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NUCLEAR SAFETY

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JUNE 1969

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OAK RIDGE, TENNESSEE
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FOREWORD

THE INDEXED BIBLIOGRAPHY OF CURRENT NUCLEAR SAFETY LITERATURE IS PUBLISHED SIX 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 CENTERS 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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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 LEAK TESTING.

12. PLANT SAFETY FEATURES - REACTOR

THIS CATEGORY INCLUDES ALL ENGINEERED SAFETY FEATURES OF REACTORS EXCEPT CONTAINMENT. SUCH FEATURES ARE SYSTEMS FOR PRESSURE AND TEMPERATURE REDUCTION, AIR CLEANING, LIQUID WASTE DISPOSAL, AND CORE COOLING. OTHER TOPICS INCLUDE MAINTENANCE, DECONTAMINATION, FUEL-ELEMENT PROTECTIVE DEVICES, ETC.

13. PLANT SAFETY FEATURES - NONREACTOR

THIS CATEGORY DEALS WITH FACILITIES ASSOCIATED WITH THE EXTERNAL FUEL CYCLE AND WITH THE USE OF RADIOACTIVE MATERIAL CREATED BY NUCLEAR FISSION. MAJOR DIVISIONS - MINING, ORE CONVERSION, ENRICHMENT, FUEL ELEMENT FABRICATION, HOT CELLS, FUEL REPROCESSING, FUEL CONVERSION, WASTE DISPOSAL, AND RADIOISOTOPES.

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

1-11229 ALSO IN CATEGORY 18
A GUIDE FOR THE ORGANIZATION AND CONTENTS OF SAFETY ANALYSIS REPORTS
U.S. ATOMIC ENERGY COMMISSION, DIV. OF REACTOR LICENSING
TID-24631 +. 63 PAGES, 4 REFERENCES, JUNE 30, 1966

(ORIGINALLY ISSUED AS REG-1) A GUIDE IN SATISFYING REQUIREMENTS OF 10 CFR 50, FOR POWER REACTORS, AND WRITTEN TO COORDINATE WITH NEW TECHNICAL SPECIFICATIONS. BASICALLY AN OUTLINE (15 CHAPTERS) OF A SAFETY-ANALYSIS REPORT, WITH DISCUSSIONS OF THE TYPE OF INFORMATION NEEDED IN EACH SUBSECTION. FOR EXAMPLE - IIR METEOROLOGY - (1) IDENTIFY PREDOMINANT METEOROLOGICAL CONDITIONS, (2) EXPLAIN EFFECT ON DESIGN BASES, (3) PROVIDE A BASIS FOR SELECTED DIFFUSION PARAMETERS, VI ENGINEERED SAFEGUARDS - INFORMATION NEEDED TO SHOW (1) CONCEPT IS PROVEN, (2) SYSTEM WILL FUNCTION AND ACCOMPLISH PURPOSE, (3) SYSTEM WILL FUNCTION WHEN REQUIRED, (4) TEST PROVISIONS HAVE BEEN MADE.

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*REGULATION, AEC + *REPORT, SAR + *SAFETY PRINCIPLES AND PHILOSOPHY + DESIGN CRITERIA + REACTOR, POWER

1-25235 ALSO IN CATEGORY 18
LICENSE EXEMPTION FOR GOLD-U238 CUFFLINK
NEFARNIN ASSOCIATES, BOSTON, MASS.
3 PAGES, ATOMIC ENERGY CLEARING HOUSE, 14(42), PAGE 32-34, (OCT. 14, 1969)

REQUESTS EXEMPTION FROM AEC LICENSING REQUIREMENTS FOR U-238, WEIGHING 40 GRAMS, AND GIVING A DOSE RATE 0.15 MR/HR THROUGH SHIRT CUFF AND TWICE THAT IN AIR. THE BLUE OXIDE LAYER MAKES IT ESPECIALLY UNIQUE AND ATTRACTIVE. THE CUFF-LINK DOSE IS LESS THAN 1/4TH THE WRIST-WATCH DOSE.

PERSONNEL EXPOSURE, RADIATION + REGULATION, AEC + SOURCE MATERIAL

1-26110 ALSO IN CATEGORIES 15 AND 13
GUIDANCE FOR THE CONTROL OF RADIATION HAZARDS IN URANIUM MINING
FEDERAL RADIATION COUNCIL
NP-17040 +. 50 PAGES, FIGURES, TABLES, REFERENCES, SEPTEMBER 1967, STAFF REPORT OF THE U.S. FEDERAL RADIATION COUNCIL, REPORT NO. 8 REVISED

PRESENTS BACKGROUND MATERIAL USED IN THE DEVELOPMENT OF GUIDANCE FOR FEDERAL AGENCIES IN REGULATORY PROGRAMS AND IN PROGRAMS OF COOPERATION WITH STATES CONCERNING RADIATION PROTECTION IN THE MINING OF URANIUM ORE, AND SEEKS TO PROVIDE GUIDANCE FOR LONG-TERM RADIATION PROTECTION IN URANIUM MINING. PERIODIC REVIEW WILL BE NECESSARY TO INCORPORATE NEW INFORMATION AND NEW SURVEILLANCE OR CONTROL TECHNIQUES AS THEY ARE DEVELOPED. THE REPORT ALSO INCLUDES RECOMMENDATIONS FOR ADDITIONAL RESEARCH AND RECORDKEEPING NEEDED TO PROVIDE A FIRMER BASIS FOR THE EVALUATION OF RADIATION RISKS IN THIS INDUSTRY.

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*RADIOLOGICAL CONCENTRATION, MAN + *HAZARDS ANALYSIS + *MINING + *RADIATION SAFETY AND CONTROL + *URANIUM + DOSIMETRY, GENERAL + FEDERAL RADIATION COUNCIL + MONITOR, RADIATION, ENVIRONMENTAL + RADIATION EFFECT + RADIOBIOLOGY

1-27784 ALSO IN CATEGORIES 18 AND 5
TRAINING MANUAL - REACTOR SAFETY AND HAZARDS EVALUATION
U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE, PUBLIC HEALTH SERVICE
125 PAGES, FIGURES, TABLES, REFERENCES, 1967

A SET OF COURSE NOTES FOR 44 LECTURES IN THE GENERAL SUBJECT AREAS OF - I. REACTOR FUNDAMENTALS AND CHARACTERISTICS (6). II. ENGINEERED SAFEGUARDS (1). III. PROCESS RADIATION MONITORING AND ENVIRONMENTAL SURVEILLANCE MONITORING (6). IV. REACTOR SAFETY AND SITE CRITERIA (6). V. SAFETY ANALYSIS EVALUATION OF NUCLEAR FACILITIES AND INSTALLATIONS (7). VI. WASTE DISPOSAL CRITERIA OF RADIOACTIVE EFFLUENT (3). VII. SAFETY ASPECTS OF FUEL STORAGE AND REPROCESSING FACILITIES (1). VIII. EMERGENCY PLANNING (6). IX. EVALUATION AND PUBLIC HEALTH ASPECTS (7). X. REACTOR MANAGEMENT ASPECTS (1). ***FOR USE IN A TWO WEEK COURSE PRESENTED BY NCRH.

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1-27970 ALSO IN CATEGORY 13
GLOVEBOX FIRE SAFETY - A GUIDE FOR SAFE PRACTICES IN DESIGN, PROTECTION, AND OPERATION
FACTORY MUTUAL RESEARCH CORPORATION, NORWOOD, MASS.
TID-24236 +. 133 PAGES, FIGURES, TABLES, 77 REFERENCES, 1967

CATEGORY 1
GENERAL SAFETY CRITERIA

1-27970 *CONTINUED*

SUMMARIZES RESULTS OF GLOVEBOX FIRE SAFETY PROJECT INITIATED AND SPONSORED BY AEC DIVISION OF OPERATIONAL SAFETY. CONTENTS BASED ON LITERATURE REVIEW, VISITS TO AEC FACILITIES, ANALYSES OF SERIOUS GLOVEBOX INCIDENTS, TESTS, AND SUGGESTIONS OF KNOWLEDGEABLE CONTRACTOR PERSONNEL. INCLUDES CHAPTERS ON FIRE AND EXPLOSION BEHAVIOR, ADMINISTRATION AND PLANNING, CONSTRUCTION, VENTILATION, FIRE DETECTION SYSTEMS, FIRE CONTROL WITHIN BOXES, FIRE PROTECTION OF ROOMS AND BUILDINGS, AND APPLICABLE ESTABLISHED CRITERIA.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*FUEL CONVERSION + *FUEL REPROCESSING + *GLOVE BOX + *RADIOISOTOPE + *PFACOR, GENERAL + ADMINISTRATIVE CONTROL + CODES AND STANDARDS + DESIGN CRITERIA + EXPLOSION + FIRE + FOAM + PROCEDURES AND MANUALS + SAFETY PRINCIPLES AND PHILOSOPHY

1-28019

BIGGS JG

NUCLEAR STATION WASTE HEAT CAN EXTEND THE ST. LAWRENCE SEAWAY SEASON
ATOMIC ENERGY OF CANADA LTD., CHALK RIVER, ONTARIO
AECL-3061 +. 2 FIGURES, 22 REFERENCES, FEB. 1968

AN APPLICATION OF NUCLEAR STATION WASTE HEAT TO EXTEND THE NAVIGATION SEASON AND INCREASE HYDRO GENERATING CAPACITY IS DESCRIBED. HEAT REQUIREMENTS TO LIMIT ICE FORMATION ARE DETERMINED FOR THE RIVERS AND SMALL LAKES IN THE ST. LAWRENCE SEAWAY SYSTEM, AND THEN PREDICTED REGIONAL NUCLEAR GENERATING CAPACITIES ARE USED TO FORECAST THE APPLICATION. A FIRST APPROXIMATION OF COSTS AND BENEFITS IS MADE INDICATING A SEASON EXTENSION MAY BE PRACTICAL. PROMPT INITIATION OF A THOROUGH ENGINEERING AND ECONOMIC STUDY IS RECOMMENDED.

AVAILABILITY - CHALK RIVER NUCLEAR LABORATORY, ATOMIC ENERGY OF CANADA LIMITED, CHALK RIVER, ONTARIO

*ECONOMIC STUDY + *REACTOR POWER + *SITING, GENERAL + *TEMPERATURE REACTIVITY EFFECT + *THERMAL CONSIDERATION + *THERMAL POLLUTION + CHALK RIVER + OCEAN AND SEA + RIVER, GENERAL

1-28020

JASKE RT

A TEST SIMULATION OF THE TEMPERATURE OF THE ILLINOIS RIVER AND A PREDICTION OF THE EFFECTS OF DRESDEN II AND DRESDEN III REACTORS
BATTELLE-NORTHWEST, RICHLAND, WASH. PACIFIC NORTHWEST LAB.
BNWL-728 +. 44 PAGES, FIGURES, TABLES, 9 REFERENCES, APRIL 1968

ACTUAL DATA COLLECTED AT TWO WIDELY DIFFERING DRAINAGE BASINS WERE USED. THESE BASINS WERE SELECTED AS CASES BY THE AEC AND BATTELLE-NORTHWEST BECAUSE OF THE EXTENSIVE INFORMATION AVAILABLE. THIS REPORT SUMMARIZES THE RESULTS OF THE ILLINOIS RIVER SIMULATION AND THE PREDICTION OF THE EFFECTS OF THE THERMAL LOADING TO BE IMPOSED BY THE OPERATION OF DRESDEN II AND DRESDEN III REACTORS, WHICH ARE PRESENTLY PLANNED FOR STARTUP DURING THE CURRENT CALENDAR YEAR.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

*DRESDEN 2 (BWR) + *DRESDEN 3 (BWR) + *MODEL TESTING + *RIVER, GENERAL + *SIMULATION + *TEMPERATURE REACTIVITY EFFECT + *THERMAL POLLUTION + ENVIRONMENTAL CONDITION + METEOROLOGY + REACTOR POWER + REACTOR, BWR + SITING, GENERAL

1-28047

ALSO IN CATEGORY 14

NAKATANI RE + FOSTER RF

HANFORD TEMPERATURE EFFECTS ON COLUMBIA RIVER FISHES
BATTELLE-NORTHWEST, RICHLAND, WASH.
BNWL-CC-591 +. 15 PAGES, APRIL 5, 1966

THIS REPORT ATTEMPTS TO BRING THE HANFORD TEMPERATURE EFFECTS ON FISHES INTO PROPER PERSPECTIVE BY SUMMARISING THE CURRENT KNOWLEDGE AND UPDATING AN EARLIER REPORT OF 1958 ON THE SUBJECT. INFORMATION ON THE TEMPERATURE EFFECT ON THE SALMON AS ADULTS, EGGS, AND JUVENILES, AS WELL AS FISH DISEASES IN GENERAL, IS DISCUSSED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151 \$3.00 COPY, \$0.65 MICROFICHE

*ECOLOGICAL CONSIDERATION + *EFFLUENT + *TEMPERATURE GRADIENT + *THERMAL POLLUTION + HANFORD SITE + REACTOR POWER + RIVER, COLUMBIA

1-28163

ALSO IN CATEGORIES 9 AND 6

GREEBLER P + HENLEY EJ

ADVANCES IN NUCLEAR SCIENCE AND TECHNOLOGY
GENERAL ELECTRIC COMPANY + UNIVERSITY OF HOUSTON
351 PAGES, VOLUME 4, 1968, ACADEMIC PRESS, NEW YORK AND LONDON

THIS VOLUME IS CONCERNED WITH ADVANCED REACTOR CONCEPTS. TWO OF THE CHAPTERS DEAL WITH THE

CATEGORY 1
GENERAL SAFETY CRITERIA

1-28163 *CONTINUED*

TECHNOLOGY OF, RESPECTIVELY, SODIUM-COOLED FAST BREEDER POWER REACTORS AND GAS-COOLED POWER REACTORS, THE LATTER INCLUDING BOTH THERMAL CONVERTERS AND FAST BREEDERS. COGNIZANCE IS TAKEN OF THE CENTRAL ROLE OF REACTOR SAFETY IN THE DEVELOPMENT OF FAST BREEDER REACTORS IN TWO CHAPTERS DEALING WITH, RESPECTIVELY, THE DOPPLER EFFECT IN FAST REACTORS AND THE ANALYSIS OF MAXIMUM ACCIDENTS. THREE CHAPTERS COVER RECENT DEVELOPMENTS IN AREAS OF MORE GENERAL APPLICABILITY, NAMELY, OPTIMAL CONTROL THEORY, MODERN PERTURBATION THEORY, AND INDUSTRIAL APPLICATION OF IONIZING RADIATIONS. MAIN HEADINGS FOR THE 7 CHAPTERS ARE - GAS-COOLED REACTOR TECHNOLOGY, SAFETY AND ECONOMIC CHARACTERISTICS OF A 1000-MWE FAST SODIUM-COOLED REACTOR DESIGN, AND THE DOPPLER EFFECT IN FAST REACTORS.

BETHE TAIT + DOPPLER EFFECT + ECONOMICS + MATHEMATICAL TREATMENT + REACTOR CONTROL + REACTOR DYNAMICS + REACTOR SAFETY SYSTEM + REACTOR, FAST + REACTOR, GCR + REACTOR, LMCR + REACTOR, LMFBR + THEORETICAL INVESTIGATION

1-28560 ALSO IN CATEGORIES 17 AND 11

ABERLE JA + MACDONALD AR + PORTER SW

A PROCEDURE FOR MINIMIZING PERSONNEL HAZARDS WHILE CHANGING TRITIUM TARGETS IN ACCELERATORS ARMED FORCES RADIOBIOLOGY RESEARCH INSTITUTE, DEFENSE ATOMIC SUPPORT AGENCY, BETHESDA, MARYLAND AFRII-TN66-5 +. 17 PAGES, 12 FIGURES, 7 REFERENCES, MAY 1966

DESCRIBES STEP-BY-STEP PROCESS UTILIZING STAINLESS-STEEL GLOVE BOX AND AN ALTERNATE USING A PLASTIC CONTAINMENT AREA. PROCEDURE IS APPLICABLE ONLY TO THE PARTICULAR TYPE OF ACCELERATOR, BUT PROCEDURE EMPHASIZES POSSIBLE HAZARDS AND THE METHODS USED TO CONTROL THEM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

*ACCELERATOR + *PROCEDURES AND MANUALS + *RADIATION SAFETY AND CONTROL + *TRITIUM + GLOVE BOX

1-28572 ALSO IN CATEGORIES 15 AND 17

PIPER HP

FACT AND FICTION CONCERNING NUCLEAR POWER SAFETY

6 PAGES, NUCLEAR NEWS, 11(12), PAGES 54-59 (DECEMBER 1968)

THE NUCLEAR POWER INDUSTRY IS BEING SUBJECTED TO OPPOSITION BY A VARIETY OF PEOPLE FOR A NUMBER OF REASONS. THIS ARTICLE LOOKS AT A SMALL SAMPLING OF MATERIAL FROM THREE DIFFERENT SOURCES - THE NONTECHNICAL AUTHOR, THE SYNDICATED COLUMNIST, AND THE TECHNICALLY ORIENTED WRITER, NONE OF WHOM HAVE ANY APPARENT CONFLICT OF INTEREST WITH NUCLEAR DEVELOPMENT. BUT IN ALL THE EXAMPLES CITED HERE, SENSATIONAL TREATMENT OF THE POTENTIAL HAZARDS ASSOCIATED WITH NUCLEAR POWER IS THE COMMON THREAD, AND THE CRITICISMS AND IMPLICATIONS SEEM, TO THE AUTHOR, TO BE UNJUSTIFIED. THE VARIOUS OCCURRENCES ARE EXAMINED AND COMPARED WITH THE RECORDED FACTS IN EACH CASE.

*RADIATION IN PERSPECTIVE + *RADIATION, PUBLIC EDUCATION/ACCEPTANCE + ACCIDENT, CONSEQUENCES + FISSION PRODUCT RELEASE, GENERAL + HAZARDS ANALYSIS + INCIDENT, GENERAL + INCIDENT, SL 1 + INCIDENT, WINDSCALE + INCIDENT, WOOD RIVER + SAFETY PRINCIPLES AND PHILOSOPHY

1-28584 ALSO IN CATEGORY 17

NUCLEAR INFORMATION CENTER VISITS THE PEOPLE

ELECTRICAL WORLD, VOL. 170, NO. 3, PP 30, 31, JULY 15, 1968

GEORGIA POWER COMPANY (HATCH BWR, OPERATIONAL 1973) TRAILER MOUNTED CENTER HAD REACHED 10,500 PERSONS IN ITS FIRST MONTH (FEB. 1968). DIVIDED INTO 3 ROOMS WITH DISPLAY PANELS AND A TAPED 3 MIN MESSAGE. UNUSUAL LIGHTING TECHNIQUES CHANGE THE COAL-FIRED BOILER TO A NUCLEAR REACTOR.

*RADIATION, PUBLIC EDUCATION/ACCEPTANCE + HATCH (BWR) + REACTOR, BWR + REACTOR, POWER

1-28601

PROVISIONAL GUIDE FOR THE CLASSIFICATION OF NUCLEAR SHIPS

NIPPON KAIJI KYOKAI, TOKYO

NP-16217 +. 44 PAGES, 1964

CHAPTERS ARE PRESENTED ON HULL AND STEERING GEAR, CONTAINMENT VESSEL, PRESSURE VESSELS, PIPING SYSTEMS, REACTOR, CONTROLS AND INSTRUMENTATION, COOLING AND AUXILIARY SYSTEMS, RADIOACTIVE WASTE DISPOSAL SYSTEMS, VENTILATION AND DRAINAGE, SHIELDING, FUEL HANDLING EQUIPMENT, EMERGENCY PROPULSION AND OTHER POWER SYSTEMS, AND ELECTRICAL EQUIPMENT.

AVAILABILITY - USAEC DEPOSITORY LIBRARIES IN THE U.S. AND OVERSEAS

*JAPAN + *REACTOR, MARITIME + *REGULATION, GENERAL + CODES AND STANDARDS + CONTAINMENT, GENERAL + CONTROL, GENERAL + COOLING, GENERAL + FUEL HANDLING + INSTRUMENT, GENERAL + PIPING + PRESSURE VESSEL + SHIELDING + WASTE DISPOSAL, GENERAL

1-28603

ALSO IN CATEGORIES 17 AND 9

CATEGORY 1
GENERAL SAFETY CRITERIA

1-28603 *CONTINUED*
ELK RIVER OPERATING EXPERIENCE
NUS CORPORATION
NUS-391 +. 74 PAGES, 12 FIGURES, 2 TABLES, 10 REFERENCES, MAY 1967

FUEL FAILURE AND COOLANT ACTIVITY HISTORY IN 1966-67 REVIEWED. SETTING COOLANT ACTIVITY LIMITS ON AIR EJECTOR (STACK) ACTIVITY RELEASE RATES IS DIFFICULT BECAUSE OF VARYING LEAK RATES. LIMITING FACTOR TO DATE IS CONTAINMENT VENTILATION RELEASE RATE. ESTIMATES ARE 40-46 FAILED ASSEMBLIES WITH 30-50 GPD LEAKAGES ARE MAXIMUM PERMISSIBLE. ***19 FUEL ASSEMBLIES CONTAINED BOWED RODS. ***IN 1966, AUTOMATIC PRESSURE CONTROLLER WITHDREW CONTROL RODS WHEN REACTOR PRESSURE WAS TOO HIGH. ALSO INSERTED RODS WHEN PRESSURE TOO LOW, AND INSERTION COULD NOT BE STOPPED. REVISIONS SUGGESTED. ***CRITICALITY SAFETY CALCULATIONS OF FUEL STORAGE INDICATE KEFF IS 0.746 WHEN LOADED WITH 20G UNIRRADIATED FUEL ELEMENTS. BORAL SHEETS USED. ANALYSIS METHOD DESCRIBED. ***PROCEDURE FOR DRY SHIPPING FUEL ELEMENTS GIVEN.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151
\$3.00 COPY, \$0.65 MICROFICHE

*CRITICALITY SAFETY + CONTROLLER + ELK RIVER (BWR) + FAILURE, FUEL ELEMENT + FAILURE, FUEL ELEMENT + FAILURE, INSTRUMENT + FUEL ELEMENT BOWING + FUEL STORAGE + INSTRUMENT, DETECTION FAILED FUEL ELEMENT + INSTRUMENT, PRESSURE + LEAK + MODIFICATION, SYSTEM OR EQUIPMENT + REACTOR, BWR + REACTOR, POWER + REPORT, OPERATIONS ANALYSIS + SAFETY REVIEW + SOURCE, CONTINUOUS + STACK + STEAM GENERATOR

1-28618 ALSO IN CATEGORIES 17 AND 15
GRAY JL
ATOMIC ENERGY OF CANADA LIMITED HEALTH AND SAFETY ORGANIZATION
ATOMIC ENERGY OF CANADA LIMITED, OTTAWA, CANADA
AECL-1027 (FIFTH EDITION) +. 43 PAGES, JULY 1968

A SUMMARY OF THE PROVISIONS FOR HEALTH AND SAFETY, IN PARTICULAR RADIATION SAFETY. 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.

*RADIATION PROTECTION, ORGANIZATION + CANADA + RADIATION SAFETY AND CONTROL + REGULATION, GENERAL

1-28636
GUTHRIE JE + ACRES DE
ORGANIC COOLANT TOXICITY TO FISH
ATOMIC ENERGY OF CANADA LIMITED, WHITESHELL NUCLEAR RESEARCH ESTABLISHMENT, PINAWA, MANITOBA
AECL-3116 +. 14 PAGES, 2 FIGURES, 3 TABLES, 24 REFERENCES, MAY 1968

THE USE OF TERPHENYL COMPOUNDS AS A COOLANT FOR NUCLEAR REACTORS RAISES QUESTIONS ABOUT THE EFFECT OF THESE SUBSTANCES IN THE AQUATIC ENVIRONMENT, SHOULD THEY BE ACCIDENTALLY RELEASED. THE LETHAL THRESHOLD CONCENTRATION OF SANTOWAX OM + 30% HIGH BOILERS IS BETWEEN 5 AND 10 MG/L WHEN THE DISSOLVED OXYGEN CONCENTRATION GREATER THAN OR EQUAL TO 8 MG/L. MINIMUM DISSOLVED OXYGEN CONDITIONS (4 - 5 MG/L) REDUCED SIGNIFICANTLY THE TIME REQUIRED TO KILL 50% OF THE TEST FISH. THE LETHAL THRESHOLD CONCENTRATION OF HB-40 TO TROUT FRY APPEARS TO BE GREATER THAN 100 MG/L. THE BEHAVIOUR OF THE FISH WHEN EXPOSED TO THESE COOLANTS IS BRIEFLY DESCRIBED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

*AQUATIC ORGANISMS + *REACTOR COOLANT + *THERMAL CONSIDERATION + *WATER POLLUTION + *WATER TREATMENT

1-28855 ALSO IN CATEGORY 3
LOW LD
10 CFR 40 EXEMPTIONS APPLY TO FINISHED PRODUCTS ONLY
LETTER TO CERAMIC COLOR + CHEMICAL MANUFACTURING COMPANY, AUG. 14, 1968

IN ANSWER TO A QUERY JUNE 27, 1968, 10 CFR 40.13 (C)(2) EXEMPTS GLAZED CERAMIC TABLEWARE FROM AEC LICENSING IF IT CONTAINS LESS THAN 20% SOURCE MATERIAL, AND GLASSWARE IF IT CONTAINS LESS THAN 10%. EXEMPTION PERTAINS ONLY TO THE FINISHED PRODUCT. THE GENERAL LICENSE OF 10 CFR 40.22 APPLIES ONLY IF LESS THAN 15 POUNDS ARE POSSESSED AT ONE TIME OR IF A PERSON RECEIVED LESS THAN 150 POUNDS OF SOURCE MATERIAL IN ANY ONE CALENDAR YEAR.

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

*SOURCE MATERIAL + CERAMICS + GLASS + REGULATION, AEC

1-29178 ALSO IN CATEGORIES 12 AND 13
JOHNSON ER
STANDARDS FOR NUCLEAR FUEL MATERIALS
3 PAGES, MAG. STAND., 38, PAGES 133-135 (MAY 1967)

NEW STANDARDS CONSIST OF CHEMICAL AND PHYSICAL SPECIFICATIONS FOR NUCLEAR GRADE U METAL MELT

CATEGORY 1
GENERAL SAFETY CRITERIA

1-29178 *CONTINUED*

STOCK, SINTERABLE UO₂ AND COMPACTIBLE UO₂. TOTAL IMPURITY CONTENT IS EXPRESSED AS 8 EQUIVALENTS RATHER THAN AS INDIVIDUAL LIMITS OF IMPURITY LEVELS. A FOURTH STANDARD COMPILES STANDARD ANALYTICAL AND TESTING TECHNIQUES FOR NUCLEAR FUEL MATERIALS.

*CODES AND STANDARDS + *FABRICATION + *FUEL ELEMENT + *REACTOR, GENERAL + IMPURITY + METAL + URANIUM + URANIUM DIOXIDE

1-29363 ALSO IN CATEGORIES 11 AND 12

COOPER WE + WIDMER R + BRODRICK RF

DESIGN CRITERIA FOR HIGH-PRESSURE HIGH-TEMPERATURE BOLTING

TELEDYNE MATERIALS RESEARCH COMPANY, WALTHAM, MASS.

18 PAGES, 6 FIGURES, 5 TABLES, 53 REFERENCES, NUCLEAR ENGINEERING AND DESIGN, 8(1), PAGES 125-142 (JULY 1968)

THE NEXT GENERATION OF POWER-PRODUCING NUCLEAR REACTORS IS EXPECTED TO OPERATE AT HIGHER TEMPERATURES THAN REACTORS NOW IN OPERATION OR UNDER CONSTRUCTION. THESE CONDITIONS WILL REQUIRE THAT BOLTED CLOSURES IN THE SYSTEMS BE DESIGNED TO OPERATE UNDER CONDITIONS NOT PRESENTLY COVERED BY ASME CODES. IT IS THEREFORE NECESSARY THAT STEPS BE TAKEN TO EXTEND THE CODES TO MEET THESE NEW CONDITIONS. THIS REPORT SURVEYS - (1) ANTICIPATED NEEDS OF THE NUCLEAR INDUSTRY, (2) AVAILABILITY OF METALLURGICAL DATA WHICH WOULD BE REQUIRED FOR CODIFICATION TO MEET THE ANTICIPATED NEEDS, AND (3) STATUS AND AVAILABILITY OF STRESS ANALYSIS AND METHODS AND DESIGN CRITERIA TO APPLY TO THE NEW CONDITIONS. IT IS FOUND THAT CLOSURE TEMPERATURES UP TO 1300 F AND PRESSURES UP TO 4000 PSI MAY BE ENCOUNTERED. ALSO, ALTHOUGH CREEP DATA FOR BOLTING MATERIALS UNDER CONSIDERATION ARE AVAILABLE, STRESS-RELAXATION DATA (OF PARTICULAR IMPORTANCE HERE) ARE VERY MEAGER. FURTHER, METHODS FOR CONVERTING CREEP DATA TO STRESS RELAXATION DATA ARE UNRELIABLE.

*DESIGN CRITERIA + *HIGH TEMPERATURE + *PRESSURE, INTERNAL + *STEEL + CREEP + FASTENER + MATERIAL + STRESS

1-29565 ALSO IN CATEGORY 17

WHERE TO SEND YOUR EMPLOYEES FOR NUCLEAR TRAINING - PART II

ELECTRICAL WORLD VOL. 170 (20), NOV. 11, 1968, PP. 61-64

PREVIOUS ISSUE GAVE BACKGROUND, LISTED PROGRAMS AT REACTOR VENDORS. THIS LISTS 5 UTILITIES (VARYING DEGREES OF AVAILABILITY FOR ON-SHIFT EXPERIENCE, NO PROGRAMS), 6 COURSES FROM NATIONAL CENTER FOR RADIOLOGICAL HEALTH, SERVICES PROVIDED BY 4 CONSULTING FIRMS, 0 UNIVERSITIES PROVIDING SHORT COURSES AND 19 MORE INTERESTED IN PERSONNEL TRAINING, AND 11 TECHNICAL INSTITUTES WITH TWO YEAR PROGRAMS IN RADIOLOGICAL HEALTH TECHNOLOGY.

*TRAINING + REACTOR, POWER

1-29568 ALSO IN CATEGORIES 18 AND 5

CAVE L + WILLIAMS TF

SAFETY ASSESSMENT OF PRESSURE-TUBE HEAVY-WATER REACTORS BY PROBABILITY METHODS

ATOMIC POWER CONSTRUCTIONS LTD., SUTTON, ENG.

CONF-67C917 + STI/PUB-163 +. PP 831-63, 1968, HEAVY-WATER POWER REACTORS

THE USE OF PROBABILITY METHODS FOR THE ASSESSMENT OF SAFETY WAS DEVELOPED IN THE UNITED KINGDOM FOR GAS-COOLED REACTORS. IN PARALLEL WITH A MOVE TOWARDS QUANTITATIVE SAFETY CRITERIA, SOME POSSIBLE CRITERIA ARE DESCRIBED. IN PARTICULAR, A METHOD WAS DEVELOPED FOR RAPID ASSESSMENT OF A PRELIMINARY DESIGN TO REVEAL POTENTIAL POINTS OF WEAKNESS BEFORE THE DESIGN IS FINALIZED. THE METHOD IS APPLIED TO HYPOTHETICAL 250-MW(E) REACTORS OF BOTH THE INDIRECT AND DIRECT CYCLE TYPES TO ILLUSTRATE THE USE FOR PRESSURE-TUBE HEAVY-WATER REACTORS AND ALSO TO PROVIDE A COMPARISON OF THE SAFETY OF THIS REACTOR SYSTEM AND OTHERS. A DIFFICULTY IN THE USE OF PROBABILITY METHODS AT PRESENT IS THE SCARCITY OF DATA ON FAILURE RATES FOR STRUCTURES AND LARGE ITEMS OF PLANT. AN ESSENTIAL FEATURE OF THE METHOD DESCRIBED IS A PERTURBATION OF THE ASSUMED FAILURE RATES BY FACTORS OF ORDER 100, TO ASSESS THE EFFECTS OF SUCH UNCERTAINTIES. THE EFFECT OF MAJOR CHANGES IN OTHER FEATURES IMPORTANT TO SAFETY, SUCH AS RELIABILITY OF THE CONTAINMENT SYSTEMS, IS ALSO EXAMINED.

*PROBABILITY + *SAFETY ANALYSIS + ACCIDENT ANALYSIS + FAILURE, EQUIPMENT + INFORMATION RETRIEVAL + REACTOR, HWR + REACTOR, PRESSURE TUBE + UNITED KINGDOM

1-29607 ALSO IN CATEGORIES 15 AND 17

ANNOUNCEMENT THIRD ANNUAL ACCELERATOR HEALTH PHYSICS TRAINING COURSE

U.S. ATOMIC ENERGY COMMISSION

HEALTH AND SAFETY INFORMATION BULLETIN 270, OCT 24, 1968

COURSE WILL BE GIVEN AT LRL IN BERKELEY, CALIFORNIA, FROM FEB. 24 TO MARCH 1969. REPORTS FOR BACKGROUND READING WILL BE SENT IN DECEMBER 1968. COURSE LIMITED TO 15 STUDENTS. CONTACT E. J. VALLARIO, USAEC DIVISION OF OPERATIONAL SAFETY. *** TOPICS INCLUDE ACCELERATOR PHYSICS AND DESIGN, INTERACTION OF RADIATION AND MATTER, RADIATION DETECTORS, SHIELDING, NEUTRON SPECTROSCOPY, INDUCED ACTIVITY, RADIATION DAMAGE, AND RADIOBIOLOGY

*ACCELERATOR + *HEALTH PHYSICS TRAINING + TRAINING

CATEGORY 1
GENERAL SAFETY CRITERIA

1-29608 ALSO IN CATEGORIES 17 AND 11
RICKOVER URGES CODE REFORM, CITES NUCLEAR POWER CASES
NUCLEAR INDUSTRY, VOL. 15, NO. 10, OCTOBER, 1968, PP. 46-47

A SOC. METALS (DETROIT, MICH.) ADDRESS CRITICIZED CODE APPLICATION AS INADEQUATE AS A CRITERION BECAUSE CODES ARE LEAST COMMON DENOMINATOR. POINTS OUT EVFN UNDER ASME BOILER CODE (REGARDED AS ONE OF BETTER CODES) A MANUFACTURER OF REACTOR VESSELS REPAIRED ONLY DEFECTS IN A MAJOR STRUCTURAL WELD REVEALED BY CODE INSPECTIONS AND IGNORED DEFECTS FOUND BY ULTRASONICS. THE INSURANCE COMPANY REFUSED TO TAKE PART IN TECHNICAL DISCUSSIONS. THE BUYER UTILITY PAID EXTRA MONEY TO HAVE THE DEFECTS REPAIRED, THOUGH NOT SO REQUIRED BY THE CODE.

*CODES AND STANDARDS + *FAILURE, PRESSURE VESSEL + EXAMINATION + FAILURE, FABRICATION ERROR + OPERATING EXPERIENCE SUMMARY + PRESSURE VESSEL + REACTOR, PWR + REACTOR, POWER + REACTOR, PWR + TEST, NONDESTRUCTIVE + WELDS

1-29609 ALSO IN CATEGORIES 17 AND 18
PAXTON HC
BENEATH THE FORMAL CLOAK
NUCLEAR NEWS 11(11), PG. 47-50, JAN. 1968

(SUBTITLED, HOW CAN EXPERIENCE CONTRIBUTE TO POWER REACTOR SAFETY). CLOAK IN THE TITLE REFERS TO THE ILLUSION THAT THE FORMAL PROCESS OF HAZARDS EVALUATION (E.G., 10 CFR 100) CAN BE SUBSTITUTED FOR JUDGEMENT. DISCUSSION CENTERS AROUND NEED FOR JUDGMENT (IMPLIED IN ANY REAL SITUATION BY ECONOMICS, AND IN LICENSING BY WORDS LIKE REASONABLE ASSURANCE) AND NEED FOR TRANSMITTING SAFETY RELATED INFORMATION. ASSERTS THAT FIRST STEP IN SOLVING INFORMATION PROBLEM IS EVERYONE RECOGNIZING THAT CANDOR IN REPORTING IS NEEDED DESPITE AUTHORITARIAN ATMOSPHERE. NSIC AND AEC JOURNALS ARE IN PRACTICE NOT FULLY EFFECTIVE. STANDARDS MUST GROW AS EXPERIENCE ACCUMULATES.

*CODES AND STANDARDS + *INCIDENT, GENERAL + *INFORMATION RETRIEVAL + HAZARDS ANALYSIS + NSIC + REACTOR, POWER + REGULATION, AEC + SAFETY ANALYSIS

1-29611 ALSO IN CATEGORY 17
MACCAZZOLA F
NUCLEAR POWER PLANTS OPERATION STATISTICAL REMARKS
ITALY. COMITATO NAZIONALE PER L ENERGIA NUCLEARE
RT/EC-(68)11 +. 49 P., 1968 (IN ITALIAN)

THE PRESENT STUDY IS MAINLY DIVIDED INTO TWO PARTS - (1) A WHOLE INVENTORY OF THE INSTALLED NUCLEAR CAPACITY IS GIVEN FOR EVERY COUNTRY, (2) SHOWS THE PERFORMANCES OF 50 POWER REACTORS (PRODUCED ENERGY, CAPACITY, FACTOR, AND AVAILABILITY). DATA INCLUDES YEARS 65, 66, 67 ONLY.

AVAILABILITY - USAEC DEPOSITORY LIBRARIES IN THE U.S. AND OVERSEAS

*ECONOMICS + *RELIABILITY, SYSTEM + ITALY + REACTOR, BWR + REACTOR, GCR + REACTOR, POWER + REACTOR, PWR

1-29618 ALSO IN CATEGORIES 17 AND 18
GIAMBUSSO A
UTILITY PREPARATION FOR NUCLEAR POWER
U.S. ATOMIC ENERGY COMMISSION
23 PAGES, 3 FIGURES, 3 TABLES, NOV. 14, 1969

REVIEWS AEC PROGRAM FOR ORIENTATION OF UTILITIES JUST PLANNING FOR NUCLEAR POWER. MENTIONS NEED FOR NUCLEAR TRAINING (IN SAFETY PROBLEM AREAS) REACHING UP TO TOP MANAGEMENT (GUIDELINES BEING PREPARED BY AEC ON SUPERVISORY AND STAFF PERSONNEL AT BOTH THE PLANT AND THE CENTRAL STAFF). SURVEY SHOWED ADEQUATE REACTOR OPERATOR TRAINING CAPABILITY, SIMULATORS CAN HELP. OF 5000 TECHNICAL PERSONNEL NEEDED 1968-76, 3500 WILL NEED SOME SORT OF NUCLEAR TRAINING. AEC WORK EXPERIENCE PROGRAM ALSO AVAILABLE. TIMING IS OF PARTICULAR IMPORTANCE, E.G., PLANT SUPT MUST BE TRAINED BY 4 YEARS BEFORE STARTUP, PLANT STAFF ENGINEERS BY TWO YEARS BEFORE STARTUP.

AVAILABILITY - A. GIAMBUSSO, ASSISTANT DIRECTOR FOR PROJECT MANAGEMENT, DIVISION OF REACTOR DEVELOPMENT AND TECHNOLOGY, U.S. ATOMIC ENERGY COMMISSION

*TRAINING + GUIDE + REACTOR, BWR + REACTOR, POWER + REACTOR, PWR + RESPONSE TIME + SIMULATION + STAFFING + USAEC

CATEGORY 2
SITING OF NUCLEAR FACILITIES

2-25091 ALSO IN CATEGORY 12
CAHILL WJ + NICHOLS RC
SITING AND LICENSING CONSIDERATIONS
CONSOLIDATED EDISON COMPANY OF NEW YORK
9 PAGES, PROC. AM. POWER CONT., 29, PAGES 218-26(1967). FROM 29TH ANNUAL POWER CONFERENCE, CHICAGO.

THE GEOLOGY, METEOROLOGICAL CONDITIONS, AND POPULATION DENSITIES OF THE INDIAN POINT UNIT-2 SITE ARE BRIEFLY REVIEWED. THE CONSEQUENCE-LIMITING ENGINEERED SAFEGUARDS OF THE PLANT ARE DESCRIBED, INCLUDING THE CONTAINMENT VESSEL, EMERGENCY CORE COOLING SYSTEM, CONTAINMENT COOLING SYSTEM, AND FISSION PRODUCT CLEANUP SYSTEM.

*ENGINEERED SAFETY FEATURE + *INDIAN POINT 2 (PWR) + *SITING, REACTOR + GEOLOGICAL CONSIDERATION, GENERAL + METEOROLOGY

2-27738
ITAKURA T + MORIJAMA F
CONDITIONS FOR SELECTION OF THE SITE OF ATOMIC POWER PLANTS
JAPAN ATOMIC POWER COMPANY
GENSHIRYOKU KOGYO, 13- NO. 4, 33-6 (APR. 1967)

THE SITE FOR AN ATOMIC POWER PLANT MUST BE SELECTED, TAKING THE TWO MAJOR REQUIREMENTS INTO CONSIDERATION - THE REQUIREMENT OF NUCLEAR SAFETY DUE TO THE POSSIBILITY OF DISPERSION OF RADIOACTIVE MATERIALS, AND THE REQUIREMENT OF ECONOMY AS A COMMERCIAL POWER PLANT. DISCUSSIONS CONCERNING POWER PLANT SITING INCLUDES SITE CRITERIA, CONDITIONS FOR SELECTION OF THE SITE SUCH AS THE AREA OF A SITE AND NONHABITATION ZONE, POPULATION DISTRIBUTION IN THE SURROUNDING AREA AND LOW-POPULATION ZONE, GEOLOGY, HYDROGRAPHY, AND METEOROLOGY, AND GEOGRAPHICAL CONDITIONS SUCH AS THE POSITION IN THE SURROUNDING POWER-DISTRIBUTION NETWORK, PLUS MEANS OF POWER TRANSPORT.

*JAPAN + *SITING, REACTOR + POPULATION DISTRIBUTION + SAFETY ANALYSIS

2-27739
ITAKURA T + HASHIMOTO T
REQUIREMENTS FOR NUCLEAR POWER REACTOR SITING
JAPAN ATOMIC POWER COMPANY
8 PAGES, HOKEN BUTSURI, 2 PAGES 108-15 (MAR. 1967). (IN JAPANESE).

THE OUTLINE OF THE SITE CRITERIA IN USA AND UK, AND A GUIDE IN REACTOR SITE EVALUATION IN JAPAN AND THE DETAILED AND GENERAL REQUIREMENTS WITH RESPECT TO THE CHOICE OF NUCLEAR POWER REACTOR SITE, SHOWING EXAMPLES OF SITING FOUR NUCLEAR POWER STATIONS IN JAPAN TOGETHER WITH SAFETY ANALYSIS, ARE PRESENTED.

*JAPAN + *REGULATION, GENERAL + *SITING, REACTOR + SAFETY ANALYSIS + SITING, URBAN

2-28164
SMITH DR + ULBERG JC + FOREMAN RE
EVALUATION OF SAN NICOLAS ISLAND AS A TEST SITE FOR SMALL NUCLEAR MOTORS
NAVAL RADIOLOGICAL DEFENSE LABORATORY, SAN FRANCISCO
USNRDL-TR-68-32 +. 133 PAGES, 20 FIGURES, 24 TABLES, 47 REFERENCES, JAN. 3, 1968

THE POSSIBLE RADIOLOGICAL HAZARDS RESULTING FROM THE UTILIZATION OF SAN NICOLAS ISLAND AS A TEST SITE FOR SMALL NUCLEAR MOTORS WERE EVALUATED USING THE AVAILABLE ENVIRONMENTAL DATA FROM THE AREA. CONSIDERATION WAS GIVEN TO BOTH SHORT- AND LONG-TERM TEST OPERATIONS. RESTRICTIONS ON OPERATIONS IMPOSED BY BIOLOGICAL FACTORS AFFECTING THE ISLAND WERE EXAMINED, TAKING INTO ACCOUNT INFORMATION PERTAINING TO THE LIFE HISTORIES, FEEDING HABITS, FOOD CHAINS, RADIOSENSITIVITIES, ETC. OF THE BIOTA. THE APPROPRIATE HEALTH-PHYSICS PERSONNEL, RAD-SAFE FACILITIES, AND MONITORING INSTRUMENTATION NEEDED FOR THE PURPOSE OF ESTABLISHING SAN NICOLAS ISLAND AS A TEST SITE ARE ALSO LISTED.

BIOTA + METEOROLOGY + SITING, GENERAL + SITING, OFF SHORE

2-28165 ALSO IN CATEGORY 14
GRISON G + KRAUSE H + LEVEQUE PC + PANTANETTI F
SITING OF RADIOACTIVE WASTE STORAGE FACILITIES WITHIN THE EUROPEAN COMMUNITY
EURATOM, BRUXELLES + GESELLSCHAFT FÜR KERNFORSCHUNG, KARLSRUHE + FACULTE DES SCIENCES DE L'UNIVERSITE DE BORDEAUX + COMITATO NAZIONALE PER L'ENERGIA NUCLEARE, ROMA
EUR-3664.F +. 70 PAGES, 12 FIGURES, TABLES, FEB. 1968

IT IS ESTIMATED THAT BY THE YEAR 2000 IT WILL BE NECESSARY TO STORE 9000 METRIC TONS (300 BILLION CURIES) OF WASTE FISSION PRODUCTS. THIS STUDY WAS MADE TO DETERMINE THE CAPABILITY OF ACCOMMODATING THIS WASTE MATERIAL. A SERIES OF COLORED MAP OVERLAYS, EACH REPRESENTING A PARAMETER, ARE USED TO DETERMINE FAVORABLE LOCATIONS. CRITERIA ARE PROPOSED.

AVAILABILITY - AEC DEPOSITORY LIBRARIES IN THE U.S. AND OVERSEAS

CATEGORY 2
SITING OF NUCLEAR FACILITIES

2-28165 *CONTINUED*
*EURATOM + *SITING, WASTE DISPOSAL + ECONOMICS + FRANCE + METEOROLOGY + POPULATION DISTRIBUTION +
SEISMOLOGY + WASTE DISPOSAL, GENERAL + WASTE STORAGE

2-28166 ALSO IN CATEGORY 13
CONSIDERATIONS RELATED TO THE SITING OF FUEL REPROCESSING PLANTS AND THEIR ASSOCIATES WASTE MANAGEMENT
FACILITIES
OAK RIDGE NATIONAL LABORATORY
CF-68-5-33 +. 300 PAGES, FIGURES, TABLES, 102 REFERENCES, MAY 31, 1968

BACKGROUND INFORMATION PERTINENT TO ESTABLISHING POLICY FOR THE SITING OF SPENT-FUEL
PROCESSING PLANTS AND THEIR ASSOCIATED WASTE-MANAGEMENT FACILITIES IS PRESENTED. ANALYSIS
AND INTERPRETATION OF BOTH NEW AND PREVIOUSLY PUBLISHED MATERIAL IS MADE AND APPLIED TO THE
SUBJECT OF DISCUSSION. THE REPORT IS MADE UP OF LIGHT SECTIONS INCLUDING - (1) INTRODUCTION,
(2) SUMMARY AND CONCLUSIONS (3) DISCUSSION OF THE PROBLEM, (4) TECHNICAL CONSIDERATIONS FOR
THE FACILITY, (5) TRANSPORTATION, (6) ECONOMICS, (7) SITING, AND (8) HEALTH AND SAFETY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*SITING, GENERAL + CIVIL DEFENSE + ECONOMICS + GEOLOGICAL CONSIDERATION, GENERAL +
HYDROLOGICAL CONSIDERATION, GENERAL + METEOROLOGY + RADIATION SAFETY AND CONTROL +
TRANSPORTATION AND HANDLING + WASTE DISPOSAL, GENERAL + WASTE HANDLING + WASTE MANAGEMENT

2-28620 ALSO IN CATEGORIES 18 AND 14
ARCUNI 4A
A SURVEY OF UNDERWATER POWER REACTOR APPLICATIONS AND RADIATION HAZARDS
PENNSYLVANIA STATE UNIV., THE GRADUATE SCHOOL, DEPT. OF NUCLEAR ENGINEERING, UNIVERSITY PARK, PA.
64 PAGES, FIGURES, TABLES, REFERENCES, DEC. 1967

REVIEWS HISTORY OF RADIOISOTOPE AND LOW POWER REACTORS POTENTIALLY USEFUL FOR UNDERWATER
EXPLORATION OR MINING. CHOOSES A 10 MWTH BWR TO EVALUATE MCA FISSION PRODUCT RELEASE FROM
ZR-H FUEL ELEMENTS. BULK OF THESIS IS RELEASE FRACTIONS FROM FUEL (2 PG), MPC ALLOWED BASED
ON RECONCENTRATION IN LIVING ORGANISMS (12 PG), AND DISPERSION CALCULATION MODEL (20 PG).
RECOMMENDS CARTES AND OKUBO MODEL AS MOST CONSERVATIVE.

AVAILABILITY - PENN. STATE UNIV., DEPT. OF NUCLEAR ENGINEERING, UNIVERSITY PARK, PA.

*DISPERSION + *MATHEMATICAL TREATMENT + *SITING, OFF SHORE + ACCIDENT, MAXIMUM CREDIBLE (MCA) +
BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + HYDRIDE + MAXIMUM PERMISSIBLE CONCENTRATION (MPC) +
OCEAN AND SEA + REACTOR, BWR + ZIRCONIUM

2-28767 ALSO IN CATEGORY 18
STASZESKY FM
PILGRIM STATION EVALUATES CONCRETE POURING EXEMPTION
ROSTON EDISON CO.
1 PAGE, ATOMIC ENERGY CLEARINGHOUSE, 14(41), PAGE 17, (OCT. 7, 1968), DOCKET 50-239

(LETTER TO COMMISSIONER JOHNSON, SEPT. 17) THE MAP. 14, 1968, EXEMPTION TO POUR CONCRETE IN
THE BASE SLAB AND REACTOR WALLS HAD THE SAME EFFECT AS IF THE CONSTRUCTION PERMIT HAD BEEN
ISSUED APRIL 22 INSTEAD OF AUG. 22, 1968. THE FINANCIAL RISK (\$443,000 OF CONCRETE AND
CONSTRUCTION) WAS LESS THAN 2% OF THE AMOUNT IRREVOCABLY COMMITTED WHEN CONSTRUCTION PERMIT
ISSUED. WE BELIEVE THAT THE EXEMPTION HAD NO POTENTIAL FOR DECREASING SAFETY BECAUSE WE HAD
REACHED AGREEMENT WITH DRL ON SOIL LOADING. WE BELIEVE THAT THE PROCEDURES DEVELOPED FOR
THIS FIRST OF A KIND EXEMPTION WERE ADEQUATE AND SUGGEST THE PRACTICE BE CONTINUED.

*CONSTRUCTION PERMIT PROCESS + CONTAINMENT CONSTRUCTION + FOUNDATION ENGINEERING + PILGRIM (BWR) +
REACTOR, BWR

2-29646 ALSO IN CATEGORY 18
OYSTER CREEK NUCLEAR STATION UNIT 2, AMENDMENT 4
JERSEY CENTRAL POWER AND LIGHT COMPANY
DOCKET 50-320-7 +. 655 PAGES, FIGURES, TABLES, REFERENCES, VOLUME 4, SUPPLEMENT 2, OCTOBER 31, 1968
(DOCKET 50-320)

PROVIDES MANY REVISED PSAR PAGES, PLUS SUPPLEMENT 2 (ANSWERS TO DRL QUESTIONS OF SEPT. 19,
1968, PLUS A SUPPLEMENTARY DRILLING AND GEOPHYSICAL DATA REPORT).

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

AEC QUESTION + OYSTER CREEK 2 (PWR) + REACTOR, PWR + REPORT, PSAR

CATEGORY 3
TRANSPORTATION AND HANDLING OF RADIOACTIVE MATERIALS

3-23229 ALSO IN CATEGORY 13
UNGER WE + CROUSE DJ + WATSON CD + IRVINE AR
LMFBR FUEL PROCESSING STUDIES STATUS REPORT FOR FEBRUARY 1968
OAK RIDGE NATIONAL LABORATORY
ORNL-CF-68-3-13 +. 21 PAGES, 4 FIGURES, 3 TABLES, MARCH 11, 1968

MONTHLY STATUS REPORT OF FAST BREEDER REACTOR AQUEOUS PROCESS DEVELOPMENT IN CHEMICAL TECHNOLOGY DIVISION. STUDIES UNDERWAY OF DISPOSAL OF SODIUM, BEHAVIOR AND REMOVAL OF IODINE, SOLVENT STABILITY UNDER RADIATION AND CHEMICAL DEGRADATION, REMOVAL OF NOBLE GASES, SHIPPING OF REACTOR FUEL.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*EXPERIMENT, GENERAL + *FUEL REPROCESSING + *RADIOCHEMICAL PROCESSING + IODINE + NOBLE GAS + ORNL + PLUTONIUM + REACTOR, BREEDER + REACTOR, FAST + REACTOR, LMCR + SHIPPING CONTAINER + SODIUM + SOLVENT EXTRACTION PROCESS + URANIUM

3-28855 ALSO IN CATEGORY 1
LOW LD
10 CFR 40 EXEMPTIONS APPLY TO FINISHED PRODUCTS ONLY
IFTEER TO CERAMIC COLOR + CHEMICAL MANUFACTURING COMPANY, AUG. 14, 1968

IN ANSWER TO A QUERY JUNE 27, 1968, 10 CFR 40.13 (C)(2) EXEMPTS GLAZED CERAMIC TABLEWARE FROM AEC LICENSING IF IT CONTAINS LESS THAN 20% SOURCE MATERIAL, AND GLASSWARE IF IT CONTAINS LESS THAN 10%. EXEMPTION PERTAINS ONLY TO THE FINISHED PRODUCT. THE GENERAL LICENSE OF 10 CFR 40.22 APPLIES ONLY IF LESS THAN 15 POUNDS ARE POSSESSED AT ONCE OR IF A PERSON RECEIVES LESS THAN 150 POUNDS OF SOURCE MATERIAL IN ANY ONE CALENDAR YEAR.

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

*SOURCE MATERIAL + CERAMICS + GLASS + REGULATION, AEC

3-28877
UF6 CYLINDER SHIPPING CONTAINERS PACKAGING
OAK RIDGE GASEOUS DIFFUSION PLANT, TENN.
CAPE-1662 +. 6 FIGURES, 1968

PACKAGING FOR 5, 8, 12 IN., AND 2-1/2 TON HORIZONTAL AND END LOADING CYLINDERS USED IN SHIPPING UF-6 AND OTHER FISSIONABLE MATERIALS IS DESCRIBED. REINFORCED HIGH-TEMPERATURE PHENOLIC FOAM PLASTIC FILLING IS USED IN ALL PACKAGING. THE 2-1/2 TON CYLINDERS USE A 16-GAGE STEEL LINER AND A 14 GAGE STEEL OUTER SHELL. THE 5, 8, AND 12 IN. CYLINDERS HAVE 16-GAGE STEEL LINERS AND 18-GAGE OUTER SHELLS. FOAM-RUBBER PRESSURE PADS ARE USED IN ALL PACKAGING.

EQUIPMENT DESIGN + FIRE + SHIPPING CONTAINER + URANIUM HEXAFLUORIDE

3-28878
STORAGE CONTAINER AND PACKAGING
DOW CHEMICAL CO., GOLDEN, COLO.
CAPE-1657 +. 4 FIGURES, 1968

DESCRIBES A STORAGE CONTAINER AND PACKAGING FOR URANIUM-233, URANIUM-235 OR PLUTONIUM-239. THE STORAGE CONTAINER FABRICATED OF 203 STAINLESS STEEL 0.065 IN. THICK AND 10 IN. IN DIA MAY BE EITHER 6-5/16 OR 12-5/16 IN. DEEP. THE PACKAGING IS DESIGNED FOR USE IN A 30-GAL DRUM. THE DIA OF THE DRUM IS 20 IN.

EQUIPMENT DESIGN + SHIPPING CONTAINER + STORAGE CONTAINER

3-28879
JIN T
FIRE RESISTIVITY OF RADIOISOTOPE CONTAINERS
8 PAGES, SHOBO KENKYUSHO HOKOKU, 26, PAGES 17-24 (DEC. 1965) (IN JAPANESE)

TESTS AND THEORETICAL CALCULATIONS WERE PERFORMED FOR EVALUATING FIRE-RESISTIVE PERFORMANCE OF CONTAINERS FOR STORAGE OF RADIOISOTOPES. A TEST SAMPLE OF A 93 MM DIA CYLINDRICAL SHIELDED LEAD CONTAINER WAS MADE AND COATED WITH IRON ON ITS SIDE AND BOTTOM SURFACES AND HEATED BY AN ELECTRIC FURNACE AT 800 C FOR 30 MIN.

ACCIDENT ANALYSIS + FIRE + HEAT TRANSFER + JAPAN + SHIPPING CONTAINER + THERMAL EXPERIMENT

CATEGORY 3
TRANSPORTATION AND HANDLING OF RADIOACTIVE MATERIALS

3-28882
BRISAC M + LEFORT G
TRANSIT FLASK FOR RADIOACTIVE OBJECTS
COMMISSARIAT A L'ENERGIE ATOMIQUE
BRITISH PATENT 1, 103,787 +. FEBRUARY 21, 1968

GIVES THE DESIGN OF A VESSEL FOR TRANSPORTING RADIOACTIVE OBJECTS. THE DESIGN PROVIDES FOR PROTECTION AGAINST GAMMA RADIATION BY ABSORPTION OF THE RADIATION BY A HEAVY MATERIAL AND FOR PROTECTION AGAINST ALPHA PARTICLES BY THE MAINTENANCE OF ABSOLUTE SEALING-TIGHTNESS.

AVAILABILITY - THE PATENT OFFICE, 25 SOUTHAMPTON BUILDING, LONDON, W.C. 2, ENGLAND (49 CENTS/COPY)

EQUIPMENT DESIGN + PATENT + SHIPPING CONTAINER + UNITED KINGDOM

3-28883
HAGSGARD S + HEDLAND R
ACTIVE MATERIAL TRANSPORT
AKTIEBOLAGET ATOMENERGI, STOCKHOLM
3 PAGES, NUCL. ENG., 13, PAGES 40-42 (JAN. 1968)

DISCUSSES THE PROBLEM OF TRANSPORTING LARGE AMOUNTS OF RADIOACTIVE MATERIALS, BOTH NUCLEAR FUEL AND OTHER SOURCES. ON THE BASIS OF EXISTING REGULATIONS, TRANSPORT FACILITIES HAVE BEEN DEVELOPED, CONSTRUCTED AND TESTED, PARTLY IN COLLABORATION WITH IAEA. A CONSIDERABLE NUMBER OF TRANSPORTATIONS WERE EFFECTED TO A POINT OF NEAR ROUTINE. THE EXPERIENCE IS DESCRIBED, AND SOME TRANSPORT COSTS AND STATISTICS ARE GIVEN.

ECONOMIC STUDY + OPERATING EXPERIENCE + STATISTICAL CORRELATION + TRANSPORTATION AND HANDLING

3-28884
INTERNATIONAL REGULATIONS FOR TRANSPORT OF RADIONUCLIDES
8 PAGES, NUCLEAR ENG., 13, PAGES 31-38 (JAN. 1968)

THE DEVELOPMENT AND PRESENT STATUS OF THE IAEA REGULATIONS ARE SUMMARISED. THE EXTENT OF ADOPTION BY INTERNATIONAL BODIES THAT CONTROL TRANSPORT BY ROAD, RAIL, SEA, INLAND WATERWAYS, AND AIR IS DISCUSSED. THE INSURANCE AND INDEMNITY REQUIREMENTS THAT WERE LAID DOWN IN THREE CONVENTIONS ARE CONSIDERED, AND PROGRESS TOWARDS RATIFICATION IS REPORTED. ANALYZES 171 TRANSPORT ACCIDENTS AND INCIDENTS THAT OCCURRED BETWEEN 1948 AND 1965.

ACCIDENT, TRANSPORTATION + INSURANCE + REGULATION, IAEA + UNITED KINGDOM

3-28885
RECOMMENDED SAFE PRACTICE FOR LABORATORIES HANDLING RADIOACTIVE MATERIALS
42 PAGES, NAT. FIRE CODES, 9, PAGES 801.1-41 (1967-68)

PRESENTS RECOMMENDED SAFE PRACTICES FOR LABORATORIES HANDLING RADIOACTIVE MATERIALS. THE TYPES OF RADIOACTIVE MATERIALS COMMONLY USED IN LABORATORIES ARE DISCUSSED. LABORATORY TYPES, CONSTRUCTION DETAILS, EQUIPMENT, AND SERVICE FACILITIES ARE DESCRIBED. FUNDAMENTAL FIRE CHARACTERISTICS, SAFEGUARDS, AND FIRE PROTECTION SYSTEMS ARE DISCUSSED.

FIRE + PROCEDURES AND MANUALS + SAFETY PRINCIPLES AND PHILOSOPHY + WASTE HANDLING

3-28886
SASAKI T
RADIOACTIVE WASTE CONTAINERS FOR DEEP SEA DISPOSAL
TOKYO UNIV. OF FISHERIES
7 PAGES, GENSHTRYOKU KOGYO, 13(9), PAGES 20-26 (SEPT. 1966) (IN JAPANESE)

DESCRIBES CONTAINERS FOR THE DEEP-SEA DISPOSAL OF RADIOACTIVE WASTES. STUDIES AND EXPERIMENTS WERE MADE ON THE SHAPE, STRENGTH, ANTI-CORROSION, AND RATE OF FALLING AND SETTLEMENT OF THE SEA BED. THE CYLINDRICAL CONTAINERS, MADE OF MORTAR, CAN BE DESIGNED BY MEANS OF THE EXPERIMENTAL T/R VALUE, WHERE T IS THE WALL THICKNESS, AND R IS THE AVERAGE RADIUS. THE DEVELOPMENT OF A METHOD FOR PREVENTING WATER PASSAGE THROUGH THE MORTAR IS NECESSARY. IN DROPPING TO THE SEA BOTTOM, THE USE OF A PARACHUTE, OR THE CHOICE OF A SUITABLE SEA BED POSITION IS IN SOME CASES NECESSARY TO ENSURE THE INTEGRITY OF THE CONTAINERS.

CONCRETE + JAPAN + OCEAN AND SEA + SHIPPING CONTAINER + WASTE DISPOSAL, OCEAN

3-29614 ALSO IN CATEGORIES 17 AND 15
RIVET (REMOTE INSPECTION VEHICLE, TELECHIRIC)
UKAEA, HARWELL, BERKSHIRE, ENGLAND
10 PAGES, FIGURES, 1 REFERENCE, 1968

CATEGORY 3
TRANSPORTATION AND HANDLING OF RADIOACTIVE MATERIALS

3-29614 *CONTINUED*

DESCRIBES DEVICE (WHOSE PRELIMINARY WORKING MODEL HAS BEEN BUILT) FOR DAMAGE CONTROL FOLLOWING NUCLEAR INCIDENT. HAS SIZE AND REACH OF POWERFUL MAN, WEIGHS 450 LB, SUPERIOR ABILITY TO MANEUVER DUE TO TRACK DRIVE PLUS FRONT WHEELS CLIMBS STAIRS AND PASSES OVER OBSTACLES. SPEED 4 MPH, RANGE 200 FT (CABLE). *** BROCHURE SHOWS CONCEPT IN PICTURES, 1 PAGE OF DESCRIPTION.

AVAILABILITY - H. A. BALLINGER, ENGINEERING SUPPORT DIVISION, BUILDING 424, A.E.R.E., HARWELL, BERKSHIRE.

*INCIDENT, RECOVERY FROM + REMOTE MANIPULATING AND VIEWING + UNITED KINGDOM

3-29615 ALSO IN CATEGORIES 17 AND 13
MANN PJ
A-POWER PLANT DESIGN, FAIL-SAFE MATERIAL HANDLING
MATERIAL HANDLING ENGINEERING, AUG. 1968

DESCRIBES AUTOMATIC CONVEYORIZED SYSTEM FOR FILLING 55 GAL DRUMS WITH A MIXTURE OF CEMENT AND RADIOACTIVE SEMISOLIDS (SLUDGE, DEMINERALIZER RESINS), CAPPING THEM, AND STORING UNTIL SHIPMENT. ASSERTS AEC CRITERIA REQUIRES NO ROUTINE MAINTENANCE WITHIN SHIELDING ONCE INSTALLED. ***GENERAL DESCRIPTION, FLOW DIAGRAM, AND PICTURES (NO TECHNICAL DETAIL) OF SYSTEM INSTALLED AT NINE MILE POINT.

*WASTE HANDLING + NINE MILE POINT (BWR) + REACTOR, BWR + REMOTE MANIPULATING AND VIEWING +
WASTE TREATMENT, FIXATION

CATEGORY 4
AEROSPACE SAFETY

4-25249
KEILHOLTZ GW + MOORE RE
BEHAVIOR OF NONFISSILE MATERIALS UNDER IRRADIATION
OAK RIDGE NATIONAL LAB., TENN.
ORNL-4229 +. 4 PAGES, 2 FIGURES, 1 TABLE, 5 REFERENCES, PAGE 142-145 OF REACTOR CHEMISTRY DIVISION ANNUAL
PROGRESS REPORT FOR PERIOD ENDING DECEMBER 31, 1967

EFFECTS OF LARGE DOSES OF FAST NEUTRONS ON THE MONOCARBIDES OF TITANIUM, ZIRCONIUM, TANTALUM, NIOBIUM, AND TUNGSTEN - AT 1000 C THERE IS A SUBSTANTIAL IN-REACTOR ANNEALING EFFECT ON GROSS DAMAGE AND DIMENSIONAL CHANGES OF REFRACTORY-METAL MONOCARBIDES IN A FAST-NEUTRON FLUX, NONE OF THE CARBIDES WERE SIGNIFICANTLY DAMAGED UP TO A FAST (GREATER THAN 1 MEV) NEUTRON DOSE OF 4.8×10^{21} N/CM. SQ. IRRADIATION DAMAGE TO REFRACTORY-METAL NITRIDES EXPOSED TO FAST-NEUTRON DOSES FROM 0.7 TO 4.9×10^{21} N/CM. SQ. NITRIDES OF TITANIUM AND NIOBIUM DID NOT FRACTURE AT 150 C UNTIL FAST (GREATER THAN 1 MEV) NEUTRON DOSES IN EXCESS OF 3.8×10^{21} N/CM. SQ. WERE RECEIVED, BUT THE NITRIDES OF TANTALUM AND ZIRCONIUM FRACTURED AT DOSES AS LOW AS 0.7×10^{21} N/CM. SQ. VOLUME EXPANSION OF THE NITRIDES OF TITANIUM, NIOBIUM, AND ZIRCONIUM WAS ABOUT 2 TO 3%. IRRADIATION DAMAGE TO REFRACTORY-METAL DISILICIDES EXPOSED TO FAST-NEUTRON DOSES FROM 0.4 TO 2.7×10^{21} N/CM. SQ AT 150 C. FRACTURING OF THE DISILICIDES OF Zr, Ti, AND Ta AT 150 C OCCURRED AT FAST (MORE THAN 1 MEV) NEUTRON DOSES GREATER THAN $1.5 \times 2 \times 10^{21}$ N/CM. SQ. BUT SPECIMENS OF TUNGSTEN DISILICIDE FRACTURED AT DOSES AS LOW AS 0.4×10^{21} N/CM. SQ. THE DISILICIDES EXPANDED IN VOLUME FROM 0.3 TO 1.0%. FAST-NEUTRON EFFECTS ON ELECTRICAL INSULATORS - HIGH-DENSITY AL₂O₃ IS MORE RESISTANT TO FAST NEUTRONS AT 1000 C THAN AT TEMPERATURES FROM 300 TO 600 C.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA, 22151, \$3.00 COPY, \$0.65 MICROFICHE

*CARBIDE + *IRRADIATION TESTING + *NITRIDE + *PROPERTY, PHYSICAL + *RADIATION DAMAGE + *REFRACTORY MATERIAL + ALUMINUM + HIGH TEMPERATURE + IN PILE EXPERIMENT + NIOBIUM + OXIDE + RADIATION EFFECT + REACTOR, BREEDER + REACTOR, FAST + SILICON + TANTALUM + THERMAL PROPERTY + TITANIUM + TUNGSTEN + ZIRCONIUM

4-25253 ALSO IN CATEGORY 7
PARKINSON WD + KIRKLAND WK
EFFECTS OF RADIATION ON ORGANIC MATERIALS
OAK RIDGE NATIONAL LAB., TENN.
ORNL-4229 +. 5 PAGES, 2 FIGURES, 1 TABLE, 9 REFERENCES, PAGE 183-188 OF REACTOR CHEMISTRY DIVISION ANNUAL
PROGRESS REPORT FOR PERIOD ENDING DECEMBER 31, 1967

EFFECT OF RADIATION ON POLYMERS - THE TENSILE STRENGTH AND ELONGATION AT BREAK OF THIN FILM POLYIMIDE IRRADIATED IN AIR WERE OBSERVED TO BE REDUCED DRASTICALLY AT A RADIATION DOSE OF 3×10^{19} RADS, THIS VALUE IS AN ORDER OF MAGNITUDE LOWER THAN FOR IRRADIATION IN VACUUM. RADIATION-INDUCED REACTIONS OF HYDROCARBONS TEN ALKYLNAPHTHALENES HAVE BEEN IDENTIFIED AS PRODUCTS IN GAMMA-IRRADIATED SOLUTIONS OF NAPHTHALENE IN HEXANE, AND A MECHANISM ACCOUNTING FOR THEIR FORMATION IS PROPOSED. ADDITION REACTIONS OF FURAN DERIVATIVES - SOLUTIONS OF CYCLOHEXANE IN TETRAHYDROFURAN HAVE BEEN IRRADIATED AND MOST OF THE GASEOUS, LOW-BOILING, AND HIGH-BOILING PRODUCTS IDENTIFIED. A MECHANISM IS PROPOSED FOR THEIR FORMATION. DEVELOPMENT OF RADIATION-RESISTANT INSULATORS - PRE- AND POSTIRRADIATION ELECTRICAL PROPERTY MEASUREMENTS ON PROSPECTIVE DOSIMETER INSULATING MATERIALS HAVE SEVERELY LIMITED THE POLYMERS TO BE STUDIED IN DETAIL DURING THE LATER STAGES OF THE INSULATION IMPROVEMENT PROGRAM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA., 22151, \$3.00 COPY, \$0.65 MICROFICHE

*IRRADIATION TESTING + *PLASTICS + *RADIATION DAMAGE + *RADIATION EFFECT + PROPERTY, PHYSICAL + TENSILE PROPERTY

4-25254 ALSO IN CATEGORY 7
SAVOLAINEN JE + COMPRE EL
STUDY OF UNCLAD-METAL-FUELED FAST BREEDER
OAK RIDGE NATIONAL LAB., TENN.
ORNL-4229 +. 2 PAGES, 1 REFERENCE, PAGE 188-189 OF REACTOR CHEMISTRY DIVISION ANNUAL PROGRESS REPORT FOR
PERIOD ENDING DECEMBER 31, 1967

A SODIUM-COOLED FAST BREEDER REACTOR WITH UNCLAD METAL FUEL SHOWS PROMISE AS A POWER AND HEAT SOURCE, ESPECIALLY FOR DESALINATION. ITS FEASIBILITY DEPENDS ON THE OXYGEN CONTENT IN THE SODIUM, WHICH IF UNCONTROLLED COULD CAUSE EXCESSIVE CORROSION OF THE FUEL.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA., 22151, \$3.00 COPY, \$0.65 MICROFICHE

*CORROSION + *FUEL INTEGRITY + *METAL, LIQUID + *OXYGEN + *SODIUM + *TESTING + CONTAMINATION + DESALINATION + REACTOR, BREEDER + REACTOR, FAST + REACTOR, LMR + THERMAL PROPERTY

4-27717 ALSO IN CATEGORY 5
HEIMEL S
THERMODYNAMIC PROPERTIES OF POTASSIUM TO 2100 K

CATEGORY 4
AEROSPACE SAFETY

4-27717 *CONTINUED*

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, WASHINGTON, D.C.
NASA-TN-D-4165 +. 36 PAGES, 5 FIGURES, 8 TABLES, 25 REFERENCES, SEPT. 1967

THERMODYNAMIC PROPERTIES OF POTASSIUM FROM ITS MELTING POINT (336 K) TO 2100 K ARE COMPUTED AND TABULATED FOR THE IDEAL CONDENSED PHASES (CRYSTAL AND LIQUID), FOR THE IDEAL MONOMERIC AND DIMERIC GASES, AND FOR THE REAL-GAS CASE. PROPERTIES CONSIDERED INCLUDE VAPOR PRESSURE, VOLUME, HEAT CAPACITY, ENTHALPY, ENTROPY, VIRIAL COEFFICIENTS, AND COMPRESSIBILITY FACTOR.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*EQUATION OF STATE + *POTASSIUM + *PROPERTY, PHYSICAL + *THERMODYNAMICS + CHEMICAL EQUILIBRIUM + COMPARISON, THEORY AND EXPERIENCE + HIGH TEMPERATURE + METAL, ALKALI

4-27718

ALSO IN CATEGORY 5

SHOUMAN AR

NONLINEAR HEAT TRANSFER AND TEMPERATURE DISTRIBUTION THROUGH FINS AND ELECTRIC FILAMENTS OF ARBITRARY GEOMETRY WITH TEMPERATURE-DEPENDENT PROPERTIES AND HEAT GENERATION
NASA, GEORGE C. MARSHALL SPACE FLIGHT CENTER, HUNTSVILLE, ALA.
NASA-TN-D-4257 +. 39 PAGES, 32 REFERENCES, JAN. 1968

A THEORETICAL ANALYSIS WAS MADE OF ONE-DIMENSIONAL, STEADY-STATE HEAT EXCHANGE BY BOTH CONVECTION AND RADIATION BETWEEN A FIN AND ITS SURROUNDINGS. AN EXACT SOLUTION IS PRESENTED FOR A CONSTANT-AREA FIN OR ROD WITH EITHER CONSTANT OR TEMPERATURE-DEPENDENT THERMAL PROPERTIES. THE EFFECT OF HEAT GENERATION OR ABSORPTION IS ALSO CONSIDERED. A PROCEDURE FOR NUMERICALLY SOLVING MORE GENERAL CASES WAS OUTLINED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

*FIN + *HEAT TRANSFER ANALYSIS + *HEAT TRANSFER, CONDUCTION + *HEAT TRANSFER, NATURAL CONVECTION + *HEAT TRANSFER, RADIANT + AEROSPACE SAFETY + COMPUTER PROGRAM + HEAT GENERATION, INTERNAL + HEAT GENERATION, NONUNIFORM + HEAT SINK + THERMAL ANALYSIS

4-27720

ALSO IN CATEGORY 5

LEKO RW

ANALYSIS OF THE TRANSIENT FLOW OF HYDROGEN IN HEATED PASSAGES IN THE LAMINAR-TURBULENT TRANSITION REGION
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, CLEVELAND, OHIO. LEWIS RESEARCH CENTER
N-66-35211 + NASA-TN-D-3629 +. 24 PAGES, 10 FIGURES, 4 REFERENCES, SEPT. 1966

THE LAMINAR INSTABILITY PROBLEM IS ANALYZED FOR THE FLOW OF HYDROGEN IN A SINGLE HEATED TUBE OF CIRCULAR CROSS SECTION. CONSIDERATION OF 21 CASES INVOLVING PERTURBATIONS OF HEAT FLUX, INLET PRESSURE, OR PRESSURE DROP LED TO THE IDENTIFICATION OF FIVE KINDS OF FLOW TRANSIENTS AND TO A STABILITY CRITERION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

*FLOW STABILITY + *FLOW, LAMINAR + *FLOW, TURBULENT + *HYDRODYNAMIC ANALYSIS + DECAY HEAT + FLUCTUATION + INSTABILITY + PRESSURE DROP

4-27952

ALSO IN CATEGORY 9

THOMPSON CA + KIM CK

CLUSTERED NUCLEAR ENGINE STUDY- SUB-POWER RANGE
WESTINGHOUSE ELECTRIC CORP., PITTSBURGH, PENNSYLVANIA
WANL-TME-1154 +. 68 PAGES, REFERENCES, JUNE 17, 1965

THE PRIMARY OBJECTIVES OF THE CONTROL AND INSTRUMENTATION SYSTEMS PORTION OF PROJECT 1840 ARE TO EVALUATE THE SIGNIFICANCE OF NUCLEAR COUPLING BETWEEN CORES ON THE CONTROL OF CLUSTERED ENGINE OPERATION, TO IDENTIFY ANY PROBLEM AREAS, AND TO COME UP WITH A CONCEPTUAL DESIGN OF CONTROL SYSTEM. AN ANALOG SIMULATION OF A NERVA REACTOR FOR SUB-POWER RANGE WAS DEVELOPED. BY COMBINING TWO OR THREE IDENTICAL MODELS WHICH INCLUDE REACTIVITY COUPLING OF CORES AND NEUTRON DETECTOR COUPLING, CLUSTERED ENGINES OF TWO OR THREE MODULES WERE SIMULATED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*NUCLEAR ROCKET + *REACTOR CONTROL + ANALOG SIMULATION + CONTROL, GENERAL + DESIGN STUDY + NERVA PROGRAM + SIMULATION

4-28051

ALSO IN CATEGORY 15

WILLIS CA + BRAMLITT ET + PAULSON RB + ROONEY KL
SAFETY CHARACTERISTICS OF POLONIUM 210
ATOMICS INTERNATIONAL, CANOGA PARK, CALIFORNIA
SC-CR-67-2801 +. 116 PAGES, FIGURES, TABLES, DEC. 20, 1967

THE SAFETY CHARACTERISTICS OF POLONIUM-210 ARE INVESTIGATED BY EVALUATING THE POTENTIAL

CATEGORY 4
AEROSPACE SAFETY

4-28C51 *CONTINUED*

HAZARDS FROM A 500,000-CI SOURCE IN A LAUNCH-PAD ABORT. A LAUNCH-PAD ABORT MODEL IS DEVELOPED LARGELY ON THE BASIS OF PROJECT PYRO DATA. THE QUANTITIES OF DUSTS WHICH NEED TO BE INJECTED INTO THE CLOUD TO PROVIDE VARIOUS DEGREES OF DOSE REDUCTION ARE ESTIMATED. IT IS CONCLUDED THAT EXPERIMENTAL DATA CONCERNING POLONIUM ATTACHMENT TO PARTICLES IS NEEDED TO PERMIT A REALISTIC ASSESSMENT OF THE HAZARDS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

*HAZARDS ANALYSIS + *MODEL TESTING + *PARTICLE, RADIOACTIVE + *POLONIUM + *SMOKE + AEROSPACE SAFETY + DOSE CALCULATION, INTERNAL + ENVIRONMENTAL CONDITION + EVAPORATION + ICRP + INHALATION + RADIATION SAFETY AND CONTROL

4-28427 ALSO IN CATEGORIES 7 AND 12

DEFIELD JD

TESTING HEPA FILTERS FOR USE IN A HIGH NOISE LEVEL ENVIRONMENT

LOS ALAMOS SCIENTIFIC LABORATORY

SM-110 +. 1 PAGE, PAGE 36 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

DURING THE PULSED COOLING PHASE OF THE NUCLEAR REACTOR ROCKET ENGINE (ROVER) TESTS, THE POSSIBILITY OF ATMOSPHERIC RELEASE OF RADIOACTIVE PARTICULATES EXISTS. TO CONTROL THIS POTENTIAL RELEASE A SPECIAL AIR CLEANING SYSTEM EMPLOYING HIGH EFFICIENCY PARTICULATE AEROSOL (HEPA) FILTERS WAS DESIGNED, CONSTRUCTED AND TESTED. A PRIMARY CONCERN WAS THE STRUCTURAL INTEGRITY OF THESE FILTERS UNDER THE INTENSE NOISE LEVELS THAT EXIST DURING REACTOR TESTS. COMMERCIAL HEPA FILTERS WERE SUBJECTED TO NOISE LEVELS SIMULATING THE ACOUSTIC ENVIRONMENT THAT EXISTS NEAR A REACTOR DURING TESTING.

AVAILABILITY - J. D. DEFIELD, LOS ALAMOS SCIENTIFIC LABORATORY, NEW MEXICO

*AEROSPACE SAFETY + *DESIGN CRITERIA + *FILTER EFFICIENCY + *TEST, FILTER SYSTEM + AIR CLEANING + FILTER DESIGN + TEST, FILTER

4-28457 ALSO IN CATEGORY 7

BGARDMAN TJ + SUDAR S

REACTION OF RESIDUAL SODIUM IN HNPf PRIMARY SODIUM SYSTEMS

ATOMICS INTERNATIONAL, CANOGA PARK, CALIF.

NAA-SR-MEMO-12268 +. 43 PAGES, 6 FIGURES, REFERENCES, MAY 15, 1967

THE ACTIVITY SPECIFICATION COVERING REACTION OF RESIDUAL SODIUM IN THE HNPf PRIMARY SYSTEM (HNPf RETIREMENT, ACTIVITY SPECIFICATION 5) REQUIRES THAT RESIDUAL SODIUM IN THE PRIMARY SYSTEM BE CONVERTED TO AN ESSENTIALLY CHEMICALLY INACTIVE FORM. PROCESSES FOR REACTING THE RESIDUAL SODIUM AND PROCEDURES FOR REACTING AND/OR REMOVING THE RESIDUAL SODIUM, IN CONFORMANCE WITH THE HNPf RETIREMENT PLAN, ARE PRESENTED. AN EXPERIMENTAL PROGRAM WILL BE CARRIED OUT TO VERIFY REACTION CHARACTERISTICS OF THE PROPOSED STEAM-NITROGEN REACTION PROCEDURE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151 \$3.00 COPY, \$0.65 MICROFICHE

*COOLANT CHEMISTRY + *DECONTAMINATION + *NITROGEN + *SODIUM + *STEAM + REACTOR, FAST

4-28458 ALSO IN CATEGORY 7

RODGERS SJ + PALLADINO CA + WILDEMAN TJ

EFFECT OF HIGH TEMPERATURE SODIUM ON THE MECHANICAL PROPERTIES OF CANDIDATE ALLOYS FOR THE LMFBR PROGRAM

MSA RESEARCH CORP., EVANS CITY, PA.

MSAR-67-2C3 +. 73 PAGES, DEC. 1967

TWO COLD TRAPS WERE REMOVED FROM MSA RESEARCH CORPORATION OPERATIONAL LOOPS AND THE CONTENTS WERE ANALYZED FOR O₂, C, N₂, H₂, CARBON COMPOUNDS, PARTICLE SIZE AND METALLIC IMPURITIES. COLD TRAP I-C HAD OPERATED FOR 1400 HOURS, AND COLD TRAP II-O2 HAD OPERATED FOR 3200 HOURS. LOOP I-C HAD OPERATED WITH A HIGH CARBON ENVIRONMENT WHERE PART OF THE MAIN-STREAM FLOW WAS PASSED THROUGH A BED OF GRAPHITE RUDS AT 1200 F. LOOP II-O2 HAD OPERATED WITH A HIGH OXYGEN ENVIRONMENT WITH THE COLD TRAP BEING OPERATED AT 760 F TO PROVIDE OXYGEN CONCENTRATION OF ABOUT 300 PPM O₂. ON THE BASIS OF THE RELATIVE QUANTITIES OF CO₂, C₂H₂, AND HCN DETECTED DURING ANALYSIS, IT IS ASSUMED THAT NA2C2 OR SOME ACETYLENE-PRODUCING COMPOUND, SUCH AS A CARBONYL, IS RESPONSIBLE FOR CARBURIZATION OF AUSTENITIC STEELS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151 \$3.00 COPY, \$0.65 MICROFICHE

*OUT OF PILE LOOPS AND EXPERIMENTS + *SODIUM + CARBON + CONTAMINATION + CORROSION + FILTER, TRAP + OXIDE + THERMAL PROPERTY

4-28466 ALSO IN CATEGORY 7

CONTZEN JP

PROSPECTS OF USING RADIOISOTOPES IN SPACE

CATEGORY 4
AEROSPACE SAFETY

4-28466 *CONTINUED*
INDUSTRIAL APPLICATIONS FOR ISOTOPIC POWER GENERATORS, PAPER COMMUNICATION NO. 3, 54 PAGES, FIGURES, TABLES, REFERENCES, 1967

IDENTIFIES THE DIFFERENT USES OF RADIOISOTOPES IN SPACE. ATTENTION IS CONCENTRATED ON THE TWO MAJOR CATEGORIES OF APPLICATIONS, PROPULSION AND ELECTRICAL POWER GENERATION. A TENTATIVE SELECTION OF THE MOST SUITABLE ISOTOPES IS MADE FOR BOTH TYPES OF SYSTEM, AND PROBLEMS WHICH ARISE FROM THEIR DEVELOPMENT ARE ANALYSED. UTILIZATION PROSPECTS ARE DEDUCED FROM THIS ANALYSIS, PARTICULARLY FROM A EUROPEAN POINT OF VIEW.

*AEROSPACE SAFETY + *SPACECRAFT + DESIGN STUDY + RADIOISOTOPE + SAFETY ANALYSIS

4-28467 ALSO IN CATEGORY 7
SQUIRES DM + YOUNG RW
POWER REQUIREMENTS FOR SPACE SATELLITES
INDUSTRIAL APPLICATIONS FOR ISOTOPIC POWER GENERATORS, PP. 55-72 +. 72 PAGES, FIGURES, 1 REFERENCE, 1967

THE EUROPEAN SPACE PROGRAMS, BOTH AT NATIONAL AND INTERNATIONAL LEVELS, ARE REVIEWED, AND THE REQUIREMENTS FOR POWER GENERATION FOR SCIENTIFIC, MILITARY, AND COMMUNICATION SATELLITES IN THE NEXT DECADE ARE EXAMINED. THE FUTURE OF ISOTOPIC POWER-GENERATION SYSTEMS IN RELATION TO THE EUROPEAN SPACE PROGRAM IS DISCUSSED AND THE DEVELOPMENT REQUIREMENTS AND TIME SCALES ARE EXAMINED.

*AEROSPACE SAFETY + *SPACECRAFT + AIRBORNE RELEASE + DESIGN STUDY + PLUTONIUM + RADIOISOTOPE + REACTOR, SPACE + SNAP, GENERAL (SR) + STRONTIUM

4-28468 ALSO IN CATEGORY 7
BRYANT PM
SAFETY ASPECTS OF RADIOISOTOPIC GENERATORS IN SPACE
6 PAGES, INDUSTRIAL APPLICATIONS FOR ISOTOPIC POWER GENERATORS, PP. 663-8, 1967

THE POTENTIAL APPLICATIONS OF ISOTOPIC GENERATORS AS SOURCES OF AUXILIARY POWER IN SPACE INVOLVE QUANTITIES OF RADIONUCLIDES SUFFICIENT TO PRODUCE UP TO A FEW KILOWATTS OF ELECTRICAL POWER. IN ABNORMAL CIRCUMSTANCES, EXPECTED TO ARISE INFREQUENTLY, MOST OR ALL OF THE ACTIVITY IN THE GENERATOR COULD BE BURNED UP ON RE-ENTRY TO THE UPPER ATMOSPHERE. PREDICTION OF THE ACTIVITY IN SURFACE AIR AND IN MILK WHICH WOULD ARISE IF A SINGLE 1 KILOWATT GENERATOR WITH ANY OF NINE NUCLIDES STUDIED WERE BURNED UP IS BASED ON DATA FROM WEAPONS TESTS. THE PREDICTED ACTIVITIES ARE COMPARED WITH REFERENCE LEVELS DERIVED FOR THE PURPOSE.

*AEROSPACE SAFETY + *PLUTONIUM + *SPACECRAFT + *STRONTIUM + AIRBORNE RELEASE + FALLOUT + RADIOISOTOPE + REACTOR, SPACE + SNAP, GENERAL (SR)

4-28506 ALSO IN CATEGORY 7
PRACH TF + NEWMAN L + AUERBACH C
THE DETERMINATION OF OXYGEN IN SODIUM BY THE AMALGAMATION METHOD
BROOKHAVEN NATIONAL LABORATORY, UPTON, NEW YORK
BNL 50118 + T-498 +. 22 PAGES, 2 FIGURES, 3 TABLES, REFERENCES, JUNE 1968

THE AMALGAMATION METHOD, WHEN USED WITH THE PROPER PRECAUTIONS, IS CAPABLE OF RELIABLE AND REPRODUCIBLE ANALYSIS TO ± 1 PPM, DOWN TO THE 1 PPM LEVEL. ITS MAIN DISADVANTAGE, ESPECIALLY WHEN RADIOACTIVE SAMPLES ARE INVOLVED, IS THE LARGE NUMBER OF MANIPULATIONS REQUIRED. WE ARE USING THE METHOD ROUTINELY FOR ANALYZING LOOP SAMPLES AS WELL AS SODIUM FROM A NUMBER OF SPECIAL EXPERIMENTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*ANALYTICAL TECHNIQUE, CALIBRATION + *OXYGEN + *SODIUM + METAL, LIQUID + OUT OF PILE LOOPS AND EXPERIMENTS + REACTOR, FAST + REACTOR, LMFBR

4-28605
BERG DE + KLETT RD + LARSON DW
ADVANCED FUEL FORM THERMAL ANALYSIS
SANDIA LABORATORIES
SC-RR-68-222 +. 23 PAGES, 16 FIGURES, 2 TABLES, 5 REFERENCES, MARCH 1968

THE TEMPERATURE RESPONSES OF ADVANCED FUEL FORMS IN A LAUNCH-PAD-ABORT FIRE WERE COMPUTED. THE FUEL FORMS INVESTIGATED WERE MIXTURES OF PuO_2 WITH Pt-Rh , MgO , ZrO_2 , AND HfO_2 . THE CONFIGURATIONS WERE SOLID CYLINDERS 1/8 TO 1 INCH LONG BY 2.374 INCHES IN DIAMETER. THE SURFACE EMISSIVITY WAS FOUND TO HAVE A GREATER EFFECT ON THE TEMPERATURE THAN DOES EITHER THE THERMAL CONDUCTIVITY, HEAT CAPACITY, OR CYLINDER LENGTH.

*AEROSPACE SAFETY + *FIRE + *FUEL INTEGRITY + FAILURE, FUEL ELEMENT + MAGNESIUM + MOLTEN FUEL + OXIDE + PLATINUM + PLUTONIUM + RHENIUM + ZIRCONIUM

CATEGORY 4
AEROSPACE SAFETY

4-28649 ALSO IN CATEGORY 5
BAUMEISTER KJ + HAMILL TD
LAMINAR FLOW ANALYSIS OF FILM BOILING FROM A HORIZONTAL WIRE
LEWIS RESEARCH CENTER, CLEVELAND, OHIO
NASA TN D-4035 +. 44 PAGES, FIGURES, REFERENCES, JULY 1967

A SEMITHEORETICAL EXPRESSION FOR THE HEAT-TRANSFER COEFFICIENT ASSOCIATED WITH POOL LAMINAR-FILM BOILING FROM A HORIZONTAL WIRE WAS DERIVED. THE EXPRESSION AGREES WELL WITH AVAILABLE EXPERIMENTAL DATA, WHICH ENCOMPASS WIRE DIAMETERS FROM 0.0021 IN. TO 1.81 IN. THE HEAT-TRANSFER COEFFICIENT IS SHOWN TO BE DEPENDENT ON SYSTEM ACCELERATION TO A POWER VARYING FROM ZERO TO 3/8, DEPENDING ON THE WIRE SIZE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*FILM BOILING + *HEAT TRANSFER ANALYSIS + *HEAT TRANSFER CORRELATION + HEAT TRANSFER, NATURAL CONVECTION + PHASE CHANGE + POOL BOILING

4-28684
RANDALL DE
AEROTHERMAL SAFETY ANALYSIS OF THE SNAP-19 (DISPERSAL CAPSULE DESIGN) ABOARD THE AGENA/NIMBUS B SPACECRAFT
SANDIA CORP., ALBUQUERQUE, N. MEX.
SC-RR-68-96 +. 33 PAGES, 15 FIGURES, 3 TABLES, 14 REFERENCES, MAY 1968

PRESENTS THE AEROTHERMAL ANALYSIS CONDUCTED TO DEFINE FUEL RELEASE LOCI FOR THE SNAP-19 (DISPERSAL CAPSULE DESIGN) ABOARD THE AGENA/NIMBUS B SPACECRAFT. FOR TUMBLING MODES OF MOTION DURING THE REENTRY HEAT PULSE, FUEL RELEASE OCCURS WITHIN THE FUEL MELT ZONE FOR MISSION ABORTS OCCURRING IN THE TIME INTERVAL OF 285 TO 462 SEC AFTER LAUNCH.

*AEROSPACE SAFETY + *REPORT, SAR + *SNAP, GENERAL (SR) + AIRBORNE RELEASE + FUEL MELTDOWN + REACTOR, SPACE

4-28755
HOLLAND WD
FINAL REPORT OF STUDIES OF 238-PU DEBRIS PARTICLES FROM THE SNAP-9A SATELLITE FAILURE OF 1964
TRACERLAB/WEST. RICHMOND, CALIF.
TLW-3803-1 +. 44 PAGES, REFERENCES, MAY 27, 1968

A STUDY WAS CONDUCTED ON ABLATED 238-PU PARTICLES FROM THE SNAP-9A SATELLITE FAILURE OF APRIL 1964 TO PROVIDE DATA FOR THE EVALUATION OF THE SATELLITE RE-ENTRY BURNUP HAZARD. DURING THIS STUDY, TWO NEW TECHNIQUES WERE DEVELOPED - THE THICK-NUCLEAR EMULSION METHOD FOR VIEWING THE ALPHA TRACKS PRODUCED BY ALPHA-EMITTING PARTICLES IN LTA-ASHED IPC PAPER, AND THE PHOTOREVERSAL TECHNIQUE FOR ELECTRON MICROSCOPY OF SUPRACON RADIOACTIVE PARTICLES. SINCE PHOTOREVERSAL PARTICLES WERE REMAINING ON THE MICROSCOPE SLIDES DURING FLOAT-OFF, THREE MORE-EFFICIENT TECHNIQUES FOR PREPARING THESE PARTICLES FOR ELECTRON MICROSCOPY WERE DEVELOPED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

*AEROSPACE SAFETY + *SNAP, GENERAL (SR) + ABLATION + PARTICLE SIZE DISTRIBUTION + PLUTONIUM + REACTOR, SPACE + REENTRY, ATMOSPHERIC

4-28757
DE AGAZIO AW
COMPARISON OF NUCLEAR AND EXPLOSIVE DESTRUCT CONCEPTS FOR NUCLEAR ROCKET ENGINES
NUS CORP., WASHINGTON, D. C. ENVIRONMENTAL SAFEGUARDS DIV.
NUS-277 +. 59 PAGES, REFERENCES, MAY 1966

IN THE EVENT OF MALFUNCTION WHICH WOULD ALLOW THE PREMATURE RE-ENTRY OF THE NUCLEAR ROCKET ENGINE, IT MAY BE DESIRABLE TO FRAGMENT THE REACTOR CORE TO MINIMIZE THE RADIATION EFFECTS TO THE POTENTIALLY AFFECTED POPULATION. ONE MEANS OF DISPOSAL OF A SPENT NUCLEAR ENGINE TO PREVENT RETURN TO EARTH OF LARGE RADIOACTIVE FRAGMENTS IS TO FRAGMENT THE ENGINE CORE BY EXPLOSIVE MEANS. THE SMALL FRAGMENT SIZE PLUS THE SUBSEQUENT DISPERSAL EFFECTS OF RE-ENTRY WOULD BE RELIED UPON PRIMARILY TO REDUCE THE POSSIBLE DOSE TO A LOW VALUE. ADDITIONALLY, THE DISPERSION OF THE PARTICLES THROUGHOUT THE ATMOSPHERE REDUCES THE PROBABILITY OF EXPOSURE OF ANY INDIVIDUAL TO A SIGNIFICANT NUMBER OF RADIOACTIVE FRAGMENTS. FRAGMENTATION OF THE NUCLEAR ENGINE CAN BE ACCOMPLISHED BY EITHER OF TWO METHODS. THE NUCLEAR STAGE CAN BE EQUIPPED WITH THE MEANS TO FIRE CHEMICAL HIGH EXPLOSIVES INTO THE CORE AND SIMULTANEOUSLY DETONATE THESE CHARGES AT THE PROPER MOMENT TO ACCOMPLISH THE DESIRED FRAGMENTATION. ALTERNATELY, THE NUCLEAR ENGINE CAN BE DESIGNED SUCH THAT SUFFICIENT REACTIVITY CAN BE INSERTED TO CAUSE A RAPID ENERGY RELEASE WITHIN THE FUEL ITSELF TO ACCOMPLISH FRAGMENTATION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

*AEROSPACE SAFETY + *EXPLOSION + *NUCLEAR EXPLOSION DEBRIS + *REENTRY, ATMOSPHERIC + *PROVER PROGRAM + *TEST, DESTRUCTIVE + PARTICLE SIZE DISTRIBUTION

CATEGORY 4
AEROSPACE SAFETY

4-28758
MAKI L + MILNER JF + GRANICH BR
SNAP-2 DEVELOPMENTAL REACTOR MOCKUP NO. 1. FINAL REPORT
ATOMICS INTERNATIONAL, DIV. OF NORTH AMERICAN AVIATION, INC., CANOGA PARK, CALIFORNIA
NAA-SR-12-186 +. 53 PAGES, 30 FIGURES, 1 TABLE, JUNE 15, 1968

THE OBJECTIVE OF THE SNAP 2 DEVELOPMENTAL REACTOR MOCKUP NO. 1 (S2DRM-1) TEST PROGRAM WAS TO DEMONSTRATE THE ABILITY OF THE REACTOR SYSTEM TO MEET THE SYSTEM REQUIREMENTS AT THE QUALIFICATION TEST LEVELS, TO IMPROVE THE QUALITY OF MARGINAL COMPONENTS BY DEVELOPMENT, AND TO LOG SUFFICIENT OPERATING TIME TO ESTABLISH SYSTEM ENDURANCE CONFIDENCE. THE TESTS WERE DESIGNED TO SIMULATE THE NONNUCLEAR CONDITIONS TO WHICH THE SNAP-2A REACTOR SUBSYSTEM WOULD BE SUBJECTED FROM FINAL ASSEMBLY THROUGH 90 DAYS OF OPERATION IN ORBIT. AN ASSOCIATED OBJECTIVE OF THE PROGRAM WAS TO DESIGN, FABRICATE, AND OPERATE AN ULTRAHIGH-VACUUM SYSTEM CAPABLE OF SUBJECTING THE REACTOR SYSTEM TO THE SEVERE EXPECTED SPACE VACUUM CONDITIONS. A BRIEF SUMMARY OF ALL S2DRM-1 TESTS TO DATE IS GIVEN IN CHRONOLOGICAL ORDER.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA
22151, \$3.00 COPY, \$0.65 MICROFICHE

*SNAP 2 (SR) + *TEST, PLANT RESPONSE + *TEST, PREOPERATIONAL + *TEST, SYSTEM OPERABILITY +
AEROSPACE SAFETY + REACTOR, AIRCRAFT + REACTOR, SPACE + TESTING

4-28759
KLETT RD
DESIGN OF SPACE NUCLEAR POWER SUPPLIES FOR INTACT REENTRY
SANDIA CORP., ALBUQUERQUE, N. MEX.
SC-RR-68-351 +. 34 PAGES, 13 FIGURES, 15 REFERENCES, MAY 1968

DESCRIBES THE ENVIRONMENTS WHICH HAVE AN ADVERSE EFFECT ON INTACT REENTRY OF SPACE NUCLEAR POWER SUPPLIES AND THE EFFECTS EACH ENVIRONMENT HAS ON THE DESIGN. SOME BASIC INTACT DESIGN CONCEPTS ARE SUGGESTED. PARAMETRIC THERMAL STUDIES FOR EARLY PHASES OF A DESIGN ARE DISCUSSED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA
22151, \$3.00 COPY, \$0.65 MICROFICHE

*AEROSPACE SAFETY + *DESIGN STUDY + *FUEL INTEGRITY + *REENTRY, ATMOSPHERIC + CHEMICAL REACTION +
DESIGN CRITERIA + FIRE + FUEL STORAGE

4-28760
ILLING RG
AEROSPACE NUCLEAR SAFETY PROGRAM. SANDIA LABORATORIES QUARTERLY REPORT, APRIL 1 - JUNE 30, 1968
SANDIA CORP., ALBUQUERQUE, N. MEX. AEROSPACE NUCLEAR SAFETY INFORMATION CENTER
SC-PR-68-451 +. 69 PAGES, 30 FIGURES, 12 TABLES, JULY 1968

DESCRIBES RESEARCH, DEVELOPMENT, SUPPORT, AND TEST ACTIVITIES AT SANDIA LABS FROM APRIL 1 TO JUNE 30, 1968, ON SNAP-27, SNAP-29, MAVSAT, ADVANCED FUELS, TRACKING, SEARCH, DETECTION, AND RECOVERY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA
22151, \$3.00 COPY, \$0.65 MICROFICHE

*AEROSPACE SAFETY + ABLATION + COMPUTER PROGRAM + DOSE CALCULATION, EXTERNAL + FALLOUT + REACTOR, SPACE +
REENTRY, ATMOSPHERIC + REPORT, REVIEW OF SAR + REVIEW + SAFETY REVIEW + SNAP, GENERAL (SR)

4-28762
CURTIS SB + WILKINSON MC
STUDY OF RADIATION HAZARDS TO MAN ON EXTENDED MISSIONS
BOEING COMPANY, SEATTLE, WASHINGTON
NASA-CR-1037 +. 82 PAGES, 48 FIGURES, 3 TABLES, 21 REFERENCES, MAY 1968

THIS STUDY ATTEMPTS TO IDENTIFY THE PARTICLE TYPES AND ENERGIES IMPORTANT IN THE EVALUATION OF THE RADIATION HAZARD ON LONG MANNED MISSIONS OUTSIDE THE MAGNETOSPHERE. IMPORTANT AREAS WHERE INFORMATION IS PRESENTLY LACKING ARE IDENTIFIED. SPECTRA OF THE VARIOUS COMPONENTS OF THE GALACTIC COSMIC RADIATION HAVE BEEN COMPILED FROM EXPERIMENTAL DATA GATHERED DURING THE PERIOD OF MINIMUM SOLAR ACTIVITY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA
22151, \$3.00 COPY, \$0.65 MICROFICHE

*AEROSPACE SAFETY + *BIOMEDICAL + *COSMIC RADIATION + DOSE CALCULATION, EXTERNAL + RADIATION EFFECT

4-29096
ASKEY DF

CATEGORY 4
AEROSPACE SAFETY

4-29096 *CONTINUED*

A FAILURE-RESISTANCE EVALUATION OF PUO-2-238 MICROSPHERES UNDER SIMULATED ENVIRONMENTAL CONDITIONS
 BATTELLE MEMORIAL INST., COLUMBUS, OHIO
 SC-CR-68-3640 +. 28 PAGES, 13 FIGURES, 3 TABLES, FEB. 1968

THE RESISTANCE OF PUO2-238 MICROSPHERES TO SPALLATION AND FRAGMENTATION UNDER ENVIRONMENTAL
 CONDITIONS SIMULATING ISOTOPIC-HEAT SOURCE CATASTROPHIC FAILURE UNDER REENTRY WAS EVALUATED.
 SMALL TEST SAMPLES OF UNCOATED MICROSPHERES WERE SUBJECTED TO A HELIUM ENVIRONMENT AT 1300 F
 AND 2500 PSI AND RAPIDLY DEPRESSURIZED IN TIME PERIODS AS SHORT AS 25 MILLISEC WITH NO
 APPARENT LOSS OF PARTICLE INTEGRITY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
 \$3.00 COPY, \$0.65 MICROFICHE

*AEROSPACE SAFETY + *PARTICLE SIZE DISTRIBUTION + FAILURE, COATED PARTICLE + FUEL ELEMENT + INHALATION +
 PARTICLE, RADIOACTIVE + TESTING

4-29151 ALSO IN CATEGORIES 9 AND 17

WILSON RB + GAFFNEY JL
 MANS RELIABILITY IN THE X-15 AEROSPACE SYSTEM
 10 PAGES, 2 FIGURES, 3 REFERENCES, 3RD AEROSPACE RELIABILITY AND MAINTAINABILITY CONFERENCE, JULY 1964

HUMAN RELIABILITY IS NOT EASILY PREDICTED OR CONTROLLED, BUT SYSTEM DESIGNERS NEED TO KNOW
 QUANTITATIVELY MANS CONTRIBUTION TO THE PERFORMANCE OF THE MAN-MACHINE SYSTEM. INTERMITTENT
 HUMAN FAILURE PLAGUES THE OPERATIONAL SITUATION. USUALLY, THE INDIVIDUAL WHO FAILS TO
 PERFORM A SPECIFIC TASK AT A SPECIFIC TIME WILL PERFORM THE TASK CORRECTLY THE NEXT TIME.
 HUMAN PERFORMANCE IS AFFECTED BY MANY COMPLEX, UNPREDICTABLE FACTORS. PREDICTING WHETHER OR
 NOT A MAN WILL SPECIFICALLY PERFORM HIS NEXT OPERATION CORRECTLY IS ANALOGOUS TO PREDICTING
 WHO IN THE POPULATION WILL BE NEXT TO DIE. HOWEVER, A SUFFICIENT NUMBER OF OBSERVATIONS OF A
 SYSTEM SHOULD INDICATE A DISCRETE DISTRIBUTION PATTERN FROM WHICH WE CAN DERIVE AN ESTIMATE
 OF MANS RELIABILITY.

*OPERATOR ACTION + *RELIABILITY ANALYSIS + FAILURE, OPERATOR ERROR + TRAINING

4-29169

GPIGOREV YG + KOVALEV EE + PRAVETSKII VN
 RADIATION AND SPACEFLIGHTS
 4 PAGES, KOSM. BIOL. MED., 1, PAGES 3-6 (1967)

THIS EDITORIAL-TYPE ARTICLE DISCUSSED SPACEFLIGHT RADIATION SAFETY SYSTEMS, REQUIREMENTS FOR
 WHICH HAVE BEEN MADE MORE SPECIFIC AS A RESULT OF INTENSIVE INVESTIGATIONS SUCH AS THOSE
 CONDUCTED ON THE KOSMOS-110 SATELLITE.

*AEROSPACE SAFETY + *SAFETY PRINCIPLES AND PHILOSOPHY + *SAFETY PROGRAM + RADIATION MODEL + SHIELDING +
 SPACECRAFT + SYSTEM DESCRIPTION

4-29401 ALSO IN CATEGORY 11

ANDREWS RC + HILTZ RH + KIRSCHLER LH + RODGERS SJ + TEPPER F
 EFFECTS OF HIGH TEMPERATURE SODIUM ON AUSTENITIC AND FERRITIC STEELS
 MSA RESEARCH CORPORATION, EVANS CITY, PENNSYLVANIA
 MSAR 67-103 +. 22 TABLES, 101 FIGURES, 148 PAGES, JULY 1967

AS PART OF A CONTINUING PROGRAM, MSA RESEARCH CORPORATION IS CONDUCTING A SERIES OF MECHANICAL
 PROPERTY TESTS OF FERRITIC AND AUSTENITIC ALLOYS IN DYNAMIC SODIUM SYSTEMS. THE SODIUM
 ENVIRONMENTS INCLUDE LOW-OXYGEN SODIUM, HIGH-OXYGEN SODIUM, AND HIGH-CARBON SODIUM. REPORT
 SUMMARIZES RESULTS OF THAT PORTION OF PROGRAM IN WHICH MECHANICAL PROPERTIES OF ONE HEAT OF
 304 SS WAS MEASURED IN TWO DYNAMIC 1200 F SODIUM SYSTEM, ONE OF WHICH WAS CONTAMINATED WITH
 CARBON AND THE OTHER WITH 200 PPM OXYGEN. SODIUM CHEMISTRY AND THE ROLE IT PLAYED IN
 CHARACTERIZING THE TEST MEDIUM ARE DISCUSSED, WITH EMPHASIS ON CARBON ANALYSES BUT ALSO
 INCLUDING OXYGEN AND EMISSION-SPECTROGRAPH ANALYSES. THE RELATION OF COLD-TRAP TEMPERATURE
 WITH THE ANALYSES OF SODIUM FOR OXYGEN IS SHOWN FOR ONE OF THE TEST LOOPS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
 \$3.00 COPY, \$0.65 MICROFICHE

*ANALYTICAL TECHNIQUE, CALIBRATION + *PROPERTY, PHYSICAL + *SODIUM + *STEEL, STAINLESS + CARBON +
 CREEP PROPERTY + IMPACT PROPERTY + MATERIAL + OXYGEN + STEEL + TENSILE PROPERTY + TESTING

CATEGORY 5
ACCIDENT ANALYSIS

5-27490

OLGER NY

A GENERAL UNSTEADY HEAT FLOW PROBLEM IN A FINITE COMPOSITE HOLLOW CIRCULAR CYLINDER UNDER BOUNDARY CONDITIONS OF THE SECOND KIND
DEPT. OF MECHANICAL AND AEROSPACE ENGINEERING, ILLINOIS INSTITUTE OF TECHNOLOGY, CHICAGO, ILLINOIS
16 PAGES, 9 REFERENCES, NUCLEAR ENGINEERING AND DESIGN, 7(2), PAGE 97-112, (FEB, 1968)

A COMPLETE ANALYTICAL STUDY IS PRESENTED FOR THE DISTRIBUTION OF THREE-DIMENSIONAL UNSTEADY TEMPERATURES IN A HOLLOW RIGHT CIRCULAR CYLINDER OF FINITE LENGTH AND COMPOSED OF TWO CONCENTRIC RADIAL LAYERS IN IMPERFECT THERMAL CONTACT. THE PRESCRIBED RATES OF HEAT FLOW OVER THE ENTIRE BOUNDARY, AND THE DISTRIBUTED HEAT SOURCES IN EACH LAYER ARE EXPRESSED IN TERMS OF ARBITRARY FUNCTIONS OF SPACE AND TIME, THE INITIAL CONDITIONS BEING ALSO ARBITRARILY PRESCRIBED. THE GENERAL EXPRESSIONS, GIVEN IN VARIOUS FORMS, FOR THE UNSTEADY TEMPERATURE FIELD IN THE CYLINDER CONTAIN THE SOLUTIONS TO MANY SPECIAL PROBLEMS OF TECHNOLOGICAL IMPORTANCE.

*CYLINDER + *FLOW, AXIAL + *HEAT TRANSFER, CONVECTION + FUEL ELEMENT + HEAT TRANSFER + HEAT TRANSFER-ANALYSIS + MATHEMATICAL STUDY

5-27492

HEWITT SF + LESLIE DC

TWO-PHASE FLOW AND HEAT TRANSFER

UNITED KINGDOM ATOMIC ENERGY AUTHORITY

5 PAGES, 7 FIGURES, THE ENGINEER 223, PAGES 29R-30Z (FEBRUARY 24, 1967)

THIS ARTICLE REVIEWS THE PRESENT STATE OF KNOWLEDGE ON TWO-PHASE FLOW AND HEAT TRANSFER WITH PARTICULAR REFERENCE TO THE DESIGN OF BOILING-WATER REACTORS. THE VARIOUS SYSTEMS IN WHICH TWO-PHASE FLOW CAN OCCUR ARE DISCUSSED, AND A REVIEW IS GIVEN OF THE FACTORS WHICH GOVERN VAPOR NUCLEATION IN AN EVAPORATING SYSTEM. THE REGIMES OF FLOW AND HEAT TRANSFER, WHICH ARE PRESENT IN BOILING SYSTEMS, ARE REVIEWED, AND THE PROBLEM OF BURNOUT IS DISCUSSED. FINALLY, SOME OTHER TWO-PHASE PROBLEMS WHICH ARE OF INTEREST IN SUCH REACTORS ARE LISTED. WHILE GOOD PROGRESS HAS BEEN MADE IN RECENT YEARS, THERE ARE STILL LARGE AREAS OF MAJOR UNCERTAINTY, AND IT SEEMS THAT MUCH FURTHER WORK WILL BE NECESSARY.

*FLOW, TWO PHASE + *HEAT TRANSFER, TWO PHASE + CONVECTIVE BOILING + FLOW, GENERAL + HEAT TRANSFER + HEAT TRANSFER, BOILING + NUCLEATE BOILING

5-27542

WALLIS GB

TWO-PHASE FLOW AND BOILING HEAT TRANSFER. FINAL REPORT

THAYER SCHOOL OF ENGINEERING, DARTMOUTH COLLEGE

NYO-3114-14 + EURAEC-1605 +. 202 PAGES, FEBRUARY 1966

THE PURPOSE OF THIS RESEARCH PROGRAM WAS TO INVESTIGATE SOME BASIC PROPERTIES OF TWO-PHASE FLOWS AND THEIR RELEVANCE TO ENGINEERING DESIGN. CERTAIN FLOW REGIMES WERE CHOSEN FOR STUDY, AND AN ADEQUATE ANALYSIS OF THE PRINCIPLE DYNAMIC PROCESSES WAS SOUGHT. DISCUSSES THESE FLOW REGIMES IN THE ORDER IN WHICH THEY TEND TO OCCUR IN AN EVAPORATOR AS THE VAPOR QUALITY IS INCREASED. FINAL REPORT. CONTENTS OF INTERIM REPORTS ARE ALSO SUMMARIZED AND THE MOST IMPORTANT CONCLUSIONS PRESENTED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

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

5-27543

EDWARDS JA + HOFFMAN HW

SUPERHEAT WITH BOILING ALKALI METALS

OAK RIDGE NATIONAL LABORATORY

ORNL-P-1659 + CONF-650946-1 +. 23 PAGES, REFERENCES, FROM 4TH HIGH TEMPERATURE LIQUID-METAL HEAT TRANSFER TECHNOLOGY CONFERENCE, ARGONNE, ILL.

THE RESULTS OF EXPERIMENTS IN A NATURAL-CIRCULATION LOOP TO ESTABLISH THE MAGNITUDE OF THE SUPERHEAT ASSOCIATED WITH ALKALI-METAL BOILING ARE REPORTED. FOR POTASSIUM BOILING ON AN AS-RECEIVED (COMMERCIALY SMOOTH) SURFACE, THE SUPERHEAT MEASURED RANGED FROM 500 F AT A SATURATION TEMPERATURE OF 1500 F DOWN TO 230 F AT T(SAT) EQUALS 1770 F. WALL-TEMPERATURE OSCILLATIONS, WHICH OCCUR IN THE PRESENCE OF THESE LARGE SUPERHEATS BECAUSE OF THE UNUSUAL THERMAL PROPERTIES OF THE LIQUID METALS WERE OF THE ORDER OF 170 TO 300 F AT A FREQUENCY OF 1.5 CYCLES/MIN. BECAUSE OF MAXIMUM SURFACE TEMPERATURE LIMITATIONS, SODIUM COULD NOT BE BOILED ON THIS SURFACE. SIGNIFICANT REDUCTIONS IN THE MAGNITUDE OF THE SUPERHEAT AND, HENCE, IN THE AMPLITUDE OF THE WALL TEMPERATURE OSCILLATIONS WERE EFFECTED BY MODIFYING THE BOILER SURFACE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*HEAT TRANSFER, BOILING + *METAL, ALKALI + *METAL, LIQUID + HEAT TRANSFER + HEAT TRANSFER EXPERIMENT +

CATEGORY 5
ACCIDENT ANALYSIS5-27543 *CONTINUED*
POTASSIUM + SODIUM5-27548
HAWTIN P + HEWITT GF + ROBERTS J
FLOW OF GASES IN POROUS SOLIDS
ATOMIC ENERGY RESEARCH ESTABLISHMENT, HARWELL, ENGLAND
2 PAGES, 2 FIGURES, 3 REFERENCES, NATURE (LONDON), 215, PAGES 1415-1416 (SEPT. 23, 1967)

APPROXIMATE EQUATIONS WERE DEVELOPED FOR THE FLOW OF BINARY MIXTURES OF GASES THROUGH POROUS MEDIA. THE MODEL WAS DEVELOPED FOR THE FLOW OF BINARY MIXTURES OF GASES THROUGH POROUS MEDIA. THE MODEL WAS DEVELOPED FOR A SINGLE CAPILLARY, ASSUMING THAT THE MOLAL FLUX OF EACH GAS THROUGH THE CAPILLARY IS THE SUM OF THREE TERMS- A DIFFUSION FLUX, WHICH RESULTS FROM THE STATISTICAL MOVEMENT OF THE MOLECULES UNDER THE PARTIAL-PRESSURE GRADIENT- A VISCOUS FLUX RESULTING FROM THE GENERAL MOTION OF THE GAS INDUCED BY THE TOTAL PRESSURE GRADIENT- AND A NET DRIFT FLUX, WHICH ARISES FROM MOMENTUM TRANSFER REQUIREMENTS WITHIN THE CAPILLARY TUBE. THE METHOD OF APPLICATION IS BY USING OVERALL CONSTANTS FOR THE MEDIA, RATHER THAN BY CONSIDERING INDIVIDUAL PORES. THE FOREGOING TREATMENT WAS VERIFIED USING REACTOR-GRADE GRAPHITE AS THE POROUS MEDIUM, AND N-2-HE AND AR-HE AS A GAS PAIRS, IN COUNTER DIFFUSION RUNS. MEASUREMENTS WERE MADE OVER THE TEMPERATURE RANGE FROM 20 TO 600 C AT A TOTAL MEAN PRESSURE OF +12 MM HG.

*DIFFUSION + *GRAPHITE + *MASS TRANSFER + ARGON + EXPERIMENT, GENERAL + HELIUM + MATHEMATICAL TREATMENT + NITROGEN

5-27549
IOBAL M
COMBINED FREE AND FORCED CONVECTION IN A HORIZONTAL TUBE WITH UNIFORM INTERNAL HEAT GENERATION
THE UNIVERSITY OF BRITISH COLUMBIA, VANCOUVER, B.C., CANADA
10 PAGES, 6 FIGURES, NUCLEAR ENGINEERING AND DESIGN, 7(1), PAGES 49-58 (JAN. 1968)

COMBINED FREE AND FORCED CONVECTION OF A HEAT GENERATING FLUID IN LAMINAR FLOW INSIDE A HORIZONTAL TUBE HAS BEEN INVESTIGATED THEORETICALLY. THE FLOW IS CONSIDERED FULLY DEVELOPED AND UNDER UNIFORM HEAT FLUX. FLUID PROPERTIES ARE CONSIDERED UNIFORM EXCEPT FOR THE VARIATION OF DENSITY IN THE BUOYANCY TERMS. A PERTURBATION SOLUTION TO THE GOVERNING EQUATIONS HAS BEEN OBTAINED AND IS VALID FOR SMALL VALUES OF THE PARAMETERS REPRESENTING HEAT GENERATION AND BUOYANCY TERMS. EXPRESSIONS FOR VELOCITY AND TEMPERATURE HAVE BEEN DEVELOPED. NUSSELT NUMBERS HAVE BEEN EVALUATED. WITHIN LIMITS, WITH INCREASING VALUES OF HEAT SOURCE PARAMETER, THE AXIAL VELOCITY IS NOT AFFECTED, HOWEVER, TEMPERATURE DIFFERENCES BETWEEN WALL AND FLUID BECOME SMALLER AND THE NUSSELT NUMBER IS REDUCED.

*FLOW, TUBE + *HEAT GENERATION, INTERNAL + *HEAT TRANSFER, CONVECTION + HEAT TRANSFER + HEAT TRANSFER, NATURAL CONVECTION + THEORETICAL INVESTIGATION

5-27550
BORISHANSKII VM + GONTOVSKII MA + FIRSOVA EV
HEAT TRANSFER DURING LONGITUDINAL-FLOW OF LIQUID METAL IN TRIANGULAR TUBE BANKS
3 PAGES, AT. ENERG. (USSR), 22, PAGES 318-320 (APRIL 1967) (IN RUSSIAN)

THE HEAT TRANSFER DURING LONGITUDINAL FLOW OF A LIQUID METAL IN TUBE BANKS HAVING RELATIVE SPACINGS S/D EQUALS 1.1, 1.2, AND 1.5 WAS CALCULATED OVER A REGION OF PECLET NUMBERS (70 TO 7000 AND PLOTTED IN THE FORM NU EQUAL TO $F(PE)$. THE CALCULATED VALUES WERE COMPARED WITH EXPERIMENTAL DATA IN TUBE BANKS HAVING THE SAME GEOMETRY AT PRANDTL NUMBERS PR EQUAL TO 0.607 AND 0.03. THE ABSOLUTE VALUES OF THE EXPERIMENTAL HEAT TRANSFER COEFFICIENTS AGREED WELL WITH THE CALCULATED VALUES BUT WERE SOMEWHAT SMALLER THAN THE CALCULATED VALUES. THE BEST AGREEMENT WAS OBTAINED FOR THE TUBE BUNDLE WITH S/D EQUAL TO 1.5, AND THE LARGEST DEVIATION WAS NOTED FOR THE TUBE BUNDLE WITH S/D EQUAL 1.1.

*FLOW, AXIAL + *FUEL ELEMENT CLUSTER + *METAL, LIQUID + HEAT TRANSFER + HEAT TRANSFER ANALYSIS + HEAT TRANSFER CORRELATION + HEAT TRANSFER EXPERIMENT

5-27551
BOGDANOV FF + KORSHAKOV AI + UTKIN OI
INTENSIFICATION OF HEAT TRANSFER IN CHANNELS
5 PAGES, AT. ENERG. (USSR), 22, PAGES 428-431 (JUNE 1967) (IN RUSSIAN)

INVESTIGATIONS OF THE EFFECTS OF ARTIFICIAL ROUGHNESS IN THE HEAT EXTRACTING SURFACES OF HEAT EXCHANGE DEVICE ON HEAT TRANSFER AND HYDRAULIC RESISTANCE WERE DESCRIBED. EMPIRICAL RELATIONS FOR THE CALCULATION OF THE HEAT EXTRACTION AND THE HYDRAULIC RESISTANCE IN HEAT EXCHANGE USING SUCH SURFACES WERE DERIVED.

*HEAT EXCHANGER + *HEAT TRANSFER, CONVECTION + *HOT CHANNEL + EQUIPMENT DESIGN + HEAT TRANSFER

5-27552
REYNES L

CATEGORY 5
ACCIDENT ANALYSIS

5-27552 *CONTINUED*
MECHANICAL AND THERMAL PROBLEMS IN THE STARTUP OF RAPSODIE
7 PAGES, IND. AT., 11(7-8), PAGES 35-41 (1967) (IN FRENCH)

THE USE OF NA AS A COOLANT ALLOWS THE PRODUCTION FUNCTION OF A REACTOR, WHICH UTILIZES THE HIGH TEMPERATURE TO BE UTILIZED. BEYOND ABOUT 500 C THE REQUIRED TEMPERATURE BECOMES THE PRINCIPAL PARAMETER OF THE PROBLEM OF DESIGN AND OPERATION. CERTAIN DIFFICULTIES WHICH COME UNEXPECTEDLY IN THE COURSE OF STARTUP OF RAPSODIE ARE PRESENTED.

*PEACTOR STARTUP EXPERIENCE + *REACTOR, LMCR + FRANCE + HEAT TRANSFER + METAL, LIQUID + RAPSODIE (LMCR) + SODIUM

5-27553
IVANOVSKII MN + ORLOV YI + SUBBOTIN VI
HEAT CONDUCTION OF A LAMINAR LAYER OF LIQUID METAL
3 PAGES, AT. ENERG. (USSR), 22, PAGES 231-233 (MARCH 1967)

THE WALL TEMPERATURES IN A 90 MM TUBE CONTAINING A TURBULENT FLOW OF LITHIUM METAL WERE MEASURED AT THE WALL AND AT DISTANCES OF 3.75 AND 6.25 MM FROM THE WALL BY THREE MICROTHERMOCOUPLES. THE EXPERIMENTS WERE CARRIED OUT WITH PURE METAL AND WITH INSOLUBLE NITRIDES SUSPENDED IN THE LITHIUM. THE PECLET NUMBER (PE) WAS VARIED FROM 200 TO 800. THE AVERAGE HEAT TRANSFER COEFFICIENT FOR PURE LITHIUM CORRESPONDED TO THE VALUES CALCULATED FROM A FORMULA. CONTAMINATION OF THE LITHIUM BY SUSPENDED IMPURITIES LED TO A DECREASE IN THE HEAT TRANSFER COEFFICIENT TO VALUES GIVEN BY THE FOLLOWING FORMULA - $NU = 3. + .014 * PE^{**}$. 9. THE DECREASE IN HEAT TRANSFER REACHES A LIMITING VALUE.

*HEAT TRANSFER EXPERIMENT + *HEAT TRANSFER, CONDUCTION + *METAL, LIQUID + FLOW, LAMINAR + HEAT TRANSFER + HEAT TRANSFER CORRELATION

5-27554
BORISHANSKII VM + ZHINKINA VB + FIRSOVA EV
EFFECT OF OXIDES ON HEAT TRANSFER DURING TRANSVERSE FLOW OF SODIUM METAL ACROSS STAGGERED TUBE BANK
2 PAGES, 1 FIGURE, 4 REFERENCES, AT. ENERG. (USSR), 22, PAGES 317-318 (APRIL 1967)

HEAT TRANSFER WAS MEASURED ON STAINLESS-STEEL TUBES HAVING A DIAM OF 29MM, WITH RELATIVE SPACINGS (S-SUB-1/D) EQUAL TO 1.25 AND (S-SUB-2/D) EQUAL TO 1.07. RANGE OF BASIC PARAMETERS - W EQUAL TO 0.09 TO 1.0 M/SEC. T-SUB-LIQ EQUAL TO 300 C. RE EQUAL TO 5000-67,000, PE EQUAL TO 30-400, OXYGEN CONTENT OF THE SODIUM EQUAL TO 0.04, 0.02, AND 0.004 WT%. THE AVERAGE OF THE INLET AND OUTLET TEMPERATURES WAS USED IN DETERMINING PHYSICAL CONSTANTS SUCH AS VISCOSITY, DENSITY, ETC. THE EXPERIMENTAL DATA WERE FITTED IN THE FOLLOWING FORM - NU EQUALS $F(PE)$. THE OXYGEN CONTENT IN THE SODIUM METAL HAD NO EFFECT ON THE HEAT TRANSFER. THE DATA COULD BE FITTED BY ONE FORMULA WITH AN ACCURACY OF 30% - NU EQUALS $PE^{**}.5$.

*FLOW, CROSS + *FUEL ELEMENT CLUSTER + *HEAT TRANSFER, CONVECTION + HEAT TRANSFER + METAL, LIQUID + OXIDE + SODIUM

5-27555
TORIKAI K + YAMAZAKI T
BOILING HEAT CONDUCTION ON THE UNWETTABLE SURFACE
JAPAN ATOMIC ENERGY RESEARCH INST., TOKYO
5 PAGES, NIPPON KIKAI GAKKAI ROMBUNSHU, 32, PAGES 1557-1561 (OCTOBER 1966) (IN JAPANESE)

HEAT CONDUCTION AT UNWETTABLE SURFACES IS MAINLY BY NATURAL-CONVECTION INVOLVING BUBBLES GENERATED AND THEN DETACHED. BURNOUT DOES NOT OCCUR WHEN THE DETACHED BUBBLES PREVENT THE FLOW OF LIQUID TOWARD THE CONDUCTIVE SURFACE BUT WHEN THE CONDUCTION IS PREVENTED BY THE ADHERENCE OF BUBBLES ONTO THE CONDUCTIVE SURFACE. IT IS FOUND THAT THE BOILING CONDUCTION AT UNWETTABLE SURFACES DIFFERS FROM THAT OF SURFACES, AND IS IN A STATE SIMILAR TO TRANSITION BOILING. CONSEQUENTLY, IT IS POSSIBLE THAT HIGH-LOAD CONDUCTION AT WET SURFACES AFFECTS THE HEAT CONDUCTION THROUGH THE THIN FILM OF BUBBLE-ADHERED SURFACES.

*BOILING + *HEAT TRANSFER, CONDUCTION + *HEAT TRANSFER, NATURAL CONVECTION + CONVECTIVE BOILING + HEAT TRANSFER + HEAT TRANSFER, BOILING + HEAT TRANSFER, TWO PHASE

5-27556
KAFENGAUZ NL + FEDOROV MI
DESTRUCTION OF PIPES BY HIGH-FREQUENCY PRESSURE OSCILLATIONS DURING HEAT TRANSFER
2 PAGES, AT. ENERG. (USSR), 23, PAGES 147-148 (1967) (IN RUSSIAN)

HEAT TRANSFER IN SURFACE BOILING LIQUIDS FLOWING IN PIPES AT SUBCRITICAL PRESSURES OR AT SUPERCRITICAL PRESSURES UNDER PSEUDO BOILING CONDITIONS IS USUALLY ACCOMPANIED BY PRESSURE OSCILLATIONS WITH A FREQUENCY BETWEEN 3000 AND 15000 HZ AND AN AMPLITUDE RANGING FROM 2 TO 40 KG/CM². EXAMINATION OF THIS PROBLEM FOR THE CASE OF DIISOPROPYLCYCLOHEXANE REVEALED THAT 10 TO 15 MINUTES AFTER THE START OF OPERATION THE STEEL PIPE WAS DESTROYED. THIS COULD NOT BE ASCRIBED TO A WORSENING OF THE HEAT TRANSFER BECAUSE IN NO CASE DID THE TEMPERATURE EXCEED 750 C AND A STATIC PRESSURE REMAINED AT 60 KG/CM². THE 10,000 HZ OSCILLATIONS SUBJECTED THE PIPE TO 6,000,000 CYCLES DURING THE 10 MINUTES, RESULTING IN FATIGUE CRACKING OF THE WALLS. THESE RESULTS SHOW THAT UNDER THE ABOVE EXPERIMENTAL CONDITIONS THE FATIGUE STRENGTH OF THE PIPE MUST BE TAKEN INTO ACCOUNT.

CATEGORY F
ACCIDENT ANALYSIS

5-27556 *CONTINUED*
 *FAILURE, PIPE + *HEAT TRANSFER + *PRESSURE TRANSIENT + ACCIDENT ANALYSIS + VIBRATION + VIBRATION ANALYSIS

5-27558
 FUJII T + TAKEUCHI M
 EXPERIMENTS ON THE FREE CONVECTION HEAT TRANSFER FROM A VERTICAL CIRCULAR CYLINDER. I. ON THE COEFFICIENTS OF THE HEAT TRANSFER TO WATER
 KYUSHU UNIVERSITY, JAPAN
 11 PAGES, KYUSHU KAIGAKU SEISAN KAGAKU KENKYUSHO HOKOKU, NO. 45, PAGES 17-28 (JULY 1967) (IN JAPANESE)

FREE CONVECTION HEAT TRANSFER FROM A VERTICAL CIRCULAR CYLINDER OF 82 MM DIAMETER AND 1000 MM HEIGHT TO WATER WAS STUDIED EXPERIMENTALLY FOR TWO CASES OF UNIFORM SURFACE TEMPERATURE AND UNIFORM SURFACE HEAT FLUX. THE COEFFICIENTS OF HEAT TRANSFER ARE CALCULATED AND ARRANGED IN NONDIMENSIONAL FORMULA. IN THE LAMINAR REGION THESE SHOW GOOD AGREEMENT WITH THE NUMERICAL SOLUTIONS OF THE BOUNDARY LAYER EQUATIONS, AND IN THE TURBULENT REGION THERE IS FOUND AN EXPERIMENTAL FORMULA. IT IS FOUND THAT THE SURFACE TEMPERATURE CAN NOT BE HELD CONSTANT WHEN THE BOUNDARY LAYER BECOMES TURBULENT. ESPECIALLY IN THE PROCESS OF THE TRANSITION OF THE VORTEX STREET LAYER INTO THE TURBULENT LAYER, THE SURFACE TEMPERATURE FLUCTUATES WITH LARGER AMPLITUDES AND WITH THE SAME PERIOD WITH WHICH THE BREAK UP POSITION OF THE VORTEX STREET SHIFTS IN THE VERTICAL DIRECTION.

*CYLINDER + *HEAT TRANSFER, NATURAL CONVECTION + *WATER, GENERAL + HEAT TRANSFER COEFFICIENT + HEAT TRANSFER CORRELATION

5-27559
 YARKHO SA + KOSHKIN VK + KALININ EK + TER-MKRTCHYAN AA
 HEAT EXCHANGE IN A CHANNEL WITH DENSELY PACKED TUBE OR ROD BUNDLES
 MOSCOW AVIATION INST.
 5 PAGES, TEPLIFIZ. VYS. TEMP., 5, PAGES 317-321 (MAR.-APR. 1967) (IN RUSSIAN)

EXPERIMENTAL STUDIES WERE MADE OF THE HEAT TRANSFER IN WATER AT RE EQUAL TO 8000 TO 800,000 RANGE AT CONSTANT HEAT RELEASE ALONG THE LENGTH AND PERIMETER OF A CHANNEL. THE RESULTS OBTAINED AND THE METHOD FOR FIELD TEMPERATURE CALCULATIONS IN THE STRUCTURAL ELEMENTS FORMING THE TIGHTLY PACKED TUBES OR FUEL RODS ARE DISCUSSED.

*FUEL ELEMENT CLUSTER + *HEAT TRANSFER, CONVECTION + *WATER, GENERAL + HEAT EXCHANGER + HEAT TRANSFER EXPERIMENT + HOT CHANNEL

5-27563
 MACK LR + HARDEE HC
 NATURAL CONVECTION BETWEEN CONCENTRIC SPHERES AT LOW RAYLEIGH NUMBERS
 UNIVERSITY OF TEXAS, AUSTIN, TEXAS
 10 PAGES, 5 FIGURES, 6 REFERENCES, INTERNATIONAL JOURNAL OF HEAT AND MASS TRANSFER, 11(3), PAGES 387-396 (MARCH 1969)

WITH NEGLECT OF VISCOUS HEATING AND WITH TREATMENT OF EACH FLUID PROPERTY EXCEPT SPECIFIC WEIGHT AS CONSTANT, THE SOLUTION FOR STEADY AXISYMMETRIC NATURAL CONVECTION BETWEEN ISOTHERMAL CONCENTRIC SPHERES IS OBTAINED. STREAMLINE CONFIGURATION, VELOCITY AND TEMPERATURE DISTRIBUTIONS, AND BOTH LOCAL AND OVERALL HEAT-TRANSFER RATES ARE DISCUSSED AND ILLUSTRATED. APPROPRIATE COMPARISONS ARE MADE WITH EXPERIMENTAL RESULTS. THEORY AND EXPERIMENT SUPPLEMENT ONE ANOTHER. A DESIGN EXAMPLE IS GIVEN IN WHICH BOTH TYPES OF RESULTS ARE NEEDED.

*HEAT TRANSFER ANALYSIS + *HEAT TRANSFER, NATURAL CONVECTION + *SPHERE + HEAT TRANSFER + HEAT TRANSFER CORRELATION + HEAT TRANSFER EXPERIMENT

5-27564
 WARNER CY + ARPACI VS
 AN EXPERIMENTAL INVESTIGATION OF TURBULENT NATURAL CONVECTION IN AIR AT LOW PRESSURE ALONG A VERTICAL HEATED FLAT PLATE
 BRIGHAM YOUNG UNIVERSITY, PROVO, UTAH + UNIVERSITY OF MICHIGAN, ANN ARBOR, MICHIGAN
 10 PAGES, 10 FIGURES, 14 REFERENCES, INTERNATIONAL JOURNAL OF HEAT AND MASS TRANSFER, 11(3), PAGES 397-406 (MARCH 1968)

DESCRIBES EXPERIMENTAL INVESTIGATION OF TURBULENT NATURAL CONVECTION IN AIR. RESULTS SHOW GOOD AGREEMENT WITH THE ANALYTICAL CORRELATION OF BAYLEY - $NU_{EQUAL} 0.1 * RA^{**} .33333$ - FOR RAYLEIGH NUMBERS UP TO $1.E+12$. EXTENSIVE MEASUREMENTS OF THE TEMPERATURE FIELD INDICATE A GOOD SIMILARITY IN THE TEMPERATURE PROFILES WHEN COMPARED ON THE BASIS OF THE NATURAL COORDINATE y , THE DISTANCE NORMAL TO THE PLATE SURFACE. THE USE OF POWER-LAW TEMPERATURE PROFILES IS SHOWN TO BE UNDESIRABLE FOR THE CASE OF TURBULENT NATURAL CONVECTION.

*HEAT TRANSFER CORRELATION + *HEAT TRANSFER EXPERIMENT + *HEAT TRANSFER, NATURAL CONVECTION + AIR + COMPARISON, THEORY AND EXPERIENCE + FLOW, TURBULENT + HEAT TRANSFER

5-27565

CATEGORY 5
ACCIDENT ANALYSIS

5-27565 *CONTINUED*
CROOKSTON RB + ROTHFUS RR + KERMODE RI
TURBULENT HEAT TRANSFER IN ANNULI WITH SMALL CORES
CARNEGIE INSTITUTE OF TECHNOLOGY, PITTSBURGH, PENNSYLVANIA
12 PAGES, 8 FIGURES, 2 TABLES, 9 REFERENCES, INTERNATIONAL JOURNAL OF HEAT AND MASS TRANSFER, 11(3), PAGES 415-426 (MARCH 1968)

THE J FACTORS FOR HEAT AND MOMENTUM AND THE MAXIMUM POINTS OF THE VELOCITY PROFILES HAVE BEEN EXPERIMENTALLY DETERMINED FOR AIR FLOW AT REYNOLDS NUMBER FROM 17,000 TO 100,000 IN A TUBE AND THREE CONCENTRIC ANNULI HAVING RADIUS RATIOS OF ABOUT 10, 16, AND 31. THE HEAT-TRANSFER DATA ARE CORRELATED SUCCESSFULLY BY MEANS OF GEOMETRICAL TRANSFORMATIONS WHICH YIELD COINCIDENT PATTERNS OF THE EDDY DIFFUSIVITIES FOR MOMENTUM.

*FLOW, ANNULAR + *FLOW, TURBULENT + *HEAT TRANSFER, CONVECTION + AIR + FLOW, TUBE + HEAT TRANSFER + HEAT TRANSFER ANALYSIS + HEAT TRANSFER CORRELATION

5-27566
PAN Y + ACRIVOS A
HEAT TRANSFER AT HIGH PECLET NUMBER IN REGIONS OF CLOSED STREAMLINES
STANFORD UNIVERSITY, STANFORD, CALIFORNIA
6 PAGES, 1 FIGURE, 4 REFERENCES, INTERNATIONAL JOURNAL OF HEAT AND MASS TRANSFER, 11(3), PAGES 439-444 (MARCH 1968)

AN ASYMPTOTIC SOLUTION IS DEVELOPED FOR THE TEMPERATURE DISTRIBUTION AT HIGH PECLET NUMBER IN A DOUBLY-CONNECTED, LAMINAR, INCOMPRESSIBLE FLOW FIELD CONSISTING ENTIRELY OF CLOSED STREAMLINES. IT IS SHOWN THAT, WITH THE EXCEPTION OF A THIN THERMAL LAYER NEXT TO A NON-ISOTHERMAL SURFACE, THE TEMPERATURE IS CONSTANT ALONG A STREAMLINE BUT THAT, IN CONTRAST TO THE ANALOGOUS PROBLEM OF VORTICITY TRANSPORT, THIS BULK TEMPERATURE DISTRIBUTION IS IN GENERAL NON-UNIFORM. IT IS ALSO ESTABLISHED THAT THE ASYMPTOTIC EXPRESSION FOR THE AVERAGE NUSSELT NUMBER NU DOES NOT CONTAIN EXPLICITLY THE PECLET NUMBER Pe IRRESPECTIVE ENCOUNTERED IN HEAT TRANSFER TO EXTERNAL FLOWS WHERE, AS A RULE, NU INCREASES MONOTONICALLY WITH INCREASING Pe .

*FLOW THEORY AND EXPERIMENTS + *HEAT TRANSFER ANALYSIS + *MATHEMATICAL STUDY + HEAT TRANSFER CORRELATION + HEAT TRANSFER, CONVECTION + TEMPERATURE GRADIENT

5-27567
WALLIS GB
USE OF THE REYNOLDS FLUX CONCEPT FOR ANALYZING ONE-DIMENSIONAL TWO-PHASE FLOW
DARTMOUTH COLLEGE, HANOVER, NEW YORK
14 PAGES, 8 FIGURES, 22 REFERENCES, INTERNATIONAL JOURNAL OF HEAT AND MASS TRANSFER, 11(3), PAGES 445-458 (MARCH 1968)

THIS SERIES OF TWO PAPERS HAS THE FOLLOWING OBJECTIVES - (1) TO DRAW ATTENTION TO THE USEFULNESS OF THE REYNOLDS FLUX CONCEPT IN ENGINEERING ANALYSIS, TO COMPARE THE VARIOUS THEORIES OF PREVIOUS WORKERS, AND TO PRESENT SOME NOVEL DEVELOPMENTS, (2) TO SHOW HOW THE CONCEPT CAN BE APPLIED TO PREDICT PRESSURE GRADIENTS IN FORCED CONVECTION BOILING, FLASHING AND CONDENSATION. THIS ANALYSIS IS ALSO RELATED TO THE MECHANISMS OF ENTROPY PRODUCTION IN TWO-PHASE FLOW.

*FLOW, TWO PHASE + *MATHEMATICAL STUDY + *THEORETICAL INVESTIGATION + FLOW THEORY AND EXPERIMENTS + FLOW, GENERAL

5-27568
SURIANO FJ + YANG K
LAMINAR FREE CONVECTION ABOUT VERTICAL AND HORIZONTAL PLATES AT SMALL AND MODERATE GRASHOF NUMBERS
UNIVERSITY OF NOTRE DAME, NOTRE DAME, INDIANA
18 PAGES, 15 FIGURES, 2 TABLES, 19 REFERENCES, INTERNATIONAL JOURNAL OF HEAT AND MASS TRANSFER, 11(3), PAGES 473-490 (MARCH 1968)

STEADY LAMINAR FREE CONVECTION ABOUT HEATED ISOTHERMAL VERTICAL AND HORIZONTAL PLATES IS STUDIED IN THE RAYLEIGH-NUMBER RANGE UP TO 3000 AT PRANDTL NUMBERS OF 0.72 AND 10.0. THE GOVERNING HYDRODYNAMIC AND ENERGY EQUATIONS ARE SOLVED BY A NUMERICAL FINITE-DIFFERENCE SCHEME, YIELDING DETAILS OF THE MOMENTUM AND ENERGY FIELDS. IN THE LOW GRASHOF-NUMBER RANGE, THE ENERGY TRANSFER IS PREDOMINANTLY BY HEAT CONDUCTION, WHILE THERMAL CONVECTION PREVAILS IN THE UPPER RANGE. THE EFFECT OF PRANDTL NUMBER IS SUCH THAT THE FIELD BEHAVIORS CAN BE GENERALLY CORRELATED WELL WITH A SINGLE PARAMETER, THE RAYLEIGH NUMBER. FINALLY, IT IS ALSO SHOWN THAT THE OVERALL HEAT-TRANSFER RATES AGREE REASONABLY WELL WITH EXISTING EXPERIMENTAL DATA IN THE LITERATURE.

*FLOW, LAMINAR + *HEAT TRANSFER, NATURAL CONVECTION + *NUMERICAL METHOD + HEAT TRANSFER ANALYSIS + HEAT TRANSFER CORRELATION + HEAT TRANSFER EXPERIMENT

5-27569
LEE Y
TURBULENT HEAT TRANSFER FROM THE CORE TUBE IN THERMAL ENTRANCE REGIONS OF CONCENTRIC ANNULI
THE LIVERPOOL COLLEGE OF TECHNOLOGY, LIVERPOOL, ENGLAND
14 PAGES, 11 FIGURES, 23 REFERENCES, INTERNATIONAL JOURNAL OF HEAT AND MASS TRANSFER, 11(3), PAGES 509-522

CATEGORY 5
ACCIDENT ANALYSIS5-27569 *CONTINUED*
(MARCH 1968)

THE PROBLEMS OF THERMAL BOUNDARY-LAYER GROWTH AND HEAT TRANSFER, FOR HYDRODYNAMICALLY FULLY DEVELOPED TURBULENT FLOW IN CONCENTRIC ANNULI, ARE INVESTIGATED BY MEANS OF THE MOMENTUM AND HEAT-TRANSFER INTEGRAL EQUATIONS, ALONG WITH A MODIFIED UNIVERSAL VELOCITY PROFILE. THE INVESTIGATION WAS CONDUCTED FOR A RANGE OF RADIUS RATIOS FROM 1.01 TO 5, PRANDTL NUMBERS FROM 0.01 TO 30 AND A REYNOLDS NUMBER RANGE OF FROM 10,000 TO 200,000. THE RESULTS REVEAL THAT IN GENERAL THE HEAT-TRANSFER COEFFICIENT ATTAINS THE FULLY DEVELOPED VALUE IN LESS THAN THIRTY EQUIVALENT DIAMETERS- ALSO THAT THE ENTRANCE LENGTH IS MODERATELY DEPENDENT UPON RADIUS RATIO. THERE IS GOOD AGREEMENT BETWEEN THE PRESENT ANALYSIS AND EXISTING EXPERIMENTAL DATA FOR THE FULLY DEVELOPED TEMPERATURE PROFILE REGIONS.

*FLOW, ANNULAR + *FLOW, TURBULENT + *HEAT TRANSFER, CONVECTION + HEAT TRANSFER + HEAT TRANSFER ANALYSIS + HEAT TRANSFER COEFFICIENT

5-27570
CITAKOGLU E + ROSE JW
DROPOWISE CONDENSATION--SOME FACTORS INFLUENCING THE VALIDITY OF HEAT-TRANSFER MEASUREMENTS
QUEEN MARY COLLEGE, UNIVERSITY OF LONDON, ENGLAND + MASSACHUSETTS INSTITUTE OF TECHNOLOGY
15 PAGES, 11 FIGURES, 9 REFERENCES, INTERNATIONAL JOURNAL OF HEAT AND MASS TRANSFER, 11(3), PAGES 523-537
(MARCH 1968)

REPORTS OF VARIOUS RECENT WORKERS IN THE FIELD OF DROPOWISE CONDENSATION, SUGGEST THAT PRECISE AND REPEATABLE MEASUREMENTS OF THE STEAM-TO-SURFACE TEMPERATURE DIFFERENCE CAN ONLY BE OBTAINED WHEN SPECIAL PRECAUTIONS ARE TAKEN TO OBVIATE THE EFFECTS OF NON-CONDENSING GASES. IN THE PRESENT WORK, THE EFFECTS OF LOCAL VENTING (I.E. REMOVAL OF VAPOUR FROM THE VICINITY OF THE CONDENSING SURFACE) WERE STUDIED. CONDITIONS WERE ESTABLISHED FOR WHICH REPEATABLE RESULTS, RELATING TO GAS-FREE STEAM, MAY BE OBTAINED. WHILE OPERATING UNDER SUCH CONDITIONS, OBSERVATIONS OF THE STEAM-TO-SURFACE TEMPERATURE DIFFERENCE WERE MADE FOR A WIDE RANGE OF HEAT-FLUX. FOR THESE TESTS, VERTICAL PLANE COPPER CONDENSING SURFACES, PROMOTED WITH DIOCTADECYL DISULPHIDE, WERE USED. THE STEAM PRESSURE WAS ABOUT 1.07 BAR. THE RESULTS ARE COMPARED WITH THOSE OF OTHER RECENT WORKERS.

*DROPLET + *HEAT TRANSFER ANALYSIS + *HEAT TRANSFER, CONDENSATION + HEAT EXCHANGER + HEAT TRANSFER + MEASUREMENT, GENERAL + STEAM + WATER, GENERAL

5-27571
GALLOWAY TR + SAGE BH
THERMAL AND MATERIAL TRANSFER FROM SPHERES PREDICTION OF LOCAL TRANSPORT
CALIFORNIA INSTITUTE OF TECHNOLOGY, PASADENA, CALIFORNIA
11 PAGES, 8 FIGURES, 2 TABLES, 37 REFERENCES, INTERNATIONAL JOURNAL OF HEAT AND MASS TRANSFER, 11(3), PAGES 539-549 (MARCH 1968)

FROM A REVIEW OF THE AVAILABLE EXPERIMENTAL DATA UPON LOCAL THERMAL AND MATERIAL TRANSPORT FROM SPHERES, EXPRESSIONS WERE DEVELOPED TO PERMIT THE PREDICTION OF SUCH TRANSPORT AS A FUNCTION OF REYNOLDS NUMBER, INTENSITY OF TURBULENCE, AND POLAR ANGLE. IT WAS FOUND THAT THE EFFECT OF REYNOLDS NUMBER WAS MORE PRONOUNCED IN THE SEPARATED FLOW FOUND IN THE AFT HEMISPHERE THAN IN THE BOUNDARY FLOW OF THE FORWARD HEMISPHERE. ON THE OTHER HAND, THE INTENSITY OF TURBULENCE EXERTED AS MUCH MORE PROFOUND EFFECT ON THE LOCAL TRANSPORT IN THE FORWARD HEMISPHERE THAN IN THE AFT HEMISPHERE. THE RESULTS ARE PRESENTED IN TERMS OF THE CROSSING NUMBER.

*HEAT TRANSFER ANALYSIS + *MASS TRANSFER + *SPHERE + DIFFUSION + DIFFUSION COEFFICIENT + HEAT TRANSFER + HEAT TRANSFER COEFFICIENT

5-27572
GAL-OR B
COUPLED HEAT AND MULTICOMPONENT MASS TRANSFER IN PARTICULATE SYSTEMS WITH RESIDENCE TIME AND SIZE DISTRIBUTIONS
UNIVERSITY OF PITTSBURGH, PITTSBURGH, PENNSYLVANIA
15 PAGES, 5 FIGURES, 1 TABLE, 25 REFERENCES, INTERNATIONAL JOURNAL OF HEAT AND MASS TRANSFER, 11(3), PAGES 551-565 (MARCH 1968)

A THEORY IS PRESENTED FOR THE GENERAL CASE OF COUPLED HEAT AND MULTICOMPONENT MASS TRANSFER IN DISPERSIONS AND SUSPENSIONS WITH RESIDENCE TIME AND PARTICLE SIZE DISTRIBUTIONS. THE GENERAL FORMULATIONS DESCRIBE THE BEHAVIOR OF INDUSTRIAL OR BIOLOGICAL PARTICULATE SYSTEMS IN TERMS OF EQUATIONS FAMILIAR FROM NON-EQUILIBRIUM THERMODYNAMICS AND TRANSPORT PHENOMENA. THE TOTAL AVERAGE HEAT- AND MASS-TRANSFER RATES IN MULTIPHASE PARTICULATE SYSTEMS ARE EVALUATED IN TERMS OF A GENERAL NORMALIZED SIZE DISTRIBUTION AND THE EXPECTED VALUES OF THE VARIOUS FLUXES INVOLVED. THE PROPERTIES OF A PROPOSED GENERAL NORMALIZED SIZE DISTRIBUTION ARE DISCUSSED AND COMPARED WITH EXPERIMENTAL RESULTS OF BUBBLE SIZE DISTRIBUTIONS IN A GAS-LIQUID DISPERSION.

*HEAT TRANSFER + *MASS TRANSFER + *SPRAY, GENERAL + CANDU (HWR) + DROPLET + MATHEMATICAL STUDY

5-27573
ECKERT ERG + SPARROW EM + IBELE WE + GOLDSTEIN RJ

CATEGORY 5
ACCIDENT ANALYSIS

5-27573 *CONTINUED*
HEAT TRANSFER BIBLIOGRAPHY
UNIVERSITY OF MINNESOTA, MINNEAPOLIS, MINNESOTA
21 PAGES, INTERNATIONAL JOURNAL OF HEAT AND MASS TRANSFER, 11(3), PAGES 583-603 (MARCH 1968)

AN EXTENSIVE BIBLIOGRAPHY OF HEAT- AND MASS-TRANSFER LITERATURE COMPILED BY THE HEAT-TRANSFER LABORATORY OF THE DEPARTMENT OF MECHANICAL ENGINEERING, UNIVERSITY OF MINNESOTA.

*BIBLIOGRAPHY + *HEAT TRANSFER + *MASS TRANSFER + FLOW, GENERAL + HEAT TRANSFER ANALYSIS

5-27574
SHIH KT + IBELE WE
GENERALIZED FREE ENERGY METHOD FOR EQUILIBRIUM COMPOSITIONS IN COMPLEX MIXTURES
UNIVERSITY OF MINNESOTA, MINNEAPOLIS, MINNESOTA
3 PAGES, 3 REFERENCES, INTERNATIONAL JOURNAL OF HEAT AND MASS TRANSFER, 11(3), PAGES 607-609 (MARCH 1968)

KNOWLEDGE OF THERMODYNAMIC AND TRANSPORT PROPERTIES IS ESSENTIAL FOR HIGH TEMPERATURE HEAT-TRANSFER STUDIES. IN THE PROCESS OF PROPERTY CALCULATIONS THE EQUILIBRIUM COMPOSITION OF THE REACTING COMPONENTS MUST BE DETERMINED. WHITE, JOHNSON, AND DANTZIG HAVE PUBLISHED A SIMPLE AND EFFECTIVE FREE ENERGY METHOD FOR DETERMINING THE EQUILIBRIUM COMPOSITION AT A SPECIFIED TEMPERATURE AND PRESSURE. IN THIS NOTE WE GENERALIZE THE ABOVE METHOD TO INCLUDE THE CONDENSED PHASE AND ELECTRICALLY CHARGED PARTICLES. FURTHERMORE, THE RATE OF CHANGE OF THE MOLES WITH RESPECT TO TEMPERATURE IS DERIVED, A QUANTITY USED IN SPECIFIC HEAT CALCULATIONS.

*MATHEMATICAL STUDY + *THERMODYNAMICS + *TRANSPORT PROPERTY + CHEMICAL REACTION + MASS TRANSFER

5-27715
BOURKE PJ + DENTON WH
AN UNUSUAL PHENOMENON OF HEAT TRANSFER NEAR THE CRITICAL POINT
ATOMIC ENERGY RESEARCH ESTABLISHMENT, HARWELL, BERKSHIRE, GREAT BRITAIN
AERE-M-1946 +. 9 PAGES, 4 FIGURES, REFERENCES, AUGUST 1967

TWO POSSIBLE EXPLANATIONS ARE SUGGESTED FOR THE OCCURRENCE OF WALL-TEMPERATURE MAXIMA AND MINIMA WHEN HEAT IS TRANSFERRED TO FLUIDS AT SUPERCRITICAL PRESSURES AND NEAR CRITICAL TEMPERATURES IN TURBULENT FLOW. IN SUCH CASES, THE FILM TEMPERATURE DIFFERENCE AT AXIAL POSITIONS WHERE THE BULK TEMPERATURE IS NEAR CRITICAL MAY DIFFER BY A FACTOR OF TEN, COMPARED WITH ITS VALUE AT LOWER AND HIGHER BULK TEMPERATURES. THE PHENOMENON HAS BEEN OBSERVED IN WATER, HYDROGEN, OXYGEN, AND CARBON DIOXIDE.

AVAILABILITY - SCIENTIFIC ADMINISTRATION OFFICE, ATOMIC ENERGY RESEARCH ESTABLISHMENT, HARWELL, DIDCOT, BERKSHIRE, ENGLAND

*FLOW, TURBULENT + *HEAT TRANSFER, SUPERCRITICAL + *HYDRAULIC EFFECT + BOUNDARY LAYER + FLOW, AXIAL + FLUCTUATION + TEMPERATURE GRADIENT + THERMAL PROPERTY + TURBULENCE, CONVECTIVE

5-27717 ALSO IN CATEGORY 4
HEIMEL S
THERMODYNAMIC PROPERTIES OF POTASSIUM TO 2100 K
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, WASHINGTON, D.C.
NASA-TN-D-4165 +. 36 PAGES, 5 FIGURES, 8 TABLES, 25 REFERENCES, SEPT. 1967

THERMODYNAMIC PROPERTIES OF POTASSIUM FROM ITS MELTING POINT (336 K) TO 2100 K ARE COMPUTED AND TABULATED FOR THE IDEAL CONDENSED PHASES (CRYSTAL AND LIQUID), FOR THE IDEAL MONOMERIC AND DIMERIC GASES, AND FOR THE REAL-GAS CASE. PROPERTIES CONSIDERED INCLUDE VAPOR PRESSURE, VOLUME, HEAT CAPACITY, ENTHALPY, ENTROPY, VIRIAL COEFFICIENTS, AND COMPRESSIBILITY FACTOR.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*EQUATION OF STATE + *POTASSIUM + *PROPERTY, PHYSICAL + *THERMODYNAMICS + CHEMICAL EQUILIBRIUM + COMPARISON, THEORY AND EXPERIENCE + HIGH TEMPERATURE + METAL, ALKALI

5-27718 ALSO IN CATEGORY 4
SHOUMAN AP
NONLINEAR HEAT TRANSFER AND TEMPERATURE DISTRIBUTION THROUGH FINS AND ELECTRIC FILAMENTS OF ARBITRARY GEOMETRY WITH TEMPERATURE-DEPENDENT PROPERTIES AND HEAT GENERATION
NASA, GEORGE C. MARSHALL SPACE FLIGHT CENTER, HUNTSVILLE, ALA.
NASA-TN-D-4257 +. 39 PAGES, 32 REFERENCES, JAN. 1968

A THEORETICAL ANALYSIS WAS MADE OF ONE-DIMENSIONAL, STEADY-STATE HEAT EXCHANGE BY BOTH CONVECTION AND RADIATION BETWEEN A FIN AND ITS SURROUNDINGS. AN EXACT SOLUTION IS PRESENTED FOR A CONSTANT-AREA FIN OR ROD WITH EITHER CONSTANT OR TEMPERATURE-DEPENDENT THERMAL PROPERTIES. THE EFFECT OF HEAT GENERATION OR ABSORPTION IS ALSO CONSIDERED. A PROCEDURE FOR NUMERICALLY SOLVING MORE GENERAL CASES WAS OUTLINED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

CATEGORY 5
ACCIDENT ANALYSIS

5-27718 *CONTINUED*

*FIN + *HEAT TRANSFER ANALYSIS + *HEAT TRANSFER, CONDUCTION + *HEAT TRANSFER, NATURAL CONVECTION +
 *HEAT TRANSFER, RADIANT + AEROSPACE SAFETY + COMPUTER PROGRAM + HEAT GENERATION, INTERNAL +
 HEAT GENERATION, NONUNIFORM + HEAT SINK + THERMAL ANALYSIS

5-27720

ALSO IN CATEGORY 4

LEKO RW

ANALYSIS OF THE TRANSIENT FLOW OF HYDROGEN IN HEATED PASSAGES IN THE LAMINAR-TURBULENT TRANSITION REGION
 NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, CLEVELAND, OHIO. LEWIS RESEARCH CENTER
 N-66-35211 + NASA-TN-D-3629 +. 24 PAGES, 10 FIGURES, 4 REFERENCES, SEPT. 1966

THE LAMINAR INSTABILITY PROBLEM IS ANALYZED FOR THE FLOW OF HYDROGEN IN A SINGLE HEATED TUBE
 OF CIRCULAR CROSS SECTION. CONSIDERATION OF 21 CASES INVOLVING PERTURBATIONS OF HEAT FLUX,
 INLET PRESSURE, OR PRESSURE DROP LED TO THE IDENTIFICATION OF FIVE KINDS OF FLOW TRANSIENTS
 AND TO A STABILITY CRITERION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA
 22151, \$3.00 COPY, \$0.65 MICROFICHE

*FLOW STABILITY + *FLOW, LAMINAR + *FLOW, TURBULENT + *HYDRODYNAMIC ANALYSIS + DECAY HEAT + FLUCTUATION +
 INSTABILITY + PRESSURE DROP

5-27729

VAN STRALEN SJ

THE MECHANISM OF NUCLEATE BOILING IN PURE LIQUIDS AND IN BINARY MIXTURES - PART III
 HEAT TRANSFER SECTION, TECHNOLOGICAL UNIVERSITY, EINDHOVEN, THE NETHERLANDS
 19 PAGES, 9 FIGURES, 33 REFERENCES, INTERNATIONAL JOURNAL OF HEAT AND MASS TRANSFER, 10(11), PAGE
 1469-1484, (NOV. 1967)

CORRECTIONS ON THE AUTHORS RELAXATION MICROLAYER THEORY OF THE MECHANISM OF NUCLEATE POOL
 BOILING HAVE BEEN MADE TO ACCOUNT FOR THE LARGE PEAK FLUX OCCURRING AT A LOW CONCENTRATION OF
 THE MORE VOLATILE COMPONENT IN BINARY LIQUID MIXTURES, CF. PARTS I-II. THE REMOVAL OF HEAT
 FROM THE HEATING SURFACE OCCURS DURING THE GREATEST PART OF THE ADHERENCE TIME AND THE ENTIRE
 SUBSEQUENT DELAY TIME (I.E. ALMOST CONTINUOUSLY) AND CAN BE DESCRIBED BY PURE CONDUCTION
 ONLY. CONSEQUENTLY, GUNTHER AND KREITHS HYPOTHESIS OF MICROCONVECTION IN THE NORMALLY
 LAMINAR SUBLAYER IS SHOWN TO BE UNNECESSARY. AN EXPRESSION FOR THE PEAK FLUX HAS BEEN
 DERIVED IN DEPENDENCE ON THE CORRESPONDING CONVECTIVE CONTRIBUTION. IN PURE LIQUIDS, THE
 DIRECT VAPOUR PRODUCTION AT THE WALL IS SHOWN TO BE RESPONSIBLE FOR THE ENTIRE INCREASE IN
 HEAT FLUX ABOVE CONVECTION AT ARBITRARY SUPERHEATING IN THE REGION OF NUCLEATE BOILING, IN
 QUANTITATIVE AGREEMENT WITH EXPERIMENTAL DATA, DEDUCED FROM HIGH-SPEED MOTION PICTURES ON
 WATER.

*HEAT TRANSFER, BOILING + *NUCLEATE BOILING + *THEORETICAL INVESTIGATION + BOILING + CONVECTIVE BOILING +
 HEAT TRANSFER + HEAT TRANSFER ANALYSIS

5-27730

VAN STRALEN SJ

THE MECHANISM OF NUCLEATE BOILING IN PURE LIQUIDS AND IN BINARY MIXTURES - PART IV
 HEAT TRANSFER SECTION, TECHNOLOGICAL UNIVERSITY, EINDHOVEN, THE NETHERLANDS
 14 PAGES, 5 FIGURES, 2 TABLES, 28 REFERENCES, INTERNATIONAL JOURNAL OF HEAT AND MASS TRANSFER, 10(11),
 PAGE 1485-1492, (NOV. 1967)

A FAVOURABLE EFFECT OF THE COMPOSITION IN BINARY MIXTURES WITH A MORE VOLATILE COMPONENT ON
 THE PEAK FLUX IN SURFACE BOILING OF SUBCOOLED LIQUIDS WITH FREE CONVECTION HAS BEEN PREDICTED
 BY THE RELAXATION MICROLAYER THEORY, CF. PARTS I-III. THE THEORETICAL VALUES ARE IN
 QUANTITATIVE AGREEMENT WITH THE AUTHORS EXPERIMENTAL DATA ON THE SYSTEM
 WATER-METHYLETHYLKETONE AND WATER-L-BUTANOL. EXPRESSIONS FOR THE PEAK FLUX AND FOR THE
 MAXIMUM BUBBLE RADIUS, FREQUENCY, GROWTH AND CONDENSATION RATES, AND LIFETIME HAVE BEEN
 DERIVED IN DEPENDENCE ON THE WIRE SUPERHEATING AND ON THE DEGREE OF SUBCOOLING. AN INCREASE
 IN THE SUBSEQUENT CONDENSATION RATE IN CERTAIN BINARY MIXTURES IS PREDICTED. AT PRESENT, NO
 EXPERIMENTAL DATA ON BUBBLES IN SUBCOOLED MIXTURES ARE AVAILABLE, BUT THE THEORETICAL
 PREDICTIONS FOR PURE LIQUIDS ARE IN REASONABLY GOOD AGREEMENT WITH SOME PRELIMINARY DATA BY
 THE AUTHOR AND WITH DATA ON WATER BY ELLIOT FOR FREE CONVECTION AND BY GUNTHER FOR FORCED
 CIRCULATION.

*HEAT TRANSFER, BOILING + *NUCLEATE BOILING + *THEORETICAL INVESTIGATION + BOILING + CONVECTIVE BOILING +
 HEAT TRANSFER + HEAT TRANSFER ANALYSIS

5-27731

BETHEL HE

A GENERALIZED GALEPKIN-KANTOROVICH TREATMENT OF TRANSIENT EVAPORATION THROUGH A FINITE REGION
 AEROSPACE RESEARCH LABORATORIES, WRIGHT-PATTERSON AIR FORCE BASE, OHIO
 10 PAGES, 8 FIGURES, 1 TABLE, 11 REFERENCES, INTERNATIONAL JOURNAL OF HEAT AND MASS TRANSFER, 10(11), PAGE
 1509-1520, (NOV. 1967)

THIS PAPER PRESENTS AN APPROXIMATE SOLUTION OF TRANSIENT EVAPORATION THROUGH A FINITE REGION.
 A GENERALIZED GALERKIN-KANTOROVICH METHOD IS EMPLOYED TO OBTAIN THE APPROXIMATE SOLUTIONS.
 EXACTNESS AND CONVERGENCE PROPERTIES OF THE APPROXIMATE SOLUTIONS ARE ESTABLISHED BY

CATEGORY 5
ACCIDENT ANALYSIS

5-27731 *CONTINUED*

COMPARISON WITH EXACT SOLUTIONS FOR TWO SPECIAL CASES. THE APPROXIMATE SOLUTIONS APPEAR TO BE CONVERGING TO THE EXACT AS THE ORDER OF APPROXIMATION IS INCREASED. FURTHERMORE, ACCURATE SOLUTIONS ARE OBTAINED FOR A COMPUTATIONALLY FEASIBLE ORDER OF APPROXIMATION (THE FIFTH). THE PHYSICAL ASPECTS OF THE APPROXIMATE SOLUTIONS ARE PRESENTED AND DISCUSSED.

*EVAPORATION + *MASS TRANSFER + *MATHEMATICAL TREATMENT + DIFFUSION

5-27732

KALISH S + DWYER OE

HEAT TRANSFER TO NAK FLOWING THROUGH UNBAFFLED ROD BUNDLES

BROOKHAVEN NATIONAL LABORATORY, UPTON, N. Y.

26 PAGES, 19 FIGURES, 3 TABLES, 27 REFERENCES, INTERNATIONAL JOURNAL OF HEAT AND MASS TRANSFER, 10(11), PAGE 1532-1558, (NOV. 1967)

THE PAPER PRESENTS THE RESULTS OF AN EXTENSIVE EXPERIMENTAL STUDY OF HEAT TRANSFER TO NAK FLOWING THROUGH UNBAFFLED ROD BUNDLES (OR BANKS). IN-LINE FLOW RESULTS ARE REPORTED ON NINE DIFFERENT TEST RODS LOCATED IN THE CENTER OF A 19-ROD BUNDLE. THEY WERE OBTAINED UNDER CONDITIONS OF FULLY ESTABLISHED VELOCITY AND TEMPERATURE PROFILES, AND ALSO UNDER ENTRANCE-REGION CONDITIONS. RESULTS WERE ALSO OBTAINED FOR 90 DEG CROSS AND 45 DEG OBLIQUE FLOWS THROUGH ROD BUNDLES, FOR THE CONDITION WHERE ONLY THE TEST ROD WAS HEATED AND FOR THAT WHERE ALL THE RODS WERE HEATED. MEASUREMENTS WERE MADE AT SEVERAL ROD LOCATIONS IN THE BANK, AND BOTH ROD-AVERAGE AND CIRCUMFERENTIALLY LOCAL HEAT-TRANSFER COEFFICIENTS WERE OBTAINED. THE CIRCUMFERENTIAL VARIATION OF THE LOCAL NORMALIZED HEAT-TRANSFER COEFFICIENT WAS FOUND TO BE INDEPENDENT OF FLOW RATE, AND THE SAME FOR BOTH 90 DEG AND 45 DEG FLOW DIRECTIONS. ALSO, FOR BOTH TYPES OF FLOW, THE CIRCUMFERENTIAL SURFACE TEMPERATURE PROFILE WAS THAT OF A SIMPLE COSINE FUNCTION.

*FUEL ELEMENT CLUSTER + *HEAT TRANSFER EXPERIMENT + *NAK + BNL + FLOW, GENERAL + HEAT TRANSFER + HEAT TRANSFER, CONVECTION + METAL, LIQUID

5-27733

CHOMIAK J + NIEDZIALEK B

MEASUREMENT OF RAPIDLY VARYING GAS TEMPERATURES IN AN UNSTEADY FLOW

AVIATION INSTITUTE, WARSAW, POLAND

9 PAGES, 5 FIGURES, 9 REFERENCES, INTERNATIONAL JOURNAL OF HEAT AND MASS TRANSFER, 10(11), PAGE 1571-1579, (NOV. 1967)

FOR A THIN THERMOMETER HAVING NO RADIAL TEMPERATURE GRADIENT BUT SHOWING A CERTAIN THERMAL INERTIA THE DISPLACEMENT OF MEAN TEMPERATURE RELATED TO THE MEAN TEMPERATURE OF GAS IS DETERMINED TOGETHER WITH THE TEMPERATURE RECORD FUNDAMENTAL AND HIGH HARMONICS IN THE CASE WHEN BOTH THE MEASURED TEMPERATURE AND THE HEAT-TRANSFER COEFFICIENT ARE VARYING PERIODICALLY AT THE SAME FREQUENCY HAVING DIFFERENT PHASE DISPLACEMENTS. THE EFFECT OF THERMAL CONDUCTION ALONG THE THERMOMETER IS TAKEN INTO CONSIDERATION.

*HEAT TRANSFER, GAS + *MEASUREMENT, TEMPERATURE + *TEMPERATURE TRANSIENT + FLOW, GENERAL + FLUCTUATION + MEASUREMENT, GENERAL

5-27734

SUTHERLAND WA

IMPROVED HEAT-TRANSFER PERFORMANCE WITH BOUNDARY-LAYER TURBULENCE PROMOTERS

GENERAL ELECTRIC COMPANY, SAN JOSE, CALIFORNIA

12 PAGES, 10 FIGURES, 1 TABLE, 9 REFERENCES, INTERNATIONAL JOURNAL OF HEAT AND MASS TRANSFER, 10(11), PAGE 1589-1599, (NOV. 1967)

A SUBSTANTIAL IMPROVEMENT IN FORCED-CONVECTION HEAT-TRANSFER CONDUCTANCE IS REQUIRED FOR THE DEVELOPMENT OF 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 WHICH CAN BE ATTAINED. HOWEVER, MUCH OF THE EXPERIMENTAL DATA ON TURBULENCE PROMOTERS HAS BEEN OBTAINED IN ANNULAR FLOW PASSAGES, AND IT IS NECESSARY TO TRANSFORM THESE DATA IN ORDER TO APPLY THEM TO REACTOR CONFIGURATIONS. THIS INVESTIGATION OF BOUNDARY-LAYER TURBULENCE PROMOTER PERFORMANCE WAS CARRIED OUT IN ARRAYS OF PARALLEL RODS, THE CONFIGURATION OF GREATEST INTEREST FOR ENGINEERING APPLICATIONS. THE RESULTS ARE DIRECTLY APPLICABLE FOR OPTIMIZATION OF HEAT-TRANSFER PERFORMANCE, AND ALSO PROVIDE A BASIS FOR EVALUATING TRANSFORMATION TECHNIQUES USED FOR DATA OBTAINED IN ANNULAR PASSAGES.

*BOUNDARY LAYER + *HEAT TRANSFER, CONVECTION + *HEAT TRANSFER, GAS + FIN + FLOW, TURBULENT + HEAT TRANSFER + REACTOR, GCR + REACTOR, POWER

5-27735

BECK JV

TRANSIENT SENSITIVITY COEFFICIENTS FOR THE THERMAL CONTACT CONDUCTANCE

MECHANICAL ENGINEERING AND ENGINEERING RESEARCH DEPT., MICHIGAN STATE UNIVERSITY, EAST LANSING, MICHIGAN

3 PAGES, 7 REFERENCES, INTERNATIONAL JOURNAL OF HEAT AND MASS TRANSFER, 10(11), PAGE 1615-1617, (NOV. 1967)

THE THERMAL CONTACT CONDUCTANCE HAS BEEN REPORTED TO VARY WITH TIME IN CERTAIN TRANSIENT CASES (1,2). IN THESE PAPERS THE ANALYSES WERE RESTRICTED EITHER TO THIN SPECIMENS OR TO CASES FOR

CATEGORY 5
ACCIDENT ANALYSIS

5-27735 *CONTINUED*

WHICH THE TEMPERATURES AT THE INTERFACE WERE MEASURED. BY UTILIZING AN EFFECTIVE METHOD OF ANALYSIS VARIOUSLY CALLED NONLINEAR ESTIMATION, SYSTEM IDENTIFICATION, NONLINEAR LEAST SQUARES, ETC., THESE RESTRICTIONS CAN BE REMOVED.

*TEMPERATURE TRANSIENT + *THERMAL MECHANICAL EFFECT + *THERMAL PROPERTY + HEAT TRANSFER + HEAT TRANSFER ANALYSIS

5-27736

IQBAL M + STACHIEWICZ JW

VARIABLE DENSITY EFFECTS IN COMBINED FREE AND FORCED CONVECTION IN INCLINED TUBES

DEPT. OF MECHANICAL ENGINEERING, UNIVERSITY OF BRITISH COLUMBIA, VANCOUVER + DEPT. OF MECHANICAL ENGINEERING, MCGILL UNIVERSITY, MONTREAL, CANADA

5 PAGES, 5 FIGURES, 8 REFERENCES, INTERNATIONAL JOURNAL OF HEAT AND MASS TRANSFER, 10(11), PAGE 1625-1629, (NOV. 1967)

WHEN, IN NONISOTHERMAL FLOW, DENSITY DIFFERENCES WHICH ARISE IN THE FLUID DUE TO TEMPERATURE DIFFERENCES ARE SUFFICIENTLY LARGE TO PRODUCE LARGE BUOYANCY FORCES UNDER THE ACTION OF THE GRAVITATIONAL FIELD, THE RESULTING NATURAL CONVECTION EFFECTS CANNOT BE NEGLECTED AND THE BUOYANT FORCE TERMS MUST BE RETAINED IN THE EQUATIONS. AN INDICATION OF THE RELATIVE MAGNITUDE OF THE FORCED AND FREE CONVECTION EFFECTS MAY BE OBTAINED MOST READILY BY NON-DIMENSIONALIZING THE DIFFERENTIAL EQUATIONS DESCRIBING THE FLOW, AND BY EXAMINING THE RELATIVE MAGNITUDE OF SUCH PARAMETERS AS THE REYNOLDS, GRASHOF AND PRANDTL NUMBER. THERE IS A PARTICULAR TUBE INCLINATION THAT PRODUCES A MAXIMUM HEAT-TRANSFER RATE.

*FLOW, TUBE + *HEAT TRANSFER, CONVECTION + *HEAT TRANSFER, NATURAL CONVECTION + HEAT TRANSFER + HEAT TRANSFER ANALYSIS

5-27749

BERGLES AE + CLAWSON LG + ROOS JP + BOURNE JG

INVESTIGATION OF BOILING FLOW REGIMES AND CRITICAL HEAT FLUX. QUARTERLY PROGRESS REPORT SEPTEMBER 15--DECEMBER 15, 1965. REPORT NO. 625

DYNATECH CORPORATION

NYO-3304-7 +. 23 PAGES, FIGURES, REFERENCES, FEBRUARY 1, 1966

THE DESIGN DETAILS OF THE STEAM LOOP WERE COMPLETED, AND MAJOR COMPONENTS ARE BEING PROCURED. THE OPERATING CHARACTERISTICS OF THE STEAM LOOP ARE DISCUSSED. PRELIMINARY TESTS WERE MADE WITH AN ELECTRICAL PROBE WHICH MEASURES THE CHARACTERISTICS OF THE ANNULAR LIQUID FILM. THE OPERATIONAL CHECKOUT OF THE TRAVERSING ISOKINETIC SAMPLING PROBE WAS COMPLETED. THE FILM PROBE AND THE SAMPLING PROBE HAVE INDICATED THAT THE HIGH QUALITY FLOW PATTERN IS CHARACTERIZED BY AN ANNULAR LIQUID FILM AND A CORE WITH ENTRAINED LIQUID, THEREBY ESTABLISHING THAT THIS FLOW PATTERN IS SPRAY ANNULAR.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*HEAT FLUX, CRITICAL + *CUT OF PIPE LOOPS AND EXPERIMENTS + *STEAM + FILM BOILING + FILM, GENERAL + FILM, LIQUID + FLOW, ANNULAR + FLOW, GENERAL

5-27784

ALSO IN CATEGORIES 18 AND 1

TRAINING MANUAL - REACTOR SAFETY AND HAZARDS EVALUATION

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE, PUBLIC HEALTH SERVICE

125 PAGES, FIGURES, TABLES, REFERENCES, 1967

A SET OF COURSE NOTES FOR 44 LECTURES IN THE GENERAL SUBJECT AREAS OF - I. REACTOR FUNDAMENTALS AND CHARACTERISTICS (6). II. ENGINEERED SAFEGUARDS (1). III. PROCESS RADIATION MONITORING AND ENVIRONMENTAL SURVEILLANCE MONITORING (6). IV. REACTOR SAFETY AND SITE CRITERIA (6). V. SAFETY ANALYSIS EVALUATION OF NUCLEAR FACILITIES AND INSTALLATIONS (7). VI. WASTE DISPOSAL CRITERIA OF RADIOACTIVE EFFLUENT (3). VII. SAFETY ASPECTS OF FUEL STORAGE AND REPROCESSING FACILITIES (1). VIII. EMERGENCY PLANNING (6). IX. EVALUATION AND PUBLIC HEALTH ASPECTS (7). X. REACTOR MANAGEMENT ASPECTS (1). ***FOR USE IN A TWO WEEK COURSE PRESENTED BY NCRH.

AVAILABILITY - NATIONAL CENTER FOR RADIOLOGICAL HEALTH, ROCKVILLE, MARYLAND 20852

*TRAINING + FUEL REPROCESSING + HAZARDS ANALYSIS + RADIOLOGICAL ASSISTANCE + REACTOR, POWER + REACTOR, RESEARCH + SITING, REACTOR + SURVEY, RADIATION, EMERGENCY

5-27804

MCKEON JT

PRIMARY PIPING FLEXIBILITY ANALYSIS FOR LIQUID-METAL-COOLED FAST BREEDER REACTORS

THE M. W. KELLOGG COMPANY, RESEARCH AND DEVELOPMENT DEPT., MECHANICAL ENGINEERING DEVELOPMENT DIVISION, PIDCATAWAY, JERSEY CITY, N. Y.

15 PAGES, 2 FIGURES, 4 TABLES, 21 REFERENCES, NUCLEAR ENGINEERING AND DESIGN, 7(5), PAGE 427-441, (MAY 1968)

DISCUSSION OF THE FOUR MAIN PROBLEM AREAS IN THE DESIGN AND ANALYSIS OF PRIMARY PIPING FOR LIQUID-METAL-COOLED FAST BREEDER POWER REACTOR SYSTEMS - VALIDITY OF THE STRESS RANGE

CATEGORY 5
ACCIDENT ANALYSIS

5-27804 *CONTINUED*

CONCEPT, LOCAL OVERSTRAIN AND CREEP CONCENTRATIONS, THERMAL RATCHETTING, ELASTIC AND INELASTIC BUCKLING. EXAMINATION OF THE APPLICABILITY OF PRESENT DESIGN METHODS TO RIGID PIPING SYSTEMS (IN WHICH THE THERMAL EXPANSION IS ABSORBED BY THE INHERENT FLEXIBILITY OF PIPING COMPONENTS) AND TO NON-RIGID PIPING SYSTEMS (IN WHICH THE THERMAL EXPANSION IS ACCOMMODATED BY BELLOW JOINTS), AND CRITICISM OF PRESENT DESIGN RULES.

*EQUIPMENT DESIGN + *PIPING + *REACTOR, LMFBR + EQUIPMENT, GENERAL + STRESS ANALYSIS

5-27806

CICKERMAN CE + PURVIANCE R + ROBINSON LE + STEPHANY W + WILLIS FL
SUMMARY AND ANALYSIS OF TREAT SODIUM LOOP EXPERIMENTS ON BEHAVIOR OF SINGLE EBR-II MARK I PINS UNDER ACCIDENT CONDITIONS
ARGONNE NATIONAL LABORATORY, ARGONNE, ILLINOIS
12 PAGES, 10 FIGURES, 1 TABLE, 31 REFERENCES, NUCLEAR ENGINEERING AND DESIGN, 7(5), PAGES 442-454 (MAY 1968)

THE STUDY OF FAST REACTOR SAFETY IS CONCERNED WITH A NUMBER OF AREAS, AMONG WHICH THE POSSIBILITY OF CORE MELTDOWN IS OF MAJOR INTEREST. A NUMBER OF FACTORS MIGHT BE INVOLVED IN SUCH AN ACCIDENT. THIS ARTICLE DEALS WITH A STUDY, EXPERIMENTALLY AND BY COMPUTATION, OF THE MECHANISMS OF FUEL FAILURE AND ASSOCIATED MOVEMENT OF FUEL AND COOLANT. THESE TWO PHENOMENA COULD LEAD TO EXTENSION OF ANY INITIAL FUEL FAILURE AND THUS WOULD PROBABLY BE THE FACTORS RESPONSIBLE FOR A SERIOUS MELTDOWN ACCIDENT.

*IN PILE LOOP + *SODIUM + *TREAT (PRR) + ACCIDENT ANALYSIS + FAILURE, FUEL ELEMENT + REACTOR, PULSED + REACTOR, SAFETY RESEARCH

5-27901

BENNETT AW + HEWITT GF + KEARSEY HA + KEEYS RK
EXPERIMENTS ON BURNOUT IN A UNIFORMLY HEATED ROUND TUBE AT 1000 PSIA WITH STEAM-WATER MIXTURES AT THE TUBE INLET
UKAEA, BERKS HARWELL
AERE-R 5072 +. 18 PAGES, 9 FIGURES, 2 TABLES, NOVEMBER 1965

BURNOUT HEAT FLUXES WERE MEASURED FOR A 1/2-IN.-DIAM TUBE WITH HEATED LENGTHS OF 3 TO 12 FEET AT A PRESSURE OF 1000 PSIA. STEAM WAS FED TO THE TUBE BASE AND WATER INJECTED AROUND THE TUBE PERIPHERY THROUGH A POROUS SINTER. THIS TYPE OF MIXED INLET GENERALLY GAVE BURNOUT FLUXES ABOUT 20% HIGHER FOR A GIVEN EXIT QUALITY THAN DID THE USE OF A SUBCOOLED FEED.

AVAILABILITY - USAEC DEPOSITORY LIBRARIES IN THE U.S. AND OVERSEAS

*FLOW, ANNULAR + *FLOW, TUBE + *HEAT FLUX, DRYOUT + *HEAT TRANSFER EXPERIMENT + BURNOUT HEAT FLUX + COMPARISON, THEORY AND EXPERIENCE + DEPOSITION + FILM, LIQUID + FLOW, TWO PHASE

5-27965

ALSO IN CATEGORIES 8 AND 6
ARGONNE NATIONAL LABORATORY. CHEMICAL ENGINEERING DIVISION RESEARCH HIGHLIGHTS. MAY 1967 - APRIL 1968
ARGONNE NATIONAL LABORATORY, ILLINOIS
ANL-7450 +. 127 PAGES, FIGURES, TABLES, APRIL 1968

BRIEFLY SUMMARIZES ANL CHEMICAL ENGINEERING DIVISIONS REACTOR SAFETY WORK FOR THE PERIOD FROM MAY 1967 TO APRIL 1968. WORK FELL INTO AREAS RELATING TO WATER-COOLED THERMAL REACTORS AND RELATING TO SODIUM-COOLED FAST REACTORS. THE THERMAL REACTOR STUDIES INCLUDED COMPUTER ANALYSIS OF A LOSS-OF-COOLANT ACCIDENTS (CHEMLOC-II PROGRAM), BOILING HEAT TRANSFER FROM MOVING SPHERES TO WATER, AND MEASUREMENTS OF REACTION FORCES DUE TO VOID FORMATION WHEN HOT PARTICLES ARE IMMERSSED IN A WATER COLUMN. THE FAST REACTOR STUDIES INCLUDED CONSTRUCTION OF APPARATUS TO MEASURE THE SPECIFIC HEAT OF LIQUID URANIUM DIOXIDE, HEAT TRANSFER FROM A MOVING HOT SPHERE TO SODIUM, DESIGN OF AN AUTOCLAVE FOR TREAT TO STUDY VIOLENT FUEL FAILURE IN SODIUM, REACTION BETWEEN VIOLENTLY SPRAYED SODIUM AND AIR, AND MIGRATION OF FISSILE AND FERTILE MATERIALS IN FUEL PINS UNDER A THERMAL GRADIENT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*ACCIDENT MODEL + *ACCIDENT, LOSS OF COOLANT + *AIR + *CHEMICAL REACTION + *FUEL SEGREGATION + *HEAT TRANSFER EXPERIMENT + *PLUTONIUM DIOXIDE + *PRESSURE TRANSIENT + *SODIUM + *SPHERE + *URANIUM DIOXIDE + ACCIDENT ANALYSIS + ANALYTICAL MODEL + ANL + DROPLET + HEAT TRANSFER, BOILING + HEAT TRANSFER, CONVECTION + MOLTEN FUEL + PROPERTY, PHYSICAL + REACTOR, PULSED + REACTOR, SAFETY RESEARCH + THERMAL ANALYSIS + TREAT (PRR)

5-28035

ALSO IN CATEGORY 9
RESEARCH PROGRAM ON THE STEADY STATE AND DYNAMIC BEHAVIOR OF A BOILING WATER REACTOR FINAL REPORT NO. 3
TECHNOLOGICAL UNIVERSITY OF EINDHOVEN
EURAC-1996 +. 68 PAGES, REFERENCES, JANUARY 1968

A RESEARCH PROGRAM WAS CARRIED OUT TO STUDY THE HEAT TRANSFER AND STABILITY CHARACTERISTICS OF A BOILING WATER SYSTEM UNDER PRESSURES UP TO 40 ATM. AN EXTENSIVE COMPILATION OF MEASURING TECHNIQUES, MEASUREMENTS, ANALYZING TECHNIQUES, AND THEORETICAL STUDIES HAS BEEN PUBLISHED. THIS PUBLICATION COINCIDED WITH THE ROUNDING-OFF OF THE MEASUREMENTS UNDER NATURAL

CATEGORY 5
ACCIDENT ANALYSIS

5-28035 *CONTINUED*

CONVECTION. SINCE, THE NATURAL RECIRCULATION PROGRAM HAS BEEN COMPLEMENTED BY A SMALL SERIES OF EXPERIMENTS BEARING A VERY SPECIAL CHARACTER (THE EFFECT OF THE RESPONSE TIME OF THE HEATING ELEMENT HAS BEEN INVESTIGATED). THE EXPERIMENTS HAVE, THEN, BEEN CONTINUED WITH FORCED CIRCULATION. A SHORT DESCRIPTION OF THE EXPERIMENTAL SET-UPS AND THE INSTRUMENTATION HAS BEEN INCLUDED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151
\$3.00 COPY, \$0.65 MICROFICHE

*HEAT TRANSFER + *INSTRUMENT, GENERAL + *REACTOR CONTROL + *REACTOR, BWR + ANALYTICAL MODEL +
FLOW STABILITY + FLOW, TWO PHASE

5-28502

ALSO IN CATEGORIES 11 AND 7

REVIEW OF METHODS OF MITIGATING SPREAD OF RADIOACTIVITY FROM A FAILED CONTAINMENT SYSTEM
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.
OFNL-NSIC-27 +. 103 PAGES, FIGURES, TABLES, REFERENCES, SEPTEMBER 1968

THIS PRELIMINARY SURVEY EXPLORES MEASURES THAT COULD BE TAKEN ON THE REACTOR SITE TO MITIGATE THE SPREAD OF RADIOACTIVITY TO HIGHLY POPULATED AREAS IN THE UNLIKELY EVENT OF FAILURE OF THE CONTAINMENT SYSTEM OF A LARGE NUCLEAR POWER STATION AT THE TIME OF A MAJOR REACTOR ACCIDENT. IT IS POINTED OUT, HOWEVER, THAT THE FACT THAT THE STUDY WAS UNDERTAKEN DOES NOT SUGGEST A LACK OF CONFIDENCE IN CONTAINMENT SYSTEMS NOR DOES IT IMPLY A WEAKENING OF THE PRESENT EMPHASIS ON THE NEED FOR SOUND, RELIABLE CONTAINMENT VESSELS. RATHER, TO ENHANCE SAFETY, CONSIDERATION IS GIVEN TO WHAT COULD BE DONE IN EVEN THE MOST IMPROBABLE SITUATIONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*CONTAINMENT RESEARCH AND DEVELOPMENT + *CONTAINMENT, GENERAL + *DESIGN CRITERIA +
*RADIATION SAFETY AND CONTROL + CONTAINMENT INTEGRITY + CONTAINMENT SYSTEM, OPERATION OF + CORE SPRAY +
FISSION PRODUCT RELEASE, GENERAL + INSTRUMENT, GENERAL

5-28619

ALSO IN CATEGORY 18

MACON EA + LEE ML + BREWER ST + BLEY WN
EFFECT OF REACTOR IRRADIATION ON SANTOWAX OM AND WR
MASSACHUSETTS INST. OF TECH., CAMBRIDGE. DEPT. OF NUCLEAR ENGINEERING
MIT-334-94 +. 386 PAGES, TABLES, JUNE 1968

IRRADIATIONS MADE THROUGH AN MITR FUEL ELEMENT, WITH COOLANT AT 572-800 F. DOSE RATES 1.2 (FAST NEUTRONS) AND 1.3 (GAMMA) WATTS/GM AT 5 MW. FIRST-ORDER RADIOLPYROLYSIS RATE CONSTANTS WERE OBTAINED, AS WELL AS HEAT-TRANSFER DATA. REPORT IS MOSTLY THEORY AND RESULTS OF IRRADIATION DEGRADATION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA
22151, \$3.00 COPY, \$0.65 MICROFICHE

*ORGANIC COOLANT + *RADIATION DAMAGE + FAST NEUTRON + IN PILE LOOP + REACTOR, TEST

5-28623

ALSO IN CATEGORY 17

DOMARATZKI Z
CANADIAN EXPERIENCE WITH WIRE WRAPPED FUEL FOR POWER REACTORS
ATOMIC ENERGY OF CANADA LTD., CHALK RIVER (ONTARIO)
AECL-3089 + CONF-680512-1 +. 25 PAGES, 9 FIGURES, 2 TABLES, MAY 1968

FLOW TESTS SHOWED WIRE PENETRATION DUE TO VIBRATION OF 0.003 IN./YR. BURNUP OF 20,000 MWD/TE SHOWS NO UNUSUAL BEHAVIOR. ONLY 1 OF 1500 BUNDLES USED IN NPD SHOWED DEFECT. DOUGLAS POINT CONDITIONS COULD CAUSE SIGNIFICANT FRETTING, AND FUEL COULD OPERATE WITH BULK BOILING. THIS TURBULENCE NOT NEEDED, AND, NOW, SPACERS ARE USED. INDUCTION BRAZING IS USED TO ELIMINATE CRACKS AT WELDS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA
22151, \$3.00 COPY, \$0.65 MICROFICHE

*FUEL ELEMENT CLUSTER + *HEAT TRANSFER AUGMENTATION + CANADA + CANDU (HWR) + REACTOR, PRESSURE TUBE +
VIBRATION + WELDING

5-28639

ALSO IN CATEGORY 18

PATTERSON JF
SUPERCRITICAL TECHNOLOGY PROGRAM. FINAL REPORT
WESTINGHOUSE ELECTRIC CORP., MADISON, PA. ADVANCED REACTORS DIV.
WCAP-3374-8 +. 236 PAGES, FIGURES, TABLES, MAY 1968

SUMMARIZES WORK FROM APRIL 1964 TO APRIL 1965, WHEN CONTRACT WAS SUSPENDED. LOOP DESIGN AND MANY COMPONENTS WERE TURNED OVER TO AEC. TWO FUEL ASSEMBLIES WERE BUILT - (1) VIBRATORY COMPACTED UO2 SWAGED INTO 16CR-20NI STAINLESS STEEL, (2) PELLETS IN INCOLOY 800 RODS. LOOP WAS INSTALLED IN SAXTON 3 WEEKS BEFORE PROJECT SUSPENDED. REPORT IS MAINLY A LOOP DESIGN DESCRIPTION, PLUS A FUEL ELEMENT DESIGN AND FABRICATION ANALYSIS.

CATEGORY 5
ACCIDENT ANALYSIS

5-28639 *CONTINUED*

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

*IN PILE LOOP + *REACTOR, SUPERCRITICAL PRESSURE + FUEL ELEMENT + FUEL, PELLET TYPE + FUEL, POWDER TYPE + HEAT TRANSFER ANALYSIS + REACTOR, PWR + SAXTON (PWR) + SYSTEM DESCRIPTION

5-28648 ALSO IN CATEGORY 6

DICKERMAN CE + ROBINSON LE
FUEL MELTDOWN EXPERIMENTS IN TREAT
ARGONNE NATIONAL LABORATORY

FRENCH INTL CONFERENCE ON FAST REACTORS (I/4) +. 29 PAGES, FIGURES, TABLES, REFERENCES, SEPT. 1967

A PROGRESS REPORT ON FAST-REACTOR SAFETY EXPERIMENTS AT THE TRANSIENT REACTOR TEST FACILITY TO OBTAIN DATA ON THE BEHAVIOR OF FUEL AND COOLANT UNDER SEVERE TRANSIENT OVERHEATING CONDITIONS. EXPERIMENTS WITH SINGLE PINS AND SEVEN-PIN CLUSTERS OF THE EBR-II TYPE IN SODIUM LOOPS IS DESCRIBED.

AVAILABILITY - C.E. DICKERMAN, ARGONNE NATIONAL LABORATORY - 9700 SOUTH CASS AVENUE - ARGONNE, ILLINOIS 60439

*FUEL MELTDOWN + *REACTOR TRANSIENT + *THERMAL EXPERIMENT + *TREAT (PWR) + ACCIDENT, CRITICALITY + EBR 1 AND 2 (RE) + EXCURSION, LARGE + FAILURE, FUEL ELEMENT + HEAT GENERATION, INTERNAL + HIGH TEMPERATURE + PRESSURE, INTERNAL + REACTOR, BWR + REACTOR, PULSED + REACTOR, SAFETY RESEARCH + SODIUM + TEMPERATURE TRANSIENT + VOID COEFFICIENT

5-28649 ALSO IN CATEGORY 4

BAUMEISTER KJ + HAMILL TO
LAMINAR FLOW ANALYSIS OF FILM BOILING FROM A HORIZONTAL WIRE
LEWIS RESEARCH CENTER, CLEVELAND, OHIO
NASA TN D-4035 +. 44 PAGES, FIGURES, REFERENCES, JULY 1967

A SEMITHEORETICAL EXPRESSION FOR THE HEAT-TRANSFER COEFFICIENT ASSOCIATED WITH POOL LAMINAR-FILM BOILING FROM A HORIZONTAL WIRE WAS DERIVED. THE EXPRESSION AGREES WELL WITH AVAILABLE EXPERIMENTAL DATA, WHICH ENCOMPASS WIRE DIAMETERS FROM 0.00021 IN. TO 1.81 IN. THE HEAT-TRANSFER COEFFICIENT IS SHOWN TO BE DEPENDENT ON SYSTEM ACCELERATION TO A POWER VARYING FROM ZERO TO 3/8, DEPENDING ON THE WIRE SIZE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*FILM BOILING + *HEAT TRANSFER ANALYSIS + *HEAT TRANSFER CORRELATION + HEAT TRANSFER, NATURAL CONVECTION + PHASE CHANGE + POOL BOILING

5-28650

GAMBILL WR
BURNOUT IN BOILING HEAT TRANSFER - PART 1- POOL-BOILING SYSTEMS
OAK RIDGE NATIONAL LABORATORY
NUCL. SAFETY, VOL. 9 (5) SEPT.-OCT. 1968, 12 PAGES, 1 TABLE, REFERENCES

REVIEWS SELECTED RECENT DEVELOPMENTS REGARDING BOILING BURNOUT IN SATURATED AND SUBCOOLED POOL SYSTEMS. RESULTS ARE SUMMARIZED FOR WATER, ORGANIC LIQUIDS, AQUEOUS - ORGANIC MIXTURES, LIQUID METALS (NA), CRYOGENS (O₂, N₂, H₂, AND HE), OVERHEATING INDUCED BY FLOODING, EXPERIMENTAL DETECTION OF NUCLEATE BOILING AND INCIPIENT BURNOUT, ACCELERATION EFFECTS, TRANSIENT BOILING (EXPONENTIAL PERIODS OF 0.7 TO 50 MSEC), AND THE EFFECT OF ARTIFICIALLY RESTRICTED FLUID CIRCULATION NEAR THE HEATER SURFACE. STUDIES RELATED TO THE DEPENDENCE OF CRITICAL HEAT FLUX ON HEATER DIMENSIONS AND ORIENTATION ARE CONSIDERED IN DETAIL.

*BURNOUT HEAT FLUX + *POOL BOILING + CORE SPRAY + METAL, LIQUID + ORGANIC COOLANT

5-28651

KOBER KJ + LEISTNER G + ZIMMERMAN M
SIMULATION OF BLOWDOWN OF BOILING WATER REACTORS
BATTELLE-INSTITUT E.V. FRANKFURT AM MAIN
56 PAGES, 44 FIGURES, 3 REFERENCES, AUGUST 1968 (IN GERMAN)

SUDDEN BLOWDOWN IN A BWR WAS SIMULATED AT PRESSURES TO 30 PSIG IN PRELIMINARY EXPERIMENTS WITH A GLASS VESSEL HI-SPEED FILMS MADE OF INTERNAL TWO-PHASE PROCESSES. PRESSURES, TEMPERATURES, AND WATER LEVELS MEASURED. FUTURE PHASES OF PROGRAM, TO 1000 PSIG, OUTLINED.

*BLOWDOWN + *HYDRAULIC EXPERIMENT + *REACTOR, BWR + ACCIDENT, LOSS OF COOLANT + FLOW, PULSATING + FLOW, TUBE + FLOW, TWO PHASE + FLUCTUATION + PHASE CHANGE + PRESSURE, INTERNAL + TEMPERATURE TRANSIENT

5-28652

RAITHBY GD + ECKERT ERG

CATEGORY 5
ACCIDENT ANALYSIS

5-28652 *CONTINUED*
THE EFFECT OF TURBULENCE PARAMETERS AND SUPPORT POSITION ON THE HEAT TRANSFER FROM SPHERES
UNIVERSITY OF MINNESOTA
20 PAGES, 12 FIGURES, 36 REFERENCES, INT. J. HEAT AND MASS TRANSFER, 11(8), PAGES 1233-1252 (AUG. 1968)

MEASUREMENTS ARE REPORTED WHICH SHOW THE INFLUENCE OF THE TURBULENCE CHARACTERISTICS AND THE POSITION OF THE SUPPORT ON THE AVERAGE HEAT TRANSFER FROM SPHERES TO AN AIR STREAM. THE REYNOLDS NUMBER RANGE WAS FROM 3600 TO 52,000. THE TURBULENCE INTENSITY AND THE SCALE OF TURBULENCE DISTRIBUTIONS DOWNSTREAM FROM THREE DRDS WERE MEASURED FOR VELOCITIES TO 18.3 M/S. THE AVERAGE NUSSELT NUMBER INCREASED WITH THE TURBULENCE INTENSITY AND WITH THE RATIO OF THE SPHERE DIAMETER TO THE SCALE OF TURBULENCE FOR VALUES UP TO AT LEAST FIVE. NUSSELT NUMBERS, OBTAINED USING A CROSSFLOW SUPPORT, WERE ABOUT 10% HIGHER THAN THOSE OBTAINED USING A REAR SUPPORT. EQUATIONS RELATING THE AVERAGE NUSSELT NUMBER TO THE REYNOLDS NUMBER ARE GIVEN.

*FLOW, CROSS + *HEAT TRANSFER, CONVECTION + *TURBULENCE, CONVECTIVE + HEAT TRANSFER CORRELATION + HEAT TRANSFER EXPERIMENT + SPHERE

5-28653
TOMLAN PF + HUDSON JL
TRANSIENT RESPONSE OF COUNTERCURRENT HEAT EXCHANGERS WITH SHORT CONTACT TIME
UNIVERSITY OF ILLINOIS
13 PAGES, 10 FIGURES, 14 REFERENCES, INT. J. OF HEAT AND MASS TRANSFER, 11(8), PAGES 1253-1265 (AUG. 1968)

NUMERICAL SOLUTIONS OBTAINED FOR STEADY-STATE AND TRANSIENT BEHAVIOR IN COUNTERCURRENT HEAT EXCHANGERS WITH SHORT CONTACT TIME. RESULTS ARE COMPARED TO THE CLASSICAL SOLUTION OF USING ADDITION OF RESISTANCES, WHERE EITHER THE WALL TEMPERATURE OR THE WALL HEAT FLUX IS ASSUMED TO BE CONSTANT. THE TRANSIENT PROBLEM RESULTING FROM A FLOW RATE CHANGE IN ONE OF THE STREAMS IS SOLVED ASSUMING PLUG FLOW AND A SERIES APPROXIMATION FOR THE WALL TEMPERATURE. THIS IS COMPARED TO A SIMPLIFIED MODEL USING AN AVERAGE WALL TEMPERATURE INDEPENDENT OF POSITION BUT VARYING WITH TIME.

*HEAT EXCHANGER + *HEAT TRANSFER ANALYSIS + *TEMPERATURE TRANSIENT + HEAT TRANSFER, CONVECTION + RESPONSE TIME

5-28769 ALSO IN CATEGORIES 12 AND 18
INDIAN POINT 1 FINAL EMERGENCY CORE COOLING REPORT
1 PAGE, ATOMIC ENERGY CLEARINGHOUSE, 14(41), PAGE 19, (OCT. 7, 1968)

(SEPT. 29) RESULTS SUBMITTED OF A STUDY ON LOSS-OF-COOLANT ACCIDENT AND DETERMINATION OF PERFORMANCE REQUIREMENTS FOR SYSTEMS TO PREVENT CORE MELTDOWN FOLLOWING LOSS-OF-COOLANT ACCIDENT.

*ACCIDENT ANALYSIS + *ACCIDENT, LOSS OF COOLANT + *SYSTEM CAPABILITY + CORE REFLOODING SYSTEM + INDIAN POINT 1 (PWR) + REACTOR, PWR

5 20020 ALSO IN CATEGORY 9
FROELICHP B
INTRODUCTION TO THE STUDY OF BOILING IN WATER REACTORS
COMMISSARIAT A L-ENERGIE ATOMIQUE, SACLAY (FRANCE). CENTRE D-ETUDES NUCLEAIRES
CEA-R-3327 +. 12 PAGES, 4 REFERENCES, NOV. 1967

TO PLOT THE LOW AND HIGH POWER TRANSFER FUNCTION FOR A REACTOR USING ITS BACKGROUND, A CONVENTIONAL METHOD IS PROPOSED HERE FOR ESTIMATING THE EFFICIENCY OF A CCS CHAMBER ASSOCIATED TO A DIRECT CURRENT DETECTION SYSTEM.

AVAILABILITY - USAEC DEPOSITORY LIBRARIES IN THE U.S. AND OVERSEAS

*INSTRUMENT, CURRENT + *INSTRUMENT, NUCLEAR + HEAT TRANSFER, BOILING + MATHEMATICAL TREATMENT + REACTOR POWER + TRANSFER FUNCTION

5-28913 ALSO IN CATEGORY 6
STANFORD GS + JOHNSON TW
DETERMINATION OF GAMMA-RAY HEATING IN A CRITICAL FACILITY BY THERMOLUMINESCENT DOSIMETRY
ARGONNE NATIONAL LAB., ILL.
ANL-7373 +. 45 PAGES, 24 FIGURES, 7 TABLES, 24 REFERENCES, FEB. 1968

BECAUSE OF GOOD SENSITIVITY, SMALL PROBE SIZE, AND RELATIVE EASE OF HANDLING, THERMOLUMINESCENT DOSIMETRY (TLD) PROVIDES A USEFUL METHOD FOR MEASURING GAMMA-RAY HEATING IN CRITICAL FACILITIES. MEASUREMENTS MADE DURING CRITICAL EXPERIMENTS FOR THE ARGONNE ADVANCED RESEARCH REACTOR ARE REPORTED. THE PHOSPHOR WAS CaF_2/Mn . REPRODUCIBILITY OF RELATIVE MEASUREMENTS WAS ABOUT 5-10%, WHICH WAS ADEQUATE. FOR ABSOLUTE MEASUREMENTS, THERE WERE ADDITIONAL UNCERTAINTIES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*DOSIMETRY, THERMOLUMINESCENCE + *HEAT GENERATION, INTERNAL + AARR (RR) + CRITICALITY EXPERIMENT +

CATEGORY 5
ACCIDENT ANALYSIS

5-28913 *CONTINUED*

FAST NEUTRON + GAMMA EMITTER + REACTOR, AEC OWNED + REACTOR, FLUX TRAP + REACTOR, RESEARCH + THERMAL NEUTRON.

5-28969

WITTE LC

AN EXPERIMENTAL STUDY OF FORCED-CONVECTION HEAT TRANSFER FROM A SPHERE TO LIQUID SODIUM
ARGONNE NATIONAL LAB., ARGONNE, ILLINOIS

4 PAGES, J. HEAT TRANSFER, 90, PAGES 9-12 (FEB. 1968)

EXPERIMENTAL HEAT-TRANSFER RATES FROM SPHERES MOVING THROUGH LIQUID SODIUM HAVE BEEN OBTAINED BY A TRANSIENT TECHNIQUE IN WHICH A HEATED METAL SPHERE WAS PASSED THROUGH A POOL OF LIQUID SODIUM. HEAT-TRANSFER RATES UP TO 3.58×10^6 BTU PER HR PER SQ FT WERE CALCULATED FROM THE EXPERIMENTAL MEASUREMENTS. REYNOLDS NUMBERS, BASED ON THE SPHERE VELOCITY AND DIAMETER, RANGED FROM 35,000 TO 153,000. THE DATA WERE CORRELATED BY AN EXPRESSION SIMILAR TO THEORETICAL EXPRESSIONS IN POTENTIAL-FLOW THEORY.

*HEAT TRANSFER EXPERIMENT + *HEAT TRANSFER, CONVECTION + *SODIUM + *SPHERE + BOUNDARY LAYER + FLOW, CROSS + HEAT TRANSFER CORRELATION + METAL, ALKALI + TEMPERATURE TRANSIENT

5-28970

ALSO IN CATEGORY 9

SILVESTRI M

UNCONVENTIONAL APPLICATIONS OF TWO-PHASE COCURRENT FLOW

CISE, MILAN

10 PAGES, ENERGIA NUCLEARE (MILAN), 15, PAGES 14-23 (JAN. 1968)

SURVEYS APPLICATIONS OF TWO-PHASE COCURRENT FLOW IN NUCLEAR REACTORS AND TO PROBLEMS IN CHEMICAL AND MECHANICAL ENGINEERING, INCLUDING CASES IN WHICH SUCH A FLOW COULD BE APPLIED IN COMPETITION WITH EXISTING PROCESSES OF A DIFFERENT NATURE. ABOUT A DOZEN SUCH APPLICATIONS ARE CONSIDERED.

*FLOW, TWO PHASE + CONTROL SYSTEM + FLOW, ANNULAR + FLOW, MIST + HEAT SINK + REACTOR COOLANT

5-28971

BOHDANSKY J + BUSSE C + GROVER GM

COOLING SYSTEM FOR NUCLEAR REACTORS

EUPATOM

CANADIAN PATENT 765, 919 +. AUGUST 22, 1967

A PROPOSED REACTOR, DESIGNED FOR DIRECT CONVERSION OF HEAT TO ELECTRICITY USES LIQUID-METAL FILLED, WICK-LINED HEAT PIPES FOR HEAT TRANSPORT. THE HEAT PIPES TERMINATE IN HEAT SINKS AT THE ENDS OF A HORIZONTAL CORE. THE HEAT IS CONVERTED TO ELECTRICITY BY THERMIONIC EMITTERS AND COLLECTOR ELECTRODES LOCATED IN THE HEAT SINKS. DEPENDING ON THE REQUIRED TEMPERATURE RANGE, SILVER, LITHIUM, OR CESIUM ARE USED AS HEAT CARRIER FLUIDS.

AVAILABILITY -- FOREIGN PATENTS MAY BE OBTAINED IN PHOTOCOPY FROM THE U.S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D.C. (\$0.30 CENTS/PAGE)

*DIRECT ENERGY CONVERSION DEVICES + *FUEL ELEMENT + *HEAT PIPE + *METAL, LIQUID + *REACTOR COOLANT + EVAPORATION + FLOW, TWO PHASE + HEAT SINK + HIGH TEMPERATURE

5-29094

ALSO IN CATEGORIES 8 AND 6

MCLAIN HA

POTENTIAL METAL-WATER REACTIONS IN LIGHT-WATER-COOLED POWER REACTORS

OAK RIDGE NATIONAL LAB., TENN.

ORNL-NSIC-23 +. 201 PAGES, FIGURES, TABLES, 206 REFERENCES, AUGUST 1968

A STATE-OF-THE-ART REVIEW OF THE ROLE OF CHEMICAL REACTIONS IN AN UNLIKELY EVENT OF A LIGHT-WATER POWER REACTOR ACCIDENT. THE STUDY CONCLUDED THAT THESE REACTIONS COULD BE ASSESSED REALISTICALLY ONLY BY CONSIDERING AN INTEGRAL MODEL OF THE ACCIDENT. COMPARED WITH THE SITUATION REGARDING THE DEFINITION AND THE MATHEMATICAL SIMULATION OF AN ACCIDENT, THE BASIC KINETICS OF THE CHEMICAL REACTIONS ARE WELL UNDERSTOOD. THERE ARE STILL SOME QUESTIONS ABOUT THE EFFECT OF LIMITED METAL-WATER REACTION ON POSSIBLE FUEL-PIN FRAGMENTATION IN LOSS-OF-COOLANT ACCIDENTS AND ABOUT THE DETONATION LIMITS OF HYDROGEN-AIR-STEAM MIXTURES, HOWEVER.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*AIR + *ALUMINUM + *CHEMICAL KINETICS + *CHEMICAL REACTION + *HYDROGEN + *METAL WATER REACTION + *STEAM + *STEEL, STAINLESS + *URANIUM DIOXIDE + *WATER, GENERAL + *ZIRCALOY + *ZIRCONIUM + ACCIDENT MODEL + ACCIDENT, CONTROL ROD EJECTION + ACCIDENT, LOSS OF COOLANT + BORON + BROWNS FERRY (BWR) + CLADDING + CORE MELTDOWN + DRESDEN 3 (BWR) + FUEL MELTDOWN + INDIAN POINT 2 (PWR) + LOFT (S-RR) + OCONEE 1, 2, AND 3 (PWR) + OXIDATION + OXYGEN + PALISADES POINT (PWR) + STOICHIOMETRY + TEMPERATURE TRANSIENT + TURKEY POINT 3 AND 4 (PWR)

CATEGORY 5
ACCIDENT ANALYSIS

5-29196 ALSO IN CATEGORY 9
LE FOLL J
DEVICE FOR INCREASING THE HEAT TRANSFER RATE BETWEEN A FLOWING MEDIUM AND A NUCLEAR REACTOR FUEL ELEMENT
COMMISSARIAT A L'ENERGIE ATOMIQUE
GERMAN PATENT 1,217,511 +. MAY 26, 1966

THE RATE OF HEAT TRANSFER FROM THE EXTERNAL WALL OF A FUEL ELEMENT HAVING A FINNED HEAT TRANSFER SURFACE, TO A FLUID FLOWING ALONG THE WALL, IS INCREASED BY A GUIDE MEMBER HAVING AN AEROFOIL CROSS SECTION AND ARRANGED IN THE PATH OF THE FLUID WITH THE EXTRADOS FACING THE FUEL ELEMENT. THE AEROFOIL IS FORMED AS AN ANNULUS OR AS A HELIX ABOUT THE FUEL ELEMENT, THE LEADING EDGE BEING DIRECTED UPSTREAM.

AVAILABILITY - FOREIGN PATENTS MAY BE OBTAINED FROM THE U.S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D.C. (\$0.30 CENTS/PAGE)

*FUEL ELEMENT + *HEAT TRANSFER + COMPONENTS, MISCELLANEOUS + GERMANY + PATENT

5-29198 ALSO IN CATEGORY 9
COSTES D
HEAT REMOVAL DEVICE
COMMISSARIAT A L'ENERGIE ATOMIQUE
CANADIAN PATENT 736,373 +. JUNE 14, 1966

A HEAT REMOVAL SYSTEM FOR A REACTOR IS PROPOSED WHEREIN THE LEAKAGE FLOW, OCCURRING AFTER A SERIOUS FAILURE IN ONE ZONE OF COOLING CIRCULATION UNDER PRESSURE IS REDUCED TO A MINIMUM. INSTEAD OF PLACING THE HEAT EXCHANGER AND PUMPS IN PARALLEL WITH THE MAIN FLOW AROUND THE FUEL RODS, SEVERAL ADDITIONAL VALVES ARE INTRODUCED. THESE EXTRA VALVES ALLOW THE ISOLATION OF A LEAK TO RELATIVELY SMALL PORTION OF THE SYSTEM SO THAT THE NORMAL PRESSURE AND FLOW IN ADJACENT PORTIONS IS MAINTAINED.

AVAILABILITY - FOREIGN PATENTS MAY BE OBTAINED FROM THE U.S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D.C. (\$0.30 CENTS/PAGE)

*HEAT TRANSFER + *INSTRUMENT, COOLANT QUALITY + CANADA + COOLING, GENERAL + LEAK + PATENT + SYSTEM DESCRIPTION

5-29201 ALSO IN CATEGORY 9
SAFETY DEVICE FOR A HEAT EXCHANGE SYSTEM
CNEN
BRITISH PATENT 1,064,273 +. APRIL 5, 1967

A DESIGN FOR A SAFETY DEVICE FOR A HEAT EXCHANGE SYSTEM, COMPRISED OF THE PRIMARY AND SECONDARY LOOPS, IS GIVEN. AN EXPANSION VESSEL IS CONNECTED TO THE PRIMARY LOOP, A DRAIN TANK CONNECTED TO THE PRIMARY LOOP BY WAY OF A VALVE, A VENT CONNECTING THE SECONDARY LOOP TO THE ATMOSPHERE, AND A PRESSURE SENSOR IN THE PRIMARY LOOP SERVE TO KEEP THE PRIMARY LOOP PRESSURES AT LOWER THAN DESIGN VALUES.

AVAILABILITY - THE BRITISH PATENT OFFICE, 25 SOUTHAMPTON BUILDING, LONDON, W.C. 2, ENGLAND (\$0.30 CENTS/COPY)

*HEAT EXCHANGER + INSTRUMENT, PROCESS + PATENT + UNITED KINGDOM

5-29202 ALSO IN CATEGORY 9
METHOD AND APPARATUS FOR INCREASING THE CRITICAL HEAT FLUX FOR HIGH PRESSURE STEAM-WATER FLOW IN NUCLEAR REACTORS
ATOMIC ENERGY OF CANADA, LTD.
BRITISH PATENT 1,061,878 +. MARCH 15, 1967

A DESIGN IS GIVEN FOR AN APPARATUS WHICH INCREASES THE CRITICAL HEAT FLUX FOR PRESSURIZED BOILING WATER REACTORS. THE DESIGN COMPRISES A SERIES OF ROUGHNESS RINGS ATTACHED TO THE INNER SURFACE OF THE COOLANT CHANNELS OF THE FUEL.

AVAILABILITY - THE BRITISH PATENT OFFICE, 25 SOUTHAMPTON BUILDING, LONDON, W.C. 2, ENGLAND (\$0.30 CENTS/COPY)

*FLOW, TWO PHASE + *INSTRUMENT, FLOW + HEAT TRANSFER + PATENT + REACTOR, PWR + UNITED KINGDOM

5-29204
ELTHAM BE
BODIES WITH FINNED HEAT TRANSFER SURFACES
UNITED KINGDOM ATOMIC ENERGY AUTHORITY
BRITISH PATENT 1,069,251 +. MAY 17, 1967

A HEAT TRANSFER SURFACE SUITABLE FOR USE ON SHEATHS OF NUCLEAR FUEL ELEMENTS HAS A FINNED

CATEGORY 5
ACCIDENT ANALYSIS

5-29204 *CONTINUED*

PATTERN INVOLVING LENGTHS OF FINNING EACH INITIALLY SECURED AT BOTH ENDS OF THE LENGTH AS WELL AS AT THE ROOT. THE FINS ARE SLIT WITH ONE OR MORE NARROW CUTS SO AS TO RELIEVE STRAINING OF THE FINS WITH TEMPERATURE CHANGE OF THE BODY AND THUS TO AVOID FIN DEFORMATION BY RANDOM CURVING.

AVAILABILITY - THE BRITISH PATENT OFFICE, 25 SOUTHAMPTON BUILDING, LONDON, W.C. 2, ENGLAND (\$0.30 CENTS/COPY)

*FIN + *FUEL ELEMENT + HEAT TRANSFER + PATENT + SURFACE, GENERAL + UNITED KINGDOM

5-29207

IMPROVEMENTS IN AND RELATING TO HEAT TRANSFER TUBES

SULZER BROTHERS LTD.

BRITISH PATENT 1,068,964 +. MAY 17, 1967

A HEAT TRANSFER TUBE IS PROVIDED WITH LONGITUDINALLY EXTENDING FINS ANGULARLY SPACED TO PROVIDE LONGITUDINAL FLOW CHANNELS FOR THE FLOW OF HEAT EXCHANGE MEDIUM ALONG THE CHANNELS BETWEEN THE FINS. THE FINS ARE INTERRUPTED BY AT LEAST ONE GENERALLY SPIRAL CHANNEL, WHICH HAS AN ANGLE OF INCLINATION TO THE LONGITUDINAL AXIS OF THE TUBE OF BETWEEN 5 AND 20 DEG. AND INTERSECTS THE LONGITUDINAL FLOW CHANNELS.

AVAILABILITY - THE BRITISH PATENT OFFICE, 25 SOUTHAMPTON BUILDING, LONDON, W.C. 2, ENGLAND, (\$0.30 CENTS/PAGE)

*FIN + *HEAT TRANSFER + *TUBING + PATENT + UNITED KINGDOM

5-29390

TONG LS

BOUNDARY-LAYER ANALYSIS OF THE FLOW BOILING CRISIS

WESTINGHOUSE ELECTRIC CORPORATION

4 PAGES, INT. J. HEAT AND MASS TRANSFER, VOL. II, NO. 7, PG. 1208-1211, JULY 1968

AUTHOR EXTENDS KUTATELADZES PROPOSAL THAT THERMAL BURNOUT CAN BE CORRELATED IN TERMS OF THE CONCEPT OF BOUNDARY-LAYER SEPARATION OR BLOW-OFF. AN APPROXIMATE EXPRESSION IS DEVELOPED CONTAINING ONE FREE CONSTANT WHICH IS CORRELATED EMPIRICALLY WITH THE BULK QUALITY, USING DATA FOR WATER AT 1000 TO 2000 PSIA IN SINGLE-TUBE TEST SECTIONS WITH UNIFORM HEAT FLUX. THE CORRELATION PREDICTS ABOUT 50% DATA POINTS FOR WATER AND ABOUT 50 FOR ORTHOTERPHENYL WITHIN A MAXIMUM DEVIATION OF +-50%.

*BOUNDARY LAYER + *BURNOUT HEAT FLUX + *CONVECTIVE BOILING + *HEAT TRANSFER CORRELATION + COMPARISON, THEORY AND EXPERIENCE + FLOW, AXIAL + ORGANIC COOLANT + PHASE CHANGE + STEAM

5-29568

ALSO IN CATEGORIES 18 AND 1

CAVE L + WILLIAMS TF

SAFETY ASSESSMENT OF PRESSURE-TUBE HEAVY-WATER REACTORS BY PROBABILITY METHODS

ATOMIC POWER CONSTRUCTIONS LTD., SUTTON, ENG.

CONF-670917 + STI/PUB-163 +. PP 831-63, 1968, HEAVY-WATER POWER REACTORS

THE USE OF PROBABILITY METHODS FOR THE ASSESSMENT OF SAFETY WAS DEVELOPED IN THE UNITED KINGDOM FOR GAS-COOLED REACTORS. IN PARALLEL WITH A MOVE TOWARDS QUANTITATIVE SAFETY CRITERIA, SOME POSSIBLE CRITERIA ARE DESCRIBED. IN PARTICULAR, A METHOD WAS DEVELOPED FOR RAPID ASSESSMENT OF A PRELIMINARY DESIGN TO REVEAL POTENTIAL POINTS OF WEAKNESS BEFORE THE DESIGN IS FINALIZED. THE METHOD IS APPLIED TO HYPOTHETICAL 250-MW(E) REACTORS OF BOTH THE INDIRECT AND DIRECT CYCLE TYPES TO ILLUSTRATE THE USE FOR PRESSURE-TUBE HEAVY-WATER REACTORS AND ALSO TO PROVIDE A COMPARISON OF THE SAFETY OF THIS REACTOR SYSTEM AND OTHERS. A DIFFICULTY IN THE USE OF PROBABILITY METHODS AT PRESENT IS THE SCARCITY OF DATA ON FAILURE RATES FOR STRUCTURES AND LARGE ITEMS OF PLANT. AN ESSENTIAL FEATURE OF THE METHOD DESCRIBED IS A PERTURBATION OF THE ASSUMED FAILURE RATES BY FACTORS OF ORDER 100, TO ASSESS THE EFFECTS OF SUCH UNCERTAINTIES. THE EFFECT OF MAJOR CHANGES IN OTHER FEATURES IMPORTANT TO SAFETY, SUCH AS RELIABILITY OF THE CONTAINMENT SYSTEMS, IS ALSO EXAMINED.

*PROBABILITY + *SAFETY ANALYSIS + ACCIDENT ANALYSIS + FAILURE, EQUIPMENT + INFORMATION RETRIEVAL + REACTOR, HWR + REACTOR, PRESSURE TUBE + UNITED KINGDOM

5-29606

ALSO IN CATEGORY 18

PETERS NT

DEVELOPMENT OF THE PRIMARY SYSTEM FOR THE ENRICO FERMI ATOMIC POWER PLANT

ATOMIC POWER DEVELOPMENT ASSOCIATES, INC.

APDA-308 +. 173 PAGES, JUNE 1968

DOCUMENTS THE COURSE OF DEVELOPMENT OF THE PRIMARY HEAT TRANSPORT SYSTEM, STARTING WITH THE EARLY HISTORY OF THE OBJECTIVES AND CONTINUING THROUGH THE EVOLUTION OF THE SYSTEM DESIGN CONCEPTS TO THE FINAL DESIGN. PRESENTS CONSTRUCTION, TESTING, AND OPERATION OF SYSTEM WITH REACTOR POWER UP TO 100 MWt WITH EVALUATION OF THE GENERAL PERFORMANCE AND IMPORTANT FEATURES, INCLUDING RECOMMENDATIONS FOR USE IN DESIGN OF NEW LMFBRs. PRESENTS INTERACTION WITH DESIGN OF OTHER FEATURES OF PLANT (SUCH AS REACTOR CONTAINMENT BUILDING). SYSTEM COMPONENTS AND AUXILIARY FEATURES ARE DESCRIBED ONLY AS RELEVANT TO THE DISCUSSION OF PRIMARY

CATEGORY 5
ACCIDENT ANALYSIS

5-29606 *CONTINUED*
SYSTEM AS AN INTEGRATED, FUNCTIONAL UNIT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*MAIN COOLING SYSTEM + *SYSTEM DESCRIPTION + FERMI (LMFBR) + R AND D PROGRAM + REACTOR, BREEDER +
REACTOR, FAST + REACTOR, LMFBR

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-21434 ALSO IN CATEGORY 17
CALLIHAN D
EXCURSION AT THE OAK RIDGE CRITICAL EXPERIMENTS FACILITY, JANUARY 30, 1968
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.
ORNL-TM-2207 +. 13 PAGES, 1 FIGURE, JUNE 1968

A VOLUME OF AN AQUEOUS SOLUTION OF URANYL NITRATE, IN WHICH THE U-233 CONTENT OF THE URANIUM WAS 97.6%, WAS INADVERTENTLY MADE SUPER-PROMPT CRITICAL IN THE OAK RIDGE CRITICAL EXPERIMENTS FACILITY. THE FISSION YIELD WAS 1.1×10 TO THE 16TH. THERE WAS NEITHER INTERNAL NOR EXTERNAL MEASURABLE EXPOSURE OF ANY INDIVIDUAL TO RADIATION. THERE WAS NO PROPERTY DAMAGE OR MATERIAL LOSS. FISSION PRODUCTS DECAYED SUFFICIENTLY WITHIN 24 HOURS TO ALLOW UNRESTRICTED OCCUPANCY OF THE AFFECTED ROOM. SOLUTION CONTAINING AN ESTIMATED 15 G OF URANIUM WAS SPILLED INTO THE REFLECTOR-WATER TANK AS THE RESULT OF A DISLOOGED RUBBER STOPPER.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

ACCIDENT, CRITICALITY + CRITICAL ASSEMBLY FACILITY + CRITICALITY EXPERIMENT + CRITICALITY SAFETY + INCIDENT, NONREACTOR

6-22546 ALSO IN CATEGORY 17
STEFANESCU A + WADE BO
REACTOR PHYSICS ASPECTS OF THE HARWELL RESEARCH REACTORS
ATOMIC ENERGY RESEARCH ESTABLISHMENT, HARWELL, ENG.
CONF-791 +. 22 PAGES, PP 31-52 OF RESEARCH REACTOR EXPERIMENTAL TECHNIQUES. BUCHAREST, EDITURA ACADEMIEI REPUBLICII SOCIALISTE ROMANIA, 1966. PAPER FROM STUDY GROUP ON RESEARCH REACTOR EXPERIMENTAL TECHNIQUES, BUCHAREST, OCT. 26-31, 1964

THE REACTOR PHYSICS CONSIDERATIONS NECESSARY TO ENSURE THE SAFETY AND EFFICIENT UTILIZATION OF THE HARWELL HIGH FLUX RESEARCH REACTORS AND TO SUPPORT THE DESIGN OF EXPERIMENTS AND THEIR ANALYSIS ARE REVIEWED, INCLUDING THE FORMULATION OF REACTIVITY BALANCES, FLUX MONITORING TECHNIQUES, AND THE TREATMENT OF FLUX DEPRESSIONS. THE USE OF A ZERO-ENERGY REACTOR TO ASSIST IN THE DESIGN OF EXPERIMENTS AND TO GIVE INSIGHT INTO THE PHYSICS OF THE HIGH FLUX REACTORS IS DISCUSSED. THE NEED FOR HIGH-SPEED DIGITAL COMPUTING IN THESE VARIOUS FIELDS IS ASSESSED.

*OPERATING EXPERIENCE SUMMARY + *REACTOR PHYSICS + DIDO (TR) + HARWELL + PLUTO (TR) + REACTOR, RESEARCH + REACTOR, TEST + UNITED KINGDOM

6-22560 ALSO IN CATEGORY 9
OGAWA Y
STABILITY OF THE REACTOR WHICH HAS THE EXTERNAL CONTROL SYSTEM
WAPD-TRANS-28 +. 26 PAGES, 4 REFERENCES, TRANSLATED FROM NIPPON GENSHIYOKU GAKKAISHI, 7, PAGES 290-7 (MAY 1965)

WHEN THE REACTOR IS EXTERNALLY CONTROLLED, THE PARAMETERS GOVERNING THE CONTROL MUST BE CHOSEN IN CLOSE CONNECTION WITH THE NUCLEAR AND THERMAL PROPERTIES AND OUT-PUT OF THE REACTOR, IN ORDER TO ATTAIN STABILITY IN THE VICINITY OF OPERATING POWER. TO GET THIS RELATION, NON-LINEAR INTEGRAL EQUATIONS CONTAINING THE EFFECTS OF FAST AND SLOW RESPONDING INTERNAL FEEDBACKS AND DELAYED NEUTRONS ARE ADOPTED AND CONNECTED WITH THE EXTERNAL CONTROL SYSTEM. THIS PAPER ALSO DEALS BRIEFLY WITH SOME MODIFICATIONS TO THE REACTOR DYNAMIC EQUATIONS TO OBTAIN A MORE CONCRETE REPRESENTATION OF THE DYNAMICAL BEHAVIOR OF HETEROGENEOUS REACTORS.

AVAILABILITY - SPECIAL LIBRARIES ASSOCIATION TRANSLATION CENTER, JOHN CRERAR LIBRARY, 35 WEST 33RD STREET, CHICAGO, ILL. 60616

*REACTOR CONTROL + *REACTOR DYNAMICS + JAPAN + LIAPUNOV'S FUNCTION + MATHEMATICAL TREATMENT + THEORETICAL INVESTIGATION

6-22566
FRANZEN HR
PROGRESSIVE SUBSTITUTION EXPERIMENTS IN UO₂ LATTICES MODERATED BY D₂O-H₂O MIXTURES
INSTITUTO DE ENERGIA ATOMICA, SAO PAULO
IEA-139 +. 30 PAGES, TABLES, APRIL 1967

BUCKLING MEASUREMENTS FOR CORES OF 3% ENRICHED URANIUM OXIDE IN DIFFERENT MIXTURES OF D₂O AND H₂O WERE PERFORMED IN THE NORA REACTOR, USING A PROGRESSIVE SUBSTITUTION TECHNIQUE. RESULTS AGREED WELL WITH 3-REGION 2-GROUP CALCULATIONS.

