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NUCLEAR SAFETY

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FEBRUARY 1968

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OAK RIDGE, TENNESSEE
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FOR THE
U.S. ATOMIC ENERGY COMMISSION

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FOREWORD

THE INDEXED BIBLIOGRAPHY OF CURRENT NUCLEAR SAFETY LITERATURE IS PUBLISHED FOUR TIMES ANNUALLY UNDER THE AUSPICES OF THE NUCLEAR SAFETY INFORMATION CENTER. THE CENTER WAS ESTABLISHED IN MARCH 1963 AT THE OAK RIDGE NATIONAL LABORATORY UNDER THE SPONSORSHIP OF THE U.S. ATOMIC ENERGY COMMISSION AND SERVES AS A FOCAL POINT FOR THE COLLECTION, STORAGE, EVALUATION, AND DISSEMINATION OF NUCLEAR SAFETY INFORMATION. THE CENTER'S EXTENSIVE REFERENCE FILES ARE STORED ON MAGNETIC TAPE AT THE OAK RIDGE COMPUTING TECHNOLOGY CENTER (CTC) AND ARE READILY AVAILABLE FOR USE BY THE NSIC STAFF IN GIVING GUIDANCE ON PROBLEMS THAT ARISE IN THE FIELD OF NUCLEAR SAFETY. THE PRODUCTION OF THIS BIBLIOGRAPHY WAS MADE POSSIBLE THROUGH IBM-7090 COMPUTER PROGRAMS DEVELOPED BY THE INFORMATION SYSTEMS DEPARTMENT OF CTC.

BIBLIOGRAPHIC ITEMS HAVE BEEN SORTED INTO 19 CATEGORIES OF NUCLEAR SAFETY INFORMATION. ITEMS MAY APPEAR IN AS MANY AS THREE CATEGORIES. A SELECTOR INDEX AND AN AUTHOR INDEX ARE PROVIDED FOR THE CONVENIENCE OF THE USER.

EACH BIBLIOGRAPHIC ITEM CONSISTS OF AUTHOR(S), TITLE, CORPORATE AUTHOR(S), NUMBER OF PAGES, TABLES, FIGURES, REFERENCES, DATE, DOCUMENT NUMBER(S), AVAILABILITY (IF NOT OBVIOUS), AN INFORMATIVE ABSTRACT OF LESS THAN 100 WORDS, AND SEVERAL SELECTOR TERMS. THE SELECTOR TERMS OR KEYWORDS ARE ASSIGNED BY NSIC PERSONNEL TO SERVE AS COORDINATE INDEXING TERMS FOR STORAGE AND FUTURE RETRIEVAL OF INFORMATION. THE MOST SIGNIFICANT SELECTOR TERMS FOR EACH BIBLIOGRAPHIC ENTRY ARE ASTERISKED AS WEIGHTING FACTORS. SELECTOR TERMS ARE INCLUDED WITH THIS BIBLIOGRAPHY SINCE THEY CAN, THROUGH THE SELECTOR INDEX, BE OF AID TO THE READER IN LOCATING ITEMS OF INTEREST. MANY READERS, HOWEVER, WILL PREFER TO SCAN THE CATEGORIES MOST RELATED TO THEIR FIELD OF INTEREST.

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PARTS AND METHOD OF INDEXING ABSTRACTS

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CATEGORY SCOPE NOTES

A BRIEF EXPLANATION OF THE COMPOSITION OF EACH CATEGORY WITHIN THE SCOPE OF THE NUCLEAR SAFETY INFORMATION CENTER FOLLOWS

1. GENERAL SAFETY CRITERIA

THIS CATEGORY ENCOMPASSES ALL SAFETY ASPECTS OF RADIATION PHILOSOPHY, STANDARDS, CODES, COST, FINANCIAL LIABILITY AND INSURANCE. OTHER ITEMS OF INTEREST ARE THE COMPARATIVE RISK TO THE PUBLIC HEALTH AND SAFETY FROM NUCLEAR AND NONNUCLEAR HAZARDS.

2. SITING OF NUCLEAR FACILITIES

THIS CATEGORY DEALS WITH DOCUMENTS RELATED TO THE FACTORS USED IN EVALUATING SITES SUCH AS CHARACTERISTICS OF THE FACILITY DESIGN, PROPOSED OPERATION, POPULATION DENSITY, USE CHARACTERISTICS OF THE SITE ENVIRONS, PHYSICAL CHARACTERISTICS OF THE SITE, EARTHQUAKE CONSIDERATIONS, AND THE RELATIONSHIP OF ENGINEERED SAFEGUARDS TO NUCLEAR FACILITY SITING.

3. TRANSPORTATION AND HANDLING OF RADIOACTIVE MATERIALS

THIS CATEGORY CONTAINS ARTICLES DEALING WITH SHIPPING CONTAINERS, SHIPPING REGULATIONS, CRITICALITY SAFETY AS RELATED TO SHIPPING AND HANDLING, TRANSPORTATION ACCIDENTS, AND ALL OTHER ITEMS DEALING WITH SAFETY DURING THE TRANSPORTATION AND/OR HANDLING OF RADIOACTIVE MATERIALS.

4. AEROSPACE SAFETY

THIS CATEGORY COVERS SAFETY CONSIDERATIONS SUCH AS LAUNCH AND REENTRY PROBLEMS THAT ARE UNIQUE TO NUCLEAR SYSTEMS USED IN AEROSPACE VEHICLES.

5. ACCIDENT ANALYSIS

ALL FACETS OF THE ANALYSIS OF POSTULATED ACCIDENTS ARE CONSIDERED IN THIS CATEGORY. INCLUDED ARE BURNOUT HEAT FLUX, CRITICAL HEAT TRANSFER, RELIABILITY ANALYSIS, IN PILE EXPERIMENTS, COOLANT ACTIVITY BUILDUP, PIPE RUPTURE, AND EXPERIMENTS, I.E. LOFT. EXPERIMENTS RELATED TO REACTOR KINETICS ARE CATALOGED IN CATEGORY 6.

6. REACTOR TRANSIENTS, KINETICS, AND STABILITY

THIS CATEGORY INCLUDES THE VARIOUS STUDIES, BOTH ANALYTICAL AND EXPERIMENTAL, SUCH AS TREAT AND SPERT IN WHICH THE TRANSIENT BEHAVIOR OF REACTORS AND CRITICALITY ACCIDENTS ARE EXAMINED.

7. FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

THE RELEASE OF FISSION PRODUCTS FROM VARIOUS MATERIALS AND THEIR MOVEMENT WITHIN A NUCLEAR FACILITY CONTAINMENT SYSTEM ARE INCLUDED IN THIS CATEGORY. TRANSPORT OF THE FISSION PRODUCT INVOLVES THE PHYSICAL AND CHEMICAL CHARACTERIZATION OF THE RELEASED RADIOACTIVE MATERIALS, AS WELL AS THE VARIOUS MECHANISMS SUCH AS DEPOSITION, ADSORPTION, FILTRATION, FALLOUT, ETC., THAT WOULD ATTENUATE THEIR CONCENTRATION WITHIN THE CONTAINMENT SYSTEM.

8. SOURCES OF ENERGY RELEASE UNDER ACCIDENT CONDITIONS

SOURCES OF ENERGY CONSIDERED IN THIS CATEGORY INCLUDE NUCLEAR, WIGNER, AND GAMMA ENERGIES, AS WELL AS CHEMICAL REACTIONS, METAL-WATER REACTIONS, AND ANY OTHER TYPES OF ENERGY THAT MIGHT BE RELEASED AS THE RESULT OF A NUCLEAR ACCIDENT.

9. NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

THE DESIGN OF CONTROL AND SAFETY SYSTEMS FOR VARIOUS NUCLEAR PROCESSES, AS WELL AS THE REQUIRED INSTRUMENTATION AND HARDWARE, ARE INCLUDED IN THIS CATEGORY. THE PROBLEMS INVOLVED ARE THE PERFORMANCE REQUIRED OF SAFETY SYSTEMS THE SPECIFICATION OF INSTRUMENTATION THE CONCEPTS OF COINCIDENCE, REDUNDANCE, FAILURE MODES, AND RELIABILITY THE ADEQUACY OF SHUTDOWN MARGINS THE DESIGN FEATURES OF DIFFERENT MECHANICAL DEVICES AND RELATED SUBJECTS.

10. ELECTRICAL POWER SYSTEMS

INFORMATION RELATED TO ROUTINE AND EMERGENCY MEANS OF SUPPLYING ELECTRICAL POWER TO NUCLEAR FACILITIES IS COVERED IN THIS CATEGORY.

11. CONTAINMENT OF NUCLEAR FACILITIES

THIS CATEGORY ENCOMPASSES ALL ASPECTS OF PRESSURE CONTAINMENT, PRESSURE RELEASE CONTAINMENT, AND MULTIPLE BARRIER CONTAINMENT FOR REACTORS, RADIOCHEMICAL PLANTS, HOT CELLS, SOURCES, ETC., AND WILL INCLUDE SUCH ASPECTS AS DESIGN CONSIDERATIONS, LEAKAGE, PENETRATIONS, STRUCTURAL INTEGRITY, AND TEST TESTING.

12. PLANT SAFETY FEATURES

THE SAFETY ASPECTS OF MAINTENANCE, DECONTAMINATION, REACTOR SYSTEMS, URANIUM MINING AND MILLING, AND FUEL FABRICATION AND STORAGE ARE COVERED IN THIS CATEGORY. ENGINEERING DEVICES SUCH AS PRESSURE AND TEMPERATURE REDUCING SYSTEMS, AIR CLEANING SYSTEMS, AND CORE SPRAY AND SAFETY INJECTION SYSTEMS THAT ARE DESIGNED TO MINIMIZE THE CONSEQUENCES OF NUCLEAR ACCIDENTS ARE INCLUDED.

13. RADIOCHEMICAL PLANT SAFETY

NUCLEAR SAFETY INFORMATION RELATED SPECIFICALLY TO RADIOCHEMICAL PLANTS IS COVERED IN THIS CATEGORY.

14. RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

ALL ASPECTS OF THE INTENTIONAL OR ACCIDENTAL RELEASE OF RADIOACTIVITY TO THE ENVIRONMENT ARE INCLUDED IN THIS CATEGORY. RADIOACTIVE WASTE MANAGEMENT, INCLUDING WASTE TRANSPORTATION, TREATMENT, DISPOSAL AND EFFLUENT CONTROL IS OF PRIMARY IMPORTANCE AS IS RADIONUCLIDE OCCURRENCE AND MOVEMENT. THE LATTER INCLUDES FALLOUT, GEOLOGICAL CONSIDERATIONS, COUNTERMEASURES, ANALYTICAL TECHNIQUES, HYDROLOGIC CONSIDERATIONS, AND RADIONUCLIDE MOVEMENT IN SOIL AND WATER.

15. ENVIRONMENTAL SURVEYS, MONITORING, AND RADIATION EXPOSURE OF MAN

THIS CATEGORY INCLUDES ITEMS RELATED TO (1) ENVIRONMENTAL AND PERSONNEL MONITORING DURING ROUTINE AND ACCIDENTAL RADIONUCLIDE RELEASE, (2) MONITORING METHODS AND TECHNIQUES, (3) DOSE MEASUREMENT AND CALCULATION, (4) DETERMINATION OF MAXIMUM PERMISSIBLE DOSE AND CONCENTRATION, AND (5) INTERNAL AND EXTERNAL EXPOSURE TO RADIONUCLIDES.

16. METEOROLOGICAL CONSIDERATIONS

THIS CATEGORY CONSIDERS NOT ONLY DIFFUSION AND DEPOSITION OF RADIOACTIVE MATERIAL NEAR THE EARTH'S SURFACE IN CONNECTION WITH REACTOR OPERATIONS BUT ALSO THE ATMOSPHERIC TRANSPORT AND FALLOUT IN THE TROPOSPHERE AND STRATOSPHERE AS A RESULT OF NUCLEAR WEAPONS TESTS.

17. OPERATIONAL SAFETY AND EXPERIENCE

THIS CATEGORY INCLUDES COVERAGE OF THE SAFETY ASPECTS OF ROUTINE REACTOR OPERATION AND OF INCIDENTS OR UNUSUAL OPERATING OCCURRENCES, LARGE OR SMALL. POWER, RESEARCH, AND TEST REACTORS AND FUEL REPROCESSING PLANTS WILL BE COVERED. ALL AVAILABLE OPERATING, INCIDENTS, SAFEGUARDS, AND INSPECTION REPORTS WILL BE COLLECTED AND INDEXED.

18. SAFETY ANALYSIS AND DESIGN REPORTS

ROUTINE LISTINGS OF THE LATEST NUCLEAR FACILITY SAFETY ANALYSIS AND DESIGN REPORTS ARE TO BE FOUND IN THIS CATEGORY. INCLUDED ARE BOTH ANALYSES AND REPORTS BY FACILITY DESIGNERS AND BY THE AEC REGULATORY STAFF.

19. BIBLIOGRAPHIES

THIS CATEGORY CATALOGUES DOCUMENTS ON NUCLEAR SAFETY TOPICS THAT ARE EXCLUSIVELY BIBLIOGRAPHIES AS WELL AS THOSE THAT INCLUDE EXTENSIVE BIBLIOGRAPHIES WITH OTHER MATERIAL.

CATEGORY 1
GENERAL SAFETY CRITERIA

1-04745
HENRY HF + MALLETT AJ + MCLENDON JD + WACHTER JW + CALLIHAN AD + OSBORN RK + GWIN R + THOMAS JT +
SILVER EG + KNIGHT JR + NEWLON CE
STUDIES IN NUCLEAR SAFETY
UNION CARBIDE CORP., OAK RIDGE GASEOUS DIFFUSION PLANT K-25, TENN.
K-1390 +. 143 PAGES, 45 FIGURES, 13 TABLES, 51 REFERENCES, NUCLEAR SAFETY TRAINING SCHOOL CONDUCTED BY
UNION CARBIDE NUCLEAR COMPANY, JUNE 3-14, 1957

COMPILATION OF MATERIAL PRESENTED AT THE FIRST NUCLEAR (CRITICALITY) SAFETY TRAINING SCHOOL
EVER CONDUCTED. NO NEW INFORMATION PRESENTED, BUT A REVIEW OF INFORMATION ON PRACTICAL
NUCLEAR SAFETY FOR INDUSTRIAL ORGANIZATIONS. BIBLIOGRAPHY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*CRITICALITY SAFETY + *STAFFING, TRAINING, QUALIFICATION + BIBLIOGRAPHY + RADIOCHEMICAL PROCESSING

1-12862 ALSO IN CATEGORY 3
WILSON EJ
TRANSPORTING RADIOACTIVE MATERIAL
2 PAGES, NEW SCIENTIST, 126, PP. 522-3 (MAY 20, 1965)

NEW INTERNATIONAL REGULATIONS ON SAFETY PRECAUTIONS THAT FORM THE BASIS OF NATIONAL
REGULATIONS FOR RADIOACTIVE CONSIGNMENTS BY LAND, SEA, AND AIR ARE DISCUSSED. FACTORS
CONSIDERED IN DRAFTING THE NEW STANDARDS WERE - CONTAINMENT, SHIELDING, CRITICALITY, AND HEAT
EMISSION.

CODES AND STANDARDS + CRITICALITY SAFETY + HEAT TRANSFER ANALYSIS + REGULATION, IAEA + SAFETY STUDY +
TRANSPORTATION AND HANDLING

1-15836
SHAW M
NUCLEAR POWER - THE NEXT DECADE OF DEVELOPMENT IN THE U.S.
DIVISION OF REACTOR DEVELOPMENT AND TECHNOLOGY, U.S. ATOMIC ENERGY COMMISSION
21 PAGES, 13 FIGURES, APRIL 25, 1967, ATOMIC POWER CONFERENCE, CHICAGO, ILLINOIS, APRIL 25-27, 1967

OUR OBJECTIVE IS TO PERMIT THE ECONOMIC TAPPING OF THE UNLIMITED ENERGY AVAILABLE IN OUR
URANIUM RESOURCES AND TO USE MOST EFFICIENTLY THE PLUTONIUM SUPPLIED BY THE
LIGHT-WATER-REACTOR COMPLEX. THE DEVELOPMENT OF HIGH-GAIN FAST BREEDERS WILL INCREASE FUEL
UTILIZATION FROM THE 1 TO 2% NOW AVAILABLE TO OVER 50% AND WILL PROVIDE AN EXCESS OF BURNABLE
PLUTONIUM TO FUEL NEW FAST BREEDERS. THE SODIUM-COOLED LIQUID-METAL FAST-BREEDER REACTOR
(LMFBR) HAS THEREFORE BEEN ESTABLISHED AS THE HIGHEST-PRIORITY PROGRAM IN OUR CIVILIAN POWER
PROGRAM.

AVAILABILITY - AMERICAN POWER CONFERENCE, E. R. WHITEHEAD, SECRETARY, ILL. INSTITUTE OF TECHNOLOGY,
CHICAGO, ILL.

*REACTOR, FAST + *REACTOR, LARGE + *REACTOR, POWER + *SURVEY, GENERAL + PLUTONIUM +
REACTOR, LIQUID METAL COOLED + URANIUM

1-15860 ALSO IN CATEGORY 1B
MCLEOD NR + UEMATSU K + YASUKAWA S + YUMOTO R
DIRECT SUBSTITUTE PLUTONIUM FUEL FOR COMMERCIAL WATER REACTORS
NUCLEAR UTILITY SERVICES, INC., WASHINGTON, D.C.
NUS-259 +. 130 PAGES, OCTOBER 15, 1965

FOR REASONS OF FUEL-SUPPLY FLEXIBILITY, A VERY DESIRABLE CONDITION FOR THE USE OF
PLUTONIUM-ENRICHED FUEL IS AS A DIRECT SUBSTITUTE FOR U-235-ENRICHED FUEL IN EXISTING POWER
REACTORS RATHER THAN IN SPECIAL PLUTONIUM-BURNING REACTORS. A PLUTONIUM-ENRICHED FUEL DESIGN
WOULD USE A LARGER NUMBER OF SMALLER RODS FOR THE SAME EXTERNAL FUEL ASSEMBLY DIMENSIONS.
THIS HAS THE EFFECT OF REDUCING VOID COEFFICIENTS AND REDUCING BOTH TOTAL FUEL AND PLUTONIUM
INVENTORIES WHILE MAINTAINING THE SAME FUEL BURNUP AND CORE POWER CAPABILITY. THE TWO
ADVERSE EFFECTS OF SMALLER ROD DIAMETER ARE AN INCREASE IN FABRICATION COSTS AND A SMALL
REDUCTION IN CONVERSION RATIO.

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*FUEL ELEMENT + *PLUTONIUM + *REACTOR, POWER + *REACTOR, WATER + JAPAN

1-15997
LECORCHE PR
CRITICALITY CONTROL PRACTICES IN FRANCE
COMMISSARIAT A L'ENERGIE ATOMIQUE, FRANCE

CATEGORY 1
GENERAL SAFETY CRITERIA

1-15997 *CONTINUED*
SC-DC-67-1305 +. 2 PAGES, 3 REFERENCES, AMERICAN NUCLEAR SOCIETY, TRINITY AND SOUTHERN NEVADA SECTIONS, NATIONAL TOPICAL MEETING, LAS VEGAS, NEVADA, DECEMBER 13-15, 1966, PP. 39-40 OF PROCEEDINGS, NUCLEAR CRITICALITY SAFETY

BRIEFLY DISCUSSES THE FRENCH AEC NUCLEAR SAFETY ORGANIZATION AND RESPONSIBILITIES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*ADMINISTRATIVE CONTROLS AND PRACTICES + *CRITICALITY SAFETY + FRANCE + SAFETY PRINCIPLES AND PHILOSOPHY

1-15998 ALSO IN CATEGORY 17
REIDER P
APPLICATION OF INDUSTRIAL SAFETY PRACTICES TO NUCLEAR SAFETY
LOS ALAMOS SCIENTIFIC LABORATORY
SC-DC-67-1305 +. 4 PAGES, 3 FIGURES, 11 REFERENCES, AMERICAN NUCLEAR SOCIETY, TRINITY AND SOUTHERN NEVADA SECTIONS, NATIONAL TOPICAL MEETING, LAS VEGAS, NEVADA, DECEMBER 13-15, 1966, PP. 25-28 OF PROCEEDINGS, NUCLEAR CRITICALITY SAFETY

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*CRITICALITY SAFETY + *SAFETY PRINCIPLES AND PHILOSOPHY + INCIDENT, ACTUAL, GENERAL + INCIDENT, ACTUAL, NONNUCLEAR

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CRITICALITY ALARMS AND ACCIDENT DOSIMETRY
HEALTH AND SAFETY LABORATORY, U.S. ATOMIC ENERGY COMMISSION
SC-DC-67-1305 +. 13 PAGES, 2 FIGURES, 3 TABLES, 31 REFERENCES, AMERICAN NUCLEAR SOCIETY, TRINITY AND SOUTHERN NEVADA SECTIONS, NATIONAL TOPICAL MEETING, LAS VEGAS, NEVADA, DECEMBER 13-15, 1966, PP. 219-231 OF PROCEEDINGS, NUCLEAR CRITICALITY SAFETY

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*CRITICALITY SAFETY + *SAFETY PRINCIPLES AND PHILOSOPHY + ACCIDENT, GENERAL + ACCIDENT, PROBABILITY OF

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MUKAIRO T + KIOSE R
PROBLEMS OF NUCLEAR CRITICALITY SAFETY IN JAPAN
UNIVERSITY OF TOKYO, JAPAN
SC-DC-67-1305 +. 7 PAGES, 4 FIGURES, 1 TABLE, AMERICAN NUCLEAR SOCIETY, TRINITY AND SOUTHERN NEVADA SECTIONS, NATIONAL TOPICAL MEETING, LAS VEGAS, NEVADA, DECEMBER 13-15, 1966, PP. 41-47 OF PROCEEDINGS, NUCLEAR CRITICALITY SAFETY

BRIEFLY DISCUSSES JAPANS LAWS, ORGANIZATIONS, AND PROCEDURES FOR ENSURING CRITICALITY CONTROL AND NUCLEAR SAFETY. REVIEWS THE PRESENT AND FUTURE EXPERIMENTAL PROGRAM.

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CATEGORY 1
GENERAL SAFETY CRITERIA

1-16002
DANIELS JT
CRITICALITY CONTROL ATTITUDES IN THE UNITED KINGDOM
UNITED KINGDOM ATOMIC ENERGY AUTHORITY
SC-DC-67-1305 +. 6 PAGES, AMERICAN NUCLEAR SOCIETY, TRINITY AND SOUTHERN NEVADA SECTIONS, NATIONAL TOPICAL MEETING, LAS VEGAS, NEVADA, DECEMBER 13-15, 1966, PP. 49-54 OF PROCEEDINGS, NUCLEAR CRITICALITY SAFETY

BRIEFLY DISCUSSES THE DEVELOPMENT OF THE UKAEA, CURRENT POLICY, PROCEDURES, INSPECTION, PLANT LIMITATIONS, AND NON-AEA OPERATORS.

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THE NATIONAL CRITICALITY DATA CENTER
CAK RIDGE NATIONAL LABORATORY
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DISCUSSES THE COMPUTATION OF A CRITICAL SYSTEM WITH THE PURPOSE OF EMPHASIZING THAT LARGE FACTORS OF CONSERVATISM, WHICH ARISE WHEN EXPERIMENTAL DATA IS EXTENDED, CAN BE REDUCED FOR SOME CONFIGURATIONS OF FISSILE MATERIAL.

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1-16005
CALLIHAN D
STANDARDIZATION FOR NUCLEAR CRITICALITY CONTROL
CAK RIDGE NATIONAL LABORATORY
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DISCUSSES THE DEVELOPMENT OF STANDARDIZATION OF CRITICALITY SAFETY IN THE UNITED STATES.

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1-16006 ALSO IN CATEGORY 13
SCHUSKE CL
CRITICALITY CONTROL IN A PLUTONIUM PROCESSING PLANT
DOW CHEMICAL, ROCKY FLATS PLANT
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CATEGORY 1
GENERAL SAFETY CRITERIA

1-16006 *CONTINUED*

DISCUSSES ADMINISTRATIVE AND PHYSICAL CONTROLS AT ROCKY FLATS. ADMINISTRATIVE AIDS INCLUDE MANUALS, CRITICALITY-LIMIT SIGNS, PERSONNEL TRAINING, AUDITS AND REVIEWS OF PRACTICES. THE CRITICALITY-EXPERIMENTS PROGRAM IS DESCRIBED.

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1-16010 ALSO IN CATEGORY 3
BRORST WA

CAN WE REGULATE NUCLEAR SAFETY
INTERSTATE COMMERCE COMMISSION

SC-DC-67-1305 +. 4 PAGES, AMERICAN NUCLEAR SOCIETY, TRINITY AND SOUTHERN NEVADA SECTIONS, NATIONAL TOPICAL MEETING, LAS VEGAS, NEVADA, DECEMBER 13-15, 1966, PP. 197-200 OF PROCEEDINGS, NUCLEAR CRITICALITY SAFETY

BRIEF NONTECHNICAL DISCUSSION ON THE HAZARDS OF TRANSPORTING RADIOACTIVE MATERIALS.

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*SAFETY PRINCIPLES AND PHILOSOPHY + *TRANSPORTATION AND HANDLING + CRITICALITY SAFETY + FUEL HANDLING

1-16011

MCARRIDE JA + STEVENSON RL

NUCLEAR SAFETY IN THE AEC MATERIALS LICENSING PROGRAM

U.S. ATOMIC ENERGY COMMISSION, DIVISION OF MATERIAL LICENSING

SC-DC-67-1305 +. 6 PAGES, 1 TABLE, 5 REFERENCES, AMERICAN NUCLEAR SOCIETY, TRINITY AND SOUTHERN NEVADA SECTIONS, NATIONAL TOPICAL MEETING, LAS VEGAS, NEVADA, DECEMBER 13-15, 1966, PP. 201-206 OF PROCEEDINGS, NUCLEAR CRITICALITY SAFETY

DESCRIBES THE FUNCTION OF THE AEC REGULATORY STAFF, THE CONCEPT OF THE IDEAL SAFETY SYSTEM, FACTORS AFFECTING ATTAINMENT OF THE IDEAL SAFETY SYSTEM, AND TYPES OF LICENSES EVOLVED FROM THE LICENSING PROCESS. SOLUTIONS TO LICENSING PROBLEMS ARE INDICATED.

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*ADMINISTRATIVE CONTROLS AND PRACTICES + *REGULATION, AEC + *SAFETY PRINCIPLES AND PHILOSOPHY + CRITICALITY SAFETY

1-16012 ALSO IN CATEGORY 17
DAXTON HC

THE NATURE AND CONSEQUENCES OF NUCLEAR ACCIDENTS

LOS ALAMOS SCIENTIFIC LABORATORY

SC-DC-67-1305 +. 5 PAGES, 4 FIGURES, 1 TABLE, 7 REFERENCES, AMERICAN NUCLEAR SOCIETY, TRINITY AND SOUTHERN NEVADA SECTIONS, NATIONAL TOPICAL MEETING, LAS VEGAS, NEVADA, DECEMBER 13-15, 1966, PP. 213-217 OF PROCEEDINGS, NUCLEAR CRITICALITY SAFETY

IN TERMS OF COMMON SAFETY INDEXES, NUMBER OF INJURIES AND TIME LOST, ONLY 0.5% OF ALL INJURIES TO AEC OPERATION CONTRACTORS FROM 1943-1964, ARE ATTRIBUTABLE TO RADIATION. THE PERCENTAGE IS EVEN SMALLER FOR LOST-TIME ACCIDENTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*SAFETY PRINCIPLES AND PHILOSOPHY + ACCIDENT, GENERAL + INCIDENT, ACTUAL, GENERAL + RADIATION SAFETY AND CONTROL

1-16046

LIEBERMAN JA

SAFETY ASPECTS OF NUCLEAR POWER

DIVISION OF REACTOR DEVELOPMENT AND TECHNOLOGY, USAEC, WASHINGTON, D. C.

9 PAGES, FOR PRESENTATION AT THE NATIONAL COAL ASSOCIATION BRIEFING, OAK RIDGE, SEPTEMBER 29, 1966

THE SAFETY OF REACTORS HINGES ON THE CONTROL OF THE RADIOACTIVE FISSION PRODUCTS GENERATED. THIS CONTROL UNDER BOTH NORMAL AND ACCIDENT SITUATIONS INCLUDES NUMEROUS CONSIDERATIONS OF DESIGN, LOCATION, CONSTRUCTION, AND OPERATION OF THE PLANT. IT HAS LED TO THE USE OF PLANT CONTAINMENT AND OTHER ENGINEERED SAFEGUARD SYSTEMS FOR CONTROLLING THE CONSEQUENCES OF AN ACCIDENT EVEN IN THE HIGHLY UNLIKELY EVENT IT SHOULD OCCUR. THESE CONSIST OF THE FUEL MATERIAL ITSELF, ITS CLADDING, THE HIGH-INTEGRITY PRIMARY SYSTEM (PRESSURE VESSEL, PIPING, PUMPS, VALVES) AND THE OVERALL CONTAINMENT SYSTEM. FOR PEOPLE TO BE EXPOSED TO THE RADIOACTIVE FISSION PRODUCTS IN THE FUEL, ALL THESE BARRIERS WOULD HAVE TO BE CROSSED.

*REACTOR SAFETY SYSTEM + *REVIEW + *SAFETY PRINCIPLES AND PHILOSOPHY + ACCIDENT ANALYSIS +

CATEGORY 1
GENERAL SAFETY CRITERIA

1-16046 *CONTINUED*
CONTAINMENT, GENERAL + FISSION PRODUCT RETENTION

1-16102
WAHL JE
COMPILING AND COMPARING ACCIDENT RECORDS
5 PAGES, NATIONAL SAFETY NEWS 92(6), PAGES 25-29 (DECEMBER 1965)

DISCUSSES THE NEED FOR ACCIDENT RECORDS, THE DEVELOPMENT, CONTENT, AND USE OF U.S.A. (ASA) STANDARD Z16.1--AMERICAN STANDARD METHOD FOR RECORDING AND MEASURING WORK INJURY EXPERIENCE, THE USE OF QUALITY CONTROL CHARTS TO MEASURE THE SIGNIFICANCE OF CHANGES IN WORK-INJURY EXPERIENCE, AND THE SERIOUS-INJURY INDEX. SAMPLE CALCULATIONS ARE GIVEN FOR DISABLING-INJURY FREQUENCY RATE, DISABLING-INJURY SEVERITY RATE, THE RATE EXPRESSING THE AVERAGE DAYS CHARGED PER DISABLING INJURY, AND THE DISABLING-INJURY INDEX.

*ACCIDENT, GENERAL + *SAFETY PRINCIPLES AND PHILOSOPHY + CODES AND STANDARDS + STATISTICAL CORRELATION

1-16125
BENEDICT M + GOLS GA + HOGERTON JF + HOPPER WH + JENSEN JT + STEPHAN RA + SMITH DW + STOLLER SM + TURNER EC + OLD BS
THE GROWTH OF FOREIGN NUCLEAR POWER
LITTLE (ARTHUR D.) INC., CAMBRIDGE, MASS.
TID-22973 +. 98 PAGES, 14 FIGURES, 31 TABLES, APRIL 1966

THE GROWTH OF NUCLEAR POWER IN THE FREE WORLD WILL BE HEAVILY CONCENTRATED IN THE INDUSTRIALIZED NATIONS OF WESTERN EUROPE, IN CANADA, AND IN JAPAN. THESE NATIONS GENERATE 45% OF THE WORLD'S ELECTRIC ENERGY AND, WITH THE UNITED STATES, REPRESENT 85% OF THE FREE WORLD'S PRODUCTION OF ELECTRICITY. WITH THE EXCEPTION OF THE FRENCH, WHO FOR THE FORESEEABLE FUTURE WILL CONTINUE TO PURSUE NATURAL URANIUM REACTORS, WE EXPECT OVER 85% OF EUROPE'S FUTURE NUCLEAR POWER GENERATING CAPACITY TO USE ENRICHED URANIUM. EXCEPT FOR GREAT BRITAIN (WITH THE AGR) WE BELIEVE MOST OF THESE PLANTS WILL USE LIGHT-WATER TECHNOLOGY. CUMULATIVE NUCLEAR GENERATING CAPACITY WILL PROBABLY ATTAIN THESE LEVELS (U.S., FOREIGN FREE WORLD, RESPECTIVELY) AS INDICATED, IN 1000S MW(E) - 8.2, 14 (1970), 29, 51 (1975), 80, 130 (1980), 200, 280 (1985).

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*REACTOR, POWER + BELGIUM + CANADA + DENMARK + ECONOMIC STUDY + FRANCE + GERMANY + ITALY + JAPAN + SPAIN + SWEDEN + SWITZERLAND + UNITED KINGDOM

1-16134 ALSO IN CATEGORY 13
KFTZLACH N
APPLICATION OF NUCLEAR SAFETY CRITERIA TO PLANT OPERATIONS
ATOMICS INTERNATIONAL, CANOGA PARK, CALIFORNIA
CONF-651103-4 +. 26 PAGES, 1964, IAEA SYMPOSIUM ON CRITICALITY CONTROL OF FISSION MATERIALS, STOCKHOLM

DISCUSSES CONSERVATIVE CALCULATION OF CRITICALITY PARAMETERS FOR URANIUM CARBIDE FUELS AND THE APPLICABILITY OF DERIVED CRITERIA TO PLANT PROCESSING CONDITIONS. A METHOD IS ALSO GIVEN FOR APPLYING URANIUM-METAL/WATER DATA TO URANIUM FUELS OF OTHER TYPES, FOR WHICH NO CRITICALITY DATA ARE AVAILABLE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*CRITICALITY SAFETY + DESIGN CRITERIA + FUEL REPROCESSING + RADIOCHEMICAL PLANT SAFETY + RADIOCHEMICAL PROCESSING + URANIUM CARBIDE + URANIUM OXIDE

1-16135 ALSO IN CATEGORIES 12 AND 17
SWAIN AD
SAFETY AS A DESIGN FEATURE IN SYSTEMS
SANDIA CORPORATION, ALBUQUERQUE, NEW MEXICO
SC-R-65-091 + CONF-650,915-2 +. 14 PAGES, SEPTEMBER 1965

TWO POINTS ARE STRESSED. FIRST, CAMPAIGNS TO MOTIVATE INDIVIDUALS TOWARD SAFETY DO NOT PERMANENTLY REDUCE THE FREQUENCY OF ACCIDENTS IN MAN-MACHINE SITUATIONS. SECOND, IT IS EASIER AND MORE LASTING TO DESIGN SAFETY FEATURES INTO THE SYSTEMS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*SAFETY PRINCIPLES AND PHILOSOPHY + ACCIDENT, GENERAL + ACCIDENT, HYPOTHETICAL + ACCIDENT, PROBABILITY OF + STAFFING, TRAINING, QUALIFICATION

1-16183 ALSO IN CATEGORIES 7 AND 11

CATEGORY 1
GENERAL SAFETY CRITERIA

1-16183 *CONTINUED*

COTTRELL WR

ORNL NUCLEAR SAFETY RESEARCH AND DEVELOPMENT PROGRAM BIMONTHLY REPORT FOR MARCH - APRIL 1967.
OAK RIDGE NATIONAL LAB., TENN.

ORNL-TM-1864 +. 77 PAGES, 6 FIGURES, 8 TABLES, 13 REFERENCES, MAY 10, 1967

INCLUDED IN THIS PROGRESS REPORT ARE WORK ON VARIOUS CHEMICAL REACTIONS, AS WELL AS THE RELEASE, CHARACTERIZATION, AND TRANSPORT OF FISSION PRODUCTS IN CONTAINMENT SYSTEMS UNDER VARIOUS ACCIDENT CONDITIONS AND ON PROBLEMS ASSOCIATED WITH THE REMOVAL OF THESE FISSION PRODUCTS FROM GAS STREAMS. ALTHOUGH MOST OF THE WORK CONTINUES TO BE IN GENERAL SUPPORT OF WATER POWER REACTOR TECHNOLOGY INCLUDING SOME IN DIRECT SUPPORT OF THE LOFT AND CSE PROGRAMS, SEVERAL PROJECTS ARE CONDUCTED IN SUPPORT OF THE HIGH-TEMPERATURE GAS-COOLED REACTOR (HTGR) PROGRAM, INCLUDING BOTH IN-PILE AND OUT-PILE STUDIES OF THE REACTION RATES AND FISSION PRODUCT RELEASE AND TRANSPORT PHENOMENA. OTHER MAJOR PROJECTS INCLUDE FUEL TRANSPORT SAFETY INVESTIGATIONS, A SERIES OF DISCUSSION PAPERS ON VARIOUS ASPECTS OF WATER REACTOR TECHNOLOGY, ANTISEISMIC DESIGN OF NUCLEAR FACILITIES, AND THE STUDIES OF PRESSURE VESSEL TECHNOLOGY. EXPERIMENTAL WORK RELATIVE TO PRESSURE VESSEL TECHNOLOGY INCLUDES INVESTIGATIONS OF THE ATTACHMENT OF NOZZLES TO SHELLS AND THE VARIABILITY OF IMPACT DATA ON LOW ALLOY STEELS. SEVERAL OF THE PROJECTS ARE CONCERNED WITH THE DEVELOPMENT OF ENGINEERING SAFEGUARDS AND THE ESTABLISHMENT OF CODES AND STANDARDS FOR THESE SAFEGUARDS. THE RECENT ACTIVITIES OF THE NSIC AND THE NUCLEAR SAFETY JOURNAL IN BEHALF OF THE NUCLEAR COMMUNITY ARE ALSO DISCUSSED.

AVAILABILITY - WM. B. COTTRELL, OAK RIDGE NATIONAL LAB., TENN.

*FISSION PRODUCT RELEASE, GENERAL + ACCIDENT, HYPOTHETICAL + ACCIDENT, MAXIMUM CREDIBLE (MCA) + AEROSOL PROPERTIES + AIR CLEANING + AIRBORNE RELEASE + ALLOY + CHARCOAL ADSORBER + CHEMICAL REACTION + CODES AND STANDARDS + CSE (CONTAINMENT SYSTEMS EXPERIMENT) + DEPOSITION + EARTHQUAKE ENGINEERING + ENGINEERED SAFETY FEATURE + FILTER + FISSION PRODUCT TRANSPORT + IMPACT PROPERTY + IMPACT SHOCK + IODINE + LOFT (LOSS OF FLUID TEST) + NOZZLE + NSIC (NUCLEAR SAFETY INFORMATION CENTER) + ORGANIC IODIDE + PRESSURE VESSEL + REACTOR, GAS COOLED + REACTOR, HIGH TEMP. GAS + REACTOR, WATER + STEEL + STEEL, STAINLESS + TREAT (TRANSIENT TEST REACTOR FACILITY)

1-16197 ALSO IN CATEGORY 17

SAFETY MANUAL - FOR USE OF OPERATORS DEALING WITH RADIOGRAPHY AND INDUSTRIAL GAMMAGRAPHY
CENTRE D ETUDES DE PROTECTION, PARIS, FRANCE
32 PAGES, FIGURES, SAFETY MANUAL, 1965

GIVES READABLE INFORMATION TOGETHER WITH AMUSING SKETCHES ON DANGERS, INDIVIDUAL DOSIMETRY, MEASURING DEVICES, DIRECT AND SCATTERED POTENTIAL, SUPERVISED ZONE, PROTECTION THROUGH DISTANCE OR SHIELDING, CAUTIONS DURING PICTURE TAKING OR IN CASE OF DIFFICULTY, AND MEDICAL VISITS. APPENDICES INDICATE SHIELDING EFFECTIVENESS, HALF-LIVES, ALLOWABLE DOSE RATES, AND METHODS FOR MAKING PROTECTION CALCULATIONS.

AVAILABILITY - USAEC DIVISION OF TECHNICAL INFORMATION EXTENSION, P.O. BOX 62, OAK RIDGE, TENNESSEE 37830

*PROCEDURES AND MANUALS + *RADIATION SAFETY AND CONTROL + *RADIOGRAPHY +
*STAFFING, TRAINING, QUALIFICATION + SAFETY PRINCIPLES AND PHILOSOPHY

1-16212 ALSO IN CATEGORIES 12 AND 17

CARPICK BJ + GEKLER WC + POMREHN HP

ARE PLANT ENGINEERED SAFEGUARDS RELIABLE

HOLMES + MARVER, INC., LOS ANGELES, CALIFORNIA

6 PAGES, 1 FIGURE, 2 TABLES, NUCLEONICS 25(1) PAGES 45-49 (JANUARY 1967)

PRESENTS THE RESULTS OF A STUDY OF THE RELIABILITY OF ENGINEERED-SAFEGUARD SYSTEMS BASED ON OPERATING EXPERIENCE AT 5 NUCLEAR POWER PLANTS. (FOR A FULL REPORT SEE REPORT HV-185). DIFFICULTIES WITH SAFEGUARD SYSTEMS INCLUDE ISOLATION-VALVE LEAKAGE OR FAILURE TO CLOSE, STARTING-CIRCUIT FAILURES, FUEL-SUPPLY-SYSTEM LEAKAGE IN EMERGENCY POWER SYSTEMS, AND DESIGN INADEQUACIES REQUIRING INCREASED MAINTENANCE OR MODIFICATION FOR ENVIRONMENTAL CONDITIONS. SUMMARIZES RESULTS OF STUDY FOR EMERGENCY COOLING SYSTEMS, CONTAINMENT, EMERGENCY POWER SYSTEMS, SECONDARY SHUTDOWN SYSTEMS, AND SAFETY SYSTEMS.

*ENGINEERED SAFETY FEATURE + *OPERATING EXPERIENCE + *RELIABILITY ANALYSIS + CONTAINMENT, GENERAL + EMERGENCY COOLING CONSIDERATIONS + EMERGENCY POWER, ELECTRIC + EXAMINATION + FAILURE, ADMINISTRATIVE CONTROL + FAILURE, EQUIPMENT + FAILURE, GENERAL + MAINTENANCE AND REPAIR + PLANT PROTECTIVE SYSTEM + REACTOR SAFETY SYSTEM + REACTOR, POWER + SHUTDOWN SYSTEM, SECONDARY

1-16329 ALSO IN CATEGORIES 18 AND 12

QUESTION A-1(1) THRU. 1(5)--UNITS 2 AND 3 SAFETY ACTION

COMMONWEALTH EDISON COMPANY

8 PAGES, PAGES A-1 TO A-8 FROM DRESDEN 3 AMENDMENT 1, 1966, DOCKET NO. 52-249

SEVERAL FEATURES OF UNIT 3 WILL BE SHARED WITH UNIT 2, INCLUDING TURBINE BUILDING, SECONDARY CONTAINMENT, CONTAINMENT-SPRAY SYSTEM, AND REACTOR-BUILDING VENTILATION SYSTEM, PROVIDING POTENTIAL INTERACTION BETWEEN UNITS. DEGREE AND EFFECT OF INTERACTIONS RELATED TO SAFETY DURING NORMAL AND ACCIDENT CONDITIONS. CONSIDER ESPECIALLY THESE FIVE POINTS - (1) DISCUSS DIFFERENCES IN PERFORMANCE OBJECTIVES OF UNIT 3 WITH LISTED INTERCONNECTIONS AS COMPARED WITH THOSE FOR A SINGLE PLANT. INCLUDE FACTORS INFLUENCING OPERATION OF UNIT 2. (2) STATE CRITERIA USED TO DETERMINE WHICH COMPONENTS, SYSTEMS, AND FACILITIES COULD AND COULD NOT BE SHARED. (3) FOR FEATURES NOT SHARED, GIVE CRITERIA FOR ADDITIONAL DESIGN CONSIDERATIONS ASSURING NO ADVERSE INTERACTION BETWEEN UNITS. (4) FOR COMPONENTS, SYSTEMS AND FACILITIES

CATEGORY 1
GENERAL SAFETY CRITERIA

1-16320 *CONTINUED*

SHARED, STATE CRITERIA SPECIFIC DESIGN OF EACH SHARED FEATURE. (5) IF INCIDENT OCCURS IN ONE UNIT, WHAT ARE POTENTIAL EFFECTS ON RELIABILITY, REDUNDANCY, ACCESS FOR INSPECTION AND MAINTENANCE, AND OPERATIONAL MODE OF REMAINING UNITS.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ENGINEERED SAFETY FEATURE + *SHARED COMPONENTS + AEC QUESTION + DRESDEN 3 + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

1-16332

ALSO IN CATEGORY 18

QUESTION A-5--COMPARATIVE EVALUATION OF DESIGN CRITERIA
COMMONWEALTH EDISON COMPANY

1 PAGE, PAGE A-1 FROM DRESDEN 3 AMENDMENT 1, 1966, DOCKET 50-249

PROVIDE A COMPARATIVE EVALUATION OF THE DRESDEN-3 DESIGN CRITERIA WITH THE COMMISSIONS GENERAL DESIGN CRITERIA FOR NUCLEAR POWER PLANT CONSTRUCTION PERMITS (NOVEMBER 22, 1965). YOUR DISCUSSION OF EACH CRITERION SHOULD INCLUDE THE PERTINENT CONSIDERATIONS GIVEN FOR MULTIPLE-UNIT INTERACTIONS.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*AEC CONSTRUCTION PERMIT CRITERIA + AEC QUESTION + DRESDEN 3 + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY + SHARED COMPONENTS

1-16364

ALSO IN CATEGORY 15

SAYLOR JP

CONGRESSMAN ASKS FOR INVESTIGATION OF AEC

CONGRESS (US), HOUSE OF REPRESENTATIVES

3 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(24) PAGES 2-4 (JUNE 12, 1967)

REPRESENTATIVE J. P. SAYLOR (DISCUSSING HR 599 TO CREATE A FEDERAL COMMITTEE ON NUCLEAR DEVELOPMENT) CITED LUNG-CANCER DEATHS OF URANIUM MINERS AND 1957 BNL ACCIDENT-CONSEQUENCES REPORT, AND ASSERTED THAT AEC WAS MOVING TOO FAST IN ITS LUST FOR ATOMIC POWER. ALSO STATED AEC MAINTAINED AN INSIDIOUS SECRECY ON MINING DANGERS. (TEXT OF HR 599 INCLUDED).

*CONGRESSIONAL ACTIVITY + *RADIATION, PUBLIC EDUCATION/ACCEPTANCE + ACCIDENT, HYPOTHETICAL + INHALATION + MINING + PERSONNEL EXPOSURE, RADIATION

1-16365

ALSO IN CATEGORIES 15 AND 17

SENATE BILL TO REIMBURSE A STATES FOR WORKMENS COMPENSATION PAID FOR URANIUM RADIATION
CONGRESS (US), HOUSE OF REPRESENTATIVES

3 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(24) PAGES 4-6 (JUNE 12, 1967)

S-1927 WOULD AUTHORIZE PAYMENT OF HALF THE WORKMENS COMPENSATION FOR INJURY, DISABILITY, OR DEATH IN MINING OR PROCESSING URANIUM, OR FROM URANIUM RADIATION. DISCUSSION BY SPONSOR MADE FIVE POINTS - (1) PERIODICALLY PUBLISH INCIDENT REPORTS TO ASSESS THE PROBLEM, (2) REVIEW HOSPITAL FACILITIES AND CAPABILITIES NEAR MINES, (3) INSTALL SATISFACTORY VENTILATION, (4) GUARD AGAINST AIR AND STREAM POLLUTION FROM MINE WASTES, (5) ESTABLISH AN INTERAGENCY AUTHORITY TO ENFORCE USE OF FEDERAL RADIATION COUNCIL GUIDELINES BY OTHER GOVERNMENT AGENCIES, FINALLY, MAKE VARIOUS STATES WORKMANS-COMPENSATION LAWS UNIFORM.

*CONGRESSIONAL ACTIVITY + *INSURANCE + INCIDENT COMPILATION + MAXIMUM PERMISSIBLE CONCENTRATION (MPC) + MILLING + MINING + PERSONNEL EXPOSURE, RADIATION + VENTILATION SYSTEM + WASTE DISPOSAL, GENERAL

1-16371

ALSO IN CATEGORY 15

JUNE 5-9 TESTIMONY AT JCAE HEARING ON RADIATION EXPOSURE OF URANIUM MINES

CONGRESS (US), HOUSE OF REPRESENTATIVES

19 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(24) PAGES 18-30 (JUNE 12, 1967)

CHIEF SUBJECT WAS THE REVISED 41 CFR 50-204.321, SETTING OCCUPATIONAL EXPOSURE TO RADON DAUGHTERS AT 3.6 WORKING-LEVEL MONTHS IN ANY CONSECUTIVE 12-MONTH PERIOD. REGULATION WAS VARIOUSLY ASSAILED AS UNENFORCEABLE, UNMEASURABLE, WOULD CLOSE THE MINES, WOULD CLOSE 95% OF THE MINES IN COLORADO, THROUGH INACCURATE DEFINITION SET THE LEVEL 10% LOWER THAN INTENDED.

*CONGRESSIONAL ACTIVITY + *DOSE MEASUREMENT, INTERNAL + *INHALATION + *MAXIMUM PERMISSIBLE CONCENTRATION (MPC) + *RADON + DOSE CALCULATION, INTERNAL + MINING + NCRP (NATIONAL COMMITTEE RADIATION PROTECTION) + PERSONNEL EXPOSURE, RADIATION + REGULATION, AEC + URANIUM

1-16372

ALSO IN CATEGORIES 18 AND 15

REVISED REGULATION ON RADON INHALATION EXPOSURE FOR UNDERGROUND MINING

CONGRESS (US) HOUSE OF REPRESENTATIVES

4 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(24) PAGES 30-33 (JUNE 12, 1967)

41 CFR 50-204.321 DEFINES A WORKING LEVEL (WL) AS RADON DAUGHTERS IN AIR WHICH WILL RELEASE

CATEGORY 1
GENERAL SAFETY CRITERIA

1-16372 *CONTINUED*

1.3 X 10 TO THE 5TH MEV OF ALPHA ENERGY A MONTH AS 173 HOURS OF EXPOSURE, AND SETS EXPOSURE LIMIT AT 3.6 WL-MONTHS/CONSECUTIVE-12-MONTHS (I.E., A 0.3-WL AVERAGE). MINES ARE GIVEN UNTIL JAN. 1, 1969, TO COMPLY. COMMENT BY SEC. LABOR ASSERTS THAT JCAE, PHS, AND OTHER TESTIMONY SUPPORTS A 0.3-WL STANDARD, AND THE ONLY QUESTION IS WHEN TO APPLY IT. REGULATION ALLOWS OPERATION AT 1/WL FOR 18 MONTHS PROVIDED THAT THE 0.3 WL IS ACHIEVED THEN.

*INHALATION + *MAXIMUM PERMISSIBLE CONCENTRATION (MPC) + *RADON + CONGRESSIONAL ACTIVITY + DOSE CALCULATION, INTERNAL + DOSE MEASUREMENT, INTERNAL + MINING + PERSONNEL EXPOSURE, RADIATION + REGULATION, AEC + URANIUM

1-16426 ALSO IN CATEGORIES 3 AND 15
RADIATION SAFETY FOR CIVIL AIRPORTS
FEDERAL AVIATION AGENCY, WASHINGTON, D. C.
AC 150-5240-6A +. 31 PAGES, 1965

THIS PUBLICATION IS DIVIDED INTO THREE MAJOR CATEGORIES - THE RADIATION PROBLEM, NUCLEAR RADIATION, AND EMERGENCY OPERATIONS AT CIVIL AIRPORTS. THE FIRST CATEGORY DISCUSSES THE SHIPMENT OF RADIOACTIVE MATERIALS ON CIVIL AIRCRAFT AND GIVES FUNDAMENTAL INFORMATION ABOUT NUCLEAR WEAPONS ON MILITARY AIRCRAFT. RADIATION, METHODS OF MEASURING AND MONITORING ITS POTENCY AND ITS BIOLOGICAL EFFECTS, PROTECTION OF PERSONNEL, AND DECONTAMINATION ARE COVERED IN THE SECOND CATEGORY. THE THIRD OUTLINES EMERGENCY OPERATIONS TO BE SET UP FOLLOWING AN ACCIDENT INVOLVING SHIPMENT OF RADIOACTIVE MATERIALS ON COMMERCIAL AIRCRAFT AND NUCLEAR WEAPONS CARRIED ON MILITARY AIRCRAFT. IT ALSO TELLS HOW TO OBTAIN ASSISTANCE FOR RADIOLOGICAL PROTECTION. PUBLIC RELATIONS AND NEWS RELEASES ARE MENTIONED TO EMPHASIZE THE NEED TO PREVENT UNDOE ANXIETY.

AVAILABILITY - U. S. GOVERNMENT PRINTING OFFICE, WASHINGTON, D. C. 20402

*AIRCRAFT + *EMERGENCY PROCEDURE + ACCIDENT, CONSEQUENCES + DECONTAMINATION + RADIATION SAFETY AND CONTROL

1-16427
AVAILABILITY TO THE PUBLIC OF AEC INFORMATION AND RECORDS
U.S. ATOMIC ENERGY COMMISSION
9 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(27) PAGES 2-10 (JULY 3, 1967)

CHANGES TO 10 CFR 1, 2, AND 9 ESTABLISH THE PUBLIC DOCUMENT ROOM (PDR) IN D.C. AND MAJOR FIELD OFFICES AS PLACES WHERE REQUESTS MAY BE MADE FOR COPIES OF RECORDS (THE PDR IS THE USUAL DEPOSITORY FOR PUBLIC VIEW) AND SETS FEES FOR COPYING AND SEARCHING. ANY IDENTIFIABLE RECORD IN AEC POSSESSION SHALL BE MADE AVAILABLE ON REQUEST, EXCEPT FOR 10 TYPES OF RECORDS (NATIONAL DEFENSE OR FOREIGN POLICY, INTERNAL PERSONNEL PRACTICES, TRADE SECRETS AND INFORMATION CONCERNING WELLS POLICY, INTERAGENCY OR OTHER AGENCY RECORDS AND MEMOS, PERSONNEL FILES, MATTERS CONCERNING FINANCIAL INSTITUTIONS OR LAW ENFORCEMENT.

*INFORMATION RETRIEVAL + RADIATION, PUBLIC EDUCATION/ACCEPTANCE + REGULATION, AEC

1-16433 ALSO IN CATEGORY 18
ACRS REPORT ON VERMONT YANKEE LISTS 4 ITEMS OF SIGNIFICANCE FOR ALL WATER-COOLED REACTORS
VERMONT YANKEE NUCLEAR POWER COMPANY
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(27) PAGES 25-26 (JULY 3, 1967), DOCKET 50-271

AMONG SPECIFIC ITEMS, ACRS REQUESTS (1) ADDITIONAL EVIDENCE TO SHOW THAT ONLY CLAD PERFORATION RESULTS FROM LOSS-OF-COOLANT ACCIDENT, (2) FAILURE OF OTHER ELEMENTS FOLLOWING A FLOW BLOCKAGE OF ONE ASSEMBLY SHOULD BE STUDIED, (3) VERIFICATION OF THE FUEL-ELEMENT DAMAGE LIMIT OF 24 KW/FT, AND (4) RECOMMENDS IMPLEMENTATION OF IMPROVEMENTS IN PRIMARY SYSTEM QUALITY PRACTICAL WITH CURRENT TECHNOLOGY. THE FIRST THREE POINTS ALSO WERE APPLIED TO BROWNS FERRY.

*ACRS (ADVISORY COMMITTEE ON REACTOR SAFEGUARDS) + *FAILURE, SEQUENTIAL + *PERFORMANCE LIMIT + *QUALITY CONTROL + ACCIDENT, LOSS OF COOLANT + FLOW BLOCKAGE + FUEL ELEMENT + MAIN COOLING SYSTEM + REACTOR, BOILING WATER + REACTOR, PRESSURIZED WATER + SAFETY PRINCIPLES AND PHILOSOPHY + VERMONT YANKEE

1-16586 ALSO IN CATEGORIES 7 AND 11
COTTFELL WR
ORNL NUCLEAR SAFETY RESEARCH AND DEVELOPMENT PROGRAM BIMONTHLY REPORT FOR JANUARY - FEBRUARY 1967
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE
ORNL-TM-1792 +. 58 PAGES, FIGURES, TABLES, MARCH 6, 1967

INCLUDED IN THIS PROGRESS REPORT IS WORK ON VARIOUS CHEMICAL REACTIONS, AS WELL AS THE RELEASE, CHARACTERIZATION, AND TRANSPORT OF FISSION PRODUCTS IN CONTAINMENT SYSTEMS UNDER VARIOUS ACCIDENT CONDITIONS AND ON PROBLEMS ASSOCIATED WITH THE REMOVAL OF THESE FISSION PRODUCTS FROM GAS STREAMS. ALTHOUGH MOST OF THE WORK HAS BEEN AND CONTINUES TO BE IN GENERAL SUPPORT OF WATER POWER-REACTOR TECHNOLOGY, INCLUDING SOME IN DIRECT SUPPORT OF THE LOFT AND CSE PROGRAMS, SEVERAL PROJECTS WERE STARTED THE FIRST OF THE CALENDAR YEAR IN SUPPORT OF THE HIGH-TEMPERATURE GAS-COOLED REACTOR (HTGR) PROGRAM. THESE PROJECTS INCLUDE BOTH IN-PILE AND OUT-PILE STUDIES OF REACTION RATES AND FISSION PRODUCT RELEASE AND TRANSPORT PHENOMENA RELEVANT TO POTENTIAL HTGR ACCIDENT SITUATIONS. OTHER MAJOR PROJECTS INCLUDE FUEL TRANSPORT SAFETY INVESTIGATIONS, A SERIES OF DISCUSSION PAPERS ON VARIOUS ASPECTS OF WATER REACTOR TECHNOLOGY, AND THE STUDIES ON PRESSURE VESSEL TECHNOLOGY. EXPERIMENTAL WORK RELATIVE TO

CATEGORY 1
GENERAL SAFETY CRITERIA

1-16586 *CONTINUED*

PRESSURE VESSEL TECHNOLOGY INCLUDES INVESTIGATIONS OF THE ATTACHMENT OF NOZZLES TO SHELLS AND THE VARIABILITY OF IMPACT DATA ON LOW-ALLOY STEELS.

AVAILABILITY - W. B. COTTRELL, OAK RIDGE NATIONAL LABORATORY, PO BOX Y, OAK RIDGE, TENNESSEE 37830

*CHEMICAL KINETICS + *CONTAINMENT, GENERAL + *CSE (CONTAINMENT SYSTEMS EXPERIMENT) +
*FISSION PRODUCT RETENTION + *FISSION PRODUCT, AIRBORNE + *IMPACT PROPERTY + *IN PILE EXPERIMENT +
*LOFT (LOSS OF FLUID TEST) + *NOZZLE + *OUT OF PILE LOOPS AND EXPERIMENTS + *PRESSURE VESSEL + *STEEL +
FISSION PRODUCT RELEASE, GENERAL + FISSION PRODUCT TRANSPORT + REACTOR, HIGH TEMP. GAS

1-16609

ALSO IN CATEGORY 18

QUESTION A-4--COMPARATIVE EVALUATION WITH AEC'S GENERAL DESIGN CRITERIA FOR NUCLEAR POWER PLANTS
THE CONNECTICUT LIGHT AND POWER COMPANY + THE HARTFORD ELECTRIC LIGHT COMPANY + WESTERN MASSACHUSETTS
ELECTRIC COMPANY

42 PAGES, 1966, PAGES A-4-1 TO A-4-42 FROM DESIGN AND ANALYSIS REPORT, AMENDMENT NO. 1, DOCKET NO. 50-245,
MILLSTONE NUCLEAR POWER PLANT

THE COMMISSION PUBLISHED GENERAL DESIGN CRITERIA FOR NUCLEAR POWER PLANTS ON NOVEMBER 22,
1965. PLEASE REVIEW THESE CRITERIA AND PROVIDE A COMPARATIVE EVALUATION WITH THE DESIGN
CRITERIA USED FOR THE MILLSTONE NUCLEAR POWER STATION. YOUR EVALUATION SHOULD INCLUDE A
DISCUSSION OF HOW THE OBJECTIVES OF THE COMMISSION CRITERIA ARE FULFILLED BY YOUR DESIGN
CRITERIA. IN ADDITION, IDENTIFY AND ANALYZE THOSE AREAS, IF ANY, IN THE STATION DESIGN THAT
DO NOT MEET THE COMMISSION CRITERIA.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*AEC CONSTRUCTION PERMIT CRITERIA + AEC QUESTION + MILLSTONE POINT + REACTOR, BOILING WATER +
SAFETY ANALYSIS REPORT, PRELIMINARY

1-16654

SEVERAL CONGRESSIONAL BILLS TO MAKE DEPARTMENT OF HEALTH, EDUCATION AND WELFARE RESPONSIBLE FOR PUBLIC
SAFETY FROM RADIATION

U.S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE

9 PAGES, ATOMIC ENERGY CLEARING HOUSE 23(29) PAGES 9-15 (JULY 17, 1967)

FIVE BILLS RELATE TO RADIATION CONTROL FROM ELECTRONIC PRODUCTS, AND S.2075 INCLUDES ISOTOPES,
REACTORS AND FALLOUT. DISCUSSION BRINGS OUT THAT 90,000 COLOR TV SETS WERE RECALLED FOR
X-RAY PRODUCTION IN EXCESS OF 0.5 MR/HR, AND EXPRESSES CONCERN FOR MEDICAL X-RAYS, RADAR
RANGES, AND OTHER HOME USAGE.

*CONGRESSIONAL ACTIVITY + *RADIATION SAFETY AND CONTROL + INCIDENT, ACTUAL, GENERAL +
PERSONNEL EXPOSURE, RADIATION + X-RAY

1-16792

MITCHELL W + CHARNOFF G + COE RJ

REPORT TO THE ATOMIC ENERGY COMMISSION BY THE SECOND REGULATORY REVIEW PANEL

UNITED STATES ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.

24 PAGES, JUNE 1967

SUGGESTIONS DEAL ENTIRELY WITH ATOMIC SAFETY AND LICENSING BOARD FUNCTIONS AND PROCEDURES IN
CONTESTED CASES. SUGGESTIONS DEAL WITH PROCEDURES FOR THE HEARING, RATHER THAN WITH
TECHNICAL MATTERS.

AVAILABILITY - WILLIAM MITCHELL, USAEC, WASHINGTON, D. C.

*REGULATION, AEC + CONSTRUCTION PERMIT PROCESS + OPERATING LICENSE PROCESS

1-16794

KINGSLEY SG

THE LICENSING OF NUCLEAR POWER REACTORS IN THE UNITED STATES

UNITED STATES ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.

11 PAGES, 102 REFERENCES, J. BRIT. NUCL. ENERG. SOC. 5(1), PAGE 49-59 (JAN. 1966)

DISCUSSES THE POSITION OF THE USAEC, ITS ORGANIZATIONAL ARRANGEMENTS AND PROCEDURES FOR
LICENSING NUCLEAR POWER REACTORS, AND THE SUBSTANTIVE CRITERIA OF SAFETY WHICH IT EMPLOYS.
THE REGULATORY DOCTRINE IS REVIEWED, AND THE PROSPECTS OF MORE EXPLICIT ELABORATION IN ITS
REGULATORY STANDARDS ARE CONSIDERED.

*CONSTRUCTION PERMIT PROCESS + *OPERATING LICENSE PROCESS + *SAFETY REVIEW (OPERATIONS, EXPERIMENTS) +
CODES AND STANDARDS + REGULATION, AEC

1-16937

ALSO IN CATEGORIES 5 AND 2

SCHIKARSKI W

REFLECTIONS ON SERIOUS REACTOR ACCIDENTS. STATEMENT ON A NEW QUANTITATIVE ACCIDENT PHILOSOPHY

CATEGORY 1
GENERAL SAFETY CRITERIA

1-16937 *CONTINUED*
KERNFORSCHUNGSZENTRUM, KARLSRUHE, WEST GERMANY
KFK-520 +. 12 PAGES, 9 REFERENCES, JANUARY 1967, IN GERMAN

THE MCA CONCEPT HAS MAINLY TWO DIFFICULTIES - IT CONSIDERS ENGINEERED SAFEGUARDS INSUFFICIENTLY, AND IT DOES NOT CONTAIN PROBABILITIES. THE BU (BASIS ACCIDENT) CONCEPT DETERMINES A CONSERVATIVE-BASIS ACCIDENT AND A DANGER POTENTIAL. PROBABILITIES ARE ASSIGNED TO INDIVIDUAL EVENTS WHICH TOGETHER MAKE UP THE ACCIDENT, AND TO ENGINEERED SAFEGUARDS. THIS FACILITATES QUANTITATIVE STATEMENTS REGARDING SAFETY OF REACTORS. THE RISK IS THE PRODUCT OF THE DANGER POTENTIAL AND THE ASSOCIATED PROBABILITIES.

AVAILABILITY - MICROCARD EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM, WISCONSIN 54669

*ACCIDENT ANALYSIS + *ACCIDENT, MAXIMUM CREDIBLE (MCA) + ACCIDENT, PROBABILITY OF +
ENGINEERED SAFETY FEATURE + GERMANY + SAFETY ANALYSIS + SAFETY EVALUATION +
SAFETY PRINCIPLES AND PHILOSOPHY

1-1724P
SIDDIQI AA
RADIATION SAFETY REGULATIONS FOR ATOMIC ENERGY CENTRE, Dacca
ATOMIC ENERGY CENTRE, Dacca, PAKISTAN
AECD/HP/2 +. 40 PAGES, REFERENCES, SEPTEMBER, 1965

IT INCLUDES DISCUSSIONS OF MAXIMUM PERMISSIBLE LEVELS OF RADIATION UNDER VARIOUS CONDITIONS, REGULATIONS REGARDING WORK AREAS AND MONITORING, CONTAMINATION AND DECONTAMINATION, STORAGE AND TRANSPORT OF RADIOACTIVE MATERIALS, AND WASTE HANDLING.

AVAILABILITY - MICROCARD EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM, WISCONSIN 54669

*PAKISTAN + *RADIATION SAFETY AND CONTROL + *REGULATION, GENERAL + CONTAMINATION + DECONTAMINATION +
MAXIMUM PERMISSIBLE BODY BURDEN + MONITORING SYSTEM, RADIATION + TRANSPORTATION AND HANDLING +
WASTE DISPOSAL, GENERAL

1-1724O ALSO IN CATEGORY 15
HART JC
ON THE LEGALISTIC ASPECTS OF THE RADIATION EXPOSURE RECORD
OAK RIDGE NATIONAL LAB., TENN.
ORNL-R-2521 +. 24 PAGES, 34 REFERENCES, HEALTH PHYSICS 13, PAGES 319-326, (JUNE, 1966)

ATOMIC ENERGY INSTALLATIONS HAVE ACCUMULATED VAST QUANTITIES OF DATA FOR THE RADIATION EXPOSURE RECORD AS A FUTURE-INTEREST MATTER. NO SMALL PART OF THIS ACCUMULATION HAS BEEN FOR SO-CALLED LEGAL REASONS EVEN THOUGH ONLY A FEW LEGAL PRECEDENTS HAVE BEEN SET IN THIS PARTICULAR AREA. SEVERAL RULES HAVE BEEN LAID DOWN OR RECOMMENDED BY VARIOUS AGENCIES. SPECIFICALLY INVOLVED ARE (I) THE WORKMENS COMPENSATION ACTS, (II) THE WRONGFUL-DEATH STATUTES, (III) A CONSIDERATION FOR PROPERTY RIGHTS IN CERTAIN TYPES OF PERSONNEL RECORDS, AND (IV) THE LAW OF EVIDENCE. DOSE DATA MAINTAINED FOR TECHNICAL REASONS ARE USUALLY IDENTIFIABLE WITH THE MEDICAL ASPECTS OF DOSE INTERPRETATION, WHILE DOSE DATA MAINTAINED FOR THE LEGAL RECORD ARE ASSOCIATED WITH EVIDENTIARY PROBLEMS IN LAW. THIS STUDY REVIEWS SOME OF THE LEGAL PROBLEMS ENCOUNTERED AND EVALUATES THEM IN RELATION TO CURRENT REQUIREMENTS AND RECOMMENDED PRACTICES.

*LAW + PERSONNEL EXPOSURE, RADIATION + REVIEW

1-1725O
PAMEY JT
QUALITY ASSURANCE AS A MATTER OF PUBLIC POLICY IN THE SAFETY OF ATOMIC POWER PLANTS
UNITED STATES ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.
20 PAGES, 7 REFERENCES, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PENNSYLVANIA, OCTOBER 30-NOVEMBER 3, 1966, TRANSACTIONS OF AMERICAN NUCLEAR SOCIETY 5(2), PAGE 410

THE RAPID EXPANSION OF THE NUCLEAR POWER INDUSTRY HAS IMPOSED NEW REQUIREMENTS FOR A MORE EFFECTIVE QUALITY-ASSURANCE PROGRAM TO PERMIT US TO DISCHARGE OUR RESPONSIBILITIES FOR PUBLIC SAFETY. THE KEY REQUIREMENTS OF THIS UPGRADED QUALITY-ASSURANCE PROGRAM INCLUDE, FIRST, THE ESTABLISHMENT OF QUALITY SYSTEM REQUIREMENTS, SECOND, THE ESTABLISHMENT OF A BODY OF COMMERCIAL ENGINEERING STANDARDS CONCERNING DESIGN, CONSTRUCTION, INSPECTION, QUALITY CONTROL, PROCE TESTING AND OPERATION, AND THIRD, THE ESTABLISHMENT OF THE MEANS FOR IMPLEMENTING THE FIRST TWO THROUGH REVIEWS, INSPECTION, AND SURVEILLANCE.

*QUALITY CONTROL + *USAEC (U.S. ATOMIC ENERGY COMMISSION) + CODES AND STANDARDS + DESIGN CRITERIA +
INSPECTION AND COMPLIANCE

1-1725I
NEW JERSEY RADIATION PROTECTION CODE
NEW JERSEY STATE DEPARTMENT OF HEALTH
P1 PAGES, FIGURES, TABLES, FEBRUARY 1, 1965

CATEGORY 1
GENERAL SAFETY CRITERIA

1-17251 *CONTINUED*

THE PURPOSE OF THIS CODE IS TO PROHIBIT AND PREVENT UNNECESSARY RADIATION AS DEFINED IN THE NEW JERSEY RADIATION PROTECTION ACT. THE CODE DEALS WITH SOURCES OF RADIATION, REGISTRATION, LICENSING, CONTROLLED AREAS, PERMISSIBLE DOSE RATES, RADIATION LEVELS AND CONCENTRATIONS, RADIATION SURVEYS AND PERSONNEL MONITORING, RECORDS, RADIOACTIVE CONTAMINATION CONTROL, LABELING, POSTING AND CONTROLS, STORAGE OF RADIATION SOURCES, DISPOSAL OF RADIOACTIVE MATERIALS, TRANSPORTATION, EMERGENCY PRECAUTIONS, THEFT AND RADIATION INCIDENTS, THERAPEUTIC INSTALLATIONS, MEDICAL DIAGNOSTIC X-RAY INSTALLATIONS, DENTAL RADIOGRAPHIC INSTALLATIONS, INDUSTRIAL AND NONMEDICAL RADIOGRAPHY.

*CODES AND STANDARDS + *REGULATION, STATE + DOSE + EMERGENCY PROCEDURE + FUEL STORAGE + INCIDENT, EXPOSURE + MONITOR, RADIATION, PERSONNEL + RADIOGRAPHY + SOURCE, RADIATION + SURVEY, RADIATION, GENERAL + TRANSPORTATION AND HANDLING + WASTE DISPOSAL, GENERAL + X-RAY

1-17252

HARMONIE AND MASURCA. THE EXPERIMENTAL MASURCA-HARMONIE INSTALLATION. HARMONIE ORNL-TR-1160 +. 16 PAGES, TRANSLATED FOR OAK RIDGE NATIONAL LAB., TENN., FROM BULL. INFORM. SCI. TECH. (PARIS), NO. 95, 48-58 (1965)

HARMONIE, 2-KW-SOURCE REACTOR, HAS A CORE-BLANKET-REFLECTOR ASSEMBLY THAT CAN BE LIFTED ABOVE THE BIOLOGICAL SHIELD. PARASITE REFLECTIONS CAN THUS BE RECOVERED DURING EXPERIMENTS IN WHICH THE NEUTRON FLUX BOMBARDS BLOCKS OF VARIOUS MATERIALS. MASURCA WAS DESIGNED FOR FLEXIBILITY, SAFETY, AND ACCURACY IN EXPERIMENTATIONS WITH VARIOUS TEMPERATURES, GEOMETRIES, AND FUEL COMPOSITIONS. IT IS USED TO STUDY REACTOR MODELS OF VOLUMES FROM 200 TO 6000 LITRES.

AVAILABILITY - JOHN CRERAR LIBRARY, 35 WEST 33RD. ST., CHICAGO, ILLINOIS, 60616, \$1.60 COPY, \$0.80 MICROFICHE

*FRANCE + *REACTOR, FAST + *REACTOR, RESEARCH + *REVIEW

1-17410

REGULATIONS PERTAINING TO WORK WITH IONIZING RADIATION SOURCES
JPRS-31993 + TT-65-32497 +. 26 PAGES, TABLES, TRANSLATIONS FROM SLUZBENI LIST SFRJ, NO. 31, 1198-1205, (JULY 14, 1965)

REGULATIONS WERE PUBLISHED IN YUGOSLAVIA IN JULY 1965 DEALING WITH FOUR ASPECTS OF NUCLEAR SAFETY - (1) HEALTH EXAMINATIONS AND CONDITIONS OF PERSONS WHO WORK WITH RADIATION SOURCES, (2) PERMISSIBLE DOSES TO WHICH SUCH PERSONS MAY BE EXPOSED, (3) PROFESSIONAL TRAINING OF SUCH PERSONS AND PROTECTION AGAINST SUCH RADIATION, (4) USE OF RADIOACTIVE MATERIALS IN EXCESS OF DESIGNATED LIMITS OF ACTIVITY AND PROTECTIVE MEASURES AGAINST RADIATION FROM SUCH SOURCES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*HEALTH PHYSICS TRAINING + *PERSONNEL EXPOSURE, RADIATION + *RADIATION PROTECTION, ORGANIZATION + *RADIATION SAFETY AND CONTROL + *REGULATION, GENERAL + *YUGOSLAVIA

1-17411

SMITH DR
NUCLEAR CRITICALITY SAFETY TOPICAL MEETING, LAS VEGAS, DECEMBER 1966
LOS ALAMOS SCIENTIFIC LABORATORY, N. MEXICO
1 PAGE, NUCLEAR SAFETY 8(4), PAGE 323, (JULY 1967)

THE 24 PAPERS AND TWO PANEL DISCUSSIONS DEALT WITH MANY FACETS OF CRITICALITY SAFETY. AN ACADEMIC TASK FORCE CONCLUDED THAT CRITICALITY SAFETY SHOULD RECEIVE INCREASED EMPHASIS IN NUCLEAR ENGINEERING EDUCATION CURRICULA. NUMEROUS STATEMENTS BY PARTICIPANTS REFLECTED DISCONTENT WITH OVERLY CONSERVATIVE SAFETY PRACTICES AND CONCERN WITH THE PUBLIC SENSITIVITY TO NUCLEAR RISK. CONSENSUS WAS THAT THE INCIDENCE OF CRITICALITY ACCIDENTS HAS BEEN EXCEPTIONALLY LOW. HOWEVER, THERE WERE SIGNIFICANT DIFFERENCES OF OPINION AS TO THE PROPER ATTITUDE TOWARD THE CONTROL OF NUCLEAR HAZARDS.

*CRITICALITY SAFETY + *REVIEW

1-17412

ALSO IN CATEGORY 8

WHITMARSH CL
WATER CHEMISTRY IN THE N.S. SAVANNAH REACTOR. EFFECT OF A CORE COMPONENT CHANGE FROM 304 STAINLESS STEEL TO ZIRCALOY-4
OAK RIDGE NATIONAL LAB., TENN.
ORNL-TM-1P44 +. 11 PAGES, APRIL 28, 1967

EFFECT OF CHANGING THE MATERIAL OF CONSTRUCTION OF THE FUEL-ELEMENT CONTAINER (A STRUCTURAL COMPONENT IN THE CORE OF THE NS SAVANNAH REACTOR) FROM 304 STAINLESS STEEL TO ZIRCALOY-4 WAS CONSIDERED WITH RESPECT TO THE WATER CHEMISTRY OF THE PRIMARY COOLANT SYSTEM. NO DETRIMENTAL EFFECTS FORESEEN FROM THE STANDPOINTS OF CRUD CHARACTERISTICS AND CHEMICAL EFFECTS ON MATERIAL PROPERTIES. CONSEQUENTLY, NO CHANGES NECESSARY TO THE PRIMARY-LOOP PURIFICATION SYSTEM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF

CATEGORY 1
GENERAL SAFETY CRITERIA

1-17412 *CONTINUED*
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*CHEMICAL REACTION + *N S SAVANNAH + *STEEL, STAINLESS + *WATER, GENERAL + *ZIRCALOY + CLAD + CRUD +
FUEL ELEMENT + REACTOR, MARITIME + REACTOR, PRESSURIZED WATER

1-17413
STRAUSS SD
NUCLEAR POWER. NEEDED. A SAFE AND SANE APPROACH TO CRITICALITY
2 PAGES, NUCLEONICS 25(3), PAGE 25 AND 26, (MARCH 1967)

THE SYMPOSIUM HELD IN LAS VEGAS ON NUCLEAR CRITICALITY SAFETY WAS A CONFERENCE OF UNUSUAL SIGNIFICANCE. A RECURRENT THEME KEPT POINTING TO WHAT WOULD SEEM TO BE THE ULTIMATE QUESTION - (1) IS THE NUCLEAR INDUSTRY READY AND ABLE TO ACCEPT ITS CLEAR RESPONSIBILITY FOR THE SAFETY OF ITS OPERATIONS. THE EXCELLENT SAFETY RECORD OF NUCLEAR OPERATIONS BY PRIVATE COMPANIES AND GOVERNMENT CONTRACTORS WAS STRESSED REPEATEDLY. (2) OUR EXCELLENT RECORD IN CRITICALITY CONTROL, ALTHOUGH PURCHASED IN CONSERVATISM IN THE EARLIEST DAYS, NOW DEMANDS THAT WE REEVALUATE OUR POSITION IN AN EXPANDING NUCLEAR INDUSTRY TO ASSURE OURSELVES THAT WE ARE ACHIEVING A REALISTIC BALANCE OF SAFETY AND ECONOMY. (3) ONE HOPES FERVENTLY FOR SIGNS THAT OVERCONSERVATISM IS GIVING WAY TO REALISTIC GOOD JUDGMENT AND THAT THE NUCLEAR INDUSTRY IS TAKING INCREASING RESPONSIBILITY FOR CONTROLLING THE RISKS IT CREATES.

*CRITICALITY SAFETY + *REVIEW

CATEGORY 2
SITING OF NUCLEAR FACILITIES

2-00897
THOMAS TH + YASUI G
NUCLEAR REACTORS AND EARTHQUAKES
LOCKHEED AIRCRAFT CORP., GEORGIA + HOLMES AND NARVER, INC.
TID-7024 +. 415 PAGES, AUGUST 1963

THIS REPORT IS INTENDED TO SUPPLY PERTINENT SEISMOLOGICAL INFORMATION TO ENGINEERS IN THE NUCLEAR REACTOR FIELD. INCLUDED ARE HISTORICAL DATA ON OCCURRENCE, INTENSITY, AND WAVE SHAPES. INCLUDED ALSO ARE SOME TECHNIQUES FOR EVALUATING THE RESPONSE OF STRUCTURES TO SUCH EVENTS. A BRIEF DISCUSSION OF CERTAIN REACTOR TYPES AND MODES OF OPERATION IS INCLUDED TO PROVIDE ARCHITECTURAL, STRUCTURAL, AND MECHANICAL ENGINEERS WITH AN INSIGHT INTO THE DESIGN REQUIREMENTS OF THE INDUSTRY.

*EARTHQUAKE ENGINEERING + ACCELERATION + EARTHQUAKE COST ANALYSIS + EARTHQUAKE, GENERAL + GROUND MOTION + RESPONSE SPECTRUM + VIBRATION ANALYSIS

2-15588 ALSO IN CATEGORIES 10 AND 18
QUESTION 8.3--CONSEQUENCES OF TOTAL LOSS OF ELECTRICAL POWER
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

ANALYZE THE CONSEQUENCES OF A TOTAL LOSS OF ELECTRICAL POWER, INCLUDING EMERGENCY POWER, IN THE PLANT. HOW LONG CAN SUCH A POWER LOSS BE SUSTAINED WITHOUT FUEL DAMAGE. DISCUSS THE POSSIBILITY THAT MECHANISMS SUCH AS SWITCH-GEAR FIRES, FAILURE OF A SINGLE BREAKER OR PROTECTIVE RELAY, ETC., COULD LEAD TO A MOMENTARY OR SUSTAINED TOTAL POWER FAILURE. DISCUSS THE ABILITY OF ELECTRICAL COMPONENTS SUCH AS TRANSFORMERS, TRANSMISSION LINES, CIRCUIT BREAKERS, AND OTHER ELECTRICAL SWITCH GEAR TO WITHSTAND SEISMIC LOADS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF POWER + EARTHQUAKE ENGINEERING + EMERGENCY POWER, ELECTRIC + PALISADES POINT + REACTOR, PRESSURIZED WATER

2-15589 ALSO IN CATEGORY 18
QUESTION 9.1--1970 AND 1980 POPULATION DISTRIBUTION PROJECTIONS AROUND SITE
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
3 PAGES, 1 FIGURE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

SECTION 9 (ENVIRONMENT) - WHAT ARE THE PROJECTED 1970 AND 1980 POPULATION DISTRIBUTIONS AS A FUNCTION OF DISTANCE AND DIRECTION AROUND THE SITE, INCLUDING PERMANENT AND TRANSIENT POPULATIONS. STATE AND JUSTIFY THE LOW POPULATION DISTANCE AS DEFINED IN 10 CFR 100 BASED ON THESE POPULATION FIGURES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + PALISADES POINT + POPULATION DISTRIBUTION + REACTOR, PRESSURIZED WATER

2-15636 ALSO IN CATEGORIES 18 AND 11
QUESTION 2.7--PLOT OF EARTHQUAKE RESPONSE
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 PAGES, 1 FIGURE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

PROVIDE PLOTS OF THE EARTHQUAKE-RESPONSE SPECTRA TO BE USED IN THE DESIGN (USE TRIPARTITE GRAPH PAPER).

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT STRUCTURE + DESIGN CRITERIA + PALISADES POINT + REACTOR, PRESSURIZED WATER + RESPONSE SPECTRUM

2-15837
GOODMAN RE + APPUHN RA
MODEL EXPERIMENTS ON THE EARTHQUAKE RESPONSE OF SOIL-FILLED BASINS
12 PAGES, 13 FIGURES, GEOLOGICAL SOCIETY OF AMERICA BULLETIN, VOL. 77, PAGES 1315-1326 (NOV. 1966)

THE MOTION OF SOIL FILLING A MODEL BEDROCK BASIN WAS OBSERVED IN THE LABORATORY DURING CONTINUOUS VIBRATION ON A SHAKING TABLE. THE FOLLOWING FACTORS WERE VARIED IN DIFFERENT EXPERIMENTS - CONSISTENCY OF THE SOIL, THICKNESS OF THE SOIL FILL, LENGTH-TO-WIDTH RATIO OF THE BASIN, AND FREQUENCY AND INTENSITY OF BEDROCK MOTION.

*SOIL MECHANICS + EARTH MATERIAL, DYNAMIC PROPERTY + EARTHQUAKE, GENERAL + GROUND MOTION +

CATEGORY 2
SITING OF NUCLEAR FACILITIES

2-15837 *CONTINUED*
SOIL PROPERTY, IN SITU

2-15830
HILL ML + TROXEL BW
TECTONICS OF DEATH VALLEY REGION, CALIFORNIA
4 PAGES, 1 FIGURE, GEOLOGICAL SOCIETY OF AMERICA BULLETIN, VOL. 77, PAGES 435-438 (APRIL 1966)

THE NORTH-NORTHWEST-TRENDING DEATH VALLEY AND FURNACE CREEK RIGHT-LATERAL SLIP FAULT ZONES BORDER THE BLACK MOUNTAINS, CALIF. OTHER TECTONIC FEATURES IN THE DEATH VALLEY REGION APPEAR COMPATIBLE WITH THIS STRIKE-SLIP STRAIN SYSTEM OF NORTHEAST-SOUTHWEST SHORTENING AND NORTHWEST-SOUTHEAST RELATIVE EXTENSION. ACCORDINGLY, SOME OF THE BASIN AND RANGE STRUCTURES OF TERTIARY TO RECENT AGE MAY BE CHARACTERIZED BY STRIKE-SLIP RATHER THAN DIP-SLIP FAULTING AND RESULT FROM COMPRESSIONAL RATHER THAN TENSIONAL DYNAMICS.

*TECTONICS + EARTHQUAKE, GENERAL + FAULT + GEOLOGICAL CONSIDERATION, GENERAL + ROCK MECHANICS

2-15840
BUDCHFIELD BC + STEWART JH
PULL-APART ORIGIN OF THE CENTRAL SEGMENT OF DEATH VALLEY, CALIFORNIA
4 PAGES, 2 FIGURES, GEOLOGICAL SOCIETY OF AMERICA BULLETIN, VOL. 77, PAGES 439-442 (APRIL 1966)

THE DEEP CENTRAL SEGMENT OF DEATH VALLEY, CALIF., MAY BE RELATED TO STRIKE-SLIP FAULTING ALONG THE DEATH VALLEY FAULT ZONE. THE TREND OF THE FAULT ZONE ALONG THE CENTRAL SEGMENT OF DEATH VALLEY IS SLIGHTLY OBLIQUE TO THE FAULT TREND ELSEWHERE, AND STRIKE-SLIP MOVEMENT MAY HAVE CAUSED A PULLING APART OF THE TWO SIDES OF THE VALLEY ALONG THIS OBLIQUELY ORIENTED SEGMENT OF THE FAULT.

*TECTONICS + EARTHQUAKE, GENERAL + FAULT + GEOLOGICAL CONSIDERATION, GENERAL

2-15842
HAMBLIN WK
ORIGIN OF REVERSE DRAG ON THE DOWNTHROWN SIDE OF NORMAL FAULTS
BRIGHAM YOUNG UNIVERSITY, PROVO, UTAH
20 PAGES, 17 FIGURES, REFERENCES, GEOLOGICAL SOCIETY OF AMERICA BULLETIN, VOL. 76, PAGES 1145-1164 (OCTOBER 1965)

REVERSE DRAG, ALSO CALLED DOWNBENDING OR TURNOVER, WAS FIRST RECOGNIZED BY POWELL IN THE COLORADO PLATEAU AND SUBSEQUENTLY WAS FOUND TO BE AN IMPORTANT STRUCTURE ASSOCIATED WITH DOWN-TO-BASIN FAULTING IN THE GULF COAST REGION. MANY CONFLICTING HYPOTHESES HAVE BEEN PROPOSED TO EXPLAIN THIS STRUCTURE, MOST OF WHICH ARE BASED UPON SUBSURFACE STUDIES OR OBSERVATIONS IN LOCAL AREAS. IT IS CONCLUDED THAT REVERSE DRAG RESULTS FROM AN ALTERNATE RESPONSE TO THE SAME FORCES THAT PRODUCE ANTITHETIC FAULTS AND DEVELOPS BECAUSE OF CURVATURE OF THE FAULT PLANE AT DEPTH. NORMAL MOVEMENT ALONG A CURVED FAULT PLANE, IN EFFECT, TENDS TO PULL THE BLOCKS APART AS WELL AS TO DISPLACE THEM VERTICALLY. ADJUSTMENTS TO FILL THE INCIPENT GAP BY RUPTURE PRODUCES ANTITHETIC FAULTS, WHEREAS FAILURE BY FLEXING DEVELOPS REVERSE DRAG.

*FAULT + DISPLACEMENT, GENERAL + EARTHQUAKE, GENERAL + GEOLOGICAL CONSIDERATION, GENERAL + ROCK MECHANICS + SUBSIDENCE

2-15843
CHRISTENSEN MN
LATE CENOZOIC DEFORMATION IN THE CENTRAL COAST RANGES OF CALIFORNIA
UNIVERSITY OF CALIFORNIA, BERKELEY, CALIF.
20 PAGES, FIGURES, 2 TABLES, REFERENCES, GEOLOGICAL SOCIETY OF AMERICA BULLETIN, VOL. 76, PAGES 1105-1124 (OCTOBER 1965)

DATA ON THE PATTERNS OF GROWTH OF YOUNG, FOLDED MOUNTAINS ARE NEEDED TO COMPLEMENT INFERENCES ABOUT OROGENIC HISTORIES DERIVED FROM STUDY OF ANCIENT DEFORMED ROCKS. CRUSTAL MOVEMENTS IN THE CENTRAL COAST RANGES DURING THE LAST 2 OR 3 MILLION YEARS ARE DETERMINED BY PLIOCENE-PLEISTOCENE STRATIGRAPHY, STRUCTURES, AND PHYSIOGRAPHY. ALTHOUGH THE MAGNITUDES OF MOVEMENTS ARE RATHER UNCERTAIN, THE GEOMETRY IS QUALITATIVELY WELL ESTABLISHED BY STRATA THAT DIP OFF THE FLANKS OF THE RANGES. BOUNDARIES BETWEEN RISING AND SUBSIDING AREAS ARE INDEPENDENT OF THE COURSE OF THE SAN ANDREAS FAULT. FURTHERMORE, THE GEOMETRIC RELATIONSHIP OF THESE MAJOR CRUSTAL BLOCKS TO THE SAN ANDREAS FAULT IS NOT THAT OF A SYSTEM OF WRENCH-FAULT TECTONICS. VERTICAL MOVEMENTS OF MAJOR BLOCKS ARE PROBABLY MECHANICALLY INDEPENDENT OF STRIKE-SLIP MOVEMENTS ON MAJOR FAULTS. THEY APPEAR TO BE PRIMARY, RATHER THAN SECONDARY, RESULTS OF LATERAL CONTRACTION. COMPARISON WITH OTHER PLACES AND TIMES SUGGESTS THE POSSIBILITY THAT THE VERTICAL MOVEMENTS MAY BE RELATED TO INTRUSION OF MAGMA AT DEPTH.

*TECTONICS + EARTHQUAKE, GENERAL + FAULT + GEOLOGICAL CONSIDERATION, GENERAL + SEISMIC ZONE + SUBSIDENCE

2-15854 ALSO IN CATEGORY 11
BERG GV

CATEGORY 2
SITING OF NUCLEAR FACILITIES

2-15854 *CONTINUED*
THE SKOPJE, YUGOSLAVIA EARTHQUAKE
UNIVERSITY OF MICHIGAN

77 PAGES, 117 FIGURES, TABLES, JULY 26, 1963, AMERICAN IRON AND STEEL INSTITUTION, N. Y.

A GENERAL DESCRIPTION OF THE GEOLOGY OF THE SKOPJE, YUGOSLOVIA, AREA IS GIVEN, ALONG WITH THE RESULTS OF THE JULY 1963 EARTHQUAKE. PICTURES OF STRUCTURAL DAMAGE ARE INCLUDED, AND CONCLUSIONS ARE DRAWN CONCERNING THE PRECAUTIONS NECESSARY TO PREVENT FAILURES DUE TO EARTHQUAKES. SURFACE CRACKS WERE EVIDENT AT SEVERAL LOCATIONS.

AVAILABILITY - AMERICAN IRON AND STEEL INSTITUTE, 150 EAST FORTY SECOND STREET, NEW YORK, N.Y., 10017

*EARTHQUAKE, GENERAL + *FAILURE, GENERAL + DEFORMATION + DISPLACEMENT, GENERAL + EARTHQUAKE ENGINEERING

2-15858
JUMIKIS AR
STABILITY ANALYSIS OF SOIL-FOUNDATION SYSTEMS
RUTGERS UNIVERSITY, NEW JERSEY

55 PAGES, 20 FIGURES, 12 TABLES, 1965, COLLEGE OF ENGINEERING, BUREAU OF ENGINEERING RESEARCH, NEW BRUNSWICK, NEW JERSEY

THE RESULTS OF EXPERIMENTS SHOWED THAT IN MANY CASES THE DEFORMATION PATTERNS OF SOIL AT FAILURE CAN BE DESCRIBED IN TERMS OF LOGARITHMIC SPIRALS. SOME OF THE EXPERIMENTAL WORK IS DESCRIBED, AND METHODS OF CALCULATING THE ULTIMATE STRENGTH OF VARIOUSLY LOADED SOIL MASSES ARE PRESENTED.

AVAILABILITY - RUTGERS UNIVERSITY, NEW BRUNSWICK, NEW JERSEY, \$5.00 COPY

*FOUNDATION ENGINEERING + *SOIL MECHANICS + EARTHQUAKE, GENERAL + INELASTIC BEHAVIOR + LANDSLIDE

2-15859 ALSO IN CATEGORY 11
EARTHQUAKE DAMAGE TO HIGHWAYS IN THE VALDEZ DISTRICT, ALASKA, REPORT 91
NATIONAL ACADEMY OF SCIENCES, HIGHWAY RESEARCH BOARD
90 PAGES, 17 FIGURES, 2 REFERENCES, 1965, PAGES 64-72 OF HIGHWAY RESEARCH RECORD NO. 91, HIGHWAY RESEARCH BOARD, PUBLICATION 1307, NATIONAL ACADEMY OF SCIENCES, WASHINGTON, D. C.

THIS REPORT CONTAINS SEVERAL PAPERS ON THE HIGHWAY ENGINEERING, INCLUDING ONE ON DAMAGE TO HIGHWAYS AND HIGHWAY STRUCTURES IN THE ALASKAN EARTHQUAKE OF 1964. THERE WAS EXTENSIVE DAMAGE DUE TO EARTH SHIFTING. DAMAGE WAS GREATEST FOR STRUCTURES FOUNDED ON THICK SECTIONS OF ALLUVIUM OVERLYING BEDROCK, AND LEAST FOR STRUCTURES FOUNDED DIRECTLY ON BEDROCK.

AVAILABILITY - HIGHWAY RESEARCH BOARD, 2101 CONSTITUTION AVE., WASHINGTON, D. C. 20418, \$1.60 COPY

*FOUNDATION ENGINEERING + DISPLACEMENT, GENERAL + EARTHQUAKE, GENERAL + GEOLOGICAL CONSIDERATION, GENERAL + LUPCHING + SOIL MECHANICS

2-15860 ALSO IN CATEGORY 11
COASTAL ENGINEERING
AMERICAN SOCIETY OF CIVIL ENGINEERS, NEW YORK
1006 PAGES, FIGURES, TABLES, REFERENCES, SPECIALTY CONFERENCE, OCTOBER 1965, SANTA BARBARA, AMERICAN SOCIETY OF CIVIL ENGINEERS, NEW YORK, NEW YORK

THIS DOCUMENT IS A COLLECTION OF PAPERS ON COASTAL ENGINEERING. A BROAD RANGE OF SUBJECTS IS COVERED, INCLUDING TSUNAMI MODELS, DAMAGE, AND WARNING SYSTEMS.

AVAILABILITY - AMERICAN SOCIETY OF CIVIL ENGINEERS, 345 E. 47TH ST., NEW YORK, N.Y. 10017, \$10.00 COPY

*TSUNAMI + EARTHQUAKE ENGINEERING + EARTHQUAKE, GENERAL

2-15862
AKI K
SCALING LAW OF SEISMIC SPECTRUM
MASSACHUSETTS INSTITUTE OF TECHNOLOGY, CAMBRIDGE
15 PAGES, JOURNAL OF GEOPHYSICAL RESEARCH 72(4), PAGES 1217-1231 (FEBRUARY 15, 1967)

THE DEPENDENCE OF THE AMPLITUDE SPECTRUM OF SEISMIC WAVES ON SOURCE SIZE IS INVESTIGATED ON THE BASIS OF TWO DISLOCATION MODELS OF AN EARTHQUAKE SOURCE. ONE OF THE MODELS (BY N. HASKELL) IS CALLED THE OMEGA-CUBED MODEL, AND THE OTHER, CALLED THE OMEGA-SQUARED MODEL, IS CONSTRUCTED BY FITTING AN EXPONENTIALLY DECAYING FUNCTION TO THE AUTOCORRELATION FUNCTION OF THE DISLOCATION VELOCITY. THE NUMBER OF SOURCE PARAMETERS IS REDUCED TO ONE BY THE ASSUMPTION OF SIMILARITY. WE FOUND THAT THE MOST CONVENIENT PARAMETER FOR OUR PURPOSE IS THE MAGNITUDE M_{SUR-S} DEFINED FOR SURFACE WAVES WITH PERIOD OF 20 SEC. SPECTRAL-DENSITY CURVES ARE DETERMINED FOR GIVEN M_{SUB-S} . COMPARISON OF THE THEORETICAL CURVES WITH OBSERVATIONS IS MADE IN TWO DIFFERENT WAYS. THE OMEGA-SQUARED MODEL GIVES A SATISFACTORY AGREEMENT WITH SUCH OBSERVATIONS ON THE ASSUMPTION OF SIMILARITY, BUT THE OMEGA-CUBED MODEL DOES NOT.

*RESPONSE SPECTRUM + DISPLACEMENT, GENERAL + EARTHQUAKE, GENERAL + ENERGY LEVEL + FAULT + SOURCE MECHANISM

CATEGORY 2
SITING OF NUCLEAR FACILITIES

2-15863
BRUNE JN + ALLEN CR
A MICRO-EARTHQUAKE SURVEY OF THE SAN ANDREAS FAULT SYSTEM IN SOUTHERN CALIFORNIA
19 PAGES, BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA, 57(2), PAGES 277-296, (APRIL, 1967)

MICRO-EARTHQUAKES HAVE BEEN SYSTEMATICALLY RECORDED WITH MAGNITUDES DOWN TO MINUS 1.3 AT MORE THAN 60 SITES ALONG THE SAN ANDREAS FAULT SYSTEM IN SOUTHERN CALIFORNIA DURING INTERVALS OF 2 DAYS TO 1 YEAR, REPRESENTING MORE THAN 35,000 HOURS OF USABLE RECORDS. EIGHT TRAILER-MOUNTED INSTRUMENTS WERE OPERATED WITH PEAK GAINS OF 4-8 MILLION AT 20 CPS, WITH NOISE LEVELS AVERAGING ABOUT 0.1 MU AMPLITUDE OF GROUND MOTION.

*MICRO-EARTHQUAKE + EARTHQUAKE PREDICTION + EARTHQUAKE, GENERAL + ENERGY LEVEL + FAULT + SEISMIC ZONE

2-15864
SUTTON GH + MITRONOVAS W + POMEROY PW
SHORT-PERIOD SEISMIC ENERGY RADIATION PATTERNS FROM UNDERGROUND NUCLEAR EXPLOSIONS AND SMALL-MAGNITUDE EARTHQUAKES
18 PAGES, BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA, 57(2)- 249-267, (APRIL 1967)

AZIMUTHAL RADIATION PATTERNS OF SHORT-PERIOD (0.5-2.0 CPS) SEISMIC ENERGY OBTAINED FROM INTEGRALS OF THE SEISMOGRAMS FROM TWO UNDERGROUND NUCLEAR EXPLOSIONS AND TWO EARTHQUAKES ARE USED TO STUDY THE PROPAGATION AND SOURCE CHARACTERISTICS OF THE P-SUB-G AND L-SUB-G PHASES IN THE UNITED STATES. IN ADDITION, THE ENERGY SPECTRUM IS DIVIDED INTO TWO BANDS, GREATER THAN AND LESS THAN 1.4 CPS, AND THE RATIO OF HIGHER TO LOWER FREQUENCY ENERGY IS MAPPED TO STUDY THE NATURE OF PROPAGATION AS A FUNCTION OF FREQUENCY. BOTH THE TOTAL ENERGY AND THE RATIO SHOW LARGE FLUCTUATIONS WITH AZIMUTH AND DISTANCE. HOWEVER, A GENERAL CORRELATION IS FOUND BETWEEN THE ENERGY AND RATIO CONTOURS AND THE MAJOR TECTONIC PROVINCES OF THE UNITED STATES.

EARTHQUAKE RECORDS + EARTHQUAKE, GENERAL + ENERGY LEVEL + GROUND MOTION + VIBRATION

2-15865
VAN DE LINDT WJ
MOVEMENT OF THE MOHOROVIČIĆ DISCONTINUITY UNDER ISOSTATIC CONDITIONS
IBM SCIENTIFIC CENTER, LOS ANGELES, CALIFORNIA
JOURNAL OF GEOPHYSICAL RESEARCH, 72(4), PAGES 1289-97, (FEBRUARY 15, 1967)

ASSUMING THAT THE MOHOROVIČIĆ DISCONTINUITY IS A PHASE TRANSITION, ITS MOVEMENT IS CALCULATED AS A FUNCTION OF TIME. THIS MOVEMENT IS CAUSED BY SEDIMENTATION OR EROSION ON THE SURFACE AND BY THE MECHANISM TO MAINTAIN ISOSTATIC EQUILIBRIUM. THICKNESSES OF THE SEDIMENT CALCULATED WERE OF THE ORDER OF 10 KM AND THICKER, DEPOSITED IN A TROUGH THAT WAS ORIGINALLY 2.7 KM DEEP. THE MAXIMUM HEIGHT OF THE SURFACE ABOVE SEA LEVEL IS ABOUT 3000 METERS, AND THE MOHO IS THEN 45 KM DEEP. IT APPEARS THAT THE MOTION OF THE SURFACE CAN BE OSCILLATORY. THE INFLUENCE OF BOTH THE SLOPE OF THE CLAPEYRON CURVE AND THE LATENT HEAT ARE INVESTIGATED AND TURN OUT TO BE SMALL. THE DENSITY AND HEAT-CONDUCTION PROPERTIES OF THE SEDIMENT ARE FOUND TO BE IMPORTANT. IT IS SHOWN THAT, WHEN PRESSURE IS APPLIED TOO FAST, THE PROCESS BECOMES UNSTABLE.

*TECTONICS + EARTHQUAKE, GENERAL + SEISMIC ZONE + SOURCE MECHANISM

2-15874
HAKK G
EARTHQUAKE ENGINEERING
CHALK RIVER LABORATORY, ATOMIC ENERGY OF CANADA LTD.
AECL-2597 + RCRS-100 +. 15 PAGES, MAY 1966

THE PURPOSE OF THIS NOTE IS TO OUTLINE THE BASIC PRINCIPLES OF EARTHQUAKE ENGINEERING AS THEY MAY RELATE TO NUCLEAR SAFETY AND TO DESCRIBE THE DYNAMIC SEISMIC ANALYSIS TO BE DONE WHEN DESIGNING EARTHQUAKE-RESISTANT STRUCTURE. THE METHODS FOR OBTAINING EARTHQUAKE-DESIGN SPECTRA ARE DESCRIBED, AND INFORMATION IS PRESENTED ON THE FREQUENCY OF OCCURRENCE OF EARTHQUAKES IN EASTERN CANADA AND THE USE OF THIS INFORMATION FOR REACTOR-SITE EVALUATION.

AVAILABILITY - ATOMIC ENERGY OF CANADA LIMITED, CHALK RIVER, ONTARIO, CANADA, \$1.00 COPY

*EARTHQUAKE ENGINEERING + EARTHQUAKE, GENERAL + GROUND MOTION + RESPONSE SPECTRUM + VIBRATION ANALYSIS

2-15875
BATH M
EARTHQUAKE PREDICTION
10 PAGES, SCIENTIA, 101(649-50), PAGES 234-43 (MAY-JUNE 1966)

SOME RECENTLY PLANNED EFFORTS TO PREDICT EARTHQUAKES ARE BRIEFLY REVIEWED AND CRITICALLY DISCUSSED. SEVERAL ITEMS OF BASIC IMPORTANCE FOR THE PREDICTION PROBLEM ARE OUTLINED. EXAMPLES ARE GIVEN OF OSCILLATION AND MIGRATION PATTERNS OF SEISMIC ACTIVITY. THEIR POSSIBLE SIGNIFICANCE FOR THE PREDICTION PROBLEM IS EMPHASIZED, ESPECIALLY AS A SUPPLEMENT TO THE

CATEGORY 2
SITING OF NUCLEAR FACILITIES

2-15875 *CONTINUED*

DETAILED INVESTIGATIONS PLANNED FOR SOME EARTHQUAKE REGIONS.

*EARTHQUAKE PREDICTION + EARTHQUAKE, GENERAL + FAULT + INSTRUMENTATION, EARTHQUAKE + MICROEARTHQUAKE + SEISMIC ZONE

2-15879

CLUFF LS + STEINBRUGGE KV

HAYWARD FAULT SLIPPAGE IN THE IRVINGTON-NILES DISTRICTS OF FREMONT, CALIFORNIA
23 PAGES, BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA, 56(2), PAGES 257-279 (APRIL 1966)

RIGHT LATERAL SLIPPAGE ON THE HAYWARD FAULT HAS TAKEN PLACE IN THE IRVINGTON AND NILES DISTRICT OF FREMONT SINCE THE WELL-KNOWN 1868 HAYWARD EARTHQUAKE, WHICH PRODUCED SURFACE RUPTURES FROM SAN LEANDRO TO WARM SPRINGS. THIS POST-1868 MOVEMENT HAS BEEN OCCURRING WITHOUT BEING IDENTIFIED WITH STRONG EARTHQUAKES. STRUCTURES AND RAILROADS CROSSING THE HAYWARD FAULT IN THE AREA UNDER STUDY DATE BACK TO 1866. FAULT SLIPPAGE CAN BE OBSERVED AT TEN LOCATIONS ALONG THE STRIKE OF THE HAYWARD FAULT IN THE IRVINGTON-NILES DISTRICTS OF FREMONT, CALIFORNIA. ONE LOCATION PREDATES THE 1868 EARTHQUAKE. THERE IS NO EVIDENCE FOR PARALLEL LINES OF FAULT SLIPPAGE WITHIN THE APPROXIMATELY 200-FOOT-WIDE FAULT ZONE. THE SLIPPAGE APPEARS TO HAVE OCCURRED WITHIN A 10-FOOT-WIDE BAND PARALLEL TO THE STRIKE OF THE FAULT.

*CREEP + DISPLACEMENT, GENERAL + EARTHQUAKE ENGINEERING + EARTHQUAKE, GENERAL + FAULT + SEISMIC ZONE + TECTONICS

2-15880

BONILLA MG

DEFORMATION OF RAILROAD TRACKS BY SLIPPAGE ON THE HAYWARD FAULT IN THE NILES DISTRICT OF FREMONT, CALIFORNIA

9 PAGES, BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA, 56(2), PAGES 281-289 (APRIL 1966)

SLIPPAGE (ALSO CALLED CREEP) ON THE HAYWARD FAULT HAS PRODUCED A RIGHT-LATERAL SHIFT OF ABOUT 0.7 FEET IN THREE SETS OF RAILROAD TRACKS THAT WERE BUILT 55 AND 56 YEARS AGO. THE AVERAGE ANNUAL RATE OF 0.15 INCH PER YEAR IS ABOUT ONE-THIRD THE AVERAGE RATE OF SLIPPAGE ON THE SAN ANDREAS FAULT, BUT THE RATE HAS BEEN MUCH GREATER DURING SHORT INTERVALS. THE ZONE OF ACUTE DEFORMATION OF THE TRACKS IS 20 TO 80 FT WIDE. THE TRACKS ARE UNDERLAIN BY UNCONSOLIDATED DEPOSITS MORE THAN 300 FT THICK. SURFACE FAULTING AT THIS LOCALITY IN THE 1868, AND PROBABLY IN THE 1836, EARTHQUAKE SUGGESTS THAT THE PROCESSES OF FAULT RUPTURE AND FAULT SLIPPAGE CAN ALTERNATE AT THE SAME LOCALITY.

*CREEP + DISPLACEMENT, GENERAL + EARTHQUAKE, GENERAL + FAULT + SEISMIC ZONE

2-15881

BLANCHARD FR + LAVERTY GL

DISPLACEMENTS IN THE CLAREMONT WATER TUNNEL AT THE INTERSECTION WITH THE HAYWARD FAULT
3 PAGES, BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA 56(2), PAGES 291-293 (APRIL 1966)

THREE CRACKS HAVE BEEN OBSERVED IN THE CONCRETE LINING OF THE CLAREMONT WATER TUNNEL AT ITS POINT OF INTERSECTION WITH THE HAYWARD FAULT ZONE. THE CRACKS, WHICH SHOW A RIGHT-LATERAL SENSE OF DISPLACEMENT, WERE NOT PRESENT 14 YEARS AGO IN 1950.

*CREEP + DISPLACEMENT, GENERAL + EARTHQUAKE ENGINEERING + EARTHQUAKE, GENERAL + FAULT

2-15882

PADBRUGH DH + LENNERT RJ

DAMAGE TO CULVERT UNDER MEMORIAL STADIUM, UNIVERSITY OF CALIFORNIA, BERKELEY, CAUSED BY SLIPPAGE IN THE HAYWARD FAULT ZONE

10 PAGES, BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA, 56(2), PAGES 295-304 (APRIL 1966)

SLIPPAGE ON A FAULT PLANE OR SHEARED BAND IN THE HAYWARD FAULT ZONE SERIOUSLY DAMAGED A CAST-IN-PLACE CONCRETE BOX CULVERT WHICH CARRIES THE WATERS OF STRAWBERRY CREEK UNDER THE UNIVERSITY OF CALIFORNIA MEMORIAL STADIUM AT BERKELEY, CALIFORNIA. RIGHT-LATERAL MOVEMENT OF THE FAULT OR SHEARED BAND OFFSET THE SOUTHWEST-FLOWING CREEK SO THAT THE SOUTHWEST PORTION MOVED NORTHWEST WITH RESPECT TO THE NORTHEAST PORTION. THE TWO PARTS ARE CONNECTED BY A NORTHWEST-TRENDING SECTION ABOUT 1200 FT LONG, WHICH FLOWS IN THE CULVERT UNDER THE STADIUM. THE FAULT CROSSES THE CULVERT AT A LOW ANGLE, TRENDING ABOUT 20 DEGREES MORE TO THE NORTH THAN THE CULVERT, SO THAT BOTH TENSION AND SHEAR HAVE BEEN EXERTED ON THE CULVERT BY RIGHT-LATERAL MOVEMENT OF THE FAULT SINCE THE CULVERT WAS BUILT IN 1923. TWO TRANSVERSE CRACKS 1 INCH WIDE AND ABOUT 5 FT APART WERE NOTED WHEN THE CULVERT WAS INSPECTED IN 1948. IN 1965, THE MAXIMUM WIDTH OF THE CRACKS WAS 3-1/2 INCHES, AND THE SECTION OF THE CULVERT BETWEEN THE CRACKS APPEARED TO HAVE ROTATED CLOCKWISE. TOTAL AVERAGE SEPARATION OF THE CRACKS DUE TO TENSION IS ABOUT 4.1 IN. LATERAL OFFSET OF THE CULVERT IS 1.25 IN. MOVEMENT ALONG THE FAULT IS ESTIMATED AT 0.1 INCH PER YEAR OVER THE 42 YEARS SINCE THE CULVERT WAS BUILT.

*CREEP + DISPLACEMENT, GENERAL + EARTHQUAKE ENGINEERING + EARTHQUAKE, GENERAL + FAULT + SEISMIC ZONE

CATEGORY 2
SITING OF NUCLEAR FACILITIES

2-15883
BOLT BA + MARION WC
INSTRUMENTAL MEASUREMENT OF SLIPPAGE ON THE HAYWARD FAULT
12 PAGES, BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA, 56(2), PAGES 305-316 (APRIL 1966)

A DIFFERENTIAL TRANSFORMER WAS USED AS A DISPLACEMENT METER ACROSS A CRACK IN A CULVERT UNDER THE MEMORIAL STADIUM, UC, BERKELEY. THE CRACK IS BELIEVED TO BE THE RESULT OF PROGRESSIVE RIGHT-LATERAL SLIPPAGE IN RECENT YEARS ALONG THE HAYWARD FAULT, WHICH TRAVERSES THE STADIUM. THE DISPLACEMENT METER RECORDED CONTINUOUS RIGHT-LATERAL SLIPPAGE FROM OCT. 7, 1965, TO JAN. 9, 1966. THE AVERAGE RATE OF MOVEMENT WOULD AMOUNT TO ABOUT 0.21 IN. PER YEAR. VARIATIONS IN THE MEASURED DISPLACEMENT SHOW NO SIGNIFICANT CORRELATION WITH THE PRESENT OCCURRENCE OF SMALL LOCAL EARTHQUAKES. A PHYSICAL MODEL OF THE OBSERVED FAULT SLIPPAGE IS OUTLINED, BASED ON THE STRAIN-RELEASE-BY-RUPTURE THEORY FOR THE ORIGIN OF SHALLOW EARTHQUAKES. THE MODEL PREDICTS THAT STRAIN IN THE CRYSTALLINE BASEMENT ALONG THE FAULT ZONE MAY BE ACCUMULATING.

*CRFEP + DISPLACEMENT, GENERAL + EARTHQUAKE, GENERAL + FAULT + INSTRUMENTATION, EARTHQUAKE + ROCK MECHANICS

2-15884
POPE AJ + STEARN JL + WHITTEN CA
SURVEYS FOR CRUSTAL MOVEMENT ALONG THE HAYWARD FAULT
7 PAGES, BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA, 56(2), PAGES 317-323 (APRIL 1966)

SEVERAL NETWORKS OF CLOSELY SPACED POINTS WERE ESTABLISHED ALONG THE HAYWARD FAULT TO MONITOR SLIPPAGE. THE RESULTS OF 1951, 1957, AND 1963 SURVEYS OF A LARGER NETWORK COVERING THE SAN FRANCISCO BAY AREA ARE SHOWN GRAPHICALLY. SHEAR DATA AS CALCULATED FROM THE 1951 AND 1957 SURVEYS ARE TABULATED FOR EACH TRIANGLE OF THE NET. THE RESULTS OBTAINED FROM THE SURVEY DATA INDICATE A LARGER MOVEMENT DURING 1951-1957.

*CRFEP + DISPLACEMENT, GENERAL + EARTHQUAKE, GENERAL + FAULT + TECTONICS

2-16095
HARDING ST + RINEHART W
THE PARKFIELD, CALIFORNIA, EARTHQUAKE OF JUNE 27, 1966
U.S. DEPARTMENT OF COMMERCE
65 PAGES, 1966

THIS DOCUMENT IS A PRELIMINARY REPORT ON THE PARKFIELD-CHOLANCE EARTHQUAKE AND INCLUDES THE GEOLOGICAL SETTING, REVIEW OF THE SEISMICITY OF THE AREA, CALCULATION OF THE EPICENTER, DERIVATION OF A NODAL-PLANE SOLUTION, PHOTOS OF STRUCTURAL DAMAGE, DESCRIPTION OF THE STRONG-MOTION ARRAY OF INSTRUMENTS, TABULATIONS, AND RECORD REPRODUCTIONS OF THE STRONG-MOTION RECORDS OBTAINED.

AVAILABILITY - U.S. DEPARTMENT OF COMMERCE, ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION

*EARTHQUAKE RECORDS + ACCELERATION + DISPLACEMENT, GENERAL + EARTHQUAKE, GENERAL + FAULT + SEISMIC ZONE

2-16097
U.S. ADVOC PANEL ON EARTHQUAKE PREDICTION. A PROPOSAL FOR A TEN-YEAR PROGRAM OF RESEARCH
OFFICE OF SCIENCE AND TECHNOLOGY, EXECUTIVE OFFICE OF THE PRESIDENT
153 PAGES, FIGURES, TABLES, REFERENCES, MAY 1965

THIS REPORT WAS PREPARED FOR THE OFFICE OF SCIENCE AND TECHNOLOGY AND PRESENTS A 10-YEAR RESEARCH PROPOSAL COSTING 137 MILLION DOLLARS. THE STATE OF KNOWLEDGE ABOUT EARTHQUAKE PREDICTION IS SUMMARIZED IN THE APPENDIXES UNDER THE HEADINGS OF (1) FIELD OBSERVATIONS IN SEISMIC AREAS, (2) PHYSICAL BASIS OF EARTHQUAKES, (3) THE PREDICTION PROBLEM IN GEOPHYSICS, (4) EARTHQUAKE ENGINEERING, (5) CURRENT RELEVANT GOVERNMENT EFFORTS, AND (6) SOME OF THE WORLD'S WORST EARTHQUAKES. THIS DOCUMENT IS FREQUENTLY REFERRED TO AS THE FRANK PRESS REPORT.

AVAILABILITY - OFFICE OF SCIENCE AND TECHNOLOGY, WASHINGTON, D. C.

*EARTHQUAKE PREDICTION + EARTHQUAKE ENGINEERING + EARTHQUAKE, GENERAL + FAULT + GEOLOGICAL CONSIDERATION, GENERAL + INSTRUMENTATION, EARTHQUAKE + RESPONSE SPECTRUM + SEISMIC ZONE + SOIL MECHANICS

2-16099
CAKESHOTT GR
SAN ANDREAS FAULT - GEOLOGIC AND EARTHQUAKE HISTORY
7 PAGES, MINERAL INFORMATION SERVICE OF CALIFORNIA DIVISION MINES + GEOLOGY VOL 19(10), PAGES 159-165 (OCTOBER 1966)

GENERAL DESCRIPTION OF THE SAN ANDREAS FAULT AND WHAT IS KNOWN ABOUT IT. A LISTING AND DISCUSSION OF THE MAJOR EARTHQUAKES IT HAS SPAWNED. A GOOD DISCUSSION OF THE GEOLOGICAL PROBLEMS AND WORK BEING DONE RELATED TO BOTH THE ACTIVE FAULT ZONE AND THE ANCESTRAL FAULT.

CATEGORY 2
SITING OF NUCLEAR FACILITIES

2-16000 *CONTINUED*

*FAULT + DISPLACEMENT, GENERAL + EARTHQUAKE RECORDS + EARTHQUAKE, GENERAL + GEOLOGICAL CONSIDERATION, GENERAL + SEISMIC ZONE

2-16100
ALGERMISSEN ST

A SEISMIC RISK MAP FOR THE UNITED STATES. A PROGRESS REPORT
U. S. DEPARTMENT OF COMMERCE

10 PAGES, PAGES 389-398 OF THIRD SYMPOSIUM ON EARTHQUAKE ENGINEERING, SCHOOL OF RESEARCH AND TRAINING IN EARTHQUAKE ENGINEERING, UNIVERSITY OF ROORKEE, ROORKEE, INDIA NOVEMBER 4-6, 1966

THE COAST AND GEODETIC SURVEY STARTED A PROGRAM IN ENGINEERING SEISMOLOGY IN 1931 WHEN A CONGRESSIONAL APPROPRIATION MADE FUNDS AVAILABLE. AT THE START AND FOR A NUMBER OF YEARS THEREAFTER, THE PRIMARY CONCERN WAS THE DEVELOPMENT OF STRONG-MOTION SEISMOGRAPHS. A SEISMIC PROBABILITY MAP OF THE U.S. WAS PREPARED BY F. P. ULRICH, WITH ADVICE OF SEISMOLOGISTS FROM VARIOUS PARTS OF THE U.S., AND PUBLISHED BY THE COAST AND GEODETIC SURVEY IN 1948. RENEWED INTEREST IN THE PROBLEM OF EARTHQUAKE RISK IN THE U.S. HAS BEEN APPARENT AS AN AFTERMATH OF THE PRINCE WILLIAM SOUND EARTHQUAKE OF MARCH 1964. THE COAST AND GEODETIC SURVEY STARTED A PROGRAM TO REEVALUATE SEISMIC RISK IN THE U.S.

*EARTHQUAKE PREDICTION + EARTHQUAKE RECORDS + EARTHQUAKE, GENERAL + SEISMIC ZONE + VIBRATION ANALYSIS

2-16192

HARRIS SJ

ZONING AND NUCLEAR FACILITY SITING
PUBLIC HEALTH SERVICE

2 PAGES, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PA., OCT. 30-NOV. 3, 1966, ANS TRANS 9(2), PAGES 553-554, (NOVEMBER 1966)

DISCUSSES HISTORY OF A SMALL ASA N-2 STUDY PROJECT WHICH RESULTED IN THE DRAFT OF AN INFORMATION GUIDE FOR PLANNING AND ZONING OFFICIALS.

*SITING, GENERAL + ENGINEERED SAFETY FEATURE + WASTE MANAGEMENT

2-16306

ISACKS B + OLIVER J

SEISMIC WAVES WITH FREQUENCIES FROM 1 TO 100 CYCLES PER SECOND RECORDED IN A DEEP MINE IN NORTHERN NEW JERSEY

30 PAGES, BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA 54(6) PAGES 1941-1979 (DEC. 1964)

A VERTICAL-COMPONENT SEISMOGRAPH WITH A MAGNIFICATION OF ABOUT 8 MILLION AT 20 CPS WAS OPERATED 1780 FEET BELOW THE SURFACE AT THE STERLING MINE OF THE NEW JERSEY ZINC COMPANY IN OGDENSBURG, N. J. BACKGROUND NOISE, LOCAL EARTHQUAKES AND TELESEISMIC BODY PHASES WERE RECORDED. FOR FREQUENCIES GREATER THAN 2 CPS, THE CONTINUOUS PART OF THE BACKGROUND NOISE WAS FAIRLY STATIONARY DURING NIGHTTIME RECORDING INTERVALS AND AT A LEVEL LOWER THAN THAT AT ALL BUT 9 OF THE 54 SITES SURVEYED BY FRANTTI (1963). DURING 730 HR OF RECORDING AT QUIET BACKGROUND NOISE LEVELS, 8 LOCAL EARTHQUAKES WERE DETECTED. SIX LOCAL SHOCKS WERE RECORDED DURING AN ADDITIONAL 2160 HR BY CONVENTIONAL SHORT-PERIOD INSTRUMENTATION LOCATED AT OGDENSBURG AND STERLING FOREST, N.Y. PHASES FROM 18 DISTANT EARTHQUAKES WERE RECORDED BY THE HIGH-GAIN INSTRUMENT. ONLY P AND S PHASES FROM WEST INDIES SHOCKS, 20 DEGREES DISTANT, EXHIBITED MOTION WITH FREQUENCIES GREATER THAN 3 CPS.

*INSTRUMENTATION, EARTHQUAKE + EARTHQUAKE, GENERAL + MICROEARTHQUAKE + SEISMIC ZONE

2-16307

RUSTAMANTJE JI

RESPONSE SPECTRA OF EARTHQUAKES ON VERY SOFT CLAY

12 PAGES, BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA 54(3) PAGES 855-866 (JUNE 1964)

THE RESPONSE SPECTRA OF TWO STRONG AND TWO MILD EARTHQUAKES RECORDED ON THE THICK LACUSTRINE FORMATION OF MEXICO CITY IN 1961 AND 1962 ARE PRESENTED. THE VELOCITY SPECTRA OF THE TWO STRONG ONES ARE COMPARED WITH STUDIES MADE INDEPENDENTLY BY JENNINGS. DISCREPANCIES ARE EXPLAINED IN TERMS OF WAVE REFLECTIONS. A CRITERION TO SIMPLIFY DATA REDUCTION AND SPECTRUM COMPUTATIONS IS SUPPORTED BY THESE COMPARISONS. VELOCITY AND PSEUDOVELOCITY SPECTRA ARE PRACTICALLY ALIKE. THE PERIOD CORRESPONDING TO THE MAXIMUM PEAK AND THE GENERAL SHAPE OF THESE CURVES AGREE CLOSELY WITH THOSE PREDICTED APPLYING THE ONE-DIMENSIONAL THEORY OF MULTIPLE WAVE REFLECTIONS TO THE FORMATIONS IN QUESTION.

*RESPONSE SPECTRUM + EARTH MATERIAL, DYNAMIC PROPERTY + EARTHQUAKE RECORDS + EARTHQUAKE, GENERAL + SOIL MECHANICS + SOIL PROPERTY, IN SITU

2-16413

ALSO IN CATEGORIES 11 AND 18

50 ORL QUESTIONS ON DIABLO CANYON PWR, MAY 5, 1967.

PACIFIC GAS AND ELECTRIC COMPANY, SAN FRANCISCO, CALIFORNIA

9 PAGES, MAY 5, 1967, DOCKET NO. 50-275

CATEGORY 2
SITING OF NUCLEAR FACILITIES

2-16413 *CONTINUED*

AT THE MARCH-APRIL MEETING WE AGREED TO SEND YOU SITE AND DESIGN QUESTIONS FIRST. OTHERS WILL FOLLOW. INCLUDED HERE ARE 39 QUESTIONS ON - SITE (4), PLANT LAYOUT AND DESIGN OF CLASS-I EQUIPMENT (14), CONTAINMENT DESIGN (17), CONTAINMENT CONSTRUCTION MATERIALS (4), CONTAINMENT CONSTRUCTION (4), AND CONTAINMENT TESTING AND SURVEILLANCE. FURTHER EVALUATION OF CORE DESIGN IS HELD UP FOR INFORMATION ON PARTIAL-LENGTH CONTROL RODS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*AEC QUESTION + CONTAINMENT CONSTRUCTION + CONTAINMENT DESIGN + CONTROL ROD, SHIM SAFETY + DIABLO CANYON + MATERIAL + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY + SITING, REACTOR + TEST, LEAK RATE

2-16462

GIZIENSKI SF

FAULTING AND EARTHQUAKE ACTIVITY IN SAN DIEGO COUNTY

WOODWARD-CLYDE-SHERARD AND ASSOCIATES

16 PAGES, 10 FIGURES, PAGES 137-153 FROM EARTHQUAKES AND THE PRACTICE OF SOIL AND GEOLOGICAL ENGINEERING, DECEMBER 1964, A SYMPOSIUM PRESENTED UNDER THE PROFESSIONAL AND TECHNICAL DEVELOPMENT PROGRAM OF WOODWARD-CLYDE-SHERARD

DISCUSSES THE KINDS OF SOILS INVESTIGATIONS ROUTINELY CARRIED OUT IN SAN DIEGO AND THE KINDS OF EARTHQUAKE-RELATED PROBLEMS USUALLY ENCOUNTERED. ALSO DISCUSSES IN SOME DETAIL THE DAMAGE TO THE HERGEN DAM DURING THE 1959 MONTANA EARTHQUAKE.

AVAILABILITY - S. F. GIZIENSKI, WOODWARD-CLYDE-SHERARD AND ASSOCIATES

EARTHQUAKE, GENERAL + FAULT + LANDSLIDE + SEICHE + SOIL MECHANICS

2-16463

CHRYSSAFOLOULOS N

EARTHQUAKE DESIGN PRACTICES IN MISSOURI

WOODWARD-CLYDE-SHERARD AND ASSOCIATES

10 PAGES, FIGURES, PAGES 97-106 FROM EARTHQUAKES AND THE PRACTICE OF SOIL AND GEOLOGICAL ENGINEERING, DECEMBER 1964, A SYMPOSIUM PRESENTED UNDER THE PROFESSIONAL AND TECHNICAL DEVELOPMENT PROGRAM OF WOODWARD-CLYDE-SHERARD AND ASSOCIATES

DESCRIPTION OF THE GEOLOGICAL EVENTS ACCOMPANYING THE 1811-1812 NEW MADRID EARTHQUAKES, AND ELABORATION OF THE FACT THAT THIS MAJOR SEISMIC EVENT HAS FAILED TO INFLUENCE THE PUBLIC, GOVERNMENT, OR STRUCTURAL ENGINEERS IN MISSOURI. ALSO A DESCRIPTION OF A SITE INVESTIGATION IN THE CAPE GIRARDEAU AREA, WHICH INDICATED A DEFINITE EARTHQUAKE HAZARD.

AVAILABILITY - N. CHRYSSAFOLOULOS, WOODWARD-CLYDE-SHERARD ASSOCIATES

EARTHQUAKE ENGINEERING + EARTHQUAKE RECORDS + EARTHQUAKE, GENERAL + FOUNDATION ENGINEERING + SITE CRITERIA, EARTHQUAKE

2-16464

SEED HB

DAMAGE TO EMBANKMENTS AND FOUNDATIONS CAUSED BY EARTHQUAKES

WOODWARD-CLYDE-SHERARD AND ASSOCIATES

21 PAGES, 20 FIGURES, 6 REFERENCES, PAGES 27-42 FROM EARTHQUAKES AND THE PRACTICE OF SOIL AND GEOLOGICAL ENGINEERING, DECEMBER 1964. A SYMPOSIUM PRESENTED UNDER THE PROFESSIONAL AND TECHNICAL DEVELOPMENT PROGRAM OF WOODWARD-CLYDE-SHERARD

GENERAL REVIEW OF THE TYPES OF SOIL FAILURES WHICH OCCUR DURING EARTHQUAKES, EXAMPLES OF SOIL FAILURES, THE MECHANISMS INVOLVED, AND PREVENTIVE STEPS WHICH CAN BE TAKEN.

AVAILABILITY - H. B. SEED, WOODWARD-CLYDE-SHERARD AND ASSOCIATES

*SOIL MECHANICS + EARTHQUAKE, GENERAL + LANDSLIDE + LIQUEFACTION + LURCHING + SOIL PROPERTY, IN SITU + SUBSIDENCE

2-16471

ALSO IN CATEGORIES 5 AND 14

CHAUVIN JL

EURATOM BED-MATERIAL TRANSPORT STUDY BY TRACERS. TRANSPORT OF THE LOIRE AT THE SITE OF THE EDF 4 NUCLEAR POWER STATION

ELECTRICITE DE FRANCE. FRANCE

EUR-3130.F, VOL. 2 +.. 14 PAGES, 6 FIGURES, MAY 12, 1956, IN FRENCH

THE DOWNSTREAM TRANSPORT OF SEDIMENT IN THE LOIRE RIVER WAS STUDIED WITH RADIOACTIVE TRACERS. RESULTS OF MEASUREMENTS MADE IN A MODEL BASIN COMPARED WELL WITH MEASUREMENTS MADE IN THE RIVER. PARTICLE-SIZE STUDIES OF THE SEDIMENT AND HYDROGRAMS FOR THE RIVER FLOW ARE REPORTED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*HYDRAULIC EXPERIMENT + *HYDROLOGICAL CONSIDERATION, RATE OF MOVEMENT + *WASTE DISPOSAL, RIVER +

CATEGORY 2
SITING OF NUCLEAR FACILITIES

2-16471 *CONTINUED*
FISSION PRODUCT TRANSPORT + FLOW DISTRIBUTION + HYDRAULIC EFFECT + RIVER, LOIRE + TRACER, RADIOACTIVE

2-16528 ALSO IN CATEGORIES 12 AND 18
CAHILL WJ + BECKJORD ES + NICHOLS RC
SITING AND LICENSING CONSIDERATIONS FOR THE INDIAN POINT UNIT NO. 2 NUCLEAR GENERATING PLANT
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC. + WESTINGHOUSE ELECTRIC CORP., PITTSBURGH, PA.
9 PAGES, 5 FIGURES, PAPER PRESENTED AT THE AMERICAN POWER CONFERENCE, GENEVA, 1967

TWO NEW SYSTEMS (PENETRATION PRESSURIZATION AND ISOLATION-VALVE SEAL WATER) WERE ADDED TO MINIMIZE CONTAINMENT LEAKAGE, AND OTHER SYSTEMS WERE MADE MORE RELIABLE. AEC STAFF RECOMMENDED THAT THE CORE-COOLING RECIRCULATION SYSTEM BE MOVED INSIDE CONTAINMENT. A REACTOR-PIT CRUCIBLE WAS ADDED TO LESSEN ACRS CONCERN OVER A MELT THROUGH THE CONTAINMENT. BECAUSE ACRS BEGAN TO APPLY PIPE-RUPTURE CRITERION TO THE MAIN LOOP ITSELF, AN ACCUMULATOR SYSTEM WAS ADDED FOR EACH LOOP.

AVAILABILITY - AMERICAN POWER CONFERENCE, E. R. WHITEHEAD, SECRETARY, ILLINOIS INSTITUTE OF TECHNOLOGY, CHICAGO, ILLINOIS

*CONSTRUCTION PERMIT PROCESS + ACCUMULATOR + CONTAINMENT LEAKAGE CONTROL +
EMERGENCY COOLING CONSIDERATIONS + INDIAN POINT 2 + REACTOR DESCRIPTION + REACTOR, PRESSURIZED WATER

2-16937 ALSO IN CATEGORIES 1 AND 5
SCIITKARSKI W
REFLECTIONS ON SERIOUS REACTOR ACCIDENTS. STATEMENT ON A NEW QUANTITATIVE ACCIDENT PHILOSOPHY
KERNFORSCHUNGSZENTRUM, KARLSRUHE, WEST GERMANY
KFK-530 +. 12 PAGES, 9 REFERENCES, JANUARY 1967, IN GERMAN

THE MCA CONCEPT HAS MAINLY TWO DIFFICULTIES - IT CONSIDERS ENGINEERED SAFEGUARDS INSUFFICIENTLY, AND IT DOES NOT CONTAIN PROBABILITIES. THE BU (BASIS ACCIDENT) CONCEPT DETERMINES A CONSERVATIVE-BASIS ACCIDENT AND A DANGER POTENTIAL. PROBABILITIES ARE ASSIGNED TO INDIVIDUAL EVENTS WHICH TOGETHER MAKE UP THE ACCIDENT, AND TO ENGINEERED SAFEGUARDS. THIS FACILITATES QUANTITATIVE STATEMENTS REGARDING SAFETY OF REACTORS. THE RISK IS THE PRODUCT OF THE DANGER POTENTIAL AND THE ASSOCIATED PROBABILITIES.

AVAILABILITY - MICROCARD EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM, WISCONSIN 54669

*ACCIDENT ANALYSIS + *ACCIDENT, MAXIMUM CREDIBLE (MCA) + ACCIDENT, PROBABILITY OF +
ENGINEERED SAFETY FEATURE + GERMANY + SAFETY ANALYSIS + SAFETY EVALUATION +
SAFETY PRINCIPLES AND PHILOSOPHY

2-17022 ALSO IN CATEGORY 11
HOFF GC
MATERIALS FOR USE IN MITIGATING BLAST LOADS ON DEEPLY BURIED PROTECTIVE STRUCTURES
ARMY ENGINEER WATERWAYS EXPERIMENT STATION, VICKSBURG, MISS.
AD-634691 +. 15 PAGES, FIGURES, JUNE 1966

THE FIELD OF STRUCTURE-MEDIUM INTERACTION HAS LONG COMMANDED THE ATTENTION OF INDIVIDUALS CONCERNED WITH THE DESIGN AND CONSTRUCTION OF BURIED STRUCTURES. WITH ADVANCES IN THE USE OF THERMONUCLEAR WEAPONS, THE DIFFICULTY IN UNDERSTANDING STRUCTURE-MEDIUM INTERACTIONS AND THEREFORE THE DESIGNING OF BURIED STRUCTURES HAVE BECOME FURTHER COMPLICATED BY THE INTRODUCTION OF COMPLEX GROUND MOTIONS AND VERY HIGH APPLIED LOADS. THE DESIGN OF BURIED STRUCTURES TO RESIST THESE EFFECTS USUALLY RESULTS IN DESIGN LOADS WHICH ARE SO HIGH THAT OVERCONSERVATIVE DESIGN WOULD BE EXTREMELY COSTLY. ON THE OTHER HAND, CATASTROPHIC FAILURE OF THE STRUCTURE DUE TO AN INADEQUATE DESIGN CANNOT BE TOLERATED. THE PURPOSE OF THIS PAPER IS TO DESCRIBE A TECHNIQUE THAT CAN BE USED FOR CONTROLLING THE MAGNITUDE OF THE FORCES BEING APPLIED TO BURIED STRUCTURES BY BLAST LOADING, I.E., THE USE OF BACKPACKING MATERIALS FOR SHOCK ISOLATION OF BURIED STRUCTURES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*CONTAINMENT, SHOCK GENERATION AND PROJECTION + *DESIGN CRITERIA + CONTAINMENT, UNDERGROUND +
NUCLEAR DETONATION + SHOCK ABSORBER

CATEGORY 3
TRANSPORTATION AND HANDLING OF RADIOACTIVE MATERIALS

3-12862 ALSO IN CATEGORY 1
WILSON FJ
TRANSPORTING RADIOACTIVE MATERIAL
2 PAGES, NEW SCIENTIST, 126, PP. 522-3 (MAY 20, 1965)

NEW INTERNATIONAL REGULATIONS ON SAFETY PRECAUTIONS THAT FORM THE BASIS OF NATIONAL REGULATIONS FOR RADIOACTIVE CONSIGNMENTS BY LAND, SEA, AND AIR ARE DISCUSSED. FACTORS CONSIDERED IN DRAFTING THE NEW STANDARDS WERE - CONTAINMENT, SHIELDING, CRITICALITY, AND HEAT EMISSION.

CODES AND STANDARDS + CRITICALITY SAFETY + HEAT TRANSFER ANALYSIS + REGULATION, IAEA + SAFETY STUDY + TRANSPORTATION AND HANDLING

3-15975
MINOR JE + PASTRELLI LU
INVESTIGATION OF LOW-LEVEL RADIOACTIVE WASTE CONTAINERS IN AN ACCIDENT ENVIRONMENT. PART I. SURVEY OF TRANSPORT AND DISPOSAL PROCEDURES, PART II. STRUCTURAL INTEGRITY OF TYPICAL LOW-LEVEL RADIOACTIVE WASTE CONTAINERS
SOUTHWEST RESEARCH INST., SAN ANTONIO, TEXAS
SWRI-1262-4 +. 174 PAGES, FIGURES, TABLES, REFERENCES, OCTOBER 1965

PART I OF THE REPORT CONSIDERS THOSE OPERATIONAL ASPECTS PERTINENT TO TRANSPORTING AND DISPOSING OF LOW-LEVEL RADIOACTIVE WASTES, AND AS SUCH, IS CONCERNED WITH SIGNIFICANT DEVELOPMENTS IN THE TRANSPORT ENVIRONMENT, CURRENT PRACTICES AND PROCEDURES, REGULATIONS, METHODS FOR SELECTING CONTAINER PARAMETERS FOR ANALYTICAL STUDIES, EMPIRICAL METHODS FOR CONTAINER EVALUATION, AND ACCIDENT/FIRE EXPOSURE. PART II CONTAINS AN ANALYSIS AND PRESENTATION OF RESULTS OF THE RESPONSE OF TYPICAL LOW-LEVEL RADIOACTIVE WASTE CONTAINERS TO FORCES RESULTING FROM AN ACCIDENT. A STRUCTURAL-INTEGRITY EVALUATION OF TWO TYPICAL CONTAINERS IS ACCOMPLISHED, WITH A SUBSEQUENT COMPARATIVE ANALYSIS SPECIFYING THE ADVANTAGES AND DISADVANTAGES OF THE CONTAINER TYPES FROM A STRUCTURAL STANDPOINT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE.

*STRESS ANALYSIS + *STRUCTURAL INTEGRITY + *WASTE TRANSPORTATION + ACCIDENT ANALYSIS + SHIPPING CONTAINER + WASTE DISPOSAL, GENERAL

3-15976
CLIFFORD CB
DESIGN AND FABRICATION OF A PROTOTYPE LAMINATED URANIUM METAL SHIPPING CASK FOR LARGE SHIPMENTS OF COBALT-60
UNION CARBIDE CORPORATION, NUCLEAP DIVISION, PADUCAH GASEOUS DIFFUSION PLANT
KY-521 +. 36 PAGES, 4 FIGURES, 6 TABLES, APRIL 3, 1967

PRESENTS THE DESIGN STANDARDS, ENGINEERING DRAWINGS AND THE MANUFACTURING TECHNIQUES USED IN MAKING A PROTOTYPE, LAMINATED, DEPLETED-URANIUM-METAL SHIPPING CASK FOR TRANSPORTING 150,000-CURIE LOTS OF CO-60. THE CASK DESIGN WAS BASED ON CRITERIA FURNISHED BY ORNL AND THE LATEST DRAFTS OF THE PROPOSED 10 CFR 71 REGULATIONS AND CHAPTER AEC-0529. EMPHASIS WAS PLACED ON REDUCING THE WEIGHT AND VOLUME OF THE CASK TO MINIMIZE THE PROBLEMS ASSOCIATED WITH TRANSPORTING AND HANDLING THE CASK IN THE CELLS LOCATED AT ORNL AND THEIR CUSTOMERS FACILITIES. HEAT-TRANSFER-TEST DATA ARE PRESENTED TO SHOW THE TEMPERATURES OBTAINED BY DISSIPATING UP TO 1.8 TIMES THE DESIGN HEAT LOAD OF ELECTRICAL ENERGY INSIDE THE CASK.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*EQUIPMENT DESIGN + *FABRICATION + *HEAT TRANSFER EXPERIMENT + *URANIUM + COBALT + SHIELDING + SHIPPING CONTAINER

3-15977
HAFF KW + NIEMEYER RG + ROBINSON RA
RADIOISOTOPE SOURCE SAFETY TESTING
OAK RIDGE NATIONAL LABORATORY, TENNESSEE
ORNL-4092 +. 154 PAGES, FIGURES, TABLES, 9 REFERENCES, MAY 1967

THIS COMPREHENSIVE REPORT COVERS THE WORK OF THE RADIOISOTOPE SOURCE CAPSULE SAFETY TESTING PROGRAM, OAK RIDGE NATIONAL LABORATORY (ORNL), THROUGH OCTOBER 1966. SEVERAL HUNDRED STRUCTURAL-STRESS AND TEMPERATURE-STRESS TESTS WERE MADE WITH A WIDE VARIETY OF RADIOISOTOPE SOURCE-CAPSULES. A METHOD OF CLASSIFYING SOURCE-CAPSULES ACCORDING TO THEIR CONTAINMENT INTEGRITY BY USING SIMPLE TEST PROCEDURES WAS DEVELOPED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*RADIOISOTOPE + *SOURCE, RADIATION + *TESTING + COBALT + SOURCE, NEUTRON + STRONTIUM + STRUCTURAL INTEGRITY + TEST, LEAK RATE + THERMAL EXPERIMENT

CATEGORY 3
TRANSPORTATION AND HANDLING OF RADIOACTIVE MATERIALS

3-15978
MALLETT AJ + NEWLON CE
PROTECTIVE SHIPPING PACKAGES FOR 30-INCH-DIAMETER UF-6 CYLINDERS
OAK RIDGE GASEOUS DIFFUSION PLANT, TENNESSEE
K-1686 +. 46 PAGES, 7 FIGURES, 2 TABLES, 11 REFERENCES, APRIL 13, 1967

TWO DESIGNS WHICH APPEARED SUITABLE AS STANDARD PROTECTIVE PACKAGES FOR CLASS II SHIPMENT OF 30-IN.-DIAM X 81-IN. CYLINDERS CONTAINING MODERATION-CONTROLLED URANIUM HEXAFLUORIDE WERE DEVELOPED AT THE OAK RIDGE GASEOUS DIFFUSION PLANT. ONE IS A HORIZONTAL LOADING UNIT COMPRISING SYMMETRICAL SEPARATIVE TOP AND BOTTOM SECTIONS. THE OTHER IS A CYLINDRICAL, END-LOADING UNIT. A PHENOLIC HIGH-TEMPERATURE FOAM PLASTIC WITH FIBER GLASS ADDITIVE IS USED AS A STRUCTURAL AND FIRE-RESISTANT MATERIAL BETWEEN THE INNER AND OUTER CASINGS OF EACH UNIT. BOTH DESIGNS RECEIVED AEC AND ICC APPROVAL FOR CLASS-II SHIPMENTS OF UF-6 ENRICHMENTS TO 4.5%. BASED ON THE NUCLEAR EVALUATION, TEN FILLED PACKAGES MAY BE TRANSPORTED TOGETHER.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*SHIPPING CONTAINER + *URANIUM HEXAFLUORIDE + FIRE + IMPACT SHOCK + STRUCTURAL INTEGRITY + THERMAL INSULATION

3-15979
HAFF KW
TRANSPORTATION OF RADIOACTIVE AND FISSILE MATERIALS
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.
3 PAGES, 8 REFERENCES, NUCLEAR SAFETY 8(3), PAGES 217-219 (SPRING 1967)

THIS ARTICLE DISCUSSES THE PRESENT AEC REGULATION TITLE 10 PART 71, PACKAGING OF RADIOACTIVE MATERIAL FOR TRANSPORT, AS WELL AS ICC ORDER NO. 70, DOCKET NO. 3666. IN ADDITION, A BRIEF COMPARISON OF INTERNATIONAL AND U.S. REGULATIONS IS GIVEN.

REGULATION, GENERAL + REGULATION, IAEA + REGULATION, ICC

3-15980
MALLETT AJ + WHEATLEY SJ
DEVELOPMENT OF FOAM PLASTIC AS HIGH TEMPERATURE INSULATION AND SHOCK ABSORBENT LINING FOR UF6 PACKAGES
OAK RIDGE GASEOUS DIFFUSION PLANT, UNION CARBIDE CORP., OAK RIDGE, TENN.
9 PAGES, 10 FIGURES, 2 TABLES, 2 REFERENCES, NUCLEAR ENGINEERING AND DESIGN 5(1) PAGES 98-106 (1967)

THE OAK RIDGE GASEOUS DIFFUSION PLANT DEVELOPED NEW PROTECTIVE PACKAGES FOR URANIUM HEXAFLUORIDE CYLINDERS WHICH SUCCESSFULLY PASSED THE SIMULATED ACCIDENT TESTS DESCRIBED IN THE ATOMIC ENERGY COMMISSION MANUAL CHAPTER D529. THESE TESTS ENCOMPASS CONCEIVABLE ACCIDENT CONDITIONS THAT COULD OCCUR IN TRANSIT. THE PACKAGES, DESIGNED TO PROTECT CYLINDERS OF 5 TO 30-IN. DIAMETER, INCORPORATE A FOAM-PLASTIC LINING THAT HAS SUPERIOR HEAT INSULATION, CUSHIONING, FIRE RESISTANCE, AND NEUTRON-ATTENUATION PROPERTIES.

*SHIPPING CONTAINER + *URANIUM HEXAFLUORIDE + FIRE + IMPACT SHOCK + STRUCTURAL INTEGRITY + THERMAL INSULATION

3-16009
BROWN CL
CRITICALITY SAFETY IN TRANSPORTATION AND STORAGE
BATTELLE NORTHWEST LABORATORY
SC-DC-67-1305 +. 12 PAGES, 13 FIGURES, 4 TABLES, 24 REFERENCES, AMERICAN NUCLEAR SOCIETY, TRINITY AND SOUTHERN NEVADA SECTIONS, NATIONAL TOPICAL MEETING, LAS VEGAS, NEVADA, DECEMBER 13-15, 1966, PP. 177-188 OF PROCEEDINGS, NUCLEAR CRITICALITY SAFETY

DISCUSSES THE STATUS AND FUTURE TRENDS OF TRANSPORTATION ECONOMY, SHIPPING-PACKAGE DESIGN, AND STORAGE OF FISSIONABLE MATERIALS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*CRITICALITY SAFETY + *FUEL HANDLING + *FUEL STORAGE + ECONOMICS + SAFETY PRINCIPLES AND PHILOSOPHY + SHIPPING CONTAINER + TRANSPORTATION AND HANDLING

3-16010 ALSO IN CATEGORY 1
BROAST WA
CAN WE REGULATE NUCLEAR SAFETY
INTERSTATE COMMERCE COMMISSION
SC-DC-67-1305 +. 4 PAGES, AMERICAN NUCLEAR SOCIETY, TRINITY AND SOUTHERN NEVADA SECTIONS, NATIONAL TOPICAL MEETING, LAS VEGAS, NEVADA, DECEMBER 13-15, 1966, PP. 197-200 OF PROCEEDINGS, NUCLEAR CRITICALITY SAFETY

CATEGORY 3
TRANSPORTATION AND HANDLING OF RADIOACTIVE MATERIALS

3-16010 *CONTINUED*
BRIEF NONTECHNICAL DISCUSSION ON THE HAZARDS OF TRANSPORTING RADIOACTIVE MATERIALS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*SAFETY PRINCIPLES AND PHILOSOPHY + *TRANSPORTATION AND HANDLING + CRITICALITY SAFETY + FUEL HANDLING

3-16194
FAIRBAIRN A + GIBSON R
THE IMPACT OF THE I.A.E.A REGULATIONS ON THE TRANSPORT OF IRRADIATED FUEL
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, HEALTH AND SAFETY BRANCH
AHS(S)R-116 +. 11 PAGES, 3 TABLES, 6 REFERENCES, 1966

THE ECONOMIC TRANSPORT OF INCREASING AMOUNTS OF IRRADIATED FUEL WITHIN MANY COUNTRIES AND ACROSS INTERNATIONAL FRONTIERS REQUIRES THE PROVISION OF UNIFORM SAFETY RULES ON A SOUND TECHNICAL BASIS. FOLLOWING PANEL MEETINGS 1965/66, THE REGULATIONS NOW RECOMMENDED BY THE INTERNATIONAL ATOMIC ENERGY AGENCY FOR NATIONAL AND INTERNATIONAL USE ARE BASED ON ASSESSMENT OF THE TECHNICAL AND ADMINISTRATIVE PROBLEMS OF IRRADIATED FUEL TRANSPORT. THESE REGULATIONS GIVE A YARDSTICK TO THE DESIGNER AND ENABLE DUE CONSIDERATION OF TRANSPORT PROBLEMS TO BE MADE DURING THE DESIGN STUDY OF A REACTOR PROJECT, ALONG WITH PROBLEMS RELATING TO FUEL MANUFACTURE AND REPROCESSING OF IRRADIATED FUEL. THIS REPORT SUMMARIZES THE LATEST IAEA REQUIREMENTS AND PARTICULAR DESIGN PROBLEMS ENCOUNTERED IN INTERPRETING THE REGULATIONS.

AVAILABILITY - AUTHORITY HEALTH + SAFETY BRANCH, U.K.A.E.A., 11 CHARLES 11 STREET, LONDON, S.W.1., ENGLAND

ADMINISTRATIVE CONTROLS AND PRACTICES + FUEL ELEMENT + REGULATION, IAEA + TRANSPORTATION AND HANDLING + UNITED KINGDOM

3-16402
MALLET AJ + NEWLON CE
PROTECTIVE SHIPPING PACKAGES FOR 8- AND 12-INCH DIAMETER UF6 CYLINDERS.
OAK RIDGE GASEOUS DIFFUSION PLANT, TENN.
K-1714 +. 37 PAGES, FIGURES, TABLES, 11 REFERENCES, APRIL 20, 1967

THIS REPORT CONCERNS THE DESIGN AND DEVELOPMENT OF PROTECTIVE SHIPPING PACKAGES FOR 8- AND 12-IN.-DIAM URANIUM HEXAFLUORIDE CYLINDERS. A REINFORCED HIGH-TEMPERATURE PHENOLIC FOAM PLASTIC DEVELOPED AT THE OAK RIDGE GASEOUS DIFFUSION PLANT IS USED AS A STRUCTURAL SUPPORT AND FIRE-RESISTANT INSULATION LINING. THE PACKAGES, WHICH ARE ALSO CONSIDERED APPLICABLE FOR SHIPMENT OF OTHER FISSIONABLE MATERIAL CONTAINERS, HAVE RECEIVED AEC AND ICC APPROVAL FOR CLASS-II SHIPMENT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*URANIUM HEXAFLUORIDE + CRITICALITY SAFETY + HEAT TRANSFER + SHIPPING CONTAINER + TEST, DROP

3-16403
KENDRICK ED
ELK RIVER REACTOR OPERATIONS ANALYSIS PROGRAM. SPENT FUEL SHIPPING CASK CRITICALITY ANALYSIS. TASK 617.
ALLIS-CHALMERS MFG. CO., BETHESDA, MD. ATOMIC ENERGY DIV.
ACNP-66551 +. 22 PAGES, JULY 1966

RESULTS ARE PRESENTED OF CRITICALITY CALCULATIONS FOR THE ELK RIVER 28-ELEMENT SPENT-FUEL SHIPPING CASK. THE ADDITION OF ONE WEIGHT PERCENT OF CADMIUM TO THE ALUMINUM USED IN MAKING THE 28-ELEMENT FUEL BASKET IS SUFFICIENT TO PREVENT CRITICALITY. ASSUMPTIONS USED IN THE STUDY ARE CONSERVATIVE, AND THE RESULTS SHOW THAT THE REQUIREMENTS OF 10 CFR 71 WILL BE MET FOR ANY COMBINATION OF FUEL ELEMENTS NOW AVAILABLE OR PRESENTLY CONTEMPLATED FOR USE IN THE FBR CORE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*CRITICALITY SAFETY + *ELK RIVER + CADMIUM + POISON, FIXED + REACTOR, BOILING WATER + SHIPPING CONTAINER

3-16426 ALSO IN CATEGORIES 1 AND 15
RADIATION SAFETY FOR CIVIL AIRPORTS
FEDERAL AVIATION AGENCY, WASHINGTON, D. C.
AC 150-5240-6A +. 31 PAGES, 1965

THIS PUBLICATION IS DIVIDED INTO THREE MAJOR CATEGORIES - THE RADIATION PROBLEM, NUCLEAR RADIATION, AND EMERGENCY OPERATIONS AT CIVIL AIRPORTS. THE FIRST CATEGORY DISCUSSES THE SHIPMENT OF RADIOACTIVE MATERIALS ON CIVIL AIRCRAFT AND GIVES FUNDAMENTAL INFORMATION ABOUT NUCLEAR WEAPONS ON MILITARY AIRCRAFT. RADIATION, METHODS OF MEASURING AND MONITORING ITS POTENCY AND ITS BIOLOGICAL EFFECTS, PROTECTION OF PERSONNEL, AND DECONTAMINATION ARE COVERED IN THE SECOND CATEGORY. THE THIRD OUTLINES EMERGENCY OPERATIONS TO BE SET UP FOLLOWING AN ACCIDENT INVOLVING SHIPMENT OF RADIOACTIVE MATERIALS ON COMMERCIAL AIRCRAFT AND NUCLEAR

CATEGORY 3
TRANSPORTATION AND HANDLING OF RADIOACTIVE MATERIALS

3-16426 *CONTINUED*
WEAPONS CARRIED ON MILITARY AIRCRAFT. IT ALSO TELLS HOW TO OBTAIN ASSISTANCE FOR RADIOLOGICAL PROTECTION. PUBLIC RELATIONS AND NEWS RELEASES ARE MENTIONED TO EMPHASIZE THE NEED TO PREVENT UNDOE ANXIETY.

AVAILABILITY - U. S. GOVERNMENT PRINTING OFFICE, WASHINGTON, D. C. 20402

*AIRCRAFT + *EMERGENCY PROCEDURE + ACCIDENT, CONSEQUENCES + DECONTAMINATION + RADIATION SAFETY AND CONTROL

3-16992 ALSO IN CATEGORIES 12 AND 13
NEWLON CE
THE ELEMENTS OF NEUTRON INTERACTING ARRAYS
OAK RIDGE GASEOUS DIFFUSION PLANT, OAK RIDGE, TENN.
K-D-1837 + CONF-666-1 +. 15 PAGES, FOR PRESENTATION AT AEC CONTRACTOR NUCLEAR MATERIALS MANAGEMENT MEETING, GATLINBURG, TENN. OCTOBER 1964

CALCULATIONAL METHODS FOR CRITICALITY STUDIES OF ARRAYS OF INDIVIDUALLY SUBCRITICAL UNITS IN AIR ARE DISCUSSED. RESULTS ARE GIVEN FOR UNREFLECTED URANIUM METAL CYLINDERS FOR 93.2% ENRICHMENT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

CRITICALITY SAFETY + NEUTRON INTERACTION + URANIUM

3-16993
WERNECKE AH
MEASUREMENTS AND RESULTING SHIPPER-RECEIVER DIFFERENCES INVOLVING URANIUM COMPOUNDS ABOVE FIVE PERCENT
U-235
GOODYEAR ATOMIC CORP., PIKETON, OHIO
GAT-T-1403 + CONF-661011-3 +. 25 PAGES, FROM AEC CONTRACTORS NUCLEAR MATERIALS MANAGEMENT MEETING, BERKELEY, CALIF. OCTOBER 3, 1966

URANIUM COMPOUNDS, RETURNED TO THE AEC FOR CREDIT, REQUIRE SAMPLING AND ANALYTICAL MEASUREMENTS TO DETERMINE SHIPPER-RECEIVER DIFFERENCES AND TO ASSESS CONFORMANCE TO PUBLISHED SPECIFICATIONS. THE DETERMINATION OF SAMPLING GROUPS, THE METHOD OF OBTAINING REPRESENTATIVE SAMPLES, AND ANALYTICAL MEASUREMENTS AND THEIR LIMITS OF ERROR ARE DISCUSSED. TABULATION OF SHIPPER-RECEIVER DIFFERENCES IS ALSO PRESENTED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

ANALYTICAL TECHNIQUE, CALIBRATION + PROCEDURES AND MANUALS + RELIABILITY ANALYSIS + SHIPPING CONTAINER + URANIUM

3-16994
BLACK WF
REVIEW OF REGULATIONS GOVERNING THE SHIPMENT OF NUCLEAR MATERIAL
ASSOCIATION OF AMERICAN RAILROADS, NEW YORK
CONF-661016-2 +. 18 PAGES FROM INSTITUTE OF NUCLEAR MATERIALS MANAGEMENT 7TH ANNUAL MEETING, COLUMBUS, OHIO, 1966

DEVELOPMENT BY THE BUREAU OF EXPLOSIVES, ASSN. OF AMERICAN RAILROADS, OF SAFE AND ECONOMICALLY SOUND REGULATIONS GOVERNING THE PACKAGING AND SHIPMENT OF RADIOACTIVE MATERIALS IS DISCUSSED, AND THE CURRENT STATUS OF THE INTERSTATE COMMERCE COMMISSION REGULATIONS FOR RADIOACTIVE MATERIALS, ESPECIALLY FISSILE MATERIALS OR SPECIAL NUCLEAR MATERIALS, IS PRESENTED. SUCCESS OF THE BUREAU IN EVALUATING PACKAGING AND SHIPPING PROCEDURES FOR RADIOACTIVE MATERIALS IS EVALUATED.

CODES AND STANDARDS + REGULATION, ICC + REVIEW

3-16995 ALSO IN CATEGORY 4
HILBORN HS
SAVANNAH RIVER LABORATORY ISOTOPIC POWER AND HEAT SOURCES
DUPONT DE NEMOURS AND CO., AIKEN, S. C., SAVANNAH RIVER LAB
DP-1004 +. 29 PAGES, JANUARY 1967

A PROGRAM TO DEVELOP, MAKE, AND TEST CAPSULES CONTAINING (1) CO-60 IN AN OXIDATION-RESISTANT CLADDING AND (2) A HIGHER-TEMPERATURE FORM OF CO-60 IN A REFRACTORY-METAL CLADDING WAS UNDERTAKEN TO MEET THE NEEDS OF HEAT-SOURCE DESIGNERS AND USERS. OF THE CAPSULE MATERIALS TESTED, INCONEL 600 AND TD NICKEL ARE MOST COMPATIBLE WITH COBALT METAL. TD NICKEL-CHROMIUM HAD OUTSTANDING OXIDATION RESISTANCE. COBALT-60 HEAT SOURCES WERE SHOWN TO REQUIRE LIGHTER SHIELDS THAN SR(90)TiO3 HEAT SOURCES AT POWERS ABOVE 2 KW(T). A SECOND PROGRAM DEALING WITH THE DEVELOPMENT OF TECHNOLOGY NEEDED FOR LARGE-SCALE MANUFACTURE OF CM-244 FUEL CAPSULES IS DESCRIBED. THE MONOCLINIC B-TYPE CM203 APPEARED TO BE THE BEST CURIUM OXIDE FOR HEAT SOURCES. A CERMET COMPACT OF CM203 WITH TUNGSTEN, FABRICATED BY COLD PRESSING AND SINTERING AT 1850 C, SHOWED NO DELETERIOUS INTERACTION BETWEEN THE OXIDE AND METAL PARTICLES. A SHIPPING CONTAINER OF TRANSPORTING CURIUM OXIDE IN 120-G BATCHES WAS DESIGNED.

CATEGORY 3
TRANSPORTATION AND HANDLING OF RADIOACTIVE MATERIALS

3-16995 *CONTINUED*
AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

COBALT + CURIUM + HEAT GENERATION, INTERNAL + HIGH TEMPERATURE + SHIELDING + SHIPPING CONTAINER

3-17406
GIRB M
CONTAINER TRANSPORTATION - A BOOST TO NUCLEAR MARINE PROPULSION
3 PAGES, EURATOM BULL. 6(2), PAGE 52-54, (JUNE 1967)

DISCUSSES THE PROBLEMS INVOLVED WITH REACTOR-POWERED MERCHANT SHIPS. AUTHOR NOTES THAT REACTOR-POWERED SHIPS CANNOT REACH THEIR FULL POTENTIAL UNTIL THE RATIO OF TIME AT SEA TO TIME IN PORT IS INCREASED APPRECIABLY. THIS WILL REQUIRE CONTAINERIZATION OF CARGO.

OCEAN AND SEA + REACTOR, MARITIME + TRANSPORTATION AND HANDLING

3-17407 ALSO IN CATEGORIES 11 AND 13
SKINNER OF + WOLF TW + WADE WZ
PORT APPARATUS FOR EXTRACTING MATERIALS FROM RADIOACTIVE ENCLOSURES
UNITED STATES ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.
U. S. PATENT 3,290,502 +. 2 PAGES, DECEMBER 6, 1966, PATENT (U.S.)

RELATES TO A SAMPLE EXTRACTOR PORT INCLUDING A SLEEVE MOUNTABLE IN A SHIELDING WALL INTO WHICH AN OPEN-ENDED CONTAINER MAY BE RETRACTABLY INSERTED. ESPECIALLY ADAPTED GROOVE STRUCTURE IN THE INNER-WALL SURFACES OF THE SLEEVE AND A COMPLIANT SLEEVE INSERTABLE AND DISPLACEABLE INWARDLY THEREIN PROVIDES FOR SEALING OF THE CONTAINER AND WALL WHILE PROVIDING CONTAMINATION SHIELDING OF THE CONTAINER MOUTH.

AVAILABILITY - THE U. S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D. C. (\$0.25 PER COPY)

CONTAINMENT AIR LOCK + CONTAINMENT PENETRATION, CLOSURE OF + PATENT

3-17408
MALLETT AJ + NEWLON CF
PROTECTIVE SHIPPING PACKAGE FOR 5-INCH-DIAMETER UF6 CYLINDER
UNION CARBIDE CORP., NUCLEAR DIV., OAK RIDGE GASEOUS DIFFUSION PLANT, TENN.
K-1716 +. 33 PAGES, FIGURES, TABLES, JUNE 14, 1967

THIS REPORT CONCERNS THE DESIGN OF A PROTECTIVE SHIPPING PACKAGE FOR THE 5-IN.-DIAM X 30-IN. UF6 CYLINDER. A REINFORCED HIGH-TEMPERATURE PHENOLIC FOAM PLASTIC IS USED AS A STRUCTURAL SUPPORT AND FIRE-RESISTANT INSULATION LINING. THE PACKAGE, WHICH CAN BE READILY MODIFIED FOR SHIPMENT OF OTHER FISSILE MATERIALS, HAS RECEIVED BOTH AEC AND BUREAU OF EXPLOSIVES APPROVAL FOR CLASS-II SHIPMENT OF THE 5-IN. UF6 CYLINDER AT ANY U-235 ENRICHMENT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

CRITICALITY SAFETY + SHIPPING CONTAINER + STRUCTURAL INTEGRITY + TEST, DROP + THERMAL ANALYSIS + URANIUM HEXAFLUORIDE

3-17409
GIBSON P
THE SAFE TRANSPORT OF RADIOACTIVE MATERIALS
UKAEA, HEALTH AND SAFETY BRANCH
290 PAGES, FIGURES, TABLES, 4 REFERENCES, 1966, PERGAMON PRESS LTD. PUBLISHER

THIS BOOK IS INTENDED AS A HANDBOOK FOR THE INCREASING NUMBER OF PEOPLE ENGAGED IN TRANSPORTING RADIOACTIVE MATERIAL. IT IS AIMED AT A WIDE AUDIENCE CONSISTING OF DESIGNERS, CONSIGNERS, CARRIERS, LEGISLATORS, AND INSURERS. IT COVERS THE 1964 VERSION OF THE IAEA REGULATIONS FOR THE SAFE TRANSPORT OF RADIOACTIVE MATERIAL, THEIR NATIONAL AND INTERNATIONAL IMPLEMENTATION, A REVIEW OF TRANSPORT ACCIDENTS AND INSURANCE PROBLEMS.

AVAILABILITY - PERGAMON PRESS INC., 44-01 21ST STREET, LONG ISLAND CITY, NEW YORK 11101, \$12.00 COPY

INSURANCE + LIABILITY + REGULATION, IAEA + SAFETY PRINCIPLES AND PHILOSOPHY + TRANSPORTATION AND HANDLING

CATEGORY 4
AEROSPACE SAFETY

4-15740
SCHAEFER HJ
ENERGY DISSIPATION CHARACTERISTICS IN TISSUE FOR IONIZING RADIATION IN SPACE. PROGRESS REPORT NO. 13,
DECEMBER 1, 1965-FEBRUARY 28, 1966
NAVAL SCHOOL OF AVIATION MEDICINE, PENSACOLA, FLA.
N-66-24123 + NASA-CR-71812 +. 3 PAGES, 1 TABLE, 1966

FOR MOST SOLAR PARTICLE BEAMS UNDER CONDITIONS OF LIGHT SHIELDING (LEM, EVA), THE RADIATION DOSE IN THE SKIN WILL BE SUBSTANTIALLY HIGHER THAN IN DEEPER REGIONS OF THE BODY AND WILL BE THE LIMITING FACTOR AS FAR AS PERMISSIBLE EXPOSURE IS CONCERNED. CONCERN WAS ALSO EXPRESSED WITH REGARD TO THE RBE FACTORS OF THE ALPHA AND MEDIUM-HEAVY COMPONENT OF FLARE BEAMS. A FORMAL REQUEST WAS DIRECTED TO THE INVESTIGATOR FOR A MORE COMPREHENSIVE ANALYSIS OF THE PERTINENT DOSE DISTRIBUTIONS BOTH ON THE RAD AND PEM DOSE LEVEL. THE EARLIER STUDY OF THE SAME BASIC PROBLEM (SEE PROGRESS REPORT NO. 10) WAS CONSIDERED INSUFFICIENT INASMUCH AS ONLY ONE REPRESENTATIVE FLARE EVENT HAD BEEN EVALUATED. SINCE THE ALPHA AND MEDIUM-HEAVY FLUX IN FLARE BEAMS VARIES GREATLY IN RELATION TO THE PROTON FLUX, A MORE COMPREHENSIVE STUDY IDENTIFYING THE UPPER AND LOWER LIMIT FOR THE FLUXES IN QUESTION AND ESTABLISHING THE CORRESPONDING DOSE DISTRIBUTIONS IN NEAR-SURFACE REGIONS OF THE BODY SEEMED INDEED A VERY DESIRABLE SUPPLEMENT TO THE EARLIER ANALYSIS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*AEROSPACE SAFETY + *DOSE + COSMIC RADIATION

4-16023 ALSO IN CATEGORIES 6 AND 18
BARDES PG + COHEN SC + FRIESENHAHN SJ + GILLETTE EM + HADDAD E + JOANOU GD + JUPITER C + MOORE RA +
PEAK JC + TRIMBLE GD
TUNGSTEN NUCLEAR POCKET. PHASE I, FINAL REPORT. PART I.
GENERAL DYNAMICS CORP., SAN DIEGO, CALIFORNIA
GA-6890 + NASA-CR-54909 +. 390 PAGES, FIGURES, TABLES, APRIL 22, 1966

DESCRIBES THE CRITICAL EXPERIMENTS, FACILITY, ASSEMBLIES, AND NUCLEAR ANALYSIS. EXPERIMENTAL RESULTS INCLUDE THE EXCESS REACTIVITY AVAILABLE IN THE CORE, WORTH OF POISON TUBES AND FUEL-ELEMENT COMPONENTS, TEMP. COEFFICIENTS, AND FLUX AND POWER DISTRIBUTIONS.

AVAILABILITY - NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, OFFICE OF SCIENTIFIC AND TECHNICAL INFORMATION, WASHINGTON, D. C. 20546

*NUCLEAR ROCKET + *REACTOR DESCRIPTION + CRITICAL ASSEMBLY FACILITY + CRITICALITY EXPERIMENT +
FLUX DISTRIBUTION + MEASUREMENT, REACTIVITY + POWER DISTRIBUTION + REACTIVITY, EXCESS +
TEMPERATURE REACTIVITY EFFECT

4-16024 ALSO IN CATEGORIES 9 AND 18
BARDES PG + COHEN SC + FRIESENHAHN SJ + GILLETTE EM + HADDAD E + JOANOU GD + JUPITER C + MOORE RA +
PEAK JC + TRIMBLE GD
TUNGSTEN NUCLEAR ROCKET. PHASE I, FINAL REPORT. PART I
GENERAL DYNAMICS CORP., SAN DIEGO, CALIFORNIA
GA-6890 + NASA-CR-54909 +. 6 PAGES, FIGURES, PAGES 2-16 THROUGH 2-21, APRIL 22, 1966

PAGES 2.16 THROUGH 2.21 DESCRIBE THE NUCLEAR INSTRUMENTATION FOR THIS TEST REACTOR.

AVAILABILITY - NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, OFFICE OF SCIENTIFIC AND TECHNICAL INFORMATION, WASHINGTON, D. C. 20546

*CONTROL SYSTEM + *NUCLEAR ROCKET + *REACTOR SAFETY SYSTEM + INSTRUMENTATION, NUCLEAR

4-16152 ALSO IN CATEGORY 17
JOHNSON CF + MASON DG
SNAP 8 REACTOR AND SHIELD DESIGNS AND OPERATING EXPERIENCES
ATOMICS INTERNATIONAL, CANOGA PARK, CALIFORNIA
7 PAGES, 6 TABLES, 13 FIGURES, 5 REFERENCES, J. SPACECRAFT, 3(7), PAGES 1099-1105 (JULY 1966), PREPRINT
65-473 AT AIAA SECOND ANNUAL MEETING, SAN FRANCISCO, CALIF. JULY 26-29, 1965

THE EXPERIMENTAL REACTOR OPERATED ONE YEAR IN THE POWER RANGE 400 TO 600 KWT WITH A 1300 F COOLANT OUTLET TEMPERATURE. POST-TEST EXAMINATION, AFTER THE 500-DAY OPERATION, REVEALED CRACKS IN 80% OF THE CLADDING TUBES. THE REACTOR AND SHIELD DESIGN IS SUMMARIZED FOR MANNED AND UNMANNED SPACE APPLICATION. SHIELDING, DOSE RATE, AND TOTAL DOSE FOR THESE APPLICATIONS ARE DISCUSSED.

*DIRECT ENERGY CONVERSION DEVICES + FAILURE, CLADDING + RADIATION SAFETY AND CONTROL + REACTOR, SPACE +
SHIELDING + SNAP 8 (SYSTEMS FOR NUCLEAR AUXILIARY POWER)

4-16154

CATEGORY 4
AEROSPACE SAFETY

4-16154 *CONTINUED*
 STONE LP + WHITAKER WD
 SNAP-10A EXPANSION COMPENSATOR. FINAL REPORT
 ATOMICS INTERNATIONAL, CANOGA PARK, CALIFORNIA
 NAA-SR-11952 +. 81 PAGES, 9 TABLES, 33 FIGURES, JULY 15, 1966

THE SNAP 10A SPACE NUCLEAR POWER UNIT WAS SUCCESSFULLY FLIGHT-TESTED, UTILIZING EXPANSION COMPENSATOR UNITS (ECU) TO ABSORB THE NAK COOLANT THERMAL EXPANSION AND TO PRESSURIZE THE COOLANT SYSTEM WITH A VOID-FREE DEVICE. AN EXPANSION-COMPENSATOR DESIGN UTILIZING A WELDED BELLGWS ASSEMBLY WAS EXTENSIVELY TESTED TO ENSURE CONFORMANCE WITH THE SNAP 10A OPERATIONAL AND RELIABILITY REQUIREMENTS. A UNIQUE FEATURE OF THE ECU DESIGN WAS A SECONDARY CONTAINMENT HOUSING WHICH WOULD HAVE PERMITTED CONTINUED SYSTEM OPERATION AT DESIGN CONDITIONS IN THE EVENT OF A BELLGWS FAILURE. THE BELLGWS ASSEMBLY WAS MADE FROM AM-350 (SCT-850) PRECIPITATION-HARDENING STEEL FOIL. COMPONENT DEVELOPMENT AND QUALIFICATION TESTS WERE SUCCESSFULLY PERFORMED. EXPANSION COMPENSATORS WERE ALSO INSTALLED ON TWO SNAP 10A GROUND-TEST SYSTEMS AND MET ALL TEST OBJECTIVES. A TOTAL OF 71,200 HR AT ELEVATED TEMPERATURES WAS ACCUMULATED DURING THE DEVELOPMENT AND QUALIFICATION TESTING OF THE ECU.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*AEROSPACE SAFETY + *CONTAINMENT RESEARCH AND DEVELOPMENT +
 *SNAP 10A (SYSTEMS FOR NUCLEAR AUXILIARY POWER) + *TEST, PLANT RESPONSE + *THERMAL MECHANICAL EFFECT +
 CONTAINMENT ANALYSIS + CONTAINMENT DESIGN + CONTAINMENT, GENERAL + TEST, SYSTEM OPERABILITY + TESTING

4-16160 ALSO IN CATEGORY 9
 DAVISON HW + HEATH CA + LOWEN W
 THE CONTROL OF A NUCLEAR REACTOR USING HELIUM-3 GAS CONTROL ELEMENTS.
 NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, LEWIS RESEARCH CENTER, CLEVELAND, OHIO
 NASA-TM-X-52256 +. 11 PAGES, 13 FIGURES, PRESENTED AT WINTER MEETING OF THE AMERICAN NUCLEAR SOCIETY,
 PITTSBURGH, PENNSYLVANIA, OCTOBER 30-NOVEMBER 3, 1966 AMERICAN NUCLEAR SOCIETY TRANSACTIONS 9(2) PAGE 574

THE FEASIBILITY OF POWER CONTROL VIA HE-3 WAS INVESTIGATED FOR A WATER-MODERATED ROCKET PROPULSION REACTOR. THIS CONCEPT OFFERS POTENTIAL WEIGHT-REDUCTION ADVANTAGES, IN ADDITION TO HIGH COPE EFFICIENCY DUE TO MINIMUM FLUX PERTURBATION. THESE ADVANTAGES COULD ALSO APPLY TO OTHER FORMS OF REACTORS. THE STUDY DESIGN PROVIDED FOR THE HE-3 TO BE INTRODUCED IN METAL CONTAINERS EVENLY DISTRIBUTED THROUGH THE CORE. ACCORDING TO CALCULATIONS, THE TARGET CRITERIA OF POISON WORTH, TIME RATE-OF-CHANGE OF WORTH, AND SPATIAL VARIATION WERE SATISFIED. THE POTENTIAL PROBLEM OF ENERGY DEPOSITION BY RECOIL PROTONS IN THE HE-3 WAS RESOLVED BY DESIGN OF THE GAS-CONTAINER ALUMINUM WALLS TO INTERCEPT AND REMOVE MOST OF THE PROTON RECOIL ENERGY.

HELIUM + REACTOR CONTROL + SPACECRAFT

4-16166 ALSO IN CATEGORY 5
 KEMME JF
 HEAT PIPE CAPABILITY EXPERIMENTS
 LOS ALAMOS SCIENTIFIC LAB., N. MEXICO
 LA-3585 +. 32 PAGES, 12 FIGURES, 3 TABLES, 10 REFERENCES, AUGUST 22, 1966

AXIAL HEAT TRANSFER LIMITS WERE MEASURED FOR SEVERAL HEATPIPES HAVING THE SAME C.D. BUT DIFFERENT WICK CONFIGURATIONS TO POTASSIUM AND SODIUM FROM 450 TO 850 C. THE WICKS WERE AXIAL CHANNELS EVENLY SPACED AROUND THE INSIDE WALL OF THE TUBE. A LAYER OF FIRE SCREEN WAS USED IN SOME TESTS TO ISOLATE THE LIQUID FROM THE VAPOR. EXPERIMENTS WERE CHOSEN TO TEST CURRENT HEAT-PIPE RELATIONSHIPS AND TO SHOW POSSIBILITY OF PERFORMANCE IMPROVEMENT. TESTS SHOWED (1) AGREEMENT WITH THEORY AT HIGH TEMPERATURE END AND (2) SCREENS HELP INCREASE STARTUP AND STEADY-STATE HEAT-TRANSFER RATES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

COMPARISON, THEORY AND EXPERIENCE + EVAPORATION + FLOW, LAMINAR + FLOW, TWO PHASE + HEAT PIPE +
 HEAT TRANSFER AUGMENTATION + HEAT TRANSFER EXPERIMENT + METAL, ALKALI + METAL, LIQUID

4-16181 ALSO IN CATEGORIES 5 AND 8
 KEMME JF
 HEAT PIPE CAPABILITY EXPERIMENTS.
 LOS ALAMOS SCIENTIFIC LAB., UNIVERSITY OF CALIF., LOS ALAMOS, NEW MEXICO
 SC-M-66-623 + CONF-660645 +. 6 PAGES, OCTOBER 1966, PROCEEDINGS OF JOINT ATOMIC ENERGY COMMISSION/SANDIA LABORATORIES HEAT PIPE CONFERENCE HELD AT ALBUQUERQUE, NEW MEXICO, JUNE 1, 1966, VOLUME I, PUBLISHED BY SPACE ISOTOPE POWER DEPARTMENT, SANDIA LABORATORIES

IN ENGINEERING APPLICATIONS, HEAT PIPES MAY SERVE ADVANTAGEOUSLY AS THERMAL CONDUCTORS, AS HEAT-FLUX TRANSFORMERS, AS ISOTHERMALIZERS, AS THERMOSTATS, OR IN COMBINATIONS OF THESE ROLES. EXCEPTING SOME QUESTIONS OF LONG-TERM MATERIALS COMPATIBILITY, PRESENT KNOWLEDGE OF RELEVANT MATERIALS PROPERTIES AND UNDERSTANDING OF THE ENGINEERING PHYSICS OF THE HEAT-PIPE PROCESS ARE SUFFICIENTLY GOOD TO PERMIT REALISTIC PREDICTION OF THE GENERAL FEASIBILITY OF A PROSPECTIVE NEW APPLICATION BUT NOT PRECISE OR DETAILED ENOUGH TO SERVE FOR THE GENERALIZATION OF TRULY OPTIMAL DESIGNS. THE CURRENT THEORY FOR DESIGN AND PERFORMANCE ANALYSIS OF HEAT PIPES IS SUMMARIZED BRIEFLY, AND THE PRINCIPAL OUTSTANDING GAPS ARE DISCUSSED.

CATEGORY 4
AEROSPACE SAFETY

4-16181 *CONTINUED*

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

FLOW, LAMINAR + HEAT EXCHANGER + HEAT PIPE + SPACECRAFT

4-16199

LONG WG + DAVIES NF + WARREN M

SNAP ENVIRONMENT SIMULATION PROBLEMS

ATOMICS INTERNATIONAL, CANOGA PARK, CALIF.

6 PAGES, 6 FIGURES, IEEE TRANS. OF NUCL. SCI. 13 (1) PAGES 224-229 (FEB. 1966)

THE PRACTICAL PROBLEMS INVOLVED IN CONDUCTING A SUCCESSFUL COMPONENT-IRRADIATION PROGRAM INCLUDE CONSIDERATIONS OF MATERIAL COMPATIBILITY WITH THE IRRADIATION AND TEMPERATURE LEVELS, PROPER SELECTION AND OPERATION OF VACUUM EQUIPMENT, AND THE ESTABLISHMENT OF PROCEDURES WHICH PROVIDE THE CLEANEST POSSIBLE CONDITIONS WITHIN THE SIMULATION CHAMBER. THIS PAPER DISCUSSES THE ABOVE PROBLEMS AND THE MODIFICATIONS REQUIRED IN BOTH MATERIALS AND VACUUM-PUMPING EQUIPMENT. MATERIALS PHENOMENA RELATED TO THE COMBINED VACUUM-TEMPERATURE-IRRADIATION ENVIRONMENT ARE ALSO PRESENTED. DISCUSSES THE TECHNICAL PROBLEMS EXPERIENCED IN THE COMBINED ENVIRONMENTAL TESTS OF TWO SNAP-10A CONTROL-DRUM ACTUATORS COUPLED TO TWO CONTROL-DRUM POSITION SENSORS.

*SNAP, GENERAL (SYSTEMS FOR NUCLEAR AUX. POWER) + *TESTING + AEROSPACE SAFETY + TEST, COMPONENT

4-16200

URFPA BF

SNAPSHOT LAUNCH OPERATIONS

ATOMICS INTERNATIONAL, CANOGA PARK, CALIF.

10 PAGES, 16 FIGURES, IEEE TRANS. NUCL. SCI. 13(1) PAGES 254-63 (FEBRUARY 1966)

DESCRIBES THE SNAP 10A SYSTEM, TESTING, SHIPPING, OPERATION, CHECKOUT, LAUNCH, AND PERSONNEL TRAINING. A BRIEF SAFETY ANALYSIS IS PRESENTED. REFERENCE IS MADE TO THE SNAPSHOT FLIGHT SAFEGUARDS REPORT AND OTHER SAFETY REVIEWS. ACCIDENT ANALYSES CONSIDERED ARE LISTED.

*SNAP 10A (SYSTEMS FOR NUCLEAR AUXILIARY POWER) + ACCIDENT ANALYSIS + AEROSPACE SAFETY + TRANSPORTATION AND HANDLING

4-16301

ALSO IN CATEGORY 15

LANGHAM WH + BROOKS PM + GRAHN D

RADIATION BIOLOGY AND SPACE ENVIRONMENTAL PARAMETERS IN MANNED SPACECRAFT DESIGN AND OPERATIONS

LOS ALAMOS SCIENTIFIC LAB., LOS ALAMOS + MCDONNELL AIRCRAFT CORP., ST. LOUIS + ARGONNE NATIONAL LAB., ARGONNE, ILL.

55 PAGES, FIGURES, TABLES, AEROSPACE MEDICINE 36(2) PAGES 1-55 (FEB. 1965)

THE PURPOSE OF THIS REPORT IS TO DERIVE, INSOFAR AS POSSIBLE, CRITERIA FOR CONSIDERATION OF MANS RESPONSE TO SPACE-RADIATION EXPOSURE SO THAT RADIATION RISKS MAY BE TAKEN INTO ACCOUNT DURING SPACECRAFT DESIGN AND OPERATIONAL PLANNING PHASES, ALONG WITH THE OTHER HAZARDS OF MANNED SPACE FLIGHT. THE ONLY BASIS FOR DERIVATION OF SUCH CRITERIA IS THE VAST AMOUNT OF DATA ON EFFECTS OF SO-CALLED CONVENTIONAL RADIATION EXPOSURES (INVOLVING LOW- AND INTERMEDIATE-ENERGY ELECTROMAGNETIC AND PARTICULATE RADIATIONS) ON ANIMALS AND OCCASIONALLY MAN. UNFORTUNATELY, EXPOSURES IN SPACE WILL NOT BE CONVENTIONAL WITH REGARD TO EXPOSURE CONDITIONS OR NATURE, ENERGY, AND SPECTRAL DISTRIBUTION OF THE RADIATIONS. IT SEEMS NECESSARY, THEREFORE, TO DISCUSS FIRST SOME OF THE GENERAL AND SPECIFIC ASPECTS OF THE SPACE RADIATION ENVIRONMENT AND SOME OF THE EXPOSURE CONDITIONS THAT MAY BE CONTEMPLATED. TWO HUNDRED EIGHTY-SIX REFERENCES ARE INCLUDED.

*AEROSPACE SAFETY + *BIOLOGICAL + CODES AND STANDARDS + DOSE + DOSE CALCULATION, EXTERNAL + DOSE CALCULATION, INTERNAL + ENVIRONMENTAL CONDITION + PERSONNEL PROTECTIVE DEVICE + SPACECRAFT

4-16425

ALSO IN CATEGORY 9

ITBERMAN US + SLECHTER AJ

AN INTRODUCTION TO THE EVALUATION OF RELIABILITY PROGRAMS

NASA, RELIABILITY AND QUALITY ASSURANCE OFFICE, WASHINGTON + ARINC RESEARCH CORPORATION, WASHINGTON, D. C.

NASA-SP-6501 +. 67 PAGES, 7 REFERENCES, 1967

THE MANAGEMENT AND USEFULNESS OF THE RELIABILITY PROGRAMS USED BY NASA ARE DISCUSSED. INCLUDED ARE (1) RELIABILITY-PROGRAM OBJECTIVES, (2) CRITERIA FOR JUDGING EFFECTIVENESS, (3) APPROACH TO EVALUATING THE TASKS FOR MEANINGFUL ACCOMPLISHMENT. SOME OF THE TECHNIQUES MAY BE USEFUL IN THE NUCLEAR FIELD, SUCH AS THE METHODS OF (1) RELIABILITY PREDICTION AND ESTIMATION, (2) FAILURE MODE, EFFECT, AND CRITICALITY ANALYSIS, (3) HUMAN FACTORS AND MAINTAINABILITY, (4) FAILURE REPORTING AND CORRECTION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*RELIABILITY ANALYSIS + AEROSPACE SAFETY + FAILURE, GENERAL + RELIABILITY, COMPONENT + RELIABILITY, SYSTEM

CATEGORY 4
AEROSPACE SAFETY

4-16554 ALSO IN CATEGORY 7
DUGAN VL
PRODUCTION OF LOW CONCENTRATION PARTICULATE AEROSOLS BY A SONIC DISSEMINATOR TECHNIQUE
SANDIA CORP., ALBUQUERQUE, N. MEXICO
SC-RR-67-14 +. 17 PAGES, DECEMBER 1966

THIS REPORT DESCRIBES A TECHNIQUE BY WHICH AN ULTRASONIC VIBRATOR MAY BE USED TO PRODUCE PARTICULATE AEROSOLS WITH CONCENTRATION LEVELS-LESS THAN 5000 PARTICLES PER CUBIC FOOT IN AN ENCLOSED VOLUME WITH GOOD REPEATABILITY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*AEROSOL PRODUCTION + AEROSPACE SAFETY + PARTICLE SIZE

4-16589 ALSO IN CATEGORIES 6 AND 9
ALMENAS KK
STUDY OF REFLECTOR-BASED CONTROL OF FAST NUCLEAR ROCKET REACTORS
ARGONNE NATIONAL LAB., ILL.
ANL-7099 +. 82 PAGES, 28 FIGURES, 26 TABLES, 19 REFERENCES, MAY 1966

COMPARATIVE EVALUATION VARIES REFLECTOR AND CONTROL MATERIALS SUITABLE FOR FAST-SPECTRUM, HIGH-PERFORMANCE CORES, FOCUSED PRIMARILY ON THE CONTROL POTENTIAL OF REFLECTOR-LOCATED CONTROL MECHANISMS. FOR MOST FAST-SPECTRUM CORE-REFLECTOR COMBINATIONS, A WELL-DEFINED OPTIMUM CONTROL-VANE DESIGN EXISTS. DEPENDENCE OF THIS OPTIMUM CONTROL SPAN ON CONTROL-VANE THICKNESS AND COMPOSITION WAS EXPLORED IN DETAIL. CALCULATIONAL METHODS FOR DETERMINING THE OPTIMUM VANE CONFIGURATION AND SUCH ASPECTS AS CONTROL-VANE HEATING ARE PRESENTED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

COMPUTER, DIGITAL + CONTROL, GENERAL + REACTOR, FAST + REFLECTOR + SPACECRAFT

4-16603 ALSO IN CATEGORY 5
ROGDONOFF SM
RESEARCH ON HYPersonic FLOWS
PRINCETON UNIVERSITY, GAS DYNAMICS LABORATORY, PRINCETON, N.J.
ARL-67-0009 +. 51 PAGES, 22 FIGURES, 15 REFERENCES, JANUARY 1967

DURING THE THREE-YEAR PERIOD, SEPTEMBER 1963 TO SEPTEMBER 1966, THE GAS DYNAMICS LABORATORY OF PRINCETON UNIVERSITY HAS BEEN ENGAGED IN A SERIES OF RESEARCH PROGRAMS OF BASIC APPLICATION TO HYPERSONIC FLIGHT. THESE STUDIES WERE EXPERIMENTALLY CENTERED AROUND THE PRINCETON HELIUM HYPERSONIC FACILITIES DEVELOPED UNDER PREVIOUS ARL SUPPORT. RESEARCH IN THE FOUR BASIC AREAS OF INTEREST (LIFTING SURFACES, SEPARATED FLOWS, BOUNDARY LAYERS, AND VISCOUS INTERACTIONS) WERE UNDERTAKEN. SUMMARIES OF THE RESEARCHES THAT HAVE BEEN COMPLETED ARE PRESENTED AS WELL AS THE PERTINENT RESULTS. STUDIES STILL IN PROCESS ARE OUTLINED AND PRELIMINARY RESULTS PRESENTED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

AIRCRAFT + BOUNDARY LAYER + FLOW THEORY AND EXPERIMENTS + FLOW, HIGH SPEED + FLOW, LAMINAR + FLOW, RECIRCULATION

4-16995 ALSO IN CATEGORY 3
HILBORN HS
SAVANNAH RIVER LABORATORY ISOTOPIC POWER AND HEAT SOURCES
DUPONT DE NEMOURS AND CO., AIKEN, S. C., SAVANNAH RIVER LAB
DP-1094 +. 29 PAGES, JANUARY 1967

A PROGRAM TO DEVELOP, MAKE, AND TEST CAPSULES CONTAINING (1) CO-60 IN AN OXIDATION-RESISTANT CLADDING AND (2) A HIGHER-TEMPERATURE FORM OF CO-60 IN A REFRACTORY-METAL CLADDING WAS UNDERTAKEN TO MEET THE NEEDS OF HEAT-SOURCE DESIGNERS AND USERS. OF THE CAPSULE MATERIALS TESTED, INCONEL 600 AND 70 NICKEL ARE MOST COMPATIBLE WITH COBALT METAL. 70 NICKEL-CHROMIUM HAD OUTSTANDING OXIDATION RESISTANCE. COBALT-60 HEAT SOURCES WERE SHOWN TO REQUIRE LIGHTER SHIELDS THAN SR1901103 HEAT SOURCES AT POWERS ABOVE 2 KW(T). A SECOND PROGRAM DEALING WITH THE DEVELOPMENT OF TECHNOLOGY NEEDED FOR LARGE-SCALE MANUFACTURE OF CM-244 FUEL CAPSULES IS DESCRIBED. THE MONOCLINIC B-TYPE CM203 APPEARED TO BE THE BEST CURIUM OXIDE FOR HEAT SOURCES. A CERMET COMPACT OF CM203 WITH TUNGSTEN, FABRICATED BY COLD PRESSING AND SINTERING AT 1850 C, SHOWED NO DELETERIOUS INTERACTION BETWEEN THE OXIDE AND METAL PARTICLES. A SHIPPING CONTAINER OF TRANSPORTING CURIUM OXIDE IN 120-G BATCHES WAS DESIGNED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

COBALT + CURIUM + HEAT GENERATION, INTERNAL + HIGH TEMPERATURE + SHIELDING + SHIPPING CONTAINER

CATEGORY 4
AEROSPACE SAFETY

4-17202 ALSO IN CATEGORY 5
CLARK LT
SUMMARY OF LITERATURE AND BIBLIOGRAPHY ON THE RELATION BETWEEN WETTING AND BOILING MERCURY HEAT TRANSFER
AERONET-GENERAL CORPORATION
NP-16046 +. 4 PAGES, AUGUST 25, 1964

A SURVEY OF THE LITERATURE ON BASIC PHENOMENA THAT MIGHT AFFECT THE BOILING OF MERCURY WAS CONDUCTED. STUDIES ARE DIVIDED INTO THE THREE GENERAL AREAS OF BOILING, WETTING, AND SURFACE TENSION. INTERFACIAL PHENOMENA ARE DISCUSSED AS THEY ARE APPLICABLE TO WETTING BY MERCURY. IT WAS CONCLUDED THAT WETTING IS REQUIRED FOR HIGH HEAT FLUXES IN BOILING, SINCE NONWETTING RESULTS IN PREMATURE TRANSITION TO FILM BOILING. WETTING MAY BE INDUCED BY PROPER SURFACE PREPARATION, EXTENDED BOILING, AND USE OF CERTAIN ADDITIVES, SUCH AS ALKALI AND ALKALINE-EARTH METALS. IT WAS ALSO CONCLUDED THAT THE MICROSCOPIC ASPECTS OF WETTING ARE IMPORTANT AS WELL AS THE MACROSCOPIC.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*BIBLIOGRAPHY + *HEAT TRANSFER + *HEAT TRANSFER, BOILING + *MERCURY + METAL, ALKALI + REACTOR, SPACE + SNAP 8 (SYSTEMS FOR NUCLEAR AUXILIARY POWER)

4-17262
BLFICHRDT, JF + BLOK J
POSSIBLE RADIOACTIVE CONTAMINATION OF MAN AND HIS ENVIRONMENT BY THE USE OF NUCLEAR POWER IN SPACE
PVC-TNO, RIJSWIJK, NETHERLANDS
9 PAGES, 2 FIGURES, 1 TABLE, 26 REFERENCES, DE INGENIEUR 70(31), PAGES G-27 THRU G-37, (AUGUST 5, 1966), IN DUTCH

GIVES METHODS FOR ESTIMATING RADIATION DOSE AFTER BURN-UP OF SATELLITES DURING RE-ENTRY INTO THE ATMOSPHERE. AFTER COMPLETE BURN-UP OF A THERMO-ELECTRIC GENERATOR FUELED WITH SR-90, CS-137, OR PU-238, THE RADIOACTIVE MATERIAL WILL BE SPREAD IN THE ATMOSPHERE AND GRADUALLY REACH THE SURFACE OF THE EARTH, GIVING RISE TO IRRADIATION OF GONADS, BONE, AND BONE MARROW OF THE WORLD POPULATION. THE ORDER OF MAGNITUDE OF THE RADIATION DOSE THESE ORGANS ARE EXPOSED TO IS ESTIMATED AT 1 MPAD/KW OF THERMAL POWER OF THE GENERATOR. BURN-UP OF A NUCLEAR REACTOR AFTER OPERATION DURING ONE YEAR AT A POWER LEVEL OF 10 MW WILL RESULT IN DOSES OF 0.04, 0.33, AND 0.11 MRAD IN GONADS, BONE, AND BONE MARROW RESPECTIVELY.

*AEROSPACE SAFETY + *PERSONNEL EXPOSURE, RADIATION + CONTAMINATION + DOSE + DOSE CALCULATION, INTERNAL

4-17263
THOMPSON LJ
DYNAMIC PENETRATION OF SELECTED PROJECTILES INTO PARTICULATE MEDIA
SANDIA CORP., ALBUQUERQUE, N. MEXICO
SC-RR-66-376 +. 206 PAGES, JULY, 1966

AN OVERALL STUDY OF THE WHOLE PROCESS OF PROJECTILE PENETRATION INTO SOIL. THE GOVERNING DIFFERENTIAL EQUATIONS FOR THE SOIL TARGET MEDIUM ARE DEVELOPED, USING THE EQUATIONS OF MOTION AND THE CONTINUITY CONDITION. CONSTITUTIVE RELATIONSHIPS ARE DERIVED FROM MOHR-COULOMB THEORY FOR A RIGID PLASTIC MATERIAL AND FROM VISCOSITY THEORY. OTHER NECESSARY EQUATIONS ARE GENERATED FROM AN EXPERIMENTAL INVESTIGATION OF THE PENETRATION MECHANISM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*AEROSPACE SAFETY + PARTICULATE + REENTRY, ATMOSPHERIC + TESTING

4-17265 ALSO IN CATEGORY 5
STENGER FJ
EXPERIMENTAL FEASIBILITY STUDY OF WATER-FILLED CAPILLARY-PUMPED HEAT-TRANSFER LOOPS
NASA, LEWIS RESEARCH CENTER, CLEVELAND, OHIO
NASA-TM-X-1310 +. 32 PAGES, 14 FIGURES, 6 REFERENCES, NOVEMBER 1966

TWO CAPILLARY-PUMPED HEAT-TRANSFER LOOPS WERE TESTED TO STUDY THEIR GENERAL CHARACTERISTICS. WITH WATER AS A WORKING FLUID, THE LOOPS WERE OPERATED OVER A POWER INPUT RANGE FROM 240 TO 1000 W. IN A TEMPERATURE RANGE FROM 212 TO 291 F. THE FIRST LOOP, WITH A VAPOR DUCT 0.193 INCH IN INSIDE DIAMETER, WAS 70 FEET LONG AND OPERATED AT A MAXIMUM POWER INPUT OF 823 W. THE SECOND LOOP (0.180-IN.-I.D. VAPOR DUCT) WAS 52 FEET LONG AND OPERATED AT 700 W. IN A VARIETY OF ORIENTATIONS WITH RESPECT TO GRAVITY. ALTHOUGH CAPILLARY-PUMPED LOOPS MUST BE DESIGNED WITH CARE TO PREVENT PROBLEMS WITH NONCONDENSABLE GAS, THE TEST RESULTS SHOW THAT SUCH LOOPS CAN TRANSFER KILOWATTS OF HEAT OVER DISTANCES GREATER THAN 50 FEET. THE OPERATION OF THE FINAL TEST LOOP WAS NOT SENSITIVE TO ITS ORIENTATION WITH RESPECT TO GRAVITY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*FLOW, TUBE + *HEAT TRANSFER + *HEAT TRANSFER EXPERIMENT + FLOW BLOCKAGE

CATEGORY 5
ACCIDENT ANALYSIS

5-09955

POPPENDIEK HF + GREENE ND + SABIN CM + FEIGENBUTZ LV + MOURITZEN G + SCHWARTZ PE + CONNELLY DJ + MORTON WA
HIGH ACCELERATION FIELD HEAT TRANSFER FOR AUXILIARY SPACE NUCLEAR POWER SYSTEMS. ANNUAL TECHNICAL REPORT,
SEPTEMBER 1, 1964 - AUGUST 31, 1965
GEOSCIENCE LTD., SOLANA BEACH, CALIFORNIA
SAN-409-28 + GLR-41 +. 123 PAGES, REFERENCES, CFSTI, \$4.00 CY, \$0.75 MN

THIS REPORT PRESENTS THE RESULTS OF FUNDAMENTAL STUDIES OF MOMENTUM AND HEAT-EXCHANGE PROCESSES IN LIQUID-METAL BOILING SYSTEMS CONDUCTED BY GEOSCIENCE LTD., UNDER SPONSORSHIP OF THE U. S. ATOMIC ENERGY COMMISSION. IN THIS WORK, EMPHASIS WAS PLACED UPON HIGH-ACCELERATION FIELD-BOILING AND HELICAL-FLOW PHASE SEPARATION, WITH POTASSIUM AS THE WORKING FLUID. EXPERIMENTS WERE RUN UNDER NEARLY UNIFORM WALL-HEAT-FLUX BOUNDARY CONDITIONS.

*HEAT TRANSFER, BOILING + *METAL, LIQUID + HEAT TRANSFER + HEAT TRANSFER ANALYSIS + POTASSIUM

5-11169

CHO E + ELWELL J + JEPSON P + SPRANKLE M
HYDRODYNAMIC STABILITY OF NATURAL CIRCULATION BOILING SYSTEM. VOL II. COMPUTER PROGRAM DESCRIPTIONS
TRW SYSTEMS. REDONDO BEACH, CALIFORNIA
STL-372-14(2) +. 238 PAGES, JUNE 30, 1965, CFSTI, \$6.00 CY, \$1.25 MN

THIS IS THE SECOND PART OF A TWO-PART REPORT ON BOILING WATER REACTOR STABILITY MODELS. PART I, HYDRODYNAMIC STABILITY OF NATURAL CIRCULATION BOILING SYSTEMS - A COMPARATIVE STUDY OF ANALYTICAL MODELS AND EXPERIMENTAL DATA, L. G. NEAL AND S. M. ZIVI, STL 372-14(1), CONTAINS THE ANALYSIS OF EXISTING MATHEMATICAL MODELS FOR DESCRIBING THE TRANSIENT BEHAVIOR OF A BOILING NATURAL CIRCULATION REACTOR (OR LOOP). THE PRESENT VOLUME CONTAINS THE COMPUTER PROGRAMS DEVELOPED TO EVALUATE THESE MODELS. THE PURPOSE OF THIS STUDY IS TO EVALUATE THE RELIABILITY AND ACCURACY OF NUMEROUS MODELS BY COMPARING THE PREDICTIONS OF THE VARIOUS MODELS WITH EXPERIMENTAL DATA FROM AS MANY SOURCES AS IS PRACTICAL. MOST OF THE MODELS REQUIRE A DIGITAL COMPUTER FOR EVALUATION, AND EXCEPT FOR ONE OR TWO MODELS, THE AUTHORS DO NOT PROVIDE A PROGRAM OR A SPECIFIC NUMERICAL PROCEDURE IN THEIR PUBLICATIONS. THEREFORE, A MAJOR OBSTACLE TO THE APPLICATION OF THESE MODELS IN DESIGNING REACTORS AND ASSESSING THEIR BEHAVIOR HAS BEEN THE REDUCTION OF THE MODEL TO A WORKABLE PROGRAM. THE PROGRAMS DEVELOPED IN THIS STUDY ARE PRESENTED HERE WITH THE INTENTION OF FACILITATING THE UTILIZATION OF ALL THE MODELS INVESTIGATED.

*COMPUTER, DIGITAL + *FLOW STABILITY + *HEAT TRANSFER, BOILING + HEAT TRANSFER + HEAT TRANSFER, NATURAL CONVECTION

5-11461

SPIGT CL
CHARACTERISTICS OF A BOILING WATER CHANNEL WITH NATURAL CIRCULATION
TECHNISCHE HOOGESCHOOL, EINDHOVEN, NETHERLANDS
NP-1612P +. 157 PAGES, FIGURES, TABLES, REFERENCES, 1966, DEP. MN

THE RESULTS OF AN EXPERIMENTAL AND THEORETICAL STUDY ARE REPORTED ON THE HYDRAULIC CHARACTERISTICS OF A SINGLE COOLANT CHANNEL OF SIMPLE ANNULAR GEOMETRY IN A BOILING-WATER REACTOR, WITH THE MAIN EMPHASIS ON THE STABILITY CHARACTERISTICS OF THE FLOW PROCESS IN SUCH A CHANNEL. UNDER CONDITIONS OF NATURAL CIRCULATION, MOST ATTENTION WAS PAID TO - (A) THE DETERMINATION OF THE LIQUID FLOW RATE AT THE INLET AND THE VOID AND PRESSURE DISTRIBUTION ALONG THE HEIGHT OF THE COOLANT CHANNEL UNDER STEADY-STATE CONDITIONS, (B) THE OCCURRENCE AND CHARACTERIZATION OF SPONTANEOUS FLOW INSTABILITIES, (C) THE DETERMINATION OF THE STABILITY CHARACTERISTICS OF A STEADY STATE BY MEANS OF A FREQUENCY-RESPONSE ANALYSIS.

*FLOW, TUBE + *HEAT TRANSFER, BOILING + *HEAT TRANSFER, NATURAL CONVECTION + *WATER, GENERAL + FLOW STABILITY + HEAT TRANSFER

5-11467

PESKIN RL + BRILLER R
CONVECTIVE HEAT TRANSFER TO GAS-SOLIDS SUSPENSIONS AT A REYNOLDS NUMBER OF 130,000
RUTGERS UNIVERSITY
NYO-2930-7 +. 77 PAGES, FIGURES, TABLES, MAY 1966, CFSTI \$3.00 CY, \$0.75 MN

AN EXPERIMENT WAS PERFORMED TO DETERMINE THE CONVECTIVE HEAT-TRANSFER COEFFICIENT TO HEATED AND COOLED GAS-SOLIDS SUSPENSIONS AT A REYNOLDS NUMBER OF 130,000. PARTICLE SIZE AND SOLID LOADING RATIO WERE VARIED. HEAT GAINED OR LOST BY THE SUSPENSION WAS MEASURED TRaversing THE STREAM AT VARIOUS POSITIONS WITH SPECIALLY DESIGNED PROBES THAT MEASURED THE TEMPERATURE OF THE AIR AND THE SOLIDS LOCALLY. THE TEMPERATURE PROFILES THUS MEASURED, ALONG WITH FLOW RATES OF SOLIDS PLUS THE TEMPERATURE OF THE AIR AND THE PIPE-WALL DETERMINED THE HEAT-TRANSFER COEFFICIENT. THE RESULTS SHOWED THAT FOR THIS HIGH A REYNOLDS NUMBER, THE HEAT-TRANSFER COEFFICIENT FOR THE SUSPENSION APPEARS TO EQUAL THAT OF AIR ALONE AT THE SAME REYNOLDS NUMBER. THIS EFFECT IS INDEPENDENT OF SOLID LOADING RATIO, HEATING OR COOLING, AND PARTICLE SIZE (BETWEEN .0011 AND .0058 IN. IN DIAMETER).

*FLUIDIZED BED + *PARTICULATE + HEAT TRANSFER + HEAT TRANSFER CORRELATION + HEAT TRANSFER EXPERIMENT

CATEGORY 5
ACCIDENT ANALYSIS

5-14734 ALSO IN CATEGORIES 14 AND 17
RAY JW + WOOTON RO + BARNES RH
INVESTIGATION OF TRITIUM GENERATION AND RELEASE IN PM NUCLEAR POWER PLANTS
BATTELLE MEMORIAL INSTITUTE
BMI-1787 +. 121 PAGES, OCTOBER 31, 1966

THE TERNARY FISSION PROCESS IS THE MAJOR SOURCE OF TRITIUM, FOLLOWING USE OF LITHIUM-BASED RESIN IN 1963 GENERATED AT THE RATE OF 8.7×10 TO THE 5TH TRITONS PER FISSION. THE RESULTANT TRITIUM DIFFUSES THROUGH THE CLAD. WATER SAMPLES WERE ASSAYED, AND A MATHEMATICAL MODEL DESCRIBING TRITIUM GENERATION AND MOVEMENT THROUGHOUT PM PLANTS WAS DEVELOPED. THE RESULTING PROGRAM, TRICON, WAS EMPLOYED TO CALCULATE TRITIUM CONCENTRATIONS AT PM-3A DURING 1965. AGREEMENT BETWEEN CALCULATED AND MEASURED CONCENTRATIONS WAS GOOD. POTENTIAL HEALTH HAZARDS FROM BOTH AIRBORNE AND WATERBORNE TRITIUM WERE CALCULATED. THE MOST ECONOMICAL SOLUTION AT PM-1 APPEARS TO BE THE REMOVAL OF TRITIATED EFFLUENT FROM THE PLANT SITE AT \$1.40 PER GALLON, AND AT PM-3A TO BE THE EXPELLING OF TRITIATED EFFLUENT WATER TO AN ISOLATED AREA WHERE IT WILL FREEZE AND SUBLIME IN SAFE CONCENTRATIONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

*MAIN COOLING SYSTEM + *TRITIUM + COMPUTER PROGRAM + COMPUTER, DIGITAL + HAZARDS ANALYSIS + PM 1 (PORTABLE MEDIUM NUCLEAR POWER PLANT) + PM 3A (PORTABLE MEDIUM NUCLEAR POWER PLANT) + REACTOR, ARMY + REACTOR, PRESSURIZED WATER + WASTE DISPOSAL, LIQUID

5-14783 ALSO IN CATEGORIES 6 AND 7
DICKFMAN CE + ROBINSON LE + STEWART R
PHOTOGRAPHIC TREAT FAST-REACTOR SAFETY EXPERIMENTS ON IRRADIATED-OXIDE PINS
GENERAL ELECTRIC, ATOMIC POWER EQUIPMENT
1 PAGE, 2 REFERENCES, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PA., OCT. 30-NOVEMBER 3, 1966, ANS TRANS. 9(2), PAGE 396, (NOVEMBER 1966)

PRE-IRRADIATED FAST-REACTOR OXIDE FUEL PINS (DESCRIBED IN DETAIL) WERE SUBJECTED TO TREAT TRANSIENTS OF VARYING SEVERITY, UP TO AND INCLUDING CLADDING FAILURE AND ATTAINMENT OF FUEL MELTING POINTS (300 CAL PER GRAM). IN SPITE OF FISSION-FRAGMENT GASES, FUEL REMAINED CYLINDRICAL.

*OXIDE + *TREAT (TRANSIENT TEST REACTOR FACILITY) + FAILURE, FUEL ELEMENT + REACTOR, FAST + REACTOR, GRAPHITE MODERATED + REACTOR, TEST

5-15231
MAYINGER F + SCHAD O + WEISS E
STUDY ON BURNOUT HEAT FLUX IN BOILING WATER. QUARTERLY REPORT NO. 18, JANUARY 1 - FEBRUARY 28, 1966
MASCHINENFABRIK AUGSBURG-NUERNBERG A.G., NUERNBERG, WEST GERMANY
EURAE-1524 + EUR-2817 +. 32 PAGES, REFERENCES, MARCH 1966

A NUMBER OF MEASUREMENTS WERE PERFORMED WHICH SHOWED THAT ORIFICING AT THE INLET OF A HIGHLY STRESSED HEATING CHANNEL IS A RELIABLE AND EFFECTIVE WAY OF PREVENTING PULSATING BURNOUT. SINCE INCREASED ORIFICING REQUIRES ADDITIONAL PUMP POWER, EVERY EFFORT IS BEING MADE TO KEEP THIS PRESSURE DROP, WHICH IS PRODUCED FOR REASONS OF PULSATION SAFETY, AS LOW AS POSSIBLE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*BURNOUT HEAT FLUX + *HEAT TRANSFER + *HEAT TRANSFER EXPERIMENT + EURATOM + FLOW ORIFICE OR RESTRICTION + FLOW, PULSATING + GERMANY

5-15541
TONG LS
PREDICTION OF DEPARTURE FROM NUCLEATE BOILING FOR AN AXIALLY NON-UNIFORM HEAT FLUX DISTRIBUTION
WESTINGHOUSE ELECTRIC CORP., PITTSBURGH, PA.
8 PAGES, 7 FIGURES, 5 REFERENCES, JOURNAL OF NUCLEAR ENERGY 21(3), PAGES 241-248 (MARCH 1967)

AN EMPIRICAL CORRELATION WAS DEVELOPED FOR PREDICTING THE DEPARTURE FROM NUCLEATE BOILING (DNB) USING DATA FOR AN AXIALLY NONUNIFORM HEAT-FLUX DISTRIBUTION. THIS CORRELATION IS RECOMMENDED FOR USE IN PREDICTING THE DNB FLUX IN A REACTOR DESIGN. PROCEDURES WERE FORMULATED FOR PREDICTING THE LOCAL DNB FLUX AND THE DNB LOCATION FOR A NONUNIFORM DISTRIBUTION. THE PREDICTED RESULTS WERE COMPARED AND AGREE CLOSELY WITH THE EXISTING NONUNIFORM FLUX DNB DATA.

*DNB (DEPARTURE FROM NUCLEATE BOILING) + FLOW THEORY AND EXPERIMENTS + FLOW, AXIAL + REACTOR COOLANT + REACTOR, BOILING WATER + REACTOR, PRESSURIZED WATER

5-15590 ALSO IN CATEGORY 18
QUESTION 9.3--PLUTONIUM INVENTORY AT END OF CORE LIFE AND POSSIBLE EXPOSURE FROM FUEL VAPORIZATION

CATEGORY 5
ACCIDENT ANALYSIS

5-15590 *CONTINUED*

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

2 PAGES, 1 REFERENCE, 1 TABLE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

PROVIDE THE ISOTOPIC PLUTONIUM INVENTORY AT THE END OF CORE LIFE, AND, USING THE ABOVE DIFFUSION PARAMETERS (IN 9.2), DETERMINE THE EXPOSURE (IN TERMS OF MICROCURIES INHALED) THAT COULD RESULT FROM THE VAPORIZATION OF FUEL AS A RESULT OF THE DESIGN-BASIS ACCIDENT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF COOLANT + HAZARDS ANALYSIS + PALISADES POINT + PLUTONIUM + REACTOR, PRESSURIZED WATER

5-15610

ALSO IN CATEGORY 18

QUESTION 10.3--SIZING OF SAFETY VALVES ON PRIMARY COOLANT AND STEAM SYSTEMS

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT IS THE BASIS FOR SIZING THE SAFETY VALVES ON THE PRIMARY COOLANT SYSTEM AND STEAM SYSTEM.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + DESIGN CRITERIA + PALISADES POINT + REACTOR, PRESSURIZED WATER

5-15612

ALSO IN CATEGORY 18

QUESTION 10.5--MAXIMUM ALLOWABLE RADIOACTIVITY INVENTORY IN PRIMARY COOLANT SYSTEM

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

2 PAGES, 1 TABLE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT IS THE BASIS FOR SETTING THE MAXIMUM ALLOWABLE RADIOACTIVITY INVENTORY CIRCULATING IN THE PRIMARY SYSTEM. WHAT DOES THE PRIMARY-COOLANT ACTIVITY CORRESPONDING TO 1% FAILED FUEL ELEMENTS USED IN THE ACCIDENT ANALYSIS MEAN IN TERMS OF ISOTOPIC INVENTORY OR CONCENTRATION IN THE PRIMARY SYSTEM.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + ACTIVITY BUILDUP + FISSION PRODUCT RETENTION + MAIN COOLING SYSTEM + PALISADES POINT + REACTOR, PRESSURIZED WATER

5-15613

ALSO IN CATEGORY 18

QUESTION 10.6--MARGIN AGAINST FAILURE OF PRIMARY TO SECONDARY BARRIER IN STEAM GENERATORS

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

3 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

(A) ANALYZE THE MARGIN AGAINST FAILURE OF PRIMARY TO SECONDARY BARRIER IN STEAM GENERATORS TO BE ACHIEVED IN DESIGN, CONSIDERING SPECIFICATION OF ONE TRANSIENT IN WHICH NORMAL STEAM TEMPERATURES AND PRESSURES ARE MAINTAINED WHILE PRIMARY-SYSTEM SIDE IS REDUCED TO ATMOSPHERIC PRESSURE. (B) ANALYZE POSSIBILITY THAT DESIGN-BASIS ACCIDENT COULD CAUSE FAILURE OF STEAM GENERATORS, PRIMARY COOLANT CIRCULATION PUMPS, OR OTHER PRIMARY-SYSTEM COMPONENTS. (C) JUSTIFY LACK OF STEAM-LINE ISOLATION VALVES AT CONTAINMENT BOUNDARY. THESE ANALYSES SHOULD INCLUDE EFFECTS OF THE SUDDEN DEPRESSURIZATION, REACTION FORCES DUE TO PIPE BREAK, AND FORCES ON THE STEAM LINE AND ITS CONTAINMENT PENETRATION.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF COOLANT + FAILURE, PIPE + HEAT EXCHANGER + PALISADES POINT + REACTOR, PRESSURIZED WATER

5-15615

ALSO IN CATEGORY 18

QUESTION 10.8--ANALYSIS OF STEAM GENERATOR TUBE RUPTURE ACCIDENT

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT ARE THE RESULTS OF A DETAILED ANALYSIS OF THE STEAM-GENERATOR TUBE-RUPTURE ACCIDENT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF COOLANT + FAILURE, TUBING + HEAT EXCHANGER + PALISADES POINT + REACTOR, PRESSURIZED WATER

5-15616

ALSO IN CATEGORY 18

QUESTION 10.9--RUPTURE OF STEAM GENERATOR TUBES TO LIFT SAFETY VALVE OR CAUSE CLAD FAILURE

CATEGORY 5
ACCIDENT ANALYSIS

5-15616 *CONTINUED*

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET NO. 50-255

ABOUT HOW MANY STEAM-GENERATOR TUBES WOULD HAVE TO RUPTURE SIMULTANEOUSLY IN ORDER TO (1) LIFT A STEAM-SYSTEM SAFETY VALVE OR (2) CAUSE SIGNIFICANT FUEL-CLADDING FAILURES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF COOLANT + FAILURE, CLADDING + FAILURE, TUBING + HEAT EXCHANGER + PALISADES POINT + REACTOR, PRESSURIZED WATER + VALVE

5-15618

ALSO IN CATEGORY 18

QUESTION 10.11--STEAM LINE RUPTURE IN PIPE TUNNEL ADJACENT TO CONTROL BUILDING

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

2 PAGES OF CONSUMER POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

ANALYZE THE EFFECT OF A STEAM-LINE RUPTURE IN THE PIPE TUNNEL ADJACENT TO THE CONTROL BUILDING BREACHING THE SEPARATING WALL. CONSIDER REACTION FORCES, PRESSURE BUILDUP, OR MISSILES. COULD THE SWITCHGEAR AREAS, CABLE SPREADING AREA, AND/OR CONTROL ROOM BE DAMAGED OR MADE INACCESSIBLE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, STEAM LINE RUPTURE + PALISADES POINT + REACTOR, PRESSURIZED WATER

5-15660

ALSO IN CATEGORIES 18 AND 11

QUESTION 6.2--CONTAINMENT PROTECTION FROM EXTERNAL MISSILES SPECIFICALLY TURBINE ROTOR FAILURE

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

3 PAGES, 1 FIGURE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT ARE CRITERIA FOR PROTECTION AGAINST EXTERNAL MISSILES. MISSILES FROM TURBINE-ROTOR FAILURE COULD RESULT IN A SPECTRUM OF MISSILES OF CONSIDERABLE VELOCITY AND MASS. PROVIDE THIS SPECTRUM. DETERMINE AMOUNT OF IMPACT ENERGY THAT COULD BE INFLICTED ON CONTAINMENT STRUCTURE. CONSIDER VARIOUS LOCATIONS OF IMPACT, AND EFFECTS DUE TO TURBINE-AXIS ORIENTATION RELATIVE TO CONTAINMENT BUILDING. WITHIN THE ABOVE SPECTRUM, WHAT IMPACT ENERGY WOULD INFLICT SUFFICIENT DAMAGE TO THE PRESTRESSING TENDONS AT POINT OF IMPACT SO AS TO LEAD TO PROGRESSIVE FAILURE AND CONTAINMENT STRUCTURE COLLAPSE. WHAT IS MARGIN OF SAFETY FOR THE CONTAINMENT STRUCTURAL INTEGRITY. DISCUSS LIKELIHOOD OF TURBINE-ROTOR FAILURE WITH RESPECT TO DESIGN, SELECTION OF MATERIALS, QUALITY CONTROL, ETC.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + MISSILE GENERATION AND PROTECTION + PALISADES POINT + REACTOR, PRESSURIZED WATER

5-15674

ALSO IN CATEGORIES 6 AND 18

SURRY POWER STATION UNITS 1 AND 2 PRELIMINARY SAFETY ANALYSIS REPORT, PART B

VIRGINIA ELECTRIC AND POWER COMPANY

170 PAGES, FIGURES, TABLES, 1967, DOCKET NO. 50-280 AND 50-281

VOLUME 1 CONTAINS THE FOLLOWING CHAPTERS - (1) INTRODUCTION, (2) SITE, AND (3) REACTOR. A TABLE COMPARES 152 SIGNIFICANT DATA ITEMS WITH INDIAN POINT 2 AND BURLINGTON 1. AEC CONSTRUCTION PERMIT CRITERIA ARE DISCUSSED, AND SHARED FACILITIES ARE NOTED. CONDENSER COOLING WATER IS LIFTED FROM DOWNSTREAM SIDE OF SITE TO AN INTAKE CANAL (PROVIDING A SOURCE OF WATER FOR EMERGENCIES) AND FLOWS BY GRAVITY THROUGH THE CONDENSERS TO THE UPSTREAM SIDE OF THE SITE. SEPARATE METEOROLOGY REPORT (NUS-333, DECEMBER 66). FAULT FORMATIONS END 50 MILES FROM SITE. REACTOR EVALUATED FOR 2546 MW(TH), WHICH CORRESPONDS TO FULL TURBINE RATING OF 846 MW(E). LENGTHY DISCUSSION OF REACTIVITY AND DNB CALCULATIONAL METHODS.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*SAFETY ANALYSIS REPORT, PRELIMINARY + AEC CONSTRUCTION PERMIT CRITERIA + ANALYTICAL MODEL + DNB (DEPARTURE FROM NUCLEATE BOILING) + EMERGENCY COOLING CONSIDERATIONS + HEAT SINK + REACTIVITY EFFECT + REACTOR, PRESSURIZED WATER + SURRY 1 AND 2

5-15717

ROUPE J

THE OSCILLATORY BEHAVIOR OF HEATED CHANNELS--AN ANALYSIS OF THE DENSITY EFFECT. PART II. THE OSCILLATIONS THRESHOLDS (LINEARIZED ANALYSIS).

COMMISSARIAT A L'ENERGIE ATOMIQUE, GRENOBLE, FRANCE

CEA-R-3049(PT. 2) +. 39 PAGES, 2 FIGURES, 1 TABLE, SEPTEMBER 1966

THE ONSET OF THE OSCILLATORY BEHAVIOR OF HEATED CHANNELS WAS STUDIED IN TERMS OF THE SO-CALLED DENSITY EFFECT, A CONSEQUENCE OF THE PHYSICAL RELATIONSHIP BETWEEN ENTHALPY AND DENSITY OF THE FLUID. THE THRESHOLD EQUATIONS ARE DERIVED AFTER LINEARIZATION OF THE EQUATIONS OBTAINED

CATEGORY 5
ACCIDENT ANALYSIS

5-15717 *CONTINUED*

IN PART I. THEY CAN BE SOLVED RIGOROUSLY BY NUMERICAL METHODS TO YIELD A RELATION BETWEEN THE DESCRIBING PARAMETERS AT THE ONSET OF OSCILLATIONS AND THE FREQUENCY OF THE OSCILLATIONS. BY COMPARING THE RESULTS PREDICTED BY THE MODEL WITH THE BEHAVIOR OF ACTUAL SYSTEMS, THE DENSITY EFFECT IS VERY OFTEN SHOWN TO BE THE ACTUAL CAUSE OF OSCILLATORY BEHAVIORS.

AVAILABILITY - MICROCARD EDITIONS, INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN 54669

*FLOW STABILITY + FLOW, TWO PHASE + FLUCTUATION + HEAT TRANSFER + HEAT TRANSFER, BOILING

5-15719

DAVIES AL + POTTER R

HYDRAULIC STABILITY AN ANALYSIS OF THE CAUSES OF UNSTABLE FLOW IN PARALLEL CHANNELS
ATOMIC ENERGY ESTABLISHMENT, WINFRITH, DORCHESTER, DORSET, ENGLAND
AEEW-R-446 +. 34 PAGES, 9 FIGURES, 8 REFERENCES, APRIL 1966

ATTENTION WAS FOCUSED ON OSCILLATORY INSTABILITY IN A BANK OF PARALLEL CHANNELS, BUT THE THEORY WOULD ALSO COVER STATIC INSTABILITIES AND RECIRCULATING LOOPS. THE EXISTENCE OF UNSTABLE MODES WAS A CONSEQUENCE OF THE PHASE LAGS WHICH EXIST BETWEEN CHANGES OF INLET VELOCITY AND THE SUBSEQUENT FLOW CHANGES IN THE TWO PHASE OR SUPERHEAT SECTIONS OF A CIRCUIT. THIS MAKES IT POSSIBLE FOR FLOW CHANGES TO OCCUR AT CERTAIN FREQUENCIES WHICH DO NOT GIVE RISE TO CHANGES IN THE OVERALL PRESSURE DROP. A NUMBER OF FACTORS WHICH CAN DOMINATE IN CAUSING UNSTABLE FLOW DEPEND ON DESIGN AND PERFORMANCE. EXAMPLES HAVE BEEN FOUND WHERE INSTABILITY HAS BEEN CAUSED BY TWO-PHASE GRAVITY HEAD, TWO-PHASE FRICTION LOSS, AND SUPERHEAT-FRICTION LOSS. STABILIZATION ALWAYS APPEARS TO BE POSSIBLE IF THE SINGLE PHASE PRESSURE LOSS IS INCREASED SUFFICIENTLY, FOR EXAMPLE BY GAGGING THE INLET.

AVAILABILITY - UNITED KINGDOM ATOMIC ENERGY AUTHORITY, 11 CHARLES II STREET, LONDON, S.W.1

*FLOW STABILITY + FLOW THEORY AND EXPERIMENTS + FLUCTUATION + HEAT EXCHANGER + HEAT TRANSFER

5-15710

MAZIEV YM

ON THE CALCULATION OF THERMAL CONDUCTIVITY OF COMPRESSED GASES.

NO-TR-1224 +. 8 PAGES, TABLES, TRANSLATED FROM INZHERNO-FIZIRCHESKII ZHURNAL 7(2), PAGES 45-47, 1964

A FUNCTIONAL RELATIONSHIP IS PRESENTED WHICH ENABLES THE THERMAL CONDUCTIVITY OF COMPRESSED GASES TO BE CALCULATED FOR VARIOUS DENSITIES, USING ONLY THE CRITICAL TEMPERATURE AND PRESSURE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*THERMAL PROPERTY + *THERMODYNAMICS + HEAT TRANSFER + HEAT TRANSFER CORRELATION

5-15720

LOVE TJ + GILBERT JS

EXPERIMENTAL STUDY OF RADIATIVE HEAT TRANSFER BETWEEN PARALLEL PLATES

UNIVERSITY OF OKLAHOMA, NORMAN

ARL-66-0103 +. 125 PAGES, 42 FIGURES, 12 TABLES, JUNE, 1966

AN APPARATUS WAS BUILT FOR DETERMINING THE RADIATIVE HEAT TRANSFER BETWEEN PARALLEL PLATES. TWO PLATES, APPROXIMATELY TWELVE INCHES SQUARE, WERE MOUNTED IN A VACUUM SYSTEM. ONE PLATE WAS ELECTRICALLY HEATED AND THE OTHER WAS COOLED BY CIRCULATING WATER. A GUARDED HEATER SECTION WAS CONSTRUCTED AT THE CENTER OF THE HOT PLATE SO THAT THE RADIATIVE FLUX AT THE CENTER COULD BE METERED. THE DISTANCE SEPARATING THE PLATES WAS ADJUSTABLE. BOTH PLATES WERE FACED WITH PREPARED STAINLESS STEEL IN ORDER TO STANDARDIZE THE MEASUREMENTS. THE SURFACE WAS SANDBLASTED SO THAT THE RADIATION WAS APPROXIMATELY DIFFUSE. MEASUREMENTS WERE MADE OVER A RANGE OF HOT-PLATE TEMPERATURES RANGING UP TO APPROXIMATELY 750 F. PLATE SPACINGS RANGED FROM 0.5 INCH TO 3.0 INCHES. MEASUREMENTS WERE IN GOOD AGREEMENT WITH COMPUTATIONS BASED ON THE ASSUMPTION OF INFINITE GRAY PLATES FOR THE 0.5-INCH SPACING. BY ENCLOSING THE EDGES OF THE PLATES WITH FOIL REFLECTORS, THE MEASUREMENTS INDICATED AGREEMENT WITH THE INFINITE-GRAY-PLATE ASSUMPTION AT 1.0-INCH SEPARATION AND REASONABLE AGREEMENT TO 3.0-INCH SEPARATION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*HEAT TRANSFER, RADIANT + HEAT TRANSFER + HEAT TRANSFER EXPERIMENT + PARTICULATE

5-15721

STERMAN LS + MIKHAILOV VO

DETERMINATION OF CRITICAL HEAT FLOWS DURING THE BOILING OF A HIGH-BOILING HEAT TRANSFER AGENT IN PIPES

RSIC-485 +. 13 PAGES, 4 FIGURES, 2 TABLES, TRANSLATED FROM TIPOENERGETIKA 10(2), PAGES 82-87 (1963)

RESULTS ARE GIVEN OF EXPERIMENTS ON THE DETERMINATION OF THE VALUES OF CRITICAL HEAT FLOWS DURING THE FLOW OF MONOISOPROPYLDIPHENYL IN PIPES. IT IS SHOWN THAT THE KNOWN FORMULAS CANNOT BE USED TO DETERMINE THESE VALUES DURING THE SURFACE BOILING OF MONOISOPROPYLDIPHENYL

CATEGORY 5
ACCIDENT ANALYSIS

5-15721 *CONTINUED*
AND CERTAIN OTHER ORGANIC LIQUIDS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*BURNOUT HEAT FLUX + *HEAT TRANSFER, BOILING + FLOW, TUBE + HEAT TRANSFER + ORGANIC COOLANT

5-15722
GREY J + WILLIAMS PM + FRADKIN DP
MIXING AND HEAT TRANSFER OF AN ARGON ARCJET WITH A COAXIAL FLOW OF COLD HELIUM. FINAL REPORT
PRINCETON UNIVERSITY, N. J.
N-66-37643 + NASA-CR-54432 +. 66 PAGES, 30 FIGURES, 1 TABLE, 11 REFERENCES, OCT. 30, 1964

THE MIXING OF A SUBSONIC, 1-CM-DIAM ARGON ARC-JET WITH A COAXIAL FLOW OF COLD HELIUM IN A 3-IN-DIAM DUCT WAS STUDIED VISUALLY BY SCHLIEREN PHOTOGRAPHY AND QUANTITATIVELY WITH A 0.075-IN-DIAM CALORIMETRIC AND SAMPLING PROBE. THE PRINCIPAL EFFECT OF THE CONTROLLED DUCTED COAXIAL FLOW WAS TO HASTEN MIXING BY CAUSING EARLIER TRANSITION OF THE ARC-JET TO TURBULENCE. THE DOMINANT MIXING PROCESS FOR BOTH THE FREE AND DUCTED JETS WAS FOUND TO BE THE INFLOW OF HELIUM INTO THE ARGON JET, THE EFFECTS OF RADIATION AND IONIZATION BEING NEGLIGIBLE. THE RESULTS INDICATE POTENTIAL FEASIBILITY OF THE COAXIAL GASEOUS-CORE NUCLEAR ROCKET. THE OBSERVED MECHANISM OF JET COOLING AND MIXING, WHICH CONSISTS PRINCIPALLY OF AN INFLOW OF LIGHT HELIUM ATOMS RATHER THAN THE DISPERSION OF THE HEAVIER ARGON ATOMS, IS CONSISTENT WITH THE REQUIREMENTS FOR RETENTION OF GASEOUS NUCLEAR FUEL IN THIS CONCEPT. IN THE ROCKET, HOWEVER, THE COAXIAL LIGHT-GAS VELOCITY IS SUBSTANTIALLY GREATER THAN THE CORE VELOCITY, AND IT IS THIS CASE WHICH WILL BE INVESTIGATED IN FUTURE WORK, WITH THE OBJECT OF DETERMINING WHETHER THE LIGHT-GAS INFLOW MECHANISM WILL CONTINUE TO BE OBSERVED UNDER THESE CONDITIONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

ANNULUS + ELECTRIC ARC + FLOW THEORY AND EXPERIMENTS + FLOW, AXIAL + HEAT TRANSFER

5-15724
QUINN EP
TRANSITION BOILING HEAT TRANSFER PROGRAM. 8TH QUARTERLY PROGRESS REPORT, OCTOBER-DECEMBER 1964
GENERAL ELECTRIC CO., SAN JOSE
GEAP-4769 + EURAEC-1300 +. 28 PAGES, JANUARY 1, 1965

THIS IS ONE OF A SERIES OF PROGRESS REPORTS ON THE FOLLOWING SUBJECTS - CRITICAL HEAT FLUX, TRANSIENT SURFACE TEMPERATURE CHARACTERISTICS ASSOCIATED WITH THE TRANSITION BOILING REGIME, CONVECTION HEAT-TRANSFER COEFFICIENT IN STABLE FILM BOILING, AND THE EFFECT OF GEOMETRICAL DEVICES ON MINIMIZING TRANSITION BOILING TEMPERATURE FLUCTUATIONS AND INCREASING FILM-BOILING HEAT-TRANSFER COEFFICIENTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*BURNOUT HEAT FLUX + FILM, GENERAL + HEAT TRANSFER + HEAT TRANSFER, BOILING + TEMPERATURE TRANSIENT

5-15725
RAO KV + SARMA PK
HEAT TRANSFER IN FORCED CONVECTION WITH TWISTED STRIPS AS SWIRL GENERATORS
ANDHRA UNIVERSITY, WALTAIR
4 PAGES, 6 FIGURES, 8 REFERENCES, INDIAN JOURNAL OF TECHNOLOGY 4(6), PAGES 169-172 (JUNE 1966)

THE PERFORMANCE OF TWISTED STEEL STRIPS OF DIFFERENT PITCH-TO-DIAMETER RATIOS AS TURBULENCE PROMOTERS IN FORCED-CONVECTION HEAT TRANSFER WAS INVESTIGATED. THE HEAT-TRANSFER COEFFICIENT WAS A FUNCTION OF PITCH AND REYNOLDS NUMBER, ITS VALUE INCREASING WITH INCREASE IN THE NUMBER OF TWISTS UP TO A PARTICULAR VALUE.

*HEAT TRANSFER AUGMENTATION + HEAT TRANSFER + HEAT TRANSFER, CONVECTION

5-15726
SASTRI NV + KULCAR RN
HEAT AND MASS TRANSFER IN SOLID CONDENSATION
INDIAN INSTITUTE OF SCIENCE
4 PAGES, 8 FIGURES, 6 REFERENCES, INDIAN JOURNAL OF TECHNOLOGY 3(12) PAGES 384-387 (DEC. 1965)

THE VALUES OF BED-TO-WALL HEAT- AND MASS-TRANSFER COEFFICIENTS FOR THE CONDENSATION OF NAPHTHALENE VAPOURS TO SOLID STATE IN AN EXTERNALLY COOLED FLUIDIZED BED WERE EVALUATED. WITH INCREASE IN THE FLOW RATE OF GASES THROUGH THE BED, MAXIMUM TRANSFER COEFFICIENTS ARE EXHIBITED FOR A PARTICULAR PARTICLE SIZE.

*HEAT TRANSFER CORRELATION + CONDENSATION + FLUIDIZED BED + HEAT TRANSFER + MASS TRANSFER

CATEGORY 5
ACCIDENT ANALYSIS

5-15727
SCHERRER MG + SMITH HF
EXPERIMENTAL STUDY OF THE FLOW STRUCTURE AND HEAT TRANSFER FOR A REARWARD FACING STEP IN SUPERSONIC FLOW
AEROSPACE RESEARCH LABORATORIES + UNIVERSITY OF DAYTON
8 PAGES, 12 FIGURES, 8 REFERENCES, ISRAEL JOURNAL OF TECHNOLOGY 4(1), PAGES 55-62 (FEB. 1966)

AN EXPERIMENTAL STUDY OF A REARWARD-FACING STEP IN SUPERSONIC FLOW DISCLOSED THE PRESENCE OF A RELATIVELY STRONG LIP-SHOCK AT THE HIGHER FREE STREAM PRESSURES OF THE TEST AS WELL AS SOME UPSTREAM EFFECTS WHICH NEED ATTENTION. AMONG OTHER THINGS, THE PRANDTL-MEYER EXPANSION FAN USUALLY USED IN SIMPLIFIED ANALYTICAL MODELS OF THE FLOW IS CLEARLY NOT APPLICABLE AND IT APPEARS THAT A MORE COMPLEX MODEL MUST BE DEVELOPED. THIS PAPER PRESENTS RESULTS ON THE DOWN-STREAM PART, AND ALSO SOME HEAT-TRANSFER RESULTS IN THE REATTACHMENT SECTION. A PRINCIPAL POINT OF INTEREST NOTED AT THIS TIME IS THE APPEARANCE OF A CRITICAL REYNOLDS NUMBER BASED ON THE STEP-HEIGHT H . A REPRESENTATIVE CASE IS PRESENTED SHOWING SOME OF THE FLOW THROUGH THE LIP-SHOCK, THE REATTACHMENT SHOCK, AND ALSO THE SLIP-LINE FLOW EMERGING FROM THE INTERSECTION OF THESE SHOCKS.

*FLOW, HIGH SPEED + BOUNDARY LAYER + FLOW THEORY AND EXPERIMENTS + HEAT TRANSFER

5-15728
SISSOM LE + JACKSON TW
HEAT EXCHANGE IN FLUID-DENSE PARTICLE MOVING BEDS
TENNESSEE TECHNOLOGICAL UNIVERSITY + GEORGIA INSTITUTE OF TECHNOLOGY, ATLANTA, GA.
6 PAGES, 8 FIGURES, 2 TABLES, 12 REFERENCES, ASME JOURNAL OF HEAT TRANSFER 89(1), SERIES C, PAGES 1-6 (FEBRUARY 1967)

THE CHARACTERISTICS OF NONISOTHERMAL TWO-PHASE STEADY FLOW IN A VERTICAL PIPE OF CONSTANT AREA WERE INVESTIGATED EXPERIMENTALLY. TEMPERATURE AND PRESSURE DISTRIBUTIONS WERE DETERMINED, AND THE VOID FRACTION WAS MEASURED UNDER FLOWING CONDITIONS. ALUMINUM GRANULES OF 0.027 IN. MEAN DIAMETER FLOWED WITH GRAVITY WHILE HEATED AIR WAS FORCED COUNTERCURRENTLY TO THE SOLIDS FLOW. REYNOLDS NUMBERS, BASED ON THE SUPERFICIAL AIR VELOCITY, FROM 10 TO 50 WERE INVESTIGATED. THE SOLIDS FLOW RATE WAS VARIED FROM 472 TO 18,900 LBM/HR-SQ FT. UTILIZING THE REGENERATION PRINCIPLE, THE EFFECTIVE LENGTH OF A FLUID-TO-PARTICLE HEAT EXCHANGER WAS DETERMINED. ITS SMALL VALUE AND THE LARGE SURFACE AREA TO VOLUME RATIO (2980 SQ FT/CU FT) INDICATE THAT SUCH A HEAT EXCHANGER WOULD BE VERY COMPACT.

*FLUIDIZED BED + *HEAT EXCHANGER + HEAT TRANSFER + PARTICULATE

5-15729
STEVERDING B
BOUNDARY-LAYER COOLING BY SPATTERED PARTICLES
PHYSICAL SCIENCES LABORATORY OF THE ARMY MISSILE COMMAND, REDSTONE ARSENAL, ALA.
4 PAGES, 5 FIGURES, 8 REFERENCES, ASME JOURNAL OF HEAT TRANSFER 89(1), SERIES C, PAGES 7-10 (FEBRUARY 1967)

THE SPATTERING OF ABLATING LIQUID FILMS WAS STUDIED UNDER THE CONDITION THAT GAS BUBBLES PENETRATE THE LIQUID FILM. THE CHARACTERISTIC MATERIAL PARAMETER FOR SPATTERING IS THE SURFACE TENSION. CONTRARY TO GENERAL BELIEF, IT WILL BE SHOWN THAT SPATTERING WILL NOT ALWAYS DECREASE ABLATION EFFECTIVENESS AND THAT, UNDER CERTAIN IDEAL CONDITIONS, EFFECTIVE BOUNDARY-LAYER COOLING BY SPATTERED PARTICLES MAY BE ACHIEVED. IDEAL SPATTERING CAN ONLY OCCUR WHEN THE SURFACE TENSION HAS A DISTINCT VALUE FOR A GIVEN FLOW CONDITION. THE PHENOMENON OF PREFERENTIAL ABLATION MAY BE EXPLAINED BY THIS PHENOMENON.

*PARTICULATE + ABLATION + BOUNDARY LAYER + FLOW, HIGH SPEED + HEAT TRANSFER

5-15730
MCMORDIE RK + EMERY AF
A NUMERICAL SOLUTION FOR LAMINAR-FLOW HEAT TRANSFER IN CIRCULAR TUBES WITH AXIAL CONDUCTION AND DEVELOPING THERMAL AND VELOCITY FIELDS
THE BOFFING COMPANY, SEATTLE, WASH. + UNIVERSITY OF WASHINGTON, SEATTLE, WASH.
6 PAGES, 8 FIGURES, 4 REFERENCES, ASME JOURNAL OF HEAT TRANSFER 89(1), SERIES C, PAGES 11-16 (FEBRUARY 1967)

THIS PAPER DESCRIBES A NUMERICAL CALCULATION OF THE LOCAL NUSSELT NUMBER FOR LAMINAR FLOW IN A TUBE WITH AXIAL CONDUCTION, RADIAL CONVECTION, AND SIMULTANEOUSLY DEVELOPING THERMAL AND VELOCITY PROFILES. THE RESULTS ARE GIVEN FOR A CONSTANT HEAT FLUX AT THE WALL AND PRANDTL NUMBERS FROM 0.005 TO 0.03 WITH A Pr EQUAL TO 0.7 USED TO COMPARE WITH KAYS SOLUTION.

FLOW, AXIAL + FLOW, LAMINAR + FLOW, TUBE + HEAT TRANSFER + HEAT TRANSFER, CONDUCTION

5-15731
WITTKF DD + CHAO BT
COLLAPSE OF VAPOR BUBBLES WITH TRANSLATORY MOTION
UNIVERSITY OF NEBRASKA, LINCOLN, NEB. + UNIVERSITY OF ILLINOIS, URBANA, ILL.
8 PAGES, 12 FIGURES, 1 TABLE, 15 REFERENCES, ASME JOURNAL OF HEAT TRANSFER 89(1), SERIES C, PAGES 17-24

CATEGORY 5
ACCIDENT ANALYSIS

5-15731 *CONTINUED*
(FEBRUARY 1967)

THE COLLAPSE OF VAPOR BUBBLES IN A SUBCOOLED LIQUID WAS STUDIED UNDER CONDITIONS THAT HEAT TRANSFER IS THE CONTROLLING MECHANISM. EMPHASIS IS PLACED ON THE EFFECT OF TRANSLATORY MOTION AND THE PRESENCE OF NONCONDENSABLE GAS ON THE COLLAPSE RATE. THE PREDICTED COLLAPSE BEHAVIOR AGREES SATISFACTORILY WITH EXPERIMENTAL DATA WHICH COVER RANGES OF JAKOB NUMBER FROM 7 TO 45, PECLET NUMBER FROM 100 TO 7700, AND PERSISTENT BUBBLE RADIUS FROM 7.5 TO 40% OF THE INITIAL RADIUS. THE ANALYSIS ALSO YIELDS DETAILED INFORMATION ON THE TEMPERATURE FIELD SURROUNDING A COLLAPSING BUBBLE, WITH OR WITHOUT TRANSLATORY MOTION. RESULTS FOR THE LATTER VINDICATED THE ANTICIPATED INADEQUACY OF THE THIN-THERMAL-BOUNDARY-LAYER ASSUMPTION USED IN PUBLISHED ANALYSES.

*HEAT TRANSFER, BOILING + FLOW, TWO PHASE + HEAT TRANSFER + VIBRATION

5-15732
LEVY S
TURBULENT FLOW IN AN ANNULUS
GENERAL ELECTRIC COMPANY, SAN JOSE, CALIF.
6 PAGES, 8 FIGURES, 15 REFERENCES, ASME JOURNAL OF HEAT TRANSFER 89(1), SERIES C, PAGES 25-31 (FEBRUARY 1967)

EQUATIONS DESCRIBING FULLY DEVELOPED TURBULENT FLOW IN AN ANNULUS ARE DERIVED. THEY ARE BASED UPON REICHARDT'S EXPRESSION FOR THE EDDY DIFFUSIVITY OF MOMENTUM, AND THEY ASSUME THAT THE VELOCITY PROFILES STARTING FROM THE CORE TUBE WALL AND THE OUTER TUBE WALL HAVE THE SAME VELOCITY AND EDDY DIFFUSIVITY AT THE PLANE OF ZERO SHEAR. THE PREDICTED LOCATION OF THE PLANE OF ZERO SHEAR, MIXING LENGTH, EDDY DIFFUSIVITY, VELOCITY DISTRIBUTION, AND FRICTION FACTOR WERE COMPARED WITH AVAILABLE DATA AND GAVE GOOD AGREEMENT WITH THE TEST RESULTS. POTENTIAL EXTENSION OF THE PROPOSED METHOD TO MORE COMPLEX GEOMETRIES IS ILLUSTRATED BY CONSIDERING THE CASE OF FLOW IN AN ANNULUS WITH ONE ARTIFICIALLY ROUGHENED SURFACE.

*ANNULUS + FLOW THEORY AND EXPERIMENTS + FLOW, AXIAL + FLOW, TURBULENT + HEAT TRANSFER + PRESSURE DROP

5-15733
HARAHAP F + MCMAHUS HN
NATURAL CONVECTION HEAT TRANSFER FROM HORIZONTAL RECTANGULAR FIN ARRAYS
CORNELL UNIVERSITY, ITHACA, N. Y. + BANDUNG INSTITUTE OF TECHNOLOGY, BANDUNG, INDONESIA
7 PAGES, 2 FIGURES, 2 TABLES, 9 REFERENCES, ASME JOURNAL OF HEAT TRANSFER 89(1), SERIES C, PAGES 32-36 (FEBRUARY 1967)

AVERAGE HEAT-TRANSFER COEFFICIENTS ARE PRESENTED FOR FIN ARRAYS POSITIONED WITH THE BASE ORIENTED HORIZONTALLY. THE FLOW FIELD ASSOCIATED WITH THE NATURAL CONVECTION FROM THE FIN ARRAYS WAS INVESTIGATED AND USED AS A MODEL TO FIND PARAMETERS TO GENERALIZE THE DATA. THE PROPOSED CORRELATION OVERCOMES THE INADEQUACY OF PARAMETERS AVAILABLE PREVIOUSLY FOR HORIZONTAL RECTANGULAR FINNS.

*FIN + *HEAT TRANSFER, CONVECTION + *HEAT TRANSFER, NATURAL CONVECTION + HEAT TRANSFER + HEAT TRANSFER AUGMENTATION

5-15734
COOPER HF
Joule heating of an infinite rectangular rod with orthotropic thermal properties
AIR FORCE WEAPONS LABORATORY, KIRTLAND AFB, N. MEX.
5 PAGES, 6 FIGURES, 4 REFERENCES, ASME JOURNAL OF HEAT TRANSFER 89(1), SERIES C, PAGES 39-43 (FEBRUARY 1967)

THE FORMAL SOLUTION PREVIOUSLY OBTAINED FOR THE TRANSIENT THERMAL RESPONSE OF AN INFINITE RECTANGULAR ROD, WITH ORTHOTROPIC THERMAL CONDUCTIVITY AND LINEAR BOUNDARY CONDITIONS, TO JOULEAN HEATING UNDER A CONSTANT-CURRENT CONDITION IS EXTENDED TO INCLUDE THE CONSTANT-VOLTAGE CASE UNDER CERTAIN RESTRICTIVE CONDITIONS. THE SOLUTION IS A RAPIDLY CONVERGING DOUBLY INFINITE SERIES WHOSE LEADING TERM IS AN ACCURATE APPROXIMATION FOR THE THERMAL RESPONSE. IT IS FOUND THAT IN CERTAIN CASES THE THEORY FOR CONSTANT-CURRENT CASE PREDICTS NO STEADY-STATE CONDITION. THIS CONDITION IS UNREALISTIC BECAUSE IT REQUIRES AN INFINITE VOLTAGE TO PROVIDE THE CONSTANT CURRENT. THE THEORY PREDICTS THAT THE CONSTANT-VOLTAGE CASE IS ALWAYS BOUNDED.

*HEAT TRANSFER, CONDUCTION + HEAT TRANSFER

5-15735
JERIC MZ + NOTTAGE HR
COUPLED PERIODIC HEAT AND MASS TRANSFER THROUGH A PERMEABLE SLAB WITH VAPOR ADSORPTION
BECHTEL CORP., VERNON, CALIF. + UNIVERSITY OF CALIF., LOS ANGELES, CALIF.
9 PAGES, 8 FIGURES, 5 TABLES, 28 REFERENCES, ASME JOURNAL OF HEAT TRANSFER 89(1), SERIES C, PAGES 44-52 (FEBRUARY 1967)

PERIODIC FLOW OF HEAT AND MASS, WITH TEMPERATURE AND VAPOR-CONCENTRATION CYCLES APPLIED AT ONE SURFACE OF A PERMEABLE SLAB, IS SOLVED ANALYTICALLY FOR AN ADSORPTION-DESORPTION ISOTHERM LINEAR WITH VAPOR CONCENTRATION AND WITH TEMPERATURE. MAGNITUDE OF THE ENERGY-TRANSFER

CATEGORY 5
ACCIDENT ANALYSIS

5-15735 *CONTINUED*

COUPLING EFFECT IS DEMONSTRATED FOR WATER VAPOR AND FIBERBOARD, WHERE DIFFERENCES IN TIME LAGS FOR HEAT AND MASS TRANSFER AT THE SLAB SURFACE OPPOSITE TO THE PERIODIC INPUT MAY PRODUCE AN ENERGY OUTFLOW WHEN AN INFLOW WOULD BE EXPECTED.

CONDENSATION + EVAPORATION + HEAT TRANSFER + MASS TRANSFER

5-15736

GEBHART B + DRING RP + POLYMEROPoulos CE
NATURAL CONVECTION FROM VERTICAL SURFACES. THE CONVECTION TRANSIENT REGIME
CORNELL UNIVERSITY, ITHACA, N.Y. + RUTGERS UNIVERSITY, NEW BRUNSWICK, N.J.
7 PAGES, 8 FIGURES, 3 TABLES, 16 REFERENCES, ASME JOURNAL OF HEAT TRANSFER 89(1), SERIES C, PAGES 53-59
(FEBRUARY 1967)

TRANSIENT NATURAL-CONVECTION RESPONSE FOR EXTERNAL FLOW IS DETERMINED EXPERIMENTALLY AND COMPARED WITH THE DOUBLE-INTEGRAL-THEORY PREDICTIONS FOR PROCESSES WHEREIN ALL TRANSIENT EFFECTS ARE IMPORTANT. THE THEORY IS SHOWN TO GIVE VERY ACCURATE PREDICTIONS OF RESPONSE FOR SUCH PROCESSES. SIMILAR AGREEMENT FOR THE QUASI-STATIC AND CONDUCTION-DOMINATED PROCESSES IS DISCUSSED. THE FORMS OF THE GENERALIZED THERMAL CAPACITY AND TIME VARIABLES ARISING IN THE THEORY ARE SUBSTANTIATED BY THE ABSENCE OF A RESIDUAL PRANDTL NUMBER OR GRASHOF NUMBER EFFECT IN COMPARING EXPERIMENTAL RESPONSE WITH PREDICTED RESPONSE. ALL MEASURED RESPONSES ARE IN AGREEMENT WITH THE THEORY PREDICTION THAT TEMPERATURE OVERSHOOT DOES NOT OCCUR FOR A VERTICAL SURFACE.

HEAT TRANSFER + HEAT TRANSFER, NATURAL CONVECTION + TEMPERATURE TRANSIENT

5-15737

KING CY + WEBB WW
PHOTOELASTIC OBSERVATIONS OF TRANSIENT HEAT TRANSFER ACROSS A SOLID-FLUID BOUNDARY
CORNELL UNIVERSITY, ITHACA, N.Y.
4 PAGES, 5 FIGURES, 1 TABLE, 5 REFERENCES, ASME JOURNAL OF HEAT TRANSFER 89(1), SERIES C PAGES 65-68
(FEBRUARY 1967)

A NEW EXPERIMENTAL METHOD FOR OBSERVING RATES OF TRANSIENT HEAT TRANSFER ACROSS A SOLID-FLUID BOUNDARY IS DESCRIBED. OBSERVATIONS OF THE PHOTOELASTIC BIREFRINGENCE DUE TO THE TRANSIENT THERMAL STRESS IN A REGULAR TRANSPARENT SOLID CAN BE ANALYZED TO YIELD EFFECTIVE SURFACE-HEAT-TRANSFER COEFFICIENTS. THE METHOD IS ILLUSTRATED BY DETERMINATIONS OF EFFECTIVE SURFACE-HEAT-TRANSFER COEFFICIENTS FOR SPHERES UNDERGOING THERMAL SHOCKS IN SEVERAL LIQUIDS. RESULTING VALUES AGREE WITH PUBLISHED DATA OBTAINED BY STEADY-STATE METHODS. NEW DATA ARE PRESENTED FOR LIQUID TIN AND MERCURY.

BOUNDARY LAYER + HEAT TRANSFER + HEAT TRANSFER EXPERIMENT + TEMPERATURE TRANSIENT

5-15738

BERGLES AE + LOPINA RF + FIORI MP
CRITICAL-HEAT-FLUX AND FLOW-PATTERN OBSERVATIONS FOR LOW-PRESSURE WATER FLOWING IN TUBES
MASSACHUSETTS INSTITUTE OF TECHNOLOGY, CAMBRIDGE, MASS.
6 PAGES, 13 FIGURES, 21 REFERENCES, ASME JOURNAL OF HEAT TRANSFER 89(1), SERIES C, PAGES 69-74 (FEBRUARY 1967)

THIS PAPER SUMMARIZES THE RESULTS OF AN INVESTIGATION OF THE CRITICAL-HEAT-FLUX CONDITION FOR BULK BOILING OF WATER IN UNIFORMLY HEATED ROUND TUBES WHERE THE INLET CONDITIONS WERE SUBCOOLED AND EXIT PRESSURES WERE BELOW 100 PSIA. CHOKED FLOW WAS PREVALENT UNDER THESE CONDITIONS. THE CRITICAL HEAT FLUX IS SHOWN TO BE A COMPLEX FUNCTION OF BOTH LOCAL AND INLET CONDITIONS. DETAILED FLOW-PATTERN OBSERVATIONS WERE MADE WITH AN ELECTRICAL PROBE. MANY OF THE TRENDS IN THE CRITICAL-HEAT-FLUX DATA CAN BE RELATED TO THE FLOW-PATTERN INSTABILITY CAUSED BY SLUG FLOW.

*BURNOUT HEAT FLUX + *WATER, GENEPAL + FLOW, AXIAL + FLOW, TUBE + HEAT TRANSFER + HEAT TRANSFER, BOILING

5-15739

MYERS GE + MITCHELL JW + NORMAN RF
THE TRANSIENT RESPONSE OF CROSSFLOW HEAT EXCHANGERS, EVAPORATORS, AND CONDENSERS
UNIVERSITY OF WISCONSIN, MADISON, WIS.
6 PAGES, 6 FIGURES, 10 REFERENCES, ASME JOURNAL OF HEAT TRANSFER 89(1), SERIES C, PAGES 75-80, (FEBRUARY 1967)

THE TRANSIENT BEHAVIOR OF CROSSFLOW HEAT EXCHANGERS WITH ONE FLUID MIXED IS DISCUSSED IN THIS PAPER. THE RESPONSE TO A STEP CHANGE IN THE INLET TEMPERATURE OF THE MIXED FLUID IS EVALUATED FOR CASES IN WHICH THE WALL CAPACITANCE MAY BE CONSIDERED LARGE. A NEW SET OF PARAMETERS FOR USE IN TRANSIENT ANALYSIS IS SUGGESTED WHICH ALLOWS GREATER INSIGHT INTO THE TRANSIENT PROBLEM THAN DOES THE MORE CONVENTIONAL SET THAT INCLUDES THE STEADY-STATE PARAMETERS. THE RANGE OF VALIDITY OF THE LARGE WALL-CAPACITANCE APPROXIMATION IS EVALUATED.

*FLOW, CROSS + *HEAT EXCHANGER + HEAT TRANSFER + TEMPERATURE TRANSIENT

CATEGORY 5
ACCIDENT ANALYSIS

5-15740
LAVERTY WF + ROHSFOW WM
FILM BOILING OF SATURATED NITROGEN FLOWING IN A VERTICAL TUBE
CARNEGIE INSTITUTE OF TECHNOLOGY, PITTSBURGH, PA., + MASSACHUSETTS INSTITUTE OF TECHNOLOGY, CAMBRIDGE, MASS.
8 PAGES, 12 FIGURES, 10 REFERENCES, ASME JOURNAL OF HEAT TRANSFER 89(1), SERIES C, PAGES 90-98 (FEBRUARY 1967)

A STUDY WAS MADE OF FILM BOILING OF SATURATED NITROGEN FLOWING UPWARD THROUGH A UNIFORMLY HEATED TUBE. VISUAL EXPERIMENTAL OBSERVATIONS DEMONSTRATE THAT THE ANNULAR FLOW REGIME WHICH EXISTS AT VERY LOW QUALITIES IS BROKEN UP AT HIGHER QUALITIES TO FORM A DISPERSED FLOW OF LIQUID DROPLETS IN A VAPOR MATRIX. ANALYSIS OF EXPERIMENTALLY DETERMINED TUBE-WALL-TEMPERATURE DISTRIBUTIONS SHOWS THAT A SIGNIFICANT AMOUNT OF VAPOR SUPERHEAT IS PRESENT THROUGHOUT THE FILM-BOILING PROCESS. A METHOD IS PRESENTED BY WHICH BOTH AN UPPER BOUND AND AN ESTIMATED VALUE OF THE HEAT-TRANSFER COEFFICIENT FOR THE DISPERSED FLOW REGIME MAY BE CALCULATED.

*HEAT TRANSFER, BOILING + FILM, GENERAL + HEAT TRANSFER + HEAT TRANSFER EXPERIMENT + NITROGEN

5-15741
HWANG-RO H
OPTIMIZATION OF SOME RADIATORS WITH FINS AND INVOLUTE REFLECTORS
TAEGU COLLEGE, TAEGU, KOREA
4 PAGES, 6 FIGURES, 6 REFERENCES, ASME JOURNAL OF HEAT TRANSFER 89(1), SERIES C, PAGES 99-102 (FEBRUARY 1967)

THE MAXIMUM HEAT REJECTION PER UNIT WEIGHT OF RADIATOR WITH INVOLUTE-TYPE REFLECTORS IS COMPARED WITH THOSE OF SOME RADIATORS WITH OPTIMUM RECTANGULAR FINS BY MEANS OF EXAMPLES. THE MUTUAL IRRADIATIONS AMONG THE SURFACES OF NEIGHBORING RADIATOR PARTS ARE CONSIDERED IN COMPUTING THE VIEW FACTORS.

*HEAT EXCHANGER + FIN + HEAT TRANSFER + HEAT TRANSFER AUGMENTATION + HEAT TRANSFER, RADIANT

5-15742
EMERY AF + SADUNAS JA + LOLL M
HEAT TRANSFER AND PRESSURE DISTRIBUTION IN OPEN CAVITY FLOW
UNIVERSITY OF WASHINGTON, SEATTLE + THE BOEING CO., RENTON, WASH. + SANDIA CORP., LIVERMORE
6 PAGES, 12 FIGURES, 8 REFERENCES, ASME JOURNAL OF HEAT TRANSFER 89(1), SERIES C, PAGES 103-108 (FEBRUARY 1967)

THE HEAT TRANSFER AND PRESSURE DISTRIBUTION IN A RECTANGULAR CAVITY IN A MACH-3 FLOW WERE INVESTIGATED FOR A RECTANGULAR AND AN INVERTED-WEDGE RECOMPRESSION STEP. NOTICEABLE DIFFERENCES BETWEEN THE RESULTS FOR THE TWO STEPS WERE FOUND IN THE RECOVERY FACTORS, BUT NO REAL DIFFERENCES WERE DETECTED IN THE HEAT-TRANSFER COEFFICIENTS OR THE VELOCITY PROFILES. HEAT-TRANSFER COEFFICIENTS IN THE CAVITY WERE DETERMINED BY TRANSIENT TECHNIQUES AND WERE FOUND TO RANGE FROM 50 TO 110% OF THE FLAT-PLATE VALUE JUST PRIOR TO THE EXPANSION STEP.

BOUNDARY LAYER + FLOW THEORY AND EXPERIMENTS + HEAT TRANSFER + PRESSURE DROP

5-15788
CHIMEN JM + CLARK JA
AN EXPERIMENTAL STUDY OF THE INFLUENCE OF LOCALIZED, NORMAL SURFACE OSCILLATIONS ON THE LAMINAR FLOW OVER A FLAT PLATE
MICHIGAN UNIVERSITY, ANN ARBOR
ARL-66-0010, PT. VI +. 133 PAGES, FIGURES, TABLES, 70 REFERENCES, JANUARY 1966

THE PURPOSE OF THIS INVESTIGATION WAS TO STUDY THE EFFECT OF A FINITE LOCALIZED SURFACE OSCILLATION ON THE MEAN-VALUE VELOCITY PROFILES IN THE LAMINAR BOUNDARY LAYER OF A FLAT PLATE AND TO COMPARE THE RESULTS WITH AN ANALYTIC SOLUTION. THE RESULTS SHOWED THAT A DEFINITE CHANGE IN THE MEAN-VALUE VELOCITY PROFILE IN LAMINAR FLOW OCCURS AND IS A FUNCTION OF FREE-STREAM VELOCITY, FREQUENCY, AND LOCATION ON THE PLATE SURFACE. IN ADDITION, EARLY TRANSITION WAS PROMOTED ALTHOUGH THE DISTURBANCE TEST RANGE WAS WITHIN THE TOLLMIE-SCHLICHTING STABILITY AREA. THE ANALYTIC SOLUTION WAS QUALITATIVELY VALID IN THE LAMINAR FLOW REGION DOWN-STREAM OF THE MEMBRANE.

AVAILABILITY - OFFENSE DOCUMENTATION CENTER, CAMERON STATION, ALEXANDRIA, VIRGINIA

*FLOW, LAMINAR + BOUNDARY LAYER + FLOW THEORY AND EXPERIMENTS + FLUCTUATION + HEAT TRANSFER

5-15789
WATSON CM + PEREZ RB + FONTANA MH
EFFECTS OF CONTAINMENT SYSTEM SIZE ON FISSION PRODUCT BEHAVIOR
OAK RIDGE NATIONAL LABORATORY
ORNL-4033 +. 47 PAGES, 8 FIGURES, 5 TABLES, 11 REFERENCES, JANUARY 1967

CATEGORY 5
ACCIDENT ANALYSIS

5-15789 *CONTINUED*

SIMPLE MATHEMATICAL MODELS TO AID IN DETERMINING THE EFFECT OF CONTAINMENT SIZE ON PLATE-OUT BEHAVIOR OF IODINE ARE POSTULATED. TWO GENERAL CLASSES OF SYSTEMS WERE CONSIDERED, DEPENDING ON THE ABSENCE OR ON THE PRESENCE OF STEAM. IN THE ABSENCE-OF-STEAM CASE, MATHEMATICAL RELATIONS IN TERMS OF MASS-TRANSFER COEFFICIENTS, SURFACE-TO-VOLUME RATIOS OF CONTAINERS, AND SURFACE-CHARACTERIZATION PARAMETERS WERE DEVELOPED FOR CASES WITH AND WITHOUT DESORPTION FROM PARTIALLY COVERED SURFACES. FOR THE CASE OF CONDENSING STEAM, MATHEMATICAL RELATIONS WERE DERIVED FOR THE CONCENTRATION OF IODINE AS A FUNCTION OF TIME IN TERMS OF THE SURFACE-TO-VOLUME RATIOS, CONDENSING STEAM FLUXES, AND STEAM CONCENTRATIONS. THE CASE OF MOLECULAR IODINE-METHYL IODIDE-CONDENSING STEAM WAS CONSIDERED. IT WAS ASSUMED THAT THE DEPOSITION OF METHYL IODIDE IS LIMITED BY ITS LESSER SOLUBILITY IN STEAM CONDENSATE. ALL ASSUMPTIONS ARE PRESENTED ALONG WITH THE MODELS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*CONTAINMENT, GENERAL + *FISSION PRODUCT TRANSPORT + CONTAINMENT RESEARCH AND DEVELOPMENT + MASS TRANSFER

5-15790

KESTEN AS + KRASCCELLA NL
THEORETICAL INVESTIGATION OF RADIANT HEAT TRANSFER IN THE FUEL REGION OF A GASEOUS NUCLEAR ROCKET ENGINE
UNITED AIRCRAFT CORP., EAST HARTFORD, CONN.
NASA-CR-695 +. 28 PAGES, 17 FIGURES, 8 REFERENCES, JANUARY 1967

A SERIES OF CALCULATIONS WERE MADE TO DETERMINE TEMPERATURE DISTRIBUTIONS IN THE FUEL-CONTAINMENT REGION OF GASEOUS NUCLEAR ROCKET ENGINES WHICH ARE BASED ON THE TRANSFER OF ENERGY BY THERMAL RADIATION FROM THE FUEL TO THE PROPELLANT. TEMPERATURE DISTRIBUTIONS WERE DETERMINED FOR TWO SETS OF FUEL OPACITIES, AND THE OPACITIES IN EACH OF THESE SETS WERE CALCULATED FROM AN ANALYTICAL HEAVY-ATOM MODEL USING TWO RECENT THEORETICAL ESTIMATES OF FUEL IONIZATION POTENTIALS. THE TEMPERATURES NEAR THE CENTERLINE OF THE FUEL-CONTAINMENT REGION WERE FOUND TO BE HIGH AND RELATIVELY INSENSITIVE TO CHANGES IN FUEL OPACITY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*NUCLEAR ROCKET + HEAT TRANSFER + HEAT TRANSFER, RADIANT

5-15791

SCHEFFLER WA
STEADY STATE HEAT CONDUCTION WITH IRREGULAR SHAPED BOUNDARIES
IDAHO NUCLEAR CORP., IDAHO FALLS
IN-1027 +. 10 PAGES, 1 REFERENCE, SEPTEMBER 1966

THE EFFECT OF IRREGULARLY SHAPED BOUNDARIES ON THE TEMPERATURE DISTRIBUTION IN A SOLID IS CALCULATED. THE METHOD USED TO CALCULATE THE EFFECT OF THE BOUNDARY PERTURBATION IS STRAIGHTFORWARD AND OF A GENERAL NATURE. THE APPLICATION OF SUCH A METHOD TO PROBLEMS IN HEAT CONDUCTION WILL PROVIDE TEMPERATURE CORRECTIONS TO THERMOCOUPLES DUE TO SOLID-BOUNDARY IRREGULARITIES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*PERTURBATION METHOD + HEAT TRANSFER + HEAT TRANSFER, CONDUCTION

5-15845

ALSO IN CATEGORIES 11 AND 12

LEVY S
A SYSTEMS APPROACH TO CONTAINMENT DESIGN IN NUCLEAR POWER PLANTS
GENERAL ELECTRIC COMPANY, SAN JOSE, CALIF.
SM-89/51 +. 20 PAGES, 9 FIGURES, APRIL 1967, IAEA SYMPOSIUM ON THE CONTAINMENT AND SITING OF NUCLEAR POWER PLANTS, VIENNA, AUSTRIA, APRIL 3-7, 1967

NEW APPROACH FOR PERFORMANCE REQUIREMENTS OF CONTAINMENT DESIGNS. CONTAINMENT IS PART OF A TOTAL SYSTEM, WHICH PREVENTS AND LIMITS THE CONSEQUENCES OF A RELEASE OF FISSION PRODUCTS. CONTAINMENT-PERFORMANCE REQUIREMENTS ARE DETERMINED BY LOOKING AT THE OVERALL SYSTEM. PROPOSED TECHNIQUE IS ILLUSTRATED FOR LOSS-OF-COOLANT ACCIDENT. INTERRELATIONSHIP OF THE PRESSURE-SUPPRESSION CONTAINMENT TO OTHER PREVENTIVE MEASURES IS REVIEWED FIRST. NEXT, THE CONTAINMENT-PERFORMANCE REQUIREMENTS ARE ESTABLISHED AS PART OF AN OVERALL SYSTEM EVALUATION. FINALLY, POSSIBLE ALTERNATE CONTAINMENT FEATURES ARE EVOLVED.

AVAILABILITY - GENERAL ELECTRIC COMPANY, ATOMIC POWER EQUIPMENT DEPT., 175 CURTNER AVE., SAN JOSE, CALIFORNIA

*ACCIDENT, LOSS OF COOLANT + *CONTAINMENT, PRESSURE SUPPRESSION + *REACTOR, BOILING WATER + CONTAINMENT, GENERAL + CORE REFLOODING SYSTEM + CORE SPRAY + EMERGENCY COOLING CONSIDERATIONS + MISSILE GENERATION AND PROTECTION

5-15952

ALSO IN CATEGORIES 7 AND 11

NUCLEAR SAFETY PROGRAM ANNUAL PROGRESS REPORT FOR PERIOD ENDING DECEMBER 31, 1966

CATEGORY 5
ACCIDENT ANALYSIS

5-15952 *CONTINUED*
OAK RIDGE NATIONAL LABORATORY
ORNL-4071 +. 359 PAGES, FIGURES, TABLES, 15 REFERENCES, MARCH 1967

THE NUCLEAR SAFETY PROGRAM AT OAK RIDGE NATIONAL LABORATORY IS DIRECTED TOWARD OBTAINING A BETTER UNDERSTANDING OF VARIOUS ASPECTS OF NUCLEAR ACCIDENTS. THE INFORMATION DEVELOPED THROUGH EXPERIMENTS AND THEIR THEORETICAL INTERPRETATION WILL ALLOW THE USE OF MORE REALISTIC ASSUMPTIONS ON SAFETY TO BE MADE IN THE EVALUATION OF REACTOR SITES. THE BEHAVIOR OF FISSION PRODUCTS IN ALL PHASES OF A NUCLEAR ACCIDENT IS THE SUBJECT OF A MAJOR PART OF THE PROGRAM, ALTHOUGH MANY OTHER AREAS OF NUCLEAR SAFETY ARE INCLUDED, EITHER EXPERIMENTALLY OR ANALYTICALLY. DURING THE YEAR, THE NUCLEAR SAFETY PROGRAM WAS BROADENED IN SCOPE TO COVER HIGH-TEMPERATURE GAS-COOLED REACTORS, AS WELL AS WATER-COOLED REACTORS, PRESSURE VESSEL TECHNOLOGY, AND EFFECTS OF EARTHQUAKES ON STRUCTURES AND FISSION-PRODUCT BEHAVIOR.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

ACCIDENT, HYPOTHETICAL + ADSORPTION + AEROSOL + BIBLIOGRAPHY + CARBON + CHARCOAL ADSORBER + CHEMICAL REACTION + CLAD + COATED PARTICLE + CONTAINMENT, GENERAL + DESORPTION + FILTER + FISSION PRODUCT RELEASE, GENERAL + FISSION PRODUCT TRANSPORT + HIGH TEMPERATURE + IGNITION + IN PILE EXPERIMENT + IN PILE LOOP + IODINE + LOFT (LOSS OF FLUID TEST) + NOBLE GAS + NSIC (NUCLEAR SAFETY INFORMATION CENTER) + NSPP (NUCLEAR SAFETY PILECT PLANT) + ORGANIC IODIDE + ORNL (OAK RIDGE NATIONAL LABORATORY) + OUT OF PILE LOOPS AND EXPERIMENTS + PARTICLE SIZE + REACTOR, GRAPHITE MODERATED + REACTOR, TEST + SITING, REACTOR + STEAM + STEEL, STAINLESS + TEST, PRESSURE VESSEL + THEORETICAL INVESTIGATION + TRANSPORTATION AND HANDLING + TREAT (TRANSIENT TEST REACTOR FACILITY) + URANIUM DIOXIDE + ZIRCALOY

5-16071
HAJI-SHEIKH A + SPARROW EM
THE SOLUTION OF HEAT CONDUCTION PROBLEMS BY PROBABILITY METHODS
UNIVERSITY OF TEXAS, ARLINGTON + UNIVERSITY OF BRASIL, RIO DE JANEIRO
11 PAGES, 9 FIGURES, 1 TABLE, 20 REFERENCES, JOURNAL OF HEAT TRANSFER 89(2) SERIES C, PAGES 121-131 (MAY 1967)

FUNDAMENTAL CONCEPTS PERTAINING TO THE SOLUTION OF HEAT CONDUCTION PROBLEMS BY PROBABILITY METHODS (MONTE CARLO METHODS) ARE DEVISED, AND TECHNIQUES OF APPLICATION ARE DEVELOPED. IT IS DEMONSTRATED THAT PROBABILITY METHODS CAN BE APPLIED OVER THE ENTIRE RANGE OF HEAT CONDUCTION PROBLEMS. THESE INCLUDE BOTH STEADY STATE AND TRANSIENT SITUATIONS IN BODIES OF ARBITRARY SHAPE WITH ARBITRARY BOUNDARY CONDITIONS (INCLUDING DERIVATIVE CONDITIONS) AND WITH VOLUME HEAT SOURCES. PROBLEMS INVOLVING NONLINEAR BOUNDARY CONDITIONS (E.G., COMBINED CONVECTION AND RADIATION) AND MOVING BOUNDARIES (CHANGE OF PHASE) ARE ALSO ACCOMMODATED BY PROBABILITY METHODS. A NEW CONCEPT, THE FLOATING RANDOM WALK, IS INTRODUCED, AND THIS PROVIDES THE FLEXIBILITY NEEDED TO ACCOMMODATE SUCH A WIDE RANGE OF PROBLEMS.

*HEAT TRANSFER, CONDUCTION + *MONTE CARLO + *TEMPERATURE TRANSIENT + HEAT TRANSFER

5-16072
EDWARDS OK + TOBIN RD
EFFECT OF POLARIZATION ON RADIANT HEAT TRANSFER THROUGH LONG PASSAGES
UNIVERSITY OF CALIFORNIA, LOS ANGELES + ROCKETDYNE, DIVISION OF NORTH AMERICAN AVIATION
7 PAGES, 7 FIGURES, 2 TABLES, 18 REFERENCES, JOURNAL OF HEAT TRANSFER 89(2) SERIES C, PAGES 132-138 (MAY 1967)

THEORETICAL PREDICTIONS OF RADIANT TRANSFER THROUGH LONG PASSAGES ARE SHOWN TO BE QUITE SENSITIVE TO DIRECTIONAL VARIATION OF RADIATION CHARACTERISTICS AND TO POLARIZATION OF THE RADIATION. WITH USE OF THE FRESNEL RELATIONS FOR SPECULAR REFLECTION TO FIND THE AMOUNT AND STATE OF POLARIZATION OF RADIATION REFLECTED BY DIELECTRIC AND METALLIC WALLS, VALUES OF TRANSMITTANCE ARE CALCULATED AND TABULATED FOR LONG PASSAGES OF SQUARE AND INFINITE SLOT CROSS SECTIONS WITH LENGTHS OF UP TO 30 TIMES THE LATERAL DISTANCE BETWEEN WALLS. DIFFERENCES IN ANSWERS BY FACTORS UP TO 14 ARE SHOWN TO RESULT FROM NEGLECT OF DIRECTIONAL VARIATION, POLARIZATION, AND PHASE CHANGE IN THE REFLECTION PROCESS. A SIMPLE, APPROXIMATE ANALYTICAL RELATION IS PRESENTED TO PERMIT TRANSMITTANCE AND INTEGRATED TRANSMITTANCE OBTAINED FOR ISOTHERMAL PASSAGE WALLS TO BE USED TO CALCULATE TRANSFER IN PASSAGES WITH ADIABATIC OR REFRACTORY WALLS.

*HEAT TRANSFER, RADIANT + HEAT TRANSFER

5-16073
HENNING CD + PARKER R
TRANSIENT RESPONSE OF AN INTRINSIC THERMOCOUPLE
LAWRENCE RADIATION LABORATORY, LIVERMORE
9 PAGES, 0 FIGURES, 1 TABLE, 17 REFERENCES, JOURNAL OF HEAT TRANSFER 89(2) SERIES C, PAGES 146-154 (MAY 1967)

WHERE RAPID HEATING IS ENCOUNTERED, AS IN A PROMPT-BURST NUCLEAR REACTOR, A THERMOCOUPLE WITH A FAST TIME-RESPONSE IS NECESSARY TO MONITOR THE TEMPERATURE OF THE SPECIMEN IN QUESTION. BECAUSE ALL THERMOCOUPLES HAVE SOME MASS, THEY CANNOT HAVE AN INFINITELY FAST RESPONSE. HOWEVER, AN INTRINSIC-TYPE THERMOCOUPLE HAS LESS THERMAL INERTIA THAN THE USUAL WELDED-BEAD TYPE. THUS IT IS A NATURAL CHOICE FOR THE MEASUREMENT OF TRANSIENT SURFACE TEMPERATURES OF CONDUCTING SOLIDS. IN THIS REPORT AN ANALYTICAL EXPRESSION IS OBTAINED FOR THE TRANSIENT RESPONSE OF AN INTRINSIC THERMOCOUPLE. IN SUPPORT OF THE ANALYSIS, EXPERIMENTAL DATA ARE

CATEGORY 5
ACCIDENT ANALYSIS

5-16073 *CONTINUED*

PRESENTED WHICH WERE OBTAINED BY MEANS OF A CAPACITOR-BANK PULSE-HEATING TECHNIQUE. IT IS CONCLUDED THAT THERMOCOUPLE WIRES OF SMALL DIAMETER AND LOW THERMAL CONDUCTIVITY RESPONSE THE FASTEST. AS AN EXAMPLE, A 1-MIL CONSTANTAN WIRE ON A COPPER SUBSTRATE PRODUCES 95 PERCENT OF THE STEADY-STATE EMF IN 3 MICROSECONDS.

*HEAT TRANSFER, CONDUCTION + *TEMPERATURE TRANSIENT + HEAT TRANSFER + INSTRUMENTATION, TEMPERATURE

5-16074

HUNG HM + APPL FC

HEAT TRANSFER OF THIN FINS WITH TEMPERATURE-DEPENDENT THERMAL PROPERTIES AND INTERNAL HEAT GENERATION DEERE AND COMPANY, OLING, ILLINOIS + CHRISTENSEN DIAMOND PRODUCTS COMPANY, SALT LAKE CITY
8 PAGES, 3 FIGURES, 6 TABLES, 7 REFERENCES, JOURNAL OF HEAT TRANSFER 89(2), SERIES C, PAGES 155-162 (MAY 1967)

AN ANALYTICAL STUDY OF THE TEMPERATURE DISTRIBUTION ALONG THIN FINS WITH TEMPERATURE-DEPENDENT THERMAL PROPERTIES AND INTERNAL HEAT GENERATION IS PRESENTED. THE ANALYSIS UTILIZES A RECENTLY PUBLISHED BOUNDING PROCEDURE WHICH YIELDS ANALYTICAL AND CONTINUOUS BOUNDING FUNCTIONS FOR THE TEMPERATURE DISTRIBUTION. SEVERAL NUMERICAL EXAMPLES ARE CONSIDERED. TABULAR AND GRAPHICAL RESULTS ARE GIVEN. THE EFFECTS OF VARIABLE THERMAL PROPERTIES AND INTERNAL HEAT GENERATION ARE ALSO SHOWN.

*FIN + *HEAT TRANSFER AUGMENTATION + HEAT GENERATION, INTERNAL + HEAT TRANSFER

5-16075

FILETTI EG + KAYS WM

HEAT TRANSFER IN SEPARATED, REATTACHED, AND REDEVELOPMENT REGIONS BEHIND A DOUBLE STEP AT ENTRANCE TO A FLAT DUCT
FRANKLIN RESEARCH INSTITUTE, PHILADELPHIA + STANFORD UNIVERSITY, STANFORD
6 PAGES, 9 FIGURES, 1 TABLE, 6 REFERENCES, JOURNAL OF HEAT TRANSFER 89(2), SERIES C, PAGES 163-168 (MAY 1967)

EXPERIMENTAL DATA ARE PRESENTED FOR LOCAL HEAT-TRANSFER RATES NEAR THE ENTRANCE TO A FLAT DUCT IN WHICH THERE IS AN ABRUPT SYMMETRICAL ENLARGEMENT IN FLOW CROSS-SECTION. TWO ENLARGEMENT AREA RATIOS ARE CONSIDERED, AND REYNOLDS NUMBERS, BASED ON DUCT HYDRAULIC DIAMETER, VARIED FROM 70,000 TO 205,000. IT IS FOUND THAT SUCH A FLOW IS CHARACTERIZED BY A LONG STALL ON ONE SIDE AND A SHORT STALL ON THE OTHER. MAXIMUM HEAT TRANSFER OCCURS IN BOTH CASES AT THE POINT OF REATTACHMENT, FOLLOWED BY A DECAY TOWARD THE VALUES FOR FULLY DEVELOPED DUCT FLOW. EMPIRICAL EQUATIONS ARE GIVEN FOR THE NUSSELT NUMBER AT THE REATTACHMENT POINT, CORRELATED AS FUNCTIONS OF DUCT REYNOLDS NUMBER AND ENLARGEMENT RATIO.

BOUNDARY LAYER + FLOW THEORY AND EXPERIMENTS + FLOW, AXIAL + HEAT TRANSFER

5-16076

JUNKHAN GH

EFFECTS OF FREE-STREAM TURBULENCE AND PRESSURE GRADIENT ON FLAT-PLATE BOUNDARY-LAYER VELOCITY PROFILES AND ON HEAT TRANSFER

AMERICAN SOCIETY OF MECHANICAL ENGINEERING + AMES LABORATORY

8 PAGES, 15 FIGURES, 1 TABLE, 16 REFERENCES, JOURNAL OF HEAT TRANSFER, 89(2), SERIES C, PAGES 169-176 (MAY 1967)

EXPERIMENTAL DATA INDICATING SOME EFFECTS OF FREE-STREAM TURBULENCE INTENSITY ON TIME-AVERAGE BOUNDARY-LAYER VELOCITY PROFILES AND ON HEAT TRANSFER FROM A CONSTANT TEMPERATURE FLAT PLATE WITH A FAVORABLE PRESSURE GRADIENT ARE PRESENTED FOR LOCAL REYNOLDS NUMBERS RANGING FROM 40,000 TO 400,000 AND FOR FREE-STREAM TURBULENCE INTENSITIES FROM 0.4 TO 8.3%. IT IS CONCLUDED THAT, FOR THE RANGE OF VARIABLE COVERED BY THE EXPERIMENTS - (A) THE EFFECT OF FREE-STREAM TURBULENCE INTENSITY ON HEAT TRANSFER THROUGH THE LAMINAR BOUNDARY LAYER WITH A ZERO PRESSURE GRADIENT IS NEGLIGIBLE, (B) FOR A GIVEN REYNOLDS NUMBER, THE LOCAL NUSSELT NUMBER INCREASES WITH INCREASING FREE-STREAM TURBULENCE INTENSITY WHEN A PRESSURE GRADIENT IS PRESENT, THE BOUNDARY-LAYER PROFILES FOR THESE CONDITIONS CHANGING WITH A VARIATION IN FREE-STREAM TURBULENCE INTENSITY, (C) NO INCREASE IN NUSSELT NUMBER WITH INCREASE IN FREE-STREAM TURBULENCE INTENSITY OCCURS FOR TURBULENT BOUNDARY LAYERS WITH A FAVORABLE PRESSURE GRADIENT.

BOUNDARY LAYER + FLOW, TURBULENT + HEAT TRANSFER + PRESSURE DROP

5-16077

HANOLD RJ + MOSZYNSKI JR

SECONDARY FLOWS ASSOCIATED WITH SLOWLY OSCILLATING AND ROTATING DISKS

LOS ALAMOS SCIENTIFIC LABORATORY + CASE INSTITUTE OF TECHNOLOGY

8 PAGES, 16 FIGURES, 3 TABLES, 16 REFERENCES, JOURNAL OF HEAT TRANSFER, 89(2), SERIES C, PAGES 177-184 (MAY 1967)

THIS INVESTIGATION CONCERNS THE APPLICATION OF FLOW-VISUALIZATION TECHNIQUE TO OBTAIN A QUANTITATIVE AND QUALITATIVE DESCRIPTION OF THE SECONDARY FLOW ASSOCIATED WITH A SLOWLY OSCILLATING DISK. INCLUDED IN THE DESCRIPTION IS A SYSTEMATIC STUDY OF THE FLOW BEHAVIOR AS A FUNCTION OF THE REYNOLDS NUMBER. THE THREE-DIMENSIONAL CHARACTER OF THE FLOW IS VERIFIED, AND THE DEVELOPMENT OF A TOROIDAL VORTEX BOTH ABOVE AND BELOW THE OSCILLATING DISK IS

CATEGORY 5
ACCIDENT ANALYSIS

5-16077 *CONTINUED*

ILLUSTRATED. THE EXPERIMENTS ARE PERFORMED IN A VESSEL SIMILAR IN DESIGN TO A TYPICAL OSCILLATING-BODY VISCOMETER. THE EFFECT OF THE REYNOLDS NUMBER ON THE DAMPING RATE OF THE DISK IS INVESTIGATED. THE INFLUENCE OF NATURAL CONVECTIVE FLOWS ON THE MAGNITUDE AND REPRODUCIBILITY OF THE DAMPING RATE IS OBTAINED. THE DEVELOPMENT OF A SECONDARY FLOW IN THE FORM OF A TOROIDAL VORTEX FOR BOTH THE ROTATING DISK AND ROTATING SPHERE IS ALSO ILLUSTRATED.

BOUNDARY LAYER + FLOW THEORY AND EXPERIMENTS + FLUCTUATION

5-16078

GOLDSTEIN ME + YANG WJ + CLARK JA

MOMENTUM AND HEAT TRANSFER IN LAMINAR FLOW OF GAS WITH LIQUID-DROPLET SUSPENSION OVER A CIRCULAR CYLINDER
MASS. INSTITUTE OF TECHNOLOGY + UNIVERSITY OF MICHIGAN

10 PAGES, 9 FIGURES, 11 REFERENCES, JOURNAL OF HEAT TRANSFER 89(2), SERIES C, PAGES 185-194 (MAY 1967)

AN ANALYSIS WAS MADE TO DETERMINE THE HEAT TRANSFER AND FRICTION CHARACTERISTICS IN A TWO-PHASE (GAS-LIQUID) FLOW OVER A CIRCULAR CYLINDER. IT IS DEMONSTRATED THAT THE RESULTING TWO-LAYER FLOW PROBLEM CAN BE FORMULATED EXACTLY WITHIN THE FRAMEWORK OF LAMINAR BOUNDARY LAYER THEORY. TWO CASES ARE STUDIED - (1) FOR THE PARAMETER E GREATER OR EQUAL TO 0.1 AND THE DROP TRAJECTORIES STRAIGHT AND, (2) FOR E LESS OR EQUAL TO 0.1 AND FOR ANY DROP TRAJECTORY. SOLUTIONS OBTAINED IN POWER SERIES INCLUDE THE LOCAL LIQUID-FILM THICKNESS, VELOCITY AND TEMPERATURE PROFILES, SKIN FRICTION AND NUSSELT NUMBER. NUMERICAL RESULTS DISCLOSE A SIGNIFICANT INCREASE IN BOTH HEAT-TRANSFER RATE AND SKIN FRICTION OVER THOSE OF A PURE GAS FLOW. THE THEORETICAL PREDICTION COMPARES FAVORABLY WITH EXPERIMENTAL RESULTS OF ACRIVOS ET AL.

FLOW, LAMINAR + HEAT TRANSFER + PARTICULATE

5-16080

KIRK LA + HUDSON FL

HEAT AND MASS TRANSFER FROM A WETTED SURFACE IN A FLUIDISED BED. I - DENSE PHASE

MANCHESTER COLLEGE OF SCIENCE AND TECHNOLOGY, MANCHESTER, ENGLAND

8 PAGES, 2 TABLES, 8 FIGURES, TRANSACTIONS OF INSTITUTE OF CHEMICAL ENGINEERS, 44(1), PAGES T7-T14 (JAN-FEB., 1966)

USE OF FLUIDIZED BEDS FOR TREATING IMMERSED BODIES IS REVIEWED. THE EXPERIMENTAL DETERMINATION OF SIMULTANEOUS HEAT AND MASS TRANSFER FROM A WETTED TILE SUSPENDED IN A FLUIDIZED BED IS DESCRIBED. EVAPORATION DATA FOR A WIDE RANGE OF CONDITIONS ARE PRESENTED, AND HEAT- AND MASS-TRANSFER COEFFICIENTS ARE DEDUCED. THE HEAT-TRANSFER COEFFICIENTS, WHICH ARE SIMILAR TO THOSE OBTAINED IN A SYSTEM NOT INVOLVING SIMULTANEOUS MASS TRANSFER, ARE CONSIDERABLY HIGHER THAN IN THE EMPTY BED. THE MASS-TRANSFER COEFFICIENTS ARE NOT SUBSTANTIALLY GREATER THAN IN THE EMPTY BED. THE REYNOLDS ANALOGY BETWEEN HEAT AND MASS TRANSFER DOES NOT APPLY. THIS IS EXPLAINED AS BEING DUE TO THE TRANSFER OF HEAT BY A PARTICLE-DEPENDENT MECHANISM.

*FLUIDIZED BED + HEAT TRANSFER + MASS TRANSFER

5-16082

MORRISON DL + GENCO JM + GIESEKE JA + RITZMAN RL + WALTERS CT + WOOTEN RO + CLARK WE + BLUTREICH JN
AN EVALUATION OF THE APPLICABILITY OF EXISTING DATA TO THE ANALYTICAL DESCRIPTION OF A NUCLEAR-REACTOR ACCIDENT. QUARTERLY PROGRESS REPORT FOR OCTOBER THROUGH DECEMBER, 1966

BATTELLE MEMORIAL INSTITUTE

BNM-1790 +. 53 PAGES, 14 FIGURES, 10 TABLES, 41 REFERENCES, JANUARY 1, 1967

THIS IS A PROGRESS REPORT ON THE FOLLOWING AREAS--HEAT TRANSFER AND THERMODYNAMICS, METAL-WATER REACTIONS, HYDROGEN COMBUSTION, LOSS-OF-COOLANT ACCIDENTS, MELTDOWN, FISSION-PRODUCT TRANSPORT AND DEPOSITION, CHEMISTRY, DEPOSITION ON SURFACES, PARTICLE DYNAMICS, AND PARTICLE-SIZE ANALYSIS ON DEPOSITION TUBES WITH POLYDISPERSE AEROSOLS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

ACCIDENT MODEL + ACCIDENT, LOSS OF COOLANT + ACCIDENT, MAXIMUM CREDIBLE (MCA) +
FLOW THEORY AND EXPERIMENTS + HEAT TRANSFER + THERMODYNAMICS

5-16084

ORKMANOVIC R + SPASOJEVIC D

HEAT TRANSFER AND PRESSURE DROP OF A GAS-COOLED REACTOR FUEL ELEMENT CAN MODEL WITH INCLINED POLYZONAL SPIRAL FINNING.

RILTEN INSTITUTA ZA NUKLEARNE NAUKE, BORIS KIDRIC

AEC-TP-6496-2 +. 22 PAGES, 14 FIGURES, 1 TABLE, 7 REFERENCES, TRANSLATED FROM BULLETIN OF THE BORIS KIDRIC INSTITUTE OF NUCLEAR SCIENCES 16(2), PAGES 101-122, (1965)

HEAT TRANSFER, PRESSURE DROP, AND FLOW PATTERN OF A GAS-COOLED-REACTOR FUEL ELEMENT MODEL WITH INCLINED POLYZONAL SPIRAL FINNING WERE INVESTIGATED. A BRIEF DESCRIPTION OF THE APPARATUS, THE METHOD OF MEASUREMENT, AND THE CALCULATION OF THE RESULTS IS GIVEN. AXIAL TEMPERATURE DISTRIBUTION IN THE FIN ROOT AND LOCAL VALUES OF $ST-SUB-K$ ARE GIVEN. CORRELATIONS FOR $ST-SUB-K$ (MINIMUM), $ST-SUB-K$ (AVERAGE), AND $F-AVERAGE$ AS A FUNCTION OF RE ARE DERIVED.

CATEGORY 5
ACCIDENT ANALYSIS

5-16084 *CONTINUED*

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*FIN + *HEAT TRANSFER AUGMENTATION + FUEL ELEMENT + HEAT TRANSFER + PRESSURE DROP + REACTOR, GAS COOLED

5-16085

HATCHER SR + FINLAY BA + SMEE JL

HEAT TRANSFER, IMPURITIES AND FOULING IN ORGANIC COOLANTS (A SUMMARY OF CANADIAN EXPERIENCE)

ATOMIC ENERGY OF CANADA LIMITED, PINAWA, MANITOBA

AECL-2642 +. 31 PAGES, 1 FIGURE, 12 TABLES, 32 REFERENCES, MAY 1966

THE RESULTS OF THE CANADIAN WORK ON FORCED-CONVECTION HEAT TRANSFER CAN BE ADEQUATELY EXPRESSED BY A MODIFIED DITTUS-BOELTER CORRELATION AND HAVE BEEN CONFIRMED BY REACTOR FUEL IRRADIATIONS. THE WR-1 FUEL DESIGN IS BASED ON A BURNOUT SAFETY FACTOR OF 2, USING DATA FROM THE CORE AND SATO CORRELATION. THIS WAS ADEQUATE, BUT AN IMPROVED CRITERION OF SAFETY IS PRESENTED. THE IMPURITIES FOUND IN ORGANIC COOLANTS ARE DISCUSSED WITH PARTICULAR EMPHASIS ON FOULING AND THE HYDRIDING OF ZIRCONIUM ALLOYS. CHLORINE AND OXYGEN SHOULD BE AVOIDED IN THE COOLANT, BUT THE PRESENCE OF ABOUT 100 PPM WATER REDUCES FOULING AND HYDRIDING RATES. RESULTS FROM THE X-7 IN-REACTOR LOOP DEMONSTRATED THAT FUEL CAN BE IRRADIATED TO HIGH BURNUP WITH NEGLIGIBLE FOULING. METHODS FOR CONTROLLING IMPURITY LEVELS ARE DISCUSSED. FURTHER DEVELOPMENT IS REQUIRED TO ASSESS THE RELATIVE MERITS OF COOLANT-PROCESSING METHODS NECESSARY TO ACHIEVE MINIMUM FOULING FOR THE FUEL.

AVAILABILITY - ATOMIC ENERGY OF CANADA LTD., CHALK RIVER, ONTARIO, \$1.00 COPY

*ORGANIC COOLANT + HEAT EXCHANGER + HEAT TRANSFER

5-16086

MATHIS A + GIORDANO P + GATTO G

ITERATIVE METHODS FOR THE ANALOG SIMULATION OF PHYSICAL SYSTEMS CONTAINING FLOWING FLUIDS

COMITATO NAZIONALE PER L'ENERGIA NUCLEARE, ROME, ITALY

RT-ING-(66)-1 + CONF-650505-6 +. 26 PAGES, 16 FIGURES, 2 REFERENCES, 1966, FROM IFIP CONGRESS 1965 MEETING, NEW YORK

SEVERAL WAYS OF SOLVING BY MEANS OF ITERATIVE ANALOG COMPUTATION THE PARTIAL DIFFERENTIAL EQUATIONS DESCRIBING SYSTEMS CONTAINING FLOWING FLUIDS ARE EVALUATED. THE DISCRETIZATION OF SPACE VARIABLE AND TIME VARIABLE, BY CENTRAL AND BACKWARD DIFFERENCES, ARE COMPARED, WITH RESPECT EITHER TO THEIR POSSIBILITIES IN THE SIMULATION OF PHYSICAL SYSTEMS AND TO THE ERRORS INVOLVED.

AVAILABILITY - MICROCARD EDITIONS INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN, 54669

*COMPUTER, ANALOG + FLOW THEORY AND EXPERIMENTS

5-16087

QUARTERLY PROGRESS REPORT, INVESTIGATION OF TWO-PHASE FLOW AND BURNOUT, JUNE 15 - SEPTEMBER 15, 1964, REPORT NO. 497

DYNATECH CORP., CAMBRIDGE, MASS.

NY-3304-2 +. 62 PAGES, 12 FIGURES, 1 TABLE, 25 REFERENCES, SEPT. 30, 1964

A PROGRAM TO INVESTIGATE THE MECHANISMS OF BURNOUT HAS BEEN STARTED AT DYNATECH FOR THE USAEC. THE INITIAL OBJECTIVES ARE TO DETERMINE FLOW REGIMES AND FLOW STABILITY AT BURNOUT FOR SOME SIMPLE GEOMETRIES. THE EXPERIMENTAL FACILITY HAS BEEN BUILT AND IS BEING INSTRUMENTED. THE INITIAL EXPERIMENTAL PROGRAM WAS PLANNED. FLOW-REGIME MODELS DEVELOPED BY INVESTIGATORS IN THE FIELD WERE EVALUATED AND CROSS-CHECKED. A SUMMARY OF THE EXPECTED FLOW REGIMES WAS DEVELOPED AND IS PRESENTED. THE PROBLEM OF NUCLEATION IN ANNULAR FLOW WAS DELINEATED. AN ANALYSIS OF THE STABILITY OF THE TEST SECTION WAS COMPLETED AND IS PRESENTED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*BURNOUT HEAT FLUX + *FLOW, TWO PHASE + DNB (DEPARTURE FROM NUCLEATE BOILING) + HEAT TRANSFER + HEAT TRANSFER, BOILING

5-16088

GORESH JW + DUNN RG

TURBULENT HEAT TRANSFER IN THE THERMAL ENTRANCE REGION OF A PERFECTLY INSULATED PIPE

WRIGHT-PATTERSON AFB, OHIO

ARL-66-0178 +. 42 PAGES, 9 FIGURES, 1 TABLE, 8 REFERENCES, SEPT. 1966

THE PROBLEM WAS THAT OF FINDING THE THERMAL ENTRANCE OR THERMAL MIXING REGION OF A PIPE WHERE THE WALL HEAT FLUX IS ZERO ALONG THE LENGTH OF THE PIPE. THE FLUID IS ASSUMED TO ENTER THE PIPE WITH A NONUNIFORM TEMPERATURE PROFILE AND A FULLY DEVELOPED TURBULENT-VELOCITY PROFILE. THE APPROACH IS ANALOGOUS TO THAT INTRODUCED BY FETTIS FOR THE SOLUTION OF THE UNIFORM-WALL-TEMPERATURE PROBLEM. THE RESULTS FOR TUBES HAVING DIFFERENT RADII AND REYNOLDS NUMBERS ARE PRESENTED IN GRAPHS WHICH SHOW THE ADJUSTMENT OF THE TEMPERATURE PROFILE DOWN THE PIPE. THESE RESULTS PROVIDE INFORMATION CONCERNING THE MINIMUM-LENGTH MIXING TUBE, SINCE ANY

CATEGORY 5
ACCIDENT ANALYSIS

5-16088 *CONTINUED*
WALL LOSSES WILL REQUIRE A GREATER LENGTH.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

FLOW THEORY AND EXPERIMENTS + FLOW, AXIAL + FLOW, TUBE + HEAT TRANSFER

5-16090
CHANG TS + SARTORY WK
HYDROMAGNETIC STABILITY OF VORTEX-LIKE FLOW
OAK RIDGE NATIONAL LABORATORY
ORNL-3707 +. 172 PAGES, 44 FIGURES, 5 TABLES, 32 REFERENCES, JANUARY 1966

A HYDROMAGNETIC STABILITY ANALYSIS OF CONDUCTING INCOMPRESSIBLE, VORTEX-LIKE FLOW WITH POSSIBLE APPLICATIONS TO THE IONIZED-GAS-PHASE FISSION REACTOR AND PLASMA POWER-GENERATION CONCEPTS IS PRESENTED. IT IS FOUND THAT, IN GENERAL, A CONDUCTING VORTEX-LIKE FLOW BETWEEN COAXIAL CYLINDRICAL WALLS CAN BE STABILIZED AGAINST THE INITIAL BREAKDOWN OF LAMINAR MOTION BY AN AXIALLY APPLIED MAGNETIC FIELD OF SUFFICIENT STRENGTH.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*FLOW STABILITY + *PLASMA + FLOW THEORY AND EXPERIMENTS

5-16090
ORTHOFF CR
WALL TEMPERATURE AND SPEED RATIO EFFECTS ON FREE MOLECULE FLAT PLATE FLOW FIELDS
AEROSPACE CORPORATION, AERODYNAMICS AND PROPULSION RESEARCH LABORATORY, EL SEGUNDO, CALIFORNIA
SSD-TP-67-28 + TR-1001(2240-20)-7 +. 35 PAGES, 16 FIGURES, 4 REFERENCES, JAN. 1967

THE EFFECTS OF WALL TEMPERATURE AND FREE-STREAM SPEED RATIO ON THE FREE-MOLECULE NUMBER DENSITY, VELOCITY, AND TEMPERATURE PROFILES ABOUT A DIFFUSELY REFLECTING FLAT PLATE SET PARALLEL TO THE FREE-STREAM VELOCITY VECTOR ARE EXAMINED. QUALITATIVE TRENDS IN NUMBER DENSITY DISTRIBUTIONS ABOUT THE PLATE WITH DECREASING KNUDSEN NUMBER ARE ADDITIONALLY OBTAINED BY COMPARING THE FREE-MOLECULE RESULTS WITH THE TRANSITIONAL-FLOW-REGIME RESULTS OF RIPP.

AVAILABILITY - DEFENSE DOCUMENTATION CENTER, CAMERON STATION, ALEXANDRIA, VIRGINIA

FLOW THEORY AND EXPERIMENTS + FLOW, HIGH SPEED + FLOW, KNUDSEN + HEAT TRANSFER

5-16162 ALSO IN CATEGORY 6
MOEN RH
RADIAL VANE STEAM SEPARATOR DEVELOPMENT, SECOND QUARTERLY REPORT, OCTOBER - DECEMBER 1964
GENERAL ELECTRIC COMPANY, SAN JOSE, CALIF.
GEAP-4783 + EURAEC-1301 +. 42 PAGES, REFERENCES, JANUARY 1965

FURTHER TESTS OF THE MODEL RADIAL-VANE SEPARATOR WERE CARRIED OUT TO DETERMINE THE EFFECT OF PLENUM DEFLECTION ON PERFORMANCE, THE SEPARATOR PERFORMANCE WITH SIX 18-IN. NOZZLES AND EIGHTEEN 6-IN. NOZZLES, THE SPREAD OF WATER FLOW ON THE VANES, AND THE EFFECT OF CARRYOVER SAMPLE FLOW RATE ON CARRYOVER READING. THE DATA WERE PARTIALLY ANALYZED AND THE FOLLOWING CONCLUSIONS MADE - (1) PLENUM DEFLECTORS UNNECESSARY AT TEST CONDITIONS, (2) CARRYOVER IS A FUNCTION OF NOZZLE VELOCITY RATHER THAN STREAM VELOCITY IF VANES NOT EXPOSED IN VORTEX, (3) WATER FLOW FROM NOZZLE ON VANES DOES NOT SPREAD WHILE FLOWING FROM NOZZLE TO VANE ENDS, (4) PREVIOUS CARRYOVER AND CARRYUNDER TESTS CONFIRMED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*FLOW DISTRIBUTION + *FLOW THEORY AND EXPERIMENTS + *FLOW, TWO PHASE + *HYDRAULIC EXPERIMENT + *SEPARATOR

5-16163 ALSO IN CATEGORY 6
RUNDY RD + HOFFMAN HW
VELOCITY MEASUREMENTS FOR BEDS OF LARGE, UNIFORM-DIAMETER SPHERES PACKED IN A FULL-SCALE MODEL OF A PEBBLE-BED NUCLEAR REACTOR
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.
ORNL-P-1708 + CONF-660302-1 +. 42 PAGES, FROM 2ND SOUTHEASTERN CONFERENCE ON THEORETICAL AND APPLIED MECHANICS, COLUMBIA, S. C.

VELOCITY PROFILES WERE DETERMINED FOR SHALLOW BEDS OF RANDOMLY PACKED SPHERES TO PROVIDE INFORMATION FOR THE THERMAL ANALYSIS OF PEBBLE-BED REACTORS. CONCURRENT MEASUREMENTS OF THE VOID FRACTION AND SUPERFICIAL ANGLE OF REPOSE FOR THE BEDS SUPPLIED DATA USEFUL IN THE INTERPRETATION OF THE VELOCITY PROFILES. THE BEDS WERE FORMED OF 1-1/2-IN.-DIAM GRAPHITE SPHERES PACKED BY VARIOUS TECHNIQUES IN A FULL-SIZE, PLEXIGLAS, PBRE CORE MODEL HAVING APPROXIMATELY A CONICAL BOTTOM AND CYLINDRICAL BODY. AN UPWARD AIR FLOW SIMULATED THE HELIUM REACTOR COOLANT. POINT VELOCITIES WERE OBTAINED ABOVE THE EXIT FACE OF THE BED WITH A HOT-WIRE ANEMOMETER.

CATEGORY 5
ACCIDENT ANALYSIS

5-16163 *CONTINUED*

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*HYDRAULIC EXPERIMENT + FLOW DISTRIBUTION + REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED + REACTOR, PEBBLE BED

5-16164 ALSO IN CATEGORIES 6 AND 9

MACFARLANE DR

AN ANALYTIC STUDY OF THE TRANSIENT BOILING OF SODIUM IN REACTOR COOLANT CHANNELS

ARGONNE NATIONAL LABORATORY, ILL.

ANL-7277 +. 117 PAGES, 48 FIGURES, 11 TABLES, JUNE 1966

TWO TYPES OF TRANSIENTS WERE STUDIED - (1) MILD REACTIVITY ADDITION AND (2) PUMP SHUTOFF WITH FLOW COASTDOWN. NUMERICAL SOLUTIONS OBTAINED FOR THE NONLINEAR FORM OF THE COUPLED FLUID DYNAMIC AND HEAT CONDUCTION PARTIAL DIFFERENTIAL EQUATION BY MEANS OF IMPLICIT FINITE-DIFFERENCE EQUATIONS AND AN ITERATIVE ALGOL COMPUTER PROGRAM. SONIC EFFECTS AND CRITICAL FLOW PHENOMENA WERE NOT TREATED. TWO-PHASE COOLANT DENSITY IS PRESSURE DEPENDENT, AND TEMPORAL- AND SPATIAL-VARYING SLIP VELOCITY ARE INCLUDED.

AVAILABILITY -- CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151 \$3.00 COPY, \$0.65 MICRONEGATIVE

ACCIDENT, LOSS OF FLOW + FLOW, TWO PHASE + METAL, LIQUID + REACTIVITY, EXCESS + REACTOR TRANSIENT + REACTOR, FAST + REACTOR, LIQUID METAL COOLED + SODIUM + VOID COEFFICIENT

5-16165 ALSO IN CATEGORIES 6 AND 8

DWEYER OF

RECENT DEVELOPMENTS IN LIQUID-METAL HEAT TRANSFER

BROOKHAVEN NATIONAL LABORATORY, UPTON, N. Y.

90 PAGES, 51 FIGURES, 12 TABLES, 100 REFERENCES, ATOMIC ENERGY REVIEW 4(1) PAGES 3-92 (1966)

SUMMARIZED DEVELOPMENTS IN LIQUID-METAL HEAT TRANSFER THAT HAVE OCCURRED, FOR THE MOST PART, DURING THE PAST 5 YEARS. PRESENTS COMPARISONS BETWEEN THEORETICAL AND EMPIRICAL PREDICTIONS AND EXPERIMENTAL RESULTS, WITH ACCOMPANYING DISCUSSIONS. ALSO, AREAS WHERE FURTHER RESEARCH IS NEEDED ARE INDICATED. SINCE THE SUBJECT CANNOT BE COMPLETELY COVERED IN A SINGLE ARTICLE, EMPHASIS IS GIVEN TO THOSE TOPICS OF MOST ENGINEERING INTEREST. MOREOVER, WITH EACH TOPIC THE THOROUGHNESS OF TREATMENT VARIES ACCORDING NOT ONLY TO REPORTED PROGRESS BUT ALSO TO CURRENT INTEREST. THE PRINCIPAL TOPIC COVERED INCLUDES LIQUID-METAL HEAT TRANSFER FOR (A) FLOW IN PIPES, (B) FLOW IN ANNULI, (C) FLOW BETWEEN PARALLEL PLATES, (D) IN-LINE FLOW THROUGH ROD BUNDLES, (E) OBLIQUE FLOW THROUGH ROD BUNDLES (F) 90-DEG CROSS FLOW THROUGH ROD BUNDLES (G) POOL BOILING, (H) NATURAL-CONVECTION BOILING IN A RECIRCULATING LOOP, (I) FORCED-CONVECTION BOILING IN A RECIRCULATING LOOP, AND (J) CRITICAL HEAT FLUX IN BOTH POOL AND FORCED-CONVECTION BOILING.

ANNULUS + HEAT TRANSFER + HEAT TRANSFER EXPERIMENT + HEAT TRANSFER, BOILING + HEAT TRANSFER, CONVECTION + METAL, LIQUID + POOL BOILING + REVIEW

5-16166 ALSO IN CATEGORY 4

KEMME JE

HEAT PIPE CAPABILITY EXPERIMENTS

LOS ALAMOS SCIENTIFIC LAB., N. MEXICO

LA-3585 +. 32 PAGES, 12 FIGURES, 3 TABLES, 10 REFERENCES, AUGUST 22, 1966

AXIAL HEAT TRANSFER LIMITS WERE MEASURED FOR SEVERAL HEATPIPES HAVING THE SAME O.D. BUT DIFFERENT WICK CONFIGURATIONS TO POTASSIUM AND SODIUM FROM 450 TO 850 C. THE WICKS WERE AXIAL CHANNELS EVENLY SPACED AROUND THE INSIDE WALL OF THE TUBE. A LAYER OF FIRE SCREEN WAS USED IN SOME TESTS TO ISOLATE THE LIQUID FROM THE VAPOR. EXPERIMENTS WERE CHOSEN TO TEST CURRENT HEAT-PIPE RELATIONSHIPS AND TO SHOW POSSIBILITY OF PERFORMANCE IMPROVEMENT. TESTS SHOWED (1) AGREEMENT WITH THEORY AT HIGH TEMPERATURE END AND (2) SCREENS HELP INCREASE STARTUP AND STEADY-STATE HEAT-TRANSFER RATES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

COMPARISON, THEORY AND EXPERIENCE + EVAPORATION + FLOW, LAMINAR + FLOW, TWO PHASE + HEAT PIPE + HEAT TRANSFER AUGMENTATION + HEAT TRANSFER EXPERIMENT + METAL, ALKALI + METAL, LIQUID

5-16178 ALSO IN CATEGORY 8

STUDY OF THE FLOW DISTRIBUTION IN A TWO-CHANNEL TEST SECTION. SPECIAL REPORT 24

SOCIETE NATIONALE D'ETUDE ET DE CONSTRUCTION DE MOTEURS D'AVIATION, SURESNES, FRANCE

EURAFEC-1611 + EUR-2824 +. 40 PAGES, FEBRUARY 10, 1966

EXPERIMENTAL OBSERVATIONS AND MEASUREMENTS OF AIR-WATER MIXTURES FLOWING IN A TWO-CHANNEL TEST REACTION ARE USED TO CLARIFY CROSS-MIXING OF TWO-PHASE COOLANT IN FUEL BUNDLES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

CATEGORY 5
ACCIDENT ANALYSIS

5-16178 *CONTINUED*
FLOW DISTRIBUTION + FLOW, CROSS + FLOW, TWO PHASE + HYDRAULIC EXPERIMENT

5-16179 ALSO IN CATEGORY 6
MAYINGER F + SCHAD O + WEISS F
STUDY ON BURNOUT HEAT FLUX IN BOILING WATER
MASCHINENFABRIK AUGSBURG-NUERNBERG A.G., NUERNBERG, GERMANY
EURDEC-1550 + EUR-2692 +. 42 PAGES, REFERENCES, JANUARY 1966

EXPERIMENTAL MEASUREMENTS ON ELIMINATING TWO-PHASE-FLOW PULSATION BY UPSTREAM ORIFICING ARE REPORTED. MINIMUM ORIFICING TO ELIMINATE FLOW PULSATION AND PULSATION-INDUCED BURNOUT WAS DETERMINED FOR PRESSURE UP TO 100 ATMOSPHERE, MASS FLOW RATES OF 200 TO 400 G PER SQ. CM PER SEC, AND SUBCOOLING OF 0 TO 60 C.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

BURNOUT HEAT FLUX + DNB (DEPARTURE FROM NUCLEATE BOILING) + FLOW STABILITY + FLOW, PULSATING + HEAT TRANSFER EXPERIMENT + HEAT TRANSFER, BOILING

5-16181 ALSO IN CATEGORIES 4 AND 8
KEMME JF
HEAT PIPE CAPABILITY EXPERIMENTS.
LOS ALAMOS SCIENTIFIC LAB., UNIVERSITY OF CALIF., LOS ALAMOS, NEW MEXICO
SC-M-66-623 + CONF-660645 +. 6 PAGES, OCTOBER 1966, PROCEEDINGS OF JOINT ATOMIC ENERGY COMMISSION/SANDIA LABORATORIES HEAT PIPE CONFERENCE HELD AT ALBUQUERQUE, NEW MEXICO, JUNE 1, 1966, VOLUME I, PUBLISHED BY SPACE ISOTOPE POWER DEPARTMENT, SANDIA LABORATORIES

IN ENGINEERING APPLICATIONS, HEAT PIPES MAY SERVE ADVANTAGEOUSLY AS THERMAL CONDUCTORS, AS HEAT-FLUX TRANSFORMERS, AS ISOTHERMALIZERS, AS THERMOSTATS, OR IN COMBINATIONS OF THESE ROLES. EXCEPTING SOME QUESTIONS OF LONG-TERM MATERIALS COMPATIBILITY, PRESENT KNOWLEDGE OF RELEVANT MATERIALS PROPERTIES AND UNDERSTANDING OF THE ENGINEERING PHYSICS OF THE HEAT-PIPE PROCESS ARE SUFFICIENTLY GOOD TO PERMIT REALISTIC PREDICTION OF THE GENERAL FEASIBILITY OF A PROSPECTIVE NEW APPLICATION BUT NOT PRECISE OR DETAILED ENOUGH TO SERVE FOR THE GENERALIZATION OF TRULY OPTIMAL DESIGNS. THE CURRENT THEORY FOR DESIGN AND PERFORMANCE ANALYSIS OF HEAT PIPES IS SUMMARIZED BRIEFLY, AND THE PRINCIPAL OUTSTANDING GAPS ARE DISCUSSED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

FLOW, LAMINAR + HEAT EXCHANGER + HEAT PIPE + SPACECRAFT

5-16281 ALSO IN CATEGORIES 6 AND 8
WENTZ LB + WRIGHT RW + ZIVI SM
THE POSSIBILITY OF DESTRUCTIVE IN-CORE PRESSURES IN POWER REACTOR MELTDOWN ACCIDENTS
TRW SYSTEMS, REDONDO BEACH, CALIFORNIA
STL 372-44 +. PAGES 3-8 OF QUARTERLY PROGRESS REPORT FOR PERIOD ENDING JUNE 30, 1966 - KINETIC STUDIES OF HETEROGENEOUS WATER REACTORS, 45 PAGES, 14 FIGURES, 1 TABLE, 30 REFERENCES, JULY 31, 1966

THE TRANSIENT HEAT FLUX OBTAINABLE FROM MELTEN UO₂ IS COMPARABLE TO THAT FROM MOLTEN ALUMINUM. IN THE ABSENCE OF DEFINITIVE EXPERIMENTS, ONE CANNOT CONCLUDE WHETHER DESTRUCTIVE PRESSURES WILL BE PRODUCED BY THE IN-CORE INTERACTION OF WATER AND MOLTEN OXIDE FUEL.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

*HYDRAULIC ANALYSIS + *THERMAL ANALYSIS + ACCIDENT ANALYSIS + HEAT TRANSFER, BOILING + METAL WATER REACTION + REACTOR TRANSIENT + URANIUM OXIDE

5-16285 ALSO IN CATEGORIES 6 AND 8
WRIGHT PW + FIRSTENBERG AF + HUMBERSTONE GH
SHOCK TUBE EXPERIMENT ON PRESSURE GENERATION
TRW SYSTEMS, REDONDO BEACH, CALIFORNIA
STL 372-47 +. PAGES 3-14 OF QUARTERLY PROGRESS REPORT FOR PERIOD ENDING SEPT. 30, 1966 - KINETIC STUDIES OF HETEROGENEOUS WATER REACTORS, 50 PAGES, 27 FIGURES, 1 TABLE, 11 REFERENCES, OCTOBER 31, 1966

IN SHOCK-TUBE EXPERIMENTS, THE PRESSURE PULSE PRODUCED BY WATER IMPACT UPON 1000 C ALUMINUM PRODUCED A PRESSURE PULSE THAT ROSE TO 5800 PSI BEFORE RUPTURE, GREATER THAN THE WATER CRITICAL PRESSURE OF 3200 PSIG. AN EXPERIMENT WAS PERFORMED WITH WATER IMPACTING ON MOLTEN SILVER, WHICH ELIMINATES THE POSSIBILITY OF A CHEMICAL CONTRIBUTION TO PRESSURE GENERATION. THESE RESULTS WERE SIMILAR TO THOSE FOR MOLTEN ALUMINUM. SHOCK-TUBE RUNS WITH POWDERED UO₂ AT 800 AND 1200 C PRODUCED UO₂ DISPERSAL INTO THE WATER, BUT PRESSURES OF ONLY 240 PSIA AND 320 PSIA, RESPECTIVELY. ONE CANNOT SAFELY EXCLUDE THE POSSIBILITY OF HIGHER PRESSURES FROM THE INTERACTION OF WATER WITH VERY MUCH HOTTER MOLTEN UO₂.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

CATEGORY 5
ACCIDENT ANALYSIS

5-16285 *CONTINUED*

*HYDRAULIC ANALYSIS + *THERMAL ANALYSIS + ACCIDENT ANALYSIS + ALUMINUM + HEAT TRANSFER, BOILING + METAL WATER REACTION + REACTOR TRANSIENT + SILVER + URANIUM OXIDE

5-16287 ALSO IN CATEGORIES 6 AND 8
WENTZ L^a

IN-PILE CAPSULE MEASUREMENTS OF TRANSIENT STEAM-VOID FORMATION
TWR SYSTEMS, REDONDO BEACH, CALIFORNIA

STL-372-47 +. PAGES 15-23 OF QUARTERLY PROGRESS REPORT FOR PERIOD ENDING SEPT. 30, 1966 - KINETIC STUDIES OF HETEROGENEOUS WATER REACTORS, 50 PAGES, 27 FIGURES, 1 TABLE, 11 REFERENCES, OCTOBER 31, 1966

IN OUR IN-PILE CAPSULE THE INITIAL PRESSURE WAS VARIED FROM 0 TO 1500 PSIA, WITH THE REACTOR PERIOD VARIED BETWEEN 3 AND 5 MILLISECONDS AT EACH STEP. THE BEHAVIOR WAS QUALITATIVELY SIMILAR AT ALL PRESSURES. THE WATER-HAMMER IMPACT PRESSURE FROM VAPOR-BLANKET COLLAPSE INCREASED WITH INITIAL PRESSURE TO A MAXIMUM NEAR 400 PSIA AND THEN DECREASED AT HIGHER PRESSURE. WATER-HAMMER IMPACT PRESSURES UP TO 1000 PSI WERE OBSERVED, BUT THE PRESSURES FROM THE INITIAL NUCLEATE BOILING PHASE WERE LESS THAN 150 PSI.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151 \$3.00 COPY, \$0.65 MICRONEGATIVE

HEAT TRANSFER, BOILING + KEWB (KINETIC EXPERIMENT ON WATER BOILERS) + REACTOR TRANSIENT + REACTOR, HOMOGENEOUS + REACTOR, RESEARCH

5-16334 ALSO IN CATEGORY 18

QUESTION A-6--FORCE ON REACTOR PRESSURE VESSEL FOLLOWING ITS RUPTURE
COMMONWEALTH EDISON COMPANY

2 PAGES, PAGES A-6-1 TO A-6-2 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

ANALYZE THE FORCE EFFECTS ON THE REACTOR VESSEL AND THE DRYWELL FROM AN ASSUMED INSTANTANEOUS RUPTURE ANYWHERE IN THE REACTOR VESSEL. THE SIZE OF THE RUPTURE SHOULD BE EQUIVALENT TO A RUPTURE LEADING TO CONTAINMENT DESIGN PRESSURE IN THE DRYWELL (62 PSIG) DURING BLOWDOWN. YOUR ANALYSIS SHOULD ALSO INCLUDE THE EFFECTS OF SUCH A RUPTURE OCCURRING ON THE BOTTOM OF THE REACTOR VESSEL COINCIDENT WITH THE VERTICAL AXIS.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACCIDENT, LOSS OF COOLANT + *PRESSURE VESSEL + AEC QUESTION + DRESDEN 3 + MISSILE GENERATION AND PROTECTION + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

5-16340 ALSO IN CATEGORY 18

QUESTION A-7(6)--FUEL MOVEMENT REACTIVITY EFFECTS
COMMONWEALTH EDISON COMPANY

4 PAGES, PAGES A-7-6 TO A-7-9 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

WHAT ARE THE POSITIVE REACTIVITY EFFECTS DUE TO FUEL RELOCATION. CAN THIS PHENOMENON AFFECT REACTIVITY TRANSIENTS LIKE THE ROD-EJECTION ACCIDENT SIGNIFICANTLY.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACCIDENT, FUEL SLUMP + ACCIDENT, CONTROL ROD EJECTION + AEC QUESTION + DRESDEN 3 + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

5-16346 ALSO IN CATEGORY 18

QUESTION B-4--REACTOR STABILITY
COMMONWEALTH EDISON COMPANY

3 PAGES, PAGES B-4-1 TO B-4-3 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

IN REGARD TO CRITERION 5, PROVIDE THE RESULTS OF YOUR FREQUENCY-RESPONSE ANALYSES CONCERNING THE STABILITY OF DRESDEN 3, INCLUDING THE EFFECT OF DOPPLER REACTIVITY COEFFICIENTS. FURTHER, INCLUDE A LIST OF DESIGN GUIDELINES AND ACTUAL VALUES OF THE IMPORTANT PARAMETERS THAT WOULD AFFECT REACTOR STABILITY.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*DOPPLER COEFFICIENT + *FREQUENCY SPECTRA + *REACTOR STABILITY + AEC CONSTRUCTION PERMIT CRITERIA + AEC QUESTION + DRESDEN 3 + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

5-16354 ALSO IN CATEGORY 18

QUESTION D-3--ANALYSIS OF FUEL DROP ACCIDENT
COMMONWEALTH EDISON COMPANY

4 PAGES, PAGES D-3-1 TO D-3-4 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

IN RECENT DISCUSSIONS WITH THE STAFF IT WAS STATED THAT THE EXCURSION ANALYSIS PRESENTED FOR THE FUEL-DROP ACCIDENT WAS IN ERROR. GIVE THE CORRECTED ANALYSIS, INCLUDING (A) PEAK FUEL

CATEGORY 5
ACCIDENT ANALYSIS

5-16354 *CONTINUED*

ENTHALPIES, (B) AMOUNT OF MOLTEN FUEL, (C) POSSIBLE REACTIVITY, STEAM GENERATION AND PRESSURE EFFECTS OF EXPULSION OF THE MOLTEN FUEL INTO MODERATOR CHANNELS AND (D) THE INCREASE IN FISSION-PRODUCT RELEASE TO THE ENVIRONMENT. COULD ENOUGH ENERGY BE TRANSFERRED TO THE MODERATOR TO GENERATE A WATER-HAMMER EFFECT.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACCIDENT, FUEL SLUMP + AEC QUESTION + DRESDEN 3 + METAL WATER REACTION + MOLTEN FUEL + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY + SHOCK WAVE

5-16356 ALSO IN CATEGORIES 18 AND 6
QUESTION D-5--EXPERIMENTAL BASIS OF FUEL DAMAGE THRESHOLDS FOR EXCURSION ANALYSIS
COMMONWEALTH EDISON COMPANY
5 PAGES, PAGES D-5-1 TO D-5-5 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

DISCUSS THE EXPERIMENTAL BASIS OF THE DAMAGE THRESHOLDS ASSUMED IN THE EXCURSION ANALYSES. INCLUDE CONSIDERATIONS OF PARTICLE SIZE AND PRESSURE PULSES GENERATED AS A FUNCTION OF PEAK FUEL ENTHALPY. HOW IS THE EXPERIMENTAL DATA CORRECTED IN YOUR ANALYSES TO TAKE INTO CONSIDERATION EFFECTS OF THE LARGE CORE. ALSO, COMPARE THE RESULTS OF YOUR MODEL FOR THE DOPPLER COEFFICIENT WITH EXPERIMENTAL DATA AND WITH OTHER CURRENT MODELS. REFER ALSO TO QUESTION A-2.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*EXCURSION, LARGE + *FUEL ELEMENT + *PERFORMANCE LIMIT + AEC QUESTION + DOPPLER COEFFICIENT + DRESDEN 3 + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

5-16359 ALSO IN CATEGORIES 18 AND 9
QUESTION D-8--STARTUP ACCIDENT ANALYSIS
COMMONWEALTH EDISON COMPANY
3 PAGES, PAGES D-8-1 TO D-8-3 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

PLEASE PROVIDE AN ANALYSIS FOR THE FOLLOWING STARTUP ACCIDENT, CONSIDERING ITS OCCURRENCE AT EITHER (A) COLD PLANT, (B) HOT STANDBY, AND (C) POWER-OPERATION CONDITIONS - SIMULTANEOUS WITHDRAWAL OF TWO CONTROL RODS UNDER CONDITIONS OF MAXIMUM REACTIVITY INSERTION RATE AND NO BYPASS FUNCTION IN EFFECT. THE EFFECTS OF DOPPLER AND SCRAM INITIATED BY THE APRM SYSTEM ONLY MAY BE CONSIDERED.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACCIDENT, CONTROL ROD EJECTION + *ACCIDENT, CONTROL ROD WITHDRAWAL + AEC QUESTION + DOPPLER EFFECT + DRESDEN 3 + REACTOR SAFETY SYSTEM + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

5-16380 ALSO IN CATEGORY 14
TWO-PHASE FLOW AND HEAT TRANSFER IN MULTIROD GEOMETRIES. QUARTERLY PROGRESS REPORT NO. 9, OCTOBER 26, 1966 - JANUARY 25, 1967.
GENERAL ELECTRIC CO., SAN JOSE, CALIFORNIA, ATOMIC POWER EQUIPMENT DEPT.
GEAP-5441 +. 37 PAGES, REFERENCES, OCTOBER 26, 1966

RESULTS OF THE ISOKINETIC PROBE MEASUREMENTS DURING THE TASK-A NINE-ROD STEAM-WATER TESTS ARE DESCRIBED. SINGLE-PHASE SAMPLE FLOW WAS MEASURED FOR VARIOUS VALUES OF PRESSURE DIFFERENCE BETWEEN PROBE AND CHANNEL. THE CALCULATED SAMPLE FLOW RATE, ASSUMING A LOSS AT PROBE INLET EQUAL TO 75% OF THE RATE AND ENTHALPY WERE MEASURED. A MODEL WAS DEVISED TO HELP INTERPRET THE RESULTS. ATTENTION WAS FOCUSED ON FLOW IN SUBCHANNEL NO. 1 IN THE CORNER. AVERAGE QUALITY WAS DETERMINED FOR SUBCHANNEL NO. 1, USING THE ISOKINETIC DATA PLUS NINE-ROD AIR-WATER DATA. AT AVERAGE CHANNEL QUALITIES OF 15% THE QUALITY IN SUBCHANNEL NO. 1 UNDER ADIABATIC CONDITIONS IS MUCH LOWER THAN THE CHANNEL AVERAGE. UNDER BOILING CONDITIONS, IT IS CLOSE TO THE CHANNEL AVERAGE. PNL USED ITS CCBPA CODE TO CALCULATE VALUES OF EXIT CONDITIONS IN THE SUBCHANNELS OF THE TASK-B NINE-ROD SECTION. TWO CORRELATIONS WERE USED TO PREDICT CRITICAL HEAT FLUX. PREDICTED AND MEASURED VALUES ARE COMPARED. RESULTS ARE PROMISING.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

BURNOUT HEAT FLUX + FLOW DISTRIBUTION + FLOW, TWO PHASE + HYDRAULIC EXPERIMENT + SAMPLING

5-16381 ALSO IN CATEGORY 6
TRANSITION BOILING HEAT TRANSFER PROGRAM. SIXTEENTH QUARTERLY PROGRESS REPORT, OCTOBER-DECEMBER 1966.
GENERAL ELECTRIC CO., SAN JOSE, CALIFORNIA. ATOMIC POWER EQUIPMENT DEPT.
GEAP-5426 + EURAEC-1792 +. 29 PAGES, JANUARY 3, 1967

THE SERIES TESTS WITH THE TUBE TEST SECTION WERE PERFORMED AT 1000 PSIA WITH MASS VELOCITIES OF 0.5 AND 0.75 MILLION LB PER HR PER SQ. FT. FULLY-DEVELOPED FILM-BOILING COEFFICIENTS WERE MEASURED, ALONG WITH STEAM-PHASE TEMPERATURES. THE PROBE DATA DEMONSTRATED QUANTITATIVELY THAT THE STEAM PHASE WAS SUPERHEATED FOR HEAT TRANSFER FROM A DRY WALL TO A FLOWING STEAM-WATER MIXTURE. A NEW SINGLE-ROD ANNULAR TEST SECTION WAS DESIGNED FOR OBTAINING FULLY DEVELOPED HEAT-TRANSFER COEFFICIENTS AND BULK-STEAM-PHASE TEMPERATURE MEASUREMENTS. THE

CATEGORY 5
ACCIDENT ANALYSIS

5-16381 *CONTINUED*

DESIGN INCORPORATES SMALL PROFILE SPACERS, 18-INCH SPANS BETWEEN SPACERS, AND SPECIAL CONSTRUCTION FOR ATTAINING HIGHER HEATED WALL TEMPERATURES THAN PREVIOUSLY POSSIBLE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

FLOW, TWO PHASE + FUEL ELEMENT + HEAT TRANSFER ANALYSIS + HEAT TRANSFER EXPERIMENT + REACTOR, BOILING WATER

5-16383 ALSO IN CATEGORY 12

ISPAEL SL + NOLAN DJ

PERFORMANCE EVALUATION OF HEAT EXCHANGERS FOR SODIUM-COOLED REACTORS. QUARTERLY TECHNICAL PROGRESS REPORT, JANUARY 1, 1967 - MARCH 31, 1967.