*BUCKLING + COMPARISON, THEORY AND EXPERIENCE + CRITICALITY EXPERIMENT + REACTOR, HWR + URANIUM OXIDE

6-25945
ALLEN WO + STOKER DJ + CAMPISE AV
FAST BREEDER REACTORS WITH MIXED FUEL CYCLES

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-25945 *CONTINUED*

ATOMICS INTERNATIONAL, CANOGA PARK, CALIFORNIA

CONF-660524-16 + AED-CONF-66-104-14 +. 18 PAGES, FIGURE, 8 TABLES, 3 REFERENCES, PRESENTED AT SECOND INTERNATIONAL THORIUM FUEL CYCLE SYMPOSIUM, GATLINBURG, TENNESSEE, MAY 3-6, 1966

FAST BREEDER REACTORS WITH MIXED FUEL CYCLES CAN HAVE VERY ATTRACTIVE ECONOMICS AND HIGH BREEDING RATIOS. A 1000-MWE REACTOR DESIGN USING OXIDE FUEL HAS A DOUBLING TIME OF 5 YEARS AND FUEL CYCLE COST OF LESS THAN 0.5 MILL/KW-HR. MIXED FUEL CYCLES REDUCE BUT DO NOT ELIMINATE POSITIVE SODIUM VOID COEFFICIENTS IN FAST REACTORS. DOPPLER COEFFICIENTS (T/DK/DT) WERE SIMILAR (ABOUT -.01) FOR ALL SYSTEMS STUDIED.

AVAILABILITY - ATOMICS INTERNATIONAL, CANOGA PARK, CALIFORNIA

DOPPLER COEFFICIENT + ECONOMICS + REACTOR, BREEDER + REACTOR, FAST + SODIUM COEFFICIENT + VOID COEFFICIENT

6-27623 ALSO IN CATEGORY 17

LACROSSE STARTUP EXPERIENCE

ALLIS-CHALMERS, BETHSEDA, MD.

ACNP-67529 +. 29 PAGES, FIGURES, TABLES, JULY 1967, DOCKET 115-5, TYPE--BWR, MFG--A.C., AE--SGT + LUNDY

CRITICALITY WAS ACHIEVED ON JULY 11 WITH 10 ELEMENTS (8 PREDICTED). MOST OF THIS WAS ASCRIBED TO UNDERESTIMATES OF LEAKAGE OR CONTROL ROD WATER SLOT FLUX AND WAS REGAINED WITH ZIRCALOY CANS. IN THE BUILDUP, ROD POSITION AND DIFF. WORTH WERE PHONED TO A COMPUTER FOR CONFIRMATION OF SHUTDOWN MARGIN. SINCE SITE SDM CALCULATIONS WERE 8-10, NO HALTS FOR COMPUTATION WERE NECESSARY. ***A VARIATION OF THE ROD DROP TECHNIQUE WAS USED TO CALIBRATE THE BANK DIFFERENTIAL WORTH. THE RODS ARE RUN IN FOR 2 SEC FROM THE CRITICAL POSITION, COUNT RATE DATA TAKEN FOR 1 MIN, AND THEN RUN IN. THE RATIO OF COUNT RATE BEFORE INSERTION TO THAT INTEGRATED 10-30 SEC AFTER INSERTION IS CONVERTED TO CENTS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, 1717 H ST., WASHINGTON, D.C. 20545 (\$0.25 CENTS/COPY)

*CONTROL ROD CALIBRATION + *SHUTDOWN MARGIN + DATA PROCESSING + LACROSSE (BWR) + REACTOR STARTUP TESTING + REACTOR, BWR + REPORT, OPERATIONS

6-27626 ALSO IN CATEGORY 17

YANKEE REACTIVITY ANOMOLY

YANKEE ATOMIC ELECTRIC COMPANY, BOSTON, MASSACHUSETTS

1 PAGE. PAGE 1 OF YANKEE OPERATION REPORT 84 FOR DECEMBER 1967, JANUARY 22, 1968 DOCKET 50-29, TYPE--PWR, MFG--WEST., AE--STONE + WEBSTER

AMMONIATION OF THE MAIN COOLANT (USING AMMONIATED CATION RESIN) GAVE A REACTIVITY INCREASE OF 0.23 PERCENT, ONE THIRD THAT EXPECTED. INVESTIGATION SHOWED A DECREASED FUEL BURNUP RATE BEGINNING AT 6100 MWD/MTU, WHEN MISCALCULATION GAVE AN OVERCHARGE OF HYDRAZINE PRIOR TO THE JULY PLANT HEATUP. RADIOLYTIC DECOMPOSITION GAVE 70 PPM AMMONIA IN COOLANT AND A CRUD BURST. THE AMMONIA AND CRUD WERE REMOVED IN 3 DAYS, BUT THE DECREASED BURNUP RATE GAVE 0.2 PERCENT DK/K INCREASE BY THE END OF CORE LIFE. EFFECT OF THIS OCCURENCE ON CORE REACTIVITY BEHAVIOR CANNOT BE DEFINED YET. ***15 PERCENT OF THE DETERIORATED PHENOLIC COATING OF THE SPENT-FUEL PIT HAD BEEN SANDBLASTED OFF.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, 1717 H ST., WASHINGTON, D.C. 20545 (\$0.25 CENTS/COPY)

*CHEMICAL SHIM + *COATING, SURFACE + *PH REACTIVITY EFFECT + COOLANT CHEMISTRY + CRUD + FUEL BURNUP + FUEL STORAGE + INCIDENT, HUMAN ERROR + MAINTENANCE AND REPAIR + POISON, SOLUBLE + REACTIVITY EFFECT, ANOMALOUS + REACTOR, PWR + REPORT, OPERATIONS + SURFACE FILM DEPOSIT + YANKEE (PWR)

6-27706

MENAPACE F + MOTTA M + VALESIO A

THE INFLUENCE OF A TWO-LEVEL FORMULA ON THE DOPPLER EFFECT EVALUATION FOR HOMOGENEOUS DILUTE FAST-OXIDE REACTORS

COMMISSARIAT A L ENERGIE ATOMIQUE

26 PAGES, 4 FIGURES, 1 TABLE, 14 REFERENCES, PRESENTED AT THE INTERNATIONAL CONFERENCE ON THE SAFETY OF FAST REACTORS, AIX EN PROVENCE, SEPTEMBER 19-22, 1967

IN THIS PAPER, THE RESULTS OF SOME ILLUSTRATIVE CALCULATIONS ON DOPPLER EFFECT BASED ON A TWO-LEVEL FORMULA FOR THE RESONANCES OF THE FISSILE MATERIAL ARE PRESENTED. IN PERFORMING THE CALCULATIONS, THE SHIELDING EFFECT DUE TO ONE RESONANCE OF THE FERTILE ISOTOPE HAS BEEN CONSIDERED. TWO INFINITE HOMOGENEOUS MEDIA HAVING TWO TYPICAL OXIDE-FUELED CORE COMPOSITIONS WERE ANALYSED. IN EACH CASE, THE RESULTS OBTAINED MAKING USE OF THE TWO-LEVEL FORMULA, WITH POSITIVE AND NEGATIVE INTERFERENCE, WERE COMPARED WITH THOSE OBTAINED BY APPLYING THE SINGLE LEVEL BREIT-WIGNER FORMULA.

AVAILABILITY - E. MENAPACE, M. MOTTA, OR A. VALESIO OF COMMISSARIAT A L ENERGIE ATOMIQUE

CROSS SECTION + DOPPLER COEFFICIENT + DOPPLER EFFECT + REACTOR, FAST + RESONANCE OVERLAP + THEORETICAL INVESTIGATION + URANIUM OXIDE

6-27746
BARTON DM

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-27746 *CONTINUED*
CENTRAL REACTIVITY CONTRIBUTIONS OF CM-244, PU-239, AND U-235 IN A BARE CRITICAL ASSEMBLY OF PLUTONIUM METAL
UNIVERSITY OF CALIFORNIA, LOS ALAMOS, NEW MEXICO
5 PAGES, 2 FIGURES, 3 TABLES, 15 REFERENCES, NUCLEAR SCIENCE AND ENGINEERING, 33, PAGES 51-55 (1968)

CENTRAL REACTIVITY CONTRIBUTIONS OF GRAM-SIZED SAMPLES OF CM-244, PU-239, AND U-235 HAVE BEEN OBTAINED IN A FAST CRITICAL ASSEMBLY OF BARE PU-239 IN A SPHERICAL GEOMETRY. RESULTING VALUES ARE - CM-244 EQUALS (1276 $\pm$ 5 PERCENT) CENTS/G-AT., PU-239 EQUALS (1393 $\pm$ 3 PERCENT) CENTS/G-AT., U-235 EQUALS (701 $\pm$ 2 PERCENT) CENTS/G-AT. FROM THESE DATA, THE CRITICAL MASS OF A BARE SPHERE OF CM-244 IS ESTIMATED TO BE (27.7 $\pm$ 2.5) KG AT A DENSITY OF 13.5 G/CC.

CRITICAL MASS + CRITICALITY EXPERIMENT + CURIUM + PLUTONIUM + URANIUM-235

6-27774 ALSO IN CATEGORIES 17 AND 9
ZINIUK MA + WILBER HA
SCRAM TESTS TO DETERMINE SHUTDOWN TRANSIENT CHARACTERISTICS OF THE ENRICO FERMI REACTOR AND ASSOCIATED HEAT TRANSPORT SYSTEM
ATOMIC POWER DEVELOPMENT ASSOCIATES, INC., DETROIT, MICH.
APDA-NTS-15 +. 45 PAGES, 8 FIGURES, 7 TABLES, 4 REFERENCES, APRIL 1968

REACTOR OUTLET TEMPERATURE FLUCTUATION AFTER 67 MWTH OPERATION BEGAN 15 SEC AFTER SCRAM AND LASTED TIL 220 SEC. THE RATE WAS 44 F/SEC, OVER A CHANGE OF 76 F. TIME CONSTANTS AND TRANSPORT LAGS WERE DETERMINED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*INSTRUMENT, TEMPERATURE + *SCRAM, REAL + *TEST, INSTRUMENT RESPONSE + FERMI (LMFBR) + MAIN COOLING SYSTEM + REACTOR, LMFBR + REPORT, OPERATIONS ANALYSIS + RESPONSE TIME + TEMPERATURE TRANSIENT

6-27775 ALSO IN CATEGORY 17
MUELLER RE + WILBER HA
POWER COEFFICIENT MEASUREMENTS FOR THE ENRICO FERMI REACTOR. ENRICO FERMI ATOMIC POWER PLANT NUCLEAR TEST SERIES
ATOMIC POWER DEVELOPMENT ASSOCIATES, INC., DETROIT, MICH.
APDA-NTS-9 +. 75 PAGES, 10 FIGURES, 12 TABLES, 22 REFERENCES, NOV. 1967

TESTS WERE MADE OF CONTROL ROD POSITION RESPONSE TO POWER INCREASE/DECREASE, WITH 2 OR 3 LOOP FLOW, FOR POWERS OF 1.3, 2.0, 13.3, 20, 66.7 AND 100 MWTH. COEFFICIENTS ARE ABOUT 28% SMALLER THAN PREDICTED. FLOW DEPENDENCE SHOWS VERY LITTLE FEEDBACK INDEPENDENT OF FLOW. THE 20-MWTH 3-LOOP COEFFICIENT VALUE IS STILL INCONSISTANT. RELIABLE INLET TEMPERATURE DATA HAVE ELIMINATED THE HYSTERESIS EFFECT BETWEEN POWER INCREASE/DECREASE. CHANGES IN ANALYSIS WERE - INCREASED VALUE OF COMPONENTS DEPENDENT ON CORE SODIUM WORTH, DECREASE IN CORE FUEL PIN AXIAL EXPANSION COEFFICIENT, DECREASE IN RADIAL EXPANSION COEFFICIENT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA, 22151, \$3.00 COPY, \$0.65 MICROFICHE

*POWER COEFFICIENT + *TEST, PHYSICS + COMPARISON, THEORY AND EXPERIENCE + FERMI (LMFBR) + FLOW STABILITY + REACTIVITY EFFECT, EXPANSION + REACTOR, LMFBR + REPORT, OPERATIONS ANALYSIS

6-27905 ALSO IN CATEGORY 17
THIE JA
ELK RIVER CYCLE-3 FUEL CALCULATIONS
RURAL COOPERATIVE POWER ASSOCIATION
JAT-67-4 +. 40 PAGES, TABLES, ELK RIVER REACTOR SAFETY ANALYSIS MONTHLY REPORT, APRIL 1967

FLARE CALCULATIONS (USING INPUT CARDS FROM ACNP-65522 STUDY) WERE USED TO GIVE 4 LOADINGS, TO BE PLACED IN CORE FOR THIRD CYCLE. ELEMENTS THAT WOULD HAVE TO BE DISCHARGED WILL BE RETAINED FOLLOWING CORE SIZE INCREASE FROM 148 TO 163 ELEMENTS. THE 4TH LOADING (ALL FRESH ELEMENTS PLACED IN CENTER, EXCEPT USED ELEMENTS IN CENTRAL FOUR POSITIONS) GIVES SATISFACTORY SHUTDOWN MARGINS, POWER DISTRIBUTIONS, AND MORE REACTIVITY THAN CYCLE 2. CYCLE 2 SHOWED CALCULATIONS ARE OPTIMISTIC BY 3700 MWD AT END OF 13,200 LIFE, AND CENTER ROD COMES OUT FASTER AFTER 49 IN.

AVAILABILITY - J. A. THIE, RURAL COOPERATIVE POWER ASSOCIATION

*REFUELING + ELK RIVER (BWR) + POWER DISTRIBUTION + REACTOR, BWR + SAFETY REVIEW + SHUTDOWN MARGIN

6-27906 ALSO IN CATEGORIES 17 AND 9
WORTHINGTON JT
DEVELOPMENT PROGRAM ON THE GARIGLIANO NUCLEAR REACTOR. QUARTERLY REPORT NO. 19
GENERAL ELECTRIC COMPANY, SAN JOSE
GEAP-5517 + EURAEC-1907 +. 32 PAGES, 10 FIGURES, JULY 1967

DOCUMENT REPORTS ANALYSES (EARLY IN 1967) OF STABILITY TESTS MADE MAY 20-31, 1966. BODE PLOTS, VERTICAL NEUTRON FLUX DISTRIBUTIONS AND TRANSFER FUNCTIONS GIVEN. SUB-ROUTINES MOST

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-27906 *CONTINUED*

APPROPRIATE FOR THE CALCULATIONS ARE DESCRIBED, AS IS AN ERROR ANALYSIS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*REACTOR STABILITY + COMPARISON, THEORY AND EXPERIENCE + ERROR ANALYSIS + FLUX DISTRIBUTION +
GARIGLIANO (BWR) + NOISE ANALYSIS + REACTOR STARTUP EXPERIENCE + REACTOR, BWR +
REPORT, OPERATIONS ANALYSIS + TRANSFER FUNCTION

6-27957 ALSO IN CATEGORIES 18 AND 9

ATHERTON R + KIKTA EJ + SHERMAN J
PWR CORE 2 REACTOR DESIGN DESCRIPTION REPORT
WESTINGHOUSE ELECTRIC CORP., BETTIS ATOMIC POWER LAB
WAPD-296 +. 143 PAGES, REFERENCES, MARCH 1968

DESCRIBES SIGNIFICANT DESIGN FEATURES OF PWR CORE 2 INSTALLED AT SHIPPINGPORT. CORE
MECHANICAL AND FUEL ELEMENT CHARACTERISTICS ARE DISCUSSED. A BRIEF DESCRIPTION OF THE
SHIPPINGPORT REACTOR PLANT IS GIVEN, WITH EMPHASIS ON PLANT CHANGES TO PERMIT OPERATION AT
505 MW. OF PARTICULAR SAFETY INTEREST ARE THE NEW FAILED ELEMENT DETECTION AND LOCATION
(FEDAL) SYSTEM, IMPROVED INSTRUMENTATION, AND THE ANALYSES OF ROD-WITHDRAWAL ACCIDENTS AND OF
COMPLETE-LOSS-OF-FLOW ACCIDENTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*REACTOR DESCRIPTION + *SHIPPINGPORT (PWR) + ACCIDENT, CONTROL ROD WITHDRAWAL + ACCIDENT, LOSS OF FLOW +
DESIGN STUDY + FAILURE, FUEL ELEMENT

6-27965 ALSO IN CATEGORIES 8 AND 5

ARGONNE NATIONAL LABORATORY. CHEMICAL ENGINEERING DIVISION RESEARCH HIGHLIGHTS. MAY 1967 - APRIL 1968
ARGONNE NATIONAL LABORATORY, ILLINOIS
ANL-7450 +. 127 PAGES, FIGURES, TABLES, APRIL 1968

BRIEFLY SUMMARIZES ANL CHEMICAL ENGINEERING DIVISIONS REACTOR SAFETY WORK FOR THE PERIOD FROM
MAY 1967 TO APRIL 1968. WORK FELL INTO AREAS RELATING TO WATER-COOLED THERMAL REACTORS AND
RELATING TO SODIUM-COOLED FAST REACTORS. THE THERMAL REACTOR STUDIES INCLUDED COMPUTER
ANALYSIS OF A LOSS-OF-COOLANT ACCIDENTS (CHEMLOC-II PROGRAM), BOILING HEAT TRANSFER FROM
MOVING SPHERES TO WATER, AND MEASUREMENTS OF REACTION FORCES DUE TO VOID FORMATION WHEN HOT
PARTICLES ARE IMMERSSED IN A WATER COLUMN. THE FAST REACTOR STUDIES INCLUDED CONSTRUCTION OF
APPARATUS TO MEASURE THE SPECIFIC HEAT OF LIQUID URANIUM DIOXIDE, HEAT TRANSFER FROM A MOVING
HOT SPHERE TO SODIUM, DESIGN OF AN AUTOCLAVE FOR TREAT TO STUDY VIOLENT FUEL FAILURE IN
SODIUM, REACTION BETWEEN VIOLENTLY SPRAYED SODIUM AND AIR, AND MIGRATION OF FISSIONABLE AND
FERTILE MATERIALS IN FUEL PINS UNDER A THERMAL GRADIENT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA,
\$3.00 COPY, \$0.65 MICROFICHE

*ACCIDENT MODEL + *ACCIDENT, LOSS OF COOLANT + *AIP + *CHEMICAL REACTION + *FUEL SEGREGATION +
*HEAT TRANSFER EXPERIMENT + *PLUTONIUM DIOXIDE + *PRESSURE TRANSIENT + *SODIUM + *SPHERE +
*URANIUM DIOXIDE + ACCIDENT ANALYSIS + ANALYTICAL MODEL + ANL + DROPLET + HEAT TRANSFER, BOILING +
HEAT TRANSFER, CONVECTION + MOLTEN FUEL + PROPERTY, PHYSICAL + REACTOR, PULSED +
REACTOR, SAFETY RESEARCH + THERMAL ANALYSIS + TREAT (PRR)

6-28036 ALSO IN CATEGORY 9

PRESKIIT CA + NEILL JM
FAST REACTOR SPECTRUM MEASUREMENT
GULF GENERAL ATOMIC, INC., SAN DIEGO, CALIF.
GA-8543 +. 30 PAGES, 6 FIGURES, JANUARY 31, 1968

THIS REPORT IS ONE OF A SERIES OF SUCH REPORTS CONCERNED WITH EXPERIMENTAL TIME-OF-FLIGHT
SPECTRAL STUDIES AND ASSOCIATED THEORETICAL ANALYSES FOR REACTOR ASSEMBLIES OF IMPORTANCE TO
THE DEVELOPMENT OF FAST BREEDERS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151
\$3.00 COPY, \$0.65 MICROFICHE

*R AND D PROGRAM + *REACTOR KINETICS + *REACTOR, BREEDER + *REACTOR, FAST + FLUX DISTRIBUTION +
FUEL HANDLING + INSTRUMENT, COMPONENT + INSTRUMENT, NUCLEAR + REACTOR TEST FACILITY + REVIEW +
THEORETICAL INVESTIGATION

6-28057 ALSO IN CATEGORY 9

SANDQUIST GM
NUMERICAL INVESTIGATION OF THE STABILITY OF REACTORS WITH XE-135
UTAH UNIVERSITY, SALT LAKE CITY
LA-DC-8100 +. 5 PAGES, FIGURES, REFERENCES, 1964

TO INITIATE A STUDY OF THE NONLINEAR BEHAVIOR OF ENERGY DEPENDENT, MULTIDIMENSIONAL,

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-28057 *CONTINUED*

MULTIREGIONAL SYSTEMS UNDER THE INFLUENCE OF XENON A DIGITAL COMPUTER PROGRAM ENTITLED XKINEQ (XENON KINETIC EQUATIONS) HAS BEEN PREPARED AND EXTENSIVELY RUN. XKINEQ IS A FORTRAN CODED PROGRAM WHICH SIMULATED THE TWO-ENERGY GROUP, DIFFUSION TYPE, NONLINEAR KINETIC EQUATIONS AND EXAMINES THE TWO-DIMENSIONAL RADIAL-AXIAL TIME BEHAVIOR IN MULTIREGIONAL CYLINDRICAL CORES AND ANY TWO-DIMENSIONAL TIME BEHAVIOR IN MULTIREGIONAL RECTANGULAR CORES. BRIEFLY THE SOLUTION SCHEME IS TO INTEGRATE THE XENON AND IODINE CONCENTRATIONS ONE TIME STEP AT EACH SPATIAL MESH POINT AND THEN SOLVE THE RESULTING MATRIX EQUATION BY A SPECIALIZED UPPER TRIANGULARIZATION METHOD FOR THE FAST AND THERMAL FLUX. SOME OF THE RESULTS OBTAINED IN EXAMINING SEVERAL MODELS ARE DISCUSSED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*COMPUTER PROGRAM + COMPUTER, DIGITAL + INSTABILITY + THEORETICAL INVESTIGATION + XENON + XENON OSCILLATION

6-28069

PONCELET CG + CHRISTIE AM
XENON-INDUCED SPATIAL INSTABILITIES IN LARGE PRESSURIZED WATER REACTORS
WESTINGHOUSE ELECTRIC CORP., PITTSBURGH, PA.
WCAP-3680-20 + EURAEC-1974 +. 203 PAGES, REFERENCES, MARCH 1968

THE CHARACTERISTICS OF FREE-RUNNING XENON-INDUCED SPATIAL OSCILLATIONS IN LARGE PRESSURIZED WATER REACTORS (PWRs) ARE INVESTIGATED BOTH FROM A PHENOMENOLOGICAL POINT OF VIEW AND FROM THE STANDPOINT OF THE THEORETICAL AND CALCULATIONAL METHODS EMPLOYED IN THEIR ANALYSIS. THE DIGITAL SIMULATION OF SPATIAL XENON INSTABILITIES WITH MULTI-DIMENSIONAL, MULTI-GROUP DIFFUSION THEORY PROGRAMS IS INVESTIGATED IN DETAIL. THE SPACE-TIME CHARACTERISTICS OF XENON-INDUCED INSTABILITIES IN THE TWO-DIMENSIONAL PLANE PERPENDICULAR TO THE DIRECTION OF COOLANT FLOW ARE STUDIED FOR A LARGE VARIETY OF CORE SIZES, POWER DISTRIBUTIONS AND TEMPERATURE FEEDBACK EFFECTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*XENON OSCILLATION + OSCILLATION + REACTOR PHYSICS + REACTOR STABILITY + REACTOR, PWR + SPACE DEPENDENT DYNAMICS + THEORETICAL INVESTIGATION

6-28088

TAXELIUS TG
QUARTERLY TECHNICAL REPORT SPERT PROJECT JULY, AUGUST, SEPTEMBER 1967
PHILLIPS PETROLEUM COMPANY, ATOMIC ENERGY DIVISION, IDAHO OPERATIONS OFFICE
IDO-17271 +. 46 PAGES, REFERENCES, FIGURES, TABLES, JULY 1968

ONE OF A SERIES OF PROGRESS REPORTS FROM THE SPERT PROGRAM IN WHICH REACTOR CORES AND FUEL ASSEMBLIES ARE TESTED IN POWER TRANSIENTS. TOPICS COVERED ARE SPERT-III OXIDE CORE KINETICS PROGRAM, SPERT-IV CAPSULE-DRIVER CORE - SUBASSEMBLY TEST PROGRAM, AND POWER-BURST-FACILITY IN-PILE TEST PROGRAM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

COMPARISON, THEORY AND EXPERIENCE + CORE, CAPSULE DRIVER (CDC) + FUEL INTEGRITY + REACTOR KINETICS + REACTOR TRANSIENT + REACTOR, SAFETY RESEARCH + SPERT, ALL (S-RR) + TEMPERATURE TRANSIENT

6-28089

THOLLOT PA + BLOCK HB + JEFFERIES KS
EXPERIMENTAL INVESTIGATION OF REACTOR-LOOP TRANSIENTS DURING STARTUP OF A SIMULATED SNAP-8 SYSTEM
LEWIS RESEARCH CENTER, CLEVELAND, OHIO
NASA-TN-D-4546 +. 46 PAGES, 22 FIGURES, 4 TABLES, 9 REFERENCES, MAY 1968

THIS REPORT DESCRIBES THE EXPERIMENTAL INVESTIGATIONS OF PRIMARY-LOOP TRANSIENTS DURING STARTUP OF A RANKINE-CYCLE SPACE-POWER SYSTEMS CONDUCTED IN THE SNAP-8 SIMULATOR FACILITY AT LEWIS RESEARCH CENTER OF PARTICULAR SIGNIFICANCE TO THESE STUDIES WAS THE FACT THAT BOTH A REALISTIC REACTOR SIMULATORS AND A FLIGHT-WEIGHT MERCURY BOILER WERE USED IN THE PRIMARY LOOP. FURTHERMORE THE SYSTEM TESTED USED THE SAME LIQUID METALS AND OPERATED AT SIMILAR TEMPERATURES, PRESSURES, AND FLOW RATES AS THOSE OF THE SNAP-8 SYSTEM. DURING STARTUP, THE ELECTRIC HEATER POWER INPUT WAS AUTOMATICALLY CONTROLLED SO THAT THE TRANSIENT BEHAVIOR OF A REAL REACTOR COULD BE DUPLICATED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

CONTROL SYSTEM + REACTOR CONTROL + REACTOR DYNAMICS + REACTOR KINETICS + REACTOR STABILITY + REACTOR TRANSIENT + TEMPERATURE COEFFICIENT

6-28090

BARLEON L + BAYER A + BRUECKNER C + BURKART K + KUHN D + KUSSMAUL G + MEISTER H + STEGEMANN D
STUDIES AT CHARGE 2 OF THE FAST THERMAL ARGONAUT REACTOR STARK

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-28090 *CONTINUED*
KERNFORSCHUNGSZENTRUM KARLSRUHE, WEST GERMANY
EURFNR-352 + KFK-592 +. 116 PAGES, 1967

CONTAINS A COMPILATION AND DISCUSSION OF THE MOST IMPORTANT EXPERIMENTAL RESULTS OBTAINED AT CHARGE 2 OF THE FAST THERMAL ARGONAUT REACTOR STARK. THE EXPERIMENTAL PROGRAM FOR INVESTIGATING THE REACTOR PHYSICAL PROPERTIES OF CHARGE 2 CONSISTED OF (A) MEASUREMENTS OF THE FLUX AND FISSION RATE DISTRIBUTION, (B) MEASUREMENTS OF THE SPECTRAL INDICES IN THE FAST REGION, (C) DETERMINATION OF THE REACTIVITY VALUES OF MATERIAL SAMPLES, (D) KINETIC STUDIES ACCORDING TO THE PULSE METHOD.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

CRITICALITY EXPERIMENT + FLUX DISTRIBUTION + NOISE ANALYSIS + PULSED NEUTRON TECHNIQUE + REACTIVITY COEFFICIENT + REACTOR DYNAMICS + REACTOR KINETICS

6-28091
JEFFERS DE + CROSBIE RE + LYNN JW
SPATIAL INSTABILITIES IN A TWO-ZONE REACTOR
UNIVERSITY OF MANCHESTER + UNIVERSITY OF SALFORD + UNIVERSITY OF LIVERPOOL
2 PAGES, 1 FIGURE, 8 REFERENCES, THE JOURNAL OF THE BRITISH NUCLEAR ENERGY SOCIETY 7(3), PAGES 259-60 (JULY 1968)

DERIVES STABILITY CRITERIA FOR XENON-INDUCED SPATIAL OSCILLATIONS IN A REACTOR COMPOSED OF TWO COUPLED CORES.

COUPLED CORES + OSCILLATION + REACTOR DYNAMICS + REACTOR KINETICS + REACTOR STABILITY + XENON OSCILLATION

6-28092
TAXELIUM TG
QUARTERLY TECHNICAL REPORT SPERT PROJECT APRIL-MAY-JUNE 1967
PHILLIPS PETROLEUM COMPANY
IDO-17270 +. 46 PAGES, 21 FIGURES, 4 TABLES, 11 REFERENCES, 1967

EXPERIMENTAL AND ANALYTICAL RESULTS ARE PRESENTED FOR THE LOW-INITIAL-POWER (ABOUT 10 WATTS) TRANSIENT TEST SERIES OF THE SPERT-111 OXIDE CORE KINETICS TEST PROGRAM. THE CORE USED IN THIS SERIES WAS A SLIGHTLY ENRICHED UO₂-FUELED CORE, DESIGNATED THE E-CORE. THE PURPOSE OF THE SERIES WAS TO PROVIDE INFORMATION ON THE TRANSIENT BEHAVIOR OF THE REACTOR FOR STEP REACTIVITY INSERTIONS UP TO ABOUT 1.25% (RESULTING IN A REACTOR PERIOD OF ABOUT 10 MSEC) WITH LOW INITIAL REACTOR POWER AND VARIOUS INITIAL SYSTEM CONDITIONS, INCLUDING AMBIENT SYSTEM TEMPERATURE AND ATMOSPHERIC PRESSURE AND NO FLOW, AND ELEVATED SYSTEM TEMPERATURE (500 F) AND PRESSURE AND FORCED FLOW.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

COMPUTER PROGRAM + CRITICALITY EXPERIMENT + DOPPLER COEFFICIENT + DYNAMICS, NONLINEAR + PULSED NEUTRON TECHNIQUE + REACTOR DYNAMICS + REACTOR KINETICS + REACTOR TRANSIENT

6-28093
LANE FE + WALKER WH
FISSPROD - A FISSION PRODUCT PROGRAM FOR THERMAL REACTOR CALCULATIONS
ATOMIC ENERGY OF CANADA LIMITED
CONF-680307-16 +. 9 PAGES, FROM 2ND CONFERENCE ON NEUTRON CROSS SECTIONS AND TECHNOLOGY, WASHINGTON, D. C., 1966

FISSPROD CALCULATES THE CONCENTRATIONS OF ABOUT 200 FISSION PRODUCT NUCLIDES BY SETTING UP AND SOLVING A MATRIX EQUATION. THE NUCLIDES ARE ARRANGED IN ORDER OF INCREASING A AND Z TO GIVE A LOWER TRIANGULAR MATRIX WITH NON-ZERO ELEMENTS NEAR THE DIAGONAL, PERMITTING CONCENTRATIONS TO BE CALCULATED ONE AT A TIME. THE PRESENT INPUT INCLUDES ALL GROUND-STATE AND METASTABLE NUCLIDES WITH HALF-LIVES EXCEEDING ABOUT 5 HR BETWEEN MASSES 76 AND 1966.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

COMPUTER PROGRAM + FISSION PRODUCT ACTIVITY, GROSS

6-28094
ALBERTONI S + CELLINA A + SZEGO GP
ON THE STABILITY OF HOMOGENEOUS NUCLEAR REACTORS
UNIVERSITY OF MILANO, MILANO, ITALY
4 PAGES, 8 REFERENCES, JOURNAL OF FRANKLIN INSTITUTE 284(5), PAGES 279-82 (1967)

IN THIS PAPER, A HOMOGENEOUS NUCLEAR REACTOR IS CONSIDERED, WITH THE USUAL SUBSTITUTIONS, AS AN INDIRECT CONTROL SYSTEM OF THE LURE TYPE. A NEW LIAPUNOV FUNCTION IS PRESENTED THAT TAKES INTO ACCOUNT A PROPERTY OF THE DERIVATIVE OF THE NONLINEARITY. FROM THIS AN IMPROVED STABILITY CRITERION IS DERIVED.

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-28094 *CONTINUED*
DYNAMICS, NONLINEAR + LIAPUNOV'S FUNCTION + REACTOR STABILITY

6-28095
ROBINSON JC
ANALYSIS OF NEUTRON FLUCTUATION SPECTRA IN THE OAK RIDGE RESEARCH REACTOR AND THE HIGH FLUX ISOTOPE REACTOR
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.
ORNL-4149 +. 45 PAGES, 22 FIGURES, 15 REFERENCES, OCTOBER 1967

AN ANALYTICAL MODEL WHICH ACCOUNTED FOR DISTRIBUTED EFFECTS ON REACTIVITY DUE TO THE COOLANT AND HEAT TRANSPORT TIME WAS DEVELOPED TO AID IN THE STUDY OF THE POWER SPECTRAL DENSITY OF FLUCTUATING CURRENT FROM A NEUTRON SENSITIVE IONIZATION CHAMBER IN THE OAK RIDGE RESEARCH REACTOR (ORR) AND THE HIGH FLUX ISOTOPE REACTOR (HFIR). RESULTS FROM THE MODEL LED TO THE CONCLUSION THAT FEEDBACK EFFECTS ON THE POWER SPECTRAL DENSITY (FOR THESE REACTORS) ARE SMALL OVER THE FREQUENCY RANGE OF OBSERVATION. A COMPARISON OF THE OBSERVED SPECTRA (WHEN PROPERLY NORMALIZED) AT VARIOUS POWER LEVELS VERIFIED THE ANALYTICAL PREDICTIONS- THEREFORE, WE CONCLUDED THAT THE OBSERVED SPECTRA WERE INDUCED BY A REACTIVITY DRIVING FUNCTION(S) WHICH WAS INDEPENDENT OF THE POWER LEVEL.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

NOISE ANALYSIS + SPACE DEPENDENT DYNAMICS

6-28098
BOUCHARD J + MOUGNIOT JC + VIDAL R
EXPERIMENTAL STUDY OF NEUTRON CHARACTERISTICS IN FAST MULTIPLYING MEDIA, USING THE THERMAL-FAST CRITICAL ASSEMBLY ERMINE
ANL-TRANS-556 + CONF-671043-15 +. 22 PAGES, TABLES, TRANSLATED FOR ARGONNE NATIONAL LAB. FROM PAPER PRESENTED AT CONFERENCE ON FAST REACTOR PHYSICS AND RELATED SAFETY PROBLEMS, KARLSRUHE, GERMANY, OCT. 30-NOV. 3, 1967

PART OF A FAST REACTOR LATTICE WAS LOCATED IN THE CENTRAL CAVITY OF THE MINERVE REACTOR TO PRODUCE A COUPLED THERMAL-FAST CRITICAL ASSEMBLY. THE FIRST CORE, CONSISTING OF THE MASURCA 1B LATTICE WITH 30% ENRICHED URANIUM DILUTED WITH GRAPHITE, IS DESCRIBED ALONG WITH THE EXPERIMENTAL TECHNIQUES. MEASUREMENTS WERE DONE MOSTLY BY THE OSCILLATION METHOD, REACTIVITY EFFECTS BEING COMPENSATED BY AN AUTOMATIC CONTROL ROD. RESULTS ARE REPORTED FOR SPECTRAL INDEX, REACTIVITY EFFECTS OF FISSION AND FERTILE MATERIALS, AS WELL AS THE STRUCTURE, HETEROGENEITY EFFECTS, U-238 DOPPLER EFFECT, AND RELATIVE IMPORTANCES. THESE EXPERIMENTAL VALUES ARE COMPARED WITH THOSE CALCULATED USING TRANSPORT THEORY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

COMPARISON, THEORY AND EXPERIENCE + CRITICALITY EXPERIMENT + REACTOR, FAST + REACTOR, POOL TYPE

6-28163 ALSO IN CATEGORIES 9 AND 1
Greebler P + Henley EJ
ADVANCES IN NUCLEAR SCIENCE AND TECHNOLOGY
GENERAL ELECTRIC COMPANY + UNIVERSITY OF HOUSTON
391 PAGES, VOLUME 4, 1968, ACADEMIC PRESS, NEW YORK AND LONDON

THIS VOLUME IS CONCERNED WITH ADVANCED REACTOR CONCEPTS. TWO OF THE CHAPTERS DEAL WITH THE TECHNOLOGY OF, RESPECTIVELY, SODIUM-COOLED FAST BREEDER POWER REACTORS AND GAS-COOLED POWER REACTORS, THE LATTER INCLUDING BOTH THERMAL CONVERTERS AND FAST BREEDERS. COGNIZANCE IS TAKEN OF THE CENTRAL ROLE OF REACTOR SAFETY IN THE DEVELOPMENT OF FAST BREEDER REACTORS IN TWO CHAPTERS DEALING WITH, RESPECTIVELY, THE DOPPLER EFFECT IN FAST REACTORS AND THE ANALYSIS OF MAXIMUM ACCIDENTS. THREE CHAPTERS COVER RECENT DEVELOPMENTS IN AREAS OF MORE GENERAL APPLICABILITY, NAMELY, OPTIMAL CONTROL THEORY, MODERN PERTURBATION THEORY, AND INDUSTRIAL APPLICATION OF IONIZING RADIATIONS. MAIN HEADINGS FOR THE 7 CHAPTERS ARE - GAS-COOLED REACTOR TECHNOLOGY, SAFETY AND ECONOMIC CHARACTERISTICS OF A 1000-MWE FAST SODIUM-COOLED REACTOR DESIGN, AND THE DOPPLER EFFECT IN FAST REACTORS.

BETHE TAIT + DOPPLER EFFECT + ECONOMICS + MATHEMATICAL TREATMENT + REACTOR CONTROL + REACTOR DYNAMICS + REACTOR SAFETY SYSTEM + REACTOR, FAST + REACTOR, GCR + REACTOR, LMC + REACTOR, LMFBR + THEORETICAL INVESTIGATION

6-28533
LORD RM
EFFECT OF CORE CONFIGURATION ON THE EXPLOSIVE YIELDS FROM LARGE SODIUM-COOLED FAST REACTORS
UKAEA, LANCASHIRE RISLEY
CEA/DPA III/4 +. 12 PAGES, TABLES, FIGURES, INTERNATIONAL CONFERENCE ON THE SAFETY OF FAST REACTORS, SEPTEMBER 1967

DESCRIBES A DIGITAL (IBM 7090) COMPUTER PROGRAM EXTRA, FOR CALCULATING EXPLOSIVE YIELDS IN THE BETHE-TAIT TYPE ANALYSIS OF FAST-REACTOR INCIDENTS. FEATURES OF THE PROGRAM - CYLINDRICAL GEOMETRY, THE INCLUSION OF DELAYED NEUTRON EFFECTS AND DOPPLER REACTIVITY, A FLEXIBLE REPRESENTATION OF THE EQUATION OF STATE FOR FUEL, AND AN OPTION TO INHIBIT RADIAL EXPANSION.

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-28533 *CONTINUED*

THE PROGRAM ACCEPTS BULK OF ITS DATA DIRECTLY FROM DUMP TAPES FROM PROGRAM CRAM. PRESENTS RESULTS FOR TYPICAL 1000-MW(E) SYSTEMS SHOWING VARIATION OF YIELD WITH CORE L/D RATIO AND WITH NUMBER OF CORE-ENRICHMENT ZONES. SHOWS INFLUENCE OF VARIATIONS IN DOPPLER CONSTANT AND EQUATION OF STATE OF THE FUEL, AND EFFECT OF DELAYED NEUTRONS ON ENERGY YIELD. ALSO CONSIDERS INFLUENCE OF BOUNDARY CONDITIONS.

AVAILABILITY - R. M. LORD, CENTRAL TECHNICAL SERVICES, UNITED KINGDOM ATOMIC ENERGY AUTHORITY, RISLEY

ACCIDENT ANALYSIS + COMPUTER PROGRAM + DESTRUCTIVE TRANSIENT + DYNAMICS, NONLINEAR + EQUATION OF STATE + REACTOR DYNAMICS + REACTOR TRANSIENT + SPACE DEPENDENT DYNAMICS

6-28535

DE MYTTENAERE P + FOSSOUL E + PILATE S

EFFECT OF THE USE OF U-235 IN PLACE OF PLUTONIUM ON FAST REACTOR SAFETY

SOCIETE BELGE POUR L'INDUSTRIE NUCLEAIRE, BRUSSELS

CEA/DPA II-A/1 +. 19 PAGES, FIGURES, TABLES, INTERNATIONAL CONFERENCE ON THE SAFETY OF FAST REACTORS, SEPTEMBER 1967

THIS PAPER DESCRIBES AN EVALUATION OF THE EFFECT OF THE USE OF U-235 INSTEAD OF PU IN FAST REACTORS. WITH U-235, MANY IMPORTANT REACTOR PARAMETERS, ESPECIALLY THOSE RELATED TO SAFETY, ARE MODIFIED. THE REACTOR PROPERTIES ARE SENSITIVE TO ISOTOPIC COMPOSITION OF THE FUEL, AND SPECIAL EMPHASIS IS PLACED ON THE EXTREME CASES IN WHICH THE U-236 AND PU-240 CONCENTRATIONS HAVE THEIR HIGHEST VALUES.

AVAILABILITY - P. DE MYTTENAERE, BELGONUCLEAIRE - BELGIUM

DELAYED NEUTRON + DOPPLER COEFFICIENT + FUEL BURNUP + FUEL COEFFICIENT + PROMPT NEUTRON LIFETIME + SODIUM COEFFICIENT + VOID COEFFICIENT

6-28536

GANDINI A + LEO M + SALVATORES M

LIFE EFFECTS ON THE PERFORMANCE OF CERAMIC FAST BREEDERS

ITALY. COMITATO NAZIONALE PER L'ENERGIA NUCLEARE

CEA/DPA II-A/2 +. 9 PAGES, TABLES, REFERENCES, INTERNATIONAL CONFERENCE ON THE SAFETY OF FAST REACTORS, SEPTEMBER 1967

ABSTRACT - THE OBJECTIVE OF THE PRESENT WORK IS THAT OF EVALUATING THE BEHAVIOUR OF LARGE FAST CERAMIC REACTORS AS A FUNCTION OF LIFE. THE QUANTITIES WHICH HAVE BEEN CONSIDERED ARE THE DOPPLER EFFECT, THE SODIUM VOID COEFFICIENT AND THE PROMPT NEUTRON LIFETIME. TWO SYSTEMS HAVE BEEN STUDIED, REPRESENTING SIMPLIFIED MODELS OF OXIDE PANCAKE AND CARBIDE REACTORS. THE LIFE CONDITIONS CONSIDERED REPRESENT THE HEAVY ISOTOPE AND FISSION PRODUCT CONCENTRATIONS AT 50,000 MWD/TON. USE HAS BEEN MADE OF GENERALIZED PERTURBATION TECHNIQUES, WHICH ALLOW A DETAILED ANALYSIS OF THE VARIOUS EFFECTS THAT INFLUENCE THE PERFORMANCE OF THESE SYSTEMS.

AVAILABILITY - A. GANDINI, CNEN, CSN CASACCIA, ROME, ITALY

COMPUTER PROGRAM + CONTROL ROD WORTH + COOLANT COEFFICIENT + DOPPLER COEFFICIENT + PERTURBATION METHOD + PROMPT NEUTRON LIFETIME + REACTIVITY COEFFICIENT + SODIUM COEFFICIENT + VOID COEFFICIENT

6-28540

ALSO IN CATEGORIES 17 AND 9

ROSS DA

UNEXPECTED REACTIVITY ADDITION AT PENN STATE UNIV FROM MOVEMENT OF LEAD SHIELD

PENNSYLVANIA STATE UNIVERSITY, UNIVERSITY PARK, PENNSYLVANIA 16802

LETTER TO AEC, DRL +. 6 PAGES, FIGURES, AUGUST 9, 1968, DOCKET 50-5

AN UNEXPECTED AUTOMATIC REGULATING ROD INSERTION OF 37 UNITS REPRESENTING A REACTIVITY ADDITION OF 0.168% DELTA K/K OCCURRED. THE CAUSE WAS ATTRIBUTED TO A LEAD PLATE BETWEEN THE REACTOR AND THERMAL COLUMN WHICH WAS NOT FITTED PROPERLY AND MOVED DURING OPERATION. CHARTS SHOWED SLIGHT INCREASE IN LOG-N CHANNEL, NO CHANGE IN LINEAR-LEVEL CHANNEL, %-POWER CHANNEL DROPPED 4.5%, AND FUEL TEMPERATURE DROPPED 10 C. LOCATION OF NEUTRON DETECTORS IS SUCH THAT THEY ARE INFLUENCED BY NEUTRON REFLECTED FROM LEAD SHIELD. NO DAMAGE. BETTER MEANS OF SECURING PLATE TO BE OBTAINED.

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

*DISPLACEMENT, GENERAL + *INSTRUMENT, ABNORMAL INDICATION + *REACTIVITY EFFECT, ANOMALOUS + *REFLECTOR + BEAM HOLE + OPERATING EXPERIENCE + REACTOR, RESEARCH + SHIELDING + TRIGA (RR)

6-28562

ALSO IN CATEGORY 17

WINKLEBLACK RK

RECENT EBR-II OPERATING EXPERIENCE

ARGONNE NATIONAL LABORATORY

15 PAGES, 4 FIGURES, 1967

DISCUSSES A FUEL FAILURE AND FISSION PRODUCT RELEASE TO COOLANT AND A SIGNIFICANT DECREASE IN THE POWER COEFFICIENT FOLLOWING A CHANGE IN CORE CONFIGURATION. DESCRIBES ANALYTICAL TECHNIQUE USED TO LOCATE THE FAULTY FUEL. NEED FOR A FAILED FUEL LOCATING METHOD IS

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-28562 *CONTINUED*

DISCUSSED, AND USE OF A TAG MATERIAL IS CONSIDERED. DECREASE IN POWER COEFFICIENT AFTER CORE ENLARGED FROM 73 TO 81 ASSEMBLIES IS ATTRIBUTED TO CHANGE IN CORE AND REFLECTOR SIZE AND COMPOSITION, AND AN INCREASED BOWING OF SUBASSEMBLIES CAUSED BY INSTALLATION OF STAINLESS STEEL SUBASSEMBLIES.

*ACTIVITY BUILDUP + *FAILURE, CLADDING + *POWER COEFFICIENT + *REACTIVITY EFFECT, ANOMALOUS + EBR 1 AND 2 (RE) + FUEL ELEMENT BOWING + INSTRUMENT, DETECTION FAILED FUEL ELEMENT + MAIN COOLING SYSTEM + OPERATING EXPERIENCE + REACTOR, AEC OWNED + REACTOR, FAST + REACTOR, LMCR + REACTOR, RESEARCH + REACTOR, TEST

6-28621 ALSO IN CATEGORIES 9 AND 17
BALCH FJ
LOCALIZATION OF IN-CORE DISTURBANCES WITH EXTERNAL CORE DETECTORS
THE PENNSYLVANIA STATE UNIVERSITY
104 PAGES, TABLES, FIGURES, JUNE 1968

TWO LEAD SHIELDED, PCP ION CHAMBERS USED WITH CROSS CORRELATION TECHNIQUES SAW DISTURBANCES IN A TRIGA CORE AT DISTANCES 3 IN. INTO THE CORE AND DISTURBANCES GREATER THAN 0.42 CENT.
***THE ROTATING OSCILLATORS PRODUCED NEUTRON WAVES 180 DEG OUT OF PHASE ON EITHER SIDE OF THE OSCILLATOR. THEREFORE THE DETECTORS SAW DIFFERENCES IN REACTIVITY WORTH OF AN ELEMENT. THIS COULD BE USED TO MEASURE FUEL BURNUP. ***REPORT DESCRIBES HARDWARE DEVELOPMENT, CORRELATION TECHNIQUES AND MATHEMATICAL TREATMENT, CHECKING WITH IN-CORE CHAMBER.

AVAILABILITY - PENN. STATE UNIV., DEPT. OF NUCLEAR ENGINEERING, UNIVERSITY PARK, PA.

*TRANSFER FUNCTION + FUEL BURNUP + INSTRUMENT, IN CORE + INSTRUMENT, NUCLEAR + OSCILLATOR, REACTIVITY + REACTIVITY EFFECT, ANOMALOUS + REACTOR, RESEARCH + TRIGA (RR)

6-28640 ALSO IN CATEGORY 17
THIE JA
ELK RIVER REACTOR SAFETY ANALYSIS MONTHLY REPORT, JULY 1968
RURAL COOPERATIVE POWER ASSOCIATION, ELK RIVER, MINN.
JAT-68-7 +. 15 PAGES, 5 FIGURES, JULY 1968

FOUR PROPOSED RELOADS FOR CYCLE 4 ARE GIVEN, AND FOR EACH THE NUMBER OF LEAKERS IS ESTIMATED, BASED ON FUEL BURNUP. THE LOAD WITH THE MINIMUM NUMBER OF LEAKERS WOULD HAVE THE LEAST SHUTDOWN MARGIN. JUNE 5 COUNTING RATE DATA INDICATE SOURCE LOCATION G-1 IS THE POOREST LOCATION (10,488 C/MIN) AND H-14 THE BEST (30 C/MIN). N-7 AND J-4 WOULD PROVIDE ADEQUATE C/MIN UP TO DEC. 68.

*REFUELING + *SOURCE, NEUTRON + ELK RIVER (BWR) + FAILURE, CLADDING + FUEL BURNUP + INSTRUMENT, STARTUP RANGE + REACTOR, BWR + REPORT, OPERATIONS + SAFETY REVIEW + SHUTDOWN MARGIN

6-28648 ALSO IN CATEGORY 5
DICKERMAN CE + ROBINSON LE
FUEL MELTDOWN EXPERIMENTS IN TREAT
ARGONNE NATIONAL LABORATORY
FRENCH INTL CONFERENCE ON FAST REACTORS (I/4) +. 29 PAGES, FIGURES, TABLES, REFERENCES, SEPT. 1967

A PROGRESS REPORT ON FAST-REACTOR SAFETY EXPERIMENTS AT THE TRANSIENT REACTOR TEST FACILITY TO OBTAIN DATA ON THE BEHAVIOR OF FUEL AND COOLANT UNDER SEVERE TRANSIENT OVERHEATING CONDITIONS. EXPERIMENTS WITH SINGLE PINS AND SEVEN-PIN CLUSTERS OF THE EBR-II TYPE IN SODIUM LOOPS IS DESCRIBED.

AVAILABILITY - C.E. DICKERMAN, ARGONNE NATIONAL LABORATORY - 9700 SOUTH CASS AVENUE - ARGONNE, ILLINOIS 60439

*FUEL MELTDOWN + *REACTOR TRANSIENT + *THERMAL EXPERIMENT + *TREAT (PRR) + ACCIDENT, CRITICALITY + EBR 1 AND 2 (RE) + EXCURSION, LARGE + FAILURE, FUEL ELEMENT + HEAT GENERATION, INTERNAL + HIGH TEMPERATURE + PRESSURE, INTERNAL + REACTOR, BWR + REACTOR, PULSED + REACTOR, SAFETY RESEARCH + SODIUM + TEMPERATURE TRANSIENT + VOID COEFFICIENT

6-28666 ALSO IN CATEGORY 9
WIBERG DM
OPTIMAL CONTROL OF NUCLEAR REACTOR SYSTEMS
UNIVERSITY OF CALIFORNIA, LOS ANGELES
88 PAGES, ADVAN. CONTR. SYST., 5, PAGE 301-389, (1967)

A REVIEW (82 REFERENCES) IS PRESENTED WHICH INCLUDES A DISCUSSION OF THE POINT REACTOR MODEL, REACTOR KINETIC STATE EQUATIONS, LINEARIZED STATE EQUATIONS AND 2 METHODS OF THEIR SOLUTION, METHODS OF SOLUTION OF THE KAPLAN MODES, A METHOD OF ESTIMATING THE EFFECTS OF SPATIAL VARIATION ON STABILITY, AND ANALYTICAL DESIGN OF A SPATIAL FEEDBACK CONTROL SYSTEM. METHODS FOR ATTACKING THE DESCRIPTION AND CONTROL OF MOST REACTOR SPATIAL PROCESSES HAVE BEEN INVESTIGATED. THE CONCEPT OF THE TEMPERATURE COEFFICIENT OF REACTIVITY WAS EXTENDED SO THAT SPATIAL TEMPERATURE EFFECTS CAN BE INVESTIGATED BY THEIR INCLUSION IN THE GENERAL MODEL. A DISCUSSION OF THE CONTROL OF THE INFINITE MODE SYSTEM WAS GIVEN.

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-28666 *CONTINUED*

*REACTOR CONTROL + *THEORETICAL INVESTIGATION + ANALYTICAL MODEL + BIBLIOGRAPHY + REACTOR KINETICS + REVIEW + TEMPERATURE REACTIVITY EFFECT

6-28766

CRUDELE JS

NEUTRON KINETICS OF HEAVY WATER MODERATED REACTORS

AMES LABORATORY

IS-18C8 +. 82 PAGES, 14 FIGURES, 18 TABLES, 16 REFERENCES, FEBRUARY 1968

NEUTRON RESPONSES TO RAMP AND STEP CHANGES OF REACTIVITY IN U-235 FUELED D2O-MODERATED REACTORS WERE CALCULATED. COMPARISONS WERE MADE FOR THE EFFECTS OF USING FAST FISSION DELAYED NEUTRONS AND THERMAL FISSION DELAYED NEUTRONS, AND FOR THE EFFECTS CAUSED BY CHANGES IN THE NUMBER OF DELAYED NEUTRON GROUPS USED, THE GAMMA RAY TRANSMISSION, THE TOTAL EFFECTIVE DELAYED NEUTRON FRACTION AND THE PROMPT NEUTRON LIFETIME. RESULTS OF THIS ANALYSIS WERE APPLIED TO THE AMES LABORATORY RESEARCH REACTOR.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*REACTOR KINETICS + ALRR (RR) + MATHEMATICAL TREATMENT + REACTOR DYNAMICS + REACTOR PHYSICS + REACTOR, FLUX TRAP + REACTOR, HWR + REACTOR, RESEARCH

6-28782

ALSO IN CATEGORY 9

KOEHLER B

STUDIES ON THE EVALUATION ERRORS IN ROD-DROP EXPERIMENTS

VEB KERNFRAKTWERKSBAU, BERLIN

6 PAGES, KERNENERGIE 10, PAGES 331-6 (NOVEMBER 1967)

IN POWER REACTORS THE VARIATION OF SPATIAL NEUTRON FLUX DISTRIBUTION USUALLY NEGLECTED IN ROD-DROP EXPERIMENTS SHOWS ESSENTIAL INFLUENCE ON THE RESULT OF MEASUREMENTS. AS AN EXAMPLE, THIS INFLUENCE IS STUDIED BY EXPANSION IN EIGENFUNCTIONS AS WELL AS BY UTILIZING SPACE-TIME SYNTHESIS. AN EXPRESSION IS DERIVED FOR CORRECTING THE MEASURED VALUES SO THAT USEFUL RESULTS OF THE REACTIVITY OF THE CONTROL RODS CAN BE OBTAINED.

*CONTROL ROD INTERACTION + *THEORETICAL INVESTIGATION + FLUX DISTRIBUTION + MATHEMATICAL TREATMENT + NEUTRON + REACTOR, POWER

6-28801

ALSO IN CATEGORY 17

KLICKMAN AE + HORNE RE + WILBER HA

OSCILLATOR TESTS IN THE ENRICO FERMI REACTOR

ATOMIC POWER DEVELOPMENT ASSOCIATES, INC.

APDA-NTS-11 +. 145 PAGES, 71 FIGURES, 24 TABLES, 10 REFERENCES, AUGUST 1967

ROTATING RODS WHICH WOULD VARY REACTIVITY BY 6 OR BY 2 CENTS BETWEEN 0.001 AND 10 CPS WERE USED, TOGETHER WITH A SYNCHRONOUS AND A NULL BALANCE TRANSFER FUNCTION ANALYZER, AS WELL AS SIMPLE RECORDERS. NEGLIGIBLE DIFFERENCES EXIST FOR SPACE DEPENDENT CALCULATIONS. SYNCHRONOUS ANALYZER SEEMED BEST, BUT TRUE FEEDBACK OBSERVABLE ONLY AT HIGHER POWERS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*OSCILLATOR, REACTIVITY + *TRANSFER FUNCTION + FERMI (LMFBR) + REACTOR STABILITY + REACTOR, LMFBR + SPACE DEPENDENT DYNAMICS + TEST, PHYSICS

6-28802

ALSO IN CATEGORY 17

SEELEY GT + BALL GL + BRANNAN CE + HORNE RE + MUELLER RE + SEGAL BM + WILBER HA

MEASUREMENT OF SOME REACTIVITY EFFECTS IN THE ENRICO FERMI REACTOR

ATOMIC POWER DEVELOPMENT ASSOCIATES, INC.

APDA-NTS-12 +. 68 PAGES, 18 FIGURES, 13 TABLES, 3 REFERENCES, NOVEMBER 1967

REACTIVITY WORTH OF PERMANENT NEUTRON SOURCE (23 CENTS AT 10 WATTS, AND 0.23 CENTS AT 1 KW), OF RETRACTABLE NEUTRON SOURCE (8.3 CENTS), OF COOLANT FLOW RATE (NO GAS ENTRAINMENT AND NEGLIGIBLE STRUCTURAL DEFORMATION) AND PRESSURE COEFFICIENT (NONE AT 15 AND 25 PSIA), AND OF TEMPORARY INSTRUMENT THIMBLE (1.41 CENTS) WERE MADE AND EVALUATED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*REACTIVITY EFFECT + COOLANT COEFFICIENT + FERMI (LMFBR) + FLOW, GENERAL + INSTRUMENT, IN CORE + PRESSURE, EXTERNAL + REACTOR, LMFBR + SOURCE, NEUTRON + TEST, PHYSICS

6-28822

ALSO IN CATEGORY 9

CIECHANOWICZ W + BOGUMIL S

ON-LINE STATISTICAL IDENTIFICATION OF NUCLEAR POWER REACTOR DYNAMICS

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-28822 *CONTINUED*
INST. OF NUCLEAR RESEARCH, SWIERK, POLAND
10 PAGES, NUCLEAR SCIENCE ENGINEERING 31, PAGES 474-83 (1968)

ON-LINE STATISTICAL IDENTIFICATION OF THE NUCLEAR REACTOR PROCESSES WERE CONSIDERED THEORETICALLY. THESE TECHNIQUES ARE NOT TIME CONSUMING. IT HAS BEEN SHOWN THAT THE PROPOSED IDENTIFICATION TECHNIQUES ENABLE DETERMINATION OF THE PROCESS DYNAMICS IN A UNIQUE WAY BY MAKING USE OF THE CORRELATION FUNCTIONS FOR THE ZERO TIME LAG EVEN WHEN THE PROCESS DYNAMICS IS CHARACTERIZED BY MORE THAN ONE TIME CONSTANT AND A DECREASE IN THE CONTRIBUTION OF THE UNCORRELATED NOISE IN THE OVERALL MEASURED NOISE WHEN THE CROSS-CORRELATION TECHNIQUE CANNOT BE USED.

*REACTOR DYNAMICS + MATHEMATICAL TREATMENT + NOISE ANALYSIS + THEORETICAL INVESTIGATION + TRANSFER FUNCTION

6-28847
SARGIS DA
GAPER, A TRANSPORT PERTURBATION THEORY PROGRAM
GULF GENERAL ATOMIC, INC., SAN DIEGO, CALIF.
GA-8667 +. 83 PAGES, 1 FIGURE, 5 TABLES, 13 REFERENCES, APRIL 26, 1968

COMPUTER PROGRAM GAPER EVALUATES REACTIVITY COEFFICIENTS IN REACTOR ASSEMBLIES, USING FIRST-ORDER TRANSPORT PERTURBATION THEORY. SCALAR NEUTRON FLUXES AND CURRENTS, AS COMPUTED BY S-SUB-N TRANSPORT CALCULATIONS ARE UTILIZED WITH LEAKAGE AND ANISOTROPIC SCATTERING EFFECTS TREATED IN A P-SUB-1 APPROXIMATION. GAPER COMPUTES CHANGES IN INVERSE MULTIPLICATION FACTOR DUE TO PERTURBATIONS IN THE INDIVIDUAL CAPTURE, NET FISSION, TOTAL SCATTERING, (N,2N), INELASTIC SCATTERING, AND LEAKAGE CROSS SECTIONS. THE FLUXES AND CURRENTS ARE ASSUMED SEPARABLE AND COMBINED IN A SYNTHESIS SCHEME FOR TWO- AND THREE-DIMENSIONAL PROBLEMS. A MULTIDIMENSIONAL PROMPT-NEUTRON-LIFETIME CALCULATION IS ALSO AVAILABLE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

COMPUTER PROGRAM + PERTURBATION METHOD + PROMPT NEUTRON LIFETIME + REACTIVITY COEFFICIENT + TRANSPORT THEORY

6-28860
SULLIVAN RE
REACTIVITY INSERTIONS IN COMPACT REACTOR CORES DUE TO FUEL MOVEMENT
LEWIS RESEARCH CENTER, NASA
NASA-TM-X-1587 +. 13 PAGES, 5 FIGURES, 4 TABLES, 8 REFERENCES, MAY 1969

THE REACTIVITY EFFECT OF FUEL MOVEMENT IN SEVERAL COMPACT, HIGHLY FUELED U-233 DIOXIDE CORES HAS BEEN CALCULATED BY A COMPUTER PROGRAM. THE CORE CONFIGURATIONS INVESTIGATED SIMULATED THE BOWING OF FUEL RODS DUE TO RADIAL TEMPERATURE GRADIENTS. THE LARGE POSITIVE REACTIVITIES OBTAINED INDICATE THAT A REACTOR CORE DESIGN HAVING FUEL RODS FIRMLY SUPPORTED AT BOTH ENDS IS NOT DESIRABLE. CORES HAVING FUEL RODS RADIALY RESTRAINED BY SPACERS BUT FREE TO MOVE AXIALLY, THE REACTIVITY CHANGE, WHILE STILL POSITIVE, IS SMALLER AND OF THE ORDER OF THE NEGATIVE EFFECTS INTRODUCED BY AXIAL EXPANSION AND REDUCED COOLANT DENSITY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*FUEL ELEMENT BOWING + *FUEL EXPANSION COEFFICIENT + *THEORETICAL INVESTIGATION + REACTIVITY EFFECT, EXPANSION + TEMPERATURE REACTIVITY EFFECT + URANIUM DIOXIDE + URANIUM-233

6-28876 ALSO IN CATEGORY 17
REACTIVITY HANDBOOK
GULF GENERAL ATOMIC INC., SAN DIEGO, CALIFORNIA
GA-8679 +. 9 PAGES, 6 FIGURES, 1 TABLE, PAGE 3-11 OF QUARTERLY PROGRESS REPORT FOR THE PERIOD ENDING APRIL 30, 1968. 40-MW(E) PROTOTYPE HIGH-TEMPERATURE GAS-COOLED REACTOR POSTCONSTRUCTION RESEARCH AND DEVELOPMENT PROGRAM, MAY 30, 1968, DOCKET 5C-171, TYPE--HTGR, MFG--G.A., AE--BECHTEL

GGA DEVELOPED A HANDBOOK FOR HAND ANALYSIS OF THE REACTIVITY STATUS OF PEACH BOTTOM AT THE SITE. VARIABLES INCLUDE TEMP., FLOW, XE AND SM CHANGES FOR FIVE MODES OF OPERATION. SIX THREE-DIMENSIONAL FIGURES ARE GIVEN SHOWING REACTIVITY DIFFERENCES FROM INITIAL EQUILIBRIUM. HANDBOOK INCLUDES CURVES OF REACTIVITY CHANGE FROM CHANGES IN HELIUM INLET TEMP., PA-U233 CONCENTRATIONS, PROCTACTINIUM DECAY, AND BUILDUP EXPONENTIALS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

*MATHEMATICAL TREATMENT + *PROCEDURES AND MANUALS + *REACTIVITY EFFECT + FLOW THEORY AND EXPERIMENTS + FUEL BURNUP + PEACH BOTTOM 1 (HTGR) + R AND D PROGRAM + REACTIVITY EFFECT, ANOMALOUS + REACTOR PHYSICS + REACTOR, HTGR + REACTOR, POWER + SAMARIUM + TEMPERATURE REACTIVITY EFFECT + XENON

6-28913 ALSO IN CATEGORY 5
STANFORD GS + JOHNSON TW
DETERMINATION OF GAMMA-RAY HEATING IN A CRITICAL FACILITY BY THERMOLUMINESCENT DOSIMETRY

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-28913 *CONTINUED*
ARGONNE NATIONAL LAB., ILL.
ANL-7373 +. 45 PAGES, 24 FIGURES, 7 TABLES, 24 REFERENCES, FEB. 1968

BECAUSE OF GOOD SENSITIVITY, SMALL PROBE SIZE, AND RELATIVE EASE OF HANDLING, THERMOLUMINESCENT DOSIMETRY (TLD) PROVIDES A USEFUL METHOD FOR MEASURING GAMMA-RAY HEATING IN CRITICAL FACILITIES. MEASUREMENTS MADE DURING CRITICAL EXPERIMENTS FOR THE ARGONNE ADVANCED RESEARCH REACTOR ARE REPORTED. THE PHOSPHOR WAS CaF_2/Mn . REPRODUCIBILITY OF RELATIVE MEASUREMENTS WAS ABOUT 5-10%, WHICH WAS ADEQUATE. FOR ABSOLUTE MEASUREMENTS, THERE WERE ADDITIONAL UNCERTAINTIES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*DOSIMETRY, THERMOLUMINESCENCE + *HEAT GENERATION, INTERNAL + A4PR (RR) + CRITICALITY EXPERIMENT + FAST NEUTRON + GAMMA EMITTER + REACTOR, AEC OWNED + REACTOR, FLUX TRAP + REACTOR, RESEARCH + THERMAL NEUTRON

6-28938 ALSO IN CATEGORY 17
TESTS ON PH REACTIVITY EFFECT
CONSOLIDATED EDISON COMPANY OF NEW YORK
4 PAGES, LETTER TO P.A. MORRIS, DIVISION OF REACTOR LICENSING FROM W.C. BEATTIE, SEPTEMBER 26, 1968, DOCKET 50-3, TYPE--PWR, MFG--B+W, AE--CON ED

(SEPT. 28 LETTER TO ORL) - ORIGINAL TESTS WERE NOT PERFORMED ON JULY 67, DUE TO LOAD DEMAND AND APPROACHING REFUELING. REQUESTS PERMISSION TO PERFORM THIS SET OF TESTS BETWEEN NOV. 1, 68, AND FEB. 1, 69, AS OUTLINED IN CHANGE 28 OF JUNE 22, 67. (ORL LETTER, OCT. 9) - CHANGE 28 IS EXTENDED TO FEB. 1, 69, BECAUSE THE PROCEDURES ARE SUBSTANTIALLY THE SAME.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, 1717 H ST., WASHINGTON, D.C. 20545 (\$0.25 CENTS/COPY)

*PH REACTIVITY EFFECT + *TEST, PHYSICS + INDIAN POINT 1 (PWR) + POISON, SOLUBLE + REACTOR, PWR

6-28993
IN-PILE DOSIMETRY. TECHNICAL REPORTS SERIES NO. 46
INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA
STI/DOC/10/46 +. 107 PAGES, FIGURES, TABLES, REFERENCES, 1965

24 STATUS-OF-DOSIMETER REPORTS FOR VARIOUS COUNTRIES. REPORT OF A JULY 1964 MEETING.

*IN PILE EXPERIMENT + DOSIMETRY, GENERAL + FAST NEUTRON + GAMMA EMITTER + IAEA + REACTOR, RESEARCH + THERMAL NEUTRON

6-29094 ALSO IN CATEGORIES 8 AND 5
MCLAIN HA
POTENTIAL METAL-WATER REACTIONS IN LIGHT-WATER-COOLED POWER REACTORS
OAK RIDGE NATIONAL LAB., TENN.
ORNL-NSIC-23 +. 201 PAGES, FIGURES, TABLES, 206 REFERENCES, AUGUST 1968

A STATE-OF-THE-ART REVIEW OF THE ROLE OF CHEMICAL REACTIONS IN AN UNLIKELY EVENT OF A LIGHT-WATER POWER REACTOR ACCIDENT. THE STUDY CONCLUDED THAT THESE REACTIONS COULD BE ASSESSED REALISTICALLY ONLY BY CONSIDERING AN INTEGRAL MODEL OF THE ACCIDENT. COMPARED WITH THE SITUATION REGARDING THE DEFINITION AND THE MATHEMATICAL SIMULATION OF AN ACCIDENT, THE BASIC KINETICS OF THE CHEMICAL REACTIONS ARE WELL UNDERSTOOD. THERE ARE STILL SOME QUESTIONS ABOUT THE EFFECT OF LIMITED METAL-WATER REACTION ON POSSIBLE FUEL-PIN FRAGMENTATION IN LOSS-OF-COOLANT ACCIDENTS AND ABOUT THE DETONATION LIMITS OF HYDROGEN-AIR-STEAM MIXTURES, HOWEVER.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*AIR + *ALUMINUM + *CHEMICAL KINETICS + *CHEMICAL REACTION + *HYDROGEN + *METAL WATER REACTION + *STEAM + *STEEL, STAINLESS + *URANIUM DIOXIDE + *WATER, GENERAL + *ZIRCALOY + *ZIRCONIUM + ACCIDENT MODEL + ACCIDENT, CONTROL ROD EJECTION + ACCIDENT, LOSS OF COOLANT + BORON + BROWNS FERRY (BWR) + CLADDING + CORE MELTDOWN + DRESDEN 3 (BWR) + FUEL MELTDOWN + INDIAN POINT 2 (PWR) + LOFT (S-RR) + OCONEE 1, 2, AND 3 (PWR) + OXIDATION + OXYGEN + PALISADES POINT (PWR) + STOICHIOMETRY + TEMPERATURE TRANSIENT + TURKEY POINT 3 AND 4 (PWR)

6-29119
BALL GL + CLICKMAN AE + WEHMEYER DB + YEH CS
TWO-DIMENSIONAL HYPOTHETICAL ACCIDENT INVESTIGATION OF A MIXED-OXIDE CORE DESIGN FOR THE FAST TEST REACTOR
ATOMIC POWER DEVELOPMENT ASSOCIATES, INC.
APDA209 +. 31 PP., FIGURES, TABLES, REFERENCES, JUNE 1968

A TWO-DIMENSIONAL STUDY OF THE EFFECTS OF CORE GEOMETRY, FUEL ENRICHMENT ZONING, AND A CENTRAL CORE INHOMOGENEITY UPON THE VALUE OF THE ENERGY RELEASE DURING THE MAXIMUM HYPOTHETICAL ACCIDENT FOR THE REFERENCE DESIGN FAST TEST REACTOR (FTR) CORE - A MIXED-OXIDE CORE. RESULTS INDICATE THAT (1) THE USE OF SIMPLIFIED SPHERICAL GEOMETRY MAY LEAD TO UNDERPREDICTION OF

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-29119 *CONTINUED*

TRANSIENT ENERGY RELEASE BUT NOT TO AN IMPORTANT DEGREE RELATIVE TO OTHER UNCERTAINTIES, THAT
(2) THE EFFECT OF FUEL ENRICHMENT ZONING (COR A CENTRAL CORE INHOMOGENEITY) UPON TRANSIENT
ENERGY RELEASE IS SMALL.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*ACCIDENT, MAXIMUM CREDIBLE (MCA) + *THEORETICAL INVESTIGATION + ACCIDENT ANALYSIS + CORE MELTDOWN +
FFTF (TR) + REACTOR, FAST + REACTOR, TEST

6-29121

STACEY WM
SPACE-TIME REACTOR KINETICS DEVELOPMENT AT KAPL
GENERAL ELECTRIC COMPANY, SCHENECTADY, NEW YORK
KAPL-P-3425 +. APRIL 9, 1968

SURVEYS A DEVELOPMENT PROGRAM AT KAPL IN THE AREA OF SPACE-TIME REACTOR KINETICS. REVIEWS
MAJOR EFFORTS ON XENON SPATIAL TRANSIENT ANALYSIS AND SPACE-TIME FLUX SYNTHESIS, AS WELL AS
MORE MODEST STUDIES ON DEFINING NODAL COUPLING COEFFICIENTS AND ON THE INFLUENCE OF SPATIAL
EFFECTS ON THE KINETICS OF LOW SOURCE REACTOR STARTUPS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

COUPLED CORES + KAPL + REACTOR KINETICS + SPACE DEPENDENT DYNAMICS + THEORETICAL INVESTIGATION +
XENON OSCILLATION

6-29369

HOOVER RJ + RYDIN RA + STACEY WM
VERIFICATION OF A XENON SPATIAL STABILITY CRITERION
GENERAL ELECTRIC, KNOLLS ATOMIC POWER LAB
TRANS ANS 11(1) 227, JUNE 1968

A XENON SPATIAL-STABILITY CRITERION IS COMPARED WITH EXPERIENCE IN THE SHIPPINGPORT PWR AND TO
OTHER CALCULATIONS, USING THE SPRITE CODE (WHICH SOLVES FLUX AND XENON NUMERICALLY). GOOD
AGREEMENT FOUND.

*XENON OSCILLATION + REACTOR DYNAMICS + REACTOR STABILITY + REACTOR, PWR + SHIPPINGPORT (PWR) +
SPACE DEPENDENT DYNAMICS

6-29416

RENARD A + STIEVENART M
EVALUATION OF THE ENERGY RELEASE IN CASE OF A SEVERE ACCIDENT FOR A FAST REACTOR WITH IMPORTANT FEEDBACKS
CEA-DPA +. FIGURES, TABLES, 23 PAGES, SEPTEMBER 22, 1967, INTERNATIONAL CONFERENCE ON THE SAFETY OF FAST
REACTORS.

THE CODE PANIC WAS WRITTEN TO STUDY THE EFFECTS ASSOCIATED WITH A FAST REACTOR EXPLOSION DUE
TO A STEEP REACTIVITY INSERTION. THE CALCULATION METHOD IS DERIVED FROM THOSE OF BETHE-TAIT
AND NICHOLSON, ADAPTED TO TAKE INTO ACCOUNT AN IMPORTANT DOPPLER FEEDBACK AND AN AXIAL
DISASSEMBLY REACTIVITY FEEDBACK RATHER THAN A SPHERICAL RADIAL ONE.

ACCIDENT ANALYSIS + COMPUTER PROGRAM + DAMAGE + DESTRUCTIVE TRANSIENT + DYNAMICS, NONLINEAR +
EQUATION OF STATE + EXCURSION, LARGE + REACTOR DYNAMICS + REACTOR TRANSIENT

6-29417

INYUTIN EI + KARCHAVA GA + MATVEENKO VI + MOROZOV IG + OREKHOV YI + PLAKSIN EA + SERGEEV YA + SIDOROV
INVESTIGATION OF THE PHYSICAL CHARACTERISTICS OF A WATER-MODERATED WATER-COOLED REACTOR WITH BURNABLE
POISONS
ARGONNE NATIONAL LABORATORY
ANL-TRANS-637 +. 5 PAGES, JUNE 1968

DISCUSSES RESULTS FROM THE EXPERIMENTAL AND CALCULATIONAL DETERMINATION OF SOME PHYSICAL
CHARACTERISTICS OF A WATER MODERATED WATER COOLED REACTOR. MEASUREMENTS WERE MADE ON A ZERO
POWER ASSEMBLY AT 20-230 C. THE FOLLOWING ITEMS WERE INVESTIGATED - (1) COMPENSATING
CAPACITY OF THE SYSTEM OF RODS WITH BURNABLE POISONS AS A FUNCTION OF THEIR NUMBER AND
POSITION IN CORE, (2) DISTRIBUTION OF HEAT GENERATION IN THE ASSEMBLY UNIT CONTAINING THE
BURNABLE POISON, (3) TEMPERATURE COEFFICIENT OF ASSEMBLIES WHICH CONTAINED BLOCKED (GD AND
CD) AND UNBLOCKED (B) POISONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

CONTROL ROD CALIBRATION + CONTROL ROD WORTH + CRITICALITY EXPERIMENT + REACTIVITY COEFFICIENT +
TEMPERATURE COEFFICIENT

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-29569 ALSO IN CATEGORY 17
PEDERSEN K + MURPHY G
MEASUREMENT OF SHUTDOWN MARGIN
UNIVERSITY OF PUERTO RICO + INST. ELEC. ELECTRON. ENG.
TRANS. NUCL. SCI., NS-15, 46-56 (FEB. 1968)

MEASUREMENTS WERE MADE ON THE IOWA STATE UNIVERSITY UTR-10 REACTOR AT VARIOUS CONDITIONS RANGING FROM ALMOST CRITICAL TO FULLY SHUTDOWN. A ROD OSCILLATOR WAS OPERATED AT 10 CPS AND FLUCTUATION MEASURED BY A BF3 DETECTOR. THE SIGNAL WAS PASSED THROUGH A BAND-PASS FILTER AND WAS THEN CROSS-CORRELATED WITH A PURE SINE WAVE TO OBTAIN THE TRANSFER FUNCTION. A PLOT OF THE TRANSFER FUNCTION VS. THE MULTIPLICATION FACTOR WAS A SMOOTH FUNCTION FROM WHICH THE MULTIPLICATION FACTOR COULD BE FOUND WITH A CONFIDENCE OF $\pm 0.04\%$ NEAR CRITICAL AND WITH A CONFIDENCE OF $\pm 0.17\%$ IN THE FULLY SHUTDOWN CONDITION. REPRODUCIBILITY OF THE PLOT WAS EXCELLENT EVEN WHEN A DIFFERENT DETECTOR WAS USED.

*INSTRUMENT, SHUTDOWN REACTIVITY + *MEASUREMENT, REACTIVITY + *SHUTDOWN MARGIN + NOISE CROSS CORRELATION + OSCILLATOR, REACTIVITY + REACTOR, RESEARCH + TRANSFER FUNCTION

6-29621
RAAIJMAKERS WA
A DIGITAL NEUTRON TRANSPORT PROGRAMME FOR TREATING THE NON-UNIFORM BURN-UP OF BURNABLE POISON PARTICLES INCORPORATED IN REACTOR FUEL
EUROPEAN ATOMIC ENERGY COMMUNITY
EUR-3930 E +. 72 PAGES, 13 FIGURES, REFERENCES, 1968

THIS COMPUTER PROGRAM CALCULATES TWO-GROUP NEUTRON FLUXES AND ASSOCIATED BURNUP OF POISON ATOMS WITHIN A SPHERICAL BURNABLE POISON PARTICLE. SUBSEQUENTLY, A TIME-STEP IS TAKEN DURING WHICH SOME OF THE POISON AND FUEL ATOMS WILL BE CONSUMED AND, EVENTUALLY, FORMED WHILE ALSO THE TOTAL NEUTRON ABSORPTION RATE BY THE PARTICLE IS COMPUTED. DURING THE TIME-STEP THE NEUTRON FLUXES ARE ASSUMED NOT TO CHANGE. WITH THE NEW CONCENTRATIONS OF POISON AND FUEL ATOMS THE NEUTRON FLUXES FOR THE FOLLOWING TIME-STEP ARE DETERMINED. THIS PROCESS IS CONTINUED FOR A SPECIFIC NUMBER OF TIME-STEPS. THIS RESULT IS OF VALUE IN CORE OF CELL BURNUP STUDIES.

*COMPUTER PROGRAM + *POISON, BURNABLE + FUEL BURNUP + REACTOR PHYSICS + TRANSPORT THEORY

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-25226 ALSO IN CATEGORY 13
FISSION PRODUCT BEHAVIOR IN THE MSRE
OAK RIDGE NATIONAL LABORATORY
ORNL-4229 +. 11 PAGES, FIGURES, TABLES, REFERENCES, PAGES 5-15 FROM REACTOR CHEMISTRY DIVISION ANNUAL
PROGRESS REPORT FOR PERIOD ENDING DECEMBER 31, 1967, MARCH 1968

THE FATE OF FISSION PRODUCTS IN THE MSRE HAS BEEN REVEALED IN CONSIDERABLE DETAIL. THE MORE
NOBLE METALS LEAVE THE FUEL. AN APPRECIABLE PORTION OF THEM LEAVE VIA THE OFF-GAS, POSSIBLE
AS SMOKE CONSISTING OF METALLIC PARTICLES RATHER THAN AS VOLATILE FLUORIDES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*FISSION PRODUCT, VOLATILE + *FLUORIDE + *MOLTEN FUEL + *MSRE (RE) + *OPERATING EXPERIENCE +
*REACTOR, MOLTEN SALT + FISSION PRODUCT RELEASE, GENERAL + FISSION PRODUCT RETENTION +
FISSION PRODUCT TRANSPORT

7-25234 ALSO IN CATEGORY 13
JENKS GH + GRIESS JC
AQUEOUS REACTOR AND DESALINATION
OAK RIDGE NATIONAL LAB., TENN.
ORNL-4229 +. 4 PAGES, 3 TABLES, 6 REFERENCES, PAGES 71-74 OF REACTOR CHEMISTRY DIVISION ANNUAL PROGRESS
REPORT FOR PERIOD ENDING DECEMBER 31, 1967

HERMETICALLY SEALED PRESSURIZED- AND BOILING-WATER REACTORS - BRIEF REVIEW OF WATER CHEMISTRY
OF BOTH PRESSURIZED- AND BOILING-WATER REACTORS, PARTICULARLY AS IT RELATES TO THE NECESSITY
OF PURIFICATION SYSTEMS, AND CONSIDERATION OF MEANS WHEREBY SMALL REACTORS COULD OPERATE
SATISFACTORILY WITHOUT WATER CLEANUP OR SPECIAL GAS HANDLING EQUIPMENT. WATER CHEMISTRY IN A
SMALL STATE-OF-THE-ART PRESSURIZED-WATER REACTOR - PLANS AND SPECIFICATIONS FOR A LOW-POWER
PRESSURIZED-WATER REACTOR BASED ON STATE-OF-THE-ART INFORMATION ARE BEING PREPARED BY ORNL,
AND WE ARE PROVIDING SPECIFICATIONS AND RECOMMENDATIONS IN AREAS RELATED TO WATER TECHNOLOGY
IN THE REACTOR. WATER RADIOLYSIS IN THE HFIR - COMPARISON BETWEEN REPORTED AND PREDICTED
CONCENTRATIONS OF HYDROGEN IN THE HFIR MODERATOR LED TO THE TENTATIVE CONCLUSION THAT ITS
RADIOLYTIC BEHAVIOR IS NEAR THAT PREDICTED. ADDITIONAL ANALYSES OF THE RELATIVE AMOUNTS OF
OXYGEN AND HYDROGEN PEROXIDE WOULD BE REQUIRED FOR COMPLETE VERIFICATION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA., 22151,
\$3.00 COPY, \$0.65 MICROFICHE

CHEMICAL KINETICS + CHEMICAL PROPERTY + COOLANT CHEMISTRY + DESIGN CRITERIA + HFIR (FTR) + HYDROGEN +
IRRADIATION TESTING + OXYGEN + PROPERTY, PHYSICAL + RADIATION EFFECT + RADIOLYTIC GAS +
REACTOR, AEC OWNED + REACTOR, BWR + REACTOR, FAST + REACTOR, PULSED + REACTOR, PWR + REACTOR, WATER +
STEAM + WATER TREATMENT + WATER, GENERAL

7-25242
MALINAUSKAS AP + SILVERMAN MD
DIFFUSION PROCESSES-TRANSPORT PROPERTIES
OAK RIDGE NATIONAL LAB., TENN.
ORNL-4229 +. 2 PAGES, 10 REFERENCES, PAGE 115 AND 116 OF REACTOR CHEMISTRY DIVISION ANNUAL PROGRESS
REPORT FOR PERIOD ENDING DECEMBER 31, 1967

DIFFUSION STUDIES IN NOBLE GAS SYSTEMS - TESTS OF A PROPOSAL TO SUPPLEMENT DIRECTLY MEASURED
DIFFUSION COEFFICIENTS WITH VISCOSITY-DERIVED DATA, IN ORDER TO OBTAIN MEANINGFUL INFERENCES
REGARDING MOLECULAR INTERACTIONS, HAVE BEEN CONTINUED. THERMAL TRANSPIRATION - CURRENT
RESEARCH ON THE TRANSPIRATION PHENOMENON IS DIRECTED TOWARD AN ELUCIDATION OF THE
LOW-PRESSURE ANOMALY AND THE USE OF TRANSPIRATION DATA IN STUDIES OF INELASTIC COLLISION
PROCESSES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA
22151, \$3.00 COPY, \$0.65 MICROFICHE

*DIFFUSION + *DIFFUSION COEFFICIENT + *PROPERTY, PHYSICAL + *THERMAL PROPERTY + REACTOR, GCR +
THERMODYNAMICS + TRANSPORT PROPERTY

7-25243
OVERHOLSER LG
OXIDATION OF CARBONACEOUS MATERIALS BY WATER VAPOR
OAK RIDGE NATIONAL LAB., TENN.
ORNL-4229 +. 6 PAGES, 4 FIGURES, 1 TABLE, 7 REFERENCES, PAGE 119-124 OF REACTOR CHEMISTRY DIVISION ANNUAL
PROGRESS REPORT FOR PERIOD ENDING DECEMBER 31, 1967

REACTION OF BONDED COATED-PARTICLE FUEL COMPACTS WITH STEAM - RATES OF OXIDATION OF AND DAMAGE
TO BONDED COATED-PARTICLE FUEL COMPACTS WERE DETERMINED AT TEMPERATURES OF 1000 TO 1200 C
USING HELIUM-STEAM MIXTURES HAVING A STEAM PRESSURE OF 20 TO 150 TORRS. REACTION OF
PYROLYTIC-CARBON-COATED FUEL PARTICLES WITH WATER VAPOR - RATES OF OXIDATION AND INCIDENCE OF
COATING FAILURES WERE MEASURED FOR VARIOUS BATCHES OF COATED FUEL PARTICLES AT 1100 AND 1200
USING A HELIUM-WATER-VAPOR MIXTURE CONTAINING 1000 PPM OF WATER VAPOR. REACTION OF

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-25243 *CONTINUED*

NEEDLE-COKE GRAPHITE WITH STEAM - OXIDATION RATES OF VIRGIN AND BARIUM- IMPREGNATED
NEEDLE-COKE GRAPHITE CYLINDERS WERE DETERMINED AT TEMPERATURES OF 1100 TO 1400 C BY EXPOSURE
TO A HELIUM-STEAM MIXTURE HAVING A STEAM PRESSURE OF 20 TORRS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA., 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*COATED PARTICLE + *FUEL INTEGRITY + *OXIDATION + *PYROLYTIC + *STEAM + CARBON + CHEMICAL PROPERTY +
CHEMICAL REACTION + GRAPHITE + HIGH TEMPERATURE + REACTOR, GCR + URANIUM DIOXIDE + WATER, GENERAL

7-25244

SISMAN O + MORGAN JG

IRRADIATION BEHAVIOR OF HIGH-TEMPERATURE FUEL MATERIALS (PART I)

OAK RIDGE NATIONAL LAB., TENN.

ORNL-4229 +. 6 PAGES, 2 FIGURES, 3 TABLES, 11 REFERENCES, PAGE 125-130 OF REACTOR CHEMISTRY DIVISION
ANNUAL PROGRESS REPORT FOR PERIOD ENDING DECEMBER 31, 1967

IN-PILE TESTS ON PYROLYTIC-CARBON-COATED FUEL PARTICLES - FISSION-GAS RELEASE RATES FROM
PYROLYTIC-CARBON-COATED URANIUM OXIDE PARTICLES, COATED FROM PROPYLENE AT LOW TEMPERATURE AND
HIGH DEPOSITION RATE AND MEASURED DURING IRRADIATION, SHOWED IMPROVED RADIATION STABILITY
OVER COATINGS DEPOSITED FROM METHANE AT HIGH TEMPERATURE AND LOW DEPOSITION RATE. IN-PILE
TESTS ON SILICON-CARBIDE-COATED FUEL PARTICLES - IRRADIATION TESTS AT HIGH TEMPERATURE SHOWED
THAT COATED PARTICLES WITH A SILICON CARBIDE LAYER APPLIED BETWEEN THE POROUS CARBON BUFFER
AND THE DENSE ISOTROPIC LAYER MAY BE OPERATED TO HIGH BURNUP AT 1300 C WITH LOW GAS RELEASE
AND GOOD COATING STABILITY. FISSION PRODUCT RELEASE BY POSTIRRADIATION ANNEALING OF COATED
PARTICLES - POSTIRRADIATION FISSION PRODUCT RELEASE FROM COATED FUEL PARTICLES SHOWED NO
EFFECT OF PYROLYTIC-CARBON-COATING VARIABLES ON FISSION PRODUCT RELEASE, BUT DEFINITE EFFECTS
OF A SILICON CARBIDE CARBIDE BARRIER LAYER WERE FOUND, AS WELL AS DIFFERENCES IN FISSION
PRODUCT RELEASE BETWEEN UC2 AND UO2.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA., 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*CARBIDE + *COATED PARTICLE + *FISSION PRODUCT RELEASE, GENERAL + *FISSION PRODUCT RETENTION +
*FUEL INTEGRITY + *IRRADIATION TESTING + *PYROLYTIC + CARBON + FISSION PRODUCT TRANSPORT + GRAPHITE +
IN PILE EXPERIMENT + RADIATION DAMAGE + RADIATION EFFECT + REACTOR, GCR + SILICON + URANIUM CARBIDE +
URANIUM DIOXIDE

7-25245

BAUMANN CD + REAGAN PE

IRRADIATION BEHAVIOR OF HIGH-TEMPERATURE FUEL MATERIALS (PART II)

OAK RIDGE NATIONAL LAB., TENN.

ORNL-4229 +. 6 PAGES, 3 FIGURES, 1 TABLE, 14 REFERENCES, PAGE 130-135 OF REACTOR CHEMISTRY DIVISION
ANNUAL PROGRESS REPORT FOR PERIOD ENDING DECEMBER 31, 1967

MECHANISM OF FISSION-GAS RELEASE FROM FUELED PYROCARBON-COATED MICROSPHERES - THE MECHANISM OF
FISSION GAS RELEASE DURING IRRADIATION FROM INTACT PYROLYTIC-CARBON-COATED FUEL PARTICLES IS
SHOWN TO BE SOLID-STATE DIFFUSION OF FISSION PRODUCTS ORIGINATING IN THE SLIGHTLY
CONTAMINATED COATINGS. RELEASE OF IODINE FROM BROKEN COATED PARTICLES (IN PILE AND OUT OF
PILE) - THE RELEASE OF FISSION PRODUCT IODINE FROM COATED FUEL PARTICLES WITH FRACTURED
COATINGS WAS DETERMINED BY IN-PILE ANALYSES OF THE XENON DAUGHTER, BY POSTIRRADIATION
ANALYSES OF SEPARATED COATINGS AND CORES, AND BY POSTIRRADIATION ANNEALING OF BROKEN COATED
PARTICLES. POSTIRRADIATION STUDIES OF HIGH-BURNUP COATED PARTICLES - WE HAVE DEMONSTRATED
THAT OR-HB-23 (TRIPLEX) COATED PARTICLES ARE CAPABLE OF OPERATING AT 1400 C TO ABOUT 45%
BURNUP WITH NO INDICATIONS OF POTENTIAL FAILURES AND THAT GA-320 (BISO) COATED PARTICLES CAN
BE OPERATED AT THE SAME TEMPERATURE AND BURNUP LEVELS WITH ONLY VERY SLIGHT LOCALIZED INNER
COATING ATTACK.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA., 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*COATED PARTICLE + *FISSION PRODUCT RELEASE, GENERAL + *FISSION PRODUCT RETENTION + *FUEL INTEGRITY +
*IN PILE EXPERIMENT + *OUT OF PILE LOOPS AND EXPERIMENTS + *PYROLYTIC + CARBIDE + CARBON +
FISSION PRODUCT TRANSPORT + GRAPHITE + IRRADIATION TESTING + RADIATION DAMAGE + RADIATION EFFECT +
REACTOR, GCR + SILICON + URANIUM CARBIDE + URANIUM DIOXIDE

7-25246

CUNEO DR + ROBERTSON HE + LONG EL + CONLIN JA

IRRADIATION BEHAVIOR OF HIGH-TEMPERATURE FUEL MATERIALS (PART III)

OAK RIDGE NATIONAL LAB., TENN.

ORNL-4229 +. 7 PAGES, 3 FIGURES, 1 TABLE, 20 REFERENCES, PAGE 135-141 OF REACTOR CHEMISTRY DIVISION
ANNUAL PROGRESS REPORT FOR PERIOD ENDING DECEMBER 31, 1967

RADIATION DAMAGE IN FAST GAS-COOLED REACTOR FUELS - THE RESULTS OF IRRADIATION OF SEVERAL
EXPERIMENTAL FUEL ASSEMBLIES HAVE SHOWN SOME SERIOUS PROBLEM AREAS. FISSION-GAS RELEASE
DURING FISSIONING OF UO2 - EXPERIMENTS WITH FINE-GRAIN UO2 AT 1700 C HAVE SHOWN INCREASED GAS
RELEASE CAUSED BY GRAIN GROWTH, WHICH WAS NOT OBSERVED WITH SINGLE-CRYSTAL SPECIMENS,
HOWEVER, THE GAS RELEASE ABOVE 1600 C FROM THE SINGLE CRYSTAL WAS BY SHORT BURSTS, PRESUMABLY
FROM BUBBLES OR MICROCRACKS. IN-PILE THERMAL CONDUCTIVITY OF URANIUM DIOXIDE - THE THEORY
HAS BEEN DEVELOPED FOR THE CALCULATION OF IN-PILE THERMAL CONDUCTIVITY OF FUEL MATERIAL FROM

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-25246 *CONTINUED*

PULSED EXPERIMENTS, AND PRELIMINARY RESULTS AT ABOUT 750 C GAVE 0.006 CAL/CM-SEC-DEG C FOR FINE-GRAIN, HIGH-DENSITY UO₂.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA., 22151, \$3.00 COPY, \$0.65 MICROFICHE

*FISSION PRODUCT RELEASE, GENERAL + *FISSION PRODUCT RETENTION + *IN PILE EXPERIMENT + *OUT OF PILE LOOPS AND EXPERIMENTS + *THERMAL PROPERTY + *URANIUM DIOXIDE + COATED PARTICLE + FISSON PRODUCT TRANSPORT + IRRADIATION TESTING + RADIATION DAMAGE + RADIATION EFFECT + REACTOR, SCR

7-25247

FRIED SH + MILLER CE + ROBERTS BF + THOMAS OW
NUCLEAR SAFETY-EXPERIMENTS IN MAJOR FACILITIES
OAK RIDGE NATIONAL LAB., TENN.

ORNL-4229 +. 7 PAGES, 3 FIGURES, 3 TABLES, 9 REFERENCES, PAGE 149-155 OF REACTOR CHEMISTRY DIVISION ANNUAL PROGRESS REPORT FOR PERIOD ENDING DECEMBER 31, 1967

FISSION PRODUCT BEHAVIOR DURING IN-PILE MELTING OF REACTOR FUELS - THE RESULTS OF RECENT EXPERIMENTS REVEALED THAT (1) RELATIVELY LARGE AMOUNTS OF CESIUM AND IODINE WERE RELEASED, (2) APPROXIMATELY 3% OF THE TOTAL IODINE RELEASED WAS IN AN ORGANIC FORM, AND (3) THE NONORGANIC IODINE WHICH REACHED THE AGING CHAMBER WAS DESORBED FROM THE HOT CHAMBER WALLS AND CONVERTED INTO A MORE PENETRATING SPECIES. IN-PILE BEHAVIOR OF HTGR FUEL ELEMENTS IN MIXTURES OF STEAM AND HELIUM - THE FUEL PARTICLES OF THE MODEL HTGR ELEMENT HAVE BEEN SHOWN TO BE WELL PROTECTED AGAINST OXIDATION BY STEAM AT ABOUT 1100 C BY THEIR BINDER AND SURROUNDING STRUCTURAL CARBON. FISSON PRODUCTS FROM FUELS UNDER REACTOR-TRANSIENT CONDITIONS - STUDIES OF FISSON PRODUCT RELEASE AND TRANSPORT FROM METAL-CLAD UO₂ FUEL TRANSIENT-MELTED UNDER WATER INCLUDE TESTS OF THE EFFECT OF PRESSURE AND RATE OF STEAM RELEASE. BEHAVIOR OF FISSON PRODUCT SIMULANTS IN THE CONTAINMENT RESEARCH INSTALLATION (CRI) TANK - COMPARISON OF THE BEHAVIOR OF REAL AND SIMULATED FISSON PRODUCTS HAS THUS FAR REVEALED NO SIGNIFICANT DIFFERENCE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA., 22151, \$3.00 COPY, \$0.65 MICROFICHE

*FISSION PRODUCT RELEASE, GENERAL + *FISSION PRODUCT RETENTION + *FISSION PRODUCT, IODINE + *FUEL MELTDOWN + *IN PILE EXPERIMENT + *IRRADIATION TESTING + *OUT OF PILE LOOPS AND EXPERIMENTS + AEROSOL PRODUCTION + CLADDING + FISSON PRODUCT TRANSPORT + FUEL BURNUP + FUEL ELEMENT + HELIUM + IODINE + REACTOR TRANSIENT + REACTOR, HTGR + SIMULATION + STEAM + URANIUM DIOXIDE

7-25248

PARKER GW + BUCHHOLZ H + DAVIS RJ
NUCLEAR SAFETY-DEVELOPMENT OF DEVICES FOR SEPARATION AND MEASUREMENT OF PARTICLES AND FISSON PRODUCTS
OAK RIDGE NATIONAL LAB., TENN.

ORNL-4229 +. 6 PAGES, 2 FIGURES, 1 TABLE, 9 REFERENCES, PAGE 156-162 OF REACTOR CHEMISTRY DIVISION ANNUAL PROGRESS REPORT FOR PERIOD ENDING DECEMBER 31, 1967

CLASSIFICATION OF SUBMICRON PARTICLES BY A LOW-PRESSURE IMPACTOR - A LOW-PRESSURE CASCADE IMPACTOR HAS BEEN DEVELOPED. IT IS A SIMPLE DEVICE WHICH SEPARATES, INTO SEVEN SEPARATE SIZE INCREMENTS, AEROSOL PARTICLES WHICH ARE IN THE SIZE RANGE 0.01 TO 2 MICRONS IN DIAMETER. ATMOSPHERIC PRESSURE SAMPLERS FOR SIZING PARTICULATE AEROSOLS - BOTH THE FIBROUS FILTER ANALYZER AND A MULTISTAGE INERTIAL IMPACTOR SAMPLER, OF IMPROVED DESIGN, ARE BEING DEVELOPED CONCURRENTLY FOR APPLICATION AS SIMPLE FIELD DEVICES FOR SAMPLING AND SIZING PARTICULATE AEROSOLS AT ATMOSPHERIC PRESSURE. IODINE CHARACTERIZATION SAMPLERS - CONVENTIONAL MAY-PACK SAMPLERS WERE FOUND TO BE INADEQUATE FOR SEPARATING ELEMENTAL IODINE FROM PARTICLES OR PARTICULATE IODINE, A NEW SAMPLER EMPLOYING A SILVER-PLATED HONEYCOMB TO ACCOMPLISH THIS SEPARATION IS BEING DEVELOPED. FISSON PRODUCT DEPOSITION CHARACTERISTICS IN THERMAL GRADIENTS - A THERMODYNAMIC ARGUMENT IS PRESENTED TO DESCRIBE THE DEPOSITION CHARACTERISTICS OF FISSON PRODUCTS IN THERMAL GRADIENTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA., 22151, \$3.00 COPY, \$0.65 MICROFICHE

*AEROSOL + *AEROSOL PROPERTIES + *ANALYTICAL TECHNIQUE, CALIBRATION + *FILTER, CASCADE IMPACTOR + *FISSION PRODUCT, IODINE + *PARTICLE SIZE + *PARTICLE SIZE DISTRIBUTION + DEPOSITION + FISSON PRODUCT TRANSPORT + IODINE + PROPERTY, PHYSICAL + SAMPLING + TEMPERATURE GRADIENT + THERMAL PROPERTY + THERMODYNAMICS

7-25250

DAVIS RJ + SOLDANO BA + WARD WT
NUCLEAR SAFETY-SUPPORTING LABORATORY AND THEORETICAL STUDIES (PART I)
OAK RIDGE NATIONAL LAB., TENN.

ORNL-4229 +. 6 PAGES, 1 FIGURE, 2 TABLES, 11 REFERENCES, PAGE 162-167 OF REACTOR CHEMISTRY DIVISION ANNUAL PROGRESS REPORT FOR PERIOD ENDING DECEMBER 31, 1967

MECHANISMS OF SORPTION OF MOLECULAR IODINE - A DETAILED STUDY OF THE PERTINENT LITERATURE SUGGESTED SIX CLASSES OF REACTIONS FOR SORPTION OF IODINE IN A REACTOR CONTAINMENT VESSEL. AN EQUATION WAS DEVELOPED FOR EACH TYPE OF REACTION SHOWING THE IODINE CONCENTRATION IN THE VESSEL AS A FUNCTION OF TIME FOR IODINE REMOVAL BY THAT PARTICULAR REACTION. UPTAKE OF METHYL IODIDE FROM WIND TUNNEL GASES BY A SUSPENDED DROP OF WATER - THE USE OF ADDITIVES CAN MARKEDLY IMPROVE THE RATE OF MASS TRANSFER OF METHYL IODIDE FROM AIR TO LIQUID SPRAYS.

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-25250 *CONTINUED*

REMOVAL OF MOLECULAR FORMS OF RADIOIODINE FROM MOIST AIR SYSTEMS - ADDITIONAL TYPES OF IODIZED CHARCOAL HAVE BEEN FOUND EFFECTIVE FOR TRAPPING RADIOACTIVE METHYL IODIDE FROM FLOWING HUMID AIR AND STEAM-AIR. ALSO, A NUMBER OF THE IODIZED CHARCOALS HAVE BEEN TESTED AND FOUND ADEQUATE FOR RETENTION OF ELEMENTAL RADIOIODINE AT 25 C. REACTIONS OF IODINE VAPOR IN CONTAINMENT SYSTEMS - BOTH CALCULATIONS AND EXPERIMENTS HAVE BEEN USED TO DEMONSTRATE THAT ORGANIC IODIDES ARE FORMED BY THE REACTION OF IODINE WITH PAINTED SURFACES AND ALSO BY THE GAS-PHASE REACTION OF IODINE WITH TRACE ORGANIC MATERIALS. APPLICATION OF IODIZED CHARCOALS TO AIR CLEANING SYSTEMS - THE EFFECTS ON IODIZED CHARCOAL OF WEATHERING AND OF ELEVATED TEMPERATURE (WHICH MAY CAUSE LOSS OF IMPREGNANT) ARE UNDER INVESTIGATION. THE RESULTS OBTAINED SHOW THAT THESE EFFECTS ARE SUFFICIENTLY DELETERIOUS THAT PROVISION FOR THEIR MITIGATION SHOULD BE INCLUDED IN DESIGNING REACTOR CONTAINMENT SYSTEMS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA., 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*ADSORPTION SURFACE + *CHARCOAL + *FISSION PRODUCT, IODINE + *HUMIDITY + *ORGANIC IODIDE +
*SURFACE, PAINTED + ADSORPTION + AIR CLEANING + CHARCOAL ADSORBER + CONTAINMENT, GENERAL + DEPOSITION +
FISSION PRODUCT RETENTION + IODINE + SORPTION + SURFACE CONTAMINATION

7-25251

MALINAUSKAS AP
NUCLEAR SAFETY-SUPPORTING LABORATORY AND THEORETICAL STUDIES (PART III)
OAK RIDGE NATIONAL LAB., TENN.
ORNL-4229 +. 8 PAGES, 5 FIGURES, 20 REFERENCES, PAGE 167-174 OF REACTOR CHEMISTRY DIVISION ANNUAL
PROGRESS REPORT FOR PERIOD ENDING DECEMBER 31, 1967

EFFECT OF WATER VAPOR ON THE VOLATILITY OF FISSION PRODUCT OXIDES. TELLURIUM DIOXIDE - EXPERIMENTAL MEASUREMENTS AT 955 K INDICATE A SLIGHTLY WEAKER DEPENDENCE OF THE VOLATILITY OF TEO-2 ON WATER VAPOR PRESSURE THAN THAT REPORTED BY PREVIOUS WORKERS, BUT THE REPORTED LINEAR DEPENDENCE HAS BEEN REAFFIRMED. CHEMICAL EQUILIBRIA OF FISSION PRODUCT-FUEL MIXTURES (GAS PHASE COMPOSITION OF THE URANIUM-OXYGEN-STRONTIUM SYSTEM IN THE PRESENCE OF THE CONDENSED PHASE) - THE RESULTS OF MULTICOMPONENT CHEMICAL EQUILIBRIUM CALCULATIONS FOR UO₂, UO₃, AND UO CONCENTRATIONS IN THE VAPOR PHASE ABOVE SOLID UO₂ WERE IN GOOD AGREEMENT WITH EXPERIMENTAL DATA, AND THE CALCULATION TECHNIQUES WERE EXTENDED TO INCLUDE THE U-O-SR SYSTEM. CALCULATION OF THE AMOUNT OF VOLATILE RADIOACTIVITY IN FUEL ROD VOID SPACES - THE D-PRIME (EMPIRICAL) METHOD - THE D-PRIME (EMPIRICAL DIFFUSION) METHOD HAS BEEN DEVELOPED TO CALCULATE THE AMOUNTS OF STABLE AND RADIOACTIVE FISSION GASES IN FUEL ROD VOID SPACES THAT ARE AVAILABLE FOR PROMPT RELEASE AS A CONSEQUENCE OF A LOSS-OF-COOLANT ACCIDENT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA., 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*FISSION PRODUCT, VOLATILE + *STRONTIUM + *TELLURIUM + *URANIUM + *VAPOR, VAPOR PRESSURE +
EQUATION OF STATE + FISSION PRODUCT TRANSPORT + HUMIDITY + OXIDE + WATER VAPOR

7-25252

USBORNE MF + PARKER CW
NUCLEAR SAFETY - SUPPORTING LABORATORY AND THEORETICAL STUDIES (PART III)
OAK RIDGE NATIONAL LAB., TENN.
ORNL-4229 +. 6 PAGES, 1 FIGURE, 3 TABLES, 17 REFERENCES, PAGE 174-179 OF REACTOR CHEMISTRY DIVISION
ANNUAL PROGRESS REPORT FOR PERIOD ENDING DECEMBER 31, 1967

PROMPT RELEASE OF FISSION PRODUCTS FROM HIGHLY RATED ZIRCALOY-CLAD UO₂ FUEL - PRELIMINARY STUDIES OF THE PROMPT RELEASE OF IMPLANTED TRACER RADIOIODINE FROM RUPTURED ZIRCALOY FUEL CAPSULES SHOW THAT MORE THAN 50% OF THE AVAILABLE IODINE ESCAPED, FURTHER EXPERIMENTS WILL INVESTIGATE FISSION PRODUCT RELEASE FROM FUEL CAPSULES IRRADIATED AT HIGH HEAT RATINGS. DEVELOPMENT OF FILTRATION TECHNOLOGY - THIS PROGRAM IS BEING CONDUCTED TO STUDY THE EFFECT OF REACTOR ACCIDENT ENVIRONMENTS ON THE BEHAVIOR OF SIMULATED ACCIDENT AEROSOLS AND ON THE PERFORMANCE OF HIGH-EFFICIENCY FILTRATION MEDIA, PREPARATIONS ARE BEING MADE TO STUDY THE COAGULATION OF AN AEROSOL BOTH ON A THEORETICAL AND AN EXPERIMENTAL BASIS. IGNITION OF CHARCOAL ADSORBERS - THE IGNITION OF CHARCOAL IS BEING STUDIED IN THE LABORATORY AND IN-PILF TO DETERMINE THE INFLUENCE OF FISSION PRODUCTS AND IRRADIATION, AN EQUATION HAS BEEN DEVELOPED TO DEFINE IGNITION TEMPERATURE ANALYTICALLY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA., 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*AEROSOL PRODUCTION + *CHARCOAL + *CHARCOAL ADSORBER + *IGNITION + *IGNITION TEMPERATURE + *SIMULATION +
AEROSOL PROPERTIES + CHARCOAL + CLADDING + FILTER + FILTER EFFICIENCY + FILTER, HIGH EFFICIENCY + FIRE +
FISSION PRODUCT RELEASE, GENERAL + FUEL ELEMENT + FUEL MELTDOWN + OXIDATION + URANIUM DIOXIDE + ZIRCONIUM

7-25253

ALSO IN CATEGORY 4
PARKINSON WW + KIRKLAND WK
EFFECTS OF RADIATION ON ORGANIC MATERIALS
OAK RIDGE NATIONAL LAB., TENN.
ORNL-4229 +. 5 PAGES, 2 FIGURES, 1 TABLE, 9 REFERENCES, PAGE 183-188 OF REACTOR CHEMISTRY DIVISION ANNUAL
PROGRESS REPORT FOR PERIOD ENDING DECEMBER 31, 1967

EFFECT OF RADIATION ON POLYMERS - THE TENSILE STRENGTH AND ELONGATION AT BREAK OF THIN FILM
POLYIMIDE IRRADIATED IN AIR WERE OBSERVED TO BE REDUCED DRASTICALLY AT A RADIATION DOSE OF 3

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-25253 *CONTINUED*

X 10(9TH) RADS, THIS VALUE IS AN ORDER OF MAGNITUDE LOWER THAN FOR IRRADIATION IN VACUUM. RADIATION-INDUCED REACTIONS OF HYDROCARBONS TEN ALKYLNAPHTHALENES HAVE BEEN IDENTIFIED AS PRODUCTS IN GAMMA-IRRADIATED SOLUTIONS OF NAPHTHALENE IN HEXANE, AND A MECHANISM ACCOUNTING FOR THEIR FORMATION IS PROPOSED. ADDITION REACTIONS OF FURAN DERIVATIVES - SOLUTIONS OF CYCLOHEXANE IN TETRAHYDROFURAN HAVE BEEN IRRADIATED AND MOST OF THE GASEOUS, LOW-BOILING, AND HIGH-BOILING PRODUCTS IDENTIFIED. A MECHANISM IS PROPOSED FOR THEIR FORMATION. DEVELOPMENT OF RADIATION-RESISTANT INSULATORS - PRE- AND POSTIRRADIATION ELECTRICAL PROPERTY MEASUREMENTS ON PROSPECTIVE DOSIMETER INSULATING MATERIALS HAVE SEVERELY LIMITED THE POLYMERS TO BE STUDIED IN DETAIL DURING THE LATER STAGES OF THE INSULATION IMPROVEMENT PROGRAM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA., 22151, \$3.00 COPY, \$0.65 MICROFICHE

*IRRADIATION TESTING + *PLASTICS + *RADIATION DAMAGE + *RADIATION EFFECT + PROPERTY, PHYSICAL + TENSILE PROPERTY

7-25254 ALSO IN CATEGORY 4

SAVOLAINEN JE + COMPERE EL

STUDY OF UNCLAD-METAL-FUELED FAST BREEDER

OAK RIDGE NATIONAL LAB., TENN.

ORNL-4229 +. 2 PAGES, 1 REFERENCE, PAGE 188-189 OF REACTOR CHEMISTRY DIVISION ANNUAL PROGRESS REPORT FOR PERIOD ENDING DECEMBER 31, 1967

A SODIUM-COOLED FAST BREEDER REACTOR WITH UNCLAD METAL FUEL SHOWS PROMISE AS A POWER AND HEAT SOURCE, ESPECIALLY FOR DESALINATION. ITS FEASIBILITY DEPENDS ON THE OXYGEN CONTENT IN THE SODIUM, WHICH IF UNCONTROLLED COULD CAUSE EXCESSIVE CORROSION OF THE FUEL.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA., 22151, \$3.00 COPY, \$0.65 MICROFICHE

*CORROSION + *FUEL INTEGRITY + *METAL, LIQUID + *OXYGEN + *SODIUM + *TESTING + CONTAMINATION + DESALINATION + REACTOR, BREEDER + REACTOR, FAST + REACTOR, LMCR + THERMAL PROPERTY

7-27520

STANLEY ML

FISSION COUPLE CRYOGENIC APPLICATIONS FEASIBILITY STUDY

PHILLIPS PETROLEUM COMPANY

IDO-17268 +. 40 PAGES, 14 FIGURES, 2 TABLES, 24 REFERENCES, JUNE 1968

THE PROBLEM OF FISSION COUPLE APPLICATION AT CRYOGENIC TEMPERATURES IS INVESTIGATED WITH CONSIDERATION GIVEN TO HEAT GENERATION PER FISSION, FISSION SIZE, GAMMA COMPENSATION, BURN UP, RADIATION HAZARD, HEAT LOSSES, AND SIGNAL OUTPUT AT VARIOUS NEUTRON FLUX LEVELS. MODELS ARE DEVELOPED USING SIMPLE ONE-DIMENSIONAL HEAT TRANSFER THEORY, AND MAXIMUM SIGNAL OUTPUTS ARE CALCULATED AS A FUNCTION OF NEUTRON FLUX LEVELS. THE VARIATION IN THERMAL CONDUCTIVITY WITH TEMPERATURE IS INCLUDED IN THE ANALYSIS. THE CONCLUSION IS REACHED THAT FISSION COUPLES ARE APPLICABLE AT CRYOGENIC TEMPERATURES WHEN HEAT LOSS IS A MAJOR PART OF THEIR DESIGN CRITERIA.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*CRYOGENICS + *FLUX DISTRIBUTION + *HEAT TRANSFER + *INSTRUMENT, NUCLEAR + *THERMAL NEUTRON + *THERMAL PROPERTY + ANALYTICAL TECHNIQUE, CALIBRATION + FISSION RECOIL + FLUX, INTEGRATED + MODEL TESTING + NEUTRON INTERACTION

7-27521

HILTON DA

THE RELEASE OF KR-85 FROM IRRADIATION URANIUM DURING OXIDATION IN CO₂ BETWEEN 500 AND 700 C

CENTRAL ELECTRICITY GENERATING BOARD, BERKELEY, ENGLAND

RD/B/N-10C8 +. 16 PAGES, FEBRUARY 1968

THE RELEASE OF KR-85 DURING THE OXIDATION OF IRRADIATED REACTOR GRADE URANIUM IN CARBON DIOXIDE HAS BEEN STUDIED IN THE TEMPERATURE RANGE 500-700 C. IN THE INITIAL PARABOLIC STAGE OF OXIDATION THE RATE OF RELEASE IS ALSO PARABOLIC OVER THE TEMPERATURE RANGE 500-625 C AND BOTH PROCESSES HAVE THE SAME ACTIVATION ENERGY. OVER LONGER PERIODS OF OXIDATION KR IS RELEASED AS A RESULT OF OXIDE CRACKING. THE ACTIVITY RELEASED IS GENERALLY PROPORTIONAL TO THE WEIGHT GAIN AND THIS IS PROBABLY DUE TO THE RATE OF CRACK PROPAGATION BEING EQUAL TO THE RATE OF OXIDE GROWTH AT THE METAL-OXIDE INTERFACE. PARTIAL OXIDATION IN THE BETA-PHASE RESULTS IN THE ADDITIONAL RELEASE OF KR DURING COOLING DUE TO DISRUPTION OF THE OXIDE AS A CONSEQUENCE OF THE BETA-ALPHA PHASE CHANGE.

AVAILABILITY - USAEC DEPOSITORY LIBRARIES IN THE U.S. AND OVERSEAS

*CARBON DIOXIDE + *FISSION GAS RELEASE + *METAL + *OXIDATION + *URANIUM + KRYPTON + NOBLE GAS + THERMAL PROPERTY

7-27522

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-27522 *CONTINUED*
BENNETT RL + HINDS WH + ADAMS RE
DEVELOPMENT OF IODINE CHARACTERIZATION SAMPLER FOR APPLICATION IN HUMID ENVIRONMENTS
OAK RIDGE NATIONAL LAB., TENN.
ORNL-TM-2071 +. 43 PAGES, 9 FIGURES, 11 TABLES, 7 REFERENCES, MAY 1968

A MAJOR PROBLEM IN THE APPLICATION OF THE MAY-PACK IODINE SAMPLER HAS BEEN THE DIFFICULTY IN DEFINING THE PROPER SEQUENCE OF MATERIALS THAT WILL REPRODUCIBLY SEPARATE THE PARTICULATE IODINE FROM ELEMENTAL IODINE. AN IMPROVED IODINE SAMPLER HAS BEEN DEvised. THIS DEVICE CONTAINS A SILVER-PLATED ALUMINUM HONEYCOMB INLET SECTION AS THE PARTICULATE IODINE-ELEMENTAL IODINE SEPARATOR. AS THE IODINE PASSES THROUGH THE CHANNELS OF THE HONEYCOMB IT IS REMOVED AS A CONSEQUENCE OF ITS GREATER DIFFUSIVITY, WHILE THE LARGER AEROSOL PARTICLES, WITH MUCH SMALLER DIFFUSION COEFFICIENTS, PASS THROUGH TO THE HIGH-EFFICIENCY FILTER SECTION. LESS-REACTIVE IODIDES, SUCH AS METHYL IODIDE, PASS THROUGH BOTH SECTIONS AND ARE ADSORBED IN AN IMPREGNATED CHARCOAL BED. TEST DATA TO SUPPORT THIS IODINE-SAMPLING CONCEPT ARE PRESENTED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

*ANALYTICAL TECHNIQUE, CALIBRATION + *IODINE + *PARTICULATE + *SAMPLING + AEROSOL + DEPOSITION + FISSION PRODUCT, IODINE + ORGANIC IODIDE + TUBING

7-27528
STANLEY ML
FISSION COUPLE CRYOGENIC APPLICATIONS FEASIBILITY STUDY
PHILLIPS PETROLEUM COMPANY
IDO-17268 +. 40 PAGES, 14 FIGURES, 2 TABLES, 24 REFERENCES, JUNE 1968

THE PROBLEM OF FISSION COUPLE APPLICATION AT CRYOGENIC TEMPERATURES IS INVESTIGATED WITH CONSIDERATION GIVEN TO HEAT GENERATION PER FISSION, FISSION SIZE, GAMMA COMPENSATION, BURN UP, RADIATION HAZARD, HEAT LOSSES, AND SIGNAL OUTPUT AT VARIOUS NEUTRON FLUX LEVELS. MODELS ARE DEVELOPED USING SIMPLE ONE-DIMENSIONAL HEAT TRANSFER THEORY, AND MAXIMUM SIGNAL OUTPUTS ARE CALCULATED AS A FUNCTION OF NEUTRON FLUX LEVELS. THE VARIATION IN THERMAL CONDUCTIVITY WITH TEMPERATURE IS INCLUDED IN THE ANALYSIS. THE CONCLUSION IS REACHED THAT FISSION COUPLES ARE APPLICABLE AT CRYOGENIC TEMPERATURES WHEN HEAT LOSS IS A MAJOR PART OF THEIR DESIGN CRITERIA.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*CRYOGENICS + *FLUX DISTRIBUTION + *HEAT TRANSFER + *INSTRUMENT, NUCLEAR + *THERMAL NEUTRON + *THERMAL PROPERTY + ANALYTICAL TECHNIQUE, CALIBRATION + FISSION RECOIL + FLUX, INTEGRATED + MODEL TESTING + NEUTRON INTERACTION

7-28037 ALSO IN CATEGORY 9
TANARRO A
DETECTION OF NUCLEAR RADIATION
JUNTA DE ENERGIA NUCLEAR, MADRID (SPAIN)
JEN-183-UP-1-56 +. 100 PAGES, 1967

TOTAL ENERGIES OF NUCLEAR ATOMIC RADIATION IS MEASURED FOR ALPHA, BETA, GAMMA, AND NEUTRON IRRADIATION. A STUDY IS MADE OF THE EFFECTS OF THESE IRRADIATORS UPON MATERIALS, DETECTORS, AND SIGNAL-MEASUREMENT TRANSMISSIONS. DETECTOR SENSITIVITIES ARE ALSO DISCUSSED.

AVAILABILITY - USAEC DEPOSITORY LIBRARIES IN THE U.S. AND OVERSEAS

*DOSIMETRY, GENERAL + *INSTRUMENT, RADIATION MONITORING + ALPHA EMITTER + GAMMA + MONITOR, RADIATION, GENERAL + NEUTRON

7-28399
MURATA T + KAMIYA K
REMOVAL OF IODINE AND METHYL IODIDE BY A FULL-SIZED CHARCOAL FILTER
HITACHI RESEARCH LABORATORY, HITACHI, IBARAKI, JAPAN
SM-11C +. 1 PAGE, PAGE 1 OF ABSTRACTS OF PAPERS, FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

THIS INVESTIGATION WAS UNDERTAKEN TO EVALUATE THE REMOVAL EFFICIENCY OF THE CHARCOAL FILTER FOR IODINE WITH A SMALL AMOUNT OF METHYL IODIDE UNDER THE SIMULATED CONDITIONS OF A REACTOR ACCIDENT. FROM THE RESULTS OF THIS MEASUREMENT, AN EQUATION EXPRESSING THE EFFICIENCY OF THE FILTER AS A FUNCTION OF THE CONSTANTS WAS OBTAINED. THE APPLICABILITY OF THE EQUATION TO A LARGE-SCALE FILTER WAS CONFIRMED IN THE SECOND EXPERIMENT.

AVAILABILITY - MURATA OR KAMIYA, HITACHI RESEARCH LABORATORY, HITACHI, IBARAKI, JAPAN

*CHARCOAL ADSORBER + *FISSION PRODUCT, IODINE + *OPERATING EXPERIENCE + *ORGANIC IODIDE + *TEST, FILTER + AIR CLEANING + FILTER + FILTER, TRAP + HUMIDITY + IODINE + WATER VAPOR

7-28400

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-28400 *CONTINUED*
HOLMES RE + HALLIDAY P + MATHIAS DJ
MEASUREMENT OF ARGON-41 ACTIVITY DISCHARGED FROM THE SHIELD-COOLING AIR OF MAGNOX REACTORS
ATOMIC POWER CONSTRUCTIONS LTD., SUTTON, SURREY, UNITED KINGDOM
SM-110 +. 1 PAGE, PAGE 2 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE
IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

THE EARLY MAGNOX REACTORS BUILT IN THE UNITED KINGDOM UTILIZED STEEL PRESSURE VESSELS SURROUNDED BY CONCRETE BIOLOGICAL SHIELDS. COOLING OF THESE SHIELDS IS ACHIEVED BY MEANS OF LARGE VOLUMES OF ATMOSPHERIC AIR. ARGON IN THE AIR IS ACTIVATED BY THE AR-4C (N, GAMMA)AR-41 THERMAL NEUTRON REACTION. LOW-COST PORTABLE EQUIPMENT WAS DESIGNED TO MEASURE THE SPECIFIC ACTIVITY OF THIS SHIELD-COOLING AIR. CALIBRATION OF THE EQUIPMENT WAS ACHIEVED BY MEANS OF A 5-CC AMPOULE OF ARGON ACTIVATED IN BEPO. THE CALIBRATED EQUIPMENT WAS UTILIZED TO MEASURE THE SPECIFIC ACTIVITY OF SHIELD-COOLING AIR DISCHARGED FROM BRADWELL, CALDER HALL, HUNTERSTON, TRAFALGAR, AND TOKAI MURA POWER STATIONS.

AVAILABILITY - R. E. HOLMES, P. HALLIDAY OR D. J. MATHIAS, ATOMIC POWER CONSTRUCTIONS LTD., SUTTON, SURREY, UNITED KINGDOM

*ANALYTICAL TECHNIQUE, CALIBRATION + *ARGON + *IN PILE EXPERIMENT + AIR CLEANING + RADIOLYTIC GAS + RADIONUCLIDE, INDUCED + SHIELDING

7-28401
PRADEL J + BRION J
SENSITIVE METHOD OF MEASURING THE EFFECTIVENESS OF HIGH-EFFICIENCY FILTERS BY MEANS OF URANIN AEROSOL
CENTRE D ETUDES NUCLEAIRES DE FONTENAY-AUX-ROSES, FRANCE
SM-110 +. 1 PAGE, PAGE 6 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE
IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

MEASUREMENTS OF THE EFFECTIVENESS OF HIGH-EFFICIENCY FILTERS ARE GENERALLY NOT VERY SENSITIVE BECAUSE OF THE VERY QUALITY OF THE FILTERS THAT HAVE TO BE STUDIED. THE FRACTION OF THE TEST AEROSOL WHICH PASSES THROUGH THE FILTERS IS VERY SMALL, AND EXPERIMENTERS OFTEN HAVE TO RELEASE HEAVY CONCENTRATIONS OF AEROSOL UPSTREAM IN ORDER TO GET MEASURABLE CONCENTRATIONS DOWNSTREAM OF THE FILTER - A TECHNIQUE WHICH TENDS TO PRODUCE COAGULATION. THE METHOD DESCRIBED IN THIS PAPER UTILIZES A TEST AEROSOL WHOSE AVERAGE PARTICLE SIZE CORRESPONDS TO THE MAXIMUM PERMEABILITY OF THE HIGH-EFFICIENCY FILTERS. THE AUTHORS GIVE A DETAILED DESCRIPTION OF THE METHOD AND PRESENT RESULTS OBTAINED WITH PLANE FILTER SAMPLES, FILTER ELEMENTS AND INSTALLED FILTERS. THE RESULTS OBTAINED WITH THE NEW METHOD ARE COMPARED WITH THOSE GIVEN BY MONODISPERSED DOP.

AVAILABILITY - J. PRADEL OR J. BRION, CENTRE D ETUDES NUCLEAIRES DE FONTENAY-AUX-ROSES, FRANCE

*ANALYTICAL TECHNIQUE, CALIBRATION + *FILTER EFFICIENCY + *FILTER, HIGH EFFICIENCY + *TEST, DOP FILTER + *TEST, FILTER + AEROSOL + AIR CLEANING + FILTER + PARTICULATE

7-28402
BILLARD F + BRION J
HIGH-TEMPERATURE FILTER FOR PURIFICATION OF INCINERATOR GASES
CENTRE D ETUDES NUCLEAIRES DE FONTENAY-AUX-ROSES, FRANCE
SM-110 +. 1 PAGE, PAGE 7 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE
IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

THE PAPER DESCRIBES A RESTORABLE FILTER DESIGNED FOR HOT FILTRATION OF INCINERATOR GASES. THE FILTER IS MADE OF WIRE GAUZE CANDLES COATED BY PNEUMATIC ATOMIZATION WITH ASBESTOS FIBRE, THE LATTER CONSTITUTING THE FILTERING MEDIUM. EXPERIMENTS WERE CARRIED OUT FIRST ON A SMALL-SCALE MODEL AND SUBSEQUENTLY ON A PILOT INSTALLATION WITH A CAPACITY OF 20 KG/H IN PROLONGED INDUSTRIAL OPERATION. BETWEEN RESTORATIONS THE FILTERS CAN FUNCTION FOR SEVERAL HUNDRED HOURS. THE COMPLETE INSTALLATION IS DESCRIBED AND THE RESULTS OBTAINED IN THE TESTS ARE GIVEN.

AVAILABILITY - F. BILLARD OR J. BRION, CENTRE D ETUDES NUCLEAIRES DE FONTENAY-AUX-ROSES, FRANCE

*COMBUSTION + *OPERATING EXPERIENCE + *TEST, FILTER SYSTEM + *WASTE DISPOSAL, ATMOSPHERIC + AIR CLEANING + FILTER + FILTER, ASBESTOS + FILTER, ROUGHING + FILTER, SCREEN + WASTE TREATMENT, GAS

7-28403
JOUBERT J
DESIGN OF AN ELECTROSTATIC WATER ATOMIZATION SEPARATOR
FACULTE DES SCIENCES DE LYON, FRANCE
SM-110 +. 1 PAGE, PAGE 8 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE
IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

THE BASIC EFFECTIVENESS OF A MICROSPHERE IS INCREASED WHEN IT IS RAISED TO A HIGH POTENTIAL. THE PERFORMANCE OF THE APPARATUS PROPOSED HERE IS COMPARED WITH THAT OF THE CONVENTIONAL SCRUBBER AND THE COTTRELL PRECIPITATOR. A NEW TYPE OF SCRUBBING DEVICE IS PROPOSED IN THE LIGHT OF THE RESULTS OBTAINED.

AVAILABILITY - J. JOUBERT, FACULTE DES SCIENCES DE LYON, FRANCE

*DESIGN CRITERIA + *ELECTROSTATIC CHARGE + *ELECTROSTATIC PRECIPITATION + *SCRUBBER + AIR CLEANING + SPRAY, GENERAL + WATER VAPOR

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-28404

GUIRLET J + DUVERGER DE CUY G + SALLE R
DESIGN AND CONSTRUCTION OF AIR PURIFICATION SYSTEMS IN FRENCH NUCLEAR INSTALLATIONS
COMMISSARIAT A L ENERGIE ATOMIQUE, PARIS, FRANCE
SM-110 +. 1 PAGE, PAGE 9 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE
IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

THE FISSION PRODUCTS PRESENT IN NUCLEAR INSTALLATIONS CREATE A POTENTIAL HAZARD OF ENVIRONMENTAL CONTAMINATION AGAINST WHICH PRECAUTIONS MUST BE TAKEN - THIS IS, SPECIFICALLY, THE PURPOSE OF PURIFICATION EQUIPMENT. THE FIRST PROBLEMS IS TO DEFINE THE CONTAINMENT AND ITS LEAKAGE RATE. THE EFFICIENCY OF PURIFICATION ON THE OFF-GAS SYSTEM MUST BE ADAPTED TO THE HAZARD AND THE CHOICE WILL BE GUIDED BY THE CHARACTERISTICS OF THE SITE, IN PARTICULAR THE WEATHER CONDITIONS AND THE DOSES REGARDED AS ACCEPTABLE FOR THE SURROUNDING POPULATION. THE FINANCIAL ASPECTS OF THE DIFFERENT SOLUTIONS ARE ALSO DISCUSSED.

AVAILABILITY - J. GUIRLET, G. DUVERGER DE CUY OR R. SALLE, COMMISSARIAT A L ENERGIE ATOMIQUE, PARIS, FRANCE

*AIR CLEANING + *DESIGN CRITERIA + *DESIGN STUDY + CONTAINMENT FILTERING SYSTEM + OPERATING EXPERIENCE

7-28405

DADILLON J
EFFICIENCY OF IMPREGNATED CHARCOAL FILTERS FOR FISSION PRODUCTS RELEASED IN A SWIMMING-POOL REACTOR
ACCIDENT
CENTRE D ETUDES NUCLEAIRES DE CADARACHE, ST. PAUL-LEZ-DURANCE, FRANCE
SM-110 +. 1 PAGE, PAGE 10 OF ABSTRACT OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE
IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

IT IS NOW A WELL-KNOWN FACT THAT ANY SIGNIFICANT INCREASE OF HUMIDITY IN A REACTOR CONTAINMENT MAY CONSIDERABLE REDUCE THE EFFICIENCY OF IODINE FILTERS. IN VIEW OF THE INTERESTING LABORATORY WORK CARRIED OUT IN THE LAST FEW YEARS, PARTICULARLY ON DIFFERENT TECHNIQUES OF CHARCOAL IMPREGNATION, WE DECIDED TO INDUCE THE MELT-DOWN OF A FUEL ELEMENT IN A SWIMMING-POOL REACTOR. RELATIVE HUMIDITY REACHED 100% IN THE CONTAINMENT, AND IN THESE CONDITIONS THE DECONTAMINATION FACTOR OF A 5-CM CARBON LAYER VARIED BETWEEN 20,000 AND 7,000,000, DEPENDING ON IMPREGNATION, FOR THE IODINE FROM MOST EASILY TRAPPED, WHILE REMAINING CONSISTENTLY BELOW 5 FOR THE MOST PENETRATING FORM.

AVAILABILITY - J. DADILLON, CENTRE D ETUDES NUCLEAIRES DE CADARACHE, ST. PAUL-LEX-DURANCE, FRANCE

*CHARCOAL + *FILTER EFFICIENCY + *FISSION PRODUCT, IODINE + *HUMIDITY + AIR CLEANING + FILTER + FILTER, PAPER + FILTER, TRAP + IODINE

7-28406

BOUGEIS P + SCHEIDHAUER J
RADIOLOGICAL CONTROL OF GASEOUS WASTES AT THE UP2 PLANT, LA HAGUE
CENTRE DE LA HAGUE, CHERBOURG, FRANCE
SM-110 +. 1 PAGE, PAGE 11 OF ABSTRACT OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE
IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

THE AUTHORS FIRST GIVE A BRIEF ACCOUNT OF THE ORGANIZATION AND PURPOSES OF THE LA HAGUE CENTRE, AND MORE PARTICULARLY OF THE UP2 INDUSTRIAL FACILITY. THE LOCAL WEATHER CONDITIONS ARE BRIEFLY DISCUSSED AND THE RESULTS OF AN EXPERIMENT IN WHICH A URANIN AEROSOL (THE SODIUM SALT OF FLUORESCIN) WAS RELEASED THROUGH THE UP2 STACK - IN SEPTEMBER AND OCTOBER 1965 - ARE EXAMINED. IN THE SECOND PART OF THE PAPER THE AUTHORS DESCRIBE THE METHODS OF CONTROL ADOPTED AT THE LA HAGUE CENTRE AND THE DIFFERENT TYPES OF EQUIPMENT INSTALLED AT THE MONITORING POINTS. FINALLY, THE RESULTS OF CONTROL OF GASEOUS EFFLUENTS RELEASED FROM THE UP2 UNIT DURING SEVERAL OPERATIONAL RUNS ARE ANALYSED.

AVAILABILITY - P. BOUGEIS OR J. SCHEIDHAUER, CENTRE DE LA HAGUE, CHERBOURG, FRANCE

*OPERATING EXPERIENCE + *WASTE DISPOSAL, ATMOSPHERIC + AIR CLEANING + AIRBORNE RELEASE + ATMOSPHERIC POLLUTION + RADIOACTIVITY RELEASE + WASTE TREATMENT, GAS

7-28407

SUTRA-FOURCADE Y + CAIRE B + GALLISSIAN F
REMOVAL OF DUST FROM COMBUSTION GASES IN AN INCINERATOR FOR RADIOACTIVE WASTES
CENTRE DE MARCOULE, FRANCE
SM-110 +. 1 PAGE, PAGE 12 OF ABSTRACT OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE
IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

INCINERATION IS A METHOD OF ELIMINATING RADIOACTIVE WASTES WHICH GIVE VERY LARGE VOLUME REDUCTION FACTORS. THE PURIFICATION OF COMBUSTION GASES FROM INCINERATORS, HOWEVER, RAISES NUMEROUS PROBLEMS WHICH THE AUTHORS CONSIDER IN THIS PAPER - HIGH GAS TEMPERATURES, ACIDITY DUE TO COMBUSTION OF PLASTIC MATERIALS, THE PRESENCE OF LAMPBLACK, AND SO ON. THE CHARACTERISTICS OF THE AEROSOLS FORMED AND THE BEHAVIOUR OF THE RADIOISOTOPES CONTAMINATING THE WASTES ARE STUDIED, THE INCINERATOR OF THE MARCOULE CENTRE BEING TAKEN AS A SPECIFIC EXAMPLE.

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-28407 *CONTINUED*
AVAILABILITY - Y SUTRA-FOURCADE, B. CAIRE, OR F. GALLISSIAN, CENTRE DE MARCOULE, FRANCE

*COMBUSTION + *OPERATING EXPERIENCE + *WASTE DISPOSAL, ATMOSPHERIC + *WASTE TREATMENT, GAS + AIR CLEANING +
AIRBORNE RELEASE + ATMOSPHERIC POLLUTION + RADIOACTIVITY RELEASE + WASTE TREATMENT, SOLID

7-28408
JACOBI W
PARTICLE SIZE SPECTROMETRY OF AEROSOLS BY LIGHT-SCATTERING IN A LASER BEAM AND ITS APPLICATION TO AIR
MONITORING AND FILTER TESTING
HAHN-MEITNER-INSTITUT FUR KERNFORSCHUNG BERLIN, FEDERAL REPUBLIC OF GERMANY
SM-110 +. 1 PAGE, PAGE 13 OF ABSTRACT OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE
IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

A NEW TYPE OF A PARTICLE SIZE SPECTROMETER FOR AEROSOLS WAS DEVELOPED USING A LOW-POWER HE-NE LASER AS LIGHT SOURCE. THE LIGHT SCATTERED FROM SINGLE PARTICLES CROSSING THE LASER BEAM IS MEASURED IN NEARLY 4-PI-GEOMETRY BY USE OF A SUITABLE LIGHT CONDUCTOR, WHICH IS CONNECTED TO THE CATHODE OF A PHOTOMULTIPLIER. THE SPECTROMETER WAS CALIBRATED WITH MONODISPERSE LATEX AEROSOLS OF DIFFERENT SIZES. THE INSTRUMENT WAS DEVELOPED ESPECIALLY FOR AIR MONITORING IN NORMAL UNFILTERED AIR, FOR MEASUREMENTS OF FILTER EFFICIENCY VERSUS PARTICLE SIZE AND FOR STUDIES ON COAGULATION AND INHALATION OF AEROSOLS. EXAMPLES OF THESE APPLICATIONS ARE PRESENTED.

AVAILABILITY - W. JACOBI, HAHN-MEITNER-INSTITUT FUR KERNFORSCHUNG BERLIN, FEDERAL REPUBLIC OF GERMANY

*ANALYTICAL TECHNIQUE, CALIBRATION + *ANALYTICAL TECHNIQUE, CALIBRATION + *INSTRUMENT, AIR SAMPLING +
*PARTICLE SIZE + *PARTICLE SIZE DISTRIBUTION + AEROSOL PROPERTIES + AIR CLEANING

7-28409
LEE K + LEE SH + KIM DJ
STUDIES OF INCINERATOR AIR CLEANING SYSTEMS
ATOMIC ENERGY RESEARCH INSTITUTE, SEOUL, KOREA
SM-110 +. 2 PAGES, PAGES 14-15 OF ABSTRACT OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL
EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

THE PURPOSE OF THIS PAPER IS TO REPORT THE EXPERIMENTAL RESULTS OBTAINED WITH A SMALL INSTITUTIONAL RADIOACTIVE WASTE INCINERATOR AND A GAS CLEANING SYSTEM WHICH WAS DESIGNED AND CONSTRUCTED AT THE KOREAN ATOMIC ENERGY RESEARCH INSTITUTE. A SERIES OF EXPERIMENTS WERE CONDUCTED TO DETERMINE THE EFFICIENCY AND THE CHARACTERISTICS OF THE SYSTEM. FOR SMALL INSTITUTIONS AND LABORATORIES, A COMBINATION OF AN INCINERATOR WITH AIR DILUTION VALVE, ONE OR TWO-STAGE CYCLONE-COLLECTOR AND A FILTER WITH TECHNICAL GRADE GLASS FIBRE APPEARS TO BE VERY SUITABLE FOR INCINERATION OF MOST MEDIUM LEVEL NON-VOLATILE SOLID WASTES.

AVAILABILITY - K. LEE, SH LEE OR D. J. KIM, ATOMIC ENERGY RESEARCH INSTITUTE, SEOUL, KOREA

*COMBUSTION + *ELECTROSTATIC PRECIPITATION + *FILTER, CYCLONE + *FILTER, GLASS + *TEST, FILTER SYSTEM +
*WASTE DISPOSAL, ATMOSPHERIC + AIR CLEANING + ATMOSPHERIC POLLUTION + OPERATING EXPERIENCE +
WASTE TREATMENT, GAS + WASTE TREATMENT, SOLID

7-28410 ALSO IN CATEGORY 12
NITTI DA
A STUDY OF CONTAINMENT SPRAYS AND CHARCOAL FILTERS FOR THE REMOVAL OF IODINE FOLLOWING A PWR
LOSS-OF-COOLANT ACCIDENT
LYNCHBURG, VIRGINIA, USA, THE BABCOCK AND WILCOX COMPANY
SM-110 +. 1 PAGE, PAGE 16 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE
IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

SUMMARIZES A STUDY OF THE RADIOIODINE PROBLEM ASSOCIATED WITH THE SITING OF THE CURRENT GENERATION OF NUCLEAR POWER STATIONS IN THE UNITED STATES. COMPARES THE EFFECTIVENESS OF A CONTAINMENT SPRAY SYSTEM AND A CHARCOAL FILTER SYSTEM FOR THE REMOVAL OF THE RADIOIODINE FOLLOWING A PWR LOSS-OF-COOLANT ACCIDENT. THE STUDY SHOWS THAT, BASED ON THE PRESENT REACTOR SITING CRITERIA IN THE U. S., THE ULTIMATE IODINE REMOVAL SYSTEM MUST PROVIDE AN IODINE DOSE REDUCTION FACTOR OF 40 TO 50 IN TWO HOURS AND A DRF OF 80 TO 100 IN 30 DAYS. THIS MEANS THAT 1 TO 1 1/2% OF THE IODINE NEED NEVER BE REMOVED FROM THE CONTAINMENT ATMOSPHERE IF THE OTHER 99% IS REMOVED SUFFICIENTLY FAST.

AVAILABILITY - D. A. NITTI, THE BABCOCK AND WILCOX COMPANY

*CHARCOAL + *CHARCOAL ADSORBER + *FISSION PRODUCT, IODINE + *IODINE + *SPRAY, GENERAL +
*TEST, FILTER SYSTEM + AIR CLEANING + DECONTAMINATION FACTOR + OPERATING EXPERIENCE

7-28411
NELSON CT + KOONTZ RL + SILBERBERG M
CHARACTERIZATION OF SODIUM SPRAY AEROSOLS
ATOMICS INTERNATIONAL DIVISION OF NORTH AMERICAN ROCKWELL CORP., CANOGA PARK, CALIF.
SM-110 +. 1 PAGE, PAGE 17 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE
IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-28411 *CONTINUED*

AN EXPERIMENTAL STUDY IS UNDER WAY AT ATOMICS INTERNATIONAL TO STUDY THE CHARACTERISTICS OF HIGH-CONCENTRATION SPRAYS OF LIQUID SODIUM IN REDUCED OXYGEN ATMOSPHERES AND IN AIR. THE EXPERIMENTS ARE CONDUCTED IN A 31.5 CU. FT (2 FT DIAMETER BY 10 FT HIGH) VESSEL, CERTIFIED FOR A PRESSURE OF 100 PSIG. THE SPRAY INJECTION APPARATUS CONSISTS OF A HEATED SODIUM SUPPLY POT AND SPRAY NOZZLE THROUGH WHICH LIQUID SODIUM IS DRIVEN BY NITROGEN PRESSURE. SPRAY RATE AND DROPLET SIZE CAN BE VARIED BY THE INJECTION VELOCITY (NOZZLE SIZE, NITROGEN PRESSURE AND SODIUM TEMPERATURE). THE REACTION RATE IS COMPUTED FROM THE RATE OF DECREASE OF OXYGEN. DURING EACH TEST, THE DISTRIBUTION OF SODIUM MASS WHICH IS AIRBORNE, ON THE VERTICAL WALLS, AND ON THE FLOOR IS MONITORED AS A FUNCTION OF TIME. CUMULATIVE SAMPLES ARE ALSO OBTAINED. WHEN SODIUM COMBUSTION HAS TERMINATED, THE AIR BORNE PARTICLE SIZE DISTRIBUTION IS MEASURED AS A FUNCTION OF TIME.

AVAILABILITY - C. T. NELSON, R. L. KOONTZ, OR M. SILBERBERG, ATOMICS INTERNATIONAL, CANOGA PARK, CALIF.

*AEROSOL + *FIRE + *PARTICLE SIZE + *SODIUM + AEROSOL PROPERTIES + AIR CLEANING + COMBUSTION + METAL, LIQUID + NOZZLE + SPRAY, GENERAL

7-28412

KOONTZ RL + NELSON CT + BAURMASH L

MODELING CHARACTERISTICS OF AEROSOLS GENERATED DURING LMFBR ACCIDENTS

ATOMICS INTERNATIONAL, CANOGA PARK, CALIF.

SM-110 +. 1 PAGE, PAGE 19 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

CONTINUING STUDIES AT ATOMICS INTERNATIONAL ARE BEING CONDUCTED TO DEVELOP EXPERIMENTAL INFORMATION AND ANALYTICAL METHODS WHICH CHARACTERIZE THE RELEASE AND TRANSPORT OF EFFLUENTS GENERATED DURING MAJOR LIQUID-METAL FAST BREEDER REACTOR (LMFBR) ACCIDENTS. EXPERIMENTS HAVE BEEN CONDUCTED IN TEST CHAMBERS IN ORDER TO STUDY THE BEHAVIOUR OF THE RELEASED OXIDIZED SODIUM AND FUEL PARTICULATES (UO₂ + STAINLESS STEEL), AT CONCENTRATIONS UP TO 60 MICROGRAMS/CC. IN ALL EXPERIMENTS, MEASUREMENTS ARE MADE OF (1) THE AIRBORNE CONCENTRATION AND PARTICLE SIZE DISTRIBUTION VS TIME, (2) THE MASS AND ACTIVITY DEPOSITION RATE ON THE FLOOR AND WALLS, (3) THE TOTAL AMOUNT OF ACTIVITY AND MASS DEPOSITED ON THE WALLS AND FLOOR, AND (4) THE INITIAL AND REMAINING QUANTITY OF MASS IN THE BURN POT. DEPOSITION SAMPLES FROM THE FLOOR AND AT SEVERAL HEIGHTS ABOVE THE FLOOR SHOWED EQUAL AMOUNTS OF MASS AND THUS DEMONSTRATED STIRRED CONDITIONS.

AVAILABILITY - R. L. KOONTZ, C. T. NELSON OR L. BAURMASH, ATOMICS INTERNATIONAL, CANOGA PARK, CALIF.

*AEROSOL PROPERTIES + *METAL, LIQUID + *SODIUM + AEROSOL + AIR CLEANING + OXIDE + PARTICLE SIZE

7-28413

BAURMASH L + NELSON CT + KOONTZ RL

THE CHARACTERIZATION OF UO₂ AEROSOLS BY AERODYNAMIC PARAMETERS

ATOMICS INTERNATIONAL, CANOGA PARK, CALIF.

SM-110 +. 1 PAGE, PAGE 20 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

INFORMATION ON THE BEHAVIOUR OF PUO₂ AEROSOLS IS REQUIRED FOR THE ANALYSIS AND DESIGN OF SAFEGUARDS FOR FAST BREEDER POWER REACTORS. EXPERIMENTAL INVESTIGATIONS OF UO₂ AEROSOLS (AS A SIMULANT FOR PUO₂) PRODUCED BY ARC VAPORIZATION OF UO₂-SS MIXTURES IN AIR HAVE BEEN CONDUCTED, AND THE PARTICLE CHARACTERISTICS OF THE AEROSOLS STUDIED AS A FUNCTION OF INITIAL CONCENTRATION AND TIME. THE INCREASING COMPLEXITY OF THE THREE-DIMENSIONAL, CHAIN-LIKE, MULTIBRANCHED AGGLOMERATES WHICH ARE PRODUCED IN INCREASING NUMBER WITH PROLONGED AGEING HAS BEEN INVESTIGATED BY ELECTRON MICROSCOPY. IT WAS EVIDENT THAT CHARACTERIZATION OF THE AEROSOL PARTICLE SIZE DISTRIBUTION COULD NOT BE PERFORMED BY MICROSCOPIC EXAMINATION, SINCE THE EFFECTIVE SIZE OF THE AGGLOMERATE WAS DIFFICULT TO DETERMINE.

AVAILABILITY - L. BAURMASH, C. T. NELSON, OR R. L. KOONTZ, ATOMICS INTERNATIONAL, CANOGA PARK, CALIF.

*AEROSOL PROPERTIES + *FILTER, CASCADE IMPACTOR + *URANIUM OXIDE + AEROSOL + AEROSOL PRODUCTION + AIR CLEANING + ELECTRON MICROSCOPY + OXIDE + PARTICLE SIZE + STEEL, STAINLESS

7-28414

KIRCHER JF + BARNES RH

METHYL IODIDE FORMATION UNDER POSTULATED NUCLEAR-REACTOR-ACCIDENT CONDITIONS

BATTELLE MEMORIAL INSTITUTE, COLUMBUS, OHIO

SM-110 +. 1 PAGE, PAGE 21 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

THE FORMATION OF METHYL IODIDE UNDER CONDITIONS OF POSTULATED NUCLEAR REACTOR ACCIDENTS IS DISCUSSED. ALTHOUGH THERMODYNAMIC CALCULATIONS INDICATE THE EQUILIBRIUM METHYL IODIDE CONCENTRATIONS WOULD BE QUITE LOW, CALCULATIONS BASED ON A SIMPLE KINETIC SCHEME INVOLVING REACTION BETWEEN SMALL HYDROCARBON SPECIES AND IODINE INDICATE THAT HIGHER-THAN EQUILIBRIUM CONCENTRATIONS CAN OCCUR DURING THE COURSE OF THE REACTION. THESE CALCULATIONS SUGGEST THAT LITTLE METHYL IODINE WOULD BE EXPECTED WITHIN THE CORE VOLUME WHERE TEMPERATURES ARE MAXIMUM.

AVAILABILITY - J. F. KIRCHER, R. H. BARNES, BATTELLE MEMORIAL INSTITUTE, COLUMBUS OHIO

*CHEMICAL KINETICS + *ORGANIC IODIDE + *THERMODYNAMICS + AIR CLEANING + CHEMICAL REACTION + FISSION PRODUCT, IODINE + THERMAL PROPERTY

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-28415

HORN FL + CASTLEMAN AW
PUO2-UO2-NA AEROSOLS PRODUCED BY VAPOURIZATION OF FAST REACTOR CORE MATERIALS
BROOKHAVEN NATIONAL LABORATORY, UPTON, NEW YORK
SM-110 +. 2 PAGES, PAGES 23-24 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

THE COMBINED AEROSOLS OF PUO2, UO2, AND NA PRODUCE FAIRLY CONSTANT SIZE DISTRIBUTIONS DEPENDING UPON THE ATMOSPHERE IN WHICH THEY ARE FORMED. THESE AGGLOMERATES ARE COMPOSED OF TWISTING CHAINS OF CUBIC SHAPED PARTICLES INTO WHICH ARE INCORPORATED SODIUM SPHERES AND CLUSTERS. DRY NITROGEN ATMOSPHERES PRODUCE AGGLOMERATES WITH A CMD OF 0.6 TO 0.8, WHILE HUMID AIR PRODUCES MUCH SMALLER AGGLOMERATES HAVING A CMD OF 0.25 TO 0.39 MICRON. A CDC 6600 COMPUTER WAS USED TO INTEGRATE NUMERICALLY THE COAGULATION RELATIONSHIPS FORMULATED BY SMOLUCHOWSKI, WITH TERMS ADDED TO ACCOUNT FOR PARTICLE FORMATION AND SETTLING. USING THE EXPERIMENTAL DATA ON THE PARTICLE SIZE, COEFFICIENTS WERE EVALUATED. IN ADDITION, THE TIME DEPENDENCE OF THE TOTAL AIRBORNE MASS CONCENTRATION WAS EVALUATED BY INTEGRATING THE PRODUCT OF THE NUMBER DENSITY AND PARTICLE DENSITY OVER ALL VALUES OF THE PARTICLE RADII.

AVAILABILITY - F. L. HORN OR A. W. CASTLEMAN, BROOKHAVEN NATIONAL LABORATORY, UPTON, N.Y.

*AEROSOL PROPERTIES + *COMPUTER PROGRAM + *PARTICLE SIZE DISTRIBUTION + *PLUTONIUM + *SODIUM + *URANIUM + AIR CLEANING + HUMIDITY + OXIDE + PARTICLE SIZE

7-28416

SCHWENDIMAN LC + MISHIMA J + RADASCH CA
AIRBORNE RELEASE OF PARTICLES IN OVERHEATING INCIDENTS INVOLVING PLUTONIUM METAL AND COMPOUNDS
PACIFIC NORTHWEST LABORATORY, BATTELLE MEMORIAL INSTITUTE, RICHLAND, WASHINGTON
SM-110 +. 1 PAGE, PAGE 24 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIR BORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

THIS WORK DESCRIBES THE OBSERVATIONS FROM A STUDY IN WHICH THE AIRBORNE RELEASE OF PLUTONIUM AND ITS COMPOUNDS WAS MEASURED DURING AN EXPOSURE OF THE MATERIAL OF INTEREST CONTAINING PLUTONIUM TO TEMPERATURES WHICH MAY RESULT FROM FIRES. EXPERIMENTS WERE CARRIED OUT IN WHICH PLUTONIUM COMPOUNDS AS POWDERS WERE HEATED AT TEMPERATURES RANGING FROM 700 TO 1000 C, WITH SEVERAL AIR FLOWS. RELEASE RATES RANGED FROM 5×10 TO THE MINUS 6 TO 0.9 WT% PER HOUR, DEPENDING UPON THE COMPOUND AND THE CONDITIONS IMPOSED. THE AIRBORNE RELEASE FROM BOILING SOLUTIONS OF PLUTONIUM NITRATE WERE ROUGHLY RELATED TO ENERGY OF BOILING AND RANGED FROM 4×10 TO THE MINUS 4% TO 2×10 TO THE MINUS 1% FOR THE EVAPORATION OF 90% OF THE SOLUTION.

AVAILABILITY - L. C. SCHWENDIMAN, J. MISHIMA, OR C. A. RADASCH, PACIFIC NORTHWEST LABORATORY, BATTELLE MEMORIAL INSTITUTE, RICHLAND, WASHINGTON

*AEROSOL PROPERTIES + *FUEL MELTDOWN + *PARTICLE SIZE DISTRIBUTION + *PLUTONIUM + AIR CLEANING + AIRBORNE RELEASE + COMBUSTION + PARTICLE SIZE

7-28417

MERRIMAN JR + PASHLEY JH + HABIGER KE + STEPHENSON MJ + ANDERSON LW
CONCENTRATION AND COLLECTION OF KRYPTON AND XENON BY SELECTIVE ABSORPTION IN FLUOROCARBON SOLVENTS
OAK RIDGE GASEOUS DIFFUSION PLANT
SM-110 +. 1 PAGE, PAGE 25 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

ONE OF THE MOST DIRECT METHODS FOR REMOVING KRYPTON AND XENON IS SELECTIVE ABSORPTION OF THE GASES FROM A COMPRESSED, CONTAMINATED AIR STREAM USING A CHILLED FLUOROCARBON SOLVENT, SUCH AS REFRIGERANT-12 (DICHLORODIFLUOROMETHANE). A DEVELOPMENT PROGRAM IS UNDER WAY AT THE OAK RIDGE GASEOUS DIFFUSION PLANT TO PROVIDE THE ENGINEERING SCALE-UP DATA REQUIRED FOR DESIGN OF A KRYPTON-XENON RECOVERY PLANT USING THE ABSORPTION TECHNIQUE. THE ORGDP WORK INVOLVES PILOT PLANT TESTING TO COLLECT PERFORMANCE DATA, AS WELL AS MOBILE UNIT DESIGN TO INVESTIGATE THE FEASIBILITY OF MAKING THE ABSORPTION PLANTS READILY TRANSPORTABLE AND COMPUTER STUDIES TO PREDICT FAVOURABLE PROCESSING CONDITIONS. THE GOAL OF THIS PROGRAM IS TO PROVIDE DESIGNERS OF NUCLEAR REACTORS, REPROCESSING PLANTS AND SIMILAR INSTALLATIONS WITH ANOTHER TOOL USEFUL IN ASSURING PUBLIC SAFETY. IN THIS PAPER, PRELIMINARY PILOT PLANT RESULTS ARE PRESENTED, AND PLANS FOR FUTURE EXPERIMENTS ARE DISCUSSED.

AVAILABILITY - J. R. MERRIMAN, J. H. PASHLEY, ETC., OAK RIDGE GASEOUS DIFFUSION PLANT, K-25, OAK RIDGE, TENNESSEE

*DESIGN CRITERIA + *KRYPTON + *SCRUBBER + *XENON + ADSORPTION + AIR CLEANING + FILTER, LIQUID

7-28418

ALSO IN CATEGORY 12

ROW TH
REACTOR CONTAINMENT SPRAY TECHNOLOGY PROGRAM
OAK RIDGE NATIONAL LABORATORY
SM-110 +. 1 PAGE, PAGE 26 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

THE DESIGN BASIS ACCIDENT IN WATER-MODERATED POWER REACTORS IS A LOSS-OF-COOLANT ACCIDENT IN

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-28418 *CONTINUED*

WHICH WATER SPRAYS ARE GENERALLY USED TO CONTROL THE CONTAINMENT PRESSURE TRANSIENT BY CONDENSING THE RELEASED STEAM-AIR MIXTURE. ADDITIVES TO THE SPRAY HAVE BEEN PROPOSED AS A WAY TO INCREASE THEIR USEFULNESS BY ENHANCING THE REMOVAL OF VARIOUS FORMS OF RADIOIODINE FROM THE CONTAINMENT ATMOSPHERE. A PROGRAM TO INVESTIGATE THE GAS-LIQUID SYSTEMS INVOLVED IS CO-ORDINATED BY ORNL FOR THE US ATOMIC ENERGY COMMISSION. CONSIDERATION IS ALSO BEING GIVEN TO CORROSION, THERMAL AND RADIATION STABILITY OF THE SOLUTIONS.

AVAILABILITY - T. H. ROW, OAK RIDGE NATIONAL LABORATORY, P. O. BOX X, OAK RIDGE, TENN.

*IODINE + *NSPP + *ORGANIC IODIDE + AIR CLEANING + CORROSION + HYDROGEN + MASS TRANSFER + RADIATION EFFECT + RADIOLYTIC GAS

7-28419

PAINÉY RH

SEPARATION OF NOBLE GASES FROM OTHER GASES BY USE OF PERMSELECTIVE MEMBRANES

OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.

SM-110 +. 2 PAGES, PAGES 27-28 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

A PROCESS IS BEING DEVELOPED FOR SEPARATING RADIOACTIVE XENON AND KRYPTON FROM OTHER INERT GASES OR FROM AIR BY USE OF A DIMETHYL SILICONE RUBBER MEMBRANE. THIS SEPARATION IS BASED ON THE SOLUBILITIES OF THE GASES IN, AND THEIR RATES OF TRANSPORT THROUGH, THE MEMBRANE. APPLICATIONS INCLUDE THE REMOVAL OF THE NOBLE GASES FROM - (1) THE AIR WITHIN A REACTOR CONTAINMENT BUILDING, E.G., AFTER AN ACCIDENTAL RELEASE OF FISSION PRODUCTS, (2) THE OFF-GAS FROM A PROCESSING PLANT FOR SPENT REACTOR FUELS, AND (3) THE GAS THAT BLANKETS NUCLEAR REACTORS, ESPECIALLY THOSE WHICH CONTINUOUSLY VENT VOLATILE FISSION PRODUCTS, SUCH AS THE MOLTEN SALT OR THE SODIUM-COOLED BREEDER REACTORS.

AVAILABILITY - R. H. RAINEY, OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE

*DECONTAMINATION FACTOR + *DIFFUSION + *KRYPTON + *SEPARATOR + *XENON + AIR CLEANING + ECONOMIC STUDY + NOBLE GAS

7-28420

BERRY DA + CREMEANS GE + GENCO JM + ROSENBERG HS + MORRISON DL

RESEARCH AND DEVELOPMENT ON COATINGS FOR RETAINING FISSION-PRODUCT IODINE

BATTELLE MEMORIAL INSTITUTE, COLUMBUS, OHIO

SM-110 +. 1 PAGE, PAGE 28 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

IN THIS WORK, ADVANTAGE WAS TAKEN OF THE FACT THAT ELEMENTAL IODINE HAS THE PROPENSITY FOR FORMING CHARGE-TRANSFER COMPLEXES WITH AMINES. THESE COMPLEXES ARE STABLE AT AMBIENT TEMPERATURES AND RETAIN MUCH OF THIS STABILITY AT ELEVATED TEMPERATURES. AMINE-CONTAINING COATINGS ALSO REACT WITH METHYL IODIDE AND HYDROGEN IODIDE TO FORM THE QUATERNARY AMMONIUM SALTS AND AMINE SALTS, RESPECTIVELY. VARIOUS POLYMERS WERE STUDIED IN A STEAM-AIR ENVIRONMENT AT ELEVATED TEMPERATURES USING DILUTE QUANTITIES OF TAGGED IODINE. BOTH NONCONDENSING AND CONDENSING STEAM CONDITIONS WERE INVESTIGATED. SEVERAL OF THE POLYMERS SHOWED ADSORPTION RATES AND CAPACITIES THAT WOULD BE MORE THAN ADEQUATE FOR THE CHEMICAL REMOVAL OF ACCIDENT-RELEASED FISSION-PRODUCT IODINE AND ARE SEVERAL TIMES MORE EFFECTIVE THAN CONTROL COMMERCIAL COATINGS. THE MOST PROMISING AMINE CANDIDATES APPEAR TO BE VINYL PYRIDINE-BUTADIENE COPOLYMERS, POLY(1-BUTYLAMINOETHYL METHACRYLATE), POLY(DIMETHYLAMINOETHYL METHACRYLATE) AND 1,10-PHENANTHROLINE.

AVAILABILITY - D. A. BERRY, G. E. CREMEANS, ETC., BATTELLE MEMORIAL INSTITUTE, COLUMBUS, OHIO

*COATING, SURFACE + *FISSION PRODUCT, IODINE + *ORGANIC IODIDE + *SURFACE, PAINTED + AIR CLEANING + CHEMICAL KINETICS + COATING + DECONTAMINATION FACTOR + DEPOSITION

7-28421

KERKER M + MATIJEVIC E + VISWANATHAN NS + COOKE D

COLLECTION EFFICIENCY OF WATER DROPLETS FALLING THROUGH AN AEROSOL

CLARKSON COLLEGE OF TECHNOLOGY, POTSDAM, NEW YORK

SM-110 +. 1 PAGE, PAGE 29 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

PRELIMINARY LABORATORY STUDIES HAVE BEEN MADE ON THE COLLECTION OF AEROSOL PARTICLES BY LIQUID DROPLETS. THIS INVOLVES THE GENERATION AND CHARACTERIZATION OF THE AEROSOLS THEMSELVES ON THE ONE HAND AND THE GENERATION OF LIQUID DROPLETS OF DEFINABLE PARAMETERS ON THE OTHER. THE COLLECTION PROCESS HAS BEEN SIMULATED IN A VERTICAL CHAMBER. SPECIFICALLY, WATER DROPLETS HAVE BEEN USED TO COLLECT ALKALI HALIDE AEROSOLS IN THE TENTH-MICRON SIZE RANGE. THE MECHANISM OF COLLECTION IS DISCUSSED, BASED ON THE HYDRODYNAMIC EQUATIONS. IT IS ANTICIPATED THAT AN ACCURATE MEASURE OF THE COLLECTION EFFICIENCY WILL BE HIGHLY USEFUL IN UNDERSTANDING THE COLLECTION OF ATMOSPHERIC DUST AND RADIOACTIVE WASTE BY FALLING RAINDROPS.

AVAILABILITY - M. KERKER, E. MATIJEVIC, N. S. VISWANATHAN, OR D. COOKE, CLARKSON COLLEGE OF TECHNOLOGY, POTSDAM, NEW YORK

AEROSOL PRODUCTION + AEROSOL PROPERTIES + AIR CLEANING + ANALYTICAL TECHNIQUE, CALIBRATION + PARTICLE SIZE + SPRAY, GENERAL

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-28422
POSTMA AK + SCHWENDIMAN LC
ABSORPTION BY REACTIVE SPRAYS WITH APPRECIABLE LIQUID-PHASE MASS TRANSFER RESISTANCE - THE WASHOUT OF METHYL IODIDE BY REACTIVE SPRAYS
PACIFIC NORTHWEST LABORATORY, BATTELLE MEMORIAL INSTITUTE, RICHLAND, WASH.
SM-110 +. 2 PAGES, PAGES 30-31 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

A STUDY WAS MADE OF THE WASHOUT OF ORGANIC IODIDES BY REACTIVE LIQUID SPRAYS. ALTHOUGH THE REACTIVE ADDITIVE USED IN THIS STUDY WAS HYDRAZINE, THE RESULTS WOULD BE APPLICABLE TO OTHER ADDITIVES. ABSORPTION BY LIQUID WALL FILMS IS AN IMPORTANT PART OF THE OVERALL ABSORPTION FOR THE SPRAY SYSTEMS DESCRIBED IN THIS WORK. THE PENETRATION THEORY MODEL OF ABSORPTION INTO FLOWING FILMS WAS USED IN THIS STUDY TO PREDICT WALL FILM ABSORPTION. THE OVERALL ABSORPTION MODEL THUS ACCOUNTS FOR ABSORPTION BY DROPS AND WALL FILM.

AVAILABILITY - A. K. POSTMA OR L. C. SCHWENDIMAN, BATTELLE MEMORIAL INSTITUTE, RICHLAND, WASH.

*ANALYTICAL MODEL + *ORGANIC IODIDE + *SPRAY, GENERAL + ADSORPTION + AIR CLEANING + FILM, LIQUID + FISSION PRODUCT, IODINE + PARTICLE SIZE

7-28423
VILES FJ + BULBA E + FIRST MW + LYNCH J
REACTANTS FOR THE REMOVAL OF IODINE AND METHYL IODIDE AND THEIR APPLICATION IN FOAMS
HARVARD UNIVERSITY, BOSTON, MASS.
SM-110 +. 1 PAGE, PAGE 31 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

THE ENCAPSULATION OF CONTAMINATED AIR BY STABLE REACTIVE FOAMS PRESENTS A POTENTIALLY EFFICIENT TECHNIQUE FOR AIR CLEANING BECAUSE OF LARGE SURFACE AREAS AND LONG REACTION TIMES. FOAMS WOULD BE APPLICABLE TO CONTAINED ATMOSPHERES WHERE COOLING IS ACCOMPLISHED BY MEANS OTHER THAN WATER SPRAYS. FOR THE LATTER, REMOVAL WOULD BE OBTAINED BY EMPLOYING FOAM AS A CLEANING TECHNIQUE IN A SEPARATELY CONTAINED AIR RECIRCULATION SYSTEM. CONTAINED ATMOSPHERES ENCAPSULATED BY FOAM DEMONSTRATE SIGNIFICANT REDUCTIONS IN LEAKAGE. APPLICATION OF HYDRAZINES TO SIMPLE WATER FOAMS PROVIDED HIGH REMOVAL RATES FOR ELEMENTAL IODINE. A 0.65% UNSYMMETRICAL DIMETHYL HYDRAZINE FOAM RESULTED IN REDUCTIONS TO 1.0 AND 0.03% OF THE INITIAL CONCENTRATION WITHIN 6 TO 60 MINUTES, RESPECTIVELY. EFFICIENT REMOVAL OF METHYL IODIDE, MAY BE POSSIBLE BY UTILIZING FOAMS MADE FROM ORGANIC LIQUIDS OR WATER-ORGANIC EMULSIONS WHERE THE FOAM FILM IS ORGANIC AND CONTAINS THE REACTANTS FOR METHYL IODIDE REMOVAL.

AVAILABILITY - F. J. VILES, E. BULBA, M. W. FIRST OR LYNCH, HARVARD UNIVERSITY, BOSTON, MASS.

*FISSION PRODUCT, IODINE + *FOAM + *ORGANIC IODIDE + *SPRAY, GENERAL + AEROSOL + AIR CLEANING + FILM, GENERAL

7-28424 ALSO IN CATEGORY 12
DEFIELD D + ETTINGER HJ
EFFICIENCY TESTING OF THE AIR CLEANING SYSTEM FOR A HIGH-TEMPERATURE REACTOR
LOS ALAMOS SCIENTIFIC LABORATORY
SM-110 +. 1 PAGE, PAGE 32 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

THE LOS ALAMOS ULTRA HIGH TEMPERATURE REACTOR EXPERIMENT (UHTREX) UTILIZES A HELIUM-COOLED, GRAPHITE-MODERATED REACTOR, EMPLOYING UNCLAD REFRACTORY FUEL ELEMENTS. UNDER ACCIDENT CONDITIONS THE EFFLUENT THAT MAY BE RELEASED FROM THIS REACTOR REQUIRES AN AIR CLEANING SYSTEM CAPABLE OF REDUCING RADIOACTIVE GAS AND PARTICULATE CONTAMINANTS TO SAFE LEVELS. IN-PLACE TESTS INDICATED DESIRABLE DESIGN CHANGES WHICH WOULD (1) SIMPLIFY IN-PLACE TESTING PROCEDURES, (2) EXPEDITE INSTALLATION AND FUTURE CHANGING OF THE FILTERS, AND (3) ASSURE OPERATION OF A MORE EFFICIENT SYSTEM. PROBLEMS ENCOUNTERED DURING IN-PLACE TESTING, RECOMMENDATIONS FOR THE DESIGN OF SIMILAR SYSTEMS AND ACCEPTANCE CRITERIA USED AT LASL ARE DISCUSSED.

AVAILABILITY - D. DEFIELD OR H. J. ETTINGER, LOS ALAMOS SCIENTIFIC LABORATORY, NEW MEXICO

*DESIGN CRITERIA + *TEST, DOP FILTER + *TEST, FILTER SYSTEM + *UHTREX (GCR) + AIR CLEANING + FILTER EFFICIENCY + FILTER SYSTEM + FILTER TEST REQUIREMENT + REACTOR, AEC OWNED + REACTOR, GCR + REACTOR, HTGR

7-28425 ALSO IN CATEGORY 12
PARRISH EC + SCHNEIDER RW
REVIEW OF INSPECTION AND TESTING OF INSTALLED HIGH-EFFICIENCY PARTICULATE AIR FILTERS AT ORNL
OAK RIDGE NATIONAL LABORATORY
SM-110 +. 2 PAGES, PAGES 33-34 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

ROUTINE IN-PLACE TESTING OF HIGH-EFFICIENCY FILTER SYSTEMS WAS INITIATED AT OAK RIDGE NATIONAL LABORATORY IN MID-1962. THE IN-PLACE TEST METHOD ADOPTED BY THE LABORATORY IS PATTERNED AFTER THE STANDARD TEST USED TO MEASURE THE EFFICIENCY OF NEW FILTER UNITS. THE PRINCIPAL

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-28425 *CONTINUED*

DIFFERENCE IS THAT THE DOP AEROSOL USED FOR THE IN-PLACE TEST IS POLYDISPERSE WITH AN AVERAGE PARTICLE DIAMETER SLIGHTLY LARGER THAN 0.3 MICRON. THOUGH THE BASIC IN-PLACE TEST HAS REMAINED UNCHANGED, SIX YEARS OF EXPERIENCE HAS RESULTED IN REFINEMENT AND STANDARDIZATION OF TECHNIQUES WHICH PERMIT WIDER APPLICATION OF THE IN-PLACE TEST AND MORE ECONOMICAL TESTING. TO FACILITATE THE IN-PLACE TESTING OF ALL ORNL HIGH-EFFICIENCY FILTER SYSTEMS, AS REQUIRED BY LABORATORY POLICY, A COMPUTER PROGRAM WAS INSTITUTED IN MID-1965. THIS PROGRAM PROVIDES AUTOMATIC ADVANCE NOTIFICATION TO COGNIZANT MANAGEMENT AND OPERATING PERSONNEL WHEN SYSTEMS ARE SCHEDULED FOR TEST. SIMILARLY, TEST RESULTS ARE REPORTED AUTOMATICALLY.

AVAILABILITY - E. C. PARRISH OR R. W. SCHNEIDER, OAK RIDGE NATIONAL LABORATORY

*FILTER INSPECTION + *FILTER OPERATION + *FILTER TEST REQUIREMENT + *TEST, DOP FILTER + AIR CLEANING + COMPUTER PROGRAM + FILTER SYSTEM + PARTICLE SIZE

7-28426 ALSO IN CATEGORY 12

LITTLE JC + DEMONBRUN R
AIR CLEANING AT AEC'S Y-12 PLANT
UNION CARBIDE CORPORATION, OAK RIDGE, TENN.
SM-110 +. 1 PAGE, PAGE 35 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

DESCRIBES SOME OF THE AIR CLEANING REQUIREMENTS OF PRODUCTION, RESEARCH, DEVELOPMENT, AND BIOLOGICAL FACILITIES IN THE Y-12 AREA. PROBLEMS AND THEIR SOLUTIONS IN HAZARDOUS MATERIAL CONTAINMENT, AIR CLEANING, CONTAMINATION CONTROL, AND AIR POLLUTION CONTROL ARE ENUMERATED. BIOCLEAN AND LAMINAR-FLOW CLEAN ROOMS, GERM-FREE SUPPLY AIR SYSTEMS, EXHAUST SYSTEMS FOR HANDLING TOXIC AND RADIOACTIVE MATERIALS, VIRUS CONTAINMENT AND EXHAUST FACILITIES ARE DESCRIBED. PLANT PRACTICE REGARDING AIR CLEANING IS DISCUSSED, INCLUDING STANDARDIZATION OF SPECIFICATIONS FOR HIGH-EFFICIENCY PARTICULATE AIR FILTERS AND MOUNTING FRAMES, DOP TESTING OF AIR FILTER SYSTEMS, AND THE REPLACEMENT OF SUBSTANDARD FILTER INSTALLATIONS.

AVAILABILITY - J. C. LITTLE OR R. DEMONBRUN, UNION CARBIDE CORP., OAK RIDGE, TENN.

*FILTER INSPECTION + *FILTER TEST REQUIREMENT + *OPERATING EXPERIENCE + AEROSOL + AIR CLEANING + FILTER EFFICIENCY + FILTER OPERATION + FILTER SYSTEM + TEST, DOP FILTER

7-28427 ALSO IN CATEGORIES 4 AND 12

DEFIELD JD
TESTING HEPA FILTERS FOR USE IN A HIGH NOISE LEVEL ENVIRONMENT
LOS ALAMOS SCIENTIFIC LABORATORY
SM-110 +. 1 PAGE, PAGE 36 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

DURING THE PULSED COOLING PHASE OF THE NUCLEAR REACTOR ROCKET ENGINE (ROVER) TESTS, THE POSSIBILITY OF ATMOSPHERIC RELEASE OF RADIOACTIVE PARTICULATES EXISTS. TO CONTROL THIS POTENTIAL RELEASE A SPECIAL AIR CLEANING SYSTEM EMPLOYING HIGH EFFICIENCY PARTICULATE AEROSOL (HEPA) FILTERS WAS DESIGNED, CONSTRUCTED AND TESTED. A PRIMARY CONCERN WAS THE STRUCTURAL INTEGRITY OF THESE FILTERS UNDER THE INTENSE NOISE LEVELS THAT EXIST DURING REACTOR TESTS. COMMERCIAL HEPA FILTERS WERE SUBJECTED TO NOISE LEVELS SIMULATING THE ACOUSTIC ENVIRONMENT THAT EXISTS NEAR A REACTOR DURING TESTING.

AVAILABILITY - J. D. DEFIELD, LOS ALAMOS SCIENTIFIC LABORATORY, NEW MEXICO

*AEROSPACE SAFETY + *DESIGN CRITERIA + *FILTER EFFICIENCY + *TEST, FILTER SYSTEM + AIR CLEANING + FILTER DESIGN + TEST, FILTER

7-28428

ADAMS RE + ACKLEY RU + SHIELDS RP
APPLICATION OF IMPREGNATED CHARCOALS FOR REMOVING RADIOIODINE FROM FLOWING AIR AT HIGH RELATIVE HUMIDITY
OAK RIDGE NATIONAL LABORATORY
SM-110 +. 2 PAGES, PAGES 37-38 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

IN ADDITION TO ELEMENTAL IODINE, METHYL IODIDE CONSTITUTES A RECOGNIZED SPECIES OF AIRBORNE RADIOIODINE. CERTAIN COMMERCIAL IODIZED CHARCOALS HAVE BEEN NOTED TO HAVE THE CAPABILITY OF EXTRACTING, VIA ISOTOPIIC EXCHANGE, THE I-131 OF CH₃I-131 TRANSPORTED IN AIR AND STEAM-AIR STREAMS, EVEN AT RATHER HIGH RELATIVE HUMIDITIES. THIS WORK HAS BEEN EXTENDED TO INCLUDE A GREATER VARIETY OF CHARCOALS AND TO DETERMINE THE EFFECTS OF BOTH NORMAL AND ABNORMAL OPERATING CONDITIONS. THE EFFECT OF WEATHERING ON IMPREGNATED CHARCOALS IS BEING INVESTIGATED. RESULTS OBTAINED INDICATE A SMALL RATE OF DECREASE IN CH₃I-131 REMOVAL EFFICIENCY FOR IODIZED CHARCOAL EXPOSED TO FLOWING PURIFIED AND HUMIDIFIED AIR AND A SOMEWHAT GREATER RATE OF DECREASE FOR CHARCOAL SUBJECTED TO HUMIDIFIED AIR CONTINUING TRACES OF ORGANIC IMPURITIES.

AVAILABILITY - R. E. ADAMS, R. D. ACKLEY, OR R. P. SHIELDS, OAK RIDGE NATIONAL LABORATORY

*CHARCOAL + *CHARCOAL ADSORBER + *FISSION PRODUCT, IODINE + *HUMIDITY + *IGNITION TEMPERATURE + *ORGANIC IODIDE + AIR CLEANING + COMBUSTION + FILTER EFFICIENCY + FILTER, TRAP + FIRE

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-28429
KOVACH JL
THE EVALUATION OF THE IGNITION TEMPERATURE OF ACTIVATED CHARCOALS IN AIR, STEAM, OXYGEN AND OXIDES OF NITROGEN
BARNEBEY-CHENEY COMPANY, COLUMBUS, OHIO
SM-110 +. 1 PAGE, PAGE 38 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

THE IGNITION TEMPERATURE OF IMPREGNATED AND UNIMPREGNATED ACTIVATED CHARCOALS CURRENTLY USED FOR THE ADSORPTION OF VARIOUS FORMS OF RADIOACTIVE IODINE IS EVALUATED IN DETAIL. THE STANDARDIZED QUARTZ IGNITION TEMPERATURE APPARATUS WAS USED FOR THE EXPERIMENTS. ATMOSPHERIC CONDITIONS AND GAS-CHARCOAL RESIDENCE TIMES EXISTING IN NUCLEAR POWER REACTOR CONTAINMENT RECIRCULATING FILTER SYSTEM, EMERGENCY OFF-GAS FILTER SYSTEMS AND FUEL REPROCESSING PLANT FILTERS WERE SIMULATED FOR THE IGNITION EXPERIMENTS. A THEORETICAL EXPLANATION BASED ON THE EXPERIMENTAL DATA IS GIVEN FOR THE CONTRIBUTING EFFECTS OF CHARCOAL PROPERTIES, IMPREGNANTS AND THE GAS COMPOSITION. THE PROPER SELECTION OF ACTIVATED CHARCOALS FOR GASEOUS IODINE FILTRATION IS DISCUSSED.

AVAILABILITY - J. L. KOVACH, BARNEBEY-CHENEY COMPANY, COLUMBUS, OHIO

*CHARCOAL + *CHARCOAL ADSORBER + *FISSION PRODUCT, IODINE + *IGNITION TEMPERATURE + *ORGANIC IODIDE + AIR CLEANING + COMBUSTION + FILTER EFFICIENCY + FIRE + TEST, FILTER

7-28430
DAVIS RJ + TRUITT J + GILL JS + YUILLE WD
THE EFFECTS OF MOISTURE ON THE CHARACTER AND FILTRATION OF UO₂-STAINLESS STEEL AEROSOLS
OAK RIDGE NATIONAL LABORATORY
SM-110 +. 2 PAGES, PAGES 39-40 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

EFFICIENCIES HAVE BEEN MEASURED FOR SEVERAL COMMERCIAL MEDIA AS A FUNCTION OF VELOCITY WITH DRY AND HUMID AEROSOL. EFFICIENCIES ARE DECREASED ABOVE VELOCITIES OF 7.5 FT/MIN. NONWATERPROOFED PAPERS FILTER HUMID AEROSOL MORE POORLY THAN DRY AEROSOL, WHEREAS THE EFFICIENCY OF WATER-PROOFED PAPERS IS LITTLE AFFECTED BY THE HUMIDITY OF THE AEROSOL. THE MASS AND NUMBER CONCENTRATIONS OF THE EFFLUENT AEROSOL ARE SUBSTANTIALLY REDUCED AND THE RELATIVE NUMBER OF THE LARGER PARTICLES IS SUBSTANTIALLY INCREASED BY CONDENSING STEAM. THEORETICAL EXTRAPOLATION OF THIS DATA TO ESTIMATE THE ENHANCEMENT BY CONDENSING STEAM OF THE RATE OF SETTLING OF PARTICLES IN A CONTAINMENT VESSEL WAS MADE.

AVAILABILITY - R. J. DAVIS, J. TRUITT, J. S. GILL OR W. D. YUILLE, OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.

*AEROSOL PROPERTIES + *HUMIDITY + *OXIDE + *PARTICLE SIZE + *STEAM + *STEEL, STAINLESS + *URANIUM + AEROSOL + AIR CLEANING + FILTER EFFICIENCY + FILTER, FIBER + FILTER, PAPER + TEST, FILTER + WATER VAPOR

7-28431 ALSO IN CATEGORY 12
BURCHSTED CA
ENVIRONMENTAL PROPERTIES AND INSTALLATION OF HEPA FILTERS
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.
SM-110 +. 2 PAGES, PAGES 40-41 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

THE ABILITY OF HEPA (I.E., ABSOLUTE) FILTERS TO WITHSTAND SEVERE ENVIRONMENTAL CONDITIONS IS OFTEN CRITICAL TO RELIABLE OPERATION OF A CONTAMINATED EXHAUST SYSTEM. THIS PAPER DISCUSSES FINDINGS RELATED TO THE INSTALLATION, MECHANICAL STRENGTH, AND THE HEAT, MOISTURE, AND CORROSION RESISTANCE OF HEPA FILTERS DETERMINED DURING THE COURSE OF THE FILTER DEVELOPMENT PROGRAM OF THE USAEC DIVISION OF OPERATIONAL SAFETY. AS A RESULT OF THESE FINDINGS, WOOD-CASED FILTER UNITS ARE RECOMMENDED IN PREFERENCE TO STEEL-CASED FILTER UNITS WHEREVER POSSIBLE, WOOD-CASED FILTER UNITS SHOULD HAVE RABBETED CASING JOINTS, NOT BUTT JOINTS. THE LIMITING TEMPERATURE FOR CONTINUOUS EXPOSURE OF HEPA FILTERS TO HOT AIR IS 400 F, ABOVE THIS TEMPERATURE THE TENSILE STRENGTH OF THE MEDIA DROPS SHARPLY, TO AS LITTLE AS 50% OF THE ROOM TEMPERATURE TENSILE STRENGTH AT 500 F. FIBRE FRACTURE AND FIBRE LOSS OCCUR AT TEMPERATURES IN EXCESS OF ABOUT 550 F. THE LIMITING TEMPERATURE OF THE ASSEMBLED FILTER ELEMENT IS ACTUALLY DETERMINED BY THE SEALANT USED BETWEEN THE CASING AND THE FRAME AND, FOR WOOD-CASED UNITS, THE CASING MATERIAL.

AVAILABILITY - C. A. BURCHSTED, OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.

*DESIGN CRITERIA + *FILTER INSPECTION + *FILTER TEST REQUIREMENT + *TEST, FILTER SYSTEM + AIR CLEANING + FILTER OPERATION + FILTER SYSTEM + FIRE + HUMIDITY + OPERATING EXPERIENCE + STEAM + TEST, FILTER + THERMAL PROPERTY + WATER VAPOR

7-28432 ALSO IN CATEGORIES 12 AND 13
SCHMIDT WC + DAVIS DF + CLARK RE
RECLAMATION OF A PARTIALLY PLUGGED GLASS FIBRE VENTILATION FILTER AT THE HANFORD PUREX NUCLEAR FUELS REPROCESSING PLANT
ATLANTIC RICHFIELD HANFORD COMPANY, RICHLAND, WASHINGTON

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-28432 *CONTINUED*

SM-110 +. 1 PAGE, PAGE 41 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

CANYON VENTILATION AIR FROM THE HANFORD PUREX NUCLEAR FUELS REPROCESSING PLANT IS EXHAUSTED THROUGH A FILTER SYSTEM BEFORE BEING RELEASED TO THE ATMOSPHERE. THE FILTER INSTALLATION CONSISTS OF A BULK-PARTICULATE REMOVING, GLASS FIBRE FORE-FILTER, AND A FINE-PARTICULATE REMOVING, HIGH-EFFICIENCY GLASS FIBRE AFTER-FILTER. SAMPLES OF FILTER ENTRANCE AIR INDICATED A LARGE PERCENTAGE OF THE PARTICULATE TO BE CRYSTALLINE AMMONIUM NITRATE. BASED ON THE LABORATORY STUDIES THE PARTIALLY PLUGGED ORIGINAL FILTER WHICH HAD BEEN REMOVED FROM OPERATION WAS TREATED FOR RECLAMATION USING A SMALL FLOW OF HIGHLY HUMIDIFIED AIR THROUGH THE FORE-FILTER. THE RESULTS OF THE RECLAMATION TREATMENT WERE SATISFACTORY AND IT WAS POSSIBLE TO RETURN THE ORIGINAL FILTER INSTALLATION TO SERVICE HANDLING THE ENTIRE EXHAUST VENTILATION FLOW.

AVAILABILITY - W. C. SCHMIDT, D. F. DAVIS, B. E. CLARK, ATLANTIC RICHFIELD HANFORD COMPANY, RICHLAND, WASHINGTON

*ECONOMIC STUDY + *FILTER INSPECTION + *OPERATING EXPERIENCE + AIR CLEANING + HUMIDITY + PARTICULATE

7-28434

ALSO IN CATEGORY 12

GILBERT H
CENTENNIAL HISTORY OF THE DEVELOPMENT AND QUALITY OF HIGH-EFFICIENCY FILTERS FOR THE U.S. ATOMIC ENERGY PROGRAM

U.S. ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.

SM-110 +. 1 PAGE, PAGE 43 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

TWO FACILITIES ARE OPERATED FOR THE U.S. ATOMIC ENERGY COMMISSION IN ITS PROGRAM TO ASSURE THE UNIFORM QUALITY OF COMMERCIALLY MANUFACTURED HIGH-EFFICIENCY PARTICULATE FILTERS. THE FILTER-TESTING PROGRAM WAS STARTED IN JANUARY 1960 AFTER IT WAS REALIZED THAT THE COMMERCIAL FIRE-RESISTANT PRODUCT INCORPORATED DEFICIENCIES OF MANUFACTURE. THE RECORD OF TESTING FOR QUALITY ASSURANCE BY THE TWO FACILITIES AND AN ANALYSIS OF FACTORS GOVERNING THE QUALITY OF FILTERS ARE PRESENTED. THE ANALYSIS IS COMPLEMENTED WITH A DESCRIPTION OF EFFORTS, MADE IN THE COURSE OF THE FILTER TESTING, TO IMPROVE THE DESIGN OF THE FILTER FOR EFFICIENCY AND RELIABILITY. THE TESTING PROGRAM, COUPLED WITH A PROGRAM FOR CONTINUING IMPROVEMENT OF THE FILTER, HAS RESULTED IN THE EFFECTIVE REMOVAL OF RADIOACTIVE AEROSOLS AT ATOMIC ENERGY INSTALLATIONS ON A CONSISTENT AND DEPENDABLE BASIS.

AVAILABILITY - H. GILBERT, U.S. ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.

*FILTER QUALITY ASSURANCE STATION + *FILTER TEST REQUIREMENT + *FILTER, GLASS + AIR CLEANING + FILTER, HIGH EFFICIENCY + FIRE + OPERATING EXPERIENCE

7-28435

ALSO IN CATEGORIES 13 AND 12

SYKES GH + HARPER JA

DESIGN AND OPERATION OF A LARGE SAND BED FOR AIR FILTRATION

SAVANNAH RIVER PLANT, AIKEN, SOUTH CAROLINA

SM-110 +. 1 PAGE, PAGE 44 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

LARGE SAND BEDS TO FILTER EXHAUST AIR FROM RADIOCHEMICAL SEPARATION PLANTS HAVE PERFORMED SATISFACTORILY FOR 13 YEARS AT THE SAVANNAH RIVER PLANT. THE BEDS ARE 103 X 240 X 9 FEET DEEP AND ARE MADE FROM LAYERS OF SIZED SANDS AND GRAVELS. ACTIVITY PENETRATES ONLY TO THE SMALLEST-MESH (30-50) SAND. ABOUT 1000 CURIES OF GAMMA ACTIVITY IS ESTIMATED TO BE IN THE BED. FILTERING EFFICIENCY HAS REMAINED AT 99%. RESISTANCE TO AIR FLOW HAS INCREASED IN THE BEDS THROUGHOUT THE YEARS OF OPERATION. SOME INCREASED PRESSURE DROP RESULTED FROM GROUNDWATER LEAKING INTO THE SAND. AIR FLOWS HAVE GENERALLY BEEN MAINTAINED IN EXCESS OF 115,000 CUBIC FEET PER MINUTE. FILTER DIFFERENTIAL PRESSURES CURRENTLY ARE IN THE RANGE OF 8 TO 10 INCHES OF WATER.

AVAILABILITY - G. H. SYKES OR J. A. HARPER, SAVANNAH RIVER PLANT, AIKEN, SOUTH CAROLINA

*DESIGN CRITERIA + *FILTER EFFICIENCY + *FILTER, BED + *FILTER, SAND + *FUEL REPROCESSING + *OPERATING EXPERIENCE + *RADIOCHEMICAL PLANT SAFETY + AIR CLEANING + FILTRATION + WASTE TREATMENT, GAS

7-28436

ALSO IN CATEGORIES 12 AND 17

HINTON JH + JOSEPH JW

OPERATING EXPERIENCE WITH THE AIRBORNE-ACTIVITY CONFINEMENT SYSTEMS AT THE SAVANNAH RIVER PLANT

SAVANNAH RIVER PLANT, AIKEN, SOUTH CAROLINA

SM-110 +. 1 PAGE, PAGE 45 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

EQUIPMENT HAS BEEN INSTALLED IN THE VENTILATION EXHAUST DUCTS OF EACH REACTOR BUILDING AT THE SAVANNAH RIVER PLANT TO COLLECT AND CONFINE AIRBORNE PARTICULATE AND HALOGEN ACTIVITY THAT MIGHT BE RELEASED IN THE HIGHLY UNLIKELY EVENT OF A REACTOR ACCIDENT. THE EQUIPMENT IS CONTINUOUSLY ON-LINE AND HAS BEEN IN SERVICE FIVE YEARS. THE MIST SEPARATORS, WHICH PREVENT MOISTURE DAMAGE TO THE FILTERS, ARE WOVEN TEFLON MATS AND ARE STEAM-CLEANED APPROXIMATELY EVERY NINE MONTHS TO REMOVE ACCUMULATED OILY MATERIALS AND PARTICULATE MATTER. TO DATE, NO MIST SEPARATORS HAVE REQUIRED REPLACEMENT. THE PARTICULATE FILTERS ARE CORRUGATED GLASS-ASBESTOS FELT, PROTECTED AGAINST MECHANICAL DAMAGE BY WIRE MESH ON BOTH FILTER FACES.

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-28436 *CONTINUED*

THE CONDITION OF THE MIST SEPARATOR AND PARTICULATE FILTER IN EACH COMPARTMENT IS DETERMINED WEEKLY BY MEASURING THE PRESSURE DROP ACROSS EACH BANK AND THE AIR FLOW RATE THROUGH THE BANK.

AVAILABILITY - J. H. HINTON OR J. W. JOSEPH, SAVANNAH RIVER LABORATORY, AIKEN, SOUTH CAROLINA

*CHARCOAL + *FILTER MAINTENANCE + *MIST + *OPERATING EXPERIENCE + *SAVANNAH RIVER PLANT + AIR CLEANING + AIRBORNE RELEASE + FILTER SYSTEM + FILTER TEST REQUIREMENT + FILTER, SCREEN + TEST, DOP FILTER

7-28438 ALSO IN CATEGORY 12

SKOGULF H + LINDER P

THE ECONOMICS OF SOME TYPES OF ABSOLUTE FILTERS

AKTIEBOLAGET ATOMENERGIE, NYKOPING, SWEDEN

SM-110 +. 1 PAGE, PAGE 48 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

THE COST OF THE FILTERS FOR AIR CLEANING IS DETERMINED BY THE PURCHASE PRICE OF THE FILTER AND THE MEAN LIFE OF THE FILTER. IF FILTER CHANGES ARE NOT CAUSED BY THE HIGH ACTIVITY LEVEL, THE INCREASE OF PRESSURE DROP WILL MAKE A FILTER CHANGE NECESSARY. IN THE LATTER CASE THE DUST-HOLDING CAPACITY OF THE FILTER IS THE DETERMINING FACTOR FOR THE REPLACEMENT INTERVALS. SOME DIFFERENT FILTERS HAVE BEEN COMPARED IN THIS RESPECT WITH ATMOSPHERIC AEROSOLS AND A SIGNIFICANT DIFFERENCE IN COST HAS BEEN OBSERVED.

H. SKOGULF OR P. LINDER, AKTIEBOLAGET ATOMENERGIE, NYKOPING, SWEDEN

*ECONOMIC STUDY + *FILTER + AEROSOL + AIR CLEANING + ATMOSPHERIC POLLUTION + FILTER, ABSOLUTE + OPERATING EXPERIENCE

7-28439

MILHAM RC

HIGH-TEMPERATURE PROPERTIES OF ACTIVATED CARBON - PART I - DESORPTION OF IODINE. PART II - STANDARD METHOD FOR IGNITION TEMPERATURE MEASUREMENT

SAVANNAH RIVER LABORATORY, AIKEN, SOUTH CAROLINA

SM-110 +. 2 PAGES, PAGES 49-50 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

THE SAVANNAH RIVER LABORATORY IS MEASURING THE DESORPTION OF IODINE FROM ACTIVATED CARBON WHEN EXPOSED TO FLOWING AIR AT ELEVATED TEMPERATURES. THE DESORPTION OF ELEMENTAL IODINE FROM NEW CARBON AND FROM CARBON WITH UP TO FOUR YEARS SERVICE IN THE REACTOR CONFINEMENT FACILITIES AT THE SAVANNAH RIVER PLANT WAS MEASURED AT TEMPERATURES TO 220 C AND AIR FLOWS TO 66 FT/MIN. RESULTS OF THESE EXPERIMENTS ARE REPORTED. DESORPTION OF IODINE FROM CARBON WITH SERVICE IN THE SRP CONFINEMENT SYSTEM WAS DEPENDENT ON LENGTH OF SERVICE AND REGENERATION CONDITIONS PRIOR TO THE DESORPTION TEST. A PROCEDURE WAS DEVELOPED TO MEASURE IGNITION TEMPERATURE OF ACTIVATED CARBONS USED IN REACTORS CONFINEMENT FACILITIES. A SMALL-SCALE APPARATUS WAS DEVELOPED FOR THE MEASUREMENT OF IGNITION TEMPERATURES TO 530 C AND AT AIR VELOCITIES TO 120 FT/MIN. THIS METHOD IS BEING PROPOSED TO THE ASTM AS A STANDARD PROCEDURE.

AVAILABILITY - R. C. MILHAM, SAVANNAH RIVER LABORATORY, AIKEN, SOUTH CAROLINA

*CHARCOAL + *HUMIDITY + *IGNITION TEMPERATURE + *IODINE + *OPERATING EXPERIENCE + *SAVANNAH RIVER PLANT + AIR CLEANING + FILTER SYSTEM + FILTER, BED + IGNITION

7-28440

BARRY PJ

BEHAVIOUR OF RADIOIODINE IN GASEOUS EFFLUENTS

ATOMIC ENERGY OF CANADA LIMITED, CHALK RIVER, ONTARIO

SM-110 +. 1 PAGE, PAGE 50 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

THIS PAPER DESCRIBES THE USE OF THE METALLIC SCREENS IN A MULTI-COMPONENT SAMPLING PACK FOR IDENTIFYING MOLECULAR IODINE IN DIFFERENT GASEOUS ENVIRONMENTS. USING MULTI-COMPONENT SAMPLING PACKS, THE FRACTIONATION OF IODINE NUCLIDES BETWEEN DIFFERENT CHEMICAL FORMS WAS MEASURED IN THE EFFLUENT GASES ESCAPING FROM AN IN-PILE TEST LOOP IN WHICH THE FUEL WAS DELIBERATELY RUPTURED BY RESTRICTING THE FLOW OF COOLANT. EXPERIMENTS HAVE BEEN CARRIED OUT WITH A VIEW TO CHARACTERIZING THE DIFFERENT CHEMICAL BEHAVIOR OF RADIOIODINE AS IT IS RELEASED FROM A VARIETY OF OPERATIONS IN THE NUCLEAR INDUSTRY INCLUDING THE CUTTING OF FUEL SECTIONS IN METALLURGICAL EXAMINATION CAVES AND AN INCINERATOR.

AVAILABILITY - P. J. BARRY, ATOMIC ENERGY OF CANADA LIMITED, CHALK RIVER

*FISSION PRODUCT, IODINE + *IN PILE EXPERIMENT + *IN PILE LOOP + AIR CLEANING + FILTER CHARACTERISTICS + FILTER EFFICIENCY + FILTER SYSTEM + FILTER, SCREEN + IODINE + NOBLE GAS + RADIOCHEMICAL PLANT SAFETY + SAMPLING

7-28441

ALSO IN CATEGORY 15

HOLFORD RM

AN AUTOMATIC MONITOR FOR ALL FORMS OF AIRBORNE RADIOIODINE

ATOMIC ENERGY OF CANADA LIMITED, CHALK RIVER, ONTARIO

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-28441 *CONTINUED*

SM-110 +. 1 PAGE, PAGE 51 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

ONE OF THE MAIN PROBLEMS ENCOUNTERED IN MONITORING AIR NEAR A REACTOR FOR RADIOIODINE IS THAT AN APPRECIABLE, THOUGH VARIABLE, PROPORTION OF THE ACTIVITY IS ASSOCIATED WITH ORGANIC FORMS OF IODINE SUCH AS METHYL IODIDE. CHARCOAL-LOADED FILTER PAPERS, SUCH AS WHATMAN ACT/8, DO NOT RETAIN THIS FORM OF IODINE FOR ANY APPRECIABLE TIME, ALTHOUGH THEIR EFFICIENCY FOR IODINE IN THE ELEMENTAL FORM IS VERY HIGH. THEREFORE, IN THE PAST THEY HAVE NOT BEEN CONSIDERED SUITABLE FOR MANY APPLICATIONS IN HEALTH PHYSICS. WE HAVE DISCOVERED HOWEVER THAT THE ADDITION OF A FEW PARTS PER MILLION OF ELEMENTAL BROMINE TO THE INCOMING AIR STREAM OVERCOMES THIS DIFFICULTY AND ENABLES THE PAPER TO EXTRACT BOTH ELEMENTAL IODINE AND METHYL IODIDE FROM AIR WITH HIGH EFFICIENCY. THIS HAS BEEN ESTABLISHED DIRECTLY BY LABORATORY EXPERIMENTS AND INDIRECTLY ON A PROTOTYPE OF THE INSTRUMENT UNDER WORKING CONDITIONS.

AVAILABILITY - R. M. HOLFORD, ATOMIC ENERGY OF CANADA LIMITED, CHALK RIVER, CANADA

*AIRBORNE RELEASE + *FILTER, PAPER + *MONITOR, RADIATION, AIR + *ORGANIC IODIDE + AIR CLEANING + BROMINE + FILTER EFFICIENCY + FISSION PRODUCT, IODINE + IODINE + MONITOR, RADIATION, GAS + MONITOR, RADIATION, GENERAL

7-28442 ALSO IN CATEGORIES 13 AND 17

RAMARATHINAM K + KHAN AA + SUBRAMANIAM KG + AMALRAJ RV

AIR CLEANING OPERATIONAL EXPERIENCE IN THE BHABHA ATOMIC RESEARCH CENTRE, TROMBAY

BHABHA ATOMIC RESEARCH CENTRE, TROMBAY, BOMBAY, INDIA

SM-110 +. 1 PAGE, PAGE 53 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

THE PROBLEM OF AIR POLLUTION DUE TO THE OPERATION OF A NUCLEAR FACILITY IS OF GREAT IMPORTANCE TO THE TROMBAY ESTABLISHMENT AS IT IS LOCATED NEAR THE HEAVILY POPULATED CITY OF BOMBAY. A SHORT ACCOUNT OF GENERAL STANDARDS OF AIR POLLUTION CONTROL, CODES AND STANDARDS OF VARIOUS AIR CLEANING SYSTEMS PRESENTLY IN USE AND PRACTICES CONCERNING CONTROL OF POLLUTANTS ARE GIVEN. DESIGN AND OPERATIONAL DETAILS AND COST ASPECTS OF VENTILATION AND AIR CLEANING SYSTEMS OF THE MAJOR NUCLEAR FACILITIES IN THE BHABHA ATOMIC RESEARCH CENTRE, SUCH AS CANADA INDIA REACTOR, FUEL REPROCESSING PLANT, RADIOLOGICAL LABORATORIES AND SEVERAL OTHER FACILITIES ARE PRESENTED. THE STUDIES CARRIED OUT TO CHARACTERIZE THE POLLUTANT AND ITS REMOVAL EFFECTED BY THE SYSTEM IN USE ARE REVIEWED.

AVAILABILITY - K. RAMARATHINAM, A. A. KHAN, ETC., BHABHA ATOMIC RESEARCH CENTRE, TROMBAY, BOMBAY, INDIA

*ATMOSPHERIC POLLUTION + *CODES AND STANDARDS + *RADIATION SAFETY AND CONTROL + *RADIOCHEMICAL PLANT SAFETY + *RADIOISOTOPE + AIR CLEANING + FILTER SYSTEM + INDIA + OPERATING EXPERIENCE

7-28443 ALSO IN CATEGORY 13

KHAN AA + AMALRAJ RV + THOMAS KT

FABRIC FILTRATION OF FLUE GASES FROM AN ACTIVE INCINERATOR - STUDIES ON DESIGN OPTIMIZATION AND OPERATIONAL ANALYSIS

BHABHA ATOMIC RESEARCH CENTRE, TROMBAY, BOMBAY, INDIA

SM-110 +. 1 PAGE, PAGE 54 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

THE PAPER DESCRIBES THE USE OF BAG FILTERS IN THE DRY GAS CLEANING SYSTEM OF AN INCINERATOR AS A SAFE AND ECONOMICAL METHOD FOR TREATMENT OF THE FLUE GAS FROM AN INCINERATOR BURNING LOW-LEVEL RADIOACTIVE SOLID COMBUSTIBLES. VARIOUS TYPES OF FABRICS WERE EVALUATED TO FIND THE FILTRATION CHARACTERISTICS DURING THE ENTIRE CYCLE OF OPERATION. DATA ON PILOT PLANT STUDIES CARRIED OUT TO OPTIMIZE A SUITABLE DESIGN OF FABRIC FILTER FOR FLUE GAS CLEANING IS INCLUDED. COST COMPARISON OF DIFFERENT FABRICS BASED ON THE LIFE OF THE FABRIC AND THE COST OF FABRIC FILTRATION PER UNIT OF SOLID WASTES TREATED HAS BEEN GIVEN. THE PHYSICAL, CHEMICAL AND RADIOCHEMICAL NATURE OF THE AEROSOLS ENCOUNTERED IN VARIOUS PARTS OF THE INCINERATOR SYSTEM ARE DESCRIBED.

AVAILABILITY - A. A. KHAN, R. V. AMALRAJ, OR K. T. THOMAS, BHABHA ATOMIC RESEARCH CENTRE, TROMBAY, BOMBAY, INDIA

*COMBUSTION + *FILTER, FABRIC + *FILTER, PREFILTER + *FILTER, ROUGHING + *RADIOISOTOPE + AEROSOL PROPERTIES + AIR CLEANING + INDIA + RADIOCHEMICAL PLANT SAFETY

7-28444 ALSO IN CATEGORY 14

SLIVNIK J

RECOVERY OF XE AND KR IN THE TREATMENT OF GASEOUS RADIOACTIVE WASTES

NUCLEARNI INSTITUT JOZEF STEFAN, LJUBLJANA, YUGOSLAVIA

SM-110 +. 1 PAGE, PAGE 55 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

IN THE COURSE OF INVESTIGATION OF THE CHEMICAL RECOVERY OF RADIOACTIVE KRYPTON AND XENON THE POSSIBILITY OF A QUANTITATIVE SEPARATION OF BOTH GASES USING FLUORINE AS A REACTING AGENT WAS STUDIED AS A BASIC PROBLEM. THE INFLUENCE OF THE REACTANTS MOLE RATIOS AND REACTION TEMPERATURE ON THE SYNTHESIS OF XENON FLUORIDES IS DESCRIBED. ALSO, THE RESULTS OBTAINED DURING THE STUDY OF THE XENON-FLUORINE REACTION KINETICS ARE GIVEN. DURING THIS STUDY 1/10 AND 1/5 MOLE RATIOS OF BOTH REACTANTS WITH AN ABSOLUTE PRESSURE AMOUNTING TO 33 ATM AT 22 C AND TEMPERATURES OF 110, 120, AND 130 C WERE EMPLOYED. IT WAS FOUND THAT KRYPTON UNDER THESE

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-28444 *CONTINUED*

CONDITIONS DOES NOT REACT WITH FLUORINE AND DOES NOT INFLUENCE THE XENON-FLUORINE REACTION RATE AND DIRECTION. THE EXPERIMENTS PERFORMED IN ORDER TO REMOVE TRACES OF XENON FROM A BULK OF KRYPTON ARE DESCRIBED.

AVAILABILITY - J. SLIVNIK, NUCLEARNI INSTITUT JOZEF STEFAN, LJUBLJANA, YUGOSLAVIA

*CHEMICAL KINETICS + *FLUORINE + *KRYPTON + *XENON + AIR CLEANING + CHEMICAL REACTION + NOBLE GAS

7-28445

ALSO IN CATEGORY 17

DALE GC

CONTROL OF AIRBORNE WASTES FROM UNITED KINGDOM GAS-COOLED POWER REACTORS

CENTRAL ELECTRICITY GENERATING BOARD, LONDON, U. K.

SM-11C +. 1 PAGE, PAGE 56 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

THE UNITED KINGDOM HAS IN OPERATION 23 CARBON-DIOXIDE-COOLED NUCLEAR POWER REACTORS. THE MAIN FEATURES OF A TYPICAL REACTOR ARE DESCRIBED, AND THE WAYS IN WHICH AIRBORNE WASTES ARISE ARE DETAILED. THE FIRST EIGHT POWER STATIONS EMPLOY REACTORS IN STEEL PRESSURE VESSELS, AND THE BIOLOGICAL SHIELD IS AIR COOLED. IN THE CASE OF REACTORS WITH PRESTRESSED CONCRETE PRESSURE VESSELS THE COOLING IS ACHIEVED BY CIRCULATING WATER THROUGH PIPES CLOSE TO THE INTERNAL STEEL LINERS, AND COOLING-AIR PROBLEMS ARE THUS ELIMINATED. IN THE EVENT OF AN EMERGENCY WHERE RELATIVELY LARGE QUANTITIES OF FISSION PRODUCTS MAY BE INVOLVED, EXTRA EQUIPMENT IS PROVIDED TO REDUCE THE EMISSION OF RADIOACTIVE MATERIALS TO ACCEPTABLE LEVELS.

AVAILABILITY - G. C. DALE, CENTRAL ELECTRICITY GENERATING BOARD, LONDON, U. K.

*CARBON DIOXIDE + *STACK + *UNITED KINGDOM + *VENTILATION SYSTEM + *WASTE DISPOSAL, GAS + AIR CLEANING + AIRBORNE RELEASE + REACTOR, HTGR + SAMPLING

7-28446

ALSO IN CATEGORY 12

KRATEL R + BECKER F

THE APPLICATION OF PLASTIC FIBRE HEPA FILTERS TO THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES

KRATEL INGENIEURGESSELLSCHAFT, STUTTGART, FEDERAL REPUBLIC OF GERMANY

SM-11D +. 1 PAGE, PAGE 58 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

HEPA FILTERS USED TO SEPARATE AIRBORNE RADIOACTIVE WASTES MUST NOT BE INFLAMMABLE. THIS PARTICULAR SAFETY REQUIREMENT IS MET WITH ALMOST IDEALLY BY HEPA FILTERS MADE OF FIBERGLASS. PLASTIC FIBRE FILTERS ARE INFLAMMABLE, AND THEREFORE THEY APPEAR TO BE UNSUITABLE FOR THE PURPOSE FROM A SAFETY STANDPOINT. WHILE GLASS FIBRE FILTERS ARE RATHER BULKY WHEN DISPOSED OF, PLASTIC FIBRE FILTERS CAN BE REDUCED TO TINY LUMPS BY THE USE OF SUITABLE SOLVENTS. FILTER FRAME AND FILTER LAYER ARE MOULDED TOGETHER USING IDENTICAL PLASTIC MATERIAL. THE USE OF SOLVENTS AND THE APPLICATION OF SUBSEQUENT EVAPORATION TECHNIQUES WILL REDUCE THE BULK OF RADIOACTIVE WASTE TO A MINIMUM. THE PLASTIC FIBRE FILTER LAYER ALSO OFFERS A METHOD OF RECOVERING VALUABLE RADIOACTIVE COMPONENTS. SAFETY REQUIREMENTS, HOWEVER, MAKE IT COMPULSORY TO COMBINE PLASTIC FIBRE FILTERS WITH GLASS FIBRE FILTERS OF THE HEPA TYPE. SEVERAL APPLICATIONS WILL BE DEMONSTRATED AND THE RESULTS DISCUSSED.

AVAILABILITY - R. KRATEL OR F. BECKER, KRATEL INGENIEURGESSELLSCHAFT, STUTTGART, FEDERAL REPUBLIC OF GERMANY

*FILTER CHARACTERISTICS + *FILTER, GLASS + *FILTER, PLASTIC + AIR CLEANING + FILTER OPERATION + FIRE + IGNITION

7-28447

ALSO IN CATEGORY 12

WILHELM J

TESTING OF IODINE FILTERS FOR NUCLEAR INSTALLATIONS

KARLSRUHE, FEDERAL REPUBLIC OF GERMANY

SM-11G +. 1 PAGE, PAGE 60 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

WORK HAS BEEN DONE TO TEST THE REMOVAL EFFICIENCY OF IODINE FILTERS FOR NUCLEAR INSTALLATIONS. THE TEST METHOD INCLUDES LABORATORY TESTS OF THE ADSORBER MATERIAL (UNDER MCA CONDITIONS FOR TEMPERATURE, RELATIVE HUMIDITY, PRESSURE, LOADING, STAY-TIME AND BED DEPTH) AND IN SITU TESTS AT THE INSTALLATION. EXPERIMENTAL DATA ARE GIVEN FOR REALISTIC LOADINGS WITH CH3I-131 UP TO 0.5 CI/G CHARCOAL AND 100% RELATIVE HUMIDITY. FOR STANDARD LABORATORY ADSORBER TESTS, A METHOD IS DISCUSSED FOR HUMIDIFICATION AND CONTROL OF GAS STREAMS UP TO 100% RELATIVE HUMIDITY AT ELEVATED TEMPERATURES. THE APPARATUS IS DESCRIBED. THE REPRODUCIBILITY OF LONG-TERM TESTS UNDER CONDITIONS OF EXTREMELY HIGH RELATIVE HUMIDITY IS SHOWN AND DISCUSSED. A DESCRIPTION OF THE HARDWARE FOR IN SITU TESTS IS INCLUDED, AND RESULTS OF TESTS ARE GIVEN.

AVAILABILITY - J. WILHELM, KARLSRUHE, FEDERAL REPUBLIC OF GERMANY

*CHARCOAL ADSORBER + *FISSION PRODUCT, IODINE + *IODINE + *OPERATING EXPERIENCE + *ORGANIC IODIDE + *TEST, FILTER SYSTEM + AIR CLEANING + CHARCOAL + DESIGN CRITERIA + FILTER EFFICIENCY

7-28448

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-28448 *CONTINUED*

SCHIKARSKI W.
THE KARLSRUHE RESEARCH PROGRAMME ON NUCLEAR AEROSOLS AND ITS RELATION TO THE PLUTONIUM HAZARD OF FAST SODIUM REACTORS
INSTITUT FÜR ANGEWANDTE REAKTORPHYSIK KERNFORSCHUNGSZENTRUM KARLSRUHE, FEDERAL REPUBLIC OF GERMANY
SM-110 +. 1 PAGE, PAGE 61 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

IN PARTICULAR, AEROSOLS FROM ACCIDENTS IN FAST REACTORS, THEIR PROCESSES OF GENERATION, TRANSPORT AND IMPAIRMENT IN REACTOR BUILDINGS ARE UNDER INVESTIGATION. THE TEST FACILITY USED FOR THE INVESTIGATION OF NUCLEAR AEROSOLS (CALLED TUNA) IS DESCRIBED TOGETHER WITH THE VARIOUS STEPS OF THE EXPERIMENTAL PROGRAMME. THEORETICAL ANALYSIS OF THE POSSIBLE ACCIDENTAL PLUTONIUM RELEASE FROM FAST REACTORS HAS SHOWN THE IMPORTANCE OF THE PROBLEM. THE ASPECTS OF PLUTONIUM RELEASE VIA FORMATION OF AEROSOLS ARE DISCUSSED, PARTICULARLY IN RESPECT TO THE UNCERTAIN OR UNKNOWN PARAMETERS AND NUMBERS INVOLVED. FINALLY, CONCLUSIONS DRAWN FROM THESE CONSIDERATIONS WHICH LED TO THE PRESENT OUTLINE OF THE KARLSRUHE RESEARCH PROGRAMME ON NUCLEAR AEROSOLS ARE DISCUSSED.

AVAILABILITY - W. SCHIKARSKI, INSTITUT FÜR ANGEWANDTE REAKTORPHYSIK KERNFORSCHUNGSZENTRUM KARLSRUHE, FEDERAL REPUBLIC OF GERMANY

*AEROSOL PRODUCTION + *PLUTONIUM + *SODIUM + *THEORETICAL INVESTIGATION + AEROSOL PROPERTIES + AIR CLEANING + REACTOR, FAST

7-28449

MELANDRI C + PRODI V + RIMONDI O + TARRONI G
A SUBMICRON PARTICLE PRECIPITATOR BASED ON WATER VAPOUR CONDENSATION
COMITATO NAZIONALE PER L'ENERGIA NUCLEARE, BOLOGNA, ITALY
SM-110 +. 1 PAGE, PAGE 62 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

AN AEROSOL PARTICLE PRECIPITATOR HAS BEEN BUILT, BASICALLY COMPOSED OF A GAP WHERE A STRONG WATER VAPOUR CONCENTRATION GRADIENT AND SUPERSATURATION ARE ESTABLISHED. THE MAIN MECHANISM CAUSING PRECIPITATION HAS PROVED TO BE PARTICLE NUCLEATION AND GROWTH WHICH GREATLY ENHANCE THE SETTLING VELOCITY UNDER GRAVITY. THE EFFECTS OF FLOW RATE AND PARTICLE CONCENTRATION AT THE INLET ARE STUDIED (THE PARAMETER RULING THE DEPOSITION EFFICIENCY IS THE AMOUNT OF WATER AVAILABLE TO EACH PARTICLE). THE CONTRIBUTION OF THERMOPHORETIC, DIFFUSOPHORETIC AND GRAVITATIONAL FORCES IS ALSO EVALUATED. THE TESTS HAVE BEEN PERFORMED WITH DOP SMOKE (MEDIAN DIAMETER 0.3 MICRON) AND WITH THE AID OF AN AEROSOL PHOTOMETER. THE COLLECTION EFFICIENCY IN PARTICULAR OPERATING CONDITIONS IS BETTER THAN 99.97%.

AVAILABILITY - C. MELANDRI, V. PRODI, O. RIMONDI, OR G. TARRONI, COMITATO NAZIONALE PER L'ENERGIA NUCLEARE, BOLOGNA, ITALY

*DIFFUSIOPHORESIS + *THERMOPHORESIS + *WATER VAPOR + AEROSOL PROPERTIES + AIR CLEANING + DEPOSITION + PRECIPITATION + TEST, DOP FILTER

7-28450

HIRLING J
EFFICIENCY OF VARIOUS FILTER PACKINGS FOR THE REMOVAL OF I-131 AND ITS COMPOUNDS
HUNGARIAN ACADEMY OF SCIENCES, INSTITUTE OF ISOTOPES, BUDAPEST, HUNGARY
SM-110 +. 1 PAGE, PAGE 63 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

IN THE COURSE OF PRODUCTION OF I-131, A RADIOISOTOPE PRODUCED ON A RELATIVELY LARGE SCALE IN HUNGARY, THE PROBLEM OF WASTE DISPOSAL IS CONSIDERED AS ONE OF THE MOST IMPORTANT. IN SPITE OF CAREFUL TREATMENT OF WASTE LIQUIDS, THE RADIATION HAZARD DUE TO VOLATILE IODINE COMPOUNDS PRESENT AS ADMIXTURES OF LONG-LIVED TELLURIUM ACTIVITIES STILL DEMANDS CONSIDERATION. OTHER DIFFICULTIES HAVE ARISEN REGARDING THE TOTAL CAPACITY AND EFFICIENCY OF THE FILTER SYSTEM, AND ALL THESE PROBLEMS ARE RELATED TO DIFFERENT VALENCY STATES OF IODINE AND ITS COMPOUNDS. THE EVALUATION OF VARIOUS FILTERS AND EXTENSIVE INVESTIGATIONS ON THE VOLATILITY AND/OR THE PHYSICAL-CHEMICAL BEHAVIOUR OF CARRIER-FREE RADIOIODINE, AS AFFECTED BY PH, PRETREATMENT AND CERTAIN CHEMICALS, ARE DESCRIBED.

AVAILABILITY - J. HIRLING, HUNGARIAN ACADEMY OF SCIENCES, INSTITUTE OF ISOTOPES, BUDAPEST, HUNGARY

*FISSION PRODUCT, IODINE + *TELLURIUM + *WASTE TREATMENT, LIQUID + AIR CLEANING + CHEMICAL PROPERTY + FILTER EFFICIENCY + FILTER SYSTEM + IODINE + PROPERTY, PHYSICAL + WASTE DISPOSAL, GAS

7-28451

MEASUREMENT OF FISSION GAS PRESSURE IN REACTOR FUEL RODS OCTOBER 1, 1966 - MARCH 31, 1968 1ST, 2ND, 3RD, AND 4TH QUARTERLY REPORTS
NUCLEAR-CHEMIE UND METALLURGIE G.M.B.H., HANAU, GERMANY
14 PAGES, 3 FIGURES, 3 TABLES, SUMMARY OF PERIODIC PROGRESS REPORTS, OCT. 1, 1966 TO MARCH 31, 1968 FROM NUKEM, MAY 28, 1968

THESE FOUR REPORTS FROM THE NUKEM COMPANY, HANAU, GERMANY, DESCRIBE THE PLANNING, PREPARATION, CONSTRUCTION, AND FIRST RESULTS FROM EXPERIMENTS FOR THE MEASUREMENT OF THE GAS PRESSURE INSIDE A FUEL ROD DURING IRRADIATION.

*ANALYTICAL TECHNIQUE, CALIBRATION + *FISSION GAS RELEASE + *FUEL ELEMENT + *PRESSURE, INTERNAL + ALLOY +

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-28451 *CONTINUED*
CLADDING + FUEL, PELLET TYPE + PROPERTY, PHYSICAL + URANIUM DIOXIDE + ZIRCONIUM

7-28452
BLANCHET J + CORIOU H + GRALL L + MOUHOT R + PELRAS M
THE EFFECT OF RADIATION ON THE CORROSION OF ZIRCALOY 2 IN AQUEOUS SOLUTIONS AT HIGH TEMPERATURES
WAPD-TRANS-87 +. 30 PAGES, TRANSLATED FOR BETTIS ATOMIC POWER LAB. FROM J. NUCL. MATER., 22, PAGES 55-67
(1967)

THE INFLUENCE OF FAST NEUTRON IRRADIATION ON THE CORROSION OF ZIRCALOY-2 IN AQUEOUS HIGH-TEMPERATURE ENVIRONMENT IS INVESTIGATED. EXPERIMENTS SHOW THAT, UNDER CERTAIN CIRCUMSTANCES, IRRADIATION COULD INCREASE THE PROPORTION OF HYDROGEN ABSORBED BY THE METAL. THE OXIDATION REMAINS PRACTICALLY UNCHANGED. ON THE OTHER HAND, EVIDENCE IS PRESENTED FOR THE DETRIMENTAL EFFECT OF HIGH PURIFICATION OF ZIRCONIUM ON ITS CORROSION RESISTANCE IN DEMINERALIZED WATER (360 C) AND PARTICULARLY IN SUPERHEATED STEAM (400 C). IN THIS CASE, THE ATTACK IS REDUCED BY ADDING SMALL QUANTITIES OF IRON TO THE METAL. THE ATTRACTIVE BEHAVIOR OF Zr/Fe2% AND Al/Fe2%-Cu2% ALLOYS IN SUPERHEATED STEAM IS REPORTED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151
\$3.00 COPY, \$0.65 MICROFICHE

*CORROSION + ALLOY + CLADDING + HYDROGEN + METAL + STEAM + WATER, GENERAL + ZIRCONIUM

7-28453
KIMURA K
EFFICIENCY OF FILTERS FOR RADIOACTIVE AEROSOLS
LA-TR-67-81 +. 13 PAGES, TRANSLATED FROM RODO KAGAKU, 42(10), PAGES 696-702 (1966)

EXAMINATIONS OF VARIOUS KINDS OF DUST FILTERS WERE CARRIED OUT USING A RADIOACTIVE SOLID AEROSOL OF THORON DAUGHTER ELEMENTS FROM THORIUM NITRATE. ELECTROMICROGRAPHS OF THE THORON DISINTEGRATION PRODUCTS COLLECTED BY A THERMAL PRECIPITATOR AND AN INVESTIGATION OF THE RELATION BETWEEN THE FILTERING EFFICIENCY AND NUMBER OF SHEETS OF FILTER PAPER SHOWED THAT THE DIAMETERS OF THE AEROSOL PARTICLES WAS VERY SMALL AND FAIRLY UNIFORM. A GLASS FIBER FILTER FOR USE IN THE MEASUREMENT OF DUST CONCENTRATIONS AND AN ACG (ASBESTOS, CELLULOSE, GLASS FIBER) FILTER SHOWED HOWEVER OVER 99% OF FILTERING EFFICIENCY, EVEN FOR THE RADIOACTIVE AEROSOL.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151
\$3.00 COPY, \$0.65 MICROFICHE

*FILTER EFFICIENCY + *THORON + *TRACER, RADIOACTIVE + AEROSOL + FILTER, GLASS + PARTICULATE + THERMAL PROPERTY

7-28455
ADAMS RE + ACKLEY RD
REMOVAL OF RADIOIODINE FROM GASES
OAK RIDGE NATIONAL LAB., TENN.
10 PAGES, 3 FIGURES, 54 REFERENCES, NUCLEAR SAFETY, 9(5), PAGE 373-382, (OCT. 1968)

CERTAIN SPECIALLY IMPREGNATED CHARCOALS ARE EFFECTIVE FOR THE REMOVAL OF RADIOACTIVE METHYL IODIDE FROM FLOWING AIR AND STEAM-AIR MIXTURES AT RELATIVE HUMIDITIES MUCH HIGHER THAN THOSE AT WHICH UNIMPREGNATED CHARCOAL IS EFFECTIVE. THESE IMPREGNATED CHARCOALS ARE ALSO EFFECTIVE FOR TRAPPING ELEMENTAL IODINE. AIRBORNE IODINE MAY ALSO OCCUR IN INTIMATE ASSOCIATION WITH PARTICULATE MATERIAL, AND STUDIES SUGGEST THAT BOTH REVERSIBLE AND IRREVERSIBLE ADSORPTION MAY OCCUR. CONSEQUENTLY, ALTHOUGH RADIOIODINE-BEARING PARTICULATES MAY BE REMOVED WITH HIGH-EFFICIENCY FILTERS, THE POSSIBLE DESORPTION OF IODINE FROM THE TRAPPED PARTICULATES MAY REPRESENT A POTENTIAL PROBLEM. THE POSTACCIDENT USE OF SPRAY SYSTEMS AND WATER POOLS FOR BOTH PRESSURE CONTROL AND FISSION-PRODUCT REMOVAL AND IN-PLACE TESTING OF IODINE-REMOVAL SYSTEMS ARE DISCUSSED.

*CHARCOAL ADSORBER + *FILTER EFFICIENCY + *FISSION PRODUCT, IODINE + *ORGANIC IODIDE + *SPRAY, GENERAL + CHARCOAL + FILTER SYSTEM + IGNITION + TEST, FILTER

7-28456
BAFFIGO V + POLIN F
STUDY ON THE RELEASE OF FISSION GASES FROM UO2 SAMPLES IRRADIATED TO VARIOUS DOSES
SOCIETA RICERCA IMPIANTI NUCLEARI, SALUGGIA (ITALY)
EURAC-1978 +. 10 PAGES, DECEMBER 1967

DURING THE QUARTER, NINE DIFFUSION EXPERIMENTS WERE PERFORMED AT 1400 C ON UO2 SAMPLES. THE DECREASE OF THE APPARENT DIFFUSION COEFFICIENT OF XENON WITH INCREASE OF THE IRRADIATION DOSE RESULTS TO BE OF 2-3 ORDERS OF MAGNITUDE GOING FROM A FEW MWDT UP TO MORE THAN 1000 MWDT. A PARTIAL RECOVERY OF THIS DECREASE IS ALSO OBSERVABLE WITH BEGINNING WITHIN THE RANGE 2000-3000 MWDT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151
\$3.00 COPY, \$0.65 MICROFICHE

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-28456 *CONTINUED*

*DIFFUSION COEFFICIENT + *FISSION PRODUCT RELEASE, GENERAL + DIFFUSION + FUEL, PELLET TYPE + URANIUM DIOXIDE

7-28457 ALSO IN CATEGORY 4

BOARDMAN TJ + SUDAR S
REACTION OF RESIDUAL SODIUM IN HNPf PRIMARY SODIUM SYSTEMS
ATOMICS INTERNATIONAL, CANOGA PARK, CALIF.
NAA-SR-MEMO-12268 +. 43 PAGES, 6 FIGURES, REFERENCES, MAY 15, 1967

THE ACTIVITY SPECIFICATION COVERING REACTION OF RESIDUAL SODIUM IN THE HNPf PRIMARY SYSTEM (HNPf RETIREMENT, ACTIVITY SPECIFICATION 5) REQUIRES THAT RESIDUAL SODIUM IN THE PRIMARY SYSTEM BE CONVERTED TO AN ESSENTIALLY CHEMICALLY INACTIVE FORM. PROCESSES FOR REACTING THE RESIDUAL SODIUM AND PROCEDURES FOR REACTING AND/OR REMOVING THE RESIDUAL SODIUM, IN CONFORMANCE WITH THE HNPf RETIREMENT PLAN, ARE PRESENTED. AN EXPERIMENTAL PROGRAM WILL BE CARRIED OUT TO VERIFY REACTION CHARACTERISTICS OF THE PROPOSED STEAM-NITROGEN REACTION PROCEDURE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151
\$3.00 COPY, \$0.65 MICROFICHE

*COOLANT CHEMISTRY + *DECONTAMINATION + *NITROGEN + *SODIUM + *STEAM + REACTOR, FAST

7-28458 ALSO IN CATEGORY 4

RODGERS SJ + PALLADINO CA + WILDEMAN TJ
EFFECT OF HIGH TEMPERATURE SODIUM ON THE MECHANICAL PROPERTIES OF CANDIDATE ALLOYS FOR THE LMFBR PROGRAM
MSA RESEARCH CORP., EVANS CITY, PA.
MSAR-67-203 +. 73 PAGES, DEC. 1967

TWO COLD TRAPS WERE REMOVED FROM MSA RESEARCH CORPORATION OPERATIONAL LOOPS AND THE CONTENTS WERE ANALYZED FOR O₂, C, N₂, H₂, CARBON COMPOUNDS, PARTICLE SIZE AND METALLIC IMPURITIES. COLD TRAP I-C HAD OPERATED FOR 1400 HOURS, AND COLD TRAP II-O2 HAD OPERATED FOR 3200 HOURS. LOOP I-C HAD OPERATED WITH A HIGH CARBON ENVIRONMENT WHERE PART OF THE MAIN-STREAM FLOW WAS PASSED THROUGH A BED OF GRAPHITE RODS AT 1200 F. LOOP II-O2 HAD OPERATED WITH A HIGH OXYGEN ENVIRONMENT WITH THE COLD TRAP BEING OPERATED AT 700 F TO PROVIDE OXYGEN CONCENTRATION OF ABOUT 300 PPM O₂. ON THE BASIS OF THE RELATIVE QUANTITIES OF CO₂, C₂H₂, AND HCN DETECTED DURING ANALYSIS, IT IS ASSUMED THAT NA₂C₂ OR SOME ACETYLENE-PRODUCING COMPOUND, SUCH AS A CARBONYL, IS RESPONSIBLE FOR CARBURIZATION OF AUSTENITIC STEELS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151
\$3.00 COPY, \$0.65 MICROFICHE

*OUT OF PILE LOOPS AND EXPERIMENTS + *SODIUM + CARBON + CONTAMINATION + CORROSION + FILTER, TRAP + OXIDE + THERMAL PROPERTY

7-28459

PALMER AD + PORRITT P
THE DETERMINATION OF FISSION PRODUCT LEVELS IN HIFAR HEAVY WATER
AUSTRALIAN ATOMIC ENERGY COMMISSION, LUCAS HEIGHTS
AAEC/TM-427 +. 14 PAGES, 4 FIGURES, REFERENCES, JAN. 1968

METHODS FOR DETERMINING BA-140 AND I-131 ARE DESCRIBED. THESE METHODS ARE SUITABLE FOR ROUTINE MONITORING OF FISSION PRODUCT LEVELS IN THE HIFAR HEAVY WATER CIRCUIT. THE RESULTS OBTAINED OVER A FOUR-MONTH PERIOD ARE PRESENTED AND DISCUSSED.

AVAILABILITY - USAEC DEPOSITORY LIBRARIES IN THE U.S. AND OVERSEAS

*AUSTRALIA + *CONTAMINATION + *COOLANT CHEMISTRY + *DEUTERIUM + BARIUM + FISSION PRODUCT TRANSPORT + FISSION PRODUCT, IODINE + RADIOISOTOPE + WATER, GENERAL

7-28460

STAHL QR + TIEDEMAN GT
OXIDATION EXPERIMENTS ON ORGANIC REACTOR COOLANT
ATOMICS INTERNATIONAL
AI-AEC-MEMO-12688 +. 82 PAGES, APRIL 27, 1968

OXIDATION CAUSED SERIOUS CORROSION AND FOULING IN THE ORGANIC MODERATED REACTOR EXPERIMENT. IN SPITE OF PRECAUTIONS TO AVOID IT, SOME OXIDATION ALSO OCCURRED IN THE PIQUA NUCLEAR POWER FACILITY, AS SHOWN BY INCREASES IN THE CARBONYL OXYGEN CONTENT FOLLOWING OPENING OF THE REACTOR VESSEL, AND BY THE SUBSTANTIAL OXYGEN CONTENT OF SOME DEPOSITS SUCH AS FILM, COKE, AND SLUDGE. CONCERNING OXIDATION RATES, IT IS KNOWN THAT UNIRRADIATED COOLANT (MOSTLY TERPHENYLS) IS RELATIVELY INERT TOWARD OXIDATION, AND THAT THE RATE OF OXIDATION INCREASES WITH INCREASING CONCENTRATION OF RADIOLYSIS PRODUCTS. OF THE OXIDATION PRODUCTS, CARBONYL COMPOUNDS ARE AMONG THE MOST ABUNDANT. CARBOXYLIC AND PHENOLIC COMPOUNDS ARE ALSO FORMED, AND IT WAS SHOWN THAT CARBONYL COMPOUNDS ARE CONVERTED TO CARBOXYLIC AND PHENOLIC COMPOUNDS BY PYROLYSIS. IN GENERAL, THERE HAS BEEN LITTLE QUANTITATIVE INFORMATION ON EITHER THE RATE OR THE PRODUCTS OF COOLANT OXIDATION.

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-28460 *CONTINUED*
AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151
\$3.00 COPY, \$0.65 MICROFICHE

*COOLANT CHEMISTRY + *REACTOR; ORGANIC COOLED + OMRE (RE) + OUT OF PILE LOOPS AND EXPERIMENTS + OXIDATION

7-28462
IN-PILE CORROSION OF NUCLEAR MATERIALS
CENTRE D'ETUDE DE L'ENERGIE NUCLEAIRE, MOL (BELGIUM)
EURAE-2010 +. 73 PAGES, FIGURES, TABLES, REFERENCES, 1968

RESEARCH HAS BEEN MAINLY BASED ON THE ELECTROCHEMICAL CORROSION METHODS, THE USEFULNESS OF WHICH WAS WELL KNOWN FROM CORROSION MEASUREMENTS AT 25 C. THESE METHODS CONSIST IN MEASURING THE DIFFERENT RELATIONSHIPS BETWEEN THE FACTORS ELECTRODE TENSION, ELECTRODE CURRENT AND TIME (E, I, T). USUALLY AN ELECTROCHEMICAL CELL WITH THREE ELECTRODES IS EMPLOYED, NAMELY THE MEASURING, THE HELP, AND THE REFERENCE ELECTRODE. IN A FIRST PERIOD OF THE WORK IT WAS TRIED TO CONSTRUCT A TYPICAL THREE ELECTRODE CELL IN AN IRRADIATION ZONE AND TO CHECK ITS BEHAVIOUR. PARALLEL, SEVERAL ELECTROCHEMICAL MEASURING METHODS WERE CLOSELY STUDIED WITHOUT IRRADIATION IN ORDER TO PREPARE THE IRRADIATION EXPERIMENTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151
\$3.00 COPY, \$0.65 MICROFICHE

*CORROSION + *IN PILE EXPERIMENT + ALUMINUM + CHEMICAL REACTION + PLATINUM + RADIATION EFFECT + STEEL, STAINLESS

7-28466 ALSO IN CATEGORY 4
CONTZEN JP
PROSPECTS OF USING RADIOISOTOPES IN SPACE
INDUSTRIAL APPLICATIONS FOR ISOTOPIC POWER GENERATORS, PAPER COMMUNICATION NO. 3, 54 PAGES, FIGURES, TABLES, REFERENCES, 1967

IDENTIFIES THE DIFFERENT USES OF RADIOISOTOPES IN SPACE. ATTENTION IS CONCENTRATED ON THE TWO MAJOR CATEGORIES OF APPLICATIONS, PROPULSION AND ELECTRICAL POWER GENERATION. A TENTATIVE SELECTION OF THE MOST SUITABLE ISOTOPES IS MADE FOR BOTH TYPES OF SYSTEM, AND PROBLEMS WHICH ARISE FROM THEIR DEVELOPMENT ARE ANALYSED. UTILIZATION PROSPECTS ARE DEDUCED FROM THIS ANALYSIS, PARTICULARLY FROM A EUROPEAN POINT OF VIEW.

*AEROSPACE SAFETY + *SPACECRAFT + DESIGN STUDY + RADIOISOTOPE + SAFETY ANALYSIS

7-28467 ALSO IN CATEGORY 4
SQUIRES DM + YOUNG RW
POWER REQUIREMENTS FOR SPACE SATELLITES
INDUSTRIAL APPLICATIONS FOR ISOTOPIC POWER GENERATORS, PP. 55-72 +. 72 PAGES, FIGURES, 1 REFERENCE, 1967

THE EUROPEAN SPACE PROGRAMS, BOTH AT NATIONAL AND INTERNATIONAL LEVELS, ARE REVIEWED, AND THE REQUIREMENTS FOR POWER GENERATION FOR SCIENTIFIC, MILITARY, AND COMMUNICATION SATELLITES IN THE NEXT DECADE ARE EXAMINED. THE FUTURE OF ISOTOPIC POWER-GENERATION SYSTEMS IN RELATION TO THE EUROPEAN SPACE PROGRAM IS DISCUSSED AND THE DEVELOPMENT REQUIREMENTS AND TIME SCALES ARE EXAMINED.

*AEROSPACE SAFETY + *SPACECRAFT + AIRBORNE RELEASE + DESIGN STUDY + PLUTONIUM + RADIOISOTOPE + REACTOR, SPACE + SNAP, GENERAL (SR) + STRONTIUM

7-28468 ALSO IN CATEGORY 4
BRYANT PM
SAFETY ASPECTS OF RADIOISOTOPIC GENERATORS IN SPACE
6 PAGES, INDUSTRIAL APPLICATIONS FOR ISOTOPIC POWER GENERATORS, PP. 663-8, 1967

THE POTENTIAL APPLICATIONS OF ISOTOPIC GENERATORS AS SOURCES OF AUXILIARY POWER IN SPACE INVOLVE QUANTITIES OF RADIONUCLIDES SUFFICIENT TO PRODUCE UP TO A FEW KILOWATTS OF ELECTRICAL POWER. IN ABNORMAL CIRCUMSTANCES, EXPECTED TO ARISE INFREQUENTLY, MOST OR ALL OF THE ACTIVITY IN THE GENERATOR COULD BE BURNED UP ON RE-ENTRY TO THE UPPER ATMOSPHERE. PREDICTION OF THE ACTIVITY IN SURFACE AIR AND IN MILK WHICH WOULD ARISE IF A SINGLE 1 KILOWATT GENERATOR WITH ANY OF NINE NUCLIDES STUDIED WERE BURNED UP IS BASED ON DATA FROM WEAPONS TESTS. THE PREDICTED ACTIVITIES ARE COMPARED WITH REFERENCE LEVELS DERIVED FOR THE PURPOSE.

*AEROSPACE SAFETY + *PLUTONIUM + *SPACECRAFT + *STRONTIUM + AIRBORNE RELEASE + FALLOUT + RADIOISOTOPE + REACTOR, SPACE + SNAP, GENERAL (SR)

7-28470 ALSO IN CATEGORIES 12 AND 17
SERIOUS ACCIDENTS, ISSUE NO. 292, JULY 31, 1968
ATOMIC ENERGY COMMISSION
SERIOUS ACCIDENTS, NO. 292 +. 3 PAGES, 1 FIGURE, JULY 1968

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-28470 *CONTINUED*

DURING CONDUCT OF NORMAL INCINERATOR OPERATIONS WITHIN A GLOVEBOX, SMOKE FROM THE FEED-END OF THE INCINERATOR CALLED ATTENTION TO THE OBVIOUSLY INADEQUATE AIRFLOW IN THE OFF-GAS SYSTEM (SEE ENCLOSED SKETCH). AFTER NOTING THAT A 6-IN. PRESSURE DROP EXISTED ACROSS THE OFF-GAS SYSTEM PRIMARY FILTER (NOTE - MAXIMUM ALLOWABLE PRESSURE DROP IS 4 IN., W.G.), BURNING WAS STOPPED AND MAINTENANCE WAS NOTIFIED TO REPLACE THE FILTER. PROPERTY DAMAGE CONSISTED OF WARPAGE OF THE 30-IN. FILTER-BOX PORT COVER. NO CONTAMINATION SPREAD WAS INVOLVED.

*FILTER + *FIRE + *RADIATION SAFETY AND CONTROL + *WASTE TREATMENT, SOLID + CONTAMINATION + FILTER, GLASS + IGNITION + WASTE HANDLING + WASTE MANAGEMENT

7-28473 ALSO IN CATEGORY 12

LOFT CHEMICAL DEVELOPMENT ASSISTANCE - IDAHO NUCLEAR CORPORATION - PROGRESS FOR AUGUST 1968
IDAHO NUCLEAR CORPORATION
CMS-52-68 +. 14 PAGES, TABLES, FIGURES, AUGUST 1968

THE NUCLEAR AND CHEMICAL TECHNOLOGY DIVISION OF THE IDAHO NUCLEAR CORPORATION HAS UNDERTAKEN SEVERAL DEVELOPMENT PROGRAMS IN SUPPORT OF THE LOSS-OF-FLUID-TEST (LOFT) PROJECT. THE PROGRAMS ARE RELATED TO THE DECONTAMINATION OF THE FACILITY, SAMPLING OF RADIOACTIVE LIQUIDS AND GASES, ANALYSIS AND HANDLING OF RADIOACTIVE SAMPLES, AND HANDLING OF RADIOACTIVE WASTES. THESE PROGRAMS HAVE BEEN AUGMENTED BY A FACILITY CALLED THE CONTAMINATION-DECONTAMINATION EXPERIMENT (CDE) IN WHICH HIGH-LEVEL FISSION PRODUCT MIXTURES ARE PRODUCED UNDER SIMULATED ACCIDENT CONDITIONS FOR USE IN THE VARIOUS SUPPORT PROGRAMS.

*ANALYTICAL TECHNIQUE, CALIBRATION + *COATING, SURFACE + *DECONTAMINATION + *FISSION PRODUCT, IODINE + *LOFT (S-RR) + *SAMPLING + CONTAINMENT PAINT + CONTAMINATION + FILTER + FISSION PRODUCT TRANSPORT + MOLECULAR SIEVE + ORGANIC IODIDE + REACTOR, SAFETY RESEARCH + STEEL, STAINLESS

7-28474 ALSO IN CATEGORY 12

LOFT CHEMICAL DEVELOPMENT ASSISTANCE - IDAHO NUCLEAR CORPORATION - PROGRESS FOR JULY 1968
IDAHO NUCLEAR CORPORATION
CMS-48-68 +. 54 PAGES, TABLES, FIGURES, JULY 1968

THE NUCLEAR AND CHEMICAL TECHNOLOGY DIVISION OF THE IDAHO NUCLEAR CORPORATION HAS UNDERTAKEN SEVERAL DEVELOPMENT PROGRAMS IN SUPPORT OF THE LOSS-OF-FLUID-TEST (LOFT) PROJECT. THE PROGRAMS ARE RELATED TO THE DECONTAMINATION OF THE FACILITY, SAMPLING OF RADIOACTIVE LIQUIDS AND GASES, ANALYSIS AND HANDLING OF RADIOACTIVE SAMPLES, AND HANDLING OF RADIO-ACTIVE WASTES. THESE PROGRAMS HAVE BEEN AUGMENTED BY A FACILITY CALLED THE CONTAMINATION-DECONTAMINATION EXPERIMENT (CDE) IN WHICH HIGH-LEVEL FISSION PRODUCT MIXTURES ARE PRODUCED UNDER SIMULATED ACCIDENT CONDITIONS FOR USE IN THE VARIOUS SUPPORT PROGRAMS.

*ANALYTICAL TECHNIQUE, CALIBRATION + *COATING, SURFACE + *CONTAINMENT PAINT + *DECONTAMINATION + *FILTER + *FISSION PRODUCT, IODINE + *LOFT (S-RR) + *MOLECULAR SIEVE + *ORGANIC IODIDE + *SAMPLING + CONTAMINATION + FISSION PRODUCT TRANSPORT + REACTOR, SAFETY RESEARCH + STEEL, STAINLESS

7-28475 ALSO IN CATEGORY 12

LOFT CHEMICAL DEVELOPMENT ASSISTANCE MONTHLY REPORT FOR JUNE 1968
IDAHO NUCLEAR CORPORATION, IDAHO FALLS, IDAHO
CMS-37-68 +. 21 PAGES, 7 FIGURES, 7 TABLES, JULY 1, 1968

THE NUCLEAR AND CHEMICAL TECHNOLOGY DIVISION OF THE IDAHO NUCLEAR CORPORATION HAS UNDERTAKEN SEVERAL DEVELOPMENT PROGRAMS IN SUPPORT OF THE LOSS-OF-FLUID-TEST (LOFT) PROJECT. THE PROGRAMS UNDERTAKEN BY IDAHO NUCLEAR CORPORATION ARE RELATED TO THE DECONTAMINATION OF THE FACILITY, SAMPLING OF RADIOACTIVE LIQUIDS AND GASES, ANALYSIS AND HANDLING OF RADIOACTIVE SAMPLES, AND HANDLING OF RADIOACTIVE WASTES. THESE PROGRAMS HAVE BEEN AUGMENTED BY A FACILITY CALLED THE CONTAMINATION-DECONTAMINATION EXPERIMENT (CDE) IN WHICH HIGH-LEVEL FISSION PRODUCT MIXTURES ARE PRODUCED UNDER SIMULATED ACCIDENT CONDITIONS FOR USE IN THE VARIOUS SUPPORT PROGRAMS.

*ANALYTICAL TECHNIQUE, CALIBRATION + *COATING, SURFACE + *DECONTAMINATION + *FISSION PRODUCT, IODINE + *LOFT (S-RR) + *SAMPLING + CONTAINMENT PAINT + CONTAMINATION + FILTER + FISSION PRODUCT TRANSPORT + MOLECULAR SIEVE + ORGANIC IODIDE + REACTOR, SAFETY RESEARCH + STEEL, STAINLESS

7-28477

KAZACHKOVSKII DO + VOTINOV SN + LEBEDEV IG
STUDY OF THE OPERATION OF AN ASSEMBLY OF FUEL ELEMENTS CONTAINING PLUTONIUM DIOXIDE FUEL IN THE BR-5 REACTOR
ARGONNE NATIONAL LAB., ILL.
ANL-TRANS-609 +. 12 PAGES, FIGURES, TABLES, 9 REFERENCES, MAY 1968, TRANSLATED BY C. E. STEVENSON FROM AT. ENERG. (USSR), 24, PAGE 136-43, (FEB. 1968)

SINCE THERE ARE VERY FEW CONTRIBUTIONS IN THE LITERATURE ON THE BEHAVIOR OF PLUTONIUM DIOXIDE UNDER IRRADIATION, PARTICULARLY FOR HIGH BURNUP, STUDIES OF FUEL ELEMENTS WITH PU(1-2) FUEL POSSESS SIGNIFICANT INTEREST. THE OPERATING ASSEMBLY STUDIED WAS LOCATED IN THE ACTIVE ZONE OF REACTOR BR-5 FOR 5.5 YEARS (THE INTEGRAL FLUX WAS ESTABLISHED AS 2.42×10^{22} ND) NEUTRONS PER SQ. CM). THE MAXIMUM HEAT FLOW IN THE CLADDING AT THE END OF OPERATION WAS EQUAL TO 8.45×10^5 TH K-CAL./SQ. METER-HR. THE MAXIMUM TEMPERATURE ACHIEVED BY THE CLADDING WAS 580 C. AT THE BEGINNING OF THE CAMPAIGN, THE CALCULATED TEMPERATURE IN THE CENTER OF THE FUEL

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-28477 *CONTINUED*
ELEMENT WAS ESTABLISHED AS 1400 C. AT THE END OF THE CAMPAIGN, 1150 C.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA., 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*EXPANSION + *FAILURE, FUEL ELEMENT + *FISSION PRODUCT RELEASE, GENERAL + *REACTOR, FAST + CLADDING +
FUEL BURNUP + FUEL ELEMENT + IN PILE EXPERIMENT + METAL, LIQUID + OXIDE + PLUTONIUM + PLUTONIUM DIOXIDE +
SODIUM + STRESS ANALYSIS

7-28478 ALSO IN CATEGORY 8
PEARCE RJ
THE IGNITION OF URANIUM. PART I. A LITERATURE SURVEY
CENTRAL ELECTRICITY GENERATING BOARD, BERKELEY (ENGLAND). BERKELEY NUCLEAR LABS.
RD/B/N-1134 +. 20 PAGES, MAY 1968

DATA ON THE IGNITION OF URANIUM IN AIR, OXYGEN AND CARBON DIOXIDE ARE REVIEWED. THE MAJOR
FACTORS THAT AFFECT IGNITION IN AIR OR OXYGEN HAVE BEEN IDENTIFIED. INFORMATION ON IGNITION
IN CARBON DIOXIDE IS MUCH MORE RESTRICTED. THE MAJOR VARIABLES AFFECTING IGNITION ARE - (1)
THE SIZE AND SHAPE OF THE SPECIMEN IN THE FORM OF THE SPECIFIC AREA, S (SURFACE AREA TO MASS
RATIO) WHERE AN ARRHENIUS-TYPE RELATIONSHIP WITH IGNITION TEMPERATURE EXISTS, AND (2)
EXPERIMENTAL CONDITIONS, ESPECIALLY THE HEATING CONDITIONS, TO WHICH THE SPECIMEN HAS BEEN
SUBJECTED. OTHER VARIABLES, SUCH AS GAS COMPOSITION, PRESSURE (IN THE CASE OF IGNITION IN
CARBON DIOXIDE) AND THE PRESENCE OF URANIUM HYDRIDE ARE ALSO SHOWN TO HAVE AN EFFECT. THE
INFLUENCE OF ALLOYING ADDITIONS ON IGNITION TEMPERATURE IS COMPLEX AND MAY NOT APPARENTLY BE
PREDICTED FROM SIMPLE CONSIDERATIONS. FINALLY A BRIEF SURVEY OF THE REACTIVITY OF URANIUM
HYDRIDE IS INCLUDED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA., 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*CHEMICAL KINETICS + *IGNITION + *PARTICLE SIZE + *SURFACE TO VOLUME RATIO + *URANIUM + CARBON DIOXIDE +
CHEMICAL REACTION + FIRE + OXIDATION + OXYGEN

7-28480
MISHIMA J + SCHWENDIMAN LC + RADASCH CA
PLUTONIUM RELEASE STUDIES III. RELEASE FROM HEATED PLUTONIUM BEARING POWDERS
PACIFIC NORTHWEST LABORATORY, RATTLE MEMORIAL INSTITUTE, RICHLAND, WASHINGTON
BNWL-786 +. 44 PAGES, FIGURES, TABLES, REFERENCES, JULY 1968

FOUR PLUTONIUM COMPOUNDS IN POWDER FORM (OXIDE, PARTIALLY OXIDIZED OXALATE, OXALATE, AND
FLUORIDE) WERE SUBJECTED TO HIGH TEMPERATURE IN AIR DRAWN UP AND AROUND THE MATERIAL AT
VARIOUS VELOCITIES. UNDER CONDITIONS OF THESE EXPERIMENTS, THE GREATEST AMOUNT, AT A RATE OF
0.90 WT%/HR, WAS RELEASED BY PLUTONIUM OXALATE AT 700 C IN AN UPSWEEP OF AIR AT 100 CM/SEC.
THE PARTIALLY OXIDIZED OXALATE, THE MOST READILY ENTRAINMENT, SHOWED SIGNIFICANT RELEASE RATES
AT ALL AIR VELOCITIES AT 1000 C, AND AT ALL TEMPERATURES IN AIR MOVING AT 100 CM/SEC. THE
RESIDUE REMAINING FROM THE OVERHEATING OF THE FLUORIDE APPEARED SUSCEPTIBLE TO FURTHER
ENTRAINMENT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*AIRBORNE RELEASE + *FLUORIDE + *OXIDE + *PARTICLE SIZE + *PLUTONIUM + *RELEASE RATE + ALPHA EMITTER +
CHEMICAL KINETICS + CONTAMINATION + FISSION PRODUCT RELEASE, GENERAL + FUEL, POWDER TYPE + OXIDATION +
SURFACE CONTAMINATION + THERMAL PROPERTY

7-28481
ROSEN P + MOROWITZ HJ
A MODEL SYSTEM OF REACTING H2 AND I2. FINAL PROGRESS REPORT
YALE UNIVERSITY, NEW HAVEN, CONNECTICUT
NASA-CR-91,339 +. 8 PAGES, 1967

TO STUDY POTENTIAL BIOLOGICAL ORGANIZATION UNDER AN ENERGY FLUX FROM AS DETAILED A PHYSICAL
POINT OF VIEW AS POSSIBLE, THE SIMPLEST CHEMICAL SYSTEM EXHIBITING THE BEHAVIOR WAS CHOSEN
AND AN ANALYSIS WAS CARRIED OUT. THE L FUNCTION DISCUSSED IN THIS REPORT REPRESENTS OUR
EFFORTS TO FIND A SUITABLE MEASURE OF MOLECULAR ORGANIZATION. FUNCTION L IS DEFINED AS OS.
L EQUALS (KINETIC ENERGY UPON ISOLATION)-(KINETIC ENERGY, STEADY STATE).

*CHEMICAL KINETICS + *CHEMICAL REACTION + *HYDROGEN + *IODINE + *THERMODYNAMICS + ANALYTICAL MODEL +
MATHEMATICAL STUDY + THEORETICAL INVESTIGATION

7-28491
HUTCHINSON WP + EAKINS JD
THE RADIOLOGICAL HAZARD FROM TRITIUM SORBED ON METAL SURFACES PART I THE SORPTION OF TRITIUM ON BRASS
ATOMIC ENERGY RESEARCH ESTABLISHMENT, HARWELL
AERE-R 5680 +. 12 PAGES, FIGURES, TABLES, REFERENCES, APRIL 1968

A STUDY WAS MADE OF THE PARAMETERS AFFECTING THE SORPTION OF TRITIUM GAS ON BRASS AND ITS

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-28491 *CONTINUED*

SUBSEQUENT DESORPTION. SORPTION DEPENDS ON TRITIUM PRESSURE, EXPOSURE TIME, SURFACE CHARACTERISTICS AND THE PRESENCE OF AIR. IT HAS BEEN SHOWN TO BE PREDOMINATELY A PROCESS OF ADSORPTION, FOLLOWING THE LANGMUIR ADSORPTION ISOTHERM AT LOW PRESSURES. IT IS CONCLUDED THAT FROM THE VIEW POINT OF RADIOLOGICAL PROTECTION THE RISK OF INHALATION OF SIGNIFICANT LEVELS OF TRITIUM FROM CONTAMINATED BRASS SURFACES IS MINIMAL, PROVIDED THE SURFACES HAVE NOT BEEN RECENTLY EXPOSED TO TRITIUM GAS. FURTHER STUDIES ARE BEING CARRIED OUT TO ASSESS THE HAZARD DUE TO PERCUTANEOUS ABSORPTION OF TRITIUM FROM METAL SURFACES.

AVAILABILITY - SCIENTIFIC ADMINISTRATION OFFICE, ATOMIC ENERGY RESEARCH ESTABLISHMENT, HARWELL, DIDCAT, BERKSHIRE, ENGLAND

*ADSORPTION + *ALLOY + *DESORPTION + *TRITIUM + METAL + SORPTION

7-28492

CARLS EL + LEVITZ NM

BLOWBACK OF SINTERED-METAL FILTERS- A REVIEW OF TESTS AND OPERATING EXPERIENCE

ARGONNE NATIONAL LABORATORY, ARGONNE, ILLINOIS

ANL-7392 +. 30 PAGES, FIGURES, TABLES, REFERENCES, JANUARY 1968

A REVIEW WAS MADE OF THE CHEMICAL ENGINEERING DIVISIONS EXPERIENCE WITH AUTOMATIC BLOWBACK SYSTEMS, WHICH HAVE BEEN USED IN FLUIDIZATION APPLICATIONS TO REMOVE ACCUMULATED POWDERS FROM SINTERED-METAL FILTERS. FOR A WIDE ARRAY OF EQUIPMENT USE IN PROCESS DEVELOPMENT STUDIES, THE BLOWBACK SYSTEMS USUALLY EMPLOY 80-100-PSIG BLOWBACK MOTIVE GAS DIRECTED PERIODICALLY (I.E., IN A PULSED MANNER) INTO THE FILTER THROUGH A 1/32-1/16-IN. NOZZLE IN AN OPPOSITE DIRECTION TO THE NORMAL PROCESS-GAS FLOW FOR PULSE DURATIONS OF 1 SEC OR LESS. THROUGH THE USE OF VENTURIS, PART OF THE BLOWBACK MOTIVE GAS IS PROVIDED BY THE EXITING FILTERED GAS. THIS HAS RESULTED IN EFFICIENT CLEANING OF THE FILTERS WHEN JUDGED EITHER BY THE APPEARANCE OF THE FILTERS OR BY COMPARISON OF FILTER PRESSURE DROP BEFORE AND AFTER A BLOWBACK PULSE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*FILTER MAINTENANCE + *OPERATING EXPERIENCE + *PRESSURE PULSE + FILTER CHARACTERISTICS + FILTER OPERATION + FILTER, METALLIC + TEST, FILTER

7-28493

HART RG + OLDAKER IE + THEXTON HE + WALKER JF

URANIUM DIOXIDE FUELS IN ORGANIC-COOLED REACTORS

WHITESHELL NUCLEAR RESEARCH ESTABLISHMENT, PINAWA, MANITOBA

AECL-2758 +. 45 PAGES, FIGURES, TABLES, REFERENCES, DECEMBER 1967

THIS REPORT OUTLINES THE PERFORMANCE REQUIREMENTS AND THE DESIGN PARAMETERS FOR THE WR-1 REACTOR FUEL AND REVIEWS THE HIGHLIGHTS OF THE IN-REACTOR AND OUT-REACTOR TEST PROGRAM. THE PERTINENT DESIGN CALCULATIONS ARE REVIEWED AND RESULTS OF THESE CALCULATIONS ARE COMPARED WITH EXPERIMENT. CALCULATED PRESSURE DROPS, SHEATH TEMPERATURES AND UO₂ TEMPERATURES ARE IN GOOD AGREEMENT WITH EXPERIMENT, BUT EXPERIMENTAL FISSION GAS RELEASES ARE HIGHER THAN THOSE CALCULATED USING A SIMPLE DIFFUSION MODEL. THE EXPERIMENTAL WORK INDICATES THAT ZR-2.5%NB CLAD UO₂ FUEL WILL HAVE A USEFUL LIFE OF AT LEAST 1.5 YEARS IN THE WR-1. SUBSEQUENT OPERATION OF THE REACTOR HAS SHOWN THIS CONCLUSION TO BE VALID.

*FUEL ELEMENT + *IN PILE EXPERIMENT + *REACTOR, ORGANIC COOLED + ALLOY + ANALYTICAL MODEL + CLADDING + DIFFUSION + FISSION GAS RELEASE + FUEL INTEGRITY + URANIUM DIOXIDE + ZIRCONIUM

7-28494

BONNEL PH

PARTICLE SIZING OF PLUTONIUM DIOXIDE MICROSPHERES AFTER IMPACT

MONSANTO RESEARCH CORPORATION, MIAMISBURG, OHIO

MLM-1499 +. 36 PAGES, FIGURES, TABLES, DECEMBER 1967

THREE CAPSULES CONTAINING SIZED PLUTONIUM-238 DIOXIDE MICROSPHERES WERE IMPACTED ONTO A GRANITE BLOCK. THE FINES (PARTICLES LESS THAN 44 MICRONS IN DIAMETER) PRODUCED BY DAMAGE TO THE MICROSPHERES WERE SIZED, AND THE PERCENTAGE IN EACH SIZE RANGE WAS DETERMINED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*COATED PARTICLE + *IMPACT PROPERTY + *PLUTONIUM DIOXIDE + FUEL INTEGRITY + IMPACT SHOCK + PLUTONIUM + PROPERTY, PHYSICAL

7-28495

REACTOR FUELS AND MATERIALS DEVELOPMENT PLUTONIUM RESEARCH- JANUARY-JUNE, 1967

MONSANTO RESEARCH CORPORATION, MIAMISBURG, OHIO

MLM-1445 +. 22 PAGES, FIGURES, TABLES, REFERENCES, MAY 1968

THE PROGRAM OF THE DIVISION OF REACTOR DEVELOPMENT AND TECHNOLOGY, FUELS AND MATERIALS DEVELOPMENT BRANCH, AT MOUND LABORATORY IS DIRECTED TO THE EVALUATION OF PLUTONIUM-BEARING MATERIALS AS POTENTIAL REACTOR FUELS. PLUTONIUM IS BEING CONSIDERED AS A FUEL FOR POWER

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-28495 *CONTINUED*

REACTORS OF THE FAST BREEDER CONCEPT BECAUSE OF ITS HIGH NEUTRON EFFICIENCY. THE PROGRAM HAS BEEN DIVIDED INTO THREE MAJOR RESEARCH AREAS - THE MEASUREMENT OF PHYSICAL AND THERMAL PROPERTIES, THE DETERMINATION OF PHASE EQUILIBRIA, AND THE FORMULATION AND EVALUATION OF CERAMIC SYSTEMS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*CERAMICS + *PLUTONIUM + *PROPERTY, PHYSICAL + ALLOY + COATED PARTICLE + THERMAL PROPERTY + URANIUM + ZIRCONIUM

7-28496

COLE GR + SMITH PK
SINTERING UO₃ TO DENSE UO₂
E. I. DU PONT DE NEMOURS + COMPANY, AIKEN, S. C.
DP-1085 +. 15 PAGES, FIGURES, TABLES, MAY 1968

SINTERING WAS CONSIDERED FOR CONVERTING SEPARATED UO₃ FROM SAVANNAH RIVER REACTORS INTO DENSE UO₂ GRANULES SUITABLE FOR VIBRATIONALLY LOADED FUEL ELEMENTS. HOWEVER, SINTERING OF COMPACTED HYDRATED UO₃ AT 1600 C IN HYDROGEN PRODUCED UO₂ PELLETS WITH BULK DENSITY OF ONLY 90% OF THEORETICAL, 5% LESS THAN THE UO₂ DENSITY DESIRED. THE EFFECTS ON UO₂ DENSITY OF TEMPERATURE, HYDRATION, COMPACTING PRESSURE, BALL-MILLING, AND ADDITIVES ARE DESCRIBED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*FUEL, PELLET TYPE + *URANIUM DIOXIDE + FUEL REPROCESSING + SAVANNAH RIVER PLANT + URANIUM OXIDE

7-28497

MCCAULEY JE + PATTERSON PW + DANIEL RC + MEIERAN HB
EVALUATION OF THE IRRADIATION BEHAVIOR OF A ZIRCALOY-4 CLAD ROD CONTAINING LOW DENSITY UO₂ FUEL PELLETS (LWBR/LSBR DEVELOPMENT PROGRAM)
BETTIS ATOMIC POWER LABORATORY, PITTSBURGH, PA.
WAPD-TM-596 +. 70 PAGES, FIGURES, TABLES, REFERENCES, JANUARY 1968

A ZIRCALOY-4 SHEATHED, ROD TYPE FUEL ELEMENT CONTAINING LOW DENSITY (ABOUT 81.4 PERCENT OF THEORETICAL) UO₂ FUEL PELLETS WAS IRRADIATED TO A PEAK AVERAGE DEPLETION OF 1.35 X 10²⁰ FISSIONS PER CUBIC CENTIMETERS OF FULLY DENSE FUEL AT AN ESTIMATED PEAK PELLET TEMPERATURE OF 2710 F. THE SPECIMEN WAS REMOVED FROM THE REACTOR AT APPROXIMATELY 50 PERCENT OF DESIGN LIFETIME IN ORDER TO EVALUATE THE FUEL AND CLADDING IRRADIATION INDUCED CHANGES IN THE ABSENCE OF THE COMPLICATING EFFECTS USUALLY ASSOCIATED WITH IN-REACTOR SPECIMEN FAILURE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*ALLOY + *CLADDING + *RADIATION DAMAGE + *ZIRCONIUM + FAILURE, FUEL ELEMENT + IN PILE EXPERIMENT + RADIATION EFFECT + URANIUM DIOXIDE

7-28498

ORITTLER K
THEORETICAL CONSIDERATIONS ABOUT THE CRACKING OF COATED PARTICLES
6 PAGES, ATOMKERNENERGIE, 13- 13-18 (1968)

USING THE FORMULAS OF PRADOS AND SCOTT FOR OUTER ELASTIC COATINGS, A SYSTEM OF CRACK CONFIGURATIONS FOR COATED PARTICLES WAS DEDUCED. SINCE THIS CLASSIFICATION IS COMPLETE IN A CERTAIN WAY, AND MANY MICROGRAPHS OF COATED PARTICLES SHOW THESE CRACK CONFIGURATIONS, IT SHOULD BE OF ASSISTANCE IN IMPROVING COATED PARTICLES FOR GIVEN OPERATION CONDITIONS.

*COATED PARTICLE + *FUEL INTEGRITY + *STRESS ANALYSIS + COATING + FISSION PRODUCT RETENTION + THEORETICAL INVESTIGATION

7-28499

ALSO IN CATEGORY 9

VAN DE VOORDE M
THE EFFECT OF NUCLEAR RADIATION ON THE ELECTRICAL PROPERTIES OF EPOXY RESINS
CERN, GENEVA
CERN 68-13 +. 14 PAGES, FIGURES, TABLES, APRIL 1968

THE AIM OF THIS REPORT IS TWOFOLD, FIRSTLY TO SELECT ON THE BASIS OF THEIR ELECTRICAL PROPERTIES RADIATION RESISTANT EPOXY RESIN COMPOSITIONS AND SECONDLY, TO RECOMMEND NEW EPOXY RESINS, WHICH WILL MINIMIZE FUTURE TROUBLES FROM RADIATION INDUCED DAMAGE FOR ELECTRICAL INSULATION IN NUCLEAR ENVIRONMENTS. AS IT IS GENERALLY ACCEPTED THAT THE MAIN CAUSES OF FAILURE OF ELECTRICAL INSULATION IN NUCLEAR RADIATION ENVIRONMENTS ARE DUE TO THE LOSS OF MECHANICAL STRENGTH OR THE EVOLUTION OF GASES RATHER THAN THE GROSS CHANGES IN THEIR DIELECTRIC PROPERTIES, IT WAS DECIDED TO STUDY ONLY THE CHANGES IN ELECTRICAL PROPERTIES IN THE AREA WHERE MECHANICAL OR PHYSICAL DETERIORATION WERE NOTED. FURTHER, THIS STUDY PROGRAM WAS MOSTLY RESTRICTED TO RADIATION-RESISTANT (MECHANICAL-PHYSICAL) EPOXY SYSTEMS.

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-28499 *CONTINUED*
AVAILABILITY - CERN EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH, GENEVA 23, SWITZERLAND

*ELECTRICAL CONDUCTION + *PLASTICS + *RADIATION DAMAGE + INSTRUMENT, GENERAL + RADIATION EFFECT

7-28500
BISHOP WN + MAPSH SF
POST-IRRADIATION EXAMINATION OF THORIA-URANIA FUEL RODS
THE BABCOCK + WILCOX COMPANY, LYNCHBURG, VA.
BAW-3809-2 +. 24 PAGES, FIGURES, TABLES, REFERENCES, JUNE 1968

THE FUEL RODS FOR THIS PROGRAM HAVE BEEN REMOVED FROM THE FUEL ELEMENTS AT BATTELLE MEMORIAL INSTITUTE AND TRANSPORTED TO THE BABCOCK + WILCOX NUCLEAR DEVELOPMENT CENTER. MOST OF THE RODS HAVE BEEN GAMMA SCANNED. A SEQUENTIAL CHEMICAL SEPARATION PROCEDURE FOR URANIUM, PLUTONIUM, AMERICIUM-CURIUM, CESIUM, NEODYMIUM, PROMETHIUM, AND SAMARIUM HAS BEEN REFINED AND IS CONSIDERED READY FOR USE ON THORIA-URANIA FUELS. THIS PROCEDURE USES FOUR COLUMNS (TWO EXTRACTION CHROMATOGRAPHY COLUMNS AND TWO INORGANIC ION EXCHANGE COLUMNS) FOR THE SEPARATION. TWO SEPARATION PROCEDURES FOR NEPTUNIUM WERE EVALUATED AND A SOLVENT EXTRACTION PROCEDURE WAS SELECTED FOR THIS PROGRAM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*PLUTONIUM + *RECOVERY PROCESS + *URANIUM + CHROMATOGRAPHY + FUEL BURNUP + FUEL ELEMENT + ION EXCHANGE

7-28501
MARINO GP
HYDROGEN BEHAVIOR IN ZIRCONIUM-BASED ALLOYS
BETTS ATOMIC POWER LABORATORY, PITTSBURGH, PENNSYLVANIA
WAPD-TM-759 +. 33 PAGES, FIGURES, TABLES, REFERENCES, JUNE 1968

AN ATTEMPT WAS MADE TO ELUCIDATE THE FACTORS INVOLVED IN THE SUPER-CHARGING OF ZIRCALOY WITH HYDROGEN DURING CORROSION. IT SHOWED THAT SUPERSATURATION OF THE ALPHA PHASE OF ZIRCALOY COUPLED WITH CONCURRENT PRECIPITATION OF HYDRIDE WITHIN THE MATRIX ALLOWS A STEADY-STATE CONCENTRATION GRADIENT OF HYDROGEN TO BE SET UP IN THE MATRIX RESULTING IN THE HYDROGEN ABSORPTION CHARACTERISTICS USUALLY OBSERVED IN CORROSION SPECIMENS. A VERY SIMPLE MODEL HAS BEEN PROPOSED TO QUANTITATIVELY EXPLAIN THE EFFECT OF THERMAL CYCLING ON HYDRIDE REDISTRIBUTION. THE MODEL WAS USED TO PREDICT THE DATA OBTAINED BY WESTERMAN AND, WITHIN THE UNCERTAINTIES OF THE PARAMETERS INVOLVED, AGREED WELL WITH THE EXPERIMENTAL POINTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*ALLOY + *ANALYTICAL MODEL + *HYDROGEN + *THEORETICAL INVESTIGATION + *ZIRCONIUM + DIFFUSION + HYDRIDE + THERMAL ANALYSIS

7-28502 ALSO IN CATEGORIES 5 AND 11
REVIEW OF METHODS OF MITIGATING SPREAD OF RADIOACTIVITY FROM A FAILED CONTAINMENT SYSTEM
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.
ORNL-NSIC-27 +. 103 PAGES, FIGURES, TABLES, REFERENCES, SEPTEMBER 1968

THIS PRELIMINARY SURVEY EXPLORES MEASURES THAT COULD BE TAKEN ON THE REACTOR SITE TO MITIGATE THE SPREAD OF RADIOACTIVITY TO HIGHLY POPULATED AREAS IN THE UNLIKELY EVENT OF FAILURE OF THE CONTAINMENT SYSTEM OF A LARGE NUCLEAR POWER STATION AT THE TIME OF A MAJOR REACTOR ACCIDENT. IT IS POINTED OUT, HOWEVER, THAT THE FACT THAT THE STUDY WAS UNDERTAKEN DOES NOT SUGGEST A LACK OF CONFIDENCE IN CONTAINMENT SYSTEMS NOR DOES IT IMPLY A WEAKENING OF THE PRESENT EMPHASIS ON THE NEED FOR SOUND, RELIABLE CONTAINMENT VESSELS. RATHER, TO ENHANCE SAFETY, CONSIDERATION IS GIVEN TO WHAT COULD BE DONE IN EVEN THE MOST IMPROBABLE SITUATIONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*CONTAINMENT RESEARCH AND DEVELOPMENT + *CONTAINMENT, GENERAL + *DESIGN CRITERIA +
*RADIATION SAFETY AND CONTROL + CONTAINMENT INTEGRITY + CONTAINMENT SYSTEM, OPERATION OF + CORE SPRAY +
FISSION PRODUCT RELEASE, GENERAL + INSTRUMENT, GENERAL

7-28506 ALSO IN CATEGORY 4
PRACH TF + NEWMAN L + AUERBACH C
THE DETERMINATION OF OXYGEN IN SODIUM BY THE AMALGAMATION METHOD
BROOKHAVEN NATIONAL LABORATORY, UPTON, NEW YORK
BNL 50118 + T-498 +. 22 PAGES, 2 FIGURES, 3 TABLES, REFERENCES, JUNE 1968

THE AMALGAMATION METHOD, WHEN USED WITH THE PROPER PRECAUTIONS, IS CAPABLE OF RELIABLE AND REPRODUCIBLE ANALYSIS TO +- 1 PPM, DOWN TO THE 1 PPM LEVEL. ITS MAIN DISADVANTAGE, ESPECIALLY WHEN RADIOACTIVE SAMPLES ARE INVOLVED, IS THE LARGE NUMBER OF MANIPULATIONS REQUIRED. WE ARE USING THE METHOD ROUTINELY FOR ANALYZING LOOP SAMPLES AS WELL AS SODIUM FROM A NUMBER OF SPECIAL EXPERIMENTS.

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-28506 *CONTINUED*
AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*ANALYTICAL TECHNIQUE, CALIBRATION + *OXYGEN + *SODIUM + METAL, LIQUID +
OUT OF PILE LOOPS AND EXPERIMENTS + REACTOR, FAST + REACTOR, LMFBR

7-28507
DUNLAP RW + GULDEN TD
DIFFUSION MODEL FOR RELEASE OF FISSION PRODUCTS FROM COATED PARTICLE FUELS
GULF GENERAL ATOMIC INCORPORATED, SAN DIEGO, CALIFORNIA
10 PAGES, 5 FIGURES, 21 REFERENCES, NUCLEAR SCIENCE AND ENGINEERING, 32, PAGE 407-416, (JUNE 1968)

A PARAMETRIC STUDY OF A TWO-ZONE DIFFUSION MODEL HAS BEEN PERFORMED TO DESCRIBE IN-PILE
DIFFUSION-CONTROLLED RELEASE OF FISSION PRODUCTS FROM SPHERICAL COATED FUEL PARTICLES. BOTH
THE STEADY-STATE RELEASE AND THE TIMES TO REACH STEADY STATE ARE CONSIDERED. THE EFFECTS OF
VARIATIONS IN DIFFUSION COEFFICIENTS OF THE FUEL AND COATING, COATING THICKNESS, PARTITION
COEFFICIENT AT THE FUEL-COATING INTERFACE, CONTAMINATION FRACTION, AND DECAY CONSTANT HAVE
BEEN CONSIDERED. THE RESULTS PREDICT THREE REGIMES OF RELEASE FOR DIFFERENT RANGES OF
HALF-LIFE AND DIFFUSION COEFFICIENTS. THE BENEFICIAL EFFECTS OF USING IMPROVED BARRIER
COATINGS ARE DISCUSSED IN TERMS OF THE DIFFUSION MODEL. CERTAIN UNUSUAL ASPECTS OF THE
IN-PILE RELEASE OF FISSION GASES ARE EXPLAINED IN TERMS OF THE RESULTS OF THIS MODEL.

*ANALYTICAL MODEL + *COATED PARTICLE + *FAILURE, COATED PARTICLE + *FISSION PRODUCT RELEASE, GENERAL +
CARBON + DIFFUSION + FUEL INTEGRITY + PYROLYTIC

7-28510
HEARD MJ + WIFFEN RD
ALPHA-TRACK-AUTO RADIOGRAPHY OF SUBMICRON AEROSOL PARTICLES USING THE ELECTRON MICROSCOPE
ATOMIC ENERGY RESEARCH ESTABLISHMENT, HARWELL (ENGLAND)
AERE-R-5715 +. 19 PAGES, 17 FIGURES, 13 REFERENCES, FEB. 1968

A METHOD IS DESCRIBED FOR APPLYING PRE-TREATED ILFORD L4 PHOTOGRAPHIC EMULSION TO SPECIMENS OF
RADIOACTIVE AEROSOLS DEPOSITED ON ELECTRON MICROSCOPE GRIDS. THE RESULTING PREPARATIONS ARE
THIN ENOUGH FOR ELECTRON MICROSCOPY AND PROVIDE A BASIS FOR HIGH RESOLUTION TRACK
AUTORADIOGRAPHY. BOTH DRY AND WET METHODS HAVE BEEN DEVELOPED SO THAT MATERIALS WHICH ARE
SOLUBLE IN WATER CAN BE EXAMINED AS WELL AS INSOLUBLE MATERIALS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA
22151, \$3.00 COPY, \$0.65 MICROFICHE

*AEROSOL + *ALPHA EMITTER + *ANALYTICAL TECHNIQUE, CALIBRATION + *ELECTRON MICROSCOPY + AIR CLEANING +
PARTICLE SIZE + PARTICULATE

7-28511
BIRSS IR
HELIUM PRODUCTION IN REACTOR MATERIALS
UKAEA, THE REACTOR GROUP, DOUNREAY EXPERIMENTAL REACTOR ESTABLISHMENT, DOUNREAY, GREAT BRITAIN
TRG-1608(D) +. 34 PAGES, 14 FIGURES, 8 TABLES, 26 REFERENCES, 1968

ALPHA PARTICLES CAN BE PRODUCED IN REACTOR MATERIAL BY ALPHA DECAY, TRIPLE FISSION OR BY
INTERACTIONS BETWEEN NUCLEI AND THE NEUTRONS AND RESULT IN AN ACCUMULATION OF HELIUM GAS.
THE BEST AVAILABLE DATA AND METHODS OF CALCULATING THE PRODUCTION RATES ARE GIVEN WITH
PARTICULAR REFERENCE TO FAST REACTORS SINCE ALL (N,ALPHA) REACTIONS EXCEPT THOSE WITH THE
B-10 ISOTOPE REQUIRE FAST NEUTRONS. ACTUAL PRODUCTION RATES TOGETHER WITH AN INDICATION OF
THE CONSEQUENCES ARE GIVEN FOR REACTOR FUEL, CLADDING MATERIAL AND COOLANT, AND THE DATA ARE
PRESENTED IN SUCH A WAY THAT A QUICK ASSESSMENT OF HELIUM CONTENT IN A MATERIAL FOR A
PARTICULAR CASE CAN BE OBTAINED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA
22151, \$3.00 COPY, \$0.65 MICROFICHE

*BORON + *COOLANT CHEMISTRY + *HELIUM + *REACTOR, FAST + CLADDING + DOUNREAY (TR) + FAILURE, FUEL ELEMENT +
RADIOISOTOPE + REACTOR, LMCR + REACTOR, TEST + UNITED KINGDOM

7-28513
PARKER GW + MATHENEY GB + ADAMS RE
LOFT ASSISTANCE PROGRAM IN ENGINEERING DEVELOPMENT AND NUCLEAR SAFETY TESTS AT THE OAK RIDGE NATIONAL LAB
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE
ORNL-4265 +. 75 PAGES, 26 FIGURES, 2 TABLES, 7 REFERENCES, AUGUST 1968

THE LOFT ASSISTANCE PROGRAM AT ORNL IS DESIGNED TO PROVIDE NUMERICAL DATA NEEDED TO DEVELOP
AND EVALUATE ANALYTICAL MODELS FOR PREDICTING RELEASE, TRANSPORT AND CONTAINMENT BEHAVIOR OF
FISSION PRODUCTS IN THE SAFETY ANALYSIS OF WATER REACTORS. THIS REPORT REVIEWS BOTH THE
STATUS OF THE LOFT ASSISTANCE PROGRAM AFTER THREE YEARS AND THE REQUIREMENTS FOR ITS
REORIENTATION IN SUPPORT OF THE LOFT EMERGENCY CORE COOLANT SYSTEMS TESTS. THE REPORT WAS
PREPARED IN A JOINT EFFORT BY THE PHILLIPS PETROLEUM COMPANY SPONSORS AND ORNL.

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-28513 *CONTINUED*

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA
22151, \$3.00 COPY, \$0.65 MICROFICHE

*ANALYTICAL TECHNIQUE, CALIBRATION + *FAILURE, FUEL ELEMENT + *FISSION PRODUCT RELEASE, GENERAL +
*FISSION PRODUCT TRANSPORT + *FUEL MELTDOWN + *LOFT (S-RR) + *RESEARCH CONTRACT + CLADDING +
FUEL ELEMENT + FUEL INTEGRITY + REACTOR, SAFETY RESEARCH + SPRAY, GENERAL

7-28516 ALSO IN CATEGORIES 12 AND 19
MILLER HW
ANNOTATED BIBLIOGRAPHY OF CURIUM
DOW CHEMICAL COMPANY, GOLDEN, COLORADO
RFP-1081 +. 81 PAGES, MAY 1, 1968

AN ANNOTATED BIBLIOGRAPHY OF CURIUM WAS PREPARED TO ASSIST THOSE INTERESTED IN THE CHEMISTRY AND PHYSICS OF THIS ELEMENT IN PERFORMING A RAPID SURVEY OF THE AVAILABLE LITERATURE. ONLY THE NONCLASSIFIED LITERATURE WAS ABSTRACTED. THIS BIBLIOGRAPHY IS COMPLETE TO THE YEAR 1967. IN ADDITION TO THE TWO MAIN DIVISIONS OF CHEMISTRY AND PHYSICS, THIS REPORT PROVIDES ALSO AN AUTHOR INDEX, A SUBJECT INDEX, AND AN INDEX OF ORGANIZATION SYMBOLS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*BIBLIOGRAPHY + *CURIUM + *PLUTONIUM + *TRANSURANIUM ELEMENT + ALLOY + AMERICIUM + CHEMICAL PROPERTY +
CHEMICAL REACTION + CHROMATOGRAPHY + PROPERTY, PHYSICAL + REVIEW

7-28517 ALSO IN CATEGORY 12
VILES FJ
AIR CLEANING SYSTEMS - REVIEW AND PROJECTION
HARVARD SCHOOL OF PUBLIC HEALTH, DEPART. OF INDUSTRIAL HYGIENE
14 PAGES, 12 REFERENCES, PRESENTED AT THE TENTH AIR CLEANING CONFERENCE, NEW YORK, AUGUST 26-30, 1968

FILTER-CHARCOAL AIR CLEANING SYSTEMS AND THEIR APPLICATION, TESTING, AND SUGGESTED FURTHER DEVELOPMENT ARE DESCRIBED FOR CLEANUP OF CONTAINMENT ATMOSPHERES FOLLOWING FISSION PRODUCT RELEASE FROM REACTOR WATER COOLANT FAILURES. DECONTAMINATION OF CONTAINMENT AIR BY CONDENSATION PROCESSES, SPRAYS, GAS PHASE REACTIONS, FOAMS, AND DIFFUSION BOARDS ARE DISCUSSED BRIEFLY AND THEIR USE NOTED AS SUPPORTIVE OPERATIONS TO EFFECT MORE RAPID CLEANUP. COMPARISONS OF AIR CLEANING PROBLEMS AND DESIGN ARE MADE BETWEEN WATER AND SODIUM COOLED REACTORS ACCIDENTS.

AVAILABILITY - F.J. VILES, HARVARD SCHOOL OF PUBLIC HEALTH

*AIR CLEANING + *FILTER SYSTEM + *REVIEW + *TEST, FILTER SYSTEM + AFROSOL + CHARCOAL ADSORBER +
CHEMICAL KINETICS + CHEMICAL REACTION + DIFFUSION BOARD + FILTER + FILTER EFFICIENCY + FOAM + HALOGEN +
METAL, LIQUID + NOBLE GAS + PARTICULATE + SPRAY, GENERAL

7-28518
CARTAN FJ + BEARD HR + DUCE FA + KELLER JH
EVIDENCE FOR THE EXISTENCE OF HYPOIODOUS ACID AS A VOLATILE IODINE SPECIES PRODUCED IN WATER-AIR MIXTURES
IDAHO NUCLEAR CORP., IDAHO FALLS, IDAHO
8 PAGES, 2 FIGURES, 13 REFERENCES, PAPER PRESENTED AT THE TENTH AIR CLEANING CONFERENCE, NEW YORK, AUGUST
26-30, 1968

VARIOUS INVESTIGATORS HAVE REPORTED VOLATILE NONELEMENTAL IODINE FORMS PRODUCED WHEN IODINE IS RELEASED INTO AIR OR MOIST AIR. RECENTLY WE OBSERVED A LARGE AMOUNT OF A NONELEMENTAL IODINE SPECIES IN AN EXPERIMENT IN WHICH CARRIER-FREE I-131 WAS INTRODUCED INTO A STEAM-AIR FILLED 86-FT3 CONTAINMENT VESSEL. GAS CHROMATOGRAPHIC ANALYSES AND THE DISTRIBUTION OF IODINE ON SAMPLER COMPONENTS SHOW THAT THE SPECIES WAS NOT METHYL OR ETHYL IODIDE. A REVIEW OF THE PROPERTIES OF POSSIBLE IODINE COMPOUNDS SUGGESTED THAT THE SPECIES WAS HYPOIODOUS ACID, HOI. A VOLATILE NONELEMENTAL SPECIES OF IODINE, LIKE THAT OBSERVED IN THE LARGE SCALE TEST, WAS GENERATED IN THE LABORATORY BY HYDROLYSIS OF IODINE. ITS VOLATILITY, LIMITED STABILITY AND THE CONDITION OF GENERATION INDICATE THAT IT IS HYPOIODOUS ACID.

AVAILABILITY - F.O. CARTAN, IDAHO NUCLEAR CORP., IDAHO FALLS, IDAHO 83401

*CHEMICAL REACTION + *CHROMATOGRAPHY + *IODINE + *WATER VAPOR + AIR CLEANING + CHEMICAL PROPERTY +
HUMIDITY + ORGANIC IODIDE

7-28519
JONES LR
EFFECT OF GAMMA RADIATION ON ADSORPTION ON IODINE AND METHYL IODIDE ON ACTIVATED CARBON
SAVANNAH RIVER LAB., AIKEN, SOUTH CAROLINA
DP-MS-68-30 +. 11 PAGES, 5 FIGURES, 1 TABLE, 9 REFERENCES, PAPER PRESENTED AT THE TENTH USAEC AIR
CLEANING CONFERENCE, AUGUST 28-30, 1968

THE EFFECT OF GAMMA RADIATION ON THE ADSORPTION OF IODINE AND METHYL IODIDE ON ACTIVATED CARBON EXPOSED TO FLOWING MIXTURES OF STEAM AND AIR IS BEING MEASURED AT THE SAVANNAH RIVER LABORATORY. THE STEAM-AIR-IODINE MIXTURES ARE EXPOSED TO A RADIATION FIELD OF ABOUT

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-28519 *CONTINUED*

20,000,000 RADS/HR WHILE FLOWING THROUGH A BED OF TEST CARBON. PRELIMINARY TESTS, IN WHICH ONLY RELATIVE HUMIDITY AND VELOCITY HAVE BEEN VARIED, SHOW THAT THE RADIATION FIELD DECOMPOSED UP TO 90% OF THE METHYL IODIDE. TEST CONDITIONS SIMULATED A POSTULATED LOSS-OF-COOLANT ACCIDENT WHERE ADSORPTION OF RADIOIODINE ON CARBON BEDS IN THE CONFINEMENT SYSTEM WOULD PRODUCE AN INTENSE GAMMA RADIATION FIELD.

AVAILABILITY - L.R. JONES, SAVANNAH RIVER LAB., E.I. DU PONT DE NEMOURS AND CO., AIKEN, SOUTH CAROLINA

*ORGANIC IODIDE + *RADIATION DAMAGE + *RADIATION EFFECT + *STEAM + AIR CLEANING + CHARCOAL + CHARCOAL ADSORBER + FISSION PRODUCT, IODINE + GAMMA + IODINE + TEST, FILTER

7-28520

BENNETT RL + ADAMS RE

A SAMPLING DEVICE FOR DISTINGUISHING THE FORMS OF IODINE IN A HUMID ATMOSPHERE
OAK RIDGE NATIONAL LAB., TENN.

28 PAGES, 10 FIGURES, 9 TABLES, 8 REFERENCES, PAPER PRESENTED AT THE TENTH USAEC AIR CLEANING CONFERENCE, NEW YORK, AUGUST 26-30, 1968

ANALYTICAL SAMPLERS, CAPABLE OF DISTINGUISHING AND MEASURING PARTICULATE, ELEMENTAL AND THE LESS REACTIVE IODINE FORMS SUCH AS METHYL IODIDE, ARE NEEDED TO AID IN THE ASSESSMENT OF THE HAZARD OF AN ACCIDENTAL IODINE RELEASE FROM A NUCLEAR REACTOR AND TO PREDICT ITS SUBSEQUENT BEHAVIOR. A MAJOR PROBLEM IN THE APPLICATION OF MAY PACK IODINE SAMPLERS HAS BEEN THE DIFFICULTY IN FINDING THE PROPER SEQUENCE OF MATERIALS THAT WILL REPRODUCIBLY SEPARATE THE PARTICULATE IODINE FROM ELEMENTAL IODINE. AN IMPROVED SAMPLER HAS BEEN DEvised WHICH CONTAINS A SILVER-PLATED ALUMINUM INLET SECTION THAT SERVES AS A DIFFUSION BATTERY. THE REACTIVE MOLECULAR IODINE IS SEPARATED FROM AEROSOL PARTICLES DUE TO ITS GREATER DIFFUSIVITY. TEST DATA TO SUPPORT THIS IODINE SAMPLING CONCEPT ARE PRESENTED.

AVAILABILITY - R.L. BENNETT, R.E. ADAMS, REACTOR CHEMISTRY DIV., OAK RIDGE NATIONAL LAB., TENN.

*ANALYTICAL TECHNIQUE, CALIBRATION + *FILTER, COMBINATION + *FILTER, MAY PACK + *FISSION PRODUCT, IODINE + *SAMPLING + AEROSOL + AIR CLEANING + DEPOSITION + INSTRUMENT, GENERAL + IODINE + SILVER + TUBING

7-28521

PARKER GW + BUCHHOLZ H + MARTIN WJ

RADIOACTIVE AEROSOL SIZE CLASSIFICATION EXPERIENCE WITH A LOW PRESSURE CASCADE IMPACTOR

OAK RIDGE NATIONAL LAB., TENN.

50 PAGES, 23 FIGURES, 4 TABLES, 19 REFERENCES, PAPER PRESENTED AT THE TENTH AIR CLEANING CONFERENCE, NEW YORK, AUGUST 26-30, 1968

AEROSOL PARTICLES IN THE SUBMICRON RANGE ARE EXPECTED TO BE RELEASED FROM OVERHEATED REACTOR FUEL MATERIALS AS INDICATED IN NUMEROUS EXPERIMENTS WHICH SIMULATE REACTOR ACCIDENTS RESULTING FROM A LOSS-OF-COOLANT. DEVICES TO MEASURE AERODYNAMIC PARTICLE SIZE IN THE SUBMICRON REGION ARE THEREFORE REQUIRED AND A SIMPLE, PASSIVE, NEARLY FOOL-PROOF DEVICE IS PARTICULARLY DESIRABLE. IN THIS WORK AN IMPROVEMENT ON A STANDARD INSTRUMENT, AN INERTIAL IMPACTOR, WHICH OPERATES AT SUBATMOSPHERIC PRESSURE THEREBY INCREASING BOTH THE MEAN FREE PATH OF THE AIR MOLECULES AND THE CUNNINGHAM CORRECTION (FOR THE SLIP OF SMALL PARTICLES BETWEEN GAS MOLECULES) WAS CONCEIVED AND INVESTIGATED TO TEST THIS PRINCIPLE.

AVAILABILITY - G.W. PARKER, H. BUCHHOLZ, W.J. MARTIN, REACTOR CHEMISTRY DIV., OAK RIDGE NATIONAL LAB., OAK RIDGE, TENN.

*AEROSOL PROPERTIES + *FILTER, CASCADE IMPACTOR + *PARTICLE SIZE DISTRIBUTION + *SAMPLING + AEROSOL + AIR CLEANING + FUEL MELTDOWN + INSTRUMENT, GENERAL + PARTICLE SIZE + URANIUM OXIDE

7-28522

MAECK WJ + PENCE DT + KELLER JH

A HIGHLY EFFICIENT INORGANIC ADSORBER FOR AIRBORNE IODINE SPECIES (SILVER ZEOLITE DEVELOPMENT STUDIES)

IDAHO NUCLEAR CORP., IDAHO FALLS, IDAHO

10 PAGES, 7 FIGURES, 14 TABLES, PRESENTED AT THE TENTH AIR CLEANING CONFERENCE, NEW YORK, AUGUST 26-30, 1968

A SYNTHETIC ZEOLITE, LINDE MOLECULAR SIEVE 13X, CONVERTED TO THE SILVER FORM STRONGLY ADSORBS INORGANIC AND ORGANIC SPECIES OF AIRBORNE IODINE. AS A FILTER MATERIAL FOR REMOVING IODINE FROM REACTOR CONTAINMENT ATMOSPHERES, IT HAS IDEAL PROPERTIES OF NONFLAMMABILITY, HIGH TEMPERATURE OPERABILITY WITH ADSORPTION OF IODINE UP TO 500 C, RETENTION OF IODINE UP TO 1000 C, AND A RAPID REACTION TIME. RETENTIONS GREATER THAN 99.98% HAVE BEEN MEASURED FOR ELEMENTAL IODINE AND FOR METHYL IODIDE FOR A VARIETY OF CONDITIONS VARYING FROM DRY FLOWS AT ROOM TEMPERATURE, DRY FLOWS AT 500 C, AND STEAM-AIR MIXTURES. OTHER PROMISING APPLICATIONS OF THIS TYPE OF MATERIAL TO THE NUCLEAR INDUSTRY INCLUDE (A) CLEANUP OF DISSOLVER OFF-GAS FROM CHEMICAL PROCESSING PLANT OPERATIONS, (B) FILTER MATERIALS FOR HEALTH PHYSICS SAFETY DEVICES SUCH AS FACE MASKS AND AIR MONITORS, AND (C) ADSORBING FILTERS IN SAMPLING DEVICES.

AVAILABILITY - W.J. MAECK, D.T. PENCE, J.H. KELLER, IDAHO NUCLEAR CORP., POST OFFICE BOX 1845, IDAHO FALLS, IDAHO 83401

*ADSORPTION + *IODINE + *MOLECULAR SIEVE + *ORGANIC IODIDE + *SILVER + AIR CLEANING + CHARCOAL ADSORBER + INSTRUMENT, RADIATION MONITORING + MONITOR, RADIATION, GAS + STEAM + THERMAL PROPERTY

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-28523

ACKLEY RD + ADAMS RE
AGING AND WEATHERING OF IMPREGNATED CHARCOALS USED FOR TRAPPING RADIOIODINE (AN INTERIM REPORT)
OAK RIDGE NATIONAL LABORATORY, TENN.
16 PAGES, 8 FIGURES, 2 TABLES, 3 REFERENCES, PRESENTED AT THE TENTH USAEC AIR CLEANING CONFERENCE, NEW YORK, AUGUST 26-30, 1968

AGING, WEATHERING (EXPOSURE TO FLOWING AIR), AND POISONING ARE PROCESSES WHICH MIGHT ADVERSELY AFFECT CHARCOAL PERFORMANCE, ESPECIALLY WITH REGARD TO TRAPPING RADIOIODINE IN THE FORM OF METHYL IODIDE. ACCORDINGLY, SOME EFFORT HAS BEEN APPLIED TOWARD INVESTIGATING THE EFFECTS OF THE ABOVE PROCESSES. THE RESULTS, WHICH WERE GENERALLY IN ACCORD WITH EXPECTATION, INDICATED THE FOLLOWING - (1) AGING PER SE HAS LITTLE OR NO EFFECT ON IMPREGNATED CHARCOAL PERFORMANCE, (2) WEATHERING WITH AIR AT AROUND 50% RELATIVE HUMIDITY HAS AN APPRECIABLE EFFECT, AND (3) POISONING OF IODIZED CHARCOAL CAN HAVE A LARGE EFFECT.

AVAILABILITY - R.D. ACKLEY OR R.E. ADAMS, REACTOR CHEMISTRY DIV., OAK RIDGE NATIONAL LAB., OAK RIDGE TENNESSEE 37830

*CHARCOAL + *CHARCOAL ADSORBER + *FILTER OPERATION + *FISSION PRODUCT, IODINE + *OPERATING EXPERIENCE + *ORGANIC IODIDE + AIR CLEANING + IODINE + TEST, FILTER

7-28524

ADLEY FE + SIMS LL
FACTORS INFLUENCING HIGH-EFFICIENCY FILTER GASKET LEAKAGE
HANFORD ENVIRONMENTAL HEALTH FOUNDATION
HCHF-6 +. 26 PAGES, 26 FIGURES, PRESENTED AT THE TENTH AIR CLEANING CONFERENCE, NEW YORK, AUGUST 26-30, 1968

TESTS WERE CONDUCTED TO STUDY OVERALL HEPA FILTER GASKET PERFORMANCE WITH EMPHASIS ON LEAKAGE AND PHYSICAL PROPERTIES OF THE GASKET MATERIALS. IN GENERAL, THE MOLDED ONE-PIECE SOLID RUBBER GASKETS WITH UNIFORM THICKNESS THROUGHOUT SHOWED A RAPIDLY DIMINISHING LEAK RATE WITH INCREASING GASKET COMPRESSION IN TESTS WITHOUT THE ARTIFICIAL DEFECTS. IT APPEARS THAT THE SKIN SURFACE ON THE MOLDED GASKETS PREVENTS ADEQUATE SEALING AROUND DEFECTS AT LOW COMPRESSIONS. INDIVIDUAL MOLDED GASKETS WITH RELATIVELY LARGE VARIATIONS IN THICKNESS (0.25 IN. +/- 0.040 IN.) PRODUCED CONSIDERABLY GREATER LEAK RATES THAN THOSE WHOSE DIMENSIONS WERE MORE UNIFORM. SEVERAL CLOSED-CELL NEOPRENE GASKETS WITH CORNER JOINTS WERE SIMILARLY TESTED FOR LEAKAGE. ELASTOMERS HAVE A TENDENCY TO RELAX WITH TIME AFTER COMPRESSION. HIGH COMPRESSION (35 TO 50%) OF THE MOLDED GASKETS PRODUCES SHEARING ALONG ONE OF THE GASKET SURFACES. USUALLY THIS OCCURS ON THE SURFACE THAT WOULD BE BONDED TO THE FILTER FRAME.

*ADHESION + *FILTER DESIGN + *LEAK + *LEAK RATE + *PLASTICITY + *PLASTICS + *PROPERTY, PHYSICAL + AIR CLEANING + FILTER EFFICIENCY + FILTER INSPECTION + FILTER TEST REQUIREMENT + FLANGE + THICKNESS

7-28525

SCHWALBE HC
REDEVELOPMENT OF THE SAVANNAH RIVER LABORATORY MOISTURE RESISTANCE TEST FOR FILTER PAPER
HERTY FOUNDATION, SAVANNAH, GEORGIA
22 PAGES, 9 FIGURES, 2 TABLES, 20 REFERENCES, PRESENTED AT THE TENTH AIR CLEANING CONFERENCE, NEW YORK, AUGUST 26-30, 1968

IMPORTANT USES OF HEPA FILTER MEDIA FOR REACTOR CONTAINMENT SPECIFY EXPOSURE OF FILTER MEDIA FOR 10 DAYS TO A STEAM-AIR MIXTURE TO GUARANTY FREEDOM FROM BREAKS IN THE MEDIA IN ACTUAL FILTER INSTALLATIONS. THIS TEST WAS FOUND TO BE SUPERIOR TO THE CURRENT WATER REPELLENCY TEST ADOPTED IN 1956. THIS PAPER DESCRIBES A REDEVELOPED TEST OF 2 HOURS DURATION IN AN APPARATUS MODIFIED BY SAVANNAH RIVER LABORATORY. A NEW METHOD TO ASSESS CHANGES IN ELASTICITY WAS INTRODUCED. TWO TRANSDUCERS OF THE SONIC MODULUS TESTER ARE MOUNTED ON THE INSIDE OF THE EXPOSURE CHAMBER AND CONTACT THE FILTER MEDIA.

AVAILABILITY - H.C. SCHWALBE, HERTY FOUNDATION, SAVANNAH, GEORGIA

*ANALYTICAL TECHNIQUE, CALIBRATION + *FILTER TEST REQUIREMENT + *FILTER, HIGH EFFICIENCY + *TEST, FILTER + *WATER VAPOR + AIR CLEANING + HUMIDITY + INSTRUMENT, GENERAL + STEAM

7-28545

ALSO IN CATEGORY 17
MONTHLY OPERATIONS REPORT NO. 29 - PEACH BOTTOM ATOMIC POWER STATION
PHILADELPHIA ELECTRIC COMPANY
MONTHLY OPERATIONS REPORT NO. 29, JULY 1968 +. 14 PAGES, DOCKET 50-171, TYPE--HTGR, MFG--G.A., AE--BECHTEL

SHUTDOWN WAS REQUIRED BECAUSE OF STEAM LEAK FROM STEAM GENERATOR DRUM LEVEL GAGE GLASS. MAIN COOLANT ACTIVITY LEVEL INCREASED TO 8 CURIES AND A THIRD DEFECTIVE ELEMENT IS SUSPECTED. OTHER TOPICS INCLUDE SUMMARY OF OPERATIONS, RADIOACTIVE EFFLUENTS, MAINTENANCE, AND ADMINISTRATION.

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

ACTIVITY BUILDUP + COATED PARTICLE + FAILURE, EQUIPMENT + FAILURE, FUEL ELEMENT + FAILURE, FUEL ELEMENT + FISSION PRODUCT RETENTION + INSTRUMENT, LIQUID LEVEL DETECTION + LEAK + MAIN COOLING SYSTEM +

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-28545 *CONTINUED*
PEACH BOTTOM 1 (HTGR) + REACTOR, HTGR + REPORT, OPERATIONS + STEAM GENERATOR

7-28596 ALSO IN CATEGORIES 17 AND 13
UNION TC
SUMMARY OF INFORMATION REQUESTED ON NFS FILTER FAILURE
NUCLEAR FUEL SERVICES, INC., WHEATON, MD.
4 PAGES, ATOMIC ENERGY CLEARING HOUSE, 14(40), PAGE 26-29, (SEPT. 30, 1968), DOCKET NO. 50-201

(LETTER TO NFS, SEPT. 17) TWO ANALYSES HAVE BEEN REQUESTED - (1) A TECHNICAL ANALYSIS OF THE SEPT. 4, 68, FILTER FAILURE, (2) A SAFETY ANALYSIS OF THE FINAL FILTER SYSTEM. FROM NFS FACTS, IT APPEARS NEW TECHNICAL SPECIFICATIONS ARE REQUIRED. ALSO PROVIDE (1) COMPREHENSIVE EVALUATION OF MATERIAL RELEASED SEPT. 4, (2) EVALUATE FILTER FAILURE CORRECTIVE ACTION, (3) EXPLAIN WHY DP SENSOR DID NOT SWITCH IN ALTERNATE FILTERS SEPT. 4, (4) 10 SPECIFIC QUESTIONS REGARDING OPERATING BEHAVIOR AND LIMITS OF FILTERS.

*FILTER, DAMAGED + *OFF GAS + AEC QUESTION + FILTER OPERATION + FUEL REPROCESSING + INSTRUMENT, FLOW + NFS + PRESSURE DROP + TECHNICAL SPECIFICATIONS

7-28597 ALSO IN CATEGORY 17
MEHANN RO
NS SAVANNAH ONBOARD FILTER TESTING PROGRESS
FIRST ATOMIC SHIP TRANSPORT, INC., HOBOKEN, N. J.
2 PAGES, ATOMIC ENERGY CLEARING HOUSE, 14(40), PAGE 25 AND 26, (SEPT. 30, 1968), DOCKET 50-238, TYPE--PWR.
MFG--B+W, AE--G.G. SHARP

(LETTER, SEPT. 13) (1) TWO FIRMS ARE PREPARING PROPOSALS ON REPLACEMENT OF THE CHARCOAL FILTERS. (2) FAST FEELS FREON-112 LEAK TESTING IS NOT SUITABLE FOR SHIPBOARD USE. HACL HAS ELIMINATED INTERFERENCE BY COPPER IONS IN THE NONRADIOACTIVE IODINE TEST. AUG. 68 TRIALS WERE ENCOURAGING, AND FURTHER TESTS ARE PLANNED. (3) OPNL TESTS SUGGESTS THAT THE OIL CONTAMINANT IS A VOLATILE FRACTION OF THE CONTROL ROD DRIVE HYDRAULIC OIL, EVOLVED WHEN OIL CONTACTS A SURFACE WARMER THAN 250 F. AN OVERALL PROGRESS REPORT WILL BE SUBMITTED BY MARCH 17, 1969.

*CHARCOAL + *FILTER + *OPERATING EXPERIENCE + FLOW BLOCKAGE + NS SAVANNAH (PWR) + R AND D PROGRAM + REACTOR, PWR + TEST, FILTER

7-28645 ALSO IN CATEGORIES 17 AND 14
OTTERSEN U
EXPERIENCE AT HBWR WITH ACTIVITY RELEASE IN CONNECTION WITH FUEL FAILURES
INSTITUTT FOR ATOMENERGI, HALDEN (NORWAY). OECD HALDEN REAKTOR PROSJEKT
HPR-87 +. 94 PAGES, 36 FIGURES, 16 TABLES, OCT. 1967

DESCRIBES 13 CLAD FAILURES (SEPT. 63 TO NOV. 66) OF UO₂ PELLET FUEL, PRIMARILY TO SHOW RELEASE HISTORY IN REACTOR BUILDING DURING OPERATION AND TRANSPORT TO STORAGE BY VARIOUS MEANS. REACTOR IS COOLED SLOWLY TO 100 C TO AVOID PULLING IN THE INERT GAS, SO FISSION GAS CAN ESCAPE WITH STEAM. XE-133 IS 1000 TIMES THE I-131 CONTENT IN THE PRIMARY GAS SPACE FOLLOWING A FUEL RUPTURE. REACTOR DOWN TIME DUE TO HEALTH PHYSICS REASONS WAS 519 HR. WORKING LIMIT BASED ON AIRBORNE ACTIVITY DERIVED.

AVAILABILITY - USAEC DEPOSITORY LIBRARIES IN THE U.S. AND OVERSEAS

*FAILURE, CLADDING + *OPERATING EXPERIENCE SUMMARY + *RADIATION SAFETY AND CONTROL + AIRBORNE RELEASE + FAILURE, FUEL ELEMENT + FISSION GAS RELEASE + FISSION PRODUCT, IODINE + HBWR (BWR) + NORWAY + PARTITION COEFFICIENT + REACTOR, BWR + REPORT, OPERATIONS ANALYSIS + XFNQM

7-29180 ALSO IN CATEGORY 12
SUGIMOTO S
DEVICE FOR FILTERING RADIOACTIVE GASEOUS WASTES
JAPAN ATOMIC ENERGY RES. INST.
JAPANESE PATENT 1966-13558 +. JULY 29, 1966

RADIOACTIVE GASEOUS WASTES, BEFORE DISCHARGING TO THE ATMOSPHERE, MUST BE CLEANED OF HARMFUL SOLID PARTICLES. THE DEVICE DESCRIBED CAN BE APPLIED EVEN FOR RADIOACTIVE GASEOUS WASTES WITH HIGH SOLID CONTENTS. IT CAN BE USED EITHER AS THE PRELIMINARY FILTER BY ITSELF OR IN COMBINATION WITH AN AEC FILTER BY ARRANGING TWO OF THE DEVICE IN SERIES.

AVAILABILITY - FOREIGN PATENTS MAY BE OBTAINED IN PHOTOCOPY FROM THE U.S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D.C. (\$0.30 CENTS/PAGE)

*FILTER DESIGN + *WASTE DISPOSAL, GAS + FILTER + FILTER, ABSOLUTE + JAPAN + PATENT

7-29411
GATLEY JA + WEBB J + CALLIE RR
VENTED NUCLEAR REACTOR FUEL ELEMENT

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-29411 *CONTINUED*
U.S. PATENT 3,357,893 +. AUGUST 23, 1963, 3 SHEETS

GIVES A FUEL ELEMENT DESIGN OF THE VENTED TYPE HAVING A FUEL-CONTAINING PROTECTIVE SHEATH OF ELONGATED FORM. A VENT PATH UNOBSTRUCTED BY FUEL HAS A PERMANENTLY OPEN COMMUNICATION WITH THE FUEL ADJACENT AT ONE END. THE OTHER END OF THE VENT PATH HAS AN OUTLET WITH THE EXTERIOR SURROUNDING OF THE SHEATH FOR DISCHARGE INTO THE SURROUNDINGS OF GASES RELEASED BY THE FUEL DURING OPERATION.

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

*DESIGN CRITERIA + *DESIGN STUDY + *FUEL ELEMENT + *REACTOR, LMFBR + FISSION GAS RELEASE + FISSION PRODUCT RELEASE, GENERAL + FISSION PRODUCT RETENTION + FISSION PRODUCT, VOLATILE + REACTOR, BREEDER + REACTOR, FAST

7-29612 ALSO IN CATEGORY 18
HOOKER JR + GREIDA RJ + LUBY CS + MILLS RG
FORT ST. VRAIN PROOF TEST ELEMENT NUMBER ONE
GULF GENERAL ATOMIC, INC., SAN DIEGO, CALIF
GAMD-8552 +. 47 FIGURES, 25 TABLES, 7 REFERENCES, 109 PAGES, JUNE 12, 1968

GIVES DETAILED DESCRIPTION OF ELEMENT TO BE IRRADIATED IN PEACH BOTTOM, MATERIALS AND PROCESSES USED IN FABRICATION, PIGGYBACK IRRADIATION SPECIFICATIONS, AND ASSEMBLY DETAILS. DEVELOPMENT DESCRIBED ELSEWHERE. ***UNPURGED ELEMENT HAS LONG HOLES FILLED WITH TRIPLE COATED PARTICLES. 6.7% BURNUP EXPECTED, AT TEMPERATURES UP TO 1240 C.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*FABRICATION + *FUEL ELEMENT + *IRRADIATION TESTING + COATED PARTICLE + FT. ST. VRAIN (HTGR) + PEACH BOTTOM 1 (HTGR) + REACTOR, HTGR + SYSTEM DESCRIPTION

CATEGORY A
SOURCES OF ENERGY RELEASE UNDER ACCIDENT CONDITIONS

8-27965 ALSO IN CATEGORIES 5 AND 6
ARGONNE NATIONAL LABORATORY. CHEMICAL ENGINEERING DIVISION RESEARCH HIGHLIGHTS. MAY 1967 - APRIL 1968
ARGONNE NATIONAL LABORATORY, ILLINOIS
ANL-7450 +. 127 PAGES, FIGURES, TABLES, APRIL 1968

BRIEFLY SUMMARIZES ANL CHEMICAL ENGINEERING DIVISIONS REACTOR SAFETY WORK FOR THE PERIOD FROM MAY 1967 TO APRIL 1968. WORK FELL INTO AREAS RELATING TO WATER-COOLED THERMAL REACTORS AND RELATING TO SODIUM-COOLED FAST REACTORS. THE THERMAL REACTOR STUDIES INCLUDED COMPUTER ANALYSIS OF A LOSS-OF-COOLANT ACCIDENTS (CHEMLOC-II PROGRAM), BOILING HEAT TRANSFER FROM MOVING SPHERES TO WATER, AND MEASUREMENTS OF REACTION FORCES DUE TO VOID FORMATION WHEN HOT PARTICLES ARE IMMersed IN A WATER COLUMN. THE FAST REACTOR STUDIES INCLUDED CONSTRUCTION OF APPARATUS TO MEASURE THE SPECIFIC HEAT OF LIQUID URANIUM DIOXIDE, HEAT TRANSFER FROM A MOVING HOT SPHERE TO SODIUM, DESIGN OF AN AUTOCLAVE FOR TREAT TO STUDY VIOLENT FUEL FAILURE IN SODIUM, REACTION BETWEEN VIOLENTLY SPRAYED SODIUM AND AIR, AND MIGRATION OF FISSILE AND FERTILE MATERIALS IN FUEL PINS UNDER A THERMAL GRADIENT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*ACCIDENT MODEL + *ACCIDENT, LOSS OF COOLANT + *AIR + *CHEMICAL REACTION + *FUEL SEGREGATION + *HEAT TRANSFER EXPERIMENT + *PLUTONIUM DIOXIDE + *PRESSURE TRANSIENT + *SODIUM + *SPHERE + *URANIUM DIOXIDE + ACCIDENT ANALYSIS + ANALYTICAL MODEL + ANL + DROPLET + HEAT TRANSFER, BOILING + HEAT TRANSFER, CONVECTION + MOLTEN FUEL + PROPERTY, PHYSICAL + REACTOR, PHSFO + REACTOR, SAFETY RESEARCH + THERMAL ANALYSIS + TREAT (PRR)

8-28478 ALSO IN CATEGORY 7
PEARCE RJ
THE IGNITION OF URANIUM. PART I. A LITERATURE SURVEY
CENTRAL ELECTRICITY GENERATING BOARD, BERKELEY (ENGLAND). BERKELEY NUCLEAR LABS.
RD/B/N-1134 +. 20 PAGES, MAY 1968

DATA ON THE IGNITION OF URANIUM IN AIR, OXYGEN AND CARBON DIOXIDE ARE REVIEWED. THE MAJOR FACTORS THAT AFFECT IGNITION IN AIR OR OXYGEN HAVE BEEN IDENTIFIED. INFORMATION ON IGNITION IN CARBON DIOXIDE IS MUCH MORE RESTRICTED. THE MAJOR VARIABLES AFFECTING IGNITION ARE - (1) THE SIZE AND SHAPE OF THE SPECIMEN IN THE FORM OF THE SPECIFIC AREA, S (SURFACE AREA TO MASS RATIO) WHERE AN ARRHENIUS-TYPE RELATIONSHIP WITH IGNITION TEMPERATURE EXISTS, AND (2) EXPERIMENTAL CONDITIONS, ESPECIALLY THE HEATING CONDITIONS, TO WHICH THE SPECIMEN HAS BEEN SUBJECTED. OTHER VARIABLES, SUCH AS GAS COMPOSITION, PRESSURE (IN THE CASE OF IGNITION IN CARBON DIOXIDE) AND THE PRESENCE OF URANIUM HYDRIDE ARE ALSO SHOWN TO HAVE AN EFFECT. THE INFLUENCE OF ALLOYING ADDITIONS ON IGNITION TEMPERATURE IS COMPLEX AND MAY NOT APPARENTLY BE PREDICTED FROM SIMPLE CONSIDERATIONS. FINALLY A BRIEF SURVEY OF THE REACTIVITY OF URANIUM HYDRIDE IS INCLUDED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA., 22151, \$3.00 COPY, \$0.65 MICROFICHE

*CHEMICAL KINETICS + *IGNITION + *PARTICLE SIZE + *SURFACE TO VOLUME RATIO + *URANIUM + CARBON DIOXIDE + CHEMICAL REACTION + FIRE + OXIDATION + OXYGEN

8-29094 ALSO IN CATEGORIES 5 AND 6
MCLAIN HA
POTENTIAL METAL-WATER REACTIONS IN LIGHT-WATER-COOLED POWER REACTORS
OAK RIDGE NATIONAL LAB., TENN.
ORNL-NSIC-23 +. 201 PAGES, FIGURES, TABLES, 206 REFERENCES, AUGUST 1968

A STATE-OF-THE-ART REVIEW OF THE ROLE OF CHEMICAL REACTIONS IN AN UNLIKELY EVENT OF A LIGHT-WATER POWER REACTOR ACCIDENT. THE STUDY CONCLUDED THAT THESE REACTIONS COULD BE ASSESSED REALISTICALLY ONLY BY CONSIDERING AN INTEGRAL MODEL OF THE ACCIDENT. COMPARED WITH THE SITUATION REGARDING THE DEFINITION AND THE MATHEMATICAL SIMULATION OF AN ACCIDENT, THE BASIC KINETICS OF THE CHEMICAL REACTIONS ARE WELL UNDERSTOOD. THERE ARE STILL SOME QUESTIONS ABOUT THE EFFECT OF LIMITED METAL-WATER REACTION ON POSSIBLE FUEL-PIN FRAGMENTATION IN LOSS-OF-COOLANT ACCIDENTS AND ABOUT THE DETONATION LIMITS OF HYDROGEN-AIR-STEAM MIXTURES, HOWEVER.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*AIR + *ALUMINUM + *CHEMICAL KINETICS + *CHEMICAL REACTION + *HYDROGEN + *METAL WATER REACTION + *STEAM + *STEEL, STAINLESS + *URANIUM DIOXIDE + *WATER, GENERAL + *ZIRCALLOY + *ZIRCONIUM + ACCIDENT MODEL + ACCIDENT, CONTROL ROD EJECTION + ACCIDENT, LOSS OF COOLANT + BORON + BROWNS FERRY (BWR) + CLADDING + CORE MELTDOWN + DRESDEN 3 (BWR) + FUEL MELTDOWN + INDIAN POINT 2 (PWR) + LOFT (S-RR) + OCONEE 1, 2, AND 3 (PWR) + OXIDATION + OXYGEN + PALISADES POINT (PWR) + STOICHIOMETRY + TEMPERATURE TRANSIENT + TURKEY POINT 3 AND 4 (PWR)

8-29095
JACHIMOWSKI CJ + HOUGHTON WM
EFFECT OF CARBON DIOXIDE AND WATER VAPOR ON THE INDUCTION PERIOD OF THE HYDROGEN-OXYGEN REACTION

CATEGORY 8
SOURCES OF ENERGY RELEASE UNDER ACCIDENT CONDITIONS

8-29095 *CONTINUED*

NASA, LANGLEY RESEARCH CENTER, LANGLEY STATION, HAMPTON, VA.

NASA-TN-D-4685 +. 13 PAGES, 9 FIGURES, 2 TABLES, 12 REFERENCES, AUGUST 1968

THE EFFECT OF CO₂ AND WATER VAPOUR ON THE INDUCTION-PERIOD KINETICS OF THE H₂-O₂ REACTION WAS STUDIED IN A SHOCK TUBE AT TEMPERATURES BETWEEN 1000 AND 1500 K. THE RESULTS SHOW THAT CO₂ DOES NOT PRODUCE ANY NOTICEABLE EFFECT, WHEREAS WATER VAPOR APPEARS TO ACCELERATE THE H₂-O₂ REACTION. THE ANALYSIS OF EXPERIMENTAL DATA INDICATES THAT THE ACCELERATING INFLUENCE OF WATER VAPOR IS DUE TO TWO PROCESSES. ONE PROCESS IS DOMINANT AT THE HIGHER TEMPERATURES, THE CHAIN-BRANCHING REACTION ($O + H_2O \rightarrow 2OH$), AND THE OTHER, AN UNIDENTIFIED PROCESS, IS DOMINANT AT THE LOWER TEMPERATURES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*CARBON DIOXIDE + *CHEMICAL KINETICS + *CHEMICAL REACTION + *HYDROGEN + *OXYGEN + *WATER VAPOR + ARGON

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-22475
RASMUSSEN J
RELIABILITY OF PROCESS PLANTS AND INSTRUMENTATION SYSTEMS
DANISH ATOMIC ENERGY COMMISSION, RISØE
RISO-M-706 +. 28 PAGES, FEBRUARY 1968

THE RELIABILITY OF AN INSTRUMENTATION SYSTEM IS OFTEN REGARDED AS A PROPERTY THAT MAY BE EVALUATED WHEN THE SYSTEM HAS BEEN DESIGNED ON THE BASIS OF PURELY FUNCTIONAL CRITERIA. ELEMENTARY RELIABILITY PROPERTIES OF AN INSTRUMENTED SYSTEM ARE DISCUSSED IN AN ATTEMPT TO INCORPORATE THE RELIABILITY AS A FUNDAMENTAL SPECIFICATION FOR THE PROCESS CONTROL SYSTEM PROPER AS WELL AS FOR MONITORING AND SAFETY SYSTEMS.

AVAILABILITY - USAEC DEPOSITORY LIBRARIES IN THE U.S. AND OVERSEAS

*INSTRUMENT, GENERAL + *RELIABILITY, SYSTEM + ECONOMICS + FAILURE, INSTRUMENT + INSTRUMENT, PROCESS + THEORETICAL INVESTIGATION

9-22530
TWITTY BL + HUMPHREY HW
A SELF-CORRECTING INSPECTION MONITOR FOR DETERMINING THE U-235 LEVEL IN REACTOR FUEL CORES
NATIONAL LEAD COMPANY OF OHIO
NLCO-1011 +. 10 PAGES, 6 FIGURES, 1 TABLE, 9 REFERENCES, MAY 1968

A SELF-CORRECTING GAMMA RAY MONITOR WAS DESIGNED TO MEASURE THE U-235 ISOTOPIC LEVELS OF URANIUM FUEL CORES NONDESTRUCTIVELY IN ROUTINE FINAL INSPECTION OF PRODUCTION. THE INSTRUMENT AUTOMATICALLY CORRECTS FOR U-238 DECAY PRODUCT INTERFERENCES AND FOR LARGE TEMPERATURE AND VOLTAGE FLUCTUATIONS. THE MONITORING OPERATION IS PERFORMED BY PRODUCTION PERSONNEL. IN 3 YEARS OF CONTINUOUS OPERATION, A PRECISION OF PLUS OR MINUS 0.05 WT% U-235 AT THE 95% CONFIDENCE LEVEL, HAS BEEN MAINTAINED IN THE 0 TO 5 WT% RANGE. THE MONITORS HAVE PROVEN TO BE HIGHLY RELIABLE AND HAVE REQUIRED LITTLE MAINTENANCE. VARIOUS TYPES OF NONDESTRUCTIVE MONITORS ARE COMPARED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*INSTRUMENT, FUEL SCANNING + *INSTRUMENT, NUCLEAR + *INSTRUMENT, RADIATION MONITORING + GAMMA EMITTER + MONITOR, RADIATION, GENERAL + OPERATING EXPERIENCE + SYSTEM DESCRIPTION + TEST, NONDESTRUCTIVE + URANIUM-235

9-22536
OAKES LC
THE CONTROL AND SAFETY OF PULSE REACTORS
OAK RIDGE NATIONAL LABORATORY
9 PAGES, 5 FIGURES, 2 TABLES, 26 REFERENCES, NUCLEAR SAFETY 9(5), PAGES 363-72 (SEPT.-OCT. 1968)

THE TECHNIQUES EMPLOYED IN THE INSTRUMENTATION AND CONTROL SYSTEMS OF THREE BASIC TYPES OF PULSE REACTOR ARE CONSIDERED - (1) BARE METAL ASSEMBLIES OF THE GODIVA TYPE, (2) REPETITIVE-PULSE REACTORS OF THE IBR TYPE, AND (3) LOW-ENERGY NEUTRON SYSTEMS OF THE TRIGA TYPE.

*REACTOR CONTROL + *REACTOR SAFETY SYSTEM + *REACTOR, PULSED + DRAGON (HTGR) + GODIVA (FBR) + PBF (S-RR) + REACTOR, AEC OWNED + REACTOR, FAST BURST + REACTOR, HTGR + REACTOR, PULSED + REACTOR, RESEARCH + REACTOR, SAFETY RESEARCH + TRIGA (RR)

9-22560 ALSO IN CATEGORY 6
OGAWA Y
STABILITY OF THE REACTOR WHICH HAS THE EXTERNAL CONTROL SYSTEM
WAPD-TRANS-28 +. 26 PAGES, 4 REFERENCES, TRANSLATED FROM NIPPON GENSHIRYOKU GAKKAISHI, 7, PAGES 290-7 (MAY 1965)

WHEN THE REACTOR IS EXTERNALLY CONTROLLED, THE PARAMETERS GOVERNING THE CONTROL MUST BE CHOSEN IN CLOSE CONNECTION WITH THE NUCLEAR AND THERMAL PROPERTIES AND OUT-PUT OF THE REACTOR, IN ORDER TO ATTAIN STABILITY IN THE VICINITY OF OPERATING POWER. TO GET THIS RELATION, NON-LINEAR INTEGRAL EQUATIONS CONTAINING THE EFFECTS OF FAST AND SLOW RESPONDING INTERNAL FEEDBACKS AND DELAYED NEUTRONS ARE ADOPTED AND CONNECTED WITH THE EXTERNAL CONTROL SYSTEM. THIS PAPER ALSO DEALS BRIEFLY WITH SOME MODIFICATIONS TO THE REACTOR DYNAMIC EQUATIONS TO OBTAIN A MORE CONCRETE REPRESENTATION OF THE DYNAMICAL BEHAVIOR OF HETEROGENEOUS REACTORS.

AVAILABILITY - SPECIAL LIBRARIES ASSOCIATION TRANSLATION CENTER, JOHN CRERAR LIBRARY, 35 WEST 33RD STREET, CHICAGO, ILL. 60616

*REACTOR CONTROL + *REACTOR DYNAMICS + JAPAN + LIAPUNOV'S FUNCTION + MATHEMATICAL TREATMENT + THEORETICAL INVESTIGATION

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-22692
HULBERT DI
THE REFERENCE MCR CONTROL DRIVE BASIS
GENERAL MOTORS CORP., INDIANAPOLIS
TID-21091 +. 17 PAGES, SEPTEMBER 11, 1964

PROBLEMS ASSOCIATED WITH THE DESIGN AND DEVELOPMENT OF THE MCR CONTROL DRIVE MECHANISM ARE DISCUSSED. PERTINENT OBJECTIVES AND REQUIREMENTS FOR THE MCR PLANT AS A WHOLE ARE DESCRIBED WITH REFERENCE TO THE REACTOR CONTROL DRIVE. A SERIES OF APPLICATION AND PARAMETRIC STUDIES WAS MADE AND DEVELOPMENT TESTING WAS CONDUCTED AT DETERMINING PROOF OF PRINCIPLE AND TOTAL FEASIBILITY IN CERTAIN KEY AREAS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*CONTROL ROD DRIVE + *DESIGN STUDY + REACTOR CONTROL + REACTOR, MILITARY + REACTOR, POWER + TEST, SYSTEM OPERABILITY

9-22693
JACOBS IM
REACTOR PROTECTION SYSTEM - A RELIABILITY ANALYSIS
GENERAL ELECTRIC COMPANY, SAN JOSE
APED-5179 +. 65 PAGES, JUNE 1966

THE DUAL BUS REACTOR PROTECTION SYSTEM CURRENTLY IN USE ON G.E. BOILING-WATER REACTORS IS DESCRIBED IN DETAIL. ITS RELIABILITY IS COMPARED WITH SEVERAL ALTERNATE SYSTEMS FROM BOTH A THEORETICAL AND A PRACTICAL POINT OF VIEW. A MATHEMATICAL RELIABILITY MODEL OF THE SYSTEM IS DERIVED AND USED TO EXPLORE THE SENSITIVITY OF THE SYSTEM TO CHANGES IN COMPONENT INTEGRITY. THE SYSTEM HAS SEVERAL ATTRIBUTES THAT MAKE IT IDEALLY MATED TO ITS REACTOR. QUALITATIVELY, IT MEETS ALL THE PERFORMANCE AND SAFETY CRITERIA THAT ARE NORMALLY APPLIED TO A REACTOR PROTECTION SYSTEM. QUANTITATIVELY, THE ANALYTICAL RESULTS FROM THE MATHEMATICAL RELIABILITY MODEL TEND TO INDICATE THAT THE SYSTEM IS GOOD AND IN GOOD BALANCE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*REACTOR SAFETY SYSTEM + *RELIABILITY ANALYSIS + ANALYTICAL MODEL + COMPARISON, THEORY AND EXPERIENCE + PLANT PROTECTIVE SYSTEM + REACTOR, BWR + SAFETY PRINCIPLES AND PHILOSOPHY + TEST, INSTRUMENT RESPONSE + THEORETICAL INVESTIGATION

9-23172 ALSO IN CATEGORY 14
QUIRK EJM
LOW LEVEL RADIOACTIVITY MONITOR FOR AQUEOUS WASTE
AKTIEBOLAGET ATOMENERGI, STOCKHOLM, SWEDEN
AE-317 +. 35 PAGES, FIGURES, TABLES, REFERENCES, APRIL 1968

A SYSTEM IS DESCRIBED FOR CONTINUOUS MONITORING OF VERY LOW LEVELS OF RADIOACTIVITY IN WASTE WATER. SPRAY EVAPORATION OF THE WATER ENABLES THE DISSOLVED SOLIDS TO BE RECOVERED IN THE FORM OF AN AEROSOL AND COLLECTED ON A FILTER TAPE WHERE THE RADIOACTIVITY IS MEASURED BY A RADIATION DETECTOR. THE ADVANTAGE OF THIS METHOD COMPARED WITH A DIRECT MEASUREMENT IS THAT THE ATTENUATING EFFECT OF THE WATER IS REMOVED AND THUS GREATER SENSITIVITY IS OBTAINED. COMPENSATION FOR BACKGROUND AND ANY CONTAMINATION IS ACHIEVED BY FEEDING DISTILLED WATER TO THE AEROSOL GENERATOR EVERY ALTERNATE SAMPLING PERIOD AND RECORDING THE COUNT DIFFERENCE BETWEEN TWO SUCCESSIVE SAMPLING PERIODS.

AVAILABILITY - USAEC DEPOSITORY LIBRARIES IN THE U.S. AND OVERSEAS

*INSTRUMENT, RADIATION MONITORING + *MONITOR, RADIATION, LIQUID + DOSIMETRY, GENERAL + FILTER + SWEDEN + SYSTEM DESCRIPTION + WASTE HANDLING

9-23184
JONES HC
RELIABILITY TESTING
WESTINGHOUSE ELECTRIC CORPORATION
24 PAGES, 10 FIGURES, FROM PROCEEDINGS OF THE ELEVENTH NATIONAL SYMPOSIUM ON RELIABILITY AND QUALITY CONTROL, MIAMI BEACH, FLORIDA, JANUARY 12-14, 1965

THE SUBJECT OF RELIABILITY TESTING IS DIVERSE AND EXTENSIVE. IT COVERS THE GAMUT FROM RADIATION TESTING OF COMPONENT PARTS OR MATERIALS TO SEQUENTIAL TESTING OF SYSTEMS TO DEMONSTRATE RELIABILITY. UNDERLYING ALL OF THESE TESTS, HOWEVER, ARE A FEW BASIC DISCIPLINES, TO WHICH THIS PAPER IS ADDRESSED. THESE ARE - STATISTICAL TEST DESIGNS, EFFECTS OF ADVERSE ENVIRONMENTAL CONDITIONS, ANALYSIS OF RESULTS AND CONFIDENCE LIMITS, ACCELERATED TESTING, AND TEST PLANNING.

AVAILABILITY - ORDER DEPARTMENT OF THE IEEE, 345 EAST 47TH STREET, NEW YORK, NEW YORK, 10017, \$5.00 EACH POSTPAID

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-23184 *CONTINUED*
*RELIABILITY, COMPONENT + *TEST, COMPONENT + INSTRUMENT, COMPONENT + STATISTICAL ANALYSIS + TESTING

9-25177
DEMITT TF
FFTF IN-LINE INSTRUMENTATION FOR SODIUM PURITY MEASUREMENT
BATTELLE-NORTHWEST, RICHLAND
BNWL-562 +. 24 PAGES, REFERENCES, OCTOBER 1967

THE STATUS OF DEVELOPMENT WORK ON IN-LINE METERS FOR MEASURING IMPURITIES IN SODIUM IS DISCUSSED. THE METERS ARE DISCUSSED IN TERMS OF THEIR POTENTIAL FOR USEFUL SERVICE IN THE FAST TEST REACTOR (FTR). THE PLUGGING METER, THE ELECTROCHEMICAL OXYGEN METER, THE CARBON DIFFUSION METER, AND THE HYDROGEN DIFFUSION METER ARE DEVICES THAT SHOULD BE DEVELOPED IN TIME FOR USE IN FTR DURING STARTUP OPERATIONS. THE ELECTRICAL RESISTIVITY METER MAY ALSO FIND USEFUL APPLICATION AT FTR IF EFFORTS TO IMPROVE PERFORMANCE CHARACTERISTICS ARE SUCCESSFUL. NO OTHER METERS APPEAR TO HAVE SUFFICIENT MERIT AT PRESENT TO WARRANT USE IN THE FTR.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*INSTRUMENT, COOLANT QUALITY + *INSTRUMENT, IN CORF + FFTF (TR) + INSTRUMENT, PROCESS + MFAL, LIQUID + REACTOR, FAST + REACTOR, LMCR + REACTOR, TEST + SODIUM

9-26091 ALSO IN CATEGORY 17
UNIV. OF MISSOURI (ROLLA) CHANGE 1
USAEC, DIVISION OF REACTOR LICENSING
3 PAGES, LETTER TO D. THOMPSON FROM D. J. SKOVHOLT, DOCKET NO. 50-123

TO ALLOW CONTROL-ROD CALIBRATION (WHEN ALLOWABLE EXCESS REACTIVITY IS 3.5%), THE LIMIT OF AT LEAST AN 8% SHUTDOWN MARGIN IS REMOVED. THE NEW LIMITS REQUIRE THAT THE REGULATING ROD BE WORTH NO MORE THAN 0.7% AND THAT THE CORE BE AT LEAST 1% SUBCRITICAL WHEN REG. ROD AND MAXIMUM-WORTH SHIM ROD ARE WITHDRAWN.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM

*SHUTDOWN MARGIN + REACTOR, RESEARCH + SAFETY EVALUATION + TECHNICAL SPECIFICATIONS

9-27405
METHOD AND MEANS FOR CONTROLLING A NUCLEAR REACTOR
U. S. ATOMIC ENERGY COMMISSION
BELGIUM PATENT 674,458 +. 14 PAGES, 2 FIGURES, DECEMBER 29, 1965

THIS INVENTION RELATES TO A METHOD OF CONTROLLING A NUCLEAR REACTOR BY VARYING THE AMOUNT OF A CONTROL MATERIAL AT THE AXIAL CENTER OF THE REACTOR. AFTER EACH INCREMENTAL VARIATION, CONVENTIONAL CONTROL RODS ARE MOVED AXIALLY AN AMOUNT SUFFICIENT TO COMPENSATE FOR SAID INCREMENTAL VARIATION. AXIAL FLUX DISTORTION CAUSED BY CONVENTIONAL CONTROL RODS IS MINIMIZED.

AVAILABILITY - U. S. PATENT OFFICE, DEPT. OF COMMERCE, WASHINGTON, D. C., \$0.30 PER PAGE

*REACTOR CONTROL + BELGIUM + CONTROL ROD INTERACTION + CONTROL SYSTEM + PATENT

9-27496
SAFETY AND CONTROL DEVICE FOR A NUCLEAR REACTOR
COMMISSARIAT A L ENERGIE ATOMIQUE
FRENCH PATENT 1,400,510 +. 10 PAGES, 9 FIGURES, APRIL 20, 1965

A CONTROL ELEMENT IS POSITIONED IN A VERTICAL CHANNEL OF A REACTOR AND COMPRISES SEVERAL ROWS OF TRAPEZOIDAL PLATES OF NEUTRON ABSORBENT MATERIAL. EACH PLATE IS HINGED BY ITS MAJOR BASE TO THE MAJOR BASE OF THE ADJACENT PLATE AND BY ITS MINOR BASE TO THE MINOR BASE OF THE OTHER ADJACENT PLATE TO FORM A ROW OF HINGED ELEMENTS. THE END PLATES OF EACH ROW ARE FIXED, ONE TO THE INLET OF THE CHANNEL AND THE OTHER TO A WEIGHT CONNECTED TO A CONTROL CABLE FOR MOVING ROWS INTO AND OUT OF THE REACTOR CORE.

AVAILABILITY - U. S. PATENT OFFICE, DEPT. OF COMMERCE, WASHINGTON, D. C., \$0.30 PER PAGE

*CONTROL ROD + FRANCE + INSTRUMENT, CONTROL + PATENT + REACTOR CONTROL

9-27497
AZUMA M
REACTOR CONTROL ROD
HITACHI LTD.
JAPANESE PATENT 1966-20917 +. 2 PAGES, 8 FIGURES, DECEMBER 6, 1966

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-27497 *CONTINUED*

IN THE PROPOSED REACTOR CONTROL ROD, USUAL CONTROL ELEMENTS, MADE BY FILLING ABSORBER POWDER OR PELLETS IN TUBES, ARE NOT USED. THE ADVANTAGES TO THE CONTROL ROD ARE UNIFORM DISTRIBUTION OF ABSORBER MATERIAL (THROUGHOUT THE CONTROL ROD) LEADING TO AN INCREASED EFFICIENCY OF NEUTRON ABSORPTION, EASY CONSTRUCTION, AND REDUCED COSTS. THE CONTROL ROD CONSISTS OF THE OUTER TUBE, THE INNER TUBE, NEUTRON MODERATOR IN THE INNER TUBE, AND A NUMBER OF CASES PACKED TIGHTLY WITH ABSORBER PLATES, AND INSERTED IN THE SPACE BETWEEN THE OUTER AND THE INNER TUBE.

AVAILABILITY - U.S. PATENT OFFICE, DEPT. OF COMMERCE, WASHINGTON, D. C., \$0.30 PER PAGE

*CONTROL ROD + *EQUIPMENT DESIGN + JAPAN + PATENT

9-27498

AZUMA M
REACTOR CONTROL ROD
HITACHI LTD.

JAPANESE PATENT 1966-16359 +. 4 PAGES, 3 FIGURES, SEPTEMBER 14, 1966

THE PROPOSED REACTOR CONTROL ROD IS USED FOR THE CONTROL OF A REACTOR BY MEANS OF AN ELECTRONIC COMPUTER. THE CONTROL ROD CONSISTS OF THE OUTERMOST SQUARE TUBE OF A NEUTRON ABSORBER SUCH AS STAINLESS STEEL, A SQUARE TUBE OF A NEUTRON MODERATOR SUCH AS BE SURROUNDED BY THE OUTER TUBE, A SQUARE TUBE MADE OF A NEUTRON-ABSORBING MATERIAL ENCLOSED IN THE MODERATOR TUBE, AND A NEUTRON-FLUX DETECTING DEVICE OF THE GAMMA-RAY-COMPENSATED TYPE WHICH IS WITHIN THE INMOST TUBE.

AVAILABILITY - U. S. PATENT OFFICE, DEPT. OF COMMERCE, WASHINGTON, D. C., \$0.30 PER PAGE

*CONTROL ROD + *EQUIPMENT DESIGN + JAPAN + PATENT

9-27507

POPE KD + MAMMADO RA + SCHNEIDER EP

CIRCUIT DESIGN RELIABILITY BY HIGH SPEED COMPUTER

9 PAGES, 8 FIGURES, FROM PROCEEDINGS OF THE ELEVENTH NATIONAL SYMPOSIUM ON RELIABILITY AND QUALITY CONTROL, MIAMI BEACH, FLORIDA, JANUARY 12-14, 1965

CIRCUIT RELIABILITY IS NOT SOLELY BASED ON CATASTROPHIC FAILURE, BUT MORE OFTEN ON OUT-OF-TOLERANCE OPERATION DUE TO COMPONENT VARIATION WITH ENVIRONMENTAL CHANGES, ELECTRICAL STRESSES, AND AGING. IF THE DESIGNER COULD ALWAYS PREDICT THE WORST POSSIBLE COMBINATION OF PARAMETER DRIFTS TO WHICH HIS DESIGN WOULD BE SUBJECTED, VERIFICATION OF CIRCUIT DESIGN RELIABILITY COULD BE READILY ACCOMPLISHED. A CIRCUIT-ANALYSIS PROGRAM HAS BEEN DEVELOPED FOR USE ON THE IBM 7094 AND CAN PRODUCE ALL THE DATA NECESSARY FOR A THOROUGH WORST-CASE CIRCUIT ANALYSIS, PARAMETER SENSITIVITY DETERMINATION, AND CIRCUIT-PERFORMANCE OPTIMIZATION WHERE REQUIRED.

AVAILABILITY - ORDER DEPARTMENT OF THE IEEE, 345 EAST 47TH STREET, NEW YORK, NEW YORK, 10017 AT \$5.00 EACH, POSTPAID

*INSTRUMENT, COMPONENT + *RELIABILITY ANALYSIS + COMPUTER PROGRAM + DATA PROCESSING + MONTE CARLO

9-27508

LENNON JR

A RELIABILITY/COST OF OWNERSHIP APPROACH TO MICROAVIONICS

THE BOEING COMPANY, RENTON, WASHINGTON

6 PAGES, 4 FIGURES, 5 TABLES, FROM PROCEEDINGS OF THE ELEVENTH NATIONAL SYMPOSIUM ON RELIABILITY AND QUALITY CONTROL, MIAMI BEACH, FLORIDA, JANUARY 12-14, 1965

A STUDY OF THE PHYSICS OF FAILURE OF SEMICONDUCTOR INTEGRATED CIRCUITS INDICATES THAT MICROELECTRONICS CAN IMPROVE THE RELIABILITY OF AVIONICS. OVER 100 MILLION CIRCUIT HOURS GIVES A QUANTITATIVE INDICATION THAT MICROELECTRONIC CIRCUITS HAVE OVER AN ORDER OF MAGNITUDE ADVANTAGE IN MTBF OVER STANDARD DISCRETE EQUIVALENT CIRCUITS. AN ANALYSIS OF SYSTEMS SHOWS THAT THIS RELIABILITY IMPROVEMENT COUPLED WITH SIZE, COST, AND MAINTAINABILITY CONSIDERATIONS GIVES MICROAVIONICS A COST OF OWNERSHIP ADVANTAGE OVER CONVENTIONAL SYSTEMS.

AVAILABILITY - ORDER DEPT. OF THE IEEE, 345 EAST 47TH STREET, NEW YORK, NEW YORK 10017, AT \$5.00 EACH POSTPAID

*RELIABILITY, COMPONENT + ECONOMICS + INSTRUMENT, COMPONENT + SOLID STATE DEVICE

9-27509

KUEHN RE

RELIABILITY MATHEMATICS AND PREDICTION

INTERNATIONAL BUSINESS MACHINES CORPORATION

4 PAGES, 10 REFERENCES, FROM PROCEEDINGS OF THE ELEVENTH NATIONAL SYMPOSIUM ON RELIABILITY AND QUALITY CONTROL, MIAMI BEACH, FLORIDA, JANUARY 12-14, 1965

ONLY MATHEMATICAL RESULTS AND THEIR APPLICATION TO RELIABILITY PROBLEMS ARE CONSIDERED BECAUSE THE DEVELOPMENT AND DERIVATION OF THE TECHNIQUES ARE DOCUMENTED IN THE VARIOUS TEXT BOOKS.

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-27509 *CONTINUED*

IMPORTANT DISCRETE PROBABILITY DISTRIBUTIONS ARE THE BINOMIAL AND THE POISSON. PROBABILITY-DENSITY FUNCTIONS IMPORTANT TO RELIABILITY INCLUDE THE NORMAL OR GAUSSIAN, THE GAMMA, WEIBULL, AND THE EXPONENTIAL. RELIABILITY PREDICTION IS BOTH A SYNTHESIS AND ANALYSIS ART DEPENDING ON THE PHASE OF THE PRODUCT CYCLE.

AVAILABILITY - ORDER DEPT. OF THE IEEE, 345 EAST 47TH STREET, NEW YORK, NEW YORK 10017, \$5.00 EACH POSTPAID

*MATHEMATICAL TREATMENT + *RELIABILITY ANALYSIS

9-27510

HOLMES JR + JAHR EF

ENVIRONMENTAL TESTING IN HIGH RELIABILITY PROGRAMS
INTERNATIONAL BUSINESS MACHINES CORPORATION

7 PAGES, 11 FIGURES, 2 REFERENCES, FROM PROCEEDINGS OF THE ELEVENTH NATIONAL SYMPOSIUM ON RELIABILITY AND QUALITY CONTROL, MIAMI BEACH, FLORIDA, JANUARY 12-14, 1965

WITH THE TREND TOWARD SHORTER DEVELOPMENT TIMES AND SMALLER PRODUCTION QUANTITIES, ENVIRONMENTAL TESTING IS RAPIDLY BECOMING THE MAJOR INSTRUMENT FOR DETECTING WEAKNESSES IN DESIGN AND PRODUCTION ON A TIMELY BASIS. TRENDS IN TESTING ARE DISCUSSED, WITH EMPHASIS BEING PLACED ON FOUR TYPES OF TESTS, NAMELY - STEP-STRESS, ENVIRONMENTAL SCREENING, PERIODIC QUALIFICATION, AND ENVIRONMENTAL ACCEPTANCE TESTING. SPECIFIC EXAMPLES OF THE APPLICATION OF THESE TECHNIQUES ARE DESCRIBED, AND THEIR IMPACT IS DISCUSSED.

AVAILABILITY - ORDER DEPT. OF THE IEEE, 345 EAST 47TH STREET, NEW YORK, NEW YORK 10017 \$5.00 EACH POSTPAID

*ENVIRONMENTAL CONDITION + *RELIABILITY ANALYSIS + *TEST, COMPONENT + INSTRUMENT, TESTING + TESTING

9-27511

KAC JH

STATISTICAL MODELS IN MECHANICAL RELIABILITY
NEW YORK UNIVERSITY

8 PAGES, 7 FIGURES, 5 REFERENCES, FROM PROCEEDINGS OF THE ELEVENTH NATIONAL SYMPOSIUM ON RELIABILITY AND QUALITY CONTROL, MIAMI BEACH, FLORIDA, JANUARY 12-14, 1965

THIS PAPER OFFERS A BACKGROUND FOR CHOOSING PROBABILITY OR STATISTICAL MODELS IN REPRESENTING AND ANALYZING MECHANICAL FAILURE DATA. TO CHOOSE A MODEL BY FIT ALONE IS NOT SUFFICIENT. THE ASSUMPTIONS WHICH GENERATE THE MODEL MUST BE ACCEPTED OR JUSTIFIED.

AVAILABILITY - ORDER DEPT. OF THE IEEE, 345 EAST 47TH STREET, NEW YORK, NEW YORK, 10017, \$5.00 EACH POSTPAID

*ANALYTICAL MODEL + *RELIABILITY ANALYSIS + DESCRIBING FUNCTION + STATISTICAL ANALYSIS

9-27512

BOSINOFF I

DESIGN TECHNIQUES FOR RELIABILITY PREDICTION
SYLVANIA ELECTRONIC SYSTEMS

6 PAGES, FIGURES, 9 TABLES, 9 REFERENCES, FROM PROCEEDINGS OF THE ELEVENTH NATIONAL SYMPOSIUM ON RELIABILITY AND QUALITY CONTROL, MIAMI BEACH, FLORIDA, JANUARY 12-14, 1965

A SET OF TECHNIQUES IS DESCRIBED FOR USE BY THE DESIGN ENGINEER IN RELIABILITY PREDICTIONS. THESE RELIABILITY PROBLEMS ARE APPROACHED BY DEVELOPING MATHEMATICAL MODELS WHICH SIMULATE THE PHYSICAL SYSTEMS BEING EVALUATED. THE TECHNIQUES ARE MOST SUITED TO THE ANALYSIS OF DEGRADATION-TYPE FAILURES.

AVAILABILITY - ORDER DEPT. OF THE IEEE, 345 EAST 47TH STREET, NEW YORK, NEW YORK 10017, \$5.00 EACH POSTPAID

*RELIABILITY ANALYSIS + ANALYTICAL MODEL + FAILURE, COMPONENT + INSTRUMENT, COMPONENT + RELIABILITY, COMPONENT + TRANSFER FUNCTION

9-27513

WALKER MH

PART RELIABILITY VERSUS REDUNDANCY TRADE-OFFS
ELECTRO-MECHANICAL RESEARCH, INC.

8 PAGES, 5 FIGURES, 5 TABLES, 3 REFERENCES, FROM PROCEEDINGS OF THE ELEVENTH NATIONAL SYMPOSIUM ON RELIABILITY AND QUALITY CONTROL, MIAMI BEACH, FLORIDA, JANUARY 12-14, 1965

TWO APPROACHES CAN BE TAKEN TO ACHIEVE HIGH RELIABILITY IN THE DESIGN OF ELECTRONIC DIGITAL EQUIPMENT - (1) REDUNDANCY OF PARTS AND SYSTEMS AND (2) HIGHLY RELIABLE BURNED-IN AND SCREENED PARTS. THIS PAPER SHOWS HOW TO CONDUCT A TRADE-OFF STUDY USING DIFFERENT DEGREES OF REDUNDANCY AND GRADES OF PARTS TO MEET SPECIFIED RELIABILITY REQUIREMENTS.

AVAILABILITY - ORDER DEPT. OF IEEE, 345 EAST 47TH STREET, NEW YORK, NEW YORK 10017, \$5.00 EACH POSTPAID

*REDUNDANCE + *RELIABILITY, COMPONENT + DESIGN CRITERIA

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-27514
ARMS RL + GOODFRIEND RD
SOME USEFUL RELIABILITY GRAPHS FOR UNITS AND SIMPLE REPAIRABLE SYSTEMS
ITT INTELCON, INC.
11 PAGES, FIGURES, 5 REFERENCES, FROM PROCEEDINGS OF THE ELEVENTH NATIONAL SYMPOSIUM ON RELIABILITY AND QUALITY CONTROL, MIAMI BEACH, FLORIDA, JANUARY 12-14, 1965

THE PURPOSE OF THIS PAPER IS TO PROVIDE THE DESIGN, RELIABILITY, MAINTAINABILITY, OR OPERATING ENGINEER WITH A MEANS FOR RAPIDLY MAKING RULE-OF-THUMB OR QUICK ESTIMATES OF THE EFFECTS THAT SPECIFIED DESIGN CONFIGURATIONS OR CHANGES THEREIN WILL HAVE ON UNIT OR SYSTEM RELIABILITY, MAINTAINABILITY, OR AVAILABILITY. SEVERAL GRAPHS AND A NOMOGRAPH ARE PRESENTED WHICH WILL ENABLE THE USER TO MAKE FAST, ACCURATE CALCULATIONS AT EITHER THE UNIT OR SYSTEM LEVEL.

AVAILABILITY - ORDER DEPT. OF IEEE, 345 EAST 47TH STREET, NEW YORK, NEW YORK 10017, \$5.00 EACH POSTPAID

*RELIABILITY ANALYSIS + RELIABILITY, COMPONENT + RELIABILITY, SYSTEM

9-27515
BISHOP WB
ENERGY SOURCE REQUIREMENTS FOR RELIABLE CIRCUITRY
AIR FORCE CAMBRIDGE RESEARCH LABORATORIES
7 PAGES, 9 FIGURES, 7 REFERENCES, FROM PROCEEDINGS OF THE ELEVENTH NATIONAL SYMPOSIUM ON RELIABILITY AND QUALITY CONTROL, MIAMI BEACH, FLORIDA, JANUARY 12-14, 1965

A VERY SIMPLE ANALYSIS OF CIRCUIT RELIABILITY WHEN THE SOURCE OF ENERGY OR POWER SUPPLY IS INCLUDED SHOWS THAT SMALL INDEPENDENT SOURCES OF ENERGY ARE NEEDED. SEVERAL POSSIBLE WAYS OF SATISFYING THIS INTUITIVELY OBVIOUS NEED ARE DISCUSSED. REDUNDANT TECHNIQUES CAN BE USED TO OVERCOME LOW RELIABILITY OF SUCH SOURCES. THE REDUCTION IN NUMBER AND LENGTH OF INTERCONNECTIONS RESULTING FROM THE USE OF SMALL INDEPENDENT SOURCES OF ENERGY OFFERS THE POSSIBILITY OF IMPROVED FABRICATIONS TECHNIQUES FOR INTEGRATED CIRCUITRY.

AVAILABILITY - ORDER DEPT. OF IEEE, 345 EAST 47TH STREET, NEW YORK, NEW YORK 10017, \$5.00 EACH POSTPAID

*ELECTRIC POWER, GENERAL + *INSTRUMENT, COMPONENT + ENERGY SOURCE + RELIABILITY, COMPONENT

9-27516
BUCKLEY JJ
THE NON-OPERATING FAILURE RATE - A VALUABLE RELIABILITY TOOL
GENERAL ELECTRIC COMPANY, PITTSFIELD, MASS.
5 PAGES, 1 FIGURE, FROM PROCEEDINGS OF THE ELEVENTH NATIONAL SYMPOSIUM ON RELIABILITY AND QUALITY CONTROL, MIAMI BEACH, FLORIDA, JANUARY 12-14, 1965

THE NECESSARY EQUATIONS ARE DEVELOPED FOR OBTAINING THE NONOPERATING FAILURE RATE AND THE PROBABILITY OF A TURN-ON OR TURN-OFF FAILURE FOR AN EQUIPMENT. REDUNDANCY EXPRESSIONS ARE GIVEN WHICH INCLUDE THE EFFECT OF THE NONOPERATING FAILURE RATE, AND A COMPARISON OF STANDBY AND PARALLEL REDUNDANCY IS MADE. AN EXAMPLE SHOWS HOW THE OPERATIONAL AVAILABILITY OF AN EQUIPMENT CAN BE OPTIMIZED WITH RESPECT TO THE CHECKOUT PERIOD.

AVAILABILITY - ORDER DEPT. OF THE IEEE, 345 EAST 47TH STREET, NEW YORK, NEW YORK 10017, \$5.00 EACH POSTPAID

*FAILURE, COMPONENT + *RELIABILITY ANALYSIS + MATHEMATICAL TREATMENT + REDUNDANCE

9-27517
SHOUMAN ML
MATHEMATICAL MODELS FOR DRIFT FAILURE ANALYSIS
POLYTECHNIC INSTITUTE OF BROOKLYN
11 PAGES, 1 FIGURE, 6 TABLES, 12 REFERENCES, FROM PROCEEDINGS OF THE ELEVENTH NATIONAL SYMPOSIUM ON RELIABILITY AND QUALITY CONTROL, MIAMI BEACH, FLORIDA, JANUARY 12-14, 1965

MUCH OF THE WORK IN RELIABILITY THEORY HAS FOCUSED ON CATASTROPHIC-FAILURE ANALYSIS WHEREIN TOTAL PART FAILURES ARE RELATED TO TOTAL UNIT FAILURES. THIS PAPER DISCUSSES THE DRIFT-FAILURE PROBLEM, WHERE CHANGES OR DRIFTS FROM THE NOMINAL VALUE OF PARTS CAUSES RESULTING DRIFTS FROM EXPECTED NOMINAL PERFORMANCE OF THE UNIT. WHEN THESE DRIFTS CAUSE A LARGE ENOUGH PERFORMANCE CHANGE, THEY PRODUCE FAILURES JUST AS SIGNIFICANT AS THE CATASTROPHIC CASES. THE EXACT APPROACH TO THE DRIFT FAILURE PROBLEM IS PROBABILISTIC AND INVOLVES APPLICATION OF THE PROBABILITY CHANGE OF VARIABLES THEREIN.

AVAILABILITY - ORDER DEPT. OF THE IEEE, 345 EAST 47TH STREET, NEW YORK, NEW YORK 10017, \$5.00 EACH POSTPAID

*FAILURE, COMPONENT + MATHEMATICAL TREATMENT

9-27518

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-27518 *CONTINUED*
WEISS RL

FUNCTIONAL RELIABILITY EVALUATION TECHNIQUE - FRET
INTERNATIONAL BUSINESS MACHINES CORPORATION
7 PAGES, 11 FIGURES, FROM PROCEEDINGS OF THE ELEVENTH NATIONAL SYMPOSIUM ON RELIABILITY AND QUALITY CONTROL, MIAMI BEACH, FLORIDA, JANUARY 12-14, 1965

BY VARYING A PROPERLY CHOSEN PARAMETER, HIGH-LEVEL STRESS IS CREATED TO CAUSE TOTAL SYSTEM FAILURE. ANALYSIS OF THE SYSTEM FAILURE PATTERN PERMITS A PREDICTION OF FAILURE RATES AT LOWER STRESS LEVELS. IN ADDITION, SPECIFIC DESIGN OR MANUFACTURING PROBLEMS ARE IDENTIFIED, AND A MEASUREMENT IS MADE OF THEIR CONTRIBUTION TO THE PREDICTED FAILURE RATE. THIS PAPER SHOWS HOW, FROM A SHORT HARDWARE TEST OFTEN ONLY A FEW MINUTES IN DURATION, A LIST OF RELIABILITY PROBLEMS MAY BE GENERATED AND IDENTIFIED IN ORDER OF IMPORTANCE.

AVAILABILITY - ORDER DEPT. OF THE IEEE, 345 EAST 47TH STREET, NEW YORK, NEW YORK 10017, \$5.00 EACH POSTPAID

*RELIABILITY ANALYSIS + FAILURE, COMPONENT + STRESS ANALYSIS + TEST, COMPONENT

9-27534 ALSO IN CATEGORY 12

JACOBS IM
RELIABILITY OF ENGINEERED SAFETY FEATURES AS A FUNCTION OF TESTING FREQUENCY
GENERAL ELECTRIC COMPANY
10 PAGES, 7 FIGURES, 1 REFERENCE, NUCLEAR SAFETY 9(4), PAGES 303-12 (JULY-AUGUST 1968)

THE RELIABILITY OF AN ENGINEERED SAFETY SYSTEM IS HIGHLY DEPENDENT ON THE FREQUENCY OF TESTS PERFORMED TO DEMONSTRATE ITS OPERABILITY. THUS THE FREQUENCY OF TESTS BECOMES A DESIGN CONSIDERATION OF UTMOST IMPORTANCE. WHEN THE SYSTEM IS NEW, THE OPERATOR MUST RELY PRIMARILY ON THE DESIGNERS RECOMMENDED TEST FREQUENCY. WITH ACTUAL IN-SERVICE EXPERIENCE, THE OPERATOR IS ABLE TO REGULATE THE TEST FREQUENCIES TO ATTAIN AN OVERALL RELIABILITY GOAL. UNDER CERTAIN LIMITING CONDITIONS, THERE IS CLEARLY AN OPTIMUM TEST FREQUENCY, MORE FREQUENT OR LESS FREQUENT TESTING WILL DEGRADE RELIABILITY. TECHNIQUES OF MODELING HAVE BEEN DEVELOPED TO SOLVE SAFETY-SYSTEM RELIABILITY PROBLEMS. THE MODELS SERVE AS THE MEANS TO BRIDGE THE GAP BETWEEN THE UNCERTAINTY OF DESIGN DECISIONS AND THE REALITY OF ACTUAL APPLICATION.

*ENGINEERED SAFETY FEATURE + *RELIABILITY ANALYSIS + *TESTING + PROBABILITY + RELIABILITY, SYSTEM + TEST, ON LINE + TEST, SYSTEM OPERABILITY

9-27535

BENNING CJ
RELIABILITY PREDICTION FORMULAS FOR STANDBY REDUNDANT STRUCTURES
TEXAS INSTRUMENTS, INC.
2 PAGES, 3 FIGURES, IEEE TRANS. ON RELIABILITY, VOL. R-16, PAGES 136-37 (DECEMBER 1967)

A RELIABILITY-PREDICTION FORMULA WAS DEVELOPED FOR A SYSTEM INVOLVING N IDENTICAL COMPONENTS OF WHICH AT LEAST K (WHERE K IS LESS THAN N) ARE REQUIRED FOR SYSTEM OPERATION AND N-K ARE IN STANDBY. ITS USE IN PREDICTING RELIABILITY IS DISCUSSED.

*RELIABILITY ANALYSIS + MATHEMATICAL TREATMENT + PROBABILITY + REDUNDANCE

9-27537

ZUROMSKY G + CHRISTOPHER SS
BURNABLE POISON ADDITIONS TO UO2
COMBUSTION ENGINEERING, INC., CONN.
CEND-3107-324 + EURAEC-1975 +. 30 PAGES, 7 FIGURES, 1 TABLE, REFERENCES, OCTOBER 1967

THIS PROGRESS REPORT IS ONE OF A SERIES CONCERNED WITH DEVELOPING METHODS FOR INCORPORATING BURNABLE POISON (B4C) IN HIGH-DENSITY UO2 PELLETS (FOR FUEL ELEMENTS) BY COLD-PRESSING AND SINTERING.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*FABRICATION + *FUEL ELEMENT + *POISON, BURNABLE + *SINTERING + BORON + FUEL INTEGRITY + FUEL, POWDER TYPE + TESTING

9-27538

ZUROMSKY G + CHRISTOPHER SS
BURNABLE POISON ADDITIONS TO UO2. PERIOD COVERED - OCTOBER 1--DECEMBER 31, 1967
COMBUSTION ENGINEERING, INC., WINDSOR, CONN.
CEND-3107-328 + EURAEC-1990 +. 32 PAGES, 14 FIGURES, JANUARY 1968

A SERIES OF SINTERING STUDIES DEMONSTRATED THAT BORON IS LOST FROM THE UO2 PELLETS BY CONSECUTIVE REACTIONS INCLUDING THE OXIDATION OF B4C TO FORM BORON OXIDES WHICH ARE SUBSEQUENTLY REMOVED AS VOLATILE PRODUCTS. UO2 PELLETS CONTAINING 0.05 W/O AND 1 W/O B4C RETAINED 50% (PLUS OR MINUS 10%) OF THE INITIAL BORON CONTENTS DURING SINTERING IN THE 1400 TO 1600 C TEMPERATURE RANGE. THE BORON IS PRESENT AS UNIFORMLY DISPERSED PARTICLES OF URANIUM BORIDES (UB4 AND UB2) THROUGHOUT THE SINTERED UO2 PELLETS. THE UO2-0.05 W/O B4C

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-27538 *CONTINUED*

PELLETS WERE SINTERED TO DENSITIES OF 90 TO 93% OF THEORETICAL IN ARGON AND VACUUM ENVIRONMENTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*FABRICATION + *FUEL ELEMENT + *POISON, BURNABLE + *SINTERING + BORON + FUEL INTEGRITY + FUEL, POWDER TYPE + TESTING

9-27539

SUNTHARALINGAM N
THERMOLUMINESCENT RESPONSE OF LITHIUM FLUORIDE TO RADIATIONS WITH DIFFERENT LET
WISCONSIN UNIVERSITY
COO-1105-129 +. 119 PAGES, 1967

LITHIUM FLUORIDE IRRADIATED WITH X OR GAMMA RADIATION EXHIBITS A NONLINEAR THERMOLUMINESCENT RESPONSE WITH DOSE. FROM THE STUDIES REPORTED IN THIS THESIS IT IS CONCLUDED THAT THERE ARE NOW FOUR DIFFERENT RADIATION QUALITY DEPENDENT EFFECTS IN THE THERMOLUMINESCENCE OF LITHIUM FLUORIDE - (1) THE USUAL LOW ENERGY INCREASE IN PHOTOELECTRIC CROSS-SECTION, (2) THE DECREASE IN SUPRALINEARITY WITH INCREASE IN LET, (3) THE DECREASE IN THE RESPONSE OF SENSITIZED PHOSPHOR WITH INCREASE IN LET AND (4) INCREASE IN EFFICIENCY AT LOW DOSES WITH INCREASE IN LET. THIS THERMOLUMINESCENT PHOSPHOR MIGHT SERVE AS A LET METER.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*DOSIMETRY, THERMOLUMINESCENCE + FLUORIDE + INSTRUMENT, RADIATION MONITORING + IRRADIATION TESTING + LITHIUM + SOLID STATE DEVICE

9-27540

KATKIEWICZ W
DESIGN CRITERIA FOR MOSFET PORTABLE IONIZATION CHAMBER MONITORS
CENTRALNE LABORATORIUM OCHRONY RADIOLOGICZNEJ, WARSAW, POLAND
CLOR-67/D +. 32 PAGES, 1967

THE PARAMETERS OF MOSFETS SUITABLE FOR PORTABLE IONIZATION CHAMBER MONITORS ARE DISCUSSED. THE JAPANESE HITACHI NIPPON (MITSUBISHI) ARE CHECKED IN THESE APPLICATIONS. A PORTABLE MONITOR WITH RANGES 0-3-30-300 MR/H IS DESCRIBED.

AVAILABILITY - USAEC DEPOSITORY LIBRARIES IN THE U.S. AND OVERSEAS

*CHAMBER, ION + *INSTRUMENT, NUCLEAR + DESIGN CRITERIA + DESIGN STUDY + POLAND + SOLID STATE DEVICE

9-27541

MATTE J
A PROPOSED PROGRAM FOR THE DESIGN AND DEMONSTRATION OF A PROTOTYPE UNDER-SODIUM ULTRASONIC SCANNER
ATOMIC POWER DEVELOPMENT ASSOCIATES, INC., DETROIT
APDA-220 +. 41 PAGES, 8 FIGURES, REFERENCES, FEBRUARY 1968

THE APPLICABILITY TO LARGE SODIUM-COOLED REACTORS OF THE UNDER-SODIUM ULTRASONIC TRANSDUCER IS SHOWN TO DEPEND ON THE DEVELOPMENT OF MECHANISMS SUITABLE FOR ACCURATE AND VERSATILE MANIPULATION OF THE TRANSDUCER WITHIN THE REACTOR. A PROGRAM OF PROTOTYPE DESIGN AND TESTING IS PROPOSED TO DEMONSTRATE THE FEASIBILITY AND DESIRABILITY OF SUCH A DEVICE FOR EIGHT TYPICAL APPLICATIONS TO SUCH REACTORS. THE FUNCTIONAL REQUIREMENTS OF A PROTOTYPE SCANNER AND OF A SUITABLE DEMONSTRATION TEST RIG ARE PRESENTED, TOGETHER WITH BRIEF DESCRIPTIONS OF INITIAL CONCEPTS OF THE PROTOTYPE AND THE TEST RIG. FINALLY, THE PROPOSED PROGRAM OF DEMONSTRATION TESTS IS OUTLINED, TOGETHER WITH THE BASIS FOR EVALUATING OF THE PROTOTYPE PERFORMANCE IN EACH APPLICATION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

DESIGN STUDY + INSTRUMENT, COMPONENT + METAL, LIQUID + REACTOR, LMCR + SODIUM + SOLID STATE DEVICE + TEST, INSTRUMENT RESPONSE

9-27624

ALSO IN CATEGORY 17

FIFTH MONTHLY OPERATIONAL REPORT ON THE LA CROSSE BOILING WATER REACTOR
ALLIS-CHALMERS, BETHSEDA, MD.
ACNP-67535 +. 26 PAGES, FIGURES, TABLES, NOVEMBER 1967, DOCKET 115-5, TYPE--BWR, MFG--A.C., AE--SGT + LUNDY

FEEDWATER CHECK VALVE WAS INSTALLED TO SATISFY DRL. ON NOV. 24, POWER TESTING BEGAN WITH THE TEMP. COEF. TO 300 F, WHICH PROVED ALWAYS NEGATIVE. THE 4 ROD BANK WORTH IS EXPONENTIAL IN THE LOWER HEAVILY RODDED PORTION OF THE CORE BECAUSE THAT IS THE FLUX SHAPE. HEATING TO 430 F WITH NUCLEAR HEAT REQUIRED SLOWLY INCREASING NEUTRON FLUX READINGS BECAUSE OF INCREASING HEAT LEAKAGE AND INCREASED ION CHAMBER SENSITIVITY. THE TOTAL TEMPERATURE DEFECT FROM 80 TO 410 F IS \$4.88, WITH THE COEFFICIENT BECOMING NONLINEAR ABOVE 330 F. DURING CONTROL ROD POSITION POWER LEVEL TESTS, THE NUCLEAR INSTRUMENT CALIBRATION (MW/MICRO-AMP) WERE SHOWN TO

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-27624 *CONTINUED*

PEAK AT 5.37 AND DECREASE AT HIGHER/LOWER POWER DUE TO THE UNCOVERING EFFECT OF THE CONTROL RODS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, 1717 H ST., WASHINGTON, D.C. 20545 (\$0.25 CENTS/COPY)

*INSTRUMENT, ABNORMAL INDICATION + *INSTRUMENT, POWER RANGE + INSTRUMENT CALIBRATION + LACROSSE (BWR) + REACTOR, BWR + REPORT, OPERATIONS

9-27774 ALSO IN CATEGORIES 17 AND 6

ZINIUK MA + WILBER HA
SCRAM TESTS TO DETERMINE SHUTDOWN TRANSIENT CHARACTERISTICS OF THE ENRICO FERMI REACTOR AND ASSOCIATED HEAT TRANSPORT SYSTEM
ATOMIC POWER DEVELOPMENT ASSOCIATES, INC., DETROIT, MICH.
APDA-NTS-15 +. 45 PAGES, 8 FIGURES, 7 TABLES, 4 REFERENCES, APRIL 1968

REACTOR OUTLET TEMPERATURE FLUCTUATION AFTER 67 MWTH OPERATION BEGAN 15 SEC AFTER SCRAM AND LASTED TIL 220 SEC. THE RATE WAS 44 F/SEC, OVER A CHANGE OF 76 F. TIME CONSTANTS AND TRANSPORT LAGS WERE DETERMINED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*INSTRUMENT, TEMPERATURE + *SCRAM, REAL + *TEST, INSTRUMENT RESPONSE + FERMI (LMFBR) + MAIN COOLING SYSTEM + REACTOR, LMFBR + REPORT, OPERATIONS ANALYSIS + RESPONSE TIME + TEMPERATURE TRANSIENT

9-27837 ALSO IN CATEGORIES 17 AND 10

HUMBOLDT BAY OPERATIONS REPORT, JAN. 1 THRU JUNE 30, 1968
PACIFIC GAS AND ELECTRIC COMPANY
12 PAGES, TABLES, LETTER TO DRL, AUGUST 19, 1968, DOCKET 50-133, TYPE--BWR, MFG--G.E., AE--BECHTEL

AIR-EJECTOR ACTIVITY HAS DECREASED FROM 0.044 TO 0.0384 C/SEC AT 210 MWTH, AS TRAMP URANIUM HAS DECREASED. CONTAINMENT CONTINUOUS LEAK RATE IS 0.067 W/D PER DAY AT 20 IN. WATER GAGE. RADIOLYTIC GAS PRODUCED IS 0.03 SCFM/MWTH. OUTAGES DUE TO SCRAMS WERE FROM (1) TREE FELL ACROSS 110 KV LINE, (2) MIST FALLING ON SALT DEPOSITED ON OCB BUSHINGS CAUSED A FLASHOVER AND COMPLETE LOAD REJECTION, (3) FREQUENCY UPSET CAUSED MG SET MALFUNCTION AFTER A LIGHTNING STRIKE, (4) DURING A QUICK LOAD PICKUP TEST WITH SOME STEAM BYPASS, THE PRESSURE SAGGED ENOUGH FOR WATER IN THE LEVEL COLUMN TO FLASH. THE HIGH LEVEL INDICATION CAUSED LOW FEED-WATER FLOW AND THEN A LOW WATER LEVEL SCRAM.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, 1717 H ST., WASHINGTON, D.C. 20545, (\$0.25 CENTS/COPY)

*INSTRUMENT, ABNORMAL INDICATION + *OFF GAS + *RADIOLYTIC GAS + ACCIDENT, LOAD REJECTION + GENERATOR, BATTERY + HUMBOLDT BAY (BWR) + INCIDENT, EQUIPMENT + INSTRUMENT, LIQUID LEVEL DETECTION + PRESSURE VESSEL + REACTOR, BWR + REPORT, OPERATIONS SUMMARY + SCRAM, REAL

9-27906 ALSO IN CATEGORIES 17 AND 6

WORTHINGTON JT
DEVELOPMENT PROGRAM ON THE GARIGLIANO NUCLEAR REACTOR. QUARTERLY REPORT NO. 19
GENERAL ELECTRIC COMPANY, SAN JOSE
GEAP-5517 + EURAEC-1907 +. 32 PAGES, 10 FIGURES, JULY 1967

DOCUMENT REPORTS ANALYSES (EARLY IN 1967) OF STABILITY TESTS MADE MAY 20-21, 1966. BODE PLOTS, VERTICAL NEUTRON FLUX DISTRIBUTIONS AND TRANSFER FUNCTIONS GIVEN. SUB-ROUTINES MOST APPROPRIATE FOR THE CALCULATIONS ARE DESCRIBED, AS IS AN ERROR ANALYSIS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*REACTOR STABILITY + COMPARISON, THEORY AND EXPERIENCE + ERROR ANALYSIS + FLUX DISTRIBUTION + GARIGLIANO (BWR) + NOISE ANALYSIS + REACTOR STARTUP EXPERIENCE + REACTOR, BWR + REPORT, OPERATIONS ANALYSIS + TRANSFER FUNCTION

9-27949

LEAKE JW
AN IMPROVED SPHERICAL DOSE EQUIVALENT NEUTRON DETECTOR
ATOMIC ENERGY RESEARCH ESTABLISHMENT, HARWELL, ENGLAND
AEPE-R-5131 +. 8 PAGES, 2 FIGURES, 5 REFERENCES, FEB. 1968

THE SCINTILLATION DETECTOR USED IN EARLIER SPHERICAL MODERATOR ASSEMBLIES HAS BEEN REPLACED BY A SMALL SPHERICAL PROPORTIONAL COUNTER, FILLED WITH HE-3, WHICH IMPROVES THE GAMMA REJECTION PROPERTIES. THE NEW DETECTOR HAS A NEUTRON-TO-GAMMA RATIO BETTER THAN 1000 TO 1 FOR A RANGE OF GAMMA ENERGIES FROM 0 TO AT LEAST 7 MEV. THE NEUTRON SENSITIVITY AND THE ENERGY RESPONSE OF THE COMPLETE 5-KG DETECTOR ASSEMBLY HAVE ALSO BEEN IMPROVED SO THAT WITH A CALIBRATION FIGURE OF 8 CPS EQUALS 2.5 MREM PER HR. THE DETECTOR MATCHES THE ICRP (1963) RECOMMENDATIONS WITHIN A FACTOR OF 2 FROM 0.025 EV TO 7 MEV.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA.

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-27949 *CONTINUED*
22151, \$3.00 COPY, \$0.65 MICROFICHE

*INSTRUMENT, RADIATION MONITORING + COUNTER + DOSIMETRY, GENERAL + EQUIPMENT DESIGN +
MONITOR, RADIATION, GENERAL + NEUTRON + UNITED KINGDOM

9-27950 ALSO IN CATEGORY 10
POWERS J
MCR PLANT CONTROL SYSTEM INTEGRATION STUDIES
GENERAL MOTORS CORP., INDIANAPOLIS, IND. ALLISON DIV.
GMAD-3078-24 + EDR-4191 +. 38 PAGES, FIGURES, TABLES, MAY 3, 1965

THE STUDY TO SIMPLIFY THE 3-MWE MILITARY COMPACT REACTOR ANALOG ENGINE SPEED CONTROL SYSTEM AND THE 60-CPS MAIN AND 400-CPS HOUSE LOAD GENERATING AND DISTRIBUTION SYSTEMS WAS ORIENTED AT HAVING THE CENTRAL CONTROL COMPUTER PERFORM THE CONTROL FUNCTIONS. IN THIS REPORT, ALTERNATE CONTROL CONCEPTS UTILIZING DIRECT DIGITAL CONTROL ARE SYNTHESIZED AND PRESENTED AS POSSIBLE ALTERNATES. THREE SIMPLIFIED DIGITAL CONTROL SYSTEMS ARE POSTULATED FOR THE ENGINE SPEED CONTROL. THESE ARE - TIME-SHARED ENGINE CONTROLS, DIGITAL ENGINE CONTROLS, AND HYBRID ENGINE CONTROLS. A SYSTEM THAT UTILIZES THE 3-MWE MCR DIGITAL CONTROL COMPUTER IN PLACE OF A 60-CPS GENERATOR PROTECTION PANEL IS SHOWN AS WELL AS A TIME-SHARED SYSTEM THAT ACCOMPLISHES THE CONTROL OF HOUSE LOAD ELECTRICAL GENERATION AND DISTRIBUTION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA, 22151, \$3.00 COPY, \$0.65 MICROFICHE

*CONTROL SYSTEM + COMPUTER CONTROL + ELECTRIC POWER, GENERAL + INSTRUMENT, CONTROL + REACTOR, MILITARY

9-27952 ALSO IN CATEGORY 4
THOMPSON CA + KIM CK
CLUSTERED NUCLEAR ENGINE STUDY- SUB-POWER RANGE
WESTINGHOUSE ELECTRIC CORP., PITTSBURGH, PENNSYLVANIA
WANL-TME-1154 +. 68 PAGES, REFERENCES, JUNE 17, 1965

THE PRIMARY OBJECTIVES OF THE CONTROL AND INSTRUMENTATION SYSTEMS PORTION OF PROJECT 1940 ARE TO EVALUATE THE SIGNIFICANCE OF NUCLEAR COUPLING BETWEEN CORES ON THE CONTROL OF CLUSTERED ENGINE OPERATION, TO IDENTIFY ANY PROBLEM AREAS, AND TO COME UP WITH A CONCEPTUAL DESIGN OF CONTROL SYSTEM. AN ANALOG SIMULATION OF A NERVA REACTOR FOR SUB-POWER RANGE WAS DEVELOPED. BY COMBINING TWO OR THREE IDENTICAL MODELS WHICH INCLUDE REACTIVITY COUPLING OF CORES AND NEUTRON DETECTOR COUPLING, CLUSTERED ENGINES OF TWO OR THREE MODULES WERE SIMULATED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151
\$3.00 COPY, \$0.65 MICROFICHE

*NUCLEAR ROCKET + *REACTOR CONTROL + ANALOG SIMULATION + CONTROL, GENERAL + DESIGN STUDY + NERVA PROGRAM + SIMULATION

9-27953
BENECKI JE
IMPACT TESTING ON COLLET ASSEMBLY FOR CONTROL ROD DRIVE MECHANISM 7K081444
GENERAL ELECTRIC, SAN JOSE, CALIFORNIA
APED-5555 +. 21 PAGES, FIGURES, TABLES, NOV. 1967

THE ABILITY OF THE COLLET-LOCKING MECHANISM TO PREVENT A RAPID ROD WITHDRAWAL WAS DEMONSTRATED BY A SERIES OF FIVE DROP TESTS. A 310-LB TEST LOAD WAS DROPPED FROM VARIOUS HEIGHTS TO PRODUCE IMPACT VELOCITIES UP TO 15 FT/SEC. THE TEST COLLETS SUSTAINED SIGNIFICANT DAMAGE. HOWEVER, COLLET LOAD CAPACITY APPEARS TO BE WITHIN CALCULATED MAXIMUM DYNAMIC AND STATIC LOAD CONDITIONS. IT IS ALSO CONCLUDED THAT AFTER STOPPING A FAST WITHDRAWAL, THE DAMAGED COMPONENTS WILL PREVENT OPERATION OF THE DRIVE WITH NORMAL HYDRAULIC SYSTEM PRESSURE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA, 22151, \$3.00 COPY, \$0.65 MICROFICHE

*CONTROL ROD DRIVE + *TEST, CONTROL ROD DRIVE + CONTROL ROD SCRAM MECHANISM + TEST, COMPONENT

9-27954
FRAY EN
NUCLEAR INSTRUMENT MODULE MAINTENANCE MANUAL. PART 34. MSRE TEST MODULE, ORNL MODEL Q-2634
OAK RIDGE NATIONAL LAB., TENN.
ORNL-TM-1638(Pt.34) +. 17 PAGES, 1 FIGURE, 1 TABLE, MARCH 21, 1968

THE MSRE TEST MODULE IS A SPECIAL PURPOSE UNIT DESIGNED TO SUPPLY CALIBRATION SIGNALS FOR TESTING THE RESPONSE OF PARTS OF THE SAFETY SYSTEM OF THE MOLTEN-SALT REACTOR EXPERIMENT. THE MODULE PROVIDES TWO CALIBRATED CURRENT RAMPS AT DIFFERENT RATES TO CHECK THE RESPONSE AND CALIBRATION OF THE FLUX AMPLIFIER AND ASSOCIATED FAST-TRIP COMPARATORS. IT ALSO PROVIDES TWO STEADY-STATE CURRENTS FOR CALIBRATION OF THE LOG-CURRENT PORTION OF THE PERIOD SAFETY MODULE, AND TWO VOLTAGE RAMPS FOR CALIBRATION OF THE PERIOD PORTION OF THE PERIOD SAFETY MODULE AND ASSOCIATED FAST-TRIP COMPARATOR. IT IS PACKAGED IN A STANDARD TWO-UNIT PLUG-IN MODULE OF THE ORNL MODULAR REACTOR INSTRUMENTATION SERIES.

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-27954 *CONTINUED*
AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA,
22151, \$3.00 COPY, \$0.65 MICROFICHE

*INSTRUMENT, TESTING + *TEST, INSTRUMENT RESPONSE + INSTRUMENT, CURRENT + INSTRUMENT, VOLTAGE + MSRE (RE) +
ORNL + REACTOR, AEC OWNED + REACTOR, MOLTEN SALT

9-27955
FRAY EN
NUCLEAR INSTRUMENT MODULE MAINTENANCE MANUAL PART 35-PERIOD SAFETY MODULE, ORNL MODEL Q-2635
OAK RIDGE NATIONAL LAB., TENN.
ORNL-TM-1638(PT.35) +. 15 PAGES, 1 FIGURE, 1 TABLE, MARCH 15, 1968

THE PERIOD SAFETY MODULE IS A CURRENT-SENSING DEVICE WHICH IS CONNECTED IN SERIES WITH THE
INPUT OF A NORMAL NEUTRON FLUX-SAFETY AMPLIFIER IN A REACTOR SAFETY SYSTEM. WITHOUT
DISTURBING THE NORMAL SAFETY FUNCTIONS OF THE FLUX SAFETY AMPLIFIER (Q-26C2), THE PERIOD
SAFETY MODULE DERIVES A SIGNAL WHICH IS PROPORTIONAL TO THE LOGARITHM OF REACTOR POWER
(IONIZATION CHAMBER CURRENT) AND TAKES THE TIME DERIVATIVE OF THE LOGARITHMIC SIGNAL TO YIELD
A SIGNAL PROPORTIONAL TO INVERSE REACTOR PERIOD. THE CIRCUIT IS PACKAGED IN A STANDARD
ONE-UNIT PLUG-IN MODULE OF THE ORNL MODULAR REACTOR INSTRUMENTATION SERIES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA,
22151, \$3.00 COPY, \$0.65 MICROFICHE

*INSTRUMENT, PERIOD + INSTRUMENT, AMPLIFIER + INSTRUMENT, CURRENT + INSTRUMENT, RATE OF CHANGE + ORNL

9-27956
ANDERSON JL
NUCLEAR INSTRUMENT MODULE MAINTENANCE MANUAL. PART 30. HFIR TEST MODULE, ORNL MODEL Q-2630
OAK RIDGE NATIONAL LAB., TENN.
ORNL-TM-1638(PT.30) +. 15 PAGES, 1 FIGURE, 1 TABLE, MARCH 29, 1968

THE HFIR TEST MODULE IS A SPECIAL-PURPOSE MODULE DESIGNED TO SUPPLY SIGNALS FOR TESTING THE
RESPONSE OF PARTS OF THE SAFETY SYSTEM OF THE HIGH FLUX ISOTOPE REACTOR. THE UNIT SUPPLIES
CALIBRATED CURRENT RAMPS OF TWO DIFFERENT RATES FOR CHECKING THE RESPONSE AND APPROXIMATE
CALIBRATION OF BOTH NEUTRON FLUX LEVEL AND RATE-OF-CHANGE-OF-FLUX-LEVEL TRIPS AND ASSOCIATED
SIGNAL AMPLIFIERS, ADJUSTABLE STEADY-STATE TEST CURRENTS, AND A CIRCUIT WHICH CONTINUOUSLY
MONITORS IONIZATION CHAMBER POLARIZING VOLTAGE. THE INSTRUMENT IS A STANDARD PLUG-IN MODULE
OF THE ORNL MODULAR REACTOR INSTRUMENTATION SERIES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA,
22151 \$3.00 COPY, \$0.65 MICROFICHE

*INSTRUMENT, TESTING + *TEST, INSTRUMENT RESPONSE + HFIR (FTR) + INSTRUMENT, CURRENT + ORNL +
REACTOR, AEC OWNED + REACTOR, FLUX TRAP + REACTOR, FLUX TRAP + REACTOR, RESEARCH

9-27957 ALSO IN CATEGORIES 6 AND 18
ATHERTON R + KIKTA EJ + SHERMAN J
PWR CORE 2 REACTOR DESIGN DESCRIPTION REPORT
WESTINGHOUSE ELECTRIC CORP., BETTIS ATOMIC POWER LAB
WAPD-296 +. 143 PAGES, REFERENCES, MARCH 1968

DESCRIBES SIGNIFICANT DESIGN FEATURES OF PWR CORE 2 INSTALLED AT SHIPPINGPORT. CORE
MECHANICAL AND FUEL ELEMENT CHARACTERISTICS ARE DISCUSSED. A BRIEF DESCRIPTION OF THE
SHIPPINGPORT REACTOR PLANT IS GIVEN, WITH EMPHASIS ON PLANT CHANGES TO PERMIT OPERATION AT
505 MWt. OF PARTICULAR SAFETY INTEREST ARE THE NEW FAILED ELEMENT DETECTION AND LOCATION
(FEDAL) SYSTEM, IMPROVED INSTRUMENTATION, AND THE ANALYSES OF ROD-WITHDRAWAL ACCIDENTS AND OF
COMPLETE-LOSS-OF-FLOW ACCIDENTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*REACTOR DESCRIPTION + *SHIPPINGPORT (PWR) + ACCIDENT, CONTROL ROD WITHDRAWAL + ACCIDENT, LOSS OF FLOW +
DESIGN STUDY + FAILURE, FUEL ELEMENT

9-27958
DELORENZO JT
NUCLEAR INSTRUMENT MODULE MAINTENANCE MANUAL PART 14, PULSE AMPLIFIER AND COUNT RATE METER, ORNL MODEL
Q-2614
OAK RIDGE NATIONAL LAB., TENN.
ORNL-TM-1638(PT.14) +. 43 PAGES, 9 FIGURES, 5 TABLES, FEB. 28, 1968

THE PULSE AMPLIFIER AND COUNT-RATE METER AMPLIFIES AND COUNTS PULSES FROM A FISSION CHAMBER
AND PREAMPLIFIER SUCH AS THE ORNL MODEL Q-2617. THE MODULE CONSISTS OF A PULSE AMPLIFIER, A
PULSE-HEIGHT DISCRIMINATOR, A LOGARITHMIC COUNTING-RATE METER OF THE COOKE-YARBOPOUGH TYPE, A
LINEAR COUNTING-RATE METER, AND TWO CALIBRATION OSCILLATORS (10 AND 10,000 COUNTS/SEC). THE
UNIT IS INTENDED PRIMARILY FOR REACTOR CONTROL APPLICATIONS AND IS PACKAGED IN A STANDARD
4-UNIT PLUG-IN MODULE OF THE ORNL MODULAR REACTOR INSTRUMENTATION SERIES.

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-27958 *CONTINUED*
AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA,
22151 \$3.00 COPY, \$0.65 MICROFICHE

*INSTRUMENT, AMPLIFIER + INSTRUMENT, LOGARITHMIC + INSTRUMENT, PULSE + ORNL

9-27959
ANDERSON JL
NUCLEAR INSTRUMENT MODULE MAINTENANCE MANUAL. PART 9. FAST TRIP COMPARATOR, ORNL MODEL Q-2609
OAK RIDGE NATIONAL LABORATORY
ORNL-TM-1638(Pt.9) +. 27 PAGES, 4 FIGURES, 2 TABLES, MARCH 25, 1968

THE COMPARATOR IS INTENDED FOR USE IN THE SAFETY OR CONTROL SYSTEMS OF NUCLEAR REACTORS TO PROVIDE VOLTAGE LEVEL DISCRIMINATION OF SAFETY OR CONTROL SIGNAL INPUTS. THE CIRCUIT IS BISTABLE IN NATURE. THAT IS, THERE IS NO CHANGE IN OUTPUT INDICATION UNTIL THE PREDETERMINED TRIP LEVEL IS EXCEEDED, AT WHICH TIME THE OUTPUT SUDDENLY CHANGES FROM ONE STATE TO THE OTHER. BOTH LOGIC-LEVEL AND RELAY OUTPUTS ARE AVAILABLE. BY SIMPLE JUMPERING OF CONNECTOR PINS, THE CIRCUIT CAN BE ARRANGED FOR EITHER POSITIVE OR NEGATIVE INPUTS WITH EITHER INCREASING OR DECREASING SENSE. THE COMPARATOR IS PACKAGED IN A STANDARD ONE-UNIT PLUG-IN MODULE OF THE ORNL MODULAR REACTOR INSTRUMENTATION SERIES, Q-2600.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA,
22151 \$3.00 COPY, \$0.65 MICROFICHE

*INSTRUMENT, COMPONENT + *INSTRUMENT, RELAY + ORNL

9-27960
STRINGER JL + BOURASSA RR
NUCLEAR RADIATION INDUCED CURRENTS IN COAXIAL SIGNAL CABLES
BATTLE-NORTHWEST, RICHLAND, WASH. PACIFIC NORTHWEST LAB.
BNWL-749 +. 54 PAGES, 7 FIGURES, 1 TABLE, 12 REFERENCES, JUNE 1968

DEVELOPED A QUALITATIVE MODEL PARAMETRICALLY RELATING THE NUCLEAR-RADIATION-INDUCED CURRENT IN A COAXIAL CABLE TO THE CABLE MATERIALS, DIMENSIONS, AND RADIATION FLUX INTENSITY. THE MODEL WILL PREDICT INDUCED CURRENT POLARITIES FOR EACH COMPONENT OF THE NUCLEAR RADIATION FIELD. EXPERIMENTAL DATA INDICATING INDUCED CURRENTS PER UNIT LENGTH UP TO 40 NANOAMPS/CM AS MEASURED IN A 1/4-INCH-OD COAXIAL CABLE PLACED IN A TRIGA REACTOR ARE PRESENTED. THE CHANGE IN POLARITY OF THE INDUCED CURRENT FOUND IN THESE EXPERIMENTS IS DESCRIBED BY THE MODEL. AN INTERPRETATION BASED ON THIS MODEL IS PRESENTED FOR OTHER PREVIOUSLY UNEXPLAINED EXPERIMENTAL DATA.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA,
22151 \$3.00 COPY, \$0.65 MICROFICHE

*ELECTRICAL CONDUCTION + *RADIATION EFFECT + ANALYTICAL MODEL + COMPARISON, THEORY AND EXPERIENCE + INSTRUMENT, CURRENT + IRRADIATION TESTING + REACTOR, RESEARCH + TRIGA (RR)

9-27961
SATOMI M + OGASAWARA E + KASHIWA S
CONSTRUCTION OF A RING-ELECTRODE VOID METER
AEC-TR-6930 +. 9 PAGES, FIGURES, 3 REFERENCES, OCT. 13, 1967, TRANSLATED FROM PROCEEDINGS OF THE SIXTH SICE TECHNICAL CONFERENCE, JAPAN, OCT. 13-15, 1967

ELECTRONIC VOID METERS, SUCH AS THE CAPACITANCE TYPE, ARE SUPERIOR TO THE OTHERS FOR MEASURING LIQUID-VAPOR MIXTURE FLOWS, IN TERMS OF CONSTRUCTION AND EASE OF OPERATION. AN ELECTRONIC, RING-ELECTRODE-TYPE VOID METER WAS DEVELOPED THAT CAN BE CONVENIENTLY USED FOR A VARIETY OF VOID FRACTION MEASUREMENTS. THE METER WAS TESTED BY MEASURING TRANSIENT BOILING VOIDS AND VOID FRACTIONS IN HIGH-SPEED TWO-PHASE FLOW.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA,
22151 \$3.00 COPY, \$0.65 MICROFICHE

*FLOW, TWO PHASE + *INSTRUMENT, FLOW + EQUIPMENT DESIGN + TEST, INSTRUMENT RESPONSE + VOID COEFFICIENT

9-27973 ALSO IN CATEGORY 17
COCHRAN JC
L-77 SCRAM CIRCUIT INCAPACITATED
ATOMICS INTERNATIONAL, CANOGA PARK, CALIFORNIA
LETTER TO R. L. DOAN, DIV. OF REACTOR LICENSING, 2 PAGES, JUNE 19, 1964, DOCKET 50-94

ON AN APRIL 29, 1964, STARTUP CHECKOUT WITH LOW WATER LEVEL, THE ONLY WAY OF SCRAMMING WAS BY TURNING OFF CONSOLE POWER. THE SPOT MERCURY SWITCH ON THE WATER LEVEL FLOAT MADE CONTACTS AT THE SAME TIME DUE TO THE SLOW DROP OF WATER LEVEL, ALLOWING CURRENT TO FLOW THRU BOTH SCRAM AND ANNUNCIATOR CIRCUITS. THUS ANNUNCIATOR CURRENT KEPT SCRAM RELAY ENERGIZED. ISOLATING DIODES WERE ADDED TO ANNUNCIATOR CIRCUITS. SCRAM RELAYS AND CONTACTS WERE MODIFIED.

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

CATEGORY 5
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-27973 *CONTINUED*
FAILURE, DESIGN ERROR + INCIDENT, EQUIPMENT + INDEPENDENCE + INSTRUMENT, INDEPENDENT +
INSTRUMENT, LIQUID LEVEL DETECTION + REACTOR SAFETY SYSTEM + REACTOR, POOL TYPE + REACTOR, POWER +
REACTOR, RESEARCH + WATER BOILER (RR)

9-28035 ALSO IN CATEGORY 5
RESEARCH PROGRAM ON THE STEADY STATE AND DYNAMIC BEHAVIOR OF A BOILING WATER REACTOR FINAL REPORT NO. 3
TECHNOLOGICAL UNIVERSITY OF EINDHOVEN
EURAC-1996 +. 68 PAGES, REFERENCES, JANUARY 1968

A RESEARCH PROGRAM WAS CARRIED OUT TO STUDY THE HEAT TRANSFER AND STABILITY CHARACTERISTICS OF
A BOILING WATER SYSTEM UNDER PRESSURES UP TO 40 ATM. AN EXTENSIVE COMPILATION OF MEASURING
TECHNIQUES, MEASUREMENTS, ANALYZING TECHNIQUES, AND THEORETICAL STUDIES HAS BEEN PUBLISHED.
THIS PUBLICATION COINCIDED WITH THE ROUNDING-OFF OF THE MEASUREMENTS UNDER NATURAL
CONVECTION. SINCE, THE NATURAL RECIRCULATION PROGRAM HAS BEEN COMPLEMENTED BY A SMALL SERIES
OF EXPERIMENTS BEARING A VERY SPECIAL CHARACTER (THE EFFECT OF THE RESPONSE TIME OF THE
HEATING ELEMENT HAS BEEN INVESTIGATED). THE EXPERIMENTS HAVE, THEN, BEEN CONTINUED WITH
FORCED CIRCULATION. A SHORT DESCRIPTION OF THE EXPERIMENTAL SET-UPS AND THE INSTRUMENTATION
HAS BEEN INCLUDED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151
\$3.00 COPY, \$0.65 MICROFICHE

*HEAT TRANSFER + *INSTRUMENT, GENERAL + *REACTOR CONTROL + *REACTOR, BWR + ANALYTICAL MODEL +
FLOW STABILITY + FLOW, TWO PHASE

9-28036 ALSO IN CATEGORY 6
PRESKITT CA + NEILL JM
FAST REACTOR SPECTRUM MEASUREMENT
GULF GENERAL ATOMIC, INC., SAN DIEGO, CALIF.
GA-8543 +. 30 PAGES, 6 FIGURES, JANUARY 31, 1968

THIS REPORT IS ONE OF A SERIES OF SUCH REPORTS CONCERNED WITH EXPERIMENTAL TIME-OF-FLIGHT
SPECTRAL STUDIES AND ASSOCIATED THEORETICAL ANALYSES FOR REACTOR ASSEMBLIES OF IMPORTANCE TO
THE DEVELOPMENT OF FAST BREEDERS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151
\$3.00 COPY, \$0.65 MICROFICHE

*R AND D PROGRAM + *REACTOR KINETICS + *REACTOR, BREEDER + *REACTOR, FAST + FLUX DISTRIBUTION +
FUEL HANDLING + INSTRUMENT, COMPONENT + INSTRUMENT, NUCLEAR + REACTOR TEST FACILITY + REVIEW +
THEORETICAL INVESTIGATION

9-28037 ALSO IN CATEGORY 7
TANAPRO A
DETECTION OF NUCLEAR RADIATION
JUNTA DE ENERGIA NUCLEAR, MADRID (SPAIN)
JEN-183-DF/1-56 +. 108 PAGES, 1967

TOTAL ENERGIES OF NUCLEAR ATOMIC RADIATION IS MEASURED FOR ALPHA, BETA, GAMMA, AND NEUTRON
IRRADIATION. A STUDY IS MADE OF THE EFFECTS OF THESE IRRADIATORS UPON MATERIALS, DETECTORS,
AND SIGNAL-MEASUREMENT TRANSMISSIONS. DETECTOR SENSITIVITIES ARE ALSO DISCUSSED.

AVAILABILITY - USAEC DEPOSITORY LIBRARIES IN THE U.S. AND OVERSEAS

*DOSIMETRY, GENERAL + *INSTRUMENT, RADIATION MONITORING + ALPHA EMITTER + GAMMA +
MONITOR, RADIATION, GENERAL + NEUTRON

9-28038
PAGE G
REACTOR HIFAR- THE MAIN HEAVY WATER PUMP CIRCUITS (SI)
AUSTRALIAN ATOMIC ENERGY COMMISSION RESEARCH ESTABLISHMENT, LUCAS HEIGHTS
AAEC/M-13 +. 9 PAGES, JANUARY 1968

THIS MANUAL DESCRIBES IN DETAIL THE OPERATION OF THE RELAY CIRCUITRY ASSOCIATED WITH THE
CONTROL OF THE MAIN HEAVY-WATER PUMPS. THE MANUAL MUST BE READ IN CONJUNCTION WITH AAEC/M1
(AN INTRODUCTION TO THE GUARD AND SAFETY CIRCUITS) AND ALSO AAEC/M14 (SHUT-DOWN HEAVY WATER
PUMP CIRCUIT). IT IS ONE OF A GROUP OF MANUALS.

AVAILABILITY - USAEC DEPOSITORY LIBRARIES IN THE U.S. AND OVERSEAS

*HEAVY WATER + *INSTRUMENT, CONTROL + *INSTRUMENT, RELAY + *PUMP + AUSTRALIA + REACTOR SAFETY SYSTEM

9-28039
PAGE G

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-28039 *CONTINUED*
REACTOR HIFAR- THE TRIP AND WARNING ALARM CIRCUITS
AUSTRALIAN ATOMIC ENERGY COMMISSION RESEARCH ESTABLISHMENT, LUCAS HEIGHTS
AAEC/M-23 +. 8 PAGES, OCTOBER 1967

THIS MANUAL DESCRIBES IN DETAIL THE OPERATION OF THE TRIP AND WARNING ALARM CIRCUITS IN HIFAR AND THEIR RELATION TO OTHER PARTS OF THE SAFETY CIRCUITS. THIS MANUAL MUST BE READ IN CONJUNCTION WITH MANUAL AAEC/M1 (AN INTRODUCTION TO HIFAR GUARD AND SAFETY CIRCUITS). IT IS ONE OF A GROUP OF MANUALS.

AVAILABILITY - USAEC DEPOSITORY LIBRARIES IN THE U.S. AND OVERSEAS

*REACTOR SAFETY SYSTEM + *SYSTEM DESCRIPTION + AUSTRALIA + INSTRUMENT, ABNORMAL INDICATION + INSTRUMENT, CONTROL + OPERATION

9-28040 ALSO IN CATEGORY 19
EVANS TW
THE EFFECTS OF IRRADIATION ON BORON CARBIDE (A LITERATURE REVIEW)
BATTELLE-NORTHWEST, RICHLAND, WASH.
BNWL-679 +. 49 PAGES, FIGURES, TABLES, REFERENCES, FEBRUARY 1968

BORON CARBIDE IS BEING CONSIDERED FOR USE IN THE SAFETY AND SHIM RODS OF THE FAST TEST REACTOR (FTR). IRRADIATION TESTING UNDER SIMULATED FAST-REACTOR CONDITIONS WILL BE PERFORMED BEFORE COMMITMENT TO ITS USE IN THE FTR. THIS REVIEW WAS DEEMED NECESSARY PRIOR TO COMMENCEMENT OF AN IRRADIATION PROGRAM IN ORDER TO INCLUDE DATA ACQUIRED SINCE THE LAST REVIEW AND TO ASSESS THE PERTINENCE OF THE DATA FOR FAST-REACTOR APPLICATION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 27151
\$3.00 COPY, \$0.65 MICROFICHE

*BORON + *CARBIDE + *IRRADIATION TESTING + BIBLIOGRAPHY + BNL + INFORMATION RETRIEVAL + REACTOR, FAST + REACTOR, TEST + REVIEW + TESTING

9-28056
SVANHOLM K
GAMMA THERMOMETER AND NEUTRON DETECTOR APPLICATION
INSTITUTT FOR ATOMENERGI, HALDEN, NORWAY
HPR-73 +. 33 PAGES, FIGURES, TABLES, REFERENCES, DECEMBER 1967

THE PAPER REPORTS ON EXPERIENCE GAINED WITH GAMMA THERMOMETERS USED AS CHANNEL POWER DETECTORS. THE GAMMA THERMOMETER HAS PROVED RELIABLE AND RUGGED. AN ACCURATE IN-PILE CALIBRATION MUST BE CARRIED OUT BEFORE IT CAN BE USED DIRECTLY AS A CHANNEL POWER DETECTOR. SOME TESTS HAVE ALSO BEEN CARRIED OUT WITH SELF-POWERED NEUTRON DETECTORS USED AS CHANNEL POWER DETECTORS. THE GENERAL MERITS OF THESE TWO DIFFERENT TYPES OF DETECTORS ARE DESCRIBED AND IN PARTICULAR THEIR BEHAVIOUR RESPECTIVE TO CONTROL ROD DISTURBANCE.

AVAILABILITY - USAEC DEPOSITORY LIBRARIES IN THE U.S. AND OVERSEAS

*INSTRUMENT, NUCLEAR + *INSTRUMENT, TEMPERATURE + COUNTER + GAMMA + HWR (BWR) + INSTRUMENT, COMPONENT + MEASUREMENT, TEMPERATURE + NEUTRON + NORWAY + OPERATING EXPERIENCE + REACTOR, BWR

9-28057 ALSO IN CATEGORY 6
SANDQUIST GM
NUMERICAL INVESTIGATION OF THE STABILITY OF REACTORS WITH XE-135
UTAH UNIVERSITY, SALT LAKE CITY
LA-DC-8100 +. 5 PAGES, FIGURES, REFERENCES, 1964

TO INITIATE A STUDY OF THE NONLINEAR BEHAVIOR OF ENERGY DEPENDENT, MULTIDIMENSIONAL, MULTIREGIONAL SYSTEMS UNDER THE INFLUENCE OF XENON A DIGITAL COMPUTER PROGRAM ENTITLED XKINEQ (XENON KINETIC EQUATIONS) HAS BEEN PREPARED AND EXTENSIVELY RUN. XKINEQ IS A FORTRAN CODED PROGRAM WHICH SIMULATED THE TWO-ENERGY GROUP, DIFFUSION TYPE, NONLINEAR KINETIC EQUATIONS AND EXAMINES THE TWO-DIMENSIONAL RADIAL-AXIAL TIME BEHAVIOR IN MULTIREGIONAL CYLINDRICAL CORES AND ANY TWO-DIMENSIONAL TIME BEHAVIOR IN MULTIREGIONAL RECTANGULAR CORES. BRIEFLY THE SOLUTION SCHEME IS TO INTEGRATE THE XENON AND IODINE CONCENTRATIONS ONE TIME STEP AT EACH SPATIAL MESH POINT AND THEN SOLVE THE RESULTING MATRIX EQUATION BY A SPECIALIZED UPPER TRIANGULARIZATION METHOD FOR THE FAST AND THERMAL FLUX. SOME OF THE RESULTS OBTAINED IN EXAMINING SEVERAL MODELS ARE DISCUSSED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*COMPUTER PROGRAM + COMPUTER, DIGITAL + INSTABILITY + THEORETICAL INVESTIGATION + XENON + XENON OSCILLATION

9-28058
CEYEN HOL J + WULLUM T
FISSION PRODUCT MONITORING SYSTEMS AND FUEL FAILURES AT HBWR
INSTITUTT FOR ATOMENERGI, HALDEN (NORWAY). OECD HALDEN REAKTOR PROSJEKT
HPR-93 +. 49 PAGES, DEC. 1967

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-28058 *CONTINUED*

DESCRIBES THE FISSION PRODUCT MONITORING SYSTEMS AND HOW THEY ARE USED TO DETECT AND LOCATE FUEL FAILURES. THE REPORT CONTAINS A DESCRIPTION OF FAILED TEST ASSEMBLIES AND SOME RESULTS REGARDING ACTIVITY RELEASE INTO THE PRIMARY SYSTEM. OF THE 42 TEST ASSEMBLIES, 10 HAVE FAILED IN SUCH A WAY THAT FISSION PRODUCTS HAVE BEEN RELEASED TO THE MODERATOR. ON ONE ASSEMBLY THE MEMBRANE ON A FISSION GAS PRESSURE TRANSDUCER FAILED AND RELEASED FISSION GASES INTO THE BACK-UP PRESSURE SYSTEM. AN ATTEMPT HAS BEEN MADE TO EXPLAIN THE UNEXPECTEDLY HIGH RELEASE OF IODINES AFTER THE REACTOR WAS COOLED DOWN. THE REPORT ALSO INCLUDES INFORMATION ON THE FISSION GAS COLLECTION SYSTEM AND THE OPERATIONAL EXPERIENCE GAINED.

AVAILABILITY - USAEC DEPOSITORY LIBRARIES IN THE U.S. AND OVERSEAS

FAILURE, COMPONENT + FAILURE, FUEL ELEMENT + FAILURE, INSTRUMENT + FISSION PRODUCT RELEASE, GENERAL + FISSION PRODUCT, IODINE + HBWR (BWR) + INSTRUMENT, DETECTION FAILED FUEL ELEMENT + MONITORING SYSTEM, RADIATION + NORWAY + OPERATING EXPERIENCE + REACTOR, BWR

9-28059

SHAFIQUE M + AKHTAR KM + HASHMI MF + KRIA S

CONTROL ROD CALIBRATION AND REACTIVITY MEASUREMENTS OF EXPERIMENTAL FACILITIES AT THE PAKISTAN RESEARCH REACTOR

PAKISTAN INST. OF NUCLEAR SCIENCE AND TECHNOLOGY, ISLAMABAD. REACTOR OPERATION AND MAINTENANCE DIV. PNSTECH/RO-4 +. 42 PAGES, FIGURES, TABLES, REFERENCES, JUNE 1967

THE CONTROL RODS OF THE PAKISTAN RESEARCH REACTOR WERE CALIBRATED BY THE COMPARISON AND THE IN-HOUR METHODS. THE WATER TO AIR FILLED REACTIVITY CHANGE FOR ALL THE BEAM TUBES AND THE REACTIVITY WORTH OF THE GRAPHITE THERMAL COLUMN WERE ALSO MEASURED. THE TOTAL WORTH OF ALL THE CONTROL RODS, OBTAINED BY THE IN-HOUR METHOD HAS BEEN FOUND TO BE 15.942% DELTA K/K IN THE OPEN END AND 16.571% DELTA K/K IN THE STALL END. THE TOTAL LOSS IN REACTIVITY FOR WATER TO AIR FILLED BEAM TUBES WAS FOUND TO BE 0.953% DELTA K/K AND THE WORTH OF THE THERMAL COLUMN EQUALS 1.263% DELTA K/K.

AVAILABILITY - USAEC DEPOSITORY LIBRARIES IN THE U.S. AND OVERSEAS

*CONTROL ROD CALIBRATION + *REACTIVITY EFFECT + PAKISTAN + REACTOR, RESEARCH

9-28060

ALSO IN CATEGORIES 14 AND 15

SANGUINETTI MJ

AEC/NASA SYMPOSIUM ON CONTAMINATION CONTROL - CURRENT AND ADVANCED CONCEPTS IN INSTRUMENTATION AND AUTOMATION. HELD AT ALBUQUERQUE, NEW MEXICO SEPTEMBER 12-14, 1967

SANDIA CORP., ALBUQUERQUE, N. MEX.

SC-M-68-94 + CONF-670919 +. 344 PAGES, SEPTEMBER 12, 1967

THE OBJECTIVES OF THIS SYMPOSIUM ARE - (1) TO PROVIDE A MEANS OF EXCHANGING TECHNOLOGICAL INFORMATION CONCERNING ADVANCES IN AUTOMATION AND ADVANCED INSTRUMENTATION FOR CONTAMINATION CONTROL. (2) TO PROVIDE A BETTER UNDERSTANDING OF CAPABILITIES AND LIMITATIONS OF CONTAMINATION CONTROL MONITORING EQUIPMENT. (3) TO EXPLORE FUTURE NEEDS FOR CONTAMINATION CONTROL INSTRUMENTATION. THE PROGRAM WAS ARRANGED INTO SIX SESSIONS - (1) CONTAMINATION IN LIQUIDS, (2) RADIATION MONITORING, (3) SURFACE CONTAMINATION, (4) AIR AND GAS CONTAMINATION, (5) MICROBIAL CONTAMINATION, (6) SYSTEMS APPROACH TO CONTAMINATION CONTROL.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

INSTRUMENT, RADIATION MONITORING + MONITOR, RADIATION, AIR + MONITOR, RADIATION, ENVIRONMENTAL

9-28070

SYSTEME PROGRAMME ORIENTE

COMMISSARIAT A L'ENERGIE ATOMIQUE

43 PAGES, FIGURES, BULLETIN D'INSTRUMENTATION NUCLEAIRE NO. 34, JUNE 1968

THIS ISSUE IS CONCERNED WITH FOLLOWING INSTRUMENTATION FOR NUCLEAR APPLICATIONS - SCINTILLATORS, PULSE TOTALIZERS, COUNTERS, RAPID DATA PRINTERS, MEASUREMENT OF U-235 ENRICHMENT, GAMMA SPECTROMETER, AN I-131 DETECTOR, AND A PROGRAM FOR THE REACTOR CABOI PUISSANCE.

*INSTRUMENT, COMPONENT + *INSTRUMENT, NUCLEAR + COMPUTER PROGRAM + COMPUTER, ANALOG + COUNTER + FRANCE + INSTRUMENT, PULSE + INSTRUMENT, RADIATION MONITORING

9-28071

ELECTRONIQUE RAPIDE

COMMISSARIAT A L'ENERGIE ATOMIQUE

63 PAGES, 38 FIGURES, BULLETIN D'INSTRUMENTATION NUCLEAIRE NO. 33, MAY 1968

THIS ISSUE IS CONCERNED WITH ELECTRONIC CIRCUITS AND INSTRUMENT COMPONENTS AND LOGIC ASSEMBLIES HAVING FAST RESPONSE TIMES FOR NUCLEAR APPLICATIONS. CHARACTERISTICS AND SPECIFICATIONS FOR THE INSTRUMENTATION ARE PRESENTED.

*INSTRUMENT, COMPONENT + *INSTRUMENT, NUCLEAR + FRANCE + INSTRUMENT, AMPLIFIER + INSTRUMENT, COINCIDENT +

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-28071 *CONTINUED*
INSTRUMENT, GENERAL + INSTRUMENT, PULSE

9-28072 ALSO IN CATEGORY 10
PROPOSED IEEE CRITERIA FOR NUCLEAR POWER PLANT PROTECTION SYSTEMS
3 PAGES, IEEE TRANS. NO. 279 (AUGUST 1968)

THE FUNCTIONAL PERFORMANCE AND RELIABILITY OF A POWER-REACTOR PROTECTION SYSTEM IS A MATTER OF CONCERN FOR MANUFACTURERS, FOR USERS, AND FOR THOSE WHO ARE RESPONSIBLE FOR LICENSING AND REGULATING REACTOR FACILITIES. WITH THE INCREASED VOLUME OF NUCLEAR POWER GENERATION PLANTS PLANNED OR BEING DESIGNED, ATTENTION HAS FOCUSED ON CRITERIA AND STANDARDS AS MECHANISMS FOR PROMOTING SAFE DESIGN PRACTICE AND FOR EVALUATING THE PERFORMANCE AND RELIABILITY OF PROPOSED SYSTEMS. THESE CRITERIA ARE AN INDUSTRY CONSENSUS OF AN ACCEPTABLE APPROACH TO ASSESSING THE ADEQUACY OF PROTECTION SYSTEM FUNCTIONAL PERFORMANCE AND RELIABILITY IN MEETING DESIGN REQUIREMENTS. THE USER OF THESE CRITERIA SHOULD BE AWARE THAT A FULL NATIONAL CONSENSUS DOES NOT YET EXIST.

*PLANT PROTECTIVE SYSTEM + *REACTOR SAFETY SYSTEM + CODES AND STANDARDS + DESIGN CRITERIA

9-28097
ALTHAUS EJ + VOEGTLEN HD
A PRACTICAL RELIABILITY AND MAINTAINABILITY MODEL AND ITS APPLICATION
HUGHES AIRCRAFT COMPANY
8 PAGES, 6 FIGURES, 5 REFERENCES, FROM PROCEEDINGS OF THE ELEVENTH NATIONAL SYMPOSIUM ON RELIABILITY AND QUALITY CONTROL, MIAMI BEACH, FLORIDA, JANUARY 12-14, 1965

A RELIABILITY AND MAINTAINABILITY MODEL HAS BEEN DEVELOPED THAT REPRESENTS A SATISFACTORY COMPROMISE BETWEEN THE COMPLEXITIES OF EXACT MARKOV SIMULATION AND THE CRUDE AVAILABILITY FORMULA APPROACH. MODEL DEVELOPMENT IS PRESENTED. A DISCUSSION OF THE MATHEMATICAL ELEMENTS, AVAILABILITY AND READINESS AS SEEN BY THE MODEL IS INCLUDED IN A DESCRIPTION OF THE MODEL ITSELF.

AVAILABILITY - ORDER DEPT. OF THE IEEE, 345 EAST 47TH STREET, NEW YORK, NEW YORK 10017, \$5.00 EACH POSTPAID

*ANALYTICAL MODEL + *RELIABILITY ANALYSIS + MATHEMATICAL TREATMENT

9-28099
SOWARDS NK + ZANE JO
FIELD EXPERIENCE IN THE UNITED STATES
PHILLIPS PETROLEUM COMPANY, IDAHO FALLS, IDAHO
25 PAGES, 6 FIGURES, 17 REFERENCES, FOR PRESENTATION AT THE 2ND CREST MEETING OF SPECIALISTS ON THE RELIABILITY OF ELECTRICAL SUPPLY SYSTEMS AND RELATED ELECTRO-MECHANICAL COMPONENTS FOR NUCLEAR REACTOR SAFETY, ISPRA, ITALY, JUNE 27-28, 1968

A RELIABILITY PROGRAM HAS BEEN PROPOSED WHICH IS RESPONSIVE TO THE NEEDS OF THOSE RESPONSIBLE FOR OVERALL NUCLEAR PLANT SAFETY. A SOLID BASE HAS BEEN DEVELOPED FOR THE PROGRAM BY THE IDENTIFICATION OF APPROPRIATE ANALYTICAL MODELS AND THE DEVELOPMENT OF A PRACTICAL DATA COLLECTION AND PROCESSING SYSTEM. THE WORK CURRENTLY IN PROGRESS AT THE CONNECTICUT YANKEE PLANT IS EXPECTED TO SERVE AS A PILOT TEST FOR THE PROPOSED SYSTEM.

AVAILABILITY - N. K. SOWARDS OR J. O. ZANE, PHILLIPS PETROLEUM COMPANY, P. O. BOX 2067, IDAHO FALLS, IDAHO 83401

*INSTRUMENT, GENERAL + *RELIABILITY ANALYSIS + ENGINEERED SAFETY FEATURE + OPERATING EXPERIENCE + REACTOR SAFETY SYSTEM + UNITED STATES

9-28100 ALSO IN CATEGORY 10
JASCHKE I
METHODS FOR DETERMINING AND IMPROVING THE RELIABILITY OF ELECTRICAL SUPPLY SYSTEMS
33 PAGES, 15 FIGURES, 3 REFERENCES, EUROPEAN NUCLEAR ENERGY AGENCY COMMITTEE ON REACTOR SAFETY TECHNOLOGY, MEETING OF SPECIALISTS ON THE RELIABILITY OF ELECTRICAL SUPPLY SYSTEMS AND RELATED ELECTRO-MECHANICAL COMPONENTS FOR NUCLEAR REACTOR SAFETY, ISPRA, ITALY, JUNE 27-28, 1968

METHODS APPLIED FOR DETERMINING AND IMPROVING THE RELIABILITY OF POWER SUPPLY SYSTEMS ARE DISCUSSED, NAMELY THE ANALYTICAL WORK DURING DESIGN AND THE TESTS ON HARDWARE. THESE METHODS ARE BASICALLY APPLICABLE TO ALL SYSTEMS AND ARE FIRST DESCRIBED IN GENERAL THEN EXAMINED BY USING PARTICULAR EXAMPLES.

AVAILABILITY - I. JASCHKE, BOLKOW GMBH

*ELECTRIC POWER, GENERAL + *RELIABILITY ANALYSIS + ELECTRIC POWER, NORMAL + EMERGENCY POWER, ELECTRIC + PROCEDURES AND MANUALS + QUALITY CONTROL + TEST, COMPONENT

9-28101 ALSO IN CATEGORY 10

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-28101 *CONTINUED*
SNAITH ER + SCARROTT D + BURDEN P
FIELD DATA REPORTING EXPERIENCE IN THE UNITED KINGDOM
17 PAGES, 8 TABLES, 7 REFERENCES, EUROPEAN NUCLEAR ENERGY AGENCY COMMITTEE ON REACTOR SAFETY TECHNOLOGY,
MEETING OF SPECIALISTS ON THE RELIABILITY OF ELECTRICAL SUPPLY SYSTEMS AND RELATED ELECTRO-MECHANICAL
COMPONENTS FOR NUCLEAR REACTOR SAFETY, ISPRA, ITALY, JUNE 27-28, 1968, SESSION III

TO CARRY OUT A RELIABILITY ANALYSIS ON ANY ELECTRICAL POWER SYSTEM FOR A NUCLEAR REACTOR,
INFORMATION IS NEEDED SUCH AS FAILURE AND REPAIR RATES FOR A VARIETY OF EQUIPMENT. TO DERIVE
THESE FROM FIELD EXPERIENCE WE REQUIRE TO EXTRACT INFORMATION SUCH AS - (1) NUMBER OF
FAILURES, (2) TIME OF FAILURES, (3) REPAIR TIME, (4) OPERATING TIME OF PLANT, (5) PERIOD
BETWEEN ROUTINE TESTS AND MAINTENANCE, (6) POPULATION OF EQUIPMENT, (7) MODE OF FAILURE, (8)
NUMBER OF FAILURE PER DEMAND FOR PLANT NORMALLY IN A STATIC STATE. SOME FIELD EXPERIENCES IN
THE U.K. ARE DISCUSSED.

AVAILABILITY - E. R. SNAITH, D. SCARROTT, UNITED KINGDOM ATOMIC ENERGY AUTHORITY, RISLEY

*ELECTRIC POWER, GENERAL + *RELIABILITY ANALYSIS + *REPORT, OPERATIONS + OPERATING EXPERIENCE +
UNITED KINGDOM

9-28105 ALSO IN CATEGORIES 10 AND 12
MAURER H
AVAILABILITY OF EMERGENCY CORE COOLING SYSTEMS MAINLY WITH REGARD TO OFF-SITE AND STAND-BY POWER PROVISIONS
13 PAGES, 1 FIGURE, 3 TABLES, 5 REFERENCES, PRESENTED AT THE MEETING OF SPECIALISTS ON THE RELIABILITY OF
ELECTRICAL SUPPLY SYSTEMS AND RELATED ELECTRO-MECHANICAL COMPONENTS FOR NUCLEAR REACTOR SAFETY, ISPRA,
JUNE 27-28, 1968

SOME EXAMPLES OF RELIABILITY ANALYSIS IN TYPICAL EMERGENCY CORE-COOLING SYSTEMS ARE GIVEN,
SHOWING THE INFLUENCE OF REDUNDANCY AND INTERDEPENDENCE. THE AVAILABLE STATISTICAL FAILURE
RATE DATA OF MECHANICAL AND ELECTRICAL SYSTEM COMPONENTS ARE DISCUSSED. THE FOLLOWING
SUBJECTS ARE TREATED IN DETAIL - (1) ANALYSIS OF DIFFERENT BLOCK DIAGRAM MODELS OF EMERGENCY
CORE-COOLING SYSTEMS AND SYSTEM OPTIMIZING WITH REGARD TO MECHANICAL COMPONENTS, (2)
RELIABILITY ANALYSIS OF DIFFERENT POSSIBLE ELECTRICAL POWER PROVISIONS AND OVERALL SYSTEM
AVAILABILITY, (3) OFF-SITE POWER AVAILABILITY CONSIDERATIONS DURING LOSS OF COOLANT ACCIDENT.

AVAILABILITY - COMMISSION OF THE EUROPEAN COMMUNITIES, MR. H. MAURER

*COOLING, SHUTDOWN + *ELECTRIC POWER, ALTERNATE + *RELIABILITY ANALYSIS + BELGIUM +
ELECTRIC POWER, GENERAL + EMERGENCY SYSTEM + FAILURE, COMPONENT

9-28106
EHRENTREICH J + MAURER H
RELIABILITY CONSIDERATIONS FOR ELECTRO-MECHANICAL AND HYDRAULIC CONTROL ROD DRIVE SYSTEMS
EURATOM
54 PAGES, 14 FIGURES, 12 TABLES, 7 REFERENCES, FOR PRESENTATION AT THE 2ND CREST MEETING OF SPECIALISTS ON
THE RELIABILITY OF ELECTRICAL SUPPLY SYSTEMS AND RELATED ELECTRO-MECHANICAL COMPONENTS FOR NUCLEAR
REACTOR SAFETY, ISPRA, ITALY, JUNE 27-28, 1968

THE DIFFERENT DESIGNS FOR CONTROL ROD DRIVES USED WITH WATER-COOLED POWER REACTORS ARE
DESCRIBED COMPARATIVELY AND ANALYZED WITH RESPECT TO THEIR RELIABILITY FOR NORMAL AND SCRAM
OPERATION. THE FOLLOWING POINTS ARE CONSIDERED - (1) DRAWING UP OF SYSTEM BLOCK DIAGRAMS,
(2) ESTIMATION OF POSSIBLE FAULT RATES OF SYSTEM COMPONENTS, (3) COMPARISON OF THE
ANALYTICALLY DETERMINED INHERENT SYSTEM RELIABILITY, (4) RELIABILITY ANALYSIS OF THE COMPLETE
CONTROL SYSTEMS.

AVAILABILITY - J. EHRENTREICH OR H. MAURER, EURATOM, BRUXELLES RUE BELLIARD 51-53 BELLIARDSTRAT 8°USSEL

*CONTROL ROD DRIVE + *CONTROL SYSTEM + *OPERATING EXPERIENCE + *RELIABILITY ANALYSIS +
*RELIABILITY, SYSTEM + COMPARISON, THEORY AND EXPERIENCE + CONTROL ROD SCRAM MECHANISM + DRESDEN 1 (BWR) +
REACTOR, BWR + REACTOR, POWER + REACTOR, PWR + REACTOR, WATER + SYSTEM DESCRIPTION + YANKEE (PWR)

9-28163 ALSO IN CATEGORIES 6 AND 1
GREEBLER P + HENLEY EJ
ADVANCES IN NUCLEAR SCIENCE AND TECHNOLOGY
GENERAL ELECTRIC COMPANY + UNIVERSITY OF HOUSTON
391 PAGES, VOLUME 4, 1968, ACADEMIC PRESS, NEW YORK AND LONDON

THIS VOLUME IS CONCERNED WITH ADVANCED REACTOR CONCEPTS. TWO OF THE CHAPTERS DEAL WITH THE
TECHNOLOGY OF, RESPECTIVELY, SODIUM-COOLED FAST BREEDER POWER REACTORS AND GAS-COOLED POWER
REACTORS, THE LATTER INCLUDING BOTH THERMAL CONVERTERS AND FAST BREEDERS. COGNIZANCE IS
TAKEN OF THE CENTRAL ROLE OF REACTOR SAFETY IN THE DEVELOPMENT OF FAST BREEDER REACTORS IN
TWO CHAPTERS DEALING WITH, RESPECTIVELY, THE DOPPLER EFFECT IN FAST REACTORS AND THE ANALYSIS
OF MAXIMUM ACCIDENTS. THREE CHAPTERS COVER RECENT DEVELOPMENTS IN AREAS OF MORE GENERAL
APPLICABILITY, NAMELY, OPTIMAL CONTROL THEORY, MODERN PERTURBATION THEORY, AND INDUSTRIAL
APPLICATION OF IONIZING RADIATIONS. MAIN HEADINGS FOR THE 7 CHAPTERS ARE - GAS-COOLED
REACTOR TECHNOLOGY, SAFETY AND ECONOMIC CHARACTERISTICS OF A 1000-MWE FAST SODIUM-COOLED
REACTOR DESIGN, AND THE DOPPLER EFFECT IN FAST REACTORS.

BETHE TAIT + DOPPLER EFFECT + ECONOMICS + MATHEMATICAL TREATMENT + REACTOR CONTROL + REACTOR DYNAMICS +
REACTOR SAFETY SYSTEM + REACTOR, FAST + REACTOR, GCR + REACTOR, LMCR + REACTOR, LMFSR +
THEORETICAL INVESTIGATION

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-28499 ALSO IN CATEGORY 7
VAN DE VOORDE M
THE EFFECT OF NUCLEAR RADIATION ON THE ELECTRICAL PROPERTIES OF EPOXY RESINS
CERN, GENEVA
CERN 68-13 +. 14 PAGES, FIGURES, TABLES, APRIL 1968

THE AIM OF THIS REPORT IS TWOFOLD, FIRSTLY TO SELECT ON THE BASIS OF THEIR ELECTRICAL PROPERTIES RADIATION RESISTANT EPOXY RESIN COMPOSITIONS AND SECONDLY, TO RECOMMEND NEW EPOXY RESINS, WHICH WILL MINIMIZE FUTURE TROUBLES FROM RADIATION INDUCED DAMAGE FOR ELECTRICAL INSULATION IN NUCLEAR ENVIRONMENTS. AS IT IS GENERALLY ACCEPTED THAT THE MAIN CAUSES OF FAILURE OF ELECTRICAL INSULATION IN NUCLEAR RADIATION ENVIRONMENTS ARE DUE TO THE LOSS OF MECHANICAL STRENGTH OR THE EVOLUTION OF GASES RATHER THAN THE GROSS CHANGES IN THEIR DIELECTRIC PROPERTIES, IT WAS DECIDED TO STUDY ONLY THE CHANGES IN ELECTRICAL PROPERTIES IN THE AREA WHERE MECHANICAL OR PHYSICAL DETERIORATION WERE NOTED. FURTHER, THIS STUDY PROGRAM WAS MOSTLY RESTRICTED TO RADIATION-RESISTANT (MECHANICAL-PHYSICAL) EPOXY SYSTEMS.

AVAILABILITY - CERN EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH, GENEVA 23, SWITZERLAND

*ELECTRICAL CONDUCTION + *PLASTICS + *RADIATION DAMAGE + INSTRUMENT, GENERAL + RADIATION EFFECT

9-28540 ALSO IN CATEGORIES 17 AND 6
ROSS DA
UNEXPECTED REACTIVITY ADDITION AT PENN STATE UNIV FROM MOVEMENT OF LEAD SHIELD
PENNSYLVANIA STATE UNIVERSITY, UNIVERSITY PARK, PENNSYLVANIA 16802
LETTER TO AEC, DRL +. 6 PAGES, FIGURES, AUGUST 9, 1968, DOCKET 50-5

AN UNEXPECTED AUTOMATIC REGULATING ROD INSERTION OF 37 UNITS REPRESENTING A REACTIVITY ADDITION OF 0.168% DELTA K/K OCCURRED. THE CAUSE WAS ATTRIBUTED TO A LEAD PLATE BETWEEN THE REACTOR AND THERMAL COLUMN WHICH WAS NOT FITTED PROPERLY AND MOVED DURING OPERATION. CHARTS SHOWED SLIGHT INCREASE IN LOG-N CHANNEL, NO CHANGE IN LINEAR-LEVEL CHANNEL, %-POWER CHANNEL DROPPED 4.5%, AND FUEL TEMPERATURE DROPPED 10 C. LOCATION OF NEUTRON DETECTORS IS SUCH THAT THEY ARE INFLUENCED BY NEUTRON REFLECTED FROM LEAD SHIELD. NO DAMAGE. BETTER MEANS OF SECURING PLATE TO BE OBTAINED.

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

*DISPLACEMENT, GENERAL + *INSTRUMENT, ABNORMAL INDICATION + *REACTIVITY EFFECT, ANOMALOUS + *REFLECTOR + BEAM HOLE + OPERATING EXPERIENCE + REACTOR, RESEARCH + SHIELDING + TRIGA (RR)

9-28551 ALSO IN CATEGORY 17
FORD JD ET AL
SELECTED OPERATING EXPERIENCES AT ETR
IDAHO NUCLEAR CORPORATION, IDAHO FALLS, IDAHO
IN-1212 +. 35 PAGES, TABLES, FIGURES, JULY 26, 1968

A CONTROL-ROD DRIVE WAS REPLACED BECAUSE OF WATER LEAKAGE IN A DAMAGED BELLOWS. ANOTHER DRIVE UNIT WAS REPLACED TWICE TO REMOVE PARTS OF A BROKEN PLUGGING TOOL, WHICH PREVENTED PROPER LATCHING, AND A SECOND TIME TO REMOVE AN EXTRA HELICAL SHOCK SPRING LEFT IN THE RECEIVER SECTION. A MAGNET FAILURE ON NO. 7 CONTROL-ROD-DRIVE UNIT REQUIRED REPLACEMENT. DISCUSSES NUMEROUS EXPERIMENT PROBLEMS CONTRIBUTING TO SHUTDOWN TIME. SUMMARIZES IRRADIATION PROGRAM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

CONTROL ROD DRIVE + ETR (TR) + FAILURE, INSTRUMENT + FAILURE, MAINTENANCE ERROR + FAILURE, SCRAM MECHANISM + IRRADIATION TESTING + LEAK + OBSTRUCTION + REACTOR, TEST + REPORT, OPERATIONS + SEAL

9-28555 ALSO IN CATEGORY 17
FORD JD ET AL
ERRATIC REGULATING - ROD CONTROL
IDAHO NUCLEAR CORPORATION, IDAHO FALLS, IDAHO
IN-1210 +. 23 PAGES, TABLES, FIGURES, JUNE 17, 1968

REGULATING-ROD CONTROL WAS ERRATIC AS INDICATED BY NUCLEAR INSTRUMENTATION. TWO MINOR POWER REDUCTIONS OCCURRED WHEN SWITCHING FROM NO. 1 TO NO. 2 REGULATING-ROD CONTROL. THE NO. 2 ROD CONTROL WAS ALSO ERRATIC. CONSIDERABLE WEAR WAS FOUND IN THE LOWER BEARING AREA OF THE REGULATING-ROD SLEEVES, WHICH ALLOWED MOVEMENT OF THE ROD DURING OPERATION AND COULD ACCOUNT FOR ERRATIC OPERATION. ALSO SUMMARIZES IRRADIATION PROGRAM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

CONTROL ROD DRIVE + DAMAGE + IRRADIATION TESTING + MTR (TR) + REACTIVITY EFFECT, ANOMALOUS + REACTOR CONTROL + REACTOR, TEST + REPORT, OPERATIONS

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-28602 ALSO IN CATEGORY 17
BONUS OPERATING EXPERIENCE
PUERTO RICO WATER RESOURCE AUTHORITY
PRWRA-114 +. 53 PAGES, 12 FIGURES, 1 TABLE, MAY 1967

SEVERAL TIMES THE 46 KV BREAKERS OPENED BECAUSE SALT CRUSTS CAUSED ARCING. REACTIVITY WAS INCREASED \$1.50 BY RESHMING (\$2.60 PREDICTED), AND TEMP. COEFF. CHECKED. SEVERAL CONTROL RODS EITHER JAMMED OR NEEDED REWORKING. AIR ACTIVITY WAS RELEASED FROM STEAM VALVES FOLLOWING A SCRAM AND DURING TWO SIDE/BLADE ROD TRADES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151
\$3.00 COPY, \$0.65 MICROFICHE

ACCIDENT, LOAD REJECTION + BONUS (ISR) + COMPARISON, THEORY AND EXPERIENCE + FAILURE, SCRAM MECHANISM + POISON, FIXED + REACTIVITY, EXCESS + REACTOR, BWR + REFUELING + REPORT, OPERATIONS

9-28603 ALSO IN CATEGORIES 17 AND 1
ELK RIVER OPERATING EXPERIENCE
NUS CORPORATION
NUS-391 +. 74 PAGES, 12 FIGURES, 2 TABLES, 10 REFERENCES, MAY 1967

FUEL FAILURE AND COOLANT ACTIVITY HISTORY IN 1966-67 REVIEWED. SETTING COOLANT ACTIVITY LIMITS ON AIR EJECTOR (STACK) ACTIVITY RELEASE RATES IS DIFFICULT BECAUSE OF VARYING LEAK RATES. LIMITING FACTOR TO DATE IS CONTAINMENT VENTILATION RELEASE RATE. ESTIMATES ARE 40-46 FAILED ASSEMBLIES WITH 30-50 GPD LEAKAGES ARE MAXIMUM PERMISSIBLE. ***19 FUEL ASSEMBLIES CONTAINED BOWED RODS. ***IN 1966, AUTOMATIC PRESSURE CONTROLLER WITHDREW CONTROL RODS WHEN REACTOR PRESSURE WAS TOO HIGH. ALSO INSERTED RODS WHEN PRESSURE TOO LOW, AND INSERTION COULD NOT BE STOPPED. REVISIONS SUGGESTED. ***CRITICALITY SAFETY CALCULATIONS OF FUEL STORAGE INDICATE KEFF IS 0.746 WHEN LOADED WITH 200 UNIRRADIATED FUEL ELEMENTS. BORAL SHEETS USED. ANALYSIS METHOD DESCRIBED. ***PROCEDURE FOR DRY SIPPING FUEL ELEMENTS GIVEN.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151
\$3.00 COPY, \$0.65 MICROFICHE

*CRITICALITY SAFETY + CONTROLLER + ELK RIVER (BWR) + FAILURE, FUEL ELEMENT + FAILURE, FUEL ELEMENT + FAILURE, INSTRUMENT + FUEL ELEMENT BOWING + FUEL STORAGE + INSTRUMENT, DETECTION FAILED FUEL ELEMENT + INSTRUMENT, PRESSURE + LEAK + MODIFICATION, SYSTEM OR EQUIPMENT + REACTOR, BWR + REACTOR, POWER + REPORT, OPERATIONS ANALYSIS + SAFETY REVIEW + SOURCE, CONTINUOUS + STACK + STEAM GENERATOR

9-28621 ALSO IN CATEGORIES 17 AND 6
DALOH FJ
LOCALIZATION OF IN-CORE DISTURBANCES WITH EXTERNAL CORE DETECTORS
THE PENNSYLVANIA STATE UNIVERSITY
104 PAGES, TABLES, FIGURES, JUNE 1968

TWO LEAD SHIELDED, PCP ION CHAMBERS USED WITH CROSS CORRELATION TECHNIQUES SAW DISTURBANCES IN A TRIGA CORE AT DISTANCES 3 IN. INTO THE CORE AND DISTURBANCES GREATER THAN 0.42 CENT. ***THE ROTATING OSCILLATORS PRODUCED NEUTRON WAVES 180 DEG OUT OF PHASE ON EITHER SIDE OF THE OSCILLATOR. THEREFORE THE DETECTORS SAW DIFFERENCES IN REACTIVITY WORTH OF AN ELEMENT. THIS COULD BE USED TO MEASURE FUEL BURNUP. ***REPORT DESCRIBES HARDWARE DEVELOPMENT, CORRELATION TECHNIQUES AND MATHEMATICAL TREATMENT, CHECKING WITH IN-CORE CHAMBER.

AVAILABILITY - PENN. STATE UNIV., DEPT. OF NUCLEAR ENGINEERING, UNIVERSITY PARK, PA.

*TRANSFER FUNCTION + FUEL BURNUP + INSTRUMENT, IN CORE + INSTRUMENT, NUCLEAR + OSCILLATOR, REACTIVITY + REACTIVITY EFFECT, ANOMALOUS + REACTOR, RESEARCH + TRIGA (RR)

9-28659 ALSO IN CATEGORY 11
FRAGOMEN AT
SHOP FABRICATION AND QUALITY CONTROL TECHNIQUES FOR MASSIVE NUCLEAR VESSELS
BABCOCK AND WILCOX, BARBERTON, OHIO
9 PAGES, PROC. AMER. POWER CONF., 29, PAGE 263-71 (1967)

THE DESIGN, FABRICATION, AND QUALITY CONTROL OF THE MASSIVE STEEL PRESSURE VESSELS FOR NUCLEAR REACTORS REQUIRE RIGID MANUFACTURING TECHNIQUES TO ENSURE REACTOR VESSEL SAFETY. NINE ESSENTIAL FACTORS NECESSARY TO THE SUCCESSFUL FABRICATION AND CONTROL OF NUCLEAR VESSELS ARE EXAMINED - DESIGN, MATERIAL SELECTION, MANUFACTURING ENGINEERING, PRODUCTION CONTROL, PLANT FACILITIES, TONNAGE, SHIPPING AND TRAFFIC CONTROL, WORK FORCE, AND QUALITY CONTROL.

*PRESSURE VESSEL + *QUALITY CONTROL + DESIGN CRITERIA + DESIGN STUDY + EQUIPMENT DESIGN + FABRICATION + MATERIAL + SHIPPING ANALYSIS + TRANSPORTATION AND HANDLING

9-28660
MASUDA Y

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-28660 *CONTINUED*
REACTOR CONTROL-ROD DRIVE
TOKYO SHIBAURA ELECTRIC CO., LTD.
JAPANESE PATENT 1966-12156. JULY 5, 1966

IN THE REACTOR CONTROL-ROD DRIVE PROPOSED, IMPROVEMENT IS MADE IN RAPIDLY MOVING CONTROL ROD TO THE REACTOR SCRAM POSITION. USING THE CONTROL-ROD DRIVE PROPOSED, THE CONTROL ROD CAN BE DRIVEN SLOWLY IN AND OUT OF THE REACTOR CORE IN REGULATING THE POWER OUTPUT, AND IN THE REACTOR SCRAM IT CAN BE BROUGHT RAPIDLY TO ITS GIVEN POSITION TO SHUT DOWN THE REACTOR WITHOUT GIVING A SHOCK TO THE SYSTEM.

AVAILABILITY - IT IS OUR UNDERSTANDING THAT FOREIGN PATENTS MAY BE OBTAINED IN PHOTOCOPY FROM THE U.S. PATENT OFFICE, DEPT. OF COMMERCE, WASHINGTON, D. C., (\$0.30 CENTS/PAGE)

*CONTROL ROD DRIVE + CONTROL ROD SCRAM MECHANISM + JAPAN + PATENT

9-28661
HORIBE O
METHOD FOR SHIM CONTROL OF A NUCLEAR REACTOR
KAWASAKI DOCKYARD CO., LTD.
JAPANESE PATENT 1967-1840. JAN. 27, 1967

BY THE METHOD PROPOSED, THE CHEMICAL SHIM-CONTROL INJECTION AND WITHDRAWAL OF LIQUID POISON CAN BE DONE AUTOMATICALLY BY MEANS OF A SIGNAL DERIVED FROM THE CHANGE IN POSITION OF A REGULATING ROD, THE MEASUREMENT OF THE POISON AMOUNT IN THE REACTOR IS NOT REQUIRED. MEMBERS OF ISSUING A SIGNAL WITH RESPECT TO THE DISPLACEMENT FROM THE PROPER POSITION OF A REGULATING ROD ARE INSTALLED. THE RELATIVE POSITIONS OF THE MEMBERS ARE SUCH THAT IN THE INJECTION OR WITHDRAWAL OF LIQUID OF LIQUID POISON THE START IS NOT AS RAPID AS THE STOP. THEREBY, THE POSITION OF THE REGULATING ROD CAN ALWAYS BE CORRECTED WITH RESPECT TO ITS PROPER POSITION AND THE SHIM CONTROL DONE VERY EFFECTIVELY.

AVAILABILITY - IT IS OUR UNDERSTANDING THAT FOREIGN PATENTS MAY BE OBTAINED IN PHOTOCOPY FROM THE U.S. PATENT OFFICE, DEPT. OF COMMERCE, WASH., D. C., (\$0.30 CENTS/PAGE)

*CONTROL ROD, SHIM SAFETY + *POISON, SOLUBLE + CONTROL SYSTEM + INSTRUMENT, CONTROL + JAPAN + PATENT

9-28662
NAGAHATA Y
REACTOR CONTROL-ROD DRIVE
HITACHI SHIPBUILDING AND ENGINEERING CO., LTD.
JAPANESE PATENT 1966-14416. JULY 5, 1966

THE REACTOR CONTROL-ROD DRIVE PROPOSED CONSISTS OF A PROTRUSION AT THE BOTTOM OF THE REACTOR PRESSURE VESSEL. THE PROTRUSION ITSELF IS A COMBINATION OF THE ONE-END CLOSED OUTERMOST CYLINDRICAL BODY AND THE TWO INNER CYLINDRICAL BODIES. THE ROD, CONNECTING TO A CONTROL ROD, IS INSERTED FROM UPWARD INTO THE MIDDLE OF THE MULTICYLINDRICAL BODY. TRAVELING GEARS, LOCATED WITHIN THE PROTRUSION, AND RACKS CUT ON EITHER THE INSIDE OR OUTSIDE SURFACE OF THE CYLINDRICAL BODIES MAKE POSSIBLE THE MOVEMENT, EITHER UPWARD OR DOWNWARD, OF THE DRIVE ROD. THE POWER OF DRIVE IS SUPPLIED FROM AN OUTSIDE ELECTRIC MOTOR.

AVAILABILITY - IT IS OUR UNDERSTANDING THAT FOREIGN PATENTS MAY BE OBTAINED IN PHOTOCOPY FROM THE U.S. PATENT OFFICE, DEPT. OF COMMERCE, WASHINGTON, D. C., (\$0.30 CENTS/PAGE)

*CONTROL ROD DRIVE + EQUIPMENT DESIGN + JAPAN + PATENT

9-28663
AZUMA M
REACTOR CONTROL ROD
HITACHI LTD.
JAPANESE PATENT 1966-12159. JULY 5, 1966

AN IMPROVED CONTROL ROD IS PROPOSED WHICH ABSORBS NEUTRONS FOR CONTROL OF RESEARCH REACTORS. THE CONTROL ROD IS MADE OF A CYLINDRICAL BODY WITH A CENTRAL TUBE LOCATED AXIALLY. THE TUBE CONTAINS A MIXTURE OF NEUTRON MODERATOR AND FAST-NEUTRON ABSORBER. SURROUNDING THIS CENTRAL TUBE ARE ARRANGED A NUMBER OF TUBES (ALSO IN THE AXIAL DIRECTION), CONTAINING A MIXTURE OF EPITHERMAL-NEUTRON ABSORBERS. SURROUNDING THIS ARRANGEMENT AND IN CONTACT WITH THE INSIDE SURFACE OF THE CYLINDRICAL BODY ARE ARRANGED AXIALLY A NUMBER OF TUBES, CONTAINING A MIXTURE OF STRONG THERMAL-NEUTRON ABSORBERS.

AVAILABILITY - IT IS OUR UNDERSTANDING THAT FOREIGN PATENTS MAY BE OBTAINED IN PHOTOCOPY FROM THE U.S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D. C. (\$0.30 CENTS/PAGE)

*CONTROL ROD + CONTROL ROD FABRICATION + EQUIPMENT DESIGN + JAPAN + PATENT + REACTOR, RESEARCH

9-28664
MCKNIGHT JA
FUEL SHEATHING FAILURE DETECTION IN LIQUID COOLED NUCLEAR REACTORS
UNITED KINGDOM ATOMIC ENERGY AUTHORITY

CATEGORY 3
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-28664 *CONTINUED*
U.S. PATENT 3,356,576. MAR. 7, 1966

A TESTING METHOD FOR CLADDING LEAKAGE IN FUEL ELEMENTS OF A LIQUID COOLED REACTOR IS DESCRIBED. THE METHOD CONSISTS OF PASSING COOLANT OVER A FUEL ELEMENT AND THEN PASSING THE COOLANT THROUGH A TUBE WITH A ROTARY MOTION. ANY BUBBLES IN THE COOLANT ARE FORCED CENTRIPETALLY TO A POSITION ABOUT THE LONGITUDINAL AXIS AND THEN RESTRAINED FROM AXIAL MOVEMENT BY FLOW PATH OBSTRUCTIONS.

AVAILABILITY - U.S. PATENT OFFICE, DEPT. OF COMMERCE, WASHINGTON, D. C., (\$0.25 CENTS/COPY)

*FAILURE, CLADDING + *INSTRUMENT, DETECTION FAILED FUEL ELEMENT + *TEST, LEAK RATE + FAILURE, FUEL ELEMENT + PATENT + TEST, NONDESTRUCTIVE + TESTING + UNITED STATES

9-28665
LONG E
NUCLEAR REACTOR CONTROL ROD WINDING ARRANGEMENTS
ENGLISH ELECTRIC CO., LTD.
U.S. PATENT 3,361,635. MAY 5, 1965

THE DESCRIPTION OF A MULTIPLE CONTROL ROD WINDING SYSTEM IS PRESENTED FOR A REACTOR WITH A PRESSURE VESSEL AND PILE CAP SEAL. THE REACTOR CONTAINS A PLURALITY OF CONTROL-ELEMENT CHANNELS WITH SEPARATE GUIDE TUBES FIXED TO EACH CHANNEL. THE GUIDE TUBES CONVERGE TO A SINGLE STANDPIPE WHICH PENETRATES THE PILE CAP AND PROVIDES ACCESS TO A MOTOR DRIVE UNIT. SEPARATE CABLES FROM EACH CONTROL-ELEMENT CHANNEL PASS THROUGH THE GUIDE TUBES, UP THE STANDPIPE, AND CONNECT TO THE MOTOR DRIVE FOR SIMULTANEOUS MOVEMENT.

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

*CONTROL ROD DRIVE + COMPONENTS, MISCELLANEOUS + PATENT + UNITED STATES

9-28666 ALSO IN CATEGORY 6
WIBERG OM
OPTIMAL CONTROL OF NUCLEAR REACTOR SYSTEMS
UNIVERSITY OF CALIFORNIA, LOS ANGELES
68 PAGES, ADVAN. CONTR. SYST., 5, PAGE 301-388, (1967)

A REVIEW (82 REFERENCES) IS PRESENTED WHICH INCLUDES A DISCUSSION OF THE POINT REACTOR MODEL, REACTOR KINETIC STATE EQUATIONS, LINEARIZED STATE EQUATIONS AND 2 METHODS OF THEIR SOLUTION, METHODS OF SOLUTION OF THE KAPLAN MODES, A METHOD OF ESTIMATING THE EFFECTS OF SPATIAL VARIATION ON STABILITY, AND ANALYTICAL DESIGN OF A SPATIAL FEEDBACK CONTROL SYSTEM. METHODS FOR ATTACKING THE DESCRIPTION AND CONTROL OF MOST REACTOR SPATIAL PROCESSES HAVE BEEN INVESTIGATED. THE CONCEPT OF THE TEMPERATURE COEFFICIENT OF REACTIVITY WAS EXTENDED SO THAT SPATIAL TEMPERATURE EFFECTS CAN BE INVESTIGATED BY THEIR INCLUSION IN THE GENERAL MODEL. A DISCUSSION OF THE CONTROL OF THE INFINITE MODE SYSTEM WAS GIVEN.

*REACTOR CONTROL + *THEORETICAL INVESTIGATION + ANALYTICAL MODEL + BIBLIOGRAPHY + REACTOR KINETICS + REVIEW + TEMPERATURE REACTIVITY EFFECT

9-28667
SPECTRAL SHIFT REACTOR CONTROL
UNITED STATES ATOMIC ENERGY COMMISSION
BRITISH PATENT 1,102,050. FEB. 7, 1968

A DESCRIPTION OF A SPECTRAL SHIFT CONTROL FOR A LIQUID SODIUM-COOLED FAST NEUTRON REACTOR IS PRESENTED. THE CONTROL SYSTEM CONSISTS OF A PUMP FOR CIRCULATING LI CONTAINING NA THROUGH THE REACTOR. BY ADDING AND WITHDRAWING SELECTED AMOUNTS OF LI FROM THE LIQUID NA, THE REACTIVITY IS CHANGED AS DESIRED. SEPARATE LI-RICH AND NA-RICH PHASES OF THE LI-NA MIXTURE ARE MAINTAINED BY TEMPERATURE REGULATION.

AVAILABILITY - THE PATENT OFFICE, 25 SOUTHAMPTON BUILDING, LONDON, W.C. 2, ENGLAND (\$0.49 CENTS/COPY)

*INSTRUMENT, CONTROL + CONTROL SYSTEM + PATENT + REACTIVITY EFFECT + UNITED KINGDOM

9-28669
WINDERS GR
IMPROVEMENTS IN AND RELATING TO NUCLEAR REACTOR SAFETY ROD ACTUATORS
BABCOCK AND WILCOX CO.
BRITISH PATENT 1,102,255 +. FEBRUARY 7, 1968

A DESCRIPTION OF A REACTOR CONTROL ROD ACTUATOR SYSTEM IS PRESENTED. THE ACTUATOR IS COMPRISED OF A PISTON WORKING IN A CYLINDER WHICH RELIES ON FLUID PRESSURE TO HOLD THE CONTROL ROD WITHDRAWN ABOVE THE REACTOR CORE. THE ACTUATOR IS LOCATED BENEATH THE CORE. A COOLANT PRESSURE DROP CAUSES THE CONTROL ROD TO BE LOWERED IN THE ACTUATOR CYLINDER. THE CYLINDER IS DESIGNED WITH FLUID OUTLETS FOR EXCESSIVE PRESSURE IN THE FLUID. THE CYLINDER HAS A DIMINISHING DIAMETER EXTENSION FOR RETARDING THE PISTON MOVEMENT AT THE END OF INSERTION.

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-28669 *CONTINUED*
AVAILABILITY - THE PATENT OFFICE, 25 SOUTHAMPTON BUILDING, LONDON, W.C. 2, ENGLAND (\$0.49 CENTS/COPY)

*CONTROL ROD DRIVE + EQUIPMENT DESIGN + PATENT + UNITED KINGDOM

9-28670
POPESCU A
INSTRUMENTAL ERRORS OF NUCLEAR RADIATION TRANSDUCERS MEASURING DEVICES
15 PAGES, STUD. CERCET. ENERG. ELECTROTEH., 17, PAGE 225-239 (1967), (IN RUMANIAN)

THE MEASUREMENT ACCURACY OF NUCLEAR RADIATION TRANSDUCERS IS LARGELY INFLUENCED BY THE INSTRUMENTAL ERRORS. THE WAY THESE ERRORS OCCUR AND A GENERAL METHOD FOR THEIR CALCULATION ARE EXPOSED. IT IS PROVED THAT THE INSTRUMENTAL ERRORS ARE COMPARABLE TO, OR EVEN HIGHER THAN STATISTICAL ONES, SO THAT THEY CANNOT BE POSSIBLY OVERLOOKED.

*ERROR ANALYSIS + *INSTRUMENT, ABNORMAL INDICATION + FAILURE, INSTRUMENT + INSTRUMENT, NUCLEAR + INSTRUMENT, RADIATION MONITORING

9-28671
LUNDE JE
COMPUTER CONTROL OF THE HBWR
7 PAGES, ATOOMENERGIE HAAR TOEPASS., 9, PAGE 267-73, (DEC. 1967)

THE MAIN FEATURES OF THE HALDEN BOILING WATER REACTOR ON-LINE PROCESS CONTROL COMPUTER SYSTEM ARE DESCRIBED. A DEVELOPMENT PROGRAM FOR THE INTENDED CONTROL FUNCTIONS OF THE SYSTEM, INCLUDING REPORTING AND MONITORING, STEADY-STATE POWER AND PRESSURE CONTROL, EXTERNAL CIRCUIT CONTROL, EVALUATION AND CONTROL OF CORE-POWER DISTRIBUTION, OPERATIONAL CONDITION CHANGES, AND STARTUP AND SHUTDOWN CONTROL, IS DISCUSSED.

*COMPUTER CONTROL + *HBWR (BWR) + COMPUTER PROGRAM + CONTROL SYSTEM + INSTRUMENT, CONTROL + INSTRUMENT, PROCESS + REACTOR CONTROL + REACTOR, BWR

9-28672
FOREMAN CE + HUBBARD RB
IN-CORE SYSTEM PROVIDES CONTINUOUS FLUX MAP OF REACTOR CORES
4 PAGES, POWER, 111, PAGES 106-9 (NOVEMBER 1967)

DESCRIBES A SOPHISTICATED IN-CORE NEUTRON MONITORING SYSTEM USED AT THE GUDREMINGEN NUCLEAR POWER STATION. CONSISTS OF A LOCAL POWER RANGE MONITORING SYSTEM IN CONJUNCTION WITH A FLUX MAPPING AND CALIBRATION SYSTEM. THE CORE-TRAVERSING NEUTRON-FLUX MAPPING SYSTEM HELPS OPTIMIZE PERFORMANCE AND CALIBRATE SAFETY MONITORS.

*FLUX DISTRIBUTION + *INSTRUMENT, IN CORE + GERMANY + INSTRUMENT, OPERATING REACTIVITY + INSTRUMENT, POSITION + INSTRUMENT, RADIATION MONITORING + INSTRUMENT, RECORDER + INSTRUMENT, SURVEILLANCE + NEUTRON + REACTOR, BWR

9-28736
KAGI J
METHOD OF CONTROLLING A NUCLEAR REACTOR PLANT AND APPARATUS THEREFOR
SULZER BROTHERS LTD.
CANADIAN PATENT 765,918 +. AUG. 22, 1967

INCREASED LOAD ON THIS NUCLEAR POWER PLANT GENERATES A SIGNAL WHICH IN TURN INCREASES THE NEUTRON FLUX BY SUITABLE MOVEMENT OF CONTROL RODS. AFTER THE FLUX INCREASE ANOTHER SIGNAL SPEEDS UP THE COOLANT FLOW RATE AND THE INPUT OF FEEDWATER. THUS MORE ENERGY REACHES THE TURBINE TO RAISE THE POWER OUTPUT. DELAY OF THE FEEDWATER SUPPLY RELATIVE TO THE STEAM OUTFLOW MAKES IT POSSIBLE TO UTILIZE THE HEAT CAPACITY OF THE STEAM GENERATOR WHEN A SUDDEN INCREASE OF LOAD OCCURS.

AVAILABILITY - FOREIGN PATENTS MAY BE OBTAINED IN PHOTOCOPY FROM THE U.S. PATENT OFFICE, DEPT. OF COMMERCE, WASH., D.C., 30 CENTS/PAGE

*CONTROL SYSTEM + *REACTOR CONTROL + CANADA + INSTRUMENT, CONTROL + PATENT + REACTOR, POWER

9-28741
MIZUNO K
REACTOR CONTROL MECHANISM
HITACHI LTD.
JAPANESE PATENT 1966-3596 +. JANUARY 21, 1966

THE REACTOR CONTROL MECHANISM PROPOSED IS SO CONSTRUCTED THAT WHEN THE REACTIVITY IS INCREASED DUE TO THE INSERTION OR REMOVAL OF AN IRRADIATION SAMPLE WITH REGARD TO THE REACTOR CORE, THE SAFETY SHUT-DOWN CANNOT BE ACTUATED. A RELAY DEVICE IS PROVIDED IN THE OVERALL CONTROL MECHANISM WHICH OPERATES DURING THE INSERTION OF A SAFETY CONTROL ROD FOR THIS PERIOD OF TIME.

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-28741 *CONTINUED*
AVAILABILITY - FOREIGN PATENTS MAY BE OBTAINED IN PHOTOCOPY FROM THE U.S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D.C. (\$0.30 CENTS/PAGE)

*REACTIVITY EFFECT + *REACTOR CONTROL + CONTROL ROD INTERACTION + INSTRUMENT, RELAY + JAPAN + PATENT + SAFETY MARGIN

9-28743
AZUMA M
METHOD FOR CONTROLLING A NUCLEAR REACTOR
HITACHI LTD.
JAPANESE PATENT 1966-12157 +. JULY 5, 1966

THE REACTOR-CONTROL METHOD PROPOSED IS FOR REGULATING THE REACTIVITY AS THE FUEL IS BURNED. SURROUNDING THE REACTOR ARE PLACED NEUTRON REFLECTORS, AND INSIDE AND ALONG EACH REFLECTOR RUNS A PASSAGE OUTWARD FROM THE CORE. THROUGH THIS PASSAGE A NEUTRON-ABSORBING PLATE IS MOVED AS REQUIRED FOR PURPOSES OF REACTIVITY REGULATION.

AVAILABILITY - FOREIGN PATENTS MAY BE OBTAINED IN PHOTOCOPY FROM THE U.S. PATENT OFFICE, DEPT. OF COMMERCE, WASH., D.C., 30 CENTS/PAGE

*FUEL BURNUP + *REACTOR CONTROL + CORE COMPONENTS + JAPAN + NEUTRON + PATENT + REACTIVITY EFFECT

9-28744
MASUDA Y
REACTOR CONTROL-ROD DRIVE
TOKYO SHIBAURA ELECTRIC CO., LTD.
JAPANESE PATENT 1966-12160 +. JULY 5, 1966

USING THE CONTROL-ROD DRIVE PROPOSED, BOTH THE FINE AND RAPID MOVEMENTS OF A CONTROL ROD CAN BE DONE SMOOTHLY AND DEFINITELY, AND THE RAPID MOVEMENT CAN BE STOPPED AT A SPECIFIED POSITION WHEREVER THE MOVEMENT IS STARTED.

AVAILABILITY - FOREIGN PATENTS MAY BE OBTAINED IN PHOTOCOPY FROM THE U.S. PATENT OFFICE, DEPT. OF COMMERCE, WASH., D.C., 30 CENTS/PAGE

*CONTROL ROD DRIVE + EQUIPMENT DESIGN + JAPAN + PATENT

9-28745
HAMADA K
DEVICE FOR PREVENTING THE QUAKING OF A REACTOR CORE
HITACHI LTD.
JAPANESE PATENT 1966-24480 +. DEC. 13, 1966

BY THE PROPOSED METHOD, THE VERTICAL AS WELL AS HORIZONTAL QUAKING OF A REACTOR CORE CAN BE PREVENTED.

AVAILABILITY - FOREIGN PATENTS MAY BE OBTAINED IN PHOTOCOPY FROM THE U.S. PATENT OFFICE, DEPT. OF COMMERCE, WASH., D.C., 30 CENTS/PAGE

*CORE COMPONENTS + *EQUIPMENT DESIGN + *SHOCK ABSORBER + COMPONENTS, MISCELLANEOUS + JAPAN + PATENT + VIBRATION

9-28746 ALSO IN CATEGORY 12
TAGAMI T
DEVICE FOR PREVENTING A NUCLEAR-REACTOR HAZARD
HITACHI LTD.
JAPANESE PATENT 1967-79 +. JAN. 6, 1967

THE DEVICE PROPOSED IS USED FOR SPRAYING WATER AND THUS REDUCING THE INTERNAL PRESSURE WHEN A PRIMARY COOLANT PIPE RUPTURES IN THE REACTOR CONTAINMENT VESSEL. THE ADVANTAGES OF THE METHOD ARE THE ELIMINATION OF A POWER SOURCE FOR THE SPRAY, THE DIRECT AND AUTOMATIC SPRAYING, AND THE POSITIVE INSTANTANEOUS LOWERING OF THE INTERNAL PRESSURE.

AVAILABILITY - FOREIGN PATENTS MAY BE OBTAINED IN PHOTOCOPY FROM THE U.S. PATENT OFFICE, DEPT. OF COMMERCE, WASH., D.C., 30 CENTS/PAGE

*CORE SPRAY + *INSTRUMENT, CONTROL + COMPONENTS, MISCELLANEOUS + HYDRAULIC EFFECT + JAPAN + PATENT

9-28747
NAKAMURA S
STRUCTURE FOR SUPPORTING REACTOR CONTROL ELEMENTS
HITACHI LTD.
JAPANESE PATENT 1966-14879 +. JULY 11, 1966

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-28747 *CONTINUED*

THE CONTROL-ELEMENT SUPPORTING STRUCTURE PROPOSED IS USED FOR A HOLLOW REACTOR CONTROL-ROD. THE CONTROL ELEMENTS ARE OBTAINED BY FILLING THE POWDER OF A NEUTRON ABSORBING MATERIAL INTO A TUBULAR BODY. THE SUPPORTS FOR THE CONTROL ELEMENTS ARE FIXED ON THE OUTSIDE SURFACE OF THE UPPER AND LOWER ENDS OF THE INNER WALL (OF A HOLLOW-CONTROL ROD). IN THIS WAY OF CONSTRUCTING A HOLLOW CONTROL-ROD, THE FUEL ELEMENTS CAN BE FREELY INSERTED OR REMOVED, AS REQUIRED.

AVAILABILITY - FOREIGN PATENTS MAY BE OBTAINED IN PHOTOCOPY FROM THE U.S. PATENT OFFICE, DEPT. OF COMMERCE, WASH., D.C., 30 CENTS/PAGE

*CONTROL ROD FABRICATION + CONTROL ROD + EQUIPMENT DESIGN + FUEL HANDLING + JAPAN + PATENT + REACTOR CONTROL

9-28749

MCKEE JM + CAPLINGER WH + KOLODNEY M
CONTINUOUS CARBON METER FOR SODIUM SYSTEMS
UNITED NUCLEAR CORPORATION
NUCLEAR APPLICATIONS VO. 5, P. 236, OCTOBER 1968

A DIFFUSION-CELL TYPE OF CARBON METER IS USEFUL FOR CONTINUOUS MEASUREMENT OF THE CARBURIZING POTENTIAL OF LIQUID SODIUM. THE IRON SENSING ELEMENT IS SMALL AND LONG LIVED AND RESPONDS RAPIDLY TO CHANGES IN CARBURIZING POTENTIAL. MEASURED CARBON FLUXES THROUGH THE IRON PROBE WALL RANGED FROM 0.007 TO 1.7 MICROGRAMS/SQ.CM-MIN IN RESPONSE TO CARBURIZING ADDITIVES TO THE SODIUM. STAINLESS-STEEL TABS IN THE SODIUM CARBURIZED AT A RATE THAT VARIED FROM NEGLIGIBLE TO RAPID OVER THIS RANGE. CARBON MONOXIDE AND UNSTABLE CARBIDES PRODUCED A HIGH CARBON ACTIVITY IN THE SODIUM, WHEREAS ELEMENTAL CARBON IN THE ABSENCE OF OXYGEN HAD LITTLE EFFECT.