UNITED NUCLEAR CORP., ELMSFORD, N. Y. RESEARCH AND ENGINEERING CENTER

UNC-5174 +. 65 PAGES, APRIL 20, 1967

PROGRESS REPORT ON THE EVALUATION OF THE THERMAL-HYDRAULIC PERFORMANCE AND STRUCTURE OF HEAT EXCHANGER FOR SODIUM-COOLED REACTORS. EVALUATION TO BE BASED ON MODEL TESTS AT ABOUT 30 MW(T). SHUTDOWN OF EVALUATION PROCEDURE ARE CONTINUING. SOME ERRORS FOUND.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

HEAT EXCHANGER + METAL, LIQUID + SODIUM + THERMAL ANALYSIS

5-16388 ALSO IN CATEGORY 18

QUESTION 4. FUEL ELEMENT FAILURE MODES UNDER LOSS-OF-COOLANT CONDITIONS

TENNESSEE VALLEY AUTHORITY

3 PAGES, PAGES 4-1 TO 4-3 FROM BROWNS FERRY AMENDMENT 7, FEBRUARY 1967, DOCKET NO. 50-259 AND 50-260

IN WHAT MANNER CAN FUEL ELEMENTS BE EXPECTED TO FAIL IN THE COURSE OF VARIOUS POSTULATED LOSS-OF-COOLANT ACCIDENTS. IS SUFFICIENT INFORMATION AVAILABLE ON FUEL PINS AT THE PROPOSED FUEL RATING AND MAXIMUM BURNUP TO VERIFY THE EXPECTED MODE OF FUEL BEHAVIOR UNDER VARIOUS ANTICIPATED TRANSIENTS AND POSTULATED ACCIDENTS. IF NOT, WILL AN ADEQUATE R AND D PROGRAM BE PURSUED TO CONFIRM THE STATED MODE OF BEHAVIOR AS A FUNCTION OF BURNUP. WILL FUEL ELEMENTS IRRADIATED IN THE BROWNS FERRY REACTORS BE EXAMINED AND TESTED TO CONFIRM AN ACCEPTABLE BEHAVIOR OF FUEL IN THE REACTOR UNDER VARIOUS TRANSIENT CONDITIONS.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*FUEL ELEMENT + *PERFORMANCE LIMIT + AEC QUESTION + BROWNS FERRY + FAILURE, FUEL ELEMENT + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

5-16389 ALSO IN CATEGORIES 18 AND 12

QUESTION 5. EFFECT ON FUEL TEMPERATURE AND OFFSITE DOSE IF ISOLATION VALVES LEAK FOLLOWING STEAM LINE RUPTURE

TENNESSEE VALLEY AUTHORITY

2 PAGES, PAGES 5-1 TO 5-2 FROM BROWNS FERRY AMENDMENT 7, FEBRUARY 1967, DOCKET NO. 50-259 AND 260

EXAMINE THE ACCIDENT INVOLVING A LARGE STEAM-LINE BREAK OUTSIDE THE DRYWELL, ASSUMING THAT THE STEAM-LINE ISOLATION VALVES DO NOT SEAT PROPERLY. CONSIDER A RANGE OF CONTINUED LEAKAGE. HOW DO THE FUEL-ELEMENT TEMPERATURES BEHAVE. HOW IS THE OFF-SITE DOSE AFFECTED BY THE NUMBER OF FUEL-PIN FAILURES.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACCIDENT, STEAM LINE RUPTURE + *CONTAINMENT PENETRATION, CLOSURE OF + AEC QUESTION + AIRBORNE RELEASE + BROWNS FERRY + DOSE + FAILURE, FUEL ELEMENT + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

5-16390 ALSO IN CATEGORY 18

QUESTION 6. FUEL TEMPERATURE RISE DURING DEPRESSURIZATION FROM HPCI TO LPCI

TENNESSEE VALLEY AUTHORITY

4 PAGES, PAGES 6-1 TO 6-4 FROM BROWNS FERRY AMENDMENT 7, FEB. 1967, DOCKET NO. 50-259/260

PROVIDE DETAILED RESULTS OF ANALYSES OF ACCIDENTS INVOLVING BREAK SIZES BEYOND THE CAPABILITY OF THE HPCI AND REQUIRING DEPRESSURIZATION BEFORE THE LPCI CAN BE EFFECTIVE. IN PARTICULAR, INDICATE THE TEMPERATURES OF THE HOTTEST GROUP OF FUEL ELEMENTS. HOW WOULD PROLIFIC FUEL-ELEMENT FAILURE IN THE HOTTEST FUEL ELEMENTS AFFECT THE COURSE OF THE ACCIDENT. WHAT WOULD BE THE EFFECT OF A STUCK ROD IN THIS ACCIDENT.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*EMERGENCY COOLING CONSIDERATIONS + AEC QUESTION + BROWNS FERRY + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

CATEGORY 5
ACCIDENT ANALYSIS

5-16391 ALSO IN CATEGORY 18
QUESTION 7. LOSS-OF-COOLANT CORE COOLING CALCULATIONS. BASES AND ASSUMPTIONS
TENNESSEE VALLEY AUTHORITY
3 PAGES, PAGES 7-1 TO 7-3, FROM BROWNS FERRY AMENDMENT 7, FEBRUARY 1967, DOCKET NO. 50-259/260

DISCUSS CALCULATIONS RELATED TO CORE COOLING DURING A BLOWDOWN INVOLVING RECIRCULATION-PIPE BREAK, CLEARLY DELINEATING ASSUMPTIONS AND STATING AREAS OF UNCERTAINTY. WHERE MAY CALCULATIONS NOT BE CONSERVATIVE. REVIEW CALCULATIONS OF FUEL-ELEMENT TEMP. FOR LOSS-OF-COOLANT ACCIDENT INVOLVING BREAK SIZES JUST BEYOND THE CAPACITY OF HPCI SYSTEM WHEREIN CORE MAY BE UNCOVERED DURING DEPRESSURIZATIONS. IN CALCULATION OF FUEL AND CLAD TEMPERATURES DURING DEPRESSURIZATION AFTER POSTULATED LOSS-OF-COOLANT ACCIDENT, WHAT ARE MAJOR UNCERTAINTIES. ARE THERE ANY ASPECTS OF THESE CALCULATIONS WHICH MAY NOT BE CONSERVATIVE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*BLOWDOWN + *MATHEMATICAL TREATMENT + ACCIDENT, LOSS OF COOLANT + AEC QUESTION + BROWNS FERRY + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

5-16392 ALSO IN CATEGORIES 18 AND 17
QUESTION 8. POSSIBLE WAYS FLOW RESTRICTION TO FUEL ASSEMBLIES
TENNESSEE VALLEY AUTHORITY
1 PAGE, PAGE 8-1 FROM BROWNS FERRY AMENDMENT 7, FEBRUARY 1967, DOCKET NO. 50-259/260

DISCUSS THOROUGHLY THE POSSIBLE WAYS IN WHICH COOLANT FLOW MIGHT BE SIGNIFICANTLY RESTRICTED OR BLOCKED TO A SUBASSEMBLY UNDER STEADY-STATE POWER OR ACCIDENT CONDITIONS. WHICH CONDITIONS LEAD TO CONSIDERABLE FUEL MELTING.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*FLOW BLOCKAGE + AEC QUESTION + BROWNS FERRY + FUEL MELTDOWN + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

5-16393 ALSO IN CATEGORY 18
QUESTION 9. FLOW BLOCKAGE DUE TO FUEL MELTDOWN
TENNESSEE VALLEY AUTHORITY
1 PAGE, PAGE 9-1 FROM BROWNS FERRY AMENDMENT 7, FEBRUARY 1967, DOCKET NO. 50-259/260

WHERE DOES OXIDE FUEL GO IN THE EVENT OF JACKET FAILURE UNDER VARIOUS FLOW AND ACCIDENT CONDITIONS. UNDER WHICH CIRCUMSTANCES MIGHT FLOW BE SIGNIFICANTLY BLOCKED BY FUEL ELEMENT FAILURE. WHAT IS THE MINIMUM NUMBER OF GROSS FUEL PIN FAILURES REQUIRED TO INTERFERE SERIOUSLY WITH FLOW. WHAT KEEPS THE INLET ORIFICE FROM BLOCKING.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*FAILURE, CLADDING + *FAILURE, SEQUENTIAL + *FLOW BLOCKAGE + AEC QUESTION + BROWNS FERRY + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

5-16394 ALSO IN CATEGORY 18
QUESTION 10. EFFECT OF FUEL FAILURE ON PRESSURE RISE WITHIN ASSEMBLIES
TENNESSEE VALLEY AUTHORITY
2 PAGES, PAGES 10-1 TO 10-2 FROM BROWNS FERRY AMENDMENT 7, FEBRUARY 1967, DOCKET NO. 50-259/260

POSTULATE THAT THE FUEL IN THE CENTRAL-THIRD OF A SUBASSEMBLY MELTS AND IS SUBJECTED TO RAPID IMPRUSHING WATER DURING STEADY-STATE FULL-POWER OPERATIONS, AS WELL AS ACCIDENT CONDITIONS. WHAT KIND OF PRESSURE PULSES COULD ENSUE. WHAT WOULD BE THE CONSEQUENCES ON NEIGHBORING SUBASSEMBLIES AND CONTROL RODS. COULD THIS ACCIDENT PROPAGATE.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*FAILURE, FUEL ELEMENT + AEC QUESTION + BROWNS FERRY + FAILURE, SEQUENTIAL + PRESSURE, EXTERNAL + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

5-16398 ALSO IN CATEGORIES 6 AND 8
MATZNER B + CASTERLINE JE + BIDERMAN R
TOPICAL REPORT NO. 4. CRITICAL HEAT FLUX IN LONG TUBES AT 1000 PSIA WITH AND WITHOUT SWIRL PROMOTERS.
COLUMBIA UNIVERSITY, CHEMICAL ENGINEERING DEPT., NEW YORK
TID-22,496 +. 34 PAGES, 9 FIGURES, 2 TABLES, 8 REFERENCES, FEBRUARY 4, 1965

OVER 200 CRITICAL-HEAT-FLUX POINTS AND OVER 400 TWO-PHASE PRESSURE-DROP POINTS WERE OBTAINED FOR SIX ELECTRICALLY HEATED TEST SECTIONS WITH VERTICAL UPFLOW OF BOILING WATER AT 1000 PSIA. THE THREE AXIAL-FLOW TEST SECTIONS HAD HEATED LENGTHS OF 8, 12, AND 16 FT. OF THE THREE SWIRL-FLOW TEST SECTIONS, ONE WITH A 16-FT HEATED LENGTH EMPLOYED A FULL-LENGTH TWISTED TAPE WHILE THE OTHER TWO WITH HEATED LENGTHS OF 12 AND 16 FT USED 2-IN.-LONG TAPE SEGMENTS

CATEGORY 5
ACCIDENT ANALYSIS

5-16398 *CONTINUED*

INSTALLED ONE EACH AT THE INLET AND 8 FT DOWNSTREAM. THE RANGES OF EXPERIMENTAL VARIABLES COVERED WERE - MASS VELOCITIES BETWEEN 1 MILLION AND 7 MILLION LB/HR/SQ. FT, EXIT QUALITIES BETWEEN 1 AND 88%, AND CRITICAL HEAT FLUXES AS HIGH AS 1.3 MILLION BTU/HR/SQ. FT. IT WAS CONCLUDED THAT PROPERLY DESIGNED SWIRL PROMOTERS HAD THE POTENTIAL FOR INCREASING THE CRITICAL HEAT FLUX INSIDE TUBES WITHOUT EXTRA PUMPING POWER.

AVAILABILITY - OAK RIDGE ASSOCIATED UNIVERSITIES, BADGER AVENUE, OAK RIDGE, TENN.

*DNB (DEPARTURE FROM NUCLEATE BOILING) + *HEAT FLUX, DRYOUT + *HEAT TRANSFER + *PRESSURE DROP + FLOW THEORY AND EXPERIMENTS + FLOW, TWO PHASE + HEAT TRANSFER AUGMENTATION + HEAT TRANSFER EXPERIMENT + HEAT TRANSFER, BOILING

5-16400

RODMAN SW + CORTEZ DH

HEAT TRANSFER TO AGITATED, TWO-PHASE LIQUIDS IN JACKETED VESSELS.

SCHOOL OF CHEMICAL ENGINEERING PRACTICE, MASSACHUSETTS INSTITUTE OF TECHNOLOGY + AMERICAN CYANAMID CO., BOUND BROOK, N. J.

6 PAGES, 4 FIGURES, 1 TABLE, 13 REFERENCES, IND. AND ENG. CHEM., PROC. DES. AND DEV., 6(1), PAGES 127-133 (JANUARY 1967)

UNSTEADY-STATE HEAT-TRANSFER EXPERIMENTS WERE MADE IN A JACKETED, AGITATED, GLASS-LINED VESSEL USING AS HEAT-TRANSFER MEDIA BOTH SINGLE-PHASE AND TWO-PHASE FLUIDS - WATER, TOLUENE, LUBRICATING OIL, WATER-TOLUENE MIXTURES, AND WATER-LUBRICATING OIL MIXTURES. DATA WERE FIRST OBTAINED FOR THE SINGLE-PHASE FLUIDS AND AGREED WITH THOSE OF PREVIOUS INVESTIGATORS. THE RATE OF HEAT TRANSFER TO TWO-PHASE AGITATED FLUIDS WAS THEN MEASURED AND COMPARED WITH THE RESULTS FOR SINGLE-PHASE HEAT TRANSFER. SEVERAL CORRELATION TECHNIQUES FOR THE TWO-PHASE HEAT-TRANSFER RESULTS WERE ATTEMPTED. THESE DIFFERED IN THE METHODS USED TO COMPUTE THE PHYSICAL PROPERTIES OF THE TWO-PHASE MIXTURES. THE USE OF BULK, VOLUME-AVERAGE PROPERTIES YIELDED THE MOST CONSISTENT CORRELATION OF THE DATA. GRAVITATIONAL EFFECTS AT LOW AGITATOR SPEED ARE DISCUSSED IN SOME DETAIL.

FLOW, TWO PHASE + HEAT TRANSFER + HEAT TRANSFER CORRELATION + MIXING DEPTH

5-16401

ALSO IN CATEGORIES 11 AND 18

AMENDMENT 7 - REVISIONS TO DESIGN AND ANALYSIS REPORT.

TENNESSEE VALLEY AUTHORITY, CHATTANOOGA, TENN.

9 PAGES, 1 TABLE, FEBRUARY 2, 1967, DOCKET NO. 50-259/260

REVISIONS INCLUDE (1) REDUCTION OF REACTOR-VESSEL INTERIOR CLADDING FROM 7/32 TO 1/8 IN. OF STAINLESS STEEL, (2) TEMPERATURE OF REACTOR-VESSEL PLATE MATERIAL OPPOSITE CORE-CENTER IMPACT TEST INCREASES FROM 10 F TO 40 F, (3) DRYWELL DESIGN TEMPERATURE REDUCED FROM 287 TO 281 F, AND RESULTANT ASME-CODE DESIGN PRESSURE REDUCED FROM 62 TO 56 PSIG, (4) PEAK ACCIDENT PRESSURE NOW CALCULATED AT 40, INSTEAD OF 32 PSIG, (5) LEAK RATE NOW QUOTED AT ACCIDENT PRESSURE RATHER THAN AT DESIGN PRESSURE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTAINMENT DESIGN + *PRESSURE VESSEL + *SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF COOLANT + BROWNS FERRY + CLAD + REACTOR, BOILING WATER

5-16437

ALSO IN CATEGORIES 12 AND 18

VOLUME II, APPENDIX E - REACTOR CORE SPRAY COOLING SYSTEM TEST PROGRAM.

JERSEY CENTRAL POWER AND LIGHT COMPANY, MORRISTOWN, NEW JERSEY

4 PAGES, 8 FIGURES, FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, JANUARY 25, 1967, DOCKET NO. 50-219

SUMMARY OF TESTS TO DETERMINE (1) AMOUNT OF SPRAY REACHING EACH ASSEMBLY (MINIMUM FLOW IS 35% OF THE AVERAGE FLOW), (2) SPRAY-COOLING EFFECTIVENESS ON A BUNDLE OF 36 ELECTRICALLY HEATED TEST RODS (THE CORE-HEATUP CALCULATIONAL MODEL EFFECTIVE-HEAT-TRANSFER COEFFICIENT WAS INCREASED TO ACCOUNT FOR INCREASED RADIATION LOSSES TO VAPOR AND DROPLETS), AND (3) HEIGHT OF CORE FLOODING NECESSARY FOR EFFECTIVE COOLING (5 MIN AFTER SHUTDOWN WITH FLOODING HALFWAY UP THE CORE, THE ENTIRE LENGTH IS AT SATURATION TEMPERATURE EXCEPT FOR THE UPPER 3 FT, WHICH PEAKED AT 975 F & IN. FROM THE TOP - TWO-THIRDS FLOODING REDUCED ALL TEMPERATURES TO SATURATION).

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CORE SPRAY + *MODEL TESTING + *TEST, PROOF + ACCIDENT, LOSS OF COOLANT + CORE REFLOODING SYSTEM + HEAT TRANSFER, RADIANT + HIGH TEMPERATURE + MOCKUP + OYSTER CREEK + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, GENERAL

5-16438

ALSO IN CATEGORY 18

VOLUME II, APPENDIX F - HEAT TRANSFER DURING BLOWDOWN.

JERSEY CENTRAL POWER AND LIGHT COMPANY, MORRISTOWN, NEW JERSEY

3 PAGES, 7 FIGURES, FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, JANUARY 25, 1967, DOCKET NO. 50-219

FOUR ELECTRICALLY HEATED RODS, 4 FT LONG, WERE USED IN 1965 TO DETERMINE THE TRANSIENT HEAT-TRANSFER COEFFICIENT TO BE USED IN THE SAFETY ANALYSIS. RESULTS - PRESSURE DECAY

CATEGORY 5
ACCIDENT ANALYSIS

5-1643P *CONTINUED*

SIMILAR TO THAT CALCULATED FOR A REACTOR CONFIRMS SCALING. NUCLEATE BOILING CONTINUES FOR SEVERAL SECONDS AFTER RUPTURE (UNTIL WATER FILMS DRY OUT), THEN CONVECTION HEAT TRANSFER BEGINS, WHICH DECREASES WITH TIME. THE EMPIRICAL DRYOUT TIME IS 30% OF THAT CALCULATED ON VAPORIZING ALL WATER, INDICATING MUCH WATER CARRIED OUT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*BLOWDOWN + *HEAT TRANSFER, BOILING + *MODEL TESTING + ACCIDENT, LOSS OF COOLANT + HEAT TRANSFER, CONVECTION + OYSTER CREEK + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, GENERAL

5-16441 ALSO IN CATEGORY 18
VOLUME II, APPENDIX J - CORE HEATUP ANALYSIS MODEL.
JERSEY CENTRAL POWER AND LIGHT COMPANY, MORRISTOWN, NEW JERSEY
6 PAGES, 4 FIGURES, FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, JANUARY 25, 1967, DOCKET NO. 50-219

SHORT DISCUSSION OF BASIC EQUATIONS FOR A SINGLE-FUEL-ROD ASSUMPTION (NO AXIAL OR BETWEEN-CHANNEL HEAT TRANSFER) LEADING TO AN EQUATION SOLVED BY FINITE DIFFERENCE ON A DIGITAL COMPUTER. RADIAL, AXIAL, AND INTRACHANNEL PEAKING FACTORS USED. FUEL-CLAD INTERFACE CONSIDERED A RESISTANCE. AT CLAD-WATER SURFACE, CONVECTION AND RADIATION HEAT TRANSFER CONSIDERED ALONG WITH (POSITIVE) METAL-WATER REACTION AND (NEGATIVE) CLAD MELT ENERGIES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACCIDENT, LOSS OF COOLANT + *FUEL MELTDOWN + *THERMAL ANALYSIS + FAILURE, CLADDING + FUEL ELEMENT + HEAT TRANSFER, RADIANT + METAL WATER REACTION + OYSTER CREEK + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, GENERAL

5-16442 ALSO IN CATEGORY 18
VOLUME II, APPENDIX K - REACTOR COOLANT INVENTORY MODEL.
JERSEY CENTRAL POWER AND LIGHT COMPANY, MORRISTOWN, NEW JERSEY
10 PAGES, FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, JANUARY 25, 1967, DOCKET NO. 50-219

DESCRIBES ANALYTIC MODELS TO DETERMINE WATER MASS IN REACTOR VESSEL, DEPENDENT UPON LEAK AND ACTIONS OF VARIOUS WATER-MAKEUP SYSTEMS. FEEDWATER FLOW USED LEVEL AS CONTROLLED LINEAR RELATION, WHILE COPE SPRAY USED HEAD-FLOW CURVE. IN OBTAINING HEAT FLUXES FROM CORE, CORE IS ASSUMED COOLED IF WATER LEVEL IS GREATER THAN HALFWAY ABOVE CORE, NOT COOLED AT ZERO WATER LEVEL, AND LINEAR IN BETWEEN. WATER-LEVEL IS COMPUTED AS OTHER EQUATIONS NEED THIS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACCIDENT, LOSS OF COOLANT + *BLOWDOWN + ACCIDENT MODEL + CORE SPRAY + HEAT TRANSFER ANALYSIS + OYSTER CREEK + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, GENERAL

5-16446 ALSO IN CATEGORIES 16 AND 18
VOLUME I, SECTION XIII - SAFETY ANALYSIS.
JERSEY CENTRAL POWER AND LIGHT COMPANY, MORRISTOWN, NEW JERSEY
46 PAGES, 21 TABLES, FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, JANUARY 25, 1967, DOCKET NO. 50-219

TRANSIENT ANALYSES FROM SYSTEM MALFUNCTIONS AND OPERATOR ERRORS ARE REPORTED IN THE VARIOUS DESCRIPTIVE SECTIONS. THERE ARE 4 DESIGN-BASIS ACCIDENTS - CONTROL-ROD DROP, REFUELING ACCIDENT, LOSS OF COOLANT INSIDE DRYWELL, AND STEAM-LINE RUPTURE (THE WORST OFF-SITE DOSE, GIVING A MAXIMUM LIFETIME DOSE OF 0.003 REM AND A WHOLE BODY DOSE OF 3.6 MICROREMS). STEAM-LINE-RUPTURE DOSE IS ABOUT 1/1000TH THAT OF NINE MILE POINT (APPARENTLY) BECAUSE LESS FODINE-BEARING WATER IS LOST (ISOLATION-VALVE CLOSURE IN 3.5 SEC RATHER THAN 11), AND VAPOR WOULD RISE TO A CENTERLINE OF 164 FT. ANALYTICAL METHODS DESCRIBED, AND DATA FROM 11 SITES QUOTED TO JUSTIFY WIND VARIABILITY AND 15-HOUR-PERSISTENCE CLOSURE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTAINMENT PENETRATION, CLOSURE OF + *SAFETY ANALYSIS REPORT, GENERAL + ACCIDENT ANALYSIS + ACCIDENT, STEAM LINE RUPTURE + HEIGHT OF RISE + OYSTER CREEK + REACTOR, BOILING WATER + WIND STATISTICS

5-16453 ALSO IN CATEGORIES 6 AND 18
VOLUME II - SITE AND SAFETY ANALYSIS.
NIAGARA MOHAWK POWER CORPORATION, SYRACUSE, N. Y.
363 PAGES, 131 FIGURES, 75 TABLES, 6 REFERENCES, FINAL SAFETY ANALYSIS REPORT, NINE MILE POINT, JUNE 1967, DOCKET NO. 50-220

CONSISTS OF 5 APPENDICES - (A) METEOROLOGY, (B) LIMNOLOGY, (C) EARTH SCIENCES, (D) ENVIRONMENTAL RADIOLOGY, AND (E) SAFETY ANALYSIS. **SAFETY ANALYSIS (I) RESULTS OF 23 MALFUNCTIONS WERE SIMULATED AND SHOWN TO BE KEPT BELOW SAFETY THRESHOLD BY PLANT PROTECTION SYSTEMS. (II) STANDBY SAFEGUARDS ANALYSIS IS OF MAJOR ACCIDENTS (MAIN-STEAM-LINE RUPTURE, LOSS OF COOLANT, REFUELING, ROD DROP). ANALYTICAL METHODS AND ASSUMPTIONS ARE SUMMARIZED. CREDIT TAKEN FOR STACK RELEASE AND FILTRATION OF AIR THAT ESCAPES CONTAINMENT INTO REACTOR BUILDING REDUCES OFFSITE DOSES TO MILLIREMS, EXCEPT FOR STEAM-LINE RUPTURE (7.8 REMS THYROID AND 0.079 REM WHOLE-BODY EXPOSURE) WHERE NO DISPERSION AND STEAM CLOUD TRAVELING AT GROUND LEVEL ARE ASSUMED.

CATEGORY 5
ACCIDENT ANALYSIS

5-16453 *CONTINUED*
AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACCIDENT, STEAM LINE RUPTURE + *SAFETY ANALYSIS REPORT, GENERAL + ACCIDENT, CONTROL ROD EJECTION +
ACCIDENT, LOSS OF COOLANT + ACCIDENT, REFUELING + AIRBORNE RELEASE + DOSE +
MONITORING PROGRAM, ENVIRONMENTAL + NINE MILE POINT + REACTOR, BOILING WATER + SAFETY ANALYSIS

5-16457 ALSO IN CATEGORY 17
MINSART G + DOPCHIE H + FOURGE L
THE CHOICE OF THE OPERATIONAL PARAMETERS OF THE BR2 REACTOR. HOT SPOT FACTORS. FIRST PART
CENTRE D'ETUDE DE L'ENERGIE NUCLEAIRE, C.E.N., BRUSSEL, BELGIUM
BLG-119, REV. 1 +. 38 PAGES, FIGURES, 6 REFERENCES, JANUARY, 1964

DEFINES THE HOT-CHANNEL AND HOT-SPOT FACTORS AND GIVES AN ESTIMATED VALUE FOR EACH.

AVAILABILITY - MICROCARD EDITIONS, INC., ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM, WISCONSIN 54669

*ANALYTICAL MODEL + *HEAT TRANSFER ANALYSIS + BR 2 (BELGIAN RESEARCH REACTOR, CEN) + HOT CHANNEL FACTOR +
HOT SPOT + REACTOR, RESEARCH

5-16468 ALSO IN CATEGORIES 6 AND 17
ISSHIKI N
EFFECTS OF HEAVING AND LISTING UPON THERMO-HYDRAULIC PERFORMANCE AND CRITICAL HEAT FLUX OF WATER-COOLED
MARINE REACTORS
SECOND MARINE ENGINE DEVELOPMENT SECTION, SHIP RESEARCH INSTITUTE, MINISTRY OF TRANSPORTATION, MITAKA,
TOKYO, JAPAN
25 PAGES, 32 FIGURES, 3 TABLES, 11 REFERENCES, NUCLEAR ENGINEERING AND DESIGN 4(2), PAGES 138-162 (AUGUST
1966)

BURNOUT WAS OBSERVED IN TWO SIMPLIFIED ATMOSPHERIC MODELS OF MARINE WATER-COOLED REACTOR
CORE-LOOPS ON WHICH CYCLIC HEAVING MOTIONS AND CONSTANT LISTING WERE APPLIED BY A HEAVING
APPARATUS. CYCLIC HEAVING MOTIONS UP TO PLUS OR MINUS 1.1 GRAVITY-AMPLITUDE AND 30 DEGREE
LIST WERE EMPLOYED. THE FOLLOWING THERMAL AND HYDRAULIC PERFORMANCE WAS OBSERVED - (1) THE
CRITICAL HEAT FLUX DECREASED LINEARLY WITH INCREASING HEAVING ACCELERATION, AND WAS
ACCOMPANIED BY VIOLENT CYCLIC FLUCTUATIONS OF VOID AND FLOW VELOCITY WHEN THE INLET FLOW
VELOCITY WAS LOW. (2) WHEN THE LOOP LISTED, THE CRITICAL HEAT FLUX DECREASED LOCALLY NEAR
BOTH SIDES OF THE LOOP CHANNEL. A SHARP CONCENTRATION OF VOID ALSO OCCURRED ON ONE SIDE.
LISTING HELPED GENERATE FLUCTUATIONS IN THE SUBCOOLED CONDITION. TO OBTAIN MARINE REACTORS
WHICH CAN OPERATE SAFELY ON VERY ROUGH SEAS IT WILL BE NECESSARY TO INCORPORATE THE FOLLOWING
SUGGESTIONS INTO THE THERMAL AND HYDRAULIC DESIGN OF THE CORE LOOPS. (1) THE DECREASE OF
CRITICAL HEAT FLUX BY HEAVING AND LISTING SHOULD BE INCLUDED AMONG THE HOT-CHANNEL FACTORS.
(2) OUTFLOW WATER AT CORE EXITS SHOULD PREFERABLY BE SUBCOOLED BELOW THE CRITICAL SUBCOOLING
TEMPERATURE. THIS MEANS THAT THE PWR TYPE IS TO BE PREFERRED FOR SEVERE MARINE USE RATHER
THAN THE BWR TYPE. (3) THE CIRCULATING WATER VELOCITY SHOULD BE HIGH. (4) THE TOTAL HEIGHT
OF THE CORE AND RISER SHOULD BE LOW.

BURNOUT HEAT FLUX + DNB (DEPARTURE FROM NUCLEATE BOILING) + FLOW DISTRIBUTION + FLOW, TWO PHASE +
HEAT TRANSFER ANALYSIS + HEAT TRANSFER EXPERIMENT + MODEL TESTING + REACTOR, BOILING WATER +
REACTOR, MARITIME + REACTOR, PRESSURIZED WATER + TRANSFER FUNCTION + VOID COEFFICIENT

5-16469 ALSO IN CATEGORY 11
KELLERMANN O + SEIPEL HG
ANALYSIS OF THE IMPROVEMENT IN SAFETY OBTAINED BY A CONTAINMENT AND BY OTHER SAFETY DEVICES FOR WATER
COOLED REACTORS
INSTITUT FUR REAKTORSICHERHEIT DER TUV E.V., KOLN, GERMANY
SM-89/8 +. 13 PAGES, 6 FIGURES, 2 TABLES, 22 REFERENCES

USUALLY, A REACTOR CONTAINMENT IS DESIGNED TO SUSTAIN THE MAXIMUM LOAD THAT COULD ARISE FROM
THE WORST CREDIBLE ACCIDENT. BECAUSE OF THE HIGH QUALITY STANDARDS IN DESIGN, CONSTRUCTION,
AND INSPECTION, A CONTAINMENT FAILURE UNDER ACCIDENT CONDITIONS IS MOSTLY BELIEVED
INCREDIBLE. THE AUTHORS, HOWEVER, SHOW BY THEORETICAL ANALYSIS AND PLANT EXPERIENCE THAT A
FAILURE OF THE CONTAINMENT OR SOME OF ITS RELATED COMPONENTS CANNOT COMPLETELY BE EXCLUDED.
SINCE DANGEROUS ACCIDENTS ALWAYS START FROM FAILURES IN THE COOLING SYSTEM OR FROM UNSAFE
PHYSICAL CORE CONDITIONS, A STUDY WAS MADE ON WHETHER IT IS POSSIBLE AND USEFUL, WITHOUT
REDUCING THE HIGH STANDARD OF SAFETY, TO SHIFT THE SAFEGUARDING EFFORTS FROM
CONSEQUENCE-LIMITING SYSTEMS LIKE A CONTAINMENT TO ADDITIONAL SAFETY FACTORS IN DESIGN,
CONSTRUCTION, AND INSPECTION OF REACTOR COMPONENTS AND INSTALLATION OF VERY RELIABLE AND
HIGHLY REDUNDANT DEVICES THAT PREVENT THE ESCALATION OF ANY ACCIDENT. THE INCREASE IN SAFETY
TO BE GAINED BY BETTER DESIGN AND IMPROVED RELIABILITY IS DISCUSSED FOR REACTOR COMPONENTS,
EMERGENCY CORE COOLING SYSTEMS, AND VAPOR CONTAINERS.

AVAILABILITY - O. KELLERMANN AND H. G. SEIPEL, INSTITUT FUR REAKTORSICHERHEIT DER TUV E.V., KOLN

*CONTAINMENT INTEGRITY + *ENGINEERED SAFETY FEATURE + CODES AND STANDARDS + CONTAINMENT, HIGH PRESSURE +
CORE REFLOODING SYSTEM + CORE SPRAY + FAILURE, COMPONENT + FAILURE, PRESSURE VESSEL +
REACTOR, BOILING WATER + REACTOR, PRESSURIZED WATER + RELIABILITY, COMPONENT

5-16471 ALSO IN CATEGORIES 2 AND 14

CATEGORY 5
ACCIDENT ANALYSIS

5-16471 *CONTINUED*

CHAUVIN JL
FURATON BED-MATERIAL TRANSPORT STUDY BY TRACERS. TRANSPORT OF THE LOIRE AT THE SITE OF THE EDF 4 NUCLEAR
POWER STATION
ELECTRICITE DE FRANCE. FRANCE
EUR-3130.F, VOL. 2 +. 14 PAGES, 6 FIGURES, MAY 12, 1966, IN FRENCH

THE DOWNSTREAM TRANSPORT OF SEDIMENT IN THE LOIRE RIVER WAS STUDIED WITH RADIOACTIVE TRACERS.
RESULTS OF MEASUREMENTS MADE IN A MODEL BASIN COMPARED WELL WITH MEASUREMENTS MADE IN THE
PIVEP. PARTICLE-SIZE STUDIES OF THE SEDIMENT AND HYDROGRAMS FOR THE RIVER FLOW ARE REPORTED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*HYDRAULIC EXPERIMENT + *HYDROLOGICAL CONSIDERATION, RATE OF MOVEMENT + *WASTE DISPOSAL, RIVER +
FISSION PRODUCT TRANSPORT + FLOW DISTRIBUTION + HYDRAULIC EFFECT + RIVER, LOIRE + TRACER, RADIOACTIVE

5-16539

VALERINO MF + ROSZTOCZY ZR + KERN R
SETUP OF ISOCHECK METHOD FOR DETERMINING HEAVY-ISOTOPE CONTENT IN THE OPERATING FUEL ELEMENTS OF INDIAN
POINT CORE B
COMBUSTION ENGINEERING, INC., WINDSOR, CONN.
CEND-268 +. 55 PAGES, FIGURES, TABLES, REFERENCES, JUNE 8, 1966

ISOCHECK, A COMPROMISE BETWEEN ACCURACY AND SIMPLICITY IN CALCULATING HEAVY-ISOTOPE CONTENT IN
OPERATING POWER REACTORS, INVOLVES (1) CALCULATION OF ASSEMBLY-BY-ASSEMBLY EXPOSURE, BY THE
FLARE CODE, FOR SUCCESSIVE INTERVALS OF POWER OPERATION, USING KNOWN LOCATIONS AND PRIOR
ACCUMULATED EXPOSURES OF FUEL ASSEMBLIES, OBSERVED AVERAGE CONTROL ELEMENT POSITIONS, AND
RECORDED HISTORY OF THERMAL POWER LEVEL DURING PERIOD BEING ANALYZED, (2) DETERMINATION OF
ASSEMBLY-BY-ASSEMBLY ISOTOPIC COMPOSITION BY APPLYING FLARE-CALCULATED EXPOSURES TO PREPARED
TABLES OF ISOTOPIC COMPOSITION VERSUS FUEL EXPOSURE. DISADVANTAGES INCLUDE LENGTHY
CALCULATIONS OF PHYSICS CHARACTERISTICS OF FUEL TYPE PRESENT AND SIMPLIFICATIONS INTRODUCED
IN TREATMENT OF REACTOR GEOMETRY AND COMPOSITIONAL VARIATIONS. SUPPLEMENT 1 INCLUDES
INPUT-CARD LISTING.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
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*COMPUTER PROGRAM + *FUEL BURNUP + *TRANSURANIUM ELEMENT + DATA PROCESSING + INDIAN POINT 1 +
POWER DISTRIBUTION + REACTOR, PRESSURIZED WATER

5-16540

VALERINO MF + ROSZTOCZY ZR + KERN R
SETUP OF ISOCHECK METHOD FOR DETERMINING HEAVY-ISOTOPE CONTENT IN THE OPERATING FUEL ELEMENTS OF YANKEE
CORE V
COMBUSTION ENGINEERING, INC., WINDSOR, CONN.
CEND-271 +. 76 PAGES, FIGURES, TABLES, REFERENCES, JUNE 30, 1966

ISOCHECK, A COMPROMISE BETWEEN ACCURACY AND SIMPLICITY IN CALCULATING HEAVY-ISOTOPE CONTENT IN
OPERATING POWER REACTORS, INVOLVES (1) CALCULATION OF ASSEMBLY-BY-ASSEMBLY EXPOSURE, BY THE
FLARE CODE, FOR SUCCESSIVE INTERVALS OF POWER OPERATION USING KNOWN LOCATIONS AND PRIOR
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ASSEMBLY-BY-ASSEMBLY ISOTOPIC COMPOSITIONS VERSUS FUEL EXPOSURE. DISADVANTAGES INCLUDE
LENGTHY CALCULATIONS OF PHYSICS CHARACTERISTICS OF FUEL TYPE PRESENT AND SIMPLIFICATIONS
INTRODUCED IN TREATMENT OF REACTOR GEOMETRY AND COMPOSITIONAL VARIATIONS. SUPPLEMENT 1
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*FUEL BURNUP + *TRANSURANIUM ELEMENT + COMPUTER PROGRAM + DATA PROCESSING + POWER DISTRIBUTION +
REACTOR, PRESSURIZED WATER + YANKEE

5-16541

VALERINO MF + ROSZTOCZY ZR + KERN R
SETUP OF ISOCHECK METHOD FOR DETERMINING HEAVY-ISOTOPE CONTENT IN THE OPERATING FUEL ELEMENTS OF SAN
ONFRE CORE I
COMBUSTION ENGINEERING, INC., WINDSOR, CONN.
CEND-272 +. 61 PAGES, FIGURES, TABLES, REFERENCES, JULY 29, 1966

ISOCHECK, A COMPROMISE BETWEEN ACCURACY AND SIMPLICITY IN CALCULATING HEAVY-ISOTOPE CONTENT IN
OPERATING POWER REACTORS, INVOLVES (1) CALCULATION OF ASSEMBLY-BY-ASSEMBLY EXPOSURE, BY THE
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RECORDED HISTORY OF THERMAL POWER LEVEL DURING PERIOD BEING ANALYZED, (2) DETERMINATION OF
ASSEMBLY-BY-ASSEMBLY ISOTOPIC COMPOSITION BY APPLYING FLARE-CALCULATED EXPOSURES TO PREPARED
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CALCULATIONS OF PHYSICS CHARACTERISTICS OF FUEL TYPE PRESENT AND SIMPLIFICATIONS INTRODUCED
IN TREATMENT OF REACTOR GEOMETRY AND COMPOSITIONAL VARIATIONS. SUPPLEMENT 1 INCLUDES
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CATEGORY 5
ACCIDENT ANALYSIS

5-16541 *CONTINUED*

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

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5-16542

VALERINC ME + ROSZTOCZY ZR + KERN R
SETUP OF ISOHECK METHOD FOR DETERMINING HEAVY-ISOTOPE CONTENT IN THE OPERATING FUEL ELEMENTS OF LACROSSE CORE I
COMBUSTION ENGINEERING INC., WINDSOR, CONN.
CFND-275 +. 83 PAGES, FIGURES, TABLES, REFERENCES, AUGUST 1966

ISOHECK, A COMPROMISE BETWEEN ACCURACY AND SIMPLICITY IN CALCULATING HEAVY-ISOTOPE CONTENT IN OPERATING POWER REACTORS, INVOLVES (1) CALCULATION OF ASSEMBLY-BY-ASSEMBLY EXPOSURE, BY THE FLARE CODE, FOR SUCCESSIVE INTERVALS OF POWER OPERATION, USING KNOWN LOCATIONS AND PRIOR ACCUMULATED EXPOSURES OF FUEL ASSEMBLIES, OBSERVED AVERAGE CONTROL ELEMENT POSITIONS, AND RECORDED HISTORY OF THERMAL POWER LEVEL DURING PERIOD BEING ANALYZED, (2) DETERMINATION OF ASSEMBLY-BY-ASSEMBLY ISOTOPIC COMPOSITION BY APPLYING FLARE-CALCULATED EXPOSURES TO PREPARED TABLES OF ISOTOPIC COMPOSITION VERSUS FUEL EXPOSURE. DISADVANTAGES INCLUDE LENGTHY CALCULATIONS OF PHYSICS CHARACTERISTICS OF FUEL TYPE AND SIMPLIFICATIONS INTRODUCED IN TREATMENT OF REACTOR GEOMETRY AND COMPOSITIONAL VARIATIONS. SUPPLEMENT 1 INCLUDES INPUT-CARD LISTING.

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5-16543

VALERINC ME + ROSZTOCZY ZR + KERN R
SETUP OF ISOHECK METHOD FOR DETERMINING HEAVY-ISOTOPE CONTENT IN THE OPERATING FUEL ELEMENTS OF HUMBOLDT BAY CORE II.
COMBUSTION ENGINEERING INC., WINDSOR, CONN.
CFND-281 +. 102 PAGES, FIGURES, TABLES, REFERENCES, SEPTEMBER 30, 1966

ISOHECK, A COMPROMISE BETWEEN ACCURACY AND SIMPLICITY IN CALCULATING HEAVY-ISOTOPE CONTENT IN OPERATING POWER REACTORS, INVOLVES (1) CALCULATION OF ASSEMBLY-BY-ASSEMBLY EXPOSURE, BY THE FLARE CODE, FOR SUCCESSIVE INTERVALS OF POWER OPERATION, USING KNOWN LOCATIONS AND PRIOR ACCUMULATED EXPOSURES OF FUEL ASSEMBLIES, OBSERVED AVERAGE CONTROL ELEMENT POSITIONS, AND RECORDED HISTORY OF THERMAL POWER LEVEL DURING PERIOD BEING ANALYZED, (2) DETERMINATION OF ASSEMBLY-BY-ASSEMBLY ISOTOPIC COMPOSITION BY APPLYING FLARE-CALCULATED EXPOSURES TO PREPARED TABLES OF ISOTOPIC COMPOSITION VERSUS FUEL EXPOSURE. DISADVANTAGES INCLUDE LENGTHY CALCULATIONS OF PHYSICS CHARACTERISTICS OF FUEL TYPE PRESENT AND SIMPLIFICATIONS INTRODUCED IN TREATMENT OF REACTOR GEOMETRY AND COMPOSITIONAL VARIATIONS. SUPPLEMENT 1 INCLUDES INPUT-CARD LISTING.

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5-16544

ROSZTOCZY ZR + KERN R + SHESLER AT
SETUP OF ISOHECK METHOD FOR DETERMINING HEAVY-ISOTOPE CONTENT IN THE OPERATING FUEL ELEMENTS OF SAVANNAH CORE I
COMBUSTION ENGINEERING, INC., WINDSOR, CONN.
CFND-282 +. 39 PAGES, FIGURES, TABLES, REFERENCES, OCTOBER 1966

ISOHECK, A COMPROMISE BETWEEN ACCURACY AND SIMPLICITY IN CALCULATING HEAVY-ISOTOPE CONTENT IN OPERATING POWER REACTORS, INVOLVES (1) CALCULATION OF ASSEMBLY-BY-ASSEMBLY EXPOSURE, BY THE FLARE CODE, FOR SUCCESSIVE INTERVALS OF POWER OPERATION, USING KNOWN LOCATIONS AND PRIOR ACCUMULATED EXPOSURES OF FUEL ASSEMBLIES, OBSERVED AVERAGE CONTROL ELEMENT POSITIONS, AND RECORDED HISTORY OF THERMAL POWER LEVEL DURING PERIOD BEING ANALYZED, (2) DETERMINATION OF ASSEMBLY-BY-ASSEMBLY ISOTOPIC COMPOSITION BY APPLYING FLARE-CALCULATED EXPOSURES TO PREPARED TABLES OF ISOTOPIC COMPOSITION VERSUS FUEL EXPOSURE. DISADVANTAGES INCLUDE LENGTHY CALCULATIONS OF PHYSICS CHARACTERISTICS OF FUEL TYPE PRESENT AND SIMPLIFICATIONS INTRODUCED IN TREATMENT OF REACTOR GEOMETRY AND COMPOSITIONAL VARIATIONS. SUPPLEMENT 1 INCLUDES INPUT-CARD LISTING.

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CATEGORY 5
ACCIDENT ANALYSIS

5-16545
KERN R
SETUP OF ISOCHECK METHOD FOR DETERMINING HEAVY-ISOTOPE CONTENT IN THE OPERATING FUEL ELEMENTS OF
PATHFINDER CORE I
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CEND-283 +. 82 PAGES, FIGURES, TABLES, REFERENCES, OCTOBER 1966

ISOCHECK, A COMPROMISE BETWEEN ACCURACY AND SIMPLICITY IN CALCULATING HEAVY-ISOTOPE CONTENT IN
OPERATING POWER REACTORS, INVOLVES (1) CALCULATION OF ASSEMBLY-BY-ASSEMBLY EXPOSURE, BY THE
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IN TREATMENT OF REACTOR GEOMETRY AND COMPOSITIONAL VARIATIONS. SUPPLEMENT 1 INCLUDES
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5-16546
KERN R + SHESLER AT + ROSZTOCZY ZR
SETUP OF ISOCHECK METHOD FOR DETERMINING HEAVY-ISOTOPE CONTENT IN THE OPERATING FUEL ELEMENTS OF SAXTON
CORE II
COMBUSTION ENGINEERING, INC., WINDSOR, CONN.
CEND-285 +. 42 PAGES, FIGURES, TABLES, REFERENCES, NOVEMBER 30, 1966

ISOCHECK, A COMPROMISE BETWEEN ACCURACY AND SIMPLICITY IN CALCULATING HEAVY-ISOTOPE CONTENT IN
OPERATING POWER REACTORS, INVOLVES (1) CALCULATION OF ASSEMBLY-BY-ASSEMBLY EXPOSURE, BY THE
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REACTOR, PRESSURIZED WATER + SAXTON

5-16547
KERN R + ROSZTOCZY ZR
SETUP OF ISOCHECK METHOD FOR DETERMINING HEAVY-ISOTOPE CONTENT IN THE OPERATING FUEL ELEMENTS OF ELK RIVER
CORE II
COMBUSTION ENGINEERING, INC., WINDSOR, CONN.
CEND-286 +. 70 PAGES, FIGURES, TABLES, REFERENCES, DECEMBER 12, 1966

ISOCHECK, A COMPROMISE BETWEEN ACCURACY AND SIMPLICITY IN CALCULATING HEAVY-ISOTOPE CONTENT IN
OPERATING POWER REACTORS, INVOLVES (1) CALCULATION OF ASSEMBLY-BY-ASSEMBLY EXPOSURE, BY THE
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RECORDED HISTORY OF THERMAL POWER LEVEL DURING PERIOD BEING ANALYZED, (2) DETERMINATION OF
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POWER DISTRIBUTION + REACTOR, BOILING WATER

5-16548
ROSZTOCZY ZR + KERN R
SETUP OF ISOCHECK METHOD FOR DETERMINING HEAVY-ISOTOPE CONTENT IN THE OPERATING FUEL ELEMENTS OF
CONNECTICUT YANKEE CORE I
COMBUSTION ENGINEERING, INC., WINDSOR, CONN.

CATEGORY 5
ACCIDENT ANALYSIS

5-1654P *CONTINUED*
CEND-287 +. 38 PAGES, FIGURES, TABLES, REFERENCES, DECEMBER 30, 1966

ISOCHECK, A COMPROMISE BETWEEN ACCURACY AND SIMPLICITY IN CALCULATING HEAVY-ISOTOPE CONTENT IN OPERATING POWER REACTORS, INVOLVES (1) CALCULATION OF ASSEMBLY-BY-ASSEMBLY EXPOSURE, BY THE FLARE CODE, FOR SUCCESSIVE INTERVALS OF POWER OPERATION, USING KNOWN LOCATIONS AND PRIOR ACCUMULATED EXPOSURES OF FUEL ASSEMBLIES, OBSERVED AVERAGE CONTROL ELEMENT POSITIONS, AND RECORDED HISTORY OF THERMAL POWER LEVEL DURING PERIOD BEING ANALYZED, (2) DETERMINATION OF ASSEMBLY-BY-ASSEMBLY ISOTOPIC COMPOSITION BY APPLYING FLARE-CALCULATED EXPOSURES TO PREPARED TABLES OF ISOTOPIC COMPOSITION VERSUS FUEL EXPOSURE. DISADVANTAGES INCLUDE LENGTHY CALCULATIONS OF PHYSICS CHARACTERISTICS OF FUEL TYPE PRESENT AND SIMPLIFICATIONS INTRODUCED IN TREATMENT OF REACTOR GEOMETRY AND COMPOSITIONAL VARIATIONS. SUPPLEMENT 1 INCLUDES INPUT-CARD LISTING.

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5-16549
KERN R + SHESLER AT
SETUP OF ISOCHECK METHOD FOR DETERMINING HEAVY-ISOTOPE CONTENT IN THE OPERATING FUEL ELEMENTS OF DRESDEN I CORE IV
COMBUSTION ENGINEERING, INC., WINDSOR, CONN.
CEND-289 +. 117 PAGES, FIGURES, TABLES, REFERENCES, JANUARY 16, 1967

ISOCHECK, A COMPROMISE BETWEEN ACCURACY AND SIMPLICITY IN CALCULATING HEAVY-ISOTOPE CONTENT IN OPERATING POWER REACTORS, INVOLVES (1) CALCULATION OF ASSEMBLY-BY-ASSEMBLY EXPOSURE, BY THE FLARE CODE, FOR SUCCESSIVE INTERVALS OF POWER OPERATION, USING KNOWN LOCATIONS AND PRIOR ACCUMULATED EXPOSURES OF FUEL ASSEMBLIES, OBSERVED AVERAGE CONTROL ELEMENT POSITIONS, AND RECORDED HISTORY OF THERMAL POWER LEVEL DURING PERIOD BEING ANALYZED, (2) DETERMINATION OF ASSEMBLY-BY-ASSEMBLY ISOTOPIC COMPOSITION BY APPLYING FLARE-CALCULATED EXPOSURES TO PREPARED TABLES OF ISOTOPIC COMPOSITION VERSUS FUEL EXPOSURE. DISADVANTAGES INCLUDE LENGTHY CALCULATIONS OF PHYSICS CHARACTERISTICS OF FUEL TYPE PRESENT AND SIMPLIFICATIONS INTRODUCED IN TREATMENT OF REACTOR GEOMETRY AND COMPOSITIONAL VARIATIONS. SUPPLEMENT 1 INCLUDES INPUT-CARD LISTING.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*COMPUTER PROGRAM + *FUEL BURNUP + *TRANSURANIUM ELEMENT + DATA PROCESSING + DRESDEN I + POWER DISTRIBUTION + REACTOR, BOILING WATER

5-16550
KERN R + SHESLER AT
SETUP OF ISOCHECK METHOD FOR DETERMINING HEAVY-ISOTOPE CONTENT IN THE OPERATING FUEL ELEMENTS OF OYSTER CREEK CORE I.
COMBUSTION ENGINEERING, INC., WINDSOR, CONN.
CEND-290 +. 40 PAGES, FIGURES, TABLES, REFERENCES, JANUARY 23, 1967

ISOCHECK, A COMPROMISE BETWEEN ACCURACY AND SIMPLICITY IN CALCULATING HEAVY-ISOTOPE CONTENT IN OPERATING POWER REACTORS, INVOLVES (1) CALCULATION OF ASSEMBLY-BY-ASSEMBLY EXPOSURE, BY THE FLARE CODE, FOR SUCCESSIVE INTERVALS OF POWER OPERATION, USING KNOWN LOCATIONS AND PRIOR ACCUMULATED EXPOSURES OF FUEL ASSEMBLIES, OBSERVED AVERAGE CONTROL ELEMENT POSITIONS, AND RECORDED HISTORY OF THERMAL POWER LEVEL DURING PERIOD BEING ANALYZED, (2) DETERMINATION OF ASSEMBLY-BY-ASSEMBLY ISOTOPIC COMPOSITION BY APPLYING FLARE-CALCULATED EXPOSURES TO PREPARED TABLES OF ISOTOPIC COMPOSITION VERSUS FUEL EXPOSURE. DISADVANTAGES INCLUDE LENGTHY CALCULATIONS OF PHYSICS CHARACTERISTICS OF FUEL TYPE PRESENT AND SIMPLIFICATIONS INTRODUCED IN TREATMENT OF REACTOR GEOMETRY AND COMPOSITIONAL VARIATIONS. SUPPLEMENT 1 INCLUDES INPUT-CARD LISTING.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*COMPUTER PROGRAM + *FUEL BURNUP + *TRANSURANIUM ELEMENT + DATA PROCESSING + OYSTER CREEK + POWER DISTRIBUTION + REACTOR, BOILING WATER

5-16570 ALSO IN CATEGORIES 6 AND 8
TESTA FJ + PAVLIK J + IVINS R
FUEL-COOLANT AND CLADDING-COOLANT INTERACTION STUDIES. CHEMICAL ENGINEERING DIVISION FROM SEMI-ANNUAL REPORT, JAN.-JUNE 1966
ARGONNE NATIONAL LAB., ILL.
ANL-7225 +. 2 PAGES, 1 FIGURE, PAGE 189-190 FROM NOVEMBER 1966

SMALL, HEATED SAMPLES OF 304 STAINLESS STEEL WERE DROPPED IN SODIUM OF TEMPERATURES BETWEEN 250 AND 820 C. NO CHEMICAL INTERACTION, BUT EXTENSIVE FRAGMENTATION. MEAN PARTICLE SIZE DECREASED WITH SODIUM TEMPERATURE. FRAGMENTATION IN LITHIUM SLIGHTLY LESS EXTENSIVE, IN POTASSIUM SUBSTANTIALLY THE SAME.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF

CATEGORY 5
ACCIDENT ANALYSIS

5-16570 *CONTINUED*
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE
CLAD + FUEL INTEGRITY + LITHIUM + POTASSIUM + SODIUM + STEEL, STAINLESS

5-16570 ALSO IN CATEGORY 18
O'CONNOR 1, 2, AND 3. AMENDMENT 5 - VOLUNTARY INFORMATION
DUKE POWER COMPANY, CHARLOTTE, N. C. 28201
14 PAGES, 3 FIGURES, JUNE 16, 1967, DOCKET NOS. 269/270/287

AMONG 21 DIFFERENT ITEMS ARE (2) VENTING DEVICES WILL BE ADDED TO PREVENT A STEAM BUBBLE ABOVE THE CORE FROM PREVENTING COOLANT INJECTION, (5) THE MOST PROBABLE FUEL FAILURE DURING THE LOSS-OF-COOLANT ACCIDENT WOULD BE CLAD PERFORATION ABOVE 1200 F WHEN 75% OF THE FUEL PINS MIGHT RELEASE FISSION GAS BUT WOULD NOT RESTRICT CORE COOLING. GE-NMPO WORK SHOWS THAT FUEL CLADDING MAY ELONGATE 34% BUT THAT ONLY 22% OF THE PINS EXCEED THE NECESSARY 1660 F, (6) LOSS-OF-COOLANT UNCERTAINTIES HAVE BEEN HANDLED CONSERVATIVELY, (11) A SUBMERGED WEIR IN THE INTAKE CANAL WILL HOLD 50 FT OF WATER IN CASE OF POND FAILURE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*FAILURE, CLADDING + *SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF COOLANT + BLOWDOWN + O'CONNOR 1, 2, AND 3 + REACTOR, PRESSURIZED WATER + STORAGE CONTAINER

5-16600 ALSO IN CATEGORY 17
MCPHEPSON GD
DRYOUT IN BOILING WATER REACTORS
ATOMIC ENERGY OF CANADA LIMITED, CHALK RIVER, ONTARIO
AECL-2876 + CONF-670522-5 +. 10 PAGES, 4 FIGURES, APRIL 1967, PRESENTED AT THE CANADIAN NUCLEAR ASSOCIATION ANNUAL CONFERENCE, MONTREAL, MAY 1967

NONTECHNICAL DISCUSSION. OPERATION OF FUEL ASSEMBLIES AT HIGH COOLANT QUALITY SHOULD BE CHEAPER. THE COMBINATION OF DESIGN PARAMETERS AT WHICH DRY-SHEATH OPERATION (DRYOUT) BEGINS IS AN IMPORTANT BOUNDARY TO THE REACTOR DESIGNER. MACBETH AND BURNETT OF UKAEA SUCCEEDED IN RELATING THE FACTORS AFFECTING DRYOUT, AND THEIR CORRELATION IS USED AT ORNL TO PREDICT THE ONSET OF DRYOUT, WITH EXPERIMENTALLY FOUND CONSTANTS. COMPUTER PROGRAMS ARE BEING DEVELOPED TO MAKE THE COMPLICATED RADIAL DISTRIBUTION OF STEAM AND WATER CALCULATIONS. THE CHEAPER FROM EXPERIMENT BEING USED INSTEAD OF WATER-STEAM MIXTURES MAY ALLOW MORE EXPERIMENTS. SINCE THE CONTRIBUTING FACTORS ARE UNDERSTOOD, IT SHOULD BE POSSIBLE TO PREDICT DRYOUT CONDITIONS FOR ANY FUEL CONFIGURATION, AND THE FUTURE COULD INCLUDE POSTDRYOUT OPERATIONS AND HIGHER OUTLET QUALITIES THAN NOW THOUGHT POSSIBLE.

AVAILABILITY - ATOMIC ENERGY OF CANADA, LTD., CHALK RIVER, ONTARIO, CANADA, \$0.50 COPY

*HEAT FLUX, DRYOUT + *HEAT TRANSFER CORRELATION + CANADA + HEAT TRANSFER EXPERIMENT + REACTOR, BOILING WATER

5-16603 ALSO IN CATEGORY 4
ROGDONOFF SM
RESEARCH ON HYPERSONIC FLOWS
PRINCETON UNIVERSITY, GAS DYNAMICS LABORATORY, PRINCETON, N.J.
ARL-67-0000 +. 51 PAGES, 22 FIGURES, 15 REFERENCES, JANUARY 1967

DURING THE THREE-YEAR PERIOD, SEPTEMBER 1963 TO SEPTEMBER 1966, THE GAS DYNAMICS LABORATORY OF PRINCETON UNIVERSITY HAS BEEN ENGAGED IN A SERIES OF RESEARCH PROGRAMS OF BASIC APPLICATION TO HYPERSONIC FLIGHT. THESE STUDIES WERE EXPERIMENTALLY CENTERED AROUND THE PRINCETON HELIUM HYPERSONIC FACILITIES DEVELOPED UNDER PREVIOUS ARL SUPPORT. RESEARCH IN THE FOUR BASIC AREAS OF INTEREST (LIFTING SURFACES, SEPARATED FLOWS, BOUNDARY LAYERS, AND VISCOUS INTERACTIONS) WERE UNDERTAKEN. SUMMARIES OF THE RESEARCHES THAT HAVE BEEN COMPLETED ARE PRESENTED AS WELL AS THE PERTINENT RESULTS. STUDIES STILL IN PROCESS ARE OUTLINED AND PRELIMINARY RESULTS PRESENTED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

AIRCRAFT + BOUNDARY LAYER + FLOW THEORY AND EXPERIMENTS + FLOW, HIGH SPEED + FLOW, LAMINAR + FLOW, RECIRCULATION

5-16604
STEWART GW + LICK DW
THE NUMERICAL TREATMENT OF A THIN PLATE HEAT TRANSFER PROBLEM
UNION CARBIDE CORPORATION, NUCLEAR DIVISION, OAK RIDGE GASEOUS DIFFUSION PLANT, TENN.
K-1695 +. 18 PAGES, 2 FIGURES, 2 REFERENCES, MAY 31, 1967

THIS REPORT CONSIDERS THE NUMERICAL SOLUTION OF A SYSTEM OF LINEAR EQUATIONS RESULTING FROM A DISCRETE APPROXIMATION TO A THIN-PLATE HEAT-TRANSFER PROBLEM. THE SLOW CONVERGENCE OF A STANDARD ITERATIVE METHOD IS ANALYZED AND SHOWN TO BE CAUSED BY ONE OF THE BOUNDARY CONDITIONS. A LINE-ITERATIVE METHOD WHICH REMOVES THE DIFFICULTY IS DESCRIBED.

CATEGORY 5
ACCIDENT ANALYSIS

5-16604 *CONTINUED*

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

COMPUTER PROGRAM + HEAT TRANSFER ANALYSIS + HEAT TRANSFER, CONDUCTION

5-16606 ALSO IN CATEGORIES 18 AND 11
QUESTIONS A-1-A, A-1-B--REACTOR VESSELS, PIPE WHIPPING, GENERATION OF MISSILES, EFFECTS OF FUEL MOVEMENT UPON RADIOACTIVITY
THE CONNECTICUT LIGHT AND POWER COMPANY + THE HARTFORD ELECTRIC LIGHT COMPANY + WESTERN MASSACHUSETTS ELECTRIC COMPANY
5 PAGES, 1 REFERENCE, 1966, PAGES A-1-1 THROUGH A-1-5 FROM DESIGN AND ANALYSIS REPORT, AMENDMENT NO. 1, DOCKET NO. 50-245, MILLSTONE NUCLEAR POWER STATION

SECTION A, GENERAL. (A-1-A) DISCUSS CONSIDERATION GIVEN IN DESIGN TO RECOMMENDATIONS RELATING TO REACTOR VESSELS IN PARAGRAPHS 1 AND 2 OF ACRS LETTER OF NOVEMBER 24, 1965. (A-1-B) DISCUSS CONSIDERATION GIVEN IN DESIGN TO PIPE-WHIPPING GENERATION OF MISSILES WHICH MIGHT VIOLATE THE CONTAINMENT, AND THE EFFECTS OF FUEL MOVEMENT UPON REACTIVITY.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACRS (ADVISORY COMMITTEE ON REACTOR SAFEGUARDS) + *AEC QUESTION + *MISSILE GENERATION AND PROTECTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + MILLSTONE POINT + REACTIVITY EFFECT, SLUMP + REACTOR, BOILING WATER

5-16622 ALSO IN CATEGORY 18
QUESTION D-2--ROD DROP LOCAL ENTHALPY PEAK
THE CONNECTICUT LIGHT AND POWER COMPANY + THE HARTFORD ELECTRIC LIGHT COMPANY + WESTERN MASSACHUSETTS ELECTRIC COMPANY
1 PAGE, 1966, PAGE D-2-1 FROM DESIGN AND ANALYSIS REPORT, AMENDMENT NO. 1, DOCKET NO. 50-245, MILLSTONE NUCLEAR POWER STATION

CLARIFY AT-POWER ROD-DROP ACCIDENT TO INDICATE WHETHER THE PEAK ENTHALPY IN CAL/GM INDICATED IN FIGURE 111 IS FOR THE ENTIRE REACTOR OR FOR THE ASSUMED EXCURSION ZONE ONLY. WHAT IS THE MAXIMUM ENTHALPY INCREASE WHICH A COPE HCT-SPOT (ABOVE 100 CAL/GM) COULD EXPERIENCE FROM A ROD DROP IN A NEARBY AREA OF THE CORE (CONSIDER LOW-WORTH RODS CLOSE TO THE HOT SPOT, AS WELL AS HIGH-WORTH RODS AT GREATER DISTANCES).

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACCIDENT, CONTROL ROD EJECTION + *POWER DISTRIBUTION + AEC QUESTION + MILLSTONE POINT + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

5-16632 ALSO IN CATEGORIES 6 AND 7
BAIN AS
MICROSCOPIC, AUTORADIOGRAPHIC AND FUEL/SHEATH HEAT TRANSFER STUDIES ON UO2 FUEL ELEMENTS
ATOMIC ENERGY OF CANADA LIMITED, CHALK RIVER, ONTARIO
AECL-25PR +. 50 PAGES, 32 FIGURES, 23 TABLES, 24 REFERENCES, JUNE 1966

HEAT-TRANSFER MEASUREMENTS WERE MADE FROM UO2 FUEL TO STAINLESS AND ZIRCALOY CLADDING IN THE NRX REACTOR. DATA AND CONCLUSIONS ARE PRESENTED. (1) HEAT TRANSFER COEFFICIENTS BETWEEN FUEL AND CLADDING INCREASED WITH DECREASED CLEARANCES. (2) FOR DIAMETRAL CLEARANCE UP TO 3.5%, THE MAJORITY OF HEAT TRANSFER WAS BETWEEN MATING ASPERITIES OF FUEL AND SHEATH. MICROSCOPIC AND AUTORADIOGRAPHIC STUDIES WERE MADE OF THE FUEL ELEMENTS.

AVAILABILITY - ATOMIC ENERGY OF CANADA LIMITED, CHALK RIVER, ONTARIO, \$2.00 COPY

CLAD + FAILURE, FUEL ELEMENT + FUEL ELEMENT + HEAT TRANSFER + HEAT TRANSFER EXPERIMENT + HEAT TRANSFER, CONDUCTION + HOT SPOT + MASS TRANSFER + NRX (CANADIAN NATURAL U-HEAVY WATER REACTOR)

5-16633 ALSO IN CATEGORY 6
HESSON GM + FITZSIMMONS DE + BATH JM
EXPERIMENTAL BOILING BURNOUT HEAT FLUXES WITH AN ELECTRICALLY HEATED 19-ROD BUNDLE TEST SECTION
BATTELLE-NORTHWEST, RICHLAND, WASHINGTON
BNWL-206 +. 47 PAGES, 21 FIGURES, 5 TABLES, DECEMBER 1965

76 BOILING BURNOUT EXPERIMENTS WERE MADE ON AN ELECTRICALLY HEATED, 19-ROD MODEL FUEL ELEMENT MADE OF 6.3-FT-LONG X 0.612-IN.-O.D. RODS SPACED 0.04 IN. APART. THE MODEL WAS COOLED BY WATER AND STEAM AT PRESSURES OF 1000 AND 1200 PSIA, WITH INLET CONDITIONS VARYING FROM 300 F TO 400 F QUALITY. FLOW ROUGHNESS ON THE TUBE WALL INCREASED THE BOILING BURNOUT FROM 10 TO 35% AT THE SAME OUTLET ENTHALPY. BOILING BURNOUT OCCURRED ON ONE OF THE INNER SEVEN RODS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

BURNOUT HEAT FLUX + FUEL ELEMENT + HEAT TRANSFER AUGMENTATION + HEAT TRANSFER EXPERIMENT + HEAT TRANSFER, BOILING

CATEGORY 5
ACCIDENT ANALYSIS

5-16634 ALSO IN CATEGORY 6
GROUSE SW
AN INDEX TO THE TWO-PHASE GAS-LIQUID FLOW LITERATURE. PART II
MASSACHUSETTS INSTITUTE OF TECHNOLOGY, MECHANICAL ENGINEERING DEPT.
AD-677,190 + DSR-8734-4 +. 150 PAGES, 2 FIGURES, SEPTEMBER 1964

REFERENCES ON CERTAIN TYPES OF TWO-PHASE GAS-LIQUID FLOW PHENOMENA WERE VERIFIED, LISTED, AND INDEXED BY SUBJECT AND PRINCIPAL AUTHOR. THIS LITERATURE SURVEY WAS MADE AS ONE PHASE OF A PROGRAM TO DETERMINE THE STATE OF THE ART IN TWO-PHASE GAS-LIQUID FLOW PHENOMENA. IT IS EXPECTED THAT THE PROGRAM WILL CONTINUE WITH THE PUBLICATION OF ADDITIONAL CRITICAL REVIEWS AND EVALUATIONS OF VARIOUS PROBLEM AREAS IN TWO-PHASE FLOW AS WELL AS WITH THE PUBLICATION OF PART III OF THE INDEX. THE PROBLEM AREAS OF CONDENSATION, CAVITATION, AND ATOMIZATION WERE GENERALLY EXCLUDED, EXCEPT THROUGH ERROR OR WHEN REFERENCES WERE SO BASIC AS TO BE GENERALLY USEFUL.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

BIBLIOGRAPHY + FLOW THEORY AND EXPERIMENTS + FLOW, TWO PHASE + HEAT TRANSFER, TWO PHASE

5-16635 ALSO IN CATEGORIES 6 AND 12
GROUSE SW
AN INDEX TO THE TWO-PHASE GAS-LIQUID FLOW LITERATURE. PART III
MASSACHUSETTS INSTITUTE OF TECHNOLOGY, MECHANICAL ENGINEERING DEPT.
AD-677,205 + DSR-8734-6 + N65-25,613 +. 100 PAGES, 2 FIGURES, REFERENCES, JANUARY 1966

1452 REFERENCES ON CERTAIN TYPES OF TWO-PHASE GAS-LIQUID FLOW PHENOMENA WERE VERIFIED, LISTED, AND INDEXED BY SUBJECT AND PRINCIPAL AUTHOR. THIS LITERATURE SURVEY WAS CARRIED OUT AS ONE PHASE OF A PROGRAM TO DETERMINE THE STATE OF THE ART IN TWO-PHASE GAS-LIQUID FLOW PHENOMENA. THIS IS THE TERMINAL REPORT OF A PROGRAM THAT HAS SEEN THE PUBLICATION OF TWO PRIOR INDEXES, TOTALING 5235 REFERENCES ON TWO-PHASE GAS-LIQUID FLOW. THE PROBLEM AREAS OF CONDENSATION, CAVITATION, AND ATOMIZATION WERE GENERALLY EXCLUDED, EXCEPT THROUGH ERROR OR WHEN REFERENCES WERE SO BASIC AS TO BE GENERALLY USEFUL. A FREQUENCY-OF-CITATION ANALYSIS WAS MADE TO DETERMINE WHICH OF THE 5235 REFERENCES HAD BEEN MOST FREQUENTLY CITED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

BURNOUT HEAT FLUX + DNB (DEPARTURE FROM NUCLEATE BOILING) + FLOW STABILITY + FLOW THEORY AND EXPERIMENTS + FLOW, ANNULAR + FLOW, MIST + FLOW, TWO PHASE + HEAT TRANSFER

5-16674 ALSO IN CATEGORY 18
QUESTION 4.2.4 - CLADDING FAILURE AND FUEL MELTING
CONSUMERS POWER CO., PALISADES PLANT, COVERT TOWNSHIP, MICHIGAN
2 PAGES, 1 TABLE, NOVEMBER 14, 1966, PAGE 4.2.4-1 AND 4.2.4-2 OF CONSUMERS POWER CO. APPLICATION FOR REACTOR CONSTRUCTION PERMIT AND OPERATING LICENSE, AMENDMENT NUMBER 3, DOCKET NO. 50-255

ANALYZE THE EXTENT OF CLADDING FAILURE AND FUEL MELTING IN THE EVENT OF THE DESIGN-BASIS ACCIDENT UNDER THE FOLLOWING CONDITIONS - (A) ONLY THE HIGH-HEAD SAFETY-INJECTION-SYSTEM PUMPS ARE AVAILABLE, (B) ONLY THE LOW-HEAD SAFETY-INJECTION-SYSTEM PUMPS ARE AVAILABLE, (C) THE ENTIRE SAFETY-INJECTION SYSTEM WITH POWER SUPPLIED BY A TRANSMISSION LINE IS AVAILABLE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACCIDENT, LOSS OF COOLANT + AEC QUESTION + PALISADES POINT + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

5-16679 ALSO IN CATEGORIES 18 AND 12
QUESTION 4.3.4 - HIGH PRESSURE PUMPS OF SAFETY INJECTION SYSTEM, LOSS-OF-COOLANT ACCIDENT
CONSUMERS POWER CO., PALISADES PLANT, COVERT TOWNSHIP, MICHIGAN
52 PAGES, 45 FIGURES, 3 TABLES, 5 REFERENCES, NOVEMBER 14, 1966, PAGES 4.3.4 - OF CONSUMERS POWER COMPANY APPLICATION FOR REACTOR CONSTRUCTION PERMIT AND OPERATING LICENSE, AMENDMENT NUMBER 3, DOCKET NO. 50-255

WHAT ASSURANCE IS THERE THAT THE HIGH-PRESSURE PUMPS WILL PERFORM PROPERLY WITH THE LOW OUTLET PRESSURE THAT WILL PREVAIL FOR THE LONG-TERM POSTACCIDENT COOLING PERIOD. WHY WERE THE HIGH-HEAD PUMPS THAN THE LOW-HEAD PUMPS SELECTED FOR LONG-TERM OPERATION. ADDITIONAL INFORMATION SUPPLIED. (ANSWER) A 52-PAGE SUPPLEMENT ON LOSS-OF-COOLANT ACCIDENTS IS INCLUDED, ENTITLED SECTION 4.S.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACCIDENT, LOSS OF COOLANT + *ANALYTICAL MODEL + AEC QUESTION + BLOWDOWN + CORE REFLOODING SYSTEM + PALISADES POINT + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

CATEGORY, 5
ACCIDENT ANALYSIS

5-16739 ALSO IN CATEGORY 6

SHAFTMAN DH

II-22. ARGONNE ADVANCED RESEARCH REACTOR CALCULATIONS-ANALYSES OF HYPOTHETICAL REACTOR ACCIDENTS
ARGONNE NATIONAL LAB., ILL.ANL-7210 +. 6 PAGES, 1 TABLE, 6 REFERENCES, SECTION II-22 PAGES 104-109 OF ANL REACTOR PHYSICS DIVISION
ANNUAL REPORT, JULY 1, 1965 TO JUNE 30, 1966, DECEMBER 1966CONCERNS THE AARR WITH STAINLESS-STEEL-URANIUM OXIDE FUEL ELEMENT, MCA RADIATION DOSES,
CONTROL-SYSTEM MALFUNCTION, COLD-WATER ACCIDENT VOIDINGS, OR FLOODING OF EXPERIMENTAL
FACILITIES.AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE*AARR (ARGONNE ADVANCED RESEARCH REACTOR) + *ACCIDENT ANALYSIS + ACCIDENT MODEL + ACCIDENT, COLD COOLANT +
ACCIDENT, CONTROL ROD WITHDRAWAL + ACCIDENT, FUEL SLUMP + ACCIDENT, HYPOTHETICAL +
ACCIDENT, MAXIMUM CREDIBLE (MCA) + ACCIDENT, REACTIVITY + REACTOR, RESEARCH + STEEL, STAINLESS +
URANIUM OXIDE + VOID COEFFICIENT

5-16739 ALSO IN CATEGORY 6

TREAT

ARGONNE NATIONAL LAB., ILL.

ANL-7210 +. 44 PAGES, 36 FIGURES, 10 TABLES, 51 REFERENCES, SECTION IV-1 THRU IV-11, PAGES 217-260 OF ANL
REACTOR PHYSICS DIVISION ANNUAL REPORT, JULY 1, 1965 TO JUNE 30, 1966, DECEMBER 1966IV-1. CAPABILITIES OF THE PRESENT TRANSIENT REACTOR TEST (TREAT) FACILITY CORE AS A FAST LOOP
MELTDOWN FACILITY. IV-2. MELTDOWN EXPERIMENTS USING THE MARK I INTEGRAL SODIUM LOOP. IV-3.
ANALYSES OF SINGLE-PIN LOOP MELTDOWN EXPERIMENTS. IV-4. PROPERTIES OF IRRADIATED UO2 PINS
PRIOR TO (TREAT) TRANSIENTS. IV-5. PHOTOGRAPHIC FAST REACTOR SAFETY EXPERIMENTS ON
IRRADIATED OXIDE PINS AT THE TREAT FACILITY. IV-6. TRANSIENT IN-PILE TESTS ON W-UO2 CERMET
POCKET FUEL SAMPLES. IV-7. DESIGN OF THE MARK II INTEGRAL TREAT FACILITY SODIUM LOOP.
IV-8. CALIBRATION MOCK-UP OF THE LARGE LOOP TEST SECTION FOR TREAT. IV-9. TRANSIENT
RESPONSE OF STANDOFF PRESSURE TRANSDUCER ASSEMBLIES ON TREAT FACILITY INTEGRAL SODIUM LOOPS.
IV-10. EXTENSIBLE, MULTIPURPOSE VACUUM GLOVE BOX. IV-11. EXPERIMENTAL RESULTS AND
IMPROVEMENTS IN THE FAST NEUTRON MHDSCOPE.AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE*FAILURE, FUEL ELEMENT + *TREAT (TRANSIENT TEST REACTOR FACILITY) + REACTOR, FAST +
REACTOR, GRAPHITE MODERATED + REACTOR, TEST + SODIUM + SPACECRAFT + TUNGSTEN + URANIUM OXIDE

5-16741 ALSO IN CATEGORY 6

FISCHER GJ + MENELEY DA + VOLODKA LK

IV-22. FAST REACTOR MELTDOWN ACCIDENT ANALYSIS CODE, PREAX

ARGONNE NATIONAL LAB., ILL.

ANL-7210 +. 2 PAGES, 1 FIGURE, 5 REFERENCES, SECTION IV-22, PAGE 299 AND 300 OF ANL REACTOR PHYSICS
DIVISION ANNUAL REPORT, JULY 1, 1965 TO JUNE 30, 1966, DECEMBER 1966THE PREAX CODE INCLUDES A SIMPLE PRELIMINARY TREATMENT OF THE MELTDOWN PHASE OF A FAST-REACTOR
ACCIDENT, WRITTEN FOR DIRECT APPLICATION TO THE ZPR TYPE OF LATTICE STRUCTURE. THE STANDARD
POINT-KINETICS CODE OF ANL, R-101, AND THE AX-1 CODE FOR CALCULATION OF NEUTRONIC AND
HYDRODYNAMIC BEHAVIOR DURING VIOLENT DISASSEMBLY, ARE SUBROUTINES WITHIN PREAX. PREAX
ITERATES BETWEEN THE MELT ROUTINE AND THE KINETICS ROUTINE THROUGHOUT THE PRE-BURST HISTORY.
A HIGHLY CONDENSED SUMMARY FLOW DIAGRAM OF THE OPERATION OF CONTROL IN PREAX IS GIVEN.AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHEACCIDENT ANALYSIS + COMPUTER, DIGITAL + CRITICAL ASSEMBLY FACILITY + FUEL MELTDOWN + REACTOR, FAST +
ZPR 3 (ANL ZERO POWER REACTOR)

5-16752 ALSO IN CATEGORY 18

SNAPP RB

TURKEY POINT - SUPPLEMENT 6 - EFFECT OF MODERATOR COEFFICIENT ON CORE STABILITY
WESTINGHOUSE ELECTRIC CORP., ATOMIC POWER DIVISIONS, PITTSBURGH, PA.

WCAP-2987 +. 2 PAGES, SEPTEMBER 30, 1966, DOCKET NOS. 50-250/251

INCORPORATES WCAP-2987 (EFFECT OF MODERATOR COEFFICIENT ON CORE STABILITY) AS SUPPLEMENT 6.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*MODERATOR COEFFICIENT + *REACTOR STABILITY + REACTOR, PRESSURIZED WATER +
SAFETY ANALYSIS REPORT, PRELIMINARY + TURKEY POINT 3 AND 4

CATEGORY 5
ACCIDENT ANALYSIS

5-16757 ALSO IN CATEGORIES 6 AND 17
PRESSURIZED WATER REACTOR PROJECT. TECHNICAL PROGRESS REPORT FOR THE PERIOD OCTOBER 22, 1966 TO JANUARY 20, 1967
RETTIS ATOMIC POWER LABORATORY, PITTSBURGH, PA.
WAPD-MRP-119 +. 109 PAGES, FIGURES, TABLES, JANUARY 1967

(PAGE 1) - LB STEAM GENERATOR DEVELOPED A 150-GPM LEAK 7 WEEKS AFTER EARLIER TUBE PLUGGING. (PAGE 5) - SEED-2 HEATUP/COOLDOWN-RATE LIMITATIONS WERE ESTABLISHED. (PAGE 24) - COOLANT PH ABOVE 10 CONTINUES TO HOLD BACK INCREASES IN CORE PRESSURE DROP. (PAGE 51) - SWING-LOAD OPERATIONS (100/20 MWE) AND PRESENT CONTROL-ROD PROGRAM CAUSES POWER DISTRIBUTIONS PEAKED TO THE CORE BOTTOM WHEN GROUP-2 RODS ARE FULLY WITHDRAWN AND GROUP-3 RODS PARTIALLY WITHDRAWN. TWO ADVERSE EFFECTS ARE (1) POWER PEAK IS HIGH WHERE DEPLETION IS HIGH AND ALLOWABLE HEAT FLUX IS LOW. (2) EVEN WHEN CORE POWER IS RAISED, XENON PEAK IN UPPER-CORE HALF IS NOT BURNED OUT AND MUST DECAY. A POWER LIMIT WAS ESTABLISHED FOR GROUP-3 OPERATION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*CONTROL ROD PROGRAM + *COOLANT CHEMISTRY + *FAILURE, TUBING + *OPERATING EXPERIENCE + *POWER DISTRIBUTION + *THERMAL MECHANICAL EFFECT + FLOW ORIFICE OR RESTRICTION + OPERATIONS REPORT, ANALYSIS + PRESSURE VESSEL + REACTOR, PRESSURIZED WATER + SHIPPINGPORT + STEAM GENERATOR + XENON

5-16770 ALSO IN CATEGORIES 6 AND 7
KFSLLER WE + WEYDERT LN
SNAPTRAN-2 DESTRUCTIVE TEST RESULTS
PHILLIPS PETROLEUM COMPANY, ATOMIC ENERGY DIVISION, IDAHO
IDC-17194 +. 118 PAGES, 56 FIGURES, 26 TABLES, 17 REFERENCES, JANUARY 1967

NUCLEAR, MECHANICAL, AND RADIOLOGICAL BEHAVIOR OF SNAPTRAN-2 WHEN SUBJECTED TO A RAPID REACTIVITY ADDITION OF 5.1 DOLLARS IS DESCRIBED. TOTAL ENERGY RELEASE LIMITED TO 54 MW-SEC PRIMARILY BY THE THERMAL NEGATIVE REACTIVITY FEEDBACK OF THE ZIRCONIUM-HYDRIDE-URANIUM FUEL. RAPID CORE EXPANSION CAUSED BY HYDROGEN PRESSURE BUILDUP WHEN THE FUEL TEMPERATURE REACHED 1900 F. DURING DISPERSAL OF THE BURNING FUEL AND HYDROGEN, ABOUT 20% OF THE FISSION PRODUCTS RELEASED TO ATMOSPHERE. POTENTIAL SIX-HOUR ACCUMULATIVE GAMMA EXPOSURE RESULTING FROM THE TEST LESS THAN 10 R AT 100 METERS FROM THE REACTOR.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

DOSE MEASUREMENT, EXTERNAL + DOSIMETRY, GENERAL + FISSION PRODUCT RELEASE, GENERAL + FISSION PRODUCT, AIRBORNE + FUEL EXPANSION COEFFICIENT + HYDRIDE + HYDROGEN + RADIOLOGY + REACTOR TRANSIENT + SNAPTRAN (SNAP TRANSIENT REACTOR TEST SERIES) + TEMPERATURE COEFFICIENT + ZIRCONIUM

5-16771 ALSO IN CATEGORY 6
CONDIT CM + SCOTT JF + JOHNSON RL
THE EFFECTS OF COOLANT TEMPERATURE AND INITIAL POWER LEVEL ON THE EXCURSION BEHAVIOR OF A HIGHLY ENRICHED PLATE CORE IN SPERT III --EXPERIMENT AND ANALYSIS
PHILLIPS PETROLEUM CO., ATOMIC ENERGY DIVISION, IDAHO
IDC-17138 +. 106 PAGES, 115 FIGURES, 3 TABLES, 20 REFERENCES, MARCH 1967

EXPERIMENTAL DATA FROM SELF-LIMITING POWER-EXCURSION TESTS ON A HIGHLY ENRICHED, STAINLESS-STEEL-CLAD PLATE CORE IN SPERT-III. STEP-INSERTIONS OF REACTIVITY. REACTOR POWER FROM 10 W TO 28 MW, PRESSURE (ATMOSPHERIC TO 2500 PSIG), TEMPERATURE (AMBIENT TO 600 F), FLOW (0 TO 20,000 GPM). REACTIVITY INSERTIONS FROM ABOUT 0.4 TO ABOUT 1.2\$, RESULTING IN INITIAL ASYMPTOTIC REACTOR PERIODS FROM ABOUT 1000 TO ABOUT 10 MSEC. AGREEMENT BETWEEN CALCULATION OF ART-04 AND EXPERIMENT IS WITHIN THE UNCERTAINTIES ASSOCIATED WITH THE DATA OVER THE RANGE OF CONDITIONS CONSIDERED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*REACTOR TRANSIENT + *SPERT 3 (SPECIAL POWER EXCURSION REACTOR TEST) + ACCIDENT ANALYSIS + REACTOR, TEST + , STEEL, STAINLESS + URANIUM OXIDE

5-16772 ALSO IN CATEGORY 6
SCOTT R + HALE CL + HAGEN RN
TRANSIENT TESTS OF THE FULLY ENRICHED URANIUM-OXIDE STAINLESS STEEL PLATE-TYPE C-CORE IN THE SPERT III REACTOR -- DATA SUMMARY REPORT
PHILLIPS PETROLEUM CO., ATOMIC ENERGY DIVISION, IDAHO
IDC-17223 +. 174 PAGES, 299 FIGURES, 2 TABLES, 19 REFERENCES, FEBRUARY 1967

DATA FROM THE TRANSIENT TEST SERIES OF THE SPERT-III C-CORE. EFFECTS OF VARIOUS PARAMETRIC CHANGES ON TRANSIENT BEHAVIOR. CHECKING MODELS AND THEORIES OF REACTOR BEHAVIOR OVER A WIDE RANGE OF PARAMETERS. STEPWISE INSERTION OF REACTIVITY. ASYMPTOTIC PERIODS FROM 10 SEC TO ABOUT 10 MSEC. REACTOR POWER -- 10 WATTS. TEMPERATURE -- AMBIENT TO ABOUT 320 C. PRESSURE -- ATMOSPHERIC TO 2500 PSI. FORCED COOLANT FLOW RATE -- 0 TO 20,000 GPM.

CATEGORY 5
ACCIDENT ANALYSIS

5-16773 *CONTINUED*

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

*REACTOR TRANSIENT + *SPERT 3 (SPECIAL POWER EXCURSION REACTOR TEST) + ACCIDENT ANALYSIS + REACTOR, TEST + STEEL, STAINLESS + URANIUM OXIDE

5-16774 ALSO IN CATEGORY 6

HOUGHTALING JE

A MODEL FOR ANALYSIS OF FAST TRANSIENT REACTIVITY EFFECTS IN LOW-ENRICHED OXIDE-FUELED REACTORS

PHILLIPS PETROLEUM CO., ATOMIC ENERGY DIVISION, IDAHO

IDC-17224 +. 56 PAGES, 11 FIGURES, 2 TABLES, 28 REFERENCES, JANUARY 1967

REACTIVITY FEEDBACK MODEL APPLICABLE TO SHORT-PERIOD POWER EXCURSIONS IN LOW-ENRICHED OXIDE FUELED REACTORS, SUCH AS A REACTOR TESTED IN SPERT I. AGREEMENT BETWEEN CALCULATION AND EXPERIMENT WITHIN PROBABLE ERROR OF ABOUT 20 PERCENT IN REACTIVITY COMPENSATION, EXCLUSIVE OF UNCERTAINTIES IN THE RESONANCE INTEGRAL TEMPERATURE COEFFICIENT, GAMMA. WHILE CALCULATIONS GAVE BEST AGREEMENT WITH EXPERIMENT FOR A VALUE OF THIS TEMPERATURE COEFFICIENT INTERMEDIATE BETWEEN THE THEORETICAL VALUE OBTAINED FOR THE SPERT-I CORE, AND AVAILABLE EMPIRICAL VALUES, AGREEMENT IN TERMS OF THE THEORETICAL VALUE OR OF PUBLISHED EMPIRICAL DATA IS NOT EXCLUDED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

ACCIDENT ANALYSIS + COMPUTER, DIGITAL + DOPPLER EFFECT + REACTOR TRANSIENT + REACTOR, TEST + SPERT 3 (SPECIAL POWER EXCURSION REACTOR TEST) + URANIUM OXIDE

5-16776 ALSO IN CATEGORY 6

MIROPOLO-SKII ZL

FLOW PULSATION IN EVAPORATION CHANNELS WITH AN ELASTIC MEDIUM PRESENT IN AN AUXILIARY PORTION OF THE CIRCUIT

WAPD-TRANS-52 +. 10 PAGES, 3 FIGURES, 9 REFERENCES, TRANSLATED BY R. KENT FOR BETTIS ATOMIC POWER LAB., WEST MIFFLIN, PA., FROM INZH.-FIZ. ZH., 7(8), PAGE 9-15, (1964)

EXPERIMENTAL DATA IS PRESENTED ON PULSATIONS DEVELOPING IN HEATED CHANNELS, WITH A COMPRESSIBLE MEDIUM IN AUXILIARY PORTIONS OF THE CIRCUIT. EXAMINATION IS MADE OF THE INFLUENCE, ON PULSATION CHARACTERISTICS, OF GEOMETRIC SIZES OF CHANNELS, THEIR HEAT INTENSITY, OF PARAMETERS OF CIRCULATION AND OF THE ELASTIC PROPERTIES OF THE COMPRESSIBLE MEDIUM FOUND IN AUXILIARY UNITS OF THE CIRCUIT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

FLOW THEORY AND EXPERIMENTS + FLOW, PULSATING + HEAT TRANSFER ANALYSIS

5-16781 ALSO IN CATEGORIES 6 AND 7

DIFTZ KA

QUARTERLY TECHNICAL REPORT. STEP PROJECT. OCTOBER 1966-DECEMBER 1966

PHILLIPS PETROLEUM CO., IDAHO. ATOMIC ENERGY DIV.

IDC-17214 +. 26 PAGES, 26 FIGURES, 5 TABLES, 7 REFERENCES, APRIL 1967

THIS REPORT IS PART OF A SERIES OF PROGRESS REPORTS DEALING WITH SNAPTRAN 1 AND 2, LOFT NUCLEAR DESIGN, BLOWDOWN ANALYSIS, MELTDOWN ANALYSIS, CONTAINMENT-INSIDE-SURFACE TEMPERATURE, FISSION-PRODUCT BEHAVIOR, RADIOLOGICAL STUDIES, AND SEMISCALE BLOWDOWN-TEST PROGRAMS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*LOFT (LOSS OF FLUID TEST) + *SNAPTRAN (SNAP TRANSIENT REACTOR TEST SERIES) + *STEP (SAFETY TEST ENGINEERING PROGRAM) + BLOWDOWN + CONTAINMENT, GENERAL + FISSION PRODUCT TRANSPORT + FUEL MELTDOWN + RADIOLOGY + REACTOR, PRESSURIZED WATER

5-16782 ALSO IN CATEGORY 6

TAXFLIUS TG

QUARTERLY TECHNICAL REPORT SPERT PROJECT, JULY, AUGUST, SEPTEMBER, 1966

PHILLIPS PETROLEUM CO., IDAHO

IDC-17228 +. 52 PAGES, 34 FIGURES, 6 TABLES, APRIL 1967

THIS REPORT IS ONE OF A SERIES OF PROGRESS REPORTS DEALING WITH SPERT 3, SPERT 4, CAPSULE DRIVER CORE, PBF, AND (OCCASIONALLY) WITH THE SPERT DATA-PROCESSING SYSTEM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*PBF (POWER BURST FACILITY) + *SPERT 3 (SPECIAL POWER EXCURSION REACTOR TEST) + *SPERT 4 (SPECIAL POWER EXCURSION REACTOR TEST) + COMPUTER, DIGITAL + DESTRUCTIVE TRANSIENT + EXCURSION, LARGE + FUEL INTEGRITY + FUEL MELTDOWN + REACTOR, TEST + REACTOR, TEST

CATEGORY 5
ACCIDENT ANALYSIS

5-16790
REACTOR DEVELOPMENT PROGRAM PROGRESS REPORT. MAY 1967
ARGONNE NATIONAL LAB., ILL.
ANL-7342 +. 131 PAGES, 42 FIGURES, 33 TABLES, JUNE 30, 1967

THIS REPORT IS ONE OF A SERIES OF PROGRESS REPORTS ON THE FOLLOWING SUBJECTS - IRRADIATION OF FUEL PINS, TREAT MELTDOWN TEST, INTEGRAL SODIUM LOOP, FAST-REACTOR SAFETY CONTAINMENT, EQUATION OF STATE OF REFRACTORIES SUCH AS UO₂, METAL-WATER REACTIONS, AND PLUTONIUM VOLATILITY SAFETY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

CONTAINMENT DESIGN + EQUATION OF STATE + FUEL MELTDOWN + METAL WATER REACTION + PLUTONIUM + REACTOR DYNAMICS + REACTOR, FAST + SODIUM + TREAT (TRANSIENT TEST REACTOR FACILITY) + URANIUM OXIDE

5-16847
LAWTHER KP + ROGERS JW
DEVELOPMENT OF EXPERIMENTAL TECHNIQUE FOR MEASURING LOCAL SURFACE HEAT TRANSFER FROM A SPHERE
AUSTRALIAN ATOMIC ENERGY COMMISSION RESEARCH ESTABLISHMENT, LUCAS HEIGHTS
FR/TN-55 +. 21 PAGES, 9 FIGURES, 7 REFERENCES, JUNE 1964

IN THE PRESENT PBR CONCEPT OF AN HTGC REACTOR, IT IS IMPORTANT FROM DESIGN ASPECT TO BE ABLE TO CALCULATE STRESSES IN THE FUEL-ELEMENT BALLS, SINCE BALL SIZE IS LIMITED BY INCREASED STRESSES ASSOCIATED WITH INCREASE IN BALL SIZE. THERMAL STRESSES DEPEND UPON SURFACE-TEMPERATURE VARIATION, WHICH IN TURN IS RELATED TO THE VARIATION OF THE HEAT TRANSFER COEFFICIENT OVER THE SURFACE. IN A PEBBLE BED, THIS DEPENDS UPON LOCAL FLOW BEHAVIOR. A COPPER SPHERE WAS MADE AND TESTED FOR MEASURING ABSOLUTE VALUES OF LOCAL SURFACE-HEAT-TRANSFER COEFFICIENTS ON THE SPHERE IN AN AIR STREAM. A SIMPLE EXPERIMENTAL TECHNIQUE, RAPID AND CAPABLE OF HIGH RESOLUTION, WAS DEVELOPED FOR MEASURING LOCAL VARIATIONS IN HEAT-TRANSFER COEFFICIENT AROUND THE SPHERES SURFACE, AND THE DESIGN OF AN INSTRUMENTED SPHERE DEVELOPED FOR OBTAINING HEAT-TRANSFER PROFILES OVER SURFACE OF A SPHERE IN AN ASSEMBLY OF SPHERES.

*HEAT TRANSFER + *HEAT TRANSFER EXPERIMENT + *REACTOR, PEBBLE BED + STRESS + SURFACE, GENERAL

5-16927
VOHR J
EXPERIMENTAL STUDY OF SUPERLAMINAR FLOW BETWEEN NONCONCENTRIC ROTATING CYLINDERS
MECHANICAL TECHNOLOGY INCORPORATED, LATHAM, NEW YORK
NASA-CR-740 +. 69 PAGES, 34 FIGURES, 1 TABLE, 21 REFERENCES, JUNE 1967

AN EXPERIMENTAL STUDY OF SUPERLAMINAR FLOW IN THE SPACE BETWEEN A ROTATING INNER CYLINDER AND A CLOSE-CLEARANCE STATIONARY OUTER CYLINDER. MEASUREMENTS OF TORQUE AND PRESSURE PROFILES IN THE TAYLOR VORTEX FLOW REGIME WERE COMPARED WITH THEORETICAL CALCULATIONS. UNDER CERTAIN CONDITIONS, DATA AND THEORY WERE WITHIN 10% FOR SPEEDS UP TO 1.5 TIMES THE CRITICAL SPEED. VISUAL STUDIES WERE ALSO MADE AND REPORTED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*FLOW, ROTATING + CYLINDER + FLOW DISTRIBUTION + FLOW THEORY AND EXPERIMENTS + FLOW, ANNULAR + FLOW, VORTEX

5-16937 ALSO IN CATEGORIES 1 AND 2
SCHIKARSKI W
REFLECTIONS ON SERIOUS REACTOR ACCIDENTS. STATEMENT ON A NEW QUANTITATIVE ACCIDENT PHILOSOPHY
KERNFORSCHUNGSZENTRUM, KARLSRUHE, WEST GERMANY
KKK-530 +. 12 PAGES, 2 REFERENCES, JANUARY 1967, IN GERMAN

THE MCA CONCEPT HAS MAINLY TWO DIFFICULTIES - IT CONSIDERS ENGINEERED SAFEGUARDS INSUFFICIENTLY, AND IT DOES NOT CONTAIN PROBABILITIES. THE BU (BASIS ACCIDENT) CONCEPT DETERMINES A CONSERVATIVE-BASIS ACCIDENT AND A DANGER POTENTIAL. PROBABILITIES ARE ASSIGNED TO INDIVIDUAL EVENTS WHICH TOGETHER MAKE UP THE ACCIDENT, AND TO ENGINEERED SAFEGUARDS. THIS FACILITATES QUANTITATIVE STATEMENTS REGARDING SAFETY OF REACTORS. THE RISK IS THE PRODUCT OF THE DANGER POTENTIAL AND THE ASSOCIATED PROBABILITIES.

AVAILABILITY - MICROCARD EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM, WISCONSIN 54669

ACCIDENT ANALYSIS + *ACCIDENT, MAXIMUM CREDIBLE (MCA) + ACCIDENT, PROBABILITY OF + ENGINEERED SAFETY FEATURE + GERMANY + SAFETY ANALYSIS + SAFETY EVALUATION + SAFETY PRINCIPLES AND PHILOSOPHY

5-17068 ALSO IN CATEGORIES 6 AND 7

CATEGORY: 5
ACCIDENT ANALYSIS

5-17068 *CONTINUED*

DICKERMAN CE

EXPERIMENTS AND ANALYSES IN FAST REACTOR SAFETY

ARGONNE NATIONAL LAB., ARGONNE, ILL.

7 PAGES, 2 FIGURES, 45 REFERENCES, NUCLEAR SAFETY 8(3), PAGES 220-226, (SPRING 1967)

REVIEW OF RECENT EXPERIMENTAL AND ANALYTICAL WORK ON THE BEHAVIOR OF FAST REACTOR CORES UNDER ACCIDENT CONDITIONS. ORIENTATION OF THE SAFETY-RELATED INVESTIGATIONS IS DISCUSSED, DEVELOPMENT OF EXPERIMENTAL EQUIPMENT AND TECHNIQUES IS SUMMARIZED, EXPERIMENTAL RESULTS ARE DESCRIBED, AND THE STATUS OF ASSOCIATED ANALYTICAL TOOLS IS PRESENTED. INTENSIVE INVESTIGATIONS OF THE EFFECTS OF COOLANT ON FUEL FAILURE AND FUEL MOVEMENT AND ON TRANSIENT COOLANT VAPORIZATION AND HYDRODYNAMICS ARE BEGINNING.

*REACTOR, FAST + *SAFETY ANALYSIS + ACCIDENT ANALYSIS + CORE MELTDOWN + SAFETY EVALUATION + SAFETY PRINCIPLES AND PHILOSOPHY + SAFETY STUDY + TREAT (TRANSIENT TEST REACTOR FACILITY)

5-17069

ALSO IN CATEGORY 6

HAURENREICH PN

SAFETY ASPECTS OF THE MOLTEN-SALT REACTOR EXPERIMENT

OAK RIDGE NATIONAL LAB., TENN.

10 PAGES, 2 FIGURES, 1 TABLE, 12 REFERENCES, NUCLEAR SAFETY 8(3), PAGES 226-235, (SPRING 1967)

FLUID-FUEL AND SOLID-FUEL REACTORS, ALTHOUGH SIMILAR IN ULTIMATE CONTAINMENT REQUIREMENTS, DIFFER IN THE KINDS OF ACCIDENTS THAT CAN CAUSE SYSTEM DAMAGE. SOME FLUID FUELS ARE SUSCEPTIBLE TO SEGREGATION, AND FILLING ACCIDENTS ARE MORE LIKELY, BUT AFTERHEAT IS MORE EASILY HANDLED. THE SURVIVING FLUID-FUEL CONCEPT, THE MOLTEN-SALT REACTOR, IS BEING DEVELOPED INTO A THERMAL BREEDER. THE MSRE, IN WHICH MOLTEN FLUORIDE SALTS CIRCULATE AT 1200 DEG. F, IS A STEP IN THAT DEVELOPMENT. SAFETY ANALYSES AND EXPERIENCE SHOW THE MSRE TO BE SAFE, AND NO SERIOUS PROBLEMS ARE EXPECTED IN DESIGNING SAFE MOLTEN-SALT BREEDER REACTORS.

*MSRE (MOLTEN SALT REACTOR EXPERIMENT) + *SAFETY ANALYSIS + ACCIDENT ANALYSIS + ACCIDENT, COLD COOLANT + ACCIDENT, CONTROL ROD WITHDRAWAL + ACCIDENT, LOSS OF COOLANT + ACCIDENT, REACTIVITY + CONTAINMENT, GENERAL + CRITICALITY SAFETY + DELAYED NEUTRON + FISSION PRODUCT RELEASE, GENERAL + FUEL COEFFICIENT + FUEL MELTDOWN + REACTOR, MOLTEN SALT + SAFETY EVALUATION + SAFETY PRINCIPLES AND PHILOSOPHY + SAFETY STUDY + TEMPERATURE COEFFICIENT + XENON

5-17096

GIGNILLIAT H + HAINES JF + KLECKER RW + PEARCE WR

PATHFINDER ATOMIC POWER PLANT THERMAL STRESS REVIEW OF PRIMARY COOLANT SYSTEM

ALLIS-CHALMERS, ATOMIC ENERGY DIVISION, BETHESDA, MARYLAND

ACNP-66555 +. 141 PAGES, FIGURES, 4 TABLES, AUGUST 19, 1966, DOCKET NO. 50-130

THERMAL AND FATIGUE STRESS ANALYSIS OF PRIMARY-COOLANT-SYSTEM THERMAL TRANSIENTS AND DETERMINATION OF EFFECTS ON SYSTEM STRUCTURE STRESSES. DISCUSSED ARE HEATING AND COOLING TRANSIENTS FOR VESSEL THAT IS FLOODED, DRAINED, OR FLOODING - COMPONENTS OF PRIMARY COOLANT SYSTEM AND AREAS THAT ARE MOST LIMITING TO STRESSES RESULTING FROM CYCLIC THERMAL TRANSIENTS - METHODS OF ANALYSIS USED - EFFECTS OF SUSTAINED REACTOR ISOLATION SCRAM WHEN REACTOR IS IN HOT FLOODED CONDITION. IT IS CONCLUDED THAT STRESSES RESULTING FROM OPERATIONAL TRANSIENTS WHEN VESSEL IS DRAINED ARE NOT AS SIGNIFICANT IN DETERMINING FATIGUE LIFE AS THOSE RESULTING FROM CHANGE OF SYSTEM TEMPERATURE FROM AMBIENT TO HOT OPERATING CONDITIONS, AND THEN RETURN TO AMBIENT TEMPERATURE. ENTIRE PRIMARY COOLANT SYSTEM CAN ACCOMMODATE ALL THERMAL CYCLES THAT MIGHT REASONABLY OCCUR WITHIN PLANT LIFETIME.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*MAIN COOLING SYSTEM + *STRESS ANALYSIS + *TEMPERATURE TRANSIENT + *THERMAL MECHANICAL EFFECT + PATHFINDER + PRESSURE VESSEL + REACTOR, INTERNAL SUPERHEAT

5-17200

ABRAHAM SC + MACDONALD IP + MOECK EC + WIKHAMMER GA

EFFECT OF COSINE AND HALF-COSINE HEAT FLUXES ON DRYOUT FOR STEAM-WATER FLOW IN AN ANNULUS AT 1000 PSIA

ATOMIC ENERGY OF CANADA LTD., CHALK RIVER, ONTARIO

AECL-2646 +. 34 PAGES, 14 FIGURES, 5 TABLES, 32 REFERENCES, AUGUST, 1966

THE DRYOUT HEAT FLUX (CRITICAL HEAT FLUX AT HIGH STEAM QUALITIES) AND LOCATION OF DRYOUT ON A ROD HAVING A NONUNIFORM AXIAL HEAT-FLUX PROFILE CAN BE EXPLAINED IN TERMS OF LIQUID FILM FLOW. FOR TWO-PHASE INLET CONDITIONS, AS USED IN OUR EXPERIMENTS, A LIQUID FILM FORMS ON THE UPSTREAM UNHEATED ROD (DUMMY) AND FLOWS ONTO THE HEATER. IF THIS FILM FLOW IS SMALL, (SHORT DUMMY) DROPLET DEPOSITION GOVERNS DRYOUT, WHICH THEN OCCURS UPSTREAM OF THE HEATED END, FOR A HALF-COSINE (FLUX-DECREASING) HEAT FLUX PROFILE. IF THIS FILM FLOW IS SIGNIFICANT, (LONG DUMMY), DRYOUT OCCURS AT THE DOWNSTREAM END. THE FILM FLOW MODEL POSTULATED EARLIER FOR UNIFORM HEAT FLUXES (AECL-1788 AND 2333) SUCCESSFULLY DESCRIBES DRYOUT FOR THE PRESENT EXPERIMENTS.

AVAILABILITY - ATOMIC ENERGY OF CANADA, LTD., CHALK RIVER, ONTARIO, CANADA, \$1.00 COPY

*FLOW, TWO PHASE + *HEAT FLUX, DRYOUT + *HEAT TRANSFER + *HEAT TRANSFER EXPERIMENT + ANNULUS + CANADA + CHALK RIVER + FILM, LIQUID + HEAT GENERATION, NONUNIFORM

CATEGORY 5
ACCIDENT ANALYSIS

5-17201
FRGAN R + WHITTLE RH
PRESSURE-DROP CHARACTERISTICS FOR THE FLOW OF SUBCOOLED WATER AT ATMOSPHERIC PRESSURE IN NARROW HEATED CHANNELS
ATOMIC ENERGY RESEARCH ESTABLISHMENT, HARWELL, ENGLAND
AERE-M-1739 (PT. 2) +. 16 PAGES, 5 FIGURES, 6 TABLES, REFERENCES, DECEMBER, 1966.

PART I OF THIS REPORT PRESENTED THE RESULTS OF PRESSURE-DROP MEASUREMENTS FOR WATER FLOWING IN A HEATED CHANNEL OF RECTANGULAR CROSS-SECTION 24 IN. LONG X 1.0 IN. X 0.127 IN. SIMILAR MEASUREMENTS HAVE NOW BEEN CARRIED OUT WITH CHANNELS OF SIMILAR GEOMETRY BUT WITH A RANGE OF HEATED LENGTHS AND GAP WIDTHS. A SET OF MEASUREMENTS WAS ALSO MADE WITH A TUBULAR CHANNEL HAVING AN I.D. OF 0.254 IN. THE OBJECT WAS TO DETERMINE THE PARAMETERS WHICH DEFINE THE MINIMA IN THE PRESSURE-DROP/FLOW CURVES (S-CURVES), AND HENCE A CRITERION FOR ASSESSING THE ONSET OF PARALLEL-CHANNEL INSTABILITY.

AVAILABILITY - BRITISH INFORMATION SERVICE, 845 THIRD AVENUE, NEW YORK, N.Y. 10022, \$0.60 COPY

*FLOW STABILITY + *FLOW THEORY AND EXPERIMENTS + *PRESSURE DROP + HARWELL (UK) + MEASUREMENT, GENERAL + UNITED KINGDOM + WATER, GENERAL

5-17202 ALSO IN CATEGORY 4
CLARK LT
SUMMARY OF LITERATURE AND BIBLIOGRAPHY ON THE RELATION BETWEEN WETTING AND BOILING MERCURY HEAT TRANSFER
AERJET-GENERAL CORPORATION
NP-16046 +. 4 PAGES, AUGUST 25, 1964

A SURVEY OF THE LITERATURE ON BASIC PHENOMENA THAT MIGHT AFFECT THE BOILING OF MERCURY WAS CONDUCTED. STUDIES ARE DIVIDED INTO THE THREE GENERAL AREAS OF BOILING, WETTING, AND SURFACE TENSION. INTERFACIAL PHENOMENA ARE DISCUSSED AS THEY ARE APPLICABLE TO WETTING BY MERCURY. IT WAS CONCLUDED THAT WETTING IS REQUIRED FOR HIGH HEAT FLUXES IN BOILING, SINCE NONWETTING RESULTS IN PREMATURE TRANSITION TO FILM BOILING. WETTING MAY BE INDUCED BY PROPER SURFACE PREPARATION, EXTENDED BOILING, AND USE OF CERTAIN ADDITIVES, SUCH AS ALKALI AND ALKALINE-EARTH METALS. IT WAS ALSO CONCLUDED THAT THE MICROSCOPIC ASPECTS OF WETTING ARE IMPORTANT AS WELL AS THE MACROSCOPIC.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*BIBLIOGRAPHY + *HEAT TRANSFER + *HEAT TRANSFER, BOILING + *MERCURY + METAL, ALKALI + REACTOR, SPACE + SNAP 8 (SYSTEMS FOR NUCLEAR AUXILIARY POWER)

5-17208
PRICE J
REVIEW OF FLUID FLOW DISTRIBUTION THROUGH RANDOMLY PACKED BEDS
AUSTRALIAN ATOMIC ENERGY COMMISSION RESEARCH ESTABLISHMENT, LUCAS HEIGHTS
AAEC-TM-332 +. 24 PAGES, 6 FIGURES, REFERENCES, JULY, 1966

THE LITERATURE ON FLUID-FLOW DISTRIBUTION THROUGH RANDOMLY PACKED BEDS IS REVIEWED IN RELATION TO A FEASIBILITY STUDY OF A PEBBLE-BED REACTOR. THE METHODS OF MEASUREMENT ARE BRIEFLY DISCUSSED, AND EXISTING THEORETICAL SOLUTIONS ARE APPRAISED. THE EXPERIMENTAL DATA OF DIFFERENT OBSERVERS ARE IN POOR AGREEMENT. EXISTING THEORETICAL DERIVATIONS ARE INADEQUATE FOR GENERAL APPLICATION. AN ALTERNATIVE THEORY IS PROPOSED WHICH RELIES UPON EXPERIMENT TO SPECIFY A BOUNDARY CONDITION. THE EXISTING SUPERFICIAL VELOCITY PROFILES CAN BE REASONABLY PREDICTED IN TERMS OF THE CENTRE-LINE VELOCITY, PROVIDED THAT THIS BOUNDARY CONDITION IS ALLOWED TO VARY.

AVAILABILITY - MICROCARD EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM, WISCONSIN 54669

*FLOW DISTRIBUTION + *FLOW THEORY AND EXPERIMENTS + *HYDRODYNAMIC ANALYSIS + *REACTOR, PEBBLE BED + AUSTRALIA + FLUIDIZED BED

5-17211
TISCHER + SCHUELER + BRUNSWICK
STUDIES ON CYCLONES FOR STEAM SEPARATION IN BOILING WATER REACTORS. QUARTERLY REPORT NO. 3, JULY 1-SEPTEMBER 30, 1966
ALLGEMEINE ELEKTRICITAETS-GESELLSCHAFT, FRANKFURT AM MAIN, WEST GERMANY. KERNENERGIEANLAGEN
EURAFEC-1734 + EUR-3303 +. 54 PAGES, FIGURES

DESCRIBES AFC EXPERIMENTAL STUDIES UNDER A EURATOM RESEARCH CONTRACT ON DROPPING-TYPE CYCLONES FOR STEAM SEPARATION IN BWRs. THE POSSIBILITY OF ARRANGING THE AXIAL CYCLONE IN SEVERAL ROWS AND CLOSELY TOGETHER IN THE REACTOR FALL SPACE, THEREBY RENDERING IT USEFUL FOR HIGHER REACTOR OUTPUTS, CAN BE USED WITHOUT RESERVATION ONLY IF EVEN MIXTURE DIVISION CAN BE ENSURED. THIS WAS NOT NECESSARILY EXPECTED FROM THE BEGINNING BUT WAS CONFIRMED DURING INITIAL TESTS. IN ADDITION TO THE MIXTURE DIVISION, THE MIXTURE QUALITY AT THE INLET TO THE CYCLONES DIFFERED CONSIDERABLY. AN ANALYSIS OF THE INFLOW CONDITIONS INVOLVED A CONSIDERABLE EXTENSION OF THE PREVIOUSLY USED MEASURING SYSTEM. IN PARTICULAR, THE BUBBLE CONTENT AT THE

CATEGORY 5
ACCIDENT ANALYSIS5-17211 *CONTINUED*
INLET WAS ANALYZED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*FLOW, AXIAL + *HYDRODYNAMIC ANALYSIS + *REACTOR, BOILING WATER + DESIGN STUDY + EURATOM + GERMANY + STEAM

5-17212
SUTHERLAND WA
IMPROVED HEAT TRANSFER PERFORMANCE WITH BOUNDARY LAYER TURBULENCE PROMOTERS
GENERAL ELECTRIC CO., SAN JOSE, CALIFORNIA. ADVANCED PRODUCTS OPERATION
GEAP-5115 +. 25 PAGES, FIGURES, REFERENCES, JUNE, 1966

A SUBSTANTIAL IMPROVEMENT IN FORCED-CONVECTION HEAT-TRANSFER CONDUCTANCE IS REQUIRED FOR DEVELOPING ADVANCED STEAM-COOLED AND GAS-COOLED POWER REACTOR SYSTEMS. BOUNDARY-LAYER TURBULENCE PROMOTERS ON THE HEATED SURFACES ARE OF GREAT INTEREST FOR THESE SYSTEMS BECAUSE OF THE LARGE INCREASE IN THE HEAT-TRANSFER PERFORMANCE. THIS REPORT ESTABLISHES THE PERFORMANCE OF BOUNDARY-LAYER TURBULENCE PROMOTERS IN ARRAYS OF PARALLEL RODS, THE CONFIGURATION OF GREATEST INTEREST FOR ENGINEERING APPLICATIONS. DISCRETE TWO-DIMENSIONAL ROUGHNESS ELEMENTS, IN THE FORM OF SMALL FINS TRANSVERSE TO THE FLOW, ARE INVESTIGATED EXPERIMENTALLY TO ESTABLISH THE EFFECT OF PROMOTER HEIGHT AND SPACING. A GENERAL CORRELATION IS PRESENTED WHICH THEN PERMITS OPTIMIZATION OF HEAT-TRANSFER PERFORMANCE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*FLOW, TURBULENT + *HEAT TRANSFER + *HEAT TRANSFER, CONVECTION + BOUNDARY LAYER + REACTOR, GAS COOLED

5-17213
LONDON AL + KLOPFER G + WOLF S
TECHNICAL REPORT NO. 63 OBLIQUE FLOW HEADERS FOR HEAT EXCHANGERS - THE IDEAL GEOMETRIES AND THE EVALUATION OF LOSSES
STANFORD UNIVERSITY, MECHANICAL ENGINEERING DEPARTMENT, STANFORD, CALIFORNIA
45 PAGES, 24 FIGURES, 4 TABLES, AUGUST, 1966

THE PROBLEM OF THE DESIGN OF OBLIQUE FLOW HEADERS FOR HEAT EXCHANGERS CARRYING LOW-DENSITY FLUIDS IS CONSIDERED. IT IS DEMONSTRATED BY TEST THAT THE THEORY ALREADY AVAILABLE IN THE LITERATURE PROVIDES AN ADEQUATE BASIS FOR DESIGN FOR THE SINGLE-PASS PARALLEL FLOW AND COUNTER FLOW CONFIGURATIONS. THE THEORY IS SUMMARIZED IN THE FORM OF DESIGN EQUATIONS AND ILLUSTRATED BY SPECIFIC APPLICATION TO THE AIR-SIDE FLOW IN A GAS-TURBINE REGENERATOR.

AVAILABILITY - STANFORD UNIVERSITY, CALIFORNIA

*DESIGN STUDY + *HEAT EXCHANGER + *HEAT TRANSFER + *HEAT TRANSFER, LOW DENSITY + HEAT TRANSFER ANALYSIS + HYDRODYNAMIC ANALYSIS

5-17214
SIEGEL R + HOWELL JR
CRITICAL HEAT FLUX FOR SATURATED POOL BOILING FROM HORIZONTAL AND VERTICAL WIRES IN REDUCED GRAVITY
NASA, LEWIS RESEARCH CENTER, CLEVELAND, OHIO
NASA-TN-D-3123 +. 25 PAGES, 5 FIGURES, 6 TABLES, 17 REFERENCES, DECEMBER, 1965

CRITICAL HEAT FLUXES WERE OBTAINED FOR WATER AND ETHYL ALCOHOL AT SATURATION CONDITIONS FROM HORIZONTAL AND VERTICAL ELECTRICALLY HEATED PLATINUM WIRES AND FOR 60 PERCENT BY WEIGHT AQUEOUS SUCROSE SOLUTION BOILING FROM A VERTICAL WIRE. THE BOILING APPARATUS WAS INSTALLED IN A COUNTERWEIGHTED DROP TOWER THAT PROVIDED GRAVITY FIELDS RANGING FROM APPROXIMATELY 0.015 TO 1 TIMES EARTH GRAVITY WITH TEST DURATIONS OF ABOUT 1 SEC AT THE LOW GRAVITIES. AS A ROUGH APPROXIMATION, THE CRITICAL FLUX DECREASED AS G TO THE $1/4$ POWER EXCEPT FOR A VERTICAL WIRE IN ETHYL ALCOHOL, WHERE THE CRITICAL FLUX DECREASED LESS RAPIDLY. FOR VERTICAL WIRES 1.5 AND 2 INCHES LONG, THE CRITICAL FLUX WAS INDEPENDENT OF WIRE LENGTH AT BOTH 0.015 AND 1 TIMES EARTH GRAVITY. AT A FIXED GRAVITY FIELD, A VERTICAL ORIENTATION OF THE HEATED WIRE PROVIDED LOWER VALUES FOR THE CRITICAL HEAT FLUX THAN FOR A HORIZONTAL WIRE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*BURNOUT HEAT FLUX + *HEAT TRANSFER + *POOL BOILING + DNB (DEPARTURE FROM NUCLEATE BOILING) + PLATINUM + REACTOR, SPACE

5-17215
BAINTON KF
EXPERIMENTAL HEAT PIPES
ATOMIC ENERGY RESEARCH ESTABLISHMENT, HARWELL, ENGLAND
AERE-M-1610 +. 9 PAGES, 1 FIGURE, 1 TABLE, JUNE, 1965

DESCRIBES SUCCESSFUL OPERATION OF TWO SODIUM-FILLED, STAINLESS-STEEL HEAT PIPES, HIGH THERMAL CONDUCTANCE DEVICES IN WHICH CONTINUOUS EVAPORATION AND CONDENSATION OF A FLUID IS ACHIEVED

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5-17215 *CONTINUED*

USING A CAPILLARY STRUCTURE AS PUMP. CAPILLARY PUMPING ENABLED THE PIPE TO WORK AGAINST A 20-CM HEAD, WITH ABOUT 75 CM LENGTH OF PIPE BEING AT A TEMPERATURE WITHIN 5 C OF THE 13-CM-LONG HEATED SECTION (675 C). HEAT PIPE USING LEAD WAS UNSUCCESSFUL, PROBABLY DUE TO IMPURITIES IN THE LEAD THAT AFFECTED SURFACE TENSION AND VAPOR PRESSURE. TANTALUM PIPE USING SILVER AS WORKING FLUID IS PROPOSED, AND LITHIUM AND COPPER ARE ALSO WORKING FLUIDS OF INTEREST. FEASIBILITY OF OBTAINING LARGE SURFACES OF ALMOST CONSTANT TEMPERATURE AND TRANSPORTING HIGH HEAT FLUXES SEEMS CONFIRMED.

AVAILABILITY - UNITED KINGDOM ATOMIC ENERGY AUTHORITY, 11 CHARLES II STREET, LONDON, S.W.1

*HEAT TRANSFER + *HEAT TRANSFER EXPERIMENT + *SODIUM + *UNITED KINGDOM + HARWELL (UK) + HEAT PIPE

5-17216

RUCKENSTEIN E

ON TURBULENT HEAT OR MASS TRANSFER

POLYTECHNICAL INSTITUTE, BUCHAREST, ROMANIA

4 PAGES, 1 TABLE, 16 REFERENCES, CHEMICAL ENGINEERING SCIENCE 21(2), PAGES 113 THRU 116, (FEBRUARY 1966)

A CONNECTION BETWEEN RENEWAL MODELS AND THE THEORY OF INSTABILITY IS SUGGESTED AND - BASED ON IT - A RELATIONSHIP BETWEEN THE RENEWAL FREQUENCY AND THE IMAGINARY PART OF THE TIME COEFFICIENT OF THE PERTURBATION. IN THIS WAY THE PARTIAL INFORMATION SUPPLIED BY THE RENEWAL MODELS, WHICH GIVE ONLY THE DEPENDENCE OF THE TRANSFER COEFFICIENT ON THE DIFFUSION COEFFICIENT OR THERMAL DIFFUSIVITY, IS COMPLETED WITH INFORMATION CONCERNING THE DEPENDENCE OF THIS COEFFICIENT ON HYDRODYNAMICAL PARAMETERS. AS AN EXAMPLE THE PROBLEM OF HEAT TRANSFER IN A NONHOMOGENEOUS FLUIDIZED BED IS DISCUSSED.

*FLOW, TURBULENT + *HEAT TRANSFER + *MASS TRANSFER + FLUIDIZED BED + INSTABILITY + TRANSPORT THEORY

5-17217

GAVALAS GP

ON THE STEADY STATES OF DISTRIBUTED PARAMETER SYSTEMS WITH CHEMICAL REACTIONS, HEAT, AND MASS TRANSFER

CHEMICAL ENGINEERING LAB., CALIFORNIA INSTITUTE OF TECHNOLOGY, PASADENA, CALIF.

16 PAGES, 4 REFERENCES, CHEMICAL ENGINEERING SCIENCE 21(6/7), PAGES 477 THRU 492, (JUNE-JULY 1966)

THE NUMBER OF STEADY STATES FOR A DISTRIBUTED SYSTEM WITH CHEMICAL REACTIONS, HEAT, AND MASS TRANSFER IS INVESTIGATED BY MEANS OF FIXED-POINT METHODS. THE MAIN STEP IN THE ANALYSIS IS THE ESTABLISHMENT OF A PRIORI BOUNDS FOR THE STEADY-STATE CONCENTRATIONS AND TEMPERATURE. SUCH BOUNDS CAN BE DERIVED FROM THE CONSERVATION OF ATOMIC SPECIES AND ENERGY, INDEPENDENTLY OF THE REACTION RATES AND THE SIZE OF THE MEDIUM. IN GREAT GENERALITY, STEADY STATES EXIST AND THEY ARE ODD IN NUMBER. IMPROVED BOUNDS OBTAINED BY CONSIDERING THE REACTION RATES AND THE SIZE OF THE MEDIUM ARE USED IN DEVELOPING CRITERIA FOR THE UNIQUENESS OF THE STEADY STATE. IF THE MEDIUM IS SUFFICIENTLY SMALL, THERE IS ONE ONLY STEADY STATE. AN EXAMPLE OF TWO SECOND-ORDER SIMULTANEOUS EXOTHERMIC CHEMICAL REACTIONS IN A CATALYST PARTICLE IS TREATED IN DETAIL, AND NUMERICAL RESULTS ARE OBTAINED.

*CHEMICAL REACTION + *HEAT TRANSFER + *MASS TRANSFER

5-17218

ACRIVOS A

ON THE COMBINED EFFECT OF FORCED AND FREE CONVECTION HEAT TRANSFER IN LAMINAR BOUNDARY LAYER FLOWS

DEPARTMENT OF CHEMICAL ENGINEERING, STANFORD UNIVERSITY, STANFORD, CALIFORNIA

10 PAGES, 3 FIGURES, 13 REFERENCES, CHEMICAL ENGINEERING SCIENCE 21(4), PAGES 343 THRU 352, (APRIL 1966)

THE PHENOMENON OF COMBINED FORCED AND FREE CONVECTION HEAT TRANSFER IN LAMINAR BOUNDARY LAYER FLOWS, IN WHICH THE MOMENTUM EQUATION IS COUPLED WITH THE ENERGY EQUATION ON ACCOUNT OF THE PRESENCE OF THE GRAVITATIONAL TERM, IS ANALYZED THEORETICALLY. AN APPROXIMATE BUT RELIABLE TECHNIQUE IS DEVELOPED FOR PREDICTING THE SHEAR STRESS AND THE RATE OF HEAT TRANSFER THROUGHOUT THE INTERMEDIATE REGIME FOR GENERAL SURFACE GEOMETRIES AND FOR ARBITRARY VELOCITY DISTRIBUTIONS AT THE EDGE OF THE BOUNDARY LAYER.

*FLOW THEORY AND EXPERIMENTS + *FLOW, LAMINAR + *HEAT TRANSFER + *HEAT TRANSFER, CONVECTION + BOUNDARY LAYER + HEAT TRANSFER, NATURAL CONVECTION

5-17220

KIRBY GJ

SCALING OF RUNOUT DATA FOR A SINGLE FLUID AT A FIXED PRESSURE

ATOMIC ENERGY ESTABLISHMENT, WINFRITH, ENGLAND

AEEW-M-696 +. 24 PAGES, FIGURES, REFERENCES, DECEMBER, 1966

THE SUCCESS OF THE SCALING-FACTOR CONCEPT IN LINKING RUNOUT MEASUREMENTS MADE IN TWO DIFFERENT FLUIDS HAS BEEN PREVIOUSLY DEMONSTRATED. THIS MEMORANDUM INVESTIGATES THE POSSIBILITY OF LINKING MEASUREMENTS MADE ON TWO DIFFERENT SYSTEMS IN THE SAME FLUID AT THE SAME PRESSURE. IT SEEMS THAT GOOD ACCURACY MAY BE OBTAINED FOR SYSTEMS WHOSE LINEAR DIMENSIONS DIFFER BY AS MUCH AS A FACTOR OF 2. THIS OFFERS THE POSSIBILITY OF SAVING VERY SUBSTANTIAL AMOUNTS OF POWER IN TESTING REACTOR FUEL ELEMENTS. A NOVEL CONCLUSION IS THAT SYSTEMS DO NOT NEED TO BE GEOMETRICALLY SIMILAR IN ORDER TO BE LINKED BY SCALING FACTORS.

CATEGORY 5
ACCIDENT ANALYSIS

5-17220 *CONTINUED*

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*BURNOUT, HEAT FLUX + *HEAT TRANSFER + DATA PROCESSING + UNITED KINGDOM

5-17221

KATSANIS T

A COMPUTER PROGRAM FOR CALCULATING VELOCITIES AND STREAMLINES FOR TWO-DIMENSIONAL, INCOMPRESSIBLE FLOW IN AXIAL BLADE ROWS

LEWIS RESEARCH CENTER, CLEVELAND, OHIO. NASA

NASA-TN-D-3762 +. 81 PAGES, FIGURES, TABLES, REFERENCES, JANUARY, 1967

THE PROGRAM REQUIRES ONLY THE BASIC CASCADE GEOMETRY AS INPUT. THE OUTPUT INCLUDES STREAMLINE COORDINATES, VELOCITY MAGNITUDE AND DIRECTION THROUGHOUT THE PASSAGE, AND THE BLADE-SURFACE VELOCITIES. THE METHOD IS BASED ON THE STREAM FUNCTION, WITH THE SOLUTION OF THE SIMULTANEOUS, LINEAR FINITE-DIFFERENCE EQUATIONS BEING OBTAINED ITERATIVELY BY USING SUCCESSIVE OVERRELAXATION, WITH AN ESTIMATED OPTIMUM OVERRELAXATION FACTOR. THIS REPORT INCLUDES THE FORTRAN COMPUTER PROGRAM THAT WAS DEVELOPED, WITH A COMPLETE EXPLANATION OF THE EQUATIONS INVOLVED, THE METHOD OF SOLUTION, AND THE CALCULATION OF THE VELOCITIES. A SAMPLE PROBLEM IS INCLUDED TO ILLUSTRATE THE USE OF THE PROGRAM AND TO SHOW THE RESULTS THAT CAN BE OBTAINED. THE RESULTS ARE IN GOOD AGREEMENT WITH EXPERIMENTAL RESULTS AT LOW MACH NUMBERS. IT IS CONCLUDED THAT REASONABLE RESULTS CAN BE OBTAINED IF THERE IS LITTLE VARIATION IN DENSITY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*COMPUTER PROGRAM + *FLOW THEORY AND EXPERIMENTS + *FLOW, AXIAL + HEAT SINK

5-17222

WORSOFF-SCHMIDT PM

FINITE-DIFFERENCE SOLUTION FOR LAMINAR FLOW OF GAS IN A TUBE AT HIGH HEATING RATE

STANFORD UNIVERSITY, CALIFORNIA. NUCLEAR TECHNOLOGY LAB.

SU-247-P +. 140 PAGES, 34 FIGURES, 16 TABLES, NOVEMBER, 1964

AN IMPLICIT FINITE-DIFFERENCE SCHEME IS DEVELOPED FOR SOLVING THE PROBLEM OF LAMINAR FLOW OF GASES IN HEATED (OR COOLED) CIRCULAR TUBES WITH AN UNHEATED ENTRANCE SECTION, UNDER CONDITIONS WHERE LARGE VARIATIONS OF GAS PROPERTIES OCCUR. THE SOLUTION IS BASED ON THE BOUNDARY-LAYER EQUATIONS, THE VALIDITY OF WHICH FOR THE PRESENT PROBLEM HAS BEEN VERIFIED FROM THE NUMERICAL SOLUTIONS. A SINGLE EXAMPLE COMPUTED WITH UNIFORM VELOCITY AT THE ENTRANCE INDICATES THAT A CONSIDERABLE REFINEMENT OF THE MESH IS NEEDED FOR SATISFACTORY CONVERGENCE OF THE FINITE-DIFFERENCE SOLUTION UNLESS AN ANALYTICAL STARTING SOLUTION IS EMPLOYED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*FLOW THEORY AND EXPERIMENTS + *FLOW, LAMINAR + *FLOW, TUBE + BOUNDARY LAYER + EQUATION, GENERAL

5-17223

ROSCHKE EJ

FLOW-VISUALIZATION STUDIES OF A CONFINED, JET-DRIVEN WATER VORTEX

CALIFORNIA INSTITUTE OF TECHNOLOGY, JET PROPULSION LAB., PASADENA

JPL-TR-22-1004 +. 31 PAGES, 19 FIGURES, 2 TABLES, 25 REFERENCES, SEPTEMBER 15, 1966

VISUAL OBSERVATIONS, IN THE FORM OF PHOTOGRAPHS AND SKETCHES, OF THE FLOW OF WATER WITHIN A CONFINED, JET-DRIVEN VORTEX TUBE ARE PRESENTED AND DISCUSSED. THIS VORTEX TUBE HAD A FIXED NOMINAL DIAMETER OF 4 IN. BUT WAS OF VARIABLE LENGTH SO THAT EFFECTS PRODUCED BY CHANGES IN ASPECT RATIO COULD BE STUDIED. THE BASIS CONFIGURATION (PLANAR END-WALLS AND A SINGLE EXIT HOLE) WAS MODIFIED BY CHANGING THE SHAPE OF THE END-WALLS AND/OR INSTALLING EXIT HOLES AT BOTH ENDS. CONICAL, HEMISPHERICAL, AND CANTED END-WALLS WERE INVESTIGATED. THE RESULTS OF OTHER EXPERIMENTS SUCH AS INJECTION OF A SECOND, HEAVIER-THAN-WATER FLUID, THE INSERTION OF PROBES INTO THE FLOW, AND THE TRANSIENT EFFECTS OF CHANGES IN MASS RATE OF FLOW SUPPLY ARE ALSO DISCUSSED. IT WAS SHOWN THAT ASPECT RATIO HAS A STRONG INFLUENCE ON THE SECONDARY FLOWS IN A CONFINED VORTEX. THE PRINCIPAL RESULTS ARE GIVEN IN THE FORM OF COLOR PHOTOGRAPHS TYPICAL OF SEVERAL FLOW CONDITIONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*FLOW THEORY AND EXPERIMENTS + *FLOW, TUBE + *FLOW, VORTEX + WATER, GENERAL

5-17224

ALSO IN CATEGORY 11

FRIEDRICH CM + GUILINGER WH

CYGR0-2. A FORTRAN IV COMPUTER PROGRAM FOR STRESS ANALYSIS OF THE GROWTH OF CYLINDRICAL FUEL ELEMENTS WITH FISSION GAS BUBBLES

WESTINGHOUSE ELECTRIC CORPORATION, BETTIS ATOMIC POWER LAB., PITTSBURGH

CATEGORY 5
ACCIDENT ANALYSIS

5-17224 *CONTINUED*
WAPD-TM-547 +. 66 PAGES, 11 FIGURES, 13 REFERENCES, NOVEMBER, 1966

THE DIGITAL COMPUTER PROGRAM CYGR0-2 PROVIDES A METHOD OF STRUCTURAL ANALYSIS FOR AN OXIDE-FUELED, METAL-CLAD, ROD-TYPE FUEL ELEMENT IN A PRESSURIZED ENVIRONMENT. STRESSES AND STRAINS ARE DETERMINED IN A CROSS SECTION OF FUEL AND CLAD UNDERGOING THERMAL EXPANSION AND IRRADIATION GROWTH. ELASTIC, PLASTIC, AND CREEP PARAMETERS WERE USED TO CALCULATE THE EFFECTS OF TEMPERATURE, PRESSURE, SOLID FISSION-PRODUCT GROWTH, AND GAS-BUBBLE EXPANSION. THE AXIALLY SYMMETRIC FUEL MAY HAVE RADIAL ZONES AND A NONFISSIONABLE CORE OR VOID.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*COMPUTER PROGRAM + *FUEL ELEMENT + *STRESS ANALYSIS + COMPUTER, DIGITAL + FISSION GAS RELEASE + IRRADIATION TESTING

5-17225
GAUDINSI G
EXPERIMENTAL RESULTS ON THE DEPENDENCE OF TRANSITION BOILING HEAT TRANSFER ON LOOP FLOW DISTURBANCES
GENERAL ELECTRIC CO., SAN JOSE, CALIFORNIA. ATOMIC POWER EQUIPMENT DEPT.
GEAP-4785 + EURAEC-1940 +. 69 PAGES, FIGURES, JULY 1, 1965

HEAT-TRANSFER RESULTS FOR TRANSITION BOILING ARE PRESENTED FOR FORCED-CIRCULATION IN A SINGLE-ROD ANNULAR TEST SECTION AT 1000 PSIA AND MASS VELOCITIES OF 500,000 AND 1,000,000 LB/HR/SQ. FT OVER A QUALITY RANGE OF 0.20 TO 0.50. MEASUREMENTS OF TWO-PHASE PRESSURE DROP INDICATED A LOW FLOW-PERTURBATION LEVEL. PRESENT RESULTS ARE COMPARED WITH PREVIOUS HEAT-TRANSFER DATA FOR WHICH PRESSURE-DROP PERTURBATIONS WERE LARGER. TRANSITION-BOILING BEHAVIOR WAS FOUND TO DEPEND STRONGLY ON THE MAGNITUDE OF PRESSURE-DROP PERTURBATIONS, WHICH IN TURN ARE RELATED TO THE OVERALL FLOW-LOOP CHARACTERISTICS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*HEAT TRANSFER + *HEAT TRANSFER, BOILING + *OUT OF PILE LOOPS AND EXPERIMENTS + ANNULUS + FLOW STABILITY + HEAT TRANSFER EXPERIMENT + PRESSURE DROP

5-17226
LEE DH
BURNOUT IN A CHANNEL WITH NON-UNIFORM CIRCUMFERENTIAL HEAT FLUX
ATOMIC ENERGY ESTABLISHMENT, WINFRITH, ENGLAND
AEEW-4-447 +. 24 PAGES, 13 FIGURES, 3 TABLES, 6 REFERENCES, MARCH, 1966

BURNOUT EXPERIMENTS ARE REPORTED FOR UNIFORM FLUX AND CIRCUMFERENTIAL FLUX TILT (MAXIMUM/AVERAGE FLUX ABOUT 1.25) WITH TUBES AND ANNULI, ALL EXPERIMENTS HAVING UNIFORM AXIAL HEATING. THESE SHOW SIMILAR RESULTS, THE BURNOUT POWER WITH FLUX TILT BEING WITHIN 10% OF THAT WITH UNIFORM FLUX. FOR THE SAME MEAN EXIT STEAM QUALITY, THE LOCAL MAXIMUM FLUX IS HIGHER THAN THE PREDICTED BURNOUT VALUE, AND GENERALLY A BETTER PREDICTION IS OBTAINED USING THE AVERAGE FLUX.

AVAILABILITY - (HER) MAJESTYS STATIONERY OFFICE, LONDON

*BURNOUT HEAT FLUX + *HEAT TRANSFER + *HEAT TRANSFER EXPERIMENT + ANNULUS + HEAT GENERATION, NONUNIFORM

5-1722P
BHATNAGAR RK + MATHUR MN
STEADY FLOW OF A NON-NEWTONIAN FLUID WITH HEAT TRANSFER IN A WAVY CYLINDRICAL TUBE
INDIAN INSTITUTE OF SCIENCE, BANGALORE
19 PAGES, 3 FIGURES, 4 REFERENCES, JOURNAL OF THE INDIAN INSTITUTE OF SCIENCE 48(1) PAGES 1-19 (JANUARY 1966)

CONSIDERS THE PROBLEM OF HEAT TRANSFER IN A STEADY FLOW OF A RIVLIN-ERICKSEN FLUID INSIDE A WAVY CYLINDRICAL TUBE. TAKING THE DEFORMATION OF THE BOUNDARY TO BE SMALL, THE EQUATIONS OF MOMENTUM AND ENERGY WERE SOLVED BY USING THE PERTURBATION TECHNIQUE. THE SOLUTION FOR THE VELOCITY FIELD IS THEN EMPLOYED TO STUDY THE NATURE OF THE TEMPERATURE FIELD, THE BOUNDARY OF THE TUBE BEING MAINTAINED AT A CONSTANT TEMPERATURE. IT IS INTERESTING THAT THE VELOCITY FIELD FOR NON-NEWTONIAN AND NEWTONIAN FLUIDS IS THE SAME, WHILE THE PRESSURE IS MODIFIED.

*FLOW THEORY AND EXPERIMENTS + *FLOW, NONNEWTONIAN + *FLOW, TUBE + *HEAT TRANSFER + HYDRODYNAMIC ANALYSIS

5-17229
ALIA P + CRAVAROLO L + HASSID A + PEDROCCHI E
SOME SPACER EFFECTS IN ANNULAR AND CLUSTER GEOMETRIES IN TWO-PHASE ANNULAR-DISPERSED FLOW. TOPICAL REPORT NO. 17
CENTRO INFORMAZIONI STUDI ESPERIENZE, MILAN, ITALY
EURAEC-1092 + CISE-R-110 + EUR-3341 +. 58 PAGES, FIGURES, TABLES, REFERENCES, NOV. 1966

DISCUSSES RESULTS OF EXPERIMENTS CARRIED OUT AT CISE UNDER THE CAN-2 RESEARCH PROGRAM AS A PRELIMINARY INVESTIGATION INTO THE EFFECT OF SPACERS IN ANNULI AND CLUSTER GEOMETRIES IN THE

CATEGORY 5
ACCIDENT ANALYSIS

5-17229 *CONTINUED*

VERTICAL UPWARD FLOW TO TWO-PHASE (GAS PLUS LIQUID) MIXTURES IN ADIABATIC CONDITIONS. QUANTITIES INVESTIGATED WERE PRESSURE LOSSES ACROSS A SPACER IN A BUNDLE OF RODS, AND FILM-THICKNESS VARIATION ACROSS A SPACER IN AN ANNULUS. IN BOTH ANNULAR ELEMENTS INVESTIGATED, THE EFFECT OF ONE SET OF SPACERS, WHEN INSTALLED CLOSE TO THE OUTLET OF THE HEATED SECTION, WAS TO INCREASE THE CRITICAL POWER INPUT BY IMPROVING THE HEAT TRANSFER CONDITIONS IN THE PORTION OF THE HEATED SECTION LOCATED DOWNSTREAM OF THE SPACERS. THIS IMPROVEMENT WAS SUFFICIENT FOR THE CRISIS TO SET IN JUST UPSTREAM OF THE SPACERS. THE CRITICAL POWER INPUT OVER THE LENGTH UPSTREAM OF THE SPACERS WAS ALMOST EQUAL TO THE VALUE FOR THIS SHORTER TEST SECTION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*ANNULUS + *FLOW, TWO PHASE + *HEAT TRANSFER + EURATOM + FILM, LIQUID + FUEL ELEMENT + ITALY + SPACE DEPENDENT DYNAMICS

5-17230

HEAT TRANSFER AND FLUID FLOW CHARACTERISTICS IN A PRESSURIZED WATER REACTOR. QUARTERLY PROGRESS REPORT NO. 3, JULY 1, 1964-OCTOBER 1, 1964
TECHNISCHE HOOGESCHOOL, EINDHOVEN, NETHERLANDS
EURAE-1324 + EUR-2306 +. 19 PAGES, REFERENCES, JANUARY 1965

PROGRESS REPORT ON EXPERIMENTS, INSTRUMENTS, MEASUREMENTS, ANALYSIS, THEORETICAL STUDIES, AND R AND D PROGRAMS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*FLOW THEORY AND EXPERIMENTS + *HEAT TRANSFER + *REACTOR, PRESSURIZED WATER + EURATOM + INSTRUMENTATION, PROCESS + NETHERLANDS + OUT OF PILE LOOPS AND EXPERIMENTS + TRANSPORT THEORY

5-17232

CHEN PC
TWO-PHASE FLOW THROUGH APERTURES. FINAL REPORT
UNIVERSITY OF MINNESOTA MINNEAPOLIS. DEPT. OF CHEMICAL ENGINEERING
TID-22145 +. 168 PAGES, JULY 29, 1965

A TEST FACILITY WAS BUILT FOR MAKING BLOWDOWN TESTS OF SATURATED WATER THROUGH A VARIETY OF APERTURES WITH INITIAL PRESSURES UP TO 250 PSIG. THE OBJECTIVES OF THE EXPERIMENTS WERE TO ESTABLISH CRITERIA FOR DEVELOPING PREDICTIVE METHODS FOR THE FLOW OF FLASHING WATER THROUGH APERTURES. PROBLEMS OF THIS TYPE BECOME IMPORTANT FACTORS IN THE DESIGN OF NUCLEAR-POWER SAFETY SYSTEMS. TEST RESULTS WITH SATURATED WATER INDICATE THAT NO VAPORIZATION OCCURRED IN THE IMMEDIATE UPSTREAM NEIGHBORHOOD OF THE OPENINGS. SATURATED WATER BECOMES SUPERHEATED AND FLOWS INTO THE APERTURES AS A METASTABLE WATER JET. FLASHING, HOWEVER, OCCURS TO A CERTAIN EXTENT WITHIN THE APERTURES, CAUSING A BACKPRESSURE HIGHER THAN THE DOWNSTREAM PRESSURE. USING THE PRESSURE DIFFERENCES BETWEEN THE INITIAL PRESSURE AND THE BACKPRESSURE IN THE SINGLE-PHASE ORIFICE EQUATION WITH CONTRACTION COEFFICIENT OF 0.61, THE MASS FLOW RATES CAN BE PREDICTED. FOR THE DIVERGING APERTURES, THE BACKPRESSURE PHENOMENA ARE CONSISTENT WITH THE THEORY OF FREE TURBULENT JETS AND THE ANALYSES ON THE THRUSTS CREATED BY THE FLOWS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*FLOW ORIFICE OR RESTRICTION + *FLOW THEORY AND EXPERIMENTS + *FLOW, TWO PHASE + REACTOR SAFETY SYSTEM + WATER, GENERAL

5-17233

ALSO IN CATEGORY 17

CULVER HN
A SUMMARY OF ACCIDENT CONDITIONS INVESTIGATED IN DETERMINING THE MAXIMUM CREDIBLE ACCIDENT FOR THE EGCR TENNESSEE VALLEY AUTHORITY, OAK RIDGE
TID-22746 +. 11 PAGES, SEPT. 28, 1964

ALTHOUGH HAZARDS LEVEL IS DETERMINED BY ACTIVITY RELEASE TO THE ENVIRONMENT, SEVERAL FACTORS HAVE AN IMPORTANT BEARING ON THE POTENTIAL ACTIVITY RELEASE FROM CORE TO REACTOR BUILDING, SUCH AS EFFECT OF ACCIDENT CONDITIONS ON (1) HEAT-REMOVAL-SYSTEM CAPABILITY, (2) FUEL-ELEMENT INTEGRITY AND CORE GEOMETRY, (3) CONTAINMENT INTEGRITY. SAFETY ANALYSIS FOR ALL ACCIDENTS INVESTIGATED THESE FACTORS. HOWEVER, ONLY IN DEPRESSURIZATION ACCIDENTS DID CONDITIONS CAUSING A SIGNIFICANT NUMBER OF FUEL ELEMENT FAILURES AND RESULTING ACTIVITY RELEASE TO THE ENVIRONMENT ARISE. THE CASE RESULTING IN THE HIGHEST TEMPERATURE IN REACTOR BUILDING CONCERNS AN ENERGY RELEASE TO BUILDING BY OPERATING THE BLOWER IN THE FAILED LOOP.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*ACCIDENT, MAXIMUM CREDIBLE (MCA) + *REACTOR, GAS COOLED + *REACTOR, GRAPHITE MODERATED + *SAFETY ANALYSIS + ACCIDENT, LOSS OF PRESSURE + EGCR (EXPERIMENTAL GAS COOLED REACTOR)

CATEGORY 5
ACCIDENT ANALYSIS

5-17234
HIGH TEMPERATURE SUPER-CRITICAL PRESSURE WATER LOOP. DNB TESTS
WESTINGHOUSE ELEC. CORP., PITTSBURGH, PA., ATOMIC POWER DIVISION
WCAP-2056 (ADD. 1) +. 15 PAGES, SEPT. 1966

DNB HEAT FLUXES MEASURED ON THE SCOTT-R LOOP AND LOOP B WERE COMPARED. WHERE A DIRECT COMPARISON BETWEEN RUNS MADE IN BOTH LOOPS WAS POSSIBLE, AN INCREASED FLOW RATE OF 25% WAS REQUIRED THROUGH THE SCOTT-R LOOP TO OBTAIN COMPARABLE VALUES OF DNB HEAT FLUX AT THE SAME PRESSURE AND INLET TEMPERATURE AS FOR LOOP B. THUS, UNDER IDENTICAL FLOW CONDITIONS, DNB HEAT FLUX ON SCOTT-R LOOP IS LOWER THAN HEAT FLUX ON LOOP B, A VARIATION THOUGHT TO ARISE DUE TO A LONG LENGTH OF SMALL-BORE PIPING DOWN-STREAM FROM TEST SECTION IN SCOTT-R LOOP THAT CREATES TWO-PHASE FLOW RESISTANCE, WHICH LEADS TO FLOW INSTABILITY AND EARLY DNB.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*DNB (DEPARTURE FROM NUCLEATE BOILING) + *HEAT TRANSFER + *HEAT TRANSFER EXPERIMENT +
*PFACTOR, PRESSURIZED WATER + FLOW, TWO PHASE + HEAT TRANSFER, SUPERCRITICAL + HIGH TEMPERATURE

5-17235 ALSO IN CATEGORIES 12 AND 18
DOE MR PG
STRUCTURAL ADEQUACY OF THE EGCR STEAM GENERATORS DURING THE PRIMARY SYSTEM DEPRESSURIZATION ACCIDENT
TENNESSEE VALLEY AUTHORITY, OAK RIDGE, TENN.
TID-7274P +. 28 PAGES, OCTOBER 5, 1964

AFTER A RUPTURE OF ONE OF THE MAIN COOLANT LOOPS IN THE EGCR PRIMARY SYSTEM, LARGE PRESSURE DIFFERENCES CAN EXIST ACROSS THE STEAM GENERATORS. FAILURE OF THE STEAM GENERATORS IN BOTH LOOPS WOULD RESULT IN THE LOSS OF THE HEAT SINK NEEDED TO REMOVE THE ENERGY FROM THE REACTOR. THE FAILURE OF EITHER STEAM GENERATOR WOULD RELEASE LARGE QUANTITIES OF STEAM INTO THE CONTAINMENT BUILDING. THIS PAPER DETERMINES THE MAGNITUDE OF THE PRESSURE DIFFERENCES REQUIRED TO CAUSE FAILURE OF THE VARIOUS COMPONENTS IN THE STEAM GENERATORS. SPECIFICALLY, STEAM-GENERATOR-TUBE FIELD-PRESSURE DIFFERENCE MUST EXCEED 92 PSI BEFORE THERE IS SUFFICIENT DAMAGE TO INTERFERE WITH THEIR ABILITY TO REMOVE HEAT FROM THE PRIMARY COOLANT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*ACCIDENT ANALYSIS + *ACCIDENT, LOSS OF PRESSURE + *REACTOR, GAS COOLED + *REACTOR, GRAPHITE MODERATED +
*STRUCTURAL INTEGRITY + EGCR (EXPERIMENTAL GAS COOLED REACTOR) + HEAT EXCHANGER

5-17236
MILLER DP + KENNISON PG
THEORETICAL ANALYSIS OF FLOW-INDUCED VIBRATION OF A BLADE SUSPENDED IN A FLOW CHANNEL
KNOLLS ATOMIC POWER LAB., SCHENECTADY, N. Y.
KAPL-M-6550 +. 54 PAGES, 12 FIGURES, REFERENCES, MAY 26, 1966

OUTLINES THE THEORETICAL ANALYSES OF TWO MODES (TRANSLATIONAL MOTION AND ANGULAR MOTION) OF FLOW-INDUCED VIBRATION OF SUSPENDED BLADE. TO ENABLE A CLOSED-FORM SOLUTION IT WAS ASSUMED THAT THERE IS NO FLOW FROM ONE SIDE OF THE BLADE TO THE OTHER. THE ANALYSES SHOW THAT UNDER SOME CONDITIONS A SELF-EXCITED VIBRATION CAN OCCUR WHEN THE INSERTION OF THE BLADE INTO A NARROW UPSTREAM SECTION OF THE FLOW CHANNEL IS LESS THAN A CRITICAL AMOUNT. THE ANALYSES ALSO SHOW THAT THE FLOW RATE MUST EXCEED A CRITICAL VALUE FOR THIS VIBRATION TO OCCUR. THEORETICAL RESULTS WERE IN REASONABLE AGREEMENT WITH EXPERIMENTAL OBSERVATIONS, EXCEPT FOR DEVIATIONS ATTRIBUTABLE TO FLOW AROUND THE EDGES OF THE BLADE. THE LATTER EFFECT MAKES THE OBSERVED FLOW RATE FOR INCEPTION OF SELF-EXCITED VIBRATIONS MUCH HIGHER THAN THE THEORETICAL VALUE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*FLOW THEORY AND EXPERIMENTS + *VIBRATION ANALYSIS + ANALYTICAL MODEL + HYDRAULIC ANALYSIS +
HYDRODYNAMIC ANALYSIS

5-17237 ALSO IN CATEGORY 12
LANULIER G
SODIUM COMPONENT TEST INSTALLATION FEASIBILITY STUDY REPORT--PRIMARY SODIUM PIPING DESIGN WITHOUT BELLOWS
ATOMICS INTERNATIONAL, CANOGA PARK, CALIF.
NAA-SR-MEMO-12018 +. 26 PAGES, REFERENCES, JUNE 21, 1966

DESCRIBES STUDY OF DETERMINE FEASIBILITY OF A BELLOWS-FREE DESIGN FOR MAIN PRIMARY HEAT-TRANSFER PIPING SYSTEM FOR THE B AND W STEAM-GENERATOR PROTOTYPE UNIT IN THE SCTI. ALTERNATIVE DESIGN STUDIES WERE INCLUDED TO ESTABLISH RELOCATION OF PRIMARY PUMP TO THE SAME ELEVATION AS THE PRIMARY SODIUM-EXPANSION TANK TO ELIMINATE SEPARATE SODIUM-LEVEL CONTROLS IN THE PRIMARY PUMP BARREL AND EXPANSION TANK. RESULT OF STUDY IS AN ISOMETRIC LAYOUT OF PRIMARY PUMP SUCTION AND DISCHARGE LINES, INCLUDING THE COLD BYPASS, WITHOUT BELLOWS-TYPE EXPANSION JOINTS, REPRESENTING A FEASIBLE SOLUTION TO THE PROBLEM BUT NOT NECESSARILY AN OPTIMUM ONE. ALSO, ALTHOUGH THIS STUDY ESTABLISHED SOME MAJOR MODIFICATIONS FOR THE

CATEGORY 5
ACCIDENT ANALYSIS

5-17237 *CONTINUED*

ALTERNATIVE DESIGN, ADEQUATE SOLUTION OF THE SODIUM-LEVEL-CONTROL PROBLEMS REQUIRES MORE STUDIES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*DESIGN STUDY + *HEAT TRANSFER + *SODIUM + PIPING + PUMP

5-17238

LEE JH

CONDENSATION HEAT TRANSFER. PART II - SOLUTION OF THE FILM CONDENSATION PROBLEM BY SUCCESSIVE ANALYTICAL ITERATION

AERONAUTICAL SYSTEMS DIV., WRIGHT-PATTERSON AFB., OHIO

ASD-TDR-62-1048, PART II + AD-410, 937 +. 20 PAGES, 4 FIGURES, 6 REFERENCES, JUNE 1963

THE BOUNDARY-LAYER EQUATIONS ARISING FROM THE FORMULATION OF TWO-PHASE LAMINAR FILM CONDENSATION WERE REDUCED TO A SET OF THREE SIMULTANEOUS INTEGRO-DIFFERENTIAL EQUATIONS DESCRIBING THE VELOCITY AND TEMPERATURE DISTRIBUTIONS IN THE CONDENSATE FILM AND THE CONDENSATE FILM PROFILE. THIS PAPER EXPLORES A NEW APPROACH TO A SOLUTION WHEN SIMILARITY TRANSFORMATION FAILS, SUCH AS THE CASE WHEN THE EFFECT OF TURBULENCE IN THE FORM OF NONLINEAR EDDY CONDUCTIVITY IS INCLUDED INTO THE FORMULATION.

AVAILABILITY - DEFENSE DOCUMENTATION CENTER, CAMERON STATION, ALEXANDRIA, VA.

*FILM, LIQUID + *FLOW, LAMINAR + *FLOW, TWO PHASE + *HEAT TRANSFER + ANALYTICAL TECHNIQUE, GENERAL + CONDENSATION

5-17239

MEINHARDT WG

CALCULATING VAPOR GROWTH IN A SUPERHEATED LIQUID METAL WITHIN A HEATED CHANNEL

GENERAL ELECTRIC CO., SAN JOSE, CALIFORNIA

12 PAGES, 7 FIGURES, 14 REFERENCES, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PENNSYLVANIA, OCTOBER 30-NOVEMBER 3, 1966, ABSTRACT IN TRANSACTIONS OF AMERICAN NUCLEAR SOCIETY 9(2), PAGE 566

VAPOR FORMATION AND GROWTH IN SODIUM-COOLED FAST REACTORS IS A POSSIBLE SOURCE OF LARGE POSITIVE REACTIVITY DURING A TRANSIENT, AND CAN OCCUR FROM (1) ACCIDENTAL REACTIVITY INSERTIONS, (2) PARTIAL OR COMPLETE LOSS OF PRIMARY OR SECONDARY COOLANT FLOW, OR (3) COOLANT CHANNEL BLOCKAGE, EACH COUPLED WITH FAILURE OF REACTOR CONTROL SYSTEMS. KEY PROBLEM IS FINDING THE SPATIAL DESCRIPTION OF VAPOR FORMATION AND GROWTH IN THE CORE AS A FUNCTION OF TIME, FROM WHICH LOCATION AND TIME OF INITIAL VOID FORMATION CAN BE PREDICTED IF COOLANT VAPORIZATION TEMPERATURE IS KNOWN. ALL ANALYTICAL MODELS PROPOSED TO DESCRIBE LIQUID METAL BOILING IN A HEATED CHANNEL OVERLOOK THE EFFECTS OF LIQUID SUPERHEAT REQUIRED TO NUCLEATE BUBBLES. PRELIMINARY RESULTS INDICATE THAT IN SODIUM-COOLED FAST REACTORS (1) SUPERHEAT IS AN IMPORTANT PARAMETER IN GROWTH AND FORMATION OF VAPOR IN CHANNELS, (2) COOLANT TEMPERATURE DISTRIBUTION IN CHANNEL AT TIME OF VAPOR FORMATION CAN STRONGLY AFFECT GROWTH AND PRESSURE OF VAPOR, (3) DESIGN OF PRIMARY COOLANT SYSTEM CAN GREATLY AFFECT RATE OF VAPOR GROWTH BY VARYING MASS OF COOLANT TO BE ACCELERATED DURING EXPULSION, (4) IMPORTANCE OF FUEL TO COOLANT HEAT TRANSFER AFTER VAPORIZATION DECREASES AS THERMAL ENERGY OF COOLANT ABOVE SATURATION TEMPERATURE INCREASES.

*ANALYTICAL MODEL + *HEAT TRANSFER + *METAL, ALKALI + *METAL, LIQUID + *REACTOR, FAST + NUCLEATE BOILING + REACTOR COOLANT + SODIUM

5-17240

TODREAS NF

THE EFFECT OF LOCAL FLUX PEAKS ON THE CRITICAL HEAT FLUX IN ANNULAR TWO-PHASE FLOW

CATHOLIC UNIVERSITY OF AMERICA + U. S. ATOMIC ENERGY COMMISSION

17 PAGES, 15 FIGURES, 2 TABLES, 16 REFERENCES, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PENNSYLVANIA, OCTOBER 30-NOVEMBER 3, 1966, ABSTRACT IN TRANSACTIONS OF AMERICAN NUCLEAR SOCIETY 9(2), PAGE 563

THE METHOD FOR PREDICTING CRITICAL HEAT FLUX CONDITIONS IN ANNULAR, TWO-PHASE FLOWS FOR NONUNIFORM FLUX DISTRIBUTIONS PRESENTED IN REFERENCE TWO OF THE REPORT WAS EXTENDED TO CASES OF LOCAL FLUX PEAKS. THE METHOD IS BASED ON THE HYPOTHESIS THAT THE CRITICAL CONDITION IS DUE TO HIGHER NUCLEATION-INDUCED DISRUPTION OF THE ANNULAR LIQUID FILM OR TO ANNULAR FILM DRYOUT. THE METHOD IS APPLIED TO THE EVALUATION OF SEVERAL DATA SOURCES AND INDICATES THAT THE EFFECTS OF FLUX SPIKES OF VARYING LOCATION, INTENSITY AND LENGTH (ABOVE 15 INCHES MINIMUM) CAN BE PREDICTED. HOWEVER SHORT SPIKE LENGTHS APPEAR TO REQUIRE GREATER FLUX INTENSITIES TO ACHIEVE THE CRITICAL CONDITION THAN PREDICTED BY THIS METHOD. THIS MAY BE DUE TO A BUBBLE BOUNDARY LAYER BUILDUP EFFECT NOT INCLUDED IN THE MODEL. IN ADDITION, SIGNIFICANT ADDITIONAL DATA ON THE EFFECTS OF ENTRAINMENT AND DEPOSITION IS NEEDED TO PERMIT NECESSARY MODIFICATIONS TO THE ASSUMPTIONS MADE IN APPROXIMATING LOCAL FILM FLOW RATES.

*DNB (DEPARTURE FROM NUCLEATE BOILING) + *FLOW, ANNULAR + *FLOW, TWO PHASE + *HEAT TRANSFER + FILM, LIQUID + HEAT GENERATION, NONUNIFORM + HEAT TRANSFER CORRELATION

CATEGORY 5
ACCIDENT ANALYSIS

5-17241
SILVERSTRIM
ON THE BURNOUT EQUATION AND ON LOCATION OF BURNOUT POINTS
ITALY. COMITATO NAZIONALE PER LE RICERCHE NUCLEARI
11 PAGES, 9 FIGURES, 2 TABLES, ENERGIA NUCLEARE, 13(9) PAGES 469-479 (SEPT. 1966)

THE CAPACITY TO PREDICT THE STEADY-STATE CRITICAL-HEAT-FLUX VALUE IN TWO-PHASE FLOW WITH REASONABLE ACCURACY IS BEING ACHIEVED WITH A NUMBER OF SEMIEMPIRICAL OR EMPIRICAL CORRELATIONS, BUT THE PREDICTION OF BURNOUT LOCATION IS STILL NOT CERTAIN. ALTHOUGH TOO MANY BURNOUT CORRELATIONS HAVE BEEN DEVELOPED IN THE LAST EIGHT YEARS, IT IS NOT CERTAIN THAT A SINGLE BURNOUT EQUATION WILL FIT ALL EXPERIMENTAL DATA. PROBABLY A BURNOUT EQUATION WILL BE NEEDED FOR EACH FLOW PATTERN. THIS PAPER DISCUSSES THE POSSIBILITY OF PREDICTING BURNOUT LOCATION WITH THE CISE CORRELATION AND INTRODUCES A CRITERION TO CORRECT THE USE OF THIS CORRELATION WHEN NONUNIFORM HEAT-FLUX DISTRIBUTIONS ARE APPLIED TO A VERTICAL HEATED SECTION.

*BURNOUT HEAT FLUX + *HEAT TRANSFER + *HEAT TRANSFER CORRELATION + FLOW THEORY AND EXPERIMENTS + FLOW, TWO PHASE + HEAT GENERATION, NONUNIFORM

5-17242
GURVICH LV + YUGMAN VS
CALCULATING THE THERMODYNAMIC FUNCTIONS OF GASEOUS URANIUM, PLUTONIUM, AND THEIR IONS UP TO 20,000 DEG K
KERNFORSCHUNGSZENTRUM, KARLSRUHE, WEST GERMANY
AD-632665 + FTD-TT-65-1480 +. 12 PAGES, JULY 1965. TRANSLATED FROM A PAPER PRESENTED AT THE SIMPOZIUM PO
THERMODYNAMIKE S OBOBYM UPOROM NA YADERNYE MATERIALY I PERSONOV ATOMOV V TVERDYKH TELAKH, VIENNA, 22-27
JULY 1965.

IN CONNECTION WITH THE PROGRAM FOR PREPARING A SUPPLEMENT TO THE HANDBOOK THERMODYNAMIC PROPERTIES OF INDIVIDUAL SUBSTANCE, CALCULATIONS WERE MADE OF THE THERMODYNAMIC FUNCTIONS OF MONATOMIC URANIUM, PLUTONIUM AND THEIR IONS IN THE STATE OF AN IDEAL GAS AT TEMPERATURES FROM 298.15 TO 20,000 K. AS IS KNOWN, THE CALCULATION OF THERMODYNAMIC FUNCTIONS FOR MONATOMIC GASES OVER SUCH A WIDE TEMPERATURE RANGE REQUIRES THE SOLUTION OF TWO PROBLEMS - DETERMINATION OF THE WHOLE SYSTEM OF ENERGY EQUATIONS OF THE CORRESPONDING ATOMS (IONS) AND A CORRECT LIMITATION OF THE STATISTICAL SUMS. HOWEVER, IN OUR CASE A SATISFACTORY SOLUTION TO EITHER OF THESE PROBLEMS IS ESSENTIALLY IMPOSSIBLE. FIRST OF ALL, THE SPECTRA OF URANIUM AND PLUTONIUM ATOMS AND IONS ARE FAR FROM BEING COMPLETELY STUDIED. NOR DO WE HAVE ANY IDEA ABOUT THE APPROXIMATE LIMITATION OF THESE STATISTICAL SUMS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*HEAT TRANSFER + *THERMAL ANALYSIS + *THERMODYNAMICS + PLUTONIUM + URANIUM

5-17243 ALSO IN CATEGORY 11
CULVP HN
INFORMATION PROVIDED TO OPERATORS FOR USE UNDER DEPRESSURIZATION ACCIDENT CONDITIONS
TENNESSEE VALLEY AUTHORITY, OAK RIDGE
TID-22745 +. 21 PAGES, TABLES, OCTOBER 2, 1964

IT IS OUR CONSIDERED JUDGMENT THAT A FEW KEY INDICATIONS (WITH BACKUP INDICATIONS FROM OTHER SOURCES AS REQUIRED) WHICH INDICATE (1) AN ACCIDENT HAS HAPPENED, (2) SPECIFIC EQUIPMENT IS AVAILABLE FOR OPERATION OR IS OPERATING, AND (3) THE ACCIDENT CONSEQUENCES ARE UNDER CONTROL, ARE THE BEST APPROACH TO IDENTIFYING AND CONTROLLING THE ACCIDENT. AFTER EXAMINING THE INFORMATION REQUIRED TO COPE WITH ACCIDENTS AND INFORMATION PROVIDED IN THE DESIGN, WE CONCLUDE THAT THE QUALITY AND AMOUNT OF EXISTING INSTRUMENTATION IS ADEQUATE FOR COPING WITH EMERGENCIES RESULTING FROM ALL CREDIBLE ACCIDENTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*ACCIDENT ANALYSIS + *ACCIDENT, LOSS OF PRESSURE + *REACTOR, GAS COOLED + *REACTOR, GRAPHITE MODERATED + ACCIDENT, MAXIMUM CREDIBLE (MCA) + EGCR (EXPERIMENTAL GAS COOLED REACTOR) + PRESSURE DROP

5-17255 ALSO IN CATEGORY 6
BLANCH H + BERRE FL + MILLOT JP
CALCULATION OF POWER EXCURSIONS IN A WATER REACTOR WHEN THE COOLANT SYSTEM IS NOT OPERATING
COMMISSARIAT A L ENERGIE ATOMIQUE, CADARACHE, FRANCE
17 PAGES, 9 FIGURES, 5 REFERENCES, BULLETIN D-INFORMATIONS SCIENTIFIQUES ET TECHNIQUES 112, (FEBRUARY, 1967), PRESENTED AT MEETING OF SPECIALISTS ON HEAT TRANSFER IN RAPID TRANSIENTS, CADARACHE, APRIL 1966

DESCRIBES A MODEL FOR COMPUTING REACTIVITY ACCIDENTS IN WATER REACTORS WHEN THE COOLING SYSTEM IS NOT WORKING. IT MAY BE APPLIED TO CORES WITH PLATE- OR PIN-TYPE FUEL AND TAKES INTO ACCOUNT THE HEATING OF THE CORE, MODERATOR BOILING, AND DOPPLER EFFECT.

ACCIDENT ANALYSIS + ACCIDENT, LOSS OF FLOW + ACCIDENT, REACTIVITY + CORE, PLATE TYPE + THEORETICAL INVESTIGATION

CATEGORY 5
ACCIDENT ANALYSIS

5-17256 ALSO IN CATEGORY 6
BLANC H + DUTRAIVE P + FABREGA S + MILLOT JP
CALCULATION OF WATER REACTOR ACCIDENTS UNDER POWER OPERATING CONDITIONS
CENTRE D ETUDES NUCLEAIRES DE CADARACHE, FRANCE + CENTRE D ETUDES NUCLEAIRES DE GRENOBLE, FRANCE +
COMMISSARIAT A L ENERGIE ATOMIQUE, FRANCE
6 PAGES, 4 FIGURES, BULLETIN D-INFORMATIONS SCIENTIFIQUES ET TECHNIQUES 112, PAGES 1-8 (FEBRUARY, 1967)

THE BEHAVIOR OF A WATER REACTOR IN AN ACCIDENT OCCURRING AS THE REACTOR IS NORMALLY OPERATED
AT POWER MAY BE CALCULATED THROUGH THE COMPUTER CODE DETAILED IN THIS ARTICLE. REACTIVITY
ACCIDENTS, LOSS-OF-COOLANT ACCIDENTS, AND OPERATION OF EXCESSIVE POWER.

*ACCIDENT ANALYSIS + *REACTOR, WATER + ACCIDENT, LOSS OF COOLANT + ACCIDENT, REACTIVITY +
COMPUTER, DIGITAL + THEORETICAL INVESTIGATION

5-17259 ALSO IN CATEGORY 6
DELCHAMPRE PH + MILLOT JP + TATTEGRAIN A
EXPERIMENTAL STUDIES OF COOLANT FLOW ACCIDENTS IN SWIMMING POOL REACTORS
CENTRE D ETUDES NUCLEAIRES DE CADARACHE, FRANCE
13 PAGES, 15 FIGURES, 2 TABLES, BULLETIN D-INFORMATIONS SCIENTIFIQUES ET TECHNIQUES 112, (FEBRUARY, 1967)
PRESENTED AT THE MEETING OF SPECIALIST ON HEAT TRANSFER IN RAPID TRANSIENTS, CADARACHE, APRIL 26-29, 1966

AN EXPERIMENTAL INVESTIGATION OF LOSS-OF-COOLANT ACCIDENTS THE CABRI REACTOR. AS IT IS
MENTIONED IN THE REVIEW OF TESTS ON REACTIVITY ACCIDENTS, TWO SERIES OF TESTS WITH OSIRIS-
AND SILOE-LIKE CORES HAVE BEEN PERFORMED. THE COOLANT FLOW WAS STOPPED EITHER BY TURNING OFF
A PUMP OR BY CLOSING A VALVE WHILE THE REACTOR WAS OPERATED AT THE STEADY-STATE POWER LEVEL.
THE BEHAVIOUR OF THE REACTOR AT POWER LEVEL AND OF THE PLATES TEMPERATURES HAVE BEEN
MEASURED. THESE TESTS WILL BE USED AS AN EXPERIMENTAL CHECK FOR A COMPUTER CODE AS DESCRIBED
IN THE CHAPTER, CALCULATION OF ACCIDENTS IN SWIMMING POOL REACTORS OPERATED AT POWER.

*ACCIDENT, LOSS OF FLOW + *CORE, PLATE TYPE + EXPERIMENT, GENERAL + REACTOR TRANSIENT + REACTOR, WATER +
TEMPERATURE TRANSIENT

5-17261 ALSO IN CATEGORY 18
EHRENPREIS SN + MCADOO JD
REACTOR SAFETY ANALYSIS
WESTINGHOUSE ELECTRIC CORP., PITTSBURGH, PA. ATOMIC POWER DIVISION
WCAP-3269-60 +. 171 PAGES, FIGURES, TABLES, APRIL, 1966

DEFINITION OF OBJECTIVES AND PRINCIPLES OF A CHEMICAL-SHIM PWR (TYPIFIED BY SAN ONOFRE) AND
DEMONSTRATION BY ANALYTICAL SIMULATION OF THE ADEQUACY OF SAFETY FEATURES. STANDARD
REACTIVITY AND HEAT TRANSFER ACCIDENTS ARE CONSIDERED. CHAPTERS DISCUSS METAL-WATER
REACTIONS AND RADIOACTIVITY SOURCES. OFF-SITE DOSES AND METROLOGY NOT INCLUDED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*SAFETY ANALYSIS + ACCIDENT, LOSS OF FLOW + ACCIDENT, REACTIVITY + REACTOR, PRESSURIZED WATER

5-17265 ALSO IN CATEGORY 4
STENGER FJ
EXPERIMENTAL FEASIBILITY STUDY OF WATER-FILLED CAPILLARY-PUMPED HEAT-TRANSFER LOOPS
NASA, LEWIS RESEARCH CENTER, CLEVELAND, OHIO
NASA-TM-X-1310 +. 32 PAGES, 14 FIGURES, 6 REFERENCES, NOVEMBER 1966

TWO CAPILLARY-PUMPED HEAT-TRANSFER LOOPS WERE TESTED TO STUDY THEIR GENERAL CHARACTERISTICS.
WITH WATER AS A WORKING FLUID, THE LOOPS WERE OPERATED OVER A POWER INPUT RANGE FROM 248 TO
1000 W. IN A TEMPERATURE RANGE FROM 212 TO 291 F. THE FIRST LOOP, WITH A VAPOR DUCT 0.193
INCH IN INSIDE DIAMETER, WAS 70 FEET LONG AND OPERATED AT A MAXIMUM POWER INPUT OF 823 W.
THE SECOND LOOP (0.180-IN.-I.D. VAPOR DUCT) WAS 52 FEET LONG AND OPERATED AT 700 W. IN A
VARIETY OF ORIENTATIONS WITH RESPECT TO GRAVITY. ALTHOUGH CAPILLARY-PUMPED LOOPS MUST BE
DESIGNED WITH CARE TO PREVENT PROBLEMS WITH NONCONDENSABLE GAS, THE TEST RESULTS SHOW THAT
SUCH LOOPS CAN TRANSFER KILOWATTS OF HEAT OVER DISTANCES GREATER THAN 50 FEET. THE OPERATION
OF THE FINAL TEST LOOP WAS NOT SENSITIVE TO ITS ORIENTATION WITH RESPECT TO GRAVITY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*FLOW, TUBE + *HEAT TRANSFER + *HEAT TRANSFER EXPERIMENT + FLOW BLOCKAGE

5-17358 ALSO IN CATEGORY 8
GENCO JM
METAL-WATER REACTIONS
BATTELLE MEMORIAL INSTITUTE
1 PAGE, 1 FIGURE, REACTOR MATERIALS 10(2) PAGE 104 (SUMMER 1967)

CATEGORY 5
ACCIDENT ANALYSIS

5-17358 *CONTINUED*

SUMMARY OF CHEMLOC-1 COMPUTER PROGRAM REPORTED IN ANL-7267. THIS FORTRAN PROGRAM DESCRIBES THE CORE HEATING AND METAL-WATER REACTION DURING A LOSS-OF-COOLANT ACCIDENT.

*ACCIDENT MODEL + *ACCIDENT, LOSS OF COOLANT + *ANALYTICAL MODEL + *METAL WATER REACTION + *TEMPERATURE TRANSIENT + ANL (ARGONNE NATIONAL LABORATORY) + CLAD + HEAT TRANSFER + STEAM

5-17386

HILRAPN IIS

USAEC - AECL COOPERATIVE PROGRAM MONTHLY PROGRESS REPORT, JANUARY 1965
DU PONT DE NEMOURS (E.I.) AND COMPANY, AIKEN, S. C. SAVANNAH RIVER LAB.
DPST-65-83-1 +. 9 PAGES, FIGURES, FEBRUARY 26, 1965

DESCRIBES TWO EXPERIMENTAL PROGRAMS AT SRL TO DETERMINE OPERATING CONDITIONS OF HEAVY-WATER-MODERATED POWER REACTORS COOLED BY BOILING LIGHT-WATER FOR AECL. PROGRAMS ARE - (1) EFFECT OF CLOSELY SPACED RODS ON HEAT TRANSFER AND HYDRAULIC CHARACTERISTICS OF ROD BUNDLES. TWO SUCCESSFUL BURNOUT TESTS WERE MADE AND FOUR OTHERS UNSUCCESSFUL DUE TO BOWING IN CENTRAL-ROD MOCKUP, TACHOMETERS AND BURNOUT-DETECTOR FAILURES, AND LOSS OF PRESSURE CONTROL, (2) STUDIES ON HYDRIDE ORIENTATION IN THIN-WALLED ZIRCALCY TUBING AND EFFECT OF HYDRIDE MORPHOLOGY, ORIENTATION, PLATELET LOCATION AND CLUSTER SIZE ON TUBING MECHANICAL PROPERTIES. DATA ANALYSIS WILL TRY TO INCORPORATE EFFECT OF NEARBY CLUSTERS INTO CRITICAL-STRESS THEORY AND LOOK AT APPLICATION OF STRAIN CONCENTRATION THEORIES OF DUCTILE FRACTURE TO HYDRIDE-ZIRCALCY SYSTEM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*HEAT TRANSFER EXPERIMENT + CANADA + REACTOR, BOILING WATER + REACTOR, HEAVY WATER + REACTOR, PRESSURE TUBE

5-17391

THE STEADY-STATE AND DYNAMIC BEHAVIOUR OF A BOILING WATER REACTOR. QUARTERLY PROGRESS REPORT XV, JULY 1 - OCTOBER 1, 1964
EINDHOVEN, NETHERLANDS. TECHNISCHE HOOGESCHOOL
EURAFEC-1290 + WWO16-R78 +. 19 PAGES, REFERENCES, OCTOBER 1, 1964

PERFORATED PLATE IN STEAM SPACE OF PWR LOOP REMOVED TO PREVENT SEVERE WATER LEVEL CHANGES. STEADY-STATE MEASUREMENTS OF ONSET AND CHARACTER OF HYDRAULIC OSCILLATIONS AT DIFFERENT TEMPERATURES ARE STUDIED. COMPUTER PROGRAM OF JAHNBERG THEORETICAL DESCRIPTION WAS ADAPTED FOR TR-4 DIGITAL COMPUTER AT DELFT. MATHEMATICAL MODEL WAS TESTED, INSTABILITIES DUE TO ASSUMED TEMPERATURE DISTRIBUTION OVERCOME, AND THE PROGRAM ADAPTED FOR THE TR-4.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*HEAT TRANSFER EXPERIMENT + *CUT OF PILE LOOPS AND EXPERIMENTS + EURATOM + REACTOR, BOILING WATER

5-17414

ALSO IN CATEGORY 8

VAN SLYKE WJ

THERMAL EFFECTS IN PACKED BED PROCESSES

BATTTEL MEMORIAL INSTITUT, PACIFIC NORTHWEST LABORATORY, RICHLAND, WASHINGTON
BNWL-117-23 + CONF-661-025-3 + BNWL-SA-942 +. 6 PAGES, 7 REFERENCES, OCTOBER 1966

AFTER A SERIES OF FIRES OR EXPLOSIONS INVOLVING NITRIC ACID AND ORGANIC RESINS, AN INVESTIGATION WAS STARTED TO PREDICT THE DYNAMIC PROCESS. A ONE-DIMENSIONAL FINITE-DIFFERENCE HEAT AND MASS TRANSFER MODEL WAS PROGRAMMED FOR THE DIGITAL COMPUTER TO SIMULATE THE ION-EXCHANGE PROCESS BEHAVIOR. THE ANION EXCHANGE PROCESS FOR PLUTONIUM PURIFICATION PREFERENTIALLY LOADS PLUTONIUM ONTO THE RESIN IN STRONG NITRIC ACID, WASHES AWAY IMPURITIES, AND FINALLY DESORBS THE PURIFIED PLUTONIUM. NO EXOTHERMIC TENDENCIES WERE OBSERVED IN INITIAL LABORATORY STUDIES. THE RESULT IS THAT THE TIME-TEMPERATURE-LOCATION BEHAVIOR FOR PACKED-BED PROCESSES CAN BE CALCULATED FROM FUNDAMENTAL EXPERIMENTAL DATA. THESE CALCULATIONS SHOW THAT EVEN QUITE MINOR HEAT-PRODUCING PROCESSES CAN PRODUCE SERIOUSLY HIGH TEMPERATURES UNDER CERTAIN CONDITIONS WHERE FLOW RATES, CHEMICAL CONCENTRATIONS, AND SYSTEM THERMAL PROPERTIES MATCH UNFAVORABLY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*CHEMICAL REACTION + *EXPLOSION + *MATHEMATICAL TREATMENT + *PLUTONIUM + *RADIOCHEMICAL PROCESSING + *SAFETY ANALYSIS

5-17421

ALSO IN CATEGORY 6

ICHINO I + SASAKI M

EXPERIMENTAL STUDIES ON HEAT TRANSFER TO CORE SPRAY

NIPPON ATOMIC INDUSTRY GROUP, JAPAN

ANL-TRANS-453 +. 12 PAGES, FIGURES, TRANSLATED FOR ARGONNE NATIONAL LAB., ILL., FROM NIPPON GENSIRYOKU GAKKAISHI, 8, PAGE 602-8, (1966)

SPRAY COOLING OF A 4 X 4 ARRAY OF RODS WAS STUDIED OVER A RANGE OF HEAT OUTPUTS UP TO 6 KW/ROD

CATEGORY 5
ACCIDENT ANALYSIS

5-17421 *CONTINUED*

AND FLOWS UP TO 30 L/MIN. THE RODS WERE 12 MM IN DIAMETER BY 3 M LONG AND WERE HOUSED IN A 71 X 71 MM CHANNEL. THE RODS WERE COOLED BY STEAM CONVECTION AND BY RADIATION. THE STEAM FLOW PREVENTED ENTRY OF THE SPRAY DROPLETS INTO THE CHANNELS.

AVAILABILITY - JOHN CRERAR LIBRARY, 35 WEST 33RD. ST., CHICAGO, ILLINOIS, 60616

ACCIDENT, LOSS OF COOLANT + HEAT TRANSFER EXPERIMENT + HEAT TRANSFER, BOILING + SPRAY, GENERAL

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-09986
LIUKALA RC + JENQUIN UP + REARDON WA
THE PUO2-UO2 EXPERIMENT IN THE EBWR
BATTTELLE-NORTHWEST
BNWL-126 +. 52 PAGES, JUNE 9, 1965, CFSTI, \$3.00 CY, \$0.50 MN

PLUTONIUM FUEL EXHIBITS LARGER VARIATIONS OF NEGATIVE REACTIVITY WITH INCREASED MODERATOR TEMPERATURE AND MODERATOR VOID CHANGES THAN DOES THE URANIUM FUEL WHICH SURROUNDS IT. MODERATOR TEMPERATURE COEFFICIENT FOR PLUTONIUM ZONE ALONE BECOMES LESS NEGATIVE WITH FUEL EXPOSURE AND GOES POSITIVE NEAR 5000 MWD/TON. AT 7000 MWD/TON REACTIVITY CHANGE DUE TO MODERATOR AND FUEL HEATING IS POSITIVE. REACTIVITY CHANGE DUE TO MODERATOR VOID IS NEGATIVE THROUGHOUT BURNUP SUFFICIENT TO COMPENSATE FOR POSITIVE TEMPERATURE EFFECT. THUS, REACTIVITY EFFECTS AT FULL POWER OPERATION ARE NEGATIVE UP TO APPROXIMATELY 15,000 MWD/TON.

*EBWR (EXPERIMENTAL BOILING WATER REACTOR) + MODERATOR COEFFICIENT + PLUTONIUM + REACTOR, BOILING WATER + TEMPERATURE COEFFICIENT + URANIUM + VOID COEFFICIENT

6-14783 ALSO IN CATEGORIES 7 AND 5
DICKERMAN CE + ROBINSON LE + STEWART R
PHOTOGRAPHIC TREAT FAST-REACTOR SAFETY EXPERIMENTS ON IRRADIATED OXIDE PINS
GENERAL ELECTRIC, ATOMIC POWER EQUIPMENT
1 PAGE, 2 REFERENCES, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PA., OCT. 30-NOVEMBER 3, 1966, ANS TRANS. 9(2), PAGE 396, (NOVEMBER 1966)

PRE-IRRADIATED FAST-REACTOR OXIDE FUEL PINS (DESCRIBED IN DETAIL) WERE SUBJECTED TO TREAT TRANSIENTS OF VARYING SEVERITY, UP TO AND INCLUDING CLADDING FAILURE AND ATTAINMENT OF FUEL MELTING POINTS (300 CAL PER GRAM). IN SPITE OF FISSION-FRAGMENT GASES, FUEL REMAINED CYLINDRICAL.

*OXIDE + *TREAT (TRANSIENT TEST REACTOR FACILITY) + FAILURE, FUEL ELEMENT + REACTOR, FAST + REACTOR, GRAPHITE MODERATED + REACTOR, TEST

6-15040 ALSO IN CATEGORIES 10 AND 9
BUDGE E
TEST CELL A CONTROL SYSTEMS
EDGERTON, GERMESHAUSEN, AND GRIER, INC., LAS VEGAS, NEVADA
EGG-1183-1054 +. 219 PAGES, 82 FIGURES, 1 TABLE, JUNE 1, 1964

THE REPORT GIVES THE THEORETICAL DERIVATION AND COMPONENT LAYOUT FOR THE INSTRUMENTATION AND CONTROL SYSTEM USED ON A NUCLEAR POWERED ROCKET. THE REPORT COVERS BOTH THE REACTOR AND THE HYDROGEN PROPellant SYSTEMS. THE APPENDIXES INCLUDE - REACTOR-SIMULATOR EQUATIONS, REACTOR-PERIOD DETERMINATION, AND AN ANALYSIS OF THE DEWAR PRESSURE-CONTROL LOOP.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

*NUCLEAR ROCKET + CONTROL SYSTEM + POWER DISTRIBUTION + REACTOR SAFETY SYSTEM + SIMULATION

6-15540
PETERSEN GT + KUNZE JF + WALL IB + HALLAM JW + HENDERSON WB + WARZEK FG
RECENT FAST CRITICAL EXPERIMENTS IN THE MSCA AND 710-CE
GENERAL ELECTRIC COMPANY, PLEASANTON CALIF.
CONF-661019-10 +. 28 PAGES, TABLES, OCTOBER 1966, FROM INTERNATIONAL CONFERENCE ON FAST CRITICAL EXPERIMENTS AND THEIR ANALYSIS, ARGONNE, ILLINOIS

MEASUREMENT IN THE MIXED-SPECTRUM CRITICAL ASSEMBLY AND THE 710-CE OF PROMPT-NEUTRON LIFE-TIME AND REACTIVITY WORTH.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*PROMPT NEUTRON LIFETIME + MSSR (MIXED SPECTRUM SUPERHEAT REACTOR) + OSCILLATOR, REACTIVITY + REACTOR, FAST

6-15542
FARINELLI U
PHYSICS MEASUREMENTS IN OPERATING POWER REACTORS - COMMENTS ON THE RESULTS OF A SEMINAR
CENTRO DI STUDI NUCLEARI DELLA CASACCIA, ROMA
6 PAGES, ENERGIA NUCLEARE 14(1), PAGES 32-37 (JANUARY 1967)

THIS REVIEW OF THE MEETING OF THE EUROPEAN-AMERICAN COMMITTEE ON REACTOR PHYSICS MENTIONS THAT THE EVOLUTION OF REACTIVITY (AND ITS COEFFICIENT) AND XENON OSCILLATIONS WERE DISCUSSED. SEE FORTHCOMING MINUTES OF THE MEETING FOR DETAILS.

*REACTIVITY COEFFICIENT + *XENON OSCILLATION

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-15543
HIGGINS TJ
THE NUCLEAR REACTOR (BOOK REVIEW)
UNIVERSITY OF WISCONSIN, MADISON
1 PAGE, JOURNAL OF THE FRANKLIN INSTITUTE, 281(1), PAGE 82 (JANUARY 1966). THE NUCLEAR REACTOR, BY ALAN SALMON, 144 PAGES, DIAGRAMS. LONDON, ENGLAND, METHUEN AND CO., LTD. - NEW YORK, JOHN WILEY AND SONS, INC., 1964

THIS EXCELLENT LITTLE VOLUME IS RECOMMENDED TO ALL WHO DESIRE A SHORT, WELL-ORIENTED, SELF-STUDY INTRODUCTORY COURSE TO REACTOR KINETICS AND CONTROL BEFORE READING A MORE ADVANCED CLASSROOM-ORIENTED TEXT. THE AUTHOR STATES THAT THE BOOK IS PRIMARILY ABOUT THE PHYSICS OF NUCLEAR REACTORS, AND NO ATTEMPT HAS BEEN MADE TO DEAL WITH THE CHEMISTRY AND METALLURGY OF REACTOR SYSTEMS. NONKINETIC ENGINEERING ASPECTS HAVE BEEN KEPT TO A MINIMUM. THE WORLDS RESERVES OF ENERGY AND THE ECONOMICS OF PRODUCTION ARE BRIEFLY DISCUSSED TO PROVIDE THE READER WITH AN UNDERSTANDING OF WHY THIS NEW SOURCE OF ENERGY IS NECESSARY AND WHY IT IS DEVELOPING AT ITS PRESENT RATE.

AVAILABILITY - JOHN WILEY AND SONS, INC., NEW YORK, (APPROXIMATELY \$2.25).

*CONTROL, GENERAL + *HEAT TRANSFER + REACTOR PHYSICS

6-15544
KUNZE JF + LOFTHOUSE JH + PINCOCK GD + WOOD RE + HYLAND RE
CAVITY REACTOR CRITICAL EXPERIMENT
GENERAL ELECTRIC CO., CINCINNATI, OHIO
GEMP-473 + CONF-661001-41 +. 25 PAGES, 15 FIGURES, 5 TABLES, 3 REFERENCES, OCT. 7, 1966, FROM 14TH CONFERENCE ON REMOTE SYSTEMS AND TECHNOLOGY, PITTSBURGH, PA.

IN A MOCKUP OF A CAVITY REACTOR, THE TEMPERATURE COEFFICIENT, NEUTRON LIFETIME, AND REACTIVITY WORTHS WERE MEASURED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

AFRSPACE SAFETY + DANGER COEFFICIENT + PROMPT NEUTRON LIFETIME + TEMPERATURE COEFFICIENT

6-15582 ALSO IN CATEGORIES 9 AND 18
QUESTION 7.5--RATE AND MAGNITUDE OF DESIGN LOAD CHANGES
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT PLANT COMPONENT(S) SETS THE LIMITS ON THE RATE AND MAGNITUDE OF DESIGN-LOAD CHANGES. HOW ARE LOAD CHANGES KEPT WITHIN THESE LIMITS. WHAT ARE THE CONSEQUENCES OF THESE LIMITS BEING EXCEEDED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + PALISADES POINT + REACTOR DYNAMICS + REACTOR, PRESSURIZED WATER

6-15674 ALSO IN CATEGORIES 5 AND 18
SURRY POWER STATION UNITS 1 AND 2 PRELIMINARY SAFETY ANALYSIS REPORT, PART B
VIRGINIA ELECTRIC AND POWER COMPANY
170 PAGES, FIGURES, TABLES, 1967, DOCKET NO. 50-280 AND 50-281

VOLUME 1 CONTAINS THE FOLLOWING CHAPTERS - (1) INTRODUCTION, (2) SITE, AND (3) REACTOR. A TABLE COMPARES 152 SIGNIFICANT DATA ITEMS WITH INDIAN POINT 2 AND BURLINGTON 1. AEC CONSTRUCTION PERMIT CRITERIA ARE DISCUSSED, AND SHARED FACILITIES ARE NOTED. CONDENSER COOLING WATER IS LIFTED FROM DOWNSTREAM SIDE OF SITE TO AN INTAKE CANAL (PROVIDING A SOURCE OF WATER FOR EMERGENCIES) AND FLOWS BY GRAVITY THROUGH THE CONDENSERS TO THE UPSTREAM SIDE OF THE SITE. SEPARATE METEOROLOGY REPORT (NUS-333, DECEMBER 66). FAULT FORMATIONS END 50 MILES FROM SITE. REACTOR EVALUATED FOR 2546 MW(TH), WHICH CORRESPONDS TO FULL TURBINE RATING OF 946 MW(E). LENGTHY DISCUSSION OF REACTIVITY AND DNB CALCULATIONAL METHODS.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*SAFETY ANALYSIS REPORT, PRELIMINARY + AEC CONSTRUCTION PERMIT CRITERIA + ANALYTICAL MODEL + DNB (DEPARTURE FROM NUCLEATE BOILING) + EMERGENCY COOLING CONSIDERATIONS + HEAT SINK + REACTIVITY EFFECT + REACTOR, PRESSURIZED WATER + SURRY 1 AND 2

6-16023 ALSO IN CATEGORIES 4 AND 18
BARDES RG + COHEN SC + FRIESENHANN SJ + GILLETTE EM + HADDAD E + JOANOU GD + JUPITER C + MCORE RA + PEAK JC + TRIMBLE GD
TUNGSTEN NUCLEAR ROCKET. PHASE I, FINAL REPORT. PART I.

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-16023 *CONTINUED*
GENERAL DYNAMICS CORP., SAN DIEGO, CALIFORNIA
GA-6890 + NASA-CR-54909 +. 390 PAGES, FIGURES, TABLES, APRIL 22, 1966

DESCRIBES THE CRITICAL EXPERIMENTS, FACILITY, ASSEMBLIES, AND NUCLEAR ANALYSIS. EXPERIMENTAL RESULTS INCLUDE THE EXCESS REACTIVITY AVAILABLE IN THE CORE, WORTH OF POISON TUBES AND FUEL-ELEMENT COMPONENTS, TEMP. COEFFICIENTS, AND FLUX AND POWER DISTRIBUTIONS.

AVAILABILITY - NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, OFFICE OF SCIENTIFIC AND TECHNICAL INFORMATION, WASHINGTON, D. C. 20546

*NUCLEAR POCKET + *REACTOR DESCRIPTION + CRITICAL ASSEMBLY FACILITY + CRITICALITY EXPERIMENT + FLUX DISTRIBUTION + MEASUREMENT, REACTIVITY + POWER DISTRIBUTION + REACTIVITY, EXCESS + TEMPERATURE REACTIVITY EFFECT

6-16057
WILDE N + BOLAND TJ + ANDERSON SD
INSTRUMENT DEVELOPMENT BRANCH, ANNUAL REPORT, 1965
PHILLIPS PETROLEUM COMPANY, ATOMIC ENERGY DIVISION, IDAHO FALLS, IDAHO
IDC-17, 211 +. 239 PAGES, 213 FIGURES, 19 TABLES, 55 REFERENCES, SEPTEMBER 1966

THIS REPORT DESCRIBES THE MAJOR PROJECTS OF THE INSTRUMENT DEVELOPMENT BRANCH AT THE NATIONAL REACTOR TESTING STATION. THESE ACTIVITIES WERE IN DIRECT SUPPORT OF AEC RESEARCH, DEVELOPMENT, AND OPERATIONAL PROGRAMS. THE REPORT CONTAINS 52 ARTICLES IN SUBJECT AREAS OF - DETECTOR AND TRANSDUCER DEVELOPMENT, INSTRUMENT COMPONENT AND SYSTEMS DEVELOPMENT, AND INSTRUMENTATION ANALYSIS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 COPY

*INSTRUMENTATION, GENERAL + *INSTRUMENTATION, PROCESS + *MEASUREMENT, GENERAL + *MONITOR, RADIATION, GENERAL + *SIMULATION

6-16058 ALSO IN CATEGORY 9
UHRIC RF
NOISE ANALYSIS IN NUCLEAR SYSTEMS.
UNIVERSITY OF FLORIDA
505 PAGES, FIGURES, TABLES, REFERENCES, JUNE 1964. PROCEEDINGS OF A SYMPOSIUM HELD AT THE UNIVERSITY OF FLORIDA, NOVEMBER 4-6, 1963, SPONSORED BY THE DEPARTMENT OF NUCLEAR ENGINEERING AND THE ENGINEERING AND INDUSTRIAL EXPERIMENT STATION OF THE COLLEGE OF ENGINEERING, UNIVERSITY OF FLORIDA, GAINESVILLE, FLORIDA, AND BY THE U.S. ATOMIC ENERGY COMMISSION

THIS BOOK CONTAINS THE PROCEEDINGS OF A SYMPOSIUM ON NOISE ANALYSIS IN NUCLEAR SYSTEMS, HELD AT THE UNIVERSITY OF FLORIDA. THE PAPERS RANGE FROM THE PHYSICAL THEORY OF NEUTRON NOISE IN REACTORS TO THE ELECTRONIC SYSTEM USED TO OBTAIN THE DATA. THE SYMPOSIUM HEARD 26 PAPERS, NINE ON THEORETICAL ASPECTS, FIVE ON DATA HANDLING AND ELECTRONICS AND THE RESULTS OF REACTOR-NOISE EXPERIMENTS AT SIX REACTORS. THIS VOLUME GIVES A GOOD STATE-OF-THE-ART REVIEW FOR NOISE ANALYSIS IN 1963.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*MEASUREMENT, NOISE + *MEASUREMENT, SUBCRITICALITY + *NOISE ANALYSIS + NOISE + NOISE CROSS CORRELATION + REACTIVITY COEFFICIENT + SHUTDOWN MARGIN + STATISTICAL ANALYSIS + SYSTEM DESCRIPTION + THEORETICAL INVESTIGATION

6-16162 ALSO IN CATEGORY 5
MOFF RH
RADIAL VANE STEAM SEPARATOR DEVELOPMENT, SECOND QUARTERLY REPORT, OCTOBER - DECEMBER 1964
GENERAL ELECTRIC COMPANY, SAN JOSE, CALIF.
GEAP-4783 + EURAEC-1301 +. 42 PAGES, REFERENCES, JANUARY 1965

FURTHER TESTS OF THE MODEL RADIAL-VANE SEPARATOR WERE CARRIED OUT TO DETERMINE THE EFFECT OF PLENUM DEFLECTION ON PERFORMANCE, THE SEPARATOR PERFORMANCE WITH SIX 18-IN. NOZZLES AND EIGHTEEN 6-IN. NOZZLES, THE SPREAD OF WATER FLOW ON THE VANES, AND THE EFFECT OF CARRYOVER SAMPLE FLOW RATE ON CARRYOVER READING. THE DATA WERE PARTIALLY ANALYZED AND THE FOLLOWING CONCLUSIONS MADE - (1) PLENUM DEFLECTORS UNNECESSARY AT TEST CONDITIONS, (2) CARRYOVER IS A FUNCTION OF NOZZLE VELOCITY RATHER THAN STREAM VELOCITY IF VANES NOT EXPOSED IN VORTEX, (3) WATER FLOW FROM NOZZLE ON VANES DOES NOT SPREAD WHILE FLOWING FROM NOZZLE TO VANE ENDS, (4) PREVIOUS CARRYOVER AND CARRYUNDER TESTS CONFIRMED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*FLOW DISTRIBUTION + *FLOW THEORY AND EXPERIMENTS + *FLOW, TWO PHASE + *HYDRAULIC EXPERIMENT + *SEPARATOR

6-16163 ALSO IN CATEGORY 5
KINDY RD + HOFFMAN HW

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-16163 *CONTINUED*
VELOCITY MEASUREMENTS FOR BEDS OF LARGE, UNIFORM-DIAMETER SPHERES PACKED IN A FULL-SCALE MODEL OF A PEBBLE-BED NUCLEAR REACTOR
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.
ORNL-P-1798 + CONF-660302-1 +. 42 PAGES, FROM 3RD SOUTHEASTERN CONFERENCE ON THEORETICAL AND APPLIED MECHANICS, COLUMBIA, S. C.

VELOCITY PROFILES WERE DETERMINED FOR SHALLOW BEDS OF RANDOMLY PACKED SPHERES TO PROVIDE INFORMATION FOR THE THERMAL ANALYSIS OF PEBBLE-BED REACTORS. CONCURRENT MEASUREMENTS OF THE VOID FRACTION AND SUPERFICIAL ANGLE OF REPOSE FOR THE BEDS SUPPLIED DATA USEFUL IN THE INTERPRETATION OF THE VELOCITY PROFILES. THE BEDS WERE FORMED OF 1-1/2-IN.-DIAM GRAPHITE SPHERES PACKED BY VARIOUS TECHNIQUES IN A FULL-SIZE, PLEXIGLAS, PBRE CORE MODEL HAVING APPROXIMATELY A CONICAL BOTTOM AND CYLINDRICAL BODY. AN UPWARD AIR FLOW SIMULATED THE HELIUM REACTOR COOLANT. POINT VELOCITIES WERE OBTAINED ABOVE THE EXIT FACE OF THE BED WITH A HOT-WIRE ANEMOMETER.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*HYDRAULIC EXPERIMENT + FLOW DISTRIBUTION + REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED + REACTOR, PEBBLE BED

6-16164 ALSO IN CATEGORIES 5 AND 9
MACFARLANE DR
AN ANALYTIC STUDY OF THE TRANSIENT BOILING OF SODIUM IN REACTOR COOLANT CHANNELS
ARGONNE NATIONAL LABORATORY, ILL.
ANL-7222 +. 117 PAGES, 48 FIGURES, 11 TABLES, JUNE 1966

TWO TYPES OF TRANSIENTS WERE STUDIED - (1) MILD REACTIVITY ADDITION AND (2) PUMP SHUTOFF WITH FLOW COASTDOWN. NUMERICAL SOLUTIONS OBTAINED FOR THE NONLINEAR FORM OF THE COUPLED FLUID DYNAMIC AND HEAT CONDUCTION PARTIAL DIFFERENTIAL EQUATION BY MEANS OF IMPLICIT FINITE-DIFFERENCE EQUATIONS AND AN ITERATIVE ALGOL COMPUTER PROGRAM. SONIC EFFECTS AND CRITICAL FLOW PHENOMENA WERE NOT TREATED. TWO-PHASE COOLANT DENSITY IS PRESSURE DEPENDENT, AND TEMPORAL- AND SPATIAL-VARYING SLIP VELOCITY ARE INCLUDED.

AVAILABILITY -- CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151 \$3.00 COPY, \$0.65 MICROFICHE

ACCIDENT, LOSS OF FLOW + FLOW, TWO PHASE + METAL, LIQUID + REACTIVITY, EXCESS + REACTOR TRANSIENT + REACTOR, FAST + REACTOR, LIQUID METAL COOLED + SODIUM + VOID COEFFICIENT

6-16165 ALSO IN CATEGORIES 5 AND 8
DWYER CE
RECENT DEVELOPMENTS IN LIQUID-METAL HEAT TRANSFER
BROOKHAVEN NATIONAL LABORATORY, UPTON, N. Y.
90 PAGES, 51 FIGURES, 12 TABLES, 100 REFERENCES, ATOMIC ENERGY REVIEW 4(1) PAGES 3-92 (1966)

SUMMARIZED DEVELOPMENTS IN LIQUID-METAL HEAT TRANSFER THAT HAVE OCCURRED, FOR THE MOST PART, DURING THE PAST 5 YEARS. PRESENTS COMPARISONS BETWEEN THEORETICAL AND EMPIRICAL PREDICTIONS AND EXPERIMENTAL RESULTS, WITH ACCOMPANYING DISCUSSIONS. ALSO, AREAS WHERE FURTHER RESEARCH IS NEEDED ARE INDICATED. SINCE THE SUBJECT CANNOT BE COMPLETELY COVERED IN A SINGLE ARTICLE, EMPHASIS IS GIVEN TO THOSE TOPICS OF MOST ENGINEERING INTEREST. MOREOVER, WITH EACH TOPIC THE THOROUGHNESS OF TREATMENT VARIES ACCORDING NOT ONLY TO REPORTED PROGRESS BUT ALSO TO CURRENT INTEREST. THE PRINCIPAL TOPIC COVERED INCLUDES LIQUID-METAL HEAT TRANSFER FOR (A) FLOW IN PIPES, (B) FLOW IN ANNULI, (C) FLOW BETWEEN PARALLEL PLATES, (D) IN-LINE FLOW THROUGH ROD BUNDLES, (E) OBLIQUE FLOW THROUGH ROD BUNDLES (F) 90-DEG CROSS FLOW THROUGH ROD BUNDLES (G) POOL BOILING, (H) NATURAL-CONVECTION BOILING IN A RECIRCULATING LOOP, (I) FORCED-CONVECTION BOILING IN A RECIRCULATING LOOP, AND (J) CRITICAL HEAT FLUX IN BOTH POOL AND FORCED-CONVECTION BOILING.

ANNULUS + HEAT TRANSFER + HEAT TRANSFER EXPERIMENT + HEAT TRANSFER, BOILING + HEAT TRANSFER, CONVECTION + METAL, LIQUID + POOL BOILING + REVIEW

6-16170 ALSO IN CATEGORY 5
MAYINGER F + SCHAD O + WEISS E
STUDY ON BURNOUT HEAT FLUX IN BOILING WATER
MASCHINENFABRIK AUGSBURG-NUERNBERG A.G., NUREMBERG, GERMANY
EURAC-1550 + EUR-2692 +. 42 PAGES, REFERENCES, JANUARY 1966

EXPERIMENTAL MEASUREMENTS ON ELIMINATING TWO-PHASE-FLOW PULSATION BY UPSTREAM ORIFICING ARE REPORTED. MINIMUM ORIFICING TO ELIMINATE FLOW PULSATION AND PULSATION-INDUCED BURNOUT WAS DETERMINED FOR PRESSURE UP TO 100 ATMOSPHERE, MASS FLOW RATES OF 200 TO 400 G PER SQ. CM PER SEC, AND SUBCOOLING OF 0 TO 60 C.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

BURNOUT HEAT FLUX + DNB (DEPARTURE FROM NUCLEATE BOILING) + FLOW STABILITY + FLOW, PULSATING + HEAT TRANSFER EXPERIMENT + HEAT TRANSFER, BOILING

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-16281 ALSO IN CATEGORIES 5 AND 8
WENTZ LB + WRIGHT RW + ZIVI SM
THE POSSIBILITY OF DESTRUCTIVE IN-CORE PRESSURES IN POWER REACTOR MELTDOWN ACCIDENTS
TRW SYSTEMS, REDONDO BEACH, CALIFORNIA
STL 372-44 +. PAGES 3-8 OF QUARTERLY PROGRESS REPORT FOR PERIOD ENDING JUNE 30, 1966 - KINETIC STUDIES OF
HETEROGENEOUS WATER REACTORS, 45 PAGES, 14 FIGURES, 1 TABLE, 30 REFERENCES, JULY 31, 1966

THE TRANSIENT HEAT FLUX OBTAINABLE FROM MOLTEN UO₂ IS COMPARABLE TO THAT FROM MOLTEN ALUMINUM.
IN THE ABSENCE OF DEFINITIVE EXPERIMENTS, ONE CANNOT CONCLUDE WHETHER DESTRUCTIVE PRESSURES
WILL BE PRODUCED BY THE IN-CORE INTERACTION OF WATER AND MOLTEN OXIDE FUEL.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

*HYDRAULIC ANALYSIS + *THERMAL ANALYSIS + ACCIDENT ANALYSIS + HEAT TRANSFER, BOILING +
METAL WATER REACTION + REACTOR TRANSIENT + URANIUM OXIDE

6-16282
ZIVI SM
AN ANALYSIS OF THE EBWR INSTABILITY WITH JONES HYDRODYNAMIC MODEL
TRW SYSTEMS, REDONDO BEACH, CALIFORNIA
STL 372-44 +. PAGES 9-18 OF QUARTERLY PROGRESS REPORT FOR PERIOD ENDING JUNE 30, 1966 - KINETIC STUDIES
OF HETEROGENEOUS WATER REACTORS, 45 PAGES, 14 FIGURES, 1 TABLE, 30 REFERENCES, JULY 31, 1966

THE CAUSE OF THE EBWR INSTABILITY IN 100-MW OPERATION WAS A HYDRODYNAMIC RESONANCE BETWEEN THE
CORES PLATE-TYPE AND ROD-BUNDLE FUEL ASSEMBLIES THAT PRODUCED A VOID-REACTIVITY FEEDBACK
INSTABILITY. THIS TYPE OF INSTABILITY CAN ALSO OCCUR IN BOILING-WATER REACTORS THAT HAVE
IDENTICAL FUEL ASSEMBLIES IF THERE IS A SIZEABLE DIFFERENCE IN THE VOID RESPONSE TO POWER
MODULATION IN DIFFERENT REGIONS OF THE CORE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

*EBWR (EXPERIMENTAL BOILING WATER REACTOR) + *REACTOR STABILITY + HYDRAULIC ANALYSIS +
REACTOR, BOILING WATER + TRANSFER FUNCTION + VOID COEFFICIENT

6-16285 ALSO IN CATEGORIES 5 AND 8
WRIGHT RW + FIRSTENBERG AF + HUMBERSTONE GH
SHOCK TUBE EXPERIMENT ON PRESSURE GENERATION
TRW SYSTEMS, REDONDO BEACH, CALIFORNIA
STL 372-47 +. PAGES 3-14 OF QUARTERLY PROGRESS REPORT FOR PERIOD ENDING SEPT. 30, 1966 - KINETIC STUDIES
OF HETEROGENEOUS WATER REACTORS, 50 PAGES, 27 FIGURES, 1 TABLE, 11 REFERENCES, OCTOBER 31, 1966

IN SHOCK-TUBE EXPERIMENTS, THE PRESSURE PULSE PRODUCED BY WATER IMPACT UPON 1000 C ALUMINUM
PRODUCED A PRESSURE PULSE THAT ROSE TO 5800 PSI BEFORE RUPTURE, GREATER THAN THE WATER
CRITICAL PRESSURE OF 3200 PSIG. AN EXPERIMENT WAS PERFORMED WITH WATER IMPACTING ON MOLTEN
SILVER, WHICH ELIMINATES THE POSSIBILITY OF A CHEMICAL CONTRIBUTION TO PRESSURE GENERATION.
THESE RESULTS WERE SIMILAR TO THOSE FOR MOLTEN ALUMINUM. SHOCK-TUBE RUNS WITH POWDERED UO₂
AT 800 AND 1200 C PRODUCED UO₂ DISPERSAL INTO THE WATER, BUT PRESSURES OF ONLY 240 PSIA AND
370 PSIA, RESPECTIVELY. ONE CANNOT SAFELY EXCLUDE THE POSSIBILITY OF HIGHER PRESSURES FROM
THE INTERACTION OF WATER WITH VERY MUCH HOTTER MOLTEN UO₂.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

*HYDRAULIC ANALYSIS + *THERMAL ANALYSIS + ACCIDENT ANALYSIS + ALUMINUM + HEAT TRANSFER, BOILING +
METAL WATER REACTION + REACTOR TRANSIENT + SILVER + URANIUM OXIDE

6-16286
FIRSTENBERG AF + NEAL LG
POWER-VOID TRANSFER FUNCTION MEASUREMENTS IN SUBCOOLED BOILING
TRW SYSTEMS, REDONDO BEACH, CALIFORNIA
STL 372-4 +. PAGES 24-49 OF QUARTERLY PROGRESS REPORT FOR PERIOD ENDING SEPT. 30, 1966 - KINETIC STUDIES
OF HETEROGENEOUS WATER REACTORS, 50 PAGES, 27 FIGURES, 1 TABLE, 11 REFERENCES, OCTOBER 31, 1966

RESULTS OF SUBCOOLED BOILING AT 300 AND 700 PSIA - (1) THE VOID FRACTION INCREASED LINEARLY
ALONG THE TEST SECTION AND WAS CONSTANT IN THE RISER. THIS MEANS THAT THE BUBBLE COLLAPSE
TIME IS LONG COMPARED WITH THE TYPICAL TRANSPORT TIME OF ABOUT 0.1 SEC. THE TRANSFER
FUNCTION MEASUREMENTS CONFIRM THIS. (2) ABOUT ONE-THIRD OF THE POWER WENT INTO STEAM, AND
THE STEAM-WATER SLIP RATIO WAS 0.8 UNDER TYPICAL OPERATING CONDITIONS WITH 8 C INLET
SUBCOOLING. (3) THE POWER-VOID TRANSFER FUNCTION APPEARS TO BE DETERMINED BY VOID TRANSPORT
EFFECTS (WITH NO BUBBLE COLLAPSE) AND THE WALL-COOLANT HEAT TRANSFER TIME CONSTANT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

*TRANSFER FUNCTION + *VOID COEFFICIENT + HEAT TRANSFER, BOILING

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-16287 ALSO IN CATEGORIES 5 AND 8
WENTZ LP
IN-PILE CAPSULE MEASUREMENTS OF TRANSIENT STEAM-VOID FORMATION
TWR SYSTEMS, REDONDO BEACH, CALIFORNIA
STL-372-47 +. PAGES 15-23 OF QUARTERLY PROGRESS REPORT FOR PERIOD ENDING SEPT. 30, 1966 - KINETIC STUDIES
OF HETEROGENEOUS WATER REACTORS, 50 PAGES, 27 FIGURES, 1 TABLE, 11 REFERENCES, OCTOBER 31, 1966

IN OUR IN-PILE CAPSULE THE INITIAL PRESSURE WAS VARIED FROM 0 TO 1500 PSIA, WITH THE REACTOR
PERIOD VARIED BETWEEN 3 AND 5 MILLISECONDS AT EACH STEP. THE BEHAVIOR WAS QUALITATIVELY
SIMILAR AT ALL PRESSURES. THE WATER-HAMMER IMPACT PRESSURE FROM VAPOR-BLANKET COLLAPSE
INCREASED WITH INITIAL PRESSURE TO A MAXIMUM NEAR 400 PSIA AND THEN DECREASED AT HIGHER
PRESSURE. WATER-HAMMER IMPACT PRESSURES UP TO 1000 PSI WERE OBSERVED, BUT THE PRESSURES FROM
THE INITIAL NUCLEATE BOILING PHASE WERE LESS THAN 150 PSI.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151 \$3.00 COPY, \$0.65 MICRONEGATIVE

HEAT TRANSFER, BOILING + KEWB (KINETIC EXPERIMENT ON WATER BOILERS) + REACTOR TRANSIENT +
REACTOR, HOMOGENEOUS + REACTOR, RESEARCH

6-16330 ALSO IN CATEGORIES 18 AND 12
QUESTION A-2--POTENTIAL REACTIVITY TRANSIENT STUDIES, PIPE-WHIPPING, AND GENERATION OF MISSILES
COMMONWEALTH EDISON COMPANY
3 PAGES, PAGES A-2-1 TO A-2-3 FROM DRESDEN 3 AMENDMENT 1, 1966, DOCKET NO. 50-249

YOUR ATTENTION IS DIRECTED TO REPORTS FROM THE ACRS TO THE CHAIRMAN, AEC, DATED NOVEMBER 24,
1965, AND MARCH 18, 1966, CONCERNING ITS REVIEW OF DRESDEN 2 AND MILLSTONE POINT. IN THESE
REPORTS, ACRS REQUESTED FURTHER STUDIES RELATED TO ITS CONCERN ON PIPE-WHIPPING, GENERATION
OF MISSILES WHICH COULD AFFECT THE EFFECTIVENESS OF ENGINEERED SAFEGUARDS, AND POTENTIAL
REACTIVITY TRANSIENTS. DISCUSS THOSE CONSIDERATIONS IN THE DESIGN OF DRESDEN 3, AS WELL AS
ANY SUPPORTING INFORMATION IN THESE AREAS. YOUR DISCUSSION OF PIPE-WHIPPING AND MISSILES
SHOULD ALSO INCLUDE PROTECTION FOR SAFETY-RELATED INSTRUMENTATION LOCATED IN THE DRYWELL.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*MISSILE GENERATION AND PROTECTION + *REACTOR TRANSIENT + ACRS (ADVISORY COMMITTEE ON REACTOR SAFEGUARDS) +
AEC QUESTION + DRESDEN 3 + FAILURE, PIPE + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

6-16356 ALSO IN CATEGORIES 18 AND 5
QUESTION D-5--EXPERIMENTAL BASIS OF FUEL DAMAGE THRESHOLDS FOR EXCURSION ANALYSIS
COMMONWEALTH EDISON COMPANY
5 PAGES, PAGES D-5-1 TO D-5-5 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

DISCUSS THE EXPERIMENTAL BASIS OF THE DAMAGE THRESHOLDS ASSUMED IN THE EXCURSION ANALYSES.
INCLUDE CONSIDERATIONS OF PARTICLE SIZE AND PRESSURE PULSES GENERATED AS A FUNCTION OF PEAK
FUEL ENTHALPY. HOW IS THE EXPERIMENTAL DATA CORRECTED IN YOUR ANALYSES TO TAKE INTO
CONSIDERATION EFFECTS OF THE LARGE CORE. ALSO, COMPARE THE RESULTS OF YOUR MODEL FOR THE
DOPPLER COEFFICIENT WITH EXPERIMENTAL DATA AND WITH OTHER CURRENT MODELS. REFER ALSO TO
QUESTION A-2.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*EXCURSION, LARGE + *FUEL ELEMENT + *PERFORMANCE LIMIT + AEC QUESTION + DOPPLER COEFFICIENT + DRESDEN 3 +
REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

6-16357 ALSO IN CATEGORY 18
QUESTION D-6--WATER TO STEAM PROPORTIONS FOLLOWING STEAM LINE BREAK
COMMONWEALTH EDISON COMPANY
2 PAGES, PAGES D-6-1 TO D-6-2 FROM DRESDEN 3 AMENDMENT 1, 1966, DOCKET 50-249

CLARIFY THE APPARENT DISCREPANCY IN THE PROPORTION OF WATER TO STEAM IN THE BLOWDOWN AFTER A
STEAM-LINE BREAK. WHAT ARE THE SIGNIFICANT CONSIDERATIONS IN DETERMINING THE COMPOSITION OF
THE BLOWDOWN FLUID.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACCIDENT, STEAM LINE RUPTURE + AEC QUESTION + BLOWDOWN + DRESDEN 3 + REACTOR, BOILING WATER +
SAFETY ANALYSIS REPORT, PRELIMINARY

6-16381 ALSO IN CATEGORY 5
TRANSITION BOILING HEAT TRANSFER PROGRAM. SIXTEENTH QUARTERLY PROGRESS REPORT, OCTOBER-DECEMBER 1966.
GENERAL ELECTRIC CO., SAN JOSE, CALIFORNIA. ATOMIC POWER EQUIPMENT DEPT.
GEAP-5426 + EURAEC-1792 +. 29 PAGES, JANUARY 3, 1967

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-16381 *CONTINUED*

THE SERIES TESTS WITH THE TUBE TEST SECTION WERE PERFORMED AT 1000 PSIA WITH MASS VELOCITIES OF 0.5 AND 0.75 MILLION LB PER HR PER SQ. FT. FULLY-DEVELOPED FILM-BOILING COEFFICIENTS WERE MEASURED, ALONG WITH STEAM-PHASE TEMPERATURES. THE PROBE DATA DEMONSTRATED QUANTITATIVELY THAT THE STEAM PHASE WAS SUPERHEATED FOR HEAT TRANSFER FROM A DRY WALL TO A FLOWING STEAM-WATER MIXTURE. A NEW SINGLE-ROD ANNULAR TEST SECTION WAS DESIGNED FOR OBTAINING FULLY DEVELOPED HEAT-TRANSFER COEFFICIENTS AND BULK-STEAM-PHASE TEMPERATURE MEASUREMENTS. THE DESIGN INCORPORATES SMALL PROFILE SPACERS, 18-INCH SPANS BETWEEN SPACERS, AND SPECIAL CONSTRUCTION FOR ATTAINING HIGHER HEATED WALL TEMPERATURES THAN PREVIOUSLY POSSIBLE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

FLOW, TWO PHASE + FUEL ELEMENT + HEAT TRANSFER ANALYSIS + HEAT TRANSFER EXPERIMENT + REACTOR, BOILING WATER

6-16398 ALSO IN CATEGORIES 5 AND 8
MATZNER R + CASTERLINE JE + BIDERMAN R
TOPICAL REPORT NO. 4. CRITICAL HEAT FLUX IN LONG TUBES AT 1000 PSIA WITH AND WITHOUT SWIRL PROMOTERS. COLUMBIA UNIVERSITY, CHEMICAL ENGINEERING DEPT., NEW YORK
TID-22,498. 34 PAGES, 9 FIGURES, 2 TABLES, 8 REFERENCES, FEBRUARY 4, 1965

OVER 200 CRITICAL-HEAT-FLUX POINTS AND OVER 400 TWO-PHASE PRESSURE-DROP POINTS WERE OBTAINED FOR SIX ELECTRICALLY HEATED TEST SECTIONS WITH VERTICAL UPFLOW OF BOILING WATER AT 1000 PSIA. THE THREE AXIAL-FLOW TEST SECTIONS HAD HEATED LENGTHS OF 8, 12, AND 16 FT. OF THE THREE SWIRL-FLOW TEST SECTIONS, ONE WITH A 16-FT HEATED LENGTH EMPLOYED A FULL-LENGTH TWISTED TAPE WHILE THE OTHER TWO WITH HEATED LENGTHS OF 12 AND 16 FT USED 2-IN.-LONG TAPE SEGMENTS INSTALLED ONE EACH AT THE INLET AND 8 FT DOWNSTREAM. THE RANGES OF EXPERIMENTAL VARIABLES COVERED WERE - MASS VELOCITIES BETWEEN 1 MILLION AND 7 MILLION LB/HR/SQ. FT, EXIT QUALITIES BETWEEN 1 AND 88%, AND CRITICAL HEAT FLUXES AS HIGH AS 1.3 MILLION BTU/HR/SQ. FT. IT WAS CONCLUDED THAT PROPERLY DESIGNED SWIRL PROMOTERS HAD THE POTENTIAL FOR INCREASING THE CRITICAL HEAT FLUX INSIDE TUBES WITHOUT EXTRA PUMPING POWER.

AVAILABILITY - OAK RIDGE ASSOCIATED UNIVERSITIES, BADGER AVENUE, OAK RIDGE, TENN.

*DNB (DEPARTURE FROM NUCLEATE BOILING) + *HEAT FLUX, DRYOUT + *HEAT TRANSFER + *PRESSURE DROP + FLOW THEORY AND EXPERIMENTS + FLOW, TWO PHASE + HEAT TRANSFER AUGMENTATION + HEAT TRANSFER EXPERIMENT + HEAT TRANSFER, BOILING

6-16452 ALSO IN CATEGORIES 5 AND 18
VOLUME II - SITE AND SAFETY ANALYSIS.
NIAGARA MOHAWK POWER CORPORATION, SYRACUSE, N. Y.
263 PAGES, 131 FIGURES, 75 TABLES, 6 REFERENCES, FINAL SAFETY ANALYSIS REPORT, NINE MILE POINT, JUNE 1967, DCKET NO. 50-220

CONSISTS OF 5 APPENDIXES - (A) METEOROLOGY, (B) LIMNOLOGY, (C) EARTH SCIENCES, (D) ENVIRONMENTAL RADIOLOGY, AND (E) SAFETY ANALYSIS. **SAFETY ANALYSIS (I) RESULTS OF 23 MALFUNCTIONS WERE SIMULATED AND SHOWN TO BE KEPT BELOW SAFETY THRESHOLD BY PLANT PROTECTION SYSTEMS. (II) STANDBY SAFEGUARDS ANALYSIS IS OF MAJOR ACCIDENTS (MAIN-STEAM-LINE RUPTURE, LOSS OF COOLANT, REFUELING, ROD DROP). ANALYTICAL METHODS AND ASSUMPTIONS ARE SUMMARIZED. CREDIT TAKEN FOR STACK RELEASE AND FILTRATION OF AIR THAT ESCAPES CONTAINMENT INTO REACTOR BUILDING REDUCES OFFSIDE DOSES TO MILLIREMS, EXCEPT FOR STEAM-LINE RUPTURE (7.8 REMS THYROID AND 0.079 REM WHOLE-BODY EXPOSURE) WHERE NO DISPERSION AND STEAM CLOUD TRAVELING AT GROUND LEVEL ARE ASSUMED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACCIDENT, STEAM LINE RUPTURE + *SAFETY ANALYSIS REPORT, GENERAL + ACCIDENT, CONTROL ROD EJECTION + ACCIDENT, LOSS OF COOLANT + ACCIDENT, REFUELING + AIRBORNE RELEASE + DOSE + MONITORING PROGRAM, ENVIRONMENTAL + NINE MILE POINT + REACTOR, BOILING WATER + SAFETY ANALYSIS

6-16468 ALSO IN CATEGORIES 5 AND 17
ISSHIKI N
EFFECTS OF HEAVING AND LISTING UPON THERMO-HYDRAULIC PERFORMANCE AND CRITICAL HEAT FLUX OF WATER-COOLED MARINE REACTORS
SECOND MARINE ENGINE DEVELOPMENT SECTION, SHIP RESEARCH INSTITUTE, MINISTRY OF TRANSPORTATION, MITAKA, TOKYO, JAPAN
25 PAGES, 32 FIGURES, 3 TABLES, 11 REFERENCES, NUCLEAR ENGINEERING AND DESIGN 4(2), PAGES 138-162 (AUGUST 1966)

BURNOUT WAS OBSERVED IN TWO SIMPLIFIED ATMOSPHERIC MODELS OF MARINE WATER-COOLED REACTOR CORE-LOOPS ON WHICH CYCLIC HEAVING MOTIONS AND CONSTANT LISTING WERE APPLIED BY A HEAVING APPARATUS. CYCLIC HEAVING MOTIONS UP TO PLUS OR MINUS 1.1 GRAVITY AMPLITUDE AND 30 DEGREE LIST WERE EMPLOYED. THE FOLLOWING THERMAL AND HYDRAULIC PERFORMANCE WAS OBSERVED - (1) THE CRITICAL HEAT FLUX DECREASED LINEARLY WITH INCREASING HEAVING ACCELERATION, AND WAS ACCOMPANIED BY VIOLENT CYCLIC FLUCTUATIONS OF VOID AND FLOW VELOCITY WHEN THE INLET FLOW VELOCITY WAS LOW. (2) WHEN THE LOOP LISTED, THE CRITICAL HEAT FLUX DECREASED LOCALLY NEAR BOTH SIDES OF THE LOOP CHANNEL. A SHARP CONCENTRATION OF VOID ALSO OCCURRED ON ONE SIDE. LISTING HELPED GENERATE FLUCTUATIONS IN THE SUBCOOLED CONDITION. TO OBTAIN MARINE REACTORS WHICH CAN OPERATE SAFELY ON VERY ROUGH SEAS IT WILL BE NECESSARY TO INCORPORATE THE FOLLOWING SUGGESTIONS INTO THE THERMAL AND HYDRAULIC DESIGN OF THE CORE LOOPS. (1) THE DECREASE OF CRITICAL HEAT FLUX BY HEAVING AND LISTING SHOULD BE INCLUDED AMONG THE HOT-CHANNEL FACTORS.

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-16468 *CONTINUED*

(2) OUTFLOW WATER AT CORE EXITS SHOULD PREFERABLY BE SUBCOOLED BELOW THE CRITICAL SUBCOOLING TEMPERATURE. THIS MEANS THAT THE PWR TYPE IS TO BE PREFERRED FOR SEVERE MARINE USE RATHER THAN THE BWR TYPE. (3) THE CIRCULATING WATER VELOCITY SHOULD BE HIGH. (4) THE TOTAL HEIGHT OF THE CORE AND RISER SHOULD BE LOW.

BURNOUT HEAT FLUX + DNB (DEPARTURE FROM NUCLEATE BOILING) + FLOW DISTRIBUTION + FLOW, TWO PHASE + HEAT TRANSFER ANALYSIS + HEAT TRANSFER EXPERIMENT + MODEL TESTING + REACTOR, BOILING WATER + REACTOR, MARITIME + REACTOR, PRESSURIZED WATER + TRANSFER FUNCTION + VOID COEFFICIENT

6-16483

ORR WL + STERNBERG HJ

A COMPARISON OF ANALYSIS WITH EXPERIMENT FOR THE SAXTON PLUTONIUM CRITICAL EXPERIMENTS WESTINGHOUSE ELECTRIC CO., ATOMIC POWER DIV., PITTSBURGH, PA.

3 PAGES, TRANS. OF THE AMERICAN NUCLEAR SOCIETY 8(2), PAGES 439-41 (1965)

A SERIES OF DESIGN-ORIENTED CRITICALITY EXPERIMENTS WAS MADE WITH UO₂ FUELS ENRICHED TO 5.74 WT% U-235, AND PUO₂-UO₂ FUELS CONTAINING 6.6 WT% PUO₂ IN NATURAL UO₂. THE FOLLOWING FACTORS WERE INVESTIGATED-CRITICALITY, POWER-PEAKING EFFECTS, POWER SHARING BETWEEN THE TWO FUELS, CONTROL-ROD AND SOLUBLE-POISON WORTH, AND KINETICS CHARACTERISTICS.

*CRITICALITY EXPERIMENT + *PLUTONIUM DIOXIDE + *URANIUM DIOXIDE + CONTROL ROD WORTH + POISON, SOLUBLE + POWER DISTRIBUTION + REACTOR KINETICS + REACTOR, PRESSURIZED WATER + SAXTON

6-16535

CHEVERTON RD + BURKE OW + COLE TE

HFIR TRANSIENTS AND REACTIVITY ACCOUNTABILITY

OAK RIDGE NATIONAL LAB., TENN.

ORNL-TM-1747 +. 61 PAGES, 11 FIGURES, 14 TABLES, 8 REFERENCES, JANUARY 18, 1967

RESULTS FROM THE TRANSIENT CALCULATIONS AND COMPARISONS WITH SELECTED SPERT EXPERIMENTS INDICATE THAT THE HFIR CAN WITHSTAND A 1.3% DELTA K INSERTION ON A 0.030 SEC RAMP WITHOUT SIGNIFICANT CORE DAMAGE. THIS REACTIVITY RAMP REPRESENTS THE FLUX-TRAP-TARGET OPTIMUM VOID INSERTION, WHICH IS CONSIDERED TO BE THE MAXIMUM CREDIBLE REACTIVITY ACCIDENT. BASED ON THESE STUDIES, IT WAS CONCLUDED THAT THE HFIR SAFETY SYSTEM IS ADEQUATE FOR HANDLING REASONABLE REACTIVITY INSERTIONS AND THAT SHUTDOWN MARGINS ARE SUFFICIENT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*HFIR (HIGH FLUX ISOTOPE REACTOR) + ACCIDENT, MAXIMUM CREDIBLE (MCA) + REACTOR TRANSIENT + REACTOR, RESEARCH + REACTOR, TEST + SPERT, ALL (SPECIAL POWER EXCURSION RCTR. TEST) + VOID COEFFICIENT

6-16536

SANDQUIST GM

XEKE. A TWO-GROUP, TWO-DIMENSIONAL, MULTIREGIONAL COMPUTER CODE FOR EXAMINING FLUX STABILITY IN NUCLEAR REACTORS WITH XE-135

LOS ALAMOS SCIENTIFIC LABORATORY, LOS ALAMOS, NEW MEXICO

LA-3588 +. 95 PAGES, 6 FIGURES, SEPTEMBER 1, 1966

XEKE IS A FORTRAN IV CODED DIGITAL COMPUTER PROGRAM FOR EXAMINING THE STABILITY OF THE TIME BEHAVIOR OF THE NEUTRON-FLUX SPATIAL DISTRIBUTION IN A REACTOR CORE UNDER THE INFLUENCE OF XE-135. THE PROGRAM EMPLOYS TWO-ENERGY-GROUP DIFFUSION-TYPE NONLINEAR KINETIC EQUATIONS TO DESCRIBE THE NEUTRON FLUX AND SIMULATES THE TWO-DIMENSIONAL RADIAL-AXIAL TIME BEHAVIOR IN MULTIREGION REACTOR CORES WITH CYLINDRICAL GEOMETRY AND ANY TWO-DIMENSIONAL TIME BEHAVIOR IN MULTIREGION CORES WITH RECTANGULAR GEOMETRY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

COMPUTER, DIGITAL + DYNAMICS, NONLINEAR + SPACE DEPENDENT DYNAMICS + XENON OSCILLATION

6-16537

CHFZEM CG + HANSEN GH + HELMICK HH + SEALE RL

LOS ALAMOS COUPLED REACTOR EXPERIENCE

LOS ALAMOS SCIENTIFIC LAB., NEW MEXICO

LA-3494 +. 52 PAGES, 10 FIGURES, 3 TABLES, 33 REFERENCES, MARCH 1, 1966

INTERACTION AMONG THE CORES IN A CLUSTER OF NUCLEAR ROCKET REACTORS AND THE RESULTING KINETIC BEHAVIOR STUDIED ANALYTICALLY. LUMPED-PARAMETER MODELS OF TWO-CORE COUPLING WERE ANALYZED BY NEUTRON PULSING AND ROD OSCILLATION AND THEIR SALIENT FEATURES VERIFIED AT ZERO POWER BY A VARIETY OF MEASUREMENTS ON TWO KIWI-TYPE REACTORS OPERATING IN PROXIMITY. NO NEUTRONIC INSTABILITY WAS FOUND EITHER IN THE THEORETICAL MODELS OR IN THE EXPERIMENTAL BEHAVIOR. TEMPERATURE DEPENDENCE IS INTRODUCED INTO THE COUPLING MODEL BASED ON EXPERIMENTAL EVIDENCE FROM THE HIGH-POWER, FULL-FLOW OPERATION OF A SINGLE KIWI REACTOR.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-16537 *CONTINUED*
*COUPLED CORES + *KIWI + REACTOR STABILITY + SPACECRAFT + TEMPERATURE COEFFICIENT

6-16538
VIGIL JC
SOLUTION OF THE NONLINEAR REACTOR KINETICS EQUATIONS BY CONTINUOUS ANALYTIC CONTINUATION
LOS ALAMOS SCIENTIFIC LAB., NEW MEXICO
LA-3518 +. 137 PAGES, FIGURES, TABLES, MAY 1, 1966

A METHOD KNOWN AS CONTINUOUS ANALYTIC CONTINUATION IS PROPOSED FOR OBTAINING APPROXIMATE SOLUTIONS TO THE NONLINEAR REACTOR KINETICS EQUATIONS. THE METHOD IS DESCRIBED AND ITS PROPERTIES ARE INVESTIGATED THEORETICALLY. THIS METHOD IS ONE OF THE MOST POWERFUL AVAILABLE FOR OBTAINING APPROXIMATE SOLUTIONS TO SYSTEMS OF COUPLED NONLINEAR DIFFERENTIAL EQUATIONS OF ANY ORDER AND IS WELL SUITED FOR DIGITAL-COMPUTER APPLICATION. BASICALLY, THE METHOD CONSISTS IN EXPANDING THOSE VARIABLES WHICH ARE ANALYTIC FUNCTIONS OF TIME IN TAYLOR SERIES TO ORDER K OVER SUCCESSIVE INTERVALS IN THE TIME DOMAIN.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

COMPUTER, DIGITAL + DYNAMICS, NONLINEAR + GODIVA + GODIVA + PROMPT NEUTRON LIFETIME + SPERT, ALL (SPECIAL POWER EXCURSION RCTR. TEST)

6-16570 ALSO IN CATEGORIES 5 AND 8
TESTA FJ + PAVLIK J + IVINS RO
FUEL-COOLANT AND CLADDING-COOLANT INTERACTION STUDIES. CHEMICAL ENGINEERING DIVISION FROM SEMIANNUAL REPORT, JAN.-JUNE 1966
ARGONNE NATIONAL LAB., ILL.
ANL-7225 +. 2 PAGES, 1 FIGURE, PAGE 189-190 FROM NOVEMBER 1966

SMALL, HEATED SAMPLES OF 304 STAINLESS STEEL WERE DROPPED IN SODIUM OF TEMPERATURES BETWEEN 250 AND 820 C. NO CHEMICAL INTERACTION, BUT EXTENSIVE FRAGMENTATION. MEAN PARTICLE SIZE DECREASED WITH SODIUM TEMPERATURE. FRAGMENTATION IN LITHIUM SLIGHTLY LESS EXTENSIVE, IN POTASSIUM SUBSTANTIALLY THE SAME.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

CLAD + FUEL INTEGRITY + LITHIUM + POTASSIUM + SODIUM + STEEL, STAINLESS

6-16589 ALSO IN CATEGORIES 9 AND 4
ALMENAS KK
STUDY OF REFLECTOR-BASED CONTROL OF FAST NUCLEAR ROCKET REACTORS
ARGONNE NATIONAL LAB., ILL.
ANL-7099 +. 82 PAGES, 28 FIGURES, 26 TABLES, 19 REFERENCES, MAY 1966

COMPARATIVE EVALUATION VARIES REFLECTOR AND CONTROL MATERIALS SUITABLE FOR FAST-SPECTRUM, HIGH-PERFORMANCE CORES, FOCUSED PRIMARILY ON THE CONTROL POTENTIAL OF REFLECTOR-LOCATED CONTROL MECHANISMS. FOR MOST FAST-SPECTRUM CORE-REFLECTOR COMBINATIONS, A WELL-DEFINED OPTIMUM CONTROL-VANE DESIGN EXISTS. DEPENDENCE OF THIS OPTIMUM CONTROL SPAN ON CONTROL-VANE THICKNESS AND COMPOSITION WAS EXPLORED IN DETAIL. CALCULATIONAL METHODS FOR DETERMINING THE OPTIMUM VANE CONFIGURATION AND SUCH ASPECTS AS CONTROL-VANE HEATING ARE PRESENTED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

COMPUTER, DIGITAL + CONTROL, GENERAL + REACTOR, FAST + REFLECTOR + SPACECRAFT

6-16590
KJAER-PEDERSEN N
DYNAMIC ASPECTS OF BOILING-HEAVY-WATER NUCLEAR REACTORS. PART II
DANISH ATOMIC ENERGY COMMISSION, RISØ. RESEARCH ESTABLISHMENT, DENMARK
RISØ-129 +. 105 PAGES, 21 FIGURES, 11 REFERENCES, AUGUST 1966

THIS REPORT CONTAINS A DESCRIPTION AND A DISCUSSION OF THE DIGITAL-COMPUTER CODE BRENDA, PREPARED FOR THE DANISH DIGITAL COMPUTER GIER. THE CODE IS AN ATTEMPT TO SIMULATE SOME OF THE MAJOR PHYSICAL EFFECTS THAT DETERMINE THE DYNAMIC BEHAVIOUR OF A COOLING CHANNEL OF A BOILING-HEAVY-WATER REACTOR.

AVAILABILITY - MICROCARD EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM, WISCONSIN 54669

*REACTOR DYNAMICS + COMPUTER, DIGITAL + HEAVY WATER + REACTOR, BOILING WATER

6-16591

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-16591 *CONTINUED*
TOWNES RM + PRIMEAU DB + DURET MF
CALCULATION OF REACTIVITY COEFFICIENTS FOR A BLW LATTICE CELL
ATOMIC ENERGY OF CANADA LTD, CHALK RIVER (ONTARIO)
AECL-2649 +. 96 PAGES, 19 FIGURES, 29 TABLES, NOVEMBER 1966

THE INCREASE IN REACTIVITY AFTER A LOSS-OF-COOLANT ACCIDENT FOR A CONCEPTUAL 19-ELEMENT BLW LATTICE CELL WAS CALCULATED BY USING THE LATREP, PCOOF, AND METHUSELAH-II COMPUTER PROGRAMS. RESULTS FOR REACTIVITY COEFFICIENTS FROM THESE THREE PROGRAMS ARE COMPARED. THE OVERALL AGREEMENT BETWEEN THE PREDICTED RESULTS IS FAIR. RESULTS OF SOME SUBSIDIARY LATREP CALCULATIONS ARE PRESENTED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*ACCIDENT, LOSS OF COOLANT + *REACTIVITY COEFFICIENT + *REACTOR, BOILING WATER + COMPUTER, DIGITAL

6-16592
DUNKLEE AE + JEWELL CE
ZERO-POWER MEASUREMENTS ON A HIGH-FLUX DEMONSTRATION LATTICE
DU PONT DE NEMOURS (E.I.) AND CO., AIKEN, S. C. SAVANNAH RIVER LAB.
DP-1076 +. 65 PAGES, 24 FIGURES, 27 TABLES, 10 REFERENCES, APRIL 1967

IN PREPARATION FOR THE HIGH-FLUX LOADING OF A SAVANNAH RIVER PRODUCTION REACTOR, EXPERIMENTS WERE RUN IN THE SAVANNAH RIVER EXPONENTIAL AND CRITICAL FACILITIES TO DETERMINE AMONG OTHER THINGS, TEMPERATURE COEFFICIENTS, VOID COEFFICIENTS, AND LIGHT-WATER COEFFICIENTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL AND SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*SAVANNAH RIVER PRODUCTION REACTORS + CRITICAL ASSEMBLY FACILITY + DANGER COEFFICIENT + TEMPERATURE COEFFICIENT + VOID COEFFICIENT

6-16593
HARRISON JW
THE CALCULATION OF THE TIME DEPENDENCE OF THE FLUX DEPRESSION AND SPECIMEN TEMPERATURES IN HIGH BURN-UP IRRADIATION RIGS
ATOMIC ENERGY RESEARCH ESTABLISHMENT, HARWELL (ENGLAND)
AERE-R-5258 +. 40 PAGES, 1 FIGURE, 7 REFERENCES, SEPTEMBER 1966

A METHOD FOR DETERMINING THE TIME DEPENDENCE OF THE FLUX DEPRESSION, SPECIMEN FLUX, SPECIMEN COMPOSITION, AND THE RADIAL TEMPERATURE DISTRIBUTION IN A CYLINDRICAL FISSION SPECIMEN IS DESCRIBED. THE SOLUTION WAS PROGRAMMED FOR A HIGH-SPEED DIGITAL COMPUTER, AND THE PROGRAM AND A DESCRIPTION OF ITS USE IS INCLUDED.

AVAILABILITY - UNITED KINGDOM ATOMIC ENERGY AUTHORITY, 11 CHARLES II STREET, LONDON, S. W. 1

*COMPUTER, DIGITAL + *TEMPERATURE COEFFICIENT

6-16612 ALSO IN CATEGORY 18
QUESTION B-3--DISCUSSION OF STUDIES TO EVALUATE AND ANALYZE DYNAMIC CHARACTERISTICS OF MILLSTONE POINT THE CONNECTICUT LIGHT AND POWER COMPANY + THE HARTFORD ELECTRIC LIGHT COMPANY + WESTERN MASSACHUSETTS ELECTRIC COMPANY
7 PAGES, 3 FIGURES, 1 TABLE, 1966, PAGES B-3-1 TO B-3-7 FROM DESIGN AND ANALYSIS REPORT AMENDMENT NO. 1, DOCKET NO. 50-245, MILLSTONE NUCLEAR POWER STATION

PSAR CONTAINS DISCUSSION ON OVERALL DYNAMIC PLANT STABILITY CHARACTERISTICS AND DESCRIPTION OF ANALYTICAL MODEL. SPECIFIC QUANTITATIVE RESULTS OF DYNAMIC ANALYSES RELATED TO DESIGN AND OFF-NORMAL CONDITIONS WERE NOT INCLUDED. PROVIDE AND DISCUSS RESULTS OF STUDIES TO EVALUATE AND ANALYZE DYNAMIC CHARACTERISTICS OF MILLSTONE. INDICATE OVERALL DESIGN CRITERIA FOR ENSURING STATION STABILITY AND HOW DESIGN FEATURES WILL BE SELECTED TO IMPLEMENT OBJECTIVES OF CRITERIA. INCLUDE IDENTIFICATION OF PARTICULAR PARAMETERS FOR DESIGN VARIABLES AS GIVEN ON PAGE IX-2-5, THEIR DESIGN VALUES, AND ASSOCIATED GAIN AND PHASE MARGINS. CHANGES IN THESE PARAMETERS AS EFFECTED BY NORMAL MANEUVERING TRANSIENTS AND OFF-NORMAL CONDITIONS THAT COULD FURTHER CHANGE THEIR VALUES AND RELATED STABILITY MARGIN SHOULD BE INCLUDED. IN LATTER CASE, EFFECTS OF EITHER EQUIPMENT OR CONTROL SYSTEM FAILURE SHOULD BE CONSIDERED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*REACTOR STABILITY + AEC QUESTION + MILLSTONE POINT + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

6-16624 ALSO IN CATEGORY 18
QUESTION D-4--MODEL DIFFERENCES BETWEEN FUEL DROP AND ROD DROP ACCIDENTS
THE CONNECTICUT LIGHT AND POWER COMPANY + THE HARTFORD ELECTRIC LIGHT COMPANY + WESTERN MASSACHUSETTS ELECTRIC COMPANY
3 PAGES, 1966, PAGES D-4-1 TO D-4-3 FROM DESIGN AND ANALYSIS REPORT, AMENDMENT NO. 1, DOCKET NO. 50-245, MILLSTONE NUCLEAR POWER STATION

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-16624 *CONTINUED*

DISCUSS THE MODEL DIFFERENCES BETWEEN THE FUEL-DROP AND ROD-DROP ACCIDENTS. IN PARTICULAR, WHAT PHYSICAL OR FLUX-SHAPE PARAMETERS VARY TO EXPLAIN THE FACT THAT THE TOTAL REACTIVITY INSERTED AND THE DROP RATE POSTULATED FOR THE REFUELING ACCIDENT CANNOT BE SUPERIMPOSED ON FIGURE 109.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACCIDENT, CONTROL ROD EJECTION + *ACCIDENT, REFUELING + *ANALYTICAL MODEL + MILLSTONE POINT + REACTOR, BOILING WATER + RESPONSE TO AEC QUESTION + SAFETY ANALYSIS REPORT, PRELIMINARY

6-16632

ALSO IN CATEGORIES 5 AND 7

BAIN AS

MICROSCOPIC, AUTORADIOGRAPHIC AND FUEL/SHEATH HEAT TRANSFER STUDIES ON UO₂ FUEL ELEMENTS
ATOMIC ENERGY OF CANADA LIMITED, CHALK RIVER, ONTARIO
AECL-2588 +. 50 PAGES, 32 FIGURES, 23 TABLES, 24 REFERENCES, JUNE 1966

HEAT-TRANSFER MEASUREMENTS WERE MADE FROM UO₂ FUEL TO STAINLESS AND ZIRCALOY CLADDING IN THE NRX REACTOR. DATA AND CONCLUSIONS ARE PRESENTED. (1) HEAT TRANSFER COEFFICIENTS BETWEEN FUEL AND CLADDING INCREASED WITH DECREASED CLEARANCES. (2) FOR DIAMETRAL CLEARANCE UP TO 7.5%, THE MAJORITY OF HEAT TRANSFER WAS BETWEEN MATING ASPERITIES OF FUEL AND SHEATH. MICROSCOPIC AND AUTORADIOGRAPHIC STUDIES WERE MADE OF THE FUEL ELEMENTS.

AVAILABILITY - ATOMIC ENERGY OF CANADA LIMITED, CHALK RIVER, ONTARIO, \$2.00 COPY

CLAD + FAILURE, FUEL ELEMENT + FUEL ELEMENT + HEAT TRANSFER + HEAT TRANSFER EXPERIMENT + HEAT TRANSFER, CONDUCTION + HOT SPOT + MASS TRANSFER + NRX (CANADIAN NATURAL U-HEAVY WATER REACTOR)

6-16633

ALSO IN CATEGORY 5

HESSON GM + FITZSIMMONS DE + BATCH JM

EXPERIMENTAL BOILING BURNOUT HEAT FLUXES WITH AN ELECTRICALLY HEATED 19-ROD BUNDLE TEST SECTION
BATTELLE-NORTHWEST, RICHLAND, WASHINGTON
BNWL-206 +. 47 PAGES, 21 FIGURES, 5 TABLES, DECEMBER 1965

76 BOILING BURNOUT EXPERIMENTS WERE MADE ON AN ELECTRICALLY HEATED, 19-ROD MODEL FUEL ELEMENT MADE OF 6.3-FT-LONG X 0.612-IN.-O.D. RODS SPACED 0.04 IN. APART. THE MODEL WAS COOLED BY WATER AND STEAM AT PRESSURES OF 1000 AND 1200 PSIA, WITH INLET CONDITIONS VARYING FROM 300 F TO 400 QUALITY. FLOW ROUGHNESS ON THE TUBE WALL INCREASED THE BOILING BURNOUT FROM 10 TO 35% AT THE SAME OUTLET ENTHALPY. BOILING BURNOUT OCCURRED ON ONE OF THE INNER SEVEN RODS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

BURNOUT HEAT FLUX + FUEL ELEMENT + HEAT TRANSFER AUGMENTATION + HEAT TRANSFER EXPERIMENT + HEAT TRANSFER, BOILING

6-16634

ALSO IN CATEGORY 5

GOUSE SW

AN INDEX TO THE TWO-PHASE GAS-LIQUID FLOW LITERATURE. PART II
MASSACHUSETTS INSTITUTE OF TECHNOLOGY, MECHANICAL ENGINEERING DEPT.
AD-607,180 + DSR-8734-4 +. 150 PAGES, 2 FIGURES, SEPTEMBER 1964

REFERENCES ON CERTAIN TYPES OF TWO-PHASE GAS-LIQUID FLOW PHENOMENA WERE VERIFIED, LISTED, AND INDEXED BY SUBJECT AND PRINCIPAL AUTHOR. THIS LITERATURE SURVEY WAS MADE AS ONE PHASE OF A PROGRAM TO DETERMINE THE STATE OF THE ART IN TWO-PHASE GAS-LIQUID FLOW PHENOMENA. IT IS EXPECTED THAT THE PROGRAM WILL CONTINUE WITH THE PUBLICATION OF ADDITIONAL CRITICAL REVIEWS AND EVALUATIONS OF VARIOUS PROBLEM AREAS IN TWO-PHASE FLOW AS WELL AS WITH THE PUBLICATION OF PART III OF THE INDEX. THE PROBLEM AREAS OF CONDENSATION, CAVITATION, AND ATOMIZATION WERE GENERALLY EXCLUDED, EXCEPT THROUGH ERROR OR WHEN REFERENCES WERE SO BASIC AS TO BE GENERALLY USEFUL.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

RADIOGRAPHY + FLOW THEORY AND EXPERIMENTS + FLOW, TWO PHASE + HEAT TRANSFER, TWO PHASE

6-16635

ALSO IN CATEGORIES 5 AND 12

GOUSE SW

AN INDEX TO THE TWO-PHASE GAS-LIQUID FLOW LITERATURE. PART III
MASSACHUSETTS INSTITUTE OF TECHNOLOGY, MECHANICAL ENGINEERING DEPT.
AD-630,295 + DSR-8734-6 + N66-25,613 +. 100 PAGES, 2 FIGURES, REFERENCES, JANUARY 1966

1453 REFERENCES ON CERTAIN TYPES OF TWO-PHASE GAS-LIQUID FLOW PHENOMENA WERE VERIFIED, LISTED, AND INDEXED BY SUBJECT AND PRINCIPAL AUTHOR. THIS LITERATURE SURVEY WAS CARRIED OUT AS ONE PHASE OF A PROGRAM TO DETERMINE THE STATE OF THE ART IN TWO-PHASE GAS-LIQUID FLOW PHENOMENA. THIS IS THE FINAL REPORT OF A PROGRAM THAT HAS SEEN THE PUBLICATION OF TWO PRIOR INDEXES, TOTALING 5235 REFERENCES ON TWO-PHASE GAS-LIQUID FLOW. THE PROBLEM AREAS OF CONDENSATION, CAVITATION, AND ATOMIZATION WERE GENERALLY EXCLUDED, EXCEPT THROUGH ERROR OR WHEN REFERENCES

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-16635 *CONTINUED*

WERE SO BASIC AS TO BE GENERALLY USEFUL. A FREQUENCY-OF-CITATION ANALYSIS WAS MADE TO DETERMINE WHICH OF THE 5235 REFERENCES HAD BEEN MOST FREQUENTLY CITED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

BURNOUT HEAT FLUX + DNB (DEPARTURE FROM NUCLEATE BOILING) + FLOW STABILITY + FLOW THEORY AND EXPERIMENTS + FLOW, ANNULAR + FLOW, MIST + FLOW, TWO PHASE + HEAT TRANSFER

6-16727 ALSO IN CATEGORY 18

QUESTION 6 - REACTIVITY EFFECTS DUE TO FUEL RELOCATION
THE CONNECTICUT LIGHT AND POWER CO. + THE HARTFORD ELECTRIC LIGHT CO. + WESTERN MASSACHUSETTS ELECTRIC COMPANY

6 PAGES, PAGE 6-1 THRU 6-6 OF DESIGN AND ANALYSIS REPORT, AMENDMENT NUMBER 3, ANSWERS TO AEC QUESTIONS, (MILLSTONE NUCLEAR POWER STATION), DOCKET NO. 50-245, FEBRUARY 9, 1966

WHAT ARE THE POSITIVE REACTIVITY EFFECTS DUE TO FUEL RELOCATION. CAN THIS PHENOMENON AFFECT REACTIVITY TRANSIENTS LIKE THE ROD-EJECTION ACCIDENT SIGNIFICANTLY. (ANSWER) LOCAL FUEL EFFECTS MIGHT BE REDUCTION OF DENSITY (MINUS 4 CENTS), ROD BOWING (PLUS 13 CENTS), DISPERSION OF FUEL INTO THE MODERATOR (MINUS 80 CENTS). IN A HYPOTHETICAL ROD-EJECTION ACCIDENT, FUEL DISPERSED WOULD RESULT IN \$5 NEGATIVE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACCIDENT, CONTROL ROD EJECTION + *REACTIVITY EFFECT, SLUMP + FUEL ELEMENT BOWING + MILLSTONE POINT + REACTOR, BOILING WATER + RESPONSE TO AEC QUESTION + SAFETY ANALYSIS REPORT, PRELIMINARY

6-16730 ALSO IN CATEGORY 9

KIER PH

II-3. INITIAL CRITICAL EXPERIMENTS OF THE EXPERIMENTAL BOILING WATER REACTOR (EBWR) PLUTONIUM RECYCLE PROGRAM

ARGONNE NATIONAL LAB., ILL.

ANL-7210 +. 6 PAGES, 6 TABLES, 10 REFERENCES, PAGE 29-34 OF ANL REACTOR PHYSICS DIVISION ANNUAL REPORT, JULY 1, 1965 TO JUNE 30, 1966, DECEMBER 1966

IN THE PLUTONIUM-LOADED EBWR, DETERMINATIONS WERE MADE OF CONTROL-ROD WORTH, BORIC ACID WORTH, AND UNIFORM TEMPERATURE COEFFICIENT OF THE UN-RODDED CRITICAL AND OF THE FULL-LOADING AND OPERATING CONSTRAINT AND SHUTDOWN MARGIN. MOSTLY EXPERIMENTAL, WITH CHECKS BY CALCULATIONS. AN INVERSE ROD-WORTH EFFECT WAS FOUND, WHICH IS, UNDER SOME CONDITIONS OF REACTIVITY, INCREASED WITH ROD INSERTION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*EBWR (EXPERIMENTAL BOILING WATER REACTOR) + *PLUTONIUM DIOXIDE + CHEMICAL SHIM + COMPUTER, DIGITAL + CONTROL ROD WORTH + CRITICALITY EXPERIMENT + EXPERIMENT, GENERAL + REACTOR, BOILING WATER + SHUTDOWN MARGIN + TEMPERATURE COEFFICIENT

6-16732 ALSO IN CATEGORY 9

ARGONNE ADVANCED RESEARCH REACTOR

ARGONNE NATIONAL LAB., ILL.

ANL-7210 +. 58 PAGES, 64 FIGURES, 29 TABLES, 41 REFERENCES, SECTION II-8 THRU II-21 PAGES 47-104 OF ANL REACTOR PHYSICS DIVISION ANNUAL REPORT, JULY 1, 1965 TO JUNE 30, 1966, DECEMBER 1966

REGARDING THE PHYSICS-REFERENCE AARR WITH STAINLESS STEEL-URANIUM OXIDE FUEL ELEMENTS, CRITICAL EXPERIMENTS FURNISHED, AMONG OTHER THINGS, INFORMATION ON THE FOLLOWING ITEMS OF SAFETY INTEREST - CONTROL-BLAD WORTH, PROMPT-NEUTRON LIFT-TIME, VOID WORTH, TEMPERATURE COEFFICIENT, MATERIAL-REACTIVITY WORTH, START-UP SOURCE REQUIREMENTS, AND INSTRUMENT RESPONSE. THEORETICAL CALCULATIONS ARE COMPARED WITH THE EXPERIMENTS AND DESCRIBED IN DETAIL, PARTICULARLY REGARDING THE POSITIVE VOID COEFFICIENT IN THE INTERNAL THERMAL COLUMN AND EFFECTS OF TARGETS IN THIS COLUMN. FOR ANALYSIS OF A HYPOTHETICAL ACCIDENT, SEE SPECIAL ABSTRACT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*AARR (ARGONNE ADVANCED RESEARCH REACTOR) + *CRITICALITY EXPERIMENT + CONTROL ROD WORTH + INSTRUMENTATION, STARTUP RANGE + PROMPT NEUTRON LIFETIME + REACTOR, RESEARCH + STEEL, STAINLESS + TEMPERATURE COEFFICIENT + URANIUM OXIDE + VOID COEFFICIENT

6-16733 ALSO IN CATEGORY 5

SHAFTMAN DH

II-22. ARGONNE ADVANCED RESEARCH REACTOR CALCULATIONS-ANALYSES OF HYPOTHETICAL REACTOR ACCIDENTS
ARGONNE NATIONAL LAB., ILL.

ANL-7210 +. 6 PAGES, 1 TABLE, 6 REFERENCES, SECTION II-22 PAGES 104-109 OF ANL REACTOR PHYSICS DIVISION ANNUAL REPORT, JULY 1, 1965 TO JUNE 30, 1966, DECEMBER 1966

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-16733 *CONTINUED*

CONCERNS THE AARR WITH STAINLESS-STEEL-URANIUM OXIDE FUEL ELEMENT, MCA RADIATION DOSES, CONTROL-SYSTEM MALFUNCTION, COLD-WATER ACCIDENT VOIDINGS, OR FLOODING OF EXPERIMENTAL FACILITIES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*AARR (ARGONNE ADVANCED RESEARCH REACTOR) + *ACCIDENT ANALYSIS + ACCIDENT MODEL + ACCIDENT, COLD COOLANT + ACCIDENT, CONTROL ROD WITHDRAWAL + ACCIDENT, FUEL SLUMP + ACCIDENT, HYPOTHETICAL + ACCIDENT, MAXIMUM CREDIBLE (MCA) + ACCIDENT, REACTIVITY + REACTOR, RESEARCH + STEEL, STAINLESS + URANIUM OXIDE + VOID COEFFICIENT

6-16734

SODIUM VOID

ARGONNE NATIONAL LAB., ILL.

ANL-7210 +. 14 PAGES, 5 FIGURES, 8 TABLES, 24 REFERENCES, SECTION III-3 THRU III-6, PAGES 116-129 OF ANL REACTOR PHYSICS DIVISION ANNUAL REPORT, JULY 1, 1965 TO JUNE 30, 1966, DECEMBER 1966

CALCULATION OF SODIUM-VOID COEFFICIENTS IN LARGE FAST-NEUTRON CARBIDE CORES ASSEMBLIES NO. 2 AND 3 OF ZPR-6, OF EFFECTS OF THIN-SLAB HETEROGENEITIES ON NONLEAKAGE REACTIVITY COMPONENT OF SODIUM VOIDING, OF SPECTRAL COMPONENT OF SODIUM-VOID EFFECT AS A FUNCTION OF SODIUM CONTENT, OF EFFECT OF PARAMETER UNCERTAINTIES ON SODIUM-VOID EFFECT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*REACTOR, FAST + CRITICAL ASSEMBLY FACILITY + SODIUM COEFFICIENT + URANIUM CARBIDE + VOID COEFFICIENT + ZPR 6 (ANL ZERO POWER REACTOR)

6-16735

ZPR ASSEMBLY

ARGONNE NATIONAL LAB., ILL.

ANL-7210 +. 48 PAGES, 50 FIGURES, 27 TABLES, 76 REFERENCES, SECTION III-7 THRU III-15, PAGES 129-176 OF ANL REACTOR PHYSICS DIVISION ANNUAL REPORT, JULY 1, 1965 TO JUNE 30, 1966, DECEMBER 1966

DOPPLER-EFFECT MEASUREMENTS IN A ZONED, FAST, URANIUM CARBIDE CORE ZPR-6, ASSEMBLY NO. 42, COMPARISON OF MEASUREMENTS IN A LONG CORE (ZPR-6 ASSEMBLY 5) AND IN A SMALL APPROPRIATELY ZONED CORE (ZPR-6 ASSEMBLY 42) OF SUCH PARAMETERS AS SODIUM VOID COEFFICIENT, DOPPLER COEFFICIENT AND REACTIVITY WORTHS OF SAMPLES, MEASUREMENTS OF REACTIVITY REMOVAL RATES FOR ZPR-6 ASSEMBLY 42, CALCULATION OF CONTROL WORTHS AND DOPPLER EFFECTS IN ZPR-3 ASSEMBLY 48, COMPARISON OF DOPPLER COEFFICIENT AND SODIUM VOID COEFFICIENT OF METAL, OXIDE AND CARBIDE FRR-II DRIVER FUELS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*DOPPLER EFFECT + *REACTOR, FAST + *SODIUM COEFFICIENT + *VOID COEFFICIENT + ACCIDENT, REACTIVITY + CRITICAL ASSEMBLY FACILITY + DANGER COEFFICIENT + EBR 1 AND 2 (EXPERIMENTAL BREEDER REACTORS) + PLUTONIUM + REACTOR, BREEDER + REACTOR, LIQUID METAL COOLED + URANIUM CARBIDE + ZPR 6 (ANL ZERO POWER REACTOR)

6-16736

FARET AND ZPR-9

ARGONNE NATIONAL LAB., ILL.

ANL-7210 +. 29 PAGES, 9 FIGURES, 24 TABLES, 26 REFERENCES, SECTION III-17 THRU III-21, PAGES 180-208 OF ANL REACTOR PHYSICS DIVISION ANNUAL REPORT, JULY 1, 1965 TO JUNE 30, 1966, DECEMBER 1966

CONTROL-ROD WORTH, WORTH OF FUEL AND STRUCTURAL MATERIALS IN FARET CRITICAL ASSEMBLIES, CONTROL-MATERIAL WORTHS, ROSSI ALPHA AND PROMPT NEUTRON LIFETIME IN ZPR-9, A MCKUP FOR THE ARGONNE FAST TUNGSTEN ROCKET REACTOR.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*FFTF (TP) + CONTROL ROD WORTH + PROMPT NEUTRON LIFETIME + REACTOR, BREEDER + REACTOR, FAST + REACTOR, LIQUID METAL COOLED + ROSSI ALPHA + SPACECRAFT + TUNGSTEN

6-16737

ALSO IN CATEGORY 9

PERSIANI PJ + SMITH RR + OKRENT D

III-22. PHYSICS MEASUREMENTS IN AN OPERATING FAST BREEDER POWER REACTOR

ARGONNE NATIONAL LAB., ILL.

ANL-7210 +. 2 PAGES, 1 REFERENCE, PAGE 208 AND 209 OF ANL REACTOR PHYSICS DIVISION ANNUAL REPORT, JULY 1, 1965 TO JUNE 30, 1966, DECEMBER 1966

ABSTRACT OF PAPER BY P. J. PERSIANI, ET AL., AT ENEA SEMINAR, ROME, MAY 1966 ON MEASUREMENT OF DOPPLER EFFECT, AXIAL FUEL MOTION, SODIUM TEMPERATURE, VOID EFFECT, TOTAL CORE EXPANSION, AND DELAYED NEUTRON FRACTION.

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-16737 *CONTINUED*

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

DELAYED NEUTRON + DOPPLER EFFECT + INSTRUMENTATION, IN CORE + NOISE ANALYSIS + OSCILLATOR, REACTIVITY + REACTIVITY EFFECT, EXPANSION + REACTOR, FAST + SODIUM COEFFICIENT + TEMPERATURE COEFFICIENT + VOID COEFFICIENT

6-16738

FAST BREEDER REACTOR

ARGONNE NATIONAL LAB., ILL.

ANL-7210 +. 4 PAGES, 3 TABLES, 8 REFERENCES, SECTION III-23 AND III-24, PAGES 209-212 OF ANL REACTOR PHYSICS DIVISION ANNUAL REPORT, JULY 1, 1965 TO JUNE 30, 1966, DECEMBER 1966

FOR A 1000-MWE METAL-FUELED FAST BREEDER, DOPPLER AND COOLANT-SODIUM REACTIVITY COEFFICIENTS BECOME MORE NEGATIVE IF MORE TI OR ZR IS USED IN THE FUEL ALLOYS. CALCULATIONS OF DOPPLER AND SODIUM VOID COEFFICIENT FOR A 10,000-MWTH FAST, SODIUM-COOLED BREEDER.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*REACTOR, FAST + DOPPLER EFFECT + REACTOR, DESALINATION + SODIUM COEFFICIENT

6-16739

ALSO IN CATEGORY 5

TREAT

ARGONNE NATIONAL LAB., ILL.

ANL-7210 +. 44 PAGES, 36 FIGURES, 10 TABLES, 51 REFERENCES, SECTION IV-1 THRU IV-11, PAGES 217-260 OF ANL REACTOR PHYSICS DIVISION ANNUAL REPORT, JULY 1, 1965 TO JUNE 30, 1966, DECEMBER 1966

IV-1. CAPABILITIES OF THE PRESENT TRANSIENT REACTOR TEST (TREAT) FACILITY CORE AS A FAST LOOP MELTDOWN FACILITY. IV-2. MELTDOWN EXPERIMENTS USING THE MARK I INTEGRAL SODIUM LOOP. IV-3. ANALYSES OF SINGLE-PIN LOOP MELTDOWN EXPERIMENTS. IV-4. PROPERTIES OF IRRADIATED UO₂ PINS PRIOR TO (TREAT) TRANSIENTS. IV-5. PHOTOGRAPHIC FAST REACTOR SAFETY EXPERIMENTS ON IRRADIATED OXIDE PINS AT THE TREAT FACILITY. IV-6. TRANSIENT IN-PILE TESTS ON W-UO₂ CERMET POCKET FUEL SAMPLES. IV-7. DESIGN OF THE MARK II INTEGRAL TREAT FACILITY SODIUM LOOP. IV-8. CALIBRATION MOCK-UP OF THE LARGE LOOP TEST SECTION FOR TREAT. IV-9. TRANSIENT RESPONSE OF STANDOFF PRESSURE TRANSDUCER ASSEMBLIES ON TREAT FACILITY INTEGRAL SODIUM LOOPS. IV-10. EXTENSIBLE, MULTIPURPOSE VACUUM GLOVE BOX. IV-11. EXPERIMENTAL RESULTS AND IMPROVEMENTS IN THE FAST NEUTRON HODOSCOPE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*FAILURE, FUEL ELEMENT + *TREAT (TRANSIENT TEST REACTOR FACILITY) + REACTOR, FAST + REACTOR, GRAPHITE MODERATED + REACTOR, TEST + SODIUM + SPACECRAFT + TUNGSTEN + URANIUM OXIDE

6-16740

HEAT TRANSFER

ARGONNE NATIONAL LAB., ILL.

ANL-7210 +. 21 PAGES, 19 FIGURES, 2 TABLES, 36 REFERENCES, SECTION IV-13 THRU IV-18, PAGES 269-289 OF ANL REACTOR PHYSICS DIVISION ANNUAL REPORT, JULY 1, 1965 TO JUNE 30, 1966, DECEMBER 1966

IV-13. TRANSIENT VAPORIZATION OF SODIUM IN REACTOR COOLANT CHANNELS. IV-14. CONVECTIVE HEAT OR MASS TRANSFER WITH PHASE CHANGES. IV-15. THEORETICAL PREDICTION OF THERMODYNAMIC AND TRANSPORT PROPERTIES OF METAL VAPORS. IV-16. EQUATION OF STATE OF REACTOR MATERIALS AT HIGH PRESSURES AND TEMPERATURES. IV-17. A MODIFIED EQUATION OF STATE FOR HYDRODYNAMIC CALCULATIONS IN THE AX-1 NUMERICAL PROGRAM. IV-18. PROPERTIES OF REFRACTORY CERAMICS AT EXTREMELY HIGH TEMPERATURES. UC LIQUID EXPANSION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

COMPUTER, DIGITAL + EQUATION OF STATE + HYDRAULIC ANALYSIS + METAL + PHASE CHANGE + REACTOR TRANSIENT + SODIUM + TEMPERATURE TRANSIENT + THERMAL ANALYSIS + URANIUM CARBIDE + VAPOR, VAPOR PRESSURE

6-16741

ALSO IN CATEGORY 5

FISCHER GJ + MENELEY DA + VOLODKA LK

IV-22. FAST REACTOR MELTDOWN ACCIDENT ANALYSIS CODE, PREAX

ARGONNE NATIONAL LAB., ILL.

ANL-7210 +. 2 PAGES, 1 FIGURE, 5 REFERENCES, SECTION IV-22, PAGE 299 AND 300 OF ANL REACTOR PHYSICS DIVISION ANNUAL REPORT, JULY 1, 1965 TO JUNE 30, 1966, DECEMBER 1966

THE PREAX CODE INCLUDES A SIMPLE PRELIMINARY TREATMENT OF THE MELTDOWN PHASE OF A FAST-REACTOR ACCIDENT, WRITTEN FOR DIRECT APPLICATION TO THE ZPR TYPE OF LATTICE STRUCTURE. THE STANDARD POINT-KINETICS CODE OF ANL, R-101, AND THE AX-1 CODE FOR CALCULATION OF NEUTRONIC AND HYDRODYNAMIC BEHAVIOR DURING VIOLENT DISASSEMBLY, ARE SUBROUTINES WITHIN PREAX. PREAX ITERATES BETWEEN THE MELT ROUTINE AND THE KINETICS ROUTINE THROUGHOUT THE PRE-BURST HISTORY. A HIGHLY CONDENSED SUMMARY FLOW DIAGRAM OF THE OPERATION OF CONTROL IN PREAX IS GIVEN.

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-16741 *CONTINUED*

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

ACCIDENT ANALYSIS + COMPUTER, DIGITAL + CRITICAL ASSEMBLY FACILITY + FUEL MELTDOWN + REACTOR, FAST + ZPP 3 (ANL ZERO POWER REACTOR)

6-16742

FLUX CALCULATIONS

ARGONNE NATIONAL LAB., ILL.

22 PAGES, 14 FIGURES, 1 TABLE, 41 REFERENCES, SECTION VI-10,11, AND 12, PAGE 370-384 AND SECTION VI-22,23, AND 24, PAGE 409-415 OF ANL REACTOR PHYSICS DIVISION ANNUAL REPORT, JULY 1, 1965 TO JUNE 30, 1966, DECEMBER 1966

VI-10. QUASISTATIC TREATMENT OF SPACE-DEPENDENT REACTOR TRANSIENTS. VI-11. SPACE-DEPENDENT KINETIC CALCULATIONS USING THE WIGLE CODE. VI-12. REACTOR SYSTEMS ANALYSIS AND HYBRID COMPUTERS. VI-22. EFFECT OF THE FLUCTUATIONS IN COLLISION DENSITY ON FAST-REACTOR DOPPLER EFFECT CALCULATIONS. VI-23. AN APPROXIMATE CALCULATION OF SPACE-DEPENDENT FLUX USING A VARIATIONAL PRINCIPLE. VI-24. NEUTRON-WAVE ANALYSIS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

COMPUTER, ANALOG + COMPUTER, DIGITAL + DOPPLER EFFECT + SPACE DEPENDENT DYNAMICS

6-16745

ALSO IN CATEGORY 18

BARRY RF

PWR CONTROL MANAGEMENT

WESTINGHOUSE ELECTRIC CORPORATION, ATOMIC POWER DIVISION

WCAP-2921 +. 114 PAGES, APRIL 1966

PURPOSES - (1) DEVELOP APPROPRIATE COMPUTATIONAL MODELS, (2) FIND CONTROL-ROD PROGRAM USING QUARTER-LENGTH CONTROL RODS FOR A HYPOTHESIZED (2750 MWTH, 12-FT-LONG FUEL ELEMENTS) INHERENTLY UNSTABLE PWR. DIFFERENCE FROM STRAWBRIDGE ET AL. - EFFORT TO IMPROVE METHODS, REACTOR IS UNSTABLE INHERENTLY, MODES OF OSCILLATION OTHER THAN AXIAL XENON. CONCLUSION - PART-LENGTH RODS DAMPEN AXIAL XENON OSCILLATION WHEN TOP/BOTTOM POWER IS BALANCED BY ROD MOVEMENT EVERY FEW HR, EVEN WHEN A DIURNAL OR RANDOM-LOAD VARIATION IS USED. FULL-LENGTH RODS STABILIZE AZIMUTHAL OSCILLATION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*CONTROL ROD PROGRAM + *MATHEMATICAL TREATMENT + *XENON OSCILLATION + ANALYTICAL MODEL + CONTROL ROD, SHIM SAFETY + POWER DISTRIBUTION + REACTOR STABILITY + REACTOR, PRESSURIZED WATER

6-16751

ALSO IN CATEGORY 18

FRENCH PJ + STRAWBRIDGE LE + BARRY RF

EFFECT OF THE MODERATOR COEFFICIENT ON CORE STABILITY

WESTINGHOUSE ELECTRIC CORP., ATOMIC POWER DIVISIONS, PITTSBURGH, PA.

WCAP-2987 +. 38 PAGES, 3 FIGURES, 15 REFERENCES, SEPTEMBER 1966, DOCKET NOS. 50-250/251

AN ANALYTICAL MODEL IS PROPOSED TO INVESTIGATE EFFECTS OF A POSITIVE MODERATOR COEFFICIENT ON SPATIAL STABILITY OF PWR POWER DISTRIBUTION AND FLOW DISTRIBUTION. ALTHOUGH LEODINEGG-CRITERION FLOW INSTABILITIES ARE NOT FOUND IN NONBOILING CHANNELS, COUPLING OF FLOW VARIATION WITH POSITIVE MODERATOR COEFFICIENT IS CONSIDERED TO DERIVE A STABILITY CRITERION INVOLVING COOLANT-FORCE BALANCE AND FUEL-ROD-COOLANT HEAT-BALANCE EQUATIONS. THE THRESHOLD MODERATOR COEFFICIENT DERIVED IS PLUS 1.5×10 TO THE MINUS 4TH PER DEG F.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ANALYTICAL MODEL + *MODERATOR COEFFICIENT + *REACTOR STABILITY + FLOW STABILITY + POWER DISTRIBUTION + REACTOR, PRESSURIZED WATER + TURKEY POINT 3 AND 4 + XENON OSCILLATION

6-16755

ALSO IN CATEGORY 17

PICONE LF + TAYLOR GR + IMPINK AJ + RAJAGOPAL V

REACTOR FOULING EXPERIMENT

WESTINGHOUSE ELECTRIC CORP., PITTSBURGH, PA. ATOMIC POWER DIVISION

WCAP-3269-58 +. 115 PAGES, 38 FIGURES, 18 TABLES, 4 REFERENCES, JULY 1966

WHILE SAXTON AND YANKEE EXPERIENCE HAD DISPELLED FEAR OF ACCIDENTAL BORON HIDEOUT, A TEST OF DEPOSITION DURING DELIBERATE HIGH CRUD CONDITIONS WAS CONSIDERED NECESSARY. OUT-OF-PILE TESTS SHOWED THAT DEPOSITION WAS DEFINITELY RELATED TO THE DEGREE OF NUCLEATE BOILING AND PROVIDED CONFIDENCE THAT THE BOTTOM-DRIVEN CONTROL RODS WOULD NOT BE AFFECTED. INJECTION OF 458 G OF $\text{Fe}(\text{OH})_2$ AT POWER LOST 0.3% REACTIVITY (HALF DUE TO PH EFFECT), AND RECOVERY STARTED WITHIN 12 HR WAS COMPLETE AT 2 DAYS. NOISE AND ROD-OSCILLATOR MEASUREMENTS INDICATE THAT RECOVERY WAS DUE TO CRUD AND (PERHAPS FLUX) REDISTRIBUTION. WHILE EVIDENCE INDICATED RELATIONS BETWEEN REACTIVITY AND CRUD AND/OR PH, NO EVIDENCE INDICATED A POWER-REVERSIBLE BORON HIDEOUT.

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-16755 *CONTINUED*

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*IN PILE EXPERIMENT + *OUT OF PILE LOOPS AND EXPERIMENTS + *POISON, SOLUBLE +
*REACTIVITY EFFECT, ANOMALOUS + *SURFACE FILM DEPOSIT + COOLANT CHEMISTRY + NUCLEATE BOILING +
OPERATIONS REPORT, ANALYSIS + REACTOR, PRESSURIZED WATER + SAXTON

6-16756 ALSO IN CATEGORIES 9 AND 17

PICONE LF + TAYLOR GR + IMPINK AJ + RAJOGOPAL V

DYNAMIC MEASUREMENTS DURING CRUD INJECTION TESTS

WESTINGHOUSE ELECTRIC CORP., PITTSBURGH, PA. ATOMIC POWER DIVISION

WCAP-3269-58 +. 13 PAGES, 10 FIGURES, 1 TABLE, PAGES 56-69 OF REACTOR FOULING EXPERIMENT, JULY 1966

NOISE SPECTRA INDICATED THAT CRUD INJECTION ALMOST IMMEDIATELY DECREASED NUCLEATE BOILING IN CENTRAL HOT REGIONS AND INCREASED NUCLEATE BOILING IN GENERAL HOT REGIONS AS THE 12-CPS PEAK REDUCED AND THE 16-CPS PEAK INCREASED. ROD OSCILLATOR ON DOPPLER COEFFICIENT AND FUEL TIME CONSTANT GAVE SIMILAR RESULTS AS PH TESTS. INCREASING PH REDUCED DOPPLER COEFFICIENT AND FUEL TIME CONSTANT, WHILE CRUD INJECTION DECREASED BOTH. (THE IMPLICATION IS THAT BOTH ACT THROUGH SURFACE DEPOSITS WHICH AFFECT THE FUEL-TO-COOLANT CONDUCTANCE MORE THAN THE FUEL-TO-CLAD CONDUCTANCE).

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*DOPPLER COEFFICIENT + *REACTIVITY EFFECT, ANOMALOUS + *SURFACE FILM DEPOSIT + COOLANT CHEMISTRY +
NOISE ANALYSIS + NUCLEATE BOILING + OPERATIONS REPORT, ANALYSIS + OSCILLATOR, REACTIVITY +
REACTOR, PRESSURIZED WATER + SAXTON

6-16757 ALSO IN CATEGORIES 5 AND 17

PRESSURIZED WATER REACTOR PROJECT. TECHNICAL PROGRESS REPORT FOR THE PERIOD OCTOBER 22, 1966 TO JANUARY 20, 1967

RETTIS ATOMIC POWER LABORATORY, PITTSBURGH, PA.

WAPD-MRP-119 +. 109 PAGES, FIGURES, TABLES, JANUARY 1967

(PAGE 1) - LB STEAM GENERATOR DEVELOPED A 150-GPM LEAK 7 WEEKS AFTER EARLIER TUBE PLUGGING. (PAGE 5) - SEED-2 HEATUP/COOLDOWN-RATE LIMITATIONS WERE ESTABLISHED. (PAGE 24) - COOLANT PH ABOVE 10 CONTINUES TO HOLD BACK INCREASES IN CORE PRESSURE DROP. (PAGE 51) - SWING-LOAD OPERATIONS (100/20 MWE) AND PRESENT CONTROL-ROD PROGRAM CAUSES POWER DISTRIBUTIONS PEAKED TO THE CORE BOTTOM WHEN GROUP-2 RODS ARE FULLY WITHDRAWN AND GROUP-3 RODS PARTIALLY WITHDRAWN. TWO ADVERSE EFFECTS ARE (1) POWER PEAK IS HIGH WHERE DEPLETION IS HIGH AND ALLOWABLE HEAT FLUX IS LOW. (2) EVEN WHEN CORE POWER IS RAISED, XENON PEAK IN UPPER-CORE HALF IS NOT BURNED OUT AND MUST DECAY. A POWER LIMIT WAS ESTABLISHED FOR GROUP-3 OPERATION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*CONTROL ROD PROGRAM + *COOLANT CHEMISTRY + *FAILURE, TUBING + *OPERATING EXPERIENCE +
*POWER DISTRIBUTION + *THERMAL MECHANICAL EFFECT + FLOW ORIFICE OR RESTRICTION +
OPERATIONS REPORT, ANALYSIS + PRESSURE VESSEL + REACTOR, PRESSURIZED WATER + SHIPPINGPORT +
STEAM GENERATOR + XENON

6-16758 ALSO IN CATEGORY 17

PRESSURIZED WATER REACTOR (PWR) PROJECT. TECHNICAL PROGRESS REPORT FOR THE PERIOD JANUARY 21, 1967 TO APRIL 21, 1967

RETTIS ATOMIC POWER LABORATORY, PITTSBURGH, PA.

WAPD-MRP-120 +. 90 PAGES, FIGURES, TABLES, APRIL 1967

(PAGE 3) - SEED-2 INSTALLATION WILL REQUIRE A SOLUBLE POISON (PTB). ITS CORROSIVE EFFECT ON ALUMINUM CANAL WATER SYSTEM WAS STUDIED. (PAGE 29) - FLUX PLOTS FROM FLUX WIRE, THTO2, AND TUPRO-ZIP SHOWED VARYING AGREEMENT DURING XENON TRANSIENTS. THTO2 IS AS GOOD AS OR SUPERIOR TO TURBO-ZIP IN DESCRIBING AXIAL POWER. (PAGE 45) - DURING XENON BURNOUT 12 HR AFTER SHUTDOWN, NEARLY CONTINUOUS ROD INSERTION WAS NECESSARY WITH GROUP III BELOW 20 IN. TO HOLD POWER CONSTANT. SPECIAL TESTS SHOWED THIS DUE TO RAPID DECREASE IN GROUP-III BURN WORTH BELOW 25 IN., APPARENTLY AS FLUX PEAK SHIFTS TO REACTOR TOP.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*OPERATING EXPERIENCE + *POISON, SOLUBLE + *POWER DISTRIBUTION + CONTROL ROD WORTH + CORROSION +
OPERATIONS REPORT, ANALYSIS + REACTIVITY EFFECT, ANOMALOUS + REACTOR, PRESSURIZED WATER + REFUELING +
SHIPPINGPORT + XENON

6-16770 ALSO IN CATEGORIES 5 AND 7

KESSLER WE + WEYDERT LN

SNAPTRAN-2 DESTRUCTIVE TEST RESULTS

PHILLIPS PETROLEUM COMPANY, ATOMIC ENERGY DIVISION, IDAHO

IDC-17194 +. 118 PAGES, 56 FIGURES, 26 TABLES, 17 REFERENCES, JANUARY 1967

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-16770 *CONTINUED*

NUCLEAR, MECHANICAL, AND RADIOLOGICAL BEHAVIOR OF SNAPTRAN-2 WHEN SUBJECTED TO A RAPID REACTIVITY ADDITION OF 5.1 DOLLARS IS DESCRIBED. TOTAL ENERGY RELEASE LIMITED TO 54 MW-SEC PRIMARILY BY THE THERMAL NEGATIVE REACTIVITY FEEDBACK OF THE ZIRCONIUM-HYDRIDE-URANIUM FUEL. RAPID CORE EXPANSION CAUSED BY HYDROGEN PRESSURE BUILDUP WHEN THE FUEL TEMPERATURE REACHED 1900 F. DURING DISPERSAL OF THE BURNING FUEL AND HYDROGEN, ABOUT 20% OF THE FISSION PRODUCTS RELEASED TO ATMOSPHERE. POTENTIAL SIX-HOUR ACCUMULATIVE GAMMA EXPOSURE RESULTING FROM THE TEST LESS THAN 10 R AT 100 METERS FROM THE REACTOR.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

DOSE MEASUREMENT, EXTERNAL + DOSIMETRY, GENERAL + FISSION PRODUCT RELEASE, GENERAL + FISSION PRODUCT, AIRBORNE + FUEL EXPANSION COEFFICIENT + HYDRIDE + HYDROGEN + RADIOLOGY + REACTOR TRANSIENT + SNAPTRAN (SNAP TRANSIENT REACTOR TEST SERIES) + TEMPERATURE COEFFICIENT + ZIRCONIUM

6-16771 ALSO IN CATEGORY 5
CONDIT CM + SCOTT JF + JOHNSON RL

THE EFFECTS OF COOLANT TEMPERATURE AND INITIAL POWER LEVEL ON THE EXCURSION BEHAVIOR OF A HIGHLY ENRICHED PLATE CORE IN SPERT III --EXPERIMENT AND ANALYSIS
PHILLIPS PETROLEUM CO., ATOMIC ENERGY DIVISION, IDAHO
IDC-17138 +. 106 PAGES, 115 FIGURES, 3 TABLES, 20 REFERENCES, MARCH 1967

EXPERIMENTAL DATA FROM SELF-LIMITING POWER-EXCURSION TESTS ON A HIGHLY ENRICHED, STAINLESS-STEEL-CLAD PLATE CORE IN SPERT-III. STEP-INSERTIONS OF REACTIVITY. REACTOR POWER FROM 10 W TO 28 MW, PRESSURE (ATMOSPHERIC TO 2500 PSIG), TEMPERATURE (AMBIENT TO 600 F), FLOW (0 TO 20,000 GPM). REACTIVITY INSERTIONS FROM ABOUT 0.4 TO ABOUT 1.2\$, RESULTING IN INITIAL ASYMPTOTIC REACTOR PERIODS FROM ABOUT 1000 TO ABOUT 10 MSEC. AGREEMENT BETWEEN CALCULATION OF ART-04 AND EXPERIMENT IS WITHIN THE UNCERTAINTIES ASSOCIATED WITH THE DATA OVER THE RANGE OF CONDITIONS CONSIDERED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*REACTOR TRANSIENT + *SPERT 3 (SPECIAL POWER EXCURSION REACTOR TEST) + ACCIDENT ANALYSIS + REACTOR, TEST + STEEL, STAINLESS + URANIUM OXIDE

6-16773 ALSO IN CATEGORY 5
SCOTT R + HALE CL + HAGEN RN

TRANSIENT TESTS OF THE FULLY ENRICHED URANIUM-OXIDE STAINLESS STEEL PLATE-TYPE C-CORE IN THE SPERT III REACTOR -- DATA SUMMARY REPORT
PHILLIPS PETROLEUM CO., ATOMIC ENERGY DIVISION, IDAHO
IDC-17223 +. 174 PAGES, 299 FIGURES, 2 TABLES, 19 REFERENCES, FEBRUARY 1967

DATA FROM THE TRANSIENT TEST SERIES OF THE SPERT-III C-CORE. EFFECTS OF VARIOUS PARAMETRIC CHANGES ON TRANSIENT BEHAVIOR. CHECKING MODELS AND THEORIES OF REACTOR BEHAVIOR OVER A WIDE RANGE OF PARAMETERS. STEPWISE INSERTION OF REACTIVITY. ASYMPTOTIC PERIODS FROM 10 SEC TO ABOUT 10 MSEC. REACTOR POWER -- 10 WATTS. TEMPERATURE -- AMBIENT TO ABOUT 320 C. PRESSURE -- ATMOSPHERIC TO 2500 PSI. FORCED COOLANT FLOW RATE -- 0 TO 20,000 GPM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

*REACTOR TRANSIENT + *SPERT 3 (SPECIAL POWER EXCURSION REACTOR TEST) + ACCIDENT ANALYSIS + REACTOR, TEST + STEEL, STAINLESS + URANIUM OXIDE

6-16774 ALSO IN CATEGORY 5
HOUGHTALING JE

A MODEL FOR ANALYSIS OF FAST TRANSIENT REACTIVITY EFFECTS IN LOW-ENRICHED OXIDE-FUELED REACTORS
PHILLIPS PETROLEUM CO., ATOMIC ENERGY DIVISION, IDAHO
IDC-17224 +. 56 PAGES, 11 FIGURES, 2 TABLES, 28 REFERENCES, JANUARY 1967

REACTIVITY FEEDBACK MODEL APPLICABLE TO SHORT-PERIOD POWER EXCURSIONS IN LOW-ENRICHED OXIDE FUELED REACTORS, SUCH AS A REACTOR TESTED IN SPERT I. AGREEMENT BETWEEN CALCULATION AND EXPERIMENT WITHIN PROBABLE ERROR OF ABOUT 20 PERCENT IN REACTIVITY COMPENSATION, EXCLUSIVE OF UNCERTAINTIES IN THE RESONANCE INTEGRAL TEMPERATURE COEFFICIENT, GAMMA. WHILE CALCULATIONS GAVE BEST AGREEMENT WITH EXPERIMENT FOR A VALUE OF THIS TEMPERATURE COEFFICIENT INTERMEDIATE BETWEEN THE THEORETICAL VALUE OBTAINED FOR THE SPERT-I CORE, AND AVAILABLE EMPIRICAL VALUES, AGREEMENT IN TERMS OF THE THEORETICAL VALUE OR OF PUBLISHED EMPIRICAL DATA IS NOT EXCLUDED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

ACCIDENT ANALYSIS + COMPUTER, DIGITAL + DOPPLER EFFECT + REACTOR TRANSIENT + REACTOR, TEST + SPERT 1 (SPECIAL POWER EXCURSION REACTOR TEST) + URANIUM OXIDE

6-16770 ALSO IN CATEGORY 5
MIROPOL-SKII ZL

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-16779 *CONTINUED*

FLOW PULSATION IN EVAPORATION CHANNELS WITH AN ELASTIC MEDIUM PRESENT IN AN AUXILIARY PORTION OF THE CIRCUIT
WAPD-TRANS-52 +. 10 PAGES, 3 FIGURES, 9 REFERENCES, TRANSLATED BY R. KENT FOR BETTIS ATOMIC POWER LAB., WEST MIFFLIN, PA., FROM INZH.-FIZ. ZH., 7(8), PAGE 9-15, (1964)

EXPERIMENTAL DATA IS PRESENTED ON PULSATIONS DEVELOPING IN HEATED CHANNELS, WITH A COMPRESSIBLE MEDIUM IN AUXILIARY PORTIONS OF THE CIRCUIT. EXAMINATION IS MADE OF THE INFLUENCE, ON PULSATION CHARACTERISTICS, OF GEOMETRIC SIZES OF CHANNELS, THEIR HEAT INTENSITY, OF PARAMETERS OF CIRCULATION AND OF THE ELASTIC PROPERTIES OF THE COMPRESSIBLE MEDIUM FOUND IN AUXILIARY UNITS OF THE CIRCUIT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

FLOW THEORY AND EXPERIMENTS + FLOW, PULSATING + HEAT TRANSFER ANALYSIS

6-16781 ALSO IN CATEGORIES 5 AND 7

DIETZ KA
QUARTERLY TECHNICAL REPORT. STEP PROJECT. OCTOBER 1966-DECEMBER 1966
PHILLIPS PETROLEUM CO., IDAHO. ATOMIC ENERGY DIV.
IDC-17214 +. 25 PAGES, 26 FIGURES, 5 TABLES, 7 REFERENCES, APRIL 1967

THIS REPORT IS PART OF A SERIES OF PROGRESS REPORTS DEALING WITH SNAPTRAN 1 AND 2, LOFT NUCLEAR DESIGN, BLOWDOWN ANALYSIS, MELTDOWN ANALYSIS, CONTAINMENT-INSIDE-SURFACE TEMPERATURE, FISSION-PRODUCT BEHAVIOR, RADIOLOGICAL STUDIES, AND SEMISCALE BLOWDOWN-TEST PROGRAMS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*LOFT (LOSS OF FLUID TEST) + *SNAPTRAN (SNAP TRANSIENT REACTOR TEST SERIES) +
*STEP (SAFETY TEST ENGINEERING PROGRAM) + BLOWDOWN + CONTAINMENT, GENERAL + FISSION PRODUCT TRANSPORT +
FUEL MELTDOWN + RADIOLOGY + REACTOR, PRESSURIZED WATER

6-16788 ALSO IN CATEGORY 5

TAXELIUS TG
QUARTERLY TECHNICAL REPORT SPERT PROJECT, JULY, AUGUST, SEPTEMBER, 1966
PHILLIPS PETROLEUM CO., IDAHO
IDC-17228 +. 52 PAGES, 34 FIGURES, 6 TABLES, APRIL 1967

THIS REPORT IS ONE OF A SERIES OF PROGRESS REPORTS DEALING WITH SPERT 3, SPERT 4, CAPSULE DRIVER CORE, PBF, AND (OCCASIONALLY) WITH THE SPERT DATA-PROCESSING SYSTEM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*PBF (POWER BURST FACILITY) + *SPERT 3 (SPECIAL POWER EXCURSION REACTOR TEST) +
*SPERT 4 (SPECIAL POWER EXCURSION REACTOR TEST) + COMPUTER, DIGITAL + DESTRUCTIVE TRANSIENT +
EXCURSION, LARGE + FUEL INTEGRITY + FUEL MELTDOWN + REACTOR, TEST + REACTOR, TEST

6-16789 ALSO IN CATEGORIES 8 AND 11

REACTOR DEVELOPMENT PROGRAM. PROGRESS REPORT
ARGONNE NATIONAL LABORATORY, ILL.
ANL-7308 +. 97 PAGES, 21 FIGURES, TABLES, MARCH 28, 1967

THIS REPORT IS ONE OF A SERIES OF PROGRESS REPORTS ON THE FOLLOWING SUBJECTS - IRRADIATION OF FUEL PINS, TREAT MELTDOWN TEST, INTEGRAL SODIUM LOOP, FAST-REACTOR SAFETY CONTAINMENT, EQUATION OF STATE OF REFRACTORIES SUCH AS UO₂, METAL-WATER REACTIONS, AND PLUTONIUM VOLATILITY SAFETY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

CONTAINMENT DESIGN + EQUATION OF STATE + FUEL MELTDOWN + METAL WATER REACTION + PLUTONIUM +
REACTOR DYNAMICS + REACTOR, FAST + REACTOR, GRAPHITE MODERATED + REACTOR, TEST + SODIUM +
TREAT (TRANSIENT TEST REACTOR FACILITY) + URANIUM OXIDE

6-16791

CREWE AV + LAWROSKI S
REACTOR DEVELOPMENT PROGRAM PROGRESS REPORT FOR JANUARY 1967
ARGONNE NATIONAL LAB., ILL.
ANL-7302 +. 98 PAGES, 29 FIGURES, 33 TABLES, JANUARY 1967

THIS REPORT IS ONE OF A SERIES OF PROGRESS REPORTS ON THE FOLLOWING SUBJECTS - IRRADIATION OF FUEL PINS, TREAT MELTDOWN TEST, INTEGRAL SODIUM LOOP, FAST-REACTOR SAFETY CONTAINMENT, EQUATION OF STATE OF REFRACTORIES SUCH AS UO₂, METAL-WATER REACTIONS, AND PLUTONIUM-VOLATILITY SAFETY.

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-16791 *CONTINUED*
AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

CONTAINMENT DESIGN + EQUATION OF STATE + FUEL MELTDOWN + METAL WATER REACTION + PLUTONIUM + REACTOR DYNAMICS + REACTOR, FAST + SODIUM + TREAT (TRANSIENT TEST REACTOR FACILITY) + URANIUM OXIDE

6-17068 ALSO IN CATEGORIES 5 AND 7
DICKERMAN GE
EXPERIMENTS AND ANALYSES IN FAST REACTOR SAFETY
ARGONNE NATIONAL LAB., ARGONNE, ILL.
7 PAGES, 2 FIGURES, 45 REFERENCES, NUCLEAR SAFETY 8(3), PAGES 220-226, (SPRING 1967)

REVIEW OF RECENT EXPERIMENTAL AND ANALYTICAL WORK ON THE BEHAVIOR OF FAST REACTOR CORES UNDER ACCIDENT CONDITIONS. ORIENTATION OF THE SAFETY-RELATED INVESTIGATIONS IS DISCUSSED, DEVELOPMENT OF EXPERIMENTAL EQUIPMENT AND TECHNIQUES IS SUMMARIZED, EXPERIMENTAL RESULTS ARE DESCRIBED, AND THE STATUS OF ASSOCIATED ANALYTICAL TOOLS IS PRESENTED. INTENSIVE INVESTIGATIONS OF THE EFFECTS OF COOLANT ON FUEL FAILURE AND FUEL MOVEMENT AND ON TRANSIENT COOLANT VAPORIZATION AND HYDRODYNAMICS ARE BEGINNING.

*REACTOR, FAST + *SAFETY ANALYSIS + ACCIDENT ANALYSIS + CORE MELTDOWN + SAFETY EVALUATION + SAFETY PRINCIPLES AND PHILOSOPHY + SAFETY STUDY + TREAT (TRANSIENT TEST REACTOR FACILITY)

6-17069 ALSO IN CATEGORY 5
HAUBENPETCH PN
SAFETY ASPECTS OF THE MOLTEN-SALT REACTOR EXPERIMENT
ORNL RISE NATIONAL LAB., TENN.
10 PAGES, 2 FIGURES, 1 TABLE, 12 REFERENCES, NUCLEAR SAFETY 8(3), PAGES 226-235, (SPRING 1967)

FLUID-FUEL AND SOLID-FUEL REACTORS, ALTHOUGH SIMILAR IN ULTIMATE CONTAINMENT REQUIREMENTS, DIFFER IN THE KINDS OF ACCIDENTS THAT CAN CAUSE SYSTEM DAMAGE. SOME FLUID FUELS ARE SUSCEPTIBLE TO SEGREGATION, AND FILLING ACCIDENTS ARE MORE LIKELY, BUT AFTERHEAT IS MORE EASILY HANDLED. THE SURVIVING FLUID-FUEL CONCEPT, THE MOLTEN-SALT REACTOR, IS BEING DEVELOPED INTO A THERMAL BREEDER. THE MSRE, IN WHICH MOLTEN FLUORIDE SALTS CIRCULATE AT 1200 DEG. F, IS A STEP IN THAT DEVELOPMENT. SAFETY ANALYSES AND EXPERIENCE SHOW THE MSRE TO BE SAFE, AND NO SERIOUS PROBLEMS ARE EXPECTED IN DESIGNING SAFE MOLTEN-SALT BREEDER REACTORS.

*MSRE (MOLTEN SALT REACTOR EXPERIMENT) + *SAFETY ANALYSIS + ACCIDENT ANALYSIS + ACCIDENT, COLD COOLANT + ACCIDENT, CONTROL ROD WITHDRAWAL + ACCIDENT, LOSS OF COOLANT + ACCIDENT, REACTIVITY + CONTAINMENT, GENERAL + CRITICALITY SAFETY + DELAYED NEUTRON + FISSION PRODUCT RELEASE, GENERAL + FUEL COEFFICIENT + FUEL MELTDOWN + REACTOR, MOLTEN SALT + SAFETY EVALUATION + SAFETY PRINCIPLES AND PHILOSOPHY + SAFETY STUDY + TEMPERATURE COEFFICIENT + XENON

6-17077
AKCASU AZ + SHOTKIN LM
POWER OSCILLATIONS AND THE DESCRIBING FUNCTION IN REACTORS WITH LINEAR FEEDBACK
BROOKHAVEN NATIONAL LAB., UPTON, NEW YORK
10 PAGES, 5 FIGURES, 1 TABLE, 18 REFERENCES, NUCLEAR SCIENCE AND ENGINEERING 28 (1) PAGES 72 THRU 81, (APRIL 1967)

POUNDED PERIODIC BEHAVIOR OF REACTOR POWER STUDIED FOR INSTANCES WHEN EQUILIBRIUM POWER IS GREATER THAN THE CRITICAL POWER LEVEL. SIMPLE FORMULAS FOR ARBITRARY LINEAR FEEDBACK AND NO DELAYED NEUTRONS, FOR THE AMPLITUDE AND FREQUENCY OF THE LIMIT CYCLES. THESE QUANTITIES ARE RELATED TO RATIO EQUILIBRIUM-TO-CRITICAL POWER LEVEL AND TO LAPLACE TRANSFORM OF THE FEEDBACK KERNEL. TECHNIQUES USED APPLY FOR ARBITRARY VALUES OF THE FUNDAMENTAL COMPONENT OF THE POWER OSCILLATION. THEY ARE USED TO DERIVE A DESCRIBING FUNCTION VALID FOR LARGE AMPLITUDES. CONDITIONS FOR EXISTENCE OF CRITICAL POWER LEVELS AND LIMIT CYCLES. STABILITY OF THESE LIMIT CYCLES. APPLICATIONS TO CIRCULATING FUEL REACTOR AND TWO-TEMPERATURE REACTOR. AN EARLIER VERSION OF THIS PAPER IS BNL-9563.

*DESCRIBING FUNCTION + *REACTOR DYNAMICS + REACTOR, CIRCULATING FUEL + TEMPERATURE COEFFICIENT

6-17078
SANATHANAN CK + CARTEP JC + BRYANT LT + AMICI LW
THE APPLICATION OF A HYBRID COMPUTER TO THE ANALYSIS OF TRANSIENT PHENOMENA IN A FAST REACTOR CORE
ARGONNE NATIONAL LAB., ARGONNE, ILLINOIS
11 PAGES, 15 FIGURES, 16 REFERENCES, NUCLEAR SCIENCE AND ENGINEERING 28 (1), PAGES 82 THRU 92, (APRIL 1967)

THE MATHEMATICAL MODEL CONSISTS OF DIFFERENTIAL EQUATIONS DESCRIBING THE SPACE AND TIME-DEPENDENT NEUTRON FLUX DENSITY, THE CORE-MATERIAL TEMPERATURES, AND ALGEBRAIC EQUATIONS THAT GIVE THE FEEDBACK REACTIVITY AS A FUNCTION OF THE TRANSIENT TEMPERATURE DISTRIBUTIONS. THE PARTIAL DIFFERENTIAL EQUATIONS ARE WRITTEN WITH TIME CONTINUOUS FOR FINITE SPACE INCREMENTS. THERE ARE SIMILAR SETS OF DIFFERENTIAL EQUATIONS. THESE MAY BE SOLVED SEQUENTIALLY BY SIMULATING ONLY ONE SET ON THE ANALOG COMPONENTS. THE SEQUENTIAL SOLUTION NECESSITATES THE SAMPLING AND STORING OF VARIOUS ANALOG VOLTAGES.

*COMPUTER, ANALOG + *COMPUTER, DIGITAL + *REACTOR, FAST + CERAMICS + DYNAMICS, NONLINEAR + THEORETICAL INVESTIGATION + URANIUM OXIDE

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-17080
DENIZ V
STUDY OF THE KINETICS OF THERMALIZED NEUTRON POPULATIONS IN MULTIPLYING OR NON-MULTIPLYING HETEROGENEOUS MEDIA
CENTRE D-ETUDES NUCLEAIRES, 91 SACLAY, FRANCE
7 PAGES, 11 REFERENCES, NUCLEAR SCIENCE AND ENGINEERING 28(3), PAGES 397-403, (JUNE 1967)

GENERAL TRANSPORT-THEORY FORMULATION OF LATTICE KINETICS OBTAINED BY AN INFINITE LATTICE WITH A MACROSCOPIC SPATIAL-FLUX VARIATION. A STUDY IS MADE OF THE VARIATION OF THE ASYMPTOTIC INVERSE PERIOD AND OF THE FLUX DISTRIBUTION AS A FUNCTION OF THE BUCKLING VECTOR, THESE BEING, RESPECTIVELY, THE EIGENVALUE AND THE EIGENFUNCTION OF THE BALANCE EQUATION FOR THE NONSTATIONARY SYSTEM. DEFINITION OF THE PARAMETERS WHICH CHARACTERIZE THE ANISOTROPIC MIGRATION OF NEUTRONS IN THE LATTICE. MACROSCOPIC CURVATURE INTRODUCES NET LEAKAGE AND MODIFIES THE MEAN DISAPPEARANCE PROBABILITY FROM THE NET EFFECT OF PRODUCTION AND ABSORPTION.

*REACTOR DYNAMICS + PROMPT NEUTRON LIFETIME + REACTIVITY, EXCESS + REACTIVITY, NEGATIVE + THEORETICAL INVESTIGATION

6-17105 ALSO IN CATEGORY 9
UHRIG RF
NEUTRON NOISE, WAVES, AND PULSE PROPAGATION
UNIVERSITY OF FLORIDA
CONF-660206 +. 771 PAGES, FIGURES, TABLES, MAY 1967, PROCEEDINGS OF A SYMPOSIUM AT THE UNIVERSITY OF FLORIDA, GAINESVILLE, FEBRUARY 14-16, 1966

RELATION BETWEEN AND RELATIVE ADVANTAGES OF NEUTRON-WAVE AND NEUTRON-PULSE PROPAGATION. TWO-DETECTOR CROSS-CORRELATION TECHNIQUE. NEUTRON DETECTORS FOR OPERATION IN HIGH GAMMA BACKGROUND. PSEUDO-RANDOM INPUT TECHNIQUE FOR MEASURING REACTOR PARAMETERS, PARTICULARLY AS USED ON PHOEBUS AND NERVA ROCKETS. THREE-LEVEL SIGNALS FOR MEASURING NONLINEAR SYSTEMS. RELATION TO SPACE-DEPENDENT DYNAMIC. GERMAN AND JAPANESE WORK.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*NOISE ANALYSIS + DYNAMICS, NONLINEAR + GAMMA + GERMANY + INSTRUMENTATION, GENERAL + JAPAN + NEUTRON + NOISE CROSS CORRELATION + NUCLEAR ROCKET + PULSED NEUTRON TECHNIQUE + SPACE DEPENDENT DYNAMICS + WAVE, NEUTRON

6-17203 ALSO IN CATEGORY 17
MASCHE GC
NEAR MISS NUMBER ONE ROD EJECTION BY REACTOR PRESSURIZATION
GENERAL ELECTRIC CO., SAN JOSE, CALIFORNIA
1 PAGE, PAGE 78 OF REACTOR OPERATOR TECHNICAL QUALIFICATIONS AS THEY RELATE TO NUCLEAR SAFETY, 1966, MASTERS THESIS FOR THE UNIVERSITY OF WASHINGTON

(PAGE 78) ON A WATER REACTOR, RODS WERE NOT ATTACHED TO THEIR DRIVES UPON REASSEMBLY BEFORE PRIMARY-SYSTEM HEATUP. DURING HEATUP, IT WAS NOTICED THAT ALL THE RODS WERE SLOWLY COMING OUT OF THE REACTOR AS THE PRESSURE BUILT UP. HEATUP WAS STOPPED, AND RODS HOOKED UP PROPERLY.

AVAILABILITY - UNIVERSITY OF WASHINGTON

*ACCIDENT, CONTROL ROD WITHDRAWAL + *FAILURE, MAINTENANCE ERROR + *INCIDENT, ACTUAL, HUMAN ERROR + CONTROL ROD DRIVE + REACTOR, POWER

6-17253
AKCASU AZ + SHOTKIN LM
POWER OSCILLATIONS AND THE DESCRIBING FUNCTION IN REACTORS WITH LINEAR FEEDBACK
BROOKHAVEN NATIONAL LAB., UPTON, N. Y.
BNL-9563 +. 36 PAGES, FIGURES, REFERENCES, SEPTEMBER, 1965

PERIODIC SOLUTIONS OF THE KINETICS EQUATIONS WITH ARBITRARY LINEAR FEEDBACK AND NO DELAYED NEUTRONS. FORMULAE RELATING THE AMPLITUDE AND FREQUENCY OF THE LIMIT CYCLES TO THE RATIO OF THE EQUILIBRIUM POWER LEVEL AND CRITICAL POWER LEVEL. TECHNIQUES USED APPLY FOR ARBITRARY VALUES OF THE FUNDAMENTAL COMPONENT OF THE POWER OSCILLATION. THEY ARE USED TO DERIVE A DESCRIBING FUNCTION VALID FOR LARGE AMPLITUDES. CONDITIONS FOR EXISTENCE OF CRITICAL POWER LEVELS AND LIMIT CYCLES. STABILITY OF THESE LIMIT CYCLES. APPLICATIONS TO CIRCULATING-FUEL REACTOR. THIS PAPER WAS SUBSTANTIALLY REVISED AND PUBLISHED IN NSE 28 72 (1967).

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*DESCRIBING FUNCTION + *REACTOR DYNAMICS + REACTOR, CIRCULATING FUEL + TEMPERATURE COEFFICIENT

6-17255 ALSO IN CATEGORY 5

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-17255 *CONTINUED*

BLANC H + BERRE FL + MILLOT JP

CALCULATION OF POWER EXCURSIONS IN A WATER REACTOR WHEN THE COOLANT SYSTEM IS NOT OPERATING

COMMISSARIAT A L ENERGIE ATOMIQUE, CADARACHE, FRANCE

17 PAGES, 9 FIGURES, 5 REFERENCES, BULLETIN D-INFORMATIONS SCIENTIFIQUES ET TECHNIQUES 112, (FEBRUARY, 1967), PRESENTED AT MEETING OF SPECIALISTS ON HEAT TRANSFER IN RAPID TRANSIENTS, CADARACHE, APRIL 1966

DESCRIBES A MODEL FOR COMPUTING REACTIVITY ACCIDENTS IN WATER REACTORS WHEN THE COOLING SYSTEM IS NOT WORKING. IT MAY BE APPLIED TO CORES WITH PLATE- OR PIN-TYPE FUEL AND TAKES INTO ACCOUNT THE HEATING OF THE CORE, MODERATOR BOILING, AND DOPPLER EFFECT.

ACCIDENT ANALYSIS + ACCIDENT, LOSS OF FLOW + ACCIDENT, REACTIVITY + CORE, PLATE TYPE + THEORETICAL INVESTIGATION

6-17256 ALSO IN CATEGORY 5

BLANC H + DUTRAIVE P + FABREGA S + MILLOT JP

CALCULATION OF WATER REACTOR ACCIDENTS UNDER POWER OPERATING CONDITIONS

CENTRE D ETUDES NUCLEAIRES DE CADARACHE, FRANCE + CENTRE D ETUDES NUCLEAIRES DE GRENOBLE, FRANCE +

COMMISSARIAT A L ENERGIE ATOMIQUE, FRANCE

6 PAGES, 4 FIGURES, BULLETIN D-INFORMATIONS SCIENTIFIQUES ET TECHNIQUES 112, PAGES 1-8 (FEBRUARY, 1967)

THE BEHAVIOR OF A WATER REACTOR IN AN ACCIDENT OCCURRING AS THE REACTOR IS NORMALLY OPERATED AT POWER MAY BE CALCULATED THROUGH THE COMPUTER CODE DETAILED IN THIS ARTICLE. REACTIVITY ACCIDENTS, LOSS-OF-COOLANT ACCIDENTS, AND OPERATION OF EXCESSIVE POWER.

*ACCIDENT ANALYSIS + *REACTOR, WATER + ACCIDENT, LOSS OF COOLANT + ACCIDENT, REACTIVITY + COMPUTER, DIGITAL + THEORETICAL INVESTIGATION

6-17258 ALSO IN CATEGORY 5

DELCHAMBRE PH + MILLOT JP + TATTEGRAIN A

EXPERIMENTAL STUDIES OF COOLANT FLOW ACCIDENTS IN SWIMMING POOL REACTORS

CENTRE D ETUDES NUCLEAIRES DE CADARACHE, FRANCE

13 PAGES, 15 FIGURES, 2 TABLES, BULLETIN D-INFORMATIONS SCIENTIFIQUES ET TECHNIQUES 112, (FEBRUARY, 1967)

PRESENTED AT THE MEETING OF SPECIALIST ON HEAT TRANSFER IN RAPID TRANSIENTS, CADARACHE, APRIL 26-29, 1966

AN EXPERIMENTAL INVESTIGATION OF LOSS-OF-COOLANT ACCIDENTS THE CABRI REACTOR. AS IT IS MENTIONED IN THE REVIEW OF TESTS ON REACTIVITY ACCIDENTS, TWO SERIES OF TESTS WITH OSIRIS- AND SILOE-LIKE CORES HAVE BEEN PERFORMED. THE COOLANT FLOW WAS STOPPED EITHER BY TURNING OFF A PUMP OR BY CLOSING A VALVE WHILE THE REACTOR WAS OPERATED AT THE STEADY-STATE POWER LEVEL. THE BEHAVIOUR OF THE REACTOR AT POWER LEVEL AND OF THE PLATES TEMPERATURES HAVE BEEN MEASURED. THOSE TESTS WILL BE USED AS AN EXPERIMENTAL CHECK FOR A COMPUTER CODE AS DESCRIBED IN THE CHAPTER, CALCULATION OF ACCIDENTS IN SWIMMING POOL REACTORS OPERATED AT POWER.