*CARBON + *DIFFUSION + *INSTRUMENT, GENERAL + DAMAGE + EQUIPMENT DESIGN + METAL + METAL, ALKALI + SODIUM + TEST, INSTRUMENT RESPONSE

9-28753

ALSO IN CATEGORIES 14 AND 15

ZIER M

ON THE DENSITY OF MEASURING GRIDS FOR THE CONTROL OF ATMOSPHERIC RADIOACTIVITY
3 PAGES, 1 FIGURE, 6 REFERENCES, KERNENERGIE, 11, PAGE 57-9, (FEB. 1968), (IN GERMAN)

THE RELATIONSHIP BETWEEN VARIATIONS OF FISSION PRODUCT ACTIVITY OF THE NEAR-GROUND LAYER OF ATMOSPHERE OF MEASURING STATIONS DIFFERENTLY SPACED TO EACH OTHER WAS STUDIED BY MEANS OF THE SIMPLE LINEAR CORRELATION ON THE BASIS OF LONG-TIME MEASUREMENTS. THE TERRITORIAL REPRESENTATIVITY OF THE VALUES MEASURED IS CONCLUDED FROM THE MEASURE OF DETERMINANCY B AS A FUNCTION OF THE DISTANCE BETWEEN THE MEASURING STATIONS UNDER CONSIDERATION, OF SEASON, AND OF THE PRESENCE OF FRESH FISSION PRODUCTS. IT IS FOUND THAT THE MEASURED VALUES ARE MORE REPRESENTATIVE IN SUMMER AND IN THE ABSENCE OF FRESH FISSION PRODUCTS THAN IN WINTER AND IN THEIR PRESENCE.

*DOSIMETRY, GENERAL + *INSTRUMENT, RADIATION MONITORING + AIR + ENVIRONMENTAL CONDITION + FALLOUT + FISSION PRODUCT, AIRBORNE

9-28754

WOOD PJ + ROBERTS DJ

TEST OF MSRE ROD CONTROL SYSTEM UNDER SIMULATED 233-U FUEL LOADING CONDITIONS
MASSACHUSETTS INSTITUTE OF TECHNOLOGY, SCHOOL OF CHEMICAL ENGINEERING PRACTICE, OAK RIDGE STATION
ORNL-MIT-45 +. 39 PAGES, 18 FIGURES, 2 TABLES, 10 REFERENCES, MARCH 1, 1968

THE STABILITY OF THE EXISTING ROD-CONTROL SYSTEM ON THE MOLTEN SALT REACTOR EXPERIMENT WAS TESTED UNDER CONDITIONS SIMULATING OPERATION WITH U-233 FUEL. THE PRESENT CONTROL SYSTEM, DESIGNED FOR U-235 FUELING, WAS MODIFIED TO SIMULATE U-233 FUELING. THE DYNAMIC DIFFERENCES WERE CALCULATED USING A FREQUENCY RESPONSE ANALYSIS OF THE NEUTRON KINETICS EQUATIONS. AN ANALOG COMPUTER WAS USED TO DETERMINE THE VALIDITY OF THE SIMULATION. THE ANALOG ANALYSIS SHOWED THAT THE SIMULATION WAS VALID, AND THE ACTUAL REACTOR TESTS SHOWED THAT, WHEN THE REACTOR WAS AT FULL POWER, THE PRESENT CONTROL SYSTEM WOULD BE STABLE WITH U-233 IN THE CORE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA
22151, \$3.00 COPY, \$0.65 MICROFICHE

ANALOG SIMULATION + COMPARISON, THEORY AND EXPERIENCE + CONTROL ROD + CONTROLLER + INSTABILITY + MSRE (RE) + ORNL + REACTOR CONTROL + REACTOR, RESEARCH + SIMULATION + TEST, INSTRUMENT RESPONSE + TEST, SYSTEM OPERABILITY + TRANSFER FUNCTION

9-28770

ALSO IN CATEGORY 17

HUBBARD ET

GETR POISON INJECTION HAMPERED BY AIR BINDING

GENERAL ELECTRIC CO., VALLECITOS ATOMIC LAB., PLEASANTON, CALIF.

1 PAGE, ATOMIC ENERGY CLEARINGHOUSE, 14(41), PAGE 19, (OCT. 7, 1968), DOCKET 50-70, TYPE--TR, MFG--G.E., AE--G.E.

(LETTER, SEPT. 24) DURING THE ANNUAL TEST OF THE LIQUID POISON SYSTEM AT THE GE TEST REACTOR,

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-28770 *CONTINUED*

SEPT. 18, 1968, THE PUMPING RATE WAS 50% OF THE DESIGN VALUE. AIR HAD COLLECTED IN AN ELEVATED SECTION BETWEEN STORAGE TANK AND PUMP, CAUSING PARTIAL AIR BINDING. PIPING CHANGE GAVE A SATISFACTORY TEST. TEST WILL BE REPEATED NEXT OUTAGE AND IN 6 MONTHS.

*FAILURE, DESIGN ERROR + *FLOW BLOCKAGE + *SHUTDOWN SYSTEM, SECONDARY + AIR + GETR (TR) + LEAK + PIPING + REACTOR, POWER + REACTOR, TEST

9-28771 ALSO IN CATEGORY 17
GOULD WR

SAN ONOFRE CONTROL ROD POSITION INDICATOR FAILURE
SOUTHERN CALIFORNIA EDISON CO., LOS ANGELES, CALIF.
2 PAGES, ATOMIC ENERGY CLEARINGHOUSE, 14(41), PAGE 20 AND 21, (OCT. 7, 1968), DOCKET 50-206, TYPE--PWR, MFG--WEST., AE--BECHTEL

(LETTER, SEPT. 25) FOLLOWING A CABLE-TRAY-FIRE OUTAGE, CONTROL ROD F-10 POSITION INDICATOR READ ERRATICALLY ON FEB. 19, 1968. ON FEB. 20, THE RESISTANCE BETWEEN PM/SEC WINDING ON THE LVD TRANSFORMER INDICATED A SHORT. SUBSEQUENT IN-CORE THERMOCOUPLE MAPS WERE IMPROPERLY ANALYZED, AND IT WAS CONCLUDED THE ROD WAS OUT IN THE CORRECT POSITION. ON MARCH 8, WESTINGHOUSE COMPUTER ANALYSIS INDICATED F-10 WAS BOTTOMED IN THE CORE. POLARITY OF F-10 MOVABLE GRIPPER COILS HAD BEEN CHANGED. OUT OF CORE FLUX READINGS WILL BE PROMPTLY COMPARED BY OPERATORS, IN-CORE THERMOCOUPLE DATA PLOTTED PERIODICALLY, TESTING OF POLARITY WHERE PENETRATIONS EFFECTED, INCIDENT REVIEWED FOR TRAINING.

*CONTROL ROD DRIVE + *INSTRUMENT, ABNORMAL INDICATION + *INSTRUMENT, POSITION + COMPUTER CONTROL + FAILURE, EQUIPMENT + FAILURE, MAINTENANCE ERROR + INSTRUMENT, IN CORE + REACTIVITY EFFECT, ANOMALOUS + REACTOR, PWR + SAN ONOFRE (PWR) + TRAINING

9-28772 ALSO IN CATEGORY 17
COX EL

AUTOMATIC ROD RUN-IN FAILS AFTER SCRAM TEST
UNIVERSITY OF MISSOURI, RESEARCH REACTOR FACILITY, COLUMBIA, MO.
1 PAGE, ATOMIC ENERGY CLEARINGHOUSE, 14(41), PAGE 21, (OCT. 7, 1968), DOCKET 50-186

(LETTER, SEPT. 25) DURING A ROUTINE CHECKOUT OF THE U OF MISSOURI (COLUMBIA) REACTOR, THE AUTOMATIC ROD RUN-IN ON ROD A DID NOT FUNCTION FOLLOWING A SCRAM TEST FROM 2 IN. A RELAY WAS FOUND INOPERABLE. THIS IS THE FIRST TIME IN THE TWO-YEAR HISTORY THIS HAS HAPPENED, AND IT WAS FOUND ON THE PREOPERATIONAL CHECKOUT. MALFUNCTION OF THE RELAY WHEN THE REACTOR IS CRITICAL DOES NOT AFFECT SAFETY CIRCUIT OPERATION.

FAILURE, COMPONENT + FAILURE, SCRAM MECHANISM + INSTRUMENT, RELAY + REACTOR, FLUX TRAP + REACTOR, RESEARCH + UMRR (RR)

9-28773
TAKAHASHI J
MAGNETIC JACK FOR THE DRIVE OF A REACTOR CONTROL ROD
JAPANESE PATENT 1967-8119 +. APRIL 3, 1967

BY THE METHOD PROPOSED, A HEAVY REACTOR CONTROL ROD CAN BE DRIVEN EASILY WITH SIMPLE CONSTRUCTION. THE RADIAL DIMENSION CAN BE REDUCED IN COMPARISON WITH THE ORDINARY MAGNETIC JACKS. A SPRING IS USED BETWEEN THE MEMBER, WHICH MOVES WITH THE (CONTROL ROD) DRIVE-ROD AND ANOTHER MEMBER WHICH IS FIXED. WHEN THE DRIVE ROD, AND HENCE THE MOVING MEMBER, MOVES UPWARD, THIS SPRING ACTS SO AS TO AID THE UPWARD MOVEMENT.

AVAILABILITY - U.S. PATENT OFFICE, DEPT. OF COMMERCE, WASHINGTON, D. C., \$0.20 PER COPY

*CONTROL ROD DRIVE + JAPAN + PATENT

9-28774
BERTHOD L
APPARATUS FOR DETECTING BREAKS IN THE FUEL CELL SHEATHS OF ATOMIC REACTORS
SOCIETE GRENOBLOIS D ETUDES ET APPLICATIONS HYDRAULIQUES SOGREATH
CANADIAN PATENT 769,153 +. OCTOBER 10, 1967

A SCRUBBING GAS SUCH AS HE IS INTRODUCED INTO THE LIQUID COOLANT AT THE TOP OF THE CHANNEL AFTER THE COOLANT HAS PASSED OVER THE FUEL ROD OR SLUGS. ASSUMING THAT THE COOLANT ENTERS AT THE BOTTOM OF THE NUCLEAR REACTOR AND IS REMOVED AT THE TOP, RADIO-ACTIVE FISSION PRODUCTS WILL BE ENTRAINED BY THE GAS IF THERE IS A BREAK IN THE FUEL SHEATH. SEPARATION OF GAS FROM THE LIQUID BY A DEGASIFIER IN THE UPPER PART OF THE FUEL CHANNEL ALLOWS THE DETECTION OF ACTIVITY, IF ANY, IN A STANDARD RADIATION METER.

AVAILABILITY - U.S. PATENT OFFICE, DEPT. OF COMMERCE, WASHINGTON, D. C., \$0.20 PER COPY

*INSTRUMENT, DETECTION FAILED FUEL ELEMENT + CANADA + FAILURE, CLADDING + PATENT

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-28775
MALAVAL C + MAUDINET L
NUCLEAR REACTOR SAFETY SYSTEM
COMMISSARIAT A L'ENERGIE ATOMIQUE
BRITISH PATENT 1,099,747 +. JANUARY 17, 1968

A SAFETY SYSTEM THAT PROVIDES FOR THE RAPID INSERTION OF A NEUTRON-ABSORBENT ROD INTO A VERTICAL CHANNEL TUBE IN THE CORE OF THE REACTOR IS DESCRIBED FOR USE WITH A LIQUID-COOLED AND MODERATED REACTOR. WHEN THE CHANNEL TUBE IS IN PLACE IN THE REACTOR, THE BOTTOM PART IS OCCUPIED BY THE LIQUID MODERATOR. A SHOCK-ABSORPTION SYSTEM IS LOCATED IN THE BOTTOM PART OF THE TUBE TO EXERT A HYDRAULIC BRAKING EFFECT AND A MECHANICAL DEFORMATION BRAKING EFFECT ON THE ROD AT THE END OF ITS FALL.

AVAILABILITY - THE PATENT OFFICE, 25 SOUTHAMPTON BUILDING, LONDON, W.C. 2, ENGLAND, \$0.49 PER COPY

*REACTOR SAFETY SYSTEM + CONTROL ROD + PATENT + SHOCK ABSORBER + UNITED KINGDOM

9-28776
DUNCOMBE E + HURLEY FI
IMPROVEMENTS IN THE CONTROL OF NUCLEAR REACTORS
UNITED KINGDOM ATOMIC ENERGY AUTHORITY
BRITISH PATENT 1,098,299 +. JANUARY 10, 1968

A CONTROL UNIT FOR A NUCLEAR REACTOR INCLUDES A U-TUBE HAVING VERTICAL LIMBS AND CONTAINING A FLEXIBLE ASSEMBLY MOVABLE THROUGH A PART OF THE U-TUBE POSITIONED IN THE CORE OF THE REACTOR. THE FLEXIBLE ASSEMBLY IS MADE UP OF A SEQUENCE OF NEUTRON ABSORBING UNITS FOLLOWED BY A SEQUENCE OF UNITS OF LOW NEUTRON CAPTURE CROSS SECTION MATERIAL. THE FLEXIBLE ASSEMBLY CAN BE MOVED OR RETAINED IN POSITION BY A PRESSURE DIFFERENTIAL REGULATION ACROSS THE U-TUBE IN SUCH A MANNER THAT ESSENTIALLY THE GREATER THE DIFFERENTIAL THE SMALLER THE NUMBER OF NEUTRON ABSORBER UNITS SITUATED IN THE CORE.

AVAILABILITY - THE PATENT OFFICE, 25 SOUTHAMPTON BUILDING, LONDON, W. C. 2, ENGLAND, \$0.49 PER COPY

*INSTRUMENT, CONTROL + INSTRUMENT, COMPONENT + INSTRUMENT, IN CORE + PATENT + UNITED KINGDOM

9-28777
PROTECTIVE DEVICE FOR PRESSURE GAUGES MEASURING THE PRESSURE OF RADIOACTIVE FLUIDS
BROWN BOVERI/KRUPP REAKTORBAU GMBH
BRITISH PATENT 1,098,915 +. JANUARY 10, 1968

A PROTECTIVE DEVICE FOR A PRESSURE GAGE FOR MEASURING THE PRESSURE OF RADIOACTIVE FLUIDS CONSISTS OF A TIME DELAY PIPE THROUGH WHICH THE PRESSURE GAGE IS CONNECTED TO THE MEASURING CHAMBER. THE PIPE IS OF A CROSS SECTION AND LENGTH CALCULATED TO ENSURE THAT THE RADIOACTIVITY OF THE FLUID ISSUING FROM THE OUTLET END OF THE DELAY PIPE IS WITHIN THE PERMISSIBLE RADIATION LEVEL FOR THE GAGE. THE DELAY PIPE MAY HAVE THE FORM OF A COIL, A STACK OF SERIALY CONNECTED SPIRAL PIPE LAYERS, OR A STACK OF SERIALY CONNECTED HELICAL COILS. THE PRESSURE GAGE IS SO LOCATED IN RELATION TO THE DELAY PIPE THAT IT IS SITUATED OUTSIDE THE LAST PIPE HELIX OR SPIRAL AND IS THUS SHIELDED BY THE DELAY PIPE.

AVAILABILITY - THE PATENT OFFICE, 25 SOUTHAMPTON BUILDING, LONDON, W. C. 2, ENGLAND, \$0.49 PER COPY

*INSTRUMENT, PRESSURE + INSTRUMENT, COMPONENT + PATENT + UNITED KINGDOM

9-28778
AZUIMA M
METHOD FOR REACTOR START-UP
HITACHI LTD.
JAPANESE PATENT 1966-14558 +. AUGUST 16, 1966

REACTOR STARTUP IS CONTROLLED BY MEANS OF AN ELECTRONIC COMPUTER, WHICH IS BOTH SAFE AND RAPID. IT IS PARTICULARLY SUITABLE FOR LARGE POWER REACTORS WITH MANY CONTROL RODS. EACH CYLINDRICAL CONTROL-ROD HAS A HOLLOW SECTION AXIALLY WHERE THE NEUTRON FLUX IS LOW WHEN INSERTED IN THE REACTOR CORE. AT THE TOP END OF THIS HOLLOW SPACE IS INSTALLED A NEUTRON DETECTOR, WHICH GIVES A SIGNAL CORRESPONDENT TO THE DETECTED NEUTRON FLUX. ALL THE CONTROL RODS ARE WITHDRAWN AT THE SAME SPEED. WITH THE DEFINITE CONDITION THAT THE CONTROL ROD IN THE HIGHEST NEUTRON-FLUX REGION IS WITHDRAWN OVER ITS WHOLE LENGTH AT THE CRITICALITY, ALL OTHER CONTROL RODS ARE PULLED OUTWARDS GRADUALLY FOR THE REACTOR STARTUP.

AVAILABILITY - U.S. PATENT OFFICE, DEPT. OF COMMERCE, WASHINGTON, D. C., \$0.30 PER COPY

*COMPUTER CONTROL + *INSTRUMENT, STARTUP + *REACTOR CONTROL + JAPAN + PATENT + REACTOR, POWER

9-28779
HORIBE O

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-28779 *CONTINUED*
METHOD FOR CONTROLLING A NUCLEAR REACTOR
KAWASAKI DOCKYARD CO., LTD.
JAPANESE PATENT 1967-7752 +. MARCH 29, 1967

THE METHOD PROPOSED IS USED FOR A HEAVY-WATER MODERATED REACTOR. THE ADVANTAGES OF THE METHOD ARE - A FLATTENING OF A NEUTRON-FLUX DISTRIBUTION, ELIMINATION OF A SHIM CONTROL ROD, AN INCREASED NEUTRON ECONOMY, AND STABLE REACTOR CONTROL. IT CONSISTS OF AN INNER HEAVY-WATER TANK AND AN OUTER HEAVY-WATER TANK (WHICH SURROUNDS THE INNER ONE). BOTH TANKS ARE DIVIDED IN THE VERTICAL DIRECTION INTO A PLURALITY OF SECTIONS. THE HEAVY-WATER LEVEL IN EACH SECTION CAN BE ADJUSTED INDEPENDENTLY OF OTHER SECTIONS.

AVAILABILITY - U.S. PATENT OFFICE, DEPT. OF COMMERCE, WASHINGTON, D. C., \$0.30 PER COPY

*REACTOR CONTROL + *REACTOR, HWR + JAPAN + PATENT

9-28780
HAYASHI T
METHOD FOR CONTROLLING THE OUTPUT OF A NUCLEAR REACTOR
HITACHI LTD.
JAPANESE PATENT 1967-12015, JULY 8, 1967

THE OUTPUT OF THE BOILING WATER REACTOR CAN BE CONTROLLED IN ACCORDANCE WITH THE VARIATION IN LOAD OF THE TURBINE SYSTEM WITHOUT MOVING THE REACTOR CONTROL RODS OVER A FAIRLY LARGE RANGE OF LOAD VARIATIONS. PART OF THE FEED (OR RECIRCULATING) WATER FROM THE TURBINE IS EVAPORATED BY MEANS OF PART OF THE SUPERHEATED STEAM FROM THE SUPERHEATING REACTOR. THE AMOUNT OF VAPOR PRODUCED, WHICH IS FED INTO THE BOILING-WATER REACTOR FOR CONTROL PURPOSES, IS CHANGED ACCORDING AS THE LOAD OF THE TURBINE SYSTEM IS VARIED.

AVAILABILITY - U.S. PATENT OFFICE, DEPT. OF COMMERCE, WASHINGTON, D. C.

*REACTOR CONTROL + *REACTOR, BWR + JAPAN + PATENT

9-28781
CKI S
METHOD FOR CONTROLLING THE OUTPUT OF A NUCLEAR REACTOR
HITACHI LTD.
JAPANESE PATENT 1967-12014, JULY 8, 1967

THE METHOD PROPOSED IS APPLICABLE FOR THE TYPE OF REACTOR IN WHICH THE (NUCLEAR) STEAM-SUPERHEATING IS INCORPORATED IN THE REACTOR ITSELF. THE OUTPUT OF THE REACTOR CAN BE CHANGED IN ACCORDANCE WITH RAPID VARIATIONS IN LOAD OF THE TURBINE SYSTEM WITHOUT USING THE CONTROL RODS. HIGH-PRESSURE STEAM IS PRODUCED BY HEATING (PRESSURIZED) PART OF THE FEED (OR RECIRCULATING) WATER FROM THE TURBINE WITH PART OF THE SUPERHEATED STEAM TO THE TURBINE. THIS STEAM IS FED INTO THE BOILING REACTOR-CORE AND ITS AMOUNT IS CHANGED ACCORDING AS THE TURBINE LOAD IS VARIED FOR REACTOR CONTROL.

AVAILABILITY - U.S. PATENT OFFICE, DEPT. OF COMMERCE, WASHINGTON, D. C. (\$0.20 CENTS/PAGE)

*REACTOR CONTROL + *REACTOR, BWR + HIGH TEMPERATURE + JAPAN + PATENT + STEAM

9-28782 ALSO IN CATEGORY 6
KOEHLER B
STUDIES ON THE EVALUATION ERRORS IN ROD-DROP EXPERIMENTS
VEB KERNKRAFTWERKSBAU, BERLIN
6 PAGES, KERNENERGIE 10, PAGES 331-6 (NOVEMBER 1967)

IN POWER REACTORS THE VARIATION OF SPATIAL NEUTRON FLUX DISTRIBUTION USUALLY NEGLECTED IN ROD-DROP EXPERIMENTS SHOWS ESSENTIAL INFLUENCE ON THE RESULT OF MEASUREMENTS. AS AN EXAMPLE, THIS INFLUENCE IS STUDIED BY EXPANSION IN EIGENFUNCTIONS AS WELL AS BY UTILIZING SPACE-TIME SYNTHESIS. AN EXPRESSION IS DERIVED FOR CORRECTING THE MEASURED VALUES SO THAT USEFUL RESULTS OF THE REACTIVITY OF THE CONTROL RODS CAN BE OBTAINED.

*CONTROL ROD INTERACTION + *THEORETICAL INVESTIGATION + FLUX DISTRIBUTION + MATHEMATICAL TREATMENT + NEUTRON + REACTOR, POWER

9-28783
NIKOLOFF K
ON THE GAMMA-RAY SPECTROMETRIC CONTROL OF RADIOISOTOPIC COMPOSITION OF WATER IN THE PRIMARY COOLANT CIRCUIT OF THE SOFIA REACTOR IRT-1000
UNIVERSITY OF SOFIA
4 PAGES, KERNENERGIE, 10, PAGES 309-12 (OCTOBER 1967)

RELATIVE MERITS OF KEEPING RADIATION HISTORIES ON ISOTOPIC CONTENT OF PRIMARY COOLING WATER ARE DISCUSSED. STUDIES ON THE IRT-1000, SOFIA, ARE DESCRIBED. USE OF GAMMA SPECTROMETRIC METHODS FOR QUALITY CONTROL IS DISCUSSED. SOME EXPERIMENTALLY DETERMINED GAMMA SPECTRA ARE SHOWN.

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-28783 *CONTINUED*

*DATA PROCESSING + *SPECTROMETRY, GAMMA + COMPARISON, THEORY AND EXPERIENCE + COOLANT QUALITY + GERMANY + INSTRUMENT, RADIATION MONITORING + OPERATING EXPERIENCE + QUALITY CONTROL + REACTOR, BWR

9-28784

RECOMMENDED FIRE PROTECTION PRACTICE FOR NUCLEAR REACTORS
71 PAGES, NAT. FIRE CODES, 9, PAGES 802.1-71 (1967-68)

PRESENTS GUIDANCE ON PRACTICES NECESSARY FOR FIRE AND EXPLOSION PROTECTION IN REACTOR FACILITIES. GENERAL INFORMATION ON REACTOR OPERATING PRINCIPLES AND POTENTIAL HAZARDS IS DISCUSSED, AND ORGANIZATION AND PLANNING PROCEDURES ARE RECOMMENDED FOR FIRE PROTECTION OF SPECIFIC REACTOR TYPES. THE DESIGN, CONSTRUCTION, AND PHYSICS OF REACTORS ARE BRIEFLY REVIEWED.

*PLANT PROTECTIVE SYSTEM + *PROCEDURES AND MANUALS + CODES AND STANDARDS + EXPLOSION + FIRE

9-28785

WINDERS GR + LITT KC + DOSSETT JS
NUCLEAR CONTROL ROD ACTUATOR
BABCOCK AND WILCOX CO.
U.S. PATENT 3,364,120, JANUARY 24, 1966

DESCRIBES A CONTROL ROD ACTUATOR FOR A CONTROL ROD OF CONSTANT DIAMETER. THE ACTUATOR SYSTEM CONSISTS OF A CONTROL ROD, AN ELONGATED CYLINDER CONTAINING THE CONTROL ROD, A FLUID-ACTUATED PISTON WITH TWO-POSITION MOVEMENT, AND A COUPLING SYSTEM TO CONNECT THE CONTROL ROD WITH THE CYLINDER. THE COUPLING SYSTEM IS ARRANGED SO THAT IN THE FIRST MOVEMENT OF THE PISTON BOTH THE CONTROL ROD AND THE CYLINDER ARE ENGAGED IN THE MOVEMENT. IN THE SECOND MOVEMENT OF THE PISTON ONLY THE CYLINDER IS IN MOTION AND THE CONTROL ROD REMAINS STATIONARY.

AVAILABILITY - U.S. PATENT OFFICE, DEPT. OF COMMERCE, WASHINGTON, D. C. (\$0.25 CENTS/PAGE)

*CONTROL ROD DRIVE + PATENT + UNITED STATES

9-28786

SASKI M
DRIVE FOR A REACTOR CONTROL ROD
HITACHI LTD.
JAPANESE PATENT 1966-16360, SEPTEMBER 14, 1966

THE PROPOSED DRIVE FOR A REACTOR CONTROL ROD HAS THE FOLLOWING ADVANTAGES - EASY SWITCHING OF A SINGLE CONTROL ROD FROM THE SHIM-SAFETY CONTROL TO THE REGULATING CONTROL AND VICE VERSA, SETTING OF REGULATING CONTROL ON THE SINGLE (SHIM-SAFETY) CONTROL ROD OVER THE WHOLE LENGTH AND FOR ANY GIVEN LENGTH, AND SAFE AND DEFINITE STOPPING OF A CONTROL ROD FOR BOTH TYPES OF REACTOR CONTROL BY A MECHANICAL MEANS, EVEN WHEN A FAILURE OCCURS IN THE ELECTRICAL SYSTEM.

AVAILABILITY - U.S. PATENT OFFICE, DEPT. OF COMMERCE, WASHINGTON, D. C. (\$0.30 CENTS/PAGE)

*CONTROL ROD DRIVE + CONTROL ROD, SHIM SAFETY + JAPAN + PATENT

9-28787

AUSTRALIAN HIGH ACTIVITY HANDLING CELLS
2 PAGES, NUCL. ENG. 13, PAGES 125-6 (FEBRUARY 1968)

DESCRIBES A BLOCK OF 4 IN-LINE INTERCONNECTED CELLS, EACH CAPABLE OF HANDLING 100,000 MEV CI GAMMA RADIATION. EXAMPLES ARE GIVEN OF THE WIDE VARIETY OF WORK FOR WHICH THESE CELLS ARE EXPECTED TO BE USED.

*INSTRUMENT, RADIATION MONITORING + AUSTRALIA + CHAMBER, GAMMA + OPERATION

9-28780

AKIMOTO S
STOPPER MECHANISM FOR A REACTOR CONTROL
HITACHI LTD.
JAPANESE PATENT 1966-21280, DECEMBER 12, 1966

THE STOPPER MECHANISM PROPOSED IS USED TO PREVENT A CONTROL ROD FROM BEING PULLED OUT BEYOND ITS GIVEN POINT. SIGNALS CAN BE GIVEN FOR INDICATING THE SET POSITION AND FOR ASCERTAINING THE LOCK COMPLETION, AND ALSO THE MOTOR FOR MOVING THE CONTROL ROD CAN BE CONTROLLED AUTOMATICALLY WITH A DEFINITE INDICATION OF THE MOVEMENT.

AVAILABILITY - U.S. PATENT OFFICE, DEPT. OF COMMERCE, WASHINGTON, D. C. (\$0.30 CENTS/PAGE)

*CONTROL ROD + *INSTRUMENT, POSITION + JAPAN + PATENT + SHOCK ABSORBER

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-28790
AQKI N
SAFETY DEVICE FOR A NUCLEAR REACTOR
HITACHI LTD.
JAPANESE PATENT 1967-9516, MAY 23, 1967

LIQUID POISON AS A BACK-UP REACTOR CONTROL CAN BE INJECTED UNIFORMLY INTO THE CIRCULATING MODERATOR-COOLANT TO SHUT DOWN THE REACTOR AT ANY OPERATING CONDITION. POISON-INJECTION PIPES ARE SET AT MANY POINTS IN THE PATH OF CIRCULATING MODERATOR-COOLANT TO INJECT IT UNIFORMLY. A CIRCULATION PUMP AND A HEAT EXCHANGER ARE INSTALLED IN THE PATH.

AVAILABILITY - U.S. PATENT, DEPT. OF COMMERCE, WASHINGTON, D. C. (\$0.30 CENTS/PAGE)

*SHUTDOWN SYSTEM, SECONDARY + JAPAN + PATENT + POISON, SOLUBLE

9-28791
YUSA H
VOID DETECTOR IN THE REACTOR CORE
HITACHI LTD.
JAPANESE PATENT 1967-12016, JULY 8, 1967

THE INSERTION OF A SEPARATE VOID-DETECTOR INTO THE REACTOR CORE CAN BE ELIMINATED, AND IMPROVED MEASUREMENTS OF VOID IN BOTH THE NUCLEAR AND THE THERMAL ASPECTS CAN BE ACHIEVED. A NUCLEAR-FUEL ROD WITH A CLADDING OF AN (ELECTRICALLY) CONDUCTING MATERIAL IS FILLED WITH A HEAT-RESISTANT, INSULATING MATERIAL. THROUGH THIS MATERIAL ALONG THE CENTRAL AXIS RUNS A CORE WIRE. THE END OF THIS WIRE PROTRUDES OUT OF THE CLADDING, AND ON TOP OF THIS END IS ATTACHED A POINT ELECTRODE. AN INSULATION IS PROVIDED BETWEEN THE ELECTRODE AND THE ROD CLADDING.

AVAILABILITY - FOREIGN PATENTS MAY BE OBTAINED TO PHOTOCOPY FROM THE U.S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D. C. (\$0.30 CENTS/PAGE)

*INSTRUMENT, IN CORE + *VOID FRACTION + FLOW, TWO PHASE + INSTRUMENT, COMPONENT + JAPAN + PATENT

9-28792
SASAKI M
PLUG FOR SEALING A PRESSURE TUBE
HITACHI LTD.
JAPANESE PATENT 1966-17796, OCTOBER 11, 1966

THE REQUIREMENTS FOR THE PLUG ARE USUALLY WITHSTANDING THE INTERNAL PRESSURE AND TEMPERATURE, PREVENTION OF THE COOLANT LEAKAGE, AND EASY HANDLING OF THE PLUG IN CONNECTION WITH THE FUEL EXCHANGE. THE PROPOSED PLUG SATISFIES THESE REQUIREMENTS. THE PRESSURE TUBE CONTAINS FUEL ELEMENTS, SHIELDING PLUGS, ORIFICE PLUGS AND THE ENTRANCE AND EXIT FOR COOLANT. COOLANT FLOWS THROUGH THE SPACE BETWEEN THE TUBE WALL AND THE INSERTIONS. THE PLUG SEALS THE TUBE AT ITS ENDS.

AVAILABILITY - FOREIGN PATENTS MAY BE OBTAINED IN PHOTOCOPY FROM THE U.S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D. C. (\$0.30 CENTS/PAGE)

*INSTRUMENT, COMPONENT + *INSTRUMENT, PRESSURE + JAPAN + PATENT + VALVE

9-28813
STRINDEHAG O
FAILED ELEMENT DETECTION SYSTEMS
AKTIEBOLAGET ATOMENERGI, STOCKHOLM
2 PAGES, NUCL. ENG. 13, PAGES 117-8 (FEBRUARY 1968)

FAILED-ELEMENT DETECTION SYSTEMS, DEVELOPED FOR SWEDISH REACTORS AND TEST LOOPS, ARE DESCRIBED. ONE SYSTEM UTILIZED A BETA-SENSITIVE FISSION GAS DETECTOR. OTHER SYSTEMS DISCUSSED INCLUDE CHERENKOV DETECTORS AND SCINTILLATION DETECTORS FOR HARD GAMMA RADIATION.

*INSTRUMENT, DETECTION FAILED FUEL ELEMENT + FAILURE, FUEL ELEMENT + INSTRUMENT, RADIATION MONITORING + MONITOR, RADIATION, GAS + SWEDEN

9-28814
SWANICK RH + GRAUPE D
ANALYSIS OF ON-LINE IDENTIFICATION AND CONTROL OF A NUCLEAR REACTOR
UNIVERSITY OF LIVERPOOL
14 PAGES, J. BRIT. NUCL. ENERGY SUPPLY 7, PAGES 100-13 (JANUARY 1968)

AN ON-LINE DIGITAL CONTROL SYSTEM IS PROPOSED FOR A REACTOR SYSTEM. THE DERIVATION OF THE REACTOR MODEL IS GIVEN IN SOME DETAIL AND ITS VALIDITY IS TESTED AGAINST ACTUAL DATA FROM THE UNIVERSITIES RESEARCH REACTOR AT RISLEY, ENGLAND. AFTER BUILDING A SATISFACTORY MODEL OF THE REACTOR, VARIOUS ON-LINE TECHNIQUES ARE INCORPORATED INTO THE PLANT OPERATION. OPTIMIZATION,

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-28814 *CONTINUED*

ESTIMATION OF INACCESSIBLE OUTPUTS, AND AN IDENTIFICATION TECHNIQUE ARE INCLUDED, TOGETHER WITH A SCHEME FOR THEIR PRACTICAL ADOPTION.

*CONTROL SYSTEM + *REACTOR CONTROL + ANALYTICAL MODEL + COMPARISON, THEORY AND EXPERIENCE + COMPUTER, DIGITAL + INSTRUMENT, CONTROL + TEST, ON LINE + UNITED KINGDOM

9-28818 ALSO IN CATEGORY 10

GROOM EJ

BUILDING A NUCLEAR SUBMARINE - SOME PROBLEMS AND THEIR SOLUTIONS

1 PAGE, ENGINEER 224, PAGE 343 (SEPT. 15, 1967)

SOME DESIGN AND CONSTRUCTION FEATURES OF THE NUCLEAR POWER PLANT AND ELECTRICAL EQUIPMENT OF THE 7500-TON (DISPLACEMENT) SUBMARINE H.M.S. RESOLUTION ARE DISCUSSED. THE REQUIREMENT OF UTMOST RELIABILITY IN THE PROPULSION PLANTS IS EMPHASIZED. THE NUCLEAR REACTOR IS EQUIPPED WITH DETAILED CONSTANT MONITORING DEVICES, REMOTELY OPERATED AND OF ASSURED RELIABILITY. IMPENDING TROUBLE CAN BE DEALT WITH BY AUTOMATIC SHUTDOWN DEVICES OPERATING RAPIDLY.

*ELECTRIC POWER, GENERAL + *INSTRUMENT, GENERAL + *REACTOR, MARITIME + DESIGN STUDY + RELIABILITY, COMPONENT + RELIABILITY, SYSTEM + UNITED KINGDOM

9-28819

YAMANOUCHI H

METHOD FOR SHUTTING DOWN A REACTOR

JAPANESE PATENT 1967-12011 +. JULY 9, 1967

AN IMPROVED METHOD IS PROPOSED FOR SHUTTING DOWN A REACTOR WITH POISON GAS. IN THE REACTOR CORE EACH PRESSURIZED PIPE CONTAINING A FUEL ROD IS SURROUNDED WITH THE OUTER TUBE, THE SPACE BETWEEN THE TWO BEING FILLED WITH AN INSULATING GAS, CO₂ FOR EXAMPLE. THESE SPACES AROUND EACH PIPE ARE CONNECTED. FOR SHUTTING DOWN THE REACTOR, A POISON GAS HAVING A LARGE NEUTRON-ABSORPTION CROSS-SECTION REPLACES THE INSULATING GAS IN THE SPACES.

AVAILABILITY - FOREIGN PATENTS MAY BE OBTAINED IN PHOTOCOPY FROM THE U.S. PATENT OFFICE, DEPT. OF COMMERCE, WASHINGTON, D. C. \$0.30 PER COPY

*SHUTDOWN SYSTEM, SECONDARY + JAPAN + PATENT + POISON, FIXED

9-28820

TSUNODA T + GOTOH S + SUZUKI E

FAIL-SAFE REACTOR SYSTEM

NIPPON ATOMIC INDUSTRY GROUP CO. LTD., KAWASAKI / JAPAN

9 PAGES, JOURNAL OF NUCLEAR SCIENCE AND TECHNOLOGY 4, PAGES 614-22 (DEC. 1967)

A HIGHLY RELIABLE SOLID STATE REACTOR SAFETY SYSTEM OPERATED IN DYNAMIC MODE IS DESCRIBED. DIRECT CURRENT SIGNALS FROM DETECTORS FOR REACTOR CONTROL ARE CONVERTED TO PULSE SIGNALS, WHICH ARE CONTINUOUSLY GENERATED BY THE CIRCUIT UNTIL SOME ABNORMAL CONDITION OCCURS. THE DESIGN AND CONSTRUCTION OF SEVERAL KINDS OF LOGIC CIRCUITS USED FOR REACTOR CONTROL ARE EXPLAINED IN DETAIL. THE FAIL-SAFE PROPERTY OF THE CIRCUITS HAS BEEN ASCERTAINED BY TESTS.

*DESIGN STUDY + *REACTOR SAFETY SYSTEM + INSTRUMENT, COMPONENT + INSTRUMENT, CONTROL + INSTRUMENT, PULSE + RELIABILITY ANALYSIS + SOLID STATE DEVICE + TEST, INSTRUMENT RESPONSE

9-28822

ALSO IN CATEGORY 6

CIECHANOWICZ W + BOGUMIL S

ON-LINE STATISTICAL IDENTIFICATION OF NUCLEAR POWER REACTOR DYNAMICS

INST. OF NUCLEAR RESEARCH, SWIERK, POLAND

10 PAGES, NUCLEAR SCIENCE ENGINEERING 31, PAGES 474-83 (1968)

ON-LINE STATISTICAL IDENTIFICATION OF THE NUCLEAR REACTOR PROCESSES WERE CONSIDERED THEORETICALLY. THESE TECHNIQUES ARE NOT TIME CONSUMING. IT HAS BEEN SHOWN THAT THE PROPOSED IDENTIFICATION TECHNIQUES ENABLE DETERMINATION OF THE PROCESS DYNAMICS IN A UNIQUE WAY BY MAKING USE OF THE CORRELATION FUNCTIONS FOR THE ZERO TIME LAG EVEN WHEN THE PROCESS DYNAMICS IS CHARACTERIZED BY MORE THAN ONE TIME CONSTANT AND A DECREASE IN THE CONTRIBUTION OF THE UNCORRELATED NOISE IN THE OVERALL MEASURED NOISE WHEN THE CROSS-CORRELATION TECHNIQUE CANNOT BE USED.

*REACTOR DYNAMICS + MATHEMATICAL TREATMENT + NOISE ANALYSIS + THEORETICAL INVESTIGATION + TRANSFER FUNCTION

9-28823

NATHAN A

NUCLEAR PLANT PROTECTIVE SYSTEMS

SARGENT AND LUNDY, CHICAGO

4 PAGES, POWER ENGINEERING 72, PAGES 45-8 (FEB. 1968)

THE PROTECTIVE SYSTEMS FOR NUCLEAR POWER PLANTS ARE DESCRIBED. INSTRUMENTATION REQUIRED FOR

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-28823 *CONTINUED*

SOURCE (OR STARTUP), INTERMEDIATE, AND POWER-RANGE OPERATION IS DISCUSSED. BLOCK DIAGRAMS SUMMARIZE NEEDS FOR EACH RANGE. SELF-REGULATING FEATURE OF COMMERCIAL POWER REACTORS IS DESCRIBED. INTERCONNECTIONS OF THE REACTOR AND STEAM PLANTS ARE CONSIDERED.

*PLANT PROTECTIVE SYSTEM + *REACTOR SAFETY SYSTEM + *SYSTEM DESCRIPTION + INSTRUMENT, POWER RANGE + INSTRUMENT, STARTUP + INSTRUMENT, STARTUP RANGE + PIPING + STEAM

9-28825

MORRISON RG

INSTRUMENT DEVELOPMENT BRANCH ANNUAL REPORT 1967

PHILLIPS PETROLEUM COMPANY

IGD-17269 +. 125 PAGES, 95 FIGURES, 7 TABLES, 56 REFERENCES, AUGUST 1968

THIS REPORT IS ONE OF A SERIES OF SUCH REPORTS CONCERNED WITH DESCRIBING SIGNIFICANT DEVELOPMENT ACTIVITIES IN INSTRUMENTATION AT THE NATIONAL REACTOR TESTING STATION. THE WORK IS CONCENTRATED IN A FIELD OF SPECIAL APPLICATIONS WHERE STATE-OF-THE-ART COMMERCIAL INSTRUMENTS DO NOT MEET THE ENVIRONMENTAL CONDITIONS, OR WHERE UNIQUE APPLICATIONS REQUIRE SPECIALIZED ADAPTATIONS TO THE PARTICULAR REQUIREMENT. THE BRANCH IS COMPRISED OF FOUR SECTIONS - DETECTOR DEVELOPMENT AND APPLIED MEASUREMENTS, COMPONENT AND SYSTEMS, ANALYSIS, AND PULSED REACTOR EXPERIMENTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*INSTRUMENT, GENERAL + *REVIEW + ATR (TR) + COMPUTER, DIGITAL + CONTROL ROD DRIVE + CONTROL SYSTEM + COUNTER + DATA PROCESSING + INSTRUMENT, AMPLIFIER + INSTRUMENT, COMPONENT + INSTRUMENT, CURRENT + INSTRUMENT, FLOW + INSTRUMENT, IN CORE + INSTRUMENT, LIQUID LEVEL DETECTION + INSTRUMENT, PULSE + INSTRUMENT, TEMPERATURE + REACTOR, PULSED + SIMULATION + VIBRATION

9-28826

ALSO IN CATEGORY 17

DENIELOU G

RECENT EXPERIENCES IN THE OPERATION OF RAPSODIE

ATOMIC POWER DEVELOPMENT ASSOCIATES, INC.

NP-TR-1682 +. 14 PAGES, FIGURES, TRANSLATED FROM ENERG. NUCL. 10, PAGES 22-8 (1968)

THE AUTHOR IS DESCRIBING THE EXPERIENCES GATHERED IN THE OPERATION OF RAPSODIE DURING THE FIRST YEAR AFTER START-UP. THE FUEL PINS DID NOT YET GIVE MUCH INFORMATION. THIS REACTOR IS A VERY RELIABLE ASSEMBLY. IT WAS CORRECTLY CALCULATED, WITH THE EXAMPLE BEING THE EXCELLENT PREDICTIONS OF THE DYNAMIC CHARACTERISTICS. INTERVENTIONS ARE EASIER THAN HAD BEEN IMAGINED. OUR IMPROVED KNOWLEDGE OF THE REACTOR AS A RESULT OF OUR EXPERIENCE PERMITS US TO CONSIDER SIMPLIFICATIONS (CONTROL, HANDLING) AND SHOULD BENEFIT THE DESIGN PROJECT OF PHENIX.

AVAILABILITY - USAEC DEPOSITORY LIBRARIES OF THE U.S. AND OVERSEAS

*OPERATING EXPERIENCE + *REACTOR CONTROL + FRANCE + REVIEW

9-28827

DRIVER GE

EXPERIENCE IN DESIGNING AND OPERATING COMPUTER CONTROLLED REACTOR FACILITIES

BATTELLE-NORTHWEST, RICHLAND, WASHINGTON

BNWL-SA-1832 +. 14 PAGES, JULY 12, 1968

DURING THE PAST THREE YEARS THE PACIFIC NORTHWEST LABORATORY HAS INSTALLED NINE PROCESS COMPUTERS IN APPLICATIONS RANGING FROM ON-LINE DATA ACQUISITION AND ANALYSIS TO EXTENSIVE PLANT CONTROL. THE INSTALLATIONS INCLUDE NUCLEAR CHEMICAL PROCESSES, MASS SPECTROMETERS, HYBRID COMPUTERS, AND EXPERIMENTAL AND TEST REACTORS. THIS PAPER DISCUSSES THE PROBLEMS ASSOCIATED WITH DEVELOPING, PROCURING, INSTALLING, AND CHECKING OUT COMPUTER-BASED DATA HANDLING AND CONTROL SYSTEMS. THE SCOPE IS CONFINED TO THOSE ASPECTS WHICH EXIST BECAUSE OF THE PRESENCE OF A DIGITAL COMPUTER.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*COMPUTER CONTROL + *DESIGN STUDY + *OPERATING EXPERIENCE + BATTELLE NORTHWEST + COMPUTER, DIGITAL + DATA PROCESSING + INSTRUMENT, CONTROL

9-28828

ALSO IN CATEGORY 5

FROELICHER B

INTRODUCTION TO THE STUDY OF BUILDING IN WATER REACTORS

COMMISSARIAT A L-ENERGIE ATOMIQUE, SACLAY (FRANCE). CENTRE D-ETUDES NUCLEAIRES

CEA-R-3327 +. 12 PAGES, 4 REFERENCES, NOV. 1967

TO PLOT THE LOW AND HIGH POWER TRANSFER FUNCTION FOR A REACTOR USING ITS BACKGROUND, A CONVENTIONAL METHOD IS PROPOSED HERE FOR ESTIMATING THE EFFICIENCY OF A CCS CHAMBER ASSOCIATED TO A DIRECT CURRENT DETECTION SYSTEM.

AVAILABILITY - USAEC DEPOSITORY LIBRARIES IN THE U.S. AND OVERSEAS

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-28828 *CONTINUED*
*INSTRUMENT, CURRENT + *INSTRUMENT, NUCLEAR + HEAT TRANSFER, BOILING + MATHEMATICAL TREATMENT + REACTOR POWER + TRANSFER FUNCTION

9-28829
RESCH F
STUDIES ON HOT WIRE AND HOT FILM UNDER WATER
CENTRE D ETUDES NUCLEAIRES DE SACLAY, FRANCE
CEA R-3510 +. 30 PAGES, FIGURES, JUNE 1968

THIS STUDY CONCERNS SOME PROBLEMS INVOLVED IN THE USE OF A HOT WIRE AND A HOT FILM IMMERSSED IN WATER. SOME THEORETICAL CONSIDERATIONS ARE MADE CONCERNING THE SENSITIVITY AND THE CALIBRATION OF HOT WIRES. A SPECIALLY DESIGNED WATER BLOWER AND A MEASUREMENT APPARATUS ARE DESCRIBED. VARIOUS CALIBRATIONS HAVE BEEN CARRIED OUT AS A FUNCTION OF THE VELOCITY AND OF THE TEMPERATURE FOR DIFFERENT WIRES AND FILMS. MEASUREMENT OF THE AMOUNT OF TURBULENCE AND OF THE ENERGY DISTRIBUTION MADE IN THE CENTER OF THE TUBE ARE IN GOOD AGREEMENT WITH THOSE ALREADY CARRIED OUT IN AIR.

*INSTRUMENT, FLOW + FLOW, TURBULENT + INSTRUMENT CALIBRATION + TEST, INSTRUMENT RESPONSE

9-28893
LARIN F
RADIATION EFFECTS IN SEMICONDUCTOR DEVICES
RENDIX RESEARCH LABORATORIES
283 PAGES, JOHN WILEY AND SONS, INC., NEW YORK, 1968

PRIMARY PURPOSE OF BOOK IS TO PRESENT DETAILED INFORMATION TO ELECTRONIC CIRCUIT DESIGNERS TO ENABLE THEM TO DESIGN RELIABLE ELECTRONICS FOR OPERATION IN A NUCLEAR RADIATION ENVIRONMENT. THE BASIC PHILOSOPHY OF THE BOOK IS THAT GIVEN A THOROUGH UNDERSTANDING OF DEVICE OPERATION, THE CIRCUIT DESIGNER CAN PREDICT THE CHANGES IN ELECTRICAL PARAMETERS DUE TO RADIATION AND ACCOUNT FOR THESE CHANGES IN THE CIRCUIT DESIGN.

*INSTRUMENT, COMPONENT + *RADIATION EFFECT + *SOLID STATE DEVICE + DESIGN CRITERIA + FAILURE, INSTRUMENT + INSTRUMENT, ABNORMAL INDICATION + IRRADIATION TESTING + RADIATION DAMAGE + RELIABILITY, COMPONENT + TEST, INSTRUMENT RESPONSE

9-28895
MUEHLAEUSER O
DEVELOPMENT OF A COMPLETELY HYDRAULICALLY ACTUATED AND CONTROLLED SHUTDOWN AND CONTROL SYSTEM FOR WATER AND STEAM-COOLED REACTORS
KERNFORSCHUNGSZENTRUM, KARLSRUHE (WEST GERMANY). INSTITUT FUER REAKTORBAUELEMENTE
EURFNR-497 + EUR-3699 +. 39 PAGES, 20 FIGURES, NOV. 1967, TRANSLATED FROM REPORT KFK-665

DESCRIBES A COMPLETELY HYDRAULIC CONTROL-ROD DRIVE SYSTEM, IN WHICH CONTROL ROD MOVEMENT IS ACTUATED AND RECORDED HYDRAULICALLY. ALSO DESCRIBED IS A FAST OPENING VALVE WHICH ENABLES THE FACILITY TO USE THE SAME CONTROL RODS TO SCRAM THE REACTOR.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

*CONTROL ROD DRIVE + *CONTROL ROD SCRAM MECHANISM + CONTROL SYSTEM + EQUIPMENT DESIGN + HYDRAULIC EFFECT + INSTRUMENT, POSITION + REACTOR, BWR + SERVOMECHANISM

9-28897 ALSO IN CATEGORY 10
FRAAS AP
ESTIMATING THE RELIABILITY OF SYSTEMS
OAK RIDGE NATIONAL LAB., TENN.
ORNL-TM-2200 +. 32 PAGES, 12 TABLES, 7 REFERENCES, MAY 1968

GENERIC DATA ON COMPONENT RELIABILITY ARE REVIEWED. A SIMPLE METHOD OF APPLYING THESE DATA IS SUGGESTED, AND SOME RESULTING IMPLICATIONS WITH RESPECT TO THE RELIABILITY OF IDEALIZED SYSTEMS ARE POINTED OUT. THE STUDY CONCLUDES THAT THERE IS AN ENORMOUS AMOUNT OF OPERATING EXPERIENCE TO INDICATE THAT THE LOWEST FAILURE RATE ONE CAN REASONABLY HOPE TO GET IN A PIECE OF MECHANICAL EQUIPMENT IS ABOUT ONE FAILURE PER MILLION OPERATING HOURS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

*INSTRUMENT, COMPONENT + *RELIABILITY, COMPONENT + OPERATING EXPERIENCE + REVIEW

9-28898
GYLLANDER JA
FINAL REPORT ON IFA-10, THE FIRST SWEDISH INSTRUMENTED FUEL ASSEMBLY IRRADIATED IN HBWR, NORWAY
INSTITUTT FOR ATOMENERGI, HALDEN (NORWAY). OECD HALDEN REAKTOR PROSJEKT
HPR-101 +. 35 PAGES, 25 FIGURES, 12 TABLES, 25 REFERENCES, AUGUST 1968

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-28898 *CONTINUED*

FINAL REPORT ON IFA-10, THE FIRST SWEDISH INSTRUMENTED FUEL ASSEMBLY IRRADIATED IN H9WR. THE POSTIRRADIATION DATA ARE PRESENTED AND CORRELATED WITH THE IRRADIATION STATISTICS. NO BOWING OF THE BUNDLE WAS OBSERVED, NO EQUI-AXED GRAIN GROWTH WAS DISCERNIBLE, THE FISSION GAS RELEASE WAS VERY SMALL, AND THE RELATIVE DIMENSIONAL CHANGES IN LENGTH AND DIAMETER WERE OF THE ORDER OF MAGNITUDE 0.0009. THE HYDRIDE CONTENT OF THE CAN INCREASED FROM 35 PPM TO 65 PPM AND, IN THE CONTACT POINT OF THE SPACER, TO 180 PPM.

AVAILABILITY - AEC DEPOSITORY LIBRARIES IN THE U.S. AND OVERSEAS

INSTRUMENT, FUEL SCANNING + IRRADIATION TESTING + SWEDEN

9-28925 ALSO IN CATEGORY 15
DIETRICH E + KOENIG LA
PROBLEMS OF RADIATION PROTECTION IN CONNECTION WITH TRITIUM
KERNFORSCHUNGSZENTRUM, KARLSRUHE, GER.
4 PAGES, ATOMPRAXIS, 13, PAGE 454-7, (OCT. 1967), (IN GERMAN)

A SURVEY IS PRESENTED ON PROBLEMS CONNECTED WITH THE SUPERVISION OF PROTECTION MEASURES FOR THE USE OF TRITIUM, AND SOLUTIONS ARE OFFERED. A SHORT REPORT DESCRIBING TRITIUM SUPERVISION AT THE FR 2 REACTOR IS INCLUDED.

*RADIATION PROTECTION, ORGANIZATION + *RADIATION SAFETY AND CONTROL + *TRITIUM + GERMANY

9-28967 ALSO IN CATEGORY 17
SELECTED LACROSSE OPERATING EXPERIENCE
ALLIS-CHALMERS, BETHESDA, MARYLAND
ACNP-68512 +. 17 PAGES OF FOURTEENTH MONTHLY OPERATIONAL REPORT ON THE LA CROSSE BOILING WATER REACTOR, 2 FIGURES, 1 TABLE, AUGUST 1968, DOCKET NO. 115-5, TYPE--BWR, MFG--A.C., AE--SGT + LUNDY

REACTOR REMAINED SHUT DOWN FOR MAINTENANCE. C ROD DRIVE EFFLUENT PUMPS ARE OPERATING SATISFACTORILY, THE PIPING HAS GREATER PRESSURE DROP THAN ANTICIPATED. CAVITATION OCCURS ONLY WHEN BOTH PUMPS ARE RUN OR WHEN LOSS OF SEAL INJECTION CAUSES LOSS OF SUBCOOLING. VARIOUS SHIELDS WERE INSTALLED TO REDUCE STREAMING SPOTS, INCLUDING BORATED POLYETHYLENE FOR 8 NEUTRON DETECTOR PENETRATIONS.

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

CONTROL ROD DRIVE + FAILURE, DESIGN ERROR, LACROSSE (BWR) + PRESSURE DROP + PUMP + REACTOR, BWR + REPORT, OPERATIONS + SHIELDING

9-28970 ALSO IN CATEGORY 5
SILVESTRI M
UNCONVENTIONAL APPLICATIONS OF TWO-PHASE COCURRENT FLOW
CISE, MILAN
10 PAGES, ENERGIA NUCLEARE (MILAN), 15, PAGES 14-23 (JAN. 1968)

SURVEYS APPLICATIONS OF TWO-PHASE COCURRENT FLOW IN NUCLEAR REACTORS AND TO PROBLEMS IN CHEMICAL AND MECHANICAL ENGINEERING, INCLUDING CASES IN WHICH SUCH A FLOW COULD BE APPLIED IN COMPETITION WITH EXISTING PROCESSES OF A DIFFERENT NATURE. ABOUT A DOZEN SUCH APPLICATIONS ARE CONSIDERED.

*FLOW, TWO PHASE + CONTROL SYSTEM + FLOW, ANNULAR + FLOW, MIST + HEAT SINK + REACTOR COOLANT

9-28991 ALSO IN CATEGORY 17
LOW LO
SAFETY MATTERS RELATED TO SAN ONOFRE FIRES
U. S. ATOMIC ENERGY COMMISSION, WASH., D. C.
LETTER TO W. R. GOULD OF SOUTHERN CALIFORNIA EDISON CO., 4 PAGES, OCT. 18, 1968, DOCKET 50-206, TYPE--PWR, MFG--WEST., AE--BECHTEL

REQUESTS MORE INFORMATION AND CORRECTIVE MEASURES, INCLUDING TECH. SPEC. CHANGES, ON (1) NOT ADDING BORON NOR VERIFYING BORON DURING COOLDOWN, NOT HAVING INSTRUCTIONS ABOUT REACTOR SAFETY DURING FIRES, NOT BEING CAPABLE OF TESTING FOR BORON DURING OFF SHIFTS, AND NOT INTERPRETING INFORMATION ON ABNORMAL CONDITIONS, (2) NOT DETERMINING THAT CONTROL ROD F-10 WAS FULLY INSERTED FOR 16 DAYS AT FULL POWER, NOT BEING ABLE TO ANALYZE IN-CORE INSTRUMENTATION DATA IN TIME, AND NOT TESTING FLOW INSTRUMENTATION FREQUENTLY ENOUGH.

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

*FAILURE, OPERATOR ERROR + *INSPECTION AND COMPLIANCE + ELECTRICAL CONDUCTION + FIRE + INSTRUMENT, ABNORMAL INDICATION + POISON, SOLUBLE + REACTIVITY EFFECT, ANOMALOUS + REACTOR, PWR + SAN ONOFRE (PWR) + SHUTDOWN SYSTEM, SECONDARY

9-28995 ALSO IN CATEGORY 17

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-28995 *CONTINUED*
DOUET P + GRAFTIEUX J
CAN REPTURE DETECTION FOR THE REACTOR OSIRIS
COMMISSARIAT A 1-ENERGIE ATOMIQUE, SACLAY (FRANCE). CENTRE D-ETUDES NUCLEAIRES
CEA-R-3328 +. 56 PAGES, DEC. 1967

DESCRIBES DETECTION FOR A 50 MW SWIMMING POOL REACTOR, BASED ON NEUTRONS FROM SHORT LIVED FISSION PRODUCTS, FOR (1) FAILURE DETECTION AND (2) IDENTIFICATION OF FAILED ELEMENT UNDER NATURAL CONVECTION. CALCULATIONS MADE DURING DESIGN AND TESTS MADE AFTER FULL POWER WAS REACHED ARE REPORTED.

AVAILABILITY - USAEC DEPOSITORY LIBRARIES IN THE U.S. AND OVERSEAS

*INSTRUMENT, DETECTION FAILED FUEL ELEMENT + FAILURE, FUEL ELEMENT + FRANCE + REACTOR, POOL TYPE + REACTOR, RESEARCH + REPORT, OPERATIONS ANALYSIS + TEST, INSTRUMENT RESPONSE

9-29104
WOODCOCK ER
THE CALCULATION OF RELIABILITY OF SYSTEMS THE PROGRAM NOTED
UNITED KINGDOM ATOMIC ENERGY AUTHORITY
AHSB(S)-R-153 +. 78 PAGES, 1968

DISCUSSES THE METHOD OF ANALYSIS OF LOGICAL FLOW NETWORKS AND DESCRIBES A VERSATILE COMPUTER PROGRAM THAT HAS BEEN DEVELOPED TO DEAL WITH NETWORKS TOO LARGE TO BE TACKLED BY OTHER METHODS. THE SOLUTION OF A SAMPLE PROBLEM IS DESCRIBED IN DETAIL.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*COMPUTER PROGRAM + *RELIABILITY, SYSTEM + MATHEMATICAL TREATMENT + PROBABILITY + RELIABILITY ANALYSIS

9-29105
ERWIN JH + WERNER WJ + MARTIN MM
DEVELOPMENT AND FABRICATION OF INSTRUMENTED-PLATE ADVANCED TEST REACTOR FUEL ELEMENTS
OAK RIDGE NATIONAL LABORATORY
ORNL-4268 +. 103 PAGES, TABLES, FIGURES, OCTOBER 1968

REPORT IS CONCERNED WITH THE TECHNIQUES USED TO MANUFACTURE FIVE FUEL ELEMENTS WITH THE THERMOCOUPLE WELLS INCORPORATED. A PROCEDURE WAS DEVELOPED FOR MANUFACTURED INSTRUMENTED ADVANCED TEST REACTOR FUEL ELEMENTS. THE FULL-SIZE ASSEMBLIES ARE UNIQUE IN THAT THEY CONTAIN ONE OR TWO DOUBLE-CORE FUEL PLATES, WHICH ELIMINATE THE INTERVENING WATER CHANNEL TO PROVIDE THERMOCOUPLE WELLS FOR IN-REACTOR TEMPERATURE MEASUREMENTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*FABRICATION + *FUEL ELEMENT + EQUIPMENT DESIGN + INSTRUMENT, IN CORE + INSTRUMENT, TEMPERATURE + REACTOR, TEST

9-29106
FRY DN + KRYTER RC + ROBINSON JC
MEASUREMENT OF HELIUM VOID FRACTION IN THE MSRE FUEL SALT USING NEUTRON-NOISE ANALYSIS
OAK RIDGE NATIONAL LABORATORY
ORNL-TM-2315 +. 32 PAGES, FIGURES, AUGUST 27, 1968

INVESTIGATIONS WERE MADE AT THE MSRE TO DETERMINE IF THE AMOUNT OF HELIUM IN THE FUEL SALT COULD BE MEASURED BY NEUTRON NOISE ANALYSIS. THE RESULT OF EXPERIMENTAL TESTS AND ANALYTICAL STUDIES HAVE SHOWN THAT THE PRINCIPAL SOURCE OF SMALL NEUTRON DENSITY FLUCTUATIONS OBSERVED IS HELIUM BUBBLES CIRCULATING IN THE FUEL SALT. THE MEASUREMENTS SHOWED THAT NEUTRON POWER SPECTRAL DENSITY IN THE FREQUENCY RANGE FROM 0.5 TO 2 CPS VARIES AS THE SQUARE OF HELIUM VOID FRACTION AS PREDICTED BY THE MODEL, AND THAT THE MINIMUM VOID FRACTION IS MORE NEARLY ZERO THAN THE PREVIOUSLY ACCEPTED VALUE OF 0.1%.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*NEUTRON + *NOISE ANALYSIS + COMPARISON, THEORY AND EXPERIENCE + DATA PROCESSING + EXPERIMENT, GENERAL + HELIUM + MSRE (RE) + ORNL + REACTOR, MOLTEN SALT + VOID FRACTION

9-29120
LMFBR LIQUID METAL FAST BREEDER REACTOR PROGRAM PLAN VOL. 4, INST. + CONTROL
ARGONNE NATIONAL LABORATORY
WASH-1104 +. 351 PAGES, TABLES, 1 FIGURE, AUGUST 1968

PRESENTS THE INSTRUMENTATION AND CONTROL SECTION OF THE LMFBR PLAN PROGRAM. IT IS ONE OF NINE SECTIONS THAT COMPRISE THE OVERALL PROGRAM. THE SECTION ASSESSES THE STATE OF THE ART FOR ITS AREA OF TECHNOLOGY, DEFINES THE OBJECTIVES, ESTABLISHES THE CRITERIA AND REQUIREMENTS, AND DESCRIBES THE R AND D PROGRAM INCLUDING MILESTONES, SCHEDULES, AND ESTIMATED COSTS

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-29120 *CONTINUED*

NECESSARY TO SATISFY THE REQUIREMENTS AND MEET THE OBJECTIVES ON TIME. COVERED IN THE TECHNICAL PROGRAM ARE TEST FACILITIES, CIRCUITS, MEASUREMENT SYSTEMS, CONTROL SYSTEMS, SIGNAL TRANSMISSION, INSTRUMENT COMPONENTS, AND SENSORS. LARGE BIBLIOGRAPHY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*INSTRUMENT, GENERAL + *R AND D PROGRAM + *REACTOR, LMFBR + CONTROL SYSTEM + INSTRUMENT, COMPONENT + INSTRUMENT, CONTROL + INSTRUMENT, IN CORE + INSTRUMENT, NUCLEAR + INSTRUMENT, TESTING + TEST, INSTRUMENT RESPONSE

9-29151 ALSO IN CATEGORIES 4 AND 17
WILSON RB + GAFFNEY JL
MANS RELIABILITY IN THE X-15 AEROSPACE SYSTEM
10 PAGES, 2 FIGURES, 3 REFERENCES, 3RD AEROSPACE RELIABILITY AND MAINTAINABILITY CONFERENCE, JULY 1964

HUMAN RELIABILITY IS NOT EASILY PREDICTED OR CONTROLLED, BUT SYSTEM DESIGNERS NEED TO KNOW QUANTITATIVELY MANS CONTRIBUTION TO THE PERFORMANCE OF THE MAN-MACHINE SYSTEM. INTERMITTENT HUMAN FAILURE PLAGUES THE OPERATIONAL SITUATION. USUALLY, THE INDIVIDUAL WHO FAILS TO PERFORM A SPECIFIC TASK AT A SPECIFIC TIME WILL PERFORM THE TASK CORRECTLY THE NEXT TIME. HUMAN PERFORMANCE IS AFFECTED BY MANY COMPLEX, UNPREDICTABLE FACTORS. PREDICTING WHETHER OR NOT A MAN WILL SPECIFICALLY PERFORM HIS NEXT OPERATION CORRECTLY IS ANALOGOUS TO PREDICTING WHO IN THE POPULATION WILL BE NEXT TO DIE. HOWEVER, A SUFFICIENT NUMBER OF OBSERVATIONS OF A SYSTEM SHOULD INDICATE A DISCRETE DISTRIBUTION PATTERN FROM WHICH WE CAN DERIVE AN ESTIMATE OF MANS RELIABILITY.

*OPERATOR ACTION + *RELIABILITY ANALYSIS + FAILURE, OPERATOR ERROR + TRAINING

9-29152 ALSO IN CATEGORY 17
KEENAN JJ
INTERACTIONIST MODELS OF THE VARIETIES OF HUMAN PERFORMANCE IN COMPLEX WORK SYSTEMS
11 PAGES, 7 FIGURES, 2 TABLES, 12 REFERENCES, PP. 76-86 OF ANNALS OF RELIABILITY AND MAINTAINABILITY, 1967

A USEFUL FRAMEWORK FOR UNDERSTANDING THE VARIETIES OF HUMAN PERFORMANCES IN THE COMPLEX SYSTEM IS PRESENTED. THE APPROACH HERE IS INTERACTIONIST, STRUCTURING HUMAN PERFORMANCE ALONG THE LINES OF THE PRINCIPAL INTERACTIONS OF THE HUMAN WITH THE SYSTEM ENVIRONMENT. MULTIDIMENSIONAL MODELS ARE DISCUSSED AS BASIC TO THE SYSTEMATIC DEVELOPMENT OF MEASURABLE ASPECTS OF HUMAN PERFORMANCE.

*OPERATOR ACTION + *RELIABILITY ANALYSIS + ANALYTICAL MODEL + ENVIRONMENTAL CONDITION + PERFORMANCE LIMIT

9-29153 ALSO IN CATEGORY 17
JONES DB
THE NEED FOR QUANTIFICATION IN HUMAN FACTORS ENGINEERING
6 PAGES, 1 FIGURE, 1 TABLE, 9 REFERENCES, PP. 87-92 OF ANNALS OF RELIABILITY AND MAINTAINABILITY, 1967

A MAJOR PROBLEM FOR HUMAN FACTORS IS IMPLEMENTING EFFECTIVE HUMAN PERFORMANCE CONSIDERATION INTO SYSTEM DESIGN, PRESENTING THE DATA IN ENGINEERING, NOT PSYCHOLOGICAL, TERMS. THE MOST USUAL BASIC ENGINEERING REQUIREMENT IS FOR INFORMATION WHICH CAN BE HANDLED IN MATHEMATICAL TERMS. THE HUMAN FACTORS MATHEMATICAL DATA NEEDED FOR SYSTEM CONCEPTUAL PHASE ENGINEERING SOLUTIONS ARE GENERALIZED MODELS, RULES OF THUMB, OR SOVEREIGN FACTORS. DURING THE DESIGN PHASE HUMAN TASK PERFORMANCE, AND ESPECIALLY TASK COMPLEXITY, SHOULD BE QUALIFIED. DURING SYSTEM ACQUISITION PHASE, OPERATION FAILURE AND ERROR ANALYSES MUST INCLUDE VALID HUMAN ERROR PROBABILITY DETERMINATION. METHODS OF MEETING THESE REQUIREMENTS ARE SUGGESTED.

*OPERATOR ACTION + *RELIABILITY ANALYSIS + DESIGN CRITERIA + EXAMINATION + PERFORMANCE LIMIT

9-29155 ALSO IN CATEGORY 17
MEISTER D
HUMAN FACTORS IN RELIABILITY
STANFORD UNIVERSITY
4 PAGES, RELIABILITY HANDBOOK, 1967

THERE IS A NATURAL RELATIONSHIP BETWEEN THE RELIABILITY AND HUMAN FACTORS DISCIPLINES. HUMAN FACTORS ENGINEERING (REFERRED TO HENCEFORTH IN SHORTHAND FORM AS SIMPLY HUMAN FACTORS) IS THE DESIGN OF EQUIPMENT, WORK ENVIRONMENT, AND WORK METHODS IN ACCORDANCE WITH HUMAN CAPABILITIES AND LIMITATIONS. HUMAN FACTORS SPECIALISTS ARE THEREFORE CONCERNED PRIMARILY WITH (1) EQUIPMENT DESIGN CHARACTERISTICS, (2) OPERATING AND MAINTENANCE PROCEDURES, (3) CHARACTERISTICS OF THE WORK ENVIRONMENT (NOISE, TEMPERATURE, WORK SPACE, ETC.), BUT ALSO WITH (4) TECHNICAL DATA, (5) COMMUNICATIONS, (6) LOGISTICS, AND (7) SYSTEM ORGANIZATION, BECAUSE EACH OF THESE INTERACTS WITH AND INFLUENCES OPERATOR PERFORMANCE.

*OPERATOR ACTION + *RELIABILITY ANALYSIS + COMPARISON, THEORY AND EXPERIENCE + DESIGN CRITERIA

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-29156
KOOI CF
PHYSICAL ANALYSIS OF STRESS TESTING FOR FAILURE OF ELECTRONIC COMPONENTS
LOCKHEED AIRCRAFT CORPORATION
IEEE TRANS. ON RELIABILITY VOL. R-17(2) PP 80 +. 5 PAGES, FIGURES, REFERENCES, JUNE 1968

IT IS THE PURPOSE OF THIS PAPER TO SHOW, STARTING WITH A SIMPLE PHYSICAL LAW FOR THE FAILURE PROCESS AND WITH A GAUSSIAN LAW FOR THE DISTRIBUTION OF COMPONENTS WITH RESPECT TO A CERTAIN PARAMETER RELATED TO THIS PHYSICAL PROCESS, THAT THE LOG-NORMAL CUMULATIVE DISTRIBUTION FUNCTIONS IN TIME CAN BE DERIVED AND THAT EQUIVALENT COFS IN TEMPERATURE AND VOLTAGE CAN ALSO BE DERIVED. CONCLUSIONS ARE DRAWN CONCERNING EXTRAPOLATION OF STRESS-TEST RESULTS TO LONGER TIMES.

*RELIABILITY, COMPONENT + INSTRUMENT, COMPONENT + MATHEMATICAL TREATMENT + STATISTICAL ANALYSIS + TEST, PHYSICS

9-29157
JOWETT CE
RELIABILITY OF ELECTRONIC COMPONENTS
RELIABILITY ABSTRACTS AND TECH. REVIEWS, 8(10), P. 163, OCT. 1968

THIS BOOK CLARIFIES AND PRESENTS ALL THE RELEVANT FACTS CONCERNING THE PROPERTIES AND STABILITIES OF VARIOUS CLASSES OF COMPONENTS AND MATERIALS. THE EFFECT OF ENVIRONMENT AND ATMOSPHERE ON EQUIPMENT IS STUDIED, AND POSSIBLE HAZARDS AND BEST WAYS OF PROTECTION ARE DESCRIBED.

*INSTRUMENT, COMPONENT + *RELIABILITY, COMPONENT + ENVIRONMENTAL CONDITION + FAILURE, COMPONENT

9-29158
MUTH EJ
A METHOD FOR PREDICTING SYSTEM DOWNTIME
GENERAL ELECTRIC (GENERAL CODE)
RELIABILITY ABSTRACTS AND TECH. REVIEWS 8(10), PP. 167, OCTOBER 1968

STUDY OF THE PROBABILISTIC BEHAVIOR OF REPAIRABLE SYSTEMS WITH RESPECT TO THE PROPERTIES AND THE PREDICTION OF DOWNTIME. ONLY TWO SYSTEM STATES, THE OPERATING AND THE FAILED STATE, ARE DISTINGUISHED. THE SYSTEM IS DEFINED BY A RELIABILITY NETWORK AND BY THE FAILURE RATE AND REPAIR RATE OF EACH COMPONENT. THE TIME-TO-FAILURE AND THE TIME-TO-REPAIR OF THE COMPONENTS ARE ASSUMED TO BE EXPONENTIALLY DISTRIBUTED.

*MAINTENANCE AND REPAIR + *PROBABILITY + RELIABILITY, SYSTEM

9-29159
JONES HC
A BASIC INTRODUCTION TO RELIABILITY ENGINEERING
WESTINGHOUSE ELECTRIC CORPORATION
RELIABILITY ABSTRACTS AND TECH. REVIEWS 8(10), PP. 167, OCTOBER 1968

RELIABILITY PREDICTION, RELIABILITY CONTROL DURING DESIGN, AND RELIABILITY VERIFICATION ARE DISCUSSED IN GENERAL TERMS, AND SOME MATHEMATICAL TREATMENT IS OFFERED FOR DETERMINING MEAN TIME BETWEEN FAILURE BY AN EXPONENTIAL MODEL. THE INFANCY OF RELIABILITY ENGINEERING AS A DISCIPLINE IS STRESSED, AND ITS IMPORTANCE IN PRESENT-DAY MILITARY TECHNOLOGY AND INDUSTRY IS NOTED.

*RELIABILITY ANALYSIS + DESIGN CRITERIA + REVIEW

9-29160
KOLESAR PJ
LINEAR PROGRAMMING AND THE RELIABILITY OF MULTICOMPONENT SYSTEMS
COLUMBIA UNIVERSITY
RELIABILITY ABSTRACTS AND TECH. REVIEWS 8(10), PP. 168, OCTOBER 1968

SEVERAL PROBLEMS IN THE ASSIGNMENT OF PARALLEL REDUNDANT COMPONENTS TO SYSTEMS COMPOSED OF ELEMENTS SUBJECT TO FAILURE ARE CONSIDERED. IN EACH CASE THE PROBLEM IS TO MAKE AN ASSIGNMENT WHICH MAXIMIZES THE SYSTEM RELIABILITY SUBJECT TO SYSTEM CONSTRAINTS. THREE DISTINCT PROBLEMS ARE TREATED. THE FIRST IS THE CLASSICAL PROBLEM OF MAXIMIZING SYSTEM RELIABILITY UNDER TOTAL COST OR WEIGHT CONSTRAINTS WHEN COMPONENTS ARE SUBJECT TO A SINGLE TYPE OF FAILURE. THE SECOND PROBLEM DEALS WITH COMPONENTS WHICH ARE SUBJECT TO TWO TYPES OF FAILURE AND MINIMIZES THE PROBABILITY OF ONE MODE OF SYSTEM FAILURE SUBJECT OF A CONSTRAINT ON THE PROBABILITY OF THE OTHER MODE OF SYSTEM FAILURE. THE THIRD PROBLEM DEALS WITH COMPONENTS WHICH MAY EITHER FAIL TO OPERATE OR MAY OPERATE PREMATURELY.

*RELIABILITY, SYSTEM + FAILURE, COMPONENT + PROBABILITY + RELIABILITY, COMPONENT

CATEGORY 0
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-29161
RYERSON CM
MATHEMATICAL MODELING FOR PREDICTING FAILURE RATES OF COMPONENT PARTS
HUGHES AIRCRAFT, INC.
RELIABILITY ABSTRACTS AND TECH. REVIEWS 8(10), PP. 168, OCT. 1968

DESCRIPTION OF A NEW INTERMEDIATE LEVEL OF RELIABILITY MODELING, RELATED TO PREDICTING FAILURE RATES OF COMPONENT PARTS. MODELS AT THIS LEVEL RELATE PROBABLE FAILURE RATES OF DEVICES TO THEIR STRENGTH AND PERFORMANCE PROPERTIES FROM A CONSIDERATION OF THE ELECTRICAL AND PHYSICAL STRESSES OF CIRCUIT APPLICATION AND LOCAL PART ENVIRONMENT. AN EXAMPLE OF AN INTERMEDIATE-LEVEL MATHEMATICAL MODEL FOR SEMICONDUCTOR DIODES IS GIVEN.

ANALYTICAL MODEL + FAILURE, COMPONENT + MATHEMATICAL TREATMENT + RELIABILITY, COMPONENT + SOLID STATE DEVICE

9-29162
STEWART RG
CASUAL BASIS FOR SYSTEM FAILURE RATE CALCULATIONS
LOCKHEED AIRCRAFT CORPORATION
RELIABILITY ABSTRACTS AND TECH. REVIEWS 8(10), P. 166, OCT. 1968

STUDY OF SYSTEM FAILURES DUE TO DEGRADATION AT CONSTANT STRESS. IT IS PROVEN THAT THE INTRINSIC SYSTEM CHARACTERISTICS ARE AS IMPORTANT AS THE DEVICE CHARACTERISTICS IN DETERMINING THE SYSTEM FAILURE RATE. IN PARTICULAR, FOR A SIMPLE N-STAGE LINEAR AMPLIFIER WITHOUT FEEDBACK, IT IS SHOWN THAT THE FAILURE RATE OF A STAGE CAN FOR SOME FAILURE MODES BE INCREASED GREATLY BY VIRTUE OF THE GAIN IN THE SUCCEEDING STAGES. THIS PROVES THAT CALCULATING THE SYSTEM FAILURE RATE AS THE SIMPLE SUM OF DEVICE FAILURE RATES IN GENERAL IS INCORRECT AND MAY SIGNIFICANTLY UNDERESTIMATE THE TRUE FAILURE RATE. A FAILURE RATE LEVEL DIAGRAM IS INTRODUCED AS A TOOL FOR CALCULATING THE FAILURE RATE OF CIRCUITS AND SYSTEMS.

*FAILURE, COMPONENT + *RELIABILITY, SYSTEM + INSTRUMENT, AMPLIFIER + STRESS

9-29163
RANKIN KF
SYSTEM ENGINEERING FOR RELIABILITY AND EASE OF MAINTENANCE
RELIABILITY ABSTRACTS AND TECH. REVIEWS 8(10), P. 169, OCT. 1968

DISCUSSION OF THE LESSONS LEARNED FROM SEVERAL YEARS OF INVESTIGATION INTO THE PERFORMANCE OF A LARGE AIR TRAFFIC CONTROL (ATC) DATA PROCESSING SYSTEM. TO ACHIEVE THE REQUIREMENTS OF RELIABILITY AND EASE OF MAINTENANCE, THE TIME BETWEEN FAULTS MUST BE MADE AS LONG AS POSSIBLE, WHILE THE TIME REQUIRED TO CLEAR A FAULT MUST BE REDUCED TO A MINIMUM. THE PRACTICE OF BUILDING UP SOME DEGREE OF SYSTEM REDUNDANCY WITH STANDBY EQUIPMENT IS ALSO ONE THAT CAN BE EMPLOYED TO ENSURE THAT THE OCCURRENCE OF A FAULT DOES NOT CAUSE AN APPRECIABLE LOSS OF SYSTEM FACILITIES.

*OPERATING EXPERIENCE + *RELIABILITY, SYSTEM + DATA PROCESSING + REDUNDANCE

9-29164
AYATOMO K
A STATISTICAL DESIGN PROCEDURE FOR RELIABLE CIRCUIT MODULE
HITACHI, LTD., JAPAN
RELIABILITY ABSTRACTS AND TECH. REVIEWS 8(10), P. 169, OCT. 1968

AN EXPANDED OVERSTRESS MONTE CARLO METHOD HAS BEEN PROPOSED FOR THE DESIGN OF CIRCUIT MODULES. PROBABILITY DISTRIBUTIONS WERE BASED ON DRIFT FAILURE OF THE ELEMENTS OF THE CIRCUIT MODULES AND A COMPUTERIZED SIMULATION OF ACCELERATED ENDURANCE TESTING FOLLOWED. INTERVAL ESTIMATES WERE THUS OBTAINED FOR FAILURE RATES CORRESPONDING TO A SPECIFIED POINT IN TIME BY COMPUTATIONS OF SHORT DURATION. RELIABILITY APPROACH TO THE DESIGN OF CIRCUIT MODULES IS DISCUSSED.

*FAILURE, INSTRUMENT + *STATISTICAL ANALYSIS + COMPUTER PROGRAM + MONTE CARLO + PROBABILITY + RELIABILITY, COMPONENT

9-29165
ALEKSEYEV OG
A PROBLEM IN OPTIMAL REDUNDANCY
RELIABILITY ABSTRACTS AND TECH. REVIEWS 8(10), P. 170, OCT. 1968

THE SOLUTION OF THE PROBLEM OF OPTIMAL REDUNDANCY OF AN APPARATUS IS INVESTIGATED FOR SEVERAL RESTRICTIONS USING THE METHOD OF DYNAMIC PROGRAMMING. FOR RESTRICTION OF THE SEARCH REGION, ADDITIONAL RESTRICTIONS ARE INTRODUCED PERMITTING SIGNIFICANT DECREASE IN THE SIZE OF THE COMPUTATION OPERATION AND THE REQUIREMENTS ON THE COMPUTER MEMORY.

*REDUNDANCE + *RELIABILITY ANALYSIS + COMPUTER PROGRAM

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-29166
RUBIN DK
THE APPROXIMATE RELIABILITY OF TRIPLY REDUNDANT MAJORITY-VOTED SYSTEMS
CALIFORNIA INSTITUTE OF TECHNOLOGY
RELIABILITY ABSTRACTS AND TECH. REVIEWS 8(10), P. 170, OCT. 1968

AN APPROXIMATION METHOD IS PROPOSED FOR DETERMINING THE RELIABILITY OF TRIPLY REDUNDANT MAJORITY-VOTED SYSTEMS. OPERATIONAL CHARACTERISTICS OF THE PROPOSED METHOD WERE STUDIED BY A GENERALIZED LOGIC NETWORK- AND RELIABILITY WAS DETERMINED BY A SUMMATION OF SUCCESS PROBABILITIES AND BY MINIMAL CUT, MONTE CARLO, AND AUGMENTED BLOCK APPROXIMATIONS. THE METHOD OF AUGMENTED BLOCKS, CONSIDERED THE PREFERRED APPROXIMATION, IS REVIEWED FOR BOTH SIMPLE SERIES NETWORKS AND FOR MORE COMPLEX LOGIC INTERCONNECTION PATTERNS. THIS TECHNIQUE OFFERS THE ADVANTAGE OF ABOUT A 1000-FOLD INCREASE IN SPEED OVER OTHER METHODS WITH LITTLE, IF ANY, LOSS IN ACCURACY.

*REDUNDANCE + *RELIABILITY, SYSTEM + MONTE CARLO + PROBABILITY

9-29167
SMITH JS + VACCARO J
FAILURE MECHANISMS AND DEVICE RELIABILITY
RELIABILITY ABSTRACTS AND TECH. REVIEWS 8(10), P. 177, OCT. 1968

THE PAPER SHOWS HOW EXPRESSIONS FOR FAILURE MECHANISMS MAY BE DERIVED AND RELATED TO DEVICE RELIABILITY. THE NECESSARY CONDITIONS AND LIMITATIONS OF SUCH RELATIONS ARE EXAMINED, AND THEIR APPLICABILITY TO PRACTICAL DEVICE RELIABILITY PROBLEMS IS ASSESSED. THE ROLE OF THE RELIABILITY PHYSICIST IN FURNISHING NEEDED INFORMATION AND UNDERSTANDING AT THE MECHANISM LEVEL IS INDICATED.

FAILURE, COMPONENT + RELIABILITY, COMPONENT

9-29168
BONIS AJ
BAYESIAN RELIABILITY DEMONSTRATION PLANS
RELIABILITY ABSTRACTS AND TECH. REVIEWS 8(10), P. 180, OCT. 1968

DIFFICULTIES ENCOUNTERED IN PRESENT-DAY RELIABILITY DETERMINATIONS ARE MENTIONED, AND A BAYESIAN RELIABILITY DEMONSTRATION TEST IS PRESENTED AS A PRACTICAL MEANS OF OVERCOMING THESE DIFFICULTIES. THIS TEST METHOD PERMITS THE MATHEMATICAL COMBINATION OF ENGINEERING JUDGMENTS AND EXPERIENCE WITH LIMITED TEST DATA- AND SEVEN EXAMPLES ARE INCLUDED TO ILLUSTRATE THE USE OF THE PROPOSED METHOD. THE EXPONENTIAL DISTRIBUTION FOR THE USUAL CASE OF ELECTRONIC EQUIPMENT IS DISCUSSED, AND RANGE AND ESTIMATION OF RELIABILITY PARAMETERS ARE CONSIDERED. TABLES INDICATE THE MAXIMUM ALLOWABLE NUMBER OF FAILURES UNDER THREE DIFFERENT CONDITIONS.

*RELIABILITY ANALYSIS + INSTRUMENT, COMPONENT + MATHEMATICAL TREATMENT + TEST, COMPONENT

9-29181
AKIMOTO S
METHOD FOR CONTROLLING A REACTOR
HITACHI, LTD.
JAPANESE 1966-9118 +. MAY 14, 1966

IN THE REACTOR CONTROL METHOD GIVEN, A LIQUID NEUTRON-ABSORBING MATERIAL IS EMPLOYED, AND A VARIETY OF ITS APPLICATIONS IS POSSIBLE. A SATURATED SOLUTION OF H3BO3 IS CIRCULATED THROUGH A CLOSED PIPE-LINE, PART OF WHICH IS IN THE REACTOR CORE. IN THE PIPELINE THE SOLUTION IS FILTERED TO TRAP CRYSTAL GRAINS OF THE NEUTRON-ABSORBING BUKIC ACID, AND ALSO, A HEATER AND COOLER TO ADJUST THE TEMPERATURE OF THE CIRCULATING SOLUTION IS INSTALLED. THUS BY CHANGING THE CONCENTRATION IN THE SATURATED SOLUTION, THE REACTOR CAN BE CONTROLLED.

AVAILABILITY - FOREIGN PATENTS MAY BE OBTAINED IN PHOTOCOPY FROM THE U.S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D.C. (\$0.30 CENTS/PAGE)

*BORON + *POISON, SOLUBLE + JAPAN + PATENT + REACTOR CONTROL

9-29184
SUZUKI Y
SAFETY DEVICE FOR A NUCLEAR REACTOR
FUJI ELECTRIC MFG. CO., LTD.
JAPANESE PATENT 1966-16918 +. SEPT. 26, 1966

IN THE REACTOR SCRAM, A CONTROL ROD IS USUALLY DROPPED INTO THE REACTOR CORE BY GRAVITATION. IN THE PROPOSED DEVICE A WEIGHT IS USED TO ACHIEVE MUCH FASTER DROPPING. IN THE REACTOR SCRAM THE WEIGHT DROPS WITH THE CONTROL ROD, AND AFTER DROPPING FOR A SET VERTICAL DISTANCE IT IS STOPPED AND RECEIVED BY THE BUMPER. THE CONTROL ROD, WHICH HAS DETACHED FROM THE WEIGHT, DROPS INTO THE REACTOR CORE FOR THE FINAL REACTOR SHUT-DOWN.

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-29184 *CONTINUED*
AVAILABILITY - FOREIGN PATENTS MAY BE OBTAINED IN PHOTOCOPY FROM THE U.S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D.C. (\$0.30 CENTS/PAGE)

*CONTROL ROD SCRAM MECHANISM + JAPAN + PATENT

9-29185 ALSO IN CATEGORY 11
OGASAWARA H
SAFETY SYSTEM FOR A NUCLEAR REACTOR
HITACHI LTD.
JAPANESE PATENT 1966-18038 +. OCT. 15, 1966

THE REACTOR IS INSTALLED IN A DRY WELL, AND THE WATER POOL SURROUNDS THIS DRY WELL. THE FLUID, E.G., VAPOR (AT THE TIME OF THE ACCIDENT) IS LED INTO THE POOL FROM THE DRY WELL THROUGH TWO LONG PIPES WHICH EXTEND INTO THE POOL IN OPPOSITE DIRECTIONS. THE END OF EACH PIPE WITHIN THE POOL IS BENT IN THE HORIZONTAL SAME DIRECTION. THE FLUID EJECTED FROM THE PIPES FLOWS CIRCUMFERENTIALLY IN THE POOL. AS RESULT, THE DEPTH OF WATER IN THE POOL CAN BE SHALLOWER THAN IN THE ORDINARY POOLS.

AVAILABILITY - FOREIGN PATENTS MAY BE OBTAINED IN PHOTOCOPY FROM THE U.S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D.C., (\$0.30 CENTS/PAGE)

*CONTAINMENT, WATER FILLED + JAPAN + PATENT + REACTOR SAFETY SYSTEM

9-29186 ALSO IN CATEGORY 11
GOKO H
SAFETY SYSTEM FOR A NUCLEAR REACTOR
HITACHI LTD.
JAPANESE PATENT 1966-18039 +. OCT. 15, 1966

THE REACTOR IS INSTALLED IN A DRY WELL, AND THE WATER POOL SURROUNDS THIS DRY WELL. THE FLUID, E.G., VAPOR (AT THE TIME OF AN ACCIDENT), IS LED INTO THE POOL FROM THE DRY WELL THROUGH A LONG PIPE. A PART OF THE LONG PIPE IS PARTITIONED BELOW THE DRY WELL AND THE POOL BY MEANS OF TWO THIN PLATES TO GIVE A SMALL ROOM. THE SMALL ROOM AND PIPE ARE CONSTANTLY FILLED WITH WATER. AT THE TIME OF A REACTOR ACCIDENT, WHEN VAPOR FLOWS THROUGH THE LONG PIPE, THE TWO THIN PLATES ARE DESTROYED AND THE LIQUID CAN BE SUPPLIED TO CONDENSE THE VAPOR BEFORE IT REACHES THE POOL WATER.

AVAILABILITY - FOREIGN PATENTS MAY BE OBTAINED IN PHOTOCOPY FROM THE U.S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D.C. (\$0.30 CENTS/PAGE)

*CONTAINMENT, WATER FILLED + JAPAN + PATENT + REACTOR SAFETY SYSTEM

9-29187 ALSO IN CATEGORY 11
OGASAWARA H
SAFETY SYSTEM FOR A NUCLEAR REACTOR
HITACHI LTD.
JAPANESE PATENT 1966-16919 +. SEPT. 26, 1966

THE REACTOR IS INSTALLED IN A DRYWELL, AND THE WATER POOL SURROUNDS THIS DRY WELL, THE FLUID VAPOR (AT THE TIME OF AN ACCIDENT) IS LED INTO THE POOL FROM THE DRY WELL THROUGH A LONG PIPE. A MEANS IS PROVIDED FOR INTRODUCING A LIQUID (TO CONDENSE THE FLUID) AT A PART OF THE LONG PIPE BETWEEN THE DRY WELL AND THE SURROUNDING POOL.

AVAILABILITY - FOREIGN PATENTS MAY BE OBTAINED IN PHOTOCOPY FROM THE U.S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D.C. (\$0.30 CENTS/PAGE)

*CONTAINMENT, WATER FILLED + JAPAN + PATENT + REACTOR SAFETY SYSTEM

9-29188 ALSO IN CATEGORY 11
GOKO H
SAFETY SYSTEM FOR A NUCLEAR REACTOR
HITACHI LTD.
JAPANESE PATENT 1966-17798 +. OCT. 11, 1966

THE REACTOR IS INSTALLED IN A DRY WELL, AND THE WATER POOL SURROUNDS THIS DRY WELL. THE FLUID, E.G., VAPOR (AT THE TIME OF AN ACCIDENT), IS LED INTO THE POOL FROM THE DRY WELL THROUGH A LONG PIPE. A PIPE RUNNING FROM WITHIN THE POOL AND BETWEEN THE DRYWELL AND THE POOL IS INSTALLED. BOTH ENDS OF THE PIPE ARE OPEN. AT THE TIME OF AN ACCIDENT, WHEN VAPOR FLOWS THROUGH THE LONG PIPE PLATES ARE DESTROYED, AND WATER IS INTRODUCED INTO THE LONG PIPE FROM THE POOL.

AVAILABILITY - FOREIGN PATENTS MAY BE OBTAINED FROM THE U.S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D.C. (\$0.30 CENTS/PAGE)

*CONTAINMENT, WATER FILLED + JAPAN + PATENT + REACTOR SAFETY SYSTEM

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-29194 ALSO IN CATEGORY 11
SAFETY DEVICE FOR PRESSURE TUBE NUCLEAR REACTORS
COMMISSARIAT A L'ENERGIE ATOMIQUE
FRENCH PATENT 1,449,804 +. JULY 11, 1966

THE REACTOR MAY PRODUCE AN IMPORTANT RELEASE OF GAS IN THE CASE OF ACCIDENT. THE INSTALLATION INCLUDES A PRACTICALLY AIRTIGHT ENCLOSURE CONTAINING ELEMENTS OF THE PRIMARY COOLING CIRCUIT, WELL COLLECTORS, AND A PIPE CONNECTING THE ENCLOSURE TO THE ATMOSPHERE. THE PIPE HAS AT LEAST EQUAL VOLUME TO THAT OCCUPIED BY THE GAS RELEASED IN AN ACCIDENT AT ABNORMAL PRESSURE. THE PIPE HAS A STRAIGHT FLAT SECTION AND IS EQUIPPED WITH GUIDING PIERS IN ORDER TO COOL THE GAS AND PREVENT MIXING OF THE CONTAMINATED GAS RELEASED DURING THE ACCIDENT WITH THE AIR NORMALLY OCCUPYING THE PIPE. THE ENCLOSURE CONSISTS OF A BIOLOGICAL SHIELD CONTAINING THE REACTOR AND THE HEAT EXCHANGERS.

AVAILABILITY - FOREIGN PATENTS MAY BE OBTAINED FROM THE U.S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D.C. (\$0.30 CENTS/PAGE)

*CONTAINMENT, PRESSURE RELIEF + CONTAINMENT STRUCTURE + FRANCE + PATENT + PIPING

9-29195
CONTROL MECHANISM FOR CONTROL RODS
COMMISSARIAT L'ENERGIE ATOMIQUE
FRENCH PATENT 1,458,620 +. OCT. 3, 1966

THE MECHANISM IS USED IN LIQUID METAL-COOLED REACTORS AND COMPRISES GRIPPING ORGANS FOR THE HEAD OF THE CONTROL ROD, AND A CONTROL STEM FOR THESE ORGANS IN A COAXIAL TRANSFER TUBE. MEANS ARE PROVIDED OUTSIDE THE REACTOR VESSEL FOR THE TRANSFER OF THE TUBE THROUGH THE VESSEL. A SEALING LABYRINTH JOINT IS DISPOSED BETWEEN THE TUBE AND THE VESSEL AND A METALLIC BELLOWS BETWEEN AND THE CONTROL SYSTEM. THE TUBE INCLUDES OPENINGS, ALLOWING FREE CIRCULATION OF THE LIQUID METAL THROUGH THE TUBE WHILE GUIDING ORGANS FOR THE CONTROL STEM HAVING A POINT CONTACT WITH THE LATTER. THE TUBE MAY BE GUIDED IN ITS TRANSFER BY A FIXED EXTERNAL TUBE HAVING OPENINGS FOR THE FREE CIRCULATION OF THE LIQUID FROM THE VESSEL.

AVAILABILITY - FOREIGN PATENTS MAY BE OBTAINED FROM THE U.S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D.C. (\$0.30 CENTS/PAGE)

*CONTROL ROD DRIVE + FRANCE + PATENT + REACTOR, LMCR

9-29196 ALSO IN CATEGORY 5
LE FOLL J
DEVICE FOR INCREASING THE HEAT TRANSFER RATE BETWEEN A FLOWING MEDIUM AND A NUCLEAR REACTOR FUEL ELEMENT
COMMISSARIAT A L'ENERGIE ATOMIQUE
GERMAN PATENT 1,217,511 +. MAY 26, 1966

THE RATE OF HEAT TRANSFER FROM THE EXTERNAL WALL OF A FUEL ELEMENT HAVING A FINNED HEAT TRANSFER SURFACE, TO A FLUID FLOWING ALONG THE WALL, IS INCREASED BY A GUIDE MEMBER HAVING AN AEROFOIL CROSS SECTION AND ARRANGED IN THE PATH OF THE FLUID WITH THE EXTRADOS FACING THE FUEL ELEMENT. THE AEROFOIL IS FORMED AS AN ANNULUS OR AS A HELIX ABOUT THE FUEL ELEMENT, THE LEADING EDGE BEING DIRECTED UPSTREAM.

AVAILABILITY - FOREIGN PATENTS MAY BE OBTAINED FROM THE U.S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D.C. (\$0.30 CENTS/PAGE)

*FUEL ELEMENT + *HEAT TRANSFER + COMPONENTS, MISCELLANEOUS + GERMANY + PATENT

9-29197
SMITH RA
CONTROL DEVICE FOR NUCLEAR REACTORS
U.S. ATOMIC ENERGY COMMISSION
U.S. PATENT 3,344,034 +. SEPT. 26, 1967

IMPROVEMENTS IN A NUCLEAR REACTOR CONTROL ROD COMPRISED OF A ROD LIKE MEMBER AND A FEED MEANS TO VARY THE EXTENT OF THE RODS PENETRATION INTO THE CORE ARE PRESENTED. THE ROD IS COUPLED WITH A FEED MEMBER OF THE FEED MEANS THROUGH AN ENERGIZED ELECTROMAGNET WHICH ON DEENERGIZATION RELEASES THE ROD FOR IMMEDIATE INSERTION INTO THE CORE. THE FEED MEMBER IS A LEAD SCREW ENGAGING A NUT DEVICE OF THE RECIRCULATING BALL TYPE. A VERNIER MOTOR, CONNECTED TO THE NUT DEVICE, CREATES STEPWISE ANGULAR MOTION TO ESTABLISH ACCURATE CONTROL OF THE POSITION OF THE ROD.

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

*CONTROL ROD DRIVE + *CONTROL ROD SCRAM MECHANISM + PATENT + UNITED STATES

9-29198 ALSO IN CATEGORY 5

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-29198 *CONTINUED*
COSTES D
HEAT REMOVAL DEVICE
COMMISSARIAT A L'ENERGIE ATOMIQUE
CANADIAN PATENT 736,373 +. JUNE 14, 1966

A HEAT REMOVAL SYSTEM FOR A REACTOR IS PROPOSED WHEREIN THE LEAKAGE FLOW, OCCURRING AFTER A SERIOUS FAILURE IN ONE ZONE OF COOLING CIRCULATION UNDER PRESSURE IS REDUCED TO A MINIMUM. INSTEAD OF PLACING THE HEAT EXCHANGER AND PUMPS IN PARALLEL WITH THE MAIN FLOW AROUND THE FUEL RODS, SEVERAL ADDITIONAL VALVES ARE INTRODUCED. THESE EXTRA VALVES ALLOW THE ISOLATION OF A LEAK TO RELATIVELY SMALL PORTION OF THE SYSTEM SO THAT THE NORMAL PRESSURE AND FLOW IN ADJACENT PORTIONS IS MAINTAINED.

AVAILABILITY - FOREIGN PATENTS MAY BE OBTAINED FROM THE U.S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D.C. (\$0.30 CENTS/PAGE)

*HEAT TRANSFER + *INSTRUMENT, COOLANT QUALITY + CANADA + COOLING, GENERAL + LEAK + PATENT + SYSTEM DESCRIPTION

9-29199
LEBEY J + COSTES D
NUCLEAR REACTOR CONTROL APPARATUS
COMMISSARIAT A L'ENERGIE ATOMIQUE
CANADIAN PATENT 761,076 +. JUNE 13, 1967

RAPID SHUTDOWN OF A NUCLEAR ROCKET IS ACHIEVED BY POURING NEUTRON ABSORBING MATERIAL OF GRAIN OR SHOT SIZE INTO THE CORE. A RESERVOIR ABOVE A VERTICAL CHANNEL INTO THE CORE HOLDS THE SHOT UNTIL REQUIRED. A VALVE ACTUATED BY PRESSURE DIFFERENCES IN FUEL ELEMENT CHANNEL AND THE RESERVOIR IS OPENED WHEN SHUTDOWN IS NECESSARY. A DEVICE EMPLOYING A HYDRAULIC RAM IS PROVIDED FOR REMOVING THE SHOT WHEN NORMAL OPERATION IS TO BE RESUMED.

AVAILABILITY - FOREIGN PATENTS MAY BE OBTAINED FROM THE U.S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D.C. (\$0.30 CENTS/PAGE)

*NUCLEAR ROCKET + *SHUTDOWN MECHANISM, SELF + CANADA + PATENT

9-29200
POULET R
CONTROL APPARATUS FOR DETECTING BETA AND GAMMA RADIATIONS
COMMISSARIAT A L'ENERGIE ATOMIQUE
CANADIAN PATENT 777,859 +. FEBRUARY 6, 1968

SEVERAL GEIGER-MUELLER DETECTORS ARE LOCATED IN THE UPRIGHTS OF GANTRY BETWEEN WHICH PERSONS WALK WHO MAY BE CONTAMINATED. THE AMPLIFIER AND OTHER ELECTRONIC EQUIPMENT IS CONTAINED IN A BOX ON THE TOP. THERE ARE TWO INTEGRATOR CIRCUITS WITH TIME CONSTANTS DIFFERING BY MORE THAN FIVE SECONDS. THE CIRCUIT INCLUDES A PREAMPLIFIED AND ELECTRONIC FLIP-FLOP SHAPING CIRCUIT, A GALVANOMETER AS INDICATOR, A RELAY CONTROLLED BY THE GALVANOMETER WHICH ACTUATES AN AUDIBLE WARNING SIGNAL. ANOTHER CIRCUIT CONNECTED TO THE GALVANOMETER INCREASES THE SENSITIVITY AT LOW RADIATION.

AVAILABILITY - FOREIGN PATENTS MAY BE OBTAINED FROM THE PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D.C. (\$0.30 CENTS/PAGE)

*INSTRUMENT, RADIATION MONITORING + *MONITOR, RADIATION, PERSONNEL + BETA EMITTER + CANADA + GAMMA + PATENT

9-29201 ALSO IN CATEGORY 5
SAFETY DEVICE FOR A HEAT EXCHANGE SYSTEM
CNEN
BRITISH PATENT 1,064,273 +. APRIL 5, 1967

A DESIGN FOR A SAFETY DEVICE FOR A HEAT EXCHANGE SYSTEM, COMPRISED OF THE PRIMARY AND SECONDARY LOOPS, IS GIVEN. AN EXPANSION VESSEL IS CONNECTED TO THE PRIMARY LOOP, A DRAIN TANK CONNECTED TO THE PRIMARY LOOP BY WAY OF A VALVE, A VENT CONNECTING THE SECONDARY LOOP TO THE ATMOSPHERE, AND A PRESSURE SENSOR IN THE PRIMARY LOOP SERVE TO KEEP THE PRIMARY LOOP PRESSURES AT LOWER THAN DESIGN VALUES.

AVAILABILITY - THE BRITISH PATENT OFFICE, 25 SOUTHAMPTON BUILDING, LONDON, W.C. 2, ENGLAND (\$0.30 CENTS/COPY)

*HEAT EXCHANGER + INSTRUMENT, PROCESS + PATENT + UNITED KINGDOM

9-29202 ALSO IN CATEGORY 5
METHOD AND APPARATUS FOR INCREASING THE CRITICAL HEAT FLUX FOR HIGH PRESSURE STEAM-WATER FLOW IN NUCLEAR REACTORS
ATOMIC ENERGY OF CANADA, LTD.
BRITISH PATENT 1,061,878 +. MARCH 15, 1967

A DESIGN IS GIVEN FOR AN APPARATUS WHICH INCREASES THE CRITICAL HEAT FLUX FOR PRESSURIZED

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-29202 *CONTINUED*

BOILING WATER REACTORS. THE DESIGN COMPRISES A SERIES OF ROUGHNESS RINGS ATTACHED TO THE INNER SURFACE OF THE COOLANT CHANNELS OF THE FUEL.

AVAILABILITY - THE BRITISH PATENT OFFICE, 25 SOUTHAMPTON BUILDING, LONDON, W.C. 2, ENGLAND (\$0.30 CENTS/COPY)

*FLOW, TWO PHASE + *INSTRUMENT, FLOW + HEAT TRANSFER + PATENT + REACTOR, PWR + UNITED KINGDOM

9-29203

DEIGHTON T
IMPROVEMENTS IN NUCLEAR REACTORS
BABCOCK AND WILCOX LTD.
BRITISH PATENT 1,067,551 +. MAY 3, 1967

A LIQUID-COOLED REACTOR WITH FUEL ELEMENTS POSITIONED BY A LOWER SUPPORT AND REMOVABLE UPPER SUPPORT IS DESCRIBED. VERTICALLY MOVABLE REACTOR CONTROL RODS ARE ARRANGED IN SPACES BETWEEN ADJACENT FUEL ELEMENTS.

AVAILABILITY - THE BRITISH PATENT OFFICE, 25 SOUTHAMPTON BUILDING, LONDON, W.C. 2, ENGLAND (\$0.30 CENTS/COPY)

*CONTROL ROD INTERACTION + *FUEL HANDLING + PATENT + UNITED KINGDOM

9-29205

NUCLEAR REACTOR WITH EMERGENCY COOLANT CROSS FLOW
U.S. ATOMIC ENERGY COMMISSION
BRITISH PATENT 1,067,905 +. MAY 3, 1967

AN EMERGENCY COOLANT CROSS FLOW DESIGN IS DESCRIBED IN A NUCLEAR REACTOR. THE COOLANT FLOWS ACROSS THE FUEL RODS DURING AN EMERGENCY SUCH AS AN INCREASE IN REACTIVITY WITHIN THE REACTOR, THUS VOIDING THE COOLANT. SHAPING OF THE INDIVIDUAL FUEL RODS AND ARRANGING THE FUEL AND MODERATOR PORTIONS ARE DISCUSSED.

AVAILABILITY - THE BRITISH PATENT OFFICE, 25 SOUTHAMPTON BUILDING, LONDON, W.C. 2, ENGLAND (\$0.30 CENTS/COPY)

*CORE REFLOODING SYSTEM + EMERGENCY SYSTEM + PATENT + UNITED KINGDOM

9-29206

MARGEN PHE
DEVICE FOR CONTROLLING THE REACTIVITY OF A NUCLEAR REACTOR HAVING A FORCED COOLANT CIRCULATION SYSTEM
AKTIEBOLAGET ATOMENERGI
BRITISH PATENT 1,090,824 +. NOVEMBER 15, 1967

THE DESCRIPTION OF A REACTOR WITH UPWARD COOLANT FLOW IS PRESENTED. A NEUTRON ABSORBING BODY CONSISTING OF A PLURALITY OF BALLS OF NEUTRON ABSORBING MATERIAL PLACED ON TOP OF EACH OTHER IN A TUBE HAS AN OPEN END IN THE COOLANT FLOW OF THE CORE AND A CLOSED END ABOVE THE CORE. THE CONTROL BALLS MOVE VERTICALLY IN THE TUBE DEPENDING ON THE COOLANT FLOW RATE THROUGH THE CORE.

AVAILABILITY - THE BRITISH PATENT OFFICE, 25 SOUTHAMPTON BUILDING, LONDON, W.C. 2, ENGLAND (\$0.30 CENTS/COPY)

*REACTIVITY EFFECT + PATENT + REACTOR CONTROL + UNITED KINGDOM

9-29208

GANDOLFO JM
METHOD AND APPARATUS FOR DETERMINING THE AMOUNT OF LEAKAGE FROM CHAMBERS
EURATOM
BRITISH PATENT 1,066,004 +. APRIL 19, 1967

THE METHOD AND EQUIPMENT USED FOR THE RAPID DETERMINATION OF THE AMOUNT OF LEAKAGE FROM CHAMBERS SUCH AS GLOVE BOXES ARE DESCRIBED. A TIGHTLY SEALED STANDARD BOX IS SUBJECTED TO THE SAME NEGATIVE PRESSURE AS THE CHAMBER UNDER TEST. THE STANDARD BOX IS SEPARATED FROM THE CHAMBER BY ONE OR MORE COCKS AND THE CHAMBER UNDER TEST IS KEPT AT THE SAME NEGATIVE PRESSURE AS THE STANDARD BOX BY EVACUATION OF LIQUID FROM A CONTAINER CONNECTED TO THE CHAMBER UNDER TEST. THE AMOUNT OF LEAKAGE IS CALCULATED FROM THE AMOUNT OF LIQUID EVACUATED.

AVAILABILITY - THE PATENT OFFICE, 25 SOUTHAMPTON BUILDING, LONDON, W.C. 2 ENGLAND (\$0.30 CENTS/COPY)

*GLOVE BOX + *INSTRUMENT, FLOW + *LEAK RATE + LEAK + PATENT + UNITED KINGDOM

9-29209

VAYMUGIN AA + DUROVSKII BG + EVSEEV AY + KISIL IM + KONSTANTINOV LV + LYURTCHENKO VF + MINASHIN ME +

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-29209 *CONTINUED*

POSTINKOV VV + SNITKO EI + SHARAPOV VN
THE STUDY OF THE LATTICE PARAMETERS AND ENERGY RELEASE CONTROL IN THE BELOYARSK ATOMIC POWER PLANT REACTOR
CONF-6706C7 +. 3 PAGES, PP. 226-228 OF THE PHYSICS PROBLEMS IN THERMAL REACTOR DESIGN, LONDON, BRITISH
NUCLEAR ENERGY SOCIETY, 1967

IN THE COURSE OF DESIGNING THE REACTOR, DETAILED INVESTIGATIONS WERE MADE OF LATTICE DATA, REACTIVITY, AND FLUX DISTRIBUTIONS, TOGETHER WITH STUDIES OF THE EFFECT OF LOCAL LATTICE NON-UNIFORMITIES ON THE FLUX IN ADJACENT FUEL CHANNELS. IN OPERATION, THE REACTOR POWER DISTRIBUTION IS MONITORED BY MEASUREMENTS OF THE RELATIVE EFFECTIVENESS OF CONTROL RODS. THE STUDY OF LATTICE PARAMETERS AND LOCAL FLUX PERTURBATIONS WAS CARRIED OUT IN A CENTRAL TEST REGION OF A URANIUM-GRAPHITE EXPERIMENTAL REACTOR, THE SIZE OF TEST REGION BEING CHOSEN TO BE SUFFICIENT TO GIVE A REPRESENTATIVE NEUTRON SPECTRUM. FURTHER DATA WERE OBTAINED DURING COMMISSIONING OF THE BAPP REACTOR. THESE RESULTS WERE IN SATISFACTORY AGREEMENT WITH THOSE OBTAINED BY THE TEST REGION TECHNIQUE.

*DESIGN STUDY + REACTOR DESCRIPTION + REACTOR DYNAMICS

9-29420

GRYNA FM

BASIC STATISTICAL CONCEPTS OF RELIABILITY

THE MARTIN COMPANY, BALTIMORE 3, MARYLAND

1 PAGE, PROCEEDINGS 7TH NATIONAL SYMPOSIUM ON RELIABILITY + QUALITY CONTROL, PG. 41, JANUARY 9, 1961

RELIABILITY IS NOW A QUANTATIVE PARAMETER AND NOT A WEAK GENERALITY. STATISTICS PLAYS A KEY ROLE IN THIS QUANTIFICATION. PURPOSE OF THIS PAPER IS TO EXPLAIN BASIC STATISTICAL CONCEPTS USEFUL IN RELIABILITY. SOME BASIC DEFINITIONS ARE PRESENTED, THEN RELIABILITY OF PARTS, RELATIONSHIP OF PART TO SYSTEM, PATTERNS FOR SYSTEMS, AND FINALLY THE EVALUATION OF RELIABILITY DATA IS DISCUSSED.

AVAILABILITY - FRANK M. GRYNA, JR., THE MARTIN COMPANY, BALTIMORE 3, MARYLAND

*RELIABILITY, SYSTEM + RELIABILITY ANALYSIS + RELIABILITY, COMPONENT + STATISTICAL ANALYSIS

9-29421

BIRD GT

ON THE BASIC CONCEPTS OF RELIABILITY PREDICTION

ARINC RESEARCH CORPORATION

1 PAGE, PROCEEDINGS 7TH NATIONAL SYMPOSIUM ON RELIABILITY + QUALITY CONTROL, P. 51, JANUARY 9, 1961

THIS PAPER SETS FORTH A FEW OF THE MORE IMPORTANT FUNDAMENTAL CONCEPTS OF RELIABILITY AND RELIABILITY PREDICTIONS, BASED ON THE CONCEPT THAT THE ABILITY TO PREDICT RELIABILITY IS TANTAMOUNT TO UNDERSTANDING THE UNDERLYING CAUSES OF UNRELIABILITY, THAT WHEN THE CAUSES OF UNRELIABILITY ARE KNOWN, THEY CAN BE CORRECTED, AND, THEREFORE, WHEN USED IN THE DESIGN PHASE, PREDICTION TECHNIQUES CAN ENSURE A PRESCRIBED LEVEL OF SYSTEM RELIABILITY IN THE FIELD.

AVAILABILITY - GEORGE T. BIRD, ENGINEERING CONSULTANT, ARINC RESEARCH CORPORATION

*RELIABILITY ANALYSIS + FORECAST + RELIABILITY, SYSTEM

9-29422

BURNETT TL + WALES BA

SYSTEM RELIABILITY CONFIDENCE LIMITS

IBM FEDERAL SYSTEMS DIVISION

11 PAGES, PROCEEDINGS 7TH NATIONAL SYMPOSIUM ON RELIABILITY + QUALITY CONTROL, PG. 118-120, JAN. 9, 1961

RELIABILITY REQUIREMENTS, IF SPECIFIED, ARE USUALLY GIVEN FOR THE TOTAL SYSTEM RATHER THAN FOR INDIVIDUAL EQUIPMENTS IN THE SYSTEM. EARLY TESTING IS PERFORMED ONLY ON EQUIPMENTS AND PROVIDES ESTIMATES OF EQUIPMENT RELIABILITIES. THIS PAPER PRESENTS METHODS FOR CONSTRUCTING STATISTICAL CONFIDENCE LIMITS ON SYSTEM RELIABILITY FROM EQUIPMENT TEST RESULTS. AN INDICATION OF THE COMPARISON BETWEEN ACTUAL SYSTEM RELIABILITY AND REQUIRED SYSTEM RELIABILITY WOULD THEN BE AVAILABLE BEFORE ACTUAL SYSTEM IS ASSEMBLED.

AVAILABILITY - THOMAS L. BURNETT AND BEVERLY A. WALES, IBM FEDERAL SYSTEMS DIVISION, OWEGO, NEW YORK

*RELIABILITY ANALYSIS + *STATISTICAL CORRELATION + MATHEMATICAL TREATMENT + RELIABILITY, SYSTEM

9-29423

KNEALE SG

RELIABILITY OF PARALLEL SYSTEMS WITH REPAIR AND SWITCHING

AVCO CORPORATION

5 PAGES, 3 FIGURES, PROCEEDINGS 7TH NATIONAL SYMPOSIUM ON RELIABILITY + QUALITY CONTROL, PG. 129-133, JANUARY 9, 1961

MOST OF THE AVAILABLE LITERATURE ON THE SUBJECT OF USING REDUNDANCY TO IMPROVE SYSTEM RELIABILITY SOLVES THE PROBLEM ONLY FOR THE ASSUMPTION THAT FAILURE OF ANY ONE OF THE PARALLEL SUBSYSTEMS IS COMPLETE, CATASTROPHIC, AND FINAL. IN MANY CASES OF PRACTICAL INTEREST, HOWEVER, REPAIR CAPABILITY EXISTS. IT MAY BE USED TO REPAIR THE FAILURE OF A

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-29423 *CONTINUED*

REDUNDANT ELEMENT BEFORE THE SYSTEM ITSELF FAILS, THUS INCREASING MARKEDLY THE RELIABILITY OF THE SYSTEM. THIS ANALYSIS IS APPLICABLE TO ANY EQUIPMENT WHERE FUNCTIONAL REDUNDANCY IS PRESENT AND REPAIR IS POSSIBLE.

AVAILABILITY - DR. S. G. KNEALE, CHIEF OF TECHNICAL ANALYSIS AND PLANNING, ELECTRONICS DIVISION, AVCO CORPORATION, CINCINNATI, OHIO

*REDUNDANCE + *RELIABILITY ANALYSIS + MAINTENANCE AND REPAIR + MATHEMATICAL TREATMENT

9-29424

BREIPOHL AM

A UNIQUE ALLOCATION OF REQUIRED COMPONENT RELIABILITY

SANDIA CORPORATION

9 PAGES, PROCEEDINGS 7TH NATIONAL SYMPOSIUM ON RELIABILITY + QUALITY CONTROL, PG. 189-197, JAN. 9, 1961

PRIMARY PURPOSE OF THIS STUDY WAS TO FIND A METHOD FOR UNIQUELY ESTABLISHING COMPONENT RELIABILITY REQUIREMENTS FROM SYSTEM RELIABILITY SPECIFICATIONS. THE DETERMINATION OF COMPONENT REQUIREMENTS IS CONSIDERED AS TWO SEPARATE PROBLEMS - (1) DETERMINATION OF ALLOWABLE COMPONENT CATASTROPHIC FAILURE PROBABILITIES, AND (2) DETERMINATION OF ALLOWABLE DISTRIBUTIONS OF COMPONENT PERFORMANCE VARIABLES.

AVAILABILITY - ARTHUR M. BREIPOHL, SANDIA CORPORATION, ALBUQUERQUE, NEW MEXICO

*RELIABILITY, COMPONENT + MATHEMATICAL TREATMENT + PROBABILITY + STATISTICAL CORRELATION

9-29425

RCSNER N

SYSTEM ANALYSIS - NON-LINEAR ESTIMATION TECHNIQUES

INTERNATIONAL BUSINESS MACHINES CORPORATION, KINGSTON, NEW YORK

5 PAGES, PROCEEDINGS 7TH NATIONAL SYMPOSIUM ON RELIABILITY + QUALITY CONTROL, PG. 203-207, JANUARY 9, 1961

THIS PAPER DEVELOPS A MATHEMATICAL MODEL DEFINING THE EARLY DEBUGGING PHASE OF AN ELECTRONIC SYSTEM. PARAMETERS TO BE DETERMINED ARE NONLINEAR AND THUS CANNOT BE FOUND BY CONVENTIONAL STATISTICAL TECHNIQUES. A NONLINEAR ESTIMATION TECHNIQUE IS APPLIED TO A VERY COMMON AND IMPORTANT RELIABILITY PROBLEM. ESTIMATION OF THE PARAMETERS OF THE MODEL GIVES INFORMATION ON (1) NUMBER OF FAILURES TO BE EXPECTED DURING ANY PERIOD OF TIME, (2) STATE OF DEBUGGING PHASE AT ANY TIME, (3) EXPECTED MEAN-TIME-TO-FAILURE OF THE EQUIPMENT AFTER DEBUGGING PHASE IS COMPLETED.

AVAILABILITY - NATHAN ROSNER, INTERNATIONAL BUSINESS MACHINES CORPORATION, FEDERAL SYSTEMS DIVISION, KINGSTON, NEW YORK

*RELIABILITY ANALYSIS + *TEST INTERVAL + ANALYTICAL MODEL + FORECAST + RELIABILITY, SYSTEM

9-29426

GOLDTHWAITE LR

FAILURE RATE STUDY FOR THE LOG-NORMAL LIFETIME MODEL

BELL TELEPHONE LABORATORIES, INC., ALLENTOWN, PENNSYLVANIA

6 PAGES, PROCEEDINGS 7TH NATIONAL SYMPOSIUM ON RELIABILITY + QUALITY CONTROL, PG. 208-213, JANUARY 9, 1961

PURPOSE OF THE WORK WAS TO STUDY THE IMPLICATIONS THAT THE LOG-NORMAL ASSUMPTION HOLDS FOR DEVICE RELIABILITY, ESPECIALLY BY A CHARACTERIZATION OF THE NONCONSTANT INSTANTANEOUS FAILURE RATES, AND TO ASSESS THE EFFECTS OF INFERENCES BASED ON THE EXPONENTIAL ASSUMPTION WHEN THE LOG-NORMAL ASSUMPTION IS TRULY APPLICABLE.

AVAILABILITY - LYNN R. GOLDTHWAITE- BELL TELEPHONE LABORATORIES, INC.- ALLENTOWN, PENNSYLVANIA

*RELIABILITY ANALYSIS + *RELIABILITY, COMPONENT + FAILURE, COMPONENT + FORECAST

9-29427

HALL KM + McDONALD RH

IMPROVING SYSTEM RELIABILITY

SYLVANIA ELECTRIC PRODUCTS, INC.

16 PAGES, PROCEEDINGS 7TH NATIONAL SYMPOSIUM ON RELIABILITY + QUALITY CONTROL, PG. 214-229, JANUARY 9, 1961

CONCERNED WITH IMPROVING THE RELIABILITY OF A CONTINUOUSLY OPERATING SYSTEM THROUGH THE USE OF REDUNDANCY AND MONITORING AT THE SUBSYSTEM LEVEL.

AVAILABILITY - K. M. HALL, SENIOR ENGINEER / R. H. McDONALD, DEVELOPMENT ENGINEER - SYLVANIA SYSTEMS DIVISION, RECONNAISSANCE SYSTEMS LABORATORY- MOUNTAIN VIEW, CALIFORNIA

*REDUNDANCE + *RELIABILITY, SYSTEM + THEORETICAL INVESTIGATION

9-29428

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-29428 *CONTINUED*

WILLIAMS RT

THE VALUE OF DESIGN PREDICTION

ARINC RESEARCH CORPORATION, WASHINGTON, D. C.

5 PAGES, PROCEEDINGS 7TH NATIONAL SYMPOSIUM ON RELIABILITY + QUALITY CONTROL, PG. 375-379, JAN. 9, 1961

SPECIFIED PERFORMANCE UNDER STATED ENVIRONMENTAL CONDITIONS FOR A GIVEN PERIOD OF TIME IS RELIABILITY. THE UNIT OF MEASUREMENT IS A PROBABILITY STATEMENT OFTEN EXPRESSED AS MEAN-LIFE. STATISTICAL TECHNIQUES PERMIT RELIABILITY TO BE MEASURED AND PUT INTO MEANINGFUL NUMERICAL FORM. RELIABILITY CAN BE EXPLICITLY STATED AS A REQUIREMENT AND TESTED. RELIABILITY AS A PARAMETER MUST BE DESIGNED INTO NEW SYSTEMS. THE PURPOSE OF THIS PAPER IS TO DISCUSS USE OF PREDICTIONS AS A TOOL TO AID IN DESIGNING RELIABILITY INTO MODERN COMPLEX SYSTEMS.

AVAILABILITY - ROBERT T. WILLIAMS - ARINC RESEARCH CORPORATION- WASHINGTON, D. C.

*FORECAST + *RELIABILITY ANALYSIS + DESIGN CRITERIA

9-29429

EARLES DR

RELIABILITY GROWTH PREDICTION DURING THE INITIAL DESIGN ANALYSIS

THE MARTIN COMPANY, DENVER, COLORADO

14 PAGES, PROCEEDINGS 7TH NATIONAL SYMPOSIUM ON RELIABILITY + QUALITY CONTROL, PG. 380-392, JANUARY 9, 1961

GIVES A RELIABILITY GROWTH PREDICTION TECHNIQUE BASED ON THE MOST RECENT AVAILABLE DATA THAT IS APPLICABLE TO THE ACCELERATED DESIGN AND DEVELOPMENT OF PRESENT DAY WEAPON SYSTEMS.

AVAILABILITY - D. R. EARLES, THE MARTIN COMPANY, DENVER, COLORADO

*FORECAST + *RELIABILITY ANALYSIS + DESIGN STUDY

9-29430

PIERUSCHKA EG

THE MEASURABILITY OF THE RELIABILITY OF AN EXPENSIVE GUIDED MISSILE TYPE

LOCKHEED AIRCRAFT CORPORATION

13 PAGES, PROCEEDINGS 7TH NATIONAL SYMPOSIUM ON RELIABILITY + QUALITY CONTROL, PG. 394-406, JANUARY 9, 1961

GIVES SOME BASIC CONCEPTS OF THE MEASURABILITY OF RELIABILITY. DISCUSSES CONFIDENCE WE MAY HAVE OF RELIABILITY COMPUTED FROM A SMALL SAMPLES, STATISTICAL ASSURANCE THAT THERE IS A DIFFERENCE BETWEEN TWO RELIABILITIES, COMPUTATION OF SYSTEM RELIABILITY WHEN GIVEN TEST DATA OF SUBSYSTEMS, MEASURABILITY OF THE INCREASE OF RELIABILITY DURING THE DEVELOPMENTAL PHASE, AND ASSURANCE OF A CONTRACTUALLY REQUESTED RELIABILITY.

AVAILABILITY - E. G. PIERUSCHKA, LOCKHEED AIRCRAFT CORPORATION, MISSILES AND SPACE DIVISION, SUNNYVALE, CALIFORNIA

*RELIABILITY ANALYSIS + *RELIABILITY, SYSTEM + SAMPLING + THEORETICAL INVESTIGATION

9-29431

FITZGIBBONS RG

QUALITY CONTROL IN RESEARCH AND DEVELOPMENT

RAYTHEON COMPANY, WAYLAND, MASS

20 PAGES, PROCEEDINGS 7TH NATIONAL SYMPOSIUM ON RELIABILITY + QUALITY CONTROL, PG. 429-438, JANUARY 9, 1961

TO ENSURE THE QUALITY OF ENGINEERING-MODEL EQUIPMENT, QUALITY CONTROL SHOULD BE INSTITUTED DURING THE RESEARCH AND DEVELOPMENT PHASES OF A PROGRAM. MINIMUM CRITERIA FOR CONFORMANCE TO MIL-Q-9858 (QUALITY CONTROL SYSTEM REQUIREMENTS) ARE PRESENTED AS WELL AS A SUGGESTED METHOD OF IMPLEMENTING THE CONTROLS.

AVAILABILITY - ROBERT G. FITZGIBBONS, MANAGER, QUALITY CONTROL SECTION, RAYTHEON COMPANY, WAYLAND, MASS.

*QUALITY CONTROL + DESIGN CRITERIA + R AND D PROGRAM + REVIEW

9-29432

LARSON DM + GRINNELL BJ

A COMPARISON OF METHODS OF DRIFT RELIABILITY DETERMINATION

INTERNATIONAL BUSINESS MACHINES CORPORATION

11 PAGES, PROCEEDINGS 7TH NATIONAL SYMPOSIUM ON RELIABILITY + QUALITY CONTROL, PG. 448-458, JAN. 9, 1961

COMPARES THREE METHODS FOR DETERMINING THE DRIFT RELIABILITY OF ELECTRONIC CIRCUITS. THE CIRCUIT-LIFE-TESTING METHOD IS QUANTITATIVE AND DETAILED BUT LIMITED BECAUSE OF TIME AND COST. THE CIRCUIT ANALYSIS TESTING METHOD PRODUCES QUALITATIVE RESULTS WITH A COMPARATIVELY SMALL EXPENDITURE BUT IS LIMITED IN ITS INABILITY TO VARY ALL COMPONENT PARAMETERS AS THE COMPLEXITY OF THE CIRCUIT INCREASES. PREDICTION TECHNIQUES ARE QUANTITATIVE BUT DEPEND UPON WORKABLE CIRCUIT EQUATIONS. THE PROGRAM INDICATES THAT QUANTITATIVE PREDICTION TECHNIQUES AUGMENTED BY QUALITATIVE CIRCUIT ANALYSIS TESTING COULD RESULT IN A PRACTICAL METHOD OF DETERMINING DRIFT RELIABILITY. HOWEVER, APPLICATION OF THESE METHODS ARE LIMITED BY LACK OF COMPONENT PART DATA.

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-29432 *CONTINUED*
AVAILABILITY - DON M. LARSON AND BRUCE J. GRINNELL, INTERNATIONAL BUSINESS MACHINES CORPORATION, FEDERAL SYSTEMS DIVISION, OWEGO, NEW YORK

*FORECAST + *INSTABILITY + *INSTRUMENT, COMPONENT + COMPARISON, THEORY AND EXPERIENCE +
RELIABILITY, COMPONENT

9-29602 ALSO IN CATEGORY 18
CRAFT PCP
DESIGN METHODS FOR NUCLEAR POWER PLANT SYSTEM DESIGN
4 PAGES, ERGONOMICS, 10, 221-4 (MARCH 1967)

INNOVATIONS INTRODUCED IN WYLF A ARE DESCRIBED. THEY INCLUDE THE CHANGE FROM STEEL TO CONCRETE FOR THE REACTOR PRESSURE VESSELS, FROM A POND TO A DRY STORE FOR THE SPENT FUEL, AND FROM A CRANE TO REMOTELY CONTROLLED VEHICLES FOR TRANSPORTING THE REACTOR FUELING AND SERVICING MACHINES. CONTROL OF THE STATION IS ALMOST ENTIRELY CENTRALIZED WITHIN A SINGLE CENTRAL CONTROL ROOM, AND A COMPUTER SYSTEM IS USED FOR DATA PROCESSING AND CONTROL. THE TWIN-REACTOR DATA PROCESSING SYSTEM DEALS WITH SOME 4500 ANALOGUE AND 3000 CONTACT SIGNALS, CARRIES OUT 300 ALARM LEVEL CHECKS EVERY 30 SEC, AND ANALYZES ABOUT 6000 POSSIBLE ALARMS. A LARGE SET OF SUB-SYSTEM TECHNICAL DESIGN ORGANIZATIONS WAS CO-ORDINATED BY AN ESSENTIALLY DIFFERENT MANAGEMENT ORGANIZATION. SOME GENERAL LESSONS THAT EMERGE FROM THIS DESIGN WORK ARE OUTLINED.

*ADMINISTRATIVE CONTROL + *DESIGN STUDY + CONCRETE, PRESTRESSED + DATA PROCESSING + FUEL STORAGE +
PRESSURE VESSEL + REACTOR, GCR + REACTOR, POWER + REFUELING + UNITED KINGDOM

9-29617 ALSO IN CATEGORY 17
MARTIN RD
RESPONSES TO QUESTIONNAIRE RESEARCH REACTOR CONTROL ROD MATERIAL PROBLEMS
UNIVERSITY OF MICHIGAN
30 PAGES, TABLES, OCTOBER 1968

BACKGROUND MATERIAL FOR A NUCLEAR SAFETY JOURNAL 10(1) ARTICLE. 84 QUESTIONNAIRES SENT, 38 REPLIES RECEIVED WITH 23 INDICATING NO OR MINOR PROBLEMS. SEVEN REPORTED PROBLEMS PRIMARILY MECHANICAL, TWO REPORTED PROBLEMS PRIMARILY CORROSION, AND SIX PRIMARILY RELATED TO DIMENSIONAL CHANGE. CORROSION PROBLEMS WERE WITH RODS MADE USING CADMIUM SHEET, AND DIMENSIONAL CHANGE WAS ASSOCIATED WITH B4C POWDER RODS. ***COMPILATION CONSISTS OF THE 38 REPLIES, WITHOUT OTHER ANALYSIS.

AVAILABILITY - PHONEIX MEMORIAL LABORATORY, THE UNIVERSITY OF MICHIGAN, ANN ARBOR, MICHIGAN

*CONTROL ROD + *CONTROL ROD BURNUP + *DAMAGE + BORON + CADMIUM + CARBIDE + CORROSION + EXPANSION +
INCIDENT COMPILATION + REACTOR, RESEARCH + REACTOR, TEST

9-29643 ALSO IN CATEGORIES 18 AND 10
INDIAN POINT 3 SUPPLEMENT 6 TO PSAR
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
31 PAGES, FIGURES, AMENDMENT 6 (ALSO EXHIBIT D-6, 6TH SUPPLEMENT TO THE PSAR) TO INDIAN POINT 3 APPLICATION (DOCKET 50-286) NOV. 25, 1968, TYPE--PWR, MFG--WEST., AE--UNITD ENGR.

PROVIDES REVISED PAGES FOR PSAR SUPPLEMENTS 1 AND 5. MAJOR CHANGES OR ANALYSES SEEM TO BE (1) A DESCRIPTION OF TWO INSTRUMENT SYSTEMS WHICH PROTECT AGAINST FLUX TILT FROM A ROD DROPPED INTO CORE, (2) A SIX PAGE DESCRIPTION OF INDEPENDENCE BETWEEN REDUNDANT POWER AND CONTROL CABLES, INCLUDING IPCEA PUBLICATION P-46-246 VALUES FOR AMPACITY RATING OF HEAVILY LOADED CABLES, AND (3) PROVISION TO GUARD AGAINST SINGLE FAILURE DISABLING 480 VOLT SYSTEM, I.E., A FAILURE ANALYSIS OF THE TWO TIE BREAKERS BETWEEN BUSES 3A-6A AND BUSES 2A-5A.

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

*ACCIDENT, CONTROL ROD DROPIN + *ELECTRICAL CONDUCTION + *EMERGENCY POWER, ELECTRIC +
*FAILURE MODE ANALYSIS + CODES AND STANDARDS + HIGH TEMPERATURE + INDIAN POINT 3 (PWR) + REACTOR, PWR +
REPORT, PSAR + SINGLE FAILURE CRITERION + SYSTEM CAPABILITY

CATEGORY 10
ELECTRICAL POWER SYSTEMS

10-22570
ANDERSON JW + MORGAN CC + MULLINIX TF + SHEPHERD DM
TURF ELECTRICAL POWER DISTRIBUTION SYSTEM - OPERATION AND MAINTENANCE
OAK RIDGE NATIONAL LABORATORY
ORNL-CF-68-5-63 +. 33 PAGES, 5 FIGURES, 2 TABLES, MAY 16, 1968

THE THORIUM-URANIUM RECYCLE FACILITY (TURF) ELECTRICAL POWER DISTRIBUTION SYSTEM IS MADE UP OF A NORMAL POWER SYSTEM AND AN EMERGENCY POWER SYSTEM. BOTH SYSTEMS HAVE BEEN TESTED AND PLACED INTO NORMAL OPERATING CONDITION. A PROGRAM OF MAINTENANCE AND OPERATIONAL TESTING HAS BEEN WORKED OUT TO MAINTAIN THE EMERGENCY POWER SYSTEM IN A CONSTANT STATE OF READINESS WITH MAXIMUM RELIABILITY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*ELECTRIC POWER, AUXILIARY + *ELECTRIC POWER, GENERAL + *ELECTRIC POWER, NORMAL +
*EMERGENCY POWER, ELECTRIC + FUEL REPROCESSING + GENERATOR, ENGINE + MAINTENANCE AND REPAIR + ORNL +
SYSTEM DESCRIPTION

10-27837 ALSO IN CATEGORIES 17 AND 9
HUMBOLDT BAY OPERATIONS REPORT, JAN. 1 THRU JUNE 30, 1969
PACIFIC GAS AND ELECTRIC COMPANY
12 PAGES, TABLES, LETTER TO ORNL, AUGUST 19, 1968, DOCKET 50-123, TYPE--BWR, MFG--G.E., AE--BECHTEL

AIR-EJECTOR ACTIVITY HAS DECREASED FROM 0.044 TO 0.0384 C/SEC AT 210 MWTH, AS TRAMP URANIUM HAS DECREASED. CONTAINMENT CONTINUOUS LEAK RATE IS 0.067 W/D PER DAY AT 20 IN. WATER GAGE. RADIOLYTIC GAS PRODUCED IS 0.03 SCFM/MWTH. OUTAGES DUE TO SCRAMS WERE FROM (1) TRFE FELL ACROSS 110 KV LINE, (2) MIST FALLING ON SALT DEPOSITED ON OCB BUSHINGS CAUSED A FLASHOVER AND COMPLETE LOAD REJECTION, (3) FREQUENCY UPSET CAUSED MG SET MALFUNCTION AFTER A LIGHTNING STRIKE, (4) DURING A QUICK LOAD PICKUP TEST WITH SOME STEAM BYPASS, THE PRESSURE SAGGED ENOUGH FOR WATER IN THE LEVEL COLUMN TO FLASH. THE HIGH LEVEL INDICATION CAUSED LOW FEEDWATER FLOW AND THEN A LOW WATER LEVEL SCRAM.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, 1717 H ST., WASHINGTON, D.C. 20545, (\$0.25 CENTS/COPY)

*INSTRUMENT, ABNORMAL INDICATION + *OFF GAS + *RADIOLYTIC GAS + ACCIDENT, LOAD REJECTION +
GENERATOR, BATTERY + HUMBOLDT BAY (BWR) + INCIDENT, EQUIPMENT + INSTRUMENT, LIQUID LEVEL DETECTION +
PRESSURE VESSEL + REACTOR, BWR + REPORT, OPERATIONS SUMMARY + SCRAM, REAL

10-27950 ALSO IN CATEGORY 9
POWERS J
MCR PLANT CONTROL SYSTEM INTEGRATION STUDIES
GENERAL MOTORS CORP., INDIANAPOLIS, IND. ALLISON DIV.
GMAD-2078-24 + EDR-4191 +. 38 PAGES, FIGURES, TABLES, MAY 3, 1965

THE STUDY TO SIMPLIFY THE 3-MWE MILITARY COMPACT REACTOR ANALOG ENGINE SPEED CONTROL SYSTEM AND THE 60-CPS MAIN AND 400-CPS HOUSE LOAD GENERATING AND DISTRIBUTION SYSTEMS WAS ORIENTED AT HAVING THE CENTRAL CONTROL COMPUTER PERFORM THE CONTROL FUNCTIONS. IN THIS REPORT, ALTERNATE CONTROL CONCEPTS UTILIZING DIRECT DIGITAL CONTROL ARE SYNTHESIZED AND PRESENTED AS POSSIBLE ALTERNATES. THREE SIMPLIFIED DIGITAL CONTROL SYSTEMS ARE POSTULATED FOR THE ENGINE SPEED CONTROL. THESE ARE - TIME-SHARED ENGINE CONTROLS, DIGITAL ENGINE CONTROLS, AND HYBRID ENGINE CONTROLS. A SYSTEM THAT UTILIZES THE 3-MWE MCR DIGITAL CONTROL COMPUTER IN PLACE OF A 60-CPS GENERATOR PROTECTION PANEL IS SHOWN AS WELL AS A TIME-SHARED SYSTEM THAT ACCOMPLISHES THE CONTROL OF HOUSE LOAD ELECTRICAL GENERATION AND DISTRIBUTION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA, 22151, \$3.00 COPY, \$0.65 MICROFICHE

*CONTROL SYSTEM + COMPUTER CONTROL + ELECTRIC POWER, GENERAL + INSTRUMENT, CONTROL + REACTOR, MILITARY

10-28072 ALSO IN CATEGORY 9
PROPOSED IEEE CRITERIA FOR NUCLEAR POWER PLANT PROTECTION SYSTEMS
3 PAGES, IEEE TRANS. NU. 279 (AUGUST 1968)

THE FUNCTIONAL PERFORMANCE AND RELIABILITY OF A POWER-REACTOR PROTECTION SYSTEM IS A MATTER OF CONCERN FOR MANUFACTURERS, FOR USERS, AND FOR THOSE WHO ARE RESPONSIBLE FOR LICENSING AND REGULATING REACTOR FACILITIES. WITH THE INCREASED VOLUME OF NUCLEAR POWER GENERATION PLANTS PLANNED OR BEING DESIGNED, ATTENTION HAS FOCUSED ON CRITERIA AND STANDARDS AS MECHANISMS FOR PROMOTING SAFE DESIGN PRACTICE AND FOR EVALUATING THE PERFORMANCE AND RELIABILITY OF PROPOSED SYSTEMS. THESE CRITERIA ARE AN INDUSTRY CONSENSUS OF AN ACCEPTABLE APPROACH TO ASSESSING THE ADEQUACY OF PROTECTION SYSTEM FUNCTIONAL PERFORMANCE AND RELIABILITY IN MEETING DESIGN REQUIREMENTS. THE USER OF THESE CRITERIA SHOULD BE AWARE THAT A FULL NATIONAL CONSENSUS DOES NOT YET EXIST.

*PLANT PROTECTIVE SYSTEM + *REACTOR SAFETY SYSTEM + CODES AND STANDARDS + DESIGN CRITERIA

CATEGORY 10
ELECTRICAL POWER SYSTEMS

10-28100 ALSO IN CATEGORY 9

JASCHKE I

METHODS FOR DETERMINING AND IMPROVING THE RELIABILITY OF ELECTRICAL SUPPLY SYSTEMS
32 PAGES, 15 FIGURES, 3 REFERENCES, EUROPEAN NUCLEAR ENERGY AGENCY COMMITTEE ON REACTOR SAFETY TECHNOLOGY,
MEETING OF SPECIALISTS ON THE RELIABILITY OF ELECTRICAL SUPPLY SYSTEMS AND RELATED ELECTRO-MECHANICAL
COMPONENTS FOR NUCLEAR REACTOR SAFETY, ISPRA, ITALY, JUNE 27-28, 1968

METHODS APPLIED FOR DETERMINING AND IMPROVING THE RELIABILITY OF POWER SUPPLY SYSTEMS ARE
DISCUSSED, NAMELY THE ANALYTICAL WORK DURING DESIGN AND THE TESTS ON HARDWARE. THESE METHODS
ARE BASICALLY APPLICABLE TO ALL SYSTEMS AND ARE FIRST DESCRIBED IN GENERAL THEN EXAMINED BY
USING PARTICULAR EXAMPLES.

AVAILABILITY - I. JASCHKE, BOLKOW GMBH

*ELECTRIC POWER, GENERAL + *RELIABILITY ANALYSIS + ELECTRIC POWER, NORMAL + EMERGENCY POWER, ELECTRIC +
PROCEDURES AND MANUALS + QUALITY CONTROL + TEST, COMPONENT

10-28101 ALSO IN CATEGORY 9

SNAITH ER + SCARROTT D + BURDEN P

FIELD DATA REPORTING EXPERIENCE IN THE UNITED KINGDOM

17 PAGES, 8 TABLES, 7 REFERENCES, EUROPEAN NUCLEAR ENERGY AGENCY COMMITTEE ON REACTOR SAFETY TECHNOLOGY,
MEETING OF SPECIALISTS ON THE RELIABILITY OF ELECTRICAL SUPPLY SYSTEMS AND RELATED ELECTRO-MECHANICAL
COMPONENTS FOR NUCLEAR REACTOR SAFETY, ISPRA, ITALY, JUNE 27-28, 1968, SESSION III

TO CARRY OUT A RELIABILITY ANALYSIS ON ANY ELECTRICAL POWER SYSTEM FOR A NUCLEAR REACTOR,
INFORMATION IS NEEDED SUCH AS FAILURE AND REPAIR RATES FOR A VARIETY OF EQUIPMENT. TO DERIVE
THESE FROM FIELD EXPERIENCE WE REQUIRE TO EXTRACT INFORMATION SUCH AS - (1) NUMBER OF
FAILURES, (2) TIME OF FAILURES, (3) REPAIR TIME, (4) OPERATING TIME OF PLANT, (5) PERIOD
BETWEEN ROUTINE TESTS AND MAINTENANCE, (6) POPULATION OF EQUIPMENT, (7) MODE OF FAILURE, (8)
NUMBER OF FAILURE PER DEMAND FOR PLANT NORMALLY IN A STATIC STATE. SOME FIELD EXPERIENCES IN
THE U.K. ARE DISCUSSED.

AVAILABILITY - E. R. SNAITH, D. SCARROTT, UNITED KINGDOM ATOMIC ENERGY AUTHORITY, RISLEY

*ELECTRIC POWER, GENERAL + *RELIABILITY ANALYSIS + *REPORT, OPERATIONS + OPERATING EXPERIENCE +
UNITED KINGDOM

10-28102

BOURNE AJ + SNAITH ER + FLETCHER D

RELIABILITY ANALYSIS OF ELECTRICAL SUPPLY SYSTEMS FOR NUCLEAR POWER STATIONS

UNITED KINGDOM ATOMIC ENERGY AUTHORITY, RISLEY

15 PAGES, 2 FIGURES, 1 TABLE, 10 REFERENCES, EUROPEAN NUCLEAR ENERGY AGENCY COMMITTEE ON REACTOR SAFETY
TECHNOLOGY, MEETING OF SPECIALISTS ON THE RELIABILITY OF ELECTRICAL SUPPLY SYSTEMS AND RELATED
ELECTRO-MECHANICAL COMPONENTS FOR NUCLEAR REACTOR SAFETY, ISPRA, ITALY, JUNE 27-28, 1968, SESSION 1

FOLLOWING THE METHOD OUTLINED IN THIS PAPER, THE RELIABILITY OF ELECTRICAL SUPPLY SYSTEMS FOR
NUCLEAR POWER STATIONS CAN BE EVALUATED IN NUMERICAL TERMS. THIS MAY BE USED AS AN ABSOLUTE
VALUE IN CONNECTION WITH SOME OVERALL SAFETY REQUIREMENTS OR AS A COMPARATIVE VALUE IN
ASSOCIATION WITH OTHER SIMILAR SYSTEMS. THE RELIABILITY NUMBER, HOWEVER, WILL GENERALLY HAVE
MANY CRUCIAL ASSUMPTIONS ASSOCIATED WITH THEM AND SO ANY RESULTS OF ANALYSIS QUOTED SHOULD
ALWAYS HIGHLIGHT THESE ASSUMPTIONS AND DEFINE PRECISELY WHAT THE RESULTS MEAN. USED IN THIS
WAY, RELIABILITY ANALYSIS CAN BE AN EXTREMELY VALUABLE TOOL IN THE OVERALL PROCESS OF SAFETY
ASSESSMENT.

AVAILABILITY - A. J. BOURNE OR E. R. SNAITH, UNITED KINGDOM ATOMIC ENERGY AUTHORITY, RISLEY

*ELECTRIC POWER, GENERAL + *RELIABILITY ANALYSIS + ANALYTICAL MODEL + COMPUTER PROGRAM +
ELECTRIC POWER, AUXILIARY + ELECTRIC POWER, NORMAL + MATHEMATICAL TREATMENT

10-28103

POTEMANS M

FIELD EXPERIENCE WITH RELIABILITY APPROACHES IN BELGIUM

15 PAGES, FIGURES, TABLES, CREST MEETING OF RELIABILITY OF ELECTRICAL SUPPLY SYSTEMS AND RELATED
ELECTRO-MECHANICAL COMPONENTS FOR NUCLEAR REACTOR SAFETY, ISPRA, JUNE 27-28, 1968

THE FIRST PART SUMMARIZES INCIDENTS AND MALFUNCTIONING EQUIPMENT IN CLASSICAL AND NUCLEAR
POWER PLANTS, AND TRANSMISSION LINES, AND HOW THIS INFORMATION IS COLLECTED AND PROCESSED.
SOME YEARLY PUBLISHED STATISTICS ARE GIVEN. IN THE SECOND PART, INFORMATION IS GIVEN ABOUT
RELIABILITY CONSIDERATIONS FOR SOME BR-3 EQUIPMENT.

AVAILABILITY - M. POTEMANS, MANAGER, GROUPE INDUSTRIAL POUR L'EXPLOITATION DU BR 3

*ELECTRIC POWER, GENERAL + *RELIABILITY, SYSTEM + BELGIUM + DATA PROCESSING + INFORMATION RETRIEVAL +
OPERATING EXPERIENCE + REACTOR, POWER

CATEGORY 10
ELECTRICAL POWER SYSTEMS

10-28104

JACKS E

EVALUATION OF RELIABILITY H.R.C. FUSELINKS

THE ENGLISH ELECTRIC COMPANY LIMITED, ENGLAND

26 PAGES, 3 FIGURES, 7 TABLES, EUROPEAN NUCLEAR ENERGY AGENCY COMMITTEE ON REACTOR SAFETY TECHNOLOGY, MEETING OF SPECIALISTS ON THE RELIABILITY OF ELECTRICAL SUPPLY SYSTEMS AND RELATED ELECTRO-MECHANICAL COMPONENTS FOR NUCLEAR REACTOR SAFETY, ISPRA, ITALY, JUNE 27 AND 28, 1968, SECTION 2

PROTECTIVE DEVICES MUST PERFORM BOTH PASSIVE AND ACTIVE FUNCTIONS - THOSE OF CARRYING CURRENT UNDER NORMAL CONDITIONS AND THOSE OF INTERRUPTING IT WHEN ABNORMALITIES OCCUR. THE TWO FUNCTIONS ARE PHYSICALLY INTERDEPENDENT IN AS MUCH AS ANY DETERIORATION TAKING PLACE DURING THE PASSIVE LIFE MAY IMPAIR THE ABILITY OF THE DEVICE TO PERFORM ITS ACTIVE FUNCTION EFFECTIVELY WHEN REQUIRED TO DO SO. THE PAPER IS IN TWO PARTS - (1) AN OBJECTIVE REVIEW OF THOSE ASPECTS OF FUSE TECHNOLOGY RELATING TO DESIGN, MANUFACTURE AND USAGE AND (2) A SUBJECTIVE ACCOUNT OF THE METHODS USED TO MAINTAIN THE STANDARDS OF QUALITY AND RELIABILITY OF ENGLISH ELECTRIC FUSES.

AVAILABILITY - E. JACKS, THE ENGLISH ELECTRIC COMPANY LIMITED, ENGLAND

*ELECTRIC POWER, GENERAL + *RELIABILITY, COMPONENT + OPERATING EXPERIENCE + QUALITY CONTROL + UNITED KINGDOM

10-28105

ALSO IN CATEGORIES 9 AND 12

MAURER H

AVAILABILITY OF EMERGENCY CORE COOLING SYSTEMS MAINLY WITH REGARD TO OFF-SITE AND STAND-BY POWER PROVISIONS 13 PAGES, 1 FIGURE, 3 TABLES, 5 REFERENCES, PRESENTED AT THE MEETING OF SPECIALISTS ON THE RELIABILITY OF ELECTRICAL SUPPLY SYSTEMS AND RELATED ELECTRO-MECHANICAL COMPONENTS FOR NUCLEAR REACTOR SAFETY, ISPRA, JUNE 27-28, 1968

SOME EXAMPLES OF RELIABILITY ANALYSIS IN TYPICAL EMERGENCY CORE-COOLING SYSTEMS ARE GIVEN, SHOWING THE INFLUENCE OF REDUNDANCY AND INTERDEPENDENCE. THE AVAILABLE STATISTICAL FAILURE RATE DATA OF MECHANICAL AND ELECTRICAL SYSTEM COMPONENTS ARE DISCUSSED. THE FOLLOWING SUBJECTS ARE TREATED IN DETAIL - (1) ANALYSIS OF DIFFERENT BLOCK DIAGRAM MODELS OF EMERGENCY CORE-COOLING SYSTEMS AND SYSTEM OPTIMIZING WITH REGARD TO MECHANICAL COMPONENTS, (2) RELIABILITY ANALYSIS OF DIFFERENT POSSIBLE ELECTRICAL POWER PROVISIONS AND OVERALL SYSTEM AVAILABILITY, (3) OFF-SITE POWER AVAILABILITY CONSIDERATIONS DURING LOSS OF COOLANT ACCIDENT.

AVAILABILITY - COMMISSION OF THE EUROPEAN COMMUNITIES, MR. H. MAURER

*COOLING, SHUTDOWN + *ELECTRIC POWER, ALTERNATE + *RELIABILITY ANALYSIS + BELGIUM + ELECTRIC POWER, GENERAL + EMERGENCY SYSTEM + FAILURE, COMPONENT

10-28107

CONNOR RA + PARKINS RA

OPERATIONAL STATISTICS IN THE MANAGEMENT OF LARGE DISTRIBUTION SYSTEMS

EASTERN ELECTRICITY BOARD, WHERSTEAD, IPSWICH, ENGLAND

12 PAGES, 7 FIGURES, 8 TABLES, 9 REFERENCES, FOR PRESENTATION AT THE 2ND CREST MEETING OF SPECIALISTS ON THE RELIABILITY OF ELECTRICAL SUPPLY SYSTEMS AND RELATED ELECTRO-MECHANICAL COMPONENTS FOR NUCLEAR REACTOR SAFETY, ISPRA, ITALY, JUNE 27-28, 1968

WITH THE ADVENT OF NATIONALIZATION OF THE SUPPLY INDUSTRY IN 1948, IT BECAME POSSIBLE TO STUDY THE PERFORMANCE OF LARGE NETWORKS IN A MANNER NOT PREVIOUSLY POSSIBLE. THE PAPER GIVES DETAILS OF THE WAY IN WHICH THE NECESSARY DATA ARE COLLECTED, ANALYSED, AND USED IN ONE AREA BOARD. DETAILS ARE GIVEN OF SOME OF THE CONCLUSIONS REACHED TO DATE OF SOME OTHER PROBLEMS WHICH ARE BEING STUDIED, AND SOME OBSERVATIONS ARE MADE ON RELIABILITY AND SECURITY OF SUPPLIES.

AVAILABILITY - R. A. CONNER OR R. A. PARKINS, EASTERN ELECTRICITY BOARD, WHERSTEAD, IPSWICH, SUFF., ENGLAND

*ELECTRIC POWER, GENERAL + *RELIABILITY ANALYSIS + *STATISTICAL ANALYSIS + INFORMATION RETRIEVAL + OPERATING EXPERIENCE + UNITED KINGDOM

10-28108

MIEZE G + EBMANN J

RELIABILITY ANALYSIS OF AN EMERGENCY POWER SUPPLY SYSTEM

18 PAGES, 5 FIGURES, 2 TABLES, FOR PRESENTATION AT THE 2ND CREST MEETING OF SPECIALISTS ON THE RELIABILITY OF ELECTRICAL SUPPLY SYSTEMS AND RELATED ELECTRO-MECHANICAL COMPONENTS FOR NUCLEAR REACTOR SAFETY, ISPRA, ITALY, JUNE 27-28, 1968

THE EMERGENCY POWER SUPPLY SYSTEM OF THE LINGEN NUCLEAR POWER STATION IS ANALYZED USING RELIABILITY CONCEPTS. THE FAULT TREE OF THE SYSTEM IS DEVELOPED. THE PROBABILITY OF THE FAILURE OF THE EMERGENCY POWER SUPPLY SYSTEM IS CALCULATED, CONCLUSIONS ARE DRAWN CONCERNING THE SYSTEMS RELIABILITY AND PROPOSALS ARE MADE TO INCREASE THE SYSTEM RELIABILITY. THE SYSTEM ANALYSIS IS COMPARED WITH THE SYSTEM ANALYSIS OF AN EMERGENCY POWER SUPPLY SYSTEM IN AN AMERICAN NUCLEAR POWER STATION.

AVAILABILITY - G. MIEZE OR J. EBMANN, INSTITUT FÜR REAKTORSICHERHEIT DER TECHNISCHEN ÜBERWACHUNGS -

CATEGORY 10
ELECTRICAL POWER SYSTEMS

10-28108 *CONTINUED*
VEREINE E.V., KOLN, GERMANY

*EMERGENCY POWER, ELECTRIC + *RELIABILITY ANALYSIS + ELECTRIC POWER, GENERAL + GERMANY + PROBABILITY + REACTOR, BWR + REACTOR, POWER

10-28109
TAYLOR DJ
RELIABILITY AND PERFORMANCE STATISTICS IN THE OPERATIONAL MANAGEMENT OF LARGE ELECTRICITY DISTRIBUTION SYSTEMS
13 PAGES, TABLES, 8 REFERENCES, FOR PRESENTATION AT THE 2ND CREST MEETING OF SPECIALISTS ON THE RELIABILITY OF ELECTRICAL SUPPLY SYSTEMS AND RELATED ELECTRO-MECHANICAL COMPONENTS FOR NUCLEAR REACTOR SAFETY, ISPRA, ITALY, JUNE 27-28, 1968

WITH THE NATIONALIZATION OF THE ELECTRICITY SUPPLY INDUSTRY IN THE U.K. THE COLLECTION OF MEANINGFUL DATA BECAME POSSIBLE TO STUDY THE PERFORMANCE OF ELECTRICITY SUPPLY NETWORKS. SYSTEM STATISTICS AND OPERATING CRITERIA ARE REVIEWED FOR ENGLAND, WALES, AND SCOTLAND. ELECTRICITY SUPPLY ENGINEERS MUST ALWAYS TRY TO MAINTAIN OPTIMUM BALANCE BETWEEN THE SECURITY AND RELIABILITY OF SUPPLY IN RELATION TO COST.

AVAILABILITY - D. J. TAYLOR, EASTERN ELECTRICITY, CHIEF ENGINEERS DEPARTMENT, P. O. BOX NO. 40, WHERSTEAD, IPSWICH

*ELECTRIC POWER, GENERAL + *RELIABILITY ANALYSIS + ECONOMICS + OPERATING EXPERIENCE + STATISTICAL ANALYSIS + UNITED KINGDOM

10-28587
PATTON AD
DETERMINATION AND ANALYSIS OF DATA FOR RELIABILITY STUDIES
TEXAS A + M UNIVERSITY, COLLEGE STATION, TEXAS
17 PAGES, 10 FIGURES, 9 TABLES, 1 REFERENCE, IEEE TRANS. ON POWER APPARATUS AND SYSTEMS VOL. PAS-87(1), PAGES 84-100 (JANUARY 1968)

METHODS FOR TRANSMISSION AND DISTRIBUTION SYSTEM RELIABILITY ANALYSIS CURRENTLY BEING DEVELOPED AND USED REQUIRE THAT THE EXPECTED VALUES OF COMPONENT OUTAGE RATES AND OUTAGE DURATIONS BE KNOWN. THE PAPER DESCRIBES HOW THE REQUIRED COMPONENT PARAMETERS CAN BE ESTIMATED FROM FIELD DATA. ALSO DESCRIBED ARE METHODS OF PLACING CONFIDENCE LIMITS ON THE PARAMETERS ESTIMATED. THE METHODS PRESENTED WERE DEVELOPED THROUGH A STUDY OF SIX YEARS OF FIELD RECORDS PROVIDED BY A UTILITY COMPANY. SAMPLE EXPECTED OUTAGE RATES AND OUTAGE DURATIONS FOR VARIOUS COMPONENTS SUCH AS TRANSMISSION LINES, SUBSTATION TRANSFORMERS, AND CIRCUIT BREAKERS ARE PRESENTED. ALSO PRESENTED ARE DATA WHICH TEND TO CONFIRM THE DISTRIBUTIONAL ASSUMPTIONS MADE IN SYSTEM RELIABILITY ANALYSIS METHODS.

*ELECTRIC POWER, GENERAL + *RELIABILITY ANALYSIS + COMPONENTS, MISCELLANEOUS + DATA PROCESSING + OPERATING EXPERIENCE + RELIABILITY, COMPONENT + RELIABILITY, SYSTEM + STATISTICAL ANALYSIS

10-28588
BILLINTON R + BOLLINGER KE
TRANSMISSION SYSTEM RELIABILITY EVALUATION USING MARKOV PROCESSES
UNIVERSITY OF SASKATCHEWAN, CANADA
10 PAGES, 12 FIGURES, 2 TABLES, 8 REFERENCES, IEEE TRANS. ON POWER APPARATUS AND SYSTEMS, VOL PAS-87(2), PAGES 538-47 (FEBRUARY 1968)

THE BASIC CONCEPTS OF STATIONARY MARKOV PROCESSES AND PARTICULARLY THEIR APPLICATION TO TRANSMISSION SYSTEM RELIABILITY EVALUATIONS ARE DISCUSSED AND ILLUSTRATED. TRANSMISSION COMPONENTS ARE ASSUMED TO OPERATE WITHIN A 2-STATE FLUCTUATING ENVIRONMENT DESCRIBED BY NORMAL AND STORMY WEATHER CONDITIONS. MARKOV PROCESSES ARE USED TO DETERMINE THE SYSTEM FAILURE RATE AND THE PROBABILITIES OF FAILURE FOR SIMPLE CONFIGURATIONS AND TO ILLUSTRATE THE BUNCHING EFFECT OF STORM ASSOCIATED FAILURES ON PARALLEL FACILITIES. THE VARIATION IN THE FAILURE PROBABILITIES IS SHOWN AS A FUNCTION OF THE EXPECTED REPAIR TIME AND THE DEGREE OF STORM ASSOCIATED FAILURES. THE RESULTS ARE COMPARED WITH THOSE OBTAINED USING A PREVIOUSLY PUBLISHED APPROXIMATE METHOD.

*ELECTRIC POWER, GENERAL + *RELIABILITY, SYSTEM + ENVIRONMENTAL CONDITION + MATHEMATICAL TREATMENT

10-28750
BRACKMANN W
GUARANTEE OF AUXILIARY SERVICE SUPPLY IN NUCLEAR POWER STATIONS BY QUICK ACTING SWITCH-OVER EQUIPMENT
BROWN, BOVERI AND CIE.-KRUPP ARBEITSGEMEINSCHAFT, GERMANY
11 PAGES, PAPER PRESENTED AT THE CREST SPECIALISTIC MEETING ON THE RELIABILITY OF ELECTRICAL SUPPLY SYSTEMS AND RELATED ELECTRO-MECHANICAL COMPONENTS FOR NUCLEAR REACTOR SAFETY, ISPRA, JUNE 1968

IN MODERN UNIT POWER STATIONS THE POWER FOR THE AUXILIARIES WILL BE SUPPLIED BY THE GENERATOR ITSELF VIA THE AUXILIARY TRANSFORMER. AN INDEPENDENT STABLE GRID MUST BE MADE AVAILABLE FOR STARTUP AND SHUTDOWN AS WELL AS FOR THE CASE OF A DISTURBANCE IN THE UNIT. THE SWITCHING BETWEEN THE TWO FEEDINGS IS WITH THE SHORTEST PERIODS OF INTERRUPTION EFFECTED BY MEANS OF A QUICK ACTING SWITCH-OVER EQUIPMENT, WHEREBY THE EXPECTATION IS EFFECTED MANUALLY OR IN CASE OF A DISTURBANCE AUTOMATICALLY BY PROTECTIVE RELAYS. AN IMPROVEMENT RESULTED FROM THE

CATEGORY 10
ELECTRICAL POWER SYSTEMS

10-28750 *CONTINUED*

INTRODUCTION OF THE PHASE COMPARISON DEVICE WHICH WAS DEVELOPED ESPECIALLY FOR THE SWITCH-OVER OF HIGH-VOLTAGE MOTORS. THE ADVANTAGES OF THE IMMEDIATE SWITCH-OVER WERE DECISIVE FOR THE FACT THAT TODAY THIS TYPE OF SWITCH-OVER IS CHOSEN ALMOST EXCLUSIVELY.

AVAILABILITY - BROWN, BOVERI + CIE AG, MANNHEIM, 5401 BADEN, SWITZERLAND

*ELECTRIC POWER, GENERAL + *INSTRUMENT, SWITCH + *RELIABILITY, SYSTEM + ELECTRIC POWER, AUXILIARY + INSTRUMENT, RELAY + INSTRUMENT, VOLTAGE + SYSTEM DESCRIPTION

10-28818 ALSO IN CATEGORY 9

GROOM EJ

BUILDING A NUCLEAR SUBMARINE - SOME PROBLEMS AND THEIR SOLUTIONS

1 PAGE, ENGINEER 224, PAGE 343 (SEPT. 15, 1967)

SOME DESIGN AND CONSTRUCTION FEATURES OF THE NUCLEAR POWER PLANT AND ELECTRICAL EQUIPMENT OF THE 7500-TON (DISPLACEMENT) SUBMARINE H.M.S. RESOLUTION ARE DISCUSSED. THE REQUIREMENT OF UTMOST RELIABILITY IN THE PROPUSSION PLANTS IS EMPHASIZED. THE NUCLEAR REACTOR IS EQUIPPED WITH DETAILED CONSTANT MONITORING DEVICES, REMOTELY OPERATED AND OF ASSURED RELIABILITY. IMPENDING TROUBLE CAN BE DEALT WITH BY AUTOMATIC SHUTDOWN DEVICES OPERATING RAPIDLY.

*ELECTRIC POWER, GENERAL + *INSTRUMENT, GENERAL + *REACTOR, MARITIME + DESIGN STUDY + RELIABILITY, COMPONENT + RELIABILITY, SYSTEM + UNITED KINGDOM

10-28821

NUCLEAR PLANT EMERGENCY POWER

4 PAGES, POWER ENGINEERING 72, PAGES 62-5 (FEB. 1968)

EMERGENCY POWER SYSTEMS DESIGNS FOR A 1000 MW(E) PWR AND A 762 MW(E) BWR ARE GIVEN. SCHEMATICS ARE SHOWN FOR THE BASIC BWR AND PWR SYSTEMS. THE BASIC LOGIC DIAGRAM FOR AN EMERGENCY DIESEL GENERATOR SYSTEM FOR THE PWR IS GIVEN. A ONE-LINE DIAGRAM FOR THE UNINTERRUPTABLE AC POWER SUPPLY FOR A BWR IS SHOWN. THESE POWER SYSTEMS ARE DISCUSSED BRIEFLY.

*EMERGENCY POWER, ELECTRIC + REACTOR, BWR + REACTOR, PWR

10-28897 ALSO IN CATEGORY 9

FRAAS AP

ESTIMATING THE RELIABILITY OF SYSTEMS

OAK RIDGE NATIONAL LAB., TENN.

ORNL-TM-2200 +. 32 PAGES, 12 TABLES, 7 REFERENCES, MAY 1968

GENERIC DATA ON COMPONENT RELIABILITY ARE REVIEWED. A SIMPLE METHOD OF APPLYING THESE DATA IS SUGGESTED, AND SOME RESULTING IMPLICATIONS WITH RESPECT TO THE RELIABILITY OF IDEALIZED SYSTEMS ARE POINTED OUT. THE STUDY CONCLUDES THAT THERE IS AN ENORMOUS AMOUNT OF OPERATING EXPERIENCE TO INDICATE THAT THE LOWEST FAILURE RATE ONE CAN REASONABLY HOPE TO GET IN A PIECE OF MECHANICAL EQUIPMENT IS ABOUT ONE FAILURE PER MILLION OPERATING HOURS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

*INSTRUMENT, COMPONENT + *RELIABILITY, COMPONENT + OPERATING EXPERIENCE + REVIEW

10-28901

MONTGITH DB

PRELIMINARY RELIABILITY PREDICTION FOR THE FFTF CONCEPTUAL BUILDING ELECTRICAL POWER SYSTEM, SYSTEM 12 BATTELLE-NORTHWEST, RICHLAND, WASH. PACIFIC NORTHWEST LAB.

BNWL-813 +. 55 PAGES, 14 FIGURES, 1 TABLE, 8 REFERENCES, AUGUST 1968

GIVES A PRELIMINARY RELIABILITY ANALYSIS OF THE FFTF BUILDING ELECTRICAL POWER SYSTEM. RESULTS OF THE ANALYSIS ARE PRELIMINARY BECAUSE THEY ARE BASED ON A CONCEPTUAL DESIGN OF THE SYSTEM AND ON OTHER SYSTEMS OF THE FFTF WHICH INFLUENCE THE DESIGN OF THE POWER SYSTEM BUT ARE NOT YET FULLY DEFINED. THIS RELIABILITY ANALYSIS PREDICTS THE AVAILABILITY, MEAN TIME BETWEEN FAILURES, AND THE MEAN TIME TO RESTORE ELECTRICAL POWER TO THE VARIOUS BUSES THAT MAKE UP THE FFTF BUILDING ELECTRICAL POWER SYSTEM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA., 22151, \$3.00 COPY, \$0.65 MICROFICHE

*ELECTRIC POWER, NORMAL + *RELIABILITY ANALYSIS + ELECTRIC POWER, ALTERNATE + FFTF (TP) + REACTOR, FAST + REACTOR, LMCR + REACTOR, TEST

10-29610 ALSO IN CATEGORY 17

DIESEL UNITS FOR NUCLEAR PLANTS

POWER ENGINEERING 72 (11), PG. 82, NOVEMBER 1968

CATEGORY 10
ELECTRICAL POWER SYSTEMS

10-29610 *CONTINUED*

A FAIRBANKS MORSE MODEL 38TD8 DIESEL CONNECTED TO A 3000 KW GENERATOR WAS DEMONSTRATED BEFORE UTILITY AND GOVERNMENT REPRESENTATIVES TO SHOW QUICK START CAPABILITY IN SUPPLYING EMERGENCY POWER FOR NUCLEAR REACTORS. TWO MOTORS (ONE 2000 HP AND ONE 1250, WITH 800% INRUSH CURRENTS) WERE USED AS LOADS. BOTH LOADS WERE APPLIED (1) SIMULTANEOUSLY, (2) SEQUENTIALLY, AND (3) REPETITIVELY FOR 100 STARTS WITH ENGINE ALLOWED TO COOL BETWEEN STARTS. ENGINE ACCEPTED LOADS WITHIN 10 SEC.

*GENERATOR, ENGINE + *TEST, SYSTEM OPERABILITY + ACCIDENT, LOSS OF POWER + RESPONSE TIME

10-29639 ALSO IN CATEGORIES 18 AND 12

OYSTER CREEK 1 AMENDMENT 34

JERSEY CENTRAL POWER AND LIGHT COMPANY

75 PAGES, FIGURES, TABLES, REFERENCES, MARCH 21, 1968, DOCKET 50-219, TYPE--BWR, MFG--G.E., AE--BURNS + ROE

PROVIDES ANSWERS TO 6 OF 16 ORL QUESTIONS ASKED IN JAN. 9, 1968, LETTER. BULK OF AMENDMENT IS A RESPONSE TO QUESTION 1, SUGGESTING AN ALTERNATIVE APPROACH TO PROVIDING EMERGENCY POWER TO THE HIGH PRESSURE COOLANT INJECTION SYSTEM, AS THE SPLIT BUS CONCEPT PROPOSED IN AMENDMENT 25 COMPROMISES THEIR INDEPENDENCE. PRINCIPLE CHANGE IS A 50% INCREASE IN ON-SITE AUXILIARY POWER CAPABILITY, WITH THE 3RD DIESEL TO INDEPENDENTLY POWER THE SECOND EMERGENCY BUS.

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

*INDEPENDENCE + ACCIDENT, LOSS OF COOLANT + AEC QUESTION + CORE SPRAY + EMERGENCY POWER, ELECTRIC + GENERATOR, ENGINE + OYSTER CREEK 1 (BWR) + REACTOR, BWR + REPORT, SAR + SYSTEM CAPABILITY

10-29643 ALSO IN CATEGORIES 18 AND 9

INDIAN POINT 3 SUPPLEMENT 6 TO PSAR

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

31 PAGES, FIGURES, AMENDMENT 6 (ALSO EXHIBIT B-6, 6TH SUPPLEMENT TO THE PSAR) TO INDIAN POINT 3 APPLICATION (DOCKET 50-286) NOV. 25, 1968, TYPE--PWR, MFG--WEST., AE--UNITED ENGR.

PROVIDES REVISED PAGES FOR PSAR SUPPLEMENTS 1 AND 5. MAJOR CHANGES OR ANALYSES SEEM TO BE (1) A DESCRIPTION OF TWO INSTRUMENT SYSTEMS WHICH PROTECT AGAINST FLUX TILT FROM A ROD DROPPED INTO CORE, (2) A SIX PAGE DESCRIPTION OF INDEPENDENCE BETWEEN REDUNDANT POWER AND CONTROL CABLES, INCLUDING IPCEA PUBLICATION P-46-246 VALUES FOR AMPACITY RATING OF HEAVILY LOADED CABLES, AND (3) PROVISION TO GUARD AGAINST SINGLE FAILURE DISABLING 480 VOLT SYSTEM, I.E., A FAILURE ANALYSIS OF THE TWO TIE BREAKERS BETWEEN BUSES 3A-6A AND BUSES 2A-5A.

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

*ACCIDENT, CONTROL ROD DROPIN + *ELECTRICAL CONDUCTION + *EMERGENCY POWER, ELECTRIC + *FAILURE MODE ANALYSIS + CODES AND STANDARDS + HIGH TEMPERATURE + INDIAN POINT 3 (PWR) + REACTOR, PWR + REPORT, PSAR + SINGLE FAILURE CRITERION + SYSTEM CAPABILITY

10-29648

PART D REVISED PSAR PAGES

NEW YORK STATE ELECTRIC + GAS CORPORATION

DOCKET 50-319-5 +. 691 PAGES, FIGURES, TABLES, REFERENCES, AMENDMENT 1 TO BELL LICENSE APPLICATION (PSAR) OCTOBER 1968, DOCKET 50-319

PART A CONSISTS OF ANSWERS TO AEC QUESTIONS OF AUG. 27, 1968. PART B CONSISTS OF REVISED PAGES TO THE PSAR VOLUMES I THRU III.

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

*AEC QUESTION + BELL (BWR) + REACTOR, BWR + REPORT, PSAR

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-27848 ALSO IN CATEGORY 18
PSAR APPENDIX 5K - PRESTRESSING TENDONS
ARKANSAS POWER AND LIGHT COMPANY
17 PAGES, PAGE 5K 1 THRU 5K 17 OF SUPPLEMENT 7 TO THE RUSSELLVILLE LICENSE APPLICATION, AUG. 15, 1968,
DOCKET 50-313

DESCRIBES ANCHORAGE ZONE DESIGN, DESIGN OF LINER PLATE ANCHORS, AND LARGE SIZE PRESTRESSING TENDONS. PROVIDES BRIEF DESCRIPTION OF ANALYTICAL MODELS AND TREATMENTS. SHOWS LINER PLATE HAS A MINIMUM FACTOR OF SAFETY OF 4.25 IF A LINER PLATE ANCHOR FAILS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, 1717 H ST., WASHINGTON, D.C. 20545 (\$0.25 CENTS/COPY)

*CONTAINMENT LINER + *STRESS ANALYSIS + ANALYTICAL MODEL + REACTOR, PWR + REPORT, PSAR + RUSSELLVILLE (PWR) + SAFETY MARGIN

11-27971 ALSO IN CATEGORIES 17 AND 12
HINKLE WD
ANALYSIS OF THE HEAT REMOVAL CAPABILITY OF THE CONTAINMENT AIR COOLING UNITS FOLLOWING A LOSS OF COOLANT INCIDENT
CONNECTICUT YANKEE ATOMIC POWER COMPANY, HADDAM
NYO-3250-9 + CYAP-102 +. 29 PAGES, FIGURES, REFERENCES, DECEMBER 30, 1966

USED METHOD BASED ON CGLBURN AND HOUGEN, WITH PARTICULAR ATTENTION TO THE 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 RATES ARE 5% ABOVE THOSE RATES IN CONTAINMENT DESIGN (AS LONG AS PRESSURES ARE ABOVE 20 PSIG).

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*CONTAINMENT AIR COOLING + *THERMAL ANALYSIS + ACCIDENT, LOSS OF COOLANT + CONTAINMENT DESIGN + HADDAM NECK (PWR) + HEAT TRANSFER, CONDENSATION + MATHEMATICAL TREATMENT + REACTOR, PWR

11-28073
BICKELL MB + RUIZ C
PRESSURE VESSEL DESIGN AND ANALYSIS
RABCOCK AND WILCOX LTD. + UNIVERSITY OF SHEFFIELD
575 PAGES, FIGURES, TABLES, REFERENCES, MACMILLAN AND ST. MARTINS PRESS, 1967

PRESSURE VESSELS ARE CRITICAL STRUCTURES AND THE RISKS INVOLVED IN THEIR OPERATION ARE OFTEN HIGH. AS A RESULT, NEW THEORIES AND METHODS OF ANALYSIS CAN ONLY BE APPLIED TO DESIGN WHEN THEY BECOME SUFFICIENTLY WELL ESTABLISHED TO BE GENERALLY ACCEPTED. DESIGNERS SHOULD BE AWARE OF ANY DEVELOPMENTS IN ORDER TO APPLY THEM AT THE FIRST OPPORTUNITY. THE BASIC INFORMATION WHICH THE DESIGNER SHOULD USE ON THE METHODS OF STRESS ANALYSIS AND THE PRINCIPAL MODES OF FAILURE ARE DISCUSSED. QUOTED REFERENCES TO MORE SPECIALIZED AND ADVANCED WORK WHICH HAS NOT YET BEEN WIDELY USED IN DESIGN ARE INCLUDED.

*PRESSURE VESSEL + *STRESS ANALYSIS + BUCKLING + CREEP + DESIGN CRITERIA + EMBRITTLEMENT + PIPING + STEEL

11-28074
PRESTRESSED CONCRETE NUCLEAR REACTOR STRUCTURES
UNIVERSITY OF CALIFORNIA, BERKELEY
200 PAGES, FIGURES, TABLES, REFERENCES, MARCH 1968, LECTURE NOTES

A SERIES OF LECTURES ON TOPICS RELATIVE TO THE USE OF PRESTRESSED CONCRETE FOR PRESSURE VESSELS.

*CONCRETE, PRESTRESSED + *CONTAINMENT, GENERAL + *PRESSURE VESSEL + *REGULATION, AEC + CONTAINMENT INSTRUMENTATION + DESIGN CRITERIA + EARTHQUAKE ENGINEERING + MOCKUP + PROPERTY, PHYSICAL + STEEL LINER + STRESS ANALYSIS + TEST, PRESSURE VESSEL

11-28075 ALSO IN CATEGORY 19
WHITMAN GD + ROBINSON GC + SAVOLAINEN AW
TECHNOLOGY OF STEEL PRESSURE VESSELS FOR WATER-COOLED NUCLEAR REACTORS
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.
ORNL-NSIC-21 +. 675 PAGES, FIGURES, TABLES, REFERENCES, DECEMBER 1967

REVIEWS CURRENT PRACTICES IN THE DESIGN AND FABRICATION OF STEEL PRESSURE VESSELS FOR LIGHT-WATER-COOLED NUCLEAR REACTORS IN PRESENT AND IMMEDIATE-FUTURE COMMERCIAL USE. THE SPECIFIED SERVICE AND PREDICTED ENVIRONMENTAL CONDITIONS ARE IDENTIFIED, ALONG WITH AN EVALUATION OF THE EFFECTS OF THESE PARAMETERS ON MATERIALS BEHAVIOR. MATERIALS FABRICATION AND MATERIALS PROPERTIES OF INTEREST IN PRESSURE-VESSEL FABRICATION ARE REVIEWED, AND THE METALLURGY OF THESE MATERIALS IS DISCUSSED. THE BASIC ASPECTS OF FRACTURE MECHANICS AND

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-28075 *CONTINUED*

CRACK GROWTH ARE EXAMINED, WITH EMPHASIS ON THE LOW-ALLOY STEELS OF CURRENT INTEREST. THE CODES AND STANDARDS APPLIED IN THE TECHNOLOGY ARE DISCUSSED, AND AREAS WHERE AUGMENTATION AND/OR REVISION TO THESE STANDARDS APPEARS WARRANTED ARE IDENTIFIED. THE TECHNIQUES FOR POSTOPERATIONAL AND IN-SERVICE INSPECTION ARE SUMMARIZED AND EVALUATED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*DESIGN CRITERIA + *FABRICATION + *PRESSURE VESSEL + *QUALITY CONTROL + *STEEL +
CONTAINMENT RESEARCH AND DEVELOPMENT + CORROSION + CREEP PROPERTY + EMBRITTLEMENT + FLAW +
FRACTURE TOUGHNESS + INSPECTION AND COMPLIANCE + RADIATION EFFECT + RADIOGRAPHY + REACTOR, WATER +
STEEL LINER + STRESS ANALYSIS + TEST, NONDESTRUCTIVE + WELDING + WELDS

11-28076 ALSO IN CATEGORY 19

Gwaltney RC

MISSILE GENERATION AND PROTECTION IN LIGHT-WATER-COOLED POWER REACTOR PLANTS

OAK RIDGE NATIONAL LABORATORY

ORNL-NSIC-22 +. 65 PAGES, 10 FIGURES, 1 TABLE, 83 REFERENCES, SEPTEMBER 1968

THE STATE OF CURRENT TECHNOLOGY OF MISSILE GENERATION AND PROTECTION IN RELATION TO THE CAPABILITY OF MEETING THE RELEVANT DESIGN CRITERIA FOR NUCLEAR POWER PLANTS IS PRESENTED. AS PART OF THE CURRENT TECHNOLOGY, PRACTICES IN OTHER INDUSTRIES ARE DISCUSSED, AND THE AVAILABLE CALCULATIONAL TECHNIQUES AND THEIR BASES AND DEFICIENCIES ARE DESCRIBED. A GENERAL DESCRIPTION IS ALSO INCLUDED OF THE CAUSE AND NATURE OF SHOCK WAVES, THE VARIOUS KINDS OF MISSILES THAT COULD BE GENERATED IN THE EVENT OF RUPTURE OF A PRIMARY SYSTEM VESSEL, AND THE CONSIDERATIONS INVOLVED IN DESIGNING TO PROTECT AGAINST THE HARMFUL EFFECTS OF SHOCK WAVES AND MISSILES. A SUMMARY OF THE CURRENT PRACTICE FOR NUCLEAR POWER REACTOR DESIGNS IS GIVEN, GAPS IN THE RELEVANT CURRENT TECHNOLOGY ARE DISCUSSED, AND RECOMMENDATIONS ARE MADE FOR FURTHER RESEARCH AND DEVELOPMENT IN THIS FIELD.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*CONTAINMENT DESIGN + *CONTAINMENT, GENERAL + *CONTAINMENT, SHOCK GENERATION AND PROTECTION +
*MISSILE GENERATION AND PROTECTION + CONCRETE + CONTAINMENT STRUCTURE + IMPACT SHOCK + REACTOR, WATER +
STEEL + STRESS ANALYSIS

11-28077 ALSO IN CATEGORIES 19 AND 12

ZAPP FC

TESTING OF CONTAINMENT SYSTEMS USED WITH LIGHT-WATER-COOLED POWER REACTORS

OAK RIDGE NATIONAL LABORATORY

ORNL-NSIC-26 +. 258 PAGES, FIGURES, TABLES, REFERENCES, AUGUST 1968

CONCLUSIONS ARE PRESENTED RELATIVE TO LEAKAGE-RATE TEST RESULTS, CONTINUOUS LEAKAGE-RATE MONITORING, AND DEVELOPMENTS THAT MAY AFFECT FUTURE TESTING REQUIREMENTS. ALSO, RECOMMENDATIONS ARE MADE RELATIVE TO PROPOSED CODES, STANDARDS, AND GUIDES, ISOLATION-VALVE TESTING, CONTAINMENT AIR-PURIFYING AND SPRAY SYSTEMS TESTING, AND CONTAINMENT SYSTEMS TESTING RESEARCH PROGRAMS. THE STUDIES INDICATED THAT INTEGRATED LEAKAGE-RATE TEST RESULTS ARE NOT CURRENTLY BEING REPORTED IN A MANNER THAT IS CONDUCTIVE TO COMPARISONS BETWEEN PLANTS OR TO AN INDEPENDENT EVALUATION OF THE ERRORS INVOLVED. IN MOST CASES THERE IS INSUFFICIENT INFORMATION PRESENTED IN THE LEAKAGE-RATE TEST REPORTS TO ADEQUATELY SUPPORT THE DEGREE OF ACCURACY CLAIMED OR TO GIVE CONFIDENCE IN THE LEAKAGE RESULT REPORTED. THE MAJORITY OF THE ERRORS ARE THE RESULT OF INADEQUATE PRECISION OF THE TEST EQUIPMENT USED, INADEQUATE TEST EQUIPMENT CALIBRATION, AND (MORE SIGNIFICANTLY) POORLY DESIGNED SAMPLING TECHNIQUES. A MAJOR NEED APPEARS TO BE THAT OF PROVIDING GUIDELINES FOR CORRECTLY DEFINING THE LEAKAGE-RATE TESTS SO THAT THE ACCURACY AND SIGNIFICANCE OF THE RESULTS CAN BE PREDICTED BEFORE THE TEST IS RUN.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*CONTAINMENT ABSOLUTE MEASURING SYSTEM + *CONTAINMENT INTEGRITY + *CONTAINMENT LEAK MONITOR +
*CONTAINMENT REFERENCE MEASURING SYSTEM + *CONTAINMENT, HIGH PRESSURE + *CONTAINMENT, ICE CONDENSER +
*CONTAINMENT, PRESSURE SUPPRESSION + *CONTAINMENT, PRESSURE VENTING + *TEST, LEAK LOCATION +
*TEST, LEAK RATE + *TEST, PROOF + CODES AND STANDARDS + CONTAINMENT LEAKAGE CONTROL +
CONTAINMENT PENETRATION, GENERAL + CONTAINMENT RESEARCH AND DEVELOPMENT + CONTAINMENT SPRAY +
CONTAINMENT STRUCTURE + CONTAINMENT VESSEL LOADING + REACTOR, WATER + STEEL

11-28117 ALSO IN CATEGORIES 18 AND 12

ICE CONDENSER INFORMATION

INDIANA + MICHIGAN ELECTRIC COMPANY

98 PAGES, FIGURES, TABLES, AMENDMENT 4 TO LICENSE APPLICATION FOR COOK 1 AND 2, JULY 29, 1968, DOCKET 50-315/316

ANSWERS QUESTIONS 9.1 AND 9.2 ON ICE CONDENSER ASKED IN JULY 1, 1968, DRL LETTER. PROVIDES REVISED PSAR PAGES, INCLUDING EXTENSIVE REVISIONS IN SECTIONS 5.2 (CONTAINMENT MATHEMATICAL MODEL), 5.3 (ICE CONDENSER), 14.3 (CONTAINMENT PRESSURE TRANSIENT ANALYSIS DURING BLOWDOWN). ASSERTS THAT SUFFICIENT EVIDENCE HAS BEEN GIVEN IN THIS AND PROPRIETARY REPORTS (WCAP-2951, 7040, 7079 AND 2 SUPPLEMENTS, PLUS 7183 AND SUPPLEMENT) FOR A FAVORABLE AEC FINDING.

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

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-28117 *CONTINUED*
AEC QUESTION + COOK 1 (PWR) + REACTOR, PWR + REPORT, PSAR

11-28502 ALSO IN CATEGORIES 5 AND 7
REVIEW OF METHODS OF MITIGATING SPREAD OF RADIOACTIVITY FROM A FAILED CONTAINMENT SYSTEM
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.
ORNL-NSIC-27 +. 103 PAGES, FIGURES, TABLES, REFERENCES, SEPTEMBER 1968

THIS PRELIMINARY SURVEY EXPLORES MEASURES THAT COULD BE TAKEN ON THE REACTOR SITE TO MITIGATE THE SPREAD OF RADIOACTIVITY TO HIGHLY POPULATED AREAS IN THE UNLIKELY EVENT OF FAILURE OF THE CONTAINMENT SYSTEM OF A LARGE NUCLEAR POWER STATION AT THE TIME OF A MAJOR REACTOR ACCIDENT. IT IS POINTED OUT, HOWEVER, THAT THE FACT THAT THE STUDY WAS UNDERTAKEN DOES NOT SUGGEST A LACK OF CONFIDENCE IN CONTAINMENT SYSTEMS NOR DOES IT IMPLY A WEAKENING OF THE PRESENT EMPHASIS ON THE NEED FOR SOUND, RELIABLE CONTAINMENT VESSELS. RATHER, TO ENHANCE SAFETY, CONSIDERATION IS GIVEN TO WHAT COULD BE DONE IN EVEN THE MOST IMPROBABLE SITUATIONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*CONTAINMENT RESEARCH AND DEVELOPMENT + *CONTAINMENT, GENERAL + *DESIGN CRITERIA +
*RADIATION SAFETY AND CONTROL + CONTAINMENT INTEGRITY + CONTAINMENT SYSTEM, OPERATION OF + CORE SPRAY + FISSION PRODUCT RELEASE, GENERAL + INSTRUMENT, GENERAL

11-28560 ALSO IN CATEGORIES 17 AND 1
ABERLE JA + MACDONALD AR + PORTER SW
A PROCEDURE FOR MINIMIZING PERSONNEL HAZARDS WHILE CHANGING TRITIUM TARGETS IN ACCELERATORS
ARMED FORCES RADIOBIOLOGY RESEARCH INSTITUTE, DEFENSE ATOMIC SUPPORT AGENCY, BETHESDA, MARYLAND
AFRRI-TN66-5 +. 17 PAGES, 12 FIGURES, 7 REFERENCES, MAY 1966

DESCRIBES STEP-BY-STEP PROCESS UTILIZING STAINLESS-STEEL GLOVE BOX AND AN ALTERNATE USING A PLASTIC CONTAINMENT AREA. PROCEDURE IS APPLICABLE ONLY TO THE PARTICULAR TYPE OF ACCELERATOR, BUT PROCEDURE EMPHASIZES POSSIBLE HAZARDS AND THE METHODS USED TO CONTROL THEM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

*ACCELERATOR + *PROCEDURES AND MANUALS + *RADIATION SAFETY AND CONTROL + *TRITIUM + GLOVE BOX

11-28580 ALSO IN CATEGORY 17
RECURRING INSPECTION OF NUCLEAR REACTOR STEEL PRESSURE VESSELS
INTERNATIONAL ATOMIC ENERGY AGENCY
STI/DOC/10/81 +. 239 PAGES, TABLES, FIGURES, JANUARY 1968

IN OCTOBER 1966, THE IAEA CONVENED A PANEL FOR DISCUSSING VARIOUS ASPECTS OF RECURRING INSPECTION OF NUCLEAR REACTOR STEEL PRESSURE VESSELS AND THE METHODS TO BE USED. THE PANEL WAS ALSO TO FORMULATE RECOMMENDATIONS OR GUIDELINES CONCERNING THE OBJECTIVES, THE FREQUENCY, AND THE PROCEDURE OF THESE INSPECTIONS. THE RECOMMENDATIONS ARE, TO SOME EXTENT, RECOMMENDATIONS TO THE AGENCY FOR ITS FURTHER WORK, WHICH WILL HAVE TO BE BASED ON FURTHER DEVELOPMENT OF INSPECTION TECHNIQUES AS WELL AS ON INCREASED KNOWLEDGE OF FUNDAMENTAL PHENOMENA SUCH AS THOSE OF FRACTURE MECHANICS. SOME RECOMMENDATIONS ARE, HOWEVER, QUITE SPECIFIC AND CONCERN REACTOR VESSEL DESIGNERS AND OPERATORS. THEY ARE CONSIDERED TO BE OF GENERAL VALUE AND ARE INCLUDED WITH THE SUBMITTED PAPERS AND THE DISCUSSION SUMMARY IN THESE PROCEEDINGS.

*INSPECTION AND COMPLIANCE + *PRESSURE VESSEL + *STEEL + FAILURE, PRESSURE VESSEL + FLAW

11-28582 ALSO IN CATEGORY 17
TV SYSTEM SURVEYS PIPELINE INTERIOR
ELECTRICAL WORLD, VOL. 170, NO. 11, P 47, SEPTEMBER 9, 1968

A JAPANESE TV CAMERA SYSTEM WAS BUILT TO SURVEY THE INTERIOR OF PIPELINES FROM 2.8 TO 12 IN. IN DIAMETER UP TO 1000 FT IN LENGTH. PICTURE IS DISPLAYED ON A REMOTE READOUT.

*EXAMINATION + *PIPING + REACTOR, POWER + REMOTE MANIPULATING AND VIEWING + SURVEILLANCE PROGRAM

11-28622 ALSO IN CATEGORY 18
ROSS-ROSS PA
FUEL CHANNEL DEVELOPMENT FOR CANADA'S POWER REACTORS
ATOMIC ENERGY OF CANADA LTD., CHALK RIVER (ONTARIO). CHALK RIVER NUCLEAR LABS.
AECL-3126 + CONF-680512-3 +. 31 PAGES, 14 FIGURES, 6 TABLES, 12 REFERENCES, MAY 1968, PAPER PRESENTED AT EIC 82ND ANNUAL GENERAL MEETING, HALIFAX, NOVA SCOTIA

DESCRIBES DEVELOPMENT WORK RELATED TO STRENGTH AND DUCTILITY OF IRRADIATED ZIRCALOY, CREEP BEHAVIOR AND CORROSION, JOINING TO STAINLESS STEEL, INSPECTION FOLLOWING OPERATION, AND CRITICAL CRACK LENGTH.

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-28622 *CONTINUED*

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA
22151, \$3.00 COPY, \$0.65 MICROFICHE

*PIPING + *PROPERTY, PHYSICAL + *REACTOR, PRESSURE TUBE + CANADA + CANDU (HWR) + CREEP BEHAVIOR +
EXAMINATION + FAULT + REACTOR, HWR + STRESS ANALYSIS + ZIRCALOY

11-28659 ALSO IN CATEGORY 9

FRAGOMEN AT
SHOP FABRICATION AND QUALITY CONTROL TECHNIQUES FOR MASSIVE NUCLEAR VESSELS
BARCOCK AND WILCOX, BARBERTON, OHIO
9 PAGES, PROC. AMER. POWER CONF., 29, PAGE 263-71 (1967)

THE DESIGN, FABRICATION, AND QUALITY CONTROL OF THE MASSIVE STEEL PRESSURE VESSELS FOR NUCLEAR
REACTORS REQUIRE RIGID MANUFACTURING TECHNIQUES TO ENSURE REACTOR VESSEL SAFETY. NINE
ESSENTIAL FACTORS NECESSARY TO THE SUCCESSFUL FABRICATION AND CONTROL OF NUCLEAR VESSELS ARE
EXAMINED - DESIGN, MATERIAL SELECTION, MANUFACTURING ENGINEERING, PRODUCTION CONTROL, PLANT
FACILITIES, TOOLING, SHIPPING AND TRAFFIC CONTROL, WORK FORCE, AND QUALITY CONTROL.

*PRESSURE VESSEL + *QUALITY CONTROL + DESIGN CRITERIA + DESIGN STUDY + EQUIPMENT DESIGN + FABRICATION +
MATERIAL + SHIPPING ANALYSIS + TRANSPORTATION AND HANDLING

11-28668

PRESSURE RELIEF VALVE
ATOMIC ENERGY OF CANADA, LTD.
BRITISH PATENT 1,102,908 +. FEB. 14, 1968

A RELIEF VALVE USED IN A NUCLEAR REACTOR CONTAINMENT SYSTEM IS DESCRIBED. A REACTOR, HOUSED
IN A BUILDING MAINTAINED AT ATMOSPHERIC PRESSURE, IS VENTED TO A LARGE VACUUM BUILDING. IF
THE PRESSURE BETWEEN THE TWO BUILDINGS IS EQUALIZED, PRESSURE IN BOTH REMAINS BELOW
ATMOSPHERIC PREVENTING THE ESCAPE OF RADIOACTIVITY. THE FAST ACTING RELIEF VALVE CONNECTING
THE TWO STRUCTURES IS DESCRIBED.

AVAILABILITY - THE PATENT OFFICE, 25 SOUTHAMPTON BUILDING, LONDON, W.C. 2, ENGLAND (\$0.49 CENTS/COPY)

*CONTAINMENT, PRESSURE RELIEF + *CONTAINMENT, PRESSURE VENTING + INSTRUMENT, PRESSURE +
INSTRUMENT, PROCESS + PATENT + UNITED KINGDOM + VALVE

11-26789

GOTO J
EMERGENCY ESCAPE DEVICE FOR THE CONTAINMENT VESSEL
HITACHI LTD.
JAPANESE PATENT 1967-9515, MAY 23, 1967

AN EMERGENCY ESCAPE DEVICE IS PROPOSED WHICH ENABLES THE OPERATOR TO ESCAPE OUT OF THE
CONTAINMENT VESSEL AT THE TIME OF A REACTOR ACCIDENT. A PROTRUDING SEMISPHERICAL CHAMBER IS
INSTALLED AT THE OPENING OF THE CONTAINMENT-VESSEL WALL, THE FLOOR BEING AT THE FLOOR LEVEL
OF THE CONTAINMENT VESSEL. A VERTICAL CHAMBER EXTENDS DOWNWARDS FROM THIS FLOOR. THE FLOOR
CAN COME DOWN ALONG THE WALLS OF THE LATTER CHAMBER BY RELEASING ITS HOOK. WHEN IT LOWERS,
THE OPEN FLOOR CAN BE CLOSED AUTOMATICALLY BY A PLATE, WHICH IS NORMALLY IN AN UPRIGHT
POSITION. IN THE LOWER PART OF THE VERTICAL CHAMBER IS PROVIDED AN ESCAPE DOOR WHICH CAN BE
TIGHTLY SHUT.

AVAILABILITY - FOREIGN PATENTS MAY BE OBTAINED IN PHOTOCOPY FROM THE U.S. PATENT OFFICE, DEPARTMENT OF
COMMERCE, WASHINGTON, D.C. (\$0.30 CENTS/PAGE)

*PERSONNEL PROTECTIVE DEVICE + CONTAINMENT DESIGN + CONTAINMENT EQUIPMENT HATCH +
CONTAINMENT PENETRATION, GENERAL + JAPAN + PATENT

11-28937 ALSO IN CATEGORY 18

RIERA JC + CRONEBERGER DK + NODLAND KE
ADDENDUM TO DESIGN OF LARGE OPENING REINFORCEMENT FOR THE (GINNA) CONTAINMENT VESSEL
ROCHESTER GAS AND ELECTRIC CORPORATION
19 PAGES, 1 FIGURE, 1 TABLE OF THE FIFTH SUPPLEMENT (EXHIBIT D-10) TO THE GINNA FINAL SAR, OCTOBER 16,
1968, DOCKET 50-244, TYPE--PWR, MFG--WEST, AE--GILBERT ASSOC.

PROVIDES CONSTRUCTION PROCEDURES AND CORRECTIONS TO THE ANALYSIS DESCRIBED IN THE THIRD
SUPPLEMENT TO THE SAR.

AVAILABILITY - USACE PUBLIC DOCUMENT ROOM, 1717 H ST., WASHINGTON, D.C. 20545 (\$0.25 CENTS/COPY)

*CONTAINMENT CONSTRUCTION + *CONTAINMENT EQUIPMENT HATCH + CONCRETE, PRESTRESSED + GINNA (PWR) +
REACTOR, PWR + REPORT, SAR + STEEL + STRESS ANALYSIS

11-29147 ALSO IN CATEGORY 12

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-29147 *CONTINUED*

BINGHAM GE

THE CAROLINAS VIRGINIA TUBE REACTOR PRELIMINARY LEAKAGE RATE TEST RESULTS

IDAHO NUCLEAR CORPORATION

100-17273 +. 76 PAGES, FIGURES, TABLES, OCTOBER 1968

PRESENTS THE RESULTS OF A PRELIMINARY LEAKAGE RATE TEST CONDUCTED ON THE CAROLINAS VIRGINIA TUBE REACTOR (CVTR) CONTAINMENT SYSTEM. THE PRIMARY PURPOSE OF THE TEST WAS TO INVESTIGATE THE ACCURACY AND SENSITIVITY OF THE CVTR CONTINUOUS LEAKAGE RATE MEASUREMENT SYSTEM. ADDITIONALLY, THE TESTING EFFORT PROVIDED VALUABLE EXPERIENCE AND INSIGHT THAT WILL BE USEFUL IN PLANNING AND PERFORMING FUTURE IN-PLANT TESTS AT CVTR. THE TEST RESULTS INDICATE THAT A CONTINUOUS LEAKAGE RATE SYSTEM WOULD BE A VALUABLE ASSET TO ANY POWER REACTORS ENGINEERED SAFETY SYSTEMS SINCE IT PROVIDES A CONTINUOUS, RAPID, AND SENSITIVE INDICATION OF THE INTEGRITY OF THE CONTAINMENT SYSTEM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*CONTAINMENT RESEARCH AND DEVELOPMENT + *CVTR (PWR) + CONTAINMENT INTEGRITY + CONTAINMENT LEAK MONITOR + CONTAINMENT LEAKAGE CONTROL + ENGINEERED SAFETY FEATURE + INSTRUMENT, PRESSURE + INSTRUMENT, TEMPERATURE + LEAK RATE + OPERATING EXPERIENCE SUMMARY + TEST, LEAK RATE + TESTING

11-29175 ALSO IN CATEGORY 12

YAMANOUCHI H + HAYASHI T

PRESSURE SUPPRESSION METHOD, EMPLOYING A STEAM SPACE

HITACHI LTD.

JAPANESE PATENT 1967-4640 +. FEBRUARY 25, 1967

BY THE METHOD PROPOSED, THE MAXIMUM PRESSURE BOTH IN THE DRY WELL AND THE PRESSURE SUPPRESSION CHAMBER CAN BE MINIMIZED AT THE TIME OF A REACTOR ACCIDENT BY REMOVING AIR IN THE DRY WELL. THE STEAM FROM THE PRIMARY COOLANT SYSTEM DUE TO A REACTOR ACCIDENT IS CONDENSED IN THE PRESSURE SUPPRESSION CHAMBER. THE DRY WELL IS ALWAYS (BEFORE THE ACCIDENT) FILLED WITH A GAS SUCH AS STEAM, WHICH CONDENSES IN THE LIQUID IN THE SUPPRESSION CHAMBER.

AVAILABILITY - U. S. PATENT OFFICE, DEPT. OF COMMERCE, WASHINGTON, D. C.

*JAPAN + *PATENT + *REACTOR, GENERAL + CONTAINMENT, PRESSURE SUPPRESSION + EQUIPMENT, GENERAL + PRESSURE RELIEF

11-29183

EGATA T

PRESSURE SUPPRESSION DEVICE

HITACHI LTD.

JAPANESE PATENT 1967-4878 +. FEB. 28, 1967

BY THE METHOD PROPOSED, THE STEAM FROM THE DRY WELL DUE TO A REACTOR ACCIDENT CAN BE MORE DIRECTLY CONTACTED WITH WATER IN THE PRESSURE SUPPRESSION CHAMBER WHICH MINIMIZES THE PRESSURE INCREASE IN THE DRY WELL. THE SUPPRESSION CHAMBER CONSISTS OF A DRY WELL CONTAINING THE REACTOR CORE, PRESSURE SUPPRESSION CHAMBERS PARTLY FILLED WITH WATER, AND THE PIPES CONNECTING THE DRY WELL AND THE CHAMBERS. A HELICAL GUIDE-PLATE IS INSTALLED IN EACH PIPE LOCATED IN THE WATER OF THE SUPPRESSION CHAMBER.

AVAILABILITY - FOREIGN PATENTS MAY BE OBTAINED IN PHOTOCOPY FROM THE U.S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D.C. (\$0.30 CENTS/PAGE)

*CONTAINMENT, PRESSURE SUPPRESSION + JAPAN + PATENT

11-29185 ALSO IN CATEGORY 9

OGASAWARA H

SAFETY SYSTEM FOR A NUCLEAR REACTOR

HITACHI LTD.

JAPANESE PATENT 1966-18038 +. OCT. 15, 1966

THE REACTOR IS INSTALLED IN A DRY WELL, AND THE WATER POOL SURROUNDS THIS DRY WELL. THE FLUID, E.G., VAPOR (AT THE TIME OF THE ACCIDENT) IS LED INTO THE POOL FROM THE DRY WELL THROUGH TWO LONG PIPES WHICH EXTEND INTO THE POOL IN OPPOSITE DIRECTIONS. THE END OF EACH PIPE WITHIN THE POOL IS BENT IN THE HORIZONTAL SAME DIRECTION. THE FLUID EJECTED FROM THE PIPES FLOWS CIRCUMFERENTIALLY IN THE POOL. AS RESULT, THE DEPTH OF WATER IN THE POOL CAN BE SHALLOWER THAN IN THE ORDINARY POOLS.

AVAILABILITY - FOREIGN PATENTS MAY BE OBTAINED IN PHOTOCOPY FROM THE U.S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D.C., (\$0.30 CENTS/PAGE)

*CONTAINMENT, WATER FILLED + JAPAN + PATENT + REACTOR SAFETY SYSTEM

11-29186 ALSO IN CATEGORY 9

GOKU H

SAFETY SYSTEM FOR A NUCLEAR REACTOR

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-29186 *CONTINUED*

HITACHI LTD.

JAPANESE PATENT 1966-18039 +. OCT. 15, 1966

THE REACTOR IS INSTALLED IN A DRY WELL, AND THE WATER POOL SURROUNDS THIS DRY WELL. THE FLUID, E.G., VAPOR (AT THE TIME OF AN ACCIDENT), IS LED INTO THE POOL FROM THE DRY WELL THROUGH A LONG PIPE. A PART OF THE LONG PIPE IS PARTITIONED BELOW THE DRY WELL AND THE POOL BY MEANS OF TWO THIN PLATES TO GIVE A SMALL ROOM. THE SMALL ROOM AND PIPE ARE CONSTANTLY FILLED WITH WATER. AT THE TIME OF A REACTOR ACCIDENT, WHEN VAPOR FLOWS THROUGH THE LONG PIPE, THE TWO THIN PLATES ARE DESTROYED AND THE LIQUID CAN BE SUPPLIED TO CONDENSE THE VAPOR BEFORE IT REACHES THE POOL WATER.

AVAILABILITY - FOREIGN PATENTS MAY BE OBTAINED IN PHOTOCOPY FROM THE U.S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D.C. (\$0.30 CENTS/PAGE)

*CONTAINMENT, WATER FILLED + JAPAN + PATENT + REACTOR SAFETY SYSTEM

11-29187 ALSO IN CATEGORY 9

OGASAWARA H

SAFETY SYSTEM FOR A NUCLEAR REACTOR

HITACHI LTD.

JAPANESE PATENT 1966-16919 +. SEPT. 26, 1966

THE REACTOR IS INSTALLED IN A DRYWELL, AND THE WATER POOL SURROUNDS THIS DRY WELL, THE FLUID VAPOR (AT THE TIME OF AN ACCIDENT) IS LED INTO THE POOL FROM THE DRY WELL THROUGH A LONG PIPE. A MEANS IS PROVIDED FOR INTRODUCING A LIQUID (TO CONDENSE THE FLUID) AT A PART OF THE LONG PIPE BETWEEN THE DRY WELL AND THE SURROUNDING POOL.

AVAILABILITY - FOREIGN PATENTS MAY BE OBTAINED IN PHOTOCOPY FROM THE U.S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D.C. (\$0.30 CENTS/PAGE)

*CONTAINMENT, WATER FILLED + JAPAN + PATENT + REACTOR SAFETY SYSTEM

11-29188 ALSO IN CATEGORY 9

GOKO H

SAFETY SYSTEM FOR A NUCLEAR REACTOR

HITACHI LTD.

JAPANESE PATENT 1966-17798 +. OCT. 11, 1966

THE REACTOR IS INSTALLED IN A DRY WELL, AND THE WATER POOL SURROUNDS THIS DRY WELL. THE FLUID, E.G., VAPOR (AT THE TIME OF AN ACCIDENT), IS LED INTO THE POOL FROM THE DRY WELL THROUGH A LONG PIPE. A PIPE RUNNING FROM WITHIN THE POOL AND BETWEEN THE DRYWELL AND THE POOL IS INSTALLED. BOTH ENDS OF THE PIPE ARE OPEN. AT THE TIME OF AN ACCIDENT, WHEN VAPOR FLOWS THROUGH THE LONG PIPE PLATES ARE DESTROYED, AND WATER IS INTRODUCED INTO THE LONG PIPE FROM THE POOL.

AVAILABILITY - FOREIGN PATENTS MAY BE OBTAINED FROM THE U.S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D.C. (\$0.30 CENTS/PAGE)

*CONTAINMENT, WATER FILLED + JAPAN + PATENT + REACTOR SAFETY SYSTEM

11-29189

UEDA K

DEVICE FOR PREVENTING LEAKS OF A COOLANT IN A NUCLEAR REACTOR

MITSUBISHI ATOMIC POWER IND., INC.

JAPANESE PATENT 1966-16006 +. SEPT. 9, 1966

THE DEVICE, SIMPLE IN CONSTRUCTION, PROVIDES RELIABLE PREVENTION OF JOINT LEAKS DUE TO THERMAL EXPANSION. THE DEVICE IN THE FORM OF A RING OF NARROW WIDTH IS LOCATED AT THE CIRCUMFERENTIAL JOINT OF TWO CONCENTRIC PIPE ENDS. THIS RING IS CUT ON ITS SURFACE WITH INCLINED RADIAL GROOVES. PIECES OF MATERIAL ENGAGE WITH THE RADIAL GROOVES AND SLIDE DOWN ON THE SURFACE BY GRAVITATION TO STOP ANY GAP FORMED BETWEEN THE BODY AND THE CYLINDRICAL BODY.

AVAILABILITY - FOREIGN PATENTS MAY BE OBTAINED IN PHOTOCOPY FROM THE U.S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D.C. (\$0.30 CENTS/PAGE)

*LEAK + *PIPING + COMPONENTS, MISCELLANEOUS + COOLING, GENERAL + JAPAN + PATENT

11-29190

SUZUKE Y

PLUG FOR SEALING A HORIZONTAL PIPE IN A NUCLEAR REACTOR

FUJI ELECTRIC MFG. CO., LTD.

JAPANESE PATENT 1966-17799 +. OCT. 11, 1966

THE PLUG PROPOSED CONSISTS OF OUTER AND INNER CYLINDRICAL PLUNGERS. THROUGH THE WALL OF THE OUTER CYLINDRICAL BODY, A SERIES OF LARGE HOLES ARE CUT CIRCUMFERENTIALLY. IN EACH HOLE A SPHERICAL BODY OF LARGER DIAMETER IS PLACED. WHEN THE PLUG IS IN ITS SEALING POSITION, THE EJECTED PART OF THE SPHERES ENGAGES THE GROOVE CUT ON THE INNER SURFACE OF THE HORIZONTAL

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-29190 *CONTINUED*

PIPE. THE INNER CYLINDRICAL BODY SERVES TO PUSH OUT THE BALLS BY MEANS OF TINY SPHERES ON ITS OUTER SURFACE WHICH ROLL IN THIN GROOVES CUT ON THE INNER SURFACE OF THE OUTER CYLINDRICAL BODY.

AVAILABILITY - FOREIGN PATENTS MAY BE OBTAINED FROM THE U.S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D.C. (\$0.30 CENTS/PA)

*PIPING + COMPONENTS, MISCELLANEOUS + JAPAN + PATENT

11-29194 ALSO IN CATEGORY 9
SAFETY DEVICE FOR PRESSURE TUBE NUCLEAR REACTORS
COMMISSARIAT A L'ENERGIE ATOMIQUE
FRENCH PATENT 1,449,804 +. JULY 11, 1966

THE REACTOR MAY PRODUCE AN IMPORTANT RELEASE OF GAS IN THE CASE OF ACCIDENT. THE INSTALLATION INCLUDES A PRACTICALLY AIRTIGHT ENCLOSURE CONTAINING ELEMENTS OF THE PRIMARY COOLING CIRCUIT, WELL COLLECTORS, AND A PIPE CONNECTING THE ENCLOSURE TO THE ATMOSPHERE. THE PIPE HAS AT LEAST EQUAL VOLUME TO THAT OCCUPIED BY THE GAS RELEASED IN AN ACCIDENT AT ABNORMAL PRESSURE. THE PIPE HAS A STRAIGHT FLAT SECTION AND IS EQUIPPED WITH GUIDING PIERS IN ORDER TO COOL THE GAS AND PREVENT MIXING OF THE CONTAMINATED GAS RELEASED DURING THE ACCIDENT WITH THE AIR NORMALLY OCCUPYING THE PIPE. THE ENCLOSURE CONSISTS OF A BIOLOGICAL SHIELD CONTAINING THE REACTOR AND THE HEAT EXCHANGERS.

AVAILABILITY - FOREIGN PATENTS MAY BE OBTAINED FROM THE U.S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D.C. (\$0.30 CENTS/PAGE)

*CONTAINMENT, PRESSURE RELIEF + CONTAINMENT STRUCTURE + FRANCE + PATENT + PIPING

11-29355
WHITMAN GD
TECHNOLOGY OF STEEL PRESSURE VESSELS FOR WATER-COOLED NUCLEAR REACTORS
OAK RIDGE NATIONAL LABORATORY, TENNESSEE
14 PAGES, 1 FIGURE, 2 TABLES, 13 REFERENCES, NUCLEAR ENGINEERING AND DESIGN, 8(1), PAGES 7-21 (JULY 1968)

SUMMARIZES REPORT - TECHNOLOGY OF STEEL PRESSURE VESSELS FOR WATER-COOLED REACTORS, USAEC REPORT ORNL-NSIC-21, DECEMBER 1967. CURRENT PRACTICES IN THE UNITED STATES FOR DESIGN AND FABRICATION OF STEEL PRESSURE VESSELS FOR COMMERCIAL STATION LIGHT WATER COOLED NUCLEAR REACTORS ARE REVIEWED. THE SPECIFIC SERVICE AND PREDICTED ENVIRONMENTAL CONDITIONS ARE IDENTIFIED, ALONG WITH AN EVALUATION OF THE EFFECTS OF THESE PARAMETERS ON MATERIALS BEHAVIOR. MATERIALS PROPERTIES OF INTEREST IN PRESSURE VESSEL FABRICATION ARE REVIEWED. CODES AND STANDARDS APPLIED IN THE TECHNOLOGY ARE IDENTIFIED AND THE METHODS OF INSPECTION DISCUSSED. METHODS OF SURVEILLANCE AND POTENTIAL TECHNIQUES FOR POST-OPERATIONAL AND IN-SERVICE INSPECTION ARE SUMMARIZED.

*DESIGN CRITERIA + *FABRICATION + *PRESSURE VESSEL + *STEEL + CODES AND STANDARDS + CORROSION + EMBRITTLEMENT + INSPECTION AND COMPLIANCE + MATERIAL + QUALITY CONTROL + RADIATION EFFECT + REACTOR, WATER + REVIEW + SURVEILLANCE PROGRAM

11-29356
WITT FJ
THE HEAVY SECTION STEEL TECHNOLOGY PROGRAM-AN ENGINEERING INVESTIGATION OF THE STRUCTURAL BEHAVIOR OF THICK PRESSURE VESSELS
OAK RIDGE NATIONAL LABORATORY, TENNESSEE
17 PAGES, 11 FIGURES, 3 TABLES, 19 REFERENCES, NUCLEAR ENGINEERING AND DESIGN, 9(1), PAGES 22-38 (JULY 1968)

THE HEAVY SECTION STEEL TECHNOLOGY PROGRAM IS A USAEC SPONSORED EFFORT WHICH WAS INITIATED TO STUDY THE STRUCTURAL BEHAVIOR OF THE THICK SECTION PLATES AND PRESSURE VESSELS FABRICATED FROM SUCH PLATES FOR USE IN LIGHT WATER POWER REACTOR SYSTEMS. MAJOR EMPHASIS IS ON EFFECTS OF FLAWS AND MATERIAL INHOMOGENEITIES AND DISCONTINUITIES UNDER IN-SERVICE REACTOR OPERATING AND ACCIDENT CONDITIONS. FRACTURE MODES OF THESE VESSELS ARE OF SPECIAL INTEREST BECAUSE OF DANGERS PECULIAR TO NUCLEAR REACTORS SHOULD A MAJOR FAILURE OF A PRESSURE VESSEL OCCUR WHILE IN SERVICE. PROGRAM BEING CARRIED OUT IN VERY CLOSE COOPERATION WITH THE MATERIALS, FABRICATION, AND DESIGN INTERESTS OF THE US NUCLEAR POWER INDUSTRY. SCOPE OF PROGRAM IS OUTLINED, AND OBJECTIVES OF THE VARIOUS TASKS ARE IDENTIFIED. SOME RESULTS OBTAINED DURING INITIAL EFFORTS OF PROGRAM ARE PRESENTED.

*FRACTURE TOUGHNESS + *PRESSURE VESSEL + *STEEL + *STRUCTURAL INTEGRITY + FLAW + MATERIAL + R AND D PROGRAM + TEST, DESTRUCTIVE + TEST, NONDESTRUCTIVE + TEST, PROOF

11-29357 ALSO IN CATEGORY 17
POTAPOVS U + KNIGHTON GW + DENTON AS
CRITIQUE OF IN-PLACE ANNEALING OF SM-1A NUCLEAR REACTOR VESSEL
NAVAL RESEARCH LABORATORY + NUCLEAR POWER FIELD OFFICE, FORT BELVOIR, VA.
19 PAGES, 12 FIGURES, 2 TABLES, 14 REFERENCES, NUCLEAR ENGINEERING AND DESIGN, 8(1), PAGES 39-57 (JULY 1968)

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-29357 *CONTINUED*

PRESENTS ANNEALING PROCEDURE USED BY US ARMY ENGINEER REACTORS GROUP TO EXTEND THE SM-1A REACTOR VESSEL LIFETIME, WHICH WAS ESSENTIALLY EXPANDED DUE TO NEUTRON-INDUCE EMBRITTLEMENT. IN AUGUST 1967, VESSEL ANNEALING OPERATIONS WERE CONDUCTED BY RAISING THE SYSTEM TEMPERATURE TO 572 F AND MAINTAINING IT FOR 143 HR, USING THE NORMAL REACTOR CORE AS THE HEAT SOURCE. THE PROCEDURES, PLANT MODIFICATIONS REQUIRED, AND DIFFICULTIES ENCOUNTERED ARE DESCRIBED, AND A FULL CRITIQUE OF THE TOTAL OPERATION IS GIVEN. DISCUSSIONS INCLUDE ANTICIPATED AMOUNT OF EMBRITTLEMENT RELIEF TO THE VESSEL, BASIS FOR THIS ESTIMATE, AND TECHNIQUES FOR ESTABLISHING DEGREE OF FINAL PROPERTIES RECOVERY.

*EMBRITTLEMENT + *HEAT TREATMENT + *PRESSURE VESSEL + *STEEL + OPERATING EXPERIENCE + REACTOR, MILITARY + REACTOR, PWR + SM 1A (PWR)

11-29358

STEELE LE + POTAPOVS U

RADIATION EMBRITTLEMENT OF REACTOR VESSEL STEELS AND SUGGESTIONS FOR ITS CONTROL

NAVAL RESEARCH LABORATORY, WASHINGTON, D.C.

13 PAGES, 11 FIGURES, 2 TABLES, 16 REFERENCES, NUCLEAR ENGINEERING AND DESIGN, 8(1), PAGES 58-70 (JULY 1968)

REVIEWS POTENTIAL FOR NEUTRON EMBRITTLEMENT OF REACTOR PRESSURE VESSEL STEELS AS WELL AS FOR THE CONTROL OF EMBRITTLEMENT OR ITS CONSEQUENCES. OPERATIONAL PROCEDURES INCLUDING THE CONTROL OF STRESS-TEMPERATURE RELATIONSHIPS OR THE USE OF HEAT TREATMENT TECHNIQUES FOR DUCTILITY RESTORATION ARE SHOWN TO OFFER GOOD POTENTIAL FOR OPERATING NUCLEAR PLANTS. DESIGN PROCEDURES INCLUDING HIGHER TEMPERATURE, GREATER VESSEL SHIELDING, CAREFUL SELECTION OF, OR THE DEVELOPMENT OF, RADIATION INSENSITIVE STEELS ARE AVAILABLE TO MINIMIZE RADIATION EMBRITTLEMENT IN REACTOR VESSELS OF THE FUTURE. PROGRESS TOWARD PRODUCING RADIATION INSENSITIVITY IN CURRENT AND HIGHER STRENGTH VERSIONS OF US PRESSURE VESSEL STEELS IS REVIEWED BRIEFLY.

*EMBRITTLEMENT + *HEAT TREATMENT + *PRESSURE VESSEL + *STEEL + REACTOR, MILITARY + REACTOR, PWR + SM 1A (PWR) + STRUCTURAL INTEGRITY

11-29359

WALKER TJ

PM-2A REACTOR VESSEL TEST - ANALYSIS OF FAILURE CONDITIONS

BETTIS ATOMIC POWER LABORATORY, WEST MIFFLIN, PA.

12 PAGES, 5 FIGURES, 6 TABLES, 3 REFERENCES, NUCLEAR ENGINEERING AND DESIGN, 9(1), PAGES 71-82 (JULY 1968)

THE REACTOR VESSEL OF THE ARMY PORTABLE MEDIUM POWER PLANT, PM-2A, EMBRITLED BY IN-SERVICE IRRADIATION, WAS TESTED TO DESTRUCTION UNDER A SET OF DEFINED CONDITIONS INCLUDING AN INTENTIONALLY INSTALLED MATERIAL DEFECT. PURPOSE OF TEST WAS TO IMPROVE THE UNDERSTANDING OF CONDITIONS REQUIRED TO OBTAIN BRITTLE FRACTURE IN AN OPERATING REACTOR VESSEL AND TO ESTABLISH IMPROVED CRITERIA FOR USE IN REACTOR VESSEL DESIGN AND OPERATION. THE TEST CONSISTED OF A PRESCRIBED PRESSURE-TEMPERATURE SEQUENCING PROCEDURE WITH A SERIES OF DEFECTS OF INCREASING SIZE IN THE VESSEL WALL TO ASSURE FRACTURE AT A LOWER BOUND CONDITION. A BRITTLE FRACTURE WAS ACHIEVED WHICH INITIATED AT THE DEFECT WITH AN INTERNAL VESSEL PRESSURE OF 4475 PSIG AND A TEMPERATURE OF -20 F. THIS PAPER ANALYZES THE FAILURE CONDITIONS ON THE BASIS OF FRACTURE MECHANICS UTILIZING MATERIAL PROPERTIES OF THE IRRADIATED MATERIAL.

*FAILURE, PRESSURE VESSEL + FRACTURE TOUGHNESS + PM 2A (PWR) + PRESSURE VESSEL + REACTOR, MILITARY + REACTOR, PWR + STEEL + TEST, PRESSURE VESSEL

11-29360

SERPAN CZ

NEUTRON RADIATION EMBRITTLEMENT OF LACROSSE REACTOR PRESSURE VESSEL STEEL AND WELDMENT - PROPERTIES AND DIRECTIONALITY CONDITIONS

NAVAL RESEARCH LABORATORY, WASHINGTON, D.C.

13 PAGES, 8 FIGURES, 2 TABLES, 14 REFERENCES, NUCLEAR ENGINEERING AND DESIGN, 8(1), PAGES 95-107 (JULY 1968)

PLATE SECTIONS FROM THREE HEATS OF A302-B STEEL INCLUDING ONE 4-IN.- THICK TEST WELDMENT PRODUCED FOR THE LACROSSE BOILING WATER REACTOR (LACBWR) WERE EVALUATED FOR BOTH PRE- AND POST-IRRADIATION PROPERTIES. TWO OF THE STEEL HEATS SHOWED EXCEPTIONALLY HIGH LEVELS OF FULL-SHEAR ENERGY ABSORPTION FOR THE LONGITUDINAL ORIENTATION, BUT ONLY HALF THOSE LEVELS FOR THE TRANSVERSE ORIENTATION. THE DECREASE IN FULL SHEAR ENERGY LEVELS AS A RESULT OF 550 F IRRADIATION WERE NOT LARGE AND APPEARED TO BE PROPORTIONAL BETWEEN LONGITUDINAL AND TRANSVERSE ORIENTATION. INCREASES IN TRANSITION TEMPERATURE AS A RESULT OF 550 F IRRADIATION, 2.1×10^{19} TH N/CM² (GREATER THAN 1 MEV), WERE SHOWN TO BE IN RELATION TO COPPER CONTENT. ONE HEAT WITH LOW COPPER CONTENT DISPLAYED ESSENTIALLY NIL EMBRITTLEMENT, WHILE THE WELD METAL, CONTAINING SIGNIFICANTLY MORE COPPER, REVEALED A LARGER AMOUNT OF EMBRITTLEMENT.

*EMBRITTLEMENT + *HEAT TREATMENT + *STEEL + LACROSSE (BWR) + PRESSURE VESSEL + PROPERTY, PHYSICAL + QUALITY CONTROL + REACTOR, BWR + WELDS

11-29361

HAWTHORNE JR + LOSS FJ

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-29361 *CONTINUED*

THE EFFECTS OF COUPLING NUCLEAR RADIATION WITH STATIC SERVICE STRESSES ON PRESSURE VESSEL MATERIAL BEHAVIOR
NAVAL RESEARCH LABORATORY, WASHINGTON, D.C.
9 PAGES, 10 FIGURES, 2 TABLES, 16 REFERENCES, NUCLEAR ENGINEERING AND DESIGN, 8(1), PAGES 108-116 (JULY 1968)

EXAMINES THE NUCLEAR SERVICE PERFORMANCE OF TWO PRESSURE VESSEL STEELS AS INFLUENCED BY APPLICATION OF STATIC STRESS DURING RADIATION EXPOSURE. BAP SAMPLES FROM AN A357-LF1 (MODIFIED) STEEL FORGING AND FROM A HEAVY SECTION A202-B STEEL PLATE WERE IRRADIATED UNDER UNIAXIAL TENSION AT 430 F AND 550 F, RESPECTIVELY, TOGETHER WITH UNSTRESSED (REFERENCE) SPECIMENS FOR COMPARISONS OF CHARPY-V NOTCH DUCTILITY PERFORMANCE. APPLIED STRESS LEVELS WERE IN EXCESS OF 75% OF INDIVIDUAL STEEL YIELD STRENGTHS AT TEMPERATURE. A BRIEF DESCRIPTION OF THE SPECIAL EXPOSURE ASSEMBLY AND CONTROL INSTRUMENTATION DEVELOPED FOR THIS STUDY IS PRESENTED.

*EMBRITTLEMENT + *RADIATION EFFECT + *STEEL + *STRESS + PERFORMANCE LIMIT + PRESSURE VESSEL

11-29362 ALSO IN CATEGORIES 12 AND 17

WYLIE RD

SURVEILLANCE OF NUCLEAR POWER PLANT COMPONENTS

SOUTHWEST RESEARCH INSTITUTE, SAN ANTONIO, TEXAS

8 PAGES, 4 FIGURES, NUCLEAR ENGINEERING AND DESIGN, 8(1), PAGES 117-124 (JULY 1968)

DESCRIBES AN APPROACH TO THE DEVELOPMENT OF A SYSTEMATIC PROGRAM FOR SURVEILLANCE OF NUCLEAR REACTOR PRESSURE VESSELS AND OTHER NUCLEAR POWER PLANT COMPONENTS. APPROACH IS BASED ON A PROPOSAL DEVELOPED FOR THE LACROSSE BOILING WATER REACTOR. SPECIFIC AREAS TREATED ARE - IRRADIATION EFFECTS SURVEILLANCE PROGRAM, TEMPERATURE MONITORING PROGRAM, INSPECTION PROGRAM, CORROSION PROGRAM.

*CORROSION + *INSPECTION AND COMPLIANCE + *RADIATION EFFECT + *SURVEILLANCE PROGRAM +
*TEMPERATURE GRADIENT + COMPONENTS, MISCELLANEOUS + LACROSSE (BWR) + PRESSURE VESSEL + REACTOR, BWR

11-29363 ALSO IN CATEGORIES 1 AND 12

COOPER WE + WIDMER R + BRODRICK RF

DESIGN CRITERIA FOR HIGH-PRESSURE HIGH-TEMPERATURE BOLTING

TELEDYNE MATERIALS RESEARCH COMPANY, WALTHAM, MASS.

18 PAGES, 6 FIGURES, 5 TABLES, 53 REFERENCES, NUCLEAR ENGINEERING AND DESIGN, 8(1), PAGES 125-142 (JULY 1968)

THE NEXT GENERATION OF POWER-PRODUCING NUCLEAR REACTORS IS EXPECTED TO OPERATE AT HIGHER TEMPERATURES THAN REACTORS NOW IN OPERATION OR UNDER CONSTRUCTION. THESE CONDITIONS WILL REQUIRE THAT BOLTED CLOSURES IN THE SYSTEMS BE DESIGNED TO OPERATE UNDER CONDITIONS NOT PRESENTLY COVERED BY ASME CODES. IT IS THEREFORE NECESSARY THAT STEPS BE TAKEN TO EXTEND THE CODES TO MEET THESE NEW CONDITIONS. THIS REPORT SURVEYS - (1) ANTICIPATED NEEDS OF THE NUCLEAR INDUSTRY, (2) AVAILABILITY OF METALLURGICAL DATA WHICH WOULD BE REQUIRED FOR CODIFICATION TO MEET THE ANTICIPATED NEEDS, AND (3) STATUS AND AVAILABILITY OF STRESS ANALYSIS AND METHODS AND DESIGN CRITERIA TO APPLY TO THE NEW CONDITIONS. IT IS FOUND THAT CLOSURE TEMPERATURES UP TO 1300 F AND PRESSURES UP TO 4000 PSI MAY BE ENCOUNTERED. ALSO, ALTHOUGH CREEP DATA FOR BOLTING MATERIALS UNDER CONSIDERATION ARE AVAILABLE, STRESS-RELAXATION DATA (OF PARTICULAR IMPORTANCE HERE) ARE VERY MEAGER. FURTHER, METHODS FOR CONVERTING CREEP DATA TO STRESS RELAXATION DATA ARE UNRELIABLE.

*DESIGN CRITERIA + *HIGH TEMPERATURE + *PRESSURE, INTERNAL + *STEEL + CREEP + FASTENER + MATERIAL + STRESS

11-29364

ANDU Y + IIDA K

THE EFFECTS OF FABRICATION THERMAL HISTORY ON THE PROPERTIES OF NUCLEAR VESSEL STEELS

UNIVERSITY OF TOKYO

19 PAGES, 29 FIGURES, 16 TABLES, 9 REFERENCES, NUCLEAR ENGINEERING AND DESIGN, 8(1), PAGES 143-161 (JULY 1968)

DURING CONSTRUCTION OF A REACTOR STEEL PRESSURE VESSEL, THE MATERIAL MAY BE SUBJECTED TO THERMAL TREATMENTS WHICH HAVE SERIOUS EFFECTS ON THE QUALITY OF THE MATERIAL. THIS PAPER DESCRIBES RESULTS OF STUDIES MADE TO INVESTIGATE THE EFFECT OF VARIOUS FABRICATION THERMAL HISTORIES ON BRITTLE, DUCTILE AND FATIGUE FRACTURE PROPERTIES OF A302B STEEL AND ITS WELDS. GENERALLY SPEAKING, THROUGH A PROPER THERMAL HISTORY CONSISTING OF TREATMENT FOR HOT FORMING, QUENCH AND TEMPERING, STRESS RELIEF ANNEALING AT 625 C, DETERIORATION OF MATERIALS IN THE FINAL STATE OF THERMAL TREATMENT CAN BE PRACTICALLY PREVENTED.