*ACCIDENT, LOSS OF FLOW + *CORE, PLATE TYPE + EXPERIMENT, GENERAL + REACTOR TRANSIENT + REACTOR, WATER + TEMPERATURE TRANSIENT

6-17259

LEJPUNSKIJ AI + KRASNOJAROV NV + NIKOLAEV MN + ORLOV VV + TROJANOV MF + CHROMOV VV

PHYSICAL PROBLEMS IN DEVELOPING FAST POWER REACTORS

AUS DEM PHYSIKALISCH-ENERGETISCHEN INSTITUT, OBNINSK/UDSSR

9 PAGES, 3 FIGURES, 2 TABLES, 31 REFERENCES, KERNENERGIE 9(9), PAGES 273 THRU 281, (SEPTEMBER, 1966)

THIS THOROUGH REVIEW OF THE PHYSICS OF FAST POWER REACTORS DEALS PARTICULARLY WITH THE RUSSIAN WORK. OF SPECIAL INTEREST IS THE COMPARISON OF THEORY AND EXPERIMENT REGARDING THE REACTIVITY EFFECT OF HEAVY AND LIGHT ELEMENTS INSERTED INTO THE REACTOR, OF CONTROL-ROD WORTH AND CONTROL-ROD INTERACTION, AND A DETAILED DISCUSSION OF THE DOPPLER EFFECT.

CONTROL ROD INTERACTION + CONTROL ROD WORTH + DANGER COEFFICIENT + DOPPLER EFFECT + REACTIVITY EFFECT + REACTOR, FAST + UNION OF SOVIET SOCIALIST REPUBLICS

6-17381 ALSO IN CATEGORY 17

HABERMANN FW + JAHREN K + LUNDE JE + OEYE O

COOLANT VOID REACTIVITY EFFECTS IN THE SECOND CHARGE OF HBWR. PART I. DIFFERENTIAL EXPERIMENTS AT LOW TEMPERATURE

INSTITUTT FOR ATOMENERGI, HALDEN, NORWAY. OECD HALDEN REAKTOR PROSJEKT

HPR-39 +. 91 PAGES, FIGURES, TABLES, REFERENCES, NOVEMBER 1964

ZERO-POWER LOW-TEMPERATURE EXPERIMENTS ON ZIRC-2-CLAD UO2 PELLETS IN NORA TO INVESTIGATE REACTIVITY DEPENDENCE BY DEPRESSING WATER LEVEL IN COOLANT CHANNEL BY AIR UPON VOID FRACTION AND VOID POSITION IN COOLANT TO SIMULATE VOIDS. DATA IS ANALYZED BY USING TWO-GROUP FIRST-ORDER PERTURBATION THEORY TO YIELD VOID INFLUENCE ON LEAKAGE PARAMETERS AND ON MULTIPLICATION, SLOWING DOWN, AND ABSORPTION PARAMETERS.

AVAILABILITY - MICROCARD EDITIONS INC., (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM, WISCONSIN 54669

*CRITICALITY EXPERIMENT + *VOID COEFFICIENT + EURATOM + HBWR (HALDEN BOILING WATER REACTOR) + REACTOR, BOILING WATER

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-17385 ALSO IN CATEGORY 18
LOWENFELD MP + ROSS MF
LA CROSSE BOILING WATER REACTOR FINAL PHYSICS DESIGN REPORT
ALLIS-CHALMERS MFG. CO., BETHESDA, MD. ATOMIC ENERGY DIVISION
ACNP-64545 +. 32 PAGES, FIGURES, REFERENCES, MAY 1964

PRESENTS A RE-ANALYSIS OF LACBWR CORE-PHYSICS PARAMETERS SINCE ACNP-63549. INITIAL ENRICHMENT AND SEVERAL PARAMETERS HAVE BEEN CHANGED. STARTUP CORE DESIGN HAS BEEN CHOSEN ACCORDING TO A CONTROL-ROD-MANAGEMENT PROGRAM AND STUDY OF FUEL LIFETIME AND ISOTOPIC CHANGE IN FUEL WITH EXPOSURE HAS BEEN COMPLETED. APPENDIX PRESENTS LACBWR CORE CHARACTERISTICS USED IN THE ANALYSIS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*DESIGN STUDY + *REACTOR PHYSICS + LACROSSE + REACTOR, BOILING WATER

6-17421 ALSO IN CATEGORY 5
ICHINO I + SASAKI M
EXPERIMENTAL STUDIES ON HEAT TRANSFER TO CORE SPRAY
NIPPON ATOMIC INDUSTRY GROUP, JAPAN
ANL-TRANS-453 +. 12 PAGES, FIGURES, TRANSLATED FOR ARGONNE NATIONAL LAB., ILL., FROM NIPPON GENSHIYOKU
GAKKAISHI, 8, PAGE 602-8, (1966)

SPRAY COOLING OF A 4 X 4 ARRAY OF RODS WAS STUDIED OVER A RANGE OF HEAT OUTPUTS UP TO 6 KW/ROD AND FLOWS UP TO 30 L/MIN. THE RODS WERE 12 MM IN DIAMETER BY 3 M LONG AND WERE HOUSED IN A 71 X 71 MM CHANNEL. THE RODS WERE COOLED BY STEAM CONVECTION AND BY RADIATION. THE STEAM FLOW PREVENTED ENTRY OF THE SPRAY DROPLETS INTO THE CHANNELS.

AVAILABILITY - JOHN CRERAR LIBRARY, 35 WEST 33RD. ST., CHICAGO, ILLINOIS, 60616

ACCIDENT, LOSS OF COOLANT + HEAT TRANSFER EXPERIMENT + HEAT TRANSFER, BOILING + SPRAY, GENERAL

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-11684
ANDERSON WL + ANDERSON F
EFFECT OF SHOCK OVERPRESSURES ON HIGH EFFICIENCY FILTER UNITS
NAVAL RESEARCH LABORATORY + U.S. NAVAL ORDNANCE LABORATORY
CONF-660904 +. 11 PAGES, 9 FIGURES, 5 TABLES, 3 REFERENCES, PRESENTED AT 9TH AEC AIR CLEANING CONFERENCE,
BOSTON, MASS., SEPTEMBER 13-16, 1966, SOURCE

THE PRESENT NONCOMBUSTIBLE HIGH-EFFICIENCY FILTER UNITS HAVE AS GOOD A RESISTANCE TO BLAST OVERPRESSURES AS THOSE REPORTED EARLIER FOR THE COMBUSTIBLE UNITS. IT IS APPARENT THAT THE PHYSICAL DIMENSIONS OF THE FILTER UNIT ITSELF IS ONE OF THE CONTROLLING FACTORS IN RUPTURE DUE TO SHOCK WAVES. IN GENERAL, THE LONGER AND THINNER THE UNSUPPORTED SPAN OF FILTER MEDIA, THE LOWER THE SHOCK WAVE REQUIRED FOR FAILURE. THE SIMPLE ADDITION OF HARDWARE WIRE CLOTH FOR THE PREVENTION OF PHYSICAL DAMAGE SEEMS TO INCREASE MATERIALLY THE RESISTANCE TO SHOCK. IT IS BELIEVED THAT ADDITIONAL WORK ON RESILIENT ADHESIVES AND METHODS OF SUPPORT FOR THE CENTER AREAS OF THE LARGER FILTER UNITS WOULD RESULT IN A UNIT THAT WOULD BE MARKEDLY IMPROVED WITH RESPECT TO BLAST RESISTANCE.

*FILTER + *FILTER DESIGN + *FILTER, GLASS + *FILTER, HIGH EFFICIENCY + AIR CLEANING + EXPLOSION + FAILURE, COMPONENT

7-11687
HAHS CA
DEVELOPMENTS IN CONTAMINATED FILTER REMOVAL EQUIPMENT
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE
CONF-660904 +. 9 PAGES, 6 FIGURES, PRESENTED AT 9TH AEC AIR CLEANING CONFERENCE, BOSTON, MASS., SEPTEMBER 13-16, 1966, SOURCE

EQUIPMENT USED TO FILTER GASES EXHAUSTED FROM A NUCLEAR FACILITY, AND THE METHODS BY WHICH THIS EQUIPMENT WILL BE REMOVED AND REPLACED, REQUIRE CAREFUL PLANNING. AT OAK RIDGE NATIONAL LABORATORY, ONE FILTER-REMOVAL CARRIER WAS DESIGNED TO REMOVE FILTERS FROM BOTH THE OLDER AND THE NEWER FILTER-PIT INSTALLATIONS AND TO PROVIDE GAMMA AND/OR NEUTRON SHIELDING DURING THIS OPERATION. OTHER DEVELOPMENTS IN REMOVAL PROCEDURES ARE EXEMPLIFIED BY THE METHODS USED TO REMOVELY REMOVE, TRANSPORT, AND DEPOSIT IN-CELL CANISTER FILTERS IN DISPOSABLE CASKS, AND BY THE METHODS USED TO SEAL GLOVE-BOX EXHAUST FILTERS IN THEIR OWN POLYETHYLENE TUBES BEFORE REMOVING THEM.

*FILTER DESIGN + *FILTER MAINTENANCE + *RADIOCHEMICAL PLANT SAFETY + AIR CLEANING + FILTER + FILTER, HIGH EFFICIENCY + GLOVE BOX

7-11713
KNUTH PH
AN EVALUATION OF TWO PORTABLE THERMAL AEROSOL GENERATORS FOR IN-PLACE FILTER TESTING
NEW YORK OPERATIONS OFFICE, USAEC, HEALTH AND SAFETY LABORATORY
CONF-660904 +. 18 PAGES, 8 FIGURES, 3 TABLES, 5 REFERENCES, PRESENTED AT 9TH AEC AIR CLEANING CONFERENCE, BOSTON, MASS., SEPTEMBER 13-16, 1966, SOURCE

TWO COMMERCIAL, PORTABLE, THERMAL AEROSOL GENERATORS WERE EVALUATED TO DETERMINE THEIR PRACTICABILITY FOR IN-PLACE TESTING OF HIGH-EFFICIENCY FILTERS. PENETRATION VALUES OF VARIOUS FILTERS WERE DETERMINED WITH THE TWO THERMAL GENERATORS, AND RESULTS WERE COMPARED WITH VALUES OBTAINED BY USING STANDARD AIR-OPERATED AEROSOL GENERATORS OF THE TYPE DEVELOPED BY THE NAVAL RESEARCH LABORATORY. VERY CLOSE AGREEMENT WAS FOUND. ALSO, THE AEROSOL PRODUCED BY THE THERMAL GENERATORS WAS QUITE STABLE, AND THE PARTICLE-SIZE DISTRIBUTION WAS VERY CLOSE TO THAT OF THE AIR-OPERATED GENERATORS. THE THERMAL GENERATORS HAVE THE IMPORTANT ADVANTAGE THAT COMPRESSED AIR IS NOT REQUIRED, AND A SMALL, COMPACT UNIT CAN SERVICE A LARGE FILTER INSTALLATION, FOR EXAMPLE 20,000 CFM. ALTHOUGH THE THERMAL GENERATORS HAVE MINOR DESIGN LIMITATIONS, THEIR USE FOR IN-PLACE TESTING, PARTICULARLY OF HIGH VOLUME SYSTEMS, IS RECOMMENDED. THE TWO THERMAL TYPE GENERATORS STUDIED IN THIS EVALUATION USE 2-1/2-LB CYLINDERS OF CO₂, RATHER THAN COMPRESSED AIR, AND OPERATE ON 110- OR 220-V ELECTRICAL SUPPLY.

*AEROSOL PRODUCTION + *AEROSOL PROPERTIES + *FILTER INSPECTION + *TEST, FILTER + AEROSOL + AIR CLEANING + FILTER + FILTER SAFETY EVALUATION + THERMAL EXPERIMENT + THERMAL EXPERIMENT

7-13189
COTTRELL WR
ORNL NUCLEAR SAFETY RESEARCH AND DEVELOPMENT PROGRAM BIMONTHLY REPORT FOR JANUARY - FEBRUARY 1967
OAK RIDGE NATIONAL LABORATORY, TENN.
ORNL-TM-1792 +. 48 PAGES, FIGURES, TABLES, REFERENCES, MARCH 6, 1967

THIS IS ONE OF A SERIES OF PROGRESS REPORTS ON THE FOLLOWING REACTOR-SAFETY PROGRAMS AT ORNL - WATER REACTOR PROGRAM (CHEMICAL REACTIONS), ENGINEERED SAFEGUARDS AND LOFT SUPPORT PROGRAM, DIVISION OF PRODUCTION (IGNITION OF CHARCOAL ADSORBERS BY FISSION PRODUCT DECAY HEAT), GAS-COOLED REACTOR PROGRAM (CHEMICAL REACTIONS), PRESSURE VESSEL AND PIPING TECHNOLOGY, ANALYSES AND EVALUATION (CODES AND STANDARDS), AND DIVISION OF TECHNICAL INFORMATION.

AVAILABILITY - WM B COTTRELL, P.O. BOX Y, OAK RIDGE NATIONAL LAB., TENN.

*ACCIDENT, HYPOTHETICAL + *ADSORPTION + *AIR CLEANING + *CARBON + *CHARCOAL + *CHEMICAL REACTION +

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-13180 *CONTINUED*

*CONTAINMENT, GENERAL + *EARTHQUAKE ENGINEERING + *FILTER, HIGH EFFICIENCY + *FUEL MELTDOWN + *GRAPHITE +
*IMPACT SHOCK + *IN PILE EXPERIMENT + *LOFT (LOSS OF FLUID TEST) + *NDT DATA (NIL DUCTILITY TRANSITION) +
*NOZZLE + *NSIC (NUCLEAR SAFETY INFORMATION CENTER) + *NSPP (NUCLEAR SAFETY PILOT PLANT) +
*REACTOR, WATER + *SIMULATION + *STEAM + *STEEL + *TRANSPORTATION AND HANDLING +
*TREAT (TRANSIENT TEST REACTOR FACILITY) + FISSION PRODUCT RELEASE, GENERAL

7-14783 ALSO IN CATEGORIES 6 AND 5

DICKERMAN CE + ROBINSON LE + STEWART R
PHOTOGRAPHIC TREAT FAST-REACTOR SAFETY EXPERIMENTS ON IRRADIATED-OXIDE PINS
GENERAL ELECTRIC, ATOMIC POWER EQUIPMENT

1 PAGE, 2 REFERENCES, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PA., OCT. 30-NOVEMBER 3,
1966, ANS TRANS. 9(2), PAGE 396, (NOVEMBER 1966)

PRE-IRRADIATED FAST-REACTOR OXIDE FUEL PINS (DESCRIBED IN DETAIL) WERE SUBJECTED TO TREAT
TRANSIENTS OF VARYING SEVERITY, UP TO AND INCLUDING CLADDING FAILURE AND ATTAINMENT OF FUEL
MELTING POINTS (300 CAL PER GRAM). IN SPITE OF FISSION-FRAGMENT GASES, FUEL REMAINED
CYLINDRICAL.

*OXIDE + *TREAT (TRANSIENT TEST REACTOR FACILITY) + FAILURE, FUEL ELEMENT + REACTOR, FAST +
REACTOR, GRAPHITE MODERATED + REACTOR, TEST

7-15537 ALSO IN CATEGORY 11

PEIST PC + FIRST MW + SILVERMAN L
DEVELOPMENT OF THE DIFFUSION BOARD CONCEPT IN REACTOR CONTAINMENT
HARVARD AIR CLEANING LABORATORY, HARVARD UNIVERSITY, BOSTON, MASS.
NYO-841-6 +. 39 PAGES, 9 FIGURES, 11 TABLES, 6 REFERENCES, SEPTEMBER 1, 1966

TO DEVELOP A SUITABLE DIFFUSION BOARD FOR APPLICATION TO PROBLEMS OF REACTOR CONTAINMENT, THE
STAFF INVESTIGATED A NUMBER OF MATERIALS. THESE INCLUDE A CARBON-IMPREGNATED CELLULOSIC
FIBER, A RIGID POROUS CARBON MATERIAL, SPECIAL BOARDS CONSTRUCTED FROM SLAGWOOL AND GLASS
FIBERS, AN ALUMINUM HONEYCOMB STRUCTURE (THE SO-CALLED HARVARD DIFFUSION BOARD), AND A
POROUS-LINED MINERAL-FIBER CERAMIC BOARD. ALTHOUGH CERTAIN OF THE MEDIA HAD THE REQUIRED
EFFICIENCY FOR REMOVING PARTICULATE RADIOACTIVITY AND IODINE VAPORS, ALL WERE DEFICIENT IN
ONE OR MORE BASIC ASPECTS, THE MAJOR ONE BEING STEAM CLOGGING. ALTHOUGH THIS CAN BE OVERCOME
BY USING PREHEATED METALLIC FILTERS (FOR EXAMPLE, COPPER WOOL), SUCH AN APPROACH IS NOT
PRACTICAL FOR APPLICATION UNDER EMERGENCY CONDITIONS. FUTURE STUDIES DIRECTED TO THE SOLVING
OF THIS PROBLEM INCLUDE THE USE OF SPECIAL METHODS TO PREVENT WETTING OF THE ADSORBENTS AND
FILTERS. ALSO UNDER CONSIDERATION IS THE POSSIBILITY OF INCORPORATING INTO THE BOARD CERTAIN
CHEMICALS THAT WOULD (UPON CONTACT WITH STEAM) RELEASE SUBSTANTIAL QUANTITIES OF HEAT (SUCH
AS THE HEAT OF SOLUTION, CRYSTALLIZATION, ETC.).

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*DIFFUSION BOARD + *FISSION PRODUCT, IODINE + *IODINE + CONTAINMENT DESIGN + CONTAINMENT FILTERING SYSTEM +
CONTAINMENT RESEARCH AND DEVELOPMENT + STEAM

7-15698

WANTLAND JL + ROW TH
BEHAVIOR OF IODINE IN AIR -- A RESUME OF THE FIRST SEVEN RUNS CONDUCTED AT THE NUCLEAR SAFETY PILOT PLANT
OAK RIDGE NATIONAL LABORATORY
ORNL-4050 +. 117 PAGES, FIGURES, TABLES, APRIL 1967

SEVEN RUNS WERE MADE AT THE NUCLEAR SAFETY PILOT PLANT TO INVESTIGATE THE TRANSPORT BEHAVIOR
OF IODINE IN AIR. A LIMITED AMOUNT OF DATA ON UO₂ TRANSPORT WAS ALSO OBTAINED. THE
RETENTION OF IODINE ON CARBON STEEL WAS CONSISTENTLY FOUND TO BE ORDERS OF MAGNITUDE GREATER
THAN THAT FOR OTHER MATERIALS TESTED (INCLUDING PAINTS AND METALS BUT NO SILVER OR CHEMICALLY
CLEAN COPPER). SINCE NO PREFERENTIAL RETENTION OF UO₂ ON DEPOSITION COUPONS WAS OBSERVED, WE
CONCLUDE THAT RETENTION OF IODINE WAS COMPLETELY INDEPENDENT OF THE RETENTION OF UO₂. ALSO
IT IS IMPLIED THAT THEIR GENERAL TRANSPORT BEHAVIORS WERE INDEPENDENT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*IODINE + *NSPP (NUCLEAR SAFETY PILOT PLANT) + *SAMPLING + AEROSOL + AIR CLEANING + DEPOSITION + FILTER +
FILTER SYSTEM

7-15699

LINDAUER GC + TICHLER P + HATCH LP
EXPERIMENTAL STUDIES ON HIGH GRAVITY ROTATING FLUIDIZED BEDS
BROOKHAVEN NATIONAL LABORATORY
BNL-50013 +. 35 PAGES, 19 FIGURES, 1 TABLE, SEPTEMBER 1966

THE PURPOSE OF THIS STUDY WAS TO INVESTIGATE THE BEHAVIOR OF A GAS-FLUIDIZED BED OPERATED
UNDER HIGH GRAVITATIONAL FORCES. THE HIGH FORCES WERE PRODUCED IN A ROTATING VESSEL THAT
CONTAINED THE BED IN THE FORM OF A CYLINDRICAL ANNULUS. THE BED WAS BOUNDED ON THE OUTSIDE
BY A POROUS METAL RING WHICH SERVED AS A SUPPORT FOR THE BED AND A DISTRIBUTOR FOR THE

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-15699 *CONTINUED*

FLUIDIZING GAS. THE BED PARTICLES WERE GLASS BEADS, AND THE FLUIDIZING GAS WAS COMPRESSED AIR AT ROOM TEMPERATURE. ACCELERATIONS UP TO 3450 G AND MASS VELOCITIES UP TO 22.7 LB PER SEC PER SQ. FT WERE EXAMINED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*FLUIDIZED BED + *THERMAL PROPERTY

7-15700

GETOFF N

ANALYSIS OF NUCLEAR FUEL ELEMENTS. III. SEPARATION OF SOME URANIUM FISSION PRODUCTS BY PAPER CHROMATOGRAPHY

INSTITUTE OF CHEMISTRY, AUSTRIA

5 PAGES, 0 FIGURES, 3 TABLES, 25 REFERENCES, ATOMPRAXIS 12(11), PAGES 563-567 (1966)

VARIOUS NEW TECHNIQUES UTILIZED IN PAPER CHROMATOGRAPHY FOR SEPARATING FISSION PRODUCTS, URANIUM, AND PLUTONIUM HAVE BEEN DEVELOPED DURING THE PAST FEW YEARS. THIS IS PRIMARILY DUE TO THE FACT THAT THE SEPARATION BY THIS METHOD IS SIMPLE, CONVENIENT, AND USUALLY SHORT. APART FROM THIS, VERY SMALL AMOUNTS OF MATERIAL ARE REQUIRED FOR THE ANALYSIS, AND THE ACHIEVED SEPARATION CAN BE REGISTERED DIRECTLY BY AUTORADIOGRAPHY.

*ANALYTICAL TECHNIQUE, GENERAL + *CHROMATOGRAPHY + PLUTONIUM + RADIOSISOTOPE + URANIUM

7-15701

MEYER RA

STATUS OF DEVELOPMENT OF DISPERSED FUEL PARTICLES IN A BERYLLIUM OXIDE MATRIX

GENERAL ATOMIC

GA-7069 +. 29 PAGES, 12 FIGURES, 4 TABLES, APRIL 1966

BEQ SHOULD BE USED AS A MODERATOR OR A FUEL MATRIX. THE LATTER APPEARS TO BE AN EXCELLENT ALTERNATE TYPE OF FUEL TO COATED PARTICLES WHERE IT IS OPERATED IN THE RANGE OF 1000 C OR HIGHER. UNDER THESE CONDITIONS, IT IS RELATIVELY INERT TO ATMOSPHERIC CONTAMINATION. ADDITIONALLY, BEQ HAS A HIGH SPECIFIC POWER AND A GOOD PACKING FRACTION OF FUEL. IT IS CAPABLE OF WITHSTANDING TEMPERATURES AS HIGH AS 1600 C. THIS HIGH-TEMPERATURE OUTLOOK IS BASICALLY DIFFERENT FROM EARLIER APPROACHES WHERE HIGH-TEMPERATURE CHARACTERISTICS HAD NOT BEEN EVALUATED. FURTHER WORK IS NEEDED TO STUDY BOTH FAST NEUTRON AND FISSION RECOIL EFFECTS TO BEQ ABOVE 1000 C AND AS HIGH AS 1600 C. TO BE A USEFUL FUEL, BOTH THE PRODUCTION AND REPROCESSING TECHNIQUES SHOULD BE EVALUATED. IN THIS LATTER INSTANCE THE REFRACTORY NATURE OF BEQ AT ROOM TEMPERATURE IS OF ASSISTANCE IN MECHANICALLY DEGRADING THE MATRIX AND SEPARATING IT FROM THE FUEL.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*BERYLLIUM + *FUEL REPROCESSING + *HIGH TEMPERATURE + *OXIDE + *RADIATION DAMAGE + FUEL INTEGRITY + MODERATOR + RADIATION EFFECT

7-15846

ADAMS RE + ACKLEY RD

NINTH AEC AIR-CLEANING CONFERENCE

OAK RIDGE NATIONAL LABORATORY

7 PAGES, 10 REFERENCES, NUCLEAR SAFETY 8(3), PAGES 238-244 (SPRING 1967)

FROM THE TECHNICAL VIEWPOINT, SOME OF THE OLD PROBLEMS APPEAR TO BE SOLVED, AND OTHERS ARE IN THE FINAL STAGES OF SOLUTION. HINTS OF SOME FUTURE PROBLEMS WERE IN EVIDENCE. IN THE AREA OF PARTICLE FILTRATION, IT SEEMS THAT SUITABLE FILTERS ARE AVAILABLE AND THAT INSTALLATION TECHNIQUES HAVE BEEN ADVANCED SO THAT IT IS POSSIBLE, WITH SOME ATTENTION TO DETAILS, TO CONSTRUCT A SYSTEM CAPABLE OF PRODUCING HIGH EFFICIENCIES FOR PARTICLE FILTRATION. IN-PLACE TESTING TECHNIQUES, USING DOP, ARE AVAILABLE WITH WHICH TO PROOF-TEST THE INSTALLED SYSTEM AND ALSO WITH WHICH TO TEST THE EFFICIENCY UPON CONTINUOUS OPERATION. MANY OF THESE CAPABILITIES WERE NOT AVAILABLE ONLY A FEW YEARS AGO. THE METHODS AND TECHNIQUES FOR REMOVAL OF ELEMENTAL IODINE AND COMPOUNDS OF IODINE FROM GAS SYSTEMS ARE NOT AS WIDELY ACCEPTED AS ARE THOSE FOR PARTICLE FILTRATION. MOST OF THE ATTENTION IS NOW BEING GIVEN TO METHODS FOR TRAPPING METHYL IODIDE RATHER THAN ELEMENTAL IODINE. METHODS FOR THE REMOVAL OF THE KRYPTON AND XENON FROM GAS VOLUMES ARE RECEIVING ATTENTION AGAIN.

*ACCIDENT, HYPOTHETICAL + *ADSORPTION + *AEROSOL PRODUCTION + *CHARCOAL + *FILTER, HIGH EFFICIENCY + *FISSION PRODUCT, IODINE + *ORGANIC IODIDE + *PARTICLE SIZE + *PLUTONIUM DIOXIDE + *REACTOR, POWER + *SAMPLING + *TESTING + AIR CLEANING + FISSION PRODUCT RELEASE, GENERAL + NOBLE GAS + PARTICULATE

7-15872

VESELKIN AP + SHAKH OY

THE INFLUENCE OF A PURIFICATION SYSTEM ON THE DEPOSITION OF ACTIVE CORROSION PRODUCTS IN PRESSURIZED WATER REACTORS

BNWL-TR-16 +. 12 PAGES, 2 FIGURES, 8 REFERENCES, TRANSLATED FROM THE RUSSIAN JOURNAL OF ATOMIC ENERGY, 20(3), PAGES 247-252 (MARCH 1966)

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-15872 *CONTINUED*

THE PROCESSES OF FORMATION, DEPOSITION, AND TRANSFER OF ACTIVE CORROSION PRODUCTS ARE EXAMINED IN PRESSURIZED WATER REACTORS AND THE INFLUENCE ON THEM OF A PURIFICATION SYSTEM. THE EFFECTIVENESS OF THE PURIFICATION SYSTEM IS SHOWN TO SIGNIFICANTLY INFLUENCE THE ACTIVITY OF THE WATER AND THE CORROSION DEPOSITS IN REACTOR SYSTEMS. THE ACCESSIBILITY OF THE PRIMARY SYSTEM COMPONENTS, WHICH ARE LOCATED OUT OF THE RADIATION EXPOSURE ZONE OF THE REACTOR, AFTER SHUTDOWN IN THE ABSENCE OF DAMAGE TO THE DEPOSITS ON THE FUEL ELEMENTS IS WHOLLY DEPENDENT ON THE PROCESSES OF FORMATION, DEPOSITION, AND TRANSFER OF ACTIVE PRODUCTS OF CORROSION IN THE LOOP.

*CORROSION + *DEPOSITION + *CUT OF PILE LOOPS AND EXPERIMENTS + *REACTOR, PRESSURIZED WATER + WATER, GENERAL

7-15934 ALSO IN CATEGORIES 8 AND 12

SAVAGE HW
HISTORY OF THE AEC SODIUM COMPONENTS DEVELOPMENT PROGRAM. VOLUME I
OAK RIDGE NATIONAL LABORATORY
ORNL-3955 (VOL. 1) +. 401 PAGES, DECEMBER 1966

THIS HISTORY WILL BE OF GREAT INTEREST TO THOSE WHO HAVE HAD A PART IN THE DEVELOPMENT OF LIQUID-METAL COMPONENTS TECHNOLOGY DURING THE LAST EIGHT TO NINE YEARS, AND WE SINCERELY HOPE THAT IT WILL SERVE AS AN ACCURATE REFLECTION OF THE CONTRIBUTION OF THE SODIUM COMPONENTS DEVELOPMENT PROGRAM WORKING GROUP IS MAKING TO THAT DEVELOPING TECHNOLOGY. THIS VOLUME IS A SUMMARY OF DEVELOPMENT PROGRAMS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*EQUIPMENT DESIGN + *FABRICATION + *FERMI + *HEAT EXCHANGER + *INSTRUMENTATION, GENERAL + *METAL WATER REACTION + *OPERATING EXPERIENCE + *PUMP + *SODIUM + *TESTING + MAIN COOLING SYSTEM + REACTOR, LIQUID METAL COOLED

7-15935 ALSO IN CATEGORIES 8 AND 12

SAVAGE HW
HISTORY OF THE AEC SODIUM COMPONENTS DEVELOPMENT PROGRAM. VOLUME II
OAK RIDGE NATIONAL LABORATORY
ORNL-3955 (VOL. 2) +. 568 PAGES, DECEMBER 1966

THIS HISTORY WILL BE OF GREAT INTEREST TO THOSE WHO HAVE HAD A PART IN THE DEVELOPMENT OF LIQUID-METAL COMPONENTS TECHNOLOGY DURING THE LAST EIGHT TO NINE YEARS, AND WE SINCERELY HOPE THAT IT WILL SERVE AS AN ACCURATE REFLECTION OF THE CONTRIBUTION OF THE SODIUM COMPONENTS DEVELOPMENT PROGRAM WORKING GROUP IS MAKING TO THAT DEVELOPING TECHNOLOGY. THIS VOLUME CONSISTS OF REPORTS OF SUBCOMMITTEE MEETINGS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*EQUIPMENT DESIGN + *FABRICATION + *HEAT EXCHANGER + *INSTRUMENTATION, GENERAL + *METAL WATER REACTION + *OPERATING EXPERIENCE + *PUMP + *SODIUM + *TESTING + MAIN COOLING SYSTEM + REACTOR, LIQUID METAL COOLED

7-15936 ALSO IN CATEGORIES 8 AND 12

SAVAGE HW
HISTORY OF THE AEC SODIUM COMPONENTS DEVELOPMENT PROGRAM. VOLUME III
OAK RIDGE NATIONAL LABORATORY
ORNL-3955 (VOL. 3) +. 484 PAGES, TABLES, DECEMBER 1966

THIS HISTORY WILL BE OF GREAT INTEREST TO THOSE WHO HAVE HAD A PART IN DEVELOPING LIQUID-METAL COMPONENTS TECHNOLOGY DURING THE LAST EIGHT TO NINE YEARS, AND WE SINCERELY HOPE THAT IT WILL SERVE AS AN ACCURATE REFLECTION OF THE CONTRIBUTION OF THE SODIUM COMPONENTS DEVELOPMENT PROGRAM WORKING GROUP IS MAKING TO THAT DEVELOPING TECHNOLOGY. THIS VOLUME CONSISTS OF QUESTIONNAIRES SENT TO MEMBERS AND ALTERNATES, AND REPLIES. ALSO INCLUDED ARE THE MONTHLY COORDINATION REPORTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*EQUIPMENT DESIGN + *FABRICATION + *HEAT EXCHANGER + *INSTRUMENTATION, GENERAL + *METAL WATER REACTION + *OPERATING EXPERIENCE + *PUMP + *SODIUM + *TESTING + MAIN COOLING SYSTEM + REACTOR, LIQUID METAL COOLED

7-15938

FEHER RC
HEATS OF DISSOCIATION OF GASEOUS HALIDES
LOS ALAMOS SCIENTIFIC LABORATORY, NEW MEXICO
LA-3164 +. 187 PAGES, 29 TABLES, 500 REFERENCES, MAY 24, 1965

HEATS OF DISSOCIATION AT 298.15 K OF THE GASEOUS FLUORIDES, BROMIDES, AND IODIDES OF ELEMENTS OF THE FIRST LONG PERIOD OF THE PERIODIC TABLE AND BEYOND ARE CALCULATED FROM AVAILABLE EXPERIMENTAL DATA FOR THE HEATS OF FORMATION OF THE CONDENSED PHASES AND DATA FOR VAPOR

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-15938 *CONTINUED*

PRESSURE AND OTHER EQUILIBRIA. RESULTS DERIVED PREVIOUSLY FOR THE CHLORIDES ARE INCLUDED AND IN SOME CASES MODIFIED OR EXTENDED WITH SUBSEQUENT DATA. ESTIMATES ARE MADE FOR MANY OF THE HALIDES FOR WHICH EXPERIMENTAL DATA ARE LACKING. THE PREVIOUS REVIEW OF HEATS OF ATOMIZATION OF SELECTED ELEMENTS IS EXTENDED TO INCLUDE SEVERAL MORE ELEMENTS AND MORE RECENT VAPOR PRESSURE DATA FOR THE REMAINING ELEMENTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*BROMIDE + *CHLORIDE + *FLUORIDE + *IODIDE + *METAL + *PROPERTY, PHYSICAL

7-15939

HOFFMAN DR

INTERNATIONAL SYMPOSIUM ON DEVELOPMENTS IN IRRADIATION CAPSULE TECHNOLOGY HELD AT PLEASANTON, CALIFORNIA, MAY 2-5, 1966

DIVISION OF REACTOR DEVELOPMENT AND TECHNOLOGY, U.S. ATOMIC ENERGY COMMISSION, WASHINGTON, D.C.
CONF-660511 +. 932 PAGES, FIGURES, TABLES, REFERENCES, MARCH 1967

THE PAPERS ASSEMBLED HEREIN REPRESENT, IN ESSENCE, A PROGRESS REPORT ON ADVANCES IN IRRADIATION-CAPSULE TECHNOLOGY SINCE THE FIRST MEETING ON THIS SUBJECT, HELD OCT. 8-10, 1963. THE REPORT ON THE PREVIOUS MEETING IS ENTITLED SYMPOSIUM ON PROBLEMS IN IRRADIATION CAPSULE EXPERIMENTS, TID-7697, ISSUED MARCH 1964. ALTHOUGH THE TITLE IS SOMEWHAT DIFFERENT FOR THIS EDITION, THE TID NUMBER HAS BEEN RETAINED SINCE THE REPORT IS ON THE SAME SUBJECT. PERHAPS THE MOST PERTINENT OBSERVATION TO BE MADE ON THE MEETING IS THAT IT SHOWED THAT IRRADIATION CAPSULES MUST GENERALLY BE OF CUSTOM DESIGN.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*EQUIPMENT DESIGN + *IN PILE EXPERIMENT + *RADIATION EFFECT

7-15952

ALSO IN CATEGORIES 11 AND 5

NUCLEAR SAFETY PROGRAM ANNUAL PROGRESS REPORT FOR PERIOD ENDING DECEMBER 31, 1966

OAK RIDGE NATIONAL LABORATORY

ORNL-4071 +. 359 PAGES, FIGURES, TABLES, 15 REFERENCES, MARCH 1967

THE NUCLEAR SAFETY PROGRAM AT OAK RIDGE NATIONAL LABORATORY IS DIRECTED TOWARD OBTAINING A BETTER UNDERSTANDING OF VARIOUS ASPECTS OF NUCLEAR ACCIDENTS. THE INFORMATION DEVELOPED THROUGH EXPERIMENTS AND THEIR THEORETICAL INTERPRETATION WILL ALLOW THE USE OF MORE REALISTIC ASSUMPTIONS ON SAFETY TO BE MADE IN THE EVALUATION OF REACTOR SITES. THE BEHAVIOR OF FISSION PRODUCTS IN ALL PHASES OF A NUCLEAR ACCIDENT IS THE SUBJECT OF A MAJOR PART OF THE PROGRAM, ALTHOUGH MANY OTHER AREAS OF NUCLEAR SAFETY ARE INCLUDED, EITHER EXPERIMENTALLY OR ANALYTICALLY. DURING THE YEAR, THE NUCLEAR SAFETY PROGRAM WAS BROADENED IN SCOPE TO COVER HIGH-TEMPERATURE GAS-COOLED REACTORS, AS WELL AS WATER-COOLED REACTORS, PRESSURE VESSEL TECHNOLOGY, AND EFFECTS OF EARTHQUAKES ON STRUCTURES AND FISSION-PRODUCT BEHAVIOR.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

ACCIDENT, HYPOTHETICAL + ADSORPTION + AEROSOL + BIBLIOGRAPHY + CARBON + CHARCOAL ADSORBER + CHEMICAL REACTION + CLAD + COATED PARTICLE + CONTAINMENT, GENERAL + DESORPTION + FILTER + FISSION PRODUCT RELEASE, GENERAL + FISSION PRODUCT TRANSPORT + HIGH TEMPERATURE + IGNITION + IN PILE EXPERIMENT + IN PILE LOOP + IODINE + LOFT (LOSS OF FLUID TEST) + NOBLE GAS + NSIC (NUCLEAR SAFETY INFORMATION CENTER) + NSPP (NUCLEAR SAFETY PILOT PLANT) + ORGANIC IODIDE + ORNL (OAK RIDGE NATIONAL LABORATORY) + OUT OF PILE LOOPS AND EXPERIMENTS + PARTICLE SIZE + REACTOR, GRAPHITE MODERATED + REACTOR, TEST + SITING, REACTOR + STEAM + STEEL, STAINLESS + TEST, PRESSURE VESSEL + THEORETICAL INVESTIGATION + TRANSPORTATION AND HANDLING + TREAT (TRANSIENT TEST REACTOR FACILITY) + URANIUM DIOXIDE + ZIRCALOY

7-15953

MILLER CE

LIGHT BULB MODEL OF FISSION PRODUCT RELEASE FROM REACTOR FUELS

OAK RIDGE NATIONAL LABORATORY

ORNL-4060 +. 23 PAGES, 5 FIGURES, 7 TABLES, 17 REFERENCES, APRIL 1967

THE MODEL IS BASED ON THE WORK OF FONDA, WHO, WHILE WORKING ON THE DEVELOPMENT OF THE GAS-FILLED TUNGSTEN FILAMENT LAMP, OBSERVED THAT THE RATE OF LOSS IN WEIGHT OF THE FILAMENT AS A FUNCTION OF TEMPERATURE WAS LOWER IN THE PRESENCE OF A NONREACTING GAS THAN IN A VACUUM. THE MODEL RELATES SEVERAL VARIABLES TO THE AMOUNT OF FISSION PRODUCT RELEASED. THESE ARE THE COMPOSITION AND PRESSURE OF THE COVER GAS, THE TEMPERATURE, SURFACE AREA, AND AMOUNT OF THE MOLTEN FUEL, THE TIME MOLTEN, AND THE CHEMICAL FORM OF THE FISSION PRODUCT. THE MODEL HAS BEEN TESTED WITH DATA FROM SEVERAL SOURCES AND SATISFACTORILY EXPLAINS THE OBSERVED BEHAVIOR OF FISSION PRODUCTS AND FUEL.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*ACCIDENT, LOSS OF COOLANT + *ACCIDENT, MAXIMUM CREDIBLE (MCA) + *COMPARISON, THEORY AND EXPERIENCE + *FUEL ELEMENT + *MATHEMATICAL TREATMENT + *SITING, REACTOR + *SURFACE TO VOLUME RATIO + *THERMAL CONSIDERATION + *VAPOR, VAPOR PRESSURE + FISSION PRODUCT RELEASE, GENERAL

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-15955

RADUSHKEVICH LV + KOLGANOV VA
INVESTIGATION OF AEROSOL FILTRATION WITH THE AID OF A MODEL FILTER
5 PAGES, 5 FIGURES, 2 TABLES, COLLOID JOURNAL, U.S.S.R., VOL. 27, PAGES 74-78 (JAN.-FEB. 1965)

THE MODEL FILTER CONSISTS OF SUCCESSIVE ELEMENTS (SECTIONS) WITH PARALLEL STRETCHED FIBERS AROUND WHICH THE STREAM FLOWS. EACH SECTION IS A POLISHED DURALUMIN PLATE ABOUT 1 MM THICK, RESEMBLING A SAFETY-RAZOR BLADE IN SHAPE, WITH A ROUND CENTRAL ORIFICE 1.6 CM IN DIAMETER ACROSS WHICH THE FIBERS ARE STRETCHED, AND TWO SIDE OPENINGS FOR ASSEMBLING THE FILTER. THE PROPOSED DESIGN MAY BE USED FOR SOLVING A NUMBER OF FILTRATION PROBLEMS WHICH MIGHT BE DIFFICULT TO SOLVE WITH REAL FILTERS BECAUSE OF THE COMPLEX STRUCTURE OF THE LATTER. IN ORDER TO OBTAIN MORE ACCURATE VALUES, IT IS INTENDED IN THE FUTURE TO NARROW THE RANGE OF FIBER DIAMETERS BY IMPROVING THE METHOD OF APPLYING THE FIBERS ONTO THE SECTIONS AND BY USING OTHER FIBERS, OF MORE UNIFORM THICKNESS.

*AEROSOL + *COMPARISON, THEORY AND EXPERIENCE + *EQUIPMENT DESIGN + *MODEL TESTING +
*THEORETICAL INVESTIGATION + FILTER, FIBER

7-16174

ALSO IN CATEGORY 17
REACTOR OFF-GAS SYSTEM ACTIVITY RELEASE
PUERTO RICO WATER RESOURCES AUTHORITY, SAN JUAN
2 PAGES, PAGES 30-31 FROM BONUS NUCLEAR POWER PLANT DRL MONTHLY REPORT NO. 31, OCTOBER 1966, DOCKET NO. 115-4

ON THREE OCCASIONS AIRBORNE CONTAMINATION WAS DETECTED IN THE BUILDING. THE MAXIMUM LEVEL DETECTED WAS 5.75×10^{-10} TO THE MINUS 8 MICROCURIE PER CC. THE RELEASE CAME FROM THE OFF-GAS SYSTEM AS A RESULT OF THE LOSS OF WATER SEALS.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*FAILURE, DESIGN ERROR + *OPERATING EXPERIENCE + *OPERATIONS REPORT, GENERAL + AIRBORNE RELEASE +
BONUS (BOILING NUCLEAR SUPERHEAT PROJECT) + FISSION PRODUCT RELEASE, GENERAL +
RADIATION SAFETY AND CONTROL + RADIOACTIVITY, RELEASE + REACTOR OFFGAS + REACTOR, BOILING WATER +
REACTOR, INTERNAL SUPERHEAT + SEAL

7-16182

SPIEGLER P + MORGAN JG + GREENFIELD MA + KOONTZ RL
CHARACTERIZATION OF AEROSOLS PRODUCED BY SODIUM FIRES VOLUME I - SOLUTIONS OF A GENERAL EQUATION FOR THE COAGULATION OF HETEROGENEOUS AEROSOLS.
ATOMICS INTERNATIONAL, CANOGA PARK, CALIF.
NAA-SP-11997 (VOL. 1) +. 35 PAGES, 19 FIGURES, 14 REFERENCES, MAY 1, 1967

AN IBM 7094 DIGITAL COMPUTER WAS USED IN SOLVING THE EQUATION THAT DESCRIBES IN TIME THE BEHAVIOR OF AN AEROSOL. THE TOPICS INVESTIGATED INCLUDE COAGULATION OF A HETEROGENEOUS AEROSOL, COAGULATION COUPLED WITH STIRRED SETTLING, AND AN EXTERNAL SOURCE THAT CONTINUOUSLY GENERATES NEW PARTICLES. IN SOME INSTANCES, APPROXIMATIONS TO THE CODE RESULTS MAY BE OBTAINED, PROVIDED THAT SIMPLIFYING ASSUMPTIONS ARE MADE. THE RESULTS INDICATE THAT THE AEROSOL CONCENTRATION IS A MORE IMPORTANT PARAMETER THAN THE INITIAL PARTICLE SPECTRUM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*AEROSOL + *COMPUTER PROGRAM + *FIRE + *MATHEMATICAL TREATMENT + *SODIUM + ACCIDENT, LOSS OF COOLANT +
ACCIDENT, MAXIMUM CREDIBLE (MCA) + COALESCENCE + EQUATION, GENERAL + FILTER DESIGN + FILTER EFFICIENCY +
PARTICLE SIZE DISTRIBUTION + REACTOR, FAST

7-16183

ALSO IN CATEGORIES 1 AND 11
COTTRELL WB
ORNL NUCLEAR SAFETY RESEARCH AND DEVELOPMENT PROGRAM BIMONTHLY REPORT FOR MARCH - APRIL 1967.
ORNL RIDGE NATIONAL LAB., TENN.
ORNL-TM-1864 +. 77 PAGES, 6 FIGURES, 8 TABLES, 13 REFERENCES, MAY 10, 1967

INCLUDED IN THIS PROGRESS REPORT ARE WORK ON VARIOUS CHEMICAL REACTIONS, AS WELL AS THE RELEASE, CHARACTERIZATION, AND TRANSPORT OF FISSION PRODUCTS IN CONTAINMENT SYSTEMS UNDER VARIOUS ACCIDENT CONDITIONS AND ON PROBLEMS ASSOCIATED WITH THE REMOVAL OF THESE FISSION PRODUCTS FROM GAS STREAMS. ALTHOUGH MOST OF THE WORK CONTINUES TO BE IN GENERAL SUPPORT OF WATER POWER REACTOR TECHNOLOGY INCLUDING SOME IN DIRECT SUPPORT OF THE LOFT AND CSE PROGRAMS, SEVERAL PROJECTS ARE CONDUCTED IN SUPPORT OF THE HIGH-TEMPERATURE GAS-COOLED REACTOR (HTGR) PROGRAM, INCLUDING BOTH IN-PILE AND OUT-PILE STUDIES OF THE REACTION RATES AND FISSION PRODUCT RELEASE AND TRANSPORT PHENOMENA. OTHER MAJOR PROJECTS INCLUDE FUEL TRANSPORT SAFETY INVESTIGATIONS, A SERIES OF DISCUSSION PAPERS ON VARIOUS ASPECTS OF WATER REACTOR TECHNOLOGY, ANTISEISMIC DESIGN OF NUCLEAR FACILITIES, AND THE STUDIES OF PRESSURE VESSEL TECHNOLOGY. EXPERIMENTAL WORK RELATIVE TO PRESSURE VESSEL TECHNOLOGY INCLUDES INVESTIGATIONS OF THE ATTACHMENT OF NOZZLES TO SHELLS AND THE VARIABILITY OF IMPACT DATA ON LOW ALLOY STEELS. SEVERAL OF THE PROJECTS ARE CONCERNED WITH THE DEVELOPMENT OF ENGINEERING SAFEGUARDS AND THE ESTABLISHMENT OF CODES AND STANDARDS FOR THESE SAFEGUARDS. THE RECENT ACTIVITIES OF THE NSIC AND THE NUCLEAR SAFETY JOURNAL IN BEHALF OF THE NUCLEAR COMMUNITY ARE ALSO DISCUSSED.

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-16183 *CONTINUED*
AVAILABILITY - WM. R. COTTRELL, OAK RIDGE NATIONAL LAB., TENN.

*FISSION PRODUCT RELEASE, GENERAL + ACCIDENT, HYPOTHETICAL + ACCIDENT, MAXIMUM CREDIBLE (MCA) + AEROSOL PROPERTIES + AIR CLEANING + AIRBORNE RELEASE + ALLOY + CHARCOAL ADSORBER + CHEMICAL REACTION + CODES AND STANDARDS + CSE (CONTAINMENT SYSTEMS EXPERIMENT) + DEPOSITION + EARTHQUAKE ENGINEERING + ENGINEERED SAFETY FEATURE + FILTER + FISSION PRODUCT TRANSPORT + IMPACT PROPERTY + IMPACT SHOCK + IODINE + LOFT (LOSS OF FLUID TEST) + NOZZLE + NSIC (NUCLEAR SAFETY INFORMATION CENTER) + ORGANIC IODIDE + PRESSURE VESSEL + REACTOR, GAS COOLED + REACTOR, HIGH TEMP. GAS + REACTOR, WATER + STEEL + STEEL, STAINLESS + TREAT (TRANSIENT TEST REACTOR FACILITY)

7-16184 ALSO IN CATEGORY 16
WIESER P
ON THE SIZE DISTRIBUTION OF NATURALLY RADIOACTIVE AEROSOL
HOHENHEIM AGRICULTURAL COLLEGE
3 PAGES, 3 FIGURES, 17 REFERENCES, ATOMPRAXIS 12(6), PAGES 294-296 (JUNE 1966) IN GERMAN

THE RADIOACTIVITY PRESENT IN THE ATMOSPHERE CAN BE DIVIDED INTO THREE LARGE GROUPS. THESE ARE - (A) RADIOACTIVE SUBSTANCES ESSENTIALLY ATTRIBUTABLE TO RARE GASES, SUCH AS RADON AND THORON, AND THEIR DAUGHTER PRODUCTS. (B) RADIOACTIVE SUBSTANCES FORMED IN HIGHER LAYERS OF THE ATMOSPHERE BY COSMIC RADIATION. (C) RADIOACTIVE SUBSTANCES WHICH CAN REACH THE ATMOSPHERE AS A CONSEQUENCE OF NUCLEAR-WEAPONS TESTS AND THE OPERATION OF REACTORS. IN RECENT YEARS, INCREASED ATTENTION HAS AGAIN BEEN TURNED TO THE RADIOACTIVE CONTAMINANTS OF GROUP (A) BECAUSE A NUMBER OF MONITORING PROGRAMS ARE BASED ON A KNOWLEDGE OF THE FORM IN WHICH THESE SUBSTANCES ARE PRESENT IN THE ATMOSPHERE.

*AEROSOL + DEPOSITION + METEOROLOGY + PARTICLE, RADIOACTIVE + COMPARISON, THEORY AND EXPERIENCE + PARTICLE SIZE DISTRIBUTION + RADON + THORON

7-16187 ALSO IN CATEGORY 17
NOTLEY MJ
CALCULATION OF FISSION-PRODUCT GAS PRESSURES IN OPERATING UO₂ FUEL ELEMENTS
ATOMIC ENERGY OF CANADA LIMITED, CHALK RIVER
8 PAGES, 5 FIGURES, 1 TABLE, 22 REFERENCES, NUCLEAR APPLICATIONS 3(6) PAGES 334-342 (JUNE 1967)

A METHOD WAS DEVELOPED FOR CALCULATING THE FISSION-PRODUCT GAS PRESSURE INSIDE OPERATING UO₂ FUEL ELEMENTS. THE CALCULATIONS WERE BASED ON A MODEL IN WHICH THE HOT CENTER OF THE UO₂ PELLET IS ASSUMED TO FLOW PLASTICALLY UNDER STRESS, AND THE OUTER ANNULUS IS CRACKED. THE CALCULATED PRESSURES WERE IN REASONABLE AGREEMENT WITH EXPERIMENTAL MEASUREMENTS OF THE GAS PRESSURE INSIDE FUEL ELEMENTS. ALTHOUGH IT IS THE PRESSURE, RATHER THAN THE AMOUNT, OF RELEASED FISSION GASES THAT COULD IMPAIR FUEL ELEMENT PERFORMANCE, VERY LITTLE WORK HAS BEEN DONE ON MEASURING THE PRESSURES INSIDE A FUEL ELEMENT, WHILE VERY MUCH HAS BEEN DONE ON MEASURING AND ESTIMATING THE AMOUNTS OF GAS RELEASED.

*FAILURE, CLADDING + FAILURE, FUEL ELEMENT + COMPARISON, THEORY AND EXPERIENCE + FISSION PRODUCT, VOLATILE + HIGH TEMPERATURE + PERFORMANCE LIMIT + PLASTICITY + PRESSURE, INTERNAL + URANIUM DIOXIDE

7-16190
SCRUBBER TWISTS GAS FLOW FOR HIGH EFFICIENCY
1 PAGE, CHEMICAL ENGINEERING 73(24), PAGE 88 (NOVEMBER 1966)

BY MAKING GASES FOLLOW A TORTUOUS PATH, A NEW UNIT IS ABLE TO CLEAN LARGE VOLUMES OF GAS FOR ITS SIZE. THE DESIGN ALSO ALLOWS HORIZONTAL INSTALLATION IN LIMITED SPACES. IN FIELD TESTS, THE UNIT HAS REMOVED PARTICLES AS SMALL AS 0.4 MICRON FROM A GAS STREAM (THE SOLIDS IN THIS PARTICULAR CASE WERE TIN DIOXIDE PARTICLES).

*AIR CLEANING + ATMOSPHERIC POLLUTION + PARTICLE SIZE + PARTICULATE + SCRUBBER

7-16191
STORCH PL
PRODUCT LOSSES CUT WITH A CENTRIFUGAL GAS SCRUBBER
CORN PRODUCTS COMPANY, ARGO, ILL.
4 PAGES, 4 FIGURES, 2 TABLES, CHEMICAL ENGINEERING PROGRESS 62(4) PAGES 51-54 (APRIL 1966)

THE ARTICLE REFERS TO THE MANUFACTURE OF DRY STARCH. COLLECTION EFFICIENCY OF 99.75% WAS ACHIEVED, RESULTING IN REDUCED AIR POLLUTION AS WELL AS SIGNIFICANT PRODUCT RECOVERY. DUST LOADINGS ARE REDUCED FROM ABOUT 0.3 TO 0.0007 GRAIN/CU FT.

*AIR CLEANING + ATMOSPHERIC POLLUTION + FILTER, ELECTROSTATIC + PARTICLE SIZE + PARTICLE SIZE DISTRIBUTION + SCRUBBER

7-16317 ALSO IN CATEGORY 12
POW TH
DECONTAMINATION EXPERIENCE IN THE NUCLEAR SAFETY PILOT PLANT.

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-16317 *CONTINUED*

OAK RIDGE NATIONAL LABORATORY, TENN.

ORNL-TM-1718 +. 23 PAGES, 5 FIGURES, 4 TABLES, 7 REFERENCES, MARCH 2, 1967

THE NUCLEAR SAFETY PILOT PLANT IS USED TO STUDY THE BEHAVIOR IN A CONTAINMENT SYSTEM OF FISSION PRODUCTS RELEASED FROM OVERHEATED FUEL. 17 EXPERIMENTS HAVE BEEN RUN TO DATE. CONTAMINATION OF THE MAIN CONTAINMENT VESSEL DURING THESE EXPERIMENTS VARIED FROM MOLECULAR IODINE TO MIXED FISSION PRODUCTS AND UO₂. A CITRATE SOLUTION WAS EFFECTIVE IN REMOVING UO₂, CERIUM, RUTHENIUM, AND BARIUM-LANTHANUM. SODIUM HYDROXIDE WAS USED SUCCESSFULLY IN REMOVING IODINE AND CESIUM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

*BARIUM + *CERIUM + *CESIUM + *IODINE + *LANTHANUM + *NSPP (NUCLEAR SAFETY PILOT PLANT) + *RUTHENIUM + *SURFACE CONTAMINATION + *URANIUM DIOXIDE + DECONTAMINATION

7-16345 ALSO IN CATEGORIES 18 AND 11

QUESTION R-3--STANDBY GAS TREATMENT FILTERS

COMMONWEALTH EDISON COMPANY

1 PAGE, PAGE R-3-1 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

DISCUSS THE DESIGN BASES FOR THE HEAT LOADS ESTABLISHED FOR THE FILTERS GIVEN IN SECTION V-4-7 OF THE PLANT DESIGN AND ANALYSIS REPORT. YOUR DISCUSSION SHOULD INCLUDE AN ANALYSIS TO SUPPORT YOUR DESIGN BASES RELATED TO ADEQUATE HEAT DISSIPATION TO PREVENT FILTER DAMAGE WITHOUT FORCED AIR FLOW (V-4-7).

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTAINMENT FILTERING SYSTEM + *DECAY HEAT + *FIRE + AEC QUESTION + DRESDEN 3 + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

7-16461 ALSO IN CATEGORIES 8 AND 12

SHIELDS RP + MILLER CE

THE EFFECT OF FISSION PRODUCTS ON CHARCOAL IGNITION

OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.

ORNL-TM-1739 +. 31 PAGES, 10 FIGURES, 3 TABLES, 2 REFERENCES, JAN. 10, 1967

IN A NUCLEAR ACCIDENT IN WHICH FISSION PRODUCTS ARE RELEASED INTO THE CONTAINMENT SYSTEM, THE CHARCOAL ADSORBERS USED FOR REMOVAL OF IODINE WOULD BE SUBJECT TO RAPID LOADING. IF AIR WERE PRESENT BUT NOT FLOWING, THE HEAT GENERATED IN THE ADSORBER BY DECAY OF FISSION PRODUCTS MIGHT RAISE THE TEMPERATURE OF SMALL AREAS OF THE CHARCOAL ADSORBER TO THE POINT WHERE THE RESUMPTION OF AIR FLOW WOULD IGNITE THE CHARCOAL. AN IN-PILE EXPERIMENT WAS PERFORMED TO STUDY HOT-SPOT EFFECTS UNDER CONDITIONS WHICH SIMULATE THOSE IN THE ADSORBER DURING A REACTOR ACCIDENT. THE IGNITION TEMPERATURE OF THE CHARCOAL WAS INCREASED BY THE PRESENCE OF FISSION PRODUCTS. ALTHOUGH THE ADSORBER WAS LOADED WITH 8 TIMES MORE RADIOACTIVE IODINE PER SQUARE INCH OF FRONT SURFACE THAN EXPECTED IN ADSORBERS SUCH AS IN HFIR AND NPR, THERE HAS BEEN NO EVIDENCE OF HOT-SPOT EFFECTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

*ADSORPTION + *CHARCOAL + *FIRE + *FISSION PRODUCT, IODINE + *IGNITION + HFIR (HIGH FLUX ISOTOPE REACTOR) + NPP (HANFORD NEW PRODUCTION REACTOR) + REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED + REACTOR, RESEARCH + REACTOR, TEST

7-16551 ALSO IN CATEGORY 17

BENEDICT RA

N S SAVANNAH CONTAINMENT-FILTER TESTING

FIRST ATOMIC SHIP TRANSPORT, INC., HOBOKEN, N. J.

2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(28) PAGES 6-7 (JULY 10, 1967), DOCKET 50-238

(LETTER, JUNE 27.) SECOND AND THIRD TESTS ON SHIPBOARD TESTING OF FILTERS USING NONRADIOACTIVE IODINE WERE MEANINGLESS BECAUSE OF IODINE CONTAMINATION OF THE COPPER BEADS. FURTHER INVESTIGATION SHOWED IODINE CONTAMINATION THROUGHOUT THE IODINE-FREE LABORATORY AT HARVARD. THE METHOD CANNOT BE CONSIDERED FEASIBLE FOR SHIPBOARD USE. HACI WILL CONTINUE LAB WORK. WESTINGHOUSE WILL TEST FAILED FILTERS TO DETERMINE IF GASKET LEAKAGE WAS AT FAULT, AND IF THE FREON-112 TECHNIQUE IS SUITABLE FOR SHIPBOARD USE.

*TEST, FILTER SYSTEM + CONTAMINATION + FILTER EFFICIENCY + IODINE + N S SAVANNAH + REACTOR, PRESSURIZED WATER

7-16554 ALSO IN CATEGORY 4

DUGAN VL

PRODUCTION OF LOW CONCENTRATION PARTICULATE AEROSOLS BY A SONIC DISSEMINATOR TECHNIQUE

SANDIA CORP., ALBUQUERQUE, N. MEXICO

SC-RR-67-14 +. 17 PAGES, DECEMBER 1966

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPCRT, AND REMOVAL

7-16554 *CONTINUED*

THIS REPORT DESCRIBES A TECHNIQUE BY WHICH AN ULTRASONIC VIBRATOR MAY BE USED TO PRODUCE PARTICULATE AEROSOLS WITH CONCENTRATION LEVELS-LESS THAN 5000 PARTICLES PER CUBIC FOOT IN AN ENCLOSED VOLUME WITH GOOD REPEATABILITY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*AEROSOL PRODUCTION + AEROSPACE SAFETY + PARTICLE SIZE

7-16555

HENRY JP + CUNNINGHAM RS + GEANKOPLIS CJ

DIFFUSION OF GASES IN POROUS SOLIDS OVER A THOUSAND-FOLD PRESSURE RANGE

THE OHIO STATE UNIVERSITY, COLUMBUS, OHIO 43210

10 PAGES, 4 FIGURES, 4 TABLES, 21 REFERENCES, CHEMICAL ENGINEERING SCIENCE 22(1), PAGE 11-20 (JANUARY 1967)

EXPERIMENTAL DATA WERE OBTAINED FOR DIFFUSION OF GASES AT CONSTANT TOTAL PRESSURE IN BIDISPERSED POROUS ALUMINA SOLIDS AND MONODISPERSED POROUS VYCOR. THE DATA COVERED A 1300/1 RANGE OF PRESSURES WHICH INCLUDED THE KNUDSEN AND MOST OF THE TRANSITION REGION. PREVIOUS DATA COVERED ONLY A 50/1 RANGE. EXPERIMENTAL DIFFUSIVITIES OF THE ALUMINA COMPARED CLOSELY WITH THOSE PREDICTED BY THE ROTHFELD EFFECTIVENESS-FACTOR MODEL AND THE WAKAO AND SMITH RANDOM-PORE MODEL. DATA ON THE VYCOR ALSO CHECKED THE PREDICTIONS, CONTRARY TO THE FINDINGS OF OTHERS. A POSSIBLE EXPLANATION MAY BE DUE TO THE DIFFERENCES IN PORE STRUCTURE. MODIFIED EQUATIONS WERE DERIVED TO EXTEND THE RANDOM-PORE MODEL TO SPECIAL CASES FOR DIFFUSION IN POROUS MEDIA.

*CHARCOAL ADSORBER + *DIFFUSION + *FILTER + COMPARISON, THEORY AND EXPERIENCE + FILTER THEORY, DIFFUSION + FLOW, KNUDSEN + POROUS DIFFUSION

7-16557

BILLINGS CE

EFFECTS OF PARTICLE ACCUMULATION IN AEROSOL FILTRATION

CALIFORNIA INSTITUTE OF TECHNOLOGY

1 PAGE, DISSERTATION ABSTRACTS 27R(5), PAGE 1451-8 (1966)

THE FILTRATION OF SOLID AEROSOL PARTICLES PRODUCES A DECREASE IN FILTER PENETRATION AND AN INCREASE IN FILTER RESISTANCE BECAUSE OF THE ACCUMULATION OF DEPOSITED MATERIAL. FUNCTIONS ARE DERIVED FOR THE EFFECTS OF PARTICLE ACCUMULATION ON FILTER PENETRATION AND RESISTANCE. A NEW AEROSOL TUNNEL IS DESCRIBED WHICH PROVIDES A UNIFORM FIELD OF PARTICLE AND FLUID FLOW FOR EXTENDED PERIODS. DATA ARE PRESENTED ON THE EFFECTS OF ACCUMULATION OF 1.3-MICRON POLYSTYRENE PARTICLES ON THE PERFORMANCE OF FILTER MATS TESTED IN THE AEROSOL TUNNEL. A QUANTITATIVE MICROSCOPIC STUDY OF ACCUMULATION OF 1.3-MICRON PARTICLES ON SINGLE ISOLATED 10-MICRON GLASS FIBERS IS DESCRIBED. PHOTOGRAPHS OF DEPOSIT STRUCTURE AND MEASUREMENTS OF AGGREGATE SIZE ARE INCLUDED.

*AEROSOL + *FILTRATION + AEROSOL PRODUCTION + FILTER EFFICIENCY + TEST, FILTER

7-16558

WALKENHORST W

AEROSOLFILTRATION MIT MEMBRANFILTERN IM TEILCHENGROSSENBEREICH UNTERHALB 0,1 MIKRON

4 PAGES, 6 FIGURES, 10 REFERENCES, STAUB 19(3), PAGE 69-72 (1959)

TESTS ARE CARRIED THROUGH TO ESTABLISH THE FILTER CAPABILITY OF MEMBRANE FILTERS, FOR WHICH A FINE-PARTICLE AEROSOL WITH PARTICLE SIZES UP TO ABOUT 0.1 MICRON WAS USED. THE ARTICLE DESCRIBES THE TEST ARRANGEMENT INCLUDING THE AEROSOL SOURCE USED. WITH 0.1-MICRON PARTICLE SIZE, THE FILTER CAPABILITY IS NEARLY 100%, GROWING SOMEWHAT LESS WITH DECREASING PARTICLE SIZE. BUT WITH PARTICLE SIZES OF 0.01-MICRON AND THE FILTER FOR THE COARSE PERMEABILITY STAGE, THE FILTER CAPABILITY STILL COMES TO ABOUT 94%, AND WITH THE FILTER FOR THE MIDDLING PERMEABILITY STAGE TO 97%. A MINIMUM OF PRECIPITATION, SIMILAR TO THE RESULTS FOUND BY FITZGERALD AND DETWILER, COULD NOT BE ESTABLISHED. EVEN WITH TWO CONTROL MEASUREMENTS MADE WITH A FILTER OF AMERICAN ORIGIN, IT WAS NOT POSSIBLE TO DETERMINE THIS MINIMUM WITH CERTAINTY.

*AEROSOL + *FILTRATION + *TEST, FILTER + FILTER EFFICIENCY + FILTER, MEMBRANE + PARTICLE SIZE

7-16560

BARTHOUX A + SAROUL J

ETUDE DU COMPORTEMENT DES PRODUITS DE FISSION DANS LE SODIUM LIQUIDE (STUDY OF FISSION PRODUCT BEHAVIOR IN LIQUID SODIUM)

CENTRE D'ETUDES NUCLEAIRES DE CADARACHE, FRANCE

SM-85/9 +. 12 PAGES, 5 FIGURES, 4 TABLES, 2 REFERENCES, PRESENTED AT THE IAEA SYMPOSIUM ON ALKALI METAL COOLANTS CORROSION STUDIES AND SYSTEM OPERATING EXPERIENCE, VIENNA, NOVEMBER 28-DECEMBER 2, 1966

PRELIMINARY WORK ON THE RELEASE OR RETENTION OF FISSION PRODUCTS BY THE SODIUM COOLANT. RARE GASES AND IODINE ARE EASILY RELEASED TO THE COVER GAS. AUTHORS CANNOT EXTRAPOLATE FROM THIS EXPERIENCE TO A FULL-SCALE REACTOR.

AVAILABILITY - INTERNATIONAL ATOMIC ENERGY AGENCY (NEW YORK OR GENEVA)

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-16560 *CONTINUED*

*FISSION PRODUCT RELEASE, GENERAL + *FISSION PRODUCT RETENTION + *SODIUM + BARIUM + DIFFUSION + IODINE + METAL, LIQUID + NOBLE GAS

7-16562

CROFT JF + DAVIS RE + ILES RS

EXPERIMENTS ON THE SURFACE DEPOSITION OF AIRBORNE IODINE OF HIGH CONCENTRATION

UNITED KINGDOM ATOMIC ENERGY AUTHORITY, WINFRITH HEALTH, DORCHESTER, DORSET, ENGLAND

13 PAGES, 6 FIGURES, 6 TABLES, 6 REFERENCES, HEALTH PHYSICS JOURNAL 11, PAGE 1-13 (1965)

(1) THE LEVELS OF DEPOSITION ACHIEVED WERE SUCH AS TO CONFIRM THAT THE SURFACES OF A TYPICAL REACTOR CONTAINMENT COULD PROVIDE A SUFFICIENT RESERVOIR FOR THE FULL IODINE CORE INVENTORY. (2) THE RATE AND LEVEL OF DEPOSITION IS DEPENDENT ON THE NATURE OF THE SURFACE, BEING MUCH GREATER FOR MILD STEEL AND BARE CONCRETE THAN FOR PAINTED SURFACES. (3) THE PRESENCE OF STEAM AND RELATIVELY LARGE QUANTITIES OF CONDENSATE ON CONTAINMENT SURFACES WOULD NOT HAVE A SIGNIFICANT RETARDING EFFECT UPON IODINE DEPOSITION. (4) THE TOTAL BEHAVIOR OF THE AIRBORNE IODINE WOULD ALMOST CERTAINLY BE PARTIALLY DETERMINED BY THE PRESENCE OF PHYSICAL AND CHEMICAL FORMS OTHER THAN MOLECULAR VAPOR. IN THE PRESENT EXPERIMENTS, SUCH FORMS WERE PRODUCED, THOUGH NO SIGNIFICANT PARTICULATE-BORNE COMPONENT WAS PRESENT.

*AIRBORNE RELEASE + *DEPOSITION + *FISSION PRODUCT, IODINE + ADSORPTION + AEROSOL + CONCRETE + CONDENSATION + CONTAINMENT PAINT + DESORPTION + IODINE + STEAM + STEEL + SURFACE, PAINTED

7-16563

CASTLEMAN AW + TANG IN + MACKAY RA

FISSION PRODUCT BEHAVIOR IN SODIUM SYSTEMS

ARCOHAVEN NATIONAL LABORATORY

SM-R5/26 +. 16 PAGES, 2 FIGURES, 1 TABLE, 25 REFERENCES, PRESENTED AT IAEA SYMPOSIUM ON ALKALI METAL COOLANTS CORROSION STUDIES AND SYSTEM OPERATING EXPERIENCE, VIENNA, NOVEMBER 28-DECEMBER 2, 1966

A KNOWLEDGE OF THE BEHAVIOR OF FISSION PRODUCTS IN DILUTE SOLUTIONS IS OF BOTH PRACTICAL AND THEORETICAL INTEREST. WHAT LITTLE INFORMATION DOES EXIST HAS BEEN OBTAINED FROM GROSS MEASUREMENTS IN LARGE-SCALE SYSTEMS UNDER POORLY DEFINED CONDITIONS. THESE DATA ARE OF LITTLE VALUE IN THEIR APPLICATION TO OTHER SITUATIONS. FROM A THEORETICAL STANDPOINT, OUR UNDERSTANDING OF THE NATURE OF SOLUTES DISSOLVED IN METALLIC SOLUTIONS IS UNSATISFACTORY. THE REGIONS OF INTEREST ARE THOSE BELOW 0.00001 MOLE FRACTION, WHERE SOLUTE-SOLUTE INTERACTIONS BECOME NEGLIGIBLE. THREE TYPES OF DATA ARE ESSENTIAL FOR PREDICTING FISSION-PRODUCT BEHAVIOR IN SODIUM. THESE ARE (1) THE CHEMICAL POTENTIAL OF FISSION PRODUCTS IN LIQUID SODIUM, (2) THEIR VOLATILITY AND THE EXTENT TO WHICH THEY WOULD BE RELEASED DURING THE VAPORIZATION OF SODIUM, AND (3) THEIR CHEMICAL STATE UPON RELEASE TO THE VAPOR PHASE. EXPERIMENTAL AND THEORETICAL STUDIES ARE UNDER WAY TO PROVIDE SUCH FUNDAMENTAL DATA. (USEFUL REPORT. CLEARLY WRITTEN).

AVAILABILITY - INTERNATIONAL ATOMIC ENERGY AGENCY (NEW YORK OR GENEVA)

*FISSION PRODUCT RELEASE, GENERAL + *FISSION PRODUCT RETENTION + *SODIUM + ANTIMONY + BARIUM + CESIUM + CHEMICAL REACTION + FISSION PRODUCT, VOLATILE + IODINE + METAL, LIQUID + RUBIDIUM + STRONTIUM + TELLURIUM + VAPOR, VAPOR PRESSURE

7-16564

MCKEE CS + ROBERTS MW

STICKING PROBABILITY OF GASES ON METAL FILMS DETERMINED BY THE FLOW METHOD. NITROGEN ON MOLYBDENUM

DEPARTMENT OF CHEMISTRY, THE QUEENS UNIVERSITY OF BELFAST, IRELAND

3 PAGES, 7 REFERENCES, CHEMICAL COMMUNICATION 4, PAGE 59-61 (1965)

A DISCUSSION OF THE MECHANISM OF THE INITIAL INTERACTION OF GASES WITH METAL FILMS, IN PARTICULAR, THE DETAILS OF HOW AN ADSORBED LAYER IS FORMED AND HOW IT DEPENDS CRITICALLY ON THE ABSOLUTE VALUE OF THE STICKING PROBABILITY. TWO LIMITING CASES ARE POSSIBLE - (A) WHEN THE STICKING PROBABILITY IS HIGH, MOLECULES WILL BE ADSORBED AT ALMOST THE FIRST POINT OF IMPACT. (B) WITH A LOW STICKING PROBABILITY, MOLECULES CAN SEEK OUT THE MORE FAVORABLE ADSORPTION SITES.

*MOLYBDENUM + *NITROGEN + *SORPTION + CARBON MONOXIDE + MAGNESIUM + MATHEMATICAL TREATMENT + OXYGEN + TUNGSTEN

7-16565

CULLINAN HT

THE TRANSIENT BEHAVIOR OF A MULTICOMPONENT GAS ABSORBER

DEPARTMENT OF CHEMICAL ENGINEERING, STATE UNIVERSITY OF NEW YORK AT BUFFALO, BUFFALO, NEW YORK

5 PAGES, 11 REFERENCES, CHEMICAL ENGINEERING SCIENCE 21(12), PAGE 1145-1149 (DECEMBER 1966)

THE PROBLEM OF THE STARTUP OF A MULTICOMPONENT-PLATE ABSORBER WITH THEORETICALLY PERFECT PLATES IS INVESTIGATED. IN SUCH AN OPERATION COMPONENTS ARE COUPLED BY THE PHASE-EQUILIBRIUM THERMODYNAMICS. SOLUTIONS ARE OBTAINED AS MATRIX GENERALIZATIONS OF THE BINARY TRANSIENT SOLUTIONS, AND THE STABILITY OF THE LINEARIZED SYSTEMS IS DEMONSTRATED. THE OVERALL APPROACH TO STEADY STATE IS ALSO CONSIDERED.

*FISSION PRODUCT RETENTION + *MATHEMATICAL TREATMENT + *SCRUBBER

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-16560
CARRILL RM + SISMAN C + PEREZ WB + WATSON GM
UTILIZATION OF THE OAK RIDGE RESEARCH REACTOR TO STUDY THE MECHANISM OF FISSION-GAS RELEASE FROM REACTOR FUELS
OAK RIDGE NATIONAL LAB., TENN.
ORNL-P-2972 + CONF-670501-6 +. 27 PAGES, 1967

AN EXPERIMENTAL PROGRAM IS IN PROGRESS AT THE OAK RIDGE NATIONAL LABORATORY TO EVALUATE THE PARAMETERS THAT CONTROL THE RELEASE OF FISSION GAS DURING IRRADIATION IN THE HOPE OF DEVELOPING A MODEL TO PREDICT FISSION-GAS RELEASE FROM CERAMIC FUEL ELEMENTS. IN A PARALLEL PROGRAM COMPLEMENTARY STUDIES ARE BEING PERFORMED ON PYROLYTIC-CARBON-COATED FUEL PARTICLES TO EVALUATE THE INTEGRITY OF THE VARIOUS TYPES OF PYROCARBON COATINGS BY STUDYING THE FISSION-GAS RELEASE DURING IRRADIATION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*FISSION GAS RELEASE + *FUEL ELEMENT + CARBON + CLAD + COATED PARTICLE + HIGH TEMPERATURE + IRRADIATION TESTING + MATHEMATICAL STUDY + NOBLE GAS + ORR (OAK RIDGE RESEARCH REACTOR) + PERFORMANCE LIMIT + PRESSURE, INTERNAL + PYROLYTIC + REACTOR, RESEARCH + REACTOR, TEST + URANIUM DIOXIDE

7-16586 ALSO IN CATEGORIES 1 AND 11
COTTRELL WB
ORNL NUCLEAR SAFETY RESEARCH AND DEVELOPMENT PROGRAM BIMONTHLY REPORT FOR JANUARY - FEBRUARY 1967
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE
ORNL-TM-1792 +. 58 PAGES, FIGURES, TABLES, MARCH 6, 1967

INCLUDED IN THIS PROGRESS REPORT IS WORK ON VARIOUS CHEMICAL REACTIONS, AS WELL AS THE RELEASE, CHARACTERIZATION, AND TRANSPORT OF FISSION PRODUCTS IN CONTAINMENT SYSTEMS UNDER VARIOUS ACCIDENT CONDITIONS AND ON PROBLEMS ASSOCIATED WITH THE REMOVAL OF THESE FISSION PRODUCTS FROM GAS STREAMS. ALTHOUGH MOST OF THE WORK HAS BEEN AND CONTINUES TO BE IN GENERAL SUPPORT OF WATER POWER-REACTOR TECHNOLOGY, INCLUDING SOME IN DIRECT SUPPORT OF THE LOFT AND CSE PROGRAMS, SEVERAL PROJECTS WERE STARTED THE FIRST OF THE CALENDAR YEAR IN SUPPORT OF THE HIGH-TEMPERATURE GAS-COOLED REACTOR (HTGR) PROGRAM. THESE PROJECTS INCLUDE BOTH IN-PILE AND OUT-PILE STUDIES OF REACTION RATES AND FISSION PRODUCT RELEASE AND TRANSPORT PHENOMENA RELEVANT TO POTENTIAL HTGR ACCIDENT SITUATIONS. OTHER MAJOR PROJECTS INCLUDE FUEL TRANSPORT SAFETY INVESTIGATIONS, A SERIES OF DISCUSSION PAPERS ON VARIOUS ASPECTS OF WATER REACTOR TECHNOLOGY, AND THE STUDIES ON PRESSURE VESSEL TECHNOLOGY. EXPERIMENTAL WORK RELATIVE TO PRESSURE VESSEL TECHNOLOGY INCLUDES INVESTIGATIONS OF THE ATTACHMENT OF NOZZLES TO SHELLS AND THE VARIABILITY OF IMPACT DATA ON LOW-ALLOY STEELS.

AVAILABILITY - W. B. COTTRELL, OAK RIDGE NATIONAL LABORATORY, PO BOX Y, OAK RIDGE, TENNESSEE 37830

*CHEMICAL KINETICS + *CONTAINMENT, GENERAL + *CSE (CONTAINMENT SYSTEMS EXPERIMENT) + *FISSION PRODUCT RETENTION + *FISSION PRODUCT, AIRBORNE + *IMPACT PROPERTY + *IN PILE EXPERIMENT + *LOFT (LOSS OF FLUID TEST) + *NOZZLE + *OUT OF PILE LOOPS AND EXPERIMENTS + *PRESSURE VESSEL + *STEEL + FISSION PRODUCT RELEASE, GENERAL + FISSION PRODUCT TRANSPORT + REACTOR, HIGH TEMP. GAS

7-16588
COTTRELL WB
ORNL NUCLEAR SAFETY RESEARCH AND DEVELOPMENT PROGRAM BIMONTHLY REPORT FOR NOVEMBER - DECEMBER 1966
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE
ORNL-TM-1742 +. 58 PAGES, FIGURES, TABLES, JANUARY 1, 1967

INCLUDED IN THIS PROGRESS REPORT IS WORK ON VARIOUS CHEMICAL REACTIONS, AS WELL AS THE RELEASE, CHARACTERIZATION, AND TRANSPORT OF FISSION PRODUCTS IN CONTAINMENT SYSTEMS UNDER VARIOUS ACCIDENT CONDITIONS AND ON PROBLEMS ASSOCIATED WITH THE REMOVAL OF THESE FISSION PRODUCTS FROM GAS STREAMS. ALTHOUGH MOST OF THE WORK HAS BEEN AND CONTINUES TO BE IN GENERAL SUPPORT OF WATER POWER-REACTOR TECHNOLOGY, INCLUDING SOME IN DIRECT SUPPORT OF THE LOFT AND CSE PROGRAMS, SEVERAL PROJECTS WERE STARTED THE FIRST OF THE CALENDAR YEAR IN SUPPORT OF THE HIGH-TEMPERATURE GAS-COOLED REACTOR (HTGR) PROGRAM. THESE PROJECTS INCLUDE BOTH IN-PILE AND OUT-PILE STUDIES OF REACTION RATES AND FISSION PRODUCT RELEASE AND TRANSPORT PHENOMENA RELEVANT TO POTENTIAL HTGR ACCIDENT SITUATIONS. OTHER MAJOR PROJECTS INCLUDE FUEL TRANSPORT SAFETY INVESTIGATIONS, A SERIES OF DISCUSSION PAPERS ON VARIOUS ASPECTS OF WATER REACTOR TECHNOLOGY, AND THE STUDIES ON PRESSURE VESSEL TECHNOLOGY. EXPERIMENTAL WORK RELATIVE TO PRESSURE VESSEL TECHNOLOGY INCLUDES INVESTIGATIONS OF THE ATTACHMENT OF NOZZLES TO SHELLS AND THE VARIABILITY OF IMPACT DATA ON LOW-ALLOY STEELS.

AVAILABILITY - W. B. COTTRELL, OAK RIDGE NATIONAL LABORATORY, PO BOX Y, OAK RIDGE, TENNESSEE 37830

*CHEMICAL KINETICS + *CONTAINMENT, GENERAL + *CSE (CONTAINMENT SYSTEMS EXPERIMENT) + *FISSION PRODUCT RETENTION + *FISSION PRODUCT, AIRBORNE + *IMPACT PROPERTY + *IN PILE EXPERIMENT + *LOFT (LOSS OF FLUID TEST) + *NOZZLE + *OUT OF PILE LOOPS AND EXPERIMENTS + *PRESSURE VESSEL + *STEEL + FISSION PRODUCT RELEASE, GENERAL + FISSION PRODUCT TRANSPORT + REACTOR, HIGH TEMP. GAS

7-16632 ALSO IN CATEGORIES 5 AND 6
BAIN AS

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-16632 *CONTINUED*

MICROSCOPIC, AUTORADIOGRAPHIC AND FUEL/SHEATH HEAT TRANSFER STUDIES ON UO₂ FUEL ELEMENTS
ATOMIC ENERGY OF CANADA LIMITED, CHALK RIVER, ONTARIO
AECL-2558 +. 50 PAGES, 32 FIGURES, 23 TABLES, 24 REFERENCES, JUNE 1966

HEAT-TRANSFER MEASUREMENTS WERE MADE FROM UO₂ FUEL TO STAINLESS AND ZIRCALOY CLADDING IN THE
NRX REACTOR. DATA AND CONCLUSIONS ARE PRESENTED. (1) HEAT TRANSFER COEFFICIENTS BETWEEN
FUEL AND CLADDING INCREASED WITH DECREASED CLEARANCES. (2) FOR DIAMETRAL CLEARANCE UP TO
3.5%, THE MAJORITY OF HEAT TRANSFER WAS BETWEEN MATING ASPERITIES OF FUEL AND SHEATH.
MICROSCOPIC AND AUTORADIOGRAPHIC STUDIES WERE MADE OF THE FUEL ELEMENTS.

AVAILABILITY - ATOMIC ENERGY OF CANADA LIMITED, CHALK RIVER, ONTARIO, \$2.00 COPY

CLAD + FAILURE, FUEL ELEMENT + FUEL ELEMENT + HEAT TRANSFER + HEAT TRANSFER EXPERIMENT +
HEAT TRANSFER, CONDUCTION + HOT SPOT + MASS TRANSFER + NRX (CANADIAN NATURAL U-HEAVY WATER REACTOR)

7-16770 ALSO IN CATEGORIES 6 AND 5

KESSLER WF + WEYDERT LN
SNAPTRAN-2 DESTRUCTIVE TEST RESULTS
PHILLIPS PETROLEUM COMPANY, ATOMIC ENERGY DIVISION, IDAHO
IDC-17194 +. 118 PAGES, 56 FIGURES, 26 TABLES, 17 REFERENCES, JANUARY 1967

NUCLEAR, MECHANICAL, AND RADIOLOGICAL BEHAVIOR OF SNAPTRAN-2 WHEN SUBJECTED TO A RAPID
REACTIVITY ADDITION OF 5.1 DOLLARS IS DESCRIBED. TOTAL ENERGY RELEASE LIMITED TO 54 MW-SEC
PRIMARILY BY THE THERMAL NEGATIVE REACTIVITY FEEDBACK OF THE ZIRCONIUM-HYDRIDE-URANIUM FUEL.
RAPID CORE EXPANSION CAUSED BY HYDROGEN PRESSURE BUILDUP WHEN THE FUEL TEMPERATURE REACHED
1900 F. DURING DISPERSAL OF THE BURNING FUEL AND HYDROGEN, ABOUT 20% OF THE FISSION PRODUCTS
RELEASED TO ATMOSPHERE. POTENTIAL SIX-HOUR ACCUMULATIVE GAMMA EXPOSURE RESULTING FROM THE
TEST LESS THAN 10 R AT 100 METERS FROM THE REACTOR.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

DOSE MEASUREMENT, EXTERNAL + DOSIMETRY, GENERAL + FISSION PRODUCT RELEASE, GENERAL +
FISSION PRODUCT, AIRBORNE + FUEL EXPANSION COEFFICIENT + HYDRIDE + HYDROGEN + RADIOLOGY +
REACTOR TRANSIENT + SNAPTRAN (SNAP TRANSIENT REACTOR TEST SERIES) + TEMPERATURE COEFFICIENT + ZIRCONIUM

7-16781 ALSO IN CATEGORIES 6 AND 5

DIETZ KA
QUARTERLY TECHNICAL REPORT. STEP PROJECT. OCTOBER 1966-DECEMBER 1966
PHILLIPS PETROLEUM CO., IDAHO. ATOMIC ENERGY DIV.
IDC-17214 +. 26 PAGES, 26 FIGURES, 5 TABLES, 7 REFERENCES, APRIL 1967

THIS REPORT IS PART OF A SERIES OF PROGRESS REPORTS DEALING WITH SNAPTRAN 1 AND 2, LOFT
NUCLEAR DESIGN, BLOWDOWN ANALYSIS, MELTDOWN ANALYSIS, CONTAINMENT-INSIDE-SURFACE TEMPERATURE,
FISSION-PRODUCT BEHAVIOR, RADIOLOGICAL STUDIES, AND SEMISCALE BLOWDOWN-TEST PROGRAMS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65-MICROFICHE

*LOFT (LOSS OF FLUID TEST) + *SNAPTRAN (SNAP TRANSIENT REACTOR TEST SERIES) +
*STEP (SAFETY TEST ENGINEERING PROGRAM) + BLOWDOWN + CONTAINMENT, GENERAL + FISSION PRODUCT TRANSPORT +
FUEL MELTDOWN + RADIOLOGY + REACTOR, PRESSURIZED WATER

7-17020 ALSO IN CATEGORIES 12 AND 14

SCHUTTMANN W
GUIDELINES FOR THE DIAGNOSIS AND THERAPY OF ACUTE RADIATION DAMAGE
STATE CENTER FOR RADIATION PROTECTION
SZS 8(1966) +. 30 PAGES, AUGUST 1966, (IN GERMAN)

CLASSIFICATION OF RADIATION INJURIES, PURE RADIATION-INJURY DIAGNOSIS AND THERAPY.
RECOMMENDATIONS TO THE PHYSICIAN REGARDING THE EXCLUSION OF CERTAIN PERSONS FROM WORK WITH
IONIZING RADIATION.

AVAILABILITY - MICROCARD EDITIONS, INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN 54669

*GERMANY + *RADIATION PROTECTION, ORGANIZATION + RADIATION DAMAGE + RADIATION EFFECT +
RADIATION INJURY, TREATMENT OF + RADIATION SAFETY AND CONTROL + REGULATION, GENERAL

7-17068 ALSO IN CATEGORIES 5 AND 6

DICKERMAN CE
EXPERIMENTS AND ANALYSES IN FAST REACTOR SAFETY
ARGONNE NATIONAL LAB., ARGONNE, ILL.
7 PAGES, 2 FIGURES, 45 REFERENCES, NUCLEAR SAFETY 8(3), PAGES 220-226, (SPRING 1967)

REVIEW OF RECENT EXPERIMENTAL AND ANALYTICAL WORK ON THE BEHAVIOR OF FAST REACTOR CORES UNDER
ACCIDENT CONDITIONS. ORIENTATION OF THE SAFETY-RELATED INVESTIGATIONS IS DISCUSSED,
DEVELOPMENT OF EXPERIMENTAL EQUIPMENT AND TECHNIQUES IS SUMMARIZED, EXPERIMENTAL RESULTS ARE

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-17068 *CONTINUED*

DESCRIBED, AND THE STATUS OF ASSOCIATED ANALYTICAL TOOLS IS PRESENTED. INTENSIVE INVESTIGATIONS OF THE EFFECTS OF COOLANT ON FUEL FAILURE AND FUEL MOVEMENT AND ON TRANSIENT COOLANT VAPORIZATION AND HYDRODYNAMICS ARE BEGINNING.

*REACTOR, FAST + *SAFETY ANALYSIS + ACCIDENT ANALYSIS + CORE MELTDOWN + SAFETY EVALUATION + SAFETY PRINCIPLES AND PHILOSOPHY + SAFETY STUDY + TREAT (TRANSIENT TEST REACTOR FACILITY)

7-17112 ALSO IN CATEGORY 17
FILTER UNIT INSPECTION AND TESTING SERVICE FISCAL YEAR 1968
DIVISION OF OPERATIONAL SAFETY, U. S. ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.
4 PAGES OF HEALTH AND SAFETY INFORMATION BULLETIN NO. 253, JULY 10, 1967

DESCRIBES CONTAMINATION OF INSPECTION AND TESTING OF HIGH-EFFICIENCY FILTER UNITS AT OAK RIDGE GASEOUS DIFFUSION PLANT AND HANFORD OCCUPATIONAL HEALTH FOUNDATION. SERVICE IS FREE TO AEC OFFICES COST-TYPE CONTRACTORS. LUMP-SUM AND UNIT-PRICE CONTRACTORS, AEC LICENSEES, AND OTHERS WILL BE SUPPLIED ACCORDING TO APPENDED SCHEDULE OF CHARGES. DETAILED PROCEDURE FOR OBTAINING SERVICE IS GIVEN.

AVAILABILITY - AEC, DIVISION OF OPERATIONAL SAFETY, WASHINGTON, D. C.

*FILTER, HIGH EFFICIENCY + *TEST, FILTER

7-17326 ALSO IN CATEGORY 18
CONNECTICUT YANKEE CHARCOAL FILTER TESTS
CONNECTICUT YANKEE ATOMIC POWER COMPANY, HADDAM NECK PLANT, HADDAM, CONNECTICUT
CYAP-101 +. 100 PAGES, 21 FIGURES, 23 TABLES, 4 REFERENCES, DECEMBER, 1966, DOCKET NO. 50-213

THE TESTS WERE PERFORMED UNDER A WIDE RANGE OF CONDITIONS THAT INCLUDED (A) UNFILTERED MIXTURES OF ENTRAINED WATER, AIR, AND STEAM WITH CARBON BEDS SATURATED WITH LIQUID WATER, (B) HIGH-VELOCITY MIXTURES (MORE THAN 300 FPM), (C) HIGH-TEMPERATURE MIXTURES (MORE THAN 300 F). THE TESTS GENERALLY SHOWED THAT A 0.5-INCH BED DEPTH WOULD PERFORM SATISFACTORILY UNDER MOST CONDITIONS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ADSORPTION + *CHARCOAL + *FISSION PRODUCT RETENTION + *FISSION PRODUCT, IODINE + *ORGANIC IODIDE + *TEST, FILTER SYSTEM + CHROMATOGRAPHY + HADDAM NECK + REACTOR, PRESSURIZED WATER + SAMPLING + TRACER, RADIOACTIVE

CATEGORY 8
SOURCES OF ENERGY RELEASE UNDER ACCIDENT CONDITIONS

8-15753 ALSO IN CATEGORY 11
MOORE JC + GILBY EV

A REVIEW OF THE PROBLEMS ARISING FROM THE COMBUSTION OF HYDROGEN IN A WATER REACTOR CONTAINMENT
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, SAFEGUARDS DIVISION
AHSR(S)R-101 +. 48 PAGES, 18 FIGURES, 9 TABLES, 26 REFERENCES, 1966

A CRITICAL REVIEW WAS MADE OF THE FACTORS AFFECTING THE EXPLOSION AND DETONATION OF HYDROGEN-AIR-STEAM MIXTURES. THERE IS LITTLE EXPERIMENTAL INFORMATION DIRECTLY APPLICABLE TO THE CONDITIONS EXPECTED TO OCCUR IN THE CONTAINMENT OF A WATER REACTOR AFTER AN ACCIDENT. THIS PAPER MAKES RECOMMENDATIONS ON THE DATA WHICH SHOULD BE USED IN THESE CONDITIONS. AN APPRECIATION OF THE HAZARD TO CONTAINMENT INTEGRITY HAS SHOWN THAT THE UNCERTAINTIES IN THE DATA ARE SMALL COMPARED WITH THE UNCERTAINTIES IN OTHER AREAS OF THE PROBLEM. PARTICULAR CONSIDERATION WAS GIVEN TO A TYPICAL LARGE PWR, AND IT WAS FOUND THAT THERE IS LITTLE RISK TO THE CONTAINMENT IF THE HYDROGEN IS UNIFORMLY DISTRIBUTED. HOWEVER, IT WAS NOT POSSIBLE TO ASSESS COMPLETELY THE EFFECTS OF AN ASSYMETRIC LOADING DUE TO THE EXPLOSION OR DETONATION OF A POCKET OF HYDROGEN CLOSE TO THE CONTAINMENT BOUNDARY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*CONTAINMENT STRUCTURE + *CONTAINMENT, SHOCK GENERATION AND PROTECTION + *EXPLOSION + *HYDROGEN + OXYGEN + STEAM

8-15934 ALSO IN CATEGORIES 7 AND 12
SAVAGE HW
HISTORY OF THE AEC SODIUM COMPONENTS DEVELOPMENT PROGRAM. VOLUME I
OAK RIDGE NATIONAL LABORATORY
ORNL-3955 (VOL. 1) +. 401 PAGES, DECEMBER 1966

THIS HISTORY WILL BE OF GREAT INTEREST TO THOSE WHO HAVE HAD A PART IN THE DEVELOPMENT OF LIQUID-METAL COMPONENTS TECHNOLOGY DURING THE LAST EIGHT TO NINE YEARS, AND WE SINCERELY HOPE THAT IT WILL SERVE AS AN ACCURATE REFLECTION OF THE CONTRIBUTION OF THE SODIUM COMPONENTS DEVELOPMENT PROGRAM WORKING GROUP IS MAKING TO THAT DEVELOPING TECHNOLOGY. THIS VOLUME IS A SUMMARY OF DEVELOPMENT PROGRAMS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*EQUIPMENT DESIGN + *FABRICATION + *FERMI + *HEAT EXCHANGER + *INSTRUMENTATION, GENERAL + *METAL WATER REACTION + *OPERATING EXPERIENCE + *PUMP + *SODIUM + *TESTING + MAIN COOLING SYSTEM + REACTOR, LIQUID METAL COOLED

8-15935 ALSO IN CATEGORIES 7 AND 12
SAVAGE HW
HISTORY OF THE AEC SODIUM COMPONENTS DEVELOPMENT PROGRAM. VOLUME II
OAK RIDGE NATIONAL LABORATORY
ORNL-3955 (VOL. 2) +. 568 PAGES, DECEMBER 1966

THIS HISTORY WILL BE OF GREAT INTEREST TO THOSE WHO HAVE HAD A PART IN THE DEVELOPMENT OF LIQUID-METAL COMPONENTS TECHNOLOGY DURING THE LAST EIGHT TO NINE YEARS, AND WE SINCERELY HOPE THAT IT WILL SERVE AS AN ACCURATE REFLECTION OF THE CONTRIBUTION OF THE SODIUM COMPONENTS DEVELOPMENT PROGRAM WORKING GROUP IS MAKING TO THAT DEVELOPING TECHNOLOGY. THIS VOLUME CONSISTS OF REPORTS OF SUBCOMMITTEE MEETINGS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*EQUIPMENT DESIGN + *FABRICATION + *HEAT EXCHANGER + *INSTRUMENTATION, GENERAL + *METAL WATER REACTION + *OPERATING EXPERIENCE + *PUMP + *SODIUM + *TESTING + MAIN COOLING SYSTEM + REACTOR, LIQUID METAL COOLED

8-15936 ALSO IN CATEGORIES 7 AND 12
SAVAGE HW
HISTORY OF THE AEC SODIUM COMPONENTS DEVELOPMENT PROGRAM. VOLUME III
OAK RIDGE NATIONAL LABORATORY
ORNL-3955 (VOL. 3) +. 484 PAGES, TABLES, DECEMBER 1966

THIS HISTORY WILL BE OF GREAT INTEREST TO THOSE WHO HAVE HAD A PART IN DEVELOPING LIQUID-METAL COMPONENTS TECHNOLOGY DURING THE LAST EIGHT TO NINE YEARS, AND WE SINCERELY HOPE THAT IT WILL SERVE AS AN ACCURATE REFLECTION OF THE CONTRIBUTION OF THE SODIUM COMPONENTS DEVELOPMENT PROGRAM WORKING GROUP IS MAKING TO THAT DEVELOPING TECHNOLOGY. THIS VOLUME CONSISTS OF QUESTIONNAIRES SENT TO MEMBERS AND ALTERNATES, AND REPLIES. ALSO INCLUDED ARE THE MONTHLY COORDINATION REPORTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*EQUIPMENT DESIGN + *FABRICATION + *HEAT EXCHANGER + *INSTRUMENTATION, GENERAL + *METAL WATER REACTION +

CATEGORY 8
SOURCES OF ENERGY RELEASE UNDER ACCIDENT CONDITIONS

R-15936 *CONTINUED*
*CORRELATING EXPERIENCE + *PUMP + *SODIUM + *TESTING + MAIN COOLING SYSTEM + REACTOR, LIQUID METAL COOLED

R-16126
HOLTZ RF
THE EFFECT OF THE PRESSURE-TEMPERATURE HISTORY UPON INCIPIENT-BOILING SUPERHEATS IN LIQUID METALS
ARGONNE NATIONAL LAB., ILL.
ANL-7184 +. 38 PAGES, 19 FIGURES, 25 REFERENCES, JUNE 1966

THE DEGREES OF LIQUID SUPERHEAT REQUIRED TO START BOILING IN THE ALKALI METALS ARE FOUND BY EXAMINING THE PRESSURE-TEMPERATURE HISTORY OF THE SYSTEM AND BY USING THE BUBBLE-EQUILIBRIUM EQUATION. THE CALCULATED INCIPIENT-BOILING SUPERHEATS FOR SODIUM AND POTASSIUM ARE SHOWN TO BE IN AGREEMENT WITH DATA PRESENTED IN THE LITERATURE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*METAL, ALKALI + *METAL, LIQUID + *NUCLEATE BOILING + PRESSURE, EXTERNAL + TEMPERATURE GRADIENT

R-16165 ALSO IN CATEGORIES 5 AND 6
Dwyer OF
RECENT DEVELOPMENTS IN LIQUID-METAL HEAT TRANSFER
ROCKHAVEN NATIONAL LABORATORY, UPTON, N. Y.
90 PAGES, 51 FIGURES, 12 TABLES, 100 REFERENCES, ATOMIC ENERGY REVIEW 4(1) PAGES 3-92 (1966)

SUMMARIZED DEVELOPMENTS IN LIQUID-METAL HEAT TRANSFER THAT HAVE OCCURRED, FOR THE MOST PART, DURING THE PAST 5 YEARS. PRESENTS COMPARISONS BETWEEN THEORETICAL AND EMPIRICAL PREDICTIONS AND EXPERIMENTAL RESULTS, WITH ACCOMPANYING DISCUSSIONS. ALSO, AREAS WHERE FURTHER RESEARCH IS NEEDED ARE INDICATED. SINCE THE SUBJECT CANNOT BE COMPLETELY COVERED IN A SINGLE ARTICLE, EMPHASIS IS GIVEN TO THOSE TOPICS OF MOST ENGINEERING INTEREST. MOREOVER, WITH EACH TOPIC THE THOROUGHNESS OF TREATMENT VARIES ACCORDING NOT ONLY TO REPORTED PROGRESS BUT ALSO TO CURRENT INTEREST. THE PRINCIPAL TOPIC COVERED INCLUDES LIQUID-METAL HEAT TRANSFER FOR (A) FLOW IN PIPES, (B) FLOW IN ANNULI, (C) FLOW BETWEEN PARALLEL PLATES, (D) IN-LINE FLOW THROUGH ROD BUNDLES, (E) OBLIQUE FLOW THROUGH ROD BUNDLES (F) 90-DEG CROSS FLOW THROUGH ROD BUNDLES (G) POOL BOILING, (H) NATURAL-CONVECTION BOILING IN A RECIRCULATING LOOP, (I) FORCED-CONVECTION BOILING IN A RECIRCULATING LOOP, AND (J) CRITICAL HEAT FLUX IN BOTH POOL AND FORCED-CONVECTION BOILING.

ANNULUS + HEAT TRANSFER + HEAT TRANSFER EXPERIMENT + HEAT TRANSFER, BOILING + HEAT TRANSFER, CONVECTION + METAL, LIQUID + POOL BOILING + REVIEW

R-16178 ALSO IN CATEGORY 5
STUDY OF THE FLOW DISTRIBUTION IN A TWO-CHANNEL TEST SECTION. SPECIAL REPORT 24
SOCIETE NATIONALE D'ETUDE ET DE CONSTRUCTION DE MOTEURS D'AVIATION, SURESNES, FRANCE
EURAF-1611 + EUR-2824 +. 40 PAGES, FEBRUARY 10, 1966

EXPERIMENTAL OBSERVATIONS AND MEASUREMENTS OF AIR-WATER MIXTURES FLOWING IN A TWO-CHANNEL TEST SECTION ARE USED TO CLARIFY CROSS-MIXING OF TWO-PHASE COOLANT IN FUEL BUNDLES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

FLOW DISTRIBUTION + FLOW, CROSS + FLOW, TWO PHASE + HYDRAULIC EXPERIMENT

R-16181 ALSO IN CATEGORIES 4 AND 5
KEMME JF
HEAT PIPE CAPABILITY EXPERIMENTS.
LOS ALAMOS SCIENTIFIC LAB., UNIVERSITY OF CALIF., LOS ALAMOS, NEW MEXICO
SC-M-66-623 + CONF-660645 +. 6 PAGES, OCTOBER 1966, PROCEEDINGS OF JOINT ATOMIC ENERGY COMMISSION/SANDIA LABORATORIES HEAT PIPE CONFERENCE HELD AT ALBUQUERQUE, NEW MEXICO, JUNE 1, 1966, VOLUME I, PUBLISHED BY SPACE ISOTOPE POWER DEPARTMENT, SANDIA LABORATORIES

IN ENGINEERING APPLICATIONS, HEAT PIPES MAY SERVE ADVANTAGEOUSLY AS THERMAL CONDUCTORS, AS HEAT-FLUX TRANSFORMERS, AS ISOTHERMALIZERS, AS THERMOSTATS, OR IN COMBINATIONS OF THESE ROLES. EXCEPTING SOME QUESTIONS OF LONG-TERM MATERIALS COMPATIBILITY, PRESENT KNOWLEDGE OF RELEVANT MATERIALS PROPERTIES AND UNDERSTANDING OF THE ENGINEERING PHYSICS OF THE HEAT-PIPE PROCESS ARE SUFFICIENTLY GOOD TO PERMIT REALISTIC PREDICTION OF THE GENERAL FEASIBILITY OF A PROSPECTIVE NEW APPLICATION BUT NOT PRECISE OR DETAILED ENOUGH TO SERVE FOR THE GENERALIZATION OF TRULY OPTIMAL DESIGNS. THE CURRENT THEORY FOR DESIGN AND PERFORMANCE ANALYSIS OF HEAT PIPES IS SUMMARIZED BRIEFLY, AND THE PRINCIPAL OUTSTANDING GAPS ARE DISCUSSED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

FLOW, LAMINAR + HEAT EXCHANGER + HEAT PIPE + SPACECRAFT

CATEGORY 8
SOURCES OF ENERGY RELEASE UNDER ACCIDENT CONDITIONS

R-16281 ALSO IN CATEGORIES 5 AND 6
WENTZ LR + WRIGHT RW + ZIVI SM
THE POSSIBILITY OF DESTRUCTIVE IN-CORE PRESSURES IN POWER REACTOR MELTDOWN ACCIDENTS
TRW SYSTEMS, REDONDO BEACH, CALIFORNIA
STL 372-44 +. PAGES 3-8 OF QUARTERLY PROGRESS REPORT FOR PERIOD ENDING JUNE 30, 1966 - KINETIC STUDIES OF
HETEROGENEOUS WATER REACTORS, 45 PAGES, 14 FIGURES, 1 TABLE, 30 REFERENCES, JULY 31, 1966

THE TRANSIENT HEAT FLUX OBTAINABLE FROM MOLTEN UO₂ IS COMPARABLE TO THAT FROM MOLTEN ALUMINUM.
IN THE ABSENCE OF DEFINITIVE EXPERIMENTS, ONE CANNOT CONCLUDE WHETHER DESTRUCTIVE PRESSURES
WILL BE PRODUCED BY THE IN-CORE INTERACTION OF WATER AND MOLTEN OXIDE FUEL.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

*HYDRAULIC ANALYSIS + *THERMAL ANALYSIS + ACCIDENT ANALYSIS + HEAT TRANSFER, BOILING +
METAL WATER REACTION + REACTOR TRANSIENT + URANIUM OXIDE

R-16285 ALSO IN CATEGORIES 5 AND 6
WRIGHT PW + FIRSTENBERG AF + HUMBERSTONE GH
SHOCK TUBE EXPERIMENT ON PRESSURE GENERATION
TRW SYSTEMS, REDONDO BEACH, CALIFORNIA
STL 372-47 +. PAGES 3-14 OF QUARTERLY PROGRESS REPORT FOR PERIOD ENDING SEPT. 30, 1966 - KINETIC STUDIES
OF HETEROGENEOUS WATER REACTORS, 50 PAGES, 27 FIGURES, 1 TABLE, 11 REFERENCES, OCTOBER 31, 1966

IN SHOCK-TUBE EXPERIMENTS, THE PRESSURE PULSE PRODUCED BY WATER IMPACT UPON 1000 C ALUMINUM
PRODUCED A PRESSURE PULSE THAT ROSE TO 5800 PSI BEFORE RUPTURE, GREATER THAN THE WATER
CRITICAL PRESSURE OF 3200 PSIG. AN EXPERIMENT WAS PERFORMED WITH WATER IMPACTING ON MOLTEN
SILVER, WHICH ELIMINATES THE POSSIBILITY OF A CHEMICAL CONTRIBUTION TO PRESSURE GENERATION.
THESE RESULTS WERE SIMILAR TO THOSE FOR MOLTEN ALUMINUM. SHOCK-TUBE RUNS WITH POWDERED UO₂
AT 800 AND 1200 C PRODUCED UO₂ DISPERSAL INTO THE WATER, BUT PRESSURES OF ONLY 240 PSIA AND
320 PSIA, RESPECTIVELY. ONE CANNOT SAFELY EXCLUDE THE POSSIBILITY OF HIGHER PRESSURES FROM
THE INTERACTION OF WATER WITH VERY MUCH HOTTER MOLTEN UO₂.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

*HYDRAULIC ANALYSIS + *THERMAL ANALYSIS + ACCIDENT ANALYSIS + ALUMINUM + HEAT TRANSFER, BOILING +
METAL WATER REACTION + REACTOR TRANSIENT + SILVER + URANIUM OXIDE

R-16287 ALSO IN CATEGORIES 5 AND 6
WENTZ LR
IN-PILE CAPSULE MEASUREMENTS OF TRANSIENT STEAM-VOID FORMATION
TRW SYSTEMS, REDONDO BEACH, CALIFORNIA
STL-372-47 +. PAGES 15-23 OF QUARTERLY PROGRESS REPORT FOR PERIOD ENDING SEPT. 30, 1966 - KINETIC STUDIES
OF HETEROGENEOUS WATER REACTORS, 50 PAGES, 27 FIGURES, 1 TABLE, 11 REFERENCES, OCTOBER 31, 1966

IN OUR IN-PILE CAPSULE THE INITIAL PRESSURE WAS VARIED FROM 0 TO 1500 PSIA, WITH THE REACTOR
PERIOD VARIED BETWEEN 3 AND 5 MILLISECONDS AT EACH STEP. THE BEHAVIOR WAS QUALITATIVELY
SIMILAR AT ALL PRESSURES. THE WATER-HAMMER IMPACT PRESSURE FROM VAPOR-BLANKET COLLAPSE
INCREASED WITH INITIAL PRESSURE TO A MAXIMUM NEAR 400 PSIA AND THEN DECREASED AT HIGHER
PRESSURE. WATER-HAMMER IMPACT PRESSURES UP TO 1000 PSI WERE OBSERVED, BUT THE PRESSURES FROM
THE INITIAL NUCLEATE BOILING PHASE WERE LESS THAN 150 PSI.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151 \$3.00 COPY, \$0.65 MICRONEGATIVE

HEAT TRANSFER, BOILING + KEWB (KINETIC EXPERIMENT ON WATER BOILERS) + REACTOR TRANSIENT +
REACTOR, HOMOGENEOUS + REACTOR, RESEARCH

R-16353 ALSO IN CATEGORY 18
QUESTION D-2(A) THRU 2(D)--DESIGN BASIS ACCIDENT
COMMONWEALTH EDISON COMPANY
11 PAGES, PAGES D-2-1 TO D-2-11 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

PROVIDE INFORMATION RELATED TO THE DESIGN-BASIS ACCIDENT FOR THE CONTAINMENT - (A) DISCUSS
BASIS ON WHICH MELTING POINT OF ZIRCONIUM WAS CHOSEN AS TERMINATION TEMPERATURE FOR THE
ZIRCONIUM-WATER REACTION. DISCUSS SUPPORTING EXPERIMENTAL DATA. WHAT ADDITIONAL REACTION
MIGHT OCCUR IF TERMINATION TEMPERATURE CHOSEN WAS THAT OF ZIRCONIUM OXIDE. OVER WHAT TIME
PERIOD WOULD REACTION TAKE PLACE. WHAT ASPECTS OF CALCULATIONAL MODEL CONTRIBUTE TO
SENSITIVITY OF EXTENT OF REACTION TO TERMINATION TEMPERATURE CHOSEN. (B) HOW WOULD REPORTED
RESULTS BE AFFECTED IF HEAT GENERATED IS TRANSFERRED IN DISCRETE STEPS AS (1) SECTIONS OF
CLAD AND FUEL REACH MELTING POINT OF ZIRCONIUM, AND/OR (2) CORE-SUPPORT STRUCTURE REACHES ITS
MELTING POINT DUE TO HEAT TRANSFER FROM REACTING CORE PROPER. (C) PROVIDE, IN DETAIL,
DOCUMENTATION AS TO BASES OF ASSUMPTIONS AND MODEL USED TO OBTAIN CONTAINMENT-CAPABILITY
CURVE. (D) WHAT WOULD PRESSURE IN CONTAINMENT BE IF ZIRCONIUM-WATER REACTION OCCURRED UP TO
MELTING POINT OF OXIDE.

CATEGORY 8
SOURCES OF ENERGY RELEASE UNDER ACCIDENT CONDITIONS

R-16353 *CONTINUED*
AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTAINMENT DESIGN + *METAL WATER REACTION + *ZIRCALOY + *ZIRCONIUM + AEC QUESTION + DRESDEN 3 +
HEAT TRANSFER, CONDUCTION + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

R-16398 ALSO IN CATEGORIES 5 AND 6
MATZNER R + CASTERLINE JE + BIDERMAN R
TOPICAL REPORT NO. 4. CRITICAL HEAT FLUX IN LONG TUBES AT 1000 PSIA WITH AND WITHOUT SWIRL PROMOTERS.
COLUMBIA UNIVERSITY, CHEMICAL ENGINEERING DEPT., NEW YORK
TID-22,496 +. 34 PAGES, 9 FIGURES, 2 TABLES, 8 REFERENCES, FEBRUARY 4, 1965

OVER 200 CRITICAL-HEAT-FLUX POINTS AND OVER 400 TWO-PHASE PRESSURE-DROP POINTS WERE OBTAINED FOR SIX ELECTRICALLY HEATED TEST SECTIONS WITH VERTICAL UPFLOW OF BOILING WATER AT 1000 PSIA. THE THREE AXIAL-FLOW TEST SECTIONS HAD HEATED LENGTHS OF 8, 12, AND 16 FT. OF THE THREE SWIRL-FLOW TEST SECTIONS, ONE WITH A 16-FT HEATED LENGTH EMPLOYED A FULL-LENGTH TWISTED TAPE WHILE THE OTHER TWO WITH HEATED LENGTHS OF 12 AND 16 FT USED 2-IN.-LONG TAPE SEGMENTS INSTALLED ONE EACH AT THE INLET AND 8 FT DOWNSTREAM. THE RANGES OF EXPERIMENTAL VARIABLES COVERED WERE - MASS VELOCITIES BETWEEN 1 MILLION AND 7 MILLION LB/HR/SQ. FT, EXIT QUALITIES BETWEEN 1 AND 89%, AND CRITICAL HEAT FLUXES AS HIGH AS 1.3 MILLION BTU/HR/SQ. FT. IT WAS CONCLUDED THAT PROPERLY DESIGNED SWIRL PROMOTERS HAD THE POTENTIAL FOR INCREASING THE CRITICAL HEAT FLUX INSIDE TUBES WITHOUT EXTRA PUMPING POWER.

AVAILABILITY OAK RIDGE ASSOCIATED UNIVERSITIES, BADGER AVENUE, OAK RIDGE, TENN.

*DNR (DEPARTURE FROM NUCLEATE BOILING) + *HEAT FLUX, DRYOUT + *HEAT TRANSFER + *PRESSURE DROP +
FLOW THEORY AND EXPERIMENTS + FLOW, TWO PHASE + HEAT TRANSFER AUGMENTATION + HEAT TRANSFER EXPERIMENT +
HEAT TRANSFER, BOILING

R-16461 ALSO IN CATEGORIES 7 AND 12
SHIELDS RP + MILLER CE
THE EFFECT OF FISSION PRODUCTS ON CHARCOAL IGNITION
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.
ORNL-TM-1729 +. 31 PAGES, 10 FIGURES, 3 TABLES, 2 REFERENCES, JAN. 10, 1967

IN A NUCLEAR ACCIDENT IN WHICH FISSION PRODUCTS ARE RELEASED INTO THE CONTAINMENT SYSTEM, THE CHARCOAL ADSORBERS USED FOR REMOVAL OF IODINE WOULD BE SUBJECT TO RAPID LOADING. IF AIR WERE PRESENT BUT NOT FLOWING, THE HEAT GENERATED IN THE ADSORBER BY DECAY OF FISSION PRODUCTS MIGHT RAISE THE TEMPERATURE OF SMALL AREAS OF THE CHARCOAL ADSORBER TO THE POINT WHERE THE RESUMPTION OF AIR FLOW WOULD IGNITE THE CHARCOAL. AN IN-PILE EXPERIMENT WAS PERFORMED TO STUDY HOT-SPOT EFFECTS UNDER CONDITIONS WHICH SIMULATE THOSE IN THE ADSORBER DURING A REACTOR ACCIDENT. THE IGNITION TEMPERATURE OF THE CHARCOAL WAS INCREASED BY THE PRESENCE OF FISSION PRODUCTS. ALTHOUGH THE ADSORBER WAS LOADED WITH 8 TIMES MORE RADIOACTIVE IODINE PER SQUARE INCH OF FRONT SURFACE THAN EXPECTED IN ADSORBERS SUCH AS IN HFIR AND NPR, THERE HAS BEEN NO EVIDENCE OF HOT-SPOT EFFECTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

*ADSORPTION + *CHARCOAL + *FIRE + *FISSION PRODUCT, IODINE + *IGNITION + HFIR (HIGH FLUX ISOTOPE REACTOR) +
NPR (HANFORD NEW PRODUCTION REACTOR) + REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED +
REACTOR, RESEARCH + REACTOR, TEST

R-16570 ALSO IN CATEGORIES 5 AND 6
TESTA FJ + PAVLIK J + IVINS PO
FUEL-COOLANT AND CLADDING-COOLANT INTERACTION STUDIES. CHEMICAL ENGINEERING DIVISION FROM SEMI-ANNUAL REPORT, JAN.-JUNE 1966
ARGONNE NATIONAL LAB., ILL.
ANL-7225 +. 2 PAGES, 1 FIGURE, PAGE 189-190 FROM NOVEMBER 1966

SMALL, HEATED SAMPLES OF 304 STAINLESS STEEL WERE DROPPED IN SODIUM OF TEMPERATURES BETWEEN 250 AND 920 C. NO CHEMICAL INTERACTION, BUT EXTENSIVE FRAGMENTATION. MEAN PARTICLE SIZE DECREASED WITH SODIUM TEMPERATURE. FRAGMENTATION IN LITHIUM SLIGHTLY LESS EXTENSIVE, IN POTASSIUM SUBSTANTIALLY THE SAME.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

CLAD + FUEL INTEGRITY + LITHIUM + POTASSIUM + SODIUM + STEEL, STAINLESS

R-16621 ALSO IN CATEGORY 1P
QUESTION D-1--METAL-WATER REACTION IN CONTAINMENT
THE CONNECTICUT LIGHT AND POWER COMPANY + THE HARTFORD ELECTRIC LIGHT COMPANY + WESTERN MASSACHUSETTS ELECTRIC COMPANY
2 PAGES, 1 FIGURE, 14 REFERENCES, 1966, PAGES D-1-1 TO D-1-P FROM DESIGN AND ANALYSIS REPORT, AMENDMENT NO. 1, DOCKET NO. 50-245, MILLSTONE NUCLEAR POWER PLANT

D. SAFETY ANALYSIS - REGARDING DESIGN-BASIS ACCIDENT FOR CONTAINMENT - (A) DISCUSS BASIS ON

CATEGORY 8
SOURCES OF ENERGY RELEASE UNDER ACCIDENT CONDITIONS

8-16621 *CONTINUED*

WHICH MELTING POINT OF ZIRCONIUM WAS CHOSEN AS TERMINATION TEMPERATURE FOR ZIRCONIUM-WATER REACTION. DISCUSS SUPPORTING EXPERIMENTAL DATA WHICH MIGHT SUPPORT THIS CONTENTION. WHAT ADDITIONAL AMOUNT OF REACTION WOULD OCCUR IF THE TERMINATION TEMPERATURE WERE MELTING POINT OF ZIRCONIUM OXIDE. (B) PROVIDE DOCUMENTATION OF ASSUMPTIONS AND MODEL USED TO OBTAIN FIGURE 11P. IF THE ZIRCONIUM-WATER REACTION OCCURRED UP TO MELTING POINT OF OXIDE, WHAT WOULD BE PRESSURE IN CONTAINMENT. WHAT WOULD BE EFFECT ON CONTAINMENT CAPABILITY. (C) RECTIFY INCONSISTENCY BETWEEN FIGURES 114 AND 115 REGARDING PRESSURE PLATEAU REACHED BEFORE ACTUATION OF CONTAINMENT SPRAY.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTAINMENT DESIGN + *METAL WATER REACTION + AEC QUESTION + ANALYTICAL MODEL + MILLSTONE POINT + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY + ZIRCALOY

8-16789 ALSO IN CATEGORIES 6 AND 11
REACTOR DEVELOPMENT PROGRAM. PROGRESS REPORT
ARGONNE NATIONAL LABORATORY, ILL.
ANL-7308 +. 97 PAGES, 21 FIGURES, TABLES, MARCH 28, 1967

THIS REPORT IS ONE OF A SERIES OF PROGRESS REPORTS ON THE FOLLOWING SUBJECTS - IRRADIATION OF FUEL PINS, TREAT MELTDOWN TEST, INTEGRAL SODIUM LOOP, FAST-REACTOR SAFETY CONTAINMENT, EQUATION OF STATE OF REFRACTORIES SUCH AS UO₂, METAL-WATER REACTIONS, AND PLUTONIUM VOLATILITY SAFETY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

CONTAINMENT DESIGN + EQUATION OF STATE + FUEL MELTDOWN + METAL WATER REACTION + PLUTONIUM + REACTOR DYNAMICS + REACTOR, FAST + REACTOR, GRAPHITE MODERATED + REACTOR, TEST + SODIUM + TREAT (TRANSIENT TEST REACTOR FACILITY) + URANIUM OXIDE

8-17358 ALSO IN CATEGORY 5
GENCO JM
METAL-WATER REACTIONS
BATTTELLE MEMORIAL INSTITUTE
1 PAGE, 1 FIGURE, REACTOR MATERIALS 10(2) PAGE 104 (SUMMER 1967)

SUMMARY OF CHEMLOC-1 COMPUTER PROGRAM REPORTED IN ANL-7267. THIS FORTRAN PROGRAM DESCRIBES THE CORE HEATING AND METAL-WATER REACTION DURING A LOSS-OF-COOLANT ACCIDENT.

*ACCIDENT MODEL + *ACCIDENT, LOSS OF COOLANT + *ANALYTICAL MODEL + *METAL WATER REACTION + *TEMPERATURE TRANSIENT + ANL (ARGONNE NATIONAL LABORATORY) + CLAD + HEAT TRANSFER + STEAM

8-17412 ALSO IN CATEGORY 1
WHITMARSH CL
WATER CHEMISTRY IN THE N.S. SAVANNAH REACTOR. EFFECT OF A CORE COMPONENT CHANGE FROM 304 STAINLESS STEEL TO ZIRCALOY-4.
OAK RIDGE NATIONAL LAB., TENN.
ORNL-TM-1844 +. 11 PAGES, APRIL 28, 1967

EFFECT OF CHANGING THE MATERIAL OF CONSTRUCTION OF THE FUEL-ELEMENT CONTAINER (A STRUCTURAL COMPONENT IN THE CORE OF THE NS SAVANNAH REACTOR) FROM 304 STAINLESS STEEL TO ZIRCALOY-4 WAS CONSIDERED WITH RESPECT TO THE WATER CHEMISTRY OF THE PRIMARY COOLANT SYSTEM. NO DETRIMENTAL EFFECTS FORESEEN FROM THE STANDPOINTS OF CRUD CHARACTERISTICS AND CHEMICAL EFFECTS ON MATERIAL PROPERTIES. CONSEQUENTLY, NO CHANGES NECESSARY TO THE PRIMARY-LOOP PURIFICATION SYSTEM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*CHEMICAL REACTION + *N S SAVANNAH + *STEEL, STAINLESS + *WATER, GENERAL + *ZIRCALOY + CLAD + CRUD + FUEL ELEMENT + REACTOR, MARITIME + REACTOR, PRESSURIZED WATER

8-17414 ALSO IN CATEGORY 5
VAN SLYKE WJ
THERMAL EFFECTS IN PACKED BED PROCESSES
BATTTELLE MEMORIAL INSTITUTE, PACIFIC NORTHWEST LABORATORY, RICHLAND, WASHINGTON
BNWL-113-23 + CONF-661-025-3 + BNWL-SA-942 +. 6 PAGES, 7 REFERENCES, OCTOBER 1966

AFTER A SERIES OF FIRES OR EXPLOSIONS INVOLVING NITRIC ACID AND ORGANIC RESINS, AN INVESTIGATION WAS STARTED TO PREDICT THE DYNAMIC PROCESS. A ONE-DIMENSIONAL FINITE-DIFFERENCE HEAT AND MASS TRANSFER MODEL WAS PROGRAMMED FOR THE DIGITAL COMPUTER TO SIMULATE THE ION-EXCHANGE PROCESS BEHAVIOR. THE ANION EXCHANGE PROCESS FOR PLUTONIUM PURIFICATION PREFERENTIALLY LOADS PLUTONIUM ONTO THE RESIN IN STRONG NITRIC ACID, WASHES AWAY IMPURITIES, AND FINALLY DESORBS THE PURIFIED PLUTONIUM. NO EXOTHERMIC TENDENCIES WERE OBSERVED IN INITIAL LABORATORY STUDIES. THE RESULT IS THAT THE TIME-TEMPERATURE-LOCATION BEHAVIOR FOR PACKED-BED PROCESSES CAN BE CALCULATED FROM FUNDAMENTAL EXPERIMENTAL DATA.

CATEGORY 8
SOURCES OF ENERGY RELEASE UNDER ACCIDENT CONDITIONS

8-17414 *CONTINUED*

THESE CALCULATIONS SHOW THAT EVEN QUITE MINOR HEAT-PRODUCING PROCESSES CAN PRODUCE SERIOUSLY HIGH TEMPERATURES UNDER CERTAIN CONDITIONS WHERE FLOW RATES, CHEMICAL CONCENTRATIONS, AND SYSTEM THERMAL PROPERTIES MATCH UNFAVORABLY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*CHEMICAL REACTION + *EXPLOSION + *MATHEMATICAL TREATMENT + *PLUTONIUM + *RADIOCHEMICAL PROCESSING +
*SAFETY ANALYSIS

CATEGORY 0
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-13686 ALSO IN CATEGORY 17
SELECTED PEACH BOTTOM OPERATIONS EXPERIENCE
PHILADELPHIA ELECTRIC COMPANY
TID-23301 +. 22 PAGES OF MONTHLY OPERATIONS REPORT NO. 2 ON THE PEACH BOTTOM ATOMIC POWER STATION, APRIL 1-30, 1966, DOCKET NO. 50-171

(PAGE 14) A THIRD CONTROL ROD STUCK BECAUSE OF PITTING AND CRACKING OF TUNGSTEN CARBIDE BALLS IN THE BALL NUT DRIVE. (PAGE 20) CHANNEL-1 SOURCE-RANGE DETECTOR HAS A SMALL INCREASE IN COUNT RATE UNTIL K EQUALS 0.985. BORON-CONTAINING CALGON AT 2400 PPM IN THE WATER AROUND THE DETECTOR WAS SHOWN NOT THE CAUSE. OPERATING THE DETECTOR-WELL DRY DOUBLED THE READING, AND A 3X MORE SENSITIVE DETECTOR WAS USED--THE SOURCE COULD THEN BE RELOCATED TO ACHIEVE BETTER GEOMETRY. CORE WAS COMPLETELY LOADED AND LOW-POWER PHYSICS TESTS BEGUN.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*FAILURE, SCRAM MECHANISM + *INSTRUMENTATION, ABNORMAL INDICATION + *INSTRUMENTATION, STARTUP RANGE + OPERATIONS REPORT, GENERAL + PEACH BOTTOM 1 + REACTOR, GAS COOLED

9-15040 ALSO IN CATEGORIES 10 AND 6
RUDGE F
TEST CELL A CONTROL SYSTEMS
EDGEPTON, GERMESHAUSEN, AND GRIER, INC., LAS VEGAS, NEVADA
EGG-1182-1054 +. 219 PAGES, 82 FIGURES, 1 TABLE, JUNE 1, 1964

THE REPORT GIVES THE THEORETICAL DERIVATION AND COMPONENT LAYOUT FOR THE INSTRUMENTATION AND CONTROL SYSTEM USED ON A NUCLEAR POWERED ROCKET. THE REPORT COVERS BOTH THE REACTOR AND THE HYDROGEN PROPELLANT SYSTEMS. THE APPENDICES INCLUDE - REACTOR-SIMULATOR EQUATIONS, REACTOR-PERIOD DETERMINATION, AND AN ANALYSIS OF THE DEWAR PRESSURE-CONTROL LOOP.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

*NUCLEAR ROCKET + CONTROL SYSTEM + POWER DISTRIBUTION + REACTOR SAFETY SYSTEM + SIMULATION

9-15534 ALSO IN CATEGORY 17
LOSS OF REACTIVITY AT THE LOS ALAMOS WATER BOILER REACTOR (SUPO)
U.S. ATOMIC ENERGY COMMISSION
REACTOR OPERATING EXPERIENCES 67-3 +. 2 PAGES, MARCH 23, 1967

ON AUG. 15, 1966, CONTROL-ROD CRITICALITY POSITION INDICATED A REACTIVITY LOSS OF 0.6% DELTA K/K, KEEPING THE REACTOR FROM FULL POWER. NORMAL VARIATION IS 1/10TH THAT. THE REACTIVITY CONTINUED TO DRIFT DOWN, CAUSING A 1.06% LOSS IN 30 DAYS. WHEN FUEL WAS ADDED TO ATTAIN FULL POWER, THE ION CHAMBERS INDICATED A POWER LEVEL CONSIDERABLY LESS THAN HEAT-POWER MEASUREMENTS. THIS LED TO CALCULATION WHICH INDICATED THAT SMALL AMOUNTS OF WATER LEAKING INTO THE GRAPHITE REFLECTOR WOULD CAUSE THE FLUX TO PEAK NEAR THE CORE, REDUCING THE NEUTRON FLUX AT THE DETECTOR. THIS WAS FOUND TO BE HAPPENING, ALTHOUGH NO SOURCE OF THE WATER WAS FOUND. DRYING THE GRAPHITE RECOVERED HALF THE REACTIVITY, AND SIX MONTHS OF LEAVING THINGS ALONE SHOWS A VERY SLIGHT UPWARD TREND IN REACTIVITY GAIN.

AVAILABILITY - AEC, DIVISION OF PUBLIC INFORMATION, WASHINGTON, D.C. 20545

*INSTRUMENTATION, ABNORMAL INDICATION + *OPERATIONS REPORT, ANALYSIS + *REACTIVITY EFFECT, ANOMALOUS + FLUX DISTRIBUTION + GRAPHITE + LASL (LOS ALAMOS SCIENTIFIC LABORATORY) + REACTOR, AEC OWNED + REACTOR, HOMOGENEOUS + REACTOR, RESEARCH + REFLECTOR

9-15564 ALSO IN CATEGORIES 11 AND 18
QUESTION 3.10--CRITERIA FOR CONTAINMENT ISOLATION VALVE ACTUATING TIMES
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

PROVIDE THE CRITERIA AND THEIR BASES FOR CONTAINMENT-ISOLATION VALVE-ACTUATING TIMES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT PENETRATION, CLOSURE OF + DESIGN CRITERIA + PALISADES POINT + REACTOR, PRESSURIZED WATER + RESPONSE TIME

9-15578 ALSO IN CATEGORY 18
QUESTION 7.1--CORE DAMAGE CRITERIA FOR PROTECTION SYSTEM AFTER ACCIDENT
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

SECTION 7. INSTRUMENTATION AND CONTROL. WHAT IS THE CRITERION FOR THE REACTOR PROTECTION SYSTEM REGARDING THE ALLOWABLE AMOUNT OF CORE DAMAGE RESULTING FROM ACCIDENTS THAT MIGHT BE

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-15578 *CONTINUED*

EXPECTED TO OCCUR DURING THE PLANT LIFE (E.G., LOSS OF FLOW, LOAD REJECTION, ETC.).
ACCIDENTS THAT DO NOT MEET THIS CRITERION SHOULD BE IDENTIFIED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AFC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + DESIGN CRITERIA + FAILURE, FUEL ELEMENT +
PALISADES POINT + PLANT PROTECTIVE SYSTEM + REACTOR, PRESSURIZED WATER

9-15579

ALSO IN CATEGORY 18

QUESTION 7.2--DESIGN OF PROTECTION AND CONTROL SYSTEMS

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

THE DESIGN BASIS OF THE REACTOR PROTECTION AND CONTROL SYSTEMS SHOULD BE EXPANDED TO INCLUDE
SUCH CONSIDERATIONS AS SINGLE CIRCUIT FAULTS (AS WELL AS COMPONENT FAILURES), BYPASSES,
INTERLOCKING POLICY, EXTENT AND FREQUENCY OF TESTING, AND AVAILABILITY OF MANUAL BACKUP TO
AUTOMATIC CONTROLS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + FAILURE, COMPONENT + PALISADES POINT +
PLANT PROTECTIVE SYSTEM + REACTOR, PRESSURIZED WATER + SINGLE-FAILURE CRITERION

9-15580

ALSO IN CATEGORY 18

QUESTION 7.3--FAILURE OF TIME DELAY RELAY ON ROD MAGNET CURRENT INTERRUPTING SWITCH

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

IN CASE OF FAILURE OF THE TIME-DELAY RELAY ON THE ROD-MAGNET-CURRENT-INTERRUPTING SWITCH,
COULD A MANUAL OR AUTOMATIC SCRAM BE PREVENTED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + FAILURE, SCRAM MECHANISM + INSTRUMENTATION, RELAY +
PALISADES POINT + REACTOR SAFETY SYSTEM + REACTOR, PRESSURIZED WATER

9-15581

ALSO IN CATEGORIES 12 AND 18

QUESTION 7.4--FIRE IN CONTROL ROOM OR CABLE SPREADING AREA

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

3 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

ANALYZE THE PROBABILITY AND CONSEQUENCES OF THE CENTRAL CONTROL ROOM BECOMING UNINHABITABLE OR
INEFFECTIVE DUE TO A FIRE (OR OTHER DISASTER) IN THE CONTROL ROOM OR CABLE-SPREADING AREA.
THIS ANALYSIS SHOULD ALSO INCLUDE CONSIDERATION OF THE AVAILABILITY OF ENGINEERED SAFEGUARDS
SYSTEMS POWER AND CONTROLS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTROL PANEL/ROOM + ENGINEERED SAFETY FEATURE +
FIRE + PALISADES POINT + REACTOR, PRESSURIZED WATER

9-15582

ALSO IN CATEGORIES 6 AND 18

QUESTION 7.5--RATE AND MAGNITUDE OF DESIGN LOAD CHANGES

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT PLANT COMPONENT(S) SETS THE LIMITS ON THE RATE AND MAGNITUDE OF DESIGN-LOAD CHANGES. HOW
ARE LOAD CHANGES KEPT WITHIN THESE LIMITS. WHAT ARE THE CONSEQUENCES OF THESE LIMITS BEING
EXCEEDED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + PALISADES POINT + REACTOR DYNAMICS +
REACTOR, PRESSURIZED WATER

9-15583

ALSO IN CATEGORIES 11 AND 18

QUESTION 7.6--INSTRUMENTATION INSIDE CONTAINMENT AFTER MAJOR ACCIDENT

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT INSTRUMENTS WILL BE PROVIDED TO INDICATE THE REACTIVITY STATUS OF THE REACTOR AS WELL AS
THE PRESSURE AND TEMPERATURE CONDITIONS INSIDE THE CONTAINMENT AFTER A MAJOR ACCIDENT. WHAT
DESIGN CRITERIA WILL BE APPLIED TO THIS INSTRUMENTATION.

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-15583 *CONTINUED*
AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT INSTRUMENTATION + INSTRUMENTATION, SHUTDOWN REACTIVITY + PALISADES POINT + REACTOR, PRESSURIZED WATER

9-15584 ALSO IN CATEGORY 18
QUESTION 7.7--I + C PROVISIONS FOR OPERATION ON ONE LOOP OR 3 PRIMARY COOLANT PUMPS
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT PROVISIONS ARE MADE IN THE CONTROL AND SAFETY SYSTEMS TO PERMIT OPERATION ON ONE LOOP OR THREE PRIMARY COOLANT PUMPS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF FLOW + PALISADES POINT + REACTOR SAFETY SYSTEM

9-15609 ALSO IN CATEGORIES 11 AND 18
QUESTION 10.1.16--DETECTION OF PROPAGATION OF CRACKS IN PRESSURE VESSEL WALL
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

ARE YOU CONSIDERING PROCEDURES FOR DETECTING THE PROPAGATION OF CRACKS WITHIN THE PRESSURE VESSEL WALL, I.E., ACOUSTIC EMISSION.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + INSTRUMENTATION, PROTECTIVE + PALISADES POINT + PRESSURE VESSEL + REACTOR, PRESSURIZED WATER

9-15625 ALSO IN CATEGORIES 18 AND 11
QUESTION 1.6--PROGRAM FOR INSTRUMENTING CONTAINMENT LINER FOR STRAIN
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES POINT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

SUBMIT THE PROPOSED PROGRAM FOR INSTRUMENTING THE CONTAINMENT LINER TO MEASURE STRAIN BEHAVIOR UNDER TEST LOADINGS, AND THE INTERPRETATION OF THE RESULTS THUS OBTAINED WITH RELATIONSHIP TO LEAKAGE BEHAVIOR OF THE LINER UNDER DESIGN-ACCIDENT CONDITIONS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT INSTRUMENTATION + PALISADES POINT + REACTOR, PRESSURIZED WATER + TEST, LEAK RATE + TEST, PROOF

9-15673 ALSO IN CATEGORIES 18 AND 11
SUPPLEMENT 3--CONTAINMENT VESSEL INSTRUMENTATION
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
4 PAGES, 1 FIGURE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

THE PURPOSE OF CONTAINMENT VESSEL INSTRUMENTATION IS GIVEN. INSTRUMENTATION DETAILS ARE GIVEN, AND A DIAGRAM OF INSTRUMENT LAYOUT IS INCLUDED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT INSTRUMENTATION + PALISADES POINT + REACTOR, PRESSURIZED WATER

9-15829 ALSO IN CATEGORY 17
GARPICK BJ + GEKLER WC + POMREHN HP
SHIPPINGPORT OPERATING EXPERIENCE SUMMARY
HOLMES AND NARVER INC., LOS ANGELES, CALIFORNIA
HN-185 +. 175 PAGES, 39 TABLES, 28 FIGURES, REFERENCES, PAGES 5-1 TO 5-175 OF AN ANALYSIS OF NUCLEAR POWER PLANT OPERATING AND SAFETY EXPERIENCE, VOLUME II, CHAPTER 5, DECEMBER 15, 1966

PRESENTS A BRIEF HISTORICAL DESCRIPTION, DESCRIBES THE MANAGEMENT AND MAINTENANCE PRACTICES, AND DISCUSSES IN DETAIL THE ACCUMULATED OPERATING EXPERIENCE AND THE RELIABILITY OF THE REACTOR CONTROL SYSTEM, SAFETY SYSTEM, AND ENGINEERED SAFEGUARDS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, 22151, \$3.00 COPY, \$0.65 MICROFICHE

*OPERATING EXPERIENCE + *RELIABILITY ANALYSIS + ENGINEERED SAFETY FEATURE + INSTRUMENTATION, CONTROL +

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-15829 *CONTINUED*
INSTRUMENTATION, PROTECTIVE + MAINTENANCE AND REPAIR + REACTOR SAFETY SYSTEM +
REACTOR, PRESSURIZED WATER + SHIPPINGPORT

9-15830 ALSO IN CATEGORY 17
GARRICK BJ + GEKLER WC + POMREHN HP
HUMBOLDT BAY OPERATING EXPERIENCE SUMMARY
HOLMES AND NARVER INC., LOS ANGELES, CALIFORNIA
HN-185 +. 135 PAGES, 37 FIGURES, 29 TABLES, REFERENCES, PAGES 4-1 TO 4-135 OF AN ANALYSIS OF NUCLEAR
POWER PLANT OPERATING AND SAFETY EXPERIENCE, VOLUME II, CHAPTER 4, DECEMBER 15, 1966

PRESENTS A BRIEF HISTORICAL DESCRIPTION, DESCRIBES THE MANAGEMENT AND MAINTENANCE PRACTICES,
AND DISCUSSES IN DETAIL THE ACCUMULATED OPERATING EXPERIENCE AND THE RELIABILITY OF THE
REACTOR CONTROL SYSTEM, SAFETY SYSTEM, AND ENGINEERED SAFEGUARDS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, 22151, \$3.00 COPY, \$0.65 MICROFICHE

*OPERATING EXPERIENCE + *RELIABILITY ANALYSIS + ENGINEERED SAFETY FEATURE + HUMBOLDT BAY +
INSTRUMENTATION, CONTROL + INSTRUMENTATION, PROTECTIVE + MAINTENANCE AND REPAIR + REACTOR SAFETY SYSTEM +
REACTOR, BOILING WATER

9-15831 ALSO IN CATEGORY 17
GARRICK BJ + GEKLER WC + POMREHN HP
INDIAN POINT OPERATING EXPERIENCE SUMMARY
HOLMES AND NARVER INC., LOS ANGELES, CALIFORNIA
HN-185 +. 170 PAGES, 23 TABLES, 45 FIGURES, REFERENCES, PAGES 3-1 TO 3-170 OF AN ANALYSIS OF NUCLEAR
POWER PLANT OPERATING AND SAFETY EXPERIENCE, VOLUME II, CHAPTER 3, DECEMBER 15, 1966

PRESENTS A BRIEF HISTORICAL DESCRIPTION, DESCRIBES THE MANAGEMENT AND MAINTENANCE PRACTICES,
AND DISCUSSES IN DETAIL THE ACCUMULATED OPERATING EXPERIENCE AND THE RELIABILITY OF THE
REACTOR CONTROL SYSTEM, SAFETY SYSTEM, AND ENGINEERED SAFEGUARDS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, 22151, \$3.00 COPY, \$0.65 MICROFICHE

*OPERATING EXPERIENCE + *RELIABILITY ANALYSIS + ENGINEERED SAFETY FEATURE + INDIAN POINT 1 +
INSTRUMENTATION, CONTROL + INSTRUMENTATION, PROTECTIVE + MAINTENANCE AND REPAIR + REACTOR SAFETY SYSTEM +
REACTOR, PRESSURIZED WATER

9-15832 ALSO IN CATEGORY 17
GARRICK BJ + GEKLER WC + POMREHN HP
YANKEE OPERATING EXPERIENCE SUMMARY
HOLMES AND NARVER INC., LOS ANGELES, CALIFORNIA
HN-185 +. 103 PAGES, 19 TABLES, 28 FIGURES, REFERENCES, PAGES 2-1 TO 2-103 OF AN ANALYSIS OF NUCLEAR
POWER PLANT OPERATING AND SAFETY EXPERIENCE, VOLUME II, CHAPTER 2, DECEMBER 15, 1966

PRESENTS A BRIEF HISTORICAL DESCRIPTION, DESCRIBES THE MANAGEMENT AND MAINTENANCE PRACTICES,
AND DISCUSSES IN DETAIL THE ACCUMULATED OPERATING EXPERIENCE AND THE RELIABILITY OF THE
REACTOR CONTROL SYSTEM, SAFETY SYSTEM, AND ENGINEERED SAFEGUARDS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, 22151, \$3.00 COPY, \$0.65 MICROFICHE

*OPERATING EXPERIENCE + *RELIABILITY ANALYSIS + ENGINEERED SAFETY FEATURE + INSTRUMENTATION, CONTROL +
INSTRUMENTATION, PROTECTIVE + MAINTENANCE AND REPAIR + REACTOR SAFETY SYSTEM +
REACTOR, PRESSURIZED WATER + YANKEE

9-15833 ALSO IN CATEGORY 17
GARRICK BJ + GEKLER WC + POMREHN HP
DRESDEN 1 OPERATING EXPERIENCE SUMMARY
HOLMES AND NARVER INC., LOS ANGELES, CALIFORNIA
HN-185 +. 157 PAGES, 31 TABLES, 49 FIGURES, REFERENCES, PAGES 1-1 TO 1-157 OF AN ANALYSIS OF NUCLEAR
POWER PLANT OPERATING AND SAFETY EXPERIENCE, VOLUME II, CHAPTER 1, DECEMBER 15, 1966

PRESENTS A BRIEF HISTORICAL DESCRIPTION, DESCRIBES THE MANAGEMENT AND MAINTENANCE PRACTICES,
AND DISCUSSES IN DETAIL THE ACCUMULATED OPERATING EXPERIENCE AND THE RELIABILITY OF THE
REACTOR CONTROL SYSTEM, SAFETY SYSTEM, AND ENGINEERED SAFEGUARDS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, 22151, \$3.00 COPY, \$0.65 MICROFICHE

*OPERATING EXPERIENCE + *RELIABILITY ANALYSIS + DRESDEN 1 + ENGINEERED SAFETY FEATURE +
INSTRUMENTATION, CONTROL + INSTRUMENTATION, PROTECTIVE + MAINTENANCE AND REPAIR + REACTOR SAFETY SYSTEM +
REACTOR, BOILING WATER

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-15834 ALSO IN CATEGORY 17
GARRICK BJ + GEKLER WC + POMREHN HP
AN ANALYSIS OF NUCLEAR POWER PLANT OPERATING AND SAFETY EXPERIENCE, VOLUME II
HOLMES AND NARVER, INC., LOS ANGELES, CALIFORNIA
HN-1P5 +. 740 PAGES, FIGURES, TABLES, REFERENCES, DECEMBER 15, 1966

OPERATING AND SAFETY EXPERIENCE, AT FIVE MAJOR NUCLEAR POWER PLANTS, REPRESENTING 20 REACTOR-YEARS OF OPERATION IS PRESENTED. THE EXPERIENCE RECORD FOR EACH PLANT IS GIVEN IN SEPARATE CHAPTERS. EACH CHAPTER CONTAINS A FACILITY DESCRIPTION, A DISCUSSION OF MANAGEMENT AND MAINTENANCE PRACTICES, AND A REVIEW OF OPERATING EXPERIENCE AND RELIABILITY IN CONTROL, SAFETY, AND ENGINEERED SAFEGUARD SYSTEMS. THE FIVE PLANTS ARE DRESDEN-1, YANKEE, INDIAN POINT-1, HUMBOLDT BAY UNIT NO. 3, AND THE SHIPPINGPORT ATOMIC POWER STATION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, 22151, \$3.00 COPY \$0.65 MICROFICHE

*OPERATING EXPERIENCE + *RELIABILITY ANALYSIS + CONTAINMENT INTEGRITY + CONTROL ROD DRIVE + CONTROL ROD SCRAM MECHANISM + DRESDEN 1 + EMERGENCY COOLING CONSIDERATIONS + EMERGENCY POWER, ELECTRIC + EMERGENCY SYSTEM + ENGINEERED SAFETY FEATURE + HUMBOLDT BAY + INDIAN POINT 1 + MAINTENANCE AND REPAIR + PLANT PROTECTIVE SYSTEM + REACTOR SAFETY SYSTEM + REACTOR, BOILING WATER + REACTOR, POWER + REACTOR, PRESSURIZED WATER + SAFETY REVIEW (OPERATIONS, EXPERIMENTS) + SAFETY STUDY + SCRAM, REAL + SCRAM, SPURIOUS + SHIPPINGPORT + SHUTDOWN SYSTEM, SECONDARY + YANKEE

9-15969
MAPLE BJ + COOPER AG
STANDARD RELAY MODULES FOR SAFETY AND CONTROL CIRCUITS, PART 2. INSTRUCTION AND MAINTENANCE MANUAL
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, RISLEY
TRG REPORT 933(P) PART 2 +. 50 PAGES, 27 FIGURES, JULY 13, 1966

STANDARD RELAY MODULES WERE DESIGNED TO MEET THE NEED FOR RELAY LOGIC ON EXPERIMENTAL PLANT. THE MODULES CAN BE BUILT WITHOUT PRIOR KNOWLEDGE OF THE PLANT REQUIREMENTS AND CAN BE MADE TO SUIT A PARTICULAR APPLICATION BY MERELY ARRANGING LINKS IN A REMOVABLE CONNECTOR. PART 1 IS A GENERAL DESCRIPTION OF THE UNIT, AND PART 2 IS THE INSTRUCTION AND MAINTENANCE MANUAL.

AVAILABILITY - (HER) MAJESTYS STATIONERY OFFICE, LONDON

*INSTRUMENTATION, CONTROL + *INSTRUMENTATION, PROTECTIVE + *INSTRUMENTATION, RELAY + INSTRUMENTATION, INTERLOCK + MAINTENANCE AND REPAIR + MODIFICATION, SYSTEM OR EQUIPMENT

9-15972 ALSO IN CATEGORY 15
DE LORENZO JT
LINEAR-LOG RADIATION MONITOR, ORNL MODEL 0-2353
OAK RIDGE NATIONAL LABORATORY, TENNESSEE
ORNL-TM-1764 +. 5 FIGURES, 2 TABLES, FEBRUARY 22, 1967

THE LINEAR-LOG RADIATION MONITOR WILL MONITOR GAMMA DOSE RATES OVER FIVE DECADES. IT PROVIDES TWO SEPARATE OUTPUT SIGNALS - A LINEAR SIGNAL AND A LINEAR-LOG COMBINATION SIGNAL. THE LINEAR SIGNAL ACTUATES A TRANSISTORIZED, HIGH AND LOW OFF-NORMAL ALARM CIRCUIT. THE LINEAR-LOG SIGNAL IS INTENDED TO PROVIDE A RECORD OF ABNORMAL EXCURSIONS ABOVE THE LINEAR RANGE. TWO PROBE DESIGNS ARE AVAILABLE -- FOR ONE THE LINEAR RANGE IS 0 TO 10 MR/HR, AND THE LINEAR-LOG RANGE COVERS FIVE DECADES TO 100,000 MR/HR. FOR THE OTHER THE LINEAR RANGE IS 0 TO 100 MR/HR, AND THE LINEAR-LOG RANGE COVERS FIVE DECADES TO A MILLION MR/HR.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*EQUIPMENT DESIGN + *GAMMA + *INSTRUMENTATION, RADIATION MONITORING + INSTRUMENTATION CALIBRATION + INSTRUMENTATION, TESTING + MONITOR, RADIATION, ENVIRONMENTAL

9-16024 ALSO IN CATEGORIES 4 AND 18
BARDES FG + COHEN SC + FRIESENHAIN SJ + GILLETTE EM + HADDAD E + JOANOU GD + JUPITER C + MOORE RA + PEAK JC + TRIMBLE GD
TUNGSTEN NUCLEAR POCKET. PHASE I, FINAL REPORT. PART I
GENERAL DYNAMICS CORP., SAN DIEGO, CALIFORNIA
GA-6890 + NASA-CR-54909 +. 6 PAGES, FIGURES, PAGES 2-16 THROUGH 2-21, APRIL 22, 1966

PAGES 2.16 THROUGH 2.21 DESCRIBE THE NUCLEAR INSTRUMENTATION FOR THIS TEST REACTOR.

AVAILABILITY - NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, OFFICE OF SCIENTIFIC AND TECHNICAL INFORMATION, WASHINGTON, D. C. 20546

*CONTROL SYSTEM + *NUCLEAR ROCKET + *REACTOR SAFETY SYSTEM + INSTRUMENTATION, NUCLEAR

9-16042

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-16042 *CONTINUED*
NON-DESTRUCTIVE TESTING IN NUCLEAR TECHNOLOGY, PROCEEDINGS SERIES, VOLUME II
INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA
STI/PUB/105 +. 446 PAGES, TABLES, FIGURES, PROCEEDINGS OF A SYMPOSIUM ON NONDESTRUCTIVE TESTING IN
NUCLEAR TECHNOLOGY HELD BY THE INTERNATIONAL ATOMIC ENERGY AGENCY IN BUCHAREST, MAY 17-21, 1965, IN TWO
VOLUMES, OCTOBER 1965

PROCEEDINGS OF A SYMPOSIUM ON NONDESTRUCTIVE TESTING IN NUCLEAR TECHNOLOGY, HELD BY THE
INTERNATIONAL ATOMIC ENERGY AGENCY IN BUCHAREST, ROMANIA, MAY 1965.

AVAILABILITY - NATIONAL AGENCY FOR INTERNATIONAL PUBLICATIONS, 317 EAST 34TH STREET, NEW YORK, N.Y.,
10016, \$4.50 COPY

*TEST, NONDESTRUCTIVE + EXAMINATION + FABRICATION + FUEL ELEMENT +
IAEA (INTERNATIONAL ATOMIC ENERGY AGENCY) + INSPECTION AND COMPLIANCE + INSTRUMENTATION, FUEL SCANNING +
MEASUREMENT, GENERAL + QUALITY CONTROL + RADIOGRAPHY + TESTING + THICKNESS

9-16043
DEKNOCK R
ULTRASONIC WATER-GAP MEASUREMENTS IN MTR FUEL ELEMENTS
CENTRE DE PRODUCTION DE PLUTONIUM DE MACQUE, MCL, BELGIUM
STI/PUB/105 +. 10 PAGES, 5 FIGURES, 1 TABLE, 2 REFERENCES, PP. 37-47, PROCEEDINGS OF A SYMPOSIUM ON
NON-DESTRUCTIVE TESTING IN NUCLEAR TECHNOLOGY, HELD BY THE INTERNATIONAL ATOMIC ENERGY AGENCY IN
BUCHAREST, ROMANIA, MAY 17-21, 1965, IN TWO VOLUMES, VOLUME II, OCTOBER 1965

DESCRIBES A PROBE DEVELOPED FOR MEASURING THE 3-MM WATER-GAP OF THE BR-2 FUEL ELEMENT OVER A
1-M LENGTH. THE PROBE CAN WITHSTAND PROLONGED IMMERSION IN WATER AND IS NOT AFFECTED BY
NORMAL GAMMA IRRADIATION DOSES. BASED ON THE PRINCIPLE OF ULTRASONICS, AN ACCURACY OF 5
MICRO-METER GAP-DISTANCE VARIATION IS EASILY OBTAINED.

AVAILABILITY - NATIONAL AGENCY FOR INTERNATIONAL PUBLICATIONS, 317 EAST 34TH STREET, NEW YORK, N.Y.,
10016, \$4.50 COPY

*INSTRUMENTATION, FUEL SCANNING + *TEST, NONDESTRUCTIVE + *TESTING + BR 2 (BELGIAN RESEARCH REACTOR, GEN) +
EXAMINATION + FABRICATION + FUEL ELEMENT + INSPECTION AND COMPLIANCE + MEASUREMENT, GENERAL +
MTR (MATERIAL TESTING REACTOR) + QUALITY CONTROL + REACTOR, RESEARCH + REACTOR, TEST + TEST, PROOF +
THICKNESS

9-16044
MCKANE RH + HONKONEN DL
NON-DESTRUCTIVE TESTING OF REACTOR-FUEL, TARGET, AND CONTROL ELEMENTS
SAVANNAH RIVER PLANT, AIKEN, S.C.
STI/PUB/105 +. 16 PAGES, 8 FIGURES, 2 TABLES, 2 REFERENCES, PP. 47-63, PROCEEDINGS OF A SYMPOSIUM ON
NON-DESTRUCTIVE TESTING IN NUCLEAR TECHNOLOGY, HELD BY THE INTERNATIONAL ATOMIC ENERGY AGENCY IN
BUCHAREST, ROMANIA, MAY 17-21, 1965, IN TWO VOLUMES; VOLUME II, OCTOBER 1965

BRIEFLY DESCRIBES THE DESIGN AND PERFORMANCE OF INSTRUMENTS USED AT THE SAVANNAH RIVER PLANT
FOR MEASURING THICKNESS OF NICKEL LAYERS ON UNCANNED URANIUM CORES, URANIUM GRAIN SIZE TO
DETERMINE IF HEAT TREATMENT WAS PROPER, UNBONDED AREAS BETWEEN CLADDING AND CORE, AND FUEL
AND ABSORBER CONTENT OF REACTOR ELEMENTS.

AVAILABILITY - NATIONAL AGENCY FOR INTERNATIONAL PUBLICATIONS, 317 EAST 34TH STREET, NEW YORK, N.Y.,
10016, \$4.50 COPY

*TEST, NONDESTRUCTIVE + *TESTING + CONTROL ROD + EXAMINATION + FABRICATION + FUEL ELEMENT +
INSPECTION AND COMPLIANCE + INSTRUMENTATION, FUEL SCANNING + MEASUREMENT, GENERAL + QUALITY CONTROL +
SAVANNAH RIVER PLANT + TEST, PROOF + THICKNESS

9-16045
PENKEN CJ
THE ECONOMICAL APPLICATION OF NON-DESTRUCTIVE TESTING TO REACTOR COMPONENTS, ESPECIALLY JACKET TUBING
ARGONNE NATIONAL LABORATORY, ARGONNE, ILL.
STI/PUB/105 +. 12 PAGES, 9 REFERENCES, PP. 125-137, PROCEEDINGS OF A SYMPOSIUM ON NON-DESTRUCTIVE TESTING
IN NUCLEAR TECHNOLOGY, HELD BY THE INTERNATIONAL ATOMIC ENERGY AGENCY IN BUCHAREST, ROMANIA, MAY 17-21, 1965, IN TWO VOLUMES, VOLUME II,
(ARGONNE NATIONAL LABORATORY) , MAY 17-21, 1965, IN TWO VOLUMES, VOLUME II,
OCTOBER 1965

ECONOMICAL TESTING OF PLATES AND TUBES IS DISCUSSED IN DETAIL. EXAMPLES ARE CITED TO SHOW
THAT CRITICAL INSPECTION OF THIN-WALL TUBING MUST USUALLY BE MADE BY ULTRASONIC OR
ELECTROMAGNETIC METHODS. THE EXPERIENCE AT ANL IS RECOUNTED FROM STANDPOINT OF LOWEST
POSSIBLE INSPECTION COST PER UNIT LENGTH OF TUBING. THE ROLE OF TUBE DIAMETER AND THICKNESS
ON INSPECTION COST IS DISCUSSED.

AVAILABILITY - NATIONAL AGENCY FOR INTERNATIONAL PUBLICATIONS, 317 EAST 34TH STREET, NEW YORK, N.Y.,
10016, \$4.50 COPY

*ECONOMICS + *TEST, NONDESTRUCTIVE + *TESTING + CLAD + EXAMINATION + FABRICATION +
INSPECTION AND COMPLIANCE + QUALITY CONTROL + TUBING

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-16047

TENNEY GH

THE ROLE OF NON-DESTRUCTIVE TESTING IN THE LOS ALAMOS REACTOR PROGRAMME
LOS ALAMOS SCIENTIFIC LABORATORY, NEW MEXICO

STI/PUR/105 +. 14 PAGES, 9 FIGURES, 7 REFERENCES, PP. 109-123, PROCEEDINGS OF A SYMPOSIUM ON
NON-DESTRUCTIVE TESTING IN NUCLEAR TECHNOLOGY, HELD BY THE INTERNATIONAL ATOMIC ENERGY AGENCY IN
BUCHAREST, ROMANIA, MAY 17-21, 1965, IN TWO VOLUMES, VOLUME II, OCTOBER 1965

BRIEFLY DESCRIBES INSTRUMENTS DEVELOPED AND USED AT LOS ALAMOS. RADIOGRAPHY IS USED TO CHECK
GOLD SURFACES FOR EMBEDDED IMPURITIES. ULTRASONIC INSPECTION IS MADE ON BAR STOCK FOR
INTERNAL CRACKS. URANIUM MIGRATION AS A FUNCTION OF TEMPERATURE IN 150 MICRO-IN.-DIAMETER
PYROCARBON-COATED URANIUM CARBIDE BEADS IS EVALUATED BY MICRORADIOGRAPHY AND ELECTRON
MICROSCOPY.

AVAILABILITY - NATIONAL AGENCY FOR INTERNATIONAL PUBLICATIONS, 317 EAST 34TH STREET, NEW YORK, N.Y.,
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*TEST, NONDESTRUCTIVE + *TESTING + CLAD + COATED PARTICLE + COATING, SURFACE + EXAMINATION + FABRICATION +
INSPECTION AND COMPLIANCE + INSTRUMENTATION, FUEL SCANNING +
LAMPRF 1 (LASL MOLTEN PU REACTOR EXPERIMENT) + LAPRE 1 AND 2 (LASL POWER REACTOR EXPERIMENT) +
LASL (LOS ALAMOS SCIENTIFIC LABORATORY) + MEASUREMENT, GENERAL + METAL + QUALITY CONTROL + RADIOGRAPHY +
TEST, PROOF + UHTREX (ULTRA HIGH TEMP. REACTOR EXPERIMENT)

9-16048

KUHLMANN A + ADAMSKY FJ

LIMITS TO THE RECOGNIZABILITY OF FLAWS IN NON-DESTRUCTIVE TESTING STEAM-GENERATOR TUBES FOR NUCLEAR-POWER
PLANTS

TECHNISCHER UBERWACHUNGS-VEREIN REINLAND E.V., COLOGNE, GERMANY

STI/PUR/105 +. 10 PAGES, 2 FIGURES, PP. 213-223, PROCEEDINGS OF A SYMPOSIUM ON NON-DESTRUCTIVE TESTING IN
NUCLEAR TECHNOLOGY, HELD BY THE INTERNATIONAL ATOMIC ENERGY AGENCY IN BUCHAREST, ROMANIA, MAY 17-21,
1965, IN TWO VOLUMES, VOLUME II, OCTOBER 1965

DISCUSSES THE EFFICIENCY OF NONDESTRUCTIVE TESTING OF STEAM-GENERATOR TUBES. DISCUSSED IN
DETAIL ARE AUTOMATIC ULTRASONIC TESTING OF STRAIGHT TUBES IN PRODUCTION FACILITIES, AND
COMBINED ULTRASONIC AND RADIOGRAPHIC TESTING OF BENT TUBES AND TUBE WELDINGS.

AVAILABILITY - NATIONAL AGENCY FOR INTERNATIONAL PUBLICATIONS, 317 EAST 34TH STREET, NEW YORK, N.Y.,
10016, \$4.50 COPY

*TEST, NONDESTRUCTIVE + *TESTING + EXAMINATION + FABRICATION + HEAT EXCHANGER + INSPECTION AND COMPLIANCE +
QUALITY CONTROL + RADIOGRAPHY + TEST, PROOF + THICKNESS + TUBING

9-16049

WORTON DC

HIGH-VOLUME NON-DESTRUCTIVE TEST APPLICATIONS AT THE HANFORD ATOMIC PRODUCTS OPERATION
PACIFIC NORTHWEST LABORATORY, RICHLAND, WASHINGTON

STI/PUR/105 +. 21 PAGES, 14 FIGURES, 9 REFERENCES, PP. 225-246, PROCEEDINGS OF A SYMPOSIUM ON
NON-DESTRUCTIVE TESTING IN NUCLEAR TECHNOLOGY, HELD BY THE INTERNATIONAL ATOMIC ENERGY AGENCY IN
BUCHAREST, ROMANIA, MAY 17-21, 1965, IN TWO VOLUMES, VOLUME II, OCTOBER 1965

ULTRASONIC ATTENUATION MEASUREMENTS MONITOR GRAIN STRUCTURE ON BARE-U FUEL CORES. ULTRASONIC
AND EDDY-CURRENT TECHNIQUES ENSURE LOADING AND THICKNESS OF 40-MIL ALUMINUM CLADDING.
EDDY-CURRENT TECHNIQUES DEVELOPED FOR INSPECTING INSTALLED HEAT-EXCHANGER TUBING ARE REVIEWED.

AVAILABILITY - NATIONAL AGENCY FOR INTERNATIONAL PUBLICATIONS, 317 EAST 34TH STREET, NEW YORK, N.Y.,
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*CLAD + *TEST, NONDESTRUCTIVE + EXAMINATION + FABRICATION + HEAT EXCHANGER + INSPECTION AND COMPLIANCE +
QUALITY CONTROL + RADIOGRAPHY + TEST, PROOF + TESTING + TUBING

9-16050

DOUGLAS DA + MCCLUNG RW + FOSTER BE + DODD CV

NON-DESTRUCTIVE TESTING TECHNIQUES FOR RESEARCH AND PROCESS CONTROL
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE

STI/PUR/105 +. 17 PAGES, 10 FIGURES, 7 REFERENCES, PP. 247-264, PROCEEDINGS OF A SYMPOSIUM ON
NON-DESTRUCTIVE TESTING IN NUCLEAR TECHNOLOGY, HELD BY THE INTERNATIONAL ATOMIC ENERGY AGENCY IN
BUCHAREST, ROMANIA, MAY 17-21, 1965, IN TWO VOLUMES, VOLUME II, OCTOBER 1965

A GAMMA-ATTENUATION TECHNIQUE IS DESCRIBED FOR MEASURING FUEL HOMOGENEITY. A
MICRORADIOGRAPHIC METHOD IS DISCUSSED FOR MEASURING COATED PARTICLE CORE DIAMETER, COATING
THICKNESS AND INTEGRITY, AND PRESENCE OF FUEL IN THE COATING.

AVAILABILITY - NATIONAL AGENCY FOR INTERNATIONAL PUBLICATIONS, 317 EAST 34TH STREET, NEW YORK, N.Y.,
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*INSTRUMENTATION, FUEL SCANNING + *TEST, NONDESTRUCTIVE + COATED PARTICLE + EXAMINATION + FABRICATION +
FUEL ELEMENT + FUEL INTEGRITY + INSPECTION AND COMPLIANCE + MEASUREMENT, GENERAL +

CATEGORY 0
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-16050 *CONTINUED*

ORNL (OAK RIDGE NATIONAL LABORATORY) + QUALITY CONTROL + RADIOGRAPHY + TESTING + THICKNESS

9-16051

MCEACHERN AD

A FAST TEST FOR EXCESSIVE U-235 CONCENTRATIONS IN ENRICHED FUEL ELEMENTS

ATOMIC ENERGY OF CANADA LIMITED, CHALK RIVER, CANADA

STI/PUR/105 T. 10 PAGES, 4 FIGURES, 1 TABLE, 9 REFERENCES, PP. 387-397, PROCEEDINGS OF A SYMPOSIUM ON NON-DESTRUCTIVE TESTING IN NUCLEAR TECHNOLOGY, HELD BY THE INTERNATIONAL ATOMIC ENERGY AGENCY IN BUCHAREST, ROMANIA, MAY 17-21, 1965, IN TWO VOLUMES, VOLUME II, OCTOBER 1965

DESCRIBES A METHOD OF TESTING FOR FUEL CONCENTRATION WHICH IS AS MUCH AS FOUR TIMES FASTER THAN CONVENTIONAL METHODS. MEASURES THE INTENSITY OF 184-KEV GAMMA RAYS EMITTED FROM THE NATURAL DECAY OF U-235.

AVAILABILITY - NATIONAL AGENCY FOR INTERNATIONAL PUBLICATIONS, 317 EAST 34TH STREET, NEW YORK, N.Y., 10016, \$4.50 COPY

*INSTRUMENTATION, FUEL SCANNING + *TEST, NONDESTRUCTIVE + EXAMINATION + FUEL ELEMENT + INSPECTION AND COMPLIANCE + QUALITY CONTROL + TESTING

9-16052

HANSTOCK RF + WALKER DC

NON-DESTRUCTIVE EXAMINATION OF THE HEAT-AFFECTED ZONE OF WELDED ZR-NB ALLOY

UNITED KINGDOM ATOMIC ENERGY AUTHORITY, CULCHEITH

STI/PUR/105 +. 8 PAGES, 4 FIGURES, 1 TABLE, 2 REFERENCES, PP. 277-284, PROCEEDINGS OF A SYMPOSIUM ON NON-DESTRUCTIVE TESTING IN NUCLEAR TECHNOLOGY, HELD BY THE INTERNATIONAL ATOMIC ENERGY AGENCY IN BUCHAREST, ROMANIA, MAY 17-21, 1965, IN TWO VOLUMES, VOLUME II, OCTOBER 1965

DISCUSSES THE USE OF A THERMOELECTRIC PROBE TO DETERMINE THE CORROSION RESISTANCE OF ZR-NB ALLOY WELDS.

AVAILABILITY - NATIONAL AGENCY FOR INTERNATIONAL PUBLICATION, 317 EAST 34TH STREET, NEW YORK, N.Y., 10016, \$4.50 COPY

*CORROSION + *TEST, NONDESTRUCTIVE + *WELDS + EXAMINATION + FABRICATION + FUEL ELEMENT + FUEL INTEGRITY + INSPECTION AND COMPLIANCE + QUALITY CONTROL + TESTING

9-16053

FRANCIS WC + BROWN ES + BURDICK EE + GIBSON GW + TINGEY FH

THE ROLE OF NON-DESTRUCTIVE TESTING IN TEST-REACTOR OPERATION AT THE NATIONAL REACTOR TESTING STATION

PHILLIPS PETROLEUM COMPANY, IDAHO FALLS

STI/PUR/105 +. 18 PAGES, 10 REFERENCES, 6 FIGURES, PP. 331-349, PROCEEDINGS OF A SYMPOSIUM ON NON-DESTRUCTIVE TESTING IN NUCLEAR TECHNOLOGY, HELD BY THE INTERNATIONAL ATOMIC ENERGY AGENCY IN BUCHAREST, ROMANIA, MAY 17-21, 1965, IN TWO VOLUMES, VOLUME II, OCTOBER 1965

DISCUSSES GAMMA-SCANNING OF ELEMENTS FOR FUEL CONTENT, ULTRASONIC DETECTION OF BRITTLE FRACTURE, RADIOGRAPHIC INSPECTION OF FUEL PLATES AND WELDS, AND EDDY-CURRENT GAUGING OF CORROSION-FILM THICKNESS ON IRRADIATED PLATES.

AVAILABILITY - NATIONAL AGENCY FOR INTERNATIONAL PUBLICATION, 317 EAST 34TH STREET, NEW YORK, N.Y., 10016, \$4.50 COPY

*FUEL ELEMENT + *QUALITY CONTROL + *TEST, NONDESTRUCTIVE + CORROSION + EXAMINATION + FABRICATION + FUEL INTEGRITY + INSPECTION AND COMPLIANCE + NRTS (NATIONAL REACTOR TEST STATION) + RADIOGRAPHY + TESTING + WELDS

9-16054

MANN CA + CAMPSIE IC

THE NON-DESTRUCTIVE TESTING OF FUEL ELEMENTS AND THEIR COMPONENTS FOR THE UNITED KINGDOM POWER-REACTOR DEVELOPMENT PROGRAMME

UNITED KINGDOM ATOMIC ENERGY AUTHORITY, SPRINGFIELDS, LANCES., ENGLAND

STI/PUR/105 +. 18 PAGES, 10 FIGURES, 10 REFERENCES, PP. 365-383, PROCEEDINGS OF A SYMPOSIUM ON NON-DESTRUCTIVE TESTING IN NUCLEAR TECHNOLOGY, HELD BY THE INTERNATIONAL ATOMIC ENERGY AGENCY IN BUCHAREST, ROMANIA, MAY 17-21, 1965, IN TWO VOLUMES, VOLUME II, OCTOBER 1965

FLAW DETECTION IN FUEL ELEMENT TUBES BY ULTRASONIC AND EDDY-CURRENT METHODS IS DESCRIBED. DIMENSIONAL INSPECTION OF TUBES AND FUEL PELLETS IS DISCUSSED.

AVAILABILITY - NATIONAL AGENCY FOR INTERNATIONAL PUBLICATION, 317 EAST 34TH STREET, NEW YORK, N.Y., 10016, \$4.50 COPY

*TEST, NONDESTRUCTIVE + EXAMINATION + FUEL ELEMENT + INSPECTION AND COMPLIANCE + QUALITY CONTROL + TESTING + TUBING

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-16058 ALSO IN CATEGORY 6
UHRIG PE
NOISE ANALYSIS IN NUCLEAR SYSTEMS.
UNIVERSITY OF FLORIDA

505 PAGES, FIGURES, TABLES, REFERENCES, JUNE 1964, PROCEEDINGS OF A SYMPOSIUM HELD AT THE UNIVERSITY OF FLORIDA, NOVEMBER 4-6, 1963, SPONSORED BY THE DEPARTMENT OF NUCLEAR ENGINEERING AND THE ENGINEERING AND INDUSTRIAL EXPERIMENT STATION OF THE COLLEGE OF ENGINEERING, UNIVERSITY OF FLORIDA, GAINESVILLE, FLORIDA, AND BY THE U.S. ATOMIC ENERGY COMMISSION

THIS BOOK CONTAINS THE PROCEEDINGS OF A SYMPOSIUM ON NOISE ANALYSIS IN NUCLEAR SYSTEMS, HELD AT THE UNIVERSITY OF FLORIDA. THE PAPERS RANGE FROM THE PHYSICAL THEORY OF NEUTRON NOISE IN REACTORS TO THE ELECTRONIC SYSTEM USED TO OBTAIN THE DATA. THE SYMPOSIUM HEARD 28 PAPERS, NINE ON THEORETICAL ASPECTS, FIVE ON DATA HANDLING AND ELECTRONICS AND THE RESULTS OF REACTOR-NOISE EXPERIMENTS AT SIX REACTORS. THIS VOLUME GIVES A GOOD STATE-OF-THE-ART REVIEW FOR NOISE ANALYSIS IN 1963.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*MEASUREMENT, NOISE + *MEASUREMENT, SUBCRITICALITY + *NOISE ANALYSIS + NOISE + NOISE CROSS CORRELATION + REACTIVITY COEFFICIENT + SHUTDOWN MARGIN + STATISTICAL ANALYSIS + SYSTEM DESCRIPTION + THEORETICAL INVESTIGATION

9-16059 ALSO IN CATEGORY 17
HUTTER F + SULLIVAN TE + GIORGIS GD
FARET CONTROL ROD DRIVE MECHANISMS
ARGONNE NATIONAL LABORATORY, ILLINOIS

ANL-715P +. 36 PAGES, 19 FIGURES, 1 TABLE, 3 REFERENCES, JUNE 1966

FARET WAS DESIGNED TO BE A 50-MW(T) SODIUM-COOLED FAST-REACTOR EXPERIMENTAL FACILITY. TWELVE CONTROL DRIVES, OPERATING ABOVE THE REACTOR VESSEL, BUT INSIDE A LARGE SHIELDED CELL, WERE TO MOVE 12 POISON-CONTROL RODS OVER A 24-IN. VERTICAL DISTANCE. THE CONTROL DRIVES ARE ELECTROMECHANICAL DEVICES THAT INCLUDE PNEUMATIC SCRAM ACCELERATORS AND HYDRAULIC DECELERATORS. A GRIPPER MECHANISM AT THE LOWER END IS SUBMERGED IN 1150 F SODIUM AND IS REMOTELY CONTROLLED TO GRIP OR TO RELEASE A CONTROL ROD. THE DETAILED DESIGN OF THE CONTROL-DRIVE CLUSTER, ITS OPERATING CHARACTERISTICS, AND PRELIMINARY TESTS OF SOME CONTROL-DRIVE COMPONENTS ARE DESCRIBED.

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*CONTROL ROD DRIVE + *CONTROL ROD SCRAM MECHANISM + *FFTF (TR) + *INSTRUMENTATION, CONTROL + FAST NEUTRON + SODIUM

9-16060
KOSOROK JR
INTERIM REPORT ON CONTROL PROGRAM DEVELOPMENT
BATTELLE-NORTHWEST, RICHLAND, WASHINGTON, PACIFIC NORTHWEST LABORATORY
BNWL-24P +. 72 PAGES, 13 FIGURES, 3 TABLES, 13 REFERENCES, DECEMBER 1966

HARDWARE AND SOFTWARE REQUIREMENTS OF A SUCCESSFULLY IMPLEMENTED DIRECT DIGITAL CONTROL PROGRAM FOR MULTILoop CONTROL ARE DEFINED. RESULTS OF THE PROGRAM WITH A SIMULATED PROCESS SHOW THAT SAMPLING INTERVALS OF ONE-TWELFTH TO ONE-FIFTH THE EFFECTIVE PROCESS TIME CONSTANT GIVE STABLE CONTROL FOR A PROCESS HAVING AN EFFECTIVE DEAD-TIME APPROXIMATELY EQUAL TO THE PROCESS TIME CONSTANT.

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*CONTROL, COMPUTER + COMPUTER, DIGITAL + CONTROL SYSTEM + SERVOMECHANISM

9-16091
EAMFS AP
THE USE OF DETAILED FAULT ANALYSES IN EVALUATING FAIL-SAFE EQUIPMENT
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, LONDON (ENGLAND). AUTHORITY HEALTH AND SAFETY BRANCH
AHSR(S)P-119 +. 11 PAGES, 5 FIGURES, 3 REFERENCES, 1 TABLE, 1966

DEMANDS OF LOW FAILURE RATES AND HIGH ACCURACY ARE IN CONFLICT. THEORETICAL ANALYSIS CAN REDUCE AMOUNT OF TESTING REQUIRED. GOOD CORRELATION BETWEEN PREDICTED AND ACTUAL FAILURE RATES WAS OBTAINED. EMPHASIS IS PLACED ON METHODS TO PRODUCE SAFE FAILURES RATHER THAN UNSAFE FAILURES.

AVAILABILITY - AUTHORITY HEALTH + SAFETY BRANCH, U.K.A.E.A., 11 CHARLES 11 STREET, LONDON, S.W.1.

*RELIABILITY ANALYSIS + *SAFE FAILURE CRITERION + FAILURE, INSTRUMENT + INSTRUMENTATION, TESTING + STATISTICAL CORRELATION

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-16092
GREEN AF + BOURNE AJ
SAFETY ASSESSMENT WITH REFERENCE TO AUTOMATIC PROTECTIVE SYSTEMS FOR NUCLEAR REACTORS
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, RISLEY (ENGLAND)
AHSR (S) P 117, (PT. 1,2,3) +. 62 PAGES, FIGURES, TABLES, REFERENCES, 1966

TUTORIAL AND THEORETICAL DISCUSSION OF AUTOMATIC PROTECTION SYSTEMS FOR NUCLEAR REACTORS.
EMPHASIS IS ON EVALUATION OF SYSTEM RELIABILITY RATHER THAN DESIGN. TOPICS INCLUDE REACTOR
TRANSIENTS, REQUIREMENTS OF PROTECTION SYSTEMS, MATHEMATICAL OPERATIONS ESSENTIAL TO
RELIABILITY ANALYSES, AND ORGANIZATION AND PRESENTATION OF THE SYSTEM REVIEW. TABLES AND
FORMULAS RELATED TO FAILURE ASSESSMENT ARE INCLUDED.

AVAILABILITY - UKAEA, AUTHORITY HEALTH + SAFETY BRANCH, U.K.A.E.A., 11 CHARLES 11 STREET, LONDON, S.W.1.

*PLANT PROTECTIVE SYSTEM + *REACTOR SAFETY SYSTEM + *RELIABILITY ANALYSIS + *RELIABILITY, SYSTEM +
ACCIDENT, GENERAL + CONTROL, GENERAL + REACTOR DYNAMICS + STATISTICAL ANALYSIS + STATISTICAL CORRELATION

9-16096
CONDE JF + POINTUD R + HOLLIDAY J + GOOD PD
THE APPLICATION OF NON-DESTRUCTIVE TECHNIQUES IN THE QUALITY CONTROL INSPECTION AND TESTING OF FUEL
MATERIALS FOR THE DRAGON REACTOR EXPERIMENT
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, WINFRITH
STI/PUB/1105 +. 27 PAGES, 10 FIGURES, 5 TABLES, 5 REFERENCES, PP. 167-194, PROCEEDINGS OF A SYMPOSIUM ON
NON-DESTRUCTIVE TESTING IN NUCLEAR TECHNOLOGY, HELD BY THE INTERNATIONAL ATOMIC ENERGY AGENCY IN
BUCHAREST, ROMANIA, MAY 17-21, 1965, IN TWO VOLUMES, VOLUME II, OCTOBER 1965

COATED PARTICLES ARE INSPECTED BY MICORADIOGRAPHY. THE PROCEDURE IS OUTLINED AND RESULTS
GIVEN. FUEL-DISTRIBUTION (HOMOGENEITY) OF PARTICLES IS INSPECTED BY FLUOROSCOPY AND
RADIOGRAPHY. EDDY-CURRENT TESTING OF RAW MATERIALS IS DESCRIBED.

AVAILABILITY - NATIONAL AGENCY FOR INTERNATIONAL PUBLICATIONS, 317 EAST 34TH STREET, NEW YORK, N.Y.,
10016, \$4.50 COPY

*INSPECTION AND COMPLIANCE + *QUALITY CONTROL + *TEST, NONDESTRUCTIVE + *TESTING + COATED PARTICLE +
DRAGON (UK) + EXAMINATION + FABRICATION + FUEL ELEMENT + RADIOGRAPHY + TEST, PROOF

9-16160 ALSO IN CATEGORY 4
DAVISON HW + HEATH CA + LOWEN W
THE CONTROL OF A NUCLEAR REACTOR USING HELIUM-3 GAS CONTROL ELEMENTS.
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, LEWIS RESEARCH CENTER, CLEVELAND, OHIO
NASA-TM-X-52256 +. 11 PAGES, 13 FIGURES, PRESENTED AT WINTER MEETING OF THE AMERICAN NUCLEAR SOCIETY,
PITTSBURGH, PENNSYLVANIA, OCTOBER 30-NOVEMBER 3, 1966 AMERICAN NUCLEAR SOCIETY TRANSACTIONS 9(2) PAGE 574

THE FEASIBILITY OF POWER CONTROL VIA HE-3 WAS INVESTIGATED FOR A WATER-MODERATED ROCKET
PROPULSION REACTOR. THIS CONCEPT OFFERS POTENTIAL WEIGHT-REDUCTION ADVANTAGES, IN ADDITION
TO HIGH CORE EFFICIENCY DUE TO MINIMUM FLUX PERTURBATION. THESE ADVANTAGES COULD ALSO APPLY
TO OTHER FORMS OF REACTORS. THE STUDY DESIGN PROVIDED FOR THE HE-3 TO BE INTRODUCED IN METAL
CONTAINERS EVENLY DISTRIBUTED THROUGH THE CORE. ACCORDING TO CALCULATIONS, THE TARGET
CRITERIA OF POISON WORTH, TIME RATE-OF-CHANGE OF WORTH, AND SPATIAL VARIATION WERE SATISFIED.
THE POTENTIAL PROBLEM OF ENERGY DEPOSITION BY RECOIL PROTONS IN THE HE-3 WAS RESOLVED BY
DESIGN OF THE GAS-CONTAINER ALUMINUM WALLS TO INTERCEPT AND REMOVE MOST OF THE PROTON RECOIL
ENERGY.

HELIUM + REACTOR CONTROL + SPACECRAFT

9-16164 ALSO IN CATEGORIES 5 AND 6
MACFARLANE DR
AN ANALYTIC STUDY OF THE TRANSIENT BOILING OF SODIUM IN REACTOR COOLANT CHANNELS
ARGONNE NATIONAL LABORATORY, ILL.
ANL-7222 +. 117 PAGES, 48 FIGURES, 11 TABLES, JUNE 1966

TWO TYPES OF TRANSIENTS WERE STUDIED - (1) MILD REACTIVITY ADDITION AND (2) PUMP SHUTOFF WITH
FLOW COASTDOWN. NUMERICAL SOLUTIONS OBTAINED FOR THE NONLINEAR FORM OF THE COUPLED FLUID
DYNAMIC AND HEAT CONDUCTION PARTIAL DIFFERENTIAL EQUATION BY MEANS OF IMPLICIT
FINITE-DIFFERENCE EQUATIONS AND AN ITERATIVE ALGOL COMPUTER PROGRAM. SONIC EFFECTS AND
CRITICAL FLOW PHENOMENA WERE NOT TREATED. TWO-PHASE COOLANT DENSITY IS PRESSURE DEPENDENT,
AND TEMPORAL- AND SPATIAL-VARYING SLIP VELOCITY ARE INCLUDED.

AVAILABILITY -- CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151 \$3.00 COPY, \$0.65 MICRONEGATIVE

ACCIDENT, LOSS OF FLOW + FLOW, TWO PHASE + METAL, LIQUID + REACTIVITY, EXCESS + REACTOR TRANSIENT +
REACTOR, FAST + REACTOR, LIQUID METAL COOLED + SODIUM + VOID COEFFICIENT

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-16176 ALSO IN CATEGORY 17
MALFUNCTIONS IN CONTROL AND SAFETY SYSTEMS
PUERTO RICO WATER RESOURCES AUTHORITY, SAN JUAN
3 PAGES, PAGES 10-12 FROM BONUS NUCLEAR POWER PLANT DRL MONTHLY REPORT NO. 31, OCTOBER 1966, DOCKET 115-4

AFTER AN UNIDENTIFIED SCRAM, A PRESSURE-RELIEF-VALVE-POSITION SWITCH, A PRESSURE SWITCH, AND A WATER-LEVEL SWITCH WERE FOUND CAPABLE OF CAUSING A SCRAM WITHOUT ANNUNCIATION. ONE SWITCH COULD NOT CAUSE ANNUNCIATION, ANOTHER REQUIRED SIGNAL ADJUSTMENT, THE THIRD REQUIRED REPAIR OF A DAMAGED WIRE CAUSED BY OVERHEATING. TWO CONTROL RODS CONTINUED MOVING AS MUCH AS 0.5 IN. AFTER THE ACTIVATING SWITCH WAS RELEASED. TEMPORARY CORRECTION WAS MADE BY CLEANING THE RELAYS AND INCREASING THE TENSION ON THEIR RELEASE SPRINGS.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*FAILURE, INSTRUMENT + *OPERATING EXPERIENCE + *OPERATIONS REPORT, GENERAL +
BONUS (BOILING NUCLEAR SUPERHEAT PROJECT) + CONTROL ROD DRIVE + FAILURE, SCRAM MECHANISM +
INSTRUMENTATION, CONTROL + INSTRUMENTATION, INDICATOR + INSTRUMENTATION, PROTECTIVE +
REACTOR, BOILING WATER + REACTOR, INTERNAL SUPERHEAT + SCRAM, REAL

9-16177 ALSO IN CATEGORY 17
REACTOR SHUTDOWNS AND CAUSES
PUERTO RICO WATER RESOURCES AUTHORITY, SAN JUAN
3 PAGES, PAGES 3-5 FROM BONUS NUCLEAR POWER PLANT. DRL MONTHLY REPORT NO. 31, OCTOBER 1966, DOCKET NO. 115-4

A SCRAM WAS CAUSED BY A LIMIT SWITCH WHICH WAS ACTUATED AS A RESULT OF THERMAL EXPANSION. THE SWITCH WAS MOUNTED TO AN EXTENSION OF THE MAIN-STEAM-STOP VALVE STEM. THERMAL EXPANSION OF THE VALVE AND MAIN STEAM LINE DISTORTED THE SWITCH-MOUNTING ASSEMBLY. A SCRAM RESULTED FROM THE REMOVAL OF THE WRONG SCRAM-BYPASS KEY, WHICH IS ADJACENT TO ANOTHER SCRAM-BYPASS KEY THAT ACCORDING TO PROCEDURE WAS TO HAVE BEEN REMOVED. A SCRAM OCCURRED WHEN THE REACTOR PRESSURE AND POWER INCREASED. A PLANT FAILURE IN THE PRWRA POWER SYSTEM RESULTED IN AN INCREASE IN THE POWER-SYSTEM FREQUENCY WHICH IN TURN CAUSED A SPEED INCREASE OF THE GENERATOR TURBINE. THE TURBINE-SPEED GOVERNOR AUTOMATICALLY CLOSED THE TURBINE-STEAM-ADMISSION VALVE, INCREASING THE MAIN STEAM PRESSURE.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*OPERATING EXPERIENCE + *OPERATIONS REPORT, GENERAL + *SCRAM, REAL +
BONUS (BOILING NUCLEAR SUPERHEAT PROJECT) + ELECTRIC POWER, GENERAL + FAILURE, DESIGN ERROR +
FAILURE, GENERAL + FAILURE, INSTALLATION ERROR + FAILURE, OPERATOR ERROR + INSTRUMENTATION, PROTECTIVE +
REACTOR, BOILING WATER + REACTOR, INTERNAL SUPERHEAT

9-16192
BRENDEN BB + COLEMAN WJ + MOORE GE
INFRARED DETECTION OF NUCLEAR REACTOR COOLANT IMPURITIES. INTERIM REPORT
BATTELLE-NORTHWEST, RICHLAND, WASHINGTON
BNWL-377 +. 12 PAGES, 10 FIGURES, 3 REFERENCES, FEBRUARY 1967

PROBLEM - DETERMINE WATER-VAPOR CONTENT OF REACTOR-COOLANT GASES. THIS IS NEEDED TO INDICATE STEAM-GENERATOR LEAKS AND REDUCE CORROSION. APPROACH - AN ABSORPTION HYGROMETER WAS DEVELOPED TO MEASURE WATER-VAPOR CONTENT IN A GAS STREAM BY MEASURING LOSS OF ENERGY IN A WATER-VAPOR ABSORPTION BAND FROM A BEAM OF INFRARED RADIATION WHICH HAS PASSED THROUGH A VOLUME OF GAS. RESULTS - ACCURACY, IN TERMS OF DEW POINT IS PLUS OR MINUS 2 F OVER A RANGE OF DEW POINTS FROM MINUS 46 F TO PLUS 56 F. A SECOND-GENERATION SYSTEM IS BEING BASED ON EXTENSIVE TESTS OF THE PROTOTYPE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*EQUIPMENT DESIGN + *INSTRUMENTATION, COOLANT QUALITY + *WATER VAPOR + INSTRUMENTATION, PROCESS +
REACTOR COOLANT + TEST, INSTRUMENT RESPONSE

9-16319
RALL SJ
NUCLEAR DESALINATION DUAL-PURPOSE PLANT CONTROL STUDIES INTERIM REPORT APPENDIX.
OAK RIDGE NATIONAL LABORATORY, INSTRUMENTATION AND CONTROLS DIV., TENN.
ORNL-TM-1618, PT. II +. 145 PAGES, 17 FIGURES, 2 TABLES, 9 REFERENCES, JAN. 10, 1967

GENERAL METHODS WERE DEVELOPED FOR PREDICTING THE DYNAMIC BEHAVIOR OF A LARGE DUAL-PURPOSE PLANT CONSISTING OF A PRESSURIZED-WATER REACTOR (PWR), A BACK-PRESSURE TURBINE GENERATOR PLANT, AND A MULTISTAGE FLASH (MSF) EVAPORATOR. A VERSATILE DIGITAL COMPUTER CODE WAS DEVELOPED FOR CALCULATING THE TRANSFER FUNCTIONS FOR SINGLE-EFFECT MSF PLANTS. PRELIMINARY RESULTS WERE OBTAINED FOR A 250-MGD REFERENCE PLANT, AND SOME OF THE MAJOR CONTROL PROBLEMS WERE DETERMINED. AN ANALOG COMPUTER STUDY WAS MADE OF A REFERENCE PWR PLANT, AND TRANSFER FUNCTIONS FOR A LARGE BACK-PRESSURE TURBINE WERE DERIVED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-16319 *CONTINUED*
STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

*CONTROL SYSTEM + *MATHEMATICAL STUDY + *REACTOR STABILITY + ANALOG SIMULATION + ANALYTICAL MODEL +
COMPUTER, DIGITAL + REACTOR DYNAMICS + REACTOR, DESALINATION + REACTOR, PRESSURIZED WATER

9-16347 ALSO IN CATEGORIES 18 AND 11
QUESTION B-5--VENTILATION SYSTEM DESIGN AND RADIATION MONITORING
COMMONWEALTH EDISON COMPANY
1 PAGE, PAGE B-5-1 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

PROVIDE THE DESIGN CRITERIA FOR USE OF THE VENT-PIPE EXHAUST SCHEME AS SHOWN IN FIGURE 36.
INCLUDE A DESCRIPTION OF THE PROPOSED RADIATION-MONITORING SYSTEM ASSOCIATED WITH VENTILATION
EXHAUST USING THE VENT PIPE. ALSO, DESCRIBE THE VENTILATION SYSTEM FOR THE TURBINE BUILDING.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*MONITOR, RADIATION, GAS + *VENTILATION SYSTEM + AEC QUESTION + DRESDEN 3 + REACTOR, BOILING WATER +
SAFETY ANALYSIS REPORT, PRELIMINARY

9-16349 ALSO IN CATEGORY 18
QUESTION C-1 (A) AND 1(B)--CONTROL ROD DRIVE FAILURE ANALYSIS, COLLET FINGER RELIABILITY. C. ENGINEERED
SAFEGUARDS
COMMONWEALTH EDISON COMPANY
2 PAGES, PAGES C-1-1 TO C-1-2 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

(A) IN REGARD TO CRITERION 7, THE CAPABILITY OF THE CONTROL-ROD-DRIVE MECHANISM AND
THIMBLE-SUPPORT STRUCTURE TO PREVENT A ROD-EJECTION ACCIDENT SHOULD BE FURTHER ANALYZED.
PROVIDE A SAFETY ANALYSIS THAT ASSESSES THE ADEQUACY OF THE COLLET FINGERS TO LATCH AND
REMAIN IN CONTACT WITH THE INDEX TUBE IN CASE OF A THIMBLE RUPTURE. ASSUME THAT THE COLLET
FINGERS HAD BEEN RETRACTED FROM THE INDEX TUBE FOR ROD MOVEMENT PRIOR TO THE RUPTURE. (B) IT
HAS BEEN STATED THAT THREE SIMULTANEOUS FAILURES ARE REQUIRED TO PREVENT THE COLLET FINGERS
FROM ENGAGING THE INDEX TUBE IN THE EVENT OF THIMBLE FAILURE. DESCRIBE THESE FAILURES IN
DETAIL AND SHOW THAT THEY ARE INDEED COMPLETELY INDEPENDENT.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTROL ROD DRIVE + *FAILURE, SCRAM MECHANISM + AEC CONSTRUCTION PERMIT CRITERIA + AEC QUESTION +
DRESDEN 3 + FAILURE, SIMULTANEOUS + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

9-16355 ALSO IN CATEGORIES 18 AND 11
QUESTION D-4--CONTROL ROD JAMMING FOLLOWING LOSS OF PRESSURE ACCIDENT
COMMONWEALTH EDISON COMPANY
2 PAGES, PAGES D-4-1 TO D-4-2 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

IDENTIFY THE DESIGN FEATURES RELATED TO CORE STRUCTURAL INTEGRITY AND ALL PORTIONS OF THE
CONTROL-ROD-DRIVE MECHANISMS THAT ENSURE CONTROL-ROD INSERTION INTO THE CORE, THEREBY
PREVENTING A SECONDARY CRITICALITY ON CORE REFLUDDING AFTER A BREAK OF EITHER A RECIRCULATION
LINE OR A MAIN STEAM LINE. HOW MANY RODS WOULD HAVE TO FAIL TO BE INSERTED TO CAUSE
CRITICALITY. IN THIS REGARD, CONSIDER THE CASE WHERE ALL CONTROL RODS ASSOCIATED WITH THE
HYDRAULIC LINES ON ONE SIDE WERE DISABLED IN SUCH A WAY THAT THESE RODS COULD NOT BE
INSERTED. WHAT IS THE SAFETY SIGNIFICANCE OF A SECONDARY CRITICALITY FROM (A) A
NUCLEAR-EXCURSION STANDPOINT AND (B) PRESSURE CONTRIBUTION TO THE CONTAINMENT BY STEAM
GENERATION.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACCIDENT, LOSS OF PRESSURE + *CONTROL ROD DRIVE + *SYSTEM OPERABILITY IN ACCIDENT CONDITIONS +
AEC QUESTION + CONTAINMENT DESIGN + DRESDEN 3 + FAILURE, SCRAM MECHANISM + REACTOR, BOILING WATER +
SAFETY ANALYSIS REPORT, PRELIMINARY

9-16359 ALSO IN CATEGORIES 18 AND 5
QUESTION D-8--STARTUP ACCIDENT ANALYSIS
COMMONWEALTH EDISON COMPANY
3 PAGES, PAGES D-8-1 TO D-8-3 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

PLEASE PROVIDE AN ANALYSIS FOR THE FOLLOWING STARTUP ACCIDENT, CONSIDERING ITS OCCURRENCE AT
EITHER (A) COLD PLANT, (B) HOT STANDBY, AND (C) POWER-OPERATION CONDITIONS - SIMULTANEOUS
WITHDRAWAL OF TWO CONTROL RODS UNDER CONDITIONS OF MAXIMUM REACTIVITY INSERTION RATE AND NO
BYPASS FUNCTION IN EFFECT. THE EFFECTS OF DOPPLER AND SCRAM INITIATED BY THE APRM SYSTEM
ONLY MAY BE CONSIDERED.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACCIDENT, CONTROL ROD EJECTION + *ACCIDENT, CONTROL ROD WITHDRAWAL + AEC QUESTION + DOPPLER EFFECT +
DRESDEN 3 + REACTOR SAFETY SYSTEM + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-16360 ALSO IN CATEGORY 18
QUESTION F-1-- ROD BLOCK INTERLOCK CORRECTIONS. E. INSTRUMENTATION
COMMONWEALTH EDISON COMPANY
1 PAGE, PAGE E-1-1 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

CERTAIN TYPOGRAPHICAL ERRORS AND OMISSIONS CONCERNING THE ROD-BLOCK FUNCTION WERE DISCUSSED WITH YOU. SUBMIT A CORRECTED COPY OF PAGE X-5-4. DISCUSS THE EFFECTS OF CHANNEL BYPASS ON THE ROD-BLOCK INTERLOCK WHICH ENFORCES PROPER POSITIONING OF THE STARTUP AND INTERMEDIATE-RANGE CHAMBERS. (ANSWER) CORRECTED COPIES OF PAGES X-5-3 AND X-5-4 ARE SUBMITTED SEPARATELY AS PART OF AMENDMENT 1 AND REPLACE PAGES IN VOL. I OF PLANT DESIGN AND ANALYSIS REPORT.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*INSTRUMENTATION, INTERLOCK + ACCIDENT, CONTROL ROD WITHDRAWAL + AEC QUESTION + DRESDEN 3 + INSTRUMENTATION, INTERMEDIATE RANGE + INSTRUMENTATION, PULSE + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

9-16362 ALSO IN CATEGORIES 18 AND 12
QUESTION E-3--STATION STACK MONITORING SYSTEM
COMMONWEALTH EDISON COMPANY
2 PAGES, PAGES E-3-1 TO E-3-2 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

PROVIDE A DIAGRAM OF THE STACK-MONITORING SYSTEM FOR GASEOUS RELEASES FROM UNITS 1, 2, AND 3.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*MONITOR, RADIATION, GAS + *STACK + AEC QUESTION + DRESDEN 3 + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

9-16363
CONTINUOUS
ANNALS OF RELIABILITY AND MAINTAINABILITY, VOLUME 4 - PRACTICAL TECHNIQUES AND APPLICATION, FOURTH ANNUAL CONFERENCE, JULY 28-30, 1965, LOS ANGELES
945 PAGES, 1965

THE BOOK IS A COMPILATION OF ARTICLES DEALING WITH RECENT EFFORTS TO IMPROVE AND EVALUATE SYSTEMS RELIABILITY. PRACTICAL AND THEORETICAL METHODS ARE DESCRIBED AND CRITICIZED, AND CASE APPLICATIONS ARE PRESENTED. THE COVERAGE INCLUDES RELIABILITY AND QUALITY CONSIDERATIONS IN PROGRAM AND PROJECT PLANNING, ADMINISTRATION, EQUIPMENT AND SYSTEMS DESIGN, FABRICATION, TESTING, AND MAINTENANCE. STATISTICAL METHODS FOR EVALUATING PERFORMANCE DATA, PREDICTING SYSTEM RELIABILITY, AND ASSISTING IN COMPLEX DECISION-MAKING ARE DISCUSSED. MUCH OF THE MATERIAL RELATES TO COMPLEX AEROSPACE SYSTEMS AND TO CONTAIN HIGH-RELIABILITY EQUIPMENT SUCH AS AIRCRAFT. RELATED CONTRACT SPECIFICATION METHODS AND PHILOSOPHY ARE ALSO DISCUSSED.

AVAILABILITY - SPARTAN BOOKS INC., 1250 CONNECTICUT AVENUE N.W., WASHINGTON, D.C., \$19.50 COPY

DESIGN CRITERIA + RELIABILITY ANALYSIS + RELIABILITY, COMPONENT + RELIABILITY, SYSTEM + SAFETY PRINCIPLES AND PHILOSOPHY + TESTING

9-16396 ALSO IN CATEGORIES 18 AND 12
QUESTION 12. ADDED FASTER INSTRUMENTATION TO INITIATE LPCI SYSTEM
TENNESSEE VALLEY AUTHORITY
1 PAGE, PAGE 12-1 FROM BROWNS FERRY AMENDMENT 7, FEBRUARY 1967, DOCKET NO. 50-259/260

DUE TO HIGHER POWER DENSITY, LESS TIME IS AVAILABLE TO INSTITUTE ACTION BY THE EMERGENCY COOLING SYSTEM IN THE EVENT OF A LARGE PIPE BREAK. WHAT ADDITIONAL INSTRUMENTATION METHOD COULD PROVIDE ADDITIONAL ASSURANCE AGAINST A FAILURE OR DELAY IN THE INITIATION SIGNAL TO THE LPCI. PARTICULARLY, HOW MIGHT DIVERSITY AFFORD ADDED ASSURANCE OF PROMPT ACTION OF THE EMERGENCY COOLING SYSTEM.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*EMERGENCY COOLING CONSIDERATIONS + *INSTRUMENTATION, PROCESS + *PLANT PROTECTIVE SYSTEM + AEC QUESTION + BROWNS FERRY + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

9-16416
RYDER FD
ON-LINE COMPUTERS FOR LARGE NUCLEAR REACTORS
DU PONT DE NEMOURS (E.I.) AND CO., AIKEN, S. C. SAVANNAH RIVER PLANT
DPSPU-66-20-5 +. 14 PAGES, APRIL 1966

AN ON-LINE COMPUTER IS BEING USED TO IMPROVE THE OPERATING SAFETY AND EFFICIENCY OF A

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-16416 *CONTINUED*

PRODUCTION REACTOR AT THE SAVANNAH RIVER PLANT. THE COMPUTER IS PROGRAMMED TO MONITOR THE ANALOG SIGNALS FROM ABOUT 3300 PROCESS SENSORS. IT PROVIDES GUIDANCE FOR OPERATING PERSONNEL IN CONTROLLING THE REACTOR AND STARTS CORRECTIVE ACTION AUTOMATICALLY IF SOME SELECTED OPERATING LIMITS ARE EXCEEDED. THE PROGRAMS WERE DESIGNED TO ACCOMMODATE THE VARIOUS TYPES OF URANIUM FUEL ASSEMBLIES USED IN THE REACTOR AND TO OPERATE UNATTENDED OVER A WIDE VARIETY OF OPERATING CONDITIONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*COMPUTER, DIGITAL + *CONTROL, COMPUTER + DATA PROCESSING + SAVANNAH RIVER PLANT

9-16417

VERLONA F

MAIN FUNCTIONS OF DIGITAL COMPUTERS IN THE ENEL NUCLEAR POWER PLANTS

ENTE NAZIONALE PER L'ENERGIA ELETTRICA, ITALY

8 PAGES, 3 TABLES, ENERGIA NUCLEARE 14(1), PAGES 24-31, (JANUARY 1967)

BY FILTERING, CORRECTING, AVERAGING, AND INTEGRATING THE INCOMING SIGNALS, DIGITAL COMPUTERS CAN SUPPLY ACCURATE RESULTS OF EVEN COMPLICATED COMPUTATIONS AT FREQUENT INTERVALS. THE BETTER QUALITY, GREATER CONTINUITY, AND EXTENT OF THE INFORMATION THUS OBTAINED ARE REFLECTED IN BETTER KNOWLEDGE OF PLANT CONDITIONS AND BETTER OPERATION. COMPUTERS ALLOW A PRACTICALLY CONTINUOUS CHECK ON THE SPATIAL VARIATIONS OF IMPORTANT QUANTITIES (SUCH AS NEUTRON FLUX, TEMPERATURES, XENON POISONING, OVERALL BURNUP OF EACH INDIVIDUAL FUEL ELEMENT, ETC.) AND HELP ASCERTAIN THAT SUFFICIENT SAFETY MARGINS ARE ALWAYS MAINTAINED.

*COMPUTER, DIGITAL + *DATA PROCESSING + INSTRUMENTATION, PROCESS + INSTRUMENTATION, SURVEILLANCE + ITALY

9-16418

HTOMS DS + JERVIS MW

THE USE OF COMPUTERS IN THE CONTROL AND INSTRUMENTATION OF CENTRAL ELECTRICITY GENERATING BOARD NUCLEAR POWER STATION

CENTRAL ELECTRICITY GENERATING BOARD, GREAT BRITAIN

11 PAGES, 8 FIGURES, 1 TABLE, 8 REFERENCES, J. BRIT. NUCL. ENERG. SOC. 5(1) PAGES 103-113 (JANUARY 1966)

EARLY NUCLEAR POWER STATIONS OF THE CENTRAL ELECTRICITY GENERATING BOARD MADE LITTLE USE OF COMPUTERS, BUT NEWER STATIONS MAKE EXTENSIVE USE OF DATA LOGGERS AND DIGITAL COMPUTERS. DATA IS RECORDED ON PUNCHED PAPER TAPE AND THEN PRINTED. NEWER SYSTEMS ALSO USE ALPHANUMERIC DISPLAYS ON CATHODE-RAY TUBES. ALARMS ARE ANALYZED TO SHOW THE PRIME CAUSES OF FAULT CONDITIONS. NEWER STATIONS HAVING TWO REACTORS HAVE EITHER TWO OR THREE COMPUTERS.

*COMPUTER, DIGITAL + *DATA PROCESSING + INSTRUMENTATION, PROCESS + INSTRUMENTATION, SURVEILLANCE + UNITED KINGDOM

9-16419

GOFFENE PJ

DIRECT DIGITAL CONTROL OF A NUCLEAR REACTOR

CHALK RIVER NUCLEAR LABORATORIES OF ATOMIC ENERGY, CANADA

3 PAGES, 2 FIGURES, INSTRUMENTS AND CONTROL SYSTEMS 32(6) PAGES 85-88 (JUNE 1965)

THIS ARTICLE DISCUSSES AN EXPERIMENT IN THE USE OF DIGITAL COMPUTERS FOR NUCLEAR REACTOR CONTROL. THE EXPERIMENT USES INPUT DATA FROM A REACTOR AND A SIMULATOR OF THE REACTOR. THE REACTOR IS NRU, A LARGE EXPERIMENTAL INSTALLATION AT THE CHALK RIVER NUCLEAR LABORATORIES OF ATOMIC ENERGY OF CANADA LIMITED. THE SYSTEM INCLUDES TWO COMPUTERS, ONE MONITORING INPUTS, THE OTHER GENERATING CONTROL SIGNALS AND INFORMING THE OPERATOR ABOUT REACTOR CONDITIONS. THE TANDEM-COMPUTER APPROACH PROVIDES THE SYSTEM WITH UNUSUAL VERSATILITY, AND THE DISPLAY PROVIDES A CONVENIENT, INFORMATIVE INTERFACE WITH THE OPERATOR. AVAILABILITY OF THE COMPUTERS WAS 99.8% AND 99.9%, WITHOUT PREVENTIVE MAINTENANCE.

*CHALK RIVER + *COMPUTER, DIGITAL + *CONTROL SYSTEM + *CONTROL, COMPUTER + CANADA + INSTRUMENTATION, CONTROL + INSTRUMENTATION, PROCESS

9-16420

ENGEL JP

APPLICATION OF AN ON-LINE DIGITAL COMPUTER TO A REACTOR EXPERIMENT

OAK RIDGE NATIONAL LAB., TENN.

ORNL-P-1502 + CONF-651101-15 +. 4 PAGES, 1 TABLE, PRESENTATION AT 13TH CONFERENCE ON REMOTE SYSTEMS TECHNOLOGY, WASHINGTON, D. C., AND TRANSACTION 8(2), PAGES 585-586, 1965

THE MOLTEN SALT REACTOR EXPERIMENT USES AN ON-LINE DIGITAL COMPUTER FOR ACQUIRING AND ANALYZING DATA. 273 ANALOG PROCESS SIGNALS ARE SCANNED EVERY 5 SEC. THESE ARE STORED ON MAGNETIC TAPE EVERY 10 MIN. ALARMS ARE TAKEN FROM 171 SIGNALS. A NUMBER OF CALCULATIONS USING CURRENT REACTOR DATA ARE PERFORMED PERIODICALLY AND ON DEMAND. SUMMARIES OF THE CALCULATIONS ARE RECORDED BY TYPEWRITERS. THE BUNKER-RAMC MODEL-340 COMPUTER CAN SUPPLY DATA FOR PROCESSING BY OTHER COMPUTERS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-16420 *CONTINUED*
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*COMPUTER, DIGITAL + *DATA PROCESSING + INSTRUMENTATION, PROCESS + INSTRUMENTATION, SURVEILLANCE +
MSRE (MOLTEN SALT REACTOR EXPERIMENT) + REACTOR, MOLTEN SALT

9-16422
SKAGGS SP + RANKEN WA + PATRICK AJ
DECALIBRATION OF A TUNGSTEN-TUNGSTEN 25 PERCENT PHENIUM THERMOCOUPLE IN A NEUTRON FLUX
LOS ALAMOS SCIENTIFIC LAB., N. MEX.
LA-3662 +. 7 PAGES, 5 FIGURES, JANUARY 1967

PROBLEM - DETERMINE THE EFFECT OF NEUTRON FLUX ON THE CALIBRATION OF THERMOCOUPLES TO BE USED TO MEASURE HIGH TEMPERATURES FOR LONG TIMES IN REACTOR ENVIRONMENTS. APPROACH - THE CHANGE IN THERMOELECTRIC EMF OF A W/W-25 RE THERMOCOUPLE WAS MEASURED FOR AN EXPOSURE OF 3.8×10 TO THE 20TH NVT. RESULTS - THE DIFFERENCE IN TEMPERATURE REQUIRED TO GENERATE THE SAME THERMAL EMF FOR IRRADIATED AND UNIRRADIATED THERMOCOUPLE VARIED FROM 33 K TO 60 K OVER A TEMPERATURE RANGE. THIS RESULT DID NOT AGREE WITH THOSE OF OTHER INVESTIGATORS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*INSTRUMENTATION, TEMPERATURE + *MEASUREMENT, TEMPERATURE + *TEST, INSTRUMENT RESPONSE

9-16423
GARIOD P + MERCHIE F + O-BYRNE G
POWER CONTROL OF WATER REACTORS USING NITROGEN 16 ACTIVITY MEASUREMENTS
CENTRE D ETUDES NUCLEAIRES DE GRENOBLE, FRANCE
CEA-R-2533 +. 10 PAGES, 4 FIGURES, 4 REFERENCES, MAY 1964

PROBLEM - THE CONVENTIONAL LINEAR CONTROL CHANNELS REACT INSTANTANECUSLY TO THE RAPID POWER FLUCTUATIONS, THIS BEING NECESSARY FOR THE SAFETY OF THE REACTORS, BUT THEIR POWER INDICATIONS ARE ERRONEOUS SINCE THEY ARE AFFECTED BY LOCAL DEFORMATIONS OF THE THERMAL FLUX CAUSED BY THE COMPENSATION MOVEMENTS OF THE CONTROL RODS. APPROACH - THE N-16 CHANNELS, ON THE OTHER HAND, GIVE AN INDICATION OF THE OVERALL POWER PROPORTIONAL TO THE MEAN FISSION FLUX AND INDEPENDENT OF THE ROD MOVEMENTS, BUT THEIR RESPONSE TIME IS 15 SEC. A CONSTANT OVERALL POWER CONTROL IS THUS POSSIBLE BY A SLOW CORRECTION OF THE REFERENCE SIGNAL GIVEN BY THE AUTOMATIC CONTROL GOVERNED BY THE LINEAR CHANNELS BY MEANS OF A CORRECTION TERM GIVEN BY THE N-16 CHANNELS. THIS IS DONE AUTOMATICALLY IN ONE SWIMMING POOL REACTOR AND MANUALLY IN ANOTHER.

AVAILABILITY - DOCUMENTATION FRANCAISE, SECRETARIAT GENERAL DU GOVERNMENT, DIRECTION DE LA DOCUMENTATION, 16 RUE LORD BYRON, PARIS VIIIEME

*CONTROL SYSTEM + *INSTRUMENTATION, CONTROL + *REACTOR POWER + INSTRUMENTATION, NUCLEAR +
INSTRUMENTATION, POWER RANGE + REACTOR CONTROL + SYSTEM DESCRIPTION

9-16424
RACHMANN U
CONTROL STUDIES WITH AN ANALOG COMPUTER FOR THE STEAM GENERATOR IN A HTGR PLANT
GENERAL DYNAMICS CORP., SAN DIEGO, CALIF. GENERAL ATOMIC DIV.
GAMD-6992 +. 45 PAGES, FIGURES, TABLES, 4 REFERENCES, JULY 15, 1966

PURPOSE - DEVELOP AND EXAMINE THE BEHAVIOR OF PLANT CONTROL SCHEMES FOR AN HTGR THAT USES COMPACT ONCE-THROUGH STEAM GENERATORS. APPROACH - A LINEAR MODEL OF THE PLANT WAS SIMULATED ON AN ANALOG COMPUTER. THE MODEL WAS USED TO STUDY THE BEHAVIOR OF SEVERAL PROPOSED CONTROL SCHEMES. RESULTS - THE CONTROL SCHEMES WOULD GIVE GOOD PLANT PERFORMANCE IN A REACTOR-FOLLOW-THE-TURBINE-LOAD MODE OF OPERATION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*ANALOG SIMULATION + *CONTROL SYSTEM + *DESIGN STUDY + COMPUTER PROGRAM + FT. ST. VRAIN +
REACTOR, GAS COOLED

9-16425 ALSO IN CATEGORY 4
LIBERMAN DS + SLECHTER AJ
AN INTRODUCTION TO THE EVALUATION OF RELIABILITY PROGRAMS
NASA, RELIABILITY AND QUALITY ASSURANCE OFFICE, WASHINGTON + ARINC RESEARCH CORPORATION, WASHINGTON, D. C.
NASA-SP-6501 +. 67 PAGES, 7 REFERENCES, 1967

THE MANAGEMENT AND USEFULNESS OF THE RELIABILITY PROGRAMS USED BY NASA ARE DISCUSSED. INCLUDED ARE (1) RELIABILITY-PROGRAM OBJECTIVES, (2) CRITERIA FOR JUDGING EFFECTIVENESS, (3) APPROACH TO EVALUATING THE TASKS FOR MEANINGFUL ACCOMPLISHMENT. SOME OF THE TECHNIQUES MAY BE USEFUL IN THE NUCLEAR FIELD, SUCH AS THE METHODS OF (1) RELIABILITY PREDICTION AND ESTIMATION, (2) FAILURE MODE, EFFECT, AND CRITICALITY ANALYSIS, (3) HUMAN FACTORS AND MAINTAINABILITY, (4) FAILURE REPORTING AND CORRECTION.

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-16425 *CONTINUED*

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*RELIABILITY ANALYSIS + AEROSPACE SAFETY + FAILURE, GENERAL + RELIABILITY, COMPONENT + RELIABILITY, SYSTEM

9-16430 ALSO IN CATEGORIES 17 AND 18
UNIVERSITY OF MISSOURI (COLUMBIA) SUFFERS CONTROL ROD DAMAGE DURING HANDLING
UNIVERSITY OF MISSOURI, COLUMBIA, MO.
3 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(27) PAGES 19-21 (JULY 3, 1967), DOCKET 50-186

(LETTER JUNE 6.) BECAUSE OF CONTROL-ROD MODIFICATION, THE SUSPENSION POINT FOR THE CONTROL-BLADE OFFSET MECHANISM WAS SHIFTED TO LIFT AT THE BLADES CENTER OF GRAVITY. HOWEVER THE REPOSITIONING AFFECTED THE OVERALL BALANCE SO THAT (AS DISCOVERED LATER) DURING THE NEXT REMOVAL THE BLADE TILTED SLIGHTLY AND JAMMED. THE CRANE MOTOR WAS USED FOR LIFT, AND A QUARTER-INCH NYLON ROPE FOR CONNECTION. AFTER CHECKING FOR FREENESS WITH A LONG TOOL, THE CRANE WAS JOGGED TO LIFT THE ROD.

*CONTROL ROD, SHIM SAFETY + *DAMAGE + FAILURE, DESIGN ERROR + FUEL HANDLING MACHINE + MODIFICATION, SYSTEM OR EQUIPMENT + REACTOR, FLUX TRAP + REACTOR, RESEARCH

9-16431 ALSO IN CATEGORIES 17 AND 18
UNIVERSITY OF MISSOURI (COLUMBIA) SUFFERS FALSE SCRAMS, DUE TO EXCESSIVE ROD DRIVE FUNCTION
UNIVERSITY OF MISSOURI, COLUMBIA, MO.
2 PAGES, ATOMIC ENERGY CLEARINGHOUSE 13(27) PAGES 18-19 (JULY 13, 1967), DOCKET 50-186

(LETTER JUNE 6.) SINCE INITIAL-LOADING DAYS, RODS HAVE ACCIDENTALLY DROPPED, AND ON SEVERAL OCCASIONS COULD NOT BE RAISED. THE DRIVE-ASSEMBLY BALL-BUSHINGS ARE SENSITIVE TO THE SLIGHTEST AMOUNT OF FOREIGN MATERIAL, AND ALL CLEANING AND INCREASED CLEARANCES PROVIDE ONLY TEMPORARY RELIEF. BELLEVILLE WASHERS ARE APPARENTLY NOT PROVIDING ENOUGH SHOCK ABSORPTION, SO A RUBBER CUSHION IS ADDED (TO BE INSPECTED AFTER EVERY 40 REACTOR OPERATING HOURS). GE IS PERFORMING A DESIGN STUDY ON NEW ROD MECHANISMS.

*CONTROL ROD DRIVE + *FAILURE, COMPONENT + FAILURE, SCRAM MECHANISM + MODIFICATION, SYSTEM OR EQUIPMENT + OPERATING EXPERIENCE + REACTOR, FLUX TRAP + REACTOR, RESEARCH

9-16434 ALSO IN CATEGORIES 17 AND 18
VOLUME II, APPENDIX A - SUMMARY OF OPERATING EXPERIENCE WITH IN-CORE CHAMBER NEUTRON MONITORING SYSTEM.
JERSEY CENTRAL POWER AND LIGHT COMPANY, MORRISTOWN, NEW JERSEY
5 PAGES, FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, JANUARY 25, 1967, DOCKET NO. 50-219

REFERS TO DRESDEN-1 EXPERIENCE WITH MECHANICAL DAMAGE DUE TO REMOVAL EACH REFUELING BUT NO LONGER BECAUSE PRESENT DESIGN IS PERMANENT INSTALLATION FROM THE BOTTOM. CAMPBELLING TESTS ARE SUMMARIZED, AND GEAP 4900 (JULY 1965) REFERENCED. TESTS ON MOVEMENT OF RETRACTING MECHANISMS AND TRAVELING IN-CORE PROPS ARE SATISFACTORY.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*DRESDEN 1 + *INSTRUMENTATION, IN CORE + *OPERATING EXPERIENCE + CORE COMPONENTS, MISCELLANEOUS + FAILURE, INSTRUMENT + INSTRUMENTATION, CAMPBELLING + OYSTER CREEK + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, GENERAL

9-16435 ALSO IN CATEGORY 18
VOLUME II, APPENDIX B - CONTROL ROD DRIVE SYSTEM DESCRIPTION AND ANALYSIS.
JERSEY CENTRAL POWER AND LIGHT COMPANY, MORRISTOWN, NEW JERSEY
20 PAGES, FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, JANUARY 25, 1967, DOCKET NO. 50-219

MODEL 7R-DB-144-A1. DRIVE IS SIMILAR TO DRESDEN-1 HUMBOLT BAY DRIVES EXCEPT, AMONG OTHER THINGS, NITRIDED 304-SS REPLACES 17-4 PH 1100, GUIDE SLEEVE ELIMINATED TO REDUCE ABRASION, OPERATING AND COLLET-RETURN FORCES ARE HIGHER, ADDITIONAL SCREENS PREVENT FOREIGN MATERIAL ENTERING. GOOD GENERAL DESCRIPTION, LIST OF POTENTIAL FAILURES AND PROTECTION.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTROL ROD DRIVE + *SYSTEM DESCRIPTION + ACCIDENT, CONTROL ROD EJECTION + FAILURE, GENERAL + OYSTER CREEK + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, GENERAL

9-16460 ALSO IN CATEGORY 15
RUSSELL JA + KNOWLES DJ
DESCRIPTION OF FACILITY RADIATION AND CONTAMINATION ALARM SYSTEMS INSTALLED IN THE HIGH RADIATION LEVEL
CHEMICAL DEVELOPMENT LABORATORY
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.
ORNL-TM-1668 +. 31 PAGES, 10 FIGURES, 3 TABLES, OCTOBER 27, 1966

FACILITY RADIATION AND CONTAMINATION ALARM SYSTEMS WERE INSTALLED IN THE HIGH RADIATION LEVEL

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-16460 *CONTINUED*

CHEMICAL DEVELOPMENT LABORATORY (BUILDING 4507) TO CONTINUOUSLY AND AUTOMATICALLY MONITOR GAMMA RADIATION (BY SIX GAMMA MONITORS), NEUTRON RADIATION (BY THREE NEUTRON-RATE-BURST DETECTORS), AND AIR CONTAMINATION (BY FIVE BETA-GAMMA AND THREE ALPHA CONSTANT AIR MONITORS) IN THE ENTIRE FACILITY. THESE INSTRUMENTS AND OTHER COMPONENTS IN THE NETWORK PROVIDE HEALTH-PHYSICS MONITORING INFORMATION, SOUND LOCAL ALARMS WHEN ABNORMAL CONDITIONS OCCUR, AND INDICATE THE ABNORMAL CONDITIONS ON A CENTRAL PANEL BOARD.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

*INSTRUMENTATION, RADIATION MONITORING + MONITORING SYSTEM, RADIATION + SYSTEM DESCRIPTION + ALPHA EMITTER + BETA EMITTER + GAMMA + INSTRUMENTATION CALIBRATION + INSTRUMENTATION, AIR SAMPLING + INSTRUMENTATION, TESTING + MONITOR, RADIATION, ENVIRONMENTAL + NEUTRON

9-16472 ALSO IN CATEGORY 17

SELECTED OPERATING EXPERIENCE - GARIGLIANO

ENTE NAZIONALE PER L'ENERGIA ELETTRICA, ROMO, ITALY

EURAF-1653 + EUR-2851 +. 8 PAGES, RESEARCH PROGRAM FOR THE GARIGLIANO NUCLEAR POWER PLAN. QUARTERLY REPORT NO. 8, APRIL 1, 1966

(TASK 1) DATA LOGGING COMPUTER MEMORY WAS REPLACED. (TASK 2) REACTOR-VESSEL IRRADIATION SPECIMENS REMOVAL WAS DELAYED BECAUSE OF UNFORSEEN MAINTENANCE. (TASK 3) INSTRUMENTED FUEL ASSEMBLIES WERE REMOVED BECAUSE OF UNFORSEEN MAINTENANCE. ONLY 3 OF THE 4 GROUPS OF MOVABLE IN-CORE ION CHAMBERS WILL BE INSTALLED, AND WITHOUT THE WIPE-IRRADIATION TUBE. CALIBRATION WILL BE DONE WITH THE IN-CORE CHAMBER ITSELF. MAINTENANCE WORK INCLUDED INSPECTION OF THE BOTTOM OF THE VESSEL.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF STANDARDS, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*PRESSURE VESSEL + DATA PROCESSING + EURATOM + EXAMINATION + INSTRUMENTATION CALIBRATION + INSTRUMENTATION, IN CORE + ITALY + OPERATIONS REPORT, ANALYSIS + REACTOR, BOILING WATER

9-16522 ALSO IN CATEGORY 17

SELECTED BIG ROCK POINT OPERATING EXPERIENCE

CONSUMERS POWER COMPANY, CHARLEVOIX, MICHIGAN

17 PAGES, JANUARY 1967, DOCKET NO. 50-155, FROM BIG ROCK POINT MONTHLY OPERATING REPORT NO. 52

REACTOR SCRAMED ON JANUARY 20 DUE TO PRESSURE TRANSIENT CAUSED BY ERRATIC IPR. STARTUP WAS DELAYED WHEN ROD E-4 COULD NOT BE WITHDRAWN. A 1/2-IN. HEX NUT WAS FOUND IN THE VESSEL. PRELIMINARY MEASUREMENTS SHOWED VERY LITTLE INCREASE IN CRUD DEPOSIT ON D-2 AND D-19.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*OPERATIONS SUMMARY FOR AEC + BIG ROCK POINT + FAILURE, SCRAM MECHANISM + REACTOR TRANSIENT + REACTOR, BOILING WATER

9-16580 ALSO IN CATEGORIES 6 AND 4

ALMENAS KK

STUDY OF REFLECTOR-BASED CONTROL OF FAST NUCLEAR ROCKET REACTORS

ARGONNE NATIONAL LAB., ILL.

ANL-7090 +. 82 PAGES, 28 FIGURES, 26 TABLES, 19 REFERENCES, MAY 1966

COMPARATIVE EVALUATION VARIES REFLECTOR AND CONTROL MATERIALS SUITABLE FOR FAST-SPECTRUM, HIGH-PERFORMANCE CORES, FOCUSED PRIMARILY ON THE CONTROL POTENTIAL OF REFLECTOR-LOCATED CONTROL MECHANISMS. FOR MOST FAST-SPECTRUM CORE-REFLECTOR COMBINATIONS, A WELL-DEFINED OPTIMUM CONTROL-VANE DESIGN EXISTS. DEPENDENCE OF THIS OPTIMUM CONTROL SPAN ON CONTROL-VANE THICKNESS AND COMPOSITION WAS EXPLORED IN DETAIL. CALCULATIONAL METHODS FOR DETERMINING THE OPTIMUM VANE CONFIGURATION AND SUCH ASPECTS AS CONTROL-VANE HEATING ARE PRESENTED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

COMPUTER, DIGITAL + CONTROL, GENERAL + REACTOR, FAST + REFLECTOR + SPACECRAFT

9-16619 ALSO IN CATEGORIES 18 AND 12

QUESTION C-6--VALIDITY OF ROD WITH MINIMIZER CONCEPT WHEN A STUCK ROD IS NOT INDICATED

THE CONNECTICUT LIGHT AND POWER COMPANY + THE HARTFORD ELECTRIC LIGHT COMPANY + WESTERN MASSACHUSETTS ELECTRIC COMPANY

2 PAGES, 1 FIGURE, 1966, PAGES C-6-1 AND C-6-2 FROM DESIGN AND ANALYSIS REPORT, AMENDMENT NO. 1, DOCKET NO. 50-245, MILLSTONE NUCLEAR POWER PLANT

DISCUSS VALIDITY OF ROD-WORTH-MINIMIZER CONCEPT IN RELATION TO CASE IN WHICH ROD IS STUCK FULL-IN WHILE DRIVE IS WITHDRAWN. SUBSEQUENT CHANGES IN SURROUNDING ROD PATTERNS ARE MADE WITHIN LIMITS PERMITTED BY ROD-WORTH MINIMIZER AND INDICATED POSITION OF STUCK ROD. WHAT IS HIGHEST WORTH OF STUCK ROD WHICH COULD BE OBTAINED AT HOT STANDBY AND AT FULL POWER.

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-16619 *CONTINUED*
AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTROL ROD WORTH + *ENGINEERED SAFETY FEATURE + *FAILURE, SCRAM MECHANISM + AEC QUESTION +
INSTRUMENTATION, POSITION + MILLSTONE POINT + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

9-16620 ALSO IN CATEGORY 18
QUESTION C-7--COLLET FINGERS BETWEEN CONTROL ROD INDEX TUBE AND THIMBLE HOUSING
THE CONNECTICUT LIGHT AND POWER COMPANY + THE HARTFORD ELECTRIC LIGHT COMPANY + WESTERN MASSACHUSETTS
ELECTRIC COMPANY
2 PAGES, 1966, PAGES C-7-1 AND C-7-2 FROM DESIGN AND ANALYSIS REPORT, AMENDMENT NO. 1, DOCKET NO. 50-245,
MILLSTONE NUCLEAR POWER PLANT

THE CONTROL-ROD-THIMBLE-SUPPORTS COMMUNICATION PROVIDED BY THE COLLET FINGERS BETWEEN THE
CONTROL ROD INDEX TUBE AND THIMBLE HOUSING IS REQUIRED. CONSIDER CASE WHERE COLLET FINGERS
ARE RELEASED FOR ROD MOVEMENT AND THERE IS COMPLETE CIRCUMFERENTIAL BREAK IN THE CONTROL-ROD
THIMBLE. WE ASSUME THAT THE CONTROL ROD COULD MOVE DOWNWARD 12 INCHES BEFORE COLLET FINGERS
LATCH ROD. ADDITIONAL MOVEMENT OF ENTIRE ASSEMBLY WOULD THEN OCCUR UNTIL SUPPORT FRAME IS
CONTACTED. (A) DISCUSS THE DESIGN CAPABILITY OF THIMBLE SUPPORT TO WITHSTAND THE TOTAL
DOWNWARD FORCE OF THE CONTROL ROD AND THIMBLE HOUSING. (B) DISCUSS EFFECTS OF ACCELERATING
ROD CONTACTING COLLET FINGERS. (C) COULD CIRCUMFERENTIAL BREAK OF THIMBLE PRODUCE SITUATION
WHERE CONTROL ROD COULD NOT BE ENGAGED AND HELD BY THE COLLET FINGERS UPON CONTACT WITH
SUPPORT FRAME. IF SO, PROVIDE EVALUATION OF CONSEQUENCES OF A ROD-EJECTION ACCIDENT,
ASSUMING FAILURE OF COLLET FINGERS TO COUPLE CONTROL-ROD-THIMBLE HOUSING.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACCIDENT, CONTROL ROD EJECTION + *FAILURE, SCRAM MECHANISM + AEC QUESTION + MILLSTONE POINT +
REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

9-16623 ALSO IN CATEGORY 18
QUESTION D-3--CORE STRUCTURAL CAPABILITY DESIGN INSURING CONTROL ROD INSERTION FOLLOWING PIPE RUPTURE
THE CONNECTICUT LIGHT AND POWER COMPANY + THE HARTFORD ELECTRIC LIGHT COMPANY + WESTERN MASSACHUSETTS
ELECTRIC COMPANY
1 PAGE, 1966, PAGE D-3-1 FROM DESIGN AND ANALYSIS REPORT, AMENDMENT NO. 1, DOCKET NO. 50-245, MILLSTONE
NUCLEAR POWER STATION

CONSIDERING THE OVERALL THERMAL AND HYDRAULIC EFFECTS OF A MAJOR PIPE RUPTURE, IDENTIFY THE
DESIGN FEATURES RELATED TO CORE STRUCTURAL CAPABILITY THAT WOULD BE AVAILABLE TO ENSURE
CONTROL-ROD INSERTION INTO THE CORE, THEREBY PREVENTING A SUBSEQUENT CRITICALITY EXCURSION
UPON CORE REFLOODING.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*FAILURE, SCRAM MECHANISM + *FAILURE, SEQUENTIAL + ACCIDENT, LOSS OF COOLANT + AEC QUESTION +
CORE COMPONENTS, MISCELLANEOUS + MILLSTONE POINT + REACTOR, BOILING WATER +
SAFETY ANALYSIS REPORT, PRELIMINARY

9-16624 ALSO IN CATEGORY 18
QUESTION E-1--SAFETY SYSTEM CAPABILITY AGAINST ROD WITHDRAWAL EXCURSIONS
THE CONNECTICUT LIGHT AND POWER COMPANY + THE HARTFORD ELECTRIC LIGHT COMPANY + WESTERN MASSACHUSETTS
ELECTRIC COMPANY
1 PAGE, 1966, PAGE E-1-1 FROM DESIGN AND ANALYSIS REPORT, AMENDMENT NO. 1, DOCKET NO. 50-245, MILLSTONE
NUCLEAR POWER STATION

E. INSTRUMENTATION - DISCUSS THE SAFETY-SYSTEM CAPABILITY TO PROTECT THE REACTOR (NO FUEL
DAMAGE) AGAINST EXCURSIONS INDUCED BY THE SIMULTANEOUS WITHDRAWAL OF ANY TWO RODS UNDER ALL
CONDITIONS OF ALLOWED BYPASS OF PROTECTION CHANNELS AND INDIVIDUAL CHAMBERS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACCIDENT, CONTROL ROD WITHDRAWAL + *REACTOR SAFETY SYSTEM + CONTROL ROD WORTH + MILLSTONE POINT +
REACTOR, BOILING WATER + RESPONSE TO AEC QUESTION + SAFETY ANALYSIS REPORT, PRELIMINARY +
SINGLE-FAILURE CRITERION

9-16626 ALSO IN CATEGORY 18
QUESTION F-2--SAFETY AMPLIFIERS INTEGRITY DURING EXCURSIONS
THE CONNECTICUT LIGHT AND POWER COMPANY + THE HARTFORD ELECTRIC LIGHT COMPANY + THE WESTERN MASSACHUSETTS
ELECTRIC COMPANY
1 PAGE, 1966, PAGE F-2-1 FROM DESIGN AND ANALYSIS REPORT, AMENDMENT NO. 1, DOCKET NO. 50-245, MILLSTONE
NUCLEAR POWER STATION

HOW WILL THE DESIGN FEATURES OF THE INTERMEDIATE- AND POWER-RANGE SAFETY AMPLIFIERS PROTECT
AGAINST OVERLOAD AND POSSIBLE FAILURE TO FUNCTION DURING THOSE EXCURSIONS WHICH THEY ARE
DESIGNED TO TERMINATE. (ANSWER) HIGH VOLTAGE CAUSES FUSES TO BLOW, LOW VOLTAGES DROPS OUT
RELAYS. EITHER WAY, A SCRAM RESULTS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-16626 *CONTINUED*
*REACTOR SAFETY SYSTEM + *SYSTEM OPERABILITY IN ACCIDENT CONDITIONS + MILLSTONE POINT + REACTOR, BOILING WATER + RESPONSE TO AEC QUESTION + SAFETY ANALYSIS REPORT, PRELIMINARY

9-16627 ALSO IN CATEGORY 18
QUESTION E-3--SNEAK CIRCUIT THRU TEST SWITCH TO PREVENT SCRAM
THE CONNECTICUT LIGHT AND POWER COMPANY + THE HARTFORD ELECTRIC LIGHT COMPANY + WESTERN MASSACHUSETTS ELECTRIC COMPANY
1 PAGE, 1966, PAGE E-3-1 FROM DESIGN AND ANALYSIS REPORT, AMENDMENT NO. 1, DOCKET NO. 50-245, MILLSTONE NUCLEAR POWER STATION

WE HAVE OBSERVED THAT ACTUATION OF THE TEST SWITCHES IN THE NEUTRAL SIDES OF THE SOLENOID PILOT VALVES HAS THE EFFECT OF TYING TOGETHER THE TWO BUSES OF THE OTHERWISE MUTUALLY INDEPENDENT DUAL BUS SYSTEM. ONE CONSEQUENCE IS THAT, UNDER CERTAIN CONDITIONS, THE CURRENT FROM ONE BUS CAN TEND TO HOLD CLOSED THE VALVES IN THE OTHER BUS. PROVIDE THE JUSTIFICATION AND BASIS FOR THIS DESIGN. (ANSWER) THIS WOULD PREVENT THE TEST, BUT NOT THE SCRAM.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*FAILURE, SCRAM MECHANISM + *REACTOR SAFETY SYSTEM + *TESTING + MILLSTONE POINT + REACTOR, BOILING WATER + RESPONSE TO AEC QUESTION + SAFETY ANALYSIS REPORT, PRELIMINARY + SINGLE-FAILURE CRITERION

9-16629 ALSO IN CATEGORIES 18 AND 11
QUESTION E-5-- CONTAINMENT ISOLATION AFTER RUPTURE OF TIP THIMBLES
THE CONNECTICUT LIGHT AND POWER COMPANY + THE HARTFORD ELECTRIC LIGHT COMPANY + WESTERN MASSACHUSETTS ELECTRIC COMPANY
2 PAGES, 1966, PAGES E-5-1 AND E-5-2 FROM DESIGN AND ANALYSIS REPORT, AMENDMENT NO. 1, DOCKET NO. 50-245, MILLSTONE NUCLEAR POWER STATION

WHAT PROVISIONS ARE BEING MADE TO ENSURE CONTAINMENT ISOLATION IN THE EVENT OF AN ACCIDENT THAT RESULTS IN RUPTURE OF THIMBLES USED FOR INSTRUMENT CALIBRATION (TIP SYSTEM). (ANSWER) THE PROBES ARE AUTOMATICALLY WITHDRAWN AND THE ISOLATION VALVE CLOSED WITHIN 1.5 MIN, WITH A MAXIMUM STEAM LEAKAGE OF 1.2 LB.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTAINMENT PENETRATION, CLOSURE OF + *INSTRUMENTATION CALIBRATION + *INSTRUMENTATION, IN CORE + MILLSTONE POINT + REACTOR, BOILING WATER + RESPONSE TO AEC QUESTION + SAFETY ANALYSIS REPORT, PRELIMINARY

9-16666 ALSO IN CATEGORIES 18 AND 12
QUESTION 2.2.3 - I AND C FOR ENGINEERED SAFEGUARD SYSTEMS
CONSUMERS POWER COMPANY, PALISADES PLANT, COVERT TOWNSHIP, MICHIGAN
18 PAGES, 11 FIGURES, NOVEMBER 14, 1966, PAGE 2.2.3-1 THROUGH 2.2.3-18 OF CONSUMERS POWER COMPANY APPLICATION FOR REACTOR CONSTRUCTION PERMIT AND OPERATING LICENSE, AMENDMENT NUMBER 3, DOCKET NO. 50-255

WHAT ARE THE CRITERIA AND DESIGN BASES IN REGARD TO REDUNDANCY, RELIABILITY, EQUIPMENT QUALIFICATIONS, ENVIRONMENTAL TESTING, BYPASSES, INTERLOCKS, AUTOMATIC SEQUENCING, PERIODIC TESTING, AND AVAILABILITY OF MANUAL BACKUP TO AUTOMATIC CONTROLS FOR THE INSTRUMENTATION AND CONTROLS WHICH ACTIVATE AND CONTROL THE ENGINEERED SAFEGUARD SYSTEMS. PROVIDE SUFFICIENT PRELIMINARY DESIGN INFORMATION AND ANALYSIS OF POTENTIAL FAILURE MODES TO DEMONSTRATE THAT THESE OBJECTIVES WILL BE ACHIEVED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ENGINEERED SAFETY FEATURE + *INSTRUMENTATION, GENERAL + AEC QUESTION + PALISADES POINT + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

9-16682 ALSO IN CATEGORIES 18 AND 12
7.5 PSAR SECTION VII SUPPLEMENT
CONSUMERS POWER CO., PALISADES PLANT, COVERT TOWNSHIP, MICHIGAN
12 PAGES, 2 FIGURES, NOVEMBER 14, 1966, PAGE 7.5-1 TO 7.5-12 OF CONSUMERS POWER COMPANY APPLICATION FOR REACTOR CONSTRUCTION PERMIT AND OPERATING LICENSE, AMENDMENT NUMBER 3, DOCKET NO. 50-255

SHORT SUMMARY OF HOW THE REACTOR PROTECTIVE SYSTEM AND ENGINEERED-SAFEGUARDS CONTROL SYSTEM ARE BEING DESIGNED IN ACCORDANCE WITH VARIOUS STANDARDS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CODES AND STANDARDS + *ENGINEERED SAFETY FEATURE + *REACTOR SAFETY SYSTEM + PALISADES POINT + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

9-16729 ALSO IN CATEGORIES 18 AND 11
QUESTION 9 - DETECTION OF CRACKS IN PRESSURE VESSEL WALL
THE CONNECTICUT LIGHT AND POWER CO. + THE HARTFORD ELECTRIC LIGHT CO. + WESTERN MASSACHUSETTS ELECTRIC COMPANY

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-16729 *CONTINUED*
1 PAGE, PAGE 9-1 OF DESIGN AND ANALYSIS REPORT, AMENDMENT NUMBER 3, ANSWERS TO AEC QUESTIONS, (MILLSTONE NUCLEAR POWER STATION), DOCKET NO. 50-245, FEBRUARY 9, 1967

ARE YOU CONSIDERING PROCEDURES FOR DETECTING THE PROPAGATION OF CRACKS WITHIN THE PRESSURE VESSEL WALL. (ANSWER) YES, AT THE OPERATIONAL STAGE, A DECISION WILL BE MADE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*BRITTLE FRACTURE + *INSTRUMENTATION, PROCESS + *PRESSURE VESSEL + AEC QUESTION + MILLSTONE POINT + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

9-16730 ALSO IN CATEGORY 6
KIER PH
II-3. INITIAL CRITICAL EXPERIMENTS OF THE EXPERIMENTAL BOILING WATER REACTOR (EBWR) PLUTONIUM RECYCLE PROGRAM
ARGONNE NATIONAL LAB., ILL.
ANL-7210 +. 6 PAGES, 6 TABLES, 10 REFERENCES, PAGE 29-34 OF ANL REACTOR PHYSICS DIVISION ANNUAL REPORT, JULY 1, 1965 TO JUNE 30, 1966, DECEMBER 1966

IN THE PLUTONIUM-LOADED EBWR, DETERMINATIONS WERE MADE OF CONTROL-ROD WORTH, BORIC ACID WORTH, AND UNIFORM TEMPERATURE COEFFICIENT OF THE UN-RODDED CRITICAL AND OF THE FULL-LOADING AND OPERATING CONSTRAINT AND SHUTDOWN MARGIN. MOSTLY EXPERIMENTAL, WITH CHECKS BY CALCULATIONS. AN INVERSE ROD-WORTH EFFECT WAS FOUND, WHICH IS, UNDER SOME CONDITIONS OF REACTIVITY, INCREASED WITH ROD INSERTION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*EBWR (EXPERIMENTAL BOILING WATER REACTOR) + *PLUTONIUM DIOXIDE + CHEMICAL SHIM + COMPUTER, DIGITAL + CONTROL ROD WORTH + CRITICALITY EXPERIMENT + EXPERIMENT, GENERAL + REACTOR, BOILING WATER + SHUTDOWN MARGIN + TEMPERATURE COEFFICIENT

9-16731
ISKENDERIAN HP
II-5. CONTROL ROD EVALUATION FOR THERMAL AND INTERMEDIATE REACTORS
ARGONNE NATIONAL LAB., ILL.
ANL-7210 +. 5 PAGES, 2 TABLES, PAGE 38-42 OF ANL REACTOR PHYSICS DIVISION ANNUAL REPORT, JULY 1, 1965 TO JUNE 30, 1966, DECEMBER 1966

THREE-GROUP PERTURBATION THEORY OF CONTROL-ROD WORTH.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*CONTROL ROD WORTH

9-16732 ALSO IN CATEGORY 6
ARGONNE ADVANCED RESEARCH REACTOR
ARGONNE NATIONAL LAB., ILL.
ANL-7210 +. 59 PAGES, 64 FIGURES, 29 TABLES, 41 REFERENCES, SECTION II-8 THRU II-21 PAGES 47-104 OF ANL REACTOR PHYSICS DIVISION ANNUAL REPORT, JULY 1, 1965 TO JUNE 30, 1966, DECEMBER 1966

REGARDING THE PHYSICS-REFERENCE AARR WITH STAINLESS STEEL-URANIUM OXIDE FUEL ELEMENTS, CRITICAL EXPERIMENTS FURNISHED, AMONG OTHER THINGS, INFORMATION ON THE FOLLOWING ITEMS OF SAFETY INTEREST - CONTROL-BLAD WORTH, PROMPT-NEUTRON LIFT-TIME, VOID WORTH, TEMPERATURE COEFFICIENT, MATERIAL-REACTIVITY WORTH, START-UP SOURCE REQUIREMENTS, AND INSTRUMENT RESPONSE. THEORETICAL CALCULATIONS ARE COMPARED WITH THE EXPERIMENTS AND DESCRIBED IN DETAIL, PARTICULARLY REGARDING THE POSITIVE VOID COEFFICIENT IN THE INTERNAL THERMAL COLUMN AND EFFECTS OF TARGETS IN THIS COLUMN. FOR ANALYSIS OF A HYPOTHETICAL ACCIDENT, SEE SPECIAL ABSTRACT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*AARR (ARGONNE ADVANCED RESEARCH REACTOR) + *CRITICALITY EXPERIMENT + CONTROL ROD WORTH + INSTRUMENTATION, STARTUP RANGE + PROMPT NEUTRON LIFETIME + REACTOR, RESEARCH + STEEL, STAINLESS + TEMPERATURE COEFFICIENT + URANIUM OXIDE + VOID COEFFICIENT

9-16737 ALSO IN CATEGORY 6
PERSIANI PJ + SMITH RP + OKRENT D
III-22. PHYSICS MEASUREMENTS IN AN OPERATING FAST BREEDER POWER REACTOR
ARGONNE NATIONAL LAB., ILL.
ANL-7210 +. 2 PAGES, 1 REFERENCE, PAGE 208 AND 209 OF ANL REACTOR PHYSICS DIVISION ANNUAL REPORT, JULY 1, 1965 TO JUNE 30, 1966, DECEMBER 1966

ABSTRACT OF PAPER BY P. J. PERSIANI, ET AL., AT ENEA SEMINAR, ROME, MAY 1966 ON MEASUREMENT OF DOPPLER EFFECT, AXIAL FUEL MOTION, SODIUM TEMPERATURE, VOID EFFECT, TOTAL CORE EXPANSION, AND

CATEGORY. 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-16737 *CONTINUED*
DELAYED-NEUTRON FRACTION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

DELAYED NEUTRON + DOPPLER EFFECT + INSTRUMENTATION, IN CORE + NOISE ANALYSIS + OSCILLATOR, REACTIVITY + REACTIVITY EFFECT, EXPANSION + REACTOR, FAST + SODIUM COEFFICIENT + TEMPERATURE COEFFICIENT + VOID COEFFICIENT

9-16748 ALSO IN CATEGORIES 15 AND 18
SUPPLEMENTAL INSERT SHEETS FOR ENGINEERING MATERIALS LIST
DIVISION OF TECHNICAL INFORMATION, OAK RIDGE, TENN.
TID-4100 (SUPPL. 39) +. 33 PAGES, JUNE 1967

INCLUDES ETR CONTROL-ROD LATCHING/PRESSURE-DROP MODIFICATIONS, MTR MECHANICALLY ASSEMBLED FUEL ELEMENTS, UCRL PLUTONIUM AIR MONITOR, AND UCRL BF3 NEUTRON SURVEY METER.

AVAILABILITY - DIVISION OF TECHNICAL INFORMATION, OAK RIDGE, TENN, FREE

*ENGINEERING DRAWING LIST + CONTROL ROD, SHIM SAFETY + ETR (ENGINEERING TEST REACTOR) + FUEL ELEMENT + MONITOR, RADIATION, AIR + MONITOR, RADIATION, PERSONNEL + MTR (MATERIAL TESTING REACTOR) + NEUTRON + PLUTONIUM + REACTOR, TEST

9-16756 ALSO IN CATEGORIES 6 AND 17
PICONE LF + TAYLOR GR + IMPINK AJ + RAJOGOPAL V
DYNAMIC MEASUREMENTS DURING CRUD INJECTION TESTS
WESTINGHOUSE ELECTRIC CORP., PITTSBURGH, PA. ATOMIC POWER DIVISION
WCAP-3260-58 +. 13 PAGES, 10 FIGURES, 1 TABLE, PAGES 56-69 OF REACTOR FOULING EXPERIMENT, JULY 1966

NOISE SPECTRA INDICATED THAT CRUD INJECTION ALMOST IMMEDIATELY DECREASED NUCLEATE BOILING IN CENTRAL HOT REGIONS AND INCREASED NUCLEATE BOILING IN GENERAL HOT REGIONS AS THE 12-CPS PEAK REDUCED AND THE 16-CPS PEAK INCREASED. ROD OSCILLATOR ON DOPPLER COEFFICIENT AND FUEL TIME CONSTANT GAVE SIMILAR RESULTS AS PH TESTS. INCREASING PH REDUCED DOPPLER COEFFICIENT AND FUEL TIME CONSTANT, WHILE CRUD INJECTION DECREASED BOTH. (THE IMPLICATION IS THAT BOTH ACT THROUGH SURFACE DEPOSITS WHICH AFFECT THE FUEL-TO-COOLANT CONDUCTANCE MORE THAN THE FUEL-TO-CLAD CONDUCTANCE).

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*DOPPLER COEFFICIENT + *REACTIVITY EFFECT, ANOMALOUS + *SURFACE FILM DEPOSIT + COOLANT CHEMISTRY + NOISE ANALYSIS + NUCLEATE BOILING + OPERATIONS REPORT, ANALYSIS + OSCILLATOR, REACTIVITY + REACTOR, PRESSURIZED WATER + SXTON

9-16939 ALSO IN CATEGORY 17
ENGEL JP + PRINCE BE
THE REACTIVITY BALANCE IN THE MSRE
OAK RIDGE NATIONAL LAB., TENN.
ORNL-TM-1796 +. 12 PAGES, 3 FIGURES, 4 REFERENCES, ABSTRACT IN AMERICAN NUCLEAR SOCIETY TRANSACTIONS 10(1) PAGES 337-338, PAPER PRESENTED AT THE THIRTEENTH ANNUAL MEETING OF THE AMERICAN NUCLEAR SOCIETY, SAN DIEGO, CALIFORNIA, JUNE 11-15, 1967

(SYNOPSIS OF ORNL-TM-1796, SAME TITLE). ON-LINE COMPUTER HAS BEEN USED SINCE 1965 TO MONITOR VARIOUS REACTIVITY EFFECTS IN CIRCULATING-FUEL REACTOR, WHICH GIVES A FACTOR-OF-10 MORE SENSITIVITY THAN CHEMICAL ANALYSIS ON FUEL CHANGES. ORIGINALLY, XENON WAS REMOVED MORE EFFICIENTLY THAN ESTIMATED. LATER, SLOW REACTIVITY DRIFTS DOWNWARD WERE FOUND DUE TO (1) DRIFT IN OUTLET-TEMPERATURE THERMOCOUPLES, CAUSING A POWER ERROR, AND (2) TRUNCATION ERRORS IN THE COMPUTATION OF SM-149 APPROACHING SATURATION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

*DATA PROCESSING + *OPERATIONS REPORT, ANALYSIS + *REACTIVITY, EXCESS + MSRE (MOLTEN SALT REACTOR EXPERIMENT) + REACTIVITY EFFECT, ANOMALOUS + REACTOR, CIRCULATING FUEL + REACTOR, GRAPHITE MODERATED + REACTOR, MOLTEN SALT

9-17105 ALSO IN CATEGORY 6
UHRIG RF
NEUTRON NOISE, WAVES, AND PULSE PROPAGATION
UNIVERSITY OF FLORIDA
CONF-660206 +. 771 PAGES, FIGURES, TABLES, MAY 1967, PROCEEDINGS OF A SYMPOSIUM AT THE UNIVERSITY OF FLORIDA, GAINESVILLE, FEBRUARY 14-16, 1966

RELATION BETWEEN AND RELATIVE ADVANTAGES OF NEUTRON-WAVE AND NEUTRON-PULSE PROPAGATION. TWO-DETECTOR CROSS-CORRELATION TECHNIQUE. NEUTRON DETECTORS FOR OPERATION IN HIGH GAMMA BACKGROUND. PSEUDO-RANDOM INPUT TECHNIQUE FOR MEASURING REACTOR PARAMETERS, PARTICULARLY AS USED ON PHOEBUS AND NERVA POCKETS. THREE-LEVEL SIGNALS FOR MEASURING NONLINEAR SYSTEMS.

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-17105 *CONTINUED*
RELATION TO SPACE-DEPENDENT DYNAMIC. GERMAN AND JAPANESE WORK.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*NOISE ANALYSIS + DYNAMICS, NONLINEAR + GAMMA + GERMANY + INSTRUMENTATION, GENERAL + JAPAN + NEUTRON + NOISE CROSS CORRELATION + NUCLEAR ROCKET + PULSED NEUTRON TECHNIQUE + SPACE DEPENDENT DYNAMICS + WAVE, NEUTRON

9-17115 ALSO IN CATEGORY 17
GENERAL ELECTRIC TEST REACTOR STUCK ROD, JULY 24, 1967
GENERAL ELECTRIC CO., NUCLEAR ENERGY DIVISION, SAN JOSE, CALIFORNIA
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(33), PAGE 18, (AUGUST 14, 1967) DOCKET NO. 50-70

(LETTER, AUGUST 1) DURING A PLANNED SHUTDOWN, CONTROL-ROD 4 STUCK 4 IN. ABOVE FULLY INSERTED POSITION. WELDING SLAG AND A BROKEN 1/4-IN. SELF-LOCKING NUT WERE FOUND IN THE SHOCK ABSORBER. ROD-GUIDE-TUBE COVERS WERE IN PLACE. A LOCKING DEVICE IN LIEU OF SELF-LOCKING NUTS IS BEING TESTED TO PROVIDE A UNIT THAT CAN NOT PASS INTO CREVICES OF THE CORE. ALL TOOLS AND ATTACHMENT NUTS WILL BE INSPECTED BEFORE USE.

*FAILURE, SCRAM MECHANISM + FUEL HANDLING MACHINE + GETR (GENERAL ELECTRIC TEST REACTOR) + REACTOR, TEST

9-17206 ALSO IN CATEGORY 17
MASCHE GC
NEAR MISS NUMBER FOUR - IMPROPER LOCATION OF STARTUP-CHANNEL
GENERAL ELECTRIC CO., SAN JOSE, CALIFORNIA
1 PAGE, PAGE 79 OF REACTOR OPERATOR TECHNICAL QUALIFICATIONS AS THEY RELATE TO NUCLEAR SAFETY, 1966.
MASTERS THESIS FOR THE UNIVERSITY OF WASHINGTON

(PAGE 79) REACTOR WAS STARTED UP WITH THE STARTUP-CHANNEL SENSORS IN A POSITION IN WHICH THEY COULD NOT DETECT THE NEUTRON DENSITY, RESULTING IN A FAST UNDETECTED PERIOD AT A TIME WHEN THE RODS WERE STILL BEING WITHDRAWN. THE EXCURSION WAS TERMINATED BY OVER-POWER TRIPS ON POWER-RANGE INSTRUMENTS, WHOSE TRIP SETTING HAD PROPERLY BEEN RESET AT A LOWER LEVEL. OTHERWISE A SIGNIFICANT EXCURSION WOULD PROBABLY HAVE OCCURRED.

AVAILABILITY - UNIVERSITY OF WASHINGTON

*ACCIDENT, CONTROL ROD WITHDRAWAL + *FAILURE, OPERATOR ERROR + *INCIDENT, ACTUAL, HUMAN ERROR + *INSTRUMENTATION, STARTUP RANGE + SCRAM, PEAL

9-17207 ALSO IN CATEGORY 17
MASCHE GC
NEAR MISS NUMBER FIVE - CONTROL ROD POISON SECTION NOT ATTACHED
GENERAL ELECTRIC CO., SAN JOSE, CALIFORNIA
1 PAGE, PAGE 80 OF REACTOR OPERATOR TECHNICAL QUALIFICATIONS AS THEY RELATE TO NUCLEAR SAFETY, 1966.
MASTERS THESIS FOR THE UNIVERSITY OF WASHINGTON

(PAGE 80) AN OPERATOR REPLACED A POISON SECTION OF A CONTROL UPSIDE DOWN. THE OPERATOR WAS NOT FULLY INFORMED OF A CHANGE IN HOOKUP DESIGN AND USED THE WRONG TOOL FOR A COUPLING CHECK. THUS THE REACTOR OPERATED FOR SOME TIME WITH ONE ROD UNHOOKED FROM THE DRIVE. A LARGE AMOUNT OF REACTIVITY COULD BE INSERTED IF SOME MECHANISM SHOULD SUDDENLY CAUSE THE LOOSE ROD TO FLUSH FROM THE CORE.

AVAILABILITY - UNIVERSITY OF WASHINGTON

*ACCIDENT, CONTROL ROD EJECTION + *FAILURE, MAINTENANCE ERROR + *INCIDENT, ACTUAL, HUMAN ERROR + CONTROL ROD DRIVE

CATEGORY 10
ELECTRICAL POWER SYSTEMS

10-15040 ALSO IN CATEGORIES 6 AND 9
BUDGE E
TEST CELL A CONTROL SYSTEMS
EDGERTON, GERMESHAUSEN, AND GRIER, INC., LAS VEGAS, NEVADA
EGG-1182-1054 +. 219 PAGES, 82 FIGURES, 1 TABLE, JUNE 1, 1964

THE REPORT GIVES THE THEORETICAL DERIVATION AND COMPONENT LAYOUT FOR THE INSTRUMENTATION AND CONTROL SYSTEM USED ON A NUCLEAR POWERED ROCKET. THE REPORT COVERS BOTH THE REACTOR AND THE HYDROGEN PROPELLANT SYSTEMS. THE APPENDICES INCLUDE - REACTOR-SIMULATOR EQUATIONS, REACTOR-PERIOD DETERMINATION, AND AN ANALYSIS OF THE DEWAR PRESSURE-CONTROL LOOP.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

*NUCLEAR ROCKET + CONTROL SYSTEM + POWER DISTRIBUTION + REACTOR SAFETY SYSTEM + SIMULATION

10-15532 ALSO IN CATEGORY 17
FAILURE OF EMERGENCY BATTERY BANK AT THE MATERIALS TESTING REACTOR
U. S. ATOMIC ENERGY COMMISSION
REACTOR OPERATING EXPERIENCES 67-1 + 2 PAGES, JANUARY 31, 1967

ON OCTOBER 4, 1966, A COMMERCIAL POWER FAILURE CAUSED THE M-G SET TO INVERT TO SUPPLY POWER TO EXPERIMENTS MOMENTARILY. THE OPERATOR WAS UNABLE TO RESYNCHRONIZE THE SET WITH COMMERCIAL POWER, AND A DC BREAKER CUT OFF ALL POWER FOR 1 MIN. INVESTIGATION SHOWED THAT 1 MIN OF DRAIN HAD DROPPED THE VOLTAGE SO LOW THAT SYNCHRONIZATION WAS IMPOSSIBLE. THE BATTERIES WERE 10 YEARS OLD, AND THE PLATES HAD BECOME COATED WITH LEAD. ROUTINE VOLTAGE AND SP.-G. CHECKS WERE NORMAL, BUT NO PERIODIC RATED-ROAD DISCHARGE TESTS WERE RUN, AND USUALLY PROMPT SWITCHING ON POWER FAILURE HAD KEPT THE BATTERIES FROM DISCHARGING. THUS, THE DEFECT DID NOT BECOME APPARENT.

AVAILABILITY - AEC, DIVISION OF PUBLIC INFORMATION, WASHINGTON, D. C. 20545

*FAILURE, ADMINISTRATIVE CONTROL + *FAILURE, EQUIPMENT + *OPERATIONS REPORT, ANALYSIS + *TEST, SYSTEM OPERABILITY + EMERGENCY POWER, ELECTRIC + MTR (MATERIAL TESTING REACTOR) + REACTOR, AEC OWNED + REACTOR, TEST

10-15586 ALSO IN CATEGORY 18
QUESTION P.1--FAILURE IN ELECTRICAL DISTRIBUTION SYSTEM
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
5 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

SECTION 8. ELECTRICAL POWER SUPPLY. PROVIDE THE RESULTS OF THE FAULT ANALYSIS WHICH VERIFIES THAT THE FAILURE OF ANY SINGLE COMPONENT OR SECTION OF THE ELECTRICAL DISTRIBUTION SYSTEM WOULD NOT RESULT IN THE LOSS OF OPERATING FUNCTIONS OF THE MINIMUM NUMBER OF EACH CATEGORY OF ENGINEERED SAFEGUARDS OR LOSS OF SURVEILLANCE INSTRUMENTS DURING NORMAL OR EMERGENCY PLANT OPERATION, GIVING PARTICULAR ATTENTION TO THE INSTRUMENT A-C BUSS, THE 125V D-C BUSS (INCLUDING ABILITY TO OPERATE SWITCH GEAR), AND THE AUXILIARY TRANSFORMER NO. 1 OR ITS CONNECTED LINES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + EMERGENCY POWER, ELECTRIC + ENGINEERED SAFETY FEATURE + FAULT TREE ANALYSIS + PALISADES POINT + REACTOR, PRESSURIZED WATER

10-15587 ALSO IN CATEGORY 18
QUESTION 8.2--VERIFICATION OF CAPABILITY OF EMERGENCY DIESEL GENERATOR AND STATION BATTERY
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

PROVIDE SUFFICIENT LOAD-ANALYSIS DATA TO VERIFY THAT THE EMERGENCY DIESEL GENERATOR AND THE STATION BATTERY HAVE SUFFICIENT CAPACITY TO ASSUME ALL EMERGENCY LOADS FOR AS LONG AS MAY BE REQUIRED. WHAT CRITERIA WILL BE APPLIED IN THE DESIGN OF THOSE SYSTEMS THAT SWITCH, CONNECT, OR SHED LOADS UNDER CONDITIONS WHEN POWER IS REQUIRED FROM THE EMERGENCY DIESEL GENERATOR. WHAT IS THE SEQUENCING AND TIMING OF THE EVENTS THAT MUST OCCUR.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + EMERGENCY POWER, ELECTRIC + GENERATOR, DIESEL + PALISADES POINT + PERFORMANCE LIMIT + REACTOR, PRESSURIZED WATER + TEST, PLANT RESPONSE

10-15588 ALSO IN CATEGORIES 2 AND 18
QUESTION 8.3--CONSEQUENCES OF TOTAL LOSS OF ELECTRICAL POWER
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

CATEGORY 10
ELECTRICAL POWER SYSTEMS

10-15588 *CONTINUED*

ANALYZE THE CONSEQUENCES OF A TOTAL LOSS OF ELECTRICAL POWER, INCLUDING EMERGENCY POWER, IN THE PLANT. HOW LONG CAN SUCH A POWER LOSS BE SUSTAINED WITHOUT FUEL DAMAGE. DISCUSS THE POSSIBILITY THAT MECHANISMS SUCH AS SWITCH-GEAR FIRES, FAILURE OF A SINGLE BREAKER OR PROTECTIVE RELAY, ETC., COULD LEAD TO A MOMENTARY OR SUSTAINED TOTAL POWER FAILURE. DISCUSS THE ABILITY OF ELECTRICAL COMPONENTS SUCH AS TRANSFORMERS, TRANSMISSION LINES, CIRCUIT BREAKERS, AND OTHER ELECTRICAL SWITCH GEAR TO WITHSTAND SEISMIC LOADS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF POWER + EARTHQUAKE ENGINEERING + EMERGENCY POWER, ELECTRIC + PALISADES POINT + REACTOR, PRESSURIZED WATER

10-15970

VERBER F + SCHMIDT HL
THE ELECTRICAL DESIGN OF THE EBR-II
ARGONNE NATIONAL LABORATORY, ARGONNE, ILLINOIS
ANL-7202 +. 196 PAGES, 79 FIGURES, 27 TABLES, JUNE 1966

REPORT IS A DETAILED DESCRIPTION OF THE EBR-II ELECTRICAL POWER SYSTEM. THE DESIGN FEATURES AND OPERATIONAL CHARACTERISTICS OF THE EMERGENCY POWER SYSTEM, PROTECTIVE RELAYING, TURBINE-GENERATOR, ALARM SYSTEMS, STATION BATTERY, ETC., ARE DISCUSSED

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*ELECTRIC POWER, AUXILIARY + *ELECTRIC POWER, NORMAL + *ELECTRIC POWER, VITAL + EQUIPMENT DESIGN + SYSTEM DESCRIPTION

10-16175

ALSO IN CATEGORIES 12 AND 17

DIESEL GENERATOR FAILURE

PUERTO RICO WATER RESOURCES AUTHORITY, SAN JUAN

2 PAGES, PAGES 8-9 FROM BONUS NUCLEAR POWER PLANT ORL MONTHLY REPORT NO. 31, OCTOBER 1966, DOCKET NO. 115-4

ALTHOUGH THE DRY-TANK-LEVEL CONTROLS WERE ADJUSTED TO ENSURE A GOOD SUPPLY OF FUEL (SEE MONTHLY REPORT 30), FAILURES TO START STILL OCCURRED. OTHER FAULTS INCLUDED PITTED CONTACTS ON THE GENERATOR ENERGIZING SWITCH, AND A BROKEN CRANKING RELAY. THE CRANKING LIMITER AND FOUR STARTER BRUSHES WERE ALSO REPLACED (PREVENTIVE MAINTENANCE).

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*FAILURE, EQUIPMENT + *FAILURE, MAINTENANCE ERROR + *GENERATOR, DIESEL + *OPERATING EXPERIENCE + *OPERATIONS REPORT, GENERAL + BONUS (BOILING NUCLEAR SUPERHEAT PROJECT) + ELECTRIC POWER, AUXILIARY + FAILURE, INSTRUMENT + MAINTENANCE AND REPAIR + REACTOR, BOILING WATER + REACTOR, INTERNAL SUPERHEAT

10-16361

ALSO IN CATEGORY 18

QUESTION E-2--DROPPING OF NONVITAL LOADS DURING DIESEL GENERATION

COMMONWEALTH EDISON COMPANY

2 PAGES, PAGES E-2-1 TO E-2-2 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

PROVIDE YOUR DESIGN CRITERIA FOR THE RELIABILITY OF THE AUTOMATIC AND MANUALLY ACTUATED SUBSYSTEMS USED TO OPERATE THOSE BREAKERS WHICH ARE PROVIDED TO SHED NONVITAL LOADS DURING ANY PERIOD WHEN THE DIESEL GENERATOR WOULD BE IN OPERATION.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*EMERGENCY POWER, ELECTRIC + *INSTRUMENTATION, INTERLOCK + AEC QUESTION + DRESDEN 3 + GENERATOR, DIESEL + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

10-16610

ALSO IN CATEGORIES 18 AND 12

QUESTION R-1--DESIGN BASIS AND ADEQUACY OF SINGLE EMERGENCY DIESEL GENERATOR

THE CONNECTICUT LIGHT AND POWER COMPANY + THE HARTFORD ELECTRIC LIGHT COMPANY + WESTERN MASSACHUSETTS

ELECTRIC COMPANY

2 PAGES, 1966, PAGES R-1-1 AND R-1-2 FROM DESIGN AND ANALYSIS REPORT AMENDMENT NO. 1, DOCKET NO. 50-245, MILLSTONE NUCLEAR POWER STATION

R. OVERALL STATION DESIGN AND OPERATION - (1) IN VIEW OF THE RECENT BLACKOUT, IT IS APPARENT THAT AUXILIARY POWER FROM OFF-SITE SOURCES MAY NOT BE AVAILABLE FOR ALL REQUIRED SAFETY SYSTEMS. IN THIS SITUATION, FULL RELIANCE FOR REMOVAL OF CORE DECAY HEAT AND HENCE FOR PUBLIC SAFETY WOULD BE PLACED ON THE SINGLE EMERGENCY DIESEL GENERATOR PROPOSED FOR THE STATION. CONSEQUENTLY, PROVIDE THE DESIGN BASIS AND JUSTIFICATION FOR THE ADEQUACY OF A SINGLE EMERGENCY DIESEL GENERATOR. CONSIDERATION OF AN ALTERNATE BACKUP SYSTEM MAY BE PROVIDED AS PART OF YOUR EVALUATION. (ANSWER) THE MAIN TURBINE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*GENERATOR, DIESEL + *SINGLE-FAILURE CRITERION + EMERGENCY COOLING CONSIDERATIONS + EMERGENCY POWER, ELECTRIC + MILLSTONE POINT + REACTOR, BOILING WATER + RESPONSE TO AEC QUESTION +

CATEGORY 10
ELECTRICAL POWER SYSTEMS

10-16610 *CONTINUED*
SAFETY ANALYSIS REPORT, PRELIMINARY

10-16628 ALSO IN CATEGORY 18
QUESTION E-4-- CIRCUIT BREAKERS RESPONSE TO DEAD SHORTS
THE CONNECTICUT LIGHT AND POWER COMPANY + THE HARTFORD ELECTRIC LIGHT COMPANY + WESTERN MASSACHUSETTS
ELECTRIC COMPANY
1 PAGE, 1966, PAGE E-4-1 FROM DESIGN AND ANALYSIS REPORT, AMENDMENT NO. 1, DOCKET NO. 50-245, MILLSTONE
NUCLEAR POWER STATION

ARE THE CIRCUIT BREAKERS WHICH PROTECT THOSE LINES FEEDING EQUIPMENT ESSENTIAL TO THE
OPERATION OF ENGINEERED SAFEGUARDS CAPABLE OF RESPONDING TO DEAD SHORTS OCCURRING AT THE
LINES. (ANSWER) A SHORT ON ONE BUS WILL NOT AFFECT THE OTHER.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*EMERGENCY POWER, ELECTRIC + *ENGINEERED SAFETY FEATURE + MILLSTONE POINT + REACTOR, BOILING WATER +
RESPONSE TO AEC QUESTION + SAFETY ANALYSIS REPORT, PRELIMINARY

10-17097 ALSO IN CATEGORY 17
VOLUME III. STUDIES OF TASK GROUPS ON THE NORTHWEST POWER INTERRUPTION
FEDERAL POWER COMMISSION
142 PAGES, FIGURES, TABLES, PREVENTION OF POWER FAILURES (REPORT TO THE FEDERAL POWER COMMISSION) JUNE 1967

SIX APPENDIXES CONTAIN - (A) GENERAL COMMENTS ON NE POWER FAILURE, (B) COMPUTER STABILITY
ANALYSES OF JUNE 1966 SYSTEM, USING NOV. 9, 1965, AND OTHER STIMULI, (C) COMPUTER ANALYSIS OF
1968 SYSTEM, (D) DETAILS OF THE ANALYSIS OF THE ISLAND SYSTEM DURING POWER DECLINE OF NOV. 9,
1965, (E) PLANING AND OPERATION CRITERIA TO PREVENT POWER FAILURES, (F) PROJECTION THRU 1973
OF GENERATION AND TRANSMISSION.

AVAILABILITY - GOVERNMENT PRINTING OFFICE, \$1.75 COPY

*EMERGENCY POWER, ELECTRIC + *INCIDENT, ACTUAL, NONNUCLEAR + OPERATIONS REPORT, ANALYSIS

10-17098 ALSO IN CATEGORY 17
VOLUME II. RELIABILITY OF ELECTRIC BULK POWER SUPPLY
FEDERAL POWER COMMISSION
138 PAGES, FIGURES, TABLES, PREVENTION OF POWER FAILURES, A REPORT TO THE FEDERAL POWER COMMISSION, JUNE
1967

REPORT AND APPENDIXES SPEAK IN BROAD GENERALITIES ON RELIABILITY AS AN OBJECTIVE, GUIDELINES
FOR PLANNING AND OPERATION. ALSO DISCUSSES EQUIPMENT DEVELOPMENT, COMPUTER APPLICATION,
PROTECTIVE RELAYING, AND OPERATION.

AVAILABILITY - GOVERNMENT PRINTING OFFICE, WASHINGTON, D. C. 20402, \$1.00 COPY

*EMERGENCY POWER, ELECTRIC + RELIABILITY ANALYSIS

10-17100 ALSO IN CATEGORY 17
VOLUME I. REPORT OF THE COMMISSION
FEDERAL POWER COMMISSION
197 PAGES, FIGURES, TABLES, PREVENTION OF POWER FAILURES, A REPORT TO THE PRESIDENT BY THE FEDERAL POWER
COMMISSION, JULY 1967

DISCUSSES NOVEMBER 9, 1965, NORTHEAST BLACKOUT, AND OTHER BLACKOUTS AND INTERRUPTIONS SINCE.
34 RECOMMENDATIONS INCLUDE AUTOMATIC LOAD SHEDDING, STRONGER INTER-TIES, GREATER LEAD TIME ON
PLANT PROCUREMENT, CENTRAL CONTROL STATIONS, COMPUTERS, COMMUNICATION, AND TRAINING. MUCH
USEFUL DATA AND GENERAL DISCUSSION INCLUDED.

AVAILABILITY - GOVERNMENT PRINTING OFFICE, WASHINGTON, D. C. 20402, \$1.50 COPY

*EMERGENCY POWER, ELECTRIC + *INCIDENT, ACTUAL, NONNUCLEAR + ADMINISTRATIVE CONTROLS AND PRACTICES +
FAILURE, ADMINISTRATIVE CONTROL + FAILURE, ADMINISTRATIVE CONTROL + FAILURE, COMPONENT

10-17415 ALSO IN CATEGORY 17
DETAILED REPORT ON FAILURE OF IRL EMERGENCY GENERATOR DUE TO OVERLOAD JUNE 22, 1967
INDUSTRIAL REACTOR LABORATORIES, INC., PLAINSBORO, N. J.
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(30), PAGE 18 AND 19, (JULY 24, 1967), DOCKET NO. 50-17

(LETTER, JULY 14) THE 50KW NATURAL-GAS MOTOR-GENERATOR IS RATED AT 174 AMP PER PHASE, AND HAS
BEEN RELATIVELY TROUBLE FREE AND HIGHLY DEPENDABLE. ON THE POWER OUTAGE, THE OVERLOAD
PROTECTOR WAS DROPPED OUT. THE NEXT DAY, A SIMILAR OVERLOAD-BREAKER FAILURE WAS ACHIEVED IN
TEST. OVERLOADING IS ATTRIBUTED TO SUBTLE ADDITION OF EQUIPMENT TO THE EMERGENCY ELECTRICAL
SYSTEM OVER THE YEARS BEYOND THE POINT OF SATURATION. LOAD TEST SHOWED AN AVERAGE OF 200 AMP
PER PHASE. VARIOUS (NONESSENTIAL) LOADS WERE REMOVED AND OTHERS PLANNED TO RETURN THE

CATEGORY 10
ELECTRICAL POWER SYSTEMS

10-17415 *CONTINUED*
ELECTRICAL LOAD TO BELOW NAMEPLATE. NEW ADMINISTRATIVE PROCEDURES INCLUDE SEMIANNUAL LOAD
AND WEEKLY FUNCTIONAL TESTS.

*EMERGENCY POWER, ELECTRIC + *FAILURE, EQUIPMENT + FAILURE, ADMINISTRATIVE CONTROL + REACTOR, POOL TYPE +
REACTOR, RESEARCH + TEST, SYSTEM OPERABILITY

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-15361
THE RESISTANCE TO PLASTIC FATIGUE OF CONSTRUCTIONAL STEELS FOR REACTOR PRESSURE VESSELS. QUARTERLY REPORT
NO. 9
CENTRE D'ETUDE DE L'ENERGIE NUCLEAIRE, MOL, BELGIUM
EURAF 1624 + EUR 2837 F +. 32 PAGES, JANUARY 1966

THE WORK PERFORMED DURING THE QUARTER WAS DEVOTED MAINLY TO ACQUIRING FURTHER DATA ON THE EFFECTS OF PLASTIC FATIGUE CYCLES IN WHICH THE CHARACTERISTIC DEFORMATIONS ARE OF LOW MAGNITUDE. DURING EARLIER EXPERIMENTS, IT BECAME APPARENT THAT SUCH CONDITIONS WERE LIKELY TO INDUCE CONSIDERABLE EMBRITTLEMENT OF THE STEEL. THE TESTS WERE CARRIED OUT ON TWO OF THE RESEARCH STEELS, AT TEMPERATURES OF 20 AND 300 C.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*FAILURE, FATIGUE + EMBRITTLEMENT + STEEL + STRESS

11-15537 ALSO IN CATEGORY 7
REIST PC + FIRST MW + SILVERMAN L
DEVELOPMENT OF THE DIFFUSION BOARD CONCEPT IN REACTOR CONTAINMENT
HARVARD AIR CLEANING LABORATORY, HARVARD UNIVERSITY, BOSTON, MASS.
NYO-841-6 +. 39 PAGES, 9 FIGURES, 11 TABLES, 6 REFERENCES, SEPTEMBER 1, 1966

TO DEVELOP A SUITABLE DIFFUSION BOARD FOR APPLICATION TO PROBLEMS OF REACTOR CONTAINMENT, THE STAFF INVESTIGATED A NUMBER OF MATERIALS. THESE INCLUDE A CARBON-IMPREGNATED CELLULOSIC FIBER, A RIGID POROUS CARBON MATERIAL, SPECIAL BOARDS CONSTRUCTED FROM SLAGWOOL AND GLASS FIBERS, AN ALUMINUM HONEYCOMB STRUCTURE (THE SO-CALLED HARVARD DIFFUSION BOARD), AND A POROUS-LINED MINERAL-FIBER CERAMIC BOARD. ALTHOUGH CERTAIN OF THE MEDIA HAD THE REQUIRED EFFICIENCY FOR REMOVING PARTICULATE RADIOACTIVITY AND IODINE VAPORS, ALL WERE DEFICIENT IN ONE OR MORE BASIC ASPECTS, THE MAJOR ONE BEING STEAM CLOGGING. ALTHOUGH THIS CAN BE OVERCOME BY USING PREHEATED METALLIC FILTERS (FOR EXAMPLE, COPPER WOOL), SUCH AN APPROACH IS NOT PRACTICAL FOR APPLICATION UNDER EMERGENCY CONDITIONS. FUTURE STUDIES DIRECTED TO THE SOLVING OF THIS PROBLEM INCLUDE THE USE OF SPECIAL METHODS TO PREVENT WETTING OF THE ADSORBENTS AND FILTERS. ALSO UNDER CONSIDERATION IS THE POSSIBILITY OF INCORPORATING INTO THE BOARD CERTAIN CHEMICALS THAT WOULD (UPON CONTACT WITH STEAM) RELEASE SUBSTANTIAL QUANTITIES OF HEAT (SUCH AS THE HEAT OF SOLUTION, CRYSTALLIZATION, ETC.).

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*DIFFUSION BOARD + *FISSION PRODUCT, IODINE + *IODINE + CONTAINMENT DESIGN + CONTAINMENT FILTERING SYSTEM + CONTAINMENT RESEARCH AND DEVELOPMENT + STEAM

11-15546 ALSO IN CATEGORY 18
QUESTION 1.1.1--CLASS 1 SYSTEMS
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 PAGES OF CONSUMERS POWER COMPANY, PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

SECTION 1 (GENERAL) - PROVIDE LISTING OF SIGNIFICANT INTERFACES BETWEEN CLASS-1 SYSTEMS AND OTHER SYSTEMS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + BUILDING + EARTHQUAKE ENGINEERING + PALISADES POINT + REACTOR, PRESSURIZED WATER

11-15547 ALSO IN CATEGORY 18
QUESTION 1.1.2--DESIGN LOADS APPLICABLE TO CLASS 1 STRUCTURES, SYSTEMS, AND COMPONENTS
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 PAGES OF CONSUMERS POWER COMPANY, PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

INDICATE DESIGN LOADS APPLICABLE TO CLASS-1 STRUCTURES, SYSTEMS, AND COMPONENTS, THE METHOD OF COMBINING THESE LOADS, AND THE STRESS CRITERIA TO BE APPLIED TO VARIOUS LOAD COMBINATIONS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + BUILDING + PALISADES POINT + REACTOR, PRESSURIZED WATER + STRESS ANALYSIS

11-15551 ALSO IN CATEGORY 18
QUESTION 1.5--TORNADO CRITERIA
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
5 PAGES, 7 REFERENCES TO CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-266

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-15551 *CONTINUED*

STATE TORNADO CRITERIA TO BE USED. FURNISH ENGINEERING DESIGN BASES AND ANALYSES FOR THOSE FEATURES OF THE PLANT AFFECTED. INCLUDE WIND LOADINGS AND THEIR COMBINATION WITH OTHER LOADS USED IN THE DESIGN. JUSTIFY THIS SELECTION. CONSIDER EFFECTS ON ALL PARTS OF THE FACILITY CONTAINING RADIOACTIVITY OF MISSILES THAT COULD BE GENERATED BY A TORNADO.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + DESIGN CRITERIA + DESTRUCTIVE WIND + PALISADES POINT + REACTOR, PRESSURIZED WATER

11-15556 ALSO IN CATEGORY 18

QUESTIONS 3.1-3.2--ENGINEERING ANALYSIS AND EVALUATION OF DESIGN BASIS CURVES FOR PRESSURE AND TEMPERATURE IN CONTAINMENT AS FUNCTION OF TIME
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
30 PAGES, 17 FIGURES, 2 REFERENCES, 1 TABLE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

SECTION 3 - CONTAINMENT. ANALYZE AND EVALUATE DESIGN-BASIS CURVES FOR PRESSURE AND TEMPERATURE IN CONTAINMENT AS FUNCTION OF TIME, CONSIDERING HEAT SINKS AND HEAT SOURCES. IDENTIFY SENSITIVITY ABOVE AND BELOW DESIGN REQUIREMENTS. SHOW EFFECTS OF VARIATIONS FROM PREDICTED BEHAVIOR OF VARIOUS PHENOMENA. CONSIDER (DO NOT LIMIT TO) EFFECT IF CORE METAL-WATER REACTION IS ANALYZED ASSUMING SAFETY INJECTION SYSTEM NOT OPERATING, EFFECT IF HYDROGEN GENERATED DOES NOT BURN AS RELEASED BUT AT TIME RESULTING IN HIGHEST PRESSURE, EFFECT IF GROSS FAILURE IN PRIMARY TO SECONDARY COOLING SYSTEM BARRIER IN STEAM GENERATOR OCCURS WITH DESIGN ACCIDENT. SHOW SENSITIVITY TO VARIATION IN COMMENCEMENT OF STEAM-GENERATOR BLOWDOWN AND IN BLOWDOWN RATES. EVALUATE ABOVE ANALYSES, INDICATING ANY NEEDED CHANGES IN DESIGN CRITERIA.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT DESIGN + PALISADES POINT + PRESSURE, INTERNAL + REACTOR, PRESSURIZED WATER

11-15557 ALSO IN CATEGORY 18

QUESTION 3.3--ACCESS TO CONTAINMENT BUILDING
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

DISCUSS THE REASON LEADING TO YOUR CONCLUSION THAT READY ACCESS TO THE CONTAINMENT BUILDING MAY NOT BE POSSIBLE DURING NORMAL PLANT OPERATION. WHAT WOULD BE INVOLVED IN ENSURING SUCH ACCESS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT, HIGH PRESSURE + PALISADES POINT + REACTOR, PRESSURIZED WATER + SHIELDING

11-15558 ALSO IN CATEGORY 18

QUESTION 3.4--LEAK-RATE TESTS OF CONTAINMENT BUILDING
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

AT WHAT PRESSURE WILL PERIODIC INTEGRATED LEAK-RATE TESTS OF THE CONTAINMENT BUILDING BE PERFORMED DURING THE PLANTS OPERATING LIFE. HOW WILL THE LEAK RATE AT ACCIDENT CONDITIONS BE DETERMINED FROM THESE MEASURED RATES. WILL THE DESIGN OF ALL INSTRUMENTATION AND OTHER COMPONENTS LOCATED WITHIN THE CONTAINMENT BUILDING PERMIT PERFORMING A LEAKAGE-RATE TEST AT DESIGN PRESSURE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT, HIGH PRESSURE + PALISADES POINT + REACTOR, PRESSURIZED WATER + TEST, LEAK RATE

11-15559 ALSO IN CATEGORY 18

QUESTION 3.5--LIST OF CONTAINMENT PENETRATIONS
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

PROVIDE A LIST OF ALL THE TYPES OF CONTAINMENT PENETRATIONS WHICH WILL NOT BE DESIGNED SO THAT THEIR LEAKAGE RATE CAN BE TESTED AT DESIGN PRESSURE LOCALLY RATHER THAN BY AN INTEGRATED TEST OF THE ENTIRE CONTAINMENT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT PENETRATION, ELECTRICAL + CONTAINMENT PENETRATION, GENERAL + CONTAINMENT PENETRATION, PIPE + PALISADES POINT + REACTOR, PRESSURIZED WATER + TEST, LEAK RATE

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-15560 ALSO IN CATEGORY 18
QUESTION 3.6--VACUUM RELIEF VALVES IN CONTAINMENT SYSTEM
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

PROVIDE A DISCUSSION AND ANALYSIS OF THE NEED FOR VACUUM-RELIEF VALVES IN THE CONTAINMENT SYSTEM. WILL THE VALVES BE REDUNDANT AS TO BOTH VACUUM-RELIEF FUNCTION AND CONTAINMENT INTEGRITY.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT, HIGH PRESSURE + PALISADES POINT + REACTOR, PRESSURIZED WATER + VACUUM RELIEF + VALVE

11-15561 ALSO IN CATEGORY 18
QUESTION 3.7--CONTAINMENT SYSTEM ISOLATION VALVES FAILURE MODES CRITERIA
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT CRITERIA WILL BE APPLIED TO THE FAILURE MODES (VALVE POSITION) OF EACH OF THE VARIOUS TYPES OF ISOLATION VALVES IN THE CONTAINMENT SYSTEM.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT PENETRATION, CLOSURE OF + CONTAINMENT, HIGH PRESSURE + DESIGN CRITERIA + FAILURE, GENERAL + PALISADES POINT + REACTOR, PRESSURIZED WATER

11-15562 ALSO IN CATEGORY 18
QUESTION 3.8--LEAK RATE TEST OF PENETRATIONS HAVING ONE CONTAINMENT ISOLATION VALVE
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

HOW WILL THE LOCAL LEAKAGE-RATE TEST OF PENETRATIONS HAVING ONLY ONE CONTAINMENT-ISOLATION VALVE BE PERFORMED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT PENETRATION, CLOSURE OF + PALISADES POINT + REACTOR, PRESSURIZED WATER + TEST, LEAK RATE

11-15563 ALSO IN CATEGORY 18
QUESTION 3.9--CRITERIA FOR CLOSED-SYSTEM CONTAINMENT
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
3 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

FOR PURPOSES OF CONTAINMENT-PENETRATION CLASSIFICATION, WHAT ARE THE CRITERIA FOR A CLOSED SYSTEM. DISCUSS THE PROBABILITIES AND CONSEQUENCES OF ONE OF THESE CLOSED SYSTEMS FAILING DURING OR AFTER AN ACCIDENT DUE TO MISSILES, VIBRATION, THERMAL SHOCK, ETC.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT PENETRATION, GENERAL + PALISADES POINT + REACTOR, PRESSURIZED WATER

11-15564 ALSO IN CATEGORIES 9 AND 18
QUESTION 3.10--CRITERIA FOR CONTAINMENT ISOLATION VALVE ACTUATING TIMES
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

PROVIDE THE CRITERIA AND THEIR BASES FOR CONTAINMENT-ISOLATION VALVE-ACTUATING TIMES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT PENETRATION, CLOSURE OF + DESIGN CRITERIA + PALISADES POINT + REACTOR, PRESSURIZED WATER + RESPONSE TIME

11-15565 ALSO IN CATEGORY 18
QUESTION 3.11--LENGTH OF PIPE LINES BETWEEN CONTAINMENT SHELL AND EXTERNAL ISOLATION VALVE
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-15565 *CONTINUED*

WHAT WILL BE THE CRITERIA ON THE LENGTH OF PIPE LINES BETWEEN THE CONTAINMENT SHELL AND EXTERNAL ISOLATION VALVES. WHAT CRITERIA APPLY TO THE CONNECTION OF SMALL LINES TO PIPE LINES BETWEEN THE CONTAINMENT SHELL AND THE EXTERNAL ISOLATION VALVES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT, HIGH PRESSURE + INSTRUMENTATION, GENERAL + PALISADES POINT + PIPING + REACTOR, PRESSURIZED WATER

11-15566

ALSO IN CATEGORY 18

QUESTION 3.12--CONTAINMENT ISOLATION VALVES DURING POST-ACCIDENT PERIOD

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT CRITERIA APPLY TO VALVES IN THE ENGINEERED-SAFEGUARDS SYSTEMS THAT MAY HAVE TO SERVE AS CONTAINMENT-ISOLATION VALVES DURING THE POST-ACCIDENT PERIOD.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT PENETRATION, CLOSURE OF + CONTAINMENT, HIGH PRESSURE + DESIGN CRITERIA + PALISADES POINT + REACTOR, PRESSURIZED WATER + VALVE

11-15567

ALSO IN CATEGORY 18

QUESTION 3.13--CONTAINMENT PENETRATION TEMPERATURES

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT CRITERIA WILL BE APPLIED TO ENSURE THAT CONTAINMENT PENETRATIONS (INCLUDING THE EQUIPMENT HATCH AND VACUUM BREAKERS) WILL ALWAYS HAVE AN ADEQUATE MARGIN BETWEEN THE TEMPERATURES THEY WILL BE EXPOSED TO AND THEIR NOT TO ENSURE DUCTILE BEHAVIOR.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + BRITTLE FRACTURE + CONTAINMENT EQUIPMENT HATCH + CONTAINMENT PENETRATION, ELECTRICAL + CONTAINMENT PENETRATION, GENERAL + CONTAINMENT PENETRATION, PIPE + PALISADES POINT + REACTOR, PRESSURIZED WATER

11-15568

ALSO IN CATEGORY 18

QUESTION 3.14--CONTAINMENT BUILDING STRUCTURAL CONCRETE INTEGRITY

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT DESIGN PROVISIONS WILL BE MADE TO PREVENT DAMAGE TO THE CONTAINMENT-BUILDING STRUCTURAL CONCRETE DUE TO HIGH TEMPERATURES AND THERMAL GRADIENTS AT LOCATIONS WHERE HIGH-TEMPERATURE PROCESS LINES PENETRATE THE CONTAINMENT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + CONCRETE + CONTAINMENT INTEGRITY + HIGH TEMPERATURE + PALISADES POINT + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

11-15569

ALSO IN CATEGORY 18

QUESTION 5.1--CONTAINMENT SPRAY SYSTEM DESIGN REQUIREMENTS ON TERMS OF HEAT REMOVAL AND PRESSURE RADIATION CAPABILITY

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

SECTION 5 (CONTAINMENT SPRAY SYSTEM) - WHAT ARE THE CRITERIA THAT QUANTITATIVELY DEFINE THE DESIGN REQUIREMENTS OF THE CONTAINMENT-SPRAY SYSTEM IN TERMS OF HEAT-REMOVAL AND PRESSURE-REDUCTION CAPABILITY.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT SPRAY + DESIGN CRITERIA + PALISADES POINT + REACTOR, PRESSURIZED WATER

11-15570

ALSO IN CATEGORY 18

QUESTION 5.2--HEAT TRANSFER CAPABILITY OF CONTAINMENT SPRAY SYSTEM

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE, 1 REFERENCE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT ARE THE DESIGN BASES USED TO ESTABLISH THE HEAT-TRANSFER CAPABILITY OF THE CONTAINMENT-SPRAY SYSTEM.

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-15570 *CONTINUED*
AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT SPRAY + HEAT TRANSFER ANALYSIS +
PALISADES POINT + REACTOR, PRESSURIZED WATER

11-15571 ALSO IN CATEGORY 18
QUESTION 5.3--PERFORMANCE MARGINS OF VARIOUS COMPONENTS OF CONTAINMENT SPRAY SYSTEM
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

PROVIDE ANALYSIS TO SHOW THE PERFORMANCE MARGINS AVAILABLE IN THE SYSTEM DESIGN, CONSIDERING
VARIOUS COMBINATIONS OF PUMPS, SPRAY HEADS, AND HEAT EXCHANGERS BEING AVAILABLE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT SPRAY + PALISADES POINT +
REACTOR, PRESSURIZED WATER

11-15572 ALSO IN CATEGORY 18
QUESTION 5.4--CONSEQUENCES OF INADVERTENT OPERATION OF CONTAINMENT SPRAY SYSTEM
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT ARE THE POTENTIAL CONSEQUENCES FROM A SAFETY POINT OF VIEW OF THE ACCIDENTAL OPERATION OF
THE CONTAINMENT-SPRAY SYSTEM. CONSIDERATION SHOULD BE GIVEN TO SUCH FACTORS AS WETTING OF
ELECTRICAL EQUIPMENT, THERMAL SHOCKING OF HOT EQUIPMENT, SEEPAGE OF WATER INTO AND BEHIND
THERMAL INSULATION, ETC.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT SPRAY + PALISADES POINT +
REACTOR, PRESSURIZED WATER + SYSTEM OPERABILITY IN ACCIDENT CONDITIONS

11-15573 ALSO IN CATEGORY 18
QUESTION 5.5--CONTAINMENT SUMP CLOGGING WITH DERRIS
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT DESIGN MEASURES WILL BE USED TO ENSURE THAT THE CONTAINMENT SUMP WILL FULFILL ITS
FUNCTION, ESPECIALLY RELATIVE TO PLUGGING BY DEBRIS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT SPRAY + FLOW BLOCKAGE +
PALISADES POINT + REACTOR, PRESSURIZED WATER

11-15574 ALSO IN CATEGORY 18
QUESTION 6.1--CONTAINMENT COOLING SYSTEM HEAT REMOVAL REQUIREMENTS
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

SECTION 6. CONTAINMENT AIR RECIRCULATION AND COOLING SYSTEM. WHAT IS THE BASIS FOR THE
HEAT-REMOVAL REQUIREMENTS INDICATED FOR THE AIR-RECIRCULATION-AND-COOLING SYSTEM.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT AIR COOLING + DESIGN CRITERIA +
PALISADES POINT + REACTOR, PRESSURIZED WATER + VENTILATION SYSTEM

11-15575 ALSO IN CATEGORY 18
QUESTION 6.2--CONCEPTUAL DESIGN OF CONTAINMENT COOLING SYSTEM
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 FIGURES, 4 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET
50-255

DESCRIBE THE CONCEPTUAL DESIGN OF THE CONTAINMENT COOLING SYSTEM, INCLUDING LOCATION OF THE
COOLING UNITS, AND THE EXTENT, NATURE, AND CONFIGURATION OF DUCT WORK.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT AIR COOLING + PALISADES POINT +
REACTOR, PRESSURIZED WATER + SYSTEM DESCRIPTION

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-15576 ALSO IN CATEGORY 18
QUESTION 6.3--DESIGN BASES OF HEAT TRANSFER CAPABILITY OF CONTAINMENT COOLING SYSTEM UNDER ACCIDENT
CONDITION
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT ARE THE DESIGN BASES USED TO ESTABLISH THE HEAT-TRANSFER CAPABILITY OF THE CONTAINMENT
COOLING SYSTEM UNDER THE AIR-STEAM ATMOSPHERIC CONDITIONS ATTENDING THE DESIGN-BASIS ACCIDENT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT AIR COOLING + DESIGN CRITERIA +
HEAT TRANSFER ANALYSIS + PALISADES POINT + REACTOR, PRESSURIZED WATER

11-15577 ALSO IN CATEGORY 18
QUESTION 6.4--MAINTAINING HEAT TRANSFER CAPABILITY OF CONTAINMENT COOLING SYSTEM
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT DESIGN MEASURES WILL BE USED TO ENSURE THAT HEAT-TRANSFER CAPABILITY OF CONTAINMENT
COOLING SYSTEM WILL NOT BE REDUCED OWING TO ACCUMULATION OF WATER IN THE COOLING UNITS, DUCT
WORK, AND FILTERS, AND THAT THE FAN, DRIVE MOTORS, AND COUPLINGS WILL FUNCTION PROPERLY UNDER
DESIGN-BASIS ACCIDENT CONDITIONS. WHAT PRESSURE DIFFERENCE WILL THE DUCTS BE DESIGNED FOR.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT AIR COOLING + PALISADES POINT +
REACTOR, PRESSURIZED WATER + SYSTEM OPERABILITY IN ACCIDENT CONDITIONS

11-15583 ALSO IN CATEGORIES 9 AND 18
QUESTION 7.6--INSTRUMENTATION INSIDE CONTAINMENT AFTER MAJOR ACCIDENT
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT INSTRUMENTS WILL BE PROVIDED TO INDICATE THE REACTIVITY STATUS OF THE REACTOR AS WELL AS
THE PRESSURE AND TEMPERATURE CONDITIONS INSIDE THE CONTAINMENT AFTER A MAJOR ACCIDENT. WHAT
DESIGN CRITERIA WILL BE APPLIED TO THIS INSTRUMENTATION.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT INSTRUMENTATION +
INSTRUMENTATION, SHUTDOWN REACTIVITY + PALISADES POINT + REACTOR, PRESSURIZED WATER

11-15594 ALSO IN CATEGORY 18
QUESTION 10.1.1--REACTOR PRESSURE VESSEL RECOMMENDATIONS OF ACRS- FAST NEUTRON FLUX DOSE PREDICTION
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 PAGES, 1 REFERENCE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966,
DOCKET 50-255

SECTION 10 - PRIMARY COOLANT SYSTEM, QUESTIONS 10.1, 10.1.1. WHAT CONSIDERATION WILL BE GIVEN
IN THE DESIGN OF THE PLANT TO THE RECOMMENDATIONS CONTAINED IN THE ACRS LETTER OF NOVEMBER
24, 1965, TO THE CHAIRMAN OF THE AEC CONCERNING REACTOR PRESSURE VESSELS. (NOTE - FOR
CONVENIENCE, THESE AREAS OF CONCERN ARE NUMBERED AS QUESTIONS 10.1.1 THROUGH 10.1.16.)
10.1.1. GIVE DETAILS ON THE BEST PREDICTION OF MAXIMUM FAST NEUTRON FLUX DOSE IN THE
PRESSURE VESSEL, INCLUDING UNCERTAINTIES IN THE PREDICTION.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + ACRS (ADVISORY COMMITTEE ON REACTOR SAFEGUARDS) +
BRITTLE FRACTURE + DOSE CALCULATION, EXTERNAL + PALISADES POINT + PRESSURE VESSEL +
REACTOR, PRESSURIZED WATER

11-15595 ALSO IN CATEGORY 18
QUESTION 10.1.2--NDT MEASUREMENTS, REACTOR VESSEL
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

GIVE DETAILS OF THE METHOD FOR MEASURING NDT FOR BASE PLATE, AND QUANTITATIVELY EXPLAIN
UNCERTAINTIES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + ACRS (ADVISORY COMMITTEE ON REACTOR SAFEGUARDS) +
NDT DATA (NIL DUCTILITY TRANSITION) + PALISADES POINT + PRESSURE VESSEL + REACTOR, PRESSURIZED WATER

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-15596 ALSO IN CATEGORY 18
QUESTION 10.1.3--NDT SHIFT WITH FAST NEUTRON DOSE IN REACTOR VESSEL
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 PAGES, 1 FIGURE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

GIVE DETAILS ON METHOD OF PREDICTING NDT SHIFT WITH FAST NEUTRON DOSE (REACTOR VESSEL), AND QUANTITATIVELY DESCRIBE UNCERTAINTIES THEREIN, INCLUDING CONSIDERATIONS OF WELD REGIONS AND HEAT-AFFECTED ZONES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + ACRS (ADVISORY COMMITTEE ON REACTOR SAFEGUARDS) + NDT DATA (NIL DUCTILITY TRANSITION) + PALISADES POINT + PRESSURE VESSEL + REACTOR, PRESSURIZED WATER + WELDING

11-15597 ALSO IN CATEGORY 18
QUESTION 10.1.4--ALLOWABLE STRESS CONSIDERATION BELOW NDT PLUS 60 AND BELOW NDT IN REACTOR VESSEL
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

DESCRIBE IN DETAIL THE STRESS CONSIDERATION TO BE ALLOWABLE BELOW NDT PLUS 60 AND BELOW NDT. STATE ASSUMPTIONS AND GIVE REASONS, ALLOWING FOR FLAW SIZE IN PARTICULAR.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + ACRS (ADVISORY COMMITTEE ON REACTOR SAFEGUARDS) + BRITTLE FRACTURE + PALISADES POINT + PRESSURE VESSEL + REACTOR, PRESSURIZED WATER + STRESS ANALYSIS

11-15598 ALSO IN CATEGORY 18
QUESTION 10.1.5--RELATION BETWEEN NDT AND ALLOWABLE STRESS IN REACTOR VESSEL
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

GIVE RATIONALE FOR RELATION BETWEEN NDT AND ALLOWED STRESS, EMPHASIZING IN PARTICULAR THE DEGREE OF CONSERVATISM WHICH IT IS FELT THE CIRCUMSTANCES REQUIRE AND WHY.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + BRITTLE FRACTURE + MAIN COOLING SYSTEM + PALISADES POINT + REACTOR, PRESSURIZED WATER + STRESS ANALYSIS

11-15599 ALSO IN CATEGORY 18
QUESTION 10.1.6--REACTOR VESSEL FLAW, SPECIFICATION
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

DEFINE THE FLAW SIZE AND TYPE IN THE PRESSURE VESSEL WHICH IS ACCEPTED IN THE SPECIFICATION. WHAT FLAW SIZE, LARGER OR OF SPECIAL SIGNIFICANCE, MIGHT NOT BE DETECTED, PARTICULARLY IN ZONES OF IRREGULAR SHAPE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + FLAW + PALISADES POINT + PRESSURE VESSEL + REACTOR, PRESSURIZED WATER + TEST, NONDESTRUCTIVE

11-15600 ALSO IN CATEGORY 18
QUESTION 10.1.7--FLAW SIZE IN STUDS OF REACTOR VESSEL, INSPECTION AND REPLACEMENT
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT FLAW SIZE IS ACCEPTED IN THE STUDS OF THE PRESSURE VESSEL. WHAT FREQUENCY OF STUD INSPECTION OR REPLACEMENT IS PLANNED. HOW MANY STUDS CAN FAIL WITHOUT THREATENING THE INTEGRITY OF THE CLOSURE.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + EXAMINATION + FLAW + PALISADES POINT + PRESSURE VESSEL + REACTOR, PRESSURIZED WATER

11-15601 ALSO IN CATEGORY 18

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-15601 *CONTINUED*

QUESTION 10.1.8--REACTOR VESSEL SUPPORT STRUCTURE REQUIREMENTS

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

DESCRIBE REQUIREMENTS CONCERNING THE SUPPORT STRUCTURE FOR THE PRESSURE VESSEL, INCLUDING THE DEGREE OF LEVELNESS OVER REACTOR LIFE, WHICH ARE NEEDED TO PREVENT PROBLEMS DUE TO LOCAL OVERSTRESSING OF THE PRESSURE VESSEL.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + PALISADES POINT + PRESSURE VESSEL + REACTOR, PRESSURIZED WATER + STRESS ANALYSIS + SUPPORT STRUCTURE

11-15602 ALSO IN CATEGORY 18

QUESTION 10.1.9--DETECTION OF SMALL LEAKS IN REACTOR VESSEL

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES POINT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

DESCRIBE HOW SMALL LEAKS IN THE PRESSURE VESSEL WOULD BE DETECTED AND THE ACTION TO BE TAKEN, SHOULD SUCH OCCUR. HOW IS ADEQUATE RESPONSE ENSURED IN THE EVENT OF A PREVIOUS EXISTENCE OF SMALL LEAKS IN OTHER PARTS OF THE SYSTEM.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + PALISADES POINT + PRESSURE VESSEL + REACTOR, PRESSURIZED WATER + TEST, LEAK LOCATION

11-15603 ALSO IN CATEGORY 18

QUESTION 10.1.10--REACTOR VESSEL MISSILE PROTECTION

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT MISSILES ARE PROTECTED FOR, AND WHICH ARE NOT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + MISSILE GENERATION AND PROTECTION + PALISADES POINT + PRESSURE VESSEL + REACTOR, PRESSURIZED WATER

11-15604 ALSO IN CATEGORY 18

QUESTION 10.1.11--PIPE WHIPPING PROBLEMS

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

CAN ANY PROBLEMS ARISE FROM PIPE WHIPPING.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + FAILURE, PIPE + PALISADES POINT + REACTOR, PRESSURIZED WATER + SYSTEM OPERABILITY IN ACCIDENT CONDITIONS

11-15605 ALSO IN CATEGORY 18

QUESTION 10.1.12--REACTOR VESSEL SURVEILLANCE PROGRAM

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

DESCRIBE THE SURVEILLANCE PROGRAM FOR THE PRESSURE VESSEL IN SOME DETAIL. WHAT UNCERTAINTIES WOULD BE EXPECTED FROM THE EXPERIMENTAL RESULTS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + NDT DATA (NIL DUCTILITY TRANSITION) + PALISADES POINT + PRESSURE VESSEL + REACTOR, PRESSURIZED WATER + SURVEILLANCE PROGRAM

11-15606 ALSO IN CATEGORY 18

QUESTION 10.1(13 AND 14)--PROPAGATION OF A CRACK IN THE PRESSURE VESSEL

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

(13) IF YOU POSTULATE THE RAPID PROPAGATION OF A CRACK CIRCUMFERENTIALLY, WITH THE CONTAINMENT ENERGY OF THE SYSTEM, WHAT WOULD HAPPEN TO THE UPPER SECTION OF THE VESSEL, INCLUDING SHEARING OF THE PRIMARY PIPES, ETC. (14) CAN YOU VISUALIZE ANY PROBLEM FROM THE PROPAGATION OF A CRACK FROM TOP TO BOTTOM OF THE VESSEL BUT NOT THROUGH THE HEAD.

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-15606 *CONTINUED*

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + BRITTLE FRACTURE + PALISADES POINT + PRESSURE VESSEL + REACTOR, PRESSURIZED WATER

11-15607 ALSO IN CATEGORY 18

QUESTION 10.1.15--SHOCK LOADING OF STEAM GENERATOR TUBE SHEET
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

DO YOUR CALCULATIONS CONFIRM THAT THE STEAM-GENERATOR TUBE-SHEET WILL WITHSTAND SHOCK LOADING BY ABRUPT LOSS OF PRIMARY COOLANT, OR WILL THE HEAD GO INSTEAD.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF COOLANT + FAILURE, TUBING + HEAT EXCHANGER + PALISADES POINT + REACTOR, PRESSURIZED WATER

11-15608 ALSO IN CATEGORIES 9 AND 18

QUESTION 10.1.16--DETECTION OF PROPAGATION OF CRACKS IN PRESSURE VESSEL WALL
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

ARE YOU CONSIDERING PROCEDURES FOR DETECTING THE PROPAGATION OF CRACKS WITHIN THE PRESSURE VESSEL WALL, I.E., ACOUSTIC EMISSION.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + INSTRUMENTATION, PROTECTIVE + PALISADES POINT + PRESSURE VESSEL + REACTOR, PRESSURIZED WATER

11-15611 ALSO IN CATEGORY 18

QUESTION 10.1, (1 THRU 4)--RELATIVE APPLICABILITY OF ASA PIPING CODE AND ASME SECTION III PRESSURE VESSEL CODE FOR PRIMARY COOLANT PIPING

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

DISCUSS RELATIVE APPLICABILITY OF THE ASA PIPING CODE AND ASME SECTION-III PRESSURE-VESSEL CODE FOR DESIGNING AND TESTING LARGE, THICK WALLED, PRIMARY COOLANT PIPING. (1) HOW WILL NDT OF MATERIAL USED IN PRIMARY-COOLANT SYSTEM OTHER THAN THE REACTOR VESSEL BE DETERMINED. (2) TO WHAT CODES WILL PRIMARY-COOLANT PUMP HOUSING AND CHECK-VALVE BODIES BE DESIGNED. (3) WILL FABRICATION AND QUALITY-CONTROL TECHNIQUES USED IN THE PRIMARY COOLANT SYSTEM BE EQUIVALENT TO THOSE USED FOR THE REACTOR VESSEL. (4) DISCUSS EXTENT OF FIELD FABRICATION PLANNED FOR PRIMARY-COOLANT PIPING.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CODES AND STANDARDS + DESIGN CRITERIA + MAIN COOLING SYSTEM + PALISADES POINT + PIPING + REACTOR, PRESSURIZED WATER

11-15614 ALSO IN CATEGORY 18

QUESTION 10.7--SECONDARY SIDE OF GENERATOR DESIGN, CLASS C VS CLASS A VESSEL COMPARTMENT
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

CONSIDERING YOUR CRITERION THAT THE STEAM GENERATORS WILL BE DESIGNED SO THAT NO COMPONENT WILL FAIL EITHER BY RUPTURE OR BY DEVELOPING DEFORMATIONS THAT WILL IMPAIR THEIR FUNCTIONAL PERFORMANCE OR INTEGRITY FOR FURTHER OPERATION, WHY WILL THE SECONDARY SIDE OF STEAM GENERATOR BE DESIGNED AS A STANDARD-QUALITY CLASS-C VESSEL COMPARTMENT (SECTION VIII CODE RULES) RATHER THAN AS A HIGHEST-QUALITY CLASS A VESSEL COMPARTMENT (SECTION III CODE RULES).

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + DESIGN CRITERIA + FAILURE, EQUIPMENT + HEAT EXCHANGER + PALISADES POINT + REACTOR, PRESSURIZED WATER

11-15617 ALSO IN CATEGORY 18

QUESTION 10.10--REACTOR VESSEL METALLURGICAL SPECIFICATIONS
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

3 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT IS THICKNESS OF REACTOR VESSEL AT BELTLINE. WHAT CRITERION OR SPECIFICATION WILL APPLY TO BELTLINE BASE METAL RELATIVE TO TENSILE STRENGTH, IMPACT TEST RESULTS AND INITIAL NDT AT 1/4T. WHAT NONDESTRUCTIVE INSPECTION OF REACTOR VESSEL MATERIAL BEFORE FABRICATION BEYOND

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-15617 *CONTINUED*

ASME CODE SECTION III WILL BE PERFORMED. WHAT CRITERIA BEYOND THOSE REQUIRED BY CODE WILL BE APPLIED RELATIVE TO METHOD OF WELDING SHELL, NOZZLES AND FLANGES, METHOD OF CLADDING, NONDESTRUCTIVE INSPECTION DURING FABRICATION, NONDESTRUCTIVE TESTING AFTER HYDROSTATIC TEST, INDEPENDENT INSPECTION DURING VESSEL FABRICATION. WILL SURVEILLANCE PROGRAM CONFORM TO LATEST REVISION OF ASTM SPECIFICATION E 185. WILL LIMITATIONS EVER HAVE TO BE IMPOSED ON OPERATIONS LATER IN PLANT LIFE BECAUSE OF IRRADIATION DAMAGE.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + BRITTLE FRACTURE + DESIGN CRITERIA + PALISADES POINT + PRESSURE VESSEL + REACTOR, PRESSURIZED WATER + TEST, NONDESTRUCTIVE

11-15620 ALSO IN CATEGORY 18

QUESTION 1.1--CONTAINMENT LINER DESIGN CRITERIA

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

SECTION 1 LINER DESIGN. (1) STATE THE SPECIFIC DESIGN CRITERIA TO BE APPLIED TO THE CONTAINMENT LINER TO MEET THE FUNCTIONAL REQUIREMENT OF LEAK TIGHTNESS WITHIN THE SPECIFIED LEAKAGE LIMIT, UNDER BOTH THE TEST CONDITION AND THE DESIGN-ACCIDENT CONDITION.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT LINER + DESIGN CRITERIA + PALISADES POINT + REACTOR, PRESSURIZED WATER + TEST, LEAK RATE

11-15621 ALSO IN CATEGORY 18

QUESTION 1.2--CONTAINMENT LINER LEAKAGE BEHAVIOR PREDICTION

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

AS THE LOADINGS ON THE CONTAINER LINER UNDER THE PROPOSED LEAKAGE TEST WILL NOT BE REPRESENTATIVE OF THE TEMPERATURE AND PRESSURE LOADINGS UNDER ACCIDENT CONDITIONS, SUBMIT THE TECHNICAL BASIS FOR PREDICTING THE LEAKAGE BEHAVIOR UNDER DESIGN-ACCIDENT CONDITIONS FROM RESULTS MEASURED UNDER TEST CONDITIONS.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + ANALYTICAL MODEL + CONTAINMENT LINER + PALISADES POINT + REACTOR, PRESSURIZED WATER + SYSTEM OPERABILITY IN ACCIDENT CONDITIONS + TEST, LEAK RATE + TEST, PROOF

11-15622 ALSO IN CATEGORY 18

QUESTION 1.3--ELASTIC INSTABILITIES OF CONTAINMENT LINER

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

3 PAGES, 1 FIGURE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

SINCE A MAJOR PORTION OF THE LINER WILL BE SUBJECTED TO COMPRESSIVE LOADINGS UNDER BOTH NORMAL SERVICE AND POSTULATED ACCIDENT CONDITIONS, DESCRIBE THE DESIGN METHODS USED TO ACCOMMODATE ELASTIC INSTABILITIES WHICH MAY JEOPARDIZE ITS LEAK-TIGHTNESS. OF PARTICULAR INTEREST ARE THE CONCRETE ANCHOR POINTS, LINER DISCONTINUITIES, LINER CONNECTIONS TO ACCESS OPENINGS, AIRLOCKS, PENETRATION ASSEMBLIES, AND THE LINER DETAIL AT THE CRANE SUPPORT.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT AIR LOCK + CONTAINMENT LINER + PALISADES POINT + REACTOR, PRESSURIZED WATER + STRESS ANALYSIS

11-15623 ALSO IN CATEGORY 18

QUESTION 1.4--CONTAINMENT LINER SPECIFICATIONS

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

SUBMIT LINER SPECIFICATIONS, INDICATING THE APPLICABLE CODES OR SECTION OF CODES TO BE USED IN THE DESIGN, CONSTRUCTION, INSPECTION, AND TESTING. THIS SHOULD INCLUDE THE FIELD TESTING TO BE PERFORMED.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CODES AND STANDARDS + CONTAINMENT LINER + PALISADES POINT + REACTOR, PRESSURIZED WATER

11-15624 ALSO IN CATEGORY 18

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-15624 *CONTINUED*

QUESTION 1.5--PROOF TEST PRESSURE FOR CONTAINMENT STRUCTURE

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

2 PAGES, 1 TABLE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

JUSTIFY, ON AN ENGINEERING BASIS, THE SELECTION OF THE SPECIFIED PROOF-TEST PRESSURE FOR THE CONTAINMENT STRUCTURE AND ITS ANTICIPATED EFFECT UPON THE LEAK-TIGHTNESS OF THE LINER. DOES THE TEST PRESSURE HAVE THE SAME ENGINEERED SAFETY MARGIN FOR ULTIMATE STRUCTURAL INTEGRITY AS THAT FOR STEEL CONTAINMENTS.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT STRUCTURE + PALISADES POINT + REACTOR, PRESSURIZED WATER + TEST, LEAK RATE + TEST, PROOF

11-15625 ALSO IN CATEGORIES 18 AND 9

QUESTION 1.6--PROGRAM FOR INSTRUMENTING CONTAINMENT LINER FOR STRAIN

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES POINT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

SUBMIT THE PROPOSED PROGRAM FOR INSTRUMENTING THE CONTAINMENT LINER TO MEASURE STRAIN BEHAVIOR UNDER TEST LOADINGS, AND THE INTERPRETATION OF THE RESULTS THUS OBTAINED WITH RELATIONSHIP TO LEAKAGE BEHAVIOR OF THE LINER UNDER DESIGN-ACCIDENT CONDITIONS.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT INSTRUMENTATION + PALISADES POINT + REACTOR, PRESSURIZED WATER + TEST, LEAK RATE + TEST, PROOF

11-15626 ALSO IN CATEGORY 18

QUESTION 1.7--INSPECTION PROCEDURES FOR WELDS AND FASTENING AROUND PENETRATIONS OF CONTAINMENT LINER

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

2 PAGES OF CONSUMERS POWER COMPANY PALISADES POINT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

STATE THE INSPECTION PROCEDURES TO BE USED FOR THE SEAM WELDS, LINER FASTENING, AND AROUND PENETRATIONS. WHAT IS THE BASIS FOR SELECTING TEN-PERCENT WELD INSPECTION.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT LINER + EXAMINATION + PALISADES POINT + REACTOR, PRESSURIZED WATER + WELDING

11-15627 ALSO IN CATEGORY 18

QUESTION 1.8--FATIGUE LOADING OF CONTAINMENT LINER

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

STATE THE FATIGUE LOADING WHICH WILL BE CONSIDERED IN THE DESIGN OF THE LINER.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT LINER + FAILURE, FATIGUE + PALISADES POINT + REACTOR, PRESSURIZED WATER + STRESS ANALYSIS

11-15628 ALSO IN CATEGORY 18

QUESTION 1.9--REPAIR OF CONTAINMENT LINER

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

DESCRIBE HOW LINER LEAKS WILL BE TRACED AND REPAIRED WHEN EXCESSIVE LEAKAGE IS MEASURED DURING INITIAL AND SUBSEQUENT LEAK-RATE TESTS.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT LINER + PALISADES POINT + REACTOR, PRESSURIZED WATER + TEST, LEAK LOCATION

11-15629 ALSO IN CATEGORY 18

QUESTION 1.10--CONTAINMENT PRESSURE VS LINER TEMPERATURE

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

2 PAGES, 1 FIGURE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT IS THE CONTAINMENT PRESSURE VS. LINER TEMPERATURE RELATIONSHIP NECESSARY TO PREVENT LINER

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-15629 *CONTINUED*

BUCKLING OR PULLING AWAY FROM THE CONCRETE.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT LINER + PALISADES POINT + REACTOR, PRESSURIZED WATER + STRESS ANALYSIS + THERMAL MECHANICAL EFFECT

11-15630 ALSO IN CATEGORY 18

QUESTION 2.1--CONCRETE STRESS VALUES

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

SECTION 2. STRUCTURAL DESIGN. STATE THE BASIS FOR EXCEEDING CONCRETE STRESS VALUES AS RECOMMENDED IN ACI 318-63.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONCRETE + CONTAINMENT, HIGH PRESSURE + PALISADES POINT + REACTOR, PRESSURIZED WATER + STRESS ANALYSIS

11-15631 ALSO IN CATEGORY 18

QUESTION 2.2--DESIGN PROCEDURES FOR WORKING STRESSES AND FACTORED LOADINGS

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

7 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

APPENDIX B OF THE PSAP IS SOMEWHAT CONFUSING IN REGARD TO THE APPLICATION OF THE DIFFERENT DESIGN METHODS. CLARIFY THE USE OF WORKING STRESSES AND FACTORED LOADINGS BY SPECIFICALLY OUTLINING THE DESIGN PROCEDURES THAT WILL BE USED WHEN EACH OF THESE APPROACHES IS EMPLOYED IN THE DESIGN.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + ANALYTICAL MODEL + CONTAINMENT STRUCTURE + PALISADES POINT + REACTOR, PRESSURIZED WATER + STRESS ANALYSIS

11-15632 ALSO IN CATEGORY 18

QUESTION 2.3--HEAVY MACHINERY CONSIDERATIONS IN FACTORED LOAD EQUATIONS

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

HOW ARE LOADS SUCH AS HEAVY MACHINERY, CRANE, AND LARGE PUMPS CONSIDERED IN THE FACTORED-LOAD EQUATIONS. IF THEY ARE TREATED AS DEAD LOADS, PROVIDE THE BASES FOR NEGLECTING THE IMPACT AND LOAD VARIATION CHARACTERISTICS ASSOCIATED WITH THIS TYPE OF EQUIPMENT.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT STRUCTURE + PALISADES POINT + REACTOR, PRESSURIZED WATER + STRESS ANALYSIS

11-15633 ALSO IN CATEGORY 18

QUESTION 2.4--GROUTED VS. UNGROUTED TENDONS

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

3 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

PROVIDE A DISCUSSION OF GROUTED VS. UNGROUTED TENDONS FOR THIS STRUCTURAL APPLICATION, INCLUDING THE RELATIVE MERITS OF EACH IN RESISTING THE DESIGN LOADINGS (ESPECIALLY SEISMIC), AND THE REASONING SUPPORTING THE SELECTION.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONCRETE, PRESTRESSED + CONTAINMENT STRUCTURE + EARTHQUAKE ENGINEERING + PALISADES POINT + REACTOR, PRESSURIZED WATER

11-15634 ALSO IN CATEGORY 18

QUESTION 2.5--EXTERNAL DESIGN PRESSURE

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

STATE THE BASIS FOR SELECTING A 1-PSIG EXTERNAL DESIGN PRESSURE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT DESIGN + PALISADES POINT + PRESSURE, EXTERNAL + REACTOR, PRESSURIZED WATER

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-15635 ALSO IN CATEGORY 18
QUESTION 2.6--LATERAL SHEARS WITH REGARD TO SEISMIC RESISTANCE
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WITH REGARD TO SEISMIC RESISTANCE, DESCRIBE HOW THE LATERAL SHEARS WILL BE CARRIED UNDER VERTICAL AND HORIZONTAL MOTIONS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT STRUCTURE + PALISADES POINT + REACTOR, PRESSURIZED WATER + STRESS ANALYSIS

11-15636 ALSO IN CATEGORIES 18 AND 2
QUESTION 2.7--PLOT OF EARTHQUAKE RESPONSE
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 PAGES, 1 FIGURE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

PROVIDE PLOTS OF THE EARTHQUAKE-RESPONSE SPECTRA TO BE USED IN THE DESIGN (USE TRIPARTITE GRAPH PAPER).

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT STRUCTURE + DESIGN CRITERIA + PALISADES POINT + REACTOR, PRESSURIZED WATER + RESPONSE SPECTRUM

11-15637 ALSO IN CATEGORY 18
QUESTION 2.8 COMBINATION OF VERTICAL AND HORIZONTAL STRESSES WITH OTHER LOADINGS
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

STATE THE MANNER IN WHICH THE VERTICAL AND HORIZONTAL STRESSES (OR LOADS) ARISING FROM THE EARTHQUAKE WILL BE COMBINED WITH THE OTHER APPLICABLE LOADINGS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT STRUCTURE + PALISADES POINT + REACTOR, PRESSURIZED WATER + STRESS ANALYSIS

11-15638 ALSO IN CATEGORY 18
QUESTION 2.9--PHI VALUES
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

JUSTIFY, ON THE BASIS OF THE UNCERTAINTIES WHICH THEY ARE INTENDED TO COVER, THE USAGE OF SEVERAL ADDITIONAL AND VARIED PHI VALUES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT DESIGN + PALISADES POINT + REACTOR, PRESSURIZED WATER + STRESS ANALYSIS

11-15639 ALSO IN CATEGORY 18
QUESTION 2.10-2.11--LOAD FACTOR EQUATIONS
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
3 PAGES, 1 REFERENCE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

(10) DEVELOP THE BASIS FOR THE LOAD FACTORS USED IN THE LOAD-FACTOR EQUATIONS SUPPLIED. (11) STATE THE BASIS FOR VARIATION OF THE DEAD-LOAD DESIGN FACTORS BETWEEN LOAD-FACTOR EQUATIONS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT DESIGN + PALISADES POINT + REACTOR, PRESSURIZED WATER + STRESS ANALYSIS

11-15640 ALSO IN CATEGORY 18
QUESTION 2.12--LOAD PLOTS
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
7 PAGES, 6 FIGURES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-15640 *CONTINUED*
50-255

PROVIDE PLOTS OF MOMENT, SHEAR, DEFLECTION, LONGITUDINAL FORCE, AND HOOP TENSION AS A FUNCTION OF CONTAINMENT HEIGHT FOR EACH OF THE LOADS (DEAD LOAD, PRESTRESSED LOAD, LIVE LOAD, PRESSURE LOAD, WIND LOAD, EARTHQUAKE LOAD, THERMAL LOAD DUE TO LINER, AND THERMAL LOAD DUE TO CONCRETE).

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT DESIGN + PALISADES POINT + REACTOR, PRESSURIZED WATER + STRESS ANALYSIS

11-15641 ALSO IN CATEGORY 18
QUESTION 2.13--CRITERIA FOR SHEAR, POSSIBLE INCONSISTENCIES
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

DISCUSS THE INCONSISTENCIES THAT MIGHT ARISE THROUGH APPLICATION OF YOUR PROPOSED CRITERIA FOR SHEAR BASED ON A COMBINATION OF ACI CODE WORKING STRESS AND PRESTRESSED CONCRETE SHEAR DESIGN PROVISIONS, AND OUTLINE HOW THESE ARE ACCOUNTED FOR IN THE DESIGN, IF SUCH INCONSISTENCIES EXIST.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT DESIGN + PALISADES POINT + REACTOR, PRESSURIZED WATER + STRESS ANALYSIS

11-15642 ALSO IN CATEGORY 18
QUESTION 2.14--FAILURE MODE AND MARGIN OF SAFETY WITH RADIAL SHEAR AND MEMBRANE TENSION COMBINATION
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

IN VIEW OF THE POSSIBLE CRITICAL NATURE OF THE COMBINATION OF RADIAL SHEAR AND MEMBRANE TENSION, DESCRIBE THE PROVISIONS MADE IN THE DESIGN TO HANDLE THIS POSSIBLE FAILURE MODE, AND IDENTIFY THE MARGIN OF SAFETY OF THE DESIGN WITH RESPECT TO SUCH A FAILURE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT DESIGN + PALISADES POINT + REACTOR, PRESSURIZED WATER + STRESS ANALYSIS

11-15643 ALSO IN CATEGORY 18
QUESTION 2.15--CONTAINMENT STRUCTURAL ANALYSIS TECHNIQUES
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
3 PAGES, 1 FIGURE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

PROVIDE (A) A DESCRIPTION OF THE STRUCTURAL-ANALYSIS TECHNIQUE USED, (B) IDENTIFICATION OF COMPUTER PROGRAMS EMPLOYED, AND (C) VERIFICATION OF THE SUITABILITY OF THE SELECTED ANALYTICAL METHOD FOR ANALYZING CONTAINMENT STRUCTURES BY INCLUDING EXPERIMENTAL OR ANALYTICAL VERIFICATION OF THE METHOD IN APPLICATION OF IT TO STRUCTURES OF COMPARABLE GEOMETRY.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + ANALYTICAL MODEL + CONTAINMENT DESIGN + PALISADES POINT + REACTOR, PRESSURIZED WATER + STRESS ANALYSIS

11-15644 ALSO IN CATEGORY 18
QUESTION 2.16--CONTAINMENT DRAWINGS
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 PAGES, 1 FIGURE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

PROVIDE PRELIMINARY DESIGN DRAWINGS OF THE CONTAINMENT AND DETAILS OF THE CYLINDER-SLAB INTERSECTION, DOME-CYLINDER INTERSECTION, AND LINER-ANCHORAGE SCHEME FOR THE DESIGN THAT WILL BE USED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT DESIGN + PALISADES POINT + REACTOR, PRESSURIZED WATER + SYSTEM DESCRIPTION

11-15645 ALSO IN CATEGORY 18

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-15645 *CONTINUED*

QUESTION 2.17--CONTAINMENT PENETRATION DRAWINGS

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

4 PAGES, 3 FIGURES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

PROVIDE PRELIMINARY DESIGN DRAWINGS, SHOWING THE TYPES OF ELECTRICAL, PIPING, AND OTHER CONTAINMENT PENETRATIONS THAT WILL BE USED. THESE SHOULD INCLUDE METHOD OF SEALING, METHOD OF LEAK-TESTING INDEPENDENTLY OF THE MAIN CONTAINMENT, AND METHODS FOR PROVIDING DIFFERENTIAL EXPANSION.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT PENETRATION, ELECTRICAL + CONTAINMENT PENETRATION, GENERAL + CONTAINMENT PENETRATION, PIPE + PALISADES POINT + REACTOR, PRESSURIZED WATER + TEST, LEAK RATE

11-15646 ALSO IN CATEGORY 18

QUESTION 2.18--DESIGN ANALYSIS FOR EQUIPMENT OPENING

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

2 PAGES, 1 FIGURE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

DESCRIBE THE METHOD OF DESIGN ANALYSIS FOR THE EQUIPMENT OPENING. PROVIDE A DETAILED DRAWING OF THE REINFORCING AND DEFLECTED-STRAND PATTERN AROUND THE OPENING, AND AN ANALYSIS OF THE EXTENT TO WHICH THE STRESS PATTERN OF THE ACCEPTANCE TEST WILL RELATE TO THE DESIGN-BASIS ACCIDENT LOADINGS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT DESIGN + CONTAINMENT EQUIPMENT HATCH + PALISADES POINT + REACTOR, PRESSURIZED WATER + STRESS ANALYSIS

11-15647 ALSO IN CATEGORY 18

QUESTION 2.19--CONTAINMENT PRESSURE AND THERMAL TRANSIENT CONDITIONS

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

4 PAGES, 3 FIGURES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

STATE THE PRESSURE AND THERMAL TRANSIENT CONDITION FOR WHICH THE CONTAINMENT IS DESIGNED. PROVIDE THE ATTENDANT THERMAL GRADIENTS ACROSS THE CONTAINMENT WALL, AND AN ANALYSIS OF ITS INFLUENCE ON CONTAINMENT STRUCTURAL INTEGRITY.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT DESIGN + DESIGN CRITERIA + PALISADES POINT + PRESSURE, INTERNAL + REACTOR, PRESSURIZED WATER + THERMAL ANALYSIS

11-15648 ALSO IN CATEGORY 18

QUESTION 2.20--TENDON FAILURE

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

PROVIDE AN ANALYSIS OF THE EFFECT OF FAILURE OF A TENDON OR SERIES OF ADJACENT OR SPACED TENDONS UNDER DESIGN-BASIS ACCIDENT LOADING.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONCRETE, PRESTRESSED + CONTAINMENT, HIGH PRESSURE + FAILURE, COMPONENT + PALISADES POINT + REACTOR, PRESSURIZED WATER

11-15649 ALSO IN CATEGORY 18

QUESTION 3.1--CONCRETE MIXES SPECIFICATIONS, PROCEDURES, AND TESTS

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

SECTION 3. MATERIALS OF CONSTRUCTION. (1) PROVIDE THE SPECIFICATIONS, PROCEDURES, AND TESTS TO BE USED IN DESIGN OF THE CONCRETE MIXES AND IN DEVELOPING/VERIFYING THE DESIGN PROPERTIES OF THE CONCRETE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONCRETE + CONTAINMENT, HIGH PRESSURE + MATERIAL + PALISADES POINT + REACTOR, PRESSURIZED WATER

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-15650 ALSO IN CATEGORY 18
QUESTION 3.2--MINIMIZING SHRINKAGE AND CREEP
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

IDENTIFY ADDITIVES TO BE USED TO MINIMIZE SHRINKAGE AND CREEP, AND PROVIDE THE BASIS FOR
DETERMINING THE EFFECTS ON SHRINKAGE AND CREEP FROM THESE ADDITIVES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONCRETE, PRESTRESSED + CONTAINMENT STRUCTURE +
CREEP PROPERTY + PALISADES POINT + REACTOR, PRESSURIZED WATER

11-15651 ALSO IN CATEGORY 18
QUESTION 3.3--TENDON WIRE SPECIFICATIONS
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

PROVIDE THE SPECIFICATIONS AND FACTORY CONTROL REQUIREMENTS THAT WILL BE IMPOSED IN THE
MANUFACTURE OF THE TENDON WIRE OR STRAND. (ANSWER) - REFER TO PAGES B-10 AND B-12, APPENDIX
B, PSAR.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONCRETE, PRESTRESSED + CONTAINMENT, HIGH PRESSURE +
MATERIAL + PALISADES POINT + REACTOR, PRESSURIZED WATER

11-15652 ALSO IN CATEGORY 18
QUESTION 3.4--CONTAINMENT LINER MATERIAL SOLUTION
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

STATE THE BASIS FOR SELECTING THE CONTAINMENT LINER MATERIAL, INCLUDING DUCTILITY AND
WELDABILITY CONSIDERATIONS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + BRITTLE FRACTURE + CONTAINMENT LINER + MATERIAL +
PALISADES POINT + REACTOR, PRESSURIZED WATER + WELDING

11-15653 ALSO IN CATEGORY 18
QUESTION 3.5--ANCHORAGE SYSTEM REQUIREMENTS
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

PROVIDE THE CRITERIA FOR ACCEPTANCE OF THE ANCHORAGE SYSTEM, INCLUDING ANCHORAGE PERFORMANCE
REQUIREMENTS UNDER CYCLIC AND RAPID LOADING. ANALYZE HOW THESE REQUIREMENTS RELATE TO
LOADING CONDITIONS ASSOCIATED WITH THE WIND, SEISMIC, AND DESIGN-BASIS ACCIDENT CONDITIONS.
IF MORE THAN ONE ANCHORAGE SYSTEM IS APPLICABLE, PROVIDE THE ABOVE INFORMATION FOR EACH
SYSTEM PROPOSED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT DESIGN + FAILURE, FATIGUE +
PALISADES POINT + REACTOR, PRESSURIZED WATER

11-15654 ALSO IN CATEGORY 18
QUESTION 4.1--CONCRETE QUALITY CONTROL TESTING
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

DESCRIBE THE QUALITY-CONTROL TESTING PROGRAM TO BE USED FOR CONCRETE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONCRETE + CONTAINMENT CONSTRUCTION +
CONTAINMENT, GENERAL + PALISADES POINT + QUALITY CONTROL + REACTOR, PRESSURIZED WATER

11-15655 ALSO IN CATEGORY 18
QUESTION 4.2--REINFORCING STEEL INSPECTION AND TESTING
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-15655 *CONTINUED*

1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

PROVIDE A DESCRIPTION OF THE ON-SITE INSPECTION AND TESTING PROGRAM FOR REINFORCING STEEL.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AFC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONCRETE, PRESTRESSED + CONTAINMENT CONSTRUCTION + CONTAINMENT, GENERAL + EXAMINATION + PALISADES POINT + REACTOR, PRESSURIZED WATER + STEEL

11-15656 ALSO IN CATEGORY 18

QUESTION 4.3--PRESTRESSING SEQUENCE, PROCEDURES, TENDON STRESS
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

PROVIDE A DESCRIPTION OF THE PRESTRESSING SEQUENCE, PROCEDURES, AND TENDON-STRESS-VERIFICATION METHODS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AFC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONCRETE, PRESTRESSED + CONTAINMENT CONSTRUCTION + CONTAINMENT, GENERAL + PALISADES POINT + REACTOR, PRESSURIZED WATER

11-15657 ALSO IN CATEGORY 18

QUESTION 4.4--ORGANIZATION FOR INSPECTION, QUALIFICATION, AND AUTHORITY
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

DESCRIBE THE ORGANIZATION FOR INSPECTION, QUALIFICATIONS AND AUTHORITY OF INSPECTORS, AND EXTENT OF DESIGN-GROUP PARTICIPATION IN THE INSPECTION. TO WHOM WILL THE QUALITY CONTROL AND INSPECTION PERSONNEL BE RESPONSIBLE.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT CONSTRUCTION + CONTAINMENT, GENERAL + EXAMINATION + PALISADES POINT + QUALITY CONTROL + REACTOR, PRESSURIZED WATER

11-15658 ALSO IN CATEGORY 18

QUESTION 4.5--REINFORCING STEEL SPLICING AND QUALITY CONTROL
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT IS THE METHOD OF REINFORCING STEEL SPLICING AND THE QUALITY CONTROL PROGRAM FOR IT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONCRETE, PRESTRESSED + CONTAINMENT CONSTRUCTION + CONTAINMENT, GENERAL + EXAMINATION + PALISADES POINT + QUALITY CONTROL + REACTOR, PRESSURIZED WATER

11-15659 ALSO IN CATEGORY 18

QUESTION 4.6--CORROSION PROTECTION FOR LINER
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

DESCRIBE THE CORROSION PROTECTION PROCEDURES AND MATERIALS TO BE USED ON THE LINER AND OTHER STEEL IN THE STRUCTURE.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT LINER + CORROSION + PALISADES POINT + REACTOR, PRESSURIZED WATER

11-15660 ALSO IN CATEGORY 18

QUESTION 4.7--CHEMICAL ANALYSIS OF TENDON AND LINER PROTECTIVE COMPOUNDS
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

PROVIDE A TYPICAL CHEMICAL ANALYSIS OF THE TENDON AND LINER PROTECTIVE COMPOUNDS TO BE USED TO INCLUDE A VERIFICATION THAT TRACE AMOUNTS OF CHLORIDES ARE NOT PRESENT. WHAT GREASE IS BEING PROPOSED FOR THE TENDONS. WILL THESE ANALYSES BE CONFIRMED FOR THE MATERIALS ACTUALLY USED IN THE PLANT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CHLORINE + CONCRETE, PRESTRESSED +

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-15660 *CONTINUED*
CONTAINMENT, GENERAL + CORROSION + PALISADES POINT + REACTOR, PRESSURIZED WATER

11-15661 ALSO IN CATEGORY 1P
QUESTION 4.8--GALVANIC CORROSION OF TENDONS, REINFORCING STEEL AND ANCHORAGES
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 PAGES, 4 REFERENCES, OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

DESCRIBE THE CONSIDERATION GIVEN TO THE POSSIBILITY OF GALVANIC CORROSION OF TENDONS, ANCHORAGES, OR REINFORCING STEEL AND A DESCRIPTION OF MEASURES TO BE USED TO PREVENT SUCH CORROSION. THIS SHOULD INCLUDE THE LONG-TERM EFFECTS SUCH AS THE CHEMICAL STABILITY OF THE TENDON GREASE. IS THE STRESSED TENDON ANODIC OR CATHODIC WITH RESPECT TO THE STEEL CONDUIT IN THE PRESENCE OF AN ELECTROLYTE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CHLORINE + CONCRETE, PRESTRESSED + CONTAINMENT, GENERAL + CORROSION + PALISADES POINT + REACTOR, PRESSURIZED WATER

11-15662 ALSO IN CATEGORY 1P
QUESTION 4.9--GALVANIZED VS UNGALVANIZED WIRE
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
3 PAGES, 2 REFERENCES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

DISCUSS THE RELATIVE MERITS OF USAGE OF GALVANIZED VS. UNGALVANIZED WIRE OR STRAND, INCLUDING THE BASIS FOR THE SELECTION.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONCRETE, PRESTRESSED + CONTAINMENT, GENERAL + CORROSION + PALISADES POINT + REACTOR, PRESSURIZED WATER + STEEL

11-15663 ALSO IN CATEGORY 1P
QUESTION 4.10--BONDING PROCEDURE BETWEEN LIFTS
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

DESCRIBE THE CONSTRUCTION PROCEDURE TO BE USED TO ENSURE PROPER BONDING BETWEEN LIFTS.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONCRETE + CONTAINMENT CONSTRUCTION + CONTAINMENT, GENERAL + PALISADES POINT + REACTOR, PRESSURIZED WATER

11-15664 ALSO IN CATEGORY 1P
QUESTION 5.1--PROCEDURES FOR CONTAINMENT PROOF TESTING
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

SECTION 5. CONTAINMENT TESTING. (1) DESCRIBE THE SEQUENCE OF PROCEDURES FOR CONTAINMENT PROOF-TESTING. PROVIDE THE PROCEDURES FOR DEVELOPING STRUCTURAL ACCEPTANCE CRITERIA AND STRAIN AND DEFLECTION ERROR BANDS TO BE MET.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT, HIGH PRESSURE + PALISADES POINT + REACTOR, PRESSURIZED WATER + TEST, PROOF

11-15665 ALSO IN CATEGORY 1P
QUESTION 5.2--INSTRUMENTATION TO VERIFY CONTAINMENT DESIGN
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

PROVIDE THE INSTRUMENTATION SCHEME TO BE USED TO VERIFY THE CONTAINMENT DESIGN, INCLUDING PROTECTIVE MEASURES TO BE TAKEN TO ENSURE LONG-TERM INSTRUMENT PERFORMANCE. THIS SHOULD INCLUDE THE LOCATIONS AND NUMBER OF THE INSTRUMENTS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT INSTRUMENTATION + CONTAINMENT, HIGH PRESSURE + PALISADES POINT + REACTOR, PRESSURIZED WATER + TEST, PROOF

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-15666 ALSO IN CATEGORY 18
QUESTION 5.3--IN SERVICE INSPECTION AND TESTING OF TENDONS AND ANCHORAGES- MONITORING STRUCTURE RESPONSE DURING PNEUMATIC TESTING
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

DEFINE THE PROVISIONS ALLOWED IN THE DESIGN FOR IN-SERVICE INSPECTION AND TESTING OF TENDONS AND ANCHORAGES AND FOR MONITORING THE RESPONSE OF THE STRUCTURE DURING PERIODIC PNEUMATIC TESTING.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT INSTRUMENTATION + CONTAINMENT, HIGH PRESSURE + PALISADES POINT + REACTOR, PRESSURIZED WATER + STRUCTURAL INTEGRITY + TEST, LEAK RATE

11-15667 ALSO IN CATEGORY 18
QUESTION 5.4--MEASURING CONTAINMENT UNDER DESIGN PRESSURES
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

DISCUSS THE ADVANTAGES AND DISADVANTAGES OF MEASURING THE CONTAINMENT UNDER DESIGN PRESSURES AS A CONFIRMATION OF DESIGN VERSUS THE USE OF MODEL TESTING TO CONFIRM THE DESIGN.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT, HIGH PRESSURE + MOCKUP + PALISADES POINT + REACTOR, PRESSURIZED WATER + TEST, PROOF + TESTING

11-15668 ALSO IN CATEGORY 18
QUESTION 6.1--MISSILE SOURCES + PROTECTION THEREFROM
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

SECTION 6 (MISSILE PROTECTION) - (1) DISCUSS ALL THE POTENTIAL SOURCES OF MISSILES THAT COULD DAMAGE THE CONTAINMENT LINER FOR WHICH MISSILE PROTECTION WILL BE PROVIDED. PROVIDE A LIST OF PIPING OR INTERNAL SYSTEMS WHICH PENETRATE THE CONTAINMENT, AND COMPONENTS WHICH WILL BE SO PROTECTED. WHAT CALCULATIONAL METHODS AND ASSUMPTIONS WILL BE USED IN DETERMINING THE SIZE AND ENERGY OF MISSILES AND THE EFFECTIVENESS OF PROTECTIVE STRUCTURES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT LINER + MISSILE GENERATION AND PROTECTION + PALISADES POINT + REACTOR, PRESSURIZED WATER

11-15669 ALSO IN CATEGORIES 18 AND 5
QUESTION 6.2--CONTAINMENT PROTECTION FROM EXTERNAL MISSILES SPECIFICALLY TURBINE ROTOR FAILURE
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
3 PAGES, 1 FIGURE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT ARE CRITERIA FOR PROTECTION AGAINST EXTERNAL MISSILES. MISSILES FROM TURBINE-ROTOR FAILURE COULD RESULT IN A SPECTRUM OF MISSILES OF CONSIDERABLE VELOCITY AND MASS. PROVIDE THIS SPECTRUM. DETERMINE AMOUNT OF IMPACT ENERGY THAT COULD BE INFLICTED ON CONTAINMENT STRUCTURE. CONSIDER VARIOUS LOCATIONS OF IMPACT, AND EFFECTS DUE TO TURBINE-AXIS ORIENTATION RELATIVE TO CONTAINMENT BUILDING. WITHIN THE ABOVE SPECTRUM, WHAT IMPACT ENERGY WOULD INFLICT SUFFICIENT DAMAGE TO THE PRESTRESSING TENDONS AT POINT OF IMPACT SO AS TO LEAD TO PROGRESSIVE FAILURE AND CONTAINMENT STRUCTURE COLLAPSE. WHAT IS MARGIN OF SAFETY FOR THE CONTAINMENT STRUCTURAL INTEGRITY. DISCUSS LIKELIHOOD OF TURBINE-ROTOR FAILURE WITH RESPECT TO DESIGN, SELECTION OF MATERIALS, QUALITY CONTROL, ETC.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + MISSILE GENERATION AND PROTECTION + PALISADES POINT + REACTOR, PRESSURIZED WATER

11-15670 ALSO IN CATEGORY 18
QUESTION 6.3--MISSILE DAMAGE TO LINES TO AND FROM CONTAINMENT AND PERTINENT EQUIPMENT
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

DETERMINE THE POTENTIAL IMPORTANCE OF MISSILE DAMAGE TO LINES LEADING TO AND FROM THE CONTAINMENT AND/OR TO AUXILIARY EQUIPMENT OUTSIDE THE CONTAINMENT THAT COULD AFFECT AN ORDERLY AND SAFE SHUTDOWN OF THE PLANT OR COOLING OF THE CORE OR CONTAINMENT BUILDING UNDER

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-15670 *CONTINUED*
POSTACCIDENT CONDITIONS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + EMERGENCY COOLING CONSIDERATIONS +
MISSILE GENERATION AND PROTECTION + PALISADES POINT + REACTOR, PRESSURIZED WATER

11-15671 ALSO IN CATEGORY 18
SUPPLEMENT 1--DESIGN BASES FOR PRESTRESSED CONCRETE VESSELS
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
6 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

SAFETY, UNDER EXTRAORDINARY CIRCUMSTANCES, AND PROPER PERFORMANCE OF VESSEL AT VARIOUS LOADING
STAGES ARE MAIN CONSIDERATION OF THESE DESIGN BASES. SECTIONS ON DESIGN APPROACH AND LOADING
STAGES ARE INCLUDED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONCRETE, PRESTRESSED + CONTAINMENT, HIGH PRESSURE +
DESIGN CRITERIA + PALISADES POINT + REACTOR, PRESSURIZED WATER

11-15672 ALSO IN CATEGORY 18
SUPPLEMENT 2--QUALITY CONTROL PROCEDURE FOR FIELD WELDING
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
7 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

THE PROCEDURE OUTLINES GENERAL REQUIREMENTS FOR QUALITY CONTROL OF WELDING TO ENSURE THAT ALL
FIELD WELDING IS PERFORMED IN COMPLIANCE WITH APPLICABLE JOB SPECIFICATIONS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT CONSTRUCTION + PALISADES POINT +
QUALITY CONTROL + REACTOR, PRESSURIZED WATER + WELDING

11-15673 ALSO IN CATEGORIES 18 AND 9
SUPPLEMENT 3--CONTAINMENT VESSEL INSTRUMENTATION
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
4 PAGES, 1 FIGURE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET
50-255

THE PURPOSE OF CONTAINMENT VESSEL INSTRUMENTATION IS GIVEN. INSTRUMENTATION DETAILS ARE
GIVEN, AND A DIAGRAM OF INSTRUMENT LAYOUT IS INCLUDED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT INSTRUMENTATION + PALISADES POINT +
REACTOR, PRESSURIZED WATER

11-15675 ALSO IN CATEGORIES 12 AND 18
SURREY POWER STATION UNITS 1 AND 2 PRELIMINARY SAFETY ANALYSIS REPORT, VOLUME 2, PART B
VIRGINIA ELECTRIC AND POWER COMPANY
200 PAGES, FIGURES, TABLES, 1967, DOCKET NO. 50-280 AND 50-281

VOLUME 2 CONTAINS THE FOLLOWING CHAPTERS - (4) REACTOR COOLANT SYSTEM, (5) CONTAINMENT, (6)
ENGINEERED SAFEGUARDS, (7) INSTRUMENTS AND CONTROLS, (8) ELECTRICAL SYSTEMS. EACH
CONTROLLED-LEAKAGE PC PUMP HAS A FLYWHEEL. A NEW CONTAINMENT CONCEPT (SUBATMOSPHERIC) IS
ADVANCED, WHERE A VACUUM PUMP DISCHARGES CONTAINMENT AIR THROUGH FILTERS TO THE STACK, TO
MAINTAIN CONTAINMENT AT 10 PSIA BEFORE AND AFTER AN ACCIDENT. DESIGN IS FOR 45 PSIG AT 280
F. ENGINEERED SAFEGUARDS ARE - (1) THREE ACCUMULATORS, HIGH- AND LOW-HEAT WATER-INSPECTION
PUMPS, (2) RECIRCULATION OF SPILLED WATER, (3) CONTAINMENT SPRAY, (4) RECIRCULATION OF
CONTAINMENT-SPRAY WATER, (5) CONTAINMENT (SUBATMOSPHERIC) VACUUM SYSTEM.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

*CONTAINMENT, LOW PRESSURE + *SAFETY ANALYSIS REPORT, PRELIMINARY + ENGINEERED SAFETY FEATURE +
REACTOR, PRESSURIZED WATER + SURREY 1 AND 2

11-15748
PIPLING EJ + CROSLBY PB
DEVELOPMENT OF TEST PROCEDURES. FRACTURE TOUGHNESS OF REACTOR PRESSURE VESSEL STEELS
MATERIALS RESEARCH LABORATORY, INC., RICHTON PARK, ILL.
CCC-1477-6 +. 14 PAGES, NOVEMBER 30, 1966, PROGRESS REPORT AUGUST 1, 1966 TO OCTOBER 31, 1966

PLANE STRAIN, ROOM TEMPERATURE, TOUGHNESS VALUES OF A302-B, WHICH APPEAR TO BE VALID, HAVE

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-15748 *CONTINUED*

BEFN MEASURED ON REASONABLY SIZED SPECIMENS. THE TOUGHNESS DECREASED AND APPROACHED THE VALUE FOR CRACK ARREST TOUGHNESS AS THE LOADING RATE WAS INCREASED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*STEEL + *TESTING + PRESSURE VESSEL

11-15750

LONG PJ

STRAIN GAGE TECHNIQUES AND ASSOCIATED TESTS ON PRESSURE VESSELS AND MATERIALS

UNION CARBIDE CORP., OAK RIDGE, TENN., Y-12 PLANT

Y-K0-5 + CONF-651141-1 +. 29 PAGES, MARCH 15, 1966, FROM SYMPOSIUM ON NONDESTRUCTIVE TESTING, LOS ALAMOS, NEW MEXICO

DISCUSSES THE USE OF STRAIN GAGES TO DETERMINE THE STRESS DISTRIBUTIONS OVER PRESSURE-VESSEL SURFACES TO EVALUATE WELDED REPAIRS ON HIGH-CARBON-STEEL MATERIAL IN A GAS-STORAGE VESSEL AND TO DETERMINE THE DYNAMIC PROPERTIES OF MATERIALS THAT ARE SUBJECTED TO HIGH STRAIN RATES. DESCRIBES TECHNIQUES FOR APPLYING STRAIN GAGES TO THREADED REGIONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*MEASUREMENT, STRAIN GAGE + *TEST, PRESSURE VESSEL + PRESSURE VESSEL + STEEL + STRESS ANALYSIS

11-15751

MILLS RR + FISCH FJ + JEZEK BW + BAKER WE

SELF-CONSISTENT BLAST WAVE PARAMETERS

AIRCRAFT ARMAMENTS, INC., COCKEYSVILLE, MARYLAND

AD-450,022 + DASA-1559 +. 58 PAGES, 6 FIGURES, 5 TABLES, 54 REFERENCES, OCTOBER 1964

A SELF-CONSISTENT SET OF BLAST-WAVE PROPERTIES THAT CHARACTERIZE THE PARAMETERS ASSOCIATED WITH DETONATIONS OF TNT EXPLOSIVE IS PRESENTED. THIS SET OF PROPERTIES WAS GENERATED FROM A MARRIAGE OF THE EXPERIMENTAL DATA COLLECTED BY VARIOUS EXPERIMENTERS WITH THE THEORETICAL COMPUTATIONAL TECHNIQUE DEVELOPED BY THE AIR-GROUND EXPLOSIONS DIVISION OF THE U.S. NAVAL ORDNANCE LABORATORY, WHITE OAK, SILVER SPRING, MARYLAND.

AVAILABILITY - DEFENSE DOCUMENTATION CENTER, CAMERON STATION, ALEXANDRIA, VIRGINIA

*COMPARISON, THEORY AND EXPERIENCE + *CONTAINMENT, SHOCK GENERATION AND PROTECTION + *EXPLOSIVE, CONVENTIONAL

11-15752

BULA K + JENNI HP

GROOVED METALLIC SEAL FOR HELIUM PRESSURE VESSEL

SULZER BROTHERS

1-PAGE, 2 FIGURES, NUCLEAR ENGINEERING 12(129), PAGE 119 (FEBRUARY 1967)

THE PRESSURE VESSELS FOR ENCLOSED DRIVE UNITS MANUFACTURED FOR THE DRAGON REACTOR CHARGE-DISCHARGE MACHINE HAD TO BE EQUIPPED WITH INSPECTION WINDOWS. PRESSURE AND TEMPERATURE CONDITIONS WOULD HAVE PERMITTED A SIMPLE O-RING SEAL, BUT TESTS SHOWED THAT THE HIGH LEAK TIGHTNESS REQUIRED COULD NOT BE ATTAINED IN THIS WAY, ESPECIALLY WITH HELIUM AS THE PRESSURE MEDIUM. LEAK-TIGHTNESS REQUIREMENTS COULD BE MET BY USING A GROOVED SEAL OF ANTICORODAL A.

*EXAMINATION + *FLANGE + *PRESSURE VESSEL + *SEAL + DRAGON (UK) + HELIUM + REACTOR, GAS COOLED

11-15753

ALSO IN CATEGORY 8

MOORE JG + GILBY EV

A REVIEW OF THE PROBLEMS ARISING FROM THE COMBUSTION OF HYDROGEN IN A WATER REACTOR CONTAINMENT UNITED KINGDOM ATOMIC ENERGY AUTHORITY, SAFEGUARDS DIVISION

AHSR(S)R-101 +. 48 PAGES, 18 FIGURES, 9 TABLES, 26 REFERENCES, 1966

A CRITICAL REVIEW WAS MADE OF THE FACTORS AFFECTING THE EXPLOSION AND DETONATION OF HYDROGEN-AIR-STEAM MIXTURES. THERE IS LITTLE EXPERIMENTAL INFORMATION DIRECTLY APPLICABLE TO THE CONDITIONS EXPECTED TO OCCUR IN THE CONTAINMENT OF A WATER REACTOR AFTER AN ACCIDENT. THIS PAPER MAKES RECOMMENDATIONS ON THE DATA WHICH SHOULD BE USED IN THESE CONDITIONS. AN APPRECIATION OF THE HAZARD TO CONTAINMENT INTEGRITY HAS SHOWN THAT THE UNCERTAINTIES IN THE DATA ARE SMALL COMPARED WITH THE UNCERTAINTIES IN OTHER AREAS OF THE PROBLEM. PARTICULAR CONSIDERATION WAS GIVEN TO A TYPICAL LARGE PWR, AND IT WAS FOUND THAT THERE IS LITTLE RISK TO THE CONTAINMENT IF THE HYDROGEN IS UNIFORMLY DISTRIBUTED. HOWEVER, IT WAS NOT POSSIBLE TO ASSESS COMPLETELY THE EFFECTS OF AN ASSYMETRIC LOADING DUE TO THE EXPLOSION OR DETONATION OF A POCKET OF HYDROGEN CLOSE TO THE CONTAINMENT BOUNDARY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-15753 *CONTINUED*
*CONTAINMENT STRUCTURE + *CONTAINMENT, SHOCK GENERATION AND PROTECTION + *EXPLOSION + *HYDROGEN + OXYGEN + STEAM

11-15754
PHILBIN TW
CONTAINMENT VESSEL LEAKAGE UNDER MAXIMUM CREDIBLE ACCIDENT CONDITIONS
NIAGARA MOHAWK POWER CORP
110 PAGES, 25 FIGURES, 12 TABLES, 1967

THE LEAKAGE IN A MCA CONSISTS PRIMARILY OF STEAM AND AIR. THE FOLLOWING CONCLUSIONS ARE DRAWN FROM THIS RESEARCH FOR CONTAINMENT VESSEL LEAKAGE GOVERNED BY VISCOUS-FLOW THEORY IN A STEAM ENVIRONMENT UNDER ACCIDENT CONDITIONS - (1) AN INCREASE IN THE LEAK PATH TEMPERATURE DECREASES THE TRANSPORT OF FISSION PRODUCTS BY DECREASING THE AIR FLOW RATE. (2) THE CONCENTRATION OF FISSION PRODUCTS IS INCREASED IN THE AIR BY CONDENSATION OF THE STEAM DURING PASSAGE THROUGH THE CONTAINMENT LEAK. (3) THE CONDENSING STEAM DOES NOT PLUG STRAIGHT CONTAINMENT LEAKS GREATER THAN 25 MICRONS IN DIAMETER OVER THE PRESSURE-TEMPERATURE RANGE EXAMINED. (4) THE LEAKS EXAMINED IN THIS WORK EXHIBIT ONLY VISCOUS FLOW CHARACTERISTICS. (5) THE DEPOSITION OF IODINE IN THE LEAKS EXAMINED DOES NOT SIGNIFICANTLY AFFECT THE TRANSPORT OF THIS ELEMENT. (6) THE CONDENSING STEAM TRANSPORTS IODINE THROUGH THE CONTAINMENT VESSEL LEAKS. THE SIGNIFICANCE OF STEAM TRANSPORT IN TOTAL IODINE TRANSPORT DEPENDS ON THE VOLUME-TO-SURFACE RATIO OF THE CONTAINMENT VESSEL AND THE SIZE OF THE STEAM FRACTION.

AVAILABILITY - T. W. PHILBIN, 535 WASHINGTON ST., BUFFALO, N. Y. 14203

*CONTAINMENT LEAKAGE CONTROL + *CONTAINMENT STRUCTURE + *CONTAINMENT, GENERAL + ANALYTICAL MODEL + COMPARISON, THEORY AND EXPERIENCE + FISSION PRODUCT TRANSPORT + FLOW, LAMINAR + IODINE + STEAM

11-15755
SERPAN CZ + STEELE LE
NEUTRON SPECTRAL CONSIDERATIONS AFFECTING PROJECTED ESTIMATES OF RADIATION EMBRITTLEMENT OF THE ARMY SM-1A REACTOR PRESSURE VESSEL
NAVAL RESEARCH LAB., WASHINGTON, D. C.
AD-641283 + NRL-6474 +. 24 PAGES, 12 FIGURES, 3 TABLES, 14 REFERENCES, AUGUST 12, 1966

THE PRESSURE VESSEL OF THE ARMY SM-1A REACTOR IS LOCATED CLOSE TO THE ACTIVE CORE IN SUCH A WAY THAT THE NEUTRON EXPOSURE IS RELATIVELY HIGH. CONSEQUENTLY, THE PRESSURE-VESSEL STEEL UNDERGOES A RELATIVELY RAPID RISE IN THE DUCTILE-BRITTLE TRANSITION TEMPERATURE. THE MAXIMUM PERMISSIBLE NOT DIFFERENTIAL FOR THE SM-1A IS ESTABLISHED BY THE ARMY AS 240 F. SINCE IT IS PHYSICALLY IMPOSSIBLE TO IRRADIATE SURVEILLANCE TEST SPECIMENS AT THE SM-1A VESSEL WALL, ONLY THE NEUTRON FLUX WAS MEASURED AT THE WALL, AND REPRESENTATIVE TEST SPECIMENS WERE IRRADIATED IN A TEST REACTOR, THE LOW INTENSITY TEST REACTOR (LITR) AT ORNL.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*EMBRITTLEMENT + *IRRADIATION TESTING + *RADIATION EFFECT + *TESTING + FLUX DISTRIBUTION + NDT DATA (NIL DUCTILITY TRANSITION) + NEUTRON + PRESSURE VESSEL + SM 1A (STATIONARY MEDIUM POWER PLANT, ALASKA) + STEEL

11-15756
SERPAN CZ + STEELE LE
DAMAGING NEUTRON EXPOSURE CRITERIA FOR EVALUATING THE EMBRITTLEMENT OF REACTOR PRESSURE VESSEL STEELS IN DIFFERENT NEUTRON SPECTRA
NAVAL RESEARCH LAB., WASHINGTON, D. C.
NRL-6415 + CONF-660607-3 +. 28 PAGES, 18 FIGURES, 4 TABLES, 15 REFERENCES, JULY 28, 1966, 3RD INTERNATIONAL SYMPOSIUM ON THE EFFECTS OF IRRADIATION ON STRUCTURAL METALS, ATLANTIC CITY

IRRADIATION EXPERIMENTS TO DEFINE BEHAVIOR TRENDS OF REACTOR STRUCTURAL MATERIALS ARE FREQUENTLY PERFORMED IN REACTOR ENVIRONMENTS DISSIMILAR TO THOSE EXPECTED DURING ACTUAL SERVICE. TO ACCURATELY ASSESS THE DAMAGE PRODUCED IN ACCELERATED EXPERIMENTAL ENVIRONMENTS SO THAT THE RESULTS CAN BE APPLIED TO OPERATING REACTORS, A DAMAGING-NEUTRON-EXPOSURE CRITERION MUST BE ESTABLISHED WHICH WILL ACCOUNT FOR THE SIGNIFICANTLY DAMAGING PORTION OF THE INCIDENT NEUTRON SPECTRA OF BOTH REACTOR ENVIRONMENTS. SEVERAL SUCH EXPOSURE CRITERIA HAVE BEEN EVALUATED THROUGH USE OF THE RESULTS OF METALLURGICAL TESTS OF REFERENCE STEEL SPECIMENS AFTER IRRADIATION IN LIGHT- AND HEAVY-WATER-MODERATED REACTOR ENVIRONMENTS AS WELL AS IN GRAPHITE-MODERATED REACTOR ENVIRONMENTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*IRRADIATION TESTING + *RADIATION EFFECT + EMBRITTLEMENT + FLUX DISTRIBUTION + NDT DATA (NIL DUCTILITY TRANSITION) + NEUTRON + PRESSURE VESSEL + STEEL + TESTING

11-15757
THE EXPERIMENTAL STUDY ON THE PERFORMANCE OF PRESSURE SUPPRESSION CONTAINMENT SYSTEM
ISHIKAWAJIMA-HARIMA HEAVY IND. CO., LTD., ATOMIC ENERGY DEPT.

CATEGORY '11'
CONTAINMENT OF NUCLEAR FACILITIES

11-15757 *CONTINUED*

NSJ-TR-70 +. 20 PAGES, 12 FIGURES, 1 TABLE, 6 REFERENCES, TRANSLATED FROM ISHIKAWAJIMA-HARIMA ENG. REV.
(24)- PAGES 369-376 (JULY 1965)

THE FOLLOWING CONCLUSIONS WERE OBTAINED. 1. FROM THE VARIOUS MEASUREMENTS AND OBSERVATIONS AT THE TIME OF A LOSS-OF-COOLANT, IT WAS FOUND THAT COMPLETE STEAM CONDENSATION TAKES PLACE IN THE PRESSURE-SUPPRESSION CHAMBER, AND THERE IS ABSOLUTELY AN ADVANTAGE IN EMPLOYING PRESSURE SUPPRESSION IN THE CONTAINMENT SYSTEM. 2. THE EFFECT ON STEAM CONDENSATION OF AIR IN THE DRYWELL IS VERY SMALL. 3. EXCEPT WHEN THE AMOUNT OF WATER IN THE PRESSURE SUPPRESSION CHAMBER IS EXTREMELY SMALL, THE PRESSURE IN THE DRYWELL AND THE SUPPRESSION CHAMBER IS MOST INFLUENCED BY THE AREA OF A RUPTURE IN THE PRIMARY SYSTEM. THE EFFECTS OF OTHER PARAMETERS WERE SMALL IN THE RANGES OF EXPERIMENT. 4. THE MAXIMUM PRESSURES IN THE CONTAINMENT VESSELS WERE LESS THAN THE DESIGN VALUES IN THE ACTUAL REACTOR, EVEN WHEN THE ACCIDENT UNDER STUDY WAS THREE TIMES AS LARGE AS THE MAXIMUM CREDIBLE ACCIDENT. 5. IN THE RANGES OF EXPERIMENT, THERE WERE FOUND NO PROBLEMS IN THE SAFETY FUNCTIONING OF THE CONTAINMENT SYSTEM.

AVAILABILITY - DIVISION OF TECHNICAL INFORMATION, TOKAI RESEARCH ESTABLISHMENT, JAPAN ATOMIC ENERGY RESEARCH INSTITUTE, TOKAI-MURA, NAKA-GUN, IBARAKI-KEN, JAPAN

*CONTAINMENT, PRESSURE SUPPRESSION + *MOCKUP + *PRESSURE, INTERNAL + *TESTING + CONDENSATION + MEASUREMENT, GENERAL + MEASUREMENT, TEMPERATURE + STEAM

11-15845 ALSO IN CATEGORIES 12 AND 5

LEVY S

A SYSTEMS APPROACH TO CONTAINMENT DESIGN IN NUCLEAR POWER PLANTS

GENERAL ELECTRIC COMPANY, SAN JOSE, CALIF.

SM-89/51 +. 20 PAGES, 9 FIGURES, APRIL 1967, IAEA SYMPOSIUM ON THE CONTAINMENT AND SITING OF NUCLEAR POWER PLANTS, VIENNA, AUSTRIA, APRIL 3-7, 1967

NEW APPROACH FOR PERFORMANCE REQUIREMENTS OF CONTAINMENT DESIGNS. CONTAINMENT IS PART OF A TOTAL SYSTEM, WHICH PREVENTS AND LIMITS THE CONSEQUENCES OF A RELEASE OF FISSION PRODUCTS. CONTAINMENT-PERFORMANCE REQUIREMENTS ARE DETERMINED BY LOOKING AT THE OVERALL SYSTEM. PROPOSED TECHNIQUE IS ILLUSTRATED FOR LOSS-OF-COOLANT ACCIDENT. INTERRELATIONSHIP OF THE PRESSURE-SUPPRESSION CONTAINMENT TO OTHER PREVENTIVE MEASURES IS REVIEWED FIRST. NEXT, THE CONTAINMENT-PERFORMANCE REQUIREMENTS ARE ESTABLISHED AS PART OF AN OVERALL SYSTEM EVALUATION. FINALLY, POSSIBLE ALTERNATE CONTAINMENT FEATURES ARE EVOLVED.

AVAILABILITY - GENERAL ELECTRIC COMPANY, ATOMIC POWER EQUIPMENT DEPT., 175 CURTNER AVE., SAN JOSE, CALIFORNIA

*ACCIDENT, LOSS OF COOLANT + *CONTAINMENT, PRESSURE SUPPRESSION + *REACTOR, BOILING WATER + CONTAINMENT, GENERAL + CORE REFLOODING SYSTEM + CORE SPRAY + EMERGENCY COOLING CONSIDERATIONS + MISSILE GENERATION AND PROTECTION

11-15854 ALSO IN CATEGORY 2

BERG GV

THE SKOPJE, YUGOSLAVIA EARTHQUAKE

UNIVERSITY OF MICHIGAN

77 PAGES, 117 FIGURES, TABLES, JULY 26, 1963, AMERICAN IRON AND STEEL INSTITUTION, N. Y.

A GENERAL DESCRIPTION OF THE GEOLOGY OF THE SKOPJE, YUGOSLOVIA, AREA IS GIVEN, ALONG WITH THE RESULTS OF THE JULY 1963 EARTHQUAKE. PICTURES OF STRUCTURAL DAMAGE ARE INCLUDED, AND CONCLUSIONS ARE DRAWN CONCERNING THE PRECAUTIONS NECESSARY TO PREVENT FAILURES DUE TO EARTHQUAKES. SURFACE CRACKS WERE EVIDENT AT SEVERAL LOCATIONS.

AVAILABILITY - AMERICAN IRON AND STEEL INSTITUTE, 150 EAST FORTY SECOND STREET, NEW YORK, N.Y., 10017

*EARTHQUAKE, GENERAL + *FAILURE, GENERAL + DEFORMATION + DISPLACEMENT, GENERAL + EARTHQUAKE ENGINEERING

11-15855

FELD J

LESSONS FROM FAILURES OF CONCRETE STRUCTURES

AMERICAN CONCRETE INSTITUTE, DETROIT, MICHIGAN

179 PAGES, FIGURES, 200 REFERENCES, 1965; AMERICAN CONCRETE INSTITUTE, DETROIT AND THE IOWA STATE UNIVERSITY PRESS, AMES, IOWA, PUBLISHERS

THIS BOOK IS A SURVEY OF MANY OF THE FAILURES THAT HAVE OCCURRED IN REINFORCED CONCRETE CONSTRUCTION IN THIS COUNTRY AND ABROAD IN THE LAST 60 YEARS. GENERAL CONCLUSIONS ARE DRAWN CONCERNING THE CAUSES OF FAILURES, AND THESE CAUSES SHOULD BE STUDIED BY DESIGNERS, ANALYSTS, AND CONTRACTORS.

AVAILABILITY - AMERICAN CONCRETE INSTITUTE, P.O. BOX 4754, REDFORD STATION, DETROIT

*DEFORMATION + *FAILURE, GENERAL + CONCRETE + STRESS

11-15859 ALSO IN CATEGORY 2

EARTHQUAKE DAMAGE TO HIGHWAYS IN THE VALDEZ DISTRICT, ALASKA, REPORT 91

NATIONAL ACADEMY OF SCIENCES, HIGHWAY RESEARCH BOARD

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-15859 *CONTINUED*

9 PAGES, 17 FIGURES, 2 REFERENCES, 1965, PAGES 64-72 OF HIGHWAY RESEARCH RECORD NO. 91, HIGHWAY RESEARCH BOARD, PUBLICATION 1307, NATIONAL ACADEMY OF SCIENCES, WASHINGTON, D. C.

THIS REPORT CONTAINS SEVERAL PAPERS ON THE HIGHWAY ENGINEERING, INCLUDING ONE ON DAMAGE TO HIGHWAYS AND HIGHWAY STRUCTURES IN THE ALASKAN EARTHQUAKE OF 1964. THERE WAS EXTENSIVE DAMAGE DUE TO EARTH SHIFTING. DAMAGE WAS GREATEST FOR STRUCTURES FOUNDED ON THICK SECTIONS OF ALLUVIUM OVERLYING BEDROCK, AND LEAST FOR STRUCTURES FOUNDED DIRECTLY ON BEDROCK.

AVAILABILITY - HIGHWAY RESEARCH BOARD, 2101 CONSTITUTION AVE., WASHINGTON, D. C. 20418, \$1.60 COPY

*FOUNDATION ENGINEERING + DISPLACEMENT, GENERAL + EARTHQUAKE, GENERAL + GEOLOGICAL CONSIDERATION, GENERAL + LURCHING + SOIL MECHANICS

11-15860 ALSO IN CATEGORY 2

COASTAL ENGINEERING

AMERICAN SOCIETY OF CIVIL ENGINEERS, NEW YORK

1006 PAGES, FIGURES, TABLES, REFERENCES, SPECIALTY CONFERENCE, OCTOBER 1965, SANTA BARBARA, AMERICAN SOCIETY OF CIVIL ENGINEERS, NEW YORK, NEW YORK

THIS DOCUMENT IS A COLLECTION OF PAPERS ON COASTAL ENGINEERING. A BROAD RANGE OF SUBJECTS IS COVERED, INCLUDING TSUNAMI MODELS, DAMAGE, AND WARNING SYSTEMS.

AVAILABILITY - AMERICAN SOCIETY OF CIVIL ENGINEERS, 345 E. 47TH ST., NEW YORK, N.Y. 10017, \$10.00 COPY

*TSUNAMI + EARTHQUAKE ENGINEERING + EARTHQUAKE, GENERAL

11-15861

DIAMANT ES

RADIOISOTOPE PROPULSION TECHNOLOGY PROGRAM (POODLE). VOLUME IIA. ANALYTICAL PROGRAM FOR CREEP IN AXISYMMETRIC SHELLS (CRASH). FINAL REPORT, OCTOBER 1, 1965 TO SEPTEMBER 30, 1966

TRW SYSTEMS, REDONDO BEACH, CALIF.

STL-517-0049 (VOL. 2A) +. 182 PAGES, FIGURES, TABLES, 19 REFERENCES, OCTOBER 1966

THIS REPORT DESCRIBES A METHOD FOR CALCULATING THE EFFECTS OF CREEP, UNDER COMBINED PRESSURE AND THERMAL LOADING, IN AXISYMMETRIC THIN-WALLED CYLINDRICAL SHELLS WITH END CLOSURES. A COMPUTER PROGRAM FOR PERFORMING THE CALCULATIONS IS DESCRIBED. THE PRESSURE AND TEMPERATURE DISTRIBUTION MAY VARY WITH TIME, AND THE TEMPERATURE MAY VARY ALONG THE MERIDIAN AS WELL AS THROUGH THE THICKNESS. THE WALL THICKNESS MAY ALSO VARY ALONG THE MERIDIAN. THE STRESS-STRAIN RELATIONS FOR CREEP ARE OF A TEMPERATURE-DEPENDENT INCREMENTAL-PLASTICITY TYPE. REVERSIBILITY UPON UNLOADING IS ASSUMED. THE ANALYSIS IS CONSIDERED APPLICABLE TO SHELLS WITH RADIUS-TO-THICKNESS RATIOS OF 5 OR GREATER.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*COMPUTER PROGRAM + *CREEP BEHAVIOR + *PRESSURE VESSEL + *SHELL + CONTAINMENT ANALYSIS + CYLINDER + HIGH TEMPERATURE + PLASTICITY + PRESSURE, INTERNAL + STEEL + STRESS + STRESS ANALYSIS + TEMPERATURE GRADIENT

11-15952 ALSO IN CATEGORIES 7 AND 5

NUCLEAR SAFETY PROGRAM ANNUAL PROGRESS REPORT FOR PERIOD ENDING DECEMBER 31, 1966

OAK RIDGE NATIONAL LABORATORY

ORNL-4071 +. 359 PAGES, FIGURES, TABLES, 15 REFERENCES, MARCH 1967

THE NUCLEAR SAFETY PROGRAM AT OAK RIDGE NATIONAL LABORATORY IS DIRECTED TOWARD OBTAINING A BETTER UNDERSTANDING OF VARIOUS ASPECTS OF NUCLEAR ACCIDENTS. THE INFORMATION DEVELOPED THROUGH EXPERIMENTS AND THEIR THEORETICAL INTERPRETATION WILL ALLOW THE USE OF MORE REALISTIC ASSUMPTIONS ON SAFETY TO BE MADE IN THE EVALUATION OF REACTOR SITES. THE BEHAVIOR OF FISSION PRODUCTS IN ALL PHASES OF A NUCLEAR ACCIDENT IS THE SUBJECT OF A MAJOR PART OF THE PROGRAM, ALTHOUGH MANY OTHER AREAS OF NUCLEAR SAFETY ARE INCLUDED, EITHER EXPERIMENTALLY OR ANALYTICALLY. DURING THE YEAR, THE NUCLEAR SAFETY PROGRAM WAS BROADENED IN SCOPE TO COVER HIGH-TEMPERATURE GAS-COOLED REACTORS, AS WELL AS WATER-COOLED REACTORS, PRESSURE VESSEL TECHNOLOGY, AND EFFECTS OF EARTHQUAKES ON STRUCTURES AND FISSION-PRODUCT BEHAVIOR.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

ACCIDENT, HYPOTHETICAL + ADSORPTION + AEROSOL + BIBLIOGRAPHY + CARBON + CHARCOAL ADSORBER + CHEMICAL REACTION + CLAD + COATED PARTICLE + CONTAINMENT, GENERAL + DESCRIPTION + FILTER + FISSION PRODUCT RELEASE, GENERAL + FISSION PRODUCT TRANSPORT + HIGH TEMPERATURE + IGNITION + IN PILE EXPERIMENT + IN PILE LOOP + IODINE + LEFT (LOSS OF FLUID TEST) + NOBLE GAS + NSIC (NUCLEAR SAFETY INFORMATION CENTER) + NSPP (NUCLEAR SAFETY PILOT PLANT) + ORGANIC IODIDE + ORNL (OAK RIDGE NATIONAL LABORATORY) + OUT OF PILE LOOPS AND EXPERIMENTS + PARTICLE SIZE + REACTOR, GRAPHITE MODERATED + REACTOR, TEST + SITING, REACTOR + STEAM + STEEL, STAINLESS + TEST, PRESSURE VESSEL + THEORETICAL INVESTIGATION + TRANSPORTATION AND HANDLING + TREAT (TRANSIENT TEST REACTOR FACILITY) + URANIUM DIOXIDE + ZIRCALOY

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-16026

REESTON JM + BRINKMAN CF

AXIAL FATIGUE OF PRE- AND POST-IRRADIATED A302B AND A212B STEELS

IDAHO NUCLEAR CORP., IDAHO FALLS, IDAHO

IN-1052 +. 35 PAGES, 16 FIGURES, 6 TABLES, 12 REFERENCES, JANUARY 1967

UNIAXIAL-FATIGUE DATA IS PRESENTED FOR IRRADIATED AND UNIRRADIATED A-302-B AND A-212-B STEELS. FOR A-302-B, IRRADIATION APPEARS TO REDUCE LOW-CYCLE FATIGUE LIFE, BUT IT APPEARS TO INCREASE THE HIGH-CYCLE FATIGUE LIFE SLIGHTLY. FOR A-212-B, THE EFFECTS OF IRRADIATION APPEAR TO BE MINOR. THESE WERE LOAD-CONTROLLED TESTS IN WHICH BOTH STRESS AND STRAIN RANGE VARIED DURING CYCLING.

AVAILABILITY - CLEARING HOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*FAILURE, FATIGUE + *FAILURE, PRESSURE VESSEL + *IRRADIATION TESTING + *PLASTICITY + *STEEL + *FATIGUE, GENERAL + *FAILURE, PIPE + METAL + RADIATION DAMAGE + TENSILE PROPERTY + TEST, DESTRUCTIVE

11-16093

FLETCHER EE + BERRY WE + ELSEA AR

STRESS-CORROSION CRACKING AND HYDROGEN-STRESS CRACKING OF HIGH STRENGTH STEEL

RATTLE MEMORIAL INSTITUTE, COLUMBUS, OHIO

DMIC-232 +. 20 PAGES, FIGURES, REFERENCES, JULY 29, 1966

THIS REPORT REVIEWS THE FACTORS THAT CAUSE TWO TYPES OF CHEMISTRY-RELATED FRACTURE FAILURES. STRESS-CORROSION AND HYDROGEN EMBRITTLEMENT ARE SEPARATE PHENOMENA WHICH CAN OCCUR SEPARATELY OR IN COMBINATION. CORROSION AT A CRACK TIP IS NECESSARY FOR STRESS-CORROSION CRACKING BUT DOES NOT OCCUR IN HYDROGEN EMBRITTLEMENT. HYDROGEN EMBRITTLEMENT IS CAUSED BY HYDROGEN BEING PRESENT IN THE METAL LATTICE. HYDROGEN EMBRITTLEMENT IS PROMOTED BY CATHODIC CONDITIONS, WHILE ANODIC CONDITIONS PROMOTE STRESS-CORROSION CRACKING. RAISING THE TEMPERATURE PROMOTES SUCH CRACKING BUT DOES NOT PROMOTE HYDROGEN EMBRITTLEMENT. STRESS-CORROSION CAN OCCUR IN STEELS WITH YIELD POINTS TOO LOW FOR THE OCCURRENCE OF HYDROGEN EMBRITTLEMENT.

AVAILABILITY - DEFENSE DOCUMENTATION CENTER, CAMERON STATION, ALEXANDRIA, VIRGINIA

*BRITTLE FRACTURE + *CORROSION + *EMBRITTLEMENT + *STRESS + FAILURE, CLADDING + FLAW + METAL + STEEL

11-16109

NELSON CT + GREENFIELD MA + KOONTZ RL

ERRORS IN MEASUREMENTS OF BUILDING LEAKAGE DUE TO DYNAMIC TEMPERATURE EFFECTS

ATOMICS INTERNATIONAL, CANOGA PARK, CALIFORNIA

NAA-SR-12001 +. 21 PAGES, 3 FIGURES, 8 REFERENCES, AUGUST 1, 1966

THIS REPORT ANALYZES SOURCES OF ERRORS IN DETERMINING LEAKAGE RATES OF A CONTAINMENT STRUCTURE WHEN A REFERENCE-VESSEL METHOD IS USED. THE MOST SERIOUS ERRORS DO NOT ARISE FROM LACK OF PRECISION IN MEASURING ABSOLUTE TEMPERATURES AND PRESSURES. RATHER, THE LARGEST ERRORS ARE DUE TO A COMBINATION OF A TEMPERATURE LAG BETWEEN REFERENCE VESSEL AND CONTAINMENT STRUCTURE, AND FROM TEMPERATURE FLUCTUATIONS DURING THE TESTING PERIOD.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*CONTAINMENT REFERENCE MEASURING SYSTEM + *CONTAINMENT STRUCTURE + *ERROR ANALYSIS + *TEST, LEAK RATE + *CONTAINMENT, HIGH PRESSURE

11-16110

ALSO IN CATEGORY 17

HAUSSMANN H

REACTOR CONTAINMENT BUILDING

5 PAGES, ATOMWIRTSCHAFT, 10(11), PAGES 611-615, NOVEMBER 1965, IN GERMAN

AT THE NUCLEAR POWER PLANT KRR THE EFFECT OF A CHEMICAL REACTION BETWEEN ZIRCONIUM AND THE PRIMARY COOLING WATER WAS STUDIED. WITH VERY PESSIMISTIC CONSIDERATIONS ENTERING INTO THE CALCULATIONS, AN INITIAL PRESSURE PEAK OF 3.4 ATM IN 5 SEC RESULTED. A SECOND BURST MIGHT RESULT FROM THE ZR-H₂O REACTION OF 3.55 ATM IN 16 MIN. THE PRESSURE SHELL WAS DESIGNED WITH THESE VALUES IN MIND. ECONOMY AND SAFETY FACTORS LEAD TO THE CHOICE OF A STEEL WITH AN ELONGATION LIMIT OF 51 KG/SQ. MM. CONSTITUENTS WERE 0.18% C, 1.5% MN, 0.55% NI, AND 0.12% V. A WALL-THICKNESS FOR THE CYLINDRICAL PORTION OF THE PRESSURE SHELL WAS SELECTED AS 26.5 MM, AND FOR THE HEMISPHERICAL PORTION 13.5 MM. IN THE COURSE OF THE FIRST PRESSURE TEST AND SUBSEQUENT CHECKS, CRACKS SHOWED UP IN THE WELDS AT SEAMS. PRACTICALLY ALL THE LOCKS AND TURNS WHICH PENETRATED THE PRESSURE VESSEL HAD TO BE CUT OUT AND NEW ONES MADE. AFTER A DELAY OF 8-1/2 MONTHS, A SECOND PRESSURE TEST WAS SATISFACTORILY RUN.

*CONTAINMENT, HIGH PRESSURE + *FAILURE, GENERAL + *TEST, PROOF + *WELDS + CONTAINMENT DESIGN + GERMANY + REACTOR, BOILING WATER + STEEL

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-16111

RROSCHKE D + KARWAT H

THE DEVELOPMENT OF PRESSURE DIFFERENTIALS ACROSS CONTAINMENTS OF LARGE WATER-COOLED POWER REACTORS
TECHNISCHE HOCHSCHULE, MUNCHEN, GERMANY
SM-89/12 + MRP-32 +. 12 PAGES, 11 FIGURES, 2 TABLES, 2 REFERENCES, APRIL 1967

IN THE DESIGN OF HIGH-PRESSURE AND PRESSURE-SUPPRESSION CONTAINMENTS, THERMODYNAMIC EQUILIBRIUM ALL OVER THE FREE SPACE OF THE DRY WELL, THE WET WELL, OR THE HIGH-PRESSURE CONTAINMENT IS ASSUMED. THE PURPOSE OF THIS STUDY WAS TO SHOW THAT THIS ASSUMPTION IS NOT CORRECT IF THE SPACE FOR WHICH THE PRESSURE AND TEMPERATURE CURVES ARE TO BE CALCULATED IS DIVIDED BY MASSIVE STRUCTURES (E. G., CONCRETE WALLS) INTO SEVERAL SUBSECTIONS. THIS STUDY SHOWS THE DESIGNER OF THE CONTAINMENT INTERNALS WHICH ADDITIONAL FORCES MUST POSSIBLY BE TAKEN INTO ACCOUNT IF THE CONTAINMENT IS DYNAMICALLY LOADED.

AVAILABILITY - INTERNATIONAL ATOMIC ENERGY AGENCY

*CONTAINMENT ANALYSIS + *CONTAINMENT VESSEL LOADING + CONTAINMENT, HIGH PRESSURE +
CONTAINMENT, PRESSURE SUPPRESSION + DYNAMICS, NONLINEAR + PRESSURE, INTERNAL + THERMAL ANALYSIS

11-16112

CLARE KD + GILL SS

EFFECT OF VESSEL DIAMETER/THICKNESS RATIO ON THE BEHAVIOR BEYOND THE ELASTIC LIMIT OF FLUSH NOZZLES IN CYLINDRICAL PRESSURE VESSELS. EXPERIMENTAL INVESTIGATION
UNIVERSITY OF MANCHESTER INSTITUTE OF SCIENCE AND TECHNOLOGY
6 PAGES, 5 FIGURES, 3 TABLES, JOURNAL OF MECHANICAL ENGINEERING SCIENCE 8(4), PAGES 357-362 (DECEMBER 1966)

THREE TESTS WERE MADE ON MILD STEEL CYLINDRICAL PRESSURE VESSELS WITH FLUSH NOZZLES. THE CYLINDRICAL VESSELS WERE NOMINALLY 18 IN. IN OUTSIDE DIAMETER AND 3/16 IN. THICK. THE BRANCHES WERE NOMINALLY 3-1/2 IN. IN DIAMETER X 1/8 IN. THICK, AND 2-1/2 IN. IN DIAMETER X 1/8 IN. THICK. THE RESULTS ARE DISCUSSED AND COMPARED WITH A SIMILAR SERIES OF TESTS FOR WHICH THE MAIN VESSEL WAS 18 IN. IN OUTSIDE DIAMETER AND 3/8 IN. THICK.

*ELASTICITY + *NOZZLE + *PRESSURE VESSEL + MATERIAL + PROPERTY, PHYSICAL + STEEL + THICKNESS

11-16113

FRACTURE MECHANICS EVALUATION OF REACTOR VESSEL STEELS QUARTERLY PROGRESS REPORT FOR THE PERIOD ENDING
DECEMBER 31, 1966

WESTINGHOUSE ELECTRIC CORP., PITTSBURGH

WCAP-3677-2 + EURAEC-1780 +. 7 PAGES, 1 FIGURE, JANUARY 1967

AN EXPERIMENTAL PROGRAM WILL BE DIRECTED TOWARD FURTHER DEVELOPMENT AND EVALUATION OF A FRACTURE-MECHANICS APPROACH TO THE PROBLEM OF BRITTLE FRACTURE OF REACTOR-VESSEL MATERIALS, BASED ON THE USE OF MODIFIED WEDGE OPENING LOADING (WOL) SPECIMENS. TESTING OF A GROUP OF REACTOR VESSEL STEELS WILL BE PERFORMED TO INVESTIGATE THE APPLICATION OF THE FRACTURE-MECHANICS TECHNIQUE TO THESE MATERIALS IN BOTH THE UNIRRADIATED AND IRRADIATED CONDITIONS. BECAUSE OF TEST-REACTOR DIMENSIONAL CONSTRAINTS, SCALED-UP SPECIMENS CAN BE USED TO OBTAIN PREIRRADIATION DATA ONLY. THEREFORE, IRRADIATION EFFECTS WILL BE DETERMINED ON SMALL SPECIMENS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*BRITTLE FRACTURE + *IRRADIATION TESTING + *STEEL + COMPARISON, THEORY AND EXPERIENCE + PRESSURE VESSEL

11-16114

MCCLAUGHLIN DW + WEISSERT LR

ROLE OF PRESSURE VESSEL SURVEILLANCE PROGRAMS IN POWER REACTORS. SUMMARY AND ANALYSIS OF ASME PANEL
DISCUSSION

MECHANICAL TECHNOLOGY, INC., LATHAM, NEW YORK + BABCOCK AND WILCOX CO., WASHINGTON

CONF-660, 627-7 + AEC-CONF-66-198-7 +. 25 PAGES, JUNE 30, 1966, PRESENTED AT SYMPOSIUM ON EFFECTS OF RADIATION ON STRUCTURAL METALS, 69TH ANNUAL MEETING-AMERICAN SOCIETY FOR TESTING AND MATERIALS HELD IN ATLANTIC CITY, NEW JERSEY

MOST OF THE U.S. POWER REACTORS INCLUDE A SURVEILLANCE PROGRAM TO MONITOR THE EFFECTS OF RADIATION AT VARIOUS TIME INTERVALS ON THE PRESSURE VESSEL STEEL. THE PRINCIPAL POINTS MADE BY THE PANELISTS DURING THEIR DISCUSSION ARE THE FOLLOWING - (1) SURVEILLANCE PROGRAMS CAN BE REGARDED AS AN INSPECTION TOOL FOR REACTOR VESSELS IN SERVICE AND ARE BEING USED SUCCESSFULLY. (2) SURVEILLANCE PROGRAMS CANNOT BE REGARDED AS RESEARCH PROGRAMS. THEIR FUNDAMENTAL PURPOSE IS THAT OF MONITORING THE CONDITION OF THE VESSEL. (3) THERE WAS NO GENERAL AGREEMENT ON WHETHER SURVEILLANCE PROGRAMS CAN BE ELIMINATED WHERE THE LIFETIME EXPOSURE LEVEL WAS BELOW A CERTAIN MINIMUM. HOWEVER, THERE WAS AGREEMENT THAT, IF A MINIMUM LEVEL WERE TO BE CHOSEN, IT WOULD BE IN THE NEIGHBORHOOD OF 10 TO THE 18TH NVT (GREATER THAN 1 MEV). (4) OPINION WAS DIVIDED ON THE DESIRABILITY OF PLACING FRACTURE-MECHANICS SPECIMENS IN SURVEILLANCE PROGRAMS. (5) THERE WAS GENERAL FEELING THAT PERIODIC HYDROSTATIC TESTS OF VESSELS AND OTHER EQUIPMENT WERE A DESIRABLE INSPECTION PROCEDURE AND IN GENERAL THAT THEY SHOULD BE CONDUCTED AT SOME PRESSURE GREATER THAN THE NORMAL OPERATING PRESSURE. (6) THERE WAS NO AGREEMENT ON MEANS OF FUNDING SURVEILLANCE PROGRAMS.

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-16114 *CONTINUED*

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*CONTAINMENT INSPECTION AND MAINTENANCE + *IRRADIATION TESTING + *PRESSURE VESSEL + *STEEL +
*SURVEILLANCE PROGRAM + CODES AND STANDARDS + FRACTURE TOUGHNESS + NDT DATA (NIL DUCTILITY TRANSITION)

11-16115

TURNER FH

IMPROVEMENTS RELATING TO APERTURED CONCRETE WALLS

BARCOCK AND WILCOX COMPANY

BRITISH PATENT 1,041,043 +. 3 PAGES, 1966

THE CONCRETE WALLS ARE FORMED WITH AN APERTURE OF CIRCULAR CROSS-SECTION PROVIDED WITH A SUBSTANTIALLY RIGID LINER OF MATERIAL HAVING AN ELASTIC MODULUS LARGE COMPARED WITH THAT OF THE CONCRETE, THE LINER BEING ADAPTED TO COMPENSATE FOR LOCAL CONCENTRATION OF STRESS IN THE VICINITY OF THE APERTURE DUE TO COMPRESSIVE LOADING AND HAVING A WALL THICKNESS OF APPROXIMATELY THE PRODUCT OF THE RATIO OF THE ELASTIC MODULUS OF THE CONCRETE TO THE ELASTIC MODULUS OF THE LINER AND THE RADIUS OF THE APERTURE.

AVAILABILITY - THE PATENT OFFICE, 25 SOUTHAMPTON BUILDING, LONDON, W. C. 2, ENGLAND, 49 CENTS PER COPY

*CONCRETE, PRESTRESSED + *PRESSURE VESSEL + *STEEL LINER + ELASTICITY + STRESS

11-16116

VILLADSEN PM

IMPROVEMENTS IN OR RELATING TO NUCLEAR REACTOR INSTALLATIONS.

AKTIESELSKABET BURMEISTER AND WAINSKIN OG SKIBSBYGGERI, DENMARK

BRITISH PAT. 1,034,375 +. 4 PAGES, 1 FIGURE, JUNE 29, 1966

THE INVENTION COMPRISES A SHELL DEFINING AN OUTER CONTAINMENT, A NUCLEAR REACTOR LOCATED WITHIN THE CONTAINMENT AND INCLUDING A PRESSURIZED LIQUID CIRCUIT, AND SPACE WITHIN THE CONTAINMENT ARRANGED FOR RECEIVING LIQUID AND VAPOR ESCAPING FROM THE REACTOR IN CASE OF A RUPTURE IN THE LIQUID CIRCUIT, AND A PLURALITY OF CLOSED, WHOLLY OR SUBSTANTIALLY LIQUID-FILLED CONDENSER ELEMENTS LOCATED WITHIN THE CONTAINMENT IN AN ARRANGEMENT SUCH THAT ESCAPING VAPOR FROM THE REACTOR IS FORCED TO FLOW AROUND THE ELEMENTS BEFORE IMPINGING UPON THE SHELL.

AVAILABILITY - THE PATENT OFFICE, 25 SOUTHAMPTON BUILDING, LONDON, W. C. 2, ENGLAND, 0.49 COPY

*CONTAINMENT, PRESSURE SUPPRESSION + CONDENSATION + REACTOR, BOILING WATER + REACTOR, PRESSURIZED WATER

11-16117

TURNER FH

IMPROVEMENTS IN CONCRETE PRESSURE VESSELS.

BARCOCK AND WILCOX, BARCOCK HOUSE, 209--225 EUSTON ROAD LONDON, N.W. 1

BRITISH PAT. 1,041,041 +. 7 PAGES, 19 FIGURES, SEPTEMBER 1, 1966

THIS INVENTION RELATES TO CONCRETE PRESSURE VESSELS COMPRISING AN INNER SHELL OF FLUID-TIGHT MATERIAL ENVELOPED BY AN OUTER WALL OF CONCRETE COMPRISING A PLURALITY OF PREFORMED COMPONENTS ARRANGED SIDE BY SIDE AND IN CONTACT WITH THE INNER SHELL, ADJACENT COMPONENTS BEING ANCHORED TOGETHER, AND THE OUTER WALL BEING PRESTRESSED.

AVAILABILITY - THE PATENT OFFICE, 25 SOUTHAMPTON BUILDING, LONDON, W. C. 2, ENGLAND, 0.49 COPY

*CONCRETE, PRESTRESSED + *PRESSURE VESSEL + CONTAINMENT CONSTRUCTION + STEEL LINER

11-16118

TURNER FH

IMPROVEMENTS RELATING TO VESSELS HAVING WALLS OF PRE-STRESSED CONCRETE LINED WITH METAL PLATING

BARCOCK AND WILCOX, BARCOCK HOUSE, 209--225 EUSTON ROAD, LONDON, N.W. 1

BRITISH PAT. 1,041,044 +. 2 PAGES, 2 FIGURES, SEPTEMBER 1, 1966

THIS INVENTION RELATES TO VESSELS HAVING WALLS OF PRESTRESSED CONCRETE LINED WITH METAL PLATING AND LOAD-TRANSFER MEANS ADAPTED TO TRANSMIT FROM THE CONCRETE TO THE PLATING FORCES OF COMPRESSION ACTING PERPENDICULARLY TO THE EDGE SURFACE OF THE METAL PLATING AS AN EDGEWISE LOADING SO THAT DURING PRESTRESSING OF THE CONCRETE THE PLATING IS COMPRESSED TOGETHER WITH THE CONCRETE WALL LINED THEREBY.

AVAILABILITY - THE PATENT OFFICE, 25 SOUTHAMPTON BUILDING, LONDON, W. C. 2, ENGLAND, 0.49 COPY

*CONCRETE, PRESTRESSED + *PRESSURE VESSEL + *STEEL LINER + CONTAINMENT VESSEL LOADING

11-16119

GALLAGHER EV + WIEDERMANN AH

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-16119 *CONTINUED*

STUDIES OF REACTOR CONTAINMENT. PROGRESS REPORT, FEBRUARY 1 - MARCH 31, 1966
IIT RESEARCH INST., CHICAGO
IITRI-T6042-18 + IITRI-578P21-18 +. 37 PAGES, FIGURES, MARCH 1966

DURING THE PERIOD, THE WORK DEALT WITH (1) FORMULATION OF AN ANALYTICAL MODEL TO DESCRIBE THE DECOMPRESSION IN THE WATER SHOCK-TUBE AND PERFORMANCE OF SOME SAMPLE CALCULATIONS FOR COMPARISON WITH EXPERIMENTAL DATA, (2) CONTINUED REDUCTION AND INTERPRETATION OF EXPERIMENTAL DATA FOR THE CASE OF UNOBSTRUCTED FLOW IN THE DRIVER SECTION, AND (3) INITIATION OF PRELIMINARY EXPERIMENTS WITH OBSTRUCTIONS IN THE DRIVER SECTION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*FLOW DISTRIBUTION + *HYDRAULIC EXPERIMENT + ACCIDENT, LOSS OF PRESSURE +
CONTAINMENT RESEARCH AND DEVELOPMENT + REACTOR, PRESSURIZED WATER + SHOCK WAVE

11-16120

ECKELS TW + SMAARDYK A
DESIGN, PERFORMANCE, AND EVALUATION OF SHIELDING WINDOW FOR FARET CONTAINMENT CELL
ARGONNE NATIONAL LAB., ILL.
ANL-7157 +. 26 PAGES, 10 FIGURES, 5 TABLES, 7 REFERENCES, JULY 1966

A HIGH-INTEGRITY SHIELDING WINDOW WAS DESIGNED FOR USE IN A REACTOR CONTAINMENT STRUCTURE. THIS WAS DONE MAINLY BY THE APPROPRIATE PLACEMENT AND SEALING ARRANGEMENT OF THICK GLASS SLABS. CONSERVATIVE CAPABILITY TO WITHSTAND, WITHOUT DAMAGE, OVER TWICE THE REQUIRED DESIGN PRESSURE OF 30 PSIG WAS ACHIEVED. HIGH RESISTANCE TO POTENTIAL MISSILE DAMAGE WAS INCLUDED, MAINLY BY THE ABILITY OF THE FIRST SLAB TO ABSORB IMPACT WHILE PROTECTING SUCCESSIVE SLABS. FOR EXTREME TEMPERATURE CONDITIONS ASSOCIATED WITH MAXIMUM-CREDIBLE-ACCIDENT CRITERIA, TESTS DEMONSTRATED THE INTEGRITY. A HIGH DEGREE OF VISIBILITY WAS ACHIEVED BY THE SELECTIVE ARRANGEMENT OF WINDOWS, ADEQUATE GLASS AREA, AND A COMBINATION OF SLAB SIZES AND THICKNESSES RESULTING IN DESIRABLE ANGLES OF VIEW. IN ADDITION, EBR-II DESIGN FEATURES FOR REPLACEMENT OF GLASS COMPONENTS WERE INCORPORATED IN A MANNER SUCH THAT REPLACEMENT MAY BE DONE WHILE THE INTEGRITY OF THE CELL IS MAINTAINED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*CONTAINMENT INTEGRITY + CONTAINMENT, SHOCK GENERATION AND PROTECTION + DESIGN CRITERIA +
MISSILE GENERATION AND PROTECTION

11-16121

SHURE K
RADIATION DAMAGE EXPOSURE AND EMBRITTLEMENT OF REACTOR PRESSURE VESSELS
WESTINGHOUSE ELEC. CORP., BETTIS ATOMIC POWER LAB., PITTSBURGH
WAPD-TM-471 +. 67 PAGES, FIGURES, 9 TABLES, 48 REFERENCES, NOVEMBER 1964

THE PROCEDURE FOR OBTAINING ESTIMATES OF THE CHANGES IN THE DUCTILE-TO-BRITTLE TRANSITION TEMPERATURE OF FERRITIC STEEL DUE TO NEUTRON IRRADIATION WAS EXAMINED. THE ESTIMATES DEPEND ON THE NEUTRON SPECTRUM USED IN THE INTERPRETATION OF THE ACTIVATION OF THE FAST-NEUTRON MONITOR ASSOCIATED WITH RADIATION-DAMAGE SPECIMENS AND ON THE DAMAGE-CROSS-SECTION MODEL USED IN EVALUATING IRRADIATION EXPOSURES. A DAMAGE MODEL WHICH ACCOUNTS FOR NEUTRON SPECTRAL DIFFERENCES BETWEEN IRRADIATION LOCATIONS WAS USED TO OBTAIN A MORE MEANINGFUL MEASURE OF EXPOSURE THAN THE USUALLY CITED NEUTRON FLUX ABOVE 1 MEV. DATA ON THE CHANGE IN TRANSITION TEMPERATURE FOR A302B PRESSURE-VESSEL STEEL WERE CORRELATED WITH THIS NEWER EXPOSURE PARAMETER. A PHYSICALLY REASONABLE ESTIMATE OF THE FUNCTIONAL DEPENDENCE OF THIS CORRELATION WAS FITTED IN A LEAST-SQUARES SENSE TO THESE DATA, AND ONE-SIDED TOLERANCE LIMITS WERE ASCRIBED FOR USE BY REACTOR DESIGNERS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*ANALYTICAL MODEL + *EMBRITTLEMENT + *STEEL + FLUX DISTRIBUTION + IRRADIATION TESTING + NEUTRON +
PRESSURE VESSEL

11-16122

CERVASEK J
SPECIFICATIONS OF CERTAIN STEELS FOR NUCLEAR REACTOR PRESSURE VESSELS
USTAV JADERNEHO VYZKUMU, CESKOSLOVENSKA AKADEMIE VED, PRAHA
UJV-1405/65 +. 27 PAGES, 1965

STEELS USED IN THE PRESSURE VESSELS OF VARIOUS NUCLEAR REACTORS ARE LISTED. THE EXAMPLES CITED ARE ALL IN THE U.S. EXCEPT FOR ONE APPLICATION IN SWEDEN. COMPLETE SPECIFICATIONS, CHEMICAL ANALYSIS, MECHANICAL, AND METALLOGRAPHIC CHARACTERISTICS ARE GIVEN. THESE ARE LISTED UNDER DIFFERENT TYPES - (1) FERRITIC-PEARLITIC CARBON STEELS--ASTM A 212 GRADE B AND STEEL NO. 2103/P3, (2) LOW-ALLOY MN-MO STEELS--ASTM A 302 GRADE B AND STEEL NO. 345, AND (3) HIGH STRENGTH STEELS--FORTIWELD STEEL. THE RESULTS OF EXTENSIVE LABORATORY TESTS ON SAMPLES OF THE STEELS ARE PRESENTED.

AVAILABILITY - MICROCARD EDITIONS INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN, 54669

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-16122 *CONTINUED*
*PROPERTY, PHYSICAL + PRESSURE VESSEL + STEEL

11-16123
FONDRIEST FF + SNYDER MJ
HEAT-RESISTANT CONCRETE FOR PRESTRESSED-CONCRETE-PRESSURE-VESSEL (PCPV) REACTORS. QUARTERLY PROGRESS REPORT, JULY-SEPTEMBER 1966
BATTTELLE MEMORIAL INSTITUTE, COLUMBUS, OHIO
BMT-X-10180 + EURAEC-1748 +. 8 PAGES, REFERENCES, OCTOBER 1, 1966

THIS PROGRAM IS DESIGNED TO INVESTIGATE THE EFFECTS OF HIGH TEMPERATURES ON CONCRETE IN LARGE STRUCTURES AND TO DETERMINE WAYS TO EXTEND THE TEMPERATURE AND STRUCTURAL LIMITATIONS BY VARIOUS MODIFICATIONS OF THE CONCRETE. SINCE STARTING THE PROGRAM EARLY IN JULY 1966, EFFORTS HAVE BEEN PRIMARILY DIRECTED TOWARD PLANNING THE EXPERIMENTS TO BE MADE DURING THE FIRST PHASE (ESTABLISHMENT OF REALISTIC TEMPERATURE AND STRUCTURAL LIMITATIONS) OF THE PROGRAM, AND IDENTIFYING AND OBTAINING THE NECESSARY MATERIALS AND EQUIPMENT. THE EXPERIMENTAL WORK WILL CONSIST ESSENTIALLY OF STUDIES OF MOISTURE MIGRATION, CHARACTERIZATION OF CONCRETE CREEP AND STRENGTH UNDER TYPICAL TEMPERATURE AND MOISTURE CONDITIONS, AND ANALYSIS OF CONCRETE DEGRADATION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*CONCRETE, PRESTRESSED + *THERMAL MECHANICAL EFFECT + *THERMAL PROPERTY + CREEP BEHAVIOR + PRESSURE VESSEL + STRESS

11-16124
HAWTHORNE JR + STEELE LE
IN-REACTOR STUDIES OF LOW CYCLE FATIGUE PROPERTIES OF A NUCLEAR PRESSURE VESSEL STEEL
NAVAL RESEARCH LABORATORY, WASHINGTON, D. C.
NRL-6127 +. 16 PAGES, FIGURES, 1 TABLE, 7 REFERENCE, JULY 27, 1964

DESCRIBES AN EXPERIMENTAL IRRADIATION ASSEMBLY AND ASSOCIATED INSTRUMENTATION WHICH HAVE BEEN DEVELOPED AND SUCCESSFULLY USED FOR THE PERFORMANCE OF DYNAMIC IN-REACTOR LOW-CYCLE FATIGUE TESTS OF PRESSURE-VESSEL STEELS. THE EQUIPMENT PROVIDES FOR THE SIMULTANEOUS REVERSE-BEND TESTING OF AS MANY AS 15 SHEET-TYPE SPECIMENS, REPRESENTING A RANGE OF STRAIN AMPLITUDES AT CONTROLLED TEMPERATURES IN THE RANGE 300 TO 700 F. THE RESULTS OF AN EXPLORATORY INVESTIGATION ON THE FATIGUE RESISTANCE OF A302-B STEEL DURING IRRADIATION AT 500 F ARE PRESENTED AND COMPARED WITH DATA FROM OUT-OF-REACTOR CONTROL TESTS. THESE PRELIMINARY DATA DO NOT INDICATE ANY PRONOUNCED DIFFERENCE IN THE FATIGUE STRENGTH OF IRRADIATED VERSUS UNIRRADIATED STEEL. EXPLORATORY INVESTIGATIONS ARE CONTINUING.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*FAILURE, FATIGUE + *INSTRUMENTATION, TESTING + *IRRADIATION TESTING + *STEEL + PRESSURE VESSEL

11-16161
KREMPL E
LOW-CYCLE FATIGUE STRENGTH REDUCTION IN NOTCHED FLAT PLATES
GENERAL ELECTRIC, SAN JOSE, CALIF.
GEAP-5410 +. 38 PAGES, 14 FIGURES, 3 TABLES, 15 REFERENCES, JANUARY 1967

THE LOW-CYCLE FATIGUE LIFE OF NOTCHED SPECIMENS WAS STUDIED ON BOTH A STRESS AND A STRAIN BASIS. THE CRACK-FORMATION AND CRACK-GROWTH PHASES OF FATIGUE MUST BE CONSIDERED SEPARATELY. PLASTIC STRAINS AT THE ROOT OF A NOTCH WERE MEASURED. THE UNLOADING LINE IS NOT NECESSARILY PARALLEL TO THE INITIAL TANGENT TO THE LOAD-STRAIN LINE. STRESS-CONTROLLED SMOOTH-BAR DATA AND THE THEORETICAL ELASTIC-STRESS-CONCENTRATION FACTOR SEEM TO GIVE A SAFE DESIGN ESTIMATE OF FATIGUE LIFE. THE FATIGUE-STRENGTH REDUCTION FACTOR ON A STRAIN BASIS INCREASES WITH NOMINAL STRESS AND EXCEEDS THE THEORETICAL ELASTIC-STRESS-CONCENTRATION FACTOR.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*FAILURE, FATIGUE + *FAILURE, PIPE + *FAILURE, PRESSURE VESSEL + *FLAW + *MEASUREMENT, STRAIN GAGE + *PIPING + *PLASTICITY + BRITTLE FRACTURE + CONTAINMENT INTEGRITY + CONTAINMENT LEAKAGE CONTROL + ELASTICITY + METAL + NOZZLE + PRESSURE VESSEL + STEEL + STRESS + STRESS STRAIN DATA + TENSILE PROPERTY

11-16167
BRITTLE FRACTURE AND SAFETY PROBLEMS OF REACTOR PRESSURE VESSELS. REPORT ON AN INTERNATIONAL COLLOQUIUM HELD IN BRUSSELS, BELGIUM, FROM 11 TO 13 JANUARY 1966, AND ORGANIZED BY THE EUROPEAN ATOMIC ENERGY COMMUNITY
EURATOM, EUROPEAN ATOMIC ENERGY COMMUNITY
8 PAGES, ATOMIC ENERGY REVIEW 4(2) PAGES 181-188 (1966)

FABRICATION AND CYCLIC PLASTIC STRAINS CAN CAUSE EMBRITTLEMENT. IRRADIATION-EFFECTS STUDIES SHOULD BE PERFORMED ON BASE PLATE, WELD METAL, AND HEAT-AFFECTED-ZONE MATERIAL. APPLIED STRESS AND FATIGUE STRENGTH DO NOT SEEM TO INTERACT SIGNIFICANTLY WITH IRRADIATION. BRITTLE

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-16167 *CONTINUED*

FRACTURES DO NOT RUN SMOOTHLY BUT PROGRESS IN STEPS, EMITTING ACOUSTIC ENERGY AT EACH STEP. THICKNESS AFFECTS THE CRACK-ARREST TEMPERATURE. THE CAT CURVE VANISHES UNDER PNEUMATIC LOADING. NEUTRON SPECTRUM AND FLUX AFFECT THE CHANGE IN NDT. CRITICAL CRACK LENGTHS MAY BE SHORTER THAN PREVIOUSLY ESTIMATED BY THE BRITISH. FATIGUE LIFE DECREASES AS CYCLING RATE DECREASES. HOT PRESTRESSING AND PERIODIC PROOF-TESTING ARE DISCUSSED. REACTOR EXCURSION LOADINGS ARE ALSO DISCUSSED.

*BRITTLE FRACTURE + *EMBRITTELEMENT + *FAILURE, FATIGUE + *FAILURE, PRESSURE VESSEL + *PRESSURE VESSEL + CODES AND STANDARDS + CONTAINMENT INTEGRITY + FLAW + NDT DATA (NIL DUCTILITY TRANSITION) + SAFETY PRINCIPLES AND PHILOSOPHY + STEEL + WELDS

11-16168

MCCOY HF

CREEP-RUPTURE PROPERTIES UNDER CONDITIONS OF CONSTANT AND VARYING STRESSES
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.

5 PAGES, 5 FIGURES, 2 TABLES, 6 REFERENCES, NUCLEAR APPLICATIONS 2(6) PAGES 481-485 (DEC. 1966)

AN ANALYTICAL MODEL WAS DEVELOPED FOR USING CREEP DATA AT A CONSTANT STRESS TO PREDICT CREEP BEHAVIOR UNDER A LINEARLY INCREASING STRESS. THE APPLICABILITY OF THIS TECHNIQUE TO SEVERAL REFRACTORY ALLOYS WAS DEMONSTRATED BY COMPARING PREDICTED AND OBSERVED BEHAVIOR. THE MODEL DOES NOT APPLY EQUALLY WELL TO ALL MATERIALS, AND IT IS NECESSARY TO RUN LIMITED TESTS TO DEMONSTRATE ITS APPLICABILITY TO A GIVEN MATERIAL.

*COMPARISON, THEORY AND EXPERIENCE + *CREEP BEHAVIOR + *METAL + *STRESS + *STRESS RUPTURE + DEFORMATION + FAILURE, CLADDING + FAILURE, FUEL ELEMENT

11-16103

ALSO IN CATEGORIES 1 AND 7

COTTRILL WR

ORNL NUCLEAR SAFETY RESEARCH AND DEVELOPMENT PROGRAM BIMONTHLY REPORT FOR MARCH - APRIL 1967.
OAK RIDGE NATIONAL LAB., TENN.

ORNL-TM-1864 +. 77 PAGES, 6 FIGURES, 8 TABLES, 13 REFERENCES, MAY 10, 1967

INCLUDED IN THIS PROGRESS REPORT ARE WORK ON VARIOUS CHEMICAL REACTIONS, AS WELL AS THE RELEASE, CHARACTERIZATION, AND TRANSPORT OF FISSION PRODUCTS IN CONTAINMENT SYSTEMS UNDER VARIOUS ACCIDENT CONDITIONS AND ON PROBLEMS ASSOCIATED WITH THE REMOVAL OF THESE FISSION PRODUCTS FROM GAS STREAMS. ALTHOUGH MOST OF THE WORK CONTINUES TO BE IN GENERAL SUPPORT OF WATER POWER REACTOR TECHNOLOGY INCLUDING SOME IN DIRECT SUPPORT OF THE LOFT AND CSE PROGRAMS, SEVERAL PROJECTS ARE CONDUCTED IN SUPPORT OF THE HIGH-TEMPERATURE GAS-COOLED REACTOR (HTGR) PROGRAM, INCLUDING BOTH IN-PILE AND OUT-PILE STUDIES OF THE REACTION RATES AND FISSION PRODUCT RELEASE AND TRANSPORT PHENOMENA. OTHER MAJOR PROJECTS INCLUDE FUEL TRANSPORT SAFETY INVESTIGATIONS, A SERIES OF DISCUSSION PAPERS ON VARIOUS ASPECTS OF WATER REACTOR TECHNOLOGY, ANTISEISMIC DESIGN OF NUCLEAR FACILITIES, AND THE STUDIES OF PRESSURE VESSEL TECHNOLOGY. EXPERIMENTAL WORK RELATIVE TO PRESSURE VESSEL TECHNOLOGY INCLUDES INVESTIGATIONS OF THE ATTACHMENT OF NOZZLES TO SHELLS AND THE VARIABILITY OF IMPACT DATA ON LOW ALLOY STEELS. SEVERAL OF THE PROJECTS ARE CONCERNED WITH THE DEVELOPMENT OF ENGINEERING SAFEGUARDS AND THE ESTABLISHMENT OF CODES AND STANDARDS FOR THESE SAFEGUARDS. THE RECENT ACTIVITIES OF THE NSIC AND THE NUCLEAR SAFETY JOURNAL IN BEHALF OF THE NUCLEAR COMMUNITY ARE ALSO DISCUSSED.

AVAILABILITY - WM. R. COTTRILL, OAK RIDGE NATIONAL LAB., TENN.

*FISSION PRODUCT RELEASE, GENERAL + ACCIDENT, HYPOTHETICAL + ACCIDENT, MAXIMUM CREDIBLE (MCA) + AEROSOL PROPERTIES + AIR CLEANING + AIRBORNE RELEASE + ALLOY + CHARCOAL ADSORBER + CHEMICAL REACTION + CODES AND STANDARDS + CSE (CONTAINMENT SYSTEMS EXPERIMENT) + DEPOSITION + EARTHQUAKE ENGINEERING + ENGINEERED SAFETY FEATURE + FILTER + FISSION PRODUCT TRANSPORT + IMPACT PROPERTY + IMPACT SHOCK + IODINE + LOFT (LOSS OF FLUID TEST) + NOZZLE + NSIC (NUCLEAR SAFETY INFORMATION CENTER) + ORGANIC IODIDE + PRESSURE VESSEL + REACTOR, GAS COOLED + REACTOR, HIGH TEMP. GAS + REACTOR, WATER + STEEL + STEEL, STAINLESS + TREAT (TRANSIENT TEST REACTOR FACILITY)

11-16242

ALSO IN CATEGORY 18

ARNOLD HG + GALL WR + TRIPP AM

USE OF THE EVAPORATOR TO AUGMENT REACTOR CONTAINMENT IN LARGE NUCLEAR DESALINATION PLANTS
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.

ORNL-TM-1586 +. 46 PAGES, 11 FIGURES, 2 TABLES, MARCH 1967

THE POSSIBILITY OF USING THE SEAWATER EVAPORATOR OF LARGE NUCLEAR DESALINATION PLANTS AS A PART OF THE REACTOR-CONTAINING SYSTEM WAS INVESTIGATED. PRELIMINARY CONCEPTS OF PLANTS IN WHICH THE EVAPORATOR IS USED AS A SHELL FOR DOUBLE CONTAINMENT AND AS A PRESSURE-SUPPRESSION CHAMBER WERE DEVELOPED AND EVALUATED. THE ESTIMATED COST OF THE CONCEPTUAL PLANTS IS LESS THAN THAT OF THE REFERENCE PLANT, BUT THIS COST ADVANTAGE MAY BE PARTIALLY OFFSET BY A POSSIBLE INCREASE IN THE COST OF THE EVAPORATOR PORTION THAT MIGHT BE REQUIRED TO MAKE IT MEET NUCLEAR STANDARDS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151 \$3.00 COPY, \$0.65 MICRONEGATIVE

*CONTAINMENT RESEARCH AND DEVELOPMENT + *CONTAINMENT, MULTIPLE + *CONTAINMENT, PRESSURE SUPPRESSION + *DESIGN STUDY + *REACTOR, DESALINATION + ECONOMICS

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-16303

REACTOR PRIMARY COOLANT SYSTEM RUPTURE STUDY. QUARTERLY PROGRESS REPORT NO. 7, OCTOBER-DECEMBER 1966
GENERAL ELECTRIC, ATOMIC POWER DEPT., SAN JOSE, CALIF.
GEAP-5427 +. 46 PAGES, FIGURES, TABLES, REFERENCES, DECEMBER 1966

GEAP-5427, OCTOBER-DECEMBER IS PROGRESS REPORT 7. FOUR ASPECTS OF THE STRUCTURAL PERFORMANCE OF REACTOR PRIMARY PIPING SYSTEMS ARE BEING STUDIED. THESE ASPECTS ARE (1) RELIABILITY, (2) STRESS ANALYSIS, (3) FRACTURE MECHANICS, AND (4) FATIGUE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*BRITTLE FRACTURE + *FAILURE, FATIGUE + *FAILURE, PIPE + *PIPING + *RELIABILITY ANALYSIS + ACCIDENT, LOSS OF COOLANT + BIBLIOGRAPHY + COMPUTER PROGRAM + CONTAINMENT RESEARCH AND DEVELOPMENT + ELASTICITY + METAL + STRESS + STRESS ANALYSIS

11-16304

MONAHAN JM + WALKER TJ
PM-2A REACTOR VESSEL TEST - DESCRIPTION OF TESTING AND FAILURE CONDITIONS
WESTINGHOUSE ELECTRIC CORP., PITTSBURGH, PA.
WAPD-TM-640 +. 76 PAGES, 25 FIGURES, 8 TABLES, 8 REFERENCES, JANUARY 1967

THIS REPORT DESCRIBES THE DESIGN OF THE TESTING APPARATUS AND THE TEST RESULTS FOR THE PM-2A POSTOPERATIONAL VESSEL-FRACTURE TEST. A HALF-SCALE MODEL WAS USED TO ESTIMATE THE FRACTURE CONDITIONS. A FRACTURE-MECHANICS ANALYSIS OF THE FULL-SCALE TEST WILL BE REPORTED SEPARATELY. THE FULL-SCALE VESSEL FAILED AT A TEMPERATURE OF MINUS 20 F AND AN INTERNAL PRESSURE OF 4475 PSIG. IT WAS NECESSARY TO INDUCE STRESS CORROSION AT THE TIPS OF THE ARTIFICIAL FLAW, USING HCL, IN ORDER TO PRODUCE FRACTURE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*BRITTLE FRACTURE + *COMPARISON, THEORY AND EXPERIENCE + *EMBRITTEMENT + *FAILURE, PRESSURE VESSEL + *FLAW + *PRESSURE VESSEL + *TEST, DESTRUCTIVE + *TEST, PRESSURE VESSEL + ACCIDENT, LOSS OF COOLANT + CORROSION + ELASTICITY + INTEGRITY + PLASTICITY + PRESSURE, INTERNAL + STEEL + STRESS + STRESS ANALYSIS

11-16305

NOPRIS EB
INFLUENCE OF NEUTRON IRRADIATION ON THE PROPERTIES OF STEELS AND WELDS TYPICAL OF THE EBR PRESSURE VESSEL.
TOPICAL REPORT NO. 4
SOUTHWEST RESEARCH INST., SAN ANTONIO, TEXAS
SWRI-1228P4-28 +. 90 PAGES, 40 FIGURES, 18 TABLES, 12 REFERENCES, JANUARY 24, 1967

AS PART OF THE ELK RIVER REACTOR SURVEILLANCE PROGRAM, A STUDY WAS MADE OF THE EFFECTS OF NEUTRON IRRADIATION ON THE TENSILE, IMPACT AND FATIGUE PROPERTIES OF STEELS AND WELDS TYPICAL OF THOSE IN THE ELK RIVER REACTOR PRESSURE VESSEL. THE TENSILE ULTIMATE AND YIELD STRENGTHS WERE SLIGHTLY INCREASED, AND THE TENSILE DUCTILITIES WERE REDUCED. THE LOW-CYCLE FATIGUE STRENGTHS WERE ALSO INCREASED. THE SHIFT IN THE TRANSITION TEMPERATURES RANGED FROM AS LITTLE AS 20 F FOR LUKENS CLAD ALLOY A302-B TO AS MUCH AS 90 F FOR THE A105-II SURVEILLANCE MATERIAL.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*BRITTLE FRACTURE + *EMBRITTEMENT + *IMPACT PROPERTY + *IRRADIATION TESTING + *NOT DATA (NIL DUCTILITY TRANSITION) + *PRESSURE VESSEL + *SURVEILLANCE PROGRAM + *TENSILE PROPERTY + *WELDS + FAILURE, FATIGUE + FAILURE, PRESSURE VESSEL + STEEL

11-16311

ALSO IN CATEGORIES 12 AND 17
A TIGHTENING SCREW ON REACTOR SAFETY
5 PAGES, FIGURES, NUCLEONICS 25(1) PAGES 41-45 (JANUARY 1967)

DISCUSSES THE PROBLEM OF INSPECTING ALL INTERNAL AND EXTERNAL SURFACES OF ALL THE PRESSURE-CONTAINING PARTS OF NUCLEAR POWER PLANTS. AEC IS NOW QUESTIONING ALL APPLICANTS FOR CONSTRUCTION PERMITS ABOUT IN-SERVICE INSPECTION. COMMONWEALTH EDISONS EXPERIENCE IS DISCUSSED. THEY STATE THAT THE BEST INSPECTION METHOD IS A MAN LOOKING. BESIDES EDISONS INSPECTORS, STATE AND INSURANCE AGENCIES HAVE INSPECTION TEAMS. A MATERIALS-SURVEILLANCE PROGRAM IS IN USE TO SUPPLEMENT VISUAL INSPECTIONS. VESSEL SAMPLES ARE EXAMINED PERIODICALLY AND HAVE INDICATED THAT THE NDT SAMPLES SHOULD REDUCE THE NEED FOR DIRECT EXAMINATION. DISCUSSES EDISONS REASONS FOR HYDROSTATIC TESTING OF THE DRESDEN-I VESSEL AT 80% OF DESIGN PRESSURE. AEC SUGGESTED A TEST AT 125% OVER DESIGN PRESSURE EVERY 4 YEARS. EDISON DISAGREED. THE QUESTION IS STILL UNSETTLED.

*ADMINISTRATIVE CONTROLS AND PRACTICES + *INSPECTION AND COMPLIANCE + *PRESSURE VESSEL + AEC CONSTRUCTION PERMIT CRITERIA + DRESDEN I + EXAMINATION + INTEGRITY + INTEGRITY + MAINTENANCE AND REPAIR + REACTOR, BOILING WATER + REGULATION, AEC + SAFETY PRINCIPLES AND PHILOSOPHY + TEST, NONDESTRUCTIVE + TEST, PRESSURE VESSEL

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-16313
NEUTRON DAMAGE TO REACTOR MATERIALS
4 PAGES, 6 FIGURES, NUCLEONICS 25(1) PAGES 49-52 (JANUARY 1967)

DISCUSSES RADIATION DAMAGE IN PRESSURE-VESSEL STEELS. THE MICROSTRUCTURE IS A DOMINANT FACTOR IN SUSCEPTIBILITY TOWARD EMBRITTLEMENT. CATASTROPHIC DELAYED FAILURE DUE TO HYDROGEN EMBRITTLEMENT HAS BEEN OBSERVED IN HIGH-STRENGTH STEELS BUT NOT IN STEELS LIKE A-212-B. FOR STAINLESS STEELS, TWO SOURCES OF EMBRITTLING DEFECTS ARE HELIUM PRODUCTION AND VOID CLUSTERS.

*EMBRITTLEMENT + *PRESSURE VESSEL + FERRITIC STEEL + HELIUM + HYDROGEN + METAL + RADIATION DAMAGE + RADIATION EFFECT + STEEL + STEEL, STAINLESS

11-16321 ALSO IN CATEGORY 17
GRONRECK HD
ETR RADIATION DAMAGE SURVEILLANCE PROGRAMS. PROGRESS REPORT II
IDAHO NUCLEAR CORPORATION, IDAHO FALLS
IN-1036 +. 56 PAGES, 17 FIGURES, 3 TABLES, FEBRUARY 1967

CONTAINS DATA ON MECHANICAL PROPERTIES OF ETR STRUCTURAL MATERIALS EXPOSED TO THE OPERATING ENVIRONMENT OF THE ETR. DATA IS BASED ON FAST-NEUTRON EXPOSURES FROM 5.12 TIMES 10 TO THE 21 NVT FOR 431 STAINLESS STEEL TO 1.69 TIMES 10 TO THE 22 NVT FOR 17-4 PH AND 304 STAINLESS STEELS. DATA INCLUDES RADIATION EFFECT ON ROCKWELL HARDNESS, TENSILE STRENGTH, YIELD STRENGTH, AND ELONGATION OF STAINLESS STEELS AND ALUMINUM 2024, 6061, AND 356.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPT. OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*ALUMINUM + *CORE COMPONENTS, MISCELLANEOUS + *RADIATION EFFECT + *STEEL, STAINLESS + ETR (ENGINEERING TEST REACTOR) + FAST NEUTRON + INCONEL + METAL + PRESSURE VESSEL + PROPERTY, PHYSICAL + REACTOR, TEST + STRUCTURAL INTEGRITY + TENSILE PROPERTY

11-16331 ALSO IN CATEGORY 18
QUESTION A-3(A) AND 3(B)--MAIN STEAM LINE BREAK. REACTOR PRESSURE VESSEL QUALITY CONTROL
COMMONWEALTH EDISON COMPANY
4 PAGES, PAGES A-3-1 TO A-3-4 FROM DRESDEN 3 AMENDMENT 1, 1966, DOCKET NO. 50-249

REFER TO THE ACRS REPORT ON MILLSTONE POINT, MARCH 18, 1966, AND PROVIDE THE FOLLOWING INFORMATION. (FIRST PARAGRAPH ON PAGE 2) DISCUSS CONSIDERATIONS BEING EVALUATED IN YOUR DESIGN IN REGARD TO A RUPTURE OF THE HIGH-PRESSURE STEAM LINES AND POSSIBLE METHODS TO REDUCE THE ESCAPE OF FISSION PRODUCTS FROM THE TURBINE BUILDING. INCLUDE STRUCTURAL EFFECTS ON THE BUILDING. (B) (NEXT TO THE LAST PARAGRAPH ON PAGE 2) DISCUSS THE CONSIDERATIONS RELATED TO ADDITIONAL METHODS OF QUALITY CONTROL ... AND THE DEVELOPMENT AND USE OF IN-SERVICE INSPECTION METHODS ... FOR PRESSURE VESSELS.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACCIDENT, STEAM LINE RUPTURE + *PRESSURE VESSEL + AEC QUESTION + DRESDEN 3 + EXAMINATION + FISSION PRODUCT RETENTION + QUALITY CONTROL + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

11-16332 ALSO IN CATEGORY 18
QUESTION A-4--REACTOR PRESSURE VESSEL NDT
COMMONWEALTH EDISON COMPANY
6 PAGES, PAGES A-4-1 TO A-4-6 FROM DRESDEN 3 AMENDMENT 1, 1966, DOCKET 50-249

DISCUSS THE REACTOR-VESSEL NDT TEMPERATURE CONSIDERATIONS FOR DRESDEN 3.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*BRITTLE FRACTURE + *PRESSURE VESSEL + AEC QUESTION + DRESDEN 3 + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

11-16335 ALSO IN CATEGORY 18
QUESTION A-7(1)--EFFECT ON REACTOR VESSEL OF A RAPID STARTUP
COMMONWEALTH EDISON COMPANY
1 PAGE, PAGE A-7-1 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

DISCUSS THE CONSEQUENCES OF AN ACCIDENTAL FAST STARTUP FROM LOW TEMPERATURE AS IT RELATES TO ALLOWABLE PRESSURE-VESSEL STRESSES AND BRITTLE-FRACTURE LIMITS THAT MIGHT EXIST AT LOW TEMPERATURE.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*BRITTLE FRACTURE + *PRESSURE VESSEL + AEC QUESTION + DRESDEN 3 + FAILURE, ADMINISTRATIVE CONTROL + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-16336 ALSO IN CATEGORY 18
QUESTION A-7(2)--ALLOWABLE REACTOR VESSEL FLOW SIZE
COMMONWEALTH EDISON COMPANY
3 PAGES, PAGES A-7-1 TO A-7-3 FROM DRESDEN 3 AMENDMENT 1, 1966, DOCKET NO. 50-249

DEFINE THE FLAW SIZE AND TYPE IN THE REACTOR VESSEL WHICH IS ACCEPTED IN THE SPECIFICATIONS. WHAT FLAWS, LARGER OR OF SPECIAL SIGNIFICANCE, MIGHT NOT BE DETECTED, PARTICULARLY IN ZONES OF IRREGULAR CONFIGURATION.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

AEC QUESTION + DRESDEN 3 + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

11-16337 ALSO IN CATEGORY 18
QUESTION A-7(3)--REACTOR VESSEL STUD FAILURE
COMMONWEALTH EDISON COMPANY
1 PAGE, PAGE A-7-4 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

WHAT FLAW SIZE IS ACCEPTED IN THE STUDS OF THE REACTOR VESSEL. WHAT FREQUENCIES OF STUD INSPECTION OR REPLACEMENT IS PLANNED. HOW MANY STUDS CAN FAIL WITHOUT THREATENING THE INTEGRITY OF THE CLOSURE.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*FLAW + *PRESSURE VESSEL + AEC QUESTION + DRESDEN 3 + EXAMINATION + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

11-16338 ALSO IN CATEGORY 18
QUESTION A-7(4)--DETECTION OF SMALL LEAKS FROM THE REACTOR VESSEL
COMMONWEALTH EDISON COMPANY
2 PAGE, PAGES A-7-4 TO A-7-5 FROM DRESDEN 3 AMENDMENT 1, 1966, DOCKET NO. 50-249

DESCRIBE HOW SMALL LEAKS IN THE REACTOR VESSEL WOULD BE DETECTED AND THE ACTION TO BE TAKEN SHOULD SUCH OCCUR. HOW IS ADEQUATE RESPONSE ENSURED IN THE EVENT OF A PREVIOUS EXISTENCE OF SMALL LEAKS IN OTHER PARTS OF THE SYSTEM.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*PRESSURE VESSEL + *TEST, LEAK LOCATION + *TEST, LEAK RATE + AEC QUESTION + DRESDEN 3 + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

11-16339 ALSO IN CATEGORY 18
QUESTION A-7(5)--MISSILE PROTECTION OF THE REACTOR VESSEL
COMMONWEALTH EDISON COMPANY
2 PAGES, PAGES 7-5 TO 7-6 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

WHICH MISSILES ARE PROTECTED FOR AND WHICH ARE NOT.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*MISSILE GENERATION AND PROTECTION + *PRESSURE VESSEL + AEC QUESTION + DRESDEN 3 + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

11-16341 ALSO IN CATEGORY 18
QUESTION A-7(7) AND 7(8)--REACTOR VESSEL CRACK PROPAGATION
COMMONWEALTH EDISON COMPANY
2 PAGES, PAGES A-7-9 AND A-7-10 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

IF ONE POSTULATES THE RAPID PROPAGATION OF A CRACK CIRCUMFERENTIALLY, WITH THE CONTAINED ENERGY OF THE SYSTEM, WHAT WOULD HAPPEN TO THE UPPER SECTION OF THE VESSEL, INCLUDING SHEARING OF PIPES, ETC. CAN YOU VISUALIZE ANY PROBLEM FROM THE PROPAGATION OF A CRACK FROM TOP TO BOTTOM OF THE VESSEL BUT NOT THROUGH THE HEAD.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*PRESSURE VESSEL + AEC QUESTION + DRESDEN 3 + FAILURE, PRESSURE VESSEL + MISSILE GENERATION AND PROTECTION + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

11-16342 ALSO IN CATEGORY 18
QUESTION A-7(9)--REACTOR VESSEL CRACK DETECTION
COMMONWEALTH EDISON COMPANY

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-16342 *CONTINUED*

1 PAGE, PAGE A-7-10 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

ARE YOU CONSIDERING PROCEDURES FOR DETECTING THE PROPAGATION OF CRACKS WITHIN THE VESSEL WALL.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*FLAW + *INSTRUMENTATION, GENERAL + *PRESSURE VESSEL + AEC QUESTION + DRESDEN 3 + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

11-16343 ALSO IN CATEGORY 18

QUESTION R-1--STACK FAILURE EFFECT ON ENGINEERED SAFEGUARDS
COMMONWEALTH EDISON COMPANY

2 PAGES, PAGES B-1-1 TO B-1-2 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

PROVIDE THE RESULTS, WITH SUPPORTING DISCUSSION OF THE MODEL AND ASSUMPTIONS USED FOR YOUR ANALYSIS TO DETERMINE THE ADEQUACY OF THE STATION VENTILATION STACK DESIGN AGAINST FAILURE AND POSSIBLE DAMAGE TO THE SAFETY FEATURES OF THE STATION. THIS REQUEST RELATES TO CRITERION 1(P).

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*FAILURE, EQUIPMENT + *STACK + AEC CONSTRUCTION PERMIT CRITERIA + AEC QUESTION + DRESDEN 3 + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY + SYSTEM OPERABILITY IN ACCIDENT CONDITIONS

11-16344 ALSO IN CATEGORY 18

QUESTION B-2--VENTILATION SYSTEM ISOLATION VALVE FAILURE
COMMONWEALTH EDISON COMPANY

2 PAGES, PAGES B-2-1 TO B-2-2 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

IN REGARD TO THE OBJECTIVE OF CRITERION 22, PROVIDE THE DESIGN CRITERIA FOR THE ISOLATION VALVES IN THE STATION VENTILATION SYSTEM AS SHOWN IN FIGURE 36 OF THE PLANT DESIGN AND ANALYSIS REPORT, AND DISCUSS THE ADEQUACY OF THE PROPOSED DESIGN IN TERMS OF SINGLE VALVE OR COMPONENT FAILURE AND TESTING CAPABILITY.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTAINMENT PENETRATION, CLOSURE OF + *SINGLE-FAILURE CRITERION + AEC CONSTRUCTION PERMIT CRITERIA + AEC QUESTION + DRESDEN 3 + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

11-16345 ALSO IN CATEGORIES 18 AND 7

QUESTION R-3--STANDBY GAS TREATMENT FILTERS
COMMONWEALTH EDISON COMPANY

1 PAGE, PAGE B-3-1 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

DISCUSS THE DESIGN BASES FOR THE HEAT LOADS ESTABLISHED FOR THE FILTERS GIVEN IN SECTION V-4-7 OF THE PLANT DESIGN AND ANALYSIS REPORT. YOUR DISCUSSION SHOULD INCLUDE AN ANALYSIS TO SUPPORT YOUR DESIGN BASES RELATED TO ADEQUATE HEAT DISSIPATION TO PREVENT FILTER DAMAGE WITHOUT FORCED AIR FLOW (V-4-7).

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTAINMENT FILTERING SYSTEM + *DECAY HEAT + *FIRE + AEC QUESTION + DRESDEN 3 + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

11-16347 ALSO IN CATEGORIES 18 AND 9

QUESTION B-5--VENTILATION SYSTEM DESIGN AND RADIATION MONITORING
COMMONWEALTH EDISON COMPANY

1 PAGE, PAGE B-5-1 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

PROVIDE THE DESIGN CRITERIA FOR USE OF THE VENT-PIPE EXHAUST SCHEME AS SHOWN IN FIGURE 36. INCLUDE A DESCRIPTION OF THE PROPOSED RADIATION-MONITORING SYSTEM ASSOCIATED WITH VENTILATION EXHAUST USING THE VENT PIPE. ALSO, DESCRIBE THE VENTILATION SYSTEM FOR THE TURBINE BUILDING.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*MONITOR, RADIATION, GAS + *VENTILATION SYSTEM + AEC QUESTION + DRESDEN 3 + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

11-16350 ALSO IN CATEGORIES 18 AND 12

QUESTION C-2--CONTAINMENT SPRAY SYSTEM CRITERIA
COMMONWEALTH EDISON COMPANY

1 PAGE, PAGE C-2-1 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

OUR PRELIMINARY REVIEW OF THE PORTION OF THE CONTAINMENT SPRAY SYSTEM THAT IS TO BE SHARED

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-16350 *CONTINUED*

WITH UNITS 2 AND 3 INDICATES THAT SINGLE VALVE FAILURES IN THE CROSSOVER LINES COULD LEAD TO A LOSS OF CAPABILITY OR COULD RESULT IN AN ADVERSE INTERACTION BETWEEN THE UNITS IN THE EVENT OF A MAJOR ACCIDENT. WE BELIEVE THAT THE PROPOSED DESIGN SHOULD BE REEVALUATED IN CONJUNCTION WITH THE REQUIREMENTS OF CRITERION 18, AND IF NECESSARY, MODIFICATIONS PROPOSED TO ENSURE THAT THE CRITERION IS SATISFIED.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTAINMENT SPRAY + *SHARED COMPONENTS + AEC CONSTRUCTION PERMIT CRITERIA + AEC QUESTION + DRESDEN 3 + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY + SINGLE-FAILURE CRITERION

11-16352 ALSO IN CATEGORY 18

QUESTION D-1(A) THRU 1(E)--CONTAINMENT DETAILS. D. SAFETY EVALUATION
COMMONWEALTH EDISON COMPANY

5 PAGES, PAGES D-1-1 TO D-1-5 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

PROVIDE THE FOLLOWING INFORMATION - (A) CURVE OF BLOWDOWN TIME VERSUS PEAK CONTAINMENT PRESSURE, WITH THE EQUIVALENT BREAK SIZE INDICATED, (B) INITIAL INVENTORY OF WATER AND STEAM IN THE VESSEL AND THE TWO RECIRCULATION LINES IN THE PRIMARY CONTAINMENT, (C) CURVE OF CONTAINMENT PRESSURE VERSUS TIME FROM 1 TO 1 MILLION SECONDS FOR THE DESIGN BASIS ACCIDENT, I.E., NO CORE SPRAY AND ONE CONTAINMENT SPRAY IN OPERATION, (D) CLARIFICATION OF THE REACTOR VESSEL DESIGN WHEREIN FOUR PENETRATIONS ARE SPECIFIED FOR THE CORE-SPRAY SYSTEM (SEE FIGURE 53), (E) LOCATION OF DRYWELL VENTILATION PENETRATIONS AS SHOWN IN FIGURE 36 BUT NOT APPARENT IN FIGURE 66.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTAINMENT DESIGN + *PRESSURE, INTERNAL + AEC QUESTION + CONTAINMENT PENETRATION, GENERAL + CONTAINMENT PENETRATION, PIPE + DRESDEN 3 + PRESSURE VESSEL + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

11-16355 ALSO IN CATEGORIES 18 AND 9

QUESTION D-4--CONTROL ROD JAMMING FOLLOWING LOSS OF PRESSURE ACCIDENT
COMMONWEALTH EDISON COMPANY

2 PAGES, PAGES D-4-1 TO D-4-2 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

IDENTIFY THE DESIGN FEATURES RELATED TO CORE STRUCTURAL INTEGRITY AND ALL PORTIONS OF THE CONTROL-ROD-DRIVE MECHANISMS THAT ENSURE CONTROL-ROD INSERTION INTO THE CORE, THEREBY PREVENTING A SECONDARY CRITICALITY ON CORE REFLOODING AFTER A BREAK OF EITHER A RECIRCULATION LINE OR A MAIN STEAM LINE. HOW MANY RODS WOULD HAVE TO FAIL TO BE INSERTED TO CAUSE CRITICALITY. IN THIS REGARD, CONSIDER THE CASE WHERE ALL CONTROL RODS ASSOCIATED WITH THE HYDRAULIC LINES ON ONE SIDE WERE DISABLED IN SUCH A WAY THAT THESE RODS COULD NOT BE INSERTED. WHAT IS THE SAFETY SIGNIFICANCE OF A SECONDARY CRITICALITY FROM (A) A NUCLEAR-EXCURSION STANDPOINT AND (B) PRESSURE CONTRIBUTION TO THE CONTAINMENT BY STEAM GENERATION.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACCIDENT, LOSS OF PRESSURE + *CONTROL ROD DRIVE + *SYSTEM OPERABILITY IN ACCIDENT CONDITIONS + AEC QUESTION + CONTAINMENT DESIGN + DRESDEN 3 + FAILURE, SCRAM MECHANISM + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

11-16358 ALSO IN CATEGORY 18

QUESTION D-7--ISOLATION REQUIREMENTS OF CONDENSER VACUUM PUMP
COMMONWEALTH EDISON COMPANY

1 PAGE, PAGE D-7-1 FROM DRESDEN 3, AMENDMENT 1, DOCKET 50-249, 1966

ASSESS THE NEED FOR AUTOMATIC ISOLATION CAPABILITY OF THE CONDENSER VACUUM PUMP IN THE EVENT OF A ROD-DROP ACCIDENT DURING PUMP OPERATION TO LIMIT THE RELEASE OF FISSION PRODUCTS DIRECTLY THROUGH THE STACK TO THE OUTSIDE ENVIRONMENT.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTAINMENT PENETRATION, CLOSURE OF + *REACTOR OFFGAS + ACCIDENT, CONTROL ROD EJECTION + AEC QUESTION + DRESDEN 3 + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

11-16375

WITT FJ

CONTRIBUTIONS FROM OAK RIDGE NATIONAL LABORATORY TO LIBBY-COCKCROFT NEWSLETTER.
OAK RIDGE NATIONAL LAB., TENN.

ORNL-P-2654 +. 38 PAGES, 16 FIGURES, 7 TABLES, MARCH 13, 1967

THIS REPORT COVERS FIVE INVESTIGATIONS OF THE STRUCTURAL PROPERTIES OF REACTOR-GRADE GRAPHITE. ELEVATED-TEMPERATURE CREEP TESTS ON GRAPHITE SHOW A MINIMUM CREEP RATE AT ABOUT 350 C. THE LIMIT OF CREEP DEFORMATIONS IS ESTIMATED TO BE AS LARGE AS 16%, PROVIDED THAT STRESSES DO NOT EXCEED THE FRACTURE STRESS. NOTCHED-BEAM TESTS WERE USED TO DETERMINE THE FRACTURE TOUGHNESS OF GRAPHITE. GOOD EMPIRICAL CORRELATIONS WERE FOUND BETWEEN DENSITY, HARDNESS, AND INITIAL

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-16375 *CONTINUED*

MODULUS OF ELASTICITY. INITIAL MODULUS IS MOST STRONGLY RELATED TO FRACTURE STRESS AND STRAIN. HIGH-TEMPERATURE STRESS-STRAIN, CREEP AND RELAXATION CURVES WERE MEASURED. THE MAXIMUM CREEP STRAIN WAS 1.5%.

AVAILABILITY - F. J. WITT, OAK RIDGE NATIONAL LAB., TENN.

*BRITTLE FRACTURE + *CREEP PROPERTY + *GRAPHITE + CREEP BEHAVIOR + FAILURE, FUEL ELEMENT + FUEL INTEGRITY + MEASUREMENT, STRAIN GAGE + STRESS + STRESS RUPTURE

11-16376

MUSSEAU DR + PRUDEN JC + GOLD SJ + PORTER NJ + TOBIAS DA
PM-2A REACTOR VESSEL TEST PROGRAM. FINAL REPORT.
IDAHO NUCLEAR CORP., IDAHO FALLS
IN-1061 +. 133 PAGES, 58 FIGURES, 10 REFERENCES, MARCH 1967

SUMMARIZES THE ACTIVITIES INVOLVED IN THE NONDESTRUCTIVE TESTING, LOOP DESIGNS, AND DETECTOR SELECTION AND APPLICATION FOR THE PM-2A REACTOR-VESSEL-STRENGTH TESTS. THE PRESSURE-TESTING PHASE IS DISCUSSED IN DETAIL, AND THE DATA OBTAINED DURING THE FINAL TESTS ARE PRESENTED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*BRITTLE FRACTURE + *COMPARISON, THEORY AND EXPERIENCE + *CORROSION + *EMBRIITLEMENT + *FAILURE, PRESSURE VESSEL + *FLAW + *PRESSURE VESSEL + *TEST, PRESSURE VESSEL + CONTAINMENT RESEARCH AND DEVELOPMENT + ELASTICITY + MEASUREMENT, STRAIN GAGE + NDT DATA (NIL DUCTILITY TRANSITION) + PLASTICITY + STEEL + STRESS + TEST, DESTRUCTIVE

11-16386

ALSO IN CATEGORY 19

QUESTION 2. INCREASED CONTAINMENT CAPABILITY BECAUSE OF HIGHER FUEL RATINGS
TENNESSEE VALLEY AUTHORITY

3 PAGES, PAGES 2-1 TO 2-3 FROM BROWNS FERRY AMENDMENT 7, FEBRUARY 1967, DOCKET NO. 50-259/260

IN VIEW OF THE RELATIVELY MORE DIFFICULT TASK OF ENSURING ADEQUATE COOLING THROUGHOUT THE CORE UNDER POSTULATED ACCIDENT CONDITIONS DUE TO THE HIGHER FUEL RATING, HAS CONSIDERATION BEEN GIVEN TO PROVIDING SUBSTANTIALLY INCREASED CONTAINMENT CAPABILITY OVER SIMILAR REACTORS PROPOSED TO OPERATE AT LOWER FUEL RATINGS.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTAINMENT DESIGN + AEC QUESTION + BROWNS FERRY + FUEL ELEMENT + PERFORMANCE LIMIT + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY + SAFETY PRINCIPLES AND PHILOSOPHY

11-16395

ALSO IN CATEGORY 18

QUESTION 11--CORROSION PROTECTION FOR CONTAINMENT (PRESSURE-SUPPRESSION) TORUS
TENNESSEE VALLEY AUTHORITY

1 PAGE, PAGE 11-1 FROM BROWNS FERRY AMENDMENT 7, FEBRUARY 1967, DOCKET NO. 50-259/260

WHAT PROTECTION AGAINST CORROSION IS PLANNED FOR THE TORUS AND MAIN HEADER CONNECTED TO THE TORUS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTAINMENT, PRESSURE SUPPRESSION + *CORROSION + AEC QUESTION + BROWNS FERRY + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

11-16397

ALSO IN CATEGORIES 18 AND 12

QUESTION 13. PRESSURE VESSEL SEQUENTIAL FAILURE EFFECT ON EMERGENCY COOLING
TENNESSEE VALLEY AUTHORITY

1 PAGE, PAGE 13-1 FROM BROWNS FERRY AMENDMENT 7, FEBRUARY 1967, DOCKET NO. 50-259/260

WHAT KINDS OF FATIGUE CRACKS OR OTHER FLAWS IN STRUCTURES WITHIN THE PRESSURE VESSEL COULD LEAD TO STRUCTURAL FAILURE DURING BLOWDOWN SO AS TO IMPAIR SIGNIFICANTLY THE EFFECTIVENESS OF THE LPCI OR THE CORE SPRAY SYSTEM. WHAT STEPS ARE PLANNED TO PROTECT AGAINST THE EXISTENCE OF SUCH FLAWS IN SERVICE.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*EMERGENCY COOLING CONSIDERATIONS + *FAILURE, PRESSURE VESSEL + *FAILURE, SEQUENTIAL + AEC QUESTION + BROWNS FERRY + PRESSURE VESSEL + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

11-16399

STUDIES OF REACTOR CONTAINMENT. PROGRESS REPORT COVERING TWO BIMONTHLY PERIODS DECEMBER 1966 THROUGH JANUARY 1967 AND FEBRUARY THROUGH MARCH 1967.
ILLINOIS INSTITUTE OF TECHNOLOGY, IIT RESEARCH INSTITUTE

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-16399 *CONTINUED*

IITRI-578P21-28 + IITRI-T-6042-28 +. 26 PAGES, 23 FIGURES, 3 REFERENCES

DURING THE REPORT PERIOD, WORK DEALT WITH (1) THE ANALYSIS OF SOME NONSTEADY BLOWDOWN CASES INVOLVING AREA CHANGE ALONG THE LENGTH OF THE FLOW PATH AND (2) A SERIES OF EXPERIMENTS CONDUCTED IN THE WATER SHOCK TUBE USING FLOW OBSTRUCTIONS TO SIMULATE THE HYDRODYNAMIC EFFECTS OF THE CORE OF A POWER REACTOR INSIDE A REACTOR VESSEL. THE COMPUTER PROGRAM FOR PROCESSING AND PRESENTING THE EXPERIMENTAL DATA IS NOW WORKING SATISFACTORILY AND WAS USED FOR HANDLING THE EXPERIMENTAL DATA.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*ACCIDENT, LOSS OF PRESSURE + *FLOW DISTRIBUTION + *HYDRAULIC EXPERIMENT +
CONTAINMENT RESEARCH AND DEVELOPMENT + REACTOR, PRESSURIZED WATER + SHOCK WAVE

11-16401 ALSO IN CATEGORIES 5 AND 18
AMENDMENT 7 - REVISIONS TO DESIGN AND ANALYSIS REPORT.
TENNESSEE VALLEY AUTHORITY, CHATTANOOGA, TENN.

9 PAGES, 1 TABLE, FEBRUARY 2, 1967, DOCKET NO. 50-259/260

REVISIONS INCLUDE (1) REDUCTION OF REACTOR-VESSEL INTERIOR CLADDING FROM 7/32 TO 1/8 IN. OF STAINLESS STEEL, (2) TEMPERATURE OF REACTOR-VESSEL PLATE MATERIAL OPPOSITE CORE-CENTER IMPACT TEST INCREASES FROM 10 F TO 40 F, (3) DRYWELL DESIGN TEMPERATURE REDUCED FROM 287 TO 281 F, AND RESULTANT ASME-CODE DESIGN PRESSURE REDUCED FROM 62 TO 56 PSIG, (4) PEAK ACCIDENT PRESSURE NOW CALCULATED AT 40, INSTEAD OF 32 PSIG, (5) LEAK RATE NOW QUOTED AT ACCIDENT PRESSURE RATHER THAN AT DESIGN PRESSURE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTAINMENT DESIGN + *PRESSURE VESSEL + *SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF COOLANT + BROWNS FERRY + CLAD + REACTOR, BOILING WATER

11-16413 ALSO IN CATEGORIES 2 AND 18
59 DRL QUESTIONS ON DIABLO CANYON PWR, MAY 5, 1967.
PACIFIC GAS AND ELECTRIC COMPANY, SAN FRANCISCO, CALIFORNIA
9 PAGES, MAY 5, 1967, DOCKET NO. 50-275

AT THE MARCH-APRIL MEETING WE AGREED TO SEND YOU SITE AND DESIGN QUESTIONS FIRST. OTHERS WILL FOLLOW. INCLUDED HERE ARE 39 QUESTIONS ON - SITE (4), PLANT LAYOUT AND DESIGN OF CLASS-I EQUIPMENT (14), CONTAINMENT DESIGN (17), CONTAINMENT CONSTRUCTION MATERIALS (4), CONTAINMENT CONSTRUCTION (4), AND CONTAINMENT TESTING AND SURVEILLANCE. FURTHER EVALUATION OF CORE DESIGN IS HELD UP FOR INFORMATION ON PARTIAL-LENGTH CONTROL RODS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*AEC QUESTION + CONTAINMENT CONSTRUCTION + CONTAINMENT DESIGN + CONTROL ROD, SHIM SAFETY + DIABLO CANYON + MATERIAL + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY + SITING, REACTOR + TEST, LEAK RATE

11-16436 ALSO IN CATEGORY 18
VOLUME II, APPENDIX D - COMPARISON OF THEORETICAL CONTAINMENT PRESSURE CALCULATION WITH TEST DATA.
JERSEY CENTRAL POWER AND LIGHT COMPANY, MORRISTOWN, NEW JERSEY
4 PAGES, 2 FIGURES, 1 TABLE, FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, JANUARY 25, 1967, DOCKET NO. 50-219

MODELS TEND TO OVERPREDICT DRYWELL/WETWELL PRESSURES IN FDSAR WHEN COMPARED WITH PRESSURE-SUPPRESSION TESTS. A SEMIDIRECT INTERPOLATION OF CORRELATED TEST DATA SHOWS THE MAXIMUM DRYWELL PRESSURE AS 52 PSIA AND WETWELL AS 34.4, COMPARED WITH 77/50 (DESIGN) AND 60/36 (FDSAR).

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTAINMENT DESIGN + COMPARISON, THEORY AND EXPERIENCE + CONTAINMENT, PRESSURE SUPPRESSION + MODEL TESTING + OYSTER CREEK + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, GENERAL + TEST, PRESSURE VESSEL

11-16439 ALSO IN CATEGORY 18
VOLUME II, APPENDIX G - CONTAINMENT FISSION PRODUCT RETENTION CAPABILITY.
JERSEY CENTRAL POWER AND LIGHT COMPANY, MORRISTOWN, NEW JERSEY
7 PAGES, 4 TABLES, FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, JANUARY 25, 1966, DOCKET NO. 50-219

IN THE POSTULATED ACCIDENT, 27% OF THE FUEL RODS WOULD PERFORATE, BUT NO FUEL WOULD MELT, AND 12/0.5% OF THE NOBLE-GASES/HALOGENS WILL BE RELEASED. THESE NUMBERS ARE APPARENTLY BASED ON RELEASE FROM FUEL EXCEEDING 3000 F, GIVING THE TID-14844 FRACTIONS (100/50/50/1%). 50% OF INORGANIC IODIDES AND 30% OF SOLIDS ESCAPE PLATEOUT/FALLOUT IN REACTOR VESSEL. 1% OF THE HALOGENS ESCAPE HOLDUP IN WATER, AND AIRBORNE SOLIDS ASSUMED TO HAVE A HALF-HOUR HALF-LIFE. PRIMARY-CONTAINMENT LEAKAGE IS ASSUMED TO BE A CONSTANT 0.5%/DAY TO SECONDARY CONTAINMENT.

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-16439 *CONTINUED*

AIRBORNE SOLID FISSION PRODUCTS ARE ASSUMED TO HAVE A 12-HR HALF-LIFE. THE STANDBY GAS TREATMENT IS ASSUMED TO DISCHARGE 100%/DAY THROUGH 99%-EFFECTIVE FILTERS TO THE STACK. OFF-SITE RADIOLOGICAL DOSES FOR VARIOUS WIND CONDITIONS ARE THEN CALCULATED, WITH NO DOSE EXCEEDING 0.18 REM.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTAINMENT, GENERAL + *FISSION PRODUCT RETENTION + ACCIDENT, LOSS OF COOLANT + AIRBORNE RELEASE + CONTAINMENT, PRESSURE SUPPRESSION + DOSE + OYSTER CREEK + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, GENERAL

11-16440 ALSO IN CATEGORY 18

VOLUME II, APPENDIX H - STRAIN SAFETY MARGIN FOR REACTOR PRESSURE VESSELS.

JERSEY CENTRAL POWER AND LIGHT COMPANY, MORRISTOWN, NEW JERSEY

5 PAGES, 2 FIGURES, 3 TABLES, FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, JANUARY 25, 1967, DOCKET NO. 50-219

DISCUSSES APPLICABILITY OF ASME CODE SECTION III, AND ASSERTS THAT THE GENERAL-ELECTRIC FATIGUE-ANALYSIS METHOD (BASED ON METHOD AND EXPERIENCE DEVELOPED FOR NAVAL REACTOR VESSELS) PLUS SECTIONS I, VIII, AND THE NUCLEAR CODE CASES RESULTS IN STRAIN SAFETY MARGINS EQUIVALENT TO USING SECTION III (WHICH WAS APPARENTLY ADOPTED AFTER THIS DESIGN WAS MADE). STRAIN SAFETY-MARGIN AND FAILURE PROBABILITY DISCUSSED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*PERFORMANCE LIMIT + *PRESSURE VESSEL + *THERMAL MECHANICAL EFFECT + ACCIDENT, PROBABILITY OF + FAILURE, FATIGUE + OYSTER CREEK + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, GENERAL + STRESS ANALYSIS

11-16444 ALSO IN CATEGORY 18

VOLUME I, SECTION V - CONTAINMENT SYSTEM.

JERSEY CENTRAL POWER AND LIGHT COMPANY, MORRISTOWN, NEW JERSEY

31 PAGES, 7 TABLES, FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, JANUARY 25, 1967, DOCKET NO. 50-219

DRYWELL PEAK PRESSURE IS CALCULATED AS 33 PSIG/275 F, AND DESIGN IS AT 35 PSIG/281 F. PROOF TEST WILL BE AT 62 PSIG AFTER INSTALLATION OF PENETRATION. LEAK TEST WILL BE AT 20 PSIG (EQUILIBRIUM PRESSURE 2 MIN AFTER ACCIDENT) AND LEAK RATE EXTRAPOLATED TO 33 PSIG. MINIMUM CONDITIONS SET ARE 90% FILTER EFFICIENCY AND 5%/DAY AT 33 PSIG. DRYWELL PLATES WERE PREHEATED TO 200 OR 100 F BEFORE WELDING. CONTAINMENT PENETRATIONS AND ISOLATION VALVES ARE DISCUSSED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTAINMENT, PRESSURE SUPPRESSION + *SAFETY ANALYSIS REPORT, GENERAL + CONTAINMENT PENETRATION, CLOSURE OF + OYSTER CREEK + REACTOR, BOILING WATER + TEST, LEAK RATE + TEST, PROOF + WELDING

11-16449 ALSO IN CATEGORY 18

VOLUME I, SECTION VI. CONTAINMENT SYSTEM.

NIAGARA MOHAWK POWER CORPORATION, SYRACUSE, N. Y.

76 PAGES, 28 FIGURES, 10 TABLES, FINAL SAFETY ANALYSIS REPORT, NINE MILE POINT, JUNE 1967, DOCKET NO. 50-220

BOTH CHAMBERS ARE INITIALLY AT 2 PSIG FROM THE NITROGEN INERTING SYSTEM. RUPTURE OF THE LARGEST PIPE CAUSES A PEAK DRYWELL PRESSURE OF 34 PSIG/270 F AT 2 SEC, OR 50 PSIG IF A SMALL LEAK HAS PREVIOUSLY FORCED THE NITROGEN INTO THE SUPPRESSION CHAMBER. AFTER BLOWDOWN, BOTH CHAMBERS EQUILIBRATE AT 22 PSIG BECAUSE OF THE NITROGEN. WITHOUT CORE SPRAY, HYDROGEN GENERATION PRODUCES A BRIEF 25-PSIG PRESSURE PEAK AT 1000 SEC. GUARD PIPES SURROUND HIGH-PRESSURE PIPES AT PENETRATION TO PROTECT THE CONTAINMENT. CLOSED-PENETRATION SLEEVES SURROUNDING PIPES AND INSTRUMENT LEADS HAVE LEAK-TEST CONNECTIONS. DEFLECTOR PLATES PROTECT AGAINST MISSILES, WHICH COULD BREAK DRYWELL VENTS TO SUPPRESSION CHAMBER. CONTAINMENT CAN BE FLOODED BY A CONNECTION BETWEEN FIREWATER AND FEEDWATER. COMPUTER ANALYSIS MADE OF SEISMIC ACTION ON REACTOR VESSEL AND ON SECONDARY CONTAINMENT BUILDING.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTAINMENT, PRESSURE SUPPRESSION + *REACTOR DESCRIPTION + *SAFETY ANALYSIS REPORT, GENERAL + CONTAINMENT ATMOSPHERE, INERT + CONTAINMENT DESIGN + CONTAINMENT PENETRATION, ELECTRICAL + CONTAINMENT PENETRATION, GENERAL + CONTAINMENT PENETRATION, PIPE + MISSILE GENERATION AND PROTECTION + NINE MILE POINT + REACTOR, BOILING WATER + VIBRATION ANALYSIS

11-16469 ALSO IN CATEGORY 5

KELLERMANN O + SEIPEL HG

ANALYSIS OF THE IMPROVEMENT IN SAFETY OBTAINED BY A CONTAINMENT AND BY OTHER SAFETY DEVICES FOR WATER COOLED REACTORS

INSTITUT FÜR REAKTORSICHERHEIT DER TUV E.V., KÖLN, GERMANY

SM-89/8 +. 13 PAGES, 6 FIGURES, 2 TABLES, 22 REFERENCES

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-16469 *CONTINUED*

USUALLY, A REACTOR CONTAINMENT IS DESIGNED TO SUSTAIN THE MAXIMUM LOAD THAT COULD ARISE FROM THE WORST CREDIBLE ACCIDENT. BECAUSE OF THE HIGH QUALITY STANDARDS IN DESIGN, CONSTRUCTION, AND INSPECTION, A CONTAINMENT FAILURE UNDER ACCIDENT CONDITIONS IS MOSTLY BELIEVED INCREDIBLE. THE AUTHORS, HOWEVER, SHOW BY THEORETICAL ANALYSIS AND PLANT EXPERIENCE THAT A FAILURE OF THE CONTAINMENT OR SOME OF ITS RELATED COMPONENTS CANNOT COMPLETELY BE EXCLUDED. SINCE DANGEROUS ACCIDENTS ALWAYS START FROM FAILURES IN THE COOLING SYSTEM OR FROM UNSAFE PHYSICAL CORE CONDITIONS, A STUDY WAS MADE ON WHETHER IT IS POSSIBLE AND USEFUL, WITHOUT REDUCING THE HIGH STANDARD OF SAFETY, TO SHIFT THE SAFEGUARDING EFFORTS FROM CONSEQUENCE-LIMITING SYSTEMS LIKE A CONTAINMENT TO ADDITIONAL SAFETY FACTORS IN DESIGN, CONSTRUCTION, AND INSPECTION OF REACTOR COMPONENTS AND INSTALLATION OF VERY RELIABLE AND HIGHLY REDUNDANT DEVICES THAT PREVENT THE ESCALATION OF ANY ACCIDENT. THE INCREASE IN SAFETY TO BE GAINED BY BETTER DESIGN AND IMPROVED RELIABILITY IS DISCUSSED FOR REACTOR COMPONENTS, EMERGENCY CORE COOLING SYSTEMS, AND VAPOR CONTAINERS.

AVAILABILITY - O. KELLERMANN AND H. G. SEIPEL, INSTITUT FÜR REAKTORSICHERHEIT DER TUV E.V., KÖLN

*CONTAINMENT INTEGRITY + *ENGINEERED SAFETY FEATURE + CODES AND STANDARDS + CONTAINMENT, HIGH PRESSURE + CORE REFLOODING SYSTEM + CORE SPRAY + FAILURE, COMPONENT + FAILURE, PRESSURE VESSEL + REACTOR, BOILING WATER + REACTOR, PRESSURIZED WATER + RELIABILITY, COMPONENT

11-16484 ALSO IN CATEGORIES 12 AND 18
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS REPORT ON H. B. ROBINSON UNIT NO. 2.
UNITED STATES ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.
PRESS REL. K-44 +. 2 PAGES, 8 REFERENCES, FEBRUARY 17, 1967, DOCKET NO. 50-261

ACRS APPROVED CONSTRUCTION OF ROBINSON 2 AND RECOMMENDS THAT AEC REGULATORY STAFF (1) REVIEW DETAILS OF THE TEST DATA ON PERFORMANCE AND RELIABILITY OF THE SODIUM THIOSULFATE CONTAINMENT SPRAY, AND OF THE DESIGN OF EMERGENCY SYSTEMS AS THEY BECOME AVAILABLE, (2) FOLLOW APPLICANT STUDIES AND CONCLUSIONS ON THE CONSEQUENCES OF A POSITIVE MODERATOR COEFFICIENT. ACRS RELIEVES INSTALLATION OF A STRONG-MOTION ACCELEROGRAPH (AS PLANNED HERE) MAY BE APPROPRIATE FOR MOST LARGE POWER REACTORS EVEN IN SEISMICALLY QUIESCENT ZONES. ACRS THINKS THAT A SPECIAL EFFORT SHOULD BE MADE TO ENSURE THAT THE CONTAINMENT ISOLATION VALVES ARE EFFECTIVELY TIGHT UNDER ACCIDENT CONDITIONS AND BELIEVES SUFFICIENT DIESEL FUEL SHOULD BE STORED TO RUN EMERGENCY DIESELS AT LEAST ONE WEEK IN CASE OF ACCIDENT.

AVAILABILITY - AEC, DIVISION OF OPERATIONAL SAFETY, WASHINGTON, D. C.

*ACRS (ADVISORY COMMITTEE ON REACTOR SAFEGUARDS) + *CONSTRUCTION PERMIT PROCESS + CONTAINMENT PENETRATION, CLOSURE OF + CONTAINMENT SPRAY + GENERATOR, DIESEL + INSTRUMENTATION, EARTHQUAKE + REACTOR, PRESSURIZED WATER + ROBINSON 2

11-16486 ALSO IN CATEGORY 18
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS REPORT ON MONTICELLO NUCLEAR GENERATING PLANT, UNIT 1.
UNITED STATES ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.
PRESS REL. K-89 +. 3 PAGES, 14 REFERENCES, APRIL 13, 1967, DOCKET NO. 50-263

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS APPROVES CONSTRUCTION OF MONTICELLO. THE COMMITTEE THINKS THAT A HIGH-QUALITY FIELD-FRACKETED PRESSURE VESSEL FOR THE PLANT CAN BE BUILT BUT RECOMMENDS THAT THE STRESS-ANALYSIS REPORT FOR THE REACTOR VESSEL BE REVIEWED BY INDEPENDENT EXPERTS. ACRS RECOMMENDS THAT THE REGULATORY STAFF SATISFY ITSELF WITH RESPECT TO THE ADEQUACY OF THE ISOLATION-VALUE TEST PROGRAM AND FOLLOW THE DEVELOPMENT OF THE DETAILED DESIGN OF THE EMERGENCY CORE-COOLING SYSTEMS, AND THAT THE MONTICELLO PLANT INCLUDE A SECOND DIESEL GENERATOR OF THE SAME CAPACITY AS THE ONE PROPOSED.

AVAILABILITY - AEC, DIVISION OF OPERATIONAL SAFETY, WASHINGTON, D. C.

*ACRS (ADVISORY COMMITTEE ON REACTOR SAFEGUARDS) + *CONSTRUCTION PERMIT PROCESS + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT PENETRATION, CLOSURE OF + EMERGENCY COOLING CONSIDERATIONS + GENERATOR, DIESEL + MONTICELLO + PRESSURE VESSEL + REACTOR, BOILING WATER + STRESS ANALYSIS

11-16487 ALSO IN CATEGORY 18
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS REPORT ON CONNECTICUT YANKEE HADDAM NECK PLANT.
UNITED STATES ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.
PRESS REL. K-89 +. 3 PAGES, 7 REFERENCES, APRIL 13, 1967, DOCKET NO. 50-213

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS APPROVES THE OPERATING LICENSE FOR THE HADDAM NECK PLANT, WITH THE ASSUMPTION THAT MODIFICATIONS WILL BE MADE TO ENSURE THE INDEPENDENCE OF THE CHANNELS THAT INITIATE AUTOMATIC CONTAINMENT ISOLATION. THE COMMITTEE RECOMMENDS THAT THE REGULATORY STAFF (1) ASSESS CAREFULLY THE RESULTS OF PRESSURIZATION TESTS ON THE CONCRETE CONTAINMENT DOME BEFORE ISSUANCE OF A PROVISIONAL SPENDING LICENSE, (2) CAREFULLY ANALYZE MEASUREMENTS REQUIRED TO ESTABLISH THE VALUE OF THE MODERATOR COEFFICIENT, AND (3) ASSESS THE RESULTS OF PROGRAMS FOR PREOPERATIONAL TESTS, ROUTINE SURVEILLANCE DURING OPERATION, AND PERIODIC INSPECTIONS.

AVAILABILITY - AEC, DIVISION OF OPERATIONAL SAFETY, WASHINGTON, D. C.

*ACRS (ADVISORY COMMITTEE ON REACTOR SAFEGUARDS) + *CONSTRUCTION PERMIT PROCESS + CONTAINMENT DESIGN + CONTAINMENT PENETRATION, CLOSURE OF + HADDAM NECK + INDEPENDENCE + MODERATOR COEFFICIENT + REACTOR, PRESSURIZED WATER

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-16525

LAFITTE R + KHAN MH

PROBLEMS OF CIVIL ENGINEERING IN THE DESIGN OF THE 250 MWE HEAVY-WATER REACTOR OF THE SNA

ORNL-TR-1633 +. 46 PAGES, TRANSLATED FOR OAK RIDGE NATIONAL LAB., TENN., FROM NEUE TECH., 8, PAGE 269-88 (1966)

BRIEF EXAMINATION OF CIVIL-ENGINEERING PROBLEMS PERTAINING TO DIFFERENT SOLUTIONS OF (FIRST) CONVENTIONAL (PRESSURE TUBE) HEAVY-WATER REACTORS OF 250 MW(E), AND (SECOND) TO INTEGRATED TYPE OF REACTORS WHERE HEAT EXCHANGERS AND CORE ARE BOTH HOUSED IN A PRESTRESSED-CONCRETE PRESSURE VESSEL AND WHERE THE MCA IS IGNITION OF A PART OF MAGNESIUM CANS AND GAS TEMPERATURE RISE TO 550 C. TWO METHODS OF PRESSURE-VESSEL ANALYSIS BASED ON THEORY OF THIN SHELL AND ON DYNAMIC RESOLUTION OF FINITE-DIFFERENCE EQUATIONS ARE ANALYZED AND COMPARED. ANALYSES OF PRESSURE AND TEMPERATURE STRESSES, SYSTEM OF PRESTRESSING CABLES, BEHAVIOR OF VESSEL UNDER ALL CONDITIONS, AND PROBLEMS CONCERNING REVERSIBLE CRACKING AND RUPTURE FOLLOW.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*PRESSURE VESSEL + *STRESS ANALYSIS + REACTOR, GAS COOLED + REACTOR, HEAVY WATER + REACTOR, PRESSURE TUBE + SWITZERLAND

11-16531

ALSO IN CATEGORY 17

PENLAND JR

EXPLOSION SUPPRESSION BY ROOM INERTING

LOS ALAMOS SCIENTIFIC LAB., N. MEXICO

LA-DC-8592 + CONF-670701-2 +. 5 PAGES, FROM SYMPOSIUM ON THE IMPACT OF LOW COST NUCLEAR POWER AND CHEMICAL INDUSTRY, HOUSTON, TEXAS, FEBRUARY 22, 1967

ROOM VOLUMES GREATER THAN 100,000 CU. FT ARE INERTED, BOTH CONCRETE (HIGH PRESSURE) AND SHEET METAL (LOW-PRESSURE ROOMS.) LEAK SEALING AND RELIEF-VALVE CLOSURE WERE PROBLEMS. A SPECIAL RELIEF DEVICE CONSISTS OF ALWAYS-OPEN PNEUMATICALLY OPERATED LOUVERS, CLOSED AFTER A PRESSURE SURGE BLOWS OUT A DOWNSTREAM PANEL - THUS THE SURGE IS RELEASED, BUT HYDROGEN IS CONTAINED TO PREVENT EXPLOSION MIXING OUTSIDE THE BUILDING. THE SYSTEM HAS BEEN IN OPERATION FOR 6 YEARS, AND ABOUT 200 TESTS ON NUCLEAR ROCKETS PERFORMED. MANY LEAKS WITH HYDROGEN AS HIGH AS 12% HAVE NOT PRODUCED FIRE OR EXPLOSION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*CONTAINMENT ATMOSPHERE, INERT + *CONTAINMENT PENETRATION, CLOSURE OF + EXPLOSION + HYDROGEN + NUCLEAR ROCKET + OPERATING EXPERIENCE + VALVE

11-16580

ALSO IN CATEGORIES 12 AND 18

OCONEE 1, 2, AND 3. AMENDMENT 5 - PSAR REVISION

DUKE POWER COMPANY, CHARLOTTE, N. C. 28201

14 PAGES, 2 FIGURES, 1 TABLE, 4 REFERENCES, JUNE 16, 1967, DOCKET NOS. 50-269/270/287

(5.1.2.8) HIGH SOIL-RESISTIVITY MEASUREMENTS SHOW NONCORROSIVE CONDITIONS, SO THE PROPOSED SACRIFICIAL ANODE AND RECTIFIER SYSTEM IS DELETED FROM THE CONTAINMENT. (6.1) RESTRICTIVE ORIFICES REMOVED FROM HIGH-PRESSURE INJECTION LINES. THE SHARED LOW-PRESSURE INJECTION SYSTEM IS REMOVED, AND ANOTHER PUMP AND HEAT EXCHANGER ADDED PER REACTOR FOR INDEPENDENCE. INDIVIDUAL ROTATED STORAGE WATER CAPACITY INCREASED FROM 260,000 GAL TO 350,000, TO NEARLY DOUBLE ITS OPERATING TIME. A CORE-FLOODING SYSTEM (TWO 940-CU. FT TANKS) TO INJECT COOLANT THROUGH CHECK VALVES WHEN REACTOR PRESSURE DROPS TO 600 PSIG WAS ADDED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACCUMULATOR + *CONTAINMENT, CORROSION PROTECTION + *CORE REFLOODING SYSTEM + OCONEE 1, 2, AND 3 + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY + SHARED COMPONENTS

11-16586

ALSO IN CATEGORIES 1 AND 7

COTTRELL WR

ORNL NUCLEAR SAFETY RESEARCH AND DEVELOPMENT PROGRAM BIMONTHLY REPORT FOR JANUARY - FEBRUARY 1967

OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE

ORNL-TM-1792 +. 58 PAGES, FIGURES, TABLES, MARCH 6, 1967

INCLUDED IN THIS PROGRESS REPORT IS WORK ON VARIOUS CHEMICAL REACTIONS, AS WELL AS THE RELEASE, CHARACTERIZATION, AND TRANSPORT OF FISSION PRODUCTS IN CONTAINMENT SYSTEMS UNDER VARIOUS ACCIDENT CONDITIONS AND ON PROBLEMS ASSOCIATED WITH THE REMOVAL OF THESE FISSION PRODUCTS FROM GAS STREAMS. ALTHOUGH MOST OF THE WORK HAS BEEN AND CONTINUES TO BE IN GENERAL SUPPORT OF WATER POWER-REACTOR TECHNOLOGY, INCLUDING SOME IN DIRECT SUPPORT OF THE LOFT AND CSE PROGRAMS, SEVERAL PROJECTS WERE STARTED THE FIRST OF THE CALENDAR YEAR IN SUPPORT OF THE HIGH-TEMPERATURE GAS-COOLED REACTOR (HTGR) PROGRAM. THESE PROJECTS INCLUDE BOTH IN-PILE AND OUT-PILE STUDIES OF REACTION RATES AND FISSION PRODUCT RELEASE AND TRANSPORT PHENOMENA RELEVANT TO POTENTIAL HTGR ACCIDENT SITUATIONS. OTHER MAJOR PROJECTS INCLUDE FUEL TRANSPORT SAFETY INVESTIGATIONS, A SERIES OF DISCUSSION PAPERS ON VARIOUS ASPECTS OF WATER REACTOR TECHNOLOGY, AND THE STUDIES ON PRESSURE VESSEL TECHNOLOGY. EXPERIMENTAL WORK RELATIVE TO

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-16586 *CONTINUED*

PRESSURE VESSEL TECHNOLOGY INCLUDES INVESTIGATIONS OF THE ATTACHMENT OF NOZZLES TO SHELLS AND THE VARIABILITY OF IMPACT DATA ON LOW-ALLOY STEELS.

AVAILABILITY - W. B. COTTPRELL, OAK RIDGE NATIONAL LABORATORY, PO BOX Y, OAK RIDGE, TENNESSEE 37830

*CHEMICAL KINETICS + *CONTAINMENT, GENERAL + *CSE (CONTAINMENT SYSTEMS EXPERIMENT) + *FISSION PRODUCT RETENTION + *FISSION PRODUCT, AIRBORNE + *IMPACT PROPERTY + *IN PILE EXPERIMENT + *LOFT (LOSS OF FLUID TEST) + *NOZZLE + *OUT OF PILE LOOPS AND EXPERIMENTS + *PRESSURE VESSEL + *STEEL + *FISSION PRODUCT RELEASE, GENERAL + *FISSION PRODUCT TRANSPORT + REACTOR, HIGH TEMP. GAS

11-16606 ALSO IN CATEGORIES 18 AND 5
QUESTIONS A-1-A, A-1-B--REACTOR VESSELS, PIPE WHIPPING, GENERATION OF MISSILES, EFFECTS OF FUEL MOVEMENT UPON RADIOACTIVITY
THE CONNECTICUT LIGHT AND POWER COMPANY + THE HARTFORD ELECTRIC LIGHT COMPANY + WESTERN MASSACHUSETTS ELECTRIC COMPANY
5 PAGES, 1 REFERENCE, 1966, PAGES A-1-1 THROUGH A-1-5 FROM DESIGN AND ANALYSIS REPORT, AMENDMENT NO. 1, DOCKET NO. 50-245, MILLSTONE NUCLEAR POWER STATION

SECTION A, GENERAL. (A-1-A) DISCUSS CONSIDERATION GIVEN IN DESIGN TO RECOMMENDATIONS RELATING TO REACTOR VESSELS IN PARAGRAPHS 1 AND 2 OF ACRS LETTER OF NOVEMBER 24, 1965. (A-1-B) DISCUSS CONSIDERATION GIVEN IN DESIGN TO PIPE-WHIPPING GENERATION OF MISSILES WHICH MIGHT VIOLATE THE CONTAINMENT, AND THE EFFECTS OF FUEL MOVEMENT UPON REACTIVITY.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACRS (ADVISORY COMMITTEE ON REACTOR SAFEGUARDS) + *AEC QUESTION + *MISSILE GENERATION AND PROTECTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + MILLSTONE POINT + REACTIVITY EFFECT, SLUMP + REACTOR, BOILING WATER

11-16607 ALSO IN CATEGORY 18
QUESTION A-2--REACTOR VESSEL NDT TEMPERATURE SELECTION
THE CONNECTICUT LIGHT AND POWER COMPANY + THE HARTFORD ELECTRIC LIGHT COMPANY + WESTERN MASSACHUSETTS ELECTRIC COMPANY
6 PAGES, 3 FIGURES, 1966, PAGES A-2-1 TO A-2-6 FROM DESIGN AND ANALYSIS REPORT AMENDMENT NO. 1, DOCKET NO. 50-245, MILLSTONE NUCLEAR POWER STATION

DESCRIBE THE METHOD BY WHICH THE NDT (NIL DUCTILITY TRANSITION TEMPERATURE) OF THE REACTOR VESSEL IS INITIALLY DETERMINED. DISCUSS THE BASIS FOR SELECTION OF THE INITIAL NDT OF THE REACTOR VESSEL, TAKING INTO ACCOUNT THE OVERALL UNCERTAINTIES AND VARIATIONS IN THE PROPERTIES OF THE VESSEL PLATES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*NDT DATA (NIL DUCTILITY TRANSITION) + *PRESSURE VESSEL + AEC QUESTION + MILLSTONE POINT + PERFORMANCE LIMIT + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

11-16614 ALSO IN CATEGORY 18
QUESTION C-1--DIFFERENCES IN CONTAINMENT DESIGN BETWEEN MILLSTONE AND DRESDEN II
THE CONNECTICUT LIGHT AND POWER COMPANY + THE HARTFORD ELECTRIC LIGHT COMPANY + WESTERN MASSACHUSETTS ELECTRIC COMPANY
2 PAGES, 1966, PAGES C-1-1 AND C-1-2 FROM DESIGN AND ANALYSIS REPORT, AMENDMENT NO. 1, DOCKET NO. 50-245, MILLSTONE NUCLEAR POWER PLANT

SECTION C. CONTAINMENT + ENGINEERING SAFEGUARDS SYSTEMS DESIGN - (1) PROVIDE A COMPLETE LIST OF ALL SIGNIFICANT DIFFERENCES BETWEEN THE PROPOSED CONTAINMENT DESIGNS FOR THE MILLSTONE AND DRESDEN II STATIONS, AND DISCUSS THE PURPOSE AND JUSTIFICATION OF THESE DIFFERENCES AND THEIR EFFECT ON SAFETY.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

AEC QUESTION + CONTAINMENT DESIGN + DRESDEN 2 + MILLSTONE POINT + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

11-16615 ALSO IN CATEGORY 18
QUESTION C-2--CONTAINMENT LEAKAGE RATE
THE CONNECTICUT LIGHT AND POWER COMPANY + THE HARTFORD ELECTRIC LIGHT COMPANY + WESTERN MASSACHUSETTS ELECTRIC COMPANY
4 PAGES, 1 FIGURE, 1 REFERENCE, 1966, PAGES C-2-1 TO C-2-4 FROM DESIGN AND ANALYSIS REPORT AMENDMENT NO. 1, DOCKET NO. 50-245, MILLSTONE NUCLEAR POWER STATION

LEAKAGE RATE IS SPECIFIED AS 0.5% PER DAY. SINCE RATE IS A FUNCTION OF VARIOUS PARAMETERS, IDENTIFY DESIGN-BASIS ACCIDENT CONDITIONS RELATED TO THIS LEAKAGE RATE. ASSUMING PEAK ACCIDENT PRESSURE GIVES THE LEAKAGE RATE LIMIT, INDICATE HOW LEAKAGE RATE LIMIT WOULD DIFFER IF PEAK ACCIDENT PRESSURE APPROACHED DESIGN VALUE. DISCUSS RELATIONSHIP BETWEEN LEAKAGE RATES UNDER TEST AND ACCIDENT CONDITIONS. CONSIDER HOW LEAKAGE RATE UNDER ACCIDENT CONDITIONS WOULD BE EXTRAPOLATED TO PERMISSIBLE LIMIT UNDER TEST CONDITIONS. ALTHOUGH THIS INFORMATION MAY APPEAR TO BE PREMATURE AT THIS TIME, IT IS NECESSARY SINCE SUCH CONSIDERATION OF TESTING CAPABILITY COULD LEAD TO DESIGN CHANGES.

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-16615 *CONTINUED*
AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTAINMENT DESIGN + *TEST, LEAK RATE + AEC QUESTION + MILLSTONE POINT + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

11-16616 ALSO IN CATEGORY 18
QUESTION C-3--LEAKAGE RATE AS A FUNCTION OF TIME AFTER ACCIDENT
THE CONNECTICUT LIGHT AND POWER COMPANY + THE HARTFORD ELECTRIC LIGHT COMPANY + WESTERN MASSACHUSETTS ELECTRIC COMPANY
2 PAGES, 1 FIGURE, 1966, PAGES C-3-1 AND C-3-2 FROM DESIGN AND ANALYSIS REPORT, AMENDMENT NO. 1, DOCKET NO. 50-245, MILLSTONE NUCLEAR POWER PLANT

PROVIDE A GRAPH SHOWING THE CONTAINMENT-LEAKAGE RATE (UNDER ACCIDENT CONDITIONS) AS A FUNCTION OF TIME AFTER THE POSTULATED RUPTURE OF THE RECIRCULATION LINE FOR THE DESIGN-BASIS ACCIDENT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTAINMENT DESIGN + *LEAK RATE + ACCIDENT, LOSS OF COOLANT + AEC QUESTION + LEAK RATE + MILLSTONE POINT + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

11-16629 ALSO IN CATEGORIES 18 AND 9
QUESTION E-5-- CONTAINMENT ISOLATION AFTER RUPTURE OF TIP THIMBLES
THE CONNECTICUT LIGHT AND POWER COMPANY + THE HARTFORD ELECTRIC LIGHT COMPANY + WESTERN MASSACHUSETTS ELECTRIC COMPANY
2 PAGES, 1966, PAGES E-5-1 AND E-5-2 FROM DESIGN AND ANALYSIS REPORT, AMENDMENT NO. 1, DOCKET NO. 50-245, MILLSTONE NUCLEAR POWER STATION

WHAT PROVISIONS ARE BEING MADE TO ENSURE CONTAINMENT ISOLATION IN THE EVENT OF AN ACCIDENT THAT RESULTS IN RUPTURE OF THIMBLES USED FOR INSTRUMENT CALIBRATION (TIP SYSTEM). (ANSWER) THE PROBES ARE AUTOMATICALLY WITHDRAWN AND THE ISOLATION VALVE CLOSED WITHIN 1.5 MIN, WITH A MAXIMUM STEAM LEAKAGE OF 1.2 LB.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTAINMENT PENETRATION, CLOSURE OF + *INSTRUMENTATION CALIBRATION + *INSTRUMENTATION, IN CORE + MILLSTONE POINT + REACTOR, BOILING WATER + RESPONSE TO AEC QUESTION + SAFETY ANALYSIS REPORT, PRELIMINARY

11-16668 ALSO IN CATEGORIES 12 AND 18
QUESTION 2.4 - LOCATION, LEAK TEST DESIGN, ACCIDENT ANALYSIS OF SAFETY INJECTION AND CONTAINMENT SPRAY SYSTEMS
CONSUMERS POWER CO., PALISADES PLANT, COVERT TOWNSHIP, MICHIGAN
8 PAGES, NOVEMBER 14, 1966, PAGE 2.4-1 THROUGH 2.4-8 OF CONSUMERS POWER COMPANY APPLICATION FOR REACTOR CONSTRUCTION PERMIT AND OPERATING LICENSE, AMENDMENT NUMBER 3, DOCKET NO. 50-255

LOCATION OF SAFETY-INJECTION AND CONTAINMENT-SPRAY SYSTEMS OUTSIDE CONTAINMENT COULD RECIRCULATE HIGHLY RADIOACTIVE WATER OUTSIDE CONTAINMENT BUILDING. JUSTIFY LOCATION PROPOSED VS LOCATION INSIDE CONTAINMENT BUILDING OR OTHER CONTROLLED-LEAKAGE ENCLOSURE. WHAT ARE LEAK TIGHTNESS DESIGN CRITERIA AND LEAKAGE-TESTING PROVISIONS FOR SYSTEMS. HOW FREQUENTLY ARE LEAK TESTS PLANNED. WHAT ARE MARGINS AGAINST EXCEEDING DESIGN-LEAKAGE RATE. DEFINE POTENTIAL SOURCES OF LEAKAGE AND RUPTURES AND SHOW POTENTIAL CONSEQUENCES OF FAILURES AFTER LARGE ACCIDENT. INCLUDE POSSIBILITY OF CHLORIDE-STRESS-CORROSION FAILURES DUE TO CHLORIDE PICKUP BY RECIRCULATED COOLING WATER. (ANSWER) ANSWER SUPERSEDES THAT OF QUESTION 2.4 IN AMENDMENT 1.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTAINMENT SPRAY + *CORE REFLOODING SYSTEM + AEC QUESTION + PALISADES POINT + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY + TEST, LEAK RATE

11-16721 ALSO IN CATEGORY 18
DESIGN AND ANALYSIS REPORT, AMENDMENT NUMBER 3, ANSWERS TO AEC QUESTIONS (MILLSTONE NUCLEAR POWER STATION)
THE CONNECTICUT LIGHT AND POWER CO. + THE HARTFORD ELECTRIC LIGHT CO. + WESTERN MASSACHUSETTS ELECTRIC COMPANY
20 PAGES, DOCKET NO. 50-245, FEBRUARY 9, 1966

THIRTEEN ANSWERS ARE GIVEN CONCERNING THE REACTOR PRESSURE VESSEL.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*PRESSURE VESSEL + AEC QUESTION + MILLSTONE POINT + REACTOR, BOILING WATER + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

11-16722 ALSO IN CATEGORY 18
QUESTION 1 - CONSEQUENCES TO REACTOR VESSEL OF INADVERTENT RAPID STARTUP FROM LOW TEMPERATURE

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-16722 *CONTINUED*

THE CONNECTICUT LIGHT AND POWER CO. + THE HARTFORD ELECTRIC LIGHT CO. + WESTERN MASSACHUSETTS ELECTRIC COMPANY

1 PAGE, PAGE 1-1 OF DESIGN AND ANALYSIS REPORT, AMENDMENT NUMBER 3, ANSWERS TO AEC QUESTIONS, (MILLSTONE NUCLEAR POWER STATION), DOCKET NO. 50-245, FEBRUARY 9, 1966

DISCUSS CONSEQUENCES OF ACCIDENTAL FAST STARTUP FROM LOW TEMPERATURE AS IT RELATES TO ALLOWABLE PRESSURE-VESSEL STRESSES AND BRITTLE-FRACTURE LIMITS THAT EXIST AT LOW TEMPERATURE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*AEC QUESTION + *BRITTLE FRACTURE + *SAFETY ANALYSIS REPORT, PRELIMINARY + FAILURE, ADMINISTRATIVE CONTROL + MILLSTONE POINT + PRESSURE VESSEL + REACTOR, BOILING WATER + REACTOR, PRESSURIZED WATER + THERMAL MECHANICAL EFFECT

11-16723 ALSO IN CATEGORY 18

QUESTION 2-A, 2-B - PRESSURE VESSEL FLAW SIZE, TYPE, AND DETECTION

THE CONNECTICUT LIGHT AND POWER CO. + THE HARTFORD ELECTRIC LIGHT CO. + WESTERN MASSACHUSETTS ELECTRIC COMPANY

4 PAGES, PAGES 2-1 TO 2-4 OF DESIGN AND ANALYSIS REPORT, AMENDMENT NUMBER 3, ANSWERS TO AEC QUESTIONS, (MILLSTONE NUCLEAR POWER STATION), DOCKET NO. 50-245, FEBRUARY 9, 1966

(A) DEFINE THE FLAW SIZE AND TYPE IN THE PRESSURE VESSEL WHICH IS ACCEPTED IN THE SPECIFICATIONS. (B) WHAT FLAWS LARGER IN SIZE OR OF SPECIAL SIGNIFICANCE MIGHT NOT BE DETECTED, PARTICULARLY IN ZONES OF IRREGULAR CONFIGURATION.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*FLAW + *PRESSURE VESSEL + *QUALITY CONTROL + AEC QUESTION + MILLSTONE POINT + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY + TEST, NONDESTRUCTIVE

11-16724 ALSO IN CATEGORY 18

QUESTION 3 - REACTOR VESSEL STUD FLAWS AND INSPECTION

THE CONNECTICUT LIGHT AND POWER CO. + THE HARTFORD ELECTRIC LIGHT CO. + WESTERN MASSACHUSETTS ELECTRIC COMPANY

1 PAGE, PAGE 3-1 OF DESIGN AND ANALYSIS REPORT, AMENDMENT NUMBER 3, ANSWERS TO AEC QUESTIONS, (MILLSTONE NUCLEAR POWER STATION), DOCKET NO. 50-245, FEBRUARY 9, 1966

(A) WHAT FLAW SIZE IS ACCEPTED IN THE STUDS OF THE PRESSURE VESSEL. (B) WHAT FREQUENCIES OF STUD INSPECTION OR REPLACEMENT ARE PLANNED. (C) HOW MANY STUDS CAN FAIL WITHOUT THREATENING THE INTEGRITY OF THE CLOSURE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTAINMENT INTEGRITY + *FLAW + *PRESSURE VESSEL + AEC QUESTION + CONTAINMENT PENETRATION, GENERAL + MILLSTONE POINT + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

11-16725 ALSO IN CATEGORY 18

QUESTION 4 - LEAK DETECTION IN PRESSURE VESSEL

THE CONNECTICUT LIGHT AND POWER CO. + THE HARTFORD ELECTRIC LIGHT CO. + WESTERN MASSACHUSETTS ELECTRIC COMPANY

2 PAGES, PAGE 4-1 AND 4-2 OF DESIGN AND ANALYSIS REPORT, AMENDMENT NUMBER 3, ANSWERS TO AEC QUESTIONS, (MILLSTONE NUCLEAR POWER STATION), DOCKET NO. 50-245, FEBRUARY 9, 1966

DESCRIBE HOW SMALL LEAKS IN THE PRESSURE VESSEL WOULD BE DETECTED AND THE ACTION TO BE TAKEN SHOULD SUCH OCCUR. HOW IS ADEQUATE RESPONSE ENSURED IN THE EVENT OF PREVIOUS EXISTENCE OF SMALL LEAKS IN OTHER PARTS OF THE SYSTEM. (ANSWER) (A) HYDROTESTING, (B) FEEDWATER-MAKEUP-RATE INCREASES, (C) HEAD-GASKET-SEAL LEAK DETECTOR, (D) DRYWELL SUMP PUMP

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*PRESSURE VESSEL + *TEST, LEAK RATE + AEC QUESTION + MILLSTONE POINT + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

11-16726 ALSO IN CATEGORY 18

QUESTION 5 - MISSILE PROTECTION

THE CONNECTICUT LIGHT AND POWER CO. + THE HARTFORD ELECTRIC LIGHT CO. + WESTERN MASSACHUSETTS ELECTRIC COMPANY

2 PAGES, PAGE 5-1 AND 5-2 OF DESIGN AND ANALYSIS REPORT, AMENDMENT NUMBER 3, ANSWERS TO AEC QUESTIONS, (MILLSTONE NUCLEAR POWER STATION), DOCKET NO. 50-245, FEBRUARY 9, 1966

WHICH MISSILES ARE PROTECTED FOR, AND WHICH MISSILES ARE NOT. (ANSWER) POTENTIAL MISSILES ARE (1) THOSE THAT ARE NOT THREATENING, OR (2) THOSE THAT PRESENT A THREAT BUT AGAINST WHICH PROTECTION IS PROVIDED. VESSEL FAILURE IS CONSIDERED INCREDIBLE. LARGE COMPONENTS (E.G., VALVE BONNETS AND ROD DRIVES) ARE POINTED AWAY FROM THE CONTAINMENT, PROVIDED WITH BRACES OR DEFLECTOR.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-16726 *CONTINUED*

*MISSILE GENERATION AND PROTECTION + MILLSTONE POINT + REACTOR, BOILING WATER + RESPONSE TO AEC QUESTION + SAFETY ANALYSIS REPORT, PRELIMINARY

11-1672P ALSO IN CATEGORY 18

QUESTION 7,8 - CRACK PROPAGATION IN PRESSURE VESSEL
THE CONNECTICUT LIGHT AND POWER CO. + THE HARTFORD ELECTRIC CO. + WESTERN MASSACHUSETTS ELECTRIC COMPANY
3 PAGES, PAGE 1-3 OF DESIGN AND ANALYSIS REPORT, AMENDMENT NUMBER 3, ANSWERS TO AEC QUESTIONS, (MILLSTONE NUCLEAR POWER STATION), DOCKET NO. 50-245, FEBRUARY 9, 1966

(7) IF ONE POSTULATES THE RAPID PROPAGATION OF A CRACK CIRCUMFERENTIALLY WITH THE CONTAINED ENERGY OF THE SYSTEM, WHAT WOULD HAPPEN TO THE UPPER SECTION OF THE PRESSURE VESSEL, INCLUDING SHEARING OF THE PIPES, ETC. (8) CAN YOU VISUALIZE ANY PROBLEM FROM THE PROPAGATION OF A CRACK FROM TOP TO BOTTOM OF THE VESSEL BUT NOT THROUGH THE HEAD.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*BRITTLE FRACTURE + *PRESSURE VESSEL + AEC QUESTION + MILLSTONE POINT + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

11-16729 ALSO IN CATEGORIES 18 AND 9

QUESTION 9 - DETECTION OF CRACKS IN PRESSURE VESSEL WALL
THE CONNECTICUT LIGHT AND POWER CO. + THE HARTFORD ELECTRIC LIGHT CO. + WESTERN MASSACHUSETTS ELECTRIC COMPANY
1 PAGE, PAGE 9-1 OF DESIGN AND ANALYSIS REPORT, AMENDMENT NUMBER 3, ANSWERS TO AEC QUESTIONS, (MILLSTONE NUCLEAR POWER STATION), DOCKET NO. 50-245, FEBRUARY 9, 1967

ARE YOU CONSIDERING PROCEDURES FOR DETECTING THE PROPAGATION OF CRACKS WITHIN THE PRESSURE VESSEL WALL. (ANSWER) YES, AT THE OPERATIONAL STAGE, A DECISION WILL BE MADE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*BRITTLE FRACTURE + *INSTRUMENTATION, PROCESS + *PRESSURE VESSEL + AEC QUESTION + MILLSTONE POINT + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

11-16746 ALSO IN CATEGORY 12

HINKLE WD

OUTLINE OF THE EXPERIMENTAL PROGRAM BEING CONDUCTED TO VERIFY THE PERFORMANCE OF THE CONTAINMENT COOLING UNITS FOLLOWING A LOSS-OF-COOLANT INCIDENT
CONNECTICUT YANKEE ATOMIC POWER COMPANY
CYAP-102 +. 9 PAGES, 1 FIGURE, 1 REFERENCE, DECEMBER 30, 1966

212 CFM OF STEAM-AIR MIXTURE (AT 261, 220, AND 184 F AND 100% RH) WILL BE ADMITTED TO THE COOLERS TO TEST THEIR HEAT-REMOVAL CAPACITY. REDUCTION OF COOLING WATER FLOW FROM 140 TO 11.7 GPM WILL GIVE CONDITIONS EQUIVALENT TO DESIGN. REPORT DESCRIBES TEST SETUP AND DATA TO BE TAKEN.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTAINMENT AIR COOLING + HADDAM NECK + REACTOR, PRESSURIZED WATER + TEST, PROOF

11-16789 ALSO IN CATEGORIES 6 AND 8

REACTOR DEVELOPMENT PROGRAM. PROGRESS REPORT
ARGONNE NATIONAL LABORATORY, ILL.
ANL-7302 +. 97 PAGES, 21 FIGURES, TABLES, MARCH 28, 1967

THIS REPORT IS ONE OF A SERIES OF PROGRESS REPORTS ON THE FOLLOWING SUBJECTS - IRRADIATION OF FUEL PINS, TREAT MELTDOWN TEST, INTEGRAL SODIUM LOOP, FAST-REACTOR SAFETY CONTAINMENT, EQUATION OF STATE OF REFRACTORIES SUCH AS UO₂, METAL-WATER REACTIONS, AND PLUTONIUM VOLATILITY SAFETY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

CONTAINMENT DESIGN + EQUATION OF STATE + FUEL MELTDOWN + METAL WATER REACTION + PLUTONIUM + REACTOR DYNAMICS + REACTOR, FAST + REACTOR, GRAPHITE MODERATED + REACTOR, TEST + SODIUM + TRFAT (TRANSIENT TEST REACTOR FACILITY) + URANIUM OXIDE

11-16798 ALSO IN CATEGORY 18

AMENDMENT 5 - OPERATING EXPERIENCE WITH FIELD ASSEMBLED PRESSURE VESSELS
MONTICELLO NUCLEAR GENERATING PLANT, MONTICELLO, MINNESOTA
8 PAGES, 3 TABLES, FEBRUARY 24, 1967, DOCKET NO. 50-263

BRIEF TABULATION OF 200 VESSELS FIELD-ASSEMBLED BY CR AND I, WITH A SLIGHTLY MORE COMPREHENSIVE REVIEW OF 9 HAVING OPERATING CONDITIONS SIMILAR TO MONTICELLO.

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-16798 *CONTINUED*
AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*FABRICATION + *OPERATING EXPERIENCE + *PRESSURE VESSEL + MONTICELLO + REACTOR, BOILING WATER +
SAFETY ANALYSIS REPORT, PRELIMINARY

11-17022 ALSO IN CATEGORY 2
HOFF GC

MATERIALS FOR USE IN MITIGATING BLAST LOADS ON DEEPLY BURIED PROTECTIVE STRUCTURES
ARMY ENGINEER WATERWAYS EXPERIMENT STATION, VICKSBURG, MISS.
AD-634691 +. 15 PAGES, FIGURES, JUNE 1966

THE FIELD OF STRUCTURE-MEDIUM INTERACTION HAS LONG COMMANDED THE ATTENTION OF INDIVIDUALS CONCERNED WITH THE DESIGN AND CONSTRUCTION OF BURIED STRUCTURES. WITH ADVANCES IN THE USE OF THERMONUCLEAR WEAPONS, THE DIFFICULTY IN UNDERSTANDING STRUCTURE-MEDIUM INTERACTIONS AND THEREFORE THE DESIGNING OF BURIED STRUCTURES HAVE BECOME FURTHER COMPLICATED BY THE INTRODUCTION OF COMPLEX GROUND MOTIONS AND VERY HIGH APPLIED LOADS. THE DESIGN OF BURIED STRUCTURES TO RESIST THESE EFFECTS USUALLY RESULTS IN DESIGN LOADS WHICH ARE SO HIGH THAT OVERCONSERVATIVE DESIGN WOULD BE EXTREMELY COSTLY. ON THE OTHER HAND, CATASTROPHIC FAILURE OF THE STRUCTURE DUE TO AN INADEQUATE DESIGN CANNOT BE TOLERATED. THE PURPOSE OF THIS PAPER IS TO DESCRIBE A TECHNIQUE THAT CAN BE USED FOR CONTROLLING THE MAGNITUDE OF THE FORCES BEING APPLIED TO BURIED STRUCTURES BY BLAST LOADING, I.E., THE USE OF BACKPACKING MATERIALS FOR SHOCK ISOLATION OF BURIED STRUCTURES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*CONTAINMENT, SHOCK GENERATION AND PROTECTION + *DESIGN CRITERIA + CONTAINMENT, UNDERGROUND +
NUCLEAR DETONATION + SHOCK ABSORBER

11-17023
BARTON JR + WYLIE RD
DEVELOPMENT OF NONDESTRUCTIVE TESTING INSTRUMENTATION FOR REACTOR PRESSURE VESSELS. SIXTH QUARTERLY REPORT, APRIL 1 - JULY 10, 1964
SOUTHWEST RESEARCH INSTITUTE, SAN ANTONIO
SWRI-1243-14 + EURAFEC-1170 +. 179 PAGES, FIGURES, JULY 10, 1964

FROM THE DESTRUCTIVE-TESTING PART OF THE PROGRAM, THE FOLLOWING CONCLUSIONS CAN BE DRAWN - (1) THERE ARE SIGNIFICANT VARIATIONS IN NIL-DUCTILITY TRANSITION TEMPERATURE WHICH RESULT FROM METALLURGICAL OR PROCESSING VARIABLES. (2) THE CHANGE IN NIL-DUCTILITY TRANSITION TEMPERATURE OF THE AEC-HANFORD STOCKPILE MATERIAL AS A FUNCTION OF IRRADIATION CORRESPONDED TO THE EXPECTED CHANGE PREDICTED BY THE NRL TREND BAND. FROM THE NONDESTRUCTIVE-EVALUATION PART OF THE PROGRAM, THE FOLLOWING CONCLUSIONS CAN BE DRAWN - (1) NO OUTSTANDING CHANGES WHICH CAN BE MEASURED BY NONDESTRUCTIVE METHODS ARE ASSOCIATED WITH THE CHANGES THAT CAUSE THE SHIFT IN NIL-DUCTILITY TRANSITION TEMPERATURE RESULTING FROM NEUTRON IRRADIATION. (2) CHANGES THAT TAKE PLACE AS A RESULT OF IRRADIATION CAN BE OBSCURED BY THE VARIATIONS ENCOUNTERED FROM INDIVIDUAL SPECIMENS. CONSEQUENTLY, MEANINGFUL DATA CAN ONLY BE OBTAINED BY MEASUREMENTS BEFORE AND AFTER IRRADIATION ON INDIVIDUAL SPECIMENS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*IRRADIATION TESTING + *NDT DATA (NIL DUCTILITY TRANSITION) + *STEEL + TEST, DESTRUCTIVE +
TEST, NONDESTRUCTIVE

11-17065 ALSO IN CATEGORIES 18 AND 12
HINKLE WD

AN ANALYSIS OF THE HEAT REMOVAL CAPABILITY OF THE CONTAINMENT AIR COOLING UNITS FOLLOWING A LOSS OF COOLANT INCIDENT
CONNECTICUT YANKEE ATOMIC POWER CO., HADDAM NECK PLANT, HADDAM CONNECTICUT
CYAP-102 +. 25 PAGES, 6 FIGURES, 6 REFERENCES, DECEMBER 30, 1966, DOCKET NO. 50-213

METHOD BASED ON COLBURN AND HUGEN WAS USED, WITH PARTICULAR ATTENTION TO EFFECT OF AIR ON CONDENSATION RATE AT DESIGN CONDITIONS OF 261 F AND TOTAL PRESSURE OF 40 PSIG. CONCLUSION WAS THAT DESIGN HEAT-TRANSFER RATES ARE REASONABLE AND CONSERVATIVE (AS THE MINIMUM CALCULATED ARE 5% ABOVE WHEN PRESSURES ARE ABOVE 20 PSIG).

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACCIDENT, LOSS OF COOLANT + *CONTAINMENT AIR COOLING + *THERMAL ANALYSIS + HADDAM NECK +
MATHEMATICAL TREATMENT + REACTOR, PRESSURIZED WATER

11-17196
GRIFFIN DS + THURMAN AL
CALCULATION OF STRESSES IN PRESSURIZED CYLINDERS WITH EXTERNAL FILLETS USING THE DUZ-1 PHILCO-2000 COMPUTER PROGRAM
BETTIS ATOMIC POWER LAB., PITTSBURGH
WAPD-TM-654 +. 18 PAGES, 13 FIGURES, 3 TABLES, 2 REFERENCES, JANUARY 1967

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-17196 *CONTINUED*

THIS REPORT PRESENTS THE RESULTS OF A STRESS ANALYSIS, BY COMPUTER, OF AN INTERNALLY PRESSURIZED CYLINDER WITH THICKER ENDS. THE THICKNESS TRANSITION IS BY MEANS OF A RADIUS FILLET AT THE EXTERIOR SURFACE. THE INTERIOR SURFACE IS SMOOTH. THE PEAK STRESSES OCCUR IN THE TRANSITION NEAR THE BEGINNING OF THE THINNER SECTION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*COMPUTER PROGRAM + *CYLINDER + *ELASTICITY + *PRESSURE, INTERNAL + *SHELL + *STRESS + *STRESS ANALYSIS + DEFORMATION + MATHEMATICAL STUDY + PIPING + PRESSURE VESSEL

11-17197

MERKLE JG

AN ENGINEERING APPROACH TO MULTIAXIAL PLASTICITY

OAK RIDGE NATIONAL LAB., TENN.

ORNL-4130 +. 92 PAGES, 21 FIGURES, 29 REFERENCES, JULY, 1967

THE BASIC EQUATIONS OF PLASTICITY ARE DERIVED BY USING ONLY CALCULUS AND VECTOR ALGEBRA (TENSOR NOTATION IS NOT USED). ALL ASSUMPTIONS ARE EXPLICITLY STATED. THE FLOW RULE IS DERIVED BY TWO DIFFERENT METHODS. IN ONE METHOD THE AREA UNDER THE EFFECTIVE STRESS-STRAIN CURVE IS ASSUMED TO EQUAL THE PLASTIC WORK. FOR THE OTHER METHOD, THE PLASTIC MATERIAL IS ASSUMED TO BE STABLE. IN BOTH DERIVATIONS, THE RATIOS OF THE PRINCIPAL PLASTIC STRAIN INCREMENTS ARE UNIQUELY DETERMINED BY THE STATE OF STRESS AT ANY POINT ON THE YIELD SURFACE, EXCEPT AT A DISCONTINUITY. PLASTIC VOLUME CHANGES ARE RELATED TO THE EFFECTS OF HYDROSTATIC PRESSURE ON THE YIELD FUNCTION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*DEFORMATION + *GRAPHITE + *METAL + *PLASTICITY + *STRESS + *STRESS ANALYSIS + CREEP BEHAVIOR + MATHEMATICAL STUDY + PRESSURE VESSEL + STEEL + STRESS STRAIN DATA + TENSILE PROPERTY

11-17198

GREENBAUM GA

RADIOISOTOPE PROPULSION TECHNOLOGY PROGRAM (POODLE). VOLUME IIB. ANALYTICAL PROGRAM FOR CREEP IN AXISYMMETRIC BODIES (CRAB). FINAL REPORT, OCTOBER 1, 1965-SEPTEMBER 30, 1966

TRW SYSTEMS, REDONDO BEACH, CALIFORNIA

STL-517-0049 (VOL. 2B) +. 57 PAGES, 17 FIGURES, 22 REFERENCES, OCTOBER, 1966

THIS REPORT DESCRIBES A METHOD OF NONLINEAR CREEP ANALYSIS FOR AXISYMMETRIC BODIES OF REVOLUTION SUBJECT TO AXISYMMETRIC LOADS. THE FINITE-ELEMENT METHOD IS USED. CREEP STRAINS ARE CALCULATED INCREMENTALLY, USING THE PLASTICITY APPROACH TO CREEP, WITH A GENERAL TIME-HARDENING TRANSIENT-CREEP LAW. IN GENERAL, THE EFFECTIVE CREEP-STRAIN INCREMENT IS A FUNCTION OF THE EFFECTIVE STRESS, TEMPERATURE, AND TIME. FOR EACH TIME INTERVAL, CREEP STRAINS ARE COMPUTED AND THEN TREATED AS INITIAL STRAINS FOR COMPUTING THE STRESSES. THE METHOD FOR CHOOSING THE LENGTH OF THE TIME INCREMENT, AND FOR ENSURING CONVERGENCE, ARE DESCRIBED. EXAMPLE CALCULATIONS ARE INCLUDED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*COMPUTER PROGRAM + *CREEP BEHAVIOR + *PLASTICITY + *STRESS + *STRESS ANALYSIS + CONTAINMENT ANALYSIS + CYLINDER + DEFORMATION + ELASTICITY + HIGH TEMPERATURE + METAL + PRESSURE VESSEL + STEEL

11-17224

ALSO IN CATEGORY 5

FRIEDRICH CM + GUILDFORD WH

CYGRD-2. A FORTRAN IV COMPUTER PROGRAM FOR STRESS ANALYSIS OF THE GROWTH OF CYLINDRICAL FUEL ELEMENTS WITH FISSION GAS BUBBLES

WESTINGHOUSE ELECTRIC CORPORATION, BETTIS ATOMIC POWER LAB., PITTSBURGH

WAPD-TM-547 +. 66 PAGES, 11 FIGURES, 13 REFERENCES, NOVEMBER, 1966

THE DIGITAL COMPUTER PROGRAM CYGRD-2 PROVIDES A METHOD OF STRUCTURAL ANALYSIS FOR AN OXIDE-FUELED, METAL-CLAD, ROD-TYPE FUEL ELEMENT IN A PRESSURIZED ENVIRONMENT. STRESSES AND STRAINS ARE DETERMINED IN A CROSS SECTION OF FUEL AND CLAD UNDERGOING THERMAL EXPANSION AND IRRADIATION GROWTH. ELASTIC, PLASTIC, AND CREEP PARAMETERS WERE USED TO CALCULATE THE EFFECTS OF TEMPERATURE, PRESSURE, SOLID FISSION-PRODUCT GROWTH, AND GAS-BUBBLE EXPANSION. THE AXIALLY SYMMETRIC FUEL MAY HAVE RADIAL ZONES AND A NONFISSIONABLE CORE OR VOID.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*COMPUTER PROGRAM + *FUEL ELEMENT + *STRESS ANALYSIS + COMPUTER, DIGITAL + FISSION GAS RELEASE + IRRADIATION TESTING

11-17243

ALSO IN CATEGORY 5

CULVER HN

INFORMATION PROVIDED TO OPERATORS FOR USE UNDER DEPRESSURIZATION ACCIDENT CONDITIONS

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-17243 *CONTINUED*
TENNESSEE VALLEY AUTHORITY, OAK RIDGE
TID-22745 +. 21 PAGES, TABLES, OCTOBER 2, 1964

IT IS OUR CONSIDERED JUDGMENT THAT A FEW KEY INDICATIONS (WITH BACKUP INDICATIONS FROM OTHER SOURCES AS REQUIRED) WHICH INDICATE (1) AN ACCIDENT HAS HAPPENED, (2) SPECIFIC EQUIPMENT IS AVAILABLE FOR OPERATION OR IS OPERATING, AND (3) THE ACCIDENT CONSEQUENCES ARE UNDER CONTROL, ARE THE BEST APPROACH TO IDENTIFYING AND CONTROLLING THE ACCIDENT. AFTER EXAMINING THE INFORMATION REQUIRED TO COPE WITH ACCIDENTS AND INFORMATION PROVIDED IN THE DESIGN, WE CONCLUDE THAT THE QUALITY AND AMOUNT OF EXISTING INSTRUMENTATION IS ADEQUATE FOR COPING WITH EMERGENCIES RESULTING FROM ALL CREDIBLE ACCIDENTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*ACCIDENT ANALYSIS + *ACCIDENT, LOSS OF PRESSURE + *REACTOR, GAS COOLED + *REACTOR, GRAPHITE MODERATED + ACCIDENT, MAXIMUM CREDIBLE (MCA) + EGCR (EXPERIMENTAL GAS COOLED REACTOR) + PRESSURE DROP

11-17407 ALSO IN CATEGORIES 3 AND 13
SKINNER DF + WOLF TW + WADE WZ
PORT APPARATUS FOR EXTRACTING MATERIALS FROM RADIOACTIVE ENCLOSURES
UNITED STATES ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.
U. S. PATENT 3,290,502 +. 2 PAGES, DECEMBER 6, 1966, PATENT (U.S.)

RELATES TO A SAMPLE EXTRACTOR PORT INCLUDING A SLEEVE MOUNTABLE IN A SHIELDING WALL INTO WHICH AN OPEN-ENDED CONTAINER MAY BE RETRACTABLY INSERTED. ESPECIALLY ADAPTED GROOVE STRUCTURE IN THE INNER-WALL SURFACES OF THE SLEEVE AND A COMPLIANT SLEEVE INSERTABLE AND DISPLACEABLE INWARDLY THEREIN PROVIDES FOR SEALING OF THE CONTAINER AND WALL WHILE PROVIDING CONTAMINATION SHIELDING OF THE CONTAINER MOUTH.

AVAILABILITY - THE U. S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D. C. (\$0.25 PER COPY)

CONTAINMENT AIR LOCK + CONTAINMENT PENETRATION, CLOSURE OF + PATENT

CATEGORY 12
PLANT SAFETY FEATURES

12-15262

A PROGRAM FOR INVESTIGATION OF CAUSE OF FAILURE OF STAINLESS STEEL CLAD FUEL RODS IN WATER REACTORS
GENERAL ELECTRIC COMPANY
USAEC 1509 + GEAP-5085 +. 2 PAGES, APRIL 1965

CORROSION TESTS ON TYPE-304 STAINLESS STEEL IN HNO₃-HEXAVALENT CR TO DETERMINE THE EFFECT OF HIGH GAMMA RADIATION FIELDS (ABOUT 1,000 R) INDICATED THAT THE PRESENCE OF HIGH ENERGY GAMMA RADIATION DOES NOT INCREASE THE DISSOLUTION RATE OF THE STAINLESS STEEL.
MICRO-THERMOELECTRIC MEASUREMENTS ACROSS GRAIN BOUNDARIES IN NONIRRADIATED AND IRRADIATED STAINLESS STEEL WERE COMPLETED AND INDICATED NO SIGNIFICANT DIFFERENCE BETWEEN THE THERMOELECTRIC PROPERTIES OF GRAINS AND GRAIN BOUNDARIES. ELECTROCHEMICAL STUDIES AT ELEVATED TEMPERATURES UP TO 275 C WERE STARTED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$2.00 COPY, \$0.50 MICROFICHE

*CORROSION + *STEEL, STAINLESS + RADIATION EFFECT

12-15457

ALSO IN CATEGORY 18

QUESTION VI F (1) - DETAILS OF FAN-COOLER DESIGN

CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA

14 PAGES, 1 FIGURE, PAGES F (1)(A)-1 TO F (1)(K)-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

ELEVEN QUESTIONS ASKED ABOUT FAN COOLERS USED IN CONTAINMENT AIR COOLING SYSTEM, INCLUDING PROOF TESTS AND LEAKAGE RATE ON TUBE RUPTURE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT AIR COOLING + TEST, PROOF

12-15552

ALSO IN CATEGORY 18

QUESTION 2.4--CONTAINMENT SPRAY SYSTEMS LOCATION, TEST, DESIGN CRITERIA, FAILURE

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

4 PAGES, CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

SECTION 2 - ENGINEERED SAFEGUARDS. SAFETY INJECTION AND CONTAINMENT SPRAY SYSTEMS ARE LOCATED OUTSIDE THE CONTAINMENT BUILDING. IN A LARGE ACCIDENT, THESE SYSTEMS WOULD RECIRCULATE HIGHLY RADIOACTIVE WATER OUTSIDE THE CONTAINMENT BUILDING. JUSTIFY THIS LOCATION VERSUS ONE INSIDE, OR SOME OTHER CONTROLLED-LEAKAGE ENCLOSURE. DISCUSS LEAK-TIGHTNESS DESIGN CRITERIA AND LEAKAGE-TESTING PROVISIONS. HOW OFTEN DO YOU PLAN TO LEAK TEST. WHAT MARGINS WILL THESE SYSTEMS HAVE AGAINST EXCEEDING THEIR DESIGN LEAKAGE RATE. DEFINE POTENTIAL SOURCES OF LEAKAGE AND RUPTURES. SHOW CONSEQUENCES OF THESE FAILURES FOLLOWING LARGE ACCIDENT. CONSIDER CHLORINE-STRESS-CORROSION FAILURES DUE TO CHLORIDE PICKUP BY THE RECIRCULATED COOLING WATER.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT SPRAY + CORE REFLOODING SYSTEM + PALISADES POINT + REACTOR, PRESSURIZED WATER + TEST, LEAK LOCATION

12-15553

ALSO IN CATEGORY 18

QUESTION 2.5--OPERATION AND ENGINEERED SAFEGUARD SYSTEMS AFTER ACCIDENTS

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

2 PAGES, CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

PROVIDE AN ANALYSIS TO SHOW HOW LONG THE ENGINEERED SAFEGUARD SYSTEMS WILL BE REQUIRED TO OPERATE AFTER THE DESIGN-BASIS ACCIDENT. WHAT SPECIFIC DESIGN CRITERIA ARE BEING APPLIED TO THESE SYSTEMS REGARDING MAINTAINABILITY, REPAIR, ISOLATION, REPLACEMENT, ETC., IN ORDER TO MEET THIS REQUIREMENT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + ENGINEERED SAFETY FEATURE + PALISADES POINT + REACTOR, PRESSURIZED WATER

12-15554

ALSO IN CATEGORY 18

QUESTION 2.6--TESTING OF ENGINEERED SAFEGUARDS

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

4 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

DISCUSS TESTING OF ENGINEERED SAFEGUARDS (ESPECIALLY THE UNITS FOR THE CONTAINMENT-AIR-COOLING SYSTEM) TO SHOW TO WHAT EXTENT THEIR PERFORMANCE UNDER DESIGN CONDITIONS WILL BE DEMONSTRATED BY CONFIRMATION TESTS BEFORE AND AFTER INSTALLATION. TO WHAT EXTENT WILL PERIODIC TEST OF

CATEGORY 12
PLANT SAFETY FEATURES

12-15554 *CONTINUED*

THE SYSTEMS FALL SHORT OF SIMULATING OPERATION UNDER DESIGN CONDITIONS. JUSTIFY THE ADEQUACY OF THE PROPOSED TESTS IN MEETING THE OBJECTIVE OF COMPLETE FUNCTIONAL TESTING UNDER DESIGN CONDITIONS. WHAT ADDITIONAL DESIGN PROVISIONS COULD BE MADE TO PERMIT MORE COMPLETE TESTING.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT AIR COOLING + ENGINEERED SAFETY FEATURE + PALISADES POINT + REACTOR, PRESSURIZED WATER + TEST, PREOPERATIONAL

12-15555 ALSO IN CATEGORY 18

QUESTION 2.7--CONSEQUENCES OF LEAKS IN CONTAINMENT SPRAY HEAT EXCHANGERS OR AIR COOLING UNITS AFTER ACCIDENT

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

DISCUSS THE CONSEQUENCES OF LEAKS IN THE CONTAINMENT-SPRAY HEAT EXCHANGERS OR AIR-COOLING UNITS DURING THEIR OPERATION AFTER A DESIGN-BASIS ACCIDENT. CONSIDERATION SHOULD BE GIVEN TO FISSION-PRODUCT CONTAMINATION OF THE SERVICE WATER AND/OR TO DILUTION OF THE BOILED WATER. DISCUSS THE PROVISIONS TO IDENTIFY AND MITIGATE THE CONSEQUENCES OF SUCH A FAILURE. DISCUSS THE ADVISABILITY OF PROVIDING AN INTERMEDIATE COOLING-WATER LOOP BETWEEN THE SERVICE-WATER SYSTEM AND SYSTEMS CONTAINING RADIOACTIVITY.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT AIR COOLING + CONTAINMENT SPRAY + PALISADES POINT + REACTOR, PRESSURIZED WATER + TEST, LEAK LOCATION

12-15581 ALSO IN CATEGORIES 9 AND 18

QUESTION 7.4--FIRE IN CONTROL ROOM OR CABLE SPREADING AREA

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

3 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

ANALYZE THE PROBABILITY AND CONSEQUENCES OF THE CENTRAL CONTROL ROOM BECOMING UNINHABITABLE OR INEFFECTIVE DUE TO A FIRE (OR OTHER DISASTER) IN THE CONTROL ROOM OR CABLE-SPREADING AREA. THIS ANALYSIS SHOULD ALSO INCLUDE CONSIDERATION OF THE AVAILABILITY OF ENGINEERED SAFEGUARDS SYSTEMS POWER AND CONTROLS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTROL PANEL/ROOM + ENGINEERED SAFETY FEATURE + FIRE + PALISADES POINT + REACTOR, PRESSURIZED WATER

12-15591 ALSO IN CATEGORY 18

QUESTION 9.5--DESIGN CRITERIA FOR POST-ACCIDENT VENTILATION OF CONTROL ROOM

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT ARE THE DESIGN CRITERIA FOR POST-ACCIDENT VENTILATION OF THE CONTROL ROOM, AND HOW WILL THE CONTROL-ROOM VENTILATING SYSTEM SATISFY THESE CRITERIA. WHAT THYROID DOSE WOULD A CONTROL-ROOM OCCUPANT RECEIVE DURING THE DESIGN-BASIS ACCIDENT. WHAT ARE THE ASSUMPTIONS MADE IN EVALUATING THIS DOSE. WHAT ARE THE ASSUMPTIONS MADE IN EVALUATING THE 5-REM WHOLE-BODY DOSE THAT WOULD RESULT DURING EGRESS FROM THE CONTROL ROOM. WHAT THYROID DOSE WOULD BE RECEIVED DURING SUCH EGRESS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, MAXIMUM CREDIBLE (MCA) + CONTROL PANEL/ROOM + DESIGN CRITERIA + DOSE CALCULATION, INTERNAL + PALISADES POINT + REACTOR, PRESSURIZED WATER + VENTILATION SYSTEM

12-15675 ALSO IN CATEGORIES 11 AND 18

SURRY POWER STATION UNITS 1 AND 2 PRELIMINARY SAFETY ANALYSIS REPORT, VOLUME 2, PART B

VIRGINIA ELECTRIC AND POWER COMPANY

200 PAGES, FIGURES, TABLES, 1967, DOCKET NO. 50-280 AND 50-281

VOLUME 2 CONTAINS THE FOLLOWING CHAPTERS - (4) REACTOR COOLANT SYSTEM, (5) CONTAINMENT, (6) ENGINEERED SAFEGUARDS, (7) INSTRUMENTS AND CONTROLS, (8) ELECTRICAL SYSTEMS. EACH CONTROLLED-LEAKAGE PC PUMP HAS A FLYWHEEL. A NEW CONTAINMENT CONCEPT (SUBATMOSPHERIC) IS ADVANCED, WHERE A VACUUM PUMP DISCHARGES CONTAINMENT AIR THROUGH FILTERS TO THE STACK, TO MAINTAIN CONTAINMENT AT 10 PSIA BEFORE AND AFTER AN ACCIDENT. DESIGN IS FOR 45 PSIG AT 280 °C. ENGINEERED SAFEGUARDS ARE - (1) THREE ACCUMULATORS, HIGH- AND LOW-HEAT WATER-INSPECTION PUMPS, (2) RECIRCULATION OF SPILLED WATER, (3) CONTAINMENT SPRAY, (4) RECIRCULATION OF CONTAINMENT-SPRAY WATER, (5) CONTAINMENT (SUBATMOSPHERIC) VACUUM SYSTEM.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

*CONTAINMENT, LOW PRESSURE + *SAFETY ANALYSIS REPORT, PRELIMINARY + ENGINEERED SAFETY FEATURE +

CATEGORY 12
PLANT SAFETY FEATURES

12-15675 *CONTINUED*
REACTOR, PRESSURIZED WATER + SURRY 1 AND 2

12-15676 ALSO IN CATEGORY 18
SURRY POWER STATION UNITS 1 AND 2 PRELIMINARY SAFETY ANALYSIS REPORT VOLUME 3, PART B
VIRGINIA ELECTRIC AND POWER COMPANY
175 PAGES, FIGURES, 1967, DOCKET NO. 50-280 AND 50-221

VOLUME 3 CONTAINS THE FOLLOWING CHAPTERS - (9) AUXILIARY AND EMERGENCY SYSTEM, (10) STEAM SYSTEMS, (11) WASTE AND RADIATION PROTECTION, (12) ORGANIZATION, (13) INITIAL TESTS, AND (14) SAFETY ANALYSIS. GRAVITY FLOW FROM INTAKE CANAL PROVIDES 24-HR SUPPLY OF COOLING WATER TO RECIRCULATION-SPRAY HEAT EXCHANGERS. CHAPTER 14 IS MAINLY A LOSS-OF-COOLANT BLOW-DOWN ANALYSIS. ONLY HYPOTHETICAL ACCIDENTS ARE REPORTED (CORE MELTDOWN RELEASES TO CONTAINMENT 100% OF THE NONLE GASES, 50% OF THE HALOGEN, 1% OF THE OTHER FISSION PRODUCTS. 50% IODINE PLATEOUT. CONTAINMENT LEAKAGE AT 0.125%/DAY.) TWO ANALYSES WERE PERFORMED - (1) LEAKAGE IS TERMINATED AFTER 35 MIN BY SUBATMOSPHERIC CONTAINMENT PRESSURES. MAXIMUM THYROID DOSE IS 264 REMS. WHOLE-BODY DOSE IS 3.9 REMS AT SITE BOUNDARY. (2) ASSUMING NO SAFEGUARDS OPERATIONAL AND THE LEAKAGE LASTS 30 DAYS, SITE BOUNDARY DOSES IS 900 REMS, BUT POPULATION CENTER DOSE IS WELL BELOW 10 CFP 100 VALUE.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, HYPOTHETICAL + BLOWDOWN + CONTAINMENT SPRAY + HEAT SINK + REACTOR, PRESSURIZED WATER + SUPPLY 1 AND 2

12-15845 ALSO IN CATEGORIES 11 AND 5
LEVY S
A SYSTEMS APPROACH TO CONTAINMENT DESIGN IN NUCLEAR POWER PLANTS
GENERAL ELECTRIC COMPANY, SAN JOSE, CALIF.
SM-89/51 +. 20 PAGES, 9 FIGURES, APRIL 1967, IAEA SYMPOSIUM ON THE CONTAINMENT AND SITING OF NUCLEAR POWER PLANTS, VIENNA, AUSTRIA, APRIL 3-7, 1967

NEW APPROACH FOR PERFORMANCE REQUIREMENTS OF CONTAINMENT DESIGNS. CONTAINMENT IS PART OF A TOTAL SYSTEM, WHICH PREVENTS AND LIMITS THE CONSEQUENCES OF A RELEASE OF FISSION PRODUCTS. CONTAINMENT-PERFORMANCE REQUIREMENTS ARE DETERMINED BY LOOKING AT THE OVERALL SYSTEM. PROPOSED TECHNIQUE IS ILLUSTRATED FOR LOSS-OF-COOLANT ACCIDENT. INTERRELATIONSHIP OF THE PRESSURE-SUPPRESSION CONTAINMENT TO OTHER PREVENTIVE MEASURES IS REVIEWED FIRST. NEXT, THE CONTAINMENT-PERFORMANCE REQUIREMENTS ARE ESTABLISHED AS PART OF AN OVERALL SYSTEM EVALUATION. FINALLY, POSSIBLE ALTERNATE CONTAINMENT FEATURES ARE EVOLVED.

AVAILABILITY - GENERAL ELECTRIC COMPANY, ATOMIC POWER EQUIPMENT DEPT., 175 CURTNER AVE., SAN JOSE, CALIFORNIA

*ACCIDENT, LOSS OF COOLANT + *CONTAINMENT, PRESSURE SUPPRESSION + *REACTOR, BOILING WATER + CONTAINMENT, GENERAL + CORE REFLOODING SYSTEM + CORE SPRAY + EMERGENCY COOLING CONSIDERATIONS + MISSILE GENERATION AND PROTECTION

12-15934 ALSO IN CATEGORIES 7 AND 8
SAVAGE HW
HISTORY OF THE AEC SODIUM COMPONENTS DEVELOPMENT PROGRAM. VOLUME I
OAK RIDGE NATIONAL LABORATORY
ORNL-3955 (VOL. 1) +. 401 PAGES, DECEMBER 1966

THIS HISTORY WILL BE OF GREAT INTEREST TO THOSE WHO HAVE HAD A PART IN THE DEVELOPMENT OF LIQUID-METAL COMPONENTS TECHNOLOGY DURING THE LAST EIGHT TO NINE YEARS, AND WE SINCERELY HOPE THAT IT WILL SERVE AS AN ACCURATE REFLECTION OF THE CONTRIBUTION OF THE SODIUM COMPONENTS DEVELOPMENT PROGRAM WORKING GROUP IS MAKING TO THAT DEVELOPING TECHNOLOGY. THIS VOLUME IS A SUMMARY OF DEVELOPMENT PROGRAMS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*EQUIPMENT DESIGN + *FABRICATION + *FERMI + *HEAT EXCHANGER + *INSTRUMENTATION, GENERAL + *METAL WATER REACTION + *OPERATING EXPERIENCE + *PUMP + *SODIUM + *TESTING + MAIN COOLING SYSTEM + REACTOR, LIQUID METAL COOLED

12-15935 ALSO IN CATEGORIES 7 AND 8
SAVAGE HW
HISTORY OF THE AEC SODIUM COMPONENTS DEVELOPMENT PROGRAM. VOLUME II
OAK RIDGE NATIONAL LABORATORY
ORNL-3955 (VOL. 2) +. 568 PAGES, DECEMBER 1966

THIS HISTORY WILL BE OF GREAT INTEREST TO THOSE WHO HAVE HAD A PART IN THE DEVELOPMENT OF LIQUID-METAL COMPONENTS TECHNOLOGY DURING THE LAST EIGHT TO NINE YEARS, AND WE SINCERELY HOPE THAT IT WILL SERVE AS AN ACCURATE REFLECTION OF THE CONTRIBUTION OF THE SODIUM COMPONENTS DEVELOPMENT PROGRAM WORKING GROUP IS MAKING TO THAT DEVELOPING TECHNOLOGY. THIS VOLUME CONSISTS OF REPORTS OF SUBCOMMITTEE MEETINGS.

CATEGORY 12
PLANT SAFETY FEATURES

12-15935 *CONTINUED*

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*EQUIPMENT DESIGN + *FABRICATION + *HEAT EXCHANGER + *INSTRUMENTATION, GENERAL + *METAL WATER REACTION + *OPERATING EXPERIENCE + *PUMP + *SODIUM + *TESTING + MAIN COOLING SYSTEM + REACTOR, LIQUID METAL COOLED

12-15936 ALSO IN CATEGORIES 7 AND 8

SAVAGE HW
HISTORY OF THE AEC SODIUM COMPONENTS DEVELOPMENT PROGRAM. VOLUME III
OAK RIDGE NATIONAL LABORATORY
ORNL-3955 (VOL. 3) +. 484 PAGES, TABLES, DECEMBER 1966

THIS HISTORY WILL BE OF GREAT INTEREST TO THOSE WHO HAVE HAD A PART IN DEVELOPING LIQUID-METAL COMPONENTS TECHNOLOGY DURING THE LAST EIGHT TO NINE YEARS, AND WE SINCERELY HOPE THAT IT WILL SERVE AS AN ACCURATE REFLECTION OF THE CONTRIBUTION OF THE SODIUM COMPONENTS DEVELOPMENT PROGRAM WORKING GROUP IS MAKING TO THAT DEVELOPING TECHNOLOGY. THIS VOLUME CONSISTS OF QUESTIONNAIRES SENT TO MEMBERS AND ALTERNATES, AND REPLIES. ALSO INCLUDED ARE THE MONTHLY COORDINATION REPORTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*EQUIPMENT DESIGN + *FABRICATION + *HEAT EXCHANGER + *INSTRUMENTATION, GENERAL + *METAL WATER REACTION + *OPERATING EXPERIENCE + *PUMP + *SODIUM + *TESTING + MAIN COOLING SYSTEM + REACTOR, LIQUID METAL COOLED

12-16027 ALSO IN CATEGORY 17

AYRES JA + PERRIGO LD + WEED RD
DECONTAMINATION OF A PWR
BATTELLE MEMORIAL INSTITUTE, RICHLAND, WASHINGTON
6 PAGES, 5 FIGURES, 3 TABLES, NUCLEONICS 25(4), PAGES 58-63 (APRIL 1967)

A SUCCESSFUL TWO-STEP PROCEDURE (ALKALINE PERMANGANATE FOLLOWED BY A CITRATE-OXALATE SOLUTION) WAS DEVELOPED FOR A RECENT DECONTAMINATION OF THE PLUTONIUM RECYCLE TEST REACTOR. THE PWR DECONTAMINATION GAVE HIGH DECONTAMINATION FACTORS (AVERAGE WAS 25), LOW UNIFORM CORROSION RATES OF THE MAJOR CONSTRUCTION MATERIALS, AND NO EVIDENCE OF NONUNIFORM CORROSION. THE OPERATION WENT SMOOTHLY AND WITHOUT INCIDENT, REQUIRING ONLY 48 HR FROM INTRODUCTION OF FIRST SOLUTION UNTIL COMPLETION OF THE FINAL RINSE.

*DECONTAMINATION + *MAIN COOLING SYSTEM + CORROSION + PWR (PLUTONIUM RECYCLE TEST REACTOR) + REACTOR, AEC OWNED + REACTOR, HEAVY WATER + REACTOR, PRESSURE TUBE + REACTOR, PRESSURIZED WATER + SURFACE FILM DEPOSIT

12-16120 ALSO IN CATEGORY 18

REASLEY EG + LENCE JT + MYSINGER ED
LEVITATION OF AN EGCR CONTROL ROD
TENNESSEE VALLEY AUTHORITY, OAK RIDGE, TENNESSEE
TID-22720 +. 72 PAGES, FEBRUARY 18, 1965

METHODS CONSIDERED CREDIBLE ARE - THE RUPTURE OF A CONTROL-ROD NOZZLE ABOVE THE TOP OF THE SHIELD PLUG SUCH THAT THE PLUG CANNOT BE EJECTED, RESULTING IN ROD-EJECTION TIME OF 1 SEC, AND RUPTURE OF THE NOZZLE INTERIOR COOLANT LINE SUCH THAT THE CROSS-SECTIONAL AREA OF THE RUPTURE IS AT LEAST EQUAL TO THE CROSS-SECTIONAL AREA OF THE PIPE. THIS RESULTS IN A ROD-EJECTION TIME OF 0.7 SEC.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*ACCIDENT ANALYSIS + *ACCIDENT, CONTROL ROD EJECTION + EGCR (EXPERIMENTAL GAS COOLED REACTOR) + REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED

12-16135 ALSO IN CATEGORIES 1 AND 17

SWAIN AD
SAFETY AS A DESIGN FEATURE IN SYSTEMS
SANDIA CORPORATION, ALBUQUERQUE, NEW MEXICO
SC-R-65-991 + CONF-650,915-2 +. 14 PAGES, SEPTEMBER 1965

TWO POINTS ARE STRESSED. FIRST, CAMPAIGNS TO MOTIVATE INDIVIDUALS TOWARD SAFETY DO NOT PERMANENTLY REDUCE THE FREQUENCY OF ACCIDENTS IN MAN-MACHINE SITUATIONS. SECOND, IT IS EASIER AND MORE LASTING TO DESIGN SAFETY FEATURES INTO THE SYSTEMS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*SAFETY PRINCIPLES AND PHILOSOPHY + ACCIDENT, GENERAL + ACCIDENT, HYPOTHETICAL + ACCIDENT, PROBABILITY OF + STAFFING, TRAINING, QUALIFICATION

CATEGORY 12
PLANT SAFETY FEATURES

12-16136

IN-PILE CORROSION OF NUCLEAR MATERIALS. QUARTERLY REPORT NO. 4, DECEMBER 1, 1965 - FEBRUARY 28, 1966
CENTRE D'ETUDE DE L'ENERGIE NUCLEAIRE, MOL, BELGIUM
EURAE-1702 + EUP-2888 + R-2388 +. 19 PAGES, FEBRUARY 1966

THE RADIATION EFFECT ON THE CORROSION OF STEEL AND PLATINUM IS MAINLY A RESULT OF RADIOLYSIS OF THE WATER. TO DETERMINE THIS EFFECT, THE POTENTIAL CHANGES OF THESE METALS WERE MEASURED IN SOLUTIONS CONTAINING FERROUS AND CERIC IONS. GAMMA IRRADIATION CAUSED A DROP OF 700 MILLIVOLTS IN THE POTENTIAL OF PLATINUM. A DROP IN THE POTENTIAL OF STEEL WAS INDICATED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*CORROSION + GAMMA + RADIATION EFFECT + STEEL

12-16175

ALSO IN CATEGORIES 10 AND 17

DIESEL GENERATOR FAILURE

PUERTO RICO WATER RESOURCES AUTHORITY, SAN JUAN

2 PAGES, PAGES 8-9 FROM BONUS NUCLEAR POWER PLANT DRL MONTHLY REPORT NO. 31, OCTOBER 1966, DOCKET NO. 115-4

ALTHOUGH THE DRY-TANK-LEVEL CONTROLS WERE ADJUSTED TO ENSURE A GOOD SUPPLY OF FUEL (SEE MONTHLY REPORT 30), FAILURES TO START STILL OCCURRED. OTHER FAULTS INCLUDED PITTED CONTACTS ON THE GENERATOR ENERGIZING SWITCH, AND A BROKEN CRANKING RELAY. THE CRANKING LIMITER AND FOUR STARTER BRUSHES WERE ALSO REPLACED (PREVENTIVE MAINTENANCE).

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*FAILURE, EQUIPMENT + *FAILURE, MAINTENANCE ERROR + *GENERATOR, DIESEL + *OPERATING EXPERIENCE + *OPERATIONS REPORT, GENERAL + BONUS (BOILING NUCLEAR SUPERHEAT PROJECT) + ELECTRIC POWER, AUXILIARY + FAILURE, INSTRUMENT + MAINTENANCE AND REPAIR + REACTOR, BOILING WATER + REACTOR, INTERNAL SUPERHEAT

12-16311

ALSO IN CATEGORIES 11 AND 17

A TIGHTENING SCREW ON REACTOR SAFETY

5 PAGES, FIGURES, NUCLEONICS 25(1) PAGES 41-45 (JANUARY 1967)

DISCUSSES THE PROBLEM OF INSPECTING ALL INTERNAL AND EXTERNAL SURFACES OF ALL THE PRESSURE-CONTAINING PARTS OF NUCLEAR POWER PLANTS. AEC IS NOW QUESTIONING ALL APPLICANTS FOR CONSTRUCTION PERMITS ABOUT IN-SERVICE INSPECTION. COMMONWEALTH EDISONS EXPERIENCE IS DISCUSSED. THEY STATE THAT THE BEST INSPECTION METHOD IS A MAN LOOKING. BESIDES EDISONS INSPECTORS, STATE AND INSURANCE AGENCIES HAVE INSPECTION TEAMS. A MATERIALS-SURVEILLANCE PROGRAM IS IN USE TO SUPPLEMENT VISUAL INSPECTIONS. VESSEL SAMPLES ARE EXAMINED PERIODICALLY AND HAVE INDICATED THAT THE NDT SAMPLES SHOULD REDUCE THE NEED FOR DIRECT EXAMINATION. DISCUSSES EDISONS REASONS FOR HYDROSTATIC TESTING OF THE DRESDEN-1 VESSEL AT 80% OF DESIGN PRESSURE. AEC SUGGESTED A TEST AT 125% OVER DESIGN PRESSURE EVERY 4 YEARS. EDISON DISAGREED. THE QUESTION IS STILL UNSETTLED.

*ADMINISTRATIVE CONTROLS AND PRACTICES + *INSPECTION AND COMPLIANCE + *PRESSURE VESSEL + AEC CONSTRUCTION PERMIT CRITERIA + DRESDEN 1 + EXAMINATION + INTEGRITY + INTEGRITY + MAINTENANCE AND REPAIR + REACTOR, BOILING WATER + REGULATION, AEC + SAFETY PRINCIPLES AND PHILOSOPHY + TEST, NONDESTRUCTIVE + TEST, PRESSURE VESSEL

12-16312

ALSO IN CATEGORIES 1 AND 17

GARRICK BJ + GEKLER WC + POMREHN HP

ARE PLANT ENGINEERED SAFEGUARDS RELIABLE

HOLMES + NAPVER, INC., LOS ANGELES, CALIFORNIA

5 PAGES, 1 FIGURE, 2 TABLES, NUCLEONICS 25(1) PAGES 45-49 (JANUARY 1967)

PRESENTS THE RESULTS OF A STUDY OF THE RELIABILITY OF ENGINEERED-SAFEGUARD SYSTEMS BASED ON OPERATING EXPERIENCE AT 5 NUCLEAR POWER PLANTS. (FOR A FULL REPORT SEE REPORT HN-185). DIFFICULTIES WITH SAFEGUARD SYSTEMS INCLUDE ISOLATION-VALVE LEAKAGE OR FAILURE TO CLOSE, STARTING-CIRCUIT FAILURES, FUEL-SUPPLY-SYSTEM LEAKAGE IN EMERGENCY POWER SYSTEMS, AND DESIGN INADEQUACIES REQUIRING INCREASED MAINTENANCE OR MODIFICATION FOR ENVIRONMENTAL CONDITIONS. SUMMARIZES RESULTS OF STUDY FOR EMERGENCY COOLING SYSTEMS, CONTAINMENT, EMERGENCY POWER SYSTEMS, SECONDARY SHUTDOWN SYSTEMS, AND SAFETY SYSTEMS.

*ENGINEERED SAFETY FEATURE + *OPERATING EXPERIENCE + *RELIABILITY ANALYSIS + CONTAINMENT, GENERAL + EMERGENCY COOLING CONSIDERATIONS + EMERGENCY POWER, ELECTRIC + EXAMINATION + FAILURE, ADMINISTRATIVE CONTROL + FAILURE, EQUIPMENT + FAILURE, GENERAL + MAINTENANCE AND REPAIR + PLANT PROTECTIVE SYSTEM + REACTOR SAFETY SYSTEM + REACTOR, POWER + SHUTDOWN SYSTEM, SECONDARY

12-16317

ALSO IN CATEGORY 7

ROW TH

DECONTAMINATION EXPERIENCE IN THE NUCLEAR SAFETY PILOT PLANT.
OAK RIDGE NATIONAL LABORATORY, TENN.

CATEGORY 12
PLANT SAFETY FEATURES

12-16317 *CONTINUED*

ORNL-TM-1718 +. 23 PAGES, 5 FIGURES, 4 TABLES, 7 REFERENCES, MARCH 2, 1967

THE NUCLEAR SAFETY PILOT PLANT IS USED TO STUDY THE BEHAVIOR IN A CONTAINMENT SYSTEM OF FISSION PRODUCTS RELEASED FROM OVERHEATED FUEL. 17 EXPERIMENTS HAVE BEEN RUN TO DATE. CONTAMINATION OF THE MAIN CONTAINMENT VESSEL DURING THESE EXPERIMENTS VARIED FROM MOLECULAR IODINE TO MIXED FISSION PRODUCTS AND UO₂. A CITRATE SOLUTION WAS EFFECTIVE IN REMOVING UO₂, CERIUM, RUTHENIUM, AND BARIUM-LANTHANUM. SODIUM HYDROXIDE WAS USED SUCCESSFULLY IN REMOVING IODINE AND CESIUM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

*BARIUM + *CERIUM + *CESIUM + *IODINE + *LANTHANUM + *NSPP (NUCLEAR SAFETY PILOT PLANT) + *RUTHENIUM + *SURFACE CONTAMINATION + *URANIUM DIOXIDE + DECONTAMINATION

12-16329 ALSO IN CATEGORIES 18 AND 1
QUESTION A-1(1) THRU 1(5)--UNITS 2 AND 3 SAFETY ACTION
COMMONWEALTH EDISON COMPANY

8 PAGES, PAGES A-1 TO A-8 FROM DRESDEN 3 AMENDMENT 1, 1966, DOCKET NO. 50-249

SEVERAL FEATURES OF UNIT 3 WILL BE SHARED WITH UNIT 2, INCLUDING TURBINE BUILDING, SECONDARY CONTAINMENT, CONTAINMENT-SPRAY SYSTEM, AND REACTOR-BUILDING VENTILATION SYSTEM, PROVIDING POTENTIAL INTERACTION BETWEEN UNITS. DEGREE AND EFFECT OF INTERACTIONS RELATED TO SAFETY DURING NORMAL AND ACCIDENT CONDITIONS. CONSIDER ESPECIALLY THESE FIVE POINTS - (1) DISCUSS DIFFERENCES IN PERFORMANCE OBJECTIVES OF UNIT 3 WITH LISTED INTERCONNECTIONS AS COMPARED WITH THOSE FOR A SINGLE PLANT. INCLUDE FACTORS INFLUENCING OPERATION OF UNIT 2. (2) STATE CRITERIA USED TO DETERMINE WHICH COMPONENTS, SYSTEMS, AND FACILITIES COULD AND COULD NOT BE SHARED. (3) FOR FEATURES NOT SHARED, GIVE CRITERIA FOR ADDITIONAL DESIGN CONSIDERATIONS ASSURING NO ADVERSE INTERACTION BETWEEN UNITS. (4) FOR COMPONENTS, SYSTEMS AND FACILITIES SHARED, STATE CRITERIA SPECIFIC DESIGN OF EACH SHARED FEATURE. (5) IF INCIDENT OCCURS IN ONE UNIT, WHAT ARE POTENTIAL EFFECTS ON RELIABILITY, REDUNDANCY, ACCESS FOR INSPECTION AND MAINTENANCE, AND OPERATIONAL MODE OF REMAINING UNITS.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ENGINEERED SAFETY FEATURE + *SHARED COMPONENTS + AEC QUESTION + DRESDEN 3 + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

12-16330 ALSO IN CATEGORIES 18 AND 6
QUESTION A-2--POTENTIAL REACTIVITY TRANSIENT STUDIES, PIPE-WHIPPING, AND GENERATION OF MISSILES
COMMONWEALTH EDISON COMPANY

3 PAGES, PAGES A-2-1 TO A-2-3 FROM DRESDEN 3 AMENDMENT 1, 1966, DOCKET NO. 50-249

YOUR ATTENTION IS DIRECTED TO REPORTS FROM THE ACRS TO THE CHAIRMAN, AEC, DATED NOVEMBER 24, 1965, AND MARCH 18, 1966, CONCERNING ITS REVIEW OF DRESDEN 2 AND MILLSTONE POINT. IN THESE REPORTS, ACRS REQUESTED FURTHER STUDIES RELATED TO ITS CONCERN ON PIPE-WHIPPING, GENERATION OF MISSILES WHICH COULD AFFECT THE EFFECTIVENESS OF ENGINEERED SAFEGUARDS, AND POTENTIAL REACTIVITY TRANSIENTS. DISCUSS THOSE CONSIDERATIONS IN THE DESIGN OF DRESDEN 3, AS WELL AS ANY SUPPORTING INFORMATION IN THESE AREAS. YOUR DISCUSSION OF PIPE-WHIPPING AND MISSILES SHOULD ALSO INCLUDE PROTECTION FOR SAFETY-RELATED INSTRUMENTATION LOCATED IN THE DRYWELL.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*MISSILE GENERATION AND PROTECTION + *REACTOR TRANSIENT + ACRS (ADVISORY COMMITTEE ON REACTOR SAFEGUARDS) + AEC QUESTION + DRESDEN 3 + FAILURE, PIPE + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

12-1634F ALSO IN CATEGORY 18
QUESTION B-6--EQUIPMENT ENVIRONMENTAL SPECIFICATIONS
COMMONWEALTH EDISON COMPANY

2 PAGES, PAGES B-6-1 TO B-6-2 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

PROVIDE THE GENERAL ENVIRONMENTAL SPECIFICATIONS FOR COMPONENTS USED IN THE SAFETY SYSTEMS. FOR EXAMPLE, IS THE SWITCHGEAR FOR THE 4.16-KV SWING-BUS SPECIFIED TO OPERATE PROPERLY IN SATURATED STEAM.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*PLANT PROTECTIVE SYSTEM + *SYSTEM OPERABILITY IN ACCIDENT CONDITIONS + AEC QUESTION + DRESDEN 3 + EMERGENCY POWER, ELECTRIC + REACTOR SAFETY SYSTEM + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

12-16350 ALSO IN CATEGORIES 18 AND 11
QUESTION C-2--CONTAINMENT SPRAY SYSTEM CRITERIA
COMMONWEALTH EDISON COMPANY

1 PAGE, PAGE C-2-1 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

OUR PRELIMINARY REVIEW OF THE PORTION OF THE CONTAINMENT SPRAY SYSTEM THAT IS TO BE SHARED

CATEGORY 12
PLANT SAFETY FEATURES

12-16350 *CONTINUED*

WITH UNITS 2 AND 3 INDICATES THAT SINGLE VALVE FAILURES IN THE CROSSOVER LINES COULD LEAD TO A LOSS OF CAPABILITY OR COULD RESULT IN AN ADVERSE INTERACTION BETWEEN THE UNITS IN THE EVENT OF A MAJOR ACCIDENT. WE BELIEVE THAT THE PROPOSED DESIGN SHOULD BE REEVALUATED IN CONJUNCTION WITH THE REQUIREMENTS OF CRITERION 18, AND IF NECESSARY, MODIFICATIONS PROPOSED TO ENSURE THAT THE CRITERION IS SATISFIED.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTAINMENT SPRAY + *SHARED COMPONENTS + AEC CONSTRUCTION PERMIT CRITERIA + AEC QUESTION + DRESDEN 3 + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY + SINGLE-FAILURE CRITERION

12-16351 ALSO IN CATEGORY 18

QUESTION C-3--ISOLATION CONDENSER DESIGN BASES

COMMONWEALTH EDISON COMPANY

1 PAGE, PAGE C-3-1 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

SINCE CRITERION 10 CONCERNS THE ADEQUACY OF AFTER-HEAT REMOVAL, CLARIFY THE DESIGN BASIS FOR THE ISOLATION CONDENSERS IN TERMS OF HEAT-REMOVAL CAPACITY WITHOUT MAKEUP-WATER REQUIREMENTS. ALSO DISCUSS THE MEANS THAT WOULD BE PROVIDED FOR MAKEUP WATER IN THE EVENT OF A LOSS OF ELECTRICAL POWER.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*AEC CONSTRUCTION PERMIT CRITERIA + *CONTAINMENT PENETRATION, CLOSURE OF + *SHUTDOWN COOLING SYSTEM + ACCIDENT, LOSS OF POWER + AEC QUESTION + DRESDEN 3 + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

12-16362

ALSO IN CATEGORIES 18 AND 9

QUESTION E-3--STATION STACK MONITORING SYSTEM

COMMONWEALTH EDISON COMPANY

2 PAGES, PAGES E-3-1 TO E-3-2 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

PROVIDE A DIAGRAM OF THE STACK-MONITORING SYSTEM FOR GASEOUS RELEASES FROM UNITS 1, 2, AND 3.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

MONITOR, RADIATION, GAS + *STACK + AEC QUESTION + DRESDEN 3 + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

12-16374

ALSO IN CATEGORIES 17 AND 18

CALDWELL WE

INDIAN POINT 2 REACTOR DESCRIPTION

CONSOLIDATED EDISON COMPANY, NEW YORK

38 PAGES, 9 FIGURES, 1 TABLE, APRIL 1967, PRESENTED AT THE AMERICAN POWER CONFERENCE, CHICAGO, APRIL 25-27, 1967

FOUR PAPERS FROM A SESSION ON INDIAN POINT 2, ENTITLED SYSTEM PLANNING ASPECTS AND ECONOMIC FACTORS, OVERALL PLANT DESIGN, SITING AND LICENSING CONSIDERATIONS (DISCUSSES EVOLUTION OF ENGINEERED SAFEGUARDS AS AEC/ACRS STANDARDS EVOLVE, MAINLY ON CONTAINMENT-PENETRATION LEAKAGE CONTROL, EMERGENCY COOLING SYSTEMS, AND PIT CRUCIBLE), AND NUCLEAR STEAM-SUPPLY SYSTEM (REUSE OF BORIC ACID REDUCES SOLID WASTE SHIPPED FROM 975 TO 375 DRUMS PER CYCLE).

AVAILABILITY - AMERICAN POWER CONFERENCE, E. R. WHITEHEAD, SECRETARY, ILLINOIS INSTITUTE OF TECHNOLOGY, CHICAGO, ILLINOIS

*CONSTRUCTION PERMIT PROCESS + *ENGINEERED SAFETY FEATURE + *REACTOR DESCRIPTION + CONTAINMENT LEAKAGE CONTROL + EMERGENCY COOLING CONSIDERATIONS + INDIAN POINT 2 + REACTOR, PRESSURIZED WATER + WASTE DISPOSAL, SOLID

12-16383

ALSO IN CATEGORY 5

ISRAEL SL + NOLAN DJ

PERFORMANCE EVALUATION OF HEAT EXCHANGERS FOR SODIUM-COOLED REACTORS. QUARTERLY TECHNICAL PROGRESS REPORT, JANUARY 1, 1967 - MARCH 31, 1967.

UNITED NUCLEAR CORP., ELMSFORD, N. Y. RESEARCH AND ENGINEERING CENTER

UNC-5174 +. 65 PAGES, APRIL 20, 1967

PROGRESS REPORT ON THE EVALUATION OF THE THERMAL-HYDRAULIC PERFORMANCE AND STRUCTURE OF HEAT EXCHANGER FOR SODIUM-COOLED REACTORS. EVALUATION TO BE BASED ON MODEL TESTS AT ABOUT 30 MW(T). SHUTDOWN OF EVALUATION PROCEDURE ARE CONTINUING. SOME ERRORS FOUND.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

HEAT EXCHANGER + METAL, LIQUID + SODIUM + THERMAL ANALYSIS

CATEGORY 12
PLANT SAFETY FEATURES

12-16385 ALSO IN CATEGORY 18

QUESTION 1. GREATER EMERGENCY CORE COOLING MARGIN BECAUSE OF HIGHER FUEL RATINGS

TENNESSEE VALLEY AUTHORITY

6 PAGES, PAGES 1-1 TO 1-6 FROM BROWNS FERRY AMENDMENT 7, FEBRUARY 1967, DOCKET NO. 50-259/260

IN VIEW OF THE MORE SEVERE FUEL-ELEMENT OPERATING CONDITIONS PROPOSED AND THE DECREASED TIME IN WHICH FUEL WILL MELT IN THE ABSENCE OF ADEQUATE COOLING UNDER POSTULATED ACCIDENT CONDITIONS, HAS CONSIDERATION BEEN GIVEN TO THE PROVISION OF AN EMERGENCY CORE-COOLING SYSTEM WITH SUBSTANTIALLY GREATER MARGIN THAN THOSE PLANNED FOR THE PROPOSED REACTORS WHICH ARE SIMILAR BUT ARE TO BE OPERATED AT LOWER FUEL RATINGS.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*EMERGENCY COOLING CONSIDERATIONS + AEC QUESTION + BROWNS FERRY + FUEL ELEMENT + PERFORMANCE LIMIT + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY + SAFETY PRINCIPLES AND PHILOSOPHY

12-16389 ALSO IN CATEGORIES 18 AND 5

QUESTION 5. EFFECT ON FUEL TEMPERATURE AND OFFSITE DOSE IF ISOLATION VALVES LEAK FOLLOWING STEAM LINE RUPTURE

TENNESSEE VALLEY AUTHORITY

2 PAGES, PAGES 5-1 TO 5-2 FROM BROWNS FERRY AMENDMENT 7, FEBRUARY 1967, DOCKET NO. 50-259 AND 260

EXAMINE THE ACCIDENT INVOLVING A LARGE STEAM-LINE BREAK OUTSIDE THE DRYWELL, ASSUMING THAT THE STEAM-LINE ISOLATION VALVES DO NOT SEAT PROPERLY. CONSIDER A RANGE OF CONTINUED LEAKAGE. HOW DO THE FUEL-ELEMENT TEMPERATURES BEHAVE. HOW IS THE OFF-SITE DOSE AFFECTED BY THE NUMBER OF FUEL-PIN FAILURES.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACCIDENT, STEAM LINE RUPTURE + *CONTAINMENT PENETRATION, CLOSURE OF + AEC QUESTION + AIRBORNE RELEASE + BROWNS FERRY + DOSE + FAILURE, FUEL ELEMENT + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

12-16396 ALSO IN CATEGORIES 18 AND 9

QUESTION 12. ADDED FASTER INSTRUMENTATION TO INITIATE LPCI SYSTEM

TENNESSEE VALLEY AUTHORITY

1 PAGE, PAGE 12-1 FROM BROWNS FERRY AMENDMENT 7, FEBRUARY 1967, DOCKET NO. 50-259/260

DUE TO HIGHER POWER DENSITY, LESS TIME IS AVAILABLE TO INSTITUTE ACTION BY THE EMERGENCY COOLING SYSTEM IN THE EVENT OF A LARGE PIPE BREAK. WHAT ADDITIONAL INSTRUMENTATION METHOD COULD PROVIDE ADDITIONAL ASSURANCE AGAINST A FAILURE OR DELAY IN THE INITIATION SIGNAL TO THE LPCI. PARTICULARLY, HOW MIGHT DIVERSITY AFFORD ADDED ASSURANCE OF PROMPT ACTION OF THE EMERGENCY COOLING SYSTEM.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*EMERGENCY COOLING CONSIDERATIONS + *INSTRUMENTATION, PROCESS + *PLANT PROTECTIVE SYSTEM + AEC QUESTION + BROWNS FERRY + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

12-16397 ALSO IN CATEGORIES 18 AND 11

QUESTION 13. PRESSURE VESSEL SEQUENTIAL FAILURE EFFECT ON EMERGENCY COOLING

TENNESSEE VALLEY AUTHORITY

1 PAGE, PAGE 13-1 FROM BROWNS FERRY AMENDMENT 7, FEBRUARY 1967, DOCKET NO. 50-259/260

WHAT KINDS OF FATIGUE CRACKS OR OTHER FLAWS IN STRUCTURES WITHIN THE PRESSURE VESSEL COULD LEAD TO STRUCTURAL FAILURE DURING BLOWDOWN SO AS TO IMPAIR SIGNIFICANTLY THE EFFECTIVENESS OF THE LPCI OR THE CORE SPRAY SYSTEM. WHAT STEPS ARE PLANNED TO PROTECT AGAINST THE EXISTENCE OF SUCH FLAWS IN SERVICE.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*EMERGENCY COOLING CONSIDERATIONS + *FAILURE, PRESSURE VESSEL + *FAILURE, SEQUENTIAL + AEC QUESTION + BROWNS FERRY + PRESSURE VESSEL + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

12-16437 ALSO IN CATEGORIES 5 AND 18

VOLUME II, APPENDIX E - REACTOR CORE SPRAY COOLING SYSTEM TEST PROGRAM.

JERSEY CENTRAL POWER AND LIGHT COMPANY, MORRISTOWN, NEW JERSEY

4 PAGES, 8 FIGURES, FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, JANUARY 25, 1967, DOCKET NO. 50-219

SUMMARY OF TESTS TO DETERMINE (1) AMOUNT OF SPRAY REACHING EACH ASSEMBLY (MINIMUM FLOW IS 35% OF THE AVERAGE FLOW), (2) SPRAY-COOLING EFFECTIVENESS ON A BUNDLE OF 36 ELECTRICALLY HEATED TEST RODS (THE CORE-HEATUP CALCULATIONAL MODEL EFFECTIVE-HEAT-TRANSFER COEFFICIENT WAS INCREASED TO ACCOUNT FOR INCREASED RADIATION LOSSES TO VAPOR AND DROPLETS), AND (3) HEIGHT OF CORE FLOODING NECESSARY FOR EFFECTIVE COOLING (5 MIN AFTER SHUTDOWN WITH FLOODING HALFWAY UP THE CORE, THE ENTIRE LENGTH IS AT SATURATION TEMPERATURE EXCEPT FOR THE UPPER 3 FT, WHICH

CATEGORY 12
PLANT SAFETY FEATURES

12-16437 *CONTINUED*

PEAKED AT 975 F 6 IN. FROM THE TOP - TWO-THIRDS FLOODING REDUCED ALL TEMPERATURES TO SATURATION).

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CORE SPRAY + *MODEL TESTING + *TEST, PROOF + ACCIDENT, LOSS OF COOLANT + CORE REFLOODING SYSTEM + HEAT TRANSFER, RADIANT + HIGH TEMPERATURE + MOCKUP + OYSTER CREEK + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, GENERAL

12-16445 ALSO IN CATEGORY 18

VOLUME I, SECTION VI - ADDITIONAL ENGINEERED SAFEGUARDS.

JERSEY CENTRAL POWER AND LIGHT COMPANY, MORRISTOWN, NEW JERSEY

22 PAGES, 1 TABLE, FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, JANUARY 25, 1967, DOCKET NO. 50-219

THE 7 SAFEGUARDS (CONTROL-ROD VELOCITY LIMITER, CONTROL-ROD HOUSING SUPPORT, STANDBY LIQUID CONTROL SYSTEM, STEAM-LINE FLOW RESTRICTORS, STANDBY CORE COOLING, CONTAINMENT SPRAY COOLING, AND CONTAINMENT NITROGEN ATMOSPHERE) HAVE DESIGN BASES, DESCRIPTION, DESIGN ANALYSIS, AND SUPERVISANCE AND TESTING SUMMARIZED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ENGINEERED SAFETY FEATURE + *SAFETY ANALYSIS REPORT, GENERAL + CONTAINMENT ATMOSPHERE, INERT + CONTAINMENT SPRAY + CORE SPRAY + FLOW ORIFICE OR RESTRICTION + OYSTER CREEK + REACTOR DESCRIPTION + REACTOR, BOILING WATER + SHUTDOWN SYSTEM, SECONDARY

12-16450 ALSO IN CATEGORY 18

VOLUME I, SECTION VII. ENGINEERED SAFEGUARDS

NIAGARA MOHAWK POWER CORPORATION, SYRACUSE, N. Y.

51 PAGES, 16 FIGURES, 2 TABLES, FINAL SAFETY ANALYSIS REPORT, NINE MILE POINT, JUNE 1967, DOCKET NO. 50-220

VOLUME IV CONTAINS DETAILS OF PRESSURE SUPPRESSION, CORE SPRAY, AND CONTAINMENT SPRAY SYSTEM. SECTION VII SUMMARIZES ENGINEERED-SAFEGUARDS SYSTEMS (CORE SPRAY, CONTAINMENT SPRAY, LIQUID POISON INJECTION, CONTROL-ROD-VELOCITY LIMITER, CONTROL-ROD HOUSING SUPPORT, STEAM-FLOW RESTRICTORS, CONTAINMENT INERT ATMOSPHERE, EMERGENCY VENTILATION AND FILTRATION) BY DESCRIBING DESIGN BASIS, SYSTEM DESIGN, DESIGN EVALUATION, AND TESTS AND INSPECTION.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ENGINEERED SAFETY FEATURE + *REACTOR DESCRIPTION + *SAFETY ANALYSIS REPORT, GENERAL + CONTAINMENT ATMOSPHERE, INERT + CONTAINMENT FILTERING SYSTEM + CONTAINMENT SPRAY + CORE SPRAY + FLOW ORIFICE OR RESTRICTION + NINE MILE POINT + REACTOR, BOILING WATER + SHUTDOWN SYSTEM, SECONDARY

12-16461 ALSO IN CATEGORIES 7 AND 8

SHIELDS RP + MILLER CE

THE EFFECT OF FISSION PRODUCTS ON CHARCOAL IGNITION

OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.

ORNL-TM-1739 +. 31 PAGES, 10 FIGURES, 3 TABLES, 2 REFERENCES, JAN. 10, 1967

IN A NUCLEAR ACCIDENT IN WHICH FISSION PRODUCTS ARE RELEASED INTO THE CONTAINMENT SYSTEM, THE CHARCOAL ADSORBERS USED FOR REMOVAL OF IODINE WOULD BE SUBJECT TO RAPID LOADING. IF AIR WERE PRESENT BUT NOT FLOWING, THE HEAT GENERATED IN THE ADSORBER BY DECAY OF FISSION PRODUCTS MIGHT RAISE THE TEMPERATURE OF SMALL AREAS OF THE CHARCOAL ADSORBER TO THE POINT WHERE THE PRESUMPTION OF AIR FLOW WOULD IGNITE THE CHARCOAL. AN IN-PILE EXPERIMENT WAS PERFORMED TO STUDY HOT-SPOT EFFECTS UNDER CONDITIONS WHICH SIMULATE THOSE IN THE ADSORBER DURING A REACTOR ACCIDENT. THE IGNITION TEMPERATURE OF THE CHARCOAL WAS INCREASED BY THE PRESENCE OF FISSION PRODUCTS. ALTHOUGH THE ADSORBER WAS LOADED WITH 8 TIMES MORE RADIOACTIVE IODINE PER SQUARE INCH OF FRONT SURFACE THAN EXPECTED IN ADSORBERS SUCH AS IN HFIR AND NPR, THERE HAS BEEN NO EVIDENCE OF HOT-SPOT EFFECTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

*ADSORPTION + *CHARCOAL + *FIRE + *FISSION PRODUCT, IODINE + *IGNITION + HFIR (HIGH FLUX ISOTOPE REACTOR) + NPR (HANFORD NEW PRODUCTION REACTOR) + REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED + REACTOR, RESEARCH + REACTOR, TEST

12-16479

MOLDENHAWER F

THE DECONTAMINATION OF WORKING SURFACES BY MEANS OF AQUEOUS SOLUTIONS.

STAATLICHE ZENTRALE FÜR STRAHLENSCHUTZ, GERMANY

26 PAGES, 3 FIGURES, 7 TABLES, 4 REFERENCES, MAY 1965, IN GERMAN

THE EFFECTIVENESS OF KNOWN AND NEW DECONTAMINATION AGENTS FOR STAINLESS STEEL, DECELITH H, IK COATING, PIACRYL, AND GLASS CONTAMINATED WITH SR-90 AND P-32 WAS DETERMINED. THE SAME METHOD OF DECONTAMINATION WITHOUT MECHANICAL AGITATION WAS USED IN ALL THE EXPERIMENTS. THE RESULTS ARE EVALUATED ON THE VARIOUS ASPECTS OF RADIATION PROTECTION.

CATEGORY 12
PLANT SAFETY FEATURES

12-16479 *CONTINUED*

AVAILABILITY - MICROCARD EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM, WISCONSIN 54669

*GLASS + *METAL + *PHOSPHORUS + *STRONTIUM + *SURFACE CONTAMINATION + DECONTAMINATION + STEEL, STAINLESS

12-16484 ALSO IN CATEGORIES 11 AND 18

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS REPORT ON H. B. ROBINSON UNIT NO. 2.

UNITED STATES ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.

PRESS REL. K-44 +. 2 PAGES, 8 REFERENCES, FEBRUARY 17, 1967, DOCKET NO. 50-261

ACRS APPROVED CONSTRUCTION OF ROBINSON 2 AND RECOMMENDS THAT AEC REGULATORY STAFF (1) REVIEW DETAILS OF THE TEST DATA ON PERFORMANCE AND RELIABILITY OF THE SODIUM THIOSULFATE CONTAINMENT SPRAY AND OF THE DESIGN OF EMERGENCY SYSTEMS AS THEY BECOME AVAILABLE, (2) FOLLOW APPLICANT STUDIES AND CONCLUSIONS ON THE CONSEQUENCES OF A POSITIVE MODERATOR COEFFICIENT. ACRS RELIEVES INSTALLATION OF A STRONG-MOTION ACCELEROGRAPH (AS PLANNED HERE) MAY BE APPROPRIATE FOR MOST LARGE POWER REACTORS EVEN IN SEISMICALLY QUIESCENT ZONES. ACRS THINKS THAT A SPECIAL EFFORT SHOULD BE MADE TO ENSURE THAT THE CONTAINMENT ISOLATION VALVES ARE EFFECTIVELY TIGHT UNDER ACCIDENT CONDITIONS AND BELIEVES SUFFICIENT DIESEL FUEL SHOULD BE STORED TO RUN EMERGENCY DIESELS AT LEAST ONE WEEK IN CASE OF ACCIDENT.

AVAILABILITY - AEC, DIVISION OF OPERATIONAL SAFETY, WASHINGTON, D. C.

*ACRS (ADVISORY COMMITTEE ON REACTOR SAFEGUARDS) + *CONSTRUCTION PERMIT PROCESS + CONTAINMENT PENETRATION, CLOSURE OF + CONTAINMENT SPRAY + GENERATOR, DIESEL + INSTRUMENTATION, EARTHQUAKE + REACTOR, PRESSURIZED WATER + ROBINSON 2

12-16528 ALSO IN CATEGORIES 2 AND 18

CAHILL WJ + BECKJORD ES + NICHOLS RC

SITING AND LICENSING CONSIDERATIONS FOR THE INDIAN POINT UNIT NO. 2 NUCLEAR GENERATING PLANT

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC. + WESTINGHOUSE ELECTRIC CORP., PITTSBURGH, PA.

9 PAGES, 5 FIGURES, PAPER PRESENTED AT THE AMERICAN POWER CONFERENCE, GENEVA, 1967

TWO NEW SYSTEMS (PENETRATION PRESSURIZATION AND ISOLATION-VALVE SEAL WATER) WERE ADDED TO MINIMIZE CONTAINMENT LEAKAGE, AND OTHER SYSTEMS WERE MADE MORE RELIABLE. AEC STAFF RECOMMENDED THAT THE CORE-COOLING RECIRCULATION SYSTEM BE MOVED INSIDE CONTAINMENT. A REACTOR-PIT CRUCIBLE WAS ADDED TO LESSEN ACRS CONCERN OVER A MELT THROUGH THE CONTAINMENT. BECAUSE ACRS BEGAN TO APPLY PIPE-RUPTURE CRITERION TO THE MAIN LOOP ITSELF, AN ACCUMULATOR SYSTEM WAS ADDED FOR EACH LOOP.

AVAILABILITY - AMERICAN POWER CONFERENCE, E. R. WHITEHEAD, SECRETARY, ILLINOIS INSTITUTE OF TECHNOLOGY, CHICAGO, ILLINOIS

*CONSTRUCTION PERMIT PROCESS + ACCUMULATOR + CONTAINMENT LEAKAGE CONTROL + EMERGENCY COOLING CONSIDERATIONS + INDIAN POINT 2 + REACTOR DESCRIPTION + REACTOR, PRESSURIZED WATER

12-16580 ALSO IN CATEGORIES 11 AND 18

OCONEE 1, 2, AND 3. AMENDMENT 5 - PSAR REVISION

DUKE POWER COMPANY, CHARLOTTE, N. C. 28201

14 PAGES, 2 FIGURES, 1 TABLE, 4 REFERENCES, JUNE 16, 1967, DOCKET NOS. 50-269/270/287

(5.1.2.8) HIGH SOIL-RESISTIVITY MEASUREMENTS SHOW NONCORROSIVE CONDITIONS, SO THE PROPOSED SACRIFICIAL ANODE AND RECTIFIER SYSTEM IS DELETED FROM THE CONTAINMENT. (6.1) RESTRICTIVE CRACKS REMOVED FROM HIGH-PRESSURE INJECTION LINES. THE SHARED LOW-PRESSURE INJECTION SYSTEM IS REMOVED, AND ANOTHER PUMP AND HEAT EXCHANGER ADDED PER REACTOR FOR INDEPENDENCE. INDIVIDUAL BORATED STORAGE WATER CAPACITY INCREASED FROM 260,000 GAL TO 350,000, TO NEARLY DOUBLE ITS OPERATING TIME. A CORE-FLOODING SYSTEM (TWO 940-CU. FT TANKS) TO INJECT COOLANT THROUGH CHECK VALVES WHEN REACTOR PRESSURE DROPS TO 600 PSIG WAS ADDED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACCUMULATOR + *CONTAINMENT, CORROSION PROTECTION + *CORE REFLOODING SYSTEM + OCONEE 1, 2, AND 3 + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY + SHARED COMPONENTS

12-16610 ALSO IN CATEGORIES 18 AND 10

QUESTION R-1--DESIGN BASIS AND ADEQUACY OF SINGLE EMERGENCY DIESEL GENERATOR

THE CONNECTICUT LIGHT AND POWER COMPANY + THE HARTFORD ELECTRIC LIGHT COMPANY + WESTERN MASSACHUSETTS ELECTRIC COMPANY

2 PAGES, 1966, PAGES R-1-1 AND R-1-2 FROM DESIGN AND ANALYSIS REPORT AMENDMENT NO. 1, DOCKET NO. 50-245, MILLSTONE NUCLEAR POWER STATION

B. OVERALL STATION DESIGN AND OPERATION - (1) IN VIEW OF THE RECENT BLACKOUT, IT IS APPARENT THAT AUXILIARY POWER FROM OFF-SITE SOURCES MAY NOT BE AVAILABLE FOR ALL REQUIRED SAFETY SYSTEMS. IN THIS SITUATION, FULL RELIANCE FOR REMOVAL OF CORE DECAY HEAT AND HENCE FOR PUBLIC SAFETY WOULD BE PLACED ON THE SINGLE EMERGENCY DIESEL GENERATOR PROPOSED FOR THE STATION. CONSEQUENTLY, PROVIDE THE DESIGN BASIS AND JUSTIFICATION FOR THE ADEQUACY OF A SINGLE EMERGENCY DIESEL GENERATOR. CONSIDERATION OF AN ALTERNATE BACKUP SYSTEM MAY BE PROVIDED AS PART OF YOUR EVALUATION. (ANSWER) THE MAIN TURBINE.

CATEGORY 12
PLANT SAFETY FEATURES

12-16610 *CONTINUED*
AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*GENERATOR, DIESEL + *SINGLE-FAILURE CRITERION + EMERGENCY COOLING CONSIDERATIONS +
EMERGENCY POWER, ELECTRIC + MILLSTONE POINT + REACTOR, BOILING WATER + RESPONSE TO AEC QUESTION +
SAFETY ANALYSIS REPORT, PRELIMINARY

12-16617 ALSO IN CATEGORY 18
QUESTION C-4--MANUAL VALVES IN CRITICAL SYSTEMS OPERATED WITHOUT REMOTE INDICATION
THE CONNECTICUT LIGHT AND POWER COMPANY + THE HARTFORD ELECTRIC LIGHT COMPANY + WESTERN MASSACHUSETTS
ELECTRIC COMPANY
2 PAGES, 1966, PAGES C-4-1 AND C-4-2 FROM DESIGN AND ANALYSIS REPORT, AMENDMENT NO. 1, DOCKET NO. 50-245,
MILLSTONE NUCLEAR POWER PLANT

FIGURE 59 (COMPOSITE P AND I DIAGRAM) INDICATES THAT ALTHOUGH THERE IS REDUNDANCY IN THE
PUMPS, PIPE LINES, AND VALVES, ULTIMATE OPERATION OF THESE SYSTEMS IS PREDICATED ON
ADMINISTRATIVE CONTROL TO ENSURE THAT CERTAIN VALVES, SOME OF WHICH ARE INSIDE THE
CONTAINMENT, ARE OPEN DURING STATION OPERATION. PROVIDE JUSTIFICATION AND BASES FOR USING
VALVES IN CRITICAL SAFETY SYSTEMS WHICH ARE MANUALLY OPERATED WITHOUT REMOTE INDICATION.
WHAT ASSURANCE WOULD BE PROVIDED TO THE OPERATOR THAT THESE VALVES ARE INDEED OPEN BEFORE
SECURING CONTAINMENT IN PREPARATION FOR STATION OPERATION.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ADMINISTRATIVE CONTROLS AND PRACTICES + *ENGINEERED SAFETY FEATURE + *INSTRUMENTATION, POSITION +
*FOUNDANCE + *VALVE + AEC QUESTION + MILLSTONE POINT + REACTOR, BOILING WATER +
SAFETY ANALYSIS REPORT, PRELIMINARY

12-16618 ALSO IN CATEGORY 18
QUESTION C-5--WHY IS CONTAINMENT SURGE SYSTEM CONSIDERED MORE RELIABLE THAN DRESDEN II
THE CONNECTICUT LIGHT AND POWER COMPANY + THE HARTFORD ELECTRIC LIGHT COMPANY + WESTERN MASSACHUSETTS
ELECTRIC COMPANY
3 PAGES, 1 FIGURE, 1966, PAGES C-5-1 TO C-5-3 FROM DESIGN AND ANALYSIS REPORT, AMENDMENT NO. 1, DOCKET NO.
50-245, MILLSTONE NUCLEAR POWER STATION

SHOW WHY THE CONTAINMENT SPRAY IS CONSIDERED MORE RELIABLE THAN THAT PROPOSED FOR DRESDEN II,
WHICH CONSISTS OF TWO INDEPENDENT SYSTEMS, EACH REDUNDANT IN PUMPING CAPACITY. (IF ONE
MILLSTONE SYSTEM WERE DISABLED, EVERY COMPONENT OF THE SECOND SYSTEM WOULD NEED TO FUNCTION
TO OBTAIN THE REQUIRED SPRAY FLOW). IN ADDITION, DISCUSS THE CONSIDERATIONS THAT LED TO
REQUIREMENT OF A SPRAY OVER THE SUPPRESSION POOL. (ANSWER) EACH SYSTEM HAS 2 HALF-CAPACITY
COMPONENTS, SO ANY TWO HALVES PROVIDE 100% COOLING. (IN A SYSTEM, COMPONENTS ARE PARALLELED,
SO IF A SINGLE RIVER PUMP FAILS, A PAIR OF HEAT EXCHANGERS STILL GETS HALF FLOW, RATHER THAN
ONE HALF A SYSTEM BEING UNCOOLED). IT HAS ORDERS-OF-MAGNITUDE BETTER RELIABILITY THAN WHERE
PUMP-EXCHANGERS WORK IN SPECIFIC PAIRS. POOL SPRAY IS TO KEEP AIR TEMPERATURE AT POOL
TEMPERATURE, AN ASSUMPTION IN PSAR.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTAINMENT SPRAY + *RELIABILITY, SYSTEM + DRESDEN 2 + MILLSTONE POINT + REACTOR, BOILING WATER +
RESPONSE TO AEC QUESTION + SAFETY ANALYSIS REPORT, PRELIMINARY

12-16619 ALSO IN CATEGORIES 18 AND 9
QUESTION C-6--VALIDITY OF ROD WITH MINIMIZER CONCEPT WHEN A STUCK ROD IS NOT INDICATED
THE CONNECTICUT LIGHT AND POWER COMPANY + THE HARTFORD ELECTRIC LIGHT COMPANY + WESTERN MASSACHUSETTS
ELECTRIC COMPANY
2 PAGES, 1 FIGURE, 1966, PAGES C-6-1 AND C-6-2 FROM DESIGN AND ANALYSIS REPORT, AMENDMENT NO. 1, DOCKET
NO. 50-245, MILLSTONE NUCLEAR POWER PLANT

DISCUSS VALIDITY OF ROD-WORTH-MINIMIZER CONCEPT IN RELATION TO CASE IN WHICH ROD IS STUCK
FULL-IN WHILE DRIVE IS WITHDRAWN. SUBSEQUENT CHANGES IN SURROUNDING ROD PATTERNS ARE MADE
WITHIN LIMITS PERMITTED BY ROD-WORTH MINIMIZER AND INDICATED POSITION OF STUCK ROD. WHAT IS
HIGHEST WORTH OF STUCK ROD WHICH COULD BE OBTAINED AT HOT STANDBY AND AT FULL POWER.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTROL ROD WORTH + *ENGINEERED SAFETY FEATURE + *FAILURE, SCRAM MECHANISM + AEC QUESTION +
INSTRUMENTATION, POSITION + MILLSTONE POINT + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

12-16635 ALSO IN CATEGORIES 5 AND 6
HOUSE SW
AN INDEX TO THE TWO-PHASE GAS-LIQUID FLOW LITERATURE. PART III
MASSACHUSETTS INSTITUTE OF TECHNOLOGY, MECHANICAL ENGINEERING DEPT.
AD-630,295 + DSR-8734-6 + N66-25,613 +. 100 PAGES, 2 FIGURES, REFERENCES, JANUARY 1966

1453 REFERENCES ON CERTAIN TYPES OF TWO-PHASE GAS-LIQUID FLOW PHENOMENA WERE VERIFIED, LISTED,
AND INDEXED BY SUBJECT AND PRINCIPAL AUTHOR. THIS LITERATURE SURVEY WAS CARRIED OUT AS ONE
PHASE OF A PROGRAM TO DETERMINE THE STATE OF THE ART IN TWO-PHASE GAS-LIQUID FLOW PHENOMENA.
THIS IS THE FINAL REPORT OF A PROGRAM THAT HAS SEEN THE PUBLICATION OF TWO PRIOR INDEXES,

CATEGORY 12
PLANT SAFETY FEATURES

12-16635 *CONTINUED*

TOTALING 5235 REFERENCES ON TWO-PHASE GAS-LIQUID FLOW. THE PROBLEM AREAS OF CONDENSATION, CAVITATION, AND ATOMIZATION WERE GENERALLY EXCLUDED, EXCEPT THROUGH ERROR OR WHEN REFERENCES WERE SO BASIC AS TO BE GENERALLY USEFUL. A FREQUENCY-OF-CITATION ANALYSIS WAS MADE TO DETERMINE WHICH OF THE 5235 REFERENCES HAD BEEN MOST FREQUENTLY CITED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

BURNOUT HEAT FLUX + DNB (DEPARTURE FROM NUCLEATE BOILING) + FLOW STABILITY + FLOW THEORY AND EXPERIMENTS + FLOW, ANNULAR + FLOW, MIST + FLOW, TWO PHASE + HEAT TRANSFER

12-16663 ALSO IN CATEGORY 18

QUESTION 2.1 - REDUNDANCE RELIABILITY OF CONTAINMENT COOLING SYSTEMS
CONSUMERS POWER COMPANY, PALISADES PLANT, COVERT TOWNSHIP, MICHIGAN
18 PAGES, 14 FIGURES, 1 TABLE, NOVEMBER 14, 1966, PAGES 2.1/1-18 OF CONSUMERS POWER COMPANY APPLICATION FOR REACTOR CONSTRUCTION PERMIT AND OPERATING LICENSE, AMENDMENT NUMBER 3, DOCKET NO. 50-255

SECTION 2.0. ENGINEERED SAFEGUARDS SYSTEMS (1). PSAR, PAGE VI-1 STATES THAT THE OBJECTIVE UNDERLYING PERFORMANCE REQUIREMENTS FOR ENGINEERED SAFEGUARDS IS TO RESTRICT FISSION-PRODUCT RELEASE FROM FUEL AND TO CONTROL DISPERSAL. ONE PRINCIPAL MEANS OF ACHIEVING OBJECTIVE IS TO LIMIT AND REDUCE INTERNAL CONTAINMENT PRESSURE, WITH IMPLEMENTATION BY TWO SEPARATE SYSTEMS, EACH HAVING REQUIRED CAPABILITY AND INTERNAL REDUNDANCY. SAFETY-INJECTION SYSTEM, HOWEVER, APPEARS LESS CONSERVATIVELY DESIGNED THAN CONTAINMENT-COOLING SYSTEMS IN THIS REGARD. A MORE SUITABLE WAY WOULD BE BY PROVIDING AT LEAST AS GREAT CONSERVATISM IN CORE-COOLING SYSTEMS IN REGARD TO REDUNDANCY RELIABILITY AND IN THE NUMBER OF SYSTEMS AS WELL AS WITHIN SYSTEMS, AS IS USED FOR CONTAINMENT-COOLING SYSTEMS. DISCUSS THIS MATTER.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CORE REFLOODING SYSTEM + AEC QUESTION + PALISADES POINT + REACTOR, PRESSURIZED WATER + REDUNDANCE + SAFETY ANALYSIS REPORT, PRELIMINARY

12-16664 ALSO IN CATEGORY 18

QUESTION 2.2-1 - REDUNDANCY AND INDEPENDENCE OF ENGINEERED SAFEGUARD SYSTEMS
CONSUMERS POWER COMPANY, PALISADES PLANT, COVERT TOWNSHIP, MICHIGAN
8 PAGES, 1 FIGURE, NOVEMBER 14, 1966, PAGE 2.2.1-1 TO 2.2.1-8 OF CONSUMERS POWER COMPANY APPLICATION FOR REACTOR CONSTRUCTION PERMIT AND OPERATING LICENSE, AMENDMENT NUMBER 3, DOCKET NO. 50-255

PSAR STATES THAT ENGINEERED-SAFEGUARD SYSTEMS ARE REDUNDANT. FIGURE VI SHOWS THAT (A) HIGH- AND LOW-HEAD SAFETY-INJECTION SYSTEMS ARE ESSENTIALLY SINGLE SYSTEMS, EACH HAVING TWO PUMPS AND FOUR INLETS TO REACTOR VESSEL, (B) THERE ARE SEVERAL AREAS WHERE SINGLE FAILURES COULD NULLIFY HIGH- OR LOW-HEAD SYSTEMS, (C) SERVICE-WATER SYSTEM IS SINGLE SYSTEM, (D) VALVING AND INSTRUMENTATION IS SHOWN ONLY FOR CLARIFICATION. 2.2.1 CLARIFY CRITERIA FOR ENGINEERED SAFEGUARD SYSTEMS IN REGARD TO INDEPENDENCE AND REDUNDANCE BOTH IN REGARD TO NUMBERS OF SYSTEMS AND WITHIN EACH SYSTEM.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ENGINEERED SAFETY FEATURE + *INDEPENDENCE + *REDUNDANCE + AEC QUESTION + PALISADES POINT + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

12-16665 ALSO IN CATEGORY 18

QUESTION 2.2.2 - FAILURE ANALYSIS OF ENGINEERED SAFEGUARD SYSTEMS
CONSUMERS POWER COMPANY, PALISADES PLANT, COVERT TOWNSHIP, MICHIGAN
6 PAGES, NOVEMBER 14, 1966, PAGE 2.2.2-1 THROUGH 2.2.2-6 OF CONSUMERS POWER COMPANY APPLICATION FOR REACTOR CONSTRUCTION PERMIT AND OPERATING LICENSE, AMENDMENT NUMBER 3, DOCKET NO. 50-255

PROVIDE AN ENGINEERING AND POTENTIAL-FAILURE-MODE ANALYSIS OF THE PRELIMINARY DESIGN OF THESE SYSTEMS TO DEMONSTRATE THAT THEY MEET THE CLARIFIED CRITERIA.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ENGINEERED SAFETY FEATURE + *FAULT TREE ANALYSIS + AEC QUESTION + PALISADES POINT + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

12-16666 ALSO IN CATEGORIES 18 AND 9

QUESTION 2.2.3 - I AND C FOR ENGINEERED SAFEGUARD SYSTEMS
CONSUMERS POWER COMPANY, PALISADES PLANT, COVERT TOWNSHIP, MICHIGAN
18 PAGES, 11 FIGURES, NOVEMBER 14, 1966, PAGE 2.2.3-1 THROUGH 2.2.3-18 OF CONSUMERS POWER COMPANY APPLICATION FOR REACTOR CONSTRUCTION PERMIT AND OPERATING LICENSE, AMENDMENT NUMBER 3, DOCKET NO. 50-255

WHAT ARE THE CRITERIA AND DESIGN BASES IN REGARD TO REDUNDANCY, RELIABILITY, EQUIPMENT QUALIFICATIONS, ENVIRONMENTAL TESTING, BYPASSES, INTERLOCKS, AUTOMATIC SEQUENCING, PERIODIC TESTING, AND AVAILABILITY OF MANUAL BACKUP TO AUTOMATIC CONTROLS FOR THE INSTRUMENTATION AND CONTROLS WHICH ACTIVATE AND CONTROL THE ENGINEERED SAFEGUARD SYSTEMS. PROVIDE SUFFICIENT PRELIMINARY DESIGN INFORMATION AND ANALYSIS OF POTENTIAL FAILURE MODES TO DEMONSTRATE THAT THESE OBJECTIVES WILL BE ACHIEVED.

CATEGORY 12
PLANT SAFETY FEATURES

12-16666 *CONTINUED*
AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ENGINEERED SAFETY FEATURE + *INSTRUMENTATION, GENERAL + AEC QUESTION + PALISADES POINT +
REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

12-16667 ALSO IN CATEGORY 18
QUESTION 2.3 - SAFETY INJECTION SYSTEM
CONSUMERS POWER CO., PALISADES PLANT, COVERT TOWNSHIP, MICHIGAN
1 PAGE, NOVEMBER 14, 1966, PAGE 2.3-1 OF CONSUMERS POWER COMPANY APPLICATION FOR REACTOR CONSTRUCTION
PERMIT AND OPERATING LICENSE, AMENDMENT NUMBER 3, DOCKET NO. 50-255

ANALYZE THE ABILITY OF THE SAFETY-INJECTION SYSTEM TO WITHSTAND REACTOR-VESSEL MOTION WITHOUT
LOSS OF DESIGN CAPABILITY. THIS ANALYSIS SHOULD INCLUDE AT LEAST THE FOLLOWING AREAS - (A)
PIPING LAYOUT, SIZE, FLEXIBILITY, (B) MAXIMUM MOTION THAT COULD REASONABLY BE ACCOMMODATED,
(C) LATERAL REACTOR-VESSEL MOTION THAT COULD OCCUR DUE TO REACTION FORCES IN THE DESIGN-BASIS
ACCIDENT, (D) MAXIMUM REACTOR-VESSEL MOTION THAT COULD OCCUR IN THE PROPOSED PLANT
ARRANGEMENT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CORE REFLOODING SYSTEM + *STRESS ANALYSIS + AEC QUESTION + PALISADES POINT + REACTOR, PRESSURIZED WATER +
SAFETY ANALYSIS REPORT, PRELIMINARY

12-16668 ALSO IN CATEGORIES 11 AND 18
QUESTION 2.4 - LOCATION, LEAK TEST DESIGN, ACCIDENT ANALYSIS OF SAFETY INJECTION AND CONTAINMENT SPRAY
SYSTEMS
CONSUMERS POWER CO., PALISADES PLANT, COVERT TOWNSHIP, MICHIGAN
8 PAGES, NOVEMBER 14, 1966, PAGE 2.4-1 THROUGH 2.4-8 OF CONSUMERS POWER COMPANY APPLICATION FOR REACTOR
CONSTRUCTION PERMIT AND OPERATING LICENSE, AMENDMENT NUMBER 3, DOCKET NO. 50-255

LOCATION OF SAFETY-INJECTION AND CONTAINMENT-SPRAY SYSTEMS OUTSIDE CONTAINMENT COULD
RECIRCULATE HIGHLY RADIOACTIVE WATER OUTSIDE CONTAINMENT BUILDING. JUSTIFY LOCATION PROPOSED
VS LOCATION INSIDE CONTAINMENT BUILDING OR OTHER CONTROLLED-LEAKAGE ENCLOSURE. WHAT ARE
LEAK-TIGHTNESS DESIGN CRITERIA AND LEAKAGE-TESTING PROVISIONS FOR SYSTEMS. HOW FREQUENTLY
ARE LEAK TESTS PLANNED. WHAT ARE MARGINS AGAINST EXCEEDING DESIGN-LEAKAGE RATE. DEFINE
POTENTIAL SOURCES OF LEAKAGE AND RUPTURES AND SHOW POTENTIAL CONSEQUENCES OF FAILURES AFTER
LARGE ACCIDENT. INCLUDE POSSIBILITY OF CHLORIDE-STRESS-CORROSION FAILURES DUE TO CHLORIDE
PICKUP BY RECIRCULATED COOLING WATER. (ANSWER) ANSWER SUPERSEDES THAT OF QUESTION 2.4 IN
AMENDMENT 1.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTAINMENT SPRAY + *CORE REFLOODING SYSTEM + AEC QUESTION + PALISADES POINT +
REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY + TEST, LEAK RATE

12-16669 ALSO IN CATEGORY 18
QUESTION 4.1 - SAFETY INJECTION SYSTEM CRITERIA
CONSUMERS POWER CO., PALISADES PLANT, COVERT TOWNSHIP, MICHIGAN
2 PAGES, NOVEMBER 14, 1966, PAGE 4.1-1 THROUGH 4.1-2 OF CONSUMERS POWER COMPANY APPLICATION FOR REACTOR
CONSTRUCTION PERMIT AND OPERATING LICENSE, AMENDMENT NUMBER 3, DOCKET NO. 50-255

SECTION 4.0. SAFETY INJECTION SYSTEM. WHAT ARE THE CORE-DAMAGE AND FISSION-PRODUCT-RELEASE
CRITERIA USED IN THE DESIGN OF THE SAFETY INJECTION SYSTEM. ADDITIONAL INFORMATION SUPPLIED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

AEC QUESTION + CORE REFLOODING SYSTEM + DESIGN CRITERIA + PALISADES POINT + REACTOR, PRESSURIZED WATER +
SAFETY ANALYSIS REPORT, PRELIMINARY

12-16670 ALSO IN CATEGORY 18
QUESTION 4.2 - CHANGES IN HEAD FLOW RATE IN SAFETY CONDITION SYSTEM
CONSUMERS POWER CO., PALISADES PLANT, COVERT TOWNSHIP, MICHIGAN
2 PAGES, NOVEMBER 14, 1966, PAGE 4.2-1 AND 4.2-2 OF CONSUMERS POWER COMPANY APPLICATION FOR REACTOR
CONSTRUCTION PERMIT AND OPERATING LICENSE, AMENDMENT NUMBER 3, DOCKET NO. 50-255

PROVIDE A CURVE AND ITS ANALYTICAL BASIS OF LEAK SIZE THAT COULD BE ACCOMMODATED AS A FUNCTION
OF HIGH-HEAD FLOW FOR SIGNIFICANTLY LARGER FLOW RATES THAN THE DESIGN FLOW RATE. ADDITIONAL
INFORMATION SUPPLIED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CORE REFLOODING SYSTEM + *DESIGN CRITERIA + AEC QUESTION + PALISADES POINT + REACTOR, PRESSURIZED WATER +
SAFETY ANALYSIS REPORT, PRELIMINARY

CATEGORY 12
PLANT SAFETY FEATURES

12-16671 ALSO IN CATEGORY 18
QUESTION 4.2.1 - LEAK SIZE OF HIGH HEAD PUMPS
CONSUMERS POWER CO., PALISADES PLANT, COVERT TOWNSHIP, MICHIGAN
1 PAGE, NOVEMBER 14, 1966, PAGE 4.2.1-1 OF CONSUMERS POWER COMPANY APPLICATION FOR REACTOR CONSTRUCTION PERMIT AND OPERATING LICENSE, AMENDMENT NUMBER 3, DOCKET NO. 50-255

WHAT IS THE LEAK SIZE THAT THE HIGH-HEAD PUMPS ARE DESIGNED TO ACCOMMODATE IN MEETING THE FOREGOING CRITERIA. ADDITIONAL INFORMATION SUPPLIED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CORE REFLOODING SYSTEM + *DESIGN CRITERIA + AEC QUESTION + PALISADES POINT + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

12-16672 ALSO IN CATEGORY 18
QUESTION 4.2.2 - INCREASED FLOW RATE OF HIGH HEAD PUMPS
CONSUMERS POWER CO., PALISADES PLANT, COVERT TOWNSHIP, MICHIGAN
1 PAGE, NOVEMBER 14, 1966, PAGE 4.2.2-1 OF CONSUMERS POWER COMPANY APPLICATION FOR REACTOR CONSTRUCTION PERMIT AND OPERATING LICENSE, AMENDMENT NUMBER 3, DOCKET NO. 50-255

WHAT ADVANTAGES COULD BE OBTAINED BY INCREASING FLOW RATE OF THE HIGH-HEAD PUMPS. ARE THERE ANY DISADVANTAGES. ADDITIONAL INFORMATION SUPPLIED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CORE REFLOODING SYSTEM + AEC QUESTION + PALISADES POINT + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

12-16673 ALSO IN CATEGORY 18
QUESTION 4.2.3 - HIGH HEAD PUMPS AND DIESEL GENERATOR POWER
CONSUMERS POWER CO., PALISADES PLANT, COVERT TOWNSHIP, MICHIGAN
1 PAGE, NOVEMBER 14, 1966, PAGE 4.2.3 OF CONSUMERS POWER COMPANY APPLICATION FOR REACTOR CONSTRUCTION PERMIT AND OPERATING LICENSE, AMENDMENT NUMBER 3, DOCKET NO. 50-255

DISCUSS THE NEED FOR THE HIGH-HEAD PUMPS TO BE POWERED BY THE DIESEL GENERATOR. ADDITIONAL INFORMATION SUPPLIED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*AEC QUESTION + *CORE REFLOODING SYSTEM + *PALISADES POINT + *SAFETY ANALYSIS REPORT, PRELIMINARY + EMERGENCY POWER, ELECTRIC + GENERATOR, DIESEL + REACTOR, PRESSURIZED WATER

12-16675 ALSO IN CATEGORY 18
QUESTION 4.3 - ENGINEERED SAFETY PERFORMANCE CRITERIA
CONSUMERS POWER CO., PALISADES PLANT, COVERT TOWNSHIP, MICHIGAN
2 PAGES, 1 TABLE, NOVEMBER 14, 1966, PAGE 4.3-1 AND 4.3-2 OF CONSUMERS POWER COMPANY APPLICATION FOR REACTOR CONSTRUCTION PERMIT AND OPERATING LICENSE, AMENDMENT NUMBER 3, DOCKET NO. 50-255

PROVIDE THE ENGINEERING ANALYSIS TO JUSTIFY THAT THE SYSTEM DESIGN WILL SATISFY THE PERFORMANCE CRITERIA. ADDITIONAL INFORMATION SUPPLIED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CORE REFLOODING SYSTEM + AEC QUESTION + PALISADES POINT + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

12-16676 ALSO IN CATEGORY 18
QUESTION 4.3.1 - HEAT REMOVAL CAPABILITY OF SAFETY INJECTION SYSTEM
CONSUMERS POWER CO., PALISADES PLANT, COVERT TOWNSHIP, MICHIGAN
2 PAGES, NOVEMBER 14, 1966, PAGE 4.3.1-1 AND 4.3.1-2 OF CONSUMERS POWER COMPANY APPLICATION FOR REACTOR CONSTRUCTION PERMIT AND OPERATING LICENSE, AMENDMENT NUMBER 3, DOCKET NO. 50-255

WHAT IS THE REQUIRED HEAT-REMOVAL CAPABILITY FOR THE SYSTEM WHEN PERFORMING AS DESIGNED. PROVIDE DATA TO SHOW THE MARGINS AVAILABLE IN THE SYSTEM DESIGN IN TERMS OF MEETING CORE-DAMAGE CRITERIA AND HEAT-REMOVAL CAPABILITY, CONSIDERING THE VARIOUS COMBINATIONS OF PUMPS AND HEAT EXCHANGERS THAT MIGHT BE AVAILABLE. ADDITIONAL INFORMATION SUPPLIED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*AEC QUESTION + *CORE REFLOODING SYSTEM + *DESIGN CRITERIA + *PALISADES POINT + *SAFETY ANALYSIS REPORT, PRELIMINARY + REACTOR, PRESSURIZED WATER

CATEGORY 12
PLANT SAFETY FEATURES

12-16677 ALSO IN CATEGORY 18
QUESTION 4.3.2 - INJECTION POINT ON MAIN LOOP HOT LEGS
CONSUMERS POWER CO., PALISADES PLANT, COVERT TOWNSHIP, MICHIGAN
2 PAGES, NOVEMBER 14, 1966, PAGE 4.3.2-1 AND 4.3.2-2 OF CONSUMERS POWER COMPANY APPLICATION FOR REACTOR
CONSTRUCTION PERMIT AND OPERATING LICENSE, AMENDMENT NUMBER 3, DOCKET NO. 50-255

DISCUSS THE ADVANTAGES AND DISADVANTAGES OF INCLUDING INJECTION POINTS ON THE MAIN-LOOP HOT
LEGS. ADDITIONAL INFORMATION SUPPLIED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*COPE REFLOODING SYSTEM + AEC QUESTION + PALISADES POINT + REACTOR, PRESSURIZED WATER +
SAFETY ANALYSIS REPORT, PRELIMINARY

12-16678 ALSO IN CATEGORY 18
QUESTION 4.3.3 - CORE DAMAGE AFTER DELAY IN INITIATION OF SYSTEM OPERATION
CONSUMERS POWER CO., PALISADES PLANT, COVERT TOWNSHIP, MICHIGAN
1 PAGE, 1 TABLE, NOVEMBER 14, 1966, PAGE 4.3.3-1 OF CONSUMERS POWER COMPANY APPLICATION FOR REACTOR
CONSTRUCTION PERMIT AND OPERATING LICENSE, AMENDMENT NUMBER 3, DOCKET NO. 50-255

WHAT ARE THE CONSEQUENCES ON THE EXTENT OF CORE DAMAGE FOR VARIOUS DELAY TIMES IN THE
INITIATION OF SYSTEM OPERATION. ADDITIONAL INFORMATION SUPPLIED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CORE REFLOODING SYSTEM + *RESPONSE TIME + AEC QUESTION + PALISADES POINT + REACTOR, PRESSURIZED WATER +
SAFETY ANALYSIS REPORT, PRELIMINARY

12-16679 ALSO IN CATEGORIES 18 AND 5
QUESTION 4.3.4 - HIGH PRESSURE PUMPS OF SAFETY INJECTION SYSTEM, LOSS-OF-COOLANT ACCIDENT
CONSUMERS POWER CO., PALISADES PLANT, COVERT TOWNSHIP, MICHIGAN
53 PAGES, 45 FIGURES, 3 TABLES, 5 REFERENCES, NOVEMBER 14, 1966, PAGES 4.3.4 - OF CONSUMERS POWER COMPANY
APPLICATION FOR REACTOR CONSTRUCTION PERMIT AND OPERATING LICENSE, AMENDMENT NUMBER 3, DOCKET NO. 50-255

WHAT ASSURANCE IS THERE THAT THE HIGH-PRESSURE PUMPS WILL PERFORM PROPERLY WITH THE LOW OUTLET
PRESSURE THAT WILL PREVAIL FOR THE LONG-TERM POSTACCIDENT COOLING PERIOD. WHY WERE THE
HIGH-HEAD RATHER THAN THE LOW-HEAD PUMPS SELECTED FOR LONG-TERM OPERATION. ADDITIONAL
INFORMATION SUPPLIED. (ANSWER) A 52-PAGE SUPPLEMENT ON LOSS-OF-COOLANT ACCIDENTS IS
INCLUDED, ENTITLED SECTION 4.5.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACCIDENT, LOSS OF COOLANT + *ANALYTICAL MODEL + AEC QUESTION + BLOWDOWN + CORE REFLOODING SYSTEM +
PALISADES POINT + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

12-16682 ALSO IN CATEGORIES 18 AND 9
7.5 PSAP SECTION VII SUPPLEMENT
CONSUMERS POWER CO., PALISADES PLANT, COVERT TOWNSHIP, MICHIGAN
12 PAGES, 2 FIGURES, NOVEMBER 14, 1966, PAGE 7.5-1 TO 7.5-12 OF CONSUMERS POWER COMPANY APPLICATION FOR
REACTOR CONSTRUCTION PERMIT AND OPERATING LICENSE, AMENDMENT NUMBER 3, DOCKET NO. 50-255

SHORT SUMMARY OF HOW THE REACTOR PROTECTIVE SYSTEM AND ENGINEERED-SAFEGUARDS CONTROL SYSTEM
ARE BEING DESIGNED IN ACCORDANCE WITH VARIOUS STANDARDS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CODES AND STANDARDS + *ENGINEERED SAFETY FEATURE + *REACTOR SAFETY SYSTEM + PALISADES POINT +
REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

12-16746 ALSO IN CATEGORY 11
HINKLE WD
OUTLINE OF THE EXPERIMENTAL PROGRAM BEING CONDUCTED TO VERIFY THE PERFORMANCE OF THE CONTAINMENT COOLING
UNITS FOLLOWING A LOSS-OF-COOLANT INCIDENT
CONNECTICUT YANKEE ATOMIC POWER COMPANY
CYAP-102 +. 9 PAGES, 1 FIGURE, 1 REFERENCE, DECEMBER 30, 1966

232 CFM OF STEAM-AIR MIXTURE (AT 261, 220, AND 184 F AND 100% RH) WILL BE ADMITTED TO THE
COOLERS TO TEST THEIR HEAT-REMOVAL CAPACITY. REDUCTION OF COOLING WATER FLOW FROM 140 TO
11.7 GPM WILL GIVE CONDITIONS EQUIVALENT TO DESIGN. REPORT DESCRIBES TEST SETUP AND DATA TO
BE TAKEN.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTAINMENT AIR COOLING + HADDAM NECK + REACTOR, PRESSURIZED WATER + TEST, PROOF

CATEGORY 12
PLANT SAFETY FEATURES

12-16992 ALSO IN CATEGORIES 3 AND 13
NEWLON CE
THE ELEMENTS OF NEUTRON INTERACTING ARRAYS
OAK RIDGE GASEOUS DIFFUSION PLANT, OAK RIDGE, TENN.
K-D-1832 + CONF-666-1 +. 15 PAGES, FOR PRESENTATION AT AEC CONTRACTOR NUCLEAR MATERIALS MANAGEMENT MEETING, GATLINBURG, TENN. OCTOBER 1964

CALCULATIONAL METHODS FOR CRITICALITY STUDIES OF ARRAYS OF INDIVIDUALLY SUBCRITICAL UNITS IN AIR ARE DISCUSSED. RESULTS ARE GIVEN FOR UNREFLECTED URANIUM METAL CYLINDERS FOR 93.2% ENRICHMENT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

CRITICALITY SAFETY + NEUTRON INTERACTION + URANIUM

12-17029 ALSO IN CATEGORIES 7 AND 14
SCHUTTMANN W
GUIDELINES FOR THE DIAGNOSIS AND THERAPY OF ACUTE RADIATION DAMAGE
STATE CENTER FOR RADIATION PROTECTION
SZS 8(1966) +. 30 PAGES, AUGUST 1966, (IN GERMAN)

CLASSIFICATION OF RADIATION INJURIES, PURE RADIATION-INJURY DIAGNOSIS AND THERAPY.
RECOMMENDATIONS TO THE PHYSICIAN REGARDING THE EXCLUSION OF CERTAIN PERSONS FROM WORK WITH IONIZING RADIATION.

AVAILABILITY - MICROCAPD EDITIONS, INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN 54669

*GERMANY + *RADIATION PROTECTION, ORGANIZATION + RADIATION DAMAGE + RADIATION EFFECT +
RADIATION INJURY, TREATMENT OF + RADIATION SAFETY AND CONTROL + REGULATION, GENERAL

12-17065 ALSO IN CATEGORIES 18 AND 11
HINKLE WD
AN ANALYSIS OF THE HEAT REMOVAL CAPABILITY OF THE CONTAINMENT AIR COOLING UNITS FOLLOWING A LOSS OF COOLANT INCIDENT
CONNECTICUT YANKEE ATOMIC POWER CO., HADDAM NECK PLANT, HADDAM CONNECTICUT
CYAP-102 +. 25 PAGES, 6 FIGURES, 6 REFERENCES, DECEMBER 30, 1966, DOCKET NO. 50-213

METHOD BASED ON COLBURN AND HOUGEN WAS USED, WITH PARTICULAR ATTENTION TO EFFECT OF AIR ON CONDENSATION RATE AT DESIGN CONDITIONS OF 261 F AND TOTAL PRESSURE OF 40 PSIG. CONCLUSION WAS THAT DESIGN HEAT-TRANSFER RATES ARE REASONABLE AND CONSERVATIVE (AS THE MINIMUM CALCULATED ARE 5% ABOVE WHEN PRESSURES ARE ABOVE 20 PSIG).

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACCIDENT, LOSS OF COOLANT + *CONTAINMENT AIR COOLING + *THERMAL ANALYSIS + HADDAM NECK +
MATHEMATICAL TREATMENT + REACTOR, PRESSURIZED WATER

12-17102 ALSO IN CATEGORY 17
HUTTER E + ELIAS P + VEITH DJ + WARE WR
EBR-II FUEL-UNLOADING MACHINE--DESIGN AND PERFORMANCE CHARACTERISTICS
ARGONNE NATIONAL LAB., ILL.
ANL-7201 +. 91 PAGES, 42 FIGURES, 6 REFERENCES, JUNE 1966

DESCRIBES THE FUEL-HANDLING SYSTEM, THE MACHINE, AND ITS OPERATION FOR THE SODIUM-COOLED REACTOR.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*EQUIPMENT DESIGN + *FUEL HANDLING MACHINE + *OPERATION + EBR 1 AND 2 (EXPERIMENTAL BREEDER REACTORS) +
REACTOR, BREEDER + REACTOR, FAST + REACTOR, LIQUID METAL COOLED

12-17195 ALSO IN CATEGORY 13
JACOBSON ME + MASCARENAS RR + OFFUTT GF + ROHDE KL
RECOVERY OF URANIUM FROM EBR-1 CORE 2 MELTED FUEL
IDAHO NUCLEAR CORP., IDAHO FALLS, IDAHO
IN-1088 +. 11 PAGES, 3 FIGURES, 3 TABLES, 8 REFERENCES, MAY 1967

CORE 2 OF THE EXPERIMENTAL BREEDER REACTOR 1 WAS PARTIALLY MELTED IN THE REACTOR AND IN THIS CONDITION REPRESENTED A UNIQUE CHALLENGE FOR THE RECOVERY OF ABOUT 66 KG OF 69-PERCENT-ENRICHED URANIUM. THE MELTED CORE MATERIAL CONTAINED URANIUM, ZIRCONIUM, AND STAINLESS STEEL FROM THE FUEL, AS WELL AS SODIUM AND POTASSIUM (NAK) FROM THE REACTOR COOLANT AND PONDING AGENT. RECENTLY THIS MATERIAL WAS REPROCESSED AT THE IDAHO CHEMICAL PROCESSING

CATEGORY 12
PLANT SAFETY FEATURES

12-17195 *CONTINUED*

PLANT (ICPP) BY CUSTOM DISSOLUTION IN A SHIELDED CELL UNDER DIRECT VISUAL SURVEILLANCE FOLLOWED BY DECONTAMINATION OF THE URANIUM USING CONVENTIONAL SOLVENT EXTRACTION. THE SUCCESSFUL RECOVERY OF THIS URANIUM AT A COST OF WELL UNDER ONE DOLLAR PER GRAM SUGGESTS THAT OTHER FUELS OF UNUSUAL COMPOSITION CAN ALSO BE ECONOMICALLY PROCESSED WITH SPECIAL HANDLING TECHNIQUES AT ICPP.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*POTASSIUM + *RADIOCHEMICAL PLANT SAFETY + *RADIOCHEMICAL PROCESSING + *SODIUM + *SOLVENT EXTRACTION PROCESS + *URANIUM + *ZIRCONIUM + CRITICALITY SAFETY + DISSOLUTION + EBP 1 AND 2 (EXPERIMENTAL BREEDER REACTORS) + EXPLOSION + HOT CELL + IDAHO FALLS + NRTS (NATIONAL REACTOR TEST STATION)

12-17235
DOMER RG

ALSO IN CATEGORIES 5 AND 18

STRUCTURAL ADEQUACY OF THE EGCR STEAM GENERATORS DURING THE PRIMARY SYSTEM DEPRESSURIZATION ACCIDENT TENNESSEE VALLEY AUTHORITY, OAK RIDGE, TENN.
TID=22748 +. 29 PAGES, OCTOBER 6, 1964

AFTER A RUPTURE OF ONE OF THE MAIN COOLANT LOOPS IN THE EGCR PRIMARY SYSTEM, LARGE PRESSURE DIFFERENCES CAN EXIST ACROSS THE STEAM GENERATORS. FAILURE OF THE STEAM GENERATORS IN BOTH LOOPS WOULD RESULT IN THE LOSS OF THE HEAT SINK NEEDED TO REMOVE THE ENERGY FROM THE REACTOR. THE FAILURE OF EITHER STEAM GENERATOR WOULD RELEASE LARGE QUANTITIES OF STEAM INTO THE CONTAINMENT BUILDING. THIS PAPER DETERMINES THE MAGNITUDE OF THE PRESSURE DIFFERENCES REQUIRED TO CAUSE FAILURE OF THE VARIOUS COMPONENTS IN THE STEAM GENERATORS. SPECIFICALLY, STEAM-GENERATOR-TUBE FIELD-PRESSURE DIFFERENCE MUST EXCEED 92 PSI BEFORE THERE IS SUFFICIENT DAMAGE TO INTERFERE WITH THEIR ABILITY TO REMOVE HEAT FROM THE PRIMARY COOLANT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*ACCIDENT ANALYSIS + *ACCIDENT, LOSS OF PRESSURE + *REACTOR, GAS COOLED + *REACTOR, GRAPHITE MODERATED + *STRUCTURAL INTEGRITY + EGCR (EXPERIMENTAL GAS COOLED REACTOR) + HEAT EXCHANGER

12-17237
LANDLIFR G

ALSO IN CATEGORY 5

SODIUM COMPONENT TEST INSTALLATION FEASIBILITY STUDY REPORT--PRIMARY SODIUM PIPING DESIGN WITHOUT BELLOWS ATOMICS INTERNATIONAL, CANOGA PARK, CALIF.
NAA-SR-MEMO-12018 +. 26 PAGES, REFERENCES, JUNE 21, 1966

DESCRIBES STUDY OF DETERMINE FEASIBILITY OF A BELLOWS-FREE DESIGN FOR MAIN PRIMARY HEAT-TRANSFER PIPING SYSTEM FOR THE B AND W STEAM-GENERATOR PROTOTYPE UNIT IN THE SCTI. ALTERNATIVE DESIGN STUDIES WERE INCLUDED TO ESTABLISH RELOCATION OF PRIMARY PUMP TO THE SAME ELEVATION AS THE PRIMARY SODIUM-EXPANSION TANK TO ELIMINATE SEPARATE SODIUM-LEVEL CONTROLS IN THE PRIMARY PUMP BARREL AND EXPANSION TANK. RESULT OF STUDY IS AN ISOMETRIC LAYOUT OF PRIMARY PUMP SUCTION AND DISCHARGE LINES, INCLUDING THE COLD BYPASS, WITHOUT BELLOWS-TYPE EXPANSION JOINTS, REPRESENTING A FEASIBLE SOLUTION TO THE PROBLEM BUT NOT NECESSARILY AN OPTIMUM ONE. ALSO, ALTHOUGH THIS STUDY ESTABLISHED SOME MAJOR MODIFICATIONS FOR THE ALTERNATIVE DESIGN, ADEQUATE SOLUTION OF THE SODIUM-LEVEL-CONTROL PROBLEMS REQUIRES MORE STUDIES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*DESIGN STUDY + *HEAT TRANSFER + *SODIUM + PIPING + PUMP

CATEGORY 13
RADIOCHEMICAL PLANT SAFETY

13-13394 ALSO IN CATEGORY 18
AMENDMENT TO APPLICATION FOR LICENSES FPCE PLANT
ISOICHEM INC.
50 PAGES, TABLES, SEPTEMBER 13, 1966, DOCKET NO. 50-258

THIS DOCUMENT, LATER REFERRED TO AS AMENDMENT 1, DESCRIBES IN SUMMARY FORM CHANGES TO BE INCORPORATED IN THE TEXT OF THE ORIGINAL APPLICATION AT A LATER DATE. AEC QUESTIONS ARE ANSWERED IN DETAIL, AND SUPPLEMENTAL SAFETY ANALYSES ARE DESCRIBED. SPECIFIC SUBJECTS COVERED ARE - (1) THE HANDLING OF HYDROGEN, (2) THE CONTAINMENT OF RADIOACTIVE POWDERS IN GLOVE BOX OPERATIONS, AND (3) REVISED PROGRAM OBJECTIVES INCLUDING NECESSITATED PLANT DESIGN CHANGES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

*APPLICATION FOR AEC LICENSE + *CERIUM + *CESIUM + *HYDROGEN + *ISOICHEM, INC. + *PROMETHIUM +
*RADIOCHEMICAL PLANT SAFETY + *RADIOCHEMICAL PROCESSING + *STRONTIUM +
FISSION PRODUCT, SEPARATION FROM WASTE + HAZARDS ANALYSIS + SAFETY ANALYSIS REPORT, GENERAL

13-15758
UNGER WE + HARRINGTON FE + SCOTT SF + WASHBURN TN + MAY JR
ON-SITE FUEL PROCESSING AND RECYCLE PLANT - DESIGN STUDY
OAK RIDGE NATIONAL LABORATORY
ORNL-2959 +. 103 PAGES, FIGURES, TABLES, APRIL 1967

THIS COST ESTIMATE FOR A SMALL, ON-SITE FUEL PROCESSING AND RECYCLE PLANT IS BASED ON A VERY COMPREHENSIVE STUDY. THIS REPORT IS THOROUGH IN ITS COVERAGE OF THE MANY TECHNICAL DETAILS AND CHOICES INVOLVED IN THE DESIGN OF RADIOCHEMICAL PLANTS. THE OYSTER CREEK NUCLEAR POWER STATION, WITH TWO 550 MW(E)/1600 MW(TH) BOILING-WATER REACTORS FUELED WITH ZIRCONIUM-SHEATHED 2.42%-ENRICHED UO₂ (22,000 MWD/TON BURNUP), WAS ASSUMED FOR THE STUDY. THE PLANT DESIGN WAS BASED ON ESTABLISHED TECHNOLOGY OR CONCEPTS WHOSE DEVELOPMENT WOULD BE BEYOND QUESTION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*DESIGN STUDY + *ECONOMIC STUDY + RADIOCHEMICAL PLANT SAFETY + RADIOCHEMICAL PROCESSING

13-16006 ALSO IN CATEGORY 1
SCHUSKE CL
CRITICALITY CONTROL IN A PLUTONIUM PROCESSING PLANT
DOW CHEMICAL, ROCKY FLATS PLANT
SC-DC-67-1305 +. 7 PAGES, 6 FIGURES, AMERICAN NUCLEAR SOCIETY, TRINITY AND SOUTHERN NEVADA SECTIONS, NATIONAL TOPICAL MEETING, LAS VEGAS, NEVADA, DECEMBER 13-15, 1966, PP. 121-127 OF PROCEEDINGS, NUCLEAR CRITICALITY SAFETY

DISCUSSES ADMINISTRATIVE AND PHYSICAL CONTROLS AT ROCKY FLATS. ADMINISTRATIVE AIDS INCLUDE MANUALS, CRITICALITY-LIMIT SIGNS, PERSONNEL TRAINING, AUDITS AND REVIEWS OF PRACTICES. THE CRITICALITY-EXPERIMENTS PROGRAM IS DESCRIBED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*CRITICALITY SAFETY + ADMINISTRATIVE CONTROLS AND PRACTICES + PLUTONIUM + RADIOCHEMICAL PLANT SAFETY + SAFETY PRINCIPLES AND PHILOSOPHY

13-16007
MORRISON WG
A LARGE DISSOLVER FOR IRRADIATED FUELS
IDAHO NUCLEAR CORPORATION
SC-DC-67-1305 +. 4 PAGES, 3 FIGURES, 5 REFERENCES, AMERICAN NUCLEAR SOCIETY, TRINITY AND SOUTHERN NEVADA SECTIONS, NATIONAL TOPICAL MEETING, LAS VEGAS, NEVADA, DECEMBER 13-15, 1966, PP. 143-146 OF PROCEEDINGS, NUCLEAR CRITICALITY SAFETY

DESCRIBES THE PROCESSING OF IRRADIATED ZIRCONIUM FUELS, SYSTEM SAFEGUARDS, AND ADMINISTRATIVE CONTROLS USED TO ASSURE SAFETY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*CRITICALITY SAFETY + *RADIOCHEMICAL PLANT SAFETY + ADMINISTRATIVE CONTROLS AND PRACTICES + ENGINEERED SAFETY FEATURE + FUEL REPROCESSING + SAFETY PRINCIPLES AND PHILOSOPHY

13-16008
LEWIS WH + WEECH ME + KNIGHT BE
CRITICALITY CONTROL IN THE NUCLEAR FUEL SERVICES PROCESSING PLANT

CATEGORY 13
RADIOCHEMICAL PLANT SAFETY

13-16008 *CONTINUED*
NUCLEAR FUEL SERVICES, INC.

SC-DC-07-1305 +. 10 PAGES, 13 FIGURES, 3 TABLES, 8 REFERENCES, AMERICAN NUCLEAR SOCIETY, TRINITY AND SOUTHERN NEVADA SECTIONS, NATIONAL TOPICAL MEETING, LAS VEGAS, NEVADA, DECEMBER 13-15, 1966, PP. 159-168 OF PROCEEDINGS, NUCLEAR CRITICALITY SAFETY

DESCRIBES THE PROCESS STEPS AND CONTROLS. DISCUSSES CONCENTRATION, GEOMETRIC AND ADMINISTRATIVE CONTROL, AND THE USE OF FIXED NEUTRON PRISONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*CRITICALITY SAFETY + ADMINISTRATIVE CONTROLS AND PRACTICES + FUEL REPROCESSING + RADIOCHEMICAL PLANT SAFETY

13-16134 ALSO IN CATEGORY 1
KETZLACH M

APPLICATION OF NUCLEAR SAFETY CRITERIA TO PLANT OPERATIONS
ATOMIC INTERNATIONAL, CANOGA PARK, CALIFORNIA

CONF-651103-4 +. 26 PAGES, 1964, IAEA SYMPOSIUM ON CRITICALITY CONTROL OF FISSIONABLE MATERIALS, STOCKHOLM

DISCUSSES CONSERVATIVE CALCULATION OF CRITICALITY PARAMETERS FOR URANIUM CARBIDE FUELS AND THE APPLICABILITY OF DERIVED CRITERIA TO PLANT PROCESSING CONDITIONS. A METHOD IS ALSO GIVEN FOR APPLYING URANIUM-METAL/WATER DATA TO URANIUM FUELS OF OTHER TYPES, FOR WHICH NO CRITICALITY DATA ARE AVAILABLE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*CRITICALITY SAFETY + DESIGN CRITERIA + FUEL REPROCESSING + RADIOCHEMICAL PLANT SAFETY + RADIOCHEMICAL PROCESSING + URANIUM CARBIDE + URANIUM OXIDE

13-16308 ALSO IN CATEGORY 15
NICHOLS DC

RADIOLOGICAL PROTECTION IN A TRITIUM SEPARATIONS FACILITY
SAVANNAH RIVER PLANT, AIKEN, S.C.

DPSPU-65-30-31 + CONF-660403-1 +. 8 PAGES, JANUARY 1966, FROM INTERNATIONAL SYMPOSIUM ON RADIOLOGICAL PROTECTION OF THE WORKER BY THE DESIGN AND CONTROL OF HIS ENVIRONMENT, BOURNEMOUTH, ENGLAND

THE SAVANNAH RIVER PLANT IS THE MAJOR CENTER OF TRITIUM PRODUCTION IN THE U.S. TRITIUM IS PRODUCED BY NEUTRON IRRADIATION OF LITHIUM IN THE REACTORS AND IS SUBSEQUENTLY SEPARATED FROM THE LITHIUM TARGET ELEMENTS. RADIOLOGICAL PROTECTION WAS ONE OF THE FOREMOST OBJECTIVES IN THE DESIGN OF THE SEPARATIONS FACILITY AND IN THE PREPARATION OF OPERATING PROCEDURES. CONSEQUENTLY, CONTROL OF RADIOLOGICAL HEALTH HAZARDS IS RELATIVELY SIMPLE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*RADIOCHEMICAL PLANT SAFETY + *SAVANNAH RIVER PLANT + HEAVY WATER + INHALATION + MAXIMUM PERMISSIBLE BODY BURDEN + PERSONNEL EXPOSURE, RADIATION + RADIOLOGICAL ASSISTANCE + TRITIUM

13-16309 ALSO IN CATEGORY 14

CHILENSKAS AA + TURNER KS + KINCINAS JE + POTTS GL

ENGINEERING DEVELOPMENT OF FLUID-BED FLUORIDE VOLATILITY PROCESSES. PART 10, BENCH-SCALE STUDIES ON IRRADIATED, HIGHLY ENRICHED, URANIUM-ALLOY FUELS
ARGONNE NATIONAL LABORATORY, ARGONNE, ILL.

ANL-6994 +. 43 PAGES, 11 FIGURES, 14 TABLES, 8 REFERENCES, OCTOBER 1966

EXPERIMENTS FOR DETERMINING URANIUM AND FISSION-PRODUCT DISTRIBUTION IN VARIOUS FLUID-BED FLUORIDE-VOLATILITY-PROCESS STEPS WERE RUN AT BENCH-SCALE LEVELS. DECONTAMINATION FACTORS WERE CALCULATED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*FLUIDIZED BED + *FLUORIDE VOLATILITY PROCESSES + *RADIOCHEMICAL PROCESSING + ANL (ARGONNE NATIONAL LABORATORY) + URANIUM + WASTE DISPOSAL, SOLID + WASTE TREATMENT, FIXATION

13-16325 ALSO IN CATEGORY 18

LOCKER JL

EXPLOSION AT STANDARD OIL CATALYST PLANT, LIMA OHIO, APRIL 25, 1967

STANDARD OIL COMPANY, LIMA, OHIO

2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(25) PAGES 25-26 (JUNE 19, 1967)

(MAY 23) - DEPLETED URANIUM IS A COMPONENT OF CATALYST 21, WHOSE MANUFACTURE IS BEGUN BY THERMALLY DECOMPOSING A MIXTURE OF U AND AMMONIUM NITRATES, PRINCIPALLY TO GET RID OF THE NH₄NO₃ (AS N₂, NO₂, NO, ETC.) AND WATER. IN THE INITIAL STARTUP OF THE PLANT, AN EXPLOSION OCCURRED DUE TO A REACTION IN THE FEED MATERIAL IN THE FEED HOPPER. THE HOPPER WAS HEATED BY

CATEGORY 13
RADIOCHEMICAL PLANT SAFETY

13-16325 *CONTINUED*

CONDUCTION FROM THE CALCINER, CAUSING A REACTION WHICH HEATED MORE FEED. SOON, GAS EVOLUTION EXCEEDED VENT CAPACITY. NO DAMAGE OR EXPOSURE RESULTED. INCREASED DRAFT, DECREASED FEED-HOPPER SIZE, PHYSICAL SEPARATION BETWEEN FEED HOPPER AND CALCINER, AND PRESSURE AND TEMPERATURE INDICATORS WERE ALL ADDED.

*INCIDENT, ACTUAL, NONNUCLEAR + *INCIDENT, ACTUAL, NONREACTOR + CHEMICAL REACTION + EXPLCSION + FATLURE, DESIGN ERROR + PRESSURE, INTERNAL

13-16326 ALSO IN CATEGORY 18

WISSINK PG

FOUR INCIDENTS REPORTED BY MMM, ST PAUL, MINN.

3M COMPANY, ST. PAUL, MINN.

2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(25) PAGES 26-27 (JUNE 19, 1967)

(MAY 25) - FOR SEPARATE INCIDENTS OCCURRED BETWEEN JAN. AND APRIL 1967, INVOLVING AIRBORNE ACTIVITY. (1) 44 MPC OF AM-241 WAS INHALED THROUGH FACE MASKS DUE TO INADEQUATE AIR FLOW IN GLOVE BOXES. (2) 1653 MPC SR-90 WAS INHALED THROUGH FACE MASKS FOR 1 HR WHILE LOADING SOURCES WITH 3M MICROSPHERES IN A HORD. (3) 4070 MPC AND (4) 66 MPC SR-90 WAS INHALED DURING HOT-CELL CLEANUP.

*AIRBORNE RELEASE + *PERSONNEL EXPOSURE, RADIATION + AMERICIUM + FABRICATION + INHALATION + SOURCE, RADIATION + STRONTIUM

13-16552 ALSO IN CATEGORY 17

NFS REQUESTS LICENSE CHANGE ON MAXIMUM PLUTONIUM QUANTITY

NUCLEAR FUEL SERVICES, INC., W. VALLEY, NEW YORK

1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(28) PAGE 8 (JULY 10, 1967), DOCKET NO. 70-984

(LETTER, JUNE 15.) NFS REQUESTS CHANGE TO SPECIFY 10.5 LITERS OF PLUTONIUM SOLUTION AS THE MAXIMUM ALLOWABLE AMOUNT. THE MEASURING TANK HOLDS EXACTLY 10 LITERS, BUT THE VALVE ARRANGEMENT ALLOWS A SLIGHT OVERAGE UP TO 10.21. COMPLIANCE INSPECTORS INTERPRET THE LICENSE TO MEAN THAT ANY VOLUME IN EXCESS OF 10 IS A VIOLATION, WHILE WE INTERPRET IT TO MEAN SOME OVERAGE, SINCE IT WAS WRITTEN TEN AND NOT 10.0. NORMALLY THIS COULD BE EXPRESSED AS 10 PLUS OR MINUS 0.5 LITER, AND THE ACCEPTABLE MAX. VOLUME AS 10.5 LITERS.

*FUEL STORAGE + *PLUTONIUM + INSPECTION AND COMPLIANCE + NFS (NUCLEAR FUEL SERVICES)

13-16657 ALSO IN CATEGORIES 15 AND 17

NUCLEAR FUEL SERVICES PLUTONIUM INHALATION

NUCLEAR FUEL SERVICES, NEW YORK

1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(29), PAGE 26 (JULY 17, 1967), DOCKET NO. 50-201

(JUNE 7) ANALYSIS RECEIVED JUNE 6, 1967. A URINE SPECIMEN TAKEN APRIL 18, 1967, SHOWED 34 DPM PU/24 HRS. THE WORKER RECALLED THAT DURING HOT-CELL WORK, HE LET A DOOR SLAM CLOSED, CUTTING HIS AIR HOSE. HE WAS WITHOUT FRESH AIR FOR 2-3 MIN. WE ESTIMATE HIS UPTAKE TO BE EQUAL TO 90% OF THE BODY BURDEN OF PLUTONIUM.

*INHALATION + *PERSONNEL EXPOSURE, RADIATION + *PLUTONIUM + FAILURE, GENERAL + HOT CELL + MAINTENANCE AND REPAIR + NFS (NUCLEAR FUEL SERVICES) + PERSONNEL PROTECTIVE DEVICE + RADIOCHEMICAL PLANT SAFETY + RADIOCHEMICAL PROCESSING

13-16992 ALSO IN CATEGORIES 3 AND 12

NEWTON CE

THE ELEMENTS OF NEUTRON INTERACTING ARRAYS

OAK RIDGE GASEOUS DIFFUSION PLANT, OAK RIDGE, TENN.

K-D-1833 + CONF-666-1 +. 15 PAGES, FOR PRESENTATION AT AEC CONTRACTOR NUCLEAR MATERIALS MANAGEMENT MEETING, GATLINBURG, TENN. OCTOBER 1964

CALCULATIONAL METHODS FOR CRITICALITY STUDIES OF ARRAYS OF INDIVIDUALLY SUBCRITICAL UNITS IN AIR ARE DISCUSSED. RESULTS ARE GIVEN FOR UNREFLECTED URANIUM METAL CYLINDERS FOR 93.2% ENRICHMENT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

CRITICALITY SAFETY + NEUTRON INTERACTION + URANIUM

13-17195 ALSO IN CATEGORY 12

JACOBSON ME + MASCARENAS RR + OFFUTT GF + ROHDE KL

RECOVERY OF URANIUM FROM EBR-1 CORE 2 MELTED FUEL

IDAHO NUCLEAR CORP., IDAHO FALLS, IDAHO

IN-1088 +. 11 PAGES, 3 FIGURES, 3 TABLES, 8 REFERENCES, MAY 1967

CORE 2 OF THE EXPERIMENTAL BREEDER REACTOR I WAS PARTIALLY MELTED IN THE REACTOR AND IN THIS

CATEGORY 13
RADIOCHEMICAL PLANT SAFETY

13-17195 *CONTINUED*

CONDITION REPRESENTED A UNIQUE CHALLENGE FOR THE RECOVERY OF ABOUT 66 KG OF 40 PERCENT ENRICHED URANIUM. THE MELTED CORE MATERIAL CONTAINED URANIUM, ZIRCONIUM, AND STAINLESS STEEL FROM THE FUEL, AS WELL AS SODIUM AND POTASSIUM (NAK) FROM THE REACTOR COOLANT AND BONDING AGENT. RECENTLY THIS MATERIAL WAS REPROCESSED AT THE IDAHO CHEMICAL PROCESSING PLANT (ICPP) BY CUSTOM DISSOLUTION IN A SHIELDED CELL UNDER DIRECT VISUAL SURVEILLANCE FOLLOWED BY DECONTAMINATION OF THE URANIUM USING CONVENTIONAL SOLVENT EXTRACTION. THE SUCCESSFUL RECOVERY OF THIS URANIUM AT A COST OF WELL UNDER ONE DOLLAR PER GRAM SUGGESTS THAT OTHER FUELS OF UNUSUAL COMPOSITION CAN ALSO BE ECONOMICALLY PROCESSED WITH SPECIAL HANDLING TECHNIQUES AT ICPP.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*POTASSIUM + *RADIOCHEMICAL PLANT SAFETY + *RADIOCHEMICAL PROCESSING + *SODIUM + *SOLVENT EXTRACTION PROCESS + *URANIUM + *ZIRCONIUM + CRITICALITY SAFETY + DISSOLUTION + FBR 1 AND 2 (EXPERIMENTAL BREEDER REACTORS) + EXPLOSION + HOT CELL + IDAHO FALLS + NRTS (NATIONAL REACTOR TEST STATION)

13-17407 ALSO IN CATEGORIES 3 AND 11

SKINNER DF + WOLF TW + WADE WZ
PORT APPARATUS FOR EXTRACTING MATERIALS FROM RADIOACTIVE ENCLOSURES
UNITED STATES ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.
U. S. PATENT 3,290,502 +. 2 PAGES, DECEMBER 6, 1966, PATENT (U.S.)

RELATES TO A SAMPLE EXTRACTOR PORT INCLUDING A SLEEVE MOUNTABLE IN A SHIELDING WALL INTO WHICH AN OPEN-ENDED CONTAINER MAY BE RETRACTABLY INSERTED. ESPECIALLY ADAPTED GROOVE STRUCTURE IN THE INNER-WALL SURFACES OF THE SLEEVE AND A COMPLIANT SLEEVE INSERTABLE AND DISPLACEABLE INWARDLY THEREIN PROVIDES FOR SEALING OF THE CONTAINER AND WALL WHILE PROVIDING CONTAMINATION SHIELDING OF THE CONTAINER MOUTH.

AVAILABILITY - THE U. S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D. C. (\$0.25 PER COPY)

CONTAINMENT AIR LOCK + CONTAINMENT PENETRATION, CLOSURE OF + PATENT

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-11634 ALSO IN CATEGORY 15

VORTMAN LJ

PROJECT SULKY. CLOSE-IN AIR BLAST FROM A RELATIVELY DEEP LOW-YIELD NUCLEAR DETONATION IN BASALT
SANDIA CORPORATION, ALBUQUERQUE, NEW MEXICO
PNE-711F +. 29 PAGES, 2 TABLES, 12 FIGURES, 6 REFERENCES, MAY 31, 1966, CFSTI \$1.50 CY, \$0.50 MN

CLOSE-IN AIR-BLAST MEASUREMENTS WERE MADE ON THE SULKY SHOT (AN 85-TON NUCLEAR DETONATION BURIED 90 FEET BELOW THE SURFACE IN BASALT). THE DOMINANT OVERPRESSURE WAS THAT RESULTING FROM A GROUND SHOCK WHICH TRANSMITTED PRESSURE TO THE AIR AT THE EPICENTER. THE PRESSURE WAVE THEN PROPAGATED AWAY FROM THE EPICENTER AT SONIC VELOCITY IN AIR. AN EARLIER WAVE OF 1/7 THE AMPLITUDE OF THE GROUND-SHOCK-INDUCED PFAK PROPAGATED AT THE VELOCITY OF A SEISMIC SURFACE WAVE. IT MAY HAVE BEEN DUE TO GAGE SENSITIVITY TO GROUND-SURFACE MOTION, OR IT MAY HAVE BEEN MEASUREMENT OF OVERPRESSURE RESULTING AT THE GAGE FROM SUCH GROUND MOTION. THE PULSE FROM VENTING GASES WAS WEAK BECAUSE OF THE RELATIVELY GREAT BURIAL DEPTH. IT WAS SUPER-IMPOSED ON THE NEGATIVE WAVE FOLLOWING THE GROUND-SHOCK-INDUCED PULSE AND GAVE PEAK VALUES EQUAL TO OR LESS THAN AMBIENT PRESSURE. IN ONE SENSE, THE GAS-VENTING PRESSURES WERE IN AGREEMENT WITH THOSE OF DANNY BOY, WHICH ALSO WERE SUPERIMPOSED ON A NEGATIVE WAVE BUT WHICH WERE STRONG ENOUGH TO HAVE POSITIVE VALUES BECAUSE OF THE RELATIVELY SHALLOWER BURIAL DEPTH. GROUND-SHOCK-INDUCED PEAKS FROM BOTH SULKY AND DANNY BOY ARE IN AGREEMENT WITH THOSE FROM HIGH-EXPLOSIVE SHOTS AT COMPARABLE BURIAL DEPTHS.

*NUCLEAR DETONATION + *PLOWSHARE PROGRAM + GEOLOGICAL CONSIDERATION, GEOPHYSICAL

14-14734 ALSO IN CATEGORIES 5 AND 17

RAY JW + WOOLTON RC + BARNES RH

INVESTIGATION OF TRITIUM GENERATION AND RELEASE IN PM NUCLEAR POWER PLANTS

BATTELLE MEMORIAL INSTITUTE

BMI-1787 +. 121 PAGES, OCTOBER 31, 1966

THE TERNARY FISSION PROCESS IS THE MAJOR SOURCE OF TRITIUM, FOLLOWING USE OF LITHIUM-BASED PESIN IN 1963 GENERATED AT THE RATE OF 8.7×10^6 TO THE 5TH TRITONS PER FISSION. THE RESULANT TRITIUM DIFFUSES THROUGH THE CLAD. WATER SAMPLES WERE ASSAYED, AND A MATHEMATICAL MODEL DESCRIBING TRITIUM GENERATION AND MOVEMENT THROUGHOUT PM PLANTS WAS DEVELOPED. THE RESULTING PROGRAM, TRICON, WAS EMPLOYED TO CALCULATE TRITIUM CONCENTRATIONS AT PM-3A DURING 1965. AGREEMENT BETWEEN CALCULATED AND MEASURED CONCENTRATIONS WAS GOOD. POTENTIAL HEALTH HAZARDS FROM BOTH AIRBORNE AND WATERBORNE TRITIUM WERE CALCULATED. THE MOST ECONOMICAL SOLUTION AT PM-1 APPEARS TO BE THE REMOVAL OF TRITIATED EFFLUENT FROM THE PLANT SITE AT \$1.40 PER GALLON, AND AT PM-3A TO BE THE EXPELLING OF TRITIATED EFFLUENT WATER TO AN ISOLATED AREA WHERE IT WILL FREEZE AND SURTIVE IN SAFE CONCENTRATIONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

*MAIN COOLING SYSTEM + *TRITIUM + COMPUTER PROGRAM + COMPUTER, DIGITAL + HAZARDS ANALYSIS + PM 1 (PORTABLE MEDIUM NUCLEAR POWER PLANT) + PM 3A (PORTABLE MEDIUM NUCLEAR POWER PLANT) + REACTOR, ARMY + REACTOR, PRESSURIZED WATER + WASTE DISPOSAL, LIQUID

14-15089 ALSO IN CATEGORY 15

SHEFCIK JJ

OPERATING EXPERIENCE ON IN-TANK SOLIDIFICATION OF RADIOCHEMICAL WASTES

HANFORD ATOMIC PRODUCTS OPERATION, GENERAL ELECTRIC CO., RICHLAND, WASH.