*FABRICATION + *HEAT TREATMENT + *PRESSURE VESSEL + *PROPERTY, PHYSICAL + *QUALITY CONTROL + *STEEL +
EMBRITTLEMENT + FRACTURE TOUGHNESS + MATERIAL + WELDING

11-29365

FUTTERMAN SR

COMPARATIVE EVALUATION OF MAXIMUM STRESSES AT ABRUPT CHANGE IN WALL THICKNESS OF PRESSURIZED CYLINDER

TRW, REDONDO BEACH, CALIF.

9 PAGES, 9 FIGURES, 6 TABLES, 9 REFERENCES, NUCLEAR ENGINEERING AND DESIGN, 8(1), PAGES 162-170 (JULY 1968)

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-29365 *CONTINUED*

THE MAXIMUM STRESSES AT AN ABRUPT CHANGE IN WALL THICKNESS IN AN AXISYMMETRIC PRESSURIZED CYLINDER ARE CALCULATED BY THE FINITE ELEMENT METHOD AND BY SHELL THEORY, AND RESULTS ARE COMPARED WITH EXPERIMENTAL DATA. EXPERIMENTAL DATA CONFIRMS VALIDITY OF FINITE-ELEMENT METHOD. THE RESULTS OF THE FINITE ELEMENT SOLUTIONS INDICATE THAT STRESSES AT THE DISCONTINUOUS SURFACE ARE ALWAYS HIGHER THAN SHELL THEORY PREDICTIONS BUT DO NOT ALWAYS EXCEED THE MAXIMUM STRESS FOUND ELSEWHERE ON THE CYLINDER.

*COMPARISON, THEORY AND EXPERIENCE + *CYLINDER + *PROPERTY, PHYSICAL + *SHELL + *STRESS + *THICKNESS + PRESSURE VESSEL

11-29367

PROCTER E + FLINDERS RF

SHAKEDOWN INVESTIGATIONS ON PARTIAL PENETRATION WELDED NOZZLES IN A SPHERICAL SHELL
CENTRAL ELECTRICITY GENERATING BOARD, BERKELEY, GLOS., ENGLAND
15 PAGES, 11 FIGURES, 1 TABLE, 7 REFERENCES, NUCLEAR ENGINEERING AND DESIGN, 8(1), PAGES 171-185 (JULY 1968)

THE ELASTIC ANALYSIS OF RADIAL AND OBLIQUE NOZZLES IN A SPHERICAL SHELL, SUBJECT TO INTERNAL PRESSURE, WAS DESCRIBED AND DISCUSSED IN AN EARLIER PAPER. THIS PAPER DESCRIBES TESTS ON THE SAME VESSEL TO INVESTIGATE SHAKEDOWN BEHAVIOR AT THE NOZZLE TO SHELL JUNCTIONS. THREE BASIC DESIGNS OF PARTIAL PENETRATION WELDED NOZZLES WERE INVESTIGATED ONE OF EACH DESIGN MOUNTED RADially AND THE OTHER AT 45 DEG OBLIQUITY. FOR THE PURPOSE OF THE ELASTIC ANALYSIS AND TO OBSERVE THE EFFECTS OF INCREASING PLASTICITY ON STRESS DIE-AWAY, FOUR HUNDRED E.R. STRAIN GAUGES WERE FIXED TO THE INNER AND OUTER SURFACES OF THE SHELL PLATE AND NOZZLES. THE RESULTS ARE COMPARED WITH THEORETICAL PREDICTIONS, AND IT IS DEMONSTRATED THAT, FOR LOW CARBON STEELS, SHAKEDOWN LOADS CAN BE CALCULATED PROVIDED THAT PLASTIC STRESS AT FIRST YIELDING POSITIONS CAN BE DETERMINED.

*NOZZLE + *PRESSURE, INTERNAL + *SHELL + *SPHERE + *WELDS + ELASTICITY + MEASUREMENT, STRAIN GAGE + PRESSURE VESSEL

11-29401

ALSO IN CATEGORY 4

ANDREWS RC + HILTZ RH + KIRSCHLER LH + RODGERS SJ + TEPPEP F
EFFECTS OF HIGH TEMPERATURE SODIUM ON AUSTENITIC AND FERRITIC STEELS
MSA RESEARCH CORPORATION, EVANS CITY, PENNSYLVANIA
MSAR 67-103 +. 22 TABLES, 101 FIGURES, 148 PAGES, JULY 1967

AS PART OF A CONTINUING PROGRAM, MSA RESEARCH CORPORATION IS CONDUCTING A SERIES OF MECHANICAL PROPERTY TESTS OF FERRITIC AND AUSTENITIC ALLOYS IN DYNAMIC SODIUM SYSTEMS. THE SODIUM ENVIRONMENTS INCLUDE LOW-OXYGEN SODIUM, HIGH-OXYGEN SODIUM, AND HIGH-CARBON SODIUM. REPORT SUMMARIZES RESULTS OF THAT PORTION OF PROGRAM IN WHICH MECHANICAL PROPERTIES OF ONE HEAT OF 304 SS WAS MEASURED IN TWO DYNAMIC 1200 F SODIUM SYSTEM, ONE OF WHICH WAS CONTAMINATED WITH CARBON AND THE OTHER WITH 300 PPM OXYGEN. SODIUM CHEMISTRY AND THE ROLE IT PLAYED IN CHARACTERIZING THE TEST MEDIUM ARE DISCUSSED, WITH EMPHASIS ON CARBON ANALYSES BUT ALSO INCLUDING OXYGEN AND EMISSION-SPECTROGRAPH ANALYSES. THE RELATION OF COLD-TRAP TEMPERATURE WITH THE ANALYSES OF SODIUM FOR OXYGEN IS SHOWN FOR ONE OF THE TEST LOOPS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*ANALYTICAL TECHNIQUE, CALIBRATION + *PROPERTY, PHYSICAL + *SODIUM + *STEEL, STAINLESS + CARBON + CREEP PROPERTY + IMPACT PROPERTY + MATERIAL + OXYGEN + STEEL + TENSILE PROPERTY + TESTING

11-29605

ALSO IN CATEGORY 18

ERKES P + GRAU P

DESCRIPTION AND OPERATION OF THE ARDENNES POWER PLANT
ENERG. NUCL. (PARIS)- 8- 520-34 V (DEC. 1966) (IN FRENCH)

A PWR WITH A NET ELECTRICAL POWER OF 266 MW. THE PECULIARITY OF ITS CONSTRUCTION IS THAT THE NUCLEAR INSTALLATIONS ARE UNDERGROUND AND THE CLASSICAL INSTALLATIONS ARE ABOVE GROUND. REACTOR CRITICAL IN OCTOBER 1966. THE VARIATION OF THE CONSTITUENT PARTS OF THE ARDENNES REACTOR FROM THE FIRST GENERATION PWR REACTORS ARE REVIEWED WITH EMPHASIS ON CHEMICAL CONTROL, CONTROL RODS, FUEL ASSEMBLY, LATTICE ARRANGEMENT, ENERGY PRODUCTION IN THE CORE, ENERGY EXTRACTION FROM THE CORE, ENERGY TRANSFER FROM THE PRIMARY TO THE SECONDARY SYSTEMS, CHARGE CYCLES FOR THE CORE, AND TRANSFER OF THE IRRADIATED FUEL. FINANCING AND PRODUCTION COST ARE ALSO BRIEFLY CONSIDERED.

*REACTOR DESCRIPTION + BELGIUM + CONTAINMENT, UNDERGROUND + REACTOR, PWR

11-29608

ALSO IN CATEGORIES 17 AND 1

RICKOVER URGES CODE REFORM, CITES NUCLEAR POWER CASES
NUCLEAR INDUSTRY, VOL. 15, NO. 10, OCTOBER, 1968, PP. 46-47

A SOC. METALS (DETROIT, MICH.) ADDRESS CRITICIZED CODE APPLICATION AS INADEQUATE AS A CRITERION BECAUSE CODES ARE LEAST COMMON DENOMINATOR. POINTS OUT EVEN UNDER ASME BOILER CODE (REGARDED AS ONE OF BETTER CODES) A MANUFACTURER OF REACTOR VESSELS REPAIRED ONLY DEFECTS IN A MAJOR STRUCTURAL WELD REVEALED BY CODE INSPECTIONS AND IGNORED DEFECTS FOUND BY

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-29608 *CONTINUED*

ULTRASONICS. THE INSURANCE COMPANY REFUSED TO TAKE PART IN TECHNICAL DISCUSSIONS. THE BUYER UTILITY PAID EXTRA MONEY TO HAVE THE DEFECTS REPAIRED, THOUGH NOT SO REQUIRED BY THE CODE.

*CODES AND STANDARDS + *FAILURE, PRESSURE VESSEL + EXAMINATION + FAILURE, FABRICATION ERROR + OPERATING EXPERIENCE SUMMARY + PRESSURE VESSEL + REACTOR, RWR + REACTOR, POWER + REACTOR, PWR + TEST, NONDESTRUCTIVE + WELDS

11-29634 ALSO IN CATEGORY 18

INDIAN POINT PSAR SUPPLEMENT 4

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

DOCKET-50286-6 +. 75 PAGES, FIGURES, TABLES, REFERENCES, AMENDMENT 4, SUPPLEMENT 4, EXHIBIT B-4, OCTOBER 31, 1968, DOCKET 50-286, TYPE--PWR, MFG--WEST., AE--UNITD ENGR.

RESPONDS TO REMAINING QUESTIONS REGARDING STRUCTURAL DESIGN OF CONTAINMENT AND BUILDINGS ASKED IN A JULY 16, 1968, LETTER, NOT DEALT WITH IN THE SECOND SUPPLEMENT.

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

*BUILDING + *CONTAINMENT DESIGN + AEC QUESTION + INDIAN POINT 3 (PWR) + REACTOR, PWR + REPORT, PSAR + STRUCTURAL INTEGRITY

CATEGORY 12
PLANT SAFETY FEATURES

12-24159
RITTENHOUSE PL
FAILURE MODES OF ZIRCALOY-CLAD FUEL RODS
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.
ORNL-TM-2347 +. 70 PAGES, FIGURES, TABLES, SEPTEMBER 1968

THIS REPORT IS CONCERNED WITH THE BEHAVIOR OF THE ZIRCALOY-CLAD UO₂ FUEL RODS DURING A LOSS-OF-COOLANT ACCIDENT IN A MODERN LIGHT-WATER REACTOR. ATTENTION IS CALLED TO THE POSSIBLE DETRIMENTAL EFFECT OF FUEL ROD FAILURE ON THE EFFICIENCY OF THE EMERGENCY CORE COOLING SYSTEM AND THE SUBSEQUENT CHAIN OF EVENTS IN THE ACCIDENT. EXISTING PROGRAMS AND DATA RELEVANT TO THE ACCIDENT BEHAVIOR OF THESE RODS ARE REVIEWED. FINALLY, RESEARCH AND TESTING NECESSARY TO RESOLVE THE QUESTIONS ON FUEL ROD BEHAVIOR ARE DESCRIBED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*CLADDING + *EXPERIMENT, GENERAL + *REACTOR, WATER + *URANIUM DIOXIDE + *ZIRCALOY +
ACCIDENT, LOSS OF COOLANT + FAILURE, FUEL ELEMENT + FUEL ELEMENT + TESTING

12-24796
WEIR JR + STIEGLER JO + BLOOM EE
IRRADIATION BEHAVIOR OF CLADDING AND STRUCTURAL MATERIALS
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.
ORNL-TM-2258 +. 49 PAGES, TABLES, REFERENCES, FIGURES, SEPTEMBER 1968

DISCUSSES GENERAL ASPECTS OF THE PROBLEM IN TERMS OF THE OBSERVED CHANGES IN PROPERTIES AND MICROSTRUCTURE AND THE POSSIBLE MECHANISMS THAT MIGHT EXPLAIN THE OBSERVED EFFECTS. DISCUSSION IS CONCERNED PRIMARILY WITH THE AUSTENITIC STAINLESS STEELS AND WITH CHANGES IN MECHANICAL PROPERTIES WHICH OCCUR AT TEST TEMPERATURES NEAR THE IRRADIATION TEMPERATURES. FOR CONVENIENCE THE PROBLEM IS DIVIDED INTO THREE RANGES OF IRRADIATION TEMPERATURE - LOW, INTERMEDIATE, AND HIGH. ON THE BASIS OF DATA PRESENTLY AVAILABLE THE DAMAGE APPEARS TO BE SIGNIFICANTLY DIFFERENT FOR EACH TEMPERATURE RANGE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*CLADDING + *FUEL ELEMENT + *REACTOR, GENERAL + IRRADIATION TESTING + PROPERTY, PHYSICAL + STEEL, STAINLESS

12-25091 ALSO IN CATEGORY 2
CAHILL WJ + NICHOLS RC
SITING AND LICENSING CONSIDERATIONS
CONSOLIDATED EDISON COMPANY OF NEW YORK
9 PAGES, PROC. AM. POWER CONF., 29, PAGES 218-26(1967). FROM 29TH ANNUAL POWER CONFERENCE, CHICAGO.

THE GEOLOGY, METEOROLOGICAL CONDITIONS, AND POPULATION DENSITIES OF THE INDIAN POINT UNIT-2 SITE ARE BRIEFLY REVIEWED. THE CONSEQUENCE-LIMITING ENGINEERED SAFEGUARDS OF THE PLANT ARE DESCRIBED, INCLUDING THE CONTAINMENT VESSEL, EMERGENCY CORE COOLING SYSTEM, CONTAINMENT COOLING SYSTEM, AND FISSION PRODUCT CLEANUP SYSTEM.

*ENGINEERED SAFETY FEATURE + *INDIAN POINT 2 (PWR) + *SITING, REACTOR + GEOLOGICAL CONSIDERATION, GENERAL +
METEOROLOGY

12-25233 ALSO IN CATEGORY 17
MEHANN RO
NS SAVANNAH CORE COOLING INTERRUPTED DURING REFUELING OUTAGE
SAFE, INC., GALVESTON, TEX.
1 PAGE, ATOMIC ENERGY CLEARING HOUSE, 14(43), PAGE 29, (OCT. 21, 1968)

(LETTER, OCT. 7, 1968) THE SUCTION VALVE TO THE EMERGENCY COOLING WATER CIRCULATION PUMP WAS CLOSED BETWEEN 1330 AND 1518 HOURS ON SEPT. 30, 1968. A PROCEDURE WHICH WOULD HAVE AVOIDED THIS WAS NOT FOLLOWED BY THOSE PERFORMING MAINTENANCE ON THE VALVE. ANALYSIS INDICATES A NATURAL CIRCULATION FLOW PATH WAS ESTABLISHED AT 3.5 GPM/ELEMENT WITH A TEMP. RISE OF 15 F. PRIMARY SYSTEM TEMP RISE WAS LESS THAN 19 F, AND TEMP. TRANSIENT ON STARTING THE PUMP WAS 3 F.

*FAILURE, MAINTENANCE ERROR + *SHUTDOWN COOLING SYSTEM + CIRCULATION, NATURAL + FLOW BLOCKAGE +
MAINTENANCE AND REPAIR + NS SAVANNAH (PWR) + REACTOR, PWR + TECHNICAL SPECIFICATIONS +
TEMPERATURE TRANSIENT + VALVE

12-27529 ALSO IN CATEGORY 13
MERRIMAN JR + PASHLEY JH
ENGINEERING DEVELOPMENT OF AN ABSORPTION PROCESS FOR THE CONCENTRATION AND COLLECTION OF KRYPTON AND XENON
- SECOND SUMMARY PROGRESS REPORT JULY THROUGH DECEMBER 1967
UNION CARBIDE CORPORATION
K-1745 +. 31 PAGES, 6 FIGURES, 1 TABLE, 2 REFERENCES, AUGUST 19, 1968

CATEGORY 12
PLANT SAFETY FEATURES

12-27529 *CONTINUED*

ONE OF THE MOST DIRECT METHODS FOR STRIPPING KRYPTON AND XENON FROM CONTAMINATED GAS STREAMS IS SELECTIVE ABSORPTION IN A FLUOROCARBON SOLVENT, SUCH AS REFRIGERANT 12. A DEVELOPMENT PROGRAM IS UNDERWAY AT THE OAK RIDGE GASEOUS DIFFUSION PLANT TO ESTABLISH THE ENGINEERING SCALE-UP DATA REQUIRED FOR DESIGN OF PLANTS USING THE ABSORPTION TECHNIQUE FOR PROCESSING GASES CONTAINING RADIOACTIVE KRYPTON AND XENON ISOTOPES. THE SCOPE OF THE WORK INCLUDES PILOT PLANT TESTING, CONCEPTUAL DESIGN STUDIES FOR VARIOUS PLANT-SCALE APPLICATIONS OF THE PROCESS, AND OPTIMIZATION STUDIES. DURING THIS REPORT PERIOD, CONSTRUCTION AND PROCUREMENT OF THE PILOT PLANT EQUIPMENT ITEMS WERE ESSENTIALLY COMPLETED, AND INSTALLATION WAS BEGUN.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*FUEL REPROCESSING + *REACTOR, GENERAL + *WASTE TREATMENT, GAS + DESIGN STUDY + EXPERIMENT, GENERAL + KRYPTON + OFF GAS + TESTING + XENON

12-27531 ALSO IN CATEGORY 13

PEEBLES FN

REMOVAL OF XENON-135 FROM CIRCULATING FUEL SALT OF THE MSBR BY MASS TRANSFER TO HELIUM BUBBLES
OAK RIDGE NATIONAL LABORATORY

ORNL-TM-2245 +. 33 PAGES, 8 FIGURES, 2 TABLES, 21 REFERENCES, JULY 23, 1968

REMOVAL OF DISSOLVED XENON-135 BY MASS TRANSFER TO HELIUM BUBBLES OFFERS AN ATTRACTIVE MEANS OF CONTROLLING THE XENON-135 POISON LEVEL IN MOLTEN SALT BREEDER REACTORS. TO PROVIDE NECESSARY ENGINEERING INFORMATION FOR EVALUATION OF THE PROPOSED METHOD, THE EXISTING DATA ON RATES OF MASS TRANSFER TO GAS BUBBLES WERE REVIEWED. RATHER EXTENSIVE LITERATURE REFERENCES POINT TO RELIABLE EQUATIONS FOR PREDICTION OF MASS TRANSFER RATES TO SINGLE BUBBLES RISING IN STATIONARY LIQUIDS UNDER THE TWO EXTREME CASES OF A RIGID BUBBLE INTERFACE AND OF A PERFECTLY MOBILE BUBBLE INTERFACE. IN GENERAL, EXPERIMENTAL DATA ARE AVAILABLE WHICH SUPPORT THESE PREDICTIONS. NO RELIABLE CRITERION FOR PREDICTING THE TRANSITION FROM ONE TYPE BEHAVIOR TO ANOTHER IS AVAILABLE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*REACTOR, BREEDER + *REACTOR, GENERAL + *REACTOR, MOLTEN SALT + *XENON + HELIUM + MASS TRANSFER + THEORETICAL INVESTIGATION + WASTE TREATMENT, GAS

12-27534 ALSO IN CATEGORY 9

JACOBS IM

RELIABILITY OF ENGINEERED SAFETY FEATURES AS A FUNCTION OF TESTING FREQUENCY
GENERAL ELECTRIC COMPANY

10 PAGES, 7 FIGURES, 1 REFERENCE, NUCLEAR SAFETY 9(4), PAGES 303-12 (JULY-AUGUST 1968)

THE RELIABILITY OF AN ENGINEERED SAFETY SYSTEM IS HIGHLY DEPENDENT ON THE FREQUENCY OF TESTS PERFORMED TO DEMONSTRATE ITS OPERABILITY. THUS THE FREQUENCY OF TESTS BECOMES A DESIGN CONSIDERATION OF UTMOST IMPORTANCE. WHEN THE SYSTEM IS NEW, THE OPERATOR MUST RELY PRIMARILY ON THE DESIGNERS RECOMMENDED TEST FREQUENCY. WITH ACTUAL IN-SERVICE EXPERIENCE, THE OPERATOR IS ABLE TO REGULATE THE TEST FREQUENCIES TO ATTAIN AN OVERALL RELIABILITY GOAL. UNDER CERTAIN LIMITING CONDITIONS, THERE IS CLEARLY AN OPTIMUM TEST FREQUENCY, MORE FREQUENT OR LESS FREQUENT TESTING WILL DEGRADE RELIABILITY. TECHNIQUES OF MODELING HAVE BEEN DEVELOPED TO SOLVE SAFETY-SYSTEM RELIABILITY PROBLEMS. THE MODELS SERVE AS THE MEANS TO BRIDGE THE GAP BETWEEN THE UNCERTAINTY OF DESIGN DECISIONS AND THE REALITY OF ACTUAL APPLICATION.

*ENGINEERED SAFETY FEATURE + *RELIABILITY ANALYSIS + *TESTING + PROBABILITY + *RELIABILITY, SYSTEM + TEST, ON LINE + TEST, SYSTEM OPERABILITY

12-27721

STACHEW JC

ISOTOPIC ANALYSIS OF NATURAL UO₂ FUEL IRRADIATED TO 22,000 MWD/MTU - THEORY VERSUS EXPERIMENT
BETTS ATOMIC POWER LABORATORY, PITTSBURGH, PA.

WAPD-TM-766 +. 76 PAGES, 33 FIGURES, 7 TABLES, 22 REFERENCES, AUGUST 1965

THE URANIUM AND PLUTONIUM ISOTOPIC DISTRIBUTIONS OF 45 IRRADIATED FUEL RODS OF NATURAL URANIUM DIOXIDE ARE COMPARED TO THEORETICAL PREDICTIONS MADE USING THREE-DIMENSIONAL P-1 NEUTRON DIFFUSION TECHNIQUES. THE CALCULATIONAL TECHNIQUE IS SOMEWHAT UNIQUE IN THAT NORMALIZATION TO EXPERIMENTAL RESULTS IS MADE ONLY BY USE OF THE TOTAL CORE ENERGY OUTPUT AND MEASURED CRITICAL ROD BANK HEIGHTS. THIS IS IN CONTRAST TO NORMALIZING EACH INDIVIDUAL FUEL ROD BURNUP TO THE EXPERIMENTAL VALUE AND THEN INVESTIGATING RESULTANT ISOTOPIC DISTRIBUTIONS IN THE ROD. THE COMPARISON INDICATES GOOD AGREEMENT BUT IDENTIFIES THE NEED FOR A SPATIAL SPECTRUM VARIATION OF THE U-238 EPITHERMAL RESONANCE ABSORPTION CROSS SECTION AND IMPROVED TIME DEPENDENCE OF THE U-238 AND PU-239 CROSS SECTIONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*COMPARISON, THEORY AND EXPERIENCE + *FUEL BURNUP + *REACTOR, GENERAL + *REACTOR, PWR + *URANIUM DIOXIDE + CROSS SECTION + FUEL ELEMENT

CATEGORY 12
PLANT SAFETY FEATURES

12-27781 ALSO IN CATEGORY 13

APPEL J + ROOS B

A STUDY OF THE RELEASE OF RADIOACTIVE METALLIC ISOTOPES FROM HIGH-TEMPERATURE GAS-COOLED REACTORS
GULF GENERAL ATOMIC INC., SAN DIEGO, CALIFORNIA
GA-8399 +. 37 PAGES, 8 FIGURES, 3 TABLES, 16 REFERENCES, JULY 22, 1968

AN EXACT FORMULATION IS PRESENTED FOR THE RELEASE OF METALLIC FISSION PRODUCTS. SUCH RADIOACTIVE ATOMS ARE CREATED THROUGH FISSION PROCESSES INSIDE THE KERNEL OF FUEL PARTICLES. THEY CAN DIFFUSE THROUGH THE COATING OF A FUEL PARTICLE AND THE SURROUNDING CHARCOAL MATRIX INTO THE STRUCTURAL GRAPHITE OF THE REACTOR CORE. SOME ATOMS TRAVERSE THIS GRAPHITE ALONG INTERNAL SURFACES AND FINALLY ENTER THE COOLANT GAS. TO FIND THE NUMBER OF RADIOACTIVE ATOMS RELEASED INTO THE COOLANT GAS, THE DIFFUSION EQUATION IN ONE SPACE DIMENSION IS SOLVED NUMERICALLY TAKING INTO ACCOUNT AS DRIVING FORCES BOTH THE GRADIENT OF THE CHEMICAL POTENTIAL AND THAT OF THE TEMPERATURE FIELD.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA, 22151, \$3.00 COPY, \$0.65 MICROFICHE

*REACTOR, GENERAL + *REACTOR, HTGR + DIFFUSION + FISSION PRODUCT RELEASE, GENERAL + FISSION PRODUCT, NONVOLATILE + MASS TRANSFER + MATHEMATICAL TREATMENT

12-27783 ALSO IN CATEGORY 13

BISHOP WN + BAROCH CJ

POST-IRRADIATION EXAMINATION OF THORIA-URANIA FUEL RODS. QUARTERLY PROGRESS REPORT NO. 3, DECEMBER 1967 - FEBRUARY 1968

BABCOCK + WILCOX CO., NUCLEAR DEVELOPMENT CENTER, LYNCHBURG, VIRGINIA
BAW-3809-3 +. 1 FIGURE, 2 TABLES, 3 REFERENCES, JULY 1968

THE DISSOLUTION OF THORIA-URANIA FUEL WAS STUDIED, AND IT WAS SHOWN THAT 13 M NITRIC ACID-0.05 M FLUORIDE UNDER REFLUX WAS EFFECTIVE FOR BOTH IRRADIATED AND UNIRRADIATED MATERIAL. NONDESTRUCTIVE EXAMINATION OF THE FUEL RODS SHOWED THAT THEY WERE IN EXCELLENT CONDITION, AND IN SOME CASES PELLETS WERE INTACT AND FREE TO MOVE WITHIN THE RODS. EIGHT OF THE 13 RODS HAVE BEEN SECTIONED, AND CHEMICAL AND METALLURGICAL EXAMINATIONS ARE IN PROGRESS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA, 22151, \$3.00 COPY, \$0.65 MICROFICHE

*EXAMINATION + *FUEL ELEMENT + *FUEL REPROCESSING + *REACTOR, GENERAL + DISSOLUTION + THORIUM + URANIUM

12-27967

TAKEKOSHI T

RELIABILITY ASSESSMENT OF ENGINEERED SAFEGUARDS OF NUCLEAR POWER PLANTS
ELECTROTECHNICAL LAB., JAPAN

19 PAGES, 2 FIGURES, 5 TABLES, PAPER PRESENTED AT THE 2ND CREST MEETING OF SPECIALISTS ON THE RELIABILITY OF ELECTRICAL SUPPLY SYSTEMS AND RELATED ELECTRO-MECHANICAL COMPONENTS FOR NUCLEAR REACTOR SAFETY, ISPRA, ITALY, JUNE 27-28, 1968

RELIABILITY ASSESSMENT OF ENGINEERED SAFEGUARDS, USING NUMERICAL CALCULATIONS, OF THE JPDR (JAPAN). FAILURE DATA OF THE SYSTEM COMPONENTS MOSTLY OBTAINED FROM RECORDS DURING TWO YEARS OPERATION. RELIABILITY RESPONSIBILITY DIVIDED INTO TWO CATEGORIES - (1) STARTUP AND (2) CONTINUOUS OPERATION. CONCLUSIONS DERIVED FROM INVESTIGATION ARE - (1) DIFFICULTY OF ACCESSING CALCULATION FROM LACK OF ACTUAL FAILURE DATA OF COMPONENTS, THEREFORE POINTING OUT NEED TO DEVELOP METHOD TO OBTAIN USEFUL DATA FOR RELIABILITY CALCULATION, (2) NEED TO DEVELOP CRITERIA IN ORDER TO JUDGE WHETHER THE LEVEL OF RELIABILITY OBTAINED CAN BE ACCEPTABLE FROM THE VIEWPOINT OF PLANT SAFETY EVALUATION.

*JAPAN + *REACTOR, BWR + *RELIABILITY ANALYSIS + REACTOR, GENERAL + RELIABILITY, SYSTEM + SAFETY ANALYSIS

12-27971 ALSO IN CATEGORIES 17 AND 11

HINKLE WD

ANALYSIS OF THE HEAT REMOVAL CAPABILITY OF THE CONTAINMENT AIR COOLING UNITS FOLLOWING A LOSS OF COOLANT INCIDENT

CONNECTICUT YANKEE ATOMIC POWER COMPANY, HADDAM

NYO-3250-9 + CYAP-102 +. 29 PAGES, FIGURES, REFERENCES, DECEMBER 30, 1966

USED METHOD BASED ON COLBURN AND HOUGEN, WITH PARTICULAR ATTENTION TO THE 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 RATES ARE 5% ABOVE THOSE RATES IN CONTAINMENT DESIGN (AS LONG AS PRESSURES ARE ABOVE 20 PSIG).

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*CONTAINMENT AIR COOLING + *THERMAL ANALYSIS + ACCIDENT, LOSS OF COOLANT + CONTAINMENT DESIGN + HADDAM NECK (PWR) + HEAT TRANSFER, CONDENSATION + MATHEMATICAL TREATMENT + REACTOR, PWR

CATEGORY 12
PLANT SAFETY FEATURES

12-28027

SPENCER WF

A DISCUSSION AND EVALUATION OF REMOTE MAINTENANCE IN A REACTOR EXPERIMENT VERSUS CONVENTIONAL MAINTENANCE FOR A SIMILAR TASK

OAK RIDGE NATIONAL LABORATORY; OAK RIDGE, TENNESSEE

CF-68-7-7 +. 6 PAGES, 1 FIGURE, 1 REFERENCE, JULY 5, 1968

A BRIEF REVIEW OF TIME AND PROBLEMS ENCOUNTERED IN REMOTE MAINTENANCE OF MSRE AT ORNL.
WORKING EFFICIENCY WAS NEARLY 66%, COMPARED WITH A NORMAL STANDARD FOR DIRECT MAINTENANCE.

*MAINTENANCE, REMOTE + *REACTOR, MOLTEN SALT + MSRE (RE) + ORNL

12-28077

ALSO IN CATEGORIES 11 AND 19

ZAPP FC

TESTING OF CONTAINMENT SYSTEMS USED WITH LIGHT-WATER-COOLED POWER REACTORS

OAK RIDGE NATIONAL LABORATORY

ORNL-NSIC-26 +. 258 PAGES, FIGURES, TABLES, REFERENCES, AUGUST 1968

CONCLUSIONS ARE PRESENTED RELATIVE TO LEAKAGE-RATE TEST RESULTS, CONTINUOUS LEAKAGE-RATE MONITORING, AND DEVELOPMENTS THAT MAY AFFECT FUTURE TESTING REQUIREMENTS. ALSO, RECOMMENDATIONS ARE MADE RELATIVE TO PROPOSED CODES, STANDARDS, AND GUIDES, ISOLATION-VALVE TESTING, CONTAINMENT AIR-COOLING AND SPRAY SYSTEMS TESTING, AND CONTAINMENT SYSTEMS TESTING RESEARCH PROGRAMS. THE STUDIES INDICATED THAT INTEGRATED LEAKAGE-RATE TEST RESULTS ARE NOT CURRENTLY BEING REPORTED IN A MANNER THAT IS CONDUCIVE TO COMPARISONS BETWEEN PLANTS OR TO AN INDEPENDENT EVALUATION OF THE ERRORS INVOLVED. IN MOST CASES THERE IS INSUFFICIENT INFORMATION PRESENTED IN THE LEAKAGE-RATE TEST REPORTS TO ADEQUATELY SUPPORT THE DEGREE OF ACCURACY CLAIMED OR TO GIVE CONFIDENCE IN THE LEAKAGE RESULT REPORTED. THE MAJORITY OF THE ERRORS ARE THE RESULT OF INADEQUATE PRECISION OF THE TEST EQUIPMENT USED, INADEQUATE TEST EQUIPMENT CALIBRATION, AND (MORE SIGNIFICANTLY) POORLY DESIGNED SAMPLING TECHNIQUES. A MAJOR NEED APPEARS TO BE THAT OF PROVIDING GUIDELINES FOR CORRECTLY DEFINING THE LEAKAGE-RATE TESTS SO THAT THE ACCURACY AND SIGNIFICANCE OF THE RESULTS CAN BE PREDICTED BEFORE THE TEST IS RUN.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*CONTAINMENT ABSOLUTE MEASURING SYSTEM + *CONTAINMENT INTEGRITY + *CONTAINMENT LEAK MONITOR +
*CONTAINMENT REFERENCE MEASURING SYSTEM + *CONTAINMENT, HIGH PRESSURE + *CONTAINMENT, ICE CONDENSER +
*CONTAINMENT, PRESSURE SUPPRESSION + *CONTAINMENT, PRESSURE VENTING + *TEST, LEAK LOCATION +
*TEST, LEAK RATE + *TEST, PROOF + CODES AND STANDARDS + CONTAINMENT LEAKAGE CONTROL +
CONTAINMENT PENETRATION, GENERAL + CONTAINMENT RESEARCH AND DEVELOPMENT + CONTAINMENT SPRAY +
CONTAINMENT STRUCTURE + CONTAINMENT VESSEL LOADING + REACTOR, WATER + STEEL

12-28105

ALSO IN CATEGORIES 10 AND 9

MAURER H

AVAILABILITY OF EMERGENCY CORE COOLING SYSTEMS MAINLY WITH REGARD TO OFF-SITE AND STAND-BY POWER PROVISIONS
13 PAGES, 1 FIGURE, 3 TABLES, 5 REFERENCES, PRESENTED AT THE MEETING OF SPECIALISTS ON THE RELIABILITY OF
ELECTRICAL SUPPLY SYSTEMS AND RELATED ELECTRO-MECHANICAL COMPONENTS FOR NUCLEAR REACTOR SAFETY, ISPPA,
JUNE 27-28, 1968

SOME EXAMPLES OF RELIABILITY ANALYSIS IN TYPICAL EMERGENCY CORE-COOLING SYSTEMS ARE GIVEN,
SHOWING THE INFLUENCE OF REDUNDANCY AND INTERDEPENDENCE. THE AVAILABLE STATISTICAL FAILURE
RATE DATA OF MECHANICAL AND ELECTRICAL SYSTEM COMPONENTS ARE DISCUSSED. THE FOLLOWING
SUBJECTS ARE TREATED IN DETAIL - (1) ANALYSIS OF DIFFERENT BLOCK DIAGRAM MODELS OF EMERGENCY
CORE-COOLING SYSTEMS AND SYSTEM OPTIMIZING WITH REGARD TO MECHANICAL COMPONENTS, (2)
RELIABILITY ANALYSIS OF DIFFERENT POSSIBLE ELECTRICAL POWER PROVISIONS AND OVERALL SYSTEM
AVAILABILITY, (3) OFF-SITE POWER AVAILABILITY CONSIDERATIONS DURING LOSS OF COOLANT ACCIDENT.

AVAILABILITY - COMMISSION OF THE EUROPEAN COMMUNITIES, MR. H. MAURER

*COOLING, SHUTDOWN + *ELECTRIC POWER, ALTERNATE + *RELIABILITY ANALYSIS + BELGIUM +
ELECTRIC POWER, GENERAL + EMERGENCY SYSTEM + FAILURE, COMPONENT

12-28117

ALSO IN CATEGORIES 18 AND 11

ICE CONDENSER INFORMATION

INDIANA + MICHIGAN ELECTRIC COMPANY

98 PAGES, FIGURES, TABLES, AMENDMENT 4 TO LICENSE APPLICATION FOR COOK 1 AND 2, JULY 29, 1968, DOCKET
50-315/316

ANSWERS QUESTIONS 9.1 AND 9.2 ON ICE CONDENSER ASKED IN JULY 1, 1968, DRL LETTER. PROVIDES
REVISED PSAR PAGES, INCLUDING EXTENSIVE REVISIONS IN SECTIONS 5.2 (CONTAINMENT MATHEMATICAL
MODEL), 5.3 (ICE CONDENSER), 14.3 (CONTAINMENT PRESSURE TRANSIENT ANALYSIS DURING BLOWDOWN).
ASSERTS THAT SUFFICIENT EVIDENCE HAS BEEN GIVEN IN THIS AND PROPRIETARY REPORTS (WCAP-2951,
7040, 7079 AND 2 SUPPLEMENTS, PLUS 7183 AND SUPPLEMENT) FOR A FAVORABLE AEC FINDING.

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

AEC QUESTION + COOK 1 (PWR) + REACTOR, PWR + REPORT, PSAR

CATEGORY 12
PLANT SAFETY FEATURES

12-28142 ALSO IN CATEGORY 13

LOWERY RR + ASAI G

AN EVALUATION OF W-25RE PRODUCED BY BOTH ARC-MELTING AND POWDER METALLURGY
BUREAU OF MINES, U.S. DEPARTMENT OF THE INTERIOR, ALBANY, OREG.

USBM-RC-1274 +. 33 PAGES, 33 FIGURES, 7 TABLES, FEBRUARY 19, 1968

AN EVALUATION OF TUNGSTEN-25 WEIGHT PERCENT RHENIUM ALLOY PROCESSED BY BOTH POWDER-METALLURGY (PM) AND ARC-MELTING (AM) TECHNIQUES WAS ACCOMPLISHED. METHODS OF CONSOLIDATION, FABRICATION, AND TESTING ARE DISCUSSED. ELECTRON MICROSCOPY WAS USED TO VIEW FRACTURES IN BOTH BEND AND WELD SPECIMENS. POROSITY WAS FOUND IN THE PM SHEET IN BOTH CASES.

*FABRICATION + *FUEL ELEMENT + *HIGH TEMPERATURE + *REACTOR, GENERAL + ALLOY + RHENIUM + TESTING + TUNGSTEN

12-28152

LAHTI GP + LANTZ E + MILLER JV

PRELIMINARY CONSIDERATIONS FOR FAST-SPECTRUM, LIQUID-METAL COOLED NUCLEAR REACTOR PROGRAM FOR SPACE-POWER APPLICATIONS

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, WASHINGTON, D. C.

NASA-TN-D-4315 +. 46 PAGES, 17 FIGURES, 12 TABLES, 30 REFERENCES, MARCH 1968

A NUCLEAR REACTOR SUITABLE FOR SPACE-POWER APPLICATIONS SHOULD IDEALLY BE COMPACT, LIGHT, EASILY CONTROLLED, AND BE CAPABLE OF OPERATION FOR A SUBSTANTIAL PERIOD OF TIME WITH LITTLE OR NO MAINTENANCE. TO DEVELOP A RELIABLE NUCLEAR REACTOR FOR SPACE POWER, HOWEVER, IT MAY BE NECESSARY TO COMPROMISE SOME OF THESE REQUIREMENTS TO SOME DEGREE DUE TO OTHER CONSIDERATIONS SUCH AS SHIELDING REQUIREMENTS WHICH MAY BE NECESSARY TO PROTECT PERSONNEL AND EQUIPMENT. FROM THE RESULTS OF THIS PRELIMINARY STUDY, IT APPEARS THAT NUCLEAR STABILITY AND CONTROL, FUEL MATERIAL DEVELOPMENT, AND SHIELDING OPTIMIZATION ARE AREAS IN WHICH ADDITIONAL WORK MUST BE PERFORMED TO DEVELOP A RELIABLE NUCLEAR REACTOR SYSTEM FOR SPACE-POWER APPLICATION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*DESIGN STUDY + *LITHIUM + *METAL, LIQUID + *REACTOR, SPACE + HYDRAULIC ANALYSIS + SHIELDING + THERMAL ANALYSIS

12-28158

ERBACHER F + FRISCH W + HUBSCHMANN W + RITZ L + WOITE G

THE SAFETY OF STEAM-COOLED FAST REACTORS AS INFLUENCED BY THE DESIGN AND ARRANGEMENT OF THEIR COMPONENTS
KERNFORSCHUNGSZENTRUM KARLSRUHE

CEAP-IV-B/2 +. 50 PAGES, 10 FIGURES, 8 REFERENCES, SEPTEMBER 22, 1967

PRESENTS THE REASONS WHY THE DYNAMIC BEHAVIOUR AND THE SAFETY OF A STEAM-COOLED FAST REACTOR IS PARTICULARLY DEPENDENT ON THE DESIGN AND THE ARRANGEMENT OF THE COOLING CYCLE AND ITS COMPONENTS. POINTS OUT THAT BY A SUITABLE DESIGN AND ARRANGEMENT A SELF-CONTROLLED SYSTEM CAN BE OBTAINED AND THE CONSEQUENCES OF CERTAIN MAJOR ACCIDENTS GREATLY REDUCED. INDEPENDENT OF ANY SPECIFIC REACTOR DESIGN, THE CRITERIA TO ACHIEVE THIS ARE DEFINED.

AVAILABILITY - F. ERBACHER, W. FRISCH, W. HUBSCHMANN, L. RITZ, OR G. WOITE, KERNFORSCHUNGSZENTRUM KARLSRUHE

*CONTROL, GENERAL + *DYNAMICS, NONLINEAR + *REACTOR, FAST + *ACCIDENT ANALYSIS, REACTOR, GENERAL + SAFETY ANALYSIS

12-28410

ALSO IN CATEGORY 7

NITTI DA

A STUDY OF CONTAINMENT SPRAYS AND CHARCOAL FILTERS FOR THE REMOVAL OF IODINE FOLLOWING A PWR LOSS-OF-COOLANT ACCIDENT

LYNCHBURG, VIRGINIA, USA, THE BABCOCK AND WILCOX COMPANY

SM-110 +. 1 PAGE, PAGE 16 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

SUMMARIZES A STUDY OF THE RADIOIODINE PROBLEM ASSOCIATED WITH THE SITING OF THE CURRENT GENERATION OF NUCLEAR POWER STATIONS IN THE UNITED STATES. COMPARES THE EFFECTIVENESS OF A CONTAINMENT SPRAY SYSTEM AND A CHARCOAL FILTER SYSTEM FOR THE REMOVAL OF THE RADIOIODINE FOLLOWING A PWR LOSS-OF-COOLANT ACCIDENT. THE STUDY SHOWS THAT, BASED ON THE PRESENT REACTOR SITING CRITERIA IN THE U. S., THE ULTIMATE IODINE REMOVAL SYSTEM MUST PROVIDE AN IODINE DOSE REDUCTION FACTOR OF 40 TO 50 IN TWO HOURS AND A DRF OF 80 TO 100 IN 30 DAYS. THIS MEANS THAT 1 TO 1 1/2% OF THE IODINE NEED NEVER BE REMOVED FROM THE CONTAINMENT ATMOSPHERE IF THE OTHER 99% IS REMOVED SUFFICIENTLY FAST.

AVAILABILITY - D. A. NITTI, THE BABCOCK AND WILCOX COMPANY

*CHARCOAL + *CHARCOAL ADSORBER + *FISSION PRODUCT, IODINE + *IODINE + *SPRAY, GENERAL + *TEST, FILTER SYSTEM + AIR CLEANING + DECONTAMINATION FACTOR + OPERATING EXPERIENCE

CATEGORY 12
PLANT SAFETY FEATURES

12-28418 ALSO IN CATEGORY 7

ROW TH

REACTOR CONTAINMENT SPRAY TECHNOLOGY PROGRAM

OAK RIDGE NATIONAL LABORATORY

SM-110 +. 1 PAGE, PAGE 26 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

THE DESIGN BASIS ACCIDENT IN WATER-MODERATED POWER REACTORS IS A LOSS-OF-COOLANT ACCIDENT IN WHICH WATER SPRAYS ARE GENERALLY USED TO CONTROL THE CONTAINMENT PRESSURE TRANSIENT BY CONDENSING THE RELEASED STEAM-AIR MIXTURE. ADDITIVES TO THE SPRAY HAVE BEEN PROPOSED AS A WAY TO INCREASE THEIR USEFULNESS BY ENHANCING THE REMOVAL OF VARIOUS FORMS OF RADIOIODINE FROM THE CONTAINMENT ATMOSPHERE. A PROGRAM TO INVESTIGATE THE GAS-LIQUID SYSTEMS INVOLVED IS CO-ORDINATED BY ORNL FOR THE US ATOMIC ENERGY COMMISSION. CONSIDERATION IS ALSO BEING GIVEN TO CORROSION, THERMAL AND RADIATION STABILITY OF THE SOLUTIONS.

AVAILABILITY - T. H. ROW, OAK RIDGE NATIONAL LABORATORY, P. O. BOX X, OAK RIDGE, TENN.

*IODINE + *NSPP + *ORGANIC IODIDE + AIR CLEANING + CORROSION + HYDROGEN + MASS TRANSFER + RADIATION EFFECT + RADIOLYTIC GAS

12-28424 ALSO IN CATEGORY 7

DEFIELD D + ETTINGER HJ

EFFICIENCY TESTING OF THE AIR CLEANING SYSTEM FOR A HIGH-TEMPERATURE REACTOR

LOS ALAMOS SCIENTIFIC LABORATORY

SM-110 +. 1 PAGE, PAGE 32 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

THE LOS ALAMOS ULTRA HIGH TEMPERATURE REACTOR EXPERIMENT (UHTREX) UTILIZES A HELIUM-COOLED, GRAPHITE-MODERATED REACTOR, EMPLOYING UNCLAD REFRACTORY FUEL ELEMENTS. UNDER ACCIDENT CONDITIONS THE EFFLUENT THAT MAY BE RELEASED FROM THIS REACTOR REQUIRES AN AIR CLEANING SYSTEM CAPABLE OF REDUCING RADIOACTIVE GAS AND PARTICULATE CONTAMINANTS TO SAFE LEVELS. IN-PLACE TESTS INDICATED DESIRABLE DESIGN CHANGES WHICH WOULD (1) SIMPLIFY IN-PLACE TESTING PROCEDURES, (2) EXPEDITE INSTALLATION AND FUTURE CHANGING OF THE FILTERS, AND (3) ASSURE OPERATION OF A MORE EFFICIENT SYSTEM. PROBLEMS ENCOUNTERED DURING IN-PLACE TESTING, RECOMMENDATIONS FOR THE DESIGN OF SIMILAR SYSTEMS AND ACCEPTANCE CRITERIA USED AT LASL ARE DISCUSSED.

AVAILABILITY - D. DEFIELD OR H. J. ETTINGER, LOS ALAMOS SCIENTIFIC LABORATORY, NEW MEXICO

*DESIGN CRITERIA + *TEST, DOP FILTER + *TEST, FILTER SYSTEM + *UHTREX (GCR) + AIR CLEANING + FILTER EFFICIENCY + FILTER SYSTEM + FILTER TEST REQUIREMENT + REACTOR, AEC OWNED + REACTOR, GCR + REACTOR, HTGR

12-28425 ALSO IN CATEGORY 7

PARRISH EC + SCHNEIDER RW

REVIEW OF INSPECTION AND TESTING OF INSTALLED HIGH-EFFICIENCY PARTICULATE AIR FILTERS AT ORNL

OAK RIDGE NATIONAL LABORATORY

SM-110 +. 2 PAGES, PAGES 33-34 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

ROUTINE IN-PLACE TESTING OF HIGH-EFFICIENCY FILTER SYSTEMS WAS INITIATED AT OAK RIDGE NATIONAL LABORATORY IN MID-1962. THE IN-PLACE TEST METHOD ADOPTED BY THE LABORATORY IS PATTERNED AFTER THE STANDARD TEST USED TO MEASURE THE EFFICIENCY OF NEW FILTER UNITS. THE PRINCIPAL DIFFERENCE IS THAT THE DOP AEROSOL USED FOR THE IN-PLACE TEST IS POLYDISPERSE WITH AN AVERAGE PARTICLE DIAMETER SLIGHTLY LARGER THAN 0.3 MICRON. THOUGH THE BASIC IN-PLACE TEST HAS REMAINED UNCHANGED, SIX YEARS OF EXPERIENCE HAS RESULTED IN REFINEMENT AND STANDARDIZATION OF TECHNIQUES WHICH PERMIT WIDER APPLICATION OF THE IN-PLACE TEST AND MORE ECONOMICAL TESTING. TO FACILITATE THE IN-PLACE TESTING OF ALL ORNL HIGH-EFFICIENCY FILTER SYSTEMS, AS REQUIRED BY LABORATORY POLICY, A COMPUTER PROGRAM WAS INSTITUTED IN MID-1965. THIS PROGRAM PROVIDES AUTOMATIC ADVANCE NOTIFICATION TO COGNIZANT MANAGEMENT AND OPERATING PERSONNEL WHEN SYSTEMS ARE SCHEDULED FOR TEST. SIMILARLY, TEST RESULTS ARE REPORTED AUTOMATICALLY.

AVAILABILITY - E. C. PARRISH OR R. W. SCHNEIDER, OAK RIDGE NATIONAL LABORATORY

*FILTER INSPECTION + *FILTER OPERATION + *FILTER TEST REQUIREMENT + *TEST, DOP FILTER + AIR CLEANING + COMPUTER PROGRAM + FILTER SYSTEM + PARTICLE SIZE

12-28426 ALSO IN CATEGORY 7

LITTLE JC + DEMONBRUN R

AIR CLEANING AT AEC'S Y-12 PLANT

UNION CARBIDE CORPORATION, OAK RIDGE, TENN.

SM-110 +. 1 PAGE, PAGE 35 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

DESCRIBES SOME OF THE AIR CLEANING REQUIREMENTS OF PRODUCTION, RESEARCH, DEVELOPMENT, AND BIOLOGICAL FACILITIES IN THE Y-12 AREA. PROBLEMS AND THEIR SOLUTIONS IN HAZARDOUS MATERIAL CONTAINMENT, AIR CLEANING, CONTAMINATION CONTROL, AND AIR POLLUTION CONTROL ARE ENUMERATED.

CATEGORY 12
PLANT SAFETY FEATURES

12-28426 *CONTINUED*

BIOCLEAN AND LAMINAR-FLOW CLEAN ROOMS, GERM-FREE SUPPLY AIR SYSTEMS, EXHAUST SYSTEMS FOR HANDLING TOXIC AND RADIOACTIVE MATERIALS, VIRUS CONTAINMENT AND EXHAUST FACILITIES ARE DESCRIBED. PLANT PRACTICE REGARDING AIR CLEANING IS DISCUSSED, INCLUDING STANDARDIZATION OF SPECIFICATIONS FOR HIGH-EFFICIENCY PARTICULATE AIR FILTERS AND MOUNTING FRAMES, DOP TESTING OF AIR FILTER SYSTEMS, AND THE REPLACEMENT OF SUBSTANDARD FILTER INSTALLATIONS.

AVAILABILITY - J. C. LITTLE OR R. DEMONBRUN, UNION CARBIDE CORP., OAK RIDGE, TENN.

*FILTER INSPECTION + *FILTER TEST REQUIREMENT + *OPERATING EXPERIENCE + AEROSOL + AIR CLEANING + FILTER EFFICIENCY + FILTER OPERATION + FILTER SYSTEM + TEST, DOP FILTER

12-28427 ALSO IN CATEGORIES 7 AND 4

DEFIELD JD

TESTING HEPA FILTERS FOR USE IN A HIGH NOISE LEVEL ENVIRONMENT

LOS ALAMOS SCIENTIFIC LABORATORY

SM-110 +. 1 PAGE, PAGE 36 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

DURING THE PULSED COOLING PHASE OF THE NUCLEAR REACTOR ROCKET ENGINE (ROVER) TESTS, THE POSSIBILITY OF ATMOSPHERIC RELEASE OF RADIOACTIVE PARTICULATES EXISTS. TO CONTROL THIS POTENTIAL RELEASE A SPECIAL AIR CLEANING SYSTEM EMPLOYING HIGH EFFICIENCY PARTICULATE AEROSOL (HEPA) FILTERS WAS DESIGNED, CONSTRUCTED AND TESTED. A PRIMARY CONCERN WAS THE STRUCTURAL INTEGRITY OF THESE FILTERS UNDER THE INTENSE NOISE LEVELS THAT EXIST DURING REACTOR TESTS. COMMERCIAL HEPA FILTERS WERE SUBJECTED TO NOISE LEVELS SIMULATING THE ACOUSTIC ENVIRONMENT THAT EXISTS NEAR A REACTOR DURING TESTING.

AVAILABILITY - J. D. DEFIELD, LOS ALAMOS SCIENTIFIC LABORATORY, NEW MEXICO

*AEROSPACE SAFETY + *DESIGN CRITERIA + *FILTER EFFICIENCY + *TEST, FILTER SYSTEM + AIR CLEANING + FILTER DESIGN + TEST, FILTER

12-28431 ALSO IN CATEGORY 7

BURCHSTED CA

ENVIRONMENTAL PROPERTIES AND INSTALLATION OF HEPA FILTERS

OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.

SM-110 +. 2 PAGES, PAGES 40-41 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

THE ABILITY OF HEPA (I.E., ABSOLUTE) FILTERS TO WITHSTAND SEVERE ENVIRONMENTAL CONDITIONS IS OFTEN CRITICAL TO RELIABLE OPERATION OF A CONTAMINATED EXHAUST SYSTEM. THIS PAPER DISCUSSES FINDINGS RELATED TO THE INSTALLATION, MECHANICAL STRENGTH, AND THE HEAT, MOISTURE, AND CORROSION RESISTANCE OF HEPA FILTERS DETERMINED DURING THE COURSE OF THE FILTER DEVELOPMENT PROGRAM OF THE USAEC DIVISION OF OPERATIONAL SAFETY. AS A RESULT OF THESE FINDINGS, WOOD-CASED FILTER UNITS ARE RECOMMENDED IN PREFERENCE TO STEEL-CASED FILTER UNITS WHEREVER POSSIBLE, WOOD-CASED FILTER UNITS SHOULD HAVE RABBETED CASING JOINTS, NOT BUTT JOINTS. THE LIMITING TEMPERATURE FOR CONTINUOUS EXPOSURE OF HEPA FILTERS TO HOT AIR IS 400 F, ABOVE THIS TEMPERATURE THE TENSILE STRENGTH OF THE MEDIA DROPS SHARPLY, TO AS LITTLE AS 50% OF THE ROOM TEMPERATURE TENSILE STRENGTH AT 500 F. FIBRE FRACTURE AND FIBRE LOSS OCCUR AT TEMPERATURES IN EXCESS OF ABOUT 550 F. THE LIMITING TEMPERATURE OF THE ASSEMBLED FILTER ELEMENT IS ACTUALLY DETERMINED BY THE SEALANT USED BETWEEN THE CASING AND THE FRAME AND, FOR WOOD-CASED UNITS, THE CASING MATERIAL.

AVAILABILITY - C. A. BURCHSTED, OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.

*DESIGN CRITERIA + *FILTER INSPECTION + *FILTER TEST REQUIREMENT + *TEST, FILTER SYSTEM + AIR CLEANING + FILTER OPERATION + FILTER SYSTEM + FIRE + HUMIDITY + OPERATING EXPERIENCE + STEAM + TEST, FILTER + THERMAL PROPERTY + WATER VAPOR

12-28432 ALSO IN CATEGORIES 7 AND 13

SCHMIDT WC + DAVIS DF + CLARK BE

RECLAMATION OF A PARTIALLY PLUGGED GLASS FIBRE VENTILATION FILTER AT THE HANFORD PUREX NUCLEAR FUELS REPROCESSING PLANT

ATLANTIC RICHFIELD HANFORD COMPANY, RICHLAND, WASHINGTON

SM-110 +. 1 PAGE, PAGE 41 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

CANYON VENTILATION AIR FROM THE HANFORD PUREX NUCLEAR FUELS REPROCESSING PLANT IS EXHAUSTED THROUGH A FILTER SYSTEM BEFORE BEING RELEASED TO THE ATMOSPHERE. THE FILTER INSTALLATION CONSISTS OF A BULK-PARTICULATE REMOVING, GLASS FIBRE FORE-FILTER, AND A FINE-PARTICULATE REMOVING, HIGH-EFFICIENCY GLASS FIBRE AFTER-FILTER. SAMPLES OF FILTER ENTRANCE AIR INDICATED A LARGE PERCENTAGE OF THE PARTICULATE TO BE CRYSTALLINE AMMONIUM NITRATE. BASED ON THE LABORATORY STUDIES THE PARTIALLY PLUGGED ORIGINAL FILTER WHICH HAD BEEN REMOVED FROM OPERATION WAS TREATED FOR RECLAMATION USING A SMALL FLOW OF HIGHLY HUMIDIFIED AIR THROUGH THE FORE-FILTER. THE RESULTS OF THE RECLAMATION TREATMENT WERE SATISFACTORY AND IT WAS POSSIBLE TO RETURN THE ORIGINAL FILTER INSTALLATION TO SERVICE HANDLING THE ENTIRE EXHAUST VENTILATION FLOW.

AVAILABILITY - W. C. SCHMIDT, D. F. DAVIS, B. E. CLARK, ATLANTIC RICHFIELD HANFORD COMPANY, RICHLAND, WASHINGTON

CATEGORY 12
PLANT SAFETY FEATURES

12-28432 *CONTINUED*
*ECONOMIC STUDY + *FILTER INSPECTION + *OPERATING EXPERIENCE + AIR CLEANING + HUMIDITY + PARTICULATE

12-28434 ALSO IN CATEGORY 7

GILBERT H

OCTENNIAL HISTORY OF THE DEVELOPMENT AND QUALITY OF HIGH-EFFICIENCY FILTERS FOR THE U.S. ATOMIC ENERGY PROGRAM

U.S. ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.

SM-11C +. 1 PAGE, PAGE 43 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

TWO FACILITIES ARE OPERATED FOR THE U.S. ATOMIC ENERGY COMMISSION IN ITS PROGRAM TO ASSURE THE UNIFORM QUALITY OF COMMERCIALLY MANUFACTURED HIGH-EFFICIENCY PARTICULATE FILTERS. THE FILTER-TESTING PROGRAM WAS STARTED IN JANUARY 1960 AFTER IT WAS REALIZED THAT THE COMMERCIAL FIRE-RESISTANT PRODUCT INCORPORATED DEFICIENCIES OF MANUFACTURE. THE RECORD OF TESTING FOR QUALITY ASSURANCE BY THE TWO FACILITIES AND AN ANALYSIS OF FACTORS GOVERNING THE QUALITY OF FILTERS ARE PRESENTED. THE ANALYSIS IS COMPLEMENTED WITH A DESCRIPTION OF EFFORTS, MADE IN THE COURSE OF THE FILTER TESTING, TO IMPROVE THE DESIGN OF THE FILTER FOR EFFICIENCY AND RELIABILITY. THE TESTING PROGRAM, COUPLED WITH A PROGRAM FOR CONTINUING IMPROVEMENT OF THE FILTER, HAS RESULTED IN THE EFFECTIVE REMOVAL OF RADIOACTIVE AEROSOLS AT ATOMIC ENERGY INSTALLATIONS ON A CONSISTENT AND DEPENDABLE BASIS.

AVAILABILITY - H. GILBERT, U.S. ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.

*FILTER QUALITY ASSURANCE STATION + *FILTER TEST REQUIREMENT + *FILTER, GLASS + AIR CLEANING + FILTER, HIGH EFFICIENCY + FIRE + OPERATING EXPERIENCE

12-28435 ALSO IN CATEGORIES 7 AND 13

SYKES GH + HARPER JA

DESIGN AND OPERATION OF A LARGE SAND BED FOR AIR FILTRATION

SAVANNAH RIVER PLANT, AIKEN, SOUTH CAROLINA

SM-11C +. 1 PAGE, PAGE 44 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

LARGE SAND BEDS TO FILTER EXHAUST AIR FROM RADIOCHEMICAL SEPARATION PLANTS HAVE PERFORMED SATISFACTORILY FOR 13 YEARS AT THE SAVANNAH RIVER PLANT. THE BEDS ARE 100 X 240 X 8 FEET DEEP AND ARE MADE FROM LAYERS OF SIZED SANDS AND GRAVELS. ACTIVITY PENETRATES ONLY TO THE SMALLEST-MESH (30-50) SAND. ABOUT 1000 CURIES OF GAMMA ACTIVITY IS ESTIMATED TO BE IN THE BED. FILTERING EFFICIENCY HAS REMAINED AT 99%. RESISTANCE TO AIR FLOW HAS INCREASED IN THE BEDS THROUGHOUT THE YEARS OF OPERATION. SOME INCREASED PRESSURE DROP RESULTED FROM GROUNDWATER LEAKING INTO THE SAND. AIR FLOWS HAVE GENERALLY BEEN MAINTAINED IN EXCESS OF 115,000 CUBIC FEET PER MINUTE. FILTER DIFFERENTIAL PRESSURES CURRENTLY ARE IN THE RANGE OF 8 TO 10 INCHES OF WATER.

AVAILABILITY - G. H. SYKES OR J. A. HARPER, SAVANNAH RIVER PLANT, AIKEN, SOUTH CAROLINA

*DESIGN CRITERIA + *FILTER EFFICIENCY + *FILTER, BED + *FILTER, SAND + *FUEL REPROCESSING + *OPERATING EXPERIENCE + *RADIOCHEMICAL PLANT SAFETY + AIR CLEANING + FILTRATION + WASTE TREATMENT, GAS

12-28436 ALSO IN CATEGORIES 7 AND 17

HINTON JH + JOSEPH JW

OPERATING EXPERIENCE WITH THE AIRBORNE-ACTIVITY CONFINEMENT SYSTEMS AT THE SAVANNAH RIVER PLANT

SAVANNAH RIVER PLANT, AIKEN, SOUTH CAROLINA

SM-110 +. 1 PAGE, PAGE 45 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

EQUIPMENT HAS BEEN INSTALLED IN THE VENTILATION EXHAUST DUCTS OF EACH REACTOR BUILDING AT THE SAVANNAH RIVER PLANT TO COLLECT AND CONFINE AIRBORNE PARTICULATE AND HALOGEN ACTIVITY THAT MIGHT BE RELEASED IN THE HIGHLY UNLIKELY EVENT OF A REACTOR ACCIDENT. THE EQUIPMENT IS CONTINUOUSLY ON-LINE AND HAS BEEN IN SERVICE FIVE YEARS. THE MIST SEPARATORS, WHICH PREVENT MOISTURE DAMAGE TO THE FILTERS, ARE WOVEN TEFLON MATS AND ARE STEAM-CLEANED APPROXIMATELY EVERY NINE MONTHS TO REMOVE ACCUMULATED OILY MATERIALS AND PARTICULATE MATTER. TO DATE, NO MIST SEPARATORS HAVE REQUIRED REPLACEMENT. THE PARTICULATE FILTERS ARE CORRUGATED GLASS-ASBESTOS FELT, PROTECTED AGAINST MECHANICAL DAMAGE BY WIRE MESH ON BOTH FILTER FACES. THE CONDITION OF THE MIST SEPARATOR AND PARTICULATE FILTER IN EACH COMPARTMENT IS DETERMINED WEEKLY BY MEASURING THE PRESSURE DROP ACROSS EACH BANK AND THE AIR FLOW RATE THROUGH THE BANK.

AVAILABILITY - J. H. HINTON OR J. W. JOSEPH, SAVANNAH RIVER LABORATORY, AIKEN, SOUTH CAROLINA

*CHARCOAL + *FILTER MAINTENANCE + *MIST + *OPERATING EXPERIENCE + *SAVANNAH RIVER PLANT + AIR CLEANING + AIRBORNE RELEASE + FILTER SYSTEM + FILTER TEST REQUIREMENT + FILTER, SCREEN + TEST, DOP FILTER

12-28437 ALSO IN CATEGORY 14

SUAREZ EB

EXPERIMENTS BY THE MEXICAN NATIONAL NUCLEAR ENERGY COMMISSION ON THE CONTROL OF AIRBORNE RADIOACTIVE CONTAMINATION

COMISION NACIONAL DE ENERGIA NUCLEAR, MEXICO, D. F., MEXICO

SM-110 +. 1 PAGE, PAGE 46 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE

CATEGORY 12
PLANT SAFETY FEATURES

12-28437 *CONTINUED*

IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

THE INSTALLATIONS OF THE MEXICAN NATIONAL NUCLEAR ENERGY COMMISSION HAVE TO DEAL WITH THE PROBLEM OF ENVIRONMENTAL CONTAMINATION CAUSED BY DUST AND AEROSOLS SUSPENDED IN THE AIR AND ORIGINATING MAINLY WITH SUCH URANIUM-BEARING ORES AS TYUYAMUNITE, CARNOTITE, BETAFITE, TECHNICAL-GRADE SODIUM URANATE, AMMONIUM URANATE CONCENTRATE, URANIUM TETRAFLUORIDE AND URANIUM DIOXIDE. TO PREVENT ENVIRONMENTAL CONTAMINATION BY THESE RADIOACTIVE MATERIALS, THE COMMISSION HAS EXPERIMENTED WITH THREE DIFFERENT SYSTEMS, BASED ON THE PRINCIPLE OF EXTRACTING THE DUST FROM THE ENVIRONMENT, PASSING IT THROUGH A CYCLONE SYSTEM, SEPARATING THE PARTICLES OF LARGER SIZE AND CONTROLLING THE SMALL PARTICLES OR AEROSOLS BY MEANS OF FILTRATION, DILUTION IN LIQUID COLUMNS AND DILUTION IN LIQUID CURTAINS.

AVAILABILITY - E. B. SUAREZ, COMISION NACIONAL DE ENERGIA NUCLEAR, MEXICO, D. F. MEXICO

*MEXICO + *RADIATION SAFETY AND CONTROL + *RADIOCHEMICAL PLANT SAFETY + ADSORPTION + AIR CLEANING + AIRBORNE RELEASE + AIRBORNE RELEASE + ATMOSPHERIC POLLUTION

12-28438 ALSO IN CATEGORY 7

SKOGULF H + LINDER P

THE ECONOMICS OF SOME TYPES OF ABSOLUTE FILTERS

AKTIEBOLAGET ATOMENERGIE, NYKOPING, SWEDEN

SM-110 +. 1 PAGE, PAGE 48 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

THE COST OF THE FILTERS FOR AIR CLEANING IS DETERMINED BY THE PURCHASE PRICE OF THE FILTER AND THE MEAN LIFE OF THE FILTER. IF FILTER CHANGES ARE NOT CAUSED BY THE HIGH ACTIVITY LEVEL, THE INCREASE OF PRESSURE DROP WILL MAKE A FILTER CHANGE NECESSARY. IN THE LATTER CASE THE DUST-HOLDING CAPACITY OF THE FILTER IS THE DETERMINING FACTOR FOR THE REPLACEMENT INTERVALS. SOME DIFFERENT FILTERS HAVE BEEN COMPARED IN THIS RESPECT WITH ATMOSPHERIC AEROSOLS AND A SIGNIFICANT DIFFERENCE IN COST HAS BEEN OBSERVED.

H. SKOGULF OR P. LINDER, AKTIEBOLAGET ATOMENERGIE, NYKOPING, SWEDEN

*ECONOMIC STUDY + *FILTER + AEROSOL + AIR CLEANING + ATMOSPHERIC POLLUTION + FILTER, ABSOLUTE + OPERATING EXPERIENCE

12-28446 ALSO IN CATEGORY 7

KRATTEL R + BECKER F

THE APPLICATION OF PLASTIC FIBRE HEPA FILTERS TO THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES

KRATTEL INGENIEURGESSELLSCHAFT, STUTTGART, FEDERAL REPUBLIC OF GERMANY

SM-110 +. 1 PAGE, PAGE 58 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

HEPA FILTERS USED TO SEPARATE AIRBORNE RADIOACTIVE WASTES MUST NOT BE INFLAMMABLE. THIS PARTICULAR SAFETY REQUIREMENT IS MET WITH ALMOST IDEALLY BY HEPA FILTERS MADE OF FIBERGLASS. PLASTIC FIBRE FILTERS ARE INFLAMMABLE, AND THEREFORE THEY APPEAR TO BE UNSUITABLE FOR THE PURPOSE FROM A SAFETY STANDPOINT. WHILE GLASS FIBRE FILTERS ARE RATHER BULKY WHEN DISPOSED OF, PLASTIC FIBRE FILTERS CAN BE REDUCED TO TINY LUMPS BY THE USE OF SUITABLE SOLVENTS. FILTER FRAME AND FILTER LAYER ARE MOULDED TOGETHER USING IDENTICAL PLASTIC MATERIAL. THE USE OF SOLVENTS AND THE APPLICATION OF SUBSEQUENT EVAPORATION TECHNIQUES WILL REDUCE THE BULK OF RADIOACTIVE WASTE TO A MINIMUM. THE PLASTIC FIBRE FILTER LAYER ALSO OFFERS A METHOD OF RECOVERING VALUABLE RADIOACTIVE COMPONENTS. SAFETY REQUIREMENTS, HOWEVER, MAKE IT COMPULSORY TO COMBINE PLASTIC FIBRE FILTERS WITH GLASS FIBRE FILTERS OF THE HEPA TYPE. SEVERAL APPLICATIONS WILL BE DEMONSTRATED AND THE RESULTS DISCUSSED.

AVAILABILITY - R. KRATTEL OR F. BECKER, KRATTEL INGENIEURGESSELLSCHAFT, STUTTGART, FEDERAL REPUBLIC OF GERMANY

*FILTER CHARACTERISTICS + *FILTER, GLASS + *FILTER, PLASTIC + AIR CLEANING + FILTER OPERATION + FIRE + IGNITION

12-28447 ALSO IN CATEGORY 7

WILHELM J

TESTING OF IODINE FILTERS FOR NUCLEAR INSTALLATIONS

KARLSRUHE, FEDERAL REPUBLIC OF GERMANY

SM-110 +. 1 PAGE, PAGE 60 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

WORK HAS BEEN DONE TO TEST THE REMOVAL EFFICIENCY OF IODINE FILTERS FOR NUCLEAR INSTALLATIONS. THE TEST METHOD INCLUDES LABORATORY TESTS OF THE ADSORBER MATERIAL (UNDER MCA CONDITIONS FOR TEMPERATURE, RELATIVE HUMIDITY, PRESSURE, LOADING, STAY-TIME AND BED DEPTH) AND IN SITU TESTS AT THE INSTALLATION. EXPERIMENTAL DATA ARE GIVEN FOR REALISTIC LOADINGS WITH CH3I-131 UP TO 0.5 CI/G CHARCOAL AND 100% RELATIVE HUMIDITY. FOR STANDARD LABORATORY ADSORBER TESTS, A METHOD IS DISCUSSED FOR HUMIDIFICATION AND CONTROL OF GAS STREAMS UP TO 100% RELATIVE HUMIDITY AT ELEVATED TEMPERATURES. THE APPARATUS IS DESCRIBED. THE REPRODUCIBILITY OF LONG-TERM TESTS UNDER CONDITIONS OF EXTREMELY HIGH RELATIVE HUMIDITY IS SHOWN AND DISCUSSED. A DESCRIPTION OF THE HARDWARE FOR IN SITU TESTS IS INCLUDED, AND RESULTS OF TESTS ARE GIVEN.

AVAILABILITY - J. WILHELM, KARLSRUHE, FEDERAL REPUBLIC OF GERMANY

CATEGORY 12
PLANT SAFETY FEATURES

12-28447 *CONTINUED*

*CHARCOAL ADSORBER + *FISSION PRODUCT, IODINE + *IODINE + *OPERATING EXPERIENCE + *ORGANIC IODIDE +
*TEST, FILTER SYSTEM + AIR CLEANING + CHARCOAL + DESIGN CRITERIA + FILTER EFFICIENCY

12-28470 ALSO IN CATEGORIES 7 AND 17
SERIOUS ACCIDENTS, ISSUE NO. 292, JULY 31, 1968
ATOMIC ENERGY COMMISSION
SERIOUS ACCIDENTS, NO. 292 +. 3 PAGES, 1 FIGURE, JULY 1968

DURING CONDUCT OF NORMAL INCINERATOR OPERATIONS WITHIN A GLOVEBOX, SMOKE FROM THE FEED-END OF THE INCINERATOR CALLED ATTENTION TO THE OBVIOUSLY INADEQUATE AIRFLOW IN THE OFF-GAS SYSTEM (SEE ENCLOSED SKETCH). AFTER NOTING THAT A 6-IN. PRESSURE DROP EXISTED ACROSS THE OFF-GAS SYSTEM PRIMARY FILTER (NOTE - MAXIMUM ALLOWABLE PRESSURE DROP IS 4 IN., W.G.), BURNING WAS STOPPED AND MAINTENANCE WAS NOTIFIED TO REPLACE THE FILTER. PROPERTY DAMAGE CONSISTED OF WARPAGE OF THE 30-IN. FILTER-BOX PORT COVER. NO CONTAMINATION SPREAD WAS INVOLVED.

*FILTER + *FIRE + *RADIATION SAFETY AND CONTROL + *WASTE TREATMENT, SOLID + CONTAMINATION + FILTER, GLASS +
IGNITION + WASTE HANDLING + WASTE MANAGEMENT

12-28473 ALSO IN CATEGORY 7
LOFT CHEMICAL DEVELOPMENT ASSISTANCE - IDAHO NUCLEAR CORPORATION - PROGRESS FOR AUGUST 1968
IDAHO NUCLEAR CORPORATION
CMS-52-68 +. 14 PAGES, TABLES, FIGURES, AUGUST 1968

THE NUCLEAR AND CHEMICAL TECHNOLOGY DIVISION OF THE IDAHO NUCLEAR CORPORATION HAS UNDERTAKEN SEVERAL DEVELOPMENT PROGRAMS IN SUPPORT OF THE LOSS-OF-FLUID-TEST (LOFT) PROJECT. THE PROGRAMS ARE RELATED TO THE DECONTAMINATION OF THE FACILITY, SAMPLING OF RADIOACTIVE LIQUIDS AND GASES, ANALYSIS AND HANDLING OF RADIOACTIVE SAMPLES, AND HANDLING OF RADIOACTIVE WASTES. THESE PROGRAMS HAVE BEEN AUGMENTED BY A FACILITY CALLED THE CONTAMINATION-DECONTAMINATION EXPERIMENT (CDE) IN WHICH HIGH-LEVEL FISSION PRODUCT MIXTURES ARE PRODUCED UNDER SIMULATED ACCIDENT CONDITIONS FOR USE IN THE VARIOUS SUPPORT PROGRAMS.

*ANALYTICAL TECHNIQUE, CALIBRATION + *COATING, SURFACE + *DECONTAMINATION + *FISSION PRODUCT, IODINE +
*LOFT (S-RR) + *SAMPLING + CONTAINMENT PAINT + CONTAMINATION + FILTER + FISSION PRODUCT TRANSPORT +
MOLECULAR SIEVE + ORGANIC IODIDE + REACTOR, SAFETY RESEARCH + STEEL, STAINLESS

12-28474 ALSO IN CATEGORY 7
LOFT CHEMICAL DEVELOPMENT ASSISTANCE - IDAHO NUCLEAR CORPORATION - PROGRESS FOR JULY 1968
IDAHO NUCLEAR CORPORATION
CMS-48-68 +. 54 PAGES, TABLES, FIGURES, JULY 1968

THE NUCLEAR AND CHEMICAL TECHNOLOGY DIVISION OF THE IDAHO NUCLEAR CORPORATION HAS UNDERTAKEN SEVERAL DEVELOPMENT PROGRAMS IN SUPPORT OF THE LOSS-OF-FLUID-TEST (LOFT) PROJECT. THE PROGRAMS ARE RELATED TO THE DECONTAMINATION OF THE FACILITY, SAMPLING OF RADIOACTIVE LIQUIDS AND GASES, ANALYSIS AND HANDLING OF RADIOACTIVE SAMPLES, AND HANDLING OF RADIOACTIVE WASTES. THESE PROGRAMS HAVE BEEN AUGMENTED BY A FACILITY CALLED THE CONTAMINATION-DECONTAMINATION EXPERIMENT (CDE) IN WHICH HIGH-LEVEL FISSION PRODUCT MIXTURES ARE PRODUCED UNDER SIMULATED ACCIDENT CONDITIONS FOR USE IN THE VARIOUS SUPPORT PROGRAMS.

*ANALYTICAL TECHNIQUE, CALIBRATION + *COATING, SURFACE + *CONTAINMENT PAINT + *DECONTAMINATION + *FILTER +
*FISSION PRODUCT, IODINE + *LOFT (S-RR) + *MOLECULAR SIEVE + *ORGANIC IODIDE + *SAMPLING + CONTAMINATION +
FISSION PRODUCT TRANSPORT + REACTOR, SAFETY RESEARCH + STEEL, STAINLESS

12-28475 ALSO IN CATEGORY 7
LOFT CHEMICAL DEVELOPMENT ASSISTANCE MONTHLY REPORT FOR JUNE 1968
IDAHO NUCLEAR CORPORATION, IDAHO FALLS, IDAHO
CMS-37-68 +. 21 PAGES, 7 FIGURES, 7 TABLES, JULY 1, 1968

THE NUCLEAR AND CHEMICAL TECHNOLOGY DIVISION OF THE IDAHO NUCLEAR CORPORATION HAS UNDERTAKEN SEVERAL DEVELOPMENT PROGRAMS IN SUPPORT OF THE LOSS-OF-FLUID-TEST (LOFT) PROJECT. THE PROGRAMS UNDERTAKEN BY IDAHO NUCLEAR CORPORATION ARE RELATED TO THE DECONTAMINATION OF THE FACILITY, SAMPLING OF RADIOACTIVE LIQUIDS AND GASES, ANALYSIS AND HANDLING OF RADIOACTIVE SAMPLES, AND HANDLING OF RADIOACTIVE WASTES. THESE PROGRAMS HAVE BEEN AUGMENTED BY A FACILITY CALLED THE CONTAMINATION-DECONTAMINATION EXPERIMENT (CDE) IN WHICH HIGH-LEVEL FISSION PRODUCT MIXTURES ARE PRODUCED UNDER SIMULATED ACCIDENT CONDITIONS FOR USE IN THE VARIOUS SUPPORT PROGRAMS.

*ANALYTICAL TECHNIQUE, CALIBRATION + *COATING, SURFACE + *DECONTAMINATION + *FISSION PRODUCT, IODINE +
*LOFT (S-RR) + *SAMPLING + CONTAINMENT PAINT + CONTAMINATION + FILTER + FISSION PRODUCT TRANSPORT +
MOLECULAR SIEVE + ORGANIC IODIDE + REACTOR, SAFETY RESEARCH + STEEL, STAINLESS

12-28516 ALSO IN CATEGORIES 7 AND 19
MILLER HW
ANNOTATED BIBLIOGRAPHY OF CURIUM
DOW CHEMICAL COMPANY, GULFEN, COLORADO

CATEGORY 12
PLANT SAFETY FEATURES

12-28516 *CONTINUED*
RFP-1081 +. 81 PAGES, MAY 1, 1968

AN ANNOTATED BIBLIOGRAPHY OF CURIUM WAS PREPARED TO ASSIST THOSE INTERESTED IN THE CHEMISTRY AND PHYSICS OF THIS ELEMENT IN PERFORMING A RAPID SURVEY OF THE AVAILABLE LITERATURE. ONLY THE NONCLASSIFIED LITERATURE WAS ABSTRACTED. THIS BIBLIOGRAPHY IS COMPLETE TO THE YEAR 1967. IN ADDITION TO THE TWO MAIN DIVISIONS OF CHEMISTRY AND PHYSICS, THIS REPORT PROVIDES ALSO AN AUTHOR INDEX, A SUBJECT INDEX, AND AN INDEX OF ORGANIZATION SYMBOLS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*BIBLIOGRAPHY + *CURIUM + *PLUTONIUM + *TRANSURANIUM ELEMENT + ALLOY + AMERICIUM + CHEMICAL PROPERTY + CHEMICAL REACTION + CHROMATOGRAPHY + PROPERTY, PHYSICAL + REVIEW

12-28517 ALSO IN CATEGORY 7
VILES FJ
AIR CLEANING SYSTEMS - REVIEW AND PROJECTION
HARVARD SCHOOL OF PUBLIC HEALTH, DEPART. OF INDUSTRIAL HYGIENE
14 PAGES, 12 REFERENCES, PRESENTED AT THE TENTH AIR CLEANING CONFERENCE, NEW YORK, AUGUST 26-30, 1968

FILTER-CHARCOAL AIR CLEANING SYSTEMS AND THEIR APPLICATION, TESTING, AND SUGGESTED FURTHER DEVELOPMENT ARE DESCRIBED FOR CLEANUP OF CONTAINMENT ATMOSPHERES FOLLOWING FISSION PRODUCT RELEASE FROM REACTOR WATER COOLANT FAILURES. DECONTAMINATION OF CONTAINMENT AIR BY CONDENSATION PROCESSES, SPRAYS, GAS PHASE REACTIONS, FOAMS, AND DIFFUSION BOARDS ARE DISCUSSED BRIEFLY AND THEIR USE NOTED AS SUPPORTIVE OPERATIONS TO EFFECT MORE RAPID CLEANUP. COMPARISONS OF AIR CLEANING PROBLEMS AND DESIGN ARE MADE BETWEEN WATER AND SODIUM COOLED REACTORS ACCIDENTS.

AVAILABILITY - F.J. VILES, HARVARD SCHOOL OF PUBLIC HEALTH

*AIR CLEANING + *FILTER SYSTEM + *REVIEW + *TEST, FILTER SYSTEM + AEROSOL + CHARCOAL ADSORBER + CHEMICAL KINETICS + CHEMICAL REACTION + DIFFUSION BOARD + FILTER + FILTER EFFICIENCY + FOAM + HALOGEN + METAL, LIQUID + NOBLE GAS + PARTICULATE + SPRAY, GENERAL

12-28526
MERRETT DJ
SAFETY ASPECTS OF IRRADIATION EXPERIMENTS
ATOMIC ENERGY RESEARCH ESTABLISHMENT, HARWELL, ENG.
17 PAGES, PAGES 507-523 OF RESEARCH REACTOR EXPERIMENTAL TECHNIQUES, BUCHAREST, EDITURA ACADEMIEI REPUBLICII SOCIALISTE ROMANIA, 1966

PRESENTS A REVIEW OF SAFETY CRITERIA FOR IRRADIATION EXPERIMENTS IN DIDO AND PLUTO REACTORS. THE METHOD FOR EVALUATING SAFETY CHARACTERISTICS OF IRRADIATION EXPERIMENTS ACCORDING TO CATEGORIES IS DISCUSSED.

*EXPERIMENT, GENERAL + *IRRADIATION TESTING + *RADIATION SAFETY AND CONTROL + *REACTOR, GENERAL + DIDO (TR) + REACTOR, HWR + REACTOR, TEST + SAFETY EVALUATION + UNITED KINGDOM

12-28626
AOKI N
DEVICE FOR FIXING REACTOR FUEL ELEMENTS
HITACHI LTD.
JAPANESE PATENT 1966-319. JAN. 12, 1966

THE FLOATING UP OF FUEL ELEMENTS IN THE REACTOR COOLANT CAN BE PREVENTED UNDER ANY CONDITIONS. AT THE LOWER END OF A FUEL ELEMENT ARE INSTALLED CLAWS, WHICH OPEN IN THE RADIAL DIRECTION AND WHICH ROTATE HORIZONTALLY WITH A PIN AS THE AXIS. A FUEL-ELEMENT SUPPORT PLATE IS LOCATED AT THE BOTTOM OF THE REACTOR CORE, THIS PLATE HAS HOLES FOR ENTRANCE OF THE LOWER ENDS OF FUEL ELEMENTS WITH ONLY THE CLAWS BEING ABLE TO COME THROUGH THE HOLES. UNDERNEATH THIS PLATE IS INSTALLED ANOTHER PLATE WITH SEMI-CIRCULAR PROTRUSIONS (ON THE UPPER SIDE) OPPOSED TO THE RESPECTIVE PAIRS OF CLAWS. WHEN THE LATTER PLATE IS MOVED UPWARD, THE PROTRUSION HITS THE CLAWS AND PRESSES THEM OPEN, THEREBY HOLDING FIRM THE FUEL ELEMENT IN THE CORE COOLANT.

AVAILABILITY - IT IS OUR UNDERSTANDING THAT FOREIGN PATENTS MAY BE OBTAINED IN PHOTOCOPY FROM THE U.S. PATENT OFFICE, DEPT. OF COMMERCE, WASH., D. C., (\$0.30 CENTS/PAGE)

*FUEL ELEMENT + *PATENT + *REACTOR, GENERAL + EQUIPMENT, GENERAL + JAPAN + SUPPORT STRUCTURE

12-28627 ALSO IN CATEGORY 13
IRRADIATION OF FUEL ELEMENTS WITH CENTRAL TEMPERATURES ABOVE THE MELTING POINT OF UO₂
EUROPEAN ATOMIC ENERGY COMMUNITY, ISPRA (ITALY). JOINT NUCLEAR RESEARCH CENTER
CONF-670967-1 +. 19 PAGES, 1967, (IN GERMAN), PAPER PRESENTED AT INTERNAL COLLOQUIUM OF THE INSTITUTE FOR REACTOR MATERIALS, JULICH, GERMANY

BRIEFLY REVIEWS THE DIFFERENT INVESTIGATIONS WHICH HAVE BEEN PERFORMED WITHIN THE SCOPE OF THE HIGH PERFORMANCE UO₂ PROGRAM. THE IRRADIATION EXPERIMENTS WITH SINTERED PELLET RODS ARE

CATEGORY 12
PLANT SAFETY FEATURES

12-28627 *CONTINUED*

DESCRIBED AND DISCUSSED. THE MOST IMPORTANT RESULTS OF THE POST-IRRADIATION EXAMINATION, E.G., DIMENSIONAL CHANGES, FISSION GAS RELEASE, AND MICROSTRUCTURAL CHANGES ARE OUTLINED AND EVALUATED. FURTHER DEVELOPMENTS IN PROGRESS ARE DISCUSSED BRIEFLY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

*EXPERIMENT, GENERAL + *FUEL ELEMENT + *IRRADIATION TESTING + *REACTOR, GENERAL + FISSION GAS RELEASE + FUEL, PELLET TYPE + ITALY + URANIUM DIOXIDE

12-28631

HOHL R

SOME PROBLEMS RELATING TO SATURATED STEAM TURBINES FOR NUCLEAR POWER PLANTS

CONF-660552-VOL. 1 +. 7 PAGES, PAGES 17.1-7 FROM INTERNATIONAL STUDY DAYS ON MODERN ELECTRICAL POWER STATIONS, LIEGE, BELGIUM, 1966

AS NUCLEAR POWER STATIONS ARE GENERALLY ONLY ECONOMICAL IN THE RANGE OF 300 TO 600 MW AND DUE TO THE PROMINENCE OF BOILING WATER REACTORS, PRESSURIZED WATER REACTORS, AND GAS COOLED REACTORS, THE TURBINE MAKERS ARE INDUCED TO DEVELOP ADEQUATE SATURATED STEAM TURBINES. IMPORTANT PROBLEMS ARE INVOLVED, SUCH AS LARGE VOLUME OF WASTE STEAM, DRAINING, PROTECTION AGAINST EROSION, MOISTURE SEPARATORS, REHEATER HEATED BY STEAM, INTERCEPTION VALVES, OVERSPEED CAUSED BY TRIPPING, AND CHOICE OF SPEED BETWEEN 3,000 AND 1,500 RPM. IT IS SHOWN THAT MANY CONDITIONS OPPOSE ONE ANOTHER AND THAT OPTIMIZING SUCH TURBINES REQUIRES CAREFUL BALANCE OF THE EVENTUAL SOLUTIONS OF COMPROMISE.

*REACTOR, BWR + *REACTOR, GCR + *REACTOR, WATER + *TURBINE + EQUIPMENT, GENERAL + EROSION + VALVE

12-28729

LARRICK AP + WEED RD

DECONTAMINATION OF NUCLEAR REACTOR SYSTEMS

BATTELLE MEMORIAL INSTITUTE, RICHLAND, WASHINGTON

4 PAGES, 3 FIGURES, 1 TABLE, 8 REFERENCES, MATERIALS PROTECTION 7(4), PAGES 34-37 (APRIL 1968)

DECONTAMINATION OF WATER COOLED NUCLEAR REACTOR SYSTEMS IS NECESSARY TO REDUCE HIGH RADIATION LEVELS THAT COULD RESTRICT MAINTENANCE OF EQUIPMENT. HOWEVER, THE DECONTAMINATION PROCESS CAN RESULT IN SEVERE STRESS CORROSION CRACKING OF STEEL. RADIOACTIVE BUILD-UP AND THE DECONTAMINATION PROCESS ARE EXAMINED, AND THE PROCEDURE AND RESULTS OF PILOT PLANT AND LABORATORY STRESS CORROSION CRACKING TESTS USING SOLUTIONS EMPLOYED IN DECONTAMINATING NUCLEAR REACTORS ARE PRESENTED. EFFECTS OF LITHIUM HYDROXIDE AND SIMPLE AND COMPLEX CREVICES ON CRACKING ARE DISCUSSED. POTASSIUM PERMANGANATES USE AS AN INHIBITOR IS ALSO DISCUSSED.

*DECONTAMINATION + *EXPERIMENT, GENERAL + *REACTOR COOLANT + *REACTOR, GENERAL + COOLANT CHEMISTRY + LITHIUM + POTASSIUM + REACTOR, WATER + STRESS CORROSION + TESTING

12-28746

ALSO IN CATEGORY 9

TAGAMI T

DEVICE FOR PREVENTING A NUCLEAR-REACTOR HAZARD

HITACHI LTD.

JAPANESE PATENT 1967-79 +. JAN. 6, 1967

THE DEVICE PROPOSED IS USED FOR SPRAYING WATER AND THUS REDUCING THE INTERNAL PRESSURE WHEN A PRIMARY COOLANT PIPE RUPTURES IN THE REACTOR CONTAINMENT VESSEL. THE ADVANTAGES OF THE METHOD ARE THE ELIMINATION OF A POWER SOURCE FOR THE SPRAY, THE DIRECT AND AUTOMATIC SPRAYING, AND THE POSITIVE INSTANTANEOUS LOWERING OF THE INTERNAL PRESSURE.

AVAILABILITY - FOREIGN PATENTS MAY BE OBTAINED IN PHOTOCOPY FROM THE U.S. PATENT OFFICE, DEPT. OF COMMERCE, WASH., D.C., 30 CENTS/PAGE

*CORE SPRAY + *INSTRUMENT, CONTROL + COMPONENTS, MISCELLANEOUS + HYDRAULIC EFFECT + JAPAN + PATENT

12-28769

ALSO IN CATEGORIES 18 AND 5

INDIAN POINT 1 FINAL EMERGENCY CORE COOLING REPORT

1 PAGE, ATOMIC ENERGY CLEARINGHOUSE, 14(41), PAGE 19, (OCT. 7, 1968)

(SEPT. 2C) RESULTS SUBMITTED OF A STUDY ON LOSS-OF-COOLANT ACCIDENT AND DETERMINATION OF PERFORMANCE REQUIREMENTS FOR SYSTEMS TO PREVENT CORE MELTDOWN FOLLOWING LOSS-OF-COOLANT ACCIDENT.

*ACCIDENT ANALYSIS + *ACCIDENT, LOSS OF COOLANT + *SYSTEM CAPABILITY + CORE REFLOODING SYSTEM + INDIAN POINT 1 (PWR) + REACTOR, PWR

12-28861

COSTES D

HANDLING APPARATUS FOR NUCLEAR REACTOR REFUELING FACILITY

CATEGORY 12
PLANT SAFETY FEATURES

12-28861 *CONTINUED*
U. S. PATENT 3,344,033, SEPTEMBER 26, 1967

AN INCLINED ARM AND GUIDE TRACK ARE PERMANENTLY MOUNTED INSIDE THE SERVICING CHAMBER OF A REACTOR PRESSURE VESSEL AND ARE ROTATABLY DRIVEN ABOUT THEIR UPPER END. A HANDLING MACHINE WITH A FUEL ELEMENT GRAB MAY BE MOVED ALONG THE GUIDE TRACK OR LIFTED UPWARDLY OUT OF THE SERVICING CHAMBER AND INTO AN OPERATING CHAMBER BY A HOIST AND CABLE ARRANGEMENT. A GRAB-ACTUATED BRAKE LOCKS THE HANDLING MACHINE TO THE ARM DURING REFUELING, AND A SHIELD PLUG CARRYING CABLE PULLEYS AND A SHORT SECTION OF GUIDE TRACK IS SUPPORTED IN THE VERTICAL SERVICING PASSAGEWAY AND ON THE UPPER END OF THE ARM.

AVAILABILITY - U. S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D. C. 02545, \$0.49 PER COPY
*EQUIPMENT, GENERAL + *PATENT + *REACTOR, GENERAL + FUEL HANDLING + MAINTENANCE, REMOTE

12-28887
ROOS BW + WELCH JE
FIPER-I, A FORTRAN IV PROGRAM FOR THE RELEASE OF FISSION PRODUCTS FROM A HIGH TEMPERATURE GAS-COOLED NUCLEAR POWER REACTOR
GULF GENERAL ATOMIC INC., SAN DIEGO, CALIF.
GA-8564 +. 200 PAGES, FIGURES, TABLES, MAY 2, 1968

THE RELEASE OF RADIOACTIVE FISSION PRODUCTS (GENERATED BY NUCLEAR FISSION PROCESSES INSIDE THE FUEL PARTICLES) INTO THE HELIUM COOLANT GAS IS OF CONSIDERABLE INTEREST FOR THE EVALUATION OF THE SAFETY CHARACTERISTICS OF AN HIGH TEMPERATURE GAS-COOLED NUCLEAR POWER REACTOR, (HTGR). REPORT DESCRIBES THE FORTRAN IV COMPUTER CODE FIPER-I. CODE IS BASED ON THEORETICAL FORMULATION OF APPEL AND ROOS. COMPUTES TEMPERATURE AND CONCENTRATION INDUCED, TRANSIENT AND STEADY-STATE, DIFFUSION OF FISSION PRODUCT ISOTOPES IN ONE-DIMENSIONAL SLAB GEOMETRY. IN PARTICULAR IT SERVES TO COMPUTE THE RELEASE RATES OF METALLIC FISSION PRODUCTS FROM THE CORE OF AN HTGR.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*COMPUTER PROGRAM + *FISSION GAS RELEASE + *REACTOR, GENERAL + *REACTOR, HTGR + FISSION PRODUCT RELEASE, GENERAL + FUEL ELEMENT + THEORETICAL INVESTIGATION

12-28952 ALSO IN CATEGORY 13
NEWBY BJ
APPLICABILITY OF CHEMICALLY REMOVABLE COATINGS TO REACTOR CONTAINMENT BUILDINGS
IDAHO NUCLEAR CORP., NATIONAL REACTOR TESTING STATION, IDAHO FALLS, IDAHO
IN-1170 +. 34 PAGES, 9 FIGURES, 4 TABLES, 5 REFERENCES, AUGUST 1968

DESCRIBES TWO METHODS FOR RAPID REMOTE DECONTAMINATION OF COATED INTERIORS OF REACTOR CONTAINMENT BUILDINGS CONTAMINATED WITH VOLATILE FISSION PRODUCTS, NAMELY, THE USE OF CHEMICALLY STRIPPABLE OR CHEMICALLY CORRODIBLE COATINGS. BOTH METHODS ARE BASED ON THE REMOVAL OF TEMPORARY COATINGS (CONTAINING THE CONTAMINATION) WITH CHEMICAL REAGENTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151 \$3.00 COPY, \$0.65 MICROFICHE

*DECONTAMINATION + *FUEL REPROCESSING + *REACTOR, GENERAL + COATING + COATING, SURFACE + EXPERIMENT, GENERAL + TESTING

12-29093 ALSO IN CATEGORY 13
AMBURGEY JW
A STUDY OF POLLUTANT DISCHARGES FROM REACTOR OPERATIONS UTILIZING ULTRACENTRIFUGATION TECHNIQUES
UNION CARBIDE CORPORATION
K-1754 +. 36 PAGES, 3 FIGURES, 18 TABLES, 1 REFERENCE, AUGUST 19, 1968

REACTOR COOLING WATER SAMPLES FROM THE HANFORD OPERATION AT RICHLAND, WASHINGTON, HAVE UNDERGONE PARTICULATE SEPARATIONS AND STUDY UTILIZING RECENTLY DEVELOPED ULTRACENTRIFUGATION TECHNIQUES. THE SUSPENDED PARTICLES CONTAINED IN THESE SAMPLES WERE SEPARATED INTO CLASSIFIED GROUPS AND THEN SUBJECTED TO A VARIETY OF ANALYTICAL INVESTIGATIONS INCLUDING ELEMENTAL AND RADIOCHEMICAL ANALYSES. A FEW OF THE RADIONUCLIDE PARENT ELEMENTS SUCH AS CHROMIUM, SULPHUR, AND ZINC WERE FOUND ALMOST ENTIRELY ASSOCIATED WITH THE DISSOLVED MATERIALS FRACTION. THESE RESULTS ALONG WITH THE OTHER DATA SHOWED THAT THE SUSPENDED MATERIALS ISOLATED FROM THE VARIOUS SAMPLES OF REACTOR COOLING WATER DID NOT SIGNIFICANTLY TO THE PRODUCTION OF RADIONUCLIDES AND THE RADIOACTIVE POLLUTION OF THE COLUMBIA RIVER AT HANFORD.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*REACTOR, GENERAL + EXPERIMENT, GENERAL + FUEL REPROCESSING + HANFORD SITE + TESTING + WASTE DISPOSAL, LIQUID + WASTE DISPOSAL, RIVER

12-29097

CATEGORY 12
PLANT SAFETY FEATURES

12-29097 *CONTINUED*
THE STATE OF TECHNOLOGY OF FUELING SYSTEMS FOR HEAVY WATER REACTORS AND A PROGRAM FOR FURTHER RESEARCH AND DEVELOPMENT
DILWORTH, SECORD, MEACHER AND ASSOCIATES, CANADA
TID-24679, VOL. 1 AND VOL. 2 +. 290 PP., FIGURES, TABLES, MAY 1968

VOLUME ONE OF THIS REPORT SUMMARIZES THE SALIENT FEATURES OF FUELING SYSTEMS FOR SEVENTEEN HEAVY WATER REACTORS, FIFTEEN OF THEM BEING OF THE PRESSURE-TUBE TYPE, THE REMAINING TWO BEING EUROPEAN PRESSURE-VESSEL REACTORS. THE STATE OF THE ART IS DETERMINED FOR VITAL ELEMENTS AND ASSEMBLIES OF EACH FUELING MACHINERY COMPLEX. A DETAILED RESEARCH AND DEVELOPMENT PROGRAM IS PRESENTED, WHICH IF IMPLEMENTED, WILL IMPROVE AND DEVELOP THOSE FEATURES WHICH ARE THOUGHT TO REQUIRE FURTHER EFFORT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*FUEL HANDLING + *FUEL HANDLING MACHINE + *REACTOR, HWR + *REACTOR, PRESSURE TUBE + EQUIPMENT, GENERAL + MAINTENANCE, REMOTE + NPD 2 (HWR) + NRU (TR)

12-29098 ALSO IN CATEGORY 13
HEUZEL N + KLEINE A
EXPERIMENTAL INVESTIGATION OF REACTIONS BETWEEN URANIUM DIOXIDE AND WATER UNDER NONISOTHERMAL, QUASI-ISOBARIC CONDITIONS
BATTELLE INSTITUTE, FRANKFURT / MAIN, GERMANY
AEC-TR-6960 +. 44 PAGES, APRIL 24, 1968

IN SUPPLEMENTATION OF AN ISOTHERMAL INVESTIGATION OF CHEMICAL REACTIONS BETWEEN NUCLEAR FUELS AND AIR OR WATER VAPOR, THE CHEMICAL AND PHYSICAL BEHAVIOR OF THE UO₂ TOWARD LIQUID WATER WAS EXAMINED UNDER NONISOTHERMAL, QUASI-ISOBARIC CONDITIONS. UP TO 100CG UO₂ PELLETS, SPHERICAL PARTICLES OR POWDER, WERE HEATED INDUCTIVELY TO 1700 C AND DUMPED INTO WATER OF 25 OR 80 C AT 1 ATM OR AT 160 C AT 6.5 ATM RESPECTIVELY. THE SURFACE-TO-VOLUME RATIO OF THE UO₂ POWDER CHANGED CONSIDERABLY BY SINTERING. EXPERIMENTS PROVED THAT STEAM GENERATION STRONGLY DEPENDS ON WATER TEMPERATURE AND SPECIFIC SAMPLE SURFACE. IT WAS CONCLUDED THAT THE DANGER OF OXYHYDROGEN EXPLOSIONS AS A RESULT OF THE DEVELOPMENT OF HYDROGEN FROM RADIOLYSIS AND METAL-WATER REACTIONS DOES NOT INCREASE MATERIALLY THROUGH THE CONTACT OF HOT URANIUM DIOXIDE WITH WATER.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*EXPERIMENT, GENERAL + *FUEL REPROCESSING + *REACTOR, GENERAL + EXPLOSION + FUEL, METALLIC TYPE + FUEL, PELLET TYPE + HYDROGEN + URANIUM DIOXIDE + WATER, GENERAL

12-29147 ALSO IN CATEGORY 11
BINGHAM GE
THE CAROLINAS VIRGINIA TUBE REACTOR PRELIMINARY LEAKAGE RATE TEST RESULTS
IDAHO NUCLEAR CORPORATION
IDO-17273 +. 76 PAGES, FIGURES, TABLES, OCTOBER 1968

PRESENTS THE RESULTS OF A PRELIMINARY LEAKAGE RATE TEST CONDUCTED ON THE CAROLINAS VIRGINIA TUBE REACTOR (CVTR) CONTAINMENT SYSTEM. THE PRIMARY PURPOSE OF THE TEST WAS TO INVESTIGATE THE ACCURACY AND SENSITIVITY OF THE CVTR CONTINUOUS LEAKAGE RATE MEASUREMENT SYSTEM. ADDITIONALLY, THE TESTING EFFORT PROVIDED VALUABLE EXPERIENCE AND INSIGHT THAT WILL BE USEFUL IN PLANNING AND PERFORMING FUTURE IN-PLANT TESTS AT CVTR. THE TEST RESULTS INDICATE THAT A CONTINUOUS LEAKAGE RATE SYSTEM WOULD BE A VALUABLE ASSET TO ANY POWER REACTORS ENGINEERED SAFETY SYSTEMS SINCE IT PROVIDES A CONTINUOUS, RAPID, AND SENSITIVE INDICATION OF THE INTEGRITY OF THE CONTAINMENT SYSTEM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*CONTAINMENT RESEARCH AND DEVELOPMENT + *CVTR (PWR) + CONTAINMENT INTEGRITY + CONTAINMENT LEAK MONITOR + CONTAINMENT LEAKAGE CONTROL + ENGINEERED SAFETY FEATURE + INSTRUMENT, PRESSURE + INSTRUMENT, TEMPERATURE + LEAK RATE + OPERATING EXPERIENCE SUMMARY + TEST, LEAK RATE + TESTING

12-29171
BRANDON CA + KIDD GJ
IN-PILE HEAT-TRANSFER STUDIES OF ROUGHENED HELIUM-COOLED REACTOR FUEL ELEMENTS
OAK RIDGE NATIONAL LABORATORY
ORNL-P-3397 + 8 PAGES, NUCLEAR SCIENCE AND ENGINEERING 32, PAGES 8-15 (APRIL 1968)

DURING A SERIES OF IN-PILE EXPERIMENTS DESIGNED TO STUDY IRRADIATION EFFECTS ON HIGH-PERFORMANCE OXIDE FUEL ELEMENTS FOR ADVANCED GAS-COOLED REACTORS, HEAT-TRANSFER DATA WERE OBTAINED FROM FOUR SPECIALLY INSTRUMENTED FUEL RODS. THE RESULTS ARE GENERALLY FOUND TO BE IN GOOD AGREEMENT WITH THE RESULTS OF PREVIOUS HEAT-TRANSFER STUDIES. SOME CONSEQUENCES OF USING HEAT-TRANSFER PROMOTERS IN NUCLEAR REACTOR FUEL ELEMENTS ARE DISCUSSED.

*FUEL ELEMENT + *FUEL, PELLET TYPE + *HEAT TRANSFER EXPERIMENT + *HELIUM + *IN PILE EXPERIMENT + *IRRADIATION TESTING + *REACTOR, GCR + EXPERIMENT, GENERAL + *REACTOR, GENERAL + URANIUM DIOXIDE

CATEGORY 12
PLANT SAFETY FEATURES

12-29172

AMAEV AD + AMVARTSUMYAN RS + GONCHAROV VV + GLUKHOV AM + DUBROVIN KP + IVANOV EI + LEBEDEV LM +
PRAVDYUK NF + RYAZANTSEV EP
TESTS OF EXPERIMENTAL ASSEMBLY WITH A ROD TYPE FUEL ELEMENT WITH SINTERED UO₂ CORE IN ZIRCONIUM CLADDING
WITH MAXIMUM BURNOUT OF 68,000 MW DAY/TON URANIUM
INSTITUTE OF ATOMIC ENERGY, MOSCOW
CONF-661059-(VOL.1) +. 16 PAGES, PAGES 143-67 OF CONFERENCE ON THE USE OF ZIRCONIUM ALLOYS IN NUCLEAR
REACTORS, OCTOBER 20-21, 1966, MARIANSKE LAZNE, CZECHOSLOVAKIA. GENERAL PROCEEDINGS. I. PLZEN,
CZECHOSLOVAKIA, SKODA WORKS, 1966

PRESENTS THE RESULTS OF IN-PILE AND POSTIRRADIATION TESTS OF AN EXPERIMENTAL ASSEMBLY OF THE
ICEBREAKER-TYPE ROD FUEL ELEMENT WITH SINTERED UO₂ AND ZR-1% NB ALLOY CLADDING. RESULTS OF
METALLOGRAPHIC AND MECHANICAL INVESTIGATIONS ARE ALSO PRESENTED. THE ASSEMBLY OPERATED FOR
10,000 HOURS IN HOT PRESSURIZED WATER WITHOUT FAILURE.

*EQUIPMENT, GENERAL + *FUEL ELEMENT + *IRRADIATION TESTING + *REACTOR, GENERAL + ALLOY + NIOBIUM +
URANIUM DIOXIDE + USSR + ZIRCONIUM

12-29173

HEER W + LUTZ HR + RICHMOND R + PERSSON R
MEASUREMENT OF MATERIAL BUCKLING AND DIFFUSION COEFFICIENT IN HEAVY WATER MODERATED
CONF-670607 +. 6 PAGES, PAGES 111-16 OF THE PHYSICS PROBLEMS IN THERMAL REACTOR DESIGN, LONDON

DESCRIBES A SERIES OF EXPERIMENTS MADE IN SUPPORT OF SWISS REACTOR ASSESSMENT STUDIES ON HEAVY
WATER MODERATED LATTICES CONTAINING NATURAL UO₂ CLUSTER FUEL ELEMENTS. THE RESULTS OF THE
BUCKLING MEASUREMENTS WERE COMPARED WITH THE PREDICTIONS OF THE UKAEA ASSESSMENT CODE
METHUSELAH AND THE SWEDISH CODE REBUS. BOTH CODES GAVE SATISFACTORY RESULTS OVER THE RANGE
OF LATTICES EXAMINED. THE MEASURED COEFFICIENTS WERE WELL PREDICTED BY THE THEORY OF BENOIST.

*EXPERIMENT, GENERAL + *FUEL ELEMENT CLUSTER + *REACTOR, HWR + BUCKLING + DIFFUSION COEFFICIENT +
SWITZERLAND + URANIUM DIOXIDE

12-29174

GALLIE RR
EXPERIMENTAL PROGRAMMES IN THE WINDSCALE A.G.R.
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, WINDSCALE, ENGLAND
7 PAGES, REACTOR, 6, PAGES 14-20 (1967)

THE REACTOR WAS USED TO CARRY OUT DEVELOPMENT PROGRAMS ON FUEL AND GRAPHITE, AND FOR SOME
REACTOR PHYSICS WORK, WHILE OBTAINING AN OVERALL LOAD FACTOR OF 76%. THE PHYSICS PROGRAM HAS
CONSISTED OF A COMPARISON OF THEORETICAL PREDICTIONS AND EXPERIMENTAL RESULTS FOR A NUMBER OF
REACTOR PARAMETERS.

*EXPERIMENT, GENERAL + *IRRADIATION TESTING + *REACTOR, GENERAL + *WINDSCALE + CARBON + FUEL ELEMENT +
UNITED KINGDOM

12-29175

ALSO IN CATEGORY 11

YAMANOUCHI H + HAYASHI T
PRESSURE SUPPRESSION METHOD, EMPLOYING A STEAM SPACE
HITACHI LTD.
JAPANESE PATENT 1967-4640 +. FEBRUARY 25, 1967

BY THE METHOD PROPOSED, THE MAXIMUM PRESSURE BOTH IN THE DRY WELL AND THE PRESSURE SUPPRESSION
CHAMBER CAN BE MINIMIZED AT THE TIME OF A REACTOR ACCIDENT BY REMOVING AIR IN THE DRY WELL.
THE STEAM FROM THE PRIMARY COOLANT SYSTEM DUE TO A REACTOR ACCIDENT IS CONDENSED IN THE
PRESSURE SUPPRESSION CHAMBER. THE DRY WELL IS ALWAYS (BEFORE THE ACCIDENT) FILLED WITH A GAS
SUCH AS STEAM, WHICH CONDENSES IN THE LIQUID IN THE SUPPRESSION CHAMBER.

AVAILABILITY - U. S. PATENT OFFICE, DEPT. OF COMMERCE, WASHINGTON, D. C.

*JAPAN + *PATENT + *REACTOR, GENERAL + CONTAINMENT, PRESSURE SUPPRESSION + EQUIPMENT, GENERAL +
PRESSURE RELIEF

12-29178

ALSO IN CATEGORIES 13 AND 1

JOHNSON ER
STANDARDS FOR NUCLEAR FUEL MATERIALS
3 PAGES, MAG. STAND., 38, PAGES 133-135 (MAY 1967)

NEW STANDARDS CONSIST OF CHEMICAL AND PHYSICAL SPECIFICATIONS FOR NUCLEAR GRADE U METAL MELT
STOCK, SINTERABLE UO₂ AND COMPACTIBLE UO₂. TOTAL IMPURITY CONTENT IS EXPRESSED AS B
EQUIVALENTS RATHER THAN AS INDIVIDUAL LIMITS OF IMPURITY LEVELS. A FOURTH STANDARD COMPILES
STANDARD ANALYTICAL AND TESTING TECHNIQUES FOR NUCLEAR FUEL MATERIALS.

*CODES AND STANDARDS + *FABRICATION + *FUEL ELEMENT + *REACTOR, GENERAL + IMPURITY + METAL + URANIUM +

CATEGORY 12
PLANT SAFETY FEATURES

12-29178 *CONTINUED*
URANIUM DIOXIDE

12-29179
SCHLECHTENDAHL EG
EJECTING SODIUM FROM REACTOR COOLANT CHANNELS
KERNFORSCHUNGSZENTRUM, KARLSRUHE, GER.
5 PAGES, NUKLEONIK, 10, PAGES 270-274 (NOV. 1967) (IN GERMAN)

THE PHENOMENOLOGICAL MODEL FOR REACTOR COOLANT NA BOILING AND EJECTION IS DESCRIBED. EQUATIONS USED FOR THE COOLANT EXPULSION, HEAT TRANSFER, AND VAPORIZATION ARE GIVEN. TIME CONSTANTS FOR TRANSIENT VAPORIZATION ARE DETERMINED. BUBBLE FORMATION IN THE NA COOLANT IS SHOWN AS A FUNCTION OF TIME. FUEL TEMPERATURE AND SODIUM FILM TEMPERATURE-DEPENDENCE ARE SHOWN ALSO.

*REACTOR COOLANT + *REACTOR, GENERAL + *REACTOR, LMFBR + *SODIUM + BUBBLE + HEAT TRANSFER

12-29180 ALSO IN CATEGORY 7
SUGIMOTO S
DEVICE FOR FILTERING RADIOACTIVE GASEOUS WASTES
JAPAN ATOMIC ENERGY RES. INST.
JAPANESE PATENT 1966-12552 +. JULY 29, 1966

RADIOACTIVE GASEOUS WASTES, BEFORE DISCHARGING TO THE ATMOSPHERE, MUST BE CLEANED OF HARMFUL SOLID PARTICLES. THE DEVICE DESCRIBED CAN BE APPLIED EVEN FOR RADIOACTIVE GASEOUS WASTES WITH HIGH SOLID CONTENTS. IT CAN BE USED EITHER AS THE PRELIMINARY FILTER BY ITSELF OR IN COMBINATION WITH AN AEC FILTER BY ARRANGING TWO OF THE DEVICE IN SERIES.

AVAILABILITY - FOREIGN PATENTS MAY BE OBTAINED IN PHOTOCOPY FROM THE U.S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D.C. (\$0.30 CENTS/PAGE)

*FILTER DESIGN + *WASTE DISPOSAL, GAS + FILTER + FILTER, ABSOLUTE + JAPAN + PATENT

12-29182
SHIMAI S
METHOD FOR PREVENTING WATER FLOODING OF THE SUPERHEATING REACTOR CORE
HITACHI LTD.
JAPANESE PATENT 1967-4879 +. FEB. 28, 1967

BY THE METHOD PROPOSED, THE PREVENTION OF WATER FLOODING OF THE SUPERHEATING REACTOR CORE CAN BE IMPROVED AND HENCE THE NUCLEAR SAFETY RELATING TO THIS FLOODING INCREASED. THE REACTOR CORE CONSISTS OF THE BOILING REGION, HAVING HORIZONTAL COOLANT PASSAGES, AND THE SUPERHEATING REGION JUST ABOVE THE BOILING REGION, HAVING HORIZONTAL STEAM PASSAGES, WITH BOTH REGIONS CONTAINED IN THE SAME PRESSURE VESSEL. THE SATURATED STEAM FROM THE BOILING REGION FLOWS UP ALONG THE OUTSIDE OF THE SUPERHEATING REGION, ENTERS THE SUPERHEATED-STEAM CHAMBER LOCATED ABOVE THE SUPERHEATING REGION, AND THEN FLOWS INTO THE SUPERHEATING REGION FROM THE CHAMBER.

AVAILABILITY - FOREIGN PATENTS MAY BE OBTAINED IN PHOTOCOPY FROM THE U.S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D.C. (\$0.30 CENTS/PAGE)

*FLOODING, SUPERHEATER + ENGINEERED SAFETY FEATURE + JAPAN + PATENT

12-29362 ALSO IN CATEGORIES 11 AND 17
WYLLIE RD
SURVEILLANCE OF NUCLEAR POWER PLANT COMPONENTS
SOUTHWEST RESEARCH INSTITUTE, SAN ANTONIO, TEXAS
8 PAGES, 9 FIGURES, NUCLEAR ENGINEERING AND DESIGN, 8(1), PAGES 117-124 (JULY 1968)

DESCRIBES AN APPROACH TO THE DEVELOPMENT OF A SYSTEMATIC PROGRAM FOR SURVEILLANCE OF NUCLEAR REACTOR PRESSURE VESSELS AND OTHER NUCLEAR POWER PLANT COMPONENTS. APPROACH IS BASED ON A PROPOSAL DEVELOPED FOR THE LACROSSE BOILING WATER REACTOR. SPECIFIC AREAS TREATED ARE - IRRADIATION EFFECTS SURVEILLANCE PROGRAM, TEMPERATURE MONITORING PROGRAM, INSPECTION PROGRAM, CORROSION PROGRAM.

*CORROSION + *INSPECTION AND COMPLIANCE + *RADIATION EFFECT + *SURVEILLANCE PROGRAM + *TEMPERATURE GRADIENT + COMPONENTS, MISCELLANEOUS + LACROSSE (BWR) + PRESSURE VESSEL + REACTOR, BWR

12-29363 ALSO IN CATEGORIES 1 AND 11
COOPER WE + WIDMER R + BRODRICK RF
DESIGN CRITERIA FOR HIGH-PRESSURE HIGH-TEMPERATURE BOLTING
TELEDYNE MATERIALS RESEARCH COMPANY, WALTHAM, MASS.
18 PAGES, 6 FIGURES, 5 TABLES, 53 REFERENCES, NUCLEAR ENGINEERING AND DESIGN, 8(1), PAGES 125-142 (JULY 1968)

THE NEXT GENERATION OF POWER-PRODUCING NUCLEAR REACTORS IS EXPECTED TO OPERATE AT HIGHER

CATEGORY 12
PLANT SAFETY FEATURES

12-29363 *CONTINUED*

TEMPERATURES THAN REACTORS NOW IN OPERATION OR UNDER CONSTRUCTION. THESE CONDITIONS WILL REQUIRE THAT BOLTED CLOSURES IN THE SYSTEMS BE DESIGNED TO OPERATE UNDER CONDITIONS NOT PRESENTLY COVERED BY ASME CODES. IT IS THEREFORE NECESSARY THAT STEPS BE TAKEN TO EXTEND THE CODES TO MEET THESE NEW CONDITIONS. THIS REPORT SURVEYS - (1) ANTICIPATED NEEDS OF THE NUCLEAR INDUSTRY, (2) AVAILABILITY OF METALLURGICAL DATA WHICH WOULD BE REQUIRED FOR CODIFICATION TO MEET THE ANTICIPATED NEEDS, AND (3) STATUS AND AVAILABILITY OF STRESS ANALYSIS AND METHODS AND DESIGN CRITERIA TO APPLY TO THE NEW CONDITIONS. IT IS FOUND THAT CLOSURE TEMPERATURES UP TO 1300 F AND PRESSURES UP TO 4000 PSI MAY BE ENCOUNTERED. ALSO, ALTHOUGH CREEP DATA FOR BOLTING MATERIALS UNDER CONSIDERATION ARE AVAILABLE, STRESS-RELAXATION DATA (OF PARTICULAR IMPORTANCE HERE) ARE VERY MEAGER. FURTHER, METHODS FOR CONVERTING CREEP DATA TO STRESS RELAXATION DATA ARE UNRELIABLE.

*DESIGN CRITERIA + *HIGH TEMPERATURE + *PRESSURE, INTERNAL + *STEEL + CREEP + FASTENER + MATERIAL + STRESS

12-29527

SEIM OS

LARGE VALVES FOR LIQUID-METAL-COOLED REACTORS

11 PAGES, REACTOR AND FUEL PROCESSING TECHNOLOGY, VOL. 11, NO. 3, PG. 127-137, JUNE 1968

VALVE-DESIGN REQUIREMENTS WERE SUMMARIZED ON BASIS OF FAST REACTOR CONCEPTUAL DESIGNS. SERVICE CONDITIONS INCLUDE NORMAL OPERATING TEMPERATURE TO 1140 F, TRANSIENTS TO 1200 F, AND PRESSURES TO 150 PSIG. FUTURE LIQUID-METAL-COOLED FAST-BREEDER REACTORS WILL ALMOST CERTAINLY INCLUDE CHECK VALVES APPROXIMATELY 30 IN. IN DIAMETER, DESIGNED FOR 20-YEAR LIFE IN PRIMARY-LOOP SERVICE AND FLOW-CONTROL VALVES 12 TO 20 IN. IN DIAMETER FOR 20-YEAR LIFE IN SECONDARY LOOPS. DEVELOPMENT PROBLEMS ARE REVIEWED. LIMITED VALVE EXPERIENCE DISCUSSED.

*PEACTOR, FAST + *REACTOR, LMFBR + *VALVE + BIBLIOGRAPHY + COMPONENTS, MISCELLANEOUS + EQUIPMENT, GENERAL

12-29528

PLUMLEE KE + PENNINGTON EM

A REVIEW OF THE EXPERIMENTAL AND ANALYTICAL RESULTS OF THE HIGH-CONVERSION CRITICAL EXPERIMENT

4 PAGES, REACTOR AND FUEL PROCESSING TECHNOLOGY, VOL. 11, NO. 3, PG. 117-120, JUNE 1968

CRITICAL EXPERIMENTS AND CALCULATIONS REPORTED FOR A SEQUENCE OF 3 AND 5% ENRICHED UO₂-FUELED H₂O-MODERATED CORES ASSEMBLED AT ARGONNE NATIONAL LABORATORY TO INVESTIGATE THE ADVANTAGES OF DENSELY LOADED POWER-REACTOR CORES, INCLUDING HIGH CONVERSION RATIOS AND HIGH POWER DENSITIES. EXPERIMENT INVOLVED A RANGE OF FUEL LOADING DENSITIES, FROM THE TIGHTEST PACKED LATTICE ACHIEVABLE TO A LOOSE LATTICE THAT COULD BE COMPARED WITH RESULTS OF OTHER EXPERIMENTS.

*CRITICALITY EXPERIMENT + *REACTOR, POWER + ALUMINUM + BIBLIOGRAPHY + COOLING, GENERAL + EXPERIMENT, GENERAL + HEAT TRANSFER EXPERIMENT + STEEL, STAINLESS + URANIUM DIOXIDE + URANIUM-235

12-29533

SKLANDTJEN SR

TOWARD AUTOMATIC AND CONTINUOUS PLUGGING METERS

6 PAGES, REACTOR AND FUEL PROCESSING TECHNOLOGY, VOL. 11, NO. 3, PG 138-143, JUNE 1968

A NUMBER OF TECHNIQUES AND DEVICES - IN ADDITION TO PLUGGING METERS - ARE BEING DEVELOPED TO MONITOR IMPURITY LEVELS IN SODIUM. AT THIS STAGE IT IS WORTHWHILE TO NOTE TWO CENTRAL FACTS - (1) OUR KNOWLEDGE OF THE CHEMISTRY OF SODIUM AND ITS IMPURITIES IS FAR FROM COMPLETE, AND (2) THERE IS NOT YET A TRULY SATISFACTORY DEVICE FOR MONITORING IMPURITIES IN SODIUM. HOWEVER, IN MY OPINION, UNTIL OTHER IN-LINE PURITY-MEASURING METHODS MATCH THE SIMPLICITY, RELIABILITY, AND ACCURACY OF PLUGGING METERS, PLUGGING METERS WILL CONTINUE TO BE USED TO MONITOR THE PURITY OF LIQUID METALS.

*COMPONENTS, MISCELLANEOUS + *COOLANT PURIFICATION SYSTEM + *REACTOR, LMCR + *REACTOR, LMFBR + CORROSION + EQUIPMENT, GENERAL + SODIUM

12-29534

PLUMLEE KE

REVIEW OF RESULTS OF THE DIMPLE CRITICAL EXPERIMENT

2 PAGES, REACTOR AND FUEL PROCESSING TECHNOLOGY, VOL. 11, NO. 3, PG. 121-122, JUNE 1968

THE DIMPLE CRITICAL EXPERIMENT, CONDUCTED BY THE USAEA REACTOR GROUP AT WINFRITH, PROVIDED ADDITIONAL INFORMATION AND CONFIRMATION OF THE RESULTS DISCUSSED IN PREVIOUS ARTICLE FOR 3% ENRICHED UO₂ CORES WITH H₂O MODERATOR AND REFLECTOR. THE ADDITIONAL INFORMATION INCLUDES MEASUREMENTS OF TEMPERATURE EFFECTS, VOID WORTHS, AND ACTIVATION RATIOS FOR SOME ADDITIONAL MATERIALS. CALCULATIONS PRECEDING THE DIMPLE PROGRAM, USING COMPUTER CODES METHUSELAH AND WIMS HAD UNDERESTIMATED THE REACTIVITIES OF TIGHTLY PACKED LATTICES. THIS UNDERESTIMATION WAS TYPICAL ALSO OF RESULTS OF FEW-GROUP CALCULATIONS THAT HAD PRECEDED THE HI-C EXPERIMENT.

*COMPUTER PROGRAM + *CRITICALITY EXPERIMENT + *REACTOR, POWER + ACTIVATION + ALUMINUM + CLADDING + PLUTONIUM + STEEL, STAINLESS + UNITED KINGDOM + URANIUM DIOXIDE + URANIUM-235

CATEGORY 12
PLANT SAFETY FEATURES

12-29639 ALSO IN CATEGORIES 18 AND 10

OYSTER CREEK 1 AMENDMENT 34

JERSEY CENTRAL POWER AND LIGHT COMPANY

75 PAGES, FIGURES, TABLES, REFERENCES, MARCH 21, 1968, DOCKET 50-219, TYPE--BWR, MFG--G.E., AE--BURNS + ROE

PROVIDES ANSWERS TO 6 OF 16 DRL QUESTIONS ASKED IN JAN. 9, 1968, LETTER. BULK OF AMENDMENT IS A RESPONSE TO QUESTION 1, SUGGESTING AN ALTERNATIVE APPROACH TO PROVIDING EMERGENCY POWER TO THE HIGH PRESSURE COOLANT INJECTION SYSTEM, AS THE SPLIT BUS CONCEPT PROPOSED IN AMENDMENT 25 COMPROMISES THEIR INDEPENDENCE. PRINCIPLE CHANGE IS A 50% INCREASE IN ON-SITE AUXILIARY POWER CAPABILITY, WITH THE 3RD DIESEL TO INDEPENDENTLY POWER THE SECOND EMERGENCY BUS.

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

*INDEPENDENCE + ACCIDENT, LOSS OF COOLANT + AEC QUESTION + CORE SPRAY + EMERGENCY POWER, ELECTRIC + GENERATOR, ENGINE + OYSTER CREEK 1 (BWR) + REACTOR, BWR + REPORT, SAR + SYSTEM CAPABILITY

12-29640 ALSO IN CATEGORY 18

OYSTER CREEK 1 AMENDMENT 32

JERSEY CENTRAL POWER AND LIGHT COMPANY

50 PAGES, FIGURES, TABLES, REFERENCES, FEBRUARY 16, 1968, DOCKET 50-219, TYPE--BWR, MFG--G.E., AE--BURNS + ROE

RESPONDS TO 8 DRL QUESTIONS OF JAN. 9, 1968, LETTER, INCLUDING AN ANALYSIS TO DEMONSTRATE ONLY ONE SPRAY PUMP AND ONE SERVICE WATER PUMP NEEDED IN EACH LOOP WHEN CONTAINMENT COOLING IS REQUIRED.

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

*CONTAINMENT SPRAY + AEC QUESTION + CONTAINMENT DESIGN + CONTAINMENT, PRESSURE SUPPRESSION + FAILURE, EQUIPMENT + OYSTER CREEK 1 (BWR) + PUMP + REACTOR, BWR + REPORT, SAR

CATEGORY 13
RADIOCHEMICAL PLANT SAFETY

13-22901

BENDIXSEN CL + LOHSE GE
STORAGE FACILITIES FOR RADIOACTIVE CALCINED WASTE SOLIDS AT THE IDAHO CHEMICAL PROCESSING PLANT
IDAHO NUCLEAR CORPORATION
IN-1155 +. 31 PAGES, 13 FIGURES, 1 TABLE, 18 REFERENCES, JULY 1968

A DETAILED DESCRIPTION OF THE SECOND FACILITY INSTALLED AT ICPP FOR STORAGE OF RADIOACTIVE CALCINED SOLIDS PRODUCED AT THE WASTE CALCINING FACILITY IS PRESENTED. THE MAJOR DESIGN CRITERIA AND SPECIAL FEATURES SUCH AS A NEWLY DESIGNED SOLIDS FLOW DIVERTER VALVE, CORROSION COUPONS OF TYPICAL CONSTRUCTION MATERIALS, A SOLIDS REMOVAL SYSTEM, AND THERMOCOUPLES FOR MEASURING TEMPERATURE GRADIENTS, ARE DESCRIBED. COSTS OF THE TWO SETS OF STORAGE FACILITIES CURRENTLY INSTALLED AT ICPP ARE COMPARED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*WASTE DISPOSAL, ECONOMICS + *WASTE DISPOSAL, GENERAL + *WASTE DISPOSAL, SOLID +
*WASTE TREATMENT, FIXATION + DESIGN CRITERIA + EQUIPMENT, GENERAL + FUEL REPROCESSING + ICRP +
IDAHO FALLS + NRTS + OPERATING EXPERIENCE + WASTE DISPOSAL, LIQUID

13-23229

ALSO IN CATEGORY 3
UNGER WE + CROUSE DJ + WATSON CD + IRVINE AR
LMFBR FUEL PROCESSING STUDIES STATUS REPORT FOR FEBRUARY 1968
OAK RIDGE NATIONAL LABORATORY
ORNL-CF-68-3-13 +. 21 PAGES, 4 FIGURES, 3 TABLES, MARCH 11, 1968

MONTHLY STATUS REPORT OF FAST BREEDER REACTOR AQUEOUS PROCESS DEVELOPMENT IN CHEMICAL TECHNOLOGY DIVISION. STUDIES UNDERWAY OF DISPOSAL OF SODIUM, BEHAVIOR AND REMOVAL OF IODINE, SOLVENT STABILITY UNDER RADIATION AND CHEMICAL DEGRADATION, REMOVAL OF NOBLE GASES, SHIPPING OF REACTOR FUEL.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*EXPERIMENT, GENERAL + *FUEL REPROCESSING + *RADIOCHEMICAL PROCESSING + IODINE + NOBLE GAS + ORNL +
PLUTONIUM + REACTOR, BREEDER + REACTOR, FAST + REACTOR, LMCR + SHIPPING CONTAINER + SODIUM +
SOLVENT EXTRACTION PROCESS + URANIUM

13-24386

DEWELL EH
GEL-ADDITION PROCESS CHEMICAL STUDIES - QUARTERLY PROGRESS REPORT NO. 7 - FEBRUARY-APRIL 1968
THE BABCOCK AND WILCOX CO., NUCLEAR DEVELOPMENT CENTER, LYNCHBURG, VA.
BAW-3714-7 +. 50 PAGES, FIGURES, TABLES, 27 REFERENCES, JULY 1968

THE DEVELOPMENT OF THE SOL-GEL PROCESS AND RELATED PROCESSES HAS CONTINUED IN BABCOCK AND WILCOX LABORATORIES. PROGRESS FOR THE SEVENTH QUARTER ENDING APRIL 31, 1968, IS REPORTED. DURING THIS REPORT PERIOD EMPHASIS WAS SHIFTED TO THE OAK RIDGE MIXED SOL APPROACH, AND DEVELOPMENT OF THE GEL-ADDITION TECHNIQUE CONTINUED AT A REDUCED LEVEL. OXIDE CHARACTERIZATION WORK CONTINUED, AND AN IRRADIATION PROGRAM COMBINING THERMAL AND FAST EXPOSURES WAS AGREED UPON.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*EXPERIMENT, GENERAL + *FUEL CONVERSION + *SOL-GEL PROCESS + IRRADIATION TESTING + OXIDE + PLUTONIUM +
URANIUM

13-25226

ALSO IN CATEGORY 7
FISSION PRODUCT BEHAVIOR IN THE MSRE
OAK RIDGE NATIONAL LABORATORY
ORNL-4229 +. 11 PAGES, FIGURES, TABLES, REFERENCES, PAGES 5-15 FROM REACTOR CHEMISTRY DIVISION ANNUAL PROGRESS REPORT FOR PERIOD ENDING DECEMBER 31, 1967, MARCH 1968

THE FATE OF FISSION PRODUCTS IN THE MSRE HAS BEEN REVEALED IN CONSIDERABLE DETAIL. THE MORE NOBLE METALS LEAVE THE FUEL. AN APPRECIABLE PORTION OF THEM LEAVE VIA THE OFF-GAS, POSSIBLE AS SMOKE CONSISTING OF METALLIC PARTICLES RATHER THAN AS VOLATILE FLUORIDES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*FISSION PRODUCT, VOLATILE + *FLUORIDE + *MOLTEN FUEL + *MSRE (PE) + *OPERATING EXPERIENCE +
*REACTOR, MOLTEN SALT + FISSION PRODUCT RELEASE, GENERAL + FISSION PRODUCT RETENTION +
FISSION PRODUCT TRANSPORT

CATEGORY 13
RADIOCHEMICAL PLANT SAFETY

13-25234 ALSO IN CATEGORY 7

JENKS GH + GRIESS JC

AQUEOUS REACTOR AND DESALINATION

OAK RIDGE NATIONAL LAB., TENN.

ORNL-4229 +. 4 PAGES, 3 TABLES, 6 REFERENCES, PAGES 71-74 OF REACTOR CHEMISTRY DIVISION ANNUAL PROGRESS REPORT FOR PERIOD ENDING DECEMBER 31, 1967

HERMETICALLY SEALED PRESSURIZED- AND BOILING-WATER REACTORS - BRIEF REVIEW OF WATER CHEMISTRY OF BOTH PRESSURIZED- AND BOILING-WATER REACTORS, PARTICULARLY AS IT RELATES TO THE NECESSITY OF PURIFICATION SYSTEMS, AND CONSIDERATION OF MEANS WHEREBY SMALL REACTORS COULD OPERATE SATISFACTORILY WITHOUT WATER CLEANUP OR SPECIAL GAS HANDLING EQUIPMENT. WATER CHEMISTRY IN A SMALL STATE-OF-THE-ART PRESSURIZED-WATER REACTOR - PLANS AND SPECIFICATIONS FOR A LOW-POWER PRESSURIZED-WATER REACTOR BASED ON STATE-OF-THE-ART INFORMATION ARE BEING PREPARED BY ORNL, AND WE ARE PROVIDING SPECIFICATIONS AND RECOMMENDATIONS IN AREAS RELATED TO WATER TECHNOLOGY IN THE REACTOR. WATER RADIOLYSIS IN THE HFIR - COMPARISON BETWEEN REPORTED AND PREDICTED CONCENTRATIONS OF HYDROGEN IN THE HFIR MODERATOR LED TO THE TENTATIVE CONCLUSION THAT ITS RADIOLYTIC BEHAVIOR IS NEAR THAT PREDICTED. ADDITIONAL ANALYSES OF THE RELATIVE AMOUNTS OF OXYGEN AND HYDROGEN PEROXIDE WOULD BE REQUIRED FOR COMPLETE VERIFICATION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA., 22151, \$3.00 COPY, \$0.65 MICROFICHE

CHEMICAL KINETICS + CHEMICAL PROPERTY + COOLANT CHEMISTRY + DESIGN CRITERIA + HFIR (FTR) + HYDROGEN + IRRADIATION TESTING + OXYGEN + PROPERTY, PHYSICAL + RADIATION EFFECT + RADIOLYTIC GAS + REACTOR, AEC OWNED + REACTOR, BWR + REACTOR, FAST + REACTOR, PULSED + REACTOR, PWR + REACTOR, WATER + STEAM + WATER TREATMENT + WATER, GENERAL

13-26119 ALSO IN CATEGORIES 15 AND 1

GUIDANCE FOR THE CONTROL OF RADIATION HAZARDS IN URANIUM MINING

FEDERAL RADIATION COUNCIL

NP-17040 +. 60 PAGES, FIGURES, TABLES, REFERENCES, SEPTEMBER 1967, STAFF REPORT OF THE U.S. FEDERAL RADIATION COUNCIL, REPORT NO. 8 REVISED

PRESENTS BACKGROUND MATERIAL USED IN THE DEVELOPMENT OF GUIDANCE FOR FEDERAL AGENCIES IN REGULATORY PROGRAMS AND IN PROGRAMS OF COOPERATION WITH STATES CONCERNING RADIATION PROTECTION IN THE MINING OF URANIUM ORE, AND SEEKS TO PROVIDE GUIDANCE FOR LONG-TERM RADIATION PROTECTION IN URANIUM MINING. PERIODIC REVIEW WILL BE NECESSARY TO INCORPORATE NEW INFORMATION AND NEW SURVEILLANCE OR CONTROL TECHNIQUES AS THEY ARE DEVELOPED. THE REPORT ALSO INCLUDES RECOMMENDATIONS FOR ADDITIONAL RESEARCH AND RECORDKEEPING NEEDED TO PROVIDE A FIRMER BASIS FOR THE EVALUATION OF RADIATION RISKS IN THIS INDUSTRY.

AVAILABILITY - GOVERNMENT PRINTING OFFICE, \$0.40

*BIOLOGICAL CONCENTRATION, MAN + *HAZARDS ANALYSIS + *MINING + *RADIATION SAFETY AND CONTROL + *URANIUM + DOSIMETRY, GENERAL + FEDERAL RADIATION COUNCIL + MONITOR, RADIATION, ENVIRONMENTAL + RADIATION EFFECT + RADIOBIOLOGY

13-27529 ALSO IN CATEGORY 12

MERRIMAN JR + PASHLEY JH

ENGINEERING DEVELOPMENT OF AN ABSORPTION PROCESS FOR THE CONCENTRATION AND COLLECTION OF KRYPTON AND XENON - SECOND SUMMARY PROGRESS REPORT JULY THROUGH DECEMBER 1967

UNION CARBIDE CORPORATION

K-1745 +. 31 PAGES, 6 FIGURES, 1 TABLE, 2 REFERENCES, AUGUST 19, 1968

ONE OF THE MOST DIRECT METHODS FOR STRIPPING KRYPTON AND XENON FROM CONTAMINATED GAS STREAMS IS SELECTIVE ABSORPTION IN A FLUOROCARBON SOLVENT, SUCH AS REFRIGERANT 12. A DEVELOPMENT PROGRAM IS UNDERWAY AT THE OAK RIDGE GASEOUS DIFFUSION PLANT TO ESTABLISH THE ENGINEERING SCALE-UP DATA REQUIRED FOR DESIGN OF PLANTS USING THE ABSORPTION TECHNIQUE FOR PROCESSING GASES CONTAINING RADIOACTIVE KRYPTON AND XENON ISOTOPES. THE SCOPE OF THE WORK INCLUDES PILOT PLANT TESTING, CONCEPTUAL DESIGN STUDIES FOR VARIOUS PLANT-SCALE APPLICATIONS OF THE PROCESS, AND OPTIMIZATION STUDIES. DURING THIS REPORT PERIOD, CONSTRUCTION AND PROCUREMENT OF THE PILOT PLANT EQUIPMENT ITEMS WERE ESSENTIALLY COMPLETED, AND INSTALLATION WAS BEGUN.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA., 22151, \$3.00 COPY, \$0.65 MICROFICHE

*FUEL REPROCESSING + *REACTOR, GENERAL + *WASTE TREATMENT, GAS + DESIGN STUDY + EXPERIMENT, GENERAL + KRYPTON + OFF GAS + TESTING + XENON

13-27530

JARRY RL + STOCKBAR JJ + STEINDLER MJ

LABORATORY INVESTIGATIONS IN SUPPORT OF FLUID-BED FLUORIDE VOLATILITY PROCESSES PART XIX

ARGONNE NATIONAL LABORATORY

ANL-7412 +. 43 PAGES, 19 FIGURES, 13 TABLES, 27 REFERENCES, MARCH 1968

THE USE OF BRF5 TO SELECTIVELY REMOVE URANIUM FROM MIXTURES WITH PLUTONIUM HAS BEEN STUDIED. THE RESULTS SHOW THAT URANIUM IN MIXTURES WITH ALUMINA, PLUTONIUM DIOXIDE, AND

CATEGORY 13
RADIOCHEMICAL PLANT SAFETY

13-27530 *CONTINUED*

FISSION-PRODUCT COMPOUNDS CAN EASILY BE CONVERTED TO UF₆ AT 350 C OR LOWER, USING 20% BRFS IN NITROGEN AS THE FLUORINATING GAS WHILE CONVERTING THE PLUTONIUM ONLY TO THE NON-VOLATILE PUF₄. THE PRESENCE OF ZIRCALOY OR STAINLESS STEEL DECLADDING PRODUCT DID NOT HINDER THE REMOVAL OF URANIUM. PLUTONIUM COULD BE SATISFACTORILY CONVERTED TO PUF₆ BY A SECOND FLUORINATION STEP AT 500-550 C, USING ELEMENTAL FLUORINE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*FUEL REPROCESSING + *VOLATILITY PROCESS + BROMINE + EXPERIMENT, GENERAL + FLUORIDE + FLUORINE +
PLUTONIUM + TESTING + URANIUM

13-27531 ALSO IN CATEGORY 12

PEEBLES FN

REMOVAL OF XENON-135 FROM CIRCULATING FUEL SALT OF THE MSBR BY MASS TRANSFER TO HELIUM BUBBLES

OAK RIDGE NATIONAL LABORATORY

ORNL-TM-2245 +. 33 PAGES, 8 FIGURES, 2 TABLES, 21 REFERENCES, JULY 23, 1968

REMOVAL OF DISSOLVED XENON-135 BY MASS TRANSFER TO HELIUM BUBBLES OFFERS AN ATTRACTIVE MEANS OF CONTROLLING THE XENON-135 POISON LEVEL IN MOLTEN SALT BREEDER REACTORS. TO PROVIDE NECESSARY ENGINEERING INFORMATION FOR EVALUATION OF THE PROPOSED METHOD, THE EXISTING DATA ON RATES OF MASS TRANSFER TO GAS BUBBLES WERE REVIEWED. RATHER EXTENSIVE LITERATURE REFERENCES POINT TO RELIABLE EQUATIONS FOR PREDICTION OF MASS TRANSFER RATES TO SINGLE BUBBLES RISING IN STATIONARY LIQUIDS UNDER THE TWO EXTREME CASES OF A RIGID BUBBLE INTERFACE AND OF A PERFECTLY MOBILE BUBBLE INTERFACE. IN GENERAL, EXPERIMENTAL DATA ARE AVAILABLE WHICH SUPPORT THESE PREDICTIONS. NO RELIABLE CRITERION FOR PREDICTING THE TRANSITION FROM ONE TYPE BEHAVIOR TO ANOTHER IS AVAILABLE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*REACTOR, BREEDER + *REACTOR, GENERAL + *REACTOR, MOLTEN SALT + *XENON + HELIUM + MASS TRANSFER +
THEORETICAL INVESTIGATION + WASTE TREATMENT, GAS

13-27723

WILLIAMS JS + FERRY PB

LARGE RADIOISOTOPE HEAT SOURCE CAPSULE PROGRAM - TOPICAL REPORT NO. 4 - T-111 PRESSURE VESSEL DEVELOPMENT AND FABRICATION

ATMICS INTERNATIONAL, CANOGA PARK, CALIFORNIA

AI-AEC-12712 +. 63 PAGES, 33 FIGURES, 3 TABLES, JULY 25, 1968

THE LARGE RADIOISOTOPE HEAT SOURCE CAPSULE (LRHSC) PROGRAM IS DEVELOPING TECHNOLOGY FOR HIGH TEMPERATURE (2000 F) LONG LIFE (5 YEARS OR LONGER) HEAT SOURCES WHICH CAN BE USED IN THE SPACE ENVIRONMENT. THE LRHSC PROGRAM IS SPECIFICALLY CONCERNED WITH THE DEVELOPMENT OF A TANTALUM ALLOY FUEL CAPSULE. THIS REPORT CONTAINS THE DETAILS OF TOOLING DEVELOPMENT AND CHECKOUT, AND THE HISTORY OF PROBLEMS AND SOLUTIONS ENCOUNTERED DURING THE DEVELOPMENT EFFORT. AT THIS POINT, THE PROCESS CAN BE CONSIDERED STATE-OF-THE-ART.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*CONTAINMENT, SOURCE + *EXPERIMENT, GENERAL + *FABRICATION + *RADIOISOTOPE + ALLOY + ENERGY SOURCE +
SOURCE, RADIATION + TANTALUM

13-27777

GREENIER WS

SOME FACTORS AFFECTING THE CHOICE OF A SOLVENT EXTRACTION CONTACTOR FOR THE 1ST CYCLE REPROCESSING OF LMFBR FUELS

OAK RIDGE NATIONAL LAB., TENNESSEE

ORNL-TM-2290 +. 23 PAGES, 1 FIGURE, 9 TABLES, 18 REFERENCES, SEPT. 1968

THREE VERY DIFFERENT TYPES OF SOLVENT EXTRACTION CONTACTORS ARE BEING CONSIDERED FOR INCLUSION IN THE FIRST CYCLE LMFBR FUEL REPROCESSING CONCEPT. THE PULSED EXTRACTION COLUMN, THE SAVANNAH RIVER CENTRIFUGAL CONTACTOR, AND THE ORNL STACKED-COLUMN CONTACTOR HAVE BEEN COMPARED IN THIS REPORT USING A POSSIBLE LMFBR FLOWSHEET WITH TYPICAL FEED AND VARIOUS DESIGN AND OPERATING INFORMATION THAT IS AVAILABLE. CONTACTORS WERE SIZED FOR A REPROCESSING PLANT HAVING A CAPACITY OF 5 METRIC TONS (URANIUM + PLUTONIUM + FISSION PRODUCT) PER DAY. COMPARISONS WERE MADE ON THE BASIS OF APPROXIMATE SOLVENT RADIATION DOSAGE. IN BOTH THE CENTRIFUGAL CONTACTOR AND THE STACKED-COLUMN CONTACTOR THIS WAS GREATER THAN 20% OF THAT IN THE PULSED COLUMN. ADDITIONAL COMPARISONS MUST BE MADE ON THE BASIS OF COST.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151
\$3.00 COPY, \$0.65 MICROFICHE

*EQUIPMENT, GENERAL + *FUEL REPROCESSING + *SOLVENT EXTRACTION PROCESS +
COMPARISON, THEORY AND EXPERIENCE + RADIATION DAMAGE + REACTOR, LMCR

CATEGORY 13
RADIOCHEMICAL PLANT SAFETY

13-27779

PRATT RB + GOLDMAN AE

FUEL ELEMENT FABRICATION COSTS FOR DRAGON PROJECT LOW-ENRICHMENT, HIGH-TEMPERATURE GAS-COOLED REACTOR CONCEPT

OAK RIDGE NATIONAL LAB., TENN.

ORNL-TM-2241 +. 19 PAGES, 1 FIGURE, 10 TABLES, 6 REFERENCES, SEPT. 1968

FUEL ELEMENT FABRICATION COSTS HAVE BEEN ESTIMATED FOR A PROPOSED LOW-ENRICHMENT DRAGON PROJECT HTGR CONCEPT. FABRICATION PROCESSES INVESTIGATED INCLUDED PURCHASE AND MACHINING OF GRAPHITE, FUEL KERNEL PREPARATION, PARTICLE COATING, ELEMENT LOADING AND BONDING, AND INSPECTION. ON THE ASSUMPTION THAT THE PRODUCTION REQUIREMENTS FOR 1-, 10-, AND 30-REACTOR INDUSTRY SIZES WOULD BE 80, 800, AND 2400 KG U/DAY, IT WAS ESTIMATED THAT THE FABRICATION COSTS WOULD BE \$166.28, \$108.38, AND \$98.23/KG OF HEAVY METAL, RESPECTIVELY, FOR ELEMENTS LOADED WITH PYC/SIC/PYC-COATED SOL-GEL UO-2 FUEL.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

*DESIGN STUDY + *FABRICATION + *FUEL ELEMENT + *REACTOR, GENERAL + DRAGON (HTGR) + ECONOMIC STUDY + FUEL, PELLET TYPE + GRAPHITE + REACTOR, HTGR + URANIUM

13-27780

FABIGER KE + BRETON DL

NUCLEAR SAFETY STUDIES FOR LOW ENRICHMENT FLUORIDE VOLATILITY FUEL REPROCESSING PLANTS

OAK RIDGE NATIONAL LAB., TENN.

K-1734 +. 66 PAGES, 17 FIGURES, 22 TABLES, 26 REFERENCES, SEPT. 4, 1968

IN COOPERATION WITH THE NATIONAL LABORATORIES, THE OAK RIDGE GASEOUS DIFFUSION PLANT HAS PARTICIPATED IN CONCEPTUAL AND HARDWARE DEVELOPMENT STUDIES RELATED TO THE DESIGN OF FLUORIDE VOLATILITY FUEL REPROCESSING PLANTS FOR LOW ENRICHMENT NUCLEAR REACTOR FUELS. AS A PART OF THIS EFFORT, CRITICALITY CALCULATIONS HAVE BEEN MADE TO ESTABLISH REACTIVITIES OF VARIOUS ASSEMBLIES OF URANIUM AND PLUTONIUM WITH OTHER VOLATILITY PROCESS MATERIALS. THESE RESULTS WERE THEN USED AS A BASIS FOR ESTIMATING THE GEOMETRY OF FISSION MASS LIMITATIONS FOR THE CONCEPTUAL PLANT PROCESSING EQUIPMENT. THE DTF-II AND ANISN ONE-DIMENSIONAL S-N MULTIGROUP TRANSPORT CODES WERE USED IN THE S-4 OPTION FOR THE CALCULATIONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

*CRITICALITY SAFETY + *FUEL REPROCESSING + *VOLATILITY PROCESS + FLUORIDE + PLUTONIUM + PLUTONIUM DIOXIDE + SAFETY ANALYSIS + URANIUM

13-27781

ALSO IN CATEGORY 12

APPEL J + ROOS B

A STUDY OF THE RELEASE OF RADIOACTIVE METALLIC ISOTOPES FROM HIGH-TEMPERATURE GAS-COOLED REACTORS

GULF GENERAL ATOMIC INC., SAN DIEGO, CALIFORNIA

GA-8399 +. 37 PAGES, 8 FIGURES, 3 TABLES, 16 REFERENCES, JULY 22, 1968

AN EXACT FORMULATION IS PRESENTED FOR THE RELEASE OF METALLIC FISSION PRODUCTS. SUCH RADIOACTIVE ATOMS ARE CREATED THROUGH FISSION PROCESSES INSIDE THE KERNEL OF FUEL PARTICLES. THEY CAN DIFFUSE THROUGH THE COATING OF A FUEL PARTICLE AND THE SURROUNDING CHARCOAL MATRIX INTO THE STRUCTURAL GRAPHITE OF THE REACTOR CORE. SOME ATOMS TRAVERSE THIS GRAPHITE ALONG INTERNAL SURFACES AND FINALLY ENTER THE COOLANT GAS. TO FIND THE NUMBER OF RADIOACTIVE ATOMS RELEASED INTO THE COOLANT GAS, THE DIFFUSION EQUATION IN ONE SPACE DIMENSION IS SOLVED NUMERICALLY TAKING INTO ACCOUNT AS DRIVING FORCES BOTH THE GRADIENT OF THE CHEMICAL POTENTIAL AND THAT OF THE TEMPERATURE FIELD.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA, 22151, \$3.00 COPY, \$0.65 MICROFICHE

*REACTOR, GENERAL + *REACTOR, HTGR + DIFFUSION + FISSION PRODUCT RELEASE, GENERAL + FISSION PRODUCT, NONVOLATILE + MASS TRANSFER + MATHEMATICAL TREATMENT

13-27782

PLATT AM

QUARTERLY PROGRESS REPORT RESEARCH AND DEVELOPMENT ACTIVITIES FIXATION OF RADIOACTIVE RESIDUES NOVEMBER, DECEMBER 1967 AND JANUARY, 1968

BATTELLE NORTHWEST, PACIFIC NORTHWEST LABORATORY, RICHLAND, WASHINGTON

BNWL-771 +. 7 FIGURES, 9 TABLES, 2 REFERENCES, JULY 1968

DURING POT CALCINATION RUN PC-8, 1,300,000 CI OF RADIOACTIVITY WAS PROCESSED IN AN 8-IN. POT. APPROXIMATELY 2,000,000 CI OF RADIOACTIVE WASTE WAS SUCCESSFULLY PROCESSED IN THE FIRST THREE RADIOACTIVE PHOSPHATE GLASS RUNS IN WASTE SOLIDIFICATION ENGINEERING PROTOTYPES (WSEP). NON-RADIOACTIVE DEVELOPMENT WORK ON SPRAY SOLIDIFICATION INDICATED THAT (1) BATCH DUMPING OF A PW-2 MELT INTO AN UNHEATED MILD STEEL CONTAINER IS FEASIBLE, AND (2) THE FILTERABILITY OF THE CALCINE FROM A PW-1 IN-POT MELTING FLOWSHEET IS GREATLY IMPROVED BY ADDING A PORTION OF THE NAPO3 TO THE FEED, AS COMPARED TO THE PREVIOUSLY USED TECHNIQUE OF ADDING ALL THE FLUX IN

CATEGORY 13
RADIOCHEMICAL PLANT SAFETY

13-27782 *CONTINUED*
SOLID FORM TO THE MELT POT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA, 22151, \$3.00 COPY, \$0.65 MICROFICHE

*CALCINATION + *GLASS + *WASTE DISPOSAL, GENERAL + *WASTE TREATMENT, FIXATION + EXPERIMENT, GENERAL + FUEL REPROCESSING

13-27783 ALSO IN CATEGORY 12
BISHOP WN + BAROCH CJ
POST-IRRADIATION EXAMINATION OF THORIA-URANIA FUEL RODS. QUARTERLY PROGRESS REPORT NO. 3, DECEMBER 1967 - FEBRUARY 1968
BABCOCK + WILCOX CO., NUCLEAR DEVELOPMENT CENTER, LYNCHBURG, VIRGINIA
BAW-3809-3 +. 1 FIGURE, 2 TABLES, 3 REFERENCES, JULY 1968

THE DISSOLUTION OF THORIA-URANIA FUEL WAS STUDIED, AND IT WAS SHOWN THAT 13 M NITRIC ACID-C.05 M FLUORIDE UNDER REFLUX WAS EFFECTIVE FOR BOTH IRRADIATED AND UNIRRADIATED MATERIAL. NONDESTRUCTIVE EXAMINATION OF THE FUEL RODS SHOWED THAT THEY WERE IN EXCELLENT CONDITION, AND IN SOME CASES PELLETS WERE INTACT AND FREE TO MOVE WITHIN THE RODS. EIGHT OF THE 13 RODS HAVE BEEN SECTIONED, AND CHEMICAL AND METALLURGICAL EXAMINATIONS ARE IN PROGRESS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA, 22151, \$3.00 COPY, \$0.65 MICROFICHE

*EXAMINATION + *FUEL ELEMENT + *FUEL REPROCESSING + *REACTOR, GENERAL + DISSOLUTION + THORIUM + URANIUM

13-27873
URBON WG
QUARTERLY REPORT FOR APRIL 1, 1968 THROUGH JUNE 30, 1968
NUCLEAR FUEL SERVICES, INC., WEST VALLEY REPROCESSING PLANT
19 PAGES, 7 TABLES, JULY 29, 1968, DOCKET 50-201

QUARTERLY REPORT REQUIRED BY PROVISIONAL LICENSE. BRIEFLY DISCUSSES OPERATIONAL DIFFICULTIES OF DISSOLUTION, OFF-GAS BLOWERS, AND WASTE-TANK FARM. FISSION-PRODUCT EFFLUENTS FROM PLANT GIVEN BY MONTH. DESCRIBES PLANT MODIFICATIONS PLANNED TO IMPROVE SAFETY. SURVEILLANCE TESTS LISTED.

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

*FUEL REPROCESSING + *NFS + DISSOLUTION + FISSION PRODUCT RELEASE, GENERAL + MODIFICATION, SYSTEM OR EQUIPMENT + MONITORING PROGRAM, ENVIRONMENTAL + REPORT, OPERATIONS + SURVEILLANCE PROGRAM + WASTE TREATMENT, GENERAL

13-27970 ALSO IN CATEGORY 1
GLOVEBOX FIRE SAFETY - A GUIDE FOR SAFE PRACTICES IN DESIGN, PROTECTION, AND OPERATION
FACTORY MUTUAL RESEARCH CORPORATION, NUKWUUU, MASS.
TID-24236 +. 133 PAGES, FIGURES, TABLES, 77 REFERENCES, 1967

SUMMARIZES RESULTS OF GLOVEBOX FIRE SAFETY PROJECT INITIATED AND SPONSORED BY AEC DIVISION OF OPERATIONAL SAFETY. CONTENTS BASED ON LITERATURE REVIEW, VISITS TO AEC FACILITIES, ANALYSES OF SERIOUS GLOVEBOX INCIDENTS, TESTS, AND SUGGESTIONS OF KNOWLEDGEABLE CONTRACTOR PERSONNEL. INCLUDES CHAPTERS ON FIRE AND EXPLOSION BEHAVIOR, ADMINISTRATION AND PLANNING, CONSTRUCTION, VENTILATION, FIRE DETECTION SYSTEMS, FIRE CONTROL WITHIN BOXES, FIRE PROTECTION OF ROOMS AND BUILDINGS, AND APPLICABLE ESTABLISHED CRITERIA.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*FUEL CONVERSION + *FUEL REPROCESSING + *GLOVE BOX + *RADIOISOTOPE + *REACTOR, GENERAL + ADMINISTRATIVE CONTROL + CODES AND STANDARDS + DESIGN CRITERIA + EXPLOSION + FIRE + FOAM + PROCEDURES AND MANUALS + SAFETY PRINCIPLES AND PHILOSOPHY

13-28026
KILIAN DC + ROEM AP + DICKEY BR
DESCRIPTION OF THE PILOT PLANT FOR THE HEADEND REPROCESSING OF UNIRRADIATED ROVER FUELS
IDAHO NUCLEAR CORPORATION
IN-1181 +. 15 PAGES, 6 FIGURES, 6 REFERENCES, MAY 1968

A NONRADIOACTIVE PILOT PLANT FACILITY FOR THE HEADEND PROCESSING OF GRAPHITE MATRIX NUCLEAR ROCKET (ROVER) FUEL IS DESCRIBED. THE GRAPHITE MATRIX IS REMOVED BY BURNING IN AN INERT ALUMINA BED FLUIDIZED WITH OXYGEN. THE URANIUM IS CONVERTED TO THE NONVOLATILE OXIDE U3O8 AND SEPARATED FROM THE BED BY ELUTRIATION FROM THE BURNER. SOLIDS SCRUBBED FROM THE OFF-GAS ARE DISSOLVED IN NITRIC ACID, PRODUCING A SOLUTION SUITABLE FOR SOLVENT EXTRACTION OF THE URANIUM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

CATEGORY 13
RADIOCHEMICAL PLANT SAFETY

13-28026 *CONTINUED*

*FLUIDIZED BED + *FUEL REPROCESSING + *URANIUM + CARBON + EXPERIMENT, GENERAL + OFF GAS + REACTOR, HTGR + REACTOR, SPACE + SOLVENT EXTRACTION PROCESS + WASTE TREATMENT, GAS

13-28125

PASHLEY JH

ORGDP FUEL REPROCESSING STUDIES. PROGRESS REPORT FOR PERIOD ENDING FEBRUARY 20, 1968

OAK RIDGE GASEOUS DIFFUSION PLANT, OAK RIDGE, TENN.

K-L-1780(PT.25) +. 21 PAGES, 5 FIGURES, 2 TABLES, REFERENCES, JUNE 12, 1968

ACTIVITIES WERE CONDUCTED ACCORDING TO THE GUIDELINES IN THE CLOSE-OUT PLAN FOR THE OAK RIDGE GASEOUS DIFFUSION PLANT FLUORIDE VOLATILITY PROGRAM. IN THE CURRENT PERIOD, THE FACTORS INFLUENCING U308 ELUTRIATION DURING OXIDATION WERE STUDIES IN FOUR SEMIWORKS PUNS. IN ADDITION, LONG-TERM OPERATION OF THE PERIPHERAL COMPRESSOR, AS WELL AS THE MULTICYCLE EXPOSURE TESTING OF THE SINTERED NICKEL FILTERS IN VOLATILITY PROCESS GASES, WERE CONTINUED, AND THE PERFORMANCE OF A SODIUM FLUORIDE BED IN THE RECOVERY OF URANIUM FROM LOW CONCENTRATION URANIUM HEXAFLUORIDE GASES WAS EVALUATED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*FLUORIDE + *FUEL REPROCESSING + EQUIPMENT, GENERAL + EXPERIMENT, GENERAL + FLUORINE + TESTING + URANIUM DIOXIDE

13-28126

HOLLADAY JH + KNOWLES DJ

DESCRIPTION OF GAMMA-NEUTRON RADIATION MONITORING SYSTEM INSTALLED IN THE 5-MV VAN DE GRAAFF ACCELERATOR AREA OF THE HIGH VOLTAGE ACCELEPATOR FACILITY, BLDG. 5500

OAK RIDGE NATIONAL LABORATORY

ORNL-TM-2137 +. 13 PAGES, 7 FIGURES, 2 TABLES, FEBRUARY 22, 1968

A RADIATION MONITORING SYSTEM WAS INSTALLED IN THE 5-MV VAN DE GRAAFF ACCELERATOR FACILITY IN BUILDING 5500 TO CONTINUOUSLY MONITOR GAMMA-NEUTRON RADIATION IN EACH OF FIVE AREAS. THE RADIATION LEVEL IN EACH AREA IS INDICATED BY A METER ON A PANEL BOARD IN THE CONTROL ROOM AND BY ANOTHER METER AT THE ENTRANCE TO THE AREA. ALARM INDICATORS ARE ACTUATED AT THE CONTROL PANEL AND IN THE MONITORED AREAS WHEN A CAUTION LEVEL (30 MREM/HR) OR A HIGH LEVEL (100 MREM/HR) OF RADIATION IS DETECTED OR WHEN AN INSTRUMENT BECOMES INOPERATIVE. BEACONS ARE OPERATED IN THE MONITORED AREA WHEN A CAUTION OR HIGH LEVEL OF RADIATION IS DETECTED. THIS REPORT DESCRIBES THE SYSTEM AND GIVEN GENERAL MAINTENANCE INFORMATION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*ACCELERATOR + *GAMMA + *MONITOR, RADIATION, GENERAL + *NEUTRON + *RADIOISOTOPE + DESIGN CRITERIA + EQUIPMENT, GENERAL + ORNL

13-28127

ALSO IN CATEGORY 17

GLOVEBOX EXPLOSION CAUSES \$42,000 DAMAGE AND PLUTONIUM 238 CONTAMINATION SPREAD

U.S. ATOMIC ENERGY COMMISSION

10 PAGES, 5 FIGURES, SERIOUS ACCIDENTS ISSUE NO. 293, AUGUST 26, 1968

PRESS RELEASE OF ACCIDENT IN WHICH THREE EMPLOYEES RECEIVED PLUTONIUM UPTAKE. FACILITIES AND OPERATIONS DESCRIBED BRIEFLY. FINDINGS DISCUSSED.

*ACCIDENT, GENERAL + *FUEL CONVERSION + *FUEL REPROCESSING + *GLOVE BOX + *RADIOISOTOPE + AIRBORNE RELEASE + EXPLOSION + INHAELATION + PLUTONIUM + RADIOACTIVITY RELEASE

13-28128

ALSO IN CATEGORY 17

LETTER, NFS TO DIVISION OF MATERIAL LICENSING (AEC)

NUCLEAR FUEL SERVICES, INC.

2 PAGES, LETTER TO J. A. MCBRIDE FROM E. D. NORTN, SEPTEMBER 10, 1968, DOCKET 50-201

BRIEF DISCUSSION OF FINDINGS OF STUDIES SURROUNDING FAILURE OF DISSOLVER OFF-GAS FILTER.

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

*FILTER, DAMAGED + *FUEL REPROCESSING + *NFS + FILTER, HIGH EFFICIENCY + WASTE TREATMENT, GAS

13-28129

ALSO IN CATEGORY 17

LETTER, NFS TO DIVISION OF MATERIALS LICENSING (AEC)

NUCLEAR FUEL SERVICES, INC.

2 PAGES, LETTER TO J. A. MCBRIDE FROM E. D. NORTN, SEPTEMBER 9, 1968, DOCKET 50-201

BRIEF DISCUSSION OF THREE PROPOSALS FOR DISPOSING OF LOW-LEVEL LIQUID WASTE FROM PLANT UNDER CONSIDERATION.

CATEGORY 13
RADIOCHEMICAL PLANT SAFETY

13-28129 *CONTINUED*
AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*FUEL REPROCESSING + *NFS + SOLVENT EXTRACTION PROCESS + WASTE DISPOSAL, LIQUID

13-28130
BONNIAUD R
VITRIFICATION OF HIGH LEVEL WASTES
BULLETIN OF SCIENTIFIC AND TECHNICAL INFORMATION NO. 128, 19 PAGES, 14 FIGURES, 1 TABLE, 0 REFERENCES
(JULY 1968)

IMPERATIVE SAFETY REASONS ENTAIL VITRIFICATION OF FISSION PRODUCT LIQUID WASTES. DIFFERENT KIND OF GLASS, ALUMINOSILICATE OR ALUMINOPHOSPHATE, ARE USED ACCORDING TO THE COMPOSITION OF THE LIQUIDS. UP TILL NOW, GLASS BLOCKS, WEIGHING SEVERAL KILOGRAMS AND HAVING A SPECIFIC RADIOACTIVITY OF 2 CURIES/CC, HAVE BEEN PREPARED ON THE LABORATORY SCALE. TWO INDUSTRIAL SCALE PROCESSES ARE UNDER STUDY - THE FIRST, A CONTINUOUS PROCESS, USES A PRELIMINARY CALCINATION IN A ROTARY KILN, THE OTHER OF MORE ADVANCED DESIGN IS A SEMICONTINUOUS METHOD INVOLVING VITRIFICATION IN A METAL POT. A PILOT PLANT USING THE LATTER IS UNDER CONSTRUCTION AT MARCOULE.

*CALCINATION + *FRANCE + *FUEL REPROCESSING + *WASTE DISPOSAL, GENERAL + *WASTE TREATMENT, LIQUID + DESIGN STUDY + GLASS + WASTE DISPOSAL, SOLID

13-28135
NIEZBORALA PF
FIVE YEARS EXPERIENCE OF IRRADIATED FUEL PROCESSING AT THE MARCOULE PILOT PLANT
ATELIER-PILOTE DE TRAITEMENT DES COMBUSTIBLES IRRADIES
15 PAGES, 13 FIGURES, 12 REFERENCES, BULLETIN D'INFORMATIONS SCIENTIFIQUES ET TECHNIQUES, 127, PAGES 75-90
(JUNE 1968)

DURING ITS FIRST FIVE YEARS OF OPERATION THE PILOT PLANT FOR IRRADIATED FUEL PROCESSING HAS TREATED IRRADIATED TEST FUELS OF NATURAL URANIUM, MOLYBDENUM URANIUM OF DIFFERENT MOLYBDENUM CONCENTRATIONS AND FUELS WITH AN ANTIDIFFUSION LAYER OF AQUADAG. THE BEHAVIOUR OF NEW SOLVENTS SUCH AS TRIAURYLAMINE, AND DIFFERENT PROCESSES FOR THE RECUPERATION OF NEPTUNIUM IN SOLUTIONS FROM THE MARCOULE PLANT, WERE ALSO STUDIED. BLOCKS OF GLASS WERE PREPARED FROM CONCENTRATED SOLUTIONS OF FISSION PRODUCTS TO STUDY THEIR PROPERTIES. THESE VARIOUS PROCESSES RAISED CERTAIN ANALYTICAL PROBLEMS AND THE RUNNING OF THE PILOT PLANT CREATED THE NEED FOR A NEW TECHNOLOGY, IN PARTICULAR THE USE OF PULSED COLUMNS AND TELEMANNIPULATION.

*FRANCE + *FUEL REPROCESSING + *OPERATING EXPERIENCE + MOLYBDENUM + NEPTUNIUM + URANIUM + WASTE TREATMENT, LIQUID

13-28136
MICHEL PP
STUDIES ON THE PROCESSING OF FUELS BASED ON ALLOYS CONTAINING HIGHLY ENRICHED URANIUM
SERVICE DE GENIE CHIMIQUE RADIOACTIF
14 PAGES, 9 FIGURES, 6 TABLES, 12 REFERENCES, BULLETIN D'INFORMATIONS SCIENTIFIQUES ET TECHNIQUES, 127, PAGES 61-74 (JUNE 1968)

SURVEYS THE STUDIES UNDERTAKEN IN FRANCE FOR REPROCESSING OF ENRICHED URANIUM CONTAINING FUELS - BUILDING OF AN ACTIVE PILOT PLANT, MANY STUDIES ABOUT BATCH AND CONTINUOUS DISSOLVING OF URANIUM-ALUMINUM ALLOYS, STUDY AND PERFECTING OF A NEW PROCESS FOR URANIUM ZIRCONIUM ALLOYS REPROCESSING.

*FRANCE + *FUEL REPROCESSING + *SOLVENT EXTRACTION PROCESS + DISSOLUTION + URANIUM-235

13-28137
LEFORT PG + MIQUEL P
THE PROCESSING OF IRRADIATED FUELS BASED ON SLIGHTLY ENRICHED URANIUM OXIDE
SERVICE DE GENIE CHIMIQUE RADIOACTIF. + GROUPE D'EXPLOITATION DES CELLULES ACTIVES
18 PAGES, 11 FIGURES, 7 TABLES, 18 REFERENCES, BULLETIN D'INFORMATIONS SCIENTIFIQUES ET TECHNIQUES, 127, PAGES 43-60 (JUNE 1968)

TO DEVELOP A PURIFICATION PROCEDURE APPLICABLE TO STRONGLY IRRADIATED FUELS OF THE OXIDE TYPE, WE STUDIED AND TESTED THE DIFFERENT CYCLES INVOLVED IN THE PROCESS. ARTICLE BRIEFLY DESCRIBES THE PRACTICAL CONDITIONS OF THESE TESTS, CERTAIN OF WHICH WERE CONDUCTED AT VERY HIGH ACTIVITIES, AND THE MAIN RESULTS OBTAINED ARE GIVEN.

*FRANCE + *FUEL REPROCESSING + *SOLVENT EXTRACTION PROCESS + DECONTAMINATION FACTOR + EXPERIMENT, GENERAL + URANIUM OXIDE

13-28138
BATHELLIER PA
STABILITY OF SOLVENTS IN FUEL REPROCESSING
SECTION ETUDES CHIMIQUES ET RADIOACTIVES, GROUPE DE CHIMIE DES PROCEDES

CATEGORY 13
RADIOCHEMICAL PLANT SAFETY

13-28138 *CONTINUED*

8 PAGES, 3 FIGURES, 30 REFERENCES, BULLETIN D'INFORMATIONS SCIENTIFIQUES ET TECHNIQUES, 127, PAGES 35-42 (JUNE 1968)

GENERAL CONSIDERATIONS ON CHEMICAL AND RADIOLYTIC ATTACK OF THE SOLVENTS AND DILUENTS OF INDUSTRIAL USE HAVE BEEN MADE. PRINCIPAL DEGRADATION PRODUCTS ARE LISTED FOR BOTH TRIBUTYLPHOSPHATE AND TRILAURYLAMINE AND THEIR EFFECTS ON THE PROCESS CHEMISTRY ARE SUMMARIZED. INDICATES SOME POSSIBILITIES OF REMOVING THEM FROM ORGANIC SOLUTIONS.

*FRANCE + *FUEL REPROCESSING + *SOLVENT EXTRACTION PROCESS

13-28139

CHESNE PA

OXIDATION-REDUCTION OF PLUTONIUM IN THE PROCESSING OF IRRADIATED FUELS

SECTION DETUDES CHIMIQUES RADIOACTIVES

8 PAGES, 2 FIGURES, 13 REFERENCES, BULLETIN D'INFORMATIONS SCIENTIFIQUES ET TECHNIQUES, 127, PAGES 27-32 (JUNE 1968)

A REVIEW OF THE REDOX PROPERTIES OF PLUTONIUM HAS BEEN MADE IN THE FRAMEWORK OF THE REPROCESSING OF SPENT FUELS. EQUILIBRIA BETWEEN PU(III)-PU(IV)-PU(VII) RELATED TO ACIDITY AND NITROUS ACID CONCENTRATION HAVE BEEN CONSIDERED AND THE EFFECTS OF NITRIC ACID RADIOLYSIS PRODUCT ON AQUEOUS PLUTONIUM CHEMISTRY HAVE BEEN EMPHASIZED.

*FRANCE + *FUEL REPROCESSING + *SOLVENT EXTRACTION PROCESS + PLUTONIUM

13-28140

FAUGERAS PP

THE PROCESSING PROBLEM OF IRRADIATED FUELS RELATED TO THE EVOLUTION OF FUEL ELEMENTS

SERVICE DE GENIE CHIMIQUE RADIOACTIF.

17 PAGES, 10 FIGURES, 4 REFERENCES, BULLETIN D'INFORMATIONS SCIENTIFIQUES ET TECHNIQUES, 127, PAGES 9-26 (JUNE 1968)

THE INCREASING COMPLEXITY OF FUEL ELEMENTS WILL NECESSITATE MODIFICATIONS TO THE MARCOULE AND LA HAGUE PROCESSING PLANTS. CONCERNS THE NATURAL URANIUM SERIES, THE OXIDE SERIES (ENRICHED URANIUM OR URANIUM-PLUTONIUM OXIDES), AND THE HIGHLY ENRICHED URANIUM SERIES (URANIUM-ALUMINUM, URANIUM-ZIRCONIUM).

*FRANCE + *FUEL REPROCESSING + *SOLVENT EXTRACTION PROCESS + ALUMINUM + CORROSION + PLUTONIUM OXIDE + URANIUM OXIDE + URANIUM-235 + WASTE TREATMENT, LIQUID + ZIRCONIUM

13-28141

REVIEW OF MOLTEN SALT REACTOR EXPERIMENT FUEL HANDLING AND PROCESSING PLANT

OAK RIDGE NATIONAL LABORATORY

ORNL-CF-68-5-42 +. 4 PAGES, MAY 23, 1968

REPORT TO MANAGEMENT OF REVIEW COMMITTEE ON ABILITY OF FACILITY TO OPERATE WITHIN LABORATORY RADIATION SAFETY POLICY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*FUEL REPROCESSING + *MOLTEN FUEL + *SAFETY EVALUATION + MSRE (RE) + REACTOR, MOLTEN SALT + SAFETY REVIEW

13-28142

ALSO IN CATEGORY 12

LOWERY RR + ASAT G

AN EVALUATION OF W-25RE PRODUCED BY BOTH ARC-MELTING AND POWDER METALLURGY

BUREAU OF MINES, U.S. DEPARTMENT OF THE INTERIOR, ALBANY, OREG.

USBM-RC-1274 +. 33 PAGES, 33 FIGURES, 7 TABLES, FEBRUARY 19, 1968

AN EVALUATION OF TUNGSTEN-25 WEIGHT PERCENT RHENIUM ALLOY PROCESSED BY BOTH POWDER-METALLURGY (PM) AND ARC-MELTING (AM) TECHNIQUES WAS ACCOMPLISHED. METHODS OF CONSOLIDATION, FABRICATION, AND TESTING ARE DISCUSSED. ELECTRON MICROSCOPY WAS USED TO VIEW FRACTURES IN BOTH BEND AND WELD SPECIMENS. PORSITY WAS FOUND IN THE PM SHEET IN BOTH CASES.

*FABRICATION + *FUEL ELEMENT + *HIGH TEMPERATURE + *REACTOR, GENERAL + ALLOY + RHENIUM + TESTING + TUNGSTEN

13-28143

TURNER S

MEASUREMENT OF LEAKAGE FROM LARGE PRESSURIZED COMPONENTS USING HELIUM ISOTOPES

UNITED KINGDOM ATOMIC ENERGY AUTHORITY, RISLEY

TRG-REPORT-1195(R) +. 32 PAGES, 7 FIGURES, 12 TABLES, 2 REFERENCES, 1968

DESCRIBES AN ISOTOPE-ABUNDANCE TECHNIQUE, WHICH HAS BEEN DEVELOPED TO MEASURE ACCURATELY THE OVERALL OUTLEAKAGE FROM PRESSURIZED GAS SYSTEMS. THE SYSTEM UNDER TEST IS FIRST PRESSURIZED WITH A SUITABLE CARRIER GAS SUCH AS ARGON OR CARBON DIOXIDE. A KNOWN AMOUNT OF HELIUM-4 IS

CATEGORY 13
RADIOCHEMICAL PLANT SAFETY

13-28143 *CONTINUED*

THEN INTRODUCED INTO THE SYSTEM. A TYPICAL CONCENTRATION IS 50 PPM, BUT THE ACTUAL VALUE DEPENDS ON THE SENSITIVITY OF THE MAS SPECTROMETER USED FOR THE QUANTITATIVE MEASUREMENTS. AFTER AN APPROPRIATE TIME INTERVAL A KNOWN AMOUNT OF HELIUM-3 IS THEN INTRODUCED INTO THE SYSTEM. THE ABUNDANCE RATIO OF THE TWO ISOTOPES IS THEN MEASURED, AND THE TOTAL GAS OUTLEAKAGE IN THE INTERVAL BETWEEN THE TWO INJECTIONS OF HELIUM IS EVALUATED. THE BASIC ASSUMPTION IS THAT THE LEAKAGE OF HELIUM-4 REPRESENTS THE TOTAL LOSS FROM THE SYSTEM, I.E., THAT THERE HAS BEEN PERFECT MIXING AND THAT ALL LEAKS ARE HOMOGENEOUS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*FUEL REPROCESSING + *LEAK RATE + *MEASUREMENT, GENERAL + *REACTOR, GENERAL + *TESTING +
EQUIPMENT, GENERAL + HELIUM + LEAK

13-28144

HASLER A + CENTENO J + MARCHANT Y + VAN EYLEN R
PILOT SCALE STUDIES ON DISSOLUTION PROCESSES FOR NUCLEAR FUELS
NP-17367 + ETR-207 +. 85 PAGES, 25 FIGURES, 5 TABLES, 15 REFERENCES, SEPTEMBER 1967

A DETAILED DESCRIPTION OF A HALF-SCALE PILOT DISSOLVER IS GIVEN. THE RESULTS OF FOUR SERIES OF RUNS, INCLUDING ALUMINUM, MAGNESIUM, AND STAINLESS STEEL DECLADDING AND DISSOLUTION OF NON-IRRADIATED URANIUM METAL ARE SUMMARIZED AND DISCUSSED. THE REACTION RATES MEASURED IN THE PILOT DISSOLVER AND THOSE OBTAINED IN LABORATORY EQUIPMENT WERE IN AGREEMENT.

*DISSOLUTION + *EUROCHEMIC + *EXPERIMENT, GENERAL + *FUEL REPROCESSING + ALUMINUM + COPROSION + MAGNESIUM +
SOLVENT EXTRACTION PROCESS + STEEL, STAINLESS + TESTING

13-28150

BINFORD FT + HARTMAN WA
PU-238 PRODUCTION BY A CONTINUOUS PROCESS
OAK RIDGE NATIONAL LABORATORY
ORNL-4023 +. 47 PAGES, FIGURES, TABLES, JANUARY 1967

A METHOD FOR THE PRODUCTION OF PU-238 BY THE CONTINUOUS IRRADIATION AND CHEMICAL PROCESSING OF NP-237 IS DESCRIBED. EQUATIONS SHOWING THE INTERRELATION OF THE VARIOUS PROCESS VARIABLES - PRODUCTION RATE, EFFICIENCY OF NP-237 UTILIZATION, AND PRODUCT QUALITY - ARE DEVELOPED. IT IS SHOWN THAT IN PRINCIPLE PU-238 CAN BE PRODUCED IN CURRENTLY AVAILABLE NEUTRON FLUXES AT REASONABLY HIGH PRODUCTION RATES WITH BETTER THAN 90% EFFICIENCY OF NP-237 UTILIZATION AND VERY HIGH PRODUCT PURITY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*ISOTOPIC GENERATOR + *PLUTONIUM + *RADIOCHEMICAL PROCESSING + *RADIOISOTOPE + ALPHA EMITTER + NEPTUNIUM

13-28151

MOORE JG
A SOL-GEL PROCESS FOR PREPARING THO₂-UO₃ SOLS FROM NITRATE SOLUTIONS BY SOLVENT EXTRACTION WITH AMINES
OAK RIDGE NATIONAL LABORATORY
ORNL-4095 +. 44 PAGES, 6 FIGURES, 21 TABLES, 16 REFERENCES, OCTOBER 1967

A SOLVENT EXTRACTION PROCESS USING LONG-CHAIN ALIPHATIC AMINES WAS DEVELOPED AND DEMONSTRATED, ON A LABORATORY SCALE, FOR PREPARING THORIA SOLS AND THORIUM-URANIUM OXIDE SOLS (CONTAINING UP TO 58 MOLE % URANIUM) DIRECTLY FROM AQUEOUS THORIUM NITRATE--URANYL NITRATE SOLUTIONS. ABOUT 80 TO 90% OF THE NITRATE IS EXTRACTED BY CONTACTING THE SOLUTION FOR AT LEAST 2 MIN WITH THE AMINE WHICH IS DISSOLVED IN AN INERT DILUENT. THE AQUEOUS PHASE IS THEN SEPARATED FROM THE ORGANIC PHASE AND DIGESTED AT LEAST 10 MIN AT 95 TO 100 C.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*EXPERIMENT, GENERAL + *FUEL CONVERSION + *THORIUM + *URANIUM + SOLVENT EXTRACTION PROCESS

13-28154

MILES FW
CHOICE OF A NEUTRON POISON FOR CRITICALITY PROTECTION OF THE PROCESS SCRUBBER TANK IN THE FLUIDIZED-BED VOLATILITY PILOT PLANT
CAK RIDGE NATIONAL LABORATORY
ORNL-TM-2093 +. 37 PAGES, 2 FIGURES, 7 TABLES, 16 REFERENCES, APRIL 1968

THIS STUDY WAS MADE TO ENSURE ADEQUATE CRITICALITY PROTECTION FOR THE PROCESS SCRUBBER TANK, FB-135, IN THE FLUIDIZED-BED VOLATILITY PILOT PLANT. BOTH THE ADVANTAGES AND THE DISADVANTAGES OF SOLUBLE AND FIXED NEUTRON POISONS ARE DISCUSSED. RESULTS OF A CRITICALITY CALCULATION, USING THE ANISN CODE, INDICATED THAT THE ADDITION OF 20 G OF BORON (AS H₃BO₃) PER LITER TO THE 4 M KOH SCRUBBER SOLUTION WOULD PROVIDE ADEQUATE PROTECTION FOR 10 KG OF PLUTONIUM (THE MAXIMUM PLANT INVENTORY).

CATEGORY 13
RADIOCHEMICAL PLANT SAFETY

13-28154 *CONTINUED*
AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*CRITICALITY SAFETY + *FUEL REPROCESSING + *POISON, FIXED + *POISON, SOLUBLE + *VOLATILITY PROCESS +
BORON + FLUIDIZED BED

13-28155
ANDERSON JW + IRVINE AR + JARVIS JP + SHEPHERD DM
LEAK TESTING OF TUFCDP CELL SUPPLY DUCTS BY TEMPERATURE COMPENSATED DIFFERENTIAL PRESSURE METHOD
OAK RIDGE NATIONAL LABORATORY
ORNL-TM-1728 +. 39 PAGES, 13 FIGURES, 3 TABLES, MAY 1967

A METHOD WAS DEVELOPED FOR LEAK TESTING LARGE STAINLESS STEEL VENTILATION DUCTS WHICH WERE
PARTIALLY EMBEDDED IN CONCRETE. THE METHOD WAS CAPABLE OF DETECTING LEAKAGE OF LESS THAN 1%
OF DUCT VOLUME PER HOUR AND WAS UTILIZED FOR ACCEPTANCE TESTING OF DUCTS UNDER FIELD
CONSTRUCTION CONDITIONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*FUEL REPROCESSING + *HOT CELL + *TESTING + *VENTILATION SYSTEM + LEAK RATE

13-28156
FLANARY JR + GODDE JH
HOT-CELL EVALUATION OF THE GRIND-LEACH PROCESS 1. IRRADIATED HTGR CANDIDATE FUELS - PYROCARBON-COATED
(TH,U)C-SUB-2 PARTICLES DISPERSED IN GRAPHITE
OAK RIDGE NATIONAL LABORATORY
ORNL-4117 +. 27 PAGES, TABLES, 9 REFERENCES, AUGUST 1967

THE GRIND-LEACH PROCESS, AN AQUEOUS HEAD-END METHOD DEVELOPED FOR HTGR CANDIDATE FUELS, WAS
EVALUATED IN HOT-CELL EXPERIMENTS WITH IRRADIATED FUEL SPECIMENS COMPOSED OF
PYROCARBON-COATED (TH, U)C2 PARTICLES DISPERSED IN GRAPHITE. RETENTION OF URANIUM, THORIUM,
AND FISSION PRODUCTS IN THE RESIDUE WAS UNIFORMLY HIGH FOR ALL LEACHED FUEL SPECIMENS THAT
HAD BEEN IRRADIATED TO BURNUPS OF 9600 TO 41,200 MWD PER METRIC TON OF (U + TH). BECAUSE OF
INCOMPLETE RECOVERY OF THE FUEL VALUES AND THE LARGE FRACTION OF HEAT-GENERATING FISSION
PRODUCTS THAT REMAINS UNLEACHED FROM THE GRAPHITE WASTE, THE GRIND-LEACH METHOD DOES NOT
APPEAR PROMISING FOR PROCESSING FUELS THAT CONTAIN PYROCARBON-COATED CARBIDE PARTICLES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*CARBIDE + *CARBON + *EXPERIMENT, GENERAL + *FUEL REPROCESSING + *THORIUM + *URANIUM + REACTOR, HTGR

13-28157
HENSCHEL DB + BHAGAT NA
ADSORPTION OF XENON ON VERMICULITE
OAK RIDGE NATIONAL LABORATORY
ORNL-MIT-22 +. 53 PAGES, 5 FIGURES, 12 TABLES, 22 REFERENCES, MAY 5, 1967

UNSUCCESSFUL ATTEMPTS WERE MADE TO EVALUATE THE RELATIVE IMPORTANCE OF MOLECULAR DIFFUSION AND
ADSORPTION IN THE MOVEMENT OF KRYPTON AND XENON THROUGH BEDS OF VERMICULITE. COMPARISON OF
EQUILIBRIUM ADSORPTION CAPACITIES OF KR AND XE ON VERMICULITE WITH DYNAMIC ADSORPTION
CAPACITIES OF THESE GASES CARRIED BY AIR THROUGH VERMICULITE BEDS WAS ATTEMPTED TO DETERMINE
HOW CLOSELY THE DYNAMIC SYSTEM APPROACHED EQUILIBRIUM. MEASUREMENTS OF THE EFFECTIVE
DIFFUSIVITIES OF THE NOBLE GASES FOR THE SYSTEMS KR-AIR AND XE-AIR IN VERMICULITE BEDS USING
A CHROMATOGRAPHIC TECHNIQUE WERE ALSO ATTEMPTED. EXPERIMENTAL DIFFICULTIES PREVENTED ANY
RELIABLE DATA FROM BEING OBTAINED. MODIFICATIONS TO THE PRESENT APPARATUS AND NEW
EXPERIMENTS ARE PROPOSED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*EXPERIMENT, GENERAL + *FUEL REPROCESSING + *REACTOR, GENERAL + *WASTE TREATMENT, GAS + *XENON + ADSORPTION

13-28166 ALSO IN CATEGORY 2
CONSIDERATIONS RELATED TO THE SITING OF FUEL REPROCESSING PLANTS AND THEIR ASSOCIATED WASTE MANAGEMENT
FACILITIES
OAK RIDGE NATIONAL LABORATORY
CF-68-5-33 +. 300 PAGES, FIGURES, TABLES, 102 REFERENCES, MAY 31, 1968

BACKGROUND INFORMATION PERTINENT TO ESTABLISHING POLICY FOR THE SITING OF SPENT-FUEL
PROCESSING PLANTS AND THEIR ASSOCIATED WASTE-MANAGEMENT FACILITIES IS PRESENTED. ANALYSIS
AND INTERPRETATION OF BOTH NEW AND PREVIOUSLY PUBLISHED MATERIAL IS MADE AND APPLIED TO THE
SUBJECT OF DISCUSSION. THE REPORT IS MADE UP OF EIGHT SECTIONS INCLUDING - (1) INTRODUCTION,
(2) SUMMARY AND CONCLUSIONS (3) DISCUSSION OF THE PROBLEM, (4) TECHNICAL CONSIDERATIONS FOR
THE FACILITY, (5) TRANSPORTATION, (6) ECONOMICS, (7) SITING, AND (8) HEALTH AND SAFETY.

CATEGORY 13
RADIOCHEMICAL PLANT SAFETY

13-28166 *CONTINUED*

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*SITING, GENERAL + CIVIL DEFENSE + ECONOMICS + GEOLOGICAL CONSIDERATION, GENERAL +
HYDROLOGICAL CONSIDERATION, GENERAL + METEOROLOGY + RADIATION SAFETY AND CONTROL +
TRANSPORTATION AND HANDLING + WASTE DISPOSAL, GENERAL + WASTE HANDLING + WASTE MANAGEMENT

13-28432 ALSO IN CATEGORIES 7 AND 12

SCHMIDT WC + DAVIS DF + CLARK BE

RECLAMATION OF A PARTIALLY PLUGGED GLASS FIBRE VENTILATION FILTER AT THE HANFORD PUREX NUCLEAR FUELS
REPROCESSING PLANT

ATLANTIC RICHFIELD HANFORD COMPANY, RICHLAND, WASHINGTON

SM-110 +. 1 PAGE, PAGE 41 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE
IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

CANYON VENTILATION AIR FROM THE HANFORD PUREX NUCLEAR FUELS REPROCESSING PLANT IS EXHAUSTED
THROUGH A FILTER SYSTEM BEFORE BEING RELEASED TO THE ATMOSPHERE. THE FILTER INSTALLATION
CONSISTS OF A BULK-PARTICULATE REMOVING, GLASS FIBRE FORE-FILTER, AND A FINE-PARTICULATE
REMOVING, HIGH-EFFICIENCY GLASS FIBRE AFTER-FILTER. SAMPLES OF FILTER ENTRANCE AIR INDICATED
A LARGE PERCENTAGE OF THE PARTICULATE TO BE CRYSTALLINE AMMONIUM NITRATE. BASED ON THE
LABORATORY STUDIES THE PARTIALLY PLUGGED ORIGINAL FILTER WHICH HAD BEEN REMOVED FROM
OPERATION WAS TREATED FOR RECLAMATION USING A SMALL FLOW OF HIGHLY HUMIDIFIED AIR THROUGH THE
FORE-FILTER. THE RESULTS OF THE RECLAMATION TREATMENT WERE SATISFACTORY AND IT WAS POSSIBLE
TO RETURN THE ORIGINAL FILTER INSTALLATION TO SERVICE HANDLING THE ENTIRE EXHAUST VENTILATION
FLOW.

AVAILABILITY - W. C. SCHMIDT, D. F. DAVIS, B. E. CLARK, ATLANTIC RICHFIELD HANFORD COMPANY, RICHLAND,
WASHINGTON

*ECONOMIC STUDY + *FILTER INSPECTION + *OPERATING EXPERIENCE + AIR CLEANING + HUMIDITY + PARTICULATE

13-28435 ALSO IN CATEGORIES 7 AND 12

SYKES GH + HARPER JA

DESIGN AND OPERATION OF A LARGE SAND BED FOR AIR FILTRATION

SAVANNAH RIVER PLANT, AIKEN, SOUTH CAROLINA

SM-110 +. 1 PAGE, PAGE 44 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE
IN THE AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

LARGE SAND BEDS TO FILTER EXHAUST AIR FROM RADIOCHEMICAL SEPARATION PLANTS HAVE PERFORMED
SATISFACTORILY FOR 13 YEARS AT THE SAVANNAH RIVER PLANT. THE BEDS ARE 100 X 240 X 8 FEET
DEEP AND ARE MADE FROM LAYERS OF SIZED SANDS AND GRAVELS. ACTIVITY PENETRATES ONLY TO THE
SMALLEST-MESH (30-50) SAND. ABOUT 1000 CURIES OF GAMMA ACTIVITY IS ESTIMATED TO BE IN THE
BED. FILTERING EFFICIENCY HAS REMAINED AT 99%. RESISTANCE TO AIR FLOW HAS INCREASED IN THE
BEDS THROUGHOUT THE YEARS OF OPERATION. SOME INCREASED PRESSURE DROP RESULTED FROM
GROUNDWATER LEAKING INTO THE SAND. AIR FLOWS HAVE GENERALLY BEEN MAINTAINED IN EXCESS OF
115,000 CUBIC FEET PER MINUTE. FILTER DIFFERENTIAL PRESSURES CURRENTLY ARE IN THE RANGE OF 8
TO 10 INCHES OF WATER.

AVAILABILITY - G. H. SYKES OR J. A. HARPER, SAVANNAH RIVER PLANT, AIKEN, SOUTH CAROLINA

*DESIGN CRITERIA + *FILTER EFFICIENCY + *FILTER, BED + *FILTER, SAND + *FUEL REPROCESSING +
*OPERATING EXPERIENCE + *RADIOCHEMICAL PLANT SAFETY + AIR CLEANING + FILTRATION + WASTE TREATMENT, GAS

13-28442 ALSO IN CATEGORIES 7 AND 17

KAMARATHINAM K + KHAN AA + SUBRAMANIAM KG + AMALRAJ RV

AIR CLEANING OPERATIONAL EXPERIENCE IN THE BHABHA ATOMIC RESEARCH CENTRE, TROMBAY

BHABHA ATOMIC RESEARCH CENTRE, TROMBAY, BOMBAY, INDIA

SM-110 +. 1 PAGE, PAGE 53 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE
IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

THE PROBLEM OF AIR POLLUTION DUE TO THE OPERATION OF A NUCLEAR FACILITY IS OF GREAT IMPORTANCE
TO THE TROMBAY ESTABLISHMENT AS IT IS LOCATED NEAR THE HEAVILY POPULATED CITY OF BOMBAY. A
SHORT ACCOUNT OF GENERAL STANDARDS OF AIR POLLUTION CONTROL, CODES AND STANDARDS OF VARIOUS
AIR CLEANING SYSTEMS PRESENTLY IN USE AND PRACTICES CONCERNING CONTROL OF POLLUTANTS ARE
GIVEN. DESIGN AND OPERATIONAL DETAILS AND COST ASPECTS OF VENTILATION AND AIR CLEANING
SYSTEMS OF THE MAJOR NUCLEAR FACILITIES IN THE BHABHA ATOMIC RESEARCH CENTRE, SUCH AS CANADA
INDIA REACTOR, FUEL REPROCESSING PLANT, RADIOLOGICAL LABORATORIES AND SEVERAL OTHER
FACILITIES ARE PRESENTED. THE STUDIES CARRIED OUT TO CHARACTERIZE THE POLLUTANT AND ITS
REMOVAL EFFECTED BY THE SYSTEM IN USE ARE REVIEWED.

AVAILABILITY - K. RAMARATHINAM, A. A. KHAN, ETC., BHABHA ATOMIC RESEARCH CENTRE, TROMBAY, BOMBAY, INDIA

*ATMOSPHERIC POLLUTION + *CODES AND STANDARDS + *RADIATION SAFETY AND CONTROL +
*RADIOCHEMICAL PLANT SAFETY + *RADIOISOTOPE + AIR CLEANING + FILTER SYSTEM + INDIA + OPERATING EXPERIENCE

13-28443 ALSO IN CATEGORY 7

KHAN AA + AMALRAJ RV + THOMAS KT

CATEGORY 13
RADIOCHEMICAL PLANT SAFETY

13-28443 *CONTINUED*

FABRIC FILTRATION OF FLUE GASES FROM AN ACTIVE INCINERATOR - STUDIES ON DESIGN OPTIMIZATION AND OPERATIONAL ANALYSIS

BHABHA ATOMIC RESEARCH CENTRE, TROMBAY, BOMBAY, INDIA

SM-110 +. 1 PAGE, PAGE 54 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF RADIOACTIVE WASTES, NEW YORK, AUGUST 24-30, 1968

THE PAPER DESCRIBES THE USE OF BAG FILTERS IN THE DRY GAS CLEANING SYSTEM OF AN INCINERATOR AS A SAFE AND ECONOMICAL METHOD FOR TREATMENT OF THE FLUE GAS FROM AN INCINERATOR BURNING LOW-LEVEL RADIOACTIVE SOLID COMBUSTIBLES. VARIOUS TYPES OF FABRICS WERE EVALUATED TO FIND THE FILTRATION CHARACTERISTICS DURING THE ENTIRE CYCLE OF OPERATION. DATA ON PILOT PLANT STUDIES CARRIED OUT TO OPTIMIZE A SUITABLE DESIGN OF FABRIC FILTER FOR FLUE GAS CLEANING IS INCLUDED. COST COMPARISON OF DIFFERENT FABRICS BASED ON THE LIFE OF THE FABRIC AND THE COST OF FABRIC FILTRATION PER UNIT OF SOLID WASTES TREATED HAS BEEN GIVEN. THE PHYSICAL, CHEMICAL AND RADIOCHEMICAL NATURE OF THE AEROSOLS ENCOUNTERED IN VARIOUS PARTS OF THE INCINERATOR SYSTEM ARE DESCRIBED.

AVAILABILITY - A. A. KHAN, R. V. AMALRAJ, OR K. T. THOMAS, BHABHA ATOMIC RESEARCH CENTRE, TROMBAY, BOMBAY, INDIA

*COMBUSTION + *FILTER, FABRIC + *FILTER, PREFILTER + *FILTER, ROUGHING + *RADIOISOTOPE + AEROSOL PROPERTIES + AIR CLEANING + INDIA + RADIOCHEMICAL PLANT SAFETY

13-28532 ALSO IN CATEGORY 18

SAFETY ANALYSIS EUROCHEMIC REPROCESSING PLANT - VOL. I, II, AND III

EUROPEAN COMPANY FOR THE CHEMICAL PROCESSING OF IRRADIATED FUELS, MOL - BELGIUM

656 PAGES, FIGURES, TABLES, REFERENCES, NOVEMBER 1965

SAFETY ANALYSIS REPORT CONTAINING (1) BASIC FUEL DATA AND PLANT CAPACITY, (2) DESCRIPTION OF SITE, BUILDINGS, FLOW SHEETS, EQUIPMENT, AUXILIARIES, (3) DETAILS OF OPERATION, (4) SAFETY ASPECTS, (5) ACCIDENT ANALYSIS, (6) APPROPRIATE DRAWINGS (EQUIPMENT AND BUILDING LAYOUTS).

*ACCIDENT ANALYSIS + *BELGIUM + *EUROCHEMIC + *FUEL REPROCESSING + *REPORT, SAP + *SOLVENT EXTRACTION PROCESS + EQUIPMENT, GENERAL + URANIUM + URANIUM-235 + WASTE TREATMENT, GENERAL

13-28596 ALSO IN CATEGORIES 17 AND 7

RUJION TC

SUMMARY OF INFORMATION REQUESTED ON NFS FILTER FAILURE

NUCLEAR FUEL SERVICES, INC., WHEATON, MD.

4 PAGES, ATOMIC ENERGY CLEARING HOUSE, 14(40), PAGE 26-29, (SEPT. 30, 1968), DOCKET NO. 50-201

(LETTER TO NFS, SEPT. 17) TWO ANALYSES HAVE BEEN REQUESTED - (1) A TECHNICAL ANALYSIS OF SEPT. 4, 68, FILTER FAILURE, (2) A SAFETY ANALYSIS OF THE FINAL FILTER SYSTEM. FROM NFS FACTS, IT APPEARS NEW TECHNICAL SPECIFICATIONS ARE REQUIRED. ALSO PROVIDE (1) COMPREHENSIVE EVALUATION OF MATERIAL RELEASED SEPT. 4, (2) EVALUATE FILTER FAILURE CORRECTIVE ACTION, (3) EXPLAIN WHY DP SENSOR DID NOT SWITCH IN ALTERNATE FILTERS SEPT. 4, (4) 10 SPECIFIC QUESTIONS REGARDING OPERATING BEHAVIOR AND LIMITS OF FILTERS.

*FILTER, DAMAGED + *OFF GAS + AEC QUESTION + FILTER OPERATION + FUEL REPROCESSING + INSTRUMENT, FLOW + NFS + PPESSURE DROP + TECHNICAL SPECIFICATIONS

13-28627 ALSO IN CATEGORY 12

IRRADIATION OF FUEL ELEMENTS WITH CENTRAL TEMPERATURES ABOVE THE MELTING POINT OF UO₂

EUROPEAN ATOMIC ENERGY COMMUNITY, ISPRA (ITALY), JOINT NUCLEAR RESEARCH CENTER

CONF-670967-1 +. 19 PAGES, 1967, (IN GERMAN), PAPER PRESENTED AT INTERNAL COLLOQUIUM OF THE INSTITUTE FOR REACTOR MATERIALS, JULICH, GERMANY

BRIEFLY REVIEWS THE DIFFERENT INVESTIGATIONS WHICH HAVE BEEN PERFORMED WITHIN THE SCOPE OF THE HIGH PERFORMANCE UO₂ PROGRAM. THE IRRADIATION EXPERIMENTS WITH SINTERED PELLET RODS ARE DESCRIBED AND DISCUSSED. THE MOST IMPORTANT RESULTS OF THE POST-IRRADIATION EXAMINATION, E.G., DIMENSIONAL CHANGES, FISSION GAS RELEASE, AND MICROSTRUCTURAL CHANGES ARE OUTLINED AND EVALUATED. FURTHER DEVELOPMENTS IN PROGRESS ARE DISCUSSED BRIEFLY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

*EXPERIMENT, GENERAL + *FUEL ELEMENT + *IRRADIATION TESTING + *REACTOR, GENERAL + FISSION GAS RELEASE + FUEL, PELLET TYPE + ITALY + URANIUM DIOXIDE

13-28629

REPROCESSING OF IRRADIATED FUELS - ANNUAL REPORT 1966-1967

CENTRE D-ETUDE DE L-ENERGIE NUCLEAIRE, MOL (BELGIQUE)

EURAC-2011 + EUR-3797E +. 504 PAGES, REFERENCES, JUNE 1967

PROGRESS OF WORK ON REPROCESSING TECHNOLOGY AT MOL, BELGIUM. TOPICS COVERED ARE BASIC RESEARCH, TECHNOLOGY OF CHEMICAL AND MECHANICAL DEGLASSING, PULVERIZATION OF UO₂ PELLETS, FLUORINATION OF URANIUM COMPOUNDS, CORROSION STUDIES, AND CRITICALITY STUDIES.

CATEGORY 13
RADIOCHEMICAL PLANT SAFETY

13-28629 *CONTINUED*

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA
22151, \$3.00 COPY, \$0.65 MICROFICHE

*BELGIUM + *EXPERIMENT, GENERAL + *FUEL REPROCESSING + CHEMICAL REACTION + CORROSION +
CRITICALITY EXPERIMENT + DISSOLUTION + URANIUM DIOXIDE

13-28630

REPROCESSING OF FUEL FROM PRESENT AND FUTURE POWER REACTORS

ADVANCED COURSE ORGANIZED BY THE NETHERLANDS-NORWEGIAN REACTOR SCHOOL AT INSTITUT FOR ATOMENERGI, NORWAY,
21ST AUGUST-1ST SEPTEMBER 1967. (INSTITUTT FOR ATOMENERGI, KJELLER (NORWAY))

KP-126 +. 532 PAGES, SEPT. 1967

SERIES OF LECTURES ON REPROCESSING OF POWER REACTOR FUELS, COVERING ALL PHASES OF A PLANT -
DECLADDING, DISSOLUTION, OFF GAS, WASTE HANDLING, EXTRACTION, ION EXCHANGE, VOLATILITY,
SOLVENT DAMAGE FOR URANIUM, PLUTONIUM, AND THORIUM FUELS.

AVAILABILITY - USAEC DEPOSITORY LIBRARIES IN THE U.S. AND OVERSEAS

*FUEL REPROCESSING + *SOLVENT EXTRACTION PROCESS + *VOLATILITY PROCESS + DISSOLUTION + ION EXCHANGE +
OFF GAS + PLUTONIUM + THORIUM + URANIUM + WASTE HANDLING

13-28632

LUX F + WURMSEHER H

APPLICATION OF MECHANICAL SEPARATIONS AND SOLID-STATE REACTIONS FOR REPROCESSING OF CERAMIC NUCLEAR FUELS
GERMANY. BUNDESMINISTERIUM FÜR WISSENSCHAFTLICHE FORSCHUNG, BAD GODESBERG

BMWF-FBK-68-08 +. 53 PAGES, 16 FIGURES, 9 TABLES, 48 REFERENCES, MARCH 1968, (IN GERMAN)

THE SYSTEM URANIUM DIOXIDE-URANIUM CARBIDE-GRAPHITE PLUS IRRADIATION PRODUCTS OF URANIUM WAS
EXAMINED BETWEEN 1000 C AND 2300 C, THE MACROSCOPIC SOLID PHASES BEING FINELY DIVIDED.
MECHANICAL DATA SUCH AS GRAIN DISTRIBUTION, DENSITY, INTERGROWTH, ETC., AND CONDITIONS OF
REACTIONS IN THE SYSTEM WERE DETERMINED. A METHOD FOR SOLID-SOLID SEPARATION WAS DEVELOPED
FOR THE SYSTEM. BELOW 2000 C THE FOLLOWING VALUES WERE FOUND FOR THE RELEASE OF NONVOLATILE
FISSION PRODUCTS FROM THE NEUTRON IRRADIATED PHASE - 100 % BA, 26 % ZR/NB, 16 % MO, 51 % RU,
51 % CE, 70 % ND. IT WAS POSSIBLE TO EXPLAIN THE RELEASE BY MICROSCOPIC HETEROGENEOUS
SOLID-STATE REACTIONS. THE POSSIBLE APPLICATION OF THESE RESULTS TO REPROCESSING OF NUCLEAR
FUEL IS DISCUSSED.

AVAILABILITY - USAEC DEPOSITORY LIBRARIES IN THE U.S. AND OVERSEAS

*EXPERIMENT, GENERAL + *FUEL REPROCESSING + *FUEL, PELLET TYPE + *IRRADIATION TESTING + CERAMICS +
EXAMINATION + GRAPHITE + URANIUM CARBIDE + URANIUM DIOXIDE

13-28727

VALENTIN A

DECONTAMINATION SYSTEM FOR A CONTAMINATED CHAMBER

COMMISSARIAT A L-ENERGIE ATOMIQUE

BRITISH PATENT 1,102,139. FEB. 7, 1968

A DECONTAMINATION SYSTEM IS DESCRIBED WHICH IS USED IN A FACILITY CONSISTING OF A NUMBER OF
HOT CELLS FOR CUTTING MILLING MATERIALS WITH A HIGH LEVEL OF RADIOACTIVITY SUCH AS PU. THE
CELLS CONSIST OF DETACHABLE SEALED ALPHA-TIGHT PROTECTIVE CHAMBERS DISPOSED IN BETA AND GAMMA
PROTECTIVE CHAMBERS. THE ALPHA CHAMBER IS A WORK PLATE CLOSED BY A DETACHABLE BELL CONNECTED
WITH THE PLATE BY A SUITABLE GASKET. LIFTING MEANS FOR THE ALPHA CHAMBER ARE PROVIDED. A
TRAVELING CRANE REMOVES THE ALPHA CHAMBER TO THE DECONTAMINATION CHAMBER, AND A SECOND CRANE
REMOVES THE BELL. IN THE DECONTAMINATION CHAMBER METHODS ARE PROVIDED FOR EXTRACTING
CONTAMINATED AIR. AFTER DECONTAMINATION AND REASSEMBLY, THE ALPHA CHAMBER IS RETURNED TO THE
BETA OR GAMMA PROTECTIVE CHAMBER.

AVAILABILITY - THE PATENT OFFICE, 25 SOUTHAMPTON BUILDING, LONDON, W.C. 2, ENGLAND (\$0.49 CENTS/COPY)

*EQUIPMENT, GENERAL + *FABRICATION + *FUEL ELEMENT + *PATENT + ALPHA EMITTER + DECONTAMINATION + HOT CELL +
UNITED KINGDOM

13-28728

SEKI Y

DEVICE FOR CRUSHING A HIGHLY RADIOACTIVE MATERIAL

MITSUBISHI ATOMIC POWER INDUSTRIES, INC.

JAPANESE PATENT 1966-23977 +. DECEMBER 6, 1966

A DEVICE IS DESCRIBED FOR CRUSHING A HIGHLY RADIOACTIVE MATERIAL SUCH AS IRRADIATED UO₂.
USING THIS DEVICE, THE CRUSHING CAN BE DONE WITHOUT CONTAMINATING THE SURROUNDING AREA. IT
CONSISTS OF A SOLID CRUSHING-PLATE (ON WHICH A MATERIAL IS PLACED) WITH THE BOTTOM HAVING A
NUMBER OF HOLES. A PLATE (WHICH SERVES AS A RECEPTACLE FOR THE PARTICLES) LOCATED DIRECTLY
BELOW THE FIRST PLATE, WITH THE BOTTOM HAVING HOLES OF SMALLER DIAMETER THAN THOSE IN THE
FIRST PLATE, A CASING (WHICH CAN BE SEALED) CONTAINING THE TWO PLATES. A CRUSHING ROD (WHICH
PENETRATES THE CASING FROM ABOVE) FOR CRUSHING THE MATERIAL IN THE FIRST PLATE. THE FIRST
AND SECOND PLATES AND THE ROD ARE ALL IN THE SAME VERTICAL LINE.

CATEGORY 13
RADIOCHEMICAL PLANT SAFETY

13-28728 *CONTINUED*

AVAILABILITY - IT IS OUR UNDERSTANDING THAT FOREIGN PATENTS MAY BE OBTAINED IN PHOTOCOPY FROM THE U.S. PATENT OFFICE, DEPT. OF COMMERCE, WASH., D. C. (\$0.30 CENTS/PAGE)

*EQUIPMENT, GENERAL + *FABRICATION + *FUEL ELEMENT + *PATENT + JAPAN

13-28730

MASSELOT Y + BATAILLER S + GANIVET M + GUILLET H + ROBILLARD A + STOSSKOPF F
RAPSODIE FIRST CORE MANUFACTURE. PART I. PROCESSING PLANT
COMMISSARIAT A L-ENERGIE ATOMIQUE, CADARACHE (FRANCE). CENTRE D-ETUDES NUCLEAIRES
CEA-R-3501(P.T.) + EUR-3862 +. 124 PAGES, 76 FIGURES, APRIL 1966 (IN FRENCH)

THIS REPORT IS THE FIRST IN A SERIES OF THREE DESCRIBING THE PROCESSES, RESULTS, AND PECULIAR TECHNICAL PROBLEMS RELATED TO THE MANUFACTURE OF THE FIRST CORE OF THE FAST REACTOR RAPSODIE. A DETAILED STUDY OF MANUFACTURING PROCESSES (PELLETS, PINS, FISSION SUBASSEMBLIES), THE ASSOCIATED TESTINGS (RAW MATERIALS, PROCESSED PELLETS AND PINS, SUB-ASSEMBLIES BEFORE DELIVERY), MANUFACTURING FACILITIES.

*FABRICATION + *FABRICATION FACILITY + *FUEL ELEMENT + *REACTOR, GENERAL + FRANCE + FUEL, METALLIC TYPE + FUEL, PELLET TYPE + TESTING

13-28731

MOORE RL
CLOSED-CIRCUIT TELEVISION VIEWING IN MAINTENANCE OF RADIOACTIVE SYSTEMS AT ORNL
OAK RIDGE NATIONAL LAB., TENN.
ORNL-TM-2032 + CONF-661001-58 +. 13 PAGES, 7 FIGURES, NOVEMBER 1, 1967, PAPER PRESENTED AT THE WINTER MEETING OF THE AMERICAN NUCLEAR SOCIETY, 14TH CONFERENCE ON REMOTE SYSTEMS AND TECHNOLOGY, OCT. 31-NOV. 3, 1966, PITTSBURGH, PA.

CONSIDERATIONS AFFECTING THE USE OF CLOSED-CIRCUIT TELEVISION IN RADIOACTIVE SYSTEMS ARE DISCUSSED. EQUIPMENT USED FOR CLOSED-CIRCUIT TELEVISION VIEWING AT THE HOMOGENEOUS REACTOR TEST AND AT THE MOLTEN-SALT REACTOR EXPERIMENT IS DESCRIBED. THE RESULTS OF A RADIATION TEST OF A MINIATURE, RADIATION-RESISTANT TELEVISION CAMERA ARE PRESENTED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

*HOT CELL + *REACTOR, GENERAL + *REMOTE MANIPULATING AND VIEWING + MAINTENANCE, REMOTE + TESTING

13-28732

LITTLETON IT + LITTLE JC
INDUSTRIAL HYGIENE CONSIDERATIONS IN THE DESIGN OF PLUTONIUM AND URANIUM ISOTOPES PROCESSING FACILITIES
UNION CARBIDE CORP., OAK RIDGE, TENN. Y-12 PLANT
Y-EF-45 + CONF-670537-2 +. 16 PAGES, 12 FIGURES, 2 TABLES, OCT. 2, 1967, PAPER PRESENTED AT AMERICAN INDUSTRIAL HYGIENE CONFERENCE, CHICAGO, ILL.

REPORTS ON SOME OF THE FACTORS INFLUENCING THE DESIGN AND OPERATION OF ALPHA-ACTIVE ISOTOPE SEPARATION AND CHEMICAL PROCESSING FACILITIES. BRIEFLY COVERED ARE CONTAINMENT, VENTILATION, GLOVE BOXES AND MONITORING. SITE IS Y-12 PLANT.

AVAILABILITY - UNION CARBIDE CORPORATION, NUCLEAR DIVISION, Y-12 PLANT, OAK RIDGE, TENNESSEE

*ENRICHMENT FACILITY + *RADIOISOTOPE + ALPHA FACILITIES + GLOVE BOX + MONITOR, RADIATION, PERSONNEL + ORNL + RADIOCHEMICAL PROCESSING + VENTILATION SYSTEM

13-28733

TOUHILL CJ + MERCER BW + SHUCKROW AJ
TREATMENT OF WASTE SOLIDIFICATION CONDENSATES
BATTELLE NORTHWEST, PACIFIC NORTHWEST LAB., RICHLAND, WASHINGTON
BNWL-723 +. 105 PAGES, 30 FIGURES, 35 TABLES, 28 REFERENCES, JULY 1968

THE WASTE SOLIDIFICATION ENGINEERING PROTOTYPES PROGRAM IS A COMPREHENSIVE RESEARCH AND DEVELOPMENT PLAN UNDERTAKEN TO PROVIDE THE NUCLEAR INDUSTRY WITH METHODS FOR LONG-TERM STORAGE OF HIGHLY RADIOACTIVE WASTES. DURING THE SOLIDIFICATION OF HIGHLY RADIOACTIVE WASTES, SOME LOW AND INTERMEDIATE LEVEL CONDENSATES ARE ENCOUNTERED AS SECONDARY EFFLUENT STREAMS. FOR COMPLETE DEMONSTRATION OF THE SOLIDIFICATION PROCESSES, THESE CONDENSATES MUST BE EFFECTIVELY TREATED SO THAT ANY POTENTIAL FOR RELEASE TO THE ENVIRONMENT IS AVOIDED. THIS REPORT DESCRIBES THE RESEARCH PERFORMED IN EXPLORING METHODS FOR ATTAINING THIS OBJECTIVE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

*EXPERIMENT, GENERAL + *FUEL REPROCESSING + *WASTE DISPOSAL, GENERAL + *WASTE TREATMENT, LIQUID

13-28848

ALSO IN CATEGORIES 17 AND 15

CATEGORY 13
RADIOCHEMICAL PLANT SAFETY

13-28848 *CONTINUED*

CALDWELL RD
WHOLE BODY COUNT EXPERIENCE
NUCLEAR MATERIALS AND EQUIPMENT CORPORATION
LETTER TO L. D. LOW, AEC COMPLIANCE, MAY 17, 1968

ALTHOUGH 10 CFR 20 DOES NOT REQUIRE REPORTING THIS, WE BELIEVE YOU WOULD BE INTERESTED.
THIRTY-THREE EMPLOYEES WERE COUNTED MARCH/APRIL 1968, SELECTED BECAUSE OF PAST EXPOSURE.
EIGHT EXCEEDED ICRP RECOMMENDATIONS, 6 FROM ENRICHED URANIUM OPERATIONS AT APOLLO, PA., AND 2
FROM PLUTONIUM SCRAP RECOVERY AT PARKS. FRACTION PERMISSIBLE RANGED BETWEEN 2.44 AND 1.13.
THEY WILL BE RECOUNTED IN MID-JUNE, AND LUNG RETENTION TIMES WILL BE GOVERNING. WE REALIZE
THAT LONG RETENTION TIMES ARE POSSIBLE FOR HIGH FIRED ACTINIDE OXIDES.

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

*COUNTER, WHOLE BODY + *DOSE MEASUREMENT, INTERNAL + FABRICATION FACILITY + FUEL ELEMENT + ICRP +
OPERATING EXPERIENCE SUMMARY + PERSONNEL EXPOSURE, RADIATION + PLUTONIUM + SPECIAL NUCLEAR MATERIAL +
URANIUM-235

13-28849 ALSO IN CATEGORY 17

CALDWELL RD
AIRBORNE EXPOSURE EXCEEDING 40 MPC-HOURS
NUCLEAR MATERIALS AND EQUIPMENT CORPORATION, APOLLO, PENNSYLVANIA
LETTER TO L. D. LOW, AEC COMPLIANCE, MAY 27, 1968

FOUR CP-2 OPERATORS WERE EXPOSED FROM A LEAKING GASKET ON A ROTATING SLAB BLENDER. ***THREE
PLANT SERVICE OPERATORS WERE EXPOSED DURING FILTER CHANGES. NASAL SMEARS SHOWED EXCESSIVE
CONTAMINATION, SO NO CREDIT WAS TAKEN FOR RESPIRATORY PROTECTION. WE ARE NOW USING AIR
SUPPLY MASKS TO CHANGE HIGHLY ENRICHED URANIUM FILTERS. WE ARE LOOKING AT ENGINEERING
CHANGES IN FILTER BOX DESIGN TO ELIMINATE THESE EXPOSURES.

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

*FABRICATION FACILITY + AIRBORNE RELEASE + FILTER OPERATION + FUEL ELEMENT + INHALATION + MILLING +
PERSONNEL PROTECTIVE DEVICE + SPECIAL NUCLEAR MATERIAL + URANIUM-235

13-28854 ALSO IN CATEGORY 17

BAIN EE.
QUARTERLY DOSE LIMITS EXCEEDED
NUCLEAR FUEL SERVICES, INC.
LETTER TO DIRECTOR, DIVISION OF COMPLIANCE, USAEC, WASHINGTON, D. C., JULY 29, 1968

DURING THE SECOND QUARTER OF 1968, FILM BADGES SHOWED ONE OPERATOR RECEIVED 3.16 REMS AND
ANOTHER 3.13 WHOLE BODY GAMMA RADIATION. NEITHER EXCEEDS (5 N-18) LIMITS. BOTH WERE
WITHDRAWN FROM PLUTONIUM PRODUCTION FACILITY WORK WHEN DOSIMETERS INDICATED A 2.5 QUARTERLY
DOSE. ***WE WILL CONTINUE TO MINIMIZE FIELD RADIATION, TO USE MOBILE SHIELDS, AND WILL LOWER
DOSE LIMITS FROM 2.5 TO 2.0 REMS.

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

*SPECIAL NUCLEAR MATERIAL + FABRICATION FACILITY + FILM, GENERAL + FUEL ELEMENT +
INSPECTION AND COMPLIANCE + PERSONNEL EXPOSURE, RADIATION + PERSONNEL PROTECTIVE DEVICE + PLUTONIUM +
RADIATION SAFETY AND CONTROL + SHIELDING

13-28857 ALSO IN CATEGORIES 17 AND 15

MULLER GE
UO2 SPILL AT HAMMER MILL
KERR-MCGEE CORPORATION, OKLAHOMA CITY, OKLAHOMA
LETTER TO L. D. LOW, DIRECTOR, DIV. OF COMPLIANCE, USAEC, WASHINGTON, D. C., AUGUST 2, 1968

ON JUNE 28, A CAN OF CALCINED UO2 (1.65% ENRICHED) SPILLED WHILE BEING HOISTED TO A HAMMER
MILL. (OPERATOR WAS UNFAMILIAR WITH HOIST CONTROLS.) AVERAGE AIRBORNE CONCENTRATION WAS
11X MPC. ONE OPERATOR CLEANED UP SPILL, WEARING RESPIRATOR. WHILE EXPOSURE CALCULATIONS
SHOWED HE WAS EXPOSED TO 2.04 MPC, URINE SAMPLES SHOWED THAT PROTECTION HAD BEEN ADEQUATE.

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

*SOURCE MATERIAL + AIRBORNE RELEASE + INSPECTION AND COMPLIANCE + MILLING + PERSONNEL PROTECTIVE DEVICE +
SPECIAL NUCLEAR MATERIAL + URANIUM DIOXIDE

13-28858 ALSO IN CATEGORY 17

MULLER GE
UF6 RELEASE THROUGH OPEN VALVE
KERR-MCGEE CORPORATION, OKLAHOMA CITY, OKLAHOMA
TWX TO B. H. GRIER, DIRECTOR, DIVISION OF COMPLIANCE, USAEC, WASHINGTON, JULY 23, 1968

ON JULY 19, 1968, ABOUT 100 POUNDS OF UF6 ENRICHED TO 1.5% WAS RELEASED THRU AN INADVERTANTLY
OPEN VALVE, DURING STARTUP OF NEW VAPORIZATION EQUIPMENT AT THE CIMARRON FACILITY. ONE

CATEGORY 13
RADIOCHEMICAL PLANT SAFETY

13-28858 *CONTINUED*

EMPLOYEE RECEIVED SKIN BURNS (NECK) DURING REENTRY WITH SCUBA GEAR TO DETERMINE SOURCE OF LEAK. VALVE WAS OPEN FROM 6.40 TILL 7.00 PM. GROUND LEVEL RELEASE RAPIDLY DISPERSED.

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

*AIRBORNE RELEASE + *FAILURE, OPERATOR ERROR + *URANIUM HEXAFLUORIDE + FUEL CONVERSION + SOURCE MATERIAL + VALVE

13-28946

ELKINS GH

RADIOACTIVE FUEL CAPSULE IMPACT DATA

SANDIA LABORATORIES, ALBUQUERQUE, NEW MEXICO

SC-RR-68-528 +. 52 PAGES, 1 FIGURE, REFERENCES, AUG. 1968

A COMPILATION OF DATA FROM IMPACT TESTS OF RADIOISOTOPE CAPSULES CONDUCTED THROUGH AUGUST 1967. PARAMETERS REPORTED ARE - (1) IMPACT VELOCITY, (2) CAPSULE TEMPERATURE AT IMPACT, (3) IMPACT ANGLE, (4) CAPSULE FAILURE OR SURVIVAL, (5) TARGET MATERIAL, (6) CAPSULE DESCRIPTION, (7) CAPSULE MATERIAL, AND (8) SOURCE OF DATA.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

*ENERGY SOURCE + *RADIOISOTOPE + *STORAGE CONTAINER + *TESTING + CONTAINMENT, SOURCE

13-28947

FERGUSON DR + SCHUSKE CL

CRITICALITY PARAMETERS AFFECTING EQUIPMENT DESIGN FOR FLUORIDE VOLATILITY PROCESS

THE DOW CHEMICAL CO., ROCKY FLAT DIVISION, GOLDEN, COLORADO

RFP-1206 +. 4 PAGES, 5 FIGURES, 4 TABLES, AUG. 29, 1968

DISCUSSES VARIOUS CRITICALITY PARAMETERS WHICH MAY HAVE AN IMPORANT INFLUENCE ON THE DESIGN OF FLUORIDE VOLATILITY PROCESSING EQUIPMENT. THE DATA PRESENTED MAY NOT HAVE DIRECT APPLICATION TO THE DESIGN OF A SPECIFIC PIECE OF PROCESS EQUIPMENT. HOWEVER, BY OPTIMIZING THE VARIOUS PARAMETERS DISCUSSED, IN LIGHT OF PROCESS REQUIREMENTS, THE DESIGNER MAY PROVIDE A BASIS FOR A SPECIFIC MODEL.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

*CRITICALITY SAFETY + *FLUORIDE + *FUEL REPROCESSING + *VOLATILITY PROCESS + EQUIPMENT, GENERAL + FLUORINE

13-28950

WOLFE RA

CRITICALITY ANALYSIS OF THE LARGE HEAT SOURCE SYSTEM CONTAINING PU(238)O₂ FUEL

MONSANTO RESEARCH CORPORATION, MOUND LABORATORY, MIAMISBURG, OHIO

MLM-1532 +. 9 PAGES, 2 FIGURES, 1 TABLE, 3 REFERENCES, OCT. 1, 1968

MADE A CRITICALITY ANALYSIS OF A PU(238)O₂ HEAT SOURCE SYSTEM THAT WILL PROVIDE 25 KW OF THERMAL POWER TO A BRAYTON-CYCLE POWER-CONVERSION SYSTEM DESIGNED FOR SPACE APPLICATION. THE CALCULATIONS REVEALED A CONSIDERABLE DEGREE OF SUBCRITICALITY FOR THE LARGE HEAT SOURCE SYSTEM. THE ONLY CREDIBLE MECHANISM WHICH COULD RESULT IN CRITICALITY, AND THE EXPECTED CONSEQUENCES OF SUCH AN EVENT, ARE DISCUSSED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*CRITICALITY SAFETY + *ENERGY SOURCE + *RADIOISOTOPE + COMPARISON, THEORY AND EXPERIENCE + PLUTONIUM DIOXIDE + THEORETICAL INVESTIGATION

13-28952

ALSO IN CATEGORY 12

NEWBY BJ

APPLICABILITY OF CHEMICALLY REMOVABLE COATINGS TO REACTOR CONTAINMENT BUILDINGS

IDAHO NUCLEAR CORP., NATIONAL REACTOR TESTING STATION, IDAHO FALLS, IDAHO

IN-1170 +. 34 PAGES, 9 FIGURES, 4 TABLES, 5 REFERENCES, AUGUST 1968

DESCRIBES TWO METHODS FOR RAPID REMOTE DECONTAMINATION OF COATED INTERIORS OF REACTOR CONTAINMENT BUILDINGS CONTAMINATED WITH VOLATILE FISSION PRODUCTS, NAMELY, THE USE OF CHEMICALLY STRIPPABLE OR CHEMICALLY CORRODIBLE COATINGS. BOTH METHODS ARE BASED ON THE REMOVAL OF TEMPORARY COATINGS (CONTAINING THE CONTAMINATION) WITH CHEMICAL REAGENTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151 \$3.00 COPY, \$0.65 MICROFICHE

*DECONTAMINATION + *FUEL REPROCESSING + *REACTOR, GENERAL + COATING + COATING, SURFACE + EXPERIMENT, GENERAL + TESTING

CATEGORY 13
RADIOCHEMICAL PLANT SAFETY

13-28953

OLUZNIEWSKI E + WALTHER H
DISASSEMBLY OF FUEL ELEMENTS. FINAL REPORT
BUNDESMINISTERIUM FÜR WISSENSCHAFTLICHE FORSCHUNG, BAD GODESBERG (WEST GERMANY)
ORNL-TR-1976 +. 83 PAGES, FIGURES, MARCH 1966, TRANSLATED FOR OAK RIDGE NATIONAL LAB. FROM GERMAN REPORT

A FUEL-ELEMENT-DISASSEMBLY MACHINE WAS BUILT AND TESTED FOR USE IN THE PILOT PLANT FOR
REPROCESSING REACTOR FUELS AT THE KARLSRUHE NUCLEAR RESEARCH CENTER. REPORT DESCRIBES TEST
EQUIPMENT, TEST PROCEDURES, AND RESULTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$C.65 MICROFICHE

*EQUIPMENT, GENERAL + *FUEL REPROCESSING + FUEL ELEMENT + GERMANY + KARLSRUHE + TESTING

13-28954

NORTH ED
LETTER FROM NSF TO DIVISION OF COMPLIANCE, AEC
NUCLEAR FUEL SERVICES, INC., WHEATON, MARYLAND
LETTER TO L. D. LOW, DIV. OF COMPLIANCE, 1 PAGE, AUGUST 6, 1968, DOCKET NO. 50-201

LETTER CONFIRMING THAT THE VENTILATION MODIFICATIONS AFFECTING THE SCRAP REMOVAL AREA HAVE
BEEN TEMPORARILY SUSPENDED PENDING THE COMPLETION BY GRACE ENGINEERING OF AN ENGINEERING
STUDY OF THE ENTIRE PLANT VENTILATION SYSTEM. STUDY IS IN FINAL STAGES AND SHOULD BE
COMPLETED BY END OF YEAR.

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

*FUEL REPROCESSING + *INSPECTION AND COMPLIANCE + *NFS + VENTILATION SYSTEM

13-28955

LOW LD
LETTER FROM DIVISION OF COMPLIANCE, AEC TO NFS
U.S. ATOMIC ENERGY COMMISSION, WASH., D. C.
LETTER TO T. C. RUNION, NUCLEAR FUEL SERVICES, 1 PAGE, AUGUST 13, 1968, DOCKET 50-201

LETTER REFERRING TO THE INSPECTION CONDUCTED ON JULY 9-11, 1968, OF ACTIVITIES UNDER AEC
PROVISIONAL OPERATING LICENSE NO. CSF-1 AND DR. E. D. NORTHS LETTER DATED AUGUST 6, 1968,
CONCERNING THE ITEMS NOTED DURING THIS INSPECTION.

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

*FUEL REPROCESSING + *INSPECTION AND COMPLIANCE + *NFS + AEC QUESTION

13-28956

NORTH ED
LETTER FROM NFS TO DIVISION OF COMPLIANCE, AEC
NUCLEAR FUEL SERVICES, INC., WHEATON, MARYLAND
LETTER TO L. D. LOW, DIVISION OF COMPLIANCE, 1 PAGE, AUGUST 6, 1968, DOCKET NO. 50-201

LETTER GIVING THE PRESENT STATUS OF 3 ITEMS CALLED TO NFS ATTENTION DURING THE RECENT
INSPECTION AT WEST VALLEY. THESE 3 ITEMS ARE - (1) HULL BURIAL WINDOW, (2) 7D-6 SAMPLER,
AND (3) PCS-3 DRAIN.

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

*FUEL REPROCESSING + *INSPECTION AND COMPLIANCE + *NFS + MAINTENANCE, REMOTE + SAMPLING

13-29093

ALSO IN CATEGORY 12

AMBURGEY JW
A STUDY OF POLLUTANT DISCHARGES FROM REACTOR OPERATIONS UTILIZING ULTRACENTRIFUGATION TECHNIQUES
UNION CARBIDE CORPORATION
K-1754 +. 36 PAGES, 3 FIGURES, 18 TABLES, 1 REFERENCE, AUGUST 19, 1968

REACTOR COOLING WATER SAMPLES FROM THE HANFORD OPERATION AT RICHLAND, WASHINGTON, HAVE
UNDERGONE PARTICULATE SEPARATIONS AND STUDY UTILIZING RECENTLY DEVELOPED ULTRACENTRIFUGATION
TECHNIQUES. THE SUSPENDED PARTICLES CONTAINED IN THESE SAMPLES WERE SEPARATED INTO
CLASSIFIED GROUPS AND THEN SUBJECTED TO A VARIETY OF ANALYTICAL INVESTIGATIONS INCLUDING
ELEMENTAL AND RADIOCHEMICAL ANALYSES. A FEW OF THE RADIONUCLIDE PARENT ELEMENTS SUCH AS
CHROMIUM, SULPHUR, AND ZINC WERE FOUND ALMOST ENTIRELY ASSOCIATED WITH THE DISSOLVED
MATERIALS FRACTION. THESE RESULTS ALONG WITH THE OTHER DATA SHOWED THAT THE SUSPENDED
MATERIALS ISOLATED FROM THE VARIOUS SAMPLES OF REACTOR COOLING WATER DID NOT SIGNIFICANTLY TO
THE PRODUCTION OF RADIONUCLIDES AND THE RADIOACTIVE POLLUTION OF THE COLUMBIA RIVER AT
HANFORD.

CATEGORY 13
RADIOCHEMICAL PLANT SAFETY

13-29093 *CONTINUED*

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*REACTOR, GENERAL + EXPERIMENT, GENERAL + FUEL REPROCESSING + HANFORD SITE + TESTING +
WASTE DISPOSAL, LIQUID + WASTE DISPOSAL, RIVER

13-29098 ALSO IN CATEGORY 12

HEUZEL N + KLEINE A

EXPERIMENTAL INVESTIGATION OF REACTIONS BETWEEN URANIUM DIOXIDE AND WATER UNDER NONISOTHERMAL,
QUASI-ISOBARIC CONDITIONS

BATTELLE INSTITUTE, FRANKFURT / MAIN, GERMANY

AEC-TR-6960 +. 44 PAGES, APRIL 24, 1968

IN SUPPLEMENTATION OF AN ISOTHERMAL INVESTIGATION OF CHEMICAL REACTIONS BETWEEN NUCLEAR FUELS
AND AIR OR WATER VAPOR, THE CHEMICAL AND PHYSICAL BEHAVIOR OF THE UO₂ TOWARD LIQUID WATER WAS
EXAMINED UNDER NONISOTHERMAL, QUASI-ISOBARIC CONDITIONS. UP TO 100CG UO₂ PELLETS, SPHERICAL
PARTICLES OR POWDER, WERE HEATED INDUCTIVELY TO 1700 C AND DUMPED INTO WATER OF 25 OR 80 C AT
1 ATM OR AT 160 C AT 6.5 ATM RESPECTIVELY. THE SURFACE-TO-VOLUME RATIO OF THE UO₂ POWDER
CHANGED CONSIDERABLY BY SINTERING. EXPERIMENTS PROVED THAT STEAM GENERATION STRONGLY DEPENDS
ON WATER TEMPERATURE AND SPECIFIC SAMPLE SURFACE. IT WAS CONCLUDED THAT THE DANGER OF
OXYHYDROGEN EXPLOSIONS AS A RESULT OF THE DEVELOPMENT OF HYDROGEN FROM RADIOLYSIS AND
METAL-WATER REACTIONS DOES NOT INCREASE MATERIALLY THROUGH THE CONTACT OF HOT URANIUM DIOXIDE
WITH WATER.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*EXPERIMENT, GENERAL + *FUEL REPROCESSING + *REACTOR, GENERAL + EXPLOSION + FUEL, METALLIC TYPE +
FUEL, PELLET TYPE + HYDROGEN + URANIUM DIOXIDE + WATER, GENERAL

13-29100

PASHLEY JH

CRGDP FUEL REPROCESSING STUDIES. PROGRESS REPORT FOR PERIOD ENDING APRIL 20, 1968

OAK RIDGE NATIONAL LABORATORY

K-L-1780(Pt.26) +. 32 PAGES, JULY 1, 1968

IN THE CURRENT PERIOD, THREE SEMIWORKS RUNS WERE PERFORMED. LONG-TERM DURABILITY TESTING OF
THE PERIPHERAL COMPRESSOR WAS CONTINUED. THE PERIPHERAL COMPRESSOR WAS DISASSEMBLED FOR
BEARING REPLACEMENT AND, AT THE SAME TIME, WAS INSPECTED FOR CORROSION AND WEAR. STUDIES OF
THE ABSORPTION OF URANIUM HEXAFLUORIDE IN LOW CONCENTRATIONS BY SODIUM FLUORIDE WERE MADE.
FINALLY, STAINLESS-STEEL FILTERS WERE TESTED IN MULTICYCLE SERVICE WITH REACTOR OFF-GASES
FROM THE DECLADDING AND OXIDATION OPERATIONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*EXPERIMENT, GENERAL + *FUEL REPROCESSING + *VOLATILITY PROCESS + ADSORPTION + EQUIPMENT, GENERAL +
FILTER + FLUORIDE + SODIUM + STEEL, STAINLESS + URANIUM HEXAFLUORIDE

13-29176

METHOD OF DECANNING NUCLEAR FUEL ELEMENTS

CEA

FRENCH PATENT 1, 438,507 +. APRIL 4, 1966

HG CANS ARE REMOVED FROM U FUEL ELEMENTS BY DISSOLUTION IN HG AT ROOM TEMPERATURE. THE
DISSOLUTION CAN BE ACCELERATED BY USE OF ULTRASONICS. THE HG IS RECOVERED FROM THE HG-MG
AMALGAM BY DISTILLATION, TREATMENT WITH NITRIC ACID, OR OXIDATION WITH AIR.

AVAILABILITY - FOREIGN PATENTS MAY BE OBTAINED FROM THE U.S. PATENT OFFICE, DEPARTMENT OF COMMERCE,
WASHINGTON, D.C. (\$0.30 CENTS/PAGE)

*DISSOLUTION + *FUEL REPROCESSING + *PATENT + FRANCE + FUEL ELEMENT + MAGNESIUM + MERCURY + URANIUM

13-29177

METHOD OF DECANNING FUEL ELEMENTS AND APPARATUS FOR CARRYING OUT SAID METHOD

CEA

FRENCH PATENT 1,430,314 +. JAN. 24, 1966

AN APPARATUS FOR CONTINUOUSLY REMOVING FUEL ELEMENT CANS BY MEANS OF AN ACID COMPRISES TWO
PARALLEL, ELONGATED RECIPIENTS, MOUNTED AT AN ANGLE OF 30 DEG, WHICH COMMUNICATE AT THEIR
LOWER ENDS. BOTH RECIPIENTS COMMUNICATE AT THEIR LOWER ENDS WITH A VERTICAL TOWER THROUGH
WHICH ALL LIQUIDS ARE DISCHARGED. SOLID WASTES ARE COLLECTED IN A REMOVABLE BASKET PLACED AT
THE BOTTOM OF THE TOWER.

AVAILABILITY - FOREIGN PATENTS MAY BE OBTAINED IN PHOTOCOPY FROM THE U.S. PATENT OFFICE, DEPARTMENT OF
COMMERCE, WASHINGTON, D.C. (\$0.30 CENTS/PAGE)

CATEGORY 13
RADIOCHEMICAL PLANT SAFETY

13-29177 *CONTINUED*

*DISSOLUTION + *EQUIPMENT, GENERAL + *FUEL REPROCESSING + *PATENT + FRANCE + FUEL ELEMENT

13-29178 ALSO IN CATEGORIES 12 AND 1

JOHNSON ER

STANDARDS FOR NUCLEAR FUEL MATERIALS

3 PAGES, MAG. STAND., 38, PAGES 133-135 (MAY 1967)

NEW STANDARDS CONSIST OF CHEMICAL AND PHYSICAL SPECIFICATIONS FOR NUCLEAR GRADE U METAL MELT STOCK, SINTERABLE UO₂ AND COMPACTIBLE UO₂. TOTAL IMPURITY CONTENT IS EXPRESSED AS B EQUIVALENTS RATHER THAN AS INDIVIDUAL LIMITS OF IMPURITY LEVELS. A FOURTH STANDARD COMPILES STANDARD ANALYTICAL AND TESTING TECHNIQUES FOR NUCLEAR FUEL MATERIALS.

*CODES AND STANDARDS + *FABRICATION + *FUEL ELEMENT + *REACTOR, GENERAL + IMPURITY + METAL + URANIUM + URANIUM DIOXIDE

13-29307

PLATT AM

QUARTERLY PROGRESS REPORT RESEARCH AND DEVELOPMENT ACTIVITIES - FIXATION OF RADIOACTIVE RESIDUES,

FEBRUARY, MARCH, APRIL 1968

BATTELLE NORTHWEST

BNWL-824 +. 28 PAGES, 4 FIGURES, 3 TABLES, SEPTEMBER 1968

DURING THE REPORT PERIOD, NEARLY 3,000,000 CI OF RADIOACTIVITY WERE SUCCESSFULLY PROCESSED IN TWO PHOSPHATE GLASS RUNS IN WSEP. THESE RUNS REPRESENT THE FOURTH AND FIFTH CONVERSION OF HIGHLY RADIOACTIVE WASTES INTO GLASS ON AN ENGINEERING SCALE. PHOSPHATE GLASS RUN PG-4 WAS MADE USING SULFATE-CONTAINING PUREX WASTE 2 (PW-2) FEED WHILE PG-5 WAS MADE USING SULFATE-FREE PUREX WASTE 1 (PW-1) FEED. LEACH PATES ON PHOSPHATE GLASS SOLIDS FROM WSEP WERE 1 X 10 TO THE MINUS 6 TO 2 X 10 TO THE MINUS 7 G/SQ.CM/DAY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151 \$3.00 COPY, \$0.65 MICROFICHE

*FUEL REPROCESSING + *WASTE DISPOSAL, GENERAL + *WASTE TREATMENT, FIXATION + CALCINATION + CORROSION + EXPERIMENT, GENERAL + GLASS + PHOSPHATE + WASTE TREATMENT, LIQUID

13-29524

SCHNEIDER KJ

STATUS OF TECHNOLOGY IN THE UNITED STATES FOR SOLIDIFICATION OF HIGHLY RADIOACTIVE LIQUID WASTES

BATTELLE MEMORIAL INSTITUTE

BNWL-820 +. 63 PAGES, REFERENCES, FIGURES, TABLES, OCTOBER 1968

THE STATUS OF TECHNOLOGY FROM RESEARCH AND DEVELOPMENT IN THE UNITED STATES ON SOLIDIFICATION OF HIGHLY RADIOACTIVE WASTES FROM PROCESSING OF SPENT POWER REACTOR FUELS IS BROUGHT UP TO DATE. A SUMMARY OF INDIVIDUAL TECHNOLOGY IS PRESENTED FOR THE FOUR PRIMARY PROCESSES UNDER DEVELOPMENT. THE FOUR PROCESSES ARE SPRAY SOLIDIFICATION, PHOSPHATE GLASS SOLIDIFICATION, POT CALCINATION, AND FLUIDIZED BED CALCINATION. SINCE START OF MAJOR RESEARCH AND DEVELOPMENT 15 YEARS AGO, TECHNOLOGY HAS PROGRESSED TO THE POINT THAT COMMERCIAL APPLICATION FOR SMALL PUREX FUEL PROCESSING PLANTS (APPROXIMATELY ONE TON/DAY OF FUEL) IS AVAILABLE IMMEDIATELY FOR THE POT CALCINATION PROCESS AND SHOULD BE AVAILABLE FOR THE OTHER THREE PROCESSES IN ABOUT ONE YEAR.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*FUEL REPROCESSING + *WASTE TREATMENT, FIXATION + *WASTE TREATMENT, LIQUID + CALCINATION + FLUIDIZED BED + GLASS + PHOSPHATE + SPRAY, GENERAL

13-29525

QUARTERLY PROGRESS REPORT RESEARCH AND DEVELOPMENT ACTIVITIES FIXATION OF RADIOACTIVE RESIDUES MAY, JUNE,

JULY, 1968

BATTELLE NORTHWEST

BNWL-889 +. 44 PAGES, 6 FIGURES, 8 TABLES, OCTOBER 1968

DURING THE REPORT PERIOD, ABOUT 2,400,000 CI OF RADIOACTIVITY WERE PROCESSED IN THE SIXTH PHOSPHATE GLASS SOLIDIFICATION RUN AND APPROXIMATELY 360,000 CI WERE PROCESSED IN THE THIRD SPRAY SOLIDIFICATION RUN. PHOSPHATE GLASS RUN PG-6 WAS MADE USING SULFATE-FREE PUREX WASTE 1 (PW-1) FEED WHILE SS-3 WAS MADE USING SULFATE-CONTAINING PUREX WASTE 2 (PW-2) FEED. THE HIGH RARE EARTH CONCENTRATION (35 WT% AS OXIDE) OF PW-4M WASTE TENDS TO RAISE THE MELTING POINT AND INCREASE NONHOMOGENEITY OF SPRAY SOLIDIFIER MELTS. THREE SUCCESSFUL VACUUM BATCH TRANSFERS OF PHOSPHATE GLASS MELTS WERE MADE IN ENGINEERING SCALE EQUIPMENT TO TEST ADVANCED SOLIDIFICATION TECHNIQUES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*CALCINATION + *FUEL REPROCESSING + *WASTE TREATMENT, FIXATION + *WASTE TREATMENT, LIQUID + EXPERIMENT, GENERAL + PHOSPHATE

CATEGORY 13
RADIOCHEMICAL PLANT SAFETY

13-29529
FINEMAN P
PROGRESS IN RESEARCH AND DEVELOPMENT ON WASTE DISPOSAL
7 PAGES, REACTOR AND FUEL PROCESSING TECHNOLOGY, VOL. 11, NO. 3, PG. 159-165, JUNE 1968

REPORTS PROGRESS IN CALCINATION BY USE OF FLUIDIZED BEDS, STORAGE OF CALCINES IN SALT MINES,
AND PRESENTS EXCERPTS FROM CURRENT REPORTS ON MANAGEMENT OF RADIOACTIVE WASTE.

*BIBLIOGRAPHY + *FUEL REPROCESSING + *WASTE DISPOSAL, SALT + *WASTE TREATMENT, LIQUID + CALCINATION +
FLUIDIZED BED + IDAHO FALLS + NPTS + WASTE STORAGE

13-29530
MILLER WE + STEUNENBERG RK
COMPACT PYROCHEMICAL PROCESSES
5 PAGES, REACTOR AND FUEL PROCESSING TECHNOLOGY, VOL. 11, NO. 3, PG. 154-158, JUNE 1968

PYROCHEMICAL PROCESSES CONSIST OF HIGH-TEMPERATURE, NONAQUEOUS PROCEDURES FOR THE
DECONTAMINATION AND RECOVERY OF FISSILE AND FERTILE CONSTITUENTS IN IRRADIATED REACTOR FUELS.
MOST OF THE PROCESSES UNDER DEVELOPMENT USE LIQUID METALS AND MOLTEN SALTS AS PROCESS
SOLVENTS AT TEMPERATURES IN THE RANGE 500 TO 800 C. PROCESS SEPARATIONS ARE USUALLY
ACCOMPLISHED BY VOLATILIZATION, PRECIPITATION, LIQUID-LIQUID EXTRACTION, OR ELECTROLYSIS.
THESE PROCESSES ALSO HAVE POTENTIAL APPLICATIONS IN THE PRODUCTION OR REFINING OF OTHER
NUCLEAR MATERIALS. MUCH DEVELOPMENT WORK IS DIRECTED TOWARD PROCESSING FUELS FOR THE TYPES
OF REACTORS WHOSE OPERATING ECONOMY WOULD BENEFIT FROM ON-SITE PROCESSING, E.G., FAST BREEDER
AND HOMOGENEOUS REACTORS.

*BIBLIOGRAPHY + *EXPERIMENT, GENERAL + *FUEL REPROCESSING + *PYROCHEMICAL + BERYLLIUM + COPPER +
LIQUID FUEL + LITHIUM + MAGNESIUM + STEEL, STAINLESS + THORIUM + URANIUM + URANIUM OXIDE

13-29531
VOGEL GJ
VOLATILITY PROCESSES
5 PAGES, REACTOR AND FUEL PROCESSING TECHNOLOGY, VOL. 11, NO. 3, PG. 149-153, JUNE 1968

SUMMARIZES RECENT DEVELOPMENTS ON VOLATILITY PROCESSES (FLUIDIZED BED), DECOMPOSITION OF UF₆,
PURIFICATION OF PU BY VOLATILITY METHODS, ECONOMICS OF FLUORINE PRODUCTION (INCLUDING PHYS.
PROPS. OF F), CORROSION OF METALS BY BR, PROPS. OF FLUORIDES. REFERS TO 78-REF. BIBLIOGRAPHY
ON CONVERSION OF UF₆ TO UO₂.

*BIBLIOGRAPHY + *EXPERIMENT, GENERAL + *FUEL REPROCESSING + *VOLATILITY PROCESS + BROMINE +
CHEMICAL PROPERTY + CORROSION + FABRICATION + FISSION PRODUCT RELEASE, GENERAL + FLUORINE + FUEL ELEMENT +
PLUTONIUM + URANIUM DIOXIDE + ZIRCALOY

13-29532
STEVENSON CE + PAIGE DM
RESEARCH AND DEVELOPMENT ON AQUEOUS PROCESSING
5 PAGES, REACTOR AND FUEL PROCESSING TECHNOLOGY, VOL. 11, NO. 3, PG. 144-148, JUNE 1968

A METHOD FOR RECOVERING ACTINIDES AND BERYLLIUM FROM AN OXIDE-TYPE HIGH-TEMPERATURE GAS-COOLED
REACTOR (HTGR) FUEL IS DESCRIBED. METHOD IS BASED ON SUCCESSIVE LEACHING OF THE FUEL WITH
HNO₃ AND H₂SO₄, FOLLOWED BY SOLVENT EXTRACTION STEPS. A RECENT SYMPOSIUM DESCRIBED ADVANCES
IN FUEL-REPROCESSING TECHNIQUES AND SUMMARIZED THE WORLDWIDE STATUS OF COMMERCIAL PROCESSING
FACILITIES. AT IDAHO CHEMICAL PROCESSING PLANT, PILOT-PLANT EQUIPMENT IS INSTALLED IN EASILY
REMOVABLE MODULES HAVING A NOVEL DESIGN. EQUATIONS HAVE BEEN DEVELOPED FOR THE DESIGN OF
AIR-PULSING DEVICES FOR SOLVENT EXTRACTION COLUMNS, AND THEIR APPLICABILITY HAS BEEN
CONFIRMED BY PLANT TESTS.

*EXPERIMENT, GENERAL + *FUEL REPROCESSING + *SOLVENT EXTRACTION PROCESS + BERYLLIUM + DESIGN STUDY +
FUEL, PELLET TYPE + NPTS + SINTERING + THORIUM + URANIUM DIOXIDE

13-29551
MAILLEN JC + CATHERS GI
FLUORINATION OF FALLING DROPLETS OF MOLTEN FLUORIDE SALT AS A MEANS OF RECOVERING URANIUM AND PLUTONIUM
OAK RIDGE NATIONAL LABORATORY
ORNL-4274 +. 21 PAGES, 7 FIGURES, 3 TABLES, 10 REFERENCES, NOVEMBER 1968

A FALLING-DROP FLUORINATION METHOD WAS DEvised FOR RECOVERY OF URANIUM AND PLUTONIUM FROM
MOLTEN FLUORIDE SALTS. THIS METHOD, IN WHICH MOLTEN-FLUORIDE DROPLETS FALL COUNTERCURRENTLY
THROUGH FLUORINE, HAS SEVERAL ADVANTAGES OVER METHODS IN WHICH FLUORINE IS BUBBLED THROUGH
THE MOLTEN SALT. AMONG THESE ARE - (1) HIGHER REMOVAL RATES FOR BOTH URANIUM AND PLUTONIUM,
(2) LOWER RATES OF CORROSION OF THE CONTAINMENT VESSEL (SINCE THE MOLTEN SALT DOES NOT
CONTACT THE WALL), (3) THE POSSIBILITY OF CONTINUOUS OPERATION, AND (4) MINIMAL
CORROSION-PRODUCT CONTAMINATION OF THE FLUORINATED SALT. THE LOW CORROSION-PRODUCT CONTENT
AND LONGER FLUORINATOR LIFE ARE ESPECIALLY ATTRACTIVE FROM THE STANDPOINT OF MOLTEN SALT

CATEGORY 13
RADIOCHEMICAL PLANT SAFETY

13-29551 *CONTINUED*

REACTOR PROCESSING, WHERE THE FLUORINATED SALT MUST BE RECYCLED TO THE REACTOR AND THE FLUORINATOR MUST BE VERY DURABLE. IN SIMILAR EXPERIMENTS USING SALT DROPLETS CONTAINING PA-231, NO PROTACTINIUM WAS FLUORINATED, EVEN AT TEMPERATURES AS HIGH AS 614 C.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*FLUORIDE + *FUEL REPROCESSING + *MOLTEN FUEL + CORROSION + EXPERIMENT, GENERAL + PLUTONIUM + URANIUM

13-29615 ALSO IN CATEGORIES 17 AND 3

MANN PJ

A-POWER PLANT DESIGN, FAIL-SAFE MATERIAL HANDLING
MATERIAL HANDLING ENGINEERING, AUG. 1968

DESCRIBES AUTOMATIC CONVEYORIZED SYSTEM FOR FILLING 55 GAL DRUMS WITH A MIXTURE OF CEMENT AND RADIOACTIVE SEMISOLIDS (SLUDGE, DEMINERALIZER RESINS), CAPPING THEM, AND STORING UNTIL SHIPMENT. ASSERTS AEC CRITERIA REQUIRES NO ROUTINE MAINTENANCE WITHIN SHIELDING ONCE INSTALLED. ***GENERAL DESCRIPTION, FLOW DIAGRAM, AND PICTURES (NO TECHNICAL DETAIL) OF SYSTEM INSTALLED AT NINE MILE POINT.

*WASTE HANDLING + NINE MILE POINT (BWR) + REACTOR, BWR + REMOTE MANIPULATING AND VIEWING +
WASTE TREATMENT, FIXATION

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-23172 ALSO IN CATEGORY 9
QUIRK EJM
LOW LEVEL RADIOACTIVITY MONITOR FOR AQUEOUS WASTE
AKTIEBOLAGET ATOMENERGI, STOCKHOLM, SWEDEN
AE-317 +. 35 PAGES, FIGURES, TABLES, REFERENCES, APRIL 1968

A SYSTEM IS DESCRIBED FOR CONTINUOUS MONITORING OF VERY LOW LEVELS OF RADIOACTIVITY IN WASTE WATER. SPRAY EVAPORATION OF THE WATER ENABLES THE DISSOLVED SOLIDS TO BE RECOVERED IN THE FORM OF AN AEROSOL AND COLLECTED ON A FILTER TAPE WHERE THE RADIOACTIVITY IS MEASURED BY A RADIATION DETECTOR. THE ADVANTAGE OF THIS METHOD COMPARED WITH A DIRECT MEASUREMENT IS THAT THE ATTENUATING EFFECT OF THE WATER IS REMOVED AND THUS GREATER SENSITIVITY IS OBTAINED. COMPENSATION FOR BACKGROUND AND ANY CONTAMINATION IS ACHIEVED BY FEEDING DISTILLED WATER TO THE AEROSOL GENERATOR EVERY ALTERNATE SAMPLING PERIOD AND RECORDING THE COUNT DIFFERENCE BETWEEN TWO SUCCESSIVE SAMPLING PERIODS.

AVAILABILITY - USAEC DEPOSITORY LIBRARIES IN THE U.S. AND OVERSEAS

*INSTRUMENT, RADIATION MONITORING + *MONITOR, RADIATION, LIQUID + DOSIMETRY, GENERAL + FILTER + SWEDEN +
SYSTEM DESCRIPTION + WASTE HANDLING

14-24683
BACHURIN AA + KULERAKINA LG + POLIKARPOV GG
UPTAKE COEFFICIENTS FOR CALCIUM, STRONTIUM, AND SR-90 IN SOME MARINE ORGANISMS
3 PAGES, RADIOBIOLOGIYA 7, PAGES 481-2 (1967)

THE UPTAKE COEFFICIENTS FOR CA, SR, AND SR-90, THE RATIOS OF K-SUB-SR/K-SUB-SR, THE DISCRIMINATION FACTORS DISR/CAI, AND THE SP/CA RATIOS WERE DETERMINED FOR 17 SPECIES OF MARINE ORGANISMS (FOUR OF ALGAE, THREE OF MOLLUSCA, TWO OF CRUSTACEA, AND EIGHT OF FISH) COLLECTED DURING 1964 AND 1965 ON THE LAND SHELF IN THE VICINITY OF SEVASTOPOL AND IN THE KARA-DAG REGION. THE RATIO K-SUB-SR/K-SUB-SR IN THE ORGANISMS STUDIES WAS 1.0 PLUS OR MINUS 0.3, I.E., SR-90 WAS IN EQUILIBRIUM WITH SR-88 IN THESE ORGANISMS AS FAR AS ISOTOPE EXCHANGE BETWEEN THEM AND SEA WATER WAS CONCERNED.

*BIOLOGICAL CONCENTRATION, ALGAE + *BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + *CALCIUM +
*OCEAN AND SEA + *STRONTIUM

14-26124
BAETSLE L + MAES W
RADIOISOTOPE MIGRATION IN SOIL
23 PAGES, PEDOLOGIA 14, PAGES 205-227 (1964)

THE MIGRATION OF RADIONUCLIDES IN SOILS MAY BE DESCRIBED BY TWO EASILY DETERMINABLE PARAMETERS - THE DISTRIBUTION COEFFICIENTS AND THE DISPERSION COEFFICIENTS. LONGITUDINAL AS WELL AS TRANSVERSE DISPERSION IS DISCUSSED. FROM THE UNDERTAKEN INVESTIGATIONS IT APPEARS THAT IN ISOTROPIC POROUS MEDIA AND AT LOW MIGRATION VELOCITY A MOVING POINT SOURCE TRANSFORMS INTO A SPHERICAL CLOUD AND INTO AN ELLIPSOID WHEN VELOCITY RISES. INJECTIONS WITH RADIONUCLIDES IN NATURE HAVE CONFIRMED THE ABOVE CONCEPTIONS.

*DIFFUSION COEFFICIENT + *DISPERSION + *POROUS MEDIA + *SOIL, RADIONUCLIDE MOVEMENT THROUGH +
*SOURCE, POINT

14-26178
RESSIG H
INVESTIGATIONS ON SR-90 WASH-OUT IN SOILS
TECHNISCHE UNIVERSITÄT, DRESDEN
26 PAGES, CHIM. ERDE 25, PAGES 204-29 (1966)

THE SORPTION, DISTRIBUTION, AND MIGRATION OF SR-90 ARE DISCUSSED ON THE BASIS OF LITERATURE DATA. A MATHEMATICAL MODEL PROPOSED BY THORNTHWAITE ET AL. WAS APPLIED TO THE RESULTS OF LYSIMETER STUDIES ON SR-90 LEACHING BY PRECIPITATION (CARRIED OUT FROM 1959 TO 1965). THE MIGRATION OF SR-90 IN SOILS WITH AVERAGE TO HIGH CATION EXCHANGE CAPACITY SHOWS A CLOSE AGREEMENT WITH THE MATHEMATICAL MODEL.

*FALLOUT + *MATHEMATICAL TREATMENT + *MODEL TESTING + *PRECIPITATION +
*SOIL, RADIONUCLIDE MOVEMENT THROUGH + *SORPTION + *STRONTIUM + *SURFACE CONTAMINATION + DISPERSION +
ION EXCHANGE

14-26777
ANDERSEN AJ
INVESTIGATIONS ON THE PLANT UPTAKE OF FISSION PRODUCTS FROM CONTAMINATED SOILS. I. INFLUENCE OF PLANT SPECIES AND SOIL TYPES ON THE UPTAKE OF RADIOACTIVE STRONTIUM AND CAESIUM.
DANISH ATOMIC ENERGY COMMISSION, RISØ
RISØ-170 +. 32 PAGES, 10 FIGURES, 9 TABLES, REFERENCES, NOVEMBER 1967

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-26777 *CONTINUED*

RESULTS OF POT EXPERIMENTS ON THE UPTAKE OF RADIOACTIVE SR AND CS BY DIFFERENT PLANT SPECIES ARE PRESENTED, AND COMPARISONS ARE MADE BETWEEN THE UPTAKE FIGURES REGISTERED ON SOME REPRESENTATIVE DANISH SOILS.

AVAILABILITY - USAEC DEPOSITORY LIBRARIES IN THE U.S. AND OVERSEAS

*BIOLOGICAL CONCENTRATION, VEGETATION + *CESIUM + *ECOLOGICAL CONSIDERATION + *SOIL + *STRONTIUM + DENMARK + POTASSIUM

14-27506 ALSO IN CATEGORY 15

WHICKER FW + DAHL AH

RADIOECOLOGY OF SOME NATURAL ORGANISMS AND SYSTEMS IN COLORADO. SIXTH TECHNICAL PROGRESS REPORT, JANUARY

1, 1967--DECEMBER 31, 1967

COLORADO STATE UNIVERSITY

CSD-1156-28 +. 75 PAGES, FEBRUARY 1, 1968

SUMMARIZES PROJECT ACTIVITIES AND INFORMATION GATHERED DURING 1967. STUDIES ON RADIOACTIVE AND STABLE SR ACCUMULATION IN WILD DEER WERE COMPLETED. THE STUDY ON CS-137 ACCUMULATION IN ALPINE LAKE TROUT WAS EXPANDED. THE STUDY ON THE EFFECTS OF RADIATION AND ENVIRONMENTAL STRESS ON THE PIKE WAS STARTED. PLANS FOR THE GRASSLAND IRRADIATION STUDY ARE NEARLY COMPLETE AND SOME FUNDS AWARDED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*BIOLOGICAL CONCENTRATION, ANIMAL + *BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + *BIOLOGICAL CONCENTRATION, VEGETATION + *ECOLOGICAL CONSIDERATION + MONITOR, RADIATION, ENVIRONMENTAL + RADIOLOGY

14-27527 ALSO IN CATEGORY 15

SAFETY INVOLVING DETONATION OF NUCLEAR DEVICES

REYNOLDS ELECTRICAL AND ENGINEERING COMPANY, INC.

NVO-28 +. 141 PAGES, MAY 1966

THE CONTENT OF THIS PUBLICATION IS PRIMARILY DIRECTED TO DESCRIBING THE LONG-RANGE SAFETY STUDIES NECESSARY TO IMPROVE PREDICTION CAPABILITIES AND KEEP PACE WITH AN ACTIVE TESTING PROGRAM. THE DAY-TO-DAY DETONATION SAFETY ACTIVITIES NECESSARY TO SUPPORT THE TESTING PROGRAM ARE DESCRIBED TO THE EXTENT REQUIRED TO GIVE AN OVERALL, THOUGH LIMITED, VERSION OF EVENT-RELATED SAFETY ACTIONS AND PROCEDURES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$4.00 COPY, \$1.00 MICROFICHE

*GROUND WATER, GENERAL + *HYDROLOGICAL CONSIDERATION, GENERAL + *NUCLEAR DETONATION + *RADIATION SAFETY AND CONTROL + *SURFACE WATER, GENERAL + *USAEC + CONTAMINATION + DIFFUSION + FALLOUT + SEISMOLOGY + TRACER, GENERAL + TRANSPORT PROPERTY + TRITIUM + WATER POLLUTION

14-27627 ALSO IN CATEGORY 17

YANKEE COVER GAS RELEASE

YANKEE ATOMIC ELECTRIC COMPANY, BOSTON, MASSACHUSETTS

11 PAGES, 2 FIGURES, 1 TABLE, YANKEE OPERATIONS REPORT 84 FOR DECEMBER 1967, JANUARY 22, 1968, DOCKET

50-29, TYPE--PWR, MFG--WEST., AE--STONE + WEBSTER

ON DEC. 1, THE FIFTH CORE VI AIR CHARGE (1000 LB) WAS COMPLETED. THE CONTAINMENT LEAK RATE FOR THE PREVIOUS 120 DAYS WAS 0.013 PERCENT/DAY. ***ON DEC. 6, ERRATIC PROCESS BEHAVIOR DURING A ROUTINE EVAPORATION OF CLASS I LIQUID LED TO AN EVAPORATOR SHUTDOWN. VALVING OUT STEAM TO THE REBOILER CREATED A PARTIAL VACUUM, PULLING IN COVER GAS. WHEN THE STEAM VALVE WAS OPENED, PRESSURE INCREASED TO 18 PSI, AND THEN THE VENT WAS OPENED, RELEASING 30 CU. FT OF COVER GAS CONTAINING 0.28 MILLCURIE OF MIXED AR, XE, AND TRITIUM.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, 1717 H ST., WASHINGTON, D.C., 20545 (\$0.25 CENTS/COPY)

*AIRBORNE RELEASE + *TEST, LEAK RATE + CONTAINMENT, HIGH PRESSURE + EVAPORATION + FAILURE, OPERATOR ERROR + REACTOR, PWR + REPORT, OPERATIONS + WASTE TREATMENT, LIQUID + YANKEE (PWR)

14-27785 ALSO IN CATEGORIES 17 AND 15

TRAINING MANUAL - OCCUPATIONAL RADIATION PROTECTION

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE, PUBLIC HEALTH SERVICE

100 PAGES, FIGURES, TABLES, REFERENCES, 1966

A SET OF COURSE NOTES FOR 45 LECTURES IN THE GENERAL SUBJECT AREAS OF - I. RADIATION PROTECTION PHILOSOPHY (1). II. RADIATION EXPOSURE, CRITERIA, AND EVALUATION (2). III. RADIONUCLIDE APPLICATIONS IN INDUSTRY AND MEDICINE (3). IV. RADIATION PROTECTION AND SHIELDING (2). V. PROTECTION, INTERNAL EXPOSURE (5). VI. NEUTRON PROTECTION (2). VII. RADIATION ACCIDENT MONITORING (6). VIII. HIGH ENERGY MACHINE PRODUCED RADIATION (3). IX. PERSONNEL INSTRUMENTS (1). X. INDUSTRIAL X-RAY (3). XI. LEGAL AND REGULATORY ASPECTS (7). XI LABORATORY EXERCISES (10). ***FOR USE IN A TWO WEEK COURSE PRESENTED BY NCRH.

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-27785 *CONTINUED*
AVAILABILITY - NATIONAL CENTER FOR RADIOLOGICAL HEALTH, ROCKVILLE, MARYLAND 20852

*HEALTH PHYSICS TRAINING + ACCELERATION + RADIATION SAFETY AND CONTROL + REACTOR, POWER +
REACTOR, RESEARCH + SURVEY, RADIATION, EMERGENCY + TRAINING + X-RAY

14-27786 ALSO IN CATEGORY 15
FUTAGAWA K + GLOYNA EF
RADIOACTIVITY TRANSPORT IN WATER--EFFECTS OF ORGANIC POLLUTION ON RADIONUCLIDE TRANSPORT
UNIVERSITY OF TEXAS AT AUSTIN
EHE-C4-6803 +. 61 PAGES, FIGURES, TABLES, 31 REFERENCES, MAY, 1968

THE ECOLOGICAL ENVIRONMENT OF A RIVER SYSTEM WAS SIMULATED WITH THE AID OF A SPECIALLY ADAPTED RESEARCH FLUME. THE CHARACTERISTICS OF THE SPATIAL AND TEMPORAL VARIATION OF THE OXYGEN CONCENTRATION IN THE FLUME WATER WERE DETERMINED. THE REAERATION RATE CONSTANTS, THE BIOLOGICAL OXIDATION RATE CONSTANT, AND THE PHOTOSYNTHESIS AND RESPIRATION RATE OF BENTHAL ALGAE WERE MEASURED. IN THE DETERMINATION OF REAERATION RATE CONSTANTS, THE OXYGEN CONCENTRATION OF THE INFLUENT WAS MAINTAINED AT A CONSTANT LEVEL BY THE USE OF SODIUM SULFITE. CANE SUGAR WAS USED AS A POLLUTANT. THE EFFECTS OF BENTHAL ALGAE ON THE SYSTEM WERE DETERMINED UNDER STAGNANT FLOW CONDITIONS.

AVAILABILITY - E.F. GLOYNA, CENTER FOR RESEARCH IN WATER RESOURCES, UNIVERSITY OF TEXAS AT AUSTIN

*BIOLOGICAL CONCENTRATION, ALGAE + *BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS +
*ECOLOGICAL CONSIDERATION + *FISSION PRODUCT TRANSPORT + *MODEL TESTING + *RIVER, GENERAL +
*WATER POLLUTION + DIFFUSION CHANNEL + MATHEMATICAL STUDY + OXYGEN + TRANSPORT PROPERTY

14-27899 ALSO IN CATEGORY 15
NATIONAL ACADEMY OF SCIENCES COMMITTEE TO ADVISE AEC ON WASTE MANAGEMENT PLANS
UNITED STATES ATOMIC ENERGY COMMISSION
AEC PRESS RELEASE NO. L-184 +. 1 PAGE, AUGUST 6, 1968

THE ATOMIC ENERGY COMMISSION AND THE NATIONAL ACADEMY OF SCIENCES HAVE ANNOUNCED THE ESTABLISHMENT OF A COMMITTEE ON RADIOACTIVE WASTE DISPOSAL TO REVIEW AND ADVISE THE AEC CONCERNING LONG-RANGE RADIOACTIVE WASTE MANAGEMENT PLANS AND PROGRAMS FOR THE RAPIDLY EXPANDING NUCLEAR ENERGY INDUSTRY. THE PRIMARY TASK OF THIS NEW ACADEMY COMMITTEE INCLUDES THE ASSESSMENT OF THE ADEQUACY OF THE PRESENT AND PROJECTED TECHNOLOGY TO MEET LONG-RANGE HEALTH, SAFETY, AND OTHER ENVIRONMENTAL REQUIREMENTS AND THE IDENTIFICATION OF NEW RESEARCH AND DEVELOPMENT NEEDS.

*USAEC + *WASTE DISPOSAL, GENERAL + *WASTE MANAGEMENT + ENGINEERED SAFETY FEATURE +
ENVIRONMENTAL CONDITION + GEOLOGICAL CONSIDERATION, GENERAL + HYDROLOGICAL CONSIDERATION, GENERAL +
OCEAN AND SEA + R AND D PROGRAM + RADIATION SAFETY AND CONTROL

14-27913
GODBEE HW + GODDE JH
DEVELOPMENT OF A PROCESS FOR INCORPORATION OF RADIOACTIVE WASTE SOLUTIONS AND SLURRIES IN EMULSIFIED ASPHALT
OAK RIDGE NATIONAL LAB., TENN.
ORNL-P-3863 +. 20 PAGES, FIGURES, TABLES, 16 REFERENCES, 1969

INCORPORATION IN ASPHALT IS A PROMISING METHOD FOR PREPARING ALKALINE SOLUTIONS AND SLURRIES OF INTERMEDIATE-LEVEL RADIOACTIVE WASTES FOR STORAGE OR BURIAL. THE WASTES ARE MIXED WITH AN ASPHALT-WATER EMULSION, THE WATER IS VOLATILIZED BY HEATING THE MIXTURE TO 160 C, AND THE RESIDUE CONTAINING THE RADIOACTIVE SOLIDS IS DRAINED INTO THE FINAL DISPOSAL CONTAINER. THE VOLUME OF WASTE TO BE STORED IS REDUCED BY A FACTOR OF ABOUT 2. PRODUCTS CONTAINING 60 WT % WASTE SOLIDS WERE HOMOGENEOUS AND SHOWED SATISFACTORILY LOW LEACH RATES IN WATER, WITH NO SIGNIFICANT INCREASE AT RADIATION (EXTERNAL CO-60) DOSES AS HIGH AS 10⁶ (10⁶TH) RADS. NO EVOLUTION OF GASES OR SWELLING WAS OBSERVED IN PRODUCTS THAT CONTAINED UP TO 52 CURIES PER GALLON AT RADIATION DOSES UP TO 7 X 10⁶ (7TH) RADS.

AVAILABILITY - H.W. GODBEE, CHEMICAL TECHNOLOGY DIVISION, OAK RIDGE NATIONAL LAB., OAK RIDGE, TENN. 27820

*WASTE STORAGE + *WASTE TREATMENT, FIXATION + EXPERIMENT, GENERAL + RADIATION SAFETY AND CONTROL

14-27919
BOEGLY WJ + EMPSON FM
DISPOSAL OF HIGH ACTIVITY POWER REACTOR WASTES IN SALT MINES - MINE RENOVATIONS REQUIRED FOR PROJECT SALT VAULT
OAK RIDGE NATIONAL LABORATORY
ORNL-P-3705 +. 18 PAGES, 5 FIGURES, 9 REFERENCES, 1966

PROJECT SALT VAULT IS A FIELD-SCALE DEMONSTRATION OF THE DISPOSAL OF HIGH-LEVEL SOLIDIFIED RADIOACTIVE WASTES IN A SALT MINE. PREPARATIONS REQUIRED FOR THE EXPERIMENT INCLUDED CONSTRUCTION OF A NEW HEADFRAME FOR THE MAIN MINE SHAFT, RENOVATION OF THE EXISTING SURFACE AND UNDERGROUND FACILITIES, MINING OF ABOUT 19,000 TONS OF SALT TO PREPARE THE EXPERIMENTAL AREA, AND DRILLING OF A 18.1-IN.-ID WASTE-CHARGING SHAFT FROM THE SURFACE TO THE MINE LEVEL, 1000 FT. BELOW.

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-27919 *CONTINUED*

AVAILABILITY - W. J. BOEGLY OR F. M. EMPSON, OAK RIDGE NATIONAL LABORATORY, P. O. BOX X, OAK RIDGE, TENNESSEE

*DECAY HEAT + *FUEL ELEMENT + *GEOLOGICAL CONSIDERATION, GENERAL + *PLASTICITY +
*TRANSPORTATION AND HANDLING + *WASTE DISPOSAL, SALT + EQUIPMENT DESIGN + EXPERIMENT, GENERAL +
RADIATION SAFETY AND CONTROL + RECOVERY PROCESS

14-27926

MOVEMENT OF STRONTIUM THROUGH THE SOIL TO PLANT ROOT MEMBRANES. TECHNICAL PROGRESS REPORT, JUNE 1, 1967--MAY 31, 1968

PURDUE UNIVERSITY, LAFAYETTE, INDIANA

COO-1495-6 +. 47 PAGES, REFERENCES, FEBRUARY 16, 1968

THE OBJECTIVES OF THE RESEARCH ON THIS PROJECT CONCERNING THE MOVEMENT OF STRONTIUM TO THE PLANT ROOT ARE TWO-FOLD - (A) TO DETERMINE THE SIGNIFICANCE OF EACH OF THE MECHANISMS OF ROOT INTERCEPTION, MASS-FLOW AND DIFFUSION IN SUPPLYING STRONTIUM TO THE ROOT SURFACE, (B) TO EVALUATE THE INFLUENCE OF SOIL PROPERTIES ON THE DISTRIBUTION OF STRONTIUM AND CALCIUM BETWEEN THE SOLID AND LIQUID PHASES OF THE SOIL AS IT RELATES TO THE SUPPLY TO THE ROOT. ALTHOUGH THE INITIAL PHASES OF THE RESEARCH WERE ON OBJECTIVE (A), A CONSIDERABLY LARGER PORTION OF THE RECENT RESEARCH EFFORT HAS BEEN ON OBJECTIVE (B). THE RESEARCH ON EACH OBJECTIVE IS REPORTED SEPARATELY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 CPY, \$0.65 MICROFICHE

*CALCIUM + *ECOLOGICAL CONSIDERATION + *SOIL, RADIONUCLIDE MOVEMENT THROUGH + *STRONTIUM + ANALYTICAL TECHNIQUE, VEGETATION + BIOLOGICAL CONCENTRATION, VEGETATION + BIOMEDICAL + MAGNESIUM + POTASSIUM + SOIL PROPERTY, IN SITU + SORPTION

14-27929

SHULL RD + GLOYNA EF

RADIOACTIVITY TRANSPORT IN WATER - SIMULATION OF SUSTAINED RELEASES TO SELECTED RIVER ENVIRONMENTS

TEXAS UNIVERSITY, AUSTIN

ORD-490-15 + EHE-04-6301 + CRWR-25 +. 252 PAGES, FIGURES, TABLES, 81 REFERENCES, 1968

THE TRANSPORT OF RADIONUCLIDES IN RIVERS WAS SIMULATED WITH A MATHEMATICAL MODEL, AND LARGE UNREGULATED RIVERS RECEIVING CONTINUOUS NORMAL WASTE DISCHARGES WERE STUDIED. EFFECTS OF VARIATIONS IN RADIOACTIVE HALF-LIFE, SURFACE CONCENTRATION DISTRIBUTION COEFFICIENT, MASS TRANSFER COEFFICIENT, AND SORPTION REVERSIBILITY WERE ALSO INVESTIGATED. VARIATIONS IN THE MASS TRANSFER COEFFICIENT WERE NOT SIGNIFICANT, BUT VARIATIONS IN SURFACE CONCENTRATION DISTRIBUTION COEFFICIENTS WERE INFLUENTIAL. ON A LONG-TERM BASIS, FLOW VARIABILITY HAD A SIGNIFICANT EFFECT ON TRANSPORT OF SHORT-LIVED RADIONUCLIDES, BUT A NEGLIGIBLE EFFECT ON TRANSPORT OF LONG-LIVED NUCLIDES. STUDIES ON CONTINUOUS SEDIMENTATION ZONES INDICATED THAT SIGNIFICANT QUANTITIES OF LONG-LIVED RADIONUCLIDES MAY ACCUMULATE THEREIN.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*HYDROLOGICAL CONSIDERATION, GENERAL + *MATHEMATICAL TREATMENT + *RADIATION MODEL + *TRANSPORT PROPERTY + DEPOSITION + DESORPTION + DIFFUSION COEFFICIENT + MASS TRANSFER + RADIONUCLIDE, INDUCED + SEDIMENT + SORPTION + SURFACE CONTAMINATION + WASTE DISPOSAL, RIVER

14-27983

ALSO IN CATEGORY 15

CALIFORNIA WASTE MANAGEMENT STUDY. A REPORT TO THE STATE OF CALIFORNIA, DEPARTMENT OF HEALTH

AEROJET-GENERAL CORPORATION

AGC-3056(FINAL) +. 500 PAGES, FIGURES, TABLES, 39 REFERENCES, AUGUST 1965

THE WASTE-HANDLING METHODS PRESENTLY USED ARE DISCUSSED IN CONSIDERABLE DETAIL. WASTE SUBSYSTEMS ARE EVALUATED WHICH ARE BASED, IN LARGE MEASURE, ON STATE-OF-THE-ART EQUIPMENT. THE RESULTS OF THIS STUDY INDICATE THAT IN THIS PARTICULAR AREA, NO MAJOR PROBLEM IS ANTICIPATED IN THE WASTE SYSTEM THAT CANNOT BE ADEQUATELY HANDLED USING PRESENT APPROACHES. THIS ASSUMES THAT REGIONAL CONSIDERATIONS AND REQUIREMENTS DO NOT INTRUDE SEVERELY ON THIS AREA. HOWEVER, MORE ADVANCED EQUIPMENT, COMBINED WITH A FULLY INTEGRATED APPROACH, MIGHT SIGNIFICANTLY REDUCE THE SYSTEM COSTS AND INCREASE SYSTEM BENEFITS. IT IS ALSO RECOGNIZED THAT THE WASTE-MANAGEMENT PROBLEM WILL INCREASE MANY FOLD IN THE FUTURE YEARS.

AIRBORNE RELEASE + ALPHA EMITTER + BETA EMITTER + BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + BIOLOGICAL CONCENTRATION, MAN + COSMIC RADIATION + FEDERAL RADIATION COUNCIL + INGESTION + NEUTRON + POPULATION EXPOSURE + RADIATION SAFETY AND CONTROL + WASTE DISPOSAL, ECONOMICS + WASTE DISPOSAL, OCEAN + WASTE HANDLING + WASTE STORAGE + WASTE TRANSPORTATION + WATER POLLUTION

14-28021

DISPOSAL OF RADIOACTIVE WASTES INTO THE GROUND

INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA + EUROPEAN NUCLEAR ENERGY AGENCY OF THE OECD

666 PAGES, 13 FIGURES, 3 TABLES, 56 REFERENCES, PROCEEDINGS OF A SYMPOSIUM ON THE DISPOSAL OF RADIOACTIVE WASTES INTO THE GROUND, VIENNA, MAY 29 THROUGH JUNE 2, 1967

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-28021 *CONTINUED*

PROCEEDINGS OF A SYMPOSIUM ON THE DISPOSAL OF RADIOACTIVE WASTES INTO THE GROUND, JOINTLY ORGANIZED BY THE INTERNATIONAL ATOMIC ENERGY AGENCY AND THE EUROPEAN NUCLEAR ENERGY AGENCY OF THE OECD AND HELD IN VIENNA, MAY 29 - JUNE 2, 1967.

*WASTE DISPOSAL, BEDROCK + *WASTE DISPOSAL, ECONOMICS + *WASTE DISPOSAL, GAS +
*WASTE DISPOSAL, HYDRAULIC FRACTURING + *WASTE DISPOSAL, LIQUID + *WASTE DISPOSAL, SALT +
*WASTE DISPOSAL, SOLID + *WASTE DISPOSAL, TERRESTRIAL + ACCIDENT, GENERAL + BARIUM + CESIUM +
CONTAMINATION + DIFFUSION + DISPERSION + ECONOMICS + GROUND WATER, NUCLIDE OCCURRENCE + ION EXCHANGE +
RADIATION SAFETY AND CONTROL + RUBIDIUM + SEDIMENT + SITING, GENERAL +
SOIL, RADIONUCLIDE MOVEMENT THROUGH + SORPTION + STRONTIUM + USAEC + WASTE STORAGE

14-28047 ALSO IN CATEGORY 1

NAKATANI RE + FOSTER RE
HANFORD TEMPERATURE EFFECTS ON COLUMBIA RIVER FISHES
BATELLE-NORTHWEST, RICHLAND, WASH.
BNWL-CC-591 +. 15 PAGES, APRIL 5, 1966

THIS REPORT ATTEMPTS TO BRING THE HANFORD TEMPERATURE EFFECTS ON FISHES INTO PROPER PERSPECTIVE BY SUMMARISING THE CURRENT KNOWLEDGE AND UPDATING AN EARLIER REPORT OF 1958 ON THE SUBJECT. INFORMATION ON THE TEMPERATURE EFFECT ON THE SALMON AS ADULTS, EGGS, AND JUVENILES, AS WELL AS FISH DISEASES IN GENERAL, IS DISCUSSED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151
\$3.00 COPY, \$0.65 MICROFICHE

*ECOLOGICAL CONSIDERATION + *EFFLUENT + *TEMPERATURE GRADIENT + *THERMAL POLLUTION + HANFORD SITE +
REACTOR POWER + RIVER, COLUMBIA

14-28060 ALSO IN CATEGORIES 9 AND 15

SANGUINETTI MJ
AEC/NASA SYMPOSIUM ON CONTAMINATION CONTROL - CURRENT AND ADVANCED CONCEPTS IN INSTRUMENTATION AND AUTOMATION. HELD AT ALBUQUERQUE, NEW MEXICO SEPTEMBER 12-14, 1967
SANDIA CORP., ALBUQUERQUE, N. MEX.
SC-M-68-94 + CONF-670919 +. 344 PAGES, SEPTEMBER 12, 1967

THE OBJECTIVES OF THIS SYMPOSIUM ARE - (1) TO PROVIDE A MEANS OF EXCHANGING TECHNOLOGICAL INFORMATION CONCERNING ADVANCES IN AUTOMATION AND ADVANCED INSTRUMENTATION FOR CONTAMINATION CONTROL. (2) TO PROVIDE A BETTER UNDERSTANDING OF CAPABILITIES AND LIMITATIONS OF CONTAMINATION CONTROL MONITORING EQUIPMENT. (3) TO EXPLORE FUTURE NEEDS FOR CONTAMINATION CONTROL INSTRUMENTATION. THE PROGRAM WAS ARRANGED INTO SIX SESSIONS - (1) CONTAMINATION IN LIQUIDS, (2) RADIATION MONITORING, (3) SURFACE CONTAMINATION, (4) AIR AND GAS CONTAMINATION, (5) MICROBIAL CONTAMINATION, (6) SYSTEMS APPROACH TO CONTAMINATION CONTROL.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

INSTRUMENT, RADIATION MONITORING + MONITOR, RADIATION, AIR + MONITOR, RADIATION, ENVIRONMENTAL

14-28064

GODDLETT CB
CONCENTRATION OF RADIOACTIVE WASTES
DU PONT DE NEMOURS (E.I.) AND CO., AIKEN, S. C. SAVANNAH RIVER LAB.
DP-1135 +. 36 PAGES, 24 FIGURES, 10 TABLES, 1 REFERENCE, JUNE 1968

RADIOACTIVE WASTES FROM THE PROCESSING OF IRRADIATED FUEL ELEMENTS CAN BE REDUCED TO AN IMMOBILE CONCENTRATE WITH ABOUT 1/2 OF ITS ORIGINAL VOLUME BY ONE OR MORE SUCCESSIVE EVAPORATIONS OF THE DECANTABLE LIQUID. DURING THESE CONCENTRATIONS THE CS-137 CONTENT INCREASES ABOUT 17-FOLD. THE CONCENTRATE CAN BE REMOBILIZED AT RATES EXCEEDING 0.1 FT/HR, IF NECESSARY, BY THE ADDITION OF WATER.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

*CESIUM + *FUEL ELEMENT + *FUEL REPROCESSING + *WASTE MANAGEMENT + *WASTE TREATMENT, SOLID + DILUTION +
DISSOLUTION + EVAPORATION + SAVANNAH RIVER PLANT + WASTE TREATMENT, ECONOMICS

14-28066

BRADSHAW RL + PERONA JJ + BLOMEKE JO + BOEGLY WJ
EVALUATION OF ULTIMATE DISPOSAL METHODS FOR LIQUID AND SOLID RADIOACTIVE WASTES. VI. DISPOSAL OF SOLID WASTES IN SALT FORMATIONS
OAK RIDGE NATIONAL LABORATORY, HEALTH PHYSICS DIV. + CHEMICAL TECHNOLOGY DIV.
ORNL-3358 +. 90 PAGES, FIGURES, TABLES, 12 REFERENCES, MAY 1968

THIS IS A STUDY OF THE COST OF DISPOSING OF HIGH-LEVEL SOLIDIFIED WASTES IN BEDDED SALT FORMATIONS. A CONCEPTUAL DESIGN OF A SALT MINE IS DEVELOPED FOR DISPOSAL OF WASTES FROM THE RECOVERY OF SPENT URANIUM AND THORIUM REACTOR FUELS FROM A 15,000-MW (ELECTRICAL) NUCLEAR POWER ECONOMY. THE WASTE PRODUCTS ARE CONTAINED IN POTS 6, 12, AND 24 IN. IN DIAMETER BY 10

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-28066 *CONTINUED*

FT LONG AND ARE BURIED IN VERTICAL HOLES IN THE FLOOR OF A MINE 1 SQ MILE IN AREA AND LOCATED 1000 FT BELOW THE SURFACE. THE OPERATING LIFE OF THIS MINE AND THE COSTS OF THE MINING AND DISPOSAL OPERATIONS ARE CALCULATED, USING RATHER CONSERVATIVE MINE STABILITY CRITERIA, FOR VARIOUS WASTE AGES, POT SIZES, AND WASTE COMPOSITIONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

*DESIGN STUDY + *MINING + *WASTE DISPOSAL, ECONOMICS + *WASTE DISPOSAL, SALT + *WASTE HANDLING + *WASTE TRANSPORTATION + DESIGN CRITERIA + FUEL REPROCESSING + OPERATION + VENTILATION SYSTEM + WASTE DISPOSAL, SOLID

14-28081 ALSO IN CATEGORY 15

BARNES CA
PHYSICAL, CHEMICAL, AND BIOLOGICAL DATA FROM THE NORTHEAST PACIFIC OCEAN - COLUMBIA RIVER EFFLUENT AREA, JULY--DECEMBER 1963. VOLUME 1, 2, 3, 4
WASHINGTON UNIVERSITY, SEATTLE
RLO-1725-77 +. 262 PAGES, OCTOBER 1966

THIS VOLUME CONTAINS TABULATED PHYSICAL, CHEMICAL, AND BIOLOGICAL DATA COLLECTED DURING CRUISES 329, 331, 332, AND 333 OF THE RESEARCH VESSEL BROWN BEAR AND CRUISE 73 OF THE RESEARCH VESSEL HOH DURING THE MONTHS OF JULY--SEPTEMBER 1963 IN AN AREA WITHIN 260 MILES OF THE COASTS OF WASHINGTON AND OREGON. THE DATA WAS 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, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + *CHEMICAL PROPERTY + *DISPERSION + *EFFLUENT + *RIVER, COLUMBIA + DIFFUSION + DILUTION + OCEAN AND SEA + R AND D PROGRAM

14-28082 ALSO IN CATEGORY 15

MCCAULEY JE
ECOLOGICAL STUDIES OF RADIOACTIVITY IN THE COLUMBIA RIVER AND ADJACENT PACIFIC OCEAN
OREGON STATE UNIVERSITY
RLO-1750-22(VOL.1) +. 356 PAGES, JULY 1967

THIS PROGRESS REPORT DEALS WITH MORE THAN 50 SEPARATE PROJECTS ORIENTED TOWARD EXPANDING KNOWLEDGE ABOUT THE EFFECTS OF A MAJOR RIVER ENTERING THE OCEAN. THE INTRODUCTION OF LOW-LEVEL INDUCED RADIONUCLIDES INTO THE RIVER AT HANFORD MAKES THIS RIVER UNIQUE AND MAKES POSSIBLE MANY STUDIES WHICH MIGHT OTHERWISE BE MORE DIFFICULT, IF NOT IMPOSSIBLE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*AQUATIC ORGANISMS + *ECOLOGICAL CONSIDERATION + *ESTUARY + *SEDIMENT + CHEMICAL ANALYSIS + OCEAN AND SEA + PARTICULATE + RIVER, COLUMBIA

14-28083

BARNES CA
COLUMBIA RIVER EFFECTS IN THE NORTHEAST PACIFIC
WASHINGTON UNIVERSITY, SEATTLE
RLO-1725-96 +. 29 PAGES, JUNE 5, 1967

THE GENERAL FINDINGS OF THE RESEARCH OF A NUMBER OF SCIENTISTS AND THEIR ASSISTANTS WHO HAVE CONSIDERED THE BIOLOGICAL, CHEMICAL, GEOLOGICAL-GEOCHEMICAL-GEOPHYSICAL, AND PHYSICAL ASPECTS OF THE COLUMBIA RIVER SYSTEM ARE GIVEN.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + *CHEMICAL PROPERTY + *DISPERSION + *EFFLUENT + *GEOLOGICAL CONSIDERATION, GENERAL + BIOLOGICAL CONCENTRATION, ALGAE + GEOLOGICAL CONSIDERATION, GEOCHEMICAL + GEOLOGICAL CONSIDERATION, GEOPHYSICAL + RIVER, COLUMBIA + SEDIMENT

14-28087 ALSO IN CATEGORY 15

BREWER LW
RADIOACTIVE ENVIRONMENTAL SURVEY AT SANDIA CORPORATION
SANDIA CORPORATION
SC-DC-67-1844 + CONF-670614-1 +. 7 PAGES, FROM ANNUAL MEETING, CONFEDERATION OF WESTERN AFFILIATES, AMERICAN PUBLIC HEALTH ASSOCIATION, ALBUQUERQUE, N. MEXICO

DESCRIBES THE COLLECTION, ANALYSES, AND EVALUATION OF SOIL, VEGETATION, AND WATER SAMPLES FROM THE LOCAL ENVIRONMENT SURROUNDING SANDIA CORPORATION (AREA V), THE CITY OF ALBUQUERQUE, AND BERNALILLO AND SANDOVAL COUNTIES, NEW MEXICO.

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-28087 *CONTINUED*

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*ANALYTICAL TECHNIQUE, GENERAL + *ANALYTICAL TECHNIQUE, VEGETATION + *ANALYTICAL TECHNIQUE, WATER +
*ENVIRONMENTAL CONDITION + *MONITOR, RADIATION, BACKGROUND + *SAMPLING +
*SURVEY, RADIATION, ENVIRONMENTAL + METEOROLOGY + REACTOR, PULSED + TOPOGRAPHY

14-28113 ALSO IN CATEGORY 15

POTTER GO + MCINTYRE DR + POMEROY D
BIOLOGICAL AVAILABILITY OF RADIONUCLIDES IN FALLOUT FROM THE CHINESE NUCLEAR TEST OF DECEMBER 1966
UNIVERSITY OF CALIFORNIA, LIVERMORE
UCRL-70301 + CONF-670503-22 +. 14 PAGES, FROM 2ND NATIONAL SYMPOSIUM ON RADIOECOLOGY, ANN ARBOR,
MICHIGAN, MAY 12, 1967

DISCUSSES THE FALLOUT DEPOSITED IN NORTHERN CALIFORNIA FROM THE CHINESE NUCLEAR TEST, ON JAN.
1 AND 2, 1967. ALSO, THE TRANSFER OF RADIONUCLIDES IN DRY FALLOUT FROM PASTURE GRASS TO COWS
MILK WAS STUDIED WITH A LITHIUM-DRIED GERMANIUM DETECTOR.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*BIOLOGICAL CONCENTRATION, ANIMAL FEED + *BIOLOGICAL CONCENTRATION, MAN + *BIOLOGICAL CONCENTRATION, MILK +
*FALLOUT + *IODINE + CONTAMINATION + DEPOSITION

14-28114 ALSO IN CATEGORY 15

WILLIAMSON MM
FALLOUT CALCULATIONS AND MEASUREMENT
UNIVERSITY OF CALIFORNIA, LIVERMORE
UCRL-7804 + CONF-470-1G +. 23 PAGES, FROM 3RD PLOWSHARE SYMPOSIUM ON ENGINEERING WITH NUCLEAR EXPLOSIVES,
DAVIS, CALIF., APRIL 1964

THE FIRST PORTION OF THE PAPER IS A GENERAL DISCUSSION OF FALLOUT AND THE DEFINITION OF
VARIOUS TERMS PECULIAR TO ANY DISCUSSION OF FALLOUT PROBLEMS. SOURCES OF RADIOACTIVITY AND
TYPES OF RADIOLOGICAL HAZARDS AS THEY PERTAIN TO NUCLEAR EXCAVATION ARE ALSO DISCUSSED. THE
REMAINDER OF THE PAPER IS DEVOTED TO OUTLINING THE STEPS WHICH MIGHT BE TAKEN IN THE PRESHOT
PLANNING AND POSTSHOT EVALUATION OF FALLOUT PROBLEMS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*DOSE CALCULATION, EXTERNAL + *DOSE CALCULATION, INTERNAL + *FALLOUT + *NUCLEAR EXPLOSION DEBRIS +
*PLOWSHARE PROGRAM + BIOLOGICAL CONCENTRATION, MAN + DEPOSITION + EXCAVATION, NUCLEAR + HAZARDS ANALYSIS +
INGESTION + RADIATION SAFETY AND CONTROL + RADIOLOGICAL ASSISTANCE

14-28165 ALSO IN CATEGORY 2

GRISON G + KRAUSE H + LEVEQUE PC + PANTANETTI F
SITING OF RADIOACTIVE WASTE STORAGE FACILITIES WITHIN THE EUROPEAN COMMUNITY
EURATOM, BRUXELLES + GESELLSCHAFT FUR KERNFORSCHUNG, KARLSRUHE + FACULTE DES SCIENCES DE L-UNIVERSITE DE
BORDEAUX + COMITATO NAZIONALE PER L-ENERGIA NUCLEARE, ROMA
EUR-3664.F +. 70 PAGES, 12 FIGURES, TABLES, FEB. 1968

IT IS ESTIMATED THAT BY THE YEAR 2000 IT WILL BE NECESSARY TO STORE 3000 METRIC TONS (300
BILLION CURIES) OF WASTE FISSION PRODUCTS. THIS STUDY WAS MADE TO DETERMINE THE CAPABILITY
OF ACCOMMODATING THIS WASTE MATERIAL. A SERIES OF COLORED MAP OVERLAYS, EACH REPRESENTING A
PARAMETER, ARE USED TO DETERMINE FAVORABLE LOCATIONS. CRITERIA ARE PROPOSED.

AVAILABILITY - AEC DEPOSITORY LIBRARIES IN THE U.S. AND OVERSEAS

*EURATOM + *SITING, WASTE DISPOSAL + ECONOMICS + FRANCE + METEOROLOGY + POPULATION DISTRIBUTION +
SEISMOLOGY + WASTE DISPOSAL, GENERAL + WASTE STORAGE

14-28433 ALSO IN CATEGORY 17

GOLDMAN MI
UNITED STATES EXPERIENCE IN MANAGEMENT OF GASEOUS WASTES FROM NUCLEAR POWER STATIONS.
NUS CORPORATION
SM-110 +. 1 PAGE, PAGE 42 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE
IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

MANAGEMENT OF GASEOUS WASTES FROM NUCLEAR POWER STATIONS HAS BEEN A MATTER OF CONCERN TO THE
REGULATORY ARM OF THE UNITED STATES ATOMIC ENERGY COMMISSION AND TO THE ELECTRIC UTILITIES
RESPONSIBLE FOR THE SAFE OPERATION OF THESE STATIONS. OPERATING EXPERIENCE FOR EIGHT NUCLEAR
GENERATING STATIONS HAS BEEN ACCUMULATED AND EVALUATED IN TERMS OF SYSTEM PERFORMANCE,
ATMOSPHERIC DILUTION AND ENVIRONMENTAL CONSEQUENCES. THE RESULTS OF THIS STUDY SHOW THAT THE
MANAGEMENT OF GASEOUS WASTES FROM NUCLEAR POWER STATIONS HAS WITHOUT EXCEPTION BEEN WELL
BELOW THOSE LEVELS OF RADIOACTIVITY WHICH WOULD EXCEED THE STANDARDS OF TITLE 10, CODE OF
FEDERAL REGULATIONS, PART 20. THE MAJOR FACTOR INFLUENCING WASTE GAS EMISSIONS HAS BEEN THE
PERFORMANCE OF FUEL CLADDING, WITH STAINLESS-STEEL-CLAD FUEL EXHIBITING A SIGNIFICANTLY

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-28433 *CONTINUED*

GREATER TENDENCY FOR DEFECTS AND CONSEQUENT ESCAPE OF FISSION GASES. THE SIGNIFICANCE OF METEOROLOGICAL PARAMETERS FOR SPECIFIC REACTOR SITES IS ALSO EXAMINED.

AVAILABILITY - M. I. GOLDMAN, NUS CORPORATION

*SAFETY PRINCIPLES AND PHILOSOPHY + *SITING, GENERAL + *WASTE DISPOSAL, ATMOSPHERIC + AIR CLEANING + METEOROLOGY + OPERATING EXPERIENCE + WASTE TREATMENT, GENERAL

14-28437 ALSO IN CATEGORY 12

SUAREZ EB

EXPERIMENTS BY THE MEXICAN NATIONAL NUCLEAR ENERGY COMMISSION ON THE CONTROL OF AIRBORNE RADIOACTIVE CONTAMINATION

COMISION NACIONAL DE ENERGIA NUCLEAR, MEXICO, D. F., MEXICO

SM-110 +. 1 PAGE, PAGE 46 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

THE INSTALLATIONS OF THE MEXICAN NATIONAL NUCLEAR ENERGY COMMISSION HAVE TO DEAL WITH THE PROBLEM OF ENVIRONMENTAL CONTAMINATION CAUSED BY DUST AND AEROSOLS SUSPENDED IN THE AIR AND ORIGINATING MAINLY WITH SUCH URANIUM-BEARING ORES AS TYUYAMUNITE, CARNOTITE, BETAFITE, TECHNICAL-GRADE SODIUM URANATE, AMMONIUM URANATE CONCENTRATE, URANIUM TETRAFLUORIDE AND URANIUM DIOXIDE. TO PREVENT ENVIRONMENTAL CONTAMINATION BY THESE RADIOACTIVE MATERIALS, THE COMMISSION HAS EXPERIMENTED WITH THREE DIFFERENT SYSTEMS, BASED ON THE PRINCIPLE OF EXTRACTING THE DUST FROM THE ENVIRONMENT, PASSING IT THROUGH A CYCLONE SYSTEM, SEPARATING THE PARTICLES OF LARGER SIZE AND CONTROLLING THE SMALL PARTICLES OR AEROSOLS BY MEANS OF FILTRATION, DILUTION IN LIQUID COLUMNS AND DILUTION IN LIQUID CURTAINS.

AVAILABILITY - E. B. SUAREZ, COMISION NACIONAL DE ENERGIA NUCLEAR, MEXICO, D. F. MEXICO

*MEXICO + *RADIATION SAFETY AND CONTROL + *RADIOCHEMICAL PLANT SAFETY + ADSORPTION + AIR CLEANING + AIRBORNE RELEASE + AIRBORNE RELEASE + ATMOSPHERIC POLLUTION

14-28444 ALSO IN CATEGORY 7

SLIVNIK J

RECOVERY OF XE AND KR IN THE TREATMENT OF GASEOUS RADIOACTIVE WASTES

NUCLEARNI INSTITUT JOZEF STEFAN, LJUBLJANA, YUGOSLAVIA

SM-110 +. 1 PAGE, PAGE 55 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

IN THE COURSE OF INVESTIGATION OF THE CHEMICAL RECOVERY OF RADIOACTIVE KRYPTON AND XENON THE POSSIBILITY OF A QUANTITATIVE SEPARATION OF BOTH GASES USING FLUORINE AS A REACTING AGENT WAS STUDIED AS A BASIC PROBLEM. THE INFLUENCE OF THE REACTANTS MOLE RATIOS AND REACTION TEMPERATURE ON THE SYNTHESIS OF XENON FLUORIDES IS DESCRIBED. ALSO, THE RESULTS OBTAINED DURING THE STUDY OF THE XENON-FLUORINE REACTION KINETICS ARE GIVEN. DURING THIS STUDY 1/10 AND 1/5 MOLE RATIOS OF BOTH REACTANTS WITH AN ABSOLUTE PRESSURE AMOUNTING TO 33 ATM AT 22 C AND TEMPERATURES OF 110, 120, AND 130 C WERE EMPLOYED. IT WAS FOUND THAT KRYPTON UNDER THESE CONDITIONS DOES NOT REACT WITH FLUORINE AND DOES NOT INFLUENCE THE XENON-FLUORINE REACTION RATE AND DIRECTION. TWO EXPERIMENTS PERFORMED IN ORDER TO REMOVE TRACES OF XENON FROM A BULK OF KRYPTON ARE DESCRIBED.

AVAILABILITY - J. SLIVNIK, NUCLEARNI INSTITUT JOZEF STEFAN, LJUBLJANA, YUGOSLAVIA

*CHEMICAL KINETICS + *FLUORINE + *KRYPTON + *XENON + AIR CLEANING + CHEMICAL REACTION + NOBLE GAS

14-28574

GRUNE WN + ATLAS HS + HAMEL GJ

EVALUATION OF FALLOUT CONTAMINATION FROM SURFACE RUNOFF

MERRIMACK COLLEGE

63 PAGES, 7 FIGURES, 9 TABLES, 69 REFERENCES, FINAL TECHNICAL REPORT COVERING THE PERIOD 6 NOVEMBER 1965 TO 10 JUNE 1966

THIS REPORT IS PART OF AN INVESTIGATION TO BETTER DEFINE THE RELATIONSHIP BETWEEN RAINFALL AND THE AMOUNT OF ACTIVITY THAT REACHES THE WATER SUPPLY DUE TO RUNOFF. IT CONCENTRATES MAINLY ON TWO AREAS - THE HYDROLOGY OF SURFACE RUNOFF AND ION EXCHANGE PHENOMENA. A DETAILED QUALITATIVE DISCUSSION OF THE RELATIONSHIPS BETWEEN THE VARIOUS HYDROLOGICAL PARAMETERS IS PRESENTED. SOME OF THE DIFFICULTIES ENCOUNTERED IN TRYING TO PREDICT RUNOFF AS A FIXED PERCENTAGE OF RAINFALL ARE DISCUSSED. SOME DATA ON ION EXCHANGE PROPERTIES OF SOILS WITH RESPECT TO THE BIOLOGICALLY IMPORTANT RADIONUCLIDES ARE GIVEN.

*FALLOUT + *HYDROLOGICAL CONSIDERATION, GENERAL + *PRECIPITATION + *SOIL, RADIONUCLIDE MOVEMENT THROUGH + *SURFACE WATER, NUCLIDE OCCURRENCE + *TRANSPORT PROPERTY + BIOTA + CIVIL DEFENSE + ION EXCHANGE + RAINOUT

14-28579 ALSO IN CATEGORIES 16 AND 15

GEY A

TRITIUM AND TRITATED WATER- TIME LIMITS OF ACCIDENTAL EXPOSURE IN STABLE OR REGENERATED ATMOSPHERES (IN FRENCH)

FRANCE. COMMISSARIAT A L ENERGIE ATOMIQUE

CONF-337-46 +. 50 PAGES, FIGURES, MAY 22, 1963

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-28579 *CONTINUED*

ORDINARILY, ACCIDENTAL RELEASES OF TRITIUM ARE TREATED AS THOUGH THEY ARE THE FORM OF TRITATED WATER VAPOR. THIS GIVES PESSIMISTIC ESTIMATES OF DOSES OBTAINED BECAUSE RETENTION OF TRITIUM IN THE BODY IS GREATER FOR HTO THAN FOR HT. RELEASES OF HT ARE ONLY SLOWLY OXIDIZED TO HTO SO THAT THE IMPACT OF THE RELEASE OF HT LIES SOMEWHERE BETWEEN THAT OF AN HT RELEASE WITH NO OXIDATION AND THAT OF HTO RELEASE. THIS PAPER MAKES A MATHEMATICAL TREATMENT OF THE EFFECT OF OXIDATION RATE ON THE IMPACT OF HT RELEASES.

*AIRBORNE RELEASE + *TRITIUM + ATMOSPHERIC DIFFUSION + CONCENTRATION, MAXIMUM + DOSE CALCULATION, EXTERNAL + DOSE CALCULATION, INTERNAL + INGESTION + INHALATION + MATHEMATICAL TREATMENT + MAXIMUM PERMISSIBLE CONCENTRATION (MPC) + OXIDATION + POPULATION EXPOSURE

14-28610

USA STANDARD PROPOSED DEFINITION OF RADIOACTIVE WASTE CATEGORIES
AMERICAN INSTITUTE OF CHEMICAL ENGINEERS, NEW YORK
NP-17206 +. 10 PAGES, 1967

PROPOSED DEFINITIONS OF CATEGORIES OF RADIOACTIVE WASTES AS DEVELOPED BY THE AMERICAN STANDARDS ASSOCIATION ARE PRESENTED. THE FOLLOWING PROPOSED CATEGORIES ARE DESCRIBED. CLASS A (POPULATION LEVEL), CLASS B (OCCUPATIONAL LEVEL), CLASS C (LOW LEVEL), CLASS D (INTERMEDIATE LEVEL, AND CLASS E (HIGH LEVEL).

*ENERGY LEVEL + *HAZARDS ANALYSIS + *POPULATION DISTRIBUTION + *RADIATION UNIT + *WASTE DISPOSAL, GENERAL + RADIATION PROTECTION, ORGANIZATION + RADIATION SAFETY AND CONTROL + WASTE MANAGEMENT

14-28611

GUIZEPIX J + MOLINARI J + GAILLARD B + AUBERT M
USE OF RADIOACTIVE TRACERS IN STUDYING THE DISPERSION OF CONTAMINATING ELEMENTS IN THE SEA, IN RIVERS, AND IN LAKES
CENTRE ETUDES NUCLEAIRES, GRENoble, FRANCE
16 PAGES, PAGES 221-236 OF RADIOISOTOPE TRACERS IN INDUSTRY AND GEOPHYSICS, VIENNA, IAEA, 1967 (IN FRENCH)

APPLICATIONS OF RADIOACTIVE TRACERS IN POLLUTION STUDIES ARE CONSIDERED. STUDIES OF DISPERSION OF CONTAMINATED WATER FROM AN EXISTING OR A FUTURE POINT OF DISPOSAL BY MEANS OF CONTINUOUS OR POINT INJECTION TECHNIQUES ARE DESCRIBED. THE PROBLEM OF LINEARITY OF THE SYSTEM IS ALSO CONSIDERED. SPECIAL ATTENTION IS PAID TO THE RESULTS OF A CRITICAL COMPARATIVE STUDY OF COLORED TRACERS OF THE RHODAMINE TYPE AND RADIOACTIVE TRACERS.

*RIVER, GENERAL + *SURFACE WATER, GENERAL + *TRACER, FLUORESCENT + *TRACER, RADIOACTIVE + *WASTE DISPOSAL, OCEAN + CONTAMINATION + HYDROLOGICAL CONSIDERATION, GENERAL + INSTRUMENT, LINEAR + WATER POLLUTION

14-28620

ALSO IN CATEGORIES 2 AND 18

ARCUNI AA
A SURVEY OF UNDERWATER POWER REACTOR APPLICATIONS AND RADIATION HAZARDS
PENNSYLVANIA STATE UNIV., THE GRADUATE SCHOOL, DEPT. OF NUCLEAR ENGINEERING, UNIVERSITY PARK, PA.
66 PAGES, FIGURES, TABLES, REFERENCES, DEC. 1967

REVIEWS HISTORY OF RADIOISOTOPE AND LOW POWER REACTORS POTENTIALLY USEFUL FOR UNDERWATER EXPLORATION OR MINING. CHOOSES A 10 MWTH BWR TO EVALUATE MCA FISSION PRODUCT RELEASE FROM ZR-H FUEL ELEMENTS. BULK OF THESIS IS RELEASE FRACTIONS FROM FUEL (2 PG), MPC ALLOWED BASED ON RECONCENTRATION IN LIVING ORGANISMS (12 PG), AND DISPERSION CALCULATION MODEL (20 PG). RECOMMENDS CARTES AND OKUBO MODEL AS MOST CONSERVATIVE.

AVAILABILITY - PENN. STATE UNIV., DEPT. OF NUCLEAR ENGINEERING, UNIVERSITY PARK, PA.

*DISPERSION + *MATHEMATICAL TREATMENT + *SITING, OFF SHORE + ACCIDENT, MAXIMUM CREDIBLE (MCA) + BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + HYDROID + MAXIMUM PERMISSIBLE CONCENTRATION (MPC) + OCEAN AND SEA + REACTOR, BWR + ZIRCONIUM

14-28645

ALSO IN CATEGORIES 17 AND 7

OTTERSEN U
EXPERIENCE AT HBWR WITH ACTIVITY RELEASE IN CONNECTION WITH FUEL FAILURES
INSTITUTT FOR ATOMENERGI, HALDEN (NORWAY). OECD HALDEN REAKTOR PROSJEKT
HPR-87 +. 94 PAGES, 36 FIGURES, 16 TABLES, OCT. 1967

DESCRIBES 13 CLAD FAILURES (SEPT. 63 TO NOV. 66) OF UO2 PELLET FUEL, PRIMARILY TO SHOW RELEASE HISTORY IN REACTOR BUILDING DURING OPERATION AND TRANSPORT TO STORAGE BY VARIOUS MEANS. REACTOR IS COOLED SLOWLY TO 100 C TO AVOID PULLING IN THE INERT GAS, SO FISSION GAS CAN ESCAPE WITH STEAM. XE-133 IS 1000 TIMES THE I-131 CONTENT IN THE PRIMARY GAS SPACE FOLLOWING A FUEL RUPTURE. REACTOR DOWN TIME DUE TO HEALTH PHYSICS REASONS WAS 519 HR. WORKING LIMIT BASED ON AIRBORNE ACTIVITY DERIVED.

AVAILABILITY - USAEC DEPOSITORY LIBRARIES IN THE U.S. AND OVERSEAS

*FAILURE, CLADDING + *OPERATING EXPERIENCE SUMMARY + *RADIATION SAFETY AND CONTROL + AIRBORNE RELEASE + FAILURE, FUEL ELEMENT + FISSION GAS RELEASE + FISSION PRODUCT, IODINE + HBWR (BWR) + NORWAY + PARTITION COEFFICIENT + REACTOR, BWR + REPORT, OPERATIONS ANALYSIS + XENON

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-29677
SUTOBAYASHI T + SUZUKI T + KANDA Y
AN ANALYSIS OF LONG-TERM OBSERVATIONS OF SR-90 DEPOSITION
NIGATA UNIVERSITY, JAPAN
2 PAGES, BULL. CHEM. SOC. JAP., 41, PAGES 246-7 (JANUARY 1968)

AN ANALYSIS OF LONG-TERM OBSERVATIONS OF SR-90 IS PRESENTED AND CUMULATIVE DEPOSITION OF SR-90 PER UNIT OF AREA PER UNIT OF THE ACTIVITY PRODUCED BY A SERIES OF ATMOSPHERIC NUCLEAR FISSION EVENTS IS ESTIMATED. DATA FOR THE MONTHLY DEPOSITION OF SR-90 AND ITS SPECIFIC ACTIVITY AT NIGATA DURING 1965 TO 1966. THE YEARLY TOTAL OF SR-90 DEPOSITION AND THE YEARLY DECREASING RATE (1960 TO 1966), AND THE ESTIMATED TEN-YEAR TOTAL OF SR-90 DEPOSITION AND ITS RATIO TO TOTAL SR-90 ACTIVITY PRODUCED ARE TABULATED.

*DEPOSITION + *NUCLEAR DETONATION + *STRONTIUM + RADIATION EXPOSURE, RECORD KEEPING + SURFACE CONTAMINATION

14-28681 ALSO IN CATEGORY 15
THE IONISING RADIATIONS (UNSEALED RADIOACTIVE SUBSTANCES) REGULATIONS 196
31 PAGES, LONDON, HER MAJESTY'S STATIONARY OFFICE, 1967

SECTION HEADINGS ARE AS FOLLOWS - INTERPRETATION AND GENERAL. ADMINISTRATION, NOTIFICATION, AND RECORDS, BASIC PRINCIPLES OF PROTECTION, RADIOLOGICAL SUPERVISION, MEDICAL SUPERVISION, ARRANGEMENT OF PREMISES AND PLANTS, PERSONAL PROTECTION, ORGANIZATION OF WORK, MONITORING AND MEASURES TO DEAL WITH CONTAMINATION. SCHEDULES ARE INCLUDED FOR MAXIMUM PERMISSIBLE RADIATION DOSES, MAXIMUM PERMISSIBLE LEVELS OF CONTAMINATION AND METHOD OF ASSESSMENT, CLASSIFICATION OF RADIONUCLIDES.

*MAXIMUM PERMISSIBLE CONCENTRATION (MPC) + *MAXIMUM PERMISSIBLE DOSE (MPD) +
*RADIATION PROTECTION, ORGANIZATION + *RADIATION SAFETY AND CONTROL + *RADIOLOGICAL ASSISTANCE +
CONTAMINATION + DECONTAMINATION + MONITOR, RADIATION, ENVIRONMENTAL + PLANT PROTECTIVE SYSTEM

14-28682 ALSO IN CATEGORY 15
LALIT BY
DEPENDENCE OF SR-90 IN MILK ON ITS CONCENTRATIONS IN AIR AND SURFACE DEPOSITION
BHABHA ATOMIC RESEARCH CENTRE, BOMBAY
4 PAGES, J. SCI. IND. RES., 26, PAGES 372-5 (SEPTEMBER 1967)

REGRESSION ANALYSIS WAS CARRIED OUT TO FIND THE DEPENDENCE OF THE SR-90 CONTENT OF MILK ON ITS CONCENTRATION IN AIR, ITS MONTHLY RATE OF DEPOSITION, AND CUMULATIVE DEPOSITION IN SOIL AT BOMBAY. THIS ANALYSIS SHOWED THAT THE DEPENDENCE OF SR-90 IN MILK ON ITS CONCENTRATION IN AIR IS IMPORTANT, ESPECIALLY IN AREAS LIKE BOMBAY WHERE THE MAJOR DEPOSITION ON THE GROUND TAKES PLACE ONLY DURING FOUR MONTHS OF THE RAINY SEASON. THE COLLECTION IN THE DRY SEASON ON THE FOLIAGE IS MAINLY BY IMPACTION OF AIRBORNE SR-90.

*BIOLOGICAL CONCENTRATION, MILK + *DEPOSITION + *METEOROLOGY + *PRECIPITATION + *STRONTIUM + FALLOUT +
INDIA + RADIOCHEMICAL ANALYSIS + RAINOUT + SURFACE CONTAMINATION

14-28687 ALSO IN CATEGORY 15
MACHTA L
RADIOIODINE FALLOUT OVER THE MIDWEST IN MAY
AIR RESOURCES LABS., SILVER SPRING, MD.
2 PAGES, SCIENCE, 160, PAGES 64-6 (APRIL 5, 1968)

HIGH CONCENTRATIONS OF RADIOIODINE IN MILK, FOUND PREFERENTIALLY OVER THE MIDWESTERN UNITED STATES AFTER ATMOSPHERIC NUCLEAR TESTS IN MAY 1962, 1965, AND 1966, CAN BEST BE EXPLAINED BY HIGH-REACHING INTENSE THUNDERSTORMS THAT SCAVENGE PASSING RADIOACTIVITY FROM THE UPPER TROPOSPHERE AND LOWER STRATOSPHERE.

*BIOLOGICAL CONCENTRATION, MILK + *FALLOUT + *IODINE + *NUCLEAR DETONATION + *RAINOUT + STRATOSPHERE +
TESTING + TROPOSPHERE + UNITED STATES

14-28688
KLINE JR + JORDAN CF
TRITIUM MOVEMENT IN SOIL OF TROPICAL RAIN FOREST
PUERTO RICO NUCLEAR CENTER, CAPARRA HEIGHTS STATION, SAN JUAN
2 PAGES, 2 FIGURES, 6 REFERENCES, SCIENCE, 160, PAGES 550-51 (MAY 3, 1968)

TRITIATED WATER APPLIED TO THE SURFACE OF SOIL IN A TROPICAL RAIN FOREST WAS FOUND IN FREE WATER OF THE LITTER AND TOP 18 CENTIMETERS OF SOIL AS LONG AS 7 MONTHS AFTER THE APPLICATION. PLANT ROOTS, EVEN IN THE HIGH-RAINFALL ENVIRONMENT OF A TROPICAL RAIN FOREST, THEREFORE ARE EXPOSED TO TRITIATED WATER FOR CONSIDERABLE PERIODS OF TIME AFTER RELEASE.

*ECOLOGICAL CONSIDERATION + *SOIL, RADIONUCLIDE MOVEMENT THROUGH + *TRITIUM +
BIOLOGICAL CONCENTRATION, VEGETATION + RADIATION MODEL + RADIONUCLIDE, INDUCED

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-28693 ALSO IN CATEGORY 15
DATA FROM RADIATION PROTECTION PROGRAMS. VOLUME 5, NUMBER 7
DEPARTMENT OF NATIONAL HEALTH AND WELFARE, OTTAWA (ONTARIO). RADIATION PROTECTION DIV.
NP-17042 +. 21 PAGES, FIGURES, TABLES, 2 REFERENCES, JULY 1967

THE RADIATION PROTECTION DIVISION CONDUCTS A NATION-WIDE PROGRAM OF FALLOUT MONITORING,
- INCLUDING ANALYSES OF AIR PARTICULATES, PRECIPITATION, MILK, WATER, WHEAT, SOIL AND HUMAN
BONE. THIS REPORT CONTAINS THE RESULTS OF ANALYSES CARRIED OUT ON SAMPLES COLLECTED IN JUNE
1967. IT INCLUDES DATA ON AIR, PRECIPITATION AND MILK.

AVAILABILITY - USAEC DEPOSITORY LIBRARIES IN THE U.S. AND OVERSEAS

*CANADA + *MONITOR, RADIATION, ENVIRONMENTAL + *RADIATION PROTECTION, ORGANIZATION +
*SURVEY, RADIATION, ENVIRONMENTAL + AIR + ANALYTICAL TECHNIQUE, GENERAL +
BIOLOGICAL CONCENTRATION, AGRICULTURAL PRODUCE + BIOLOGICAL CONCENTRATION, GENERAL +
BIOLOGICAL CONCENTRATION, MAN + FALLOUT + PARTICULATE + PRECIPITATION + RAINOUT + SAMPLING

14-28694 ALSO IN CATEGORY 15
DATA FROM RADIATION PROTECTION PROGRAMS. VOLUME 4, NUMBER 2
DEPARTMENT OF NATIONAL HEALTH AND WELFARE, OTTAWA (ONTARIO). RADIATION PROTECTION DIV.
NP-17029 +. 40 PAGES, REFERENCES, FEB. 1966

THE FIRST TWO PARTS OF THIS SERIES DESCRIBED THE SYSTEMS OF RADIATION GUIDE LEVELS WHICH HAVE
BEEN ESTABLISHED BY VARIOUS AUTHORITIES, WITH PARTICULAR REFERENCE TO THE RECOMMENDATIONS OF
THE INTERNATIONAL COMMISSION ON RADIOLOGICAL PROTECTION. THE PRESENT ARTICLE DEALS WITH THE
PROCEDURES USED BY THE RADIATION PROTECTION DIVISION TO ENSURE THAT EXPOSURE OF RADIATION
WORKERS AND OF THE GENERAL PUBLIC WILL REMAIN WITHIN THE ACCEPTABLE LIMITS AS DEFINED BY THE
GUIDES.

AVAILABILITY - USAEC DEPOSITORY LIBRARIES IN THE U.S. AND OVERSEAS

*CANADA + *MAXIMUM PERMISSIBLE BODY BURDEN + *MAXIMUM PERMISSIBLE CONCENTRATION (MPC) +
*MONITOR, RADIATION, PERSONNEL + *RADIATION PROTECTION, ORGANIZATION + BIOLOGICAL CONCENTRATION, ANIMAL +
BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + FALLOUT + ICRP + INGESTION + POPULATION EXPOSURE +
RADIATION SAFETY AND CONTROL + REACTOR POWER

14-28695 ALSO IN CATEGORY 15
DATA FROM RADIATION PROTECTION PROGRAMS. VOLUME 5, NUMBER 5
DEPARTMENT OF NATIONAL HEALTH AND WELFARE, OTTAWA (ONTARIO). RADIATION PROTECTION DIV.
NP-16878 +. 21 PAGES, FIGURES, TABLES, 2 REFERENCES, MAY 1967

THE RADIATION PROTECTION DIVISION CONDUCTS A NATION-WIDE PROGRAM OF FALLOUT MONITORING,
INCLUDING ANALYSES OF AIR PARTICULATES, PRECIPITATION, MILK, WATER, WHEAT, SOIL AND HUMAN
BONE. THIS REPORT CONTAINS THE RESULTS OF ANALYSES CARRIED OUT ON SAMPLES COLLECTED IN APRIL
1967. IT INCLUDES DATA ON AIR, PRECIPITATION AND MILK.

AVAILABILITY - USAEC DEPOSITORY LIBRARIES IN THE U.S. AND OVERSEAS

*CANADA + *MONITOR, RADIATION, ENVIRONMENTAL + *MONITOR, RADIATION, PERSONNEL +
*RADIATION PROTECTION, ORGANIZATION + FALLOUT + RADIATION SAFETY AND CONTROL + REACTOR POWER

14-28701 ALSO IN CATEGORY 15
RADIOACTIVITY SURVEY DATA IN JAPAN. NUMBER 14
NATIONAL INST. OF RADIOLOGICAL SCIENCES, CHIBA, JAPAN
NP-16993 +. 25 PAGES, FIGURES, TABLES, FEBRUARY 1967

SINCE 1954, RAIN AND FALLOUT THAT HAVE COLLECTED MONTHLY IN A RECEIVER (COLLECTION AREA, 1 SQ.
METER) AT THE METEOROLOGICAL RESEARCH INSTITUTE, TOKYO, TO DETERMINE STRONTIUM-90 AND
CESIUM-137. OTHER SAMPLES COLLECTED MONTHLY (RECEIVER COLLECTION AREA, 0.5 SQ. METER) AT SIX
STATIONS LOCATED THROUGHOUT JAPAN HAVE ALSO BEEN ANALYZED. THE RESULTS OF OBSERVATION DURING
THE PERIOD FROM JANUARY TO DECEMBER 1966 ARE TABULATED.

AVAILABILITY - USAEC DEPOSITORY LIBRARIES IN THE U. S. AND OVERSEAS

*BIOLOGICAL CONCENTRATION, AGRICULTURAL PRODUCE + *BIOLOGICAL CONCENTRATION, MAN +
*BIOLOGICAL CONCENTRATION, MILK + *METEOROLOGICAL SUPPORT + *SURFACE WATER, NUCLIDE OCCURRENCE +
*SURVEY, RADIATION, ENVIRONMENTAL + CESIUM + DIETARY HABIT + FALLOUT + STRONTIUM

14-28703
DE LAGUNA W + TAMURA T + WEEREN HO + STRUXNESS EG + MCCLAIN WC + SEXION RC
ENGINEERING DEVELOPMENT OF HYDRAULIC FRACTURING AS A METHOD FOR PERMANENT DISPOSAL OF RADIOACTIVE WASTES
OAK RIDGE NATIONAL LAB., TENN.
ORNL-4259 +. 261 PAGES, FIGURES, TABLES, AUGUST 1968

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-28703 *CONTINUED*

THE MANY PHASES OF THE DEVELOPMENT OF WASTE DISPOSAL BY HYDRAULIC FRACTURING ARE DISCUSSED. THE FIRST AND SECOND PHASES POINTED OUT A NEED FOR FURTHER PRELIMINARY INVESTIGATIONS BEFORE DESIGN AND CONSTRUCTION OF THE FRACTURING PLANT. EXPERIMENTAL INJECTIONS, ONE THROUGH SEVEN, ARE DISCUSSED AND THE TWO OPERATIONAL INJECTIONS OF INTERMEDIATE LOW-LEVEL WASTES COMPLETED, DISPOSING OF BETTER THAN 80,000 CURIES OF CESIUM AND STRONTIUM. THE CONCLUSION IS THAT THE POSSIBILITY OF USING HYDRAULIC FRACTURING FOR WASTE DISPOSAL IN OTHER AREAS SHOULD BE EXPLORED AND THAT CONSIDERATION SHOULD BE GIVEN TO USING THE METHOD TO DISPOSE OF WASTES OTHER THAN THE MEDIUM-LEVEL WASTES FOR WHICH IT IS NOW EMPLOYED AT OAK RIDGE

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

*GEOLOGICAL CONSIDERATION, GENERAL + *WASTE DISPOSAL, ECONOMICS + *WASTE DISPOSAL, HYDRAULIC FRACTURING + CESIUM + ORNL + RADIATION SAFETY AND CONTROL + STRONTIUM + WASTE STORAGE

14-28707

GOODLETT CB

TRANSFER OF RADIOACTIVE SLURRIES

DU PONT DE NEMOURS (E.I.) AND CO., AIKEN, S. C. SAVANNAH RIVER LAB.

DP-1136 +. 35 PAGES, 30 FIGURES, 7 REFERENCES, JUNE 1968

SLURRIES OF RADIOACTIVE WASTE CARRYING UP TO 20 VOL % UNDISSOLVED SOLIDS CAN BE PUMPED THROUGH EXTENSIVE HORIZONTAL RUNS OF 2-INCH PIPE, IF THE BULK VELOCITY IS AT LEAST 1.6 FT/SEC. A VERTICAL SUBMERGED PUMP WITH AN OVERHUNG SHAFT AND A SPECIAL CASING IS USED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

*WASTE HANDLING + *WASTE MANAGEMENT + *WASTE TRANSPORTATION + RADIATION SAFETY AND CONTROL

14-28712

ALSO IN CATEGORY 15

WILSON DW + WARD GM

GAMMA-EMITTING FALLOUT IN SURFACE AIR AT FORT COLLINS, COLO., 1962-1967

DEPT. OF ANIMAL SCIENCE, COLORADO STATE UNIV., FORT COLLINS, COLO.

5 PAGES, 2 FIGURES, 2 TABLES, 7 REFERENCES, RADIOLOGICAL HEALTH DATA AND REPORT, 9(8), PAGE 407-411, (AUGUST 1968)

SURFACE AIR GAMMA-RAY ACTIVITIES OF THE FISSION PRODUCTS CERIUM-144, ANTIMONY-125, RUTHENIUM-106, CESIUM-137 AND A NEUTRON ACTIVATION PRODUCT, MANGANESE-54, ALL FROM NUCLEAR WEAPONS TESTING, WERE MEASURED AT FORT COLLINS, COLO. FROM 1962 TO 1967. THESE MEASUREMENTS WERE PART OF A STUDY OF THE TRANSPORT OF WORLD-WIDE FALLOUT FROM THE ATMOSPHERE TO MILK. IN OUR STUDIES, AIR LEVELS OF CESIUM-137 HAVE BEEN A RELIABLE INDICATION OF FORAGE AND MILK CONTAMINATION, AND WE BELIEVE THAT THE IMPORTANCE OF DIRECT DEPOSITION FROM AIR TO VEGETATION (DRY DEPOSITION) HAS BEEN UNDERESTIMATED PREVIOUSLY IN FOOD CHAIN TRANSPORT MODELS.

AIR + ANTIMONY + BIOLOGICAL CONCENTRATION, MILK + BIOLOGICAL CONCENTRATION, VEGETATION + CERIUM + CESIUM + DEPOSITION + FALLOUT + GAMMA EMITTER + MANGANESE + NEUTRON + RUTHENIUM + SURFACE CONTAMINATION + TRANSPORT PROPERTY

14-28716

SCHEJBALOVA L

FIXATION OF RADIOACTIVE WASTES IN CEMENT

INST. OF NUCLEAR RESEARCH, REZ, CZECHOSLOVAKIA

5 PAGES, 5 FIGURES, 1 TABLE, REFERENCES, J. GEOPHYS. RES. 73, PAGES 2715-19 (APRIL 15, 1968)

STUDIES WERE CARRIED OUT TO FIND A COMPOSITION OF CONCRETE THAT WOULD ENSURE BOTH THE DEGREE OF STRENGTH NEEDED FOR SAFE TRANSPORT AND A HIGHLY EFFICIENT FIXATION OF THE RADIOACTIVE MATERIALS. COMPARATIVE STUDIES PROVED THE ADVANTAGES OF PORTLAND CEMENT. DATA ARE PRESENTED IN TABLES AND GRAPHS. OTHER CEMENTS WERE BETTER THAN PORTLAND CEMENT AT RETAINING THE RADIOACTIVITY BUT THEIR VOLUME STABILITY AFTER LONG AGING TIMES WAS NOT SUFFICIENT TO PERMIT THEIR PRACTICAL USE.

*CONCRETE + *STORAGE CONTAINER + *WASTE TRANSPORTATION + *WASTE TREATMENT, FIXATION + CZECHOSLOVAKIA + WASTE HANDLING

14-28753

ALSO IN CATEGORIES 9 AND 15

ZIER M

ON THE DENSITY OF MEASURING GRIDS FOR THE CONTROL OF ATMOSPHERIC RADIOACTIVITY

3 PAGES, 1 FIGURE, 6 REFERENCES, KERNENERGIE, 11, PAGE 57-9, (FEB. 1968), (IN GERMAN)

THE RELATIONSHIP BETWEEN VARIATIONS OF FISSION PRODUCT ACTIVITY OF THE NEAR-GROUND LAYER OF ATMOSPHERE OF MEASURING STATIONS DIFFERENTLY SPACED TO EACH OTHER WAS STUDIED BY MEANS OF THE SIMPLE LINEAR CORRELATION ON THE BASIS OF LONG-TIME MEASUREMENTS. THE TERRITORIAL REPRESENTATIVITY OF THE VALUES MEASURED IS CONCLUDED FROM THE MEASURE OF DETERMINANCY AS A FUNCTION OF THE DISTANCE BETWEEN THE MEASURING STATIONS UNDER CONSIDERATION, OF SEASON, AND OF THE PRESENCE OF FRESH FISSION PRODUCTS. IT IS FOUND THAT THE MEASURED VALUES ARE MORE REPRESENTATIVE IN SUMMER AND IN THE ABSENCE OF FRESH FISSION PRODUCTS THAN IN WINTER AND IN

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-28753 *CONTINUED*
THEIR PRESENCE.

*DOSIMETRY, GENERAL + *INSTRUMENT, RADIATION MONITORING + AIR + ENVIRONMENTAL CONDITION + FALLOUT +
FISSION PRODUCT, AIRBORNE

14-28756 ALSO IN CATEGORY 16

STEYN JJ + KIM YS
USERS MANUAL FOR CODE EXGAM. A CODE TO CALCULATE GAMMA PHOTON DOSE FROM AN AIRBORNE RADIOACTIVE RELEASE
NUS CORP., WASHINGTON, D. C.
NUS-329 +. 56 PAGES, FIGURES, REFERENCES, NOV. 1966

A FORTRAN IV CODE - EXGAM - FOR USE ON A CDC-3600 DIGITAL COMPUTER WAS WRITTEN TO PREDICT THE
INTEGRATED PHOTON DOSE AT A RECEPTOR EXPOSED TO AN AIRBORNE RELEASE OF RADIOACTIVITY. THE
CODE ASSUMES THE SOURCE SPATIAL DISTRIBUTION TO BE GAUSSIAN. IN PUT OPTIONS ALLOW THE USER
TO CHOOSE SOURCE DECAY MODE, CLOUD THICKNESS, CLOUD WIND SPEED, CLOUD STABILITY CLASS, CLOUD
DRIFT DIRECTION, AIR ATTENUATION AND BUILD-UP COEFFICIENTS AND SOURCE PHOTON ENERGIES. THE
CODE-USERS REQUIREMENTS AND FORTRAN LISTING ARE GIVEN, ALONG WITH A SAMPLE INPUT AND OUTPUT.
THE CODE WAS OPTIMIZED WITH RESPECT TO COMPUTER EXECUTION TIME.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA
22151, \$3.00 COPY, \$0.65 MICROFICHE

*AIRBORNE RELEASE + *COMPUTER PROGRAM + *DOSE + COMPUTER, DIGITAL

14-28803

KUEHN K
GEO-SCIENTIFIC INVESTIGATIONS IN THE ASSE II SALT MINE
INSTITUT FUER TIEFLAGERUNG CLAUSTHAL-ZELLERFELD DER GESELLSCHAFT FUER STRAHLENFORSCHUNG, MUNICH
STI/PUB-156 + CONF-670512 +. 10 PAGES, PAGES 509-18 OF DISPOSAL OF RADIOACTIVE WASTES INTO THE GROUND,
FROM JOINT IAEA/ENEA SYMPOSIUM, VIENNA, AUSTRIA

IN THE RADIOACTIVE WASTE DISPOSAL PROGRAM OF THE FEDERAL REPUBLIC OF GERMANY, THE ABANDONED
SALT-MINE AT ASSE, NEAR WOLFENBUTTEL IN LOWER SAXONY, IS TO BE USED FOR STORAGE. ROCK
MECHANICAL INVESTIGATIONS WERE PERFORMED. A TEMPERATURE TEST FIELD WAS INSTALLED IN THE
MINE. OTHER TESTS HAVE JUST BEEN STARTED TO EXAMINE THE COMPRESSIVE STRENGTH OF ROCK SALT BY
TRIAxIAL HYDRAULIC PRESS AT HIGH TEMPERATURES.

*GEOLOGICAL CONSIDERATION, GENERAL + *ROCK MECHANICS + *TEMPERATURE REACTIVITY EFFECT +
*WASTE DISPOSAL, SALT + MODEL TESTING + SUPPORT STRUCTURE

14-28804

BARRREAU A + ESCALIER DES ORRES P
RADIOACTIVE WASTE STORAGE IN CAVITIES FORMED BY DISSOLUTION IN SALT - PRELIMINARY STUDIES
CENTRE D ETUDES NUCLEAIRES, SACLAY, FRANCE
STI/PUB-156 + CONF-670512 +. 14 PAGES, PAGES 495-508 OF DISPOSAL OF RADIOACTIVE WASTES INTO THE GROUND,
FROM JOINT IAEA/ENEA SYMPOSIUM, VIENNA, AUSTRIA

THE POSSIBILITIES OF STORING RADIOACTIVE WASTE IN CAVITIES FORMED BY DISSOLUTION IN SALT
DEPOSITS ARE DESCRIBED. THIS METHOD IS PARTICULARLY ATTRACTIVE BECAUSE OF THE
CHARACTERISTICS OF ROCK SALT AND THE DEGREE OF SAFETY OFFERED. THE GEOLOGICAL AND
TECHNOLOGICAL CONDITIONS AND THE SAFETY CRITERIA ARE DESCRIBED.

*GEOLOGICAL CONSIDERATION, GENERAL + *GROUND WATER, GENERAL + *ROCK MECHANICS + *TECHNICAL SPECIFICATIONS +
*WASTE DISPOSAL, SALT + FRANCE + SAFETY ANALYSIS

14-28805

KRAUSE H + RAMDOHR H + SCHUCHARDT MC
PROJECT FOR STORING RADIOACTIVE WASTES IN A SALT CAVITY
GESELLSCHAFT FUER KERNFORSCHUNG MBH, KARLSRUHE, GERMANY
STI/PUB-156 + CONF-670512 +. 26 PAGES, PAGES 479-94 OF DISPOSAL OF RADIOACTIVE WASTES INTO THE GROUND,
FROM JOINT IAEA/ENEA SYMPOSIUM, VIENNA, AUSTRIA

THE SOLUTION METHOD OF CREATING A CAVITY IN A SALT DOME IS DESCRIBED. THE MECHANISM FOR
INTRODUCTION OF THE RADIOACTIVE WASTE INTO THE CAVITY AND THE PROBLEMS INVOLVED ARE EXPLAINED
(BORE-HOLE DIAMETER, METHOD OF INTRODUCTION, ETC). ECONOMIC CONSIDERATIONS ARE PRESENTED FOR
A CAVITY OF 10,000 CU. METERS, AND THE INFLUENCE ON THE COST OF PARAMETERS SUCH AS DEPTH AND
DIAMETER OF THE BORE-HOLE AND SIZE OF THE CAVITY IS INVESTIGATED.

*RADIATION SAFETY AND CONTROL + *WASTE DISPOSAL, ECONOMICS + *WASTE DISPOSAL, SALT + GERMANY

14-28806

SCHWIBACH J
RESEARCH ON THE PERMANENT DISPOSAL OF RADIOACTIVE WASTES IN SALT FORMATIONS IN THE FEDERAL REPUBLIC OF
GERMANY

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-28806 *CONTINUED*

FEDERAL MINISTRY FOR SCIENTIFIC RESEARCH, BAD GODESBERG, GERMANY
STI/PUB-156 + CONF-670512 +. 13 PAGES, PAGES 465-77 OF DISPOSAL OF RADIOACTIVE WASTES INTO THE GROUND,
FROM JOINT IAEA/ENEA SYMPOSIUM, VIENNA, AUSTRIA

IN THE FEDERAL REPUBLIC OF GERMANY, AS WELL AS IN OTHER DENSELY POPULATED EUROPEAN COUNTRIES,
THE METHOD OF BURYING RADIOACTIVE WASTES IN SHALLOW GROUND COULD NOT BE ADOPTED BECAUSE OF
THE INTENSIVE LAND UTILIZATION, APPREHENSIONS ON THE PART OF THE PUBLIC AND THE NEED TO
PRESERVE THE NATURAL WATER RESOURCES. ONLY IN EXCEPTIONAL CASES MAY RADIOACTIVE WASTES BE
DISPOSED OF IN THE SAME WAY AS CONVENTIONAL REFUSE. FOR THE PERMANENT DISPOSAL OF THE BULK
OF RADIOACTIVE WASTES, WHICH ARE PACKAGED AND CURRENTLY STORED IN PRIVATE OR STATE-OWNED
INTERIM STORAGE HALLS, SCIENTIFIC BODIES IN THE FEDERAL REPUBLIC HAVE RECOMMENDED THAT SUCH
WASTE BE STORED IN DEEP SALT FORMATIONS.

*GEOLOGICAL CONSIDERATION, GENERAL + *HYDROLOGICAL CONSIDERATION, GENERAL + *WASTE DISPOSAL, SALT +
*WASTE DISPOSAL, SOLID + GERMANY + MINING + RADIATION SAFETY AND CONTROL + RESEARCH CONTRACT

14-28807

WHEELER BR + DICKEY BR + LOHSE GE + BLACK DE + RHODES DW + BUCKHAM JA
STORAGE OF RADIOACTIVE SOLIDS IN UNDERGROUND FACILITIES - CURRENT ICPP PRACTICES AND FUTURE CONCEPTS
IDAHO NUCLEAR CORPORATION, IDAHO FALLS
STI/PUB-156 + CONF-670512 +. 20 PAGES, PAGES 421-40 OF DISPOSAL OF RADIOACTIVE WASTES INTO THE GROUND,
FROM JOINT IAEA/ENEA SYMPOSIUM, VIENNA, AUSTRIA

HIGH-ACTIVITY GRANULAR SOLIDS ARE STORED IN STAINLESS-STEEL BINS INSIDE A BURIED CONCRETE
VAULT AT THE IDAHO CHEMICAL PROCESSING PLANT FOR ABOUT 1500 CU. METER. LABORATORY WORK
SHOWS THAT NO FISSION PRODUCTS WILL BE RELEASED FROM THE STORED SOLIDS AND SAFETY ASPECTS OF
STORAGE AT HIGH TEMPERATURES ARE BEING STUDIED TO REDUCE FURTHER THE EXPENSE OF SOLIDS
STORAGE. AN APPRECIABLE REDUCTION IN COSTS FOR SOLIDS STORAGE FACILITIES COULD BE REALIZED
BY OMITTING THE CONCRETE VAULT AND BURYING BINS DIRECTLY IN THE SOIL.

*MODEL TESTING + *THERMAL CONSIDERATION + *WASTE MANAGEMENT + *WASTE STORAGE +
*WASTE TREATMENT, ECONOMICS + *WASTE TREATMENT, EQUIPMENT + ICRP + MATHEMATICAL STUDY + SOIL

14-28808

MERRITT WF
PERMANENT DISPOSAL BY BURIAL OF HIGHLY RADIOACTIVE WASTES INCORPORATED INTO GLASS
ATOMIC ENERGY OF CANADA LTD., CHALK RIVER
STI/PUB-156 + CONF-670512 +. 6 PAGES, PAGES 403-8 OF DISPOSAL OF RADIOACTIVE WASTES INTO THE GROUND,
JOINT IAEA/ENEA SYMPOSIUM, VIENNA, AUSTRIA

A METHOD WAS DEVELOPED AT CHALK RIVER FOR INCORPORATING HIGH-LEVEL FISSION PRODUCT WASTES FROM
NUCLEAR FUEL PROCESSING INTO GLASS BLOCKS FOR ULTIMATE DISPOSAL. NITRIC ACID SOLUTIONS OF
FISSION PRODUCTS WERE MIXED WITH NEPHELINE SYENITE AND LIME IN CRUCIBLES AND FIRED IN A KILN
TO A TEMPERATURE OF 1350 C TO FORM A GLASS WITH HIGH RESISTANCE TO LEACHING. THE RESULTS
INDICATE THAT THE METHOD IS SUITABLE FOR PERMANENT DISPOSAL OF HIGH-LEVEL NUCLEAR WASTES AND
THAT THE BLOCKS COULD BE BURIED UNPROTECTED IN A CONTROLLED AREA, EVEN IN SATURATED SAND OF
LOW EXCHANGE CAPACITY. BURIAL ABOVE THE SATURATED ZONE IN AN ARID REGION WOULD RESULT IN
EVEN LESS RELEASE OF RADIOACTIVITY FROM THE GLASS.

*GLASS + *SINTERING + *WASTE DISPOSAL, LIQUID + *WASTE DISPOSAL, SOLID + CHALK RIVER + CHEMICAL REACTION +
FUEL REPROCESSING

14-28809

RODIER J + NIEZBORALA F + MARICHAL M
COMPARATIVE STUDY OF THE BEHAVIOR IN SOIL OF RADIOACTIVE WASTE SOLIDIFIED BY VARIOUS PROCESSES
CEA, MARCOULE, FRANCE
STI/PUB-156 + CONF-670512 +. 28 PAGES, PAGES 383-400 OF DISPOSAL OF RADIOACTIVE WASTES INTO THE GROUND,
FROM JOINT IAEA/ENEA SYMPOSIUM, VIENNA, AUSTRIA

THE PROCESSING OF RADIOACTIVE WASTE HAS CREATED A NUMBER OF INTENSIVE STUDIES OF INDUSTRIAL
PROJECTS. VITRIFICATION, ENCAPSULATION IN BITUMEN, AND SOLIDIFICATION IN CEMENT CONSTITUTE
THREE SOLUTIONS TO THE PROBLEM OF STORING RADIOACTIVE WASTE. A COMPARATIVE STUDY IS MADE OF
THE BEHAVIOR OF WASTE PROCESSED BY THESE THREE METHODS IN A SPECIFIC SOIL AND UNDER
PARTICULAR ATMOSPHERIC CONDITIONS.

*SITE CLIMATOLOGY + *SOIL + *WASTE STORAGE + *WASTE TREATMENT, FIXATION + CONCRETE

14-28810

VAZQUEZ BARETE M + BRAVO SUAREZ E
ASSESSMENT OF THE VARIOUS FACTORS GOVERNING THE SITING OF A RADIOACTIVE WASTE BURIAL GROUND FOR THE
MEXICAN NATIONAL NUCLEAR ENERGY COMMISSION
COMISION NACIONAL DE ENERGIA NUCLEAR, MEXICO
STI/PUB-156 + CONF-670512 +. 16 PAGES, PAGES 367-82 OF DISPOSAL OF RADIOACTIVE WASTES INTO THE GROUND,
FROM JOINT IAEA/ENEA SYMPOSIUM, VIENNA, AUSTRIA

REGIONS IN THE NEIGHBORHOOD OF MEXICO CITY WERE STUDIED WITH A VIEW TO FINDING SUITABLE SITES
FOR A RADIOACTIVE-WASTE BURIAL GROUND. EACH REGION WAS ASSESSED FROM THE VIEWPOINTS OF LINES

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-28810 *CONTINUED*

OF COMMUNICATION, RAINFALL, PROXIMITY TO POPULATION CENTERS, PREVAILING WINDS AND THEIR VELOCITY, LIABILITY TO EARTHQUAKES, SUB-SOIL STRUCTURE, FERTILITY, AND IN GENERAL ALL THE FACTORS WHICH MIGHT MAKE IT DESIRABLE OR UNDESIRABLE FOR HABITATION IN THE NEAR FUTURE. AFTER ASSESSMENT OF THE VARIOUS TECHNICAL, ECONOMIC, ADMINISTRATIVE, AND LEGAL ASPECTS AND CONSIDERATION OF THE POSSIBLE DISPERSAL OF RADIOACTIVE ELEMENTS INTO VARIOUS MEDIA, THE SITES MOST SUITABLE WERE PROPOSED.

*POPULATION EXPOSURE + *SITE CLIMATOLOGY + *SOIL + *WASTE DISPOSAL, ECONOMICS + *WASTE DISPOSAL, SOLID + LAW + METEOROLOGY + PRECIPITATION + RADIATION SAFETY AND CONTROL + SITE CRITERIA, EARTHQUAKE + WASTE MANAGEMENT

14-28811

GRAF P

PLANS FOR LONG-TERM STORAGE OF LOW- AND MEDIUM-LEVEL RADIOACTIVE WASTES IN SWITZERLAND
MOTOR-COLUMBUS LTD., SWITZERLAND

STI/PUB-156 + CONF-670512 +. 20 PAGES, PAGES 329-41 OF DISPOSAL OF RADIOACTIVE WASTES INTO THE GROUND, FROM JOINT IAEA/ENEA SYMPOSIUM, VIENNA, AUSTRIA

NO LIQUID, SUSPECT CONTAMINATED WASTE IS AUTHORIZED TO BE RELEASED INTO THE GROUND. THE SOLID AND SOLIDIFIED LOW-LEVEL RADIOACTIVE WASTES ARE COMPRESSED AND PACKED IN STANDARD STEEL DRUMS AND ARE AT PRESENT STORED AD INTERIM IN WEATHER-PROOF WASTE STORAGE AREAS ON THE NUCLEAR PLANT SITES. THE GENERAL OPINION OF THE PUBLIC AND LOCAL AUTHORITIES IS WIDELY OPPOSED TO RADIOACTIVE WASTE DISPOSAL, WHICH MAKES THE REALIZATION OF THESE WASTE STORAGE PROJECTS VERY DIFFICULT.

*POPULATION EXPOSURE + *RADIATION, PUBLIC EDUCATION/ACCEPTANCE + *SURFACE WATER, DISPOSAL MEDIA + *WASTE MANAGEMENT + *WASTE STORAGE + CONCRETE + REACTOR POWER + SWITZERLAND

14-28812

GIANNOTTI GP + MITTEMPERGHER M + SIDOTI G

SELECTION CRITERIA FOR GROUND DISPOSAL SITES FOR SOLID RADIOACTIVE WASTE IN HIGHLY POPULATED AREAS
CNEN, CASACCIA, ITALY

STI/PUB-156 + CONF-670512 +. 10 PAGES, PAGES 319-28 OF DISPOSAL OF RADIOACTIVE WASTES INTO THE GROUND, FROM JOINT IAEA/ENEA SYMPOSIUM, VIENNA, AUSTRIA

IN CONTRAST TO DEEP DISPOSAL OF RADIOACTIVE WASTE, WHICH ENSURES VIRTUAL ISOLATION, SHALLOW DISPOSAL IS INFLUENCED DIRECTLY BY POSSIBLE INTERACTION OF THE WASTE WITH NATURAL WATERS AND INDIRECTLY BY A NUMBER OF OTHER ENVIRONMENTAL FACTORS. IN EXAMINING ITALY FOR POTENTIAL WASTE BURIAL SITES, VARIOUS CRITERIA WERE STUDIED AND PRIORITY ALLOTTED TO CERTAIN OF THESE. IT IS BELIEVED THAT THE INVESTIGATIONS UNDERTAKEN IN ITALY MAY BE APPLICABLE TO OTHER COUNTRIES WITH HIGH POPULATION DENSITIES.

*ECOLOGICAL CONSIDERATION + *ENVIRONMENTAL CONDITION + *GEOLOGICAL CONSIDERATION, GENERAL + *HYDROLOGICAL CONSIDERATION, GENERAL + *SEISMOLOGY + *SITE CLIMATOLOGY + *SOIL + *WASTE DISPOSAL, ECONOMICS + *WASTE DISPOSAL, SOLID + ITALY + POPULATION EXPOSURE + SURFACE WATER, NUCLIDE OCCURRENCE + WATER POLLUTION

14-28815

CAPITANT B + GRISON G + LEVEQUE P

EXPERIMENTAL STUDY OF THE HIGH-PRESSURE INJECTION OF RADIOACTIVE EFFLUENTS INTO FRACTURED GEOLOGICAL LAYERS
BUREAU DE RECHERCHES GEOLOGIQUES ET MINIERES, PARIS

STI/PUB-156 + CONF-670512 +. 30 PAGES, PAGES 621-51 OF DISPOSAL OF RADIOACTIVE WASTES INTO THE GROUND, FROM JOINT IAEA/ENEA SYMPOSIUM, VIENNA, AUSTRIA

RADIOACTIVE EFFLUENTS CAN BE SATISFACTORILY STORED BY INJECTING THEM, IN THE FORM OF A CEMENT OR CLAY GROUT, INTO CLOSED GEOLOGICAL STRUCTURES. AN ATTEMPT HAS BEEN MADE TO REPRODUCE IN A SUPERFICIAL GEOLOGICAL FORMATION SOME OF THE EFFECTS OF FRACTURING AT DEPTH. HIGH-PRESSURE INJECTION TESTS WERE CARRIED OUT WITH INERT ELEMENTS IN SURFACE LAYERS. THE RESULTS OBTAINED, TOGETHER WITH FURTHER APPLICATION OF THE METHOD, USING WELL-KNOWN MINERAL-OIL FORMATIONS AS SPECIFIC EXAMPLES, ARE DESCRIBED.

*GEOLOGICAL CONSIDERATION, GENERAL + *SOIL, RADIONUCLIDE MOVEMENT THROUGH + *WASTE DISPOSAL, HYDRAULIC FRACTURING + *WASTE DISPOSAL, LIQUID + CALCIUM + ION EXCHANGE + RUTHENIUM + STRONTIUM + THALLIUM + ZIRCONIUM

14-28816

RARBRAH A

POSSIBILITIES OF INJECTING RADIOACTIVE WASTES INTO DEEP, PERMEABLE GEOLOGICAL FORMATIONS

CENTRE D ETUDES NUCLEAIRES, SACLAY, FRANCE

STI/PUB-156 + CONF-670512 +. 14 PAGES, PAGES 607-20 OF DISPOSAL OF RADIOACTIVE WASTES INTO THE GROUND, FROM JOINT IAEA/ENEA SYMPOSIUM, VIENNA, AUSTRIA

THE INJECTION OF RADIOACTIVE EFFLUENTS INTO DEEP, PERMEABLE GEOLOGICAL FORMATIONS CAN BE VERY SATISFACTORY METHOD OF DISPOSING OF CERTAIN WASTES, PARTICULARLY AS EXPERIENCE IN USING THIS METHOD IN THE PETROLEUM INDUSTRY AND WITH OTHER INDUSTRIAL WASTES IS ALREADY AVAILABLE. IN FRANCE THE GEOLOGICAL STRUCTURES WHICH MAY PROVE SUITABLE FOR THIS TYPE OF WASTE STORAGE ARE BEING SURVEYED.

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-28816 *CONTINUED*

*GEOLOGICAL CONSIDERATION, GENERAL + *HYDRODYNAMIC ANALYSIS + *WASTE DISPOSAL, LIQUID +
CONTAINMENT, GENERAL + EFFLUENT + FRANCE + SOIL + WASTE DISPOSAL, ECONOMICS

14-28817

CLEBSCH A + BALTZ EH

PROGRESS IN THE UNITED STATES OF AMERICA TOWARD DEEP-WELL DISPOSAL OF LIQUID AND GASEOUS RADIOACTIVE WASTES
GEOLOGICAL SURVEY, WASHINGTON, D. C.
STI/PUB-156 + CONF-670512 +. 15 PAGES, PAGES 591-605 OF DISPOSAL OF RADIOACTIVE WASTES INTO THE GROUND,
JOINT IAEA/ENEA SYMPOSIUM, VIENNA, AUSTRIA

THE BASIC TECHNOLOGY FOR DEEP-WELL DISPOSAL OF LIQUID WASTES IN THE GEOLOGIC SUBSURFACE HAS
BEEN DEVELOPED AND USED BY THE PETROLEUM INDUSTRY FOR DISPOSAL OF OIL-FIELD BRINES AND
ADAPTED BY THE CHEMICAL INDUSTRY FOR DISPOSAL OF CERTAIN NOXIOUS WASTES. REQUIREMENTS FOR
DISPOSAL OF RADIOACTIVE WASTES ARE MORE STRINGENT THAN FOR MOST OTHER INDUSTRIAL WASTES.
STUDIES TO EVALUATE THE DEEP-WELL METHOD SPECIFICALLY FOR DISPOSAL OF RADIOACTIVE WASTES,
PLUS INFORMATION ON OTHER GROUND-DISPOSAL PRACTICES AND ON DEEP DISPOSAL OF OTHER INDUSTRIAL
WASTES, INDICATE THAT THE METHOD ITSELF IS TECHNICALLY FEASIBLE.

*WASTE DISPOSAL, BEDROCK + *WASTE DISPOSAL, GAS + *WASTE DISPOSAL, LIQUID + CHEMICAL REACTION +
GEOLOGICAL CONSIDERATION, GENERAL

14-28830

LENNEMAN WL

UNITED STATES ATOMIC ENERGY COMMISSION INTERIM RADIOACTIVE WASTE BURIAL PROGRAM
ATOMIC ENERGY COMMISSION, WASHINGTON, D.C.

STI/PUB-156 + CONF-670512 +. 40 PAGES, PAGES 261-300 OF DISPOSAL OF RADIOACTIVE WASTES INTO THE GROUND,
VIENNA, IAEA, 1967

EARLY IN 1960, THE USAEC PROVIDED INDUSTRY WITH RADIOACTIVE WASTE DISPOSAL SERVICES IN
STRATEGIC LOCATIONS WITHIN THE UNITED STATES. IT ANNOUNCED THAT RADIOACTIVE WASTE BURIAL
GROUNDS AT OAK RIDGE, TENNESSEE, AND THE NATIONAL REACTOR TESTING STATION, IDAHO, WOULD BE
MADE AVAILABLE TO AEC LICENSEES FOR THE DISPOSAL OF SOLID RADIOACTIVE WASTES. FOR THE NEXT
THREE YEARS, THE AEC HAD AN INTERIM RADIOACTIVE WASTE PROGRAM WHICH WAS TERMINATED WHEN
PRIVATELY OPERATED GROUNDS, SERVING REGIONAL AREAS OF THE COUNTRY, BECAME AVAILABLE. THE
ADMINISTRATIVE PROCESSES, TREATMENT, AND PROCEDURES OF A NATIONAL RADIOACTIVE WASTE BURIAL
PROGRAM ARE DESCRIBED.

*USAEC + *WASTE DISPOSAL, SOLID + *WASTE HANDLING + *WASTE MANAGEMENT + *WASTE TRANSPORTATION +
*WASTE TREATMENT, GENERAL + DATA PROCESSING + NRTS + ORNL

14-28831

RANCON D

MECHANISM OF RADIOACTIVE CONTAMINATION IN CONSOLIDATED IMPERMEABLE ROCKS OR ROCKS OF VERY LOW PERMEABILITY
CENTRE D'ETUDES NUCLEAIRES, CADARACHE, FRANCE
STI/PUB-156 + CONF-67-512 +. 19 PAGES, PAGES 179-97 OF DISPOSAL OF RADIOACTIVE WASTES INTO THE GROUND,
VIENNA, IAEA, 1967 (IN FRENCH)

A CIRCULATION OF RADIOACTIVE EFFLUENTS CAN AFFECT CONSOLIDATED ROCKS WHICH ARE IMPERMEABLE OR
OF VERY LOW PERMEABILITY. THE RETENTION PHENOMENA ARE THEN DIFFERENT, SINCE THEY OCCUR
MAINLY ON THE SURFACE. A LAW WAS DEvised TO EXPRESS THE VARIATION OF THIS KD MEASURED AS A
FUNCTION OF THE THICKNESS OF PENETRATION (E) OF THE LIQUID AND OF THE DIMENSION OF THE ROCK,
WHICH WAS EXPERIMENTALLY VERIFIED BY MEASURING THE KD AS A FUNCTION OF THE DIAMETER X OF THE
GRAINS IN THE ROCK.

*DIFFUSION COEFFICIENT + *GEOLOGICAL CONSIDERATION, GEOCHEMICAL + *ROCK MECHANICS + EFFLUENT +
EXPERIMENT, GENERAL + FRANCE + RADIOISOTOPE + WASTE DISPOSAL, LIQUID

14-28832

FONTAINE G

GROUND DISPOSAL METHODS FOR RADIOACTIVE SOLID WASTES AT THE ISPRA ESTABLISHMENT OF EURATOM
EUROPEAN ATOMIC ENERGY COMMUNITY, ISPRA, ITALY

STI/PUB-156 + CONF-670512 +. 13 PAGES, PAGES 109-21 OF DISPOSAL OF RADIOACTIVE WASTES INTO THE GROUND,
VIENNA, IAEA, 1967 (IN FRENCH)

RADIOACTIVE SOLID WASTE PRODUCED IN THE REACTORS AND LABORATORIES OF THE ISPRA ESTABLISHMENT
OF EURATOM CAN BE DIVIDED INTO HIGHLY CONTAMINATED BUT NONACTIVATED WASTE (WASTE FROM
LABORATORIES, HOT-CELL DECONTAMINATION, ETC.), AND HIGHLY ACTIVATED BUT LIGHTLY CONTAMINATED
WASTE (WASTE FROM IN-PILE LOOPS AND EXPERIMENTS). GROUND DISPOSAL METHODS ARE USED ONLY IF
THERE IS NO MATERIAL IN THE WASTE WHICH CAN REACT WITH THE CEMENT. VARIOUS METHODS HAVE BEEN
CONSIDERED AND UTILIZED, UNDERGROUND WELLS BEING UTILIZED IN EACH CASE. A STUDY OF
CONSTRUCTION COST REVEALED AN ECONOMICAL SOLUTION WITH RESPECT TO HIGH-LEVEL ACTIVITY AND
SECURITY, WHICH ALSO COVERS DIRECT IRRADIATION AND THE EVENTUAL TRANSFER OF CONTAMINATION:

*CONCRETE + *HYDROLOGICAL CONSIDERATION, GENERAL + *SOIL + *WASTE DISPOSAL, ECONOMICS +
*WASTE DISPOSAL, SOLID + *WASTE MANAGEMENT + CONTAMINATION + RADIATION SAFETY AND CONTROL

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-28833

MERRITT WF + MAWSON CA

EXPERIENCES WITH GROUND DISPOSAL AT CHALK RIVER

ATOMIC ENERGY OF CANADA LTD., CHALK RIVER, ONT.

STI/PUB-156 + CONF-670512 +. 14 PAGES, PAGES 79-92 OF DISPOSAL OF RADIOACTIVE WASTES INTO THE GROUND, VIENNA, IAEA, 1967

THE SOIL AT CHALK RIVER IS QUITE SHALLOW AND CONSISTS MAINLY OF SAND, IT HAS A LOW EXCHANGE CAPACITY BUT IS VERY PERMEABLE. LARGE DISPOSALS OF RADIOACTIVE WASTES HAVE BEEN MADE INTO THIS SOIL, IN SOLID AND LIQUID FORM, BOTH EXPERIMENTALLY AND AS PART OF THE NORMAL WASTE-MANAGEMENT PROGRAM. THE EXPERIMENTS INCLUDED THE PUMPING OF KILOCURIE AMOUNTS OF MIXED FISSION PRODUCTS, DISSOLVED IN NITRIC ACID, INTO SOIL PITS. THE AMOUNT OF GROUND USED HAS BEEN SMALL, AND MOVEMENT OF RADIONUCLIDES THROUGH THE SOIL HAS BEEN EXTREMELY LIMITED. DECAY OF RADIONUCLIDES DURING THEIR SLOW MOVEMENT MAKES GROUND DISPOSAL A SAFE OPERATION IF GROUND CONDITIONS ARE ADEQUATELY KNOWN.

*ION EXCHANGE + *RADIOACTIVITY RELEASE + *SOIL + *WASTE DISPOSAL, LIQUID + *WASTE DISPOSAL, SOLID + *WASTE MANAGEMENT + GEOLOGICAL CONSIDERATION, GENERAL + HYDROLOGICAL CONSIDERATION. GENERAL + SOIL, RADIONUCLIDE MOVEMENT THROUGH

14-28834

IRANZO E + MINGARPO E

DISPOSAL OF LOW- AND INTERMEDIATE-LEVEL SOLID RADIOACTIVE WASTES

JUNTA DE ENERGIA NUCLEAR, MADRID

STI/PUB-156 + CONF-670512 +. 17 PAGES, PAGES 61-77 OF DISPOSAL OF RADIOACTIVE WASTES INTO THE GROUND, VIENNA, IAEA, 1967 (IN SPANISH)

IN VIEW OF THE FUTURE IMPORTANCE OF RADIOACTIVE WASTE DISPOSAL AND BURIAL IN THE GROUND, STUDIES HAVE BEEN UNDERTAKEN TO FIND SUITABLE SITES FOR THIS PURPOSE IN SPAIN. THE GEOGRAPHICAL, GEOLOGICAL, HYDROLOGICAL, PETROGRAPHICAL AND SEISMOLOGICAL CONSIDERATIONS WHICH LED TO THE CHOICE OF SOME OLD MINES IN THE SOUTH OF SPAIN AS STORAGE SITES FOR LOW- AND INTERMEDIATE-LEVEL WASTES ARE DESCRIBED. THE AVAILABILITY OF THESE SITES WILL ENSURE THAT ENOUGH SPACE IS AVAILABLE TO MEET THE REQUIREMENTS OF THE SPANISH NUCLEAR ENERGY PROGRAM FOR A VERY CONSIDERABLE TIME.

*GEOLOGICAL CONSIDERATION, GENERAL + *SEISMOLOGY, GENERAL + *SPAIN + *WASTE DISPOSAL, SOLID + HYDROLOGICAL CONSIDERATION, GENERAL + MINING + RADIATION SAFETY AND CONTROL + WASTE STORAGE

14-28835

HOWELLS H

TRENCH DISPOSAL OF SOLID RADIOACTIVE WASTE FROM THE WINDSCALE AND CALDER WORKS OF THE UKAEA

UNITED KINGDOM ATOMIC ENERGY AUTHORITY, SELLAFIELD, ENGLAND

STI/PUB-156 + CONF-670512 +. 11 PAGES, PAGES 2-13 OF DISPOSAL OF RADIOACTIVE WASTES INTO THE GROUND, FROM JOINT IAEA/ENEA SYMPOSIUM, VIENNA, AUSTRIA

WINDSCALE AND CALDER WORKS OF THE UKAEA IS SITUATED IN CUMBERLAND ON THE NORTHWEST COAST OF ENGLAND. LARGE VOLUMES OF LOW-ACTIVITY AND SUSPECT ACTIVE SOLID WASTES ARISE BOTH FROM PROCESS AND LABORATORY OPERATIONS. THE TOTAL QUANTITY IS ABOUT 1000 TONS/YR, WITH AN UNCOMPRESSED VOLUME OF ABOUT 6000 CU. METERS. IT IS IMPRACTICABLE TO USE MONITORING AS A METHOD OF SEGREGATION INTO ACTIVE AND INACTIVE FRACTIONS. CONSEQUENTLY, ALL THE MATERIAL MUST BE TREATED AS RADIOACTIVE WASTE AND DISPOSED OF CORRESPONDINGLY. A STUDY OF THE RELATIVE COST OF DISPOSAL METHODS HAS EMPHASIZED THE EXPENSE OF PRETREATMENT SUCH AS INCINERATION OR BAILING AND SHOWN THAT LOCAL BURIAL WITHOUT TREATMENT IS BY FAR THE CHEAPEST METHOD OF DISPOSAL.

*MONITOR, RADIATION, LIQUID + *SITE CLIMATOLOGY + *WASTE DISPOSAL, SOLID + *WASTE TREATMENT, ECONOMICS + UNITED KINGDOM + WASTE TRANSPORTATION + WINDSCALE

14-28836

MARTER WL

GROUND WASTE DISPOSAL PRACTICES AT THE SAVANNAH RIVER PLANT

SAVANNAH RIVER LABORATORY

STI/PUB + CONF-670512 +. 12 PAGES, PAGES 95-106 OF DISPOSAL OF RADIOACTIVE WASTES INTO THE GROUND, FROM JOINT IAEA/ENEA SYMPOSIUM, VIENNA, AUSTRIA

SOLID RADIOACTIVE WASTE HAS BEEN BURIED AT THE SAVANNAH RIVER PLANT SINCE 1953. THE WASTE, CONSISTING OF EQUIPMENT AND MATERIAL CONTAMINATED WITH FISSION PRODUCTS, ACTIVATION PRODUCTS, AND TRANSURANIC ISOTOPES, HAS BEEN BURIED IN UNLINED EARTHEN TRENCHES ABOVE THE WATER TABLE. A TOTAL OF 1,500,000 CI OF FISSION AND ACTIVATION PRODUCTS, AND 9000 CI OF TRANSURANIC ELEMENTS, HAVE BEEN BURIED THROUGH 1966. SLEEPAGE BASINS COST ABOUT \$0.25/CU. METER TO CONSTRUCT, AND EXPERIENCE INDICATES THAT THE USEFUL LIFE OF A BASIN IS GREATER THAN 10 YEARS.

*HYDROLOGICAL CONSIDERATION, GENERAL + *SOIL, RADIONUCLIDE MOVEMENT THROUGH + *WASTE DISPOSAL, SOLID + *WASTE STORAGE + *WASTE TREATMENT, ECONOMICS + DIFFUSION + ION EXCHANGE + MONITOR, RADIATION, LIQUID + PRECIPITATION + RADIATION SAFETY AND CONTROL + SAVANNAH RIVER PLANT + THERMAL CONSIDERATION + TRITIUM + WASTE TREATMENT, SOLID

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-28838
SAKAGISHI S
MOVEMENT OF RADIOACTIVE MATERIAL FOR THE SHORE AND OFFSHORE RELEASE OF LOW LEVEL LIQUID WASTES
JAPAN ATOMIC ENERGY RESEARCH INST., TOKYO
4 PAGES, GENSHIRYOKU KOGYO 13(9), PAGES 32-35 (SEPT. 1966)

IN THE OPERATION OF RADIOACTIVE INSTALLATIONS, SUCH AS ATOMIC POWER STATIONS AND FUEL REPROCESSING PLANTS, ALTHOUGH LOW IN RADIOACTIVITY, LARGE AMOUNTS OF LIQUID WASTES ARE RELEASED INTO THE SEA. A STUDY WAS MADE OF HOW THE RADIOACTIVE MATERIAL IN THE EFFLUENT WAS DIFFUSED AND DILUTED BY THE SEA WATER. FOR THIS PURPOSE AN EFFLUENT WAS RELEASED AT THREE POINTS - 1 KM OFFSHORE, AT THE BEACH, AND AT THE MOUTH OF A RIVER.

*CONCENTRATION, AREA + *DIFFUSION + *DILUTION + *WASTE DISPOSAL, OCEAN + EFFLUENT + ESTUARY +
FUEL REPROCESSING + TRACER, FLUORESCENT + WATER POLLUTION

14-28866
MCCLAIN WC
THE INTERPRETATION OF WATER INJECTION TESTS IN SITE EVALUATION FOR WASTE DISPOSAL BY HYDRAULIC FRACTURING
OAK RIDGE NATIONAL LAB., TENN.
ORNL-CF-68-8-13 +. 37 PAGES, 7 FIGURES, 1 TABLE, 12 REFERENCES, AUGUST 5, 1968

THE ANALYSIS PRESENTED IN THIS REPORT PROVIDES THE MEANS OF INTERPRETING THE PRESSURE HISTORY OF WATER-INJECTION TESTS. SUCH TESTS CAN BE USED TO ADVANTAGE AS A PART OF A PROGRAM TO EVALUATE THE SUITABILITY OF ANY PROPOSED SITE FOR RADIOACTIVE WASTE DISPOSAL BY HYDRAULIC FRACTURING. THE ANALYSIS INCLUDES THE THEORETICAL AND EMPIRICAL EVALUATION OF THE VARIOUS COMPONENTS CONTRIBUTION TO THE PRESSURE MEASURED IN THE INJECTION WELL, INCLUDING TURBULENCE AT THE ENTRANCE TO THE FRACTURE, LAMINAR FLOW VISCOUS LOSSES FOR CIRCULAR AND NONCIRCULAR FRACTURES, AND THE EFFECTS OF VERTICAL GRADIENTS IN THE CONFINING ROCK STRESSES DUE TO TECTONISM AND IN THE FRACTURE RESULTING FROM CHANGES IN ELEVATION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

*GEOLOGICAL CONSIDERATION, GENERAL + *HYDRAULIC ANALYSIS + *ROCK MECHANICS + *SITING, WASTE DISPOSAL +
*STRESS + *WASTE DISPOSAL, HYDRAULIC FRACTURING

14-28872
ZAJIC J.
GEOLOGICAL STUDIES ON THE POSSIBILITIES OF STORING RADIOACTIVE WASTES IN THE CSSR
INSTITUT FUER INGENIEUR-GEOLOGISCHE UND HYDROGEOLOGISCHE FORSCHUNG, PRAGUE
7 PAGES, KERNENERGIE, 10, PAGES 312-318 (OCT. 1967)

INVESTIGATIONS ON THE UTILIZATION OF GEOLOGIC FORMATIONS FOR THE DISPOSAL OF RADIOACTIVE WASTES IN THE C.S.S.R. ARE DESCRIBED. THE POSSIBILITIES OF STORAGE IN AN ABANDONED MINE (CHALK FORMATION) OR IN AN ISOLATED NONPRODUCTIVE PETROLEUM STRUCTURE (NEOGEN) ARE DESCRIBED. FINALLY, THE STATE OF STUDIES ON THE UTILIZATION OF THE SORPTIVE PROPERTIES OF LOOSE ROCKS AND SOILS FOR PURIFYING WASTE LIQUIDS ARE DISCUSSED.

*GEOLOGICAL CONSIDERATION, GENERAL + *SORPTION + *WASTE DISPOSAL, TERRESTRIAL + SOIL + WASTE STORAGE

14-28873
PETROSYANTS AM
RADIATION SITUATION NEAR THE BELOYARSK NUCLEAR POWER STATION
4 PAGES, AT. ENERG. (USSR), 23, PAGES 38-41 (JULY 1967) (IN GERMAN)

DATA ARE GIVEN ON THE CONCENTRATION OF RADIOACTIVE AEROSOLS, DENSITY OF RADIOACTIVE FALLOUT, CONTENT OF RADIOACTIVE SUBSTANCES IN WATER AND OTHER EXPOSED AREAS IN THE VICINITY OF THE BELOYARSK ATOMIC POWER PLANT DURING 1963 TO 1966. THE STUDIES DID NOT REVEAL ANY INCREASE IN THE NATURAL RADIOACTIVITY LEVEL OF THE REGION.

*AEROSOL, RADIOACTIVE + *CONCENTRATION, AREA + *SURFACE CONTAMINATION +
*SURFACE WATER, NUCLIDE OCCURRENCE + DEPOSITION + FALLOUT + REACTOR, POWER + USSR

14-28918
FUTAGAWA K + GLOYNA EF
TECHNICAL REPORT NO. 16. RADIOACTIVITY TRANSPORT IN WATER--EFFECTS OF ORGANIC POLLUTION ON RADIONUCLIDE TRANSPORT (THESIS)
TEXAS. UNIV. CENTER FOR RESEARCH IN WATER RESOURCES, ENVIRONMENTAL HEALTH ENGINEERING RESEARCH LAB., AUSTIN
EHE-04-6803 +. 62 PAGES, FIGURES, TABLES, 31 REFERENCES, MAY 1968

THE ECOLOGICAL ENVIRONMENT OF A RIVER SYSTEM WAS SIMULATED WITH THE AID OF A SPECIALLY ADAPTED RESEARCH FLUME. THE CHARACTERISTICS OF THE SPATIAL AND TEMPORAL VARIATION OF THE OXYGEN CONCENTRATION IN THE FLUME WATER WERE DETERMINED. THE REAERATION RATE CONSTANTS, THE

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-28918 *CONTINUED*

BIOLOGICAL OXIDATION RATE CONSTANT, AND THE PHOTOSYNTHESIS AND RESPIRATION RATE OF BENTHAL ALGAE WERE MEASURED. IN THE DETERMINATION OF REAERATION RATE CONSTANTS, THE OXYGEN CONCENTRATION OF THE INFLUENT WAS MAINTAINED AT A CONSTANT LEVEL BY SODIUM SULFITE. CANE SUGAR WAS USED AS A POLLUTANT. THE EFFECTS OF BENTHAL ALGAE ON THE SYSTEM WERE DETERMINED UNDER STAGNANT FLOW CONDITIONS.

*ECOLOGICAL CONSIDERATION + *OXYGEN + *RIVER, GENEPAL + *WATER POLLUTION +
SURFACE WATER, NUCLIDE OCCURRENCE

14-28921

GIANNOTTI GP + MITTEMPERGER M + SIDOTI G + PANTANETTI F
RADIOACTIVE WASTE DISPOSAL IN ITALY. PRELIMINARY SITING STUDY
CNEN, ROME

16 PAGES, COM. NAZ. ENERG. NUCL., NOTIZ., 13, PAGE 53-68, (DEC. 1967), (IN ITALIAN)

A PRELIMINARY SITING STUDY TO LOCATE AREAS FAVORABLE FOR A PERMANENT INSTALLATION FOR THE DISPOSAL OF RADIOACTIVE WASTES IN SURFACE GROUND FORMATIONS IS DESCRIBED. THE STUDY IS BASED ON A COMPARATIVE EXAMINATION OF THE FACTORS WHICH CHARACTERIZE A NATURAL ENVIRONMENT, IN PARTICULAR, CONSIDERATION WAS GIVEN TO ALL PARAMETERS WHICH GOVERN THE COMPLEX RELATIONSHIP BETWEEN WATER, REGARDED AS THE POTENTIALLY BEST DISPERSING MEDIUM, AND THE BIOLOGIC ENVIRONMENT. ALL DATA COLLECTED ON THE VARIOUS PARAMETERS ARE SUMMARIZED IN 21 MAPS.

*DISPERSION + *SITING, WASTE DISPOSAL + *WASTE DISPOSAL, TERRESTRIAL + *WATER, GENERAL + ITALY

14-29010

SCHWILLE F + LIPPOK W + WEISFLOG D

MODEL EXPERIMENTS ON FLUID FLOW IN THE TRANSITION ZONE FROM UNSATURATED TO SATURATED SOIL
BUNDESANSTALT FUER GEWAESSERKUNDE, KOBLENZ, GERMANY

10 PAGES, PP. 151-160 OF DISPOSAL OF RADIOACTIVE WASTES INTO THE GROUND, VIENNA, IAEA, 1967

IF GROUND WATER IS TO PROTECTED EFFECTIVELY AND AT REASONABLE COST AGAINST RADIONUCLIDE CONTAMINATION, A DETAILED KNOWLEDGE IS FIRST NECESSARY OF THE MIGRATION MECHANISMS OF RADIONUCLIDE-CONTAINING SOLUTIONS BOTH INTO THE UNSATURATED ZONE, I.E., THE AERATED ZONE, AND THE SATURATED ZONE, SINCE THE MIGRATION OF RADIONUCLIDES DEPENDS ON THE STATIC AND DYNAMIC BEHAVIOR OF FLUIDS IN POROUS MEDIA. INFILTRATION IN THE UNSATURATED ZONE AND SPREADING IN THE SATURATED ZONE WERE ANALYZED WITH SAND MODELS SCALED TO RESEMBLE THE NATURAL CONDITIONS AS CLOSELY AS POSSIBLE. THE RESULT SHOWS THAT IT IS NOT YET POSSIBLE TO TREAT THE FLOW OF LIQUID ANALYTICALLY IN EVERY CASE, EVEN IN HOMOGENEOUS MEDIA.

CONTAMINATION + PRECIPITATION + RADIATION MODEL + SITING, GENERAL + SOIL PROPERTY, IN SITU +
SOIL, RADIONUCLIDE MOVEMENT THROUGH + SURFACE WATER, NUCLIDE OCCURRENCE + WASTE DISPOSAL, TERRESTRIAL +
WASTE TREATMENT, GENERAL + WATER POLLUTION + WATER, DRINKING

14-29011

HUGUET C + DELAS J + DELMAS J

EXPERIMENTAL STUDY OF THE RADIOACTIVE CONTAMINATION OF SOME CULTIVATED PLANTS BY IRRIGATION WATER
12 PAGES, TECH. EAU (BRUSSELS), (231), PAGE 31-42, (MAR. 15, 1966), (IN FRENCH)

RESULTS ARE REPORTED FROM STUDIES ON THE QUANTITATIVE RELATION EXISTING BETWEEN THE APPLICATION TO THE SOIL OF LONG-LIVED RADIOISOTOPES BY IRRIGATION WATER AND THE LEVEL OF CONTAMINATION OF THE VEGETABLE FOOD PRODUCTS AT THE LIMIT OF ACCUMULATION OF THE RADIOISOTOPE IN THE SOIL. DATA ARE REPORTED FOR THE YEARS 1961 AND 1962, THE FIFTH AND SIXTH YEARS OF OBSERVATION. THE RESULTS SHOW THAT THE DEGREE OF CONTAMINATION OF THE PLANTS IS LOWERED FROM THE SECOND TO THE THIRD YEAR. IN THE LAST YEAR THE SR-90 BEGINS TO APPEAR SIGNIFICANTLY ONLY IN THE LEAFAGE.

*BIOLOGICAL CONCENTRATION, VEGETATION + *CONTAMINATION + *ECOLOGICAL CONSIDERATION + *RADIOISOTOPES +
*SOIL, NUCLIDE OCCURRENCE + CESIUM + STRONTIUM

14-29012

MIKHAILOV M + PETKOV T + YANICHKOVA M

INVESTIGATION OF THE RADIOACTIVITY OF THE SOIL IN A REGION WITH AN ELEVATED RADIATION BACKGROUND
9 PAGES, RENTGENOL. RADIOD., 5(3), PAGE 179-87, (1966)

A HIGH GAMMA-RADIATION BACKGROUND WAS FOUND AT THE VILLAGE BACHKOVO, PLOVDIV DISTRICT, AND IN ITS VICINITY. A COMPARISON WITH MEASUREMENTS CARRIED OUT IN A CONTROL REGION (VILLAGE SIMEONOVO, SOFIA DISTRICT) INDICATED THAT THE NATURAL RADIATION BACKGROUND AT BACHKOVO WAS 3 TO 5 TIMES HIGHER THAN THAT AT SIMEONOVO.

*MONITOR, RADIATION, BACKGROUND + *SOIL, NUCLIDE OCCURRENCE + *URANIUM + BETA EMITTER + GAMMA EMITTER

14-29013

BELYAEV LI + GEDEONOV LI + YAKOVLEVVA GV

ESTIMATION OF SR-90 AND CS-137 CONTENT IN THE BLACK SEA

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-29013 *CONTINUED*

4 PAGES, OKEANOLOGIYA, 6, PAGE 641-4, (1966), (IN RUSSIAN)

BASED ON STUDIES OF RADIOACTIVE FALLOUT OVER THE BLACK SEA DURING THE PERIOD 1959 TO 1964, AN ATTEMPT WAS MADE TO ESTIMATE THE SR-90 AND CS-137 CONTENT OF THE BLACK SEA. TABLES ARE PRESENTED WITH SHOW THE TOTAL FISSION PRODUCT FALLOUT OVER THE BLACK SEA FOR 1960 TO 1964, THE WATER BALANCE OF THE BLACK SEA, SR-90 INFLUX INTO THE BLACK SEA, SR-90 EFFLUX INTO THE SEAS OF MARMORA AND AZOV, AND THE SR-90 BALANCE IN THE BLACK SEA.

*CESIUM + *FALLOUT + *OCEAN AND SEA + *STRONTIUM + NUCLEAR DETONATION + PRECIPITATION + USSR

14-29014

BARANOV VI + MOROZOVA NG + AKIMOVA TG + ORLOVA AV
NATURAL RADIOELEMENTS IN SURFACE AND SOIL-SUBSOIL WATERS
INST. OF GEOCHEMISTRY AND ANALYTICAL CHEMISTRY, MOSCOW
8 PAGES, GEOKHIMIYA, NO. 3, PAGE 334-41, (MAR. 1968), (IN RUSSIAN)

DATA ON THE RADIUM, URANIUM AND THORIUM CONTENT IN SOIL-SUBSOIL WATERS, LAKE AND RIVER WATERS OF THE ESTONIAN SOVIET SOCIALIST REPUBLIC ARE GIVEN. IN ALL TYPES OF SURFACE WATERS EQUILIBRIUM BETWEEN U AND RA IS LACKING. IN LYSIMETRIC SOIL WATERS AND ACID WATERS OF LOW-LAND BOGS RA IS PRESENT IN AN AMOUNT CONSIDERABLY EXCEEDING THE EQUILIBRIUM AMOUNT WITH CONTAINED URANIUM. IN SURFACE WATERS OF ALL TYPES THE TH/U RATIO MUCH LESS THAN 1 (WITH AN AVERAGE VALUE FROM 0.1 TO 0.4).

*RADIUM + *SOIL, NUCLIDE OCCURRENCE + *SURFACE WATER, NUCLIDE OCCURRENCE + *THORIUM + *URANIUM + RIVER, GENERAL + SOIL, RADIONUCLIDE MOVEMENT THROUGH

14-29032

CUSHING CE
PERIPHYTON PRODUCTIVITY AND RADIONUCLIDE ACCUMULATION IN THE COLUMBIA RIVER, WASHINGTON, USA
BATTELLE MEMORIAL INST., RICHLAND, WASH.
5 PAGES, HYDROBIOLOGIA, 29, PAGES 125-239 (MARCH 16, 1967)

BEST CORRELATIONS BETWEEN THE FOUR BIOMASS MEASUREMENTS WERE BETWEEN DRY WEIGHT, ASH WEIGHT, AND CHLOROPHYLL A. NET PRODUCTION RATE VARIED FROM 0.006 TO 0.070 MG DRY WEIGHT/SQ CM/DAY AND WAS CLOSELY RELATED TO CHLOROPHYLL A AND ALSO TO SOLAR ENERGY. THE ACCUMULATION OF P-32 AND ZN-65 WAS HIGHLY RELATED TO DRY AND ASH WEIGHT AND CHLOROPHYLL A. LOW CORRELATIONS WERE FOUND BETWEEN RADIOISOTOPE BURDEN OF THE RIVER. THE DATA SUGGEST THAT ADSORPTION WAS THE DOMINANT MODE OF UPTAKE.

*BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + *RIVER, COLUMBIA + *SORPTION + *SURFACE WATER, NUCLIDE OCCURRENCE + BATTELLE NORTHWEST + HYDROLOGICAL CONSIDERATION, GENERAL + WATER POLLUTION

14-29033

BLOMEKE JO + HARRINGTON FE
WASTE MANAGEMENT AT NUCLEAR POWER STATIONS
10 PAGES, NUCLEAR SAFETY, 9, PAGES 239-248 (MAY-JUNE 1968)

THE MANAGEMENT OF WASTES PRODUCED AT NUCLEAR POWER PLANTS MAY BECOME AN INCREASINGLY SIGNIFICANT PROBLEM IN AN ECONOMY EXPECTED TO GROW TO 50 TIMES ITS PRESENT SIZE WITH THE NEXT 13 YEARS. AS PRELIMINARY STEP IN ASSESSING FUTURE IMPLICATIONS, REVIEWS WERE MADE OF THE OPERATING EXPERIENCE IN WASTE MANAGEMENT AT THE ARBITRARILY SELECTED DRESDEN 1, BIG ROCK POINT, HUMBOLDT BAY, ELK RIVER, INDIAN POINT 1, AND YANKEE POWER STATIONS. WASTE-MANAGEMENT PRACTICES AT LIGHT-WATER POWER-REACTOR STATIONS HAVE BEEN QUITE ADEQUATE IN THE PAST, AND THAT THERE ARE NO FUTURE PROBLEMS ANTICIPATED IN THIS AREA THAT WILL NOT BE RESOLVED IN THE NORMAL COURSE OF AN EXPANDING INDUSTRIAL TECHNOLOGY.

*MAXIMUM PERMISSIBLE CONCENTRATION (MPC) + *OPERATING EXPERIENCE + *RADIATION SAFETY AND CONTROL + *WASTE MANAGEMENT + MONITOR, RADIATION, GENERAL + REACTOR, POWER + TRITIUM

14-29036

ALSO IN CATEGORY 15
RICHMOND CR + FURCHNER JE
CS-137 BODY BURDENS IN MAN- JANUARY 1956 TO DECEMBER 1966
UNIV. OF CALIF., LOS ALAMOS
12 PAGES, RADIAT. RES., 32, PAGES 538-539 (1967)

BODY BURDENS OF CS-137 ORIGINATING FROM NUCLEAR WEAPONS FALLOUT WERE MEASURED IN A GROUP OF NEW MEXICO SUBJECTS BY WHOLE-BODY COUNTING FOR THE PERIOD JANUARY 1956 TO JANUARY 1967. THE TOTAL INTEGRATED RADIATION DOSE FOR THE 11-YEAR PERIOD WAS 0.3 MREMS, OR ABOUT 6% OF THAT RESULTING FROM BODY K-40. CESIUM-137 CONCENTRATIONS AGREE WITH THOSE REPORTED FROM OTHER NORTHERN HEMISPHERE LABORATORIES UNTIL AFTER THE 1961 AND 1962 TEST SERIES- SINCE THEN, CONCENTRATIONS APPEAR TO INCREASE WITH LATITUDE IN THE NORTHERN HEMISPHERE. A MODEL THAT DESCRIBES RETENTION OF FALLOUT CS-137 IN A POPULATION IS PRESENTED.

*BIOLOGICAL CONCENTRATION, MAN + *CESIUM + *COUNTER, WHOLE BODY + *FALLOUT + *MAXIMUM PERMISSIBLE BODY BURDEN + MATHEMATICAL TREATMENT + NUCLEAR DETONATION + POPULATION EXPOSURE

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-29037 ALSO IN CATEGORY 15
CHERNENKO GT + MOLKOV AG
THE EXTENT OF THE INTERNAL CONTAMINATION OF AN ORGANISM IN A REGION OF RADIOACTIVE FALLOUT
5 PAGES, VOENNO-MED. ZH., 2, PAGES 22-26 (FEB. 1967) (IN RUSSIAN)

ALTHOUGH THE MAIN HAZARD FROM RADIOACTIVE FALLOUT IS FROM THE EXTERNAL GAMMA RADIATION, IT IS DESIRABLE TO ESTIMATE THE INTERNAL DOSE DUE TO INHALATION, WHICH IS CALCULATED FROM A FORMULA. AT GAMMA DOSE RATES OF 1, 10, 20, AND 1000 R/HR, THE INSPIRED ACTIVITIES ARE 0.22, 2.2, 4.4, AND 22 MICROCURIES ENTERING THE ORGANISM IN ONE HOUR. THE MAXIMUM ALLOWABLE DOSE TO THE THYROID IS 30 R/HR, WHICH CAN BE IMPARTED BY ABOUT 1 MICROCURIE OF MIXED FISSION-PRODUCT ACTIVITIES. HENCE, INHALED ACTIVITIES OF 4 TO 22 MICROCURIES MUST BE CONSIDERED AS DANGEROUS TO THE BODY. MEASURES SHOULD BE TAKEN TO PREVENT THE ENTRANCE OF FALLOUT FISSION-PRODUCTS INTO THE BODY.

*BIOLOGICAL CONCENTRATION, MAN + *DOSE CALCULATION, INTERNAL + *FALLOUT + *INHALATION + GAMMA + MAXIMUM PERMISSIBLE DOSE (MPD) + RADIATION SAFETY AND CONTROL

14-29038 ALSO IN CATEGORY 15
PELLERIN P + MORONI JP + REMY ML
PRELIMINARY RESULTS OF A SYSTEMATIC STUDY OF INTERNAL CONTAMINATION FOLLOWING RADIOACTIVE FALLOUT
SERVICE CENTRAL DE PROTECTION CONTRE LES RAYONNEMENTS IONISANTS, LE VESINET, FRANCE
12 PAGES, REV. HYG. MED. SOC., 13, PAGES 49-60 (JAN.-FEB. 1965) (IN FRENCH)

DATA ARE PRESENTED FOR SOME HUMAN BODY BURDENS OF FALLOUT RADIO-NUCLIDES AS ASSAYED FROM SEPTEMBER 1961 TO FEBRUARY 1964.

*BIOLOGICAL CONCENTRATION, MAN + *CESIUM + *COUNTER, WHOLE BODY + *DOSE MEASUREMENT, INTERNAL + *FALLOUT + AIRBORNE RELEASE + FRANCE + IODINE + NUCLEAR DETONATION

14-29107
LAMMERS WT
THE DISTRIBUTION OF COBALT-60, RUTHENIUM-106, AND CESIUM-137 AMONG SUSPENDED AND DISSOLVED PARTICLES IN WHITE OAK LAKE
OAK RIDGE GASEOUS DIFFUSION PLANT
K-1758 +. 20 PAGES, REFERENCES, TABLES, FIGURES, OCTOBER 3, 1968

WHITE OAK LAKE WAS SAMPLED ROUTINELY DURING A 14-MONTH PERIOD. EACH SAMPLE WAS CENTRIFUGALLY FRACTIONATED INTO SELECTED PARTICULATE FRACTIONS AND A DISSOLVED MATERIALS FRACTION. THE FRACTIONS ISOLATED FROM SAMPLES OF WHITE OAK LAKE WATER WERE SUBJECTED TO RADIOCHEMICAL ANALYSIS. LINEAR CORRELATIONS WERE CALCULATED FOR SEVERAL COMBINATIONS OF THE DATA. FROM THIS STATISTICAL ANALYSIS AND INTERPRETATION, THE PATTERN OF UPTAKE AND DISTRIBUTION OF THREE RADIONUCLIDES (COBALT-60, RUTHENIUM-106, AND CESIUM-137) IN THE AQUATIC ENVIRONMENT IS BETTER UNDERSTOOD.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*AQUATIC ORGANISMS + *ISOTOPIC FRACTIONATION + *PARTICLE, RADIOACTIVE + *PARTICULATE + *RADIOCHEMICAL ANALYSIS + CESIUM + COBALT + DISPERSION + PARTICLE SIZE DISTRIBUTION + RUTHENIUM + SAMPLING + STATISTICAL ANALYSIS + STATISTICAL CORRELATION + WASTE DISPOSAL, LAKE

14-29109
FULTYN RV
ENVIRONMENTAL EFFECTS OF THE KIWI-TNT EFFLUENT- A REVIEW AND EVALUATION
LOS ALAMOS SCIENTIFIC LABORATORY
LA-3449 +. 68 PAGES, TABLES, FIGURES, JANUARY 1969

THE KIWI TRANSIENT NUCLEAR TEST (KIWI-TNT) WAS A CONTROLLED EXCURSION IN WHICH REACTIVITY WAS INSERTED INTO A NUCLEAR ROCKET ENGINE PROTOTYPE FAST ENOUGH TO VAPORIZE A SIGNIFICANT PORTION OF THE REACTOR CORE. THE TEST STUDIED THE NEUTRONIC BEHAVIOR OF THE REACTOR AND THE ENVIRONMENTAL EFFECTS OF THE RADIOACTIVE MATERIALS RELEASED. THIS REPORT DISCUSSES IN DETAIL ONLY THE DETERMINATION OF ENVIRONMENTAL EFFECTS. RADIATION EFFECTS FROM THE CLOUD PASSAGE WERE LESS THAN PREDICTED IN THE PRETEST SAFETY EVALUATION REPORT. THE MAXIMUM OFF-SITE, INTEGRATED, WHOLE-BODY EXPOSURE WAS 5.0 MRAD ABOUT 15 MILES FROM THE TEST POINT. NO FRESH FISSION PRODUCTS WERE DETECTED IN ANY OF THE MILK SAMPLES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

AIRCRAFT + BIOLOGICAL CONCENTRATION, MILK + CORE MELTDOWN + EFFLUENT + ENVIRONMENTAL CONDITION + FISSION GAS RELEASE + FISSION PRODUCT, AIRBORNE + FUEL MELTDOWN + KIWI TNT (S-R) + METEOROLOGY + NEVADA TEST SITE + REACTOR, SAFETY RESEARCH + SAMPLING + SPACECRAFT + VAPOR, VAPOR PRESSURE

14-29110 ALSO IN CATEGORY 15

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-29110 *CONTINUED*
FALLOUT PROGRAM - QUARTERLY SUMMARY REPORT - JUNE 1 - SEPT. 1, 1968
UNITED STATES ATOMIC ENERGY COMMISSION
HASL-200 APP. +. 364 PGS. SEPT. 1, 1968

THE HEALTH AND SAFETY LABORATORY PRESENTS IN TABULAR FORM A
VAST AMOUNT OF DATA ACCUMULATED DURING THE PERIOD OF 1958
THROUGH SEPTEMBER 1, 1968. ALSO APPENDIXES ARE GIVEN FOR -
A - SR-90 AND -89 IN MONTHLY DEPOSITION AT WORLD LAND SITES,
B - RADIOSTRONTIUM DEPOSITION AT ATLANTIC OCEAN WEATHER
STATIONS,
C - RADIONUCLIDES IN MONTHLY SURFACE AIR SAMPLES,
D - RADIOSTRONTIUM IN MILK AND TAP WATER,
E - TABLE OF CONVERSION FACTORS,
F - TABLE OF RADIONUCLIDES

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*DEPOSITION + *ECOLOGICAL CONSIDERATION + *FALLOUT + *STRONTIUM + *SURVEILLANCE PROGRAM + AIR +
BIOLOGICAL CONCENTRATION, MILK + OCEAN AND SEA + POPULATION EXPOSURE +
RADIATION EXPOSURE, RECORD KEEPING + SAMPLING + SURFACE WATER, NUCLIDE OCCURRENCE

14-29111
HARDY EP + RIVERA J
FALLOUT PROGRAM - QUARTERLY SUMMARY REPORT
UNITED STATES ATOMIC ENERGY COMMISSION
HASL-200 +. TABLES, FIGURES, REFERENCES, OCT. 1, 1968

PRESENTS CURRENT DATA FROM THE HASL FALLOUT PROGRAM, THE NATIONAL RADIATION LABORATORY IN NEW
ZEALAND, THE EURATOM JOINT NUCLEAR RESEARCH CENTRE AT ISPRA, ITALY, THE DIVISION OF
BIOLOGICAL AND MEDICAL RESEARCH AT ARGONNE NATIONAL LABORATORY, AND THE DEPARTMENT OF ANIMAL
SCIENCE AT COLORADO STATE UNIVERSITY. INCLUDES BIBLIOGRAPHY OF RECENT PUBLICATIONS RELATED
TO RADIONUCLIDE STUDIES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*BIOLOGICAL CONCENTRATION, ANIMAL + *BIOLOGICAL CONCENTRATION, FOOD + *BIOLOGICAL CONCENTRATION, MILK +
*DIETARY HABIT + *FALLOUT + *SURVEY, RADIATION, ENVIRONMENTAL + CESIUM + NIOBIUM + STRONTIUM +
SURVEILLANCE PROGRAM + ZIRCONIUM

14-29112
STROEMME, A
CESIUM-137 IN PEOPLE AND FOOD IN NORWAY, 1963-67
NYO-3364-42 + 4 PAGES, 1967

DISCUSSES FALLOUT AND ITS INCIDENCE WITH RESPECT TO BIOLOGICAL CONCENTRATION IN FOOD, ANIMALS,
AND MAN. CORRELATES PRECIPITATION WITH CESIUM IN COWS MILK.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*BIOLOGICAL CONCENTRATION, FOOD + *BIOLOGICAL CONCENTRATION, MAN + *CESIUM + *DIETARY HABIT + *FALLOUT +
BIOLOGICAL CONCENTRATION, MILK + BIOLOGICAL CONCENTRATION, VEGETATION + FISSION PRODUCT RELEASE, GENERAL +
NORWAY + NUCLEAR DETONATION

14-29113 ALSO IN CATEGORY 15
CORNISH AC + UYESUGI G
DETECTION OF ELEVATED FALLOUT LEVELS IN CALIFORNIA, JANUARY 1967
RAD. HEALTH DATA AND REPORTS, VOL. 9, NO. 9, 7 PP., 6 FIG., 5 TABL., 7 REF., PP. 467-473, SEPT. 1968

CALIFORNIA RECEIVED A HEAVY FALLOUT OF RADIOACTIVE DEBRIS BEGINNING 4.5 DAYS AFTER A FOREIGN
NUCLEAR DEVICE WAS DETONATED IN THE ATMOSPHERE ON DECEMBER 27, 1966. HIGHEST AIR PARTICULATE
LEVELS OCCURRED IN BERKELEY AND SACRAMENTO. ALL MILK-SHEDS IN CALIFORNIA WERE CONTAMINATED
TO SOME EXTENT WITH RADIOACTIVE IODINE. APPARENT HALF-LIFE FOR IODINE-131 IN ENVIRONMENT WAS
CALCULATED TO BE 3.2 DAYS

AVAILABILITY - SUPT. OF DOCUMENTS, GOVERNMENT PRINTING OFFICE, WASHINGTON, DC 20402

*BIOLOGICAL CONCENTRATION, MAN + *BIOLOGICAL CONCENTRATION, MILK + *FALLOUT + *IODINE +
*SURFACE CONTAMINATION + AIRBURST + ENVIRONMENTAL CONDITION + NUCLEAR DETONATION + PARTICULATE

14-29114 ALSO IN CATEGORY 15
ROBINSON PB
A COMPARISON OF RESULTS BETWEEN THE PUBLIC HEALTH SERVICE RAW MILK AND PASTEURIZED MILK NETWORKS FOR
JANUARY 1964 THROUGH JUNE 1966
RAD. HEALTH DATA AND REPORTS, VOL. 9, NO. 9, PP. 475-488, 14 PP., 5 FIG., 10 TABL., 8 REF., SEPT. 1968

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-29114 *CONTINUED*

THE PUBLIC HEALTH SERVICE RAW MILK AND PASTEURIZED MILK NETWORKS ARE COMPARED FOR INTERVAL JANUARY 1964 THROUGH JUNE 1966 ON THE BASIS OF MILK SAMPLE ANALYSES MADE DURING THAT PERIOD. ONCE LABORATORY EFFECTS DUE TO ANALYTICAL DIFFERENCES IN MILK SAMPLE ANALYSES WERE REMOVED FROM THE DATA, THE AGREEMENT FOR CESIUM-137 AND STRONTIUM-90 BETWEEN FOUR OF THE NINE STATIONS THAT WERE COMMON TO BOTH NETWORKS WAS RELATED TO MILKSHED OVERLAP.

AVAILABILITY - SUPT. OF DOCUMENTS, GOVERNMENT PRINTING OFFICE, WASHINGTON, DC 20402, \$5.00 A YEAR- \$0.50 SINGLE ISSUE.

*ANALYTICAL TECHNIQUE, MILK + *BIOLOGICAL CONCENTRATION, MILK + *CESIUM + *METEOROLOGY + *STRONTIUM + SOIL, NUCLIDE OCCURRENCE + SURFACE CONTAMINATION

14-29117

EICHOLZ GG + NAGEL AE + HUGHES RB

DEVELOPMENT OF A RAPID ASSAY METHOD FOR GROSS LOW-LEVEL RADIOACTIVITY IN WATER
AD-458507L +. 41 PAGES, TABLES, FIGURES, REFERENCES, FEB. 15, 1965

THE DETERMINATION OF FISSION PRODUCTS FROM FALLOUT IN LOW-LEVEL CONCENTRATIONS IN SURFACE WATERS WAS STUDIED IN DETAIL. EXTRACTION OF ALL MAJOR ISOTOPES ON MIXED-BED ION EXCHANGE RESIN, HAS BEEN INVESTIGATED FOR PURE DISTILLED WATER, A SYNTHETIC HARD WATER, AND VARIOUS METAL WATERS FROM GEORGIA, USING THE VARIOUS ISOTOPES AS TRACERS. THESE INCLUDE I-131, SR-90, CE-144, Y-91, CS-137, BA-LA-140, RU-RH-106, NB-ZR-95, LCA-45, AND Cl-36. THE MIXED-BED RESIN CONTAINED AN EXCESS OF CATION RESIN FOR PREFERENTIAL EXTRACTION OF THE CATIONS AND FOR DIRECT ADJUSTMENT OF THE PH OF THE SOLUTION TO A LOW LEVEL.

*FISSION PRODUCT ACTIVITY, GROSS + *ION EXCHANGE + *SURFACE WATER, NUCLIDE OCCURRENCE + *TRACER, RADIOACTIVE + CERIUM + CESIUM + FALLOUT + IODINE + RESIN + STRONTIUM

14-29131

ECONOMICS IN MANAGING RADIOACTIVE WASTES

INTERNATIONAL ATOMIC ENERGY AGENCY

STI/DOC-10-83 +. 45 PAGES, 1 TABLE, 1968

THE PURPOSE OF THIS REPORT IS TO RECOMMEND FOR UNIFORM REPORTING PURPOSES A COSTING SYSTEM. THE SYSTEM SHOULD INCLUDE ALL ASPECTS OF THE COSTS OF WASTE MANAGEMENT IN ORDER TO PROVIDE A SUFFICIENTLY ACCURATE ASSESSMENT OF THE TRUE COSTS AND A COMMON STANDARD OF REPORTING. THE STUDY, AT THE REQUEST OF THE AGENCY, WAS CONFINED TO RADIOACTIVE WASTES PRODUCED AT RESEARCH AND DEVELOPMENT CENTRES. BECAUSE DEFINITIONS OF LOW, INTERMEDIATE, AND HIGH LEVELS OF RADIOACTIVITY VARY FROM SITE TO SITE, NO SPECIFIC UPPER LIMIT WAS SET ON WASTES TO BE INCLUDED IN THE STUDY EXCEPT TO EXCLUDE WASTES FROM THE FIRST EXTRACTION CYCLE OF CHEMICAL PROCESSING FOR RECOVERY OF REACTOR FUEL.

AVAILABILITY - INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA

*ECONOMIC STUDY + *MONITOR, RADIATION, ENVIRONMENTAL + *MONITOR, RADIATION, GENERAL + *WASTE MANAGEMENT + WASTE DISPOSAL, GENERAL + WASTE STORAGE + WASTE TRANSPORTATION + WASTE TREATMENT, GENERAL

14-29140

GODBEE HW + GOODE JH + BLANCO RE

DEVELOPMENT OF A PROCESS FOR INCORPORATION OF RADIOACTIVE WASTE SOLUTIONS AND SLURRIES IN EMULSIFIED ASPHALT

OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN. 37830

ENVIRONMENTAL SCIENCE + TECHNOLOGY VOL. 2, NO. 11, PP 1034-1040. 7 FIGURES, 2 TABLES, NOVEMBER 1968

INCORPORATION IN ASPHALT IS A PROMISING METHOD FOR PREPARING ALKALINE SOLUTIONS AND SLURRIES OF INTERMEDIATE-LEVEL RADIOACTIVE WASTES FOR STORAGE OR BURIAL. THE WASTES ARE MIXED WITH AN ASPHALT-WATER EMULSION, THE WATER IS VOLATILIZED BY HEATING THE MIXTURE TO 160 C, AND THE RESIDUE CONTAINING THE RADIOACTIVE SOLIDS IS DRAINED INTO THE FINAL DISPOSAL CONTAINER. THE VOLUME OF WASTE TO BE STORED IS REDUCED BY A FACTOR OF ABOUT 2. PRODUCTS CONTAINING 60 WEIGHT % WASTE SOLIDS WERE HOMOGENEOUS AND SHOWED SATISFACTORILY LOW LEACH RATES IN WATER. NO EVOLUTION OF GASES OR SWELLING WAS OBSERVED IN PRODUCTS THAT CONTAINED UP TO 52 CURIES PER GALLON AT RADIATION DOSES UP TO 1×10^{18} RADS.

*WASTE DISPOSAL, TERRESTRIAL + *WASTE STORAGE + *WASTE TREATMENT, FIXATION + EXPERIMENT, GENERAL + ORNL

14-29626

KING LG

DISPOSAL OF REACTOR OFF-GAS INTO SOIL SYSTEMS

BATTFILL MEMORIAL INSTITUTE

BNWL-985, PP. 4.1-4.2, APRIL 1968

REPORTS PROGRESS OF A FIELD DEMONSTRATION OF THE CONCEPT FOR DISPOSAL OF REACTOR OFF-GAS INTO THE GROUND. RECENT WORK WAS CENTERED UPON COMPLETING THE DEVELOPMENT OF TWO MATHEMATICAL MODELS OF GAS FLOW AND APPLYING THEM TO THE SPECIFIC TRACER TEST AT NRTS. SOME PROBLEMS ARE DISCUSSED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-29626 *CONTINUED*
\$3.00 COPY, \$0.65 MICROFICHE

*MATHEMATICAL TREATMENT + *MODEL TESTING + *TRACER, GAS + *WASTE DISPOSAL, GAS +
ENGINEERED SAFETY FEATURE + NRTS + R AND D PROGRAM + WASTE DISPOSAL, TERRESTRIAL

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-26117
CAMPBELL SD + BODY OF
AN ACCLIMATION ROOM FOR THE DETECTION OF LOW RADIUM 226 BODY BURDENS
U.S. DEPT. OF HEALTH, EDUCATION, AND WELFARE, PUBLIC HEALTH SERVICE
20 PAGES, 7 FIGURES, 1 TABLE, 15 REFERENCES, ENVIRONMENTAL HEALTH SERIES, RADIOLOGICAL HEALTH, FEBRUARY
1968, PUBLICATION NO. 999-RH-31

A MOBILE BREATH RADON DETECTION APPARATUS HAS BEEN USED FOR MEASURING LOW RADIUM-226 BODY BURDENS. THE UNIQUE FEATURE OF THE APPARATUS IS AN ACCLIMATION ROOM DESIGNED TO ACCOMMODATE SUBJECTS FOR PERIODS UP TO 1 WEEK IN A LOW-RADON ENVIRONMENT. RADON CONCENTRATIONS IN THE ACCLIMATION ROOM HAVE BEEN REDUCED TO AN OPERATING LEVEL OF 0.0005 PCI PER LITER, A REDUCTION OF APPROXIMATELY 600 TO 1, BY AN AIR PROCESSING UNIT EMPLOYING ACTIVATED COCONUT CHARCOAL. THE CONSTRUCTION AND OPERATION OF THE ACCLIMATION ROOM AND BREATH SAMPLE COLLECTION ARE DESCRIBED. RADIUM-226 BODY BURDENS FOR THE SUBJECTS AND A RADON ELIMINATION CURVE FOR ONE SUBJECT ARE INCLUDED.

AVAILABILITY - OFFICE OF INFORMATION, NATIONAL CENTER FOR RADIOLOGICAL HEALTH, PUBLIC HEALTH SERVICE, U. S. DEPT. OF HEALTH, EDUCATION AND WELFARE, ROCKVILLE, MD. 20852

*BIOLOGICAL CONCENTRATION, MAN + *COUNTER + *ENVIRONMENTAL CONDITION + *INHALATION + *RADON + CHARCOAL ADSORBER + RADIUM

15-26119 ALSO IN CATEGORIES 13 AND 1
GUIDANCE FOR THE CONTROL OF RADIATION HAZARDS IN URANIUM MINING
FEDERAL RADIATION COUNCIL
NP-17040 +. 60 PAGES, FIGURES, TABLES, REFERENCES, SEPTEMBER 1967, STAFF REPORT OF THE U.S. FEDERAL RADIATION COUNCIL, REPORT NO. 8 REVISED

PRESENTS BACKGROUND MATERIAL USED IN THE DEVELOPMENT OF GUIDANCE FOR FEDERAL AGENCIES IN REGULATORY PROGRAMS AND IN PROGRAMS OF COOPERATION WITH STATES CONCERNING RADIATION PROTECTION IN THE MINING OF URANIUM ORE, AND SEEKS TO PROVIDE GUIDANCE FOR LONG-TERM RADIATION PROTECTION IN URANIUM MINING. PERIODIC REVIEW WILL BE NECESSARY TO INCORPORATE NEW INFORMATION AND NEW SURVEILLANCE OR CONTROL TECHNIQUES AS THEY ARE DEVELOPED. THE REPORT ALSO INCLUDES RECOMMENDATIONS FOR ADDITIONAL RESEARCH AND RECORDKEEPING NEEDED TO PROVIDE A FIRMER BASIS FOR THE EVALUATION OF RADIATION RISKS IN THIS INDUSTRY.

AVAILABILITY - GOVERNMENT PRINTING OFFICE, \$C.40

*BIOLOGICAL CONCENTRATION, MAN + *HAZARDS ANALYSIS + *MINING + *RADIATION SAFETY AND CONTROL + *URANIUM + DOSIMETRY, GENERAL + FEDERAL RADIATION COUNCIL + MONITOR, RADIATION, ENVIRONMENTAL + RADIATION EFFECT + RADIOBIOLOGY

15-26483
TROUSIL J + BUCINA I
ALL-STATE FILM DOSIMETRY SERVICE IN CSSR. PART III. THE EVALUATION OF HIGH-LEVEL DOSES, MEASURING ERRORS, AND ORGANIZATION OF SERVICE
9 PAGES, JAD. ENERG. 13, PAGES 454-62 (1967)

A STATISTICAL EVALUATION OF MAXIMUM ERRORS WHICH OCCUR IN FILM DOSIMETRY WITH RESPECT TO DOSE AND THE PHOTOGRAPHIC FILMS AVAILABLE IS PRESENTED. THE CRITERIA FOR CHOOSING FILMS SENSITIVE TO GAMMA, BETA, AND X RADIATION AT 20 MR TO 1000 R WITH AN ACCURACY BETTER THAN PLUS OR MINUS 30% AND AT 50 MR TO 600 R WITH AN ACCURACY BETTER THAN PLUS OR MINUS 20% ARE DISCUSSED. THE METHOD OF HIGH LEVEL DOSE EVALUATION USING EMULSIONS WITH LOW SENSITIVITY AND INHIBITORS OF DEVELOPING PROCESSES IS DESCRIBED. THE ORGANIZATION FOR FILM DOSIMETER SERVICE IN CSSR IS EXAMINED.

COSIMETRY, PHOTOGRAPHIC + ERROR ANALYSIS + GAMMA + MEASUREMENT, GENERAL + X-RAY

15-26769
KAYE SV + ROHWER PS
ESTIMATING EXTERNAL DOSE IN FEASIBILITY EVALUATIONS OF PLOWSHARE EVENTS
OAK RIDGE NATIONAL LABORATORY
ORNL-TM-2249 +. 18 PAGES, 6 REFERENCES, AUGUST 1968

A BRIEF DESCRIPTION IS GIVEN OF THE EXREM COMPUTER CODE FOR CALCULATING DOSE EQUIVALENT RATES AND DOSE EQUIVALENTS FROM EXTERNAL BETA AND GAMMA SOURCES OF RADIOACTIVITY WHICH MIGHT RESULT FROM NUCLEAR ENGINEERING DETONATIONS. THREE MODES OF EXTERNAL EXPOSURE ARE CONSIDERED - (1) SUBMERSION IN CONTAMINATED AIR, (2) SUBMERSION IN CONTAMINATED WATER, AND (3) EXPOSURE ABOVE A CONTAMINATED SURFACE. THIS CODE WILL HANDLE UP TO 25 RELEASES OF RADIOACTIVITY INVOLVING UP TO 250 RADIONUCLIDES AND TWO LOCATIONS FOR EACH MODE OF EXPOSURE. THE MACHINE OUTPUT FROM A SAMPLE PROBLEM IS SHOWN IN THE APPENDIX.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*AIR + *COMPUTER PROGRAM + *CONTAMINATION + *DOSE CALCULATION, EXTERNAL + *SURFACE CONTAMINATION + *WATER, GENERAL + NUCLEAR DETONATION + PLOWSHARE PROGRAM + R AND D PROGRAM

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-27328
BECKER K
BIBLIOGRAPHIES IN NUCLEAR SCIENCE AND TECHNOLOGY, SECTION 21, DOSIMETRY
ZENTRALSTELLE FUER ATOMKERNENERGIE-DOKUMENTATION, FRANKFURT
AED-C-21-C6 +. 82 PAGES, JANUARY 1968

THE BIBLIOGRAPHY CONSISTS OF MANY FORMS AND VARIETIES OF DOSIMETRY AND IN MANY DIFFERENT SITUATIONS AND CONDITIONS. MOST OF THE ITEMS ARE LISTED IN THE ENGLISH LANGUAGE, BUT SOME ARE LISTED IN FOREIGN LANGUAGE, PARTICULARLY, RUSSIAN.

AVAILABILITY - USAEC DEPOSITORY LIBRARIES IN THE U.S. AND OVERSEAS

BIBLIOGRAPHY + BIOLOGICAL CONCENTRATION, MAN + DOSE + DOSIMETRY, GENERAL + FAST NEUTRON + MONITOR, RADIATION, PERSONNEL + RADIATION SAFETY AND CONTROL + RADIOBIOLOGY + RADIONUCLIDE, INDUCED + SORPTION + THERMAL CONSIDERATION + X-RAY

15-27460
ATOMIC BOMB CASUALTY COMMISSION - ANNUAL REPORT, JULY 1, 1966 TO JUNE 30, 1967
ATOMIC BOMB CASUALTY COMMISSION, HIROSHIMA AND NAGASKI
ABCC-66-7 +. 336 PAGES, FIGURES, TABLES, APRIL 1, 1968

IN 1947, THE ATOMIC BOMB CASUALTY COMMISSION (ABCC) WAS ESTABLISHED, AND THE COLLECTION OF DATA FOR STUDY WAS BEGUN IN HIROSHIMA AND NAGASKI IN THE SAME YEAR. THE COMMISSION IS SUPPORTED BY THE AEC AND THE JAPANESE NATIONAL INSTITUTE OF HEALTH, MINISTRY OF HEALTH AND WELFARE. THE THREE MAJOR PROGRAMS BEING CONDUCTED BY ABCC ARE THE LIFE-SPAN STUDY, THE ADULT-HEALTH STUDY, AND THE PATHOLOGY STUDY. OTHER STUDIES INCLUDE INCIDENCE OF CATARACTS, LEUKEMIA, AND OF OTHER MALIGNANT DISEASE AMONG SURVIVORS, PLUS GENETIC FOLLOW-UP.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00, \$0.65 MICROFICHE

*BIOLOGICAL CONCENTRATION, MAN + *BIOMEDICAL + *POPULATION EXPOSURE + *RADIATION EFFECT + *RADIATION INJURY TREATMENT + *RADIOBIOLOGY + RADIATION DAMAGE + RADIATION EXPOSURE, RECORD KEEPING + RADIATION SAFETY AND CONTROL + USAEC

15-27506 ALSO IN CATEGORY 14
WHICKER FW + DAHL AH
RADIOECOLOGY OF SOME NATURAL ORGANISMS AND SYSTEMS IN COLORADO. SIXTH TECHNICAL PROGRESS REPORT, JANUARY 1, 1967--DECEMBER 31, 1967
COLORADO STATE UNIVERSITY
COO-1156-28 +. 75 PAGES, FEBRUARY 1, 1968

SUMMARIZES PROJECT ACTIVITIES AND INFORMATION GATHERED DURING 1967. STUDIES ON RADIOACTIVE AND STABLE SR ACCUMULATION IN WILD DEER WERE COMPLETED. THE STUDY ON CS-137 ACCUMULATION IN ALPINE LAKE TROUT WAS EXPANDED. THE STUDY ON THE EFFECTS OF RADIATION AND ENVIRONMENTAL STRESS ON THE PIKE WAS STARTED. PLANS FOR THE GRASSLAND IRRADIATION STUDY ARE NEARLY COMPLETE AND SOME FUNDS AWARDED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*BIOLOGICAL CONCENTRATION, ANIMAL + *BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + *BIOLOGICAL CONCENTRATION, VEGETATION + *ECOLOGICAL CONSIDERATION + MONITOR, RADIATION, ENVIRONMENTAL + RADIOLOGY

15-27526 ALSO IN CATEGORIES 16 AND 17
BULLETIN OF COURSES, JULY 1967 TO JUNE 1968
U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
31 PAGES, 1968

THIRTY-ONE COURSES (1 DAY TO 3 WEEKS EACH) ARE OFFERED IN 5 AREAS. (1) BASIC TRAINING AND ORIENTATION - 6. (2) AIR QUALITY MANAGEMENT - 7. (3) PROCESS EVALUATION AND CONTROL - 8. (4) ATMOSPHERIC SAMPLING AND ANALYSIS - 8. (5) FIELD STUDIES - 5. *** ALTHOUGH PRIMARILY FOR NONREACTOR AIR POLLUTION, OF INTEREST TO REACTOR OPERATIONS PERSONNEL ARE METEOROLOGICAL ASPECTS OF AIR POLLUTION, DIFFUSION OF AIR POLLUTION - THEORY AND APPLICATION, AND MEASUREMENT OF AIRBORNE RADIOACTIVITY. COURSES ARE FREE BUT ATTENDANCE MAY BE LIMITED.

AVAILABILITY - CHIEF, TRAINING PROGRAM, NATIONAL CENTER FOR AIR POLLUTION CONTROL, 411 WEST CHAPEL HILL STREET, DURHAM, NORTH CAROLINA 27701

*TRAINING

15-27527 ALSO IN CATEGORY 14
SAFETY INVOLVING DETONATION OF NUCLEAR DEVICES

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-27527 *CONTINUED*
REYNOLDS ELECTRICAL AND ENGINEERING COMPANY, INC.
NVO-28 +. 141 PAGES, MAY 1966

THE CONTENT OF THIS PUBLICATION IS PRIMARILY DIRECTED TO DESCRIBING THE LONG-RANGE SAFETY STUDIES NECESSARY TO IMPROVE PREDICTION CAPABILITIES AND KEEP PACE WITH AN ACTIVE TESTING PROGRAM. THE DAY-TO-DAY DETONATION SAFETY ACTIVITIES NECESSARY TO SUPPORT THE TESTING PROGRAM ARE DESCRIBED TO THE EXTENT REQUIRED TO GIVE AN OVERALL, THOUGH LIMITED, VERSION OF EVENT-RELATED SAFETY ACTIONS AND PROCEDURES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$4.00 COPY, \$1.00 MICROFICHE

*GROUND WATER, GENERAL + *HYDROLOGICAL CONSIDERATION, GENERAL + *NUCLEAR DETONATION + *RADIATION SAFETY AND CONTROL + *SURFACE WATER, GENERAL + *USAEC + CONTAMINATION + DIFFUSION + FALLOUT + SEISMOLOGY + TRACER, GENERAL + TRANSPORT PROPERTY + TRITIUM + WATER POLLUTION

15-27785 ALSO IN CATEGORIES 17 AND 14
TRAINING MANUAL - OCCUPATIONAL RADIATION PROTECTION
U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE, PUBLIC HEALTH SERVICE
100 PAGES, FIGURES, TABLES, REFERENCES, 1966

A SET OF COURSE NOTES FOR 45 LECTURES IN THE GENERAL SUBJECT AREAS OF - I. RADIATION PROTECTION PHILOSOPHY (1). II. RADIATION EXPOSURE, CRITERIA, AND EVALUATION (2). III. RADIONUCLIDE APPLICATIONS IN INDUSTRY AND MEDICINE (3). IV. RADIATION PROTECTION AND SHIELDING (2). V. PROTECTION, INTERNAL EXPOSURE (5). VI. NEUTRON PROTECTION (2). VII. RADIATION ACCIDENT MONITORING (6). VIII. HIGH ENERGY MACHINE PRODUCED RADIATION (3). IX. PERSONNEL INSTRUMENTS (1). X. INDUSTRIAL X-RAY (3). XI. LEGAL AND REGULATORY ASPECTS (7). XII. LABORATORY EXERCISES (10). ***FOR USE IN A TWO WEEK COURSE PRESENTED BY NCRH.

AVAILABILITY - NATIONAL CENTER FOR RADIOLOGICAL HEALTH, ROCKVILLE, MARYLAND 20852

*HEALTH PHYSICS TRAINING + ACCELERATION + RADIATION SAFETY AND CONTROL + REACTOR, POWER + REACTOR, RESEARCH + SURVEY, RADIATION, EMERGENCY + TRAINING + X-RAY

15-27786 ALSO IN CATEGORY 14
FUTAGAWA K + GLOYNA EF
RADIOACTIVITY TRANSPORT IN WATER--EFFECTS OF ORGANIC POLLUTION ON RADIONUCLIDE TRANSPORT
UNIVERSITY OF TEXAS AT AUSTIN
EHE-04-6803 +. 61 PAGES, FIGURES, TABLES, 31 REFERENCES, MAY, 1968

THE ECOLOGICAL ENVIRONMENT OF A RIVER SYSTEM WAS SIMULATED WITH THE AID OF A SPECIALLY ADAPTED RESEARCH FLUME. THE CHARACTERISTICS OF THE SPATIAL AND TEMPORAL VARIATION OF THE OXYGEN CONCENTRATION IN THE FLUME WATER WERE DETERMINED. THE REAERATION RATE CONSTANTS, THE BIOLOGICAL OXIDATION RATE CONSTANT, AND THE PHOTOSYNTHESIS AND RESPIRATION RATE OF BENTHAL ALGAE WERE MEASURED. IN THE DETERMINATION OF REAERATION RATE CONSTANTS, THE OXYGEN CONCENTRATION OF THE INFLUENT WAS MAINTAINED AT A CONSTANT LEVEL BY THE USE OF SODIUM SULFITE. CANE SUGAR WAS USED AS A POLLUTANT. THE EFFECTS OF BENTHAL ALGAE ON THE SYSTEM WERE DETERMINED UNDER STAGNANT FLOW CONDITIONS.

AVAILABILITY - E.F. GLOYNA, CENTER FOR RESEARCH IN WATER RESOURCES, UNIVERSITY OF TEXAS AT AUSTIN

*BIOLOGICAL CONCENTRATION, ALGAE + *BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + *ECOLOGICAL CONSIDERATION + *FISSION PRODUCT TRANSPORT + *MODEL TESTING + *RIVER, GENERAL + *WATER POLLUTION + DIFFUSION CHANNEL + MATHEMATICAL STUDY + OXYGEN + TRANSPORT PROPERTY

15-27810 ALSO IN CATEGORIES 16 AND 17
SMITH M
RECOMMENDED GUIDE FOR THE PREDICTION OF THE DISPERSION OF AIRBORNE EFFLUENTS
THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS, NEW YORK, N.Y.
85 PAGES, FIGURES, TABLES, MAY, 1969

THIS GUIDE IS AN OUTGROWTH OF A MEETING OF ASME COMMITTEE ON AIR POLLUTION CONTROLS, A DIVISION OF THE POWER DEPARTMENT, HELD ON DEC. 2, 1964. THE FOLLOWING CHAPTERS PRESENT THE OVERALL SCOPE OF THE VOLUME - (CHAPTER 1) METEOROLOGICAL FUNDAMENTALS. (CHAPTER 2) BEHAVIOR OF AIRBORNE EFFLUENTS. (CHAPTER 3) CALCULATION OF EFFECTIVE STACK HEIGHT. (CHAPTER 4) CALCULATIONS OF DISPERSION AND DEPOSITION. (CHAPTER 5) SOURCES OF DATA AND EXPERIMENTAL METHODS. (CHAPTER 6) CALCULATION METHODS AND EXAMPLES.

AVAILABILITY - THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS, UNITED ENGINEERING CENTER, 345 EAST 47TH STREET, NEW YORK, N.Y. 10017

*METEOROLOGY + *TRAINING + ATMOSPHERIC DIFFUSION + ATMOSPHERIC STABILITY + DEPOSITION + DISPERSION + HEIGHT OF RISE + INSTRUMENT, METEOROLOGICAL + PLUME BEHAVIOR, GENERAL + STACK

15-27830 ALSO IN CATEGORY 17
FUNDAMENTALS OF RADIATION SAFETY FOR NERVA TEST OPERATIONS PERSONNEL
WESTINGHOUSE ELECTRIC CORP. + AEROJET-GENERAL CORP.

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-27830 *CONTINUED*
NTO-T-0022 +. 83 PAGES, FIGURES, APRIL 1967

(I) CHARACTERISTICS OF RADIATION, 12 PAGES. (II) MEASUREMENT OF RADIATION, 5 PAGES. (III) BIOLOGICAL HAZARDS OF RADIATION, 14 PAGES. (IV) PRINCIPLES OF RADIATION DETECTION, 19 PAGES. (V) PROTECTION FROM RADIATION. ***ANOTHER REHASH OF THE USUAL MATERIAL. SUITABLE INTRODUCTORY TRAINING MATERIAL FOR LOWER GRADE OPERATIONS AND MAINTENANCE PERSONNEL.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*HEALTH PHYSICS TRAINING + NERVA PROGRAM

15-27863
SIVINTSEV YV + KANAREIKIN VA + ARUTINOV OM
CHANGE IN THE CS-137 CONCENTRATIONS IN HUMANS
INSTITUTE OF ATOMIC ENERGY, MOSCOW
4 PAGES, 3 FIGURES, 16 REFERENCES, RADIOBIOLOGIYA 6, PAGES 822-5 (1966)

MONTHLY MEASUREMENTS OF A CONTROL GROUP OF 10 ADULT MEN WHO HAD NO OCCUPATIONAL CONTACT WITH RADIOACTIVE SUBSTANCES, USING A SPECTROMETER DESIGNED BY THE AUTHORS, WERE CONDUCTED TO DETERMINE THE POINT OF INFLECTION ON THE CURVE OF THE VARIATION OF THE SPECIFIC ACTIVITY OF CS-137 IN THE HUMAN ORGANISM, RESULTING FROM THE CESSATION OF ATMOSPHERIC NUCLEAR TESTING. RESULTS WERE COMPARED WITH ANALOGOUS INVESTIGATIONS CONCENTRATION OF LONG-LIVED CS-137 IN THE HUMAN ORGANISM BEGAN TO DROP IN THE MIDDLE OF 1964. INDIRECT SUPPORT FOR THE IMPORTANCE OF MILK IN THE DIET AS A SOURCE OF CS-137 WAS OBTAINED IN OBSERVATIONS OF A SUBJECT WHO CONSUMED ABOUT 1.5 LITERS OF MILK PER DAY, APPROXIMATELY THREE TIMES THE AVERAGE LEVEL. BREAD AND GROATS ARE ALSO PRESUMED TO BE IMPORTANT SOURCES OF UPTAKE OF THIS ISOTOPE.

*BIOLOGICAL CONCENTRATION, AGRICULTURAL PRODUCE + *BIOLOGICAL CONCENTRATION, MAN +
*BIOLOGICAL CONCENTRATION, MILK + *CESIUM + NUCLEAR DETONATION + SPECTROMETRY, GAMMA + USSR

15-27864
KEELY RB + WENSTRAND TK
ENVIRONMENTAL REPORT NO. 3
NUCLEAR FUEL SERVICES, INC., WEST VALLEY, NEW YORK
20 PAGES, 10 TABLES, MAY 25, 1968, DOCKET 50-201

SUMMARIZES RESULTS OF NUCLEAR FUEL SERVICES, INC., WEST VALLEY, NEW YORK, ENVIRONMENTAL MONITORING PROGRAM FOR THE LAST THREE MONTHS OF 1967. DURING THIS PERIOD, THE WESTERN NEW YORK NUCLEAR RESEARCH CENTER, ISOTOPIES, INC., AND NUCLEAR FUEL SERVICES, INC., ANALYZED A TOTAL OF 300 SAMPLES. SAMPLE RESULTS ARE COMPARED TO THE PREOPERATIONAL STUDY MADE FROM JULY 1963 TO JULY 1965 AND TO AVAILABLE CURRENT UNITED STATES PUBLIC HEALTH SERVICE DATA.

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

*MONITOR, RADIATION, ENVIRONMENTAL + *MONITOR, RADIATION, SAMPLING + AIR + BIOLOGICAL CONCENTRATION, MILK +
BIOLOGICAL CONCENTRATION, VEGETATION + FALLOUT + PARTICULATE + SEDIMENT + SOIL + STACK + WATER, GENERAL

15-27869
PIESCH E
THE INDICATION OF ADSORBED DOSE IN CRITICAL ORGANS BY ENERGY INDEPENDENT PERSONNEL DOSIMETERS
KARLSRUHE NUCLEAR RESEARCH CENTER
9 PAGES, 5 FIGURES, 1 TABLE, 13 REFERENCES, HEALTH PHYSICS 15(2), PAGES 145-153 (AUGUST 1968)

THE RADIATION HAZARD TO A PERSON MAY BE DETERMINED BY A PERSONNEL DOSIMETER WORN ON A REPRESENTATIVE PART OF THE BODY. ACCORDING TO THE ICRP RECOMMENDATIONS, THE ABSORBED DOSE IN THE CRITICAL ORGANS HAS TO BE MEASURED. THERE ARE DIFFERENT POSSIBILITIES OF ESTIMATING AN ORGAN DOSE BY A PERSONNEL DOSIMETER. PERSONNEL DOSIMETERS, ESPECIALLY SPHERICAL PHOSPHATE GLASS DOSIMETERS, ARE DESCRIBED WHICH SIMULTANEOUSLY INDICATE THE ABSORBED DOSE IN THE BONE MARROW, GUT MUCOSA, TESTES, OVARIES AND LENSES OF THE EYE INDEPENDENT OF THE RADIATION ENERGY ABOVE 50 KEV WHEN THE DOSIMETERS WERE EXPOSED AT THE FRONT OF AN ALDERSON PHANTOM. THE POSSIBILITIES OF INTERPRETING AN ORGAN DOSE AND THE MEASURING ACCURACY FOR PERSONNEL DOSIMETER READINGS ARE DISCUSSED.

*BIOLOGICAL CONCENTRATION, MAN + *DOSE MEASUREMENT, INTERNAL + *DOSIMETRY, GENERAL +
*MONITOR, RADIATION, PERSONNEL

15-27870
MOYER RA
SAVANNAH RIVER EXPERIENCE WITH TRANSPLUTONIUM ELEMENTS
SAVANNAH RIVER LABORATORY
6 PAGES, 4 FIGURES, 5 TABLES, 7 REFERENCES, HEALTH PHYSICS 15(2), PAGES 133-38 (AUGUST 1968)

THE SAVANNAH RIVER LABORATORY IS INVOLVED IN RESEARCH AND DEVELOPMENT WORK WITH CM-244, CF-252, AND OTHER HIGH-SPECIFIC-ACTIVITY ALPHA EMITTING ISOTOPES. THIS WORK INCREASES CONTAMINATION PROBLEMS AND PRESENTS NEUTRON AND X-RAY EXPOSURE PROBLEMS NOT PREVIOUSLY ENCOUNTERED. WHILE PROBLEMS OF SURFACE, AIR, AND PERSONNEL CONTAMINATION ARE SIMILAR TO

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-27870 *CONTINUED*

THOSE WITH PU-239, THE HIGHER SPECIFIC ACTIVITY OF THE TRANSPLUTONIUM ISOTOPES INCREASES THE HAZARDS AND CONTROL PROBLEMS, ESPECIALLY WHEN FINELY DIVIDED DRY POWDERS ARE USED. CONTAINMENT IS BEING ACHIEVED THROUGH DESIGN AND STRICT PROCEDURES. PERSONNEL EXPOSURE IS BEING CONTROLLED AND EVALUATED BY USING THERMOLUMINESCENT DOSIMETERS TO SUPPLEMENT BETA GAMMA AND NTA FILM BADGES. BECAUSE OF THE INCREASED RADIATION, THE QUANTITY OF WORKING MATERIAL IS LIMITED AND LOCAL SHIELDING IS USED.

*CALIFORNIUM + *CONTAMINATION + *CURIUM + *RADIATION SAFETY AND CONTROL + ALPHA EMITTER + NEUTRON + SAVANNAH RIVER PLANT + X-RAY

15-27871

BURGESS WA + SHAPIRO J
PROTECTION FROM THE DAUGHTER PRODUCTS OF RADON THROUGH THE USE OF A POWERED AIR-PURIFYING RESPIRATOR
HARVARD SCHOOL OF PUBLIC HEALTH
7 PAGES, 2 FIGURES, 2 TABLES, 8 REFERENCES, HEALTH PHYSICS 15, PAGES 115-121 (AUGUST 1968)

THE PROTECTION AFFORDED BY A POWERED AIR-PURIFYING RESPIRATOR AGAINST RADON DAUGHTERS HAS BEEN EVALUATED UNDER PHYSIOLOGICAL WORKING CONDITIONS IN AIR CONCENTRATIONS OF DAUGHTER PRODUCTS IN EXCESS OF 10 TO THE MINUS 8TH CI/L. THE TESTS DEMONSTRATED THAT THIS DEVICE COULD REDUCE THE EXPOSURE TO THE RADON DAUGHTERS BY FACTORS OF GREATER THAN 1000. SINCE THE RESPIRATOR FILTER DID NOT REMOVE THE RADON THE ACTUAL DEGREE OF PROTECTION AFFORDED BY THE DEVICE IN A RADON-RADON DAUGHTER ATMOSPHERE WAS EVALUATED. SEVERAL DIFFERENT METHODS FOR CALCULATING DOSE WERE USED AND THE RESULTS COMPARED. IT IS SUGGESTED THAT A CONSERVATIVE PROTECTION FACTOR OF 20 BE UTILIZED FOR SUCH DEVICES UNTIL THE CRITICAL REGIONS OF THE LUNG AFFECTED BY EXPOSURE TO RADIOACTIVITY IN MINES ARE IDENTIFIED.

*AIR CLEANING + *MINING + *URANIUM + BIOLOGICAL CONCENTRATION, MAN + DOSE CALCULATION, INTERNAL + RADON

15-27899

ALSO IN CATEGORY 14
NATIONAL ACADEMY OF SCIENCES COMMITTEE TO ADVISE AEC ON WASTE MANAGEMENT PLANS
UNITED STATES ATOMIC ENERGY COMMISSION
AEC PRESS RELEASE NO. L-184 +. 1 PAGE, AUGUST 6, 1968

THE ATOMIC ENERGY COMMISSION AND THE NATIONAL ACADEMY OF SCIENCES HAVE ANNOUNCED THE ESTABLISHMENT OF A COMMITTEE ON RADIOACTIVE WASTE DISPOSAL TO REVIEW AND ADVISE THE AEC CONCERNING LONG-RANGE RADIOACTIVE WASTE MANAGEMENT PLANS AND PROGRAMS FOR THE RAPIDLY EXPANDING NUCLEAR ENERGY INDUSTRY. THE PRIMARY TASK OF THIS NEW ACADEMY COMMITTEE INCLUDES THE ASSESSMENT OF THE ADEQUACY OF THE PRESENT AND PROJECTED TECHNOLOGY TO MEET LONG-RANGE HEALTH, SAFETY, AND OTHER ENVIRONMENTAL REQUIREMENTS AND THE IDENTIFICATION OF NEW RESEARCH AND DEVELOPMENT NEEDS.

*USAEC + *WASTE DISPOSAL, GENERAL + *WASTE MANAGEMENT + ENGINEERED SAFETY FEATURE + ENVIRONMENTAL CONDITION + GEOLOGICAL CONSIDERATION, GENERAL + HYDROLOGICAL CONSIDERATION, GENERAL + OCEAN AND SEA + R AND D PROGRAM + RADIATION SAFETY AND CONTROL

15-27909

MOGHISSI AA + PORTER CR
TRITIUM IN SURFACE WATERS OF THE UNITED STATES, 1966
SOUTHEASTERN RADIOLOGICAL HEALTH LAB., MONTGOMERY, ALA.
3 PAGES, 1 TABLE, 7 REFERENCES, RADIOLOGICAL HEALTH DATA AND REPORTS, 9(7), PAGES 327-339 (JULY 1968)

DURING 1964, A TRITIUM SAMPLING NETWORK WAS ESTABLISHED BY THE PUBLIC HEALTH SERVICE TO MEASURE THE LEVELS AND CONSEQUENTLY TO DETERMINE THE PUBLIC HEALTH SIGNIFICANCE OF TRITIUM IN SURFACE WATERS OF THE U.S. ANALYTICAL PROCEDURES ARE DESCRIBED. DATA FOR THE SAMPLES OBTAINED ARE PRESENTED. A MEANS FOR ESTIMATING THE RADIATION DOSE RESULTING FROM TRITIUM IN THE BODY IS DEVELOPED.

*RADIOLOGICAL ASSISTANCE + *SURFACE WATER, NUCLIDE OCCURRENCE + *TRITIUM + RADIATION SAFETY AND CONTROL + SAMPLING + UNITED STATES

15-27910

DALY JC + MANCHESTER AV + GAGAY JJ + SAX NI
TRITIATED MOISTURE IN THE ATMOSPHERE SURROUNDING A NUCLEAR FUEL REPROCESSING PLANT
NEW YORK STATE HEALTH DEPARTMENT
6 PAGES, 2 FIGURES, 8 TABLES, 11 REFERENCES, RADIOLOGICAL HEALTH DATA AND REPORTS, 9(7), PAGES 341-346 (JULY 1968)

A NEW WIDE-AREA SAMPLING TECHNIQUE WAS USED TO COLLECT MORE THAN 700 TRITIATED MOISTURE SAMPLES OVER A 2-MONTH PERIOD FROM SEVEN SAMPLING LEGS RADIATING OUT FROM A FUEL REPROCESSING PLANT. THE HIGHEST TRITIUM LEVEL RECORDED WAS 26,400 PCI/LITER. THE DATA ARE REPORTED NOT SO MUCH FOR THEIR EPIDEMIOLOGIC VALUE AS FOR THEIR VALUE TO PUBLIC HEALTH AGENCIES CONTEMPLATING RADIOLOGICAL SURVEILLANCE AROUND NUCLEAR FACILITIES.

AVAILABILITY - U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE, NATIONAL CENTER FOR RADIOLOGICAL HEALTH

*ATMOSPHERIC DIFFUSION + *FUEL REPROCESSING + *SURVEILLANCE PROGRAM + *TRITIUM + RADIOLOGICAL ASSISTANCE + SAMPLING

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-27915
UPTON AC
EFFECTS OF RADIATION ON MAN
OAK RIDGE NATIONAL LABORATORY
ORNL-P-3874 +. 104 PAGES, 1 FIGURE, 1 TABLE, 267 REFERENCES, 1968

THE EFFECTS OF RADIATION ON THE SKIN WERE NOTED AS EARLY AS 1859. TWO TYPES OF RADIATION INJURY ARE GIVEN GENERAL COVERAGE - (1) GENETIC EFFECTS, AND (2) SOMATIC EFFECTS. THE ARTICLE DISCUSSES THE INCIDENCES OF CANCER, LONGEVITY, THYROID TUMOR, BONE TUMOR, PULMONARY TUMOR AND OTHER NEOPLASMS. THE PAPER ALSO POINTS OUT THE DEVELOPMENT OF RADIATION STANDARDS FOR PROTECTION AS THE ICRP AND NCRP IN 1928-29 AS WELL AS THE FEDERAL RADIATION COUNCIL IN 1959. BIBLIOGRAPHY INCLUDED.

AVAILABILITY - A. C. UPTON, OAK RIDGE NATIONAL LABORATORY

*BIOLOGICAL CONCENTRATION, MAN + *RADIATION EFFECT + *RADIATION PROTECTION, ORGANIZATION + BIBLIOGRAPHY + ICRP + NCRP + ORNL + RADIATION SAFETY AND CONTROL

15-27916
BOOT SJ + DENNIS JA
THE DOSE DISTRIBUTION IN A MAN-PHANTOM FROM THERMAL NEUTRONS
ATOMIC ENERGY RESEARCH ESTABLISHMENT, HARWELL
AERE-R-5522 +. 15 PAGES, 6 FIGURES, 1 TABLE, 14 REFERENCES, JUNE 1967

THE FLUX DENSITY DISTRIBUTION IN AND AROUND A MAN-PHANTOM HAS BEEN INVESTIGATED EXPERIMENTALLY USING A BROAD BEAM OF THERMAL NEUTRONS FROM THE GRAPHITE COLUMN OF A NUCLEAR REACTOR, THE PRESENCE OF THE PHANTOM PRODUCES A DISTURBANCE OF FLUX DENSITY LEVELS OVER DISTANCES AS MUCH AS 70 TO 100 CM FROM ITS SURFACE. THE EXPERIMENTALLY DERIVED VALUES ARE LOWER BECAUSE THE FINITE SIZE OF THE PHANTOM ALLOWS MORE NEUTRONS TO ESCAPE THAN IS THE CASE FOR THE SEMI-INFINITE SLAB USED IN THE THEORETICAL DERIVATION THAT IS THE BASIS OF THE RECOMMENDED LEVEL.

AVAILABILITY - SCIENTIFIC ADMINISTRATION OFFICE, ATOMIC ENERGY RESEARCH ESTABLISHMENT, HARWELL, DIDCOT, BERKSHIRE, ENGLAND

*DOSE CALCULATION, EXTERNAL + *DOSE CALCULATION, INTERNAL + *FLUX DISTRIBUTION + *MAXIMUM PERMISSIBLE DOSE (MPD) + *PHANTOM, HUMAN BODY + *THERMAL NEUTRON + UNITED KINGDOM

15-27920
SCOTT LM + WEST CM
HEALTH PHYSICS APPLICATION OF INVIVO GAMMA SPECTROMETRY IN A URANIUM PROCESSING PLANT
OAK RIDGE NATIONAL LABORATORY
Y-K8-77 + CONF-670521-11 +. 15 PAGES, 5 FIGURES, 3 TABLES, 6 REFERENCES, AUGUST 17, 1967, FROM SYMPOSIUM ON DIAGNOSIS AND TREATMENT OF DEPOSITED RADIONUCLIDES, RICHLAND, WASHINGTON

IN-VIVO GAMMA SPECTROMETRY HAS BEEN USED ROUTINELY FOR THE PAST SIX AND ONE-HALF YEARS IN THE HEALTH PHYSICS MONITORING OF URANIUM PROCESSING WORKERS. THE MAJOR PROBLEMS ASSOCIATED WITH THE TECHNIQUE ARE - (1) EFFECTS OF SURFACE CONTAMINATION, (2) RELATIVE INSENSITIVITY OF THE METHODS, AND (3) THE DIFFICULTY OF PREDICTING THE BASE SPECTRUM IN THE URANIUM REGION. THE SOLUTIONS TO THESE PROBLEMS AT Y-12 HAVE BEEN TO - (1) USE THE BACK DETECTOR DATA WHEN CONTAMINATION IS INDICATED, (2) INCREASE THE NUMBER OF DETECTORS, AND (3) DERIVE A PREDICTION EQUATION AND COUNT A CONTROL POPULATION TO ASSURE CONTINUED RELIABILITY OF THE EQUATION. IT HAS BEEN CONCLUDED THAT IN-VIVO SPECTROMETRY IS SUPERIOR TO URINALYSIS AS A MONITOR FOR INSOLUBLE URANIUM. HOWEVER, FOR SOLUBLE URANIUM AND AREAS OF LOW EXPOSURE POTENTIAL, URINALYSIS IS OF REAL VALUE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION - SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*ANALYTICAL TECHNIQUE, URINE + *BIOLOGICAL CONCENTRATION, MAN + *INSTRUMENT, RADIATION MONITORING + *MONITOR, RADIATION, PERSONNEL + *SPECTROMETRY, GAMMA + *URANIUM + CONTAMINATION + MONITOR, RADIATION, BACKGROUND + RADIATION SAFETY AND CONTROL

15-27921
HAZARDS CONTROL PROGRESS REPORT NO. 29 (SEPTEMBER-DECEMBER 1967) AND INDEX TO HAZARDS CONTROL PROGRESS REPORTS NOS. 27-29
CALIFORNIA UNIVERSITY, LIVERMORE
UCRL-50067-67-3 +. 67 PAGES, 47 FIGURES, 5 TABLES, 28 REFERENCES, DECEMBER 31, 1967

REPORTS AN EXPERIMENT WHICH WAS DESIGNED TO MEASURE THE ENERGY-DEPENDENT THERMOLUMINESCENT SUPRALINEARITY AND THE SIMULTANEOUS CHANGES IN TWO OF THE OPTICAL ABSORPTION BANDS OF TLD-100, A COMMERCIAL PRODUCT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*DOSIMETRY, THERMOLUMINESCENCE + *HAZARDS ANALYSIS + *IRRADIATION TESTING + COBALT + DOSE +

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-27921 *CONTINUED*
EXPERIMENT, GENERAL + LRL + SAMPLING + X-RAY

15-27922
PENSKO J + WARDASZKO T + WOCHNA M
NATURAL ATMOSPHERIC RADIOACTIVITY AND ITS DEPENDENCE ON SOME GEOPHYSICAL FACTORS
CENTRAL LABORATORY FOR RADIOLOGICAL PROTECTION, WARSAW, POLAND
4 PAGES, 7 FIGURES, 1 TABLE, 9 REFERENCES, ATOMPRAXIS, PAGES 255-8 (JUNE 1969)

ATMOSPHERIC RADIOACTIVITY IS OF IMPORTANCE AS ONE OF THE COMPONENTS OF NATURAL RADIATION BACKGROUND, AND WILL BE DISCUSSED FROM THAT POINT OF VIEW IN THIS PAPER. THE MAIN COMPONENT OF NATURAL ATMOSPHERIC RADIOACTIVITY IS RN-222, DIFFUSING FROM THE EARTH'S SURFACE. OF THE TWO REMAINING RADIOACTIVE EMANATIONS, ACTINON (RN-219) IS OF NO IMPORTANCE BECAUSE OF ITS VERY SHORT HALF-LIFE AND LACK OF LONG-LIVED DECAY PRODUCTS, WHEREAS THE CONTRIBUTION OF THORON (RN-220) IS SMALLER BY ONE OR TWO ORDERS OF MAGNITUDE THAN THAT OF RN-222 IN THE TOTAL RADIOACTIVITY OF THE GROUND LEVEL ATMOSPHERIC AIR AND RAPIDLY DECREASES WITH HEIGHT. THE PART OF OTHER NATURAL RADIONUCLIDES (BE-7, BE-10, C-14, H-3) IS INSIGNIFICANT IN THE GROUND-LEVEL ATMOSPHERE

*ATMOSPHERIC DIFFUSION, GLOBAL + *BEPYLLIUM + *CARBON + *HYDROGEN + *METEOROLOGY +
*MONITOR, RADIATION, BACKGROUND + *SOIL, NUCLIDE OCCURRENCE + AIR + GAMMA SMITTER + PRECIPITATION +
RADON + SNOW + SOIL

15-27923
FAUST LG
NEUTRON AND PHOTON SPECTRA, DOSE RATES AND ITS CHANGES WITH TIME SINCE CHEMICAL SEPARATION FOR HIGH-EXPOSURE PLUTONIUM
BATTELLE-NORTHWEST, RICHLAND, WASHINGTON
BNWL-SA-1644 + CONF-680302-4 +. 16 PAGES, 1 TABLE, 5 REFERENCES, JANUARY 1968, FROM INTERNATIONAL SYMPOSIUM ON NUCLEAR ELECTRONICS AND RADIOPROTECTION, TOULOUSE, FRANCE

THEORETICAL EXPRESSIONS ARE PRESENTED WHICH DESCRIBE THE RADIATION LEVELS AND RESULTANT DOSE RATES EXPECTED FROM PLUTONIUM. THE EXPRESSION FOR PHOTON DOSE RATES ARE BASED ON THE ISOTOPIC COMPOSITION OF THE PLUTONIUM, THE TIME SINCE CHEMICAL SEPARATION AND THE ENERGIES AND YIELDS OF THE PHOTONS ACCOMPANYING RADIOACTIVE DECAY, THE EXPRESSIONS FOR NEUTRON DOSE RATES ARE BASED ON ISOTOPIC COMPOSITION, MASS AND CHEMICAL/PHYSICAL FORM. NEUTRON ENERGY SPECTRA ARE PRESENTED FOR PUF4 AND PUO2.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*DECAY HEAT + *DOSE + *ENERGY LEVEL + *PLUTONIUM + GAMMA + NEUTRON + POPULATION EXPOSURE + X-RAY

15-27924
BENNETT CB + KEHRER WS + SOULE RP + CORN JP
GAMMA RAY FIELDS ABOVE ROUGH CONTAMINATED SURFACES
NAVAL RADIOLOGICAL DEFENSE LABORATORY, SAN FRANCISCO
USNRDL-TR-68-20 +. 214 PAGES, FIGURES, TABLES, JULY 14, 1967

AN EXPERIMENT WAS PERFORMED TO DETERMINE THE EFFECT OF SURFACE ROUGHNESS ON THE GAMMA RADIATION EXPOSURE RATE ABOVE FALLOUT-CONTAMINATED SURFACES. GAMMA RADIATION MEASUREMENTS WERE MADE AT HEIGHTS OF 1, 4, 8, AND 16 METERS AND AT HORIZONTAL DISTANCES OF 0 TO 128 METERS FROM THE CENTER OF A 10. FT. DIAMETER CIRCLE OF AU-198 CONTAMINATION ON TESTS WERE CONDUCTED WITH LU-177 CONTAMINATION ON PLATE GLASS AND 5/8 IN. GRAVEL IN AN ATTEMPT TO ESTABLISH THE ENERGY DEPENDENCE OF THE ROUGHNESS EFFECT. THE MEASURED VALUES WERE NUMERICALLY INTEGRATED TO APPROXIMATE THE GAMMA EXPOSURE FIELD ABOVE A UNIFORMLY CONTAMINATED INFINITE PLANE OF THE BASE MATERIAL. FOR EACH SURFACE MATERIAL, THE INTENSITY OF THE GAMMA EXPOSURE IS GIVEN.

AVAILABILITY - C. B. BENNETT, W. S. KEHRER, R. R. SOULE OR J. P. CORN, NAVAL RADIOLOGICAL DEFENSE LABORATORY, SAN FRANCISCO, CALIFORNIA

*GOLD + *SURFACE CONTAMINATION + DEPOSITION + FALLOUT

15-27925
A NEW FAMILY OF TRITIUM MONITORING EQUIPMENT OFFERING COMPLETE PERSONNEL PROTECTION
SANDIA CORPORATION
SC-M-68-245 +. 10 PAGES, MARCH 1968

DESCRIBES A COMPLETE TRITIUM MONITOR WHICH INCLUDES THE PRIMARY COMPONENTS OF A NEW CONTINUOUS MONITORING SYSTEM. THE COMPONENTS ARE A TRITIUM ALARM-MONITOR, RECORDER, RADIOLOGICAL URINALYSIS KIT, GAS-GENERATION CARTRIDGE, AND A TRITIUM-MONITORING CONSOLE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*INSTRUMENT, RADIATION MONITORING + *MONITOR, RADIATION, PERSONNEL + *RADIOLOGICAL ASSISTANCE + *TRITIUM +
BIOLOGICAL CONCENTRATION, MAN + RADIATION SAFETY AND CONTROL

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-27927

STOCUM WE

VARIABILITY IN THE PARAMETERS USED TO PREDICT THE DOSE TO THE THYROID FROM THE INGESTION OF I-131 IN MILK
LOS ALAMOS SCIENTIFIC LABORATORY, NEW MEXICO
LA-DC-9095 + CONF-68G108-8 +. 44 PAGES, FROM SYMPOSIUM ON ENVIRONMENTAL SURVEILLANCE IN THE VICINITY OF
NUCLEAR FACILITIES, AUGUSTA, GEORGIA

BEFORE TESTING A NUCLEAR REACTOR FOR PROJECT ROVER, A SAFETY ANALYSIS IS PERFORMED TO PREDICT
DOWNWIND DOSE DUE TO RADIONUCLIDES IN THE EFFLUENT CLOUD. UNDER CERTAIN METEOROLOGICAL
CONDITIONS, THE CLOUD MAY PASS OVER AREAS WHERE DAIRY CATTLE GRAZE, AND FISSION PRODUCTS WILL
BE DEPOSITED ON THE SOIL AND FORAGE. WHEN THE DATA FROM ENVIRONMENTAL SAMPLES OF PAST ROVER
TESTS WERE ANALYZED A LARGE VARIABILITY WAS FOUND IN ANY GIVEN MEASUREMENT, WHICH COULD NOT
BE ELIMINATED BY NORMALIZING OR CURVE-FITTING SCHEMES. THUS A STATISTICAL APPROACH IS
APPLIED TO PHYSICAL PHENOMENA SUCH AS ATMOSPHERIC DIFFUSION AND DEPOSITION AND TO BIOLOGICAL
PHENOMENA SUCH AS THE COW-MILK-MAN CHAIN. A DEMONSTRATION OF THE APPROACH IS GIVEN.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*BIOLOGICAL CONCENTRATION, ANIMAL + *BIOLOGICAL CONCENTRATION, MILK + *IODINE + *METEOROLOGICAL SUPPORT +
*POPULATION EXPOSURE + *REACTOR POWER + BIOLOGICAL CONCENTRATION, MAN + DEPOSITION + DIFFUSION + FALLOUT +
MONITOR, RADIATION, ENVIRONMENTAL + RADIATION SAFETY AND CONTROL + ROVER PROGRAM

15-27928

WATSON JE

PREDICTED RADIATION DOSE LEVELS FOR THE ABERDEEN PULSED REACTOR FACILITY
BALLISTIC RESEARCH LABORATORIES, ABERDEEN PROVING GROUND
BRL-MR-1586 +. 23 PAGES, 5 FIGURES, 1 TABLE, 13 REFERENCES, JUNE 1964

CALCULATIONS AND DATA PRESENTED IN BRL MEMORANDUM REPORT NO. 1438 FOR THE RADIATION DOSE
LEVELS FROM THE ABERDEEN PULSED REACTOR FACILITY (APRF) TO BE LOCATED AT ABERDEEN PROVING
GROUND, MARYLAND, ARE REVIEWED. RECENT DATA (FROM OPERATION BREN) AND CALCULATIONS ARE
PRESENTED. THE RECENT INFORMATION INDICATES THAT THE CALCULATION (METHOD B) IN BRL
MEMORANDUM REPORT NO. 1438 BASED ON DATA FROM A MONTE CARLO CALCULATION BY MEHL YIELDS A
NEUTRON DOSE AS A FUNCTION OF DISTANCE FROM THE REACTOR THAT IS TOO LARGE. THE RESULTS OF
THE NEUTRON DOSE CALCULATION BY METHOD A, ARE IN APPROXIMATE AGREEMENT WITH DOSE MEASUREMENTS
FROM OPERATION BREN. INFORMATION IS PRESENTED TO SHOW AS A FUNCTION OF DISTANCE FROM THE
APRF NEUTRON DOSE PER REACTOR PULSE, PER WEEK OF OPERATION, AND PER KW HR FOR STEADY STATE
OPERATION.

AVAILABILITY - DEFENSE DOCUMENTATION CENTER, WASHINGTON, D. C.

*DOSE CALCULATION, EXTERNAL + *DOSE CALCULATION, INTERNAL + DOSE + GAMMA + MONTE CARLO + NEUTRON +
REACTOR, PULSED

15-27983

ALSO IN CATEGORY 14

CALIFORNIA WASTE MANAGEMENT STUDY. A REPORT TO THE STATE OF CALIFORNIA, DEPARTMENT OF HEALTH
ALBUJEL-GENERAL CORPORATION
AGC-3056(FINAL) +. 500 PAGES, FIGURES, TABLES, 39 REFERENCES, AUGUST 1965

THE WASTE-HANDLING METHODS PRESENTLY USED ARE DISCUSSED IN CONSIDERABLE DETAIL. WASTE
SUBSYSTEMS ARE EVALUATED WHICH ARE BASED, IN LARGE MEASURE, ON STATE-OF-THE-ART EQUIPMENT.
THE RESULTS OF THIS STUDY INDICATE THAT IN THIS PARTICULAR AREA, NO MAJOR PROBLEM IS
ANTICIPATED IN THE WASTE SYSTEM THAT CANNOT BE ADEQUATELY HANDLED USING PRESENT APPROACHES.
THIS ASSUMES THAT REGIONAL CONSIDERATIONS AND REQUIREMENTS DO NOT INTRUDE SEVERELY ON THIS
AREA. HOWEVER, MORE ADVANCED EQUIPMENT, COMBINED WITH A FULLY INTEGRATED APPROACH, MIGHT
SIGNIFICANTLY REDUCE THE SYSTEM COSTS AND INCREASE SYSTEM BENEFITS. IT IS ALSO RECOGNIZED
THAT THE WASTE-MANAGEMENT PROBLEM WILL INCREASE MANY FOLD IN THE FUTURE YEARS.

AIRBORNE RELEASE + ALPHA EMITTER + BETA EMITTER + BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS +
BIOLOGICAL CONCENTRATION, MAN + COSMIC RADIATION + FEDERAL RADIATION COUNCIL + INGESTION + NEUTRON +
POPULATION EXPOSURE + RADIATION SAFETY AND CONTROL + WASTE DISPOSAL, ECONOMICS + WASTE DISPOSAL, OCEAN +
WASTE HANDLING + WASTE STORAGE + WASTE TRANSPORTATION + WATER POLLUTION

15-28031

PRADEL J

AIR MONITORING IN URANIUM MINES
LA-TR-67-66 +. 50 PAGES, JUNE 17, 1967

FOR RADON, INTERNATIONAL COMMISSION ON RADIOLOGICAL PROTECTION RECOMMENDS A MAXIMUM ADMISSIBLE
CONCENTRATION OF $3 \times 10^{(-8)}$ TH MICROCURIE/CC FOR AN EXPOSURE OF 40 TO 48 HOURS A WEEK, ITS
OFFSPRING RADIUM A, B, AND C BEING PRESUMED PRESENT IN RADIOACTIVE EQUILIBRIUM. IT IS
SPECIFIED THAT THIS LIMIT WAS OBTAINED BY CONSIDERING THE DOSE DELIVERED TO THE BRONCHI BY
RADIUM A IN THE FORM OF FREE IONS PRESENT IN A PROPORTION (F) ASSUMED TO EQUAL 10% OF THE
TOTAL RADIUM A. THE MAXIMUM ADMISSIBLE CONCENTRATION IS GIVEN BY THE FORMULA $3 \times 10^{(-6)}$ TH/(1
+ 1000 F) MICROCURIE/CC.