PL-SA-41 + CONF-650902-10 +. 18 PAGES, AUGUST 17, 1965, FROM AMERICAN CHEMICAL SOCIETY, 150TH NATIONAL MEETING, ATLANTIC CITY

THE INITIAL OPERATION OF THE FIRST IN-TANK SOLIDIFICATION UNIT IS DESCRIBED. ALKALINE RADIOCHEMICAL WASTE SOLUTIONS ARE EVAPORATED WITHIN A 750,000-GAL UNDERGROUND TANK BY SPARGING WITH COMPRESSED AIR ELECTRICALLY HEATED TO 1200 F. THE AIR SPARGER ALSO SERVES AS AN AIR-LIFT CIRCULATOR TO AGITATE THE SOLUTION AND AS A HEAT EXCHANGER. TO AVOID THE HIGH ENTRAINMENT NORMALLY ASSOCIATED WITH HOT AIR SPARGING, MORE THAN HALF THE AVAILABLE HEAT IS TRANSFERRED TO THE SOLUTION BY PASSING THE HOT AIR DOWN THE HOLLOW WALL OF THE 40-IN-DIAMETER, 12-FOOT LONG, CIRCULATOR-SPARGER. STUD FINS ARE USED TO IMPROVE THE HEAT TRANSFER COEFFICIENT. THE OFF-GAS VAPORS ARE FILTERED AND DEHUMIDIFIED, PRODUCING CONDENSATE AND EFFLUENT AIR STREAMS VERY LOW IN RESIDUAL RADIOACTIVITY. SOLUTION DECONTAMINATION FACTORS OF GREATER THAN 100,000 ARE OBTAINED. AS EVAPORATION OCCURS, ADDITIONAL RADIOCHEMICAL WASTE SOLUTIONS ARE ADDED. AFTER WASTES HAVE BEEN BOILED DOWN BY A FACTOR OF 4 TO 6, THE CONCENTRATE WILL BE ALLOWED TO COOL AND SOLIDIFY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*BATTELLE NORTHWEST + *EVAPORATION + *WASTE TREATMENT, LIQUID + WASTE DISPOSAL, GENERAL + WASTE MANAGEMENT + WASTE TREATMENT, GENERAL + WASTE TREATMENT, SOLID

14-15585 ALSO IN CATEGORIES 16 AND 18

QUESTION 7.8--IODINE MONITORING

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-15585 *CONTINUED*

WHAT PROVISIONS ARE MADE FOR IODINE MONITORING IN THE VARIOUS GASEOUS-ACTIVITY MONITORS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + FISSION PRODUCT, IODINE + MONITOR, RADIATION, GAS + PALISADES POINT + REACTOR, PRESSURIZED WATER

14-15592

ALSO IN CATEGORY 14

QUESTION 9.6--LAKE MICHIGAN LIQUID EFFLUENT DIFFUSION STUDY

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

3 PAGES, 2 REFERENCES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

DESCRIBE THE ANTICIPATED LIQUID-EFFLUENT DIFFUSION STUDY TO BE CARRIED OUT IN LAKE MICHIGAN. WHAT IS THE ESTIMATED MINIMUM DILUTION TO BE EXPECTED BETWEEN THE CONDENSER COOLANT OUTFALL AND THE INTAKES FOR THE TWO NEARBY COMMUNITY-SUPPLY INTAKES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + PALISADES POINT + REACTOR, PRESSURIZED WATER + THERMAL POLLUTION + WASTE DISPOSAL, OCEAN

14-15619

ALSO IN CATEGORY 14

QUESTION 11.1--CONSTRUCTION CRITERIA FOR WASTE STORAGE TANKS, ACCIDENT ANALYSIS OF TANK RUPTURE

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT CRITERIA WILL BE APPLIED IN THE DESIGN AND CONSTRUCTION OF THE RADIOACTIVE LIQUID WASTE STORAGE TANKS AND THE GASEOUS WASTE HOLDUP TANKS, SUCH AS CODES, DESIGN MARGINS, TESTING, LEAKAGE-RATE SPECIFICATIONS AND MAXIMUM ALLOWABLE RADIOACTIVE INVENTORY. PROVIDE AN ANALYSIS OF AN ACCIDENT IN WHICH A GASEOUS HOLDUP TANK CONTAINING THE MAXIMUM ALLOWABLE INVENTORY IS RUPTURED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + DESIGN CRITERIA + PALISADES POINT + REACTOR, PRESSURIZED WATER + WASTE DISPOSAL, GAS + WASTE STORAGE

14-15766

ALSO IN CATEGORY 15

CAMBRAY RS + FISHER EM + BROOKS WL + PEIRSON DH

RADIOACTIVE FALLOUT IN AIR AND RAIN. RESULTS TO THE MIDDLE OF 1966

ATOMIC ENERGY RESEARCH ESTABLISHMENT, HARWELL, ENGLAND

AERE-R-5760 +. 48 PAGES, 6 FIGURES, 21 TABLES, NOVEMBER 1966

SAMPLES OF ATMOSPHERIC DUST AND RAINWATER WERE COLLECTED FROM THE UK AND OVERSEAS. RESULTS ARE PRESENTED OF THE ANALYSES OF THESE SAMPLES FOR VARIOUS FISSION PRODUCTS AND CERTAIN OTHER RADIONUCLIDES. THE CONCENTRATIONS OF CS-137 AND SR-90 IN AIR AND RAIN OVER THE UNITED KINGDOM WERE, IN THE FIRST HALF OF 1966, ABOUT 40% OF THOSE FOR THE FIRST HALF OF 1965. THE AVERAGE DEPOSITION OF CS-137 AND SR-90 IN THE UK FOR THE FIRST SIX MONTHS OF 1966 WAS ABOUT 55% OF THAT FOR THE CORRESPONDING PERIOD OF 1965. THE THIRD CHINESE EXPLOSION OF 9TH MAY 1966 TEMPORARILY CONTRIBUTED ABOUT 2% TO THE LONG-LIVED ACTIVITY. AN ESTIMATE IS MADE OF THE TOTAL GLOBAL DEPOSITION OF SR-90 IN RAIN TO THE END OF 1965. THE EFFECTIVE AGE OF LONG-LIVED FISSION PRODUCT DEBRIS IN THE TWO HEMISPHERES IS NOW SIMILAR ALTHOUGH THE DEPOSITION OF SR-90 STILL CONTINUES SIGNIFICANTLY LOWER IN THE SOUTHERN HEMISPHERE. CONCENTRATIONS OF SHORT-LIVED FISSION PRODUCTS FROM THE CHINESE TEST OF 9TH MAY 1966 AND THE FRENCH TESTS OF JULY - OCTOBER 1966 ARE GIVEN IN AN APPENDIX.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*FALLOUT + *RAINFALL + AIR + ATMOSPHERIC DIFFUSION, GLOBAL + CESIUM + DEPOSITION + NUCLEAR EXPLOSION DEBRIS + SAMPLING + STRONTIUM + UNITED KINGDOM

14-15770

PERKINS EJ + WILLIAMS RR + GORMAN J

THE BIOLOGY OF THE SOLWAY FIRTH IN RELATION TO THE MOVEMENT AND ACCUMULATION OF RADIOACTIVE MATERIALS

UNITED KINGDOM ATOMIC ENERGY AUTHORITY, ANNON, SCOTLAND

PG-REPORT-732 +. 22 PAGES, 8 FIGURES, 6 TABLES, 13 REFERENCES, 1966

THE SPECIFIC ACTIVITY OF THE NUCLIDES K-40, SR-90, AND RU-106 IN CERTAIN OF THE FAUNA OF THE SOLWAY FIRTH WAS EXAMINED. IT WAS SHOWN THAT AT HIGHER TROPIC LEVELS THE SPECIFIC ACTIVITY OF RU-106 DECREASES, WHILE THE REVERSE IS TRUE FOR SR-90. THE UPTAKE OF SR-90 BY THE FLOUNDER WAS THOUGHT TO BE RELATED TO FOOD INTAKE, AND IT WAS SHOWN THAT A PEAK IN THE SPECIFIC ACTIVITY OCCURRED WHEN THE FISH WERE IN PEAK CONDITION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-15770 *CONTINUED*

*BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + HYDROLOGICAL CONSIDERATION, RATE OF MOVEMENT + POTASSIUM + RUTHENIUM + SAMPLING + STRONTIUM + SURFACE WATER, NUCLIDE OCCURRENCE + SURFACE WATER, PROPERTY

14-15774

MOORE DP

A STUDY OF THE MECHANISM OF DIVALENT CATION UPTAKE BY PLANTS. PROGRESS REPORT JUNE 1, 1965 TO MAY 31, 1966
OREGON STATE UNIVERSITY, CORVALLIS

RLC-1547-2 +. 15 PAGES, FEBRUARY 28, 1966

PROGRESS IS REPORTED ON STUDIES OF METABOLISM IN THE UPTAKE OF DIVALENT CATIONS, THE EFFECT OF CONCENTRATION, PH, AND COMPETITIVE IONS ON THE RATE OF UPTAKE, AND THE BASIC DIFFERENCES BETWEEN SPECIES IN THE UPTAKE OF DIVALENT CATIONS. STUDIES ON MANGANESE ABSORPTION BY EXCISED BARLEY ROOTS WERE CONTINUED WITH EMPHASIS ON THE INTERACTIONS BETWEEN VARIOUS POLYVALENT CATIONS AS THEY AFFECT MANGANESE ABSORPTION. EXPERIMENTS ON THE BEHAVIOR OF URANYL ION AS A SELECTIVE INHIBITOR OF ION ABSORPTION WERE CONTINUED, AND A SERIES OF EXPERIMENTS ON THE DIFFERENTIAL INHIBITORY EFFECT OF URANYL ON ION ABSORPTION TO PH AND URANYL ION CONCENTRATION WERE CONDUCTED. EXPERIMENTS ON THE INFLUENCE OF IRON ON THE EXPRESSION OF LEAF CHLOROSIS TO TOMATO PLANTS EXPOSED TO CONTINUOUS LIGHT INDICATED THAT THE EXPRESSION OF TOMATO LEAF ABNORMALITIES IN CONTINUOUS LIGHT WAS DEPENDENT IN PART ON THE NUTRIENT STATUS OF THE PLANTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*BIOLOGICAL CONCENTRATION, VEGETATION + *ECOLOGICAL CONSIDERATION + IRON + MANGANESE + SOIL, NUCLIDE OCCURRENCE + SOIL, PROPERTY + SORPTION + URANIUM

14-15775

ALSO IN CATEGORY 15

PRESLIN AJ + GEORGE AC + LECLARE PC

THE CONTRIBUTION OF URANIUM SURFACE CONTAMINATION TO INHALATION EXPOSURES

NEW YORK OPERATIONS OFFICE, U.S. ATOMIC ENERGY COMMISSION, NEW YORK

HASL-175 + CONF-660403-3 +. 20 PAGES, MAY 1966, FROM INTERNATIONAL SYMPOSIUM ON RADIOLOGICAL PROTECTION OF THE WORKER BY THE DESIGN AND CONTROL OF HIS ENVIRONMENT, BOURNEMOUTH, ENG.

IN ESTIMATING INHALATION EXPOSURES THAT MAY OCCUR FROM RADIOACTIVITY TRANSFERRED FROM SURFACES INTO THE AIR, MOST INVESTIGATORS HAVE USED RESUSPENSION FACTORS DERIVED EXPERIMENTALLY. EXPERIMENTAL PROCEDURES CONSISTED OF MEASURING RADIOACTIVITY ON SURFACES AND IN THE AIR SIMULTANEOUSLY, WHILE CONTAMINATED SURFACES WERE BEING DISTURBED IN A MANNER THAT SIMULATED CONDITIONS THAT MIGHT BE FOUND IN INDUSTRIAL AND LABORATORY FACILITIES. TAKING A SOMEWHAT DIFFERENT APPROACH, THE AUTHORS MEASURED THE ACTUAL INHALATION EXPOSURES OF EMPLOYEES FROM CONTAMINATION ORIGINATING ON SURFACES IN A URANIUM PLANT. VALIDITY OF THE TECHNIQUE HAD BEEN DEMONSTRATED IN AN EARLIER STUDY. SURFACE CONTAMINATION WAS FOUND TO CONTRIBUTE A VERY SMALL PROPORTION OF THE TOTAL INHALATION EXPOSURES EVEN IN AREAS WHERE LEVELS OF SURFACE CONTAMINATION WERE HIGH WITH RESPECT TO SUGGESTED STANDARDS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*INHALATION + *SURFACE CONTAMINATION + ALPHA EMITTER + PERSONNEL EXPOSURE, RADIATION + RADIATION SAFETY AND CONTROL + URANIUM

14-15776

ALSO IN CATEGORY 15

ROWE DP + GLOYN E

RADIOACTIVITY TRANSPORT IN WATER - THE TRANSPORT OF ZN-65 IN AN AQUEOUS ENVIRONMENT. TECHNICAL REPORT NO.

5
TEXAS UNIVERSITY, AUSTIN

TID-22876 + EHE-09-6403 +. 114 PAGES, FIGURES, TABLES, SEPTEMBER 1, 1964

THE PURPOSE OF THIS STUDY WAS TO EVALUATE THE TRANSPORT OF ZN-65 UNDER SIMULATED RIVER CONDITIONS. MEASUREMENTS WERE MADE OF THE DISTRIBUTION OF ZN-65 AMONG THE SEDIMENT, PLANTS, SOLUTION, AND SUSPENDED MATERIAL IN A RESEARCH FLUME. IN THE FLOWING SYSTEM, THE GREATEST FRACTION OF ZN-65 WAS ASSOCIATED WITH THE SOLUTION AND SUSPENDED MATERIAL. IT IS EXPECTED THAT ZN-65 IN A NONFLOWING SYSTEM SUCH AS A LAKE WOULD BECOME MAINLY ASSOCIATED WITH THE BOTTOM SEDIMENT. HOWEVER, FOR ROOTED AND MACROSCOPIC PLANTS GROWN IN EITHER THE CLOSED OR FLOWING ECOLOGICAL SYSTEMS, THERE APPEARS TO BE NO SIGNIFICANT DIFFERENCE IN THE UPTAKE OF ZN-65. IT IS CONSIDERED THAT PHOTOSYNTHESIS IS THE PRIME ELEMENT IN THE UPTAKE AND RELEASE OF ZN-65 IN PLANTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*FISSION PRODUCT TRANSPORT + *HYDROLOGICAL CONSIDERATION, RATE OF MOVEMENT + *SURFACE WATER, SEDIMENT + *ZINC + BIOLOGICAL CONCENTRATION, VEGETATION + SOIL + SOIL, PROPERTY + SORPTION + SURFACE WATER, PROPERTY + SURFACE WATER, SUSPENDED MATERIAL

14-15777

ALSO IN CATEGORY 15

HOFFMANN E + VAN LINT JM + VANDE POEL M

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-15777 *CONTINUED*
WASTE TREATMENT PLANT ACCOUNTING PROCEDURE, APPLICATION
SOCIETE BELGE POUR L'INDUSTRIE NUCLEAIRE, BRUSSELS
TID-22427 +. 37 PAGES, TABLES, NOVEMBER 1965

COST OF RUNNING THE MOL TREATMENT PLANTS ON BEHALF OF THE C.E.N. IS REPORTED. ALL COSTS ARE QUOTED IN BELGIAN FRANCS. TWO KINDS OF FIGURES ARE QUOTED. IN ONE TABLE, ACTUAL FIGURES OF THE DECEMBER 1964 MONTHLY RUNNING EXPENSES ARE GIVEN. ALTHOUGH THE OTHER FIGURES QUOTED ARE NOT CONSIDERED AS ACTUAL, THEY DO GIVE A VERY ACCURATE IDEA OF RUNNING EXPENSES AVERAGED OVER THE LAST FIVE YEARS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*WASTE TREATMENT, ECONOMICS + BELGIUM + WASTE DISPOSAL, GENERAL + WASTE MANAGEMENT + WASTE TREATMENT, LIQUID

14-15780 ALSO IN CATEGORY 15

IANF WR
FALLOUT SIMULANT DEVELOPMENT. THE ADSORPTION REACTIONS OF CERIUM, CESIUM, RUTHENIUM, STRONTIUM, AND ZIRCONIUM-NIOBIUM.
STANFORD RESEARCH INSTITUTE, MENLO PARK, CALIF.
AD-635547 + SRI-5068 +. 30 PAGES, REFERENCES, NOVEMBER 1965

THIS REPORT DESCRIBES THE PREPARATION OF SYNTHETIC FALLOUT. METHODS ARE DISCUSSED FOR SIMULATING SELECTED PROPERTIES OF RADIOACTIVE FALLOUT SO THAT EXPERIMENTS CAN BE CONDUCTED TO EVALUATE RADIOLOGICAL HAZARDS. THE EXPERIMENTS MEASURED THE SOLUBILITY OF RADIONUCLIDES WHICH WOULD BE AVAILABLE TO CYCLE IN THE FOOD CHAINS. HEATING THE FALLOUT PARTICLES TO HIGH TEMPERATURES REDUCED THE SOLUBILITY OF ALL NUCLIDES STUDIED. THE METHODS CAN BE USED BY OTHER RESEARCHERS TO PREPARE SYNTHETIC FALLOUT HAVING SELECTED SOLUBILITY AND AVAILABILITY PROPERTIES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*FALLOUT + *SORPTION + CERIUM + CESIUM + RUTHENIUM + SIMULATION + STRONTIUM + ZIRCONIUM

14-15781 ALSO IN CATEGORY 15

THE UPTAKE OF STRONTIUM BY VARIOUS TYPE CROPS AND FACTORS AFFECTING UPTAKE AND TRANSLOCATION OF STRONTIUM AND CALCIUM NATIVE TO SOIL. TECHNICAL PROGRESS REPORT
ARIZONA AGRICULTURAL EXPERIMENT STATION, TUCSON
TID-23271 +. 36 PAGES, 1966

THIS STUDY SHOWED THAT CERTAIN SPECIES OF ALGAE ABSORB CALCIUM PREFERENTIALLY OVER STRONTIUM. IN ALL BUT ONE OF THE SPECIES STUDIED, STRONTIUM DID NOT APPEAR TO COMPETE IN THE ABSORPTION OF CALCIUM BY ALGAL CELLS BUT WAS ABSORBED IN ADDITION TO THE NEEDED CALCIUM. INCREASED MICROBIAL ACTIVITY REDUCES RADIOSTRONTIUM MOVEMENT. MOVEMENT OF RADIOSTRONTIUM FROM ALGAL TISSUES IS LOW, AS IS THE CASE WITH MOVEMENT OF RADIOSTRONTIUM FROM OTHER PLANT TISSUES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*BIOLOGICAL CONCENTRATION, ALGAE + *SOIL, NUCLIDE OCCURRENCE + *STRONTIUM + BIOLOGICAL CONCENTRATION, VEGETATION + CALCIUM + ECOLOGICAL CONSIDERATION + SOIL, PROPERTY + SOIL, RADIONUCLIDE MOVEMENT THROUGH

14-15782 ALSO IN CATEGORY 15

SUCHOZA RP
SHIPPINGPORT ATOMIC POWER STATION DISPOSITION OF RADIOACTIVE WASTE FROM UNDERGROUND STORAGE TANKS
BETTIS ATOMIC POWER LABORATORY, WEST MIFFLIN, PA.
WAPD-T-1851 + CNF-651101-52 +. 31 PAGES, 12 FIGURES, 3 TABLES, REFERENCES, NOVEMBER 1965 FROM 13TH CONFERENCE ON REMOTE SYSTEMS TECHNOLOGY, WASHINGTON, D. C.

THE DESIGN OF A STATION FOR ECONOMICALLY REMOVING AND DISPOSING OF RADIOACTIVE WASTES FROM THE SHIPPINGPORT ATOMIC POWER STATION IS DESCRIBED. THE DESIGN INCLUDES THE CAPABILITY OF TEMPORARILY STORING SOME 3100 CU. FT OF WASTES IN TWO UNDERGROUND STORAGE TANKS. THE WASTE IS BASICALLY SPENT DEMINERALIZER RESIN WITH SOME INCINERATOR ASH RESULTING FROM PLANT OPERATIONS. THE DESIGN APPLIES PRIMARILY TO THE REMOVAL OF SOLID DEMINERALIZER RESIN. ANY REMOVAL OF INCINERATOR ASH IS A CONSEQUENCE OF THE BASIC OPERATION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*SHIPPINGPORT + *WASTE MANAGEMENT + *WASTE STORAGE + TRANSPORTATION AND HANDLING + WASTE DISPOSAL, LIQUID + WASTE DISPOSAL, SOLID

14-15787 ALSO IN CATEGORY 15
WILTSHIRE LL + OWEN WL

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-15787 *CONTINUED*

REMOVAL OF SIMULATED FALLOUT FROM ASPHALT STREETS BY FIREHOSEING TECHNIQUES
NAVAL RADIOLOGICAL DEFENSE LABORATORY, SAN FRANCISCO, CALIF.
AD-641480 + USNRDL-TR-1049 +. 96 PAGES, FIGURES, TABLES, JULY 29, 1965

FIREHOSEING IS EVALUATED AS A PROCEDURE FOR CLEANING ASPHALT PAVED STREETS CONTAMINATED WITH FALLOUT FROM A LAND-SURFACE NUCLEAR DETONATION. PRINCIPAL TESTS, CONDUCTED WITH RADIO-TRACED SIMULANTS, MEASURED THE EFFECTS OF HOSEING RATE, STREAM PATTERN, PARTICLE SIZE, AND MASS LOADING. A SLOW HOSEING RATE WAS MORE EFFECTIVE THAN A FASTER RATE, REGARDLESS OF LOADING OR PARTICLE-SIZE RANGE. THE EFFECTIVENESS IMPROVED WITH INCREASED PARTICLE-SIZE RANGE AND INCREASED LOADING. AN EXPERIMENTAL NRDL FLARE NOZZLE APPEARED TO IMPROVE PERFORMANCE AT NOZZLE PRESSURES GREATER THAN 150 PSI.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*CIVIL DEFENSE + *DECONTAMINATION + *SURFACE CONTAMINATION + FALLOUT + PARTICLE SIZE

14-15796

KVAM DJ
WASTE MANAGEMENT PRACTICES AT LAWRENCE RADIATION LABORATORY, LIVERMORE
LAWRENCE RADIATION LABORATORY
UCRL-14320 + CONF-651202-2 +. 18 PAGES, FROM SYMPOSIUM ON PRACTICES IN THE TREATMENT OF LOW AND INTERMEDIATE LEVEL RADIOACTIVE WASTE, VIENNA

THE WASTE-MANAGEMENT PROGRAM HAS THE FUNCTIONS OF REDUCING WASTE GENERATION AND DISPOSING OF RADIOACTIVE WASTES. RETENTION TANK WASTE, CARBOXY WASTES, AND SOLID WASTES ARE CONSIDERED. THE WASTE PLANT, DRY-WASTE CONTAINER, WASTE-PACKAGING FACILITY, AND WASTE PRESS ARE DESCRIBED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65, MICROFICHE

*LRL (LAWRENCE RADIATION LABORATORY) + *WASTE MANAGEMENT + DECONTAMINATION + WASTE DISPOSAL, GENERAL + WASTE DISPOSAL, LIQUID + WASTE DISPOSAL, SOLID + WASTE SOURCE AND TYPE + WASTE TREATMENT, GENERAL

14-15797

ALSO IN CATEGORY 15

GERVAISE J + MALLET C
GEOLOGIC AND GEOTECHNICAL STUDIES ON PROPOSED SITES FOR A 300 GEV ACCELERATOR
EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH, SWITZERLAND
UCRL-TRANS-1320 +. 48 PAGES, NOVEMBER 1965, TRANSLATED FROM REPORT AR-INT-SG-65-28

A QUESTIONNAIRE FOR AIDING IN SELECTING A SITE FOR A 300-BEV SYNCHROTRON IS INCLUDED. ALL NECESSARY GEOLOGICAL TERMS NECESSARY FOR THE ENGINEERS UNDERSTANDING ARE DEFINED AND DISCUSSED IN DETAIL. ROCK MECHANICS AND MECHANICAL BORINGS OF THE SELECTED SITE ARE DISCUSSED.

AVAILABILITY - JOHN CRERAR LIBRARY, 35 WEST 33RD ST., CHICAGO, ILLINOIS 60616

*ACCELERATOR + *FRANCE + *GEOLOGICAL CONSIDERATION, GENERAL + *GEOLOGICAL CONSIDERATION, GEOPHYSICAL + GEOLOGICAL CONSIDERATION, STRATIGRAPHY

14-15798

TAMURA T
DEVELOPMENT AND APPLICATIONS OF MINERALS IN RADIOACTIVE WASTE DISPOSAL
OAK RIDGE NATIONAL LABORATORY
ORNL-P-1811 + CONF-660601-2 +. 35 PAGES, FROM INTERNATIONAL CLAY CONFERENCE, JERUSALEM

THE USE OF CLAY MINERALS AND ALLIED MATERIALS IN RADIOACTIVE WASTE DISPOSAL IS CONSIDERED. THE RATIONALE BEHIND THE DEVELOPMENT OF THESE APPLICATIONS AND THE IMPLICATIONS OF THE EXPERIMENTAL RESULTS IN UNDERSTANDING REACTIONS OF RADIOCESIUM AND RADIOSTRONTIUM IN GROUND DISPOSAL OPERATIONS ARE ALSO DISCUSSED. RADIOCESIUM-CLAY MINERAL REACTIONS ARE TREATED IN GREAT DETAIL. THE DATA SUPPORT THE HYPOTHESIS THAT CLAY MINERAL STRUCTURE IS THE DOMINANT FACTOR IN RADIOCESIUM SORPTION FROM RADIOACTIVE WASTE SOLUTIONS. INFORMATION ON THE SESQUIOXIDES, COMMON CONSTITUENTS IN SOIL AND CLAY MINERAL SYSTEMS, IS ALSO INCLUDED BECAUSE THEY COMPLICATE THE ABSORPTION BEHAVIOR OF RADIONUCLIDES IN SOILS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*WASTE DISPOSAL, GENERAL + CESIUM + SOIL, PROPERTY + SORPTION + STRONTIUM + WASTE DISPOSAL, LIQUID + WASTE DISPOSAL, TERRESTRIAL + WASTE MANAGEMENT

14-15799

ALSO IN CATEGORY 15

COMAR CL + WENTWORTH RA + LENGEMANN FW
METABOLISM OF SELECTED RADIONUCLIDES FED IN VARIOUS PHYSICAL FORMS TO ANIMALS. FINAL REPORT, JUNE 4, 1964
- JUNE 30, 1965
NEW YORK STATE VETERINARY COLLEGE, ITHACA
AD-626320 +. 41 PAGES, FIGURES, REFERENCES, JUNE 1965

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-15799 *CONTINUED*

BODY RETENTION AND SECRETION INTO MILK WERE DETERMINED FOR SR-85 AND CS-134 FROM THE FOLLOWING SOURCES - SIMULANTS OF LOCAL FALLOUT, SR-85 NITRATE AND CHLORIDE, AND CS-134 CHLORIDE. FOUR COWS, 15 GOATS, AND 16 HOGS WERE USED. THE WHOLE-BODY COUNTER WAS EMPLOYED TO MEASURE RETENTION IN THE GOATS AND HOGS. THE BIOLOGICAL AVAILABILITY OF RADIOCESIUM AND STRONTIUM DEPENDED ON THE SOLUBILITY CHARACTERISTICS OF THE FALLOUT SIMULANT AND APPEARS TO BE PREDICTABLE FROM IN VITRO TESTS UNDER SOME CONDITIONS. INTERSPECIES DIFFERENCES IN BIOLOGICAL AVAILABILITY WERE NOT LARGE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65, MICROFICHE

*BIOLOGICAL CONCENTRATION, ANIMAL + *FALLOUT + CESIUM + COUNTER, WHOLE BODY + ECOLOGICAL CONSIDERATION + STRONTIUM

14-15802

RODIER J + ALLES M + AUCHAPT P + IFFILLATRE G
SOLIDIFICATION OF RADIOACTIVE SLUDGES BY ASPHALT
COMMISSARIAT A L ENERGIE ATOMIQUE, MARCOULE, FRANCE
ORNL-IR-1432 + STI-PUB-116 + CONF-651202 +. 22 PAGES, PAGES 713-724 OF STI-PUB-116, 1966

THE PROCESS CONSISTS IN POURING THE HOT ASPHALT INTO THE SLUDGE, TO WHICH A SURFACE-ACTIVE AGENT HAS BEEN ADDED. THE RESULTING UNSTABLE EMULSION IS BROKEN DOWN IMMEDIATELY, AND ALMOST ALL THE WATER CONTAINED IN THE SLUDGE ESCAPES BY EXUDING FROM THE MASTIC WHICH HAS BEEN FORMED. THE SMALL AMOUNT OF RESIDUAL WATER IS ELIMINATED BY VAPORIZATION WHEN THE COATED MATERIAL IS HEATED BEFORE BEING PLACED IN CONTAINERS.

AVAILABILITY - JOHN CRERAR LIBRARY, 35 WEST 33RD. ST., CHICAGO, ILL. 60616, \$2.60 COPY, \$0.86 MICROFICHE

*FRANCE + *WASTE TREATMENT, FIXATION + WASTE TREATMENT, LIQUID + WASTE TREATMENT, SOLID

14-15803

STRICKLAND G + TUTHILL EJ + DRAGER RF
PHOSPHATE GLASS PROCESS. EVAPORATOR STUDIES WITH SIMULATED PUREX WASTES
BROOKHAVEN NATIONAL LAB., UPTON, N.Y.
ORNL-10047 + CONF-660208-11 +. 24 PAGES, FROM SYMPOSIUM ON SOLIDIFICATION AND LONG-TERM STORAGE OF HIGHLY RADIOACTIVE WASTES, RICHLAND, WASHINGTON

PRELIMINARY STUDIES WERE MADE ON THE CONTINUOUS EVAPORATION AND DENITRATION OF SIMULATED PUREX WASTES USING A TUBE-BUNDLE EVAPORATOR EQUIPPED WITH A TURBINE AGITATOR. OPERATING EXPERIENCE AND PERFORMANCE DATA WERE OBTAINED WITH PROTOTYPE DESIGN-BASIS FEED AT 150 C. THE DECREASES IN PERFORMANCE WERE GENERALLY RELATED TO THE INITIAL HEATING CONDITIONS RATHER THAN TO THE TOTAL TIME OF OPERATION. IN THE CONCENTRATION OF PUREX-2 FEED AT TEMPERATURES OF 123-145 C, THE PERFORMANCE OF THE EVAPORATOR DECREASED VOLUME REDUCTION AND SOLUTION VISCOSITY. RECOMMENDATIONS INCLUDE SEVERAL DESIGN CHANGES AND CONTINUED TESTING IN THE VICINITY OF 130 C.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*WASTE TREATMENT, FIXATION + EVAPORATION + THERMAL CONSIDERATION + WASTE TREATMENT, EQUIPMENT + WASTE TREATMENT, LIQUID

14-15804

ALSO IN CATEGORY 15
REQUIREMENTS FOR LOCAL PLANNING TO COVER HAZARDS OF FALLOUT. VOLUME I
DUNLAP AND ASSOCIATES, INC., DARIEN, CONN.
AD-611744 + ORD-64-110, VOL. 1 +. 63 PAGES, JANUARY 1965

THE DEVELOPMENT OF EFFECTIVE PLANS FOR ASSIGNING SHELTERS TO POPULATION AND FOR BRINGING THE POPULATION TO THE SHELTER WAS STUDIED. TWO MEDIUM-SIZED TOWNS IN CONNECTICUT, STAMFORD AND WATERBURY, WERE STUDIED IN DETAIL. STUDIES WERE MADE OF THE VARIOUS SPEEDS OF MOVEMENT TO SHELTER AND THEIR EFFECTS UPON RATE AT WHICH THE POPULATION WAS SHELTERED. PLANNING PROBLEMS ASSOCIATED WITH PRIMARY AND SECONDARY FIRES WERE GIVEN CURSORY EXAMINATION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*CIVIL DEFENSE + *FALLOUT + RADIATION SAFETY AND CONTROL

14-15807

ALSO IN CATEGORY 15
RADIUM AND MESOTHORIUM POISONING DOSIMETRY AND INSTRUMENTATION TECHNIQUES IN APPLIED RADIOACTIVITY.
COMPREHENSIVE REPORT OF OVER-ALL ACTIVITIES, 1950-1965
MASSACHUSETTS INSTITUTE OF TECHNOLOGY, CAMBRIDGE
TID-22131 +. 47 PAGES, 1965

A REVIEW IS PRESENTED OF A 15-YEAR INVESTIGATION OF RA AND RA-228 POISONING IN HUMAN BEINGS. THE INVESTIGATION CONSISTED OF IDENTIFICATION AND LOCATION OF CASES, MEASUREMENTS OF THE BODY BURDENS OF RADIOACTIVITY IN 428 CASES, COMPILATION OF PERSONAL AND MEDICAL HISTORIES (WITH A COMPLETE SERIES OF X RAYS) AND PROPER INTERPRETATION, COMPILATION, STORAGE, AND DISTRIBUTION

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-15807 *CONTINUED*

OF CASE RECORDS. SUFFICIENT DATA WAS ACCUMULATED FOR PRELIMINARY STATISTICAL STUDIES OF DOSE-RESPONSE RELATIONSHIPS FOR A NUMBER OF HEALTH FACTORS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*BIOLOGICAL CONCENTRATION, MAN + *BIOMEDICAL + *RADIUM + COUNTER, WHOLE BODY + DOSE MEASUREMENT, INTERNAL + DOSIMETRY, GENERAL + INSTRUMENTATION, RADIATION MONITORING + RADIATION EFFECT

14-15808

SIGLER WF

SOME EFFECTS OF ACCUMULATED RADIUM ON THE PRODUCTIVITY OF ALGAE

UTAH STATE UNIVERSITY, LOGAN

TID-22222 +. 31 PAGES, 1965

RESULTS ARE REPORTED FROM AN AQUARIUM STUDY OF THE EFFECTS OF ACCUMULATED RA ON THE PRODUCTIVITY OF TWO GENERA OF BENTHIC ALGAE, VAUCHERIA AND CLADOPHORA, FROM THE LOGAN RIVER, UTAH. RIVER WATER, CONTAINING 5 DIFFERENT CONCENTRATIONS OF RA-226, WAS USED AS THE CULTURE MEDIUM. AT THE END OF SELECTED TIME PERIODS MEASUREMENTS WERE MADE OF DRY WEIGHT, NITROGEN CONTENT, LIPID CONTENT, RA UPTAKE, OXYGEN PRODUCTION, AND C-14 UPTAKE. RADIUM-226 WAS ACCUMULATED BY ALL THE ALGAE TESTED, HOWEVER, THE AMOUNT TAKEN UP WAS AFFECTED BY THE GENUS OF THE ALGAE, THE CONCENTRATION OF RA IN THE MEDIUM, AND THE LENGTH OF TIME THE ALGAE WAS EXPOSED TO IT. RESULTS DEMONSTRATED THERE WERE EFFECTS ON THE ALGAE CAUSED BY EXPOSURE TO RA, BUT IT WAS IMPOSSIBLE TO DISTINGUISH BETWEEN RADIATION OR CHEMICAL EFFECTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*BIOLOGICAL CONCENTRATION, ALGAE + *RADIUM + CARBON + ECOLOGICAL CONSIDERATION + RADIATION EFFECT + ADSORPTION + SURFACE WATER, NUCLIDE OCCURRENCE

14-15813

CHRISTENSEN EL + MCNEESE WD + MARAMAN WJ

DECONTAMINATION EXPERIENCE IN THE DESIGN AND OPERATION OF THE PLUTONIUM PROCESSING FACILITIES AT LOS ALAMOS LOS ALAMOS SCIENTIFIC LAB., UNIV. OF CALIFORNIA

LA-DC-7590 + CONF-660520-2 +. 36 PAGES, 19 FIGURES, 2 REFERENCES, APRIL 1966, FROM INTERNATIONAL SYMPOSIUM ON THE DECONTAMINATION OF NUCLEAR INSTALLATIONS, HARWELL, ENGLAND

THIS PAPER PRESENTS IMPROVEMENTS IN DRYBOX DESIGN, VENTILATION CONTROL, AND EQUIPMENT ARRANGEMENT, WITH EMPHASIS ON SECONDARY CONTAINMENT FOR HIGH-RISK AREAS OR OPERATIONS, DECONTAMINATION PROCEDURES, OPERATOR TRAINING, CONSTRUCTION MATERIALS, AND OPERATING POLICY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*DECONTAMINATION + *PLUTONIUM + *RADIOCHEMICAL PROCESSING + LASL (LOS ALAMOS SCIENTIFIC LABORATORY) + RADIATION SAFETY AND CONTROL

14-15817

ALSO IN CATEGORY 15

HALLAM NUCLEAR POWER FACILITY MONTHLY OPERATING REPORT NO. 37, AUGUST 1965

CONSUMERS PUBLIC POWER DISTRICT, HALLAM, NEBR.

TID-22355 +. 29 PAGES, FIGURES, 1965

THE REACTOR REMAINED SHUTDOWN FOR THE MODERATOR-REPLACEMENT PROGRAM. SIGNIFICANT OPERATING ACTIVITIES DURING THE MONTH ARE SUMMARIZED, TOGETHER WITH PLANT PERFORMANCE THROUGH THE MONTH. WATER WAS OBSERVED IN THE FOUR FUEL-STORAGE THIMBLES. AN ATTEMPT WAS MADE TO DETERMINE THE SOURCE OF THE WATER. DURING THE MODERATOR-ELEMENT EXAMINATION PROGRAM, IT WAS NOTED THAT ONE ELEMENT FAILED DUE TO A MECHANICAL GUAGE IN THE SKIN. AN ATTEMPT WAS MADE TO DETERMINE THE CAUSE OF THE GUAGE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*HALLAM + *SURVEY, RADIATION, ENVIRONMENTAL + DECONTAMINATION + FUEL-STORAGE + GROSS ALPHA + GROSS BETA + GROSS GAMMA + INSTRUMENTATION, RADIATION MONITORING + PERSONNEL EXPOSURE, RADIATION + RADIATION SAFETY AND CONTROL + SAMPLING + WASTE DISPOSAL, GENERAL + WASTE DISPOSAL, SOLID + WASTE HANDLING

14-15819

ALSO IN CATEGORY 15

ALDRICH JJ + FRANK T + HUNZINGER W

RADIATION EXPOSURE OF THE POPULATION DUE TO THE NORMAL OPERATION OF THE EUROCHEM REPROCESSING PLANT EUROPEAN COMPANY FOR THE CHEMICAL PROCESSING OF IRRADIATED FUELS, MOL, BELGIUM

NP-16279 + ETR-197 +. 30 PAGES, 6 FIGURES, 3 TABLES, 16 REFERENCES, OCTOBER 1966

THE AVERAGE RADIOACTIVE CONTAMINATION IN THE AIR AT GROUND LEVEL AND THE AVERAGE RATE OF DEPOSITION ON THE GROUND HAVE BOTH BEEN COMPUTED FOR A CIRCULAR AREA OF 100 KM RADIUS AROUND THE EUROCHEM DISCHARGE STACK. THE ESTIMATE IS BASED ON THE ATMOSPHERIC DISCHARGES OF RADIOACTIVE NUCLIDES EXPECTED TO OCCUR DURING NORMAL PLANT OPERATION, AND ON DETAILED

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-15819 *CONTINUED*

OBSERVATIONS OF WEATHER CONDITIONS IN MUL DURING 1963. THE AREA COVERS ABOUT HALF OF BELGIUM, A LARGE PART OF THE NETHERLANDS, AND A FRACTION OF WESTERN GERMANY. THE RADIATION EXPOSURE OF THE POPULATION WITHIN THIS AREA WAS CALCULATED SEPARATELY FOR ALL CRITICAL ORGANS, TAKING INTO ACCOUNT ALL NUCLIDES CONTRIBUTING SIGNIFICANTLY TO THE DOSE EQUIVALENT, AND ALL MODES OF EXPOSURE, E.G., DIRECT IRRADIATION, INHALATION, AND INGESTION OF CONTAMINATED FOOD.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*DOSE CALCULATION, INTERNAL + *EUROCHEMIC + *POPULATION EXPOSURE + AIR + CERIUM + CESIUM + DEPOSITION + DOSE + DOSE CALCULATION, EXTERNAL + INHALATION + IODINE + METEOROLOGY + MONITOR, RADIATION, AIR + NEPTUNIUM + PLUTONIUM + RADIATION SAFETY AND CONTROL + STRONTIUM + WASTE DISPOSAL, GAS + ZIRCONIUM

14-15821 ALSO IN CATEGORY 15

VOHRA KG

SOME ASPECTS OF FALLOUT FROM THE FIRST AND SECOND CHINESE TESTS
ATOMIC ENERGY ESTABLISHMENT, TROMBAY, INDIA
AEET-240 +. 28 PAGES, 1965

THE PATTERN OF MOVEMENT OF FALLOUT-DEBRIS CLOUDS AFTER THE FIRST AND SECOND CHINESE TESTS WAS STUDIED WITH THE HELP OF WIND DATA AT THE 200-MB LEVEL. SAMPLES OF FALLOUT DEBRIS COLLECTED AT HIGH ALTITUDES WITH THE HELP OF COMMERCIAL AIRCRAFT WERE STUDIED FOR FRESHLY PRODUCED FISSION PRODUCTS, AND A DETAILED ANALYSIS WAS MADE FOR SEVERAL SHORT-LIVED ISOTOPES. DETAILS OF THE ANALYSIS USED FOR RAPIDLY IDENTIFYING FISSION MATERIALS AFTER THE TWO TESTS ARE PRESENTED. ACTIVITY RATIOS OF IMPORTANT SHORT-LIVED FISSION PRODUCTS FOR BOTH TESTS SHOWED U-235 FISSION. THE RESULTS OF ANALYSIS FOR NP-239 AND U-237 ARE ALSO GIVEN. THESE ANALYSES PROVIDE EVIDENCE OF PRODUCTION OF U-237 BY DOUBLE NEUTRON CAPTURE AND OF NP-239 BY NEUTRON ACTIVATION OF U-238. AIRBORNE RADIATION EMITTERS FOUND AT GULMARG AFTER THE SECOND CHINESE TEST ARE DISCUSSED.

AVAILABILITY - MICROCAPD EDITIONS, ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISC., 54669

*FALLOUT + NEPTUNIUM + NUCLEAR EXPLOSION DEBRIS + SAMPLING + URANIUM + WIND STATISTICS

14-15822

OSLOOND JH + SCHMALZ RL

RADIOACTIVE WASTE DISPOSAL DATA FOR THE NATIONAL REACTOR TESTING STATION, IDAHO
IDAHO OPERATIONS OFFICE, AEC, IDAHO FALLS
IDQ-12040(SUPPL.1) +. 12 PAGES, 6 FIGURES, 7 TABLES, AUGUST 1966

CONTAINS INFORMATION ABOUT THE QUANTITIES, CLASSIFICATION, AND DISPOSITION OF RADIOACTIVE WASTE ACCUMULATED DURING 1965. IT IS A SUPPLEMENT TO A PREVIOUS REPORT ISSUED IN APRIL 1965, WHICH INCLUDES INFORMATION FOR THE 10-YEAR PERIOD 1966-1964.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*NRTS (NATIONAL REACTOR TEST STATION) + *WASTE DISPOSAL, GAS + *WASTE DISPOSAL, GENERAL + *WASTE DISPOSAL, LIQUID + *WASTE DISPOSAL, SOLID + CESIUM + COBALT + RUTHENIUM + STRONTIUM + TRITIUM + URANIUM

14-15825 ALSO IN CATEGORY 15

REQUIREMENTS FOR LOCAL PLANNING TO COVER HAZARDS OF FALLOUT. VOLUME II. APPENDICES
DUNLAP AND ASSOCIATES, INC., DARIEN, CONN.
AD-611765 + DRD-64-110, VOL. 2 +. 111 PAGES, REFERENCES, JANUARY 1965

INFORMATION IS INCLUDED ON CIVIL DEFENSE SYSTEMS, MANAGEMENT PLANNING FOR SHELTERS, MATHEMATICAL MODELS FOR TRAFFIC, POPULATIONS, PASSENGER VEHICLES, AND HAZARDS AND DISTRIBUTION OF RADIOACTIVE FALLOUT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$0.65 MICROFICHE, \$3.00 COPY

*CIVIL DEFENSE + *FALLOUT + MATHEMATICAL TREATMENT + NUCLEAR EXPLOSION DEBRIS + RADIATION SAFETY AND CONTROL

14-15927 ALSO IN CATEGORY 15

DAVIS TF

RADIOACTIVE WASTE PROCESSING AND DISPOSAL
DIVISION OF TECHNICAL INFORMATION EXTENSION (AEC), OAK RIDGE, TENNESSEE
TID-3311 (SUPPLEMENT 2) +. 182 PAGES, 1011 REFERENCES, JULY 15, 1966

THESE SELECTED 1012 ANNOTATED REFERENCES SUPPLEMENT TID-3311, TID-3311 (SUPPL. 1), TID-3555, AND TID-3555 (SUPPL. 1). UNCLASSIFIED REPORT AND JOURNAL LITERATURE FROM FEBRUARY 1965 THROUGH JULY 15, 1966 IS COVERED. THE REFERENCES HAVE BEEN SUBJECT-ARRANGED AND PROVIDED WITH NUMEROUS CROSS REFERENCES. AUTHOR, CORPORATE AUTHOR, AND REPORT NUMBER-AVAILABILITY

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-15927 *CONTINUED*
INDEXES ARE INCLUDED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*WASTE DISPOSAL, GENERAL + *WASTE TREATMENT, GENERAL + AEROSOL + INCINERATION + PARTICULATE +
WASTE DISPOSAL, GAS + WASTE DISPOSAL, LIQUID + WASTE DISPOSAL, OCEAN + WASTE DISPOSAL, SOLID +
WASTE DISPOSAL, TERRESTRIAL + WASTE MANAGEMENT + WASTE SOURCE AND TYPE + WASTE TREATMENT, FIXATION +
WASTE TREATMENT, GAS + WASTE TREATMENT, LIQUID + WASTE TREATMENT, SOLID

14-15931
CARDOZO RL + VACCAREZZA J + VANUZZI S
SLUDGE CONCENTRATION WITH A CENTRIFUGAL SEPARATOR
EUROPEAN ATOMIC ENERGY COMMUNITY, ISPRA (ITALY)
EUR-3175.E +. 16 PAGES, 8 REFERENCES, 1966

A DESCRIPTION OF A CENTRIFUGAL SEPARATOR FOR THE VOLUME REDUCTION OF SLUDGES EMANATING FROM THE DECONTAMINATION OF RADIOACTIVE WASTE WATER BY COPRECIPITATION IS PRESENTED. ITS MAIN FEATURES ARE - OVERALL VOLUME REDUCTION FACTOR OF 500, SOLIDS CONTENT OF CONCENTRATED SLUDGE OF 11 TO 16 WT %, MINIMALIZATION OF RADIOACTIVE HAZARDS, EASE OF OPERATION, AND LOW COST OF TREATMENT.

AVAILABILITY - MICROCARD EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM, WISCONSIN 54669

*WASTE TREATMENT, EQUIPMENT + *WASTE TREATMENT, LIQUID + *WASTE TREATMENT, SOLID + DECONTAMINATION +
EUPATOM + WASTE TREATMENT, ECONOMICS

14-15959 ALSO IN CATEGORY 15
SOLDAT JK + ESSIG TH
EVALUATION OF RADIOLOGICAL CONDITIONS IN THE VICINITY OF HANFORD FOR 1965
BATTELLE-NORTHWEST, RICHLAND, WASHINGTON
BNWL-316 +. 39 PAGES, 23 FIGURES, 7 TABLES, 13 REFERENCES, NOVEMBER 11, 1966

THE EVALUATION OF RESULTS OBTAINED FROM THE HANFORD ENVIRONMENTAL SURVEILLANCE PROGRAM FOR 1965 INDICATES THAT MOST OF THE ENVIRONMENTAL RADIATION DOSE RECEIVED BY THE MAJORITY LIVING IN THE NEIGHBORHOOD OF THE HANFORD PROJECT WAS DUE TO NATURAL SOURCES AND WORLD-WIDE FALLOUT RATHER THAN TO HANFORD OPERATIONS. OF THE LOW-LEVEL WASTES THAT WERE RELEASED TO THE ENVIRONMENT, NEUTRON-INDUCED RADIONUCLIDES PRESENT IN REACTOR COOLING WATER DISCHARGED TO THE COLUMBIA RIVER CONTINUED TO BE THE SOURCE OF GREATEST POTENTIAL RADIATION DOSE TO PEOPLE IN THE ENVIRONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*BATTELLE NORTHWEST + *FALLOUT + *SURVEY, RADIATION, ENVIRONMENTAL + ACTIVATION PRODUCT + AIR + ARSENIC +
BIOLOGICAL CONCENTRATION, AGRICULTURAL PRODUCE + BIOLOGICAL CONCENTRATION, ANIMAL +
BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + BIOLOGICAL CONCENTRATION, MILK + CESIUM + CHROMIUM +
COPPER + DOSE + DOSE CALCULATION, EXTERNAL + DOSE CALCULATION, INTERNAL + GROSS BETA +
HYDROLOGICAL CONSIDERATION, RATE OF MOVEMENT + INGESTION + IODINE + NEPTUNIUM + PARTICULATE + PHOSPHORUS +
POPULATION EXPOSURE + RARE EARTH + RIVER, COLUMBIA + SAMPLING + SODIUM + STRONTIUM +
SURFACE WATER, NUCLIDE OCCURRENCE + TRITIUM + WASTE DISPOSAL, LIQUID + WASTE DISPOSAL, TERRESTRIAL +
WATER, DRINKING + ZINC

14-15960
BOAPDMAN CR
SOME CHARACTERISTICS OF THE HARDHAT CHIMNEY AND SURROUNDING WALL ROCK
UNIVERSITY OF CALIFORNIA, LIVERMORE
UCRL-50177 +. 16 PAGES, 6 FIGURES, 2 TABLES, 13 REFERENCES, OCTOBER 1966

THE HARDHAT EVENT WAS A 4.9 PLUS-OR-MINUS 1.5 KT NUCLEAR EXPLOSION AT A DEPTH OF 286.2 METERS IN GRANODIORITE. DATA FROM THREE UNDERGROUND DRILL HOLES WERE ANALYZED TO FURTHER DEFINE CHIMNEY CHARACTERISTICS. THE NATURE OF THE RADIOACTIVE MELT AND ITS DISTRIBUTION IN THE PUDDLE SUGGEST THAT THE CAVITY DID NOT COLLAPSE UNTIL H + 11 HR, WHEN AN AUDIBLE RUMBLE WAS HEARD. THE ZONE OF HIGHLY CRUSHED ROCK OUTSIDE THE CHIMNEY IS CALCULATED TO HAVE A VOID VOLUME OF ABOUT 2500 CU. METERS, ROUGHLY 8% OF THE VOID VOLUME INSIDE THE CHIMNEY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*NUCLEAR DETONATION + *PLOWSHARE PROGRAM + GEOLOGICAL CONSIDERATION, GENERAL +
GEOLOGICAL CONSIDERATION, GEOPHYSICAL

14-15962 ALSO IN CATEGORY 15
AARKROG A + LIPPERT J
ENVIRONMENTAL RADIOACTIVITY IN GREENLAND IN 1965
DANISH ATOMIC ENERGY COMMISSION RESEARCH ESTABLISHMENT, RISO

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-15962 *CONTINUED*
RIS0-132 +. 21 PAGES, FIGURES, TABLES; 8 REFERENCES, JULY 1966

THE PRESENT REPORT DEALS WITH THE MEASUREMENT OF FALLOUT RADIOACTIVITY IN GREENLAND IN 1965. SR-90 (AND CS-137 IN MOST INSTANCES) WAS DETERMINED IN SAMPLES OF PRECIPITATION, SOIL, SEA WATER, VEGETATION, ANIMALS, AND DRINKING WATER. ESTIMATES OF THE MEAN CONTENTS OF SR-90 AND CS-137 IN THE HUMAN DIET IN GREENLAND IN 1965 ARE GIVEN.

AVAILABILITY - JUL GJELLERUP, 87 SOLVGAD, COPENHAGEN, DENMARK

*FALLOUT + BIOLOGICAL CONCENTRATION, ANIMAL + BIOLOGICAL CONCENTRATION, FOOD + BIOLOGICAL CONCENTRATION, VEGETATION + CESIUM + DENMARK + OCEAN AND SEA + RAINOUT + SAMPLING + SOIL, NUCLIDE OCCURRENCE + STRONTIUM + SURFACE WATER, NUCLIDE OCCURRENCE + WATER, DRINKING

14-15965
NUGENT RC + BANKS DC
ENGINEERING-GEOLOGIC INVESTIGATIONS. PROJECT DANNY BOY. FINAL REPORT
ARMY CORPS OF ENGINEERS, ENGINEER WATERWAYS EXPERIMENT STATION, VICKSBURG, MISSISSIPPI
PNE-5005 +. 104 PAGES, FIGURES, 9 TABLES, AUGUST 1966

PRESHOT AND POSTSHOT INVESTIGATIONS OF THE DANNY BOY SITE WERE MADE TO OBTAIN INFORMATION ON THE CHANGE IN ENGINEERING PROPERTIES OF THE BASALT MEDIA ADJACENT TO THE CRATER AND TO DETERMINE ENGINEERING PROPERTIES OF THE IMPORTANT PHYSIOGRAPHIC FEATURES OF THE CRATER SUCH AS EJECTA AND FALLOUT MATERIALS. FIELD INVESTIGATIONS INCLUDED GEOLOGICAL STUDIES OF THE AREA AND CORE BORINGS IN WHICH BOREHOLE PHOTOGRAPHS WERE MADE AND WATER PRESSURE TESTS WERE CONDUCTED. PARTICLE-SIZE DISTRIBUTION AND DENSITY OF THE EJECTED MATERIALS WERE DETERMINED. POSTSHOT INVESTIGATIONS INDICATED THAT THE UPLIFT OF THE GROUND SURFACE AT THE CRATER PERIMETER VARIED FROM 8.5 TO 20.2 FT, AND AVERAGED 14.5. NO INDICATION OF FAULTING OR OVERTURNING WAS NOTED IN TRENCHES EXCAVATED THROUGH THE EJECTA.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*GEOLOGICAL CONSIDERATION, GENERAL + *NUCLEAR DETONATION + GEOLOGICAL CONSIDERATION, GEOPHYSICAL

14-15967 ALSO IN CATEGORY 15
ALLEN RF
SURVEILLANCE NETWORKS. REVISION NO. 1
DIVISION OF OPERATIONAL SAFETY (AEC), WASHINGTON, D. C.
TID-23286 +. 101 PAGES, TABLES, JUNE 1966

A REFERENCE DOCUMENT WAS COMPILED TO SERVE AS A SUMMARY OF THE MAJOR RADIATION SURVEILLANCE AND MONITORING PROGRAMS WITHIN THE USA, CANADA, AND MEXICO. SAMPLING PROCEDURES AND AREAS OF INTEREST OF THE VARIOUS NETWORKS ARE DISCUSSED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*FALLOUT + *SURVEY, RADIATION, ENVIRONMENTAL + CANADA + MEXICO + MONITOR, RADIATION, ENVIRONMENTAL + RADIATION SAFETY AND CONTROL + SAMPLING

14-15968
JONES YM
A PRELIMINARY STUDY OF CESIUM SORPTION FROM ACID WASTE SOLUTIONS UTILIZING PHOSPHATE EXCHANGERS
BATTELLE-NORTHWEST, RICHLAND, WASHINGTON
BNWL-270 +. 18 PAGES, 7 FIGURES, 8 TABLES, 33 REFERENCES, DECEMBER 2, 1966

LABORATORY STUDIES ARE REPORTED ON THE RECOVERY OF CESIUM FROM ACID WASTE SOLUTIONS BY CATION EXCHANGERS. CAPACITIES, CAPABILITIES, AND RELATIVE SELECTIVITIES WERE EVALUATED. EQUILIBRIUM CESIUM CAPACITIES IN THE PRESENCE OF COMPETING IONS WERE DETERMINED. CESIUM COLUMN CAPACITIES AS A FUNCTION OF ACID AND CESIUM CONCENTRATIONS WERE STUDIED. ELUTION STUDIES WERE MADE USING VARIOUS FLUENT AGENTS. THERMAL EFFECTS WERE ALSO INVESTIGATED. A HOT-CELL RUN USING PUREX ACID WASTE INDICATED FAST AND EFFICIENT CESIUM REMOVAL BY CATION EXCHANGER.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*CESIUM + *ION EXCHANGE + *WASTE TREATMENT, LIQUID + CHEMICAL KINETICS + SORPTION

14-15974 ALSO IN CATEGORY 15
HARMON JA
PHASE II PROTOTYPE MANUAL ON CIVIL DEFENSE ASPECTS OF WATERWORKS OPERATIONS CONSIDERING RADIOLOGICAL RECOVERY PROCEDURES, ALTERNATE DISTRIBUTION TECHNIQUES FOR SAVING WATER, AND ANALYSIS OF BLAST VULNERABILITY OF SELECTED DISTRIBUTION SYSTEMS COMPONENTS
ENGINEERING-SCIENCE, INC., ARCADIA, CALIFORNIA
USNRDL-TRC-65 +. 103 PAGES, 19 FIGURES, 19 TABLES, SEPTEMBER 1966

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-15974 *CONTINUED*

THIS STUDY PRESENTS INFORMATION ON THE BLAST VULNERABILITY OF COMMUNITY WATER PIPELINES, ALTERNATIVE OPERATING TECHNIQUES FOR CONTROLLING THE USE OF WATER IN EARLY POSTATTACK PERIODS, AND ON RADIOLOGICAL RECOVERY PROCEDURES AND SHELTERS AVAILABLE TO WATERWORKS PERSONNEL. THE RESULTS OF THE ANALYSIS OF THE VULNERABILITY OF PIPELINES INDICATE THAT THE PRIMARY MODE OF FAILURE WILL BE CRUSHING OF THE PIPE. THE FIVE PRINCIPAL ALTERNATE OPERATING TECHNIQUES CONSIDERED ARE - ISOLATION OF PORTIONS OF THE DISTRIBUTION SYSTEM, RATIONING CONSUMER WATER USE, REDUCING HYDROSTATIC OPERATING PRESSURES, REROUTING WATER, AND THE USE OF AUXILIARY SOURCES OF WATER. PLANNING IS STRESSED FOR POSTATTACK RADIOLOGICAL RECOVERY PROCEDURES, SUCH AS, WET DECONTAMINATION AND THE DETERMINATION OF THE SAFE STAY TIMES FOR RECOVERY PERSONNEL. IT IS ESSENTIAL TO PROVIDE SHELTER IN LOCATIONS AS CLOSE AS POSSIBLE TO THE DESIGNATED TASKS THAT WATERWORKS PERSONNEL MUST PERFORM IN EARLY POSTATTACK RECOVERY SITUATIONS.

AVAILABILITY - ENGINEERING-SCIENCE, INC., 150 EAST FOOTHILL BOULEVARD, ARCADIA, CALIFORNIA

*CIVIL DEFENSE + *WATER, DRINKING + DECONTAMINATION + HYDROLOGICAL CONSIDERATION, GENERAL + HYDROLOGICAL CONSIDERATION, QUALITY OF WATER + NUCLEAR DETONATION

14-15981

MURTON CA + MAXWELL JH

AVAILABLE DISINTEGRATION ENERGY OF ALL RADIONUCLIDES (FOR USE IN DOSIMETRY PROBLEMS). I. HALF-LIVES 12 HOURS OR GREATER.

LAWRENCE RADIATION LABORATORY, UNIVERSITY OF CALIFORNIA, LIVERMORE

UCRL-50164 +. 34 PAGES, DECEMBER 15, 1966

THE ERPD COMPUTER PROGRAM CALCULATES THE MAXIMUM AVAILABLE ENERGY PER DISINTEGRATION FOR ALL RADIONUCLIDES. THE INPUT AND THE RESULTS ARE GIVEN FOR NUCLIDES WITH HALF-LIVES GREATER THAN 12 HR.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*COMPUTER PROGRAM + *DOSIMETRY, GENERAL + ENERGY LEVEL + PLOWSHARE PROGRAM + RADIATION SAFETY AND CONTROL

14-15982

POTTIER P + CHAUVET P + DE FLERS P + CHARUIT P

THE CONCENTRATION OF RADIOACTIVE EFFLUENTS BY FORCED AIR DRAFT EVAPORATION

CENTRE D ETUDES NUCLEAIRES DE CADARACHE, COMMISSARIAT A L ENERGIE ATOMIQUE + SOCIETE INDUSTRIELLE ET COMMERCIALE DES SALINS DU MIDI

6 PAGES, 6 FIGURES, 3 REFERENCES, ENERGIE NUCLEAIRE, 8(7), PAGES 483-488 (NOVEMBER 1966), IN FRENCH

A PROCEDURE WHICH CONCENTRATES, BY NATURAL EVAPORATION, THE LIQUID RADIOACTIVE EFFLUENTS OF NUCLEAR ENERGY STUDY CENTERS IS DESCRIBED. THIS METHOD DOES NOT PRODUCE DISTILLATES BECAUSE THE ENVIRONMENTAL AIR IS A DILUTION AGENT. THE ABSENCE OF CONDENSATES AVOIDS ANY POLLUTION FROM UNDERGROUND WATER LEVELS AND RIVERS.

*EVAPORATION + *WASTE TREATMENT, GAS + AIR + WASTE TREATMENT, EQUIPMENT

14-15983

BOARDMAN CR + MEYER GL + RABR DD

MACRODEFORMATION RESULTING FROM THE HANDCAR EVENT

LAWRENCE RADIATION LABORATORY, UNIVERSITY OF CALIFORNIA, LIVERMORE

UCRL-50149 +. 54 PAGES, 20 FIGURES, 9 TABLES, DECEMBER 1, 1966

THE HANDCAR EVENT WAS A 12-KT NUCLEAR EXPLOSION AT A DEPTH OF 402.3 M IN FRACTURED DOLOMITE. THE EXPLOSION PRODUCED A CAVITY WITH A RADIUS OF 21.2 PLUS OR MINUS 0.8 M WHICH COLLAPSED WITHIN 17 SEC AFTER THE DETONATION. THE RESULTANT CHIMNEY OF BROKEN ROCK IS SLIGHTLY TILTED AND EXTENDS TO A HEIGHT OF 68 M, OR 3.2 TIMES THE CAVITY RADIUS ABOVE THE SHOT POINT. A VOID EXISTS AT THE CHIMNEY APEX WITH A HEIGHT OF 17.4 M AND VOLUME GREATER THAN 50% OF THE INITIAL CAVITY VOLUME. RUBBLE PARTICLES OBSERVED ON THE FLOOR OF THIS CAVITY RANGE UP TO 1 M IN DIAMETER. THE ROCK BELOW THE CHIMNEY APPEARS TO BE HIGHLY CRUSHED TO A RADIAL DISTANCE FROM SHOT POINT OF 26-27 M. ALSO, DATA FROM THE PRESSURIZATION OF THE CHIMNEY ARE INTERPRETED TO INDICATE THAT THE AVERAGE PERMEABILITY OF THE ROCK BEYOND THE CHIMNEY HAS BEEN INCREASED TO A RADIAL DISTANCE OF 3.5 TO 5 CAVITY RADII. THE AIR TEMPERATURE IN THE APICAL VOID OF THE CHIMNEY WAS 34.5 C (10 C ABOVE BACKGROUND) 12 MONTHS AFTER THE EXPLOSION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*GEOLOGICAL CONSIDERATION, GEOPHYSICAL + *PLOWSHARE PROGRAM + GEOLOGICAL CONSIDERATION, GENERAL + NUCLEAR DETONATION

14-15984

ALSO IN CATEGORY 15

APPLICATION OF ATOMIC ENERGY IN AGRICULTURE. ANNUAL REPORT, 1965

INSTITUUT VOOR TOEPASSING VAN ATOMENERGIE IN DE LANDBOUW, WAGENINGEN, NETHERLANDS

EUR-3163.F +. 66 PAGES, OCTOBER 1966

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-15984 *CONTINUED*

THE RESEARCH ACTIVITIES OF THE EURATOM-ITAL ASSOCIATION WERE DIRECTED IN 1965 TO THE APPLICATION OF ATOMIC ENERGY TO AGRICULTURE. IN ADDITION TO CLASSICAL PLANT-BREEDING EXPERIMENTS USING RADIATION AS MUTAGEN, STUDIES WERE UNDERTAKEN TO INVESTIGATE THE IMPROVEMENT OF MUTAGENIC EFFICIENCY AND THE ANALYSIS OF IRRADIATION EFFECTS, AS WELL AS TO ASSESS THE POSSIBILITIES OFFERED BY ELECTRON IRRADIATION FOR THE PRESERVATION OF FRUITS AND VEGETABLES. RELATED PHYSICAL PROBLEMS WERE ALSO INVESTIGATED. THE BEHAVIOR OF CA-45, CL-36, CS-134, K-42, P-32, RR-P6, S-35, SR-85, SR-90, AND ZN-65 IN PLANTS AND SOILS, AS WELL AS THE DEVELOPMENT AND IMPROVEMENT OF NUCLEAR TECHNIQUES FOR AGRICULTURAL RESEARCH, ALSO FORMED PART OF THE ACTIVITIES OF THE ASSOCIATION. A LIST IS INCLUDED OF 49 PUBLICATIONS THAT REPORT THE RESEARCH RESULTS IN DETAIL.

AVAILABILITY - MICROCARD EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM, WISCONSIN 54669

*ECOLOGICAL CONSIDERATION + *SOIL, NUCLIDE OCCURRENCE + BIOLOGICAL CONCENTRATION, VEGETATION + CALCIUM + CESIUM + CHLORINE + DOSIMETRY, GENERAL + KRYPTON + PHOSPHORUS + RADIATION EFFECT + RUBIDIUM + STRONTIUM + SULFUR + ZINC

14-15985

L'OVE CM

PHYSICAL, CHEMICAL, AND BIOLOGICAL DATA FROM THE NORTHEAST PACIFIC OCEAN. COLUMBIA RIVER EFFLUENT AREA, JANUARY-OCTOBER 1962. VOLUME II. BROWN BEAR CRUISE 304. MARCH 27-APRIL 12. TECHNICAL REPORT NO. 119 UNIVERSITY OF WASHINGTON, SEATTLE. DEPARTMENT OF OCEANOGRAPHY
PL0-1725-16 + M65-31 +. 193 PAGES, FIGURES, TABLES, AUGUST 1965

PHYSICAL, CHEMICAL, AND BIOLOGICAL DATA COLLECTED DURING CRUISE 304 OF THE RESEARCH VESSEL BROWN BEAR DURING MARCH AND APRIL 1962 IN AN AREA WITHIN 150 MILES OF THE COASTS OF WASHINGTON AND OREGON ARE TABULATED. THESE DATA WERE COLLECTED AS PART OF A YEAR-ROUND STUDY WHICH HAS AS ITS OBJECTIVE THE DETERMINATION OF THE GROSS FEATURES OF THE MOVEMENT AND DISPERSION OF COLUMBIA RIVER EFFLUENT WATER IN THE NORTHEAST PACIFIC.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*OCEAN AND SEA + *RIVER, COLUMBIA + ECOLOGICAL CONSIDERATION +
HYDROLOGICAL CONSIDERATION, QUALITY OF WATER + HYDROLOGICAL CONSIDERATION, RATE OF MOVEMENT

14-15987

ALSO IN CATEGORY 15

OKUNEWICK JP

EFFECTS OF ACUTE DOSES OF GAMMA-RADIATION ON PINE TREES
RAND CORPORATION, SANTA MONICA, CALIFORNIA
RM-4904-TAR +. 35 PAGES, REFERENCES, OCTOBER 1966

THE SENSITIVITY OF PINE TREES TO GAMMA AND X IRRADIATION IS REVIEWED TO ESTABLISH WHETHER THE GENUS PINUS WOULD BE SERIOUSLY AFFECTED BY EXPOSURE TO DOSES OF 2000 R OR LESS. ON THE BASIS OF ACUTE-EXPOSURE DATA, PINE TREES ARE ABOUT AS SENSITIVE AS MAN. EXPERIMENTALLY DETERMINED VALUES FOR LD-100 FOR FOUR DIFFERENT PINE SPECIES RANGE FROM 1000 TO 1800 R. DOSES THAT PRODUCE SEVERE INHIBITION OF GROWTH ARE REPORTED TO RANGE FROM 300 TO 715 R. PREDICTIONS OF LD-100 VALUES, BASED ON NUCLEAR VOLUME TECHNIQUES, GIVE EVEN LOWER VALUES FOR THE LD-100 OF VARIOUS PINE SPECIES, RANGING FROM 301 TO 1056 R. SEVERE GROWTH INHIBITION IS SIMILARLY PREDICTED FOR VARIOUS SPECIES AT DOSES BETWEEN 184 AND 615 R. RECOVERY PATTERNS FOR TREES SEVERELY DAMAGED BY IRRADIATION ARE ALSO CONSIDERED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*ECOLOGICAL CONSIDERATION + *FALLOUT + *RADIATION DAMAGE + DOSE + NUCLEAR EXPLOSION DEBRIS +
RADIATION EFFECT

14-15989

ALSO IN CATEGORY 15

WOMFLSDUFF RE

FALLOUT REPORT. BETA-GAMMA RADIOACTIVITY IN AIR AT SANDIA LABORATORY, JANUARY THRU JUNE 1964
SANDIA LABORATORY, ALBUQUERQUE, NEW MEXICO
SC-RR-64-1679 +. 12 PAGES, 16 REFERENCES, SEPTEMBER 1964

DATA ARE PRESENTED ON THE GROSS BETA-GAMMA RADIOACTIVITY (EXPRESSED AS MICROMICROCURIES PER CURIE METER) OF AIR SAMPLES COLLECTED BY THE HEALTH PHYSICS DIVISION OF THE SANDIA LABORATORY OF SANDIA CORPORATION DURING THE FIRST HALF OF 1964

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*FALLOUT + *SURVEY, RADIATION, ENVIRONMENTAL + AIR + GROSS BETA + GROSS GAMMA + MONITOR, RADIATION, AIR

14-15990

ALSO IN CATEGORY 15

AARKROG A + LIPPERT J

ENVIRONMENTAL RADIOACTIVITY IN THE FAROEES IN 1965

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-15990 *CONTINUED*
DANISH ATOMIC ENERGY COMMISSION RESEARCH ESTABLISHMENT, RISO
RISO-131 +. 23 PAGES, 4 FIGURES, 18 TABLES, 8 REFERENCES, JULY 1966

REPORT DEALS WITH THE MEASUREMENT OF FALLOUT RADIOACTIVITY IN THE FAROES IN 1965. SR-90 (AND CS-137 IN MOST INSTANCES) WAS DETERMINED IN REGULARLY COLLECTED SAMPLES OF PRECIPITATION, MILK, POTATOES, SHEEP, FISH, DRINKING WATER, AND DECIDUOUS TEETH. IN ADDITION, ANALYSES OF SPOT SAMPLES OF GRASS, SOIL, SEA WATER, SEA PLANTS, BIRDS, VEGETABLES, BREAD, CHEESE, AND EGGS WERE CARRIED OUT. ESTIMATES OF THE MEAN CONTENTS OF SR-90 AND CS-137 IN THE HUMAN DIET IN THE FAROES IN 1965 ARE GIVEN

AVAILABILITY - JUL GJELLERUP, 87 SOLVGAD, COPENHAGEN, DENMARK

*FALLOUT + *SURVEY, RADIATION, ENVIRONMENTAL + BIOLOGICAL CONCENTRATION, ANIMAL + BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + BIOLOGICAL CONCENTRATION, FOOD + BIOLOGICAL CONCENTRATION, MILK + BIOLOGICAL CONCENTRATION, VEGETATION + CESIUM + OCEAN AND SEA + RAINOUT + RISO (RESEARCH LABORATORY, DENMARK) + SAMPLING + STRONTIUM + SURFACE WATER, NUCLIDE OCCURRENCE

14-16013
HILD W + LOPEZ-MENCHERO E + LAZZARETTO JF
THE TREATMENT OF EUROCHEMIC MEDIUM LEVEL WASTE BY THE NEUTRALISATION SELF-SOLIDIFICATION PROCESS.
PROGRESS REPORT NO. 1
EUROPEAN COMPANY FOR THE CHEMICAL PROCESSING OF IRRADIATED FUELS, MOL (BELGIUM)
NP-16597 + ETR-194 +. 54 PAGES, 19 FIGURES, 12 TABLES, 20 REFERENCES, SEPT. 1966

AN ASSESSMENT WAS MADE OF EUROCHEMICS MEDIUM-LEVEL WASTE (MLW) PRODUCED IN THE PERIOD 1966-1970, INCLUDING CHEMICAL COMPOSITIONS, ACTIVITIES, VOLUMES, AND STORAGE SITUATION. AFTER A SHORT DESCRIPTION OF THE STATE OF THE WORK ON MLW TREATMENT IN AUGUST, 1965, A DETAILED SUMMARY OF RECENT EXPERIMENTAL WORK IS GIVEN, LEADING TO THE NEUTRALISATION SELF-SOLIDIFICATION (NSS) PROCESS. THE FEATURES OF THIS VERY VERSATILE PROCESS ARE DESCRIBED, AND FUNCTIONAL FLOWSHEETS ARE GIVEN.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*EUROCHEMIC + *WASTE TREATMENT, LIQUID + WASTE SOURCE AND TYPE + WASTE TREATMENT, ECONOMICS + WASTE TREATMENT, FIXATION + WASTE TREATMENT, GENERAL

14-16014
POITRAS JP
TRITIUM REMOVAL FROM GASES
MOUND LABORATORY, MONSANTO RESEARCH CORPORATION, MIAMISBURG, OHIO
MLM-1389 +. 16 PAGES, 5 FIGURES, 9 TABLES, 7 REFERENCES, MARCH 20, 1967

THE TRITIUM CONCENTRATION OF A GAS MIXTURE CONSISTING PRIMARILY OF HELIUM WAS REDUCED FROM 0.01 MOLE PERCENT TO 2×10^{-12} MOLE PERCENT. ADSORPTION EXPERIMENTS ON ACTIVATED CHARCOAL AT 77 K AND 4.2 K WERE CONDUCTED USING VARIOUS TRAPS, AND THE RESULTS COMPARED. ADSORPTION ON CHARCOAL AT 77 K, WITH TRAPS OF LARGE SURFACE AREAS, WAS MOST EFFICIENT AND PRACTICAL. THE TRITIUM WAS THEN REMOVED FROM THE GAS (MAINLY AIR) WHICH HAD BEEN CRYOGENICALLY ADSORBED BY THE CHARCOAL. THIS WAS DONE BY USING A CATALYST, HOPCALITE, HEATED TO 725 C, TO FORM TRITIATED WATER, WHICH WAS THEN ADSORBED ON A MOLECULAR SIEVE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*TRITIUM + *WASTE TREATMENT, EQUIPMENT + *WASTE TREATMENT, GAS + ADSORPTION + CHARCOAL

14-16016 ALSO IN CATEGORY 15
FARRIS GC + WHICKER FW + DAHL AH
EFFECT OF AGE ON RADIOACTIVE AND STABLE STRONTIUM ACCUMULATION IN MULE DEER BONE
COLORADO STATE UNIV., FORT COLLINS, DEPT. OF RADIOLOGY AND RADIATION BIOLOGY
CCC-1156-17 + CONF-660561-1 +. 21 PAGES, MAY 1966, INTERNATIONAL SYMPOSIUM ON SOME ASPECTS OF STRONTIUM METABOLISM, CHAPELCROSS, ANNAN, SCOTLAND

METACARPAL AND FEMUR BONES OF COLORADO MULE DEER (*Odocoileus hemionus hemionus*) OF VARIOUS AGE CLASSES WERE COLLECTED TO STUDY RADIOACTIVE AND STABLE SR DISTRIBUTION WITHIN THE HERD. AVERAGE SR-90 AND STABLE SR CONCENTRATIONS IN BONE OF SIX AGE CLASSES WERE SIGNIFICANTLY DIFFERENT. THE HIGHEST LEVELS OF SR-90 WERE IN THE YOUNGER AGE CLASSES, AND STABLE SR CONCENTRATIONS WERE LARGER IN THE OLDER AGE GROUPS. CONSIDERABLE VARIATION IN THE RADIOACTIVE AND STABLE SR CONTENT OF METACARPALS WAS OBSERVED WITHIN AGE CLASSES. NO SIGNIFICANT DIFFERENCE IN RADIOACTIVE OR STABLE CONTENT WAS OBSERVED BETWEEN THE SEXES OF DEER YOUNGER THAN 17 MONTHS. SEX WAS NOT COMPARED IN OLDER AGE CLASSES BECAUSE OF LIMITED SAMPLE SIZE. ESTIMATES OF SR TURNOVER RATES INDICATED VALUES OF ABOUT 19%/YR FOR JUVENILES AND 6%/YR FOR ADULTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*BIOLOGICAL CONCENTRATION, ANIMAL + *ECOLOGICAL CONSIDERATION + *FALLOUT + *STRONTIUM

CATEGORY 14
RADIOISOTOPE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-16017 ALSO IN CATEGORY 15

WHICKER FW + FARRIS GC + DAHL AH

WILD DEER AS A SOURCE OF RADIOISOTOPE INTAKE BY HUMANS AND AS INDICATORS OF FALLOUT HAZARDS
COLORADO STATE UNIVERSITY, FORT COLLINS, DEPT. OF RADIOLOGY AND RADIATION BIOLOGY
COO-1156-18 + CONF-660920-13 +. 19 PAGES, SEPTEMBER 1966, FIRST INTERNATIONAL CONGRESS OF THE
INTERNATIONAL RADIATION PROTECTION ASSN., ROME, ITALY

CONCENTRATIONS OF VARIOUS FALLOUT RADIOISOTOPES WERE MEASURED IN NATIVE FORAGE AND IN TISSUES OF WILD MULE DEER OVER A FIVE-YEAR PERIOD IN NORTH-CENTRAL COLORADO. CONCENTRATIONS OF ¹³⁷CS IN DEER FLESH WERE 5 TO 13 TIMES HIGHER THAN CONCENTRATIONS REPORTED IN BEEF AND IN PORK. THE DATA INDICATED THAT CONSUMPTION OF DEER FLESH COULD RESULT IN A ¹³⁷CS INTAKE THAT COULD POSSIBLY EXCEED THE INTAKE OF THE ISOTOPE FROM THE TOTAL DIET. CONSUMPTION OF DEER LIVER WOULD RESULT IN THE INGESTION OF ¹⁴⁴CE, ¹³⁷CS, ⁵⁴MN, AND ¹⁰⁶RU. THE DATA INDICATED THAT DEER TISSUES CAN BE USEFUL AND IN SOME CASES UNUSUALLY SENSITIVE INDICATORS OF ENVIRONMENTAL CONTAMINATION BY ¹⁴⁴CE, ¹³⁷CS, ¹³¹I, ⁵⁴MN, ¹⁰⁶RU, AND ⁹⁰SR. DURING 1963, THE RADIATION DOSE TO THE SKELETON OF YEARLING DEER FROM ⁹⁰SR AVERAGED 330 MRADS, WHICH WAS GENERALLY HIGHER THAN THE TOTAL DOSE FROM NATURAL BACKGROUND AND OTHER SOURCES COMBINED. DURING THE SAME PERIOD, THE ⁹⁰SR CONCENTRATIONS IN DEER BONE WERE HIGHER BY A FACTOR OF 35 THAN REPORTED BONE LEVELS IN HUMANS. DURING THE STUDY, DOSE RATES TO DEER THYROID, LIVER, AND MUSCLE REACHED 20, 0.014, AND 0.012 RADS/YEAR, RESPECTIVELY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*BIOLOGICAL CONCENTRATION, ANIMAL + *ECOLOGICAL CONSIDERATION + *FALLOUT + BIOLOGICAL CONCENTRATION, MAN + BIOLOGICAL CONCENTRATION, VEGETATION + CERIUM + CESIUM + DOSE + IODINE + MANGANESE + RUTHENIUM + STRONTIUM

14-16018

POLAN M

AN ANALYSIS OF THE FALLOUT PREDICTION MODELS, PRESENTED AT THE USNRDL-DASA FALLOUT SYMPOSIUM OF SEPTEMBER 1962, VOLUME I. ANALYSIS, COMPARISON, AND CLASSIFICATION OF MODELS
U.S. NAVAL RADIOLOGICAL DEFENSE LABORATORY, SAN FRANCISCO, CALIFORNIA + FORD INSTRUMENT COMPANY, DIVISION OF SPEERY + RAND CORPORATION, LONG ISLAND, NEW YORK
USNRDL-TRC-68 +. 157 PAGES, 15 FIGURES, 13 TABLES, 50 REFERENCES, SEPTEMBER 8, 1966

AN ANALYSIS OF THE MODELS, BASED ON PUBLISHED AND UNPUBLISHED REPORTS AND ON PERSONAL COMMUNICATIONS WITH THOSE WHO DEVELOPED OR ARE CURRENTLY RESPONSIBLE FOR THEM, IS PUBLISHED IN THIS VOLUME. THE MODELS ARE CLASSIFIED ACCORDING TO USE AND IMPLEMENTATION, AND ACCORDING TO THEIR PHYSICOMATHEMATICAL STRUCTURES. THE BASIC CHARACTERISTICS OF THE MODELS ARE COMPARED AND EVALUATED, AND THE CONCLUSIONS DRAWN FROM THIS MATERIAL ARE GIVEN.

AVAILABILITY - DEFENSE DOCUMENTATION CENTER, CAMERON STATION, ALEXANDRIA, VIRGINIA

*ANALYTICAL MODEL + *FALLOUT + *RADIATION MODEL + COMPUTER PROGRAM + MATHEMATICAL TREATMENT + METEOROLOGY + NUCLEAR DETONATION + NUCLEAR EXPLOSION DEBRIS + PARTICLE SIZE + TOPOGRAPHY

14-16055

MCMAHON JW

PHYSICAL AND CHEMICAL CONDITIONS IN PERCH LAKE
ATOMIC ENERGY OF CANADA LIMITED, CHALK RIVER, ONTARIO
AECL-2231 +. 6 PAGES, 5 FIGURES, 4 REFERENCES, NOVEMBER 1966

SOME PHYSICAL AND CHEMICAL CONDITIONS IN PERCH LAKE, ON THE CRNL PROPERTY, WERE RECORDED AT WEEKLY INTERVALS DURING THE PERIOD JUNE 1963 TO JUNE 1964. SEASONAL VARIATIONS ARE PRESENTED FOR WATER TEMPERATURE (DEGREES C), DISSOLVED OXYGEN CONCENTRATION (MG/L), FREE CARBON DIOXIDE (MG/L) AND PH. SAMPLES WERE TAKEN AT TWO STATIONS, ONE INSHORE, THE OTHER AT THE CENTER OF THE LAKE. WATER SAMPLES WERE TAKEN AT A DEPTH OF 3/CM AT BOTH STATIONS. BOTTOM WATER WAS ALSO SAMPLED AT A DEPTH OF 4.2 M AT THE CENTRAL STATION. THE DIURNAL FLUCTUATION IN THE TEMPERATURE OF SURFACE AND BOTTOM WATERS IS RECORDED FOR A 24-HOUR PERIOD ON AUGUST 20-21, 1963.

AVAILABILITY - ATOMIC ENERGY OF CANADA LIMITED, CHALK RIVER, ONTARIO, CANADA, \$0.50 COPY

*CHALK RIVER + *SURFACE WATER, PROPERTY + HYDROLOGICAL CONSIDERATION, QUALITY OF WATER + SAMPLING

14-16062 ALSO IN CATEGORY 17

BEAL SK + HENDERSON DR

DETERMINATION OF CHEMICAL CONCENTRATION AS A FUNCTION OF TIME IN A TWO-VOLUME REACTOR COOLANT SYSTEM
PETTIS ATOMIC POWER LABORATORY, PITTSBURGH, PA.
WAPD-TM-646 +. 10 PAGES, 3 FIGURES, 1 REFERENCE, NOVEMBER 1966

VARIOUS CHEMICAL PROCESSES (SUCH AS DECONTAMINATION) USED IN NUCLEAR REACTOR PLANTS, REQUIRE ACCURATE KNOWLEDGE OF THE TIME BEHAVIOR OF CHEMICAL CONCENTRATIONS WITHIN THE REACTOR PLANT. A PRESSURIZED WATER REACTOR PLANT IS CONSIDERED TO CONSIST OF TWO DISTINCT VOLUMES, ONE BEING THE PRESSURIZER, THE OTHER BEING THE REACTOR VESSEL AND LOOP PIPING. FLOW OCCURS BETWEEN THESE TWO VOLUMES, AND THE CONCENTRATION OF A CHEMICAL SOLUTION INTRODUCED INTO ONE VOLUME MAY LEAD OR LAG THE CONCENTRATION IN THE OTHER VOLUME, DEPENDING UPON THE RELATIVE VOLUMES

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-16062 *CONTINUED*
AND FLOW RATES. IN THIS REPORT, THE DIFFERENTIAL EQUATIONS WHICH DESCRIBE THE TIME BEHAVIOR OF CHEMICAL CONCENTRATIONS IN THE PRESSURIZER AND THE REMAINDER OF THE PRIMARY PLANT ARE SOLVED FOR THREE PIPING CONFIGURATIONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*CONTAMINATION + *MAIN COOLING SYSTEM + ANALYTICAL MODEL + REACTOR, PRESSURIZED WATER

14-16098
PITMAN F
FIRST STATE SETS CONTROLS ON RADIOACTIVE WASTE PILES
1 PAGE, PAGE 6 OF THE NATIONAL OBSERVER, DECEMBER 26, 1966

COLORADO HAS BECOME THE FIRST STATE TO ADOPT REGULATIONS FOR CONTROLLING WASTE PILES FROM MINES AND MILLS PRODUCING URANIUM AND THORIUM. COLORADO HEALTH BOARD REGULATIONS REQUIRE THAT THE WASTE PILES BE LEVELED AND GRADED TO PREVENT EROSION AND THAT THEY BE STABILIZED WITH VEGETATION, SOIL, OR OTHER MATERIAL. OWNERS ARE REQUIRED TO CONTROL ACCESS TO THE INACTIVE PILES AND PROPERLY POST THEM.

THE NATIONAL OBSERVER, DENVER COLORADO

*REGULATION, STATE + THORIUM + URANIUM + WASTE DISPOSAL, SOLID + WASTE DISPOSAL, TERRESTRIAL + WASTE SOURCE AND TYPE

14-16106
SCHONFELD E + KISREY AH
CONTROLLED REFLUX. A METHOD FOR IMPROVING THE EFFICIENCY OF STRONTIUM REMOVAL FROM SOLUTION BY FOAM SEPARATION
OAK RIDGE NATIONAL LAB., TENN.
ORNL-P-2779 +. 18 PAGES, 3 FIGURES, 4 TABLES, 12 REFERENCES, 1966

CONTROLLED REFLUX WAS STUDIED AS A METHOD FOR IMPROVING THE EFFICIENCY OF REMOVING STRONTIUM FROM SOLUTION BY FOAM SEPARATION. TESTS WERE PERFORMED WITH SOLUTIONS CONTAINING SR-85, 10-6 MILLIONTH SR CARRIER, AND 90 TO 100 PPM OF THE SURFACTANT SODIUM DODECYL BENZENE SULFONATE IN EITHER DISTILLED WATER OR 0.005 M NACH TO 0.005 M NA2CO3 SOLUTION. NEARLY CONSTANT FEED RATES WERE MAINTAINED AT ABOUT 40 GAL/SQ. FT OF COLUMN CROSS SECTION PER HOUR. WITH THESE CONDITIONS, THE VOLUME REDUCTION FACTOR WAS INCREASED TO 3700 (FROM A VALUE OF ABOUT 30 FOR NONREFLUXING SYSTEMS) AND THE STRONTIUM DECONTAMINATION FACTOR WAS IN EXCESS OF 1000. IN GENERAL, THE VOLUME REDUCTION WAS INVERSELY PROPORTIONAL TO THE GAS/LIQUID VOLUME RATIO BUT DIRECTLY PROPORTIONAL TO THE PERCENTAGE OF FOAM REFLUX. THE STRONTIUM DECONTAMINATION FACTOR, HOWEVER, DID NOT CHANGE VERY MUCH WITHIN THE THROUGHPUT RANGE STUDIED.

*STRONTIUM + *WASTE TREATMENT, LIQUID + DECONTAMINATION + FOAM + WASTE TREATMENT, EQUIPMENT

14-16300 ALSO IN CATEGORY 13
CHILENSKAS AA + TURNER KS + KINCINAS JE + POTTS GL
ENGINEERING DEVELOPMENT OF FLUID-BED FLUORIDE VOLATILITY PROCESSES. PART 10, BENCH-SCALE STUDIES ON IRRADIATED, HIGHLY ENRICHED, URANIUM-ALLOY FUELS
ARGONNE NATIONAL LABORATORY, ARGONNE, ILL.
ANL-6004 +. 43 PAGES, 11 FIGURES, 14 TABLES, 8 REFERENCES, OCTOBER 1966

EXPERIMENTS FOR DETERMINING URANIUM AND FISSION-PRODUCT DISTRIBUTION IN VARIOUS FLUID-BED FLUORIDE-VOLATILITY-PROCESS STEPS WERE RUN AT BENCH-SCALE LEVELS. DECONTAMINATION FACTORS WERE CALCULATED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*FLUIDIZED BED + *FLUORIDE VOLATILITY PROCESSES + *RADIOCHEMICAL PROCESSING +
ANL (ARGONNE NATIONAL LABORATORY) + URANIUM + WASTE DISPOSAL, SOLID + WASTE TREATMENT, FIXATION

14-16380 ALSO IN CATEGORY 5
TWO-PHASE FLOW AND HEAT TRANSFER IN MULTIROD GEOMETRIES. QUARTERLY PROGRESS REPORT NO. 9, OCTOBER 26, 1966 - JANUARY 25, 1967.
GENERAL ELECTRIC CO., SAN JOSE, CALIFORNIA, ATOMIC POWER EQUIPMENT DEPT.
GEAP-5441 +. 37 PAGES, REFERENCES, OCTOBER 26, 1966

RESULTS OF THE ISOKINETIC PROBE MEASUREMENTS DURING THE TASK-A NINE-ROD STEAM-WATER TESTS ARE DESCRIBED. SINGLE-PHASE SAMPLE FLOW WAS MEASURED FOR VARIOUS VALUES OF PRESSURE DIFFERENCE BETWEEN PROBE AND CHANNEL. THE CALCULATED SAMPLE FLOW RATE, ASSUMING A LOSS AT PROBE INLET EQUAL TO 75% OF THE RATE AND ENTHALPY WERE MEASURED. A MODEL WAS DEvised TO HELP INTERPRET THE RESULTS. ATTENTION WAS FOCUSED ON FLOW IN SUBCHANNEL NO. 1 IN THE CORNER. AVERAGE QUALITY WAS DETERMINED FOR SUBCHANNEL NO. 1, USING THE ISOKINETIC DATA PLUS NINE-ROD AIR-WATER DATA. AT AVERAGE CHANNEL QUALITIES OF 15% THE QUALITY IN SUBCHANNEL NO. 1 UNDER ADIABATIC CONDITIONS IS MUCH LOWER THAN THE CHANNEL AVERAGE. UNDER BOILING CONDITIONS, IT IS CLOSE TO THE CHANNEL AVERAGE. PNL USED ITS COBRA CODE TO CALCULATE VALUES OF EXIT CONDITIONS

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-16380 *CONTINUED*

IN THE SUBCHANNELS OF THE TASK-B NINE-ROD SECTION. TWO CORRELATIONS WERE USED TO PREDICT CRITICAL HEAT FLUX. PREDICTED AND MEASURED VALUES ARE COMPARED. RESULTS ARE PROMISING.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

BURNOUT HEAT FLUX + FLOW DISTRIBUTION + FLOW, TWO PHASE + HYDRAULIC EXPERIMENT + SAMPLING

14-16452 ALSO IN CATEGORY 19
VOLUME II, APPENDIX B - LIMNOLOGY.

NIAGARA MOHAWK POWER CORPORATION, SYRACUSE, N. Y.

23 PAGES, 4 FIGURES, 1 TABLE, FINAL SAFETY ANALYSIS REPORT, NINE MILE POINT, JUNE 1967, DOCKET NO. 50-220

1964 STUDIES COMPLETED THE 1963 PROGRAM (REPORTED IN PHSR) FOR MORE PRECISE DILUTION INFORMATION. STATION APPEARS TO BE AT AN OPTIMUM POINT ON SOUTH SHORE OF LAKE ONTARIO BECAUSE OF CURRENT TURNS AWAY FROM SHORE AT THE POINT. BICTA OFF POINT IS SCANTY BECAUSE OF ERODING WAVE ACTION, AND THERE IS LITTLE SHELTER FOR FISH. DILUTION OF CONDENSER DISCHARGE IS 20-40 AT SITE BOUNDARY, AND 4,900,000 AT CITY OF OSWEGO INTAKE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*DILUTION + *SAFETY ANALYSIS REPORT, GENERAL + *WASTE DISPOSAL, OCEAN + NINE MILE POINT + REACTOR, BOILING WATER + WASTE DISPOSAL, LIQUID

14-16471 ALSO IN CATEGORIES 2 AND 5

CHAUVIN JL

EURATOM SED-MATERIAL TRANSPORT STUDY BY TRACERS. TRANSPORT OF THE LOIRE AT THE SITE OF THE EDF 4 NUCLEAR POWER STATION

ELECTRICITE DE FRANCE. FRANCE

EUR-3130.F, VOL. 2 +. 14 PAGES, 6 FIGURES, MAY 12, 1966, IN FRENCH

THE DOWNSTREAM TRANSPORT OF SEDIMENT IN THE LOIRE RIVER WAS STUDIED WITH RADIOACTIVE TRACERS. RESULTS OF MEASUREMENTS MADE IN A MODEL BASIN COMPARED WELL WITH MEASUREMENTS MADE IN THE RIVER. PARTICLE-SIZE STUDIES OF THE SEDIMENT AND HYDROGRAPHS FOR THE RIVER FLOW ARE REPORTED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*HYDRAULIC EXPERIMENT + *HYDROLOGICAL CONSIDERATION, RATE OF MOVEMENT + *WASTE DISPOSAL, RIVER + FISSION PRODUCT TRANSPORT + FLOW DISTRIBUTION + HYDRAULIC EFFECT + RIVER, LOIRE + TRACER, RADIOACTIVE

14-16638

CIRCEC LJ

ENGINEERING PROPERTIES AND APPLICATIONS OF NUCLEAR EXCAVATIONS

LAWRENCE RADIATION LABORATORY, UNIVERSITY OF CALIFORNIA, LIVERMORE, CALIFORNIA

UCRL-7657 +. 46 PAGES, 12 FIGURES, 3 TABLES, 29 REFERENCES, FEBRUARY 5, 1964

THE USE OF NUCLEAR EXCAVATION FOR ENGINEERING PROJECTS DEPENDS NOT ONLY ON THE SIZE OF THE EXCAVATION BUT ALSO ON THE PROPERTIES OF THE MATERIAL IN AND AROUND THE EXCAVATION. IN A NUCLEAR EXCAVATION, SEVERAL GENERAL ZONES ARE EVIDENT. AMONG THESE ARE THE TRUE AND APPARENT CRATER, CRATER FALLBACK AND LIP THROWOUT MATERIAL, GROUND UPHEAVAL, AND THE RUPTURE AND PLASTIC ZONES. THE PROPERTIES OF THE MATERIAL IN THESE ZONES DEPEND ON ORIGINAL-MEDIUM CHARACTERISTICS AND THE EFFECTS OF THE DETONATION.

AVAILABILITY -- CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

*GEOLOGICAL CONSIDERATION, GEOPHYSICAL + *PLOWSHARE PROGRAM + GEOLOGICAL CONSIDERATION, GENERAL + NUCLEAR DETONATION

14-16661 ALSO IN CATEGORY 17

U.S. RADIUM CORPORATION REPORTS EXCESSIVE STACK DISCHARGE OF TRITIUM

UNITED STATES RADIUM CORPORATION, BLOOMSBURG, PA.

1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(29), PAGE 29 (JULY 17, 1967)

(MAY 9) ON APRIL 13/14 AND 26TH, SOLUBLE TRITIUM WAS DISCHARGED ABOVE MPC EVEN THOUGH NO OPERATIONS WERE PERFORMED AND VACUUM PUMP IS VENTED THROUGH DRYING COLUMNS. THE PROBLEM WILL BE STUDIED FURTHER.

*AIRBORNE RELEASE + *STACK + *TRITIUM

14-16918 ALSO IN CATEGORY 15

EFFECT OF THE SAVANNAH RIVER PLANT ON ENVIRONMENTAL RADIOACTIVITY. SEMIANNUAL REPORT, JULY-DECEMBER 1966 DU PONT DE NEMOURS (E.I.) AND CO., AIKEN, S. C., SAVANNAH RIVER LABORATORY

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-16918 *CONTINUED*
DPST-67-30-1 +. 20 PAGES, FEBRUARY 1967

PRESENT RESULTS OF THE ENVIRONMENTAL MONITORING PROGRAM OF THE ATMOSPHERE, VEGETATION, FOOD, AND WATER FOR JULY 1 THROUGH DECEMBER 31, 1966. THE QUANTITY OF RADIOACTIVE WASTE RELEASED TO THE ENVIRONS WAS, FOR THE MOST PART, TOO SMALL TO BE DISTINGUISHED FROM NATURAL BACKGROUND RADIATION OR WAS OBSCURED BY WORLDWIDE FALLOUT FROM NUCLEAR WEAPONS TESTING. FALLOUT FROM THE CHINESE NUCLEAR TEST ON OCTOBER 27, 1966, WAS DETECTED, AND FALLOUT FROM THE 5TH CHINESE DETONATION IN LATE DECEMBER HAD NOT ARRIVED BY DECEMBER 31. BETA ACTIVITY IN AIR, WHICH SHOWED NO RELATION TO PLANT OPERATIONS, WAS ABOUT THE SAME AS THAT OBSERVED FOR THE PAST 18 MONTHS. RADIOACTIVE MATERIALS IN FISH FLESH CONTINUED TO BE FAR BELOW LEVELS CONSIDERED SIGNIFICANT FROM A HEALTH STANDPOINT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL SPECIFICATIONS, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*FALLOUT + *SAVANNAH RIVER PLANT + *SURVEY, RADIATION, ENVIRONMENTAL + AIR + BETA EMITTER + BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + BIOLOGICAL CONCENTRATION, FOOD + BIOLOGICAL CONCENTRATION, GENERAL + BIOLOGICAL CONCENTRATION, MILK + BIOLOGICAL CONCENTRATION, VEGETATION + CONCENTRATION, AREA + ENVIRONMENTAL CONDITION + GAMMA + MAXIMUM PERMISSIBLE CONCENTRATION (MPC) + NUCLEAR DETONATION + SURFACE WATER, NUCLIDE OCCURRENCE + WASTE DISPOSAL, GENERAL

14-16919 ALSO IN CATEGORY 15
ARGIERO L + MANFREDINI S + PALMAS G
ABSORPTION OF FISSION PRODUCTS BY MARINE ORGANISMS
SC-T-67-0903 +. 7 PAGES, FIGURES, TABLES, REFERENCES, TRANSLATED BY MARCEL I. WEINREICH FOR SANDIA CORP., ALBUQUERQUE, N. MEX., FROM HEALTH PHYS., 12, PAGES 1259-65 (1966)

THIS REPORT CONCERNS A SYSTEMATIC STUDY OF THE SORPTION OF RADIOELEMENTS BY MARINE ORGANISMS. IN THE PRESENT WORK, THE SORPTION AND THE CONCENTRATION FACTORS OF SR-90 AND CS-137 IN MYTILUS GALLOPROVINCIALIS ARE STUDIED. EXAMINING THE SR-90 DATA, IT IS VERIFIED THAT EQUILIBRIUM IS MAINTAINED AFTER 120 HR, AND THE CONCENTRATION FACTOR IS 3.6 BASED ON FRESH WEIGHT (AFTER CENTRIFUGATION) AND 98.3 BASED ON ASH WEIGHT. AS TO CS-137, THE EQUILIBRIUM IS REACHED AFTER ABOUT 100 HR. THE CONCENTRATION FACTOR, IF BASED ON FRESH WEIGHT (AT 110 C), VARIES FROM 4.3 FOR ADULT ORGANISMS TO 6.4 FOR YOUNG ONES. IF BASED ON ASH WEIGHT, IT VARIES FROM 117 FOR ADULTS TO 175 FOR YOUNG.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + *FALLOUT + CESIUM + CONTAMINATION + FISSION PRODUCT RELEASE, GENERAL + NIOBIUM + OCEAN AND SEA + POTASSIUM + RHODIUM + RUTHENIUM + SAMPLING + SPECTROMETRY, GAMMA + STATISTICAL ANALYSIS + STRONTIUM + SURFACE WATER, NUCLIDE OCCURRENCE

14-16920 ALSO IN CATEGORY 15
HONSTEAD JF + SOLDAT JK
ENVIRONMENTAL MONITORING
BATTELLE-NORTHWEST, RICHLAND, WASHINGTON, PACIFIC NORTHWEST LABORATORY
BNWL-SA-465 +. 73 PAGES, FIGURES, REFERENCES, MARCH 25, 1965

THE ENVIRONMENTAL RADIATION MONITORING PROGRAM AT THE BATTELLE MEMORIAL INSTITUTE PACIFIC NORTHWEST LABORATORY, RICHLAND, WASHINGTON, IS DESCRIBED IN DETAIL. CRITERIA FOR ENVIRONMENTAL MONITORING PROGRAMS ARE REVIEWED, AND METHODS USED FOR PREOPERATIONAL SURVEYS, EMERGENCY SURVEYS, OPERATIONAL SURVEYS, RADIOLOGICAL MONITORING OF THE COLUMBIA RIVER AND THE ATMOSPHERE ARE DESCRIBED. EXPOSURE PATHWAYS THAT MUST BE COMBINED TO ASSESS THE TOTAL EXPOSURE OF EMPLOYEES AND THE PUBLIC ARE DISCUSSED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*FALLOUT + *SURVEY, RADIATION, ENVIRONMENTAL + AIR + AIRBORNE RELEASE + ANALYTICAL TECHNIQUE, GENERAL + BATTELLE NORTHWEST + BIOLOGICAL CONCENTRATION, GENERAL + BIOMEDICAL + CODES AND STANDARDS + CONTAMINATION + DOSE + HANFORD SITE + MAXIMUM PERMISSIBLE CONCENTRATION (MPC) + MEASUREMENT, GENERAL + MONITOR, RADIATION, AIR + MONITOR, RADIATION, ENVIRONMENTAL + MONITORING PROGRAM, ENVIRONMENTAL + PERSONNEL EXPOSURE, RADIATION + POPULATION EXPOSURE + RADIOCHEMICAL ANALYSIS + RAINOUT + REACTOR POWER + RIVER, COLUMBIA + SAMPLING + STACK + STATISTICAL ANALYSIS + SURFACE WATER, NUCLIDE OCCURRENCE + SURVEY, GENERAL + SURVEY, RADIATION, EMERGENCY + X-RAY

14-16981
NISHITA H + ESSINGTON EH
EFFECT OF CHELATING AGENTS ON THE MOVEMENT OF FISSION PRODUCTS IN SOILS
UNIVERSITY OF CALIFORNIA, LOS ANGELES
0 PAGES, 4 FIGURES, 2 TABLES, 14 REFERENCES, SOIL SCIENCE 103(3), PAGES 168-176 (MARCH 1967)

CHELATING AGENTS AND DEIONIZED WATER WERE EVALUATED AS TO THEIR ABILITY TO MOVE SEVERAL RADIOACTIVE FISSION PRODUCTS IN DIFFERENT KINDS OF SOILS. PRACTICALLY NO MOVEMENT OF CS-137, Y-91, OR CE-144 OCCURRED BY H2O LEACHING. AMONG THE CHELATING AGENTS, THE EFFECTIVENESS OF EDDHA WAS GENERALLY THE LEAST, WHILE THE RELATIVE EFFECTIVENESS OF DTPA AND EDTA VARIED WITH THE SOIL AND RADIONUCLIDE. THE POSSIBLE CAUSES FOR THE VARIATIONS IN THE EFFECTIVENESS OF DIFFERENT LEACHING AGENTS IN DIFFERENT SOILS WERE DISCUSSED.

CATEGORY 14
RADIOISOTOPE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-16981 *CONTINUED*

*SOIL, RADIOISOTOPE MOVEMENT THROUGH + CERIUM + CESIUM + RUTHENIUM + SOIL, ISOTOPE OCCURRENCE + SOIL, PROPERTY + STRONTIUM + YTTRIUM

14-17029 ALSO IN CATEGORIES 7 AND 12

SCHUTTMANN W

GUIDELINES FOR THE DIAGNOSIS AND THERAPY OF ACUTE RADIATION DAMAGE

STATE CENTER FOR RADIATION PROTECTION

SZS 8(1966) +. 30 PAGES, AUGUST 1966, (IN GERMAN)

CLASSIFICATION OF RADIATION INJURIES, PURE RADIATION-INJURY DIAGNOSIS AND THERAPY. RECOMMENDATIONS TO THE PHYSICIAN REGARDING THE EXCLUSION OF CERTAIN PERSONS FROM WORK WITH IONIZING RADIATION.

AVAILABILITY - MICROCARD EDITIONS, INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN 54669

*GERMANY + *RADIATION PROTECTION, ORGANIZATION + RADIATION DAMAGE + RADIATION EFFECT + RADIATION INJURY, TREATMENT OF + RADIATION SAFETY AND CONTROL + REGULATION, GENERAL

14-17106

BOEGLY WJ + PARKER FL + STRUXNESS EG

DISPOSAL OF RADIOACTIVE WASTES IN GEOLOGIC FORMATIONS

ORNL-P-2537 + CONF-660920-9 +. 24 PAGES, FROM 1ST INTERNATIONAL CONGRESS OF THE 1ST INTERNATIONAL

RADIATION PROTECTION ASSOCIATION, ROME, ITALY

FIELD-SCALE DEMONSTRATIONS SHOWED THAT IT IS POSSIBLE TO SAFELY AND ECONOMICALLY STORE HIGH-LEVEL SOLIDIFIED WASTES IN SALT FORMATIONS AND INTERMEDIATE-LEVEL WASTES IN THE SLIGHTLY PERMEABLE SHALES AT OAK RIDGE. DISPOSAL OF LOW-LEVEL LIQUID WASTES IN PERMEABLE FORMATIONS HAS NOT YET BEEN DEMONSTRATED IN FIELD-SCALE PLANTS, BUT THE IDEA HAS BEEN PROVED ON LABORATORY-SCALE MODELS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*WASTE DISPOSAL, HYDRAULIC FRACTURING + *WASTE DISPOSAL, SALT + GEOLOGICAL CONSIDERATION, GENERAL + WASTE DISPOSAL, LIQUID + WASTE DISPOSAL, SOLID

14-17254

LANGHAM WH

RADIATION RESPONSES OF MAN IN THE INTERMEDIATE DOSE RANGE

LOS ALAMOS SCIENTIFIC LAB., N. MEX.

LA-DC-8110 + CONF-661001-43 +. 10 PAGES, FROM 14TH CONFERENCE ON REMOTE SYSTEMS AND TECHNOLOGY, PITTSBURGH, PENNSYLVANIA

OCCURRENCE OF EARLY AND LATE RADIATION EFFECTS IN MAN IS CONSIDERED IN RELATION TO DOSE WITHIN THE INTERMEDIATE RAD DOSE RANGE. STUDIES RELATE TO SKIN ERYTHEMA AND DESQUAMATION, PROLONGED REACTION, BLOOD-COUNT DEPRESSIONS, LD-50 DOSE, PERMANENT STERILITY, NECROSIS, LENS CHANGES, LEUKEMIA, AND LIFE-SHORTENING RISK IN MAN FROM WHOLE-BODY PROTRACTED OR FRACTIONATED X-RAY EXPOSURE MAY BE 2 TO 3 DAYS/RAD, MEASURED AT THE APPROXIMATE MIDLINE OF THE BODY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*DOSE MEASUREMENT, INTERNAL + *RADIATION DAMAGE + DOSE + MAXIMUM PERMISSIBLE BODY BURDEN + MAXIMUM PERMISSIBLE CONCENTRATION (MPC) + MAXIMUM PERMISSIBLE DOSE (MPD) + NCRP (NATIONAL COMMITTEE RADIATION PROTECTION) + RADIATION EFFECT

14-17271

RAMDORF H

SILING INVESTIGATIONS FOR A PROTOTYPE CAVITY FOR RADIOACTIVE WASTE STORAGE

GESELLSCHAFT FUER KERNFORSCHUNG M.B.H., KARLSRUHE (WEST GERMANY)

RMWF-FBK-65-06 +. 40 PAGES, DECEMBER, 1965, (IN GERMAN)

SALT FORMATIONS IN THE SUBSOIL OF THE FEDERAL REPUBLIC OF GERMANY OFFER MANY POSSIBILITIES FOR ULTIMATE STORAGE OF RADIOACTIVE WASTES. THESE TYPES OF ROCK, ESPECIALLY THE PURE HALITE ROCK, ARE PRACTICALLY IMPERMEABLE, HAVE A GOOD THERMAL CONDUCTIVITY, AND PERMIT THE EXCAVATION OF LARGE UNDERGROUND ROOMS AT LOW COST. THE STORAGE OF RADIOACTIVE RESIDUES IS POSSIBLE EITHER IN ACCESSIBLE EXCAVATIONS (AS IN MINES) OR IN INACCESSIBLE ROOMS (AS IN STORAGE CAVERNS), WHICH ARE FORMED BY THE SOLUTION METHOD.

AVAILABILITY - MICROCARD EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM, WISCONSIN 54669

*WASTE DISPOSAL, SALT + GEOLOGICAL CONSIDERATION, SALT STRUCTURE + GERMANY + WASTE DISPOSAL, SOLID

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-17272

PRITCHARD DW + CARTER HH

ON THE PREDICTION OF THE DISTRIBUTION OF EXCESS TEMPERATURE FROM A HEATED DISCHARGE IN AN ESTUARY.

TECHNICAL REPORT NO. 33

CHESAPEAKE BAY INST., JOHNS HOPKINS UNIVERSITY, BALTIMORE, MD.

NYO-10508 +. 49 PAGES, FEBRUARY, 1965

THIS REPORT COVERS A STUDY OF THE APPLICABILITY OF THE PRINCIPLES OF FOAM SEPARATION TO THE ENRICHMENT AND RECOVERY OF SPECIFIC FISSION PRODUCT NUCLIDES FROM TYPICAL NUCLEAR WASTE SOLUTIONS. A REVIEW OF FOAM-SEPARATION PRINCIPLES IS GIVEN IN SECTION 2. EXPERIMENTAL METHODS AND EQUIPMENT USED ARE DESCRIBED IN SECTION 3.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*RECOVERY PROCESS + *WASTE TREATMENT, LIQUID + CESIUM + RARE EARTH + STRONTIUM + WASTE DISPOSAL, GENERAL + WASTE TREATMENT, EQUIPMENT

14-17277

MAGNE A

POT VITRIFICATION, STUDY OF THE FLOW OF GLASS

COMMISSARIAT A L-ENERGIE ATOMIQUE, CHUSCLAN, FRANCE. CENTRE DE PRODUCTION DE PLUTONIUM DE MARCOULE

CRNL-TP-1445 + SCCI-61 +. 28 PAGES, AUGUST, 1966, TRANSLATED FROM REPORT SCCI-61

IN DETERMINING THE POSSIBILITIES OF CONTROL OF FLOW IN THE PROCESS OF POT VITRIFICATION, TESTS WITH NOZZLES OF DIFFERENT DIAMETERS WERE PERFORMED IN AN INDUCTION FURNACE WITH CONSTANT CHARGE AND TEMPERATURE (1200 C) USING GLASS X-41. RESULTS INDICATE THE POSSIBILITY OF INCREASING THE DIAMETER OF THE POURING NOZZLE, THE VITRIFYING POTS, AND PERHAPS THE ELIMINATION OF HEATING OF THE RECEIVING VESSEL, WHICH, UP TO THAT TIME, WAS NECESSARY FOR OBTAINING A GOOD COATING OF GLASS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*WASTE TREATMENT, EQUIPMENT + WASTE DISPOSAL, GENERAL + WASTE TREATMENT, FIXATION + WASTE TREATMENT, LIQUID

14-17282

ALSO IN CATEGORY 15

RABB DD

PLOWSHARE PROGRAM. VOLUME II, NO. 4, NOVEMBER 1, 1966-JANUARY 31, 1967

CALIFORNIA UNIVERSITY, LIVERMORE. LAWRENCE RADIATION LABORATORY

UCRL-5000P-67-1 +. 18 PAGES, REFERENCES, JANUARY 31, 1967

PROGRESS ON THE FIRST PLOWSHARE PROJECT INVOLVING EXTENSIVE INDUSTRIAL PARTICIPATION IS REPORTED. FUNDS FOR THE GASBUGGY PROJECT SITE PREPARATION ARE AVAILABLE, AND CONSTRUCTION IS READY TO START. EXPLOSIVES DEVELOPMENT, PHYSICAL MEASUREMENTS, EFFECTS ON MATERIALS, AND COMPUTER CODE DEVELOPMENT IN PLOWSHARE NUCLEAR-EFFECTS-TESTING PROGRAMS CONTINUED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*PLOWSHARE PROGRAM + ATMOSPHERIC DIFFUSION + COMPUTER PROGRAM + DISPERSION + GEOLOGICAL CONSIDERATION, GENERAL + NUCLEAR DETONATION

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-11634 ALSO IN CATEGORY 14
VORTMAN I I

PROJECT SULKY. CLOSE-IN AIR BLAST FROM A RELATIVELY DEEP LOW-YIELD NUCLEAR DETONATION IN BASALT
SANDIA CORPORATION, ALBUQUERQUE, NEW MEXICO
PNE-711F +. 28 PAGES, 2 TABLES, 12 FIGURES, 6 REFERENCES, MAY 31, 1966, CFSTI \$1.50 CY, \$0.50 MN

CLOSE-IN AIR-BLAST MEASUREMENTS WERE MADE ON THE SULKY SHOT (AN 85-TON NUCLEAR DETONATION BURIED 90 FEET BELOW THE SURFACE IN BASALT). THE DOMINANT OVERPRESSURE WAS THAT RESULTING FROM A GROUND SHOCK WHICH TRANSMITTED PRESSURE TO THE AIR AT THE EPICENTER. THE PRESSURE WAVE THEN PROPAGATED AWAY FROM THE EPICENTER AT SONIC VELOCITY IN AIR. AN EARLIER WAVE OF 1/7 THE AMPLITUDE OF THE GROUND-SHOCK-INDUCED PEAK PROPAGATED AT THE VELOCITY OF A SEISMIC SURFACE WAVE. IT MAY HAVE BEEN DUE TO GAGE SENSITIVITY TO GROUND-SURFACE MOTION, OR IT MAY HAVE BEEN MEASUREMENT OF OVERPRESSURE RESULTING AT THE GAGE FROM SUCH GROUND MOTION. THE PULSE FROM VENTING GASES WAS WEAK BECAUSE OF THE RELATIVELY GREAT BURIAL DEPTH. IT WAS SUPER-IMPOSED ON THE NEGATIVE WAVE FOLLOWING THE GROUND-SHOCK-INDUCED PULSE AND GAVE PEAK VALUES EQUAL TO OR LESS THAN AMBIENT PRESSURE. IN ONE SENSE, THE GAS-VENTING PRESSURES WERE IN AGREEMENT WITH THOSE OF DANNY BOY, WHICH ALSO WERE SUPERIMPOSED ON A NEGATIVE WAVE BUT WHICH WERE STRONG ENOUGH TO HAVE POSITIVE VALUES BECAUSE OF THE RELATIVELY SHALLOWER BURIAL DEPTH. GROUND-SHOCK-INDUCED PEAKS FROM BOTH SULKY AND DANNY BOY ARE IN AGREEMENT WITH THOSE FROM HIGH-EXPLOSIVE SHOTS AT COMPARABLE BURIAL DEPTHS.

*NUCLEAR DETONATION + *BLOWSHARE PROGRAM + GEOLOGICAL CONSIDERATION, GEOPHYSICAL

15-13854
PARKER FL
UNITED STATES AND SOVIET UNION WASTE-DISPOSAL STANDARDS
PAK RIDGE NATIONAL LABORATORY
4 PAGES, 3 TABLES, NUCLEAR SAFETY 6(4), PAGES 433-36, (SUMMER 1965)

STANDARDS FOR REGULATING THE DISPOSAL OF RADIOACTIVE WASTES IN THE USSR ARE COMPARED TO THOSE OF THE USA.

*UNION OF SOVIET SOCIALIST REPUBLICS + *UNITED STATES + *WASTE DISPOSAL, GENERAL +
ICRP (INT. COMM. ON RADIOLOGICAL PROTECTION) + MAXIMUM PERMISSIBLE CONCENTRATION (MPC) +
POPULATION EXPOSURE + REGULATION, GENERAL + WASTE DISPOSAL, GAS + WASTE DISPOSAL, LIQUID +
WASTE DISPOSAL, SOLID + WASTE DISPOSAL, TERRESTRIAL

15-14837
RENEZECH G + ZABOROWSKI H
DETERMINATION OF NEUTRON FLUXES AND DOSES AT THE TIME OF A CRITICALITY ACCIDENT BY THE MULTISPHERE
TECHNIQUE.
COMMISSARIAT A L'ENERGIE ATOMIQUE, CADARACHE, FRANCE
NP-TR-1406 + STI-PUR-99 +. 29 PAGES, APRIL 1966

LINEAR COMBINATIONS OF THE RESPONSES OF CERTAIN ASSEMBLIES TO NEUTRON FLUXES OF UNKNOWN SPECTRA MAKE IT POSSIBLE TO DETERMINE - (I) THE NEUTRON FLUXES, WITH AN ESTIMATED ACCURACY OF PLUS-OR-MINUS 10% - (II) THE KERMA AND THE ABSORBED DOSES, WITH AN ESTIMATED ACCURACY OF PLUS-OR-MINUS 15%. DETECTION ASSEMBLIES HAVE BEEN DEVELOPED - (I) AN ASSEMBLY IN WHICH THE THERMAL NEUTRON DETECTOR CONSISTS OF A 4 X 4 LI-6 CRYSTAL WITH WHICH FLUXES OF THE ORDER OF 2 NEUTRONS/SQ.CM/SEC AND A DOSE RATE OF 0.5 MREM/HR CAN BE MEASURED, (II) AN ASSEMBLY IN WHICH THE THERMAL NEUTRON DETECTOR CONSISTS OF A 6 X 6MM GOLD CYLINDER WITH WHICH INTEGRATED FLUXES OF THE ORDER OF 10 TO THE 6TH NEUTRONS/SQ.CM AND INTEGRATED DOSES OF THE ORDER OF 0.5 REM CAN BE MEASURED. A METHOD OF NEUTRON SPECTROMETRY IN THE REGION OF INTERMEDIATE AND FAST ENERGIES HAS BEEN DEVELOPED, USING THE RESPONSES OF THE VARIOUS SPHERES. THE RESULTS ARE PRESENTED OF TESTS CARRIED OUT WITH THESE ASSEMBLIES IN THE VICINITY OF AN UNMODERATED FISSION SOURCE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*MEASUREMENT, REACTIVITY + *MONITOR, RADIATION, ENVIRONMENTAL + *NEUTRON +
INSTRUMENTATION, RADIATION MONITORING + MONITOR, RADIATION, NUCLEAR DETONATION +
PERSONNEL PROTECTIVE DEVICE

15-15089 ALSO IN CATEGORY 14
SHEFCIK JJ
OPERATING EXPERIENCE ON IN-TANK SOLIDIFICATION OF RADIOCHEMICAL WASTES
HANFORD ATOMIC PRODUCTS OPERATION, GENERAL ELECTRIC CO., RICHLAND, WASH.
RL-SA-41 + CONF-650902-10 +. 18 PAGES, AUGUST 17, 1965, FROM AMERICAN CHEMICAL SOCIETY, 150TH NATIONAL MEETING, ATLANTIC CITY

THE INITIAL OPERATION OF THE FIRST IN-TANK SOLIDIFICATION UNIT IS DESCRIBED. ALKALINE RADIOCHEMICAL WASTE SOLUTIONS ARE EVAPORATED WITHIN A 750,000-GAL UNDERGROUND TANK BY SPARGING WITH COMPRESSED AIR ELECTRICALLY HEATED TO 1200 F. THE AIR SPARGER ALSO SERVES AS AN AIR-LIFT CIRCULATOR TO AGITATE THE SOLUTION AND AS A HEAT EXCHANGER. TO AVOID THE HIGH ENTRAINMENT NORMALLY ASSOCIATED WITH HOT AIR SPARGING, MORE THAN HALF THE AVAILABLE HEAT IS TRANSFERRED TO THE SOLUTION BY PASSING THE HOT AIR DOWN THE HOLLOW WALL OF THE

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-15089 *CONTINUED*

40-IN-DIAMETER, 12-FOOT LONG, CIRCULATOR-SPARGER. STUD FINS ARE USED TO IMPROVE THE HEAT TRANSFER COEFFICIENT. THE OFF-GAS VAPORS ARE FILTERED AND DEHUMIDIFIED, PRODUCING CONDENSATE AND EFFLUENT AIR STREAMS VERY LOW IN RESIDUAL RADIOACTIVITY. SOLUTION DECONTAMINATION FACTORS OF GREATER THAN 100,000 ARE OBTAINED. AS EVAPORATION OCCURS, ADDITIONAL RADIOCHEMICAL WASTE SOLUTIONS ARE ADDED. AFTER WASTES HAVE BEEN BOILED DOWN BY A FACTOR OF 4 TO 6, THE CONCENTRATE WILL BE ALLOWED TO COOL AND SOLIDIFY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*BATTELLE NORTHWEST + *EVAPORATION + *WASTE TREATMENT, LIQUID + WASTE DISPOSAL, GENERAL + WASTE MANAGEMENT + WASTE TREATMENT, GENERAL + WASTE TREATMENT, SOLID

15-15703

BOENZI D + DLOUHY Z
A CONTRIBUTION TO THE STUDY OF THE SORPTION PROPERTIES OF TUFFS
COMITATO NAZIONALE PER L'ENERGIA NUCLEARE, ROME, ITALY
RT-PRCT-(66)-6 +. 14 PAGES, 2 TABLES, 1966

THE ITALIAN TUFFS ARE COMPACT VOLCANIC ROCKS SHOWING CERTAIN NONHOMOGENEITIES. THE PRESENCE, BESIDES THE ZEOLITIC MATERIAL THAT FORMS THE BULK OF THE CEMENTING GROUNDMASS, OF SOME ACCESSORY MINERALS SEEMS TO CAUSE A DILUTION OF THE MAIN ACTIVE MATERIAL (OR MATERIALS) REDUCING THEIR GOOD SORPTION PROPERTIES. STARTING FROM THIS RESULT, AN EXPERIMENTAL RESEARCH WAS CARRIED OUT IN ORDER TO TRY THE SEPARATION POSSIBILITY OF THE ACTIVE FRACTION OF AN ITALIAN TUFF. THE RESULTS SHOWED THAT THE NATURE OF THE MATERIAL DOES NOT ALLOW A COMPLETE SEPARATION OF THE MOST ACTIVE FRACTION FROM THE LESS OR INACTIVE ONES BY MEANS OF THE EXPERIMENTED METHODS, BUT IT WAS POSSIBLE TO ACHIEVE A GOOD ECONOMICALLY AVAILABLE ENRICHMENT.

AVAILABILITY - MICROCARD EDITIONS. ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN 54669

*MINERAL EXCHANGE + ITALY + SORPTION

15-15704

KATHREN RL + YODER RE
PERSONNEL MONITORING WITH FILM, GLASS, AND TLD
UNIVERSITY OF CALIFORNIA, LAWRENCE RADIATION LAB.
UCRL-70171 + CONF-661027-1 +. 8 PAGES, 1 FIGURE, OCTOBER 7, 1966, FROM WESTERN INDUSTRIAL HEALTH CONFERENCE, LOS ANGELES, CALIFORNIA

CRITERIA FOR THE IDEAL PERSONNEL DOSIMETER ARE PRESENTED. IT IS CONCLUDED THAT NO DOSIMETER IN PRESENT USE FILLS ALL THE REQUIREMENTS. THE PERFORMANCE OF PHOTOGRAPHIC FILM DOSIMETERS, RADIOPHOTOLUMINESCENT GLASS DOSIMETERS, AND THERMOLUMINESCENT DOSIMETERS IS DISCUSSED. IT IS CONCLUDED THAT RADIOPHOTOLUMINESCENT GLASS AND THERMOLUMINESCENT DOSIMETERS ARE SUPERIOR TO PHOTOGRAPHIC FILM DOSIMETERS AND THAT THE IDEAL PERSONNEL DOSIMETER SHOULD INCLUDE ALL THREE RADIATION DETECTORS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*DOSIMETRY, GENERAL + DOSIMETRY, PHOTOGRAPHIC + DOSIMETRY, RADIOPHOTOLUMINESCENCE + DOSIMETRY, THERMOLUMINESCENCE + MONITOR, RADIATION, PERSONNEL

15-15705

CHASE BH + CLOSSER WH + SPEERS RR + SWARTZ JM + THURSTON MO
DEVELOPMENT OF A FAST NEUTRON DOSIMETRY SYSTEM. FINAL REPORT
PHYLATRON CORP., COLUMBUS, OHIO
CON-1226-12 +. 53 PAGES, OCTOBER 1, 1966

THE VARIOUS ASPECTS OF A PROGRAM FOR THE DEVELOPMENT OF A HIGHLY SENSITIVE FAST NEUTRON DOSIMETRY SYSTEM ARE DISCUSSED. TOPICS INCLUDED ARE PROCESSING STUDIES, DOSIMETER IRRADIATION BEHAVIOR, PU-BE SOURCE IRRADIATIONS, ROOM-TEMPERATURE ANNEALING, BADGE-DESIGN REQUIREMENTS, BASE WIDTH DOSIMETER EXTENDED RANGE OF DOSIMETER, SURFACE LEAKAGE, AND READER FOR DOSIMETER.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*DOSIMETRY, PHOTOGRAPHIC + MONITOR, RADIATION, PERSONNEL + NEUTRON

15-15706

OHLEN H
THE NATURAL RADIATION BURDEN TO MAN FROM EXTERNAL SOURCES
STAATLICHE ZENTRALE FUER STRAHLENSCHUTZ, BERLIN, EAST GERMANY
SZS-10(1966) +. 45 PAGES, SEPTEMBER 1966

ENVIRONMENTAL SOURCES OF PENETRATING RADIATION AND EFFECTS OF SUCH SOURCES ON MAN ARE DISCUSSED. METHODS FOR MEASURING THE GAMMA DOSE, GAMMA DOSE-RATE, NEUTRONS, AND DOSE TO

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-15706 *CONTINUED*
POPULATION FROM NATURAL BACKGROUND RADIATION ARE CONSIDERED. APPLICATIONS OF
RADIO-GEOLOGICAL MEASUREMENTS TO DOSIMETRY ARE PRESENTED. TWO HUNDRED TWENTY NINE REFERENCES
ARE INCLUDED.

AVAILABILITY - MICROCARD EDITIONS, ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISC. 54669

*DOSE CALCULATION, EXTERNAL + POPULATION EXPOSURE

15-15707
SAMUELS ER + MOHINDRA VK
CANADIAN FALLOUT DATA FOR FEBRUARY 1966, AND REACTOR ENVIRONMENT MONITORING FOR FEB. 1966
DEPARTMENT OF NATIONAL HEALTH AND WELFARE, OTTAWA, ONTARIO
NP-16041 +. PAGES 3-13 AND PAGES 14-24, 1 FIGURE, 7 TABLES, 3 REFERENCES, FROM DATA FROM RADIATION
PROTECTION PROGRAMS. VOL. 4, NUMBER 3

THE RESULTS OF ANALYSES CARRIED OUT ON SAMPLES OF AIR, PRECIPITATION, AND MILK COLLECTED IN
FEB. 1966 ARE REPORTED. TOTAL BETA ACTIVITY WAS DETERMINED IN AIR AND PRECIPITATION, SR-90
AND CS-137 IN PRECIPITATION, AND SR-90 IN MILK. FALLOUT LEVELS DURING FEB. 1966 GENERALLY
REMAINED UNCHANGED FROM THOSE OBSERVED DURING THE PREVIOUS MONTH. TOTAL BETA ACTIVITY IN AIR
AND PRECIPITATION SAMPLES REMAINED AT VERY LOW LEVELS. THE AVERAGE CONCENTRATIONS OF CS-137
AND SR-90 IN LIQUID MILK WERE 60 AND 21 PC/L, RESPECTIVELY. TOTAL ALPHA ACTIVITY, TOTAL BETA
ACTIVITY, SR-90 AND CS-137 DETERMINATIONS WERE MADE ON WATER AND MILK SAMPLES IN THE
ENVIRONMENT OF CANADIAN REACTORS. THE RESULTS DID NOT SHOW ANY ANOMALIES THAT COULD BE
ATTRIBUTED TO A RELEASE OF CONTAMINATION FROM THE REACTORS.

AVAILABILITY - MICROCARD EDITIONS, ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISC. 54669

*CANADA + *SURVEY, RADIATION, ENVIRONMENTAL + AIR + BIOLOGICAL CONCENTRATION, MILK + CESIUM +
PRECIPITATION + RAINOUT + STRONTIUM + WATER, GENERAL

15-15708
MADSHUS K
CONTINUATION OF THE INVESTIGATION OF NORWEGIAN SCHOOL CHILDREN WITH REGARD TO THEIR BODY BURDEN OF CS-137
DUE TO RADIOACTIVE FALLOUT
NORSK HYDROS INST. FOR CANCER RESEARCH, OSLO, NORWAY
NYO-3364-26 +. 7 PAGES, TABLES, 1966

POTASSIUM CONTENT, HEIGHT, WEIGHT, AND BODY SURFACE WERE MEASURED AND RELATED TO THE CS-137
BODY BURDEN IN NORWEGIAN CHILDREN AVERAGING 15 YEARS OF AGE. BODY CONTENT OF POTASSIUM WAS
HIGHER IN BOYS THAN IN GIRLS. THE OVERALL TREND IN CS-137 BODY BURDENS WAS A STEADY DECREASE
THAT WAS MORE PRONOUNCED DURING WINTER MONTHS. A GREATER DECREASE IN CS-137 CONCENTRATIONS
WAS OBSERVED IN MILK DURING THE SAME PERIOD.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*BIOLOGICAL CONCENTRATION, MAN + BIOLOGICAL CONCENTRATION, MILK + CESIUM + NORWAY + POTASSIUM

15-15709
MECHLING WH
DECONTAMINATION OF SELECTED VEGETABLE CROPS BY LEACHING WITH REFERENCE TO STRONTIUM
CORNELL UNIVERSITY, ITHACA, N. Y.
NYO-2598-24 +. 84 PAGES, FEBRUARY 1966

VARIOUS VEGETABLES WERE CONTAMINATED WITH SR-89 TO SEE HOW MUCH COULD BE LEACHED OUT OF THE
TISSUE. THE VEGETABLES INCLUDED BEAN FRUITS AND LEAVES, LETTUCE AND TOMATO PLANTS, PARSLEY
LEAVES AND PEA PODS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*BIOLOGICAL CONCENTRATION, FOOD + *BIOLOGICAL CONCENTRATION, VEGETATION + *DESORPTION + *STRONTIUM +
ECOLOGICAL CONSIDERATION

15-15710
WRIGHT H + BRANSTETTER EE + NEUFELD J + TURNER JE + SNYDER WS
CALCULATION OF RADIATION DOSE DUE TO HIGH-ENERGY PROTONS
OAK RIDGE NATIONAL LABORATORY
ORNL-P-2568 + CONF-660920-11 +. 18 PAGES FROM 1ST INTERNATIONAL CONGRESS OF THE INTERNATIONAL RADIATION
PROTECTION ASSOCIATION, ROME, ITALY, 1966

RESULTS ARE PRESENTED FOR A CONTINUING STUDY OF THE DOSIMETRY OF HIGH-ENERGY PROTONS. STUDIES
IN HIGH-ENERGY PROTON DOSIMETRY ARE OF INTEREST IN ASSESSING THE POTENTIAL RADIATION HAZARDS
FOR MANNED SPACE FLIGHT AND ARE ALSO OF INTEREST FOR RADIOLOGICAL PROTECTION IN THE VICINITY
OF HIGH-ENERGY ACCELERATORS AND FOR BIOLOGICAL IRRADIATION EXPERIMENTS. THE PRESENT
CALCULATIONS CONSIDER THE DOSE DEPOSITED IN TISSUE BY PROTONS WITH ENERGIES FROM 400 MEV TO 2
GEV. THE DOSE AND DOSE EQUIVALENT WERE CALCULATED IN EACH SUB-SLAB OF A PHANTOM HAVING THE

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-15710 *CONTINUED*

FORM OF A SLAB 30 CM THICK AND INFINITE Laterally. COMPUTER CALCULATIONS WERE MADE TO PROVIDE ABSORBED DOSE AND DOSE-EQUIVALENT DATA.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*DOSE CALCULATION, EXTERNAL + ACCELERATOR + DOSE + DOSIMETRY, GENERAL

15-15711

LOVE CM

PHYSICAL, CHEMICAL, AND BIOLOGICAL DATA FROM THE NORTHEAST PACIFIC OCEAN. COLUMBIA RIVER EFFLUENT AREA, JANUARY-OCTOBER 1962. VOLUME I. BROWN BEAR CRUISE 299. JANUARY 23-FEBRUARY 7 WASHINGTON STATE UNIVERSITY, SEATTLE
RL0-1725-15 + M65-30 +. 186 PAGES, 2 FIGURES, TABLES, REFERENCES, AUGUST 1965

PHYSICAL, CHEMICAL, AND BIOLOGICAL DATA COLLECTED DURING CRUISE 299 OF THE RESEARCH VESSEL BROWN BEAR DURING THE MONTHS OF JANUARY AND FEBRUARY 1962 IN AN AREA WITHIN 120 MILES OF THE COASTS OF WASHINGTON AND OREGON ARE TABULATED. THESE DATA WERE COLLECTED AS PART OF A YEAR-ROUND STUDY WHICH HAS AS ITS OBJECTIVE THE DETERMINATION OF THE GROSS FEATURES OF MOVEMENT AND DISPERSION OF COLUMBIA RIVER EFFLUENT WATER IN THE NORTHEAST PACIFIC.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*OCEAN AND SEA + RIVER, COLUMBIA + WASTE DISPOSAL, OCEAN + WASTE DISPOSAL, RIVER

15-15712

PALLISTER ET + GREEN JH

ENVIRONMENTAL RADIOACTIVITY IN NEW SOUTH WALES.

NEW SOUTH WALES UNIVERSITY, KENSINGTON, AUSTRALIA

NRS-30 +. 26 PAGES, 1965

THE INHALATION AND INGESTION OF THE NATURAL ALPHA-EMITTING NUCLIDES OF URANIUM, THORIUM, POLENIUM, RADIUM, THE NATURAL BETA-EMITTER, POTASSIUM-40, AND THE ARTIFICIAL BETA-EMITTERS, CAESIUM-137 ARE DISCUSSED. EMPHASIS IS PUT ON THE SOMATIC EFFECTS IN LUNGS AND BONE OF THE PRESENCE OF THESE RADIONUCLIDES. DIFFICULTIES IN THE ASSESSMENT OF THE TISSUE DOSE LEVELS ARISING FROM THE INHALATION OF RADIOACTIVE AEROSOLS AND IN UNDERSTANDING THE PRECISE NATURE OF THE AEROSOL ARE NOTED. THE NATURAL WATER CONTENTS OF RA-226, RN-222 AND DAUGHTERS IN WATER FROM AUSTRALIA, UNITED KINGDOM AND THE U.S.A. ARE COMPARED. THE ATTEMPT TO MEASURE BODY BURDENS OF RA-226 BY THE ANALYSIS OF TEETH IN THE ILLINOIS AREA IS CONSIDERED. FALLOUT OF NATURAL NUCLIDES ARISING FROM RN-222 IS REVIEWED, AND THE SIGNIFICANCE OF COAL COMBUSTION IN ADDING TO THE FALLOUT IS TREATED.

AVAILABILITY - MICROCARD EDITIONS, INC. ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN 54669

*INGESTION + *INHALATION + AUSTRALIA + BIOLOGICAL CONCENTRATION, VEGETATION + CESIUM + DOSE CALCULATION, INTERNAL +, POLONIUM + POTASSIUM + RADIUM + RADON + STRONTIUM + SURFACE WATER, NUCLIDE OCCURRENCE + THORIUM + URANIUM

15-15713

MIYANAGA I + BINGO K + YAMAMOTO H

THE SENSITIVITY TO BETA RAYS OF FUJI GAMMA-RAY BADGE FILM AND THE EVALUATION OF BETA-RAY DOSE NP-TR-1195 +. 14 PAGES, TRANSLATED FROM NIPPON GENSIRYKU GAKKAISHI, 5, PAGES 497-503 (JUNE 1963).

THE SENSITIVITIES OF FUJI BADGE FILM TO BETA RAYS WERE INVESTIGATED BY USING THE ISOTOPES S-35, W-185, Tl-204, P-32, SR-90, Y-90, AND NATURAL URANIUM PLAQUES. PLANE SOURCES FOR EXPOSURE WERE PREPARED, AND CONTACT RADIOGRAPHY SHOWED THE UNIFORMITY OF THE SOURCE WAS WITHIN PLUS OR MINUS 10% OVER THE WHOLE AREA. THE PARTICLE SENSITIVITY WAS FOUND TO HAVE THE PEAK AROUND 0.2 MEV IN MAXIMUM ENERGY, WHICH CAN BE EXPLAINED CONSIDERING THE RELATION BETWEEN THE RANGE OF BETA RAYS AND THE THICKNESS OF EMULSION COATING. THE DOSAGE SENSITIVITY WAS FOUND TO INCREASE WITH BETA-RAY ENERGY AND TO BE ALMOST IN FLAT MAXIMUM ABOVE 1.5 MEV IN MAXIMUM ENERGY. BY USING THE RESULTS ABOVE, AN EXAMPLE WAS SHOWN HOW TO ESTIMATE THE APPARENT ENERGY OF INCIDENT BETA RAYS AND TO EVALUATE THE SKIN DOSE AND THE LENS DOSE OF EYE WITH THREE PLASTIC FILTERS OF JAERI FILM BADGE, MODEL III.

AVAILABILITY - JOHN CRERAR LIBRARY, 35 WEST 33RD ST., CHICAGO, ILLINOIS 60616, \$1.60 COPY, \$0.80 MICROFICHE

*DOSIMETRY, PHOTOGRAPHIC + *JAPAN + BETA EMITTER + DOSE MEASUREMENT, EXTERNAL

15-15714

WHIPPLE GH + PELLETIER CA + WEDLICK HL

INVESTIGATIONS INTO THE CYCLING AND RECYCLING OF CERTAIN RADIONUCLIDES THROUGH THE MILK FOOD CHAIN. ANNUAL REPORT NO. 3, DECEMBER 15, 1965--DECEMBER 14, 1966

UNIVERSITY OF MICHIGAN, ANN ARBOR

COO-1333-3 +. 76 PAGES, FIGURES, TABLES, REFERENCES, SEPTEMBER 1966

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-15714 *CONTINUED*

THIS REPORT COVEPS THE RESULTS OF THE THIRD YEAR OF A RESEARCH PROGRAM AIMED AT DESCRIBING MATHEMATICALLY THE BEHAVIOR OF FALLOUT RADIONUCLIDES IN THE MILK FOOD CHAIN. MATHEMATICAL EXPRESSIONS ARE DERIVED AND COMPARED WITH THE OBSERVED BEHAVIOR OF CE-144, CS-137, AND K-40 ON A COMMERCIAL DAIRY FARM. PRELIMINARY COMPARISONS SUBSTANTIATE THE FORMS OF THE MATHEMATICAL EXPRESSIONS. THE RESULTS OF BALANCE STUDIES FOR THE ABOVE THREE RADIONUCLIDES AS WELL AS CALCIUM AND STRONTIUM ARE PRESENTED. THE RESULTS TEND TO CONFIRM THE EXPERIMENTAL METHODS USED. ON THE BASIS OF THE DATA ANALYZED SO FAR, IT APPEARS THAT MATHEMATICAL EXPRESSIONS CAN TRACE WITH REASONABLE ACCURACY THE BEHAVIOR OF A RADIONUCLIDE FROM AIR TO MILK.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*BIOLOGICAL CONCENTRATION, MILK + *ECOLOGICAL CONSIDERATION + BIOLOGICAL CONCENTRATION, ANIMAL FEED + BIOLOGICAL CONCENTRATION, VEGETATION + CALCIUM + CERIUM + CESIUM + POTASSIUM + SAMPLING + SOIL, NUCLIDE OCCURRENCE + STRONTIUM

15-15715

HAGHRI F

DETAILED CHARACTERIZATION OF SOIL AND VEGETATION ON SELECTED SITES TO SERVE AS BASIS FOR FUTURE EVALUATION OF EFFECT OF RADIOACTIVE CONTAMINATION. TECHNICAL PROGRESS REPORT, MARCH 1, 1966 -- NOVEMBER 21, 1966 OHIO AGRICULTURAL RESEARCH AND DEVELOPMENT CENTER, WOOSTER
COO-414-4 +. 73 PAGES, NOVEMBER 17, 1966

A PRELIMINARY INVESTIGATION ON THE VERTICAL MOVEMENT OF RADIONUCLIDES IN CRACKING AND NONCRACKING SOILS WAS CONDUCTED. SOIL, PLANT MATERIALS, RUNOFF WATER, RUNOFF SEDIMENT, AND LEACHATE SAMPLES FROM FIELD PLOTS WERE ASSAYED FOR SR-90 AND STABLE CA. THE PERCENTAGE OF SR-90 IN THE 4- TO 8-IN.-DEPTH SOIL CORES FROM THE SR-90 TREATED PLOTS VARIED CONSIDERABLY. THE MOVEMENT OF SR-90 IN THE SOIL PROFILE WAS HIGHER UNDER MORE ACIDIC CONDITIONS. ADSORPTION OF SR BY THE H-SATURATED SOIL SAMPLES WAS LESS THAN THE AMMONIUM-SATURATED SAMPLES. METHYLATION AND SUBSEQUENT SAPONIFICATION DID NOT APPRECIABLY ALTER THE ADSORPTION OF SR BY THE MINERAL SOILS BUT DID DECREASE THE QUANTITIES OF SR ADSORBED BY THE ORGANIC SOILS. THE RUNOFF WATER COLLECTED FROM THE CONTINUOUS CORN PLOT WAS CONCENTRATED AND ELECTRODIALYZED. FIFTY PERCENT OF THE SR-90 MIGRATED TO THE ANODE COMPARTMENT. TWENTY-FIVE PERCENT WAS IN EACH OF THE OTHER COMPARTMENTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*SOIL, RADIONUCLIDE MOVEMENT THROUGH + BIOLOGICAL CONCENTRATION, VEGETATION + ECOLOGICAL CONSIDERATION + ION EXCHANGE + MINERAL EXCHANGE + SOIL + SOIL PROPERTY, IN SITU + SOIL, NUCLIDE OCCURRENCE + SOIL, PROPERTY + SORPTION + STRONTIUM + SURFACE WATER, NUCLIDE OCCURRENCE + SURFACE WATER, SUSPENDED MATERIAL + ZINC

15-15747

THACKER DG

HEALTH AND SAFETY ORGANIZATION. FOURTH EDITION
ATOMIC ENERGY OF CANADA LIMITED, OTTAWA
AECL-1027(4TH EDITION) +. 32 PAGES, JUNE 1, 1966

THIS REPORT IS A SUMMARY OF THE PROVISIONS OF HEALTH AND SAFETY, IN PARTICULAR RADIATION SAFETY, AT ATOMIC ENERGY OF CANADA LIMITED. IT DEALS WITH SUCH MATTERS AS DERIVATION OF LEGAL AUTHORITY, ESTABLISHMENT OF POLICY, ASSIGNMENT OF OPERATIONAL RESPONSIBILITY, AND PROVISION OF EXPERT ADVICE FOR MANAGEMENT. STANDARD POLICIES AND PROCEDURES DEFINE THE TERMS OF REFERENCE OF SOME OF THE COMMITTEES AND PANELS MENTIONED IN THE REPORT. NEW TERMS OF REFERENCE FOR ALL SUCH GROUPS WILL BE PUBLISHED IN THE SAME WAY. THESE WILL BE THE AUTHORITATIVE TEXTS FOR OPERATING PURPOSES.

AVAILABILITY - ATOMIC ENERGY OF CANADA, LTD., CHALK RIVER, ONTARIO, CANADA, FREE

*CANADA + *RADIATION PROTECTION, ORGANIZATION + RADIATION SAFETY AND CONTROL

15-15760

MARFI AN + KNIZHNIKOV VA + YARTSEV EI

SR-90 CONTENT IN THE BONE TISSUE OF THE USSR POPULATION (MATERIALS OF 1964)
GOSUDARSTVENNYI KOMITET PO ISPOL'ZOVANIYU ATOMNOI ENERGII
AEC-TF-6797, PAPER 2 +. 7 PAGES, JULY 1966

DATA ARE PRESENTED ON THE SR-90 CONTENT IN HUMAN BONE SAMPLES COLLECTED IN DIFFERENT GEOGRAPHICAL REGIONS OF THE USSR DURING 1964. ALL RESULTS OF RADIOCHEMICAL ANALYSIS OF BONES AND TEETH SAMPLES WERE NORMALIZED WITH REFERENCE TO THE SKELETON FOR ADULTS AND CHILDREN OF VARIOUS AGE GROUPS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*BIOLOGICAL CONCENTRATION, MAN + *STRONTIUM + *UNION OF SOVIET SOCIALIST REPUBLICS + RADIATION SAFETY AND CONTROL

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-15761

MAREI AN + YARTSEV EI + MOISEENKO EI
SR-90 DISTRIBUTION IN THE SKELETON OF ADULTS
GOSUDARSTVENNIY KOMITET PO ISPOL ZOVANIYU ATOMNOI ENERGII
AEC-TR-6797, PAPER 4 +. 7 PAGES, JULY 1966

THE SR-90 CONTENT IN PARTS OF DIFFERENT BONES OF ADULTS IS NOT IDENTICAL AND, AS A RULE, DOES NOT CORRESPOND TO THE AVERAGE VALUES FOR THE WHOLE SKELETON. THE RELATION BETWEEN THE SR-90 CONTENT IN INDIVIDUAL BONES AND THE AVERAGE CONCENTRATION IN THE SKELETON WAS DETERMINED BY A NORMALIZATION FACTOR. THE VALUES FOR NORMALIZATION FACTORS PUBLISHED IN 1959 WERE RECALCULATED, BASED ON MEASUREMENTS OF SR-90 CONTENT IN 20 SKELETONS OF ADULT PERSONS AND IN 7 BONES (FEMUR, RIBS, SPINE, SKULL, STERNUM, PELVIS, AND JAW) AND SAMPLES OF THESE BONES. THE FINDINGS ARE COMPARED WITH PUBLISHED FINDINGS FROM ALL PARTS OF THE WORLD.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*BIOLOGICAL CONCENTRATION, MAN + *STRONTIUM + FALLOUT + RADIATION SAFETY AND CONTROL

15-15762

MAREI AN + KARMAEVA AN
CERTAIN HEALTH ASPECTS OF THE RA-226 PROBLEM
GOSUDARSTVENNIY KOMITET PO ISPOL ZOVANIYU ATOMNOI ENERGII
AEC-TR-6797, PAPER 6 +. 10 PAGES, JULY 1966

IN THE LOCALITY STUDIED, WHERE RADIUM CONTENT IS SOMEWHAT HIGHER THAN USUAL, THE QUANTITY INGESTED BY THE POPULATION WITH FOOD PRODUCTS IS ON THE AVERAGE EQUAL TO RADIUM INGESTION WITH THE DRINKING WATER. THE SOMEWHAT HIGHER LEVELS OF RADIUM-226 IN THE BONE TISSUE OF THE POPULATION ARE APPARENTLY DUE TO SUBSTANTIAL INGESTION WITH DRINKING WATER AND TO THE PARTICULAR DIET PATTERN. CALCIUM CONTAINED IN DRINKING WATER LIMITS RADIUM ACCUMULATION IN THE HUMAN BONE TISSUE WHEN THE CALCIUM IN THE FOOD PRODUCTS IS SUFFICIENT FOR BODY REQUIREMENTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*BIOLOGICAL CONCENTRATION, MAN + *INGESTION + *RADIUM + CALCIUM + RADIATION SAFETY AND CONTROL + WATER, DRINKING

15-15763

MAREI AN + KNIZHNIKOV VA + YARTSEV EI
STUDY OF EXTRACTED TEETH AS A METHOD OF MASS INVESTIGATION OF SR-90 CONTENT IN THE HUMAN ORGANISM
GOSUDARSTVENNIY KOMITET PO ISPOL ZOVANIYU ATOMNOI ENERGII
AEC-TR-6797, PAPER 5 +. 13 PAGES, JULY 1966

THE FEASIBILITY OF USING EXTRACTED TEETH AS AN INDEX TO THE SR-90 CONTENT IN THE HUMAN SKELETON WAS INVESTIGATED. DATA ARE PRESENTED ON THE RATIO OF SR-90 IN TEETH AND SKELETON OF ADULTS IN DIFFERENT AGE GROUPS. THE DATA INDICATE THAT TEETH/SKELETON CONCENTRATION RATIOS DO NOT CHANGE FOR PERSONS OLDER THAN 20 YEARS. CARIOUS TEETH WERE FOUND TO CONTAIN 9% LESS SR-90 THAN SOUND TEETH. SOME DISEASES CAUSED VARIATIONS IN THE SR-90 CONTENT OF TEETH. CHILDRENS TEETH ACCUMULATED MORE SR-90 THAN THE TEETH OF ADULTS, AND THE ACCUMULATION RATE WAS INVERSELY PROPORTIONAL TO AGE. STRONTIUM-90 ACCUMULATION WAS OBSERVED IN THE HARD TISSUES OF BOTH TEMPORARY AND PERMANENT TEETH AND IN FULLY FORMED TEETH. IT WAS CONCLUDED THAT THE ANALYSIS OF TEETH OFFERS A MEANS FOR DETERMINING THE SR-90 CONTENT OF THE SKELETON IN SMALL POPULATIONS WHERE THERE IS NO POSSIBILITY OF OBTAINING ENOUGH SAMPLES OF BONE TISSUES FOR ACCURATE MEASUREMENTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*BIOLOGICAL CONCENTRATION, MAN + *STRONTIUM + FALLOUT + RADIATION SAFETY AND CONTROL

15-15764

KNIZHNIKOV VA + STEPANOV YS + PETUKHOVA EV + BARKHUDAROV RM
INGESTION OF FALLOUT WITH FOOD AND WATER BY THE POPULATION OF THE SOVIET UNION DURING 1963-64
GOSUDARSTVENNIY KOMITET PO ISPOL ZOVANIYU ATOMNOI ENERGII
AEC-TR-6769, PAPER 1 +. 21 PAGES, JULY 1966

DATA ARE PRESENTED ON THE CONTENT OF SR-90 AND CS-137 IN THE DIET IN THE USSR DURING 1963 AND 1964. IN THE USSR, 75% OF THE SR-90 AND 50% OF THE CS-137 ARE INGESTED WITH BREAD PRODUCTS. THE INGESTION OF SR-90 AND CS-137 BY THE RURAL POPULATION SHOWED MARKED VARIATIONS IN DIFFERENT REGIONS AND WHEN COMPARED WITH URBAN POPULATIONS. THE RATION IN DAY NURSERIES AND KINDERGARTENS IN THE CITIES CONTAINED ABOUT HALF THE SR-90 CONTENT OF THE ADULT DIET.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-15764 *CONTINUED*
*FALLOUT + *INGESTION + *UNION OF SOVIET SOCIALIST REPUBLICS + BIOLOGICAL CONCENTRATION, FOOD +
BIOLOGICAL CONCENTRATION, MAN + BIOLOGICAL CONCENTRATION, MILK + CESIUM + STRONTIUM + WATER, DRINKING

15-15765
USSR REPORTS ON NATURAL AND ARTIFICIAL RADIOACTIVITY IN DIET AND MAN
GOSUDARSTVENNYI KOMITET PO ISPOL ZOVANIYU ATOMNOI ENERGII
AEC-TR-6797 +. 70 PAGES, 1966

TRANSLATIONS ARE PRESENTED OF FIVE PAPERS SUBMITTED TO THE UNITED NATIONS SCIENTIFIC COMMITTEE
ON THE EFFECTS OF ATOMIC RADIATION BY THE USSR. ABSTRACTS OF THE PAPERS ARE PRESENTED
SEPARATELY. ONE PAPER WAS ABSTRACTED PREVIOUSLY AND APPEARED IN NSA VOL. 20 AS NUMBER 427.41.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*RADIATION SAFETY AND CONTROL + *UNION OF SOVIET SOCIALIST REPUBLICS

15-15766 ALSO IN CATEGORY 14
CAMBRAY RS + FISHER EM + BROOKS WL + PEIRSON DM
RADIOACTIVE FALLOUT IN AIR AND RAIN. RESULTS TO THE MIDDLE OF 1966
ATOMIC ENERGY RESEARCH ESTABLISHMENT, HARWELL, ENGLAND
AERE-R-5260 +. 48 PAGES, 6 FIGURES, 21 TABLES, NOVEMBER 1966

SAMPLES OF ATMOSPHERIC DUST AND RAINWATER WERE COLLECTED FROM THE UK AND OVERSEAS. RESULTS
ARE PRESENTED OF THE ANALYSES OF THESE SAMPLES FOR VARIOUS FISSION PRODUCTS AND CERTAIN OTHER
RADIONUCLIDES. THE CONCENTRATIONS OF CS-137 AND SR-90 IN AIR AND RAIN OVER THE UNITED
KINGDOM WERE, IN THE FIRST HALF OF 1966, ABOUT 40% OF THOSE FOR THE FIRST HALF OF 1965. THE
AVERAGE DEPOSITION OF CS-137 AND SR-90 IN THE UK FOR THE FIRST SIX MONTHS OF 1966 WAS ABOUT
55% OF THAT FOR THE CORRESPONDING PERIOD OF 1965. THE THIRD CHINESE EXPLOSION OF 9TH MAY
1966 TEMPORARILY CONTRIBUTED ABOUT 2% TO THE LONG-LIVED ACTIVITY. AN ESTIMATE IS MADE OF THE
TOTAL GLOBAL DEPOSITION OF SR-90 IN RAIN TO THE END OF 1965. THE EFFECTIVE AGE OF LONG-LIVED
FISSION PRODUCT DEBRIS IN THE TWO HEMISPHERES IS NOW SIMILAR ALTHOUGH THE DEPOSITION OF SR-90
STILL CONTINUES SIGNIFICANTLY LOWER IN THE SOUTHERN HEMISPHERE. CONCENTRATIONS OF
SHORT-LIVED FISSION PRODUCTS FROM THE CHINESE TEST OF 9TH MAY 1966 AND THE FRENCH TESTS OF
JULY - OCTOBER 1966 ARE GIVEN IN AN APPENDIX.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*FALLOUT + *RAINOUT + AIR + ATMOSPHERIC DIFFUSION, GLOBAL + CESIUM + DEPOSITION +
NUCLEAR EXPLOSION DEBRIS + SAMPLING + STRONTIUM + UNITED KINGDOM

15-15767
ANDERSON HF + SHEEHAN WE
ENVIRONMENTAL MONITORING REPORT- JANUARY-JUNE 1966
MOUND LABORATORY, MIAMISBURG, OHIO
MLM-1356 +. 22 PAGES, 3 FIGURES, 5 TABLES, SEPTEMBER 1, 1966

THE CONCENTRATION OF RADIOACTIVE MATERIALS DETECTED IN THE SURROUNDINGS OF MOUND LABORATORY,
MIAMISBURG, OHIO, IS PRESENTED FOR THE FIRST HALF OF 1966. THE CONCENTRATION OF
RADIONUCLIDES FROM MOUND LABORATORY IN THE GREAT MIAMI RIVER AND IN THE AIR WAS WITHIN THE
STANDARDS SPECIFIED BY THE ATOMIC ENERGY COMMISSION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*MOUND LABORATORY + *SURVEY, RADIATION, ENVIRONMENTAL + AIR + MONITOR, RADIATION, AIR +
MONITOR, RADIATION, STACK + PLUTONIUM + POLONIUM + SAMPLING + SURFACE WATER, NUCLIDE OCCURRENCE + TRITIUM

15-15768
JONES AR
THE DESIGN AND USES OF A MINIATURE RECORDING GAMMA-RAY DOSIMETER
ATOMIC ENERGY OF CANADA, LIMITED, CHALK RIVER, ONTARIO
AECL-2629 +. 17 PAGES, 7 FIGURES, 1 TABLE, JULY 1966

THE REPORT DESCRIBES THE EVOLUTION OF DESIGN OF THE DOSIMETER, ITS PERFORMANCE, AND
APPLICATION. THE DOSIMETER CONSISTS OF A REGULATED HIGH-VOLTAGE SUPPLY, A LOW-SENSITIVITY GM
COUNTER, AN ELECTROSTATIC SCALER, A MINIATURE WRIST-WATCH COUNTER, AND MEANS FOR CONTROLLING
POWER TAKEN BY THE HIGH-VOLTAGE SUPPLY AND CHECKING THE BATTERY. IT MEASURES DOSES TO THE
WEARER IN THE RANGE 4 MRAD TO 432 RAD AT RATES FROM 1 MRAD/H TO 100 RAD/H. THE BATTERY LASTS
FOR AT LEAST THREE MONTHS. THE DOSIMETER FITS INTO A SHIRT POCKET.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*DOSIMETRY, GENERAL + *GAMMA + *INSTRUMENTATION, RADIATION MONITORING + DOSE

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-15760
HANKINS DE
MODIFIED-SPHERE NEUTRON DETECTOR
LOS ALAMOS SCIENTIFIC LAB., NEW MEXICO
LA-3595 +. 39 PAGES, 14 FIGURES, 7 TABLES, 4 REFERENCES, OCTOBER 1966

CALCULATIONS WERE MADE BY USING THE ADJOINT-TRANSPORT PROGRAM TO DETERMINE THE RESPONSE OF A NEUTRON DETECTOR UTILIZING CADMIUM-LOADED POLYETHYLENE SPHERES OF 8-, 9-, AND 9 1/2-IN. DIAMETER. THE EFFECT ON THE ENERGY RESPONSE OF THE DETECTOR IS GIVEN AS A FUNCTION OF CADMIUM THICKNESS AND LOCATION OF THE CADMIUM IN THE SPHERE. THE EFFECT ON THE ENERGY RESPONSE OF THE DETECTOR IS GIVEN AS A FUNCTION OF CADMIUM THICKNESS AND LOCATION OF THE CADMIUM IN THE SPHERE. THE EFFECT ON THE ENERGY RESPONSE OF A VOID IN THE SPHERE, SUBSTITUTION OF BORON FOR CADMIUM, AND THE USE OF A PERFORATED CADMIUM LAYER WERE ALSO CALCULATED. A 9-IN. CADMIUM-LOADED SPHERE WAS MADE BY USING THE CALCULATED CADMIUM LOCATION AND THICKNESS. THE RESPONSE CURVE TO FAST AND THERMAL NEUTRONS WAS COMPARED WITH THE CALCULATED VALUE. THE 9-IN. CADMIUM-LOADED SPHERE HAD A RESPONSE SIMILAR TO THAT OF THE 10-IN. REM-RESPONDING SPHERE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*INSTRUMENTATION, RADIATION MONITORING + *NEUTRON + DOSIMETRY, GENERAL + FAST NEUTRON + THERMAL NEUTRON

15-15772
HEALTH AND SAFETY ACTIVITIES REPORT FOR 1965
GOODYEAR ATOMIC CORP., PIKETON, OHIO
GAT-R-379 +. 66 PAGES, MAY 4, 1966

THE HEALTH AND SAFETY PROGRAM AT GOODYEAR ATOMIC CORPORATION IS DESCRIBED IN DETAIL. ACTIVITIES DURING 1965 IN THE FIELDS OF SAFETY, EQUIPMENT INSPECTIONS, FIRE PROTECTION AND PREVENTION, MEDICAL SERVICE, INDUSTRIAL HYGIENE, AND HEALTH PHYSICS ARE REPORTED. THE ACCIDENT FREQUENCY RATE IN 1965 WAS 1.37, A REDUCTION OF 35% FROM THE 1964 RATE. AIRBORNE ALPHA ACTIVITY DURING 1965 INCREASED OVER THE 1964 VALUE, WHILE BETA-GAMMA AIRBORNE ACTIVITY DECREASED OVER THE SAME PERIOD. THE AVERAGE ANNUAL CONCENTRATION OF BOTH ALPHA AND BETA-GAMMA ACTIVITY IN NEIGHBORING STREAMS, CREEKS, AND RIVERS INCREASED OVER THE 1964 VALUES. THE OVERALL 1965 ANNUAL AVERAGE BACKGROUND EXPOSURE WAS 27.2% OF THE MAXIMUM PERMISSIBLE EXPOSURE LEVEL.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*SURVEY, RADIATION, ENVIRONMENTAL + AIR + ALPHA EMITTER + GROSS ALPHA + GROSS BETA + GROSS GAMMA + SURFACE WATER, NUCLIDE OCCURRENCE

15-15773
SURVEY OF ENVIRONMENTAL RADIOACTIVITY FOR PERIOD JANUARY 1-JUNE 30, 1965
AMES LABORATORY, IOWA STATE UNIVERSITY
TID-22173 +. 16 PAGES, JUNE 1965

THE ENVIRONMENTAL MONITORING REPORT OF THE AMES LABORATORY OF THE USAEC IS THE PREOPERATIONAL PROGRAM FOR THE AMES LABORATORY RESEARCH REACTOR (ALRR). THE PROGRAM CONSISTS OF AIR SAMPLES, SOIL, VEGETATION, RIVER WATER, BOTTOM SEDIMENT, PRECIPITATION, AND WELL WATER SAMPLES, AND COVERS THE PERIOD FROM JANUARY 1, 1965, TO JUNE 30, 1965. IT IS CONCLUDED THAT RADIOACTIVITY LEVELS RECORDED REPRESENT BACKGROUND CONDITIONS FOR THE ABOVE-STATED PERIOD. AVERAGE LEVELS OF RADIOACTIVITY WERE RECORDED FOR THIS PERIOD IN MICRO-MICROCURIES/CU. METER FOR AIR, MICRO-MICROCURIES/LITER FOR RIVER WATER, PRECIPITATION, AND WELL WATER, AND MICROMICROCURIES/GRAM FOR BOTTOM SEDIMENT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*SURVEY, RADIATION, ENVIRONMENTAL + AIR + BIOLOGICAL CONCENTRATION, VEGETATION + GROUND WATER, NUCLIDE OCCURRENCE + RAINOUT + SAMPLING + SOIL, NUCLIDE OCCURRENCE + SURFACE WATER, NUCLIDE OCCURRENCE + SURFACE WATER, SEDIMENT

15-15775 ALSO IN CATEGORY 14
BRESLIN AJ + GEORGE AC + LECLARE PC
THE CONTRIBUTION OF URANIUM SURFACE CONTAMINATION TO INHALATION EXPOSURES
NEW YORK OPERATIONS OFFICE, U.S. ATOMIC ENERGY COMMISSION, NEW YORK
HASL-175 + CONF-660403-3 +. 20 PAGES, MAY 1966, FROM INTERNATIONAL SYMPOSIUM ON RADIOLOGICAL PROTECTION OF THE WORKER BY THE DESIGN AND CONTROL OF HIS ENVIRONMENT, BOURNEMOUTH, ENG.

IN ESTIMATING INHALATION EXPOSURES THAT MAY OCCUR FROM RADIOACTIVITY TRANSFERRED FROM SURFACES INTO THE AIR, MOST INVESTIGATORS HAVE USED RESUSPENSION FACTORS DERIVED EXPERIMENTALLY. EXPERIMENTAL PROCEDURES CONSISTED OF MEASURING RADIOACTIVITY ON SURFACES AND IN THE AIR SIMULTANEOUSLY, WHILE CONTAMINATED SURFACES WERE BEING DISTURBED IN A MANNER THAT SIMULATED CONDITIONS THAT MIGHT BE FOUND IN INDUSTRIAL AND LABORATORY FACILITIES. TAKING A SOMEWHAT

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-15775 *CONTINUED*

DIFFERENT APPROACH, THE AUTHORS MEASURED THE ACTUAL INHALATION EXPOSURES OF EMPLOYEES FROM CONTAMINATION ORIGINATING ON SURFACES IN A URANIUM PLANT. VALIDITY OF THE TECHNIQUE HAD BEEN DEMONSTRATED IN AN EARLIER STUDY. SURFACE CONTAMINATION WAS FOUND TO CONTRIBUTE A VERY SMALL PROPORTION OF THE TOTAL INHALATION EXPOSURES EVEN IN AREAS WHERE LEVELS OF SURFACE CONTAMINATION WERE HIGH WITH RESPECT TO SUGGESTED STANDARDS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*INHALATION + *SURFACE CONTAMINATION + ALPHA EMITTER + PERSONNEL EXPOSURE, RADIATION + RADIATION SAFETY AND CONTROL + URANIUM

15-15776 ALSO IN CATEGORY 14

POWELL DR + GLOYNA EF

RADIOACTIVITY TRANSPORT IN WATER - THE TRANSPORT OF ZN-65 IN AN AQUEOUS ENVIRONMENT. TECHNICAL REPORT NO.

5

TEXAS UNIVERSITY, AUSTIN

TID-22876 + EHE-09-6403 +. 114 PAGES, FIGURES, TABLES, SEPTEMBER 1, 1964

THE PURPOSE OF THIS STUDY WAS TO EVALUATE THE TRANSPORT OF ZN-65 UNDER SIMULATED RIVER CONDITIONS. MEASUREMENTS WERE MADE OF THE DISTRIBUTION OF ZN-65 AMONG THE SEDIMENT, PLANTS, SOLUTION, AND SUSPENDED MATERIAL IN A RESEARCH FLUME. IN THE FLOWING SYSTEM, THE GREATEST FRACTION OF ZN-65 WAS ASSOCIATED WITH THE SOLUTION AND SUSPENDED MATERIAL. IT IS EXPECTED THAT ZN-65 IN A NONFLOWING SYSTEM SUCH AS A LAKE WOULD BECOME MAINLY ASSOCIATED WITH THE BOTTOM SEDIMENT. HOWEVER, FOR ROOTED AND MACROSCOPIC PLANTS GROWN IN EITHER THE CLOSED OR FLOWING ECOLOGICAL SYSTEMS, THERE APPEARS TO BE NO SIGNIFICANT DIFFERENCE IN THE UPTAKE OF ZN-65. IT IS CONSIDERED THAT PHOTOSYNTHESIS IS THE PRIME ELEMENT IN THE UPTAKE AND RELEASE OF ZN-65 IN PLANTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*FISSION PRODUCT TRANSPORT + *HYDROLOGICAL CONSIDERATION, RATE OF MOVEMENT + *SURFACE WATER, SEDIMENT + *ZINC + BIOLOGICAL CONCENTRATION, VEGETATION + SOIL + SOIL, PROPERTY + SORPTION + SURFACE WATER, PROPERTY + SURFACE WATER, SUSPENDED MATERIAL

15-15777 ALSO IN CATEGORY 14

HOFFMANN F + VAN LINT JM + VANDE POEL M

WASTE TREATMENT PLANT ACCOUNTING PROCEDURE, APPLICATION

SOCIETE BELGE POUR L'INDUSTRIE NUCLEAIRE, BRUSSELS

TID-22427 +. 37 PAGES, TABLES, NOVEMBER 1965

COST OF RUNNING THE MCL TREATMENT PLANTS ON BEHALF OF THE C.E.N. IS REPORTED. ALL COSTS ARE QUOTED IN BELGIAN FRANCS. TWO KINDS OF FIGURES ARE QUOTED. IN ONE TABLE, ACTUAL FIGURES OF THE DECEMBER 1964 MONTHLY RUNNING EXPENSES ARE GIVEN. ALTHOUGH THE OTHER FIGURES QUOTED ARE NOT CONSIDERED AS ACTUAL, THEY DO GIVE A VERY ACCURATE IDEA OF RUNNING EXPENSES AVERAGED OVER THE LAST FIVE YEARS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*WASTE TREATMENT, ECONOMICS + BELGIUM + WASTE DISPOSAL, GENERAL + WASTE MANAGEMENT + WASTE TREATMENT, LIQUID

15-15778

HANSON WC

CONTAMINATION OF SOFT TISSUES OF INFANTS AND CHILDREN WITH RADIOACTIVE FALLOUT AS EXEMPLIFIED BY CS-137 AND I-131

BATTELLE-NORTHWEST, RICHLAND, WASHINGTON

BNWL-SA-572 + CONF-660309-1 +. 25 PAGES, MARCH 7, 1966, FROM CONFERENCE ON PEDIATRIC SIGNIFICANCE OF PEACETIME RADIOACTIVE FALLOUT, SAN DIEGO, CALIF.

AMOUNTS, ROUTES, AND RATE OF CS-137 ACCUMULATION IN ALASKAN ESKIMO AND INDIAN POPULATIONS ARE DISCUSSED. IN THE ARCTIC, ECOLOGIC FACTORS FACILITATE THE EFFECTIVE TRANSFER OF CS-137 THROUGH THE LICHEN-TO-CARIBOU-TO-MAN FOOD WEB. THE DISTRIBUTIONS OF CS-137 BODY BURDENS WITHIN ALASKAN NATIVE POPULATIONS SHOWED IMPORTANT INFLUENCES OF ETHNIC BACKGROUND AND CULTURAL PRACTICES OF THE PEOPLE. CESIUM-137 CONCENTRATIONS WERE GREATEST IN PERSONS CONSUMING THE LARGEST AMOUNTS OF CARIBOU FLESH AND WERE INVERSELY RELATED TO AGE. NO VARIATION WITH SEX WAS NOTED. WHOLE-BODY DOSE TO THE ANATUVUK PASS POPULATION DURING 1964 WAS ABOUT 30% OF THE AMOUNT RECOMMENDED AS MAXIMUM PERMISSIBLE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*BIOLOGICAL CONCENTRATION, MAN + *FALLOUT + BIOLOGICAL CONCENTRATION, ANIMAL + CESIUM + DOSE + ECOLOGICAL CONSIDERATION + IODINE

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-15779
DOBYS BM

A STUDY OF THE PHYSIOLOGICAL FUNCTION AND HISTOLOGICAL CHANGES IN THYROIDS IRRADIATED WITH RADIOACTIVE IODINE, ANNUAL REPORT, JUNE 1, 1965 - JUNE 1, 1966
WESTERN RESERVE UNIVERSITY, CLEVELAND, OHIO
TID-23228 +. 8 PAGES, 5 REFERENCES, JULY 1, 1966

PROGRESS IN CLINICAL AND EXPERIMENTAL STUDIES OF THE EFFECTS OF RADIATION ON THE THYROID IS REPORTED. CLINICAL STUDIES INCLUDED INVESTIGATIONS OF RADIATION EFFECTS ON THYROID FUNCTION, NUCLEI IN THYROID TISSUE, AND CHROMOSOMES IN CIRCULATING LEUKOCYTES OF PATIENTS TREATED WITH I-131. EXPERIMENTAL DATA WERE COLLECTED ON RATS ADMINISTERED I-131 AND WERE CONCERNED WITH DNA SYNTHESIS IN IRRADIATED AND ANTITHYROID-DRUG STIMULATED RATS AND WITH NUCLEAR CHANGES AT THE TIME OF NEOPLASM FORMATION IN RAT THYROIDS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*BIOMEDICAL + *RADIATION EFFECT + IODINE

15-15780

ALSO IN CATEGORY 14

LANE WB

FALLOUT SIMULANT DEVELOPMENT. THE SORPTION REACTIONS OF CERIUM, CESIUM, RUTHENIUM, STRONTIUM, AND ZIRCONIUM-NIOBIUM.

STANFORD RESEARCH INSTITUTE, MENLO PARK, CALIF.

AD-635547 + SRI-5068 +. 30 PAGES, REFERENCES, NOVEMBER 1965

THIS REPORT DESCRIBES THE PREPARATION OF SYNTHETIC FALLOUT. METHODS ARE DISCUSSED FOR SIMULATING SELECTED PROPERTIES OF RADIOACTIVE FALLOUT SO THAT EXPERIMENTS CAN BE CONDUCTED TO EVALUATE RADIOLOGICAL HAZARDS. THE EXPERIMENTS MEASURED THE SOLUBILITY OF RADIONUCLIDES WHICH WOULD BE AVAILABLE TO CYCLE IN THE FOOD CHAINS. HEATING THE FALLOUT PARTICLES TO HIGH TEMPERATURES REDUCED THE SOLUBILITY OF ALL NUCLIDES STUDIED. THE METHODS CAN BE USED BY OTHER RESEARCHERS TO PREPARE SYNTHETIC FALLOUT HAVING SELECTED SOLUBILITY AND AVAILABILITY PROPERTIES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*FALLOUT + *SORPTION + CERIUM + CESIUM + RUTHENIUM + SIMULATION + STRONTIUM + ZIRCONIUM

15-15781

ALSO IN CATEGORY 14

THE UPTAKE OF STRONTIUM BY VARIOUS TYPE CROPS AND FACTORS AFFECTING UPTAKE AND TRANSLOCATION OF STRONTIUM AND CALCIUM NATIVE TO SOIL. TECHNICAL PROGRESS REPORT

ARIZONA AGRICULTURAL EXPERIMENT STATION, TUCSON

TID-23271 +. 36 PAGES, 1966

THIS STUDY SHOWED THAT CERTAIN SPECIES OF ALGAE ABSORB CALCIUM PREFERENTIALLY OVER STRONTIUM. IN ALL BUT ONE OF THE SPECIES STUDIED, STRONTIUM DID NOT APPEAR TO COMPETE IN THE ABSORPTION OF CALCIUM BY ALGAL CELLS BUT WAS ABSORBED IN ADDITION TO THE NEEDED CALCIUM. INCREASED MICROBIAL ACTIVITY REDUCES RADIOSTRONTIUM MOVEMENT. MOVEMENT OF RADIOSTRONTIUM FROM ALGAL TISSUES IS LOW, AS IS THE CASE WITH MOVEMENT OF RADIOSTRONTIUM FROM OTHER PLANT TISSUES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*BIOLOGICAL CONCENTRATION, ALGAE + *SOIL, NUCLIDE OCCURRENCE + *STRONTIUM +
BIOLOGICAL CONCENTRATION, VEGETATION + CALCIUM + ECOLOGICAL CONSIDERATION + SOIL, PROPERTY +
SOIL, RADIONUCLIDE MOVEMENT, THROUGH

15-15782

ALSO IN CATEGORY 14

SUCHOZA BP

SHIPPINGPORT ATOMIC POWER STATION DISPOSITION OF RADIOACTIVE WASTE FROM UNDERGROUND STORAGE TANKS

RETTIS ATOMIC POWER LABORATORY, WEST MIFFLIN, PA.

WAPD-T-1851 + CONF-651101-52 +. 31 PAGES, 12 FIGURES, 3 TABLES, REFERENCES, NOVEMBER 1965 FROM 13TH CONFERENCE ON REMOTE SYSTEMS TECHNOLOGY, WASHINGTON, D. C.

THE DESIGN OF A STATION FOR ECONOMICALLY REMOVING AND DISPOSING OF RADIOACTIVE WASTES FROM THE SHIPPINGPORT ATOMIC POWER STATION IS DESCRIBED. THE DESIGN INCLUDES THE CAPABILITY OF TEMPORARILY STORING SOME 3100 CU. FT OF WASTES IN TWO UNDERGROUND STORAGE TANKS. THE WASTE IS BASICALLY SPENT DEMINERALIZER RESIN WITH SOME INCINERATOR ASH RESULTING FROM PLANT OPERATIONS. THE DESIGN APPLIES PRIMARILY TO THE REMOVAL OF SOLID DEMINERALIZER RESIN. ANY REMOVAL OF INCINERATOR ASH IS A CONSEQUENCE OF THE BASIC OPERATION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*SHIPPINGPORT + *WASTE MANAGEMENT + *WASTE STORAGE + TRANSPORTATION AND HANDLING + WASTE DISPOSAL, LIQUID +
WASTE DISPOSAL, SOLID

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-15783

BARKMAN JR

A REVIEW OF GAMMA COUNTING EXPERIENCE FOR HETEROGENEOUS MATERIALS IN THE OAK RIDGE Y-12 PLANT
Y-12 PLANT, UNION CARBIDE CORP.

Y-MA-901 + CONF-661011-4 +. 8 PAGES, SEPTEMBER 23, 1966, FROM AEC CONTRACTORS NUCLEAR MATERIALS
MANAGEMENT MEETING, BERKELEY, CALIFORNIA

THREE METHODS OF GAMMA COUNTING OF HETEROGENEOUS MATERIAL ARE DESCRIBED. THESE ARE - PORTABLE
METERS, A MOVING-BELT COUNTER, AND A COUNTER DESIGNED TO ACCOMMODATE 55-GAL DRUMS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*COUNTER + *GAMMA + FABRICATION + INSTRUMENTATION, RADIATION MONITORING + URANIUM

15-15784

STROEMME A

INDUCED RADIOACTIVITY IN THE COLLIMATOR SYSTEM OF A 31 MEV BROWN BOVERI BETATRON
NORSK RADIUMHOSPITAL, OSLO

NYO-3364-21 +. 8 PAGES, 2 TABLES, 1966

DURING USE, SOME RADIOACTIVITY IS INDUCED IN THE COLLIMATOR SYSTEM OF THE BBC 31-MEV BETATRON.
DIRECT HANDLING OF THE EQUALIZER SYSTEM IS TO BE AVOIDED BECAUSE OTHERWISE THE DOSES TO THE
HANDS CAN EXCEED 150-200 MR A DAY. BUT IF THE HANDS ARE PLACED NOT CLOSER THAN ABOUT 15 CM
FROM THE EQUALIZER SYSTEM, THE DOSE TO THE HANDS WILL NOT EXCEED 3 OR 4 MR EVEN ON A BUSY
DAY. IF CARE IS TAKEN, THE RADIATION HAZARDS DUE TO INDUCED RADIOACTIVITY AFTER COLLIMATOR
IRRADIATION ARE OF NO PRACTICAL IMPORTANCE. IN MODERN BETATONS, THE COLLIMATOR SYSTEM WITH
THE FIELD EQUALIZER IS SAFELY MOUNTED INSIDE THE APPARATUS AND REMOTELY CONTROLLED, AND THERE
IS THUS NO RADIATION HAZARD FROM THE COLLIMATOR SYSTEM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*BIOMEDICAL + *DOSE + ACTIVATION + RADIATION SAFETY AND CONTROL

15-15785

LAWRENCE RADIATION LABORATORY HANDBOOK

UNIVERSITY OF CALIFORNIA, BERKELEY, LAWRENCE RADIATION LABORATORY

UCRL-3307 (REV. 3) +. 126 PAGES, 1 FIGURE, 1 REFERENCE, OCTOBER, 1966

A COMPILATION OF OPERATIONAL TECHNIQUES AND PERFORMANCE SPECIFICATIONS ON COUNTING EQUIPMENT
IN USE AT LAWRENCE RADIATION LABORATORY IS PRESENTED. TOPICS INCLUDED ARE AMPLIFIERS, CABLES
AND COAXIAL COMPONENTS, COINCIDENCE SYSTEMS AND DISCRIMINATORS, COMPONENTS FOR AMPLITUDE
ANALYSIS, DEFINITIONS AND STANDARDS, ELECTRONIC CIRCUITS FOR SPARK CHAMBERS, OSCILLOSCOPES
AND MONITORING, PHOTOMULTIPLIERS AND SCINTILLATORS, SCALERS AND READOUT EQUIPMENT, AND
WAVEFORM GENERATORS AND POWER SUPPLIES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*COUNTER + *PROCEDURES AND MANUALS + INSTRUMENTATION, NUCLEAR + INSTRUMENTATION, RADIATION MONITORING +
LRL (LAWRENCE RADIATION LABORATORY)

15-15786

PROKSCH E + SLAIS E

PERFLUOROALKANES AS FAST-NEUTRON INSENSITIVE CHEMICAL DOSIMETERS

OESTERREICHISCHE STUDIENGESellschaft FUER ATOMENERGIE G.M.B.H, SEIBERSDORF

SGAE-CH-37/1966 + CONF-661005-24 +. 16 PAGES, 1966, SYMPOSIUM ON SOLID-STATE AND CHEMICAL RADIATION
DOSIMETRY, VIENNA, AUSTRIA

PERFLUOROALKANES ARE ESPECIALLY SUITABLE FOR USE AS GAMMA DOSIMETERS IN MIXED RADIATION
FIELDS. THEIR SENSITIVITY TO FAST AND THERMAL NEUTRONS IS SMALL, AND THE YIELD OF THE
GASEOUS PRODUCTS SHOULD BE A CONVENIENT MEASURE OF ABSORBED DOSE. BY USING GAS
CHROMATOGRAPHY, THE AMOUNT OF FLUOROCARBON NECESSARY FOR A SINGLE MEASUREMENT CAN BE REDUCED
TO ABOUT 100 MILLIGRAMS. AS EXAMPLES, THE PERFLUOROKEROSENE MIXTURES AS WELL AS PURE
PERFLUORO-N-HEXANE WERE INVESTIGATED. BOTH WERE SUITABLE, ESPECIALLY THE PERFLUORO-N-HEXANE.
WITHOUT DEGASSING, IT MAY BE USED WITH GAS YIELDS CONSTANT TO PLUS OR MINUS 3% IN THE DOSE
RANGE FROM 3 TO 40 MRAD. A VARIATION IN DOSE-RATE FROM ABOUT 50 KRAD/HR TO 100 MRAD/HR HAD
BUT A SLIGHT INFLUENCE ON YIELDS. FOR MEASUREMENT OF LOWER DOSES, COMPLETE DEGASSING AND
FURTHER PURIFICATION OF THE MATERIAL WAS NECESSARY.

AVAILABILITY - MICROCARD EDITIONS, ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISC. 54669

*DOSIMETRY, GENERAL + DOSE + FAST NEUTRON + RADIATION SAFETY AND CONTROL

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-15787 ALSO IN CATEGORY 14

WILTSHIRE LL + OWEN WL
REMOVAL OF SIMULATED FALLOUT FROM ASPHALT STREETS BY FIREHOSING TECHNIQUES
NAVAL RADIOLOGICAL DEFENSE LABORATORY, SAN FRANCISCO, CALIF.
AD-641480 + USNRDL-TR-1049 +. 96 PAGES, FIGURES, TABLES, JULY 29, 1965 -

FIREHOSING IS EVALUATED AS A PROCEDURE FOR CLEANING ASPHALT PAVED STREETS CONTAMINATED WITH FALLOUT FROM A LAND-SURFACE NUCLEAR DETONATION. PRINCIPAL TESTS, CONDUCTED WITH RADIO-TRACED SIMULANTS, MEASURED THE EFFECTS OF HOSING RATE, STREAM PATTERN, PARTICLE SIZE, AND MASS LOADING. A SLOW HOSING RATE WAS MORE EFFECTIVE THAN A FASTER RATE, REGARDLESS OF LOADING OR PARTICLE-SIZE RANGE. THE EFFECTIVENESS IMPROVED WITH INCREASED PARTICLE-SIZE RANGE AND INCREASED LOADING. AN EXPERIMENTAL NRDL FLARE NOZZLE APPEARED TO IMPROVE PERFORMANCE AT NOZZLE PRESSURES GREATER THAN 150 PSI.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*CIVIL OFFENSE + *DECONTAMINATION + *SURFACE CONTAMINATION + FALLOUT + PARTICLE SIZE

15-15792

THORNGATE JH
DOSIMETRY, SHIELDING AND SCATTERING. PART II
OAK RIDGE NATIONAL LABORATORY
ORNL-P-2686 + CONF-660815-2 +. 38 PAGES, 1966, FROM CONFERENCE ON PRINCIPLES OF RADIATION PROTECTION, OAK RIDGE, TENNESSEE

A DISCUSSION IS PRESENTED ON RESEARCH, PAST AND PRESENT, IN RADIATION DOSIMETRY. RESEARCH RELATED CLOSELY TO RADIATION PROTECTION AND THE DESIGN AND DEVELOPMENT OF DOSIMETERS AND DOSIMETRIC SYSTEMS IS INCLUDED. TYPICAL RESEARCH PROBLEMS ENCOUNTERED ARE NUCLEAR ACCIDENT, RADIOBIOLOGICAL AND RADIOCHEMICAL EXPERIMENTS, AND EXPERIMENTS TO MEASURE DEPTH DOSE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*DOSIMETRY, GENERAL + DOSE + INSTRUMENTATION, RADIATION MONITORING + RADIATION SAFETY AND CONTROL

15-15793

BATTEN ES
A METHOD OF COMPUTING THE DISTRIBUTION FUNCTION OF RADIOACTIVE DOSES FROM MULTIPLE NUCLEAR DETONATIONS
RAND CORP., SANTA MONICA, CALIF.
RM-3189PR + AD-285975 +. 43 PAGES, FIGURES, REFERENCES, SEPTEMBER 1962

A COMPUTATIONAL METHOD IS PRESENTED FOR ESTIMATING FALLOUT CONTAMINATION FROM MULTIPLE NUCLEAR DETONATIONS FOR A SMALL GEOGRAPHICAL AREA. THE METHOD ACCOUNTS FOR THE OVERLAPPING OF FALLOUT PATTERNS ENCOUNTERED IN A VARIETY OF WIND CONDITIONS. THE METHOD IS APPLIED TO A TYPICAL TARGET SYSTEM. LIMITATIONS IMPOSED BY UNCERTAINTIES IN THE INITIAL ASSUMPTIONS ARE DISCUSSED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*FALLOUT + *NUCLEAR DETONATION + ANALYTICAL MODEL + DOSE + METEOROLOGY + NUCLEAR EXPLOSION DEBRIS + WIND STATISTICS

15-15794

BASIC RESEARCH IN SEMICONDUCTOR DETECTOR-DOSIMETER CHARACTERISTICS, AS APPLIED TO THE PROBLEMS OF WHOLE-BODY DOSIMETRY. ANNUAL PROGRESS REPORT
SOUTHERN METHODIST UNIVERSITY, DALLAS, TEXAS
N-65-32043 + NASA-CR-64562 +. 52 PAGES, JULY 1965

VARIOUS FACETS OF EXPERIMENTAL AND THEORETICAL RESEARCH WERE REPORTED, INCLUDING FABRICATION OF LITHIUM-DRIFTED SILICON SEMICONDUCTOR DETECTORS, STOPPING-POWER MEASUREMENTS, CHARGE-PULSE RESPONSE OF SILICON DETECTORS, DETECTOR LIFETIME BEHAVIOR STUDIES, LINEAR AND MONTE CARLO STOPPING-POWER CALCULATIONS, CALCULATION OF EFFECTIVE Z, A, AND I VALUES, AND DEPTH-DOSE-DISTRIBUTION CALCULATIONS. A METHOD FOR EXTRACTING INFORMATION FROM PROTON-STOPPING EXPERIMENTS IS DESCRIBED. A COMPUTER PROGRAM ON THE MONTE CARLO PROTON TRANSPORT IS PRESENTED, AND DATA SHEETS ARE INCLUDED FOR A TEST PROBLEM IN WHICH THE SLOWING DOWN OF PROTONS IN SILICON FROM 187 TO 147 MEV IS STUDIED. ABSTRACTS OF STUDIES ON RELATED SUBJECTS ARE ALSO INCLUDED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*DOSIMETRY, GENERAL + *INSTRUMENTATION, RADIATION MONITORING + COMPUTER PROGRAM + DOSE + MONTE CARLO

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-15797 ALSO IN CATEGORY 14
GERVAISE J + MALLET C
GEOLOGIC AND GEOTECHNICAL STUDIES ON PROPOSED SITES FOR A 300 GEV ACCELERATOR
EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH, SWITZERLAND
UCRL-TRANS-1220 +. 48 PAGES, NOVEMBER 1965, TRANSLATED FROM REPORT AR-INT-SG-65-28

A QUESTIONNAIRE FOR AIDING IN SELECTING A SITE FOR A 300-BEV SYNCHROTRON IS INCLUDED. ALL NECESSARY GEOLOGICAL TERMS NECESSARY FOR THE ENGINEERS UNDERSTANDING ARE DEFINED AND DISCUSSED IN DETAIL. ROCK MECHANICS AND MECHANICAL BORINGS OF THE SELECTED SITE ARE DISCUSSED.

AVAILABILITY - JOHN CRERAR LIBRARY, 35 WEST 33RD ST., CHICAGO, ILLINOIS 60616

*ACCELERATOR + *FRANCE + *GEOLOGICAL CONSIDERATION, GENERAL + GEOLOGICAL CONSIDERATION, GEOPHYSICAL + GEOLOGICAL CONSIDERATION, STRATIGRAPHY

15-15799 ALSO IN CATEGORY 14
COMAR CL + WENTWORTH RA + LENGEMANN FW
METABOLISM OF SELECTED RADIONUCLIDES FED IN VARIOUS PHYSICAL FORMS TO ANIMALS. FINAL REPORT, JUNE 4, 1964
- JUNE 30, 1965
NEW YORK STATE VETERINARY COLLEGE, ITHACA
AD-626320 +. 41 PAGES, FIGURES, REFERENCES, JUNE 1965

BODY RETENTION AND SECRETION INTO MILK WERE DETERMINED FOR SR-85 AND CS-134 FROM THE FOLLOWING SOURCES - SIMULANTS OF LOCAL FALLOUT, SR-85 NITRATE AND CHLORIDE, AND CS-134 CHLORIDE. FOUR COWS, 15 GOATS, AND 16 HOGS WERE USED. THE WHOLE-BODY COUNTER WAS EMPLOYED TO MEASURE RETENTION IN THE GOATS AND HOGS. THE BIOLOGICAL AVAILABILITY OF RADIOCESIUM AND STRONTIUM DEPENDS ON THE SOLUBILITY CHARACTERISTICS OF THE FALLOUT SIMULANT AND APPEARS TO BE PREDICTABLE FROM IN VITRO TESTS UNDER SOME CONDITIONS. INTERSPECIES DIFFERENCES IN BIOLOGICAL AVAILABILITY WERE NOT LARGE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65, MICROFICHE

*BIOLOGICAL CONCENTRATION, ANIMAL + *FALLOUT + CESIUM + COUNTER, WHOLE BODY + ECOLOGICAL CONSIDERATION + STRONTIUM

15-15800
FOX SA
DEVELOPMENT OF AN AUTOMATIC REMOTE RADIATION MONITORING (ARRM) SYSTEM
NUCLEAR-CHICAGO CORP., DES PLAINES, ILL.
AD-634040 +. 93 PAGES, DECEMBER 31, 1965

THIS REPORT CONTAINS ENGINEERING AND PERFORMANCE DATA ON A PROTOTYPE REMOTE AUTOMATIC MONITORING SYSTEM DESIGNED FOR USE IN LOCAL EMERGENCY OPERATING CENTERS. THE DEVELOPMENT EFFORT INCLUDED BUT WAS NOT LIMITED TO DESIGN AND CONSTRUCTION OF A DETECTION SYSTEM WHICH TRANSMITS DIGITAL RADIATION DATA ON COMMAND FROM A REMOTE MONITOR LOCATION, INCORPORATION OF SENSOR-STATION IDENTIFICATION FOR SERIAL LINE SYSTEMS, PRODUCTION OF ONE COMPLETE TENSOR STATION SYSTEM FOR FIELD EVALUATION. THE SYSTEM WILL TRANSMIT DATA OVER COMMERCIAL TELEPHONE LINES AND PROVIDE CONTROL FOR OPERATION OF RADIOFREQUENCY COMMUNICATION EQUIPMENT. AN INVESTIGATION OF DATA STORAGE AND RETRANSMISSION SYSTEMS WAS PERFORMED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*CIVIL DEFENSE + *INSTRUMENTATION, RADIATION MONITORING + MONITOR, RADIATION, GENERAL

15-15801
DISTENFELD C + RISHOP W
RADIATION MONITORING AND DOSIMETRY WITH INTEGRATING PULSE DISCHARGE IONIZATION CHAMBER DETECTORS
BROCKHAVEN NATIONAL LAB., UPTON
BNL-9593 + CONF-650616-8 +. 18 PAGES, FROM HEALTH PHYSICS SOCIETY ANNUAL MEETING, LOS ANGELES, CALIF.

THE ION CHAMBER CONSISTS OF A PRESSURE VESSEL, INTERNALLY MOUNTED GAS DISCHARGE TUBE, ANODE SUPPORT STRUCTURE, AND OPTICAL PLASTIC INNER LINING. CHAMBERS ARE AVAILABLE WITH EITHER A FREON OR ETHYLENE GAS FILLING OF ABOUT 10 ATM. GAMMA SENSITIVITY DEPENDS ON THE FILLER GAS AND LINER, AND IS 0.25 AND 0.6 MRAD FOR FREON AND ETHYLENE GAS RESPECTIVELY. THE GAMMA AND NEUTRON-ENERGY-RESPONSE CHARACTERISTICS, TOGETHER WITH RATE-DEPENDENCE EFFECTS WERE INVESTIGATED AND ARE DISCUSSED. A TRANSISTORIZED, PORTABLE, DOSE INTEGRATOR, WITH ADJUSTABLE ALARM LEVEL, WAS DEVELOPED AS AN AID IN CONTROLLING MISSION EXPOSURE TO EITHER GAMMA OR MIXED FIELD RADIATION. THE DEVICE CAN BE SET TO ALARM AT ANY ABSORBED DOSE BETWEEN 0.25 AND 600 MRAD IN INCREMENTS OF 0.25 OR 0.6 MRAD. COSMOTRON AREA MONITORING CONSISTS OF A 16-CHANNEL SYSTEM DESIGNED TO ALARM ABOVE ABOUT 1.2 MREM/HR.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-15801 *CONTINUED*

*INSTRUMENTATION, RADIATION MONITORING + DOSE + DOSIMETRY, GENERAL + MONITOR, RADIATION, GENERAL

15-15804 ALSO IN CATEGORY 14

REQUIREMENTS FOR LOCAL PLANNING TO COVER HAZARDS OF FALLOUT. VOLUME I

DUNLAP AND ASSOCIATES, INC., DARIEN, CONN.

AD-611764 + DRD-64-110, VOL. 1 +. 63 PAGES, JANUARY 1965

THE DEVELOPMENT OF EFFECTIVE PLANS FOR ASSIGNING SHELTERS TO POPULATION AND FOR BRINGING THE POPULATION TO THE SHELTER WAS STUDIED. TWO MEDIUM-SIZED TOWNS IN CONNECTICUT, STANFORD AND WATERBURY, WERE STUDIED IN DETAIL. STUDIES WERE MADE OF THE VARIOUS SPEEDS OF MOVEMENT TO SHELTER AND THEIR EFFECTS UPON RATE AT WHICH THE POPULATION WAS SHELTERED. PLANNING PROBLEMS ASSOCIATED WITH PRIMARY AND SECONDARY FIRES WERE GIVEN CURSORY EXAMINATION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*CIVIL DEFENSE + *FALLOUT + RADIATION SAFETY AND CONTROL

15-15805

GOODMAN LJ + PEARLMAN M

MOUSE PHANTOM DEPTH DOSE STUDIES AT THE HEALTH PHYSICS RESEARCH REACTOR OF THE OAK RIDGE NATIONAL

LABORATORY

COLUMBIA UNIVERSITY

CONF-650-616-16 +. 25 PAGES, 3 REFERENCES

MEASUREMENTS IN MOUSE PHANTOMS WERE MADE FOR VARIOUS PHANTOM CONFIGURATIONS TO DETERMINE THE DISTRIBUTION OF DOSE ALONG THE AXIS AND THROUGH THE CROSS SECTION OF A MOUSE. SCATTERING FROM ONE OR TWO ADJACENT MICE WAS SMALL, BUT ATTENUATION PRODUCED SIGNIFICANT VARIATIONS IN ABSORBED DOSE. THE ATTENUATION ALONG THE AXIS OF A MOUSE WAS ALMOST TWO-THIRDS, AND EVEN THE SHIELDING PRODUCED BY ONE MOUSE REDUCED THE DOSE TO THE SHIELDED MOUSE BY MORE THAN 30%. IN ADDITION, THE TISSUE KERMA RATE IN FREE AIR AT VARIOUS REACTOR POWER LEVELS WAS MEASURED, AND THE RATIO OF GAMMA-RAY KERMA TO NEUTRON KERMA WAS ESTIMATED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*DOSE MEASUREMENT, EXTERNAL + DOSE + DOSIMETRY, GENERAL + HPRR (HEALTH PHYSICS RESEARCH REACTOR) + REACTOR, RESEARCH

15-15806

THE FIRST ANNUAL PROGRESS REPORT ON RADIOECOLOGICAL STUDIES

HELSINKI UNIVERSITY, FINLAND

NYO-3446-3 +. 25 PAGES, 3 REFERENCES, JULY 22, 1965

RESULTS ARE REPORTED FROM RADIOECOLOGICAL STUDIES IN FINLAND DURING THE FIRST HALF OF 1965. ABOUT 100 LAPPS WERE WHOLE-BODY COUNTED, AND AN INCREASE OF ABOUT 15% WAS FOUND IN BODY RADIOACTIVITY OVER THAT FOUND A YEAR EARLIER. DATA ARE INCLUDED ON RADIOACTIVITY IN LAKE WATERS, CS-137 AND SR-90 CONTENT IN FISH FROM LAKE WATERS, INACTIVE ELEMENTS IN LAKE WATERS THAT MAY SERVE AS CARRIERS OF RADIONUCLIDES, THE RELATION BETWEEN CA CONTENT OF LAKE WATERS AND SR-90 CONTENT OF FISH, THE FE-55 CONTENT OF FISH AND MEAT FROM ELK AND REINDEER, A COMPARISON OF THE CS-137 CONTENT OF MEAT FROM ELK AND REINDEER, WITH DATA ON VALUES FOR CARIBOU AND REINDEER MEAT FROM ALASKA IN 1964, THE ANALYSIS OF PLANT SAMPLES FOR 10 MICRO NUTRIENT ELEMENTS, AND TECHNIQUES FOR THE DETERMINATION OF FE-55, PO-210, PB, AND K-40 IN BIOLOGICAL SAMPLES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*FINLAND + *SURVEY, RADIATION, ENVIRONMENTAL + ANALYTICAL TECHNIQUE, VEGETATION + BIOLOGICAL CONCENTRATION, ANIMAL + BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + BIOLOGICAL CONCENTRATION, MAN + BIOLOGICAL CONCENTRATION, VEGETATION + CALCIUM + CESIUM + COUNTER, WHOLE BODY + ECOLOGICAL CONSIDERATION + FALLOUT + IRON + LEAD + POLONIUM + POTASSIUM + STRONTIUM + STRONTIUM + SURFACE WATER, NUCLIDE OCCURRENCE

15-15807 ALSO IN CATEGORY 14

RADIUM AND MESOTHORIUM POISONING DOSIMETRY AND INSTRUMENTATION TECHNIQUES IN APPLIED RADIOACTIVITY.

COMPREHENSIVE REPORT OF OVER-ALL ACTIVITIES, 1950-1965

MASSACHUSETTS INSTITUTE OF TECHNOLOGY, CAMBRIDGE

TID-22131 +. 47 PAGES, 1965

A REVIEW IS PRESENTED OF A 15-YEAR INVESTIGATION OF RA AND RA-228 POISONING IN HUMAN BEINGS. THE INVESTIGATION CONSISTED OF IDENTIFICATION AND LOCATION OF CASES, MEASUREMENTS OF THE BODY BURDENS OF RADIOACTIVITY IN 428 CASES, COMPILATION OF PERSONAL AND MEDICAL HISTORIES (WITH A COMPLETE SERIES OF X RAYS) AND PROPER INTERPRETATION, COMPILATION, STORAGE, AND DISTRIBUTION OF CASE RECORDS. SUFFICIENT DATA WAS ACCUMULATED FOR PRELIMINARY STATISTICAL STUDIES OF DOSE-RESPONSE RELATIONSHIPS FOR A NUMBER OF HEALTH FACTORS.

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-15807 *CONTINUED*

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*BIOLOGICAL CONCENTRATION, MAN + *BIOMEDICAL + *RADIUM + COUNTER, WHOLE BODY + DOSE MEASUREMENT, INTERNAL + DOSIMETRY, GENERAL + INSTRUMENTATION, RADIATION MONITORING + RADIATION EFFECT

15-15809

KAMBOUROV C

DETERMINATION OF THE DETECTION LIMIT IN THE MEASUREMENT OF RADIOACTIVE MATERIALS.

ÖSTERREICHISCHE STUDIENGESellschaft FÜR ATOMENERGIE G.M.B.H., SEIBERSDORF

SGAE-SS-2/1965 +. 18 PAGES, 1965

AN ACCURATE FORMULA FOR CALCULATING THE LOWEST POSSIBLE DETECTION LIMIT AT OPTIMUM MEASUREMENT CONDITIONS WAS DERIVED. A METHOD FOR RAPID DETERMINATION OF THE MINIMUM MEASUREMENT TIME (BLANK VALUE AND TOTAL EFFECT) IS GIVEN. A VALUE OF 95% WAS ASSUMED FOR THE PRACTICAL LIABILITY LIMIT. SOME QUANTITATIVE PROBLEMS WERE SOLVED TO MAKE THE FORMULAS INTELLIGIBLE. THE FORMULA LIMIT MADE IT POSSIBLE TO DETERMINE THE MOST SENSITIVE INSTRUMENTS.

AVAILABILITY - MICROCARD EDITIONS, ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISC. 54669

*INSTRUMENTATION, RADIATION MONITORING + DOSIMETRY, GENERAL + RADIATION SAFETY AND CONTROL

15-15810

DATA FROM RADIATION PROTECTION PROGRAMS. VOLUME 3, NUMBER 8

DEPARTMENT OF NATIONAL HEALTH AND WELFARE, OTTAWA, ONTARIO

NP-15542 +. 25 PAGES, AUGUST 1965

FALLOUT DATA FOR CANADA FOR JULY 1965 SHOW A DECREASE IN RADIOACTIVITY. DATA ARE PRESENTED ON TOTAL BETA ACTIVITY, SR-90 AND CS-137 IN ATMOSPHERIC PRECIPITATION, AND SR-90 AND CS-137 CONTENT IN MILK SAMPLES. DATA ARE INCLUDED FROM REACTOR-ENVIRONMENT MONITORING STUDIES DURING THE MONTH.

AVAILABILITY - MICROCARD EDITIONS, ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISC. 54669

*CANADA + *FALLOUT + *SURVEY, RADIATION, ENVIRONMENTAL + AIR + BIOLOGICAL CONCENTRATION, MILK + CESIUM + GROSS BETA + MONITOR, RADIATION, AIR + RAINOUT + STRONTIUM + SURFACE WATER, NUCLIDE OCCURRENCE

15-15811

DATA FROM RADIATION PROTECTION PROGRAMS. VOLUME 3, NUMBER 6

DEPARTMENT OF NATIONAL HEALTH AND WELFARE, OTTAWA, ONTARIO

NP-15563 +. 25 PAGES, JUNE 1965

DATA ARE PRESENTED ON FALLOUT IN CANADA DURING MAY, 1965. RESULTS OF NATIONAL AVERAGES OF FALLOUT DATA FOR 1964 ARE INCLUDED FOR COMPARISON. THE RADIOACTIVITY LEVELS RECORDED WERE MUCH LOWER THAN THOSE OBSERVED AFTER THE FIRST CHINESE TEST OF OCT. 1964 AND WERE INSIGNIFICANT FROM A HEALTH POINT OF VIEW. RESULTS ARE PRESENTED FOR REACTOR ENVIRONMENTAL MONITORING STUDIES DURING MAY 1965.

AVAILABILITY - MICROCARD EDITIONS, ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISC., 54669

*CANADA + *FALLOUT + *SURVEY, RADIATION, ENVIRONMENTAL + AIR + BIOLOGICAL CONCENTRATION, MILK + CESIUM + GROSS BETA + MONITOR, RADIATION, AIR + RAINOUT + STRONTIUM + SURFACE WATER, NUCLIDE OCCURRENCE

15-15812

DATA FROM RADIATION PROTECTION PROGRAMS. VOLUME 4, NUMBER 8

DEPARTMENT OF NATIONAL HEALTH AND WELFARE, OTTAWA

NP-16325 +. 26 PAGES, AUGUST 1966

DATA ARE PRESENTED ON RADIOACTIVITY DUE TO FALLOUT IN CANADA DURING JULY 1966. MONTHLY AVERAGE VALUES FOR TOTAL BETA ACTIVITY IN ATMOSPHERE AND PRECIPITATION AND CS-137 AND SR-90 CONTENT IN MILK ARE COMPARED WITH VALUES FOR THE PREVIOUS MONTHS IN 1965 AND 1966. RESULTS ARE ALSO SUMMARIZED FROM ENVIRONMENTAL MONITORING FOR RADIOACTIVITY IN THE ENVIRONS OF CANADIAN REACTORS.

AVAILABILITY - MICROCARD EDITIONS, ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISC., 54669

*CANADA + *FALLOUT + *SURVEY, RADIATION, ENVIRONMENTAL + AIR + BIOLOGICAL CONCENTRATION, FOOD + BIOLOGICAL CONCENTRATION, MAN + BIOLOGICAL CONCENTRATION, MILK + CESIUM + GROSS ALPHA + GROSS BETA + MONITOR, RADIATION, AIR + PARTICULATE + POTASSIUM + RAINOUT + RIVER, OTTAWA + SAMPLING + SOIL, NUCLIDE OCCURRENCE + STRONTIUM + SURFACE WATER, NUCLIDE OCCURRENCE

15-15815

HEALTH AND SAFETY ACTIVITIES REPORT FOR 1963

GOODYEAR ATOMIC CORP., PIKETON, OHIO

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-15815 *CONTINUED*
GAT-R-335 +. 60 PAGES, MARCH 12, 1964

THERE ARE MANY SAFETY PRECAUTIONS PECULIAR TO ATOMIC ENERGY OPERATIONS THAT ARE REQUIRED BY THE AEC AND ARE FOUND IN THE PROCEDURES AT GOODYEAR ATOMIC CORP. JUST AS IMPORTANT AS THESE SPECIAL PRECAUTIONS ARE THE MANY COMMON PRECAUTIONS AGAINST HAZARDS FOUND IN EVERY INDUSTRIAL PLANT. MOST OF THE RESPONSIBILITIES FOR THE HEALTH AND SAFETY ACTIVITIES IN CONJUNCTION WITH THESE PRECAUTIONS ARE DISTRIBUTED AMONG SEVERAL GROUPS IN THE INDUSTRIAL RELATIONS DIVISION. THESE GROUPS ARE IN THE MEDICAL SUBDIVISION AND THE SAFETY AND FIRE PROTECTION SUBDIVISION. THE MORE SIGNIFICANT FUNCTIONS OF THESE GROUPS, AS WELL AS THE MORE IMPORTANT STATISTICS COMPILED DURING CALENDAR YEAR 1963, ARE REPORTED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*CODES AND STANDARDS + *SURVEY, RADIATION, ENVIRONMENTAL + BIOLOGICAL CONCENTRATION, MAN + GROSS BETA + GROSS GAMMA + MONITOR, RADIATION, AIR + PERSONNEL EXPOSURE, RADIATION + RADIATION SAFETY AND CONTROL + SAMPLING

15-15817 ALSO IN CATEGORY 14
HALLAM NUCLEAR POWER FACILITY MONTHLY OPERATING REPORT NO. 37, AUGUST 1965
CONSUMERS PUBLIC POWER DISTRICT, HALLAM, NEBR.
TID-22355 +. 29 PAGES, FIGURES, 1965

THE REACTOR REMAINED SHUTDOWN FOR THE MODERATOR-REPLACEMENT PROGRAM. SIGNIFICANT OPERATING ACTIVITIES DURING THE MONTH ARE SUMMARIZED, TOGETHER WITH PLANT PERFORMANCE THROUGH THE MONTH. WATER WAS OBSERVED IN THE FOUR FUEL-STORAGE THIMBLES. AN ATTEMPT WAS MADE TO DETERMINE THE SOURCE OF THE WATER. DURING THE MODERATOR-ELEMENT EXAMINATION PROGRAM, IT WAS NOTED THAT ONE ELEMENT FAILED DUE TO A MECHANICAL GOUGE IN THE SKIN. AN ATTEMPT WAS MADE TO DETERMINE THE CAUSE OF THE GOUGE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*HALLAM + *SURVEY, RADIATION, ENVIRONMENTAL + DECONTAMINATION + FUEL STORAGE + GROSS ALPHA + GROSS BETA + GROSS GAMMA + INSTRUMENTATION, RADIATION MONITORING + PERSONNEL EXPOSURE, RADIATION + RADIATION SAFETY AND CONTROL + SAMPLING + WASTE DISPOSAL, GENERAL + WASTE DISPOSAL, SOLID + WASTE HANDLING

15-15819 ALSO IN CATEGORY 14
ALDERHOUT JJ + FRANK T + HUNZINGER W
RADIATION EXPOSURE OF THE POPULATION DUE TO THE NORMAL OPERATION OF THE EUROCHEMIC REPROCESSING PLANT
EUROPEAN COMPANY FOR THE CHEMICAL PROCESSING OF IRRADIATED FUELS, MOL, BELGIUM
NP-16379 + ETR-197 +. 30 PAGES, 6 FIGURES, 3 TABLES, 16 REFERENCES, OCTOBER 1966

THE AVERAGE RADIOACTIVE CONTAMINATION IN THE AIR AT GROUND LEVEL AND THE AVERAGE RATE OF DEPOSITION ON THE GROUND HAVE BOTH BEEN COMPUTED FOR A CIRCULAR AREA OF 100 KM RADIUS AROUND THE EUROCHEMIC DISCHARGE STACK. THE ESTIMATE IS BASED ON THE ATMOSPHERIC DISCHARGES OF RADIOACTIVE NUCLIDES EXPECTED TO OCCUR DURING NORMAL PLANT OPERATION, AND ON DETAILED OBSERVATIONS OF WEATHER CONDITIONS IN MOL DURING 1963. THE AREA COVERS ABOUT HALF OF BELGIUM, A LARGE PART OF THE NETHERLANDS, AND A FRACTION OF WESTERN GERMANY. THE RADIATION EXPOSURE OF THE POPULATION WITHIN THIS AREA WAS CALCULATED SEPARATELY FOR ALL CRITICAL ORGANS, TAKING INTO ACCOUNT ALL NUCLIDES CONTRIBUTING SIGNIFICANTLY TO THE DOSE EQUIVALENT, AND ALL MODES OF EXPOSURE, E.G., DIRECT IRRADIATION, INHALATION, AND INGESTION OF CONTAMINATED FOOD.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*DOSE CALCULATION, INTERNAL + *EUROCHEMIC + *POPULATION EXPOSURE + AIR + CERIUM + CESIUM + DEPOSITION + DOSE + DOSE CALCULATION, EXTERNAL + INHALATION + IODINE + METEOROLGY + MONITOR, RADIATION, AIR + NIOBIUM + PLUTONIUM + RADIATION SAFETY AND CONTROL + STRONTIUM + WASTE DISPOSAL, GAS + ZIRCONIUM

15-15820
SALMON RJ
ENVIRONMENTAL HEALTH PLANNING FOR POSTATTACK CONDITIONS. SOME PROBLEMS, PROGRAMS, AND PRIORITIES
RESEARCH TRIANGLE INST., DURHAM, N. C.
AD-632865 + R-OU-197 +. 77 PAGES, APRIL 1966

CONDITIONS IMPOSED BY MASSIVE NUCLEAR ATTACK CAN BE EXPECTED TO DISRUPT NORMAL ENVIRONMENTAL HEALTH SERVICES OF COMMUNITIES THROUGHOUT THE U.S., AND TO THREATEN THE HEALTH OF SURVIVING POPULATION. THIS STUDY DEVELOPS A FRAMEWORK TO HELP DECISION-MAKERS EVALUATE POSTATTACK CONDITIONS RELATIVE TO ENVIRONMENTAL HEALTH. REVIEW AND ANALYSIS OF THE INFORMATION ON PROBABLE POSTATTACK CONDITIONS AS THEY MIGHT AFFECT, AND BE AFFECTED BY, PERSONNEL OF LOCAL HEALTH DEPARTMENTS, PUBLIC HEALTH ORGANIZATIONS, AND RESOURCE-MANAGEMENT PRACTICES IS PRESENTED. ANTICIPATED POSTATTACK ENVIRONMENTAL HEALTH PROBLEMS ARE IDENTIFIED, AND PRIORITY JUDGMENTS ARE MADE ON A COMPARATIVE BASIS IN TERMS OF GRAVITY. RATIONALE SUPPORTING THE JUDGMENTS IS INCLUDED, AND BOTH ACTION AND RESEARCH PROGRAMS TO IMPROVE PREPAREDNESS ARE RECOMMENDED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-15820 *CONTINUED*

*CIVIL DEFENSE + BIOMEDICAL + NUCLEAR EXPLOSION DEBRIS + RADIATION SAFETY AND CONTROL + WASTE DISPOSAL, GENERAL

15-15821 ALSO IN CATEGORY 14

VONHRA KC

SOME ASPECTS OF FALLOUT FROM THE FIRST AND SECOND CHINESE TESTS
ATOMIC ENERGY ESTABLISHMENT, TROMBAY, INDIA

AEET-240 +. 28 PAGES, 1965

THE PATTERN OF MOVEMENT OF FALLOUT-DEBRIS CLOUDS AFTER THE FIRST AND SECOND CHINESE TESTS WAS STUDIED WITH THE HELP OF WIND DATA AT THE 200-MB LEVEL. SAMPLES OF FALLOUT DEBRIS COLLECTED AT HIGH ALTITUDES WITH THE HELP OF COMMERCIAL AIRCRAFT WERE STUDIED FOR FRESHLY PRODUCED FISSION PRODUCTS, AND A DETAILED ANALYSIS WAS MADE FOR SEVERAL SHORT-LIVED ISOTOPES. DETAILS OF THE ANALYSIS USED FOR RAPIDLY IDENTIFYING FISSION MATERIALS AFTER THE TWO TESTS ARE PRESENTED. ACTIVITY RATIOS OF IMPORTANT SHORT-LIVED FISSION PRODUCTS FOR BOTH TESTS SHOWED U-235 FISSION. THE RESULTS OF ANALYSIS FOR NP-239 AND U-237 ARE ALSO GIVEN. THESE ANALYSES PROVIDE EVIDENCE OF PRODUCTION OF U-237 BY DOUBLE NEUTRON CAPTURE AND OF NP-239 BY NEUTRON ACTIVATION OF U-238. AIRBORNE RADIATION EMITTERS FOUND AT GULMARG AFTER THE SECOND CHINESE TEST ARE DISCUSSED.

AVAILABILITY - MICROCARD EDITIONS, ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISC., 54669

*FALLOUT + NEPTUNIUM + NUCLEAR EXPLOSION DEBRIS + SAMPLING + URANIUM + WIND STATISTICS

15-15824

DOMREK FS

DIGITAL COMPUTER AUTOMATION OF BODY BURDEN RETENTION DETERMINATIONS

AIR FORCE INST. OF TECH., WRIGHT-PATTERSON AFB, OHIO

AD-621270 + GNE-65-10 +. 46 PAGES, AUGUST 1965

A METHOD OF UNSCRAMBLING A COMPLEX HOMOGENIZATION OF INDIVIDUAL EXPONENTIAL FUNCTIONS WAS DEVELOPED. ESSENTIALLY THE PROBLEM REDUCES TO THIS - GIVEN A SET OF EXPERIMENTAL DATA KNOWN TO CONSIST OF A SERIES OF DIFFERENT EXPONENTIAL DECAY FUNCTIONS, FIND EACH OF THESE FUNCTIONS. THE MATHEMATICAL TECHNIQUE CHOSEN WAS THAT OF NONLINEAR LEAST SQUARES. UTILIZING THE METHOD OF LEAST SQUARES, A COMPUTER PROGRAM WAS WRITTEN, BRAT (BIOLOGICAL RETENTION ANALYSIS TECHNIQUE) IN KINGSTRAN FOR THE IBM-1620. THE PROGRAM ITSELF WAS DEVELOPED FOR THE USAF RADIOLOGICAL HEALTH LABORATORIES, ALTHOUGH ITS APPLICATION TO OTHER COMPOSITIONS WITH EXPONENTIAL DECAY IS OBVIOUS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*COMPUTER PROGRAM + *DOSIMETRY, GENERAL + BIOLOGICAL CONCENTRATION, MAN + GEOLOGICAL CONSIDERATION, GENERAL + MATHEMATICAL TREATMENT

15-15825 ALSO IN CATEGORY 14

REQUIREMENTS FOR LOCAL PLANNING TO COVER HAZARDS OF FALLOUT, VOLUME II. APPENDICES

RUNLAP AND ASSOCIATES, INC., DARIEN, CONN.

AD-611765 + DRD-64-110, VOL. 2 +. 111 PAGES, REFERENCES, JANUARY 1965

INFORMATION IS INCLUDED ON CIVIL DEFENSE SYSTEMS, MANAGEMENT PLANNING FOR SHELTERS, MATHEMATICAL MODELS FOR TRAFFIC, POPULATIONS, PASSENGER VEHICLES, AND HAZARDS AND DISTRIBUTION OF RADIOACTIVE FALLOUT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$0.65 MICROFICHE, \$3.00 COPY

*CIVIL DEFENSE + *FALLOUT + MATHEMATICAL TREATMENT + NUCLEAR EXPLOSION DEBRIS + RADIATION SAFETY AND CONTROL

15-15866

SMITH DG + REIST PC + SILVERMAN L

A REVIEW OF DETECTION SENSITIVITY FOR MONITORING OF KRYPTON-85

HARVARD AIR CLEANING LABORATORY, HARVARD UNIVERSITY

NYO-841-5 +. 30 PAGES, 3 FIGURES, 4 TABLES, 24 REFERENCES, FEBRUARY 1, 1967

THE OVERALL OBJECTIVE OF THIS STUDY WAS TO DEVELOP A KR-85 MONITORING INSTRUMENT CAPABLE OF DETECTING A FIELD CONCENTRATION OF 3×10 TO THE MINUS 8TH MICROCURIE/CC. THIS REPORT INCLUDES A REVIEW OF THE MAJOR KR-85 DETECTION METHODS AND A TABULATION OF THE READILY AVAILABLE SENSITIVITIES FOR EACH. SEVERAL SPECIALLY DESIGNED DETECTORS CONTAINING AN ADSORBENT FOR CONCENTRATING KR-85 IN THE IMMEDIATE VICINITY OF THE DETECTOR ARE SUGGESTED AND TENTATIVELY EVALUATED. ALSO DISCUSSED ARE POSSIBLE MECHANISMS FOR CONCENTRATING KRYPTON IN A SAMPLE STREAM PRIOR TO MEASUREMENT. OF ALL METHODS CONSIDERED, THIS LATTER APPROACH APPEARS MOST PROMISING FOR INCREASING THE DETECTION SENSITIVITY FOR KR-85.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-15866 *CONTINUED*
*KRYPTON + *MONITOR, RADIATION, GAS + COUNTER

15-15891
LOVE CM
PHYSICAL, CHEMICAL, AND BIOLOGICAL DATA FROM THE NORTHEAST PACIFIC OCEAN. COLUMBIA RIVER EFFLUENT AREA, JANUARY-OCTOBER 1962. VOLUME III. BROWN BEAR CRUISE 308:--JUNE 7-19. BROWN BEAR CRUISE 310--JULY 10-23. BROWN BEAR CRUISE 311--JULY 24-AUGUST 14
WASHINGTON UNIVERSITY, SEATTLE
RL0-1725-17 + M65-32 +. 272 PAGES, 3 FIGURES, TABLES, AUGUST 1965

THIS REPORT CONSTITUTES VOLUME III OF TECHNICAL REPORT NO. 119 AND CONTAINS DATA FROM THREE 1962 CRUISES OF THE RESEARCH VESSEL BROWN BEAR. A DISCUSSION OF THE OBJECTIVES OF THESE CRUISES AND THE SCIENTIFIC PROGRAM OF WHICH THEY WERE A PART WILL BE FOUND IN VOLUME I, TOGETHER WITH DESCRIPTIONS OF THE OBSERVATIONS MADE, THE METHODS OF COLLECTING SAMPLES AND THE METHODS OF DETERMINATION OF PROPERTIES. A LIST OF THE PERSONNEL ENGAGED IN COLLECTING AND PREPARING THE DATA AND A BIBLIOGRAPHY WILL BE FOUND IN VOLUME I. THE CRUISE TRACKS AND STATION LOCATIONS FOR CRUISES 308, 310, AND 311 ARE SHOWN IN THIS VOLUME. THE VALUES OF PHOSPHATE TABULATED FOR CRUISE 308 WERE OBTAINED FROM THE SHIPBOARD ANALYSES OF UNFROZEN SAMPLES. PHOSPHATE VALUES FOR THE OTHER TWO CRUISES AND ALL SILICATE AND NITRATE VALUES WERE OBTAINED FROM THE ANALYSES OF SAMPLES WHICH WERE FROZEN IMMEDIATELY AFTER COLLECTION AND ANALYZED AT A LATER DATE ASHORE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*OCEAN AND SEA + RIVER, COLUMBIA + WASTE DISPOSAL, OCEAN + WASTE DISPOSAL, RIVER

15-15927 ALSO IN CATEGORY 14
DAVIS TF
RADIOACTIVE WASTE PROCESSING AND DISPOSAL
DIVISION OF TECHNICAL INFORMATION EXTENSION (AEC), OAK RIDGE, TENNESSEE
TID-3311 (SUPPLEMENT 2) +. 182 PAGES, 1011 REFERENCES, JULY 15, 1966

THESE SELECTED 1012 ANNOTATED REFERENCES SUPPLEMENT TID-3311, TID-3311 (SUPPL. 1), TID-3555, AND TID-3555 (SUPPL. 1). UNCLASSIFIED REPORT AND JOURNAL LITERATURE FROM FEBRUARY 1965 THROUGH JULY 15, 1966 IS COVERED. THE REFERENCES HAVE BEEN SUBJECT-ARRANGED AND PROVIDED WITH NUMEROUS CROSS REFERENCES. AUTHOR, CORPORATE AUTHOR, AND REPORT NUMBER-AVAILABILITY INDEXES ARE INCLUDED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*WASTE DISPOSAL, GENERAL + *WASTE TREATMENT, GENERAL + AEROSOL + INCINERATION + PARTICULATE + WASTE DISPOSAL, GAS + WASTE DISPOSAL, LIQUID + WASTE DISPOSAL, OCEAN + WASTE DISPOSAL, SOLID + WASTE DISPOSAL, TERRESTRIAL + WASTE MANAGEMENT + WASTE SOURCE AND TYPE + WASTE TREATMENT, FIXATION + WASTE TREATMENT, GAS + WASTE TREATMENT, LIQUID + WASTE TREATMENT, SOLID

15-15959 ALSO IN CATEGORY 14
SOLDAT JK + ESSIG TH
EVALUATION OF RADIOLOGICAL CONDITIONS IN THE VICINITY OF HANFORD FOR 1965
BATTELLE-NORTHWEST, RICHLAND, WASHINGTON
BNWL-316 +. 39 PAGES, 23 FIGURES, 7 TABLES, 13 REFERENCES, NOVEMBER 11, 1966

THE EVALUATION OF RESULTS OBTAINED FROM THE HANFORD ENVIRONMENTAL SURVEILLANCE PROGRAM FOR 1965 INDICATES THAT MOST OF THE ENVIRONMENTAL RADIATION DOSE RECEIVED BY THE MAJORITY LIVING IN THE NEIGHBORHOOD OF THE HANFORD PROJECT WAS DUE TO NATURAL SOURCES AND WORLD-WIDE FALLOUT RATHER THAN TO HANFORD OPERATIONS. OF THE LOW-LEVEL WASTES THAT WERE RELEASED TO THE ENVIRONMENT, NEUTRON-INDUCED RADIONUCLIDES PRESENT IN REACTOR COOLING WATER DISCHARGED TO THE COLUMBIA RIVER CONTINUED TO BE THE SOURCE OF GREATEST POTENTIAL RADIATION DOSE TO PEOPLE IN THE ENVIRONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*BATTELLE NORTHWEST + *FALLOUT + *SURVEY, RADIATION, ENVIRONMENTAL + ACTIVATION PRODUCT + AIR + ARSENIC + BIOLOGICAL CONCENTRATION, AGRICULTURAL PRODUCE + BIOLOGICAL CONCENTRATION, ANIMAL + BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + BIOLOGICAL CONCENTRATION, MILK + CESIUM + CHROMIUM + COPPER + DOSE + DOSE CALCULATION, EXTERNAL + DOSE CALCULATION, INTERNAL + GROSS BETA + HYDROLOGICAL CONSIDERATION, RATE OF MOVEMENT + INGESTION + IODINE + NEPTUNIUM + PARTICULATE + PHOSPHORUS + POPULATION EXPOSURE + RARE EARTH + RIVER, COLUMBIA + SAMPLING + SODIUM + STRONTIUM + SURFACE WATER, NUCLIDE OCCURRENCE + TRITIUM + WASTE DISPOSAL, LIQUID + WASTE DISPOSAL, TERRESTRIAL + WATER, DRINKING + ZINC

15-15961
ZATZICK, MR + KATZENSTEIN JF + HIGA R + UNDERWOOD J + MITCHELSON DL
FLUOP-PHOTO DIODE GAMMA-RAY DOSIMETER
SOLID STATE RADIATIONS, INC., LOS ANGELES, CALIFORNIA

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-15961 *CONTINUED*
AN-641913 + HENRI-TOC-79 +. 113 PAGES, FIGURES, TABLES, SEPTEMBER 21, 1965

A FLUOR-PHOTO DiODE GAMMA-RAY DOSIMETER WAS DESIGNED, BUILT, AND EXTENSIVELY TESTED AND CALIBRATED. THE INSTRUMENT PROVIDES OUTPUT PULSES SUITABLE FOR LOW-SENSITIVITY SCALER INPUTS. IT IS CAPABLE OF MONITORING BOTH STEADY-STATE OR PULSED RADIATION FIELDS OVER AN INTERMEDIATE DOSE-RATE RANGE OF 10 TO 100,000 RADS/SEC.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*DOSIMETRY, GENERAL + *INSTRUMENTATION, RADIATION MONITORING + GAMMA + INSTRUMENTATION CALIBRATION

15-15962 ALSO IN CATEGORY 14
AARKROG A + LIPPERT J
ENVIRONMENTAL RADIOACTIVITY IN GREENLAND IN 1965
DANISH ATOMIC ENERGY COMMISSION RESEARCH ESTABLISHMENT, RISO
RISO-132 +. 21 PAGES, FIGURES, TABLES, 8 REFERENCES, JULY 1966

THE PRESENT REPORT DEALS WITH THE MEASUREMENT OF FALLOUT RADIOACTIVITY IN GREENLAND IN 1965. SR-90 (AND CS-137 IN MOST INSTANCES) WAS DETERMINED IN SAMPLES OF PRECIPITATION, SOIL, SEA WATER, VEGETATION, ANIMALS, AND DRINKING WATER. ESTIMATES OF THE MEAN CONTENTS OF SR-90 AND CS-137 IN THE HUMAN DIET IN GREENLAND IN 1965 ARE GIVEN.

AVAILABILITY - JUL GJELLERUP, 87 SOLVGADE, COPENHAGEN, DENMARK

*FALLOUT + BIOLOGICAL CONCENTRATION, ANIMAL + BIOLOGICAL CONCENTRATION, FOOD + BIOLOGICAL CONCENTRATION, VEGETATION + CESIUM + DENMARK + OCEAN AND SEA + RAINOUT + SAMPLING + SOIL, NUCLIDE OCCURRENCE + STRONTIUM + SURFACE WATER, NUCLIDE OCCURRENCE + WATER, DRINKING

15-15963
WOODWARD WJ
AN ALPHA-COUNTING HAND AND FOOT MONITOR
DUPONT DE NEMOURS (E.I.) AND COMPANY, SAVANNAH RIVER LABORATORY, AIKEN, SOUTH CAROLINA
DP-1080 +. 20 PAGES, 16 FIGURES, 2 REFERENCES, JANUARY 1967

AN INSTRUMENT WAS DEVELOPED FOR DETECTING ALPHA CONTAMINATION ON HANDS AND FEET. A PRACTICAL FOOT MONITOR WAS MADE POSSIBLE BY IMPROVEMENTS IN THE ALUMINUM-COATED FILM USED TO COVER THE SCINTILLATION DETECTORS. IN THE INSTRUMENT, SCINTILLATION DETECTORS ARE CONNECTED TO COUNTERS MADE FROM STANDARDIZED PLUG-IN CIRCUITS DEVELOPED AT THE SAVANNAH RIVER LABORATORY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*INSTRUMENTATION, RADIATION MONITORING + *MONITOR, RADIATION, PERSONNEL + ALPHA EMITTER

15-15964
PUTZIEP FA
DATA USED IN HEALTH PHYSICS CONSIDERATIONS FOR PLUTONIUM AND AMERICIUM
DOW CHEMICAL COMPANY, GOLDEN, COLORADO
RFP-795 +. 40 PAGES, 31 FIGURES, 2 TABLES, 3 REFERENCES, NOVEMBER 23, 1966

THE NUCLEAR CONSTANTS OF 238-Pu, 239-Pu, 240-Pu, 241-Pu, 242-Pu, 241-Am, AND 237-U ARE PRESENTED. DATA ARE INCLUDED ON THE GAMMA DOSE RATES FROM SEMI-INFINITELY THICK PURE METAL SLABS OF 238-Pu, 239-Pu, 240-Pu, 241-Pu PLUS THE DAUGHTERS 241-Am AND 237-U, SURFACE DOSE RATES FROM X AND GAMMA RAYS FROM 241-Am GROWTH, SURFACE DOSE RATES FROM GAMMA RAYS FROM 237-U GROWTH, THE EFFECTS OF THE DECAY OF 241-Pu TO 241-Am AND 237-U ON THE X AND GAMMA ACTIVITY OF A MIXTURE OF Pu ISOTOPES, NEUTRON RADIATION VALUES (NGS) FOR 238-Pu, 239-Pu, 240-Pu, AND 242-Pu, METHODS USED TO EXPRESS THE GROWTH OF 241-Am FROM 241-Pu, THE AMOUNTS AND ENERGIES OF FISSION PRODUCT IMPURITIES (103-Ru - 103-Rh AND 95-Zr - 95-Nb) ASSOCIATED WITH Pu OPERATIONS, THE GAMMA SHIELDING PROPERTIES OF VARIOUS MATERIALS, INCLUDING Pb GLASS, Pb GLOVES, SAFETY GLASS, PLEXIGLASS, Pb, AND STEEL, DATA USEFUL FOR CALCULATING THE ISOTOPIC ABUNDANCE AND RADIATION DOSE FROM Pu DURING SHIPMENT, DATA USED IN MONITORING WORK AREAS FOR ALPHA AND BETA ACTIVITY ASSOCIATED WITH Pu ISOTOPES, AND DATA USED TO CALCULATE THE BODY BURDEN FROM INHALED PARTICLES OF Pu OR FROM Pu-CONTAMINATED WOUNDS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*AMERICIUM + *PLUTONIUM + *RADIATION SAFETY AND CONTROL + DOSE + DOSE CALCULATION, INTERNAL + GAMMA + INHALATION + PARTICLE SIZE + SHIELDING + TRANSPORTATION AND HANDLING

15-15966
ROBERTS IC
EFFLUENT MONITORING AND EVALUATION--A POWER REACTOR DESIGN GUIDE
BATTELLE-NORTHWEST, RICHLAND, WASHINGTON
BNWL-251 +. 78 PAGES, 20 FIGURES, 17 TABLES, DECEMBER 13, 1966

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-15966 *CONTINUED*

BASIC INFORMATION OF EFFLUENT AND ENVIRONMENTAL MONITORING REQUIREMENTS OF POWER REACTORS DURING NORMAL OPERATION IS PRESENTED. EQUIPMENT AND PROCEDURES FOR MONITORING LIQUID WASTES, TANK, PIPELINE, AND GASEOUS WASTES ARE DESCRIBED. REGULATIONS WHICH HAVE BEEN ISSUED BY REGULATORY AUTHORITIES ARE PRESENTED AND EXPLAINED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*MONITOR, RADIATION, ENVIRONMENTAL + EFFLUENT + FISSION GAS RELEASE + IODINE + MONITOR, RADIATION, GAS + MONITOR, RADIATION, GENERAL + MONITOR, RADIATION, LIQUID + RADIATION SAFETY AND CONTROL + REACTOR COOLANT + REACTOR OFFGAS + REACTOR, BOILING WATER + REACTOR, POWER + REACTOR, PRESSURIZED WATER + REGULATION, AEC + SAMPLING + WASTE DISPOSAL, GAS + WASTE DISPOSAL, LIQUID + WASTE MANAGEMENT

15-15967 ALSO IN CATEGORY 14

ALLEN RE

SURVEILLANCE NETWORKS. REVISION NO. 1

DIVISION OF OPERATIONAL SAFETY (AEC), WASHINGTON, D. C.

TID-23286 +. 101 PAGES, TABLES, JUNE 1966

A REFERENCE DOCUMENT WAS COMPILED TO SERVE AS A SUMMARY OF THE MAJOR RADIATION SURVEILLANCE AND MONITORING PROGRAMS WITHIN THE USA, CANADA, AND MEXICO. SAMPLING PROCEDURES AND AREAS OF INTEREST OF THE VARIOUS NETWORKS ARE DISCUSSED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*FALLOUT + *SURVEY, RADIATION, ENVIRONMENTAL + CANADA + MEXICO + MONITOR, RADIATION, ENVIRONMENTAL + RADIATION SAFETY AND CONTROL + SAMPLING

15-15972 ALSO IN CATEGORY 9

DE LORENZO JT

LINEAR-LOG RADIATION MONITOR, ORNL MODEL Q-2353

OAK RIDGE NATIONAL LABORATORY, TENNESSEE

ORNL-TM-1764 +. 5 FIGURES, 2 TABLES, FEBRUARY 22, 1967

THE LINEAR-LOG RADIATION MONITOR WILL MONITOR GAMMA DOSE RATES OVER FIVE DECADES. IT PROVIDES TWO SEPARATE OUTPUT SIGNALS - A LINEAR SIGNAL AND A LINEAR-LOG COMBINATION SIGNAL. THE LINEAR SIGNAL ACTUATES A TRANSISTORIZED, HIGH AND LOW OFF-NORMAL ALARM CIRCUIT. THE LINEAR-LOG SIGNAL IS INTENDED TO PROVIDE A RECORD OF ABNORMAL EXCURSIONS ABOVE THE LINEAR RANGE. TWO PROBE DESIGNS ARE AVAILABLE - FOR ONE THE LINEAR RANGE IS 0 TO 10 MR/HR, AND THE LINEAR-LOG RANGE COVERS FIVE DECADES TO 100,000 MR/HR. FOR THE OTHER THE LINEAR RANGE IS 0 TO 100 MR/HR, AND THE LINEAR-LOG RANGE COVERS FIVE DECADES TO A MILLION MR/HR.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*EQUIPMENT DESIGN + *GAMMA + *INSTRUMENTATION, RADIATION MONITORING + INSTRUMENTATION CALIBRATION + INSTRUMENTATION, TESTING + MONITOR, RADIATION, ENVIRONMENTAL

15-15973

TOWNER JW + LINDBERG RG

PERSISTENT RADIATION INDUCED CHROMOSOMAL CHANGES IN NATIVE POCKET MOUSE POPULATIONS OF THE NEVADA TEST SITE. FINAL REPORT

NORTHROP SPACE LABS., HAWTHORNE, CALIFORNIA

SAN-510-2 +. 81 PAGES, FIGURES, TABLES, AUGUST 1966

ANIMALS WERE COLLECTED IN 1963 AND 1964 FROM THE PREVIOUSLY CONTAMINATED HILLS EAST OF THE OLD GROUND-ZERCS AT YUCCA FLAT (YF) AND FROM AN ESSENTIALLY UNCONTAMINATED AREA NORTH OF JACKASS FLATS (JF). THE INFINITE ENVIRONMENTAL DOSE TO THE YF STUDY AREA WAS ABOUT 200 R FROM WEAPONS TESTS BETWEEN 1951 AND 1958 AND PERHAPS AS MUCH AS 4000 TO 6000 R TOTAL CUMULATIVE GAMMA DOSE FROM PROJECT SEDAN IN 1962. USEFUL CYTOGENETIC DATA ON MEIOSIS, MITOSIS, OR BOTH WERE OBTAINED FROM 149 ANIMALS, INCLUDING 95 FROM THE CONTAMINATED AREA (YF) AND 54 FROM THE CONTROL AREA (JF). NO INHERITED ABERRATIONS WERE DETECTED IN THE SEX CHROMOSOMES, THE ACROCENTRICS, OR THE METACENTRICS NOS. 5,6,7, OR 10. INHERITED NUMERICAL ABERRATIONS WERE NOT FOUND. NONE OF THE ANIMALS HAD UNEQUIVOCAL CYTOGENETIC OR SOMATIC SYMPTOMS OF RADIATION EXPOSURE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*ECOLOGICAL CONSIDERATION + *FALLOUT + *NEVADA TEST SITE + NUCLEAR EXPLOSION DEBRIS

15-15974 ALSO IN CATEGORY 14

HARMON JA

PHASE II PROTOTYPE MANUAL ON CIVIL DEFENSE ASPECTS OF WATERWORKS OPERATIONS CONSIDERING RADIOLOGICAL RECOVERY PROCEDURES, ALTERNATE DISTRIBUTION TECHNIQUES FOR SAVING WATER, AND ANALYSIS OF BLAST VULNERABILITY OF SELECTED DISTRIBUTION SYSTEMS COMPONENTS

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-15974 *CONTINUED*
ENGINEERING-SCIENCE, INC., ARCADIA, CALIFORNIA
USNPOL-TRC-65 +. 103 PAGES, 19 FIGURES, 19 TABLES, SEPTEMBER 1966

THIS STUDY PRESENTS INFORMATION ON THE BLAST VULNERABILITY OF COMMUNITY WATER PIPELINES, ALTERNATIVE OPERATING TECHNIQUES FOR CONTROLLING THE USE OF WATER IN EARLY POSTATTACK PERIODS, AND ON RADIOLOGICAL RECOVERY PROCEDURES AND SHELTERS AVAILABLE TO WATERWORKS PERSONNEL. THE RESULTS OF THE ANALYSIS OF THE VULNERABILITY OF PIPELINES INDICATE THAT THE PRIMARY MODE OF FAILURE WILL BE CRUSHING OF THE PIPE. THE FIVE PRINCIPAL ALTERNATE OPERATING TECHNIQUES CONSIDERED ARE - ISOLATION OF PORTIONS OF THE DISTRIBUTION SYSTEM, RATIONING CONSUMER WATER USE, REDUCING HYDROSTATIC OPERATING PRESSURES, ROUTING WATER, AND THE USE OF AUXILIARY SOURCES OF WATER. PLANNING IS STRESSED FOR POSTATTACK RADIOLOGICAL RECOVERY PROCEDURES, SUCH AS, WET DECONTAMINATION AND THE DETERMINATION OF THE SAFE STAY TIMES FOR RECOVERY PERSONNEL. IT IS ESSENTIAL TO PROVIDE SHELTER IN LOCATIONS AS CLOSE AS POSSIBLE TO THE DESIGNATED TASKS THAT WATERWORKS PERSONNEL MUST PERFORM IN EARLY POSTATTACK RECOVERY SITUATIONS.

AVAILABILITY - ENGINEERING-SCIENCE, INC., 150 EAST FOOTHILL BOULEVARD, ARCADIA, CALIFORNIA

*CIVIL DEFENSE + *WATER, DRINKING + DECONTAMINATION + HYDROLOGICAL CONSIDERATION, GENERAL + HYDROLOGICAL CONSIDERATION, QUALITY OF WATER + NUCLEAR DETONATION

15-15984 ALSO IN CATEGORY 14
APPLICATION OF ATOMIC ENERGY IN AGRICULTURE. ANNUAL REPORT, 1965
INSTITUUT VOOR TOEPASSING VAN ATOMENERGIE IN DE LANDBOUW, WAGENINGEN, NETHERLANDS
EUR-3163.F +. 66 PAGES, OCTOBER 1966

THE RESEARCH ACTIVITIES OF THE EURATOM-ITAL ASSOCIATION WERE DIRECTED IN 1965 TO THE APPLICATION OF ATOMIC ENERGY TO AGRICULTURE. IN ADDITION TO CLASSICAL PLANT-BREEDING EXPERIMENTS USING RADIATION AS MUTAGEN, STUDIES WERE UNDERTAKEN TO INVESTIGATE THE IMPROVEMENT OF MUTAGENIC EFFICIENCY AND THE ANALYSIS OF IRRADIATION EFFECTS, AS WELL AS TO ASSESS THE POSSIBILITIES OFFERED BY ELECTRON IRRADIATION FOR THE PRESERVATION OF FRUITS AND VEGETABLES. RELATED PHYSICAL PROBLEMS WERE ALSO INVESTIGATED. THE BEHAVIOR OF CA-45, CL-36, CS-134, K-42, P-32, RB-86, S-35, SR-85, SR-90, AND ZN-65 IN PLANTS AND SOILS, AS WELL AS THE DEVELOPMENT AND IMPROVEMENT OF NUCLEAR TECHNIQUES FOR AGRICULTURAL RESEARCH, ALSO FORMED PART OF THE ACTIVITIES OF THE ASSOCIATION. A LIST IS INCLUDED OF 49 PUBLICATIONS THAT REPORT THE RESEARCH RESULTS IN DETAIL.

AVAILABILITY - MICROCAPD EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM, WISCONSIN 54669

*ECOLOGICAL CONSIDERATION + *SOIL, NUCLIDE OCCURRENCE + BIOLOGICAL CONCENTRATION, VEGETATION + CALCIUM + CESIUM + CHLORINE + DOSIMETRY, GENERAL + KRYPTON + PHOSPHORUS + RADIATION EFFECT + RUBIDIUM + STRONTIUM + SULFUR + ZINC

15-15986
LAFUMA J
TREATMENT OF ACCIDENTAL INTERNAL CONTAMINATION
COMMISSARIAT A L-ENERGIE ATOMIQUE, FONTENAY-AUX-ROSES (FRANCE). CENTRE D-ETUDES NUCLEAIRES
CONF-660412-7 +. 9 PAGES, APRIL 26-29, 1966

THE TREATMENT OF INTERNAL CONTAMINATION BY RADIOACTIVE MATERIALS DEPENDS ON THE CHEMICAL AND PHYSICAL PROPERTIES OF THE MATERIAL, THE PORTAL OF ENTRY OF THE MATERIAL INTO THE BODY, THE DISTRIBUTION OF THE ELEMENTAL MATERIAL IN BODY TISSUES, AND, IN SOME CASES, THE PHYSIOLOGICAL STATE. PROBLEMS INVOLVED IN REMOVING RADIOACTIVE MATERIALS FROM THE LUNGS, GASTROINTESTINAL TRACT, PUNCTURE WOUNDS, AND WHEN DIFFUSED INTO THE BODY ARE DISCUSSED.

AVAILABILITY - JOHN CRFRAR LIBRARY, 35 WEST 33RD. ST., CHICAGO, ILLINOIS 60616, \$1.10 FS, \$0.80 MF

*BIOMEDICAL + *INGESTION + *RADIATION INJURY, TREATMENT OF + AEROSOL, RADIOACTIVE + CERIUM + DECONTAMINATION + PLUTONIUM + RADIATION PROTECTION, CHEMICAL

15-15987 ALSO IN CATEGORY 14
OKUNEWICK JP
EFFECTS OF ACUTE DOSES OF GAMMA-RADIATION ON PINE TREES
RAND CORPORATION, SANTA MONICA, CALIFORNIA
RM-4904-TAB +. 35 PAGES, REFERENCES, OCTOBER 1966

THE SENSITIVITY OF PINE TREES TO GAMMA AND X IRRADIATION IS REVIEWED TO ESTABLISH WHETHER THE GENUS PINUS WOULD BE SERIOUSLY AFFECTED BY EXPOSURE TO DOSES OF 2000 R OR LESS. ON THE BASIS OF ACUTE-EXPOSURE DATA, PINE TREES ARE ABOUT AS SENSITIVE AS MAN. EXPERIMENTALLY DETERMINED VALUES FOR LD-100 FOR FOUR DIFFERENT PINE SPECIES RANGE FROM 1000 TO 1800 R. DOSES THAT PRODUCE SEVERE INHIBITION OF GROWTH ARE REPORTED TO RANGE FROM 300 TO 715 R. PREDICTIONS OF LD-100 VALUES, BASED ON NUCLEAR VOLUME TECHNIQUES, GIVE EVEN LOWER VALUES FOR THE LD-100 OF VARIOUS PINE SPECIES, RANGING FROM 301 TO 1056 R. SEVERE GROWTH INHIBITION IS SIMILARLY PREDICTED FOR VARIOUS SPECIES AT DOSES BETWEEN 184 AND 615 R. RECOVERY PATTERNS FOR TREES SEVERELY DAMAGED BY IRRADIATION ARE ALSO CONSIDERED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-15987 *CONTINUED*

*ECOLOGICAL CONSIDERATION + *FALLOUT + *RADIATION DAMAGE + DOSE + NUCLEAR EXPLOSION DEBRIS +
*RADIATION EFFECT

15-15989 ALSO IN CATEGORY 14

WOMELSDUFF RE

FALLOUT REPORT. BETA-GAMMA RADIOACTIVITY IN AIR AT SANDIA LABORATORY, JANUARY THRU JUNE 1964
SANDIA LABORATORY, ALBUQUERQUE, NEW MEXICO

SC-RR-64-1679 +. 12 PAGES, 16 REFERENCES, SEPTEMBER 1964

DATA ARE PRESENTED ON THE GROSS BETA-GAMMA RADIOACTIVITY (EXPRESSED AS MICROMICROCURIES PER
CUBIC METER) OF AIR SAMPLES COLLECTED BY THE HEALTH PHYSICS DIVISION OF THE SANDIA LABORATORY
OF SANDIA CORPORATION DURING THE FIRST HALF OF 1964

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*FALLOUT + *SURVEY, RADIATION, ENVIRONMENTAL + AIR + GROSS BETA + GROSS GAMMA + MONITOR, RADIATION, AIR

15-15990 ALSO IN CATEGORY 14

AARKROG A + LIPPERT J

ENVIRONMENTAL RADIOACTIVITY IN THE FAROES IN 1965

DANISH ATOMIC ENERGY COMMISSION RESEARCH ESTABLISHMENT, RISO

RISO-131 +. 23 PAGES, 4 FIGURES, 18 TABLES, 8 REFERENCES, JULY 1966

REPORT DEALS WITH THE MEASUREMENT OF FALLOUT RADIOACTIVITY IN THE FAROES IN 1965. SR-90 (AND
CS-137 IN MOST INSTANCES) WAS DETERMINED IN REGULARLY COLLECTED SAMPLES OF PRECIPITATION,
MILK, POTATOES, SHEEP, FISH, DRINKING WATER, AND DECIDUOUS TEETH. IN ADDITION, ANALYSES OF
SPOT SAMPLES OF GRASS, SOIL, SEA WATER, SEA PLANTS, BIRDS, VEGETABLES, BREAD, CHEESE, AND
EGGS WERE CARRIED OUT. ESTIMATES OF THE MEAN CONTENTS OF SR-90 AND CS-137 IN THE HUMAN DIET
IN THE FAROES IN 1965 ARE GIVEN

AVAILABILITY - JUL GJELLERUP, 87 SOLVGAD, COPENHAGEN, DENMARK

*FALLOUT + *SURVEY, RADIATION, ENVIRONMENTAL + BIOLOGICAL CONCENTRATION, ANIMAL +
BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + BIOLOGICAL CONCENTRATION, FOOD +
BIOLOGICAL CONCENTRATION, MILK + BIOLOGICAL CONCENTRATION, VEGETATION + CESIUM + OCEAN AND SEA + RAINOUT +
RISO (RESEARCH LABORATORY, DENMARK) + SAMPLING + STRONTIUM + SURFACE WATER, NUCLIDE OCCURRENCE

15-15991

BHATT RC

MEASUREMENT OF NEUTRON FLUENCE BY FISSION FRAGMENT DAMAGE TRACK DETECTION
ATOMIC ENERGY OF CANADA LTD., CHALK RIVER (ONTARIO)

AECL-2657 +. 31 PAGES, 2 FIGURES, 8 TABLES, 21 REFERENCES, AUGUST 1966

THE PHENOMENON OF FISSION-FRAGMENT DAMAGE PRODUCED IN GLASS AND MICA WAS STUDIED FOR ITS
POSSIBLE APPLICATION IN THE MEASUREMENT OF NEUTRON FLUX. EXPERIMENTS WITH THREE DETECTOR
SYSTEMS EMPLOYING NATURAL URANIUM FOIL IN CONJUNCTION WITH MICA, PHOSPHATE GLASS, AND
SILICATE GLASS, ARE DESCRIBED. THE THERMAL-NEUTRON SENSITIVITY OF EACH OF THE ABOVE SYSTEMS
WAS ESTIMATED FROM STANDARDIZATION EXPERIMENTS WITH THERMAL NEUTRONS. NEUTRON SENSITIVITIES
OF A NUMBER OF DETECTOR SYSTEMS AT VARIOUS NEUTRON ENERGIES OF INTEREST WERE PREDICTED WITH
THE HELP OF CORRESPONDING FISSION CROSS-SECTION DATA. APPLICATIONS TO PERSONNEL NEUTRON
DOSIMETRY ARE DISCUSSED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*INSTRUMENTATION, RADIATION MONITORING + *NEUTRON + DOSIMETRY, GENERAL + PERSONNEL EXPOSURE, RADIATION

15-15992

JONES AR

APPLICATION OF SOLID STATE AMPLIFYING RADIATION DETECTORS IN HEALTH PHYSICS

ATOMIC ENERGY OF CANADA LTD., CHALK RIVER (ONTARIO)

AECL-2637 +. 20 PAGES, 9 FIGURES, 7 REFERENCES, JANUARY 1967

TO ASSESS AMPLIFYING RADIATION DETECTORS FOR USE IN HEALTH PHYSICS, FIVE SAMPLES WERE
MEASURED. THE PROPERTIES MEASURED WERE - DEPENDENCE OF NOISE ON APPLIED VOLTAGE, DEPENDENCE
OF GAIN ON APPLIED VOLTAGE, DEPENDENCE OF SENSITIVITY TO GAMMA RAYS ON ENERGY, DEPENDENCE OF
SENSITIVITY TO GAMMA RAYS ON VOLTAGE, AND DEPENDENCE OF SENSITIVITY TO GAMMA RAYS ON
TEMPERATURE. THE MEASUREMENTS SUGGESTED THAT THE DETECTORS WOULD BE SUITABLE FOR MEASURING
EXPOSURES, OR DOSES, AND THEIR RATES OVER A WIDE RANGE OF ENERGIES (0.03-1.25 MEV) AND OVER A
WIDE RANGE OF EXPOSURE RATES (BACKGROUND UP TO ABOUT 1000 ROENTGENS/HOUR).

AVAILABILITY - ATOMIC ENERGY OF CANADA, LTD., CHALK RIVER, ONTARIO, CANADA, \$0.50 COPY

*INSTRUMENTATION, RADIATION MONITORING + DOSE + ENERGY LEVEL + GAMMA

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-15993
CARTER P
IRON AS A FAST-NEUTRON MONITOR
ATOMIC ENERGY RESEARCH ESTABLISHMENT, HARWELL (ENGLAND)
AERE-M-1778 +. 22 PAGES, 10 FIGURES, 3 TABLES, 15 REFERENCES, OCTOBER 1966

THE TECHNIQUES ADOPTED AT A.E.R.E. HARWELL FOR THE USE OF THE FE-54 (N,P) MN-54 REACTION IN NATURAL IRON AS A LONG-TERM FAST-NEUTRON MONITOR ARE DESCRIBED. THE ADDITIONAL FE-58 (N,GAMMA) FE-59 THERMAL-NEUTRON REACTION MAY BE USED IN SHORTER IRRADIATIONS FOR OBTAINING THERMAL-NEUTRON DOSES. SINCE LARGE NUMBERS OF MONITORS ARE REQUIRED, THE MONITORS ARE CHOSEN TO BE IN THE FORM OF WIRES WEIGHING 1.6 MCM.

AVAILABILITY - BRITISH INFORMATION SERVICE, 845 THIRD AVENUE, NEW YORK, N.Y. 10022, \$0.70 COPY

*INSTRUMENTATION, RADIATION MONITORING + *IRON + FAST NEUTRON + MANGANESE + MONITOR, RADIATION, GENERAL + THERMAL NEUTRON

15-16015
BURT AK + GIBSON JA
DETECTION OF HIGH BETA-RAY DOSE RATES WITH A SIMPLE DETECTOR
ATOMIC ENERGY RESEARCH ESTABLISHMENT, HARWELL (ENGLAND)
AERE-M-1830 +. 10 PAGES, FIGURES, 5 REFERENCES, JANUARY 1967

A SIMPLE INSTRUMENT WAS DEVELOPED TO MEASURE BETA-RAY DOSE RATES ABOVE 1 RAD/H (IN TISSUE) AND CONTAMINATION LEVELS GREATER THAN 0.04 NCI/SQ. CM. THE DETECTOR WAS USED IN CONTAMINATION CONTROL OF HIGH-ACTIVITY HANDLING CELLS. THE RATE OF ENERGY DEPOSITION (DE/DX) IS MEASURED IN 0.010 INCH OF PLASTIC PHOSPHOR (NE 102A) WITH A SIMPLE PHOTODIODE TO DETECT THE LIGHT OUTPUT. THE INSTRUMENT WAS ALSO USED TO DETERMINE SURFACE ACTIVITY BY USING A PLASTIC COLLIMATOR TO DEFINE A FIXED AREA FOR MEASUREMENT. THE RANGE OF THE INSTRUMENT IS FROM 2 TO AT LEAST 25,000 RAD/H (IN TISSUE). THE GAMMA-RAY RESPONSE IS SMALL BELOW 100 R/H AND IS A LINEAR FUNCTION OF DOSE RATE ABOVE THIS LEVEL. THE INSTRUMENT IS ESSENTIALLY TISSUE-EQUIVALENT (PLUS OR MINUS 20%) ABOVE ABOUT 0.15 MEV (ELECTRON ENERGY).

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*INSTRUMENTATION, RADIATION MONITORING + BETA EMITTER + DOSE + DOSIMETRY, GENERAL

15-16016 ALSO IN CATEGORY 14
FARRIS GC + WHICKER FW + DAHL AH
EFFECT OF AGE ON RADIOACTIVE AND STABLE STRONTIUM ACCUMULATION IN MULE DEER BONE
COLORADO STATE UNIV., FORT COLLINS, DEPT. OF RADIOLOGY AND RADIATION BIOLOGY
COO-1156-17 + CONF-660561-1 +. 21 PAGES, MAY 1966, INTERNATIONAL SYMPOSIUM ON SOME ASPECTS OF STRONTIUM METABOLISM, CHAPELCROSS, ANNAN, SCOTLAND

METACARPAL AND FEMUR BONES OF COLORADO MULE DEER (ODOCOILEUS HEMIONUS HEMIONUS) OF VARIOUS AGE CLASSES WERE COLLECTED TO STUDY RADIOACTIVE AND STABLE SR DISTRIBUTION WITHIN THE HERD. AVERAGE SR-90 AND STABLE SR CONCENTRATIONS IN BONE OF SIX AGE CLASSES WERE SIGNIFICANTLY DIFFERENT. THE HIGHEST LEVELS OF SR-90 WERE IN THE YOUNGER AGE CLASSES, AND STABLE SR CONCENTRATIONS WERE LARGER IN THE OLDER AGE GROUPS. CONSIDERABLE VARIATION IN THE RADIOACTIVE AND STABLE SR CONTENT OF METACARPALS WAS OBSERVED WITHIN AGE CLASSES. NO SIGNIFICANT DIFFERENCE IN RADIOACTIVE OR STABLE CONTENT WAS OBSERVED BETWEEN THE SEXES OF DEER YOUNGER THAN 17 MONTHS. SEX WAS NOT COMPARED IN OLDER AGE CLASSES BECAUSE OF LIMITED SAMPLE SIZE. ESTIMATES OF SR TURNOVER RATES INDICATED VALUES OF ABOUT 19%/YR FOR JUVENILES AND 6%/YR FOR ADULTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*BIOLOGICAL CONCENTRATION, ANIMAL + *ECOLOGICAL CONSIDERATION + *FALLOUT + *STRONTIUM

15-16017 ALSO IN CATEGORY 14
WHICKER FW + FARRIS GC + DAHL AH
WILD DEER AS A SOURCE OF RADIONUCLIDE INTAKE BY HUMANS AND AS INDICATORS OF FALLOUT HAZARDS
COLORADO STATE UNIVERSITY, FORT COLLINS, DEPT. OF RADIOLOGY AND RADIATION BIOLOGY
COO-1156-18 + CONF-660920-13 +. 19 PAGES, SEPTEMBER 1966, FIRST INTERNATIONAL CONGRESS OF THE INTERNATIONAL RADIATION PROTECTION ASSN., ROME, ITALY

CONCENTRATIONS OF VARIOUS FALLOUT RADIONUCLIDES WERE MEASURED IN NATIVE FORAGE AND IN TISSUES OF WILD MULE DEER OVER A FIVE-YEAR PERIOD IN NORTH-CENTRAL COLORADO. CONCENTRATIONS OF 137-CS IN DEER FLESH WERE 5 TO 13 TIMES HIGHER THAN CONCENTRATIONS REPORTED IN BEEF AND IN PORK. THE DATA INDICATED THAT CONSUMPTION OF DEER FLESH COULD RESULT IN A 137-CS INTAKE THAT COULD POSSIBLY EXCEED THE INTAKE OF THE NUCLIDE FROM THE TOTAL DIET. CONSUMPTION OF DEER LIVER WOULD RESULT IN THE INGESTION OF 144-CE, 137-CS, 137-CE, 54-MN, AND 106-RU. THE DATA INDICATED THAT DEER TISSUES CAN BE USEFUL AND IN SOME CASES UNUSUALLY SENSITIVE INDICATORS OF ENVIRONMENTAL CONTAMINATION BY 144-CE, 137-CS, 131-I, 54-MN, 106-RU, AND 90-SR. DURING 1963, THE RADIATION DOSE TO THE SKELETON OF YEARLING DEER FROM 90-SR AVERAGED 330 MRADS, WHICH WAS

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-16017 *CONTINUED*

GENERALLY HIGHER THAN THE TOTAL DOSE FROM NATURAL BACKGROUND AND OTHER SOURCES COMBINED. DURING THE SAME PERIOD, THE 90-SR CONCENTRATIONS IN DEER BONE WERE HIGHER BY A FACTOR OF 35 THAN REPORTED BONE LEVELS IN HUMANS. DURING THE STUDY, DOSE RATES TO DEER THYROID, LIVER, AND MUSCLE REACHED 20, 0.014, AND 0.012 RADS/YEAR, RESPECTIVELY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*BIOLOGICAL CONCENTRATION, ANIMAL + *ECOLOGICAL CONSIDERATION + *FALLOUT + BIOLOGICAL CONCENTRATION, MAN + BIOLOGICAL CONCENTRATION, VEGETATION + CERIUM + CESIUM + DOSE + IODINE + MANGANESE + RUTHENIUM + STRONTIUM

15-16019

HOLLOWAY RJ + LEONG GF + AINSWORTH EJ + ALBRIGHT ML + BAUM SJ
RECOVERY FROM RADIATION INJURY IN THE HAMSTER AS EVALUATED BY THE SPLIT-DOSE TECHNIQUE
NAVAL RADIOLOGICAL DEFENSE LAB., SAN FRANCISCO, CALIF.
USNRDL-TP-1111 +. 32 PAGES, FIGURES, TABLES, REFERENCES, DECEMBER 20, 1966

THE SPLIT-DOSE TECHNIQUE WAS USED TO DETERMINE THE PATTERN OF RECOVERY FROM RADIATION INJURY IN THE SYRIAN HAMSTER (MESOCRICETUS AURATUS). EXPOSURE OF THE ANIMALS TO 1 MVP X-RAYS RESULTED IN AN LD-50/30 OF 941 R (95 PERCENT CONFIDENCE INTERVAL, 917-967 R). RECOVERY, DEFINED AS A RETURN TO NORMAL RADIOSENSITIVITY AFTER A SUBLETHAL EXPOSURE, WAS FOUND TO BE NONEXPONENTIAL. IN FACT, A MARKED TRANSIENT INCREASE IN RADIOSENSITIVITY WAS OBSERVED DURING THE SECOND WEEK. HEMATOLOGICAL STUDIES INDICATE THAT THE EXTENT OF RECOVERY, IN TERMS OF SPLIT-DOSE RADIOSENSITIVITY, IS NOT CORRELATED WITH THE NUMBER OF CIRCULATING ERYTHROCYTES, THROMBOCYTES, GRANULOCYTES, OR MONONUCLEAR CELLS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*BIOMEDICAL + *ECOLOGICAL CONSIDERATION + *RADIATION DAMAGE + DOSE + RADIATION EFFECT + RADIATION INJURY, TREATMENT OF + X-RAY

15-16020

MILLER WG
A SEMI-EMPIRICAL DETERMINATION OF DOSE RATES WITHIN AN AIRCRAFT CARRIER ENVELOPED BY A CLOUD OF CO-60
NAVAL RADIOLOGICAL DEFENSE LABORATORY, SAN FRANCISCO
USNRDL-TR-906 + AD-474,194L +. 30 PAGES, 9 FIGURES, 9 TABLES, 6 REFERENCES, SEPTEMBER 15, 1965

DOSE RATES ARE CALCULATED FOR SEVEN DETECTOR LOCATIONS ABOARD AN AIRCRAFT CARRIER ENVELOPED BY A CLOUD OF CO-60. THE ASSUMED CLOUD IS A HEMISPHERE OF 500-FT RADIUS CENTERED AT A DETECTOR AND LIES UPON THE HORIZONTAL PLANE THROUGH THE DETECTOR. IT CONTAINS 1 CURIE/CU. FT OF CO-60. THE BASES OF THE CALCULATIONS ARE DOSE RATES OBTAINED AT THE DETECTOR LOCATIONS BY IRRADIATION OF THE SHIP FROM MANY DISTANT POSITIONS WITH A POINT SOURCE OF CO-60.

AVAILABILITY - DEFENSE DOCUMENTATION CENTER, CAMERON STATION, ALEXANDRIA, VIRGINIA

*DOSE + *DOSE CALCULATION, EXTERNAL + COBALT + DOSIMETRY, GENERAL + NUCLEAR DETONATION + SHIELDING

15-16028

KHOBYEVA MA
PENETRATION OF PU-239 THROUGH THE SKIN
4 PAGES, 2 TABLES, REFERENCES, MEDITSINSKAYA RADIOLOGIYA 10(10), PAGES 42-45 (1965), IN RUSSIAN

THE AUTHOR CONDUCTED AN EXPERIMENTAL STUDY OF THE POSSIBILITY OF PLUTONIUM NITRATE PENETRATING THE INTACT SKIN OF ANIMALS (RABBITS). THE POSSIBILITY OF PU-239 PENETRATION THROUGH THE INTACT SKIN WAS ASSESSED BY THE CONTENT OF THE ACTIVITY IN THE BLOOD AND INTERNAL ORGANS OF ANIMALS. DETERMINATION OF THE BLOOD RADIOACTIVITY WAS BY MEANS OF A SENSITIVE METHOD OF PHOTOGRAPHING THE TRACKS OF ALPHA-PARTICLES OF PU-239 ON THICK-LAYER PLATES OF THE A-2-50 TYPE.

*BIOMEDICAL + *PLUTONIUM + *PRESSURE VESSEL + BIOLOGICAL CONCENTRATION, ANIMAL + CONTAMINATION

15-16061

RUSSELL JA + KNOWLES DJ
DESCRIPTION OF FACILITY RADIATION AND CONTAMINATION ALARM SYSTEMS INSTALLED IN THE METALS AND CERAMICS LABORATORY, BUILDING 4508
OAK RIDGE NATIONAL LABORATORY, TENNESSEE
ORNL-TM-1669 +. 26 PAGES, 8 FIGURES, 3 TABLES, DECEMBER 6, 1966

RADIATION AND CONTAMINATION ALARM SYSTEMS WERE INSTALLED IN THE METALS AND CERAMICS LABORATORY (BUILDING 4508) TO CONTINUOUSLY AND AUTOMATICALLY MONITOR NEUTRON RADIATION (BY THREE NEUTRON RATE-BURST DETECTORS) AND AIR CONTAMINATION (BY FIVE ALPHA AND THREE BETA-GAMMA CONSTANT AIR MONITORS) IN THE ENTIRE FACILITY. THESE INSTRUMENTS AND OTHER COMPONENTS IN THE NETWORK PROVIDE HEALTH-PHYSICS MONITORING INFORMATION, SOUND LOCAL ALARMS WHEN ABNORMAL CONDITIONS OCCUR, AND INDICATE THE ABNORMAL CONDITIONS ON A CENTRAL PANEL BOARD.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-16061 *CONTINUED*
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*MONITOR, RADIATION, AIR + *MONITOR, RADIATION, ENVIRONMENTAL + *MONITORING SYSTEM, RADIATION +
ALPHA EMITTER + NEUTRON

15-16060
MCCONNEN D + TURNER K9
A REVIEW OF THE AIR MONITORING PROGRAM AT THE PRTR
HANFORD ATOMIC PRODUCTS OPERATION, GENERAL ELECTRIC CO., RICHLAND WASH.
HW-82705 +. 14 PAGES, FIGURES, TABLES, 11 REFERENCES, MAY 15, 1964

THE AIRBORNE PARTICULATE CONTAMINATION NORMALLY ENCOUNTERED AT THE PRTR HAS BEEN IDENTIFIED AS RB-89 (18-MIN HALF-LIFE) AND CS-138 (32.2-MIN HALF-LIFE). A CALCULATION METHOD WHICH CORRECTS FOR RADIOACTIVE DECAY DURING SAMPLE COLLECTION AND AFTER THE SAMPLE IS CHANGED IS PROPOSED IN PLACE OF THE PRESENT CALCULATION METHOD. SAMPLING INTERVALS AND HOLDING PERIODS OF 5 MIN EACH ARE RECOMMENDED FOR ROUTINE USE. THE PRESENT MPC (AIR) IN USE AT THE PRTR - 1 MILLIONTH OF A MICROCURIE/CC - IS JUDGED TO BE ADEQUATE, HOWEVER, A RECOMMENDATION IS MADE TO USE ASSULT-MASK RESPIRATORY PROTECTION IN PLACE OF SUPPLIED AIR MASKS IN ATMOSPHERES BETWEEN A MILLIONTH AND A HUNDRED THOUSANDTH OF A MICROCURIE/CC.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*MONITOR, RADIATION, AIR + *MONITORING SYSTEM, RADIATION + FISSION GAS RELEASE +
MONITOR, RADIATION, SAMPLING

15-16301 ALSO IN CATEGORY 4
LANGHAM WH + BROOKS PM + GRAHN D
RADIATION BIOLOGY AND SPACE ENVIRONMENTAL PARAMETERS IN MANNED SPACECRAFT DESIGN AND OPERATIONS
LOS ALAMOS SCIENTIFIC LAB., LOS ALAMOS + MCDONNELL AIRCRAFT CORP., ST. LOUIS + ARGONNE NATIONAL LAB.,
ARGONNE, ILL.
55 PAGES, FIGURES, TABLES, AEROSPACE MEDICINE 36(2) PAGES 1-55 (FEB. 1965)

THE PURPOSE OF THIS REPORT IS TO DERIVE, INSOFAR AS POSSIBLE, CRITERIA FOR CONSIDERATION OF MANS RESPONSE TO SPACE-RADIATION EXPOSURE SO THAT RADIATION RISKS MAY BE TAKEN INTO ACCOUNT DURING SPACECRAFT DESIGN AND OPERATIONAL PLANNING PHASES, ALONG WITH THE OTHER HAZARDS OF MANNED SPACE FLIGHT. THE ONLY BASIS FOR DERIVATION OF SUCH CRITERIA IS THE VAST AMOUNT OF DATA ON EFFECTS OF SO-CALLED CONVENTIONAL RADIATION EXPOSURES (INVOLVING LOW- AND INTERMEDIATE-ENERGY ELECTROMAGNETIC AND PARTICULATE RADIATIONS) ON ANIMALS AND OCCASIONALLY MAN. UNFORTUNATELY, EXPOSURES IN SPACE WILL NOT BE CONVENTIONAL WITH REGARD TO EXPOSURE CONDITIONS OR NATURE, ENERGY, AND SPECTRAL DISTRIBUTION OF THE RADIATIONS. IT SEEMS NECESSARY, THEREFORE, TO DISCUSS FIRST SOME OF THE GENERAL AND SPECIFIC ASPECTS OF THE SPACE RADIATION ENVIRONMENT AND SOME OF THE EXPOSURE CONDITIONS THAT MAY BE CONTEMPLATED. TWO HUNDRED EIGHTY-SIX REFERENCES ARE INCLUDED.

*AEROSPACE SAFETY + *BIOMEDICAL + CODES AND STANDARDS + DOSE + DOSE CALCULATION, EXTERNAL +
DOSE CALCULATION, INTERNAL + ENVIRONMENTAL CONDITION + PERSONNEL PROTECTIVE DEVICE + SPACECRAFT

15-1630R ALSO IN CATEGORY 13
NICHOLS DC
RADIOLOGICAL PROTECTION IN A TRITIUM SEPARATIONS FACILITY
SAVANNAH RIVER PLANT, Aiken, S.C.
DPSU-65-30-31 + CNF-660403-1 +. 8 PAGES, JANUARY 1966, FROM INTERNATIONAL SYMPOSIUM ON RADIOLOGICAL
PROTECTION OF THE WORKER BY THE DESIGN AND CONTROL OF HIS ENVIRONMENT, BOURNEMOUTH, ENGLAND

THE SAVANNAH RIVER PLANT IS THE MAJOR CENTER OF TRITIUM PRODUCTION IN THE U.S. TRITIUM IS PRODUCED BY NEUTRON IRRADIATION OF LITHIUM IN THE REACTORS AND IS SUBSEQUENTLY SEPARATED FROM THE LITHIUM TARGET ELEMENTS. RADIOLOGICAL PROTECTION WAS ONE OF THE FOREMOST OBJECTIVES IN THE DESIGN OF THE SEPARATIONS FACILITY AND IN THE PREPARATION OF OPERATING PROCEDURES. CONSEQUENTLY, CONTROL OF RADIOLOGICAL HEALTH HAZARDS IS RELATIVELY SIMPLE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*RADIOCHEMICAL PLANT SAFETY + *SAVANNAH RIVER PLANT + HEAVY WATER + INHALATION +
MAXIMUM PERMISSIBLE BODY BURDEN + PERSONNEL EXPOSURE, RADIATION + RADIOLOGICAL ASSISTANCE + TRITIUM

15-16318
IRVING DC + ALSMILLER RG + MORAN HS
TISSUES CURRENT TO DOSE CONVERSION FACTORS FOR NEUTRONS WITH ENERGIES FROM 0.5 TO 60 MEV
OAK RIDGE NATIONAL LAB., TENN.
ORNL-TM-1522 +. 27 PAGES, 8 FIGURES, 4 TABLES, 10 REFERENCES, DECEMBER 7, 1966

TO ASSIST IN EVALUATING THE HAZARD ASSOCIATED WITH EXPOSURE TO HIGH-ENERGY NEUTRONS, A MONTE CARLO COMPUTER PROGRAM WAS USED TO CALCULATE THE ENERGY DEPOSITION AS A FUNCTION OF DEPTH IN A 30-CM-THICK INFINITE SLAB OF TISSUE RESULTING FROM NEUTRONS INCIDENT ON THE SLAB AT ENERGIES UP TO 60 MEV. THE PROGRAM TREATED NONELASTIC AND ELASTIC INTERACTIONS, INCLUDING

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-16318 *CONTINUED*

EVAPORATION PROCESSES AND NUCLEAR RECOILS. CASES OF BOTH NORMAL AND ISOTROPIC INCIDENCE WERE CALCULATED FOR NEUTRONS OF 0.5, 2, 10, 18, 30, AND 60 MEV. FROM THESE DATA, CURRENT-TO-DOSE CONVERSION FACTORS WERE EXTRACTED FOR THE AVERAGE WHOLE-BODY DOSE, THE DOSE AT A 5-CM DEPTH, AND THE MAXIMUM DOSE. A SET OF QUALITY FACTORS WAS ADOPTED FOR TRANSFORMING RAD DOSE TO REM DOSE.

AVAILABILITY - D. C. IRVING, R. C. ALSMILLER, JR., AND H. S. MORAN, OAK RIDGE NATIONAL LABORATORY, TENNESSEE

*DOSE + *NEUTRON + COMPUTER PROGRAM + DOSIMETRY, GENERAL + MONTE CARLO

15-16323 ALSO IN CATEGORY 18

U.S. FISH AND WILDLIFE SERVICE COMMENTS ON VERMONT YANKEE, MAY 18, 1967
VERMONT YANKEE NUCLEAR POWER CORP., BOSTON, MASS.
3 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(25) PAGES 19-21 (JUNE 19, 1967)

SERVICE RECOMMENDS POSTOPERATIONAL SURVEYS (RADIOLOGICAL AND ECOLOGICAL) OF AQUATIC ORGANISMS WHICH CONCENTRATE RADIOACTIVITY AND WHICH ARE AFFECTED BY INCREASED WATER TEMPERATURE. THE SURVEYS ARE RECOMMENDED TO DEMONSTRATE THAT THERE ARE NO SIGNIFICANT ADVERSE CONDITIONS (RADIOACTIVITY OR HIGH TEMPERATURE) AFFECTING AQUATIC ORGANISM, PARTICULARLY FOOD FISH.

*MONITORING PROGRAM, ENVIRONMENTAL + REACTOR, BOILING WATER + SURVEY, RADIATION, ENVIRONMENTAL + THERMAL POLLUTION + VERMONT YANKEE

15-16324 ALSO IN CATEGORY 18

FORSCHER F
AIRBORNE EXPOSURE TO 12 OPERATORS AT NUMEC, APOLLO, PA.
NUCLEAR MATERIALS AND EQUIPMENT CORP., APOLLO, PA.
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(25) PAGE 24 (JUNE 19, 1967)

(MAY 1) - 12 OPERATORS WERE EXPOSED TO AIRBORNE ENRICHED URANIUM FOR 7-DAY PERIODS BETWEEN FEB. AND APRIL 1967, GIVING EXPOSURES MORE THAN 40 MPC-HOURS. (PWR, 4 OPERATORS) - OPERATOR ERRORS. AFTER REINSTRUCTION, NO MORE OVEREXPOSURE OCCURRED. (CP-2, 7 OPERATORS) - STRICTER SUPERVISION AND TOTAL ENCLOSURE ARE BEING CONSIDERED. (VAULT, 1 OPERATOR) - MORE-RESTRICTIVE SURFACE CONTAMINATION LIMITS ARE APPLIED TO CONTAINERS IN THE VAULT.

*INHALATION + *PERSONNEL EXPOSURE, RADIATION + *URANIUM + FABRICATION FACILITY + FUEL, POWDER TYPE

15-16327 ALSO IN CATEGORIES 17 AND 18

WRIGHT EG
RADIATION OVEREXPOSURE AT U.S. ARMY NUCLEAR DEFENSE LAB., EDGEWOOD ARSENAL, MD.
U. S. ARMY NUCLEAR DEFENSE LABORATORY, EDGEWOOD ARSENAL, MD.
3 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(25) PAGES 27-29 (JUNE 19, 1967)

(MAY 29) - A 700-CURIE CO-60 SOURCE STUCK DURING TRANSFER FROM A STORAGE SHIELD TO AN OPERATIONS SHIELD. DECOMPOSED RUST INHIBITOR CAUSED IT TO JAM IN THE HYDRAULIC-TRANSMISSION TUBING. THE SUPERVISOR TRIED VARIOUS MEANS OF FREEZING THE SOURCE IN THE MEASURED 2-R/HR FIELD, AFTER MONITORING WITH AN AMERICAN-NUCLEAR HIGH-RANGE (0-100 R/HR) SURVEY METER, BUT FINALLY SENT THE PARTIALLY SHIELDED SOURCE TO A HOT CELL. HE THEN FOUND HIS 5-R DOSIMETERS OFF-SCALE (AND APPARENTLY ONLY THEN INFORMED RADIATION PROTECTOR OFFICER). THE SURVEY-METER NEON LIGHT WAS NOT LIT, SHOWING LOW BATTERY VOLTAGE, WHICH CAUSED THE METER TO READ 30-40 P/HR IN FIELDS OF 55-500 R/HR. RUST INHIBITOR IS NO LONGER USED. PERIODIC INSPECTIONS TO SHOW DEBRIS-FREE HANDLING MECHANISM, BETTER MARKING OF BATTERY INDICATOR, ADDITIONAL TRAINING IN EMERGENCY PROCEDURES WERE INSTITUTED.

*INCIDENT, ACTUAL, GENERAL + *SOURCE, RADIATION + FAILURE, ADMINISTRATIVE CONTROL + FAILURE, EQUIPMENT + FAILURE, INSTRUMENT + HEALTH PHYSICS TRAINING + INCIDENT, ACTUAL, RECOVERY FROM + MONITOR, RADIATION, EMERGENCY + PERSONNEL EXPOSURE, RADIATION

15-16364 ALSO IN CATEGORY 1

SAYLOR JP
CONGRESSMAN ASKS FOR INVESTIGATION OF AEC
CONGRESS (US), HOUSE OF REPRESENTATIVES
3 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(24) PAGES 2-4 (JUNE 12, 1967)

REPRESENTATIVE J. P. SAYLOR (DISCUSSING HR 599 TO CREATE A FEDERAL COMMITTEE ON NUCLEAR DEVELOPMENT) CITED LUNG-CANCER DEATHS OF URANIUM MINERS AND 1957 BNL ACCIDENT-CONSEQUENCES REPORT, AND ASSERTED THAT AEC WAS MOVING TOO FAST IN ITS LUST FOR ATOMIC POWER. ALSO STATED AEC MAINTAINED AN INSIDIOUS SECRECY ON MINING DANGERS. (TEXT OF HR 599 INCLUDED).

*CONGRESSIONAL ACTIVITY + *RADIATION, PUBLIC EDUCATION/ACCEPTANCE + ACCIDENT, HYPOTHETICAL + INHALATION + MINING + PERSONNEL EXPOSURE, RADIATION

15-16365 ALSO IN CATEGORIES 17 AND 1

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-16365 *CONTINUED*

SENATE BILL TO REIMBURSE A STATES FOR WORKMENS COMPENSATION PAID FOR URANIUM RADIATION
CONGRESS (US), HOUSE OF REPRESENTATIVES
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(24) PAGES 4-6 (JUNE 12, 1967)

S-1927 WOULD AUTHORIZE PAYMENT OF HALF THE WORKMENS COMPENSATION FOR INJURY, DISABILITY, OR DEATH IN MINING OR PROCESSING URANIUM, OR FROM URANIUM RADIATION. DISCUSSION BY SPONSOR MADE FIVE POINTS - (1) PERIODICALLY PUBLISH INCIDENT REPORTS TO ASSESS THE PROBLEM, (2) REVIEW HOSPITAL FACILITIES AND CAPABILITIES NEAR MINES, (3) INSTALL SATISFACTORY VENTILATION, (4) GUARD AGAINST AIR AND STREAM POLLUTION FROM MINE WASTES, (5) ESTABLISH AN INTERAGENCY AUTHORITY TO ENFORCE USE OF FEDERAL RADIATION COUNCIL GUIDELINES BY OTHER GOVERNMENT AGENCIES, FINALLY, MAKE VARIOUS STATES WORKMANS-COMPENSATION LAWS UNIFORM.

*CONGRESSIONAL ACTIVITY + *INSURANCE + INCIDENT COMPILATION + MAXIMUM PERMISSIBLE CONCENTRATION (MPC) + MILLING + MINING + PERSONNEL EXPOSURE, RADIATION + VENTILATION SYSTEM + WASTE DISPOSAL, GENERAL

15-16366 ALSO IN CATEGORIES 17 AND 18

BABCOCK AND WILCOX, MT. VERNON INDIANA, CITED FOR NON COMPLIANCE UNDER LICENSE 13-11317-1
BABCOCK AND WILCOX, MT. VERNON, IND.

2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(24) PAGES 13-14 (JUNE 12, 1967)

(LETTER FROM DIV. COMPLIANCE, APRIL 17, REGARDING FEB. 16 INSPECTION, APPARENTLY RELATING TO A RADIOGRAPHY INCIDENT ON OCT. 10, 1966) - A SURVEY WAS NOT MADE AFTER EACH FILM EXPOSURE TO CHECK THE 141-CURIE CO-60 WAS RETURNED TO THE SHIELD. AN INADEQUATE EVALUATION WAS MADE OF DOSE RECEIVED. THE WARNING SYSTEM WAS A BUZZER ACTIVATED UPON ENTRY TO RADIOGRAPHY ROOM, AND WAS NOT RELATED TO RADIATION LEVEL. (B AND W REPLY, MAY 3) - PROPER SURVEY WAS NOT MADE. DOSE REPORTED NOV. 3 WAS CALCULATED IN GOOD FAITH, HOWEVER FURTHER INFORMATION REPORTED DURING INSPECTION OF FEB. 16 DOES INDICATE AN 8-R CALCULATED DOSE TO UPPER BODY, 3.7-R FILM-BADGE DOSE TO WAIST, AND 27.7/36.6-R CALCULATED DOSE TO L/R HANDS. INCIDENT OCCURRED BECAUSE OF EMPLOYEE PREOCCUPATION WITH PERSONAL MATTERS. WARNING ALARM IS TYPICAL OF THOSE IN OTHER INSTALLATIONS, COMPLIES WITH OUR INTERPRETATION OF 10 CFR 20, AND SHOULD REMAIN AS IS. WE HAVE CHANGED FROM A BELL TO A HORN, AND HAVE POSTED AN AUTHORIZED-ENTRY-ONLY SIGN.

*INCIDENT, ACTUAL, HUMAN ERROR + *INSPECTION AND COMPLIANCE + *RADIOGRAPHY + DOSE CALCULATION, EXTERNAL + DOSE MEASUREMENT, EXTERNAL + FAILURE, DESIGN ERROR + FAILURE, OPERATOR ERROR + PERSONNEL EXPOSURE, RADIATION

15-16367

ALSO IN CATEGORIES 17 AND 18

FIXMAN M

COTTER CORP., CANNON CITY, COLORADO EXPOSURE

COTTER CORP., CANNON CITY, COLORADO

1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(24) PAGE 15 (JUNE 12, 1967)

(LETTER, MAY 10). EIGHT INDIVIDUALS WERE EXPOSED TO ABOUT 2.3 MPC DURING MARCH, WHILE SAMPLING BARRELS OF YELLOW CAKE DURING ADVERSE WEATHER. NEW SAMPLING PROCEDURES SHOW EXPOSURE IS NOW DOWN TO 0.4 MPC. TWO MAINTENANCE MEN WERE EXPOSED TO 2.8 TO 6.8 MPC WHILE REPAIRING A YELLOW-CAKE DRYER. DUST WAS RETAINED ON FACE-MASK FILTERS. NOW, DRYERS ARE GIVEN TWO WATER WASHES BEFORE MAINTENANCE TO SETTLE DUST, AND NO ONE IS ALLOWED IN A DRYER MORE THAN 30 MIN/WEEK.

*INHALATION + *MILLING + *PERSONNEL EXPOSURE, RADIATION + INCIDENT, ACTUAL, GENERAL + MAINTENANCE AND REPAIR + SAMPLING + URANIUM

15-16368

ALSO IN CATEGORIES 17 AND 18

LAGRUA JD

COMPLIANCE CITATION OF LONG ISLAND NUCLEAR SERVICE CORP. FOLLOWING RESIN HANDLING INCIDENT AT PORTSMOUTH NAVAL SHIPYARD

LONG ISLAND NUCLEAR SERVICE CORP., BELLPORT, N.Y.

2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(24) PAGES 15-16 (JUNE 12, 1967)

(LETTER, APRIL 24, 1967, REGARDING NOV. INCIDENT AND INSPECTION IN DEC. 1966 AND JAN. 1967). RESIN HANDLING AND DECONTAMINATION WERE NOT AUTHORIZED BY LICENSE 31-8360-1, A POSSESSION LICENSE. RADIATION SURVEYS WERE NOT CONDUCTED. TWO PERSONS WERE RE-EXPOSED WITHOUT CHECKING THEIR RADIATION HISTORY. NOTICE WAS NOT GIVEN AEC OF OVEREXPOSURE TO TWO OTHERS. RADIATION AREAS WERE NOT POSTED. AN EMPLOYEE WAS NOT GIVEN WRITTEN NOTICE OF HIS OVEREXPOSURE. IN ADDITION, WRITTEN RECORDS WERE NOT AVAILABLE FOR OTHER LICENSED MATERIAL DURING THE INSPECTION.

*FAILURE, ADMINISTRATIVE CONTROL + *INCIDENT, ACTUAL, HUMAN ERROR + *INSPECTION AND COMPLIANCE + *MAINTENANCE AND REPAIR + COOLANT PURIFICATION SYSTEM + HEALTH PHYSICS TRAINING + RADIATION SAFETY AND CONTROL + REGULATION, AEC + RESIN

15-16369

ALSO IN CATEGORIES 17 AND 18

KELLER CW

10 RAD SKIN EXPOSURE DURING HOT CELL DECONTAMINATION AT MARTIN-MARIETTA BALTIMORE MD., 21 APRIL 1967

MARTIN MARIETTA CORP., BALTIMORE, MD.

2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(24) PAGES 16-17 (JUNE 12, 1967)

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-16369 *CONTINUED*

(LETTER, MAY 16). SINCE NORMALLY THE FILM BADGE SHOWS 4 TO 6 TIMES THE DOSIMETER READINGS, DOSIMETER READINGS ARE MULTIPLIED BY 8 FOR CONTROL PURPOSES. IN THIS CASE THE RATIOS WERE 36 TO 1, AND 9 TO 1. SURVEYS SHOWED 2 TO 4 RADS/HOUR. PERHAPS GROSS CONTAMINATION OF CLOTHING NEAR FILM BADGE OCCURRED. HOWEVER, CUMULATIVE EXPOSURE OF 200 MR BY DOSIMETERS WILL BE USED TO LIMIT WORKERS UNTIL FILM BADGES ARE PROCESSED.

*DOSE MEASUREMENT, EXTERNAL + *PERSONNEL EXPOSURE, RADIATION + BETA EMITTER + DECONTAMINATION + HEALTH PHYSICS TRAINING + HOT CELL + MONITOR, RADIATION, PERSONNEL + RADIATION SAFETY AND CONTROL

15-16371

ALSO IN CATEGORY 1

JUNE 5-9 TESTIMONY AT JCAE HEARING ON RADIATION EXPOSURE OF URANIUM MINES
CONGRESS (US), HOUSE OF REPRESENTATIVES
18 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(24) PAGES 18-30 (JUNE 12, 1967)

CHIEF SUBJECT WAS THE REVISED 41 CFR 50-204.321, SETTING OCCUPATIONAL EXPOSURE TO RADON DAUGHTERS AT 3.6 WORKING-LEVEL MONTHS IN ANY CONSECUTIVE 12-MONTH PERIOD. REGULATION WAS VAPOROUSLY ASSAILED AS UNENFORCEABLE, UNMEASURABLE, WOULD CLOSE THE MINES, WOULD CLOSE 95% OF THE MINES IN COLORADO, THROUGH INACCURATE DEFINITION SET THE LEVEL 10% LOWER THAN INTENDED.

*CONGRESSIONAL ACTIVITY + *DOSE MEASUREMENT, INTERNAL + *INHALATION +
*MAXIMUM PERMISSIBLE CONCENTRATION (MPC) + *RADON + DOSE CALCULATION, INTERNAL + MINING +
NCPP (NATIONAL COMMITTEE RADIATION PROTECTION) + PERSONNEL EXPOSURE, RADIATION + REGULATION, AEC + URANIUM

15-16372

ALSO IN CATEGORIES 18 AND 1

REVISED REGULATION ON RADON INHALATION EXPOSURE FOR UNDERGROUND MINING
CONGRESS (US) HOUSE OF REPRESENTATIVES
4 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(24) PAGES 30-33 (JUNE 12, 1967)

41 CFR 50-204.321 DEFINES A WORKING LEVEL (WL) AS RADON DAUGHTERS IN AIR WHICH WILL RELEASE 1.3×10 TO THE 5TH MEV OF ALPHA ENERGY A MONTH AS 173 HOURS OF EXPOSURE, AND SETS EXPOSURE LIMIT AT 3.6 WL-MONTHS/CONSECUTIVE-12-MONTHS (I.E., A 0.3-WL AVERAGE). MINES ARE GIVEN UNTIL JAN. 1, 1969, TO COMPLY. COMMENT BY SEC. LABOR ASSERTS THAT JCAE, PHS, AND OTHER TESTIMONY SUPPORTS A 0.3-WL STANDARD, AND THE ONLY QUESTION IS WHEN TO APPLY IT. REGULATION ALLOWS OPERATION AT 1/WL FOR 18 MONTHS PROVIDED THAT THE 0.3 WL IS ACHIEVED THEN.

*INHALATION + *MAXIMUM PERMISSIBLE CONCENTRATION (MPC) + *RADON + CONGRESSIONAL ACTIVITY +
DOSE CALCULATION, INTERNAL + DOSE MEASUREMENT, INTERNAL + MINING + PERSONNEL EXPOSURE, RADIATION +
REGULATION, AEC + URANIUM

15-16404

ALSO IN CATEGORIES 17 AND 18

SELECTED YANKEE OPERATING EXPERIENCE.
YANKEE ATOMIC ELECTRIC COMPANY, BOSTON, MASSACHUSETTS
8 PAGES, 2 FIGURES, 1 TABLE, MAY 24, 1967, DOCKET NO. 50-79, FROM YANKEE NUCLEAR POWER STATION OPERATIONS
REPORT NO. 76 FOR THE MONTH OF APRIL 1967.

(1) CORE REACTIVITY CONTINUES NORMALLY AT 0.74 DELTA K/K PER 1000 MWD/MT. (2) INCREASING NO.-1 STEAM-GENERATOR CHLORIDE LEVEL WAS TRACED TO CHLORIDE CONTAMINATION OF THE PHOSPHATE ADDITIVE, AS OTHER INDICATORS OF TURBINE-CONDENSER TUBE LEAKS WERE ABSENT. (3) AN ACCIDENTAL RELEASE OF BELOW-MPC GAS OCCURRED DURING A ROUTINE SAMPLING OF THE PRESSURIZER GAS SPACE WHEN THE RECIRCULATION VENT VALVE TO THE LOW-PRESSURE SURGE TANK WAS LEFT OPEN, ALLOWING BACKFLOW FROM SURGE TANK TO SAMPLE HOOD. 32 MICROCURIES OF BETA-GAMMA AND 60 MILLICURIES OF TRITIUM WERE RELEASED IN A 2-1/2-HOUR PERIOD.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*COOLANT CHEMISTRY + *FUEL BURNUP + *REACTOR OFFGAS + AIRBORNE RELEASE + CHLORINE +
FAILURE, OPERATOR ERROR + HEAT EXCHANGER + INCIDENT, ACTUAL, HUMAN ERROR + OPERATIONS SUMMARY FOR AEC +
REACTOR, PRESSURIZED WATER + STEAM GENERATOR + TRITIUM + YANKEE

15-16426

ALSO IN CATEGORIES 3 AND 1

RADIATION SAFETY FOR CIVIL AIRPORTS
FEDERAL AVIATION AGENCY, WASHINGTON, D. C.
AC 150-5240-6A +. 31 PAGES, 1965

THIS PUBLICATION IS DIVIDED INTO THREE MAJOR CATEGORIES - THE RADIATION PROBLEM, NUCLEAR RADIATION, AND EMERGENCY OPERATIONS AT CIVIL AIRPORTS. THE FIRST CATEGORY DISCUSSES THE SHIPMENT OF RADIOACTIVE MATERIALS ON CIVIL AIRCRAFT AND GIVES FUNDAMENTAL INFORMATION ABOUT NUCLEAR WEAPONS ON MILITARY AIRCRAFT. RADIATION, METHODS OF MEASURING AND MONITORING ITS POTENCY AND ITS BIOLOGICAL EFFECTS, PROTECTION OF PERSONNEL, AND DECONTAMINATION ARE COVERED IN THE SECOND CATEGORY. THE THIRD OUTLINES EMERGENCY OPERATIONS TO BE SET UP FOLLOWING AN ACCIDENT INVOLVING SHIPMENT OF RADIOACTIVE MATERIALS ON COMMERCIAL AIRCRAFT AND NUCLEAR WEAPONS CARRIED ON MILITARY AIRCRAFT. IT ALSO TELLS HOW TO OBTAIN ASSISTANCE FOR RADIOLOGICAL PROTECTION. PUBLIC RELATIONS AND NEWS RELEASES ARE MENTIONED TO EMPHASIZE THE NEED TO PREVENT UNDUE ANXIETY.

AVAILABILITY - U. S. GOVERNMENT PRINTING OFFICE, WASHINGTON, D. C. 20402

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-16426 *CONTINUED*

*AIRCRAFT + *EMERGENCY PROCEDURE + ACCIDENT, CONSEQUENCES + DECONTAMINATION + RADIATION SAFETY AND CONTROL

15-16459

RUSSELL JA

SUMMARY REPORT ON CIVIL DEFENSE RADIOLOGICAL INSTRUMENT DEVELOPMENT

CAK RIDGE NATIONAL LABORATORY, TENN.

ORNL-TM-1768 +. 17 PAGES, MARCH 1, 1967

ORNL PROVIDED TECHNICAL ASSISTANCE TO THE OFFICE OF CIVIL DEFENSE ON SPECIALIZED INSTRUMENTATION. TWO INSTRUMENTS WERE DEVELOPED, AND A NUMBER OF TESTS WERE PERFORMED, LEADING TO THE IMPROVEMENT OF DESIGNS. THIS REPORT DESCRIBES ORNL ASSISTANCE TO JUNE 30, 1966

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

*CIVIL DEFENSE + *INSTRUMENTATION, RADIATION MONITORING + DOSIMETRY, GENERAL + GAMMA

15-16460 ALSO IN CATEGORY 9

RUSSELL JA + KNOWLES DJ

DESCRIPTION OF FACILITY RADIATION AND CONTAMINATION ALARM SYSTEMS INSTALLED IN THE HIGH RADIATION LEVEL CHEMICAL DEVELOPMENT LABORATORY

CAK RIDGE NATIONAL LABORATORY, CAK RIDGE, TENN.

ORNL-TM-1668 +. 31 PAGES, 10 FIGURES, 3 TABLES, OCTOBER 27, 1966

FACILITY RADIATION AND CONTAMINATION ALARM SYSTEMS WERE INSTALLED IN THE HIGH RADIATION LEVEL CHEMICAL DEVELOPMENT LABORATORY (BUILDING 4507) TO CONTINUOUSLY AND AUTOMATICALLY MONITOR GAMMA RADIATION (BY SIX GAMMA MONITORS), NEUTRON RADIATION (BY THREE NEUTRON-RATE-BURST DETECTORS), AND AIR CONTAMINATION (BY FIVE BETA-GAMMA AND THREE ALPHA CONSTANT AIR MONITORS) IN THE ENTIRE FACILITY. THESE INSTRUMENTS AND OTHER COMPONENTS IN THE NETWORK PROVIDE HEALTH-PHYSICS MONITORING INFORMATION, SOUND LOCAL ALARMS WHEN ABNORMAL CONDITIONS OCCUR, AND INDICATE THE ABNORMAL CONDITIONS ON A CENTRAL PANEL BOARD.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

*INSTRUMENTATION, RADIATION MONITORING + *MONITORING SYSTEM, RADIATION + *SYSTEM DESCRIPTION + ALPHA + GAMMA + BETA + GAMMA + INSTRUMENTATION CALIBRATION + INSTRUMENTATION, AIR SAMPLING + INSTRUMENTATION, TESTING + MONITOR, RADIATION, ENVIRONMENTAL + NEUTRON

15-16474

MORGAN KZ

DEVELOPMENT OF HEALTH PHYSICS AS A PROFESSION

CAK RIDGE NATIONAL LABORATORY, CAK RIDGE, TENN.

15 PAGES, 4 TABLES, PRESENTED AT THE FIRST INTERNATIONAL CONGRESS OF THE INTERNATIONAL RADIATION PROTECTION ASSOCIATION, ROME, ITALY, SEPT. 5-10, 1966

A BRIEF HISTORY IS GIVEN OF THE GROWTH AND DEVELOPMENT OF HEALTH PHYSICS AS A SCIENTIFIC PROFESSION. HEALTH PHYSICS RESEARCH COVERS PROBLEMS RANGING FROM THE EFFECTS ON THE LIVING CELL AND ON MAN. ULTIMATELY, THE GOAL OF THE HEALTH PHYSICIST IS TO DEVELOP A COHERENT THEORY OF RADIATION DAMAGE, TO ENSURE THAT HE MEASURES AND EVALUATES THE PROPER PHYSICAL AND BIOLOGICAL PROPERTIES RELATED TO THE SIGNIFICANT FORMS OF POTENTIAL RADIATION DAMAGE, TO ESTABLISH ADEQUATE RADIATION PROTECTION RECOMMENDATIONS AND MEASURES AT THE NATIONAL AND INTERNATIONAL LEVELS, AND TO ENFORCE THESE IN SUCH A WAY THAT THE BENEFITS OF IONIZING RADIATION FAR OUTWEIGH THE DAMAGE.

AVAILABILITY - PROCEEDINGS OF THE INTERNATIONAL RADIATION PROTECTION ASSOCIATION. PERGAMON PRESS, OXFORD, 1967

*RADIATION PROTECTION, ORGANIZATION + HEALTH PHYSICS TRAINING + RADIATION SAFETY AND CONTROL + RADIATION, PUBLIC EDUCATION/ACCEPTANCE

15-16533 ALSO IN CATEGORY 17

MOE HJ + LASUK SR + SCHUMACHER MC

RADIATION SAFETY TECHNICIAN TRAINING COURSE

ARGONNE NATIONAL LABORATORY, ARGONNE, ILLINOIS

ANL-7291 +. 359 PAGES, 83 FIGURES, 6 TABLES, 38 REFERENCES, SEPTEMBER 1966

GENERALIZED TREATMENT WITH OCCASIONAL QUICK-MATHEMATICS CALCULATIONS (E.G., BUILDUP FACTOR). MOST OF THE MATERIAL CONCERNS INSTRUMENTS AND MONITORING DEVICES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*HEALTH PHYSICS TRAINING + MONITOR, RADIATION, GENERAL + PERSONNEL PROTECTIVE DEVICE + RADIATION SAFETY AND CONTROL

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-16657 ALSO IN CATEGORIES 13 AND 17
NUCLEAR FUEL SERVICES PLUTONIUM INHALATION
NUCLEAR FUEL SERVICES, NEW YORK
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(29), PAGE 26 (JULY 17, 1967), DOCKET NO. 50-201

(JUNE 7) ANALYSIS RECEIVED JUNE 6, 1967. A URINE SPECIMEN TAKEN APRIL 18, 1967, SHOWED 34 DPM PU/24 HRS. THE WORKER RECALLED THAT DURING HOT-CELL WORK, HE LET A DOOR SLAM CLOSED, CUTTING HIS AIR HOSE. HE WAS WITHOUT FRESH AIR FOR 2-3 MIN. WE ESTIMATE HIS UPTAKE TO BE EQUAL TO 90% OF THE BODY BURDEN OF PLUTONIUM.

*INHALATION + *PERSONNEL EXPOSURE, RADIATION + *PLUTONIUM + FAILURE, GENERAL + HOT CELL + MAINTENANCE AND REPAIR + NFS (NUCLEAR FUEL SERVICES) + PERSONNEL PROTECTIVE DEVICE + RADIOCHEMICAL PLANT SAFETY + RADIOCHEMICAL PROCESSING

15-16658 ALSO IN CATEGORY 17
RADIOGRAPHY INCIDENT AT QUAKER ALLOY CASTING. MAY 17, 1967
QUAKER ALLOY CASTING CO., MYERSTOWN, PA.
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(29), PAGE 27 (JULY 17, 1967)

(JUNE 12) A RADIOGRAPHER ENTERED THE EXPOSURE CELL UNAWARE THAT THE 450-CURIE CO-60 SOURCE HAD SEPARATED FROM THE CABLE. HIS SURVEY METER HAD A DEAD BATTERY, BUT HE HAD CHECKED HIS DOSIMETER, WHICH HE FOUND TO BE OFF SCALE. FILM-BADGE MEASURED 10 REMS. CORRECTIVE ACTION - (1) ONLY FRESH BATTERIES WILL BE USED, RECHARGING WILL BE DISCONTINUED, (2) A SEQUENCE COUNTER WILL RECORD THE CYCLE OF OPERATION, (3) RADIATION DETECTORS AND LIGHTS ORIGINALLY SUPPLIED WILL BE REMOVED, (4) EXPOSURE CELL-DOORS WILL BE INTERLOCKED SO AN ALARM SOUNDS IF DOOR IS OPENED WITH SOURCE EXPOSED.

*PERSONNEL EXPOSURE, RADIATION + *RADIOGRAPHY + FAILURE, INSTRUMENT + FAILURE, OPERATOR ERROR + INSTRUMENTATION, INTERLOCK + MONITOR, RADIATION, PERSONNEL + RADIATION SAFETY AND CONTROL

15-16680 ALSO IN CATEGORIES 18 AND 16
QUESTION 9.2 - DOSE CALCULATIONS FOR DESIGN BASIS ACCIDENTS
CONSUMERS POWER CO., PALISADES PLANT, COVERT TOWNSHIP, MICHIGAN
14 PAGES, 2 FIGURES, 3 TABLES, 4 REFERENCES, NOVEMBER 14, 1966, PAGE 9.2-1 TO 9.2-14 OF CONSUMERS POWER COMPANY APPLICATION FOR REACTOR CONSTRUCTION PERMIT AND OPERATING LICENSE, AMENDMENT NUMBER 3, DOCKET NO. 50-255

9.2 SEVERAL NONCONSERVATIVE PARAMETERS WERE USED IN PSAR DOSE CALCULATIONS. WHAT DOSES ARE CALCULATED FOR DESIGN-BASIS ACCIDENT, USING THE FOLLOWING ASSUMPTIONS - (1) DIFFUSION MODEL, ASSUMING VOLUMETRIC GROUND SOURCE WITH REFLECTION, RATHER THAN VIRTUAL GROUND SOURCE WITHOUT REFLECTION. (2) PASQUILL F METEOROLOGY AND 1-M/SEC WIND FOR FIRST 8 HOURS, PASQUILL F AND 2-M/SEC WIND FROM 8 TO 24 HOURS, AND VARYING WIND SPEED, DIRECTION, AND STABILITY FOR THE BALANCE OF THE ACCIDENT. (3) NO DEPOSITION ENROUTE TO EXPOSURE LOCATIONS. (4) BREATHING RATE OF 347 CC/SEC FOR FIRST 8 HOURS, 174 CC/SEC FROM 8 TO 24 HOURS, AND 232 CC/SEC FOR BALANCE OF ACCIDENT. DESIGN CHANGES NEEDED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*AIRBORNE RELEASE + *ANALYTICAL MODEL + *DOSE + *WIND STATISTICS + AEC QUESTION + PALISADES POINT + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

15-16748 ALSO IN CATEGORIES 9 AND 18
SUPPLEMENTAL INSERT SHEETS FOR ENGINEERING MATERIALS LIST
DIVISION OF TECHNICAL INFORMATION, OAK RIDGE, TENN.
TID-4100 (SUPPL. 39) +. 33 PAGES, JUNE 1967

INCLUDES ETR CONTROL-ROD LATCHING/PRESSURE-DROP MODIFICATIONS, MTR MECHANICALLY ASSEMBLED FUEL ELEMENTS, UCRL PLUTONIUM AIR MONITOR, AND UCRL BF3 NEUTRON SURVEY METER.

AVAILABILITY - DIVISION OF TECHNICAL INFORMATION, OAK RIDGE, TENN, FREE

*ENGINEERING DRAWING LIST + CONTROL ROD, SHIM SAFETY + ETR (ENGINEERING TEST REACTOR) + FUEL ELEMENT + MONITOR, RADIATION, AIR + MONITOR, RADIATION, PERSONNEL + MTR (MATERIAL TESTING REACTOR) + NEUTRON + PLUTONIUM + REACTOR, TEST

15-16800
PAGE NP + AINSWORTH EJ + LEONG GF
RELATIONSHIP OF EXPOSURE RATE AND EXPOSURE TIME TO RADIATION INJURY IN SHEEP
NAVAL RADIOLOGICAL DEFENSE LAB., SAN FRANCISCO, CALIFORNIA
USNRDL-TR-67-22 +. 36 PAGES, 5 FIGURES, 2 TABLES, 33 REFERENCES, JANUARY 10, 1967

RADIATION LETHALITY IN SHEEP WAS STUDIED WITH CO-60 GAMMA RADIATION AT FIVE EXPOSURE RATES RANGING FROM 660 TO 2 R/HR. THE DATA SHOWED THAT A DECREASE IN THE EXPOSURE-RATE RESULTED IN AN INCREASE IN THE LD-50. AN ANALYSIS OF THE DATA SHOWED LINEARITY THROUGH THE RANGE 660-30

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-16800 *CONTINUED*

R/HR. HOWEVER, BETWEEN 3.0 AND 3.6 R/HR, A SHARP DEPARTURE FROM THIS RELATIONSHIP OCCURRED, WITH THE MEDIAN LETHAL DOSES AT 3.6 AND 2.0 R/HR BEING CONSIDERABLY HIGHER THAN PREDICTED FROM EXTRAPOLATION. IN ANOTHER SERIES OF EXPERIMENTS, THE KINETICS OF INJURY ACCUMULATION AT 316 R/HR WAS STUDIED. THE RESULTS WERE COMPARED WITH DOSE-RATE-EFFECTIVENESS EXPRESSIONS DERIVED FOR RODENTS AND MAN.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*PERSONNEL EXPOSURE, RADIATION + *RADIATION EFFECT + BIOMEDICAL + CIVIL DEFENSE + DOSE + ECOLOGICAL CONSIDERATION + RADIATION DAMAGE

15-16903

PAKOW A

MEAN CORRECTION FACTORS OF ROENTGEN IN RAD FOR COMPACT BONE AND MUSCLE TISSUE

ORNL-TR-1544 +. 14 PAGES, 9 FIGURES, 2 TABLES, 10 REFERENCES, 1965, TRANSLATED FOR OAK RIDGE NATIONAL LAB., TENN., FROM STRAHLENTHEORIE, 127. 538-49 (1965)

THE MEAN CONVERSION FACTOR FOR CONVERTING THE MEASURED STANDARD ION DOSE INTO AN ENERGY DOSE IN BONES DEPENDS UPON THE IRRADIATION CONDITIONS AND THE DEPTH IN A PHANTOM (E.G., 90%). AN ATTEMPT WAS MADE TO ESTABLISH RELATIONS BETWEEN THESE VALUES BY THE USE OF QUANTUM ENERGY DISTRIBUTION MEASUREMENTS WHICH HAVE BEEN MADE IN WATER PHANTOMS. NOW, MEAN CONVERSION FACTORS (F-BAR) HAVE BEEN COMPUTED SEVERAL IRRADIATION CONDITIONS. A CLEAR RELATIONSHIP SEEMS TO EXIST BETWEEN F-BAR AND THE HVL FOR THE ENERGY INTERVAL USED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*BIOMEDICAL + *DOSE + DOSE CALCULATION, EXTERNAL + DOSE CALCULATION, INTERNAL + DOSIMETRY, GENERAL

15-16904

ROMAN J + WOLSKA-WITEROWA M + URBANOWICZ Z

THERMOLUMINESCENT PHOSPHORS FOR RADIATION DOSIMETRY

CENTRALNE LABORATORIUM OCHRONY RADIOLOGICZNEJ, WARSAW (POLAND)

CLOR-59/D +. 23 PAGES, 7 REFERENCES, 1966

LiF AND CaF₂ PHOSPHORS WITH THERMOLUMINESCENT PROPERTIES WERE PREPARED FROM COMMERCIAL MATERIALS. THE GLOW CURVES OF THE PHOSPHORS OBTAINED BY VARIOUS METHODS ARE PRESENTED. SOME PREPARATION TECHNIQUES HAVING EFFECT ON THERMOLUMINESCENT PROPERTIES ARE CONSIDERED. A SIMPLE THERMOLUMINESCENT DOSIMETRIC SYSTEM CONTAINING CaF₂-Mn PHOSPHOR WAS SUITABLE TO MEASURE THE GAMMA-RAY DOSE IN THE MILLIROENTGEN RANGE.

AVAILABILITY - MICROCARD EDITIONS, INC., (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM, WISCONSIN 54669

*DOSIMETRY, THERMOLUMINESCENCE + *INSTRUMENTATION, RADIATION MONITORING + GAMMA + RADIATION SAFETY AND CONTROL

15-16905

PESTANER JF + KUBOSE DA + BALKWELL WR

BETA DOSE RATES FROM NEUTRON-IRRADIATED ²³⁵U CARBIDE PARTICLES

NAVAL RADIOLOGICAL DEFENSE LAB., SAN FRANCISCO, CALIFORNIA

USNRL-TR-1082 +. 29 PAGES, JUNE 30, 1966

SMALL HIGHLY RADIOACTIVE PARTICLES COULD BE INJECTED INTO THE BIOSPHERE FROM THE RE-ENTRY AND RUNUP OF A NUCLEAR PROPULSION REACTOR. THIS WOULD CONSTITUTE A POTENTIAL RADIOLOGICAL HAZARD TO MAN. THE WORK REPORTED IS THE EXPERIMENTAL MEASUREMENT OF BETA DOSE RATES FROM FISSION PRODUCTS CONTAINED IN PYROLYTIC-CARBON-COATED URANIUM-235 CARBIDE BEADS OF CORE DIAMETER 90, 120, AND 260 MICRONS. THE DOSE WAS MEASURED IN AN EXTRAPOLATION CHAMBER USING TISSUE-EQUIVALENT ELECTRODES. THE BETA DOSE FROM THE IRRADIATED PARTICLES DELIVERED TO A SEGMENT OF TISSUE CAN BE CALCULATED USING A RATE LAW DERIVED FROM THE EXPERIMENTAL VALUES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*DOSE CALCULATION, EXTERNAL + *FISSION PRODUCT, AIRBORNE + *REACTOR, SPACE + ACTIVATION PRODUCT + BETA EMITTER + DOSE + DOSE MEASUREMENT, EXTERNAL + DOSIMETRY, GENERAL + NEUTRON + NUCLEAR REACTOR + PARTICULATE + RADIATION SAFETY AND CONTROL + URANIUM CARBIDE

15-16906

AUXIER JA + BROWN MD

NEUTRON CROSS SECTIONS AND REACTION PRODUCTS FOR H, C, N, AND O FOR THE ENERGY RANGE FROM THERMAL TO 15 MEV OAK RIDGE NATIONAL LAB., TENN.

ORNL-P-2914 + CONF-660920-15 +. 16 PAGES, 1966

A COMPILATION WAS MADE OF THE MOST DETAILED CROSS-SECTION DATA AVAILABLE AND REACTION PRODUCTS FOR THE FOUR MAJOR ELEMENTS IN TISSUE (H, C, N, O). THE COMPILATION IS FOR NEUTRON ENERGIES

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-16906 *CONTINUED*

BELOW 15 MEV, BUT THE ENERGY INTERVAL REQUIRING THE MOST STUDY AND ANALYSIS WAS THAT FROM 2.5 TO 15 MEV. PARTICULAR ATTENTION WAS DIRECTED TO NONELASTIC REACTIONS. AVERAGE VALUES FOR THE ENERGIES OF THE VARIOUS CHARGED PARTICLES AS A FUNCTION OF THE ENERGY OF THE INCIDENT NEUTRON WERE COMPUTED, AND THE VALUES WERE COMPILED TO PROVIDE A BASIS FOR REVISION OF THE DOSE-DISTRIBUTION FUNCTIONS FOR NEUTRON EXPOSURES OF MAN AND OF ANIMALS USED IN RADIOBIOLOGICAL STUDIES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*DOSE CALCULATION, EXTERNAL + *NEUTRON + BIOMEDICAL + CARBON + DOSE + DOSIMETRY, GENERAL + HYDROGEN + NITROGEN + OXYGEN + RADIATION EFFECT + RADIATION SAFETY AND CONTROL

15-16907

LAWSON RC + WATT DE

THERMAL NEUTRON DEPTH DOSE DEPENDENCE ON BEAM AND PHANTOM SIZE FOR INCIDENT COLLIMATED BEAMS OF FAST NEUTRONS

UNITED KINGDOM ATOMIC ENERGY AUTHORITY, ANNAN (SCOTLAND). PRODUCTION GROUP
PG-REPORT-774 +. 20 PAGES, 5 FIGURES, 3 TABLES, 8 REFERENCES, 1967

THERMAL-NEUTRON FLUX DISTRIBUTIONS PRODUCED AT DEPTH IN TISSUE-EQUIVALENT LIQUID WERE MEASURED FOR SEVERAL COLLIMATED BEAMS OF INCIDENT FAST NEUTRONS WITH THE OBJECT OF OBTAINING DATA FOR CALCULATING THE (NEUTRON, GAMMA) AND N-14(N,P)C-14 DOSES DELIVERED UNDER CONDITIONS EXPERIENCED FREQUENTLY IN RADIOBIOLOGICAL EXPERIMENTS. TWO-GROUP THEORY CAN BE USED TO PREDICT ACCURATELY THE DISTRIBUTION OF THERMAL NEUTRON FLUX WITH DEPTH AND ALSO THE POSITION OF THE PEAK VALUE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*DOSE CALCULATION, EXTERNAL + *NEUTRON + DOSE + DOSIMETRY, GENERAL + FAST NEUTRON + FLUX DISTRIBUTION + PHANTOM, HUMAN BODY + RADIATION SAFETY AND CONTROL + THERMAL NEUTRON

15-16908

DABURON F + CAPELLE A + TRICAUD Y + NIZZA P

EXPERIMENTAL RESULTS CONCERNING THE METABOLISM OF INGESTED I-131 IN ADULT SHEEP DURING LACTATION
COMMISSARIAT A L ENERGIE ATOMIQUE, FONTENAY-AUX-ROSES (FRANCE). CENTRE D ETUDES NUCLEAIRES
CEA-R-3107 +. 68 PAGES, 14 FIGURES, 16 TABLES, 118 REFERENCES, JANUARY 1967, IN FRENCH

THE AUTHORS GIVE THE RESULTS OF A SERIES OF EXPERIMENTS ON THE METABOLISM OF INGESTED IODINE-131 IN ADULT SHEEP UNDER LACTATION. THE MEASUREMENTS WERE MADE FROM 1961 TO 1966. THE WORK WAS CONCERNED INITIALLY WITH THE FIXATION OF IODINE-131 IN THE THYROID GLAND, WITH THE CALCULATION OF RADIATION DOSES ABSORBED, AND WITH WAYS OF SHOWING UP ANY POSSIBLE RADIATION DAMAGE IN THE GLAND. THE MODES OF ABSORPTION OF IODINE-131 AND ITS ELIMINATION THROUGH MILK, URINE, AND THE FAECES WERE THEN CONSIDERED. LAST CHAPTER IS DEVOTED TO CHANGES IN THE RADIOACTIVITY OF THE BLOOD AND OF THE MILK, TO VARIATIONS OF THE PBI LEVEL OF THE BLOOD SERUM AS TO DIFFERENT METHODS FOR MEASURING THIS LEVEL.

AVAILABILITY - MICROCARD EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM, WISCONSIN 54669

*BIOLOGICAL CONCENTRATION, ANIMAL + *INGESTION + BIOMEDICAL + DOSE + DOSE CALCULATION, INTERNAL + ECOLOGICAL CONSIDERATION + IODINE + RADIATION DAMAGE + RADIATION EFFECT

15-16909

JONES TD + AUXIER JA + POSTON JW + JOHNSON DR

DOSE DISTRIBUTION FUNCTIONS FOR NEUTRONS AND GAMMA RAYS IN ANTHROPOMORPHOUS AND RADIOBIOLOGICAL PHANTOMS
OAK RIDGE NATIONAL LAB., TENN.

ORNL-P-2897 + CONF-660920-14 +. 14 PAGES, 1966

A RIGHT CIRCULAR CYLINDER, 30 CM IN DIAMETER AND 60 CM HIGH, WAS ASSUMED TO BE COMPOSED OF STANDARD SOFT TISSUE, AND DOSE AS A FUNCTION OF PENETRATION DEPTH WAS COMPUTED FOR PLANE BEAMS OF INCIDENT NEUTRONS. DATA ARE PRESENTED FOR MONOENERGETIC NEUTRONS OF VARIOUS ENERGIES UP TO 14.0 MEV AS WELL AS FOR THE NEUTRON SPECTRUM FROM THE HEALTH PHYSICS RESEARCH REACTOR (HPRR). THE CALCULATIONS WERE OF A MONTE CARLO NATURE, USING A SLIGHTLY REVISED VERSION OF SNYDERS LINEAR ENERGY TRANSFER (LET) CODE. NEW LET CURVES WERE OBTAINED FOR C,N,O,B,Be, PROTONS, TRITONS, AND ALPHA PARTICLES, AND RECENTLY OBTAINED VALUES OF CROSS SECTIONS FOR THESE SAME ELEMENTS WERE USED WITH THE CODE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*DOSE + *DOSIMETRY, GENERAL + GAMMA + MONTE CARLO + NEUTRON + RADIATION SAFETY AND CONTROL

15-16910

BIRD PM

RADIOISOTOPES IN FOODS

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-16910 *CONTINUED*

DEPARTMENT OF NATIONAL HEALTH AND WELFARE, CANADA

8 PAGES, 7 FIGURES, 6 TABLES, 10 REFERENCES, THE CANADIAN MEDICAL ASSOCIATION JOURNAL 94, PAGES 590-597 (MARCH 19, 1966)

LEVELS OF SR-90 AND CS-137 IN CANADIAN MILK DURING 1960-64 WERE CONSISTENTLY HIGHER THAN THOSE IN THE UNITED STATES OR THE UNITED KINGDOM, BUT LEVELS IN HUMANS, WHILE ALSO HIGHER, DID NOT REFLECT THE DIFFERENCES OBSERVED IN MILK. ANNUAL DOSE RATES OF 27 MILLIRADS TO BONE AND 4 TO THE WHOLE BODY CORRESPOND TO THE HIGHEST AVERAGE CONCENTRATIONS OF SR-90 AND CS-137 SO FAR OBSERVED. LEVELS OF CS-137 IN THE URINE OF RESIDENTS OF THE CANADIAN NORTH INCREASED WITH INCREASING CONSUMPTION OF CARIBOU OR REINDEER.

*BIOLOGICAL CONCENTRATION, FOOD + *FALLOUT + BIOLOGICAL CONCENTRATION, MAN + BIOLOGICAL CONCENTRATION, MILK + BIOMEDICAL + CANADA + CESIUM + DOSE + DOSE MEASUREMENT, INTERNAL + ECOLOGICAL CONSIDERATION + ICRP (INT. COMM. ON RADIOLOGICAL PROTECTION) + STRONTIUM

15-16911

THIS WEEK IN WASHINGTON

1 PAGE, THE NATIONAL OBSERVER, PAGE 2, (MAY 15, 1967)

TO DATE, 98 URANIUM MINERS IN THE WEST HAVE DIED OF LUNG CANCER, AND THE U.S. PUBLIC HEALTH SERVICE ESTIMATES THAT AS MANY AS 529 MORE MAY DIE OVER THE NEXT 20 YEARS OF RADIATION EXPOSURES THEY HAVE ALREADY EXPERIENCED. UNLESS THE RADIATION EXPOSURE OF THE MINERS IS REDUCED, ONE OUT OF EVERY 10 URANIUM MINERS IN THE FUTURE WILL DIE OF LUNG CANCER. THE JOINT COMMITTEE ON ATOMIC ENERGY RADIATION SUBCOMMITTEE IS ENGAGED IN FACT-FINDING ON THIS SUBJECT.

*MINING + *PERSONNEL EXPOSURE, RADIATION + *RADIATION SAFETY AND CONTROL + CODES AND STANDARDS + RADIATION EFFECT

15-16912

AINSWORTH FJ + MITCHELL FA

POSTIRRADIATION LEUKOCYTE PATTERNS IN MICE AND DOGS TREATED WITH ENDOTOXIN

NAVAL RADIOLOGICAL DEFENSE LABORATORY, SAN FRANCISCO

USNRDL-TR-67-23 +. 22 PAGES, 4 FIGURES, 37 REFERENCES, FEBRUARY 20, 1967

DATA SHOWED THAT ENDOTOXIN-TREATED ANIMALS HAD HIGHER NUMBERS OF CIRCULATORY GRANULOCYTES THAN DID CONTROLS BETWEEN APPROXIMATELY 7 AND 17-21 DAYS AFTER IRRADIATION. THE PATTERN OF THE RETURN OF GRANULOCYTE COUNTS TOWARD NORMAL IN ENDOTOXIN-TREATED ANIMALS WAS CHARACTERIZED BY A LARGE RISE DURING THE SECOND WEEK, WHICH COINCIDED IN TIME WITH THE ABORTIVE RISE OBSERVED IN UNTREATED ANIMALS. SPECULATION IS OFFERED RELATING TO THE MECHANISM BY WHICH ENDOTOXIN INFLUENCES POSTIRRADIATION LEUKOCYTE COUNTS.