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-28031 *CONTINUED*
AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151
\$3.00 COPY, \$0.65 MICROFICHE

*CONTAMINATION + *MAXIMUM PERMISSIBLE CONCENTRATION (MPC) + *MINING + *RADON + *URANIUM + AIR + ICOP +
MONITOR, RADIATION, PERSONNEL + RADIATION SAFETY AND CONTROL

15-28032
IVANOV VI
DOSIMETRY OF IONIZING RADIATION
AD-663930 +. 260 PAGES, 1964

THE TRAINING AID IS WRITTEN ON THE BASIS OF A COURSE OF LECTURES READ BY THE AUTHOR AT THE MOSCOW ENGINEERING-PHYSICS INSTITUTE AND IS DESIGNED FOR A READER FAMILIAR WITH ATOMIC AND NUCLEAR PHYSICS, METHODS OF REGISTRATION OF RADIATION, AND INTERACTION OF RADIATION WITH SUBSTANCES. THE BOOK SETS FORTH PHYSICAL BASES, CALCULATIONS, AND EXPERIMENTAL METHODS OF DOSIMETRY IN CONFORMITY WITH EFFECTIVE TRAINING PROGRAMS. THE AID IS INTENDED FOR STUDENTS SPECIALIZING IN THE AREA OF PHYSICS OF SHIELDING AND DOSIMETRY. THE BOOK WILL BE USEFUL TO ENGINEERS, TECHNICIANS, AND LABORATORY ASSISTANTS, PRACTICALLY STUDYING QUESTION OF THE DOSIMETRY OF NUCLEAR RADIATIONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151
\$3.00 COPY, \$0.65 MICROFICHE

*DOSE CALCULATION, EXTERNAL + *DOSE CALCULATION, INTERNAL + *DOSIMETRY, GENERAL +
*HEALTH PHYSICS TRAINING + *INSTRUMENT, RADIATION MONITORING + *INTERACTION, SOIL AND STRUCTURE +
RADIATION SAFETY AND CONTROL + SHIELDING + USSR

15-28044
OFF SITE SURVEILLANCE FOR PROJECT STERLING
SOUTHEASTERN RADIOLOGICAL HEALTH LAB., MONTGOMERY, ALA. + SOUTHWESTERN RADIOLOGICAL HEALTH LAB., LAS VEGAS, NEVADA
VUF-1036 +. 41 PAGES, FIGURES, TABLES, 2 REFERENCES, DECEMBER 3, 1966

THE INFORMATION AND DATA PRESENTED IN THIS REPORT WERE COMPILED TO SUMMARIZE THE ACTIVITIES CONDUCTED BY THE OFF-SITE RADIOLOGICAL SAFETY ORGANIZATION RELATIVE TO PROJECT STERLING. ACTIVITIES BEFORE THE SHOT, DURING THE ACTIVE TEST PERIOD, AND IMMEDIATELY POST-SHOT ARE DISCUSSED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151
\$3.00 COPY, \$0.65 MICROFICHE

*MONITOR, RADIATION, ENVIRONMENTAL + *NUCLEAR DETONATION + *SAMPLING + *SURVEILLANCE PROGRAM + *TESTING +
RADIATION SAFETY AND CONTROL + RADIOLOGICAL ASSISTANCE

15-28045
HULETT SH
ENVIRONMENTAL RADIATION LEVELS AND CONCENTRATIONS FIRST HALF 1967
GOODYEAR ATOMIC CORP., PIKETON, OHIO
GAT-552 +. 10 PAGES, JULY 20, 1967

THE AVERAGE ENVIRONMENTAL RADIATION AND CONCENTRATION LEVELS FOR THE GOODYEAR ATOMIC CORPORATION GASEOUS DIFFUSION PLANT, FOR THE FIRST HALF OF 1967 AND FOR THE CALENDAR YEAR 1966, ARE SUMMARIZED IN THIS REPORT WHICH IS PREPARED IN ACCORDANCE WITH THE POLICY OF THE ATOMIC ENERGY COMMISSION. FOR THE FIRST HALF OF 1967 THE WATER ALPHA AND BETA-GAMMA, AND THE BACKGROUND DOSE RATE REMAINED SUBSTANTIALLY UNCHANGED COMPARED WITH THE 1966 RESULTS. THE WATER BETA-GAMMA, HOWEVER, INCREASED FOR THE FIRST HALF OF 1967. THIS INCREASE WAS CAUSED BY ONE SAMPLE OBTAINED FROM A PLANT EFFLUENT STREAM INSIDE THE PLANT BOUNDARIES (THE RESULTS SHOWED ONLY 6.0% OF THE AEC CONCENTRATION STANDARDS). SAMPLES TAKEN DOWNSTREAM OF ALL PLANT EFFLUENT SHOWED A DILUTION FACTOR OF 17 TO 1. PENETRATING BACKGROUND DOSE RATES REMAINED UNCHANGED FROM THE 1966 VALUES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151
\$3.00 COPY, \$0.65 MICROFICHE

*DOSE + *EFFLUENT + *MONITOR, RADIATION, ENVIRONMENTAL + *SURVEILLANCE PROGRAM +
MONITOR, RADIATION, BACKGROUND + RADIATION SAFETY AND CONTROL

15-28046 ALSO IN CATEGORY 19
LIN FM + CAMERON JR
A BIBLIOGRAPHY OF THERMOLUMINESCENT DOSIMETRY
WISCONSIN UNIV., MADISON
COO-1105-124 +. 60 PAGES, 1967

IN RECENT YEARS, THERE HAVE BEEN SEVERAL BIBLIOGRAPHIES LARGELY CONCERNED WITH THERMOLUMINESCENCE (TL). THE RAPID GROWTH OF THERMOLUMINESCENT DOSIMETRY (TLD) REQUIRES THAT A SEPARATE COMPREHENSIVE BIBLIOGRAPHY ON THIS SUBJECT BE COMPILED. IT IS UNAVOIDABLE THAT CERTAIN PERTINENT REFERENCES WILL HAVE BEEN UNINTENTIONALLY OMITTED, AND THE AUTHORS WOULD

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-28046 *CONTINUED*

APPRECIATE BEING INFORMED OF THESE. IT WAS NECESSARY TO MAKE ARBITRARY DECISIONS AS TO THE EDGES OF THE SUBJECT. WE INCLUDED THOSE BASIC PAPERS ON TL AND APPLICATIONS THAT APPEARED TO HAVE A DIRECT BEARING ON TLO.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151
\$3.00 COPY, \$0.65 MICROFICHE

*BIBLIOGRAPHY + *INSTRUMENT, GENERAL

15-28051 ALSO IN CATEGORY 4

WILLIS CA + BRAMLITT ET + PAULSON RB + ROONEY KL
SAFETY CHARACTERISTICS OF POLONIUM 210
ATOMICS INTERNATIONAL, CANOGA PARK, CALIFORNIA
SC-CR-67-2801 +. 116 PAGES, FIGURES, TABLES, DEC. 20, 1967

THE SAFETY CHARACTERISTICS OF POLONIUM-210 ARE INVESTIGATED BY EVALUATING THE POTENTIAL HAZARDS FROM A 500,000-CI SOURCE IN A LAUNCH-PAD ABORT. A LAUNCH-PAD ABORT MODEL IS DEVELOPED LARGELY ON THE BASIS OF PROJECT PYRO DATA. THE QUANTITIES OF DUSTS WHICH NEED TO BE INJECTED INTO THE CLOUD TO PROVIDE VARIOUS DEGREES OF DOSE REDUCTION ARE ESTIMATED. IT IS CONCLUDED THAT EXPERIMENTAL DATA CONCERNING POLONIUM ATTACHMENT TO PARTICLES IS NEEDED TO PERMIT A REALISTIC ASSESSMENT OF THE HAZARDS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA
22151, \$3.00 COPY, \$0.65 MICROFICHE

*HAZARDS ANALYSIS + *MODEL TESTING + *PARTICLE, RADIOACTIVE + *POLONIUM + *SMOKE + AEROSPACE SAFETY +
DOSE CALCULATION, INTERNAL + ENVIRONMENTAL CONDITION + EVAPORATION + ICRP + INHALATION +
RADIATION SAFETY AND CONTROL

15-28052

CLARK TG + FISH BR + BOYETT RH + WILKIE WH + ROYSTER GW
BIOHAZARDS OF AEROSPACE NUCLEAR SYSTEMS. QUARTERLY REPORT FOR JANUARY 1 - MARCH 31, 1967
OAK RIDGE NATIONAL LAB., TENN. + SANDIA CORP., ALBUQUERQUE, N. MEX.
SC-CR-67-2845 +. 35 PAGES, FIGURES, TABLES, REFERENCES, DEC. 1967

ANALYTICAL STUDIES HAVE BEEN MADE ON THE PROBABILITY OF ENTRY OF LARGE PARTICLES INTO THE NOSE. A COMPUTER PROGRAM WAS WRITTEN TO DETERMINE VARIOUS FLUID DYNAMICAL PARAMETERS OF PARTICLES. CALCULATIONS HAVE BEEN MADE ON THE MAXIMUM RANGE OF THE ALPHA FROM PU-238 IN TISSUE AND ON DOSE RATES FROM SMALL PU(238)O₂ MICROSPHERES. ESTIMATES ARE GIVEN OF THE GAMMA AND NEUTRON DOSE RATES TO SKIN FROM CONTACT WITH THESE SOURCES. DIFFICULTIES IN HANDLING THESE MICROSPHERES WITHOUT SPREADING CONTAMINATION IS DISCUSSED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA
22151, \$3.00 COPY, \$0.65 MICROFICHE

AEROSPACE SAFETY + BIOLOGICAL CONCENTRATION, MAN + COMPUTER PROGRAM + CONTAMINATION +
DOSE CALCULATION, EXTERNAL + DOSE CALCULATION, INTERNAL + GAMMA + HAZARDS ANALYSIS + NEUTRON +
PARTICLE SIZE + PARTICLE, RADIOACTIVE

15-28053

MIKHAIL SZ + JAMES LR
DEVELOPMENT OF OCEAN DIFFUSION MODELS
NAVAL RADIOLOGICAL DEFENSE LAB., SAN FRANCISCO, CALIF.
SC-CR-68-3532 +. 23 PAGES, 5 FIGURES, 1 TABLE, 6 REFERENCES, JANUARY 1968

THE ASSUMPTIONS, APPROXIMATIONS, AND BASIC EQUATIONS USED IN DEVELOPING, EVALUATING, AND PROGRAMMING TWO OCEAN DIFFUSION MODELS ARE DESCRIBED. THE FIRST MODEL ASSUMES AN INSTANTANEOUS POINT SOURCE RELEASE, WHILE THE SECOND CONSIDERS A SLOWLY DISSOLVING RADIOACTIVE SOURCE. PRELIMINARY RESULTS FOR THE INSTANTANEOUS CASE ARE PRESENTED AND FUTURE PLANS FOR CONTINUING THE DEVELOPMENT AND EVALUATION OF THESE TWO MODELS ARE DETAILED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA
22151, \$3.00 COPY, \$0.65 MICROFICHE

*COMPUTER PROGRAM + *DIFFUSION + *MODEL TESTING + *OCEAN AND SEA + *SOURCE, CONTINUOUS + *SOURCE, POINT +
RADIOLOGICAL ASSISTANCE + SOURCE, RADIATION

15-28054

HEALTH PHYSICS AND SAFETY ANNUAL REPORT FOR 1967
OAK RIDGE NATIONAL LAB., TENN.
ORNL-4286 +. 90 PAGES, FIGURES, TABLES, AUGUST 1968

THE GASEOUS AND LIQUID WASTE RELEASES FROM THE LABORATORY WERE SUCH THAT THE CONCENTRATION OF RADIOACTIVE MATERIALS IN THE ENVIRONS WAS WELL BELOW THE MAXIMUM LEVELS RECOMMENDED BY THE NCRP AND FRC. NO EMPLOYEE RECEIVED AN EXTERNAL OR INTERNAL RADIATION DOSE WHICH EXCEEDED THE MAXIMUM PERMISSIBLE LEVELS RECOMMENDED BY THE FRC. DURING 1967, THERE WERE 16 UNUSUAL OCCURRENCES RECORDED, WHICH IS THE LOWEST NUMBER RECORDED SINCE THE PRESENT SYSTEM OF

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-28054 *CONTINUED*

REPORTING UNUSUAL OCCURRENCES WAS ESTABLISHED IN 1960. THE LABORATORY REPORTED FOUR DISABLING INJURIES DURING 1967, WHICH WAS A FREQUENCY RATE OF 0.50. THE TOTAL NUMBER FOR THE PREVIOUS FIVE YEARS (1962-1966) WAS 51, OR AN AVERAGE FREQUENCY RATE OF 1.4.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

*COUNTER, WHOLE BODY + *MONITOR, RADIATION, ENVIRONMENTAL + *WASTE HANDLING + *WASTE MANAGEMENT + *WASTE TREATMENT, LIQUID + BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + BIOLOGICAL CONCENTRATION, MAN + BIOLOGICAL CONCENTRATION, MILK + DOSE MEASUREMENT, EXTERNAL + DOSE MEASUREMENT, INTERNAL + FALLOUT + MONITOR, RADIATION, BACKGROUND + ORNL + RADIATION SAFETY AND CONTROL + REACTOR POWER + RIVER, CLINCH + TRANSURANIUM PROGRAM + WASTE DISPOSAL, HYDRAULIC FRACTURING + WASTE STORAGE + WASTE TREATMENT, GAS

15-28055

GOLDEN JC

NATURAL BACKGROUND RADIATION LEVELS IN FLORIDA

SANDIA CORP., ALBUQUERQUE, N. MEX.

SC-RR-68-196 +. 32 PAGES, 11 FIGURES, 15 TABLES, 37 REFERENCES, MAY 1968

MEASUREMENTS OF EXTERNAL GAMMA RADIATION AND RADIOACTIVITY IN AIR, FOOD, AND WATER HAVE SHOWN THAT THE REGION ENCOMPASSED BY THE BONE VALLEY PHOSPHATE DEPOSIT IN CENTRAL FLORIDA HAS A HIGHER BACKGROUND RADIATION LEVEL THAN THE REMAINDER OF THE STATE. HOWEVER, ADDITIONAL WORK, SUCH AS QUANTITATIVE/QUALITATIVE ANALYSES OF RADIOACTIVITY IN FOOD AND WATER, MUST BE DONE BEFORE ANY ESTIMATE OF TOTAL RADIATION EXPOSURE MAY BE MADE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

*BIOLOGICAL CONCENTRATION, GENERAL + *MEASUREMENT, REACTIVITY + *MONITOR, RADIATION, AIR + *MONITOR, RADIATION, BACKGROUND + *PHOSPHATE + *WATER, DRINKING + GAMMA EMITTER

15-28060

ALSO IN CATEGORIES 9 AND 14

SANGUINETTI MJ

AEC/NASA SYMPOSIUM ON CONTAMINATION CONTROL - CURRENT AND ADVANCED CONCEPTS IN INSTRUMENTATION AND AUTOMATION. HELD AT ALBUQUERQUE, NEW MEXICO SEPTEMBER 12-14, 1967

SANDIA CORP., ALBUQUERQUE, N. MEX.

SC-M-68-94 + CONF-670919 +. 344 PAGES, SEPTEMBER 12, 1967

THE OBJECTIVES OF THIS SYMPOSIUM ARE - (1) TO PROVIDE A MEANS OF EXCHANGING TECHNOLOGICAL INFORMATION CONCERNING ADVANCES IN AUTOMATION AND ADVANCED INSTRUMENTATION FOR CONTAMINATION CONTROL. (2) TO PROVIDE A BETTER UNDERSTANDING OF CAPABILITIES AND LIMITATIONS OF CONTAMINATION CONTROL MONITORING EQUIPMENT. (3) TO EXPLORE FUTURE NEEDS FOR CONTAMINATION CONTROL INSTRUMENTATION. THE PROGRAM WAS ARRANGED INTO SIX SESSIONS - (1) CONTAMINATION IN LIQUIDS, (2) RADIATION MONITORING, (3) SURFACE CONTAMINATION, (4) AIR AND GAS CONTAMINATION, (5) MICROBIAL CONTAMINATION, (6) SYSTEMS APPROACH TO CONTAMINATION CONTROL.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

INSTRUMENT, RADIATION MONITORING + MONITOR, RADIATION, AIR + MONITOR, RADIATION, ENVIRONMENTAL

15-28062

WILSON RH + ESSIG TH

CRITERIA USED TO ESTIMATE RADIATION DOSES RECEIVED BY PERSONS LIVING IN THE VICINITY OF HANFORD. INTERIM REPORT

BATTELLE NORTHWEST, PACIFIC NORTHWEST LABORATORY, RICHLAND

BNWL-706 +. 15 PAGES, 2 FIGURES, 5 TABLES, 15 REFERENCES, JULY 1968

RATIONALE FOR DIETARY HABITS USED IN COMPUTATION OF RADIATION DOSES THROUGH CALENDAR-YEAR 1964 FOR SELECTED POPULATION GROUPS IN THE VICINITY OF HANFORD ARE PRESENTED. ALSO DISCUSSED IS THE METHOD USED TO COMPUTE ENVIRONMENTAL RADIATION DOSES BASED ON THESE DIETARY HABITS AND ON MEASURED CONCENTRATIONS OF RADIONUCLIDES IN SEVERAL ENVIRONMENTAL MEDIA.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

*BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + *BIOLOGICAL CONCENTRATION, FOOD + *BIOLOGICAL CONCENTRATION, MAN + *BIOLOGICAL CONCENTRATION, MILK + *BIOLOGICAL CONCENTRATION, VEGETATION + *DIETARY HABIT + *DOSE CALCULATION, INTERNAL + ECOLOGICAL CONSIDERATION + FEDERAL RADIATION COUNCIL + ICPP + MONITOR, RADIATION, ENVIRONMENTAL + NCRP + POPULATION EXPOSURE + WATER, DRINKING

15-28063

MCCONNON D

HEALTH PHYSICS CONSIDERATIONS DURING PPTR RECOVERY AND DECONTAMINATION

BATTELLE-NORTHWEST, RICHLAND, WASH. PACIFIC NORTHWEST LAB.

BNWL-752 +. 17 PAGES, 3 FIGURES, 4 TABLES, 13 REFERENCES, MAY 1968

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-28063 *CONTINUED*

ON SEPTEMBER 29, 1965, THE PLUTONIUM RECYCLE TEST REACTOR (PRTR) EXPERIENCED A FUEL ELEMENT AND PRESSURE TUBE FAILURE DURING WHICH APPROXIMATELY 700 G OF FUEL MATERIAL WAS RELEASED FROM THE FUEL ELEMENT. THIS REPORT PRESENTS THE HEALTH PHYSICS APPROACH TO THE RECOVERY AND DECONTAMINATION PHASE, THE RADIOLOGICAL CONDITIONS EXPERIENCED DURING THIS PHASE AND DURING THE SUBSEQUENT STARTUP OF THE REACTOR. NO SIGNIFICANT QUANTITIES OF AIRBORNE OR SURFACE PLUTONIUM CONTAMINATION WERE DETECTED DURING EITHER THE RECOVERY AND DECONTAMINATION PHASE OR SUBSEQUENT REACTOR OPERATION. THE APPROACH TO RECOVERY AND DECONTAMINATION WAS THE SAME AS THAT WHICH WOULD BE USED AT A URANIUM-FUELED REACTOR.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

*DECONTAMINATION + *FAILURE, FUEL ELEMENT + *FAILURE, PRESSURE VESSEL + *RADIOACTIVITY RELEASE + AIRBORNE RELEASE + DOSE + PLUTONIUM + PRTR (TR) + RADIATION SAFETY AND CONTROL + REACTOR, AEC OWNED + REACTOR, HWR + REACTOR, PRESSURE TUBE + REACTOR, TEST + SURFACE CONTAMINATION

15-28065

RUSSELL JA + HOLLADAY JH + KNOWLES DJ
DESCRIPTION OF FACILITY CONTAMINATION ALARM SYSTEM AND CONTAINMENT SYSTEM INSTALLED IN THE FISSION PRODUCTS DEVELOPMENT LABORATORY, BUILDING 3517
OAK RIDGE NATIONAL LAB., TENN.
ORNL-TM-2149 +. 33 PAGES, 10 FIGURES, TABLES, MARCH 4, 1968

A FACILITY CONTAMINATION ALARM SYSTEM WAS ADDED TO THE EXISTING RADIATION MONITORING AND CONTAINMENT ALARM SYSTEM IN THE FISSION PRODUCTS DEVELOPMENT LABORATORY, BUILDING 3517. THE INSTRUMENTS IN THESE SYSTEMS PROVIDE HEALTH PHYSICS MONITORING INFORMATION AND ACTUATE LOCAL ALARMS AND REMOTE ALARMS ON TWO CENTRAL MONITORING PANELS WHEN ABNORMAL RADIATION OR CONTAMINATION CONDITIONS OCCUR. THE FACILITY IS CONTINUOUSLY MONITORED FOR GAMMA RADIOACTIVITY BY 19 MONITORS. TEN HIGH-VOLUME BETA-GAMMA AIR MONITORS ARE PART OF THE CONTAINMENT SYSTEM, AND FOUR BETA-GAMMA CONSTANT AIR MONITORS ARE USED IN THE FACILITY CONTAMINATION ALARM SYSTEM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

*CONTAINMENT LEAK MONITOR + *FISSION PRODUCT RELEASE, GENERAL + *MONITOR, RADIATION, EMERGENCY + *SYSTEM DESCRIPTION + BETA EMITTER + CONTAMINATION + FISSION PRODUCT RETENTION + GAMMA EMITTER + MONITOR, RADIATION, PERSONNEL + RADIATION SAFETY AND CONTROL

15-28078

EVANS RD
RADIUM AND MESOTHORIUM POISONING AND DOSIMETRY AND INSTRUMENTATION TECHNIQUES IN APPLIED RADIOACTIVITY.
ANNUAL PROGRESS REPORT
MASSACHUSETTS INST. OF TECH., CAMBRIDGE. DEPT. OF PHYSICS
MIT-952-4 +. 438 PAGES, TABLES, MAY 1967

THE ARTICLE DEALS WITH STUDIES OF THE FOLLOWING TOPICS - SEC. A, STUDIES ON RADIUM AND MESOTHORIUM CASES ARE PRESENTED. SEC. B, A NEW SEMI-AMPIRICAL RELATION FOR THE RATE OF LOSS OF ENERGY WITH DISTANCE (LET) OF HEAVY CHARGED PARTICLES IN MATTER HAS BEEN FOUND. SEC. C, DATA FROM THE LONG-TERM CS-137 BODY BURDEN MONITORING PROGRAM HAVE BEEN ANALYZED TO DETERMINE THE DEGREE OF SIMILARITY IN RELATIVE CHANGE FOR THE VARIOUS SUBJECTS. SEC. D, LEVEL STRUCTURES IN THE AC-227 DECAY SERIES ABOVE RN-219 WERE STUDIED IN DETAIL BY ALPHA-GAMMA COINCIDENCE AND ALPHA-GAMMA ANGULAR CORRELATION METHODS. SEC. E, A METHOD OF CORRECTING DATA FROM ANGULAR CORRELATION EXPERIMENTS FOR THE FINITE SIZE OF THE SOURCE AND THE DETECTORS IS PRESENTED. SEC. F, ADDITIONAL STUDIES HAVE BEEN MADE OF THE DIFFUSION OF RADON THROUGH POROUS MATERIALS, PARTICULARLY IN MULTILAYERED ASSEMBLIES, IN BOTH THE PLANE AND THE SPHERICAL GEOMETRIES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA, 22151, \$3.00 COPY, \$0.65 MICROFICHE

*BIOLOGICAL CONCENTRATION, MAN + *DOSIMETRY, GENERAL + *INSTRUMENT, GENERAL + *RADIUM + RADIATION EFFECT + RADIOBIOLOGY + RADON

15-28079

KOZLOV VF + TROSHKIN US
HANDBOOK ON RADIATION PROTECTION
276 PAGES, MOSCOW, ATOMIZDAT, 1967

QUESTIONS OF RADIATION PROTECTION PROVISIONS AND THE ORGANIZATION OF DOSIMETRIC CONTROLS IN INSTALLATIONS USING RADIOACTIVE MATERIALS AND SOURCES OF IONIZING RADIATION WERE BRIEFLY CONSIDERED. BASIC DATA ON THE INTERACTION OF IONIZING RADIATION WITH MATTER WERE REPORTED- THE BIOLOGICAL EFFECTS OF RADIATION, THE LEVEL OF NATURAL IRRADIATION OF THE HUMAN ORGANISM, PERMISSIBLE RADIATION DOSE, DOSE CALCULATION, RADIATION PROTECTION, AND IONIZATION, SCINTILLATION, PHOTOGRAPHIC, CHEMICAL, AND OTHER METHODS FOR THE DETERMINATION OF IONIZING RADIATION WERE CONSIDERED. DEVICES FOR THE GENERAL AND INDIVIDUAL DOSIMETRIC CONTROL OF X RAY, GAMMA, BETA, AND NEUTRON RADIATIONS WERE DESCRIBED.

*BIOLOGICAL CONCENTRATION, MAN + *MAXIMUM PERMISSIBLE DOSE (MPD) + *RADIATION EFFECT + *WASTE MANAGEMENT + AEROSOL + BETA EMITTER + DOSE CALCULATION, EXTERNAL + DOSE CALCULATION, INTERNAL + DOSIMETRY, GENERAL +

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-28079 *CONTINUED*

GAMMA + ION EXCHANGE + NEUTRON + RADIATION SAFETY AND CONTROL + SOURCE, RADIATION + WASTE TRANSPORTATION + X-RAY

15-28080

BLANC D + MATHIEU J + PATAU P + FRANCOIS H + SOUDAIN G
DOSIMETRY IN A MIXED (GAMMA-RAY AND FAST-NEUTRON) FIELD, USING IONIZATION CHAMBERS FILLED WITH A LIQUID DIELECTRIC
SANDIA CORPORATION, ALBUQUERQUE, NEW MEXICO
SC-T-67-0945 +. 10 PAGES, 4 FIGURES, 3 REFERENCES, 1967

USING AN IONIZATION CHAMBER FILLED WITH PURE HEXANE OR A MIXTURE OF HEXANE AND CARBON TETRACHLORIDE, WHICH IS TISSUE-EQUIVALENT FOR GAMMA RAYS, ONE CAN NOT ONLY DETERMINE THE TOTAL ABSORBED DOSE IN A COMPLEX FLUX OF GAMMA RAYS AND FAST NEUTRONS BUT CAN ALSO QUICKLY ESTABLISH THE PARTIAL DOSES DUE TO ONE OR THE OTHER OF THESE TWO RADIATIONS. DETECTORS COMPRISING PLANE PARALLEL ELECTRODES OR COAXIAL CYLINDRICAL ELECTRODES WERE USED AND EXPERIMENTS WERE CARRIED OUT ON MIXED FIELDS OF 14.7-MEV NEUTRONS AND GAMMA RAYS PRODUCED BY CO-60 OR CS-137 SOURCES. PROVIDED THAT THE FLUX REMAINS CONSTANT FOR A FEW MINUTES, THE ABSORBED DOSE FOR EACH OF THE TWO COMPONENTS OF THE RADIATION CAN BE DEDUCED BY A SIMPLE GRAPHIC PROCEDURE FROM MEASUREMENTS OF THE IONIZATION CURRENT FOR TWO DIFFERENT AND WELL-KNOWN VALUES OF THE VOLTAGE BETWEEN THE ELECTRODES OF THE CHAMBER.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA, 22151, \$3.00 COPY, \$0.65 MICROFICHE

*DOSIMETRY, GENERAL + *FAST NEUTRON + *FLUX DISTRIBUTION + *GAMMA EMITTER + CESIUM + CHAMBER, ION + COBALT + MEASUREMENT, GENERAL + SORPTION

15-28081

ALSO IN CATEGORY 14

BARNES CA
PHYSICAL, CHEMICAL, AND BIOLOGICAL DATA FROM THE NORTHEAST PACIFIC OCEAN - COLUMBIA RIVER EFFLUENT AREA, JULY--DECEMBER 1963. VOLUME 1, 2, 3, 4
WASHINGTON UNIVERSITY, SEATTLE
RLO-1725-77 +. 262 PAGES, OCTOBER 1966

THIS VOLUME CONTAINS TABULATED PHYSICAL, CHEMICAL, AND BIOLOGICAL DATA COLLECTED DURING CRUISES 329, 331, 332, AND 333 OF THE RESEARCH VESSEL BROWN BEAR AND CRUISE 73 OF THE RESEARCH VESSEL HQH DURING THE MONTHS OF JULY--SEPTEMBER 1963 IN AN AREA WITHIN 260 MILES OF THE COASTS OF WASHINGTON AND OREGON. THE DATA WAS 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, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + *CHEMICAL PROPERTY + *DISPERSION + *EFFLUENT + *RIVER, COLUMBIA + DIFFUSION + DILUTION + OCEAN AND SEA + R AND D PROGRAM

15-28082

ALSO IN CATEGORY 14

MCCAULEY JE
ECOLOGICAL STUDIES OF RADIOACTIVITY IN THE COLUMBIA RIVER AND ADJACENT PACIFIC OCEAN
OREGON STATE UNIVERSITY
RLO-1750-22(VOL.1) +. 356 PAGES, JULY 1967

THIS PROGRESS REPORT DEALS WITH MORE THAN 50 SEPARATE PROJECTS ORIENTED TOWARD EXPANDING KNOWLEDGE ABOUT THE EFFECTS OF A MAJOR RIVER ENTERING THE OCEAN. THE INTRODUCTION OF LOW-LEVEL INDUCED RADIONUCLIDES INTO THE RIVER AT HANFORD MAKES THIS RIVER UNIQUE AND MAKES POSSIBLE MANY STUDIES WHICH MIGHT OTHERWISE BE MORE DIFFICULT, IF NOT IMPOSSIBLE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*AQUATIC ORGANISMS + *ECOLOGICAL CONSIDERATION + *ESTUARY + *SEDIMENT + CHEMICAL ANALYSIS + OCEAN AND SEA + PARTICULATE + RIVER, COLUMBIA

15-28084

ANDERSON BV + NELSON IC
MEASUREMENT OF PLUTONIUM AEROSOL PARAMETERS FOR APPLICATION TO RESPIRATORY TRACT MODELS
BATTELLE-NORTHWEST, RICHLAND, WASHINGTON
BNWL-SA-1220 + SM-94-48 + CONF-670764-5 +. 26 PAGES, FROM IAEA SYMPOSIUM ON INSTRUMENTS AND TECHNIQUES FOR THE ASSESSMENT OF AIRBORNE RADIOACTIVITY IN NUCLEAR OPERATIONS, VIENNA, AUSTRIA, 1967

THE CONCENTRATION AND PARTICLE SIZE DISTRIBUTION OF PLUTONIUM AEROSOLS AS MEASURED IN EMPLOYEE WORK AREAS ARE IMPORTANT PARAMETERS IN THE ANALYSIS OF CHRONIC INTERNAL EXPOSURE RECEIVED BY RADIATION WORKERS. MEASUREMENT RESULTS ARE PRESENTED FROM A STUDY OF A VARIETY OF EXPOSURE SITUATIONS IN THREE MAJOR PLUTONIUM HANDLING FACILITIES. THE CONCENTRATION AND PARTICLE SIZE DISTRIBUTION DATA WERE THEN UTILIZED IN THE STUDY OF RELATIONSHIPS OF CHRONIC INHALATION WITH CURRENT RESPIRATORY TRACT MODELS FOR DEPOSITION AND RETENTION OF PLUTONIUM AEROSOLS.

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-28084 *CONTINUED*

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*AEROSOL, RADIOACTIVE + *BIOLOGICAL CONCENTRATION, MAN + *INHALATION + *PARTICLE SIZE DISTRIBUTION +
*PLUTONIUM + *RADIATION MODEL + DEPOSITION + FALLOUT + MEASUREMENT, REACTIVITY

15-28085

PENNA FRANCA E

RADIOCHEMICAL AND RADIOECOLOGICAL STUDIES ON BRAZILIAN AREAS OF HIGH NATURAL RADIATION

BRAZIL UNIVERSITY, RIO DE JANEIRO

NYO-3273-7 +. 115 PAGES, JULY 30, 1966

THIS REPORT COVERS PROGRAMS UNDERWAY IN THREE DIFFERENT BRAZILIAN AREAS OF HIGH NATURAL
RADIOACTIVITY - GUARAPARY-MEAIPE, IN THE MONAZITE SAND REGION, ARAXA AND MORRO DO FERRO, BOTH
LOCATED IN AREAS OF VOLCANIC INTRUSIVES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*BIOLOGICAL CONCENTRATION, FOOD + *BIOLOGICAL CONCENTRATION, MAN + *BIOLOGICAL CONCENTRATION, MAN +
*BIOLOGICAL CONCENTRATION, VEGETATION + *ECOLOGICAL CONSIDERATION + *MAXIMUM PERMISSIBLE BODY BURDEN +
*MONITOR, RADIATION, ENVIRONMENTAL + BRAZIL + RADIUM + THORIUM

15-28086

HOLLEY WL + MCKELVEY JW + EVERETT RJ

METHODS OF ASSESSING THE LUNG DOSE FROM INHALED PUO2-238

SANDIA CORPORATION

SC-DC-67-1854 + CONF-670610-3 +. 21 PAGES, FROM 12TH ANNUAL MEETING OF THE HEALTH PHYSICS SOCIETY,
WASHINGTON, D. C. JUNE 1967

PLUTONIUM-238 IS A PRIME FUEL FOR SPACE ELECTRIC POWER HAVING BEEN USED IN SNAP-9A SYSTEM AND
IS THE CANDIDATE FUEL FOR SNAP-19 AND SNAP-27 IN THE OXIDE FORM. THE FUEL IS MADE IN THE
FORM OF MICROSPHERES (50-250 MICRONS) DESIGNED TO ELIMINATE INHALATION HAZARDS. HOWEVER,
THERE ARE THERMO AND AERODYNAMIC FORCES PRESENT IN LAUNCH AND RE-ENTRY SITUATIONS THAT MAY
BREAKUP OR VAPORIZE THIS FUEL TO INHALABLE SIZES. THIS STUDY IS CONCERNED WITH THE METHODS
OF ASSESSING LUNG DOSES FROM INHALED PLUTONIUM-238 DIOXIDE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*BIOLOGICAL CONCENTRATION, MAN + *INHALATION + *PLUTONIUM + *SPACECRAFT + DOSE + ICRP + MODEL TESTING +
REACTOR, SPACE + SNAP 27 (SR)

15-28087

ALSO IN CATEGORY 14

BREWER LW

RADIOACTIVE ENVIRONMENTAL SURVEY AT SANDIA CORPORATION

SANDIA CORPORATION

SC-DC-67-1844 + CONF-670614-1 +. 7 PAGES, FROM ANNUAL MEETING, CONFEDERATION OF WESTERN AFFILIATES,
AMERICAN PUBLIC HEALTH ASSOCIATION, ALBUQUERQUE, N. MEXICO

DESCRIBES THE COLLECTION, ANALYSES, AND EVALUATION OF SOIL, VEGETATION, AND WATER SAMPLES FROM
THE LOCAL ENVIRONMENT SURROUNDING SANDIA CORPORATION (AREA V), THE CITY OF ALBUQUERQUE, AND
BERNALILLO AND SANDOVAL COUNTIES, NEW MEXICO.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*ANALYTICAL TECHNIQUE, GENERAL + *ANALYTICAL TECHNIQUE, VEGETATION + *ANALYTICAL TECHNIQUE, WATER +
*ENVIRONMENTAL CONDITION + *MONITOR, RADIATION, BACKGROUND + *SAMPLING +
*SURVEY, RADIATION, ENVIRONMENTAL + METEOROLOGY + REACTOR, PULSED + TOPOGRAPHY

15-28110

BARR GD

EFFECTS OF ROUTINE OCCUPATIONAL RADIATION EXPOSURE IN WORKERS AT THE LAWRENCE RADIATION LABORATORY,
BERKELEY

UNIVERSITY OF CALIFORNIA, BERKELEY

UCRL-17573 +. 99 PAGES, MAY 1967

THE STUDY WAS DESIGNED TO PROVIDE ADDITIONAL DATA ON THE PHYSIOLOGICAL EFFECTS IN HUMANS OF
DOSES NEAR THE PRESENT MAXIMUM PERMISSIBLE DOSE. IT IS POINTED OUT THAT THE ACTUAL SIZE OF
THE CHANCE OF INJURY AT RADIATION LEVELS NEAR OR BELOW THE PERMISSIBLE DOSE IS NOT KNOWN.
INVESTIGATIONS IN THIS AREA ARE HAMPERED BY THE NECESSITY TO COLLECT AND ANALYZE VERY LARGE
AMOUNTS OF EMPLOYER MEDICAL DATA IN ORDER TO DETECT SMALL INCREASES IN RISKS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-28110 *CONTINUED*

*BIOMEDICAL + *MAXIMUM PERMISSIBLE DOSE (MPD) + *RADIATION EFFECT + DATA PROCESSING + POPULATION EXPOSURE + RADIATION DAMAGE + RADIATION SAFETY AND CONTROL + X-RAY

15-28111

SCHULTE HC

PERSONAL AIR SAMPLING AND MULTIPLE STAGE SAMPLING - INTERPRETATION OF RESULTS FROM PERSONAL AND STATIC AIR SAMPLERS

LCS ALAMOS SCIENTIFIC LAB., NEW MEXICO

LA-DC-8608 + CONF-670621-3 +. 14 PAGES, TABLES, FROM SYMPOSIUM ON RADIATION DOSE MEASUREMENTS, THEIR PURPOSE, INTERPRETATION AND REQUIRED ACCURACY IN RADIOLOGICAL PROTECTION STOCKHOLM, SWEDEN, 1966

IN ATTEMPTING TO LIMIT THE INTERNAL DEPOSITION OF RADIOACTIVE MATERIALS AND SO LIMIT THE RADIATION DOSAGE FROM THIS SOURCE, WE HAVE SEEN THAT IT IS NECESSARY TO MEASURE THE CONCENTRATION OF RADIOACTIVE MATERIAL IN THE AIR. BASICALLY, THIS IS DONE (1) TO DETERMINE WHETHER THE CONTROL EQUIPMENT INSTALLED IS FUNCTIONING EFFECTIVELY AND (2) TO MAKE SOME ESTIMATE OF THE RATE OF INTERNAL DEPOSITION THAT MAY BE ENCOUNTERED. PROBABLY THE MOST THAT CAN BE EXPECTED WITH RESPECT TO THE LATTER FUNCTION IS THAT WE MAY DETERMINE WHEN AND TO WHAT EXTENT THE INTERNAL DEPOSITION IS LIKELY TO EXCEED SOME DEFINED RATE. THE ARTICLE POINTS OUT THE ADVANTAGES AND PROBLEMS ASSOCIATED WITH PERSONAL AIR SAMPLERS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*DEPOSITION + *DOSE + *INSTRUMENT, RADIATION MONITORING + *SAMPLING + AIR + MONITOR, RADIATION, PERSONNEL

15-28112

KIMEL LP + MASHKOVICH VP

MAXIMUM PERMISSIBLE LEVELS OF IONIZING RADIATIONS

JPRS-41250 + TT-67-31899 +. 20 PAGES, TABLES, REFERENCES, 1966

BY MEANS OF HEALTH LAWS IN FORCE IN THE SOVIET UNION FOR WORKING WITH RADIOACTIVE SUBSTANCES AND SOURCES OF IONIZING RADIATIONS THERE HAVE BEEN ESTABLISHED MAXIMUM PERMISSIBLE LEVELS OF RADIATION, MAXIMUM PERMISSIBLE CONCENTRATIONS, MAXIMUM PERMISSIBLE LEVELS FOR CONTAMINATION OF HANDS, CLOTHING, SHOES, AND WORKING SURFACES AND WORK WITH SOURCES OF IONIZING RADIATIONS IN ORDER TO ASSURE RADIATION SECURITY HAS BEEN REGULATED. IN THIS REPORT ARE GIVEN THE BASIC TABLES AND REGULATIONS FROM THE LAWS NECESSARY FOR COMPUTATIONS OF SAFE WORKING CONDITIONS WITH SOURCES OF RADIATIONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*DOSIMETRY, GENERAL + *MAXIMUM PERMISSIBLE BODY BURDEN + *MAXIMUM PERMISSIBLE CONCENTRATION (MPC) + *USSR + RADIATION SAFETY AND CONTROL

15-28113 ALSO IN CATEGORY 14

POTTER GD + MCINTYRE DR + POMEROY D

BIOLOGICAL AVAILABILITY OF RADIONUCLIDES IN FALLOUT FROM THE CHINESE NUCLEAR TEST OF DECEMBER 1966 UNIVERSITY OF CALIFORNIA, LIVERMORE

UCRL-70301 + CONF-670503-22 +. 14 PAGES, FROM 2ND NATIONAL SYMPOSIUM ON RADIOECOLOGY, ANN ARBOR, MICHIGAN, MAY 12, 1967

DISCUSSES THE FALLOUT DEPOSITED IN NORTHERN CALIFORNIA FROM THE CHINESE NUCLEAR TEST, ON JAN. 1 AND 2, 1967. ALSO, THE TRANSFER OF RADIONUCLIDES IN DRY FALLOUT FROM PASTURE GRASS TO COWS MILK WAS STUDIED WITH A LITHIUM-DRIFTED GERMANIUM DETECTOR.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*BIOLOGICAL CONCENTRATION, ANIMAL FEED + *BIOLOGICAL CONCENTRATION, MAN + *BIOLOGICAL CONCENTRATION, MILK + *FALLOUT + *IODINE + CONTAMINATION + DEPOSITION

15-28114 ALSO IN CATEGORY 14

WILLIAMSON MM

FALLOUT CALCULATIONS AND MEASUREMENT

UNIVERSITY OF CALIFORNIA, LIVERMORE

UCRL-7804 + CONF-470-10 +. 23 PAGES, FROM 3RD PLOWSHARE SYMPOSIUM ON ENGINEERING WITH NUCLEAR EXPLOSIVES, DAVIS, CALIF., APRIL 1964

THE FIRST PORTION OF THE PAPER IS A GENERAL DISCUSSION OF FALLOUT AND THE DEFINITION OF VARIOUS TERMS PECULIAR TO ANY DISCUSSION OF FALLOUT PROBLEMS. SOURCES OF RADIOACTIVITY AND TYPES OF RADIOLOGICAL HAZARDS AS THEY PERTAIN TO NUCLEAR EXCAVATION ARE ALSO DISCUSSED. THE REMAINDER OF THE PAPER IS DEVOTED TO OUTLINING THE STEPS WHICH MIGHT BE TAKEN IN THE PRESHOT PLANNING AND POSTSHOT EVALUATION OF FALLOUT PROBLEMS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-28114 *CONTINUED*

*DOSE CALCULATION, EXTERNAL + *DOSE CALCULATION, INTERNAL + *FALLOUT + *NUCLEAR EXPLOSION DERRIS +
*PLOWSHARE PROGRAM + BIOLOGICAL CONCENTRATION, MAN + DEPOSITION + EXCAVATION, NUCLEAR + HAZARDS ANALYSIS +
INGESTION + RADIATION SAFETY AND CONTROL + RADIOLOGICAL ASSISTANCE

15-28115

SR-90 LEVELS IN THE DIETS AND BONES OF CHILDREN
COMISION NACIONAL DE ENERGIA ATOMICA, BUENOS AIRES, ARGENTINA
NYO-2753-5 +. 47 PAGES, JUNE 2, 1967

NEW DATA WERE OBTAINED ON YOUNG CHILDREN WITH THE PURPOSE OF IMPROVING THE ESTIMATES OF
TURNOVER AND DISCRIMINATION IN THE FIRST TWO YEARS OF LIFE. AS PREVIOUSLY, THE DATA RELATE
TO A CONTROLLED GROUP CONSISTING MAINLY OF CHILDREN HAVING LIVED A SUBSTANTIAL PART OF THEIR
LIFE IN PEDIATRIC HOSPITALS OR OTHER PUBLIC INSTITUTIONS, AND FOR WHICH INDIVIDUAL DIET
INFORMATION IS REASONABLY ACCEPTABLE. A LARGE PART OF THE WORK REFER TO OLDER AGE GROUPS
(FROM 3 TO 12). THESE AGE GROUPS ARE VERY INTERESTING BECAUSE ANY ENHANCED BONE ACTIVITY
(FAST GROWING, REMODELING, ETC) COULD CONCEIVABLE INFLUENCE TURNOVER OR EVEN DISCRIMINATION.
THE DIET INFORMATION REQUIRED FOR THESE OLDER AGE GROUPS CANNOT BE OBTAINED ON INDIVIDUAL
BASIS AND THE REPRESENTATIVE VALUES FOR THESE GROUPS IN THE AREA WERE USED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*BIOLOGICAL CONCENTRATION, MAN + *DIETARY HABIT + *DOSE CALCULATION, INTERNAL + *STRONTIUM + CALCIUM +
FALLOUT + RADIUM

15-28162

FAW RE + DONNERT HJ
RADIATION QUALITY EFFECTS IN CHEMICAL DOSIMETRY
KANSAS STATE UNIVERSITY
2 PAGES, 1 FIGURE, 4 REFERENCES, NUCL. INSTRUM. METHODS 58, PAGES 307-8 (JAN. 1968)

AN EXAMINATION WAS MADE OF THE IMPORTANCE OF THE EFFECTS OF SECONDARY ELECTRONS IN THE
INTERPRETATION OF YIELDS OF THE FRICKE DOSIMETER FOR HIGH-ENERGY CHARGED PARTICLES.

ALPHA EMITTER + DOSIMETRY, GENERAL + RADIATION PROTECTION, CHEMICAL + RADIATION SAFETY AND CONTROL

15-28441

ALSO IN CATEGORY 7

HOLFORD RM
AN AUTOMATIC MONITOR FOR ALL FORMS OF AIRBORNE RADIOIODINE
ATOMIC ENERGY OF CANADA LIMITED, CHALK RIVER, ONTARIO
SM-110 +. 1 PAGE, PAGE 51 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE
IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTE, NEW YORK, AUGUST 26-30, 1968

ONE OF THE MAIN PROBLEMS ENCOUNTERED IN MONITORING AIR NEAR A REACTOR FOR RADIOIODINE IS THAT
AN APPRECIABLE, THOUGH VARIABLE, PROPORTION OF THE ACTIVITY IS ASSOCIATED WITH ORGANIC FORMS
OF IODINE SUCH AS METHYL IODIDE. CHARCOAL-LOADED FILTER PAPERS, SUCH AS WHAUMAN ACT/D, DO
NOT RETAIN THIS FORM OF IODINE FOR ANY APPRECIABLE TIME, ALTHOUGH THEIR EFFICIENCY FOR IODINE
IN THE ELEMENTAL FORM IS VERY HIGH. THEREFORE, IN THE PAST THEY HAVE NOT BEEN CONSIDERED
SUITABLE FOR MANY APPLICATIONS IN HEALTH PHYSICS. WE HAVE DISCOVERED HOWEVER THAT THE
ADDITION OF A FEW PARTS PER MILLION OF ELEMENTAL BROMINE TO THE INCOMING AIR STREAM OVERCOMES
THIS DIFFICULTY AND ENABLES THE PAPER TO EXTRACT BOTH ELEMENTAL IODINE AND METHYL IODIDE FROM
AIR WITH HIGH EFFICIENCY. THIS HAS BEEN ESTABLISHED DIRECTLY BY LABORATORY EXPERIMENTS AND
INDIRECTLY ON A PROTOTYPE OF THE INSTRUMENT UNDER WORKING CONDITIONS.

AVAILABILITY - R. M. HOLFORD, ATOMIC ENERGY OF CANADA LIMITED, CHALK RIVER, CANADA

*AIRBORNE RELEASE + *FILTER, PAPER + *MONITOR, RADIATION, AIR + *ORGANIC IODIDE + AIR CLEANING + BROMINE +
FILTER EFFICIENCY + FISSION PRODUCT, IODINE + IODINE + MONITOR, RADIATION, GAS +
MONITOR, RADIATION, GENERAL

15-28567

GUNTHER G + KONIG LA
MEASUREMENT OF THE ACTIVITY RELEASED VIA THE EXHAUST AIR WITH THE HELP OF DOSIMETERS
ATOMPRAXIS, 14(8), PAGE 344 (AUGUST 1968)

DESCRIBES SIMPLE METHOD FOR ASSESSING ACTIVITY RELEASED VIA AN EXHAUST STACK AND BASED ON
MEASUREMENT OF GAMMA-DOSE AND QUALITY OF EXHAUST AIR. THE DOSIMETERS USED FOR THIS PURPOSE
MUST HAVE THE LOWEST POSSIBLE FADING AND, THEREFORE, GLASS DOSIMETERS WERE USED. A
CYLINDRICAL GEOMETRY WAS TAKEN AS AN EXAMPLE TO CALCULATE THE CORRELATION EXISTING BETWEEN
DOSE RATE AND ACTIVITY CONCENTRATION. THE RESULT AGREES WELL WITH THE RESPECTIVE
MEASUREMENTS.

*DOSIMETRY, GENERAL + *MONITOR, RADIATION, STACK + *RADIOACTIVITY RELEASE + DOSE + GAMMA EMITTER + STACK

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-28568
KIEFER H + MAUSHART R
DEMONSTRATION OF PLUTONIUM INCORPORATION BY DIRECT MEASUREMENT
ATOMPRAXIS, 14(8), PAGE 338 (AUGUST 1968)

SURVEYS PRESENT POSSIBILITIES FOR DEMONSTRATING INCORPORATION OF PU BY DIRECT MEASUREMENT. MEASUREMENT TECHNIQUES, LIMITS OF DEMONSTRABILITY, AND INFLUENCE OF ERRORS ARE DISCUSSED, BOTH FOR IN VIVO MEASUREMENT OF INHALED PU-239 AND FOR DEMONSTRATION OF ITS PRESENCE IN WOUNDS. THE PRESENT STATE OF DETECTOR DEVELOPMENT IS DISCUSSED IN PARTICULAR DETAIL, AND THE SETUP IN OPERATION AT NUCLEAR RESEARCH CENTER IN KARLSRUHE FOR DIRECT MEASUREMENT OF PU-239 IN THE LUNG IS CLOSELY DESCRIBED.

*BIOLOGICAL CONCENTRATION, MAN + *DOSE MEASUREMENT, EXTERNAL + *DOSE MEASUREMENT, INTERNAL + *PLUTONIUM + INHALATION

15-28569
BECKER K
PERSONNEL NEUTRON DOSIMETRY BY NUCLEAR TRACK REGISTRATION IN SOLID MATERIALS
P. 331, ATOMPRAXIS, 14(8) (AUGUST 1968)

THE METHOD OF NONPHOTOGRAPHIC NUCLEAR TRACK IMAGING BY CHEMICAL ETCHING OF THE SURFACE OF INSULATORS CAN BE USED FOR THERMAL AND FAST NEUTRON DOSIMETRY BY (N,F) REACTIONS (REGISTRATION OF FISSION FRAGMENTS EMITTED BY FOILS OF FISSIONABLE MATERIALS IN GLASSES, MICA, AND PLASTICS), FURTHER (N, ALPHA) REACTIONS (ALPHA PARTICLE REGISTRATION IN SENSITIVE PLASTIC FOILS), AND/OR REGISTRATION OF RECOIL NUCLEI IN PLASTICS. NEUTRON ENERGY DISTRIBUTIONS CAN BE MEASURED BY THRESHOLD REACTIONS AND/OR THE USE OF ADDITIONAL NEUTRON ABSORBERS. - THE METHOD IS SUPERIOR TO CONVENTIONAL NUCLEAR EMULSION AND ACTIVATION TECHNIQUES IN MANY RESPECTS.

*CHEMICAL REACTION + *DOSIMETRY, GENERAL + *FAST NEUTRON + *INSTRUMENT, INDEPENDENT + *THERMAL NEUTRON + MONITOR, RADIATION, EMERGENCY

15-28572 ALSO IN CATEGORIES 1 AND 17
PIPER HP
FACT AND FICTION CONCERNING NUCLEAR POWER SAFETY
6 PAGES, NUCLEAR NEWS, 11(12), PAGES 54-59 (DECEMBER 1968)

THE NUCLEAR POWER INDUSTRY IS BEING SUBJECTED TO OPPOSITION BY A VARIETY OF PEOPLE FOR A NUMBER OF REASONS. THIS ARTICLE LOOKS AT A SMALL SAMPLING OF MATERIAL FROM THREE DIFFERENT SOURCES - THE Nontechnical AUTHOR, THE SYNDICATED COLUMNIST, AND THE TECHNICALLY ORIENTED WRITER, NONE OF WHOM HAVE ANY APPARENT CONFLICT OF INTEREST WITH NUCLEAR DEVELOPMENT. BUT IN ALL THE EXAMPLES CITED HERE, SENSATIONAL TREATMENT OF THE POTENTIAL HAZARDS ASSOCIATED WITH NUCLEAR POWER IS THE COMMON THREAD, AND THE CRITICISMS AND IMPLICATIONS SEEM, TO THE AUTHOR, TO BE UNJUSTIFIED. THE VARIOUS OCCURRENCES ARE EXAMINED AND COMPARED WITH THE RECORDED FACTS IN EACH CASE.

*RADIATION IN PERSPECTIVE + *RADIATION, PUBLIC EDUCATION/ACCEPTANCE + ACCIDENT, CONSEQUENCES + FISSION PRODUCT RELEASE, GENERAL + HAZARDS ANALYSIS + INCIDENT, GENERAL + INCIDENT, SL 1 + INCIDENT, WINDSCALE + INCIDENT, WOOD RIVER + SAFETY PRINCIPLES AND PHILOSOPHY

15-28578 ALSO IN CATEGORY 17
SURVEY OF ENVIRONMENTAL RADIOACTIVITY
MINNESOTA DEPARTMENT OF HEALTH + RURAL COOPERATIVE POWER ASSOCIATION
CDO-651-64 +. 38 PAGES, FIGURES, TABLES, SEPTEMBER 1968, DOCKET 115-1, TYPE--BWR, MFG--A.C., AE--SGT + IINDY

THE MINNESOTA DEPT. OF HEALTH AND THE RURAL COOPERATIVE POWER ASSOCIATION, ELK RIVER, MINN., COMBINED THEIR EFFORTS INTO A COMPREHENSIVE SURVEILLANCE PROGRAM OF THE STATE AND THE AREA IMMEDIATE TO THE ELK RIVER REACTOR SITE. THE WASTE DISCHARGES IN THE REACTOR EXHAUST DUCT, SEWER LINE, AND OTHER SYSTEMS ARE MONITORED TO SUPPLEMENT THE ENVIRONMENTAL DATA NEAR THE REACTOR SITE. A DESCRIPTION OF THE SURVEY METHODS AND THE DATA OBTAINED IS GIVEN WITH RESPECT TO ANIMALS, AIR, SURFACE WATER, PRECIPITATION, AND MILK. A BRIEF DISCUSSION OF TRITIUM IN SURFACE WATER IS ALSO GIVEN.

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

*BIOLOGICAL CONCENTRATION, ANIMAL + *BIOLOGICAL CONCENTRATION, MILK + *PRECIPITATION + *REACTOR, RWP + *SURFACE WATER, NUCLIDE OCCURRENCE + *SURVEILLANCE PROGRAM + ELK RIVER (BWR) + MONITOR, RADIATION, AIR + MONITOR, RADIATION, GENERAL + RADIOLOGICAL ASSISTANCE

15-28579 ALSO IN CATEGORIES 14 AND 16
GEY A
TRITIUM AND TRITATED WATER- TIME LIMITS OF ACCIDENTAL EXPOSURE IN STABLE OR REGENERATED ATMOSPHERES (IN FRENCH)

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-28579 *CONTINUED*
FRANCE. COMMISSARIAT A L ENERGIE ATOMIQUE
CONF-337-46 +. 50 PAGES, FIGURES, MAY 22, 1963

ORDINARILY, ACCIDENTAL RELEASES OF TRITIUM ARE TREATED AS THOUGH THEY ARE THE FORM OF TRITATED WATER VAPOR. THIS GIVES PESSIMISTIC ESTIMATES OF DOSES OBTAINED BECAUSE RETENTION OF TRITIUM IN THE BODY IS GREATER FOR HTO THAN FOR HT. RELEASES OF HT ARE ONLY SLOWLY OXIDIZED TO HTO SO THAT THE IMPACT OF THE RELEASE OF HT LIES SOMEWHERE BETWEEN THAT OF AN HT RELEASE WITH NO OXIDATION AND THAT OF HTO RELEASE. THIS PAPER MAKES A MATHEMATICAL TREATMENT OF THE EFFECT OF OXIDATION RATE ON THE IMPACT OF HT RELEASES.

*AIRBORNE RELEASE + *TRITIUM + ATMOSPHERIC DIFFUSION + CONCENTRATION, MAXIMUM + DOSE CALCULATION, EXTERNAL + DOSE CALCULATION, INTERNAL + INGESTION + INHALATION + MATHEMATICAL TREATMENT + MAXIMUM PERMISSIBLE CONCENTRATION (MPC) + OXIDATION + POPULATION EXPOSURE

15-28598
BRADY WJ
ANOMALIES AND CURIOSITIES OF FILM DOSIMETRY
REYNOLDS ELECTRICAL AND ENGINEERING CO., INC.
NVO-162-30 +. 11 PAGES, 10 REFERENCES, OCTOBER 30, 1967

FILM DOSIMETRY RELIABLE AND CAPABLE FOR MEASURING MIXED RADIATION DOSES, STILL HAS SOME ANOMALIES AND CURIOSITIES. VARIATIONS IN EXPOSURE GEOMETRY AND EMULSION DAMAGE MAY BE RECOGNIZED UPON VISUAL EXAMINATION OF EACH FILM WHICH INDICATED AN APPARENT DOSE, AND SPECIAL TECHNIQUES AND PROCEDURES MAY BE EMPLOYED TO MINIMIZE DOSE-ASSIGNMENT ERRORS. THE ABOVE CONDITIONS USING A NEVADA TEST SITE HOLDER ARE DISCUSSED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151
\$3.00 COPY, \$0.65 MICROFICHE

*DOSIMETRY, PHOTOGRAPHIC + *FILM, GENERAL + CADMIUM + CONTAMINATION + DOSE MEASUREMENT, EXTERNAL + DOSE MEASUREMENT, INTERNAL + TANTALUM + X-RAY

15-28599
SNAVELY DR
MONTHLY TABULATION OF FINDINGS, PUBLIC HEALTH SERVICE RADIATION SURVEILLANCE NETWORK
PUBLIC HEALTH SERVICE, WASHINGTON, D. C.
NP-17081 +. 186 PAGES, APRIL 30, 1967

THE REPORT PRESENTS THE FINDINGS OF THE UNITED STATES PUBLIC HEALTH SERVICE RADIATION SURVEILLANCE NETWORK FOR THE PERIOD OF APRIL 1- APRIL 30, 1967, FOR GROSS BETA AND PRECIPITATION AT 74 STATIONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151
\$3.00 COPY, \$0.65 MICROFICHE

*GROSS BETA + *SURVEY, RADIATION, USPHS + AIR + PRECIPITATION + SURVEILLANCE PROGRAM

15-28600
RECHEN HJ
MONTHLY AVERAGES OF GROSS BETA RADIOACTIVITY IN AIR IN THE WESTERN HEMISPHERE - SETP. 1961 THROUGH DECEMBER 1966
PUBLIC HEALTH SERVICE, WASHINGTON, D. C.
NP-17080 +. 85 PAGES, DECEMBER 1966

THIS REPORT PRESENTS THE MONTHLY AVERAGES OF GROSS BETA RADIOACTIVITY FOR 75 RADIATION SURVEILLANCE NETWORK STATION AND 8 PAN AMERICAN HEALTH ORGANIZATION STATIONS IN BOTH TABULAR AND GRAPHICAL FORM FOR THE PERIOD OF SEPTEMBER 1961 THROUGH DECEMBER 31, 1966. SINCE SOME OF THESE STATIONS WERE OPERATED FOR ONLY A PORTION OF THE PERIOD, BREAKS IN DATA WILL BE NOTED. ALL DATA STORED ON PUNCH CARDS WERE USED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151
\$3.00 COPY, \$0.65 MICROFICHE

*AIR + *GROSS BETA + *SAMPLING + *SURVEY, RADIATION, USPHS + DATA PROCESSING + MONITOR, RADIATION, ENVIRONMENTAL + RADIOLOGICAL ASSISTANCE + SURVEILLANCE PROGRAM

15-28604 ALSO IN CATEGORY 17
HEMPELMANN LH + LISCO H + HOFFMAN JG
THE ACUTE RADIATION SYNDROME- A STUDY OF NINE CASES AND A REVIEW OF THE PROBLEM
ARGONNE NATIONAL LABORATORY + LOS ALAMOS SCIENTIFIC LABORATORY
129 PAGES, 24 FIGURES, JOURNAL OF INTERNAL MEDICINE, 36(2), PAGES 279-510 (FEBRUARY 1952)

CASE HISTORIES ARE GIVEN OF 9 PATIENTS INVOLVED IN 2 NUCLEAR INCIDENTS AT LASL. REPORT IS WRITTEN FOR THE CLINICIAN AND EMPHASIZES CLINICAL, HEMATOLOGIC, AND PATHOLOGIC ASPECTS OF ILLNESSES. DISCUSSES MECHANISMS BY WHICH IONIZING RADIATIONS CAUSE TISSUE DAMAGE. OF 10 PERSONS INVOLVED IN THE ACCIDENTS, 2 DIED. CALCULATED DOSES ARE TABULATED. THE MAXIMUM WHOLE BODY DOSE WAS 1930 ROENTGENS 80-KV X-RAY AND 114 ROENTGENS GAMMA. THE SAME INDIVIDUAL

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-28604 *CONTINUED*

RECEIVED 15,000 TO 30,000 ROENTGENS SOFT X-RAY TO THE LEFT HAND. TWENTY-FOUR COLORED PRINTS DRASTICALLY REVEAL THE EFFECTS OF THE RADIATION. ILLNESSES OF PATIENTS ARE COMPARED TO SYNDROME AS OBSERVED IN JAPANESE VICTIMS OF 1945.

*PERSONNEL EXPOSURE, RADIATION + *RADIATION INJURY TREATMENT + *RADIOBIOLOGY + INCIDENT, EXPOSURE + INCIDENT, FATALITY + LASL

15-28606

NGVIKOV YV

HEALTH PROBLEMS AND PROTECTION AGAINST RADIOACTIVE CONTAMINATION OF THE ATMOSPHERE AIR
182 PAGES, FIGURES, TABLES, REFERENCES, MOSCOW, IZDATELSTVO MEDITSINE 1966

BRIEFLY REVIEWS THE SOURCES OF NATURAL AND ARTIFICIAL RADIOACTIVE AIR CONTAMINATION AND POLLUTION AND THE METHODS FOR DETERMINING ATMOSPHERIC RADIOACTIVITY. THE PROBLEMS OF ATMOSPHERIC CONTAMINATION BY FALLOUT FROM NUCLEAR TESTS AND FROM THE PEACEFUL USES OF RADIOACTIVE MATERIALS ARE ANALYZED AND VARIOUS MEANS OF HEALTH PROTECTION AGAINST RADIOACTIVE ATMOSPHERIC CONTAMINATION ARE DISCUSSED. EXTENSIVE BIBLIOGRAPHY.

*AIR + *BIBLIOGRAPHY + *CONTAMINATION + *FALLOUT + *MONITOR, RADIATION, ENVIRONMENTAL + *RADIOACTIVITY RELEASE + *RADIOLOGICAL ASSISTANCE + ATMOSPHERIC POLLUTION + METEOROLOGY + NUCLEAR DETONATION + POPULATION EXPOSURE + SOURCE, RADIATION + TESTING

15-28607

ROAG JW

METHODS OF ABSORBED-DOSE MEASUREMENT

INST. OF CANCER RESEARCH, SUTTON, ENG.

STI/PUB-138 + CONF-661005 +. 19 PAGES, PAGES 349-366 OF SOLID STATE AND CHEMICAL RADIATION DOSIMETRY IN MEDICINE AND BIOLOGY, VIENNA, IAEA, 1967

THERE ARE MANY METHODS OF MEASURING ABSORBED DOSE, AND WHICH METHOD TO USE DEPENDS UPON THE NATURE OF THE PROBLEM. THE IMPORTANT CRITERIA ARE DISCUSSED, AND THE FIELD OF APPLICATION OF DIFFERENT METHODS IS ILLUSTRATED BY TABLES AND DIAGRAMS. ONLY THE CALORIMETRIC AND IONIZATION METHODS OF ABSORBED-DOSE MEASUREMENT CAN BE CONSIDERED TO PROVIDE ABSOLUTE MEASUREMENT, BUT CHEMICAL METHODS AND SOME SOLID STATE METHODS MAY BE EQUALLY ACCURATE. THE NEWER SOLID STATE METHODS HAVE PROVED PARTICULARLY SUITABLE FOR SPECIAL PROBLEMS, SUCH AS THE STORAGE OF DOSE INFORMATION, USE IN VERY CONFINED SPACES, OR THE MEASUREMENT OF EXTREMELY LOW OR EXTREMELY HIGH DOSES OR DOSE RATES. HOWEVER, THE ESTABLISHED IONIZATION METHODS MUST NOT BE ABANDONED.

*BIOMEDICAL + *DOSE MEASUREMENT, EXTERNAL + *DOSE MEASUREMENT, INTERNAL + *MEASUREMENT, GENERAL

15-28608

WYCKOFF HO

STANDARDS AND QUANTITIES IN RADIATION DOSIMETRY

ARMED FORCES RADIOBIOLOGY RESEARCH INST., BETHESDA, MD.

STI/PUB-138 + CONF-661005 +. 13 PAGES, PAGES 333-345 OF SOLID STATE AND CHEMICAL RADIATION DOSIMETRY IN MEDICINE AND BIOLOGY, VIENNA, IAEA, 1967

THE INTERNATIONAL COMMISSION ON RADIATION UNITS AND MEASUREMENTS (ICRU) HAS DEFINED THE QUANTITIES NEEDED FOR MEDICAL AND BIOLOGICAL DOSIMETRY OF X-RAYS, GAMMA RAYS, AND ELECTRONS. IT ALSO SUGGESTED A METHOD FOR OBTAINING THE ABSORBED DOSE AT THE POINT OF INTEREST. THIS MATERIAL IS REVIEWED AND SOME CONSIDERATION GIVEN TO THE NEEDS FOR STANDARDS IN THE HIGHER-ENERGY X-RAY AND ELECTRON FIELD.

*BIOMEDICAL + *ICRU + *MEASUREMENT, GENERAL + *RADIATION UNIT + DOSE + DOSIMETRY, GENERAL + ELECTRON MICROSCOPY + X-RAY

15-28609

PERSONAL RADIATION MONITOR-BELT/Q2941/(ENGINEERING MATERIALS)

OAK RIDGE NATIONAL LAB.

CAPE-1684 +. 18 FIGURES, OCTOBER 9, 1968

A PERSONAL RADIATION MONITOR-BELT (PRM-B) IS DESCRIBED. IT IS DESIGNED TO BE WORN CLIPPED TO THE WEARERS BELT OR SHIRT POCKET. IT IS CONTAINED IN A HIGH-IMPACT STRENGTH POLYSTYRENE CASE 3/8 IN. HIGH, 2-1/4 IN. WIDE AND 1-1/16 IN. THICK. THE INSTRUMENT GIVES INSTANT WARNING OF THE PRESENCE OF RADIATION. A SCREAMER ALARM (A HEARING-AID TYPE EARPHONE WITH A RESONANT AIR COLUMN) MAKES A WARNING NOISE WITH PITCH AND REPETITION RATE INCREASING AS RADIATION INTENSITY INCREASES. POWER IS SUPPLIED BY A 4V MERCURY BATTERY WITH A BATTERY LIFE OF ABOUT 10 MO.

*BETA EMITTER + *COUNTER + *GAMMA EMITTER + *INSTRUMENT, RADIATION MONITORING + *MONITOR, RADIATION, PERSONNEL + ENERGY LEVEL + ORNL + PARTICLE, RADIOACTIVE

15-28612

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-28612 *CONTINUED*

SATO N + MINAMI K
PERFORMANCE OF GAS MONITOR EMPLOYED AT FUEL REPROCESSING TEST PLANT OF JAERI
JAPAN ATOMIC ENERGY RESEARCH INST., TOKYO
5 PAGES, HOKEN BUTSURI, 2, PAGES 76-80 (JUNE 1967) (IN JAPANESE)

THE FIRST JAPANESE FUEL REPROCESSING PLANT WAS CONSTRUCTED AT THE JAERI IN 1962 AND IS SCHEDULED TO BE IN OPERATION SOON. THE RADIOACTIVE GASES RELEASED FROM THE PLANT ARE MAINLY IODINE AND KRYPTON. IODINE IS MONITORED BY A SPECIAL INSTRUMENT WITH A CHARCOAL FILTER PAPER AND CHARCOAL CARTRIDGES. THE PERFORMANCE OF A GAS MONITOR DESIGNED TO MEASURE KRYPTON-85 IS DESCRIBED.

*FUEL REPROCESSING + *IODINE + *KRYPTON + *MONITOR, RADIATION, GAS + BETA EMITTER + CHARCOAL ADSORBER + FILTER, PAPER + JAPAN + TEST, PLANT RESPONSE

15-28614

TIKHOMIROV VK + PETRUKHIN NV
DETERMINATION OF RADIORUTHENIUM IN ENVIRONMENTAL OBJECTS
6 PAGES, GIG. SANIT., NO. 10, PAGES 87-92 (OCT. 1967) (IN RUSSIAN)

THE WIDESPREAD PEACEFUL APPLICATION OF NUCLEAR ENERGY MAKES IT NECESSARY TO DETERMINE IN THE ENVIRONMENT NOT ONLY DEFINITELY HARMFUL ISOTOPES, SUCH AS SR-90 AND CS-137, BUT ALSO THE LESS TOXIC RU-103 AND RU-106 BECAUSE THEY ARE FORMED AT A HIGH YIELD AND HAVE A RELATIVELY LONG HALF-LIFE. THEY ARE ACCUMULATED IN THE SOIL AND THUS MAY CONTAMINATE RESERVOIRS LOCATED NEAR NUCLEAR POWER PLANTS. THE METHOD OF ANALYSIS IS DESCRIBED.

*ANALYTICAL TECHNIQUE, GENERAL + *CONTAMINATION + *RUTHENIUM + *SURFACE WATER, NUCLIDE OCCURRENCE + CHEMICAL ANALYSIS + MONITOR, RADIATION, ENVIRONMENTAL + REACTOR POWER + SITING, REACTOR + SOIL, RADIONUCLIDE MOVEMENT THROUGH

15-28615

GUULO SE
ATOMIC BOMB CASUALTY COMMISSION
ATOMIC BOMB CASUALTY COMMISSION, HIROSHIMA
1 PAGE, BULL. PATHOL. (CHICAGO), 8, PAGE 58 (MARCH 1967)

THE ORGANIZATION, FUNCTION, AND FINDINGS OF THE ABCC ARE BRIEFLY REVIEWED. THE THREE MAJOR PROGRAMS BEING CONDUCTED AT ABCC ARE THE LIFE SPAN STUDY, THE ADULT HEALTH STUDY, AND THE PATHOLOGY STUDY. THE SUBJECTS IN THESE STUDIES ARE PERSONS SELECTED FROM AMONG THOSE WHO WERE EXPOSED TO ATOMIC RADIATION, PLACED IN GROUPS ACCORDING TO THEIR DISTANCE FROM THE HYPOCENTER AT THE TIME OF THE BLAST, AND AN EQUAL NUMBER OF NONEXPOSED PERSONS, MATCHED WITH THOSE WHO HAD BEEN EXPOSED, FOR AGE AND SEX.

*JAPAN + *NUCLEAR ATTACK + *RADIATION EFFECT + *RADIATION PROTECTION, ORGANIZATION + *RADIOLOGY + BIOLOGICAL CONCENTRATION, MAN + BIOMEDICAL + RADIATION EXPOSURE, RECORD KEEPING

15-28618

ALSO IN CATEGORIES 17 AND 1

GRAY JL
ATOMIC ENERGY OF CANADA LIMITED HEALTH AND SAFETY ORGANIZATION
ATOMIC ENERGY OF CANADA LIMITED, OTTAWA, CANADA
AECL-1027 (FIFTH EDITION) +. 43 PAGES, JULY 1968

A SUMMARY OF THE PROVISIONS FOR HEALTH AND SAFETY, IN PARTICULAR RADIATION SAFETY. 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.

*RADIATION PROTECTION, ORGANIZATION + CANADA + RADIATION SAFETY AND CONTROL + REGULATION, GENERAL

15-28634

BIBLIOGRAPHY OF PUBLISHED PAPERS OF THE ATOMIC BOMB CASUALTY COMMISSION
ATOMIC BOMB CASUALTY COMMISSION, HIROSHIMA (JAPAN)
ABCC-TR-O-67 +. 7 PAGES, JUNE 1968 (IN ENGLISH AND JAPANESE)

THIS PART OF THE TECHNICAL REPORT SERIES IS A BIBLIOGRAPHY OF PUBLISHED PAPERS OF THE ATOMIC BOMB CASUALTY COMMISSION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA
22151, \$3.00 COPY, \$0.65 MICROFICHE

*BIBLIOGRAPHY + *NUCLEAR ATTACK + ADMINISTRATIVE CONTROL + DOSIMETRY, GENERAL + RADIATION EFFECT + RADIATION INJURY TREATMENT

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-28637
SEYMOUR AH
COLUMBIA RIVER STUDIES. ANNUAL REPORT, 1967-68
WASHINGTON UNIV., SEATTLE. LAB. OF RADIATION ECOLOGY
RLO-2047-2 +. 16 PAGES, FIGURES, TABLES, JUNE 26, 1968

IN THIS FIRST ANNUAL REPORT, AN ACCOUNT IS GIVEN OF THE ACHIEVEMENTS DURING THE FIRST NINE MONTHS OF THE CONTRACT YEAR WHICH BEGAN OCTOBER 1, 1967. THE REPORT DISCUSSES FIVE PARTS OF THE PROGRAM - (1) DISTRIBUTION OF STABLE AND RADIO-PHOSPHORUS IN THE MARINE ENVIRONMENT AT ONE LOCALITY NEAR THE MOUTH OF THE COLUMBIA RIVER, (2) SENSITIVITY OF OYSTER LAPVAE TO THREE RADIONUCLIDES, (3) DISTRIBUTION OF ZINC-65 IN MUSSELS FROM THE MOUTH OF THE COLUMBIA RIVER TO PUGET SOUND, (4) ZINC-65 IN BENTHIC ORGANISMS FROM THE STRAITS OF JUAN DE FUCA, AND (5) TABULATION OF DATA ON THE ACCUMULATION OF HANFORD-PRODUCED ⁶⁵Zn BY MARINE ORGANISMS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

*BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + *ECOLOGICAL CONSIDERATION + *EFFLUENT + *RIVER, COLUMBIA + BIOMEDICAL + CHROMIUM + DIFFUSION + DILUTION + DISPERSION + HANFORD SITE + HYDROLOGICAL CONSIDERATION, GENERAL + OCEAN AND SEA + PHOSPHORUS + STRONTIUM + YTTRIUM + ZINC

15-28673
DAVIS S
THE ANALYTICAL DETERMINATION OF SR-90 IN FOODS
DEPT. OF HEALTH, EDUCATION AND WELFARE, WASHINGTON, D. C.
13 PAGES, RESIDUE REVIEWS 12, PAGES 1-13 (1966)

THE CHEMISTRY OF SR AND Y APPLICABLE TO SR-90 DETERMINATIONS IS REVIEWED IN ADDITION TO GRAVIMETRIC METHODS OF SEPARATION, ION-EXCHANGE AND OTHER CHROMATOGRAPHIC METHODS, AND SOLVENT EXTRACTION METHODS FOR SR-90 ASSAY OF FOODS. SOLVENT EXTRACTION PROCEDURES HAVE BECOME MOST POPULAR FOR THE SEPARATION OF RADIONUCLIDES. THE CHROMATOGRAPHIC ION-EXCHANGE AND SOLVENT-EXTRACTION METHODS, AS ATTEMPTS TO SIMPLIFY THE CLASSICAL GRAVIMETRIC SEPARATION STEPS OF THE EARLIER SR-90 METHODS, ARE A STEP IN THE TREND TOWARD SIMPLIFICATION.

*ANALYTICAL TECHNIQUE, FOOD + *STRONTIUM + *YTTRIUM + CHEMICAL ANALYSIS + CHROMATOGRAPHY + ION EXCHANGE + SOLVENT EXTRACTION PROCESS

15-28679
YUDIN MF + KARAVAEV FM + YARITSYNA IA + RUZER LS
OFFICIAL STANDARDS AND INDEXES FOR MEASURING IONIZATION RADIATION
10 PAGES, IZMER. TEKH., NO. 11, PAGES 107-16 (NOVEMBER 1967)

PROBLEMS RELATED TO THE DETERMINATION OF STANDARDS FOR MEASURING IONIZATION RADIATION AND PROBLEMS OF TRANSFERRING THE UNIT VALUE FROM THE STANDARD TO THE SPECIMENS AND WORKING RADIATION SOURCES AND INSTRUMENTATIONS ARE DISCUSSED. METHODS OF QUANTUM, NEUTRON, AND BETA RADIATIONS DOSIMETRY, MEASUREMENTS OF RADIOACTIVE AEROSOLS, AND NEUTRON FLUXES ARE ANALYZED. A LISTING OF 27 REFERENCES IS INCLUDED.

*DOSIMETRY, GENERAL + *INSTRUMENT, GENERAL + *MEASUREMENT, REACTIVITY + *RADIATION UNIT + AEROSOL + NEUTRON + SOURCE, RADIATION + USSR

15-28680
SHAMOS MH + LIBOFF AR
NEW IONIZATION CHAMBER TECHNIQUE FOR THE MEASUREMENT OF ENVIRONMENTAL RADIATION
NEW YORK UNIVERSITY, NEW YORK
7 PAGES, REV. SCI. INSTRUM, 39, PAGES 223-9 (FEBRUARY 1969)

IT IS SHOWN, CONTRARY TO USUAL LOW-LEVEL ION CHAMBER PRACTICE, THAT THERE ARE UNIQUE ADVANTAGES TO USING HIGHLY ELECTRONEGATIVE FILLING GASES, WHICH ENHANCE COLUMNAR RECOMBINATION. INDEED, THROUGH THE PROPER CHOICE OF GAS AND ELECTRIC FIELD STRENGTH, IT IS POSSIBLE TO DISCRIMINATE ALMOST COMPLETELY AGAINST ALPHAS ORIGINATING IN THE WALLS WITHOUT AFFECTING THE COLLECTION OF BETA- AND GAMMA-INDUCED IONIZATION. A NUMBER OF CHAMBERS UTILIZING THIS TECHNIQUE HAVE BEEN CONSTRUCTED. THE RESULTING CHARACTERISTICS, AS WELL AS COMPARISONS WITH CALIBRATED SOURCES, INDICATE A COMPLETE ABSENCE OF RESIDUAL CURRENTS FROM WALL CONTAMINANTS. THE FLUCTUATIONS IN BACKGROUND MEASUREMENT ARE REDUCED BY AT LEAST A FACTOR OF 3 OVER COMPARABLE AIR CHAMBERS.

*CHAMBER, ION + *GAS + *MEASUREMENT, REACTIVITY + *SURFACE CONTAMINATION + ALPHA EMITTER + BETA EMITTER + GAMMA EMITTER + INSTRUMENT, NUCLEAR + MONITOR, RADIATION, ENVIRONMENTAL

15-28681 ALSO IN CATEGORY 14
THE IONISING RADIATIONS (UNSEALED RADIOACTIVE SUBSTANCES) REGULATIONS 196
31 PAGES, LONDON, HER MAJESTYS STATIONARY OFFICE, 1967

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-28681 *CONTINUED*

SECTION HEADINGS ARE AS FOLLOWS - INTERPRETATION AND GENERAL. ADMINISTRATION, NOTIFICATION, AND RECORDS, BASIC PRINCIPLES OF PROTECTION, RADIOLOGICAL SUPERVISION, MEDICAL SUPERVISION, ARRANGEMENT OF PREMISES AND PLANTS, PERSONAL PROTECTION, ORGANIZATION OF WORK, MONITORING AND MEASURES TO DEAL WITH CONTAMINATION. SCHEDULES ARE INCLUDED FOR MAXIMUM PERMISSIBLE RADIATION DOSES, MAXIMUM PERMISSIBLE LEVELS OF CONTAMINATION AND METHOD OF ASSESSMENT, CLASSIFICATION OF RADIONUCLIDES.

*MAXIMUM PERMISSIBLE CONCENTRATION (MPC) + *MAXIMUM PERMISSIBLE DOSE (MPD) +
*RADIATION PROTECTION, ORGANIZATION + *RADIATION SAFETY AND CONTROL + *RADIOLOGICAL ASSISTANCE +
CONTAMINATION + DECONTAMINATION + MONITOR, RADIATION, ENVIRONMENTAL + PLANT PROTECTIVE SYSTEM

15-28682

ALSO IN CATEGORY 14

LALIT BY

DEPENDENCE OF SR-90 IN MILK ON ITS CONCENTRATIONS IN AIR AND SURFACE DEPOSITION
BHABHA ATOMIC RESEARCH CENTRE, BOMBAY

4 PAGES, J. SCI. IND. RES., 26, PAGES 372-5 (SEPTEMBER 1967)

REGRESSION ANALYSIS WAS CARRIED OUT TO FIND THE DEPENDENCE OF THE SR-90 CONTENT OF MILK ON ITS CONCENTRATION IN AIR, ITS MONTHLY RATE OF DEPOSITION, AND CUMULATIVE DEPOSITION IN SOIL AT BOMBAY. THIS ANALYSIS SHOWED THAT THE DEPENDENCE OF SR-90 IN MILK ON ITS CONCENTRATION IN AIR IS IMPORTANT, ESPECIALLY IN AREAS LIKE BOMBAY WHERE THE MAJOR DEPOSITION ON THE GROUND TAKES PLACE ONLY DURING FOUR MONTHS OF THE RAINY SEASON. THE COLLECTION IN THE DRY SEASON ON THE FOLIAGE IS MAINLY BY IMPACTION OF AIRBORNE SR-90.

*BIOLOGICAL CONCENTRATION, MILK + *DEPOSITION + *METEOROLOGY + *PRECIPITATION + *STRONTIUM + FALLOUT +
INDIA + RADIOCHEMICAL ANALYSIS + RAINOUT + SURFACE CONTAMINATION

15-28683

NOVIKOV YV

EFFECT OF SMALL CONCENTRATIONS OF URANIUM IN WATER ON THE POPULATIONS HEALTH
SCIENTIFIC-RESEARCH INST. OF HYGIENE AND SANITATION, MOSCOW

8 PAGES, GIG. SANIT. NO. 10, PAGES 33-40 (OCTOBER 1967)

A STUDY OF THE EFFECT PRODUCED BY SMALL CONCENTRATIONS OF URANIUM ON THE POPULATIONS HEALTH
PROVED THE DEMOGRAPHIC INDICES OF SETTLEMENTS A AND B (BIRTH, MORTALITY, NATURAL INCREASE OF
POPULATION) TO BE ALMOST THE SAME.

*POPULATION EXPOSURE + *RADIATION EFFECT + *URANIUM + BIOLOGICAL CONCENTRATION, MAN +
SURFACE WATER, NUCLIDE OCCURRENCE + USSR

15-28687

ALSO IN CATEGORY 14

MACHTA L

RADIOIODINE FALLOUT OVER THE MIDWEST IN MAY
AIR RESOURCES LABS., SILVER SPRING, MD.

2 PAGES, SCIENCE, 160, PAGES 64-6 (APRIL 5, 1968)

HIGH CONCENTRATIONS OF RADIOIODINE IN MILK, FOUND PREFERENTIALLY OVER THE MIDWESTERN UNITED
STATES AFTER ATMOSPHERIC NUCLEAR TESTS IN MAY 1962, 1965, AND 1966, CAN BEST BE EXPLAINED BY
HIGH-REACHING INTENSE THUNDERSTORMS THAT SCAVENGE PASSING RADIOACTIVITY FROM THE UPPER
TROPOSPHERE AND LOWER STRATOSPHERE.

*BIOLOGICAL CONCENTRATION, MILK + *FALLOUT + *IODINE + *NUCLEAR DETONATION + *RAINOUT + STRATOSPHERE +
TESTING + TROPOSPHERE + UNITED STATES

15-28692

RADIOACTIVITY SURVEY DATA IN JAPAN, NUMBER 15

NATIONAL INST. OF RADIOLOGICAL SCIENCES, CHIBA (JAPAN)

NP-17083 +. 29 PAGES, FIGURES, TABLES, MAY 1967

SINCE MAY 1963, THE JAPAN ANALYTICAL CHEMISTRY RESEARCH INSTITUTE HAS MEASURED THE LEVEL OF
STRONTIUM-90 AND CESIUM-137 IN SAMPLES ACQUIRED AT VARIOUS LOCATIONS THROUGHOUT JAPAN.
SAMPLING AND PRE-TREATMENT FOR CONCENTRATION WERE PERFORMED BY 24 PREFECTURAL PUBLIC HEALTH
LABORATORIES THROUGHOUT JAPAN. DATA IS GIVEN CONCERNING METEOROLOGY, EXTERNAL DOSE, HUMAN,
DIETARY, FISH, WATER, AND MARINE LIFE.

AVAILABILITY - USAEC DEPOSITORY LIBRARIES IN THE U.S. AND OVERSEAS

*CESIUM + *JAPAN + *RADIUM + *STRONTIUM + *SURVEY, RADIATION, GENERAL + BIOLOGICAL CONCENTRATION, MAN +
DIETARY HABIT + DOSE MEASUREMENT, EXTERNAL + METEOROLOGY + WATER, GENERAL

15-28693

ALSO IN CATEGORY 14

DATA FROM RADIATION PROTECTION PROGRAMS. VOLUME 5, NUMBER 7

DEPARTMENT OF NATIONAL HEALTH AND WELFARE, OTTAWA (ONTARIO). RADIATION PROTECTION DIV.

NP-17042 +. 21 PAGES, FIGURES, TABLES, 2 REFERENCES, JULY 1967

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-28693 *CONTINUED*

THE RADIATION PROTECTION DIVISION CONDUCTS A NATION-WIDE PROGRAM OF FALLOUT MONITORING, INCLUDING ANALYSES OF AIR PARTICULATES, PRECIPITATION, MILK, WATER, WHEAT, SOIL AND HUMAN BONE. THIS REPORT CONTAINS THE RESULTS OF ANALYSES CARRIED OUT ON SAMPLES COLLECTED IN JUNE 1967. IT INCLUDES DATA ON AIR, PRECIPITATION AND MILK.

AVAILABILITY - USAEC DEPOSITORY LIBRARIES IN THE U.S. AND OVERSEAS

*CANADA + *MONITOR, RADIATION, ENVIRONMENTAL + *RADIATION PROTECTION, ORGANIZATION +
*SURVEY, RADIATION, ENVIRONMENTAL + AIR + ANALYTICAL TECHNIQUE, GENERAL +
BIOLOGICAL CONCENTRATION, AGRICULTURAL PRODUCE + BIOLOGICAL CONCENTRATION, GENERAL +
BIOLOGICAL CONCENTRATION, MAN + FALLOUT + PARTICULATE + PRECIPITATION + RAINOUT + SAMPLING

15-28694 ALSO IN CATEGORY 14

DATA FROM RADIATION PROTECTION PROGRAMS. VOLUME 4, NUMBER 2
DEPARTMENT OF NATIONAL HEALTH AND WELFARE, OTTAWA (ONTARIO). RADIATION PROTECTION DIV.
NP-17029 +. 40 PAGES, REFERENCES, FEB. 1966

THE FIRST TWO PARTS OF THIS SERIES DESCRIBED THE SYSTEMS OF RADIATION GUIDE LEVELS WHICH HAVE BEEN ESTABLISHED BY VARIOUS AUTHORITIES, WITH PARTICULAR REFERENCE TO THE RECOMMENDATIONS OF THE INTERNATIONAL COMMISSION ON RADIOLOGICAL PROTECTION. THE PRESENT ARTICLE DEALS WITH THE PROCEDURES USED BY THE RADIATION PROTECTION DIVISION TO ENSURE THAT EXPOSURE OF RADIATION WORKERS AND OF THE GENERAL PUBLIC WILL REMAIN WITHIN THE ACCEPTABLE LIMITS AS DEFINED BY THE GUIDES.

AVAILABILITY - USAEC DEPOSITORY LIBRARIES IN THE U.S. AND OVERSEAS

*CANADA + *MAXIMUM PERMISSIBLE BODY BURDEN + *MAXIMUM PERMISSIBLE CONCENTRATION (MPC) +
*MONITOR, RADIATION, PERSONNEL + *RADIATION PROTECTION, ORGANIZATION + BIOLOGICAL CONCENTRATION, ANIMAL +
BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + FALLOUT + ICRP + INGESTION + POPULATION EXPOSURE +
RADIATION SAFETY AND CONTROL + REACTOR POWER

15-28695 ALSO IN CATEGORY 14

DATA FROM RADIATION PROTECTION PROGRAMS. VOLUME 5, NUMBER 5
DEPARTMENT OF NATIONAL HEALTH AND WELFARE, OTTAWA (ONTARIO). RADIATION PROTECTION DIV.
NP-16878 +. 21 PAGES, FIGURES, TABLES, 2 REFERENCES, MAY 1967

THE RADIATION PROTECTION DIVISION CONDUCTS A NATION-WIDE PROGRAM OF FALLOUT MONITORING, INCLUDING ANALYSES OF AIR PARTICULATES, PRECIPITATION, MILK, WATER, WHEAT, SOIL AND HUMAN BONE. THIS REPORT CONTAINS THE RESULTS OF ANALYSES CARRIED OUT ON SAMPLES COLLECTED IN APRIL 1967. IT INCLUDES DATA ON AIR, PRECIPITATION AND MILK.

AVAILABILITY - USAEC DEPOSITORY LIBRARIES IN THE U.S. AND OVERSEAS

*CANADA + *MONITOR, RADIATION, ENVIRONMENTAL + *MONITOR, RADIATION, PERSONNEL +
*RADIATION PROTECTION, ORGANIZATION + FALLOUT + RADIATION SAFETY AND CONTROL + REACTOR POWER

15-28696

ENVIRONMENTAL RADIOACTIVITY IN NEW ZEALAND AND MEASUREMENTS ON SAMPLES FROM FIJI AND RAROTONGA. QUARTERLY REPORT, JANUARY-MARCH 1967
NATIONAL RADIATION LAB., CHRISTCHURCH (NEW ZEALAND)
NP-16879 + NRL-F-24 +. 12 PAGES, TABLES, MARCH 1967

THIS ISSUE CONCERNS THE EXTENSIVE MONITORING PROGRAM CARRIED OUT DURING NUCLEAR TESTING IN THE PACIFIC AREA AND ROUTINE MONITORING OPERATIONS WITH THE FOLLOWING EXCEPTIONS - AIR SAMPLING AT WELLINGTON, WEEKLY RAIN COLLECTION AT GREYMUITH AND MONTHLY RAIN COLLECTION AT RAROTONGA, WHICH WERE PART OF THE EXTENDED MONITORING OPERATIONS, HAVE BEEN CONTINUED ON A ROUTINE BASIS. THE MEASUREMENT OF STRONTIUM-89 IN ALL MONTHLY RAINWATER COLLECTIONS AND MILK COLLECTIONS HAS ALSO BEEN CONTINUED AND WILL NOT BE DISCONTINUED UNTIL THE LEVELS FALL BELOW THE MINIMUM DETECTABLE LEVEL.

AVAILABILITY - USAEC DEPOSITORY LIBRARIES IN THE U.S. AND OVERSEAS

*BIOLOGICAL CONCENTRATION, MILK + *CESIUM + *MONITOR, RADIATION, ENVIRONMENTAL + *NEW ZEALAND +
*PRECIPITATION + *STRONTIUM + *SURVEILLANCE PROGRAM + FALLOUT + NUCLEAR DETONATION +
RADIATION SAFETY AND CONTROL + RAINOUT + SAMPLING + STRATOSPHERE + TESTING + TROPOSPHERE

15-28699

RADIOACTIVE CONTAMINATION OF AIRCRAFT
MINISTRY OF AVIATION, LONDON, ENGLAND
NP-16887 +. 44 PAGES, 1966

GIVES CODE OF PRACTICE FOR PROTECTING PERSONS EXPOSED TO IONIZING RADIATIONS ARISING FROM THE RADIOACTIVE CONTAMINATION OF AIRCRAFT.

*AIRBORNE RELEASE + *AIRCRAFT + *CONTAMINATION + *MONITOR, RADIATION, GENERAL + DECONTAMINATION +
NUCLEAR DETONATION + PRECIPITATION + STRATOSPHERE + TROPOSPHERE + WASTE MANAGEMENT

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-28700
EABER DE
STANDARDS OF PERFORMANCE FOR FILM BADGE SERVICES
UNIVERSITY OF MICHIGAN, ANN ARBOR, MICHIGAN
NP-16866 +. 47 PAGES, FIGURES, TABLES, REFERENCES, SEPTEMBER 1966

STANDARDS OF PERFORMANCE FOR FILM BADGE SERVICES ARE OF GENERAL CONCERN TO FILM BADGE SERVICES, USERS OF THE SERVICES, AND REGULATORY AGENCIES. A QUALITY CONTROL PROGRAM SELF-IMPOSED BY FILM BADGE SERVICES, BUT INVOLVING ALL OF THESE GROUPS, IS DESCRIBED. ADMINISTRATIVE PROCEDURES FOR PERIODICALLY EVALUATING FILM BADGE SERVICE PERFORMANCE AND FOR RECOGNIZING ACCEPTABLE PERFORMANCE ARE ALSO DESCRIBED.

AVAILABILITY - U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE, PUBLIC HEALTH SERVICE, DIVISION OF RADIOLOGICAL HEALTH, WASHINGTON, D. C. 20201

*INSTRUMENT, RADIATION MONITORING + *MONITOR, RADIATION, PERSONNEL + *PERSONNEL PROTECTIVE DEVICE + DOSIMETRY, GENERAL + ERROR ANALYSIS + PERFORMANCE LIMIT + RADIATION SAFETY AND CONTROL

15-28701 ALSO IN CATEGORY 14
RADIOACTIVITY SURVEY DATA IN JAPAN. NUMBER 14
NATIONAL INST. OF RADIOLOGICAL SCIENCES, CHIBA, JAPAN
NP-16993 +. 25 PAGES, FIGURES, TABLES, FEBRUARY 1967

SINCE 1954, RAIN AND FALLOUT THAT HAVE COLLECTED MONTHLY IN A RECEIVER (COLLECTION AREA, 1 SQ. METER) AT THE METEOROLOGICAL RESEARCH INSTITUTE, TOKYO, TO DETERMINE STRONTIUM-90 AND CESIUM-137. OTHER SAMPLES COLLECTED MONTHLY (RECEIVER COLLECTION AREA, 0.5 SQ. METER) AT SIX STATIONS LOCATED THROUGHOUT JAPAN HAVE ALSO BEEN ANALYZED. THE RESULTS OF OBSERVATION DURING THE PERIOD FROM JANUARY TO DECEMBER 1966 ARE TABULATED.

AVAILABILITY - USAEC DEPOSITORY LIBRARIES IN THE U. S. AND OVERSEAS

*BIOLOGICAL CONCENTRATION, AGRICULTURAL PRODUCE + *BIOLOGICAL CONCENTRATION, MAN +
*BIOLOGICAL CONCENTRATION, MILK + *METEOROLOGICAL SUPPORT + *SURFACE WATER, NUCLIDE OCCURRENCE +
*SURVEY, RADIATION, ENVIRONMENTAL + CESIUM + DIETARY HABIT + FALLOUT + STRONTIUM

15-28702
VAN DE GEIJN J + KOK G
COMPUTER IN RADIOTHERAPY
4 PAGES, NEDERLANDS TIJDSCHRIFT, GENEESKUNDE 110, PAGES 1692-5 (SEPTEMBER 24, 1966)

PRACTICAL AND THEORETICAL ASPECTS OF THE USE OF COMPUTERS FOR MORE ACCURATE ASSESSMENT OF DOSE DISTRIBUTION IN THE IRRADIATED VOLUME, FOR THE PROTECTION OF HEALTHY TISSUE AND DELIVERY OF CANCERICIDAL DOSES TO MALIGNANT TISSUE, WERE CONSIDERED. ADEQUATE KNOWLEDGE OF THE DISTRIBUTION OF DOSE WAS A PRIME CONDITION FOR THE ACCURATE TREATMENT OF MALIGNANT TUMORS BY MEANS OF X OR GAMMA RAYS.

*COMPUTER PROGRAM + *DOSE CALCULATION, INTERNAL + *RADIOLOGY + BIOMEDICAL + GAMMA EMITTER + X-RAY

15-28708
PALMER HE + LANGFORD JC + JENKINS CE + BEASLEY TM + AASE JM
LEVELS OF IRON-55 IN HUMANS, ANIMALS, AND FOOD 1964-1967
PACIFIC NORTHWEST LABORATORY, OPERATED BY BATTELLE MEMORIAL INSTITUTE FOR THE ATOMIC ENERGY COMMISSION, RICHLAND, WASHINGTON + ARCTIC HEALTH RESEARCH CENTER, ANCHORAGE, ALASKA
4 PAGES, 1 FIGURE, 5 TABLES, 8 REFERENCES, RADIOLOGICAL HEALTH DATA AND REPORTS, 9(8), PAGE 387-390, (AUGUST 1968)

IRON-55 LEVELS IN THE FOODS OF HUMANS HAVE BEEN DECREASING SINCE 1964, WITH THE EXCEPTION OF CARIBOU OBTAINED FROM ARCTIC AREAS, WHICH SHOWED PEAK LEVELS IN 1965. THE LEVELS OF IRON-55 IN HUMANS AT RICHLAND, WASH., INCREASED UNTIL ABOUT JANUARY 1967 AND THEN BEGAN TO DECREASE. THIS PEAK LEVEL IN HUMANS OCCURRED ABOUT 4 YEARS AFTER THE 1962 NUCLEAR TEST SERIES. THIS LAG TIME OF 4 YEARS IS MUCH LONGER THAN THAT FOR CESIUM-137 IN HUMANS, WHERE PEAK LEVELS OCCURRED 1 AND 1/2 YEARS AFTER THE NUCLEAR TESTS STOPPED.

BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + BIOLOGICAL CONCENTRATION, FOOD +
BIOLOGICAL CONCENTRATION, MAN + CESIUM + DEPOSITION + DIETARY HABIT + FALLOUT + HANFORD SITE + IRON +
NUCLEAR DETONATION + POPULATION EXPOSURE + STRONTIUM + TESTING

15-28709
ROESSLER CE + DUNAVANT BG + BEVIS HA + ROESSLER GS
CESIUM-137 LEVELS IN FLORIDA BEEF-VARIATIONS WITH FEEDING PROGRAM
UNIVERSITY OF FLORIDA, GAINESVILLE, FLA.
5 PAGES, 1 FIGURE, 2 TABLES, 14 REFERENCES, RADIOLOGICAL HEALTH DATA AND REPORTS, 9(8), PAGE 391-395, (AUGUST 1968)

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-28700 *CONTINUED*

LEVELS OF CESIUM-137 IN LOW QUALITY LEAN BEEF SAMPLES, COLLECTED IN THE VICINITY OF GAINESVILLE, FLA., IN THE SPRING OF 1967, AVERAGED 4,000 PCI/KG AND RANGED FROM 200 TO 12,500 PCI/KG. THE AVERAGE AND MAXIMUM LEVELS IN THESE SAMPLES FROM EIGHT GRASS-FED ANIMALS WERE CONSIDERABLY HIGHER THAN THOSE IN SAMPLES FROM 26 GRAIN-FED ANIMALS FROM FIVE PENINSULAR FLORIDA FEEDLOTS. THE LEVELS IN THE GRASS-FED ANIMALS SUGGEST VERY HIGH LEVELS OF CESIUM-137 INTAKE BY THE ANIMALS, AN EXTREMELY HIGH FEED-TO-MEAT TRANSFER, OR BOTH. FOR PERSONS WHOSE MEAT CONSUMPTION IS REPRESENTED BY THE GRASS-FED ANIMALS EXAMINED IN THIS STUDY, IT CAN BE EXPECTED THAT MEAT EXCEEDS ALL OTHER COMMODITIES AS THE SOURCE OF CESIUM-137 INTAKE.

*RADIOLOGICAL CONCENTRATION, ANIMAL FEED + *BIOLOGICAL CONCENTRATION, MAN +
*BIOLOGICAL CONCENTRATION, VEGETATION + *CESIUM + *DIETARY HABIT

15-28710

HOWLEY JR + ROBBINS C + DICKINSON MS

THERMOLUMINESCENT RADIATION DOSIMETRY APPLIED TO DENTAL X-RAY EXPOSURES
RADIATION SAFETY SECTION, DEPT. OF NUCLEAR MEDICINE, NATIONAL INSTITUTES OF HEALTH, BETHESDA, MD.
5 PAGES, 4 FIGURES, 1 TABLE, 11 REFERENCES, RADIOLOGICAL HEALTH DATA AND REPORTS, 9(8), PAGE 397-401,
(AUGUST 1968)

SUMMARIZES A PANORAMIC RADIOGRAPHIC TECHNIQUE USED BY DENTISTS TO PRODUCE A FULL-MONTH RADIOGRAPH ON A SINGLE STRIP OF FILM. DURING THIS X-RAY PROCEDURE THE PATIENTS HEAD REMAINS STATIONARY WHILE THE FILM AND THE X-RAY SOURCE ROTATE AROUND THE HEAD. THE PROCEDURE IS LIMITED TO THOSE SITUATIONS WHERE CLARITY IS NOT ESSENTIAL AND SERVES ONLY TO COMPLEMENT CONVENTIONAL PERIAPICAL RADIOGRAPHY.

*DOSIMETRY, THERMOLUMINESCENCE + *RADIOGRAPHY + *X-RAY + BIOLOGICAL CONCENTRATION, MAN + BIOMEDICAL +
PHANTOM, HUMAN BODY

15-28711

HONSTEAD JF

A PROCEDURE FOR EVALUATING ENVIRONMENTAL RADIATION DOSE TO CHILDREN IN THE VICINITY OF THE HANFORD PROJECT IN WASHINGTON, APRIL 1965-JANUARY 1967
ENVIRONMENTAL STUDIES SECTION, PACIFIC NORTHWEST LABORATORY, BATTELLE MEMORIAL INSTITUTE, RICHLAND, WASH.
4 PAGES, 4 FIGURES, 5 REFERENCES, RADIOLOGICAL HEALTH DATA AND REPORTS, 9(8), PAGE 402-405, (AUGUST 1968)

A DESCRIPTION IS GIVEN OF A PROCEDURE TO INVESTIGATE DIETS AND RADIONUCLIDE BODY BURDENS IN LOCAL CHILDREN. THE CHILDREN, WITH COOPERATION FROM PARENTS, WERE ASKED TO KEEP A RECORD OF THE PERTINENT FOODSTUFFS EATEN AND DRUNK DURING A CONSECUTIVE 7-DAY PERIOD. ABOUT TWO WEEKS LATER A MOBILE WHOLE-BODY COUNTER WAS BROUGHT TO THE SCHOOL AND EACH CHILD COUNTED FOR 10 MINUTES. ABOUT HALF OF THE DIET RECORDS WERE ANALYZED BY ELECTRONIC DATA PROCESSING AND ARE PRESENTED. NONE OF THE CHILDREN MEASURED IN THE WHOLE-BODY COUNTER HAD BODY BURDENS OF RADIONUCLIDES OUTSIDE THE RANGE ANTICIPATED.

*BIOLOGICAL CONCENTRATION, MAN + *DIETARY HABIT + *ENVIRONMENTAL CONDITION +
*MAXIMUM PERMISSIBLE BODY BURDEN + COUNTER, WHOLE BODY + SURVEY, RADIATION, ENVIRONMENTAL

15-28712

ALSO IN CATEGORY 14

WILSON DW + WARD GM

GAMMA-EMITTING FALLOUT IN SURFACE AIR AT FORT COLLINS, COLO., 1962-1967
DEPT. OF ANIMAL SCIENCE, COLORADO STATE UNIV., FORT COLLINS, COLO.
5 PAGES, 2 FIGURES, 2 TABLES, 7 REFERENCES, RADIOLOGICAL HEALTH DATA AND REPORT, 9(8), PAGE 407-411,
(AUGUST 1968)

SURFACE AIR GAMMA-RAY ACTIVITIES OF THE FISSION PRODUCTS CESIUM-144, ANTIMONY-125, RUTHENIUM-106, CESIUM-137 AND A NEUTRON ACTIVATION PRODUCT, MANGANESE-54, ALL FROM NUCLEAR WEAPONS TESTING, WERE MEASURED AT FORT COLLINS, COLO. FROM 1962 TO 1967. THESE MEASUREMENTS WERE PART OF A STUDY OF THE TRANSPORT OF WORLD-WIDE FALLOUT FROM THE ATMOSPHERE TO MILK. IN OUR STUDIES, AIR LEVELS OF CESIUM-137 HAVE BEEN A RELIABLE INDICATION OF FORAGE AND MILK CONTAMINATION, AND WE BELIEVE THAT THE IMPORTANCE OF DIRECT DEPOSITION FROM AIR TO VEGETATION (DRY DEPOSITION) HAS BEEN UNDERESTIMATED PREVIOUSLY IN FOOD CHAIN TRANSPORT MODELS.

AIR + ANTIMONY + BIOLOGICAL CONCENTRATION, MILK + BIOLOGICAL CONCENTRATION, VEGETATION + CESIUM + CESIUM +
DEPOSITION + FALLOUT + GAMMA EMITTER + MANGANESE + NEUTRON + RUTHENIUM + SURFACE CONTAMINATION +
TRANSPORT PROPERTY

15-28713

GALLEGOS AF + WARD GM

CESIUM-137 IN MILK FROM THE COLORADO STATE UNIVERSITY DAIRY HERD, 1962-1967
DEPT. OF ANIMAL SCIENCE, COLORADO STATE UNIVERSITY, FORT COLLINS, COLO.
2 PAGES, 1 FIGURE, 1 TABLE, 4 REFERENCES, RADIOLOGICAL HEALTH DATA AND REPORTS, 9(8), PAGE 412-413,
(AUGUST 1968)

PRESENTS A COMPARISON BETWEEN TWO GROUPS OF A COMMERCIAL DAIRY HERD AT COLORADO STATE UNIVERSITY WITH RESPECT TO THE TRANSFER OF CESIUM-137 FROM FEED TO MILK. ONE GROUP WAS DRY-LOT FED AND THE OTHER GRAZED ON PASTURE OR WAS FED GREEN-CUT ALFALFA. RESULTS GIVEN IN GRAPHIC AND TABULAR FORM.

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-28713 *CONTINUED*

*BIOLOGICAL CONCENTRATION, ANIMAL FEED + *BIOLOGICAL CONCENTRATION, MILK +
*BIOLOGICAL CONCENTRATION, VEGETATION + *CESIUM + ENVIRONMENTAL CONDITION + FALLOUT + PRECIPITATION +
SPECTROMETRY, GAMMA

15-28714

SCHROEDER RJ + BRANDLY PJ + COURTER RD
REPORT OF THE COMMITTEE ON PUBLIC HEALTH AND RADIOLOGICAL FALLOUT
7 PAGES, 9 REFERENCES, PROC. U.S. LIVESTOCK SANIT. ASS., 68, PAGES 241-7 (1964)

THE REPORT RELATING TO FALLOUT AND OTHER HEALTH HAZARDS PERTINENT TO LIVESTOCK IS OUTLINED.
IT CONCERNS MAINLY THE PROTECTION ACTION GUIDE. THE OTHER IS THE SUBSTITUTION OF STORED FEED
FOR PASTURAGE, UNTIL MOST OF THE I-131 HAS DECAYED. LONG-LIVED ISOTOPES SR-90 AND CS-137 IN
THE ATMOSPHERE BY MID-1964 WERE REDUCED TO ONE-HALF THAT IN JANUARY 1963, AND AT THE END OF
THE LAST TEST SERIES REACHED A DELAYED PEAK IN THE DIET DURING 1964 AND WILL DECREASE IN
FUTURE YEARS.

*BIOLOGICAL CONCENTRATION, ANIMAL FEED + *BIOLOGICAL CONCENTRATION, MAN + *BIOLOGICAL CONCENTRATION, MILK +
*FALLOUT + *RADIATION PROTECTION, ORGANIZATION + *RADIOACTIVITY RELEASE +
BIOLOGICAL CONCENTRATION, ANIMAL + CESIUM + DIETARY HABIT + IODINE + POPULATION EXPOSURE + STRONTIUM

15-28717

JORDAN SW + HASEGAWA CM + KEEHN RJ
TESTICULAR CHANGES IN ATOMIC BOMB SURVIVORS
ATOMIC BOMB CASUALTY COMMISSION, HIROSHIMA. ATOMIC BOMB CASUALTY COMMISSION, NAGASAKI (JAPAN)
ABCC-TR-15-66 +. 25 PAGES, 11 FIGURES, 5 TABLES, 13 REFERENCES, JUNE 9, 1966

PREVIOUS STUDIES OF THE PATHOLOGIC CHANGES IN HUMAN TESTES FOLLOWING ATOMIC BOMB RADIATION
EXPOSURE WERE MADE DURING THE ACUTE STAGE, AND NO INFORMATION WAS AVAILABLE ABOUT LONG-TERM
TESTICULAR CHANGES. THE PRESENT STUDY WAS UNDERTAKEN TO DETERMINE WHETHER RESIDUAL
MORPHOLOGIC CHANGES COULD BE DETECTED A DECADE OR MORE AFTER EXPOSURE TO THE HIROSHIMA AND
NAGASAKI ATOMIC BOMBS.

*BIOLOGICAL CONCENTRATION, MAN + *JAPAN + *NUCLEAR ATTACK + *RADIATION EFFECT + POPULATION EXPOSURE +
RADIATION DAMAGE

15-28718

DOLPHIN GW
THE RISK OF THYROID CANCERS FOLLOWING IRRADIATION
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, AUTHORITY HEALTH AND SAFETY BRANCH, RADIOLOGICAL PROTECTION
DIVISION, HARWELL, DIDCOT, BERKS., ENGLAND
10 PAGES, 1 FIGURE, 6 TABLES, 34 REFERENCES, HEALTH PHYSICS, 15(3), PAGE 219-228, (SEPT. 1968)

EVALUATIONS OF RISKS FROM RADIATION FOR USE IN RADIOLOGICAL PROTECTION HAVE BEEN MADE RECENTLY
BY GROUPS OF EXPERTS SET UP BY THE INTERNATIONAL COMMISSION ON RADIOLOGICAL PROTECTION, THE
INTERNATIONAL ATOMIC ENERGY AGENCY AND THE WORLD HEALTH ORGANISATION AND THE UNITED NATIONS
SCIENTIFIC COMMITTEE ON THE EFFECTS OF ATOMIC RADIATION. THE MAJOR DISADVANTAGE OF THE RISK
CONCEPT IN RADIOLOGICAL PROTECTION IS DUE TO THE PAUCITY OF THE DATA FROM WHICH RISK
ESTIMATES CAN BE MADE. THIS MEANS THAT CURRENT RISK ESTIMATES ARE VERY TENTATIVE AND NEW
DATA MAY LEAD TO SUBSTANTIAL CHANGES. A REVIEW IS MADE OF ALL THE DATA AVAILABLE FROM WHICH
ESTIMATES OF THE RISK OF THYROID CANCER CAN BE CALCULATED. THE CANCER RISK FOLLOWING
X-IRRADIATION IN ADULT LIFE APPEARS TO BE LOWER THAN THAT FOLLOWING X-IRRADIATION IN INFANCY.
THE FINDING OF THYROID NODULES IN PERSONS FOLLOWING INTAKES OF RADIOIODINE IS DISCUSSED. IT
IS NOTED THAT THE LIFE EXPECTANCY FOLLOWING DIAGNOSIS OF THYROID CANCER VARIES WITH THE TYPE
OF CANCER AND THE AGE AT DIAGNOSIS. UNLIKE MOST OTHER CANCERS, THE LONGEST SURVIVAL TIME
APPEARS TO BE FOR THE YOUNGEST AGE GROUPS.

*BIOLOGICAL CONCENTRATION, MAN + *IODINE + *RADIOLOGY + *X-RAY + ICRP + POPULATION EXPOSURE

15-28719

BARRY PJ
SAMPLING FOR AIRBORNE RADIOIODINE BY COPPER SCREENS
BIOLOGY AND HEALTH PHYSICS DIV., CHALK RIVER NUCLEAR LABORATORIES, ATOMIC ENERGY OF CANADA LIMITED, CHALK
RIVER, ONTARIO
6 PAGES, 7 FIGURES, 6 REFERENCES, HEALTH PHYSICS, 15(3), PAGE 243-250, (SEPT. 1968)

THE MECHANISM BY WHICH RADIOIODINE VAPOUR IS ABSORBED BY COPPER SCREEN FILTERS HAS BEEN
INVESTIGATED. AN EQUATION IS GIVEN FROM WHICH THE EFFECT OF SCREEN MESH SIZE, WIRE DIAMETER
AND FACE VELOCITY ON THE EFFICIENCY OF ABSORPTION CAN BE CALCULATED.

*COPPER + *FILTER + *IODINE + *SORPTION + AIRBORNE RELEASE + DIFFUSION COEFFICIENT +
MATHEMATICAL TREATMENT + SAMPLING

15-28720

JOLLY L + HARPER JA + SMITH SR

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-28720 *CONTINUED*

EXPERIENCE WITH AN IMPROVED STACK MONITOR

SAVANNAH RIVER PLANT, E.I. DU PONT DE NEMOURS + CO., AIKEN, SOUTH CAROLINA

7 PAGES, 7 FIGURES, 2 TABLES, 1 REFERENCE, HEALTH PHYSICS, 15(3), PAGE 251-256, (JANUARY 17, 1968)

AN IMPROVED STACK MONITOR FOR RADIOIODINE AND PARTICULATE FISSION PRODUCTS HAS BEEN DEVELOPED FOR A RADIOCHEMICAL SEPARATIONS FACILITY AT THE SAVANNAH RIVER PLANT. THE MONITOR, CONSISTING OF A FILTER AND AN ADSORBER IN SHIELDED HOUSINGS, HAS AN AVERAGE IODINE-131 COLLECTION EFFICIENCY OF 84%. PARTICULATE RADIOACTIVITY IS TRAPPED BY A PAPER FILTER, RADIOIODINE, BY ACTIVATED COCONUT SHELL CHARCOAL IN THE ADSORBER. EACH HAS A SEPARATE G-M TUBE AND RECORDING SYSTEM. ALARMS SIGNAL HIGH RELEASE RATES AND FAILURES IN THE MONITORING SYSTEM.

*INSTRUMENT, RADIATION MONITORING + *IODINE + *MONITOR, RADIATION, STACK + *PARTICLE, RADIOACTIVE + *RADIOCHEMICAL PROCESSING + CHARCOAL ADSORBER + FILTER, PAPER + RADIOISOTOPE + SAVANNAH RIVER PLANT

15-28721

DALTON P + TURNER JE

NEW EVALUATION OF MEAN EXCITATION ENERGIES FOR USE IN RADIATION DOSIMETRY

HEALTH PHYSICS DIV., OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN. + OAK RIDGE ASSOCIATED UNIVERSITIES, OAK RIDGE, TENN.

6 PAGES, 1 FIGURE, 4 TABLES, 24 REFERENCES, HEALTH PHYSICS 15(3), PAGE 257-262, (NOVEMBER 15, 1967)

ATOMIC MEAN EXCITATION ENERGIES (I VALUES) HAVE BEEN OBTAINED FROM STOPPING-POWER AND RANGE DATA IN TWELVE EXPERIMENTS. THE ANALYSIS INCORPORATES NEW VALUES OF SHELL CORRECTIONS THAT INCLUDE CONTRIBUTIONS MADE BY ELECTRONS IN ALL SHELLS. EXCEPT FOR ONE SET OF DATA, THE VALUES OF I OBTAINED FROM DIFFERENT EXPERIMENTS ARE CONSISTENT WITH ONE ANOTHER. THE NUMERICAL VALUES FOUND FROM THE EXPERIMENTS ANALYZED ARE IN AGREEMENT WITH THOSE SUGGESTED IN THE NATIONAL ACADEMY OF SCIENCES-NATIONAL RESEARCH COUNCIL REPORT 1123. IT APPEARS THAT A FEW OF THE I VALUES GIVEN IN THE NATIONAL BUREAU OF STANDARDS HANDBOOK 79 (1961) ARE NOW OUT OF DATE. A TABLE OF I VALUES FOR SOME THIRTY-SIX MATERIALS OF PARTICULAR IMPORTANCE IN RADIATION DOSIMETRY IS GIVEN IN ADDITION TO THE ELEMENTAL I VALUES FOUND FROM THE NEW DATA ANALYSIS.

*DOSIMETRY, GENERAL + *ENERGY LEVEL + *EQUATION, GENERAL + ELECTRON + NBS + ORNL

15-28723

VALENTINE AM

AN INVESTIGATION OF A BUBBLER TRITIUM SAMPLER

LOS ALAMOS SCIENTIFIC LABORATORY, NEW MEXICO

LA-3916 +. 11 PAGES, 5 FIGURES, 6 TABLES, 3 REFERENCES, APRIL 1968

INVESTIGATION OF A BUBBLER TRITIUM SAMPLER INDICATED COLLECTION CHARACTERISTICS SIMILAR TO REPORTED HUMAN BODY UPTAKE RATES FOR TRITIUM GAS AND TRITIATED WATER VAPOR. THE BUBBLER COLLECTOR CONSISTED OF A DRY GAS WASH BOTTLE WITH A FRITTED GLASS TIP ON THE INLET AND DISTILLED WATER AS THE COLLECTING MEDIUM. TESTS WERE MADE UNDER BOTH LABORATORY AND FIELD CONDITIONS, AND THE EFFECTS OF VARYING THE FLOW RATE, WATER VOLUME, AND WATER TEMPERATURE WERE DETERMINED. A FLOW-THROUGH IONIZATION CHAMBER INSTRUMENT WAS USED TO MEASURE THE TRITIUM CONCENTRATIONS SAMPLED, AND THE COLLECTED TRITIUM WAS DETERMINED BY LIQUID SCINTILLATION COUNTING. THIS COLLECTOR CAN SELECTIVELY SAMPLE TRITIATED WATER VAPOR IN THE PRESENCE OF TRITIUM GAS, AND ALLOWS THE HEALTH PHYSICIST TO MAKE A BETTER ASSESSMENT OF TRITIATED WATER VAPOR CONCENTRATIONS IN AIR.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

*ANALYTICAL TECHNIQUE, GAS + *SAMPLING + *TRITIUM + AIR + BUBBLE + CHAMBER, ION + COUNTER + FILTER + RADIOLYTIC GAS

15-28724

MEYER CT + ANDERSON HF + KAHLE JB

CALCULATED DOSE RATES FOR PU-239 DIOXIDE

MCORD LAB., MIAMISBURG, OHIO

MLM-1460 +. 37 PAGES, 5 FIGURES, 9 TABLES, 5 REFERENCES, AUGUST 15, 1967

A COMPUTERIZED PROGRAM WAS DEVELOPED TO DETERMINE THE GAMMA DOSE RATES FROM PLUTONIUM DIOXIDE AS A FUNCTION OF MASS, DENSITY, DISTANCE FROM THE MATERIAL, AND TIME ELAPSED AFTER PURIFICATION. PROGRAM GIVES THE GAMMA DOSE RATE FROM THE BARE MATERIAL AS WELL AS THE DOSE RATE ATTENUATED BY COMPONENTS OF A TYPICAL GLOVE BOX. LITERATURE VALUES WERE SELECTED FOR THE GAMMA ENERGIES OF THE SEVEN ISOTOPES IN THE PLUTONIUM DIOXIDE, THEIR RELATIVE ABUNDANCE, AND THE LINEAR ABSORPTION COEFFICIENTS IN VARIOUS SHIELDING MATERIALS. AS A MEANS FOR EVALUATING THE NEUTRON DOSE RATE WAS ALSO INCLUDED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

*COMPUTER PROGRAM + *DOSE + *DOSE CALCULATION, EXTERNAL + *DOSE CALCULATION, INTERNAL + *NEUTRON + *PLUTONIUM

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-28725

EPIDEMIOLOGICAL FOLLOW-UP OF THE NEW JERSEY RADIUM CASES NOVEMBER 1957 THROUGH JUNE 1967
NEW JERSEY STATE DEPARTMENT OF HEALTH, RADIUM RESEARCH PROJECT, TRENTON, NEW JERSEY
NYO-2181-5(VOL.II) +. 550 PAGES, JULY 1968

GIVES A SUMMARY AND STATISTICAL DATA OF KNOWN BODY BURDENS OF INDIVIDUALS EXPOSED TO RADIUM IN THE RADIUM RESEARCH PROJECT, NEW JERSEY STATE DEPT. OF HEALTH FOR THE PERIOD OF NOV. 1957 THROUGH JUNE 1967.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

*BIOLOGICAL CONCENTRATION, MAN + *PERSONNEL EXPOSURE, RADIATION + *RADIATION EXPOSURE, RECORD KEEPING + *RADIUM + *STATISTICAL CORRELATION + RADIATION DAMAGE + RADIATION EFFECT + RADIOLOGY

15-28753

ALSO IN CATEGORIES 9 AND 14

ZIER M

ON THE DENSITY OF MEASURING GRIDS FOR THE CONTROL OF ATMOSPHERIC RADIOACTIVITY
3 PAGES, 1 FIGURE, 6 REFERENCES, KERNENERGIE, 11, PAGE 57-9, (FEB. 1968), (IN GERMAN)

THE RELATIONSHIP BETWEEN VARIATIONS OF FISSION PRODUCT ACTIVITY OF THE NEAR-GROUND LAYER OF ATMOSPHERE OF MEASURING STATIONS DIFFERENTLY SPACED TO EACH OTHER WAS STUDIED BY MEANS OF THE SIMPLE LINEAR CORRELATION ON THE BASIS OF LONG-TIME MEASUREMENTS. THE TERRITORIAL REPRESENTATIVITY OF THE VALUES MEASURED IS CONCLUDED FROM THE MEASURE OF DETERMINANCY B AS A FUNCTION OF THE DISTANCE BETWEEN THE MEASURING STATIONS UNDER CONSIDERATION, OF SEASON, AND OF THE PRESENCE OF FRESH FISSION PRODUCTS. IT IS FOUND THAT THE MEASURED VALUES ARE MORE REPRESENTATIVE IN SUMMER AND IN THE ABSENCE OF FRESH FISSION PRODUCTS THAN IN WINTER AND IN THEIR PRESENCE.

*DOSIMETRY, GENERAL + *INSTRUMENT, RADIATION MONITORING + AIR + ENVIRONMENTAL CONDITION + FALLOUT + FISSION PRODUCT, AIRBORNE

15-28848

ALSO IN CATEGORIES 17 AND 13

CALDWELL RD

WHOLE BODY COUNT EXPERIENCE

NUCLEAR MATERIALS AND EQUIPMENT CORPORATION

LETTER TO L. D. LOW, AEC COMPLIANCE, MAY 17, 1968

ALTHOUGH 10 CFR 20 DOES NOT REQUIRE REPORTING THIS, WE BELIEVE YOU WOULD BE INTERESTED. THIRTY-THREE EMPLOYEES WERE COUNTED MARCH/APRIL 1968, SELECTED BECAUSE OF PAST EXPOSURE. EIGHT EXCEEDED ICRP RECOMMENDATIONS, 6 FROM ENRICHED URANIUM OPERATIONS AT APOLLO, PA., AND 2 FROM PLUTONIUM SCRAP RECOVERY AT PARKS. FRACTION PERMISSIBLE RANGED BETWEEN 2.44 AND 1.13. THEY WILL BE RECOUNTED IN MID-JUNE, AND LUNG RETENTION TIMES WILL BE GOVERNING. WE REALIZE THAT LONG RETENTION TIMES ARE POSSIBLE FOR HIGH FIRED ACTINIDE OXIDES.

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

*COUNTER, WHOLE BODY + *DOSE MEASUREMENT, INTERNAL + FABRICATION FACILITY + FUEL ELEMENT + ICRP + OPERATING EXPERIENCE SUMMARY + PERSONNEL EXPOSURE, RADIATION + PLUTONIUM + SPECIAL NUCLEAR MATERIAL + URANIUM-235

15-28851

ALSO IN CATEGORY 17

HIRSCHBERG SM

REPORT OF OVEREXPOSURE DURING RADIOGRAPHY

GENERAL DYNAMICS, GROTON, CONN.

LETTER TO DIRECTOR, DIV. OF COMPLIANCE, USAEC, WASHINGTON, D. C., MARCH 21, 1968

ON JAN. 30, 1968, A RADIOGRAPHER NOTED THAT THE DEVICE WAS OPERATING WITH DIFFICULTY AFTER 21 EXPOSURES, AND HIS DOSIMETER READ 10 MREM. AFTER 28 EXPOSURES IT WAS OFF SCALE. FILM BADGE READ 14.5 REMS. ALTHOUGH RADIOGRAPHER STATED HE SURVEYED, AND STORED LIGHT WAS RECEIVED AFTER EACH EXPOSURE, IT WAS JUDGED HE FAILED TO NOTE THESE. A CRIMPED AREA ON DRIVE HOUSING COULD RESTRICT DRIVE OPERATION. HE WAS ESTIMATED TO RECEIVE 20 REMS WHOLE BODY AND 50 REMS EXTREMITIES. *** (CITATION JULY 31) FOR NOT SURVEYING, NOT NOTIFYING SUPERVISOR, AND NOT FOLLOWING EMERGENCY PROCEDURES. AEC BELIEVES WHOLE BODY DOSE WAS FROM 50 TO 200 REMS.

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

*EMERGENCY PROCEDURE + *INCIDENT, EXPOSURE + FAILURE, EQUIPMENT + FAILURE, OPERATOR ERROR + PERSONNEL EXPOSURE, *RADIATION + RADIOGRAPHY

15-28857

ALSO IN CATEGORIES 17 AND 13

WULLER GE

UO2 SPILL AT HAMMER MILL

KERR-MCGEE CORPORATION, OKLAHOMA CITY, OKLAHOMA

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-28857 *CONTINUED*

LETTER TO L. D. LOW, DIRECTOR, DIV. OF COMPLIANCE, USAEC, WASHINGTON, D. C., AUGUST 2, 1968

ON JUNE 28, A CAN OF CALCINED UO₂ (1.65% ENRICHED) SPILLED WHILE BEING HOISTED TO A HAMMER MILL. (OPERATOR WAS UNFAMILIAR WITH HOIST CONTROLS.) AVERAGE AIRBORNE CONCENTRATION WAS 11X MPC. ONE OPERATOR CLEANED UP SPILL, WEARING RESPIRATOR. WHILE EXPOSURE CALCULATIONS SHOWED HE WAS EXPOSED TO 2.04 MPC, URINE SAMPLES SHOWED THAT PROTECTION HAD BEEN ADEQUATE.

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

*SOURCE MATERIAL + AIRBORNE RELEASE + INSPECTION AND COMPLIANCE + MILLING + PERSONNEL PROTECTIVE DEVICE + SPECIAL NUCLEAR MATERIAL + URANIUM DIOXIDE

15-28864

TURNER WD + KAYE SV + ROHWER PS

EXREM AND INREM COMPUTER CODES FOR ESTIMATING RADIATION DOSES TO POPULATIONS FROM CONSTRUCTION OF A SEA-LEVEL CANAL WITH NUCLEAR EXPLOSIVES
UNION CARBIDE CORP., NUCLEAR DIVISION, OAK RIDGE Y-12 PLANT + OAK RIDGE NATIONAL LABORATORY
K-1752 +. 193 PAGES, SEPT. 16, 1968

EXREM IS A COMPUTER CODE TO ESTIMATE THE DOSE EQUIVALENT RATE AND THE TOTAL DOSE EQUIVALENT FROM BOTH BETA AND GAMMA RADIATION RESULTING FROM SUBMERSION IN CONTAMINATED WATER, SUBMERSION IN CONTAMINATED AIR, AND EXPOSURE TO A CONTAMINATED SURFACE. THERE CAN BE MORE THAN ONE ENVIRONMENTAL RELEASE, AND EXPOSURE CAN BEGIN AT ANY TIME AFTER THE FIRST RELEASE. INREM IS A COMPUTER CODE TO ESTIMATE THE CUMULATIVE DOSE EQUIVALENT TO BODY ORGANS RESULTING FROM A CONTINUOUS INTAKE. THE ORGAN PARAMETERS ARE DEPENDENT ON THE AGE OF THE INDIVIDUAL, AND THE INTAKE IS A FUNCTION OF POST-DETONATION TIME AND THE INDIVIDUALS AGE. ALTHOUGH THE CODES WERE SPECIFICALLY WRITTEN TO ESTIMATE DOSES TO POPULATIONS FROM CONSTRUCTION OF A SEA-LEVEL CANAL, THEY MAY BE USEFUL IN OTHER DOSE-ESTIMATION STUDIES INVOLVING RELEASES OF RADIOACTIVE MATERIALS TO THE ENVIRONMENT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

*AIR + *COMPUTER PROGRAM + *CONTAMINATION + *DOSE + *POPULATION EXPOSURE + *RADIOACTIVITY RELEASE + *SURFACE CONTAMINATION + *WATER, GENERAL + BETA EMITTER + ENVIRONMENTAL CONDITION + GAMMA EMITTER

15-28867

REIST PC + SMITH DG

LOW LEVEL MONITORING OF KRYPTON-85 IN AIR

HARVARD UNIVERSITY, BOSTON, MASS.

NYO-841-13 +. 39 PAGES, 10 FIGURES, 4 TABLES, 12 REFERENCES, AUGUST 1968

PROPOSES A METHOD FOR MONITORING LOW LEVELS OF KRYPTON-85 IN AIR. RESULTS SHOW THAT ADSORPTION OF THE GAS ON ACTIVATED CARBON AT -78.5 C FOLLOWED BY DESORPTION AT 20 C INTO A 2.8-LITER IONIZATION CHAMBER COUPLED TO A VIBRATING REED ELECTRO-METER WILL PERMIT LABORATORY MEASUREMENTS DOWN TO CONCENTRATIONS OF 10(-9TH) MICROCURIE/CC.

*CARBON + *KRYPTON + *MONITOR, RADIATION, AIR + ACTIVATION + ADSORPTION + EXPERIMENT, GENERAL

15-28875

ASSESSMENT OF AIRBORNE RADIOACTIVITY

INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA

STI-PUB/159 +. 766 PAGES, FIGURES, TABLES, REFERENCES, PROCEEDINGS OF A SYMPOSIUM ON INSTRUMENTS AND TECHNIQUES FOR THE ASSESSMENT OF AIRBORNE RADIOACTIVITY IN NUCLEAR OPERATIONS HELD BY THE IAEA, JULY 1967

THE FIFTY-SIX PAPERS DEALT WITH SUCH SUBJECTS AS THE TECHNIQUES OF SAMPLING AND PARTICLE-SIZE ANALYSIS, INSTRUMENTS FOR THE ASSAY OF SPECIFIC RADIONUCLIDES, CHARACTERIZATION OF RADIOACTIVE AEROSOLS PRODUCED IN DIFFERENT NUCLEAR OPERATIONS, THE PHILOSOPHY, SCOPE AND EXTENT OF AIR MONITORING, AND UNCERTAINTIES AND SOURCES OF ERROR. A PANEL OF EXPERTS REVIEWED AND DISCUSSED THE SYMPOSIUM AND FUTURE RESEARCH AND DEVELOPMENT REQUIREMENTS. THE PROCEEDINGS CONTAIN ALL THE PAPERS AND DISCUSSIONS, TOGETHER WITH AN EDITED SUMMARY OF THE PANELS REVIEW AND DISCUSSIONS.

AVAILABILITY - IAEA, VIENNA, AUSTRIA, \$15.50

*AEROSOL, RADIOACTIVE + *AIR + *ANALYTICAL TECHNIQUE, GENERAL + *ERROR ANALYSIS + *INSTRUMENT, RADIATION MONITORING + *MONITOR, RADIATION, AIR + *PARTICLE SIZE + *SAMPLING + R AND D PROGRAM

15-28915

WHOLE BODY GAMMA COUNTER STUDIES. APPLICATIONS IN ENVIRONMENTAL HEALTH

U.S. ARMY MEDICAL RESEARCH AND DEVELOPMENT COMMAND, DEPT. OF THE ARMY, WASH., D. C.

AD-460527L +. 12 FIGURES, 4 TABLES, 11 REFERENCES, FEB. 29, 1965

IN-VIVO METHODS OF ESTIMATING THE PRESENCE OF NUCLIDES EMITTING SOFT PENETRATING RADIATIONS ARE OF RELEVANCE BECAUSE SEVERAL NUCLIDES, SUCH AS PLUTONIUM-239, STRONTIUM-90, AND NATURAL URANIUM, ARE POTENTIALLY HAZARDOUS WHEN ABSORBED INTO THE BODY AND METHODS OF MEASURING THEM

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-28915 *CONTINUED*

IN-VIVO ARE HANDICAPPED BY THE FACT THAT THEY EMIT ONLY SOFT RADIATION THAT ARE DIFFICULT TO QUANTITATE USING CONVENTIONAL TECHNIQUES. THIN CRYSTALS ARE PARTICULARLY APPLICABLE TO MEASUREMENT OF THE SOFT RADIATIONS AND CESIUM-IODIDE HAS PROVEN TO BE MORE SATISFACTORY FOR FABRICATION OF SUCH CRYSTALS THAN SODIUM-IODIDE. A RELATIVELY SIMPLE SYSTEM OF ANTI-COINCIDENCE COUNTING USING THIN CRYSTALS OF SODIUM AND CESIUM-IODIDE OPTICALLY COUPLED TO THE SAME PHOTOTUBE HAS BEEN DESIGNED AND PRELIMINARY MEASUREMENTS HAVE SHOWN IT TO BE EFFECTIVE IN INCREASING SIGNAL TO NOISE FROM THE SOFT RADIATIONS. STUDIES HAVE BEEN UNDERTAKEN TO DETERMINE THE OPTIMUM DOSE OF POTASSIUM-IODIDE FOR SUPPRESSION OF I-131 UPTAKE.

*BIOLOGICAL CONCENTRATION, MAN + *COUNTER, WHOLE BODY + *DOSE MEASUREMENT, INTERNAL + *GAMMA EMITTER + *IODINE + CESIUM + PLUTONIUM + SODIUM + SORPTION + STRONTIUM + URANIUM

15-28916

VOILLEQUE PG

CALCULATION OF ORGAN AND TISSUE BURDENS AND DOSES RESULTING FROM AN ACUTE EXPOSURE TO A RADIOACTIVE AEROSOL USING THE ICRP TASK GROUP REPORT ON THE HUMAN RESPIRATORY TRACT
IDAHO OPERATIONS OFFICE (AEC), IDAHO FALLS. HEALTH SERVICE LAB.
ID0-12067 +. 44 PAGES, 4 FIGURES, 8 TABLES, 16 REFERENCES, AUGUST 1968

THE REPORT OF THE TASK GROUP ON LUNG DYNAMICS FOR COMMITTEE II OF THE INTERNATIONAL COMMISSION ON RADIOLOGICAL PROTECTION (ICRP) IS USED AS THE BASIS FOR THE DERIVATION OF EQUATIONS FOR THE CALCULATION OF ORGAN AND TISSUE BURDENS AND RADIATION DOSES RESULTING FROM AN ACUTE INHALATION EXPOSURE TO A RADIOACTIVE AEROSOL. EQUATIONS FOR THE DOSES TO SECTIONS OF THE GASTROINTESTINAL (GI) TRACT ARE DERIVED FOR THE VARIABLE DAILY INPUT TO THE GI TRACT FOLLOWING AN ACUTE INHALATION EXPOSURE. THESE LATTER EQUATIONS ARE BASED ON THE APPROACH OF DOLPHIN AND EVE FOR THE DOSIMETRY OF EVES NEW GI-TRACT MODEL. THE DERIVED EQUATIONS ARE USED TO CALCULATE THE ORGAN AND TISSUE DOSES RESULTING FROM AN ACUTE EXPOSURE TO PU0-2-239 AS A FUNCTION OF TIME AFTER EXPOSURE. A FORTRAN-63 COMPUTER PROGRAM WRITTEN TO SIMPLIFY THE APPLICATION OF THE DERIVED EQUATIONS IS APPENDED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*AEROSOL, RADIOACTIVE + *COMPUTER PROGRAM + *DOSE CALCULATION, INTERNAL + *EQUATION, GENERAL + *ICRP + *INHALATION + MAXIMUM PERMISSIBLE BODY BURDEN + PLUTONIUM DIOXIDE

15-28919

STRINDEHAG O

FISSION PRODUCT MONITORING IN WATER COOLED REACTORS BY DETECTION OF HARD GAMMA RADIATION
AKTIEBOLAGET ATOMENERGI, STUDSVIK, SWEDEN
6 PAGES, ATOMKERNENERGIE, 13, PAGE 119-24, (1968)

A FISSION PRODUCT MONITOR IS DESCRIBED IN WHICH THE HARD GAMMA RADIATION FROM A FEW FISSION PRODUCTS, PARTICULARLY KR-87, KR-88, AND KR-89, IS DETECTED. THE MONITOR HAS A SPHERICAL SAMPLE CONTAINER WITH A VOLUME OF 230 CC AND A SCINTILLATION DETECTOR WITH A 3-X-3-IN. NA1(TI) CRYSTAL. THE DISCRIMINATOR LEVEL CORRESPONDS TO A THRESHOLD ENERGY OF 2 MEV, AND TO IMPROVE THE RELATIVE SENSITIVITY FOR HARD GAMMA RADIATION A LEAD PLATE CAN BE PLACED BETWEEN SAMPLE CONTAINER AND DETECTOR. SPECIAL INTEREST IS DEVOTED TO THE REDUCTION OF THE PILEUP BACKGROUND FROM AR-41.

*ARGON + *FISSION PRODUCT RELEASE, GENERAL + *INSTRUMENT, RADIATION MONITORING + *KRYPTON + GAMMA + MONITOR, RADIATION, BACKGROUND + REACTOR POWER

15-28920

VOGT KJ

ENVIRONMENTAL RADIOACTIVITY AND ENVIRONMENTAL MONITORING OF NUCLEAR INSTALLATIONS
ZENTRALABTEILUNG STRAHLENSCHUTZ DER KERNFORSCHUNGSANLAGE, JUELICH, GER.
8 PAGES, Z. TECH. UEBERWACH., 7, PAGE 17-24, (1966), IN GERMAN

BEFORE BUILDING A NUCLEAR INSTALLATION, THE RADIOACTIVE BACKGROUND FROM NATURAL RADIOACTIVITY AND ARTIFICIAL RADIOISOTOPES PRODUCED BY NUCLEAR WEAPONS SHOULD BE DETERMINED. THE ORIGIN, MAGNITUDE, AND PROPAGATION OF THE VARIOUS CONTRIBUTIONS TO THE ENVIRONMENTAL RADIOACTIVITY AND THE CONSEQUENT DANGERS TO MAN IN THE NORMAL OPERATION AND THE EVENT OF AN ACCIDENT OF SPECIAL REACTOR TYPES ARE DISCUSSED AND THE MODIFICATION OF THE ENVIRONMENT IS CONSIDERED. THE PROBLEMS, MONITORING METHODS, AND MEASURING METHODS OF THE ENVIRONMENTAL MONITORING SYSTEM OF THE JUELICH NUCLEAR INSTALLATION ARE DESCRIBED IN SOME DETAIL.

*HAZARDS ANALYSIS + *MONITOR, RADIATION, AIR + *MONITOR, RADIATION, BACKGROUND + *MONITOR, RADIATION, GROUND SURFACE + *MONITOR, RADIATION, LIQUID + *MONITORING PROGRAM, ENVIRONMENTAL + *MONITORING SYSTEM, RADIATION + GERMANY + REACTOR, POWER

15-28922

SPARKS JR

AIR PROPORTIONAL ALPHA DETECTOR
UNITED STATES ATOMIC ENERGY COMMISSION
U. S. PATENT 3,372,295 +. MAR. 5, 1968

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-28922 *CONTINUED*

AN AIR PROPORTIONAL ALPHA DETECTOR IS DESCRIBED. IT CONSISTS OF A REMOVABLE SCREEN SEALED WITH AN ALUMINIZED MYLAR FILM REMOVABLY MOUNTED ON A METAL COATED PLASTIC HOUSING, A REMOVABLE DETECTOR UNIT POSITIONED WITHIN THE HOUSING ADJACENT THE SCREEN AND INCLUDING A PLURALITY OF LONGITUDINAL CHANNELS EACH HAVING A WIRE INDEPENDENTLY SUSPENDED ALONG THE CHANNEL, AND AN ALUMINIZED MYLAR FILM SEAL ADHESIVELY BONDED OVER THE CHANNELS SEALING THE DETECTOR UNIT.

AVAILABILITY - THE U.S. PATENT OFFICE, DEPT. OF COMMERCE, WASH., D. C., \$0.25 CENTS/COPY

*ALPHA EMITTER + *INSTRUMENT, RADIATION MONITORING + DESIGN CRITERIA + PATENT

15-28923

POULET R

APPARATUS HAVING OPPOSING CIRCUITS OF DIFFERENT TIME CONSTANTS FOR DETECTING BETA AND GAMMA RADIATION IN THE PRESENCE OF BACKGROUND RADIATION

COMMISSARIAT A L-ENERGIE ATOMIQUE

U.S. PATENT 3,364,353 +. JAN. 16, 1963

A BETA AND GAMMA RADIATION DETECTION DEVICE FOR MEASURING RADIATION IN THE PRESENCE OF HEAVY BACKGROUND RADIATION IS DESCRIBED. IT CONSISTS OF TWO INTEGRATOR CIRCUITS, A PLURALITY OF ELEMENTS RESPONSIVE TO THE RADIATIONS TO BE DETECTED, SAID CIRCUITS BEING CONNECTED TO EACH OTHER, AND AN INDICATOR DIRECTLY CONNECTED TO SAID CIRCUITS FOR COMPARING THE SIGNALS FROM SAID CIRCUITS, SAID CIRCUITS HAVING DIFFERENT TIME CONSTANTS.

AVAILABILITY - THE U.S. PATENT OFFICE, DEPT. OF COMMERCE, WASH., D.C., \$0.25 CENTS/COPY

*INSTRUMENT, RADIATION MONITORING + *MONITOR, RADIATION, BACKGROUND + *PATENT + BETA EMITTER + GAMMA EMITTER

15-28924

TERRILL JG + WEAVER CL + HARWARD ED + SMITH DP

ENVIRONMENTAL SURVEILLANCE OF NUCLEAR FACILITIES

7 PAGES, NUCL. SAFETY, 9, PAGE 143-9, (MAR-APR. 1968)

ENVIRONMENTAL SURVEILLANCE PROGRAMS IN THE ENVIRONS OF NUCLEAR PLANTS ARE CONDUCTED BY LOCAL, STATE, AND FEDERAL AGENCIES EXTERNAL TO THE FACILITIES SITE PERIMETER OR FENCED AREA. BASIC TO THE ESTABLISHMENT OF THESE PROGRAMS IS REVIEW BY THE HEALTH AGENCY OF THE PLANT SITE, THE FACILITIES RADIOACTIVE-WASTE DISCHARGE SYSTEM, THE SPECIFIC RADIONUCLIDES AND ANTICIPATED NORMAL DISCHARGES, AND THE PUBLIC-HEALTH IMPLICATIONS OF THE PRESENCE OF THESE RADIONUCLIDES. THESE ENVIRONMENTAL SURVEILLANCE PROGRAMS CAN BE DIRECTED AT THE MOST SENSITIVE OR CRITICAL VECTORS TO OBTAIN THE DATA NEEDED TO MAKE ESTIMATES OF POPULATION EXPOSURE. PREOPERATIONAL SURVEYS ARE DESIGNED TO OBTAIN BASE-LINE DATA, PROVIDE TRAINING AND EXPERIENCE FOR PERSONNEL, AND AS A MECHANISM FOR GATHERING DATA FOR PURPOSES OF PUBLIC INFORMATION.

*HEALTH PHYSICS TRAINING + *MONITOR, RADIATION, ENVIRONMENTAL + *RADIATION PROTECTION, ORGANIZATION + *SAMPLING + *SURVEILLANCE PROGRAM + *SURVEY, RADIATION, USPHS + AIR + BIOLOGICAL CONCENTRATION, FOOD + BIOLOGICAL CONCENTRATION, MILK + PLANT PROTECTIVE SYSTEM + POPULATION EXPOSURE + RADIATION, PUBLIC EDUCATION/ACCEPTANCE + SURFACE WATER, GENERAL

15-28925 ALSO IN CATEGORY 9

DIETRICH E + KOENIG LA

PROBLEMS OF RADIATION PROTECTION IN CONNECTION WITH TRITIUM

KERNFORSCHUNGSZENTRUM, KARLSRUHE, GER.

4 PAGES, ATOMPRAXIS, 13, PAGE 454-7, (OCT. 1967), (IN GERMAN)

A SURVEY IS PRESENTED ON PROBLEMS CONNECTED WITH THE SUPERVISION OF PROTECTION MEASURES FOR THE USE OF TRITIUM, AND SOLUTIONS ARE OFFERED. A SHORT REPORT DESCRIBING TRITIUM SUPERVISION AT THE FR 2 REACTOR IS INCLUDED.

*RADIATION PROTECTION, ORGANIZATION + *RADIATION SAFETY AND CONTROL + *TRITIUM + GERMANY

15-28927

ROTHE W

MEASUREMENT OF INDIVIDUAL DOSES IN MIXED RADIATION FIELDS OF UNKNOWN COMPOSITION BY USING MULTICOMPONENT DOSIMETER SYSTEMS

STAATLICHE ZENTRALE FUER STRAHLENSCHUTZ, BERLIN

5 PAGES, KERNENERGIE, 10, PAGES 368-372 (DEC. 1967) (IN GERMAN)

A COMPENSATION METHOD FOR INDIVIDUAL DOSE MEASUREMENT IN MIXED RADIATION FIELDS OF UNKNOWN COMPOSITION IS DESCRIBED. THE DOSE MAY BE DETERMINED BY MEANS OF SIMPLE FORMULAS. THE METHOD THEREFORE IS SUITABLE FOR THE AUTOMATIC EVALUATION OF THE DOSIMETERS.

*DOSE MEASUREMENT, EXTERNAL + *MONITOR, RADIATION, ENVIRONMENTAL + DOSIMETRY, GENERAL + MATHEMATICAL TREATMENT + THEORETICAL INVESTIGATION

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-28928
KANG YH + TATSUTA H
PERSONNEL NEUTRON DOSIMETER FOR NUCLEAR ACCIDENT
KYUNG POKK NATIONAL UNIV., TAEGU, KOREA
5 PAGES, J. NUCLEAR SCIENCE TECHNOLOGY, 5, PAGES 74-78 (FEB. 1968)

TWO TYPES OF PERSONNEL DOSIMETER ARE PRESENTED - AN EMULSION CONTAINING B-10 AND A TOSHIBA GLASS-COVERED MODEL EMBODYING NATURAL URANIUM FOIL. IF A CD SHEET IS USED TO REDUCE THERMAL NEUTRONS LEAVING THE HUMAN BODY, MEASUREMENTS OF THE DOSE EQUIVALENT WILL BE POSSIBLE TO COVER A NEUTRON ENERGY RANGE BETWEEN THERMAL AND 10 MEV. EXPERIMENTAL RESULTS SHOW THAT THE MINIMUM DETECTABLE DOSE EQUIVALENT WITH THE DOSIMETERS ARE 0.15 REM AND 10 REM FOR THE EMULSION TYPE AND THE ETCHED PIT TYPE, RESPECTIVELY.

*CADMIUM + *DOSIMETRY, GENERAL + *MONITOR, RADIATION, PERSONNEL + *THERMAL NEUTRON + BIOLOGICAL CONCENTRATION, MAN + DOSE + INSTRUMENT, RADIATION MONITORING + JAPAN + MAXIMUM PERMISSIBLE BODY BURDEN

15-29029
GHORMLEY JA + HOCHANDEL CJ + BCYLE JW
THE YIELD OF OZONE IN THE PULSE RADIOLYSIS OF GASEOUS OXYGEN AT VERY HIGH DOSE RATE. USE OF THIS SYSTEM AS A DOSIMETER
OAK RIDGE NATIONAL LAB., TENN.
ORNL-P-4084 +. 20 PAGES, 6 FIGURES, 2 TABLES, 12 REFERENCES, OCT. 10, 1968

A YIELD OF OZONE OF 13.8 ± 0.7 MOLECULES/100 EV WAS DETERMINED IN THE PULSE RADIOLYSIS OF OXYGEN AT ONE ATMOSPHERE BY HIGH ENERGY ELECTRONS AT A DOSE RATE OF 10(12TH) RADS/SEC. THE ABSORBED DOSE WAS BASED ON THE ENERGY ABSORBED IN A THIN ALUMINUM CALORIMETER. THIS YIELD IS SOMEWHAT HIGHER THAN A RECENTLY REPORTED VALUE OF 10.2 ± 0.6 DETERMINED FROM THE INITIAL RATE OF FORMATION IN RADIOLYSIS BY COBALT GAMMA RAYS AT LOW DOSE RATE. THIS SYSTEM PROVIDES A SIMPLE AND ACCURATE DOSIMETER, AND THE IN-SITU MEASUREMENT OF OZONE OFFERS THE ADDED ADVANTAGE FOR SYSTEMS IN WHICH THE ELECTRON FLUX IS NONUNIFORM, THAT THE AVERAGE ABSORBED DOSE IN THE OPTICAL PATH IS MEASURED.

AVAILABILITY - CHEMISTRY DIVISION, OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE 37830

*AIR + *DOSE + *DOSIMETRY, GENERAL + *INSTRUMENT, GENERAL + *MEASUREMENT, REACTIVITY + COBALT + FLUX DISTRIBUTION + OZONE

15-29034
KIEFER H
WHOLE-BODY COUNTER
KERNFORSCHUNGSZENTRUM, KARLSRUHE, GERMANY
3 PAGES, RADIOLOGE, 4, PAGES 362-364 (NOV. 1964) (IN GERMAN)

THE PRINCIPLES OF THE CONSTRUCTION, CALIBRATION, AND LIMITS OF DETECTION OF THE WHOLE-BODY COUNTER ARE DISCUSSED AND ILLUSTRATED WITH RESULTS OBTAINED FROM SUCH AN INSTALLATION.

*DESIGN CRITERIA + *INSTRUMENT CALIBRATION + *INSTRUMENT, RADIATION MONITORING + COUNTER, WHOLE BODY + GERMANY

15-29035
GUT J
USE OF HELICOPTERS FOR THE MEASUREMENT OF TERRAIN CONTAMINATION
4 PAGES, RADIOL. CLIN. BIOL., 35, PAGES 387-390 (1966) (IN GERMAN)

THE USE OF SUITABLY EQUIPPED HELICOPTERS WAS PROPOSED IN ORDER TO OBTAIN AS QUICKLY AS POSSIBLE A PICTURE OF THE EXTENT AND INTENSITY OF THE CONTAMINATED AREA FOLLOWING THE DEPOSITION OF RADIOACTIVE FISSION PRODUCTS AFTER A NUCLEAR EXPLOSION OR REACTOR ACCIDENT. SINCE WITH INCREASING HEIGHT OVER THE TERRAIN, THE RADIATION INTENSITY DECREASES, THE ACCUMULATED DOSE OF THE CREW CAN BE KEPT SMALL BY ADJUSTMENT OF THE FLIGHT HEIGHT. EXTENSIVE AREAS CAN BE MEASURED RADIOLOGICALLY IN A SHORT TIME. THE COMMUNICATION SYSTEM PERMITS IMMEDIATE INFORMATION ON INJURED TROOPS OR POPULATIONS.

*ACCIDENT, HYPOTHETICAL + *AIRCRAFT + *MEASUREMENT, REACTIVITY + *MONITOR, RADIATION, GROUND SURFACE + CONTAMINATION + FALLOUT + MILITARY CONSIDERATION + NUCLEAR DETONATION + POPULATION EXPOSURE + RADIOLOGICAL ASSISTANCE

15-29036 ALSO IN CATEGORY 14
RICHMOND CR + FURCHNER JE
CS-137 BODY BURDENS IN MAN- JANUARY 1956 TO DECEMBER 1966
UNIV. OF CALIF., LOS ALAMOS
12 PAGES, RADIAT. RES., 32, PAGES 538-539 (1967)

BODY BURDENS OF CS-137 ORIGINATING FROM NUCLEAR WEAPONS FALLOUT WERE MEASURED IN A GROUP OF

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-29036 *CONTINUED*

NEW MEXICO SUBJECTS BY WHOLE-BODY COUNTING FOR THE PERIOD JANUARY 1956 TO JANUARY 1967. THE TOTAL INTEGRATED RADIATION DOSE FOR THE 11-YEAR PERIOD WAS 9.3 MREMS, OR ABOUT 6% OF THAT RESULTING FROM BODY K-40. CESIUM-137 CONCENTRATIONS AGREE WITH THOSE REPORTED FROM OTHER NORTHERN HEMISPHERE LABORATORIES UNTIL AFTER THE 1961 AND 1962 TEST SERIES- SINCE THEN, CONCENTRATIONS APPEAR TO INCREASE WITH LATITUDE IN THE NORTHERN HEMISPHERE. A MODEL THAT DESCRIBES RETENTION OF FALLOUT CS-137 IN A POPULATION IS PRESENTED.

*BIOLOGICAL CONCENTRATION, MAN + *CESIUM + *COUNTER, WHOLE BODY + *FALLOUT +
*MAXIMUM PERMISSIBLE BODY BURDEN + MATHEMATICAL TREATMENT + NUCLEAR DETONATION + POPULATION EXPOSURE

15-29037 ALSO IN CATEGORY 14
CHERNENKO GT + MOLKOV AG

THE EXTENT OF THE INTERNAL CONTAMINATION OF AN ORGANISM IN A REGION OF RADIOACTIVE FALLOUT
5 PAGES, VOENNO-MED. ZH., 2, PAGES 22-26 (FEB. 1967) (IN RUSSIAN)

ALTHOUGH THE MAIN HAZARD FROM RADIOACTIVE FALLOUT IS FROM THE EXTERNAL GAMMA RADIATION, IT IS DESIRABLE TO ESTIMATE THE INTERNAL DOSE DUE TO INHALATION, WHICH IS CALCULATED FROM A FORMULA. AT GAMMA DOSE RATES OF 1, 10, 20, AND 1000 R/HR, THE INSPIRED ACTIVITIES ARE 0.22, 2.2, 4.4, AND 22 MICROCURIES ENTERING THE ORGANISM IN ONE HOUR. THE MAXIMUM ALLOWABLE DOSE TO THE THYROID IS 30 R/HR, WHICH CAN BE IMPARTED BY ABOUT 1 MICROCURIE OF MIXED FISSION-PRODUCT ACTIVITIES. HENCE, INHALED ACTIVITIES OF 4 TO 22 MICROCURIES MUST BE CONSIDERED AS DANGEROUS TO THE BODY. MEASURES SHOULD BE TAKEN TO PREVENT THE ENTRANCE OF FALLOUT FISSION-PRODUCTS INTO THE BODY.

*BIOLOGICAL CONCENTRATION, MAN + *DOSE CALCULATION, INTERNAL + *FALLOUT + *INHALATION + GAMMA +
MAXIMUM PERMISSIBLE DOSE (MPD) + RADIATION SAFETY AND CONTROL

15-29038 ALSO IN CATEGORY 14

PELLERIN P + MORONI JP + REMY ML

PRELIMINARY RESULTS OF A SYSTEMATIC STUDY OF INTERNAL CONTAMINATION FOLLOWING RADIOACTIVE FALLOUT
SERVICE CENTRAL DE PROTECTION CONTRE LES RAYONNEMENTS IONISANTS, LE VESINET, FRANCE
12 PAGES, REV. HYG. MED. SOC., 13, PAGES 49-60 (JAN.-FEB. 1965) (IN FRENCH)

DATA ARE PRESENTED FOR SOME HUMAN BODY BURDENS OF FALLOUT RADIO-NUCLIDES AS ASSAYED FROM
SEPTEMBER 1961 TO FEBRUARY 1964.

*BIOLOGICAL CONCENTRATION, MAN + *CESIUM + *COUNTER, WHOLE BODY + *DOSE MEASUREMENT, INTERNAL + *FALLOUT +
AIRBORNE RELEASE + FRANCE + IODINE + NUCLEAR DETONATION

15-29039

SEDLACEK F

PERSONAL DOSIMETRY IN RADIOLOGICAL WORK-PLACES

6 PAGES, VOJ. ZDRAVOT. LISTY, 34, PAGES 221-226 (OCT. 1965)

THE RESULTS OF A SYSTEMATIC CHECK-UP OF X-RADIATION DOSES IN THE X-RAY DEPARTMENT OF A LARGE HOSPITAL, MADE WITH FILM BADGE AND PENCIL DOSIMETERS, WERE COMPARED WITH THE RECORDS SIMULTANEOUSLY MADE OF ALL TREATMENT GIVEN. THE PENCIL DOSIMETERS INDICATED GENERALLY HIGHER READINGS THAN DID THE FILM BADGES. THE VALUES OBTAINED WERE FOR THE MOST PART SUBSTANTIALLY BELOW THE MAXIMUM PERMISSIBLE DOSES.

*DOSIMETRY, GENERAL + *IRRADIATION TESTING + *PERSONNEL PROTECTIVE DEVICE + *X-RAY + DOSE +
MAXIMUM PERMISSIBLE DOSE (MPD)

15-29089 ALSO IN CATEGORIES 18 AND 17

OYSTER CREEK I EMERGENCY MEDICAL PLANNING

JERSEY CENTRAL POWER + LIGHT CO., MORRISTOWN, NEW JERSEY

16 PAGES, AMENDMENT 41 TO THE OYSTER CREEK I LICENSE APPLICATION, JULY 26, 1968, DOCKET 50-219, TYPE--BWR,
MFG--G.E., AE--BURNS + ROE

RESPONDS TO MAY 27, 1968; SEVEN QUESTIONS ASKED BY DRL ON (1) PERSONNEL DECONTAMINATION FACILITIES, (2) AVAILABLE MEDICAL PERSONNEL TRAINING IN RADIATION DECONTAMINATION, (3) TRANSPORT TO AN AGREEABLE HOSPITAL, (5), (6), (7) QUALIFICATION OF PERSONNEL AND PLANNING AT LOCAL HOSPITALS.

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

AEC QUESTION + EMERGENCY PROCEDURE + OYSTER CREEK I (BWR) + REACTOR, BWR + REPORT, SAR

15-29108

THE NEW LASL FILM BADGE AND PERSONNEL NEUTRON DOSIMETRY PACKET

LOS ALAMOS SCIENTIFIC LABORATORY, LOS ALAMOS, NEW MEXICO

LA-3889 +. 27 PAGES, 1 FIGURE, JAN. 1968

THE NEW LASL FILM BADGE IS USED TO MEASURE EXPOSURE TO SOFT X RAYS OR BETA RAYS, GAMMA RAYS,

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-29108 *CONTINUED*

AND THERMAL AND FAST NEUTRONS. THE BADGE CONSISTS OF A TWO-PIECE CYCOLAC PLASTIC CASE, MULTIELEMENT FILTERS, FILM PACKETS, AND IDENTIFICATION PLATES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*DOSIMETRY, PHOTOGRAPHIC + *FILM, GENERAL + *MONITOR, RADIATION, PERSONNEL + *RADIATION UNIT + DOSE + ICPP + NCRP + RADIATION DAMAGE + RADIATION PROTECTION, ORGANIZATION + RADIATION SAFETY AND CONTROL + RADIOBIOLOGY

15-29110

ALSO IN CATEGORY 14

FALLOUT PROGRAM - QUARTERLY SUMMARY REPORT - JUNE 1 - SEPT. 1, 1968
UNITED STATES ATOMIC ENERGY COMMISSION
HASL-200 APP. +. 364 PGS. SEPT. 1, 1968

THE HEALTH AND SAFETY LABORATORY PRESENTS IN TABULAR FORM A VAST AMOUNT OF DATA ACCUMULATED DURING THE PERIOD OF 1959 THROUGH SEPTEMBER 1, 1968. ALSO APPENDIXES ARE GIVEN FOR -
A - SR-90 AND -89 IN MONTHLY DEPOSITION AT WORLD LAND SITES,
B - RADIOSTRONTIUM DEPOSITION AT ATLANTIC OCEAN WEATHER STATIONS,
C - RADIONUCLIDES IN MONTHLY SURFACE AIR SAMPLES,
D - RADIOSTRONTIUM IN MILK AND TAP WATER,
E - TABLE OF CONVERSION FACTORS,
F - TABLE OF RADIONUCLIDES

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*DEPOSITION + *ECOLOGICAL CONSIDERATION + *FALLOUT + *STRONTIUM + *SURVEILLANCE PROGRAM + AIR + BIOLOGICAL CONCENTRATION, MILK + OCEAN AND SEA + POPULATION EXPOSURE + RADIATION EXPOSURE, RECORD KEEPING + SAMPLING + SURFACE WATER, NUCLIDE OCCURRENCE

15-29113

ALSO IN CATEGORY 14

CORNISH AC + UYESUGI G
DETECTION OF ELEVATED FALLOUT LEVELS IN CALIFORNIA, JANUARY 1967
RAD. HEALTH DATA AND REPORTS, VOL. 9, NO. 9, 7 PP., 6 FIG., 5 TABL., 7 REF., PP. 467-473, SEPT. 1968

CALIFORNIA RECEIVED A HEAVY FALLOUT OF RADIOACTIVE DEBRIS BEGINNING 4.5 DAYS AFTER A FOREIGN NUCLEAR DEVICE WAS DETONATED IN THE ATMOSPHERE ON DECEMBER 27, 1966. HIGHEST AIR PARTICULATE LEVELS OCCURRED IN BERKELEY AND SACRAMENTO. ALL MILK-SHEDS IN CALIFORNIA WERE CONTAMINATED TO SOME EXTENT WITH RADIOACTIVE IODINE. APPARENT HALF-LIFE FOR IODINE-131 IN ENVIRONMENT WAS CALCULATED TO BE 3.2 DAYS

AVAILABILITY - SUPT. OF DOCUMENTS, GOVERNMENT PRINTING OFFICE, WASHINGTON, DC 20402

*BIOLOGICAL CONCENTRATION, MAN + *BIOLOGICAL CONCENTRATION, MILK + *FALLOUT + *IODINE + *SURFACE CONTAMINATION + AIRBURST + ENVIRONMENTAL CONDITION + NUCLEAR DETONATION + PARTICULATE

15-29114

ALSO IN CATEGORY 14

ROBINSON PB
A COMPARISON OF RESULTS BETWEEN THE PUBLIC HEALTH SERVICE RAW MILK AND PASTEURIZED MILK NETWORKS FOR JANUARY 1964 THROUGH JUNE 1966
RAD. HEALTH DATA AND REPORTS, VOL. 9, NO. 9, PP. 475-482, 14 PP., 5 FIG., 10 TABL., 8 REF., SEPT. 1968

THE PUBLIC HEALTH SERVICE RAW MILK AND PASTEURIZED MILK NETWORKS ARE COMPARED FOR INTERVAL JANUARY 1964 THROUGH JUNE 1966 ON THE BASIS OF MILK SAMPLE ANALYSES MADE DURING THAT PERIOD. ONCE LABORATORY EFFECTS DUE TO ANALYTICAL DIFFERENCES IN MILK SAMPLE ANALYSES WERE REMOVED FROM THE DATA, THE AGREEMENT FOR CESIUM-137 AND STRONTIUM-90 BETWEEN FOUR OF THE NINE STATIONS THAT WERE COMMON TO BOTH NETWORKS WAS RELATED TO MILKSHED OVERLAP.

AVAILABILITY - SUPT. OF DOCUMENTS, GOVERNMENT PRINTING OFFICE, WASHINGTON, DC 20402, \$5.00 A YEAR- \$0.50 SINGLE ISSUE.

*ANALYTICAL TECHNIQUE, MILK + *BIOLOGICAL CONCENTRATION, MILK + *CESIUM + *METEOROLOGY + *STRONTIUM + SOIL, NUCLIDE OCCURRENCE + SURFACE CONTAMINATION

15-29116

DONEGAN DP

REPORT ON A SYMPOSIUM ON THE RADIOLOGICAL PROTECTION OF THE WORKER BY THE DESIGN AND CONTROL OF HIS ENVIRONMENT HELD AT BOURNEMOUTH, APRIL 1966
DCROF-2-79 +. APRIL, 1966

THE PROGRAM WAS BRIEFLY AS FOLLOWS - SESSION I, THE PRINCIPLES OF RADIOLOGICAL PROTECTION BY CONTROL OF THE WORKING ENVIRONMENT. SESSION II, CONTAINMENT AND VENTILATION. SESSION III, SURFACE PHENOMENA. SESSION IV, SELECTION AND DESIGN OF OPERATING PROCEDURES. SESSION V, LAYOUT AND DESIGN OF CONTROLLED AREAS AND SHIELDING. SESSION VI, MONITORING METHODS. IN

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-29116 *CONTINUED*

ADDITION TO THE PAPERS, THERE WAS AN INSTRUMENT EXHIBITION CONTAINING MANY ITEMS OF INTEREST.

AVAILABILITY - USAEC DEPOSITORY LIBRARIES IN THE U.S. AND OVERSEAS

*DESIGN CRITERIA + *ENVIRONMENTAL CONDITION + *MONITOR, RADIATION, GENERAL +
*RADIATION SAFETY AND CONTROL + CONTAINMENT, GENERAL + CONTAMINATION +
RADIATION PROTECTION, ORGANIZATION + SHIELDING

15-29134

IHLE H + KARAYANNIS M + MURRENHOFF A

LIQUID SCINTILLATION COUNTING OF THORIUM, PROTACTINIUM, AND NEPTUNIUM. AVOIDANCE OF QUENCHING CAUSED BY ADSORPTION ON THE WALL
ATOMPRAXIS 14, NO. 9/10, 1968 P 397

THE METHOD OF INTERNAL LIQUID SCINTILLATION COUNTING WITH STABILIZATION OF THE SOLUTION OF THE RADIONUCLIDE IN THE LIQUID SCINTILLATOR BY MEANS OF TRI-N-OCTYLPHOSPHINE OXIDE OR POLYVINYLCARBONATE-COPOLYMER HAS BEEN SUCCESSFUL FOR U, PU, AM, CM, AND OTHER RADIONUCLIDES IN ROUTINE COUNTING AS WELL AS IN HIGH PRECISION ABSOLUTE COUNTING. IN THE WORK PRESENTED HERE, THE APPLICABILITY OF THIS METHOD TO NUCLIDES OF THE ELEMENTS TH, PA, AND NP HAS BEEN EXPERIMENTALLY INVESTIGATED.

*COUNTER + *DOSE MEASUREMENT, INTERNAL + *EXPERIMENT, GENERAL + *INSTRUMENT, RADIATION MONITORING +
ADSORPTION + RADIATION PROTECTION, CHEMICAL

15-29135

ZONGE E

CONTRIBUTION TO THE DETERMINATION OF POLONIUM-210 IN RADIOACTIVE EFFLUENTS
ATOMPRAXIS, 14, SEPT. 10, 1968, P 407

WHEN THE UNFILTERED SAMPLE OF THE EFFLUENT HAS BEEN CONCENTRATED BY EVAPORATION AND OXIDIZED THE PO-210 IS SEPARATED FROM THE DRY RESIDUE BY SUBLIMATION UNDER NORMAL PRESSURE IN A SIMPLE DEVICE. FINALLY THE PO-210 IS PLATED BY SPONTANEOUS DEPOSITION ON A SILVER FOIL. THE ACTIVITY IS MEASURED IN A PROPORTIONAL COUNTER. THE AVERAGE TOTAL YIELD AMOUNTS TO 89.9% AND THE STANDARD DEVIATION FOR A SINGLE DETERMINATION HAS BEEN CALCULATED TO BE $\pm 8.9\%$.

*DEPOSITION + *EFFLUENT + *EVAPORATION + *OXIDATION + *POLONIUM + COUNTER + *RADIOACTIVITY RELEASE + SILVER

15-29136

PLESCH R

THE ERROR STATISTICS OF ACTIVITY MEASUREMENTS WITH STANDARDS
ATOMPRAXIS, 14, SEPT 10, 1968, P 409

FORMER CONSIDERATIONS OF THE ERROR STATISTICS OF ACTIVITY MEASUREMENTS DID NOT ALLOW FOR THE APRIORI-ERROR OF ACTIVITY STANDARD AND THE STATISTICAL ERROR OF THE STANDARD PULSE RATE BECAUSE OF THE INSIGNIFICANCE OF THESE ERRORS. BUT THEY CAN REACH IN SOME CASES SUCH A MAGNITUDE, THAT THEY ARE NOT TO BE NEGLECTED FURTHERMORE. IN THIS PAPER, THE STATISTICAL ERROR OF THE SAMPLE ACTIVITY, THE SMALLEST DIFFERENCE BETWEEN TWO SAMPLES TO BE MEASURED AND THE LIMIT OF INDICATING ARE TREATED INCLUDING THE ERRORS CAUSED BY THE APPLICATION OF A STANDARD. SUBSEQUENTLY THE MINIMIZING OF THE ABOVE MENTIONED STATISTICAL TERMS BY CHOICING SUITABLE MEASURING TIMES IS REPRESENTED. FROM THIS, RULES OF SELECTION OF MEASURING DEVICES ARE GIVEN. THE FORMAL CONNECTIONS ARE ILLUSTRATED BY NUMERICAL EXAMPLES.

*ERROR ANALYSIS + *STATISTICAL ANALYSIS + *STATISTICAL FLUCTUATION + COUNTER + SOURCE, RADIATION

15-29138

ALSO IN CATEGORY 17

SAUTER E

INCREASE IN DOSE OUTPUT BY USE OF A RADIATION SHIELD
ATOMPRAXIS, 14, SEPT. 10, 1968, P 426

IN SPECIAL CASES, SHIELDING OF A GAMMA-SOURCE MAY INCREASE THE DOSE RATE BEHIND THE SHIELD.

*DOSE + *SHIELDING + *SOURCE, RADIATION + GAMMA + OPERATION + RADIATION SAFETY AND CONTROL + X-RAY

15-29139

ALSO IN CATEGORY 17

HELICOPTER SPEEDS TRANSPORTATION OF INJURED WORKERS
ELECTRICAL WORLD, VOL 170(14) P 62, SEPT, 30, 1967

IN A SPECIAL REPORT ON ELECTRIC UTILITY METHODS IN AIRBORNE SERVICES (MAINLY FOR CONSTRUCTION AND POWERLINE PATROL), TVA IS MENTIONED AS USING STANDARD WIRE-BASKET STOKES LITTERS MOUNTED ON HELICOPTERS FOR RAPID EVACUATION FROM REMOTE CONSTRUCTION AREAS. THE HELICOPTER HAS SPECIAL ATTACHMENTS FOR LITTERS MAINTAINED AT EACH AREA. AT LEAST 1 LIFE HAS BEEN SAVED SINCE USE BEGAN IN 1967. ***A MOBILE HEALTH STATION TRAILER (WITH NURSE ON DUTY) ALSO IS USED IN CONSTRUCTION AREAS. ***MANY UTILITIES COULD ARRANGE A SIMILAR SERVICE FOR CONTAMINATED, INJURED PERSONS AT NUCLEAR POWER REACTORS.

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-29139 *CONTINUED*

*RADIOLOGICAL ASSISTANCE + INDUSTRIAL SAFETY + RADIATION INJURY TREATMENT + REACTOR, POWER

15-29210

CAVALLINI A + BUSUOLI G

ROLE, INTERPRETATION, AND ACCURACY OF MEASUREMENT OF FAST NEUTRONS BY MEANS OF PHOTOGRAPHIC EMULSIONS
COMITATO PER L'ENERGIA NUCLEARE, BOLOGNACONF-670621 +. 23 PAGES, PP. 293-315 OF RADIATION DOSE MEASUREMENTS. THEIR PURPOSE, INTERPRETATION, AND
REQUIRED ACCURACY IN RADIOLOGICAL PROTECTION, PARIS, EUROPEAN NUCLEAR ENERGY AGENCY, 1967

IN THE PAST 10 TO 15 YEARS NUCLEAR EMULSIONS HAVE COME INTO GENERAL USE IN THE FIELD OF
PERSONNEL FAST NEUTRON DOSIMETRY. THE METHOD HAS INTRINSIC CHARACTERISTICS AND LIMITATIONS -
THE USEFUL RESPONSE RESTRICTED TO A NARROW ENERGY RANGE, ENERGY-DEPENDENCE, LATENT IMAGE
FADING, GAMMA SENSITIVITY, AND TRACK RECOGNITION LIABLE TO JUDGMENT OF THE OBSERVER.
NEVERTHELESS, NUCLEAR EMULSIONS ARE STILL THE MOST WIDELY USED, ALTHOUGH NEW DOSIMETRIC
TECHNIQUES (SOME OF THEM VERY PROMISING) HAVE BEEN FOUND AND REMARKABLY IMPROVED.

*DOSIMETRY, PHOTOGRAPHIC + *FAST NEUTRON + *MEASUREMENT, GENERAL + MONITOR, RADIATION, PERSONNEL +
RADIATION SAFETY AND CONTROL

15-29211

COWPER G

PURPOSES, INTERPRETATION, AND REQUIRED ACCURACY IN RADIATION MONITORING OF THE WORKING ENVIRONMENT
ATOMIC ENERGY OF CANADA LTD., CHALK RIVER, ONT.CONF-670621 +. 10 PAGES, PP. 345-354 OF RADIATION DOSE MEASUREMENTS. THEIR PURPOSE, INTERPRETATION, AND
REQUIRED ACCURACY IN RADIOLOGICAL PROTECTION, PARIS, EUROPEAN NUCLEAR ENERGY AGENCY, 1967

THE PURPOSES, INTERPRETATION, AND ACCURACY REQUIRED IN THE RADIATION MONITORING OF THE WORKING
ENVIRONMENT MUST CONTINUE, AS ALWAYS, TO BE BASED UPON THE BEST UNDERSTANDING OF THE ADVERSE
EFFECTS OF IONIZING RADIATION UPON MAN. THE CONSENSUS OF THE BEST AVAILABLE EXPERT OPINION
HAS LED TO THE RECOMMENDATIONS OF THE ICRP, AND IN THE MATTER OF FORMULATING CONTROLS AND
CARRYING OUT PRACTICES FOR THE MONITORING OF THE WORKING ENVIRONMENT THESE RECOMMENDATIONS
MUST ALWAYS BE KEPT IN MIND.

*ERROR ANALYSIS + *ICRP + *MONITOR, RADIATION, ENVIRONMENTAL + *RADIATION EFFECT +
*RADIATION SAFETY AND CONTROL + CHALK RIVER

15-29212

PELLERIN P + CHANTEUR J + MORONI JP

ORGANIZATION OF SURVEILLANCE AND CONTROL OF WORKING ENVIRONMENT BY APPLICATION OF FRENCH REGULATIONS
MINISTERE DES AFFAIRES SOCIALES, PARISCONF-670621 +. 19 PAGES, PP. 365-381 OF RADIATION DOSE MEASUREMENTS. THEIR PURPOSE, INTERPRETATION, AND
REQUIRED ACCURACY IN RADIOLOGICAL PROTECTION, PARIS, EUROPEAN NUCLEAR ENERGY AGENCY, 1967 (IN FRENCH)

THE EXPERIENCE GAINED OVER THE LAST SEVEN YEARS BY FRANCE IN THE FIELD OF PERSONAL DOSIMETERS
RELATES TO A LARGE NUMBER OF WORKERS (10,000 PHOTOGRAPHIC FILM DOSIMETERS A MONTH AT
PRESENT). THE TECHNOLOGICAL ORGANIZATION OF THE MONITORING SERVICES IS DESCRIBED, AND ITS
SPECIFIC REQUIREMENTS FOR DETERMINATION OF TYPE OF EXPOSURE, CALIBRATION OF DOSIMETERS,
CONDITIONS FOR WEARING DOSIMETERS, DEVELOPMENT, READING, AND INTERPRETATION OF PERSONAL
DOSIMETERS, AND MEASURES TAKEN IN THE EVENT OF THE MAXIMUM PERMITTED DOSE BEING EXCEEDED ARE
DISCUSSED.

*DOSIMETRY, PHOTOGRAPHIC + *INSTRUMENT CALIBRATION + *MONITOR, RADIATION, PERSONNEL +
*RADIATION PROTECTION, ORGANIZATION + *RADIATION SAFETY AND CONTROL + FRANCE +
MAXIMUM PERMISSIBLE DOSE (MPD)

15-29213

WHEATLEY BM

CONFIDENCE LIMITS ON MEASUREMENTS IN THE WORKING ENVIRONMENT
CENTRAL ELECTRICITY GENERATING BOARD, BERKELEY, ENG.CONF-670621 +. 10 PAGES, PP. 415-424 OF RADIATION DOSE MEASUREMENTS. THEIR PURPOSE, INTERPRETATION, AND
REQUIRED ACCURACY IN RADIOLOGICAL PROTECTION, PARIS, EUROPEAN NUCLEAR ENERGY AGENCY, 1967

MONITORING A WORKING ENVIRONMENT IS SHOWN TO YIELD DATA FROM WHICH PERSONAL DOSES CAN ONLY BE
ROUGHLY ESTIMATED, SOMETIMES WITH VERY LARGE MARGINS OF ERROR. IT IS IMPORTANT TO REALIZE
THAT MONITORING DOES NOT LEAD DIRECTLY TO A DOSE ESTIMATE WHICH CAN BE COMPARED WITH ICRP
LIMITS. EVEN WITH A PERFECT INSTRUMENT FURTHER ERRORS OF UP TO A FACTOR OF 10 IN DOSE
ESTIMATION CAN OCCUR IN INTERPRETATION DEPENDING ON THE DIRECTIONAL PROPERTIES OF THE FIELD
AND THE POSITION OF THE WORKER IN IT.

*CHAMBER, ION + *DOSE + *ERROR ANALYSIS + *INSTRUMENT, RADIATION MONITORING + *THERMAL NEUTRON +
DOSIMETRY, GENERAL + ICRP + MONITOR, RADIATION, ENVIRONMENTAL

15-29214

SCHULTE HF

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-29214 *CONTINUED*

PERSONAL AIR SAMPLING AND MULTIPLE STAGE SAMPLING, INTERPRETATION OF RESULTS FROM PERSONAL AND STATIC AIR SAMPLERS

LOS ALAMOS SCIENTIFIC LAB., N. MEXICO

CONF-670621 +. 16 PAGES, PP. 495-510 OF RADIATION DOSE MEASUREMENTS. THEIR PURPOSE, INTERPRETATION, AND REQUIRED ACCURACY IN RADIOLOGICAL PROTECTION, PARIS, EUROPEAN NUCLEAR ENERGY AGENCY, 1967

PERSONAL AIR SAMPLERS WERE DEVELOPED TO PROVIDE BREATHING ZONE SAMPLING OF RADIOACTIVE AEROSOLS FOR WORKERS WHO DO NONREPETITIVE TASKS AND MOVE ABOUT IN DOING THESE TASKS. THE DISTURBING FACT DEMONSTRATED BY THE USE OF THESE SAMPLERS IS THE HIGHER CONCENTRATIONS FOUND AS COMPARED WITH CONVENTIONAL SAMPLERS. MULTISTAGE SAMPLERS WERE DEVELOPED IN AN ATTEMPT TO OBTAIN BETTER DATA ON THE QUANTITY OF CONTAMINANT ACTUALLY REACHING THE PULMONARY REGION OF THE LUNGS.

*AEROSOL, RADIOACTIVE + *BIOLOGICAL CONCENTRATION, MAN + *INHALATION +
*MAXIMUM PERMISSIBLE CONCENTRATION (MPC) + *PARTICLE SIZE DISTRIBUTION + AIR + CONTAMINATION +
DEPOSITION + ICRP + MONITOR, RADIATION, PERSONNEL

15-29215

LANGMEAD WA

OBJECTIVES OF AIR MONITORING AND THE INTERPRETATION OF AIR SAMPLING RESULTS

UNITED KINGDOM ATOMIC ENERGY AUTHORITY, HARWELL, ENG.

CONF-670621 +. 19 PAGES, PP. 475-493 OF RADIATION DOSE MEASUREMENTS. THEIR PURPOSE, INTERPRETATION, AND REQUIRED ACCURACY IN RADIOLOGICAL PROTECTION, PARIS, EUROPEAN NUCLEAR ENERGY AGENCY, 1967

THE OBJECTIVES OF MONITORING FOR RADIOACTIVE AEROSOLS IN THE WORKING ENVIRONMENT ARE REVIEWED. THE SUITABILITY OF THE CONVENTIONAL STATIC AIR SAMPLER AS A DEVICE FOR PROVIDING MEANINGFUL DATA FOR THE CONTROL OF PERSONAL EXPOSURE IS DISCUSSED IN RELATION TO VARIOUS TYPES OF AEROSOL AND WORKING ENVIRONMENT.

*MONITORING PROGRAM, ENVIRONMENTAL + *PARTICLE SIZE DISTRIBUTION + *RADIATION SAFETY AND CONTROL +
*SAMPLING + *STATISTICAL CORRELATION + AEROSOL, RADIOACTIVE + AIR + CONTAMINATION +
DOSE MEASUREMENT, EXTERNAL + DOSE MEASUREMENT, INTERNAL + ICRP + INHALATION +
MAXIMUM PERMISSIBLE BODY BURDEN + MAXIMUM PERMISSIBLE CONCENTRATION (MPC) + PARTICLE SIZE + UNITED KINGDOM

15-29216

BRESLIN AJ

SOURCES OF ERROR INHERENT IN THE METHODS OF AIR MONITORING FOR INHALED RADIO-ACTIVE MATERIALS

ATOMIC ENERGY COMMISSION, NEW YORK

CONF-670621 +. 15 PAGES, PP. 511-525 OF RADIATION DOSE MEASUREMENTS. THEIR PURPOSE, INTERPRETATION, AND REQUIRED ACCURACY IN RADIOLOGICAL PROTECTION, PARIS, EUROPEAN NUCLEAR ENERGY AGENCY, 1967

TWO KINDS OF ERRORS ARE PERTINENT IN ROUTINE MONITORING PROGRAMS FOR RADIOACTIVE AEROSOLS. THESE INCLUDE THE SAMPLING ERRORS WHICH RELATE TO THE ACCURACY OF EACH SEPARATE MEASUREMENT OF DUST CONCENTRATION, AND THE ERRORS ASSOCIATED WITH ESTIMATING AVERAGE CONCENTRATIONS FROM GROUPS OF SAMPLES. THE SAMPLING ERROR DEPENDS UPON THE QUALITY OF INSTRUMENTATION AND TECHNIQUE. IT CAN BE QUITE SMALL, AS LITTLE AS 10 TO 15%, BUT IS NOT NECESSARILY SO, THERE BEING CIRCUMSTANCES IN WHICH CONSIDERABLY GREATER SAMPLING ERRORS ARE POSSIBLE.

*AEROSOL, RADIOACTIVE + *INSTRUMENT, GENERAL + *MONITORING PROGRAM, ENVIRONMENTAL + *SAMPLING +
ANALYTICAL TECHNIQUE, GENERAL + ERROR ANALYSIS + PARTICLE SIZE + STATISTICAL ANALYSIS

15-29217

ETOH H

ACCIDENTAL INJECTION INTO FINGER TIP IN PREPARATION PROCEDURE OF PU-239 SOLUTION

NATIONAL INST. OF RADIOLOGICAL SCIENCES, CHIBA, JAPAN

5 PAGES, HOKU, BUTSURI, 2, PAGES 116-120 (MARCH 1967) (IN JAPANESE)

AN INTERNAL EXPOSURE ACCIDENT TOOK PLACE ON MARCH 10, 1966, AT THE NATIONAL INSTITUTE OF RADIOLOGICAL SCIENCES WHEN A RESEARCH WORKER WAS ENGAGED IN PREPARATION AND FRACTIONATION PROCEDURES OF A PU-239 SOLUTION. A 37-YR OLD MAN ACCIDENTALLY INJECTED A CONTAMINATED NEEDLE INTO HIS LEFT FOREFINGER DURING A GLOVEROX PROCEDURE. THE RADIOACTIVITY OF THE CONTAMINATED PORTION OF THE FINGER WAS RAPIDLY AND ACCURATELY DETERMINED, AND RADIATION HAZARDS WERE REDUCED TO A MINIMUM BY SURGICAL REMOVAL OF THE CONTAMINATED TISSUE AND ADMINISTRATION OF A CHELATING AGENT.

*ACCIDENT, RADIOISOTOPE + *DOSE MEASUREMENT, INTERNAL + *PLUTONIUM + *RADIATION INJURY TREATMENT +
GLOVE BOX + INCIDENT, HUMAN ERROR

15-29218

MECHALI D

INTERPRETATION OF RESULTS OF INDIVIDUAL DOSIMETRY AND DOSE EVALUATION AT THE ORGAN LEVEL

COMMISSARIAT A L'ENERGIE ATOMIQUE, FONTENAY-AUX-ROSES, FRANCE

CONF-670621 +. 13 PAGES, PP. 227-239 OF RADIATION DOSE MEASUREMENTS. THEIR PURPOSE, INTERPRETATION, AND REQUIRED ACCURACY IN RADIOLOGICAL PROTECTION, PARIS, EUROPEAN NUCLEAR ENERGY AGENCY, 1967 (IN FRENCH)

THE RECOMMENDATIONS OF THE ICRP AND MOST NATIONAL REGULATIONS RELATING TO THE IRRADIATION OF VARIOUS BODY ORGANS OR TISSUES STATE THAT THE DOSES RECEIVED BY THESE ORGANS OR TISSUES

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-29218 *CONTINUED*

SHOULD ENABLE DOSE MEASUREMENT FOR EXTERNAL IRRADIATION TO BE DERIVED. THE INFORMATION NECESSARY FOR THIS EVALUATION INCLUDES PHYSICAL DATA ON THE CONDITIONS OF EXPOSURE (NATURE, ENERGY, FLUENCY, AND THE ANGLE OF INCIDENCE OF THE PARTICLES ON THE VARIOUS PARTS OF THE BODY) AND ANATOMICAL DATA (SHAPE, SIZE, COMPOSITION, AND POSITION OF THE VARIOUS ORGANS OR TISSUES IN THE BODY).

*DOSE MEASUREMENT, EXTERNAL + *DOSE MEASUREMENT, INTERNAL + *MAXIMUM PERMISSIBLE BODY BURDEN + *RADIATION PROTECTION, ORGANIZATION + BIOLOGICAL CONCENTRATION, MAN + DOSE + DOSIMETRY, GENERAL + ENERGY LEVEL + ICRP

15-29219

DELHOVE J

INDIVIDUAL DOSIMETRY OF EXPOSED PERSONNEL IN THE INDUSTRIAL SECTORS AND MEDICAL ESTABLISHMENTS OUTSIDE NUCLEAR CENTERS.

CCNTRALATOM, BRUSSELS

CONF-670621 +. 13 PAGES, PP. 137-149 OF RADIATION DOSE MEASUREMENTS. THEIR PURPOSE, INTERPRETATION, AND REQUIRED ACCURACY IN RADIOLOGICAL PROTECTION, PARIS, EUROPEAN NUCLEAR ENERGY AGENCY, 1967 (IN FRENCH)

LEGISLATION IN BELGIUM RELATING TO THE PROTECTION OF THE POPULATION AND WORKERS AGAINST THE DANGERS OF IONIZING RADIATIONS REQUIRES THAT DOSES RECEIVED BY WORKERS EXPOSED IN THE COURSE OF THEIR JOBS BE MONITORED.

*DOSIMETRY, PHOTOGRAPHIC + *DOSIMETRY, THERMOLUMINESCENCE + *MONITOR, RADIATION, PERSONNEL + *RADIATION PROTECTION, ORGANIZATION + BIOMEDICAL + POPULATION EXPOSURE

15-29220

MAUSHART R

ACCURACY OF METHODS AND INTERPRETATION OF RESULTS OF H-3 MONITORING

KARLSRUHE NUCLEAR RESEARCH CENTRE, GERMANY

CONF-670621 +. 17 PAGES, PP. 541-557 OF RADIATION DOSE MEASUREMENTS. THEIR PURPOSE, INTERPRETATION, AND REQUIRED ACCURACY IN RADIOLOGICAL PROTECTION, PARIS, EUROPEAN NUCLEAR ENERGY AGENCY, 1967

TRITIUM IN THE HUMAN BODY CAN BE ASSESSED WITH A HIGH DEGREE OF ACCURACY BY MEASUREMENTS OF TRITIUM EXCRETED IN URINE IF THE MEASUREMENTS ARE NOT LONGER THAN SOME WEEKS AFTER THE INITIAL INTAKE AND IF THE MEASUREMENTS ARE REPEATED SUFFICIENTLY SO THAT THE HALF-TIME OF EXCRETION WILL BE KNOWN. LATER MEASUREMENTS HAVE TO TAKE INTO ACCOUNT THAT THE FRACTION OF TOTAL-BODY TRITIUM CONTAINED IN THE BODY WATER DECREASES WITH TIME.

*ANALYTICAL TECHNIQUE, AIR + *ANALYTICAL TECHNIQUE, URINE + *DOSE MEASUREMENT, INTERNAL + *MONITOR, RADIATION, PERSONNEL + *TRITIUM + BIOLOGICAL CONCENTRATION, MAN

15-29221

JOHNS TF

USE OF ENERGY-INDEPENDENT DOSIMETERS FOR MEASURING PARTIAL AND WHOLE-BODY DOSES

ATOMIC ENERGY ESTABLISHMENT, WINFRITH, SCOTLAND

CONF-670621 +. 14 PAGES, PP. 241-254 OF RADIATION DOSE MEASUREMENTS. THEIR PURPOSE, INTERPRETATION, AND REQUIRED ACCURACY IN RADIOLOGICAL PROTECTION, PARIS, EUROPEAN NUCLEAR ENERGY AGENCY, 1967

DOSE INFORMATION CAN BE OBTAINED FROM LIF THERMOLUMINESCENT DOSIMETERS WITHOUT THE USE OF FILTERS, AND THE QUESTION ARISES WHETHER SUCH DOSIMETERS ARE AT A DISADVANTAGE COMPARED WITH FILM BADGES FOR THE MEASUREMENT OF PARTIAL AND WHOLE-BODY RADIATION DOSES IN THAT THEY DO NOT ALSO PROVIDE SPECTROMETRIC DATA FROM WHICH ORGAN DOSES CAN BE CALCULATED. SIMPLE LIF DOSIMETERS ARE NOT ONLY USEFUL FOR MEASURING DOSES TO FINGER-TIP OR OTHER PARTS OF THE BODY, BUT CAN BE USED AS AN ALTERNATIVE TO FILM BADGES FOR DEMONSTRATING GENERAL COMPLIANCE WITH ICRP RECOMMENDATIONS ON CRITICAL ORGAN DOSES. SIMILAR DOSIMETERS ARE DISCUSSED FROM THE STANDPOINT OF MODIFICATION, LOCATION ON BODY, AND USE AS AN ALTERNATIVE TO FILM BADGES.

*BIOLOGICAL CONCENTRATION, MAN + *DOSE + *DOSE CALCULATION, INTERNAL + *DOSIMETRY, THERMOLUMINESCENCE + BETA EMITTER + COUNTER, WHOLE BODY + FILTER + GAMMA EMITTER + ICRP + X-RAY

15-29222

LAFONTAINE A

INTERPRETATION OF RESULTS OF PHYSICAL DOSIMETRY BY MEANS OF BIOLOGICAL DOSIMETRY

MINISTERE DE LA SANTE PUBLIQUE ET DE LA FAMILLE, BRUSSELS

CONF-670621 +. 6 PAGES, PP. 255-260 OF RADIATION DOSE MEASUREMENTS. THEIR PURPOSE, INTERPRETATION, AND REQUIRED ACCURACY IN RADIOLOGICAL PROTECTION, PARIS, EUROPEAN NUCLEAR ENERGY AGENCY, 1967

DOSIMETRY LEAVES OPEN THE PROBLEM OF THE ACTUAL DOSE TRANSFERRED TO THE BODY TISSUES OR SYSTEMS. THE POSSIBILITY OF USING CHANGES INDUCED IN THE CELL OR TISSUE STRUCTURE AS A BIOLOGICAL DOSIMETER IS DISCUSSED.

*ACCIDENT, REACTIVITY + *BIOLOGICAL CONCENTRATION, MAN + *DOSE MEASUREMENT, INTERNAL + *DOSIMETRY, GENERAL + POPULATION EXPOSURE

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-29223

FRANKE T + HUNZINGER W

ACCURACY OF DOSIMETRY CONSISTENT WITH VARIANCES IN BIOLOGICAL DAMAGE

EUROPEAN COMMISSION FOR THE CHEMICAL PROCESSING OF IRRADIATED FUELS, MOL, BELGIUM

CONF-670621 +. 12 PAGES, PP. 261-272 OF RADIATION DOSE MEASUREMENTS. THEIR PURPOSE, INTERPRETATION, AND REQUIRED ACCURACY IN RADIOLOGICAL PROTECTION, PARIS, EUROPEAN NUCLEAR ENERGY AGENCY, 1967

THE PURPOSE OF RADIATION DOSIMETRY IS NOT TO COMPARE DOSE EQUIVALENTS ACTUALLY RECEIVED BY AN INDIVIDUAL OR ONE OF HIS ORGANS WITH SOME RECOMMENDED OR IMPOSED PERMISSIBLE VALUES, BUT RATHER TO CHECK WHETHER BIOLOGICAL DAMAGE IS LIKELY TO DEVELOP IN THAT INDIVIDUAL. IT IS SHOWN THAT RADIATION DOSIMETRY AS IT IS CURRENTLY APPLIED, IS SUFFICIENTLY PRECISE, AT LEAST FOR EXTERNAL DOSIMETRY, PARTICULARLY IF THE DOSE EQUIVALENTS RECEIVED BY A RADIATION WORKER OVER MANY YEARS ARE DETERMINED AS THE SUM OF MANY SHORT INTERVAL DOSES INDIVIDUALLY MEASURED.

*BIOLOGICAL CONCENTRATION, MAN + *DOSE MEASUREMENT, INTERNAL + *DOSIMETRY, GENERAL + *RADIATION DAMAGE + DOSE MEASUREMENT, EXTERNAL + MAXIMUM PERMISSIBLE BODY BURDEN

15-29224

BAARLT J + DUTRANNOIS J

PURPOSE AND INTERPRETATION OF PERSONNEL MONITORING DATA FOR HIGH ENERGY ACCELERATORS

CERN, GENEVA

CONF-670621 +. 18 PAGES, PP. 275-292 OF RADIATION DOSE MEASUREMENTS. THEIR PURPOSE, INTERPRETATION, AND REQUIRED ACCURACY IN RADIOLOGICAL PROTECTION, PARIS, EUROPEAN NUCLEAR ENERGY AGENCY, 1967

THE PROBLEMS ASSOCIATED WITH PERSONNEL MONITORING NEAR HIGH-ENERGY ACCELERATOR INSTALLATIONS ARE REVIEWED. IT IS SHOWN THAT DUE TO THE COMPLEXITY AND VARIETY OF THE RADIATION FIELDS EXISTING NEAR SUCH ACCELERATORS PARTICULAR PROBLEMS ARE MET WITH IN PERSONNEL RADIATION MONITORING. IN SPITE OF THE LACK OF SUITABLE DETECTORS FOR DIRECT MEASUREMENTS OF THE DOSE EQUIVALENT, VALUABLE INFORMATION CAN BE OBTAINED BY CONVENTIONAL DEVICES. BY SPECIFYING THE INFORMATION REQUIRED, A REVIEW OF POSSIBLE PRACTICAL METHODS FOR PERSONNEL MONITORING NEAR HIGH ENERGY ACCELERATORS IS GIVEN.

*ACCELERATOR + *DOSE MEASUREMENT, INTERNAL + *DOSIMETRY, PHOTOGRAPHIC + *MONITOR, RADIATION, PERSONNEL + DOSE + FILM, GENERAL + HIGH RADIATION + PHANTOM, HUMAN BODY + SURVEY, RADIATION, ENVIRONMENTAL

15-29225

RUNDO J + TAYLOR BT + BOOKER DV + NEWTON D + SCARGILL D

ATTENUATION IN THE CHEST WALL OF 20 KEV X-RAYS FROM AN INHALED RADIOACTIVE AEROSOL

ATOMIC ENERGY RESEARCH ESTABLISHMENT, HARWELL, ENG.

2 PAGES, NATURE (LONDON), 217, PAGES 642-643 (FEB. 17, 1968)

EXTERNAL COUNTING OF THE LOW INTENSITY L URANIUM X RAYS (ENERGIES 13.6, 16.9, AND 20.2 KEV) IS A PROMISING TECHNIQUE FOR ESTIMATION OF INSOLUBLE PLUTONIUM COMPOUNDS IN THE HUMAN LUNG. THE LOW ENERGY RADIATIONS ARE, HOWEVER, VERY EASILY ABSORBED IN THE TISSUES OF THE CHEST WALL, THE HALF-VALUE THICKNESS BEING ABOUT 0.7 CM FOR SOFT TISSUE AND 0.03 CM FOR BONE. THE EFFECTS OF VARIATIONS IN BODY BUILD ARE CLEARLY IMPORTANT, BUT DIFFICULT TO ASSESS, AND CALIBRATION OF THE COUNTING EQUIPMENT IS A SEVERE PROBLEM.

AEROSOL + BIOLOGICAL CONCENTRATION, MAN + ENERGY LEVEL + INHALATION + INSTRUMENT CALIBRATION + PLUTONIUM + SORPTION + X-RAY

15-29329

MEHAS TC + TAPPAN JT

ON-SITE HEALTH AND SAFETY REPORT

REYNOLDS ELECTRICAL AND ENGINEERING CO., INC.

VUF-1098 +. 21 PAGES, 3 FIGURES, FEB. 1967

THE REECO P/S DEPARTMENT WAS DELEGATED THE BASIC RESPONSIBILITY OF PROVIDING RADIOLOGICAL SAFETY SERVICES FOR ALL ACTIVITIES AT THE TEST SITE PREPARATORY TO AND FOLLOWING THE PROJECT STERLING EVENT. BASIC RESPONSIBILITIES ARE LISTED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151 \$3.00 COPY, \$0.65 MICROFICHE

*DECONTAMINATION + *INSTRUMENT CALIBRATION + *INSTRUMENT, RADIATION MONITORING + *RADIATION EXPOSURE, RECORD KEEPING + *RADIATION SAFETY AND CONTROL + ANALYTICAL TECHNIQUE, GENERAL + SAMPLING

15-29607

ALSO IN CATEGORIES 1 AND 17

ANNOUNCEMENT THIRD ANNUAL ACCELERATOR HEALTH PHYSICS TRAINING COURSE

U.S. ATOMIC ENERGY COMMISSION

HEALTH AND SAFETY INFORMATION BULLETIN 270, OCT 24. 1968

COURSE WILL BE GIVEN AT LRL IN BERKELEY, CALIFORNIA, FROM FEB. 24 TO MARCH 1969. REPORTS FOR

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-29607 *CONTINUED*

BACKGROUND READING WILL BE SENT IN DECEMBER 1968. COURSE LIMITED TO 15 STUDENTS. CONTACT E. J. VALLARIO, USAEC DIVISION OF OPERATIONAL SAFETY. *** TOPICS INCLUDE ACCELERATOR PHYSICS AND DESIGN, INTERACTION OF RADIATION AND MATTER, RADIATION DETECTORS, SHIELDING, NEUTRON SPECTROSCOPY, INDUCED ACTIVITY, RADIATION DAMAGE, AND RADIOBIOLOGY

*ACCELERATOR + *HEALTH PHYSICS TRAINING + TRAINING

15-29614 ALSO IN CATEGORIES 17 AND 3
RIVET (REMOTE INSPECTION VEHICLE, TELECHIRIC)
UKAEA, HARWELL, BERKSHIRE, ENGLAND
10 PAGES, FIGURES, 1 REFERENCE, 1968

DESCRIBES DEVICE (WHOSE PRELIMINARY WORKING MODEL HAS BEEN BUILT) FOR DAMAGE CONTROL FOLLOWING NUCLEAR INCIDENT. HAS SIZE AND REACH OF POWERFUL MAN, WEIGHS 450 LB, SUPERIOR ABILITY TO MANEUVER DUE TO TRACK DRIVE PLUS FRONT WHEELS CLIMBS STAIRS AND PASSES OVER OBSTACLES. SPEED 4 MPH, RANGE 200 FT (CABLE). *** BROCHURE SHOWS CONCEPT IN PICTURES, 1 PAGE OF DESCRIPTION.

AVAILABILITY - H. A. BALLINGER, ENGINEERING SUPPORT DIVISION, BUILDING 424, A.E.R.E., HARWELL, BERKSHIRE.

*INCIDENT, RECOVERY FROM + REMOTE MANIPULATING AND VIEWING + UNITED KINGDOM

15-29625

BURT AK + PEAPLE LHJ + WHITTING FB
X-RAY CALIBRATION SPECTRA FOR USE IN DOSIMETRY
UKAEA, BERKS HARWELL
AERE-M-2053 +. FIGURES, TABLES, JULY 1968

THE PHOTON SPECTRA FROM A SIEMENS STABILIPAN X-RAY SET WAS MEASURED WITH A NAI (TI) CRYSTAL AND MULTICHANNEL ANALYSER FOR VARIOUS COMBINATIONS OF APPLIED POTENTIALS AND FILTRATION. THE OBSERVED PULSE HEIGHT DISTRIBUTION WAS CONVERTED TO THE PHOTON SPECTRUM WITH A DIGITAL COMPUTER. THIS SPECTRUM OF KNOWN ENERGY AND SHAPE IS REQUIRED FOR THE CALIBRATION OF VARIOUS DOSE MEASURING INSTRUMENTS. A SET OF FILTERS HAVE BEEN DEFINED WHICH PRODUCE SUITABLE CALIBRATION SPECTRA IN THE ENERGY RANGE 20-200 KEV FOR EXPOSURE RATES FROM 0.01 TO 100 MR MIN (-1). THE SPECTRA CONSIST OF A SINGLE SYMMETRICAL PEAK FOR WHICH THE ENERGY AND WIDTH AT HALF HEIGHT ARE GIVEN.

AVAILABILITY - SCIENTIFIC ADMINISTRATION OFFICE, ATOMIC ENERGY RESEARCH ESTABLISHMENT, HARWELL, DIDCOT, BERKSHIRE, ENGLAND

*DOSIMETRY, GENERAL + *INSTRUMENT CALIBRATION + *X-RAY + CHAMBER, ION + COMPUTER, DIGITAL + FILTRATION + UNITED KINGDOM

CATEGORY 16
METEOROLOGICAL CONSIDERATIONS

16-27526 ALSO IN CATEGORIES 17 AND 15
BULLETIN OF COURSES, JULY 1967 TO JUNE 1968
U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
31 PAGES, 1968

THIRTY-ONE COURSES (1 DAY TO 3 WEEKS EACH) ARE OFFERED IN 5 AREAS. (1) BASIC TRAINING AND ORIENTATION - 6. (2) AIR QUALITY MANAGEMENT - 7. (3) PROCESS EVALUATION AND CONTROL - 8. (4) ATMOSPHERIC SAMPLING AND ANALYSIS - 8. (5) FIELD STUDIES - 5. *** ALTHOUGH PRIMARILY FOR NONREACTOR AIR POLLUTION, OF INTEREST TO REACTOR OPERATIONS PERSONNEL ARE METEOROLOGICAL ASPECTS OF AIR POLLUTION, DIFFUSION OF AIR POLLUTION - THEORY AND APPLICATION, AND MEASUREMENT OF AIRBORNE RADIOACTIVITY. COURSES ARE FREE BUT ATTENDANCE MAY BE LIMITED.

AVAILABILITY - CHIEF, TRAINING PROGRAM, NATIONAL CENTER FOR AIR POLLUTION CONTROL, 411 WEST CHAPEL HILL STREET, DURHAM, NORTH CAROLINA 27701

*TRAINING

16-27713 ALSO IN CATEGORY 18
MILLSTONE POINT NUCLEAR POWER STATION UNIT 1, FINAL SAFETY ANALYSIS REPORT, VOLUME 2
MILLSTONE POINT CO.
150 PAGES, FIGURES, TABLES, MARCH 14, 1968, Docket 50-245, TYPE--BWR, MFG--G.E., AE--EBASCO

CONTAINS SECTION XIII CONDUCT OF OPERATION (TRAINING, PROCEDURE, ADMINISTRATIVE CONTROL), XIV SAFETY ANALYSIS (4 DESIGN BASIS ACCIDENTS OFFSITE DOSE DID NOT EXCEED 10 CFR 100, ANALYTICAL METHODS). APPENDIX A (STACK RELEASE LIMIT CALCULATION) INCLUDES A DESCRIPTION OF THE ANALYTICAL MODEL, ITS VERIFICATION (USING BNL GRAPHITE REACTOR STACK RELEASE OF AR-41, AND OBSERVING EXPERIENCE SHOWS 1-131 CURIES/SEC ARE 10 (MINUS 6TH) THAT OF NOBLE GAS RELEASE RATE FROM BWRs) TO OBTAIN STACK RELEASE RATE LIMITS OF 1.4 CURIES/SEC (AVERAGE ANNUAL) AND 12.9 (15 MIN IN ANY HOUR).

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

*ANALYTICAL MODEL + *FISSION GAS RELEASE + *SOURCE, CONTINUOUS + *STACK + COMPARISON, THEORY AND EXPERIENCE + FISSION PRODUCT, IODINE + MILLSTONE POINT (BWP) + REACTOR, BWR + SETPOINT + TRAINING

16-27810 ALSO IN CATEGORIES 15 AND 17
SMITH M
RECOMMENDED GUIDE FOR THE PREDICTION OF THE DISPERSION OF AIRBORNE EFFLUENTS
THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS, NEW YORK, N.Y.
85 PAGES, FIGURES, TABLES, MAY, 1968

THIS GUIDE IS AN OUTGROWTH OF A MEETING OF ASME COMMITTEE ON AIR POLLUTION CONTROLS, A DIVISION OF THE POWER DEPARTMENT, HELD ON DEC. 2, 1964. THE FOLLOWING CHAPTERS PRESENT THE OVERALL SCOPE OF THE VOLUME - (CHAPTER 1) METEOROLOGICAL FUNDAMENTALS. (CHAPTER 2) BEHAVIOR OF AIRBORNE EFFLUENTS. (CHAPTER 3) CALCULATION OF EFFECTIVE STACK HEIGHT. (CHAPTER 4) CALCULATIONS OF DISPERSION AND DEPOSITION. (CHAPTER 5) SOURCES OF DATA AND EXPERIMENTAL METHODS. (CHAPTER 6) CALCULATION METHODS AND EXAMPLES.

AVAILABILITY - THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS, UNITED ENGINEERING CENTER, 345 EAST 47TH STREET, NEW YORK, N.Y. 10017

*METEOROLCGY + *TRAINING + ATMOSPHERIC DIFFUSION + ATMOSPHERIC STABILITY + DEPOSITION + DISPERSION + HEIGHT OF RISE + INSTRUMENT, METEOROLOGICAL + PLUME BEHAVIOR, GENERAL + STACK

16-27811
BRUMMAGE KG
THE CALCULATION OF ATMOSPHERIC DISPERSION FROM A STACK
STICHTING CONCAWE, THE HAGUE
28 PAGES, 9 FIGURES, 10 TABLES, 23 REFERENCES, ATMOSPHERIC ENVIRONMENT, 2, PAGES 197-224 (1968)

PRESENTS AN EQUATION USING SUTTONS DISPERSION FORMULA AND A PLUME RISE FORMULA TO CALCULATE ATMOSPHERIC DISPERSION FROM A STACK FOR NEUTRAL CONDITIONS. THIS EQUATION IS PRESENTED AS A NOMOGRAM. GRAPHS OF ADJUSTMENT FACTORS ARE GIVEN FOR OTHER THAN NEUTRAL CONDITIONS.

*CONCENTRATION, MAXIMUM + *STACK + *SUTTON DIFFUSION FORMULA + BUOYANT RISE + EQUATION, GENERAL + HEIGHT OF RISE

16-27812
HOGSTROM U
A STATISTICAL APPROACH TO THE AIR POLLUTION PROBLEM OF CHIMNEY EMISSION
UNIVERSITY OF UPPSALA
21 PAGES, 2 FIGURES, 4 TABLES, 11 REFERENCES, ATMOSPHERIC ENVIRONMENT, 2, PAGES 251-271 (1968)

CATEGORY 16
METEOROLOGICAL CONSIDERATIONS

16-27812 *CONTINUED*

A METHOD IS DESCRIBED THAT NOT ONLY GIVES ONE SINGLE CONCENTRATION VALUE BUT THE EXPECTED CONCENTRATION FREQUENCY DISTRIBUTION AT AN ARBITRARY POINT IN THE VICINITY OF THE EMITTING CHIMNEY. UNLIKE THE METHOD OF GIFFORD (1959) THE CONCENTRATION FREQUENCY DISTRIBUTION OBTAINED COMPRISES THE FULL RANGE OF METEOROLOGICAL CONDITIONS AT A GIVEN PLACE AND NOT ONLY THE HOSRT TERM VARIATIONS IN CONCENTRATION DURING ONE PARTICULAR METEOROLOGICAL SITUATION. NINE MONTHS STATISTICS OF 2-HR SO₂ CONCENTRATION (2602 VALUES) MEASURED AT A POINT SITUATED 750 M FROM A SULPHURIC ACID PLANT ARE COMPARED WITH THEORETICALLY OBTAINED STATISTICS.

*CONCENTRATION, PEAK TO AVERAGE + *SOURCE, ELEVATED + ATMOSPHERIC POLLUTION +
COMPARISON, THEORY AND EXPERIENCE + CONCENTRATION, GROUND LEVEL

16-27813

CSNADY GT + HILST GR + BOWNE NE
TURBULENT DIFFUSION FROM A CROSS-WIND LINE SOURCE IN SHEAR FLOW AT FORT WAYNE, INDIANA
UNIVERSITY OF WATERLOO, ONTARIO, CANADA + TRAVELERS RESEARCH CENTER HARTFORD, CONN.
20 PAGES, 15 FIGURES, 3 TABLES, 12 REFERENCES, ATMOSPHERIC ENVIRONMENT, 2, PAGES 273-292 (1968)

A SERIES OF LINE-SOURCE DIFFUSION EXPERIMENTS WERE RUN AT FORT WAYNE, INDIANA, TO DETERMINE PRIMARILY THE HEAT-ISLAND EFFECT ON ATMOSPHERIC DIFFUSION. THE MEAN DOSAGE FIELD WAS FOUND TO BE INFLUENCED BOTH BY THE HIGH RELATIVE ROUGHNESS OF NATURAL TERRAIN AND BY THE URBAN HEAT-ISLAND IN THE EXPECTED WAY.

*SOURCE, ELEVATED + *SOURCE, LINE + ATMOSPHERIC DIFFUSION EXPERIMENT + ATMOSPHERIC STABILITY +
CONCENTRATION, GROUND LEVEL + DIFFUSION COEFFICIENT

16-27814 ALSO IN CATEGORY 19

AIR POLLUTION BIBLIOGRAPHY
6 PAGES, ATMOSPHERIC ENVIRONMENT, 2, PAGES 297-302 (1968)

A BIBLIOGRAPHY OF 110 ARTICLES ON AIR POLLUTION, COVERING EMISSION SOURCES, ATMOSPHERIC INTERACTIONS, MEASUREMENT METHOD, CONTROL METHODS, EFFECT ON HUMAN HEALTH, EFFECT ON MATERIALS, AIR-QUALITY MEASUREMENTS, LEGAL AND ADMINISTRATIVE ASPECTS, STANDARDS AND CRITERIA, AND BASIC SCIENCES AND TECHNOLOGIES.

*ATMOSPHERIC POLLUTION + *BIBLIOGRAPHY + ADMINISTRATIVE CONTROL + INSTRUMENT, AIR SAMPLING +
MEASUREMENT, GENERAL + METEOROLOGY

16-27962

BRIGGS GA
CONCAWE MEETING- DISCUSSION OF THE COMPARATIVE CONSEQUENCES OF DIFFERENT PLUME RISE FORMULAS
ATMOSPHERIC TURBULENCE AND DIFFUSION LAB.
5 PAGES, 1 FIGURE, 2 TABLES, 12 REFERENCES, ATMOSPHERIC ENVIRONMENT, 2 PAGES 228-232 (1968)

COMPARES THREE FORMULAS FOR DETERMINING THE HEIGHT OF RISE OF STACK EFFLUENTS UNDER NEUTRAL WINDY CONDITIONS. DISCUSSES ADVANTAGES AND DISADVANTAGES OF THE THREE FORMULAS.

*EFFLUENT + *HEIGHT OF RISE + COMPARISON, THEORY AND EXPERIENCE + MATHEMATICAL TREATMENT +
PLUME BEHAVIOR, GENERAL + STACK

16-27964

DANIELSEN EF
TRANSPORT AND DIFFUSION OF STRATOSPHERIC RADIOACTIVITY BASED ON SYNOPTIC HEMISPHERIC ANALYSES OF POTENTIAL VORTICITY. FINAL REPORT, PART 3
PENNSYLVANIA STATE UNIV., UNIVERSITY PARK
NYO-3317-3 +. 97 PAGES, FIGURES, REFERENCES, NOV. 1967

ON THE BASIS OF THE MACHINE ANALYSES OF POTENTIAL VORTICITY AND MACHINE-COMPUTED ISENTROPIC TRAJECTORIES, THE TRANSPORT AND DIFFUSION OF THE POTENTIAL VORTICITY WAS STUDIED FOR A NINE-DAY PERIOD FROM 16 TO 25 APRIL 1963. MEASUREMENTS OF RADIOACTIVITY MADE DURING THE SAME PERIOD FOR PROJECT SPRINGFIELD ARE USED TO TEST THE ASSUMPTION THAT THE POTENTIAL VORTICITY IN THE LOWER STRATOSPHERE IS POSITIVELY CORRELATED WITH STRATOSPHERIC RADIOACTIVITY, AND THAT THE CHANGES IN POTENTIAL VORTICITY DUE TO MIXING SHOULD CORRESPOND TO SIMILAR CHANGES IN THE CONCENTRATION OF RADIOACTIVITY. THE RESULTS SUPPORT THE ASSUMPTION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA,
\$3.00 COPY, \$0.65 MICROFICHE

ATMOSPHERIC CIRCULATION, GLOBAL + ATMOSPHERIC DIFFUSION + COMPARISON, THEORY AND EXPERIENCE +
COMPUTER PROGRAM, METEOROLOGICAL + FALLOUT + STRATOSPHERE

16-28024

MOSES H. + BOGNER MA
FIFTEEN-YEAR CLIMATOLOGICAL SUMMARY, JANUARY 1, 1950-DECEMBER 31, 1964
ARGONNE NATIONAL LABORATORY

CATEGORY 16
METEOROLOGICAL CONSIDERATIONS

16-28024 *CONTINUED*

ANL-7084 +. 671 PAGES, 58 FIGURES, 574 TABLES, 17 REFERENCES, SEPTEMBER 1967

PRESENTS THE CLIMATOLOGICAL DATA FOR ARGONNE NATIONAL LABORATORY FROM JANUARY 1, 1950, THROUGH DECEMBER 31, 1964.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 CPY, \$0.65 MICROFICHE

*SITE CLIMATOLOGY + *STATISTICAL ANALYSIS + ANL + INSTRUMENT, METEOROLOGICAL + METEOROLOGY

16-28116

PAYNE BR + THATCHER LL + CAMERON JF + FLORKOWSKI T

THE MEASUREMENT OF HYDROGEN AND OXYGEN ISOTOPES IN NATURAL WATERS AND ITS APPLICATION TO METEOROLOGY AND HYDROLOGY. FINAL REPORT

INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA

IAEA-3162-1 +. 119 PAGES, MAY 1967

THE RESEARCH CONTRACT WAS IN EFFECT BETWEEN THE U.S. ATOMIC ENERGY COMMISSION AND THE AGENCY FROM 1 JANUARY 1963 TO 31 DECEMBER 1965. THE AIM OF THE PROJECT MAY BE DEFINED BROADLY AS THE DEVELOPMENT OF ROUTINE METHODS FOR THE ANALYSIS OF ENVIRONMENTAL LEVELS OF TRITIUM IN NATURAL WATERS, AND, THROUGH THE JOINT PROGRAMME OF PRECIPITATION SAMPLING THROUGHOUT THE WORLD CARRIED OUT BY THE AGENCY IN COLLABORATION WITH WHO, THE PROVISION OF AN OVERALL PICTURE OF THE GLOBAL OCCURRENCE OF TRITIUM IN PRECIPITATION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*MONITORING PROGRAM, ENVIRONMENTAL + *PRECIPITATION + *TRITIUM + *WATER, GENERAL + HYDROGEN + IAEA + METEOROLOGY + OXYGEN + STRATOSPHERE

16-28579

ALSO IN CATEGORIES 14 AND 15

GEY A

TRITIUM AND TRITATED WATER- TIME LIMITS OF ACCIDENTAL EXPOSURE IN STABLE OR REGENERATED ATMOSPHERES (IN FRENCH)

FRANCE. COMMISSARIAT A L ENERGIE ATOMIQUE

CONF-337-46 +. 50 PAGES, FIGURES, MAY 22, 1963

ORDINARILY, ACCIDENTAL RELEASES OF TRITIUM ARE TREATED AS THOUGH THEY ARE THE FORM OF TRITATED WATER VAPOR. THIS GIVES PESSIMISTIC ESTIMATES OF DOSES OBTAINED BECAUSE RETENTION OF TRITIUM IN THE BODY IS GREATER FOR HTO THAN FOR HT. RELEASES OF HT ARE ONLY SLOWLY OXIDIZED TO HTO SO THAT THE IMPACT OF THE RELEASE OF HT LIES SOMEWHERE BETWEEN THAT OF AN HT RELEASE WITH NO OXIDATION AND THAT OF HTO RELEASE. THIS PAPER MAKES A MATHEMATICAL TREATMENT OF THE EFFECT OF OXIDATION RATE ON THE IMPACT OF HT RELEASES.

*AIRBORNE RELEASE + *TRITIUM + ATMOSPHERIC DIFFUSION + CONCENTRATION, MAXIMUM + DOSE CALCULATION, EXTERNAL + DOSE CALCULATION, INTERNAL + INGESTION + INHALATION + MATHEMATICAL TREATMENT + MAXIMUM PERMISSIBLE CONCENTRATION (MPC) + OXIDATION + POPULATION EXPOSURE

16-28594

GANDINO C

CONTRIBUTION TO MICROANEMOLOGY AT ISRA

EUROPEAN ATOMIC ENERGY COMMUNITY

5 PAGES, GEOFIS. METEOROL. (GENOA), 16 PAGES 13-17 (JAN.-APR. 1967)

THE NECESSITY FOR AND PROBLEMS ASSOCIATED WITH WIND MEASUREMENTS AT NUCLEAR INSTALLATIONS ARE DISCUSSED, WITH PARTICULAR REFERENCE TO ANEMOMETRY. WIND PARAMETERS MUST BE INVESTIGATED TO PROVIDE ACCURATE DATA IN THE EVENT OF RELEASE OF RADIOACTIVITY. THE LOCATION OF VARIOUS METEOROLOGICAL STATIONS IN RELATION TO THE ISRA-I REACTOR IS DESCRIBED. FOR THE FORECAST OF THE WIND VARIATIONS, CLIMATOLOGICAL DATA ARE PROCESSED WITH AN IBM-709C COMPUTER.

*ATMOSPHERIC DIFFUSION + *INSTRUMENT, METEOROLOGICAL + ITALY + SITE CLIMATOLOGY + WIND STATISTICS

16-28595

KRUPCHATNIKOV VM

CALCULATIONS OF HEIGHT OF VENTILATION STACKS FOR DISCHARGING AIR CONTAMINATED WITH RADIOACTIVE MATERIALS JPRS-43977 +. 4 PAGES, JANUARY 1968

PRESENTS FORMULA FOR DETERMINING THE NECESSARY STACK HEIGHT SO THAT GROUND-LEVEL CONCENTRATION OF RADIOACTIVE EFFLUENT WILL BE LESS THAN THE PERMISSIBLE TOTAL DAILY INTAKE BY AN INDIVIDUAL.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*CONCENTRATION, GROUND LEVEL + *MATHEMATICAL TREATMENT + *MAXIMUM PERMISSIBLE DOSE (MPD) + *STACK + HEIGHT OF RISE + USSR

CATEGORY 16
METEOROLOGICAL CONSIDERATIONS

16-28735

HOULT DP + FAY JA + FORNEY LJ
THEORY OF PLUME RISE COMPARED WITH FIELD OBSERVATIONS
MASSACHUSETTS INSTITUTE OF TECHNOLOGY
NP-17543 +. 27 PAGES, MARCH 1968

A THEORY FOR THE RISE OF A PLUME IN A HORIZONTAL WIND IS PROPOSED IN WHICH IT IS ASSUMED THAT, FOR SOME DISTANCE DOWNWIND OF A HIGH STACK, THE EFFECTS OF ATMOSPHERIC TURBULENCE MAY BE IGNORED IN COMPARISON WITH THE EFFECTS OF TURBULENCE GENERATED BY THE PLUME. WITHIN 10 STACK HEIGHTS DOWNWIND OF THE STACK, THE ROOT MEAN SQUARE DISCREPANCY BETWEEN THE OBSERVED HEIGHT OF THE TRAJECTORY ABOVE GROUND LEVEL AND THE THEORETICAL VALUE IS 14%, WHICH IS ABOUT THE UNCERTAINTY IN THE OBSERVED HEIGHT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151
\$3.00 COPY, \$0.65 MICROFICHE

ATMOSPHERIC STABILITY + COMPARISON, THEORY AND EXPERIENCE + HEIGHT OF RISE + METEOROLOGY +
PLUME BEHAVIOR, GENERAL + STACK + TURBULENCE, MECHANICAL

16-28756

ALSO IN CATEGORY 14

STEYN JJ + KIM YS
USERS MANUAL FOR CODE EXGAM. A CODE TO CALCULATE GAMMA PHOTON DOSE FROM AN AIRBORNE RADIOACTIVE RELEASE
NUS CORP., WASHINGTON, D. C.
NUS-329 +. 56 PAGES, FIGURES, REFERENCES, NOV. 1966

A FORTRAN IV CODE - EXGAM - FOR USE ON A CDC-3600 DIGITAL COMPUTER WAS WRITTEN TO PREDICT THE INTEGRATED PHOTON DOSE AT A RECEPTOR EXPOSED TO AN AIRBORNE RELEASE OF RADIOACTIVITY. THE CODE ASSUMES THE SOURCE SPATIAL DISTRIBUTION TO BE GAUSSIAN. IN PUT OPTIONS ALLOW THE USER TO CHOOSE SOURCE DECAY MODE, CLOUD THICKNESS, CLOUD WIND SPEED, CLOUD STABILITY CLASS, CLOUD DRIFT DIRECTION, AIR ATTENUATION AND BUILD-UP COEFFICIENTS AND SOURCE PHOTON ENERGIES. THE CODE-USERS REQUIREMENTS AND FORTRAN LISTING ARE GIVEN, ALONG WITH A SAMPLE INPUT AND OUTPUT. THE CODE WAS OPTIMIZED WITH RESPECT TO COMPUTER EXECUTION TIME.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA
22151, \$3.00 COPY, \$0.65 MICROFICHE

*AIRBORNE RELEASE + *COMPUTER PROGRAM + *DOSE + COMPUTER, DIGITAL

16-29170

BRADLEY WE + MARTIN GE
AIRBORNE PRECIPITATION COLLECTOR
ILLINOIS STATE WATER SURVEY, URBANA
COC-1199-11 +. 7 PAGES, J. APPL. METEOROL., 6, PAGES 717-23 (AUGUST 1967)

DESCRIBES A HIGH-VOLUME AIRBORNE PRECIPITATION COLLECTOR. THE DEVICE IS BEING USED TO DETERMINE IF RADIOACTIVE PARTICLES ARE WASHED FROM THE AIR BY PRECIPITATION BETWEEN CLOUD BASE AND THE SURFACE BY COMPARING THE ACTIVITIES OF SURFACE AND AIRBORNE SAMPLES. THE IMPLICATIONS OF ONE SET OF SAMPLES ARE SUMMARIZED.

*INSTRUMENT, AIR SAMPLING + *PARTICLE, RADIOACTIVE + *RAINOUT + *WASHOUT + AIRCRAFT +
COMPARISON, THEORY AND EXPERIENCE + METEOROLOGY + PRECIPITATION

16-29370

ARMSTRONG RH + MORRELL JR
WEATHER AND SURFACE RADIATION PREDICTION ACTIVITIES FOR THE STERLING EVENT - PROJECT STERLING
ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION, LAS VEGAS, NEV.
VUF-1C37 +. 28 PAGES, FIGURES, JULY 1968

IN SUPPORT OF PROJECT STERLING TECHNICAL AND SAFETY PROGRAMS, THE AIR RESOURCES LABORATORY-LAS VEGAS, LAS VEGAS, NEVADA, PROVIDED METEOROLOGICAL SERVICES WHICH INCLUDED THE COMPILATION OF CLIMATOLOGICAL SUMMARIES, A PROGRAM OF SURFACE AND UPPER-AIR METEOROLOGICAL OBSERVATIONS, AND THE PREPARATION OF WEATHER AND RADIATION PREDICTIONS. THESE SERVICES ARE DESCRIBED AND WEATHER AND RADIATION CHRONOLOGIES, RELEVANT TO SHOT-DAY, ARE RECOUNTED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151
\$3.00 COPY, \$0.65 MICROFICHE

*METEOROLOGICAL SUPPORT + *PLOWSHARE PROGRAM + HAZARDS ANALYSIS + METEOROLOGY + NUCLEAR DETONATION

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

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. DEcriES EXCESSIVE DEPENDENCE ON SUPERVISION, PROCEDURES OF PLANT SYSTEMS - AS MOST INCIDENTS OCCUR AS A 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

*TRAINING + REACTOR POWER

17-21434 ALSO IN CATEGORY 6
CALLIHAN D
EXCURSION AT THE OAK RIDGE CRITICAL EXPERIMENTS FACILITY, JANUARY 30, 1968
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.
ORNL-TM-2207 +. 13 PAGES, 1 FIGURE, JUNE 1968

A VOLUME OF AN AQUEOUS SOLUTION OF URANYL NITRATE, IN WHICH THE U-233 CONTENT OF THE URANIUM WAS 97.6%, WAS INADVERTENTLY MADE SUPER-PROMPT CRITICAL IN THE OAK RIDGE CRITICAL EXPERIMENTS FACILITY. THE FISSION YIELD WAS 1.1×10 TO THE 16TH. THERE WAS NEITHER INTERNAL NOR EXTERNAL MEASURABLE EXPOSURE OF ANY INDIVIDUAL TO RADIATION. THERE WAS NO PROPERTY DAMAGE OR MATERIAL LOSS. FISSION PRODUCTS DECAYED SUFFICIENTLY WITHIN 24 HOURS TO ALLOW UNRESTRICTED OCCUPANCY OF THE AFFECTED ROOM. SOLUTION CONTAINING AN ESTIMATED 15 G OF URANIUM WAS SPILLED INTO THE REFLECTOR-WATER TANK AS THE RESULT OF A DISLODGED RUBBER STOPPER.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

ACCIDENT, CRITICALITY + CRITICAL ASSEMBLY FACILITY + CRITICALITY EXPERIMENT + CRITICALITY SAFETY + INCIDENT, NONREACTOR

17-22546 ALSO IN CATEGORY 6
STEFANESCU A + WADE BO
REACTOR PHYSICS ASPECTS OF THE HARWELL RESEARCH REACTORS
ATOMIC ENERGY RESEARCH ESTABLISHMENT, HARWELL, ENG.
CONF-791 +. 22 PAGES, PP 31-52 OF RESEARCH REACTOR EXPERIMENTAL TECHNIQUES. BUCHAREST, EDITURA ACADEMIEI REPUBLICII SOCIALISTE ROMANIA, 1966. PAPER FROM STUDY GROUP ON RESEARCH REACTOR EXPERIMENTAL TECHNIQUES, BUCHAREST, OCT. 26-31, 1964

THE REACTOR PHYSICS CONSIDERATIONS NECESSARY TO ENSURE THE SAFETY AND EFFICIENT UTILIZATION OF THE HARWELL HIGH FLUX RESEARCH REACTORS AND TO SUPPORT THE DESIGN OF EXPERIMENTS AND THEIR ANALYSIS ARE REVIEWED, INCLUDING THE FORMULATION OF REACTIVITY BALANCES, FLUX MONITORING TECHNIQUES, AND THE TREATMENT OF FLUX DEPRESSIONS. THE USE OF A ZERO-ENERGY REACTOR TO ASSIST IN THE DESIGN OF EXPERIMENTS AND TO GIVE INSIGHT INTO THE PHYSICS OF THE HIGH FLUX REACTORS IS DISCUSSED. THE NEED FOR HIGH-SPEED DIGITAL COMPUTING IN THESE VARIOUS FIELDS IS ASSESSED.

*OPERATING EXPERIENCE SUMMARY + *REACTOR PHYSICS + DIDO (TR) + HARWELL + PLUTO (TR) + REACTOR, RESEARCH + REACTOR, TEST + UNITED KINGDOM

17-25228
RICCI T
PIQUA NUCLEAR POWER FACILITY DISMANTLEMENT SPECIFICATION FOR THE REACTOR COMPLEX
ATOMICS INTERNATIONAL
56 PAGES, 25 FIGURES, AUGUST 1968, DOCKET 115-2, TYPE--OCR, MFG-A.I., AE--A.I.

PROVIDES DETAILS AS TO PIPE REMOVAL, REWELDING AND SEALING REACTOR VESSEL AFTER FILLING WITH DRY SAND, ETC. VESSEL WILL PASS 5 PSI LEAK RATE TEST

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, 1717 H ST., WASHINGTON, D. C. 20545 (\$0.25 CENTS/PAGE)

*DECOMMISSIONING + MAIN COOLING SYSTEM + PIQUA (OCR) + PRESSURE VESSEL + REACTOR, ORGANIC COOLED + SEAL + TEST, LEAK RATE + WELDING

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-25229

SEYFRIT KV
APPLICATION FOR A DISMANTLEMENT ORDER FOR THE PIQUA NUCLEAR POWER FACILITY (LETTER TO P. A. MORRIS FROM SEYFRIT)
4 PAGES, LETTER TO P.A. MORRIS FROM K.V. SEYFRIT, SEPT. 3, 1968, DOCKET 115-2, TYPE--OCR, MFG--A.I., AE--A.I.

CONVEYS SUPPORTING DOCUMENTS PROVIDING BASIS FOR THE CONCLUSION THAT DISMANTLING WILL BE SAFE, REQUESTS PRESENT OPERATING AUTHORIZATION BE CANCELLED, AND DESCRIBES ADMINISTRATIVE CONTROLS TO BE FOLLOWED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, 1717 H ST., WASHINGTON, D. C. 20545 (\$0.25 CENTS/PAGE)

DECOMMISSIONING + PIQUA (OCR) + REACTOR, ORGANIC COOLED

17-25230

SILBERMAN M
PIQUA NUCLEAR POWER FACILITY DISMANTLEMENT - SPECIFICATION FOR CONCRETE ATOMICS INTERNATIONAL
10 PAGES, 2 DRAWINGS, AUGUST 1968, DOCKET 115-2, TYPE--OCR, MFG--A.I., AE--A.I.

FOR USE IN VARIOUS LOCATIONS.

AVAILABILITY - ATOMICS INTERNATIONAL

*CONCRETE + *QUALITY CONTROL + DECOMMISSIONING + PIQUA (OCR) + REACTOR, ORGANIC COOLED

17-25232

GERRARD M
LEAK DETECTION WITH RADIOISOTOPE TRACERS
ISOTOPES AND RADIATION TECHNOLOGY, VOL 6(1), PG 44-57, SEPT. 1968

100 REFERENCES DESCRIBED USE OF TRACERS FOR DETECTING LEAKS IN BURIED PIPES AND CABLE SHEATHS, CROSS STREAM UNITS SUCH AS HEAT EXCHANGERS AND AUTOMATIC TRANSMISSION SYSTEMS, VEHICLES, WATER CARRIER AND STORAGE SYSTEMS, HERMETICALLY SEALED COMPONENTS AND OTHER USES.