AVAILABILITY - DEFENSE DOCUMENTATION CENTER, CAMERON STATION, ALEXANDRIA, VIRGINIA

*BIOMEDICAL + *RADIATION INJURY, TREATMENT OF + *RADIATION PROTECTION, CHEMICAL + ECOLOGICAL CONSIDERATION + RADIATION DAMAGE + RADIATION EFFECT

15-16913

CAPROLL HW + KIMELDORF DJ

PROTECTION THROUGH PARABIOSIS AGAINST THE LETHAL EFFECT OF LARGE X-RAY EXPOSURE DOSES

NAVAL RADIOLOGICAL DEFENSE LABORATORY, SAN FRANCISCO, CALIF.

USNRDL-TR-67-27 +. 17 PAGES, 1 TABLE, 11 REFERENCES, FEBRUARY 17, 1967

PARABiotic RAT PAIRS WITH A SKIN-VASCULAR ANASTOMOSIS WERE USED TO TEST WHETHER SHIELDING OF ONE MEMBER OF THE PAIR WOULD PROTECT THE IRRADIATED PARTNER AGAINST VERY LARGE DOSES OF X-RAYS (1200-2400 R). WITH EXCEPTION OF THE LOWEST DOSE, ALL UNSHIELDED IRRADIATED PAIRS OR SINGLE IRRADIATED ANIMALS DIED BEFORE 5 DAYS HAD ELAPSED. IN CONTRAST, IRRADIATED RATS THAT HAD A SHIELDED PARABiotic PARTNER SURVIVED THE 5-DAY PERIOD, AND MANY SURVIVED BEYOND 30 DAYS. THIS IS INTERPRETED AS PROTECTION AGAINST THE ACUTE INTESTINAL DEATH THAT NORMALLY OCCURS IN THE DOSE RANGE INVESTIGATED.

AVAILABILITY - DEFENSE DOCUMENTATION CENTER, CAMERON STATION, ALEXANDRIA, VIRGINIA

*BIOMEDICAL + *RADIATION EFFECT + DOSE + ECOLOGICAL CONSIDERATION + RADIATION DAMAGE + SHIELDING + X-RAY

15-16914

LAMSON RG + BILLINGS MS + BENNETT LR

INCIDENCE OF DISEASE AND CAUSE OF DEATH FOLLOWING SINGLE AND DIVIDED DOSES OF TOTAL BODY X-IRRADIATION IN RATS

UNIVERSITY OF CALIFORNIA, LOS ANGELES. LAB. OF NUCLEAR MEDICINE AND RADIATION BIOLOGY

UCLA-12-616 +. 29 PAGES, 9 TABLES, 4 REFERENCES, JANUARY 1967

FEMALE LONG EVANS-WISTAR F-SUB-1 HYBRID RATS WERE IRRADIATED WITH X RAYS AT AGE THREE MONTHS WITH 120, 240, OR 480 R IN EITHER SINGLE OR DIVIDED TOTAL-BODY EXPOSURES. LIFE EXPECTANCY WAS SHORTENED AT ALL PERIODS OF LIFE AT ALL THREE DOSE LEVELS. RATE OF WEIGHT GAIN WAS SUPPRESSED DURING THE FIRST YEAR OF LIFE AND THEREAFTER. EXTERNAL TUMORS AND BLOODY VAGINAL DISCHARGE WERE INCREASED IN FREQUENCY, WITH DOSE DEPENDENCE. A THRESHOLD FOR GREYING OCCURRED BETWEEN 120 AND 240 R. DOSE FRACTIONATION PROTECTED AGAINST GREYING, EPILATION,

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-16914 *CONTINUED*

SKIN ULCERS, BLOODY VAGINAL DISCHARGE, AND CATARACTS, BUT INCREASED THE INCIDENCE OF EXTERNAL TUMORS. EPILATION AND EXTERNAL TUMORS BOTH APPEARED SIGNIFICANTLY EARLIER AFTER IRRADIATION. ONSET OF GREYING WAS DELAYED BY DOSE FRACTIONATION. THE DISEASES OBSERVED ARE SUFFICIENTLY AGE-DEPENDENT SO THAT RATS WITH THESE DISEASES LIVED LONGER THAN THOSE WITHOUT THESE CONDITIONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*BIOMEDICAL + *RADIATION EFFECT + DOSE + ECOLOGICAL CONSIDERATION + RADIATION DAMAGE + X-RAY

15-16915

GRIFFITHS P + ERICKSON PB

RADIOLOGICAL PREDICTION AND MONITORING OF TESTS AT THE NUCLEAR ROCKET DEVELOPMENT STATION
AEC/NASA SPACE NUCLEAR PROPULSION OFFICE

9 PAGES, 7 FIGURES, 8 TABLES, IEEE TRANS. NUCL. SCI. 13(1), PAGE 6-13 (FEB. 1966)

THE PROCEDURE AND FORMULA USED IN THE RADIOLOGICAL ANALYSIS OF REACTOR TESTING AT THE NUCLEAR ROCKET DEVELOPMENT STATION ARE DESCRIBED. MONITORING METHODS ARE DISCUSSED AND COMPARISON IS MADE BETWEEN MEASURED DOSE LEVELS AND GUIDE VALUES.

*DOSE + *REACTOR, SPACE + DOSE CALCULATION, EXTERNAL + DOSE CALCULATION, INTERNAL + FISSION PRODUCT RELEASE, GENERAL + INGESTION + INHALATION + IODINE + METEOROLOGY + SURVEY, RADIATION, ENVIRONMENTAL + SURVEY, RADIATION, GENERAL

15-16916

COWSER KE + KAYE SV + ROHWER PS + SNYDER WS + STRUXNESS EG

DOSE-ESTIMATION STUDIES RELATED TO PROPOSED CONSTRUCTION OF AN ATLANTIC-PACIFIC INTEROCEANIC CANAL WITH NUCLEAR EXPLOSIVES. PHASE I

OAK RIDGE NATIONAL LABORATORY, HEALTH PHYSICS DIVISION, TENN.

ORNL-4101 +. 210 PAGES, 13 FIGURES, 11 TABLES, 3 REFERENCES, MARCH 1967

THIS REPORT PRESENTS INFORMATION OBTAINED BY ORNL IN PHASE I OF DOSE-ESTIMATION STUDIES TO EVALUATE THE RADIOLOGICAL-SAFETY FEASIBILITY OF EXCAVATING AN ATLANTIC-PACIFIC INTEROCEANIC CANAL WITH NUCLEAR EXPLOSIVES. THE INFORMATION INCLUDES (1) METHODS FOR ESTIMATING EXTERNAL AND INTERNAL DOSE EQUIVALENTS, FOR QUANTIFYING THE TRANSFER OF RADIONUCLIDES THROUGH CRITICAL EXPOSURE PATHWAYS, AND FOR IDENTIFYING THE RADIONUCLIDES LIKELY TO BE CRITICAL, (2) CRITERIA FOR EVALUATING THE RADIOLOGICAL SAFETY OF THE OPERATION, AND (3) LISTS OF RADIONUCLIDES ARRANGED ACCORDING TO THE DOSE COMMITMENT THAT RESULTS FROM EXPOSURE TO A UNIT QUANTITY OF EACH RADIONUCLIDE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*DOSE + *NUCLEAR EXPLOSION DEBRIS + *RADIATION SAFETY AND CONTROL + BIOLOGICAL CONCENTRATION, MAN + DOSE CALCULATION, EXTERNAL + DOSE CALCULATION, INTERNAL + ECOLOGICAL CONSIDERATION + EQUATION, GENERAL + FALLOUT + FEDERAL RADIATION COUNCIL + INGESTION + INHALATION + IODINE + MATHEMATICAL TREATMENT + NUCLEAR DETONATION + PERSONNEL EXPOSURE, RADIATION + SOIL, NUCLIDE OCCURRENCE + SURFACE WATER, NUCLIDE OCCURRENCE + TRITIUM

15-16917

CLINICAL USES OF WHOLE-BODY COUNTING

INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA (AUSTRIA)

STI-PUB-122 + CONF-650673 +. 302 PAGES, FIGURES, TABLES, 216 REFERENCES, PROCEEDINGS OF A PANEL HELD IN VIENNA, JUNE 28-JULY 2, 1965. PANEL PROCEEDINGS SERIES

CONTAINS A SERIES OF PAPERS THAT DEAL WITH PHYSICAL ASPECTS OF WHOLE-BODY COUNTERS AND CLINICAL APPLICATIONS OF WHOLE-BODY COUNTING.

AVAILABILITY - INTERNATIONAL ATOMIC ENERGY AGENCY (NEW YORK OR GENEVA), \$6.00 COPY

*BIOMEDICAL + *COUNTER, WHOLE BODY + CALCIUM + COUNTER + DOSIMETRY, GENERAL + INSTRUMENTATION, RADIATION MONITORING + IODINE + IRON + POTASSIUM + SHIELDING + STRONTIUM

15-16918

ALSO IN CATEGORY 14

EFFECT OF THE SAVANNAH RIVER PLANT ON ENVIRONMENTAL RADIOACTIVITY. SEMIANNUAL REPORT, JULY-DECEMBER 1966
DU PONT DE NEMOURS (E.I.) AND CO., AIKEN, S. C., SAVANNAH RIVER LABORATORY
DPST-67-30-1 +. 20 PAGES, FEBRUARY 1967

PRESENT RESULTS OF THE ENVIRONMENTAL MONITORING PROGRAM OF THE ATMOSPHERE, VEGETATION, FOOD, AND WATER FOR JULY 1 THROUGH DECEMBER 31, 1966. THE QUANTITY OF RADIOACTIVE WASTE RELEASED TO THE ENVIRONS WAS, FOR THE MOST PART, TOO SMALL TO BE DISTINGUISHED FROM NATURAL BACKGROUND RADIATION OR WAS OBSCURED BY WORLDWIDE FALLOUT FROM NUCLEAR WEAPONS TESTING. FALLOUT FROM THE CHINESE NUCLEAR TEST ON OCTOBER 27, 1966, WAS DETECTED, AND FALLOUT FROM THE 5TH CHINESE DETONATION IN LATE DECEMBER HAD NOT ARRIVED BY DECEMBER 31. BETA ACTIVITY IN AIR, WHICH SHOWED NO RELATION TO PLANT OPERATIONS, WAS ABOUT THE SAME AS THAT OBSERVED FOR THE PAST 18 MONTHS. RADIOACTIVE MATERIALS IN FISH FLESH CONTINUED TO BE FAR BELOW LEVELS CONSIDERED

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ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-16918 *CONTINUED*
SIGNIFICANT FROM A HEALTH STANDPOINT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL SPECIFICATIONS, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*FALLOUT + *SAVANNAH RIVER PLANT + *SURVEY, RADIATION, ENVIRONMENTAL + AIR + BETA EMITTER + BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + BIOLOGICAL CONCENTRATION, FOOD + BIOLOGICAL CONCENTRATION, GENERAL + BIOLOGICAL CONCENTRATION, MILK + BIOLOGICAL CONCENTRATION, VEGETATION + CONCENTRATION, AREA + ENVIRONMENTAL CONDITION + GAMMA + MAXIMUM PERMISSIBLE CONCENTRATION (MPC) + NUCLEAR DETONATION + SURFACE WATER, NUCLIDE OCCURRENCE + WASTE DISPOSAL, GENERAL

15-16919 ALSO IN CATEGORY 14
ARGIERO L + MANFREDINI S + PALMAS G
ABSORPTION OF FISSION PRODUCTS BY MARINE ORGANISMS
SC-T-67-0903 +. 7 PAGES, FIGURES, TABLES, REFERENCES, TRANSLATED BY MARCEL I. WEINREICH FOR SANDIA CORP., ALBUQUERQUE, N. MEX., FROM HEALTH PHYS., 12, PAGES 1259-65 (1966)

THIS REPORT CONCERNS A SYSTEMATIC STUDY OF THE SORPTION OF RADIONUCLIDES BY MARINE ORGANISMS. IN THE PRESENT WORK, THE SORPTION AND THE CONCENTRATION FACTORS OF SR-90 AND CS-137 IN MYTILUS GALLOPROVINCIALIS ARE STUDIED. EXAMINING THE SR-90 DATA, IT IS VERIFIED THAT EQUILIBRIUM IS MAINTAINED AFTER 120 HR, AND THE CONCENTRATION FACTOR IS 3.6 BASED ON FRESH WEIGHT (AFTER CENTRIFUGATION) AND 98.3 BASED ON ASH WEIGHT. AS TO CS-137, THE EQUILIBRIUM IS REACHED AFTER ABOUT 100 HR. THE CONCENTRATION FACTOR, IF BASED ON FRESH WEIGHT (AT 110 C), VARIES FROM 4.3 FOR ADULT ORGANISMS TO 6.4 FOR YOUNG ONES. IF BASED ON ASH WEIGHT, IT VARIES FROM 117 FOR ADULTS TO 175 FOR YOUNG.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + *FALLOUT + CESIUM + CONTAMINATION + FISSION PRODUCT RELEASE, GENERAL + NIOBIUM + OCEAN AND SEA + POTASSIUM + RHODIUM + RUTHENIUM + SAMPLING + SPECTROMETRY, GAMMA + STATISTICAL ANALYSIS + STRONTIUM + SURFACE WATER, NUCLIDE OCCURRENCE

15-16920 ALSO IN CATEGORY 14
HONSTEAD JF + SCLDAR JK
ENVIRONMENTAL MONITORING
BATTELLE-NORTHWEST, RICHLAND, WASHINGTON, PACIFIC NORTHWEST LABORATORY
BNWL-SA-465 +. 73 PAGES, FIGURES, REFERENCES, MARCH 25, 1965

THE ENVIRONMENTAL RADIATION MONITORING PROGRAM AT THE BATTELLE MEMORIAL INSTITUTE PACIFIC NORTHWEST LABORATORY, RICHLAND, WASHINGTON, IS DESCRIBED IN DETAIL. CRITERIA FOR ENVIRONMENTAL MONITORING PROGRAMS ARE REVIEWED, AND METHODS USED FOR PREOPERATIONAL SURVEYS, EMERGENCY SURVEYS, OPERATIONAL SURVEYS, RADIOLOGICAL MONITORING OF THE COLUMBIA RIVER AND THE ATMOSPHERE ARE DESCRIBED. EXPOSURE PATHWAYS THAT MUST BE COMBINED TO ASSESS THE TOTAL EXPOSURE OF EMPLOYEES AND THE PUBLIC ARE DISCUSSED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*FALLOUT + *SURVEY, RADIATION, ENVIRONMENTAL + AIR + AIRBORNE RELEASE + ANALYTICAL TECHNIQUE, GENERAL + BATTELLE NORTHWEST + BIOLOGICAL CONCENTRATION, GENERAL + BIOMEDICAL + CODES AND STANDARDS + CONTAMINATION + DOSE + HANFORD SITE + MAXIMUM PERMISSIBLE CONCENTRATION (MPC) + MEASUREMENT, GENERAL + MONITOR, RADIATION, AIR + MONITOR, RADIATION, ENVIRONMENTAL + MONITORING PROGRAM, ENVIRONMENTAL + PERSONNEL EXPOSURE, RADIATION + POPULATION EXPOSURE + RADIOCHEMICAL ANALYSIS + RAINOUT + REACTOR POWER + RIVER, COLUMBIA + SAMPLING + STACK + STATISTICAL ANALYSIS + SURFACE WATER, NUCLIDE OCCURRENCE + SURVEY, GENERAL + SURVEY, RADIATION, EMERGENCY + X-RAY

15-16935
EFFECTS OF LOW DOSES OF RADIATION ON CROP PLANTS
INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA, AUSTRIA
STI-DOC-10/64 +. 65 PAGES, 17 FIGURES, 7 TABLES, 174 REFERENCES, TECHNICAL REPORTS SERIES NO. 64, SEPTEMBER 1966

EXPERIMENTAL RESULTS OF STUDIES ON RADIOINDUCED GROWTH STIMULATION IN PLANTS ARE REVIEWED AND EVALUATED, AND THE SIGNIFICANCE OF SUCH INVESTIGATIONS WITH RESPECT TO PRACTICAL APPLICATIONS FOR INCREASING CROP YIELDS ARE DISCUSSED. INCREASED GROWTH (GROWTH STIMULATION) WAS OBSERVED IN SEVERAL PLANT SPECIES, AND THE EFFECTS OF RADIATION VARIED WITH THE PLANT SPECIES AND VARIETY. IN ADDITION TO AN INCREASE IN PLANT LENGTH, IMPROVED ROOT-GROWTH DEVELOPMENT WAS ALSO FOUND IN MANY CASES. IT WAS THE GENERAL OPINION THAT THE EFFECTS OF SMALL DOSES OF IONIZING RADIATIONS MAY BE CAUSED BY SHORTENING OF SEED DORMANCY.

AVAILABILITY - INTERNATIONAL ATOMIC ENERGY AGENCY, NEW YORK OR GENEVA, \$1.50 COPY

*AGRICULTURAL CONSIDERATION + *RADIATION EFFECT + DOSE + ECOLOGICAL CONSIDERATION

15-16936

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-16936 *CONTINUED*

COMPUTER CALCULATION OF DOSE DISTRIBUTIONS IN RADIOTHERAPY
INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA, AUSTRIA

STI-DCC-10-57 +. 215 PAGES, FIGURES, TABLES, REFERENCES, REPORT OF A PANEL HELD IN VIENNA, OCTOBER 19-22, 1965, TECHNICAL REPORTS SERIES NO. 57

COMPUTER TECHNIQUES ARE RAPIDLY EXPANDING IN PROBLEMS OF EXTERNAL BEAM, AND INTRACAVITARY AND INTERSTITIAL DOSIMETRY. THE MOST IMPORTANT RESULT OF AUTOMATION DOSAGE CALCULATIONS IS NOT SIMPLY AN INCREASE IN THE QUANTITY OF DATA BUT IMPROVEMENT IN THEIR QUALITY AS A TREATMENT GUIDE FOR THERAPISTS. A PANEL OF 15 EXPERTS FROM SEVEN COUNTRIES MET IN VIENNA WITH OBSERVERS FROM THE WORLD HEALTH ORGANIZATION IN OCTOBER 1965. THIS BOOK CONTAINS A 24-PAGE REPORT AND RECOMMENDATIONS, 20 WORKING PAPERS, AN EIGHT-PAGE QUESTIONNAIRE USED IN THE SURVEY. FINALLY, THERE IS A LIST OF 27 INSTITUTIONS IN EIGHT COUNTRIES, 13 IN THE UNITED STATES, SIX IN BRITAIN, THAT HAVE USED COMPUTERS IN RADIOTHERAPEUTIC DOSIMETRY.

AVAILABILITY - INTERNATIONAL ATOMIC ENERGY AGENCY, NEW YORK OR GENEVA, \$4.50 COPY

*BIOMEDICAL + *COMPUTER PROGRAM + DOSE + DOSIMETRY, GENERAL + PERSONNEL EXPOSURE, RADIATION + RADIATION SAFETY AND CONTROL

15-16938

LABORATORY TRAINING MANUAL ON THE USE OF ISOTOPES AND RADIATION IN ANIMAL RESEARCH
INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA, AUSTRIA

STI-DCC-10/60 +. 196 PAGES, 42 FIGURES, 10 TABLES, 6 REFERENCES, TECHNICAL REPORTS SERIES NO. 60, AUGUST 1966

THIS MANUAL CONTAINS LECTURE MATERIAL AND LABORATORY EXERCISES APPLICABLE TO A BASIC COURSE ON THE USE OF ISOTOPES AND RADIATION IN ANIMAL RESEARCH. BASIC CONCEPTS OF NUCLEAR PHYSICS, RADIATION DETECTION, AND HEALTH PHYSICS ARE DISCUSSED, AND APPLICATIONS OF THE BASIC PRINCIPLES ARE DISCUSSED. EIGHTEEN LABORATORY EXERCISES ARE GIVEN TO ILLUSTRATE THE USE OF VARIOUS RADIATION DETECTION INSTRUMENTS. 13 OTHERS COVER TRACER STUDIES IN RATS, DOGS, AND FROGS. ONE SHOWS THE ACUTE EFFECTS OF RADIATION ON RATS. THE MATERIAL IS WELL ORGANIZED, AND EACH SECTION IS FOLLOWED BY A BIBLIOGRAPHY. THE APPENDIXES PRESENT INFORMATION PERTINENT TO THE STUDIES.

AVAILABILITY - INTERNATIONAL ATOMIC ENERGY AGENCY, NEW YORK OR GENEVA, \$4.00 COPY

*BIOLOGICAL CONCENTRATION, ANIMAL + *HEALTH PHYSICS TRAINING + *RADIATION EFFECT + BIOMEDICAL + COUNTER + DECONTAMINATION + ECOLOGICAL CONSIDERATION + INSTRUMENTATION, RADIATION MONITORING + TRACER, RADIOACTIVE + TRITIUM

15-16957

SPODENKIEWICZ T + GAWRONSKI A

METHOD FOR DETERMINING RADON (RN-222) IN AIR EXHALED

INSTITUTE OF NUCLEAR RESEARCH, POLAND

AEC-TR-6499 +. 11 PAGES, 4 FIGURES, 5 TABLES, 18 REFERENCES, NUKLEONIKA 10(3), PAGE 27-37, (1965)

A METHOD FOR DETERMINING RA-226 IN THE BODY WAS DEVELOPED, BASED ON THE DETERMINATION OF RN-222 IN EXHALED AIR. IONIZATION CHAMBERS WERE DEVISED FOR USE IN CONJUNCTION WITH A STRING ELECTROMETER CONNECTED IN THE COMPENSATION SYSTEM. MEASUREMENTS WERE CARRIED OUT WITH 30 INDIVIDUALS OCCUPATIONALLY UNEXPOSED TO IONIZING RADIATION. THE DATA OBTAINED WITH THEM WERE USED FOR ESTIMATING THE DETECTABILITY OF THE METHOD. THIS WAS FOUND TO BE 0.08 TIMES 10 TO THE MINUS 7TH CURIE RA-226 IN THE BODY. THE BODY BURDEN OF RA-226 WAS DETERMINED IN 154 INDIVIDUALS WORKING WITH LUMINOUS PAINTS CONTAINING THIS ELEMENT. THE BURDEN ESTABLISHED DID NOT EXCEED THE MAXIMUM PERMISSIBLE BODY BURDEN.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*BIOLOGICAL CONCENTRATION, MAN + *RADON + DOSE + DOSE MEASUREMENT, INTERNAL + INSTRUMENTATION, RADIATION MONITORING + MONITOR, RADIATION, AIR + RADIUM + SAMPLING

15-16963

WOJCIWICZ S

DETECTION OF LOW-LEVEL BETA ACTIVITY WITH G-M COUNTERS

DEPARTMENT OF ELECTRONICS, INSTITUTE OF NUCLEAR RESEARCH, SWIERK

AEC-TR-6493 +. 3 PAGES, NUKLEONIKA 10, PAGES 20-23, (1965)

A METHOD FOR ELIMINATING THE EFFECT OF COSMIC RAYS ON BACKGROUND COUNTS IN G-M COUNTERS IS GIVEN. PRACTICAL REALIZATIONS ARE DISCUSSED, AND DATA ARE GIVEN WHICH ALLOWS YOU TO COMPARE THE SOLUTIONS DESCRIBED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*INSTRUMENTATION, RADIATION MONITORING + COUNTER + MONITOR, RADIATION, GENERAL

15-17114

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-17114 *CONTINUED*
FORYS M I ZLOTOWSKI I
A G-M COUNTER FOR ACCURATE MEASUREMENT OF THE ACTIVITY OF ORGANIC COMPOUNDS OF ^{14}C
DEPARTMENT OF NUCLEAR CHEMISTRY, WARSAW UNIVERSITY
AEC-TR-6493 +. 5 PAGES, FIGURES, NUKLEONIKA 10, PAGES 32 THRU 36, (1965)

THE ARTICLE DESCRIBES THE CONSTRUCTION OF A SIMPLE G-M COUNTER FOR DETERMINING THE ACTIVITY OF ORGANIC COMPOUNDS IN THE FORM OF CARBON DIOXIDE. THE TECHNIQUE IS GIVEN. THE DEVICE MAKES IT POSSIBLE TO MEASURE ACTIVITIES DOWN TO 0.00005 MICROCURIE/MG WITH AN ERROR LESS THAN 1%.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*INSTRUMENTATION, RADIATION MONITORING + ANALYTICAL TECHNIQUE, GENERAL + CARBON + COUNTER

15-17101 ALSO IN CATEGORY 17
HEALTH PHYSICS HANDBOOK
GENERAL DYNAMICS, FORT WORTH
OSP-379 +. 316 PAGES, FIGURES, TABLES, APRIL 1963

INFORMATION FOR NUCLEAR AEROSPACE REACTOR FACILITY, WITH SECTIONS ON (1,3) PERSONNEL AND ENVIRONMENTAL MONITORING, (2) INSTRUMENTATION, (4) PHYSICAL CONSTANTS AND EQUATIONS, (5) SOURCE AND DOSE RATE - SHIELDING, GEOMETRY - DATA, (6) BIOLOGICAL DATA, (7) DECONTAMINATION, (8) SHIPPING REGULATIONS, (9) CHARTS AND GRAPHS, (10) GLOSSARY.

AVAILABILITY - GENERAL DYNAMICS, FORT WORTH, TEXAS

*HEALTH PHYSICS TRAINING + PROCEDURES AND MANUALS + REACTOR, RESEARCH + STAFFING, TRAINING, QUALIFICATION

15-17249 ALSO IN CATEGORY 1
HART JC
ON THE LEGALISTIC ASPECTS OF THE RADIATION EXPOSURE RECORD
OAK RIDGE NATIONAL LAB., TENN.
ORNL-P-2521 +. 24 PAGES, 34 REFERENCES, HEALTH PHYSICS 13, PAGES 319-326, (JUNE, 1966)

ATOMIC ENERGY INSTALLATIONS HAVE ACCUMULATED VAST QUANTITIES OF DATA FOR THE RADIATION EXPOSURE RECORD AS A FUTURE-INTEREST MATTER. NO SMALL PART OF THIS ACCUMULATION HAS BEEN FOR SO-CALLED LEGAL REASONS EVEN THOUGH ONLY A FEW LEGAL PRECEDENTS HAVE BEEN SET IN THIS PARTICULAR AREA. SEVERAL RULES HAVE BEEN LAID DOWN OR RECOMMENDED BY VARIOUS AGENCIES. SPECIFICALLY INVOLVED ARE (I) THE WORKMENS COMPENSATION ACTS, (II) THE WRONGFUL-DEATH STATUTES, (III) A CONSIDERATION FOR PROPERTY RIGHTS IN CERTAIN TYPES OF PERSONNEL RECORDS, AND (IV) THE LAW OF EVIDENCE. DOSE DATA MAINTAINED FOR TECHNICAL REASONS ARE USUALLY IDENTIFIABLE WITH THE MEDICAL ASPECTS OF DOSE INTERPRETATION, WHILE DOSE DATA MAINTAINED FOR THE LEGAL RECORD ARE ASSOCIATED WITH EVIDENTIARY PROBLEMS IN LAW. THIS STUDY REVIEWS SOME OF THE LEGAL PROBLEMS ENCOUNTERED AND EVALUATES THEM IN RELATION TO CURRENT REQUIREMENTS AND RECOMMENDED PRACTICES.

*LAW + PERSONNEL EXPOSURE, RADIATION + REVIEW

15-17268
LABORATORY TRAINING MANUAL ON THE USE OF ISOTOPES AND RADIATION IN ENTOMOLOGY. TECHNICAL REPORTS SERIES NO. 61
INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA, AUSTRIA
STI-DCC-10/61 +. 144 PAGES, 29 FIGURES, 9 TABLES, AUGUST, 1966

GENERAL AND BASIC INFORMATION ENCOMPASSING THE PROPERTIES OF RADIOISOTOPES AND RADIATIONS, THE METHODS OF RADIATION DETECTION, THE APPLICATION AND USES OF THE BASIC PROPERTIES OF RADIOISOTOPES AND RADIATIONS, AND THE PRECAUTIONS AND PROCEDURES NECESSARY FOR THE SAFETY OF THE INDIVIDUAL IN THEIR USE ARE PRESENTED IN LECTURE FORM.

AVAILABILITY - INTERNATIONAL ATOMIC ENERGY AGENCY, NEW YORK OR GENEVA, \$3.50

*ECOLOGICAL CONSIDERATION + *RADIATION SAFETY AND CONTROL + ANALYTICAL TECHNIQUE, GENERAL + BIOLOGICAL CONCENTRATION, GENERAL + COUNTER + DOSE + RADIATION EFFECT + RADIOISOTOPE + TRACER, GAS + TRACER, RADIOACTIVE + TRITIUM

15-17269
KAMBOURIS C.
A COMPARISON OF EXISTING METHODS FOR THE MEASUREMENT OF RADIOACTIVE SAMPLES TAKING ACCOUNT OF SENSITIVITY AND TOTAL TIME OF MEASUREMENT
FESTERFICHISCHE STUDIENGESellschaft FÜR ATOMENERGIE G.M.B.H., SEIBERSDORF. INSTITUT FÜR STRAHLENSCHUTZ
NP-TR-1460 + SGAE-SS-3 +. 1966, 16 PAGES, TRANSLATED FROM REPORT SGAE-SS-3/1966

COMPARES METHODS FOR MEASURING RADIOACTIVE SUBSTANCES. THE COMPARISON IS MADE IN RELATION TO THE STATISTICAL ACCURACY AND THE TOTAL TIME OF MEASUREMENT. THE FORMULA DERIVED FOR CALCULATING THE LOWEST POSSIBLE DETECTION LIMIT ENABLES THE SENSITIVITY TO BE DETERMINED IN ALL CASES.

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ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-17269 *CONTINUED*

AVAILABILITY - JOHN CRERAR LIBRARY, 35 WEST 33RD. ST., CHICAGO, ILLINOIS, 60616, \$1.60 COPY, \$0.80 MICROFICHE

*DOSIMETRY, GENERAL + *STATISTICAL ANALYSIS + INSTRUMENTATION, RADIATION MONITORING + MONITOR, RADIATION, GENERAL + RADIATION SAFETY AND CONTROL

15-17270

JOHANSEN G

DIRECTIONAL CHARACTERISTICS AND NEUTRON SENSITIVITY OF IONIZATION-CHAMBER DOSIMETERS

FORSVARETS FORSKNINGSRAAD, COPENHAGEN, DENMARK

NP-16701 +. 36 PAGES, AUGUST, 1966, (IN DANISH)

THE DOSIMETER IS INDIRECTLY READABLE. IT CAN BE STORED IN CHARGED CONDITION READY FOR USE FOR SEVERAL YEARS. AS THE NEUTRON SENSITIVITY IS NOT EQUAL TO 1, THE DOSIMETER CANNOT MEASURE THE SUM OF THE NEUTRON AND GAMMA DOSES. IN A MIXED RADIATION FIELD IT MEASURES THE GAMMA DOSE WITH AN UNCERTAINTY OF 20% IN MOST OF THE SITUATIONS TO WHICH THE CIVILIAN POPULATION IS EXPOSED. BY USING TWO DOSIMETERS WITH DIFFERENT NEUTRON SENSITIVITY THE NEUTRON AS WELL AS THE GAMMA DOSE CAN BE MEASURED. IT IS SHOWN THAT THE NEUTRON DOSE IS OFTEN SO LARGE THAT IT SHOULD BE MEASURED.

AVAILABILITY - MICROCARD EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM, WISCONSIN 54669

*DOSIMETRY, GENERAL + *INSTRUMENTATION, RADIATION MONITORING + DOSE + NEUTRON + RADIATION SAFETY AND CONTROL + X-RAY

15-17272

RAPRACTOUGH JT + TEASDALE WE + JENSEN RG

HYDROLOGY OF THE NATIONAL REACTOR TESTING STATION AREA, IDAHO. ANNUAL PROGRESS REPORT, 1965

GEOLOGICAL SURVEY, IDAHO FALLS, IDAHO

IDG-22048 +. 118 PAGES, FIGURES, FEBRUARY, 1967

THIS ANNUAL REPORT DESCRIBES A STUDY BY THE U.S. GEOLOGICAL SURVEY, SPONSORED BY THE USAEC, TO DETERMINE THE EFFECTS OF RADIOACTIVE WASTE DISPOSAL TO THE BASALTS OF THE SNAKE PLAIN AQUIFER. GROUND- AND SURFACE-WATER SAMPLES WERE COLLECTED FOR CHEMICAL AND RADIO-METRIC ANALYSES. THE RESULTS WERE EVALUATED AND MAPPED. GROUNDWATER LEVELS WERE ALSO MONITORED AND MAPPED. PUMPAGE AND WASTE-DISPOSAL DATA ARE GIVEN.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*GEOLOGICAL CONSIDERATION, GENERAL + *HYDROLOGICAL CONSIDERATION, GENERAL + *WASTE DISPOSAL, LIQUID + GEOLOGICAL CONSIDERATION, GEOCHEMICAL + GEOLOGICAL CONSIDERATION, GEOPHYSICAL + GROUND WATER, NUCLIDE OCCURRENCE + GROUND WATER, PROPERTY + HYDROLOGICAL CONSIDERATION, QUALITY OF WATER + HYDROLOGICAL CONSIDERATION, RATE OF MOVEMENT + NRTS (NATIONAL REACTOR TEST STATION) + STRONTIUM + SURFACE WATER, PROPERTY + TRITIUM

15-17274

BRACCIARENTI J

WINDOW AND WINDOW SCREENS AS MODIFIERS OF THERMAL RADIATION RELEASED IN NUCLEAR DETONATIONS. PROGRESS REPORT

NAVAL APPLIED SCIENCE LAB., BROOKLYN, N. Y. + NAVAL RADIOLOGICAL DEFENSE LAB., SAN FRANCISCO, CALIFORNIA
AD-643019 +. 24 PAGES, FIGURES, TABLES, REFERENCES, DECEMBER 9, 1966

THE SPECTRAL TRANSMITTANCE OF CLEAN AND SOILED WINDOW GLASS, AND OF NEW AND USED WINDOW SCREENING, WAS DETERMINED IN THE LABORATORY. THE ATTENUATION AS A FUNCTION OF THE ANGLE OF INCIDENCE OF THE RADIATION, FROM 0 DEGREES TO 70 DEGREES, WAS DETERMINED. WINDOW GLASS AND SCREENS WERE FOUND TO BE SPECTRALLY NEUTRAL IN THE WAVE LENGTH RANGE 0.34 TO 2.70 MICRONS, THE SPECTRAL BAND OF INTEREST IN EVALUATING THE EFFECTS OF THERMAL RADIATION FROM NUCLEAR DETONATIONS. THE ATTENUATION CAUSED BY SOILING AS A RESULT OF EXPOSURE TO THE ATMOSPHERE WAS MINOR AND DID NOT ALTER THE SPECTRAL CHARACTER OF THE TRANSMISSION. THE CHANGE IN ATTENUATION DUE TO VARYING THE ANGLE OF INCIDENCE WAS SMALL FOR ANGLES UP TO 45 DEGREES BUT INCREASED DRASTICALLY ABOVE THAT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*CIVIL DEFENSE + BUILDING + NUCLEAR ATTACK + RADIATION SAFETY AND CONTROL + THERMAL PROPERTY

15-17275

WIEHLE CK + DURBIN WL

COMBINED EFFECTS OF NUCLEAR WEAPONS ON NFSS TYPE STRUCTURES. FINAL REPORT.

URS CORP., BURLINGAME, CALIFORNIA

URS-658-3 +. 103 PAGES, REFERENCES, SEPTEMBER, 1966

THE PRIMARY OBJECTIVE OF THIS PROGRAM WAS TO EXAMINE AND EVALUATE THE PROTECTION AFFORDED BY THE TYPES OF STRUCTURES FOUND IN THE NATIONAL FALLOUT SHELTER SURVEY (NFSS) AGAINST THE

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-17275 *CONTINUED*

COMBINED EFFECTS OF NUCLEAR WEAPONS. SINCE A MAJOR CRITERION FOR THE DESIGNATION OF THE NFSS STRUCTURES WAS THE RADIATION-PROTECTION FACTOR (PF) OF THE STRUCTURE, THE APPROACH ADOPTED IN THIS INVESTIGATION WAS TO EXAMINE THE SENSITIVITY OF THE PF FOR IDEALIZED BUILDING SITUATIONS TO ALTERATION BY AIR BLAST AND FIRE DAMAGE. TO ACCOMPLISH THIS, INTERIM TECHNIQUES WERE DEVELOPED FOR ESTIMATION OF THE AIR-BLAST LOADING AND DAMAGE TO SELECTED TYPES OF STRUCTURES. SIMILARLY, BY UTILIZING FIRE-PREDICTION INFORMATION, A METHOD WAS DEVELOPED FOR DETERMINING THE FIRE DAMAGE WITHIN THE BUILDING.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*CIVIL DEFENSE + BUILDING + FALLOUT + NUCLEAR ATTACK + RADIATION EFFECT + STRUCTURAL INTEGRITY + THERMAL PROPERTY

15-17276

FORSMAN AH + GASKILL JR + PHILLIPS WA + TAYLOR RD
RADIATION DOSIMETER
U. S. ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.
U. S. PATENT 3,243,590 +. MARCH 29, 1966

DESCRIBES THERMOLUMINESCENT PERSONNEL RADIATION DOSIMETER COMPRISING GRANULAR, DOSIMETRIC LITHIUM FLUORIDE BONDED TO A SECTION OF GRAPHITE CLOTH BY MEANS OF A RADIATION AND LIGHT-TRANSPARENT INORGANIC BINDER. THERMOLUMINESCENT EMISSION OF LIGHT FROM THE LITHIUM FLUORIDE IS INDUCED BY RESISTIVELY HEATING THE GRAPHITE CLOTH. THE DOSIMETER IS RUGGED, DURABLE, REUSABLE, AND IS ESPECIALLY SUITED TO AUTOMATED READOUT PROCESSING.

AVAILABILITY - THE U. S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D. C. (\$0.25 PER COPY)

*DOSIMETRY, THERMOLUMINESCENCE + *INSTRUMENTATION, RADIATION MONITORING + RADIATION SAFETY AND CONTROL

15-1727P

ANNUAL REPORT TO THE DIRECTOR-GENERAL FOR THE YEAR ENDED JUNE 30, 1966
COMMONWEALTH X-RAY AND RADIUM LAB., MELBOURNE, AUSTRALIA
NP-16386 +. 32 PAGES, 1966

ACTIVITIES OF THE COMMONWEALTH X-RAY AND RADIUM LABORATORY ARE REVIEWED FOR THE PERIOD ENDING JUNE 30, 1966. THESE ACTIVITIES INCLUDE THE SUPERVISION OF THE PROGRAM FOR LENDING RADIUM AND RADON TO HOSPITALS AND RESEARCH CENTERS, THE DEVELOPMENT, MODIFICATION, AND APPLICATION OF EQUIPMENT FOR RADIATION DOSIMETRY, ADVISORY SERVICES ON TECHNICAL ASPECTS OF DIAGNOSTIC X-RAY EQUIPMENT, ADVISORY SERVICES ON PHYSICAL ASPECTS (INCLUDING SAFETY) IN THE USE OF RADIOISOTOPES, RADIOLOGICAL INVESTIGATIONS, AND FILM-BADGE-MONITORING SERVICES.

AVAILABILITY - MICROCARD EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM, WISCONSIN 54669

*BIOMEDICAL + DOSIMETRY, GENERAL + MONITOR, RADIATION, PERSONNEL + RADIATION SAFETY AND CONTROL + RADIUM + RADON + X-RAY

15-17270

TRAINING IN RADIOLOGICAL PROTECTION. CURRICULA AND PROGRAMMING. TECHNICAL REPORTS SERIES NO. 31
INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA
STI/OAC/10/31 +. 102 PAGES, 8 TABLES, 17 REFERENCES, AUGUST, 1964

TRAINING PROGRAMS FOR RADIOLOGICAL PROTECTION ARE DISCUSSED. CURRICULA ARE SUGGESTED AND EXAMPLES OF ESTABLISHED TRAINING COURSES ARE INCLUDED.

AVAILABILITY - INTERNATIONAL ATOMIC ENERGY AGENCY, NEW YORK OR GENEVA, (\$2.50 COPY)

*HEALTH PHYSICS TRAINING + CODES AND STANDARDS + RADIATION SAFETY AND CONTROL + RADIATION, PUBLIC EDUCATION/ACCEPTANCE

15-17280

MORUCCI JP
NEW PROPORTIONAL COUNTER FOR IN VIVO DETECTION OF TRACES OF PLUTONIUM IN THE LUNGS
COMMISSARIAT A L-ENERGIE ATOMIQUE, SACLAY, FRANCE. CENTRE D-ETUDES NUCLEAIRES
CEA-R-3027 +. 87 PAGES, 71 FIGURES, 2 TABLES, 1966, (IN FRENCH)

DESCRIBES DEVELOPMENT OF A MULTIWIRED PROPORTIONAL COUNTER HAVING A UNIFORM RESPONSE OVER 250 SQ. CM DUE TO CORRECTIONS MADE FOR BOUNDARY EFFECTS, AND HAVING A LOW BACKGROUND PER SQ. CM DUE TO THE USE OF TWO IDENTICAL COUNTERS SET IN ANTICINCIDENCE IN THE SAME ENCLOSURE.

AVAILABILITY - MICROCARDS EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM, WISCONSIN 54669

*COUNTER + *INSTRUMENTATION, RADIATION MONITORING + DOSE MEASUREMENT, INTERNAL + DOSIMETRY, GENERAL + PLUTONIUM

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-17281

GOELLER BF

SENSITIVITY OF MORTALITY ESTIMATES TO VARIATIONS IN AGGREGATE POPULATION REPRESENTATIONS

RAND CORP., SANTA MONICA, CALIFORNIA

RM-5141-TAB +. 85 PAGES, FIGURES, TABLES, DECEMBER, 1966

CHANGES THAT OCCUR IN ESTIMATES OF MORTALITIES FROM PROMPT EFFECTS, FALLOUT, AND COMBINED EFFECTS WITH CHANGES IN THE POPULATION REPRESENTATION USED FOR DAMAGE ASSESSMENT ARE REPORTED. REPRESENTATIONS FOR THE U. S. POPULATION ARE CREATED BY LAYING A SQUARE MESH GRID OF SOME PARTICULAR DIMENSION OVER THE UNITED STATES AND ADDING UP THE POPULATION CONTAINED WITHIN EACH CELL. DIFFERENT POPULATION REPRESENTATIONS ARE MADE FROM DIFFERENT SIZE GRIDS, THE SIZE OF THE GRID INDICATING THE POPULATION REPRESENTATIONS DEGREE OF AGGREGATION. THE STUDY CONSIDERS U. S. POPULATION REPRESENTATIONS WITH GRID SIZES OF 5, 10, 20, AND 50 KM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*CIVIL DEFENSE + FALLOUT + METEOROLOGY + NUCLEAR ATTACK + RADIATION EFFECT

15-17282

ALSO IN CATEGORY 14

RABB DD

PLOWSHARE PROGRAM. VOLUME II, NO. 4, NOVEMBER 1, 1966-JANUARY 31, 1967

CALIFORNIA UNIVERSITY, LIVERMORE. LAWRENCE RADIATION LABORATORY

UCRL-50008-67-1 +. 18 PAGES, REFERENCES, JANUARY 31, 1967

PROGRESS ON THE FIRST PLOWSHARE PROJECT INVOLVING EXTENSIVE INDUSTRIAL PARTICIPATION IS REPORTED. FUNDS FOR THE GASBUGGY PROJECT SITE PREPARATION ARE AVAILABLE, AND CONSTRUCTION IS READY TO START. EXPLOSIVES DEVELOPMENT, PHYSICAL MEASUREMENTS, EFFECTS ON MATERIALS, AND COMPUTER CODE DEVELOPMENT IN PLOWSHARE NUCLEAR-EFFECTS-TESTING PROGRAMS CONTINUED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*PLOWSHARE PROGRAM + ATMOSPHERIC DIFFUSION + COMPUTER PROGRAM + DISPERSION + GEOLOGICAL CONSIDERATION, GENERAL + NUCLEAR DETONATION

15-17419

ALSO IN CATEGORY 17

CONAM INSPECTION, INC., RADIOGRAPHY OVEREXPOSURE DURING MAINTENANCE

CONAM INSPECTION, INC., TULSA, OKLA.

1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(31), PAGE 31, (JULY 31, 1967)

(TWX, JULY 17) A 45-CURIE IR-192 SOURCE WAS ACCIDENTLY REMOVED FROM ITS SHIELDED POSITION DURING ROUTINE MAINTENANCE. EMPLOYEE A REPLACED SOURCE IN CAMERA, BUT IT DID NOT GO IN THE SHIELDED POSITION. A AND B PLACED DEVICE IN TRUCK AND DROVE FROM MISSISSIPPI SITE TO TULSA, OKLA. ONE FILM BADGE REVEALED A 24.5-R EXPOSURE, WHILE THE OTHER HAD A 180-MR EXPOSURE, WHICH IS NOT CORRECT, AS FIRST ESTIMATES OF EXPOSURE ARE 15-300 R.

*MAINTENANCE AND REPAIR + *PERSONNEL EXPOSURE, RADIATION + *RADIOGRAPHY + FAILURE, GENERAL + INCIDENT, ACTUAL, GENERAL

CATEGORY 16
METEOROLOGICAL CONSIDERATIONS

16-15585 ALSO IN CATEGORIES 14 AND 18
QUESTION 7.0 IODINE MONITORING
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT PROVISIONS ARE MADE FOR IODINE MONITORING IN THE VARIOUS GASEOUS-ACTIVITY MONITORS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + FISSION PRODUCT, IODINE + MONITOR, RADIATION, GAS + PALISADES POINT + REACTOR, PRESSURIZED WATER

16-15593 ALSO IN CATEGORY 18
QUESTION 9.7--ATMOSPHERIC DILUTION FACTOR, VALUE AND BASIS
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE, 1 REFERENCE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT IS THE VALUE AND THE BASIS OF THE ATMOSPHERIC DILUTION FACTOR USED TO CALCULATE RADIOACTIVITY CONCENTRATIONS AT THE SITE BOUNDARY DUE TO ROUTINE RELEASES OF RADIOACTIVE GASES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + DILUTION + DOSE CALCULATION, EXTERNAL + PALISADES POINT + REACTOR, PRESSURIZED WATER + SOURCE, CONTINUOUS

16-15847
KUNKIS A + RIES G
APPARATUS FOR THE MEASUREMENT AND RECORDING OF THE ELEMENTS OF ATMOSPHERIC ELECTRICITY WITH AUTOMATIC EVALUATION OF HOURLY MEAN VALUES
SC-T-65-761 +. 11 PAGES, 5 FIGURES, TRANSLATED FROM ZEITSCHRIFT FUR GEOPHYSIK 30(1), PAGES 5-12 (1964)

A NEW SIMPLIFIED APPARATUS FOR LONG-RANGE REGISTRATIONS OF THE AIR-ELECTRIC ELEMENTS WITH A DEVICE FOR THE EVALUATION OF THE HOURLY MEAN VALUES IS PRESENTED. ONLY ONE FIRST-RATE ELECTROMETER/AMPLIFIER IS USED IN THIS APPARATUS. THE INPUT OF THE ELECTROMETER IS CONNECTED IN TURN TO THE MEASURING CHANNELS (POTENTIAL GRADIENT, AIR-EARTH CURRENT, POSITIVE AND NEGATIVE POLAR CONDUCTIVITY) BY MEANS OF A HIGH-RESISTANCE DISTRIBUTOR. A MULTICHANNEL RECORDER FOR THE REGISTRATION, AND A MULTICHANNEL INTEGRATION-DEVICE FOR THE AUTOMATIC CALCULATION OF THE HOURLY MEAN VALUES, ARE CONNECTED TO THE OUTPUT OF THE ELECTROMETER BY A COMMON SWITCH.

AVAILABILITY - JOHN CRERAR LIBRARY, 35 WEST 33RD ST., CHICAGO, ILL. 60616, \$1.10 COPY, \$0.80 MICROFICHE

*ATMOSPHERIC ELECTRICITY + *INSTRUMENTATION, METEOROLOGICAL

16-15849
ARNETT LM
CALCULATION OF RADIATION DOSE FROM A CLOUD OF RADIOACTIVE GASES
SAVANNAH RIVER LABORATORY, Aiken, S. C.
5 PAGES, 1 FIGURE, 1 TABLE, 6 REFERENCES, NUCLEAR APPLICATIONS 3(4), PAGES 217-221 (APRIL 1967)

FORMULAS WERE DEVELOPED FOR CALCULATING THE WHOLE-BODY GAMMA-RADIATION DOSE FROM A CLOUD OF RADIOACTIVE GASES. THE COMPLEXITY OF THE FORMULAS IS GREATLY REDUCED BY THE SIMPLIFYING ASSUMPTION THAT THE CLOUD DOES NOT CHANGE IN SIZE AND SHAPE DURING THE TIME THAT THE RECEPTOR IS EXPOSED TO RADIATION. FOR MOST CASES OF INTEREST, THE NUMERICAL SOLUTIONS BASED ON THIS ASSUMPTION ARE NEARLY IDENTICAL WITH MORE DETAILED SOLUTIONS. THE FORMULAS WERE PROGRAMMED FOR COMPUTER SOLUTION SO THAT LARGE PARAMETRIC STUDIES ARE POSSIBLE IN AN HOUR OR TWO OF MACHINE TIME. THE NUMERICAL SOLUTIONS CAN BE DISPLAYED AS A CONTOUR MAP OR AN ISOMETRIC DRAWING AS A FUNCTION OF CLOUD SIZE AND SHAPE. WHEN LINES THAT ARE FUNCTIONS OF METEOROLOGICAL CONDITIONS AND DISTANCE FROM THE RELEASE POINT OF THE CLOUD ARE ADDED TO SUCH A DISPLAY, THE DETAILS OF THE SOLUTION ARE GRAPHICALLY PRESENTED TO PROVIDE A VERY CLEAR VISUAL COMPREHENSION.

*COMPUTER PROGRAM, METEOROLOGICAL + EQUATION, GENERAL + SUTTON DIFFUSION FORMULA

16-15850
MCMULLEN TB + SMITH R
TREND OF SUSPENDED PARTICULATES IN URBAN AIR. 1957-1964
ROBERT A. TAFT SANITARY ENGINEERING CENTER
PB-170475 + PHS PUB 999-AP-19 +. 26 PAGES, TABLES, SEPTEMBER, 1965

THE TREND TOWARD LOWER AVERAGE CONCENTRATIONS OF SUSPENDED PARTICULATE POLLUTION IN THE URBAN AIR IN THE UNITED STATES FROM 1957 THROUGH 1963, INDICATED BY MEASUREMENTS OF THE NATIONAL

CATEGORY 16
METEOROLOGICAL CONSIDERATIONS

16-15850 *CONTINUED*

AIR SAMPLING NETWORK, IS INVESTIGATED FROM THREE ASPECTS - (1) STATISTICAL SIGNIFICANCE, (2) THE VALIDITY OF THE SAMPLING AND ANALYTICAL METHODS, AND (3) RELATIONSHIP TO ENVIRONMENTAL CHANGES IN THE VICINITY OF THE SAMPLING STATIONS. THE EVIDENCE INDICATES THAT THE DECLINE IS REAL AND THAT THE METHODS EMPLOYED CAN RELIABLY DETECT SUBSTANTIVE CHANGES IN THE CONCENTRATION OF SUSPENDED-PARTICLE POLLUTION. INFORMATION ON CHANGES IN THE ENVIRONMENTS OF A REPRESENTATIVE GROUP OF STATIONS REVEALED THAT WHERE SIGNIFICANT DECREASES IN SUSPENDED PARTICLES OCCURRED, THEY WERE OFTEN LOGICALLY RELATED TO SPECIFIC CHANGES IN SOURCE EMISSIONS. THUS THE INDICATED DECLINE IN THE SUSPENDED-PARTICLE PORTION OF URBAN AIR POLLUTION IS VERIFIED AND SUBSTANTIALLY ACCOUNTED FOR. A STATISTICALLY SIGNIFICANT INCREASE IN THE ANNUAL MEAN OCCURRED IN 1964. IF CONTINUED, SUCH AN INCREASE WOULD SUGGEST THE POSSIBILITY OF CYCLIC INFLUENCES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

ATMOSPHERIC POLLUTION + SAMPLING + STATISTICAL ANALYSIS

16-16184 ALSO IN CATEGORY 7

WIESER P

ON THE SIZE DISTRIBUTION OF NATURALLY RADIOACTIVE AEROSOL
HOHENHEIM AGRICULTURAL COLLEGE

3 PAGES, 3 FIGURES, 17 REFERENCES, ATOMPRAXIS 12(6), PAGES 294-296 (JUNE 1966) IN GERMAN

THE RADIOACTIVITY PRESENT IN THE ATMOSPHERE CAN BE DIVIDED INTO THREE LARGE GROUPS. THESE ARE - (A) RADIOACTIVE SUBSTANCES ESSENTIALLY ATTRIBUTABLE TO RARE GASES, SUCH AS RADON AND THORON, AND THEIR DAUGHTER PRODUCTS. (B) RADIOACTIVE SUBSTANCES FORMED IN HIGHER LAYERS OF THE ATMOSPHERE BY COSMIC RADIATION. (C) RADIOACTIVE SUBSTANCES WHICH CAN REACH THE ATMOSPHERE AS A CONSEQUENCE OF NUCLEAR-WEAPONS TESTS AND THE OPERATION OF REACTORS. IN RECENT YEARS, INCREASED ATTENTION HAS AGAIN BEEN TURNED TO THE RADIOACTIVE CONTAMINANTS OF GROUP (A) BECAUSE A NUMBER OF MONITORING PROGRAMS ARE BASED ON A KNOWLEDGE OF THE FORM IN WHICH THESE SUBSTANCES ARE PRESENT IN THE ATMOSPHERE.

*AEROSOL + *DEPOSITION + *METEOROLOGY + *PARTICLE, RADIOACTIVE + COMPARISON, THEORY AND EXPERIENCE + PARTICLE SIZE DISTRIBUTION + RADON + THORON

16-16446 ALSO IN CATEGORIES 5 AND 18

VOLUME I, SECTION XIII - SAFETY ANALYSIS.

JERSEY CENTRAL POWER AND LIGHT COMPANY, MORRISTOWN, NEW JERSEY

46 PAGES, 21 TABLES, FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, JANUARY 25, 1967, DOCKET NO. 50-219

TRANSIENT ANALYSES FROM SYSTEM MALFUNCTIONS AND OPERATOR ERRORS ARE REPORTED IN THE VARIOUS DESCRIPTIVE SECTIONS. THERE ARE 4 DESIGN-BASIS ACCIDENTS - CONTROL-ROD DROP, REFUELING ACCIDENT, LOSS OF COOLANT INSIDE DRYWELL, AND STEAM-LINE RUPTURE (THE WORST OFF-SITE DOSE, GIVING A MAXIMUM LIFETIME DOSE OF 0.003 REM AND A WHOLE BODY DOSE OF 3.6 MICROREMS). STEAM-LINE-RUPTURE DOSE IS ABOUT 1/1000TH THAT OF NINE MILE POINT (APPARENTLY) BECAUSE LESS IODINE-BEARING WATER IS LOST (ISOLATION-VALVE CLOSURE IN 3.5 SEC RATHER THAN 11), AND VAPOR WOULD RISE TO A CENTERLINE OF 164 FT. ANALYTICAL METHODS DESCRIBED, AND DATA FROM 11 SITES QUOTED TO JUSTIFY WIND VARIABILITY AND 15-HOUR-PERSISTENCE CLOSURE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTAINMENT PENETRATION, CLOSURE OF + *SAFETY ANALYSIS REPORT, GENERAL + ACCIDENT ANALYSIS + ACCIDENT, STEAM LINE RUPTURE + HEIGHT OF RISE + OYSTER CREEK + REACTOR, BOILING WATER + WIND STATISTICS

16-16451 ALSO IN CATEGORY 18

VOLUME II - APPENDIX A - METEOROLOGY.

NIAGARA MOHAWK POWER CORPORATION, SYRACUSE, N. Y.

106 PAGES, 55 FIGURES, 29 TABLES, 6 REFERENCES, FINAL SAFETY ANALYSIS REPORT, NINE MILE POINT, JUNE 1967, DOCKET NO. 50-220

CONSISTS OF A LETTER FROM CONSULTANTS SMITH AND SWIGER. NO IMPORTANT METEOROLOGICAL DIFFERENCES BETWEEN 63 (DATA REPORTED IN PHSR) AND 64 DATA WERE FOUND, SO LOCAL TOWER DATA TAKING STOPPED EARLY IN 65. MUCH DATA PRESENTED, AND SOPHISTICATION ADDED TO PHSR METEOROLOGICAL MODELS OR DATA DISCUSSED. MOST SIGNIFICANT CHANGE IS TO USE ACTUAL 350-FT STACK HEIGHT PLUS HEIGHT OF RISE, INSTEAD OF ASSUMED 250-FT HEIGHT RISE. NO CHANGE MADE FOR ACCIDENTS (PHSR TREATMENT OF STEAM LINE BREAK CONSIDERED ADEQUATE) BUT, FOR ROUTINE RELEASE, RADOS MACHINE CALCULATION USED, TOGETHER WITH INCLUSION OF VARIATION OF WIND SPEED AND DIRECTION WITH HEIGHT AND TOPOGRAPHY. IN PARTICULAR, PHSR HAD ASSUMED INVERSION PLUME HIT GROUND WHEN LAND WAS 250 FT ABOVE STACK BASE WITHIN 5 KM. PRESENT STUDY SHOWS PLUME REMAINS 400 FT ABOVE GROUND, AND THIS ELEVATION NOT REACHED UNTIL 30 KM DOWNWIND.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*SAFETY ANALYSIS REPORT, GENERAL + *SAFETY ANALYSIS REPORT, METEOROLOGY + *SOURCE, CONTINUOUS + HEIGHT OF RISE + LAPSE RATE, STABLE + NINE MILE POINT + REACTOR, BOILING WATER + STACK + WIND STATISTICS

16-16630 ALSO IN CATEGORY 18

CATEGORY 16
METEOROLOGICAL CONSIDERATIONS

16-16630 *CONTINUED*

QUESTION F-1--EFFECT OF HILLS AND WATER SURFACE ON PLUME ANALYTICAL MODEL

THE CONNECTICUT LIGHT AND POWER COMPANY + WESTERN MASSACHUSETTS ELECTRIC COMPANY + THE HARTFORD ELECTRIC LIGHT COMPANY

2 PAGES, 1966, PAGES F-1-1 AND F-1-2 FROM DESIGN AND ANALYSIS REPORT, AMENDMENT NO. 1, DOCKET NO. 50-245, MILLSTONE NUCLEAR POWER STATION

THE PENINSULA-SITE METEOROLOGICAL MODEL DOES NOT RELATE TO (A) HILLS AND (B) COLD-WATER COOLING AND TRAVEL OVER WARMER LAND, WHICH MIGHT GIVE LONGER FUMIGATION. (ANSWER) (A) REFERENCE TO HUMBOLDT BAY AND BIG ROCK POINT TRACER TESTS TO INDICATE THAT DEVIATIONS ARE MINOR. (B) WHILE THE 2-HR DOSE MIGHT BE TWICE AS HIGH, TOTAL ACCIDENT DOSE WOULD NOT BE SIGNIFICANTLY DIFFERENT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*AIRBORNE RELEASE + *ANALYTICAL MODEL + *DOSE + MILLSTONE POINT + REACTOR, BOILING WATER + RESPONSE TO AEC QUESTION + SAFETY ANALYSIS REPORT, PRELIMINARY

16-16680 ALSO IN CATEGORIES 18 AND 15

QUESTION 9.2 - DOSE CALCULATIONS FOR DESIGN BASIS ACCIDENTS

CONSUMERS POWER CO., PALISADES PLANT, COVERT TOWNSHIP, MICHIGAN

14 PAGES, 2 FIGURES, 3 TABLES, 4 REFERENCES, NOVEMBER 14, 1966, PAGE 9.2-1 TO 9.2-14 OF CONSUMERS POWER COMPANY APPLICATION FOR REACTOR CONSTRUCTION PERMIT AND OPERATING LICENSE, AMENDMENT NUMBER 3, DOCKET NO. 50-255

9.2 SEVERAL NONCONSERVATIVE PARAMETERS WERE USED IN PSAR DOSE CALCULATIONS. WHAT DOSES ARE CALCULATED FOR DESIGN-BASIS ACCIDENT, USING THE FOLLOWING ASSUMPTIONS - (1) DIFFUSION MODEL, ASSUMING VOLUMETRIC GROUND SOURCE WITH REFLECTION, RATHER THAN VIRTUAL GROUND SOURCE WITHOUT REFLECTION. (2) PASQUILL F METEOROLOGY AND 1-M/SEC WIND FOR FIRST 8 HOURS, PASQUILL F AND 2-M/SEC WIND FROM 8 TO 24 HOURS, AND VARYING WIND SPEED, DIRECTION, AND STABILITY FOR THE REMAINDER OF THE ACCIDENT. (3) NO DEPOSITION ENROUTE TO EXPOSURE LOCATIONS. (4) BREATHING RATE OF 347 CC/SEC FOR FIRST 8 HOURS, 174 CC/SEC FROM 8 TO 24 HOURS, AND 232 CC/SEC FOR REMAINDER OF ACCIDENT. DESIGN CHANGES NEEDED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*AIRBORNE RELEASE + *ANALYTICAL MODEL + *DOSE + *WIND STATISTICS + AEC QUESTION + PALISADES POINT + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-04143

FOX GA

THE INTRODUCTION OF NEW AND IMPROVED METHODS FOR WORK IN RADIATION ZONES IN PRODUCTION REACTORS AT HANFORD
HANFORD ATOMIC PRODUCTS OPERATION, RICHLAND, WASHINGTON
HW-SA-2565 +. 29 PAGES, MAY 2, 1962

TECHNIQUES AND EQUIPMENT ARE DESCRIBED THAT WERE SUCCESSFULLY USED IN RADIATION PROTECTION BY HANFORD. COMPLICATING FACTORS SUCH AS THE REMOTENESS OF THE WASTE LOCATION, RADIATION, AND COMMUNICATIONS PROBLEMS ARE DISCUSSED. IN ADDITION TO CONVENTIONAL METHODS OF STANDARDIZATION AND TRAINING, PARTICULAR USE IS MADE OF PHOTOGRAPHY IN DESCRIBING WORK METHODS. ALTHOUGH MOVIES ARE IN COMMON USE FOR METHODS ANALYSIS AND TRAINING, STILL PHOTOS ARE ALSO USED EXTENSIVELY TOGETHER WITH THE WRITTEN WORD FOR STANDARDIZATION OF INSTRUCTION AND METHOD. THESE TECHNIQUES HAVE BEEN SUCCESSFUL AND ARE THOUGHT TO BE USEFUL ELSEWHERE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*RADIATION SAFETY AND CONTROL + *STAFFING, TRAINING, QUALIFICATION + HANFORD SITE

17-04179

PYRON WJ

REACTOR OPERATOR TRAINING AT THE MTR-ETR

PHILLIPS PETROLEUM COMPANY, IDAHO FALLS, IDAHO

TID-7663 +. 17 PAGES, PAGES 386-402 OF CONFERENCE ON LIGHT-WATER-MODERATED RESEARCH REACTORS, GATLINBURG, TENNESSEE, JUNE 11-14, 1962

DESCRIBES TRAINING PROGRAM INSTITUTED IN 1960 TO GIVE MTR-ETR REACTOR AND EXPERIMENT OPERATORS THE BASIC INFORMATIONAL BACKGROUND NEEDED FOR A CLEAR UNDERSTANDING OF PROBLEMS OF IRRADIATION-TEST PROGRAMS. THE THREE PHASES ARE - (1) CLASSROOM LECTURES LASTING FROM 9 TO 10 WEEKS, USING MANUALS PROPOSED BY PHILLIPS STAFF MEMBERS, (2) ON-THE-JOB TRAINING, INCLUDING EXPERIENCE IN REACTOR OPERATION AND TRAINING ON EXPERIMENTS IN A SPECIFIC PLANT, (3) QUALIFICATION AFTER COMPLETION OF CLASSROOM WORK AND ONE YEAR ON REACTOR AND EXPERIMENTS. AFTER SUCCESSFUL ORAL EXAMINATION BY THE OPERATIONS TRAINING AND QUALIFICATIONS COMMITTEE, HE IS GIVEN A CERTIFICATE STATING THAT HE IS TECHNICALLY QUALIFIED FOR HIS JOB. REQUALIFICATION IN GRADE BY ORAL AND WRITTEN EXAMS IS REQUIRED IF TWO YEARS PASS BEFORE EXAMINATIONS FOR A HIGHER QUALIFICATION LEVEL.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*STAFFING, TRAINING, QUALIFICATION + ETR (ENGINEERING TEST REACTOR) + MTR (MATERIAL TESTING REACTOR) + REACTOR, AEC OWNED + REACTOR, TEST

17-04180

CRAMER FN

AN ANALYSIS OF OPERATIONS DIVISION TRAINING PROGRAMS

OAK RIDGE NATIONAL LAB., TENN.

TID-7663 +. 33 PAGES, 6 FIGURES, 8 REFERENCES, PAGES 403-435 OF CONFERENCE ON LIGHT-WATER-MODERATED RESEARCH REACTORS, GATLINBURG, TENNESSEE, JUNE 11-14, 1962

DISCUSSES (1) THE OPERATING POLICY OF THE ORGANIZATION WITH RESPECT TO VARIOUS TYPES OF ORGANIZATIONAL AUTHORITY STRUCTURE, FACTORS DETERMINING OPERATING POLICY, AND ORNL OPERATIONS DIVISION OPERATING POLICY IN ORDER TO FIX TRAINING NEEDS, (2) EXPERIENCE IN USING VARIOUS METHODS OF TRAINING/EDUCATION FOR NEW OPERATORS, RE-EDUCATING PREVIOUSLY TRAINED ONES, AND A STARTUP CREW OF A NEW REACTOR, (3) TYPE OF PERSONNEL TO BE TRAINED AND MATERIAL TO BE LEARNED. INCLUDED IN APPENDIXES ARE INFORMATION ON FACTORS WHICH AFFECT METHODS OF TEACHING AND PERSONNEL SELECTION, THE XENON MACHINE (A TEACHING AID), AND AN OUTLINE OF RADIATION-CONTROL LECTURES. ALSO A SAMPLE REACTOR OPERATOR STUDY GUIDE AND CHECK LISTS FOR RADIATION SAFETY AND CONTROL KNOWLEDGE AND REACTOR OPERATION QUALIFICATIONS ARE GIVEN.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*STAFFING, TRAINING, QUALIFICATION + ORNL (OAK RIDGE NATIONAL LABORATORY) + RADIATION SAFETY AND CONTROL + REACTOR, AEC OWNED + REACTOR, TEST

17-04715

VOLLMER HM + TOWLE LH + MAYNARD BJ

DEVELOPMENT OF A TRAINING PROGRAM FOR RADIOISOTOPE WORKERS IN INDUSTRY

STANFORD RESEARCH INSTITUTE, MENLO PARK, CALIFORNIA

SP-1A-20 +. 125 PAGES, 6 FIGURES, 24 TABLES, JULY 1960

DESCRIBES STUDY (1) TO DETERMINE SCOPE AND MAGNITUDE OF WORKERS TRAINING NEEDS NOW EXISTING OR EXPECTED, (2) TO DESIGN A BASIC SURVEY COURSE (32 HR), (3) TO ASCERTAIN COURSE EFFECTIVENESS THROUGH TRIAL PRESENTATION AND MODIFY ACCORDINGLY. TRAINING PROGRAMS PRESENTLY CONDUCTED BY OPINS, INDUSTRIAL NUCLEONICS, GENERAL MOTORS, AND OTHERS ARE DISCUSSED, AND STUDENT CHARACTERISTICS AND MOTIVATION AND COURSE DESIGN AND EFFECTIVENESS ARE GIVEN. INCLUDED ARE

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-04715 *CONTINUED*

STUDENTS' PREFERENCES FOR FUTURE COURSES, BEFORE-AND-AFTER KNOWLEDGE AND RADIATION-ATTITUDE QUESTIONNAIRES, RELATION OF KNOWLEDGE AND APTITUDE SCORES TO GRADE, AND CONSTRUCTION AND INTERPRETATION OF A SCALE TO MEASURE ATTITUDES TOWARD RADIATION HAZARDS. (COURSE PRESENTED IN SRIA-19.)

AVAILABILITY - SUPERINTENDENT OF DOCUMENTS, U.S. GOVERNMENT PRINTING OFFICE, WASHINGTON 25, D.C. \$0.75 COPY

*STAFFING, TRAINING, QUALIFICATION + RADIATION SAFETY AND CONTROL + RADIATION, PUBLIC EDUCATION/ACCEPTANCE + RADIOISOTOPE

17-13686 ALSO IN CATEGORY 9

SELECTED PEACH BOTTOM OPERATIONS EXPERIENCE
PHILADELPHIA ELECTRIC COMPANY

TID-23301 +. 22 PAGES OF MONTHLY OPERATIONS REPORT NO. 2 ON THE PEACH BOTTOM ATOMIC POWER STATION, APRIL 1-30, 1966, DOCKET NO. 50-171

(PAGE 14) A THIRD CONTROL ROD STUCK BECAUSE OF PITTING AND CRACKING OF TUNGSTEN CARBIDE BALLS IN THE BALL NUT DRIVE. (PAGE 20) CHANNEL-T SOURCE-RANGE DETECTOR HAS A SMALL INCREASE IN COUNT RATE UNTIL K EQUALS 0.985. BORON-CONTAINING CALGON AT 2400 PPM IN THE WATER AROUND THE DETECTOR WAS SHOWN NOT THE CAUSE. OPERATING THE DETECTOR-WELL DRY DOUBLED THE READING, AND A 7X MORE SENSITIVE DETECTOR WAS USED--THE SOURCE COULD THEN BE RELOCATED TO ACHIEVE BETTER GEOMETRY. CORE WAS COMPLETELY LOADED AND LOW-POWER PHYSICS TESTS BEGUN.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*FAILURE, SCRAM MECHANISM + *INSTRUMENTATION, ABNORMAL INDICATION + *INSTRUMENTATION, STARTUP RANGE + OPERATIONS REPORT, GENERAL + PEACH BOTTOM 1 + REACTOR, GAS COOLED

17-14734 ALSO IN CATEGORIES 14 AND 5

RAY JW + WOOTEN RO + BARNES RH

INVESTIGATION OF TRITIUM GENERATION AND RELEASE IN PM NUCLEAR POWER PLANTS
BATTTELLE MEMORIAL INSTITUTE

BMI-1787 +. 121 PAGES, OCTOBER 31, 1966

THE TERNARY FISSION PROCESS IS THE MAJOR SOURCE OF TRITIUM, FOLLOWING USE OF LITHIUM-BASED PESIN IN 1963 GENERATED AT THE RATE OF 8.7×10 TO THE 5TH TRITONS PER FISSION. THE RESULTANT TRITIUM DIFFUSES THROUGH THE CLAD. WATER SAMPLES WERE ASSAYED, AND A MATHEMATICAL MODEL DESCRIBING TRITIUM GENERATION AND MOVEMENT THROUGHOUT PM PLANTS WAS DEVELOPED. THE RESULTING PROGRAM, TRICON, WAS EMPLOYED TO CALCULATE TRITIUM CONCENTRATIONS AT PM-3A DURING 1965. AGREEMENT BETWEEN CALCULATED AND MEASURED CONCENTRATIONS WAS GOOD. POTENTIAL HEALTH HAZARDS FROM BOTH AIRBORNE AND WATERBORNE TRITIUM WERE CALCULATED. THE MOST ECONOMICAL SOLUTION AT PM-1 APPEARS TO BE THE REMOVAL OF TRITIATED EFFLUENT FROM THE PLANT SITE AT \$1.40 PER GALLON, AND AT PM-3A TO BE THE EXPELLING OF TRITIATED EFFLUENT WATER TO AN ISOLATED AREA WHERE IT WILL FREEZE AND SUBLIME IN SAFE CONCENTRATIONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

*MAIN COOLING SYSTEM + *TRITIUM + COMPUTER PROGRAM + COMPUTER, DIGITAL + HAZARDS ANALYSIS + PM 1 (PORTABLE MEDIUM NUCLEAR POWER PLANT) + PM 3A (PORTABLE MEDIUM NUCLEAR POWER PLANT) + REACTOR, ARMY + REACTOR, PRESSURIZED WATER + WASTE DISPOSAL, LIQUID

17-14834 ALSO IN CATEGORY 18

SELECTED OPERATIONS EXPERIENCE

WESTINGHOUSE ELECTRIC CORP., BETTIS ATOMIC POWER LABORATORY

WAPD-MRP-118 +. 115 PAGES, FIGURES, TABLES, OCTOBER 1966

(PAGE 1) BOILER 1B WAS ISOLATED WHEN TUBE LEAKAGE REACHED 30-50 GPH, AND LEAKAGE REACHED 100 GPM DURING THE LOOP SHUTDOWN. ONE CENTRAL TUBE AT THE MID POINT OF THE U BEND LEAKS. (PAGE 2-41) A COMPLETE REVIEW OF VARIOUS REACTOR ACCIDENTS AND EFFECTIVENESS OF PROTECTION SYSTEMS WAS MADE FOR CORE 2 FOR 5-10,000 EFPH CONDITIONS. (PAGE 43) A RADIOLOGICAL CONTROL REPORT OF PWR-2 REFUELING WAS DRAFTED. COMPARTMENT RADIATIONS LEVELS WERE SURVEYED IN PREPARATION FOR AN INTERNAL INSPECTION OF THE PRESSURIZER. (PAGE 45, 66-68) TESTS ON FLOW VARIATION RELATED TO PH VARIATIONS WAS INTERRUPTED BY 1B ISOLATION EFFECTS. (PAGE 55-57) CORE-1 VESSEL HEAD COMPONENTS WERE EXAMINED. (PAGE 64) TENSILE TESTS ON A HAFNIUM CONTROL ROD 17 TIMES 10 TO THE 21ST NVT ABOVE 1 MEV INDICATED AN UNEXPECTED SHARP LOSS OF DUCTILITY, GREATER AT HIGH TEMPERATURES (600 F). (PAGE 89-102) VARIOUS IRRADIATION TESTS ON LOW DENSITY ZR02-CAO-UO2 FOR PWR2 SEED 2 REPORTED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*OPERATIONS REPORT, ANALYSIS + CONTROL ROD BURNUP + COOLANT QUALITY + FAILURE, TUBING + FLOW ORIFICE OR RESTRICTION + FUEL ELEMENT + HEAT EXCHANGER + IRRADIATION TESTING + PRESSURIZER + REACTOR, PRESSURIZED WATER + SHIPPINGPORT + SURVEY, RADIATION, GENERAL

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-15360

RENDERS P + SPAEPEN J

INVESTIGATION OF VARIOUS FACTORS INFLUENCING THE CORROSION OF ALUMINUM IN NUCLEAR REACTORS

CENTRE D'ETUDE DE L'ENERGIE NUCLEAIRE, MOL, BELGIUM

21 PAGES, SCUOLA IN AZIONE (8), PAGES 132-152 (1965)

THE REPORT DESCRIBES THE VARIOUS FACTORS GOVERNING THE CORROSION OF ALUMINUM AND ITS EFFECTS ON THE OPERATION OF NUCLEAR REACTORS. RESULTS ARE GIVEN OF ELECTROCHEMICAL, STATIC, AND DYNAMIC TESTS, EACH EXPERIMENT BEING DESIGNED TO STUDY ONE OR SEVERAL OF THE FOLLOWING FACTORS - SURFACE PREPARATION, TEMPERATURE EFFECTS FROM 40 TO 150 C, HYDROGEN PICKUP IN THE METAL, IMPURITIES IN THE COOLING WATER, THERMAL CYCLING, THERMAL FLUX, NEUTRON AND GAMMA IRRADIATION OF ADDITIVES TO THE WATER DURING STORAGE OF SPENT FUEL ELEMENTS.

*ALUMINUM + *CORROSION + HYDROGEN + OXIDATION + RADIATION EFFECT

17-15532

ALSO IN CATEGORY 10

FAILURE OF EMERGENCY BATTERY BANK AT THE MATERIALS TESTING REACTOR

U. S. ATOMIC ENERGY COMMISSION

REACTOR OPERATING EXPERIENCES 67-1 + 2 PAGES, JANUARY 31, 1967

ON OCTOBER 4, 1966, A COMMERCIAL POWER FAILURE CAUSED THE M-G SET TO INVERT TO SUPPLY POWER TO EXPERIMENTS MOMENTARILY. THE OPERATOR WAS UNABLE TO RESYNCHRONIZE THE SET WITH COMMERCIAL POWER, AND A DC BREAKER CUT OFF ALL POWER FOR 1 MIN. INVESTIGATION SHOWED THAT 1 MIN OF DRAIN HAD DROPPED THE VOLTAGE SO LOW THAT SYNCHRONIZATION WAS IMPOSSIBLE. THE BATTERIES WERE 10 YEARS OLD, AND THE PLATES HAD BECOME COATED WITH LEAD. ROUTINE VOLTAGE AND SP.-G. CHECKS WERE NORMAL, BUT NO PERIODIC RATED-ROAD DISCHARGE TESTS WERE RUN, AND USUALLY PROMPT SWITCHING ON POWER FAILURE HAD KEPT THE BATTERIES FROM DISCHARGING. THUS, THE DEFECT DID NOT BECOME APPARENT.

AVAILABILITY - AEC, DIVISION OF PUBLIC INFORMATION, WASHINGTON, D. C. 20545

*FAILURE, ADMINISTRATIVE CONTROL + *FAILURE, EQUIPMENT + *OPERATIONS REPORT, ANALYSIS +
*TEST, SYSTEM OPERABILITY + EMERGENCY POWER, ELECTRIC + MTR (MATERIAL TESTING REACTOR) +
REACTOR, AEC OWNED + REACTOR, TEST

17-15534-

ALSO IN CATEGORY 9

LOSS OF REACTIVITY AT THE LOS ALAMOS WATER BOILER REACTOR (SUPO)

U.S. ATOMIC ENERGY COMMISSION

REACTOR OPERATING EXPERIENCES 67-3 +. 2 PAGES, MARCH 23, 1967

ON AUG. 15, 1966, CONTROL-ROD CRITICALITY POSITION INDICATED A REACTIVITY LOSS OF 0.6% DELTA K/K, KEEPING THE REACTOR FROM FULL POWER. NORMAL VARIATION IS 1/10TH THAT. THE REACTIVITY CONTINUED TO DRIFT DOWN, CAUSING A 1.06% LOSS IN 30 DAYS. WHEN FUEL WAS ADDED TO ATTAIN FULL POWER, THE ION CHAMBERS INDICATED A POWER LEVEL CONSIDERABLY LESS THAN HEAT-POWER MEASUREMENTS. THIS LED TO CALCULATION WHICH INDICATED THAT SMALL AMOUNTS OF WATER LEAKING INTO THE GRAPHITE REFLECTOR WOULD CAUSE THE FLUX TO PEAK NEAR THE CORE, REDUCING THE NEUTRON FLUX AT THE DETECTOR. THIS WAS FOUND TO BE HAPPENING, ALTHOUGH NO SOURCE OF THE WATER WAS FOUND. DRYING THE GRAPHITE RECOVERED HALF THE REACTIVITY, AND SIX MONTHS OF LEAVING THINGS ALONE SHOWS A VERY SLIGHT UPWARD TREND IN REACTIVITY GAIN.

AVAILABILITY - AEC, DIVISION OF PUBLIC INFORMATION, WASHINGTON, D.C. 20545

*INSTRUMENTATION, ABNORMAL INDICATION + *OPERATIONS REPORT, ANALYSIS + *REACTIVITY EFFECT, ANOMALOUS +
FLUX DISTRIBUTION + GRAPHITE + LASL (LOS ALAMOS SCIENTIFIC LABORATORY) + REACTOR, AEC OWNED +
REACTOR, HOMOGENEOUS + REACTOR, RESEARCH + REFLECTOR

17-15535

REACTIVITY SHIFT IN SPERT-III REACTOR

U.S. ATOMIC ENERGY COMMISSION

REACTOR OPERATING EXPERIENCES 67-4 +. 2 PAGES, APRIL 10, 1967

CONTROL-ROD CRITICAL POSITIONS VARIED ERRATICALLY OVER SEVERAL WEEKS, WITH MAGNITUDES UP TO 20 CENTS, WITH A 15-CENT CHANGE IN ONE TEST. EXPERIMENTS INDICATED ONE ROD AT FAULT, AND THE FLUX SUPPRESSOR WAS CHECKED RADIOGRAPHICALLY. IT WAS FREE TO MOVE 12 INCHES, ON FLOW CHANGES OR ROD DROPS. HOLES WERE DRILLED TO SPOT WELD THE SUPPRESSORS IN 24 LOCATIONS.

AVAILABILITY - AEC, DIVISION OF PUBLIC INFORMATION, WASHINGTON, D. C. 20545

*OPERATIONS REPORT, ANALYSIS + *REACTIVITY EFFECT, ANOMALOUS + CONTROL ROD WORTH + REACTOR, AEC OWNED +
REACTOR, PRESSURIZED WATER + SPERT 3 (SPECIAL POWER EXCURSION REACTOR TEST)

17-15609

ALSO IN CATEGORY 18

QUESTION 10.2--PREVENTION OF BORON WATER IN IDLE LOOP- STARTUP OF IDLE LOOP

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-15609 *CONTINUED*
2 PAGES OF CONSUMERS POWER COMPANYS PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

PROVIDE AN ANALYSIS TO SHOW HOW THE CONTROLLED BACKFLOW THROUGH THE POWER-OPERATED CHECK VALVES WILL BE EFFECTIVE IN PREVENTING THE INJECTION AND ACCUMULATION OF COLD OR LOW-BORON-CONTENT WATER IN AN IDLE LOOP. DISCUSS THE PROCEDURES THAT WILL BE USED TO START AN IDLE LOOP WHEN THE REACTOR IS OPERATING.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, COLD COOLANT + PALISADES POINT + POISON, SOLUBLE + REACTOR, PRESSURIZED WATER + VALVE

17-15826
QUARTERLY STATUS REPORT ON ADVANCED REACTOR TECHNOLOGY (ART) FOR PERIOD ENDING JANUARY 31, 1967. PART I LOS ALAMOS SCIENTIFIC LABORATORY, NEW MEXICO
LA-3665 +. 11 PAGES, 5 TABLES, REFERENCES, FEBRUARY, 1967

LEAK TESTING WAS PERFORMED ON THE PRIMARY AND SECONDARY COOLANT SYSTEMS AND THE GAS-CLEANUP SYSTEMS. CALCULATIONS OF REACTOR TRANSIENTS ARE SUMMARIZED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, 22151, \$3.00 COPY, \$0.65 MICROFICHE

*OPERATIONS REPORT, GENERAL + *TEST, PREOPERATIONAL + REACTOR TRANSIENT + REACTOR, GAS COOLED + THEORETICAL INVESTIGATION + UHTREX (ULTRA HIGH TEMP. REACTOR EXPERIMENT)

17-15827
DISPLACED ENGINEERING TEST REACTOR FUEL ELEMENT
IDAHO OPERATIONS OFFICE, U. S. ATOMIC ENERGY COMMISSION
REACTOR OPERATING EXPERIENCE 67-2, 2 PAGES, FEBRUARY 27, 1967

THE REACTOR WAS TAKEN CRITICAL WITH ONE FUEL ELEMENT INSERTED ONLY 9 IN., LEAVING THE ENTIRE FUELED PORTION ABOVE THE CORE. ONE SHIFT LOGGED THE ELEMENT AS BEING PROPERLY SEATED, AND THE NEXT SHIFT CHECKED THE SEATING AS A PART OF THE PRE-STARTUP CHECK LIST. THE CAUSE WAS ATTRIBUTED TO OPERATOR ERRORS. THE POWER LEVEL NEVER EXCEEDED 1% OF FULL POWER, AND SCRAM WAS INITIATED FOLLOWING INABILITY TO EXPLAIN ROD-POSITION (REACTIVITY) DISCREPANCIES.

AVAILABILITY - AEC, DIVISION OF OPERATIONAL SAFETY, WASHINGTON, D. C.

*FAILURE, OPERATOR ERROR + *INCIDENT, ACTUAL, HUMAN ERROR + *OPERATING EXPERIENCE + ETR (ENGINEERING TEST REACTOR) + FAILURE, SEQUENTIAL + FUEL HANDLING + REACTIVITY EFFECT, ANOMALOUS + REACTOR, AEC OWNED + REACTOR, TEST

17-15828
NORA--H₂O MODERATED CORES FIRST STARTUP
INSTITUTT FOR ATOMENERGI, KJEILLER, NORWAY
TID-21735 + NC-61 +. 2 PAGES, JANUARY 29, 1965

A CRITICAL LOADING OF 240 ELEMENTS AT A LIGHT-WATER HEIGHT OF 77.6 CM WAS OBTAINED. CALCULATIONS INDICATED A HEIGHT OF 78 CM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, 22151, \$3.00 COPY, \$0.65 MICROFICHE

*CRITICALITY EXPERIMENT + NORWAY + REACTOR, WATER

17-15829 ALSO IN CATEGORY 9
GARRICK BJ + GEKLER WC + POMREHN HP
SHIPPINGPORT OPERATING EXPERIENCE SUMMARY
HOLMES AND NARVER INC., LOS ANGELES, CALIFORNIA
HN-185 +. 175 PAGES, 39 TABLES, 28 FIGURES, REFERENCES, PAGES 5-1 TO 5-175 OF AN ANALYSIS OF NUCLEAR POWER PLANT OPERATING AND SAFETY EXPERIENCE, VOLUME II, CHAPTER 5, DECEMBER 15, 1966

PRESENTS A BRIEF HISTORICAL DESCRIPTION, DESCRIBES THE MANAGEMENT AND MAINTENANCE PRACTICES, AND DISCUSSES IN DETAIL THE ACCUMULATED OPERATING EXPERIENCE AND THE RELIABILITY OF THE REACTOR CONTROL SYSTEM, SAFETY SYSTEM, AND ENGINEERED SAFEGUARDS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, 22151, \$3.00 COPY, \$0.65 MICROFICHE

*OPERATING EXPERIENCE + *RELIABILITY ANALYSIS + ENGINEERED SAFETY FEATURE + INSTRUMENTATION, CONTROL + INSTRUMENTATION, PROTECTIVE + MAINTENANCE AND REPAIR + REACTOR SAFETY SYSTEM + REACTOR, PRESSURIZED WATER + SHIPPINGPORT

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-15830 ALSO IN CATEGORY 9
GARRICK BJ + GEKLER WC + POMREHN HP
HUMBOLDT BAY OPERATING EXPERIENCE SUMMARY
HOLMES AND NARVER INC., LOS ANGELES, CALIFORNIA
HN-185 +. 135 PAGES, 37 FIGURES, 29 TABLES, REFERENCES, PAGES 4-1 TO 4-135 OF AN ANALYSIS OF NUCLEAR
POWER PLANT OPERATING AND SAFETY EXPERIENCE, VOLUME II, CHAPTER 4, DECEMBER 15, 1966

PRESENTS A BRIEF HISTORICAL DESCRIPTION, DESCRIBES THE MANAGEMENT AND MAINTENANCE PRACTICES,
AND DISCUSSES IN DETAIL THE ACCUMULATED OPERATING EXPERIENCE AND THE RELIABILITY OF THE
REACTOR CONTROL SYSTEM, SAFETY SYSTEM, AND ENGINEERED SAFEGUARDS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, 22151, \$3.00 COPY, \$0.65 MICROFICHE

*OPERATING EXPERIENCE + *RELIABILITY ANALYSIS + ENGINEERED SAFETY FEATURE + HUMBOLDT BAY +
INSTRUMENTATION, CONTROL + INSTRUMENTATION, PROTECTIVE + MAINTENANCE AND REPAIR + REACTOR SAFETY SYSTEM +
REACTOR, BOILING WATER

17-15831 ALSO IN CATEGORY 9
GARRICK BJ + GEKLER WC + POMREHN HP
INDIAN POINT OPERATING EXPERIENCE SUMMARY
HOLMES AND NARVER INC., LOS ANGELES, CALIFORNIA
HN-185 +. 170 PAGES, 33 TABLES, 45 FIGURES, REFERENCES, PAGES 3-1 TO 3-170 OF AN ANALYSIS OF NUCLEAR
POWER PLANT OPERATING AND SAFETY EXPERIENCE, VOLUME II, CHAPTER 3, DECEMBER 15, 1966

PRESENTS A BRIEF HISTORICAL DESCRIPTION, DESCRIBES THE MANAGEMENT AND MAINTENANCE PRACTICES,
AND DISCUSSES IN DETAIL THE ACCUMULATED OPERATING EXPERIENCE AND THE RELIABILITY OF THE
REACTOR CONTROL SYSTEM, SAFETY SYSTEM, AND ENGINEERED SAFEGUARDS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, 22151, \$3.00 COPY, \$0.65 MICROFICHE

*OPERATING EXPERIENCE + *RELIABILITY ANALYSIS + ENGINEERED SAFETY FEATURE + INDIAN POINT 1 +
INSTRUMENTATION, CONTROL + INSTRUMENTATION, PROTECTIVE + MAINTENANCE AND REPAIR + REACTOR SAFETY SYSTEM +
REACTOR, PRESSURIZED WATER

17-15832 ALSO IN CATEGORY 9
GARRICK BJ + GEKLER WC + POMREHN HP
YANKEE OPERATING EXPERIENCE SUMMARY
HOLMES AND NARVER INC., LOS ANGELES, CALIFORNIA
HN-185 +. 103 PAGES, 19 TABLES, 28 FIGURES, REFERENCES, PAGES 2-1 TO 2-103 OF AN ANALYSIS OF NUCLEAR
POWER PLANT OPERATING AND SAFETY EXPERIENCE, VOLUME II, CHAPTER 2, DECEMBER 15, 1966

PRESENTS A BRIEF HISTORICAL DESCRIPTION, DESCRIBES THE MANAGEMENT AND MAINTENANCE PRACTICES,
AND DISCUSSES IN DETAIL THE ACCUMULATED OPERATING EXPERIENCE AND THE RELIABILITY OF THE
REACTOR CONTROL SYSTEM, SAFETY SYSTEM, AND ENGINEERED SAFEGUARDS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, 22151, \$3.00 COPY, \$0.65 MICROFICHE

*OPERATING EXPERIENCE + *RELIABILITY ANALYSIS + ENGINEERED SAFETY FEATURE + INSTRUMENTATION, CONTROL +
INSTRUMENTATION, PROTECTIVE + MAINTENANCE AND REPAIR + REACTOR SAFETY SYSTEM +
REACTOR, PRESSURIZED WATER + YANKEE

17-15833 ALSO IN CATEGORY 9
GARRICK BJ + GEKLER WC + POMREHN HP
DRESDEN 1 OPERATING EXPERIENCE SUMMARY
HOLMES AND NARVER INC., LOS ANGELES, CALIFORNIA
HN-185 +. 157 PAGES, 31 TABLES, 49 FIGURES, REFERENCES, PAGES 1-1 TO 1-157 OF AN ANALYSIS OF NUCLEAR
POWER PLANT OPERATING AND SAFETY EXPERIENCE, VOLUME II, CHAPTER 1, DECEMBER 15, 1966

PRESENTS A BRIEF HISTORICAL DESCRIPTION, DESCRIBES THE MANAGEMENT AND MAINTENANCE PRACTICES,
AND DISCUSSES IN DETAIL THE ACCUMULATED OPERATING EXPERIENCE AND THE RELIABILITY OF THE
REACTOR CONTROL SYSTEM, SAFETY SYSTEM, AND ENGINEERED SAFEGUARDS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
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*OPERATING EXPERIENCE + *RELIABILITY ANALYSIS + DRESDEN 1 + ENGINEERED SAFETY FEATURE +
INSTRUMENTATION, CONTROL + INSTRUMENTATION, PROTECTIVE + MAINTENANCE AND REPAIR + REACTOR SAFETY SYSTEM +
REACTOR, BOILING WATER

17-15834 ALSO IN CATEGORY 9
GARRICK BJ + GEKLER WC + POMREHN HP

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-15834 *CONTINUED*

AN ANALYSIS OF NUCLEAR POWER PLANT OPERATING AND SAFETY EXPERIENCE; VOLUME II
HOLMES AND NARVER, INC., LOS ANGELES, CALIFORNIA
HN-185 +. 740 PAGES, FIGURES, TABLES, REFERENCES, DECEMBER 15, 1966

OPERATING AND SAFETY EXPERIENCE, AT FIVE MAJOR NUCLEAR POWER PLANTS, REPRESENTING 20 REACTOR-YEARS OF OPERATION IS PRESENTED. THE EXPERIENCE RECORD FOR EACH PLANT IS GIVEN IN SEPARATE CHAPTERS. EACH CHAPTER CONTAINS A FACILITY DESCRIPTION, A DISCUSSION OF MANAGEMENT AND MAINTENANCE PRACTICES, AND A REVIEW OF OPERATING EXPERIENCE AND RELIABILITY IN CONTROL, SAFETY, AND ENGINEERED SAFEGUARD SYSTEMS. THE FIVE PLANTS ARE DRESDEN-1, YANKEE, INDIAN POINT-1, HUMBOLDT BAY UNIT NO. 3, AND THE SHIPPINGPORT ATOMIC POWER STATION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, 22151, \$3.00 COPY \$0.65 MICROFICHE

*OPERATING EXPERIENCE + *RELIABILITY ANALYSIS + CONTAINMENT INTEGRITY + CONTROL ROD DRIVE + CONTROL ROD SCRAM MECHANISM + DRESDEN 1 + EMERGENCY COOLING CONSIDERATIONS + EMERGENCY POWER, ELECTRIC + EMERGENCY SYSTEM + ENGINEERED SAFETY FEATURE + HUMBOLDT BAY + INDIAN POINT 1 + MAINTENANCE AND REPAIR + PLANT PROTECTIVE SYSTEM + REACTOR SAFETY SYSTEM + REACTOR, BOILING WATER + REACTOR, POWER + REACTOR, PRESSURIZED WATER + SAFETY REVIEW (OPERATIONS, EXPERIMENTS) + SAFETY STUDY + SCRAM, REAL + SCRAM, SPURIOUS + SHIPPINGPORT + SHUTDOWN SYSTEM, SECONDARY + YANKEE

17-15868

HEMMILL TF + FITZPATRICK VF
OXYGEN CONTROL IN LOW-TEMPERATURE, PRESSURIZED WATER REACTOR SYSTEMS
HANFORD ATOMIC PRODUCTS OPERATION
HW-83430 +. 9 PAGES, JULY 27, 1964

THE COOLANT IN PRESSURIZED-WATER-REACTOR SYSTEMS UNDERGOES RADIOLYTIC DECOMPOSITION TO HYDROGEN AND OXYGEN GASES, WITH HYDROGEN PEROXIDE AS AN INTERMEDIATE. THE REACTION PRODUCTS ACCUMULATE IN THE COOLANT AT TEMPERATURES BELOW ABOUT 150 C UNLESS REDUCING AGENTS ARE PRESENT TO REACT WITH THEM. HYDRAZINE IS NORMALLY ADDED FOR THIS PURPOSE IN SYSTEMS OPERATING BELOW 100 C, WHILE HYDROGEN GAS IS ADDED AT HIGHER TEMPERATURES. RECENT STUDIES INDICATE THAT REDUCING SPECIES FORMED BY IRRADIATION OF PH-10 AMMONIATED COOLANTS SATISFACTORILY RETARD COOLANT RADIOLYSIS AT TEMPERATURES AS LOW AS 70 C. HYDRAZINE COULD BE THE PRIMARY SPECIES INVOLVED SINCE IT HAS BEEN MEASURED AS A STABLE PRODUCT UNDER THESE CONDITIONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*CHEMICAL REACTION + *COOLANT CHEMISTRY + *OXYGEN + *REACTOR, PRESSURIZED WATER

17-15871

TABER WH + HURT SS
QUARTERLY REPORT JULY, AUGUST, AND SEPTEMBER OF 1966. OAK RIDGE RESEARCH REACTOR
OAK RIDGE NATIONAL LABORATORY
ORNL-TM-1791 +. 51 PAGES, 7 FIGURES, 13 TABLES, MARCH 1, 1967

SECONDARY COOLING EQUIPMENT WAS DAMAGED AS A RESULT OF FLOODING THE BUILDING TO A DEPTH OF 34.5 IN. ABOVE THE FLOOR. A CULVERT HAD BEEN COVERED WITH CHAIN-LINK FENCE, WHICH BECAME CHOKED WITH DEBRIS AND DIVERTED A STREAM TO THE BUILDING DURING A STORM. DAMAGE WAS INFLECTED ON A 2400-V TRANSFORMER, PUMP STARTER, AND PUMP MOTORS. ALUMINUM-CLAD SHIM RODS WERE FOUND TO BE BENT. THE CAUSE WAS ATTRIBUTED TO RADIATION DAMAGE. SHIM-ROD VIBRATION IS STILL OCCURRING, CAUSING WIDE LOG-N PERIOD RECORDER TRACINGS. NO EXPLANATION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*FAILURE, GENERAL + CONTROL ROD + DAMAGE + EQUIPMENT, GENERAL + MAIN COOLING SYSTEM + ORR (OAK RIDGE RESEARCH REACTOR) + RADIATION DAMAGE + REACTIVITY EFFECT, ANOMALOUS + REACTOR, AEC OWNED + REACTOR, RESEARCH + VIBRATION + WATER, GENERAL

17-15994

MCCORD PV + CORRETT RL
HIGH FLUX ISOTOPE REACTOR QUARTERLY REPORT, OCTOBER, NOVEMBER, AND DECEMBER OF 1966
OAK RIDGE NATIONAL LABORATORY, TENNESSEE
ORNL-TM-1811 +. 22 PAGES, 2 FIGURES, 12 TABLES, MARCH 23, 1967

TEN BALLS FROM THE CONTROL-PLATE BEARINGS WERE FOUND IN THE PRIMARY-SYSTEM STRAINER DURING A SHUTDOWN. INSPECTION WITH AN UNDERWATER PERISCOPE SHOWED EXCESSIVE WEAR ON OTHER PLATE BEARINGS. THE WEAR WAS ATTRIBUTED TO FRETTING CORROSION, AND, ALTHOUGH SIGNIFICANT, THE BEARINGS WERE EXPOSED TO THE FLOW ENVIRONMENT TWICE AS LONG AS THEIR DESIGN LIFE. MODIFIED BEARINGS WERE INSTALLED WHICH PROVIDED RETAINERS FOR BOTH BALLS AND THE RACE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*FAILURE, DESIGN ERROR + *OPERATIONS REPORT, GENERAL + CORROSION + FAILURE, SCRAM MECHANISM + HFIR (HIGH FLUX ISOTOPE REACTOR) + OPERATING EXPERIENCE + REACTOR, AEC OWNED + REACTOR, FLUX TRAP

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-15995

ALTVATER VW + PREUSS HJ
THE NIEDERAICHBACH NUCLEAR POWER STATION (KKN) WITH A GAS-COOLED, D2O PRESSURE TUBE REACTOR, TECHNOLOGY
AND CONCEPTION OF THE PLANT (II)
3 PAGES, FIGURES, ATOMWIRTSCHAFT 11(11) PAGES 562-564 (NOVEMBER 1966). IN GERMAN

DESCRIBES THE CONCEPT OF A PROTOTYPE 106-MW(E), CO2-COOLED, D2O-MODERATED, PRESSURE-TUBE
REACTOR.

*REACTOR DESCRIPTION + REACTOR, GAS COOLED + REACTOR, HEAVY WATER + REACTOR, POWER

17-15996

YANKEE NUCLEAR POWER STATION OPERATION REPORT NO. 71
YANKEE ATOMIC ELECTRIC COMPANY, BOSTON
10 PAGES, 2 FIGURES, 1 TABLE, DECEMBER 21, 1966, DOCKET NO. 50-29

THE MAIN COOLING SYSTEM WAS HEATED TO 400 F AT 550 PSIG AND ALLOWED TO SOAK FOR 24 HOURS TO
ALLOW COMPLETE EFFUSION OF HYDROGEN FROM THE REACTOR VESSEL BEFORE TAKING THE REACTOR
CRITICAL. A LEAK FROM THE PRIMARY TO THE SECONDARY SYSTEM WAS DETERMINED TO BE 34 GAL/DAY BY
USING TRITIUM AS A TRACER.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*OPERATIONS REPORT, GENERAL + HYDROGEN + MAIN COOLING SYSTEM + OPERATING EXPERIENCE + REACTOR OFFGAS +
REACTOR, POWER + REACTOR, PRESSURIZED WATER + TEST, LEAK RATE + TRACER, GENERAL + TRITIUM + YANKEE

17-15998

ALSO IN CATEGORY 1

REIDER F
APPLICATION OF INDUSTRIAL SAFETY PRACTICES TO NUCLEAR SAFETY
LOS ALAMOS SCIENTIFIC LABORATORY
SC-DC-67-1305 +. 4 PAGES, 3 FIGURES, 11 REFERENCES, AMERICAN NUCLEAR SOCIETY, TRINITY AND SOUTHERN NEVADA
SECTIONS, NATIONAL TOPICAL MEETING, LAS VEGAS, NEVADA, DECEMBER 13-15, 1966, PP. 25-28 OF PROCEEDINGS,
NUCLEAR CRITICALITY SAFETY

BRIEFLY DISCUSSES THE IDEAS THAT MOTIVATION FOR SAFETY IS A MATTER OF SELF-PRESERVATION AND
THAT A REASONABLE UNDERSTANDING OF THE RISKS IS FUNDAMENTAL.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*CRITICALITY SAFETY + *SAFETY PRINCIPLES AND PHILOSOPHY + INCIDENT, ACTUAL, GENERAL +
INCIDENT, ACTUAL, NONNUCLEAR

17-16012

ALSO IN CATEGORY 1

PAXTON HC
THE NATURE AND CONSEQUENCES OF NUCLEAR ACCIDENTS
LOS ALAMOS SCIENTIFIC LABORATORY
SC-DC-67-1305 +. 5 PAGES, 4 FIGURES, 1 TABLE, 7 REFERENCES, AMERICAN NUCLEAR SOCIETY, TRINITY AND
SOUTHERN NEVADA SECTIONS, NATIONAL TOPICAL MEETING, LAS VEGAS, NEVADA, DECEMBER 13-15, 1966, PP. 213-217
OF PROCEEDINGS, NUCLEAR CRITICALITY SAFETY

IN TERMS OF COMMON SAFETY INDEXES, NUMBER OF INJURIES AND TIME LOST, ONLY 0.5% OF ALL INJURIES
TO AEC OPERATION CONTRACTORS FROM 1943-1964, ARE ATTRIBUTABLE TO RADIATION. THE PERCENTAGE
IS EVEN SMALLER FOR LOST-TIME ACCIDENTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*SAFETY PRINCIPLES AND PHILOSOPHY + ACCIDENT, GENERAL + INCIDENT, ACTUAL, GENERAL +
RADIATION SAFETY AND CONTROL

17-16021

BONUS NUCLEAR POWER PLANT. DRL MONTHLY REPORT FOR SEPTEMBER 1966
PUERTO RICO WATER RESOURCES AUTHORITY
17 PAGES, SEPT. 1966, DOCKET NO 115-4

THE EMERGENCY DIESEL GENERATOR FAILED TO START BECAUSE OF REDUCED FUEL FLOW CAUSED BY A LOW
LEVEL IN THE FUEL TANK, WHICH ALLOWED RUST PARTICLES (SETTLED IN THE BOTTOM OF THE TANK) TO
BE PUMPED INTO THE FUEL LINE. THE LEVEL CONTROLLER WAS ADJUSTED TO ACTIVATE THE REFILL PUMP
WHEN THE TANK BECOMES HALF EMPTY. LONG DROP TIMES ON FOUR CONTROL RODS WERE UNACCEPTABLE,
RESULTING FROM FRICTIONAL FORCES DEVELOPED BY THE CONTROL-ROD SEALS. THE USE OF LOW-FRICTION
MATERIALS IS BEING CONSIDERED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-16021 *CONTINUED*

*OPERATIONS REPORT, GENERAL + BONUS (BOILING NUCLEAR SUPERHEAT PROJECT) + CONTROL ROD + EMERGENCY POWER, ELECTRIC + FAILURE, ADMINISTRATIVE CONTROL + FAILURE, EQUIPMENT + FAILURE, SCRAM MECHANISM + GENERATOR, DIESEL + OPERATING EXPERIENCE + REACTOR, BOILING WATER + REACTOR, INTERNAL SUPERHEAT + SEAL

17-16022

SAVOLAINEN AW

SEMIANNUAL PROGRESS REPORT FOR PERIOD ENDING SEPTEMBER 30, 1966, GAS-COOLED REACTOR PROGRAM
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE
ORNL-4036 +. 276 PAGES, FIGURES, TABLES, FEBRUARY 1967

PROGRESS REPORT. TOPICS DISCUSSED INCLUDE THE DEVELOPMENT AND EVALUATION WORK AIMED AT IMPROVED FUEL UTILIZATION FOR HIGH-TEMPERATURE GAS-COOLED REACTORS, FUEL-GRAPHITE DEVELOPMENT STUDIES, PRESTRESSED-CONCRETE PRESSURE-VESSEL DEVELOPMENT, AND HIGH-TEMPERATURE GAS-COOLED REACTOR NUCLEAR SAFETY. DISCUSSES THE STATUS OF THE PROGRAM FOR INVESTIGATING HIGH-TEMPERATURE REACTION RATES IN A STEAM-GRAPHITE SYSTEM.

AVAILABILITY - CLEARING HOUSE FOR FEDERAL AND SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*RESEARCH AND DEVELOPMENT PROGRAM + COATED PARTICLE + CONCRETE, PRESTRESSED + CORROSION + FUEL BURNUP + GRAPHITE + IRRADIATION TESTING + PRESSURE VESSEL + REACTOR, GAS COOLED + REACTOR, HIGH TEMP. GAS + STEAM

17-16025

BONUS NUCLEAR POWER PLANT. DRL MONTHLY REPORT NO. 32

PUERTO RICO WATER RESOURCES AUTHORITY

20 PAGES, 1 FIGURE, 3 TABLES, NOVEMBER 1966, DUCKLE 115-4

RADIOACTIVE GASES ENTERED THE BUILDING WHEN A WATER-SEAL TRAP OF THE STATIC INVERTER WAS BREACHED AS A RESULT OF A SWITCH FAILURE. TWO RODS FAILED TO SCRAM BECAUSE OF STICKING RELAYS. BY ROUGHENING THE CONTACTING PORTION OF THE RELAYS, PROPER OPERATION WAS OBTAINED. COLD WATER WAS INJECTED INTO THE CORE AS A RESULT OF A VIOLATION OF PROCEDURE. THE POWER LEVEL INCREASED FROM 3.0 TO 4.15 MW.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*OPERATIONS REPORT, GENERAL + ACCIDENT, COLD COOLANT + BONUS (BOILING NUCLEAR SUPERHEAT PROJECT) + FAILURE, INSTRUMENT + FAILURE, SCRAM MECHANISM + INCIDENT, ACTUAL, HUMAN ERROR + INSTRUMENTATION, RELAY + INSTRUMENTATION, SWITCH + RADIOACTIVITY, RELEASE + REACTOR, BOILING WATER + REACTOR, INTERNAL SUPERHEAT

17-16027

ALSO IN CATEGORY 12

AYRES JA + PERRIGO LD + WEED RD

DECONTAMINATION OF A PWR

BATTELLE MEMORIAL INSTITUTE, RICHLAND, WASHINGTON

6 PAGES, 5 FIGURES, 3 TABLES, NUCLEONICS 25(4), PAGES 58-63 (APRIL 1967)

A SUCCESSFUL TWO-STEP PROCEDURE (ALKALINE PERMANGANATE FOLLOWED BY A CITRATE-OXALATE SOLUTION) WAS DEVELOPED FOR A RECENT DECONTAMINATION OF THE PLUTONIUM RECYCLE TEST REACTOR. THE PRTR DECONTAMINATION GAVE HIGH DECONTAMINATION FACTORS (AVERAGE WAS 25), LOW UNIFORM CORROSION RATES OF THE MAJOR CONSTRUCTION MATERIALS, AND NO EVIDENCE OF NONUNIFORM CORROSION. THE OPERATION WENT SMOOTHLY AND WITHOUT INCIDENT, REQUIRING ONLY 48 HR FROM INTRODUCTION OF FIRST SOLUTION UNTIL COMPLETION OF THE FINAL RINSE.

*DECONTAMINATION + *MAIN COOLING SYSTEM + CORROSION + PRTR (PLUTONIUM RECYCLE TEST REACTOR) + REACTOR, AEC OWNED + REACTOR, HEAVY WATER + REACTOR, PRESSURE TUBE + REACTOR, PRESSURIZED WATER + SURFACE FILM DEPOSIT

17-16029

PERRET JD

PERIOD SPIKES RELATED TO SRE OPERATING HISTORY

ATOMICS INTERNATIONAL, CANOGA PARK, CALIF.

NAA-SR MEMO-9523 +. 21 PAGES, FIGURES, REFERENCES, MARCH 27, 1964

SEVENTY-FOUR PERIOD SPIKES WERE RECORDED DURING SRE CORE-II OPERATION FROM OCTOBER 8, 1962, TO FEBRUARY 15, 1964. THE OCCURENCE, FREQUENCY, AND MAGNITUDE OF THESE EVENTS AS RELATED TO SRE OPERATIONS IS DOCUMENTED. THE OBSERVATIONS AND REASONING WHICH SUPPORT GAS-BUBBLE PASSAGE THROUGH THE CORE AS THE MOST PROBABLE CAUSE ARE PRESENTED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*REACTIVITY EFFECT + *REACTIVITY EFFECT, ANOMALOUS + REACTIVITY EFFECT, VOID + REACTOR, GRAPHITE MODERATED + REACTOR, LIQUID METAL COOLED + SRE (SODIUM REACTOR EXPERIMENT)

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-16031

WALTER C.

COMPARISON OF TWO FUEL ELEMENT SHAPES

LAWRENCE RADIATION LABORATORY, LIVERMORE, CALIF.

UCRL-14986 +. 18 PAGES, 4 FIGURES, 3 TABLES, 1 REFERENCE, OCT. 31, 1966 ALSO ABSTRACT FROM ANS TRANS. 9(2) PAGES 574. 1966 WINTER MEETING, AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PA., OCTOBER 30-NOVEMBER 3, 1966

EXTERNALLY COOLED FUEL PINS AND INTERNALLY COOLED FUEL TUBES ARE COMPARED FOR OTHERWISE IDENTICAL REACTORS. THE FUEL-TUBE DESIGN OVERCOMES THE DEFICIENCY OF THE FUEL-PIN DESIGN AS REGARDS FISSION-GAS-PRESSURE VENTING. FUEL TUBES HAVE LOWER MATERIAL DELTA T AND THERMAL STRESS THAN FUEL PINS. A GREATER NUMBER OF SMALLER FUEL TUBES ARE REQUIRED TO REPLACE FUEL PINS.

*DESIGN STUDY + *FUEL ELEMENT + FABRICATION + STRESS + THERMAL ANALYSIS

17-16032

ADAMS RM + GLASSNER A

REACTOR DEVELOPMENT PROGRAM PROGRESS REPORT, NOVEMBER 1966

ARGONNE NATIONAL LABORATORY, ILL.

ANL-7279 +. 98 PAGES, (PAGES 86-95.) 26 FIGURES, 20 TABLES, DECEMBER 21, 1966

DISCUSSES LIQUID SUPERHEAT TESTS WITH SODIUM, FUEL-MELTDOWN STUDIES, TRANSIENT HEAT TRANSFER FROM SMALL HOT PARTICLES IN LIQUID SODIUM, AND HIGH-TEMPERATURE PHYSICAL PROPERTIES OF REACTOR CORE MATERIALS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*HEAT TRANSFER + *SODIUM + *THERMAL ANALYSIS + CORE COMPONENTS, MISCELLANEOUS + FUEL ELEMENT + FUEL MELTDOWN + HIGH TEMPERATURE + LIQUID FUEL + PROPERTY, PHYSICAL + REACTOR, LIQUID METAL COOLED

17-16033

QUINN EP

VIBRATION OF SEFOR FUEL RODS IN PARALLEL FLOW

GENERAL ELECTRIC CO., SAN JOSE, CALIF. ATOMIC POWER EQUIPMENT DEPT.

GEAP-4966 +. 35 PAGES, TABLES, SEPT. 1965

TESTS WERE RUN WITH A FULL-SCALE SEFOR FUEL ROD ASSEMBLY TO DETERMINE THE ROD VIBRATION RESULTING FROM FLUID FLOW. THE MAXIMUM VIBRATION FOR A NORMAL ROD ASSEMBLY CORRESPONDING TO REACTOR CONDITIONS WAS FOUND TO BE 0.0001 IN. AT 67 CPS. LARGER VIBRATION AT LOWER FREQUENCIES WAS MEASURED FOR TWO OTHER ASSEMBLIES WITH A REDUCED NUMBER OF AXIAL SUPPORTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*FUEL ELEMENT + *VIBRATION + HYDRAULIC EFFECT + MAIN COOLING SYSTEM + MEASUREMENT, GENERAL + REACTOR, BREEDER + REACTOR, FAST + REACTOR, LIQUID METAL COOLED + SEFOR (SOUTHWEST EXP. FAST OXIDE REACTOR) + SODIUM

17-16034

HAUBENRICH PN

OPERATION OF THE MOLTEN SALT REACTOR EXPERIMENT

OAK RIDGE NATIONAL LAB., TENN.

ORNL-P-2397 + CONF-660524-18 +. 11 PAGES, 1965

EXPERIENCE INDICATES THAT THE NUCLEAR CHARACTERISTICS ARE AS PREDICTED, XENON IS EFFECTIVELY STRIPPED, THE SYSTEM IS STABLE AT ALL POWERS, THERE HAS BEEN PRACTICALLY NO CORROSION, THE FUEL IS CHEMICALLY STABLE, AND SOME EQUIPMENT DIFFICULTIES HAVE OCCURRED BUT ALL MANAGEABLE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*OPERATING EXPERIENCE + CHEMICAL REACTION + CORROSION + MOLTEN FUEL + MSRE (MOLTEN SALT REACTOR EXPERIMENT) + REACTIVITY EFFECT + REACTOR STABILITY + REACTOR, AEC OWNED + REACTOR, MOLTEN SALT + XENON

17-16036

A HAIR-RAISING ACCIDENT

DIVISION OF OPERATIONAL SAFETY, USAEC

2 PAGES, SERIOUS ACCIDENTS ISSUE NO. 277, MARCH 1, 1967

AN EMPLOYEE OPERATING AN EIGHT-SPINDLE SPOT-FACER LEANED FORWARD, AND HIS LONG HAIR BECAME WRAPPED AROUND THE SPINDLE AND TOOL. HE SUFFERED ABRASIONS, CUTS, AND CONSIDERABLE LOSS OF

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-16036 *CONTINUED*
HAIR,

AVAILABILITY - DIVISION OF OPERATIONAL SAFETY, USAEC

*ACCIDENT, GENERAL + *INCIDENT, ACTUAL, NONNUCLEAR + INCIDENT, ACTUAL, GENERAL +
INCIDENT, ACTUAL, HUMAN ERROR + INCIDENT, ACTUAL, NONREACTOR

17-16037

TERRY PA

THE MAXIMUM FUEL ELEMENT LOADING OF THE AIR FORCE NUCLEAR ENGINEERING TEST FACILITY
AIR FORCE INST. OF TECH., WRIGHT-PATTERSON AFB, OHIO SCHOOL OF ENGINEERING
AD-635041 + GSP-PH-66-19 +. 205 PAGES, FIGURES, TABLES, REFERENCES, MARCH 1966

THE MAXIMUM FUEL-ELEMENT LOADING FOR THE THIRD CORE OF THE AIR FORCE NUCLEAR ENGINEERING TEST
FACILITY AT WRIGHT-PATTERSON AIR FORCE BASE, OHIO, WAS CALCULATED. THE EFFECTS OF SEVERAL
LOADINGS WERE EVALUATED BY USING A TWO-DIMENSIONAL BURNUP CODE ON THE 7094 COMPUTER. THE
CRITERIA USED IN THE EVALUATION WERE - LIMITS ON THE EXCESS REACTIVITY, THE THERMAL STRESS,
AND THE MATERIALS OF THE REACTOR. THE 250-GM FUEL ELEMENT LOADING WAS FOUND TO BE THE
MAXIMUM FOR THE THIRD CORE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*FUEL BURNUP + *MATHEMATICAL STUDY + AF-NETR (AIR FORCE NUC. ENGINEERING TEST RCTR.) + REACTIVITY, EXCESS +
REACTOR, RESEARCH + STRESS + THERMAL CONSIDERATION

17-16040

EXPLOSIONS INVOLVING METALLIC POTASSIUM OR NAK.

UNITED STATES ATOMIC ENERGY COMMISSION, DIVISION OF OPERATIONAL SAFETY
HEALTH AND SAFETY INFO. NO 251, 4 PAGES, MARCH 13, 1967

THE HAZARDS ASSOCIATED WITH HANDLING POTASSIUM INCLUDE THE PRESENCE OF POTASSIUM SUPEROXIDE,
FORMED BY AIR OXIDATION, WHICH IS CAPABLE OF EXPLODING WHEN IN CONTACT WITH POTASSIUM,
ALCOHOL, KEROSENE, AND MANY OTHER FLAMMABLE MATERIALS. EIGHT INCIDENTS ARE PRESENTED WHICH
ATTEST TO THIS ADDITIONAL POTASSIUM HAZARD RESULTING FROM PRIOR REACTION WITH AIR.
RECOMMENDATIONS FOR MINIMIZING THE HAZARDS ARE GIVEN.

AVAILABILITY - AEC, DIVISION OF OPERATIONAL SAFETY, WASHINGTON, D. C.

*EXPLOSION + *INCIDENT, ACTUAL, GENERAL + ACCIDENT, GENERAL + CHEMICAL REACTION +
NAK (SODIUM POTASSIUM ALLOY) + OXIDATION + POTASSIUM + SAFETY PRINCIPLES AND PHILOSOPHY

17-16041

ANDERSEN E + BARALA D + BRYHN-INGEBRIGTSEN K + DRAGESET A + MILLAR CH + SNIDOW NL + SMIT J
A MOCK-UP STUDY OF THE JEEP II RESEARCH REACTOR CORE IN NORA
INSTITUTT FOR ATOMENERGI, KJELLER, NORWAY
TID-21248 + KP-69 + NORA-7 +. 42 PAGES, REFERENCES, APRIL 1964

MEASUREMENTS ON A MOCKUP CORE OF JEEP II WERE IN AGREEMENT WITH CALCULATED VALUES. PARAMETERS
MEASURED INCLUDED CRITICAL MASS, WATER-LEVEL REACTIVITY COEFFICIENT, MATERIAL BUCKLING,
NEUTRON-FLUX DISTRIBUTION, AND CONTROL-ROD WORTH

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNOLOGY INFORMATION, NATIONAL BUREAU OF
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

CONTROL ROD WORTH + CRITICAL MASS + FLUX DISTRIBUTION + JEEP 2 (JOINT ESTABLISHMENT EXPTL PILE 2) +
MEASUREMENT, GENERAL + MEASUREMENT, REACTIVITY + NEUTRON + REACTOR, HEAVY WATER + REACTOR, RESEARCH +
TEST, PHYSICS

17-16059

ALSO IN CATEGORY 9

HUTTER F + SULLIVAN TE + GIORGIS GO

FARET CONTROL ROD DRIVE MECHANISMS

ARGONNE NATIONAL LABORATORY, ILLINOIS

ANL-7158 +. 36 PAGES, 19 FIGURES, 1 TABLE, 3 REFERENCES, JUNE 1966

FARET WAS DESIGNED TO BE A 50-MW(T) SODIUM-COOLED FAST-REACTOR EXPERIMENTAL FACILITY. TWELVE
CONTROL DRIVES, OPERATING ABOVE THE REACTOR VESSEL, BUT INSIDE A LARGE SHIELDED CELL, WERE TO
MOVE 12 POISON-CONTROL RODS OVER A 24-IN. VERTICAL DISTANCE. THE CONTROL DRIVES ARE
ELECTROMECHANICAL DEVICES THAT INCLUDE PNEUMATIC SCRAM ACCELERATORS AND HYDRAULIC
DECELERATORS. A GRIPPER MECHANISM AT THE LOWER END IS SUBMERGED IN 1150 F SODIUM AND IS
REMOTELY CONTROLLED TO GRIP OR TO RELEASE A CONTROL ROD. THE DETAILED DESIGN OF THE
CONTROL-DRIVE CLUSTER, ITS OPERATING CHARACTERISTICS, AND PRELIMINARY TESTS OF SOME
CONTROL-DRIVE COMPONENTS ARE DESCRIBED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-16059 *CONTINUED*
*CONTROL ROD DRIVE + *CONTROL ROD SCRAM MECHANISM + *FFTF (TR) + *INSTRUMENTATION, CONTROL + FAST NEUTRON + SODIUM

17-16062 ALSO IN CATEGORY 14
BEAL SK + HENDERSON DR
DETERMINATION OF CHEMICAL CONCENTRATION AS A FUNCTION OF TIME IN A TWO-VOLUME REACTOR COOLANT SYSTEM
BETTIS ATOMIC POWER LABORATORY, PITTSBURGH, PA.
WAPD-TM-646 +. 10 PAGES, 3 FIGURES, 1 REFERENCE, NOVEMBER 1966

VARIOUS CHEMICAL PROCESSES (SUCH AS DECONTAMINATION) USED IN NUCLEAR REACTOR PLANTS, REQUIRE ACCURATE KNOWLEDGE OF THE TIME BEHAVIOR OF CHEMICAL CONCENTRATIONS WITHIN THE REACTOR PLANT. A PRESSURIZED WATER REACTOR PLANT IS CONSIDERED TO CONSIST OF TWO DISTINCT VOLUMES, ONE BEING THE PRESSURIZER, THE OTHER BEING THE REACTOR VESSEL AND LOOP PIPING. FLOW OCCURS BETWEEN THESE TWO VOLUMES, AND THE CONCENTRATION OF A CHEMICAL SOLUTION INTRODUCED INTO ONE VOLUME MAY LEAD OR LAG THE CONCENTRATION IN THE OTHER VOLUME, DEPENDING UPON THE RELATIVE VOLUMES AND FLOW RATES. IN THIS REPORT, THE DIFFERENTIAL EQUATIONS WHICH DESCRIBE THE TIME BEHAVIOR OF CHEMICAL CONCENTRATIONS IN THE PRESSURIZER AND THE REMAINDER OF THE PRIMARY PLANT ARE SOLVED FOR THREE PIPING CONFIGURATIONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*CONTAMINATION + *MAIN COOLING SYSTEM + ANALYTICAL MODEL + REACTOR, PRESSURIZED WATER

17-16063
BROWN J + VAN HOWE K + WEIMAN A
REACTIVITY EFFECT OF HELIUM MASS AND FLOW IN PEACH BOTTOM. RESULTS OF POST CONSTRUCTION R AND D TEST PROCEDURES RP-17 AND RP-18
GENERAL DYNAMICS CORP., SAN DIEGO, CALIF., GENERAL ATOMIC DIV.
GAMD-7356 +. 7 PAGES, 2 FIGURES, OCTOBER 1, 1966

THE REACTIVITY EFFECT OF ADDING HELIUM TO THE MAIN LOOP WAS DETERMINED FROM CHANGES IN THE CRITICAL POSITION OF A CALIBRATED ROD GROUP WITH OTHER PLANT VARIABLES REMAINING CONSTANT. THE MAXIMUM HELIUM PRESSURE WAS 187 PSIG AT 70 F. THE REACTIVITY EFFECT OF HELIUM FLOW WAS ALSO DETERMINED FROM THE CHANGE IN CRITICAL POSITION OF A CALIBRATED ROD GROUP. FLOW CHANGES COULD BE MADE RAPIDLY ENOUGH SO THAT TEMPERATURE CHANGES IN THE CORE DURING THE MEASUREMENT WERE SMALL. THESE FLOW COEFFICIENT MEASUREMENTS WERE MADE AT SEVERAL TEMPERATURES UP TO 600 F.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*MEASUREMENT, REACTIVITY + FLOW THEORY AND EXPERIMENTS + HELIUM + MAIN COOLING SYSTEM + PEACH BOTTOM 1 + REACTIVITY EFFECT + REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED

17-16064
BROWN JR + VAN HOWE KR
PEACH BOTTOM, INITIAL LOADING TO CRITICALITY. RESULTS OF POST CONSTRUCTION R AND D TEST PROCEDURE BP-1.
GENERAL DYNAMICS CORP., SAN DIEGO, CALIF., GENERAL ATOMIC DIV.
GAMD-7351 +. 37 PAGES, 7 FIGURES, 5 TABLES, 9 REFERENCES, OCTOBER 1, 1966

THE CRITICAL FUEL-ELEMENT LOADING AND CRITICAL MASS WERE MEASURED. THE MEASURED REACTIVITY WAS GREATER THAN THE CALCULATED BY 0.7 PERCENT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*CRITICALITY EXPERIMENT + *MEASUREMENT, REACTIVITY + PEACH BOTTOM 1 + REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED + TEST, PHYSICS

17-16065
BROWN J + LANE R + MERRILL M + MOWRY W
ZERO POWER NOISE ANALYSIS AND ROD SCRAM TRANSIENT MEASUREMENTS IN PEACH BOTTOM. RESULTS OF POST CONSTRUCTION R AND D TEST PROCEDURES BP-19 AND BP-16
GENERAL DYNAMICS CORP., SAN DIEGO, CALIFORNIA. GENERAL ATOMIC DIV.
GAMD-7359 +. 25 PAGES, 11 FIGURES, 1 TABLE, 2 REFERENCES, OCTOBER 1, 1966

NOISE-ANALYSIS TESTS WERE MADE TO DETERMINE THE FLUCTUATIONS IN NEUTRON LEVEL IN THE REACTOR IN TERMS OF AMPLITUDE AS A FUNCTION OF FREQUENCY OVER THE RANGE 0.1 TO 100 CPS. ROD-SCRAM-TRANSIENT TESTS WERE CONDUCTED TO DETERMINE THE MAGNITUDE OF THE TEMPERATURE COEFFICIENT OF REACTIVITY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*NOISE ANALYSIS + *TEMPERATURE REACTIVITY EFFECT + MEASUREMENT, REACTIVITY + PEACH BOTTOM 1 + REACTIVITY EFFECT + REACTOR KINETICS + REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED +

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-16065 *CONTINUED*
TEMPERATURE COEFFICIENT + TEST, PHYSICS

17-16066
BROWN JP + MERRILL MH + VAN HOWE KR
ISOTHERMAL TEMPERATURE COEFFICIENT MEASUREMENT IN PEACH BOTTOM. RESULTS OF POST CONSTRUCTION R AND D TEST
PROCEDURE CP-1
GENERAL DYNAMICS CORP., SAN DIEGO, CALIF., GENERAL ATOMIC DIV.
GAMD-7258 +. 17 PAGES, 6 FIGURES, 2 TABLES, 7 REFERENCES, OCTOBER 1, 1966

THE REACTIVITY EFFECT OF ISOTHERMAL CORE-TEMPERATURE CHANGES AND THE RESULTING TEMPERATURE
COEFFICIENT OF REACTIVITY WERE MEASURED BY UNIFORMLY HEATING THE CORE AND REFLECTOR USING THE
HEAT INPUT OF THE MAIN HELIUM CIRCULATORS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*MEASUREMENT, REACTIVITY + *TEST, PHYSICS + PEACH BOTTOM 1 + REACTOR, GAS COOLED +
REACTOR, GRAPHITE MODERATED + TEMPERATURE COEFFICIENT + TEMPERATURE REACTIVITY EFFECT

17-16067
LANE R + MERRILL M
REACTIVITY COEFFICIENT MEASUREMENTS IN PEACH BOTTOM. RESULTS OF POST CONSTRUCTION R AND E TEST PROCEDURES
BP-7 AND BP-15
GENERAL DYNAMICS CORP., SAN DIEGO, CALIF., GENERAL ATOMIC DIV.
GAMD-7355 +. 13 PAGES, 3 FIGURES, 5 TABLES, NOVEMBER 1, 1966

THE REACTIVITY CHANGE PRODUCED BY REPLACING A POISON DUMMY FUEL ELEMENT WITH A NORMAL FUEL
ELEMENT WAS MEASURED AT SEVERAL RADIAL LOCATIONS BY OBSERVING THE CHANGE IN CRITICAL ROD
POSITIONS. THE REACTIVITY WORTHS OF URANIUM, THORIUM, RHODIUM, AND THE BORON LUMPED BURNABLE
POISON WERE MEASURED IN THE SAME WAY BY EXCHANGING FUEL ELEMENTS CONTAINING DIFFERENT AMOUNTS
OF THESE MATERIALS. THE METHODS ARE DESCRIBED, AND THE RESULTS ARE GIVEN. A SERIES OF
CALCULATIONS DONE AFTER THE EXPERIMENTS ARE COMPARED WITH THE MEASUREMENTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*CONTROL ROD WORTH + *POISON, BURNABLE + *REACTIVITY EFFECT + MEASUREMENT, REACTIVITY + PEACH BOTTOM 1 +
REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED + TEST, PHYSICS

17-16068
BROWN JP + VAN HOWE KR
PEACH BOTTOM, DIFFERENTIAL ROD WORTH MEASUREMENTS AND LOADING TO 804 ELEMENTS. RESULTS OF POST
CONSTRUCTION R AND D TEST PROCEDURE BP-11
GENERAL DYNAMICS CORP., SAN DIEGO, CALIF. GENERAL ATOMIC DIV.
GAMD-7354 +. 31 PAGES, 22 FIGURES, 2 TABLES, 2 REFERENCES, OCTOBER 1, 1966

AFTER DETERMINING THE MINIMUM CRITICAL CORE, FUEL LOADING WAS CONTINUED TO THE FULL COMPLEMENT
OF 804 FUEL ELEMENTS. DURING LOADING, ALL THE CONTROL-ROD CONFIGURATIONS TO BE OBTAINED
DURING NORMAL OPERATION DURING THE LIFE OF THE CORE WERE DUPLICATED, AND THE CONTROL RODS
WERE CALIBRATED. THE MEASURED REACTIVITY WORTHS OF THE CONTROL RODS AGREED WELL WITH THOSE
PREDICTED. THE MEASURED CORE REACTIVITY AT VARIOUS STAGES DURING LOADING WAS COMPARED WITH
THE CALCULATED VALUES, AND THE AGREEMENT IN ABSOLUTE REACTIVITY IS WITHIN 1 PERCENT FOR ALL
CONFIGURATIONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*CONTROL ROD WORTH + MEASUREMENT, REACTIVITY + PEACH BOTTOM 1 + REACTOR, GAS COOLED +
REACTOR, GRAPHITE MODERATED + TEST, PHYSICS

17-16070
RIETTINI A
A FLY-WHEEL DRIVE WITH CONTROLLED-TORQUE CLUTCH FOR A REACTORS COOLING CIRCUIT PUMPS
CENTRE ETUDES NUCLEAIRES DE GRENOBLE
CEA-R-2517 +. 95 PAGES, FIGURES, REFERENCES, OCTOBER 1964

A THEORETICAL STUDY OF THE SLOWING DOWN OF A CENTRIFUGAL PUMP WAS MADE, AND THE CONCLUSIONS
WERE CHECKED EXPERIMENTALLY. TO LENGTHEN PUMP COAST-DOWN TIMES, A FLY-WHEEL WAS ADDED TO THE
PUMP.

AVAILABILITY - DOCUMENTATION FRANCAISE, SECRETARIAT GENERAL DU GOUVERNMENT, DIRECTION DE LA DOCUMENTATION,
16 RUE LORD BYRON, PARIS VIIIEME

*ACCIDENT, LOSS OF FLOW + ACCIDENT, LOSS OF POWER + REACTOR COOLANT

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-16103

DIETZ CR + DUNCAN DE + GARRETT AW + MILLS RM + SEYFRIT KV + SIMS WH + TOMBLISON MR + WEBSTER BH +
ZIEMANN DL
PIQUA NUCLEAR POWER FACILITY. MONTHLY OPERATING REPORT NUMBER 47
PIQUA NUCLEAR POWER FACILITY, OHIO
COO-652-37 +. 13 PAGES, MARCH 1967

THE REACTOR VESSEL WAS DRAINED TO VISUALLY EXAMINE THE LOWER GRID-PLATE PLUGS. 90% WERE
UNSEATED AND 6 WERE UPSIDE DOWN. A SEMISOLID ORGANIC FILM WAS FOUND ON THE GRID SURFACE AND
WAS ATTRIBUTED TO DRAINING RESTRICTIONS IMPOSED BY THE PLUG. EFFORTS ARE IN PROGRESS TO
DETERMINE IF THE MATERIAL IS CARBONACEOUS OR SOLIDIFIED COOLANT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*OPERATIONS REPORT, GENERAL + *SURFACE FILM DEPOSIT + CORE COMPONENTS, MISCELLANEOUS +
OPERATING EXPERIENCE + ORGANIC COOLANT + PIQUA + REACTOR, ORGANIC COOLED + REACTOR, POWER

17-16107

FAILURE OF HALVES TO SEPARATE IN A SPLIT TABLE TYPE CRITICAL ASSEMBLY
DIVISION OF OPERATIONAL SAFETY, USAEC
3 PAGES, REACTOR SAFETY OPERATING EXPERIENCE BULLETIN NO. 67-6, MAY 3, 1967

THE HALVES OF A SPLIT-TABLE CRITICAL ASSEMBLY FAILED TO SEPARATE ON SHUTDOWN. THE OVERLOADS
IN THE ELECTRIC MOTORS THAT DRIVE THE HALVES APART TRIPPED OUT TWICE. THE ONLY FAULT FOUND
WAS EXCESSIVE END PLAY IN THE DRIVE-SCREW MECHANISM. BEARING REPLACEMENT AND LUBRICATION
CORRECTED THE PROBLEM. INCREASED MAINTENANCE CHECKS WERE STARTED.

AVAILABILITY - AEC, DIVISION OF OPERATIONAL SAFETY, WASHINGTON, D.C.

*FAILURE, MAINTENANCE ERROR + CRITICALITY EXPERIMENT + INCIDENT, ACTUAL, HUMAN ERROR + LUBRICATION +
MAINTENANCE AND REPAIR

17-16108

ENGINEERING TEST REACTOR FUEL ELEMENT RUPTURE
DIVISION OF OPERATIONAL SAFETY, USAEC
2 PAGES, REACTOR OPERATING EXPERIENCES BULLETIN NO. 67-5, MAY 2, 1967

FUEL ELEMENT MELTING OCCURRED BECAUSE OF COOLANT-FLOW BLOCKAGE BY A PIECE OF SILVERED TAPE.
THE TAPE WAS USED DURING THE PRECEDING SHUTDOWN FOR PLACING RADIOGRAPHIC FILM. THE TANK HAD
BEEN INSPECTED FOUR TIMES BEFORE STARTUP, BUT THE TAPE WAS NOT OBSERVED THEN NOR SEEN UNTIL
THE ELEMENT WAS REMOVED FROM THE REACTOR. PORTIONS OF NINE PLATES MELTED. FOUR WERE FUSED
TOGETHER, WITH 50% OF THE PLATE AREA MELTED. A HIGHLY VISIBLE YELLOW TAPE WILL BE USED IN
THE FUTURE.

AVAILABILITY - AEC, DIVISION OF OPERATIONAL SAFETY, WASHINGTON, D. C.

*FAILURE, FUEL ELEMENT + *FUEL MELTDOWN + *INCIDENT, ACTUAL, HUMAN ERROR + ACCIDENT, LOSS OF FLOW +
ETR (ENGINEERING TEST REACTOR) + REACTOR, AEC OWNED + REACTOR, TEST

17-16110

ALSO IN CATEGORY 11

HAUSSMANN H
REACTOR CONTAINMENT BUILDING
5 PAGES, ATOMWIRTSCHAFT, 10(11), PAGES 611-615, NOVEMBER 1965, IN GERMAN

AT THE NUCLEAR POWER PLANT KRB THE EFFECT OF A CHEMICAL REACTION BETWEEN ZIRCONIUM AND THE
PRIMARY COOLING WATER WAS STUDIED. WITH VERY PESSIMISTIC CONSIDERATIONS ENTERING INTO THE
CALCULATIONS, AN INITIAL PRESSURE PEAK OF 3.4 ATM IN 5 SEC RESULTED. A SECOND BURST MIGHT
RESULT FROM THE ZR-H₂O REACTION OF 3.55 ATM IN 16 MIN. THE PRESSURE SHELL WAS DESIGNED WITH
THESE VALUES IN MIND. ECONOMY AND SAFETY FACTORS LEAD TO THE CHOICE OF A STEEL WITH AN
ELONGATION LIMIT OF 51 KG/SQ. MM. CONSTITUENTS WERE 0.18% C, 1.5% MN, 0.55% NI, AND 0.18% V.
A WALL-THICKNESS FOR THE CYLINDRICAL PORTION OF THE PRESSURE SHELL WAS SELECTED AS 26.5 MM,
AND FOR THE HEMISPHERICAL PORTION 13.5 MM. IN THE COURSE OF THE FIRST PRESSURE TEST AND
SUBSEQUENT CHECKS, CRACKS SHOWED UP IN THE WELDS AT SEAMS. PRACTICALLY ALL THE LOCKS AND
TURNS WHICH PENETRATED THE PRESSURE VESSEL HAD TO BE CUT OUT AND NEW ONES MADE. AFTER A
DELAY OF 8-1/2 MONTHS, A SECOND PRESSURE TEST WAS SATISFACTORILY RUN.

*CONTAINMENT, HIGH PRESSURE + *FAILURE, GENERAL + *TEST, PROOF + *WELDS + CONTAINMENT DESIGN + GERMANY +
REACTOR, BOILING WATER + STEEL

17-16131

STEARNS JD
CARBURIZATION POTENTIAL DETERMINATION FOR HNPf HOT TRAP SODIUM SAMPLES NOS. 18, 19, AND 20
ATOMICS INTERNATIONAL, CANOGA PARK, CALIFORNIA
NAA-SR-MEMO-10123 +. 14 PAGES, JUNE 24, 1964

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-16131 *CONTINUED*

THE PROCEEDINGS AND RESULTS ARE GIVEN FOR DETERMINING THE CARBURIZATION POTENTIAL OF HNP
HOT-TRAP SODIUM AND THE EXAMINATION OF SODIUM FOR EVIDENCE OF GRAPHITE RELEASED FROM FAILED
MODERATOR CANS. THE ANALYSIS OF SODIUM FOR DETECTING MODERATOR-CAN FAILURE IS NOT EFFECTIVE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*COOLANT QUALITY + CARBON + CHEMICAL ANALYSIS + COOLANT CHEMISTRY + EXAMINATION + HALLAM + METAL, LIQUID +
REACTOR, GRAPHITE MODERATED + REACTOR, LIQUID METAL COOLED + SODIUM

17-16132

WIMETT TF

FAST BURST REACTORS IN THE U.S.A.

LOS ALAMOS SCIENTIFIC LABORATORY, LOS ALAMOS, NEW MEXICO

LA-DC-6786 + SM-62/53 + CONF-650504-8 +. 43 PAGES, 1965

DISCUSSES THE EVOLUTION OF THESE REACTORS, THE DESIGN AND DESCRIPTIONS, PERFORMANCE, SAFETY,
AND PRESENT STATUS. THE OPERATING POWER LEVELS ARE LESS THAN 1 KW, AND THE FISSION PRODUCT
INVENTORY IS LOW, THUS AN ACCIDENTAL EXPLOSION POSES NO THREAT TO THE PUBLIC. THE LIMIT OF
PEAK POWER IN SELF-QUENCHING BURSTS IS 10,000 MW, AS OBTAINED IN MOLLY-G. THE SHORTEST BURST
WIDTH IS 35 MICROSEC, AS OBSERVED IN SMALLER REACTORS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*REACTOR, FAST BURST + *REACTOR, PULSED + REACTOR DESCRIPTION

17-16135

ALSO IN CATEGORIES 1 AND 12

SWAIN AD

SAFETY AS A DESIGN FEATURE IN SYSTEMS

SANDIA CORPORATION, ALBUQUERQUE, NEW MEXICO

SC-R-65-991 + CONF-650,915-2 +. 14 PAGES, SEPTEMBER 1965

TWO POINTS ARE STRESSED. FIRST, CAMPAIGNS TO MOTIVATE INDIVIDUALS TOWARD SAFETY DO NOT
PERMANENTLY REDUCE THE FREQUENCY OF ACCIDENTS IN MAN-MACHINE SITUATIONS. SECOND, IT IS
FASTER AND MORE LASTING TO DESIGN SAFETY FEATURES INTO THE SYSTEMS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*SAFETY PRINCIPLES AND PHILOSOPHY + ACCIDENT, GENERAL + ACCIDENT, HYPOTHETICAL + ACCIDENT, PROBABILITY OF +
STAFFING, TRAINING, QUALIFICATION

17-16137

LEPPARD JA

REVIEW OF SCTI BELLows FAILURES

ATOMICS INTERNATIONAL, CANOGA PARK, CALIFORNIA

NAA-SR-MEMO-11970 +. 18 PAGES, MAY 26, 1966

THREE EXPANSION BELLows (304 SS) FAILED AFTER A SHORT OPERATING TIME IN THE SODIUM COMPONENTS
TEST INSTALLATION. CRACKS OCCURRED WHEN THE BELLows WERE FLEXED DURING THE SODIUM-LOOP
OPERATION. IT WAS DETERMINED THAT INTERGRANULAR CORROSION HAD OCCURRED DURING THE 30-MONTH
PERIOD BETWEEN FABRICATION AND INSTALLATION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*CORROSION + *FAILURE, PIPE + TRANSPORTATION AND HANDLING

17-16138

BONYHADY KA

ANALYSIS OF SAFETY AND RELIEF VALVE INSTALLATIONS IN THE SCTI MAIN STEAM LINES

ATOMICS INTERNATIONAL, CANOGA PARK, CALIFORNIA

NAA-SR-MEMO-11961 +. 49 PAGES, MAY 10, 1966

METHODS ARE GIVEN FOR REDUCING VIBRATIONS OF HIGH-PRESSURE SAFETY VALVES IN THE STEAM LOOP OF
THE SODIUM COMPONENTS TEST INSTALLATION. IMPROVEMENTS INCLUDE ANCHORS, ADJUSTMENT OF HANGER
LOADS, ADDING VIBRATION DAMPERS, AND RELOCATING VALVES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*PRESSURE RELIEF + *VALVE + *VIBRATION + MAINTENANCE AND REPAIR + MODIFICATION, SYSTEM OF EQUIPMENT + STEAM

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-16139
REACTOR OPERATIONS AT THE BONUS PLANT. MONTHLY REPORT NO. 9
PUERTO RICO WATER RESOURCES AUTHORITY, SAN JUAN
PRWRA-104 +. 69 PAGES, SEPTEMBER 1966

MEANS OF REDUCING FRICTION BETWEEN THE FLOATING RINGS AND DIAPHRAGMS OF THE CONTROL-ROD WATER-SEAL ASSEMBLIES WERE INVESTIGATED. THE USE OF TEFLON WAFERS WAS EXPLORED WITH GOOD RESULTS. THE EMERGENCY GENERATOR FAILED TO START DUE TO FUEL FLOW RESTRICTION CAUSED BY RUST PARTICLES IN THE LINE FROM AN ALMOST EMPTY TANK. THE DRY-TANK LEVEL-CONTROLLER WAS ADJUSTED TO 50% TO PREVENT THE TANK FROM REACHING A LOW-LEVEL AGAIN. CIRCUITS WERE INSTALLED TO PRODUCE A SCRAM UPON LOSS OF SEAL WATER TO CIRCULATING WATER PUMPS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

BONUS (BOILING NUCLEAR SUPERHEAT PROJECT) + CONTROL ROD DRIVE + EMERGENCY POWER, ELECTRIC + FAILURE, EQUIPMENT + FAILURE, MAINTENANCE ERROR + GENERATOR, DIESEL + INSTRUMENTATION, CONTROL + MODIFICATION, SYSTEM OR EQUIPMENT + OPERATING EXPERIENCE + OPERATIONS REPORT, GENERAL + REACTOR, BOILING WATER + REACTOR, INTERNAL SUPERHEAT + SEAL

17-16140
REACTOR OPERATIONS AT THE BONUS PLANT. MONTHLY REPORT NO. 8
PUERTO RICO WATER RESOURCES AUTHORITY, SAN JUAN
PRWRA-103 +. 63 PAGES, AUGUST 1966

THE EIGHT SUPERHEATER CONTROL RODS SHOWED OCCASIONAL STICKING DUE TO EXCESSIVE FRICTION IN THE WATER-SEAL ASSEMBLIES. FAULTY WIRING ALLOWED A BOILER AND A SUPERHEATER CONTROL ROD TO BE WITHDRAWN SIMULTANEOUSLY. TESTS WERE CONDUCTED ON THE RACK-HOUSING PURGE SYSTEM, WHICH PREVENTS ACCUMULATION OF EXPLOSIVE MIXTURES OF HYDROGEN AND OXYGEN.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*OPERATIONS REPORT, GENERAL + BONUS (BOILING NUCLEAR SUPERHEAT PROJECT) + CONTROL ROD DRIVE + FAILURE, DESIGN ERROR + FAILURE, INSTALLATION ERROR + FAILURE, SCRAM MECHANISM + OPERATING EXPERIENCE + RADIOLYTIC GAS + REACTOR OFFGAS + REACTOR, BOILING WATER + REACTOR, INTERNAL SUPERHEAT + SEAL

17-16141
RONNET JA + RONNET CM + VELEZ GA
METALLURGICAL INVESTIGATIONS AND REPAIRS MADE ON BONUS STEAM DRYER-PREHEATER AND NONDESTRUCTIVE TESTS OF OTHER REACTOR COMPONENTS
PUERTO RICO WATER RESOURCES AUTHORITY, SAN JUAN
PRWRA-102 +. 91 PAGES, OCTOBER 31, 1966

CONCLUSIONS WERE TO CHECK FOR CRACKS IN THE SUPERHEATER PIPING BY METHODS OTHER THAN AIR-LEAK TESTS, WHICH ARE INADEQUATE. CRACKS DISCOVERED WERE PRIMARILY DUE TO STRESS CORROSION. NO CRACKS DETECTED IN INCONEL PIPES. SHUTDOWN REQUIRED IF SUPERHEATER STEAM TEMPERATURE DROPS 20 F.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*FAILURE, PIPE + BONUS (BOILING NUCLEAR SUPERHEAT PROJECT) + CORROSION + EXAMINATION + FAILURE, EQUIPMENT + HEAT EXCHANGER + MAINTENANCE AND REPAIR + PIPING + REACTOR, BOILING WATER + REACTOR, INTERNAL SUPERHEAT

17-16142
DEBEAR WS + FUKUSHIMA T + HANSEN AI + PERRET JD + ROECKER J + SHEPARD RC + TONDI D
PIQUA OPERATION IN JANUARY 1966
ATOMICS INTERNATIONAL, CANOGA PARK, CALIF.
NAA-SR-MEMO-12071 (PP. 1-13) +. 13 PAGES, PP. 1-13 OF PIQUA NUCLEAR POWER FACILITY REACTOR OPERATIONS ANALYSIS PROGRAM. REPORT NO. 41, JANUARY-APRIL, 1966. JULY 1966

A SCRAM RESULTED FROM A FAULTY LEVEL SWITCH FOR THE DEGASIFIER TANK. POWER AND TEMPERATURE OSCILLATIONS OF 1% WITH A PERIOD OF 1 TO 2 MIN WERE CAUSED BY PRESSURE VARIATIONS STARTED BY THE DEGASIFIER INLET CONTROL VALVE. JUST BEFORE THE SHUTDOWN, POWER OSCILLATIONS OF 2% WITH A FREQUENCY OF 18 MIN WERE OBSERVED, BUT THE CAUSE WAS NOT DETERMINED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*OPERATING EXPERIENCE + *OPERATIONS REPORT, GENERAL + FAILURE, INSTRUMENT + PIQUA + REACTIVITY EFFECT, ANOMALOUS + REACTOR, ORGANIC COOLED + REACTOR, POWER + SCRAM, SPURIOUS

17-16143

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-16143 *CONTINUED*

DEBEAR WS + FUKUSHIMA T + HANSEN AI + PERRET JD + ROECKER J + SHEP
PIQUA CORE EXAMINATION

ARD RC + TONDI D

ATOMICS INTERNATIONAL, CANOGA PARK, CALIF.

NAA-SR-MEMO-12071 +. 16 PAGES, JULY 1966, PP. 14-29 OF PIQUA NUCLEAR POWER FACILITY REACTOR OPERATIONS ANALYSIS PROGRAM. REPORT NO. 41, JANUARY-APRIL, 1966

AFTER SHUTDOWN, THE REACTOR WAS NOT RESTARTED BECAUSE OF FAILURES IN 8 CONTROL-ROD ELECTRICAL CIRCUITS, AND WITHDRAWAL OF 2 RODS WAS DIFFICULT. BINDING OF 5 FUEL ELEMENTS WAS DETERMINED. BUCKLING OF ONE ELEMENT PROCESS TUBE WAS OBSERVED, AND CARBONACEOUS MATERIAL WAS PRESENT. FOUR ELEMENTS HAD RESTRICTED FLOW DUE TO FOULING. FUEL-ELEMENT MODIFICATIONS TO INCREASE FLOW ARE GIVEN TO MINIMIZE CARBONACEOUS DEPOSITS RESULTING FROM LOW VELOCITY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*OPERATING EXPERIENCE + *OPERATIONS REPORT, GENERAL + CONTROL ROD + FAILURE, DESIGN ERROR + FAILURE, SCRAM MECHANISM + FUEL ELEMENT + PIQUA + REACTOR, ORGANIC COOLED + REACTOR, POWER + SURFACE FILM DEPOSIT

17-16144

HODDE JA

CORE PERFORMANCE AND TRANSIENT FLOW TESTING OF BIG ROCK POINT BOILING WATER REACTOR

GENERAL ELECTRIC COMPANY, ATOMIC POWER EQUIPMENT DEPT., SAN JOSE, CALIFORNIA

GEAP-4406 +. 265 PAGES, FIGURES, TABLES, JULY 1965

PLANT EFFICIENCY INCREASED FROM 29.8% AT 800 PSIA TO 33.5% AT 1500 PSIA AS CRITICAL HEAT FLUX RATIO DECREASED FROM 2.5 TO 1.8. GENERALLY, MORE SEVERE OPERATING CONDITIONS, ENCOUNTERED AS THE CORE SIZE WAS DECREASED, WERE REDUCED BY CORE-POWER-DISTRIBUTION FLATTENING. QUANTITATIVE MEASUREMENTS WERE MADE OF POWER AND FLOW DISTRIBUTIONS. THE MODELS FOLLOWED TRENDS AND GAVE SLIGHTLY CONSERVATIVE RESULTS. THE POWER DISTRIBUTION IN FORCED-CIRCULATION OPERATION PRIMARILY DEPENDENT ON THE CONTROL-ROD PATTERN. MOREOVER, FOR DIFFERENT COMBINATIONS OF POWER AND FORCED CIRCULATION FLOW AT THE SAME CONTROL ROD PATTERN, POWER DISTRIBUTION CHANGES WERE ABOUT 10%. PUMP-TRIP TESTS SHOWED POWER AND FLOW COASTDOWN TO NATURAL-CIRCULATION LEVELS, WITH TRANSIENT REDISTRIBUTIONS OF IN-CORE FLOW AND POWER DISTRIBUTIONS. FLOW CONTROL AND LOAD-FOLLOWING TESTS DEMONSTRATED THAT AUTOMATIC CONTROL OF REACTOR POWER BY VARYING THE RECIRCULATION FLOW IS FEASIBLE AND ATTRACTIVE. THE REACTOR POWER WAS NEARLY A LINEAR FUNCTION OF THE RECIRCULATION FLOW, AND THE RANGEABILITY OF THE POWER WAS ABOUT 40%. SCHEMES WERE DEVELOPED FOR COMPUTING THE STEADY-STATE CORE-PERFORMANCE PARAMETERS AND THE TRANSIENT FOLLOWING THE LOSS OF PUMPS FOR THE BIG ROCK POINT PLANT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*POWER UPGRATING + BIG ROCK POINT + FLOW STABILITY + REACTOR, BOILING WATER + TEST, PLANT RESPONSE

17-16145

PATHFINDER ATOMIC POWER PLANT OPERATING EXPERIENCE UP TO 5MWT. PHASE II REPORT

NORTHERN STATES POWER COMPANY, SIOUX FALLS, S. DAK.

TID-23356 + NSP-6602 +. 43 PAGES, 1966

NUCLEAR-INSTRUMENTATION-CALIBRATION TESTS AND SUPERHEATER-RADIOACTIVE-COOLING-ABILITY TESTS WERE MADE. THE EMERGENCY CONDENSER PIPING AND CONTROL SYSTEM WAS ALTERED AND TESTED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*OPERATING EXPERIENCE + *REACTOR STARTUP TESTING + PATHFINDER + REACTOR, BOILING WATER + REACTOR, INTERNAL SUPERHEAT

17-16146

PRESSURIZED WATER REACTOR PH-REACTIVITY EFFECT. QUARTERLY PROGRESS REPORT FOR THE PERIOD ENDING DECEMBER 31, 1966

WESTINGHOUSE ELECTRIC CORPORATION, ATOMIC POWER DIVISION, PITTSBURGH, PA.

WCAP-3696-2 + EURAEC-1779 +. 51 PAGES, TABLES, FIGURES, JANUARY 1967

COOLANT-PH AFFECT ON THE MODERATOR TEMPERATURE COEFFICIENT IS NOT EVIDENT. RADIAL AND AXIAL FLUX DISTRIBUTIONS ARE NOT AFFECTED BY PH. PRELIMINARY ANALYSIS INDICATES THAT THE AVERAGE FUEL TEMPERATURE IS HIGHER AT LOW PH. THE POWER DEFECT (REACTIVITY LOSS REQUIRED TO GO FROM CRITICAL TO POWER) AT LOW PH IS HIGHER THAN AT A HIGH PH.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*COOLANT CHEMISTRY + *REACTIVITY EFFECT + *RESEARCH AND DEVELOPMENT PROGRAM + FLUX DISTRIBUTION + MODERATOR + REACTIVITY EFFECT, ANOMALOUS + REACTOR, PRESSURIZED WATER + REACTOR, WATER + TEMPERATURE COEFFICIENT

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-16147
PRESSURIZED WATER REACTOR PH-REACTIVITY EFFECT. TECHNICAL PROGRESS REPORT FOR THE PERIOD ENDING SEPTEMBER 30, 1966
WESTINGHOUSE ELECTRIC CORPORATION, ATOMIC POWER DIVISION, PITTSBURGH, PA.
WCAP-3696-1 + EURAEC-1723 +. 51 PAGES, FIGURES, TABLES, OCTOBER 1966

DESCRIBES A PROGRAM FOR INVESTIGATING PH REACTIVITY EFFECTS IN CLOSED-CYCLE WATER REACTORS. THE PROGRAM INCLUDES STUDIES OF CORROSION-FILM DEPOSITS ON FUEL ELEMENTS. DYNAMIC MEASUREMENTS INDICATE THAT THE EFFECT IS ASSOCIATED WITH THE REACTIVITY REQUIRED TO GO FROM HOT CRITICALITY TO POWER. (THIS EFFECT AT YANKEE PROVIDED ONE ADDITIONAL MONTH OF FULL-POWER OPERATION DURING THE SECOND AND ALL SUBSEQUENT CORE CYCLES SEE CONF-650,970-3).

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*COOLANT CHEMISTRY + *REACTIVITY EFFECT + *RESEARCH AND DEVELOPMENT PROGRAM + CORROSION + CRUD + FUEL ELEMENT + REACTIVITY EFFECT, ANOMALOUS + REACTOR, PRESSURIZED WATER + REACTOR, WATER + SURFACE FILM DEPOSIT

17-16148
NOVICK M + BACCA JP + CERUTTI BC + CISEL DW
ROTATING PLUG SEALS
ARGONNE NATIONAL LAB., IDAHO FALLS, IDAHO
3 PAGES, 1 FIGURE, 2 TABLES, PAGES 7-9 FROM EBR-II OPERATING EXPERIENCE PRESENTED AT THE AMERICAN NUCLEAR SOCIETY MEETING, APRIL 10-12, 1967

THE SEALS CONTAIN BISMUTH-TIN-ALLOY, OF WHICH THE UPPER HALF IS FROZEN AND THE LOWER HALF IS MOLTEN. THE SEAL ALLOY IS MELTED COMPLETELY TO PERMIT ROTATION. THE TIME REQUIRED TO COMPLETE THE MELTING INCREASED FROM 6 HOURS TO 24, AND THE PLUGS WOULD BIND DURING ROTATION. INVESTIGATION REVEALED SIGNIFICANT QUANTITIES OF METALLIC OXIDES AS THE RESULT OF AIR EXPOSURE. REMOVAL OF THE OXIDIZED MATERIAL AND REPLACEMENT WITH NEW ALLOY CORRECTED THE PROBLEM.

AVAILABILITY - M. NOVICK, J. P. BACCA, B. C. CERUTTI AND D. W. CISEL, ARGONNE NATIONAL LAB., IDAHO FALLS, IDAHO

*OPERATING EXPERIENCE + *SEAL + EBR 1 AND 2 (EXPERIMENTAL BREEDER REACTORS) + FAILURE, EQUIPMENT + FUEL HANDLING MACHINE + MAIN COOLING SYSTEM + MAINTENANCE AND REPAIR + REACTOR, BREEDER + REACTOR, FAST + REACTOR, LIQUID METAL COOLED + SHIELDING

17-16149
NOVICK M + BACCA JP + CERUTTI BC + CISEL DW
SECONDARY SODIUM SYSTEM
ARGONNE NATIONAL LAB., IDAHO FALLS, IDAHO
1 PAGE, 1 FIGURE, PAGE 4 FROM EBR-II OPERATING EXPERIENCE PRESENTED AT THE AMERICAN NUCLEAR SOCIETY MEETING, APRIL 10-12, 1967

THE CONTROL SYSTEM FOR TRACE HEATING THE SECONDARY SODIUM PIPING WAS MODIFIED TO USE SILICON-CONTROLLED RECTIFIERS IN PLACE OF MECHANICAL RELAYS. THE EXCESSIVE MAINTENANCE REQUIRED BY THE RELAYS WAS ELIMINATED.

AVAILABILITY - M. NOVICK, J. P. BACCA, B. C. CERUTTI AND D. W. CISEL, ARGONNE NATIONAL LAB., IDAHO FALLS, IDAHO

*MAINTENANCE AND REPAIR + *OPERATING EXPERIENCE + EBR 1 AND 2 (EXPERIMENTAL BREEDER REACTORS) + FAILURE, INSTRUMENT + INSTRUMENTATION, PROCESS + INSTRUMENTATION, RELAY + REACTOR, BREEDER + REACTOR, FAST + REACTOR, LIQUID METAL COOLED

17-16150
NOVICK M + BACCA JP + CERUTTI BC + CISEL DW
FUEL TRANSFER MECHANISM
ARGONNE NATIONAL LAB., IDAHO FALLS, IDAHO
1 PAGE, FROM PAGE 2 OF EBR-II OPERATING EXPERIENCE PRESENTED AT THE AMERICAN NUCLEAR SOCIETY MEETING, APRIL 10-12, 1967

INSPECTION OF THE FUEL-TRANSFER MECHANISM TO DETERMINE REASON FOR DIFFICULTIES WITH THE LOCKING-PIN ACTUATING ARM REVEALED THAT THE BELL CRANK HAD FAILED AND THAT AN ALUMINUM-BRONZE BUSHING WAS BADLY DETERIORATED. AN IMPROVED DESIGN ELIMINATED THE USE OF ALUMINUM-BRONZE. REMOVAL OF THE TRANSFER ARM FROM THE PRIMARY TANK INVOLVED RADIATION LEVELS OF THE ORDER OF 10 MR/HR.

AVAILABILITY - M. NOVICK, J. P. BACCA, B. C. CERUTTI AND D. W. CISEL, ARGONNE NATIONAL LAB., IDAHO FALLS, IDAHO

*FUEL HANDLING MACHINE + *OPERATING EXPERIENCE + EBR 1 AND 2 (EXPERIMENTAL BREEDER REACTORS) + FAILURE, DESIGN ERROR + FAILURE, EQUIPMENT + RADIATION SAFETY AND CONTROL + REACTOR, BREEDER + REACTOR, FAST + REACTOR, LIQUID METAL COOLED

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-16151

NOVICK M + BACCA BP + CERUTTI BC + CISSEL DW

EBR-II OPERATING EXPERIENCE

ARGONNE NATIONAL LAB., IDAHO FALLS, IDAHO

20 PAGES, 10 FIGURES, 3 TABLES, 11 REFERENCES, EBR-II OPERATING EXPERIENCE PRESENTED AT THE AMERICAN NUCLEAR SOCIETY MEETING, APRIL 10-12, 1967

REPROCESSING AND REFABRICATION IN THE ADJACENT FUEL-CYCLE FACILITY OF ALL DRIVER FUEL WAS HIGHLY SUCCESSFUL. NO FAILURE OCCURRED WITH ANY OF THE 24,000 FUEL ELEMENTS THAT HAVE UNDERGONE IRRADIATION, OR WITH ANY MAJOR REACTOR COMPONENT. SOME OF THE FUEL IN THE REACTOR IS NOW IN ITS THIRD CYCLE OF OPERATION THROUGH THE FUEL-CYCLE FACILITY AND REACTOR. PERFORMANCE OF THE DRIVER FUEL WAS LESS THAN EXPECTED, RESULTING IN A LARGER REQUIREMENT FOR FUEL AND INITIATING AN IMPROVED DRIVER-FUEL DEVELOPMENT PROGRAM.

AVAILABILITY - M. NOVICK, J. P. BACCA, B. C. CERUTTI AND D. W. CISSEL, ARGONNE NATIONAL LAB., IDAHO FALLS, IDAHO

*OPERATING EXPERIENCE + EBR 1 AND 2 (EXPERIMENTAL BREEDER REACTORS) + FUEL BURNUP + FUEL INTEGRITY + FUEL REPROCESSING + REACTOR, BREEDER + REACTOR, FAST + REACTOR, LIQUID METAL COOLED

17-16152

ALSO IN CATEGORY 4

JOHNSON CE + MASON DC

SNAP 8 REACTOR AND SHIELD DESIGNS AND OPERATING EXPERIENCES

ATOMICS INTERNATIONAL, CANOGA PARK, CALIFORNIA

7 PAGES, 6 TABLES, 13 FIGURES, 5 REFERENCES, J. SPACECRAFT, 3(7), PAGES 1099-1105 (JULY 1966), PREPRINT 65-473 AT AIAA SECOND ANNUAL MEETING, SAN FRANCISCO, CALIF. JULY 26-29, 1965

THE EXPERIMENTAL REACTOR OPERATED ONE YEAR IN THE POWER RANGE 400 TO 600 KWT WITH A 1300 F COOLANT OUTLET TEMPERATURE. POST-TEST EXAMINATION, AFTER THE 500-DAY OPERATION, REVEALED CRACKS IN 80% OF THE CLADDING TUBES. THE REACTOR AND SHIELD DESIGN IS SUMMARIZED FOR MANNED AND UNMANNED SPACE APPLICATION. SHIELDING, DOSE RATE, AND TOTAL DOSE FOR THESE APPLICATIONS ARE DISCUSSED.

*DIRECT ENERGY CONVERSION DEVICES + FAILURE, CLADDING + RADIATION SAFETY AND CONTROL + REACTOR, SPACE + SHIELDING + SNAP 8 (SYSTEMS FOR NUCLEAR AUXILIARY POWER)

17-16153

GILLEY LW + HOLLAND LP + POSTON JW + WARD DR

OPERATIONAL PROBLEMS WITH THE HEALTH PHYSICS RESEARCH REACTOR

ORNL RIDGE NATIONAL LABORATORY, TENNESSEE

4 PAGES, 2 FIGURES, 6 REFERENCES, NUCLEAR SAFETY, 8(2), PAGES 179-182 (WINTER 1966-1967)

FOUR PROBLEMS THAT REQUIRED THE MOST DEVELOPMENT TIME TO ELIMINATE ARE DISCUSSED. SAFETY-BLOCK-STATED INFORMATION WAS IMPROVED BY REDESIGNING THE LIMIT AND INCREASING THE POSITIONING TOLERANCE. REPLATING OF A THREADED FUEL DISK WITH AN ADDITIONAL COAT OF GOLD WAS REQUIRED BECAUSE THE INITIAL PLATING AND THREADING WERE UNSATISFACTORY. INADEQUATE QUALITY CONTROL DURING ASSEMBLY BY VENDOR OF IONIZATION CHAMBERS RESULTED IN SPURIOUS SIGNALS FROM ELECTRICAL NOISE. SCATTER IN THE PULSE SIZE UP TO 40% WAS REDUCED TO ABOUT 4% BY DAMPING THE IMPACT OF THE BURST ROD ON INSERTION.

*OPERATING EXPERIENCE + FAILURE, DESIGN ERROR + FAILURE, FABRICATION ERROR + FAILURE, GENERAL + FAILURE, INSTRUMENT + HPRR (HEALTH PHYSICS RESEARCH REACTOR) + INSTRUMENTATION, ABNORMAL INDICATION + QUALITY CONTROL + REACTIVITY EFFECT, ANOMALOUS + REACTOR, AEC OWNED + REACTOR, FAST BURST

17-16155

NOVICK PJ

EVALUATION OF MASS SPECTROMETRIC AND RADIOCHEMICAL ANALYSES OF YANKEE CORE 1 SPENT FUEL

WESTINGHOUSE ELECTRIC CORPORATION, PITTSBURGH, PA.

WCAP-6068 +. 181 PAGES, FIGURES, TABLES, REFERENCES, MARCH 1966

PRESENTS THE RESULTS OF MASS SPECTROMETRIC, X-RAY SPECTROGRAPHIC, AND RADIOCHEMICAL ANALYSES OF SPENT FUEL SAMPLES FROM THE YANKEE CORE TO PROVIDE (1) THE U AND PU ISOTOPIC COMPOSITION OF THE FUEL AS A FUNCTION OF BURNUP, (2) THE SPATIAL DISTRIBUTION OF BURNUP AND FUEL ISOTOPES IN THE RODS, IN THE ASSEMBLIES, AND IN THE CORE, (3) THE TOTAL ISOTOPIC INVENTORY OF THE CORE, AND (4) FUEL CHARACTERISTICS, INCLUDING THE SPECIFIC PU PRODUCTION, THE EFFECTIVE CAPTURE-TO-FISSION RATIO IN U-235, AND THE NET MASS OF FISSIONABLE MATERIALS DESTROYED PER UNIT OF ENERGY RELEASE IN THE FUEL. VALUES OF BURNUP ARE INFERRED OVER A BROAD RANGE (1,200 TO 31,000 MWD/MTU) FROM RELATIONSHIPS BETWEEN U AND PU CONCENTRATIONS MEASURED BEFORE AND AFTER IRRADIATION, AND FROM THE ACTIVITIES OF THE CS-137 AND SR-90 FISSION PRODUCTS. THE CALCULATIONS USED TO INFER BURNUP, AND THE VARIOUS FUEL CHARACTERISTICS FROM THE SPENT FUEL DATA, ARE DESCRIBED IN DETAIL.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*FUEL BURNUP + *MEASUREMENT, GENERAL + REACTOR, PRESSURIZED WATER + YANKEE

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-16157
APELOVIST G + BLISELIUS PA + BLOMRBERG PE + JONSSON E + AKERHJELM F
PHYSICS EXPERIMENTS AT THE AGESTA POWER STATION
AKTIEBOLAGET ATOMENERGI, STOCKHOLM, SWEDEN
AE-244 +. 31 PAGES, SEPTEMBER 1966

REPORTS RESULTS OF MEASUREMENTS OF MODERATOR AND FUEL TEMPERATURE COEFFICIENT, CONTROL-ROD WORTH, RADIAL POWER DISTRIBUTION, AND OTHER REACTIVITY COEFFICIENTS. MEASUREMENTS WERE MADE TO CHECK THE THEORETICAL MODEL.

AVAILABILITY - MICROCARD EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM, WISCONSIN 54669

*COMPARISON, THEORY AND EXPERIENCE + *MEASUREMENT, REACTIVITY + AGESTA (SWEDISH 65 MWTB REACTOR) + CONTROL ROD WORTH + FUEL COEFFICIENT + MODERATOR COEFFICIENT + POWER DISTRIBUTION + REACTOR, HEAVY WATER + REACTOR, PRESSURIZED WATER + SWEDEN + TEMPERATURE COEFFICIENT

17-16158
PROPOSAL FOR EXPERIMENTAL OPERATION OF THE HBWR FOR THE THREE YEAR PERIOD 1967-1969
INSTITUTT FOR ATOMENERGI, KJELLER, NORWAY
NP-16344 +. 120 PAGES, JANUARY 1966

DEFINES THE PROGRAM TO EXTEND THE FUEL-TESTING STUDIES, INCLUDING HIGH-FUEL-HEAT-RATING STUDIES, IN-CORE INSTRUMENT DEVELOPMENT, THORIUM PHYSICS AND FUEL STUDIES, WATER CHEMISTRY, AND ON-LINE COMPUTER CONTROL.

AVAILABILITY - MICROCARD EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM, WISCONSIN 54669

*OPERATION + HBWR (HALDEN BOILING WATER REACTOR) + OPERATIONS REPORT, GENERAL + REACTOR, HEAVY WATER + RESEARCH AND DEVELOPMENT PROGRAM

17-16159 ALSO IN CATEGORY 18
PERFORMANCE CHARACTERISTICS OF A LARGE FAST BREEDER REACTOR CORE WITH BUNDLE CONTROLLED EXPANSION (BCEX) FUEL ASSEMBLIES
WESTINGHOUSE ELECTRIC CORPORATION, ATOMIC POWER DIVISION, PITTSBURGH, PA.
WCAP-2599-2 +. 474 PAGES, FIGURES, TABLES, MAY 1966

IDENTIFIES PROBLEMS AND CHARACTERISTICS OF A MODULAR-CORE PROPOSAL WHICH UTILIZES CONTROLLED CLADDING OR FUEL (THERMAL EXPANSION) TO PROVIDE A RELIABLE NEGATIVE-REACTIVITY FEEDBACK TO SUPPLEMENT THE DOPPLER COEFFICIENT FOR INHERENT REACTOR CONTROL AND SAFETY. THE DYNAMIC BEHAVIOR OF THE EXPANDING CLADDING IS BRIEFLY REVIEWED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*REACTIVITY EFFECT + *REACTIVITY EFFECT, EXPANSION + ENGINEERED SAFETY FEATURE + REACTOR CONTROL + REACTOR STABILITY + REACTOR, BREEDER + REACTOR, FAST + THERMAL MECHANICAL EFFECT

17-16169
DALDRUP H
NUCLEAR POWER PLANT COMPONENTS
EURATOM
2 PAGES, NUCLEAR ENGINEERING 12(130) PAGES 198-199 (MARCH 1967)

SUMMARIZES INFORMATION PRESENTED AT A EURATOM SYMPOSIUM ON THE MAIN CAUSES OF CONSTRUCTION DELAYS AND OPERATING INTERRUPTIONS IN NUCLEAR POWER PLANTS. FABRICATION DIFFICULTIES WITH CONTAINMENTS WERE DUE TO DEFECTIVE WELDING. NO MAJOR DIFFICULTIES WITH VENTILATION AND OFFGAS SYSTEMS. MINOR PROBLEMS WERE DUE TO INADEQUATE LEAKTIGHTNESS. HEAT-EXCHANGER FAILURES WERE DUE TO THE TUBE VIBRATIONS OR FABRICATION DEFECTS. DIFFICULTIES IN CIRCULATING BLOWERS IN GAS-COOLED SYSTEMS WERE DUE TO EXCESSIVE VIBRATION. FAILURES OF PUMPS AND VALVES WERE FREQUENTLY DUE TO DEFECTIVE SEALING SYSTEMS. THE GENERAL CONCLUSION WAS THAT THE QUALITY CONTROL FOR CONVENTIONAL PLANT EQUIPMENT IS NOT SUFFICIENT FOR NUCLEAR PLANTS.

*FAILURE, GENERAL + *OPERATING EXPERIENCE + CONTAINMENT DESIGN + FAILURE, EQUIPMENT + FAILURE, FABRICATION ERROR + HEAT EXCHANGER + PUMP + QUALITY CONTROL + VALVE

17-16170
REPORTS FROM EUROPEAN NUCLEAR PLANT SITES
6 PAGES, FIGURES, NUCLEAR ENGINEERING 12(130) PAGES 200-205 (MARCH, 1967)

DELAYS TO THE COMMISSIONING OF RAPSDIE, A 20 MWTB FAST REACTOR, INCLUDED A BLOCKAGE CAUSED BY SODIUM SOLIDIFICATION IN THE SECONDARY CIRCUIT, RESULTING IN A FRACTURED EXPANSION CHAMBER, WHICH SHED SODIUM INTO THE SINGLE HEAT EXCHANGER. LATER, EXCESS ARGON PRESSURE

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-16170 *CONTINUED*

LIFTED LIFTED SODIUM UP THE CENTRAL SHROUD ABOVE THE CORE AND INTO THE CONTROL-ROD MECHANISMS. EDF-3 SHUTDOWN IN MAY 1967 FOR REPAIRS TO THE BEARINGS AND SHAFT ON ONE TURBO-ALTERNATOR SET FOLLOWING LUBRICANT FAILURES DUE TO DESIGN ERRORS.

*FAILURE, GENERAL + *OPERATING EXPERIENCE + CONTROL ROD DRIVE + FAILURE, DESIGN ERROR + FAILURE, EQUIPMENT + FRANCE + LUBRICATION + REACTOR, POWER

17-16171

REPORTS FROM EUROPEAN NUCLEAR PLANT SITES

6 PAGES, FIGURES, NUCLEAR ENGINEERING 12(130) PAGES 200-205 (MARCH 1967)

REPORTS CONSTRUCTION PROGRESS ON NUCLEAR POWER PLANTS IN ENGLAND, FRANCE, GERMANY, HOLLAND, SPAIN, SWEDEN, AND SWITZERLAND.

FRANCE + GERMANY + NETHERLANDS + REACTOR, POWER + SPAIN + SWEDEN + SWITZERLAND + UNITED KINGDOM

17-16172

HBWR OPERATIONAL EXPERIENCE

INSTITUTT FOR ATOMENERGI, HALDEN, NORWAY

NP-16230 +. 23 PAGES, PAGES 135-157 OF O.E.C.D. HALDEN REACTOR PROJECT, 1965

TWO RODS FAILED TO SCRAM BECAUSE OF IMPROPER CIRCUIT LOCATION OF THE SCRAM RELAY. DROP TIMES ON TWO RODS INCREASED MORE THAN A FACTOR OF 2, PROBABLY DUE TO REMNANT MAGNETISM PRESSING THE DRIVE RODS AGAINST THE THIMBLE WALL OR BRAKING EFFECT OF THE REMNANT MAGNETIC FIELD OF THE DRIVE RODS WITH THE COILS OR THIMBLE. DURING UNLOADING OF FUEL ELEMENTS, BINDING OCCURRED DUE TO SHIELD-PLUG PROTECTION NOSES CORRODING, BECOMING LOOSE, AND RESTING ON THE ELEMENTS.

AVAILABILITY - MICROCARD EDITIONS, INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN 54669

*OPERATING EXPERIENCE + *OPERATIONS REPORT, GENERAL + CONTROL ROD DRIVE + CORROSION + FAILURE, DESIGN ERROR + FAILURE, GENERAL + FAILURE, INSTRUMENT + FAILURE, SCRAM MECHANISM + FUEL HANDLING + HBWR (HALDEN BOILING WATER REACTOR) + REACTOR, HEAVY WATER + REFUELING

17-16173

O.E.C.D. HALDEN REACTOR PROJECT. SIXTH ANNUAL REPORT, 1964/65.

INSTITUTT FOR ATOMENERGI, HALDEN, NORWAY

NP-16230 +. 194 PAGES, FIGURES, TABLES, REFERENCES, 1965

COVERS OPERATION OF HBWR FROM JUNE 1964 TO DECEMBER 1965. TOPICS DISCUSSED INCLUDE REACTOR STATICS, DYNAMICS, WATER CHEMISTRY, FUEL-IRRADIATION TESTING, OPERATING EXPERIENCE, AND ADMINISTRATION.

AVAILABILITY - MICROCARD EDITIONS, INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN 54669

*OPERATING EXPERIENCE + *OPERATIONS REPORT, GENERAL + COOLANT CHEMISTRY + FUEL ELEMENT + IRRADIATION TESTING + REACTOR DYNAMICS + REACTOR PHYSICS

17-16174

ALSO IN CATEGORY 7

REACTOR OFF-GAS SYSTEM ACTIVITY RELEASE

PUERTO RICO WATER RESOURCES AUTHORITY, SAN JUAN

2 PAGES, PAGES 30-31 FROM BONUS NUCLEAR POWER PLANT DRL MONTHLY REPORT NO. 31, OCTOBER 1966, DOCKET NO. 115-4

ON THREE OCCASIONS AIRBORNE CONTAMINATION WAS DETECTED IN THE BUILDING. THE MAXIMUM LEVEL DETECTED WAS 5.75 X 10 TO THE MINUS 8 MICROCURIE PER CC. THE RELEASE CAME FROM THE OFF-GAS SYSTEM AS A RESULT OF THE LOSS OF WATER SEALS.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*FAILURE, DESIGN ERROR + *OPERATING EXPERIENCE + *OPERATIONS REPORT, GENERAL + AIRBORNE RELEASE + BONUS (BOILING NUCLEAR SUPERHEAT PROJECT) + FISSION PRODUCT RELEASE, GENERAL + RADIATION SAFETY AND CONTROL + RADIOACTIVITY, RELEASE + REACTOR OFFGAS + REACTOR, BOILING WATER + REACTOR, INTERNAL SUPERHEAT + SEAL

17-16175

ALSO IN CATEGORIES 10 AND 12

DIESEL GENERATOR FAILURE

PUERTO RICO WATER RESOURCES AUTHORITY, SAN JUAN

2 PAGES, PAGES 8-9 FROM BONUS NUCLEAR POWER PLANT DRL MONTHLY REPORT NO. 31, OCTOBER 1966, DOCKET NO. 115-4

ALTHOUGH THE DRY-TANK-LEVEL CONTROLS WERE ADJUSTED TO ENSURE A GOOD SUPPLY OF FUEL (SEE MONTHLY REPORT 30), FAILURES TO START STILL OCCURRED. OTHER FAULTS INCLUDED PITTED CONTACTS ON THE GENERATOR ENERGIZING SWITCH, AND A BROKEN CRANKING RELAY. THE CRANKING LIMITER AND FOUR STARTER BRUSHES WERE ALSO REPLACED (PREVENTIVE MAINTENANCE).

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-16175 *CONTINUED*

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*FAILURE, EQUIPMENT + *FAILURE, MAINTENANCE ERROR + *GENERATOR, DIESEL + *OPERATING EXPERIENCE +
*OPERATIONS REPORT, GENERAL + BONUS (BOILING NUCLEAR SUPERHEAT PROJECT) + ELECTRIC POWER, AUXILIARY +
FAILURE, INSTRUMENT + MAINTENANCE AND REPAIR + REACTOR, BOILING WATER + REACTOR, INTERNAL SUPERHEAT

17-16176 ALSO IN CATEGORY 9

MALFUNCTIONS IN CONTROL AND SAFETY SYSTEMS

PUERTO RICO WATER RESOURCES AUTHORITY, SAN JUAN

3 PAGES, PAGES 10-12 FROM BONUS NUCLEAR POWER PLANT DRL MONTHLY REPORT NO. 31, OCTOBER 1966, DOCKET 115-4

AFTER AN UNIDENTIFIED SCRAM, A PRESSURE-RELIEF-VALVE-POSITION SWITCH, A PRESSURE SWITCH, AND A
WATER-LEVEL SWITCH WERE FOUND CAPABLE OF CAUSING A SCRAM WITHOUT ANNUNCIATION. ONE SWITCH
COULD NOT CAUSE ANNUNCIATION, ANOTHER REQUIRED SIGNAL ADJUSTMENT, THE THIRD REQUIRED REPAIR
OF A DAMAGED WIRE CAUSED BY OVERHEATING. TWO CONTROL RODS CONTINUED MOVING AS MUCH AS 0.5
IN. AFTER THE ACTIVATING SWITCH WAS RELEASED. TEMPORARY CORRECTION WAS MADE BY CLEANING THE
RELAYS AND INCREASING THE TENSION ON THEIR RELEASE SPRINGS.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*FAILURE, INSTRUMENT + *OPERATING EXPERIENCE + *OPERATIONS REPORT, GENERAL +
BONUS (BOILING NUCLEAR SUPERHEAT PROJECT) + CONTROL ROD DRIVE + FAILURE, SCRAM MECHANISM +
INSTRUMENTATION, CONTROL + INSTRUMENTATION, INDICATOR + INSTRUMENTATION, PROTECTIVE +
REACTOR, BOILING WATER + REACTOR, INTERNAL SUPERHEAT + SCRAM, REAL

17-16177 ALSO IN CATEGORY 9

REACTOR SHUTDOWNS AND CAUSES

PUERTO RICO WATER RESOURCES AUTHORITY, SAN JUAN

3 PAGES, PAGES 3-5 FROM BONUS NUCLEAR POWER PLANT. DRL MONTHLY REPORT NO. 31, OCTOBER 1966, DOCKET NO. 115-4

A SCRAM WAS CAUSED BY A LIMIT SWITCH WHICH WAS ACTUATED AS A RESULT OF THERMAL EXPANSION. THE
SWITCH WAS MOUNTED TO AN EXTENSION OF THE MAIN-STEAM-STOP VALVE STEM. THERMAL EXPANSION OF
THE VALVE AND MAIN STEAM LINE DISTORTED THE SWITCH-MOUNTING ASSEMBLY. A SCRAM RESULTED FROM
THE REMOVAL OF THE WRONG SCRAM-BYPASS KEY, WHICH IS ADJACENT TO ANOTHER SCRAM-BYPASS KEY THAT
ACCORDING TO PROCEDURE WAS TO HAVE BEEN REMOVED. A SCRAM OCCURRED WHEN THE REACTOR PRESSURE
AND POWER INCREASED. A PLANT FAILURE IN THE PRWR POWER SYSTEM RESULTED IN AN INCREASE IN
THE POWER-SYSTEM FREQUENCY WHICH IN TURN CAUSED A SPEED INCREASE OF THE GENERATOR TURBINE.
THE TURBINE-SPEED GOVERNOR AUTOMATICALLY CLOSED THE TURBINE-STEAM-ADMISSION VALVE, INCREASING
THE MAIN STEAM PRESSURE.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*OPERATING EXPERIENCE + *OPERATIONS REPORT, GENERAL + *SCRAM, REAL +
BONUS (BOILING NUCLEAR SUPERHEAT PROJECT) + ELECTRIC POWER, GENERAL + FAILURE, DESIGN ERROR +
FAILURE, GENERAL + FAILURE, INSTALLATION ERROR + FAILURE, OPERATOR ERROR + INSTRUMENTATION, PROTECTIVE +
REACTOR, BOILING WATER + REACTOR, INTERNAL SUPERHEAT

17-16187 ALSO IN CATEGORY 7

NOTLEY MJ

CALCULATION OF FISSION-PRODUCT GAS PRESSURES IN OPERATING UO2 FUEL ELEMENTS

ATOMIC ENERGY OF CANADA LIMITED, CHALK RIVER

8 PAGES, 5 FIGURES, 1 TABLE, 22 REFERENCES, NUCLEAR APPLICATIONS 3(6) PAGES 334-342 (JUNE 1967)

A METHOD WAS DEVELOPED FOR CALCULATING THE FISSION-PRODUCT GAS PRESSURE INSIDE OPERATING UO2
FUEL ELEMENTS. THE CALCULATIONS WERE BASED ON A MODEL IN WHICH THE HOT CENTER OF THE UO2
PELLET IS ASSUMED TO FLOW PLASTICALLY UNDER STRESS, AND THE OUTER ANNULUS IS CRACKED. THE
CALCULATED PRESSURES WERE IN REASONABLE AGREEMENT WITH EXPERIMENTAL MEASUREMENTS OF THE GAS
PRESSURE INSIDE FUEL ELEMENTS. ALTHOUGH IT IS THE PRESSURE, RATHER THAN THE AMOUNT, OF
RELEASED FISSION GASES THAT COULD IMPAIR FUEL ELEMENT PERFORMANCE, VERY LITTLE WORK HAS BEEN
DONE ON MEASURING THE PRESSURES INSIDE A FUEL ELEMENT, WHILE VERY MUCH HAS BEEN DONE ON
MEASURING AND ESTIMATING THE AMOUNTS OF GAS RELEASED.

*FAILURE, CLADDING + *FAILURE, FUEL ELEMENT + COMPARISON, THEORY AND EXPERIENCE +
FISSION PRODUCT, VOLATILE + HIGH TEMPERATURE + PERFORMANCE LIMIT + PLASTICITY + PRESSURE, INTERNAL +
URANIUM DIOXIDE

17-16197 ALSO IN CATEGORY 1

SAFETY MANUAL - FOR USE OF OPERATORS DEALING WITH RADIOGRAPHY AND INDUSTRIAL GAMMAGRAPHY

CENTRE D ETUDES DE PROTECTION, PARIS, FRANCE

32 PAGES, FIGURES, SAFETY MANUAL, 1965

GIVES READABLE INFORMATION TOGETHER WITH AMUSING SKETCHES ON DANGERS, INDIVIDUAL DOSIMETRY,
MEASURING DEVICES, DIRECT AND SCATTERED ROTATION, SUPERVISED ZONE, PROTECTION THROUGH
DISTANCE OR SHIELDING, CAUTIONS DURING PICTURE TAKING OR IN CASE OF DIFFICULTY, AND MEDICAL
VISITS. APPENDIXES INDICATE SHIELDING EFFECTIVENESS, HALF-LIVES, ALLOWABLE DOSE RATES, AND
METHODS FOR MAKING PROTECTION CALCULATIONS.

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-16197 *CONTINUED*

AVAILABILITY - USAEC DIVISION OF TECHNICAL INFORMATION EXTENSION, P.O. BOX 62, OAK RIDGE, TENNESSEE 37830

*PROCEDURES AND MANUALS + *RADIATION SAFETY AND CONTROL + *RADIOGRAPHY +
*STAFFING, TRAINING, QUALIFICATION + SAFETY PRINCIPLES AND PHILOSOPHY

17-16219

QUARTERLY PROGRESS REPORT FOR THE PERIOD ENDING OCTOBER 31, 1966. 40-MW(E) PROTOTYPE HIGH-TEMPERATURE GAS-COOLED REACTOR POSTCONSTRUCTION RESEARCH AND DEVELOPMENT PROGRAM
GENERAL ATOMIC, DIVISION OF GENERAL DYNAMICS, JOHN JAY HOPKINS LAB. FOR PURE AND APPLIED SCIENCE, SAN DIEGO, CALIFORNIA
GA-7595 +. 33 PAGES, 15 FIGURES, 4 TABLES, FEBRUARY 2, 1967

IN THIS PROGRESS REPORT, TOPICS DISCUSSED INCLUDE REACTIVITY-WORTH MEASUREMENTS, ROD-SCRAM TRANSIENT TESTS, NOISE ANALYSIS, AND PREPARATIONS FOR MEASUREMENTS DURING APPROACH TO POWER.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

*OPERATIONS REPORT, GENERAL + *RESEARCH AND DEVELOPMENT PROGRAM + MEASUREMENT, REACTIVITY + NOISE ANALYSIS + REACTIVITY EFFECT + REACTOR STARTUP TESTING + REACTOR, GAS COOLED + REACTOR, HIGH TEMP. GAS + SCRAM, REAL

17-16297

ELK RIVER REACTOR OPERATIONS ANALYSIS PROGRAM. PROGRESS REPORT, FEBRUARY 1965
ALLIS-CHALMERS MFG. CO., BETHESDA, MD.
ACNP-65525 +. 13 PAGES, 4 FIGURES, 4 TABLES, MARCH 15, 1965

THIS PROGRESS REPORT IS ONE OF A SERIES AND COVERS THE FOLLOWING TASKS - (102) EVAPORATOR WATER LEVELS, (102) REACTIVITY HISTORY, (103) POWER DISTRIBUTION, (106) NVT AT SAMPLE LOCATIONS, (201) FUEL-CYCLE STUDIES, (204) CONTROL-ROD WORTH, (208) TECHNICAL-SPECIFICATION CHANGES, (401) PURIFICATION SYSTEM, (404) THIMBLE-COOLING SYSTEM, (406) OFF-GAS SYSTEM, (407) BORON POISON SYSTEM, (611) DECONTAMINATION AND WASTE DISPOSAL, (612) CASK HANDLING AND STORAGE, (615) CORROSION SAMPLE AND TESTS, (616) RADIOLYTIC-GAS SAMPLING.

*OPERATIONS REPORT, ANALYSIS + CASK OPERATING EXPERIENCE + CONTROL ROD BURNUP + CONTROL ROD WORTH + COOLANT CHEMISTRY + CORROSION + DECONTAMINATION + ELK RIVER + FUEL BURNUP + POWER DISTRIBUTION + RADIOLYTIC GAS + REACTOR, BOILING WATER + SHUTDOWN SYSTEM, SECONDARY + TECHNICAL SPECIFICATIONS + WASTE DISPOSAL, GENERAL

17-16310

AEC TESTIMONY ON REACTOR NON COMPLIANCE BEFORE JCAE, APRIL 1967
1 PAGE, NUCLEONICS WEEK, VOLUME 8 (17) (APRIL 1967)

THE DIRECTOR OF AEC COMPLIANCE DIVISION TESTIFIED THAT REGULATORY VIOLATIONS WERE FOUND IN 40% OF ALL LICENSED REACTORS IN U.S. IN 1966, FOLLOWING THE PATTERN OF THE LAST FOUR YEARS. NONCOMPLIANCES WERE FOUND IN 37% OF THE 90 REACTORS, 21 FOR FAILURE TO COMPLY WITH PROCEDURES ON IN-PLANT SAFETY REVIEW OF EXPERIMENT AND PLANT MODIFICATION OR OBSERVATION OF INSTRUMENTATION DURING CORE CHANGES, 13 FOR EXCEEDING LIMITS ON POWER OR REACTIVITY OR BORON CONCENTRATION, AND 14 FOR OPERATION WITH LESS THAN THE MINIMUM EQUIPMENT. OTHER VIOLATIONS INCLUDED INADEQUATE RADIATION SURVEYS OR RECORDS, FAILURE TO FILE REPORTS OR MAKE ROUTINE MEASUREMENTS OR TESTS OR INSPECTIONS, AND FAILURE TO POST RADIATION AREAS AS REQUIRED.

*FAILURE, ADMINISTRATIVE CONTROL + *INSPECTION AND COMPLIANCE + INCIDENT, ACTUAL, GENERAL + RADIATION SAFETY AND CONTROL + SAFETY REVIEW (OPERATIONS, EXPERIMENTS) + TECHNICAL SPECIFICATIONS

17-16311

ALSO IN CATEGORIES 11 AND 12
A TIGHTENING SCREW ON REACTOR SAFETY
5 PAGES, FIGURES, NUCLEONICS 25(1) PAGES 41-45 (JANUARY 1967)

DISCUSSES THE PROBLEM OF INSPECTING ALL INTERNAL AND EXTERNAL SURFACES OF ALL THE PRESSURE-CONTAINING PARTS OF NUCLEAR POWER PLANTS. AEC IS NOW QUESTIONING ALL APPLICANTS FOR CONSTRUCTION PERMITS ABOUT IN-SERVICE INSPECTION. COMMONWEALTH EDISONS EXPERIENCE IS DISCUSSED. THEY STATE THAT THE BEST INSPECTION METHOD IS A MAN LOOKING. BESIDES EDISONS INSPECTORS, STATE AND INSURANCE AGENCIES HAVE INSPECTION TEAMS. A MATERIALS-SURVEILLANCE PROGRAM IS IN USE TO SUPPLEMENT VISUAL INSPECTIONS. VESSEL SAMPLES ARE EXAMINED PERIODICALLY AND HAVE INDICATED THAT THE NDT SAMPLES SHOULD REDUCE THE NEED FOR DIRECT EXAMINATION. DISCUSSES EDISONS REASONS FOR HYDROSTATIC TESTING OF THE DRESDEN-I VESSEL AT 80% OF DESIGN PRESSURE. AEC SUGGESTED A TEST AT 125% OVER DESIGN PRESSURE EVERY 4 YEARS. EDISON DISAGREED. THE QUESTION IS STILL UNSETTLED.

*ADMINISTRATIVE CONTROLS AND PRACTICES + *INSPECTION AND COMPLIANCE + *PRESSURE VESSEL + AEC CONSTRUCTION PERMIT CRITERIA + DRESDEN 1 + EXAMINATION + INTEGRITY + INTEGRITY + MAINTENANCE AND REPAIR + REACTOR, BOILING WATER + REGULATION, AEC + SAFETY PRINCIPLES AND PHILOSOPHY + TEST, NONDESTRUCTIVE + TEST, PRESSURE VESSEL

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-16312 ALSO IN CATEGORIES 1 AND 12
GARRICK BJ + GEKLER WC + POMREHN HP
ARE PLANT ENGINEERED SAFEGUARDS RELIABLE
HOLMES + NARVER, INC., LOS ANGELES, CALIFORNIA
5 PAGES, 1 FIGURE, 2 TABLES, NUCLEONICS 25(1) PAGES 45-49 (JANUARY 1967)

PRESENTS THE RESULTS OF A STUDY OF THE RELIABILITY OF ENGINEERED-SAFEGUARD SYSTEMS BASED ON OPERATING EXPERIENCE AT 5 NUCLEAR POWER PLANTS. (FOR A FULL REPORT SEE REPORT HN-185). DIFFICULTIES WITH SAFEGUARD SYSTEMS INCLUDE ISOLATION-VALVE LEAKAGE OR FAILURE TO CLOSE, STARTING-CIRCUIT FAILURES, FUEL-SUPPLY-SYSTEM LEAKAGE IN EMERGENCY POWER SYSTEMS, AND DESIGN INADEQUACIES REQUIRING INCREASED MAINTENANCE OR MODIFICATION FOR ENVIRONMENTAL CONDITIONS. SUMMARIZES RESULTS OF STUDY FOR EMERGENCY COOLING SYSTEMS, CONTAINMENT, EMERGENCY POWER SYSTEMS, SECONDARY SHUTDOWN SYSTEMS, AND SAFETY SYSTEMS.

*ENGINEERED SAFETY FEATURE + *OPERATING EXPERIENCE + *RELIABILITY ANALYSIS + CONTAINMENT, GENERAL + EMERGENCY COOLING CONSIDERATIONS + EMERGENCY POWER, ELECTRIC + EXAMINATION + FAILURE, ADMINISTRATIVE CONTROL + FAILURE, EQUIPMENT + FAILURE, GENERAL + MAINTENANCE AND REPAIR + PLANT PROTECTIVE SYSTEM + REACTOR SAFETY SYSTEM + REACTOR, POWER + SHUTDOWN SYSTEM, SECONDARY

17-16316
MACPHERSON HG
MSRE OPERATING EXPERIENCE.
OAK RIDGE NATIONAL LAB., TENN.
ORNL-P-2345 +. 21 PAGES, 4 FIGURES, 1 TABLE, 1966, PUBLISHED IN POWER ENGINEERING (JANUARY 1967) AND (FEBRUARY 1967)

(PAGES 11-16) THE HASTELLOY-N USED IN THE REACTOR CONTAINED AN APPRECIABLE AMOUNT OF BORON IMPURITY WHICH WAS CONVERTED TO HELIUM BY RADIATION, RESULTING IN POOR DUCTILITY AT HIGH TEMPERATURES. NO DANGER FROM EMBRITTLEMENT EXPECTED FOR 3 YEARS. SOLUTION FOR FUTURE REACTORS WAS FOUND. OIL, ACCUMULATED IN THE SYSTEM FROM PRENUCLEAR OPERATION VAPORIZED WHEN REACTOR OPERATED AT POWER. THE VAPORS WERE POLYMERIZED BY RADIATION IN THE OFF-GAS SYSTEM AND PLUGGED VALVES. SYSTEM WAS REVAMPED. PRINCIPLES GAINED FROM MAINTENANCE EXPERIENCE ARE TO MAKE THE PRIMARY SYSTEM AS SIMPLE AS POSSIBLE AND PROVIDE FEATURES IN THE PLANT DESIGN FOR PERFORMING MAINTENANCE.

*EMBRITTLEMENT + *HELIUM + *OPERATING EXPERIENCE + *PRESSURE VESSEL + FAILURE, DESIGN ERROR + FAILURE, OPERATOR ERROR + MAINTENANCE AND REPAIR + MAINTENANCE, REMOTE + MSRE (MOLTEN SALT REACTOR EXPERIMENT) + RADIATION DAMAGE + RADIATION EFFECT + REACTOR OFFGAS + REACTOR, MOLTEN SALT

17-16320
TABOR WH + HURT SS
OAK RIDGE RESEARCH REACTOR QUARTERLY REPORT, APRIL-JUNE 1966
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE
ORNL-TM-1679 +. 38 PAGES, 15 TABLES, 8 FIGURES, OCTOBER 31, 1966

THE UNCOMPENSATED SECTION OF A DUAL-PURPOSE IONIZATION CHAMBER FOR THE NO. 1 SAFETY CHANNEL FAILED AFTER 14 MONTHS. A SIMILAR FAILURE OCCURRED LAST QUARTER. INDICATIONS ARE THAT THE SERVICE LIFE IS CONSIDERABLY SHORTER THAN EXPECTED. THE WATER SEAL FOR THE NO. 3 CONTROL-ROD-DRIVE UNIT DEVELOPED A LEAK AND WAS REPLACED. COMPLETE FLUX MAPS AND A SHIM-ROD CALIBRATION WERE MADE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*OPERATING EXPERIENCE + *OPERATIONS REPORT, GENERAL + CONTROL ROD CALIBRATION + CONTROL ROD DRIVE + FAILURE, GENERAL + FAILURE, INSTRUMENT + FLUX DISTRIBUTION + INSTRUMENTATION, NUCLEAR + MEASUREMENT, GENERAL + ORR (OAK RIDGE RESEARCH REACTOR) + REACTOR, AEC OWNED + REACTOR, RESEARCH

17-16321 ALSO IN CATEGORY 11
GRONBECK HD
ETR RADIATION DAMAGE SURVEILLANCE PROGRAMS. PROGRESS REPORT II
IDAHO NUCLEAR CORPORATION, IDAHO FALLS
IN-1036 +. 56 PAGES, 17 FIGURES, 3 TABLES, FEBRUARY 1967

CONTAINS DATA ON MECHANICAL PROPERTIES OF ETR STRUCTURAL MATERIALS EXPOSED TO THE OPERATING ENVIRONMENT OF THE ETR. DATA IS BASED ON FAST-NEUTRON EXPOSURES FROM 5.12 TIMES 10 TO THE 21 NVT FOR 431 STAINLESS STEEL TO 1.69 TIMES 10 TO THE 22 NVT FOR 17-4 PH AND 304 STAINLESS STEELS. DATA INCLUDES RADIATION EFFECT ON ROCKWELL HARDNESS, TENSILE STRENGTH, YIELD STRENGTH, AND ELONGATION OF STAINLESS STEELS AND ALUMINUM 2024, 6061, AND 356.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPT. OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*ALUMINUM + *CORE COMPONENTS, MISCELLANEOUS + *RADIATION EFFECT + *STEEL, STAINLESS + ETR (ENGINEERING TEST REACTOR) + FAST NEUTRON + INCONEL + METAL + PRESSURE VESSEL + PROPERTY, PHYSICAL + REACTOR, TEST + STRUCTURAL INTEGRITY + TENSILE PROPERTY

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-16322

BERNANDER G + BLJMBERG PE + DUBOIS PU
EXPERIMENTAL EQUIPMENT FOR PHYSICS STUDIES IN THE AGE STA REACTOR
AKTIEROLAGET ATOMENERGI, STOCKHOLM, SWEDEN
AE-269 +. 27 PAGES, REFERENCES, MARCH 1967

PHYSICS MEASUREMENTS INCLUDED CONTROL-ROD WORTH, MODERATOR-LEVEL COEFFICIENT, TEMPERATURE COEFFICIENT, AND BUCKLING. THE THEORY UNDERESTIMATED THE EFFECTIVENESS OF THE REFLECTOR, AND MEASUREMENTS AT FULL POWER GAVE AN EXCESS REACTIVITY 1.5% HIGHER THAN THAT PREDICTED BY THEORY. THE REPORT PRIMARILY DISCUSSES THE EQUIPMENT USED FOR THESE MEASUREMENTS, INCLUDING IN-CORE DETECTORS, MODERATOR-LEVEL METER, ACTIVATION-WIRE HOLDERS, A MODIFIED ELEMENT FOR FLUX-SPECTRA MEASUREMENTS, AND A TOOL FOR HANDLING FOILS USED IN BURNUP STUDIES.

AVAILABILITY - MICROCARD EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM, WISCONSIN, 54669

*EQUIPMENT, GENERAL + *MEASUREMENT, REACTIVITY + AGE STA (SWEDISH 65 MWTH REACTOR) + BUCKLING + COMPARISON, THEORY AND EXPERIENCE + CONTROL ROD WORTH + INSTRUMENTATION, IN CORE + INSTRUMENTATION, LIQUID LEVEL DETECTION + INSTRUMENTATION, NUCLEAR + MODERATOR COEFFICIENT + REACTIVITY, EXCESS + REACTOR, HEAVY WATER + REACTOR, POWER + REACTOR, PRESSURIZED WATER + SWEDEN + TEMPERATURE COEFFICIENT + TEMPERATURE REACTIVITY EFFECT

17-16327

ALSO IN CATEGORIES 15 AND 18

WRIGHT EG

RADIATION OVEREXPOSURE AT U.S. ARMY NUCLEAR DEFENSE LAB., EDGEWOOD ARSENAL, MD.
U. S. ARMY NUCLEAR DEFENSE LABORATORY, EDGEWOOD ARSENAL, MD.
3 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(25) PAGES 27-29 (JUNE 19, 1967)

(MAY 29) - A 700-CURIE CO-60 SOURCE STUCK DURING TRANSFER FROM A STORAGE SHIELD TO AN OPERATIONS SHIELD. DECOMPOSED RUST INHIBITOR CAUSED IT TO JAM IN THE HYDRAULIC-TRANSMISSION TUBING. THE SUPERVISOR TRIED VARIOUS MEANS OF FREEZING THE SOURCE IN THE MEASURED 2-R/HR FIELD, AFTER MONITORING WITH AN AMERICAN-NUCLEAR HIGH-RANGE (0-100 R/HR) SURVEY METER, BUT FINALLY SENT THE PARTIALLY SHIELDED SOURCE TO A HOT CELL. HE THEN FOUND HIS 5-R DOSEMETERS OFF-SCALE (AND APPARENTLY ONLY THEN INFORMED RADIATION PROTECTOR OFFICER). THE SURVEY-METER NEON LIGHT WAS NOT LIT, SHOWING LOW BATTERY VOLTAGE, WHICH CAUSED THE METER TO READ 30-40 R/HR IN FIELDS OF 55-500 R/HR. RUST INHIBITOR IS NO LONGER USED. PERIODIC INSPECTIONS TO SHOW DEBRIS-FREE HANDLING MECHANISM, BETTER MARKING OF BATTERY INDICATOR, ADDITIONAL TRAINING IN EMERGENCY PROCEDURES WERE INSTITUTED.

*INCIDENT, ACTUAL, GENERAL + *SOURCE, RADIATION + FAILURE, ADMINISTRATIVE CONTROL + FAILURE, EQUIPMENT + FAILURE, INSTRUMENT + HEALTH PHYSICS TRAINING + INCIDENT, ACTUAL, RECOVERY FROM + MONITOR, RADIATION, EMERGENCY + PERSONNEL EXPOSURE, RADIATION

17-16365

ALSO IN CATEGORIES 15 AND 1

SENATE BILL TO REIMBURSE A STATES FOR WORKMENS COMPENSATION PAID FOR URANIUM RADIATION
CONGRESS (US), HOUSE OF REPRESENTATIVES
3 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(24) PAGES 4-6 (JUNE 12, 1967)

S-1927 WOULD AUTHORIZE PAYMENT OF HALF THE WORKMENS COMPENSATION FOR INJURY, DISABILITY, OR DEATH IN MINING OR PROCESSING URANIUM, OR FROM URANIUM RADIATION. DISCUSSION BY SPONSOR MADE FIVE POINTS - (1) PERIODICALLY PUBLISH INCIDENT REPORTS TO ASSESS THE PROBLEM, (2) REVIEW HOSPITAL FACILITIES AND CAPABILITIES NEAR MINES, (3) INSTALL SATISFACTORY VENTILATION, (4) GUARD AGAINST AIR AND STREAM POLLUTION FROM MINE WASTES, (5) ESTABLISH AN INTERAGENCY AUTHORITY TO ENFORCE USE OF FEDERAL RADIATION COUNCIL GUIDELINES BY OTHER GOVERNMENT AGENCIES, FINALLY, MAKE VARIOUS STATES WORKMANS-COMPENSATION LAWS UNIFORM.

*CONGRESSIONAL ACTIVITY + *INSURANCE + INCIDENT COMPILATION + MAXIMUM PERMISSIBLE CONCENTRATION (MPC) + MILLING + MINING + PERSONNEL EXPOSURE, RADIATION + VENTILATION SYSTEM + WASTE DISPOSAL, GENERAL

17-16266

ALSO IN CATEGORIES 15 AND 18

BABCOCK AND WILCOX, MT. VERNON INDIANA, CITED FOR NON COMPLIANCE UNDER LICENSE 13-11317-1
BABCOCK AND WILCOX, MT. VERNON, IND.
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(24) PAGES 13-14 (JUNE 12, 1967)

(LETTER FROM DIV. COMPLIANCE, APRIL 17, REGARDING FEB. 16 INSPECTION, APPARENTLY RELATING TO A RADIOGRAPHY INCIDENT ON OCT. 10, 1966) - A SURVEY WAS NOT MADE AFTER EACH FILM EXPOSURE TO CHECK THE 141-CURIE CO-60 WAS RETURNED TO THE SHIELD. AN INADEQUATE EVALUATION WAS MADE OF DOSE RECEIVED. THE WARNING SYSTEM WAS A BUZZER ACTIVATED UPON ENTRY TO RADIOGRAPHY ROOM, AND WAS NOT RELATED TO RADIATION LEVEL. (B AND W REPLY, MAY 3) - PROPER SURVEY WAS NOT MADE. DOSE REPORTED NOV. 3 WAS CALCULATED IN GOOD FAITH, HOWEVER FURTHER INFORMATION REPORTED DURING INSPECTION OF FEB. 16 DOES INDICATE AN 8-R CALCULATED DOSE TO UPPER BODY, 3.7-R FILM-RADGE DOSE TO WAIST, AND 27.7/36.6-R CALCULATED DOSE TO L/R HANDS. INCIDENT OCCURRED BECAUSE OF EMPLOYEE PREOCCUPATION WITH PERSONAL MATTERS. WARNING ALARM IS TYPICAL OF THOSE IN OTHER INSTALLATIONS, COMPLIES WITH OUR INTERPRETATION OF 10 CFR 20, AND SHOULD REMAIN AS IS. WE HAVE CHANGED FROM A BELL TO A HORN, AND HAVE POSTED AN AUTHORIZED-ENTRY-ONLY SIGN.

*INCIDENT, ACTUAL, HUMAN ERROR + *INSPECTION AND COMPLIANCE + *RADIOGRAPHY + DOSE CALCULATION, EXTERNAL +

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-16366 *CONTINUED*
DOSE MEASUREMENT, EXTERNAL + FAILURE, DESIGN ERROR + FAILURE, OPERATOR ERROR +
PERSONNEL EXPOSURE, RADIATION

17-16367 ALSO IN CATEGORIES 15 AND 18
FIXMAN M
COTTER CORP., CANNON CITY, COLORADO EXPOSURE
COTTER CORP., CANNON CITY, COLORADO
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(24) PAGE 15 (JUNE 12, 1967)

(LETTER, MAY 10). EIGHT INDIVIDUALS WERE EXPOSED TO ABOUT 2.3 MPC DURING MARCH, WHILE SAMPLING BARRELS OF YELLOW CAKE DURING ADVERSE WEATHER. NEW SAMPLING PROCEDURES SHOW EXPOSURE IS NOW DOWN TO 0.4 MPC. TWO MAINTENANCE MEN WERE EXPOSED TO 2.8 TO 6.8 MPC WHILE REPAIRING A YELLOW-CAKE DRYER. DUST WAS RETAINED ON FACE-MASK FILTERS. NOW, DRYERS ARE GIVEN TWO WATER WASHES BEFORE MAINTENANCE TO SETTLE DUST, AND NO ONE IS ALLOWED IN A DRYER MORE THAN 30 MIN/WEK.

*INHALATION + *MILLING + *PERSONNEL EXPOSURE, RADIATION + INCIDENT, ACTUAL, GENERAL +
MAINTENANCE AND REPAIR + SAMPLING + URANIUM

17-1636P ALSO IN CATEGORIES 15 AND 18
LAGRUA JD
COMPLIANCE CITATION OF LONG ISLAND NUCLEAR SERVICE CORP. FOLLOWING RESIN HANDLING INCIDENT AT PORTSMOUTH
NAVAL SHIPYARD
LONG ISLAND NUCLEAR SERVICE CORP., BELLPORT, N.Y.
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(24) PAGES 15-16 (JUNE 12, 1967)

(LETTER, APRIL 24, 1967, REGARDING NOV. INCIDENT AND INSPECTION IN DEC. 1966 AND JAN. 1967).
RESIN HANDLING AND DECONTAMINATION WERE NOT AUTHORIZED BY LICENSE 31-8360-1, A POSSESSION
LICENSE. RADIATION SURVEYS WERE NOT CONDUCTED. TWO PERSONS WERE RE-EXPOSED WITHOUT CHECKING
THEIR RADIATION HISTORY. NOTICE WAS NOT GIVEN AEC OF OVEREXPOSURE TO TWO OTHERS. RADIATION
AREAS WERE NOT POSTED. AN EMPLOYEE WAS NOT GIVEN WRITTEN NOTICE OF HIS OVEREXPOSURE. IN
ADDITION, WRITTEN RECORDS WERE NOT AVAILABLE FOR OTHER LICENSED MATERIAL DURING THE
INSPECTION.

*FAILURE, ADMINISTRATIVE CONTROL + *INCIDENT, ACTUAL, HUMAN ERROR + *INSPECTION AND COMPLIANCE +
*MAINTENANCE AND REPAIR + *COOLANT PURIFICATION SYSTEM + *HEALTH PHYSICS TRAINING +
RADIATION SAFETY AND CONTROL + REGULATION, AEC + RESIN

17-16369 ALSO IN CATEGORIES 15 AND 18
KELLER CW
10 RAD SKIN EXPOSURE DURING HOT CELL DECONTAMINATION AT MARTIN-MARIETTA BALTIMORE MD., 21 APRIL 1967
MARTIN MARIETTA CORP., BALTIMORE, MD.
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(24) PAGES 16-17 (JUNE 12, 1967)

(LETTER, MAY 16). SINCE NORMALLY THE FILM BADGE SHOWS 4 TO 6 TIMES THE DOSIMETER READINGS,
DOSIMETER READINGS ARE MULTIPLIED BY 8 FOR CONTROL PURPOSES. IN THIS CASE THE RATIOS WERE 36
TO 1, AND 9 TO 1. SURVEYS SHOWED 2 TO 4 RADS/HOUR. PERHAPS GROSS CONTAMINATION OF CLOTHING
NEAR FILM BADGE OCCURRED. HOWEVER, CUMULATIVE EXPOSURE OF 200 MR BY DOSIMETERS WILL BE USED
TO LIMIT WORKERS UNTIL FILM BADGES ARE PROCESSED.

*DOSE MEASUREMENT, EXTERNAL + *PERSONNEL EXPOSURE, RADIATION + BETA EMITTER + DECONTAMINATION +
HEALTH PHYSICS TRAINING + HOT CELL + MONITOR, RADIATION, PERSONNEL + RADIATION SAFETY AND CONTROL

17-16370 ALSO IN CATEGORY 18
SHIELDS RR
RADIOGRAPHY SOURCE CAPSULE SEPARATES AT WALWORTH PRODUCT DIVISION, GREENBURG PA. MARCH 21, 1967
WALWORTH CO., GREENBURG, PA.
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(24) PAGES 17-18 (JUNE 12, 1967)

(LETTER, MARCH 22). AFTER AN EXPOSURE, THE SURVEY SHOWED RADIATION LEVELS ABOVE NORMAL IN THE
AREA OF THE PROJECTOR. OPERATOR REPORTED TO SUPERVISOR, WHO FOUND 15 MR/HR IN EXPOSURE AREA,
AND HIGHER LEVELS AT PROJECTOR-AREA ENTRANCE. REPEATED CONTROL ACTUATION REDUCED RADIATION
IN THE EXPOSURE AREA TO NORMAL. ON EXAMINING THE SOURCE SWITCH, A SMALL OBJECT (RESEMBLING
THE DUMMY SOURCE CAPSULE, GREATER THAN 50 MR/HR AT CONTACT) FELL OUT. THE MANUFACTURER WAS
CALLED, WHO ARRANGED FOR IMMEDIATE HELP AND THEN CAME HIMSELF. A DETAILED REPORT WILL BE
SUBMITTED LATER. THE SMALL OBJECT WAS THE NOSE PIECE OF THE CAPSULE. PELLETS WERE IN
PROJECTOR. NO CONTAMINATION WAS FOUND. OPERATING PERSONNEL RECEIVED 30 MR.

*INCIDENT, ACTUAL, EQUIPMENT + *RADIOGRAPHY + FAILURE, EQUIPMENT + SOURCE, RADIATION

17-16373 ALSO IN CATEGORY 18
SELECTED ELK RIVER OPERATING EXPERIENCE. FIFTY-FOURTH MONTHLY OPERATING REPORT
RURAL COOPERATIVE POWER ASSOCIATIONS
COO-651-44 +. 21 PAGES, 4 FIGURES, APRIL 1967

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-16373 *CONTINUED*

ON APRIL 24, THE PLANT WAS SHUT DOWN FOR 7-WEEK REFUELING. ALL RODS WERE CUT AT BEGINNING OF APRIL, AND OPERATION CONTINUED BY SLOW STRETCHOUT FROM 58.2 TO 55.2 MW TH (1.7MW REDUCTION PER 1000 MW, COMPARED WITH A PREDICTED 1.9). A ROD-BANK CALIBRATION (37 CENTS/IN. AT 28.2 IN.) AGREED WITH FIRST-CYCLE CALIBRATION. FUEL SHIPPING CASK WAS INSPECTED. REACTOR UPPER-CAVITY VENT SIGHT-GLASS WAS 2/3 FULL, APPARENTLY FROM CONDENSATION.

AVAILABILITY - USAFC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*FUEL BURNUP + CONTROL ROD CALIBRATION + ELK RIVER + EXAMINATION + OPERATIONS SUMMARY FOR AEC + REACTOR, BOILING WATER + REFUELING + SHIPPING CONTAINER

17-16274 ALSO IN CATEGORIES 12 AND 18

CALDWELL WF

INDIAN POINT 2 REACTOR DESCRIPTION

CONSOLIDATED EDISON COMPANY, NEW YORK

38 PAGES, 9 FIGURES, 1 TABLE, APRIL 1967, PRESENTED AT THE AMERICAN POWER CONFERENCE, CHICAGO, APRIL 25-27, 1967

FOUR PAPERS FROM A SESSION ON INDIAN POINT 2, ENTITLED SYSTEM PLANNING ASPECTS AND ECONOMIC FACTORS, OVERALL PLANT DESIGN, SITING AND LICENSING CONSIDERATIONS (DISCUSSES EVOLUTION OF ENGINEERED SAFEGUARDS AS AEC/ACRS STANDARDS EVOLVE, MAINLY ON CONTAINMENT-PENETRATION LEAKAGE CONTROL, EMERGENCY COOLING SYSTEMS, AND PIT CRUCIBLE), AND NUCLEAR STEAM-SUPPLY SYSTEM (REUSE OF BORIC ACID REDUCES SOLID WASTE SHIPPED FROM 975 TO 315 DRUMS PER CYCLE).

AVAILABILITY - AMERICAN POWER CONFERENCE, E. R. WHITEHEAD, SECRETARY, ILLINOIS INSTITUTE OF TECHNOLOGY, CHICAGO, ILLINOIS

*CONSTRUCTION PERMIT PROCESS + *ENGINEERED SAFETY FEATURE + *REACTOR DESCRIPTION + CONTAINMENT LEAKAGE CONTROL + EMERGENCY COOLING CONSIDERATIONS + INDIAN POINT 2 + REACTOR, PRESSURIZED WATER + WASTE DISPOSAL, SOLID

17-16387 ALSO IN CATEGORY 18

QUESTION 3. LIMITS ON NUMBER OF FUEL ELEMENT FAILURES

TENNESSEE VALLEY AUTHORITY

1 PAGE, PAGE 3.1 FROM BROWNS FERRY AMENDMENT 7, FEBRUARY 1967, DOCKET NO. 50-259/260

WHAT LIMITS WILL BE PLACED ON THE ACCEPTABLE NUMBER OF FUEL-ELEMENT FAILURES UNDER STEADY-STATE OPERATION. WHAT CONSIDERATIONS ENTER IN SETTING THESE LIMITS. HOW WILL DECISIONS BE MADE THAT CONTINUED IRRADIATION TO HIGHER BURNUP IS PERMISSIBLE.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*FAILURE, FUEL ELEMENT + *PERFORMANCE LIMIT + AEC QUESTION + BROWNS FERRY + FUEL BURNUP + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

17-16392 ALSO IN CATEGORIES 18 AND 5

QUESTION 8. POSSIBLE WAYS FLOW RESTRICTION TO FUEL ASSEMBLIES

TENNESSEE VALLEY AUTHORITY

1 PAGE, PAGE 8-1 FROM BROWNS FERRY AMENDMENT 7, FEBRUARY 1967, DOCKET NO. 50-259/260

DISCUSS THOROUGHLY THE POSSIBLE WAYS IN WHICH COOLANT FLOW MIGHT BE SIGNIFICANTLY RESTRICTED OR BLOCKED TO A SUBASSEMBLY UNDER STEADY-STATE POWER OR ACCIDENT CONDITIONS. WHICH CONDITIONS LEAD TO CONSIDERABLE FUEL MELTING.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*FLOW BLOCKAGE + AEC QUESTION + BROWNS FERRY + FUEL MELTDOWN + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

17-16404 ALSO IN CATEGORIES 15 AND 18

SELECTED YANKEE OPERATING EXPERIENCE.

YANKEE ATOMIC ELECTRIC COMPANY, BOSTON, MASSACHUSETTS

8 PAGES, 2 FIGURES, 1 TABLE, MAY 24, 1967, DOCKET NO. 50-79, FROM YANKEE NUCLEAR POWER STATION OPERATIONS REPORT NO. 76 FOR THE MONTH OF APRIL 1967

(1) CORE REACTIVITY CONTINUES NORMALLY AT 0.74 DELTA K/K PER 1000 MWD/MT. (2) INCREASING NO.-1 STEAM-GENERATOR CHLORIDE LEVEL WAS TRACED TO CHLORIDE CONTAMINATION OF THE PHOSPHATE ADDITIVE, AS OTHER INDICATORS OF TURBINE-CONDENSER TUBE LEAKS WERE ABSENT. (3) AN ACCIDENTAL RELEASE OF BELOW-MPC GAS OCCURRED DURING A ROUTINE SAMPLING OF THE PRESSURIZER GAS SPACE WHEN THE RECIRCULATION VENT VALVE TO THE LOW-PRESSURE SURGE TANK WAS LEFT OPEN, ALLOWING BACKFLOW FROM SURGE TANK TO SAMPLE HOOD. 32 MICROCURIES OF BETA-GAMMA AND 60 MILLICURIES OF TRITIUM WERE RELEASED IN A 2-1/2-HOUR PERIOD.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*COOLANT CHEMISTRY + *FUEL BURNUP + *REACTOR OFFGAS + AIRBORNE RELEASE + CHLORINE + FAILURE, OPERATOR ERROR + HEAT EXCHANGER + INCIDENT, ACTUAL, HUMAN ERROR + OPERATIONS SUMMARY FOR AEC +

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-16404 *CONTINUED*
REACTOR, PRESSURIZED WATER + STEAM GENERATOR + TRITIUM + YANKEE

17-16405 ALSO IN CATEGORY 18
YANKEE 16 HOUR SHUTDOWN FOR CONDENSER TUBE CLEANING.
YANKEE ATOMIC ELECTRIC COMPANY, BOSTON, MASSACHUSETTS
8 PAGES, 2 FIGURES, 1 TABLE, JUNE 20, 1967, DOCKET NO. 50-29, FROM YANKEE NUCLEAR POWER STATION OPERATIONS
REPORT NO. 77 FOR THE MONTH OF MAY 1967

THE OUTPUT GRADUALLY LESSENED TO 179 MW(E) AS RIVER-WATER TEMPERATURE ROSE, AND CLEANING
INCREASED OUTPUT TO 183. TWO LEAKY TUBES WERE FOUND BY AN AHS SOAP SOLUTION AND BY A
SARAN-PLASTIC TECHNIQUE. 16 HOURS BEFORE SHUTDOWN, NAOH INJECTION TO DETERMINE THE
STEAM-GENERATOR LEAKAGE RATE INCREASED COOLANT PH FROM 5.2 TO 6.0, CAUSING A REACTIVITY GAIN
OF 0.0023 DELTA K/K. LEAK RATES WERE (1) 16 GPD, (2) 60 GPD, (3) AND (4) LESS THAN 0.5 GPD.
PORON AND TRITIUM TRACER TECHNIQUES SHOWED THE TOTAL LEAK RATE AS 110 GPD.

USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*COOLANT CHEMISTRY + *TEST, LEAK RATE + OPERATIONS SUMMARY FOR AEC + REACTIVITY EFFECT, ANOMALOUS +
REACTOR, PRESSURIZED WATER + STEAM GENERATOR + TRACER, GENERAL + YANKEE

17-16409
ENGINEERING MATERIALS LIST. SUPPLEMENTAL INSERT SHEETS
UNITED STATES ATOMIC ENERGY COMMISSION, DIVISION OF TECHNICAL INFORMATION
TID-4100 (SUPPL. 37) +. 70 PAGES, MARCH 1967

SUPPLEMENTAL SHEETS FOR ADDITION TO AN EXTENSIVE LIST OF ENGINEERING DRAWINGS IN THE TID-4100
SERIES OF REPORTS.

AVAILABILITY - USAEC, DIVISION OF TECHNICAL INFORMATION EXTENSION, OAK RIDGE, TENNESSEE -- FREE
ENGINEERING DRAWING LIST

17-16410
MONTHLY OPERATING REPORT (ON CVTR OPERATION), SEPTEMBER 1965.
CAROLINAS VIRGINIA NUCLEAR POWER ASSOCIATES, INC., PARR, S. C.
CVNA-244 +. 41 PAGES, SEPTEMBER 1965

THIS REPORT IS ONE OF A SERIES. TOPICS COVERED INCLUDE GENERAL PLANT PERFORMANCE, PLANT
CHEMISTRY, PLANT MAINTENANCE, HEALTH AND SAFETY, STATUS OF RESEARCH AND DEVELOPMENT PROGRAMS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*OPERATIONS REPORT, GENERAL + COOLANT CHEMISTRY + CVTR (CAROLINAS VIRGINIA TUBE REACTOR) +
MAINTENANCE AND REPAIR + RADIATION SAFETY AND CONTROL + REACTOR, HEAVY WATER + REACTOR, PRESSURE TUBE +
REACTOR, PRESSURIZED WATER

17-16411
CVTR MONTHLY OPERATING REPORT. OCTOBER 1965
CAROLINAS VIRGINIA NUCLEAR POWER ASSOCIATES, INC., PARR, S. C.
CVNA-247 +. 32 PAGES, OCTOBER 1965, DOCKET NO. 50-144

THIS REPORT IS ONE OF A SERIES ON GENERAL PLANT PERFORMANCE, PLANT CHEMISTRY, PLANT
MAINTENANCE, HEALTH AND SAFETY, STATUS OF R AND D PROGRAM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*OPERATIONS REPORT, GENERAL + COOLANT CHEMISTRY + CVTR (CAROLINAS VIRGINIA TUBE REACTOR) +
MAINTENANCE AND REPAIR + RADIATION SAFETY AND CONTROL + REACTOR, HEAVY WATER + REACTOR, PRESSURE TUBE +
REACTOR, PRESSURIZED WATER

17-16412 ALSO IN CATEGORY 18
LICENSING CHANGES FOR CVTR DECOMMISSIONING.
CAROLINAS VIRGINIA NUCLEAR POWER ASSOCIATES, INC., PARR, S. C.
27 PAGES, JUNE 1967, DOCKET NO. 50-144, AMENDMENT 2

FUEL WILL BE PLACED IN STORAGE BASINS TEMPORARILY. HEAVY WATER IS BEING DRAINED. THE CHANGED
LICENSE IS EFFECTIVE UNTIL 27 NOV. 67, WHEN A FINAL BY-PRODUCT LICENSE WILL BE CONSIDERED FOR
THE REMAINING MATERIAL. NEW TECHNICAL SPECIFICATIONS FOR DECOMMISSIONING PROCESS ENCLOSED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*SAFETY EVALUATION + *TECHNICAL SPECIFICATIONS + CVTR (CAROLINAS VIRGINIA TUBE REACTOR) +

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-16412 *CONTINUED*

REACTOR DECOMMISSIONING EXPERIENCE + REACTOR, HEAVY WATER + REACTOR, PRESSURE TUBE +
REACTOR, PRESSURIZED WATER

17-16430 ALSO IN CATEGORIES 9 AND 18

UNIVERSITY OF MISSOURI (COLUMBIA) SUFFERS CONTROL ROD DAMAGE DURING HANDLING

UNIVERSITY OF MISSOURI, COLUMBIA, MO.

3 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(27) PAGES 19-21 (JULY 3, 1967), DOCKET 50-186

(LETTER JUNE 6.) BECAUSE OF CONTROL-ROD MODIFICATION, THE SUSPENSION POINT FOR THE
CONTROL-BLADE OFFSET MECHANISM WAS SHIFTED TO LIFT AT THE BLADES CENTER OF GRAVITY. HOWEVER
THE REPOSITIONING AFFECTED THE OVERALL BALANCE SO THAT (AS DISCOVERED LATER) DURING THE NEXT
REMOVAL THE BLADE TILTED SLIGHTLY AND JAMMED. THE CRANE MOTOR WAS USED FOR LIFT, AND A
QUARTER-INCH NYLON ROPE FOR CONNECTION. AFTER CHECKING FOR FREEDOM WITH A LONG TOOL, THE
CRANE WAS JOGGED TO LIFT THE ROD.

*CONTROL ROD, SHIM SAFETY + *DAMAGE + FAILURE, DESIGN ERROR + FUEL HANDLING MACHINE +
MODIFICATION, SYSTEM OR EQUIPMENT + REACTOR, FLUX TRAP + REACTOR, RESEARCH

17-16431 ALSO IN CATEGORIES 9 AND 18

UNIVERSITY OF MISSOURI (COLUMBIA) SUFFERS FALSE SCRAMS, DUE TO EXCESSIVE ROD DRIVE FUNCTION

UNIVERSITY OF MISSOURI, COLUMBIA, MO.

2 PAGES, ATOMIC ENERGY CLEARINGHOUSE 13(27) PAGES 18-19 (JULY 13, 1967), DOCKET 50-186

(LETTER JUNE 6.) SINCE INITIAL-LOADING DAYS, RODS HAVE ACCIDENTALLY DROPPED, AND ON SEVERAL
OCCASIONS COULD NOT BE RAISED. THE DRIVE-ASSEMBLY BALL-BUSHINGS ARE SENSITIVE TO THE
SLIGHTEST AMOUNT OF FOREIGN MATERIAL, AND ALL CLEANING AND INCREASED CLEARANCES PROVIDE ONLY
TEMPORARY RELIEF. BELLEVILLE WASHERS ARE APPARENTLY NOT PROVIDING ENOUGH SHOCK ABSORPTION,
SO A RUBBER CUSHION IS ADDED (TO BE INSPECTED AFTER EVERY 40 REACTOR OPERATING HOURS). GE IS
PERFORMING A DESIGN STUDY ON NEW ROD MECHANISMS.

*CONTROL ROD DRIVE + *FAILURE, COMPONENT + FAILURE, SCRAM MECHANISM + MODIFICATION, SYSTEM OR EQUIPMENT +
OPERATING EXPERIENCE + REACTOR, FLUX TRAP + REACTOR, RESEARCH

17-16434 ALSO IN CATEGORIES 9 AND 18

VOLUME II, APPENDIX A - SUMMARY OF OPERATING EXPERIENCE WITH IN-CORE CHAMBER NEUTRON MONITORING SYSTEM.

JERSEY CENTRAL POWER AND LIGHT COMPANY, MORRISTOWN, NEW JERSEY

5 PAGES, FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, JANUARY 25, 1967, DOCKET NO. 50-219

REFERS TO DRESDEN-1 EXPERIENCE WITH MECHANICAL DAMAGE DUE TO REMOVAL EACH REFUELING BUT NO
LONGER BECAUSE PRESENT DESIGN IS PERMANENT INSTALLATION FROM THE BOTTOM. CAMPBELLING TESTS
ARE SUMMARIZED, AND GEAP 4900 (JULY 1965) REFERENCED. TESTS ON MOVEMENT OF RETRACTING
MECHANISMS AND TRAVELING IN-CORE PROBES ARE SATISFACTORY.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*DRESDEN 1 + *INSTRUMENTATION, IN CORE + *OPERATING EXPERIENCE + CORE COMPONENTS, MISCELLANEOUS +
FAILURE, INSTRUMENT + INSTRUMENTATION, CAMPBELLING + Oyster Creek + REACTOR, BOILING WATER +
SAFETY ANALYSIS REPORT, GENERAL

17-16447 ALSO IN CATEGORY 18

FUEL FAILURES AT CVTR

CAROLINAS VIRGINIA NUCLEAR POWER ASSOCIATES, INC., PARR, S. C.

CVNA-275 +. 29 PAGES, FIGURES, 1967, FROM MONTHLY OPERATING REPORT, JANUARY 1967

DEGASIFIER OPERATION AND VENTING OF THE SURGE TANK DID NOT REDUCE PC ACTIVITY FROM PREVIOUS
FAILURES. PC ACTIVITY WAS ABOVE THAT THOUGHT FOR A SINGLE FAILURE, SO A FEDERAL CHECK FOUND
TWO U-TUBES WITH FAILED ELEMENTS. BOTH HAD BEEN MOVED FROM PERIPHERY TO CORE CENTER. LATER,
GRADUAL INCREASE IN PC ACTIVITY (UNLIKE PREVIOUS FAILURES) SIGNALLED FAILURE IN A NEW FUEL
ELEMENT, OPERATING AT 14 KW/FT. NOW, THREE OF THE FOUR SPECIAL ASSEMBLIES HAVE FAILED.
FLOW-RATE DECREASES SEEM TO BE HEAT-FLUX DEPENDENT, SUGGESTING THAT CRUD DEPOSITION ON
HIGH-POWER-DENSITY FUEL IN 3-4 MONTHS MAY BE EQUAL TO SEVERAL YEARS ACCUMULATION ON A
STANDARD FUEL ASSEMBLY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*FAILURE, FUEL ELEMENT + *OPERATIONS REPORT, GENERAL + *PERFORMANCE LIMIT + *SURFACE FILM DEPOSIT +
CVTR (CAROLINAS VIRGINIA TUBE REACTOR) + FAILURE, CLADDING + FLOW ORIFICE OR RESTRICTION +
REACTOR, HEAVY WATER + REACTOR, PRESSURE TUBE + REACTOR, PRESSURIZED WATER

17-16456

DISCHINGER RH

PERFORMANCE EVALUATION OF HEAT EXCHANGERS FOR SODIUM-COOLED REACTORS. QUARTERLY TECHNICAL REPORT, OCTOBER
1, 1965-DECEMBER 31, 1965

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-16456 *CONTINUED*
UNITED NUCLEAR CORP., ELMSFORD, N. Y.
UNC-5142 +. 32 PAGES, TABLES, JANUARY 20, 1966

ONE OF A SERIES OF PROGRESS REPORTS. TOPICS DISCUSSED ARE THE THERMAL-HYDRAULIC PERFORMANCE AND STRUCTURAL-PERFORMANCE EVALUATION OF HEAT EXCHANGERS FOR SODIUM-COOLED REACTORS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*HEAT EXCHANGER + REACTOR, LIQUID METAL COOLED + REACTOR, POWER + RESEARCH AND DEVELOPMENT PROGRAM

17-16457 ALSO IN CATEGORY 5
MINSAPT G + DOPCHIE H + FOURGE L
THE CHOICE OF THE OPERATIONAL PARAMETERS OF THE BR2 REACTOR. HOT SPOT FACTORS. FIRST PART
CENTRE D ETUDE DE L ENERGIE NUCLEAIRE, C.E.N., BRUSSEL, BELGIUM
BLG-119, REV. 1 +. 38 PAGES, FIGURES, 6 REFERENCES, JANUARY, 1964

DEFINES THE HOT-CHANNEL AND HOT-SPOT FACTORS AND GIVES AN ESTIMATED VALUE FOR EACH.

AVAILABILITY - MICROCARD EDITIONS, INC., ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM, WISCONSIN 54669

*ANALYTICAL MODEL + *HEAT TRANSFER ANALYSIS + BR 2 (BELGIAN RESEARCH REACTOR, CEN) + HOT CHANNEL FACTOR + HOT SPOT + REACTOR, RESEARCH

17-16458
MECHANICAL FAILURES OF THE ANTI-CRITICAL GRID OF THE HIGH FLUX BEAM REACTOR
DIVISION OF OPERATIONAL SAFETY, USAEC
5 PAGES, 3 FIGURES, REACTOR OPERATING EXPERIENCES 67-7, MAY 10, 1967

DESCRIBES TWO FAILURES OF THE ANTICRITICAL GRID RESULTING FROM IMPROPER WELDING. (THE GRID IS AN ASSEMBLY OF STEEL BARS WHICH PREVENTS CRITICALITY OF MOLTEN FUEL IN THE EVENT THE CORE MELTS AND RESOLIDIFIES IN THE BOTTOM OF THE VESSEL.) THE FIRST FAILURE WAS IDENTIFIED WHEN A HOLD-DOWN LUG FOR THE GRID WAS FOUND IN THE HEAT EXCHANGER. THE WELD MATERIAL ON THE LUGS WAS NOT PROPERLY DEPOSITED AND LACKED FULL PENETRATION. THE SECOND FAILURE WAS IDENTIFIED AFTER OBSERVING NOISE IN THE VESSEL. AN OUTER BAR OF THE GRID HAD BROKEN LOOSE AS A RESULT OF STRESS CORROSION ENHANCED BY IMPROPER WELDING. ANOTHER GRID IS BEING DESIGNED.

AVAILABILITY - USAEC, DIVISION OF OPERATIONAL SAFETY, WASHINGTON, D. C.

*FAILURE, FABRICATION ERROR + *OPERATING EXPERIENCE + CORE COMPONENTS, MISCELLANEOUS + HFRR (HIGH FLUX BEAM REACTOR) + NOISE ANALYSIS + OPERATIONS REPORT, ANALYSIS + REACTOR, RESEARCH + REACTOR, TEST + STRESS CORROSION + WELDS

17-16460 ALSO IN CATEGORIES 5 AND 6
ISSHIKI N
EFFECTS OF HEAVING AND LISTING UPON THERMO-HYDRAULIC PERFORMANCE AND CRITICAL HEAT FLUX OF WATER-COOLED MARINE REACTORS
SECOND MARINE ENGINE DEVELOPMENT SECTION, SHIP RESEARCH INSTITUTE, MINISTRY OF TRANSPORTATION, MITAKA, TOKYO, JAPAN
25 PAGES, 32 FIGURES, 3 TABLES, 11 REFERENCES, NUCLEAR ENGINEERING AND DESIGN 4(2), PAGES 138-162 (AUGUST 1966)

BURNOUT WAS OBSERVED IN TWO SIMPLIFIED ATMOSPHERIC MODELS OF MARINE WATER-COOLED REACTOR COPE-LOOPS ON WHICH CYCLIC HEAVING MOTIONS AND CONSTANT LISTING WERE APPLIED BY A HEAVING APPARATUS. CYCLIC HEAVING MOTIONS UP TO PLUS OR MINUS 1.1 GRAVITY AMPLITUDE AND 30 DEGREE LIST WERE EMPLOYED. THE FOLLOWING THERMAL AND HYDRAULIC PERFORMANCE WAS OBSERVED - (1) THE CRITICAL HEAT FLUX DECREASED LINEARLY WITH INCREASING HEAVING ACCELERATION, AND WAS ACCOMPANIED BY VIOLENT CYCLIC FLUCTUATIONS OF VOID AND FLOW VELOCITY WHEN THE INLET FLOW VELOCITY WAS LOW. (2) WHEN THE LOOP LISTED, THE CRITICAL HEAT FLUX DECREASED LOCALLY NEAR BOTH SIDES OF THE LOOP CHANNEL. A SHARP CONCENTRATION OF VOID ALSO OCCURRED ON ONE SIDE. LISTING HELPED GENERATE FLUCTUATIONS IN THE SUBCOOLED CONDITION. TO OBTAIN MARINE REACTORS WHICH CAN OPERATE SAFELY ON VERY ROUGH SEAS IT WILL BE NECESSARY TO INCORPORATE THE FOLLOWING SUGGESTIONS INTO THE THERMAL AND HYDRAULIC DESIGN OF THE CORE LOOPS. (1) THE DECREASE OF CRITICAL HEAT FLUX BY HEAVING AND LISTING SHOULD BE INCLUDED AMONG THE HOT-CHANNEL FACTORS. (2) OUTFLOW WATER AT CORE EXITS SHOULD PREFERABLY BE SUBCOOLED BELOW THE CRITICAL SUBCOOLING TEMPERATURE. THIS MEANS THAT THE PWR TYPE IS TO BE PREFERRED FOR SEVERE MARINE USE RATHER THAN THE BWR TYPE. (3) THE CIRCULATING WATER VELOCITY SHOULD BE HIGH. (4) THE TOTAL HEIGHT OF THE CORE AND RISER SHOULD BE LOW.

BURNOUT HEAT FLUX + DNR (DEPARTURE FROM NUCLEATE BOILING) + FLOW DISTRIBUTION + FLOW, TWO PHASE + HEAT TRANSFER ANALYSIS + HEAT TRANSFER EXPERIMENT + MODEL TESTING + REACTOR, BOILING WATER + REACTOR, MARITIME + REACTOR, PRESSURIZED WATER + TRANSFER FUNCTION + VOID COEFFICIENT

17-16472 ALSO IN CATEGORY 9
SELECTED OPERATING EXPERIENCE - GARIGLIANO
ENTE NAZIONALE PER L-ENERGIA ELETTRICA, ROMO, ITALY
EURAE-1653 + EUR-2851 +. 8 PAGES, RESEARCH PROGRAM FOR THE GARIGLIANO NUCLEAR POWER PLAN. QUARTERLY

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-16472 *CONTINUED*
REPORT NO. 0, APRIL 1, 1966

(TASK 1) DATA LOGGING COMPUTER MEMORY WAS REPLACED. (TASK 2) REACTOR-VESSEL IRRADIATION SPECIMENS REMOVAL WAS DELAYED BECAUSE OF UNFORSEEN MAINTENANCE. (TASK 3) INSTRUMENTED FUEL ASSEMBLIES WERE REMOVED BECAUSE OF UNFORSEEN MAINTENANCE. ONLY 3 OF THE 4 GROUPS OF MOVABLE IN-CORE ION CHAMBERS WILL BE INSTALLED, AND WITHOUT THE WIRE-IRRADIATION TUBE. CALIBRATION WILL BE DONE WITH THE IN-CORE CHAMBER ITSELF. MAINTENANCE WORK INCLUDED INSPECTION OF THE BOTTOM OF THE VESSEL.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF STANDARDS, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*PRESSURE VESSEL + DATA PROCESSING + EURATOM + EXAMINATION + INSTRUMENTATION CALIBRATION + INSTRUMENTATION, IN CORE + ITALY + OPERATIONS REPORT, ANALYSIS + REACTOR, BOILING WATER

17-16478 ALSO IN CATEGORY 18
MONTHLY OPERATING REPORT, JUNE, 1965
CAROLINAS VIRGINIA NUCLEAR POWER ASSOCIATES, INC.
CVNA-239 +. 36 PAGES, JUNE 1965

ONE IN A SERIES OF PROGRESS REPORTS. TOPICS INCLUDE GENERAL PLANT PERFORMANCE, PLANT CHEMISTRY, PLANT MAINTENANCE, HEALTH AND SAFETY, STATUS OF RESEARCH AND DEVELOPMENT PROGRAMS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*OPERATIONS REPORT, GENERAL + COOLANT CHEMISTRY + CVTR (CAROLINAS VIRGINIA TUBE REACTOR) + MAINTENANCE AND REPAIR + RADIATION SAFETY AND CONTROL + REACTOR, HEAVY WATER + REACTOR, PRESSURE TUBE + REACTOR, PRESSURIZED WATER

17-16482
MCENHILL JJ + RODGERS AL + TODD MCJ
THE RESEARCH REACTOR HERALD AT AWRE ALDERMASTON
ATOMIC WEAPONS RESEARCH ESTABLISHMENT, ALDERMASTON, ENGLAND
10 PAGES, 10 FIGURES, 18 REFERENCES, JOURNAL BRITISH NUCLEAR ENERGY SOCIETY 4(4) PAGES 344-353 (OCT. 1965)

MODIFICATIONS IN 1963 TO HERALD IN ORDER TO ACCOMMODATE ITS PARTIAL USE BY UNIVERSITIES INCLUDE MOUNTING OF CORE ON A BOX FROM MEMBERS ATTACHED TO SIDES OF REACTOR TANK AND SUPPORT OF CONTROL-ROD-DRIVE MOTORS AND GEAR BOXES BY A BRIDGE ABOVE THE REACTOR TANK. REACTOR CORE IS DIVIDED INTO REGIONS FOR REACTIVITY CONTROL AND FOR EXPERIMENTS, AND THE SYSTEM NOW IS USED FOR IN-CORE IRRADIATION OF MATERIALS IN ADDITION TO PROVIDING NEUTRON BEAMS. MOST OF THE ARTICLE DISCUSSES RESEARCH TOPICS SUCH AS INTERACTIONS OF NEUTRONS WITH VARIOUS LIQUIDS, DEFECT SCATTERING OF LONG-WAVELENGTH NEUTRONS BY CRYSTALS, NEUTRON DIFFRACTION BY TIME-OF-FLIGHT, NEUTRON CRYSTAL SPECTROMETER (ALL USING A COLD NEUTRON SOURCE), FISSION STUDIES USING A LARGE LIQUID SCINTILLATOR, POWER-REACTOR DATA, AND MATERIALS TESTING BY CEGB.

*IN PILE LOOP + *MODIFICATION, SYSTEM OR EQUIPMENT + CONTROL ROD DRIVE + IRRADIATION TESTING + REACTOR, POOL TYPE + REACTOR, RESEARCH + UNITED KINGDOM

17-16520
RANF RW + CARNALL WT + STEWART DC
LANTHANUM CONTAMINATION AT CP5
ARGONNE NATIONAL LABORATORY, ILL
1 PAGE, 1 FIGURE, NUCLEAR APPLICATIONS 3(5), PAGE 270 (MAY, 1967)

A HALF-GRAM SAMPLE OF LANTHANUM OXIDE, OVEN DRIED AT 110 C AND SEALED IN A QUARTZ CAPSULE, WAS IRRADIATED FOR 1.5×10^{10} TO THE 19TH N/CM SQ. PREVIOUS SAMPLES HAD BEEN SUCCESSFULLY IRRADIATED. WHEN THE SAMPLE WAS REMOVED, THE CONTAINER WAS DISCOVERED RUPTURED, AND CONSIDERABLE CONTAMINATION OCCURRED. STUDIES SHOWED A DRASTIC WEIGHT LOSS IN LA203 AT 300 C (AS TWO WATERS PER MOLECULE WERE LOST) AND AT 450 C (ONE WATER PER MOLECULE LOST), AND A NET 14% WEIGHT LOSS. THE ACCIDENT PROBABLY WAS CAUSED BY RADIOLYTIC GAS DECOMPOSITION DURING IRRADIATION, RUPTURING AN IMPERFECT TUBE.

*INCIDENT, ACTUAL, GENERAL + *LANTHANUM + *OXIDE + *RADIOLYTIC GAS + CP-5 (CHICAGO PILE NO. 5) + IN PILE LOOP + PRESSURE, INTERNAL + REACTOR, AEC OWNED + REACTOR, HEAVY WATER + REACTOR, RESEARCH + SAFETY REVIEW (OPERATIONS, EXPERIMENTS)

17-16521
SELECTED BIG ROCK POINT OPERATOR EXPERIENCES
CONSUMERS POWER COMPANY, CHARLEVOIX, MICHIGAN
10 PAGES, DECEMBER 1966, DOCKET NO. 50-155, FROM BIG ROCK POINT MONTHLY OPERATING REPORT NO. 51

NO. 2 RECIRCULATING PUMP WAS REMOVED FROM ITS CASING WHILE ON A STAND INSIDE A TANK OF WATER THAT PROVIDED 1/2 IN. OF STEEL AND 1 FT OF WATER SHIELDING. MAXIMUM CONTACT RADIATION LEVELS WERE 9 R/HR. THE BEARING HOUSING HAD BEEN INSTALLED INVERTED, PRACTICALLY CUTTING OFF BEARING COOLING AND LUBRICATION FLOW. GROSS FAILURE OF THE TUNGSTEN CARBIDE RING CAUSED OTHER GALLING AND FAILURES. THE SEAL-DRAIN PIPES WERE FITTED WITH SWAGELOK UNIONS INSTEAD OF

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-16521 *CONTINUED*
BEING REWELDED, TO ELIMINATE ABOUT 2.4 R OF EXPOSURE DURING EACH REMOVAL.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*OPERATIONS SUMMARY FOR AEC + BIG ROCK POINT + FAILURE, FABRICATION ERROR + MAINTENANCE AND REPAIR + PUMP + RADIATION SAFETY AND CONTROL + REACTOR, BOILING WATER + SEAL

17-16522 ALSO IN CATEGORY 9
SELECTED BIG ROCK POINT OPERATING EXPERIENCE
CONSUMERS POWER COMPANY, CHARLEVOIX, MICHIGAN
17 PAGES, JANUARY 1967, DOCKET NO. 50-155, FROM BIG ROCK POINT MONTHLY OPERATING REPORT NO. 52

REACTOR SCRAMED ON JANUARY 20 DUE TO PRESSURE TRANSIENT CAUSED BY ERRATIC 1PR. STARTUP WAS DELAYED WHEN ROD E-4 COULD NOT BE WITHDRAWN. A 1/2-IN. HEX NUT WAS FOUND IN THE VESSEL. PRELIMINARY MEASUREMENTS SHOWED VERY LITTLE INCREASE IN CRUD DEPOSIT ON D-2 AND D-19.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*OPERATIONS SUMMARY FOR AEC + BIG ROCK POINT + FAILURE, SCRAM MECHANISM + REACTOR TRANSIENT + REACTOR, BOILING WATER

17-16524
BIG ROCK POINT MONTHLY OPERATING REPORT NO. 54
CONSUMERS POWER COMPANY, CHARLEVOIX, MICHIGAN
19 PAGES, MARCH 1967, DOCKET NO. 50-155

PROGRESS REPORT, ONE OF A SERIES. THESE REPORTS USUALLY CONTAIN DATA ON (III) CORE PERFORMANCE, (IV) RESEARCH AND DEVELOPMENT PROGRAM, (V) CHEMISTRY, (VI) RADIATION PROTECTION, (VII) PLANT MAINTENANCE AND OUTAGES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*OPERATIONS SUMMARY FOR AEC + BIG ROCK POINT + COOLANT CHEMISTRY + MAINTENANCE AND REPAIR + RADIATION SAFETY AND CONTROL + REACTOR, BOILING WATER + RESEARCH AND DEVELOPMENT PROGRAM

17-16527
BASKIN KP + DIETZ JF + MCENTEE JR + VON HOLLEN PJ
UNIQUE ASPECTS OF THE SAN ONOFRE NUCLEAR PLANT
SOUTHERN CALIFORNIA EDISON COMPANY + SAN DIEGO GAS + ELECTRIC COMPANY + BECHTEL CORPORATION + WESTINGHOUSE ELECTRIC CORPORATION
22 PAGES, 6 FIGURES, PRESENTED AT THE AMERICAN POWER CONFERENCE ANNUAL MEETING, CHICAGO, ILLINOIS, APRIL 25-27, 1967

UNIQUE ASPECTS INCLUDE NO COOLANT-LOOP ISOLATION VALVES, PROGRAMMED AVERAGE CORE-COOLANT TEMPERATURE TO MAINTAIN 710-PSI STEAM PRESSURE, ROD-CLUSTER CONTROL ELEMENTS (SHORTENING REACTOR VESSEL 6 FT, SINCE FOLLOWERS NOT NEEDED), LARGE (70,000 GPM) LIMITED-LEAKAGE PUMPS (TO MAINTAIN FLOW FOR 10 SEC AFTER LOSS OF POWER), COOPERATION WITH AEC TECHNICAL-SPECIFICATIONS TASK FORCE FOR THE FIRST NEW-MODEL POWER-REACTOR TECH. SPECS. WITH THE THREE 4000-HP PUMPS, IT WAS POSSIBLE TO REACH OPERATING TEMPERATURE AND ROLL THE TURBINE.

AVAILABILITY - AMERICAN POWER CONFERENCE, E. R. WHITEHEAD, SECRETARY, ILLINOIS INSTITUTE OF TECHNOLOGY, CHICAGO, ILLINOIS

*REACTOR DESCRIPTION + CONTROL ROD, SHIM SAFETY + PUMP + REACTOR, PRESSURIZED WATER + SAN ONOFRE + TECHNICAL SPECIFICATIONS + TEST, PREOPERATIONAL

17-16529
RADCLIFFE JR + HILL EE + CUMMINGS GE
THE LIVERMORE POOL TYPE REACTOR (LPTR)
UNIVERSITY OF CALIFORNIA, LIVERMORE. LAWRENCE RADIATION LAB.
UCRL-4919 (REV. 2) +. 54 PAGES, 22 FIGURES, 3 TABLES, JANUARY 1967

UPDATED DESCRIPTION (JANUARY 1967) FOR 3-MW OPERATIONS. TYPICAL POOL TYPE EXCEPT FOR 6 FT 7 IN. DIAMETER CYLINDRICAL POOL. GIVES IRRADIATION FLUX DATA AT 3 MW.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*REACTOR DESCRIPTION + BROWNS FERRY + REACTOR, BOILING WATER + REACTOR, POOL TYPE

17-16531 ALSO IN CATEGORY 11
PENLAND JR
EXPLOSION SUPPRESSION BY ROOM INERTING
LOS ALAMOS SCIENTIFIC LAB., N. MEXICO

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-16531 *CONTINUED*

LA-DC-8592 + CONF-670201-2 +. 5 PAGES, FROM SYMPOSIUM ON THE IMPACT OF LOW COST NUCLEAR POWER AND CHEMICAL INDUSTRY, HOUSTON, TEXAS, FEBRUARY 22, 1967

ROOM VOLUMES GREATER THAN 100,000 CU. FT ARE INERTED, BOTH CONCRETE (HIGH PRESSURE) AND SHEET METAL (LOW-PRESSURE ROOMS.) LEAK SEALING AND RELIEF-VALVE CLOSURE WERE PROBLEMS. A SPECIAL RELIEF DEVICE CONSISTS OF ALWAYS-OPEN PNEUMATICALLY OPERATED LOUVERS, CLOSED AFTER A PRESSURE SURGE BLOWS OUT A DOWNSTREAM PANEL - THUS THE SURGE IS RELEASED, BUT HYDROGEN IS CONTAINED TO PREVENT EXPLOSURE MIXING OUTSIDE THE BUILDING. THE SYSTEM HAS BEEN IN OPERATION FOR 6 YEARS, AND ABOUT 200 TESTS ON NUCLEAR ROCKETS PERFORMED. MANY LEAKS WITH HYDROGEN AS HIGH AS 12% HAVE NOT PRODUCED FIRE OR EXPLOSION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*CONTAINMENT ATMOSPHERE, INERT + *CONTAINMENT PENETRATION, CLOSURE OF + EXPLOSION + HYDROGEN + NUCLEAR ROCKET + OPERATING EXPERIENCE + VALVE

17-16533 ALSO IN CATEGORY 15

MOE HJ + LASUK SR + SCHUMACHER MC
RADIATION SAFETY TECHNICIAN TRAINING COURSE
ARGONNE NATIONAL LABORATORY, ARGONNE, ILLINOIS
ANL-7291 +. 359 PAGES, 83 FIGURES, 6 TABLES, 38 REFERENCES, SEPTEMBER 1966

GENERALIZED TREATMENT WITH OCCASIONAL QUICK-MATHEMATICS CALCULATIONS (E.G., BUILDUP FACTOR). MOST OF THE MATERIAL CONCERNS INSTRUMENTS AND MONITORING DEVICES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*HEALTH PHYSICS TRAINING + MONITOR, RADIATION, GENERAL + PERSONNEL PROTECTIVE DEVICE + RADIATION SAFETY AND CONTROL

17-16534 ALSO IN CATEGORY 18

ADAMS RM + GLASSNER A
EBR II POWER COEFFICIENT, AARR LOSS OF FLOW STUDIES
ARGONNE NATIONAL LAB., ARGONNE, ILLINOIS
ANL-7329 +. 103 PAGES, 28 FIGURES, 29 TABLES, 23 REFERENCES, FROM REACTOR DEVELOPMENT PROGRAM PROGRESS REPORT, APRIL 1967.

(PAGE 2-4) EBR-II STARTUP WITH STAINLESS-STEEL ASSEMBLIES REPLACING SOME DEPLETED URANIUM SHOWED A DECREASING POWER COEFFICIENT, BUT TESTS SHOWED THAT IT INCREASED ABOVE HALF POWER. (PAGE 75-82) AARR PRIMARY COOLANT SYSTEM BURSTING PRESSURE/STRAIN-ENERGY ARE CALCULATED AS 5000 PSI/524 MW SEC, AND THE VESSEL IS STRONGER. A 163-MW SEC NUCLEAR EXCURSION FOLLOWED BY A 1300-MW SEC METAL-WATER REACTION, WOULD GIVE A 4270-PSI VESSEL PRESSURE THAT EQUALIZES AT 3300 PSI. FLOW-CASTDOWN ANALOG-COMPUTER STUDY SHOWS PUMP MOTOR FLOW IS NECESSARY TO PREVENT HIGH FUEL-ELEMENT TEMPERATURES AT END OF LIFE. HOOKED-END BEAM-HOLE SEAL RINGS WERE ACCEPTABLY LEAK-RATE TESTED AT 55 PSI DELTA P.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*ACCIDENT, LOSS OF FLOW + *BEAM HOLE + *PERFORMANCE LIMIT + *POWER COEFFICIENT + *PRESSURE VESSEL + *SEAL + AARR (ARGONNE ADVANCED RESEARCH REACTOR) + EBR 1 AND 2 (EXPERIMENTAL BREEDER REACTORS) + METAL WATER REACTION + REACTIVITY EFFECT, ANOMALOUS + REACTOR, AEC OWNED + REACTOR, BREEDER + REACTOR, FAST + REACTOR, FLUX TRAP + REACTOR, LIQUID METAL COOLED + REACTOR, LIQUID METAL COOLED + TEST, LEAK RATE

17-16551 ALSO IN CATEGORY 7

BENEDICT RA
N S SAVANNAH CONTAINMENT-FILTER TESTING
FIRST ATOMIC SHIP TRANSPORT, INC., HOBOKEN, N. J.
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(28) PAGES 6-7 (JULY 10, 1967), DOCKET 50-238

(LETTER, JUNE 27.) SECOND AND THIRD TESTS ON SHIPBOARD TESTING OF FILTERS USING NONRADIOACTIVE IODINE WERE MEANINGLESS BECAUSE OF IODINE CONTAMINATION OF THE COPPER BEADS. FURTHER INVESTIGATION SHOWED IODINE CONTAMINATION THROUGHOUT THE IODINE-FREE LABORATORY AT HARVARD. THE METHOD CANNOT BE CONSIDERED FEASIBLE FOR SHIPBOARD USE. HACI WILL CONTINUE LAB WORK. WESTINGHOUSE WILL TEST FAILED FILTERS TO DETERMINE IF GASKET LEAKAGE WAS AT FAULT, AND IF THE FREON-112 TECHNIQUE IS SUITABLE FOR SHIPBOARD USE.

*TEST, FILTER SYSTEM + CONTAMINATION + FILTER EFFICIENCY + IODINE + N S SAVANNAH + REACTOR, PRESSURIZED WATER

17-16552 ALSO IN CATEGORY 13

NFS REQUESTS LICENSE CHANGE ON MAXIMUM PLUTONIUM QUANTITY
NUCLEAR FUEL SERVICES, INC., W. VALLEY, NEW YORK
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(28) PAGE 8 (JULY 10, 1967), DOCKET NO. 70-984

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-16552 *CONTINUED*

(LETTER, JUNE 15.) NFS REQUESTS CHANGE TO SPECIFY 10.5 LITERS OF PLUTONIUM SOLUTION AS THE MAXIMUM ALLOWABLE AMOUNT. THE MEASURING TANK HOLDS EXACTLY 10 LITERS, BUT THE VALVE ARRANGEMENT ALLOWS A SLIGHT OVERAGE UP TO 10.21. COMPLIANCE INSPECTORS INTERPRET THE LICENSE TO MEAN THAT ANY VOLUME IN EXCESS OF 10 IS A VIOLATION, WHILE WE INTERPRET IT TO MEAN SOME OVERAGE, SINCE IT WAS WRITTEN TEN AND NOT 10.0. NORMALLY THIS COULD BE EXPRESSED AS 10 PLUS OR MINUS 0.5 LITER, AND THE ACCEPTABLE MAX. VOLUME AS 10.5 LITERS.

*FUEL STORAGE + *PLUTONIUM + INSPECTION AND COMPLIANCE + NFS (NUCLEAR FUEL SERVICES)

17-16582

HADDAM NECK OPERATING LICENSE AND TECHNICAL SPECIFICATIONS
UNITED STATES ATOMIC ENERGY COMMISSION, WASHINGTON, D. C., DIVISION OF REACTOR LICENSING
43 PAGES, FIGURES, TABLES, JUNE 30, 1967, DOCKET NO. 50-213

TECHNICAL SPECIFICATIONS LIST APPLICABILITY, OBJECTIVES, AND SPECIFICATIONS TO SYSTEMS AND PROCEDURE IN (SECTION 1). DESIGN FEATURES (SECTION 2). SAFETY LIMITS AND MAXIMUM SAFETY SETTINGS (SECTION 3). LIMITING CONDITION FOR OPERATION (SECTION 4). SURVEILLANCE REQUIREMENTS (SECTION 5). ADMINISTRATIVE CONTROL. GRAPHS ARE USED TO PRESENT ALLOWABLE PRESSURE-VS-TEMPERATURE REGIONS FOR REACTOR COOLANT SYSTEM, ALLOWABLE PRESSURE-VS-INLET TEMPERATURE FOR VARIOUS FLOWS AND POWERS, AND MINIMUM ROD-GROUP POSITION VS POWER LEVEL.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*TECHNICAL SPECIFICATIONS + HADDAM NECK + REACTOR, PRESSURIZED WATER

17-16600

ALSO IN CATEGORY 5

MCPHERSON GD

DRYOUT IN BOILING WATER REACTORS

ATOMIC ENERGY OF CANADA LIMITED, CHALK RIVER, ONTARIO

AEC-2876 + CONF-670522-5 +. 10 PAGES, 4 FIGURES, APRIL 1967, PRESENTED AT THE CANADIAN NUCLEAR ASSOCIATION ANNUAL CONFERENCE, MONTREAL, MAY 1967

NONTECHNICAL DISCUSSION. OPERATION OF FUEL ASSEMBLIES AT HIGH COOLANT QUALITY SHOULD BE CHEAPER. THE COMBINATION OF DESIGN PARAMETERS AT WHICH DRY-SHEATH OPERATION (DRYOUT) BEGINS IS AN IMPORTANT BOUNDARY TO THE REACTOR DESIGNER. MACBETH AND BURNETT OF UKAEA SUCCEEDED IN RELATING THE FACTORS AFFECTING DRYOUT, AND THEIR CORRELATION IS USED AT ORNL TO PREDICT THE ONSET OF DRYOUT, WITH EXPERIMENTALLY FOUND CONSTANTS. COMPUTER PROGRAMS ARE BEING DEVELOPED TO MAKE THE COMPLICATED RADIAL DISTRIBUTION OF STEAM AND WATER CALCULATIONS. THE CHEAPER FREON EXPERIMENT BEING USED INSTEAD OF WATER-STEAM MIXTURES MAY ALLOW MORE EXPERIMENTS. ONCE THE CONTRIBUTING FACTORS ARE UNDERSTOOD, IT SHOULD BE POSSIBLE TO PREDICT DRYOUT CONDITIONS FOR ANY FUEL CONFIGURATION, AND THE FUTURE COULD INCLUDE POSTDRYOUT OPERATIONS AND HIGHER OUTLET QUALITIES THAN NOW THOUGHT POSSIBLE.

AVAILABILITY - ATOMIC ENERGY OF CANADA, LTD., CHALK RIVER, ONTARIO, CANADA, \$0.50 COPY

*HEAT FLUX, DRYOUT + *HEAT TRANSFER CORRELATION + CANADA + HEAT TRANSFER EXPERIMENT + REACTOR, BOILING WATER

17-16650

COLE TE

HFIR DESIGN AND OPERATION

OAK RIDGE NATIONAL LABORATORY, OAK RIDGE

32 PAGES, 9 FIGURES, 7 TABLES, 13 REFERENCES, AEC-ENEA SEMINAR ON INTENSE NEUTRON SOURCES, SANTA FE, N. MEXICO, SEPT. 19-23, 1966

PRESENTS INFORMATION ON THE STARTUP PROGRAM, DEVELOPMENT, CONSTRUCTION AND OPERATING COSTS, PLANS FOR USE OF EXPERIMENTAL FACILITIES, AND THE POSSIBILITY OF ACHIEVING A HIGHER NEUTRON FLUX WITH A REACTOR OF THIS TYPE. REACTIVITY MEASUREMENTS MADE DURING THE TEST PERIOD INCLUDE SHUTDOWN MARGINS, CONTROL-ROD WORTHS, TEMPERATURE COEFFICIENTS, EFFECTS OF EXPERIMENT FACILITIES, FLOW AND PRESSURE EFFECTS, AND VOID COEFFICIENTS.

AVAILABILITY - T. E. COLE, HIGH FLUX ISOTOPE REACTOR, OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE

*OPERATING EXPERIENCE + *REACTOR DESCRIPTION + *REACTOR STARTUP EXPERIENCE, INITIAL + ECONOMICS + HFIR (HIGH FLUX ISOTOPE REACTOR) + MEASUREMENT, REACTIVITY + REACTIVITY COEFFICIENT + REACTOR STARTUP TESTING + REACTOR, AEC OWNED + REACTOR, FLUX TRAP + REACTOR, RESEARCH + REACTOR, TEST + TEST, PHYSICS

17-16656

ATCOR INC. CITED BY DIVISION OF COMPLIANCE FOR NON-COMPLIANCE

NUCLEAR FUEL SERVICES, NEW YORK

1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(29), PAGE 26 (JULY 17, 1967)

ATCOR IS CITED FOR RESIN-HANDLING OPERATION DECEMBER 22, 1966, AT COMBUSTION ENGINEERING, WINDSOR, CONNECTICUT, BECAUSE THEIR LICENSE 31-11640-1 AUTHORIZES ATCOR ONLY TO RECEIVE AND POSSESS RADIOACTIVE MATERIAL.

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-16656 *CONTINUED*
+INSPECTION AND COMPLIANCE + RESIN

17-16657 ALSO IN CATEGORIES 13 AND 15
NUCLEAR FUEL SERVICES PLUTONIUM INHALATION
NUCLEAR FUEL SERVICES, NEW YORK
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(29), PAGE 26 (JULY 17, 1967), DOCKET NO. 50-201

(JUNE 7) ANALYSIS RECEIVED JUNE 6, 1967. A URINE SPECIMEN TAKEN APRIL 18, 1967, SHOWED 34 DPM PU/24 HRS. THE WORKER RECALLED THAT DURING HOT-CELL WORK, HE LET A DOOR SLAM CLOSED, CUTTING HIS AIR HOSE. HE WAS WITHOUT FRESH AIR FOR 2-3 MIN. WE ESTIMATE HIS UPTAKE TO BE EQUAL TO 90% OF THE BODY BURDEN OF PLUTONIUM.

*INHALATION + *PERSONNEL EXPOSURE, RADIATION + *PLUTONIUM + FAILURE, GENERAL + HOT CELL + MAINTENANCE AND REPAIR + NFS (NUCLEAR FUEL SERVICES) + PERSONNEL PROTECTIVE DEVICE + RADIOCHEMICAL PLANT SAFETY + RADIOCHEMICAL PROCESSING

17-16658 ALSO IN CATEGORY 15
RADIOGRAPHY INCIDENT AT QUAKER ALLOY CASTING. MAY 17, 1967
QUAKER ALLOY CASTING CO., MYERSTOWN, PA.
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(29), PAGE 27 (JULY 17, 1967)

(JUNE 12) A RADIOGRAPHER ENTERED THE EXPOSURE CELL UNAWARE THAT THE 450-CURIE CO-60 SOURCE HAD SEPARATED FROM THE CABLE. HIS SURVEY METER HAD A DEAD BATTERY, BUT HE HAD CHECKED HIS DOSIMETER, WHICH HE FOUND TO BE OFF SCALE. FILM-BADGE MEASURED 10 REMS. CORRECTIVE ACTION - (1) ONLY FRESH BATTERIES WILL BE USED, RECHARGING WILL BE DISCONTINUED, (2) A SEQUENCE COUNTER WILL RECORD THE CYCLE OF OPERATION, (3) RADIATION DETECTORS AND LIGHTS ORIGINALLY SUPPLIED WILL BE REMOVED, (4) EXPOSURE CELL-DOORS WILL BE INTERLOCKED SO AN ALARM SOUNDS IF DOOR IS OPENED WITH SOURCE EXPOSED.

*PERSONNEL EXPOSURE, RADIATION + *RADIOGRAPHY + FAILURE, INSTRUMENT + FAILURE, OPERATOR ERROR + INSTRUMENTATION, INTERLOCK + MONITOR, RADIATION, PERSONNEL + RADIATION SAFETY AND CONTROL

17-16659
RICHARDSON X-RAY, ALHAMBRA, CITED FOR NON-COMPLIANCE
RICHARDSON X-RAY SERVICE, ALHAMBRA, CALIFORNIA
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(29), PAGES 27-28 (JULY 17, 1967)

(MAY 17) A FEBRUARY AND A MARCH 13TH INSPECTION REVEALED 9 ITEMS OF NONCOMPLIANCE. A WELDERS HELPER WAS ALLOWED TO PLACE FILM ON PIPE AND THEN REMAIN NEAR THE 11-CURIE IR-192 SOURCE DURING EXPOSURE

*INSPECTION AND COMPLIANCE + *RADIOGRAPHY + FAILURE, ADMINISTRATIVE CONTROL + PERSONNEL EXPOSURE, RADIATION

17-16660
T. R. SCHWALM CITED FOR NON-COMPLIANCE
THEODORE R. SCHWALM, INC., LANCASTER, PA.
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(29), PAGES 28-29 (JULY 17, 1967)

(MAY 11) A JANUARY 10 INSPECTION RESULTED IN CITATION ON 5 ITEMS OF TRITIUM CONTAMINATION, DISCHARGE, AND SURVEY PRACTICES. RESULTS OF SMEAR SURVEYS ARE NOT AVAILABLE FOR A WEEK AFTER PERFORMED.

*INSPECTION AND COMPLIANCE + RADIATION SAFETY AND CONTROL + TRITIUM

17-16661 ALSO IN CATEGORY 14
U.S. RADIUM CORPORATION REPORTS EXCESSIVE STACK DISCHARGE OF TRITIUM
UNITED STATES RADIUM CORPORATION, RIDGEBURG, PA.
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(29), PAGE 29 (JULY 17, 1967)

(MAY 9) ON APRIL 13/14 AND 26TH, SOLUBLE TRITIUM WAS DISCHARGED ABOVE MPC EVEN THOUGH NO OPERATIONS WERE PERFORMED AND VACUUM PUMP IS VENTED THROUGH DRYING COLUMNS. THE PROBLEM WILL BE STUDIED FURTHER.

*AIRBORNE RELEASE + *STACK + *TRITIUM

17-16744
MIRONE M + SANTASILIA F + COLLING A
RESULTS OF THE SPECIAL TESTS CONDUCTED AT THE GARIGLIANO BWR POWER STATION UNDER THE RESEARCH AND DEVELOPMENT PROGRAM
ENTE NAZIONALE PER L ENERGIA ELETTRICA, ITALY
12 PAGES, 10 FIGURES, 3 TABLES, 4 REFERENCES, ENERGIA NUCLEARE 14(4), PAGE 205-216 (APRIL 1967)

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-16744 *CONTINUED*

VARIOUS HIGH-VOID AND LOW-INLET SUBCOOLING TESTS WERE PERFORMED ALONG WITH ROD-OSCILLATION TRANSFER-FUNCTION MEASUREMENTS. THE REACTOR OPERATED AT 75% POWER WITH NATURAL CIRCULATION TO GIVE 42% AVERAGE VOID FRACTION, AND COULD BE OPERATED SO AT FULL POWER WITH REVISED WATER-LEVEL SCRAMS. THE PLANT OPERATED WITH RECIRCULATION/STEAM FLOW AS LOW AS 5/1, INDICATING THAT JET PUMPS COULD BE FED DIRECTLY WITH FEEDWATER. HIGH VOIDS REDUCED THE FLUX PEAK CAUSED BY RODS INSERTED IN LOWER HALF OF THE REACTOR, INCREASING THE MCHF RATIO. FLUX PLOTS BY IN-CORE INSTRUMENTS AND ON-LINE COMPUTER AGREED.

*OPERATING EXPERIENCE + *TEST, PLANT RESPONSE + CIRCULATION, NATURAL (LOOPS AND REACTORS) + EURATOM + INSTRUMENTATION, IN CORE + ITALY + OSCILLATOR, REACTIVITY + PUMP, JET + REACTOR STABILITY + REACTOR, BOILING WATER + TRANSFER FUNCTION

17-16749

LEDoux A

CHEMICAL ELIMINATION OF ALUMINIA IN SUSPENSION IN HEAVY WATER OF NUCLEAR REACTORS

CENTRE D'ETUDES NUCLEAIRES, SACLAY, FRANCE

CEA-R-2990 +. 90 PAGES, FIGURES, 9 TABLES, FEBRUARY 1967, IN FRENCH

CORROSION OF ALUMINUM IN CONTACT WITH THE MODERATING WATER FORMS AN ALUMINA HYDROSOL WHICH CAN HAVE AN ADVERSE EFFECT ON THE OPERATION OF THE REACTOR. SEVERAL METHODS HAVE BEEN USED TO COUNTERACT THIS. THE METHOD PROPOSED HERE IS ELIMINATION OF THE ALUMINIUM BY DISSOLUTION AND SUBSEQUENT FIXATION IN THE IONIC FORM ON MIXED-BED ION-EXCHANGE RESINS. TO DO THIS, THE PARAMETERS AND THE VALUES OF THESE PARAMETERS MOST FAVORABLE TO THE DISSOLUTION PROCESS HAVE BEEN DETERMINED. IF THE MODERATOR IS HEAVY WATER, THE DEUTERATED ACID CAN BE PREPARED BY CONVERTING A SOLUTION IN HEAVY WATER TO A SALT OF THE ACID USING A DEUTERATED CATIONIC RESIN.

AVAILABILITY - MICROCARD EDITIONS, INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN 54669

*CORROSION + COOLANT CHEMISTRY + COOLANT PURIFICATION SYSTEM + FRANCE + ION EXCHANGE + REACTOR, HEAVY WATER

17-16752

PICONE LF + FLETCHER WD

THE POST-IRRADIATION EXAMINATION OF SAXTON FUEL CLADDING CORROSION PRODUCTS

WESTINGHOUSE ELECTRIC CORP., PITTSBURGH, PA.

WCAP-3269-57 +. 2 PAGES, PAGES 67-68, MARCH 1966

(1) A COTTON-MATTER INCIDENT (REMAINS OF A FIBROUS FILTER OR SOMETHING LODGED IN A FUEL ELEMENT DURING INITIAL OPERATION) LED TO PREMATURE SURFACE-FILM DEPOSITS. (2) INJECTION OF $Fe(OH)_2$ DURING OPERATION SHOWED LITTLE EFFECT ON BUILDUP IN ASSEMBLY E. HOWEVER, ON RESTART, ASSEMBLY G SOON SHOWED A HIGH DELTA T, AND WAS FOUND TO HAVE A HEAVY DEPOSITION. SUPPOSITION IS THAT INJECTED HYDROXIDE DEPOSITED UNIFORMLY BUT THAT AGING CONVERTED IT TO MAGNETITE, SO WHEN SOME WAS REMOVED BY THE COOLDOWN, IT PREFERENTIALLY DEPOSITED ON THE NUCLEATE BOILING SURFACES OF ASSEMBLY G, REDUCING FLOW.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*FLOW BLOCKAGE + *INCIDENT, ACTUAL, GENERAL + FAILURE, GENERAL + REACTOR, PRESSURIZED WATER + SAXTON + SURFACE FILM DEPOSIT

17-16754

PICONE LF + FLETCHER WD

THE POST-IRRADIATION EXAMINATION OF SAXTON FUEL CLADDING CORROSION PRODUCTS

WESTINGHOUSE ELECTRIC CORP., PITTSBURGH, PA., ATOMIC POWER DIV.

WCAP-3269-57 +. 81 PAGES, 34 FIGURES, 12 TABLES, 6 REFERENCES, MARCH 1966

VISUAL EXAMINATION AND PHOTOGRAPHS OF ZIRCALOY AND STAINLESS CLAD ELEMENTS DURING REFUELING, TOGETHER WITH HOT-CELL EXAMINATION, INDICATES - (1) CRUD DEPOSITION NOT SIGNIFICANTLY DIFFERENT ON ZIRCALOY AND SS CLAD. (2) DESPITE KATZ AND HOPKINS IN-PILE-LOOP DATA, DEPOSITION OCCURRED ONLY IN AREAS ABOVE 300,000 BTU/HR-SQ. FT WHICH WERE IN NUCLEATE BOILING AND ONLY WHEN COOLANT-CRUD SOURCE WAS HIGH, E.G., DURING COOLDOWNS, ROD MOVEMENTS, AND SPECIAL TESTS. (3) DURING HIGH-PH CHEMICAL-SHM OPERATION CHROMIUM AND MANGANESE DEPOSITION RATES INCREASED. (4) SPECIAL CRUD-INJECTION TESTS INDICATED THE IMPORTANCE OF CHEMICAL NATURE OF CRUD. CONCLUSION WAS THAT DEPOSITION IN A PWR WILL BE TOLERABLE EVEN IN A RECYCLED-FUEL-ASSEMBLY PROGRAM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*EXAMINATION + *FUEL ELEMENT + *SURFACE FILM DEPOSIT + COOLANT CHEMISTRY + HEAT TRANSFER, BOILING + OPERATIONS REPORT, ANALYSIS + PICONE, SOLUBLE + REACTOR, PRESSURIZED WATER + SAXTON

17-16755

ALSO IN CATEGORY 6

PICONE LF + TAYLOR GR + IMPINK AJ + RAJAGOPAL V

REACTOR FOULING EXPERIMENT

WESTINGHOUSE ELECTRIC CORP., PITTSBURGH, PA. ATOMIC POWER DIVISION

WCAP-3269-58 +. 115 PAGES, 38 FIGURES, 18 TABLES, 4 REFERENCES, JULY 1966

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-16755 *CONTINUED*

WHILE SAXTON AND YANKEE EXPERIENCE HAD DISPELLED FEAR OF ACCIDENTAL BORON HIDEOUT, A TEST OF DEPOSITION DURING DELIBERATE HIGH CRUD CONDITIONS WAS CONSIDERED NECESSARY. OUT-OF-PILE TESTS SHOWED THAT DEPOSITION WAS DEFINITELY RELATED TO THE DEGREE OF NUCLEATE BOILING AND PROVIDED CONFIDENCE THAT THE BOTTOM-DRIVEN CONTROL RODS WOULD NOT BE AFFECTED. INJECTION OF 458 G OF FE(OH)₃ AT POWER LOST 0.3% REACTIVITY (HALF DUE TO PH EFFECT), AND RECOVERY STARTED WITHIN 12 HR WAS COMPLETE AT 2 DAYS. NOISE AND ROD-OSCILLATOR MEASUREMENTS INDICATE THAT RECOVERY WAS DUE TO CRUD AND (PERHAPS FLUX) REDISTRIBUTION. WHILE EVIDENCE INDICATED RELATIONS BETWEEN REACTIVITY AND CRUD AND/OR PH, NO EVIDENCE INDICATED A POWER-REVERSIBLE BORON HIDEOUT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*IN PILE EXPERIMENT + *OUT OF PILE LOOPS AND EXPERIMENTS + *POISON, SOLUBLE +
*REACTIVITY EFFECT, ANOMALOUS + *SURFACE FILM DEPOSIT + COOLANT CHEMISTRY + NUCLEATE BOILING +
OPERATIONS REPORT, ANALYSIS + REACTOR, PRESSURIZED WATER + SAXTON

17-16756 ALSO IN CATEGORIES 6 AND 9
PICONE LF + TAYLOR GR + IMPINK AJ + RAJOGOPAL V
DYNAMIC MEASUREMENTS DURING CRUD INJECTION TESTS
WESTINGHOUSE ELECTRIC CORP., PITTSBURGH, PA. ATOMIC POWER DIVISION
WCAP-3269-58 +. 13 PAGES, 10 FIGURES, 1 TABLE, PAGES 56-69 OF REACTOR FOULING EXPERIMENT, JULY 1966

NOISE SPECTRA INDICATED THAT CRUD INJECTION ALMOST IMMEDIATELY DECREASED NUCLEATE BOILING IN CENTRAL HOT REGIONS AND INCREASED NUCLEATE BOILING IN GENERAL HOT REGIONS AS THE 12-CPS PEAK REDUCED AND THE 16-CPS PEAK INCREASED. ROD OSCILLATOR ON DOPPLER COEFFICIENT AND FUEL TIME CONSTANT GAVE SIMILAR RESULTS AS PH TESTS. INCREASING PH REDUCED DOPPLER COEFFICIENT AND FUEL TIME CONSTANT, WHILE CRUD INJECTION DECREASED BOTH. (THE IMPLICATION IS THAT BOTH ACT THROUGH SURFACE DEPOSITS WHICH AFFECT THE FUEL-TO-COOLANT CONDUCTANCE MORE THAN THE FUEL-TO-CLAD CONDUCTANCE).

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*DOPPLER COEFFICIENT + *REACTIVITY EFFECT, ANOMALOUS + *SURFACE FILM DEPOSIT + COOLANT CHEMISTRY +
NOISE ANALYSIS + NUCLEATE BOILING + OPERATIONS REPORT, ANALYSIS + OSCILLATOR, REACTIVITY +
REACTOR, PRESSURIZED WATER + SAXTON

17-16757 ALSO IN CATEGORIES 5 AND 6
PRESSURIZED WATER REACTOR PROJECT. TECHNICAL PROGRESS REPORT FOR THE PERIOD OCTOBER 22, 1966 TO JANUARY 20, 1967
BETTS ATOMIC POWER LABORATORY, PITTSBURGH, PA.
WAPD-MRP-119 +. 109 PAGES, FIGURES, TABLES, JANUARY 1967

(PAGE 1) - LB STEAM GENERATOR DEVELOPED A 150-GPM LEAK 7 WEEKS AFTER EARLIER TUBE PLUGGING. (PAGE 5) - SEED-2 HEATUP/COOLDOWN-RATE LIMITATIONS WERE ESTABLISHED. (PAGE 24) - COOLANT PH ABOVE 10 CONTINUES TO HOLD BACK INCREASES IN CORE PRESSURE DROP. (PAGE 51) - SWING-LOAD OPERATIONS (100/20 MWE) AND PRESENT CONTROL-ROD PROGRAM CAUSES POWER DISTRIBUTIONS PEAKED TO THE CORE BOTTOM WHEN GROUP-2 RODS ARE FULLY WITHDRAWN AND GROUP-3 RODS PARTIALLY WITHDRAWN. TWO ADVERSE EFFECTS ARE (1) POWER PEAK IS HIGH WHERE DEPLETION IS HIGH AND ALLOWABLE HEAT FLUX IS LOW. (2) EVEN WHEN CORE POWER IS RAISED, XENON PEAK IN UPPER-CORE HALF IS NOT BURNED OUT AND MUST DECAY. A POWER LIMIT WAS ESTABLISHED FOR GROUP-3 OPERATION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*CONTROL ROD PROGRAM + *COOLANT CHEMISTRY + *FAILURE, TUBING + *OPERATING EXPERIENCE +
*POWER DISTRIBUTION + *THERMAL MECHANICAL EFFECT + FLOW ORIFICE OR RESTRICTION +
OPERATIONS REPORT, ANALYSIS + PRESSURE VESSEL + REACTOR, PRESSURIZED WATER + SHIPPINGPORT +
STEAM GENERATOR + XENON

17-16758 ALSO IN CATEGORY 6
PRESSURIZED WATER REACTOR (PWR) PROJECT. TECHNICAL PROGRESS REPORT FOR THE PERIOD JANUARY 21, 1967 TO APRIL 21, 1967
BETTS ATOMIC POWER LABORATORY, PITTSBURGH, PA.
WAPD-MRP-120 +. 90 PAGES, FIGURES, TABLES, APRIL 1967

(PAGE 3) - SEED-2 INSTALLATION WILL REQUIRE A SOLUBLE POISON (PTB). ITS CORROSIVE EFFECT ON ALUMINUM CANAL WATER SYSTEM WAS STUDIED. (PAGE 29) - FLUX PLOTS FROM FLUX WIRE, TNO₂, AND TURBO-ZIP SHOWED VARYING AGREEMENT DURING XENON TRANSIENTS. TNO₂ IS AS GOOD AS OR SUPERIOR TO TURBO-ZIP IN DESCRIBING AXIAL POWER. (PAGE 45) - DURING XENON BURNOUT 12 HR AFTER SHUTDOWN, NEARLY CONTINUOUS ROD INSERTION WAS NECESSARY WITH GROUP III BELOW 20 IN. TO HOLD POWER CONSTANT. SPECIAL TESTS SHOWED THIS DUE TO RAPID DECREASE IN GROUP-III BANK WORTH BELOW 25 IN., APPARENTLY AS FLUX PEAK SHIFTS TO REACTOR TOP.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*OPERATING EXPERIENCE + *POISON, SOLUBLE + *POWER DISTRIBUTION + CONTROL ROD WORTH + CORROSION +
OPERATIONS REPORT, ANALYSIS + REACTIVITY EFFECT, ANOMALOUS + REACTOR, PRESSURIZED WATER + REFUELING +

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-16758 *CONTINUED*
SHIPPINGPORT + XENON

17-16763
MCCAULEY JE + DANIEL RC + MEIERAN HP + ENGEL JT
EVALUATION OF THE IRRADIATION PERFORMANCE OF ZIRCALOY-4 CLAD TEST ROD CONTAINING ANNULAR UO₂ FUEL PELLETS
(ROD 79-19)
WESTINGHOUSE ELECTRIC CORP., BETTIS ATOMIC POWER LAB., PITTSBURGH
WAPD-TM-596 +. 100 PAGES, 41 FIGURES, 11 TABLES, 29 REFERENCES, DECEMBER 1966

A ZIRCALOY-4 SHEATH WAS COLLAPSED ONTO ANNULAR UO₂ PELLETS TO MAKE FUEL-SWELLING MEASUREMENTS EASIER, AND IRRADIATED IN THE MTR IN A DELIBERATE PARTIALLY SHIELDED LOCATION. CLAD FAILED AFTER 467.9 EFP DAYS (HALF THE GOAL) FROM CRACKING DUE TO FUEL SWELLING AND FROM ELONGATION DUE TO FAST-NEUTRON DAMAGE, RESULTING IN SUBSTANTIAL ROD BOWING, AS FUEL FAILED TO SWELL INTO THE CENTRAL HOLE. CALCULATIONS USING CYGRO-2 WERE IN REASONABLE AGREEMENT WITH MEASUREMENTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*ANNULUS + *FAILURE, CLADDING + *FUEL ELEMENT BOWING + *RADIATION DAMAGE + FUEL BURNUP + IRRADIATION TESTING

17-16764
UNIVERSITY OF MISSOURI (COLUMBIA) CHANGE 3 APPROVED BY DRL
UNITED STATES ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.
3 PAGES, JULY 11, 1967, DOCKET NO. 50-186

LETTERS APRIL 19 AND JUNE 7 REQUESTED (1) FUEL-FAILURE-MONITOR OPERATION BE SUSPENDED BELOW 100 KW DURING NATURAL CONVECTION FLOW, (2) REVISION OF MINIMUM COUNT RATE FROM 2 COUNTS/SEC OR A 1/2-DECADE DEFLECTION TO 1 COUNT/SEC VS 1 DECADE, (3) REDUCE REFLECTOR FLOW REQUIREMENTS TO AGREE WITH MEASUREMENTS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*TECHNICAL SPECIFICATIONS + FLOW DISTRIBUTION + INSTRUMENTATION, DETECTION FAILED FUEL ELEMENT + INSTRUMENTATION, STARTUP RANGE + REACTOR, FLUX TRAP + REACTOR, RESEARCH + SAFETY EVALUATION

17-16765
HALLAM CHANGE 5 - FACILITY RETIREMENT-PLAN
UNITED STATES ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.
5 PAGES, FEBRUARY 8, 1967, DOCKET NO. 115-3

PROVIDES FOR DISMANTLING HALLAM, BASED ON NAA-SR-MEMO 12209 (RETIREMENT PLAN).

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*REACTOR DECOMMISSIONING EXPERIENCE + *TECHNICAL SPECIFICATIONS + HALLAM + REACTOR, GRAPHITE MODERATED + REACTOR, LIQUID METAL COOLED

17-16766
HALLAM NUCLEAR POWER FACILITY RETIREMENT PLANT REVISION 4 (OCTOBER 10, 1966)
CONSUMERS PUBLIC POWER DISTRICT, COLUMBUS, NEBRASKA
NAA-SR-MEMO-12209 +. 36 PAGES, OCTOBER 28, 1966, DOCKET NO. 115-3

PROVIDES CRITERIA (DISPOSAL AND DECONTAMINATION) FOR VARIOUS SYSTEMS AND COMPONENTS, AND ASSIGNS WORK RESPONSIBILITIES TO UTILITY AND MANUFACTURER.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. OR -- CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

*REACTOR DECOMMISSIONING EXPERIENCE + ADMINISTRATIVE CONTROLS AND PRACTICES + DECONTAMINATION + HALLAM + REACTOR, GRAPHITE MODERATED + REACTOR, LIQUID METAL COOLED

17-16767
PEACH BOTTOM MONTHLY OPERATIONS REPORT NUMBER 11, JANUARY 1967
PHILADELPHIA ELECTRIC COMPANY, PHILADELPHIA
27 PAGES, 2 TABLES, JANUARY 1967, DOCKET NO. 50-171

THIS PROGRESS REPORT IS ONE OF A SERIES WHOSE USUAL CONTENT IS - OPERATIONS, HEALTH PHYSICS AND CHEMISTRY, MAINTENANCE, CHANGES TO THE FACILITY, RESULTS OF SIGNIFICANT TESTS, AND ADMINISTRATION.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-16767 *CONTINUED*
OPERATIONS REPORT, GENERAL + OPERATIONS SUMMARY FOR AEC + PEACH BOTTOM 1 + REACTOR, GAS COOLED

17-16830
TABOR WH + HURT SS
SELECTED ORR OPERATING EXPERIENCE
OAK RIDGE NATIONAL LAB., TENN.
ORNL-TM-1881 +. 45 PAGES, 9 FIGURES, 17 TABLES OF OAK RIDGE RESEARCH REACTOR QUARTERLY REPORT FOR JANUARY, FEBRUARY, AND MARCH OF 1967. MAY 10, 1967

THE NO. 1 CONTROL ROD DRIVE UNIT WAS REPLACED AFTER DEBRIS WAS FOUND IN THE SHOCK ABSORBER. THE REACTIVITY VOID COEFFICIENT FOR THE FUEL REGION WAS MEASURED AS MINUS 2.9×10 TO THE MINUS 4% PER CC. TWO ALUMINUM CORE PIECES WERE FOUND TO BE BOWED DUE TO NEUTRON DAMAGE. DEFLECTIONS TOWARD THE HIGH-FLUX AREA WERE 29 MILS FOR THE HYDRAULIC TUBE AND 60 FOR A SAMPLE-IRRADIATION TRAY.

AVAILABILITY -- CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

*OPERATING EXPERIENCE + *RADIATION DAMAGE + *VOID COEFFICIENT + ALUMINUM + CONTROL ROD + FAILURE, SCRAM MECHANISM + MEASUREMENT, REACTIVITY + NEUTRON + OPERATIONS REPORT, GENERAL + ORR (OAK RIDGE RESEARCH REACTOR) + REACTOR, RESEARCH + REACTOR, TEST

17-16939 ALSO IN CATEGORY 9
ENGEL JP + PRINCE RE
THE REACTIVITY BALANCE IN THE MSRE
OAK RIDGE NATIONAL LAB., TENN.
ORNL-TM-1796 +. 12 PAGES, 3 FIGURES, 4 REFERENCES, ABSTRACT IN AMERICAN NUCLEAR SOCIETY TRANSACTIONS 10(1) PAGES 337-338, PAPER PRESENTED AT THE THIRTEENTH ANNUAL MEETING OF THE AMERICAN NUCLEAR SOCIETY, SAN DIEGO, CALIFORNIA, JUNE 11-15, 1967

(SYNOPSIS OF ORNL-TM-1796, SAME TITLE). ON-LINE COMPUTER HAS BEEN USED SINCE 1965 TO MONITOR VARIOUS REACTIVITY EFFECTS IN CIRCULATING-FUEL REACTOR, WHICH GIVES A FACTOR-OF-10 MORE SENSITIVITY THAN CHEMICAL ANALYSIS ON FUEL CHANGES. ORIGINALLY, XENON WAS REMOVED MORE EFFICIENTLY THAN ESTIMATED. LATER, SLOW REACTIVITY DRIFTS DOWNWARD WERE FOUND DUE TO (1) DRIFT IN OUTLET-TEMPERATURE THERMOCOUPLES, CAUSING A POWER ERROR, AND (2) TRUNCATION ERRORS IN THE COMPUTATION OF SM-149 APPROACHING SATURATION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

*DATA PROCESSING + *OPERATIONS REPORT, ANALYSIS + *REACTIVITY, EXCESS + MSRE (MOLTEN SALT REACTOR EXPERIMENT) + REACTIVITY EFFECT, ANOMALOUS + REACTOR, CIRCULATING FUEL + REACTOR, GRAPHITE MODERATED + REACTOR, MOLTEN SALT

17-17097 ALSO IN CATEGORY 10
VOLUME III. STUDIES OF TASK GROUPS ON THE NORTHWEST POWER INTERRUPTION
FEDERAL POWER COMMISSION
142 PAGES, FIGURES, TABLES, PREVENTION OF POWER FAILURES (REPORT TO THE FEDERAL POWER COMMISSION) JUNE 1967

SIX APPENDIXES CONTAIN - (A) GENERAL COMMENTS ON NE POWER FAILURE, (B) COMPUTER STABILITY ANALYSES OF JUNE 1966 SYSTEM, USING NOV. 9, 1965, AND OTHER STIMULI, (C) COMPUTER ANALYSIS OF 1968 SYSTEM, (D) DETAILS OF THE ANALYSIS OF THE ISLAND SYSTEM DURING POWER DECLINE OF NOV. 9, 1965, (E) PLANNING AND OPERATION CRITERIA TO PREVENT POWER FAILURES, (F) PROJECTION THRU 1973 OF GENERATION AND TRANSMISSION.

AVAILABILITY - GOVERNMENT PRINTING OFFICE, \$1.75 COPY

*EMERGENCY POWER, ELECTRIC + *INCIDENT, ACTUAL, NONNUCLEAR + OPERATIONS REPORT, ANALYSIS

17-17098 ALSO IN CATEGORY 10
VOLUME II. RELIABILITY OF ELECTRIC BULK POWER SUPPLY
FEDERAL POWER COMMISSION
138 PAGES, FIGURES, TABLES, PREVENTION OF POWER FAILURES, A REPORT TO THE FEDERAL POWER COMMISSION, JUNE 1967

REPORT AND APPENDIXES SPEAK IN BROAD GENERALITIES ON RELIABILITY AS AN OBJECTIVE, GUIDELINES FOR PLANNING AND OPERATION. ALSO DISCUSSES EQUIPMENT DEVELOPMENT, COMPUTER APPLICATION, PROTECTIVE RELAYING, AND OPERATION.

AVAILABILITY - GOVERNMENT PRINTING OFFICE, WASHINGTON, D. C. 20402, \$1.00 COPY

*EMERGENCY POWER, ELECTRIC + RELIABILITY ANALYSIS

17-17099

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17099 *CONTINUED*

APPENDIX I, SECTION X - OPERATOR TRAINING
FEDERAL POWER COMMISSION1 PAGE, PAGE 131, PREVENTION OF POWER FAILURES, JUNE 1967, A REPORT TO THE FEDERAL POWER COMMISSION.
VOLUME II. ADVISORY COMMITTEE REPORT. RELIABILITY OF ELECTRIC BULK POWER SUPPLY

(PAGE 131) COULD SERVE AS MODEL GENERAL DEFINITIONS FOR ANY TRAINING PROGRAM. REQUIRES OPERATOR AND DISPATCHER TO BE WELL GROUNDED IN BASIC PRINCIPLES, HAVE A WELL-ADMINISTERED TRAINING PLAN, HAVE UPDATED PROCEDURES AND BE REQUIRED TO STUDY THEM, AND HAVE PERIODIC REFRESHER TRAINING. TRAINING CENTERS WITH SIMULATORS SUGGESTED AS USEFUL.

AVAILABILITY - GOVERNMENT PRINTING OFFICE, WASHINGTON, D. C. 20402, \$1.00 COPY

*STAFFING, TRAINING, QUALIFICATION + EMERGENCY POWER, ELECTRIC

17-17100 ALSO IN CATEGORY 10

VOLUME I. REPORT OF THE COMMISSION
FEDERAL POWER COMMISSION

197 PAGES, FIGURES, TABLES, PREVENTION OF POWER FAILURES, A REPORT TO THE PRESIDENT BY THE FEDERAL POWER COMMISSION, JULY 1967

DISCUSSES NOVEMBER 9, 1965, NORTHEAST BLACKOUT, AND OTHER BLACKOUTS AND INTERRUPTIONS SINCE. 34 RECOMMENDATIONS INCLUDE AUTOMATIC LOAD SHEDDING, STRONGER INTER-TIES, GREATER LEAD TIME ON PLANT PROCUREMENT, CENTRAL CONTROL STATIONS, COMPUTERS, COMMUNICATION, AND TRAINING. MUCH USEFUL DATA AND GENERAL DISCUSSION INCLUDED.

AVAILABILITY - GOVERNMENT PRINTING OFFICE, WASHINGTON, D. C. 20402, \$1.50 COPY

*EMERGENCY POWER, ELECTRIC + *INCIDENT, ACTUAL, NONNUCLEAR + ADMINISTRATIVE CONTROLS AND PRACTICES + FAILURE, ADMINISTRATIVE CONTROL + FAILURE, ADMINISTRATIVE CONTROL + FAILURE, COMPONENT

17-17101

CUNNINGHAM JE + LONG EL + FRANCO-FERREIRA EA + HARMAN DG

BONUS REACTOR SUPER-HEATER FUEL ASSEMBLIES--AN INVESTIGATION OF FAILURE AND METHOD OF CORRECTION
OAK RIDGE NATIONAL LAB., TENN.

ORNL-3910 +. 173 PAGES, FIGURES, TABLES, DECEMBER 1965

FAULTY WELDING PRACTICES RESULTED IN HOLES PERMITTING WATER OR STEAM TO LEAK INTO THE ELEMENT SO THAT OVERHEATING INCREASED THE INTERNAL PRESSURE. ONE ROD HAD AN 11.5-IN. CLADDING RUPTURE. PROCEDURES FOR ESTABLISHING THE NATURE AND EXTENT OF THE DAMAGE ARE DESCRIBED. OBSERVATIONS MADE DURING IN-CELL INSPECTION, COMPONENT DISASSEMBLY, GAMMA SCANNING, LEAK TESTING, AND METALLOGRAPHY ARE DISCUSSED. TO PREVENT RECURRENCE, RECOMMENDATIONS INCLUDE ELIMINATION OF VENT HOLES, CHANGE FROM SOCKET TO EDGE-TYPE JOINT FOR CIRCUMFERENTIAL WELD CLOSURES OF THE FUEL ROD, CONTROL OF GRAIN SIZE, AND IMPROVED WELD QUALIFICATIONS AND QUALITY-CONTROL PROCEDURES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*EXAMINATION + *FAILURE, FUEL ELEMENT + BONUS (BOILING NUCLEAR SUPERHEAT PROJECT) + FAILURE, ADMINISTRATIVE CONTROL + FAILURE, CLADDING + FAILURE, FABRICATION ERROR + FAILURE, GENERAL + REACTOR, BOILING WATER + REACTOR, INTERNAL SUPERHEAT + WELDING

17-17102 ALSO IN CATEGORY 12

HUTTER F + ELIAS P + VEITH DJ + WARE WR

EBR-II FUEL-UNLOADING MACHINE--DESIGN AND PERFORMANCE CHARACTERISTICS
ARGONNE NATIONAL LAB., ILL.

ANL-7201 +. 91 PAGES, 42 FIGURES, 6 REFERENCES, JUNE 1966

DESCRIBES THE FUEL-HANDLING SYSTEM, THE MACHINE, AND ITS OPERATION FOR THE SODIUM-COOLED REACTOR.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*EQUIPMENT DESIGN + *FUEL HANDLING MACHINE + *OPERATION + EBR 1 AND 2 (EXPERIMENTAL BREEDER REACTORS) + REACTOR, BREEDER + REACTOR, FAST + REACTOR, LIQUID METAL COOLED

17-17104

TABOR WH + HURT SS

SELECTED CPR OPERATING EXPERIENCE

OAK RIDGE NATIONAL LAB., TENN.

ORNL-TM-1843 +. 54 PAGES, 13 FIGURES, 17 TABLES OF OAK RIDGE RESEARCH REACTOR QUARTERLY REPORT, OCTOBER, NOVEMBER, AND DECEMBER OF 1966. APRIL 28, 1966

(PAGE 24) ALUMINUM SECTIONS OF AL-CD SHIM RODS WERE FOUND TO BE BOWED AS MUCH AS 38 MILS TOWARD THE HIGH-NEUTRON-FLUX REGION (DUE TO NEUTRON DAMAGE). (PAGE 39) TWO CONTAMINATION RELEASES OCCURRED, BOTH RELATED TO EXPERIMENTS, WITHOUT OVEREXPOSURES. TUNGSTEN-187 IN THE

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17104 *CONTINUED*

FORM OF OXIDE PARTICLES FROM A THERMOCOUPLE WAS SPILLED AND RESULTED IN CONTAMINATION THROUGHOUT THE BUILDING COMPLICATING CLEANUP OPERATIONS. THE SECOND RELEASE WAS XENON-138 FROM A FAILED FUEL ELEMENT EXPERIMENT. 12 HOURS AFTER THE RELEASE THE ACTIVITY DECAYED SUFFICIENTLY TO PERMIT UNRESTRICTED ACCESS TO THE BUILDING.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*OPERATIONS REPORT, GENERAL + ALUMINUM + CONTROL ROD + CORE COMPONENTS, MISCELLANEOUS + FAILURE, SCRAM MECHANISM + IN PILE EXPERIMENT + INCIDENT, ACTUAL, GENERAL + INSTRUMENTATION, TEMPERATURE + NEUTRON + OPERATING EXPERIENCE + ORR (OAK RIDGE RESEARCH REACTOR) + RADIATION DAMAGE + RADIOACTIVITY, RELEASE + REACTOR, AEC OWNED + REACTOR, RESEARCH + REACTOR, TEST

17-17109

MANSON RE + SMYTH HE
THE NRX REACTOR. A GENERAL DESCRIPTION
ATOMIC ENERGY OF CANADA LIMITED, CHALK RIVER, ONTARIO, CANADA
IC-309 + AECL-2692 +. 153 PAGES, 47 FIGURES, FEBRUARY 1967

GENERAL DESCRIPTION PREPARED AS PART OF A SUBMISSION TO REVIEW COMMITTEE ON REACTOR SAFETY, ON THE NRX, A 42-MW TANK-TYPE REACTOR USED FOR NEUTRON PHYSICS RESEARCH, ISOTOPE PRODUCTION, AND TESTING FUEL ELEMENTS AND MATERIALS. INCLUDES GENERAL DESCRIPTIONS, ILLUSTRATIONS, AND BASIC DATA OF THE REACTOR STRUCTURE, AUXILIARY COOLING AND PROTECTIVE SYSTEMS, FUEL, AND EXPERIMENTAL FACILITIES.

AVAILABILITY - ATOMIC ENERGY OF CANADA, LTD., CHALK RIVER, ONTARIO, CANADA, \$3.00 COPY

*REACTOR DESCRIPTION + CANADA + CHALK RIVER + NRX (CANADIAN NATURAL U-HEAVY WATER REACTOR) + REACTOR, HEAVY WATER

17-17112

ALSO IN CATEGORY 7
FILTER UNIT INSPECTION AND TESTING SERVICE FISCAL YEAR 1968
DIVISION OF OPERATIONAL SAFETY, U. S. ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.
4 PAGES OF HEALTH AND SAFETY INFORMATION BULLETIN NO. 253, JULY 10, 1967

DESCRIBES CONTAMINATION OF INSPECTION AND TESTING OF HIGH-EFFICIENCY FILTER UNITS AT OAK RIDGE GASEOUS DIFFUSION PLANT AND HANFORD OCCUPATIONAL HEALTH FOUNDATION. SERVICE IS FREE TO AEC OFFICES COST-TYPE CONTRACTORS. LUMP-SUM AND UNIT-PRICE CONTRACTORS, AEC LICENSES, AND OTHERS WILL BE SUPPLIED ACCORDING TO APPENDED SCHEDULE OF CHANGES. DETAILED PROCEDURE FOR OBTAINING SERVICE IS GIVEN.

AVAILABILITY - AEC, DIVISION OF OPERATIONAL SAFETY, WASHINGTON, D. C.

*FILTER, HIGH EFFICIENCY + *TEST, FILTER

17-17115

ALSO IN CATEGORY 9
GENERAL ELECTRIC TEST REACTOR STUCK ROD, JULY 24, 1967
GENERAL ELECTRIC CO., NUCLEAR ENERGY DIVISION, SAN JOSE, CALIFORNIA
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(33), PAGE 18, (AUGUST 14, 1967) DOCKET NO. 50-70

(LETTER, AUGUST 1) DURING A PLANNED SHUTDOWN, CONTROL-ROD 4 STUCK 4 IN. ABOVE FULLY INSERTED POSITION. WELDING SLAG AND A BROKEN 1/4-IN. SELF-LOCKING NUT WERE FOUND IN THE SHOCK ABSORBER. ROD-GUIDE-TUBE COVERS WERE IN PLACE. A LOCKING DEVICE IN LIEU OF SELF-LOCKING NUTS IS BEING TESTED TO PROVIDE A UNIT THAT CAN NOT PASS INTO CREVICES OF THE CORE. ALL TOOLS AND ATTACHMENT NUTS WILL BE INSPECTED BEFORE USE.

*FAILURE, SCRAM MECHANISM + FUEL HANDLING MACHINE + GETR (GENERAL ELECTRIC TEST REACTOR) + REACTOR, TEST

17-17116

T. R. SCHWALM REPLIES TO COMPLIANCE CITATION OF MAY 11, 1967
THEO. R. SCHWALM, INC., LANCASTER, PA.
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(33), PAGE 28 (AUGUST 14, 1967)

(LETTER, JUNE 6) (1) PLANT HAS BEEN DECONTAMINATED, (2) TRITIUM STACK RELEASE FROM NEW FACILITIES IS WELL WITHIN LIMITS, ROOM IS A RESTRICTED AREA, (3,4) MONTHLY SURVEYS ARE TAKEN OF TRITIUM RELEASED TO SEWERS, WATER SAMPLES TAKEN OF WASH LINES, (5) SURGE TESTS OF SCREENS FOR TRITIUM PAINTING SHOW 1000 DPM/100 CC. MOVING TO A SEPARATE BUILDING WILL ELIMINATE MANY PROBLEMS.

*INSPECTION AND COMPLIANCE + CONTAMINATION + RADIOISOTOPE + TRITIUM

17-17117

ATLANTIC X-RAY INC. CITED FOR NONCOMPLIANCE
ATLANTIC X-RAY, INC., NORRISTOWN, PA.

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17117 *CONTINUED*

1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(33), PAGE 25 (AUGUST 14, 1967)

(LETTER, JUNE 7) SIX ITEMS OF NONCOMPLIANCE NOTED WERE - (1) RECORDS PURPORTED TO SHOW A CERTAIN INDIVIDUAL CALIBRATED SURVEY INSTRUMENTS DURING A CERTAIN PERIOD WHEN HE DID NOT, (2) OPERATIONS WERE CONDUCTED WITHOUT USING CALIBRATED INSTRUMENTS, (3) AN INDIVIDUAL WAS ALLOWED TO ACT AS A RADIOGRAPHER WITHOUT DEMONSTRATING UNDERSTANDING OF 10 CFR 36 APPENDIX A, (4) THREE SEALED SOURCES WERE NOT LEAK TESTED AT 6-MONTH INTERVALS, (5) RECORDS WERE NOT MADE OF SURVEYS TO SHOW SOURCES RETURNED TO SHIELD, AND (6) OTHER RECORDS OF SURVEYS WERE NOT MADE.

*INSPECTION AND COMPLIANCE + FAILURE, ADMINISTRATIVE CONTROL + RADIOGRAPHY + SOURCE, RADIATION + SURVEY, RADIATION, GENERAL + TEST, LEAK LOCATION

17-17118

JOHNS HOPKINS UNIVERSITY CITED FOR NON COMPLIANCE
JOHNS HOPKINS UNIVERSITY, BALTIMORE, MD.

2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(33), PAGE 25 AND 26 (AUGUST 14, 1967)

(LETTER, JUNE 6) INSPECTION AFTER A RELEASE OF 30 CURIES OF TRITIUM INTO AN UNRESTRICTED LAB ON FEBRUARY 20 REVEALED (1) TRITIUM POSSESSED, BUT NO VALID AEC LICENSE, (2,3) SURVEYS FOR AIRBORNE TRITIUM WERE INADEQUATE, (4) TWO INDIVIDUALS WERE EXPOSED TO ABOVE MPC FOR TRITIUM, (5-7) TRITIUM WAS STORED IN AN UNRESTRICTED, UNPOSTED AREA AND RECORDS NOT KEPT, (8) THE EXPOSURE IN ITEM 4 AND THE RELEASE ITSELF WERE NOT REPORTED IN WRITING. THERE APPEARS TO BE A LACK OF CENTRAL CONTROL OF PROCUREMENT AND USE OF BY-PRODUCT MATERIAL, WITH NO ONE ASSIGNED OVERALL RESPONSIBILITY TO ENSURE COMPLIANCE WITH LICENSES.

*AIRBORNE RELEASE + *INCIDENT, ACTUAL, GENERAL + FAILURE, ADMINISTRATIVE CONTROL + INSPECTION AND COMPLIANCE + RADIATION SAFETY AND CONTROL + TRITIUM

17-17119

NUCLEAR SCIENCE AND ENGINEERING CORPORATION CITED FOR NON COMPLIANCE
NUCLEAR SCIENCE AND ENGINEERING CORP., PITTSBURGH, PA.

2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(33), PAGE 26 AND 27 (AUGUST 14, 1967)

(LETTER, JUNE 26) TWO ITEMS - (1) DECEMBER 66 AND JANUARY 67 RELEASE DATA FROM HOT-LAB EXHAUST STACKS EXCEEDED 10 CFR 20 RELEASE LIMITS, WHEN AVERAGED OVER A YEAR, PRINCIPALLY I-125. (2) SURVEYS WERE INADEQUATE FOR AIRBORNE RELEASES FROM CO-60 ROOM. (REPLY, JULY 14) (1) CAUSE WAS OUR FAILURE TO CONTAIN ADEQUATELY THE IODINE HANDLED IN A FUME HOOD RATHER THAN IN A GLOVE BOX. HOT-LAB FILTER WAS CHANGED TO MINIMIZE BLEEDING, AND IODINE WORK WAS SHIFTED TO A SPECIALLY DESIGNED GLOVE BOX WITH CHARCOAL FILTER. (2) SURVEYS CONDUCTED DURING APRIL 67 INDICATE CONCENTRATIONS LESS THAN 0.01 MPC (INSOLUBLE CO-60). COMMITTEE CONCLUDED CONTINUOUS EFFLUENT MONITORING NOT NECESSARY.

*INSPECTION AND COMPLIANCE + AIRBORNE RELEASE + COBALT + FISSION PRODUCT, IODINE + GLOVE BOX

17-17120

U. S. NUCLEAR CORPORATION CITED FOR NON COMPLIANCE
U. S. NUCLEAR CORPORATION, BURBANK, CALIFORNIA

1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(33), PAGE 29, (AUGUST 14, 1967) DOCKET NO. 70-1051

(LETTER, JUNE 19) A JUNE 5 INSPECTION REVEALED (1) SURVEYS WERE INADEQUATE FOR AIRBORNE PU-238, (2) RADIATION WAS ABOVE PERMISSIBLE FOR UNRESTRICTED AREAS, (3) RECORDS WERE NOT KEPT IN UNITS SPECIFIED IN 10 CFR 20. (REPLY, JUNE 29) (1) RADON DECAY SCHEMES HAVE BEEN MADE. IF AIR SAMPLES COUNTED WITHIN ONE HOUR OF THE COMPLETION OF AN OPERATION SHOWS AIRBORNE ACTIVITY OTHER THAN RADON. THE PU-BE FACILITY WILL BE SHUT DOWN AND BIOASSAYS MADE. (2) FURTHER SHIELDING IS BEING PROVIDED. (3) RECORDS HAVE BEEN UPDATED. WE FEEL THAT WE ARE IN FULL COMPLIANCE NOW.

*INSPECTION AND COMPLIANCE + BERYLLIUM + NEUTRON + PLUTONIUM + RADON + SHIELDING + SOURCE, RADIATION + SURVEY, RADIATION, GENERAL

17-17121

3M COMPANY NOTIFICATION OF DOSE TO EMPLOYEES
3M CO., ST. PAUL, MINN.

2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(33), PAGE 28 AND 29 (AUGUST 14, 1967)

(LETTER, JUNE 28) DIV. OF COMPLIANCE CALLS ATTENTION OF 3M CO. TO 10 CFR 20.405(B), REQUIRING THAT EMPLOYEES BE NOTIFIED OF EXCESSIVE DOSES. (3M LETTER OF JULY 14). THE EMPLOYEES CONCERNED IN THE INCIDENT REPORTED IN 3M LETTER OF MARCH 10, 1967, WILL BE NOTIFIED THAT AEC COMPLIANCE IS OF THE OPINION THAT THEY RECEIVED EXPOSURES OF AT LEAST 1000 RADS TO THEIR HANDS, BASED ON STATEMENTS OF THEIR MEDICAL CONSULTANT.

*INSPECTION AND COMPLIANCE + DOSE + INCIDENT, ACTUAL, GENERAL + PERSONNEL EXPOSURE, RADIATION

17-17122

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17122 *CONTINUED*

RICHARDSON X-RAY REPLIES TO COMPLIANCE CITATION OF MAY 17, 1967
RICHARDSON X-RAY SERVICE, ALHAMBRA, CALIFORNIA
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(33), PAGE 27 AND 28 (AUGUST 14, 1967)

(LETTER, JUNE 16) (ITEMS 1, 2, 6, AND 7) RADIOGRAPHER WAS INVOLVED IN EARLIER VIOLATION (METALINE FALLS, WASHINGTON, 1966), RETRAINED, AND STILL DISREGARDED OUR INSTRUCTIONS. HE WILL NOT BE USED AGAIN. (3, 4, 7) WE DISCONTINUED USE OF THE 5-IN. STORAGE CONTAINERS. THE CONTAINER LEFT ALHAMBRA MARKED. (5, 8, 9) RECORDS HAVE BEEN KEPT.

*INSPECTION AND COMPLIANCE + *RADIOGRAPHY + FAILURE, OPERATOR ERROR + STORAGE CONTAINER

17-17123

UNIVERSITY OF ILLINOIS CITED FOR NON COMPLIANCE
UNIVERSITY OF ILLINOIS, URBANA, ILL.
3 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(33), PAGES 29-31 (AUGUST 14, 1967)

(LETTER, JUNE 12) INVESTIGATION OF A P-32 SPILL ON MARCH 1, 1967, SHOWED - (1) INCIDENT WAS NOT PROMPTLY REPORTED TO UNIVERSITY, LABORATORY WAS NOT LOCKED WHEN NOT IN USE. (2) AEC WAS NOT NOTIFIED WITHIN 24 HR OF EXPOSURE ABOVE 75 REMS TO HAND. IMPROVEMENTS ARE NEEDED IN CENTRAL MANAGEMENT OF ALL PROGRAMS. (REPLY, JUNE 30) (1) CHARGES INCONTESTABLE. PEOPLE DO VIOLATE RULES, USUALLY ACCIDENTALLY. (2) ORIGINAL ESTIMATES WERE ONLY 8-12 RDS, LATER ESTIMATE LED TO HIGHER ESTIMATES FOR VERY SMALL AREAS OF HANDS. CHICAGO COMPLIANCE ADVISED US TO USE A 30-DAY REPORT BECAUSE OF THE DOUBT. IN FUTURE, WE WILL TAKE MOST CONSERVATIVE COURSE. INCIDENT RESULTED IN REAPPRAISAL OF PROGRAM. HP STAFF HAS BEEN SPREAD THIN. ANOTHER WILL BE HIRED, ALLOWING MORE OBSERVATION, TRAINING, AND UPGRADING IN GENERAL.

*CONTAMINATION + *INCIDENT, ACTUAL, GENERAL + *INSPECTION AND COMPLIANCE + BETA EMITTER + FAILURE, ADMINISTRATIVE CONTROL + FAILURE, OPERATOR ERROR + PHOSPHORUS + RADIATION SAFETY AND CONTROL

17-17169

GUYMON RH
MSRE - TRAINING, PREPARATION FOR OPERATION AND OPERATING TECHNIQUES
OAK RIDGE NATIONAL LAB., TENN.
39 PAGES, 5 FIGURES, ABSTRACT IN SUPPLEMENT TO AMERICAN NUCLEAR SOCIETY TRANSACTIONS 10, PAGE 35, CONFERENCE ON REACTOR OPERATING EXPERIENCE, REACTOR OPERATIONS DIVISION, JULY 23-26, 1967, ATLANTIC CITY, NEW JERSEY

THREE PERIODS OF TRAINING WERE GIVEN, THOUGH ALL HAD PARTICIPATED IN SOME PHASE OF MSRE DESIGN OR TESTING, INITIAL (SYSTEM FAMILIARITY PRIOR TO CHECKOUT), PRECRITICAL (A SIMULATOR WAS HOOKED TO ACTUAL CONTROLS AND INSTRUMENT READOUTS), AND PRE-POWER (MORE SIMULATOR WORK, OPERATION OF POWER SYSTEMS). OPERATIONS PROCEDURES AND PRACTICES DISCUSSED.

*STAFFING, TRAINING, QUALIFICATION + MSRE (MOLTEN SALT REACTOR EXPERIMENT) + REACTOR, AEC OWNED + REACTOR, MOLTEN SALT

17-17170

LINK BW
TECHNIQUES FOR RECRUITING AND MAINTAINING A RESEARCH REACTOR OPERATIONS STAFF
AMES LABORATORY, IOWA STATE UNIVERSITY, AMES, IOWA
7 PAGES, ABSTRACT IN SUPPLEMENT TO AMERICAN NUCLEAR SOCIETY TRANSACTIONS 10, PAGE 36 AND 37, CONFERENCE ON REACTOR OPERATING EXPERIENCE, REACTOR OPERATIONS DIVISION, JULY 23-26, 1967, ATLANTIC CITY, NEW JERSEY

HIRING AS OPERATORS ONLY THOSE FULL-TIME UNDERGRADS WHO NEED MONEY, AND ARRANGING SHIFT/VACATION/EXPERIMENTAL SCHEDULES ACCORDING TO 13-WEEK UNIVERSITY CYCLE SEEMS A SUCCESS. RIGOROUS PRE-EMPLOYMENT SCREENING IS NECESSARY, BUT THEIR BEST ADVERTISEMENT HAS BEEN SATISFIED OPERATORS. IN 5 YEARS, THE 15 POSITIONS HAVE YIELDED 4 DEGREES, AND ONLY 8 REPLACEMENTS WERE NEEDED. UPTIME IS 75-85%. A NEAR-NORMAL PROGRESSION FROM TRAINEE TO CHIEF OPERATOR IS POSSIBLE.

*STAFFING, TRAINING, QUALIFICATION + REACTOR, AEC OWNED + REACTOR, RESEARCH

17-17171

FERGUSON JH + GRIDLEY RL + MASCHKE GC
NUCLEAR POWER PLANT PEAL TIME SIMULATION APPLIED TO REACTOR OPERATOR TRAINING
GENERAL ELECTRIC COMPANY
13 PAGES, ABSTRACT IN SUPPLEMENT TO AMERICAN NUCLEAR SOCIETY TRANSACTIONS 10, PAGE 37, CONFERENCE ON REACTOR OPERATING EXPERIENCE, REACTOR OPERATIONS DIVISION, JULY 23-26, 1967, ATLANTIC CITY, NEW JERSEY

A GE TRAINING CENTER NEAR DRESDEN, ILLINOIS, WILL BE OPERATIONAL IN 1968 TO TRAIN PREVIOUSLY PREPARED BWR CREWS IN ROUTINE SHIFT OPERATIONS AND ABNORMAL SITUATIONS ON A CONTROL-ROOM SIMULATOR OF DRESDEN 2. NINETY REAL FAILURES, NORMAL STARTUP/SHUTDOWN WILL BE POSSIBLE. GE INITIAL TRAINING PROGRAM OUTLINED.

*STAFFING, TRAINING, QUALIFICATION + ANALOG SIMULATION + REACTOR, BOILING WATER

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17172

CRAMER EN

SHORTCOMINGS OF OPERATOR CREW TRAINING AND INTERNAL CERTIFICATION PROGRAMS

OAK RIDGE NATIONAL LAB., TENN.

16 PAGES, ABSTRACT IN SUPPLEMENT TO AMERICAN NUCLEAR SOCIETY TRANSACTIONS 10, PAGE 37 AND 38, CONFERENCE ON REACTOR OPERATING EXPERIENCE, REACTOR OPERATIONS DIVISION, JULY 23-26, 1967, ATLANTIC CITY, NEW JERSEY

PART OF THE REASON IS THAT THE JOB OF TRAINING COORDINATION IS HANDED AROUND. MORE IMPORTANT SHORTCOMINGS INCLUDE TRAINING FOR EMERGENCY SITUATIONS, OBTAINING HIGH-QUALITY DEMONSTRATIONS OF REACTOR BEHAVIOR, DEVELOPING OPERATOR ABILITY TO COMMUNICATE TECHNICAL INFORMATION TO OUTSIDERS, AND STUDYING PAST INCIDENT. TRANSACTION SUMMARY LISTS THE 20 SHORTCOMINGS.

*STAFFING, TRAINING, QUALIFICATION

17-17173

MASCHE GC

REACTOR OPERATOR TECHNICAL QUALIFICATIONS AS THEY RELATE TO NUCLEAR SAFETY

GENERAL ELECTRIC CO., SAN JOSE, CALIFORNIA

113 PAGES, 5 FIGURES, 52 REFERENCES, 1966, MASTERS THESIS FOR UNIVERSITY OF WASHINGTON

EXCELLENT THESIS, SHOULD BE A READILY OBTAINABLE REPORT, MANY GOOD IDEAS. CHOOSES TECHNICAL KNOWLEDGE TO DISCUSS, POINTING OUT HUMAN FACTORS, ACTUAL OPERATING ABILITY, AND PLANT KNOWLEDGE AS EQUALLY IMPORTANT. DESCRIBES EXCESSIVE DEPENDENCE ON SUPERVISION, PROCEDURES OR PLANT SYSTEMS - AS MOST INCIDENTS OCCUR AS SYSTEM BREAKDOWN AND SUBSEQUENT OPERATOR MISACTION. DISCUSSES ROLE OF VARIOUS SEGMENTS OF INDUSTRY, ATTITUDE AND CONTROL OF PRESENT TRAINING PROGRAMS, OPERATOR-SAFETY RECORD. ENCOURAGES DISSEMINATION OF NEAR-MISS INFORMATION FOR TRAINING PURPOSES, INTERNAL STUDY OF SMALL OPERATOR ERRORS (AS AT MTR AND ETR). (CONCLUSIONS) PRESENT TRAINING/TESTING NEEDS REFINING TO ENSURE THAT THE TECHNICAL KNOWLEDGE REQUIRED IS USEABLE. DATA COLLECTION/DISSEMINATION ON OPERATOR RELIABILITY TO DETERMINE WEAK AREAS, REACTOR SIMULATION AS A TRAINING/TESTING TOOL. (INCLUDES GE -APIO 1038, PHYSICS FOR REACTOR OPERATORS).

AVAILABILITY - UNIVERSITY OF WASHINGTON

*STAFFING, TRAINING, QUALIFICATION + ADMINISTRATIVE CONTROLS AND PRACTICES + INCIDENT, ACTUAL, GENERAL + REACTOR POWER

17-17174

MASCHE GC

PHYSICS FOR REACTOR OPERATORS

GENERAL ELECTRIC CO., IRRADIATION PROCESSING OPERATION, VALLECITOS ATOMIC LAB., PLEASANTON, CALIFORNIA

APIO-1038 +. 209 PAGES, 45 FIGURES, APRIL 1966

TO SERVE AS COURSE NOTES IN BASIC TRAINING FOR BWR OPERATORS, WITH SAMPLE PROBLEMS. CHAPTERS ON BASIC NUCLEAR PHYSICS (PAGE 34), NEUTRON BEHAVIOR (PAGE 56), CRITICALITY EQUATIONS (PAGE 49), REACTOR AT POWER (PAGE 54), REACTOR HAZARDS (PAGE 15). IS NOT SLANTED TO A PARTICULAR REACTOR TYPE, NOR DOES IT CONTAIN PRACTICAL OPERATIONAL PROBLEMS. MATH PAST ALGEBRA REQUIRED.

AVAILABILITY - GENERAL ELECTRIC CO., VALLECITOS ATOMIC LAB., PLEASANTON, CALIF.

*STAFFING, TRAINING, QUALIFICATION + REACTOR PHYSICS + REACTOR, BOILING WATER

17-17176

COBURN JM

PROGRAM REQUIREMENTS FOR TRAINING SUPERVISORY OPERATORS AND OPERATORS ON NUCLEAR REACTORS

UNIVERSITY OF TENNESSEE, KNOXVILLE

102 PAGES, 1 FIGURE, 17 TABLES, 11 REFERENCES, JUNE 1963

(M.S. DISSERTATION) 33 OPERATING ORGANIZATIONS WERE QUERIED. 21 RESPONDED. RECOMMENDATIONS PRESENTED ON ADMINISTRATION OF THE PROGRAM, SELECTION OF TRAINEES AND TEACHER, TEACHING, DETERMINATION OF CURRICULUM. EVALUATION OF PROGRAM INCLUDES (1) ADMINISTRATION BY SOMEONE OTHER THAN REACTOR MANAGER, (2) SUPERVISORY OPERATOR NEED NOT HAVE A COLLEGE DEGREE BUT SHOULD HAVE TWO YEARS EXPERIENCE AT THE FACILITY AS OPERATOR, STANDARDIZED SELECTION TESTS SHOULD BE USED, INSTRUCTORS SHOULD BE TRAINED IN HOW TO TEACH.

*STAFFING, TRAINING, QUALIFICATION + REACTOR POWER

17-17177

LOCKWOOD EH

REACTOR PHYSICS PRIMER

HANFORD ATOMIC PRODUCTS OPERATION, RICHLAND, WASHINGTON

HW-51856 +. 106 PAGES, 31 FIGURES, 2 TABLES, NOVEMBER 15, 1957

WELL-WRITTEN DISCUSSIONS, READABLE WITHOUT PRIOR PHYSICS, WITH CHAPTERS ON BUILDING BLOCKS OF

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17177 *CONTINUED*

MATTER, STRUCTURE OF THE NUCLEUS, NUCLEAR PARTICLE, NUCLEAR FORCES, NUCLEAR REACTIONS, METHODS OF REACTION, NUCLEAR FISSION, DETECTION OF RADIATION. ALL THESE ARE MOST USEFUL IN ANY TRAINING PROGRAM, WHILE THE LATTER CHAPTERS (DESCRIPTION OF FISSION REACTIONS, CHAIN REACTIONS, PROPERTIES OF A CHAIN REACTING PITS) ARE SLANTED TO THE LARGE PRODUCTION REACTORS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*STAFFING, TRAINING, QUALIFICATION + REACTOR, PRODUCTION

17-17178

BOBIN KJ

A NUCLEAR PHYSICS TRAINING MANUAL
ATOMIC ENERGY RESEARCH ESTABLISHMENT, HARWELL, BERKSHIRE
AERE-N/M-11-D (REV.) +. 106 PAGES, FIGURES, 1959

(MINOR REVISION TO 1948 TEXT.) THE LAST HALF IS REACTOR PHYSICS (REPRODUCTION CONSTANT, CONTROL, HEAT PRODUCTION). FIRST PART PRESENTS ATOMIC AND NUCLEAR STRUCTURE, RADIATION AND IONIZATION, HEALTH PHYSICS, AND SHIELDING. WRITTEN TERSELY AND NONMATHEMATICALLY, APPARENTLY INTENDED MORE AS COURSE NOTES THAN AS A BOOK.

AVAILABILITY - (HER) MAJESTYS STATIONERY OFFICE, LONDON

*STAFFING, TRAINING, QUALIFICATION + REACTOR, POWER

17-17179

ETHERINGTON H

REACTOR CALCULATIONS FOR AMATEURS
ARGONNE NATIONAL LAB., LEMONT, ILL.
ANL-5746 +. 140 PAGES, FIGURES, TABLES, SEPTEMBER 1957

BASED ON 1952 LECTURES, INTENDED AS A CORRESPONDENCE REFRESHER COURSE CONTAINING PROBLEMS AND SIMPLE DIRECTIONS FOR CALCULATING THE ONE-GROUP REACTOR. NO DERIVATIONS GIVEN. GOOD WHEN USED AS INTENDED. NOT FOR INITIAL TRAINING.

*STAFFING, TRAINING, QUALIFICATION

17-17180

FUNDAMENTALS IN THE OPERATION OF NUCLEAR TEST REACTORS. VOLUME 1. REACTOR SCIENCE AND TECHNOLOGY
PHILLIPS PETROLEUM CO., ATOMIC ENERGY DIVISION, IDAHO FALLS, IDAHO
ID0-16871-1 +. 133 PAGES, 64 FIGURES, 22 TABLES, REFERENCES, JUNE 1963

A 5-VOLUME SET INTENDED TO PROVIDE BASIC INFORMATION TO OPERATE (MTR, ETR) AND RUN IN-PILE LOOPS. THIS VOLUME INCLUDES NUCLEAR PHYSICS, REACTOR PHYSICS, ENGINEERING, CHEMISTRY AND METALLURGY, INSTRUMENTATION, KINETICS AND CONTROL, AND REACTOR SAFETY. INTENDED FOR OPERATORS WHO HAVE ENGINEERING DEGREES, USEFUL FOR SUPERVISORS ELSEWHERE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*STAFFING, TRAINING, QUALIFICATION + REACTOR, TEST

17-17181

FUNDAMENTALS IN THE OPERATION OF NUCLEAR TEST REACTORS. VOLUME 2. MATERIALS TESTING REACTOR DESIGN AND OPERATION

PHILLIPS PETROLEUM CO., ATOMIC ENERGY DIVISION, IDAHO FALLS, IDAHO
ID0-16871-2 +. 161 PAGES, 44 FIGURES, 11 TABLES, OCTOBER 1963

BASICALLY A SIMPLE REACTOR DESCRIPTION, WITH MANY ILLUSTRATIONS AND CIRCUIT DIAGRAMS, PLUS A 20-PAGE DISCUSSION OF VARIOUS OPERATIONAL MODES, 10 PAGES OF SHUTDOWN WORK. EACH CHAPTER ENDS WITH A SET OF TRAINING QUESTIONS. NOT JUST A DESCRIPTION OF HARDWARE. USAGE AND EXPERIENCE IS INCLUDED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*REACTOR DESCRIPTION + MTR (MATERIAL TESTING REACTOR) + REACTOR, AEC OWNED + REACTOR, TEST + STAFFING, TRAINING, QUALIFICATION

17-17182

FUNDAMENTALS IN THE OPERATION OF NUCLEAR TEST REACTORS. VOLUME 3. ENGINEERING TEST REACTOR DESIGN AND OPERATION

PHILLIPS PETROLEUM CO., ATOMIC ENERGY DIVISION, IDAHO FALLS, IDAHO
ID0-16871-3 +. 185 PAGES, 42 FIGURES, 9 TABLES, JULY 1964

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17182 *CONTINUED*

BASICALLY A SIMPLE REACTOR DESCRIPTION INTENDED FOR USE IN OPERATOR AND STAFF-ENGINEER TRAINING.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*REACTOR DESCRIPTION + ETR (ENGINEERING TEST REACTOR) + REACTOR, AEC OWNED + REACTOR, TEST + STAFFING, TRAINING, QUALIFICATION

17-17183

FUNDAMENTALS IN THE OPERATION OF NUCLEAR TEST REACTORS. VOLUME 4. ENGINEERING AND DESIGN CONSIDERATIONS FOR IN-PILE TESTS

PHILLIPS PETROLEUM CO., ATOMIC ENERGY DIVISION, IDAHO FALLS, IDAHO
IDC-16871-4 +. 298 PAGES, 54 FIGURES, 10 TABLES, 4 REFERENCES, JULY 1965

DISCUSSES EXPERIMENTAL PROGRAMS AT 3 TEST REACTORS AND REVIEWS ENGINEERING AND DESIGN FUNDAMENTALS. INTENDED FOR PROJECT ENGINEERS WHO MUST WORK WITH SPONSOR TO DESIGN EXPERIMENT. CHAPTERS I-IV REVIEW NUCLEAR, HEAT, AND FLUID ASPECTS, V AND VI LOOP EQUIPMENT DESIGN, VII-IX SAMPLE HANDLING, INSTRUMENTATION AND DECONTAMINATION, X-XII TYPICAL CAPSULE, WATER AND GAS LOOPS, XIII LIQUID METALS AND FUSED SALTS, XIV HAZARDS, AND TIES THE MATERIAL TOGETHER. XV SHIPPING. EIGHT APPENDIXES PRESENT SAMPLE CALCULATIONS.

AVAILABILITY -- CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

*SAFETY REVIEW (OPERATIONS, EXPERIMENTS) + *STAFFING, TRAINING, QUALIFICATION + ATR (ADVANCED TEST REACTOR - NRTS) + ETR (ENGINEERING TEST REACTOR) + IN PILE LOOP + MTP (MATERIAL TESTING REACTOR) + OUT OF PILE LOOPS AND EXPERIMENTS + REACTOR, AEC OWNED + REACTOR, TEST

17-17186

VOLLMER HM + MAYNARD PJ
INSTRUCTORS GUIDE - SURVEY OF NUCLEAR ENERGY AND POWER PLANT APPLICATIONS
STANFORD RESEARCH INSTITUTE, CALIFORNIA
SRIA-4 (SUPPL.) +. 75 PAGES, 18 FIGURES, SEPTEMBER 1959

INSTRUCTORS GUIDE (LESSON PLANS AND SUGGESTED READING LISTS) FOR A 32-HR COURSE TO TRAIN TECHNICIANS AND OTHERS IN THE FUNDAMENTALS OF NUCLEAR ENERGY AND POWER-PLANT APPLICATIONS. PRELIMINARY DRAFT WAS IMPROVED BASED ON TRIAL PRESENTATIONS AT VOCATIONAL EDUCATION CLASSES AND AT A COURSE FOR INSTRUCTOR TRAINEES. TOPICS INCLUDE (1) PRINCIPLES OF ATOMIC STRUCTURE, (2) PRINCIPLES OF RADIATION, (3) RADIATION PROTECTION, (4) ENERGY FROM MATTER, (5) NUCLEAR REACTORS, (6) NUCLEAR FUELS, (7) REACTOR CONTROL AND INSTRUMENTATION, AND (8) COMMERCIAL DEVELOPMENT OF NUCLEAR ENERGY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*STAFFING, TRAINING, QUALIFICATION + RADIATION SAFETY AND CONTROL + REACTOR, POWER

17-17187

TOWLE LH
INSTRUCTORS GUIDE - SURVEY OF NUCLEAR FUNDAMENTALS AND RADIOISOTOPE APPLICATIONS IN INDUSTRY
STANFORD RESEARCH INSTITUTE, CALIFORNIA
SRIA-19 +. 91 PAGES, 20 FIGURES, JULY 1960

OUTLINE (LESSON PLAN, ILLUSTRATIONS, AND READING ASSIGNMENTS) FOR A 27-HR COURSE TO TRAIN WORKERS AND TECHNICIANS IN NUCLEAR FUNDAMENTALS AND INDUSTRIAL RADIOISOTOPE APPLICATIONS, SUCH AS IN RADIOGRAPHY, GAGING, AND TRACING. THE GUIDE CONTAINS NINE SECTIONS, EACH CONTAINING PLANS FOR LECTURES AND DISCUSSIONS, AND QUESTIONS FOR STUDENT DISCUSSION - (1) PRINCIPLES OF ATOMIC STRUCTURE, (2) PRINCIPLES OF RADIOACTIVITY, (3) RADIATION SAFETY, (4) RADIOGRAPHY, (5) RADIATION GAGES, (6) RADIOISOTOPE TRACERS, (7) OTHER INDUSTRIAL APPLICATIONS OF RADIATION SOURCES, (8) HANDLING RADIOACTIVE MATERIALS, (9) RADIOISOTOPES UTILIZATION AND PEOPLE. BACKGROUND READINGS FOR INSTRUCTORS AND INFORMATION ON PROCUREMENT OF TRAINING FILMS AND CHARTS IS ALSO GIVEN. (SEE SRIA-20 FOR REPORT ON ITS DEVELOPMENT.)

AVAILABILITY - SUPERINTENDENT OF DOCUMENTS, GOVERNMENT PRINTING OFFICE, WASHINGTON 25, D.C., \$0.75 COPY

*STAFFING, TRAINING, QUALIFICATION + RADIATION SAFETY AND CONTROL + RADIOGRAPHY + TRACER, RADIOACTIVE

17-17188

VOLLMER HM + TOWLE LH + MAYNARD BJ
DEVELOPMENT OF A RADIATION SAFETY TRAINING PROGRAM FOR INDUSTRIAL AND PUBLIC SERVICE PERSONNEL
STANFORD RESEARCH INSTITUTE, MENLO PARK, CALIFORNIA
SRIA-22 +. 115 PAGES, 8 FIGURES, 25 TABLES, JULY 1960

DESCRIBES STUDY (1) TO ASSESS RADIATION SAFETY TRAINING NEEDS THAT NOW OR WILL EXIST, (2) TO DESIGN A BASIC SURVEY COURSE (32 HR), (3) TO ASCERTAIN ITS EFFECTIVENESS AND MODIFY COURSE ACCORDINGLY. RADIATION-SAFETY TRAINING OF FIRE-PROTECTION PERSONNEL, TRAINING BY AEC

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17188 *CONTINUED*

CONTRACTORS, RADIATION HAZARDS IN THE COMMUNITY AND INDUSTRY, EFFECTIVENESS AND DESIGN OF COURSE, AND CHARACTERISTICS AND MOTIVATION OF STUDENTS ARE DISCUSSED. INCLUDED ARE BEFORE-AND-AFTER COURSE QUESTIONNAIRES, INFORMATION ON RELATION OF KNOWLEDGE AND APTITUDE SCORES TO GRADES, CONSTRUCTION AND INTERPRETATION OF A SCALE TO MEASURE ATTITUDES TOWARD AND RADIATION HAZARDS. (COURSE PREPARED IS IN SRIS 21.)

AVAILABILITY - SUPERINTENDENT OF DOCUMENTS, U.S. GOVERNMENT PRINTING OFFICE, WASHINGTON 25, D.C., \$1.00 COPY

*STAFFING, TRAINING, QUALIFICATION + RADIATION SAFETY AND CONTROL + RADIATION, PUBLIC EDUCATION/ACCEPTANCE

17-17189

VOLLMER HM + TOWLE LH

RADIATION SAFETY TRAINING IN A NAVAL SHIPYARD - SOME MEANS OF ASSESSING TRAINING NEEDS AND EVALUATING COURSE EFFECTIVENESS

STANFORD RESEARCH INSTITUTE, MENLO PARK, CALIFORNIA

SRIA-23 +. 145 PAGES, 9 FIGURES, 25 TABLES, JULY 1960

STUDY TO DEMONSTRATE HOW ANALYTICAL DEVICES MAY BE DEVELOPED TO MEASURE (1) KNOWLEDGE ABOUT RADIATION SAFETY, (2) ATTITUDES TOWARD RADIATION HAZARDS, AND TO INDICATE HOW THESE DEVICES MAY BE USED IN A LARGE INDUSTRIAL NUCLEAR FACILITY (A) TO ASSESS TRAINING NEEDS AND (B) TO EVALUATE THE EFFECTIVENESS OF A TRAINING COURSE. DISCUSSES TRIAL PRESENTATION AT MARE ISLAND NAVAL SHIPYARD OF RADIATION SAFETY COURSE IN 1960. CONSTRUCTION AND VALIDITY OF A KNOWLEDGE INVENTORY AND SPI-AR SCALE ARE DESCRIBED.

AVAILABILITY - SUPERINTENDENT OF DOCUMENTS, U.S. GOVERNMENT PRINTING OFFICE, WASHINGTON 25, D.C., \$0.35 COPY

*STAFFING, TRAINING, QUALIFICATION + RADIATION SAFETY AND CONTROL

17-17190

TOWLE LH

INSTRUCTORS GUIDE - RADIATION SAFETY

STANFORD RESEARCH INSTITUTE, MENLO PARK, CALIFORNIA

SRIA-21 +. 92 PAGES, 14 FIGURES, JULY 1960

LESSON PLANS FOR A 32-HR COURSE FOR INDUSTRIAL AND PUBLIC PROTECTION PERSONNEL IN THE FUNDAMENTALS OF RADIATION SAFETY AS A COMPANION TO OTHER SRI COURSES IN REACTOR FUNDAMENTALS AND RADIOISOTOPE APPLICATION. THE GUIDE IS DIVIDED INTO NINE SECTIONS, EACH OF WHICH CONTAINS LESSON PLANS FOR LECTURES, DISCUSSIONS, AND QUESTIONS FOR STUDENT DISCUSSION. SECTION TOPICS ARE - (1) PRINCIPLES OF MATTER, (2) PRINCIPLES OF RADIATION, (3) RADIATION EFFECTS, (4) HAZARDS ASSOCIATED WITH RADIATION APPLICATIONS, (5) RADIATION EXPOSURE CONTROL, (6) RADIATION DETECTION AND MEASUREMENT, (7) ADMINISTRATIVE PROCEDURES FOR RADIATION CONTROL, (8) RADIATION ACCIDENT PROCEDURES, (9) OTHER RADIATION SAFETY PROBLEMS. BACKGROUND READINGS FOR THE INSTRUCTOR ARE SUGGESTED, AND DEMONSTRATIONS INVOLVING GEIGER TUBES, COUNT-RATE METERS, AND VARIOUS SHIELDING MATERIALS AND RADIOISOTOPE SOURCES ARE DESCRIBED. TRAINING FILM AND CHART PROCUREMENT IS DESCRIBED.

AVAILABILITY - SUPERINTENDENT OF DOCUMENTS, U.S. GOVERNMENT PRINTING OFFICE, WASHINGTON 25, D. C.

*STAFFING, TRAINING, QUALIFICATION + RADIATION SAFETY AND CONTROL

17-17191

ALSO IN CATEGORY 15

HEALTH PHYSICS HANDBOOK

GENERAL DYNAMICS, FORT WORTH

GSP-379 +. 316 PAGES, FIGURES, TABLES, APRIL 1963

INFORMATION FOR NUCLEAR AEROSPACE REACTOR FACILITY, WITH SECTIONS ON (1,3) PERSONNEL AND ENVIRONMENTAL MONITORING, (2) INSTRUMENTATION, (4) PHYSICAL CONSTANTS AND EQUATIONS, (5) SOURCE AND DOSE RATE - SHIELDING, GEOMETRY - DATA, (6) BIOLOGICAL DATA, (7) DECONTAMINATION, (8) SHIPPING REGULATIONS, (9) CHARTS AND GRAPHS, (10) GLOSSARY.

AVAILABILITY - GENERAL DYNAMICS, FORT WORTH, TEXAS

*HEALTH PHYSICS TRAINING + PROCEDURES AND MANUALS + REACTOR, RESEARCH + STAFFING, TRAINING, QUALIFICATION

17-17192

KLAUS DJ + DETERLINE WA

ATOMIC PHYSICS - AN AUTO-INSTRUCTIONAL PROGRAM

AMERICAN INSTITUTE FOR RESEARCH, PITTSBURGH, PENNSYLVANIA

AIR-C10-9/61-RP (VOL. 1-4) +. VOLUME 1 - 197 PAGES, VOLUME 2 - 199 PAGES, VOLUME 3 - 211 PAGES, VOLUME 4 - 179 PAGES, 1961

PROGRAMMED INSTRUCTION PREPARED FOR AN EXPERIMENTAL STUDY OF SELF-TUTORING. COVERS ATOMIC AND NUCLEAR PHYSICS (ATOMIC AND NUCLEAR STRUCTURE, NUCLEAR REACTIONS AND RADIATIONS, DECAY, NUCLEAR ENERGY USES) AT APPROXIMATELY HIGH SCHOOL LEVEL WITHOUT REQUIRING PRIOR PHYSICS OR MATH.

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17192 *CONTINUED*

AVAILABILITY - D. J. KLAUS AND W. A. DETERLINE, AMERICAN INSTITUTE FOR RESEARCH, PITTSBURGH, PENNSYLVANIA

*STAFFING, TRAINING, QUALIFICATION

17-17203 ALSO IN CATEGORY 6

MASCHE GC

NEAR MISS NUMBER ONE ROD EJECTION BY REACTOR PRESSURIZATION

GENERAL ELECTRIC CO., SAN JOSE, CALIFORNIA

1 PAGE, PAGE 78 OF REACTOR OPERATOR TECHNICAL QUALIFICATIONS AS THEY RELATE TO NUCLEAR SAFETY, 1966,
MASTERS THESIS FOR THE UNIVERSITY OF WASHINGTON

(PAGE 78) ON A WATER REACTOR, RODS WERE NOT ATTACHED TO THEIR DRIVES UPON REASSEMBLY BEFORE
PRIMARY-SYSTEM HEATUP. DURING HEATUP, IT WAS NOTICED THAT ALL THE RODS WERE SLOWLY COMING
OUT OF THE REACTOR AS THE PRESSURE BUILT UP. HEATUP WAS STOPPED, AND RODS HOOKED UP PROPERLY.

AVAILABILITY - UNIVERSITY OF WASHINGTON

*ACCIDENT, CONTROL ROD WITHDRAWAL + *FAILURE, MAINTENANCE ERROR + *INCIDENT, ACTUAL, HUMAN ERROR +
CONTROL ROD DRIVE + REACTOR, POWER

17-17204

MASCHE GC

NEAR MISS NUMBER TWO - FULL POWER ON A 30 SEC PERIOD

GENERAL ELECTRIC CO., SAN JOSE, CALIFORNIA

1 PAGE, PAGE 78 OF REACTOR OPERATOR TECHNICAL QUALIFICATIONS AS THEY RELATE TO NUCLEAR SAFETY, 1966,
MASTERS THESIS FOR THE UNIVERSITY OF WASHINGTON

(PAGE 78) DURING A NORMAL STARTUP, THE REACTOR WAS TAKEN THROUGH THE WATT AND KW RANGE ON A
30-SEC PERIOD. AS THE REACTOR REACHED THE MEGAWATT RANGE, NORMAL PROCEDURE WAS TO CHANGE TO
A SPECIFIC MW/MIN LIMIT. FOR SOME REASON, NO ONE WAS AWARE OF THE TRUE POWER LEVEL, AND THE
REACTOR WAS TAKEN TO FULL POWER ON A 30-SEC PERIOD, A DANGEROUS MANEUVER WITH THIS PARTICULAR
REACTOR. THE REACTOR SCRAMMED AUTOMATICALLY DUE TO COOLANT-TEMPERATURE PROBLEMS, OTHERWISE A
CONSIDERABLE AMOUNT OF POWER OVERSHOOT WOULD HAVE BEEN VERY PROBABLE.

AVAILABILITY - UNIVERSITY OF WASHINGTON

*FAILURE, OPERATOR ERROR + *INCIDENT, ACTUAL, HUMAN ERROR + *REACTOR POWER

17-17205

MASCHE GC

NEAR MISS NUMBER THREE - IMPROPER ROD MOVES

GENERAL ELECTRIC CO., SAN JOSE, CALIFORNIA

1 PAGE, PAGE 79 OF REACTOR OPERATOR TECHNICAL QUALIFICATIONS AS THEY RELATE TO NUCLEAR SAFETY, 1966,
MASTERS THESIS FOR THE UNIVERSITY OF WASHINGTON

(PAGE 79) ON A REACTOR STARTUP, THE OPERATOR MADE THE SAME SERIES OF IMPROPER ROD MOVES THREE
TIMES IN SUCCESSION IN A SPAN OF 7-8 MIN. THIS RESULTED IN THE REACTOR BEING PUT ON QUITE A
RAPID RATE OF POWER INCREASE. HAD NOT THE POWER INCREASE BEEN STOPPED, A SIGNIFICANT AMOUNT
OF POWER OVERSHOOT WOULD HAVE RESULTED.

AVAILABILITY - UNIVERSITY OF WASHINGTON

*FAILURE, OPERATOR ERROR + *INCIDENT, ACTUAL, HUMAN ERROR + *REACTOR POWER

17-17206 ALSO IN CATEGORY 9

MASCHE GC

NEAR MISS NUMBER FOUR - IMPROPER LOCATION OF STARTUP-CHANNEL

GENERAL ELECTRIC CO., SAN JOSE, CALIFORNIA

1 PAGE, PAGE 79 OF REACTOR OPERATOR TECHNICAL QUALIFICATIONS AS THEY RELATE TO NUCLEAR SAFETY, 1966,
MASTERS THESIS FOR THE UNIVERSITY OF WASHINGTON

(PAGE 79) REACTOR WAS STARTED UP WITH THE STARTUP-CHANNEL SENSORS IN A POSITION IN WHICH THEY
COULD NOT DETECT THE NEUTRON DENSITY, RESULTING IN A FAST UNDETECTED PERIOD AT A TIME WHEN
THE RODS WERE STILL BEING WITHDRAWN. THE EXCURSION WAS TERMINATED BY OVER-POWER TRIPS ON
POWER-RANGE INSTRUMENTS, WHOSE TRIP SETTING HAD PROPERLY BEEN RESET AT A LOWER LEVEL.
OTHERWISE A SIGNIFICANT EXCURSION WOULD PROBABLY HAVE OCCURRED.

AVAILABILITY - UNIVERSITY OF WASHINGTON

*ACCIDENT, CONTROL ROD WITHDRAWAL + *FAILURE, OPERATOR ERROR + *INCIDENT, ACTUAL, HUMAN ERROR +
*INSTRUMENTATION, STARTUP RANGE + SCRAM, REAL

17-17207

MASCHE GC

ALSO IN CATEGORY 9

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17207 *CONTINUED*

NGAP MISS NUMBER FIVE CONTROL ROD POISON SECTION NOT ATTACHED

GENERAL ELECTRIC CO., SAN JOSE, CALIFORNIA

1 PAGE, PAGE 80 OF REACTOR OPERATOR TECHNICAL QUALIFICATIONS AS THEY RELATE TO NUCLEAR SAFETY, 1966, MASTERS THESIS FOR THE UNIVERSITY OF WASHINGTON

(PAGE 80) AN OPERATOR REPLACED A POISON SECTION OF A CONTROL UPSIDE DOWN. THE OPERATOR WAS NOT FULLY INFORMED OF A CHANGE IN HOOKUP DESIGN AND USED THE WRONG TOOL FOR A COUPLING CHECK. THUS THE REACTOR OPERATED FOR SOME TIME WITH ONE ROD UNHOOKED FROM THE DRIVE. A LARGE AMOUNT OF REACTIVITY COULD BE INSERTED IF SOME MECHANISM SHOULD SUDDENLY CAUSE THE LOOSE ROD TO FLUSH FROM THE CORE.

AVAILABILITY - UNIVERSITY OF WASHINGTON

*ACCIDENT, CONTROL ROD EJECTION + *FAILURE, MAINTENANCE ERROR + *INCIDENT, ACTUAL, HUMAN ERROR + CONTROL ROD DRIVE

17-17233

ALSO IN CATEGORY 5

CULVER HM

A SUMMARY OF ACCIDENT CONDITIONS INVESTIGATED IN DETERMINING THE MAXIMUM CREDIBLE ACCIDENT FOR THE EGCR TENNESSEE VALLEY AUTHORITY, OAK RIDGE

TID-22746 +. 11 PAGES, SEPT. 28, 1964

ALTHOUGH HAZARDS LEVEL IS DETERMINED BY ACTIVITY RELEASE TO THE ENVIRONMENT, SEVERAL FACTORS HAVE AN IMPORTANT BEARING ON THE POTENTIAL ACTIVITY RELEASE FROM CORE TO REACTOR BUILDING, SUCH AS EFFECT OF ACCIDENT CONDITIONS ON (1) HEAT-REMOVAL-SYSTEM CAPABILITY, (2) FUEL-ELEMENT INTEGRITY AND CORE GEOMETRY, (3) CONTAINMENT INTEGRITY. SAFETY ANALYSIS FOR ALL ACCIDENTS INVESTIGATED THESE FACTORS. HOWEVER, ONLY IN DEPRESSURIZATION ACCIDENTS DID CONDITIONS CAUSING A SIGNIFICANT NUMBER OF FUEL ELEMENT FAILURES AND RESULTING ACTIVITY RELEASE TO THE ENVIRONMENT ARISE. THE CASE RESULTING IN THE HIGHEST TEMPERATURE IN REACTOR BUILDING CONCERNS AN ENERGY RELEASE TO BUILDING BY OPERATING THE BLOWER IN THE FAILED LOOP.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*ACCIDENT, MAXIMUM CREDIBLE (MCA) + *REACTOR, GAS COOLED + *REACTOR, GRAPHITE MODERATED + *SAFETY ANALYSIS + ACCIDENT, LOSS OF PRESSURE + EGCR (EXPERIMENTAL GAS COOLED REACTOR)

17-17260

PERCENT FOAMED POLYURETHANE FIRES ON NON-AEC FACILITIES

UNITED STATES ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.

5 PAGES, 5 FIGURES, JULY 14, 1967, USAEC HEALTH AND SAFETY INFORMATION BULLETIN NO. 254

(1) HOT BOLTS AND MOLTEN METAL LODGED BETWEEN EXTERIOR ALUMINUM WALL CLADDING AND INTERIOR SPRAYED-ON POLYURETHANE INSULATION AT A TEST FACILITY, WITH RESULTING INTENSE SMOKE, HEAT, AND SOME FIRE, WHICH COULD NOT BE PUT OUT. TESTS SHOWED THAT THE NORMALLY FIRE-RESISTANT POLYURETHANE COULD SUSTAIN COMBUSTION WHENEVER AN OPEN FLAME OR SPARK AND A LIMITED AMOUNT OF AIR WAS PRESENT. POLYURETHANE SHOULD NOT BE APPLIED UNLESS AN INFINITE AMOUNT OF AIR, OR NO AIR IS PRESENT, AND WILL HENCE BE SPRAYED ON THE BUILDING INTERIOR, WITH FREQUENT FIREBREAKS. (2) FIRE DAMAGE TO PIPELINE INSULATION AND EXTENSIVE SMOKE AND SOOT DAMAGE IN REACTOR-CONTAINMENT ENCLOSURE DUE TO SPONTANEOUS IGNITION OF POLYURETHANE. THE INCIDENT WAS ATTRIBUTED TO APPLICATION OF INSULATION IN SUCCESSIVE LAYERS WITHOUT SUFFICIENT CURING TIME, ALLOWING THE POLYURETHANE EXOTHERMIC TENDENCIES TO CAUSE TEMPERATURE INCREASES. ALL REMAINING POLYURETHANE IN THE FACILITY WILL BE REMOVED AND REPLACED WITH LESS HAZARDOUS MATERIALS.

AVAILABILITY - AEC, DIVISION OF OPERATIONAL SAFETY, WASHINGTON, D. C.

*FIRE + *THERMAL INSULATION

17-17346

THIE JA

ELK RIVER REACTOR SAFETY ANALYSIS MONTHLY REPORT, MAY 1966

RURAL COOPERATIVE POWER ASSOCIATION, ELK RIVER, MINN.

TID-23231 + JAT-66-5 +. 14 PAGES, MAY 1966, DOCKET NO. 115-1

CORE-II RODS MAY BE WORTH AS MUCH AS 8.3% IN THE SUBCRITICAL REACTOR. THE SECOND ROD OUT DURING CORE-I EOL MEASUREMENTS WAS 7.8%. TO COMPLY WITH TECH.-SPECS. MAX. LIMIT OF 3% PER POD ABOVE 100 PSI, ADMIN. CONTROL WILL LIMIT THE INSERTION OF ANY ROD NOT IN THE BANK. DATA MAY BE INTERPRETED AS GIVING A POSITIVE MODERATOR TEMPERATURE COEFFICIENT BELOW 170 F. RATIO OF STARTUP CHANNELS 10-MIN COUNT RATE TAKEN OVER A WEEKS TIME WITH REACTOR SHUTDOWN SHOWED STANDARD DEVIATION 3X EXPECTED, NOT ENOUGH TO CONCLUSIVELY INDICATE LACK OF RELIABILITY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*ADMINISTRATIVE CONTROLS AND PRACTICES + *CONTROL ROD WORTH + *SHUTDOWN MARGIN + ELK RIVER + INSTRUMENTATION, ABNORMAL INDICATION + INSTRUMENTATION, STARTUP + MODERATOR COEFFICIENT + OPERATIONS REPORT, ANALYSIS + REACTOR, BOILING WATER + SAFETY REVIEW (OPERATIONS, EXPERIMENTS)

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17366

KAY RE + TANNER CJ

CANDU-BLW EXPERIMENTS IN ZED-2. PART I. REFUELLING EXPERIMENT

ATOMIC ENERGY OF CANADA LIMITED, CHALK RIVER, ONTARIO

AECL-2667 +. 36 PAGES, 9 FIGURES, 9 TABLES, 11 REFERENCES, JANUARY, 1967

EXPERIMENTS WERE RUN IN A SIMULATED CANDU-BLW LATTICE IN ZED-2 TO DETERMINE THE REACTIVITY EFFECT AND THE PERTURBING EFFECT ON THE SURROUNDING LATTICE OF REPLACING THE FUEL IN THE CENTRAL CELL OF THE LATTICE BY LIGHT WATER. THIS PROCEDURE SIMULATES TWO STAGES IN THE REFUELING SEQUENCE OF THE PROPOSED CANDU-BLW REACTOR. THE MAXIMUM NEUTRON-DENSITY PERTURBATION OBSERVED IN FUEL ASSEMBLIES IMMEDIATELY ADJACENT TO THE PERTURBATION WAS A DEPRESSION OF 16%. THE MAXIMUM PERTURBATION WAS 18% 15 TO 20 CM AWAY.

AVAILABILITY - ATOMIC ENERGY OF CANADA, LTD., CHALK RIVER, ONTARIO, CANADA, \$1.50 COPY

*FLUX DISTRIBUTION + *REFUELING, ON LINE + *TEST, PHYSICS + CANDU (CANADIAN NATURAL URANIUM REACTOR) + FLUCTUATION + NEUTRON + REACTIVITY EFFECT + REACTOR, BOILING WATER + REACTOR, PRESSURE TUBE

17-17376

WARZEE M + PUSTON WR + DE DORLODOT P + HENNAUT J + BERGE JP

CORROSION OF STAINLESS STEELS IN HIGH TEMPERATURE WATER AND STEAM

SOCIETE D-ETUDES, DE RECHERCHES ET D-APPLICATIONS POUR L-INDUSTRIE, BRUSSELS, BELGIUM

EURAE-1665 + EUR-2857.E + CONF-660514-3 +. 14 PAGES, 6 FIGURES, FEBRUARY 9, 1966

CORROSION OF STAINLESS STEELS INCREASES REGULARLY, BETWEEN 200 AND 300 C IN STEAM. IN WATER, CORROSION SHOWS A MARKED MAXIMUM AROUND 250 C FOR AISI-410 STEEL, AND A LOWER (THOUGH NOT ACTUALLY OBSERVED) MAXIMUM VALUE FOR AISI 304 STEEL. THE QUANTITY OF DISSOLVED METAL IS RESPONSIBLE FOR THE MAXIMUM. IT WAS SHOWN THAT MAGNETITE CRYSTALS GROW OUT OF SOLUTION, AND THIS REDEPOSITION MAY CAUSE UNDERESTIMATION OF CORROSION VALUES FROM STATIC AUTOCLAVE TESTS. THIS IS OF GREAT SIGNIFICANCE BECAUSE MAGNETITE CRYSTALLIZATION FROM SOLUTION MAY CAUSE MASS TRANSFER FROM COOLER TO HOTTER PARTS IN WATER-COOLED REACTORS OPERATING AT 300 C.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*CORROSION + *STEAM + *STEEL, STAINLESS + *SURFACE FILM DEPOSIT + *WATER, GENERAL + REACTOR, POWER + REACTOR, WATER + RESEARCH AND DEVELOPMENT PROGRAM

17-17381

ALSO IN CATEGORY 6

HABERMANN FW + JAHREN K + LUNDE JE + OEYE O

COOLANT VOID REACTIVITY EFFECTS IN THE SECOND CHARGE OF HBWR. PART I. DIFFERENTIAL EXPERIMENTS AT LOW TEMPERATURE

INSTITUTT FOR ATOMENERGI, HALDEN, NORWAY. OECD HALDEN REAKTOR PROSJEKT

HPR-39 +. 91 PAGES, FIGURES, TABLES, REFERENCES, NOVEMBER 1964

ZERO-POWER LOW-TEMPERATURE EXPERIMENTS ON ZIRC-2-CLAD UO2 PELLETS IN NORA TO INVESTIGATE REACTIVITY DEPENDENCE BY DEPRESSING WATER LEVEL IN COOLANT CHANNEL BY AIR UPON VOID FRACTION AND VOID POSITION IN COOLANT TO SIMULATE VOIDS. DATA IS ANALYZED BY USING TWO-GROUP FIRST-ORDER PERTURBATION THEORY TO YIELD VOID INFLUENCE ON LEAKAGE PARAMETERS AND ON MULTIPLICATION, SLOWING DOWN, AND ABSORPTION PARAMETERS.

AVAILABILITY - MICROCARD EDITIONS INC., (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM, WISCONSIN 54669

*CRITICALITY EXPERIMENT + *VOID COEFFICIENT + EURATOM + HBWR (HALDEN BOILING WATER REACTOR) + REACTOR, BOILING WATER

17-17384

ARMY GAS COOLED REACTOR SYSTEMS PROGRAM. ML-1-IM DESIGN REPORT

ARJET GENERAL NUCLEONICS, SAN RAMON, CALIFORNIA

TID-22595 + AN AGCR-958 +. 238 PAGES, DECEMBER 1965

DESIGN-ANALYSIS SECTION COVERS NEUTRONIC, THERMAL, AND MECHANICAL ASPECTS OF ML-1-IM DESIGN AND SUMMARIZES BASIC CHARACTERISTICS OF ML-1-I AND ML-1-I/-IM CORES. DEVELOPMENT TESTING SECTION DESCRIBES MATERIAL, MECHANICAL, AND IN-PILE TESTS. APPENDICES PROVIDE SUPPLEMENTAL NEUTRONIC INFORMATION, PROPERTIES OF MATERIALS, MECHANICAL DESIGN, AND STRESS CALCULATIONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*DESIGN STUDY + *RESEARCH AND DEVELOPMENT PROGRAM + ML 1 (MORE LOW POWER PLANT NO. 1) + REACTOR, ARMY + REACTOR, GAS COOLED

17-17397

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17397 *CONTINUED*

BONUS POISON INJECTION, CONTROL ROD CALIBRATION
PUERTO RICO WATER RESOURCES AUTHORITY

20 PAGES, 3 FIGURES, 7 TABLES FROM DRL MONTHLY REPORT NO. 3, MARCH 1967, DOCKET NO. 115-4, JULY 27, 1967

(PAGE 3) 24 GAL OF LIQUID POISON WAS ACCIDENTLY INJECTED DURING A SYSTEM-OPERABILITY TEST. TO LOWER THE BORON CONTENT IN THE REACTOR WATER, THE WATER SYSTEM WAS PARTIALLY DRAINED AND REFILLED WITH DEMINERALIZED WATER SEVERAL TIMES, AND DEMINERALIZERS WERE USED. (PAGE 14-16) DESCRIBES A XENON-TRANSIENT EXPERIMENT IN WHICH CONTROL-ROD BANKS WERE CALIBRATED USING THE XENON CHANGE IN THE CORE FOLLOWING POWER REDUCTION FROM 50 TO 14.5 MW IN 50 MIN BY INSERTING THE BLADE ROD BANK.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTROL ROD CALIBRATION + *INCIDENT, ACTUAL, HUMAN ERROR + *SHUTDOWN SYSTEM, SECONDARY + *XENON + BONUS (BOILING NUCLEAR SUPERHEAT PROJECT) + OPERATIONS REPORT, GENERAL + POISON, SOLUBLE + REACTIVITY EFFECT + REACTOR DYNAMICS + REACTOR, BOILING WATER + REACTOR, INTERNAL SUPERHEAT + TEST, PHYSICS

17-17400

RATCH ML

ZERO POWER TESTS, PM-1 CORE II

BABCOCK AND WILCOX CO., LYNCHBURG, VA.

BAW-3576-2 +. 31 PAGES, TABLES, JUNE 1966

TESTS PERFORMED BY BABCOCK AND WILCOX AT ITS CRITICAL EXPERIMENT LABORATORY - (1) DETECTOR RESPONSE MEASURED DURING CORE SUBMERSION AND APPROACH TO CRITICALITY, (2) TEMPERATURE COEFFICIENT MEASURED UP TO 170 F, (3) STUCK-ROD CRITERIA AND CORE UNIFORMITY CONFIRMED, (4) TOTAL EXCESS REACTIVITY MEASURED (BORIC ACID TECHNIQUES) AS 10.09% DELTA K/K, COMPARED WITH 10.9% PREDICTED. ALL TESTS EXCEPT CORE-SUBMERSION-DETECTOR RESPONSE WERE DONE WITH STAINLESS-STEEL MOCKUPS OF THERMAL SHIELDS AND PRESSURE VESSEL.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

CRITICALITY EXPERIMENT + PM 1 (PORTABLE MEDIUM NUCLEAR POWER PLANT) + REACTOR, ARMY + REACTOR, PRESSURIZED WATER

17-17403

BAEP R

LOW ENRICHED PM REPLACEMENT CORE. VOLUME I. FINAL DESIGN REPORT

HITMAN ASSOCIATES, INC., BALTIMORE, MD.

HIT-3583-43(VOL. 1) +. 178 PAGES, FIGURES, TABLES, REFERENCES, NOVEMBER 28, 1966

(CHAPTER II) MECHANICAL DESIGN, NUCLEAR CHARACTERISTICS, AND THERMAL HYDRAULIC PERFORMANCE OF THE CORE. (CHAPTER III) FOUR PARTS - (1) MECHANICAL DESIGN ANALYSIS, INCLUDING ALIGNMENT AND TOLERANCE STUDY ON FUEL ELEMENTS AND CONTROL RODS AND ADEQUACY OF FISSION GAS RETENTION VOLUME. (2) NUCLEAR ANALYSES USING ANALYTICAL TECHNIQUES AND COMPUTER PROGRAMS TO CALCULATE POWER DISTRIBUTIONS, CONTROL ROD WORTH AND BEGINNING-OF-LIFE CHARACTERISTICS. (3) THERMAL-HYDRAULIC ANALYSIS, INCLUDING DETERMINATION OF CORE FLOW DISTRIBUTION, SIZING OF GRID PLATE ORIFICE HOLES, AND DNR RATIOS. (4) ECONOMIC ANALYSIS. (CHAPTER IV) PRELIMINARY SAFETY ANALYSIS WHICH CONCLUDES THAT CONSEQUENCES OF CONTAINMENT AND COLD-STARTUP ACCIDENTS ARE LESS FOR REPLACEMENT THAN FOR FULLY ENRICHED CORES. (APPENDIXES) CONTAIN VARIOUS THERMAL ANALYSES AND ANALOG STUDY EQUATIONS AND CONSTANTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*SAFETY ANALYSIS REPORT, GENERAL + CORE, PLATE TYPE + DESIGN STUDY + PM 1 (PORTABLE MEDIUM NUCLEAR POWER PLANT) + REACTOR, ARMY + REACTOR, PRESSURIZED WATER + REFUELING

17-17415

ALSO IN CATEGORY 10

DETAILED REPORT ON FAILURE OF IRL EMERGENCY GENERATOR DUE TO OVERLOAD JUNE 22, 1967

INDUSTRIAL REACTOR LABORATORIES, INC., PLAINSBORO, N. J.

2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(30), PAGE 18 AND 19, (JULY 24, 1967), DOCKET NO. 50-17

(LETTER, JULY 14) THE 50KW NATURAL-GAS MOTOR-GENERATOR IS RATED AT 174 AMP PER PHASE, AND HAS BEEN RELATIVELY TROUBLE FREE AND HIGHLY DEPENDABLE. ON THE POWER OUTAGE, THE OVERLOAD BREAKER WAS DROPPED OUT. THE NEXT DAY, A SIMILAR OVERLOAD-BREAKER FAILURE WAS ACHIEVED IN TEST. OVERLOADING IS ATTRIBUTED TO SUBTLE ADDITION OF EQUIPMENT TO THE EMERGENCY ELECTRICAL SYSTEM OVER THE YEARS BEYOND THE POINT OF SATURATION. LOAD TEST SHOWED AN AVERAGE OF 200 AMP PER PHASE. VARIOUS (NONESSENTIAL) LOADS WERE REMOVED AND OTHERS PLANNED TO RETURN THE ELECTRICAL LOAD TO BELOW NAMEPLATE. NEW ADMINISTRATIVE PROCEDURES INCLUDE SEMIANNUAL LOAD AND WEEKLY FUNCTIONAL TESTS.

*EMERGENCY POWER, ELECTRIC + *FAILURE, EQUIPMENT + FAILURE, ADMINISTRATIVE CONTROL + REACTOR, POOL TYPE + REACTOR, RESEARCH + TEST, SYSTEM OPERABILITY

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17416

WISCONSIN UNIVERSITY AUTHORIZED TRIGA MODIFICATION
UNIVERSITY OF WISCONSIN, NUCLEAR ENGRG., DEPT., MADISON, WIS., 53705
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(30), PAGE 21, (JULY 24, 1967), DOCKET NO. 50-156

UNIVERSITY OF WISCONSIN AUTHORIZED JULY 7 TO INSTALL TRIGA CORE AND MODIFY REACTOR CONTROL SYSTEM.

*MODIFICATION, SYSTEM OR EQUIPMENT + *POWER UPGRATING + *REACTOR CONTROL + REACTOR, POOL TYPE + REACTOR, RESEARCH + TECHNICAL SPECIFICATIONS + TRIGA (TRAINING REACTOR, ISOTOPES, G.A.)

17-17417

WASHINGTON STATE UNIVERSITY AUTHORIZED 1MW OPERATION
WASHINGTON STATE UNIVERSITY, PULLMAN, WASHINGTON
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(30), PAGE 21, (JULY 24, 1967), DOCKET NO. 50-27

LETTER OF JULY 12 AUTHORIZES OPERATION OF UNIVERSITY REACTOR AT 1 MW WITH MODIFIED CORE AND CONTROL SYSTEM.

*POWER UPGRATING + REACTOR, POOL TYPE + REACTOR, RESEARCH + TECHNICAL SPECIFICATIONS

17-17418

DETAILED REPORT ON KERR-MCGEE ION EXCHANGE REACTION
KERR-MCGEE CORP., OKLAHOMA CITY, OKLA.
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(31), PAGE 31, (JULY 31, 1967)

(LETTER, JUNE 29) ON MAY 24, 1967, DEPLETED URANIUM WAS BEING STRIPPED FROM IRA-400 ANION RESIN WITH NITRIC ACID. A PRESSURE BUILDUP OCCURRED DUE TO A RAPID CHEMICAL REACTION, PROBABLY AS FOLLOWS - (1) THE ACID-WATER BLENDING EQUIPMENT MALFUNCTIONED SO A SLUG OF ACID WAS FED, (2) DILUTION BY WATER AND EXOTHERMAL REACTION WITH SOLIDS AND ELUTED URANIUM, (3) NITRIC ACID WAS SEQUENTIALLY HEATED TO ACHIEVE AN AUTOCATALYTIC REACTION WITH RESIN. CORRECTIVE ACTIONS INCLUDE (1) BATCH MAKEUP OF ACID-WATER, (2) PROVISION OF A RUPTURE DISK, (3) CONTINUOUS FLOW REGENERATION FOR HEAT REMOVAL, (4) EFFLUENT-TEMPERATURE MONITORING.

*EXPLOSION + *ION EXCHANGE + *OPERATIONS REPORT, ANALYSIS + CHEMICAL REACTION + FAILURE, EQUIPMENT + INCIDENT, ACTUAL, EQUIPMENT + RESIN

17-17419

ALSO IN CATEGORY 15
CONAM INSPECTION, INC., RADIOGRAPHY OVEREXPOSURE DURING MAINTENANCE
CONAM INSPECTION, INC., TULSA, OKLA.
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(31), PAGE 31, (JULY 31, 1967)

(TWX, JULY 17) A 45-CURIE IP-192 SOURCE WAS ACCIDENTLY REMOVED FROM ITS SHIELDED POSITION DURING ROUTINE MAINTENANCE. EMPLOYEE A REPLACED SOURCE IN CAMERA, BUT IT DID NOT GO IN THE SHIELDED POSITION. A AND B PLACED DEVICE IN TRUCK AND DROVE FROM MISSISSIPPI SITE TO TULSA, OKLA. ONE FILM BADGE REVEALED A 24.5-R EXPOSURE, WHILE THE OTHER HAD A 180-MR EXPOSURE, WHICH IS NOT CORRECT, AS FIRST ESTIMATES OF EXPOSURE ARE 15-300 R.

*MAINTENANCE AND REPAIR + *PERSONNEL EXPOSURE, RADIATION + *RADIOGRAPHY + FAILURE, GENERAL + INCIDENT, ACTUAL, GENERAL

17-17420

CORRESPONDENCE RELATED TO CITATION OF LONG ISLAND NUCLEAR CORPORATION
LONG ISLAND NUCLEAR SERVICE CORPORATION
7 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(32), PAGES 47 THRU 53, (AUGUST 7, 1967)

ABSTRACTS OF 8 LETTERS (APRIL-JULY 1967) BETWEEN AEC, LONG ISLAND NUCLEAR SERVICE CO., AND NAVAL SUPPLY SYSTEMS COMMAND. LINS WAS CITED FOR HANDLING RESIN NOVEMBER 1966 AT PORTSMOUTH NAVAL SHIPYARD WITHOUT A LICENSE, FOR NOT POSTING RADIATION SIGNS, NOT INFORMING AEC OF OVEREXPOSURE. REPLY MAINTAINS NO LICENSE IS NEEDED FOR THIS WORK, AND SHIPYARD WAS RESPONSIBLE FOR SURVEYS AND MONITORING.

*INSPECTION AND COMPLIANCE + *PERSONNEL EXPOSURE, RADIATION + COOLANT PURIFICATION SYSTEM + ION EXCHANGE + REACTOR, PRESSURIZED WATER + RESIN

CATEGORY 1A
SAFETY ANALYSIS AND DESIGN REPORTS

18-13394 ALSO IN CATEGORY 13
AMENDMENT TO APPLICATION FOR LICENSES FPLE PLANT
ISOICHEM INC.
50 PAGES, TABLES, SEPTEMBER 13, 1966, DOCKET NO. 50-258

THIS DOCUMENT, LATER REFERRED TO AS AMENDMENT 1, DESCRIBES IN SUMMARY FORM CHANGES TO BE INCORPORATED IN THE TEXT OF THE ORIGINAL APPLICATION AT A LATER DATE. AEC QUESTIONS ARE ANSWERED IN DETAIL, AND SUPPLEMENTAL SAFETY ANALYSES ARE DESCRIBED. SPECIFIC SUBJECTS COVERED ARE - (1) THE HANDLING OF HYDROGEN, (2) THE CONTAINMENT OF RADIOACTIVE POWDERS IN GLOVE BOX OPERATIONS, AND (3) REVISED PROGRAM OBJECTIVES INCLUDING NECESSITATED PLANT DESIGN CHANGES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

*APPLICATION FOR AEC LICENSE + *CERIUM + *CESIUM + *HYDROGEN + *ISOICHEM, INC. + *PROMETHIUM +
*RADIOCHEMICAL PLANT SAFETY + *RADIOCHEMICAL PROCESSING + *STRONTIUM +
FISSION PRODUCT, SEPARATION FROM WASTE + HAZARDS ANALYSIS + SAFETY ANALYSIS REPORT, GENERAL

18-14834 ALSO IN CATEGORY 17
SELECTED OPERATIONS EXPERIENCE
WESTINGHOUSE ELECTRIC CORP., BETTIS ATOMIC POWER LABORATORY
WAPD-MRP-118 +. 115 PAGES, FIGURES, TABLES, OCTOBER 1966

(PAGE 1) BOILER 1B WAS ISOLATED WHEN TUBE LEAKAGE REACHED 30-50 GPH, AND LEAKAGE REACHED 100 GPM DURING THE 100P SHUTDOWN. ONE CENTRAL TUBE AT THE MID POINT OF THE U BEND LEAKS. (PAGE 2-41) A COMPLETE REVIEW OF VARIOUS REACTOR ACCIDENTS AND EFFECTIVENESS OF PROTECTION SYSTEMS WAS MADE FOR CORE 2 FOR 5-10,000 EFPH CONDITIONS. (PAGE 43) A RADIOLOGICAL CONTROL REPORT OF PWR-2 REFUELING WAS DRAFTED. COMPARTMENT RADIATIONS LEVELS WERE SURVEYED IN PREPARATION FOR AN INTERNAL INSPECTION OF THE PRESSURIZER. (PAGE 45, 66-68) TESTS ON FLOW VARIATION RELATED TO PH VARIATIONS WAS INTERRUPTED BY 1B ISOLATION EFFECTS. (PAGE 55-57) CORE-1 VESSEL HEAD COMPONENTS WERE EXAMINED. (PAGE 64) TENSILE TESTS ON A HAFNIUM CONTROL ROD (7 TIMES 10 TO THE 21ST NVT ABOVE 1 MEV) INDICATED AN UNEXPECTED SHARP LOSS OF DUCTILITY, GREATER AT HIGH TEMPERATURES (600 F). (PAGE 89-102) VARIOUS IRRADIATION TESTS ON LOW DENSITY ZR02-CAO-UO2 FOR PWR2 SEED 2 REPORTED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*OPERATIONS REPORT, ANALYSIS + CONTROL ROD BURNUP + COOLANT QUALITY + FAILURE, TUBING +
FLOW ORIFICE OR RESTRICTION + FUEL ELEMENT + HEAT EXCHANGER + IRRADIATION TESTING + PRESSURIZER +
REACTOR, PRESSURIZED WATER + SHIPPINGPORT + SURVEY, RADIATION, GENERAL

18-15457 ALSO IN CATEGORY 12
QUESTION VI F (1) - DETAILS OF FAN-COOLER DESIGN
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA
14 PAGES, 1 FIGURE, PAGES F (1)(A)-1 TO F (1)(K)-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION
AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

ELEVEN QUESTIONS ASKED ABOUT FAN COOLERS USED IN CONTAINMENT AIR COOLING SYSTEM, INCLUDING
PROOF TESTS AND LEAKAGE RATE ON TUBE RUPTURE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT AIR COOLING + TEST, PROOF

18-15545
CONSUMERS POWER COMPANY, PALISADES PLANT, AMENDMENT NO. 1
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
288 PAGES, 40 FIGURES, 22 REFERENCES, 5 TABLES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO.
1, SEPTEMBER 6, 1966, DOCKET 50-255

REVISED PAGES TO PSAP ARE SUBMITTED AND QUESTIONS FROM DLR ASKED ON AUGUST 2, 1966, ARE ANSWERED (139 IN AMENDMENT 1) EXCEPT NUMBERS 2.1, 2.2, 2.2.1, THROUGH 2.2.3, 2.3, 4, 9.2, 9.4, 12, AND 13. SUBJECT AREAS ARE-- 1 - GENERAL (9 QUESTIONS). 2 - ENGINEERED SAFEGUARDS (4). 3 - CONTAINMENT (14). 5 - CONTAINMENT SPRAY SYSTEM (5). 6 - CONTAINMENT AIR RECIRCULATION AND COOLING SYSTEM (4). 7 - INSTRUMENTATION AND CONTROL (8). 8 - ELECTRICAL POWER SUPPLY (3). 9 - ENVIRONMENT (7). 10 - PRIMARY COOLANT SYSTEM (31). 11 - WASTE DISPOSAL (1). A SECOND SET OF QUESTIONS WAS DEVELOPED ON CONTAINMENT ALONE-- 1 - LINER DESIGN (10). 2 - STRUCTURAL DESIGN (20). 3 - CONTAINMENT CONSTRUCTION MATERIAL (5). 4 - CONTAINMENT CONSTRUCTION PRACTICE (10). 5 - CONTAINMENT TESTING (5). 6 - MISSILE PROTECTION (3).

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + PALISADES POINT + REACTOR, PRESSURIZED WATER

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-15546 ALSO IN CATEGORY 11
QUESTION 1.1.1--CLASS 1 SYSTEMS
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 PAGES OF CONSUMERS POWER COMPANY, PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

SECTION 1 (GENERAL) - PROVIDE LISTING OF SIGNIFICANT INTERFACES BETWEEN CLASS-1 SYSTEMS AND OTHER SYSTEMS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + BUILDING + EARTHQUAKE ENGINEERING + PALISADES POINT + REACTOR, PRESSURIZED WATER

18-15547 ALSO IN CATEGORY 11
QUESTION 1.1.2--DESIGN LOADS APPLICABLE TO CLASS 1 STRUCTURES, SYSTEMS, AND COMPONENTS
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 PAGES OF CONSUMERS POWER COMPANY, PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

INDICATE DESIGN LOADS APPLICABLE TO CLASS-1 STRUCTURES, SYSTEMS, AND COMPONENTS, THE METHOD OF COMBINING THESE LOADS, AND THE STRESS CRITERIA TO BE APPLIED TO VARIOUS LOAD COMBINATIONS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + BUILDING + PALISADES POINT + REACTOR, PRESSURIZED WATER + STRESS ANALYSIS

18-15548
QUESTION 1.2--FABRICATION INSPECTION AND QUALITY CONTROL. DETAILS AND RESPONSIBILITY
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 PAGES OF CONSUMERS POWER COMPANY, PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

DISCUSS FABRICATION-INSPECTION AND QUALITY-CONTROL TECHNIQUES, AND ORGANIZATIONS AND THEIR RESPONSIBILITY FOR BOTH WHICH WILL BE USED IN FIELD FABRICATION. ESTABLISH DEGREE OF INDEPENDENCE OF THE INSPECTION AND QUALITY-CONTROL ORGANIZATIONS FROM PRODUCTION AND SCHEDULAR PRESSURES. WILL ANY SPECIAL PROCEDURES OR TECHNIQUES BE APPLIED TO CLASS-1 ITEMS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + ADMINISTRATIVE CONTROLS AND PRACTICES + PALISADES POINT + QUALITY CONTROL + REACTOR, PRESSURIZED WATER

18-15549
QUESTION 1.3--REDUNDANCY, CRITERIA AND METHODS OF IMPLEMENTATION
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
4 PAGES OF CONSUMERS POWER COMPANY, PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

BEFORE OPERATION, IT IS NECESSARY TO IDENTIFY MINIMUM CONDITIONS OF OPERABILITY AND SURVEILLANCE AND REQUIREMENTS FOR VARIOUS SYSTEMS DURING REACTOR OPERATION. DEFINE EXTENT OF REDUNDANCY IN THESE SYSTEMS, BOTH TO DEMONSTRATE COMPLIANCE WITH NECESSARY CRITERIA AND TO MAKE ADEQUATE PROVISIONS FOR DOWNTIME DUE TO FAILURES AND SURVEILLANCE AND MAINTENANCE REQUIREMENTS FOR VARIOUS PARTS WHILE THE REACTOR PLANT IS BEING OPERATED. DISCUSS THIS MATTER AND STATE CRITERIA AND METHODS OF IMPLEMENTATION PLANNED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + ENGINEERED SAFETY FEATURE + PALISADES POINT + REACTOR, PRESSURIZED WATER + REDUNDANCE + TEST, SYSTEM OPERABILITY

18-15550
QUESTION 1.4--DIFFERENCES IN PLANT DESIGN AND OPERATING PARAMETERS AT 2200 MWT AND 2640 MWT
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 PAGES, 1 TABLE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

DISCUSS THE SIGNIFICANT DIFFERENCES REQUIRED IN DESIGN AND OPERATING PARAMETERS FOR SYSTEMS AND COMPONENTS AT 2200 MWT AND 2640 MWT. IN ADDITION, MODIFY TABLE I-1 TO SHOW ALL DIFFERENCES IN PLANT PARAMETERS FOR THE TWO POWER LEVELS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + PALISADES POINT + PERFORMANCE LIMIT + REACTOR, PRESSURIZED WATER

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-15551 ALSO IN CATEGORY 11
QUESTION 1.7--TORNADO CRITERIA
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
5 PAGES, 7 REFERENCES TO CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-266

STATE TORNADO CRITERIA TO BE USED. FURNISH ENGINEERING DESIGN BASES AND ANALYSES FOR THOSE FEATURES OF THE PLANT AFFECTED. INCLUDE WIND LOADINGS AND THEIR COMBINATION WITH OTHER LOADS USED IN THE DESIGN. JUSTIFY THIS SELECTION. CONSIDER EFFECTS ON ALL PARTS OF THE FACILITY CONTAINING RADIOACTIVITY OF MISSILES THAT COULD BE GENERATED BY A TORNADO.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + DESIGN CRITERIA + DESTRUCTIVE WIND + PALISADES POINT + REACTOR, PRESSURIZED WATER

18-15552 ALSO IN CATEGORY 12
QUESTION 2.4--CONTAINMENT SPRAY SYSTEMS LOCATION, TEST, DESIGN CRITERIA, FAILURE
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
4 PAGES, CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

SECTION 2 - ENGINEERED SAFEGUARDS. SAFETY INJECTION AND CONTAINMENT SPRAY SYSTEMS ARE LOCATED OUTSIDE THE CONTAINMENT BUILDING. IN A LARGE ACCIDENT, THESE SYSTEMS WOULD RECIRCULATE HIGHLY RADIOACTIVE WATER OUTSIDE THE CONTAINMENT BUILDING. JUSTIFY THIS LOCATION VERSUS ONE INSIDE, OR SOME OTHER CONTROLLED-LEAKAGE ENCLOSURE. DISCUSS LEAK-TIGHTNESS DESIGN CRITERIA AND LEAKAGE-TESTING PROVISIONS. HOW OFTEN DO YOU PLAN TO LEAK TEST. WHAT MARGINS WILL THESE SYSTEMS HAVE AGAINST EXCEEDING THEIR DESIGN LEAKAGE RATE. DEFINE POTENTIAL SOURCES OF LEAKAGE AND RUPTURES. SHOW CONSEQUENCES OF THESE FAILURES FOLLOWING LARGE ACCIDENT. CONSIDER CHLORIDE-STRESS-CORROSION FAILURES DUE TO CHLORIDE PICKUP BY THE RECIRCULATED COOLING WATER.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT SPRAY + CORE REFLOODING SYSTEM + PALISADES POINT + REACTOR, PRESSURIZED WATER + TEST, LEAK LOCATION

18-15553 ALSO IN CATEGORY 12
QUESTION 2.5--OPERATION AND ENGINEERED SAFEGUARD SYSTEMS AFTER ACCIDENTS
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 PAGES, CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

PROVIDE AN ANALYSIS TO SHOW HOW LONG THE ENGINEERED SAFEGUARD SYSTEMS WILL BE REQUIRED TO OPERATE AFTER THE DESIGN-BASIS ACCIDENT. WHAT SPECIFIC DESIGN CRITERIA ARE BEING APPLIED TO THESE SYSTEMS REGARDING MAINTAINABILITY, REPAIR, ISOLATION, REPLACEMENT, ETC., IN ORDER TO MEET THIS REQUIREMENT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + ENGINEERED SAFETY FEATURE + PALISADES POINT + REACTOR, PRESSURIZED WATER

18-15554 ALSO IN CATEGORY 12
QUESTION 2.6--TESTING OF ENGINEERED SAFEGUARDS
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
4 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

DISCUSS TESTING OF ENGINEERED SAFEGUARDS (ESPECIALLY THE UNITS FOR THE CONTAINMENT-AIR-COOLING SYSTEM) TO SHOW TO WHAT EXTENT THEIR PERFORMANCE UNDER DESIGN CONDITIONS WILL BE DEMONSTRATED BY CONFIRMATION TESTS BEFORE AND AFTER INSTALLATION. TO WHAT EXTENT WILL PERIODIC TEST OF THE SYSTEMS FALL SHORT OF SIMULATING OPERATION UNDER DESIGN CONDITIONS. JUSTIFY THE ADEQUACY OF THE PROPOSED TESTS IN MEETING THE OBJECTIVE OF COMPLETE FUNCTIONAL TESTING UNDER DESIGN CONDITIONS. WHAT ADDITIONAL DESIGN PROVISIONS COULD BE MADE TO PERMIT MORE COMPLETE TESTING.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT AIR COOLING + ENGINEERED SAFETY FEATURE + PALISADES POINT + REACTOR, PRESSURIZED WATER + TEST, PREOPERATIONAL

18-15555 ALSO IN CATEGORY 12
QUESTION 2.7--CONSEQUENCES OF LEAKS IN CONTAINMENT SPRAY HEAT EXCHANGERS OR AIR COOLING UNITS AFTER ACCIDENT
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-15555 *CONTINUED*

DISCUSS THE CONSEQUENCES OF LEAKS IN THE CONTAINMENT-SPRAY HEAT EXCHANGERS OR AIR-COOLING UNITS DURING THEIR OPERATION AFTER A DESIGN-BASIS ACCIDENT. CONSIDERATION SHOULD BE GIVEN TO FISSION-PRODUCT CONTAMINATION OF THE SERVICE WATER AND/OR TO DILUTION OF THE BORATED WATER. DISCUSS THE PROVISIONS TO IDENTIFY AND MITIGATE THE CONSEQUENCES OF SUCH A FAILURE. DISCUSS THE ADVISABILITY OF PROVIDING AN INTERMEDIATE COOLING-WATER LOOP BETWEEN THE SERVICE-WATER SYSTEM AND SYSTEMS CONTAINING RADIOACTIVITY.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT AIR COOLING + CONTAINMENT SPRAY + PALISADES POINT + REACTOR, PRESSURIZED WATER + TEST, LEAK LOCATION

18-15556 ALSO IN CATEGORY 11

QUESTIONS 3.1-3.2--ENGINEERING ANALYSIS AND EVALUATION OF DESIGN BASIS CURVES FOR PRESSURE AND TEMPERATURE IN CONTAINMENT AS FUNCTION OF TIME
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
30 PAGES, 17 FIGURES, 2 REFERENCES, 1 TABLE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

SECTION 3 - CONTAINMENT. ANALYZE AND EVALUATE DESIGN-BASIS CURVES FOR PRESSURE AND TEMPERATURE IN CONTAINMENT AS FUNCTION OF TIME, CONSIDERING HEAT SINKS AND HEAT SOURCES. IDENTIFY SENSITIVITY ABOVE AND BELOW DESIGN REQUIREMENTS. SHOW EFFECTS OF VARIATIONS FROM PREDICTED BEHAVIOR OF VARIOUS PHENOMENA. CONSIDER (DO NOT LIMIT TO) EFFECT IF CORE METAL-WATER REACTION IS ANALYZED ASSUMING SAFETY INJECTION SYSTEM NOT OPERATING, EFFECT IF HYDROGEN GENERATED DOES NOT BURN AS RELEASED BUT AT TIME RESULTING IN HIGHEST PRESSURE, EFFECT IF GROSS FAILURE IN PRIMARY TO SECONDARY COOLING SYSTEM BARRIER IN STEAM GENERATOR OCCURS WITH DESIGN ACCIDENT. SHOW SENSITIVITY TO VARIATION IN COMMENCEMENT OF STEAM-GENERATOR BLOWDOWN AND IN BLOWDOWN RATES. EVALUATE ABOVE ANALYSES, INDICATING ANY NEEDED CHANGES IN DESIGN CRITERIA.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT DESIGN + PALISADES POINT + PRESSURE, INTERNAL + REACTOR, PRESSURIZED WATER

18-15557 ALSO IN CATEGORY 11

QUESTION 3.3--ACCESS TO CONTAINMENT BUILDING
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

DISCUSS THE REASON LEADING TO YOUR CONCLUSION THAT READY ACCESS TO THE CONTAINMENT BUILDING MAY NOT BE POSSIBLE DURING NORMAL PLANT OPERATION. WHAT WOULD BE INVOLVED IN ENSURING SUCH ACCESS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT, HIGH PRESSURE + PALISADES POINT + REACTOR, PRESSURIZED WATER + SHIELDING

18-15558 ALSO IN CATEGORY 11

QUESTION 3.4--LEAK-RATE TESTS OF CONTAINMENT BUILDING
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

AT WHAT PRESSURE WILL PERIODIC INTEGRATED LEAK-RATE TESTS OF THE CONTAINMENT BUILDING BE PERFORMED DURING THE PLANTS OPERATING LIFE. HOW WILL THE LEAK RATE AT ACCIDENT CONDITIONS BE DETERMINED FROM THESE MEASURED RATES. WILL THE DESIGN OF ALL INSTRUMENTATION AND OTHER COMPONENTS LOCATED WITHIN THE CONTAINMENT BUILDING PERMIT PERFORMING A LEAKAGE-RATE TEST AT DESIGN PRESSURE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT, HIGH PRESSURE + PALISADES POINT + REACTOR, PRESSURIZED WATER + TEST, LEAK RATE

18-15559 ALSO IN CATEGORY 11

QUESTION 3.5--LIST OF CONTAINMENT PENETRATIONS
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

PROVIDE A LIST OF ALL THE TYPES OF CONTAINMENT PENETRATIONS WHICH WILL NOT BE DESIGNED SO THAT THEIR LEAKAGE RATE CAN BE TESTED AT DESIGN PRESSURE LOCALLY RATHER THAN BY AN INTEGRATED TEST OF THE ENTIRE CONTAINMENT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT PENETRATION, ELECTRICAL +

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-15559 *CONTINUED*

CONTAINMENT PENETRATION, GENERAL + CONTAINMENT PENETRATION, PIPE + PALISADES POINT + REACTOR, PRESSURIZED WATER + TEST, LEAK RATE

18-15560

ALSO IN CATEGORY 11

QUESTION 3.6--VACUUM RELIEF VALVES IN CONTAINMENT SYSTEM

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

PROVIDE A DISCUSSION AND ANALYSIS OF THE NEED FOR VACUUM-RELIEF VALVES IN THE CONTAINMENT SYSTEM. WILL THE VALVES BE REDUNDANT AS TO BOTH VACUUM-RELIEF FUNCTION AND CONTAINMENT INTEGRITY.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT, HIGH PRESSURE + PALISADES POINT + REACTOR, PRESSURIZED WATER + VACUUM RELIEF + VALVE

18-15561

ALSO IN CATEGORY 11

QUESTION 3.7--CONTAINMENT SYSTEM ISOLATION VALVES FAILURE MODES CRITERIA

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT CRITERIA WILL BE APPLIED TO THE FAILURE MODES (VALVE POSITION) OF EACH OF THE VARIOUS TYPES OF ISOLATION VALVES IN THE CONTAINMENT SYSTEM.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT PENETRATION, CLOSURE OF + CONTAINMENT, HIGH PRESSURE + DESIGN CRITERIA + FAILURE, GENERAL + PALISADES POINT + REACTOR, PRESSURIZED WATER

18-15562

ALSO IN CATEGORY 11

QUESTION 3.8--LEAK RATE TEST OF PENETRATIONS HAVING ONE CONTAINMENT ISOLATION VALVE

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

HOW WILL THE LOCAL LEAKAGE-RATE TEST OF PENETRATIONS HAVING ONLY ONE CONTAINMENT-ISOLATION VALVE BE PERFORMED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT PENETRATION, CLOSURE OF + PALISADES POINT + REACTOR, PRESSURIZED WATER + TEST, LEAK RATE

18-15563

ALSO IN CATEGORY 11

QUESTION 3.9--CRITERIA FOR CLOSED-SYSTEM CONTAINMENT

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

FOR PURPOSES OF CONTAINMENT-PENETRATION CLASSIFICATION, WHAT ARE THE CRITERIA FOR A CLOSED SYSTEM. DISCUSS THE PROBABILITIES AND CONSEQUENCES OF ONE OF THESE CLOSED SYSTEMS FAILING DURING OR AFTER AN ACCIDENT DUE TO MISSILES, VIBRATION, THERMAL SHOCK, ETC.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT PENETRATION, GENERAL + PALISADES POINT + REACTOR, PRESSURIZED WATER

18-15564

ALSO IN CATEGORIES 11 AND 9

QUESTION 3.10--CRITERIA FOR CONTAINMENT ISOLATION VALVE ACTUATING TIMES

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

PROVIDE THE CRITERIA AND THEIR BASES FOR CONTAINMENT-ISOLATION VALVE-ACTUATING TIMES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT PENETRATION, CLOSURE OF + DESIGN CRITERIA + PALISADES POINT + REACTOR, PRESSURIZED WATER + RESPONSE TIME

18-15565

ALSO IN CATEGORY 11

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-15565 *CONTINUED*

QUESTION 3.11--LENGTH OF PIPE LINES BETWEEN CONTAINMENT SHELL AND EXTERNAL ISOLATION VALVE
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT WILL BE THE CRITERIA ON THE LENGTH OF PIPE LINES BETWEEN THE CONTAINMENT SHELL AND
EXTERNAL ISOLATION VALVES. WHAT CRITERIA APPLY TO THE CONNECTION OF SMALL LINES TO PIPE
LINES BETWEEN THE CONTAINMENT SHELL AND THE EXTERNAL ISOLATION VALVES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT, HIGH PRESSURE +
INSTRUMENTATION, GENERAL + PALISADES POINT + PIPING + REACTOR, PRESSURIZED WATER

18-15566 ALSO IN CATEGORY 11

QUESTION 3.12--CONTAINMENT ISOLATION VALVES DURING POST-ACCIDENT PERIOD
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT CRITERIA APPLY TO VALVES IN THE ENGINEERED-SAFEGUARDS SYSTEMS THAT MAY HAVE TO SERVE AS
CONTAINMENT-ISOLATION VALVES DURING THE POSTACCIDENT PERIOD.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT PENETRATION, CLOSURE OF +
CONTAINMENT, HIGH PRESSURE +--DESIGN CRITERIA + PALISADES POINT + REACTOR, PRESSURIZED WATER + VALVE

18-15567 ALSO IN CATEGORY 11

QUESTION 3.13--CONTAINMENT PENETRATION TEMPERATURES

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT CRITERIA WILL BE APPLIED TO ENSURE THAT CONTAINMENT PENETRATIONS (INCLUDING THE EQUIPMENT
HATCH AND VACUUM BREAKERS) WILL ALWAYS HAVE AN ADEQUATE MARGIN BETWEEN THE TEMPERATURES THEY
WILL BE EXPOSED TO AND THEIR NOT TO ENSURE DUCTILE BEHAVIOR.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + BRITTLE FRACTURE + CONTAINMENT EQUIPMENT HATCH +
CONTAINMENT PENETRATION, ELECTRICAL + CONTAINMENT PENETRATION, GENERAL + CONTAINMENT PENETRATION, PIPE +
PALISADES POINT + REACTOR, PRESSURIZED WATER

18-15568 ALSO IN CATEGORY 11

QUESTION 3.14--CONTAINMENT BUILDING STRUCTURAL CONCRETE INTEGRITY

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT DESIGN PROVISIONS WILL BE MADE TO PREVENT DAMAGE TO THE CONTAINMENT-BUILDING STRUCTURAL +
CONCRETE DUE TO HIGH TEMPERATURES AND THERMAL GRADIENTS AT LOCATIONS WHERE HIGH-TEMPERATURE
PROCESS LINES PENETRATE THE CONTAINMENT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + CONCRETE + CONTAINMENT INTEGRITY + HIGH TEMPERATURE + PALISADES POINT +
REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-15569 ALSO IN CATEGORY 11

QUESTION 5.1--CONTAINMENT SPRAY SYSTEM DESIGN REQUIREMENTS ON TERMS OF HEAT REMOVAL AND PRESSURE RADIATION
CAPABILITY

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

SECTION 5 (CONTAINMENT SPRAY SYSTEM) - WHAT ARE THE CRITERIA THAT QUANTITATIVELY DEFINE THE
DESIGN REQUIREMENTS OF THE CONTAINMENT-SPRAY SYSTEM IN TERMS OF HEAT-REMOVAL AND
PRESSURE-REDUCTION CAPABILITY.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT SPRAY + DESIGN CRITERIA +
PALISADES POINT + REACTOR, PRESSURIZED WATER

18-15570 ALSO IN CATEGORY 11

QUESTION 5.2--HEAT TRANSFER CAPABILITY OF CONTAINMENT SPRAY SYSTEM

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE, 1 REFERENCE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-15570 *CONTINUED*
5U-255

WHAT ARE THE DESIGN BASES USED TO ESTABLISH THE HEAT-TRANSFER CAPABILITY OF THE CONTAINMENT-SPRAY SYSTEM.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT SPRAY + HEAT TRANSFER ANALYSIS + PALISADES POINT + REACTOR, PRESSURIZED WATER

18-15571 ALSO IN CATEGORY 11
QUESTION 5.3--PERFORMANCE MARGINS OF VARIOUS COMPONENTS OF CONTAINMENT SPRAY SYSTEM
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

PROVIDE ANALYSIS TO SHOW THE PERFORMANCE MARGINS AVAILABLE IN THE SYSTEM DESIGN, CONSIDERING VARIOUS COMBINATIONS OF PUMPS, SPRAY HEADS, AND HEAT EXCHANGERS BEING AVAILABLE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT SPRAY + PALISADES POINT + REACTOR, PRESSURIZED WATER

18-15572 ALSO IN CATEGORY 11
QUESTION 5.4--CONSEQUENCES OF INADVERTENT OPERATION OF CONTAINMENT SPRAY SYSTEM
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT ARE THE POTENTIAL CONSEQUENCES FROM A SAFETY POINT OF VIEW OF THE ACCIDENTAL OPERATION OF THE CONTAINMENT-SPRAY SYSTEM. CONSIDERATION SHOULD BE GIVEN TO SUCH FACTORS AS WETTING OF ELECTRICAL EQUIPMENT, THERMAL SHOCKING OF HOT EQUIPMENT, SEEPAGE OF WATER INTO AND BEHIND THERMAL INSULATION, ETC.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT SPRAY + PALISADES POINT + REACTOR, PRESSURIZED WATER + SYSTEM OPERABILITY IN ACCIDENT CONDITIONS

18-15573 ALSO IN CATEGORY 11
QUESTION 5.5--CONTAINMENT SUMP CLOGGING WITH DEBRIS
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT DESIGN MEASURES WILL BE USED TO ENSURE THAT THE CONTAINMENT SUMP WILL FULFILL ITS FUNCTION, ESPECIALLY RELATIVE TO PLUGGING BY DEBRIS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT SPRAY + FLOW BLOCKAGE + PALISADES POINT + REACTOR, PRESSURIZED WATER

18-15574 ALSO IN CATEGORY 11
QUESTION 6.1--CONTAINMENT COOLING SYSTEM HEAT REMOVAL REQUIREMENTS
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

SECTION 6. CONTAINMENT AIR RECIRCULATION AND COOLING SYSTEM. WHAT IS THE BASIS FOR THE HEAT-REMOVAL REQUIREMENTS INDICATED FOR THE AIR-RECIRCULATION-AND-COOLING SYSTEM.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT AIR COOLING + DESIGN CRITERIA + PALISADES POINT + REACTOR, PRESSURIZED WATER + VENTILATION SYSTEM

18-15575 ALSO IN CATEGORY 11
QUESTION 6.2--CONCEPTUAL DESIGN OF CONTAINMENT COOLING SYSTEM
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 FIGURES, 4 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

DESCRIBE THE CONCEPTUAL DESIGN OF THE CONTAINMENT COOLING SYSTEM, INCLUDING LOCATION OF THE COOLING UNITS, AND THE EXTENT, NATURE, AND CONFIGURATION OF DUCT WORK.

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CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-15575 *CONTINUED*

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT AIR COOLING + PALISADES POINT + REACTOR, PRESSURIZED WATER + SYSTEM DESCRIPTION

18-15576 ALSO IN CATEGORY 11

QUESTION 6.3--DESIGN BASES OF HEAT TRANSFER CAPABILITY OF CONTAINMENT COOLING SYSTEM UNDER ACCIDENT CONDITION

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT ARE THE DESIGN BASES USED TO ESTABLISH THE HEAT-TRANSFER CAPABILITY OF THE CONTAINMENT COOLING SYSTEM UNDER THE AIR-STEAM ATMOSPHERIC CONDITIONS ATTENDING THE DESIGN-BASIS ACCIDENT.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT AIR COOLING + DESIGN CRITERIA + HEAT TRANSFER ANALYSIS + PALISADES POINT + REACTOR, PRESSURIZED WATER

18-15577 ALSO IN CATEGORY 11

QUESTION 6.4--MAINTAINING HEAT TRANSFER CAPABILITY OF CONTAINMENT COOLING SYSTEM

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT DESIGN MEASURES WILL BE USED TO ENSURE THAT HEAT-TRANSFER CAPABILITY OF CONTAINMENT COOLING SYSTEM WILL NOT BE REDUCED OWING TO ACCUMULATION OF WATER IN THE COOLING UNITS, DUCT WORK, AND FILTERS, AND THAT THE FAN, DRIVE MOTORS, AND COUPLINGS WILL FUNCTION PROPERLY UNDER DESIGN-BASIS ACCIDENT CONDITIONS. WHAT PRESSURE DIFFERENCE WILL THE DUCTS BE DESIGNED FOR.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT AIR COOLING + PALISADES POINT + REACTOR, PRESSURIZED WATER + SYSTEM OPERABILITY IN ACCIDENT CONDITIONS

18-15578 ALSO IN CATEGORY 9

QUESTION 7.1--CORE DAMAGE CRITERIA FOR PROTECTION SYSTEM AFTER ACCIDENT

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

SECTION 7. INSTRUMENTATION AND CONTROL. WHAT IS THE CRITERION FOR THE REACTOR PROTECTION SYSTEM REGARDING THE ALLOWABLE AMOUNT OF CORE DAMAGE RESULTING FROM ACCIDENTS THAT MIGHT BE EXPECTED TO OCCUR DURING THE PLANT LIFE (E.G., LOSS OF FLOW, LOAD REJECTION, ETC.). ACCIDENTS THAT DO NOT MEET THIS CRITERION SHOULD BE IDENTIFIED.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + DESIGN CRITERIA + FAILURE, FUEL ELEMENT + PALISADES POINT + PLANT PROTECTIVE SYSTEM + REACTOR, PRESSURIZED WATER

18-15579 ALSO IN CATEGORY 9

QUESTION 7.2--DESIGN OF PROTECTION AND CONTROL SYSTEMS

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

THE DESIGN BASIS OF THE REACTOR PROTECTION AND CONTROL SYSTEMS SHOULD BE EXPANDED TO INCLUDE SUCH CONSIDERATIONS AS SINGLE CIRCUIT FAULTS (AS WELL AS COMPONENT FAILURES), BYPASSES, INTERLOCKING POLICY, EXTENT AND FREQUENCY OF TESTING, AND AVAILABILITY OF MANUAL BACKUP TO AUTOMATIC CONTROLS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + FAILURE, COMPONENT + PALISADES POINT + PLANT PROTECTIVE SYSTEM + REACTOR, PRESSURIZED WATER + SINGLE-FAILURE CRITERION

18-15580 ALSO IN CATEGORY 9

QUESTION 7.3--FAILURE OF TIME DELAY RELAY ON ROD MAGNET CURRENT INTERRUPTING SWITCH

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

IN CASE OF FAILURE OF THE TIME-DELAY RELAY ON THE ROD-MAGNET-CURRENT-INTERRUPTING SWITCH, COULD A MANUAL OR AUTOMATIC SCRAM BE PREVENTED.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + FAILURE, SCRAM MECHANISM + INSTRUMENTATION, RELAY + PALISADES POINT + REACTOR SAFETY SYSTEM + REACTOR, PRESSURIZED WATER

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-15581 ALSO IN CATEGORIES 9 AND 12
QUESTION 7.4--FIRE IN CONTROL ROOM OR CABLE SPREADING AREA
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
3 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

ANALYZE THE PROBABILITY AND CONSEQUENCES OF THE CENTRAL CONTROL ROOM BECOMING UNINHABITABLE OR INEFFECTIVE DUE TO A FIRE (OR OTHER DISASTER) IN THE CONTROL ROOM OR CABLE-SPREADING AREA. THIS ANALYSIS SHOULD ALSO INCLUDE CONSIDERATION OF THE AVAILABILITY OF ENGINEERED SAFEGUARDS SYSTEMS POWER AND CONTROLS.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTROL PANEL/ROOM + ENGINEERED SAFETY FEATURE + FIRE + PALISADES POINT + REACTOR, PRESSURIZED WATER

18-15582 ALSO IN CATEGORIES 9 AND 6
QUESTION 7.5--RATE AND MAGNITUDE OF DESIGN LOAD CHANGES
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT PLANT COMPONENT(S) SETS THE LIMITS ON THE RATE AND MAGNITUDE OF DESIGN-LOAD CHANGES. HOW ARE LOAD CHANGES KEPT WITHIN THESE LIMITS. WHAT ARE THE CONSEQUENCES OF THESE LIMITS BEING EXCEEDED.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + PALISADES POINT + REACTOR DYNAMICS + REACTOR, PRESSURIZED WATER

18-15583 ALSO IN CATEGORIES 9 AND 11
QUESTION 7.6--INSTRUMENTATION INSIDE CONTAINMENT AFTER MAJOR ACCIDENT
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT INSTRUMENTS WILL BE PROVIDED TO INDICATE THE REACTIVITY STATUS OF THE REACTOR AS WELL AS THE PRESSURE AND TEMPERATURE CONDITIONS INSIDE THE CONTAINMENT AFTER A MAJOR ACCIDENT. WHAT DESIGN CRITERIA WILL BE APPLIED TO THIS INSTRUMENTATION.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT INSTRUMENTATION + INSTRUMENTATION, SHUTDOWN REACTIVITY + PALISADES POINT + REACTOR, PRESSURIZED WATER

18-15584 ALSO IN CATEGORY 9
QUESTION 7.7--I + C PROVISIONS FOR OPERATION ON ONE LOOP OR 3 PRIMARY COOLANT PUMPS
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT PROVISIONS ARE MADE IN THE CONTROL AND SAFETY SYSTEMS TO PERMIT OPERATION ON ONE LOOP OR THREE PRIMARY COOLANT PUMPS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF FLOW + PALISADES POINT + REACTOR SAFETY SYSTEM

18-15585 ALSO IN CATEGORIES 14 AND 16
QUESTION 7.8--IODINE MONITORING
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT PROVISIONS ARE MADE FOR IODINE MONITORING IN THE VARIOUS GASEOUS-ACTIVITY MONITORS.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + FISSION PRODUCT, IODINE + MONITOR, RADIATION, GAS + PALISADES POINT + REACTOR, PRESSURIZED WATER

18-15586 ALSO IN CATEGORY 10
QUESTION 8.1--FAILURE IN ELECTRICAL DISTRIBUTION SYSTEM
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-15586 *CONTINUED*

5 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

SECTION 8. ELECTRICAL POWER SUPPLY. PROVIDE THE RESULTS OF THE FAULT ANALYSIS WHICH VERIFIES THAT THE FAILURE OF ANY SINGLE COMPONENT OR SECTION OF THE ELECTRICAL DISTRIBUTION SYSTEM WOULD NOT RESULT IN THE LOSS OF OPERATING FUNCTIONS OF THE MINIMUM NUMBER OF EACH CATEGORY OF ENGINEERED SAFEGUARDS OR LOSS OF SURVEILLANCE INSTRUMENTS DURING NORMAL OR EMERGENCY PLANT OPERATION, GIVING PARTICULAR ATTENTION TO THE INSTRUMENT A-C BUSS, THE 125V D-C BUSS (INCLUDING ABILITY TO OPERATE SWITCH GEAR), AND THE AUXILIARY TRANSFORMER NO. 1 OR ITS CONNECTED LINES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + EMERGENCY POWER, ELECTRIC + ENGINEERED SAFETY FEATURE + FAULT TREE ANALYSIS + PALISADES POINT + REACTOR, PRESSURIZED WATER

18-15587 ALSO IN CATEGORY 10

QUESTION 8.2--VERIFICATION OF CAPABILITY OF EMERGENCY DIESEL GENERATOR AND STATION BATTERY CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

PROVIDE SUFFICIENT LOAD-ANALYSIS DATA TO VERIFY THAT THE EMERGENCY DIESEL GENERATOR AND THE STATION BATTERY HAVE SUFFICIENT CAPACITY TO ASSUME ALL EMERGENCY LOADS FOR AS LONG AS MAY BE REQUIRED. WHAT CRITERIA WILL BE APPLIED IN THE DESIGN OF THOSE SYSTEMS THAT SWITCH, CONNECT, OR SHED LOADS UNDER CONDITIONS WHEN POWER IS REQUIRED FROM THE EMERGENCY DIESEL GENERATOR. WHAT IS THE SEQUENCING AND TIMING OF THE EVENTS THAT MUST OCCUR.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + EMERGENCY POWER, ELECTRIC + GENERATOR, DIESEL + PALISADES POINT + PERFORMANCE LIMIT + REACTOR, PRESSURIZED WATER + TEST, PLANT RESPONSE

18-15588 ALSO IN CATEGORIES 10 AND 2

QUESTION 8.3--CONSEQUENCES OF TOTAL LOSS OF ELECTRICAL POWER CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

ANALYZE THE CONSEQUENCES OF A TOTAL LOSS OF ELECTRICAL POWER, INCLUDING EMERGENCY POWER, IN THE PLANT. HOW LONG CAN SUCH A POWER LOSS BE SUSTAINED WITHOUT FUEL DAMAGE. DISCUSS THE POSSIBILITY THAT MECHANISMS SUCH AS SWITCH-GEAR FIRES, FAILURE OF A SINGLE BREAKER OR PROTECTIVE RELAY, ETC., COULD LEAD TO A MOMENTARY OR SUSTAINED TOTAL POWER FAILURE. DISCUSS THE ABILITY OF ELECTRICAL COMPONENTS SUCH AS TRANSFORMERS, TRANSMISSION LINES, CIRCUIT BREAKERS, AND OTHER ELECTRICAL SWITCH GEAR TO WITHSTAND SEISMIC LOADS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF POWER + EARTHQUAKE ENGINEERING + EMERGENCY POWER, ELECTRIC + PALISADES POINT + REACTOR, PRESSURIZED WATER

18-15589 ALSO IN CATEGORY 2

QUESTION 9.1--1970 AND 1980 POPULATION DISTRIBUTION PROJECTIONS AROUND SITE CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

3 PAGES, 1 FIGURE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

SECTION 9 (ENVIRONMENT) - WHAT ARE THE PROJECTED 1970 AND 1980 POPULATION DISTRIBUTIONS AS A FUNCTION OF DISTANCE AND DIRECTION AROUND THE SITE, INCLUDING PERMANENT AND TRANSIENT POPULATIONS. STATE AND JUSTIFY THE LOW POPULATION DISTANCE AS DEFINED IN 10 CFR 100 BASED ON THESE POPULATION FIGURES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + PALISADES POINT + POPULATION DISTRIBUTION + REACTOR, PRESSURIZED WATER

18-15590 ALSO IN CATEGORY 5

QUESTION 9.3--PLUTONIUM INVENTORY AT END OF CORE LIFE AND POSSIBLE EXPOSURE FROM FUEL VAPORIZATION CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

2 PAGES, 1 REFERENCE, 1 TABLE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

PROVIDE THE ISOTOPIC PLUTONIUM INVENTORY AT THE END OF CORE LIFE, AND, USING THE ABOVE DIFFUSION PARAMETERS (IN 9.2), DETERMINE THE EXPOSURE (IN TERMS OF MICROCURIES INHALED) THAT COULD RESULT FROM THE VAPORIZATION OF FUEL AS A RESULT OF THE DESIGN-BASIS ACCIDENT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF COOLANT + HAZARDS ANALYSIS +

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-15590 *CONTINUED*
PALISADES POINT + PLUTONIUM + REACTOR, PRESSURIZED WATER

18-15591 ALSO IN CATEGORY 12
QUESTION 9.5--DESIGN CRITERIA FOR POST-ACCIDENT VENTILATION OF CONTROL ROOM
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT ARE THE DESIGN CRITERIA FOR POSTACCIDENT VENTILATION OF THE CONTROL ROOM, AND HOW WILL THE CONTROL-ROOM VENTILATING SYSTEM SATISFY THESE CRITERIA. WHAT THYROID DOSE WOULD A CONTROL-ROOM OCCUPANT RECEIVE DURING THE DESIGN-BASIS ACCIDENT. WHAT ARE THE ASSUMPTIONS MADE IN EVALUATING THIS DOSE. WHAT ARE THE ASSUMPTIONS MADE IN EVALUATING THE 5-REM WHOLE-BODY DOSE THAT WOULD RESULT DURING EGRESS FROM THE CONTROL ROOM. WHAT THYROID DOSE WOULD BE RECEIVED DURING SUCH EGRESS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, MAXIMUM CREDIBLE (MCA) + CONTROL PANEL/ROOM + DESIGN CRITERIA + DOSE CALCULATION, INTERNAL + PALISADES POINT + REACTOR, PRESSURIZED WATER + VENTILATION SYSTEM

18-15592 ALSO IN CATEGORY 14
QUESTION 9.6--LAKE MICHIGAN LIQUID EFFLUENT DIFFUSION STUDY
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
3 PAGES, 2 REFERENCES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

DESCRIBE THE ANTICIPATED LIQUID-EFFLUENT DIFFUSION STUDY TO BE CARRIED OUT IN LAKE MICHIGAN. WHAT IS THE ESTIMATED MINIMUM DILUTION TO BE EXPECTED BETWEEN THE CONDENSER COOLANT OUTFALL AND THE INTAKES FOR THE TWO NEARBY COMMUNITY-SUPPLY INTAKES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + PALISADES POINT + REACTOR, PRESSURIZED WATER + THERMAL POLLUTION + WASTE DISPOSAL, OCEAN

18-15593 ALSO IN CATEGORY 16
QUESTION 9.7--ATMOSPHERIC DILUTION FACTOR, VALUE AND BASIS
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE, 1 REFERENCE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT IS THE VALUE AND THE BASIS OF THE ATMOSPHERIC DILUTION FACTOR USED TO CALCULATE RADIACTIVITY CONCENTRATIONS AT THE SITE BOUNDARY DUE TO ROUTINE RELEASES OF RADIOACTIVE GASES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + DILUTION + DOSE CALCULATION, EXTERNAL + PALISADES POINT + REACTOR, PRESSURIZED WATER + SOURCE, CONTINUOUS

18-15594 ALSO IN CATEGORY 11
QUESTION 10.1.1--REACTOR PRESSURE VESSEL RECOMMENDATIONS OF ACRS- FAST NEUTRON FLUX DOSE PREDICTION
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 PAGES, 1 REFERENCE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

SECTION 10 - PRIMARY COOLANT SYSTEM, QUESTIONS 10.1, 10.1.1. WHAT CONSIDERATION WILL BE GIVEN IN THE DESIGN OF THE PLANT TO THE RECOMMENDATIONS CONTAINED IN THE ACRS LETTER OF NOVEMBER 24, 1965, TO THE CHAIRMAN OF THE AEC CONCERNING REACTOR PRESSURE VESSELS. (NOTE - FOR CONVENIENCE, THESE AREAS OF CONCERN ARE NUMBERED AS QUESTIONS 10.1.1 THROUGH 10.1.16.) 10.1.1. GIVE DETAILS ON THE BEST PREDICTION OF MAXIMUM FAST NEUTRON FLUX DOSE IN THE PRESSURE VESSEL, INCLUDING UNCERTAINTIES IN THE PREDICTION.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + ACRS (ADVISORY COMMITTEE ON REACTOR SAFEGUARDS) + BRITTLE FRACTURE + DOSE CALCULATION, EXTERNAL + PALISADES POINT + PRESSURE VESSEL + REACTOR, PRESSURIZED WATER

18-15595 ALSO IN CATEGORY 11
QUESTION 10.1.2--NDT MEASUREMENTS, REACTOR VESSEL
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-15595 *CONTINUED*

GIVE DETAILS OF THE METHOD FOR MEASURING NDT FOR BASE PLATE, AND QUANTITATIVELY EXPLAIN UNCERTAINTIES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + ACRS (ADVISORY COMMITTEE ON REACTOR SAFEGUARDS) + NDT DATA (NIL DUCTILITY TRANSITION) + PALISADES POINT + PRESSURE VESSEL + REACTOR, PRESSURIZED WATER

18-15596 ALSO IN CATEGORY 11

QUESTION 10.1.3--NDT SHIFT WITH FAST NEUTRON DOSE IN REACTOR VESSEL

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

2 PAGES, 1 FIGURE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

GIVE DETAILS ON METHOD OF PREDICTING NDT SHIFT WITH FAST NEUTRON DOSE (REACTOR VESSEL), AND QUANTITATIVELY DESCRIBE UNCERTAINTIES THEREIN, INCLUDING CONSIDERATIONS OF WELD REGIONS AND HEAT-AFFECTED ZONES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + ACRS (ADVISORY COMMITTEE ON REACTOR SAFEGUARDS) + NDT DATA (NIL DUCTILITY TRANSITION) + PALISADES POINT + PRESSURE VESSEL + REACTOR, PRESSURIZED WATER + WELDING

18-15597 ALSO IN CATEGORY 11

QUESTION 10.1.4--ALLOWABLE STRESS CONSIDERATION BELOW NDT PLUS 60 AND BELOW NDT IN REACTOR VESSEL

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

DESCRIBE IN DETAIL THE STRESS CONSIDERATION TO BE ALLOWABLE BELOW NDT PLUS 60 AND BELOW NDT. STATE ASSUMPTIONS AND GIVE REASONS, ALLOWING FOR FLAW SIZE IN PARTICULAR.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + ACRS (ADVISORY COMMITTEE ON REACTOR SAFEGUARDS) + BRITTLE FRACTURE + PALISADES POINT + PRESSURE VESSEL + REACTOR, PRESSURIZED WATER + STRESS ANALYSIS

18-15598 ALSO IN CATEGORY 11

QUESTION 10.1.5--RELATION BETWEEN NDT AND ALLOWABLE STRESS IN REACTOR VESSEL

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

GIVE RATIONALE FOR RELATION BETWEEN NDT AND ALLOWED STRESS, EMPHASIZING IN PARTICULAR THE DEGREE OF CONSERVATISM WHICH IT IS FELT THE CIRCUMSTANCES REQUIRE AND WHY.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + BRITTLE FRACTURE + MAIN COOLING SYSTEM + PALISADES POINT + REACTOR, PRESSURIZED WATER + STRESS ANALYSIS

18-15599 ALSO IN CATEGORY 11

QUESTION 10.1.6--REACTOR VESSEL FLAW, SPECIFICATION

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

DEFINE THE FLAW SIZE AND TYPE IN THE PRESSURE VESSEL WHICH IS ACCEPTED IN THE SPECIFICATION. WHAT FLAW SIZE, LARGER OR OF SPECIAL SIGNIFICANCE, MIGHT NOT BE DETECTED, PARTICULARLY IN ZONES OF IRREGULAR SHAPE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + FLAW + PALISADES POINT + PRESSURE VESSEL + REACTOR, PRESSURIZED WATER + TEST, NONDESTRUCTIVE

18-15600 ALSO IN CATEGORY 11

QUESTION 10.1.7--FLAW SIZE IN STUDS OF REACTOR VESSEL, INSPECTION AND REPLACEMENT

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT FLAW SIZE IS ACCEPTED IN THE STUDS OF THE PRESSURE VESSEL. WHAT FREQUENCY OF STUD INSPECTION OR REPLACEMENT IS PLANNED. HOW MANY STUDS CAN FAIL WITHOUT THREATENING THE INTEGRITY OF THE CLOSURE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-15600 *CONTINUED*

*AEC QUESTION : *SAFETY ANALYSIS REPORT, PRELIMINARY : EXAMINATION : FLAW : PALISADES POINT +
PRESSURE VESSEL + REACTOR, PRESSURIZED WATER

18-15601 ALSO IN CATEGORY 11

QUESTION 10.1.8--REACTOR VESSEL SUPPORT STRUCTURE REQUIREMENTS

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

DESCRIBE REQUIREMENTS CONCERNING THE SUPPORT STRUCTURE FOR THE PRESSURE VESSEL, INCLUDING THE
DEGREE OF LEVELNESS OVER REACTOR LIFE, WHICH ARE NEEDED TO PREVENT PROBLEMS DUE TO LOCAL
OVERSTRESSING OF THE PRESSURE VESSEL.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + PALISADES POINT + PRESSURE VESSEL +
REACTOR, PRESSURIZED WATER + STRESS ANALYSIS + SUPPORT STRUCTURE

18-15602 ALSO IN CATEGORY 11

QUESTION 10.1.9--DETECTION OF SMALL LEAKS IN REACTOR VESSEL

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES POINT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

DESCRIBE HOW SMALL LEAKS IN THE PRESSURE VESSEL WOULD BE DETECTED AND THE ACTION TO BE TAKEN,
SHOULD SUCH OCCUR. HOW IS ADEQUATE RESPONSE ENSURED IN THE EVENT OF A PREVIOUS EXISTENCE OF
SMALL LEAKS IN OTHER PARTS OF THE SYSTEM.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + PALISADES POINT + PRESSURE VESSEL +
REACTOR, PRESSURIZED WATER + TEST, LEAK LOCATION

18-15603 ALSO IN CATEGORY 11

QUESTION 10.1.10--REACTOR VESSEL MISSILE PROTECTION

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT MISSILES ARE PROTECTED FOR, AND WHICH ARE NOT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + MISSILE GENERATION AND PROTECTION +
PALISADES POINT + PRESSURE VESSEL + REACTOR, PRESSURIZED WATER

18-15604 ALSO IN CATEGORY 11

QUESTION 10.1.11--PIPE WHIPPING PROBLEMS

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

CAN ANY PROBLEMS ARISE FROM PIPE WHIPPING.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + FAILURE, PIPE + PALISADES POINT +
REACTOR, PRESSURIZED WATER + SYSTEM OPERABILITY IN ACCIDENT CONDITIONS

18-15605 ALSO IN CATEGORY 11

QUESTION 10.1.12--REACTOR VESSEL SURVEILLANCE PROGRAM

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

DESCRIBE THE SURVEILLANCE PROGRAM FOR THE PRESSURE VESSEL IN SOME DETAIL. WHAT UNCERTAINTIES
WOULD BE EXPECTED FROM THE EXPERIMENTAL RESULTS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + NDT DATA (NIL DUCTILITY TRANSITION) +
PALISADES POINT + PRESSURE VESSEL + REACTOR, PRESSURIZED WATER + SURVEILLANCE PROGRAM

18-15606 ALSO IN CATEGORY 11

QUESTION 10.1(13 AND 14)--PROPAGATION OF A CRACK IN THE PRESSURE VESSEL

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-15606 *CONTINUED*

1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

(13) IF YOU POSTULATE THE RAPID PROPAGATION OF A CRACK CIRCUMFERENTIALLY, WITH THE CONTAINMENT ENERGY OF THE SYSTEM, WHAT WOULD HAPPEN TO THE UPPER SECTION OF THE VESSEL, INCLUDING SHEARING OF THE PRIMARY PIPES, ETC. (14) CAN YOU VISUALIZE ANY PROBLEM FROM THE PROPAGATION OF A CRACK FROM TOP TO BOTTOM OF THE VESSEL BUT NOT THROUGH THE HEAD.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + BRITTLE FRACTURE + PALISADES PCINT + PRESSURE VESSEL + REACTOR, PRESSURIZED WATER

18-15607

ALSO IN CATEGORY 11

QUESTION 10.1.15--SHOCK LOADING OF STEAM GENERATOR TUBE SHEET

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

DO YOUR CALCULATIONS CONFIRM THAT THE STEAM-GENERATOR TUBE-SHEET WILL WITHSTAND SHOCK LOADING BY ABRUPT LOSS OF PRIMARY COOLANT, OR WILL THE HEAD GO INSTEAD.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF COOLANT + FAILURE, TUBING + HEAT EXCHANGER + PALISADES POINT + REACTOR, PRESSURIZED WATER

18-15608

ALSO IN CATEGORIES 11 AND 9

QUESTION 10.1.16--DETECTION OF PROPAGATION OF CRACKS IN PRESSURE VESSEL WALL

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

ARE YOU CONSIDERING PROCEDURES FOR DETECTING THE PROPAGATION OF CRACKS WITHIN THE PRESSURE VESSEL WALL, I.E., ACOUSTIC EMISSION.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + INSTRUMENTATION, PROTECTIVE + PALISADES POINT + PRESSURE VESSEL + REACTOR, PRESSURIZED WATER

18-15609

ALSO IN CATEGORY 17

QUESTION 10.2--PREVENTION OF BORON WATER IN IDLE LOOP- STARTUP OF IDLE LOOP

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

PROVIDE AN ANALYSIS TO SHOW HOW THE CONTROLLED BACKFLOW THROUGH THE POWER-OPERATED CHECK VALVES WILL BE EFFECTIVE IN PREVENTING THE INJECTION AND ACCUMULATION OF COLD OR LOW-BORON-CONTENT WATER IN AN IDLE LOOP. DISCUSS THE PROCEDURES THAT WILL BE USED TO START AN IDLE LOOP WHEN THE REACTOR IS OPERATING.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, COLD COOLANT + PALISADES POINT + POISON, SOLUBLE + REACTOR, PRESSURIZED WATER + VALVE

18-15610

ALSO IN CATEGORY 5

QUESTION 10.3--SIZING OF SAFETY VALVES ON PRIMARY COOLANT AND STEAM SYSTEMS

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT IS THE BASIS FOR SIZING THE SAFETY VALVES ON THE PRIMARY COOLANT SYSTEM AND STEAM SYSTEM.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + DESIGN CRITERIA + PALISADES POINT + REACTOR, PRESSURIZED WATER

18-15611

ALSO IN CATEGORY 11

QUESTION 10.1, (1 THRU 4)--RELATIVE APPLICABILITY OF ASA PIPING CODE AND ASME SECTION III PRESSURE VESSEL

CODE FOR PRIMARY COOLANT PIPING

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

DISCUSS RELATIVE APPLICABILITY OF THE ASA PIPING CODE AND ASME SECTION-III PRESSURE-VESSEL CODE FOR DESIGNING AND TESTING LARGE, THICK WALLED, PRIMARY COOLANT PIPING. (1) HOW WILL NOT OF MATERIAL USED IN PRIMARY-COOLANT SYSTEM OTHER THAN THE REACTOR VESSEL BE DETERMINED. (2)

CATEGORY 1P
SAFETY ANALYSIS AND DESIGN REPORTS

18-15611 *CONTINUED*

(1) WHAT LINES WILL PRIMARY-COOLANT PUMP HOUSING AND CHECK VALVE BODIES BE DESIGNED. (3) WILL FABRICATION AND QUALITY-CONTROL TECHNIQUES USED IN THE PRIMARY COOLANT SYSTEM BE EQUIVALENT TO THOSE USED FOR THE REACTOR VESSEL. (4) DISCUSS EXTENT OF FIELD FABRICATION PLANNED FOR PRIMARY-COOLANT PIPING.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CODES AND STANDARDS + DESIGN CRITERIA + MAIN COOLING SYSTEM + PALISADES POINT + PIPING + REACTOR, PRESSURIZED WATER

18-15612 ALSO IN CATEGORY 5

QUESTION 10.5--MAXIMUM ALLOWABLE RADIOACTIVITY INVENTORY IN PRIMARY COOLANT SYSTEM

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

2 PAGES, 1 TABLE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT IS THE BASIS FOR SETTING THE MAXIMUM ALLOWABLE RADIOACTIVITY INVENTORY CIRCULATING IN THE PRIMARY SYSTEM. WHAT DOES THE PRIMARY-COOLANT ACTIVITY CORRESPONDING TO 1% FAILED FUEL ELEMENTS USED IN THE ACCIDENT ANALYSIS MEAN IN TERMS OF ISOTOPIC INVENTORY OR CONCENTRATION IN THE PRIMARY SYSTEM.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + ACTIVITY BUILDUP + FISSION PRODUCT RETENTION + MAIN COOLING SYSTEM + PALISADES POINT + REACTOR, PRESSURIZED WATER

18-15613 ALSO IN CATEGORY 5

QUESTION 10.6--MARGIN AGAINST FAILURE OF PRIMARY TO SECONDARY BARRIER IN STEAM GENERATORS

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

3 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

(A) ANALYZE THE MARGIN AGAINST FAILURE OF PRIMARY TO SECONDARY BARRIER IN STEAM GENERATORS TO BE ACHIEVED IN DESIGN, CONSIDERING SPECIFICATION OF ONE TRANSIENT IN WHICH NORMAL STEAM TEMPERATURES AND PRESSURES ARE MAINTAINED WHILE PRIMARY-SYSTEM SIDE IS REDUCED TO ATMOSPHERIC PRESSURE. (B) ANALYZE POSSIBILITY THAT DESIGN-BASIS ACCIDENT COULD CAUSE FAILURE OF STEAM GENERATORS, PRIMARY COOLANT CIRCULATION PUMPS, OR OTHER PRIMARY-SYSTEM COMPONENTS. (C) JUSTIFY LACK OF STEAM-LINE ISOLATION VALVES AT CONTAINMENT BOUNDARY. THESE ANALYSES SHOULD INCLUDE EFFECTS OF THE SUDDEN DEPRESSURIZATION, REACTION FORCES DUE TO PIPE BREAK, AND FORCES ON THE STEAM LINE AND ITS CONTAINMENT PENETRATION.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF COOLANT + FAILURE, PIPE + HEAT EXCHANGER + PALISADES POINT + REACTOR, PRESSURIZED WATER

18-15614 ALSO IN CATEGORY 11

QUESTION 10.7--SECONDARY SIDE OF GENERATOR DESIGN, CLASS C VS CLASS A VESSEL COMPARTMENT

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

CONSIDERING YOUR CRITERION THAT THE STEAM GENERATORS WILL BE DESIGNED SO THAT NO COMPONENT WILL FAIL EITHER BY RUPTURE OR BY DEVELOPING DEFORMATIONS THAT WILL IMPAIR THEIR FUNCTIONAL PERFORMANCE OR INTEGRITY FOR FURTHER OPERATION, WHY WILL THE SECONDARY SIDE OF STEAM GENERATOR BE DESIGNED AS A STANDARD-QUALITY CLASS-C VESSEL COMPARTMENT (SECTION VIII CODE RULES) RATHER THAN AS A HIGHEST-QUALITY CLASS A VESSEL COMPARTMENT (SECTION III CODE RULES).

AVAILABILITY-USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + DESIGN CRITERIA + FAILURE, EQUIPMENT + HEAT EXCHANGER + PALISADES POINT + REACTOR, PRESSURIZED WATER

18-15615 ALSO IN CATEGORY 5

QUESTION 10.8--ANALYSIS OF STEAM GENERATOR TUBE RUPTURE ACCIDENT

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT ARE THE RESULTS OF A DETAILED ANALYSIS OF THE STEAM-GENERATOR TUBE-RUPTURE ACCIDENT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF COOLANT + FAILURE, TUBING + HEAT EXCHANGER + PALISADES POINT + REACTOR, PRESSURIZED WATER

18-15616 ALSO IN CATEGORY 5

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-15616 *CONTINUED*

QUESTION 10.9--RUPTURE OF STEAM GENERATOR TUBES TO LIFT SAFETY VALVE OR CAUSE CLAD FAILURE
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET NO. 50-255

ABOUT HOW MANY STEAM-GENERATOR TUBES WOULD HAVE TO RUPTURE SIMULTANEOUSLY IN ORDER TO (1) LIFT
A STEAM-SYSTEM SAFETY VALVE OR (2) CAUSE SIGNIFICANT FUEL-CLADDING FAILURES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF COOLANT + FAILURE, CLADDING +
FAILURE, TUBING + HEAT EXCHANGER + PALISADES POINT + REACTOR, PRESSURIZED WATER + VALVE

18-15617 ALSO IN CATEGORY 11

QUESTION 10.10--REACTOR VESSEL METALLURGICAL SPECIFICATIONS
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
3 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT IS THICKNESS OF REACTOR VESSEL AT BELTLINE. WHAT CRITERION OR SPECIFICATION WILL APPLY
TO BELTLINE BASE METAL RELATIVE TO TENSILE STRENGTH, IMPACT TEST RESULTS AND INITIAL NDT AT
1/4T. WHAT NONDESTRUCTIVE INSPECTION OF REACTOR VESSEL MATERIAL BEFORE FABRICATION BEYOND
ASME CODE SECTION III WILL BE PERFORMED. WHAT CRITERIA BEYOND THOSE REQUIRED BY CODE WILL BE
APPLIED RELATIVE TO METHOD OF WELDING SHELL, NOZZLES AND FLANGES, METHOD OF CLADDING,
NONDESTRUCTIVE INSPECTION DURING FABRICATION, NONDESTRUCTIVE TESTING AFTER HYDROSTATIC TEST,
INDEPENDENT INSPECTION DURING VESSEL FABRICATION. WILL SURVEILLANCE PROGRAM CONFORM TO
LATEST REVISION OF ASTM SPECIFICATION E 185. WILL LIMITATIONS EVER HAVE TO BE IMPOSED ON
OPERATIONS LATER IN PLANT LIFE BECAUSE OF IRRADIATION DAMAGE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + BRITTLE FRACTURE + DESIGN CRITERIA +
PALISADES POINT + PRESSURE VESSEL + REACTOR, PRESSURIZED WATER + TEST, NONDESTRUCTIVE

18-15618 ALSO IN CATEGORY 5

QUESTION 10.11--STEAM LINE RUPTURE IN PIPE TUNNEL ADJACENT TO CONTROL BUILDING
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 PAGES OF CONSUMER POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

ANALYZE THE EFFECT OF A STEAM-LINE RUPTURE IN THE PIPE TUNNEL ADJACENT TO THE CONTROL BUILDING
BREACHING THE SEPARATING WALL. CONSIDER REACTION FORCES, PRESSURE BUILDUP, OR MISSILES.
COULD THE SWITCHGEAR AREAS, CABLE SPREADING AREA, AND/OR CONTROL ROOM BE DAMAGED OR MADE
INACCESSIBLE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, STEAM LINE RUPTURE + PALISADES POINT +
REACTOR, PRESSURIZED WATER

18-15619 ALSO IN CATEGORY 14

QUESTION 11.1--CONSTRUCTION CRITERIA FOR WASTE STORAGE TANKS, ACCIDENT ANALYSIS OF TANK RUPTURE
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT CRITERIA WILL BE APPLIED IN THE DESIGN AND CONSTRUCTION OF THE RADIOACTIVE LIQUID WASTE
STORAGE TANKS AND THE GASEOUS WASTE HOLDUP TANKS, SUCH AS CODES, DESIGN MARGINS, TESTING,
LEAKAGE-RATE SPECIFICATIONS AND MAXIMUM ALLOWABLE RADIOACTIVE INVENTORY. PROVIDE AN ANALYSIS
OF AN ACCIDENT IN WHICH A GASEOUS HOLDUP TANK CONTAINING THE MAXIMUM ALLOWABLE INVENTORY IS
RUPTURED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + DESIGN CRITERIA + PALISADES POINT +
REACTOR, PRESSURIZED WATER + WASTE DISPOSAL, GAS + WASTE STORAGE

18-15620 ALSO IN CATEGORY 11

QUESTION 1.1--CONTAINMENT LINER DESIGN CRITERIA
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

SECTION 1 LINER DESIGN. (1) STATE THE SPECIFIC DESIGN CRITERIA TO BE APPLIED TO THE
CONTAINMENT LINER TO MEET THE FUNCTIONAL REQUIREMENT OF LEAK TIGHTNESS WITHIN THE SPECIFIED
LEAKAGE LIMIT, UNDER BOTH THE TEST CONDITION AND THE DESIGN-ACCIDENT CONDITION.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT LINER + DESIGN CRITERIA +
PALISADES POINT + REACTOR, PRESSURIZED WATER + TEST, LEAK RATE

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-15621 ALSO IN CATEGORY 11
QUESTION 1.2 CONTAINMENT LINER LEAKAGE BEHAVIOR PREDICTION
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

AS THE LOADINGS ON THE CONTAINER LINER UNDER THE PROPOSED LEAKAGE TEST WILL NOT BE REPRESENTATIVE OF THE TEMPERATURE AND PRESSURE LOADINGS UNDER ACCIDENT CONDITIONS, SUBMIT THE TECHNICAL BASIS FOR PREDICTING THE LEAKAGE BEHAVIOR UNDER DESIGN-ACCIDENT CONDITIONS FROM RESULTS MEASURED UNDER TEST CONDITIONS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + ANALYTICAL MODEL + CONTAINMENT LINER + PALISADES POINT + REACTOR, PRESSURIZED WATER + SYSTEM OPERABILITY IN ACCIDENT CONDITIONS + TEST, LEAK RATE + TEST, PROOF

18-15622 ALSO IN CATEGORY 11
QUESTION 1.3--ELASTIC INSTABILITIES OF CONTAINMENT LINER
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
3 PAGES, 1 FIGURE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

SINCE A MAJOR PORTION OF THE LINER WILL BE SUBJECTED TO COMPRESSIVE LOADINGS UNDER BOTH NORMAL SERVICE AND POSTULATED ACCIDENT CONDITIONS, DESCRIBE THE DESIGN METHODS USED TO ACCOMMODATE ELASTIC INSTABILITIES WHICH MAY JEOPARDIZE ITS LEAK-TIGHTNESS. OF PARTICULAR INTEREST ARE THE CONCRETE ANCHOR POINTS, LINER DISCONTINUITIES, LINER CONNECTIONS TO ACCESS OPENINGS, AIRLOCKS, PENETRATION ASSEMBLIES, AND THE LINER DETAIL AT THE CRANE SUPPORT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT AIR LOCK + CONTAINMENT LINER + PALISADES POINT + REACTOR, PRESSURIZED WATER + STRESS ANALYSIS

18-15623 ALSO IN CATEGORY 11
QUESTION 1.4--CONTAINMENT LINER SPECIFICATIONS
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

SUBMIT LINER SPECIFICATIONS, INDICATING THE APPLICABLE CODES OR SECTION OF CODES TO BE USED IN THE DESIGN, CONSTRUCTION, INSPECTION, AND TESTING. THIS SHOULD INCLUDE THE FIELD TESTING TO BE PERFORMED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CODES AND STANDARDS + CONTAINMENT LINER + PALISADES POINT + REACTOR, PRESSURIZED WATER

18-15624 ALSO IN CATEGORY 11
QUESTION 1.5--PROOF TEST PRESSURE FOR CONTAINMENT STRUCTURE
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
3 PAGES, 1 TABLE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

JUSTIFY, ON AN ENGINEERING BASIS, THE SELECTION OF THE SPECIFIED PROOF-TEST PRESSURE FOR THE CONTAINMENT STRUCTURE AND ITS ANTICIPATED EFFECT UPON THE LEAK-TIGHTNESS OF THE LINER. DOES THE TEST PRESSURE HAVE THE SAME ENGINEERED SAFETY MARGIN FOR ULTIMATE STRUCTURAL INTEGRITY AS THAT FOR STEEL CONTAINMENTS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT STRUCTURE + PALISADES POINT + REACTOR, PRESSURIZED WATER + TEST, LEAK RATE + TEST, PROOF

18-15625 ALSO IN CATEGORIES 9 AND 11
QUESTION 1.6--PROGRAM FOR INSTRUMENTING CONTAINMENT LINER FOR STRAIN
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES POINT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

SUBMIT THE PROPOSED PROGRAM FOR INSTRUMENTING THE CONTAINMENT LINER TO MEASURE STRAIN BEHAVIOR UNDER TEST LOADINGS, AND THE INTERPRETATION OF THE RESULTS THUS OBTAINED WITH RELATIONSHIP TO LEAKAGE BEHAVIOR OF THE LINER UNDER DESIGN-ACCIDENT CONDITIONS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-15625 *CONTINUED*

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT INSTRUMENTATION + PALISADES POINT + REACTOR, PRESSURIZED WATER + TEST, LEAK RATE + TEST, PROOF

18-15626 ALSO IN CATEGORY 11

QUESTION 1.7--INSPECTION PROCEDURES FOR WELDS AND FASTENING AROUND PENETRATIONS OF CONTAINMENT LINER
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 PAGES OF CONSUMERS POWER COMPANY PALISADES POINT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

STATE THE INSPECTION PROCEDURES TO BE USED FOR THE SEAM WELDS, LINER FASTENING, AND AROUND PENETRATIONS. WHAT IS THE BASIS FOR SELECTING TEN-PERCENT WELD INSPECTION.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT LINER + EXAMINATION + PALISADES POINT + REACTOR, PRESSURIZED WATER + WELDING

18-15627 ALSO IN CATEGORY 11

QUESTION 1.8--FATIGUE LOADING OF CONTAINMENT LINER
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

STATE THE FATIGUE LOADING WHICH WILL BE CONSIDERED IN THE DESIGN OF THE LINER.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT LINER + FAILURE, FATIGUE + PALISADES POINT + REACTOR, PRESSURIZED WATER + STRESS ANALYSIS

18-15628 ALSO IN CATEGORY 11

QUESTION 1.9--REPAIR OF CONTAINMENT LINER
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

DESCRIBE HOW LINER LEAKS WILL BE TRACED AND REPAIRED WHEN EXCESSIVE LEAKAGE IS MEASURED DURING INITIAL AND SUBSEQUENT LEAK-RATE TESTS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT LINER + PALISADES POINT + REACTOR, PRESSURIZED WATER + TEST, LEAK LOCATION

18-15629 ALSO IN CATEGORY 11

QUESTION 1.10--CONTAINMENT PRESSURE VS LINER TEMPERATURE
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 PAGES, 1 FIGURE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT IS THE CONTAINMENT PRESSURE VS. LINER TEMPERATURE RELATIONSHIP NECESSARY TO PREVENT LINER BUCKLING OR PULLING AWAY FROM THE CONCRETE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT LINER + PALISADES POINT + REACTOR, PRESSURIZED WATER + STRESS ANALYSIS + THERMAL MECHANICAL EFFECT

18-15630 ALSO IN CATEGORY 11

QUESTION 2.1--CONCRETE STRESS VALUES
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

SECTION 2. STRUCTURAL DESIGN. STATE THE BASIS FOR EXCEEDING CONCRETE STRESS VALUES AS RECOMMENDED IN ACI 318-63.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONCRETE + CONTAINMENT, HIGH PRESSURE + PALISADES POINT + REACTOR, PRESSURIZED WATER + STRESS ANALYSIS

18-15631 ALSO IN CATEGORY 11

QUESTION 2.2--DESIGN PROCEDURES FOR WORKING STRESSES AND FACTORED LOADINGS
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-15631 *CONTINUED*

7 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

APPENDIX B OF THE PSAR IS SOMEWHAT CONFUSING IN REGARD TO THE APPLICATION OF THE DIFFERENT DESIGN METHODS. CLARIFY THE USE OF WORKING STRESSES AND FACTORED LOADINGS BY SPECIFICALLY OUTLINING THE DESIGN PROCEDURES THAT WILL BE USED WHEN EACH OF THESE APPROACHES IS EMPLOYED IN THE DESIGN.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + ANALYTICAL MODEL + CONTAINMENT STRUCTURE + PALISADES POINT + REACTOR, PRESSURIZED WATER + STRESS ANALYSIS

18-15632

ALSO IN CATEGORY 11

QUESTION 2.3--HEAVY MACHINERY CONSIDERATIONS IN FACTORED LOAD EQUATIONS
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

HOW ARE LOADS SUCH AS HEAVY MACHINERY, CRANE, AND LARGE PUMPS CONSIDERED IN THE FACTORED-LOAD EQUATIONS. IF THEY ARE TREATED AS DEAD LOADS, PROVIDE THE BASES FOR NEGLECTING THE IMPACT AND LOAD VARIATION CHARACTERISTICS ASSOCIATED WITH THIS TYPE OF EQUIPMENT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT STRUCTURE + PALISADES POINT + REACTOR, PRESSURIZED WATER + STRESS ANALYSIS

18-15633

ALSO IN CATEGORY 11

QUESTION 2.4--GROUTED VS. UNGROUTED TENDONS

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

3 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

PROVIDE A DISCUSSION OF GROUTED VS. UNGROUTED TENDONS FOR THIS STRUCTURAL APPLICATION, INCLUDING THE RELATIVE MERITS OF EACH IN RESISTING THE DESIGN LOADINGS (ESPECIALLY SEISMIC), AND THE REASONING SUPPORTING THE SELECTION.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONCRETE, PRESTRESSED + CONTAINMENT STRUCTURE + EARTHQUAKE ENGINEERING + PALISADES POINT + REACTOR, PRESSURIZED WATER

18-15634

ALSO IN CATEGORY 11

QUESTION 2.5--EXTERNAL DESIGN PRESSURE

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

STATE THE BASIS FOR SELECTING A 1-PSIG EXTERNAL DESIGN PRESSURE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT DESIGN + PALISADES POINT + PRESSURE, EXTERNAL + REACTOR, PRESSURIZED WATER

18-15635

ALSO IN CATEGORY 11

QUESTION 2.6--LATERAL SHEARS WITH REGARD TO SEISMIC RESISTANCE

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WITH REGARD TO SEISMIC RESISTANCE, DESCRIBE HOW THE LATERAL SHEARS WILL BE CARRIED UNDER VERTICAL AND HORIZONTAL MOTIONS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT STRUCTURE + PALISADES POINT + REACTOR, PRESSURIZED WATER + STRESS ANALYSIS

18-15636

ALSO IN CATEGORIES 2 AND 11

QUESTION 2.7--PLOT OF EARTHQUAKE RESPONSE

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

2 PAGES, 1 FIGURE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

PROVIDE PLOTS OF THE EARTHQUAKE-RESPONSE SPECTRA TO BE USED IN THE DESIGN (USE TRIPARTITE GRAPH PAPER).

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-15636 *CONTINUED*
AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT STRUCTURE + DESIGN CRITERIA +
PALISADES POINT + REACTOR, PRESSURIZED WATER + RESPONSE SPECTRUM

18-15637 ALSO IN CATEGORY 11
QUESTION 2.8 COMBINATION OF VERTICAL AND HORIZONTAL STRESSES WITH OTHER LOADINGS
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

STATE THE MANNER IN WHICH THE VERTICAL AND HORIZONTAL STRESSES (OR LOADS) ARISING FROM THE
EARTHQUAKE WILL BE COMBINED WITH THE OTHER APPLICABLE LOADINGS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT STRUCTURE + PALISADES POINT +
REACTOR, PRESSURIZED WATER + STRESS ANALYSIS

18-15638 ALSO IN CATEGORY 11
QUESTION 2.9--PHI VALUES
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

JUSTIFY, ON THE BASIS OF THE UNCERTAINTIES WHICH THEY ARE INTENDED TO COVER, THE USAGE OF
SEVERAL ADDITIONAL AND VARIED PHI VALUES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT DESIGN + PALISADES POINT +
REACTOR, PRESSURIZED WATER + STRESS ANALYSIS

18-15639 ALSO IN CATEGORY 11
QUESTION 2.10-2.11--LOAD FACTOR EQUATIONS
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
3 PAGES, 1 REFERENCE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966,
DOCKET 50-255

(10) DEVELOP THE BASIS FOR THE LOAD FACTORS USED IN THE LOAD-FACTOR EQUATIONS SUPPLIED. (11)
STATE THE BASIS FOR VARIATION OF THE DEAD-LOAD DESIGN FACTORS BETWEEN LOAD-FACTOR EQUATIONS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT DESIGN + PALISADES POINT +
REACTOR, PRESSURIZED WATER + STRESS ANALYSIS

18-15640 ALSO IN CATEGORY 11
QUESTION 2.12--LOAD PLOTS
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
7 PAGES, 6 FIGURES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET
50-255

PROVIDE PLOTS OF MOMENT, SHEAR, DEFLECTION, LONGITUDINAL FORCE, AND HOOP TENSION AS A FUNCTION
OF CONTAINMENT HEIGHT FOR EACH OF THE LOADS (DEAD LOAD, PRESTRESSED LOAD, LIVE LOAD, PRESSURE
LOAD, WIND LOAD, EARTHQUAKE LOAD, THERMAL LOAD DUE TO LINER, AND THERMAL LOAD DUE TO
CONCRETE).

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT DESIGN + PALISADES POINT +
REACTOR, PRESSURIZED WATER + STRESS ANALYSIS

18-15641 ALSO IN CATEGORY 11
QUESTION 2.13--CRITERIA FOR SHEAR, POSSIBLE INCONSISTENCIES
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

DISCUSS THE INCONSISTENCIES THAT MIGHT ARISE THROUGH APPLICATION OF YOUR PROPOSED CRITERIA FOR
SHEAR BASED ON A COMBINATION OF ACI CODE WORKING STRESS AND PRESTRESSED CONCRETE SHEAR DESIGN
PROVISIONS, AND OUTLINE HOW THESE ARE ACCOUNTED FOR IN THE DESIGN, IF SUCH INCONSISTENCIES
EXIST.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT DESIGN + PALISADES POINT +

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-15641 *CONTINUED*
REACTOR, PRESSURIZED WATER + STRESS ANALYSIS

18-15642 ALSO IN CATEGORY 11
QUESTION 2.14--FAILURE MODE AND MARGIN OF SAFETY WITH RADIAL SHEAR AND MEMBRANE TENSION COMBINATION
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

IN VIEW OF THE POSSIBLE CRITICAL NATURE OF THE COMBINATION OF RADIAL SHEAR AND MEMBRANE TENSION, DESCRIBE THE PROVISIONS MADE IN THE DESIGN TO HANDLE THIS POSSIBLE FAILURE MODE, AND IDENTIFY THE MARGIN OF SAFETY OF THE DESIGN WITH RESPECT TO SUCH A FAILURE.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT DESIGN + PALISADES POINT + REACTOR, PRESSURIZED WATER + STRESS ANALYSIS

18-15643 ALSO IN CATEGORY 11
QUESTION 2.15--CONTAINMENT STRUCTURAL ANALYSIS TECHNIQUES
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
3 PAGES, 1 FIGURE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

PROVIDE (A) A DESCRIPTION OF THE STRUCTURAL-ANALYSIS TECHNIQUE USED, (B) IDENTIFICATION OF COMPUTER PROGRAMS EMPLOYED, AND (C) VERIFICATION OF THE SUITABILITY OF THE SELECTED ANALYTICAL METHOD FOR ANALYZING CONTAINMENT STRUCTURES BY INCLUDING EXPERIMENTAL OR ANALYTICAL VERIFICATION OF THE METHOD IN APPLICATION OF IT TO STRUCTURES OF COMPARABLE GEOMETRY.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + ANALYTICAL MODEL + CONTAINMENT DESIGN + PALISADES POINT + REACTOR, PRESSURIZED WATER + STRESS ANALYSIS

18-15644 ALSO IN CATEGORY 11
QUESTION 2.16--CONTAINMENT DRAWINGS
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 PAGES, 1 FIGURE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

PROVIDE PRELIMINARY DESIGN DRAWINGS OF THE CONTAINMENT AND DETAILS OF THE CYLINDER-SLAB INTERSECTION, DOME-CYLINDER INTERSECTION, AND LINER-ANCHORAGE SCHEME FOR THE DESIGN THAT WILL BE USED.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT DESIGN + PALISADES POINT + REACTOR, PRESSURIZED WATER + SYSTEM DESCRIPTION

18-15645 ALSO IN CATEGORY 11
QUESTION 2.17--CONTAINMENT PENETRATION DRAWINGS
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
4 PAGES, 3 FIGURES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

PROVIDE PRELIMINARY DESIGN DRAWINGS, SHOWING THE TYPES OF ELECTRICAL, PIPING, AND OTHER CONTAINMENT PENETRATIONS THAT WILL BE USED. THESE SHOULD INCLUDE METHOD OF SEALING, METHOD OF LEAK-TESTING INDEPENDENTLY OF THE MAIN CONTAINMENT, AND METHODS FOR PROVIDING DIFFERENTIAL EXPANSION.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT PENETRATION, ELECTRICAL + CONTAINMENT PENETRATION, GENERAL + CONTAINMENT PENETRATION, PIPE + PALISADES POINT + REACTOR, PRESSURIZED WATER + TEST, LEAK RATE

18-15646 ALSO IN CATEGORY 11
QUESTION 2.18--DESIGN ANALYSIS FOR EQUIPMENT OPENING
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 PAGES, 1 FIGURE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

DESCRIBE THE METHOD OF DESIGN ANALYSIS FOR THE EQUIPMENT OPENING. PROVIDE A DETAILED DRAWING OF THE REINFORCING AND DEFLECTED-STRAND PATTERN AROUND THE OPENING, AND AN ANALYSIS OF THE EXTENT TO WHICH THE STRESS PATTERN OF THE ACCEPTANCE TEST WILL RELATE TO THE DESIGN-BASIS

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-15646 *CONTINUED*
ACCIDENT LOADINGS.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT DESIGN + CONTAINMENT EQUIPMENT HATCH + PALISADES POINT + REACTOR, PRESSURIZED WATER + STRESS ANALYSIS

18-15647 ALSO IN CATEGORY 11
QUESTION 2.19--CONTAINMENT PRESSURE AND THERMAL TRANSIENT CONDITIONS
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
4 PAGES, 3 FIGURES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

STATE THE PRESSURE AND THERMAL TRANSIENT CONDITION FOR WHICH THE CONTAINMENT IS DESIGNED.
PROVIDE THE ATTENDANT THERMAL GRADIENTS ACROSS THE CONTAINMENT WALL, AND AN ANALYSIS OF ITS
INFLUENCE ON CONTAINMENT STRUCTURAL INTEGRITY.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT DESIGN + DESIGN CRITERIA + PALISADES POINT + PRESSURE, INTERNAL + REACTOR, PRESSURIZED WATER + THERMAL ANALYSIS

18-15648 ALSO IN CATEGORY 11
QUESTION 2.20--TENDON FAILURE
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

PROVIDE AN ANALYSIS OF THE EFFECT OF FAILURE OF A TENDON OR SERIES OF ADJACENT OR SPACED
TENDONS UNDER DESIGN-BASIS ACCIDENT LOADING.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONCRETE, PRESTRESSED + CONTAINMENT, HIGH PRESSURE + FAILURE, COMPONENT + PALISADES POINT + REACTOR, PRESSURIZED WATER

18-15649 ALSO IN CATEGORY 11
QUESTION 3.1--CONCRETE MIXES SPECIFICATIONS, PROCEDURES, AND TESTS
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

SECTION 3. MATERIALS OF CONSTRUCTION. (1) PROVIDE THE SPECIFICATIONS, PROCEDURES, AND TESTS
TO BE USED IN DESIGN OF THE CONCRETE MIXES AND IN DEVELOPING/VERIFYING THE DESIGN PROPERTIES
OF THE CONCRETE.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONCRETE + CONTAINMENT, HIGH PRESSURE + MATERIAL + PALISADES POINT + REACTOR, PRESSURIZED WATER

18-15650 ALSO IN CATEGORY 11
QUESTION 3.2--MINIMIZING SHRINKAGE AND CREEP
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

IDENTIFY ADDITIVES TO BE USED TO MINIMIZE SHRINKAGE AND CREEP, AND PROVIDE THE BASIS FOR
DETERMINING THE EFFECTS ON SHRINKAGE AND CREEP FROM THESE ADDITIVES.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONCRETE, PRESTRESSED + CONTAINMENT STRUCTURE + CREEP PROPERTY + PALISADES POINT + REACTOR, PRESSURIZED WATER

18-15651 ALSO IN CATEGORY 11
QUESTION 3.3--TENDON WIRE SPECIFICATIONS
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

PROVIDE THE SPECIFICATIONS AND FACTORY CONTROL REQUIREMENTS THAT WILL BE IMPOSED IN THE
MANUFACTURE OF THE TENDON WIRE OR STRAND. (ANSWER) - REFER TO PAGES 8-10 AND 8-12, APPENDIX
B, PSAR.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONCRETE, PRESTRESSED + CONTAINMENT, HIGH PRESSURE +

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-15651 *CONTINUED*
MATERIAL + PALISADES POINT + REACTOR, PRESSURIZED WATER

18-15652 ALSO IN CATEGORY 11
QUESTION 3.4--CONTAINMENT LINER MATERIAL SOLUTION
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

STATE THE BASIS FOR SELECTING THE CONTAINMENT LINER MATERIAL, INCLUDING DUCTILITY AND WELDABILITY CONSIDERATIONS.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + BRITTLE FRACTURE + CONTAINMENT LINER + MATERIAL + PALISADES POINT + REACTOR, PRESSURIZED WATER + WELDING

18-15653 ALSO IN CATEGORY 11
QUESTION 3.5--ANCHORAGE SYSTEM REQUIREMENTS
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

PROVIDE THE CRITERIA FOR ACCEPTANCE OF THE ANCHORAGE SYSTEM, INCLUDING ANCHORAGE PERFORMANCE REQUIREMENTS UNDER CYCLIC AND RAPID LOADING. ANALYZE HOW THESE REQUIREMENTS RELATE TO LOADING CONDITIONS ASSOCIATED WITH THE WIND, SEISMIC, AND DESIGN-BASIS ACCIDENT CONDITIONS. IF MORE THAN ONE ANCHORAGE SYSTEM IS APPLICABLE, PROVIDE THE ABOVE INFORMATION FOR EACH SYSTEM PROPOSED.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT DESIGN + FAILURE, FATIGUE + PALISADES POINT + REACTOR, PRESSURIZED WATER

18-15654 ALSO IN CATEGORY 11
QUESTION 4.1--CONCRETE QUALITY CONTROL TESTING
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

DESCRIBE THE QUALITY-CONTROL TESTING PROGRAM TO BE USED FOR CONCRETE.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONCRETE + CONTAINMENT CONSTRUCTION + CONTAINMENT, GENERAL + PALISADES POINT + QUALITY CONTROL + REACTOR, PRESSURIZED WATER

18-15655 ALSO IN CATEGORY 11
QUESTION 4.2--REINFORCING STEEL INSPECTION AND TESTING
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

PROVIDE A DESCRIPTION OF THE ON-SITE INSPECTION AND TESTING PROGRAM FOR REINFORCING STEEL.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONCRETE, PRESTRESSED + CONTAINMENT CONSTRUCTION + CONTAINMENT, GENERAL + EXAMINATION + PALISADES POINT + REACTOR, PRESSURIZED WATER + STEEL

18-15656 ALSO IN CATEGORY 11
QUESTION 4.3--PRESTRESSING SEQUENCE, PROCEDURES, TENDON STRESS
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

PROVIDE A DESCRIPTION OF THE PRESTRESSING SEQUENCE, PROCEDURES, AND TENDON-STRESS-VERIFICATION METHODS.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONCRETE, PRESTRESSED + CONTAINMENT CONSTRUCTION + CONTAINMENT, GENERAL + PALISADES POINT + REACTOR, PRESSURIZED WATER

18-15657 ALSO IN CATEGORY 11
QUESTION 4.4--ORGANIZATION FOR INSPECTION, QUALIFICATION, AND AUTHORITY
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

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SAFETY ANALYSIS AND DESIGN REPORTS

18-15657 *CONTINUED*
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

DESCRIBE THE ORGANIZATION FOR INSPECTION, QUALIFICATIONS AND AUTHORITY OF INSPECTORS, AND EXTENT OF DESIGN-GROUP PARTICIPATION IN THE INSPECTION. TO WHOM WILL THE QUALITY CONTROL AND INSPECTION PERSONNEL BE RESPONSIBLE.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT CONSTRUCTION + CONTAINMENT, GENERAL + EXAMINATION + PALISADES POINT + QUALITY CONTROL + REACTOR, PRESSURIZED WATER

18-15658 ALSO IN CATEGORY 11
QUESTION 4.5--REINFORCING STEEL SPLICING AND QUALITY CONTROL
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT IS THE METHOD OF REINFORCING STEEL SPLICING AND THE QUALITY CONTROL PROGRAM FOR IT.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONCRETE, PRESTRESSED + CONTAINMENT CONSTRUCTION + CONTAINMENT, GENERAL + EXAMINATION + PALISADES POINT + QUALITY CONTROL + REACTOR, PRESSURIZED WATER

18-15659 ALSO IN CATEGORY 11
QUESTION 4.6--CORROSION PROTECTION FOR LINER
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

DESCRIBE THE CORROSION PROTECTION PROCEDURES AND MATERIALS TO BE USED ON THE LINER AND OTHER STEEL IN THE STRUCTURE.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT LINER + CORROSION + PALISADES POINT + REACTOR, PRESSURIZED WATER

18-15660 ALSO IN CATEGORY 11
QUESTION 4.7--CHEMICAL ANALYSIS OF TENDON AND LINER PROTECTIVE COMPOUNDS
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

PROVIDE A TYPICAL CHEMICAL ANALYSIS OF THE TENDON AND LINER PROTECTIVE COMPOUNDS TO BE USED TO INCLUDE A VERIFICATION THAT TRACE AMOUNTS OF CHLORIDES ARE NOT PRESENT. WHAT GREASE IS BEING PROPOSED FOR THE TENDONS. WILL THESE ANALYSES BE CONFIRMED FOR THE MATERIALS ACTUALLY USED IN THE PLANT.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CHLORINE + CONCRETE, PRESTRESSED + CONTAINMENT, GENERAL + CORROSION + PALISADES POINT + REACTOR, PRESSURIZED WATER

18-15661 ALSO IN CATEGORY 11
QUESTION 4.8--GALVANIC CORROSION OF TENDONS, REINFORCING STEEL AND ANCHORAGES
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 PAGES, 4 REFERENCES, OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

DESCRIBE THE CONSIDERATION GIVEN TO THE POSSIBILITY OF GALVANIC CORROSION OF TENDONS, ANCHORAGES, OR REINFORCING STEEL AND A DESCRIPTION OF MEASURES TO BE USED TO PREVENT SUCH CORROSION. THIS SHOULD INCLUDE THE LONG-TERM EFFECTS SUCH AS THE CHEMICAL STABILITY OF THE TENDON GREASE. IS THE STRESSED TENDON ANODIC OR CATHODIC WITH RESPECT TO THE STEEL CONDUIT IN THE PRESENCE OF AN ELECTROLYTE.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CHLORINE + CONCRETE, PRESTRESSED + CONTAINMENT, GENERAL + CORROSION + PALISADES POINT + REACTOR, PRESSURIZED WATER

18-15662 ALSO IN CATEGORY 11
QUESTION 4.9--GALVANIZED VS UNGALVANIZED WIRE
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
3 PAGES, 2 REFERENCES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-15662 *CONTINUED*

DISCUSS THE RELATIVE MERITS OF USAGE OF GALVANIZED VS. UNGALVANIZED WIRE OR STRAND, INCLUDING THE BASIS FOR THE SELECTION.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONCRETE, PRESTRESSED + CONTAINMENT, GENERAL + CORROSION + PALISADES POINT + REACTOR, PRESSURIZED WATER + STEEL

18-15663 ALSO IN CATEGORY 11

QUESTION 4.10--BONDING PROCEDURE BETWEEN LIFTS

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

DESCRIBE THE CONSTRUCTION PROCEDURE TO BE USED TO ENSURE PROPER BONDING BETWEEN LIFTS.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONCRETE + CONTAINMENT CONSTRUCTION + CONTAINMENT, GENERAL + PALISADES POINT + REACTOR, PRESSURIZED WATER

18-15664 ALSO IN CATEGORY 11

QUESTION 5.1--PROCEDURES FOR CONTAINMENT PROOF TESTING

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

SECTION 5. CONTAINMENT TESTING. (1) DESCRIBE THE SEQUENCE OF PROCEDURES FOR CONTAINMENT PROOF-TESTING. PROVIDE THE PROCEDURES FOR DEVELOPING STRUCTURAL ACCEPTANCE CRITERIA AND STRAIN AND DEFLECTION ERROR BANDS TO BE MET.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT, HIGH PRESSURE + PALISADES POINT + REACTOR, PRESSURIZED WATER + TEST, PROOF

18-15665 ALSO IN CATEGORY 11

QUESTION 5.2--INSTRUMENTATION TO VERIFY CONTAINMENT DESIGN

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

PROVIDE THE INSTRUMENTATION SCHEME TO BE USED TO VERIFY THE CONTAINMENT DESIGN, INCLUDING PROTECTIVE MEASURES TO BE TAKEN TO ENSURE LONG-TERM INSTRUMENT PERFORMANCE. THIS SHOULD INCLUDE THE LOCATIONS AND NUMBER OF THE INSTRUMENTS.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT INSTRUMENTATION + CONTAINMENT, HIGH PRESSURE + PALISADES POINT + REACTOR, PRESSURIZED WATER + TEST, PROOF

18-15666 ALSO IN CATEGORY 11

QUESTION 5.3--IN SERVICE INSPECTION AND TESTING OF TENDONS AND ANCHORAGES- MONITORING STRUCTURE RESPONSE DURING PNEUMATIC TESTING

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

DEFINE THE PROVISIONS ALLOWED IN THE DESIGN FOR IN-SERVICE INSPECTION AND TESTING OF TENDONS AND ANCHORAGES AND FOR MONITORING THE RESPONSE OF THE STRUCTURE DURING PERIODIC PNEUMATIC TESTING.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT INSTRUMENTATION + CONTAINMENT, HIGH PRESSURE + PALISADES POINT + REACTOR, PRESSURIZED WATER + STRUCTURAL INTEGRITY + TEST, LEAK RATE

18-15667 ALSO IN CATEGORY 11

QUESTION 5.4--MEASURING CONTAINMENT UNDER DESIGN PRESSURES

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

DISCUSS THE ADVANTAGES AND DISADVANTAGES OF MEASURING THE CONTAINMENT UNDER DESIGN PRESSURES AS A CONFIRMATION OF DESIGN VERSUS THE USE OF MODEL TESTING TO CONFIRM THE DESIGN.

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CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-15667 *CONTINUED*

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT, HIGH PRESSURE + MOCKUP + PALISADES POINT + REACTOR, PRESSURIZED WATER + TEST, PROOF + TESTING

18-15668 ALSO IN CATEGORY 11

QUESTION 6.1--MISSILE SOURCES + PROTECTION THEREFROM

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

2 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

SECTION 6 (MISSILE PROTECTION) - (1) DISCUSS ALL THE POTENTIAL SOURCES OF MISSILES THAT COULD DAMAGE THE CONTAINMENT LINER FOR WHICH MISSILE PROTECTION WILL BE PROVIDED. PROVIDE A LIST OF PIPING OR INTERNAL SYSTEMS WHICH PENETRATE THE CONTAINMENT, AND COMPONENTS WHICH WILL BE SO PROTECTED. WHAT CALCULATIONAL METHODS AND ASSUMPTIONS WILL BE USED IN DETERMINING THE SIZE AND ENERGY OF MISSILES AND THE EFFECTIVENESS OF PROTECTIVE STRUCTURES.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT LINER + MISSILE GENERATION AND PROTECTION + PALISADES POINT + REACTOR, PRESSURIZED WATER

18-15669 ALSO IN CATEGORIES 5 AND 11

QUESTION 6.2--CONTAINMENT PROTECTION FROM EXTERNAL MISSILES SPECIFICALLY TURBINE ROTOR FAILURE

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

3 PAGES, 1 FIGURE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

WHAT ARE CRITERIA FOR PROTECTION AGAINST EXTERNAL MISSILES. MISSILES FROM TURBINE-ROTOR FAILURE COULD RESULT IN A SPECTRUM OF MISSILES OF CONSIDERABLE VELOCITY AND MASS. PROVIDE THIS SPECTRUM. DETERMINE AMOUNT OF IMPACT ENERGY THAT COULD BE INFLICTED ON CONTAINMENT STRUCTURE. CONSIDER VARIOUS LOCATIONS OF IMPACT, AND EFFECTS DUE TO TURBINE-AXIS ORIENTATION RELATIVE TO CONTAINMENT BUILDING. WITHIN THE ABOVE SPECTRUM, WHAT IMPACT ENERGY WOULD INFLICT SUFFICIENT DAMAGE TO THE PRESTRESSING TENDONS AT POINT OF IMPACT SO AS TO LEAD TO PROGRESSIVE FAILURE AND CONTAINMENT STRUCTURE COLLAPSE. WHAT IS MARGIN OF SAFETY FOR THE CONTAINMENT STRUCTURAL INTEGRITY. DISCUSS LIKELIHOOD OF TURBINE-ROTOR FAILURE WITH RESPECT TO DESIGN, SELECTION OF MATERIALS, QUALITY CONTROL, ETC.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + MISSILE GENERATION AND PROTECTION + PALISADES POINT + REACTOR, PRESSURIZED WATER

18-15670 ALSO IN CATEGORY 11

QUESTION 6.3--MISSILE DAMAGE TO LINES TO AND FROM CONTAINMENT AND PERTINENT EQUIPMENT

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

1 PAGE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

DETERMINE THE POTENTIAL IMPORTANCE OF MISSILE DAMAGE TO LINES LEADING TO AND FROM THE CONTAINMENT AND/OR TO AUXILIARY EQUIPMENT OUTSIDE THE CONTAINMENT THAT COULD AFFECT AN ORDERLY AND SAFE SHUTDOWN OF THE PLANT OR COOLING OF THE CORE OR CONTAINMENT BUILDING UNDER POSTACCIDENT CONDITIONS.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + EMERGENCY COOLING CONSIDERATIONS + MISSILE GENERATION AND PROTECTION + PALISADES POINT + REACTOR, PRESSURIZED WATER

18-15671 ALSO IN CATEGORY 11

SUPPLEMENT 1--DESIGN BASES FOR PRESTRESSED CONCRETE VESSELS

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

6 PAGES OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

SAFETY, UNDER EXTRAORDINARY CIRCUMSTANCES, AND PROPER PERFORMANCE OF VESSEL AT VARIOUS LOADING STAGES ARE MAIN CONSIDERATION OF THESE DESIGN BASES. SECTIONS ON DESIGN APPROACH AND LOADING STAGES ARE INCLUDED.

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*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONCRETE, PRESTRESSED + CONTAINMENT, HIGH PRESSURE + DESIGN CRITERIA + PALISADES POINT + REACTOR, PRESSURIZED WATER

18-15672 ALSO IN CATEGORY 11

SUPPLEMENT 2--QUALITY CONTROL PROCEDURE FOR FIELD WELDING

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

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CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-15672 *CONTINUED*

THE PROCEDURE OUTLINES GENERAL REQUIREMENTS FOR QUALITY CONTROL OF WELDING TO ENSURE THAT ALL FIELD WELDING IS PERFORMED IN COMPLIANCE WITH APPLICABLE JOB SPECIFICATIONS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT CONSTRUCTION + PALISADES POINT + QUALITY CONTROL + REACTOR, PRESSURIZED WATER + WELDING

18-15673 ALSO IN CATEGORIES 9 AND 11
SUPPLEMENT 3--CONTAINMENT VESSEL INSTRUMENTATION
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
4 PAGES, 1 FIGURE OF CONSUMERS POWER COMPANY PALISADES PLANT, AMENDMENT NO. 1, SEPTEMBER 6, 1966, DOCKET 50-255

THE PURPOSE OF CONTAINMENT VESSEL INSTRUMENTATION IS GIVEN. INSTRUMENTATION DETAILS ARE GIVEN, AND A DIAGRAM OF INSTRUMENT LAYOUT IS INCLUDED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT INSTRUMENTATION + PALISADES POINT + REACTOR, PRESSURIZED WATER

18-15674 ALSO IN CATEGORIES 5 AND 6
SURREY POWER STATION UNITS 1 AND 2 PRELIMINARY SAFETY ANALYSIS REPORT, PART B
VIRGINIA ELECTRIC AND POWER COMPANY
170 PAGES, FIGURES, TABLES, 1967, DOCKET NO. 50-280 AND 50-281

VOLUME 1 CONTAINS THE FOLLOWING CHAPTERS - (1) INTRODUCTION, (2) SITE, AND (3) REACTOR. A TABLE COMPARES 152 SIGNIFICANT DATA ITEMS WITH INDIAN POINT 2 AND BURLINGTON 1. AEC CONSTRUCTION PERMIT CRITERIA ARE DISCUSSED, AND SHARED FACILITIES ARE NOTED. CONDENSER COOLING WATER IS LIFTED FROM DOWNSTREAM SIDE OF SITE TO AN INTAKE CANAL (PROVIDING A SOURCE OF WATER FOR EMERGENCIES) AND FLOWS BY GRAVITY THROUGH THE CONDENSERS TO THE UPSTREAM SIDE OF THE SITE. SEPARATE METEOROLOGY REPORT (NUS-333, DECEMBER 66). FAULT FORMATIONS END 50 MILES FROM SITE. REACTOR EVALUATED FOR 2546 MW(TH), WHICH CORRESPONDS TO FULL TURBINE RATING OF 846 MW(E). LENGTHY DISCUSSION OF REACTIVITY AND DNB CALCULATIONAL METHODS.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*SAFETY ANALYSIS REPORT, PRELIMINARY + AEC CONSTRUCTION PERMIT CRITERIA + ANALYTICAL MODEL + DNR (DEPARTURE FROM NUCLEATE BOILING) + EMERGENCY COOLING CONSIDERATIONS + HEAT SINK + REACTIVITY EFFECT + REACTOR, PRESSURIZED WATER + SURREY 1 AND 2

18-15675 ALSO IN CATEGORIES 11 AND 12
SURREY POWER STATION UNITS 1 AND 2 PRELIMINARY SAFETY ANALYSIS REPORT, VOLUME 2, PART B
VIRGINIA ELECTRIC AND POWER COMPANY
200 PAGES, FIGURES, TABLES, 1967, DOCKET NO. 50-280 AND 50-281

VOLUME 2 CONTAINS THE FOLLOWING CHAPTERS - (4) REACTOR COOLANT SYSTEM, (5) CONTAINMENT, (6) ENGINEERED SAFEGUARDS, (7) INSTRUMENTS AND CONTROLS, (8) ELECTRICAL SYSTEMS. EACH CONTROLLED-LEAKAGE PC PUMP HAS A FLYWHEEL. A NEW CONTAINMENT CONCEPT (SUBATMOSPHERIC) IS ADVANCED, WHERE A VACUUM PUMP DISCHARGES CONTAINMENT AIR THROUGH FILTERS TO THE STACK, TO MAINTAIN CONTAINMENT AT 10 PSIA BEFORE AND AFTER AN ACCIDENT. DESIGN IS FOR 45 PSIG AT 280 F. ENGINEERED SAFEGUARDS ARE - (1) THREE ACCUMULATORS, HIGH- AND LOW-HEAT WATER-INSPECTION PUMPS, (2) RECIRCULATION OF SPILLED WATER, (3) CONTAINMENT SPRAY, (4) RECIRCULATION OF CONTAINMENT-SPRAY WATER, (5) CONTAINMENT (SUBATMOSPHERIC) VACUUM SYSTEM.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTAINMENT, LOW PRESSURE + *SAFETY ANALYSIS REPORT, PRELIMINARY + ENGINEERED SAFETY FEATURE + REACTOR, PRESSURIZED WATER + SURREY 1 AND 2

18-15676 ALSO IN CATEGORY 12
SURREY POWER STATION UNITS 1 AND 2 PRELIMINARY SAFETY ANALYSIS REPORT VOLUME 3, PART B
VIRGINIA ELECTRIC AND POWER COMPANY
175 PAGES, FIGURES, 1967, DOCKET NO. 50-280 AND 50-281

VOLUME 3 CONTAINS THE FOLLOWING CHAPTERS - (9) AUXILIARY AND EMERGENCY SYSTEM, (10) STEAM SYSTEMS, (11) WASTE AND RADIATION PROTECTION, (12) ORGANIZATION, (13) INITIAL TESTS, AND (14) SAFETY ANALYSIS. GRAVITY FLOW FROM INTAKE CANAL PROVIDES 24-HR SUPPLY OF COOLING WATER TO RECIRCULATION-SPRAY HEAT EXCHANGERS. CHAPTER 14 IS MAINLY A LOSS-OF-COOLANT BLOW-DOWN ANALYSIS. ONLY HYPOTHETICAL ACCIDENTS ARE REPORTED (CORE MELTDOWN RELEASES TO CONTAINMENT 100% OF THE NOBLE GASES, 50% OF THE HALOGEN, 1% OF THE OTHER FISSION PRODUCTS. 50% IODINE PLATEOUT. CONTAINMENT LEAKAGE AT 0.125%/DAY.) TWO ANALYSES WERE PERFORMED - (1) LEAKAGE IS TERMINATED AFTER 35 MIN BY SUBATMOSPHERIC CONTAINMENT PRESSURES. MAXIMUM THYROID DOSE IS 264 REMS. WHOLE-BODY DOSE IS 3.9 REMS AT SITE BOUNDARY. (2) ASSUMING NO SAFEGUARDS OPERATIONAL AND THE LEAKAGE LASTS 30 DAYS, SITE BOUNDARY DOSES IS 900 REMS, BUT POPULATION CENTER DOSE IS WELL BELOW 10 CFR 100 VALUE.

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-15676 *CONTINUED*
AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

*SAFETY ANALYSIS REPORT; PRELIMINARY + ACCIDENT, HYPOTHETICAL + BLOWDOWN + CONTAINMENT SPRAY + HEAT SINK + REACTOR, PRESSURIZED WATER + SURRY 1 AND 2

18-15867
SURAK A
NUCLEAR REACTOR DEVELOPMENT IN EGYPT. SUMMARY OF DATA
LIBRARY OF CONGRESS, WASHINGTON, D.C.
AD-632925 + AD-66-32 +. 21 PAGES, APRIL 1, 1966

AVAILABLE INFORMATION INDICATES THAT EGYPT HAS ONLY ONE RESEARCH REACTOR (2 MW(TH)), WHICH WAS SUPPLIED BY THE SOVIET UNION, AND ONE POWER REACTOR (150 MW(3)), CURRENTLY UNDER CONSTRUCTION. THERE ARE A FEW NUCLEAR RESEARCH LABORATORIES ALREADY IN OPERATION, AND SEVERAL MORE ARE BEING BUILT AT THE INCHASS AND ALEXANDRIA RESEARCH CENTERS. NO DETAILED INFORMATION COULD BE FOUND ON THE RESEARCH BEING CONDUCTED AT THESE CENTERS. IT IS TRUE THAT, AT LEAST FOR THE TIME BEING, THE EGYPTIAN NUCLEAR REACTOR DEVELOPMENT PROGRAM IS HEAVILY DEPENDENT ON FOREIGN COOPERATION AND ASSISTANCE. HOWEVER, GREAT EMPHASIS IS BEING PLACED ON THE DEVELOPMENT OF A NATIONAL NUCLEAR ENGINEERING CAPABILITY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*EGYPT + *REACTOR, POWER + *REACTOR, RESEARCH + *REVIEW

18-15869 ALSO IN CATEGORY 1
MCLEOD NB + UEMATSU K + YASUKAWA S + YUMOTO R
DIRECT SUBSTITUTE PLUTONIUM FUEL FOR COMMERCIAL WATER REACTORS
NUCLEAR UTILITY SERVICES, INC., WASHINGTON, D.C.
NUS-259 +. 130 PAGES, OCTOBER 15, 1965

FOR REASONS OF FUEL-SUPPLY FLEXIBILITY, A VERY DESIRABLE CONDITION FOR THE USE OF PLUTONIUM-ENRICHED FUEL IS AS A DIRECT SUBSTITUTE FOR U-235-ENRICHED FUEL IN EXISTING POWER REACTORS RATHER THAN IN SPECIAL PLUTONIUM-BURNING REACTORS. A PLUTONIUM-ENRICHED FUEL DESIGN WOULD USE A LARGER NUMBER OF SMALLER RODS FOR THE SAME EXTERNAL FUEL ASSEMBLY DIMENSIONS. THIS HAS THE EFFECT OF REDUCING VOID COEFFICIENTS AND REDUCING BOTH TOTAL FUEL AND PLUTONIUM INVENTORIES WHILE MAINTAINING THE SAME FUEL BURNUP AND CORE POWER CAPABILITY. THE TWO ADVERSE EFFECTS OF SMALLER ROD DIAMETER ARE AN INCREASE IN FABRICATION COSTS AND A SMALL REDUCTION IN CONVERSION RATIO.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*FUEL ELEMENT + *PLUTONIUM + *REACTOR, POWER + *REACTOR, WATER + JAPAN

18-15870
HENDRIE JM + KOUTS HJ
HFBR. A SOURCE REACTOR FOR NEUTRON BEAMS
BROOKHAVEN NATIONAL LABORATORY, UPTON, N.Y.
BNL-10610 + CONF-660925-4 +. 29 PAGES, SEPT. 1966, FROM SEMINAR ON INTENSE NEUTRON SOURCES, SANTA FE, NEW MEXICO

HFBR (HIGH FLUX BEAM REACTOR) IS A 40-MW, HEAVY-WATER-COOLED, MODERATED, AND REFLECTED REACTOR AT BROOKHAVEN NATIONAL LABORATORY TO PROVIDE NEUTRONS FOR BASIC RESEARCH IN PHYSICS AND CHEMISTRY. THE REACTOR WAS DESIGNED PRIMARILY FOR EXTERNAL NEUTRON BEAM EXPERIMENTS, AND THE CORE, REFLECTOR, AND BEAM HOLES ARE ARRANGED TO ENHANCE THE LOW-ENERGY NEUTRON FLUX IN THE BEAMS, WHILE DECREASING THE FAST BACKGROUND. NINE OF THE 16 EXPERIMENTAL FACILITIES ARE EXTERNAL BEAM FACILITIES. SEVERAL OF THE BEAM HOLES ARE ARRANGED SO THAT TWO BEAMS MAY BE OBTAINED FROM EACH HOLE. THE REMAINING EXPERIMENTAL FACILITIES ARE FOR IRRADIATION EXPERIMENTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*HFBR (HIGH FLUX BEAM REACTOR) + *REACTOR, FLUX TRAP + *REACTOR, RESEARCH + *SOURCE, NEUTRON + BNL (BROOKHAVEN NATIONAL LABORATORY)

18-16023 ALSO IN CATEGORIES 4 AND 6
BARDES RG + COHEN SC + FRISENHANN SJ + GILLETTE EM + HADDAD E + JOANOU GD + JUPITER C + MOORE RA + PEAK JC + TRIMBLE GD
TUNGSTEN NUCLEAR ROCKET. PHASE I, FINAL REPORT. PART I.
GENERAL DYNAMICS CORP., SAN DIEGO, CALIFORNIA
GA-6990 + NASA-CR-54909 +. 390 PAGES, FIGURES, TABLES, APRIL 22, 1966

DESCRIBES THE CRITICAL EXPERIMENTS, FACILITY, ASSEMBLIES, AND NUCLEAR ANALYSIS. EXPERIMENTAL RESULTS INCLUDE THE EXCESS REACTIVITY AVAILABLE IN THE CORE, WORTH OF POISON TUBES AND FUEL-ELEMENT COMPONENTS, TEMP. COEFFICIENTS, AND FLUX AND POWER DISTRIBUTIONS.

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-16023 *CONTINUED*

AVAILABILITY - NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, OFFICE OF SCIENTIFIC AND TECHNICAL INFORMATION, WASHINGTON, D. C. 20546

*NUCLEAR ROCKET + *REACTOR DESCRIPTION + CRITICAL ASSEMBLY FACILITY + CRITICALITY EXPERIMENT + FLUX DISTRIBUTION + MEASUREMENT, REACTIVITY + POWER DISTRIBUTION + REACTIVITY, EXCESS + TEMPERATURE REACTIVITY EFFECT

18-16024 ALSO IN CATEGORIES 4 AND 9

BARDES RG + COHEN SC + FRIESENHAIN SJ + GILLETTE EM + HADDAD E + JOANOU GD + JUPITER C + MOORE RA + PEAK JC + TRIMBLE GD

TUNGSTEN NUCLEAR ROCKET. PHASE I, FINAL REPORT. PART I

GENERAL DYNAMICS CORP., SAN DIEGO, CALIFORNIA

GA-6890 + NASA-CR-54909 +. 6 PAGES, FIGURES, PAGES 2-16 THROUGH 2-21, APRIL 22, 1966

PAGES 2.16 THROUGH 2.21 DESCRIBE THE NUCLEAR INSTRUMENTATION FOR THIS TEST REACTOR.

AVAILABILITY - NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, OFFICE OF SCIENTIFIC AND TECHNICAL INFORMATION, WASHINGTON, D. C. 20546

*CONTROL SYSTEM + *NUCLEAR ROCKET + *REACTOR SAFETY SYSTEM + INSTRUMENTATION, NUCLEAR

18-16035

FOX CH + GUENTHER E + HALL W + HASSELL LD + MCNEIL J + RIGGS C + ROSENTHAL H + VOGEL W + WISCHOW R

PM-3A NUCLEAR POWER PLANT HAZARDS SUMMARY REPORT. DESCRIPTION OF PLANT EXPERIENCE AND CHANGES

MARTIN CO., BALTIMORE, MD.

MND-3315-1 +. 88 PAGES, JANUARY 1964

THE CHANGES MADE IN PM-3A SINCE DECEMBER 1962 ARE SUMMARIZED. AREAS COVERED ARE CONTROL-ROD-DRIVE MECHANISMS, HYDROGEN SOURCES AND CONTROL, CONTAINMENT LEAK TESTING, NUCLEAR INSTRUMENTS, PLANT CHEMISTRY, RADIOACTIVE-WASTE PROCESSING, AIRBORNE-ACTIVITY EXPERIENCE, AND MISCELLANEOUS PLANT MODIFICATIONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*MODIFICATION, SYSTEM OR EQUIPMENT + *REACTOR DESCRIPTION + CONTAINMENT INSPECTION AND MAINTENANCE + CONTROL ROD DRIVE + INSTRUMENTATION, NUCLEAR + PM 3A (PORTABLE MEDIUM NUCLEAR POWER PLANT) + REACTOR, ARMY + REACTOR, PRESSURIZED WATER + TEST, LEAK RATE + WASTE MANAGEMENT

18-16127

STERN MC + BAXTER AM + DAHLBERG RC + THOMPSON WI

GAS-COOLED REACTOR EXPERIMENTAL EXCURSION TEST. SUPPLEMENT NO. 2 TO FINAL REPORT ON FEASIBILITY STUDIES

PHILLIPS PETROLEUM COMPANY, IDAHO FALLS, IDAHO

GA-6178 (SUPPL. 2) +. 42 PAGES, JULY 6, 1965

METHODS OF USING MODERATOR-COEFFICIENT DATA IN THE DESIGN AND ANALYSIS OF THE HTGR ARE GIVEN. THE ACCURACY OF MEASURING DOPPLER COEFFICIENTS FOR HTGRS IS DISCUSSED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*RESEARCH AND DEVELOPMENT PROGRAM + DOPPLER COEFFICIENT + MODERATOR COEFFICIENT + REACTOR TEST FACILITY + REACTOR, GAS COOLED + REACTOR, HIGH TEMP. GAS

18-16128

STERN MC + BAXTER AM + DAHLBERG RC + MERRILL M + THOMPSON WI + ZUMWALT L

GAS-COOLED REACTOR EXPERIMENTAL EXCURSION TEST. SUPPLEMENT NO. 1 TO FINAL REPORT ON FEASIBILITY STUDIES

PHILLIPS PETROLEUM COMPANY, IDAHO FALLS, IDAHO

GA-6178 (SUPPL. 1) +. 31 PAGES, APRIL 8, 1965

EXAMINES THE POSSIBILITY OF OBTAINING DATA TO CHECK OR IMPROVE THEORETICAL MODELS FOR HIGH-TEMPERATURE GAS-COOLED REACTORS. REACTOR SYSTEMS THAT COULD BE STUDIED IN THE GREET FACILITY ARE REVIEWED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*RESEARCH AND DEVELOPMENT PROGRAM + REACTOR DYNAMICS + REACTOR TEST FACILITY + REACTOR, GAS COOLED + REACTOR, HIGH TEMP. GAS

18-16129

STERN M + BAXTER A + DAHLBERG R + MELESE G + MERRILL M + THOMPSON W

GAS-COOLED REACTOR EXPERIMENTAL EXCURSION TEST. FINAL REPORT ON FEASIBILITY STUDIES, AUGUST 1, 1964 -

JANUARY 31, 1965

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-16129 *CONTINUED*
PHILLIPS PETROLEUM COMPANY, IDAHO FALLS, IDAHO
GA-6178 +. 119 PAGES, MARCH 15, 1965

THIS FINAL REPORT ON THE FEASIBILITY OF THE GREET PROGRAM COVERS THE PERIOD OF AUGUST 1, 1964, THROUGH JANUARY 31, 1965. THE PROGRAM INVOLVES THE DEVELOPMENT OF A GRAPHITE REACTOR EXPERIMENTAL EXCURSION TEST FACILITY TO STUDY SUBJECTS PERTINENT TO THE SAFETY OF SOLID-MODERATOR REACTORS. THE REASONS WHY EXPERIMENTAL SAFETY STUDIES OF HIGH-TEMPERATURE GAS-COOLED REACTORS SHOULD BE UNDERTAKEN ARE REPORTED. SOME SUGGESTED TEST CORES FORMING THE FIRST PART OF A PROPOSED EXPERIMENTAL PROGRAM ARE DESCRIBED. THE EXPERIMENTAL FACILITY REQUIREMENTS ARE GIVEN. CORE STRUCTURE, CORE COOLING AND HEATING, CONTROL-ROD SYSTEMS, FACILITY REQUIREMENTS, RADIOACTIVITY PROBLEMS, AND EXPERIMENTAL INSTRUMENTATION ARE ALL CONSIDERED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL AND SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*RESEARCH AND DEVELOPMENT PROGRAM + REACTOR DYNAMICS + REACTOR KINETICS + REACTOR TEST FACILITY + REACTOR, GAS COOLED + REACTOR, HIGH TEMP. GAS

18-16130 ALSO IN CATEGORY 12
REASLEY FG + LENCE JT + MYSINGER ED
LEVITATION OF AN EGCR CONTROL ROD
TENNESSEE VALLEY AUTHORITY, OAK RIDGE, TENNESSEE
TID-22739 +. 72 PAGES, FEBRUARY 18, 1965

METHODS CONSIDERED CREDIBLE ARE - THE RUPTURE OF A CONTROL-ROD NOZZLE ABOVE THE TOP OF THE SHIELD PLUG SUCH THAT THE PLUG CANNOT BE EJECTED, RESULTING IN ROD-EJECTION TIME OF 1 SEC, AND RUPTURE OF THE NOZZLE INTERIOR COOLANT LINE SUCH THAT THE CROSS-SECTIONAL AREA OF THE RUPTURE IS AT LEAST EQUAL TO THE CROSS-SECTIONAL AREA OF THE PIPE. THIS RESULTS IN A ROD-EJECTION TIME OF 0.7 SEC.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*ACCIDENT ANALYSIS + *ACCIDENT, CONTROL ROD EJECTION + EGCR (EXPERIMENTAL GAS COOLED REACTOR) + REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED

18-16132
EXPERIMENT DESIGN MANUAL AND HAZARDS ANALYSIS. PLUM BROOK REACTOR FACILITY.
WESTINGHOUSE ELECTRIC CORP., ASTRONUCLEAR LABORATORY, PITTSBURGH, PA.
N-66-26822 + NASA-CR-75303 + WNL-TNR-119 (REV. 1) +. 52 PAGES, 7 TABLES, 4 FIGURES, MAY 1964

DESCRIBES AND EVALUATES AN IN-PILE EXPERIMENT TO BE INSERTED IN PLUM BROOK. TEST ASSEMBLIES TO BE IRRADIATED INCLUDE TRANSDUCERS, STRAIN GAGES, THERMOMETERS, ACCELEROMETERS, AND VARIOUS MECHANICAL COMPONENTS. THE MCA IS THE SEVERANCE OF THE CAPSULE PIPING BELOW THE QUADRANT WATER LEVEL.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*IN PILE EXPERIMENT + *IN PILE LOOP + DESIGN STUDY + HAZARDS ANALYSIS + PLUM BROOK + RADIATION EFFECT + REACTOR, TEST + TEST, INSTRUMENT RESPONSE

18-16156
TECHNICAL SPECIFICATIONS FOR THE MIT RESEARCH REACTOR
MASSACHUSETTS INST. OF TECHNOLOGY, CAMBRIDGE, MASS.
MITN-62 +. 110 PAGES, REFERENCES, AUGUST 16, 1965

TECHNICAL SPECIFICATIONS TO ENSURE THE SAFETY OF THE REACTOR ARE GIVEN. INCLUDES THE BASIS FOR EACH CHOICE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*TECHNICAL SPECIFICATIONS + MITR (MASS. INST. OF TECH. REACTOR) + REACTOR, HEAVY WATER + REACTOR, RESEARCH

18-16159 ALSO IN CATEGORY 17
PERFORMANCE CHARACTERISTICS OF A LARGE FAST BREEDER REACTOR CORE WITH BUNDLE CONTROLLED EXPANSION (BCEX) FUEL ASSEMBLIES
WESTINGHOUSE ELECTRIC CORPORATION, ATOMIC POWER DIVISION, PITTSBURGH, PA.
WCAP-3589-2 +. 474 PAGES, FIGURES, TABLES, MAY 1966

IDENTIFIES PROBLEMS AND CHARACTERISTICS OF A MODULAR-CORE PROPOSAL WHICH UTILIZES CONTROLLED CLADDING OR FUEL (THERMAL EXPANSION) TO PROVIDE A RELIABLE NEGATIVE-REACTIVITY FEEDBACK TO SUPPLEMENT THE DOPPLER COEFFICIENT FOR INHERENT REACTOR CONTROL AND SAFETY. THE DYNAMIC BEHAVIOR OF THE EXPANDING CLADDING IS BRIEFLY REVIEWED.

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-16159 *CONTINUED*

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*REACTIVITY EFFECT + *REACTIVITY EFFECT, EXPANSION + ENGINEERED SAFETY FEATURE + REACTOR CONTROL + REACTOR STABILITY + REACTOR, BREEDER + REACTOR, FAST + THERMAL MECHANICAL EFFECT

18-16242 ALSO IN CATEGORY 11

ARNOLD HG + GALL WR + TRIPP AM

USE OF THE EVAPORATOR TO AUGMENT REACTOR CONTAINMENT IN LARGE NUCLEAR DESALINATION PLANTS

ORNL-RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.

ORNL-TM-1586 +. 46 PAGES, 11 FIGURES, 2 TABLES, MARCH 1967

THE POSSIBILITY OF USING THE SEAWATER EVAPORATOR OF LARGE NUCLEAR DESALINATION PLANTS AS A PART OF THE REACTOR-CONTAINING SYSTEM WAS INVESTIGATED. PRELIMINARY CONCEPTS OF PLANTS IN WHICH THE EVAPORATOR IS USED AS A SHELL FOR DOUBLE CONTAINMENT AND AS A PRESSURE-SUPPRESSION CHAMBER WERE DEVELOPED AND EVALUATED. THE ESTIMATED COST OF THE CONCEPTUAL PLANTS IS LESS THAN THAT OF THE REFERENCE PLANT, BUT THIS COST ADVANTAGE MAY BE PARTIALLY OFFSET BY A POSSIBLE INCREASE IN THE COST OF THE EVAPORATOR PORTION THAT MIGHT BE REQUIRED TO MAKE IT MEET NUCLEAR STANDARDS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151 \$3.00 COPY, \$0.65 MICROFICHE

*CONTAINMENT RESEARCH AND DEVELOPMENT + *CONTAINMENT, MULTIPLE + *CONTAINMENT, PRESSURE SUPPRESSION + *DESIGN STUDY + *REACTOR, DESALINATION + ECONOMICS

18-16323 ALSO IN CATEGORY 15

U.S. FISH AND WILDLIFE SERVICE COMMENTS ON VERMONT YANKEE, MAY 18, 1967

VERMONT YANKEE NUCLEAR POWER CORP., BOSTON, MASS.

3 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(25) PAGES 19-21 (JUNE 19, 1967)

SERVICE RECOMMENDS POSTOPERATIONAL SURVEYS (RADIOLOGICAL AND ECOLOGICAL) OF AQUATIC ORGANISMS WHICH CONCENTRATE RADIOACTIVITY AND WHICH ARE AFFECTED BY INCREASED WATER TEMPERATURE. THE SURVEYS ARE RECOMMENDED TO DEMONSTRATE THAT THERE ARE NO SIGNIFICANT ADVERSE CONDITIONS (RADIOACTIVITY OR HIGH TEMPERATURE) AFFECTING AQUATIC ORGANISM, PARTICULARLY FOOD FISH.

*MONITORING PROGRAM, ENVIRONMENTAL + REACTOR, BOILING WATER + SURVEY, RADIATION, ENVIRONMENTAL + THERMAL POLLUTION + VERMONT YANKEE

18-16324 ALSO IN CATEGORY 15

FORSCHER F

AIRBORNE EXPOSURE TO 12 OPERATORS AT NUMEC, APOLLO, PA.

NUCLEAR MATERIALS AND EQUIPMENT CORP., APOLLO, PA.

1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(25) PAGE 24 (JUNE 19, 1967)

(MAY 1) - 12 OPERATORS WERE EXPOSED TO AIRBORNE ENRICHED URANIUM FOR 7-DAY PERIODS BETWEEN FEB. AND APRIL 1967, GIVING EXPOSURES MORE THAN 40 MPC-HOURS. (PWR, 4 OPERATORS) - OPERATOR ERRORS. AFTER REINSTRUCTION, NO MORE OVEREXPOSURE OCCURRED. (CP-2, 7 OPERATORS) - STRICTER SUPERVISION AND TOTAL ENCLOSURE ARE BEING CONSIDERED. (VAULT, 1 OPERATOR) - MORE-RESTRICTIVE SURFACE CONTAMINATION LIMITS ARE APPLIED TO CONTAINERS IN THE VAULT.

*INHALATION + *PERSONNEL EXPOSURE, RADIATION + *URANIUM + FABRICATION FACILITY + FUEL, POWDER TYPE

18-16325 ALSO IN CATEGORY 13

LOCKER JL

EXPLOSION AT STANDARD OIL CATALYST PLANT, LIMA OHIO, APRIL 25, 1967

STANDARD OIL COMPANY, LIMA, OHIO

2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(25) PAGES 25-26 (JUNE 19, 1967)

(MAY 23) - DEPLETED URANIUM IS A COMPONENT OF CATALYST 21, WHOSE MANUFACTURE IS BEGUN BY THERMALLY DECOMPOSING A MIXTURE OF U AND AMMONIUM NITRATES, PRINCIPALLY TO GET RID OF THE NH4NO3 (AS N2, NO2, NO, ETC.) AND WATER. IN THE INITIAL STARTUP OF THE PLANT, AN EXPLOSION OCCURRED DUE TO A REACTION IN THE FEED MATERIAL IN THE FEED HOPPER. THE HOPPER WAS HEATED BY CONDUCTION FROM THE CALCINER, CAUSING A REACTION WHICH HEATED MORE FEED. SOON, GAS EVOLUTION EXCEEDED VENT CAPACITY. NO DAMAGE OR EXPOSURE RESULTED. INCREASED DRAFT, DECREASED FEED-HOPPER SIZE, PHYSICAL SEPARATION BETWEEN FEED HOPPER AND CALCINER, AND PRESSURE AND TEMPERATURE INDICATORS WERE ALL ADDED.

*INCIDENT, ACTUAL, NONNUCLEAR + *INCIDENT, ACTUAL, NONREACTOR + CHEMICAL REACTION + EXPLOSION + FAILURE, DESIGN ERROR + PRESSURE, INTERNAL

18-16326 ALSO IN CATEGORY 13

WISSINK RG

FOUR INCIDENTS REPORTED BY MMM, ST PAUL, MINN.

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-16326 *CONTINUED*

3M COMPANY, ST. PAUL, MINN.

2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(25) PAGES 26-27 (JUNE 19, 1967)

(MAY 25) - FOR SEPARATE INCIDENTS OCCURRED BETWEEN JAN. AND APRIL 1967, INVOLVING AIRBORNE ACTIVITY. (1) 44 MPC OF AM-241 WAS INHALED THROUGH FACE MASKS DUE TO INADEQUATE AIR FLOW IN GLOVE BOXES. (2) 1653 MPC SR-90 WAS INHALED THROUGH FACE MASKS FOR 1 HR WHILE LOADING SOURCES WITH 3M MICROSPHERES IN A HOD. (3) 4070 MPC AND (4) 66 MPC SR-90 WAS INHALED DURING HOT-CELL CLEANUP.

*AIRBORNE RELEASE + *PERSONNEL EXPOSURE, RADIATION + AMERICIUM + FABRICATION + INHALATION + SOURCE, RADIATION + STRONTIUM

18-16327

ALSO IN CATEGORIES 15 AND 17

WRIGHT EG

RADIATION OVEREXPOSURE AT U.S. ARMY NUCLEAR DEFENSE LAB., EDGEWOOD ARSENAL, MD.

U. S. ARMY NUCLEAR DEFENSE LABORATORY, EDGEWOOD ARSENAL, MD.

3 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(25) PAGES 27-29 (JUNE 19, 1967)

(MAY 29) - A 700-CURIE CO-60 SOURCE STUCK DURING TRANSFER FROM A STORAGE SHIELD TO AN OPERATIONS SHIELD. DECOMPOSED RUST INHIBITOR CAUSED IT TO JAM IN THE HYDRAULIC-TRANSMISSION TURING. THE SUPERVISOR TRIED VARIOUS MEANS OF FREEZING THE SOURCE IN THE MEASURED 2-R/HR FIELD, AFTER MONITORING WITH AN AMERICAN-NUCLEAR HIGH-RANGE (0-100 R/HR) SURVEY METER, BUT FINALLY SENT THE PARTIALLY SHIELDED SOURCE TO A HOT CELL. HE THEN FOUND HIS 5-R DOSIMETERS OFF-SCALE (AND APPARENTLY ONLY THEN INFORMED RADIATION PROTECTOR OFFICER). THE SURVEY-METER NEON LIGHT WAS NOT LIT, SHOWING LOW BATTERY VOLTAGE, WHICH CAUSED THE METER TO READ 30-40 R/HR IN FIELDS OF 55-500 R/HR. RUST INHIBITOR IS NO LONGER USED. PERIODIC INSPECTIONS TO SHOW DEBRIS-FREE HANDLING MECHANISM, BETTER MARKING OF BATTERY INDICATOR, ADDITIONAL TRAINING IN EMERGENCY PROCEDURES WERE INSTITUTED.

*INCIDENT, ACTUAL, GENERAL + *SOURCE, RADIATION + FAILURE, ADMINISTRATIVE CONTROL + FAILURE, EQUIPMENT + FAILURE, INSTRUMENT + HEALTH PHYSICS TRAINING + INCIDENT, ACTUAL, RECOVERY FROM + MONITOR, RADIATION, EMERGENCY + PERSONNEL EXPOSURE, RADIATION

18-16328

DRESDEN NUCLEAR POWER STATION. UNIT 3 AMENDMENT 1, ANSWERS TO AEC QUESTIONS

COMMONWEALTH EDISON COMPANY

86 PAGES, FIGURES, TABLES, 1966, DOCKET NO. 50-249

AMENDMENT 1 CONTAINS ANSWERS TO 34 QUESTIONS ASKED BY DLR IN A LETTER DATED APRIL 21, 1966.

ALSO, CHANGES AND ADDITIONS TO THE PLANT DESIGN AND ANALYSIS REPORT (PSAR) ARE INCLUDED. (A) GENERAL, (B) STATION DESIGN, (C) ENGINEERED SAFEGUARDS, (D) SAFETY EVALUATION, (E) INSTRUMENTATION.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*AEC QUESTION + DRESDEN 3 + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16329

ALSO IN CATEGORIES 12 AND 1

QUESTION A-1(1) THRU 1(5)--UNITS 2 AND 3 SAFETY ACTION

COMMONWEALTH EDISON COMPANY

8 PAGES, PAGES A-1 TO A-8 FROM DRESDEN 3 AMENDMENT 1, 1966, DOCKET NO. 50-249

SEVERAL FEATURES OF UNIT 3 WILL BE SHARED WITH UNIT 2, INCLUDING TURBINE BUILDING, SECONDARY CONTAINMENT, CONTAINMENT-SPRAY SYSTEM, AND REACTOR-BUILDING VENTILATION SYSTEM, PROVIDING POTENTIAL INTERACTION BETWEEN UNITS. DEGREE AND EFFECT OF INTERACTIONS RELATED TO SAFETY DURING NORMAL AND ACCIDENT CONDITIONS. CONSIDER ESPECIALLY THESE FIVE POINTS - (1) DISCUSS DIFFERENCES IN PERFORMANCE OBJECTIVES OF UNIT 3 WITH LISTED INTERCONNECTIONS AS COMPARED WITH THOSE FOR A SINGLE PLANT. INCLUDE FACTORS INFLUENCING OPERATION OF UNIT 2. (2) STATE CRITERIA USED TO DETERMINE WHICH COMPONENTS, SYSTEMS, AND FACILITIES COULD AND COULD NOT BE SHARED. (3) FOR FEATURES NOT SHARED, GIVE CRITERIA FOR ADDITIONAL DESIGN CONSIDERATIONS ASSURING NO ADVERSE INTERACTION BETWEEN UNITS. (4) FOR COMPONENTS, SYSTEMS AND FACILITIES SHARED, STATE CRITERIA SPECIFIC DESIGN OF EACH SHARED FEATURE. (5) IF INCIDENT OCCURS IN ONE UNIT, WHAT ARE POTENTIAL EFFECTS ON RELIABILITY, REDUNDANCY, ACCESS FOR INSPECTION AND MAINTENANCE, AND OPERATIONAL MODE OF REMAINING UNITS.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ENGINEERED SAFETY FEATURE + *SHARED COMPONENTS + AEC QUESTION + DRESDEN 3 + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16330

ALSO IN CATEGORIES 12 AND 6

QUESTION A-2--POTENTIAL REACTIVITY TRANSIENT STUDIES, PIPE-WHIPPING, AND GENERATION OF MISSILES

COMMONWEALTH EDISON COMPANY

3 PAGES, PAGES A-2-1 TO A-2-3 FROM DRESDEN 3 AMENDMENT 1, 1966, DOCKET NO. 50-249

YOUR ATTENTION IS DIRECTED TO REPORTS FROM THE ACRS TO THE CHAIRMAN, AEC, DATED NOVEMBER 24, 1965, AND MARCH 18, 1966, CONCERNING ITS REVIEW OF DRESDEN 2 AND MILLSTONE POINT. IN THESE

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-16330 *CONTINUED*

REPORTS, ACRS REQUESTED FURTHER STUDIES RELATED TO ITS CONCERN ON PIPE-WHIPPING, GENERATION OF MISSILES WHICH COULD AFFECT THE EFFECTIVENESS OF ENGINEERED SAFEGUARDS, AND POTENTIAL REACTIVITY TRANSIENTS. DISCUSS THOSE CONSIDERATIONS IN THE DESIGN OF DRESDEN 3, AS WELL AS ANY SUPPORTING INFORMATION IN THESE AREAS. YOUR DISCUSSION OF PIPE-WHIPPING AND MISSILES SHOULD ALSO INCLUDE PROTECTION FOR SAFETY-RELATED INSTRUMENTATION LOCATED IN THE DRYWELL.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*MISSILE GENERATION AND PROTECTION + *REACTOR TRANSIENT + ACRS (ADVISORY COMMITTEE ON REACTOR SAFEGUARDS) + AEC QUESTION + DRESDEN 3 + FAILURE, PIPE + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16331 ALSO IN CATEGORY 11

QUESTION A-3(A) AND 3(B)--MAIN STEAM LINE BREAK. REACTOR PRESSURE VESSEL QUALITY CONTROL
COMMONWEALTH EDISON COMPANY

4 PAGES, PAGES A-3-1 TO A-3-4 FROM DRESDEN 3 AMENDMENT 1, 1966, DOCKET NO. 50-249

REFER TO THE ACRS REPORT ON MILLSTONE POINT, MARCH 18, 1966, AND PROVIDE THE FOLLOWING INFORMATION. (FIRST PARAGRAPH ON PAGE 2) DISCUSS CONSIDERATIONS BEING EVALUATED IN YOUR DESIGN IN REGARD TO A RUPTURE OF THE HIGH-PRESSURE STEAM LINES AND POSSIBLE METHODS TO REDUCE THE ESCAPE OF FISSION PRODUCTS FROM THE TURBINE BUILDING. INCLUDE STRUCTURAL EFFECTS ON THE BUILDING. (B) (NEXT TO THE LAST PARAGRAPH ON PAGE 2) DISCUSS THE CONSIDERATIONS RELATED TO ADDITIONAL METHODS OF QUALITY CONTROL ... AND THE DEVELOPMENT AND USE OF IN-SERVICE INSPECTION METHODS ... FOR PRESSURE VESSELS.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACCIDENT, STEAM LINE RUPTURE + *PRESSURE VESSEL + AEC QUESTION + DRESDEN 3 + EXAMINATION + FISSION PRODUCT RETENTION + QUALITY CONTROL + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16332 ALSO IN CATEGORY 11

QUESTION A-4--REACTOR PRESSURE VESSEL NDT
COMMONWEALTH EDISON COMPANY

6 PAGES, PAGES A-4-1 TO A-4-6 FROM DRESDEN 3 AMENDMENT 1, 1966, DOCKET 50-249

DISCUSS THE REACTOR-VESSEL NDT TEMPERATURE CONSIDERATIONS FOR DRESDEN 3.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*BRITTLE FRACTURE + *PRESSURE VESSEL + AEC QUESTION + DRESDEN 3 + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16333 ALSO IN CATEGORY 1

QUESTION A-5--COMPARATIVE EVALUATION OF DESIGN CRITERIA
COMMONWEALTH EDISON COMPANY

1 PAGE, PAGE A-5-1 FROM DRESDEN 3 AMENDMENT 1, 1966, DOCKET 50-249

PROVIDE A COMPARATIVE EVALUATION OF THE DRESDEN-3 DESIGN CRITERIA WITH THE COMMISSIONS GENERAL DESIGN CRITERIA FOR NUCLEAR POWER PLANT CONSTRUCTION PERMITS (NOVEMBER 22, 1965). YOUR DISCUSSION OF EACH CRITERION SHOULD INCLUDE THE PERTINENT CONSIDERATIONS GIVEN FOR MULTIPLE-UNIT INTERACTIONS.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*AEC CONSTRUCTION PERMIT CRITERIA + AEC QUESTION + DRESDEN 3 + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY + SHARED COMPONENTS

18-16334 ALSO IN CATEGORY 5

QUESTION A-6--FORCE ON REACTOR PRESSURE VESSEL FOLLOWING ITS RUPTURE
COMMONWEALTH EDISON COMPANY

2 PAGES, PAGES A-6-1 TO A-6-2 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

ANALYZE THE FORCE EFFECTS ON THE REACTOR VESSEL AND THE DRYWELL FROM AN ASSUMED INSTANTANEOUS RUPTURE ANYWHERE IN THE REACTOR VESSEL. THE SIZE OF THE RUPTURE SHOULD BE EQUIVALENT TO A RUPTURE LEADING TO CONTAINMENT DESIGN PRESSURE IN THE DRYWELL (62 PSIG) DURING BLOWDOWN. YOUR ANALYSIS SHOULD ALSO INCLUDE THE EFFECTS OF SUCH A RUPTURE OCCURRING ON THE BOTTOM OF THE REACTOR VESSEL COINCIDENT WITH THE VERTICAL AXIS.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACCIDENT, LOSS OF COOLANT + *PRESSURE VESSEL + AEC QUESTION + DRESDEN 3 + MISSILE GENERATION AND PROTECTION + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16335 ALSO IN CATEGORY 11

QUESTION A-7(1)--EFFECT ON REACTOR VESSEL OF A RAPID STARTUP

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-16335 *CONTINUED*
COMMONWEALTH EDISON COMPANY
1 PAGE, PAGE A-7-1 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

DISCUSS THE CONSEQUENCES OF AN ACCIDENTAL FAST STARTUP FROM LOW TEMPERATURE AS IT RELATES TO ALLOWABLE PRESSURE-VESSEL STRESSES AND BRITTLE-FRACTURE LIMITS THAT MIGHT EXIST AT LOW TEMPERATURE.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*BRITTLE FRACTURE + *PRESSURE VESSEL + AEC QUESTION + DRESDEN 3 + FAILURE, ADMINISTRATIVE CONTROL + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16336 ALSO IN CATEGORY 11
QUESTION A-7(2)--ALLOWABLE REACTOR VESSEL FLOW SIZE
COMMONWEALTH EDISON COMPANY
3 PAGES, PAGES A-7-1 TO A-7-3 FROM DRESDEN 3 AMENDMENT 1, 1966, DOCKET NO. 50-249

DEFINE THE FLAW SIZE AND TYPE IN THE REACTOR VESSEL WHICH IS ACCEPTED IN THE SPECIFICATIONS. WHAT FLAWS, LARGER OR OF SPECIAL SIGNIFICANCE, MIGHT NOT BE DETECTED, PARTICULARLY IN ZONES OF IRREGULAR CONFIGURATION.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

AEC QUESTION + DRESDEN 3 + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16337 ALSO IN CATEGORY 11
QUESTION A-7(3)--REACTOR VESSEL STUD FAILURE
COMMONWEALTH EDISON COMPANY
1 PAGE, PAGE A-7-4 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

WHAT FLAW SIZE IS ACCEPTED IN THE STUDS OF THE REACTOR VESSEL. WHAT FREQUENCIES OF STUD INSPECTION OR REPLACEMENT IS PLANNED. HOW MANY STUDS CAN FAIL WITHOUT THREATENING THE INTEGRITY OF THE CLOSURE.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*FLAW + *PRESSURE VESSEL + AEC QUESTION + DRESDEN 3 + EXAMINATION + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16338 ALSO IN CATEGORY 11
QUESTION A-7(4)--DETECTION OF SMALL LEAKS FROM THE REACTOR VESSEL
COMMONWEALTH EDISON COMPANY
2 PAGES, PAGES A-7-4 TO A-7-5 FROM DRESDEN 3 AMENDMENT 1, 1966, DOCKET NO. 50-249

DESCRIBE HOW SMALL LEAKS IN THE REACTOR VESSEL WOULD BE DETECTED AND THE ACTION TO BE TAKEN SHOULD SUCH OCCUR. HOW IS ADEQUATE RESPONSE ENSURED IN THE EVENT OF A PREVIOUS EXISTENCE OF SMALL LEAKS IN OTHER PARTS OF THE SYSTEM.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*PRESSURE VESSEL + *TEST, LEAK LOCATION + *TEST, LEAK RATE + AEC QUESTION + DRESDEN 3 + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16339 ALSO IN CATEGORY 11
QUESTION A-7(5)--MISSILE PROTECTION OF THE REACTOR VESSEL
COMMONWEALTH EDISON COMPANY
2 PAGES, PAGES 7-5 TO 7-6 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

WHICH MISSILES ARE PROTECTED FOR AND WHICH ARE NOT.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*MISSILE GENERATION AND PROTECTION + *PRESSURE VESSEL + AEC QUESTION + DRESDEN 3 + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16340 ALSO IN CATEGORY 5
QUESTION A-7(6)--FUEL MOVEMENT REACTIVITY EFFECTS
COMMONWEALTH EDISON COMPANY
4 PAGES, PAGES A-7-6 TO A-7-9 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

WHAT ARE THE POSITIVE REACTIVITY EFFECTS DUE TO FUEL RELOCATION. CAN THIS PHENOMENON AFFECT REACTIVITY TRANSIENTS LIKE THE ROD-EJECTION ACCIDENT SIGNIFICANTLY.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-16340 *CONTINUED*

*ACCIDENT, FUEL CLUMP + ACCIDENT, CONTROL ROD EJECTION + AEC QUESTION + DRESDEN 3 + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16341 ALSO IN CATEGORY 11

QUESTION A-7(7) AND 7(8)--REACTOR VESSEL CRACK PROPAGATION

COMMONWEALTH EDISON COMPANY

2 PAGES, PAGES A-7-9 AND A-7-10 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

IF ONE POSTULATES THE RAPID PROPAGATION OF A CRACK CIRCUMFERENTIALLY, WITH THE CONTAINED ENERGY OF THE SYSTEM, WHAT WOULD HAPPEN TO THE UPPER SECTION OF THE VESSEL, INCLUDING SHEARING OF PIPES, ETC. CAN YOU VISUALIZE ANY PROBLEM FROM THE PROPAGATION OF A CRACK FROM TOP TO BOTTOM OF THE VESSEL BUT NOT THROUGH THE HEAD.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*PRESSURE VESSEL + AEC QUESTION + DRESDEN 3 + FAILURE, PRESSURE VESSEL + MISSILE GENERATION AND PROTECTION + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16342 ALSO IN CATEGORY 11

QUESTION A-7(9)--REACTOR VESSEL CRACK DETECTION

COMMONWEALTH EDISON COMPANY

1 PAGE, PAGE A-7-10 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

ARE YOU CONSIDERING PROCEDURES FOR DETECTING THE PROPAGATION OF CRACKS WITHIN THE VESSEL WALL.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*FLAW + *INSTRUMENTATION, GENERAL + *PRESSURE VESSEL + AEC QUESTION + DRESDEN 3 + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16343 ALSO IN CATEGORY 11

QUESTION B-1--STACK FAILURE EFFECT ON ENGINEERED SAFEGUARDS

COMMONWEALTH EDISON COMPANY

2 PAGES, PAGES B-1-1 TO B-1-2 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

PROVIDE THE RESULTS, WITH SUPPORTING DISCUSSION OF THE MODEL AND ASSUMPTIONS USED FOR YOUR ANALYSIS TO DETERMINE THE ADEQUACY OF THE STATION VENTILATION STACK DESIGN AGAINST FAILURE AND POSSIBLE DAMAGE TO THE SAFETY FEATURES OF THE STATION. THIS REQUEST RELATES TO CRITERION 1(B).

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*FAILURE, EQUIPMENT + *STACK + AEC CONSTRUCTION PERMIT CRITERIA + AEC QUESTION + DRESDEN 3 + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY + SYSTEM OPERABILITY IN ACCIDENT CONDITIONS

18-16344 ALSO IN CATEGORY 11

QUESTION B-2--VENTILATION SYSTEM ISOLATION VALVE FAILURE

COMMONWEALTH EDISON COMPANY

2 PAGES, PAGES B-2-1 TO B-2-2 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

IN REGARD TO THE OBJECTIVE OF CRITERION 22, PROVIDE THE DESIGN CRITERIA FOR THE ISOLATION VALVES IN THE STATION VENTILATION SYSTEM AS SHOWN IN FIGURE 36 OF THE PLANT DESIGN AND ANALYSIS REPORT, AND DISCUSS THE ADEQUACY OF THE PROPOSED DESIGN IN TERMS OF SINGLE VALVE OR COMPONENT FAILURE AND TESTING CAPABILITY.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTAINMENT PENETRATION, CLOSURE OF + *SINGLE-FAILURE CRITERION + AEC CONSTRUCTION PERMIT CRITERIA + AEC QUESTION + DRESDEN 3 + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16345 ALSO IN CATEGORIES 7 AND 11

QUESTION B-3--STANDBY GAS TREATMENT FILTERS

COMMONWEALTH EDISON COMPANY

1 PAGE, PAGE B-3-1 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

DISCUSS THE DESIGN BASES FOR THE HEAT LOADS ESTABLISHED FOR THE FILTERS GIVEN IN SECTION V-4-7 OF THE PLANT DESIGN AND ANALYSIS REPORT. YOUR DISCUSSION SHOULD INCLUDE AN ANALYSIS TO SUPPORT YOUR DESIGN BASES RELATED TO ADEQUATE HEAT DISSIPATION TO PREVENT FILTER DAMAGE WITHOUT FORCED AIR FLOW (V-4-7).

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTAINMENT FILTERING SYSTEM + *DECAY HEAT + *FIRE + AEC QUESTION + DRESDEN 3 + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-16346 ALSO IN CATEGORY 5
QUESTION B-4--REACTOR STABILITY
COMMONWEALTH EDISON COMPANY
3 PAGES, PAGES B-4-1 TO B-4-3 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

IN REGARD TO CRITERION 5, PROVIDE THE RESULTS OF YOUR FREQUENCY-RESPONSE ANALYSES CONCERNING THE STABILITY OF DRESDEN 3, INCLUDING THE EFFECT OF DOPPLER REACTIVITY COEFFICIENTS. FURTHER, INCLUDE A LIST OF DESIGN GUIDELINES AND ACTUAL VALUES OF THE IMPORTANT PARAMETERS THAT WOULD AFFECT REACTOR STABILITY.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*DOPPLER COEFFICIENT + *FREQUENCY SPECTRA + *REACTOR STABILITY + AEC CONSTRUCTION PERMIT CRITERIA + AEC QUESTION + DRESDEN 3 + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16347 ALSO IN CATEGORIES 9 AND 11
QUESTION B-5--VENTILATION SYSTEM DESIGN AND RADIATION MONITORING
COMMONWEALTH EDISON COMPANY
1 PAGE, PAGE B-5-1 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

PROVIDE THE DESIGN CRITERIA FOR USE OF THE VENT-PIPE EXHAUST SCHEME AS SHOWN IN FIGURE 36. INCLUDE A DESCRIPTION OF THE PROPOSED RADIATION-MONITORING SYSTEM ASSOCIATED WITH VENTILATION EXHAUST USING THE VENT PIPE. ALSO, DESCRIBE THE VENTILATION SYSTEM FOR THE TURBINE BUILDING.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*MONITOR, RADIATION, GAS + *VENTILATION SYSTEM + AEC QUESTION + DRESDEN 3 + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16348 ALSO IN CATEGORY 12
QUESTION B-6--EQUIPMENT ENVIRONMENTAL SPECIFICATIONS
COMMONWEALTH EDISON COMPANY
2 PAGES, PAGES B-6-1 TO B-6-2 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

PROVIDE THE GENERAL ENVIRONMENTAL SPECIFICATIONS FOR COMPONENTS USED IN THE SAFETY SYSTEMS. FOR EXAMPLE, IS THE SWITCHGEAR FOR THE 4.16-KV SWING-BUS SPECIFIED TO OPERATE PROPERLY IN SATURATED STEAM.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*PLANT PROTECTIVE SYSTEM + *SYSTEM OPERABILITY IN ACCIDENT CONDITIONS + AEC QUESTION + DRESDEN 3 + EMERGENCY POWER, ELECTRIC + REACTOR SAFETY SYSTEM + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16349 ALSO IN CATEGORY 9
QUESTION C-1 (A) AND (B)--CONTROL ROD DRIVE FAILURE ANALYSIS; COLLET FINGER RELIABILITY. C. ENGINEERED SAFEGUARDS
COMMONWEALTH EDISON COMPANY
2 PAGES, PAGES C-1-1 TO C-1-2 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

(A) IN REGARD TO CRITERION 7, THE CAPABILITY OF THE CONTROL-ROD-DRIVE MECHANISM AND THIMBLE-SUPPORT STRUCTURE TO PREVENT A ROD-EJECTION ACCIDENT SHOULD BE FURTHER ANALYZED. PROVIDE A SAFETY ANALYSIS THAT ASSESSES THE ADEQUACY OF THE COLLET FINGERS TO LATCH AND REMAIN IN CONTACT WITH THE INDEX TUBE IN CASE OF A THIMBLE RUPTURE. ASSUME THAT THE COLLET FINGERS HAD BEEN RETRACTED FROM THE INDEX TUBE FOR ROD MOVEMENT PRIOR TO THE RUPTURE. (B) IT HAS BEEN STATED THAT THREE SIMULTANEOUS FAILURES ARE REQUIRED TO PREVENT THE COLLET FINGERS FROM ENGAGING THE INDEX TUBE IN THE EVENT OF THIMBLE FAILURE. DESCRIBE THESE FAILURES IN DETAIL AND SHOW THAT THEY ARE INDEED COMPLETELY INDEPENDENT.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTROL ROD DRIVE + *FAILURE, SCRAM MECHANISM + AEC CONSTRUCTION PERMIT CRITERIA + AEC QUESTION + DRESDEN 3 + FAILURE, SIMULTANEOUS + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16350 ALSO IN CATEGORIES 12 AND 11
QUESTION C-2--CONTAINMENT SPRAY SYSTEM CRITERIA
COMMONWEALTH EDISON COMPANY
1 PAGE, PAGE C-2-1 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

OUR PRELIMINARY REVIEW OF THE PORTION OF THE CONTAINMENT SPRAY SYSTEM THAT IS TO BE SHARED WITH UNITS 2 AND 3 INDICATES THAT SINGLE VALVE FAILURES IN THE CROSSOVER LINES COULD LEAD TO A LOSS OF CAPABILITY OR COULD RESULT IN AN ADVERSE INTERACTION BETWEEN THE UNITS IN THE EVENT OF A MAJOR ACCIDENT. WE BELIEVE THAT THE PROPOSED DESIGN SHOULD BE REEVALUATED IN CONJUNCTION WITH THE REQUIREMENTS OF CRITERION 18, AND IF NECESSARY, MODIFICATIONS PROPOSED TO ENSURE

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-16350 *CONTINUED*
THAT THE CRITERION IS SATISFIED.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTAINMENT SPRAY + *SHARED COMPONENTS + AEC CONSTRUCTION PERMIT CRITERIA + AEC QUESTION + DRESDEN 3 + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY + SINGLE-FAILURE CRITERION

18-16351 ALSO IN CATEGORY 12
QUESTION C-3--ISOLATION CONDENSER DESIGN BASES
COMMONWEALTH EDISON COMPANY
1 PAGE, PAGE C-3-1 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

SINCE CRITERION 10 CONCERNS THE ADEQUACY OF AFTER-HEAT REMOVAL, CLARIFY THE DESIGN BASIS FOR THE ISOLATION CONDENSERS IN TERMS OF HEAT-REMOVAL CAPACITY WITHOUT MAKEUP-WATER REQUIREMENTS. ALSO DISCUSS THE MEANS THAT WOULD BE PROVIDED FOR MAKEUP WATER IN THE EVENT OF A LOSS OF ELECTRICAL POWER.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*AEC CONSTRUCTION PERMIT CRITERIA + *CONTAINMENT PENETRATION, CLOSURE OF + *SHUTDOWN COOLING SYSTEM + ACCIDENT, LOSS OF POWER + AEC QUESTION + DRESDEN 3 + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16352 ALSO IN CATEGORY 11
QUESTION D-1(A) THRU 1(E)--CONTAINMENT DETAILS. D. SAFETY EVALUATION
COMMONWEALTH EDISON COMPANY
5 PAGES, PAGES D-1-1 TO D-1-5 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

PROVIDE THE FOLLOWING INFORMATION - (A) CURVE OF BLOWDOWN TIME VERSUS PEAK CONTAINMENT PRESSURE, WITH THE EQUIVALENT BREAK SIZE INDICATED, (B) INITIAL INVENTORY OF WATER AND STEAM IN THE VESSEL AND THE TWO RECIRCULATION LINES IN THE PRIMARY CONTAINMENT, (C) CURVE OF CONTAINMENT PRESSURE VERSUS TIME FROM 1 TO 1 MILLION SECONDS FOR THE DESIGN BASIS ACCIDENT, I.E., NO CORE SPRAY AND ONE CONTAINMENT SPRAY IN OPERATION, (D) CLARIFICATION OF THE REACTOR VESSEL DESIGN WHEREIN FOUR PENETRATIONS ARE SPECIFIED FOR THE CORE-SPRAY SYSTEM (SEE FIGURE 53), (E) LOCATION OF DRYWELL VENTILATION PENETRATIONS AS SHOWN IN FIGURE 36 BUT NOT APPARENT IN FIGURE 66.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTAINMENT DESIGN + *PRESSURE, INTERNAL + AEC QUESTION + CONTAINMENT PENETRATION, GENERAL + CONTAINMENT PENETRATION, PIPE + DRESDEN 3 + PRESSURE VESSEL + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16353 ALSO IN CATEGORY 8
QUESTION D-2(A) THRU 2(D)--DESIGN BASIS ACCIDENT
COMMONWEALTH EDISON COMPANY
11 PAGES, PAGES D-2-1 TO D-2-11 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

PROVIDE INFORMATION RELATED TO THE DESIGN-BASIS ACCIDENT FOR THE CONTAINMENT - (A) DISCUSS BASIS ON WHICH MELTING POINT OF ZIRCONIUM WAS CHOSEN AS TERMINATION TEMPERATURE FOR THE ZIRCONIUM-WATER REACTION. DISCUSS SUPPORTING EXPERIMENTAL DATA. WHAT ADDITIONAL REACTION MIGHT OCCUR IF TERMINATION TEMPERATURE CHOSEN WAS THAT OF ZIRCONIUM OXIDE. OVER WHAT TIME PERIOD WOULD REACTION TAKE PLACE. WHAT ASPECTS OF CALCULATIONAL MODEL CONTRIBUTE TO SENSITIVITY OF EXTENT OF REACTION TO TERMINATION TEMPERATURE CHOSEN. (B) HOW WOULD REPORTED RESULTS BE AFFECTED IF HEAT GENERATED IS TRANSFERRED IN DISCRETE STEPS AS (1) SECTIONS OF CLAD AND FUEL REACH MELTING POINT OF ZIRCONIUM, AND/OR (2) CORE-SUPPORT STRUCTURE REACHES ITS MELTING POINT DUE TO HEAT TRANSFER FROM REACTING CORE PROPER. (C) PROVIDE, IN DETAIL, DOCUMENTATION AS TO BASES OF ASSUMPTIONS AND MODEL USED TO OBTAIN CONTAINMENT-CAPABILITY CURVE. (D) WHAT WOULD PRESSURE IN CONTAINMENT BE IF ZIRCONIUM-WATER REACTION OCCURRED UP TO MELTING POINT OF OXIDE.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTAINMENT DESIGN + *METAL WATER REACTION + *ZIRCALOY + *ZIRCONIUM + AEC QUESTION + DRESDEN 3 + HEAT TRANSFER, CONDUCTION + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16354 ALSO IN CATEGORY 5
QUESTION D-3--ANALYSIS OF FUEL DROP ACCIDENT
COMMONWEALTH EDISON COMPANY
4 PAGES, PAGES D-3-1 TO D-3-4 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

IN RECENT DISCUSSIONS WITH THE STAFF IT WAS STATED THAT THE EXCURSION ANALYSIS PRESENTED FOR THE FUEL-DROP ACCIDENT WAS IN ERROR. GIVE THE CORRECTED ANALYSIS, INCLUDING (A) PEAK FUEL ENTHALPIES, (B) AMOUNT OF MOLTEN FUEL, (C) POSSIBLE REACTIVITY, STEAM GENERATION AND PRESSURE EFFECTS OF EXPULSION OF THE MOLTEN FUEL INTO MODERATOR CHANNELS AND (D) THE INCREASE IN FISSION-PRODUCT RELEASE TO THE ENVIRONMENT. COULD ENOUGH ENERGY BE TRANSFERRED TO THE MODERATOR TO GENERATE A WATER-HAMMER EFFECT.

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-16354 *CONTINUED*
AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACCIDENT, FUEL SLUMP + AEC QUESTION + DRESDEN 3 + METAL WATER REACTION + MOLTEN FUEL + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY + SHOCK WAVE

18-16355 ALSO IN CATEGORIES 11 AND 9
QUESTION D-4--CONTROL ROD JAMMING FOLLOWING LOSS OF PRESSURE ACCIDENT
COMMONWEALTH EDISON COMPANY
2 PAGES, PAGES D-4-1 TO D-4-2 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

IDENTIFY THE DESIGN FEATURES RELATED TO CORE STRUCTURAL INTEGRITY AND ALL PORTIONS OF THE CONTROL-ROD-DRIVE MECHANISMS THAT ENSURE CONTROL-ROD INSERTION INTO THE CORE, THEREBY PREVENTING A SECONDARY CRITICALITY ON CORE REFLOODING AFTER A BREAK OF EITHER A RECIRCULATION LINE OR A MAIN STEAM LINE. HOW MANY RODS WOULD HAVE TO FAIL TO BE INSERTED TO CAUSE CRITICALITY. IN THIS REGARD, CONSIDER THE CASE WHERE ALL CONTROL RODS ASSOCIATED WITH THE HYDRAULIC LINES ON ONE SIDE WERE DISABLED IN SUCH A WAY THAT THESE RODS COULD NOT BE INSERTED. WHAT IS THE SAFETY SIGNIFICANCE OF A SECONDARY CRITICALITY FROM (A) A NUCLEAR-EXCURSION STANDPOINT AND (B) PRESSURE CONTRIBUTION TO THE CONTAINMENT BY STEAM GENERATION.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACCIDENT, LOSS OF PRESSURE + *CONTROL ROD DRIVE + *SYSTEM OPERABILITY IN ACCIDENT CONDITIONS + AEC QUESTION + CONTAINMENT DESIGN + DRESDEN 3 + FAILURE, SCRAM MECHANISM + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16356 ALSO IN CATEGORIES 6 AND 5
QUESTION D-5--EXPERIMENTAL BASIS OF FUEL DAMAGE THRESHOLDS FOR EXCURSION ANALYSIS
COMMONWEALTH EDISON COMPANY
5 PAGES, PAGES D-5-1 TO D-5-5 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

DISCUSS THE EXPERIMENTAL BASIS OF THE DAMAGE THRESHOLDS ASSUMED IN THE EXCURSION ANALYSES. INCLUDE CONSIDERATIONS OF PARTICLE SIZE AND PRESSURE PULSES GENERATED AS A FUNCTION OF PEAK FUEL ENTHALPY. HOW IS THE EXPERIMENTAL DATA CORRECTED IN YOUR ANALYSES TO TAKE INTO CONSIDERATION EFFECTS OF THE LARGE CORE. ALSO, COMPARE THE RESULTS OF YOUR MODEL FOR THE DOPPLER COEFFICIENT WITH EXPERIMENTAL DATA AND WITH OTHER CURRENT MODELS. REFER ALSO TO QUESTION A-2.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*EXCURSION, LARGE + *FUEL ELEMENT + *PERFORMANCE LIMIT + AEC QUESTION + DOPPLER COEFFICIENT + DRESDEN 3 + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16357 ALSO IN CATEGORY 6
QUESTION D-6--WATER TO STEAM PORTIONS FOLLOWING STEAM LINE BREAK
COMMONWEALTH EDISON COMPANY
2 PAGES, PAGES D-6-1 TO D-6-2 FROM DRESDEN 3 AMENDMENT 1, 1966, DOCKET 50-249

CLARIFY THE APPARENT DISCREPANCY IN THE PROPORTION OF WATER TO STEAM IN THE BLOWDOWN AFTER A STEAM-LINE BREAK. WHAT ARE THE SIGNIFICANT CONSIDERATIONS IN DETERMINING THE COMPOSITION OF THE BLOWDOWN FLUID.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACCIDENT, STEAM LINE RUPTURE + AEC QUESTION + BLOWDOWN + DRESDEN 3 + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16358 ALSO IN CATEGORY 11
QUESTION D-7--ISOLATION REQUIREMENTS OF CONDENSER VACUUM PUMP
COMMONWEALTH EDISON COMPANY
1 PAGE, PAGE D-7-1 FROM DRESDEN 3, AMENDMENT 1, DOCKET 50-249, 1966

ASSESS THE NEED FOR AUTOMATIC ISOLATION CAPABILITY OF THE CONDENSER VACUUM PUMP IN THE EVENT OF A ROD-DROP ACCIDENT DURING PUMP OPERATION TO LIMIT THE RELEASE OF FISSION PRODUCTS DIRECTLY THROUGH THE STACK TO THE OUTSIDE ENVIRONMENT.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTAINMENT PENETRATION, CLOSURE OF + *REACTOR OFFGAS + ACCIDENT, CONTROL ROD EJECTION + AEC QUESTION + DRESDEN 3 + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16359 ALSO IN CATEGORIES 9 AND 5
QUESTION D-8--STARTUP ACCIDENT ANALYSIS
COMMONWEALTH EDISON COMPANY

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-16350 *CONTINUED*

2 PAGES, PAGES D-8-1 TO D-8-3 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

PLEASE PROVIDE AN ANALYSIS FOR THE FOLLOWING STARTUP ACCIDENT, CONSIDERING ITS OCCURRENCE AT EITHER (A) COLD PLANT, (B) HOT STANDBY, AND (C) POWER-OPERATION CONDITIONS - SIMULTANEOUS WITHDRAWAL OF TWO CONTROL RODS UNDER CONDITIONS OF MAXIMUM REACTIVITY INSERTION RATE AND NO BYPASS FUNCTION IN EFFECT. THE EFFECTS OF DOPPLER AND SCRAM INITIATED BY THE APRM SYSTEM ONLY MAY BE CONSIDERED.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACCIDENT, CONTROL ROD EJECTION + *ACCIDENT, CONTROL ROD WITHDRAWAL + AEC QUESTION + DOPPLER EFFECT + DRESDEN 3 + REACTOR SAFETY SYSTEM + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16360 ALSO IN CATEGORY 9

QUESTION E-1-- ROD BLOCK INTERLOCK CORRECTIONS. E. INSTRUMENTATION

COMMONWEALTH EDISON COMPANY

1 PAGE, PAGE E-1-1 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

CERTAIN TYPOGRAPHICAL ERRORS AND OMISSIONS CONCERNING THE ROD-BLOCK FUNCTION WERE DISCUSSED WITH YOU. SUBMIT A CORRECTED COPY OF PAGE X-5-4. DISCUSS THE EFFECTS OF CHANNEL BYPASS ON THE ROD-BLOCK INTERLOCK WHICH ENFORCES PROPER POSITIONING OF THE STARTUP AND INTERMEDIATE-RANGE CHAMBERS. (ANSWER) CORRECTED COPIES OF PAGES X-5-3 AND X-5-4 ARE SUBMITTED SEPARATELY AS PART OF AMENDMENT 1 AND REPLACE PAGES IN VOL. I OF PLANT DESIGN AND ANALYSIS REPORT.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*INSTRUMENTATION, INTERLOCK + ACCIDENT, CONTROL ROD WITHDRAWAL + AEC QUESTION + DRESDEN 3 + INSTRUMENTATION, INTERMEDIATE RANGE + INSTRUMENTATION, PULSE + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16361 ALSO IN CATEGORY 10

QUESTION E-2--DROPPING OF NONVITAL LOADS DURING DIESEL GENERATION

COMMONWEALTH EDISON COMPANY

2 PAGES, PAGES E-2-1 TO E-2-2 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

PROVIDE YOUR DESIGN CRITERIA FOR THE RELIABILITY OF THE AUTOMATIC AND MANUALLY ACTUATED SUBSYSTEMS USED TO OPERATE THOSE BREAKERS WHICH ARE PROVIDED TO SHED NONVITAL LOADS DURING ANY PERIOD WHEN THE DIESEL GENERATOR WOULD BE IN OPERATION.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*EMERGENCY POWER, ELECTRIC + *INSTRUMENTATION, INTERLOCK + AEC QUESTION + DRESDEN 3 + GENERATOR, DIESEL + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16362 ALSO IN CATEGORIES 12 AND 9

QUESTION E-3--STATION STACK MONITORING SYSTEM

COMMONWEALTH EDISON COMPANY

2 PAGES, PAGES E-3-1 TO E-3-2 FROM DRESDEN 3, AMENDMENT 1, 1966, DOCKET 50-249

PROVIDE A DIAGRAM OF THE STACK-MONITORING SYSTEM FOR GASEOUS RELEASES FROM UNITS 1, 2, AND 3.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*MONITOR, RADIATION, GAS + *STACK + AEC QUESTION + DRESDEN 3 + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16366 ALSO IN CATEGORIES 15 AND 17

BARCOCK AND WILCOX, MT. VERNON INDIANA, CITED FOR NON COMPLIANCE UNDER LICENSE 13-11317-1

BARCOCK AND WILCOX, MT. VERNON, IND.

2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(24) PAGES 13-14 (JUNE 12, 1967)

(LETTER FROM DIV. COMPLIANCE, APRIL 17, REGARDING FEB. 16 INSPECTION, APPARENTLY RELATING TO A RADIOGRAPHY INCIDENT ON OCT. 10, 1966) - A SURVEY WAS NOT MADE AFTER EACH FILM EXPOSURE TO CHECK THE 141-CURIE CF-60 WAS RETURNED TO THE SHIELD. AN INADEQUATE EVALUATION WAS MADE OF DOSE RECEIVED. THE WARNING SYSTEM WAS A BUZZER ACTIVATED UPON ENTRY TO RADIOGRAPHY ROOM, AND WAS NOT RELATED TO RADIATION LEVEL. (B AND W REPLY, MAY 3) - PROPER SURVEY WAS NOT MADE. DOSE REPORTED NOV. 3 WAS CALCULATED IN GOOD FAITH, HOWEVER FURTHER INFORMATION REPORTED DURING INSPECTION OF FEB. 16 DOES INDICATE AN 8-R CALCULATED DOSE TO UPPER BODY, 3.7-R FILM-BADGE DOSE TO WAIST, AND 27.7/36.6-R CALCULATED DOSE TO L/R HANDS. INCIDENT OCCURRED BECAUSE OF EMPLOYEE PREOCCUPATION WITH PERSONAL MATTERS. WARNING ALARM IS TYPICAL OF THOSE IN OTHER INSTALLATIONS, COMPLIES WITH OUR INTERPRETATION OF 10 CFR 20, AND SHOULD REMAIN AS IS. WE HAVE CHANGED FROM A BELL TO A HORN, AND HAVE POSTED AN AUTHORIZED-ENTRY-ONLY SIGN.

*INCIDENT, ACTUAL, HUMAN ERROR + *INSPECTION AND COMPLIANCE + *RADIOGRAPHY + DOSE CALCULATION, EXTERNAL + DOSE MEASUREMENT, EXTERNAL + FAILURE, DESIGN ERROR + FAILURE, OPERATOR ERROR + PERSONNEL EXPOSURE, RADIATION

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-16367 ALSO IN CATEGORIES 15 AND 17
FIXMAN M
COTTER CORP., CANNON CITY, COLORADO EXPOSURE
COTTER CORP., CANNON CITY, COLORADO
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(24) PAGE 15 (JUNE 12, 1967)

(LETTER, MAY 10). EIGHT INDIVIDUALS WERE EXPOSED TO ABOUT 2.3 MPC DURING MARCH, WHILE SAMPLING BARRELS OF YELLOW CAKE DURING ADVERSE WEATHER. NEW SAMPLING PROCEDURES SHOW EXPOSURE IS NOW DOWN TO 0.4 MPC. TWO MAINTENANCE MEN WERE EXPOSED TO 2.8 TO 6.8 MPC WHILE REPAIRING A YELLOW-CAKE DRYER. DUST WAS RETAINED ON FACE-MASK FILTERS. NOW, DRYERS ARE GIVEN TWO WATER WASHES BEFORE MAINTENANCE TO SETTLE DUST, AND NO ONE IS ALLOWED IN A DRYER MORE THAN 30 MIN/WEEK.

*INHALATION + *MILLING + *PERSONNEL EXPOSURE, RADIATION + INCIDENT, ACTUAL, GENERAL + MAINTENANCE AND REPAIR + SAMPLING + URANIUM

18-16368 ALSO IN CATEGORIES 15 AND 17
LAGRUA JD
COMPLIANCE CITATION OF LONG ISLAND NUCLEAR SERVICE CORP. FOLLOWING RESIN HANDLING INCIDENT AT PORTSMOUTH NAVAL SHIPYARD
LONG ISLAND NUCLEAR SERVICE CORP., BELLPORT, N.Y.
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(24) PAGES 15-16 (JUNE 12, 1967)

(LETTER, APRIL 24, 1967, REGARDING NOV. INCIDENT AND INSPECTION IN DEC. 1966 AND JAN. 1967). RESIN HANDLING AND DECONTAMINATION WERE NOT AUTHORIZED BY LICENSE 31-8360-1, A POSSESSION LICENSE. RADIATION SURVEYS WERE NOT CONDUCTED. TWO PERSONS WERE RE-EXPOSED WITHOUT CHECKING THEIR RADIATION HISTORY. NOTICE WAS NOT GIVEN AEC OF OVEREXPOSURE TO TWO OTHERS. RADIATION AREAS WERE NOT POSTED. AN EMPLOYEE WAS NOT GIVEN WRITTEN NOTICE OF HIS OVEREXPOSURE. IN ADDITION, WRITTEN RECORDS WERE NOT AVAILABLE FOR OTHER LICENSED MATERIAL DURING THE INSPECTION.

*FAILURE, ADMINISTRATIVE CONTROL + *INCIDENT, ACTUAL, HUMAN ERROR + *INSPECTION AND COMPLIANCE + *MAINTENANCE AND REPAIR + COOLANT PURIFICATION SYSTEM + HEALTH PHYSICS TRAINING + RADIATION SAFETY AND CONTROL + REGULATION, AEC + RESIN

18-16369 ALSO IN CATEGORIES 15 AND 17
KELLER CW
10 RAD SKIN EXPOSURE DURING HOT CELL DECONTAMINATION AT MARTIN-MARIETTA BALTIMORE MD., 21 APRIL 1967
MARTIN-MARIETTA CORP., BALTIMORE, MD.
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(24) PAGES 16-17 (JUNE 12, 1967)

(LETTER, MAY 16). SINCE NORMALLY THE FILM BADGE SHOWS 4 TO 6 TIMES THE DOSIMETER READINGS, DOSIMETER READINGS ARE MULTIPLIED BY 8 FOR CONTROL PURPOSES. IN THIS CASE THE RATIOS WERE 36 TO 1, AND 9 TO 1. SURVEYS SHOWED 2 TO 4 RADS/HOUR. PERHAPS GROSS CONTAMINATION OF CLOTHING NEAR FILM BADGE OCCURRED. HOWEVER, CUMULATIVE EXPOSURE OF 200 MR BY DOSIMETERS WILL BE USED TO LIMIT WORKERS UNTIL FILM BADGES ARE PROCESSED.

*DOSE MEASUREMENT, EXTERNAL + *PERSONNEL EXPOSURE, RADIATION + BETA EMITTER + DECONTAMINATION + HEALTH PHYSICS TRAINING + HOT CELL + MONITOR, RADIATION, PERSONNEL + RADIATION SAFETY AND CONTROL

18-16370 ALSO IN CATEGORY 17
SHIELDS RP
RADIOGRAPHY SOURCE CAPSULE SEPARATES AT WALWORTH PRODUCT DIVISION, GREENBURG PA. MARCH 21, 1967
WALWORTH CO., GREENBURG, PA.
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(24) PAGES 17-18 (JUNE 12, 1967)

(LETTER, MARCH 22). AFTER AN EXPOSURE, THE SURVEY SHOWED RADIATION LEVELS ABOVE NORMAL IN THE AREA OF THE PROJECTOR. OPERATOR REPORTED TO SUPERVISOR, WHO FOUND 15 MR/HR IN EXPOSURE AREA, AND HIGHER LEVELS AT PROJECTOR-AREA ENTRANCE. REPEATED CONTROL ACTUATION REDUCED RADIATION IN THE EXPOSURE AREA TO NORMAL. ON EXAMINING THE SOURCE SWITCH, A SMALL OBJECT (RESEMBLING THE DUMMY SOURCE CAPSULE, GREATER THAN 50 MR/HR AT CONTACT) FELL OUT. THE MANUFACTURER WAS CALLED, WHO ARRANGED FOR IMMEDIATE HELP AND THEN CAME HIMSELF. A DETAILED REPORT WILL BE SUBMITTED LATER. THE SMALL OBJECT WAS THE NOSE PIECE OF THE CAPSULE. PELLETS WERE IN PROJECTOR. NO CONTAMINATION WAS FOUND. OPERATING PERSONNEL RECEIVED 30 MR.

*INCIDENT, ACTUAL, EQUIPMENT + *RADIOGRAPHY + FAILURE, EQUIPMENT + SOURCE, RADIATION

18-16372 ALSO IN CATEGORIES 15 AND 17
REVISED REGULATION ON RADON INHALATION EXPOSURE FOR UNDERGROUND MINING
CONGRESS (US) HOUSE OF REPRESENTATIVES
4 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(24) PAGES 30-33 (JUNE 12, 1967)

41 CFR 50-204.321 DEFINES A WORKING LEVEL (WL) AS RADON DAUGHTERS IN AIR WHICH WILL RELEASE 1.3×10 TO THE 5TH MEV OF ALPHA ENERGY A MONTH AS 173 HOURS OF EXPOSURE, AND SETS EXPOSURE

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-16372 *CONTINUED*

LIMIT AT 3.6 WL-MONTHS/CONSECUTIVE-12-MONTHS (I.E., A 0.3-WL AVERAGE). MINES ARE GIVEN UNTIL JAN. 1, 1969, TO COMPLY. COMMENT BY SEC. LABOR ASSERTS THAT JCAE, PHS, AND OTHER TESTIMONY SUPPORTS A 0.3-WL STANDARD, AND THE ONLY QUESTION IS WHEN TO APPLY IT. REGULATION ALLOWS OPERATION AT 1/WL FOR 18 MONTHS PROVIDED THAT THE 0.3 WL IS ACHIEVED THEN.

*INHALATION + *MAXIMUM PERMISSIBLE CONCENTRATION (MPC) + *RADON + CONGRESSIONAL ACTIVITY + DOSE CALCULATION, INTERNAL + DOSE MEASUREMENT, INTERNAL + MINING + PERSONNEL EXPOSURE, RADIATION + REGULATION, AEC + URANIUM

18-16373 ALSO IN CATEGORY 17

SELECTED ELK RIVER OPERATING EXPERIENCE. FIFTY-FOURTH MONTHLY OPERATING REPORT
RURAL COOPERATIVE POWER ASSOCIATIONS
COO-651-44 +. 21 PAGES, 4 FIGURES, APRIL 1967

ON APRIL 29, THE PLANT WAS SHUT DOWN FOR 7-WEEK REFUELING. ALL RODS WERE OUT AT BEGINNING OF APRIL, AND OPERATION CONTINUED BY SLOW STRETCHOUT FROM 58.2 TO 55.2 MW TH (1.7MW REDUCTION PER 1000 MWD, COMPARED WITH A PREDICTED 1.9). A ROD-BANK CALIBRATION (37 CENTS/IN. AT 28.2 IN.) AGREED WITH FIRST-CYCLE CALIBRATION. FUEL SHIPPING CASK WAS INSPECTED. REACTOR UPPER-CAVITY VENT SIGHT-GLASS WAS 2/3 FULL, APPARENTLY FROM CONDENSATION.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*FUEL BURNUP + CONTROL ROD CALIBRATION + ELK RIVER + EXAMINATION + OPERATIONS SUMMARY FOR AEC + REACTOR, BOILING WATER + REFUELING + SHIPPING CONTAINER

18-16374 ALSO IN CATEGORIES 12 AND 17

CALDWELL WE
INDIAN POINT 2 REACTOR DESCRIPTION
CONSOLIDATED EDISON COMPANY, NEW YORK
38 PAGES, 9 FIGURES, 1 TABLE, APRIL 1967, PRESENTED AT THE AMERICAN POWER CONFERENCE, CHICAGO, APRIL 25-27, 1967

FOUR PAPERS FROM A SESSION ON INDIAN POINT 2, ENTITLED SYSTEM PLANNING ASPECTS AND ECONOMIC FACTORS, OVERALL PLANT DESIGN, SITING AND LICENSING CONSIDERATIONS (DISCUSSES EVOLUTION OF ENGINEERED SAFEGUARDS AS AEC/ACRS STANDARDS EVOLVE, MAINLY ON CONTAINMENT-PENETRATION LEAKAGE CONTROL, EMERGENCY COOLING SYSTEMS, AND PIT CRUCIBLE), AND NUCLEAR STEAM-SUPPLY SYSTEM (REUSE OF BORIC ACID REDUCES SOLID WASTE SHIPPED FROM 975 TO 375 DRUMS PER CYCLE).

AVAILABILITY - AMERICAN POWER CONFERENCE, E. R. WHITEHEAD, SECRETARY, ILLINOIS INSTITUTE OF TECHNOLOGY, CHICAGO, ILLINOIS

*CONSTRUCTION PERMIT PROCESS + *ENGINEERED SAFETY FEATURE + *REACTOR DESCRIPTION + CONTAINMENT LEAKAGE CONTROL + EMERGENCY COOLING CONSIDERATIONS + INDIAN POINT 2 + REACTOR, PRESSURIZED WATER + WASTE DISPOSAL, SOLID

18-16375

ARMSTRONG RH + CARTER JC
EXPERIMENTAL BOILING-LIQUID-METAL FAST REACTOR.
ARGONNE NATIONAL LABORATORY, ILL.
ANL-7212 +. 83 PAGES, 16 REFERENCES, 29 FIGURES, 10 TABLES, JUNE 1966

PROPOSES THE USE OF THE EBR-1 TO STUDY CHARACTERISTICS OF BOILING LIQUID METALS IN FAST-REACTOR CORES. DESCRIBES THE 1-MW, SEALED, TEST UNIT WHICH IS TO BE PLACED IN THE CORE-CAVITY LINER AFTER REMOVING STANDARD EBR-1 FUEL. THE OBJECTIVES ARE TO DETERMINE THE REACTIVITY EFFECT OF VAPOR FORMATION AND THE FEASIBILITY OF USING THE VAPOR AS THE WORKING FLUID IN A POWER CYCLE. DISCUSSES THE TECHNICAL ASPECTS, SAFETY, THE ANALYTICAL AND TEST PROGRAM, AND COSTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE.

*REACTOR DESCRIPTION + *RESEARCH AND DEVELOPMENT PROGRAM + EBR 1 AND 2 (EXPERIMENTAL BREEDER REACTORS) + HEAT TRANSFER, BOILING + METAL, LIQUID + REACTIVITY EFFECT + REACTOR, FAST + REACTOR, LIQUID METAL COOLED + TEST, PHYSICS + VOID COEFFICIENT

18-16384

BROWNS FERRY NUCLEAR POWER PLANT. AMENDMENT 7. ANSWERS TO AEC QUESTIONS
TENNESSEE VALLEY AUTHORITY
30 PAGES, FIGURES, FEBRUARY 1967, DOCKET NO. 50-259/260

REVISED PAGES TO THE DESIGN AND ANALYSIS REPORT ARE SUBMITTED, AND ANSWERS ARE GIVEN TO 13 AEC QUESTIONS RAISED AT THE MEETING ON JANUARY 13, 1967.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + BROWNS FERRY + REACTOR, BOILING WATER

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-16385 ALSO IN CATEGORY 12

QUESTION 1. GREATER EMERGENCY CORE COOLING MARGIN BECAUSE OF HIGHER FUEL RATINGS

TENNESSEE VALLEY AUTHORITY

6 PAGES, PAGES 1-1 TO 1-6 FROM BROWNS FERRY AMENDMENT 7, FEBRUARY 1967, DOCKET NO. 50-259/260

IN VIEW OF THE MORE SEVERE FUEL-ELEMENT OPERATING CONDITIONS PROPOSED AND THE DECREASED TIME IN WHICH FUEL WILL MELT IN THE ABSENCE OF ADEQUATE COOLING UNDER POSTULATED ACCIDENT CONDITIONS, HAS CONSIDERATION BEEN GIVEN TO THE PROVISION OF AN EMERGENCY CORE-COOLING SYSTEM WITH SUBSTANTIALLY GREATER MARGIN THAN THOSE PLANNED FOR THE PROPOSED REACTORS WHICH ARE SIMILAR BUT ARE TO BE OPERATED AT LOWER FUEL RATINGS.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*EMERGENCY COOLING CONSIDERATIONS + AEC QUESTION + BROWNS FERRY + FUEL ELEMENT + PERFORMANCE LIMIT + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY + SAFETY PRINCIPLES AND PHILOSOPHY

18-16386 ALSO IN CATEGORY 11

QUESTION 2. INCREASED CONTAINMENT CAPABILITY BECAUSE OF HIGHER FUEL RATINGS

TENNESSEE VALLEY AUTHORITY

3 PAGES, PAGES 2-1 TO 2-3 FROM BROWNS FERRY AMENDMENT 7, FEBRUARY 1967, DOCKET NO. 50-259/260

IN VIEW OF THE RELATIVELY MORE DIFFICULT TASK OF ENSURING ADEQUATE COOLING THROUGHOUT THE CORE UNDER POSTULATED ACCIDENT CONDITIONS DUE TO THE HIGHER FUEL RATING, HAS CONSIDERATION BEEN GIVEN TO PROVIDING SUBSTANTIALLY GREATER CONTAINMENT CAPABILITY OVER SIMILAR REACTORS PROPOSED TO OPERATE AT LOWER FUEL RATINGS.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTAINMENT DESIGN + AEC QUESTION + BROWNS FERRY + FUEL ELEMENT + PERFORMANCE LIMIT + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY + SAFETY PRINCIPLES AND PHILOSOPHY

18-16387 ALSO IN CATEGORY 17

QUESTION 3. LIMITS ON NUMBER OF FUEL ELEMENT FAILURES

TENNESSEE VALLEY AUTHORITY

1 PAGE, PAGE 3.1 FROM BROWNS FERRY AMENDMENT 7, FEBRUARY 1967, DOCKET NO. 50-259/260

WHAT LIMITS WILL BE PLACED ON THE ACCEPTABLE NUMBER OF FUEL-ELEMENT FAILURES UNDER STEADY-STATE OPERATION. WHAT CONSIDERATIONS ENTER IN SETTING THESE LIMITS. HOW WILL DECISIONS BE MADE THAT CONTINUED IRRADIATION TO HIGHER BURNUP IS PERMISSIBLE.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*FAILURE, FUEL ELEMENT + *PERFORMANCE LIMIT + AEC QUESTION + BROWNS FERRY + FUEL BURNUP + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16388 ALSO IN CATEGORY 5

QUESTION 4. FUEL ELEMENT FAILURE MODES UNDER LOSS-OF-COOLANT CONDITIONS

TENNESSEE VALLEY AUTHORITY

3 PAGES, PAGES 4-1 TO 4-3 FROM BROWNS FERRY AMENDMENT 7, FEBRUARY 1967, DOCKET NO. 50-259 AND 50-260

IN WHAT MANNER CAN FUEL ELEMENTS BE EXPECTED TO FAIL IN THE COURSE OF VARIOUS POSTULATED LOSS-OF-COOLANT ACCIDENTS. IS SUFFICIENT INFORMATION AVAILABLE ON FUEL PINS AT THE PROPOSED FUEL RATING AND MAXIMUM BURNUP TO VERIFY THE EXPECTED MODE OF FUEL BEHAVIOR UNDER VARIOUS ANTICIPATED TRANSIENTS AND POSTULATED ACCIDENTS. IF NOT, WILL AN ADEQUATE R AND D PROGRAM BE PURSUED TO CONFIRM THE STATED MODE OF BEHAVIOR AS A FUNCTION OF BURNUP. WILL FUEL ELEMENTS IRRADIATED IN THE BROWNS FERRY REACTORS BE EXAMINED AND TESTED TO CONFIRM AN ACCEPTABLE BEHAVIOR OF FUEL IN THE REACTOR UNDER VARIOUS TRANSIENT CONDITIONS.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*FUEL ELEMENT + *PERFORMANCE LIMIT + AEC QUESTION + BROWNS FERRY + FAILURE, FUEL ELEMENT + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16389 ALSO IN CATEGORIES 12 AND 5

QUESTION 5. EFFECT ON FUEL TEMPERATURE AND OFFSITE DOSE IF ISOLATION VALVES LEAK FOLLOWING STEAM LINE RUPTURE

TENNESSEE VALLEY AUTHORITY

2 PAGES, PAGES 5-1 TO 5-2 FROM BROWNS FERRY AMENDMENT 7, FEBRUARY 1967, DOCKET NO. 50-259 AND 260

EXAMINE THE ACCIDENT INVOLVING A LARGE STEAM-LINE BREAK OUTSIDE THE DRYWELL, ASSUMING THAT THE STEAM-LINE ISOLATION VALVES DO NOT SEAT PROPERLY. CONSIDER A RANGE OF CONTINUED LEAKAGE. HOW DO THE FUEL-ELEMENT TEMPERATURES BEHAVE. HOW IS THE OFF-SITE DOSE AFFECTED BY THE NUMBER OF FUEL-PIN FAILURES.

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-16389 *CONTINUED*
AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACCIDENT, STEAM LINE RUPTURE + *CONTAINMENT PENETRATION, CLOSURE OF + AEC QUESTION + AIRBORNE RELEASE + BROWNS FERRY + DOSE + FAILURE, FUEL ELEMENT + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16390 ALSO IN CATEGORY 5
QUESTION 6. FUEL TEMPERATURE RISE DURING DEPRESSURIZATION FROM HPCI TO LPCI
TENNESSEE VALLEY AUTHORITY
4 PAGES, PAGES 6-1 TO 6-4 FROM BROWNS FERRY AMENDMENT 7, FEB. 1967, DOCKET NO. 50-259/260

PROVIDE DETAILED RESULTS OF ANALYSES OF ACCIDENTS INVOLVING BREAK SIZES BEYOND THE CAPABILITY OF THE HPCI AND REQUIRING DEPRESSURIZATION BEFORE THE LPCI CAN BE EFFECTIVE. IN PARTICULAR, INDICATE THE TEMPERATURES OF THE HOTTEST GROUP OF FUEL ELEMENTS. HOW WOULD PROLIFIC FUEL-ELEMENT FAILURE IN THE HOTTEST FUEL ELEMENTS AFFECT THE COURSE OF THE ACCIDENT. WHAT WOULD BE THE EFFECT OF A STUCK ROD IN THIS ACCIDENT.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*EMERGENCY COOLING CONSIDERATIONS + AEC QUESTION + BROWNS FERRY + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16391 ALSO IN CATEGORY 5
QUESTION 7. LOSS-OF-COOLANT CORE COOLING CALCULATIONS. BASES AND ASSUMPTIONS
TENNESSEE VALLEY AUTHORITY
3 PAGES, PAGES 7-1 TO 7-3, FROM BROWNS FERRY AMENDMENT 7, FEBRUARY 1967, DOCKET NO. 50-259/260

DISCUSS CALCULATIONS RELATED TO CORE COOLING DURING A BLOWDOWN INVOLVING RECIRCULATION-PIPE BREAK, CLEARLY DELINEATING ASSUMPTIONS AND STATING AREAS OF UNCERTAINTY. WHERE MAY CALCULATIONS NOT BE CONSERVATIVE. REVIEW CALCULATIONS OF FUEL-ELEMENT TEMP. FOR LOSS-OF-COOLANT ACCIDENT INVOLVING BREAK SIZES JUST BEYOND THE CAPACITY OF HPCI SYSTEM WHEREIN CORE MAY BE UNCOVERED DURING DEPRESSURIZATIONS. IN CALCULATION OF FUEL AND CLAD TEMPERATURES DURING DEPRESSURIZATION AFTER POSTULATED LOSS-OF-COOLANT ACCIDENT, WHAT ARE MAJOR UNCERTAINTIES. ARE THERE ANY ASPECTS OF THESE CALCULATIONS WHICH MAY NOT BE CONSERVATIVE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*BLOWDOWN + *MATHEMATICAL TREATMENT + ACCIDENT, LOSS OF COOLANT + AEC QUESTION + BROWNS FERRY + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16392 ALSO IN CATEGORIES 17 AND 5
QUESTION 8. POSSIBLE WAYS FLOW RESTRICTION TO FUEL ASSEMBLIES
TENNESSEE VALLEY AUTHORITY
1 PAGE, PAGE 8-1 FROM BROWNS FERRY AMENDMENT 7, FEBRUARY 1967, DOCKET NO. 50-259/260

DISCUSS THOROUGHLY THE POSSIBLE WAYS IN WHICH COOLANT FLOW MIGHT BE SIGNIFICANTLY RESTRICTED OR BLOCKED TO A SUBASSEMBLY UNDER STEADY-STATE POWER OR ACCIDENT CONDITIONS. WHICH CONDITIONS LEAD TO CONSIDERABLE FUEL MELTING.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*FLOW BLOCKAGE + AEC QUESTION + BROWNS FERRY + FUEL MELTDOWN + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16393 ALSO IN CATEGORY 5
QUESTION 9. FLOW BLOCKAGE DUE TO FUEL MELTDOWN
TENNESSEE VALLEY AUTHORITY
1 PAGE, PAGE 9-1 FROM BROWNS FERRY AMENDMENT 7, FEBRUARY 1967, DOCKET NO. 50-259/260

WHERE DOES OXIDE FUEL GO IN THE EVENT OF JACKET FAILURE UNDER VARIOUS FLOW AND ACCIDENT CONDITIONS. UNDER WHICH CIRCUMSTANCES MIGHT FLOW BE SIGNIFICANTLY BLOCKED BY FUEL ELEMENT FAILURE. WHAT IS THE MINIMUM NUMBER OF GROSS FUEL PIN FAILURES REQUIRED TO INTERFERE SERIOUSLY WITH FLOW. WHAT KEEPS THE INLET CRIFICE FROM BLOCKING.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*FAILURE, CLADDING + *FAILURE, SEQUENTIAL + *FLOW BLOCKAGE + AEC QUESTION + BROWNS FERRY + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16394 ALSO IN CATEGORY 5
QUESTION 10. EFFECT OF FUEL FRACTURE ON PRESSURE RISE WITHIN ASSEMBLIES
TENNESSEE VALLEY AUTHORITY
2 PAGES, PAGES 10-1 TO 10-2 FROM BROWNS FERRY AMENDMENT 7, FEBRUARY 1967, DOCKET NO. 50-259/260

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-16394 *CONTINUED*

POSTULATE THAT THE FUEL IN THE CENTRAL-THIRD OF A SUBASSEMBLY MELTS AND IS SUBJECTED TO RAPID INRUSHING WATER DURING STEADY-STATE FULL-POWER OPERATIONS, AS WELL AS ACCIDENT CONDITIONS. WHAT KIND OF PRESSURE PULSES COULD ENSUE. WHAT WOULD BE THE CONSEQUENCES ON NEIGHBORING SUBASSEMBLIES AND CONTROL RODS. COULD THIS ACCIDENT PROPAGATE.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*FAILURE, FUEL ELEMENT + AEC QUESTION + BROWNS FERRY + FAILURE, SEQUENTIAL + PRESSURE, EXTERNAL + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16395 ALSO IN CATEGORY 11

QUESTION 11--CORROSION PROTECTION FOR CONTAINMENT (PRESSURE-SUPPRESSION) TORUS
TENNESSEE VALLEY AUTHORITY

1 PAGE, PAGE 11-1 FROM BROWNS FERRY AMENDMENT 7, FEBRUARY 1967, DOCKET NO. 50-259/260

WHAT PROTECTION AGAINST CORROSION IS PLANNED FOR THE TORUS AND MAIN HEADER CONNECTED TO THE TORUS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTAINMENT, PRESSURE SUPPRESSION + *CORROSION + AEC QUESTION + BROWNS FERRY + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16396 ALSO IN CATEGORIES 12 AND 9

QUESTION 12. ADDED FASTER INSTRUMENTATION TO INITIATE LPCI SYSTEM
TENNESSEE VALLEY AUTHORITY

1 PAGE, PAGE 12-1 FROM BROWNS FERRY AMENDMENT 7, FEBRUARY 1967, DOCKET NO. 50-259/260

DUE TO HIGHER POWER DENSITY, LESS TIME IS AVAILABLE TO INSTITUTE ACTION BY THE EMERGENCY COOLING SYSTEM IN THE EVENT OF A LARGE PIPE BREAK. WHAT ADDITIONAL INSTRUMENTATION METHOD COULD PROVIDE ADDITIONAL ASSURANCE AGAINST A FAILURE OR DELAY IN THE INITIATION SIGNAL TO THE LPCI. PARTICULARLY, HOW MIGHT DIVERSITY AFFORD ADDED ASSURANCE OF PROMPT ACTION OF THE EMERGENCY COOLING SYSTEM.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*EMERGENCY COOLING CONSIDERATIONS + *INSTRUMENTATION, PROCESS + *PLANT PROTECTIVE SYSTEM + AEC QUESTION + BROWNS FERRY + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16397 ALSO IN CATEGORIES 12 AND 11

QUESTION 13. PRESSURE VESSEL SEQUENTIAL FAILURE EFFECT ON EMERGENCY COOLING
TENNESSEE VALLEY AUTHORITY

1 PAGE, PAGE 13-1 FROM BROWNS FERRY AMENDMENT 7, FEBRUARY 1967, DOCKET NO. 50-259/260

WHAT KINDS OF FATIGUE CRACKS OR OTHER FLAWS IN STRUCTURES WITHIN THE PRESSURE VESSEL COULD LEAD TO STRUCTURAL FAILURE DURING BLOWDOWN SO AS TO IMPAIR SIGNIFICANTLY THE EFFECTIVENESS OF THE LPCI OR THE CORE SPRAY SYSTEM. WHAT STEPS ARE PLANNED TO PROTECT AGAINST THE EXISTENCE OF SUCH FLAWS IN SERVICE.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*EMERGENCY COOLING CONSIDERATIONS + *FAILURE, PRESSURE VESSEL + *FAILURE, SEQUENTIAL + AEC QUESTION + BROWNS FERRY + PRESSURE VESSEL + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16401 ALSO IN CATEGORIES 11 AND 5

AMENDMENT 7 - REVISIONS TO DESIGN AND ANALYSIS REPORT.
TENNESSEE VALLEY AUTHORITY, CHATTANOOGA, TENN.

9 PAGES, 1 TABLE, FEBRUARY 2, 1967, DOCKET NO. 50-259/260

REVISIONS INCLUDE (1) REDUCTION OF REACTOR-VESSEL INTERIOR CLADDING FROM 7/32 TO 1/8 IN. OF STAINLESS STEEL, (2) TEMPERATURE OF REACTOR-VESSEL PLATE MATERIAL OPPOSITE CORE-CENTER IMPACT TEST INCREASES FROM 10 F TO 40 F, (3) DRYWELL DESIGN TEMPERATURE REDUCED FROM 287 TO 281 F, AND RESULTANT ASME-CODE DESIGN PRESSURE REDUCED FROM 62 TO 56 PSIG, (4) PEAK ACCIDENT PRESSURE NOW CALCULATED AT 40, INSTEAD OF 32 PSIG, (5) LEAK RATE NOW QUOTED AT ACCIDENT PRESSURE RATHER THAN AT DESIGN PRESSURE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTAINMENT DESIGN + *PRESSURE VESSEL + *SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF COOLANT + BROWNS FERRY + CLAD + REACTOR, BOILING WATER

18-16404 ALSO IN CATEGORIES 15 AND 17

SELECTED YANKEE OPERATING EXPERIENCE.
YANKEE ATOMIC ELECTRIC COMPANY, BOSTON, MASSACHUSETTS

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-16404 *CONTINUED*

8 PAGES, 2 FIGURES, 1 TABLE, MAY 24, 1967, DOCKET NO. 50-79, FROM YANKEE NUCLEAR POWER STATION OPERATIONS REPORT NO. 76 FOR THE MONTH OF APRIL 1967

(1) CORE REACTIVITY CONTINUES NORMALLY AT 0.74 DELTA K/K PER 1000 MWD/MT. (2) INCREASING NO.-1 STEAM-GENERATOR CHLORIDE LEVEL WAS TRACED TO CHLORIDE CONTAMINATION OF THE PHOSPHATE ADDITIVE, AS OTHER INDICATORS OF TURBINE-CONDENSER TUBE LEAKS WERE ABSENT. (3) AN ACCIDENTAL RELEASE OF BELOW-MPC GAS OCCURRED DURING A ROUTINE SAMPLING OF THE PRESSURIZER GAS SPACE WHEN THE RECIRCULATION VENT VALVE TO THE LOW-PRESSURE SURGE TANK WAS LEFT OPEN, ALLOWING BACKFLOW FROM SURGE TANK TO SAMPLE HOOD. 32 MICROCURIES OF BETA-GAMMA AND 60 MILLICURIES OF TRITIUM WERE RELEASED IN A 2-1/2-HOUR PERIOD.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*COOLANT CHEMISTRY + *FUEL BURNUP + *REACTOR OFFGAS + AIRBORNE RELEASE + CHLORINE + FAILURE, OPERATOR ERROR + HEAT EXCHANGER + INCIDENT, ACTUAL, HUMAN ERROR + OPERATIONS SUMMARY FOR AEC + REACTOR, PRESSURIZED WATER + STEAM GENERATOR + TRITIUM + YANKEE

18-16405 ALSO IN CATEGORY 17

YANKEE 16 HOUR SHUTDOWN FOR CONDENSER TUBE CLEANING.

YANKEE ATOMIC ELECTRIC COMPANY, BOSTON, MASSACHUSETTS

8 PAGES, 2 FIGURES, 1 TABLE, JUNE 20, 1967, DOCKET NO. 50-29, FROM YANKEE NUCLEAR POWER STATION OPERATIONS REPORT NO. 77 FOR THE MONTH OF MAY 1967

THE OUTPUT GRADUALLY LESSENNED TO 179 MW(E) AS RIVER-WATER TEMPERATURE ROSE, AND CLEANING INCREASED OUTPUT TO 183. TWO LEAKY TUBES WERE FOUND BY AN ANS SOAP SOLUTION AND BY A SARAN-PLASTIC TECHNIQUE. 16 HOURS BEFORE SHUTDOWN, NAOH INJECTION TO DETERMINE THE STEAM-GENERATOR LEAKAGE RATE INCREASED COOLANT PH FROM 5.2 TO 6.0, CAUSING A REACTIVITY GAIN OF 0.0023 DELTA K/K. LEAK RATES WERE (1) 16 GPD, (2) 60 GPD, (3) AND (4) LESS THAN 0.5 GPD. BORON AND TRITIUM TRACER TECHNIQUES SHOWED THE TOTAL LEAK RATE AS 110 GPD.

USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*COOLANT CHEMISTRY + *TEST, LEAK RATE + OPERATIONS SUMMARY FOR AEC + REACTIVITY EFFECT, ANOMALOUS + REACTOR, PRESSURIZED WATER + STEAM GENERATOR + TRACER, GENERAL + YANKEE

18-16407

ORL ASKS MORE QUESTIONS ABOUT OYSTER CREEK FINAL SAR JUNE 21, 1967.

UNITED STATES ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.

19 PAGES, JUNE 21, 1967, DOCKET NO. 50-219

FOLLOWING REVIEW OF THE SAFETY-ANALYSIS REPORT FOR INITIAL AUTHORIZATION (AMEND. 3, JAN. 25, 1967) AND MEETINGS IN MAY 1967, ORL REQUESTS TECHNICAL SPECIFICATION AND ASKS MORE QUESTIONS - SITE AND ENVIRONMENTAL ASPECTS (14), PHYSICS (6), CONTAINMENT (25), STRUCTURE (10), INSTRUMENTATION AND CONTROL (24), GENERAL (11), ORGANIZATION AND PERSONNEL (8), PLANS AND PROCEDURES (6), AND TESTS AND MAINTENANCE (5).

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*AEC QUESTION + *SAFETY ANALYSIS REPORT, GENERAL + OYSTER CREEK + REACTOR, BOILING WATER + TECHNICAL SPECIFICATIONS

18-16408

FERMI CHANGE 12 TO ALLOW SODIUM DRAINING FOR REACTOR VESSEL INSPECTION.

UNITED STATES ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.

6 PAGES, JUNE 16, 1967, DOCKET NO. 50-16, CHANGE 12 TO OPERATING LICENSE

FERMI GRANTED FIVE SPECIFIC TECHNICAL SPECIFICATION CHANGES TO ALLOW SODIUM DRAINING FOR REACTOR-VESSEL INSPECTION.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*SAFETY EVALUATION + *TECHNICAL SPECIFICATIONS + EXAMINATION + FERMI + INCIDENT, ACTUAL, RECOVERY FROM + PRESSURE VESSEL + REACTOR, BREEDER + REACTOR, FAST + REACTOR, LIQUID METAL COOLED

18-16412

ALSO IN CATEGORY 17

LICENSING CHANGES FOR CVTR DECOMMISSIONING.

CAROLINAS VIRGINIA NUCLEAR POWER ASSOCIATES, INC., PARR, S. C.

27 PAGES, JUNE 1967, DOCKET NO. 50-144, AMENDMENT 2

FUEL WILL BE PLACED IN STORAGE BASINS TEMPORARILY. HEAVY WATER IS BEING DRAINED. THE CHANGED LICENSE IS EFFECTIVE UNTIL 27 NOV. 67, WHEN A FINAL BY-PRODUCT LICENSE WILL BE CONSIDERED FOR THE REMAINING MATERIAL. NEW TECHNICAL SPECIFICATIONS FOR DECOMMISSIONING PROCESS ENCLOSED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*SAFETY EVALUATION + *TECHNICAL SPECIFICATIONS + CVTR (CAROLINAS VIRGINIA TUBE REACTOR) + REACTOR DECOMMISSIONING EXPERIENCE + REACTOR, HEAVY WATER + REACTOR, PRESSURE TUBE +

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-16412 *CONTINUED*
REACTOR, PRESSURIZED WATER

18-16412 ALSO IN CATEGORIES 2 AND 11
59 DRL QUESTIONS ON DIABLO CANYON PWR, MAY 5, 1967.
PACIFIC GAS AND ELECTRIC COMPANY, SAN FRANCISCO, CALIFORNIA
9 PAGES, MAY 5, 1967, DOCKET NO. 50-275

AT THE MARCH-APRIL MEETING WE AGREED TO SEND YOU SITE AND DESIGN QUESTIONS FIRST. OTHERS WILL FOLLOW. INCLUDED HERE ARE 39 QUESTIONS ON - SITE (4), PLANT LAYOUT AND DESIGN OF CLASS-I EQUIPMENT (14), CONTAINMENT DESIGN (17), CONTAINMENT CONSTRUCTION MATERIALS (4), CONTAINMENT CONSTRUCTION (4), AND CONTAINMENT TESTING AND SURVEILLANCE. FURTHER EVALUATION OF CORE DESIGN IS HELD UP FOR INFORMATION ON PARTIAL-LENGTH CONTROL RODS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*AEC QUESTION + CONTAINMENT CONSTRUCTION + CONTAINMENT DESIGN + CONTROL ROD, SHIM SAFETY + DIABLO CANYON + MATERIAL + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY + SITING, REACTOR + TEST, LEAK RATE

18-16414
OCONEE AMENDMENT 3 - APRIL 29, 1967.
DUKE POWER COMPANY, CHARLOTTE, N. C.
45 PAGES, FIGURES, TABLES, APRIL 29, 1967, DOCKET NO. 50-269/270/287

EPRATA AND MINOR CHANGES, ADDITIONAL INFORMATION ON CONTROL-ROD DRIVES ARE INCLUDED. OCONEE 3 WILL BE A DUPLICATE OF 1, SCHEDULED FOR OPERATION IN JUNE 1973. THERE WILL BE NO INTERACTION BETWEEN UNIT 3 AND UNITS 1-2, OTHER THAN INTERCONNECTION OF CONVENTIONAL PLANT-UTILITY SYSTEMS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*SAFETY ANALYSIS REPORT, PRELIMINARY + OCONEE 1, 2, AND 3 + REACTOR, PRESSURIZED WATER + SHARED COMPONENTS

18-16428
AEC REPLIES CONCERNING INDUSTRIAL ACCIDENT AT QUAD CITIES CONSTRUCTION SITE
U.S. ATOMIC ENERGY COMMISSION
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(27) PAGE 14 (JULY 3, 1967), DOCKET 50-254/265

(LETTER JUNE 22 FROM AEC DIRECTOR OF REGULATION TO MRS. ROLOFF.) REPLY NOTES AEC LIMITATION TO RADIOLOGICAL SAFETY, AND THAT STATE AND LOCAL CODES OR LAWS PERTAIN TO THE COMMON INDUSTRIAL ACCIDENTS. PROVISIONS FOR EVACUATION OF RESIDENTS WILL BE CHECKED BY AEC INSPECTION AT THE OPERATING-LICENSE STAGE.

*INCIDENT, ACTUAL, NONNUCLEAR + QUAD CITIES 1 AND 2 + RADIATION, PUBLIC EDUCATION/ACCEPTANCE + REACTOR, BOILING WATER

18-16430 ALSO IN CATEGORIES 9 AND 17
UNIVERSITY OF MISSOURI (COLUMBIA) SUFFERS CONTROL ROD DAMAGE DURING HANDLING
UNIVERSITY OF MISSOURI, COLUMBIA, MO.
3 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(27) PAGES 19-21 (JULY 3, 1967), DOCKET 50-186

(LETTER JUNE 6.) BECAUSE OF CONTROL-ROD MODIFICATION, THE SUSPENSION POINT FOR THE CONTROL-BLADE OFFSET MECHANISM WAS SHIFTED TO LIFT AT THE BLADES CENTER OF GRAVITY. HOWEVER THE REPOSITIONING AFFECTED THE OVERALL BALANCE SO THAT (AS DISCOVERED LATER) DURING THE NEXT REMOVAL THE BLADE TILTED SLIGHTLY AND JAMMED. THE CRANE MOTOR WAS USED FOR LIFT, AND A QUARTER-INCH NYLON ROPE FOR CONNECTION. AFTER CHECKING FOR FREEDOM WITH A LONG TOOL, THE CRANE WAS JOGGED TO LIFT THE ROD.

*CONTROL ROD, SHIM SAFETY + *DAMAGE + FAILURE, DESIGN ERROR + FUEL HANDLING MACHINE + MODIFICATION, SYSTEM OR EQUIPMENT + REACTOR, FLUX TRAP + REACTOR, RESEARCH

18-16431 ALSO IN CATEGORIES 9 AND 17
UNIVERSITY OF MISSOURI (COLUMBIA) SUFFERS FALSE SCRAMS, DUE TO EXCESSIVE ROD DRIVE FUNCTION
UNIVERSITY OF MISSOURI, COLUMBIA, MO.
2 PAGES, ATOMIC ENERGY CLEARINGHOUSE 13(27) PAGES 18-19 (JULY 13, 1967), DOCKET 50-186

(LETTER JUNE 6.) SINCE INITIAL-LOADING DAYS, RODS HAVE ACCIDENTALLY DROPPED, AND ON SEVERAL OCCASIONS COULD NOT BE RAISED. THE DRIVE-ASSEMBLY BALL-BUSHINGS ARE SENSITIVE TO THE SLIGHTEST AMOUNT OF FOREIGN MATERIAL, AND ALL CLEANING AND INCREASED CLEARANCES PROVIDE ONLY TEMPORARY RELIEF. BELLEVILLE WASHERS ARE APPARENTLY NOT PROVIDING ENOUGH SHOCK ABSORPTION, SO A RUBBER CUSHION IS ADDED (TO BE INSPECTED AFTER EVERY 40 REACTOR OPERATING HOURS). GE IS PERFORMING A DESIGN STUDY ON NEW ROD MECHANISMS.

*CONTROL ROD DRIVE + *FAILURE, COMPONENT + FAILURE, SCRAM MECHANISM + MODIFICATION, SYSTEM OR EQUIPMENT +

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-16431 *CONTINUED*
OPERATING EXPERIENCE + REACTOR, FLUX TRAP + REACTOR, RESEARCH

18-16432
VERMONT YANKEE SITE PREPARATION PRIOR TO CONSTRUCTION PERMIT
VERMONT YANKEE NUCLEAR POWER COMPANY
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(27) PAGES 21-22 (JULY 3, 1967), DOCKET 50-271

(LETTER JUNE 20.) LISTS 4 SPECIFIC ITEMS VY CONSIDERS SITE PREPARATION ALLOWABLE PRIOR TO CONSTRUCTION PERMIT. (1) EXCAVATION FOR REACTOR AND TURBINE BUILDING FOUNDATION, (2) LEVELING POURS ON REACTOR BUILDING FOUNDATION AND PLACEMENT OF FORMS AND REBARS, (3) FOUR POURS IN REACTOR BUILDING SUBSTRUCTURE MAT, (4) PILES, FORMS, AND CONCRETE POURS FOR TURBINE-SUPPORT MAT. (LETTER JUNE 28.) AEC AGREES THAT 1, 2, AND 4 ARE SITE PREPARATION AND IS STILL CONSIDERING ITEM 3.

*CONSTRUCTION PERMIT PROCESS + *CONTAINMENT CONSTRUCTION + CONCRETE + REACTOR, BOILING WATER + VERMONT YANKEE

18-16433 ALSO IN CATEGORY 1
ACRS REPORT ON VERMONT YANKEE LISTS 4 ITEMS OF SIGNIFICANCE FOR ALL WATER-COOLED REACTORS
VERMONT YANKEE NUCLEAR POWER COMPANY
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(27) PAGES 25-26 (JULY 3, 1967), DOCKET 50-271

AMONG SPECIFIC ITEMS, ACRS REQUESTS (1) ADDITIONAL EVIDENCE TO SHOW THAT ONLY CLAD PERFORATION RESULTS FROM LOSS-OF-COOLANT ACCIDENT, (2) FAILURE OF OTHER ELEMENTS FOLLOWING A FLOW BLOCKAGE OF ONE ASSEMBLY SHOULD BE STUDIED, (3) VERIFICATION OF THE FUEL-ELEMENT DAMAGE LIMIT OF 28 KW/FT, AND (4) RECOMMENDS IMPLEMENTATION OF IMPROVEMENTS IN PRIMARY SYSTEM QUALITY PRACTICAL WITH CURRENT TECHNOLOGY. THE FIRST THREE POINTS ALSO WERE APPLIED TO BROWNS FERRY.

*ACPS (ADVISORY COMMITTEE ON REACTOR SAFEGUARDS) + *FAILURE, SEQUENTIAL + *PERFORMANCE LIMIT + *QUALITY CONTROL + ACCIDENT, LOSS OF COOLANT + FLOW BLOCKAGE + FUEL ELEMENT + MAIN COOLING SYSTEM + REACTOR, BOILING WATER + REACTOR, PRESSURIZED WATER + SAFETY PRINCIPLES AND PHILOSOPHY + VERMONT YANKEE

18-16434 ALSO IN CATEGORIES 9 AND 17
VOLUME II, APPENDIX A - SUMMARY OF OPERATING EXPERIENCE WITH IN-CORE CHAMBER NEUTRON MONITORING SYSTEM.
JERSEY CENTRAL POWER AND LIGHT COMPANY, MORRISTOWN, NEW JERSEY
5 PAGES, FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, JANUARY 25, 1967, DOCKET NO. 50-219

REFERS TO DRESDEN-1 EXPERIENCE WITH MECHANICAL DAMAGE DUE TO REMOVAL EACH REFUELING BUT NO LONGER BECAUSE PRESENT DESIGN IS PERMANENT INSTALLATION FROM THE BOTTOM. CAMPBELLING TESTS ARE SUMMARIZED, AND GEAP 4900 (JULY 1965) REFERENCED. TESTS ON MOVEMENT OF RETRACTING MECHANISMS AND TRAVELING IN-CORE PROBES ARE SATISFACTORY.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*DRESDEN 1 + *INSTRUMENTATION, IN CORE + *OPERATING EXPERIENCE + CORE COMPONENTS, MISCELLANEOUS + FAILURE, INSTRUMENT + INSTRUMENTATION, CAMPBELLING + OYSTER CREEK + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, GENERAL

18-16435 ALSO IN CATEGORY 9
VOLUME II, APPENDIX B - CONTROL ROD DRIVE SYSTEM DESCRIPTION AND ANALYSIS.
JERSEY CENTRAL POWER AND LIGHT COMPANY, MORRISTOWN, NEW JERSEY
20 PAGES, FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, JANUARY 25, 1967, DOCKET NO. 50-219

MODEL 7R-DB-144-A1. DRIVE IS SIMILAR TO DRESDEN-1 HUMBOLT BAY DRIVES EXCEPT, AMONG OTHER THINGS, NITRIDED 304-SS REPLACES 17-4 PH 1100, GUIDE SLEEVE ELIMINATED TO REDUCE ABRASION, OPERATING AND COLLET-RETURN FORCES ARE HIGHER, ADDITIONAL SCREENS PREVENT FOREIGN MATERIAL ENTERING. GOOD GENERAL DESCRIPTION, LIST OF POTENTIAL FAILURES AND PROTECTION.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTROL ROD DRIVE + *SYSTEM DESCRIPTION + ACCIDENT, CONTROL ROD EJECTION + FAILURE, GENERAL + OYSTER CREEK + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, GENERAL

18-16436 ALSO IN CATEGORY 11
VOLUME II, APPENDIX D - COMPARISON OF THEORETICAL CONTAINMENT PRESSURE CALCULATION WITH TEST DATA.
JERSEY CENTRAL POWER AND LIGHT COMPANY, MORRISTOWN, NEW JERSEY
4 PAGES, 2 FIGURES, 1 TABLE, FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, JANUARY 25, 1967, DOCKET NO. 50-219

MODELS TEND TO OVERPREDICT DRYWELL/WETWELL PRESSURES IN FDSAR WHEN COMPARED WITH PRESSURE-SUPPRESSION TESTS. A SEMIDIRECT INTERPOLATION OF CORRELATED TEST DATA SHOWS THE MAXIMUM DRYWELL PRESSURE AS 52 PSIA AND WETWELL AS 34.4, COMPARED WITH 77/50 (DESIGN) AND 60/36 (FDSAR).

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-16436 *CONTINUED*
AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTAINMENT DESIGN + COMPARISON, THEORY AND EXPERIENCE + CONTAINMENT, PRESSURE SUPPRESSION +
MODEL TESTING + OYSTER CREEK + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, GENERAL +
TEST, PRESSURE VESSEL

18-16437 ALSO IN CATEGORIES 5 AND 12
VOLUME II, APPENDIX E - REACTOR CORE SPRAY COOLING SYSTEM TEST PROGRAM.
JERSEY CENTRAL POWER AND LIGHT COMPANY, MORRISTOWN, NEW JERSEY
4 PAGES, 8 FIGURES, FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, JANUARY 25, 1967, DOCKET NO. 50-219

SUMMARY OF TESTS TO DETERMINE (1) AMOUNT OF SPRAY REACHING EACH ASSEMBLY (MINIMUM FLOW IS 35% OF THE AVERAGE FLOW), (2) SPRAY-COOLING EFFECTIVENESS ON A BUNDLE OF 36 ELECTRICALLY HEATED TEST RODS (THE CORE-HEATUP CALCULATIONAL MODEL EFFECTIVE-HEAT-TRANSFER COEFFICIENT WAS INCREASED TO ACCOUNT FOR INCREASED RADIATION LOSSES TO VAPOR AND DROPLETS), AND (3) HEIGHT OF CORE FLOODING NECESSARY FOR EFFECTIVE COOLING (5 MIN AFTER SHUTDOWN WITH FLOODING HALFWAY UP THE CORE, THE ENTIRE LENGTH IS AT SATURATION TEMPERATURE EXCEPT FOR THE UPPER 3 FT, WHICH PEAKED AT 975 F 6 IN. FROM THE TOP - TWO-THIRDS FLOODING REDUCED ALL TEMPERATURES TO SATURATION).

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*COPE SPRAY + *MODEL TESTING + *TEST, PROOF + ACCIDENT, LOSS OF COOLANT + CORE REFLCODING SYSTEM +
HEAT TRANSFER, RADIANT + HIGH TEMPERATURE + MOCKUP + OYSTER CREEK + REACTOR, BOILING WATER +
SAFETY ANALYSIS REPORT, GENERAL

18-16438 ALSO IN CATEGORY 5
VOLUME II, APPENDIX F - HEAT TRANSFER DURING BLOWDOWN.
JERSEY CENTRAL POWER AND LIGHT COMPANY, MORRISTOWN, NEW JERSEY
3 PAGES, 7 FIGURES, FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, JANUARY 25, 1967, DOCKET NO. 50-219

FOUR ELECTRICALLY HEATED RODS, 4 FT LONG, WERE USED IN 1965 TO DETERMINE THE TRANSIENT HEAT-TRANSFER COEFFICIENT TO BE USED IN THE SAFETY ANALYSIS. RESULTS - PRESSURE DECAY SIMILAR TO THAT CALCULATED FOR A REACTOR CONFIRMS SCALING. NUCLEATE BOILING CONTINUES FOR SEVERAL SECONDS AFTER RUPTURE (UNTIL WATER FILMS DRY OUT), THEN CONVECTION HEAT TRANSFER REGINS, WHICH DECREASES WITH TIME. THE EMPIRICAL DRYOUT TIME IS 30% OF THAT CALCULATED ON VAPORIZING ALL WATER, INDICATING MUCH WATER CARRIED OUT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*BLOWDOWN + *HEAT TRANSFER, BOILING + *MODEL TESTING + ACCIDENT, LOSS OF COOLANT +
HEAT TRANSFER, CONVECTION + OYSTER CREEK + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, GENERAL

18-16439 ALSO IN CATEGORY 11
VOLUME II, APPENDIX G - CONTAINMENT FISSION PRODUCT RETENTION CAPABILITY.
JERSEY CENTRAL POWER AND LIGHT COMPANY, MORRISTOWN, NEW JERSEY
7 PAGES, 4 TABLES, FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, JANUARY 25, 1966, DOCKET NO. 50-219

IN THE POSTULATED ACCIDENT, 27% OF THE FUEL RODS WOULD PERFORATE, BUT NO FUEL WOULD MELT, AND 1%/0.5% OF THE NOBLE-GASES/HALOGENS WILL BE RELEASED. THESE NUMBERS ARE APPARENTLY BASED ON RELEASE FROM FUEL EXCEEDING 3000 F, GIVING THE TID-14844 FRACTIONS (100/50/50/1%). 50% OF INORGANIC IODIDES AND 30% OF SOLIDS ESCAPE PLATEOUT/FALLOUT IN REACTOR VESSEL. 1% OF THE HALOGENS ESCAPE HOLDUP IN WATER, AND AIRBORNE SOLIDS ASSUMED TO HAVE A HALF-HOUR HALF-LIFE. PRIMARY-CONTAINMENT LEAKAGE IS ASSUMED TO BE A CONSTANT 0.5%/DAY TO SECONDARY CONTAINMENT. AIRBORNE SOLID FISSION PRODUCTS ARE ASSUMED TO HAVE A 12-HR HALF-LIFE. THE STANDBY GAS TREATMENT IS ASSUMED TO DISCHARGE 100%/DAY THROUGH 99%-EFFECTIVE FILTERS TO THE STACK. OFF-SITE RADIOLOGICAL DOSES FOR VARIOUS WIND CONDITIONS ARE THEN CALCULATED, WITH NO DOSE EXCEEDING 0.18 REM.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTAINMENT, GENERAL + *FISSION PRODUCT RETENTION + ACCIDENT, LOSS OF COOLANT + AIRBORNE RELEASE +
CONTAINMENT, PRESSURE SUPPRESSION + DOSE + OYSTER CREEK + REACTOR, BOILING WATER +
SAFETY ANALYSIS REPORT, GENERAL

18-16440 ALSO IN CATEGORY 11
VOLUME II, APPENDIX H - STRAIN SAFETY MARGIN FOR REACTOR PRESSURE VESSELS.
JERSEY CENTRAL POWER AND LIGHT COMPANY, MORRISTOWN, NEW JERSEY
5 PAGES, 2 FIGURES, 3 TABLES, FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, JANUARY 25, 1967, DOCKET NO. 50-219

DISCUSSES APPLICABILITY OF ASME CODE SECTION III, AND ASSERTS THAT THE GENERAL-ELECTRIC FATIGUE-ANALYSIS METHOD (BASED ON METHOD AND EXPERIENCE DEVELOPED FOR NAVAL REACTOR VESSELS) PLUS SECTIONS I, VIII, AND THE NUCLEAR CODE CASES RESULTS IN STRAIN SAFETY MARGINS EQUIVALENT TO USING SECTION III (WHICH WAS APPARENTLY ADOPTED AFTER THIS DESIGN WAS MADE). STRAIN SAFETY-MARGIN AND FAILURE PROBABILITY DISCUSSED.

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-16440 *CONTINUED*
AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*PERFORMANCE LIMIT + *PRESSURE VESSEL + *THERMAL MECHANICAL EFFECT + ACCIDENT, PROBABILITY OF + FAILURE, FATIGUE + OYSTER CREEK + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, GENERAL + STRESS ANALYSIS

18-16441 ALSO IN CATEGORY 5
VOLUME II, APPENDIX J - CORE HEATUP ANALYSIS MODEL.
JERSEY CENTRAL POWER AND LIGHT COMPANY, MORRISTOWN, NEW JERSEY
6 PAGES, 4 FIGURES, FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, JANUARY 25, 1967, DOCKET NO. 50-219

SHORT DISCUSSION OF BASIC EQUATIONS FOR A SINGLE-FUEL-ROD ASSUMPTION (NO AXIAL OR BETWEEN-CHANNEL HEAT TRANSFER) LEADING TO AN EQUATION SOLVED BY FINITE DIFFERENCE ON A DIGITAL COMPUTER. RADIAL, AXIAL, AND INTRACHANNEL PEAKING FACTORS USED. FUEL-CLAD INTERFACE CONSIDERED A RESISTANCE. AT CLAD-WATER SURFACE, CONVECTION AND RADIATION HEAT TRANSFER CONSIDERED ALONG WITH (POSITIVE) METAL-WATER REACTION AND (NEGATIVE) CLAD MELT ENERGIES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACCIDENT, LOSS OF COOLANT + *FUEL MELTDOWN + *THERMAL ANALYSIS + FAILURE, CLADDING + FUEL ELEMENT + HEAT TRANSFER, RADIANT + METAL WATER REACTION + OYSTER CREEK + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, GENERAL

18-16442 ALSO IN CATEGORY 5
VOLUME II, APPENDIX K - REACTOR COOLANT INVENTORY MODEL.
JERSEY CENTRAL POWER AND LIGHT COMPANY, MORRISTOWN, NEW JERSEY
10 PAGES, FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, JANUARY 25, 1967, DOCKET NO. 50-219

DESCRIBES ANALYTIC MODELS TO DETERMINE WATER MASS IN REACTOR VESSEL, DEPENDENT UPON LEAK AND ACTIONS OF VARIOUS WATER-MAKEUP SYSTEMS. FEEDWATER FLOW USED LEVEL AS CONTROLLED LINEAR RELATION, WHILE CORE SPRAY USED HEAD-FLOW CURVE. IN OBTAINING HEAT FLUXES FROM CORE, CORE IS ASSUMED COOLED IF WATER LEVEL IS GREATER THAN HALFWAY ABOVE CORE, NOT COOLED AT ZERO WATER LEVEL, AND LINEAR IN BETWEEN. WATER LEVEL IS COMPUTED AS OTHER EQUATIONS NEED THIS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACCIDENT, LOSS OF COOLANT + *BLOWDOWN + ACCIDENT MODEL + CORE SPRAY + HEAT TRANSFER ANALYSIS + OYSTER CREEK + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, GENERAL

18-16443
OYSTER CREEK AMENDMENT 2 - FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT.
JERSEY CENTRAL POWER AND LIGHT COMPANY, MORRISTOWN, NEW JERSEY
325 PAGES, 237 FIGURES, 62 TABLES, FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, JANUARY 25, 1967, DOCKET NO. 50-219

VOLUME I INCLUDES DESCRIPTION AND SAFETY ANALYSIS, WHILE VOLUME 2 INCLUDES THE FIGURES AND DETAILED APPENDIX. VOLUME 1 INCLUDES - (CHAP. II) SITE AND ENVIRONS, (III) REACTOR, (IV) REACTOR COOLANT SYSTEM, (V) CONTAINMENT, (VI) ADDITIONAL ENGINEERED SAFEGUARDS, (VII) CONTROLS AND INSTRUMENTS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*SAFETY ANALYSIS REPORT, GENERAL + OYSTER CREEK + REACTOR DESCRIPTION + REACTOR, BOILING WATER

18-16444 ALSO IN CATEGORY 11
VOLUME I, SECTION V - CONTAINMENT SYSTEM.
JERSEY CENTRAL POWER AND LIGHT COMPANY, MORRISTOWN, NEW JERSEY
71 PAGES, 7 TABLES, FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, JANUARY 25, 1967, DOCKET NO. 50-219

DRYWELL PEAK PRESSURE IS CALCULATED AS 33 PSIG/275 F, AND DESIGN IS AT 35 PSIG/281 F. PROOF TEST WILL BE AT 62 PSIG AFTER INSTALLATION OF PENETRATION. LEAK TEST WILL BE AT 20 PSIG (EQUILIBRIUM PRESSURE 2 MIN AFTER ACCIDENT) AND LEAK RATE EXTRAPOLATED TO 33 PSIG. MINIMUM CONDITIONS SET ARE 90% FILTER EFFICIENCY AND 5%/DAY AT 33 PSIG. DRYWELL PLATES WERE PREHEATED TO 200 OR 100 F BEFORE WELDING. CONTAINMENT PENETRATIONS AND ISOLATION VALVES ARE DISCUSSED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTAINMENT, PRESSURE SUPPRESSION + *SAFETY ANALYSIS REPORT, GENERAL + CONTAINMENT PENETRATION, CLOSURE OF + OYSTER CREEK + REACTOR, BOILING WATER + TEST, LEAK RATE + TEST, PROOF + WELDING

18-16445 ALSO IN CATEGORY 12
VOLUME I, SECTION VI - ADDITIONAL ENGINEERED SAFEGUARDS.

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-16445 *CONTINUED*

JERSEY CENTRAL POWER AND LIGHT COMPANY, MORRISTOWN, NEW JERSEY

22 PAGES, 1 TABLE, FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, JANUARY 25, 1967, DOCKET NO. 50-219

THE 7 SAFEGUARDS (CONTROL-ROD VELOCITY LIMITER, CONTROL-ROD HOUSING SUPPORT, STANDBY LIQUID CONTROL SYSTEM, STEAM-LINE FLOW RESTRICTORS, STANDBY CORE COOLING, CONTAINMENT SPRAY COOLING, AND CONTAINMENT NITROGEN ATMOSPHERE) HAVE DESIGN BASES, DESCRIPTION, DESIGN ANALYSIS, AND SURVEILLANCE AND TESTING SUMMARIZED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ENGINEERED SAFETY FEATURE + *SAFETY ANALYSIS REPORT, GENERAL + CONTAINMENT ATMOSPHERE, INERT + CONTAINMENT SPRAY + CORE SPRAY + FLOW ORIFICE OR RESTRICTION + OYSTER CREEK + REACTOR DESCRIPTION + REACTOR, BOILING WATER + SHUTDOWN SYSTEM, SECONDARY

18-16446 ALSO IN CATEGORIES 5 AND 16

VOLUME I, SECTION XIII - SAFETY ANALYSIS.

JERSEY CENTRAL POWER AND LIGHT COMPANY, MORRISTOWN, NEW JERSEY

46 PAGES, 21 TABLES, FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, JANUARY 25, 1967, DOCKET NO. 50-219

TRANSIENT ANALYSES FROM SYSTEM MALFUNCTIONS AND OPERATOR ERRORS ARE REPORTED IN THE VARIOUS DESCRIPTIVE SECTIONS. THERE ARE 4 DESIGN-BASIS ACCIDENTS - CONTROL-ROD DROP, REFUELING ACCIDENT, LOSS OF COOLANT INSIDE DRYWELL, AND STEAM-LINE RUPTURE (THE WORST OFF-SITE DOSE, GIVING A MAXIMUM LIFETIME DOSE OF 0.003 REM AND A WHOLE BODY DOSE OF 3.6 MICROREMS). STEAM-LINE-RUPTURE DOSE IS ABOUT 1/1000TH THAT OF NINE MILE POINT (APPARENTLY) BECAUSE LESS IODINE-BEARING WATER IS LOST (ISOLATION-VALVE CLOSURE IN 3.5 SEC RATHER THAN 11), AND VAPOR WOULD RISE TO A CENTERLINE OF 164 FT. ANALYTICAL METHODS DESCRIBED, AND DATA FROM 11 SITES QUOTED TO JUSTIFY WIND VARIABILITY AND 15-HOUR-PERSISTENCE CLOSURE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTAINMENT PENETRATION, CLOSURE OF + *SAFETY ANALYSIS REPORT, GENERAL + ACCIDENT ANALYSIS + ACCIDENT, STEAM LINE RUPTURE + HEIGHT OF RISE + OYSTER CREEK + REACTOR, BOILING WATER + WIND STATISTICS

18-16447 ALSO IN CATEGORY 17

FUEL FAILURES AT CVTR

CAROLINAS VIRGINIA NUCLEAR POWER ASSOCIATES, INC., PARR, S. C.

CVNA-27F +. 29 PAGES, FIGURES, 1967, FROM MONTHLY OPERATING REPORT, JANUARY 1967

DEGASIFIER OPERATION AND VENTING OF THE SURGE TANK DID NOT REDUCE PC ACTIVITY FROM PREVIOUS FAILURES. PC ACTIVITY WAS ABOVE THAT THOUGHT FOR A SINGLE FAILURE, SO A FEDERAL CHECK FOUND TWO U-TUBES WITH FAILED ELEMENTS. BOTH HAD BEEN MOVED FROM PERIPHERY TO CORE CENTER. LATER, GRADUAL INCREASE IN PC ACTIVITY (UNLIKE PREVIOUS FAILURES) SIGNALLED FAILURE IN A NEW FUEL ELEMENT, OPERATING AT 14 KW/FT. NOW, THREE OF THE FOUR SPECIAL ASSEMBLIES HAVE FAILED. FLOW-RATE DECREASES SEEM TO BE HEAT-FLUX DEPENDENT, SUGGESTING THAT CRUD DEPOSITION ON HIGH-POWER-DENSITY FUEL IN 3-4 MONTHS MAY BE EQUAL TO SEVERAL YEARS ACCUMULATION ON A STANDARD FUEL ASSEMBLY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*FAILURE, FUEL ELEMENT + *OPERATIONS REPORT, GENERAL + *PERFORMANCE LIMIT + *SURFACE FILM DEPOSIT + CVTR (CAROLINAS VIRGINIA TUBE REACTOR) + FAILURE, CLADDING + FLOW ORIFICE OR RESTRICTION + REACTOR, HEAVY WATER + REACTOR, PRESSURE TUBE + REACTOR, PRESSURIZED WATER

18-16448

VOLUME I - REACTOR DESCRIPTION

NIAGARA MOHAWK POWER CORPORATION, SYRACUSE, N. Y.

587 PAGES, 163 FIGURES, 29 TABLES, FINAL SAFETY ANALYSIS REPORT, NINE MILE POINT, JUNE 1967, DOCKET NO.

50-220

MAJOR SECTIONS ARE - II SITE, III BUILDINGS AND STRUCTURE, IV REACTOR, V REACTOR COOLANT SYSTEM, VI CONTAINMENT, VII ENGINEERED SAFEGUARDS, VIII INSTRUMENTS AND CONTROLS, IX ELECTRICAL, AND X AUXILIARY SYSTEMS. VOL. II INCLUDES SITE AND SAFETY ANALYSES. VOL. III LISTS THE TECHNICAL SPECIFICATIONS, AND VOL. IV INCLUDES SPECIAL TOPICAL REPORTS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*REACTOR DESCRIPTION + *SAFETY ANALYSIS REPORT, GENERAL + NINE MILE POINT + REACTOR, BOILING WATER

18-16449 ALSO IN CATEGORY 11

VOLUME I, SECTION VI. CONTAINMENT SYSTEM.

NIAGARA MOHAWK POWER CORPORATION, SYRACUSE, N. Y.

76 PAGES, 28 FIGURES, 10 TABLES, FINAL SAFETY ANALYSIS REPORT, NINE MILE POINT, JUNE 1967, DOCKET NO.

50-220

BOTH CHAMBERS ARE INITIALLY AT 2 PSIG FROM THE NITROGEN INERTING SYSTEM. RUPTURE OF THE LARGEST PIPE CAUSES A PEAK DRYWELL PRESSURE OF 34 PSIG/270 F AT 2 SEC, OR 50 PSIG IF A SMALL

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-16449 *CONTINUED*

LEAK HAS PREVIOUSLY FORCED THE NITROGEN INTO THE SUPPRESSION CHAMBER. AFTER BLOWDOWN, BOTH CHAMBERS EQUILIBRATE AT 22 PSIG BECAUSE OF THE NITROGEN. WITHOUT CORE SPRAY, HYDROGEN GENERATION PRODUCES A BRIEF 25-PSIG PRESSURE PEAK AT 1000 SEC. GUARD PIPES SURROUND HIGH-PRESSURE PIPES AT PENETRATION TO PROTECT THE CONTAINMENT. CLOSED-PENETRATION SLEEVES SURROUNDING PIPES AND INSTRUMENT LEADS HAVE LEAK-TEST CONNECTIONS. DEFLECTOR PLATES PROTECT AGAINST MISSILES, WHICH COULD BREAK DRYWELL VENTS TO SUPPRESSION CHAMBER. CONTAINMENT CAN BE FLOODED BY A CONNECTION BETWEEN FIREWATER AND FEEDWATER. COMPUTER ANALYSIS MADE OF SEISMIC ACTION ON REACTOR VESSEL AND ON SECONDARY CONTAINMENT BUILDING.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTAINMENT, PRESSURE SUPPRESSION + *REACTOR DESCRIPTION + *SAFETY ANALYSIS REPORT, GENERAL + CONTAINMENT ATMOSPHERE, INERT + CONTAINMENT DESIGN + CONTAINMENT PENETRATION, ELECTRICAL + CONTAINMENT PENETRATION, GENERAL + CONTAINMENT PENETRATION, PIPE + MISSILE GENERATION AND PROTECTION + NINE MILE POINT + REACTOR, BOILING WATER + VIBRATION ANALYSIS

18-16450 ALSO IN CATEGORY 12

VOLUME I, SECTION VII. ENGINEERED SAFEGUARDS

NIAGARA MOHAWK POWER CORPORATION, SYRACUSE, N. Y.

51 PAGES, 16 FIGURES, 2 TABLES, FINAL SAFETY ANALYSIS REPORT, NINE MILE POINT, JUNE 1967, DOCKET NO. 50-220

VOLUME IV CONTAINS DETAILS OF PRESSURE SUPPRESSION, CORE SPRAY, AND CONTAINMENT SPRAY SYSTEM. SECTION VII SUMMARIZES ENGINEERED-SAFEGUARDS SYSTEMS (CORE SPRAY, CONTAINMENT SPRAY, LIQUID POISON INJECTION, CONTROL-ROD-VELOCITY LIMITER, CONTROL-ROD HOUSING SUPPORT, STEAM-FLOW RESTRICTORS, CONTAINMENT INERT ATMOSPHERE, EMERGENCY VENTILATION AND FILTRATION) BY DESCRIBING DESIGN BASIS, SYSTEM DESIGN, DESIGN EVALUATION, AND TESTS AND INSPECTION.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ENGINEERED SAFETY FEATURE + *REACTOR DESCRIPTION + *SAFETY ANALYSIS REPORT, GENERAL + CONTAINMENT ATMOSPHERE, INERT + CONTAINMENT FILTERING SYSTEM + CONTAINMENT SPRAY + CORE SPRAY + FLOW ORIFICE OR RESTRICTION + NINE MILE POINT + REACTOR, BOILING WATER + SHUTDOWN SYSTEM, SECONDARY

18-16451 ALSO IN CATEGORY 16

VOLUME II - APPENDIX A - METEOROLOGY.

NIAGARA MOHAWK POWER CORPORATION, SYRACUSE, N. Y.

106 PAGES, 55 FIGURES, 29 TABLES, 6 REFERENCES, FINAL SAFETY ANALYSIS REPORT, NINE MILE POINT, JUNE 1967, DOCKET NO. 50-220

CONSISTS OF A LETTER FROM CONSULTANTS SMITH AND SWIGER. NO IMPORTANT METEOROLOGICAL DIFFERENCES BETWEEN 63 (DATA REPORTED IN PHSR) AND 64 DATA WERE FOUND, SO LOCAL TOWER DATA TAKING STOPPED EARLY IN 65. MUCH DATA PRESENTED, AND SOPHISTICATION ADDED TO PHSR METEOROLOGICAL MODELS OR DATA DISCUSSED. MOST SIGNIFICANT CHANGE IS TO USE ACTUAL 350-FT STACK HEIGHT PLUS HEIGHT OF RISE, INSTEAD OF ASSUMED 250-FT HEIGHT RISE. NO CHANGE MADE FOR ACCIDENTS (PHSR TREATMENT OF STEAM LINE BREAK CONSIDERED ADEQUATE) BUT, FOR ROUTINE RELEASE, RADOS MACHINE CALCULATION USED, TOGETHER WITH INCLUSION OF VARIATION OF WIND SPEED AND DIRECTION WITH HEIGHT AND TOPOGRAPHY. IN PARTICULAR, PHSR HAD ASSUMED INVERSION PLUME HIT GROUND WHEN LAND WAS 250 FT ABOVE STACK BASE WITHIN 5 KM. PRESENT STUDY SHOWS PLUME REMAINS 400 FT ABOVE GROUND, AND THIS ELEVATION NOT REACHED UNTIL 30 KM DOWNWIND.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*SAFETY ANALYSIS REPORT, GENERAL + *SAFETY ANALYSIS REPORT, METEOROLOGY + *SOURCE, CONTINUOUS + HEIGHT OF RISE + LAPSE RATE, STABLE + NINE MILE POINT + REACTOR, BOILING WATER + STACK + WIND STATISTICS

18-16452 ALSO IN CATEGORY 14

VOLUME II, APPENDIX B - LIMNOLOGY.

NIAGARA MOHAWK POWER CORPORATION, SYRACUSE, N. Y.

23 PAGES, 4 FIGURES, 1 TABLE, FINAL SAFETY ANALYSIS REPORT, NINE MILE POINT, JUNE 1967, DOCKET NO. 50-220

1964 STUDIES COMPLETED THE 1963 PROGRAM (REPORTED IN PHSR) FOR MORE PRECISE DILUTION INFORMATION. STATION APPEARS TO BE AT AN OPTIMUM POINT ON SOUTH SHORE OF LAKE ONTARIO BECAUSE OF CURRENT TURNS AWAY FROM SHORE AT THE POINT. BIODA OFF POINT IS SCANTY BECAUSE OF ERODING WAVE ACTION, AND THERE IS LITTLE SHELTER FOR FISH. DILUTION OF CONDENSER DISCHARGE IS 20-40 AT SITE BOUNDARY, AND 4,900,000 AT CITY OF OSWEGO INTAKE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*DILUTION + *SAFETY ANALYSIS REPORT, GENERAL + *WASTE DISPOSAL, OCEAN + NINE MILE POINT + REACTOR, BOILING WATER + WASTE DISPOSAL, LIQUID

18-16453 ALSO IN CATEGORIES 5 AND 6

VOLUME II - SITE AND SAFETY ANALYSIS.

NIAGARA MOHAWK POWER CORPORATION, SYRACUSE, N. Y.

363 PAGES, 131 FIGURES, 75 TABLES, 6 REFERENCES, FINAL SAFETY ANALYSIS REPORT, NINE MILE POINT, JUNE 1967, DOCKET NO. 50-220

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-16453 *CONTINUED*

CONSISTS OF 5 APPENDICES - (A) METEOROLOGY, (B) LIMNOLOGY, (C) EARTH SCIENCES, (D) ENVIRONMENTAL RADIOLOGY, AND (E) SAFETY ANALYSIS. **SAFETY ANALYSIS (I) RESULTS OF 23 MALFUNCTIONS WERE SIMULATED AND SHOWN TO BE KEPT BELOW SAFETY THRESHOLD BY PLANT PROTECTION SYSTEMS. (II) STANDBY SAFEGUARDS ANALYSIS IS OF MAJOR ACCIDENTS (MAIN-STEAM-LINE RUPTURE, LOSS OF COOLANT, REFUELING, ROD DROP). ANALYTICAL METHODS AND ASSUMPTIONS ARE SUMMARIZED. CREDIT TAKEN FOR STACK RELEASE AND FILTRATION OF AIR THAT ESCAPES CONTAINMENT INTO REACTOR BUILDING REDUCES OFFSIDE DOSES TO MILLIREMS, EXCEPT FOR STEAM-LINE RUPTURE (7.8 REMS THYROID AND 0.079 REM WHOLE-BODY EXPOSURE) WHERE NO DISPERSION AND STEAM CLOUD TRAVELING AT GROUND LEVEL ARE ASSUMED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACCIDENT, STEAM LINE RUPTURE + *SAFETY ANALYSIS REPORT, GENERAL + ACCIDENT, CONTROL ROD EJECTION + ACCIDENT, LOSS OF COOLANT + ACCIDENT, REFUELING + AIRBORNE RELEASE + DOSE + MONITORING PROGRAM, ENVIRONMENTAL + NINE MILE POINT + REACTOR, BOILING WATER + SAFETY ANALYSIS

18-16473

FORTESCUE P + SCHULTZ GM

A 1000 MW(E) GAS-COOLED FAST BREEDER REACTOR

GENERAL ATOMIC, DIVISION OF GENERAL DYNAMICS, SAN DIEGO, CALIF.

GA-7823 +. 13 PAGES, 6 FIGURES, 2 TABLES, PRESENTED AT THE TWENTY-NINTH ANNUAL MEETING OF THE AMERICAN POWER CONFERENCE, APRIL 25-27, 1967, CHICAGO, ILLINOIS, SPONSORED BY ILLINOIS INSTITUTE OF TECHNOLOGY, AND PRINTED IN THE PROCEEDINGS

PRESENTS A DESCRIPTION OF THE CONFIGURATION AND CHARACTERISTICS, INCLUDING THE NEUTRONIC ASPECTS, OF A 1000-MW(E) GAS-COOLED FAST-BREEDER REFERENCE DESIGN. THE ADVANTAGES GAS COOLING OFFER TO FAST REACTOR SYSTEM ARE EVALUATED IN TERMS OF THE REQUIREMENTS AND OBJECTIVES OF A PRACTICAL POWER PLANT.

AVAILABILITY - AMERICAN POWER CONFERENCE, E. R. WHITEHEAD, SECRETARY, ILLINOIS INSTITUTE OF TECHNOLOGY, CHICAGO, ILLINOIS

*REACTOR DESCRIPTION + REACTOR, BREEDER + REACTOR, FAST + REACTOR, GAS COOLED + REACTOR, POWER

18-16478

ALSO IN CATEGORY 17

MONTHLY OPERATING REPORT, JUNE, 1965

CAROLINAS VIRGINIA NUCLEAR POWER ASSOCIATES, INC.

CVNA-239 +. 36 PAGES, JUNE 1965

ONE IN A SERIES OF PROGRESS REPORTS. TOPICS INCLUDE GENERAL PLANT PERFORMANCE, PLANT CHEMISTRY, PLANT MAINTENANCE, HEALTH AND SAFETY, STATUS OF RESEARCH AND DEVELOPMENT PROGRAMS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*OPERATIONS REPORT, GENERAL + COOLANT CHEMISTRY + CVTR (CAROLINAS VIRGINIA TUBE REACTOR) + MAINTENANCE AND REPAIR + RADIATION SAFETY AND CONTROL + REACTOR, HEAVY WATER + REACTOR, PRESSURE TUBE + REACTOR, PRESSURIZED WATER

18-16484

ALSO IN CATEGORIES 11 AND 12

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS REPORT ON H. B. ROBINSON UNIT NO. 2.

UNITED STATES ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.

PRESS REL. K-44 +. 2 PAGES, 8 REFERENCES, FEBRUARY 17, 1967, DOCKET NO. 50-261

ACRS APPROVED CONSTRUCTION OF ROBINSON 2 AND RECOMMENDS THAT AEC REGULATORY STAFF (1) REVIEW DETAILS OF THE TEST DATA ON PERFORMANCE AND RELIABILITY OF THE SODIUM THIOSULFATE CONTAINMENT SPRAY AND OF THE DESIGN OF EMERGENCY SYSTEMS AS THEY BECOME AVAILABLE, (2) FOLLOW APPLICANT STUDIES AND CONCLUSIONS ON THE CONSEQUENCES OF A POSITIVE MODERATOR COEFFICIENT. ACRS RELIEVES INSTALLATION OF A STRONG-MOTION ACCELEROGRAPH (AS PLANNED HERE) MAY BE APPROPRIATE FOR MOST LARGE POWER REACTORS EVEN IN SEISMICALLY QUIESCENT ZONES. ACRS THINKS THAT A SPECIAL EFFORT SHOULD BE MADE TO ENSURE THAT THE CONTAINMENT ISOLATION VALVES ARE EFFECTIVELY TIGHT UNDER ACCIDENT CONDITIONS AND RELIEVES SUFFICIENT DIESEL FUEL SHOULD BE STORED TO RUN EMERGENCY DIESELS AT LEAST ONE WEEK IN CASE OF ACCIDENT.

AVAILABILITY - AEC, DIVISION OF OPERATIONAL SAFETY, WASHINGTON, D. C.

*ACRS (ADVISORY COMMITTEE ON REACTOR SAFEGUARDS) + *CONSTRUCTION PERMIT PROCESS + CONTAINMENT PENETRATION, CLOSURE OF + CONTAINMENT SPRAY + GENERATOR, DIESEL + INSTRUMENTATION, EARTHQUAKE + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-16485

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS REPORTS ON THE NATIONAL BUREAU OF STANDARDS REACTOR.

UNITED STATES ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.

PRESS REL. K-47 +. 3 PAGES, 4 REFERENCES, FEBRUARY 17, 1967, DOCKET NO. 50-184

ACRS APPROVES OPERATING LICENSE FOR NATIONAL BUREAU OF STANDARDS REACTOR, ASSUMING THAT RECOMMENDED REVISIONS ARE MADE BEFORE STARTUP (PRESSURIZATION SAFETY VALVE, PROTECTION

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-16485 *CONTINUED*

INSTRUMENTATION, RADIATION MONITORS, AND REMOVAL OF THE HELIUM-BUBBLER BACKUP-SHUTDOWN SYSTEM). THE COMMITTEE HAS NOT REVIEWED THE PROPOSED INSTALLATION OF A CRYOGENICS FACILITY. ACRS RECOMMENDS THAT ANY EXPERIMENTS INVOLVING THE POSSIBILITY OF LARGE CHEMICAL ENERGY RELEASES BE REFERRED TO THE AEC REGULATORY STAFF FOR REVIEW.

AVAILABILITY - AEC, DIVISION OF OPERATIONAL SAFETY, WASHINGTON, D. C.

*ACPS (ADVISORY COMMITTEE ON REACTOR SAFEGUARDS) + *OPERATING LICENSE PROCESS + MODIFICATION, SYSTEM OR EQUIPMENT + REACTOR, HEAVY WATER + REACTOR, RESEARCH

18-16486

ALSO IN CATEGORY 11

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS REPORT ON MONTICELLO NUCLEAR GENERATING PLANT, UNIT 1. UNITED STATES ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.
PRESS RFL. K-89 +. 3 PAGES, 14 REFERENCES, APRIL 13, 1967, DOCKET NO. 50-263

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS APPROVES CONSTRUCTION OF MONTICELLO. THE COMMITTEE THINKS THAT A HIGH-QUALITY FIELD-ERECTED PRESSURE VESSEL FOR THE PLANT CAN BE BUILT BUT RECOMMENDS THAT THE STRESS-ANALYSIS REPORT FOR THE REACTOR VESSEL BE REVIEWED BY INDEPENDENT EXPERTS. ACRS RECOMMENDS THAT THE REGULATORY STAFF SATISFY ITSELF WITH RESPECT TO THE ADEQUACY OF THE ISOLATION-VALUE TEST PROGRAM AND FOLLOW THE DEVELOPMENT OF THE DETAILED DESIGN OF THE EMERGENCY CORE-COOLING SYSTEMS, AND THAT THE MONTICELLO PLANT INCLUDE A SECOND DIESEL GENERATOR OF THE SAME CAPACITY AS THE ONE PROPOSED.

AVAILABILITY - AEC, DIVISION OF OPERATIONAL SAFETY, WASHINGTON, D. C.

*ACRS (ADVISORY COMMITTEE ON REACTOR SAFEGUARDS) + *CONSTRUCTION PERMIT PROCESS + *SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT PENETRATION, CLOSURE OF + EMERGENCY COOLING CONSIDERATIONS + GENERATOR, DIESEL + MONTICELLO + PRESSURE VESSEL + REACTOR, BOILING WATER + STRESS ANALYSIS

18-16487

ALSO IN CATEGORY 11

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS REPORT ON CONNECTICUT YANKEE HADDAM NECK PLANT. UNITED STATES ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.
PRESS RFL. K-89 +. 3 PAGES, 7 REFERENCES, APRIL 13, 1967, DOCKET NO. 50-213

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS APPROVES THE OPERATING LICENSE FOR THE HADDAM NECK PLANT, WITH THE ASSUMPTION THAT MODIFICATIONS WILL BE MADE TO ENSURE THE INDEPENDENCE OF THE CHANNELS THAT INITIATE AUTOMATIC CONTAINMENT ISOLATION. THE COMMITTEE RECOMMENDS THAT THE REGULATORY STAFF (1) ASSESS CAREFULLY THE RESULTS OF PRESSURIZATION TESTS ON THE CONCRETE CONTAINMENT DOMS BEFORE ISSUANCE OF A PROVISIONAL SPENDING LICENSE, (2) CAREFULLY ANALYZE MEASUREMENTS REQUIRED TO ESTABLISH THE VALUE OF THE MODERATOR COEFFICIENT, AND (3) ASSESS THE RESULTS OF PROGRAMS FOR PREOPERATIONAL TESTS, ROUTINE SURVEILLANCE DURING OPERATION, AND PERIODIC INSPECTIONS.

AVAILABILITY - AEC, DIVISION OF OPERATIONAL SAFETY, WASHINGTON, D. C.

*ACRS (ADVISORY COMMITTEE ON REACTOR SAFEGUARDS) + *CONSTRUCTION PERMIT PROCESS + CONTAINMENT DESIGN + CONTAINMENT PENETRATION, CLOSURE OF + HADDAM NECK + INDEPENDENCE + MODERATOR COEFFICIENT + REACTOR, PRESSURIZED WATER

18-16495

PROPOSED TECHNICAL SPECIFICATIONS FOR NATIONAL BUREAU OF STANDARDS
NATIONAL BUREAU OF STANDARDS, DEPT. OF COMMERCE
NBSR-CC +. 47 PAGES, FIGURES, TABLES, JANUARY 1967, DOCKET NO. 50-184

MAJOR SECTIONS ARE (1) DEFINITIONS, (2) OPERATING LIMITS AND CONDITIONS, (3) SURVEILLANCE STANDARDS, (4) ADMINISTRATIVE STANDARD, AND (5) EXCEPTIONS FOR LOWER-POWER STARTUP OPERATION. SECTIONS 2 AND 3 ARE SUBDIVIDED INTO SYSTEMS, AND FOR EACH SYSTEM NAMED IS GIVEN THE EQUIPMENT APPLICABILITY, OBJECTIVE, SPECIFICATION, BASIS, AND REFERENCE. EXCEEDING AN OPERATING-LIMIT CONDITION (E.G., UPON A SCRAM) REQUIRES LOCAL ACTION, WHILE EXCEEDING A SAFETY LIMIT REQUIRES AEC APPROVAL FOR FURTHER OPERATION.

AVAILABILITY - AEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*TECHNICAL SPECIFICATIONS + REACTOR, HEAVY WATER + REACTOR, RESEARCH

18-16526

SKOVHOLT DJ
DRL REQUEST ADDITIONAL INFORMATION ON IDAHO STATE UNIVERSITY
IDAHO STATE UNIVERSITY, POESTELLE, IDAHO
2 PAGES, APRIL 27, 1967, DOCKET NO. 50-286

DRL REQUESTS (APRIL 27) INFORMATION TO SUPPLEMENT THE UNIVERSITY REQUEST FOR A CONSTRUCTION PERMIT ALLOWING POSSESSION AND ASSEMBLY OF THE AGN-201 REACTOR (SERIAL NO. 103) - (1) DESCRIPTION OF USE AND STORAGE OF THE REACTOR COMPONENTS AND FUEL, AND THE QUALIFICATIONS OF THE ASSEMBLER, (2) PRECAUTIONS TO PROTECT PERSONNEL DURING STORAGE OF RADIOACTIVE FUEL PLATES, (3) ASSURANCE THAT A NUCLEAR-MATERIALS MONITORING SYSTEM BE INSTALLED IN FUEL-STORAGE

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-16526 *CONTINUED*
AREAS, (4) CAPABILITY OF REACTOR-ROOM FLOOR TO SUPPORT REACTOR.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONSTRUCTION PERMIT PROCESS + AGN (TRAINING REACTOR, AEROJET-GEN. NUCLEONICS) + REACTOR, TRAINING

18-16528 ALSO IN CATEGORIES 12 AND 2
CAHILL WJ + BECKJORD ES + NICHOLS RC
SITING AND LICENSING CONSIDERATIONS FOR THE INDIAN POINT UNIT NO. 2 NUCLEAR GENERATING PLANT
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC. + WESTINGHOUSE ELECTRIC CORP., PITTSBURGH, PA.
9 PAGES, 5 FIGURES, PAPER PRESENTED AT THE AMERICAN POWER CONFERENCE, GENEVA, 1967

TWO NEW SYSTEMS (PENETRATION PRESSURIZATION AND ISOLATION-VALVE SEAL WATER) WERE ADDED TO
MINIMIZE CONTAINMENT LEAKAGE, AND OTHER SYSTEMS WERE MADE MORE RELIABLE. AEC STAFF
RECOMMENDED THAT THE CORE-COOLING RECIRCULATION SYSTEM BE MOVED INSIDE CONTAINMENT. A
REACTOR-PIT CRUCIBLE WAS ADDED TO LESSEN ACRS CONCERN OVER A MELT THROUGH THE CONTAINMENT.
BECAUSE ACRS BEGAN TO APPLY PIPE-RUPTURE CRITERION TO THE MAIN LOOP ITSELF, AN ACCUMULATOR
SYSTEM WAS ADDED FOR EACH LOOP.

AVAILABILITY - AMERICAN POWER CONFERENCE, E. R. WHITEHEAD, SECRETARY, ILLINOIS INSTITUTE OF TECHNOLOGY,
CHICAGO, ILLINOIS

*CONSTRUCTION PERMIT PROCESS + ACCUMULATOR + CONTAINMENT LEAKAGE CONTROL +
EMERGENCY COOLING CONSIDERATIONS + INDIAN POINT 2 + REACTOR DESCRIPTION + REACTOR, PRESSURIZED WATER

18-16530
HUB KA + CHARAK I + LUTZ DE + THOMPSON DH + GAST PF + MENELEY DA + KEYFITZ IM
FEASIBILITY STUDY OF NUCLEAR STEAM SUPPLY SYSTEM USING 10,000-MW, SODIUM-COOLED BREEDER REACTOR
WESTINGHOUSE ELECTRIC CORP., PITTSBURGH, PA. ATOMIC POWER DIV. + ARGONNE NATIONAL LABORATORY, ILL.
ANL-7187 +. 210 PAGES, 54 FIGURES, 45 TABLES, 57 REFERENCES, SEPTEMBER 1966

DESIGN WAS REGARDED AS FEASIBLE BY ANL-WESTINGHOUSE EFFORT FOR 10,000-MW(TH) PLANT WITH ANNULAR
CARBIDE FUEL CORE, 1050 F REACTOR-OUTLET TEMPERATURE, AND 7-YEAR DOUBLING TIME. NO MCA WAS
ESTABLISHED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*DESIGN STUDY + REACTOR, BREEDER + REACTOR, FAST + REACTOR, LIQUID METAL COOLED

18-16532
HABUSH AL + WALKER RF
THE FORT SAINT VRAIN HTGR
GENERAL ATOMIC, DIVISION OF GENERAL DYNAMICS, SAN DIEGO, CALIFORNIA
GA-7817 +. 20 PAGES, 7 FIGURES, 1 TABLE, APRIL 3, 1967, PRESENTED AT AND PUBLISHED IN THE PROCEEDINGS OF
THE AMERICAN POWER CONFERENCE, APRIL 25-27, 1967, SPONSORED BY THE ILLINOIS INSTITUTE OF TECHNOLOGY

SIMPLE DESCRIPTION OF 837MW(TH)/330 MW(E) HELIUM-COOLED REACTOR BASED ON URANIUM CARBIDE FUEL
PARTICLES. IMPROVEMENTS OVER PEACH BOTTOM INCLUDE PRESTRESSED-CONCRETE REACTOR VESSEL,
ONCE-THROUGH STEAM GENERATORS, STEAM-DRIVEN AXIAL-FLOW HELIUM CIRCULATORS.

AVAILABILITY - AMERICAN POWER CONFERENCE, E. R. WHITEHEAD, SECRETARY, ILLINOIS INSTITUTE OF TECHNOLOGY,
CHICAGO, ILLINOIS

*REACTOR DESCRIPTION + FT. ST. VRAIN + REACTOR, GAS COOLED

18-16534 ALSO IN CATEGORY 17
ADAMS RM + GLASSNER A
ERR II POWER COEFFICIENT, AARR LOSS OF FLOW STUDIES
ARGONNE NATIONAL LAB., ARGONNE, ILLINOIS
ANL-7329 +. 103 PAGES, 28 FIGURES, 29 TABLES, 23 REFERENCES, FROM REACTOR DEVELOPMENT PROGRAM PROGRESS
REPORT, APRIL 1967.

(PAGE 2-4) ERR-II STARTUP WITH STAINLESS-STEEL ASSEMBLIES REPLACING SOME DEPLETED URANIUM
SHOWED A DECREASING POWER COEFFICIENT, BUT TESTS SHOWED THAT IT INCREASED ABOVE HALF POWER.
(PAGE 75-82) AARR PRIMARY COOLANT SYSTEM BURSTING PRESSURE/STRAIN-ENERGY ARE CALCULATED AS
5000 PSI/524 MW SEC, AND THE VESSEL IS STRONGER. A 163-MW SEC NUCLEAR EXCURSION FOLLOWED BY
A 1300-MW SEC METAL-WATER REACTION, WOULD GIVE A 4270-PSI VESSEL PRESSURE THAT EQUALIZES AT
3300 PSI. FLOW-COASTDOWN ANALOG-COMPUTER STUDY SHOWS PONY MOTOR FLOW IS NECESSARY TO PREVENT
HIGH FUEL-ELEMENT TEMPERATURES AT END OF LIFE. HOOKED-END BEAM-HOLE SEAL RINGS WERE
ACCEPTABLY LEAK-RATE TESTED AT 55 PSI DELTA P.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*ACCIDENT, LOSS OF FLOW + *BEAM HOLE + *PERFORMANCE LIMIT + *POWER COEFFICIENT + *PRESSURE VESSEL + *SEAL +
AARR (ARGONNE ADVANCED RESEARCH REACTOR) + EBR 1 AND 2 (EXPERIMENTAL BREEDER REACTORS) +

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-16534 *CONTINUED*

METAL WATER REACTION + REACTIVITY EFFECT, ANOMALOUS + REACTOR, AEC OWNED + REACTOR, BREEDER + REACTOR, FAST + REACTOR, FLUX TAP + REACTOR, LIQUID METAL COOLED + REACTOR, LIQUID METAL COOLED + TEST, LEAK RATE

18-16579 ALSO IN CATEGORY 5
OCONEE 1, 2, AND 3. AMENDMENT 5 - VOLUNTARY INFORMATION
DUKE POWER COMPANY, CHARLOTTE, N. C. 28201
14 PAGES, 3 FIGURES, JUNE 16, 1967, DOCKET NOS. 269/270/287

AMONG 21 DIFFERENT ITEMS ARE (2) VENTING DEVICES WILL BE ADDED TO PREVENT A STEAM BUBBLE ABOVE THE CORE FROM PREVENTING COOLANT INJECTION, (5) THE MOST PROBABLE FUEL FAILURE DURING THE LOSS-OF-COOLANT ACCIDENT WOULD BE CLAD PERFORATION ABOVE 1200 F WHEN 75% OF THE FUEL PINS MIGHT RELEASE FISSION GAS BUT WOULD NOT RESTRICT CORE COOLING. GE-NMPO WORK SHOWS THAT FUEL CLADDING MAY ELONGATE 34% BUT THAT ONLY 22% OF THE PINS EXCEED THE NECESSARY 1660 F, (6) LOSS-OF-COOLANT UNCERTAINTIES HAVE BEEN HANDLED CONSERVATIVELY, (11) A SUBMERGED WEIR IN THE INTAKE CANAL WILL HOLD 50 FT OF WATER IN CASE OF POND FAILURE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*FAILURE, CLADDING + *SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF COOLANT + BLOWDOWN + OCONEE 1, 2, AND 3 + REACTOR, PRESSURIZED WATER + STORAGE CONTAINER

18-16580 ALSO IN CATEGORIES 12 AND 11
OCONEE 1, 2, AND 3. AMENDMENT 5 - PSAR REVISION
DUKE POWER COMPANY, CHARLOTTE, N. C. 28201
14 PAGES, 2 FIGURES, 1 TABLE, 4 REFERENCES, JUNE 16, 1967, DOCKET NOS. 50-269/270/287

(5.1.2.8) HIGH SOIL-RESISTIVITY MEASUREMENTS SHOW NONCORROSIVE CONDITIONS, SO THE PROPOSED SACRIFICIAL ANODE AND RECTIFIER SYSTEM IS DELETED FROM THE CONTAINMENT. (6.1) RESTRICTIVE CRIFICES REMOVED FROM HIGH-PRESSURE INJECTION LINES. THE SHARED LOW-PRESSURE INJECTION SYSTEM IS REMOVED, AND ANOTHER PUMP AND HEAT EXCHANGER ADDED PER REACTOR FOR INDEPENDENCE. INDIVIDUAL BORATED STORAGE WATER CAPACITY INCREASED FROM 260,000 GAL TO 350,000, TO NEARLY DOUBLE ITS OPERATING TIME. A CORE-FLOODING SYSTEM (TWC 940-CU. FT TANKS) TO INJECT COOLANT THROUGH CHECK VALVES WHEN REACTOR PRESSURE DROPS TO 600 PSIG WAS ADDED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACCUMULATOR + *CONTAINMENT, CORROSION PROTECTION + *CORE REFLOODING SYSTEM + OCONEE 1, 2, AND 3 + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY + SHARED COMPONENTS

18-16581
DRL REQUEST ADDITIONAL INFORMATION ON DIABLO CANYON
UNITED STATES ATOMIC ENERGY COMMISSION, WASHINGTON, D. C., DIVISION OF REACTOR LICENSING
17 PAGES, JUNE 15, 1967, DOCKET NO. 50-275

DRL TRANSMITS QUESTIONS ON (V) PLANT SYSTEM, (VI) ENGINEERED SAFETY SYSTEMS, (VII) ACCIDENT ANALYSIS, AS INDICATED IN MAY LETTERS REGARDING SITE, CONTAINMENT STRUCTURAL DESIGN, INSTRUMENTATION AND CONTROL, AND POWER SYSTEMS. ATTENTION IS DIRECTED TO ACRS, JUNE 15, 1967, COMMENTS ON VERMONT YANKEE, INDICATED TO APPLY TO ALL LARGE WATER-COOLED REACTORS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

ACCIDENT ANALYSIS + AEC QUESTION + DIABLO CANYON + ENGINEERED SAFETY FEATURE + REACTOR, PRESSURIZED WATER

18-16597
PALO GP
BROWNS FERRY - TVA'S FIRST NUCLEAR PLANT
TENNESSEE VALLEY AUTHORITY, CHATTANOOGA
5 PAGES, 4 FIGURES, POWER ENGINEERING 71(4), PAGES 38-42 (APRIL 1967)

GENERAL DESIGN FEATURES ARE DISCUSSED. THE STRETCH CONCEPT, WITH DELIBERATE MISMATCH BETWEEN REACTOR AND TURBINE, WAS ELIMINATED. CORE POWER DENSITY INCREASED FROM 37 TO 51 KW/LITER THROUGH (1) HEAT-TRANSFER CORRELATIONS BASED ON MULTI-ROD GEOMETRY, (2) IMPROVED POWER DISTRIBUTION DUE TO USE OF THREE URANIUM ENRICHMENTS PER FUEL BUNDLE, AND (3) TO USE OF ON-LINE COMPUTER FOR MONITORING POWER DISTRIBUTION. INCREASED FUEL EXPOSURE WILL LESSEN FUEL-CYCLE COSTS.

*REACTOR DESCRIPTION + BROWNS FERRY + HEAT TRANSFER CORRELATION + REACTOR, BOILING WATER

18-16601
ROY GM + BAILY FG + PARRISH JR
NUCLEAR POWER PLANT OF TVA AT BROWNS FERRY - BACKGROUND AND DESCRIPTION
TENNESSEE VALLEY AUTHORITY, CHATTANOOGA
29 PAGES, 10 FIGURES, PAPER PRESENTED AT AMERICAN POWER CONFERENCE, APRIL 25-27, 1967, CHICAGO, ILL.

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-16601 *CONTINUED*

INCLUDES PLANT LAYOUT, MAIN POWER LOOP, PLANT AUXILIARIES. NUCLEAR-SYSTEM DESCRIPTION EMPHASIZES DESIGN OF EMERGENCY CORE-COOLING SYSTEM, WITH CORE SIZE DETERMINED BY THE 100% PUMPING INSTEAD OF BY 120%, BY REDUCTIONS IN PEAK/AV. RATIOS, AND A NEW HEAT-TRANSFER CORRELATION BASED ON MULTI-ROD GEOMETRY. IN-CORE INSTRUMENTS AND THE ON-LINE COMPUTER FOR MONITORING POWER DISTRIBUTION, AND USE OF THE BURNABLE POISON (GADOLINIA) IN THE FUEL ARE MENTIONED. THE LAST SECTION DESCRIBES THE TURBINE-GENERATOR SYSTEM. TURBINE-DRIVEN BOILER FEED PUMPS ARE USED.

AVAILABILITY - AMERICAN POWER CONFERENCE, E. R. WHITEHEAD, SECRETARY, ILLINOIS INSTITUTE OF TECHNOLOGY, CHICAGO, ILLINOIS

*REACTOR DESCRIPTION + BROWNS FERRY + EMERGENCY COOLING CONSIDERATIONS + POWER DISTRIBUTION + REACTOR, BOILING WATER

18-16605

DESIGN AND ANALYSIS REPORT, AMENDMENT NO. 1, ANSWERS TO AEC QUESTIONS THE CONNECTICUT LIGHT AND POWER COMPANY + THE HARTFORD ELECTRIC LIGHT COMPANY + WESTERN MASSACHUSETTS ELECTRIC COMPANY
105 PAGES, 11 FIGURES, 1 TABLE, 16 REFERENCES, 1966, DOCKET NO. 50-245, MILLSTONE NUCLEAR POWER STATION

27 ANSWERS TO QUESTIONS ASKED BY DRL JANUARY 14, 1966, ARE ANSWERED. DESIGN CHANGES BEING DEVELOPED AND REFLECTED IN ANSWERS WILL BE INCLUDED IN REVISED PAGES OF DESIGN AND ANALYSIS REPORT CURRENTLY BEING PREPARED. A. GENERAL (5 QUESTIONS), B. OVERALL STATION DESIGN AND OPERATION (4 QUESTIONS), C. CONTAINMENT AND ENGINEERING SAFEGUARDS SYSTEMS DESIGN (7), D. SAFETY ANALYSIS (4), E. INSTRUMENTATION (5), F. SITE METEOROLOGY (2).

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + MILLSTONE POINT + REACTOR, BOILING WATER

18-16606

ALSO IN CATEGORIES 11 AND 5
QUESTIONS A-1-A, A-1-B--REACTOR VESSELS, PIPE WHIPPING, GENERATION OF MISSILES, EFFECTS OF FUEL MOVEMENT UPON RADIOACTIVITY
THE CONNECTICUT LIGHT AND POWER COMPANY + THE HARTFORD ELECTRIC LIGHT COMPANY + WESTERN MASSACHUSETTS ELECTRIC COMPANY
5 PAGES, 1 REFERENCE, 1966, PAGES A-1-1 THROUGH A-1-5 FROM DESIGN AND ANALYSIS REPORT, AMENDMENT NO. 1, DOCKET NO. 50-245, MILLSTONE NUCLEAR POWER STATION

SECTION A, GENERAL. (A-1-A) DISCUSS CONSIDERATION GIVEN IN DESIGN TO RECOMMENDATIONS RELATING TO REACTOR VESSELS IN PARAGRAPHS 1 AND 2 OF ACRS LETTER OF NOVEMBER 24, 1965. (A-1-B) DISCUSS CONSIDERATION GIVEN IN DESIGN TO PIPE-WHIPPING GENERATION OF MISSILES WHICH MIGHT VIOLATE THE CONTAINMENT, AND THE EFFECTS OF FUEL MOVEMENT UPON REACTIVITY.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACRS (ADVISORY COMMITTEE ON REACTOR SAFEGUARDS) + *AEC QUESTION + *MISSILE GENERATION AND PROTECTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + MILLSTONE POINT + REACTIVITY EFFECT, SLUMP + REACTOR, BOILING WATER

18-16607

ALSO IN CATEGORY 11
QUESTION A-2--REACTOR VESSEL NOT TEMPERATURE SELECTION
THE CONNECTICUT LIGHT AND POWER COMPANY + THE HARTFORD ELECTRIC LIGHT COMPANY + WESTERN MASSACHUSETTS ELECTRIC COMPANY
6 PAGES, 3 FIGURES, 1966, PAGES A-2-1 TO A-2-6 FROM DESIGN AND ANALYSIS REPORT AMENDMENT NO. 1, DOCKET NO. 50-245, MILLSTONE NUCLEAR POWER STATION

DESCRIBE THE METHOD BY WHICH THE NDT (NIL DUCTILITY TRANSITION TEMPERATURE) OF THE REACTOR VESSEL IS INITIALLY DETERMINED. DISCUSS THE BASIS FOR SELECTION OF THE INITIAL NDT OF THE REACTOR VESSEL, TAKING INTO ACCOUNT THE OVERALL UNCERTAINTIES AND VARIATIONS IN THE PROPERTIES OF THE VESSEL PLATES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*NDT DATA (NIL DUCTILITY TRANSITION) + *PRESSURE VESSEL + AEC QUESTION + MILLSTONE POINT + PERFORMANCE LIMIT + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16608

QUESTION A-3--EQUIVALENT SYSTEM AS SUBSTITUTE FOR ISOLATION CONDENSER
THE CONNECTICUT LIGHT AND POWER COMPANY + THE HARTFORD ELECTRIC LIGHT COMPANY + WESTERN MASSACHUSETTS ELECTRIC COMPANY
1 PAGE, 1966, PAGE A-3-1 FROM DESIGN AND ANALYSIS REPORT, AMENDMENT NO. 1, DOCKET NO. 50-245, MILLSTONE NUCLEAR POWER PLANT

IN REGARD TO AFTERHEAT-REMOVAL CAPABILITY, NUMEROUS REFERENCES ARE MADE TO AN EQUIVALENT SYSTEM AS A SUBSTITUTE FOR THE ISOLATION CONDENSER. SINCE THIS EQUIVALENT SYSTEM HAS NOT BEEN IDENTIFIED OR DISCUSSED, PLEASE CLARIFY THE INTENT FOR ITS INCLUSION AND/OR PROVIDE NECESSARY INFORMATION AS TO ITS DESIGN, DESCRIPTION, AND FUNCTIONAL CAPABILITIES FOR OUR EVALUATION. (ANSWER) AN ISOLATION CONDENSER WILL BE PROVIDED AS IN SECTION IV-5.

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-16608 *CONTINUED*
AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*SHUTDOWN COOLING SYSTEM + CONTAINMENT PENETRATION, CLOSURE OF + MILLSTONE POINT + REACTOR, BOILING WATER +
RESPONSE TO AEC QUESTION + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16609 ALSO IN CATEGORY 1
QUESTION A-4--COMPARATIVE EVALUATION WITH AECS GENERAL DESIGN CRITERIA FOR NUCLEAR POWER PLANTS
THE CONNECTICUT LIGHT AND POWER COMPANY + THE HARTFORD ELECTRIC LIGHT COMPANY + WESTERN MASSACHUSETTS
ELECTRIC COMPANY
42 PAGES, 1966, PAGES A-4-1 TO A-4-42 FROM DESIGN AND ANALYSIS REPORT, AMENDMENT NO. 1, DOCKET NO. 50-245,
MILLSTONE NUCLEAR POWER PLANT

THE COMMISSION PUBLISHED GENERAL DESIGN CRITERIA FOR NUCLEAR POWER PLANTS ON NOVEMBER 22,
1965. PLEASE REVIEW THESE CRITERIA AND PROVIDE A COMPARATIVE EVALUATION WITH THE DESIGN
CRITERIA USED FOR THE MILLSTONE NUCLEAR POWER STATION. YOUR EVALUATION SHOULD INCLUDE A
DISCUSSION OF HOW THE OBJECTIVES OF THE COMMISSION CRITERIA ARE FULFILLED BY YOUR DESIGN
CRITERIA. IN ADDITION, IDENTIFY AND ANALYZE THOSE AREAS, IF ANY, IN THE STATION DESIGN THAT
DO NOT MEET THE COMMISSION CRITERIA.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*AEC CONSTRUCTION PERMIT CRITERIA + AEC QUESTION + MILLSTONE POINT + REACTOR, BOILING WATER +
SAFETY ANALYSIS REPORT, PRELIMINARY

18-16610 ALSO IN CATEGORIES 12 AND 10
QUESTION B-1--DESIGN BASIS AND ADEQUACY OF SINGLE EMERGENCY DIESEL GENERATOR
THE CONNECTICUT LIGHT AND POWER COMPANY + THE HARTFORD ELECTRIC LIGHT COMPANY + WESTERN MASSACHUSETTS
ELECTRIC COMPANY
2 PAGES, 1966, PAGES B-1-1 AND B-1-2 FROM DESIGN AND ANALYSIS REPORT AMENDMENT NO. 1, DOCKET NO. 50-245,
MILLSTONE NUCLEAR POWER STATION

B. OVERALL STATION DESIGN AND OPERATION - (1) IN VIEW OF THE RECENT BLACKOUT, IT IS APPARENT
THAT AUXILIARY POWER FROM OFF-SITE SOURCES MAY NOT BE AVAILABLE FOR ALL REQUIRED SAFETY
SYSTEMS. IN THIS SITUATION, FULL RELIANCE FOR REMOVAL OF CORE DECAY HEAT AND HENCE FOR
PUBLIC SAFETY WOULD BE PLACED ON THE SINGLE EMERGENCY DIESEL GENERATOR PROPOSED FOR THE
STATION. CONSEQUENTLY, PROVIDE THE DESIGN BASIS AND JUSTIFICATION FOR THE ADEQUACY OF A
SINGLE EMERGENCY DIESEL GENERATOR. CONSIDERATION OF AN ALTERNATE BACKUP SYSTEM MAY BE
PROVIDED AS PART OF YOUR EVALUATION. (ANSWER) THE MAIN TURBINE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*GENERATOR, DIESEL + *SINGLE-FAILURE CRITERION + EMERGENCY COOLING CONSIDERATIONS +
EMERGENCY POWER, ELECTRIC + MILLSTONE POINT + REACTOR, BOILING WATER + RESPONSE TO AEC QUESTION +
SAFETY ANALYSIS REPORT, PRELIMINARY

18-16611
QUESTION B-2--TRAINING PROGRAM
THE CONNECTICUT LIGHT AND POWER COMPANY + THE HARTFORD ELECTRIC LIGHT COMPANY + WESTERN MASSACHUSETTS
ELECTRIC COMPANY
1 PAGE, 1966, PAGE B-2-1 FROM DESIGN AND ANALYSIS REPORT AMENDMENT NO. 1, DOCKET NO. 50-245, MILLSTONE
NUCLEAR POWER STATION.

TRAINING OF RESPONSIBLE PERSONNEL IS TO BE AT THE YANKEE FACILITIES. SINCE THESE ARE PWR
SYSTEMS AND THE MILLSTONE IS BWR, DISCUSS HOW RESPONSIBLE PERSONNEL WOULD RECEIVE ADDITIONAL
TRAINING ON A SIMILAR REACTOR PLANT. (ANSWER) FOUR OTHER BWR FACILITIES WILL ACCEPT PEOPLE
FOR TRAINING.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*STAFFING, TRAINING, QUALIFICATION + MILLSTONE POINT + REACTOR, BOILING WATER + RESPONSE TO AEC QUESTION +
SAFETY ANALYSIS REPORT, PRELIMINARY

18-16612 ALSO IN CATEGORY 6
QUESTION B-3--DISCUSSION OF STUDIES TO EVALUATE AND ANALYZE DYNAMIC CHARACTERISTICS OF MILLSTONE POINT
THE CONNECTICUT LIGHT AND POWER COMPANY + THE HARTFORD ELECTRIC LIGHT COMPANY + WESTERN MASSACHUSETTS
ELECTRIC COMPANY
7 PAGES, 3 FIGURES, 1 TABLE, 1966, PAGES B-3-1 TO B-3-7 FROM DESIGN AND ANALYSIS REPORT AMENDMENT NO. 1,
DOCKET NO. 50-245, MILLSTONE NUCLEAR POWER STATION

PSAR CONTAINS DISCUSSION ON OVERALL DYNAMIC PLANT STABILITY CHARACTERISTICS AND DESCRIPTION OF
ANALYTICAL MODEL. SPECIFIC QUANTITATIVE RESULTS OF DYNAMIC ANALYSES RELATED TO DESIGN AND
OFF-NORMAL CONDITIONS WERE NOT INCLUDED. PROVIDE AND DISCUSS RESULTS OF STUDIES TO EVALUATE
AND ANALYZE DYNAMIC CHARACTERISTICS OF MILLSTONE. INDICATE OVERALL DESIGN CRITERIA FOR
ENSURING STATION STABILITY AND HOW DESIGN FEATURES WILL BE SELECTED TO IMPLEMENT OBJECTIVES
OF CRITERIA. INCLUDE IDENTIFICATION OF PARTICULAR PARAMETERS FOR DESIGN VARIABLES AS GIVEN
ON PAGE IX-2-5, THEIR DESIGN VALUES, AND ASSOCIATED GAIN AND PHASE MARGINS. CHANGES IN THESE
PARAMETERS AS EFFECTED BY NORMAL MANEUVERING TRANSIENTS AND OFF-NORMAL CONDITIONS THAT COULD

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-16612 *CONTINUED*

FURTHER CHANGE THEIR VALUES AND RELATED STABILITY MARGIN SHOULD BE INCLUDED. IN LATTER CASE, EFFECTS OF EITHER EQUIPMENT OR CONTROL SYSTEM FAILURE SHOULD BE CONSIDERED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*REACTOR STABILITY + AEC QUESTION + MILLSTONE POINT + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16613

QUESTION B-4--CONTROL ROOM SHIELDING DESIGN BASES

THE CONNECTICUT LIGHT AND POWER COMPANY + THE HARTFORD ELECTRIC LIGHT COMPANY + WESTERN MASSACHUSETTS ELECTRIC COMPANY

1 PAGE, 1966, PAGE B-4-1 FROM DESIGN AND ANALYSIS REPORT AMENDMENT NO. 1, DOCKET NO. 50-245, MILLSTONE NUCLEAR POWER STATION

IDENTIFY AND DISCUSS THE DESIGN BASES OF CONTROL-ROOM SHIELDING TO ENSURE THE MAINTENANCE OF REQUIRED WATCH STATIONS UNDER POSTACCIDENT CONDITIONS. IN ADDITION, CONSIDER EXPOSURES THAT COULD OCCUR DURING ACCESS AND EGRESS. (ANSWER) CRITERION IS 0.5 REM PER 8 HR PERIOD POSTACCIDENT, WITH ACCESS/EGRESS INCLUDED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTROL PANEL/ROOM + *SHIELDING + MILLSTONE POINT + REACTOR, BOILING WATER + RESPONSE TO AEC QUESTION + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16614

ALSO IN CATEGORY 11

QUESTION C-1--DIFFERENCES IN CONTAINMENT DESIGN BETWEEN MILLSTONE AND DRESDEN II

THE CONNECTICUT LIGHT AND POWER COMPANY + THE HARTFORD ELECTRIC LIGHT COMPANY + WESTERN MASSACHUSETTS ELECTRIC COMPANY

2 PAGES, 1966, PAGES C-1-1 AND C-1-2 FROM DESIGN AND ANALYSIS REPORT, AMENDMENT NO. 1, DOCKET NO. 50-245, MILLSTONE NUCLEAR POWER PLANT

SECTION C. CONTAINMENT + ENGINEERING SAFEGUARDS SYSTEMS DESIGN - (1) PROVIDE A COMPLETE LIST OF ALL SIGNIFICANT DIFFERENCES BETWEEN THE PROPOSED CONTAINMENT DESIGNS FOR THE MILLSTONE AND DRESDEN II STATIONS, AND DISCUSS THE PURPOSE AND JUSTIFICATION OF THESE DIFFERENCES AND THEIR EFFECT ON SAFETY.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

AEC QUESTION + CONTAINMENT DESIGN + DRESDEN 2 + MILLSTONE POINT + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16615

ALSO IN CATEGORY 11

QUESTION C-2--CONTAINMENT LEAKAGE RATE

THE CONNECTICUT LIGHT AND POWER COMPANY + THE HARTFORD ELECTRIC LIGHT COMPANY + WESTERN MASSACHUSETTS ELECTRIC COMPANY

4 PAGES, 1 FIGURE, 1 REFERENCE, 1966, PAGES C-2-1 TO C-2-4 FROM DESIGN AND ANALYSIS REPORT AMENDMENT NO. 1, DOCKET NO. 50-245, MILLSTONE NUCLEAR POWER STATION

LEAKAGE RATE IS SPECIFIED AS 0.5% PER DAY. SINCE RATE IS A FUNCTION OF VARIOUS PARAMETERS, IDENTIFY DESIGN-BASIS ACCIDENT CONDITIONS RELATED TO THIS LEAKAGE RATE. ASSUMING PEAK ACCIDENT PRESSURE GIVES THE LEAKAGE RATE LIMIT, INDICATE HOW LEAKAGE RATE LIMIT WOULD DIFFER IF PEAK ACCIDENT PRESSURE APPROACHED DESIGN VALUE. DISCUSS RELATIONSHIP BETWEEN LEAKAGE RATES UNDER TEST AND ACCIDENT CONDITIONS. CONSIDER HOW LEAKAGE RATE UNDER ACCIDENT CONDITIONS WOULD BE EXTRAPOLATED TO PERMISSIBLE LIMIT UNDER TEST CONDITIONS. ALTHOUGH THIS INFORMATION MAY APPEAR TO BE PREMATURE AT THIS TIME, IT IS NECESSARY SINCE SUCH CONSIDERATION OF TESTING CAPABILITY COULD LEAD TO DESIGN CHANGES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTAINMENT DESIGN + *TEST, LEAK RATE + AEC QUESTION + MILLSTONE POINT + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16616

ALSO IN CATEGORY 11

QUESTION C-3--LEAKAGE RATE AS A FUNCTION OF TIME AFTER ACCIDENT

THE CONNECTICUT LIGHT AND POWER COMPANY + THE HARTFORD ELECTRIC LIGHT COMPANY + WESTERN MASSACHUSETTS ELECTRIC COMPANY

2 PAGES, 1 FIGURE, 1966, PAGES C-3-1 AND C-3-2 FROM DESIGN AND ANALYSIS REPORT, AMENDMENT NO. 1, DOCKET NO. 50-245, MILLSTONE NUCLEAR POWER PLANT

PROVIDE A GRAPH SHOWING THE CONTAINMENT-LEAKAGE RATE (UNDER ACCIDENT CONDITIONS) AS A FUNCTION OF TIME AFTER THE POSTULATED RUPTURE OF THE RECIRCULATION LINE FOR THE DESIGN-BASIS ACCIDENT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTAINMENT DESIGN + *LEAK RATE + ACCIDENT, LOSS OF COOLANT + AEC QUESTION + LEAK RATE + MILLSTONE POINT + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-16617 ALSO IN CATEGORY 12
QUESTION C-4--MANUAL VALVES IN CRITICAL SYSTEMS OPERATED WITHOUT REMOTE INDICATION
THE CONNECTICUT LIGHT AND POWER COMPANY + THE HARTFORD ELECTRIC LIGHT COMPANY + WESTERN MASSACHUSETTS
ELECTRIC COMPANY
2 PAGES, 1966, PAGES C-4-1 AND C-4-2 FROM DESIGN AND ANALYSIS REPORT, AMENDMENT NO. 1, DOCKET NO. 50-245,
MILLSTONE NUCLEAR POWER PLANT

FIGURE 59 (COMPOSITE P AND I DIAGRAM) INDICATES THAT ALTHOUGH THERE IS REDUNDANCY IN THE PUMPS, PIPE LINES, AND VALVES, ULTIMATE OPERATION OF THESE SYSTEMS IS PREDICATED ON ADMINISTRATIVE CONTROL TO ENSURE THAT CERTAIN VALVES, SOME OF WHICH ARE INSIDE THE CONTAINMENT, ARE OPEN DURING STATION OPERATION. PROVIDE JUSTIFICATION AND BASES FOR USING VALVES IN CRITICAL SAFETY SYSTEMS WHICH ARE MANUALLY OPERATED WITHOUT REMOTE INDICATION. WHAT ASSURANCE WOULD BE PROVIDED TO THE OPERATOR THAT THESE VALVES ARE INDEED OPEN BEFORE SECURING CONTAINMENT IN PREPARATION FOR STATION OPERATION.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ADMINISTRATIVE CONTROLS AND PRACTICES + *ENGINEERED SAFETY FEATURE + *INSTRUMENTATION, POSITION + *REDUNDANCY + *VALVE + AEC QUESTION + MILLSTONE POINT + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16618 ALSO IN CATEGORY 12
QUESTION C-5--WHY IS CONTAINMENT SURGE SYSTEM CONSIDERED MORE RELIABLE THAN DRESDEN IIS
THE CONNECTICUT LIGHT AND POWER COMPANY + THE HARTFORD ELECTRIC LIGHT COMPANY + WESTERN MASSACHUSETTS
ELECTRIC COMPANY
3 PAGES, 1 FIGURE, 1966, PAGES C-5-1 TO C-5-3 FROM DESIGN AND ANALYSIS REPORT, AMENDMENT NO. 1, DOCKET NO. 50-245, MILLSTONE NUCLEAR POWER PLANT

SHOW WHY THE CONTAINMENT SPRAY IS CONSIDERED MORE RELIABLE THAN THAT PROPOSED FOR DRESDEN II, WHICH CONSISTS OF TWO INDEPENDENT SYSTEMS, EACH REDUNDANT IN PUMPING CAPACITY. (IF ONE MILLSTONE SYSTEM WERE DISABLED, EVERY COMPONENT OF THE SECOND SYSTEM WOULD NEED TO FUNCTION TO OBTAIN THE REQUIRED SPRAY FLOW). IN ADDITION, DISCUSS THE CONSIDERATIONS THAT LED TO REQUIREMENT OF A SPRAY OVER THE SUPPRESSION POOL. (ANSWER) EACH SYSTEM HAS 2 HALF-CAPACITY COMPONENTS, SO ANY TWO HALVES PROVIDE 100% COOLING. (IN A SYSTEM, COMPONENTS ARE PARALLELED, SO IF A SINGLE RIVER PUMP FAILS, A PAIR OF HEAT EXCHANGERS STILL GETS HALF FLOW, RATHER THAN ONE HALF A SYSTEM BEING UNCOOLED). IT HAS ORDERS-OF-MAGNITUDE BETTER RELIABILITY THAN WHERE PUMP-EXCHANGERS WORK IN SPECIFIC PAIRS. POOL SPRAY IS TO KEEP AIR TEMPERATURE AT POOL TEMPERATURE, AN ASSUMPTION IN PSAR.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTAINMENT SPRAY + *RELIABILITY, SYSTEM + DRESDEN 2 + MILLSTONE POINT + REACTOR, BOILING WATER + RESPONSE TO AEC QUESTION + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16619 ALSO IN CATEGORIES 9 AND 12
QUESTION C-6--VALIDITY OF ROD WITH MINIMIZER CONCEPT WHEN A STUCK ROD IS NOT INDICATED
THE CONNECTICUT LIGHT AND POWER COMPANY + THE HARTFORD ELECTRIC LIGHT COMPANY + WESTERN MASSACHUSETTS
ELECTRIC COMPANY
2 PAGES, 1 FIGURE, 1966, PAGES C-6-1 AND C-6-2 FROM DESIGN AND ANALYSIS REPORT, AMENDMENT NO. 1, DOCKET NO. 50-245, MILLSTONE NUCLEAR POWER PLANT

DISCUSS VALIDITY OF ROD-WORTH-MINIMIZER CONCEPT IN RELATION TO CASE IN WHICH ROD IS STUCK FULL-IN WHILE DRIVE IS WITHDRAWN. SUBSEQUENT CHANGES IN SURROUNDING ROD PATTERNS ARE MADE WITHIN LIMITS PERMITTED BY ROD-WORTH MINIMIZER AND INDICATED POSITION OF STUCK ROD. WHAT IS HIGHEST WORTH OF STUCK ROD WHICH COULD BE OBTAINED AT HOT STANDBY AND AT FULL POWER.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTROL ROD WORTH + *ENGINEERED SAFETY FEATURE + *FAILURE, SCRAM MECHANISM + AEC QUESTION + INSTRUMENTATION, POSITION + MILLSTONE POINT + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16620 ALSO IN CATEGORY 9
QUESTION C-7--COLLET FINGERS BETWEEN CONTROL ROD INDEX TUBE AND THIMBLE HOUSING
THE CONNECTICUT LIGHT AND POWER COMPANY + THE HARTFORD ELECTRIC LIGHT COMPANY + WESTERN MASSACHUSETTS
ELECTRIC COMPANY
2 PAGES, 1966, PAGES C-7-1 AND C-7-2 FROM DESIGN AND ANALYSIS REPORT, AMENDMENT NO. 1, DOCKET NO. 50-245, MILLSTONE NUCLEAR POWER PLANT

THE CONTROL-ROD-THIMBLE-SUPPORTS COMMUNICATION PROVIDED BY THE COLLET FINGERS BETWEEN THE CONTROL ROD INDEX TUBE AND THIMBLE HOUSING IS REQUIRED. CONSIDER CASE WHERE COLLET FINGERS ARE RELEASED FOR ROD MOVEMENT AND THERE IS COMPLETE CIRCUMFERENTIAL BREAK IN THE CONTROL-ROD THIMBLE. WE ASSUME THAT THE CONTROL ROD COULD MOVE DOWNWARD 12 INCHES BEFORE COLLET FINGERS LATCH ROD. ADDITIONAL MOVEMENT OF ENTIRE ASSEMBLY WOULD THEN OCCUR UNTIL SUPPORT FRAME IS CONTACTED. (A) DISCUSS THE DESIGN CAPABILITY OF THIMBLE SUPPORT TO WITHSTAND THE TOTAL DOWNWARD FORCE OF THE CONTROL ROD AND THIMBLE HOUSING. (B) DISCUSS EFFECTS OF ACCELERATING ROD CONTACTING COLLET FINGERS. (C) COULD CIRCUMFERENTIAL BREAK OF THIMBLE PRODUCE SITUATION WHERE CONTROL ROD COULD NOT BE ENGAGED AND HELD BY THE COLLET FINGERS UPON CONTACT WITH

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-16620 *CONTINUED*

SUPPORT FRAME. IF SO, PROVIDE EVALUATION OF CONSEQUENCES OF A ROD-EJECTION ACCIDENT, ASSUMING FAILURE OF COLLET FINGERS TO COUPLE CONTROL-ROD-THIMBLE HOUSING.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACCIDENT, CONTROL ROD EJECTION + *FAILURE, SCRAM MECHANISM + AEC QUESTION + MILLSTONE POINT + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16621

ALSO IN CATEGORY 8

QUESTION D-1--METAL-WATER REACTION IN CONTAINMENT

THE CONNECTICUT LIGHT AND POWER COMPANY + THE HARTFORD ELECTRIC LIGHT COMPANY + WESTERN MASSACHUSETTS ELECTRIC COMPANY

2 PAGES, 1 FIGURE, 14 REFERENCES, 1966, PAGES D-1-1 TO D-1-8 FROM DESIGN AND ANALYSIS REPORT, AMENDMENT NO. 1, DOCKET NO. 50-245, MILLSTONE NUCLEAR POWER PLANT

D. SAFETY ANALYSIS - REGARDING DESIGN-BASIS ACCIDENT FOR CONTAINMENT - (A) DISCUSS BASIS ON WHICH MELTING POINT OF ZIRCONIUM WAS CHOSEN AS TERMINATION TEMPERATURE FOR ZIRCONIUM-WATER REACTION. DISCUSS SUPPORTING EXPERIMENTAL DATA WHICH MIGHT SUPPORT THIS CONTENTION. WHAT ADDITIONAL AMOUNT OF REACTION WOULD OCCUR IF THE TERMINATION TEMPERATURE WERE MELTING POINT OF ZIRCONIUM OXIDE. (B) PROVIDE DOCUMENTATION OF ASSUMPTIONS AND MODEL USED TO OBTAIN FIGURE 118. IF THE ZIRCONIUM-WATER REACTION OCCURRED UP TO MELTING POINT OF OXIDE, WHAT WOULD BE PRESSURE IN CONTAINMENT. WHAT WOULD BE EFFECT ON CONTAINMENT CAPABILITY. (C) RECTIFY INCONSISTENCY BETWEEN FIGURES 114 AND 115 REGARDING PRESSURE PLATEAU REACHED BEFORE ACTUATION OF CONTAINMENT SPRAY.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTAINMENT DESIGN + *METAL WATER REACTION + AEC QUESTION + ANALYTICAL MODEL + MILLSTONE POINT + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY + ZIRCALOY

18-16622

ALSO IN CATEGORY 5

QUESTION D-2--ROD DROP LOCAL ENTHALPY PEAK

THE CONNECTICUT LIGHT AND POWER COMPANY + THE HARTFORD ELECTRIC LIGHT COMPANY + WESTERN MASSACHUSETTS ELECTRIC COMPANY

1 PAGE, 1966, PAGE D-2-1 FROM DESIGN AND ANALYSIS REPORT, AMENDMENT NO. 1, DOCKET NO. 50-245, MILLSTONE NUCLEAR POWER STATION

CLARIFY AT-POWER ROD-DROP ACCIDENT TO INDICATE WHETHER THE PEAK ENTHALPY IN CAL/GM INDICATED IN FIGURE 111 IS FOR THE ENTIRE REACTOR OR FOR THE ASSUMED EXCURSION ZONE ONLY. WHAT IS THE MAXIMUM ENTHALPY INCREASE WHICH A CORE HOT-SPOT (ABOVE 100 CAL/GM) COULD EXPERIENCE FROM A ROD DROP IN A NEARBY AREA OF THE CORE (CONSIDER LOW-WORTH RODS CLOSE TO THE HOT SPOT, AS WELL AS HIGH-WORTH RODS AT GREATER DISTANCES).

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACCIDENT, CONTROL ROD EJECTION + *POWER DISTRIBUTION + AEC QUESTION + MILLSTONE POINT + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16623

ALSO IN CATEGORY 9

QUESTION D-3--CORE STRUCTURAL CAPABILITY DESIGN INSURING CONTROL ROD INSERTION FOLLOWING PIPE RUPTURE THE CONNECTICUT LIGHT AND POWER COMPANY + THE HARTFORD ELECTRIC LIGHT COMPANY + WESTERN MASSACHUSETTS ELECTRIC COMPANY

1 PAGE, 1966, PAGE D-3-1 FROM DESIGN AND ANALYSIS REPORT, AMENDMENT NO. 1, DOCKET NO. 50-245, MILLSTONE NUCLEAR POWER STATION

CONSIDERING THE OVERALL THERMAL AND HYDRAULIC EFFECTS OF A MAJOR PIPE RUPTURE, IDENTIFY THE DESIGN FEATURES RELATED TO CORE STRUCTURAL CAPABILITY THAT WOULD BE AVAILABLE TO ENSURE CONTROL-ROD INSERTION INTO THE CORE, THEREBY PREVENTING A SUBSEQUENT CRITICALITY EXCURSION UPON CORE REFLOODING.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*FAILURE, SCRAM MECHANISM + *FAILURE, SEQUENTIAL + ACCIDENT, LOSS OF COOLANT + AEC QUESTION + CORE COMPONENTS, MISCELLANEOUS + MILLSTONE POINT + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16624

ALSO IN CATEGORY 6

QUESTION D-4--MODEL DIFFERENCES BETWEEN FUEL DROP AND ROD DROP ACCIDENTS

THE CONNECTICUT LIGHT AND POWER COMPANY + THE HARTFORD ELECTRIC LIGHT COMPANY + WESTERN MASSACHUSETTS ELECTRIC COMPANY

3 PAGES, 1966, PAGES D-4-1 TO D-4-3 FROM DESIGN AND ANALYSIS REPORT, AMENDMENT NO. 1, DOCKET NO. 50-245, MILLSTONE NUCLEAR POWER STATION

DISCUSS THE MODEL DIFFERENCES BETWEEN THE FUEL-DROP AND ROD-DROP ACCIDENTS. IN PARTICULAR, WHAT PHYSICAL OR FLUX-SHAPE PARAMETERS VARY TO EXPLAIN THE FACT THAT THE TOTAL REACTIVITY INSERTED AND THE DROP RATE POSTULATED FOR THE REFUELING ACCIDENT CANNOT BE SUPERIMPOSED ON FIGURE 109.

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-16624 *CONTINUED*
AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACCIDENT, CONTROL ROD EJECTION + *ACCIDENT, REFUELING + *ANALYTICAL MODEL + MILLSTONE POINT + REACTOR, BOILING WATER + RESPONSE TO AEC QUESTION + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16625 ALSO IN CATEGORY 9
QUESTION E-1--SAFETY SYSTEM CAPABILITY AGAINST ROD WITHDRAWAL EXCURSIONS
THE CONNECTICUT LIGHT AND POWER COMPANY + THE HARTFORD ELECTRIC LIGHT COMPANY + WESTERN MASSACHUSETTS ELECTRIC COMPANY
1 PAGE, 1966, PAGE E-1-1 FROM DESIGN AND ANALYSIS REPORT, AMENDMENT NO. 1, DOCKET NO. 50-245, MILLSTONE NUCLEAR POWER STATION

E. INSTRUMENTATION - DISCUSS THE SAFETY-SYSTEM CAPABILITY TO PROTECT THE REACTOR (NO FUEL DAMAGE) AGAINST EXCURSIONS INDUCED BY THE SIMULTANEOUS WITHDRAWAL OF ANY TWO RODS UNDER ALL CONDITIONS OF ALLOWED BYPASS OF PROTECTION CHANNELS AND INDIVIDUAL CHAMBERS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACCIDENT, CONTROL ROD WITHDRAWAL + *REACTOR SAFETY SYSTEM + CONTROL ROD WORTH + MILLSTONE POINT + REACTOR, BOILING WATER + RESPONSE TO AEC QUESTION + SAFETY ANALYSIS REPORT, PRELIMINARY + SINGLE-FAILURE CRITERION

18-16626 ALSO IN CATEGORY 9
QUESTION E-2--SAFETY AMPLIFIERS INTEGRITY DURING EXCURSIONS
THE CONNECTICUT LIGHT AND POWER COMPANY + THE HARTFORD ELECTRIC LIGHT COMPANY + THE WESTERN MASSACHUSETTS ELECTRIC COMPANY
1 PAGE, 1966, PAGE E-2-1 FROM DESIGN AND ANALYSIS REPORT, AMENDMENT NO. 1, DOCKET NO. 50-245, MILLSTONE NUCLEAR POWER STATION

HOW WILL THE DESIGN FEATURES OF THE INTERMEDIATE- AND POWER-RANGE SAFETY AMPLIFIERS PROTECT AGAINST OVERLOAD AND POSSIBLE FAILURE TO FUNCTION DURING THOSE EXCURSIONS WHICH THEY ARE DESIGNED TO TERMINATE. (ANSWER) HIGH VOLTAGE CAUSES FUSES TO BLOW, LOW VOLTAGES DROPS OUT RELAYS. EITHER WAY, A SCRAM RESULTS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*REACTOR SAFETY SYSTEM + *SYSTEM OPERABILITY IN ACCIDENT CONDITIONS + MILLSTONE POINT + REACTOR, BOILING WATER + RESPONSE TO AEC QUESTION + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16627 ALSO IN CATEGORY 9
QUESTION E-3--SNEAK CIRCUIT THRU TEST SWITCH TO PREVENT SCRAM
THE CONNECTICUT LIGHT AND POWER COMPANY + THE HARTFORD ELECTRIC LIGHT COMPANY + WESTERN MASSACHUSETTS ELECTRIC COMPANY
1 PAGE, 1966, PAGE E-3-1 FROM DESIGN AND ANALYSIS REPORT, AMENDMENT NO. 1, DOCKET NO. 50-245, MILLSTONE NUCLEAR POWER STATION

WE HAVE OBSERVED THAT ACTUATION OF THE TEST SWITCHES IN THE NEUTRAL SIDES OF THE SOLENOID PILOT VALVES HAS THE EFFECT OF TYING TOGETHER THE TWO BUSES OF THE OTHERWISE MUTUALLY INDEPENDENT DUAL BUS SYSTEM. ONE CONSEQUENCE IS THAT, UNDER CERTAIN CONDITIONS, THE CURRENT FROM ONE BUS CAN TEND TO HOLD CLOSED THE VALVES IN THE OTHER BUS. PROVIDE THE JUSTIFICATION AND BASIS FOR THIS DESIGN. (ANSWER) THIS WOULD PREVENT THE TEST, BUT NOT THE SCRAM.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*FAILURE, SCRAM MECHANISM + *REACTOR SAFETY SYSTEM + *TESTING + MILLSTONE POINT + REACTOR, BOILING WATER + RESPONSE TO AEC QUESTION + SAFETY ANALYSIS REPORT, PRELIMINARY + SINGLE-FAILURE CRITERION

18-16628 ALSO IN CATEGORY 10
QUESTION E-4-- CIRCUIT BREAKERS RESPONSE TO DEAD SHORTS
THE CONNECTICUT LIGHT AND POWER COMPANY + THE HARTFORD ELECTRIC LIGHT COMPANY + WESTERN MASSACHUSETTS ELECTRIC COMPANY
1 PAGE, 1966, PAGE E-4-1 FROM DESIGN AND ANALYSIS REPORT, AMENDMENT NO. 1, DOCKET NO. 50-245, MILLSTONE NUCLEAR POWER STATION

ARE THE CIRCUIT BREAKERS WHICH PROTECT THOSE LINES FEEDING EQUIPMENT ESSENTIAL TO THE OPERATION OF ENGINEERED SAFEGUARDS CAPABLE OF RESPONDING TO DEAD SHORTS OCCURRING AT THE LINES. (ANSWER) A SHORT ON ONE BUS WILL NOT AFFECT THE OTHER.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*EMERGENCY POWER, ELECTRIC + *ENGINEERED SAFETY FEATURE + MILLSTONE POINT + REACTOR, BOILING WATER + RESPONSE TO AEC QUESTION + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16629 ALSO IN CATEGORIES 9 AND 11

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-16620 *CONTINUED*

QUESTION E-5-- CONTAINMENT ISOLATION AFTER RUPTURE OF TIP THIMBLES
THE CONNECTICUT LIGHT AND POWER COMPANY + THE HARTFORD ELECTRIC LIGHT COMPANY + WESTERN MASSACHUSETTS
ELECTRIC COMPANY
2 PAGES, 1966, PAGES E-5-1 AND E-5-2 FROM DESIGN AND ANALYSIS REPORT, AMENDMENT NO. 1, DOCKET NO. 50-245,
MILLSTONE NUCLEAR POWER STATION

WHAT PROVISIONS ARE BEING MADE TO ENSURE CONTAINMENT ISOLATION IN THE EVENT OF AN ACCIDENT
THAT RESULTS IN RUPTURE OF THIMBLES USED FOR INSTRUMENT CALIBRATION (TIP SYSTEM). (ANSWER)
THE PROBES ARE AUTOMATICALLY WITHDRAWN AND THE ISOLATION VALVE CLOSED WITHIN 1.5 MIN, WITH A
MAXIMUM STEAM LEAKAGE OF 1.2 LB.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTAINMENT PENETRATION, CLOSURE OF + *INSTRUMENTATION CALIBRATION + *INSTRUMENTATION, IN CORE +
MILLSTONE POINT + REACTOR, BOILING WATER + RESPONSE TO AEC QUESTION + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16630 ALSO IN CATEGORY 16

QUESTION F-1--EFFECT OF HILLS AND WATER SURFACE ON PLUME ANALYTICAL MODEL
THE CONNECTICUT LIGHT AND POWER COMPANY + WESTERN MASSACHUSETTS ELECTRIC COMPANY + THE HARTFORD ELECTRIC
LIGHT COMPANY
2 PAGES, 1966, PAGES F-1-1 AND F-1-2 FROM DESIGN AND ANALYSIS REPORT, AMENDMENT NO. 1, DOCKET NO. 50-245,
MILLSTONE NUCLEAR POWER STATION

THE PENINSULA-SITE METEOROLOGICAL MODEL DOES NOT RELATE TO (A) HILLS AND (B) COLD-WATER
COOLING AND TRAVEL OVER WARMER LAND, WHICH MIGHT GIVE LONGER FUMIGATION. (ANSWER) (A)
REFERENCE TO HUMBOLOT BAY AND BIG ROCK POINT TRACER TESTS TO INDICATE THAT DEVIATIONS ARE
MINOR. (B) WHILE THE 2-HR DOSE MIGHT BE TWICE AS HIGH, TOTAL ACCIDENT DOSE WOULD NOT BE
SIGNIFICANTLY DIFFERENT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*AIRBORNE RELEASE + *ANALYTICAL MODEL + *DOSE + MILLSTONE POINT + REACTOR, BOILING WATER +
RESPONSE TO AEC QUESTION + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16655

NEW JERSEY GOVERNOR ASKS PROGRESS OF BURLINGTON 1 REGULATORY REVIEW
PUBLIC SERVICE ELECTRIC + GAS CO.
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(29), PAGE 21 (JULY 17, 1967), DOCKET NO. 50-272

(LETTER JULY 3) NOTES THAT A POWER FAILURE OCCURRED ON JUNE 5, 1967, BECAUSE A SUDDEN DEMAND
COULD NOT BE MET, THAT NUCLEAR POWER IS INCREASINGLY IMPORTANT IN NEW JERSEY, AND THAT OTHER
FACILITIES HAVE BEEN SCHEDULED FOR ACRS REVIEW, PUBLIC HEARINGS, ETC., AHEAD OF BURLINGTON 1.
GOVERNOR ASKS ABOUT PROGRESS MADE ON THE APPLICATION.

*CONSTRUCTION PERMIT PROCESS + *RESPONSE TIME + BURLINGTON 1 + REACTOR, PRESSURIZED WATER

18-16662

CONSUMERS POWER COMPANY. APPLICATION FOR REACTOR CONSTRUCTION PERMIT AND OPERATING LICENSE, AMENDMENT
NUMBER 3
CONSUMERS POWER COMPANY, PALISADES PLANT, COVERT TOWNSHIP, MICHIGAN
165 PAGES, 80 FIGURES, 10 TABLES, 10 REFERENCES, NOVEMBER 14, 1966, DOCKET NO. 50-255

AMENDMENT 3 SUBMITS ONE PSAR SUPPLEMENT (SECTION VII), CORRECTED FIGURES FOR AMENDMENT 2,
ADDITIONAL INFORMATION FOR 5, 11 QUESTIONS AND SUPPLEMENTAL ANSWERS TO 2 QUESTIONS RAISED BY
AEC ON AUGUST 2, 1966. (QUESTION 2.4 SUPERSEDES THAT SUBMITTED IN AMENDMENT 1). SECTION 2.
ENGINEERED SAFEGUARDS SYSTEMS (6), SECTION 4. SAFETY INJECTION SYSTEM (3), SECTION 9. (2).

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*AEC QUESTION + *SAFETY ANALYSIS REPORT, PRELIMINARY + PALISADES POINT + REACTOR, PRESSURIZED WATER

18-16663 ALSO IN CATEGORY 12

QUESTION 2.1 - REDUNDANCE RELIABILITY OF CONTAINMENT COOLING SYSTEMS
CONSUMERS POWER COMPANY, PALISADES PLANT, COVERT TOWNSHIP, MICHIGAN
18 PAGES, 14 FIGURES, 1 TABLE, NOVEMBER 14, 1966, PAGES 2.1/1-18 OF CONSUMERS POWER COMPANY APPLICATION
FOR REACTOR CONSTRUCTION PERMIT AND OPERATING LICENSE, AMENDMENT NUMBER 3, DOCKET NO. 50-255

SECTION 2.0. ENGINEERED SAFEGUARDS SYSTEMS (1). PSAR, PAGE VI-1 STATES THAT THE OBJECTIVE
UNDERLYING PERFORMANCE REQUIREMENTS FOR ENGINEERED SAFEGUARDS IS TO RESTRICT FISSION-PRODUCT
RELEASE FROM FUEL AND TO CONTROL DISPERSAL. ONE PRINCIPAL MEANS OF ACHIEVING OBJECTIVE IS TO
LIMIT AND REDUCE INTERNAL CONTAINMENT PRESSURE, WITH IMPLEMENTATION BY TWO SEPARATE SYSTEMS,
EACH HAVING REQUIRED CAPABILITY AND INTERNAL REDUNDANCY. SAFETY-INJECTION SYSTEM, HOWEVER,
APPEARS LESS CONSERVATIVELY DESIGNED THAN CONTAINMENT-COOLING SYSTEMS IN THIS REGARD. A MORE
SUITABLE WAY WOULD BE BY PROVIDING AT LEAST AS GREAT CONSERVATISM IN CORE-COOLING SYSTEMS IN
REGARD TO REDUNDANCY RELIABILITY AND IN THE NUMBER OF SYSTEMS AS WELL AS WITHIN SYSTEMS, AS
IS USED FOR CONTAINMENT-COOLING SYSTEMS. DISCUSS THIS MATTER.

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-16663 *CONTINUED*
AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CORE REFLOODING SYSTEM + AEC QUESTION + PALISADES POINT + REACTOR, PRESSURIZED WATER + REDUNDANCE + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16664 ALSO IN CATEGORY 12
QUESTION 2.2-1 - REDUNDANCY AND INDEPENDENCE OF ENGINEERED SAFEGUARD SYSTEMS
CONSUMERS POWER COMPANY, PALISADES PLANT, COVERT TOWNSHIP, MICHIGAN
8 PAGES, 1 FIGURE, NOVEMBER 14, 1966, PAGE 2.2.1-1 TO 2.2.1-8 OF CONSUMERS POWER COMPANY APPLICATION FOR REACTOR CONSTRUCTION PERMIT AND OPERATING LICENSE, AMENDMENT NUMBER 3, DOCKET NO. 50-255

PSAR STATES THAT ENGINEERED-SAFEGUARD SYSTEMS ARE REDUNDANT. FIGURE VI SHOWS THAT (A) HIGH- AND LOW-HEAD SAFETY-INJECTION SYSTEMS ARE ESSENTIALLY SINGLE SYSTEMS, EACH HAVING TWO PUMPS AND FOUR INLETS TO REACTOR VESSEL, (B) THERE ARE SEVERAL AREAS WHERE SINGLE FAILURES COULD NULLIFY HIGH- OR LOW-HEAD SYSTEMS, (C) SERVICE-WATER SYSTEM IS SINGLE SYSTEM, (D) VALVING AND INSTRUMENTATION IS SHOWN ONLY FOR CLARIFICATION. 2.2.1 CLARIFY CRITERIA FOR ENGINEERED SAFEGUARD SYSTEMS IN REGARD TO INDEPENDENCE AND REDUNDANCE BOTH IN REGARD TO NUMBERS OF SYSTEMS AND WITHIN EACH SYSTEM.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ENGINEERED SAFETY FEATURE + *INDEPENDENCE + *REDUNDANCE + AEC QUESTION + PALISADES POINT + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16665 ALSO IN CATEGORY 12
QUESTION 2.2.2 - FAILURE ANALYSIS OF ENGINEERED SAFEGUARD SYSTEMS
CONSUMERS POWER COMPANY, PALISADES PLANT, COVERT TOWNSHIP, MICHIGAN
6 PAGES, NOVEMBER 14, 1966, PAGE 2.2.2-1 THROUGH 2.2.2-6 OF CONSUMERS POWER COMPANY APPLICATION FOR REACTOR CONSTRUCTION PERMIT AND OPERATING LICENSE, AMENDMENT NUMBER 3, DOCKET NO. 50-255

PROVIDE AN ENGINEERING AND POTENTIAL-FAILURE-MODE ANALYSIS OF THE PRELIMINARY DESIGN OF THESE SYSTEMS TO DEMONSTRATE THAT THEY MEET THE CLARIFIED CRITERIA.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ENGINEERED SAFETY FEATURE + *FAULT TREE ANALYSIS + AEC QUESTION + PALISADES POINT + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16666 ALSO IN CATEGORIES 12 AND 9
QUESTION 2.2.3 - I AND C FOR ENGINEERED SAFEGUARD SYSTEMS
CONSUMERS POWER COMPANY, PALISADES PLANT, COVERT TOWNSHIP, MICHIGAN
18 PAGES, 11 FIGURES, NOVEMBER 14, 1966, PAGE 2.2.3-1 THROUGH 2.2.3-18 OF CONSUMERS POWER COMPANY APPLICATION FOR REACTOR CONSTRUCTION PERMIT AND OPERATING LICENSE, AMENDMENT NUMBER 3, DOCKET NO. 50-255

WHAT ARE THE CRITERIA AND DESIGN BASES IN REGARD TO REDUNDANCY, RELIABILITY, EQUIPMENT QUALIFICATIONS, ENVIRONMENTAL TESTING, BYPASSES, INTERLOCKS, AUTOMATIC SEQUENCING, PERIODIC TESTING, AND AVAILABILITY OF MANUAL BACKUP TO AUTOMATIC CONTROLS FOR THE INSTRUMENTATION AND CONTROLS WHICH ACTIVATE AND CONTROL THE ENGINEERED SAFEGUARD SYSTEMS. PROVIDE SUFFICIENT PRELIMINARY DESIGN INFORMATION AND ANALYSIS OF POTENTIAL FAILURE MODES TO DEMONSTRATE THAT THESE OBJECTIVES WILL BE ACHIEVED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ENGINEERED SAFETY FEATURE + *INSTRUMENTATION, GENERAL + AEC QUESTION + PALISADES POINT + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16667 ALSO IN CATEGORY 12
QUESTION 2.3 - SAFETY INJECTION SYSTEM
CONSUMERS POWER CO., PALISADES PLANT, COVERT TOWNSHIP, MICHIGAN
1 PAGE, NOVEMBER 14, 1966, PAGE 2.3-1 OF CONSUMERS POWER COMPANY APPLICATION FOR REACTOR CONSTRUCTION PERMIT AND OPERATING LICENSE, AMENDMENT NUMBER 3, DOCKET NO. 50-255

ANALYZE THE ABILITY OF THE SAFETY-INJECTION SYSTEM TO WITHSTAND REACTOR-VESSEL MOTION WITHOUT LOSS OF DESIGN CAPABILITY. THIS ANALYSIS SHOULD INCLUDE AT LEAST THE FOLLOWING AREAS - (A) PIPING LAYOUT, SIZE, FLEXIBILITY, (B) MAXIMUM MOTION THAT COULD REASONABLY BE ACCOMMODATED, (C) LATERAL REACTOR-VESSEL MOTION THAT COULD OCCUR DUE TO REACTION FORCES IN THE DESIGN-BASIS ACCIDENT, (D) MAXIMUM REACTOR-VESSEL MOTION THAT COULD OCCUR IN THE PROPOSED PLANT ARRANGEMENT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CORE REFLOODING SYSTEM + *STRESS ANALYSIS + AEC QUESTION + PALISADES POINT + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-16668 ALSO IN CATEGORIES 11 AND 12

QUESTION 2.4 - LOCATION, LEAK TEST DESIGN, ACCIDENT ANALYSIS OF SAFETY INJECTION AND CONTAINMENT SPRAY SYSTEMS
CONSUMERS POWER CO., PALISADES PLANT, COVERT TOWNSHIP, MICHIGAN
8 PAGES, NOVEMBER 14, 1966, PAGE 2.4-1 THROUGH 2.4-8 OF CONSUMERS POWER COMPANY APPLICATION FOR REACTOR CONSTRUCTION PERMIT AND OPERATING LICENSE, AMENDMENT NUMBER 3, DOCKET NO. 50-255

LOCATION OF SAFETY-INJECTION AND CONTAINMENT-SPRAY SYSTEMS OUTSIDE CONTAINMENT COULD RECIRCULATE HIGHLY RADIOACTIVE WATER OUTSIDE CONTAINMENT BUILDING. JUSTIFY LOCATION PROPOSED VS LOCATION INSIDE CONTAINMENT BUILDING OR OTHER CONTROLLED-LEAKAGE ENCLOSURE. WHAT ARE LEAK-TIGHTNESS DESIGN CRITERIA AND LEAKAGE-TESTING PROVISIONS FOR SYSTEMS. HOW FREQUENTLY ARE LEAK TESTS PLANNED. WHAT ARE MARGINS AGAINST EXCEEDING DESIGN-LEAKAGE RATE. DEFINE POTENTIAL SOURCES OF LEAKAGE AND RUPTURES AND SHOW POTENTIAL CONSEQUENCES OF FAILURES AFTER LARGE ACCIDENT. INCLUDE POSSIBILITY OF CHLORIDE-STRESS-CORROSION FAILURES DUE TO CHLORIDE PICKUP BY RECIRCULATED COOLING WATER. (ANSWER) ANSWER SUPERSEDES THAT OF QUESTION 2.4 IN AMENDMENT 1.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTAINMENT SPRAY + *CORE REFLOODING SYSTEM + AEC QUESTION + PALISADES POINT + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY + TEST, LEAK RATE

18-16669 ALSO IN CATEGORY 12

QUESTION 4.1 - SAFETY INJECTION SYSTEM CRITERIA
CONSUMERS POWER CO., PALISADES PLANT, COVERT TOWNSHIP, MICHIGAN
2 PAGES, NOVEMBER 14, 1966, PAGE 4.1-1 THROUGH 4.1-2 OF CONSUMERS POWER COMPANY APPLICATION FOR REACTOR CONSTRUCTION PERMIT AND OPERATING LICENSE, AMENDMENT NUMBER 3, DOCKET NO. 50-255

SECTION 4.0. SAFETY INJECTION SYSTEM. WHAT ARE THE CORE-DAMAGE AND FISSION-PRODUCT-RELEASE CRITERIA USED IN THE DESIGN OF THE SAFETY INJECTION SYSTEM. ADDITIONAL INFORMATION SUPPLIED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

AEC QUESTION + CORE REFLOODING SYSTEM + DESIGN CRITERIA + PALISADES POINT + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16670 ALSO IN CATEGORY 12

QUESTION 4.2 - CHANGES IN HEAD FLOW RATE IN SAFETY CONDITION SYSTEM
CONSUMERS POWER CO., PALISADES PLANT, COVERT TOWNSHIP, MICHIGAN
2 PAGES, NOVEMBER 14, 1966, PAGE 4.2-1 AND 4.2-2 OF CONSUMERS POWER COMPANY APPLICATION FOR REACTOR CONSTRUCTION PERMIT AND OPERATING LICENSE, AMENDMENT NUMBER 3, DOCKET NO. 50-255

PROVIDE A CURVE AND ITS ANALYTICAL BASIS OF LEAK SIZE THAT COULD BE ACCOMMODATED AS A FUNCTION OF HIGH-HEAD FLOW FOR SIGNIFICANTLY LARGER FLOW RATES THAN THE DESIGN FLOW RATE. ADDITIONAL INFORMATION SUPPLIED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CORE REFLOODING SYSTEM + *DESIGN CRITERIA + AEC QUESTION + PALISADES POINT + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16671 ALSO IN CATEGORY 12

QUESTION 4.2.1 - LEAK SIZE OF HIGH HEAD PUMPS
CONSUMERS POWER CO., PALISADES PLANT, COVERT TOWNSHIP, MICHIGAN
1 PAGE, NOVEMBER 14, 1966, PAGE 4.2.1-1 OF CONSUMERS POWER COMPANY APPLICATION FOR REACTOR CONSTRUCTION PERMIT AND OPERATING LICENSE, AMENDMENT NUMBER 3, DOCKET NO. 50-255

WHAT IS THE LEAK SIZE THAT THE HIGH-HEAD PUMPS ARE DESIGNED TO ACCOMMODATE IN MEETING THE FOREGOING CRITERIA. ADDITIONAL INFORMATION SUPPLIED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CORE REFLOODING SYSTEM + *DESIGN CRITERIA + AEC QUESTION + PALISADES POINT + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16672 ALSO IN CATEGORY 12

QUESTION 4.2.2 - INCREASED FLOW RATE OF HIGH HEAD PUMPS
CONSUMERS POWER CO., PALISADES PLANT, COVERT TOWNSHIP, MICHIGAN
1 PAGE, NOVEMBER 14, 1966, PAGE 4.2.2-1 OF CONSUMERS POWER COMPANY APPLICATION FOR REACTOR CONSTRUCTION PERMIT AND OPERATING LICENSE, AMENDMENT NUMBER 3, DOCKET NO. 50-255

WHAT ADVANTAGES COULD BE OBTAINED BY INCREASING FLOW RATE OF THE HIGH-HEAD PUMPS. ARE THERE ANY DISADVANTAGES. ADDITIONAL INFORMATION SUPPLIED.

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-16672 *CONTINUED*
AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CORE REFLOODING SYSTEM + AEC QUESTION + PALISADES POINT + REACTOR, PRESSURIZED WATER +
SAFETY ANALYSIS REPORT, PRELIMINARY

18-16673 ALSO IN CATEGORY 12
QUESTION 6.2.3 - HIGH HEAD PUMPS AND DIESEL GENERATOR POWER
CONSUMERS POWER CO., PALISADES PLANT, COVERT TOWNSHIP, MICHIGAN
1 PAGE, NOVEMBER 14, 1966, PAGE 4.2.3 OF CONSUMERS POWER COMPANY APPLICATION FOR REACTOR CONSTRUCTION
PERMIT AND OPERATING LICENSE, AMENDMENT NUMBER 3, DOCKET NO. 50-255

DISCUSS THE NEED FOR THE HIGH-HEAD PUMPS TO BE POWERED BY THE DIESEL GENERATOR. ADDITIONAL
INFORMATION SUPPLIED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*AEC QUESTION + *CORE REFLOODING SYSTEM + *PALISADES POINT + *SAFETY ANALYSIS REPORT, PRELIMINARY +
EMERGENCY POWER, ELECTRIC + GENERATOR, DIESEL + REACTOR, PRESSURIZED WATER

18-16674 ALSO IN CATEGORY 5
QUESTION 4.2.4 - CLADDING FAILURE AND FUEL MELTING
CONSUMERS POWER CO., PALISADES PLANT, COVERT TOWNSHIP, MICHIGAN
2 PAGES, 1 TABLE, NOVEMBER 14, 1966, PAGE 4.2.4-1 AND 4.2.4-2 OF CONSUMERS POWER CO. APPLICATION FOR
REACTOR CONSTRUCTION PERMIT AND OPERATING LICENSE, AMENDMENT NUMBER 3, DOCKET NO. 50-255

ANALYZE THE EXTENT OF CLADDING FAILURE AND FUEL MELTING IN THE EVENT OF THE DESIGN-BASIS
ACCIDENT UNDER THE FOLLOWING CONDITIONS - (A) ONLY THE HIGH-HEAD SAFETY-INJECTION-SYSTEM
PUMPS ARE AVAILABLE, (B) ONLY THE LOW-HEAD SAFETY-INJECTION-SYSTEM PUMPS ARE AVAILABLE, (C)
THE ENTIRE SAFETY-INJECTION SYSTEM WITH POWER SUPPLIED BY A TRANSMISSION LINE IS AVAILABLE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACCIDENT, LOSS OF COOLANT + AEC QUESTION + PALISADES POINT + REACTOR, PRESSURIZED WATER +
SAFETY ANALYSIS REPORT, PRELIMINARY

18-16675 ALSO IN CATEGORY 12
QUESTION 4.3 - ENGINEERED SAFETY PERFORMANCE CRITERIA
CONSUMERS POWER CO., PALISADES PLANT, COVERT TOWNSHIP, MICHIGAN
2 PAGES, 1 TABLE, NOVEMBER 14, 1966, PAGE 4.3-1 AND 4.3-2 OF CONSUMERS POWER COMPANY APPLICATION FOR
REACTOR CONSTRUCTION PERMIT AND OPERATING LICENSE, AMENDMENT NUMBER 3, DOCKET NO. 50-255

PROVIDE THE ENGINEERING ANALYSIS TO JUSTIFY THAT THE SYSTEM DESIGN WILL SATISFY THE
PERFORMANCE CRITERIA. ADDITIONAL INFORMATION SUPPLIED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CORE REFLOODING SYSTEM + AEC QUESTION + PALISADES POINT + REACTOR, PRESSURIZED WATER +
SAFETY ANALYSIS REPORT, PRELIMINARY

18-16676 ALSO IN CATEGORY 12
QUESTION 4.3.1 - HEAT REMOVAL CAPABILITY OF SAFETY INJECTION SYSTEM
CONSUMERS POWER CO., PALISADES PLANT, COVERT TOWNSHIP, MICHIGAN
2 PAGES, NOVEMBER 14, 1966, PAGE 4.3.1-1 AND 4.3.1-2 OF CONSUMERS POWER COMPANY APPLICATION FOR REACTOR
CONSTRUCTION PERMIT AND OPERATING LICENSE, AMENDMENT NUMBER 3, DOCKET NO. 50-255

WHAT IS THE REQUIRED HEAT-REMOVAL CAPABILITY FOR THE SYSTEM WHEN PERFORMING AS DESIGNED.
PROVIDE DATA TO SHOW THE MARGINS AVAILABLE IN THE SYSTEM DESIGN IN TERMS OF MEETING
CORE-DAMAGE CRITERIA AND HEAT-REMOVAL CAPABILITY, CONSIDERING THE VARIOUS COMBINATIONS OF
PUMPS AND HEAT EXCHANGERS THAT MIGHT BE AVAILABLE. ADDITIONAL INFORMATION SUPPLIED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*AEC QUESTION + *CORE REFLOODING SYSTEM + *DESIGN CRITERIA + *PALISADES POINT +
*SAFETY ANALYSIS REPORT, PRELIMINARY + REACTOR, PRESSURIZED WATER

18-16677 ALSO IN CATEGORY 12
QUESTION 4.3.2 - INJECTION POINT ON MAIN LOOP HOT LEGS
CONSUMERS POWER CO., PALISADES PLANT, COVERT TOWNSHIP, MICHIGAN
2 PAGES, NOVEMBER 14, 1966, PAGE 4.3.2-1 AND 4.3.2-2 OF CONSUMERS POWER COMPANY APPLICATION FOR REACTOR
CONSTRUCTION PERMIT AND OPERATING LICENSE, AMENDMENT NUMBER 3, DOCKET NO. 50-255

DISCUSS THE ADVANTAGES AND DISADVANTAGES OF INCLUDING INJECTION POINTS ON THE MAIN-LOOP HOT
LEGS. ADDITIONAL INFORMATION SUPPLIED.

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-16677 *CONTINUED*
AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CORE REFLOODING SYSTEM + AEC QUESTION + PALISADES POINT + REACTOR, PRESSURIZED WATER +
SAFETY ANALYSIS REPORT, PRELIMINARY

18-16678 ALSO IN CATEGORY 12
QUESTION 4.3.3 - CORE DAMAGE AFTER DELAY IN INITIATION OF SYSTEM OPERATION
CONSUMERS POWER CO., PALISADES PLANT, COVERT TOWNSHIP, MICHIGAN
1 PAGE, 1 TABLE, NOVEMBER 14, 1966, PAGE 4.3.3-1 OF CONSUMERS POWER COMPANY APPLICATION FOR REACTOR
CONSTRUCTION PERMIT AND OPERATING LICENSE, AMENDMENT NUMBER 3, DOCKET NO. 50-255

WHAT ARE THE CONSEQUENCES ON THE EXTENT OF CORE DAMAGE FOR VARIOUS DELAY TIMES IN THE
INITIATION OF SYSTEM OPERATION. ADDITIONAL INFORMATION SUPPLIED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CORE REFLOODING SYSTEM + *RESPONSE TIME + AEC QUESTION + PALISADES POINT + REACTOR, PRESSURIZED WATER +
SAFETY ANALYSIS REPORT, PRELIMINARY

18-16679 ALSO IN CATEGORIES 12 AND 5
QUESTION 4.3.4 - HIGH PRESSURE PUMPS OF SAFETY INJECTION SYSTEM, LOSS-OF-COOLANT ACCIDENT
CONSUMERS POWER CO., PALISADES PLANT, COVERT TOWNSHIP, MICHIGAN
53 PAGES, 45 FIGURES, 3 TABLES, 5 REFERENCES, NOVEMBER 14, 1966, PAGES 4.3.4 - OF CONSUMERS POWER COMPANY
APPLICATION FOR REACTOR CONSTRUCTION PERMIT AND OPERATING LICENSE, AMENDMENT NUMBER 3, DOCKET NO. 50-255

WHAT ASSURANCE IS THERE THAT THE HIGH-PRESSURE PUMPS WILL PERFORM PROPERLY WITH THE LOW OUTLET
PRESSURE THAT WILL PREVAIL FOR THE LONG-TERM POSTACCIDENT COOLING PERIOD. WHY WERE THE
HIGH-HEAD RATHER THAN THE LOW-HEAD PUMPS SELECTED FOR LONG-TERM OPERATION. ADDITIONAL
INFORMATION SUPPLIED. (ANSWER) A 52-PAGE SUPPLEMENT ON LOSS-OF-COOLANT ACCIDENTS IS
INCLUDED, ENTITLED SECTION 4.S.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACCIDENT, LOSS OF COOLANT + *ANALYTICAL MODEL + AEC QUESTION + BLOWDOWN + CORE REFLOODING SYSTEM +
PALISADES POINT + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16680 ALSO IN CATEGORIES 16 AND 15
QUESTION 9.2 - DOSE CALCULATIONS FOR DESIGN BASIS ACCIDENTS
CONSUMERS POWER CO., PALISADES PLANT, COVERT TOWNSHIP, MICHIGAN
14 PAGES, 2 FIGURES, 3 TABLES, 4 REFERENCES, NOVEMBER 14, 1966, PAGE 9.2-1 TO 9.2-14 OF CONSUMERS POWER
COMPANY APPLICATION FOR REACTOR CONSTRUCTION PERMIT AND OPERATING LICENSE, AMENDMENT NUMBER 3, DOCKET NO.
50-255

9.2 SEVERAL NONCONSERVATIVE PARAMETERS WERE USED IN PSAR DOSE CALCULATIONS. WHAT DOSES ARE
CALCULATED FOR DESIGN-BASIS ACCIDENT, USING THE FOLLOWING ASSUMPTIONS - (1) DIFFUSION MODEL,
ASSUMING VOLUMETRIC GROUND SOURCE WITH REFLECTION, RATHER THAN VIRTUAL GROUND SOURCE WITHOUT
REFLECTION. (2) PASQUILL F METEOROLOGY AND 1-M/SEC WIND FOR FIRST 8 HOURS, PASQUILL F AND
2-M/SEC WIND FROM 8 TO 24 HOURS, AND VARYING WIND SPEED, DIRECTION, AND STABILITY FOR THE
BALANCE OF THE ACCIDENT. (3) NO DEPOSITION ENROUTE TO EXPOSURE LOCATIONS. (4) BREATHING
RATE OF 347 CC/SEC FOR FIRST 8 HOURS, 174 CC/SEC FROM 8 TO 24 HOURS, AND 232 CC/SEC FOR
BALANCE OF ACCIDENT. DESIGN CHANGES NEEDED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*AIRBORNE RELEASE + *ANALYTICAL MODEL + *DOSE + *WIND STATISTICS + AEC QUESTION + PALISADES POINT +
REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16681
QUESTION 9.4 - RADIOACTIVITY CONCENTRATION OF DESIGN BASIS ACCIDENT WITH RAIN
CONSUMERS POWER CO., PALISADES PLANT, COVERT TOWNSHIP, MICHIGAN
23 PAGES, 7 FIGURES, 1 REFERENCE, NOVEMBER 14, 1966, PAGE 9.4-1 TO 9.4-3 OF CONSUMERS POWER COMPANY
APPLICATION FOR REACTOR CONSTRUCTION PERMIT AND OPERATING LICENSE, AMENDMENT NUMBER 3, DOCKET NO. 50-255

WHAT WOULD BE THE GROUND AND LAKE-WATER RADIOACTIVITY CONCENTRATIONS ASSOCIATED WITH THE
DESIGN-BASIS ACCIDENT IF IT WERE RAINING DURING THE ACCIDENT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*RAINFALL + ACCIDENT, LOSS OF COOLANT + AEC QUESTION + PALISADES POINT + REACTOR, PRESSURIZED WATER +
SAFETY ANALYSIS REPORT, PRELIMINARY

18-16682 ALSO IN CATEGORIES 12 AND 9
7.S PSAR SECTION VII SUPPLEMENT
CONSUMERS POWER CO., PALISADES PLANT, COVERT TOWNSHIP, MICHIGAN

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-16682 *CONTINUED*
12 PAGES, 2 FIGURES, NOVEMBER 14, 1966, PAGE 7.5-1 TO 7.5-12 OF CONSUMERS POWER COMPANY APPLICATION FOR REACTOR CONSTRUCTION PERMIT AND OPERATING LICENSE, AMENDMENT NUMBER 3, DOCKET NO. 50-255

SHORT SUMMARY OF HOW THE REACTOR PROTECTIVE SYSTEM AND ENGINEERED-SAFEGUARDS CONTROL SYSTEM ARE BEING DESIGNED IN ACCORDANCE WITH VARIOUS STANDARDS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CODES AND STANDARDS + *ENGINEERED SAFETY FEATURE + *REACTOR SAFETY SYSTEM + PALISADES POINT + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16721 ALSO IN CATEGORY 11
DESIGN AND ANALYSIS REPORT, AMENDMENT NUMBER 3, ANSWERS TO AEC QUESTIONS (MILLSTONE NUCLEAR POWER STATION) THE CONNECTICUT LIGHT AND POWER CO. + THE HARTFORD ELECTRIC LIGHT CO. + WESTERN MASSACHUSETTS ELECTRIC COMPANY
20 PAGES, DOCKET NO. 50-245, FEBRUARY 9, 1966

THIRTEEN ANSWERS ARE GIVEN CONCERNING THE REACTOR PRESSURE VESSEL.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*PRESSURE VESSEL + AEC QUESTION + MILLSTONE POINT + REACTOR, BOILING WATER + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16722 ALSO IN CATEGORY 11
QUESTION 1 - CONSEQUENCES TO REACTOR VESSEL OF INADVERTENT RAPID STARTUP FROM LOW TEMPERATURE THE CONNECTICUT LIGHT AND POWER CO. + THE HARTFORD ELECTRIC LIGHT CO. + WESTERN MASSACHUSETTS ELECTRIC COMPANY
1 PAGE, PAGE 1-1 OF DESIGN AND ANALYSIS REPORT, AMENDMENT NUMBER 3, ANSWERS TO AEC QUESTIONS, (MILLSTONE NUCLEAR POWER STATION), DOCKET NO. 50-245, FEBRUARY 9, 1966

DISCUSS CONSEQUENCES OF ACCIDENTAL FAST STARTUP FROM LOW TEMPERATURE AS IT RELATES TO ALLOWABLE PRESSURE-VESSEL STRESSES AND BRITTLE-FRACTURE LIMITS THAT EXIST AT LOW TEMPERATURE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*AEC QUESTION + *BRITTLE FRACTURE + *SAFETY ANALYSIS REPORT, PRELIMINARY + FAILURE, ADMINISTRATIVE CONTROL + MILLSTONE POINT + PRESSURE VESSEL + REACTOR, BOILING WATER + REACTOR, PRESSURIZED WATER + THERMAL MECHANICAL EFFECT

18-16723 ALSO IN CATEGORY 11
QUESTION 2-A, 2-B - PRESSURE VESSEL FLAW SIZE, TYPE, AND DETECTION THE CONNECTICUT LIGHT AND POWER CO. + THE HARTFORD ELECTRIC LIGHT CO. + WESTERN MASSACHUSETTS ELECTRIC COMPANY
4 PAGES, PAGES 2-1 TO 2-4 OF DESIGN AND ANALYSIS REPORT, AMENDMENT NUMBER 3, ANSWERS TO AEC QUESTIONS, (MILLSTONE NUCLEAR POWER STATION), DOCKET NO. 50-245, FEBRUARY 9, 1966

(A) DEFINE THE FLAW SIZE AND TYPE IN THE PRESSURE VESSEL WHICH IS ACCEPTED IN THE SPECIFICATIONS. (B) WHAT FLAWS LARGER IN SIZE OR OF SPECIAL SIGNIFICANCE MIGHT NOT BE DETECTED, PARTICULARLY IN ZONES OF IRREGULAR CONFIGURATION.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*FLAW + *PRESSURE VESSEL + *QUALITY CONTROL + AEC QUESTION + MILLSTONE POINT + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY + TEST, NONDESTRUCTIVE

18-16724 ALSO IN CATEGORY 11
QUESTION 3 - REACTOR VESSEL STUD FLAWS AND INSPECTION THE CONNECTICUT LIGHT AND POWER CO. + THE HARTFORD ELECTRIC LIGHT CO. + WESTERN MASSACHUSETTS ELECTRIC COMPANY
1 PAGE, PAGE 3-1 OF DESIGN AND ANALYSIS REPORT, AMENDMENT NUMBER 3, ANSWERS TO AEC QUESTIONS, (MILLSTONE NUCLEAR POWER STATION), DOCKET NO. 50-245, FEBRUARY 9, 1966

(A) WHAT FLAW SIZE IS ACCEPTED IN THE STUDS OF THE PRESSURE VESSEL. (B) WHAT FREQUENCIES OF STUD INSPECTION OR REPLACEMENT ARE PLANNED. (C) HOW MANY STUDS CAN FAIL WITHOUT THREATENING THE INTEGRITY OF THE CLOSURE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTAINMENT INTEGRITY + *FLAW + *PRESSURE VESSEL + AEC QUESTION + CONTAINMENT PENETRATION, GENERAL + MILLSTONE POINT + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16725 ALSO IN CATEGORY 11
QUESTION 4 - LEAK DETECTION IN PRESSURE VESSEL

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-16725 *CONTINUED*
THE CONNECTICUT LIGHT AND POWER CO. + THE HARTFORD ELECTRIC LIGHT CO. + WESTERN MASSACHUSETTS ELECTRIC COMPANY
2 PAGES, PAGE 4-1 AND 4-2 OF DESIGN AND ANALYSIS REPORT, AMENDMENT NUMBER 3, ANSWERS TO AEC QUESTIONS, (MILLSTONE NUCLEAR POWER STATION), DOCKET NO. 50-245, FEBRUARY 9 1966

DESCRIBE HOW SMALL LEAKS IN THE PRESSURE VESSEL WOULD BE DETECTED AND THE ACTION TO BE TAKEN SHOULD SUCH OCCUR. HOW IS ADEQUATE RESPONSE ENSURED IN THE EVENT OF PREVIOUS EXISTENCE OF SMALL LEAKS IN OTHER PARTS OF THE SYSTEM. (ANSWER) (A) HYDROTESTING, (B) FEEDWATER-MAKEUP-RATE INCREASES, (C) HEAD-GASKET-SEAL LEAK DETECTOR, (D) DRYWELL SUMP PUMP

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*PRESSURE VESSEL + *TEST, LEAK RATE + AEC QUESTION + MILLSTONE POINT + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16726 ALSO IN CATEGORY 11
QUESTION 5 - MISSILE PROTECTION
THE CONNECTICUT LIGHT AND POWER CO. + THE HARTFORD ELECTRIC LIGHT CO. + WESTERN MASSACHUSETTS ELECTRIC COMPANY
2 PAGES, PAGE 5-1 AND 5-2 OF DESIGN AND ANALYSIS REPORT, AMENDMENT NUMBER 3, ANSWERS TO AEC QUESTIONS, (MILLSTONE NUCLEAR POWER STATION), DOCKET NO. 50-245, FEBRUARY 9, 1966

WHICH MISSILES ARE PROTECTED FOR, AND WHICH MISSILES ARE NOT. (ANSWER) POTENTIAL MISSILES ARE (1) THOSE THAT ARE NOT THREATENING, OR (2) THOSE THAT PRESENT A THREAT BUT AGAINST WHICH PROTECTION IS PROVIDED. VESSEL FAILURE IS CONSIDERED INCREDIBLE. LARGE COMPONENTS (E.G., VALVE BONNETS AND ROD DRIVES) ARE POINTED AWAY FROM THE CONTAINMENT, PROVIDED WITH BRACES OR DEFLECTOR.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*MISSILE GENERATION AND PROTECTION + MILLSTONE POINT + REACTOR, BOILING WATER + RESPONSE TO AEC QUESTION + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16727 ALSO IN CATEGORY 6
QUESTION 6 - REACTIVITY EFFECTS DUE TO FUEL RELOCATION
THE CONNECTICUT LIGHT AND POWER CO. + THE HARTFORD ELECTRIC LIGHT CO. + WESTERN MASSACHUSETTS ELECTRIC COMPANY
6 PAGES, PAGE 6-1 THRU 6-6 OF DESIGN AND ANALYSIS REPORT, AMENDMENT NUMBER 3, ANSWERS TO AEC QUESTIONS, (MILLSTONE NUCLEAR POWER STATION), DOCKET NO. 50-245, FEBRUARY 9, 1966

WHAT ARE THE POSITIVE REACTIVITY EFFECTS DUE TO FUEL RELOCATION. CAN THIS PHENOMENON AFFECT REACTIVITY TRANSIENTS LIKE THE ROD-EJECTION ACCIDENT SIGNIFICANTLY. (ANSWER) LOCAL FUEL EFFECTS MIGHT BE REDUCTION OF DENSITY (MINUS 4 CENTS), ROD BOWING (PLUS 13 CENTS), DISPERSION OF FUEL INTO THE MODERATOR (MINUS 80 CENTS). IN A HYPOTHETICAL ROD-EJECTION ACCIDENT, FUEL DISPERSED WOULD RESULT IN \$5 NEGATIVE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACCIDENT, CONTROL ROD EJECTION + *REACTIVITY EFFECT, SLUMP + FUEL ELEMENT BOWING + MILLSTONE POINT + REACTOR, BOILING WATER + RESPONSE TO AEC QUESTION + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16728 ALSO IN CATEGORY 11
QUESTION 7,8 - CRACK PROPAGATION IN PRESSURE VESSEL
THE CONNECTICUT LIGHT AND POWER CO. + THE HARTFORD ELECTRIC CO. + WESTERN MASSACHUSETTS ELECTRIC COMPANY
3 PAGES, PAGE 1-3 OF DESIGN AND ANALYSIS REPORT, AMENDMENT NUMBER 3, ANSWERS TO AEC QUESTIONS, (MILLSTONE NUCLEAR POWER STATION), DOCKET NO. 50-245, FEBRUARY 9, 1966

(7) IF ONE POSTULATES THE RAPID PROPAGATION OF A CRACK CIRCUMFERENTIALLY WITH THE CONTAINED ENERGY OF THE SYSTEM, WHAT WOULD HAPPEN TO THE UPPER SECTION OF THE PRESSURE VESSEL, INCLUDING SHEARING OF THE PIPES, ETC. (8) CAN YOU VISUALIZE ANY PROBLEM FROM THE PROPAGATION OF A CRACK FROM TOP TO BOTTOM OF THE VESSEL BUT NOT THROUGH THE HEAD.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*BRITTLE FRACTURE + *PRESSURE VESSEL + AEC QUESTION + MILLSTONE POINT + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16729 ALSO IN CATEGORIES 9 AND 11
QUESTION 9 - DETECTION OF CRACKS IN PRESSURE VESSEL WALL
THE CONNECTICUT LIGHT AND POWER CO. + THE HARTFORD ELECTRIC LIGHT CO. + WESTERN MASSACHUSETTS ELECTRIC COMPANY
1 PAGE, PAGE 9-1 OF DESIGN AND ANALYSIS REPORT, AMENDMENT NUMBER 3, ANSWERS TO AEC QUESTIONS, (MILLSTONE NUCLEAR POWER STATION), DOCKET NO. 50-245, FEBRUARY 9, 1967

ARE YOU CONSIDERING PROCEDURES FOR DETECTING THE PROPAGATION OF CRACKS WITHIN THE PRESSURE VESSEL WALL. (ANSWER) YES, AT THE OPERATIONAL STAGE, A DECISION WILL BE MADE.

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-16729 *CONTINUED*
AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*BRITTLE FRACTURE + *INSTRUMENTATION, PROCESS + *PRESSURE VESSEL + AEC QUESTION + MILLSTONE POINT + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16745 ALSO IN CATEGORY 6
BARRY RF
PWR CONTROL MANAGEMENT
WESTINGHOUSE ELECTRIC CORPORATION, ATOMIC POWER DIVISION
WCAP-2921 +. 114 PAGES, APRIL 1966

PURPOSES - (1) DEVELOP APPROPRIATE COMPUTATIONAL MODELS, (2) FIND CONTROL-ROD PROGRAM USING QUARTER-LENGTH CONTROL RODS FOR A HYPOTHESIZED (2750 MWTH, 12-FT-LONG FUEL ELEMENTS) INHERENTLY UNSTABLE PWR. DIFFERENCE FROM STRAWBRIDGE ET AL. - EFFORT TO IMPROVE METHODS, REACTOR IS UNSTABLE INHERENTLY, MODES OF OSCILLATION OTHER THAN AXIAL XENON. CONCLUSION - PART-LENGTH RODS DAMPEN AXIAL XENON OSCILLATION WHEN TOP/BOTTOM POWER IS BALANCED BY ROD MOVEMENT EVERY FEW HR, EVEN WHEN A DIURNAL OR RANDOM-LOAD VARIATION IS USED. FULL-LENGTH RODS STABILIZE AZIMUTHAL OSCILLATION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*CONTROL ROD PROGRAM + *MATHEMATICAL TREATMENT + *XENON OSCILLATION + ANALYTICAL MODEL + CONTROL ROD, SHIM SAFETY + POWER DISTRIBUTION + REACTOR STABILITY + REACTOR, PRESSURIZED WATER

18-16747
DUFFY EP
DUNGENESS R
15 PAGES, FIGURES, NUCLEAR ENGINEERING 12(134) PAGES 524-538 (JULY 1967)

BRIEFLY DESCRIBES THE STATION, SAFETY, CORE DESIGN, CONTROL, AND FUEL HANDLING.

*REACTOR DESCRIPTION + DUNGENESS R (UK) + REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED

18-16748 ALSO IN CATEGORIES 9 AND 15
SUPPLEMENTAL INSERT SHEETS FOR ENGINEERING MATERIALS LIST
DIVISION OF TECHNICAL INFORMATION, OAK RIDGE, TENN.
TID-4100 (SUPPL. 39) +. 33 PAGES, JUNE 1967

INCLUDES ETR CONTROL-ROD LATCHING/PRESSURE-DROP MODIFICATIONS, MTR MECHANICALLY ASSEMBLED FUEL ELEMENTS, UCRL PLUTONIUM AIR MONITOR, AND UCRL BF3 NEUTRON SURVEY METER.

AVAILABILITY - DIVISION OF TECHNICAL INFORMATION, OAK RIDGE, TENN, FREE

*ENGINEERING DRAWING LIST + CONTROL ROD, SHIM SAFETY + ETR (ENGINEERING TEST REACTOR) + FUEL ELEMENT + MONITOR, RADIATION, AIR + MONITOR, RADIATION, PERSONNEL + MTR (MATERIAL TESTING REACTOR) + NEUTRON + PLUTONIUM + REACTOR, TEST

18-16750
BROWNS FEPHY NUCLEAR POWER PLANT, AMENDMENT 6, ANSWERS TO AEC QUESTIONS
TENNESSEE VALLEY AUTHORITY, CHATTANOOGA
205 PAGES, 47 FIGURES, 9 TABLES, 18 REFERENCES, DOCKET NO. 50-259/260

SUBMITTED ARE REVISIONS TO DESIGN AND ANALYSIS REPORT, PLUS ANSWERS TO 49 QUESTIONS RAISED BY ACRS ON NOVEMBER 26, 1966, BY DLR ON DECEMBER 2, 1966, AND QUESTION A-2, ASKED BY DLR ON OCTOBER 24, 1966. A. GENERAL (9), B. ACCIDENT ANALYSIS (12), C. CORE-COOLING SYSTEMS (27).

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*BROWNS FEPHY + AEC QUESTION + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-16751 ALSO IN CATEGORY 6
FRENCH RJ + STRAWBRIDGE LE + BARRY RF
EFFECT OF THE MODERATOR COEFFICIENT ON CORE STABILITY
WESTINGHOUSE ELECTRIC CORP., ATOMIC POWER DIVISIONS, PITTSBURGH, PA.
WCAP-2987 +. 38 PAGES, 3 FIGURES, 15 REFERENCES, SEPTEMBER 1966, DOCKET NOS. 50-250/251

AN ANALYTICAL MODEL IS PROPOSED TO INVESTIGATE EFFECTS OF A POSITIVE MODERATOR COEFFICIENT ON SPATIAL STABILITY OF PWR POWER DISTRIBUTION AND FLOW DISTRIBUTION. ALTHOUGH LEDDINEGG-CRITERION FLOW INSTABILITIES ARE NOT FOUND IN NONBOILING CHANNELS, COUPLING OF FLOW VARIATION WITH POSITIVE MODERATOR COEFFICIENT IS CONSIDERED TO DERIVE A STABILITY CRITERION INVOLVING COOLANT-FORCE BALANCE AND FUEL-ROD-COOLANT HEAT-BALANCE EQUATIONS. THE THRESHOLD MODERATOR COEFFICIENT DERIVED IS PLUS 1.5 X 10 TO THE MINUS 4TH PER DEG F.

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-16751 *CONTINUED*
AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ANALYTICAL MODEL + *MODERATOR COEFFICIENT + *REACTOR STABILITY + FLOW STABILITY + POWER DISTRIBUTION +
REACTOR, PRESSURIZED WATER + TURKEY POINT 3 AND 4 + XENON OSCILLATION

18-16752 ALSO IN CATEGORY 5
SNAPP 99

TURKEY POINT - SUPPLEMENT 6 - EFFECT OF MODERATOR COEFFICIENT ON CORE STABILITY
WESTINGHOUSE ELECTRIC CORP., ATOMIC POWER DIVISIONS, PITTSBURGH, PA.
WCAP-2987 +. 2 PAGES, SEPTEMBER 30, 1966, DOCKET NOS. 50-250/251

INCORPORATES WCAP-2987 (EFFECT OF MODERATOR COEFFICIENT ON CORE STABILITY) AS SUPPLEMENT 6.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*MODERATOR COEFFICIENT + *REACTOR STABILITY + REACTOR, PRESSURIZED WATER +
SAFETY ANALYSIS REPORT, PRELIMINARY + TURKEY POINT 3 AND 4

18-16775

JAYE S + RICKARD CL + STEWART HB
HIGH-TEMPERATURE GAS-COOLED ADVANCED CONVERTER REACTORS AND THE COLORADO PROJECT
GENERAL ATOMIC, DIVISION OF GENERAL DYNAMICS, SAN DIEGO, CALIFORNIA
GA-7149 + CONF-660554-1 +. 37 PAGES, MAY 16, 1966

DISCUSSES DESIGN OBJECTIVES AND FUEL-CYCLE CHARACTERISTICS OF LARGE HTGR PLANTS, INCLUDING
SOME DESIGN CONSIDERATIONS OF THE FT. ST. VRAIN 330-MW(E) PROTOTYPE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

FT. ST. VRAIN + REACTOR, GAS COOLED + REACTOR, THERMAL + RESEARCH AND DEVELOPMENT PROGRAM +
TARGET (THERMAL ADVANCED REACTOR GASCOOLED EXPLOITING THE)

18-16776

ATR FUEL PLATE DEVELOPMENT - HYDRAULIC TESTING, AND CLAD FILM
IDAHO NUCLEAR CORP., IDAHO FALLS, IDAHO
IN-1048 +. 75 PAGES, 36 FIGURES, 15 TABLES, 35 REFERENCES, FEBRUARY 1967, FROM NUCLEAR TECHNOLOGY
BRANCHES QUARTERLY REPORT FOR THE PERIOD OF JULY 1-SEPT. 30, 1966

(PAGE 10) - PROOF TEST AT 120% FLOW FOR 6-8 HOURS RESULTED IN 0.01 TO 0.013 IN. OF BOWING BUT
NO FAILURES. TWO TEST ELEMENTS FAILED DUE TO INADEQUATE STRENGTH AT SWAGE JOINT BETWEEN SIDE
PLATE AND FUEL PLATE. (PAGE 16) - 6% COPPER-CONTAINING AL 2219-O HAS HIGHER YIELD STRENGTH
AND THINNER OXIDE FILMS THAN THE PROPOSED 6061-O CLAD FOLLOWING IN-PILE TESTS OF SAMPLE FUEL
PLATES AT 375 F WATER TEMPERATURE AND PH 5, WITH 45 FT/SEC FLOW AND 10 TO THE SIXTH HEAT
FLUX. LOOP-WATER SAMPLES TURNED UP NO COPPER ABOVE BACKGROUND.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*CORROSION + *FAILURE, FUEL ELEMENT + *SURFACE FILM DEPOSIT + ALUMINUM +
ATR (ADVANCED TEST REACTOR - NRTS) + FUEL ELEMENT BOWING + HYDRAULIC EFFECT + REACTOR, TEST +
RESEARCH AND DEVELOPMENT PROGRAM + TEST, PROOF

18-16796

APPLICATION FOR A CONSTRUCTION PERMIT FOR AGN-201 REACTOR AT IDAHO STATE UNIVERSITY
IDAHO STATE UNIVERSITY, DEPARTMENT OF NUCLEAR SCIENCE AND ENGINEERING
46 PAGES, 7 FIGURES, 5 REFERENCES, APRIL 3, 1967, DOCKET NO. 50-284

CONTAINS THE ELEMENTS OF SAFETY-ANALYSIS REPORT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONSTRUCTION PERMIT PROCESS + AGN (TRAINING REACTOR, AEROJET-GEN. NUCLEONICS) + REACTOR, TRAINING

18-16797

MANUAL OF OPERATION FOR THE AGN-201 REACTOR FACILITY
IDAHO STATE UNIVERSITY, POCAHELLO, IDAHO
26 PAGES, MARCH 1967, DOCKET NO. 50-284

DESCRIBES ADMINISTRATIVE ORGANIZATION AND OPERATION OF REACTOR. INCLUDES CHECKOUT SHEETS AND
VARIOUS INSTRUCTIONS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-16797 *CONTINUED*
*PROCEDURES AND MANUALS + AGN (TRAINING REACTOR, AEROJET-GEN. NUCLEONICS) + REACTOR, TRAINING

18-16798 ALSO IN CATEGORY 11
AMENDMENT 5 - OPERATING EXPERIENCE WITH FIELD ASSEMBLED PRESSURE VESSELS
MONTICELLO NUCLEAR GENERATING PLANT, MONTICELLO, MINNESOTA
8 PAGES, 3 TABLES, FEBRUARY 24, 1967, DOCKET NO. 50-263

BRIEF TABULATION OF 200 VESSELS FIELD-ASSEMBLED BY CB AND I, WITH A SLIGHTLY MORE
COMPREHENSIVE REVIEW OF 9 HAVING OPERATING CONDITIONS SIMILAR TO MONTICELLO.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*FABRICATION + *OPERATING EXPERIENCE + *PRESSURE VESSEL + MONTICELLO + REACTOR, BOILING WATER +
SAFETY ANALYSIS REPORT, PRELIMINARY

18-16799
APPLICATION FOR EXEMPTION UNDER SECTION 10 CFR 50.12
WISCONSIN MICHIGAN POWER COMPANY, POINT BEACH NUCLEAR PLANT
118 PAGES, 58 FIGURES, 2 TABLES, OF PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, JANUARY
1967, DOCKET NO. 50-266

WISCONSIN-MICHIGAN DUPLICATED GINNA TO AVOID LONG DEVELOPMENT AND OTHER DELAYS BECAUSE THE
POWER IS NEEDED IN APRIL 1970. IT APPEARS THAT THE CONSTRUCTION PERMIT WILL TAKE LONGER THAN
FOR GINNA, AND FINAL ANALYSIS OF SUBSOIL INDICATES THAT PILES ARE NECESSARY. EXEMPTION
REQUESTED TO BEGIN PILE DRIVING UNDER CONTAINMENT TO MAINTAIN SCHEDULE. DAMES AND MOORE
FOUNDATION INVESTIGATION INCLUDED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONSTRUCTION PERMIT PROCESS + *FOUNDATION ENGINEERING + RESPONSE TIME

18-16901
ADDITIONAL INFORMATION REQUIRED, AMENDMENT NUMBER 12
CONNECTICUT YANKEE ATOMIC POWER COMPANY, HADDAM NECK PLANT, HADDAM, CONNECTICUT
50 PAGES, 6 FIGURES, 4 TABLES, JANUARY 11, 1967, DOCKET NO. 50-213

IN RESPONSE TO A LETTER FROM DLR, DECEMBER 13, 1966, THREE REPORTS (CYAP-101, CYAP-102,
CYAP-103) AND ANSWERS TO 17 QUESTIONS ARE SUBMITTED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

AEC QUESTION + HADDAM NECK + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-17065 ALSO IN CATEGORIES 11 AND 12
HINKLE WD
AN ANALYSIS OF THE HEAT REMOVAL CAPABILITY OF THE CONTAINMENT AIR COOLING UNITS FOLLOWING A LOSS OF
COOLANT INCIDENT
CONNECTICUT YANKEE ATOMIC POWER CO., HADDAM NECK PLANT, HADDAM CONNECTICUT
CYAP-102 +. 25 PAGES, 6 FIGURES, 6 REFERENCES, DECEMBER 30, 1966, DOCKET NO. 50-213

METHOD BASED ON COLBURN AND HUGEN WAS USED, WITH PARTICULAR ATTENTION TO EFFECT OF AIR ON
CONDENSATION RATE AT DESIGN CONDITIONS OF 261 F AND TOTAL PRESSURE OF 40 PSIG. CONCLUSION
WAS THAT DESIGN HEAT-TRANSFER RATES ARE REASONABLE AND CONSERVATIVE (AS THE MINIMUM
CALCULATED ARE 5% ABOVE WHEN PRESSURES ARE ABOVE 20 PSIG).

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACCIDENT, LOSS OF COOLANT + *CONTAINMENT AIR COOLING + *THERMAL ANALYSIS + HADDAM NECK +
MATHEMATICAL TREATMENT + REACTOR, PRESSURIZED WATER

18-17066
PRUCKNER C
STAPK
KERNREAKTOR BAU- UND BETRIEBS-GESELLSCHAFT M.B.H., GERMANY
6 PAGES, 5 FIGURES, 1 TABLE, EURATOM 5(4) PAGE 118-24 (DECEMBER 1966)

REACTOR DESCRIPTIONS FOR AN ARGONAUT WITH FAST-REACTOR FUEL ELEMENTS IN THE CENTRAL FLUX TRAP.
THIS PERMITTED MEASUREMENTS OF FAST-REACTOR EFFECTS WHILE MAINTAINING THE SAFETY OF THE
ARGONAUT, AS EACH REGION IS INDIVIDUALLY SUBCRITICAL.

*COUPLED CORES + *REACTOR DESCRIPTION + ARGONAUT (ARGONNE NUC ASSEMBLY, UNIV TRAINING) + GERMANY +
REACTOR, BREEDER + REACTOR, FAST + REACTOR, RESEARCH

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-17090
COATS RL + OBRIEN PD
SPR II SAFETY ANALYSIS REPORT
SANDIA CORP., ALBUQUERQUE, N. MEXICO
SC-PR-66-2706 +. 77 PAGES, REFERENCES, JANUARY 1967

DESCRIBES THE DESIGN AND FUTURE OPERATION OF THE SANDIA PULSED REACTOR II (SPR II), A FAST-BURST REACTOR TO BE USED IN THE SANDIA RADIATION-EFFECTS RESEARCH PROGRAM TO PROVIDE HIGHER TOTAL DOSES (NEUTRON AND GAMMA) AND DOSE RATES THAN NOW AVAILABLE FROM SPR AND TO PERMIT MEASUREMENT OF MECHANICAL RESPONSE OF FUEL ASSEMBLY AND SUPPORT STRUCTURE TO VERY FAST POWER TRANSIENTS. INTEGRATED FLUX VALUES OF SPR II ARE FIVE TIMES GREATER THAN FOR THE UNALLOYED-FUEL SPR, AND SIGNIFICANTLY HIGHER THAN THOSE AVAILABLE AT HPRR AND WSMR FAST BURST REACTOR. SAFETY OF SPR II IS ANALYZED WITH RESPECT TO CREDIBILITY OF HYPOTHETICAL ACCIDENTS. SANDIA ASSERTS THAT WITH THEIR PAST 5500 REACTOR OPERATIONS AND HIGHLY EFFECTIVE OPERATING REGULATIONS THEY CAN OPERATE SPR II SAFELY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

REACTOR, AEC OWNED + REACTOR, FAST BURST + SAFETY ANALYSIS REPORT, GENERAL

18-17091
HASENKAMP A
FINAL SAFETY ANALYSIS. ANNULAR CORE PULSE REACTOR
SANDIA CORP., ALBUQUERQUE, NEW MEXICO
SC-RR-66-2609 +. 202 PAGES, REFERENCES, NOVEMBER 1966

LOCATED AT TRIGA SANDIA FOR CONDUCTING RADIATION EFFECTS STUDIES IN A 9-IN-DIAM DRY IRRADIATION SPACE LOCATED IN THE CENTRAL CORE REGION, IN WHICH EXPERIMENTS MAY BE SUBJECTED TO FAST NEUTRON FLUX OF 10 TO THE 15TH NEUTRONS/CM SQ. IN A SINGLE PULSE. STUDY INCLUDES DESCRIPTION OF REACTOR AND FACILITY, CONSIDERATIONS OF REACTOR SITE IN RELATION TO HAZARDS TO OPERATIONS PERSONNEL AND PUBLIC, EVALUATION OF SAFETY FACTORS, AND DESCRIPTION OF SUPERVISORY PRACTICES AND OPERATING PROCEDURES. MOST CRITICAL POTENTIAL EVENT IS THAT OF AN EXPERIMENTER RAPIDLY REMOVING A MAXIMUM-WORTH EXPERIMENT SIMULTANEOUSLY WITH INITIATION OF MAXIMUM PULSE BY REACTOR OPERATOR, BUT ADEQUATE PROVISIONS HAVE BEEN MADE TO PREVENT SUCH AN INCIDENT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

REACTOR, AEC OWNED + REACTOR, FLUX TRAP + REACTOR, PULSED + SAFETY ANALYSIS REPORT, GENERAL + TRIGA (TRAINING REACTOR, ISOTOPES, G.A.)

18-17092
COHEN-KP + ONEILL GL
SAFETY AND ECONOMIC CHARACTERISTICS OF A 1000 MWE FAST SODIUM-COOLED REACTOR DESIGN
GENERAL ELECTRIC CO., SUNNYVALE, CALIF., ADVANCED PRODUCTS OPERATION
GEAP-4939 +. 170 PAGES, REFERENCES, DECEMBER 1965

DESIGN FOR A MIXED-OXIDE-FUELED REACTOR BASED ON UPDATED SET OF SAFETY AND DESIGN CRITERIA. CRITERIA DEVELOPED HAVE IMPLICATIONS ON REACTIVITY COEFFICIENTS, CORE AND FUEL DESIGN, AND PRIMARY SYSTEM DESIGN. 1965 CALCULATIONS REPORTED HERE DO NOT TAKE INTO ACCOUNT CHANGES SUCH AS DISCOVERY THAT PU-239 DOPPLER CONTRIBUTION IS ALMOST ZERO, THUS CHANGING DOPPLER COEFFICIENT VALUES SOMEWHAT. PRIMARY EMPHASIS IS ON SAFETY AND ASSURANCE OF TECHNICAL FEASIBILITY, AND OPTIMIZATION IS LIMITED. ACCIDENT ANALYSES PERFORMED IN SUFFICIENT DETAIL TO DETERMINE CHARACTERISTIC BEHAVIOR OF PLANT IN COMMON ACCIDENT SITUATIONS AND TO DEMONSTRATE THAT SAFETY CRITERIA SATISFIED. EFFECTS OF UNCERTAINTIES IN NUCLEAR DATA AND FUEL PERFORMANCE CONSIDERED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*DESIGN STUDY + *SAFETY ANALYSIS + REACTOR, BREEDER + REACTOR, FAST + REACTOR, LIQUID METAL COOLED

18-17095
FEASIBILITY STUDY OF A 1000-MWE SODIUM-COOLED FAST REACTOR
ATOMICS INTERNATIONAL, CANOGA PARK, CALIF.
NAA-SR-11378 (VOL 2) +. 68 PAGES, FIGURES, TABLES, JULY 1966

DESCRIBES PROGRAM IN FAST-REACTOR TECHNOLOGY TO BE UNDERTAKEN BY AI, WHICH WILL BE COMBINED WITH WORK OF OTHER CONTRACTORS AND NATIONAL LABORATORIES TO YIELD COMPLETE DEVELOPMENT PROGRAM IN THIS AREA. DEALS WITH SOLID-FUELED, SODIUM-COOLED REACTOR CONCEPTS AND THE AI PLANT TO INITIATE FAST-REACTOR PROTOTYPE PROJECT BY 1970. CONCEPTUAL DESIGN STUDIES TO BEGIN IN FY 66 (TO EXPLORE NUCLEAR AND SAFETY UNCERTAINTIES, FUEL AND MATERIALS TECHNOLOGY AND MECHANICAL AND PLANT DESIGN ASPECTS OF FAST REACTORS). KEY FACTORS CONSIDERED IN STUDY INCLUDE (1) COUPLED FAST-THERMAL, MIXED CYCLE (PU-TH), AND U-235-PU ZONED CORES, (2) CONTROL OF ALL POSTULATED ACCIDENTS BY DOPPLER IS POSSIBLE OR CONTROL-ROD ACTION TO PREVENT FUEL VAPORIZATION, AND CONSIDERATION OF ACCIDENTS SUCH AS CONTROL ROD WITHDRAWAL, FUEL SUMPING,

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-17095 *CONTINUED*

LOSS OF PUMP, CHANNEL PLUGGING, MAXIMUM SODIUM VOIDING ACCIDENTS, AND OTHERS (3) OTHER MIXED OXIDES (FAST SECTION) WITH MIXED CARBIDES, (4) BE, BEO, AND ZRH₂ AS MODERATOR-REFLECTORS, (5) OPTIMIZATION OF TEMPERATURES IN SODIUM FOR LOW FUEL-CYCLE COSTS AND OPTIMUM STEAM CONDITIONS, (6) ELIMINATION OF STEEL LININGS AND N₂ COOLING SYSTEMS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*RESEARCH AND DEVELOPMENT PROGRAM + REACTOR, FAST + REACTOR, LIQUID METAL COOLED

18-17103

KAZI AH + TOMONTO JR + TEER BR

DESIGN OF A HIGH-PERFORMANCE UO₂ PULSE REACTOR

UNITED NUCLEAR CORP., ELMSFORD, N. Y. RESEARCH AND ENGINEERING CENTER

CONF-670501-3 +. 34 PAGES, FIGURES, FEBRUARY 1, 1967, FROM INTERNATIONAL CONFERENCE ON RESEARCH REACTOR UTILIZATION AND REACTOR MATHEMATICS, MEXICO CITY, MEX.

SUMMARIZES RESULTS OF A WATER-MODERATED PULSE-REACTOR DESIGN STUDY. PROVIDES A PULSE OF 10 TO THE 15TH NEUTRONS/CM SQ. IN AN AIR-FILLED IRRADIATION FACILITY. THE FUEL IS UC₂ PELLETS, 5% ENRICHED U-235, USING ARGON AS FILL GAS IN THE FUEL ROD. THE REACTIVITY INSERT IS \$2.35, PULSE HALF-WIDTH IS 8 MSEC, PEAK POWER IS 25,000 MW, AND TOTAL PROMPT ENERGY RELEASE IS 213 MW-SEC. POTENTIAL PERFORMANCE IS 4.9 X 10 TO THE 15TH NEUTRONS/CM SQ. (PULSE) AND 6.9 X 10 TO THE 15TH FOR 9-IN.- AND 6-IN.-DIAM IRRADIATION FACILITIES RESPECTIVELY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*REACTOR DESCRIPTION + DESIGN STUDY + REACTOR, PULSED

18-17110

SEABORG GT

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS REPORTS TO AEC ON PROPOSED NUCLEAR PLANTS IN SOUTH CAROLINA ATOMIC ENERGY COMMISSION, DIVISION OF REACTOR LICENSING

3 PAGES, PRESS RELEASE K-178, JULY 17, 1967

ACRS APPROVES OCONEE 1, 2, AND 3 CONSTRUCTION PERMIT AND RECOMMENDS (1) REGULATORY-STAFF REVIEW DETAILED DESIGN OF THE EMERGENCY CORE COOLING SYSTEM ECCS AND EFFECTS UPON PRESSURE-VESSEL INTEGRITY ARISING FROM ECCS THERMAL SHOCK, (2) EFFECTS OF BLOWDOWN FORCES ON CORE AND OTHER PRIMARY-SYSTEM COMPONENTS BE ANALYZED MORE FULLY, (3) FURTHER EVIDENCE BE OBTAINED TO SHOW THAT FUEL-ROD FAILURE IN LOSS-OF-COOLANT ACCIDENTS WILL NOT AFFECT ABILITY OF ECCS TO PREVENT CLAD MELTING, (4) SWING-CHECK VALVES IN CORE BARREL BE REVIEWED, (5) FURTHER IMPROVEMENT OF INSTRUMENTATION THAT INITIATES ECCS ACTION.

AVAILABILITY - AEC, DIVISION OF OPERATIONAL SAFETY, WASHINGTON, D. C.

*ACRS (ADVISORY COMMITTEE ON REACTOR SAFEGUARDS) + *CONSTRUCTION PERMIT PROCESS + EMERGENCY COOLING CONSIDERATIONS + OCONEE 1, 2, AND 3 + REACTOR, PRESSURIZED WATER

18-17113

YEVICK JG

FAST REACTOR TECHNOLOGY. PLANT DESIGN

MASSACHUSETTS INSTITUTE OF TECHNOLOGY, CAMBRIDGE, MASSACHUSETTS AND LONDON, ENGLAND
754 PAGES, FIGURES, TABLES, REFERENCES, 1966

ATTEMPTS TO CONSOLIDATE 15 YEARS OF AVAILABLE INFORMATION FOR USE IN PRESENT FAST-REACTOR DESIGN. CHAPTERS, EACH WRITTEN BY AN EXPERT, INCLUDE (1) COOLANT PROPERTIES, HEAT TRANSFER, AND FLUID FLOW OF LIQUID METALS, (2) STRUCTURAL ANALYSIS, (3) HEAT-TRANSPORT SYSTEMS, (4) FUEL HANDLING, (5) SHIELDING, AND OTHERS. MATERIALS AND PHYSICS ASPECTS OF FUEL AND CORE DESIGN ARE NOT DISCUSSED FOR LACK OF SPACE, BUT DESIGN ASPECTS OF EBR-I AND II, USSR BR-5, LAMPRE-I, DOUNREAY, FERMI, AND RAPSODIE ARE.

AVAILABILITY - THE M.I.T. PRESS, CAMBRIDGE, MASS., \$35.00 COPY

*DESIGN STUDY + *SYSTEM DESCRIPTION + REACTOR, FAST + REACTOR, LIQUID METAL COOLED

18-17235

ALSO IN CATEGORIES 5 AND 12

DOMER RG

STRUCTURAL ADEQUACY OF THE EGCR STEAM GENERATORS DURING THE PRIMARY SYSTEM DEPRESSURIZATION ACCIDENT TENNESSEE VALLEY AUTHORITY, OAK RIDGE, TENN.

TID-22748 +. 28 PAGES, OCTOBER 5, 1964

AFTER A RUPTURE OF ONE OF THE MAIN COOLANT LOOPS IN THE EGCR PRIMARY SYSTEM, LARGE PRESSURE DIFFERENCES CAN EXIST ACROSS THE STEAM GENERATORS. FAILURE OF THE STEAM GENERATORS IN BOTH LOOPS WOULD RESULT IN THE LOSS OF THE HEAT SINK NEEDED TO REMOVE THE ENERGY FROM THE REACTOR. THE FAILURE OF EITHER STEAM GENERATOR WOULD RELEASE LARGE QUANTITIES OF STEAM INTO THE CONTAINMENT BUILDING. THIS PAPER DETERMINES THE MAGNITUDE OF THE PRESSURE DIFFERENCES REQUIRED TO CAUSE FAILURE OF THE VARIOUS COMPONENTS IN THE STEAM GENERATORS. SPECIFICALLY,

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-17235 *CONTINUED*

STEAM-GENERATOR-TUBE FIELD-PRESSURE DIFFERENCE MUST EXCEED 92 PSI BEFORE THERE IS SUFFICIENT DAMAGE TO INTERFERE WITH THEIR ABILITY TO REMOVE HEAT FROM THE PRIMARY COOLANT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*ACCIDENT ANALYSIS + *ACCIDENT, LOSS OF PRESSURE + *REACTOR, GAS COOLED + *REACTOR, GRAPHITE MODERATED + *STRUCTURAL INTEGRITY + EGCR (EXPERIMENTAL GAS COOLED REACTOR) + HEAT EXCHANGER

18-17261 ALSO IN CATEGORY 5

EHRENPREIS SN + MCADOO JD

REACTOR SAFETY ANALYSIS

WESTINGHOUSE ELECTRIC CORP., PITTSBURGH, PA. ATOMIC POWER DIVISION

WCAP-3269-60 +. 171 PAGES, FIGURES, TABLES, APRIL, 1966

DEFINITION OF OBJECTIVES AND PRINCIPLES OF A CHEMICAL-SHIM PWR (TYPIFIED BY SAN CNCFRE) AND DEMONSTRATION BY ANALYTICAL SIMULATION OF THE ADEQUACY OF SAFETY FEATURES. STANDARD REACTIVITY AND HEAT TRANSFER ACCIDENTS ARE CONSIDERED. CHAPTERS DISCUSS METAL-WATER REACTIONS AND RADIOACTIVITY SOURCES. OFF-SITE DOSES AND METROLOGY NOT INCLUDED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*SAFETY ANALYSIS + ACCIDENT, LOSS OF FLOW + ACCIDENT, REACTIVITY + REACTOR, PRESSURIZED WATER

18-17297

COHEN S + MOORE R + SHANSTROM R + RUSSELL J + MATHEWS D

CONCEPTUAL DESIGN OF A THERMIONIC CRITICAL EXPERIMENT FOR DOPPLER COEFFICIENT MEASUREMENTS

GENERAL ATOMIC, SAN DIEGO, CALIF.

GA-7472 +. 62 PAGES, 25 FIGURES, 11 TABLES, 27 REFERENCES, NOVEMBER 15, 1966

SINCE REACTIVITY COEFFICIENTS ARE EXCEEDINGLY SMALL, SMALL LOAD PERTURBATIONS COULD LEAD TO EXCESSIVE TEMPERATURE EXCURSIONS. PRINCIPAL REACTIVITY FEEDBACK IS DOPPLER EFFECT, AND ALTERNATIVE FUEL DILUENTS DEPENDS UPON SIGN AND MAGNITUDE OF FISSILE DOPPLER COEFFICIENTS. A SERIES OF CRITICAL EXPERIMENTS IS PLANNED TO SIMULATE THE CHARACTERISTICS OF A THERMIONIC REACTOR, WITH THE FIRST EXPERIMENT TO MEASURE DOPPLER COEFFICIENTS WITH A HOMOGENEOUS MIXTURE OF HYDROGEN AND URANIUM. SPHERICAL SAMPLE IN A SPHERICAL CAVITY IS TO BE USED, AND SAMPLES WILL BE MADE FROM ORDINARY OXIDE OR CARBIDE OR INCORPORATED INTO A MATRIX WITH VERY LOW THERMAL-EXPANSION PROPERTIES, POSSIBLY USING VYCOR. CHAPTERS DISCUSS ASSEMBLY COMPOSITION, SENSITIVITY AND MAGNITUDE OF EXPECTED REACTIVITY SIGNALS, SAMPLE DESIGN, INSTRUMENTATION, AND SPECTRUM MEASUREMENTS.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CRITICALITY EXPERIMENT + *DESIGN STUDY + DOPPLER COEFFICIENT + REACTIVITY EFFECT, EXPANSION + REACTOR, SPACE

18-17326 ALSO IN CATEGORY 7

CONNECTICUT YANKEE CHARCOAL FILTER TESTS

CONNECTICUT YANKEE ATOMIC POWER COMPANY, HADDAM NECK PLANT, HADDAM, CONNECTICUT

CYAP-101 +. 100 PAGES, 21 FIGURES, 23 TABLES, 4 REFERENCES, DECEMBER, 1966, DOCKET NO. 50-213

THE TESTS WERE PERFORMED UNDER A WIDE RANGE OF CONDITIONS THAT INCLUDED (A) UNFILTERED MIXTURES OF ENTRAINED WATER, AIR, AND STEAM WITH CARBON BEDS SATURATED WITH LIQUID WATER, (B) HIGH-VELOCITY MIXTURES (MORE THAN 300 FPM), (C) HIGH-TEMPERATURE MIXTURES (MORE THAN 300 F). THE TESTS GENERALLY SHOWED THAT A 0.5-INCH BED DEPTH WOULD PERFORM SATISFACTORILY UNDER MOST CONDITIONS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ADSORPTION + *CHARCOAL + *FISSION PRODUCT RETENTION + *FISSION PRODUCT, IODINE + *ORGANIC IODIDE + *TEST, FILTER SYSTEM + CHROMATOGRAPHY + HADDAM NECK + REACTOR, PRESSURIZED WATER + SAMPLING + TRACER, RADIOACTIVE

18-17377

NILSON R

HAZARDS SUMMARY REPORT. HANFORD TEST REACTOR (305 PILE)

GENERAL ELECTRIC CO., RICHLAND, WASHINGTON. HANFORD ATOMIC PRODUCTS OPERATION

HW-80600 +. 111 PAGES, FIGURES, APRIL 1, 1964

MCA IS THE CHARGING OF SIX HIGHLY ENRICHED U-AL FUEL ELEMENTS WITHOUT POISON COMPENSATION, TO BE TERMINATED BY MANUAL BALL-SHOT SCRAM AFTER ALL OTHER DEVICES FAIL. REACTOR POWER WOULD PEAK AT 250 WATTS, AND MAXIMUM ELEMENT TEMPERATURE WOULD BE 50 C, WITH MAXIMUM RADIATION LEVEL OF 13.5 R/HR AND AVERAGE LEVEL FOR THE EXCURSION DURATION OF 0.44 R/HR. WORST CONCEIVABLE ACCIDENT (NOT CREDIBLE) OCCURS IF ALL DEVICES DO NOT WORK AND EXCURSION IS TERMINATED BY DOPPLER COEFFICIENTS AT 20-MW POWER LEVEL. ENRICHED U-AL FUEL WOULD MELT, RELEASING 500 CURIES TO ATMOSPHERE AFTER THE ESCAPE TIME OF 30-60 MINUTES, WITH WHOLE-BODY

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-17377 *CONTINUED*
DOSE AT NEAREST BUILDING MANY TIMES LESS THAN 25 REMS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*ACCIDENT ANALYSIS + *SAFETY ANALYSIS REPORT, GENERAL + CRITICAL ASSEMBLY FACILITY + HANFORD SITE + REACTOR, AEC OWNED

18-17378
WILBORN HS
USAF-C-47CL COOPERATIVE PROGRAM. MONTHLY PROGRESS REPORT, MAY 1966
DU PONT DE NEMOURS (E.I.) AND CO., AIKEN, S. C. SAVANNAH RIVER LAB.
DPST-66-83-5 +. 12 PAGES, JUNE 10, 1966

DISCUSSES THREE EXPERIMENTAL PROGRAMS AT SRR - (1) INVESTIGATION AT PROCESS DEVELOPMENT PILE AND SUBCRITICAL EXPERIMENT OF PHYSICS BEHAVIOR OF SIMULATED BURNED UP FUEL IN CANDU. PU/UPATICS FOR THIS FUEL MEASURED AT NFS AND SRL DIFFER BY SEVERAL PERCENT, AND MORE WORK NEEDED. (2) STUDIES ON FACTORS THAT INFLUENCE ORIENTATION OF ZIRCONIUM HYDRIDE PLATELETS AND MECHANICAL PROPERTIES OF THIN-WALLED ZIRCALOY TUBING. AT LEAST TWO FABRICATION STEPS WITH SIMILAR DIPECTIONAL STRAIN PARAMETERS FOLLOWED BY ANNEALS ARE NEEDED TO OBTAIN EQUILIBRIUM HYDRIDE ORIENTATION. (3) IRRADIATION TEST OF AECL IN-CORE FLUX MONITORS TO DETERMINE INTEGRITY OF CONDUCTORS, SHEATH, AND MINERAL INSULATION, ALSO SENSITIVITY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*RESEARCH AND DEVELOPMENT PROGRAM + CANADA + FUEL BURNUP + HYDRIDE + INSTRUMENTATION, IN CORE + REACTOR, HEAVY WATER + SAVANNAH RIVER PLANT

18-17379
PINCOCK GD
TEST PROGRAM AND PROCEDURES FOR A MOCKUP AND UF6 NASA CAVITY REACTOR CRITICAL EXPERIMENT AT THE LOW POWER TEST FACILITY
GENERAL ELECTRIC CO., CINCINNATI, OHIO. NUCLEAR MATERIALS AND PROPULSION OPERATION
GEMP-472 +. 19 PAGES, FIGURES, TABLES, DECEMBER 23, 1966

MOCKUP OF A GASEOUS UF6 EXPERIMENT USING SHEET FUEL FOLLOWED BY AN ACTUAL UF6 EXPERIMENT, IN ORDER TO DETERMINE ABSOLUTE DIFFERENCES BETWEEN MOCKUP REACTOR AND GASEOUS UF6 SYSTEM. THESE DIFFERENCES TO BE EVALUATED BY MEASURING K EXCESS, ROD WORTH, WORTHS IN SUCH MATERIALS AS FUEL, ALUMINUM, ETC., AND POWER AND FLUX DISTRIBUTIONS IN THE CAVITY AND REFLECTOR REGIONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*CRITICAL ASSEMBLY FACILITY + REACTOR, SPACE + RESEARCH AND DEVELOPMENT PROGRAM

18-17382
ANDONEDIS A
PM-3A NUCLEAR POWER PLANT DESIGN ANALYSIS REPORT
BURNS AND ROE, INC., NEW YORK. NUCLEAR ENGINEERING DEPARTMENT
NYO-3280-1(VOL. 1)(BK.1) +. 1021 PAGES, FIGURES, REFERENCES, DECEMBER 1965

CONTAINS SYSTEM AND COMPONENTS DESCRIPTION, DESIGN FEATURES, OPERATING LIMITS, SET POINTS AND OPERATING PARAMETERS, AND DOCUMENTATION TO SUBSTANTIATE ANALYSES. SYSTEMS EXTENSIVELY STUDIED OR REVISED ARE - (1) EFFECT OF REFUELING ON POWER DISTRIBUTIONS AND LIFETIME, (2) TEMPERATURE COEFFICIENTS, ROD-BANK WORTHS, AND AXIAL POWER DISTRIBUTIONS, (3) CORE THERMAL-HYDRAULICS STUDY, (4) PRIMARY AND SECONDARY HEAT-REMOVED SYSTEMS, (5) SECONDARY-SYSTEM HEAT BALANCE, AND OTHERS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*REACTOR DESCRIPTION + PM 3A (PORTABLE MEDIUM NUCLEAR POWER PLANT) + REACTOR, ARMY + REACTOR, PRESSURIZED WATER

18-17383
DUFFY JG + HESS JW + MUELLER RE + WHITE JR
ALTERNATE REACTOR CONCEPT DESIGN STUDY FOR THE FAST FLUX TEST FACILITY. ALTERNATE SKEWED-CORE REACTOR CONCEPT
ATOMIC POWER DEVELOPMENT ASSOCIATES, INC., DETROIT, MICHIGAN
APDA-186 +. 95 PAGES, APRIL 30, 1966

REPORT ON APDA DESIGN STUDY OF ALTERNATIVE SKEWED-CORE REACTOR, WHICH DIFFERS FROM REFERENCE DESIGN BY (1) LATTICE ARRANGEMENT TO ACCOMMODATE VARIETY OF LOOP SIZES IN ANY REGION OF THE CORE, INCLUDING CENTER, (2) LATTICE TUBES THAT DO NOT PASS THROUGH CORE, AND DRIVER FUEL ASSEMBLIES LIKE FBR II, (3) IN-REACTOR DECAY STORAGE POSITIONS FOR DRIVER FUEL SUBASSEMBLIES, (4) REDUCED REFUELING TIME, (5) GREATER ACCESSIBILITY FOR MAINTENANCE AND REPAIR. RECOMMENDS

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-17382 *CONTINUED*

THAT ONE MAN-YEAR OF DESIGN STUDY BE USED TO ASSESS RELIABILITY OF DRIVER-FUEL HANDLING MACHINE, USE OF CYLINDRICAL FUEL SUBASSEMBLIES, AND REDUCTION OF LOOP-TUBE LENGTHS AND SKEW ANGLES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*CORE COMPONENTS, MISCELLANEOUS + *DESIGN STUDY + FFTF (TR) + REACTOR, TEST

18-17385 ALSO IN CATEGORY 6

LOWENFELD MP + ROSS MF
LA CROSSE BOILING WATER REACTOR FINAL PHYSICS DESIGN REPORT
ALLIS-CHALMERS MFG. CO., BETHESDA, MD. ATOMIC ENERGY DIVISION
ACNP-64545 +. 32 PAGES, FIGURES, REFERENCES, MAY 1964

PRESENTS A RE-ANALYSIS OF LACBWR CORE-PHYSICS PARAMETERS SINCE ACNP-63549. INITIAL ENRICHMENT AND SEVERAL PARAMETERS HAVE BEEN CHANGED. STARTUP CORE DESIGN HAS BEEN CHOSEN ACCORDING TO A CONTROL-ROD-MANAGEMENT PROGRAM AND STUDY OF FUEL LIFETIME AND ISOTOPIC CHANGE IN FUEL WITH EXPOSURE HAS BEEN COMPLETED. APPENDIX PRESENTS LACBWR CORE CHARACTERISTICS USED IN THE ANALYSIS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*DESIGN STUDY + *REACTOR PHYSICS + LACROSSE + REACTOR, BOILING WATER

18-17390

PLEINEVAUX C + VAN ROCKSTAELE G
MAIN TECHNICAL CHARACTERISTICS OF THE GRAPHITE-GAS AND LIGHT BOILING- OR PRESSURIZED-WATER TYPE PLANTS
EUROPEAN ATOMIC ENERGY COMMUNITY
EUR-2449.F +. 33 PAGES, JULY, 1965, (IN FRENCH)

THE REPORT IS IN FRENCH. TITLE IS SUGGESTIVE OF CONTENTS.

AVAILABILITY - MICROCARD EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM, WISCONSIN 54669

*REACTOR DESCRIPTION + FRANCE + REACTOR, BOILING WATER + REACTOR, GAS COOLED + REACTOR, PRESSURIZED WATER

18-17401

ALEKSEENKO YN
RESEARCH ON THE USE OF ORGANIC COOLANT-MODERATORS IN NUCLEAR POWER REACTORS
USSR. GOSUDARSTVENNYI KOMITET PO I-SPOL ZOVANIYU ATOMNOI ENERGII
AECL-2370 +. 300 PAGES, TRANSLATED BY ERNEST BOCK (ATOMIC ENERGY OF CANADA LTD., CHALK RIVER (ONTARIO). CHALK RIVER NUCLEAR LABS.), OF ISSLEDOVANIYA PO PRIMENENIYU ORGANICHESKIKH TEPLONOSITELEI-ZAMEDLITELEI V ENERGETICHESKIKH REAKTORAKH, ATOMIZDAT, MOSCOW, 1964

FIFTEEN PAPERS ON THE RADIATION-CHEMICAL, THERMAL, AND NEUTRON-PHYSICAL PROPERTIES OF ORGANIC COOLANTS, RESULTING FROM USSR INVESTIGATION OF HIGH-BOILING-POINT LOW-MELTING-POINT ORGANIC LIQUIDS WITH RELATIVELY HIGH RADIATION STABILITY. INCLUDED ARE ARTICLES ON PURIFICATION-REGENERATION OF COOLANTS, REMOVAL OF UNSATURATED HYDROCARBONS FORMED DURING RADIOLYSIS, AND USE OF GAS-OIL FRACTION OF NATURAL OIL AS A COOLANT, WHICH PERMITTED CONSTRUCTION OF PROTOTYPE REACTOR ARBUS.

AVAILABILITY - ATOMIC ENERGY OF CANADA, LTD., CHALK RIVER, ONTARIO, CANADA, \$6.00 COPY

*HEAT TRANSFER ANALYSIS + *ORGANIC COOLANT + *RADIATION DAMAGE + REACTOR, ORGANIC COOLED + UNION OF SOVIET SOCIALIST REPUBLICS

18-17402

GUNDREMMINGEN (KRB) NUCLEAR POWER PLANT ANNUAL REPORT, 1964
KERNKRAFTWERK RWE-BAYERNWERK G.M.B.H., GUNDREMMINGEN, WEST GERMANY
EUR-2426.D +. 59 PAGES, MAY 1965

SUMMARIZES THE DEVELOPMENT, DESIGN, AND CONSTRUCTION WORK DONE AT THE GUNDREMMINGEN NUCLEAR POWER PLANT DURING 1964. A TIME SCHEDULE FOR THE COMPLETION OF THE WORK IS INCLUDED. CHARACTERISTICS OF THE NUCLEAR POWER PLANT ARE TABULATED. ARTICLE IS IN GERMAN.

AVAILABILITY - MICROCARD EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM, WISCONSIN, 54669

GERMANY + OPERATIONS REPORT, GENERAL + REACTOR, BOILING WATER

18-17404

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-17404 *CONTINUED*
REACTOR OPERATIONS SAFETY ANALYSIS FINAL REPORT TO RURAL COOPERATIVE POWER ASSOCIATION
COMBUSTION ENGINEERING, INC., DUNEDIN, FLORIDA. NUCLEAR DIVISION
CEND-515 +. 129 PAGES, FIGURES, TABLES, REFERENCES, NOVEMBER 1964

RECORDS STATUS OF WORK BY CEND, UNDER SUBCONTRACT TO DO ELK RIVER OPERATIONS-SAFETY ANALYSIS AT THE TIME SUBCONTRACT WAS TERMINATED PRIOR TO FINAL SAFETY ANALYSIS. THREE DIRECTIVES ARE GIVEN - (1) COMPLETION OF INITIAL REVIEW OF ITEMS SHOWN TO BE SIGNIFICANT THROUGH OPERATING EXPERIENCE TO DATE, STATING FOR EACH THE RELATION TO PLANT SAFETY AND MEANS OF GUARANTEEING SAFETY THROUGH TECHNICAL SPECIFICATIONS, OPERATING PROCEDURES, AND ROSA MONITORING PROGRAMS, (2) ESTABLISHMENT OF INITIAL CONDITIONS FOR IMPORTANT VARIABLES TO BE ANALYZED AS FUNCTIONS OF OPERATING TIME, (3) DEVELOP METHOD FOR RCPA-GNEC ACTIVITIES UNDER ROSA PROGRAM, IN PARTICULAR SAFETY-MONITORING PROGRAM AND PROCEDURES FOR LIASON WITH RCPA. APPENDIX CONTAINS DRAFT OF REVISED TECHNICAL SPECIFICATIONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*OPERATIONS REPORT, ANALYSIS + *SAFETY REVIEW (OPERATIONS, EXPERIMENTS) + ELK RIVER +
REACTOR, BOILING WATER

CATEGORY 19
BIBLIOGRAPHIES

19-1619P
ENGINEERING MATERIALS LIST
USAEC, DIVISION OF TECHNICAL INFORMATION
TID-4100 (SUPPL. 38) +. 65 PAGES, MAY 1967

SUPPLEMENTAL SHEETS FOR ADDITION TO AN EXTENSIVE LIST OF ENGINEERING DRAWINGS IN THE TID-4100
SERIES OF REPORTS. DRAWINGS LISTED ON THIS SUPPLEMENT RANGE FROM ONE FOR A SPACE POWER
REACTOR TO AN INSTRUMENT FOR DETERMINING THE AMOUNT OF PLUTONIUM IN A SUPERFICIAL WOUND.

USAEC, DIVISION OF TECHNICAL INFORMATION, OAK RIDGE, TENN.

*ENGINEERING DRAWING LIST

19-16777
FAST REACTORS - IAEA BIBLIOGRAPHICAL SERIES NO. 22
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2383 REFERENCES (WITH ABSTRACTS IN ENGLISH) FROM THE LITERATURE BETWEEN MAY 1966 AND THE 2ND
GENEVA CONFERENCE IN 1958. KWIC, AUTHOR, AND SUBJECT INDICES. MAJOR SUBDIVISION ARE -
GENERAL (20 PAGES), PHYSICS (113), TECHNOLOGY AND COMPONENTS (152), OPERATIONS AND SAFETY
(32), CONCEPT DESCRIPTIONS (30).

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*BIBLIOGRAPHY + *IAEA (INTERNATIONAL ATOMIC ENERGY AGENCY) + *REACTOR, FAST + CRITICAL ASSEMBLY FACILITY +
REACTOR DESCRIPTION + REACTOR PHYSICS + RESEARCH AND DEVELOPMENT PROGRAM + SAFETY STUDY

19-1739P
BEYENS-HENRY MT
CHARACTERISTICS OF FAST NEUTRON POWER REACTORS
EUROPEAN ATOMIC ENERGY COMMUNITY
EUR-2766.E +. 168 PAGES, APRIL 1966

LISTS LOCATION, OWNER, PHYSICS CHARACTERISTICS AND GEOMETRY OF COMPONENTS, SHORT BIBLIOGRAPHY,
AND DIAGRAMS OF ESSENTIAL PARTS FOR EACH OF 19 REACTORS OR REACTOR PROJECTS. DATA IS MEANT
TO BE EXHAUSTIVE, SO PROJECTS FOR WHICH LITTLE INFORMATION IS AVAILABLE OR WHICH WERE
ABANDONED ARE NOT INCLUDED.

AVAILABILITY - MICROCARD EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM,
WISCONSIN 54669

*BIBLIOGRAPHY + *REACTOR DESCRIPTION + *REACTOR, FAST + EURATOM + REACTOR, POWER

AARP (ARGONNE ADVANCED RESEARCH REACTOR)
5-16733 6-16732 6-16733 9-16732
17-16534 18-16534

ABLATION	5-15720
ACCELERATION	3-00887

ACCFLEATOR
14-15797 15-15710 15-15797

ACCIDENT ANALYSIS			
1-16046	1-16937	2-16937	3-15975
4-16200	5-16281	5-16285	5-16446
5-16733	5-16741	5-16771	5-16773
5-16774	5-16937	5-17068	5-17069
5-17235	5-17242	5-17255	5-17256
6-16291	6-16285	6-16733	6-16741
6-16771	6-16773	6-16774	6-17068
6-17069	6-17255	6-17256	7-17068
8-16281	8-16285	11-17243	12-16130
12-17235	16-16446	18-16130	18-16446
18-16581	18-17235	18-17377	

ACCIDENT MODEL

5-16083	5-16442	5-16733	5-17358
6-16733	8-17358	18-16442	

ACCIDENT, COLD COOLANT

5-16733	5-17069	6-16733	6-17069
17-15609	17-16025	18-15609	

ACCIDENT, CONSEQUENCES

1-16426 3-16426 15-16426

ACCIDENT, CONTROL		POD EJECTION	
5-16340	5-16359	5-16453	5-16622
6-16453	6-16624	6-16727	9-16359
9-16435	9-16620	9-17207	11-16358
12-16130	17-17207	18-16130	18-16340
18-16358	18-16359	18-16435	18-16453
18-16620	18-16622	18-16624	18-16727

ACCIDENT, CONTROL ROD WITHDRAWAL			
5-16359	5-16733	5-17069	6-16733
6-17069	6-17203	9-16359	9-16360
9-16625	9-17206	17-17203	17-17206
18-16359	18-16360	18-16625	

ACCIDENT, FUEL SLUMP

5-16340	5-16354	5-16733	6-16733
18-16340	18-16354		

ACCIDENT, GENERAL			
1-16000	1-16012	1-16102	1-16135
9-16092	12-16135	17-16012	17-16036
17-16040	17-16135		

ACCIDENT, HYPOTHETICAL			
1-16135	1-16183	1-16364	5-15952
5-16733	6-16733	7-13189	7-15846
7-15952	7-16183	11-15952	11-16183
12-15676	12-16135	15-16364	17-16135
18-15676			

ACCIDENT, LOSS OF COULANT			
1-16433	5-15590	5-15613	5-15615
5-15616	5-15845	5-16083	5-16334
5-16391	5-16401	5-16437	5-16438
5-16441	5-16442	5-16453	5-16579
5-16674	5-16679	5-17069	5-17256
5-17358	5-17421	6-16453	6-16591
6-17069	6-17256	6-17421	7-15953
7-16182	8-17358	9-16623	11-15607
11-15845	11-16303	11-16304	11-16401
11-16439	11-16616	11-17065	12-15845
12-16437	12-16679	12-17065	18-15590
18-15607	18-15613	18-15615	18-15616
18-16334	18-16391	18-16401	18-16433
18-16437	18-16438	18-16439	18-16441
18-16442	18-16453	18-16579	18-16616
18-16623	18-16674	18-16679	18-16681
18-17065			

ACCIDENT, LOSS OF FLOW			
5-16164	5-17255	5-17258	5-17261
6-16164	6-17255	6-17258	9-15584
9-16164	17-16070	17-16108	17-16534
18-15584	18-16534	18-17261	

ACCIDENT, LOSS OF POWER			
2-15588	10-15588	12-16351	17-16070
18-15588	18-16351		

ACCIDENT, LOSS OF PRESSURE

5-17233	5-17235	5-17243	9-16355
11-16119	11-16355	11-16399	11-17243
12-17235	17-17233	18-16355	18-17235

ACCIDENT, MAXIMUM CREDIBLE (MCA)

1-16183	1-16937	2-16937	5-16083
5-16733	5-16937	5-17233	5-17243
6-16535	6-16733	7-15953	7-16182
7-16183	11-16183	11-17243	12-15591
17-17233	18-15591		

ACCIDENT, PROBABILITY OF

1-16000	1-16135	1-16937	2-16937
5-16937	11-16440	12-16135	17-16135

18-16440
ACCIDENT, REACTIVITY
5-16733 5-17069 5-17255 5-17256
5-17261 6-16733 6-16735 6-17069
6-17255 6-17256 18-17261

ACCIDENT, REFUELING
5-16453 6-16453 6-16624 18-16453
18-16624

ACCIDENT, STEAM LINE RUPTURE			
5-15618	5-16389	5-16446	5-16453
6-16357	6-16453	11-16331	12-16389
16-16446	18-15618	18-16331	18-16357
18-16389	18-16446	18-16453	

ACCUMULATOR			
2-16528	11-16580	12-16528	12-16580
18-16528	18-16580		

ACRS	(ADVISORY COMMITTEE ON REACTOR SAFEGUARDS)
11-16433	5-16606
11-15595	6-16330
11-15595	11-15597
11-16486	11-16487
11-16486	11-16606
12-16484	18-15594
18-15597	18-15595
18-16485	18-16330
18-16485	18-16433
18-17110	18-16487
	18-16606

ACTIVATION
15-15784
ACTIVATION PRODUCT
14-15959 15-15959 15-16905

ACTIVITY BUILDUP
5-15612 18-15612

ADMINISTRATIVE CONTROLS AND PRACTICES			
1-15997	1-16001	1-16002	1-16005
1-16006	1-16011	3-16194	10-17100
11-16311	12-16311	12-16617	13-16006
13-16007	13-16008	17-16311	17-16766
17-17100	17-17173	17-17346	18-15548

18-16617			
ADSORPTION			
5-15952	7-13189	7-15846	7-15952
7-16461	7-16562	7-17326	8-16461
11-15952	12-16461	14-16014	18-17326

AEC CONSTRUCTION PERMIT CRITERIA				
1-16333	1-16609	5-15674	5-16346	
6-15674	9-16345	11-16311	11-16343	
11-16344	11-16350	12-16311	12-16350	
12-16351	17-16311	18-15674	18-16333	
18-16343	18-16344	18-16346	18-16349	
18-16350	18-16351	18-16609		

AEC QUESTION	1-16333	1-16609	2-15588
1-16329	1-16333	1-16609	2-15588
2-15589	2-15636	2-16413	5-15590
5-15610	5-15612	5-15613	5-15615
5-15616	5-15618	5-15669	5-16334
5-16340	5-16346	5-16354	5-16356
5-16359	5-16388	5-16389	5-16390
5-16391	5-16392	5-16393	5-16394
5-16606	5-16622	5-16674	5-16679
6-15582	6-16330	6-16356	6-16357
6-16612	7-16345	8-16353	8-16621
9-15564	9-15578	9-15579	9-15580
9-15581	9-15582	9-15583	9-15584
9-15608	9-15625	9-15673	9-16347
9-16349	9-16355	9-16359	9-16360
9-16362	9-16396	9-16619	9-16620
9-16623	9-16666	9-16729	10-15586
10-15587	10-15588	10-16361	11-15546
11-15547	11-15551	11-15556	11-15557
11-15558	11-15559	11-15560	11-15561
11-15562	11-15563	11-15564	11-15565

11-15566	11-15567	11-15568	11-15569	18-16666	18-16667	18-16668	18-16669
11-15570	11-15571	11-15572	11-15573	18-16670	18-16671	18-16672	18-16673
11-15574	11-15575	11-15576	11-15577	18-16674	18-16675	18-16676	18-16677
11-15583	11-15594	11-15595	11-15596	18-16678	18-16679	18-16680	18-16681
11-15597	11-15598	11-15599	11-15600	18-16721	18-16722	18-16723	18-16724
11-15601	11-15602	11-15603	11-15604	18-16725	18-16728	18-16729	18-16750
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11-15629	11-15630	11-15631	11-15632	7-16558	7-16562	11-15952	14-15927
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11-15649	11-15650	11-15651	11-15652	AEROSOL PROPERTIES			
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11-15657	11-15658	11-15659	11-15660	AEROSOL, RADIOACTIVE			
11-15661	11-15662	11-15663	11-15664	15-15986			
11-15665	11-15666	11-15667	11-15668	AEROSPACE SAFETY			
11-15669	11-15670	11-15671	11-15672	4-15749	4-16154	4-16199	4-16200
11-15673	11-16331	11-16332	11-16335	4-16301	4-16425	4-16554	4-17262
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12-15552	12-15553	12-15554	12-15555	AGRICULTURAL CONSIDERATION			
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12-16617	12-16619	12-16663	12-16664	14-15989	14-16918	14-16920	15-15707
12-16665	12-16666	12-16667	12-16668	15-15766	15-15767	15-15772	15-15773
12-16669	12-16670	12-16671	12-16672	15-15810	15-15811	15-15812	15-15819
12-16673	12-16675	12-16676	12-16677	15-15959	15-15989	15-16918	15-16920
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18-15580	18-15581	18-15582	18-15583	18-16630	18-16680		
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18-16330	18-16331	18-16332	18-16333	16-16680	17-16062	17-16457	18-15621
18-16334	18-16335	18-16336	18-16337	18-15631	18-15643	18-15674	18-16621
18-16338	18-16339	18-16340	18-16341	18-16624	18-16630	18-16679	18-16680
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18-16662	18-16663	18-16664	18-16665	8-16165	17-16763		

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14-15089	14-15959	14-16920	15-15089	11-16303	11-16304	11-16305	11-16332
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BERYLLIUM				BROMIDE			
7-15701	17-17120			7-15938			
BETA EMITTER				BROWNS FERRY			
9-16460	14-16918	15-15713	15-16015	5-16388	5-16389	5-16390	5-16391
15-16369	15-16460	15-16905	15-16918	5-16392	5-16393	5-16394	5-16401
17-16369	17-17123	18-16369		9-16396	11-16386	11-16395	11-16397
BIRLIOGRAPHY				11-16401	12-16385	12-16389	12-16396
1-04745	4-17202	5-15952	5-16634	12-16397	17-16387	17-16392	17-16529
5-17202	6-16634	7-15952	11-15952	18-16384	18-16385	18-16386	18-16387
11-16303	19-16777	19-17398		18-16388	18-16389	18-16390	18-16391
BIG ROCK POINT				18-16392	18-16393	18-16394	18-16395
9-16522	17-16144	17-16521	17-16522	18-16396	18-16397	18-16401	18-16597
17-16524				18-16601	18-16750		
BIOLOGICAL CONCENTRATION, AGRICULTURAL PRODUCE				BUCKLING			
14-15959	15-15959			17-16322			
BIOLOGICAL CONCENTRATION, ALGAE				BUILDING			
14-15781	14-15808	15-15781		11-15546	11-15547	15-17274	15-17275
BIOLOGICAL CONCENTRATION, ANIMAL				18-15546	18-15547		
14-15799	14-15959	14-15962	14-15990	BURLINGTON 1			
14-16016	14-16017	15-15778	15-15799	18-16655			
15-15806	15-15959	15-15962	15-15990	BURNOUT HEAT FLUX			
15-16016	15-16017	15-16028	15-16908	5-15231	5-15721	5-15724	5-15738
15-16938				5-16087	5-16179	5-16380	5-16468
BIOLOGICAL CONCENTRATION, ANIMAL FEED				5-16633	5-16635	5-17214	5-17220
15-15714				5-17226	5-17241	6-16179	6-16468
BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS				6-16633	6-16635	12-16635	14-16380
14-15770	14-15959	14-16918		17-16468			
14-16919	15-15806	15-15959	15-15990	CADMIUM			
15-16918	15-16919			3-16403			
BIOLOGICAL CONCENTRATION, FOOD				CALCIUM			
14-15962	14-15990	14-16918	15-15709	14-15781	14-15984	15-15714	15-15762
15-15764	15-15812	15-15962	15-15990	15-15781	15-15806	15-15984	15-16917
15-16910	15-16918			CANADA			
BIOLOGICAL CONCENTRATION, GENERAL				1-16125	5-16600	5-17200	5-17386
14-16918	14-16920	15-16918	15-16920	9-16419	14-15967	15-15707	15-15747
15-17268				15-15810	15-15811	15-15812	15-15967
BIOLOGICAL CONCENTRATION, MAN				15-16910	17-16600	17-17109	18-17378
14-15807	14-16017	15-15708	15-15760	CANDU (CANADIAN NATURAL URANIUM REACTOR)			
15-15761	15-15762	15-15763	15-15764	17-17366			
15-15778	15-15806	15-15807	15-15812	CARBON			
15-15815	15-15824	15-16017	15-16910	5-15952	7-13189	7-15952	7-16569
15-16916	15-16957			11-15952	14-15808	15-16906	15-17114
BIOLOGICAL CONCENTRATION, MILK				17-16131			
14-15959	14-15990	14-16918	15-15707	CARBON MONOXIDE			
15-15708	15-15714	15-15764	15-15810	7-16564			
15-15811	15-15812	15-15959	15-15990	CASK OPERATING EXPERIENCE			
15-16910	15-16918			17-16292			
BIOLOGICAL CONCENTRATION, VEGETATION				CERAMICS			
14-15774	14-15776	14-15781	14-15962	6-17078			
14-15984	14-15990	14-16017	14-16918	CERIUM			
15-15709	15-15712	15-15714	15-15715	7-16317	12-16317	13-13394	14-15780
15-15773	15-15776	15-15781	15-15806	14-15819	14-16017	14-16981	15-15714
15-15962	15-15984	15-15990	15-16017	15-15780	15-15819	15-15986	15-16017
15-16918				18-13394			
BIOLOGICAL				CESIUM			
4-16301	14-15807	14-16920	15-15779	7-16317	7-16563	12-16317	13-13394
15-15784	15-15807	15-15820	15-15986	14-15766	14-15780	14-15798	14-15799
15-16019	15-16028	15-16301	15-16800	14-15819	14-15822	14-15959	14-15962
15-16903	15-16906	15-16908	15-16910	14-15968	14-15984	14-15990	14-16017
15-16912	15-16913	15-16914	15-16917	14-16919	14-16981	14-17273	15-15707
15-16920	15-16936	15-16938	15-17278	15-15708	15-15712	15-15714	15-15764
BLADDOWN				15-15766	15-15778	15-15780	15-15799

15-15806	15-15810	15-15811	15-15812	6-16591	6-16593	6-16730	6-16740
15-15819	15-15959	15-15962	15-15984	6-16741	6-16742	6-16774	6-16788
15-15990	15-16017	15-16910	15-16919	6-17078	6-17256	9-16060	9-16319
18-13394				9-16416	9-16417	9-16418	9-16419
CHALK PIVER				9-16420	9-16589	9-16730	11-17224
5-17200	9-16419	14-16055	17-17109	14-14734	17-14734		
CHARCOAL				CONCENTRATION, AREA			
7-13189	7-15846	7-16461	7-17326	14-16918	15-16918		
8-16461	12-16461	14-16014	18-17326	CONCRETE			
CHARCOAL ADSORBER				7-16562	11-15568	11-15630	11-15649
1-16183	5-15952	7-15952	7-16183	11-15654	11-15663	11-15855	18-15568
7-16555	11-15952	11-16183		18-15630	18-15649	18-15654	18-15663
CHEMICAL ANALYSIS				18-16432			
17-16131				CONCRETE, PRESTRESSED			
CHEMICAL KINETICS				11-15633	11-15648	11-15650	11-15651
1-16586	7-16586	7-16588	11-16586	11-15655	11-15656	11-15658	11-15660
14-15968				11-15661	11-15662	11-15671	11-16115
CHEMICAL REACTION				11-16117	11-16118	11-16123	17-16022
1-16183	1-17412	5-15952	5-17217	18-15633	18-15648	18-15650	18-15651
5-17414	7-13189	7-15952	7-16183	18-15655	18-15656	18-15658	18-15660
7-16563	8-17412	8-17414	11-15952	18-15661	18-15662	18-15671	
11-16183	13-16325	17-15868	17-16034	CONDENSATION			
17-16043	17-17418	18-16325		5-15726	5-15735	5-17238	7-16562
CHEMICAL SHIM				11-15757	11-16116		
6-16730	9-16730			CONGRESSIONAL ACTIVITY			
CHLORIDE				1-16364	1-16365	1-16371	1-16372
7-15938				1-16654	15-16364	15-16365	15-16371
CHLORINE				15-16372	17-16365	18-16372	
11-15660	11-15661	14-15984	15-15984	CONSTRUCTION PERMIT PROCESS			
15-16404	17-16404	18-15660	18-15661	1-16793	1-16794	2-16528	11-16484
18-16404				11-16486	11-16487	12-16374	12-16484
CHROMATOGRAPHY				12-16528	17-16374	18-16374	18-16432
7-15700	7-17326	18-17326		18-16484	18-16486	18-16487	18-16526
CHROMIUM				18-16528	18-16655	18-16796	18-16799
14-15959	15-15959			18-17110			
CIRCULATION, NATURAL (LOOPS AND REACTORS)				CONTAINMENT AIR COOLING			
17-16744				11-15574	11-15575	11-15576	11-15577
CIVIL DEFENSE				11-16746	11-17065	12-15457	12-15554
14-15787	14-15804	14-15825	14-15974	12-15555	12-16746	12-17065	18-15457
15-15787	15-15800	15-15804	15-15820	18-15554	18-15555	18-15574	18-15575
15-15825	15-15974	15-16459	15-16800	18-15576	18-15577	18-17065	
15-17274	15-17275	15-17281		CONTAINMENT AIR LOCK			
CLAD				3-17407	11-15622	11-17407	13-17407
1-17412	5-15952	5-16401	5-16570	18-15622			
5-16632	5-17358	6-16570	6-16632	CONTAINMENT ANALYSIS			
7-15952	7-16569	7-16632	8-16570	4-16154	11-15861	11-16111	11-17198
8-17358	8-17412	9-16045	9-16047	CONTAINMENT ATMOSPHERE, INERT			
9-16049	11-15952	11-16401	18-16401	11-16449	11-16531	12-16445	12-16450
COALESCENCE				17-16531	18-16445	18-16449	18-16450
7-16182				CONTAINMENT CONSTRUCTION			
COATED PARTICLE				2-16413	11-15654	11-15655	11-15656
5-15952	7-15952	7-16569	9-16047	11-15657	11-15658	11-15663	11-15672
9-16050	9-16096	11-15952	17-16022	11-16117	11-16413	18-15654	18-15655
COATING, SURFACE				18-15656	18-15657	18-15658	18-15663
9-16047				18-15672	18-16413	18-16432	
CORAL				CONTAINMENT DESIGN			
3-15976	3-15977	3-16995	4-16995	2-16413	4-16154	5-16401	5-16790
14-15822	15-16020	17-17119		6-16789	6-16791	7-15537	8-16353
CONES AND STANDARDS				8-16621	8-16789	9-16355	11-15537
1-12862	1-16005	1-16102	1-16183	11-15556	11-15634	11-15638	11-15639
1-16794	1-17250	1-17251	3-12862	11-15640	11-15641	11-15642	11-15643
3-16994	4-16301	5-16469	7-16183	11-15644	11-15646	11-15647	11-15653
9-16682	11-15611	11-15623	11-16114	11-16110	11-16352	11-16355	11-16386
11-16167	11-16183	11-16469	12-16682	11-16401	11-16413	11-16436	11-16449
14-16920	15-15815	15-16301	15-16911	11-16487	11-16614	11-16615	11-16616
15-16920	15-17279	18-15611	18-15623	11-16789	17-16110	17-16169	18-15556
18-16682				18-15634	18-15636	18-15639	18-15640
COMPARISON, THEORY AND EXPERIENCE				18-15641	18-15642	18-15643	18-15644
4-16166	5-16166	7-15953	7-15955	18-15646	18-15647	18-15653	18-16352
7-16184	7-16187	7-16555	11-15751	18-16353	18-16355	18-16386	18-16401
11-15754	11-16117	11-16168	11-16304	18-16413	18-16436	18-16449	18-16487
11-16376	11-16436	16-16184	17-16157	18-16614	18-16615	18-16616	18-16621
17-16187	17-16322	18-16436		CONTAINMENT EQUIPMENT HATCH			
COMPUTER PROGRAM				11-15567	11-15646	18-15567	18-15646
5-14734	5-16539	5-16540	5-16541	CONTAINMENT FILTERING SYSTEM			
5-16542	5-16543	5-16544	5-16545	7-15537	7-16345	11-15537	11-16345
5-16546	5-16547	5-16548	5-16549	12-16450	18-16345	18-16450	
5-16550	5-16604	5-17221	5-17224	CONTAINMENT INSPECTION AND MAINTENANCE			
7-16182	9-16424	11-15861	11-16303	11-16114	18-16035		
11-17196	11-17198	11-17224	14-14734	CONTAINMENT INSTRUMENTATION			
14-15981	14-16018	14-17282	15-15794	9-15583	9-15625	9-15673	11-15583
15-15824	15-16318	15-16936	15-17282	11-15625	11-15665	11-15666	11-15673
17-14734				18-15583	18-15625	18-15665	18-15666
COMPUTER PROGRAM, METEOROLOGICAL				18-15673			
16-15849				CONTAINMENT INTEGRITY			
COMPUTER, ANALOG				5-16469	9-15834	11-15568	11-16120
5-16086	6-16742	6-17078		11-16161	11-16167	11-16469	11-16724
COMPUTER, DIGITAL				17-15834	18-15568	18-16724	
4-16589	5-11169	5-14734	5-16741	CONTAINMENT LEAKAGE CONTROL			
5-16774	5-16788	5-17224	5-17256	2-16528	11-15754	11-16161	12-16374
6-16536	6-16538	6-16589	6-16590	12-16528	17-16374	18-16374	18-16528

CONTAINMENT LINER				2-17022	8-15753	11-15751	11-15753
11-15620	11-15621	11-15622	11-15623	11-16120	11-17022		
11-15626	11-15627	11-15628	11-15629	CONTAINMENT, UNDERGROUND			
11-15652	11-15659	11-15668	18-15620	2-17022	11-17022		
18-15621	18-15622	18-15623	18-15626	CONTAMINATION			
18-15627	18-15628	18-15629	18-15652	1-17248	4-17262	7-16551	14-16062
18-15659	18-15668			14-16919	14-16920	15-16028	15-16919
CONTAINMENT PAINT				15-16920	17-16062	17-16551	17-17116
7-16562				17-17123			
CONTAINMENT PENETRATION, CLOSURE OF				CONTROL PANEL/ROOM			
3-17407	5-16389	5-16446	9-15564	9-15581	12-15581	12-15591	18-15581
9-16629	11-15561	11-15562	11-15564	18-15591	18-16613		
11-15566	11-16344	11-16358	11-16444	CONTROL ROD			
11-16484	11-16486	11-16487	11-16531	9-16044	17-15871	17-16021	17-16143
11-16629	11-17407	12-16351	12-16389	17-16830	17-17104		
12-16484	13-17407	16-16446	17-16531	CONTROL ROD BURNUP			
18-15561	18-15562	18-15564	18-15566	17-14834	17-16292	18-14834	
18-16344	18-16351	18-16358	18-16389	CONTROL ROD CALIBRATION			
18-16444	18-16446	18-16484	18-16486	17-16320	17-16373	17-17397	18-16373
18-16487	18-16608	18-16629		CONTROL ROD DRIVE			
CONTAINMENT PENETRATION, ELECTRICAL				6-17203	9-15834	9-16059	9-16176
11-15559	11-15567	11-15645	11-16449	9-16349	9-16355	9-16431	9-16435
18-15559	18-15567	18-15645	18-16449	9-17207	11-16355	17-15834	17-16059
CONTAINMENT PENETRATION, GENERAL				17-16139	17-16140	17-16170	17-16172
11-15559	11-15563	11-15567	11-15645	17-16176	17-16320	17-16431	17-16482
11-16352	11-16449	11-16724	18-15559	17-17203	17-17207	18-16035	18-16349
18-15563	18-15567	18-15645	18-16352	18-16355	18-16431	18-16435	
18-16449	18-16724			CONTROL ROD INTERACTION			
CONTAINMENT PENETRATION, PIPE				6-17259			
11-15559	11-15567	11-15645	11-16352	CONTROL ROD PROGRAM			
11-16449	18-15559	18-15567	18-15645	5-16757	6-16745	6-16757	17-16757
18-16352	18-16449			18-16745			
CONTAINMENT REFERENCE MEASURING SYSTEM				CONTROL ROD SCRAM MECHANISM			
11-16109				9-15834	9-16059	17-15834	17-16059
CONTAINMENT RESEARCH AND DEVELOPMENT				CONTROL ROD WORTH			
4-16154	5-15789	7-15537	11-15537	6-16483	6-16730	6-16732	6-16736
11-16119	11-16242	11-16303	11-16376	6-16758	6-17259	9-16619	9-16625
11-16399	18-16242			9-16730	9-16731	9-16732	12-16619
CONTAINMENT SPRAY				17-15535	17-16041	17-16067	17-16068
11-15569	11-15570	11-15571	11-15572	17-16157	17-16292	17-16322	17-16758
11-15573	11-16350	11-16484	11-16668	17-17346	18-16619	18-16625	
12-15552	12-15555	12-15676	12-16350	CONTROL ROD, SHIM SAFETY			
12-16445	12-16450	12-16484	12-16618	2-16413	6-16745	9-16430	9-16748
12-16668	18-15552	18-15555	18-15569	11-16413	15-16748	17-16430	17-16527
18-15570	18-15571	18-15572	18-15573	18-16413	18-16430	18-16745	18-16748
18-15676	18-16350	18-16445	18-16450	CONTROL SYSTEM			
18-16484	18-16618	18-16668		4-16024	6-15040	9-15040	9-16024
CONTAINMENT STRUCTURE				9-16060	9-16319	9-16419	9-16423
2-15636	8-15753	11-15624	11-15631	9-16424	10-15040	18-16024	
11-15632	11-15633	11-15635	11-15636	CONTROL, COMPUTER			
11-15637	11-15650	11-15753	11-15754	9-16060	9-16416	9-16419	
11-16109	18-15624	18-15631	18-15632	CONTROL, GENERAL			
18-15633	18-15635	18-15636	18-15637	4-16589	6-15543	6-16589	9-16092
18-15650				9-16589			
CONTAINMENT VESSEL LOADING				COOLANT CHEMISTRY			
11-16111	11-16118			5-16757	6-16755	6-16756	6-16757
CONTAINMENT, CORROSION PROTECTION				9-16756	15-16404	17-15868	17-16131
11-16580	12-16580	18-16580		17-16146	17-16147	17-16173	17-16292
CONTAINMENT, GENERAL				17-16404	17-16405	17-16410	17-16411
1-16046	1-16312	1-16586	4-16154	17-16478	17-16524	17-16749	17-16754
5-15789	5-15845	5-15952	5-16781	17-16755	17-16756	17-16757	18-16404
5-17069	6-16781	6-17069	7-13189	18-16405	18-16478		
7-15952	7-16586	7-16588	7-16781	COOLANT PURIFICATION SYSTEM			
11-15654	11-15655	11-15656	11-15657	15-16368	17-16368	17-16749	17-17420
11-15658	11-15660	11-15661	11-15662	18-16368			
11-15663	11-15754	11-15845	11-15952	COOLANT QUALITY			
11-16439	11-16586	12-15845	12-16312	17-14834	17-16131	18-14834	
17-16312	18-15654	18-15655	18-15656	COPPER			
18-15657	18-15658	18-15660	18-15661	14-15959	15-15959		
18-15662	18-15663	18-16439		CORE COMPONENTS, MISCELLANEOUS			
CONTAINMENT, HIGH PRESSURE				9-16434	9-16623	11-16321	17-16032
5-16469	11-15557	11-15558	11-15560	17-16103	17-16321	17-16434	17-16458
11-15561	11-15565	11-15566	11-15630	17-17104	18-16434	18-16623	18-17383
11-15648	11-15649	11-15651	11-15664	CORE MELTDOWN			
11-15665	11-15666	11-15667	11-15671	5-17068	6-17068	7-17068	
11-16109	11-16110	11-16111	11-16469	CORE REFLOODING SYSTEM			
17-16110	18-15557	18-15558	18-15560	5-15845	5-16437	5-16469	5-16679
18-15561	18-15565	18-15566	18-15630	11-15845	11-16469	11-16580	11-16668
18-15648	18-15649	18-15651	18-15664	12-15552	12-15845	12-16437	12-16580
18-15665	18-15666	18-15667	18-15671	12-16663	12-16667	12-16668	12-16669
CONTAINMENT, LOW PRESSURE				12-16670	12-16671	12-16672	12-16673
11-15675	12-15675	18-15675		12-16675	12-16676	12-16677	12-16678
CONTAINMENT, MULTIPLE				12-16679	18-15552	18-16437	18-16580
11-16242	18-16242			18-16663	18-16667	18-16668	18-16669
CONTAINMENT, PRESSURE SUPPRESSION				18-16670	18-16671	18-16672	18-16673
5-15845	11-15757	11-15845	11-16111	18-16675	18-16676	18-16677	18-16678
11-16116	11-16242	11-16395	11-16436	18-16679			
11-16439	11-16444	11-16449	12-15845	CORE SPRAY			
18-16242	18-16395	18-16436	18-16439	5-15845	5-16437	5-16442	5-16469
18-16444	18-16449			11-15845	11-16469	12-15845	12-16437
CONTAINMENT, SHOCK GENERATION AND PROTECTION				12-16445	12-16450	18-16437	18-16442

18-16445	18-16450			11-17196	11-17197	11-17198	
COPE, PLATE TYPE				DELAYED NEUTRON			
5-17255	5-17258	6-17255	6-17258	5-17069	6-16737	6-17069	9-16737
17-17403				DENMARK			
CORROSION				1-16125	14-15962	15-15962	
6-16758	7-15872	9-16052	9-16053	DEPOSITION			
11-15659	11-15660	11-15661	11-15662	1-16183	7-15698	7-15872	7-16183
11-16093	11-16304	11-16376	11-16395	7-16184	7-16562	11-16183	14-15766
12-15362	12-16027	12-16136	17-15360	14-15819	15-15766	15-15819	16-16184
17-15994	17-16022	17-16027	17-16034	DESCRIBING FUNCTION			
17-16137	17-16141	17-16147	17-16172	6-17077	6-17253		
17-16292	17-16749	17-16758	17-17376	DESIGN CRITERIA			
18-15659	18-15660	18-15661	18-15662	1-16134	1-17253	2-15636	2-17022
18-16395	18-16776			5-15610	9-15564	9-15578	9-16363
COSMIC RADIATION				11-15551	11-15561	11-15564	11-15566
4-15749				11-15569	11-15574	11-15576	11-15611
COUNTER				11-15614	11-15617	11-15620	11-15636
15-15783	15-15785	15-15866	15-16917	11-15647	11-15671	11-16120	11-17022
15-16938	15-16963	15-17114	15-17268	12-15591	12-16669	12-16670	12-16671
15-17280				12-16676	13-16134	14-15619	18-15551
COUNTER, WHOLE BODY				18-15561	18-15564	18-15566	18-15569
14-15799	14-15807	15-15799	15-15806	18-15574	18-15576	18-15578	18-15591
15-15807	15-16917			18-15610	18-15611	18-15614	18-15617
COUPLED CORES				18-15619	18-15620	18-15636	18-15647
6-16537	18-17066			18-15671	18-16669	18-16670	18-16671
CP-5 (CHICAGO PILE NO. 5)				18-16676			
17-16520				DESIGN STUDY			
CRFEP				5-17211	5-17213	5-17237	6-17385
2-15879	2-15880	2-15881	2-15882	9-16424	11-16242	12-17237	13-15758
2-15883	2-15884			17-16031	17-17384	17-17403	18-16132
CREEP BEHAVIOR				18-16242	18-16530	18-17092	18-17103
11-15861	11-16123	11-16168	11-16375	18-17113	18-17297	18-17383	18-17385
11-17197	11-17198			DESORPTION			
CRFEP PROPERTY				5-15952	7-15952	7-16562	11-15952
11-15650	11-16375	18-15650		15-15709			
CRITICAL ASSEMBLY FACILITY				DESTRUCTIVE TRANSIENT			
4-16023	5-16741	6-16023	6-16592	5-16788	6-16788		
6-16734	6-16735	6-16741	18-16023	DESTRUCTIVE WIND			
18-17377	18-17379	19-16777		11-15551	18-15551		
CRITICAL MASS				DIABLO CANYON			
17-16041				2-16413	11-16413	18-16413	18-16581
CRITICALITY EXPERIMENT				DIFFUSION			
1-16004	4-16023	6-16023	6-16483	7-16555	7-16560		
6-16730	6-16732	6-17381	9-16730	DIFFUSION BOARD			
9-16732	17-15828	17-16064	17-16107	7-15537	11-15537		
17-17381	17-17400	18-16023	18-17297	DILUTION			
CRITICALITY SAFETY				14-16452	16-15593	18-15593	18-16452
1-164745	1-12862	1-15997	1-15998	DIRECT ENERGY CONVERSION DEVICES			
1-15999	1-16000	1-16001	1-16002	4-16152	17-16152		
1-16003	1-16004	1-16005	1-16006	DISPERSION			
1-16010	1-16011	1-16134	1-17411	14-17282	15-17282		
1-17413	3-12862	3-16009	3-16010	DISPLACEMENT, GENERAL			
3-16402	3-16403	3-16992	3-17408	2-15842	2-15854	2-15859	2-15862
5-17069	6-17069	12-16992	12-17195	2-15879	2-15880	2-15881	2-15882
13-16006	13-16007	13-16008	13-16134	2-15883	2-15884	2-16095	2-16099
13-16992	13-17195	17-15998		11-15854	11-15859		
CRUD				DISSOLUTION			
1-17412	8-17412	17-16147		12-17195	13-17195		
CSE (CONTAINMENT SYSTEMS EXPERIMENT)				DNB (DEPARTURE FROM NUCLEATE BOILING)			
1-16183	1-16586	7-16183	7-16586	5-15541	5-15674	5-16087	5-16179
7-16588	11-16183	11-16586		5-16398	5-16468	5-16635	5-17214
CURIUM				5-17234	5-17240	6-15674	6-16179
3-16995	4-16995			6-16398	6-16468	6-16635	8-16398
CVTP (CAROLINAS VIRGINIA TUBE REACTOR)				12-16635	17-16468	18-15674	
17-16410	17-16411	17-16412	17-16447	DOPPLER COEFFICIENT			
17-16478	18-16412	18-16447	18-16478	5-16346	5-16356	6-16356	6-16756
CYLINDER				9-16756	17-16756	18-16127	18-16346
5-16922	11-15861	11-17196	11-17198	18-16356	18-17297		
DAMAGE				DOPPLER EFFECT			
9-16430	17-15871	17-16430	18-16430	5-16359	5-16774	6-16735	6-16737
DANGER COEFFICIENT				6-16738	6-16742	6-16774	6-17259
6-15544	6-16592	6-16735	6-17259	9-16359	9-16737	18-16359	
DATA PROCESSING				DOSE			
1-16003	5-16539	5-16540	5-16541	1-17251	4-15749	4-16301	4-17262
5-16542	5-16543	5-16544	5-16545	5-16389	5-16453	6-16453	11-16439
5-16546	5-16547	5-16548	5-16549	12-16389	14-15819	14-15959	14-15987
5-16550	5-17220	9-16416	9-16417	14-16017	14-16920	14-17254	15-15710
9-16418	9-16420	9-16472	9-16939	15-15768	15-15778	15-15784	15-15786
17-16472	17-16939			15-15792	15-15793	15-15794	15-15801
DECAY HEAT				15-15805	15-15819	15-15959	15-15964
7-16345	11-16345	18-16345		15-15987	15-15992	15-16015	15-16017
DECONTAMINATION				15-16019	15-16020	15-16301	15-16318
1-16426	1-17248	3-16426	7-16317	15-16680	15-16800	15-16903	15-16905
12-16027	12-16317	12-16479	14-15787	15-16906	15-16907	15-16908	15-16909
14-15796	14-15813	14-15817	14-15931	15-16910	15-16913	15-16914	15-16915
14-15974	14-16106	15-15787	15-15817	15-16916	15-16920	15-16935	15-16936
15-15974	15-15986	15-16369	15-16426	15-16957	15-17268	15-17270	16-16630
15-16938	17-16027	17-16292	17-16369	16-16680	17-17121	18-16389	18-16439
17-16766	18-16369			18-16453	18-16630	18-16680	
DEFORMATION				DOSE CALCULATION, EXTERNAL			
2-15854	11-15854	11-15855	11-16168	4-16301	11-15594	14-15819	14-15959

15-15706	15-15710	15-15819	15-15959	2-15879	2-15880	2-15881	2-15882
15-16020	15-16301	15-16366	15-16903	2-15883	2-15884	2-16095	2-16097
15-16905	15-16906	15-16907	15-16915	2-16099	2-16100	2-16306	2-16307
15-16916	16-15593	17-16366	18-15593	2-16462	2-16463	2-16464	11-15854
18-15594	18-16366			11-15859	11-15860		
DOSE CALCULATION, INTERNAL				EBR 1 AND 2 (EXPERIMENTAL BREEDER REACTORS)			
1-16371	1-16372	4-16301	4-17262	6-16735	12-17102	12-17195	13-17195
12-15591	14-15819	14-15959	15-15712	17-16148	17-16149	17-16150	17-16151
15-15819	15-15959	15-15964	15-16301	17-16534	17-17102	18-16379	18-16534
15-16371	15-16372	15-16903	15-16908	EBWR (EXPERIMENTAL BOILING WATER REACTOR)			
15-16915	15-16916	18-15591	18-16372	6-09986	6-16282	6-16730	9-16730
DOSE MEASUREMENT, EXTERNAL				ECOLOGICAL CONSIDERATION			
5-16770	6-16770	7-16770	15-15713	14-15774	14-15781	14-15799	14-15808
15-15805	15-16366	15-16369	15-16905	14-15984	14-15985	14-15987	14-16016
17-16366	17-16369	18-16366	18-16369	14-16017	15-15709	15-15714	15-15715
DOSE MEASUREMENT, INTERNAL				15-15778	15-15781	15-15799	15-15806
1-16371	1-16372	14-15807	14-17254	15-15973	15-15984	15-15987	15-16016
15-15807	15-16371	15-16372	15-16910	15-16017	15-16019	15-16800	15-16908
15-16957	15-17280	18-16372		15-16910	15-16912	15-16913	15-16914
DOSIMETRY, GENERAL				15-16916	15-16935	15-16938	15-17268
1-15999	5-16770	6-16770	7-16770	ECONOMIC STUDY			
14-15807	14-15981	14-15984	15-15704	1-16125	13-15758		
15-15710	15-15768	15-15769	15-15786	ECONOMICS			
15-15792	15-15794	15-15801	15-15805	3-16009	9-16045	11-16242	17-16650
15-15807	15-15809	15-15824	15-15961	18-16242			
15-15984	15-15991	15-16015	15-16020	EFFLUENT			
15-16318	15-16459	15-16903	15-16905	15-15966			
15-16906	15-16907	15-16909	15-16917	EGCR (EXPERIMENTAL GAS COOLED REACTOR)			
15-16936	15-17269	15-17270	15-17278	5-17233	5-17235	5-17243	11-17243
15-17280				12-16130	12-17235	17-17233	18-16130
DOSIMETRY, PHOTOGRAPHIC				10-17235			
15-15704	15-15705	15-15713		EGYPT			
DOSIMETRY, RADIOPHOTOLUMINESCENCE				18-15867			
15-15704				ELASTICITY			
DOSIMETRY, THERMOLUMINESCENCE				11-16112	11-16115	11-16161	11-16303
15-15704	15-16904	15-17276		11-16304	11-16376	11-17196	11-17198
DRAGON (UK)				ELECTRIC ARC			
9-16096	11-15752			5-15722			
DRESDEN 1				ELECTRIC POWER, AUXILIARY			
5-16549	9-15833	9-15834	9-16434	10-15970	10-16175	12-16175	17-16175
11-16311	12-16311	17-15833	17-15834	ELECTRIC POWER, GENERAL			
17-16311	17-16434	18-16434		9-16177	17-16177		
DRESDEN 2				ELECTRIC POWER, NORMAL			
11-16614	12-16618	18-16614	18-16618	10-15970			
DRESDEN 3				ELECTRIC POWER, VITAL			
1-16329	1-16333	5-16334	5-16340	10-15970			
5-16346	5-16354	5-16356	5-16359	ELK RIVER			
6-16330	6-16356	6-16357	7-16345	3-16403	5-16547	17-16292	17-16373
8-16353	9-16347	9-16349	9-16355	17-17346	18-16373	18-17404	
9-16359	9-16360	9-16362	10-16361	EMBRYOILEMENT			
11-16331	11-16332	11-16335	11-16336	11-15361	11-15755	11-15756	11-16093
11-16337	11-16338	11-16339	11-16341	11-16121	11-16167	11-16304	11-16305
11-16342	11-16343	11-16344	11-16345	11-16313	11-16376	17-16316	
11-16347	11-16350	11-16352	11-16355	EMERGENCY COOLING CONSIDERATIONS			
11-16358	12-16329	12-16330	12-16348	1-16312	2-16528	5-15674	5-15845
12-16350	12-16351	12-16362	18-16328	5-16390	6-15674	9-15834	9-16396
18-16329	18-16330	18-16331	18-16332	10-16610	11-15670	11-15845	11-16397
18-16333	18-16334	18-16335	18-16336	11-16486	12-15845	12-16312	12-16374
18-16337	18-16338	18-16339	18-16340	12-16385	12-16396	12-16397	12-16528
18-16341	18-16342	18-16343	18-16344	12-16610	17-15834	17-16312	17-16374
18-16345	18-16346	18-16347	18-16348	18-15670	18-15674	18-16374	18-16385
18-16349	18-16350	18-16351	18-16352	18-16390	18-16396	18-16397	18-16486
18-16353	18-16354	18-16355	18-16356	18-16528	18-16601	18-16610	18-17110
18-16357	18-16358	18-16359	18-16360	EMERGENCY POWER, ELECTRIC			
18-16361	18-16362			1-16312	2-15588	9-15834	10-15532
DUNGENESS B (UK)				10-15586	10-15587	10-15588	10-16361
18-16747				10-16610	10-16628	10-17097	10-17098
DYNAMICS, NONLINEAR				10-17100	10-17415	12-16312	12-16348
6-16536	6-16538	6-17078	6-17105	12-16610	12-16673	17-15532	17-15834
9-17105	11-16111			17-16021	17-16139	17-16312	17-17097
EARTH MATERIAL, DYNAMIC PROPERTY				17-17098	17-17099	17-17100	17-17415
2-15837	2-16307			18-15586	18-15587	18-15588	18-16348
EARTHQUAKE COST ANALYSIS				18-16361	18-16610	18-16628	18-16673
2-00897				EMERGENCY PROCEDURE			
EARTHQUAKE ENGINEERING				1-16426	1-17251	3-16426	15-16426
1-16183	2-00897	2-15588	2-15854	EMERGENCY SYSTEM			
2-15860	2-15874	2-15879	2-15881	9-15834	17-15834		
2-15882	2-16097	2-16463	7-13189	ENERGY LEVEL			
7-16183	10-15588	11-15546	11-15633	2-15862	2-15863	2-15864	14-15981
11-15854	11-15860	11-16183	18-15546	15-15992			
18-15588	18-15633			ENGINEERED SAFETY FEATURE			
EARTHQUAKE PREDICTION				1-16183	1-16312	1-16329	1-16937
2-15863	2-15875	2-16097	2-16100	2-16192	2-16937	5-16469	5-16937
EARTHQUAKE RECORDS				7-16183	9-15581	9-15829	9-15830
2-15864	2-16095	2-16099	2-16100	9-15831	9-15832	9-15833	9-15834
2-16307	2-16463			9-16619	9-16666	9-16682	10-15586
EARTHQUAKE, GENERAL				10-16628	11-15675	11-16183	11-16469
2-00897	2-15837	2-15839	2-15840	12-15553	12-15554	12-15581	12-15675
2-15842	2-15843	2-15854	2-15858	12-16312	12-16329	12-16374	12-16445
2-15859	2-15860	2-15862	2-15863	12-16450	12-16617	12-16619	12-16664
2-15864	2-15865	2-15874	2-15875	12-16665	12-16666	12-16682	13-16007

17-15829	17-15830	17-15831	17-15832	17-17100	18-15579	18-15648	18-16431
17-15833	17-15834	17-16159	17-16312	FAILURE, DESIGN ERROR			
17-16374	18-15549	18-15553	18-15554	7-16174	9-16177	9-16430	13-16325
18-15581	18-15586	18-15675	18-16159	15-16366	17-15994	17-16140	17-16143
18-16329	18-16374	18-16445	18-16450	17-16150	17-16153	17-16170	17-16172
18-16581	18-16617	18-16619	18-16628	17-16174	17-16177	17-16316	17-16366
18-16664	18-16665	18-16666	18-16682	17-16430	18-16325	18-16366	18-16430
ENGINEERING DRAWING LIST				FAILURE, EQUIPMENT			
9-16748	15-16748	17-16409	18-16748	1-16312	10-15532	10-16175	10-17415
19-16198				11-15614	11-16343	12-16175	12-16312
ENVIRONMENTAL CONDITION				15-16327	17-15532	17-16021	17-16139
4-16301	14-16918	15-16301	15-16918	17-16141	17-16148	17-16150	17-16169
EQUATION OF STATE				17-16170	17-16175	17-16312	17-16327
5-16790	6-16740	6-16789	6-16791	17-16370	17-17415	17-17418	18-15614
8-16789	11-16789			18-16327	18-16343	18-16370	
EQUATION, GENERAL				FAILURE, FABRICATION ERROR			
5-17222	7-16182	15-16916	16-15849	17-16153	17-16169	17-16458	17-16521
EQUIPMENT DESIGN				17-17101			
3-15976	7-15934	7-15935	7-15936	FAILURE, FATIGUE			
7-15939	7-15955	8-15934	8-15935	11-15361	11-15627	11-15653	11-16026
8-15936	9-15972	9-16193	10-15970	11-16124	11-16161	11-16167	11-16303
12-15934	12-15935	12-15936	12-17102	11-16305	11-16440	18-15627	18-15653
15-15972	17-17102			18-16440			
EQUIPMENT, GENERAL				FAILURE, FUEL ELEMENT			
17-15871	17-16322			5-14783	5-16388	5-16389	5-16394
ERROR ANALYSIS				5-16632	5-16739	6-14783	6-16632
11-16109				6-16739	7-14783	7-16187	7-16632
ETP (ENGINEERING TEST REACTOR)				9-15578	11-16168	11-16375	12-16389
9-16748	11-16321	15-16748	17-04179	17-16108	17-16187	17-16387	17-16447
17-15827	17-16108	17-16321	17-17182	17-17101	18-15578	18-16387	18-16388
17-17183	19-16748			18-16389	18-16394	18-16447	18-16776
EURATOM				FAILURE, GENERAL			
5-15231	5-17211	5-17229	5-17230	1-16312	2-15854	4-16425	9-16177
5-17391	6-17381	9-16472	14-15931	9-16425	9-16435	11-15561	11-15854
17-16472	17-16744	17-17381	19-17398	11-15855	11-16026	11-16110	12-16312
EUROCHEM				13-16657	15-16657	15-17419	17-15871
14-15819	14-16013	15-15819		17-16110	17-16153	17-16169	17-16170
EVAPORATION				17-16172	17-16177	17-16312	17-16320
4-16166	5-15735	5-16166	14-15089	17-16657	17-16753	17-17101	17-17419
14-15803	14-15982	15-15089		18-15561	18-16435		
EXAMINATION				FAILURE, INSTALLATION ERROR			
1-16312	9-16042	9-16043	9-16044	9-16177	17-16140	17-16177	
9-16045	9-16047	9-16048	9-16049	FAILURE, INSTRUMENT			
9-16050	9-16051	9-16052	9-16053	9-16091	9-16176	9-16434	10-16175
9-16054	9-16096	9-16472	11-15600	12-16175	15-16327	15-16658	17-16025
11-15626	11-15655	11-15657	11-15658	17-16142	17-16149	17-16153	17-16172
11-15752	11-16311	11-16331	11-16337	17-16175	17-16176	17-16320	17-16327
12-16311	12-16312	17-16131	17-16141	17-16434	17-16658	18-16327	18-16434
17-16311	17-16312	17-16373	17-16472	FAILURE, MAINTENANCE ERROR			
17-16754	17-17101	18-15600	18-15626	6-17203	9-17207	10-16175	12-16175
18-15655	18-15657	18-15658	18-16331	17-16107	17-16139	17-16175	17-17203
18-16337	18-16373	18-16408		17-17207			
EXCURSION, LARGE				FAILURE, OPERATOR ERROR			
5-16356	5-16788	6-16356	6-16788	9-16177	9-17206	15-16366	15-16404
18-16356				15-16658	17-15827	17-16177	17-16316
EXPERIMENT, GENERAL				17-16366	17-16404	17-16658	17-17122
5-17258	6-16730	6-17258	9-16730	17-17123	17-17204	17-17205	17-17206
EXPLOSION				18-16366	18-16404		
5-17414	7-11684	8-15753	8-17414	FAILURE, PIPE			
11-15753	11-16531	12-17195	13-16325	5-15613	6-16330	11-15604	11-16026
13-17195	17-16040	17-16531	17-17418	11-16161	11-16303	12-16330	17-16137
18-16325				17-16141	18-15604	18-15613	18-16230
EXPLOSIVE, CONVENTIONAL				FAILURE, PRESSURE VESSEL			
11-15751				5-16469	11-16026	11-16161	11-16167
FABRICATION				11-16304	11-16305	11-16341	11-16376
3-15976	7-15934	7-15935	7-15936	11-16397	11-16469	12-16397	18-16341
8-15934	8-15935	8-15936	9-16042	18-16397			
9-16043	9-16044	9-16045	9-16047	FAILURE, SCRAM MECHANISM			
9-16048	9-16049	9-16050	9-16052	9-13686	9-15580	9-16176	9-16349
9-16053	9-16096	11-16798	12-15934	9-16355	9-16431	9-16522	9-16619
12-15935	12-15936	13-16326	15-15783	9-16620	9-16623	9-16627	9-17115
17-16031	18-16326	18-16798		11-16355	12-16619	17-13686	17-15994
FABRICATION FACILITY				17-16021	17-16025	17-16140	17-16143
15-16324	18-16324			17-16172	17-16176	17-16431	17-16522
FAILURE, ADMINISTRATIVE CONTROL				17-16830	17-17104	17-17115	18-15580
1-16312	10-15532	10-17100	10-17100	18-16349	18-16355	18-16421	18-16619
10-17415	11-16335	11-16722	12-16312	18-16620	18-16623	18-16627	
15-16327	15-16368	17-15532	17-16021	FAILURE, SEQUENTIAL			
17-16310	17-16312	17-16327	17-16368	1-16433	5-16393	5-16394	9-16623
17-16659	17-17100	17-17100	17-17101	11-16397	12-16397	17-15827	18-16393
17-17117	17-17118	17-17123	17-17415	18-16394	18-16397	18-16433	18-16623
18-16327	19-16335	18-16368	18-16722	FAILURE, SIMULTANEOUS			
FAILURE, CLADDING				9-16349	18-16349		
4-16152	5-15616	5-16393	5-16441	FAILURE, TUBING			
5-16579	7-16187	11-16093	11-16168	5-15615	5-15616	5-16757	6-16757
17-16152	17-16187	17-16447	17-16763	11-15607	17-14834	17-16757	18-14834
17-17101	18-15616	18-16393	18-16441	18-15607	18-15615	18-15616	
18-16447	18-16579			FALLOUT			
FAILURE, COMPONENT				14-15766	14-15780	14-15787	14-15799
5-16469	7-11684	9-15579	9-16431	14-15804	14-15821	14-15825	14-15959
10-17100	11-15648	11-16469	17-16431	14-15962	14-15967	14-15987	14-15989

14-15990	14-16016	14-16017	14-16018	1-16183	1-16586	2-16471	5-15789
14-16918	14-16919	14-16920	15-15761	5-15952	5-16471	5-16781	6-16781
15-15763	15-15764	15-15766	15-15778	7-15952	7-16183	7-16586	7-16588
15-15780	15-15787	15-15793	15-15799	7-16781	11-15754	11-15952	11-16183
15-15804	15-15806	15-15810	15-15811	11-16586	14-15776	14-16471	15-15776
15-15812	15-15821	15-15825	15-15959	FISSION PRODUCT, AIRBORNE			
15-15962	15-15967	15-15973	15-15987	1-16586	5-16770	6-16770	7-16586
15-15989	15-15990	15-16016	15-16017	7-16588	7-16770	11-16586	15-16905
15-16910	15-16916	15-16918	15-16919	FISSION PRODUCT, IODINE			
15-16920	15-17275	15-17281		7-15537	7-15846	7-16461	7-16562
FAST NEUTRON				7-17326	8-16461	11-15537	12-16461
9-16059	11-16321	15-15769	15-15786	14-15585	16-15585	17-17119	18-15585
15-15993	15-16907	17-16059	17-16321	18-17326			
FAULT				FISSION PRODUCT, SEPARATION FROM WASTE			
2-15839	2-15840	2-15842	2-15843	13-13394	18-13394		
2-15862	2-15863	2-15875	2-15879	FISSION PRODUCT, VOLATILE			
2-15880	2-15881	2-15882	2-15883	7-16187	7-16563	17-16187	
2-15884	2-16095	2-16097	2-16099	FLANGE			
2-16462				11-15752			
FAULT TREE ANALYSIS				FLAW			
10-15586	12-16665	18-15586	18-16665	11-15599	11-15600	11-16093	11-16161
FEDERAL RADIATION COUNCIL				11-16167	11-16304	11-16337	11-16342
15-16916				11-16376	11-16723	11-16724	18-15599
FERMI				18-15600	18-16337	18-16342	18-16723
7-15934	8-15934	12-15934	18-16408	18-16724			
FERRITIC STEEL				FLOW BLOCKAGE			
11-16313				1-16433	4-17265	5-16392	5-16393
FFTF (TR)				5-17265	11-15573	17-16392	17-16753
6-16736	9-16059	17-16059	18-17383	18-15573	18-16392	18-16393	18-16433
FILM, GENERAL				FLOW DISTRIBUTION			
5-15724	5-15740			2-16471	5-16162	5-16163	5-16178
FILM, LIQUID				5-16380	5-16468	5-16471	5-16922
5-17200	5-17229	5-17238	5-17240	5-17208	6-16162	6-16163	6-16468
FILTER				8-16178	11-16119	11-16399	14-16380
1-16183	5-15952	7-11684	7-11687	14-16471	17-16468	17-16764	
7-11713	7-15698	7-15952	7-16183	FLOW ORIFICE OR RESTRICTION			
7-16555	11-15952	11-16183		5-15231	5-16757	5-17232	6-16757
FILTER DESIGN				12-16445	12-16450	17-14834	17-16447
7-11684	7-11687	7-16182		17-16757	18-14834	18-16445	18-16447
FILTER EFFICIENCY				18-16450			
7-16182	7-16551	7-16557	7-16558	FLOW STABILITY			
17-16551				5-11169	5-11461	5-15717	5-15718
FILTER INSPECTION				5-16089	5-16179	5-16635	5-17201
7-11713				5-17225	6-16179	6-16635	6-16751
FILTER MAINTENANCE				12-16635	17-16144	18-16751	
7-11687				FLOW THEORY AND EXPERIMENTS			
FILTER SAFETY EVALUATION				4-16603	5-15541	5-15718	5-15722
7-11713				5-15727	5-15732	5-15742	5-15788
FILTER SYSTEM				5-16075	5-16077	5-16083	5-16086
7-15698				5-16088	5-16089	5-16090	5-16162
FILTER THEORY, DIFFUSION				5-16398	5-16603	5-16634	5-16635
7-16555				5-16779	5-16922	5-17201	5-17208
FILTER, ELECTROSTATIC				5-17218	5-17221	5-17222	5-17223
7-16191				5-17228	5-17230	5-17232	5-17236
FILTER, FIBER				5-17241	6-16162	6-16398	6-16634
7-15955				6-16635	6-16779	8-16398	12-16635
FILTER, GLASS				17-16063			
7-11684				FLOW, ANNULAR			
FILTER, HIGH EFFICIENCY				5-16635	5-16922	5-17240	6-16635
7-11684	7-11687	7-13189	7-15846	12-16635			
7-17112	17-17112			FLOW, AXIAL			
FILTER, MEMBRANE				5-15541	5-15722	5-15730	5-15732
7-16558				5-15738	5-16075	5-16088	5-17211
FILTRATION				5-17221			
7-16557	7-16558			FLOW, CROSS			
FIN				5-15739	5-16178	8-16178	
5-15733	5-15741	5-16074	5-16084	FLOW, HIGH SPEED			
FINLAND				4-16603	5-15727	5-15729	5-16090
15-15806				5-16603			
PIPE				FLOW, KNUDSEN			
3-15978	3-15980	7-16182	7-16345	5-16090	7-16555		
7-16461	8-16461	9-15581	11-16345	FLOW, LAMINAR			
12-15581	12-16461	17-17260	18-15581	4-16166	4-16181	4-16603	5-15730
18-16345				5-15788	5-16078	5-16166	5-16181
FISSION GAS RELEASE				5-16603	5-17218	5-17222	5-17238
5-17224	7-16569	11-17224	15-15966	8-16181	11-15754		
15-16069				FLOW, MIST			
FISSION PRODUCT RELEASE, GENERAL				5-16635	6-16635	12-16635	
1-16183	1-16586	5-15952	5-16770	FLOW, NONNEWTONIAN			
5-17069	6-16770	6-17069	7-13189	5-17228			
7-15846	7-15952	7-15953	7-16174	FLOW, PULSATING			
7-16183	7-16560	7-16563	7-16586	5-15231	5-16179	5-16779	6-16179
7-16588	7-16770	11-15952	11-16183	6-16779			
11-16586	14-16919	15-16915	15-16919	FLOW, RECIRCULATION			
17-16174				4-16603	5-16603		
FISSION PRODUCT RETENTION				FLOW, ROTATING			
1-16046	1-16586	5-15612	7-16560	5-16922			
7-16563	7-16565	7-16586	7-16588	FLOW, TUBE			
7-17326	11-16331	11-16439	11-16586	4-17265	5-11461	5-15721	5-15730
18-15612	18-16331	18-16439	18-17326	5-15738	5-16088	5-17222	5-17223
FISSION PRODUCT TRANSPORT				5-17228	5-17265		

FLCW, TURBULENT				FUEL REPROCESSING			
5-15732	5-16076	5-17212	5-17216	1-16134	7-15701	13-16007	13-16008
FLOW, TWO PHASE				13-16134	17-16151		
4-16166	5-15717	5-15731	5-16087	FUEL STORAGE			
5-16162	5-16164	5-16166	5-16178	1-17251	3-16009	13-16552	14-15817
5-16380	5-16381	5-16398	5-16400	15-15817	17-16552		
5-16468	5-16634	5-16635	5-17200	FUEL, POWDER TYPE			
5-17229	5-17232	5-17234	5-17238	15-16324	18-16324		
5-17240	5-17241	6-16162	6-16164	GAMMA			
6-16381	6-16398	6-16468	6-16634	6-17105	9-15972	9-16460	9-17105
6-16635	8-16178	8-16398	9-16164	12-16136	14-16918	15-15768	15-15783
12-16635	14-16380	17-16468		15-15961	15-15964	15-15972	15-15992
FLOW, VORTEX				15-16459	15-16460	15-16904	15-16909
5-16922	5-17223			15-16918			
FLUCTUATION				GENERATOR, DIESEL			
5-15717	5-15718	5-15788	5-16077	10-15587	10-16175	10-16361	10-16610
17-17366				11-16484	11-16486	12-16175	12-16484
FLUIDIZED BED				12-16610	12-16673	17-16021	17-16139
5-11467	5-15726	5-15728	5-16080	17-16175	18-15587	18-16361	18-16484
5-17208	5-17216	7-15699	13-16309	18-16486	18-16610	18-16673	
14-16309				GEOLOGICAL CONSIDERATION, GENERAL			
FLUORIDE				2-15839	2-15840	2-15842	2-15843
7-15938				2-15859	2-16097	2-16099	11-15859
FLUORIDE VOLATILITY PROCESSES				14-15797	14-15960	14-15965	14-15983
13-16309	14-16309			14-16638	14-17106	14-17282	15-15797
FLUX DISTRIBUTION				15-15824	15-17272	15-17282	
4-16023	6-16023	9-15534	11-15755	GEOLOGICAL CONSIDERATION, GEOCHEMICAL			
11-15756	11-16121	15-16907	17-15534	15-17272			
17-16041	17-16146	17-16320	17-17366	GEOLOGICAL CONSIDERATION, GEOPHYSICAL			
18-16023				14-11634	14-15797	14-15960	14-15965
FOAM				14-15983	14-16638	15-11634	15-15797
14-16106				15-17272			
FOUNDATION ENGINEERING				GEOLOGICAL CONSIDERATION, SALT STRUCTURE			
2-15858	2-15859	2-16463	11-15859	14-17271			
18-16799				GEOLOGICAL CONSIDERATION, STRATIGRAPHY			
FRACTURE TOUGHNESS				14-15797	15-15797		
11-16114				GERMANY			
FRANCE				1-16125	1-16937	2-16937	5-15231
1-15997	1-16125	1-17252	14-15797	5-16937	5-17211	6-17105	7-17029
14-15802	15-15797	17-16170	17-16171	9-17105	11-16110	12-17029	14-17029
17-16749	18-17390			14-17271	17-16110	17-16171	18-17066
FREQUENCY SPECTRA				18-17402			
5-16346	18-16346			GETR (GENERAL ELECTRIC TEST REACTOR)			
FT. ST. VRAIN				9-17115	17-17115		
9-16424	18-16537	18-16775		GLASS			
FUEL BURNUP				12-16479			
5-16539	5-16540	5-16541	5-16542	GLOVE BOX			
5-16543	5-16544	5-16545	5-16546	7-11687	17-17119		
5-16547	5-16548	5-16549	5-16550	GODIVA			
15-16404	17-16022	17-16037	17-16151	6-16538	6-16538		
17-16155	17-16292	17-16373	17-16387	GRAPHITE			
17-16404	17-16763	18-16373		7-13189	9-15534	11-16375	11-17197
18-16404	18-17378			17-15534	17-16022		
FUEL COEFFICIENT				GROSS ALPHA			
5-17069	6-17069	17-16157		14-15817	15-15772	15-15812	15-15817
FUEL ELEMENT				GROSS BETA			
1-15869	1-16433	1-17412	3-16194	14-15817	14-15959	14-15989	15-15772
5-16084	5-16356	5-16381	5-16388	15-15810	15-15811	15-15812	15-15815
5-16441	5-16632	5-16633	5-17224	15-15817	15-15959	15-15989	
5-17229	6-16356	6-16381	6-16632	GROSS GAMMA			
6-16633	7-15952	7-16569	7-16632	14-15817	14-15989	15-15772	15-15815
8-17412	9-16042	9-16043	9-16044	15-15817	15-15989		
9-16050	9-16051	9-16052	9-16053	GROUND MOTION			
9-16054	9-16096	9-16748	11-16386	2-00897	2-15837	2-15864	2-15874
11-17224	12-16385	15-16748	17-14834	GROUND WATER, NUCLIDE OCCURRENCE			
17-16031	17-16032	17-16033	17-16143	15-15773	15-17272		
17-16147	17-16173	17-16754	18-14834	GROUND WATER, PROPERTY			
18-15869	18-16356	18-16385	18-16386	15-17272			
18-16388	18-16433	18-16441	18-16748	HADDAM NECK			
FUEL ELEMENT BOWING				7-17326	11-16487	11-16746	11-17065
6-16727	17-16763	18-16727	18-16776	12-16746	12-17065	17-16583	18-16487
FUEL EXPANSION COEFFICIENT				18-16901	18-17065	18-17326	
5-16770	6-16770	7-16770		HALLAM			
FUEL HANDLING				14-15817	15-15817	17-16131	17-16765
1-16010	2-16009	3-16010	17-15827	17-16766			
17-16172				HANFORD SITE			
FUEL HANDLING MACHINE				14-16920	15-16920	17-04143	18-17377
9-16430	9-17115	12-17102	17-16148	HARWELL (UK)			
17-16150	17-16430	17-17102	17-17115	5-17201	5-17215		
18-16430				HAZARDS ANALYSIS			
FUEL INTEGRITY				5-14734	5-15590	13-13394	14-14734
5-16570	5-16788	6-16570	6-16788	17-14734	18-13394	18-15590	18-16132
7-15701	8-16570	9-16050	9-16052	HBWR (HALDEN BOILING WATER REACTOR)			
9-16053	11-16375	17-16151		6-17381	17-16158	17-16172	17-17381
FUEL MELTDOWN				HEALTH PHYSICS TRAINING			
5-16392	5-16441	5-16741	5-16781	1-17410	15-16327	15-16368	15-16369
5-16788	5-16790	5-17069	6-16741	15-16474	15-16533	15-16938	15-17191
6-16781	6-16788	6-16789	6-16791	15-17279	17-16327	17-16368	17-16369
6-17069	7-13189	7-16781	8-16789	17-16533	17-17191	18-16327	18-16368
11-16789	17-16032	17-16108	17-16392	18-16369			
18-16392	18-16441			HEAT EXCHANGER			

4-16181	5-15613	5-15615	5-15616	5-17212	5-17218	6-16165	8-16165
5-15718	5-15728	5-15739	5-15741	18-16438			
5-16085	5-16181	5-16383	5-17213	HEAT TRANSFER, LOW DENSITY			
5-17235	7-15934	7-15935	7-15936	5-17213			
8-15934	8-15935	8-15936	8-16181	HEAT TRANSFER, NATURAL CONVECTION			
9-16048	9-16049	11-15607	11-15614	5-11169	5-11461	5-15733	5-15736
12-15934	12-15935	12-15936	12-16383	5-17218			
12-17235	15-16404	17-14834	17-16141	HEAT TRANSFER, RADIANT			
17-16169	17-16404	17-16456	18-14834	5-15720	5-15741	5-15790	5-16072
18-15607	18-15613	18-15614	18-15615	5-16437	5-16441	12-16437	18-16437
18-15616	18-16404	18-17235		18-16441			
HEAT FLUX, DRYOUT				HEAT TRANSFER, SUPERCRITICAL			
5-16398	5-16600	5-17200	6-16398	5-17234			
8-16398	17-16600			HEAT TRANSFER, TWO PHASE			
HEAT GENERATION, INTERNAL				5-16634	6-16634		
3-16995	4-16995	5-16074		HEAVY WATER			
HEAT GENERATION, NONUNIFORM				6-16590	13-16308	15-16308	
5-17200	5-17226	5-17240	5-17241	HEIGHT OF RISE			
HEAT PIPE				5-16446	16-16446	16-16451	18-16446
4-16166	4-16181	5-16166	5-16181	18-16451			
5-17215	8-16181			HELIUM			
HEAT SINK				4-16160	9-16160	11-15752	11-16313
5-15674	5-17221	6-15674	12-15676	17-16063	17-16316		
18-15674	18-15676			HFBR (HIGH FLUX BEAM REACTOR)			
HEAT TRANSFER				17-16458	18-15870		
3-16402	4-17202	4-17265	5-09955	HFIR (HIGH FLUX ISOTOPE REACTOR)			
5-11169	5-11461	5-11467	5-15231	6-16535	7-16461	8-16461	12-16461
5-15717	5-15718	5-15719	5-15720	17-15994	17-16650		
5-15721	5-15722	5-15724	5-15725	HIGH TEMPERATURE			
5-15726	5-15727	5-15728	5-15729	3-16995	4-16995	5-15952	5-16437
5-15730	5-15731	5-15732	5-15733	5-17234	7-15701	7-15952	7-16187
5-15734	5-15735	5-15736	5-15737	7-16569	11-15568	11-15861	11-15952
5-15738	5-15739	5-15740	5-15741	11-17198	12-16437	17-16032	17-16187
5-15742	5-15788	5-15790	5-15791	18-15568	18-16437		
5-16071	5-16072	5-16073	5-16074	HOT CELL			
5-16075	5-16076	5-16078	5-16080	12-17195	13-16657	13-17195	15-16369
5-16083	5-16084	5-16085	5-16087	15-16657	17-16369	17-16657	18-16369
5-16088	5-16090	5-16165	5-16398	HOT CHANNEL FACTOR			
5-16400	5-16632	5-16635	5-16842	5-16457	17-16457		
5-17200	5-17202	5-17212	5-17213	HOT SPOT			
5-17214	5-17215	5-17216	5-17217	5-16457	5-16632	6-16632	7-16632
5-17218	5-17220	5-17225	5-17226	17-16457			
5-17228	5-17229	5-17230	5-17234	HPRR (HEALTH PHYSICS RESEARCH REACTOR)			
5-17237	5-17238	5-17239	5-17240	15-15805	17-16153		
5-17241	5-17242	5-17265	5-17358	HUMBOLDT BAY			
6-15543	6-16165	6-16398	6-16632	5-16543	9-15830	9-15834	17-15830
6-16635	7-16632	8-16165	8-16398	17-15834			
8-17358	12-16635	12-17237	17-16032	HYDRAULIC ANALYSIS			
HEAT TRANSFER ANALYSIS				5-16281	5-16285	5-17236	6-16281
1-12862	3-12862	5-09955	5-16381	6-16282	6-16285	6-16740	8-16281
5-16442	5-16457	5-16468	5-16604	8-16285			
5-16779	5-17213	6-16381	6-16468	HYDRAULIC EFFECT			
6-16779	11-15570	11-15576	17-16457	2-16471	5-16471	14-16471	17-16033
17-16468	18-15570	18-15576	18-16442	18-16776			
18-17401				HYDRAULIC EXPERIMENT			
HEAT TRANSFER AUGMENTATION				2-16471	5-16162	5-16163	5-16176
4-16166	5-15725	5-15733	5-15741	5-16380	5-16471	6-16162	6-16163
5-16074	5-16084	5-16166	5-16398	8-16178	11-16119	11-16399	14-16380
5-16433	6-16398	6-16633	8-16398	14-16471			
HEAT TRANSFER CORRELATION				HYDRIDE			
5-11467	5-15719	5-15726	5-16400	5-16770	6-16770	7-16770	18-17378
5-16600	5-17240	5-17241	17-16600	HYDRODYNAMIC ANALYSIS			
18-16597				5-17208	5-17211	5-17213	5-17228
HEAT TRANSFER EXPERIMENT				5-17236			
3-15976	4-16166	4-17265	5-11467	HYDROGEN			
5-15231	5-15720	5-15737	5-15740	5-16770	6-16770	7-16770	8-15753
5-16165	5-16166	5-16179	5-16381	11-15753	11-16313	11-16531	13-13394
5-16398	5-16468	5-16600	5-16632	15-16906	17-15360	17-15996	17-16531
5-16633	5-16842	5-17200	5-17215	18-13394			
5-17225	5-17226	5-17234	5-17265	HYDROLOGICAL CONSIDERATION, GENERAL			
5-17386	5-17391	5-17421	6-16165	14-15974	15-15974	15-17272	
6-16179	6-16381	6-16398	6-16468	HYDROLOGICAL CONSIDERATION, QUALITY OF WATER			
6-16632	6-16633	6-17421	7-16632	14-15974	14-15985	14-16055	15-15974
8-16165	8-16398	17-16468	17-16600	15-17272			
HEAT TRANSFER, BOILING				HYDROLOGICAL CONSIDERATION, RATE OF MOVEMENT			
4-17202	5-09955	5-11169	5-11461	2-16471	5-16471	14-15770	14-15776
5-15717	5-15721	5-15724	5-15731	14-15959	14-15985	14-16471	15-15776
5-15738	5-15740	5-16087	5-16165	15-15959	15-17272		
5-16179	5-16281	5-16285	5-16287	IAEA (INTERNATIONAL ATOMIC ENERGY AGENCY)			
5-16398	5-16438	5-16633	5-17202	9-16042	19-16777		
5-17225	5-17421	6-16165	6-16179	ICRP (INT. COMM. ON RADIOLOGICAL PROTECTION)			
6-16281	6-16285	6-16286	6-16287	15-13854	15-16910		
6-16398	6-16633	6-17421	8-16165	IDAHO FALLS			
8-16781	8-16285	8-16287	8-16398	12-17195	13-17195		
17-16754	18-16379	18-16438		IGNITION			
HEAT TRANSFER, CONDUCTION				5-15952	7-15952	7-16461	8-16461
5-15730	5-15734	5-15791	5-16071	11-15952	12-16461		
5-16073	5-16604	5-16632	6-16632	IMPACT PROPERTY			
7-16632	8-16353	18-16353		1-16183	1-16586	7-16183	7-16586
HEAT TRANSFER, CONVECTION				7-16588	11-16183	11-16305	11-16586
5-15725	5-15733	5-16165	5-16438	IMPACT SHOCK			

1-16183	3-15978	3-15980	7-13189	9-15829	9-15830	9-15831	9-15832
7-16183	11-16183			9-15833	9-15969	9-16059	9-16176
IN PILE EXPERIMENT				9-16419	9-16423	17-15829	17-15830
1-16586	5-15952	6-16755	7-13189	17-15831	17-15832	17-15833	17-16059
7-15939	7-15952	7-16586	7-16588	17-16139	17-16176		
11-15952	11-16586	17-16755	17-17104	INSTRUMENTATION, COOLANT QUALITY			
18-16132				9-16193			
IN PILE LOOP				INSTRUMENTATION, DETECTION FAILED FUEL ELEMENT			
5-15952	7-15952	11-15952	17-16482	17-16764			
17-16520	17-17163	18-16132		INSTRUMENTATION, EARTHQUAKE			
INCIDENT COMPILATION				2-15875	2-15883	2-16097	2-16306
1-16365	15-16365	17-16365		11-16484	12-16484	18-16484	
INCIDENT, ACTUAL, EQUIPMENT				INSTRUMENTATION, FUEL SCANNING			
17-16370	17-17418	18-16370		9-16042	9-16043	9-16044	9-16047
INCIDENT, ACTUAL, GENERAL				9-16050	9-16051		
1-15998	1-16012	1-16654	15-16327	INSTRUMENTATION, GENERAL			
15-16367	15-17419	17-15998	17-16012	1-15999	6-16057	6-17105	7-15934
17-16026	17-16040	17-16310	17-16327	7-15935	7-15936	8-15934	8-15935
17-16367	17-16520	17-16753	17-17104	8-15936	9-16666	9-17105	11-15565
17-17118	17-17121	17-17123	17-17173	11-16342	12-15934	12-15935	12-15936
17-17419	18-16327	18-16367		12-16666	18-15565	18-16342	18-16666
INCIDENT, ACTUAL, HUMAN ERROR				INSTRUMENTATION, IN CORE			
6-17203	9-17206	9-17207	15-16366	6-16737	9-16434	9-16472	9-16629
15-16368	15-16404	17-15827	17-16025	9-16737	11-16629	17-16322	17-16434
17-16036	17-16107	17-16108	17-16366	17-16472	17-16744	18-16434	18-16629
17-16368	17-16404	17-17203	17-17204	18-17378			
17-17205	17-17206	17-17207	17-17397	INSTRUMENTATION, INDICATOR			
18-16366	18-16368	18-16404		9-16176	17-16176		
INCIDENT, ACTUAL, NONNUCLEAR				INSTRUMENTATION, INTERLOCK			
1-15998	10-17097	10-17100	13-16325	9-15969	9-16360	10-16361	15-16658
17-15998	17-16036	17-17097	17-17100	17-16658	18-16360	18-16361	
18-16325	18-16428			INSTRUMENTATION, INTERMEDIATE RANGE			
INCIDENT, ACTUAL, NONREACTOR				9-16360	18-16360		
13-16325	17-16036	18-16325		INSTRUMENTATION, LIQUID LEVEL DETECTION			
INCIDENT, ACTUAL, RECOVERY FROM				17-16322			
15-16327	17-16327	18-16327	18-16408	INSTRUMENTATION, METEOROLOGICAL			
INCIDENT, EXPOSURE				16-15847			
1-17251				INSTRUMENTATION, NUCLEAR			
INCINERATION				4-16024	9-16024	9-16423	15-15785
14-15927	15-15927			17-16320	17-16322	18-16024	18-16035
INCONFL				INSTRUMENTATION, POSITION			
11-16321	17-16321			9-16619	12-16617	12-16619	18-16617
INDEPENDENCE				18-16619			
11-16487	12-16664	18-16487	18-16664	INSTRUMENTATION, POWER RANGE			
INDIAN POINT 1				9-16423			
5-16539	9-15831	9-15834	17-15831	INSTRUMENTATION, PROCESS			
17-15834				5-17230	6-16057	9-16193	9-16396
INDIAN POINT 2				9-16417	9-16418	9-16419	9-16420
2-16528	12-16374	12-16528	17-16374	9-16729	11-16729	12-16396	17-16149
18-16374	18-16528			18-16396	18-16729		
INFLASTIC BEHAVIOR				INSTRUMENTATION, PROTECTIVE			
2-15858				9-15608	9-15829	9-15830	9-15831
INFORMATION RETRIEVAL				9-15832	9-15833	9-15969	9-16176
1-16003	1-16427			9-16177	11-15608	17-15829	17-15630
INGESTION				17-15831	17-15832	17-15833	17-16176
14-15959	15-15712	15-15762	15-15764	17-16177	18-15608		
15-15959	15-15986	15-16908	15-16915	INSTRUMENTATION, PULSE			
15-16916				9-16360	18-16360		
INHALATION				INSTRUMENTATION, RADIATION MONITORING			
1-16364	1-16371	1-16372	13-16308	9-15972	9-16463	14-15807	14-15817
13-16326	13-16657	14-15775	14-15819	15-14832	15-15768	15-15769	15-15783
15-15712	15-15775	15-15819	15-15964	15-15785	15-15792	15-15794	15-15600
15-16308	15-16324	15-16364	15-16367	15-15801	15-15807	15-15809	15-15817
15-16371	15-16372	15-16657	15-16915	15-15961	15-15963	15-15972	15-15991
15-16916	17-16367	17-16657	18-16324	15-15992	15-15993	15-16015	15-16459
18-16326	18-16367	18-16372		15-16460	15-16904	15-16917	15-16938
INSPECTION AND COMPLIANCE				15-16957	15-16963	15-17114	15-17269
1-17252	9-16042	9-16043	9-16044	15-17270	15-17276	15-17280	
9-16045	9-16047	9-16048	9-16049	INSTRUMENTATION, RELAY			
9-16050	9-16051	9-16052	9-16053	9-15580	9-15969	17-16025	17-16149
9-16054	9-16096	11-16311	12-16311	18-15580			
13-16552	15-16366	15-16368	17-16310	INSTRUMENTATION, SHUTDOWN REACTIVITY			
17-16311	17-16366	17-16368	17-16552	9-15583	11-15583	18-15583	
17-16656	17-16659	17-16660	17-17116	INSTRUMENTATION, STARTUP			
17-17117	17-17118	17-17119	17-17120	17-17346			
17-17121	17-17122	17-17123	17-17420	INSTRUMENTATION, STARTUP RANGE			
18-16366	18-16368			6-16732	9-13686	9-16732	9-17206
INSTABILITY				17-13686	17-16764	17-17206	
5-17216				INSTRUMENTATION, SURVEILLANCE			
INSTRUMENTATION CALIBRATION				9-16417	9-16418	9-16420	
9-15972	9-16460	9-16472	9-16629	INSTRUMENTATION, SWITCH			
11-16629	15-15961	15-15972	15-16460	17-16025			
17-16472	18-16629			INSTRUMENTATION, TEMPERATURE			
INSTRUMENTATION, ABNORMAL INDICATION				5-16073	9-16422	17-17104	
9-13686	9-15534	17-13686	17-15534	INSTRUMENTATION, TESTING			
17-16153	17-17346			9-15972	9-16091	9-16460	11-16124
INSTRUMENTATION, AIR SAMPLING				15-15972	15-16460		
9-16460	15-16460			INSURANCE			
INSTRUMENTATION, CAMPBELLING				1-16365	3-17409	15-16365	17-16365
9-16434	17-16434	18-16434		INTEGRITY			
INSTRUMENTATION, CONTROL				11-16304	11-16311	11-16311	12-16311

12-16311	17-16311	17-16311	9-15832	9-15833	9-15834	9-15969
IONINE			10-16175	11-16311	12-16175	12-16311
7-15938			12-16312	13-16657	15-16367	15-16368
IONINE			15-16657	15-17419	17-15829	17-15830
1-16183	5-15952	7-15537	17-15831	17-15832	17-15833	17-15834
7-15952	7-16182	7-16317	17-16107	17-16138	17-16141	17-16148
7-16560	7-16562	7-16563	17-16149	17-16175	17-16311	17-16312
11-15754	11-15952	11-16183	17-16316	17-16367	17-16368	17-16410
14-15819	14-15959	14-16017	17-16411	17-16478	17-16521	17-16524
15-15779	15-15819	15-15959	17-16657	17-17419	18-16367	18-16368
15-16017	15-16908	15-16915	18-16478			
15-16917	17-16551		MAINTENANCE, REMOTE			
ION EXCHANGE			17-16316			
14-15968	15-15715	17-16749	MANGANESE			
17-17420		17-17418	14-15774	14-16017	15-15993	15-16017
IRON			MASS TRANSFER			
14-15774	15-15806	15-15993	5-15726	5-15735	5-15789	5-16080
IPRADIATION TESTING			5-16632	5-17216	5-17217	6-16632
5-17224	7-16569	11-15755	7-16632			
11-16026	11-16113	11-16114	MATERIAL			
11-16124	11-16305	11-17023	2-16413	11-15649	11-15651	11-15652
17-14834	17-16022	17-16173	11-16112	11-16413	18-15649	18-15651
17-16763	18-14834		18-15652	18-16413		
ISOCHEM, INC.			MATHEMATICAL STUDY			
13-13394	18-13394		1-16004	7-16569	9-16319	11-17196
ITALY			11-17197	17-16037		
1-16125	5-17229	9-16417	MATHEMATICAL TREATMENT			
15-15703	17-16472	17-16744	5-16391	5-17414	6-16745	7-15953
JAPAN			7-16182	7-16564	7-16565	8-17414
1-15869	1-16001	1-16125	11-17065	12-17065	14-15825	14-16018
9-17105	15-15713	18-15869	15-15824	15-15025	15-16916	18-16391
JEEP 2 (JOINT ESTABLISHMENT EXPTL PILE 2)			18-16745	18-17065		
17-16041			MAXIMUM PERMISSIBLE BODY BURDEN			
KEWA (KINETIC EXPERIMENT ON WATER BOILERS)			1-17248	13-16308	14-17254	15-16308
5-16287	6-16287	8-16287	MAXIMUM PERMISSIBLE CONCENTRATION (MPC)			
KIWI			1-16365	1-16371	1-16372	14-16918
6-16537			14-16920	14-17254	15-13854	15-16365
KRYPTON			15-16371	15-16372	15-16918	15-16920
14-15984	15-15866	15-15984	17-16365	18-16372		
LACROSSE			MAXIMUM PERMISSIBLE DOSE (MPD)			
5-16542	6-17385	18-17385	14-17254			
LAMPRE 1 (LASL MOLTEN PU REACTOR EXPERIMENT)			MEASUREMENT, GENERAL			
9-16047			5-17201	6-16057	9-16042	9-16043
LANDSLIDE			9-16044	9-16047	9-16050	11-15757
2-15858	2-16462	2-16464	14-16920	15-16920	17-16033	17-16041
LANTHANUM			17-16155	17-16320		
7-16317	12-16317	17-16520	MEASUREMENT, NOISE			
LAPRE 1 AND 2 (LASL POWER REACTOR EXPERIMENT)			6-16058	9-16058		
9-16047			MEASUREMENT, REACTIVITY			
LAPSE RATE, STABLE			4-16023	6-16023	15-14832	17-16041
16-16451	18-16451		17-16063	17-16064	17-16065	17-16066
LASL (LOS ALAMOS SCIENTIFIC LABORATORY)			17-16067	17-16068	17-16157	17-16219
9-15534	9-16047	14-15813	17-16322	17-16650	17-16830	18-16023
LAW			MEASUREMENT, STRAIN GAGE			
1-17249	15-17249		11-15750	11-16161	11-16375	11-16376
LEAD			MEASUREMENT, SUBCRITICALITY			
15-15806			6-16058	9-16058		
LEAK RATE			MEASUREMENT, TEMPERATURE			
11-16616	11-16616	18-16616	9-16422	11-15757		
LIABILITY			MERCURY			
3-17409			4-17202	5-17202		
LIQUEFACTION			METAL			
2-16464			6-16740	7-15938	9-16047	11-16026
LIQUID FUEL			11-16093	11-16161	11-16168	11-16303
17-16032			11-16313	11-16321	11-17197	11-17198
LITHIUM			12-16479	17-16321		
5-16570	6-16570	8-16570	METAL WATER REACTION			
LOFT (LOSS OF FLUID TEST)			5-16281	5-16285	5-16354	5-16441
1-16183	1-16586	5-15952	5-16790	5-17358	6-16281	6-16285
6-16781	7-13189	7-15952	6-16789	6-16791	7-15934	7-15935
7-16586	7-16588	7-16781	7-15936	8-15934	8-15935	8-15936
11-16183	11-16586		8-16281	8-16285	8-16353	8-16621
LRI (LAURENCE RADIATION LABORATORY)			8-16789	8-17358	11-16789	12-15934
14-15796	15-15785		12-15935	12-15936	17-16534	18-16353
LUBRICATION			18-16354	18-16441	18-16534	18-16621
17-16107	17-16170		METAL, ALKALI			
LUPCHING			4-16166	4-17202	5-16166	5-17202
2-15859	2-16464	11-15859	5-17239	8-16126		
MAGNESIUM			METAL, LIQUID			
7-16564			4-16166	5-09955	5-16164	5-16165
MAIN COOLING SYSTEM			5-16166	5-16383	5-17239	6-16164
1-16433	5-14734	5-15612	6-16165	7-16560	7-16563	8-16126
7-15934	7-15935	7-15936	8-16165	9-16164	12-16383	17-16131
8-15935	8-15936	11-15598	18-16379			
12-15934	12-15935	12-15936	METEOROLOGY			
14-14734	14-16062	17-14734	7-16184	14-15819	14-16018	15-15793
17-15996	17-16027	17-16033	15-15819	15-16915	15-17281	16-16184
17-16063	17-16148	18-15598	18-15611			
18-15612	18-16433		MEFICO			
MAINTENANCE AND REPAIR			14-15967	15-15967		
1-16312	9-15829	9-15830	MICROEARTHQUAKE			
		9-15831	2-15863	2-15875	2-16306	

MILLING				15-15963	15-16369	15-16658	15-16748
1-16365	15-16365	15-16367	17-16365	15-17278	17-16369	17-16658	18-16369
17-16367	18-16367			18-16748			
MILLSTONE POINT				MONITOR, RADIATION, SAMPLING			
1-16609	5-16606	5-16622	6-16612	15-16069			
6-16624	6-16727	8-16621	9-16619	MONITOR, RADIATION, STACK			
9-16620	9-16623	9-16625	9-16626	15-15767			
9-16627	9-16629	9-16729	10-16610	MONITORING PROGRAM, ENVIRONMENTAL			
10-16628	11-16606	11-16607	11-16614	5-16453	6-16453	14-16920	15-16323
11-16615	11-16616	11-16629	11-16721	15-16920	18-16323	18-16453	
11-16722	11-16723	11-16724	11-16725	MONITORING SYSTEM, RADIATION			
11-16726	11-16728	11-16729	12-16610	1-17248	9-16460	15-16061	15-16069
12-16617	12-16618	12-16619	16-16630	15-16460			
18-16605	18-16606	18-16607	18-16608	MONTE CARLO			
18-16609	18-16610	18-16611	18-16612	5-16071	15-15794	15-16318	15-16909
18-16613	18-16614	18-16615	18-16616	MONTECELLO			
18-16617	18-16618	18-16619	18-16620	11-16486	11-16798	18-16486	18-16798
18-16621	18-16622	18-16623	18-16624	MOUND LABORATORY			
18-16625	18-16626	18-16627	18-16628	15-15767			
18-16629	18-16630	18-16721	18-16722	MSRE (MOLTEN SALT REACTOR EXPERIMENT)			
18-16723	18-16724	18-16725	18-16726	5-17069	6-17069	9-16420	9-16939
18-16727	18-16728	18-16729		17-16034	17-16316	17-16939	17-17169
MINERAL EXCHANGE				MSSR (MIXED SPECTRUM SUPERHEAT REACTOR)			
15-15703	15-15715			6-15540			
MINING				MTR (MATERIAL TESTING REACTOR)			
1-16364	1-16365	1-16371	1-16372	9-16043	9-16748	10-15532	15-16748
15-16364	15-16365	15-16371	15-16372	17-04179	17-15532	17-17181	17-17183
15-16911	17-16365	18-16372		18-16748			
MISSILE GENERATION AND PROTECTION				N S SAVANNAH			
5-15669	5-15845	5-16334	5-16606	1-17412	5-16544	7-16551	8-17412
6-16330	11-15603	11-15668	11-15669	17-16551			
11-15670	11-15845	11-16120	11-16339	NAK (SODIUM POTASSIUM ALLOY)			
11-16341	11-16449	11-16606	11-16726	17-16040			
12-15845	12-16330	18-15603	18-15668	NCRP (NATIONAL COMMITTEE RADIATION PROTECTION)			
18-15669	18-15670	18-16330	18-16334	1-16371	14-17254	15-16371	
18-16339	18-16341	18-16449	18-16606	NDT DATA (NIT DUCTILITY TRANSITION)			
18-16726				7-13189	11-15595	11-15596	11-15605
MITR (MASS. INST. OF TECH. REACTOR)				11-15755	11-15756	11-16114	11-16167
18-16156				11-16305	11-16376	11-16607	11-17023
MIXING DEPTH				18-15595	18-15596	18-15605	18-16607
5-16400				NEPTUNIUM			
ML 1 (MOBILE LOW POWER PLANT NO. 1)				14-15821	14-15959	15-15821	15-15959
17-17384				NETHERLANDS			
MOCKUP				5-17230	17-16171		
5-16437	11-15667	11-15757	12-16437	NEUTRON			
18-15667	18-16437			6-17105	9-16460	9-16748	9-17105
MODEL TESTING				11-15755	11-15756	11-16121	15-14832
5-16437	5-16438	5-16468	6-16468	15-15705	15-15769	15-15991	15-16061
7-15955	11-16436	12-16437	17-16468	15-16318	15-16460	15-16748	15-16905
18-16436	18-16437	18-16438		15-16906	15-16907	15-16909	15-17270
MODERATOR				17-16041	17-16830	17-17104	17-17120
7-15701	17-16146			17-17366	18-16748		
MODERATOR COEFFICIENT				NEUTRON INTERACTION			
5-16752	6-09986	6-16751	11-16487	3-16992	12-16992	13-16992	
17-16157	17-16322	17-17346	18-16127	NEVADA TEST SITE			
18-16487	18-16751	18-16752		15-15973			
MODIFICATION, SYSTEM OR EQUIPMENT				NFS (NUCLEAR FUEL SERVICES)			
9-15969	9-16430	9-16431	17-16138	13-16552	13-16657	15-16657	17-16552
17-16139	17-16430	17-16431	17-16482	17-16657			
17-17416	18-16035	18-16430	18-16431	NINE MILE POINT			
18-16485				5-16453	6-16453	11-16449	12-16450
MOLTEN FUEL				14-16452	16-16451	18-16448	18-16449
5-16354	17-16034	18-16354		18-16450	18-16451	18-16452	18-16453
MOLYBDENUM				NI0BIUM			
7-16564				14-15819	14-16919	15-15819	15-16919
MONITOR, RADIATION, AIR				NITROGEN			
9-16748	14-15819	14-15989	14-16920	5-15740	7-16564	15-16906	
15-15767	15-15810	15-15811	15-15812	NOBLE GAS			
15-15815	15-15819	15-15989	15-16061	5-15952	7-15846	7-15952	7-16560
15-16269	15-16748	15-16920	15-16957	7-16569	11-15952		
18-16748				NOISE			
MONITOR, RADIATION, EMERGENCY				6-16058	9-16058		
15-16327	17-16327	18-16327		NOISE ANALYSIS			
MONITOR, RADIATION, ENVIRONMENTAL				6-16058	6-16737	6-16756	6-17105
9-15972	9-16460	14-15967	14-16920	9-16058	9-16737	9-16756	9-17105
15-14832	15-15966	15-15967	15-15972	17-16065	17-16219	17-16458	17-16756
15-16061	15-16460	15-16920		NOISE CROSS CORRELATION			
MONITOR, RADIATION, GAS				6-16058	6-17105	9-16058	9-17105
9-16347	9-16362	11-16347	12-16362	NORWAY			
14-15585	15-15866	15-15966	16-15585	15-15708	17-15828		
18-15585	18-16347	18-16362		NOZZLE			
MONITOR, RADIATION, GENERAL				1-16183	1-16586	7-13189	7-16183
6-16057	15-15800	15-15801	15-15966	7-16586	7-16588	11-16112	11-16161
15-15993	15-16533	15-16963	15-17269	11-16183	11-16586		
17-16533				NPR (HANFORD NEW PRODUCTION REACTOR)			
MONITOR, RADIATION, LIQUID				7-16461	8-16461	12-16461	
15-15966				NRTS (NATIONAL REACTOR TEST STATION)			
MONITOR, RADIATION, NUCLEAR DETONATION				9-16053	12-17195	13-17195	14-15822
15-14832				15-17272			
MONITOR, RADIATION, PERSONNEL				NRX (CANADIAN NATURAL U-HEAVY WATER REACTOR)			
1-17251	9-16748	15-15704	15-15705	5-16632	6-16632	7-16632	17-17109

NSIC (NUCLEAR SAFETY INFORMATION CENTER)				ORR (OAK RIDGE RESEARCH REACTOR)			
1-16183	5-15952	7-13189	7-15952	7-16569	17-15871	17-16320	17-16830
7-16183	11-15952	11-16183		17-17104			
NSPP (NUCLEAR SAFETY PILOT PLANT)				OSCILLATOR, REACTIVITY			
5-15952	7-13189	7-15698	7-15952	6-15540	6-16737	6-16756	9-16737
7-16317	11-15952	12-16317		9-16756	17-16744	17-16756	
NUCLEAR ATTACK				OUT OF PILE LOOPS AND EXPERIMENTS			
15-17274	15-17275	15-17281		1-16586	5-15952	5-17225	5-17230
NUCLEAR DETONATION				5-17391	6-16755	7-15872	7-15952
2-17022	11-17022	14-11634	14-15960	7-16586	7-16588	11-15952	11-16586
14-15965	14-15974	14-15983	14-16018	17-16755	17-17183		
14-16638	14-16918	14-17282	15-11634	OXIDATION			
15-15793	15-15974	15-16020	15-16916	17-15360	17-16040		
15-16918	15-17282			OXIDE			
NUCLEAR EXPLOSION DEBRIS				5-14783	6-14783	7-14783	7-15701
14-15166	14-15821	14-15825	14-15987	17-16520			
14-16018	15-15766	15-15793	15-15820	OXYGEN			
15-15821	15-15825	15-15973	15-15987	7-16564	8-15753	11-15753	15-16906
15-16916				17-15868			
NUCLEAR ROCKET				OYSTER CREEK			
4-16023	4-16024	5-15790	6-15040	5-16437	5-16438	5-16441	5-16442
6-16023	6-17105	9-15040	9-16024	5-16446	5-16550	9-16434	9-16435
9-17105	10-15040	11-16531	15-16905	11-16436	11-16439	11-16440	11-16444
17-16531	18-16023	18-16024		17-16437	12-16445	16-16446	17-16434
NUCLEATE BOILING				18-16407	18-16434	18-16435	18-16436
5-17239	6-16755	6-16756	8-16126	18-16437	18-16438	18-16439	18-16440
9-16756	17-16755	17-16756		18-16441	18-16442	18-16443	18-16444
OCEAN AND SEA				18-16445	18-16446		
3-17406	14-15962	14-15985	14-15990	PAKISTAN			
14-16919	15-15711	15-15891	15-15962	1-17248			
15-15990	15-16919			PALISADES POINT			
OCCURRENCE 1, 2, AND 3				2-15589	2-15589	2-15636	5-15590
5-16579	11-16580	12-16580	18-16414	5-15610	5-15612	5-15613	5-15615
18-16579	18-16580	18-17110		5-15616	5-15618	5-15669	5-16674
OPERATING EXPERIENCE				5-16679	6-15582	9-15564	9-15578
1-16312	5-16757	6-16757	6-16758	9-15579	9-15580	9-15581	9-15582
7-15934	7-15935	7-15936	7-16174	9-15583	9-15584	9-15608	9-15625
8-15934	8-15935	8-15936	9-15829	9-15673	9-16666	9-16682	10-15586
9-15830	9-15831	9-15832	9-15833	10-15587	10-15588	11-15546	11-15547
9-15834	9-16176	9-16177	9-16431	11-15551	11-15556	11-15557	11-15558
9-16434	10-16175	11-16531	11-16798	11-15559	11-15560	11-15561	11-15562
12-15934	12-15935	12-15936	12-16175	11-15563	11-15564	11-15565	11-15566
12-16312	17-15827	17-15829	17-15830	11-15567	11-15568	11-15569	11-15570
17-15831	17-15832	17-15833	17-15834	11-15571	11-15572	11-15573	11-15574
17-15994	17-15996	17-16021	17-16034	11-15575	11-15576	11-15577	11-15583
17-16103	17-16139	17-16140	17-16142	11-15594	11-15595	11-15596	11-15597
17-16143	17-16145	17-16148	17-16149	11-15598	11-15599	11-15600	11-15601
17-16150	17-16151	17-16153	17-16169	11-15602	11-15603	11-15604	11-15605
17-16170	17-16172	17-16173	17-16174	11-15606	11-15607	11-15608	11-15611
17-16175	17-16176	17-16177	17-16312	11-15614	11-15617	11-15620	11-15621
17-16316	17-16320	17-16431	17-16434	11-15622	11-15623	11-15624	11-15625
17-16458	17-16531	17-16650	17-16744	11-15626	11-15627	11-15628	11-15629
17-16757	17-16758	17-16830	17-17104	11-15630	11-15631	11-15632	11-15633
18-16431	18-16434	18-16798		11-15634	11-15635	11-15636	11-15637
OPERATING LICENSE PROCESS				11-15638	11-15639	11-15640	11-15641
1-16793	1-16794	18-16485		11-15642	11-15643	11-15644	11-15645
OPERATION				11-15646	11-15647	11-15648	11-15649
12-17102	17-16158	17-17102		11-15650	11-15651	11-15652	11-15653
OPERATIONS REPORT, ANALYSIS				11-15654	11-15655	11-15656	11-15657
5-16757	6-16755	6-16756	6-16757	11-15658	11-15659	11-15660	11-15661
6-16758	9-15534	9-16472	9-16756	11-15662	11-15663	11-15664	11-15665
9-16939	10-15532	10-17097	17-14834	11-15666	11-15667	11-15668	11-15669
17-15532	17-15534	17-15535	17-16292	11-15670	11-15671	11-15672	11-15673
17-16458	17-16472	17-16754	17-16755	11-16668	12-15552	12-15553	12-15554
17-16756	17-16757	17-16758	17-16939	12-15555	12-15581	12-15591	12-16663
17-17097	17-17346	17-17418	18-14834	12-16664	12-16665	12-16666	12-16667
18-17404				12-16668	12-16669	12-16670	12-16671
OPERATIONS REPORT, GENERAL				12-16672	12-16673	12-16675	12-16676
7-16174	9-13686	9-16176	9-16177	12-16677	12-16678	12-16679	12-16682
10-16175	12-16175	17-13686	17-15826	14-15585	14-15592	14-15619	15-16680
17-15994	17-15996	17-16021	17-16025	16-15585	16-15593	16-16680	17-15609
17-16103	17-16135	17-16140	17-16142	18-15545	18-15546	18-15547	18-15548
17-16143	17-16158	17-16172	17-16173	18-15549	18-15550	18-15551	18-15552
17-16174	17-16175	17-16176	17-16177	18-15553	18-15554	18-15555	18-15556
17-16219	17-16320	17-16410	17-16411	18-15557	18-15558	18-15559	18-15560
17-16447	17-16478	17-16767	17-16830	18-15561	18-15562	18-15563	18-15564
17-17104	17-17397	18-16447	18-16478	18-15565	18-15566	18-15567	18-15568
18-17402				18-15569	18-15570	18-15571	18-15572
OPERATIONS SUMMARY FOR AEC				18-15573	18-15574	18-15575	18-15576
9-16522	15-16404	17-16373	17-16404	18-15577	18-15578	18-15579	18-15580
17-16405	17-16521	17-16522	17-16524	18-15581	18-15582	18-15583	18-15584
17-16767	18-16373	18-16404	18-16405	18-15585	18-15586	18-15587	18-15588
ORGANIC COOLANT				18-15589	18-15590	18-15591	18-15592
5-15721	5-16085	17-16103	18-17401	18-15593	18-15594	18-15595	18-15596
ORGANIC IODIDE				18-15597	18-15598	18-15599	18-15600
1-16183	5-15952	7-15846	7-15952	18-15601	18-15602	18-15603	18-15604
7-16183	7-17326	11-15952	11-16183	18-15605	18-15606	18-15607	18-15608
18-17326				18-15609	18-15610	18-15611	18-15612
ORNL (OAK RIDGE NATIONAL LABORATORY)				18-15613	18-15614	18-15615	18-15616
5-15952	7-15952	9-16050	11-15952	18-15617	18-15618	18-15619	18-15620
17-04180				18-15621	18-15622	18-15623	18-15624

1P-15625	1P-15626	18-15627	18-15628	7-16187	11-15861	11-16026	11-16161
1P-15629	1P-15630	18-15631	18-15632	11-16304	11-16376	11-17197	11-17198
1P-15633	1P-15634	18-15635	18-15636	17-16187			
18-15637	1P-15638	18-15639	18-15640	PLATINUM			
18-15641	1P-15642	18-15643	18-15644	5-17214			
18-15645	18-15646	18-15647	18-15648	PLOWSHARE PROGRAM			
18-15649	1P-15650	18-15651	18-15652	14-11634	14-15960	14-15981	14-15983
18-15653	18-15654	18-15655	18-15656	14-16638	14-17282	15-11634	15-17282
18-15657	1P-15658	18-15659	18-15660	PLUM BROCK			
18-15661	18-15662	18-15663	18-15664	18-16132			
18-15665	1P-15666	18-15667	18-15668	PLUTONIUM			
18-15669	1P-15670	18-15671	18-15672	1-15836	1-15869	1-16006	5-15590
18-15673	18-16662	18-16663	18-16664	5-16790	5-17242	5-17414	6-09986
18-16665	18-16666	18-16667	18-16668	6-16735	6-16789	6-16791	7-15700
18-16669	18-16670	18-16671	18-16672	8-16789	8-17414	9-16748	11-16789
1P-16673	18-16674	18-16675	18-16676	13-16006	13-16552	13-16657	14-15813
18-16677	18-16678	18-16679	18-16680	14-15819	15-15767	15-15819	15-15964
18-16681	1P-16682			15-15986	15-16028	15-16657	15-16748
PARTICLE SIZE				15-17280	17-16552	17-16657	17-17120
4-16554	5-15952	7-15846	7-15952	18-15590	18-15869	18-16748	
7-16193	7-16191	7-16554	7-16558	PLUTONIUM DIOXIDE			
11-15952	14-15787	14-16018	15-15787	6-16483	6-16730	7-15846	9-16730
15-15964				PM 1 (PORTABLE MEDIUM NUCLEAR POWER PLANT)			
PARTICLE SIZE DISTRIBUTION				5-14734	14-14734	17-14734	17-17400
7-16182	7-16184	7-16191	16-16184	17-17403			
PARTICLE, RADIOACTIVE				PM 3A (PORTABLE MEDIUM NUCLEAR POWER PLANT)			
7-16184	16-16184			5-14734	14-14734	17-14734	18-16035
PARTICULATE				18-17382			
4-17263	5-11467	5-15720	5-15728	POISON, BURNABLE			
5-15729	5-16078	7-15846	7-16190	17-16067			
14-15927	14-15959	15-15812	15-15927	POISON, FIXED			
15-15959	15-16905			3-16403			
PATENT				POISON, SOLUBLE			
3-17407	11-17407	13-17407		6-16483	6-16755	6-16758	17-15609
PATHFINDER				17-16754	17-16755	17-16758	17-17397
5-16545	5-17096	17-16145		18-15609			
PBF (POWER BURST FACILITY)				POLONIUM			
5-16788	6-16788			15-15712	15-15767	15-15806	
PEACH BOTTOM 1				POOL BOILING			
9-13686	17-13686	17-16063	17-16064	5-16165	5-17214	6-16165	8-16165
17-16065	17-16066	17-16067	17-16068	POPULATION DISTRIBUTION			
17-16767				2-15589	18-15589		
PERFORMANCE LIMIT				POPULATION EXPOSURE			
1-16433	5-16356	5-16388	6-16356	14-15819	14-15959	14-16920	15-13854
7-16187	7-16569	10-15587	11-16386	15-15706	15-15819	15-15959	15-16920
11-16443	11-16607	12-16385	17-16187	POROUS DIFFUSION			
17-16387	17-16447	17-16534	18-15550	7-16555			
18-15587	19-16356	1P-16385	18-16386	POTASSIUM			
18-16387	1P-16388	18-16433	18-16440	5-09955	5-16570	6-16570	8-16570
18-16447	18-16534	18-16607		12-17195	13-17195	14-15770	14-16919
PERSONNEL EXPOSURE, RADIATION				15-15708	15-15712	15-15714	15-15806
1-16364	1-16365	1-16371	1-16372	15-15812	15-16917	15-16919	17-16040
1-16554	1-17249	1-17410	4-17262	POWER COEFFICIENT			
13-16308	13-16326	13-16657	14-15775	17-16534	18-16534		
14-15917	14-16920	15-15775	15-15815	POWER DISTRIBUTION			
15-15817	15-15991	15-16308	15-16324	4-16023	5-16539	5-16540	5-16541
15-16327	15-16364	15-16365	15-16366	5-16542	5-16543	5-16544	5-16545
15-16367	15-16369	15-16371	15-16372	5-16546	5-16547	5-16548	5-16549
15-16657	15-16658	15-16800	15-16911	5-16550	5-16622	5-16757	6-15040
15-16916	15-16920	15-16936	15-17249	6-16023	6-16483	6-16745	6-16751
15-17419	17-16327	17-16365	17-16366	6-16757	6-16758	9-15040	10-15040
17-16367	17-16369	17-16657	17-16658	17-16157	17-16292	17-16757	17-16758
17-16659	17-17121	17-17419	17-17420	18-16023	18-16601	18-16622	18-16745
18-16324	18-16326	18-16327	18-16366	18-16751			
18-16367	18-16369	18-16372		POWER UPGRATING			
PERSONNEL PROTECTIVE DEVICE				17-16144	17-17416	17-17417	
4-16301	13-16657	15-14832	15-16301	PRECIPITATION			
15-16533	15-16657	17-16533	17-16657	15-15707			
REPTURATION METHOD				PRESSURE DROP			
5-15791				5-15732	5-15742	5-16076	5-16084
PHANTOM, HUMAN BODY				5-16398	5-17201	5-17225	5-17243
15-16907				6-16398	8-16398	11-17243	
PHASE CHANGE				PRESSURE RELIEF			
6-16740				17-16138			
PHOSPHORUS				PRESSURE VESSEL			
12-16479	14-15959	14-15984	15-15959	1-16183	1-16586	5-16334	5-16401
15-15984	17-17123			5-16757	5-17096	6-16757	7-16183
PIPING				7-16586	7-16588	9-15608	9-16472
5-17237	11-15565	11-15611	11-16161	9-16729	11-15594	11-15595	11-15596
11-16303	11-17196	12-17237	17-16141	11-15597	11-15599	11-15600	11-15601
18-15565	18-15611			11-15602	11-15603	11-15605	11-15606
PIQUA				11-15608	11-15617	11-15748	11-15750
17-16103	17-16142	17-16143		11-15752	11-15755	11-15756	11-15861
PLANT PROTECTIVE SYSTEM				11-16112	11-16113	11-16114	11-16115
1-16312	9-1557P	9-15579	9-15834	11-16117	11-16118	11-16121	11-16122
9-16092	9-16396	12-16312	12-16348	11-16123	11-16124	11-16161	11-16167
12-16396	17-15834	17-16312	18-15578	11-16183	11-16304	11-16305	11-16311
18-15579	18-16348	18-16396		11-16313	11-16321	11-16331	11-16332
PLASMA				11-16335	11-16337	11-16338	11-16339
5-16090				11-16341	11-16342	11-16352	11-16376
PLASTICITY				11-16397	11-16401	11-16440	11-16486

11-16525	11-16586	11-16607	11-16721	1-15999	1-16012	1-16197	1-16426
11-16722	11-16723	11-16724	11-16725	1-16654	1-17248	1-17410	3-16426
11-16728	11-16729	11-16798	11-17196	4-16152	7-16174	7-17029	12-17029
11-17197	11-17198	12-16311	12-16397	14-15775	14-15804	14-15813	14-15817
15-16028	17-16022	17-16311	17-16316	14-15819	14-15825	14-15967	14-15981
17-16321	17-16472	17-16534	17-16757	14-17029	15-15747	15-15760	15-15761
18-15594	18-15595	18-15596	18-15597	15-15762	15-15763	15-15765	15-15775
18-15599	18-15600	18-15601	18-15602	15-15784	15-15786	15-15792	15-15804
18-15603	18-15605	18-15606	18-15608	15-15809	15-15815	15-15817	15-15819
18-15617	18-16331	18-16332	18-16334	15-15820	15-15825	15-15964	15-15966
18-16335	18-16337	18-16338	18-16339	15-15967	15-16368	15-16369	15-16426
18-16341	18-16342	18-16352	18-16397	15-16474	15-16533	15-16658	15-16904
18-16401	18-16408	18-16440	18-16486	15-16905	15-16906	15-16907	15-16909
18-16534	18-16607	18-16721	18-16722	15-16911	15-16916	15-16936	15-17268
18-16723	18-16724	18-16725	18-16728	15-17269	15-17270	15-17274	15-17276
18-16729	18-16798			15-17278	15-17279	17-04143	17-04180
PRESSURE, EXTERNAL				17-04715	17-16012	17-16150	17-16152
5-16394	8-16126	11-15634	18-15634	17-16174	17-16197	17-16310	17-16368
18-16394				17-16369	17-16410	17-16411	17-16478
PRESSURE, INTERNAL				17-16521	17-16524	17-16533	17-16658
7-16187	7-16569	11-15556	11-15647	17-16660	17-17118	17-17123	17-17186
11-15757	11-15861	11-16111	11-16304	17-17187	17-17188	17-17189	17-17190
11-16352	11-17196	13-16325	17-16187	18-16368	18-16369	18-16478	
17-16523	18-15556	18-15647	18-16325	RADIATION, PUBLIC EDUCATION/ACCEPTANCE			
18-16352				1-16364	1-16427	15-16364	15-16474
PRESSURIZER				15-17279	17-04715	17-17188	18-16428
17-14834	18-14834			RADIOACTIVITY, RELEASE			
PROCEDURES AND MANUALS				7-16174	17-16025	17-16174	17-17104
1-16197	3-16993	15-15785	15-17191	RADIOCHEMICAL ANALYSIS			
17-16197	17-17191	18-16797		14-16920	15-16920		
PROMETHIUM				RADIOCHEMICAL PLANT SAFETY			
13-13394	18-13394			1-16006	1-16134	7-11687	12-17195
PROMPT NEUTRON LIFETIME				13-13394	13-15758	13-16006	13-16007
6-15540	6-15544	6-16538	6-16732	13-16008	13-16134	13-16308	13-16657
6-16736	6-17080	9-16732		13-17195	15-16308	15-16657	17-16657
PROPERTY, PHYSICAL				18-13394			
7-15938	11-16112	11-16122	11-16321	RADIOCHEMICAL PROCESSING			
17-16032	17-16321			1-04745	1-16134	5-17414	8-17414
PPTP (PLUTONIUM RECYCLE TEST REACTOR)				12-17195	13-13394	13-15758	13-16134
12-16027	17-16027			13-16309	13-16657	13-17195	14-15813
PULSED NEUTRON TECHNIQUE				14-16309	15-16657	17-16657	18-13394
6-17105	9-17105			RADIOGRAPHY			
PUMP				1-16197	1-17251	9-16042	9-16047
5-17237	7-15934	7-15935	7-15936	9-16048	9-16049	9-16050	9-16053
8-15934	8-15935	8-15936	12-15934	9-16096	15-16366	15-16658	15-17419
12-15935	12-15936	12-17237	17-16169	17-16197	17-16366	17-16370	17-16658
17-16521	17-16527			17-16659	17-17117	17-17122	17-17187
PUMP, JET				17-17419	18-16366	18-16370	
17-16744				RADIOISOTOPE			
PPOLYTIC				3-15977	7-15700	15-17268	17-04715
7-16569				17-17116			
QUAD CITIES 1 AND 2				RADIOLOGICAL ASSISTANCE			
18-16428				13-16308	15-16308		
QUALITY CONTROL				RADIOLOGY			
1-16433	1-17250	9-16042	9-16043	5-16770	5-16781	6-16770	6-16781
9-16044	9-16045	9-16047	9-16048	7-16770	7-16781		
9-16049	9-16050	9-16051	9-16052	RADIOCLYTIC GAS			
9-16053	9-16054	9-16096	11-15654	17-16140	17-16292	17-16520	
11-15657	11-15658	11-15672	11-16331	RADIUM			
11-16723	17-16153	17-16169	18-15548	14-15807	14-15808	15-15712	15-15762
18-15654	18-15657	18-15658	18-15672	15-15807	15-16957	15-17278	
18-16331	18-16433	18-16723		RADON			
RADIATION DAMAGE				1-16371	1-16372	7-16184	15-15712
7-15701	7-17029	11-16026	11-16313	15-16371	15-16372	15-16957	15-17278
12-17029	14-15987	14-17029	14-17254	16-16184	17-17120	18-16372	
15-15987	15-16019	15-16800	15-16908	RAINOUT			
15-16912	15-16913	15-16914	17-15871	14-15766	14-15962	14-15990	14-16920
17-16316	17-16763	17-16830	17-17104	15-15707	15-15766	15-15773	15-15810
18-17401				15-15811	15-15812	15-15962	15-15990
RADIATION EFFECT				15-16920	18-16681		
7-15701	7-15939	7-17029	11-15755	RARE EARTH			
11-15756	11-16313	11-16321	12-15362	14-15959	14-17273	15-15959	
12-16136	12-17029	14-15807	14-15808	REACTIVITY COEFFICIENT			
14-15984	14-15987	14-17029	14-17254	6-15542	6-16058	6-16591	9-16058
15-15779	15-15807	15-15984	15-15987	17-16650			
15-16019	15-16800	15-16906	15-16908	REACTIVITY EFFECT			
15-16911	15-16912	15-16913	15-16914	5-15674	6-15674	6-17259	17-16029
15-16935	15-16938	15-17268	15-17275	17-16034	17-16063	17-16065	17-16067
15-17281	17-15360	17-16316	17-16321	17-16146	17-16147	17-16159	17-16219
18-16132				17-17366	17-17397	18-15674	18-16159
RADIATION INJURY, TREATMENT OF				18-16379			
7-17029	12-17029	14-17029	15-15986	REACTIVITY EFFECT, ANOMALOUS			
15-16019	15-16912			6-16755	6-16756	6-16758	9-15534
RADIATION MODEL				9-16756	9-16939	17-15534	17-15535
14-16018				17-15827	17-15871	17-16029	17-16142
RADIATION PROTECTION, CHEMICAL				17-16146	17-16147	17-16153	17-16405
15-15986	15-16912			17-16534	17-16755	17-16756	17-16758
RADIATION PROTECTION, ORGANIZATION				17-16939	18-16405	18-16534	
1-17410	7-17029	12-17029	14-17029	REACTIVITY EFFECT, EXPANSION			
15-15747	15-16474			6-16737	9-16737	17-16159	18-16159
RADIATION SAFETY AND CONTROL				18-17297			

REACTIVITY EFFECT, SLUMP				5-14734	14-14734	17-14734	17-17384
5-16606	6-16727	11-16606	18-16606	17-17400	17-17403	18-16035	18-17382
18-16727				REACTOR, BOILING WATER			
REACTIVITY EFFECT, VOID				1-16329	1-16333	1-16433	1-16609
17-16029				3-16403	5-15541	5-15845	5-16334
REACTIVITY, EXCESS				5-16340	5-16346	5-16354	5-16356
4-16023	5-16164	6-16023	6-16164	5-16359	5-16381	5-16388	5-16389
6-17080	9-16164	9-16939	17-16037	5-16390	5-16391	5-16392	5-16393
17-16322	17-16939	18-16023		5-16394	5-16401	5-16437	5-16438
REACTIVITY, NEGATIVE				5-16441	5-16442	5-16446	5-16453
6-17080				5-16468	5-16469	5-16542	5-16543
REACTOR CONTROL				5-16547	5-16549	5-16550	5-16600
4-16160	9-16160	9-16423	17-16159	5-16606	5-16622	5-17211	5-17386
17-17416	18-16159			5-17391	6-09986	6-16282	6-16330
REACTOR COOLANT				6-16356	6-16357	6-16381	6-16453
5-15541	5-17239	9-16193	15-15966	6-16468	6-16590	6-16591	6-16612
17-16073				6-16624	6-16727	6-16730	6-17381
REACTOR DECOMMISSIONING EXPERIENCE				6-17385	7-16174	7-16345	8-16353
17-16412	17-16765	17-16766	18-16412	8-16621	9-15830	9-15833	9-15834
REACTOR DESCRIPTION				9-16176	9-16177	9-16347	9-16349
2-16528	4-16023	6-16023	11-16449	9-16355	9-16359	9-16360	9-16362
12-16374	12-16445	12-16450	12-16528	9-16396	9-16434	9-16435	9-16472
17-15995	17-16133	17-16374	17-16527	9-16522	9-16619	9-16620	9-16623
17-16529	17-16650	17-17109	17-17181	9-16625	9-16626	9-16627	9-16629
17-17182	18-16023	18-16035	18-16374	9-16729	9-16730	10-16175	10-16261
18-16379	18-16443	18-16445	18-16448	10-16610	10-16628	11-15845	11-16110
19-16449	18-16450	18-16473	18-16528	11-16116	11-16311	11-16331	11-16332
18-16532	18-16597	18-16601	18-16747	11-16335	11-16336	11-16337	11-16338
18-17066	18-17103	18-17382	18-17390	11-16339	11-16341	11-16342	11-16343
19-16777	19-17398			11-16344	11-16345	11-16347	11-16350
REACTOR DYNAMICS				11-16352	11-16355	11-16358	11-16386
5-16790	6-15582	6-16590	6-16789	11-16395	11-16397	11-16401	11-16436
6-16791	6-17077	6-17080	6-17253	11-16439	11-16440	11-16444	11-16449
8-16789	9-15582	9-16092	9-16319	11-16469	11-16486	11-16606	11-16607
11-16789	17-16173	17-17397	18-15582	11-16614	11-16615	11-16616	11-16629
18-16128	18-16129			11-16721	11-16722	11-16723	11-16724
REACTOR KINETICS				11-16725	11-16726	11-16728	11-16729
6-16483	17-16065	18-16129		11-16798	12-15845	12-16175	12-16311
REACTOR OFFGAS				12-16329	12-16330	12-16348	12-16350
7-16174	11-16358	15-15966	15-16404	12-16351	12-16362	12-16385	12-16389
17-15996	17-16140	17-16174	17-16316	12-16396	12-16397	12-16437	12-16445
17-16404	18-16358	18-16404		12-16450	12-16610	12-16617	12-16618
REACTOR PHYSICS				12-16619	14-16452	15-15966	15-16323
6-15543	6-17385	17-16173	17-17174	16-16446	16-16451	16-16630	17-15830
18-17385	19-16777			17-15833	17-15834	17-16021	17-16025
REACTOR POWER				17-16110	17-16139	17-16140	17-16141
9-16423	14-16920	15-16920	17-17173	17-16144	17-16145	17-16174	17-16175
17-17176	17-17204	17-17205		17-16176	17-16177	17-16292	17-16311
REACTOR SAFETY SYSTEM				17-16373	17-16387	17-16392	17-16434
1-16046	1-16312	4-16024	5-16359	17-16468	17-16472	17-16521	17-16522
5-17232	6-15040	9-15040	9-15580	17-16524	17-16529	17-16600	17-16744
9-15584	9-15829	9-15830	9-15831	17-17101	17-17171	17-17174	17-17346
9-15832	9-15833	9-15834	9-16024	17-17366	17-17381	17-17397	18-16323
9-16092	9-16359	9-16625	9-16626	18-16323	18-16329	18-16330	18-16331
9-16627	9-16682	10-15040	12-16312	18-16332	18-16333	18-16334	18-16335
12-16348	12-16682	17-15829	17-15830	18-16336	18-16337	18-16338	18-16339
17-15831	17-15832	17-15833	17-15834	18-16340	18-16341	18-16342	18-16343
17-16312	18-15580	18-15584	18-16024	18-16344	18-16345	18-16346	18-16347
18-16348	18-16359	18-16625	18-16626	18-16348	18-16349	18-16350	18-16351
18-16627	18-16682			18-16352	18-16353	18-16354	18-16355
REACTOR STABILITY				18-16356	18-16357	18-16358	18-16359
5-16346	5-16752	6-16282	6-16537	18-16360	18-16361	18-16362	18-16373
6-16612	6-16745	6-16751	9-16319	18-16384	18-16385	18-16386	18-16387
17-16034	17-16159	17-16744	18-16159	18-16388	18-16389	18-16390	18-16391
18-16346	18-16612	18-16745	18-16751	18-16392	18-16393	18-16394	18-16395
18-16752				18-16396	18-16397	18-16401	18-16407
REACTOR STARTUP EXPERIENCE, INITIAL				18-16429	18-16432	18-16433	18-16434
17-16650				18-16435	18-16436	18-16437	18-16438
REACTOR STARTUP TESTING				18-16439	18-16440	18-16441	18-16442
17-16145	17-16219	17-16650		18-16443	18-16444	18-16445	18-16446
REACTOR TEST FACILITY				18-16448	18-16449	18-16450	18-16451
18-16127	18-16128	18-16129		18-16452	18-16453	18-16486	18-16597
REACTOR TRANSIENT				18-16601	18-16605	18-16606	18-16607
5-16164	5-16281	5-16285	5-16287	18-16608	18-16609	18-16610	18-16611
5-16770	5-16771	5-16773	5-16774	18-16612	18-16613	18-16614	18-16615
5-17259	6-16164	6-16281	6-16285	18-16616	18-16617	18-16618	18-16619
6-16287	6-16330	6-16535	6-16740	18-16620	18-16621	18-16622	18-16623
6-16770	6-16771	6-16773	6-16774	18-16624	18-16625	18-16626	18-16627
6-17258	7-16770	8-16281	8-16285	18-16628	18-16629	18-16630	18-16721
8-16287	9-16164	9-16522	12-16330	18-16722	18-16723	18-16724	18-16725
17-15826	17-16522	18-16330		18-16726	18-16727	18-16728	18-16729
REACTOR, AEC OWNED				18-16750	18-16798	18-17385	18-17390
9-15534	10-15532	12-16027	17-04179	18-17402	18-17404		
17-04180	17-15532	17-15534	17-15535	REACTOR, BREEDER			
17-15827	17-15871	17-15994	17-16027	6-16735	6-16736	12-17102	17-16033
17-16034	17-16108	17-16153	17-16320	17-16148	17-16149	17-16150	17-16151
17-16520	17-16534	17-16650	17-17104	17-16159	17-16534	17-17102	18-16159
17-17169	17-17170	17-17181	17-17182	18-16408	18-16473	18-16530	18-16534
17-17183	18-16534	18-17090	18-17091	18-17066	18-17092		
18-17377				REACTOR, CIRCULATING FUEL			
REACTOR, ARMY				6-17077	6-17253	9-16939	17-16939

REACTOR, DESALINATION				REACTOR, POOL TYPE			
6-16738	9-16319	11-16242	18-16242	10-17415	17-16482	17-16529	17-17415
REACTOR, FAST				17-17416	17-17417		
1-15836	1-17252	4-16589	5-14783	REACTOR, POWER			
5-16164	5-16739	5-16741	5-16790	1-15836	1-15869	1-16125	1-16312
5-17068	5-17239	6-14783	6-15540	6-17203	7-15846	9-15834	12-16312
6-16164	6-16589	6-16734	6-16735	15-15966	17-15834	17-15995	17-15996
6-16736	6-16737	6-16738	6-16739	17-16103	17-16142	17-16143	17-16170
6-16741	6-16789	6-16791	6-17068	17-16171	17-16312	17-16322	17-16456
6-17078	6-17259	7-14783	7-16182	17-17178	17-17186	17-17203	17-17376
7-17068	8-16789	9-16164	9-16589	18-15867	18-15869	18-16473	19-17398
9-16737	11-16789	12-17102	17-16033	REACTOR, PRESSURE TUBE			
17-16148	17-16149	17-16150	17-16151	5-17386	11-16525	12-16027	17-16027
17-16159	17-16534	17-17102	18-16159	17-16410	17-16411	17-16412	17-16447
18-16379	18-16408	18-16473	18-16530	17-16478	17-17366	18-16412	18-16447
18-16534	18-17066	18-17092	18-17095	18-16478			
18-17113	19-16777	19-17398		REACTOR, PRESSURIZED WATER			
REACTOR, FAST BURST				1-16433	1-17412	2-15588	2-15589
17-16133	17-16153	18-17090		2-15636	2-16413	2-16528	5-14734
REACTOR, FLUX TRAP				5-15541	5-15590	5-15610	5-15612
9-16430	9-16431	17-15994	17-16430	5-15613	5-15615	5-15616	5-15618
17-16431	17-16534	17-16650	17-16764	5-15669	5-15674	5-16468	5-16469
18-15870	18-16430	18-16431	18-16534	5-16539	5-16540	5-16541	5-16544
18-17091				5-16546	5-16548	5-16579	5-16674
REACTOR, GAS COOLED				5-16679	5-16752	5-16757	5-16781
1-16183	5-16084	5-16163	5-17212	5-17230	5-17234	5-17261	6-15582
5-17233	5-17235	5-17243	6-16163	6-15674	6-16468	6-16483	6-16745
7-16183	7-16461	8-16461	9-13686	6-16751	6-16755	6-16756	6-16757
9-16424	11-15752	11-16103	11-16525	6-16758	6-16781	7-15872	7-16551
11-17243	12-16130	12-16461	12-17235	7-16781	7-17326	8-17412	9-15564
17-13686	17-15826	17-15995	17-16022	9-15578	9-15579	9-15500	9-15501
17-16063	17-16064	17-16065	17-16066	9-15582	9-15583	9-15608	9-15625
17-16067	17-16068	17-16219	17-16767	9-15673	9-15829	9-15831	9-15832
17-17233	17-17384	18-16127	18-16128	9-15834	9-16319	9-16666	9-16682
18-16129	18-16130	18-16473	18-16532	9-16756	10-15586	10-15587	10-15588
18-16747	18-16775	18-17235	18-17390	11-15546	11-15547	11-15551	11-15556
REACTOR, GRAPHITE MODERATED				11-15557	11-15558	11-15559	11-15560
5-14783	5-15952	5-16163	5-16739	11-15561	11-15562	11-15563	11-15564
5-17233	5-17235	5-17243	6-14783	11-15565	11-15566	11-15567	11-15568
6-16163	6-16739	6-16789	7-14783	11-15569	11-15570	11-15571	11-15572
7-15952	7-16461	8-16461	8-16789	11-15573	11-15574	11-15575	11-15576
9-16939	11-15952	11-16789	11-17243	11-15577	11-15583	11-15594	11-15595
12-16130	12-16461	12-17235	17-16029	11-15596	11-15597	11-15598	11-15599
17-16063	17-16064	17-16065	17-16066	11-15600	11-15601	11-15602	11-15603
17-16067	17-16068	17-16131	17-16765	11-15604	11-15605	11-15606	11-15607
17-16766	17-16939	17-17233	18-16130	11-15608	11-15611	11-15614	11-15617
18-16747	18-17235			11-15620	11-15621	11-15622	11-15623
REACTOR, HEAVY WATER				11-15624	11-15625	11-15626	11-15627
5-17386	11-16525	12-16027	17-15995	11-15628	11-15629	11-15630	11-15631
17-16027	17-16041	17-16157	17-16158	11-15632	11-15633	11-15634	11-15635
17-16172	17-16322	17-16410	17-16411	11-15636	11-15637	11-15638	11-15639
17-16412	17-16447	17-16478	17-16520	11-15640	11-15641	11-15642	11-15643
17-16749	17-17109	18-16156	18-16412	11-15644	11-15645	11-15646	11-15647
18-16447	18-16478	18-16485	18-16495	11-15648	11-15649	11-15650	11-15651
18-17378				11-15652	11-15653	11-15654	11-15655
REACTOR, HIGH TEMP. GAS				11-15656	11-15657	11-15658	11-15659
1-16183	1-16586	7-16183	7-16586	11-15660	11-15661	11-15662	11-15663
7-16588	11-16183	11-16586	17-16022	11-15664	11-15665	11-15666	11-15667
17-16219	18-16127	18-16128	18-16129	11-15668	11-15669	11-15670	11-15671
REACTOR, HOMOGENEOUS				11-15672	11-15673	11-15675	11-16116
5-16287	6-16287	8-16287	9-15534	11-16119	11-16399	11-16413	11-16469
17-15534				11-16484	11-16487	11-16580	11-16668
REACTOR, INTERNAL SUPERHEAT				11-16721	11-16722	11-16746	11-17065
5-16545	5-17096	7-16174	9-16176	12-15552	12-15553	12-15554	12-15555
9-16177	10-16175	12-16175	17-16021	12-15581	12-15591	12-15675	12-15676
17-16025	17-16139	17-16140	17-16141	12-16027	12-16374	12-16484	12-16528
17-16145	17-16174	17-16175	17-16176	12-16580	12-16663	12-16664	12-16665
17-16177	17-17101	17-17397		12-16666	12-16667	12-16668	12-16669
REACTOR, LARGE				12-16670	12-16671	12-16672	12-16673
1-15836				12-16675	12-16676	12-16677	12-16678
REACTOR, LIQUID METAL COOLED				12-16679	12-16682	12-16746	12-17065
1-15836	5-16164	6-16164	6-16735	14-14734	14-15585	14-15592	14-15619
6-16736	7-15934	7-15935	7-15936	14-16062	15-15966	15-16404	15-16680
8-15934	8-15935	8-15936	9-16164	16-15585	16-15593	16-16600	17-14734
12-15934	12-15935	12-15936	12-17102	17-14834	17-15535	17-15609	17-15829
17-16029	17-16032	17-16033	17-16131	17-15831	17-15832	17-15834	17-15868
17-16148	17-16149	17-16150	17-16151	17-15996	17-16027	17-16062	17-16146
17-16456	17-16534	17-16534	17-16765	17-16147	17-16155	17-16157	17-16322
17-16766	17-17102	18-16379	18-16408	17-16374	17-16404	17-16405	17-16410
18-16530	18-16534	18-16534	18-17092	17-16411	17-16412	17-16447	17-16468
18-17095	18-17113			17-16478	17-16527	17-16551	17-16583
REACTOR, MARITIME				17-16753	17-16754	17-16755	17-16756
1-17412	3-17406	5-16468	6-16468	17-16757	17-16758	17-17400	17-17403
8-17412	17-16468			17-17420	18-14834	18-15545	18-15546
REACTOR, MOL TEN SALT				18-15547	18-15548	18-15549	18-15550
5-17069	6-17069	9-16420	9-16939	18-15551	18-15552	18-15553	18-15554
17-16034	17-16316	17-16939	17-17169	18-15555	18-15556	18-15557	18-15558
REACTOR, ORGANIC COOLED				18-15559	18-15560	18-15561	18-15562
17-16103	17-16142	17-16143	18-17401	18-15563	18-15564	18-15565	18-15566
REACTOR, PEBBLE BED				18-15567	18-15568	18-15569	18-15570
5-16163	5-16842	5-17208	6-16163	18-15571	18-15572	18-15573	18-15574

18-15575	18-15576	18-15577	18-15578	4-16589	6-16589	9-15534	9-16589
18-15579	18-15580	18-15581	18-15582	17-15534			
18-15583	18-15585	18-15586	18-15587	REFUELING			
18-15588	18-15589	18-15590	18-15591	6-16758	17-16172	17-16373	17-16758
18-15592	18-15593	18-15594	18-15595	17-17403	18-16373		
18-15596	18-15597	18-15598	18-15599	REFUELING, ON LINE			
18-15600	18-15601	18-15602	18-15603	17-17366			
18-15604	18-15605	18-15606	18-15607	REGULATION, AEC			
18-15608	18-15609	18-15610	18-15611	1-16011	1-16371	1-16372	1-16427
18-15612	18-15613	18-15614	18-15615	1-16793	1-16794	11-16311	12-16311
18-15616	18-15617	18-15618	18-15619	15-15966	15-16368	15-16371	15-16372
18-15620	18-15621	18-15622	18-15623	17-16311	17-16368	18-16368	18-16372
18-15624	18-15625	18-15626	18-15627	REGULATION, GENERAL			
18-15628	18-15629	18-15630	18-15631	1-17248	1-17410	3-15979	7-17029
18-15632	18-15633	18-15634	18-15635	12-17029	14-17029	15-13854	
18-15636	18-15637	18-15638	18-15639	REGULATION, IAEA			
18-15640	18-15641	18-15642	18-15643	1-12862	3-12862	3-15979	3-16194
18-15644	18-15645	18-15646	18-15647	3-17409			
18-15648	18-15649	18-15650	18-15651	REGULATION, ICC			
18-15652	18-15653	18-15654	18-15655	3-15979	3-16994		
18-15656	18-15657	18-15658	18-15659	REGULATION, STATE			
18-15660	18-15661	18-15662	18-15663	1-17251	14-16098		
18-15664	18-15665	18-15666	18-15667	RELIABILITY ANALYSIS			
18-15668	18-15669	18-15670	18-15671	1-16312	3-16993	4-16425	9-15829
18-15672	18-15673	18-15674	18-15675	9-15830	9-15831	9-15832	9-15833
18-15676	18-16035	18-16374	18-16404	9-15834	9-16091	9-16092	9-16363
18-16405	18-16412	18-16413	18-16414	9-16425	10-17098	11-16303	12-16312
18-16433	18-16447	18-16478	18-16484	17-15829	17-15830	17-15831	17-15832
18-16487	18-16528	18-16579	18-16580	17-15833	17-15834	17-16312	17-17098
18-16581	18-16655	18-16662	18-16663	RELIABILITY, COMPONENT			
18-16664	18-16665	18-16666	18-16667	4-16425	5-16469	9-16363	9-16425
18-16668	18-16669	18-16670	18-16671	11-16469			
18-16672	18-16673	18-16674	18-16675	RELIABILITY, SYSTEM			
18-16676	18-16677	18-16678	18-16679	4-16425	9-16092	9-16363	9-16425
18-16680	18-16681	18-16682	18-16721	12-16618	18-16618		
18-16722	18-16745	18-16751	18-16752	RESEARCH AND DEVELOPMENT PROGRAM			
18-16901	18-17065	18-17110	18-17261	17-16022	17-16146	17-16147	17-16158
18-17326	18-17382	18-17390		17-16219	17-16456	17-16524	17-17376
PEACTOR, PRODUCTION				17-17384	18-16127	18-16128	18-16129
17-17177				18-16379	18-16775	18-16776	18-17095
PEACTOR, PULSED				18-17378	18-17379	19-16777	
17-16133	18-17091	18-17103		RESIN			
PEACTOR, RESEARCH				15-16368	17-16368	17-16656	17-17418
1-17252	5-16287	5-16457	5-16733	17-17420	18-16368		
6-16287	6-16535	6-16732	6-16733	RESPONSE SPECTRUM			
7-16461	7-16569	8-16287	8-16461	2-00897	2-15636	2-15862	2-15874
9-15534	9-16043	9-16430	9-16431	2-16097	2-16307	11-15636	18-15636
9-16732	10-17415	12-16461	15-15805	RESPONSE TIME			
15-17191	17-15534	17-15871	17-16037	9-15564	11-15564	12-16678	18-15564
17-16041	17-16320	17-16430	17-16431	18-16655	18-16678	18-16799	
17-16457	17-16458	17-16482	17-16520	RESPONSE TO AEC QUESTION			
17-16650	17-16764	17-16830	17-17104	6-16624	6-16727	9-16625	9-16626
17-17170	17-17191	17-17415	17-17416	9-16627	9-16629	10-16610	10-16628
17-17417	18-15867	18-15870	18-16156	11-16629	11-16726	12-16610	12-16618
18-16430	18-16431	18-16485	18-16495	16-16630	18-16608	18-16610	18-16611
18-17066				18-16613	18-16618	18-16624	18-16625
PEACTOR, SPACE				18-16626	18-16627	18-16628	18-16629
4-16152	4-17202	5-17202	5-17214	18-16630	18-16726	18-16727	
15-16905	15-16915	17-16152	18-17297	REVIEW			
18-17379				1-16046	1-17249	1-17252	1-17411
PEACTOR, TEST				1-17413	3-16994	5-16165	6-16165
5-14783	5-15952	5-16739	5-16771	8-16165	15-17249	18-15867	
5-16773	5-16774	5-16788	5-16788	RHODIUM			
6-14783	6-16535	6-16739	6-16771	14-16919	15-16919		
6-16773	6-16774	6-16788	6-16788	RISO (RESEARCH LABORATORY, DENMARK)			
6-16780	7-14783	7-15952	7-16461	14-15990	15-15990		
7-16569	8-16461	8-16789	9-16043	RIVER, COLUMBIA			
9-16748	9-17115	10-15532	11-15952	14-15959	14-15985	14-16920	15-15711
11-16321	11-16789	12-16461	15-16748	15-15891	15-15959	15-16920	
17-04179	17-04180	17-15532	17-15827	RIVER, LOIRE			
17-16108	17-16321	17-16458	17-16650	2-16471	5-16471	14-16471	
17-16830	17-17104	17-17115	17-17180	RIVER, OTTAWA			
17-17181	17-17182	17-17183	18-16132	15-15812			
18-16748	18-16776	18-17383		ROBINSON 2			
REACTOR, THERMAL				11-16484	12-16484	18-16484	
18-16775				ROCK MECHANICS			
REACTOR, TRAINING				2-15839	2-15842	2-15883	
18-16526	18-16796	18-16797		ROSSI ALPHA			
PEACTOR, WATER				6-16736			
1-15869	1-16183	5-17256	5-17258	RUBIDIUM			
4-17256	6-17258	7-13189	7-16183	7-16563	14-15984	15-15984	
11-16183	17-15828	17-16146	17-16147	RUTHENIUM			
17-17376	18-15869			7-16317	12-16317	14-15770	14-15780
RECOVERY PROCESS				14-15822	14-16017	14-16919	14-16981
14-17273				15-15780	15-16017	15-16919	
REDUNDANCE				SAFE FAILURE CRITERION			
12-16617	12-16663	12-16664	18-15549	9-16091			
18-16617	18-16663	18-16664		SAFETY ANALYSIS			
REFENTRY, ATMOSPHERIC				1-16937	2-16937	5-16453	5-16937
4-17263				5-17068	5-17069	5-17233	5-17261
REFLECTOR				5-17414	6-16453	6-17068	6-17069

7-17068	8-17414	17-17233	18-16453	18-15564	18-15565	18-15566	18-15567
18-17092	18-17261			18-15568	18-15569	18-15570	18-15571
SAFETY ANALYSIS REPORT, GENERAL							
5-16437	5-16438	5-16441	5-16442	18-15572	18-15573	18-15574	18-15575
5-16446	5-16453	6-16453	9-16434	18-15576	18-15577	18-15578	18-15579
9-16435	11-16436	11-16439	11-16440	18-15580	18-15581	18-15582	18-15583
11-16444	11-16449	12-16437	12-16445	18-15584	18-15585	18-15586	18-15587
12-16450	13-13394	14-16452	16-16446	18-15588	18-15589	18-15590	18-15591
16-16451	17-16434	17-17403	18-13394	18-15592	18-15593	18-15594	18-15595
18-16407	18-16434	18-16435	18-16436	18-15596	18-15597	18-15598	18-15599
18-16437	18-16438	18-16439	18-16440	18-15600	18-15601	18-15602	18-15603
18-16441	18-16442	18-16443	18-16444	18-15604	18-15605	18-15606	18-15607
18-16445	18-16446	18-16448	18-16449	18-15608	18-15609	18-15610	18-15611
18-16450	18-16451	18-16452	18-16453	18-15612	18-15613	18-15614	18-15615
18-17090	18-17091	18-17377		18-15616	18-15617	18-15618	18-15619
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16-16451	18-16451			18-15620	18-15621	18-15622	18-15623
SAFETY ANALYSIS REPORT, PRELIMINARY							
1-16329	1-16333	1-16609	2-15588	18-15624	18-15625	18-15626	18-15627
2-15589	2-15636	2-16413	5-15590	18-15628	18-15629	18-15630	18-15631
5-15610	5-15612	5-15613	5-15615	18-15632	18-15633	18-15634	18-15635
5-15616	5-15618	5-15669	5-15674	18-15636	18-15637	18-15638	18-15639
5-16334	5-16340	5-16346	5-16354	18-15640	18-15641	18-15642	18-15643
5-16356	5-16359	5-16388	5-16389	18-15644	18-15645	18-15646	18-15647
5-16390	5-16391	5-16392	5-16393	18-15648	18-15649	18-15650	18-15651
5-16394	5-16401	5-16579	5-16606	18-15652	18-15653	18-15654	18-15655
5-16622	5-16674	5-16679	5-16752	18-15656	18-15657	18-15658	18-15659
6-15582	6-15674	6-16330	6-16356	18-15660	18-15661	18-15662	18-15663
6-16357	6-16612	6-16624	6-16727	18-15664	18-15665	18-15666	18-15667
7-16345	8-16353	8-16621	9-15564	18-15668	18-15669	18-15670	18-15671
9-15578	9-15579	9-15580	9-15581	18-15672	18-15673	18-15674	18-15675
9-15582	9-15583	9-15584	9-15608	18-15676	18-15677	18-15678	18-15679
9-15625	9-15673	9-16347	9-16349	18-16331	18-16332	18-16333	18-16334
9-16355	9-16359	9-16360	9-16362	18-16335	18-16336	18-16337	18-16338
9-16396	9-16619	9-16620	9-16623	18-16339	18-16340	18-16341	18-16342
9-16625	9-16626	9-16627	9-16629	18-16343	18-16344	18-16345	18-16346
9-16666	9-16682	9-16729	10-15586	18-16347	18-16348	18-16349	18-16350
10-15587	10-15588	10-16361	10-16610	18-16351	18-16352	18-16353	18-16354
10-16628	11-15546	11-15547	11-15551	18-16355	18-16356	18-16357	18-16358
11-15556	11-15557	11-15558	11-15559	18-16359	18-16360	18-16361	18-16362
11-15560	11-15561	11-15562	11-15563	18-16384	18-16385	18-16386	18-16387
11-15564	11-15565	11-15566	11-15567	18-16392	18-16393	18-16394	18-16395
11-15568	11-15569	11-15570	11-15571	18-16396	18-16397	18-16401	18-16413
11-15572	11-15573	11-15574	11-15575	18-16414	18-16486	18-16579	18-16580
11-15576	11-15577	11-15583	11-15594	18-16605	18-16606	18-16607	18-16608
11-15595	11-15596	11-15597	11-15598	18-16609	18-16610	18-16611	18-16612
11-15599	11-15600	11-15601	11-15602	18-16613	18-16614	18-16615	18-16616
11-15603	11-15604	11-15605	11-15606	18-16617	18-16618	18-16619	18-16620
11-15607	11-15608	11-15611	11-15614	18-16621	18-16622	18-16623	18-16624
11-15617	11-15620	11-15621	11-15622	18-16625	18-16626	18-16627	18-16628
11-15623	11-15624	11-15625	11-15626	18-16629	18-16630	18-16662	18-16663
11-15627	11-15628	11-15629	11-15630	18-16664	18-16665	18-16666	18-16667
11-15631	11-15632	11-15633	11-15634	18-16668	18-16669	18-16670	18-16671
11-15635	11-15636	11-15637	11-15638	18-16672	18-16673	18-16674	18-16675
11-15639	11-15640	11-15641	11-15642	18-16676	18-16677	18-16678	18-16679
11-15643	11-15644	11-15645	11-15646	18-16680	18-16681	18-16682	18-16721
11-15647	11-15648	11-15649	11-15650	18-16722	18-16723	18-16724	18-16725
11-15651	11-15652	11-15653	11-15654	18-16726	18-16727	18-16728	18-16729
11-15655	11-15656	11-15657	11-15658	18-16750	18-16752	18-16798	18-16901
11-15659	11-15660	11-15661	11-15662	SAFETY EVALUATION			
11-15663	11-15664	11-15665	11-15666	1-16937	2-16937	5-16937	5-17068
11-15667	11-15668	11-15669	11-15670	5-17069	6-17068	6-17069	7-17068
11-15671	11-15672	11-15673	11-15674	17-16412	17-16764	18-16408	18-16412
11-16331	11-16332	11-16333	11-16336	SAFETY PRINCIPLES AND PHILOSOPHY			
11-16337	11-16338	11-16339	11-16341	1-15997	1-15998	1-15999	1-16000
11-16342	11-16343	11-16344	11-16345	1-16001	1-16002	1-16004	1-16005
11-16347	11-16350	11-16352	11-16355	1-16006	1-16010	1-16011	1-16012
11-16358	11-16386	11-16395	11-16397	1-16046	1-16102	1-16135	1-16197
11-16401	11-16413	11-16486	11-16580	1-16433	1-16937	2-16937	3-16009
11-16606	11-16607	11-16614	11-16615	3-16010	3-17409	5-16937	5-17068
11-16616	11-16629	11-16668	11-16721	5-17069	6-17068	6-17069	7-17068
11-16722	11-16723	11-16724	11-16725	9-16363	11-16167	11-16311	11-16386
11-16726	11-16728	11-16729	11-16798	12-16135	12-16311	12-16385	13-16006
12-15457	12-15552	12-15553	12-15554	13-16007	17-15998	17-16012	17-16040
12-15555	12-15581	12-15591	12-15675	17-16135	17-16197	17-16311	18-16385
12-15676	12-16329	12-16330	12-16348	18-16386	18-16433		
12-16353	12-16351	12-16362	12-16385	SAFETY REVIEW (OPERATIONS, EXPERIMENTS)			
12-16389	12-16396	12-16397	12-16580	1-16794	9-15834	17-15834	17-16310
12-16610	12-16617	12-16618	12-16619	17-16520	17-17183	17-17346	18-17404
12-16663	12-16664	12-16665	12-16666	SAFETY STUDY			
12-16667	12-16668	12-16669	12-16670	1-12862	3-12862	5-17068	5-17069
12-16671	12-16672	12-16673	12-16675	6-17068	6-17069	7-17068	9-15834
12-16676	12-16677	12-16678	12-16679	17-15834	19-16777		
12-16682	14-15585	14-15592	14-15619	SAMPLING			
15-16680	16-15505	16-15593	16-16630	5-16380	7-15698	7-15846	7-17326
16-16683	17-15609	17-16387	17-16392	14-15766	14-15770	14-15817	14-15821
18-15457	18-15545	18-15546	18-15547	14-15959	14-15962	14-15967	14-15990
18-15548	18-15549	18-15550	18-15551	14-16055	14-16380	14-16919	14-16920
18-15552	18-15553	18-15554	18-15555	15-15714	15-15766	15-15767	15-15773
18-15556	18-15557	18-15558	18-15559	15-15812	15-15815	15-15817	15-15821
18-15560	18-15561	18-15562	18-15563	15-15959	15-15962	15-15966	15-15967
				15-15990	15-16367	15-16919	15-16920
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 SOIL PROPERTY, IN SITU
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 SOIL, NUCLIDE OCCURRENCE
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 SPERT 3 (SPECIAL POWER EXCURSION REACTOR TEST)
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17-17182	17-17183	17-17186	17-17187	2-15842	2-15843	2-16464
17-17188	17-17189	17-17190	17-17191	SULFUR		
17-17192	18-16611			14-15984	15-15984	
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14-16920	15-16919	15-16920	15-17269	SURFACE CONTAMINATION		
16-15850				7-16317	12-16317	12-16479 14-15775
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1-16102	9-16091	9-16092		SURFACE FILM DEPOSIT		
STEAM				6-16755	6-16756	9-16756 12-16027
5-15952	5-17211	5-17358	7-13189	17-16027	17-16103	17-16143 17-16147
7-15537	7-15952	7-16562	8-15753	17-16447	17-16753	17-16754 17-16755
8-17358	11-15537	11-15753	11-15754	17-16756	17-17376	18-16447 18-16776
11-15757	11-15952	17-16022	17-16138	SURFACE TO VOLUME RATIO		
17-17376				7-15953		
STEAM GENERATOR				SURFACE WATER, NUCLIDE OCCURRENCE		
5-16757	6-16757	15-16404	17-16404	14-15770	14-15808	14-15959 14-15962
17-16405	17-16757	18-16404	18-16405	14-15990	14-16918	14-16919 14-16920
STEEL				15-15712	15-15715	15-15767 15-15772
1-16183	1-16586	7-13189	7-16183	15-15773	15-15806	15-15810 15-15811
7-16562	7-16586	7-16588	11-15361	15-15812	15-15959	15-15962 15-15990
11-15655	11-15662	11-15748	11-15750	15-16916	15-16918	15-16919 15-16920
11-15755	11-15756	11-15861	11-16026	SURFACE WATER, PROPERTY		
11-16093	11-16110	11-16112	11-16113	14-15770	14-15776	14-16055 15-15776
11-16114	11-16121	11-16122	11-16124	15-17272		
11-16161	11-16167	11-16183	11-16304	SURFACE WATER, SEDIMENT		
11-16305	11-16313	11-16376	11-16586	14-15776	15-15773	15-15776
11-17023	11-17197	11-17198	12-16136	SURFACE WATER, SUSPENDED MATERIAL		
17-16110	18-15655	18-15662		14-15776	15-15715	15-15776
STEEL LINER				SURFACE, GENERAL		
11-16115	11-16117	11-16118		5-16842		
STEEL, STAINLESS				SURFACE, PAINTED		
1-16183	1-17412	5-15952	5-16570	7-16562		
5-16733	5-16771	5-16773	6-16570	SURRY 1 AND 2		
6-16732	6-16733	6-16771	6-16773	5-15674	6-15674	11-15675 12-15675
7-15952	7-16183	8-16570	8-17412	12-15676	18-15674	18-15675 18-15676
9-16732	11-15952	11-16183	11-16313	SURVEILLANCE PROGRAM		
11-16321	12-15362	12-16479	17-16321	11-15605	11-16114	11-16305 18-15605
17-17376				SURVEY, GENERAL		
STEP (SAFETY TEST ENGINEERING PROGRAM)				1-15836	14-16920	15-16920
5-16781	6-16781	7-16781		SURVEY, RADIATION, EMERGENCY		
STORAGE CONTAINER				14-16920	15-16920	
5-16570	17-17122	18-16579		SURVEY, RADIATION, ENVIRONMENTAL		
STRESS				14-15817	14-15959	14-15967 14-15989
5-16842	11-15361	11-15855	11-15861	14-15990	14-16918	14-16920 15-15707
11-16093	11-16115	11-16123	11-16161	15-15767	15-15772	15-15773 15-15806
11-16168	11-16303	11-16304	11-16375	15-15810	15-15811	15-15812 15-15815
11-16376	11-17196	11-17197	11-17198	15-15817	15-15959	15-15967 15-15989
17-16031	17-16037			15-15990	15-16323	15-16915 15-16918
STRESS ANALYSIS				15-16920	18-16323	
3-15975	5-17096	5-17224	11-15547	SURVEY, RADIATION, GENERAL		
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11-15627	11-15629	11-15630	11-15631	17-17120	18-14834	
11-15632	11-15635	11-15637	11-15638	SUTTON DIFFUSION FORMULA		
11-15639	11-15640	11-15641	11-15642	16-15849		
11-15643	11-15646	11-15750	11-15861	SWEDEN		
11-16303	11-16304	11-16440	11-16486	1-16125	17-16157	17-16171 17-16322
11-16525	11-17196	11-17197	11-17198	SWITZERLAND		
11-17224	12-16667	18-15547	18-15597	1-16125	11-16525	17-16171
18-15598	18-15601	18-15622	18-15627	SYSTEM DESCRIPTION		
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18-15640	18-15641	18-15642	18-15643	15-16460	18-15575	18-15644 18-16435
18-15646	18-16440	18-16486	18-16667	18-17113		
STRESS CORROSION				SYSTEM OPERABILITY IN ACCIDENT CONDITIONS		
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STRESS RUPTURE				11-15604	11-15621	11-16343 11-16355
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STRONTIUM				TARGET (THERMAL ADV. REACTOR GAS-COOLED EXPLOITING TH)		
3-15977	7-16563	12-16479	13-13394	18-16775		
13-16326	14-15766	14-15770	14-15780	TECHNICAL SPECIFICATIONS		
14-15781	14-15798	14-15799	14-15819	17-16292	17-16310	17-16412 17-16527
14-15822	14-15959	14-15962	14-15984	17-16583	17-16764	17-16765 17-17416
14-15990	14-16016	14-16017	14-16106	17-17417	18-16156	18-16407 18-16408
14-16919	14-16981	14-17273	15-15707	18-16412	18-16495	
15-15709	15-15712	15-15714	15-15715	TECTONICS		
15-15760	15-15761	15-15763	15-15764	2-15839	2-15840	2-15843 2-15865
15-15766	15-15780	15-15781	15-15799	2-15879	2-15884	
15-15806	15-15806	15-15810	15-15811	TELLURIUM		
15-15812	15-15819	15-15959	15-15962	7-16563		
15-15984	15-15990	15-16016	15-16017	TEMPERATURE COEFFICIENT		
15-16910	15-16917	15-16919	15-17272	5-16770	5-17069	6-09986 6-15544
18-13394	18-16326			6-16537	6-16592	6-16593 6-16730
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3-17408	5-17235	11-15666	11-16321	9-16732	9-16737	17-16065 17-16066
12-17235	15-17275	17-16321	18-15666	17-16146	17-16157	17-16322
18-17235				TEMPERATURE GRADIENT		
SUBSIDENCE				8-16126	11-15861	

TEMPERATURE REACTIVITY EFFECT	17-16031	17-16032	18-15647	18-16441
4-16023	6-16023	17-16065	17-16066	
17-16322	18-16023			
TEMPERATURE TRANSIENT	THERMAL CONSIDERATION			
5-15724	5-15736	5-15737	5-15739	
5-16071	5-16073	5-17096	5-17258	
5-17358	6-16740	6-17258	8-17358	
TENSILE PROPERTY	THERMAL INSULATION			
11-16026	11-16161	11-16305	11-16321	
11-17197	17-16321			
TEST, COMPONENT	3-15978	3-15980	17-17260	
4-16199	THERMAL MECHANICAL EFFECT			
TEST, DESTRUCTIVE	4-16154	5-16757	5-17096	6-16757
11-16026	11-15629	11-16123	11-16440	11-16722
TEST, DROP	17-16159	17-16757	18-15629	18-16159
3-16402	18-16440	18-16722		
TFST, FILTER	THERMAL NEUTRON			
7-11713	15-15769	15-15993	15-16907	
17-17112	THERMAL POLLUTION			
TEST, FILTER SYSTEM	14-15592	15-16323	18-15592	18-16323
7-16551	THERMAL PROPERTY			
TEST, INSTRUMENT RESPONSE	5-15719	7-15699	11-16123	15-17274
9-16193	15-17275			
TEST, LEAK LOCATION	THERMODYNAMICS			
11-15602	5-15719	5-16083	5-17242	
12-15555	THICKNESS			
18-15602	9-16042	9-16043	9-16044	9-16048
TEST, LEAK RATE	9-16050	11-16112		
2-16413	14-16098	15-15712		
11-15559	THORON			
11-15624	7-16184	16-16184		
11-16109	TOPOGRAPHY			
11-16615	14-16018			
17-15996	TRACER, GAS			
18-15559	15-17268			
18-15624	TRACER, GENERAL			
18-16035	17-15996	17-16405	18-16405	
18-16444	TRACER, RADIOACTIVE			
18-16725	2-16471	5-16471	7-17326	14-16471
TEST, NONDESTRUCTIVE	15-16938	15-17268	17-17187	18-17326
9-16042	TRANSFER FUNCTION			
9-16047	5-16468	6-16282	6-16286	6-16468
9-16051	17-16468	17-16744		
9-16096	TRANSPORT THEORY			
11-16723	5-17216	5-17230		
18-15599	TRANSPORTATION AND HANDLING			
TEST, PHYSICS	1-12862	1-16010	1-17248	1-17251
17-16041	3-12862	3-16009	3-16010	3-16194
17-16067	3-17406	3-17409	4-16200	5-15952
17-17397	7-13189	7-15952	11-15952	14-15782
TEST, PLANT RESPONSE	15-15782	15-15964	17-16137	
4-16154	TRANSURANIUM ELEMENT			
18-15587	5-16539	5-16540	5-16541	5-16542
TEST, PREOPERATIONAL	5-16543	5-16544	5-16545	5-16546
12-15554	5-16547	5-16548	5-16549	5-16550
TEST, PRESSURE VESSEL	TREAT (TRANSIENT TEST REACTOR FACILITY)			
5-15952	1-16183	5-14783	5-15952	5-16739
11-16304	5-16790	5-17068	6-14783	6-16739
12-16311	6-16789	6-16791	6-17068	7-13189
TEST, PROOF	7-14783	7-15952	7-16183	7-17068
5-16437	8-16789	11-15952	11-16183	11-16789
9-16047	TRIGA (TRAINING REACTOR, ISOTOPES, G.A.)			
11-15621	17-17416	18-17091		
11-15665	TRITIUM			
11-16746	5-14734	13-16308	14-14734	14-15822
17-16113	14-15959	14-16014	14-16661	15-15767
18-15625	15-15959	15-16308	15-16404	15-16916
18-16437	15-16938	15-17268	15-17272	17-14734
TEST, SYSTEM OPERABILITY	17-15996	17-16404	17-16660	17-16661
4-16154	17-17116	17-17118	18-16404	
17-17415	TSUNAMI			
TESTING	2-15860	11-15860		
3-15977	TUBING			
7-15946	9-16045	9-16048	9-16049	9-16054
8-15934	TUNGSTEN			
9-16043	5-16739	6-16736	6-16739	7-16564
9-16048	TURKEY POINT 3 AND 4			
9-16052	5-16752	6-16751	18-16751	18-16752
9-16363	UHTREX (ULTRA HIGH TEMP. REACTOR EXPERIMENT)			
11-15755	9-16047	17-15826		
12-15935	UNION OF SOVIET SOCIALIST REPUBLICS			
THEORETICAL INVESTIGATION	6-17259	15-13854	15-15760	15-15764
1-16004	15-15765	18-17401		
6-16058	UNITED KINGDOM			
6-17256	1-16002	1-16125	3-16194	5-17201
11-15952	5-17215	5-17220	9-16418	14-15766
THERMAL ANALYSIS	15-15766	17-16171	17-16482	
3-17408	UNITED STATES			
5-16441	15-13854			
6-16740	URANIUM			
11-16111	1-15836	1-16371	1-16372	3-15976
TEST, ANALYSIS	3-16992	3-16993	5-17242	6-09986
3-17408	7-15700	12-16992	12-17195	13-16300

13-16992	13-17195	14-15774	14-15775	14-15817	15-15817		
14-15821	14-15822	14-16098	14-16309	WASTE MANAGEMENT			
15-15712	15-15775	15-15783	15-15821	2-16192	14-15089	14-15777	14-15782
15-16324	15-16367	15-16371	15-16372	14-15796	14-15798	14-15927	15-15089
17-16367	18-16324	18-16367	18-16372	15-15777	15-15782	15-15927	15-15966
URANIUM CARBIDE				18-16035			
1-16134	6-16734	6-16735	6-16740	WASTE SOURCE AND TYPE			
13-16134	15-16905			14-15796	14-15927	14-16013	14-16098
URANIUM DIOXIDE				15-15927			
5-15952	6-16483	7-15952	7-16187	WASTE STORAGE			
7-16317	7-16569	11-15952	12-16317	14-15619	14-15782	15-15782	18-15619
17-16187				WASTE TRANSPORTATION			
URANIUM HEXAFLUORIDE				3-15975			
3-15978	3-15980	3-16402	3-17408	WASTE TREATMENT, ECONOMICS			
URANIUM OXIDE				14-15777	14-15931	14-16013	15-15777
1-16134	5-16281	5-16285	5-16733	WASTE TREATMENT, EQUIPMENT			
5-16739	5-16771	5-16773	5-16774	14-15803	14-15931	14-15982	14-16014
5-16790	6-16281	6-16285	6-16732	14-16106	14-17273	14-17277	
6-16733	6-16739	6-16771	6-16773	WASTE TREATMENT, FIXATION			
6-16774	6-16789	6-16791	6-17078	13-16309	14-15802	14-15803	14-15927
8-16281	8-16285	8-16789	9-16732	14-16013	14-16309	14-17277	15-15927
11-16789	13-16134			WASTE TREATMENT, GAS			
USAEC (U.S. ATOMIC ENERGY COMMISSION)				14-15927	14-15982	14-16014	15-15927
1-17250				WASTE TREATMENT, GENERAL			
VACUUM RELIEF				14-15089	14-15796	14-15927	14-16013
11-15560	18-15560			15-15089	15-15927		
VALVE				WASTE TREATMENT, LIQUID			
5-15616	11-15560	11-15566	11-16531	14-15089	14-15777	14-15802	14-15803
12-16617	17-15609	17-16138	17-16169	14-15927	14-15931	14-15968	14-16013
17-16531	18-15560	18-15566	18-15609	14-16106	14-17273	14-17277	15-15089
18-15616	18-16617			15-15777	15-15927		
VAPOR, VAPOR PRESSURE				WASTE TREATMENT, SOLID			
6-16743	7-15953	7-16563		14-15089	14-15802	14-15927	14-15931
VENTILATION SYSTEM				15-15089	15-15927		
1-16365	9-16347	11-15574	11-16347	WATER VAPOR			
12-15591	15-16365	17-16365	18-15574	9-16193			
18-15591	18-16347			WATER, DRINKING			
VERMONT YANKEE				14-15959	14-15962	14-15974	15-15762
1-16433	15-16323	18-16323	18-16432	15-15764	15-15959	15-15962	15-15974
18-16433				WATER, GENERAL			
VIBRATION				1-17412	5-11461	5-15738	5-17201
2-15864	5-15731	17-15871	17-16033	5-17223	5-17232	7-15872	8-17412
17-16138				15-15707	17-15871	17-17376	
VIBRATION ANALYSIS				WAVE, NEUTRON			
2-00897	2-15874	2-16100	5-17236	6-17105	9-17105		
11-16449	18-16449			WELDING			
VOID COEFFICIENT				11-15596	11-15626	11-15652	11-15672
5-16164	5-16468	5-16733	6-09986	11-16444	17-17101	18-15596	18-15626
6-16164	6-16282	6-16286	6-16468	18-15652	18-15672	18-16444	
6-16335	6-16392	6-16732	6-16733	WELDS			
6-16734	6-16735	6-16737	6-17381	9-16052	9-16053	11-16110	11-16167
9-16164	9-16732	9-16737	17-16468	11-16305	17-16110	17-16458	
17-16830	17-17381	18-16379		WIND STATISTICS			
WASTE DISPOSAL, GAS				5-16446	14-15821	15-15793	15-15821
14-15619	14-15810	14-15822	14-15927	15-16680	16-16446	16-16451	16-16680
15-13854	15-15819	15-15927	15-15966	18-16446	18-16451	18-16680	
18-15619				X-RAY			
WASTE DISPOSAL, GENERAL				1-16654	1-17251	14-16920	15-16019
1-16365	1-17248	1-17251	3-15975	15-16913	15-16914	15-16920	15-17270
14-15089	14-15777	14-15796	14-15798	15-17278			
14-15817	14-15822	14-15927	14-16918	XENON			
14-17273	14-17277	15-13854	15-15089	5-16757	5-17069	6-16757	6-16758
15-15777	15-15817	15-15820	15-15927	6-17069	17-16034	17-16757	17-16758
15-16365	15-16918	17-16292	17-16365	17-17397			
WASTE DISPOSAL, HYDRAULIC FRACTURING				XENON OSCILLATION			
14-17106				6-15542	6-16536	6-16745	6-16751
WASTE DISPOSAL, LIQUID				18-16745	18-16751		
5-14734	14-14734	14-15782	14-15796	YANKEE			
14-15798	14-15822	14-15927	14-15959	5-16540	9-15832	9-15834	15-16404
14-16452	14-17106	15-13854	15-15782	17-15832	17-15834	17-15996	17-16155
15-15927	15-15959	15-15966	15-17272	17-16404	17-16405	18-16404	18-16405
17-14734	18-16452			YTTRIUM			
WASTE DISPOSAL, OCEAN				14-16981			
14-15592	14-15927	14-16452	15-15711	YUGOSLAVIA			
15-15891	15-15927	18-15592	18-16452	1-17410			
WASTE DISPOSAL, RIVER				ZINC			
2-16471	5-16471	14-16471	15-15711	14-15776	14-15959	14-15984	15-15715
15-15891				15-15776	15-15959	15-15984	
WASTE DISPOSAL, SALT				ZIRCALOY			
14-17106	14-17271			1-17412	5-15952	7-15952	8-16353
WASTE DISPOSAL, SOLID				8-16621	8-17412	11-15952	18-16353
12-16374	13-16309	14-15782	14-15796	18-16621			
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15-16318					KEMME JE				
ISACKS B					4-16166	4-16181	5-16166	5-16181	
2-16306					8-16181				
ISKENDERIAN HP					KENDRICK ED				
9-16731					3-16403				
ISPAEL SL					KENNISON RG				
5-16383	12-16383				5-17236				
ISSHIKI N					KERN R				
5-16468	6-16468	17-16468			5-16539	5-16540	5-16541	5-16542	
IVINS RO					5-16543	5-16544	5-16545	5-16546	
5-16570	6-16570	8-16570			5-16547	5-16548	5-16549	5-16550	
JACKSON TW					KESSLER WE				
5-15728					5-16770	6-16770	7-16770		
JACOBSON ME					KESTEN AS				
12-17195	13-17195				5-15790				
JAHREN K					KETZLACH N				
6-17381	17-17381				1-16134	13-16134			
JAYE S					KEYFITZ IM				
10-16775					18-16530				
JENNI HP					KHAN MH				
11-15752					11-16525				
JENQUIN UP					KHODYREVA MA				
6-09986					15-16028				
JENSEN JT					KIBBEY AH				
1-16125					14-16106				
JENSEN RG					KIER PH				
15-17272					6-16730	9-16730			
JEPSON P					KIMELDORF DJ				
5-11169					15-16913				
JERIC MZ					KINCINAS JE				
5-15735					13-16309	14-16309			
JERVIS MW					KING CY				
9-16418					5-15737				
JEWELL CE					KINGSLEY SG				
6-16592					1-16794				
JEZEK BW					KIRBY GJ				
11-15751					5-17229				
JOANOU GD					KIRK LA				
4-16023	4-16024	6-16023	9-16024		5-16080				
18-16023	18-16024				KIYOSE R				
JOHANSEN G					1-16001				
15-17270					KJAER-PEDERSEN N				
JOHNSON CE					6-16590				
4-16152	17-16152				KLAUS DJ				
JOHNSON DR					17-17192				
15-16909					KLECKER RW				

5-17096				LEPPARD JA			
KLOPFER G				17-16137			
5-17213				LEVY S			
KNIGHT BE				5-15732	5-15845	11-15845	12-15845
13-16008				LEWIS WH			
KNIGHT JR				13-16008			
1-04745				LIBERMAN DS			
KNIZHNIKOV VA				4-16425	9-16425		
15-15760	15-15763	15-15764		LICK DW			
KNOWLES DJ				5-16604			
9-16460	15-16061	15-16460		LIEBERMAN JA			
KNUTH PH				1-16046			
7-11713				LIKALA RC			
KOLGANOV VA				6-09986			
7-15955				LINDAUER GC			
KORNTZ RL				7-15699			
7-16182	11-16109			LINDBERG RG			
KOSOROK JR				15-15973			
9-16060				LINK BW			
KRUTS HJ				17-17170			
18-15870				LIPPERT J			
KRASCELLA NL				14-15962	14-15990	15-15962	15-15990
5-15790				LOCKER JL			
KRASNOJAROV NV				13-16325	18-16325		
6-17259				LOCKWOOD EH			
KREMPL E				17-17177			
11-16161				LOFTHOUSE JH			
KUBOSE DA				6-15544			
15-16905				LOLL M			
KUHLMANN A				5-15742			
9-16048				LONDON AL			
KULORR RN				5-17213			
5-15726				LONG EL			
KUNKIS A				17-17101			
16-15847				LONG PJ			
KUNZE JF				11-15750			
6-15540	6-15544			LONG WG			
KVAM NJ				4-16199			
14-15796				LOPEZ-MENCHERO E			
LAFITTE R				14-16013			
11-16525				LOPINA RF			
LAFUMA J				5-15738			
15-15986				LOVE CM			
LAGRUA JD				14-15985	15-15711	15-15891	
15-16368	17-16368	18-16368		LOVE TJ			
LAMSON BG				5-15720			
15-16914				LOWEN W			
LANDLIER G				4-16160	9-16160		
5-17237	12-17237			LOWENFELD MP			
LANE P				6-17385	18-17385		
17-16065	17-16067			LUNDE JE			
LANE WB				6-17381	17-17381		
14-15780	15-15780			LUTZ DE			
LANGHAM WH				18-16530			
4-16301	14-17254	15-16301		MACDONALD IP			
LASUK SR				5-17200			
15-16533	17-16533			MACFARLANE DR			
LAVERTY GL				5-16164	6-16164	9-16164	
2-15881				MACKAY RA			
LAVERTY WF				7-16563			
5-15740				MACPHERSON HG			
LAWROSKI S				17-16316			
6-16791				MADSHUS K			
LAWSON RC				15-15708			
15-16907				MAGNE A			
LAWTHER KR				14-17277			
5-16842				MALLET C			
LAZZARETTO JF				14-15797	15-15797		
14-16013				MALLETT AJ			
LECLARE PC				1-04745	3-15978	3-15980	3-16402
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LECORCHE PR				MANFREDINI S			
1-15997				14-16919	15-16919		
LEDoux A				MANN CA			
17-16749				9-16054			
LEE DH				MANSON RE			
5-17226				17-17109			
LEE JH				MAPLE BJ			
5-17238				9-15969			
LEFILLATRE G				MARAMAN WJ			
14-15802				14-15813			
LEJPUNSKIJ AI				MAREI AN			
6-17259				15-15760	15-15761	15-15762	15-15763
LENCE JT				MARION WC			
12-16130	18-16130			2-15883			
LENGEMANN FW				MASCARENAS RR			
14-15799	15-15799			12-17195	13-17195		
LENNERT BJ				MASCHE GC			
2-15882				6-17203	9-17206	9-17207	17-17171
LEONG GF				17-17173	17-17174	17-17203	17-17204
15-16019	15-16800			17-17205	17-17206	17-17207	

MASON DG				7-15953	7-16461	8-16461	12-16461
4-16152	17-16152			MILLER DR			
MATHEWS D				5-17236			
18-17297				MILLER WG			
MATHIS A				15-16020			
5-16086				MILLOT JP			
MATHUR MN				5-17255	5-17256	5-17258	6-17255
5-17228				6-17256	6-17258		
MATZNER B				MILLS RM			
5-16398	6-16398	8-16398		17-16103			
MAXWELL JH				MILLS RR			
14-15981				11-15751			
MAY JR				MINOR JE			
13-15758				3-15975			
MAYINGER F				MINSART G			
5-15231	5-16179	6-16179		5-16457	17-16457		
MAYNARD BJ				MIRONE M			
17-04715	17-17186	17-17188		17-16744			
MCADON JD				MIROPOL-SKII ZL			
5-17261	18-17261			5-16779	6-16779		
MCPRIDE JA				MITCHELL FA			
1-16011				15-16912			
MCCAUH FY JF				MITCHELL JW			
17-16763				5-15739			
MCCLEUNG RW				MITCHELL W			
9-16050				1-16793			
MCCONNON D				MITCHELSON DL			
15-16069				15-15961			
MCCORD RV				MITRONOVAS W			
17-15994				2-15864			
MCCOY HE				MTYANAGA I			
11-16168				15-15713			
MCFACHERN AD				MOE HJ			
9-16051				15-16533	17-16533		
MCENHILL JJ				MOECK EO			
17-16482				5-17200			
MCENTEE JR				MOEN RH			
17-16527				5-16162	6-16162		
MCKANE RH				MOHINDRA VK			
9-16044				15-15707			
MCKFE CS				MOISEENKO EI			
7-16564				15-15761			
MCLAUGHLIN DW				MOLDENHAWER F			
11-16114				12-16479			
MCLAUGHLIN JE				MONAHAN JM			
1-15999				11-16304			
MCLENDON JU				MOORE DP			
1-04745				14-15774			
MCLEND NB				MOORE GE			
1-15869	18-15069			9-16193			
MCMAHON JW				MOORE JG			
14-16055				8-15753	11-15753		
MCMANUS HN				MOORE R			
5-15733				18-17297			
MCMORDIE RK				MOORE RA			
5-15730				4-16023	4-16024	6-16023	9-16024
MCMULLEN TB				18-16023	18-16024		
16-15850				MORAN HS			
MCNEESE WD				15-16318			
14-15813				MORGAN JG			
MCNEIL J				7-16182			
18-16035				MORGAN KZ			
MCPHERSON GD				15-16474			
5-16600	17-16600			MORRIS PA			
MERHLING WH				1-16000			
15-15709				MORRISON DL			
MEIERAN HB				5-16083			
17-16763				MORRISON WC			
MCINHARDT WG				13-16007			
5-17239				MORTON WA			
MELESE G				5-09955			
18-16129				MORUCCI JP			
MENELEY DA				15-17280			
5-16741	6-16741	18-16530		MOSZYNSKI JR			
MERCHIE F				5-16077			
9-16423				MOURITZEN G			
MERKLE JG				5-09955			
11-17197				MOUSSEAU DR			
MERRILL M				11-16376			
17-16065	17-16067	18-16128	18-16129	MOWRY W			
MERRILL MH				17-16065			
17-16066				MUELLER RE			
MEYER GL				18-17383			
14-15983				MUKAIBO T			
MEYER RA				1-16001			
7-15701				MYERS GE			
MIKHAILOV VD				5-15739			
5-15721				MYSINGER ED			
MILLAR CH				12-16130	18-16130		
17-16041				NAZIEV YM			
MILLER CE				5-15719			

NEAL LG				PAXTON HC			
6-16286				1-16012	17-16012		
NELSON CT				PEAK JC			
11-16109				4-16023	4-16024	6-16023	9-16024
NEUFELD J				18-16023	18-16024		
15-15710				PEARCE WR			
NEWLON CE				5-17096			
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3-17408	12-16992	13-16992		15-15805			
NICHOLS DC				PEDROCCHI E			
13-16308	15-16308			5-17229			
NICHOLS RC				PEIRSON DH			
2-16528	12-16528	18-16528		14-15766	15-15766		
NIFMEYER RG				PELLETIER CA			
3-15977				15-15714			
NIKOLAIEV MN				PENLAND JR			
6-17259				11-16531	17-16531		
NILSON R				PEREZ RB			
18-17377				5-15789	7-16569		
NISHITA H				PERKINS EJ			
14-16981				14-15770			
NIZZA P				PERRET JD			
15-16908				17-16029	17-16142	17-16143	
NODVIK RJ				PERRIGO LD			
17-16155				12-16027	17-16027		
NOLAN DJ				PERSIANI PJ			
5-16383	12-16383			6-16737	9-16737		
NORMAN RF				PESKIN RL			
5-15739				5-11467			
NORRIS EB				PESTANER JF			
11-16305				15-16905			
NOTLEY MJ				PETERSEN GT			
7-16187	17-16187			6-15540			
NOTTAGE HB				PETUKHOVA EV			
5-15735				15-15764			
NOVICK M				PHILBIN TW			
17-16148	17-16149	17-16150	17-16151	11-15754			
MUGENT RC				PHILLIPS WA			
14-15965				15-17276			
O-BYRNE G				PICONE LF			
9-16423				6-16755	6-16756	9-16756	17-16753
OKESHOTT GB				17-16754	17-16755	17-16756	
2-16099				PINCOCK GD			
OBRIEN PD				6-15544	18-17379		
18-17090				PITMAN F			
OEYE O				14-16098			
6-17381	17-17381			PLEINEVAUX C			
OFFUTT GF				18-17390			
12-17195	13-17195			POINTUD R			
OHLEN H				9-16096			
15-15706				POITRAS JP			
OKRENT D				14-16014			
6-16737	9-16737			POLAN M			
OKUNEWICK JP				14-16018			
14-15987	15-15987			POLYMEROPoulos CE			
OLD BS				5-15736			
1-16125				POMEROY PW			
OLIVER J				2-15864			
2-16306				POMREHN HP			
ONEILL GL				1-16312	9-15829	9-15830	9-15831
18-17092				9-15832	9-15833	9-15834	12-16312
ORLOV VV				17-15829	17-15830	17-15831	17-15832
6-17259				17-15833	17-15834	17-16312	
ORP WL				POPE AJ			
6-16483				2-15884			
ORTLOFF CR				POPPENDIEK HF			
5-16090				5-09955			
OSBORN RK				PORTER NJ			
1-04745				11-16376			
OSLOND JH				POSTON JW			
14-15822				15-16909	17-16153		
OWEN WL				POTTER R			
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PAGE NP				POTTIER P			
15-16800				14-15982			
PALLISTER ET				POTTS GL			
15-15712				13-16309	14-16309		
PALMAS G				PREUSS HJ			
14-16919	15-16919			17-15995			
PALC GP				PRICE J			
18-16597				5-17208			
PARKER FL				PRIMEAU DB			
14-17106	15-13854			6-16591			
PARKER R				PRINCE BE			
5-16073				9-16939	17-16939		
PARRISH JR				PRITCHARD DW			
18-16601				14-17273			
PATRICK AJ				PROKSCH E			
9-16422				15-15786			
PAVLIK J				PRUDEN JC			
5-16570	6-16570	8-16570		11-16376			

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15-15964					ROY GM				
QUINN EP					18-16601				
5-15724	17-16033				RUCKENSTEIN E				
PARR DD					5-17216				
14-15983	14-17282	15-17282			RUSSELL J				
RADBPUGH DH					18-17297				
2-15882					RUSSELL JA				
RADCLIFFE JB					9-16460	15-16061	15-16459	15-16460	
17-16529					RUSTON WR				
RADUSHKEVICH LV					17-17376				
7-15955					RYDER FD				
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RAJAGOPAL V					5-09955				
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15-16903					SALMON RJ				
RAMDOHR H					15-15820				
14-17271					SAMUELS ER				
RAMEY JT					15-15707				
1-17250					SANATHANAN CK				
RANKEN WA					6-17078				
9-16422					SANDQUIST GM				
RAO KV					6-16536				
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RASTRELLI LU					17-16744				
3-15975					SARMA PK				
RAY JW					5-15725				
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6-09986					SARTORY WK				
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REIST PC					5-17421	6-17421			
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RENKEN CJ					7-15934	7-15935	7-15936	8-15934	
9-16045					8-15935	8-15936	12-15934	12-15935	
PICKARD CL					12-15936				
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RIES G					17-16022				
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RIETTINI A					1-16364	15-16364			
17-16070					SCHAD O				
PIGGS C					5-15231	5-16179	6-16179		
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PINEHART W					4-15749				
2-16095					SCHAEFFLER WA				
RIPLING EJ					5-15791				
11-15748					SCHERBERG MG				
RITZMAN RL					5-15727				
5-16083					SCHIKARSKI W				
ROBERTS IC					1-16937	2-16937	5-16937		
15-15966					SCHMALZ BL				
ROBERTS MW					14-15822				
7-16564					SCHMIDT HL				
ROBINSON LE					10-15970				
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ROBINSON RA					14-16106				
3-15977					SCHUELER				
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RODIER J					18-16473				

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SHAKH CY				7-16182			
7-15872				SPIGT CL			
SHANSTRUM R				5-11461			
18-17297				SPODENKIEWICZ T			
SHAW M				15-16957			
1-15836				SPRANKLE M			
SHEEHAN WE				5-11169			
15-15767				STEARNS JL			
SHEFCIK JJ				2-15884			
14-15089	15-15089			STEARNS JD			
SHEP				17-16131			
17-16143				STEELE LE			
SHEPARD RC				11-15755	11-15756		11-16124
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SHESLER AT				2-15879			
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SHIELDS RP				4-17265	5-17265		
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SHIELDS RR				15-15764			
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6-17077	6-17253			STERMAN LS			
SHURE K				5-15721			
11-16121				STERN M			
SIDOTIOT AA				18-16129			
1-17248				STERN MC			
SIEGEL R				18-16127	18-16128		
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SIGLER WF				6-16483			
14-15808				STEVENSON RL			
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1-04745				STEVEDING B			
SILVERMAN L				5-15729			
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SILVERPSTRI M				17-16520			
5-17241				STEWART GW			
SIMS WH				5-16604			
17-16103				STEWART HB			
SISMAN O				18-16775			
7-16569				STEWART JH			
SISSON LE				2-15840			
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0-16422				STOLLER SM			
SKINNFR DF				1-16125			
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SKOVHOLT DJ				4-16154			
18-16526				STORCH HL			
SLAIS E				7-16191			
15-15786				STRATTON WR			
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4-16425	0-16425			STRAUSS SD			
SMAARDYK A				1-17413			
11-16120				STRAWBRIDGE LE			
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5-16085				STRICKLAND G			
SMIT J				14-15803			
17-16041				STRCEMME A			
SMITH DG				15-15784			
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SMITH DR				14-17106	15-16916		
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SMITH DW				14-15782	15-15782		
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SMITH HE				9-16059	17-16059		
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SMITH P				18-15867			
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SMITH RR				5-17212			
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SMYTH HE				2-15864			
17-17109				SWAIN AD			
SNAPP RB				1-16135	12-16135		17-16135
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SNIDOW NL				15-15705			
17-16041				TABOR WH			
SNYDER MJ				17-15871	17-16320	17-16830	17-17104
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SNYDER WS				14-15798			
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17-15360				TATTEGRAIN A			
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SPEEPS RR				6-16755	6-16756	9-16756	17-16755

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TAYLOR RD				15-15961			
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TEASDALE WF				13-15758			
15-17272				URBANOWICZ Z			
TEER RR				15-16904			
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TENNEY GH				4-16200			
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TEPRY PA				14-15931			
17-16037				VALERINO MF			
TESTA FJ				5-16539	5-16540	5-16541	5-16542
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THACKER DG				VAN BOCKSTAEL G			
15-15747				18-17390			
THIF JA				VAN DE LINDT WJ			
17-17346				2-15865			
THOMAS JT				VAN HOWE K			
1-04745				17-16063			
THOMAS TH				VAN HOWE KR			
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THOMPSON DH				VAN LINT JM			
18-16530				14-15777	15-15777		
THOMPSON LJ				VAN SLYKE WJ			
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THOMPSON W				VANDE POEL M			
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THOMPSON WI				VANUZZI S			
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THORNGATE JH				VEITH DJ			
15-15792				12-17102	17-17102		
THURMAN AL				VELEZ GA			
11-17196				17-16141			
THURSTON MC				VERBER F			
15-15705				10-15970			
TICHLER P				VERLONA F			
7-15699				9-16417			
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9-16053				7-15872			
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5-17211				6-16538			
TORTAS DA				VILLADSEN PM			
11-16376				11-16116			
TORTIN RD				VOGELE W			
5-16072				18-16035			
TODD MCJ				VOHR J			
17-16482				5-16922			
TODREAS NE				VOHRA KG			
5-17240				14-15821	15-15821		
TOMALISON MR				VOLLMER IIM			
17-16103				17-04715	17-17186	17-17188	17-17189
TOMONTO JR				VOLODKA LK			
18-17103				5-16741	6-16741		
TONDI D				VON HOLLEN HJ			
17-16142				17-16527			
TONG LS				VORTMAN LJ			
5-15541				14-11634	15-11634		
TOWLE LH				WACHTER JW			
17-04715	17-17187	17-17188	17-17189	1-04745			
17-17190				WADE WZ			
TOWNER JW				3-17407	11-17407	13-17407	
15-15973				WAHL JE			
TOWNES BM				1-16102			
6-16591				WALKENHORST W			
TRICAUD Y				7-16558			
15-16908				WALKER DC			
TRIMBLE GD				9-16052			
4-16023	4-16024	6-16023	9-16024	WALKER RF			
18-16023	18-16024			18-16532			
TRIPP AM				WALKER TJ			
11-16242	18-16242			11-16304			
TROJANDV MF				WALL IB			
6-17259				6-15540			
TROXEL RW				WALLER C			
2-15839				17-16031			
TURNER FC				WALTERS CT			
1-16125				5-16083			
TURNER FH				WANTLAND JL			
11-16115	11-16117	11-16118		7-15698			
TURNER JE				WARD DR			
15-15710				17-16153			
TURNER KB				WARE WR			
15-16069				12-17102	17-17102		
TURNER KS				WARREN M			
13-16309	14-16309			4-16199			
TUTHILL EJ				WARZEE M			
14-15803				17-17376			
UEMATSU K				WARZEK FG			
1-15869	18-15869			6-15540			
UHPIC RE				WASHBURN TN			
6-16058	6-17105	9-16058	9-17105	13-15758			

WATSON GM					WISCHOW R				
5-15789		7-16569			18-16035				
WATT DE					WISSINK RG				
15-16907					13-16326		18-16326		
WEBB WW					WITT FJ				
5-15737					11-16375				
WEPSTER BH					WITTKE DD				
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WEDLICK HL					WOJTOWICZ S				
15-15714					15-16963				
WEFCH ME					WOLF S				
13-16008					5-17213				
WEFD RD					WOLF TW				
12-16027	17-16027				3-17407	11-17407		13-17407	
WEIMAN A					WOLSKA-WITEROWA M				
17-16063					15-16904				
WEINSTEIN MS					WOMELSDUFF RE				
1-15999					14-15989	15-15989			
WEISS F					WOOD RE				
5-15231	5-16179	6-16179			6-15544				
WEISSERT LR					WOODWARD WJ				
11-16114					15-15963				
WENTWORTH RA					WOOTON RO				
14-15799	15-15799				5-14734	5-16083	14-14734	17-14734	
WENTZ LR					WORLTON DC				
5-16281	5-16287	6-16281	6-16287		9-16049				
8-16281	8-16287				WORSOEE-SCHMIDT PM				
WERNECKE AH					5-17222				
3-16993					WRIGHT EG				
WEYDERT LN					15-16327	17-16327	18-16327		
5-16770	6-16770	7-16770			WRIGHT H				
WHFATLEY SJ					15-15710				
3-15980					WRIGHT RW				
WHICKER FW					5-16281	5-16285	6-16281	6-16285	
14-16016	14-16017	15-16016	15-16017		8-16281	8-16285			
WHIPPLE GH					WYLIE RD				
15-15714					11-17023				
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WILTSHIRE LL					ZLOTOWSKI I				
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