*PIPING + *TEST, LEAK LOCATION + *TRACER, RADIOACTIVE

17-25233

ALSO IN CATEGORY 12

MEHANN RO
NS SAVANNAH CORE COOLING INTERRUPTED DURING REFUELING OUTAGE
SAFE, INC., GALVESTON, TEX.
1 PAGE, ATOMIC ENERGY CLEARING HOUSE, 14(43), PAGE 29, (OCT. 21, 1968)

(LETTER, OCT. 7, 1968) THE SUCTION VALVE TO THE EMERGENCY COOLING WATER CIRCULATION PUMP WAS CLOSED BETWEEN 1330 AND 1518 HOURS ON SEPT. 30, 1968. A PROCEDURE WHICH WOULD HAVE AVOIDED THIS WAS NOT FOLLOWED BY THOSE PERFORMING MAINTENANCE ON THE VALVE. ANALYSIS INDICATES A NATURAL CIRCULATION FLOW PATH WAS ESTABLISHED AT 3.5 GPM/ELEMENT WITH A TEMP. RISE OF 15 F. PRIMARY SYSTEM TEMP RISE WAS LESS THAN 15 F, AND TEMP. TRANSIENT ON STARTING THE PUMP WAS 3 F.

*FAILURE, MAINTENANCE ERROR + *SHUTDOWN COOLING SYSTEM + CIRCULATION, NATURAL + FLOW BLOCKAGE + MAINTENANCE AND REPAIR + NS SAVANNAH (PWR) + REACTOR, PWR + TECHNICAL SPECIFICATIONS + TEMPERATURE TRANSIENT + VALVE

17-25237

FORD JD
MTR PROGRESS REPORT CYCLE NO. 279 JUNE 17, 1968 - JULY 7, 1968
IDAHO NUCLEAR CORPORATION
IN-1216 +. 23 PAGES, FIGURES, TABLES, AUGUST 1968

ONE OF A SERIES. TOPICS INCLUDE PLANT OPERATION AND SUMMARY OF THE IRRADIATION PROGRAM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

MTR (TR) + REACTOR, TEST + REPORT, OPERATIONS

17-25238

CONTROL ROD MALFUNCTIONS CAUSED BY FOREIGN MATERIAL
UNITED STATES ATOMIC ENERGY COMMISSION, DIVISION OF OPERATIONAL SAFETY
ROE 68-8 +. 2 PAGES, SEPTEMBER 1968

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-25238 *CONTINUED*

DESCRIBES FIVE INSTANCES THAT OCCURRED IN 1967, AND EMPHASIZED IMPORTANCE OF SYSTEM CLEANLINESS AND ACCOUNTABILITY OF PARTS THROUGHOUT PLANT LIFE. INCIDENT (1), A 1/2-IN. NUT MISSING FROM A REPLACEMENT PROGRAM FOR BEAM CLAMP BOLTS CONDUCTED 2 MONTHS PREVIOUSLY LODGED IN DRIVE MECHANISM. (2) AT BWR, 6 ROD MALFUNCTIONS CAUSED BY FOREIGN MATERIAL INTERFERING WITH LATCHING MECHANISM. (3) AT PWR, ROD STUCK AT FULLY INSERTED POSITION (FOREIGN MATTER IN GUIDE BLOCK). (4) AT PWR, ROD STUCK 16 IN. FROM FULL INSERT BECAUSE OF METAL OBJECT IN CONTROL ROD SNUBBER, PROBABLY FROM CONSTRUCTION. (5) AT A TRIGA REACTOR, TRANSIENT ROD STUCK FULLY WITHDRAWN (DIRT IN THE PNEUMATIC CYLINDER).

*CONTROL ROD DRIVE + *FAILURE, SCRAM MECHANISM + *OBSTRUCTION + OPERATING EXPERIENCE SUMMARY + REACTOR, BWR + REACTOR, PWR + REACTOR, RESEARCH + TRIGA (RP)

17-25239

CORROSIVE FAILURE OF UNDERGROUND ALUMINUM PIPE
UNITED STATES ATOMIC ENERGY COMMISSION, DIVISION OF OPERATIONAL SAFETY
ROE- 68-10 +. 3 PAGES, SEPTEMBER 1968

AT A POOL-TYPE RESEARCH REACTOR, DURING A PRESSURE TEST OF THE PRIMARY SYSTEM HOLDUP TANK, IT WAS DISCOVERED THAT WATER WAS LEAKING INTO A VALVE PIT. EXCAVATION REVEALED CORROSION OF THE 6061-T6 SCHEDULE-40 EXTRUDED AL PIPE BEYOND REPAIR. THE CORROSION ORIGINATED FROM THE OUTSIDE SURFACE FOLLOWING DETERIORATION OF THE SINGLE LAYER OF GLASS REINFORCED PROTECTIVE CRAFT PAPER APPLIED OVER 2 COATS OF BITUMINOUS ENAMEL. THE PIPE HAD BEEN BURIED 9 YEARS. THE PIPE WAS REPLACED WITH 304 STAINLESS STEEL, AND THE FLANGED CONNECTIONS INCORPORATE DIELECTRIC INSERTS IN THE BOLT HOLES FOR FLANGED CONNECTIONS BETWEEN DISSIMILAR METALS TO PROTECT AGAINST ELECTROLYTIC ACTION. RECOMMENDS FACILITIES USING ALUMINUM PIPE UNDERGROUND SHOULD INSTITUTE SURVEILLANCE PROGRAM.

*ALUMINUM + *FAILURE, PIPE + CORROSION + MAIN COOLING SYSTEM + MAINTENANCE AND REPAIR + MODIFICATION, SYSTEM OR EQUIPMENT + REACTOR, POOL TYPE + STEEL, STAINLESS + SURVEILLANCE PROGRAM

17-25240

HBWR QUARTERLY PROGRESS REPORT JANUARY TO MARCH 1968
NORWAY. INSTITUTT FOR ATOMENERGI
HPR-99 +. 117 PAGES, FIGURES, TABLES, REFERENCES, MAY 1968

FIVE FUEL TEST ASSEMBLED FAILED. ONE SLOW SCRAM WAS INITIATED DUE TO AN OPERATOR ERROR, ANOTHER DUE TO MISUNDERSTANDING BETWEEN OPERATOR AND EXPERIMENTER. OTHER TOPICS INCLUDE ANALYSIS OF XENON AND POWER-VOID EXPERIMENTS, COMPUTER CONTROL, AND THE FUEL TEST PROGRAM.

AVAILABILITY - USAEC DEPOSITORY LIBRARIES IN THE U.S. AND OVERSEAS

COMPUTER CONTROL + FAILURE, FUEL ELEMENT + FAILURE, OPERATOR ERROR + FUEL ELEMENT + HBWR (BWR) + IRRADIATION TESTING + P AND D PROGRAM + REACTIVITY EFFECT, VOID + REACTOR, BWR + REPORT, OPERATIONS + SCRAM, REAL + XENON

17-25241

MOVEMENT OF AN INSTRUMENTED FUEL ROD AT A RESEARCH REACTOR
UNITED STATES ATOMIC ENERGY COMMISSION, DIVISION OF OPERATIONAL SAFETY
ROE-68-9 +. 2 PAGES, SEPTEMBER 1968

DURING INSTALLATION OF AN EXPERIMENT, THE RIGHT ANGLE BEND AT THE TOP OF THE CONDUIT ON AN INSTRUMENTED FUEL ROD WAS PUSHED OVER ONE OF THE CONTROL ROD MAGNETS. THE REACTOR WAS BROUGHT CRITICAL AND THE ROD APPARENTLY RAISED 8.2 INCHES. THE REACTOR WAS BROUGHT CRITICAL A SECOND TIME AND PULSED FOR THE EXPERIMENT. THIS TIME THE ROD WAS RAISED 12 INCHES AND AN ANOMALOUSLY LOW FUEL TEMP WAS OBSERVED. AFTER THIS THE CRITICAL ROD POSITIONS WERE DIFFERENT. LIFTING THE ROD 8.2 IN. DECREASED REACTIVITY 95 CENTS. ANALYSIS AND CRITICALITY DATA INDICATES A 12 IN. LIFT DECREASES REACTIVITY \$1.70 TO \$1.90. AN UNCONTROLLED INSERTION OF REACTIVITY COULD HAVE TAKEN PLACE IF THE FUEL ROD HAD DROPPED BACK INTO CORE.

*OPERATING EXPERIENCE + FAILURE, DESIGN ERROR + FAILURE, OPERATOR ERROR + IN PILE EXPERIMENT + REACTIVITY EFFECT, ANOMALOUS + REACTOR, RESEARCH

17-26091

ALSO IN CATEGORY 9
UNIV. OF MISSOURI (ROLLA) CHANGE 1
USAEC, DIVISION OF REACTOR LICENSING
3 PAGES, LETTER TO D. THOMPSON FROM D. J. SKOVHOLT, DOCKET NO. 50-123

TO ALLOW CONTROL-ROD CALIBRATION (WHEN ALLOWABLE EXCESS REACTIVITY IS 3.5%), THE LIMIT OF AT LEAST AN 8% SHUTDOWN MARGIN IS REMOVED. THE NEW LIMITS REQUIRE THAT THE REGULATING ROD BE WORTH NO MORE THAN 0.7% AND THAT THE CORE BE AT LEAST 1% SUBCRITICAL WHEN REG. ROD AND MAXIMUM-WORTH SHIM ROD ARE WITHDRAWN.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM

*SHUTDOWN MARGIN + REACTOR, RESEARCH + SAFETY EVALUATION + TECHNICAL SPECIFICATIONS

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-27526 ALSO IN CATEGORIES 16 AND 15
BULLETIN OF COURSES, JULY 1967 TO JUNE 1968
U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
51 PAGES, 1968

THIRTY-ONE COURSES (1 DAY TO 3 WEEKS EACH) ARE OFFERED IN 5 AREAS. (1) BASIC TRAINING AND ORIENTATION - 6. (2) AIR QUALITY MANAGEMENT - 7. (3) PROCESS EVALUATION AND CONTROL - 8. (4) ATMOSPHERIC SAMPLING AND ANALYSIS - 8. (5) FIELD STUDIES - 5. *** ALTHOUGH PRIMARILY FOR NONREACTOR AIR POLLUTION, OF INTEREST TO REACTOR OPERATIONS PERSONNEL ARE METEOROLOGICAL ASPECTS OF AIR POLLUTION, DIFFUSION OF AIR POLLUTION - THEORY AND APPLICATION, AND MEASUREMENT OF AIRBORNE RADIOACTIVITY. COURSES ARE FREE BUT ATTENDANCE MAY BE LIMITED.

AVAILABILITY - CHIEF, TRAINING PROGRAM, NATIONAL CENTER FOR AIR POLLUTION CONTROL, 411 WEST CHAPEL HILL STREET, DURHAM, NORTH CAROLINA 27701

*TRAINING

17-27623 ALSO IN CATEGORY 6
LACROSSE STARTUP EXPERIENCE
ALLIS-CHALMERS, BETHSEDA, MD.
ACNP-67529 +. 29 PAGES, FIGURES, TABLES, JULY 1967, DOCKET 115-5, TYPE--BWR, MFG--A.C., AE--SGT + LUNDY

CRITICALITY WAS ACHIEVED ON JULY 11 WITH 10 ELEMENTS (8 PREDICTED). MOST OF THIS WAS ASCRIBED TO UNDERESTIMATES OF LEAKAGE OR CONTROL ROD WATER SLOT FLUX AND WAS REGAINED WITH ZIRCALOY CANS. IN THE BUILDUP, ROD POSITION AND DIFF. WORTH WERE PHONED TO A COMPUTER FOR CONFIRMATION OF SHUTDOWN MARGIN. SINCE SITE SDM CALCULATIONS WERE \$8-10, NO HALTS FOR COMPUTATION WERE NECESSARY. ***A VARIATION OF THE ROD DROP TECHNIQUE WAS USED TO CALIBRATE THE BANK DIFFERENTIAL WORTH. THE RODS ARE RUN IN FOR 2 SEC FROM THE CRITICAL POSITION, COUNT RATE DATA TAKEN FOR 1 MIN, AND THEN RUN IN. THE RATIO OF COUNT RATE BEFORE INSERTION TO THAT INTEGRATED 10-30 SEC AFTER INSERTION IS CONVERTED TO CENTS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, 1717 H ST., WASHINGTON, D.C. 20545 (\$0.25 CENTS/COPY)

*CONTROL ROD CALIBRATION + *SHUTDOWN MARGIN + DATA PROCESSING + LACROSSE (BWR) + REACTOR STARTUP TESTING + REACTOR, BWR + REPORT, OPERATIONS

17-27624 ALSO IN CATEGORY 9
FIFTH MONTHLY OPERATIONAL REPORT ON THE LA CROSSE BOILING WATER REACTOR
ALLIS-CHALMERS, BETHSEDA, MD.
ACNP-67535 +. 26 PAGES, FIGURES, TABLES, NOVEMBER 1967, DOCKET 115-5, TYPE--BWR, MFG--A.C., AE--SGT + LUNDY

FEEDWATER CHECK VALVE WAS INSTALLED TO SATISFY DRL. ON NOV. 24, POWER TESTING BEGAN WITH THE TEMP. COEF. TO 300 F, WHICH PROVED ALWAYS NEGATIVE. THE 4 ROD BANK WORTH IS EXPONENTIAL IN THE LOWER HEAVILY RODDED PORTION OF THE CORE BECAUSE THAT IS THE FLUX SHAPE. HEATING TO 430 F WITH NUCLEAR HEAT REQUIRED SLOWLY INCREASING NEUTRON FLUX READINGS BECAUSE OF INCREASING HEAT LEAKAGE AND INCREASED ION CHAMBER SENSITIVITY. THE TOTAL TEMPERATURE DEFECT FROM 80 TO 410 F IS \$4.88, WITH THE COEFFICIENT BECOMING NONLINEAR ABOVE 330 F. DURING CONTROL ROD POSITION POWER LEVEL TESTS, THE NUCLEAR INSTRUMENT CALIBRATION (MW/MICRO-AMP) WERE SHOWN TO PEAK AT 5.37 AND DECREASE AT HIGHER/LOWER POWER DUE TO THE UNCOVERING EFFECT OF THE CONTROL RODS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, 1717 H ST., WASHINGTON, D.C. 20545 (\$0.25 CENTS/COPY)

*INSTRUMENT, ABNORMAL INDICATION + *INSTRUMENT, POWER RANGE + INSTRUMENT CALIBRATION + LACROSSE (BWR) + REACTOR, BWR + REPORT, OPERATIONS

17-27625
SCRAM CAUSED BY AIR DRYER PLUGGING
YANKEE ATOMIC ELECTRIC COMPANY, BOSTON, MASSACHUSETTS
7 PAGES, 2 FIGURES, 1 TABLE, YANKEE OPERATIONS REPORT 83 FOR NOVEMBER 1967, DECEMBER 22, 1967, DOCKET 50-29, TYPE--PWR, MFG--WEST., AE--STONE + WEBSTER

ON NOV. 6 THE COOLANT BORON WAS REDUCED TO 4 PPM, AND ON NOV. 15 THE END OF CORE LIFE WITHOUT PH ADJUSTMENT WAS REACHED AND STRETCHOUT OPERATION BEGUN. ***ON NOV. 13, A MECHANICAL MALFUNCTION OF THE AIR DRYER PLUGGED THE AIR OUTLET PORT'S TO THE INSTRUMENT AIR HEADER. THE RESULTANT TOTAL LOSS OF INSTRUMENT AIR CAUSED A TRIP OF THE HEATER DRAIN AND BOILER FEED PUMPS, CAUSING A TURBINE TRIP BECAUSE OF LOW STEAM GENERATOR LEVEL. ***DATA GIVEN ON OXYGEN, NITROGEN, AND HYDROGEN FRACTIONS IN PRESSURIZER FOR BORATED AND UNBORATED CONDITIONS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, 1717 H ST., WASHINGTON, D.C., 20545 (\$0.25 CENTS/COPY)

*CHEMICAL SHIM + *RADIOLYTIC GAS + *SCRAM, REAL + AIR CLEANING + FUEL BURNUP + PRESSURIZER + REACTOR, PWR + REPORT, OPERATIONS + YANKEE (PWR)

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-27626 ALSO IN CATEGORY 6

YANKEE REACTIVITY ANOMOLY

YANKEE ATOMIC ELECTRIC COMPANY, BOSTON, MASSACHUSETTS

1 PAGE. PAGE 1 OF YANKEE OPERATION REPORT 84 FOR DECEMBER 1967, JANUARY 22, 1968 DOCKET 50-29, TYPE--PWR, MFG--WEST., AE--STONE + WEBSTER

AMMONIATION OF THE MAIN COOLANT (USING AMMONIATED CATION RESIN) GAVE A REACTIVITY INCREASE OF 0.23 PERCENT, ONE THIRD THAT EXPECTED. INVESTIGATION SHOWED A DECREASED FUEL BURNUP RATE BEGINNING AT 6100 MWD/MTU, WHEN MISCALCULATION GAVE AN OVERCHARGE OF HYDRAZINE PRIOR TO THE JULY PLANT HEATUP. RADIOLYTIC DECOMPOSITION GAVE 70 PPM AMMONIA IN COOLANT AND A CRUD BURST. THE AMMONIA AND CRUD WERE REMOVED IN 3 DAYS, BUT THE DECREASED BURNUP RATE GAVE 0.2 PERCENT DK/K INCREASE BY THE END OF CORE LIFE. EFFECT OF THIS OCCURENCE ON COPE REACTIVITY BEHAVIOR CANNOT BE DEFINED YET. ***15 PERCENT OF THE DETERIORATED PHENOLIC COATING OF THE SPENT-FUEL PIT HAS BEEN SANDBLASTED OFF.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, 1717 H ST., WASHINGTON, D.C. 20545 (\$0.25-CENTS/COPY)

*CHEMICAL SHIM + *COATING, SURFACE + *PH REACTIVITY EFFECT + COOLANT CHEMISTRY + CRUD + FUEL BURNUP + FUEL STORAGE + INCIDENT, HUMAN ERROR + MAINTENANCE AND REPAIR + POISON, SOLUBLE + REACTIVITY EFFECT, ANOMALOUS + REACTOR, PWR + REPORT, OPERATIONS + SURFACE FILM DEPOSIT + YANKEE (PWR)

17-27627 ALSO IN CATEGORY 14

YANKEE COVER GAS RELEASE

YANKEE ATOMIC ELECTRIC COMPANY, BOSTON, MASSACHUSETTS

11 PAGES, 2 FIGURES, 1 TABLE, YANKEE OPERATIONS REPORT 84 FOR DECEMBER 1967, JANUARY 22, 1968, DOCKET 50-29, TYPE--PWR, MFG--WEST., AE--STONE + WEBSTER

ON DEC. 1, THE FIFTH CORE VI AIR CHARGE (1000 LB) WAS COMPLETED. THE CONTAINMENT LEAK RATE FOR THE PREVIOUS 120 DAYS WAS 0.013 PERCENT/DAY. ***ON DEC. 6, ERRATIC PROCESS BEHAVIOR DURING A ROUTINE EVAPORATION OF CLASS 1 LIQUID LED TO AN EVAPORATOR SHUTDOWN. VALVING OUT STEAM TO THE REBOILER CREATED A PARTIAL VACUUM, PULLING IN COVER GAS. WHEN THE STEAM VALVE WAS OPENED, PRESSURE INCREASED TO 18 PSI, AND THEN THE VENT WAS OPENED, RELEASING 30 CU. FT OF COVER GAS CONTAINING 0.28 MILLICURIE OF MIXED AR, XE, AND TRITIUM.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, 1717 H ST., WASHINGTON, D.C., 20545 (\$0.25 CENTS/COPY)

*AIRBORNE RELEASE + *TEST, LEAK RATE + CONTAINMENT, HIGH PRESSURE + EVAPORATION + FAILURE, OPERATOR ERROR + REACTOR, PWR + REPORT, OPERATIONS + WASTE TREATMENT, LIQUID + YANKEE (PWR)

17-27710 ALSO IN CATEGORY 18

KEWAUNEE ANSWERS DRL INFORMAL DISCUSSION OF FEB. 2, 1968

WISCONSIN PUBLIC SERVICE CORPORATION

150 PAGES, FIGURES, TABLES, AMENDMENT 2 TO KEWAUNEE LICENSE APPLICATION, FEB. 14, 1968, DOCKET NO. 50-305, TYPE--PWR, MFG--WEST., AE--PIONEER SERV.

PROVIDES REVISED PSAR PAGES FOR THE FOLLOWING - (SECT. 7) PART LENGTH CONTROL RODS, COMPLIANCE WITH IEEE STANDARD, POST-LOCA INSTRUMENTATION, PROTECTION SYSTEM. (SECT 14) SMALL BREAK IN RCS, REACTIVITY TRANSIENT FOR STEAM BREAK WITH TUBE RUPTURE. (SECT. 13) DNBR GREATER THAN 1.2 DURING INITIAL STARTUP. (SECT. 5) EARTHQUAKE DESIGN TO 0.06 AND 0.12 G, CONTAINMENT PENETRATION, COOLANT SYSTEM MISSILE PROTECTION, LEAKAGE THROUGH JOINTS, METHODS OF ANALYSIS FOR MISSILE IMPACT ON BUILDINGS. (APPENDIX P) - SHIELD BUILDING VENT SYSTEM PERFORMANCE STUDY AND EVALUATION OF EFFECT ON OFFSITE DOSES. TOPICAL REPORTS - (WCAP 7125) IRRADIATION PROGRAM FOR HI PERFORMANCE FUEL, AND (WCAP 3269-66) SAN ONOFRE STARTUP TEST RESULTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

CONTAINMENT DESIGN + FUEL ELEMENT + IRRADIATION TESTING + KEWAUNEE (PWR) + MISSILE GENERATION AND PROTECTION + REACTOR STARTUP TESTING + REACTOR, PWR + REPORT, PSAR

17-27774 ALSO IN CATEGORIES 9 AND 6

ZINIUK MA + WILBER HA

SCRAM TESTS TO DETERMINE SHUTDOWN TRANSIENT CHARACTERISTICS OF THE ENRICO FERMI REACTOR AND ASSOCIATED HEAT TRANSPORT SYSTEM

ATOMIC POWER DEVELOPMENT ASSOCIATES, INC., DETROIT, MICH.

APDA-NTS-15 +. 45 PAGES, 8 FIGURES, 7 TABLES, 4 REFERENCES, APRIL 1968

REACTOR OUTLET TEMPERATURE FLUCTUATION AFTER 67 MWD OPERATION BEGAN 15 SEC AFTER SCRAM AND LASTED TIL 220 SEC. THE RATE WAS 44 F/SEC, OVER A CHANGE OF 76 F. TIME CONSTANTS AND TRANSPORT LAGS WERE DETERMINED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*INSTRUMENT, TEMPERATURE + *SCRAM, REAL + *TEST, INSTRUMENT RESPONSE + FERMI (LMFBR) + MAIN COOLING SYSTEM + REACTOR, LMFBR + REPORT, OPERATIONS ANALYSIS + RESPONSE TIME + TEMPERATURE TRANSIENT

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-27775 ALSO IN CATEGORY 6
MUELLER RE + WILBER HA
POWER COEFFICIENT MEASUREMENTS FOR THE ENRICO FERMI REACTOR. ENRICO FERMI ATOMIC POWER PLANT NUCLEAR TEST SERIES
ATOMIC POWER DEVELOPMENT ASSOCIATES, INC., DETROIT, MICH.
APDA-NTS-9 +. 75 PAGES, 10 FIGURES, 12 TABLES, 22 REFERENCES, NOV. 1967

TESTS WERE MADE OF CONTROL ROD POSITION RESPONSE TO POWER INCREASE/DECREASE, WITH 2 OR 3 LOOP FLOW, FOR POWERS OF 1.3, 2.0, 13.3, 20, 66.7 AND 100 MWTH. COEFFICIENTS ARE ABOUT 28% SMALLER THAN PREDICTED. FLOW DEPENDENCE SHOWS VERY LITTLE FEEDBACK INDEPENDENT OF FLOW. THE 20-MWTH 3-LOOP COEFFICIENT VALUE IS STILL INCONSISTANT. RELIABLE INLET TEMPERATURE DATA HAVE ELIMINATED THE HYSTERESIS EFFECT BETWEEN POWER INCREASE/DECREASE. CHANGES IN ANALYSIS WERE - INCREASED VALUE OF COMPONENTS DEPENDENT ON CORE SODIUM WORTH, DECREASE IN CORE FUEL PIN AXIAL EXPANSION COEFFICIENT, DECREASE IN RADIAL EXPANSION COEFFICIENT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA, 22151, \$3.00 COPY, \$0.65 MICROFICHE

*POWER COEFFICIENT + *TEST, PHYSICS + COMPARISON, THEORY AND EXPERIENCE + FERMI (LMFBR) + FLOW STABILITY + REACTIVITY EFFECT, EXPANSION + REACTOR, LMFBR + REPORT, OPERATIONS ANALYSIS

17-27776
COMPILATION OF CURRENT TECHNICAL EXPERIENCE AT ENRICO FERMI ATOMIC POWER PLANT, DECEMBER 1967
ATOMIC POWER DEVELOPMENT ASSOCIATES, INC., DETROIT, MICH. POWER REACTOR DEVELOPMENT CO., DETROIT, MICH.
DETROIT EDISON CO., MICH.
APDA-CFE-17 +. 37 PAGES, 11 FIGURES, DEC. 1967

DIMENSIONS OF THE UNIDENTIFIED FOREIGN OBJECT WERE ESTIMATED AND SKETCHES REPRODUCED HERE. TOOLS AND VIEWING DEVICES WERE MODIFIED BASED ON USAGE. A SAMPLE OF THE OBJECT TAKEN. AN INDEX TO PAST REPORTS 1 THRU 17 IS MADE, USING OPERATIONALLY SIGNIFICANT TERMS LIKE GALLING.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

*REMOTE MANIPULATING AND VIEWING + FERMI (LMFBR) + REACTOR, LMFBR + REPORT, OPERATIONS

17-27785 ALSO IN CATEGORIES 15 AND 14
TRAINING MANUAL - OCCUPATIONAL RADIATION PROTECTION
U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE, PUBLIC HEALTH SERVICE
100 PAGES, FIGURES, TABLES, REFERENCES, 1966

A SET OF COURSE NOTES FOR 45 LECTURES IN THE GENERAL SUBJECT AREAS OF - I. RADIATION PROTECTION PHILOSOPHY (1). II. RADIATION EXPOSURE, CRITERIA, AND EVALUATION (2). III. RADIONUCLIDE APPLICATIONS IN INDUSTRY AND MEDICINE (3). IV. RADIATION PROTECTION AND SHIELDING (2). V. PROTECTION, INTERNAL EXPOSURE (5). VI. NEUTRON PROTECTION (2). VII. RADIATION ACCIDENT MONITORING (6). VIII. HIGH ENERGY MACHINE PRODUCED RADIATION (3). IX. PERSONNEL INSTRUMENTS (1). X. INDUSTRIAL X-RAY (3). XI. LEGAL AND REGULATORY ASPECTS (7). XI LABORATORY EXERCISES (10). ***FOR USE IN A TWO WEEK COURSE PRESENTED BY NCRPH.

AVAILABILITY - NATIONAL CENTER FOR RADIOLOGICAL HEALTH, ROCKVILLE, MARYLAND 20852

*HEALTH PHYSICS TRAINING + ACCELERATION + RADIATION SAFETY AND CONTROL + REACTOR, POWER + REACTOR, RESEARCH + SURVEY, RADIATION, EMERGENCY + TRAINING + X-RAY

17-27810 ALSO IN CATEGORIES 15 AND 16
SMITH M
RECOMMENDED GUIDE FOR THE PREDICTION OF THE DISPERSION OF AIRBORNE EFFLUENTS
THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS, NEW YORK, N.Y.
85 PAGES, FIGURES, TABLES, MAY, 1968

THIS GUIDE IS AN OUTGROWTH OF A MEETING OF ASME COMMITTEE ON AIR POLLUTION CONTROLS, A DIVISION OF THE POWER DEPARTMENT, HELD ON DEC. 2, 1964. THE FOLLOWING CHAPTERS PRESENT THE OVERALL SCOPE OF THE VOLUME - (CHAPTER 1) METEOROLOGICAL FUNDAMENTALS. (CHAPTER 2) BEHAVIOR OF AIRBORNE EFFLUENTS. (CHAPTER 3) CALCULATION OF EFFECTIVE STACK HEIGHT. (CHAPTER 4) CALCULATIONS OF DISPERSION AND DEPOSITION. (CHAPTER 5) SOURCES OF DATA AND EXPERIMENTAL METHODS. (CHAPTER 6) CALCULATION METHODS AND EXAMPLES.

AVAILABILITY - THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS, UNITED ENGINEERING CENTER, 345 EAST 47TH STREET, NEW YORK, N.Y. 10017

*METEOROLOGY + *TRAINING + ATMOSPHERIC DIFFUSION + ATMOSPHERIC STABILITY + DEPOSITION + DISPERSION + HEIGHT OF RISE + INSTRUMENT, METEOROLOGICAL + PLUME BEHAVIOR, GENERAL + STACK

17-27829

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-27829 *CONTINUED*
PRESSURIZED WATER REACTOR (PWR) PROJECT
BETTIS ATOMIC POWER LABORATORY
WAPD-MRP-124 +. FIGURES, TABLES, APRIL 1968

CORE HAS EXCEEDED DESIGN LIFE BY 13%. CORE PRESSURE DROP INCREASED ONLY AT 0.04 PSIA/DAY. REFUELING PREPORTIONS PROCEED. NEAR END OF LIFE A TEST WILL BE MADE ON WHETHER OH RADICAL OR NH₃ IS RESPONSIBLE FOR BENEFICIAL HIGH PH EFFECT. DEGASIFICATION REQUIREMENTS (HOURS/DAY) VS PH SHOW 0.2 (AT 10.0), 3.0 (AT 10.2), AND 13.4 (AT 10.4). XENON TRANSIENT TEST MADE AT 10,745 EFPH.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*COOLANT CHEMISTRY + *PH REACTIVITY EFFECT + REACTOR, PWR + REPORT, OPERATIONS ANALYSIS + SHIPPINGPORT (PWR) + SURFACE FILM DEPOSIT + XENON

17-27830 ALSO IN CATEGORY 15
FUNDAMENTALS OF RADIATION SAFETY FOR NERVA TEST OPERATIONS PERSONNEL
WESTINGHOUSE ELECTRIC CORP. + AEROJET-GENERAL CORP.
NTO-T-0022 +. 83 PAGES, FIGURES, APRIL 1967

(I) CHARACTERISTICS OF RADIATION, 12 PAGES. (II) MEASUREMENT OF RADIATION, 5 PAGES. (III) BIOLOGICAL HAZARDS OF RADIATION, 14 PAGES. (IV) PRINCIPLES OF RADIATION DETECTION, 19 PAGES. (V) PROTECTION FROM RADIATION. ***ANOTHER REHASH OF THE USUAL MATERIAL. SUITABLE INTRODUCTORY TRAINING MATERIAL FOR LOWER GRADE OPERATIONS AND MAINTENANCE PERSONNEL.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*HEALTH PHYSICS TRAINING + NERVA PROGRAM

17-27837 ALSO IN CATEGORIES 10 AND 9
HUMBOLDT BAY OPERATIONS REPORT, JAN. 1 THRU JUNE 30, 1968
PACIFIC GAS AND ELECTRIC COMPANY
12 PAGES, TABLES, LETTER TO DRL, AUGUST 19, 1968, DOCKET 50-133, TYPE--BWR, MFG--G.E., AE--RECHTEL

AIR-EJECTOR ACTIVITY HAS DECREASED FROM 0.044 TO 0.0384 C/SEC AT 210 MWTH, AS TRAMP URANIUM HAS DECREASED. CONTAINMENT CONTINUOUS LEAK RATE IS 0.067 W/D PER DAY AT 20 IN. WATER GAGE. RADIOLYTIC GAS PRODUCED IS 0.03 SCFM/MWTH. OUTAGES DUE TO SCRAMS WERE FROM (1) TREE FELL ACROSS 110 KV LINE, (2) MIST FALLING ON SALT DEPOSITED ON OCB BUSHINGS CAUSED A FLASHOVER AND COMPLETE LOAD REJECTION, (3) FREQUENCY UPSET CAUSED MG SET MALFUNCTION AFTER A LIGHTNING STRIKE, (4) DURING A QUICK LOAD PICKUP TEST WITH SOME STEAM BYPASS, THE PRESSURE SAGGED ENOUGH FOR WATER IN THE LEVEL COLUMN TO FLASH. THE HIGH LEVEL INDICATION CAUSED LOW FEEDWATER FLOW AND THEN A LOW WATER LEVEL SCRAM.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, 1717 H ST., WASHINGTON, D.C. 20545, (50.25 CENTS/COPY)

*INSTRUMENT, ABNORMAL INDICATION + *OFF GAS + *RADIOLYTIC GAS + ACCIDENT, LOAD REJECTION + GENERATOR, BATTERY + HUMBOLDT BAY (BWR) + INCIDENT, EQUIPMENT + INSTRUMENT, LIQUID LEVEL DETECTION + PRESSURE VESSEL + REACTOR, BWR + REPORT, OPERATIONS SUMMARY + SCRAM. REAL

17-27905 ALSO IN CATEGORY 6
THIE JA
ELK RIVER CYCLE-3 FUEL CALCULATIONS
RURAL COOPERATIVE POWER ASSOCIATION
JAT-67-4 +. 40 PAGES, TABLES, ELK RIVER REACTOR SAFETY ANALYSIS MONTHLY REPORT, APRIL 1967

FLARE CALCULATIONS (USING INPUT CARDS FROM ACNP-66522 STUDY) WERE USED TO GIVE 4 LOADINGS, TO BE PLACED IN CORE FOR THIRD CYCLE. ELEMENTS THAT WOULD HAVE TO BE DISCHARGED WILL BE RETAINED FOLLOWING CORE SIZE INCREASE FROM 148 TO 163 ELEMENTS. THE 4TH LOADING (ALL FRESH ELEMENTS PLACED IN CENTER, EXCEPT USED ELEMENTS IN CENTRAL FOUR POSITIONS) GIVES SATISFACTORY SHUTDOWN MARGINS, POWER DISTRIBUTIONS, AND MORE REACTIVITY THAN CYCLE 2. CYCLE 2 SHOWED CALCULATIONS ARE OPTIMISTIC BY 3700 MWD AT END OF 13,200 LIFE, AND CENTER ROD COMES OUT FASTER AFTER 49 IN.

AVAILABILITY - J. A. THIE, RURAL COOPERATIVE POWER ASSOCIATION

*REFUELING + ELK RIVER (BWR) + POWER DISTRIBUTION + REACTOR, BWR + SAFETY REVIEW + SHUTDOWN MARGIN

17-27906 ALSO IN CATEGORIES 9 AND 6
WORTHINGTON JT
DEVELOPMENT PROGRAM ON THE GARIGLIANO NUCLEAR REACTOR. QUARTERLY REPORT NO. 10
GENERAL ELECTRIC COMPANY, SAN JOSE
GEAP-5517 + EURAEC-1907 +. 32 PAGES, 10 FIGURES, JULY 1967

DOCUMENT REPORTS ANALYSES (EARLY IN 1967) OF STABILITY TESTS MADE MAY 20-31, 1966. POWER PLOTS, VERTICAL NEUTRON FLUX DISTRIBUTIONS AND TRANSFER FUNCTIONS GIVEN. SUB-ROUTINES MOST

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-27906 *CONTINUED*

APPROPRIATE FOR THE CALCULATIONS ARE DESCRIBED, AS IS AN ERROR ANALYSIS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*REACTOR STABILITY + COMPARISON, THEORY AND EXPERIENCE + ERROR ANALYSIS + FLUX DISTRIBUTION +
GARIGLIANO (BWR) + NOISE ANALYSIS + REACTOR STARTUP EXPERIENCE + REACTOR, BWR +
REPORT, OPERATIONS ANALYSIS + TRANSFER FUNCTION

17-27971 ALSO IN CATEGORIES 11 AND 12

HINKLE WD

ANALYSIS OF THE HEAT REMOVAL CAPABILITY OF THE CONTAINMENT AIR COOLING UNITS FOLLOWING A LOSS OF COOLANT
INCIDENT
CONNECTICUT YANKEE ATOMIC POWER COMPANY, HADDAM
NYO-3250-9 + CYAP-102 +. 29 PAGES, FIGURES, REFERENCES, DECEMBER 30, 1966

USED METHOD BASED ON CCLBURN AND HOUGEN, WITH PARTICULAR ATTENTION TO THE 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 RATES ARE 5% ABOVE THOSE RATES IN CONTAINMENT DESIGN (AS LONG AS PRESSURES ARE
ABOVE 20 PSIG).

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*CONTAINMENT AIR COOLING + *THERMAL ANALYSIS + ACCIDENT, LOSS OF COOLANT + CONTAINMENT DESIGN +
HADDAM NECK (PWR) + HEAT TRANSFER, CONDENSATION + MATHEMATICAL TREATMENT + REACTOR, PWR

17-27972

THIRTEENTH ANNUAL PROGRESS REPORT OF THE PENNSYLVANIA STATE UNIVERSITY NUCLEAR REACTOR FACILITY. JULY 1,
1967 TO JUNE 30, 1968
PENNSYLVANIA STATE UNIVERSITY
50 PAGES, 5 TABLES, 44 REFERENCES, JUNE 30, 1968, DOCKET 50-5

ON AN AVERAGE DAY, THERE WERE 9 SAMPLES, 5 EXPERIMENTERS USING REACTOR 13.5 HRS/DAY. THREE
MILE ISLAND PWR CREW WAS GIVEN PHASE-I TRAINING. 20 ENROLLEES BEGIN UNDERGRADUATE NUCLEAR
ENGINEERING COURSE WORK SEPT. 1968. LISTS THESES PRODUCED AND RESEARCH PROJECTS USING CO-60
AND REACTOR RADIATION. (USE OF A REACTIVITY OSCILLATION TO SEPARATE PROMPT AND DELAYED GAMMA
RAYS, USE OF HIGHLY COLLIMATED GAMMA DETECTORS TO LOCATE DISTURBANCES OF 40 MILLICENTS 5 IN.
INTO A TRIGA CORE, CU-AL FOIL FOR SIMULTANEOUS FAST AND THERMAL NEUTRON FLUX DETECTION,
SURVEY OF UNDERWATER POWER REACTOR APPLICATIONS, EFFECT OF GAMMA ON NUCLEATE BOILING
NUCLEATION, DESIGN OF A PNEUMATIC SAMPLE IRRADIATION FOR PULSED NEUTRON WORK).

*REPORT, OPERATIONS SUMMARY + NUCLEATE BOILING + OSCILLATOR, REACTIVITY + REACTOR, RESEARCH +
SITING, OFF SHORE + TRAINING

17-27973 ALSO IN CATEGORY 9

COCHRAN JC

L-77 SCRAM CIRCUIT INCAPACITATED

ATOMICS INTERNATIONAL, CANOGA PARK, CALIFORNIA

LETTER TO R. L. DOAN, DIV. OF REACTOR LICENSING, 2 PAGES, JUNE 19, 1964, DOCKET 50-94

ON AN APRIL 29, 1964, STARTUP CHECKOUT WITH LOW WATER LEVEL, THE ONLY WAY OF SCRAMMING WAS BY
TURNING OFF CONSOLE POWER. THE SPDT MERCURY SWITCH ON THE WATER LEVEL FLOAT MADE CONTACTS AT
THE SAME TIME DUE TO THE SLOW DROP OF WATER LEVEL, ALLOWING CURRENT TO FLOW THRU BOTH SCRAM
AND ANNUNCIATOR CIRCUITS. THUS ANNUNCIATOR CURRENT KEPT SCRAM RELAY ENERGIZED. ISOLATING
DIODES WERE ADDED TO ANNUNCIATOR CIRCUITS. SCRAM RELAYS AND CONTACTS WERE MODIFIED.

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

FAILURE, DESIGN ERROR + INCIDENT, EQUIPMENT + INDEPENDENCE + INSTRUMENT, INDEPENDENT +
INSTRUMENT, LIQUID LEVEL DETECTION + REACTOR SAFETY SYSTEM + REACTOR, POOL TYPE + REACTOR, POWER +
REACTOR, RESEARCH + WATER BOILER (RR)

17-28127 ALSO IN CATEGORY 13

GLCVERBOX EXPLOSION CAUSES \$42,000 DAMAGE AND PLUTONIUM 238 CONTAMINATION SPREAD

U.S. ATOMIC ENERGY COMMISSION

10 PAGES, 5 FIGURES, SERIOUS ACCIDENTS ISSUE NO. 292, AUGUST 26, 1968

PRESS RELEASE OF ACCIDENT IN WHICH THREE EMPLOYEES RECEIVED PLUTONIUM UPTAKE. FACILITIES AND
OPERATIONS DESCRIBED BRIEFLY. FINDINGS DISCUSSED.

*ACCIDENT, GENERAL + *FUEL CONVERSION + *FUEL REPROCESSING + *GLOVE BOX + *RADIOISOTOPE +
AIRBORNE RELEASE + EXPLOSION + INHALATION + PLUTONIUM + RADIOACTIVITY RELEASE

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-28128 ALSO IN CATEGORY 13
LETTER, NFS TO DIVISION OF MATERIAL LICENSING (AEC)
NUCLEAR FUEL SERVICES, INC.
2 PAGES, LETTER TO J. A. MCBRIDE FROM E. D. NORTH, SEPTEMBER 10, 1968, DOCKET 50-201

BRIEF DISCUSSION OF FINDINGS OF STUDIES SURROUNDING FAILURE OF DISSOLVER OFF-GAS FILTER.
AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.
*FILTER, DAMAGED + *FUEL REPROCESSING + *NFS + FILTER, HIGH EFFICIENCY + WASTE TREATMENT, GAS

17-28129 ALSO IN CATEGORY 13
LETTER, NFS TO DIVISION OF MATERIALS LICENSING (AEC)
NUCLEAR FUEL SERVICES, INC.
2 PAGES, LETTER TO J. A. MCBRIDE FROM E. D. NORTH, SEPTEMBER 9, 1968, DOCKET 50-201

BRIEF DISCUSSION OF THREE PROPOSALS FOR DISPOSING OF LOW-LEVEL LIQUID WASTE FROM PLANT UNDER CONSIDERATION.
AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.
*FUEL REPROCESSING + *NFS + SOLVENT EXTRACTION PROCESS + WASTE DISPOSAL, LIQUID

17-28134
HEALTH AND SAFETY GUIDE
UNIVERSITY OF CALIFORNIA, BERKELEY
UCRL-17933 +. 40 PAGES, JUNE 1968

CONTAINS EXAMPLES OF RECOMMENDED PRACTICES AND GENERAL SAFETY INFORMATION FOR LRL. DESCRIBES MEDICAL SERVICES AT LRL, HEALTH PHYSICS APPROACH TO PROBLEMS OF ACCELERATOR RADIATION MEASUREMENT AND SHIELDING, PERSONNEL MONITORING AND GUIDE-LINES FOR FILM BADGE USE. SAFETY SERVICES INCLUDE ASSISTING RADIOISOTOPE USERS, FIRE AND INDUSTRIAL SAFETY, INJURY AND ACCIDENT PROCEDURES AND TREATMENT, INDUSTRIAL HYGIENE AND TECHNOLOGY. THOROUGH INDEX INCLUDED.
AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFILM
*INDUSTRIAL SAFETY + *PROCEDURES AND MANUALS + *RADIATION SAFETY AND CONTROL +
*SAFETY PRINCIPLES AND PHILOSOPHY + ACCELERATOR + EMERGENCY PROCEDURE + FIRE + LRL + SAFETY PROGRAM

17-28172
SCHUMAN SD
WESTINGHOUSE SPECIAL COURSE IN NUCLEAR AND PWR TECHNOLOGY
WESTINGHOUSE ATOMIC POWER DIVISION, PITTSBURGH, PA.
WCAP-7206 +. 21 PAGES, JUNE 1968

SAME AS GIVEN SRO CANDIDATES WITHOUT HARDWARE AND OPERATIONAL PHASES. PROVIDES DAILY LESSON OUTLINE FOR PHASE A (6 WEEKS CLASS ROOM LECTURES, 2 WEEKS DEMONSTRATION AND OPERATION OF 100 KW RESEARCH REACTOR, 1 WEEK REVIEW AND FINAL EXAM) AND PHASE B (2 WEEKS ORIENTATION ON AND 6 WEEKS STUDY OF SYSTEMS PURPOSE AND FUNCTION AT SAXTON 25-MWTH PWR).
AVAILABILITY - WESTINGHOUSE ATOMIC POWER DIVISION, P. O. BOX 355, PITTSBURGH, PA. 15230
*TRAINING + REACTOR, POWER + REACTOR, PWR + SAXTON (PWR)

17-28173
SCHUMAN SD
WESTINGHOUSE REACTOR OPERATOR TRAINING PROGRAM
WESTINGHOUSE ATOMIC POWER DIVISIONS
WCAP-7170 REV. I +. 57 PAGES, JULY 1968

PROVIDES SHORT INTRODUCTORY DESCRIPTION OF (1) INTRODUCTION, INTENT TO TRAIN STAFF WHO WILL GET AEC CANDIDATE LICENSE, (2) SELECTION TEST ASSISTANCE, (3,4) SCHEDULE. PROVIDES DETAILED CURRICULUM OUTLINE FOR (5) PHASE I-LECTURES AND RESEARCH REACTOR DEMONSTRATIONS, (6) PHASE-II LECTURES AND ON SHIFT EXPERIENCE AT SAXTON PWR, (7) PHASE-III LECTURES ON SPECIFIC CUSTOMERS PLANT DESIGN AND OPERATION, (8) PHASE-IV ONSITE TRAINING.
AVAILABILITY - WESTINGHOUSE ATOMIC POWER DIVISION, P. O. BOX 355, PITTSBURGH, PA. 15230
*TRAINING + REACTOR, PWR + SAXTON (PWR)

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-28433 ALSO IN CATEGORY 14

GOLDMAN MI

UNITED STATES EXPERIENCE IN MANAGEMENT OF GASEOUS WASTES FROM NUCLEAR POWER STATIONS
NUS CORPORATION

SM-110 +. 1 PAGE, PAGE 42 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE
IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

MANAGEMENT OF GASEOUS WASTES FROM NUCLEAR POWER STATIONS HAS BEEN A MATTER OF CONCERN TO THE REGULATORY ARM OF THE UNITED STATES ATOMIC ENERGY COMMISSION AND TO THE ELECTRIC UTILITIES RESPONSIBLE FOR THE SAFE OPERATION OF THESE STATIONS. OPERATING EXPERIENCE FOR EIGHT NUCLEAR GENERATING STATIONS HAS BEEN ACCUMULATED AND EVALUATED IN TERMS OF SYSTEM PERFORMANCE, ATMOSPHERIC DILUTION AND ENVIRONMENTAL CONSEQUENCES. THE RESULTS OF THIS STUDY SHOW THAT THE MANAGEMENT OF GASEOUS WASTES FROM NUCLEAR POWER STATIONS HAS WITHOUT EXCEPTION BEEN WELL BELOW THOSE LEVELS OF RADIOACTIVITY WHICH WOULD EXCEED THE STANDARDS OF TITLE 10, CODE OF FEDERAL REGULATIONS, PART 20. THE MAJOR FACTOR INFLUENCING WASTE GAS EMISSIONS HAS BEEN THE PERFORMANCE OF FUEL CLADDING, WITH STAINLESS-STEEL-CLAD FUEL EXHIBITING A SIGNIFICANTLY GREATER TENDENCY FOR DEFECTS AND CONSEQUENT ESCAPE OF FISSION GASES. THE SIGNIFICANCE OF METEOROLOGICAL PARAMETERS FOR SPECIFIC REACTOR SITES IS ALSO EXAMINED.

AVAILABILITY - M. I. GOLDMAN, NUS CORPORATION

*SAFETY PRINCIPLES AND PHILOSOPHY + *SITING, GENERAL + *WASTE DISPOSAL, ATMOSPHERIC + AIR CLEANING +
METEOROLOGY + OPERATING EXPERIENCE + WASTE TREATMENT, GENERAL

17-28436 ALSO IN CATEGORIES 7 AND 12

HINTON JH + JOSEPH JW

OPERATING EXPERIENCE WITH THE AIRBORNE-ACTIVITY CONFINEMENT SYSTEMS AT THE SAVANNAH RIVER PLANT
SAVANNAH RIVER PLANT, AIKEN, SOUTH CAROLINA

SM-110 +. 1 PAGE, PAGE 45 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE
IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

EQUIPMENT HAS BEEN INSTALLED IN THE VENTILATION EXHAUST DUCTS OF EACH REACTOR BUILDING AT THE SAVANNAH RIVER PLANT TO COLLECT AND CONFINED AIRBORNE PARTICULATE AND HALOGEN ACTIVITY THAT MIGHT BE RELEASED IN THE HIGHLY UNLIKELY EVENT OF A REACTOR ACCIDENT. THE EQUIPMENT IS CONTINUOUSLY ON-LINE AND HAS BEEN IN SERVICE FIVE YEARS. THE MIST SEPARATORS, WHICH PREVENT MOISTURE DAMAGE TO THE FILTERS, ARE WOVEN TEFLON MATS AND ARE STEAM-CLEANED APPROXIMATELY EVERY NINE MONTHS TO REMOVE ACCUMULATED OILY MATERIALS AND PARTICULATE MATTER. TO DATE, NO MIST SEPARATORS HAVE REQUIRED REPLACEMENT. THE PARTICULATE FILTERS ARE CORRUGATED GLASS-ASBESTOS FELT, PROTECTED AGAINST MECHANICAL DAMAGE BY WIRE MESH ON BOTH FILTER FACES. THE CONDITION OF THE MIST SEPARATOR AND PARTICULATE FILTER IN EACH COMPARTMENT IS DETERMINED WEEKLY BY MEASURING THE PRESSURE DROP ACROSS EACH BANK AND THE AIR FLOW RATE THROUGH THE BANK.

AVAILABILITY - J. H. HINTON OR J. W. JOSEPH, SAVANNAH RIVER LABORATORY, AIKEN, SOUTH CAROLINA

*CHARCOAL + *FILTER MAINTENANCE + *MIST + *OPERATING EXPERIENCE + *SAVANNAH RIVER PLANT + AIR CLEANING +
AIRBORNE RELEASE + FILTER SYSTEM + FILTER TEST REQUIREMENT + FILTER, SCREEN + TEST, DOP FILTER

17-28442 ALSO IN CATEGORIES 7 AND 13

RAMARATHINAM K + KHAN AA + SUBRAMANIAM KG + AMALRAJ RV

AIR CLEANING OPERATIONAL EXPERIENCE IN THE BHABHA ATOMIC RESEARCH CENTRE, TROMBAY
BHABHA ATOMIC RESEARCH CENTRE, TROMBAY, BOMBAY, INDIA

SM-110 +. 1 PAGE, PAGE 53 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE
IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

THE PROBLEM OF AIR POLLUTION DUE TO THE OPERATION OF A NUCLEAR FACILITY IS OF GREAT IMPORTANCE TO THE TROMBAY ESTABLISHMENT AS IT IS LOCATED NEAR THE HEAVILY POPULATED CITY OF BOMBAY. A SHORT ACCOUNT OF GENERAL STANDARDS OF AIR POLLUTION CONTROL, CODES AND STANDARDS OF VARIOUS AIR CLEANING SYSTEMS PRESENTLY IN USE AND PRACTICES CONCERNING CONTROL OF POLLUTANTS ARE GIVEN. DESIGN AND OPERATIONAL DETAILS AND COST ASPECTS OF VENTILATION AND AIR CLEANING SYSTEMS OF THE MAJOR NUCLEAR FACILITIES IN THE BHABHA ATOMIC RESEARCH CENTRE, SUCH AS CANADA INDIA REACTOR, FUEL REPROCESSING PLANT, RADIOLOGICAL LABORATORIES AND SEVERAL OTHER FACILITIES ARE PRESENTED. THE STUDIES CARRIED OUT TO CHARACTERIZE THE POLLUTANT AND ITS REMOVAL EFFECTED BY THE SYSTEM IN USE ARE REVIEWED.

AVAILABILITY - K. RAMARATHINAM, A. A. KHAN, ETC., BHABHA ATOMIC RESEARCH CENTRE, TROMBAY, BOMBAY, INDIA

*ATMOSPHERIC POLLUTION + *CODES AND STANDARDS + *RADIATION SAFETY AND CONTROL +
*RADIOCHEMICAL PLANT SAFETY + *RADIOISOTOPE + AIR CLEANING + FILTER SYSTEM + INDIA + OPERATING EXPERIENCE

17-28445 ALSO IN CATEGORY 7

DALE GC

CONTROL OF AIRBORNE WASTES FROM UNITED KINGDOM GAS-COOLED POWER REACTORS

CENTRAL ELECTRICITY GENERATING BOARD, LONDON, U. K.

SM-110 +. 1 PAGE, PAGE 56 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE
IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

THE UNITED KINGDOM HAS IN OPERATION 23 CARBON-DIOXIDE-COOLED NUCLEAR POWER REACTORS. THE MAIN

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-28445 *CONTINUED*

FEATURES OF A TYPICAL REACTOR ARE DESCRIBED, AND THE WAYS IN WHICH AIRBORNE WASTES ARISE ARE DETAILED. THE FIRST EIGHT POWER STATIONS EMPLOY REACTORS IN STEEL PRESSURE VESSELS, AND THE BIOLOGICAL SHIELD IS AIR COOLED. IN THE CASE OF REACTORS WITH PRESTRESSED CONCRETE PRESSURE VESSELS THE COOLING IS ACHIEVED BY CIRCULATING WATER THROUGH PIPES CLOSE TO THE INTERNAL STEEL LINERS, AND COOLING-AIR PROBLEMS ARE THUS ELIMINATED. IN THE EVENT OF AN EMERGENCY WHERE RELATIVELY LARGE QUANTITIES OF FISSION PRODUCTS MAY BE INVOLVED, EXTRA EQUIPMENT IS PROVIDED TO REDUCE THE EMISSION OF RADIOACTIVE MATERIALS TO ACCEPTABLE LEVELS.

AVAILABILITY - G. C. DALE, CENTRAL ELECTRICITY GENERATING BOARD, LONDON, U. K.

*CARBON DIOXIDE + *STACK + *UNITED KINGDOM + *VENTILATION SYSTEM + *WASTE DISPOSAL, GAS + AIR CLEANING + AIRBORNE RELEASE + REACTOR, HTGR + SAMPLING

17-28470 ALSO IN CATEGORIES 7 AND 12
SERIOUS ACCIDENTS, ISSUE NO. 292, JULY 31, 1968
ATOMIC ENERGY COMMISSION
SERIOUS ACCIDENTS, NO. 292 +. 3 PAGES, 1 FIGURE, JULY 1968

DURING CONDUCT OF NORMAL INCINERATOR OPERATIONS WITHIN A GLOVEBOX, SMOKE FROM THE FEED-END OF THE INCINERATOR CALLED ATTENTION TO THE OBVIOUSLY INADEQUATE AIRFLOW IN THE OFF-GAS SYSTEM (SEE ENCLOSED SKETCH). AFTER NOTING THAT A 6-IN. PRESSURE DROP EXISTED ACROSS THE OFF-GAS SYSTEM PRIMARY FILTER (NOTE - MAXIMUM ALLOWABLE PRESSURE DROP IS 4 IN., W.G.), BURNING WAS STOPPED AND MAINTENANCE WAS NOTIFIED TO REPLACE THE FILTER. PROPERTY DAMAGE CONSISTED OF WARPAGE OF THE 30-IN. FILTER-BOX PORT COVER. NO CONTAMINATION SPREAD WAS INVOLVED.

*FILTER + *PIPE + *RADIATION SAFETY AND CONTROL + *WASTE TREATMENT, SOLID + CONTAMINATION + FILTER, GLASS + IGNITION + WASTE HANDLING + WASTE MANAGEMENT

17-28540 ALSO IN CATEGORIES 6 AND 9
ROSS DA
UNEXPECTED REACTIVITY ADDITION AT PENN STATE UNIV FROM MOVEMENT OF LEAD SHIELD
PENNSYLVANIA STATE UNIVERSITY, UNIVERSITY PARK, PENNSYLVANIA 16802
LETTER TO AEC, DRL +. 6 PAGES, FIGURES, AUGUST 9, 1968, DOCKET 50-5

AN UNEXPECTED AUTOMATIC REGULATING ROD INSERTION OF 37 UNITS REPRESENTING A REACTIVITY ADDITION OF 0.168% DELTA K/K OCCURRED. THE CAUSE WAS ATTRIBUTED TO A LEAD PLATE BETWEEN THE REACTOR AND THERMAL COLUMN WHICH WAS NOT FITTED PROPERLY AND MOVED DURING OPERATION. CHARTS SHOWED SLIGHT INCREASE IN LOG-N CHANNEL, NO CHANGE IN LINEAR-LEVEL CHANNEL, K-POWER CHANNEL DROPPED 4.5%, AND FUEL TEMPERATURE DROPPED 10 C. LOCATION OF NEUTRON DETECTORS IS SUCH THAT THEY ARE INFLUENCED BY NEUTRON REFLECTED FROM LEAD SHIELD. NO DAMAGE. BETTER MEANS OF SECURING PLATE TO BE OBTAINED.

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

*DISPLACEMENT, GENERAL + *INSTRUMENT, ABNORMAL INDICATION + *REACTIVITY EFFECT, ANOMALOUS + *REFLECTOR + BEAM HOLE + OPERATING EXPERIENCE + REACTOR, RESEARCH + SHIELDING + TRIGA (RR)

17-28541
MARTIN RD
REACTOR OPERATION AT UNIVERSITY OF MICHIGAN FOR 1965 THRU 1967
THE UNIVERSITY OF MICHIGAN, ANN ARBOR, MICHIGAN
LETTER TO P. A. MORRIS, AEC, DRL, DOCKET NO. 50-2 +. 7 PAGES, AUGUST 21, 1968

IN 1967, 52 SINGLE ROD DROPS OCCURRED. 27 WERE CAUSED BY INTERMITTENT FAULTS IN THE ELECTROMAGNET POWER SUPPLY CABLES, WHICH HANDICAPPED DETECTION. IN JULY 1967, A PARTICULATE ACTIVITY LEVEL 5 TIMES NORMAL BACKGROUND WAS OBSERVED. SAMPLING OF WATER PASSING THROUGH EACH ELEMENT REVEALED ONE ELEMENT WITH A HIGH WATER ACTIVITY. THE ELEMENT WAS REMOVED FROM THE CORE, INSPECTED, AND SHIPPED FOR REPROCESSING. NO FAULT WAS FOUND WITH THE ELEMENT WHEN INSPECTED. ON SEPT. 29, 1966, A GASKET FAILED ON THE BEAM-HOLE-PORT EXTENSION. NO LEAKAGE OCCURRED, BUT DRAINING WAS PREVENTED.

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

*OPERATING EXPERIENCE SUMMARY + ACTIVITY BUILDUP + BEAM HOLE + ELECTRICAL CONDUCTION + FAILURE, EQUIPMENT + FAILURE, SCRAM MECHANISM + REACTOR, POOL TYPE + REACTOR, RESEARCH + REPORT, OPERATIONS SUMMARY + REVIEW + SEAL

17-28542
REPORT OF FACILITY AND OPERATING PROCEDURE CHANGES AND SUMMARY OF IRRADIATION EXPERIMENTS FOR THE NASA PLUM BROOK REACTOR
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
LETTER TO AEC, DRL, DOCKET NO. 50-30, 3 PAGES, AUGUST 14, 1968

NO CHANGES IN FACILITY OR OPERATING PROCEDURES. BRIEFLY DESCRIBES THE 11 IRRADIATION TESTS CONDUCTED DURING PERIOD.

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

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-28542 *CONTINUED*

*IRRADIATION TESTING + *MODIFICATION, SYSTEM OR EQUIPMENT + OPERATING EXPERIENCE SUMMARY +
PLUM BROOK (TR) + REACTOR, TEST + REPORT, OPERATIONS

17-28543

JOHNSON WR

REACTOR POOL LEAK AT UNIVERSITY OF VIRGINIA

UNIVERSITY OF VIRGINIA

LETTER TO AEC, ORL, AUGUST 8, 1968, DOCKET 50-62

WATER LOSS FROM REACTOR POOL INCREASED FROM 200-400 TO 600-800 GAL/DAY. REACTOR OPERATION
TERMINATED BECAUSE OF INABILITY TO DETERMINE WHERE THE WATER WAS GOING. INVESTIGATION
UNDERWAY TO DETERMINE SOURCE, PATH OF LEAKAGE, AND MEANS OF REPAIRING LEAK.

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

*FAILURE, EQUIPMENT + *LEAK + *STORAGE CONTAINER + FUEL STORAGE + REACTOR, POOL TYPE

17-28544

MONTHLY OPERATIONS REPORT NO. 28 - PEACH BOTTOM ATOMIC POWER STATION

PHILADELPHIA ELECTRIC COMPANY

MONTHLY OPERATIONS REPORT NO. 28, JUNE 1968 +. 17 PAGES, DOCKET 50-171, TYPE--HTGR, MFG--G.A., AE--BECHTEL

A REACTOR SCRAM WAS REQUIRED DUE TO LOSS OF CHILLED WATER PRESSURE WHEN A SHORT CIRCUIT IN THE
AC CHILLER MOTOR TRIPPED THE CHILLED WATER PUMP. ACTIVITY LEVELS IN THE MAIN COOLING SYSTEM
INDICATE THE POSSIBILITY OF 2 DEFECTIVE ELEMENTS. DIRT IN A PNEUMATIC RELAY OF THE TURBINE
BYPASS CONTROLLER RESULTED IN REACTOR POWER AND ELECTRICAL OUTPUT PERTURBATIONS. A LEAK ON
ACID WASH FLANGE IN FEEDWATER SYSTEM REQUIRED SHUTDOWN FOR MAINTENANCE.

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

ACTIVITY BUILDUP + FAILURE, EQUIPMENT + FAILURE, FUEL ELEMENT + FAILURE, MAINTENANCE ERROR + FLANGE +
FLOW, BYPASS + INSTRUMENT, PROCESS + LEAK + MAIN COOLING SYSTEM + PEACH BOTTOM 1 (HTGR) + REACTOR, HTGR +
REPORT, OPERATIONS + SCRAM, REAL + TURBINE

17-28545

ALSO IN CATEGORY 7

MONTHLY OPERATIONS REPORT NO. 29 - PEACH BOTTOM ATOMIC POWER STATION

PHILADELPHIA ELECTRIC COMPANY

MONTHLY OPERATIONS REPORT NO. 29, JULY 1968 +. 14 PAGES, DOCKET 50-171, TYPE--HTGR, MFG--G.A., AE--BECHTEL

SHUTDOWN WAS REQUIRED BECAUSE OF STEAM LEAK FROM STEAM GENERATOR DRUM LEVEL GAGE GLASS. MAIN
COOLANT ACTIVITY LEVEL INCREASED TO 8 CURIES AND A THIRD DEFECTIVE ELEMENT IS SUSPECTED.
OTHER TOPICS INCLUDE SUMMARY OF OPERATIONS, RADIOACTIVE EFFLUENTS, MAINTENANCE, AND
ADMINISTRATION.

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

ACTIVITY BUILDUP + COATED PARTICLE + FAILURE, EQUIPMENT + FAILURE, FUEL ELEMENT + FAILURE, FUEL ELEMENT +
FISSION PRODUCT RETENTION + INSTRUMENT, LIQUID LEVEL DETECTION + LEAK + MAIN COOLING SYSTEM +
PEACH BOTTOM 1 (HTGR) + REACTOR, HTGR + REPORT, OPERATIONS + STEAM GENERATOR

17-28546

MORGAN JP

APPLICATION OF TECHNICAL SPECIFICATIONS DURING DECOMMISSIONING

PUERTO RICO WATER RESOURCES AUTHORITY

LETTER TO AEC, ORL, AUGUST 1968, DOCKET 115-4, TYPE--BWR, MFG--C.E., AE--JACKSON + MORELAND

ALL FUEL HAS BEEN REMOVED FROM PRESSURE VESSEL AND STORED. POISON INJECTION SYSTEM IS OUT OF
SERVICE. THE EMERGENCY CONDENSER AND SHIELD COOLING SYSTEMS ARE IN DRY STORAGE. SINCE THE
REACTOR IS NOT CAPABLE OF BEING MADE CRITICAL, AREAS OF TECH. SPECS. ARE NO LONGER
APPLICABLE. INTERPRETATIONS HAVE BEEN MADE, AND ASSURANCE THAT THEY CAN BE IMPLEMENTED IS
REQUIRED. IN PARTICULAR, 24-HR SURVEILLANCE BY OPERATORS IS NO LONGER NEEDED, AND, EFFECTIVE
AUG. 18, THE NUMBER OF SHIFTS WILL BE REDUCED.

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

*ADMINISTRATIVE CONTROL + *DECOMMISSIONING + *TECHNICAL SPECIFICATIONS + BONUS (ISR) +
OPERATING EXPERIENCE + REACTOR, INTERNAL SUPERHEAT

17-28547

TABOR WH + HURT SS III

OAK RIDGE RESEARCH REACTOR QUARTERLY REPORT - JANUARY, FEBRUARY, AND MARCH OF 1968

OAK RIDGE NATIONAL LABORATORY

ORNL-TM-2237 +. 44 PAGES, TABLES, FIGURES, MAY 21, 1968

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-28547 *CONTINUED*

NAOH WAS FORCED INTO THE PRIMARY WATER SYSTEM WHILE REGENERATING THE DEMINERALIZER, ALTHOUGH IT WAS ISOLATED. HOWEVER, WATER WAS FORCED THROUGH A COMMON DRAIN LINE TO THE MAIN SYSTEM DEMINERALIZER. MISVALVING, PLUS FAILURE OF AN AUTOMATIC VALVE, CONTRIBUTED TO INCIDENT. PH ROSE FROM 5.7 TO 9.65. NO DAMAGE. RESULTS OF CORROSION-SAMPLE TESTS ARE GIVEN.
***ROD-WORTH MEASUREMENTS FOR SHIM RODS WITH 154 G OF U-235 SHOWED 25.255% DELTA K/K, COMPARED WITH 23.467% FOR 141-G RODS. SUMMARIZES SHUTDOWN CAUSES, ONE CAUSED BY FAILURE OF SERVO AMPLIFIER VACUUM TUBE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*CONTAMINATION + *FAILURE, DESIGN ERROR + *FAILURE, OPERATOR ERROR + *MAIN COOLING SYSTEM + ALUMINUM + CONTROL ROD WORTH + COOLANT CHEMISTRY + CORROSION + FAILURE, INSTRUMENT + FAILURE, SIMULTANEOUS + HFIR (FTR) + INSTRUMENT, AMPLIFIER + OPERATING EXPERIENCE + REACTOR, FLUX TAP + REPORT, OPERATIONS + VALVE

17-29548

ADAMSON GM + KNIGHT RW
HFIR FUEL ELEMENT PRODUCTION AND OPERATION
OAK RIDGE NATIONAL LABORATORY
ORNL-TM-2196 +. 20 PAGES, TABLES, FIGURES, JUNE 1969

DISCUSSES PERFORMANCE OF COMMERCIALY MADE HFIR FUEL ELEMENTS. AREAS IN THE FUEL PLATES HAD BURNUPS OF 18.6 X 10²⁰ FISSIONS/CUBIC CENTIMETER, WITH NO SIGNIFICANT IRRADIATION DAMAGE. OF 30,220 PLATES PRODUCED, ONLY 15.7% WERE REJECTED, 3.9% WERE ACCEPTED ON WAIVERS. ALL BUT A FEW MINOR SPECIFICATIONS WERE MET, AND NO PROBLEMS OCCURRED REQUIRING SPECIFICATION CHANGES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*FABRICATION + *FUEL ELEMENT + ALUMINUM + CODES AND STANDARDS + FUEL BURNUP + FUEL, METALLIC TYPE + HFIR (FTR) + OPERATING EXPERIENCE + RADIATION EFFECT + REACTOR, FLUX TRAP

17-28549

SMITH EH ET AL
SELECTED OPERATING EXPERIENCES AT ETR
IDAHO NUCLEAR CORPORATION, IDAHO FALLS, IDAHO
IN-1175 +. 37 PAGES, TABLES, FIGURES, MARCH 19, 1968

DOWNTIME FOR CYCLE 93 WAS ATTRIBUTED TO CONTROL ROD SEAT SWITCH PROBLEMS, A COMMERCIAL POWER OUTAGE, AND FAILURES OR PROBLEMS WITH EXPERIMENTS. THREE POWER REDUCTIONS WERE CAUSED BY DROPPED CONTROL RODS. REACTIVITY COMPARISON BETWEEN ETR AND ETR CORE MOCKUP SHOWS THE MOCKUP IS 0.1% DELTA K/K GREATER THAN THAT OF ETR AT EQUILIBRIUM XENON. SUMMARIZES THE IRRADIATION PROGRAM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

ETR (TR) + FAILURE, SCRAM MECHANISM + INSTRUMENT, SWITCH + IRRADIATION TESTING + REACTIVITY EFFECT, ANOMALOUS + REACTOR, TEST + REPORT, OPERATIONS

17-28550

SMITH EH ET AL
SELECTED OPERATING EXPERIENCES AT ETR
IDAHO NUCLEAR CORPORATION, IDAHO FALLS, IDAHO
IN-1192 +. 33 PAGES, TABLES, FIGURES, MAY 24, 1968

THE CAUSES OF 153 HR OF DOWNTIME INCLUDED (1) A LOST PLUG ON BOTTOM OF REACTOR FROM A SEAL-REMOVAL PLUGGING TOOL, DUE TO IMPROPER MANIPULATION, (2) LEAK IN HIGH-PRESSURE SYSTEM OF AN EXPERIMENT, AND (3) EXPERIMENT INSTRUMENTATION PROBLEMS. INTERFERENCE OF A WALKIE-TALKIE SIGNAL CAUSED AN ELECTRONIC SCRAM FROM THE NO. 2 LOG-N AMPLIFIER. SUMMARIZES IRRADIATION PROGRAM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

ETR (TR) + FAILURE, INSTRUMENT + FAILURE, OPERATOR ERROR + IN PILE LOOP + INSTRUMENT, ABNORMAL INDICATION + IRRADIATION TESTING + NOISE + REACTOR, TEST + REPORT, OPERATIONS + SCRAM, REAL

17-28551

ALSO IN CATEGORY 9
FORD JD ET AL
SELECTED OPERATING EXPERIENCES AT ETR
IDAHO NUCLEAR CORPORATION, IDAHO FALLS, IDAHO
IN-1212 +. 35 PAGES, TABLES, FIGURES, JULY 26, 1968

A CONTROL-ROD DRIVE WAS REPLACED BECAUSE OF WATER LEAKAGE IN A DAMAGED BELLOWS. ANOTHER DRIVE UNIT WAS REPLACED TWICE TO REMOVE PARTS OF A BROKEN PLUGGING TOOL, WHICH PREVENTED PROPER

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-28551 *CONTINUED*

LATCHING, AND A SECOND TIME TO REMOVE AN EXTRA HELICAL SHOCK SPRING LEFT IN THE RECEIVER SECTION. A MAGNET FAILURE ON NO. 7 CONTROL-ROD-DRIVE UNIT REQUIRED REPLACEMENT. DISCUSSES NUMEROUS EXPERIMENT PROBLEMS CONTRIBUTING TO SHUTDOWN TIME. SUMMARIZES IRRADIATION PROGRAM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

CNTRL ROD DRIVE + ETR (TR) + FAILURE, INSTRUMENT + FAILURE, MAINTENANCE ERROR + FAILURE, SCRAM MECHANISM + IRRADIATION TESTING + LEAK + OBSTRUCTION + REACTOR, TEST + REPORT, OPERATIONS + SEAL

17-28552

FORD JD ET AL
SELECTED OPERATING EXPERIENCES AT MTR
IDAHO NUCLEAR CORPORATION, IDAHO FALLS, IDAHO
IN-1197 +. 23 PAGES, TABLES, APRIL 18, 1968

TWENTY HOURS OF SHUTDOWN TIME WAS ATTRIBUTED TO FAILURE OF A TEST ASSEMBLY TO SEAT DUE TO A MISSING SPRING CLIP. A PRIMARY-PUMP MOTOR-BEARING-OIL LEAK WAS DUE TO CRUD BUILDUP BECAUSE LUBRICATING OIL WAS INADEQUATE. SUMMARIZES IRRADIATION PROGRAM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

FAILURE, FABRICATION ERROR + FAILURE, MAINTENANCE ERROR + IRRADIATION TESTING + LUBRICATION + MTR (TR) + PUMP + REACTOR, TEST + REPORT, OPERATIONS

17-28553

FORD JD ET AL
SELECTED OPERATING EXPERIENCES AT MTR
IDAHO NUCLEAR CORPORATION, IDAHO FALLS, IDAHO
IN-1190 +. 23 PAGES, TABLES, MAY 10, 1968

GROOVES WERE OBSERVED IN THE HT-1 SKIRT PLATE, CAUSED BY CONTACT WITH FUEL-ELEMENT SIDE PLATES AND VIBRATIONAL EFFECTS. FAILURE OF THE DOWNSTREAM BLOCK VALVE WAS ATTRIBUTED TO SOLENOID AND CONTROL TRANSFORMER FAILURE. BEARINGS FAILED ON COOLING TOWER PUMP. SUMMARIZES IRRADIATION PROGRAM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

CORE COMPONENTS + DAMAGE + FAILURE, EQUIPMENT + FAILURE, INSTRUMENT + IRRADIATION TESTING + MTR (TR) + PUMP + REACTOR, TEST + REPORT, OPERATIONS + VALVE + VIBRATION

17-28554

FORD JD ET AL
MTR PROGRESS REPORT CYCLE NO. 276 - APRIL 15, 1968 - MAY 5, 1968
IDAHO NUCLEAR CORPORATION, IDAHO FALLS, IDAHO
IN-1197 +. 22 PAGES, TABLES, FIGURES, JUNE 6, 1968

ONE OF A SERIES. TOPICS - PLANT OPERATION, OPERATING SUMMARY, AND THE IRRADIATION PROGRAM. A BEARING RETAINER-RING FAILURE ON A MAIN BLOWER REQUIRED SHUTDOWN.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

FAILURE, EQUIPMENT + IRRADIATION TESTING + MTR (TR) + REACTOR, TEST + REPORT, OPERATIONS

17-28555

ALSO IN CATEGORY 9

FORD JD ET AL
ERRATIC REGULATING - ROD CONTROL
IDAHO NUCLEAR CORPORATION, IDAHO FALLS, IDAHO
IN-1210 +. 23 PAGES, TABLES, FIGURES, JUNE 17, 1968

REGULATING-ROD CONTROL WAS ERRATIC AS INDICATED BY NUCLEAR INSTRUMENTATION. TWO MINOR POWER REDUCTIONS OCCURRED WHEN SWITCHING FROM NO. 1 TO NO. 2 REGULATING-ROD CONTROL. THE NO. 2 ROD CONTROL WAS ALSO ERRATIC. CONSIDERABLE WEAR WAS FOUND IN THE LOWER BEARING AREA OF THE REGULATING-ROD SLEEVES, WHICH ALLOWED MOVEMENT OF THE ROD DURING OPERATION AND COULD ACCOUNT FOR ERRATIC OPERATION. ALSO SUMMARIZES IRRADIATION PROGRAM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

CONTROL ROD DRIVE + DAMAGE + IRRADIATION TESTING + MTR (TR) + REACTIVITY EFFECT, ANOMALOUS + REACTOR CONTROL + REACTOR, TEST + REPORT, OPERATIONS

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-28556

GRABER MJ + GIBSON GW
IRRADIATION TESTING OF FUEL FOR THE MARK I CORE OF THE ARGONNE ADVANCED RESEARCH REACTOR
IDAHO NUCLEAR CORPORATION, IDAHO FALLS, IDAHO
IN - 1160 +. 54 PAGES, FIGURES, TABLES, APRIL 1968

REPORTS THE IRRADIATION TESTING AND EVALUATION OF A 27 WT% LOW-DENSITY UO₂ STAINLESS STEEL DISPERSION FUEL. THE INCORPORATION OF POROSITY RESULTED IN IMPROVED FISSION PRODUCT ACCOMMODATION AND A REDUCED FUEL-GROWTH RATE. THE FUEL DEMONSTRATED CAPABILITY TO PERFORM ACCORDING TO REQUIREMENTS AND COULD BE IRRADIATED TO 15 X 10²⁰TH FISSIONS/CC BEFORE 2-MIL DECREASE IN CHANNEL IS REACHED, AND FRAGMENTED STRUCTURE COULD BE IRRADIATED TO 19 X 10²⁰TH FISSIONS/CC. BLISTER RESISTANCE WAS SIMILAR TO THAT OF 18 TO 30 WT% FUELS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*FUEL BURNUP + *IRRADIATION TESTING + AARR (RR) + FUEL ELEMENT + FUEL, METALLIC TYPE + PRESSURE, INTERNAL + R AND D PROGRAM + REACTOR, AEC OWNED + REACTOR, FLUX TRAP + REACTOR, RESEARCH + STEEL, STAINLESS

17-28557

ANNUAL REVIEW OF THE BULK SHIELDING REACTOR AND POOL CRITICAL ASSEMBLY FOR 1968
OAK RIDGE NATIONAL LAB., TENN.
ORNL-CF-68-6-23 +. 7 PAGES, JUNE 15, 1968

THE CHANCEOVER TO BORON-STAINLESS STEEL CONTROL RODS IN PLACE OF BORON-CARBIDE RODS WAS PRESENTED NO PROBLEMS AND NEW RODS ARE DIMENSIONALLY STABLE. NEUTRON AND GAMMA SOURCES ARE KEPT SUSPENDED ON CARDS IN POOL. A POSITIVE DEVICE TO PRECLUDE REMOVAL IS NEEDED. COMMITTEE RECOMMENDED AGAIN THAT PERSONNEL IN UPSTAIRS OFFICES BE MADE AWARE OF THE EVACUATION AND EMERGENCY PROCEDURES. RECENT TESTS SHOWED ERRATIC RETENTION OF METHYL IODIDE BUT SINCE NO LIMITS HAVE YET BEEN SET COMMITTEE MADE NO RECOMMENDATION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

*SAFETY REVIEW + BORON + BSR (RR) + CARBIDE + CONTROL ROD BURNUP + EMERGENCY PROCEDURE + FILTER EFFICIENCY + MODIFICATION, SYSTEM OR EQUIPMENT + ORGANIC IODIDE + RADIATION SAFETY AND CONTROL + REACTOR, POOL TYPE + REACTOR, RESEARCH + SAFETY PRINCIPLES AND PHILOSOPHY + SOURCE MATERIAL + STEEL, STAINLESS + STORAGE CONTAINER

17-28558

MANNING JJ + HOLLAND LB + HULL JL
TOWER SHIELDING FACILITY OPERATING REPORT (TSR-II, TSF, SNAP) - NOVEMBER 1, 1967 THROUGH APRIL 30, 1968
OAK RIDGE NATIONAL LAB., TENN.
ORNL-CF-68-6-29 +. 11 PAGES, JUNE 11, 1968

TSR-II - NINE SHIM-ROD DROPS OCCURRED DUE TO INSTRUMENT NOISE, FAULTY MAGNET AMPLIFIER, AND FAULTY VR TUBE IN COMPOSITE AMPLIFIER. DURING INSERTION OF SHIM RODS, MOTION STOPPED AT 0.3 IN. RODS WERE EXERCISED BETWEEN 0.5 IN. AND 0.3 IN., AND THEY OPERATED SATISFACTORILY. TSF-SNAP REACTOR - COARSE DRUMS WITHDREW ON SIX OCCASIONS DUE TO LOW MAGNET CURRENT, LOSS OF AIR COMPRESSOR, AND 3 WERE UNEXPLAINED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

FAILURE, SCRAM MECHANISM + REACTOR, RESEARCH + REPORT, OPERATIONS

17-28559

COSTNER RA
OPERATING SAFETY LIMITS FOR THE POOL CRITICAL ASSEMBLY (PCA)
OAK RIDGE NATIONAL LAB., TENN.
ORNL-TM-2232 +. 9 PAGES, MAY 15, 1968

LIMITS GIVEN FOR REACTOR CORE, PRIMARY COOLING SYSTEM, EMERGENCY COOLING FACILITY, CONTROL AND SAFETY SYSTEMS, RADIATION MONITORING SYSTEMS, EXPERIMENTS, AND ADMINISTRATIVE AND PROCEDURAL SAFEGUARDS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

*TECHNICAL SPECIFICATIONS + BSR (RR) + ORNL + REACTOR, POOL TYPE

17-28560

ALSO IN CATEGORIES 11 AND 1
ABERLE JA + MACDONALD AR + PORTER SW
A PROCEDURE FOR MINIMIZING PERSONNEL HAZARDS WHILE CHANGING TRITIUM TARGETS IN ACCELERATORS

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-28560 *CONTINUED*

ARMED FORCES RADIOBIOLOGY RESEARCH INSTITUTE, DEFENSE ATOMIC SUPPORT AGENCY, BETHESDA, MARYLAND
AFRRI-TN66-5 +. 17 PAGES, 12 FIGURES, 7 REFERENCES, MAY 1966

DESCRIBES STEP-BY-STEP PROCESS UTILIZING STAINLESS-STEEL GLOVE BOX AND AN ALTERNATE USING A
PLASTIC CONTAINMENT AREA. PROCEDURE IS APPLICABLE ONLY TO THE PARTICULAR TYPE OF
ACCELERATOR, BUT PROCEDURE EMPHASIZES POSSIBLE HAZARDS AND THE METHODS USED TO CONTROL THEM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA
22151, \$3.00 COPY, \$0.65 MICROFICHE

*ACCELERATOR + *PROCEDURES AND MANUALS + *RADIATION SAFETY AND CONTROL + *TRITIUM + GLOVE BOX

17-28561

GODFREY WR + PHENNAH PJ

BRADWELL REACTOR COOLANT CHEMISTRY

7 PAGES, BRITISH NUCLEAR ENERGY SOCIETY VO. 7, NO. 2, PG 151-157. APRIL 1968

SEVERAL FEATURES ARE DESCRIBED TO INDICATE DEVELOPMENT OF COOLANT CHEMISTRY AS AN IMPORTANT
SUBJECT TO REACTOR OPERATION. DESCRIBES METHODS OF MOISTURE DETERMINATION, SAMPLING AND
DETERMINING CONSTITUENTS OF RESIDUAL GAS, AND METHOD OF COLLECTING GAS SAMPLES. MAJOR
IMPURITY IS CARBON MONOXIDE, WHICH INDICATES LOSS OF MODERATOR STRUCTURE STRENGTH AND
MODERATING EFFICIENCY - PRODUCED BY THE RADIOLYTICALLY INDUCED GRAPHITE-CO₂ REACTION. MINOR
IMPURITIES INCLUDE O, N, AND AR.

*ANALYTICAL TECHNIQUE, GAS + *COOLANT CHEMISTRY + *OPERATING EXPERIENCE SUMMARY + BRADWELL (GCR) +
CARBON DIOXIDE + COOLANT QUALITY + COOLING, GENERAL + REACTOR COOLANT + REACTOR, GCR +
REACTOR, GRAPHITE MODERATED + UNITED KINGDOM

17-28562 ALSO IN CATEGORY 6

WINKLEBLACK RK

RECENT EBR-II OPERATING EXPERIENCE

ARGONNE NATIONAL LABORATORY

15 PAGES, 4 FIGURES, 1967

DISCUSSES A FUEL FAILURE AND FISSION PRODUCT RELEASE TO COOLANT AND A SIGNIFICANT DECREASE IN
THE POWER COEFFICIENT FOLLOWING A CHANGE IN CORE CONFIGURATION. DESCRIBES ANALYTICAL
TECHNIQUE USED TO LOCATE THE FAULTY FUEL. NEED FOR A FAILED FUEL LOCATING METHOD IS
DISCUSSED, AND USE OF A TAG MATERIAL IS CONSIDERED. DECREASE IN POWER COEFFICIENT AFTER CORE
ENLARGED FROM 73 TO 81 ASSEMBLIES IS ATTRIBUTED TO CHANGE IN CORE AND REFLECTOR SIZE AND
COMPOSITION, AND AN INCREASED BOWING OF SUBASSEMBLIES CAUSED BY INSTALLATION OF STAINLESS
STEEL SUBASSEMBLIES.

*ACTIVITY BUILDUP + *FAILURE, CLADDING + *POWER COEFFICIENT + *REACTIVITY EFFECT, ANOMALOUS +
EBR 1 AND 2 (RE) + FUEL ELEMENT BOWING + INSTRUMENT, DETECTION FAILED FUEL ELEMENT + MAIN COOLING SYSTEM +
OPERATING EXPERIENCE + REACTOR, AEC OWNED + REACTOR, FAST + REACTOR, LMCR + REACTOR, RESEARCH +
REACTOR, TEST

17-28572

ALSO IN CATEGORIES 1 AND 15

PIPER HP

FACT AND FICTION CONCERNING NUCLEAR POWER SAFETY

6 PAGES, NUCLEAR NEWS, 11(12), PAGES 54-59 (DECEMBER 1968)

THE NUCLEAR POWER INDUSTRY IS BEING SUBJECTED TO OPPOSITION BY A VARIETY OF PEOPLE FOR A
NUMBER OF REASONS. THIS ARTICLE LOOKS AT A SMALL SAMPLING OF MATERIAL FROM THREE DIFFERENT
SOURCES - THE NONTECHNICAL AUTHOR, THE SYNDICATED COLUMNIST, AND THE TECHNICALLY ORIENTED
WRITER, NONE OF WHOM HAVE ANY APPARENT CONFLICT OF INTEREST WITH NUCLEAR DEVELOPMENT. BUT IN
ALL THE EXAMPLES CITED HERE, SENSATIONAL TREATMENT OF THE POTENTIAL HAZARDS ASSOCIATED WITH
NUCLEAR POWER IS THE COMMON THREAD, AND THE CRITICISMS AND IMPLICATIONS SEEM, TO THE AUTHOR,
TO BE UNJUSTIFIED. THE VARIOUS OCCURRENCES ARE EXAMINED AND COMPARED WITH THE RECORDED FACTS
IN EACH CASE.

*RADIATION IN PERSPECTIVE + *RADIATION, PUBLIC EDUCATION/ACCEPTANCE + ACCIDENT, CONSEQUENCES +
FISSION PRODUCT RELEASE, GENERAL + HAZARDS ANALYSIS + INCIDENT, GENERAL + INCIDENT, SL 1 +
INCIDENT, WINDSCALE + INCIDENT, WOOD RIVER + SAFETY PRINCIPLES AND PHILOSOPHY

17-28578

ALSO IN CATEGORY 15

SURVEY OF ENVIRONMENTAL RADIOACTIVITY

MINNESOTA DEPARTMENT OF HEALTH + RURAL COOPERATIVE POWER ASSOCIATION

COO-651-64 +. 38 PAGES, FIGURES, TABLES, SEPTEMBER 1968, DOCKET 115-1, TYPE--RWR, MFG--A.C., AE--SGT +
LUNDY

THE MINNESOTA DEPT. OF HEALTH AND THE RURAL COOPERATIVE POWER ASSOCIATION, ELK RIVER, MINN.,
COMBINED THEIR EFFORTS INTO A COMPREHENSIVE SURVEILLANCE PROGRAM OF THE STATE AND THE AREA
IMMEDIATE TO THE ELK RIVER REACTOR SITE. THE WASTE DISCHARGES IN THE REACTOR EXHAUST DUCT,
SEWER LINE, AND OTHER SYSTEMS ARE MONITORED TO SUPPLEMENT THE ENVIRONMENTAL DATA NEAR THE
REACTOR SITE. A DESCRIPTION OF THE SURVEY METHODS AND THE DATA OBTAINED IS GIVEN WITH
RESPECT TO ANIMALS, AIR, SURFACE WATER, PRECIPITATION, AND MILK. A BRIEF DISCUSSION OF

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-28578 *CONTINUED*
TRITIUM IN SURFACE WATER IS ALSO GIVEN.

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

*BIOLOGICAL CONCENTRATION, ANIMAL + *BIOLOGICAL CONCENTRATION, MILK + *PRECIPITATION + *REACTOR, BWR +
*SURFACE WATER, NUCLIDE OCCURRENCE + *SURVEILLANCE PROGRAM + ELK RIVER (BWR) + MONITOR, RADIATION, AIR +
MONITOR, RADIATION, GENERAL + RADIOLOGICAL ASSISTANCE

17-28580 ALSO IN CATEGORY 11
RECURRING INSPECTION OF NUCLEAR REACTOR STEEL PRESSURE VESSELS
INTERNATIONAL ATOMIC ENERGY AGENCY
STI/DOC/10/81 +. 239 PAGES, TABLES, FIGURES, JANUARY 1968

IN OCTOBER 1966, THE IAEA CONVENED A PANEL FOR DISCUSSING VARIOUS ASPECTS OF RECURRING INSPECTION OF NUCLEAR REACTOR STEEL PRESSURE VESSELS AND THE METHODS TO BE USED. THE PANEL WAS ALSO TO FORMULATE RECOMMENDATIONS OR GUIDELINES CONCERNING THE OBJECTIVES, THE FREQUENCY, AND THE PROCEDURE OF THESE INSPECTIONS. THE RECOMMENDATIONS ARE, TO SOME EXTENT, RECOMMENDATIONS TO THE AGENCY FOR ITS FURTHER WORK, WHICH WILL HAVE TO BE BASED ON FURTHER DEVELOPMENT OF INSPECTION TECHNIQUES AS WELL AS ON INCREASED KNOWLEDGE OF FUNDAMENTAL PHENOMENA SUCH AS THOSE OF FRACTURE MECHANICS. SOME RECOMMENDATIONS ARE, HOWEVER, QUITE SPECIFIC AND CONCERN REACTOR VESSEL DESIGNERS AND OPERATORS. THEY ARE CONSIDERED TO BE OF GENERAL VALUE AND ARE INCLUDED WITH THE SUBMITTED PAPERS AND THE DISCUSSION SUMMARY IN THESE PROCEEDINGS.

*INSPECTION AND COMPLIANCE + *PRESSURE VESSEL + *STEEL + FAILURE, PRESSURE VESSEL + FLAW

17-28581
MINI VIDEO RECORDER OFFERS POTENTIAL FOR PERSONNEL TRAINING
ELECTRICAL WORLD, VOL. 170, NO. 7, P 52, AUGUST 12, 1968

A 5 LB HAND HELD TV CAMERA USES A 10 LB SHOULDER SLUNG, BATTERY OPERATED RECORDER. THE HALF INCH TAPE GIVES A 20 MIN RECORDING FOR EACH 5 IN. REEL. BATTERY GIVES 1 HR RECORDING BEFORE NEEDING AN 8 HR RECHARGING. ***SYSTEM RECORDS BOTH SIGHT AND SOUND AND IS USEFUL IN RECORDING ON THE SPOT MAINTENANCE WITHOUT REQUIRING DEVELOPING OF FILM AND REPEAT PERFORMANCES.

*TRAINING

17-28582 ALSO IN CATEGORY 11
TV SYSTEM SURVEYS PIPELINE INTERIOR
ELECTRICAL WORLD, VOL. 170, NO. 11, P 47, SEPTEMBER 9, 1968

A JAPANESE TV CAMERA SYSTEM WAS BUILT TO SURVEY THE INTERIOR OF PIPELINES FROM 2.5 TO 12 IN. IN DIAMETER UP TO 1000 FT IN LENGTH. PICTURE IS DISPLAYED ON A REMOTE READOUT.

*EXAMINATION + *PIPING + REACTOR, POWER + REMOTE MANIPULATING AND VIEWING + SURVEILLANCE PROGRAM

17-28583
UNIQUE DOUGHNUTS PROVIDE NEUTRON SHIELD DURING REACTOR REFUELING
ELECTRICAL WORLD, VOL. 170, NO. 11, P 47, SEPTEMBER 9, 1968

TWO DOUGHNUTS OF ABOUT 20 FT DIA PROVIDE PROTECTION AGAINST NEUTRON STREAMING WHEN HADDAM NECK IS TO BE REFUELED. PLACED ON THE REFUELING WATER SEAL PLATE TO COVER GAP BETWEEN VESSEL AND CONCRETE. SHEATHED IN 20 GAUGE ALUMINUM FOR PROTECTION AGAINST THE WATER IN THE REFUELING CAVITY. MADE OF 14 THICKNESSES OF 1 IN. THICK 14 IN. WIDE SEGMENTS.

*FUEL HANDLING + *NEUTRON + *SHIELDING + HADDAM NECK (PWR) + REACTOR, PWR

17-28584 ALSO IN CATEGORY 1
NUCLEAR INFORMATION CENTER VISITS THE PEOPLE
ELECTRICAL WORLD, VOL. 170, NO. 3, PP 30, 31, JULY 15, 1968

GEORGIA POWER COMPANY (HATCH BWR, OPERATIONAL 1973) TRAILER MOUNTED CENTER HAD REACHED 10,500 PERSONS IN ITS FIRST MONTH (FEB. 1968). DIVIDED INTO 3 ROOMS WITH DISPLAY PANELS AND A TAPED 3 MIN MESSAGE. UNUSUAL LIGHTING TECHNIQUES CHANGE THE COAL-FIRED BOILER TO A NUCLEAR REACTOR.

*RADIATION, PUBLIC EDUCATION/ACCEPTANCE + HATCH (BWR) + REACTOR, BWR + REACTOR, POWER

17-28596 ALSO IN CATEGORIES 13 AND 7
RUNION TC
SUMMARY OF INFORMATION REQUESTED ON NFS FILTER FAILURE

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-28596 *CONTINUED*

NUCLEAR FUEL SERVICES, INC., WHEATON, MD.

4 PAGES, ATOMIC ENERGY CLEARING HOUSE, 14(40), PAGE 26-29, (SEPT. 30, 1968), DOCKET NO. 50-201

(LETTER TO NFS, SEPT. 17) TWO ANALYSES HAVE BEEN REQUESTED - (1) A TECHNICAL ANALYSIS OF THE SEPT. 4, 68, FILTER FAILURE, (2) A SAFETY ANALYSIS OF THE FINAL FILTER SYSTEM. FROM NFS FACTS, IT APPEARS NEW TECHNICAL SPECIFICATIONS ARE REQUIRED. ALSO PROVIDE (1) COMPREHENSIVE EVALUATION OF MATERIAL RELEASED SEPT. 4, (2) EVALUATE FILTER FAILURE CORRECTIVE ACTION, (3) EXPLAIN WHY DP SENSOR DID NOT SWITCH IN ALTERNATE FILTERS SEPT. 4, (4) 10 SPECIFIC QUESTIONS REGARDING OPERATING BEHAVIOR AND LIMITS OF FILTERS.

*FILTER, DAMAGED + *OFF GAS + AEC QUESTION + FILTER OPERATION + FUEL REPROCESSING + INSTRUMENT, FLOW + NFS + PRESSURE DROP + TECHNICAL SPECIFICATIONS

17-28597 ALSO IN CATEGORY 7

MEHANN RO

NS SAVANNAH ONBOARD FILTER TESTING PROGRESS

FIRST ATOMIC SHIP TRANSPORT, INC., HOBOKEN, N. J.

2 PAGES, ATOMIC ENERGY CLEARING HOUSE, 14(40), PAGE 25 AND 26, (SEPT. 30, 1968), DOCKET 50-238, TYPE--PWR, MFG--B+W, AE--G.G. SHARP

(LETTER, SEPT. 13) (1) TWO FIRMS ARE PREPARING PROPOSALS ON REPLACEMENT OF THE CHARCOAL FILTERS. (2) FAST FEELS FREON-112 LEAK TESTING IS NOT SUITABLE FOR SHIPBOARD USE. HACL HAS ELIMINATED INTERFERENCE BY COPPER IONS IN THE NONRADIOACTIVE IODINE TEST. AUG. 68 TRIALS WERE ENCOURAGING, AND FURTHER TESTS ARE PLANNED. (3) ORNL TESTS SUGGESTS THAT THE OIL CONTAMINANT IS A VOLATILE FRACTION OF THE CONTROL ROD DRIVE HYDRAULIC OIL, EVOLVED WHEN OIL CONTACTS A SURFACE WARMER THAN 250 F. AN OVERALL PROGRESS REPORT WILL BE SUBMITTED BY MARCH 17, 1969.

*CHARCOAL + *FILTER + *OPERATING EXPERIENCE + FLOW BLOCKAGE + NS SAVANNAH (PWR) + R AND D PROGRAM + REACTOR, PWR + TEST, FILTER

17-28602 ALSO IN CATEGORY 9

BONUS OPERATING EXPERIENCE

PUERTO RICO WATER RESOURCE AUTHORITY

PRWRA-114 +. 53 PAGES, 12 FIGURES, 1 TABLE, MAY 1967

SEVERAL TIMES THE 46 KV BREAKERS OPENED BECAUSE SALT CRUSTS CAUSED ARCING. REACTIVITY WAS INCREASED \$1.50 BY RESHIMMING (\$2.60 PREDICTED), AND TEMP. COEFF. CHECKED. SEVERAL CONTROL RODS EITHER JAMMED OR NEEDED REWORKING. AIR ACTIVITY WAS RELEASED FROM STEAM VALVES FOLLOWING A SCRAM AND DURING TWO SIDE/BLADE ROD TRADES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151 \$3.00 COPY, \$0.65 MICROFICHE

ACCIDENT, LOAD REJECTION + BONUS (ISR) + COMPARISON, THEORY AND EXPERIENCE + FAILURE, SCRAM MECHANISM + POISON, FIXED + REACTIVITY, EXCESS + REACTOR, BWR + REFUELING + REPORT, OPERATIONS

17-28603 ALSO IN CATEGORIES 9 AND 1

ELK RIVER OPERATING EXPERIENCE

NUS CORPORATION

NUS-391 +. 74 PAGES, 12 FIGURES, 2 TABLES, 10 REFERENCES, MAY 1967

FUEL FAILURE AND COOLANT ACTIVITY HISTORY IN 1966-67 REVIEWED. SETTING COOLANT ACTIVITY LIMITS ON AIR EJECTOR (STACK) ACTIVITY RELEASE RATES IS DIFFICULT BECAUSE OF VARYING LEAK RATES. LIMITING FACTOR TO DATE IS CONTAINMENT VENTILATION RELEASE RATE. ESTIMATES ARE 40-46 FAILED ASSEMBLIES WITH 30-50 GPD LEAKAGES ARE MAXIMUM PERMISSIBLE. ***19 FUEL ASSEMBLIES CONTAINED BOWED RODS. ***IN 1966, AUTOMATIC PRESSURE CONTROLLER WITHDREW CONTROL RODS WHEN REACTOR PRESSURE WAS TOO HIGH. ALSO INSERTED RODS WHEN PRESSURE TOO LOW, AND INSERTION COULD NOT BE STOPPED. REVISIONS SUGGESTED. ***CRITICALITY SAFETY CALCULATIONS OF FUEL STORAGE INDICATE KEFF IS 0.746 WHEN LOADED WITH 200 UNIRRADIATED FUEL ELEMENTS. BORAL SHEETS USED. ANALYSIS METHOD DESCRIBED. ***PROCEDURE FOR DRY SHIPPING FUEL ELEMENTS GIVEN.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151 \$3.00 COPY, \$0.65 MICROFICHE

*CRITICALITY SAFETY + CONTROLLER + ELK RIVER (BWR) + FAILURE, FUEL ELEMENT + FAILURE, FUEL ELEMENT + FAILURE, INSTRUMENT + FUEL ELEMENT BOWING + FUEL STORAGE + INSTRUMENT, DETECTION FAILED FUEL ELEMENT + INSTRUMENT, PRESSURE + LEAK + MODIFICATION, SYSTEM OR EQUIPMENT + REACTOR, BWR + REACTOR, POWER + REPORT, OPERATIONS ANALYSIS + SAFETY REVIEW + SOURCE, CONTINUOUS + STACK + STEAM GENERATOR

17-28604 ALSO IN CATEGORY 15

HEMPELMANN LH + LISCO H + HOFFMAN JG

THE ACUTE RADIATION SYNDROME- A STUDY OF NINE CASES AND A REVIEW OF THE PROBLEM

ARGONNE NATIONAL LABORATORY + LOS ALAMOS SCIENTIFIC LABORATORY

129 PAGES, 24 FIGURES, JOURNAL OF INTERNAL MEDICINE, 36(2), PAGES 279-510 (FEBRUARY 1952)

CASE HISTORIES ARE GIVEN OF 9 PATIENTS INVOLVED IN 2 NUCLEAR INCIDENTS AT LASL. REPORT IS

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-28604 *CONTINUED*

WRITTEN FOR THE CLINICIAN AND EMPHASIZES CLINICAL, HEMATOLOGIC, AND PATHOLOGIC ASPECTS OF ILLNESSES. DISCUSSES MECHANISMS BY WHICH IONIZING RADIATIONS CAUSE TISSUE DAMAGE. OF 10 PERSONS INVOLVED IN THE ACCIDENTS, 2 DIED. CALCULATED DOSES ARE TABULATED. THE MAXIMUM WHOLE BODY DOSE WAS 1930 ROENTGENS 80-KV X-RAY AND 114 ROENTGENS GAMMA. THE SAME INDIVIDUAL RECEIVED 15,000 TO 30,000 ROENTGENS SOFT X-RAY TO THE LEFT HAND. TWENTY-FOUR COLORED PRINTS DRASTICALLY REVEAL THE EFFECTS OF THE RADIATION. ILLNESSES OF PATIENTS ARE COMPARED TO SYNDROME AS OBSERVED IN JAPANESE VICTIMS OF 1945.

*PERSONNEL EXPOSURE, RADIATION + *RADIATION INJURY TREATMENT + *RADIOBIOLOGY + INCIDENT, EXPOSURE + INCIDENT, FATALITY + LASL

17-28617

QUARTERLY PROGRESS REPORT FOR THE PERIOD ENDING APRIL 30, 1968. 40-MW(E) PROTOTYPE HIGH-TEMPERATURE GAS-COOLED REACTOR POSTCONSTRUCTION RESEARCH AND DEVELOPMENT PROGRAM
GULF GENERAL ATOMIC INC., SAN DIEGO, CALIFORNIA
GA-8679 +. 53 PAGES, FIGURES, TABLES, REFERENCES, MAY 30, 1968, DOCKET 50-171, TYPE--HTGR, MFG--G.A., AE--BFCHELT

REACTOR WAS SHUT DOWN ALL QUARTER FOR CORE-ELEMENT-SURVEILLANCE MEASUREMENTS. THREE ELEMENTS REPLACED. ONE HAD ABNORMAL PURGE FLOW, ONE HAD BEEN DROPPED, AND ONE POSSIBLY HAD A CRACK IN IT. DEVELOPMENT OF A REACTIVITY HANDBOOK FOR HAND ANALYSIS OF REACTIVITY STATUS OF REACTOR IS DISCUSSED. INVESTIGATION CONTINUING TO DETERMINE WHY CALCULATED REACTIVITY IS 0.009 DELTA K/K LESS THAN ACTUAL AFTER 169 DAYS OF OPERATION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

FAILURE. FUEL ELEMENT + FUEL BURNUP + MATHEMATICAL TREATMENT + PEACH BOTTOM 1 (HTGR) + PROCEDURES AND MANUALS + R AND D PROGRAM + REACTIVITY EFFECT + REACTIVITY EFFECT, ANOMALOUS + REACTOR, HTGR

17-28618

ALSO IN CATEGORIES 15 AND 1

GRAY JL
ATOMIC ENERGY OF CANADA LIMITED HEALTH AND SAFETY ORGANIZATION
ATOMIC ENERGY OF CANADA LIMITED, OTTAWA, CANADA
AECL-1027 (FIFTH EDITION) +. 43 PAGES, JULY 1968

A SUMMARY OF THE PROVISIONS FOR HEALTH AND SAFETY, IN PARTICULAR RADIATION SAFETY. 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.

*RADIATION PROTECTION, ORGANIZATION + CANADA + RADIATION SAFETY AND CONTROL + REGULATION, GENERAL

17-28621

ALSO IN CATEGORIES 9 AND 6

BALOF FJ
LOCALIZATION OF IN-CORE DISTURBANCES WITH EXTERNAL CORE DETECTORS
THE PENNSYLVANIA STATE UNIVERSITY
104 PAGES, TABLES, FIGURES, JUNE 1968

TWO LEAD SHIELDED, PCP ION CHAMBERS USED WITH CROSS CORRELATION TECHNIQUES SAW DISTURBANCES IN A TRIGA CORE AT DISTANCES 3 IN. INTO THE CORE AND DISTURBANCES GREATER THAN 0.42 CENT.
***THE ROTATING OSCILLATORS PRODUCED NEUTRON WAVES 180 DEG OUT OF PHASE ON EITHER SIDE OF THE OSCILLATOR. THEREFORE THE DETECTORS SAW DIFFERENCES IN REACTIVITY WORTH OF AN ELEMENT. THIS COULD BE USED TO MEASURE FUEL BURNUP. ***REPORT DESCRIBES HARDWARE DEVELOPMENT, CORRELATION TECHNIQUES AND MATHEMATICAL TREATMENT, CHECKING WITH IN-CORE CHAMBER.

AVAILABILITY - PENN. STATE UNIV., DEPT. OF NUCLEAR ENGINEERING, UNIVERSITY PARK, PA.

*TRANSFER FUNCTION + FUEL BURNUP + INSTRUMENT, IN CORE + INSTRUMENT, NUCLEAR + OSCILLATOR, REACTIVITY + REACTIVITY EFFECT, ANOMALOUS + REACTOR, RESEARCH + TRIGA (RR)

17-28623

ALSO IN CATEGORY 5

DOMARATZKI Z
CANADIAN EXPERIENCE WITH WIRE WRAPPED FUEL FOR POWER REACTORS
ATOMIC ENERGY OF CANADA LTD., CHALK RIVER (ONTARIO)
AECL-3089 + CONF-680512-1 +. 25 PAGES, 9 FIGURES, 2 TABLES, MAY 1966

FLOW TESTS SHOWED WIRE PENETRATION DUE TO VIBRATION OF 0.003 IN./YR. BURNUP OF 20,000 MWDT/TE SHOWS NO UNUSUAL BEHAVIOR. ONLY 1 OF 1500 BUNDLES USED IN NPD SHOWED DEFECT. DOUGLAS POINT CONDITIONS COULD CAUSE SIGNIFICANT FRETTING, AND FUEL COULD OPERATE WITH BULK BOILING. THIS TURBULENCE NOT NEEDED, AND, NOW, SPACERS ARE USED. INDUCTION BRAZING IS USED TO ELIMINATE CRACKS AT WELDS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-28623 *CONTINUED*
22151, \$3.00 COPY, \$0.65 MICROFICHE

*FUEL ELEMENT CLUSTER + *HEAT TRANSFER AUGMENTATION + CANADA + CANDU (HWR) + REACTOR, PRESSURE TUBE + VIBRATION + WELDING

17-28640 ALSO IN CATEGORY 6
THIE JA
ELK RIVER REACTOR SAFETY ANALYSIS MONTHLY REPORT, JULY 1968
PURAL COOPERATIVE POWER ASSOCIATION, ELK RIVER, MINN.
JAT-68-7 +. 15 PAGES, 5 FIGURES, JULY 1968

FOUR PROPOSED RELOADS FOR CYCLE 4 ARE GIVEN, AND FOR EACH THE NUMBER OF LEAKERS IS ESTIMATED, BASED ON FUEL BURNUP. THE LOAD WITH THE MINIMUM NUMBER OF LEAKERS WOULD HAVE THE LEAST SHUTDOWN MARGIN. JUNE 5 COUNTING RATE DATA INDICATE SOURCE LOCATION G-1 IS THE POOREST LOCATION (10,488 C/MIN) AND H-14 THE BEST (30 C/MIN). N-7 AND J-4 WOULD PROVIDE ADEQUATE C/MIN UP TO DEC. 68.

*REFUELING + *SOURCE, NEUTRON + ELK RIVER (BWR) + FAILURE, CLADDING + FUEL BURNUP + INSTRUMENT, STARTUP RANGE + REACTOR, BWR + REPORT, OPERATIONS + SAFETY REVIEW + SHUTDOWN MARGIN

17-28641
HAMRICK TP + SWANKS JH
THE OAK RIDGE RESEARCH REACTOR - A FUNCTIONAL DESCRIPTION
OAK RIDGE NATIONAL LABORATORY, OPERATIONS DIVISION, TENN.
ORNL-4169(VOL.1) +. 261 PAGES, FIGURES, TABLES, SEPT. 1968

DESCRIBES REACTOR, HEAT TRANSFER SYSTEM, I AND C AND BUILDINGS. MANY CIRCUIT DIAGRAMS, BOTH ELECTRICAL AND FLUID. HAS USEFUL INFORMATION FROM INITIAL TESTS ON CORE FLOW AND REACTIVITY, FLUX DISTRIBUTION, AND FUEL BURNUP. FUEL AND CONTROL ROD PURCHASE SPECIFICATIONS INCLUDED. ORR WAS ORIGINALLY CONCEIVED FOR 5 MWTH, DESIGNED AND OPERATED AT 20, AND IN 1960 UPRATED TO 30.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA
22151, \$3.00 COPY, \$0.65 MICROFICHE

*REACTOR DESCRIPTION + BIBLIOGRAPHY + FUEL BURNUP + ORR (RR) + REACTOR STARTUP TESTING + REACTOR, RESEARCH + REACTOR, TEST

17-28642
JAMNE E + SIVERTS JG
DESCRIPTION OF THE HBWR PLANT
INSTITUTT FOR ATOMENERGI, HALDEN (NORWAY). OECD HALDEN REAKTOR PROSJEKT
HPR-95 +. 214 PAGES, 71 FIGURES, TABLES, DEC. 1967

UPDATED VERSION OF THE 1961 HAZARDS REPORT, PART 1. IT IS A 25 MWTH BWR, HEAVY WATER COOLED AND MODERATED, GIVING PROCESS STEAM TO A FACTORY. LOCATED UNDERGROUND AND REACHED THRU AN AIRLOCK. MAIN EMPHASIS IS NOW ON FUEL TESTING. REPORT DESCRIBES REACTOR, NO OPERATING EXPERIENCE.

AVAILABILITY - USAEC DEPOSITORY LIBRARIES IN THE U.S. AND OVERSEAS

*REACTOR DESCRIPTION + HBWR (BWR) + REACTOR, BWR + REACTOR, HWR

17-28645 ALSO IN CATEGORIES 14 AND 7
OTTENSEN U
EXPERIENCE AT HBWR WITH ACTIVITY RELEASE IN CONNECTION WITH FUEL FAILURES
INSTITUTT FOR ATOMENERGI, HALDEN (NORWAY). OECD HALDEN REAKTOR PROSJEKT
HPR-87 +. 94 PAGES, 36 FIGURES, 16 TABLES, OCT. 1967

DESCRIBES 13 CLAD FAILURES (SEPT. 63 TO NOV. 66) OF UO₂ PELLET FUEL, PRIMARILY TO SHOW RELEASE HISTORY IN REACTOR BUILDING DURING OPERATION AND TRANSPORT TO STORAGE BY VARIOUS MEANS. REACTOR IS COOLED SLOWLY TO 100 C TO AVOID PULLING IN THE INERT GAS, SO FISSION GAS CAN ESCAPE WITH STEAM. XE-133 IS 1000 TIMES THE I-131 CONTENT IN THE PRIMARY GAS SPACE FOLLOWING A FUEL RUPTURE. REACTOR DOWN TIME DUE TO HEALTH PHYSICS REASONS WAS 519 HR. WORKING LIMIT BASED ON AIRBORNE ACTIVITY DERIVED.

AVAILABILITY - USAEC DEPOSITORY LIBRARIES IN THE U.S. AND OVERSEAS

*FAILURE, CLADDING + *OPERATING EXPERIENCE SUMMARY + *RADIATION SAFETY AND CONTROL + AIRBORNE RELEASE + FAILURE, FUEL ELEMENT + FISSION GAS RELEASE + FISSION PRODUCT, IODINE + HBWR (BWR) + NORWAY + PARTITION COEFFICIENT + REACTOR, BWR + REPORT, OPERATIONS ANALYSIS + XENON

17-28646
QUARTERLY OPERATING REPORT. FIRST QUARTER 1968

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-28646 *CONTINUED*
DUQUESNE LIGHT CO., SHIPPINGPORT, PA. POWER STATIONS DEPT.
DLCS-5000168 +. 27 PAGES, 2 FIGURES, 8 TABLES, MARCH 1968

COOLANT LEAKED 20 GPH BACK THROUGH CLOSED AIR OPERATED VALVE AND A POSITIVE DISPLACEMENT CHARGING PUMP TO THE CHARGING WATER TANK. A RAD-WASTE TANK FLOATED BECAUSE OF EXCESSIVE RAINWATER. A RELIEF VALVE LEAKED DUE TO A FILLER METAL RING CAUGHT BETWEEN DISK AND SEAT. VARIOUS ROUTINE CORE PHYSICS TESTS WERE MADE, NO RESULTS GIVEN. THREE SCRAMS - (1) NOISE FROM AN OPERATIONAL AMPLIFIER INTRODUCED INTO POWER TO FLOW CIRCUTRY. (2) FROM HIGH POWER FOLLOWING A LOAD INCREASE, BEFORE GAINS COULD BE REDUCED TO COMPENSATE FOR CHANGED ROD HEIGHT. (3) FROM OPERATOR ERROR IN NOT SUPPRESSING PERIOD IN PHYSICS TEST.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, 1717 H ST., WASHINGTON, D. C. 20545 (\$0.25 CENTS/COPY)

*LEAK + *PRESSURE RELIEF + *VALVE + INSTRUMENT, ABNORMAL INDICATION + REACTOR, POWER + REPORT, OPERATIONS + SCRAM, REAL + SHIPPINGPORT (PWR) + STORAGE CONTAINER

17-28722
HOWES JE + EWING PA + MORRISON DL
A STUDY OF THE NEUTRON ACTIVATION PRODUCTS IN THE PIQUA NUCLEAR POWER FACILITY CONCRETE BIOLOGICAL SHIELD BATTLEF MEMORIAL INSTITUTE, COLUMBUS, OHIO
BMI-X-518 +. 20 PAGES, APPENDIX, TABLES, FIGURES, REFERENCES, AUGUST 1968

A 2.5 IN. CORE 94.5 IN. LONG WAS DRILLED FROM THE SHIELD AND ANALYZED. FAST FLUX 6 IN. INTO CONCRETE AGREED WITH AI ESTIMATE, BUT THERMAL FLUX WAS ONE-TENTH THE ESTIMATE. LEACHING WITH MIAMI RIVER WATER INDICATES ONLY 3% OF THE 0.4 CURIE/CC WOULD BE LEACHED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*ACTIVATION PRODUCT + *SHIELDING + DECOMMISSIONING + FAST NEUTRON + PIQUA (OCR) + REACTOR, ORGANIC COOLED + SURFACE WATER, GENERAL + THERMAL NEUTRON

17-28763
GENERAL ELECTRIC PWR POWER PLANT TRAINING PROGRAM
GENERAL ELECTRIC COMPANY
88 PAGES, FIGURES, TABLES, AUGUST 1968

PRIMARILY FOR THE UTILITY PERSONNEL OBTAINING THE AEC COLD OPERATING LICENSE. GIVES GENERAL REQUIREMENTS FOR VARIOUS STATION STAFF JOBS. OPERATOR TRAINING BUILT AROUND GE-BWR SIMULATOR. TWELVE-WEEK SPECIALIST COURSES AVAILABLE FOR STATION NUCLEAR ENGINEER, FOR I AND C SUPERVISOR, FOR REACTOR CHEMIST, AND FOR PLANT HEALTH PHYSICIST (SIMULATOR TRAINING WELL DESCRIBED). TYPICAL TRAINING SCHEDULE FOR ALL PERSONNEL STARTS 20 MONTHS BEFORE INITIAL CRITICALITY.

AVAILABILITY - GENERAL ELECTRIC COMPANY M/C 595, 175 CURTNER AVENUE, SAN JOSE, CALIFORNIA 95125

*TRAINING + ANALOG SIMULATION + HEALTH PHYSICS TRAINING + REACTOR, BWR + REACTOR, POWER

17-28768
BEATTIE WC
INDIAN POINT 1 CHANGES APRIL TO SEPT. 30, 1968
CONSOLIDATED EDISON CO. OF NEW YORK, INC. NEW YORK, N. Y.
1 PAGE, ATOMIC ENERGY CLEARINGHOUSE, 14(41), PAGE 18, (OCT. 7, 1968), DOCKET 50-3, TYPE--PWR, MFG--B+W, AE--CON ED

(LETTER, SEPT. 26) PRINCIPAL CHANGES WERE - (1) TUNGSTEN CARBIDE BEARINGS HAVE NOW BEEN INSTALLED ON ALL NUCLEAR RIVER-WATER PUMPS, REPLACING WATER COOLED BEARINGS, TO CONSERVE WATER. (2) BARS INSTALLED TO KEEP DERRIS OUT OF CONDENSER SCREENWELL. (3) REFRIGIDRYER INSTALLED IN CONTAINMENT RADIATION SAMPLING LINE TO PREVENT MOISTURE-CONDENSING PROBLEMS. (4) FUEL HANDLING CRANE DISCONNECT SWITCH ADDED. (5) NEW POWER SUPPLY TO NO. 2 COUNTING ROOM CORRECTS UNDERVOLTAGE. (6) A PARALLEL TIE TO NUCLEAR FRESH WATER COOLING WAS MADE FOR CELL-3 PRIMARY COOLANT SAMPLE COOLERS.

AUXILIARY COOLING SYSTEM + BEARING + CONDENSATION + FUEL HANDLING MACHINE + HEAT SINK + INDIAN POINT 1 (PWR) + MODIFICATION, SYSTEM OR EQUIPMENT + MONITOR, RADIATION, AIR + PUMP + REACTOR, PWR + REPORT, OPERATIONS SUMMARY

17-28770 ALSO IN CATEGORY 9
HUBBARD ET
GETR POISON INJECTION HAMPERED BY AIR BINDING
GENERAL ELECTRIC CO., VALLECITOS ATOMIC LAB., PLEASANTON, CALIF.
1 PAGE, ATOMIC ENERGY CLEARINGHOUSE, 14(41), PAGE 19, (OCT. 7, 1968), DOCKET 50-70, TYPE--TR, MFG--G.E., AE--G.E.

(LETTER, SEPT. 24) DURING THE ANNUAL TEST OF THE LIQUID POISON SYSTEM AT THE GE TEST REACTOR, SEPT. 18, 1968, THE PUMPING RATE WAS 50% OF THE DESIGN VALUE. AIR HAD COLLECTED IN AN ELEVATED SECTION BETWEEN STORAGE TANK AND PUMP, CAUSING PARTIAL AIR BINDING. PIPING CHANGE

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-28770 *CONTINUED*

GAVE A SATISFACTORY TEST. TEST WILL BE REPEATED NEXT OUTAGE AND IN 6 MONTHS.

*FAILURE, DESIGN ERROR + *FLOW BLOCKAGE + *SHUTDOWN SYSTEM, SECONDARY + AIR + GETR (TR) + LEAK + PIPING + REACTOR, POWER + REACTOR, TEST

17-28771

ALSO IN CATEGORY 9

GOULD WR

SAN ONOFRE CONTROL ROD POSITION INDICATOR FAILURE

SOUTHERN CALIFORNIA EDISON CO., LOS ANGELES, CALIF.

2 PAGES, ATOMIC ENERGY CLEARINGHOUSE, 14(41), PAGE 20 AND 21, (OCT. 7, 1968), DOCKET 50-206, TYPE--PWR, MFG--WEST., AE--BECHTEL

(LETTER, SEPT. 25) FOLLOWING A CABLE-TRAY-FIRE OUTAGE, CONTROL ROD F-10 POSITION INDICATOR READ ERRATICALLY ON FEB. 19, 1968. ON FEB. 20, THE RESISTANCE BETWEEN PM/SEC WINDING ON THE LVD TRANSFORMER INDICATED A SHORT. SUBSEQUENT IN-CORE THERMOCOUPLE MAPS WERE IMPROPERLY ANALYZED, AND IT WAS CONCLUDED THE ROD WAS OUT IN THE CORRECT POSITION. ON MARCH 8, WESTINGHOUSE COMPUTER ANALYSIS INDICATED F-10 WAS BOTTOMED IN THE CORE. POLARITY OF F-10 MOVABLE GRIPPER COILS HAD BEEN CHANGED. OUT OF CORE FLUX READINGS WILL BE PROMPTLY COMPARED BY OPERATORS, IN-CORE THERMOCOUPLE DATA PLOTTED PERIODICALLY, TESTING OF POLARITY WHERE PENETRATIONS EFFECTED, INCIDENT REVIEWED FOR TRAINING.

*CONTROL ROD DRIVE + *INSTRUMENT, ABNORMAL INDICATION + *INSTRUMENT, POSITION + COMPUTER CONTROL + FAILURE, EQUIPMENT + FAILURE, MAINTENANCE ERROR + INSTRUMENT, IN CORE + REACTIVITY EFFECT, ANOMALOUS + REACTOR, PWR + SAN ONOFRE (PWR) + TRAINING

17-28772

ALSO IN CATEGORY 9

COX EL

AUTOMATIC ROD RUN-IN FAILS AFTER SCRAM TEST

UNIVERSITY OF MISSOURI, RESEARCH REACTOR FACILITY, COLUMBIA, MO.

1 PAGE, ATOMIC ENERGY CLEARINGHOUSE, 14(41), PAGE 21, (OCT. 7, 1968), DOCKET 50-186

(LETTER, SEPT. 25) DURING A ROUTINE CHECKOUT OF THE U OF MISSOURI (COLUMBIA) REACTOR, THE AUTOMATIC ROD RUN-IN ON ROD A DID NOT FUNCTION FOLLOWING A SCRAM TEST FROM 2 IN. A RELAY WAS FOUND INOPERABLE. THIS IS THE FIRST TIME IN THE TWO-YEAR HISTORY THIS HAS HAPPENED, AND IT WAS FOUND ON THE PREOPERATIONAL CHECKOUT. MALFUNCTION OF THE RELAY WHEN THE REACTOR IS CRITICAL DOES NOT AFFECT SAFETY CIRCUIT OPERATION.

FAILURE, COMPONENT + FAILURE, SCRAM MECHANISM + INSTRUMENT, RELAY + REACTOR, FLUX TRAP + REACTOR, RESEARCH + UMR (RR)

17-28800

CHEMICAL SURVEILLANCE OF THE CAROLINAS-VIRGINIA TUBE REACTOR

WESTINGHOUSE ELECTRIC CORPORATION

CVNA-285 +. 149 PAGES, FIGURES, TABLES, REFERENCES, AUGUST 1967

GENERAL STUDY DEALING WITH DEGRADATION OF D₂O (USE D₂ INSTEAD OF H₂ GAS TO SUPPRESS RADIOLYSIS), FLUORIDE PICKUP IN MODERATOR FROM INSULATION, ADDITION OF ALKALI TO REDUCE CRUD AND SURFACE FILM BUILDUP, AND FAILURE OF PIPE IN THE SWEEP GAS SYSTEM (CAUSED BY CHLORIDES FROM RECOMBINER PALLADIUM PELLETS).

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*COOLANT CHEMISTRY + *OPERATING EXPERIENCE SUMMARY + CHLORIDE + CRUD + FAILURE, PIPE + FLUORINE + RADIOLYTIC GAS + REACTOR, HWR + REACTOR, PRESSURE TUBE + REACTOR, PWR + RECOMBINER + REPORT, OPERATIONS ANALYSIS + STRESS CORROSION

17-28801

ALSO IN CATEGORY 6

KLICKMAN AE + HORNE RE + WILBER HA

OSCILLATOR TESTS IN THE ENRICO FERMI REACTOR

ATOMIC POWER DEVELOPMENT ASSOCIATES, INC.

APDA-NTS-11 +. 145 PAGES, 71 FIGURES, 24 TABLES, 10 REFERENCES, AUGUST 1967

ROTATING RODS WHICH WOULD VARY REACTIVITY BY 6 OR BY 2 CENTS BETWEEN 0.001 AND 10 CPS WERE USED, TOGETHER WITH A SYNCHRONOUS AND A NULL BALANCE TRANSFER FUNCTION ANALYZER, AS WELL AS SIMPLE RECORDERS. NEGLIGIBLE DIFFERENCES EXIST FOR SPACE DEPENDENT CALCULATIONS. SYNCHRONOUS ANALYZER SEEMED BEST, BUT TRUE FEEDBACK OBSERVABLE ONLY AT HIGHER POWERS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*OSCILLATOR, REACTIVITY + *TRANSFER FUNCTION + FERMI (LMFBR) + REACTOR STABILITY + REACTOR, LMFBR + SPACE DEPENDENT DYNAMICS + TEST, PHYSICS

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-28802 ALSO IN CATEGORY 6
SEELEY GT + BALL GL + BRANYAN CE + HORNE RE + MUELLER RE + SEGAL BM + WILBER HA
MEASUREMENT OF SOME REACTIVITY EFFECTS IN THE ENRICO FERMI REACTOR
ATOMIC POWER DEVELOPMENT ASSOCIATES, INC.
APDA-NTS-12 +. 68 PAGES, 18 FIGURES, 13 TABLES, 3 REFERENCES, NOVEMBER 1967

REACTIVITY WORTH OF PERMANENT NEUTRON SOURCE (23 CENTS AT 10 WATTS, AND 0.23 CENTS AT 1 KW),
OF RETRACTABLE NEUTRON SOURCE (8.3 CENTS), OF COOLANT FLOW RATE (NO GAS ENTRAINMENT AND
NEGLECTABLE STRUCTURAL DEFORMATION) AND PRESSURE COEFFICIENT (NONE AT 15 AND 25 PSIA), AND OF
TEMPORARY INSTRUMENT THIMBLE (1.41 CENTS) WERE MADE AND EVALUATED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*REACTIVITY EFFECT + COOLANT COEFFICIENT + FERMI (LMFBR) + FLOW, GENERAL + INSTRUMENT, IN CORE +
PRESSURE, EXTERNAL + REACTOR, LMFBR + SOURCE, NEUTRON + TEST, PHYSICS

17-28826 ALSO IN CATEGORY 9
DENIELOU G
RECENT EXPERIENCES IN THE OPERATION OF RAPSODIE
ATOMIC POWER DEVELOPMENT ASSOCIATES, INC.
NP-TR-1682 +. 14 PAGES, FIGURES, TRANSLATED FROM ENFRG. NUCL. 10, PAGES 22-2 (1968)

THE AUTHOR IS DESCRIBING THE EXPERIENCES GATHERED IN THE OPERATION OF RAPSODIE DURING THE
FIRST YEAR AFTER START-UP. THE FUPL PINS DID NOT YET GIVE MUCH INFORMATION. THIS REACTOR IS
A VERY RELIABLE ASSEMBLY. IT WAS CORRECTLY CALCULATED, WITH THE EXAMPLE BEING THE EXCELLENT
PREDICTIONS OF THE DYNAMIC CHARACTERISTICS. INTERVENTIONS ARE EASIER THAN HAD BEEN IMAGINED.
OUR IMPROVED KNOWLEDGE OF THE REACTOR AS A RESULT OF OUR EXPERIENCE PERMITS US TO CONSIDER
SIMPLIFICATIONS (CONTROL, HANDLING) AND SHOULD BENEFIT THE DESIGN PROJECT OF PHENIX.

AVAILABILITY - USAEC DEPOSITORY LIBRARIES OF THE U.S. AND OVERSEAS

*OPERATING EXPERIENCE + *REACTOR CONTROL + FRANCE + REVIEW

17-28648 ALSO IN CATEGORIES 15 AND 13
CALDWELL RD
WHOLE BODY COUNT EXPERIENCE
NUCLEAR MATERIALS AND EQUIPMENT CORPORATION
LETTER TO L. D. LOW, AEC COMPLIANCE, MAY 17, 1968

ALTHOUGH 10 CFR 20 DOES NOT REQUIRE REPORTING THIS, WE BELIEVE YOU WOULD BE INTERESTED.
THIRTY-THREE EMPLOYEES WERE COUNTED MARCH/APRIL 1969, SELECTED BECAUSE OF PAST EXPOSURE.
EIGHT EXCEEDED ICRP RECOMMENDATIONS, 6 FROM ENRICHED URANIUM OPERATIONS AT APOLLO, PA., AND 2
FROM PLUTONIUM SCRAP RECOVERY AT PARKS. FRACTION PERMISSIBLE RANGED BETWEEN 2.44 AND 1.12.
THEY WILL BE RECOUNTED IN MID-JUNE, AND LUNG RETENTION TIMES WILL BE GOVERNING. WE REALIZE
THAT LONG RETENTION TIMES ARE POSSIBLE FOR HIGH FIRED ACTINIDE OXIDES.

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

*COUNTER, WHOLE BODY + *DOSE MEASUREMENT, INTERNAL + FABRICATION FACILITY + FUEL ELEMENT + ICRP +
OPERATING EXPERIENCE SUMMARY + PERSONNEL EXPOSURE, RADIATION + PLUTONIUM + SPECIAL NUCLEAR MATERIAL +
URANIUM-235

17-28849 ALSO IN CATEGORY 13
CALDWELL RD
AIRBORNE EXPOSURE EXCEEDING 40 MPC-HOURS
NUCLEAR MATERIALS AND EQUIPMENT CORPORATION, APOLLO, PENNSYLVANIA
LETTER TO L. D. LOW, AEC COMPLIANCE, MAY 27, 1968

FOUR CP-2 OPERATORS WERE EXPOSED FROM A LEAKING GASKET ON A ROTATING SLAB BLENDER. ***THREE
PLANT SERVICE OPERATORS WERE EXPOSED DURING FILTER CHANGES. NASAL SMEARS SHOWED EXCESSIVE
CONTAMINATION, SO NO CREDIT WAS TAKEN FOR RESPIRATORY PROTECTION. WE ARE NOW USING AIR
SUPPLY MASKS TO CHANGE HIGHLY ENRICHED URANIUM FILTERS. WE ARE LOOKING AT ENGINEERING
CHANGES IN FILTER BOX DESIGN TO ELIMINATE THESE EXPOSURES.

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

*FABRICATION FACILITY + AIRBORNE RELEASE + *FILTER OPERATION + FUEL ELEMENT + INHALATION + MILLING +
PERSONNEL PROTECTIVE DEVICE + SPECIAL NUCLEAR MATERIAL + URANIUM-235

17-28850
WEISNER WJ
TWO RADIOGRAPHY INCIDENTS
PITTSBURGH-DES MOINES STEEL COMPANY

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-28850 *CONTINUED*

LETTER TO DIRECTOR, DIV. OF STATE AND LICENSEE RELATIONS, USAEC, WASHINGTON, JULY 19, 1968

TRANSMITS LETTER TO INDIVIDUALS CONCERNED. (1) ON 18 DEC. 1967, AN EMPLOYEE ON NIGHT SHIFT, WORKING ON LAST EXPOSURE AND IN A HURRY TO COMPLETE BREAKDOWN, DID NOT TAKE A SECOND LOOK AND FOUND DRIVE CABLE IN SOURCE TUBE. HE RECEIVED 4.98 REMS, AND HIS ASSISTANT 0.463. HE VIOLATED 3 PROCEDURES. (2) EARLY IN 1968, AN EMPLOYEE RADIOGRAPHING ON NIGHT SHIFT FOUND SOURCE STUCK BECAUSE OF A KINKED GUIDE TUBE. IN DISLODGING THE SOURCE, HE RECEIVED 1.033 REMS AND HIS ASSISTANT 0.094. NO PROCEDURE VIOLATIONS.

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

*PERSONNEL EXPOSURE, RADIATION + *RADIOGRAPHY + FAILURE, OPERATOR ERROR + INCIDENT, EQUIPMENT

17-28851 ALSO IN CATEGORY 15

HIRSCHBERG SM

REPORT OF OVEREXPOSURE DURING RADIOGRAPHY.

GENERAL DYNAMICS, GROTON, CONN.

LETTER TO DIRECTOR, DIV. OF COMPLIANCE, USAEC, WASHINGTON, D. C., MARCH 21, 1968

ON JAN. 30, 1968, A RADIOGRAPHER NOTED THAT THE DEVICE WAS OPERATING WITH DIFFICULTY AFTER 21 EXPOSURES, AND HIS DOSIMETER READ 10 MREM. AFTER 28 EXPOSURES IT WAS OFF SCALE. FILM BADGE READ 14.5 REMS. ALTHOUGH RADIOGRAPHER STATED HE SURVEYED, AND STORED LIGHT WAS RECEIVED AFTER EACH EXPOSURE, IT WAS JUDGED HE FAILED TO NOTE THESE. A CRIMPED AREA ON DRIVE HOUSING COULD RESTRICT DRIVE OPERATION. HE WAS ESTIMATED TO RECEIVE 20 REMS WHOLE BODY AND 50 REMS EXTREMITIES. ***CITATION JULY 31) FOR NOT SURVEYING, NOT NOTIFYING SUPERVISOR, AND NOT FOLLOWING EMERGENCY PROCEDURES. AEC BELIEVES WHOLE BODY DOSE WAS FROM 50 TO 20 REMS.

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

*EMERGENCY PROCEDURE + *INCIDENT, EXPOSURE + FAILURE, EQUIPMENT + FAILURE, OPERATOR ERROR + PERSONNEL EXPOSURE, RADIATION + RADIOGRAPHY

17-28852

BERRY ET

FAILURE OF RADIAC CALIBRATOR

LETTER TO DIRECTOR, DIV. OF LICENSING + REGULATIONS, USAEC, WASHINGTON, D. C. 7/25/68

A RADIAC CALIBRATOR ABOARD USS PROTEUS (AS-19) OPERATED ERRATICALLY DURING RECENT RADIAC CALIBRATIONS. IT ALSO JAMS AND LEAKS MERCURY. WITH THE SOURCE IN THE STOWED POSITION, 4.6 MREM/HR COMES THROUGH 1/4 INCH LEAD SHIELD.

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

*SOURCE, RADIATION + BYPRODUCT MATERIAL + FAILURE, EQUIPMENT + INSTRUMENT CALIBRATION

17 20053

BERMAN HL

LEAKING CS-137 SOURCE

LETTER TO DIRECTOR, DIV. OF MATERIALS LICENSING, USAEC, WASHINGTON, D. C., JULY 25, 1968

DURING ROUTINE LEAK TESTING OF 8 SEALED 10 MGM RA EQUIVALENT SOURCES, TWO WERE FOUND LEAKING. A TEST TUBE USED TO STORE THEM DURING CHECK WAS CONTAMINATED TO 50 MR/HR, YET THE NORMAL STORAGE WAS NOT CONTAMINATED. THEY ARE EXCELLENT FOR TREATMENT OF PELVIC CANCER BUT SHOULD THEY BE CHECKED MORE FREQUENTLY. (REPLY AUG. 12, 1968) - SINCE 1963, SEVEN LICENSES HAVE REPORTED A LEAKING MMM CS-137 SOURCE, A RATHER SMALL PERCENTAGE OF THOSE IN USE.

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

*SOURCE, RADIATION + BYPRODUCT MATERIAL + CESIUM + LEAK + OPERATING EXPERIENCE SUMMARY + SURVEILLANCE PROGRAM

17-28854

ALSO IN CATEGORY 13

RAIN EE

QUARTERLY DOSE LIMITS EXCEEDED

NUCLEAR FUEL SERVICES, INC.

LETTER TO DIRECTOR, DIVISION OF COMPLIANCE, USAEC, WASHINGTON, D. C., JULY 29, 1968

DURING THE SECOND QUARTER OF 1968, FILM BADGES SHOWED ONE OPERATOR RECEIVED 3.16 REMS AND ANOTHER 3.13 WHOLE BODY GAMMA RADIATION. NEITHER EXCEEDS (5 N-19) LIMITS. BOTH WERE WITHDRAWN FROM PLUTONIUM PRODUCTION FACILITY WORK WHEN DOSIMETERS INDICATED A 2.5 QUARTERLY DOSE. ***WE WILL CONTINUE TO MINIMIZE FIELD RADIATION, TO USE MOBILE SHIELDS, AND WILL LOWER DOSE LIMITS FROM 2.5 TO 2.0 REMS.

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

*SPECIAL NUCLEAR MATERIAL + FABRICATION FACILITY + FILM, GENERAL + FUEL ELEMENT + INSPECTION AND COMPLIANCE + PERSONNEL EXPOSURE, RADIATION + PERSONNEL PROTECTIVE DEVICE + PLUTONIUM +

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-28854 *CONTINUED*
RADIATION SAFETY AND CONTROL + SHIELDING

17-28856
NELSON CA
QUARTERLY EXPOSURE EXCEEDS 3 REM
LETTER TO DIRECTOR, DIVISION OF LICENSING AND REGULATION, USAEC, WASHINGTON, D. C. AUG. 5, 1968

DURING THE PERIOD 8 APRIL TO 30 JUNE 1968, AN EMPLOYEE RECEIVED 3.969 REMS, 2.391 DURING THE LAST TWO WEEKS. HE HAD BEEN ROUTINELY INVOLVED IN PROCESSING NA-24, K-42, AND BR-82 THROUGHOUT THE QUARTER, BUT IN THE LAST TIME PERIOD BEGAN PROCESSING HG-197 (1.2 CURIES). THE OTHER QUANTITIES WERE 0.2 CURIE OR LESS. INVESTIGATION HAS NOT YET INDICATED THE CAUSE.

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

*BYPRODUCT MATERIAL + INSPECTION AND COMPLIANCE + MERCURY + PERSONNEL EXPOSURE, RADIATION + RADIOISOTOPE

17-28857 ALSO IN CATEGORIES 15 AND 13
WULLER GE
UO2 SPILL AT HAMMER MILL
KERR-MCGEE CORPORATION, OKLAHOMA CITY, OKLAHOMA
LETTER TO L. D. LOW, DIRECTOR, DIV. OF COMPLIANCE, USAEC, WASHINGTON, D. C., AUGUST 2, 1968

ON JUNE 28, A CAN OF CALCINED UO2 (1.55% ENRICHED) SPILLED WHILE BEING HOISTED TO A HAMMER MILL. (OPERATOR WAS UNFAMILIAR WITH HOIST CONTROLS.) AVERAGE AIRBORNE CONCENTRATION WAS 11X MPC. ONE OPERATOR CLEANED UP SPILL, WEARING RESPIRATOR. WHILE EXPOSURE CALCULATIONS SHOWED HE WAS EXPOSED TO 2.04 MPC, URINE SAMPLES SHOWED THAT PROTECTION HAD BEEN ADEQUATE.

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

*SOURCE MATERIAL + AIRBORNE RELEASE + INSPECTION AND COMPLIANCE + MILLING + PERSONNEL PROTECTIVE DEVICE + SPECIAL NUCLEAR MATERIAL + URANIUM DIOXIDE

17-28858 ALSO IN CATEGORY 13
WULLER GE
UF6 RELEASE THROUGH OPEN VALVE
KERR-MCGEE CORPORATION, OKLAHOMA CITY, OKLAHOMA
TWX TO B. H. GRIER, DIRECTOR, DIVISION OF COMPLIANCE, USAEC, WASHINGTON, JULY 23, 1968

ON JULY 19, 1968, ABOUT 100 POUNDS OF UF6 ENRICHED TO 1.5% WAS RELEASED THRU AN INADVERTANTLY OPEN VALVE, DURING STARTUP OF NEW VAPORIZATION EQUIPMENT AT THE CIMAPRON FACILITY. ONE EMPLOYEE RECEIVED SKIN BURNS (NECK) DURING REENTRY WITH SCURA GEAR TO DETERMINE SOURCE OF LEAK. VALVE WAS OPEN FROM 6.40 TILL 7.00 PM. GROUND LEVEL RELEASE RAPIDLY DISPERSED.

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

*AIRBORNE RELEASE + *FAILURE, OPEPATOR ERROR + *URANIUM HEXAFLUORIDE + FUEL CONVERSION + SOURCE MATERIAL + VALVE

17-28859
TWALLER WE
SPILL OF MO99-TC99M
UNIVERSITY OF IOWA
TWX TO USAEC COMPLIANCE OFFICE, GLENELLYN. III.

ON JULY 30, 1968, A SPILL OF MO-99/TC-99M OCCURRED. DATA INSUFFICIENT TO SHOW CAUSE FOR NOTIFICATION UNDER 10 CFR 20.403.

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

*BYPRODUCT MATERIAL + CONTAMINATION + INCIDENT, GENERAL + INSPECTION AND COMPLIANCE + MOLYBDENUM + TECHNETIUM

17-28876 ALSO IN CATEGORY 6
REACTIVITY HANDBOOK
GULF GENERAL ATOMIC INC., SAN DIEGO, CALIFORNIA
GA-8679 +. 9 PAGES, 6 FIGURES, 1 TABLE, PAGE 3-11 OF QUARTERLY PROGRESS REPORT FOR THE PERIOD ENDING APRIL 30, 1968. 40-MW(E) PROTOTYPE HIGH-TEMPERATURE GAS-COOLED REACTOR POSTCONSTRUCTION RESEARCH AND DEVELOPMENT PROGRAM, MAY 30, 1968, DOCKET 50-171, TYPE--HTGR, MFG--G.A., AE--BECHTEL

GGA DEVELOPED A HANDBOOK FOR HAND ANALYSIS OF THE REACTIVITY STATUS OF PEACH BOTTOM AT THE SITE. VARIABLES INCLUDE TEMP., FLOW, XE AND SM CHANGES FOR FIVE MODES OF OPERATION. SIX THREE-DIMENSIONAL FIGURES ARE GIVEN SHOWING REACTIVITY DIFFERENCES FROM INITIAL EQUILIBRIUM. HANDBOOK INCLUDES CURVES OF REACTIVITY CHANGE FROM CHANGES IN HELIUM INLET TEMP., PA-U233 CONCENTRATIONS, PROCTACTINIUM DECAY, AND BUILDUP EXPONENTIALS.

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-28876 *CONTINUED*

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA
22151, \$3.00 COPY, \$0.65 MICROFICHE

*MATHEMATICAL TREATMENT + *PROCEDURES AND MANUALS + *REACTIVITY EFFECT + FLOW THEORY AND EXPERIMENTS +
FUEL BURNUP + PEACH BOTTOM 1 (HTGR) + R AND D PROGRAM + REACTIVITY EFFECT, ANOMALOUS + REACTOR PHYSICS +
REACTOR, HTGR + REACTOR, POWER + SAMARIUM + TEMPERATURE REACTIVITY EFFECT + XENON

17-28938 ALSO IN CATEGORY 6

TESTS ON PH REACTIVITY EFFECT

CONSOLIDATED EDISON COMPANY OF NEW YORK

4 PAGES, LETTER TO P.A. MORRIS, DIVISION OF REACTOR LICENSING FROM W.C. BEATTIE, SEPTEMBER 26, 1968,
DOCKET 50-3, TYPE--PWR, MFG--B+W, AE--CON ED

(SEPT. 28 LETTER TO DRL) - ORIGINAL TESTS WERE NOT PERFORMED ON JULY 67, DUE TO LOAD DEMAND
AND APPROACHING REFUELING. REQUESTS PERMISSION TO PERFORM THIS SET OF TESTS BETWEEN NOV. 1,
68, AND FEB. 1, 69, AS OUTLINED IN CHANGE 28 OF JUNE 22, 67. (DRL LETTER, OCT. 9) - CHANGE
28 IS EXTENDED TO FEB. 1, 69, BECAUSE THE PROCEDURES ARE SUBSTANTIALLY THE SAME.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, 1717 H ST., WASHINGTON, D.C. 20545 (\$0.25 CENTS/COPY)

*PH REACTIVITY EFFECT + *TEST, PHYSICS + INDIAN POINT 1 (PWR) + POISON, SOLUBLE + REACTOR, PWR

17-28965

KING WH

EVESR ANNUAL REPORT 1 OF DEACTIVATED STATUS

GENERAL ELECTRIC CO., VALLECITOS ATOMIC LAB., PLEASANTON, CALIFORNIA

LTR. TO P. A. MORRIS, DIVISION OF REACTOR LICENSING, 7 PAGES, 1 TABLE, OCT. 4, 1968, DOCKET NO. 50-183

TURBINE AND ASSOCIATED EQUIPMENT ARE BEING DISPOSED OF. WEEKLY INSPECTIONS OF FACILITY ARE
MADE. BUILDINGS ARE USED FOR CHEMICAL PROCESSING OF IRRADIATED PLASTIC AND METALLURGICAL
TESTING. MAX. RADIATION READING LISTED IS 65 MR/HR (GAMMA).

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

*DECOMMISSIONING + REACTOR, BWR + REPORT, OPERATIONS SUMMARY + VESR (ISR)

17-28966

PIQUA MONTHLY PROGRESS REPORT 55

PIQUA NUCLEAR POWER FACILITY

COO-652-55 +. 7 PAGES, SEPT. 1968, DOCKET NO. 115-2, TYPE--OCR, MFG--A.I., AE--A.I.

ORGANIC SERVICE PIPING AND PUMPS ARE BEING REMOVED AND SHIPPED.

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

*DECOMMISSIONING + PIPING + PIQUA (OCR) + REACTOR, ORGANIC COOLED + REPORT, OPERATIONS

17-28967 ALSO IN CATEGORY 9

SELECTED LACROSSE OPERATING EXPERIENCE

ALLIS-CHALMERS, BETHESDA, MARYLAND

ACNP-68512 +. 17 PAGES OF FOURTEENTH MONTHLY OPERATIONAL REPORT ON THE LA CROSSE BOILING WATER REACTOR, 2
FIGURES, 1 TABLE, AUGUST 1968, DOCKET NO. 115-5, TYPE--BWR, MFG--A.C., AE--SGT + LUNDY

REACTOR REMAINED SHUT DOWN FOR MAINTENANCE. C ROD DRIVE EFFLUENT PUMPS ARE OPERATING
SATISFACTORILY, THE PIPING HAS GREATER PRESSURE DROP THAN ANTICIPATED. CAVITATION OCCURS
ONLY WHEN BOTH PUMPS ARE RUN OR WHEN LOSS OF SEAL INJECTION CAUSES LOSS OF SUBCOOLING.
VARIOUS SHIELDS WERE INSTALLED TO REDUCE STREAMING SPOTS, INCLUDING BORATED POLYETHYLENE FOR
9 NEUTRON DETECTOR PENETRATIONS.

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

CONTROL ROD DRIVE + FAILURE, DESIGN ERROR + LACROSSE (BWR) + PRESSURE DROP + PUMP + REACTOR, BWR +
REPORT, OPERATIONS + SHIELDING

17-28968

SINCLAIR PM

CAUSE OF LAB ACCIDENT UNANSWERED

2 PAGES, PAGES 27 AND 30 OF INDUSTRIAL RESEARCH 10(9), SEPTEMBER 1968

BRIEF YET COMPREHENSIBLE REVIEW OF THE GULF OIL R AND D LAB OCTOBER 4, 1967, INCIDENT,
RESULTING IN WHOLE-BODY DOSES OF 600, 300, AND 115 R TO THOSE DOING MAINTENANCE OF AN
IMPROPERLY OPERATING TARGET COOLING SYSTEM. A VOLTAGE RECORDER INDICATED THAT THE MACHINE
WAS NOT TURNED OFF TO PERFORM THE MAINTENANCE. ***DOOR AND OTHER INTERLOCKS WERE FOUND NOT
FUNCTIONING, YET THE EXACT CAUSE HAS NOT BEEN REPRODUCED DESPITE HUNDREDS OF OPERATING

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-28968 *CONTINUED*

CYCLES. SAFETY INTERLOCKS ARE NOT SUPPLIED WITH THE MACHINE (BECAUSE MANY STATES DO NOT REQUIRE THEM) AND WERE INSTALLED BY GULF.

*ACCELERATOR + FAILURE, GENERAL + INCIDENT, EXPOSURE + MAINTENANCE AND REPAIR + PERSONNEL EXPOSURE, RADIATION + RADIATION INJURY TREATMENT + RADIATION SAFETY AND CONTROL + STATE PROGRAM

17-28991 ALSO IN CATEGORY 9

LOW LD

SAFETY MATTERS RELATED TO SAN ONOFRE PIPES

U. S. ATOMIC ENERGY COMMISSION, WASH., D. C.

LETTER TO W. R. GOULD OF SOUTHERN CALIFORNIA EDISON CO., 4 PAGES, OCT. 18, 1968, DOCKET 50-206, TYPE--PWR, MFG--WEST., AE--BECHTEL

REQUESTS MORE INFORMATION AND CORRECTIVE MEASURES, INCLUDING TECH. SPEC. CHANGES, ON (1) NOT ADDING BORON NOR VERIFYING BORON DURING COOLDOWN, NOT HAVING INSTRUCTIONS ABOUT REACTOR SAFETY DURING FIRES, NOT BEING CAPABLE OF TESTING FOR BORON DURING OFF SHIFTS, AND NOT INTERPRETING INFORMATION ON ABNORMAL CONDITIONS, (2) NOT DETERMINING THAT CONTROL ROD F-10 WAS FULLY INSERTED FOR 19 DAYS AT FULL POWER, NOT BEING ABLE TO ANALYZE IN-CORE INSTRUMENTATION DATA IN TIME, AND NOT TESTING FLOW INSTRUMENTATION FREQUENTLY ENOUGH.

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

*FAILURE, OPERATOR ERROR + *INSPECTION AND COMPLIANCE + ELECTRICAL CONDUCTION + PIPE + INSTRUMENT, ABNORMAL INDICATION + POISON, SOLUBLE + REACTIVITY EFFECT, ANOMALOUS + REACTOR, PWR + SAN ONOFRE (PWR) + SHUTDOWN SYSTEM, SECONDARY

17-28995 ALSO IN CATEGORY 9

DOUFT P + GRAFTIEAUX J

CAN REPTURE DETECTION FOR THE REACTOR OSIRIS

COMMISSARIAT A L'ENERGIE ATOMIQUE, SACLAY (FRANCE). CENTRE D'ETUDES NUCLEAIRES

CEA-R-3328 +. 56 PAGES, DEC. 1967

DESCRIBES DETECTION FOR A 50 MW SWIMMING POOL REACTOR, BASED ON NEUTRONS FROM SHORT LIVED FISSION PRODUCTS, FOR (1) FAILURE DETECTION AND (2) IDENTIFICATION OF FAILED ELEMENT UNDER NATURAL CONVECTION. CALCULATIONS MADE DURING DESIGN AND TESTS MADE AFTER FULL POWER WAS REACHED ARE REPORTED.

AVAILABILITY - USAEC DEPOSITORY LIBRARIES IN THE U.S. AND OVERSEAS

*INSTRUMENT, DETECTION FAILED FUEL ELEMENT + FAILURE, FUEL ELEMENT + FRANCE + REACTOR, POOL TYPE + REACTOR, RESEARCH + REPORT, OPERATIONS ANALYSIS + TEST, INSTRUMENT RESPONSE

17-29089 ALSO IN CATEGORIES 18 AND 15

OYSTER CREEK 1 EMERGENCY MEDICAL PLANNING

JERSEY CENTRAL POWER + LIGHT CO., MORRISTOWN, NEW JERSEY

16 PAGES, AMENDMENT 41 TO THE OYSTER CREEK 1 LICENSE APPLICATION, JULY 26, 1968, DOCKET 50-219, TYPE--BWR, MFG--G.E., AE--BURNS + ROE

RESPONDS TO MAY 27, 1968, SEVEN QUESTIONS ASKED BY ORL ON (1) PERSONNEL DECONTAMINATION FACILITIES, (2) AVAILABLE MEDICAL PERSONNEL TRAINING IN RADIATION DECONTAMINATION, (3) TRANSPORT TO AN AGREEABLE HOSPITAL, (5), (6), (7) QUALIFICATION OF PERSONNEL AND PLANNING AT LOCAL HOSPITALS.

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

AEC QUESTION + EMERGENCY PROCEDURE + OYSTER CREEK 1 (BWR) + REACTOR, BWR + REPORT, SAR

17-29138 ALSO IN CATEGORY 15

SAUTER E

INCREASE IN DOSE OUTPUT BY USE OF A RADIATION SHIELD

ATOMPRAXIS, 14, SEPT. 10, 1968, P 426

IN SPECIAL CASES, SHIELDING OF A GAMMA-SOURCE MAY INCREASE THE DOSE RATE BEHIND THE SHIELD.

*DOSE + *SHIELDING + *SOURCE, RADIATION + GAMMA + OPERATION + RADIATION SAFETY AND CONTROL + X-RAY

17-29139 ALSO IN CATEGORY 15

HELICOPTER SPEEDS TRANSPORTATION OF INJURED WORKERS

ELECTRICAL WORLD, VOL 170(14) P 62, SEPT. 30, 1968

IN A SPECIAL REPORT ON ELECTRIC UTILITY METHODS IN AIRBORNE SERVICES (MAINLY FOR CONSTRUCTION AND POWERLINE PATROL), TVA IS MENTIONED AS USING STANDARD WIRE-BASKET STOKES LITTERS MOUNTED ON HELICOPTERS FOR RAPID EVACUATION FROM REMOTE CONSTRUCTION AREAS. THE HELICOPTER HAS SPECIAL ATTACHMENTS FOR LITTERS MAINTAINED AT EACH AREA. AT LEAST 1 LIFE HAS BEEN SAVED

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-29139 *CONTINUED*

SINCE USE BEGAN IN 1967. ****A MOBILE HEALTH STATION TRAILER (WITH NURSE ON DUTY) ALSO IS USED IN CONSTRUCTION AREAS. *** (MANY UTILITIES COULD ARRANGE A SIMILAR SERVICE FOR CONTAMINATED, INJURED PERSONS AT NUCLEAR POWER REACTORS.

*RADIOLOGICAL ASSISTANCE + INDUSTRIAL SAFETY + RADIATION INJURY TREATMENT + REACTOR, POWER

17-29151 ALSO IN CATEGORIES 9 AND 4

WILSON RB + GAFFNEY JL

MANS RELIABILITY IN THE X-15 AEROSPACE SYSTEM

10 PAGES, 2 FIGURES, 3 REFERENCES, 3RD AEROSPACE RELIABILITY AND MAINTAINABILITY CONFERENCE, JULY 1964

HUMAN RELIABILITY IS NOT EASILY PREDICTED OR CONTROLLED, BUT SYSTEM DESIGNERS NEED TO KNOW QUANTITATIVELY MANS CONTRIBUTION TO THE PERFORMANCE OF THE MAN-MACHINE SYSTEM. INTERMITTENT HUMAN FAILURE PLAGUES THE OPERATIONAL SITUATION. USUALLY, THE INDIVIDUAL WHO FAILS TO PERFORM A SPECIFIC TASK AT A SPECIFIC TIME WILL PERFORM THE TASK CORRECTLY THE NEXT TIME. HUMAN PERFORMANCE IS AFFECTED BY MANY COMPLEX, UNPREDICTABLE FACTORS. PREDICTING WHETHER OR NOT A MAN WILL SPECIFICALLY PERFORM HIS NEXT OPERATION CORRECTLY IS ANALOGOUS TO PREDICTING WHO IN THE POPULATION WILL BE NEXT TO DIE. HOWEVER, A SUFFICIENT NUMBER OF OBSERVATIONS OF A SYSTEM SHOULD INDICATE A DISCRETE DISTRIBUTION PATTERN FROM WHICH WE CAN DERIVE AN ESTIMATE OF MANS RELIABILITY.

*OPERATOR ACTION + *RELIABILITY ANALYSIS + FAILURE, OPERATOR ERROR + TRAINING

17-29152 ALSO IN CATEGORY 9

KEENAN JJ

INTERACTIONIST MODELS OF THE VARIETIES OF HUMAN PERFORMANCE IN COMPLEX WORK SYSTEMS

11 PAGES, 7 FIGURES, 2 TABLES, 12 REFERENCES, PP. 76-86 OF ANNALS OF RELIABILITY AND MAINTAINABILITY, 1967

A USEFUL FRAMEWORK FOR UNDERSTANDING THE VARIETIES OF HUMAN PERFORMANCES IN THE COMPLEX SYSTEM IS PRESENTED. THE APPROACH HERE IS INTERACTIONIST, STRUCTURING HUMAN PERFORMANCE ALONG THE LINES OF THE PRINCIPAL INTERACTIONS OF THE HUMAN WITH THE SYSTEM ENVIRONMENT. MULTIDIMENSIONAL MODELS ARE DISCUSSED AS BASIC TO THE SYSTEMATIC DEVELOPMENT OF MEASURABLE ASPECTS OF HUMAN PERFORMANCE.

*OPERATOR ACTION + *RELIABILITY ANALYSIS + ANALYTICAL MODEL + ENVIRONMENTAL CONDITION + PERFORMANCE LIMIT

17-29153 ALSO IN CATEGORY 9

JONES DB

THE NEED FOR QUANTIFICATION IN HUMAN FACTORS ENGINEERING

6 PAGES, 1 FIGURE, 1 TABLE, 9 REFERENCES, PP. 87-92 OF ANNALS OF RELIABILITY AND MAINTAINABILITY, 1967

A MAJOR PROBLEM FOR HUMAN FACTORS IS IMPLEMENTING EFFECTIVE HUMAN PERFORMANCE CONSIDERATION INTO SYSTEM DESIGN, PRESENTING THE DATA IN ENGINEERING, NOT PSYCHOLOGICAL, TERMS. THE MOST USUAL BASIC ENGINEERING REQUIREMENT IS FOR INFORMATION WHICH CAN BE HANDLED IN MATHEMATICAL TERMS. THE HUMAN FACTORS MATHEMATICAL DATA NEEDED FOR SYSTEM CONCEPTUAL PHASE ENGINEERING SOLUTIONS ARE GENERALIZED MODELS, RULES OF THUMB, OR SOVEREIGN FACTORS. DURING THE DESIGN PHASE HUMAN TASK PERFORMANCE, AND ESPECIALLY TASK COMPLEXITY, SHOULD BE QUALIFIED. DURING SYSTEM ACQUISITION PHASE, OPERATION FAILURE AND ERROR ANALYSES MUST INCLUDE VALID HUMAN ERROR PROBABILITY DETERMINATION. METHODS OF MEETING THESE REQUIREMENTS ARE SUGGESTED.

*OPERATOR ACTION + *RELIABILITY ANALYSIS + DESIGN CRITERIA + EXAMINATION + PERFORMANCE LIMIT

17-29155 ALSO IN CATEGORY 9

MFISTER D

HUMAN FACTORS IN RELIABILITY

STANFORD UNIVERSITY

4 PAGES, RELIABILITY HANDBOOK, 1967

THERE IS A NATURAL RELATIONSHIP BETWEEN THE RELIABILITY AND HUMAN FACTORS DISCIPLINES. HUMAN FACTORS ENGINEERING (REFERRED TO HENCEFORTH IN SHORTHAND FORM AS SIMPLY HUMAN FACTORS) IS THE DESIGN OF EQUIPMENT, WORK ENVIRONMENT, AND WORK METHODS IN ACCORDANCE WITH HUMAN CAPABILITIES AND LIMITATIONS. HUMAN FACTORS SPECIALISTS ARE THEREFORE CONCERNED PRIMARILY WITH (1) EQUIPMENT DESIGN CHARACTERISTICS, (2) OPERATING AND MAINTENANCE PROCEDURES, (3) CHARACTERISTICS OF THE WORK ENVIRONMENT (NOISE, TEMPERATURE, WORK SPACE, ETC.), BUT ALSO WITH (4) TECHNICAL DATA, (5) COMMUNICATIONS, (6) LOGISTICS, AND (7) SYSTEM ORGANIZATION, BECAUSE EACH OF THESE INTERACTS WITH AND INFLUENCES OPERATOR PERFORMANCE.

*OPERATOR ACTION + *RELIABILITY ANALYSIS + COMPARISON, THEORY AND EXPERIENCE + DESIGN CRITERIA

17-29357 ALSO IN CATEGORY 11

POTAPOV S U + KNIGHTON GW + DENTON AS

CRITIQUE OF IN-PLACE ANNEALING OF SM-1A NUCLEAR REACTOR VESSEL

NAVAL RESEARCH LABORATORY + NUCLEAR POWER FIELD OFFICE, FORT BELVOIR, VA.

19 PAGES, 12 FIGURES, 2 TABLES, 14 REFERENCES, NUCLEAR ENGINEERING AND DESIGN, 8(1), PAGES 39-57 (JULY

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-29357 *CONTINUED*
1968)

PRESENTS ANNEALING PROCEDURE USED BY US ARMY ENGINEER REACTORS GROUP TO EXTEND THE SM-1A REACTOR VESSEL LIFETIME, WHICH WAS ESSENTIALLY EXPANDED DUE TO NEUTRON-INDUCED EMBRITTLEMENT. IN AUGUST 1967, VESSEL ANNEALING OPERATIONS WERE CONDUCTED BY RAISING THE SYSTEM TEMPERATURE TO 572 F AND MAINTAINING IT FOR 143 HR, USING THE NORMAL REACTOR CORE AS THE HEAT SOURCE. THE PROCEDURES, PLANT MODIFICATIONS REQUIRED, AND DIFFICULTIES ENCOUNTERED ARE DESCRIBED, AND A FULL CRITIQUE OF THE TOTAL OPERATION IS GIVEN. DISCUSSIONS INCLUDE ANTICIPATED AMOUNT OF EMBRITTLEMENT RELIEF TO THE VESSEL, BASIS FOR THIS ESTIMATE, AND TECHNIQUES FOR ESTABLISHING DEGREE OF FINAL PROPERTIES RECOVERY.

*EMBRITTLEMENT + *HEAT TREATMENT + *PRESSURE VESSEL + *STEEL + OPERATING EXPERIENCE + REACTOR, MILITARY + REACTOR, PWR + SM 1A (PWR)

17-29362 ALSO IN CATEGORIES 11 AND 12
WYLIE RD
SURVEILLANCE OF NUCLEAR POWER PLANT COMPONENTS
SOUTHWEST RESEARCH INSTITUTE, SAN ANTONIO, TEXAS
8 PAGES, 9 FIGURES, NUCLEAR ENGINEERING AND DESIGN, 8(1), PAGES 117-124 (JULY 1968)

DESCRIBES AN APPROACH TO THE DEVELOPMENT OF A SYSTEMATIC PROGRAM FOR SURVEILLANCE OF NUCLEAR REACTOR PRESSURE VESSELS AND OTHER NUCLEAR POWER PLANT COMPONENTS. APPROACH IS BASED ON A PROPOSAL DEVELOPED FOR THE LACROSSE BOILING WATER REACTOR. SPECIFIC AREAS TREATED ARE - IRRADIATION EFFECTS SURVEILLANCE PROGRAM, TEMPERATURE MONITORING PROGRAM, INSPECTION PROGRAM, CORROSION PROGRAM.

*CORROSION + *INSPECTION AND COMPLIANCE + *RADIATION EFFECT + *SURVEILLANCE PROGRAM + *TEMPERATURE GRADIENT + COMPONENTS, MISCELLANEOUS + LACROSSE (BWR) + PRESSURE VESSEL + REACTOR, BWR

17-29565 ALSO IN CATEGORY 1
WHERE TO SEND YOUR EMPLOYEES FOR NUCLEAR TRAINING - PART II
ELECTRICAL WORLD VOL. 170 (20), NOV. 11, 1968, PP. 61-64

PREVIOUS ISSUE GAVE BACKGROUND, LISTED PROGRAMS AT REACTOR VENDORS. THIS LISTS 5 UTILITIES (VARYING DEGREES OF AVAILABILITY FOR ON-SHIFT EXPERIENCE, NO PROGRAMS), 6 COURSES FROM NATIONAL CENTER FOR RADIOLOGICAL HEALTH, SERVICES PROVIDED BY 4 CONSULTING FIRMS, 9 UNIVERSITIES PROVIDING SHORT COURSES AND 19 MORE INTERESTED IN PERSONNEL TRAINING, AND 11 TECHNICAL INSTITUTES WITH TWO YEAR PROGRAMS IN RADIOLOGICAL HEALTH TECHNOLOGY.

*TRAINING + REACTOR, POWER

17-29569 ALSO IN CATEGORY 6
PEDERSEN K + MURPHY G
MEASUREMENT OF SHUTDOWN MARGIN
UNIVERSITY OF PUERTO RICO + INST. ELEC. ELECTRON. ENG.
TRANS. NUCL. SCI., NS-15, 46-56 (FEB. 1968)

MEASUREMENTS WERE MADE ON THE IOWA STATE UNIVERSITY UTR-10 REACTOR AT VARIOUS CONDITIONS RANGING FROM ALMOST CRITICAL TO FULLY SHUTDOWN. A ROD OSCILLATOR WAS OPERATED AT 10 CPS AND FLUCTUATION MEASURED BY A BF3 DETECTOR. THE SIGNAL WAS PASSED THROUGH A BAND-PASS FILTER AND WAS THEN CROSS-CORRELATED WITH A PURE SINE WAVE TO OBTAIN THE TRANSFER FUNCTION. A PLOT OF THE TRANSFER FUNCTION VS. THE MULTIPLICATION FACTOR WAS A SMOOTH FUNCTION FROM WHICH THE MULTIPLICATION FACTOR COULD BE FOUND WITH A CONFIDENCE OF $\pm 0.04\%$ NEAR CRITICAL AND WITH A CONFIDENCE OF $\pm 0.17\%$ IN THE FULLY SHUTDOWN CONDITION. REPRODUCIBILITY OF THE PLOT WAS EXCELLENT EVEN WHEN A DIFFERENT DETECTOR WAS USED.

*INSTRUMENT, SHUTDOWN REACTIVITY + *MEASUREMENT, REACTIVITY + *SHUTDOWN MARGIN + NOISE CROSS CORRELATION + OSCILLATOR, REACTIVITY + REACTOR, RESEARCH + TRANSFER FUNCTION

17-29577
WILLIAMS GH
DOUGLAS POINT GENERATING STATION COMMISSIONING
CANADA. HYDROELECTRIC POWER COMMISSION
CONF-670917 + STI/PUB-163 +. 1968, PP. 83-101 OF HEAVY-WATER POWER REACTORS

GIVES EXPERIENCE, BACKGROUND WITH RESPECT TO THE BASIC PROCESS, EQUIPMENT LOCATIONS, AND COMMISSIONING HISTORY. THREE COMMISSIONING PHILOSOPHIES FOLLOWED IN THE COMMISSIONING OF CANADIAN NUCLEAR POWER STATIONS ARE MENTIONED - NO ORDINARY WATER USED FOR COMMISSIONING HEAVY-WATER SYSTEMS, FUELLING MACHINES USED FOR INITIAL FUEL LOADING, AND NO PORTABLE STEAM-GENERATING EQUIPMENT FOR PRELIMINARY TURBINE-GENERATOR RUN UP. AGAINST THIS BACKGROUND THE FOLLOWING EXPERIENCES ARE MENTIONED - LOW POWER PHYSICS MEASUREMENTS, FUEL CHANNEL REPLACEMENT AND FAULTY BOOSTER REMOVAL, HEAT TRANSPORT PRESSURE CONTROL, ION-EXCHANGE RESIN IN THE HEAT TRANSPORT SYSTEM, HEAT TRANSPORT PUMPS, BOILER LEVEL CONTROL, POSSIBLE FRETTING OF PRESSURE TUBES, TURBINE OPERATION, AND HEAVY-WATER EXPERIENCE.

*OPERATING EXPERIENCE SUMMARY + *REACTOR STARTUP TESTING + CANADA + CANDU (HWR) + REACTOR, HWR + REACTOR, PRESSURE TUBE

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-29586

VIDEM K + AAS S + HANEVIK A + JENSEN E
IRRADIATION EXPERIENCE WITH THE FIRST UO2 ALUMINUM CLAD FUEL ASSEMBLY TESTED IN HBWR
INSTITUTT FOR ATOMENERGI, HALDEN (NORWAY)
HPR-100 +. MAY 1968, 31 P.

AFTER 140 DAYS (730 MWD/T) AT TWO DIFFERENT POWER LEVELS, IFA-9 ELEMENT FAILED (IN 1964) AT THE ENDS OF THE ELEMENT BECAUSE OF CORROSION OF ACCIDENTAL INCLUSIONS OF PURE ALUMINUM IN THE CLAD ALLOY. BULB SHAPED DISTORTIONS WERE CAUSED BY REACTION BETWEEN WATER AND THE MAGNESIA END PELLETS. TWO NEW ELEMENTS HAVE BEEN OPERATING SATISFACTORILY AT 5900 MWD/MT AND 140 W/SQ. CM AS OF AUG. 1966. ***REPORT DESCRIBES FABRICATION AND POSTFAILURE EXAMINATION OF IFA-9.

AVAILABILITY - USAEC DEPOSITORY LIBRARIES IN THE U.S. AND OVERSEAS

*FAILURE, CLADDING + ALUMINUM + CORROSION + EXAMINATION + FAILURE, FABRICATION ERROR + FUEL ELEMENT + HBWR (BWR) + IRRADIATION TESTING + NORWAY + REACTOR, BWR

17-29607

ALSO IN CATEGORIES 1 AND 15
ANNOUNCEMENT THIRD ANNUAL ACCELERATOR HEALTH PHYSICS TRAINING COURSE
U.S. ATOMIC ENERGY COMMISSION
HEALTH AND SAFETY INFORMATION BULLETIN 27C, OCT 24, 1968

COURSE WILL BE GIVEN AT LRL IN BERKELEY, CALIFORNIA, FROM FEB. 24 TO MARCH 1969. REPORTS FOR BACKGROUND READING WILL BE SENT IN DECEMBER 1968. COURSE LIMITED TO 15 STUDENTS. CONTACT E. J. VALLARIO, USAEC DIVISION OF OPERATIONAL SAFETY. *** TOPICS INCLUDE ACCELERATOR PHYSICS AND DESIGN, INTERACTION OF RADIATION AND MATTER, RADIATION DETECTORS, SHIELDING, NEUTRON SPECTROSCOPY, INDUCED ACTIVITY, RADIATION DAMAGE, AND RADIOBIOLOGY

*ACCELERATOR + *HEALTH PHYSICS TRAINING + TRAINING

17-29608

ALSO IN CATEGORIES 1 AND 11
RICKOVER URGES CODE REFORM, CITES NUCLEAR POWER CASES
NUCLEAR INDUSTRY, VOL. 15, NO. 10, OCTOBER, 1968, PP. 46-47

A SOC. METALS (DETROIT, MICH.) ADDRESS CRITICIZED CODE APPLICATION AS INADEQUATE AS A CRITERION BECAUSE CODES ARE LEAST COMMON DENOMINATOR. POINTS OUT EVEN UNDER ASME BOILER CODE (REGARDED AS ONE OF BETTER CODES) A MANUFACTURER OF REACTOR VESSELS REPAIRED ONLY DEFECTS IN A MAJOR STRUCTURAL WELD REVEALED BY CODE INSPECTIONS AND IGNORED DEFECTS FOUND BY ULTRASONICS. THE INSURANCE COMPANY REFUSED TO TAKE PART IN TECHNICAL DISCUSSIONS. THE BUYER UTILITY PAID EXTRA MONEY TO HAVE THE DEFECTS REPAIRED, THOUGH NOT SO REQUIRED BY THE CODE.

*CODES AND STANDARDS + *FAILURE, PRESSURE VESSEL + EXAMINATION + FAILURE, FABRICATION ERROR + OPERATING EXPERIENCE SUMMARY + PRESSURE VESSEL + REACTOR, BWR + REACTOR, POWER + REACTOR, PWR + TEST, NONDESTRUCTIVE + WELDS

17-29609

ALSO IN CATEGORIES 1 AND 18
PAXTON HC
BENEATH THE FORMAL CLOAK
NUCLEAR NEWS 11(1), PG. 47-50, JAN. 1968

(SUBTITLED, HOW CAN EXPERIENCE CONTRIBUTE TO POWER REACTOR SAFETY). CLOAK IN THE TITLE REFERS TO THE ILLUSION THAT THE FORMAL PROCESS OF HAZARDS EVALUATION (E.G., 10 CFR 100) CAN BE SUBSTITUTED FOR JUDGEMENT. DISCUSSION CENTERS AROUND NEED FOR JUDGEMENT (IMPLIED IN ANY REAL SITUATION BY ECONOMICS, AND IN LICENSING BY WORDS LIKE REASONABLE ASSURANCE) AND NEED FOR TRANSMITTING SAFETY RELATED INFORMATION. ASSERTS THAT FIRST STEP IN SOLVING INFORMATION PROBLEM IS EVERYONE RECOGNIZING THAT CANDOR IN REPORTING IS NEEDED DESPITE AUTHORITARIAN ATMOSPHERE. NSIC AND AEC JOURNALS ARE IN PRACTICE NOT FULLY EFFECTIVE; STANDARDS MUST GROW AS EXPERIENCE ACCUMULATES.

*CODES AND STANDARDS + *INCIDENT, GENERAL + *INFORMATION RETRIEVAL + HAZARDS ANALYSIS + NSIC + REACTOR, POWER + REGULATION, AEC + SAFETY ANALYSIS

17-29610

ALSO IN CATEGORY 10
DIESEL UNITS FOR NUCLEAR PLANTS
POWER ENGINEERING 72 (11), PG. 82, NOVEMBER 1968

A FAIRBANKS MORSE MODEL 38TD8 DIESEL CONNECTED TO A 3000 KW GENERATOR WAS DEMONSTRATED BEFORE UTILITY AND GOVERNMENT REPRESENTATIVES TO SHOW QUICK START CAPABILITY IN SUPPLYING EMERGENCY POWER FOR NUCLEAR REACTORS. TWO MOTORS (ONE 2000 HP AND ONE 1250, WITH 80% INRUSH CURRENTS) WERE USED AS LOADS. BOTH LOADS WERE APPLIED (1) SIMULTANEOUSLY, (2) SEQUENTIALLY, AND (3) REPETITIVELY FOR 100 STARTS WITH ENGINE ALLOWED TO COOL BETWEEN STARTS. ENGINE ACCEPTED LOADS WITHIN 10 SEC.

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-29610 *CONTINUED*
*GENERATOR, ENGINE + *TEST, SYSTEM OPERABILITY + ACCIDENT, LOSS OF POWER + RESPONSE TIME

17-29611 ALSO IN CATEGORY 1
MACCAZZOLA F
NUCLEAR POWER PLANTS OPERATION STATISTICAL REMARKS
ITALY. COMITATO NAZIONALE PER L ENERGIA NUCLEARE
RT/EC-(68)1 +. 49 P., 1968 (IN ITALIAN)

THE PRESENT STUDY IS MAINLY DIVIDED INTO TWO PARTS - (1) A WHOLE INVENTORY OF THE INSTALLED
NUCLEAR CAPACITY IS GIVEN FOR EVERY COUNTRY, (2) SHOWS THE PERFORMANCES OF 50 POWER REACTORS
(PRODUCED ENERGY, CAPACITY, FACTOR, AND AVAILABILITY). DATA INCLUDES YEARS 65, 66, 67 ONLY.

AVAILABILITY - USAEC DEPOSITORY LIBRARIES IN THE U.S. AND OVERSEAS

*ECONOMICS + *RELIABILITY, SYSTEM + ITALY + REACTOR, BWR + REACTOR, GCR + REACTOR, POWER + REACTOR, PWR

17-29614 ALSO IN CATEGORIES 15 AND 3
RIVET (REMOTE INSPECTION VEHICLE, TELECHIRIC)
UKAEA, HARWELL, BERKSHIRE, ENGLAND
10 PAGES, FIGURES, 1 REFERENCE, 1968

DESCRIBES DEVICE (WHOSE PRELIMINARY WORKING MODEL HAS BEEN BUILT) FOR DAMAGE CONTROL FOLLOWING
NUCLEAR INCIDENT. HAS SIZE AND REACH OF POWERFUL MAN, WEIGHS 450 LB, SUPERIOR ABILITY TO
MANEUVER DUE TO TRACK DRIVE PLUS FRONT WHEELS CLIMBS STAIRS AND PASSES OVER OBSTACLES. SPEED
4 MPH, RANGE 200 FT (CABLE). *** BROCHURE SHOWS CONCEPT IN PICTURES, 1 PAGE OF DESCRIPTION.

AVAILABILITY - H. A. BALLINGER, ENGINEERING SUPPORT DIVISION, BUILDING 424, A.E.R.E., HARWELL, BERKSHIRE.

*INCIDENT, RECOVERY FROM + REMOTE MANIPULATING AND VIEWING + UNITED KINGDOM

17-29615 ALSO IN CATEGORIES 3 AND 13
MANN PJ
A-POWER PLANT DESIGN, FAIL-SAFE MATERIAL HANDLING
MATERIAL HANDLING ENGINEERING, AUG. 1968

DESCRIBES AUTOMATIC CONVEYORIZED SYSTEM FOR FILLING 55 GAL DRUMS WITH A MIXTURE OF CEMENT AND
RADIOACTIVE SEMISOLIDS (SLUDGE, DEMINERALIZER RESINS), CAPPING THEM, AND STORING UNTIL
SHIPMENT. ASSERTS AEC CRITERIA REQUIRES NO ROUTINE MAINTENANCE WITHIN SHIELDING ONCE
INSTALLED. ***GENERAL DESCRIPTION, FLOW DIAGRAM, AND PICTURES (NO TECHNICAL DETAIL) OF
SYSTEM INSTALLED AT NINE MILE POINT.

*WASTE HANDLING + NINE MILE POINT (BWR) + REACTOR, BWR + REMOTE MANIPULATING AND VIEWING +
WASTE TREATMENT, FIXATION

17-29616
MATTHEWS RR + HENRY KJ
LOCATION AND REPAIR OF THE DFR LEAK
UKAEA, DOUNREAY WORKS
NUCLEAR ENGINEERING, OCTOBER 1968, PG. 84C-844

ON MAY 9, 1967, A 100-LITER/DAY SODIUM LEAK APPEARED, YET DISAPPEARED WHENEVER REACTOR SHUT
DOWN EVEN THOUGH TEMPERATURES HELD CONSTANT. LEAK ESTIMATED TO BE 0.015 IN. DIA. HOLE.
ANTI LEAK JACKET 1/8 IN. FROM VESSEL MADE LOCATION DIFFICULT. GRID ADDED TO NAK SHOWED
SLIGHT LEAKAGE EVEN AFTER REACTOR DOWN. LOWERING NAK LEVEL WITH 25 PSIG HE IN VESSEL
EVENTUALLY SHOWED LEAK WAS AT BOTTOM OF NAK OUTLET NOZZLES. MILDLY STRAINING EACH NOZZLE IN
TURN INDICATED NO. 10 HEAT EXCHANGER, AND ACOUSTIC NOISE ANALYSIS INDICATED A LOCATION ON A
PIPE. A FIELD WELD CRACKED FROM FATIGUE WHERE THERE WAS A POOR WELD AND A MISALIGNMENT.
INTERNAL WELDING HEAD DEVELOPED FOR THE 4-IN. PIPE.

*FAILURE, PIPE + *LEAK + *WELDING + DOUNREAY (TR) + FAILURE, FATIGUE + FAILURE, INSTALLATION ERROR +
FAULT + REACTOR, LMCR + REACTOR, LMFBR + REACTOR, TEST + REMOTE MANIPULATING AND VIEWING

17-29617 ALSO IN CATEGORY 4
MARTIN RD
RESPONSES TO QUESTIONNAIRE RESEARCH REACTOR CONTROL ROD MATERIAL PROBLEMS
UNIVERSITY OF MICHIGAN
30 PAGES, TABLES, OCTOBER 1968

BACKGROUND MATERIAL FOR A NUCLEAR SAFETY JOURNAL 10(1) ARTICLE. 24 QUESTIONNAIRES SENT, 38
REPLIES RECEIVED WITH 23 INDICATING NO OR MINOR PROBLEMS. SEVEN REPORTED PROBLEMS PRIMARILY
MECHANICAL, TWO REPORTED PROBLEMS PRIMARILY CORROSION, AND SIX PRIMARILY RELATED TO
DIMENSIONAL CHANGE. CORROSION PROBLEMS WERE WITH RODS MADE USING CADMIUM SHEET, AND
DIMENSIONAL CHANGE WAS ASSOCIATED WITH B4C POWDER RODS. ***COMPILATION CONSISTS OF THE 38
REPLIES, WITHOUT OTHER ANALYSIS.

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-29617 *CONTINUED*

AVAILABILITY - PHONEIX MEMORIAL LABORATORY, THE UNIVERSITY OF MICHIGAN, ANN ARBOR, MICHIGAN

*CONTROL ROD + *CONTROL ROD BURNUP + *DAMAGE + BORON + CADMIUM + CARBIDE + CORROSION + EXPANSION +
INCIDENT COMPILATION + REACTOR, RESEARCH + REACTOR, TEST

17-29618 ALSO IN CATEGORIES 18 AND 1

GIAMBUSSO A

UTILITY PREPARATION FOR NUCLEAR POWER

U.S. ATOMIC ENERGY COMMISSION

23 PAGES, 3 FIGURES, 3 TABLES, NOV. 14, 1968

REVIEWS AEC PROGRAM FOR ORIENTATION OF UTILITIES JUST PLANNING FOR NUCLEAR POWER. MENTIONS
NEED FOR NUCLEAR TRAINING (IN SAFETY PROBLEM AREAS) REACHING UP TO TOP MANAGEMENT (GUIDELINES
BEING PREPARED BY AEC ON SUPERVISORY AND STAFF PERSONNEL AT BOTH THE PLANT AND THE CENTRAL
STAFF). SURVEY SHOWED ADEQUATE REACTOR OPERATOR TRAINING CAPABILITY, SIMULATORS CAN HELP.
OF 5000 TECHNICAL PERSONNEL NEEDED 1968-76, 3500 WILL NEED SOME SORT OF NUCLEAR TRAINING.
AEC WORK EXPERIENCE PROGRAM ALSO AVAILABLE. TIMING IS OF PARTICULAR IMPORTANCE, E.G., PLANT
SUPT MUST BE TRAINED BY 4 YEARS BEFORE STARTUP, PLANT STAFF ENGINEERS BY TWO YEARS BEFORE
STARTUP.

AVAILABILITY - A. GIAMBUSSO, ASSISTANT DIRECTOR FOR PROJECT MANAGEMENT, DIVISION OF REACTOR DEVELOPMENT
AND TECHNOLOGY, U.S. ATOMIC ENERGY COMMISSION

*TRAINING + GUIDE + REACTOR, BWR + REACTOR, POWER + REACTOR, PWR + RESPONSE TIME + SIMULATION + STAFFING +
USAEC

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-11229 ALSO IN CATEGORY 1
A GUIDE FOR THE ORGANIZATION AND CONTENTS OF SAFETY ANALYSIS REPORTS
U.S. ATOMIC ENERGY COMMISSION, DIV. OF REACTOR LICENSING
TID-24631 +. 63 PAGES, 4 REFERENCES, JUNE 30, 1966

(ORIGINALLY ISSUED AS REG-1) A GUIDE IN SATISFYING REQUIREMENTS OF 10 CFR 50, FOR POWER REACTORS, AND WRITTEN TO COORDINATE WITH NEW TECHNICAL SPECIFICATIONS. BASICALLY AN OUTLINE (15 CHAPTERS) OF A SAFETY-ANALYSIS REPORT, WITH DISCUSSIONS OF THE TYPE OF INFORMATION NEEDED IN EACH SUBSECTION. FOR EXAMPLE - IIB METEOROLOGY - (1) IDENTIFY PREDOMINANT METEOROLOGICAL CONDITIONS, (2) EXPLAIN EFFECT ON DESIGN BASES, (3) PROVIDE A BASIS FOR SELECTED DIFFUSION PARAMETERS, VI ENGINEERED SAFEGUARDS - INFORMATION NEEDED TO SHOW (1) CONCEPT IS PROVEN, (2) SYSTEM WILL FUNCTION AND ACCOMPLISH PURPOSE, (3) SYSTEM WILL FUNCTION WHEN REQUIRED, (4) TEST PROVISIONS HAVE BEEN MADE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151
\$3.00 COPY, \$0.65 MICROFICHE

*REGULATION, AEC + *REPORT, SAR + *SAFETY PRINCIPLES AND PHILOSOPHY + DESIGN CRITERIA + REACTOR, POWER

18-25235 ALSO IN CATEGORY 1
LICENSE EXEMPTION FOR GOLD-U238 CUFFLINK
NEFARNIN ASSOCIATES, BOSTON, MASS.
3 PAGES, ATOMIC ENERGY CLEARING HOUSE, 14(42), PAGE 32-34, (OCT. 14, 1969)

REQUESTS EXEMPTION FROM AEC LICENSING REQUIREMENTS FOR U-238, WEIGHING 40 GRAMS, AND GIVING A DOSE RATE 0.15 MR/HR THROUGH SHIRT CUFF AND TWICE THAT IN AIR. THE BLUE OXIDE LAYER MAKES IT ESPECIALLY UNIQUE AND ATTRACTIVE. THE CUFF-LINK DOSE IS LESS THAN 1/4TH THE WRIST-WATCH DOSE.

PERSONNEL EXPOSURE, RADIATION + REGULATION, AEC + SOURCE MATERIAL

18-27710 ALSO IN CATEGORY 17
KEWAUNEE ANSWERS DRL INFORMAL DISCUSSION OF FEB. 2, 1968
WISCONSIN PUBLIC SERVICE CORPORATION
150 PAGES, FIGURES, TABLES, AMENDMENT 2 TO KEWAUNEE LICENSE APPLICATION, FEB. 14, 1968, DOCKET NO. 50-305,
TYPE--PWR, MFG--WEST., AE--PIONEER SERV.

PROVIDES REVISED PSAR PAGES FOR THE FOLLOWING - (SECT. 7) PART LENGTH CONTROL RODS, COMPLIANCE WITH IEEE STANDARD, POST-LOCA INSTRUMENTATION, PROTECTION SYSTEM. (SECT 14) SMALL BREAK IN RCS, REACTIVITY TRANSIENT FOR STEAM BREAK WITH TUBE RUPTURE. (SECT. 13) DNBR GREATER THAN 1.3 DURING INITIAL STARTUP. (SECT. 5) EARTHQUAKE DESIGN TO 0.06 AND 0.12 G, CONTAINMENT PENETRATION, COOLANT SYSTEM MISSILE PROTECTION, LEAKAGE THROUGH JOINTS, METHODS OF ANALYSIS FOR MISSILE IMPACT ON BUILDINGS. (APPENDIX P) - SHIELD BUILDING VENT SYSTEM PERFORMANCE STUDY AND EVALUATION OF EFFECT ON OFFSITE DOSES. TOPICAL REPORTS - (WCAP 7125) IRRADIATION PROGRAM FOR HI PERFORMANCE FUEL, AND (WCAP 3269-66) SAN ONOFRE STARTUP TEST RESULTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA
22151, \$3.00 COPY, \$0.65 MICROFICHE

CONTAINMENT DESIGN + FUEL ELEMENT + IRRADIATION TESTING + KEWAUNEE (PWR) +
MISSILE GENERATION AND PROTECTION + REACTOR STARTUP TESTING + REACTOR, PWR + REPORT, PSAR

18-27713 ALSO IN CATEGORY 16
MILLSTONE POINT NUCLEAR POWER STATION UNIT 1, FINAL SAFETY ANALYSIS REPORT, VOLUME 3
MILLSTONE POINT CO.
150 PAGES, FIGURES, TABLES, MARCH 14, 1969, DOCKET 50-245, TYPE--BWR, MFG--G.E., AE--EBASCO

CONTAINS SECTION XIII CONDUCT OF OPERATION (TRAINING, PROCEDURE, ADMINISTRATIVE CONTROL), XIV SAFETY ANALYSIS (4 DESIGN BASIS ACCIDENTS OFFSITE DOSE DID NOT EXCEED 10 CFR 100, ANALYTICAL METHODS). APPENDIX A (STACK RELEASE LIMIT CALCULATION) INCLUDES A DESCRIPTION OF THE ANALYTICAL MODEL, ITS VERIFICATION (USING BNL GRAPHITE REACTOR STACK RELEASE OF AR-41, AND OBSERVING EXPERIENCE SHOWS 1-131 CURIES/SEC ARE 10(MINUS 6TH) THAT OF NOBLE GAS RELEASE RATE FROM BWRs) TO OBTAIN STACK RELEASE RATE LIMITS OF 1.4 CURIES/SEC (AVERAGE ANNUAL) AND 12.0 (15 MIN IN ANY HOUR).

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

*ANALYTICAL MODEL + *FISSION GAS RELEASE + *SOURCE, CONTINUOUS + *STACK +
COMPARISON, THEORY AND EXPERIENCE + FISSION PRODUCT, IODINE + MILLSTONE POINT (BWR) + REACTOR, BWR +
SETPPOINT + TRAINING

18-27784 ALSO IN CATEGORIES 5 AND 1
TRAINING MANUAL - REACTOR SAFETY AND HAZARDS EVALUATION
U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE, PUBLIC HEALTH SERVICE
125 PAGES, FIGURES, TABLES, REFERENCES, 1967

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-27784 *CONTINUED*

A SET OF COURSE NOTES FOR 44 LECTURES IN THE GENERAL SUBJECT AREAS OF - I. REACTOR FUNDAMENTALS AND CHARACTERISTICS (6). II. ENGINEERED SAFEGUARDS (1). III. PROCESS RADIATION MONITORING AND ENVIRONMENTAL SURVEILLANCE MONITORING (6). IV. REACTOR SAFETY AND SITE CRITERIA (6). V. SAFETY ANALYSIS EVALUATION OF NUCLEAR FACILITIES AND INSTALLATIONS (7). VI. WASTE DISPOSAL CRITERIA OF RADIOACTIVE EFFLUENT (3). VII. SAFETY ASPECTS OF FUEL STORAGE AND REPROCESSING FACILITIES (1). VIII. EMERGENCY PLANNING (6). IX. EVALUATION AND PUBLIC HEALTH ASPECTS (7). X. REACTOR MANAGEMENT ASPECTS (1). ***FOR USE IN A TWO WEEK COURSE PRESENTED BY NCRH.

AVAILABILITY - NATIONAL CENTER FOR RADIOLOGICAL HEALTH, ROCKVILLE, MARYLAND 20852

*TRAINING + FUEL REPROCESSING + HAZARDS ANALYSIS + RADIOLOGICAL ASSISTANCE + REACTOR, POWER + REACTOR, RESEARCH + SITING, REACTOR + SURVEY, RADIATION, EMERGENCY

1E-27831

STEAM GENERATING HEAVY WATER REACTOR
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, LONDON
NP-17473 +. 36 PAGES, FEBRUARY 1968

A SET OF PHOTOGRAPHS TAKEN DURING CONSTRUCTION AND EARLY OPERATION, WITH A FEW EXPLANATORY NOTES. INTENDED AS A DESCRIPTION FOR VISITORS.

*REACTOR DESCRIPTION + REACTOR, SGHWR + UNITED KINGDOM

18-27847

RUSSELVILLE SUPPLEMENT 7
ARKANSAS POWER AND LIGHT COMPANY
14 PAGES, FIGURES, TABLES, SUPPLEMENT 7 TO THE RUSSELVILLE LICENSE APPLICATION, AUG. 15, 1969, DOCKET 50-313

REPLIES TO 4 INFORMAL DRL QUESTIONS, REVISES ANSWER TO QUESTION 7.4, PROVIDES APPENDIX 5K (PRESTRESSING TENDONS), AND INCLUDES SEVERAL REVISED PSAR PAGES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, 1717 H ST., WASHINGTON, D.C. 20545 (\$0.25 CENTS/COPY)

*AEC QUESTION + REACTOR, PWR + REPORT, PSAR + RUSSELLVILLE (PWR)

18-27848

ALSO IN CATEGORY 11
PSAR APPENDIX 5K - PRESTRESSING TENDONS
ARKANSAS POWER AND LIGHT COMPANY
17 PAGES, PAGE 5K 1 THRU 5K 17 OF SUPPLEMENT 7 TO THE RUSSELVILLE LICENSE APPLICATION, AUG. 15, 1968, DOCKET 50-313

DESCRIBES ANCHORAGE ZONE DESIGN, DESIGN OF LINER PLATE ANCHORS, AND LARGE SIZE PRESTRESSING TENDONS. PROVIDES BRIEF DESCRIPTION OF ANALYTICAL MODELS AND TREATMENTS. SHOWS LINER PLATE HAS A MINIMUM FACTOR OF SAFETY OF 4.25 IF A LINER PLATE ANCHOR FAILS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, 1717 H ST., WASHINGTON, D.C. 20545 (\$0.25 CENTS/COPY)

*CONTAINMENT LINER + *STRESS ANALYSIS + ANALYTICAL MODEL + REACTOR, PWR + REPORT, PSAR + RUSSELLVILLE (PWR) + SAFETY MARGIN

18-27957

ALSO IN CATEGORIES 6 AND 9
ATHERTON R + KIKTA EJ + SHERMAN J
PWR CORE 2 REACTOR DESIGN DESCRIPTION REPORT
WESTINGHOUSE ELECTRIC CORP., BETTIS ATOMIC POWER LAB
WAPD-296 +. 143 PAGES, REFERENCES, MARCH 1968

DESCRIBES SIGNIFICANT DESIGN FEATURES OF PWR CORE 2 INSTALLED AT SHIPPINGPORT. CORE MECHANICAL AND FUEL ELEMENT CHARACTERISTICS ARE DISCUSSED. A BRIEF DESCRIPTION OF THE SHIPPINGPORT REACTOR PLANT IS GIVEN, WITH EMPHASIS ON PLANT CHANGES TO PERMIT OPERATION AT 505 MWT. OF PARTICULAR SAFETY INTEREST ARE THE NEW FAILED ELEMENT DETECTION AND LOCATION (FEDAL) SYSTEM, IMPROVED INSTRUMENTATION, AND THE ANALYSES OF ROD-WITHDRAWAL ACCIDENTS AND OF COMPLETE-LOSS-OF-FLOW ACCIDENTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*REACTOR DESCRIPTION + *SHIPPINGPORT (PWR) + ACCIDENT, CONTROL ROD WITHDRAWAL + ACCIDENT, LOSS OF FLOW + DESIGN STUDY + FAILURE, FUEL ELEMENT

18-28117

ALSO IN CATEGORIES 11 AND 12
ICE CONDENSER INFORMATION
INDIANA + MICHIGAN ELECTRIC COMPANY

CATEGORY 19
SAFETY ANALYSIS AND DESIGN REPORTS

18-28117 *CONTINUED*

98 PAGES, FIGURES, TABLES, AMENDMENT 4 TO LICENSE APPLICATION FOR COOK 1 AND 2, JULY 29, 1968, DOCKET 50-315/316

ANSWERS QUESTIONS 9.1 AND 9.2 ON ICE CONDENSER ASKED IN JULY 1, 1968, DRL LETTER. PROVIDES REVISED PSAR PAGES, INCLUDING EXTENSIVE REVISIONS IN SECTIONS 5.2 (CONTAINMENT MATHEMATICAL MODEL), 5.3 (ICE CONDENSER), 14.3 (CONTAINMENT PRESSURE TRANSIENT ANALYSIS DURING SHUTDOWN). ASSERTS THAT SUFFICIENT EVIDENCE HAS BEEN GIVEN IN THIS AND PROPRIETARY REPORTS (WCAP-2951, 704C, 7079 AND 2 SUPPLEMENTS, PLUS 7183 AND SUPPLEMENT) FOR A FAVORABLE AEC FINDING.

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

AEC QUESTION + COOK 1 (PWR) + REACTOR, PWR + REPORT, PSAR

18-28532

ALSO IN CATEGORY 13

SAFETY ANALYSIS-EUROCHEMIC REPROCESSING PLANT - VOL. I, II, AND III
EUROPEAN COMPANY FOR THE CHEMICAL PROCESSING OF IRRADIATED FUELS, MOL - BELGIUM
630 PAGES, FIGURES, TABLES, REFERENCES, NOVEMBER 1965

SAFETY ANALYSIS REPORT CONTAINING (1) BASIC FUEL DATA AND PLANT CAPACITY, (2) DESCRIPTION OF SITE, BUILDINGS, FLOW SHEETS, EQUIPMENT, AUXILIARIES, (3) DETAILS OF OPERATION, (4) SAFETY ASPECTS, (5) ACCIDENT ANALYSIS, (6) APPROPRIATE DRAWINGS (EQUIPMENT AND BUILDING LAYOUTS).

*ACCIDENT ANALYSIS + *BELGIUM + *EUROCHEMIC + *FUEL REPROCESSING + *REPORT, SAR +
*SOLVENT EXTRACTION PROCESS + EQUIPMENT, GENERAL + URANIUM + URANIUM-235 + WASTE TREATMENT, GENERAL

18-28619

ALSO IN CATEGORY 5

MACON EA + LEE ML + BREWER ST + BLEY WN
EFFECT OF REACTOR IRRADIATION ON SANTOWAX OM AND WR
MASSACHUSETTS INST. OF TECH., CAMBRIDGE. DEPT. OF NUCLEAR ENGINEERING
MIT-334-94 +. 386 PAGES, TABLES, JUNE 1968

IRRADIATIONS MADE THROUGH AN MITR FUEL ELEMENT, WITH COOLANT AT 572-800 F. DOSE RATES 1.2 (FAST NEUTRONS) AND 1.3 (GAMMA) WATTS/GM AT 5 MW. FIRST-ORDER RADIOLYOLYSIS RATE CONSTANTS WERE OBTAINED, AS WELL AS HEAT-TRANSFER DATA. REPORT IS MOSTLY THEORY AND RESULTS OF IRRADIATION DEGRADATION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

*ORGANIC COOLANT + *RADIATION DAMAGE + FAST NEUTRON + IN PILE LOOP + REACTOR, TEST

18-28620

ALSO IN CATEGORIES 2 AND 14

ARCUNI AA
A SURVEY OF UNDERWATER POWER REACTOR APPLICATIONS AND RADIATION HAZARDS
PENNSYLVANIA STATE UNIV., THE GRADUATE SCHOOL, DEPT. OF NUCLEAR ENGINEERING, UNIVERSITY PARK, PA.
66 PAGES, FIGURES, TABLES, REFERENCES, DEC. 1967

REVIEWS HISTORY OF RADIOISOTOPE AND LOW POWER REACTORS POTENTIALLY USEFUL FOR UNDERWATER EXPLORATION OR MINING. CHOOSES A 10 MWTH BWR TO EVALUATE MCA FISSION PRODUCT RELEASE FROM ZR-H FUEL ELEMENTS. BULK OF THESIS IS RELEASE FRACTIONS FROM FUEL (2 PG), MPC ALLOWED BASED ON RECONCENTRATION IN LIVING ORGANISMS (12 PG), AND DISPERSION CALCULATION MODEL (20 PG). RECOMMENDS CARTES AND OKUBO MODEL AS MOST CONSERVATIVE.

AVAILABILITY - PENN. STATE UNIV., DEPT. OF NUCLEAR ENGINEERING, UNIVERSITY PARK, PA.

*DISPERSION + *MATHEMATICAL TREATMENT + *SITING, OFF SHORE + ACCIDENT, MAXIMUM CREDIBLE (MCA) + BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + HYDRIDE + MAXIMUM PERMISSIBLE CONCENTRATION (MPC) + OCEAN AND SEA + REACTOR, BWR + ZIRCONIUM

18-28622

ALSO IN CATEGORY 11

ROSS-ROSS PA
FUEL CHANNEL DEVELOPMENT FOR CANADAS POWER REACTORS
ATOMIC ENERGY OF CANADA LTD., CHALK RIVER (ONTARIO). CHALK RIVER NUCLEAR LABS.
AECL-3126 + CONF-680512-3 +. 31 PAGES, 14 FIGURES, 6 TABLES, 12 REFERENCES, MAY 1969, PAPER PRESENTED AT EIC 82ND ANNUAL GENERAL MEETING, HALIFAX, NOVA SCOTIA

DESCRIBES DEVELOPMENT WORK RELATED TO STRENGTH AND DUCTILITY OF IRRADIATED ZIRCALOY, CREEP BEHAVIOR AND CORROSION, JOINING TO STAINLESS STEEL, INSPECTION FOLLOWING OPERATION, AND CRITICAL CRACK LENGTH.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

*PIPING + *PROPERTY, PHYSICAL + *REACTOR, PRESSURE TUBE + CANADA + CANDU (HWR) + CREEP BEHAVIOR + EXAMINATION + FAULT + REACTOR, HWR + STRESS ANALYSIS + ZIRCALOY

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-28638
FROMM LW + MATOUSEK JF + ROHDE RR + SHAFTMAN OH + TESSIER JH
PRELIMINARY SAFETY ANALYSIS REPORT ON THE ARGONNE ADVANCED RESEARCH REACTOR
ARGONNE NATIONAL LAB., ILL.
ANL-7448 +. 638 PAGES, FIGURES, TABLES, JUNE 1968

IN APRIL 1966, THE DRAFT PSAR OF THIS 100-MWTH FLUX TRAP REACTOR WAS PUBLISHED. IN OCT. 66, THE REACTOR CORE WAS CHANGED TO THE HFIR DESIGN TO SAVE MONEY. ON APRIL 2, 1968, THE PROJECT WAS CANCELLED. THIS REPORT WAS REVISED TO SERVE AS A RECORD. PART 1 IS THE PSAR, REVISED TO THE DESIGN AS OF ABOUT SEPT. 67, AND PART 2 CONTAINS REPLIES TO THE AEC QUESTIONS. REPORT CONTAINS THE ANL CRITERIA EQUIVALENT TO THE 27 AEC DESIGN CRITERIA, DESCRIPTIONS OF SITE AND DESIGN, SAFETY ANALYSIS, MCA ANALYSIS, AND HYPOTHETICAL ACCIDENTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA
22151, \$3.00 COPY, \$0.65 MICROFICHE

*REPORT, PSAR + AARR (RR) + REACTOR, FLUX TRAP + REACTOR, RESEARCH

18-28639 ALSO IN CATEGORY 5
PATTERSON JF
SUPERCritical TECHNOLOGY PROGRAM. FINAL REPORT
WESTINGHOUSE ELECTRIC CORP., MADISON, PA. ADVANCED REACTORS DIV.
WCAP-2374-8 +. 236 PAGES, FIGURES, TABLES, MAY 1968

SUMMARIZES WORK FROM APRIL 1964 TO APRIL 1965, WHEN CONTRACT WAS SUSPENDED. LOOP DESIGN AND MANY COMPONENTS WERE TURNED OVER TO AEC. TWO FUEL ASSEMBLIES WERE BUILT - (1) VIBRATORY COMPACTED UO₂ SWAGED INTO 16CR-20NI STAINLESS STEEL, (2) PELLETS IN INCOLOY 800 RODS. LOOP WAS INSTALLED IN SAXTON 3 WEEKS BEFORE PROJECT SUSPENDED. REPORT IS MAINLY A LOOP DESIGN DESCRIPTION, PLUS A FUEL ELEMENT DESIGN AND FABRICATION ANALYSIS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA
22151, \$3.00 COPY, \$0.65 MICROFICHE

*IN PILE LOOP + *REACTOR, SUPERCRITICAL PRESSURE + FUEL ELEMENT + FUEL, PELLET TYPE + FUEL, POWDER TYPE + HEAT TRANSFER ANALYSIS + REACTOR, PWR + SAXTON (PWR) + SYSTEM DESCRIPTION

18-28767 ALSO IN CATEGORY 2
STASZESKY FM
PILGRIM STATION EVALUATES CONCRETE POURING EXEMPTION
BOSTON EDISON CO.
1 PAGE, ATOMIC ENERGY CLEARINGHOUSE, 14141, PAGE 17, (OCT. 7, 1968), DOCKET 50-239

(LETTER TO COMMISSIONER JOHNSON, SEPT. 17) THE MAR. 18, 1968, EXEMPTION TO POUR CONCRETE IN THE BASE SLAB AND REACTOR WALLS HAD THE SAME EFFECT AS IF THE CONSTRUCTION PERMIT HAD BEEN ISSUED APRIL 22 INSTEAD OF AUG. 22, 1968. THE FINANCIAL RISK (\$443,000 OF CONCRETE AND CONSTRUCTION) WAS LESS THAN 2% OF THE AMOUNT IRREVOCABLY COMMITTED WHEN CONSTRUCTION PERMIT ISSUED. WE BELIEVE THAT THE EXEMPTION HAD NO POTENTIAL FOR DECREASING SAFETY BECAUSE WE HAD REACHED AGREEMENT WITH DRL ON SOIL LOADING. WE BELIEVE THAT THE PROCEDURES DEVELOPED FOR THIS FIRST OF A KIND EXEMPTION WERE ADEQUATE AND SUGGEST THE PRACTICE BE CONTINUED.

*CONSTRUCTION PERMIT PROCESS + CONTAINMENT CONSTRUCTION + FOUNDATION ENGINEERING + PILGRIM (BWR) + REACTOR, BWR

18-28769 ALSO IN CATEGORIES 12 AND 5
INDIAN POINT 1 FINAL EMERGENCY CORE COOLING REPORT
1 PAGE, ATOMIC ENERGY CLEARINGHOUSE, 14141, PAGE 19, (OCT. 7, 1968)

(SEPT. 20) RESULTS SUBMITTED OF A STUDY ON LOSS-OF-COOLANT ACCIDENT AND DETERMINATION OF PERFORMANCE REQUIREMENTS FOR SYSTEMS TO PREVENT CORE MELTDOWN FOLLOWING LOSS-OF-COOLANT ACCIDENT.

*ACCIDENT ANALYSIS + *ACCIDENT, LOSS OF COOLANT + *SYSTEM CAPABILITY + CORE REFLOODING SYSTEM + INDIAN POINT 1 (PWR) + REACTOR, PWR

18-28794
CONDENSED DESCRIPTION - 1000 MWE - 3600 PSI STEAM-COOLED BREEDER REACTOR DESIGN
BABCOCK + WILCOX CO., ATOMIC ENERGY DIVISION, LYNCHBURG, VIRGINIA
BAW-1309 +. 50 PAGES, FIGURES, TABLES, JAN. 1967

CONCEPTUAL DESIGN PERFORMED SEPT. 62 TO JUNE 65. DOES NOT USE EARLIER D2O AND SPECTRAL SHIFT CONTROL. USES FLANGELESS REACTOR VESSEL. CAPITAL COST \$89/KW.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA,
22151 \$3.00 COPY, \$0.65 MICROFICHE

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-28794 *CONTINUED*
*DESIGN STUDY + REACTOR, BREEDER + REACTOR, FAST + STEAM

18-28934
SCHLUPP KF
NSPE-PROGRAM PROJECT REVIEW COMMITTEE 5TH AND FINAL MEETING JANUARY 16 TO 19, 1967 IN KARLSRUHE
NP-17122 +. 159 PAGES, JANUARY 16, 1967

A GENERAL REVIEW OF THE EXPERIENCE IN INTERNAL SUPERHEAT REACTOR (FUEL, CHEMISTRY, HEAT TRANSFER, MATERIALS) OBTAINED FROM THE VALLECITOS EXPERIMENTAL SUPERHEAT REACTOR PROGRAM, TERMINATED IN 1967.

*OPERATING EXPERIENCE SUMMARY + FAILURE, FUEL ELEMENT + VESR (ISR)

18-28935
ZURN H
EXAMPLES OF WELDING TECHNOLOGY EMPLOYED IN NUCLEAR REACTOR CONSTRUCTION
33 PAGES, Z. SCHWEISSTECH., 56, PAGES 383-415 (1966) (IN GERMAN)

GENERAL REVIEW OF WELDING PROBLEMS IN NUCLEAR REACTOR TECHNOLOGY. THE PRINCIPAL TYPES OF REACTORS, THEIR MOST IMPORTANT STRUCTURAL ELEMENTS AND THE GENERAL PROBLEMS OF WELDING OCCURRING IN CONSTRUCTION ARE SURVEYED AND EXTENSIVELY TABULATED. THE WELDING OF FUEL ELEMENTS, CYLINDRICAL STRUCTURAL ELEMENTS (PROTECTIVE TUBES AND HEATING ELEMENTS), THERMOCOUPLES AND SENSORS, SPECIAL RESEARCH DEVICES, PRESSURE AND CONTAINMENT VESSELS, FILLERS, STEAM CONVERTERS AND UNDERCOOLERS AND SAFETY CONTAINERS IS DISCUSSED IN DETAIL WITH THE AID OF EXAMPLES TAKEN FROM THE LITERATURE.

*WELDING + GERMANY + REACTOR, POWER

18-28937 ALSO IN CATEGORY 11
RIERA JD + CRONEBERGER DK + NODLAND KE
ADDENDUM TO DESIGN OF LARGE OPENING REINFORCEMENT FOR THE (GINNA) CONTAINMENT VESSEL
ROCHESTER GAS AND ELECTRIC CORPORATION
19 PAGES, 1 FIGURE, 1 TABLE OF THE FIFTH SUPPLEMENT (EXHIBIT D-10) TO THE GINNA FINAL SAR, OCTOBER 16, 1968, DOCKET 50-244, TYPE--PWR, MFG--WEST, AE--GILBERT ASSOC.

PROVIDES CONSTRUCTION PROCEDURES AND CORRECTIONS TO THE ANALYSIS DESCRIBED IN THE THIRD SUPPLEMENT TO THE SAR.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, 1717 H ST., WASHINGTON, D.C. 20545 (\$0.25 CENTS/COPY)

*CONTAINMENT CONSTRUCTION + *CONTAINMENT EQUIPMENT HATCH + CONCRETE, PRESTRESSED + GINNA (PWR) + REACTOR, PWR + REPORT, SAR + STEEL + STRESS ANALYSIS

18-28942
KNK-SICHERHEITSBERICHT INTAT-70, 2. NACHTRAG
INTERATOM, INTERNATIONALE ATOMREAKTORBAU GMBH
32 PAGES, FIGURES, TABLES, LETTER KNK, JULY 10, 1968

REVISED PAGES (IN GERMAN) TO KNK SODIUM-COOLED REACTOR SAR.

GERMANY + REACTOR, FAST + REACTOR, LMFBR + REPORT, SAR

18-28943
BAINBRIDGE GR
EXPERIENCE WITH AND POTENTIAL OF GAS-COOLED REACTORS IN THE U.K.
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, RISLEY (ENGLAND). REACTOR GROUP
TRG-REPORT-1692 +. 31 PAGES, 15 FIGURES, TABLES, 1968

PRESENTS PHOTOGRAPHS, TABLES OF AVAILABILITY FACTORS, A FEW SUGGESTIONS ABOUT IMPROVED HARDWARE.

AVAILABILITY - USAEC DEPOSITORY LIBRARIES IN THE U.S. AND OVERSEAS

*ECONOMICS + OPERATING EXPERIENCE SUMMARY + REACTOR, GCR + UNITED KINGDOM

18-29089 ALSO IN CATEGORIES 17 AND 15
OYSTER CREEK I EMERGENCY MEDICAL PLANNING
JERSEY CENTRAL POWER + LIGHT CO., MORRISTOWN, NEW JERSEY
16 PAGES, AMENDMENT 41 TO THE OYSTER CREEK I LICENSE APPLICATION, JULY 26, 1969, DOCKET 50-219, TYPE--BWR, MFG--G.E., AE--BURNS + ROE

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-29089 *CONTINUED*

RESPONDS TO MAY 27, 1968, SEVEN QUESTIONS ASKED BY DRL ON (1) PERSONNEL DECONTAMINATION FACILITIES, (2) AVAILABLE MEDICAL PERSONNEL TRAINING IN RADIATION DECONTAMINATION, (3) TRANSPORT TO AN AGREEABLE HOSPITAL, (5), (6), (7) QUALIFICATION OF PERSONNEL AND PLANNING AT LOCAL HOSPITALS.

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

AEC QUESTION + EMERGENCY PROCEDURE + OYSTER CREEK 1 (BWR) + REACTOR, BWR + REPORT, SAR

18-29091

OYSTER CREEK 1 AMENDMENT 26
JERSEY CENTRAL POWER + LIGHT CO., MORRISTOWN, NEW JERSEY
55 PAGES, FIGURES, TABLES, DEC. 4, 1967, DOCKET NO. 50-219, TYPE--BWR, MFG--G.E., AE--BURNS + ROE

RESPONDS TO DRL LETTERS OF OCT. 16, 1967, AND NOV. 20, 1967.

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

AEC QUESTION + OYSTER CREEK 1 (BWR) + REACTOR, BWR + REPORT, SAR

18-29568

ALSO IN CATEGORIES 1 AND 5

CAVE L + WILLIAMS TF
SAFETY ASSESSMENT OF PRESSURE-TUBE HEAVY-WATER REACTORS BY PROBABILITY METHODS
ATOMIC POWER CONSTRUCTIONS LTD., SUTTON, ENG.
CONF-570917 + STI/PUB-163 +. PP 831-63, 1968, HEAVY-WATER POWER REACTORS

THE USE OF PROBABILITY METHODS FOR THE ASSESSMENT OF SAFETY WAS DEVELOPED IN THE UNITED KINGDOM FOR GAS-COOLED REACTORS. IN PARALLEL WITH A MOVE TOWARDS QUANTITATIVE SAFETY CRITERIA, SOME POSSIBLE CRITERIA ARE DESCRIBED. IN PARTICULAR, A METHOD WAS DEVELOPED FOR RAPID ASSESSMENT OF A PRELIMINARY DESIGN TO REVEAL POTENTIAL POINTS OF WEAKNESS BEFORE THE DESIGN IS FINALIZED. THE METHOD IS APPLIED TO HYPOTHETICAL 250-MW(E) REACTORS OF BOTH THE INDIRECT AND DIRECT CYCLE TYPES TO ILLUSTRATE THE USE FOR PRESSURE-TUBE HEAVY-WATER REACTORS AND ALSO TO PROVIDE A COMPARISON OF THE SAFETY OF THIS REACTOR SYSTEM AND OTHERS. A DIFFICULTY IN THE USE OF PROBABILITY METHODS AT PRESENT IS THE SCARCITY OF DATA ON FAILURE RATES FOR STRUCTURES AND LARGE ITEMS OF PLANT. AN ESSENTIAL FEATURE OF THE METHOD DESCRIBED IS A PERTURBATION OF THE ASSUMED FAILURE RATES BY FACTORS OF ORDER 100, TO ASSESS THE EFFECTS OF SUCH UNCERTAINTIES. THE EFFECT OF MAJOR CHANGES IN OTHER FEATURES IMPORTANT TO SAFETY, SUCH AS RELIABILITY OF THE CONTAINMENT SYSTEMS, IS ALSO EXAMINED.

*PROBABILITY + *SAFETY ANALYSIS + ACCIDENT ANALYSIS + FAILURE, EQUIPMENT + INFORMATION RETRIEVAL + REACTOR, HWR + REACTOR, PRESSURE TUBE + UNITED KINGDOM

18-29602

ALSO IN CATEGORY 9

CRAFT PCR
DESIGN METHODS FOR NUCLEAR POWER PLANT SYSTEM DESIGN
4 PAGES, ERGONOMICS, 10, 221-4 (MARCH 1967)

INNOVATIONS INTRODUCED IN WYLFA ARE DESCRIBED. THEY INCLUDE THE CHANGE FROM STEEL TO CONCRETE FOR THE REACTOR PRESSURE VESSELS, FROM A POND TO A DRY STORE FOR THE SPENT FUEL, AND FROM A CRANE TO REMOTELY CONTROLLED VEHICLES FOR TRANSPORTING THE REACTOR FUELING AND SERVICING MACHINES. CONTROL OF THE STATION IS ALMOST ENTIRELY CENTRALIZED WITHIN A SINGLE CENTRAL CONTROL ROOM, AND A COMPUTER SYSTEM IS USED FOR DATA PROCESSING AND CONTROL. THE TWIN-REACTOR DATA PROCESSING SYSTEM DEALS WITH SOME 4500 ANALOGUE AND 3000 CONTACT SIGNALS, CARRIES OUT 300 ALARM LEVEL CHECKS EVERY 30 SEC, AND ANALYZES ABOUT 6000 POSSIBLE ALARMS. A LARGE SET OF SUB-SYSTEM TECHNICAL DESIGN ORGANIZATIONS WAS CO-ORDINATED BY AN ESSENTIALLY DIFFERENT MANAGEMENT ORGANIZATION. SOME GENERAL LESSONS THAT EMERGE FROM THIS DESIGN WORK ARE OUTLINED.

*ADMINISTRATIVE CONTROL + *DESIGN STUDY + CONCRETE, PRESTRESSED + DATA PROCESSING + FUEL STORAGE + PRESSURE VESSEL + REACTOR, GCR + REACTOR, POWER + REFUELING + UNITED KINGDOM

18-29605

ALSO IN CATEGORY 11

ERKES P + GRAU P
DESCRIPTION AND OPERATION OF THE ADRENES POWER PLANT
ENERG. NUCL. (PARIS)- 8- 520-34 V (DEC. 1966) (IN FRENCH)

A PWR WITH A NET ELECTRICAL POWER OF 266 MW. THE PECULIARITY OF ITS CONSTRUCTION IS THAT THE NUCLEAR INSTALLATIONS ARE UNDERGROUND AND THE CLASSICAL INSTALLATIONS ARE ABOVE GROUND. REACTOR CRITICAL IN OCTOBER 1966. THE VARIATION OF THE CONSTITUENT PARTS OF THE ARDENNES REACTOR FROM THE FIRST GENERATION PWR REACTORS ARE REVIEWED WITH EMPHASIS ON CHEMICAL CONTROL, CONTROL RODS, FUEL ASSEMBLY, LATTICE ARRANGEMENT, ENERGY PRODUCTION IN THE CORE, ENERGY EXTRACTION FROM THE CORE, ENERGY TRANSFER FROM THE PRIMARY TO THE SECONDARY SYSTEMS, CHARGE CYCLES FOR THE CORE, AND TRANSFER OF THE IRRADIATED FUEL. FINANCING AND PRODUCTION COST ARE ALSO BRIEFLY CONSIDERED.

*REACTOR DESCRIPTION + BELGIUM + CONTAINMENT, UNDERGROUND + REACTOR, PWR

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-29606 ALSO IN CATEGORY 5
PETERS NT
DEVELOPMENT OF THE PRIMARY SYSTEM FOR THE ENRICO FERMI ATOMIC POWER PLANT
ATOMIC POWER DEVELOPMENT ASSOCIATES, INC.
APDA-308 +. 173 PAGES, JUNE 1968

DOCUMENTS THE COURSE OF DEVELOPMENT OF THE PRIMARY HEAT TRANSPORT SYSTEM, STARTING WITH THE EARLY HISTORY OF THE OBJECTIVES AND CONTINUING THROUGH THE EVOLUTION OF THE SYSTEM DESIGN CONCEPTS TO THE FINAL DESIGN. PRESENTS CONSTRUCTION, TESTING, AND OPERATION OF SYSTEM WITH REACTOR POWER UP TO 100 MWt WITH EVALUATION OF THE GENERAL PERFORMANCE AND IMPORTANT FEATURES, INCLUDING RECOMMENDATIONS FOR USE IN DESIGN OF NEW LMFBRs. PRESENTS INTERACTION WITH DESIGN OF OTHER FEATURES OF PLANT (SUCH AS REACTOR CONTAINMENT BUILDING). SYSTEM COMPONENTS AND AUXILIARY FEATURES ARE DESCRIBED ONLY AS RELEVANT TO THE DISCUSSION OF PRIMARY SYSTEM AS AN INTEGRATED, FUNCTIONAL UNIT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*MAIN COOLING SYSTEM + *SYSTEM DESCRIPTION + FFERMI (LMFBR) + R AND D PROGRAM + REACTOR, BREEDER + REACTOR, FAST + REACTOR, LMFBR

18-29609 ALSO IN CATEGORIES 17 AND 1
PAXTON HC
BENEATH THE FORMAL CLOAK
NUCLEAR NEWS 11(1), PG. 47-50, JAN. 1968

(SUBTITLED, HOW CAN EXPERIENCE CONTRIBUTE TO POWER REACTOR SAFETY). CLOAK IN THE TITLE REFERS TO THE ILLUSION THAT THE FORMAL PROCESS OF HAZARDS EVALUATION (E.G., 10 CFR 100) CAN BE SUBSTITUTED FOR JUDGEMENT. DISCUSSION CENTERS AROUND NEED FOR JUDGEMENT (IMPLIED IN ANY REAL SITUATION BY ECONOMICS, AND IN LICENSING BY WORDS LIKE REASONABLE ASSURANCE) AND NEED FOR TRANSMITTING SAFETY RELATED INFORMATION. ASSERTS THAT FIRST STEP IN SOLVING INFORMATION PROBLEM IS EVERYONE RECOGNIZING THAT CANDOOR IN REPORTING IS NEEDED DESPITE AUTHORITARIAN ATMOSPHERE. NSIC AND AEC JOURNALS ARE IN PRACTICE NOT FULLY EFFECTIVE. STANDARDS MUST GROW AS EXPERIENCE ACCUMULATES.

*CODES AND STANDARDS + *INCIDENT, GENERAL + *INFORMATION RETRIEVAL + HAZARDS ANALYSIS + NSIC + REACTOR, POWER + REGULATION, AEC + SAFETY ANALYSIS

18-29612 ALSO IN CATEGORY 7
HUUKER JR + GREEDA RJ + LUNY CS + MILLS RG
FORT ST. VRAIN PROOF TEST ELEMENT NUMBER ONE
GULF GENERAL ATOMIC, INC., SAN DIEGO, CALIF
GAMD-8552 +. 47 FIGURES, 25 TABLES, 7 REFERENCES, 109 PAGES, JUNE 12, 1968

GIVES DETAILED DESCRIPTION OF ELEMENT TO BE IRRADIATED IN PEACH BOTTOM, MATERIALS AND PROCESSES USED IN FABRICATION, PIGGYBACK IRRADIATION SPECIFICATIONS, AND ASSEMBLY DETAILS. DEVELOPMENT DESCRIBED ELSEWHERE. ***UNPURGED ELEMENT HAS LONG HOLES FILLED WITH TRIPLE COATED PARTICLES. 6.7% BURNUP EXPECTED, AT TEMPERATURES UP TO 1240 C.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*FABRICATION + *FUEL ELEMENT + *IRRADIATION TESTING + COATED PARTICLE + FT. ST. VRAIN (HTGR) + PEACH BOTTOM 1 (HTGR) + REACTOR, HTGR + SYSTEM DESCRIPTION

18-29618 ALSO IN CATEGORIES 17 AND 1
GIAMBUSSO A
UTILITY PREPARATION FOR NUCLEAR POWER
U.S. ATOMIC ENERGY COMMISSION
23 PAGES, 3 FIGURES, 3 TABLES, NOV. 14, 1968

REVIEWS AEC PROGRAM FOR ORIENTATION OF UTILITIES JUST PLANNING FOR NUCLEAR POWER. MENTIONS NEED FOR NUCLEAR TRAINING (IN SAFETY PROBLEM AREAS) REACHING UP TO TOP MANAGEMENT (GUIDELINES BEING PREPARED BY AEC ON SUPERVISORY AND STAFF PERSONNEL AT BOTH THE PLANT AND THE CENTRAL STAFF). SURVEY SHOWED ADEQUATE REACTOR OPERATOR TRAINING CAPABILITY, SIMULATORS CAN HELP. OF 5000 TECHNICAL PERSONNEL NEEDED 1968-76, 3500 WILL NEED SOME SORT OF NUCLEAR TRAINING. AEC WORK EXPERIENCE PROGRAM ALSO AVAILABLE. TIMING IS OF PARTICULAR IMPORTANCE, E.G., PLANT SUPT MUST BE TRAINED BY 4 YEARS BEFORE STARTUP, PLANT STAFF ENGINEERS BY TWO YEARS BEFORE STARTUP.

AVAILABILITY - A. GIAMBUSSO, ASSISTANT DIRECTOR FOR PROJECT MANAGEMENT, DIVISION OF REACTOR DEVELOPMENT AND TECHNOLOGY, U.S. ATOMIC ENERGY COMMISSION

*TRAINING + GUIDE + REACTOR, BWR + REACTOR, POWER + REACTOR, PWR + RESPONSE TIME + SIMULATION + STAFFING + USAEC

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-29634 ALSO IN CATEGORY 11
INDIAN POINT PSAR SUPPLEMENT 4
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
DOCKET-50286-6 +. 75 PAGES, FIGURES, TABLES, REFERENCES, AMENDMENT 4, SUPPLEMENT 4, EXHIBIT B-4, OCTOBER 31, 1968, DOCKET 50-286, TYPE--PWR, MFG--WEST., AE--UNITD ENGR.

RESPONDS TO REMAINING QUESTIONS REGARDING STRUCTURAL DESIGN OF CONTAINMENT AND BUILDINGS ASKED IN A JULY 16, 1968, LETTER, NOT DEALT WITH IN THE SECOND SUPPLEMENT.

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

*BUILDING + *CONTAINMENT DESIGN + AEC QUESTION + INDIAN POINT 3 (PWR) + REACTOR, PWR + REPORT, PSAR + STRUCTURAL INTEGRITY

18-29637
OYSTER CREEK AMENDMENT 11
JERSEY CENTRAL POWER AND LIGHT COMPANY
375 PAGES, FIGURES, TABLES, REFERENCES, AUGUST 30, 1967, DOCKET 50-219, TYPE--BWR, MFG--G.E., AE--BURNS + ROE

IN SUPPORT OF ITS REQUEST FOR INITIAL OPERATING LICENSE AT 1600 MW(TH), ANSWERS 109 QUESTIONS BASED ON THE FSAR REQUESTED IN DRL LETTER OF JUNE 21, 1967.

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

AEC QUESTION + OYSTER CREEK 1 (BWR) + REACTOR, BWR + REPORT, SAR

18-29639 ALSO IN CATEGORIES 10 AND 12
OYSTER CREEK 1 AMENDMENT 34
JERSEY CENTRAL POWER AND LIGHT COMPANY
75 PAGES, FIGURES, TABLES, REFERENCES, MARCH 21, 1968, DOCKET 50-219, TYPE--BWR, MFG--G.E., AE--BURNS + ROE

PROVIDES ANSWERS TO 6 OF 16 DRL QUESTIONS ASKED IN JAN. 9, 1968, LETTER. BULK OF AMENDMENT IS A RESPONSE TO QUESTION 1, SUGGESTING AN ALTERNATIVE APPROACH TO PROVIDING EMERGENCY POWER TO THE HIGH PRESSURE COOLANT INJECTION SYSTEM, AS THE SPLIT BUS CONCEPT PROPOSED IN AMENDMENT 25 COMPROMISES THEIR INDEPENDENCE. PRINCIPLE CHANGE IS A 50% INCREASE IN ON-SITE AUXILIARY POWER CAPABILITY, WITH THE 3RD DIESEL TO INDEPENDENTLY POWER THE SECOND EMERGENCY BUS.

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

*INDEPENDENCE + ACCIDENT, LOSS OF COOLANT + AEC QUESTION + CORE SPRAY + EMERGENCY POWER, ELECTRIC + GENERATOR, ENGINE + OYSTER CREEK 1 (BWR) + REACTOR, BWR + REPORT, SAR + SYSTEM CAPABILITY

18-29640 ALSO IN CATEGORY 12
OYSTER CREEK 1 AMENDMENT 32
JERSEY CENTRAL POWER AND LIGHT COMPANY
50 PAGES, FIGURES, TABLES, REFERENCES, FEBRUARY 16, 1968, DOCKET 50-219, TYPE--BWR, MFG--G.E., AE--BURNS + ROE

RESPONDS TO 8 DRL QUESTIONS OF JAN. 9, 1968, LETTER, INCLUDING AN ANALYSIS TO DEMONSTRATE ONLY ONE SPRAY PUMP AND ONE SERVICE WATER PUMP NEEDED IN EACH LOOP WHEN CONTAINMENT COOLING IS REQUIRED.

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

*CONTAINMENT SPRAY + AEC QUESTION + CONTAINMENT DESIGN + CONTAINMENT, PRESSURE SUPPRESSION + FAILURE, EQUIPMENT + OYSTER CREEK 1 (BWR) + PUMP + REACTOR, BWR + REPORT, SAR

18-29643 ALSO IN CATEGORIES 9 AND 10
INDIAN POINT 3 SUPPLEMENT 6 TO PSAR
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
51 PAGES, FIGURES, AMENDMENT 6 (ALSO EXHIBIT B-6, 6TH SUPPLEMENT TO THE PSAR) TO INDIAN POINT 3 APPLICATION (DOCKET 50-286) NOV. 25, 1968, TYPE--PWR, MFG--WEST., AE--UNITD ENGR.

PROVIDES REVISED PAGES FOR PSAR SUPPLEMENTS 1 AND 5. MAJOR CHANGES OR ANALYSES SEEM TO BE (1) A DESCRIPTION OF TWO INSTRUMENT SYSTEMS WHICH PROTECT AGAINST FLUX TILT FROM A ROD DROPPED INTO CORE, (2) A SIX PAGE DESCRIPTION OF INDEPENDENCE BETWEEN REDUNDANT POWER AND CONTROL CABLES, INCLUDING IPCEA PUBLICATION P-46-245 VALUES FOR AMPACITY RATING OF HEAVILY LOADED CABLES, AND (3) PROVISION TO GUARD AGAINST SINGLE FAILURE DISABLING 480 VOLT SYSTEM, I.E., A FAILURE ANALYSIS OF THE TWO TIE BREAKERS BETWEEN BUSES 3A-6A AND BUSES 2A-5A.

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

*ACCIDENT, CONTROL ROD DROPIN + *ELECTRICAL CONDUCTION + *EMERGENCY POWER, ELECTRIC +

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-29643 *CONTINUED*

*FAILURE MODE ANALYSIS + CODES AND STANDARDS + HIGH TEMPERATURE + INDIAN POINT 3 (PWR) + REACTOR, PWR + REPORT, PSAR + SINGLE FAILURE CRITERION + SYSTEM CAPABILITY

18-29645

CALVERT CLIFFS AMENDMENT 4

BALTIMORE GAS AND ELECTRIC CO., BALTIMORE, MARYLAND

225 PAGES, FIGURES, TABLES, REFERENCES, AMENDMENT 4 TO (PSAR SUPPLEMENT 1) CALVERT CLIFFS APPLICATION (DOCKET 50-317 AND -318), NOV. 7, 1968

PROVIDES REVISED PSAR PAGES AND (IN SUPPLEMENT 1 TO THE PSAR) ANSWERS A MAJORITY OF THE DRL QUESTIONS OF SEPT. 16, 1968.

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

AEC QUESTION + CALVERT CLIFFS 1 (PWR) + REACTOR, PWR + REPORT, PSAR

18-29646

ALSO IN CATEGORY 2

OYSTER CREEK NUCLEAR STATION UNIT 2, AMENDMENT 4

JERSEY CENTRAL POWER AND LIGHT COMPANY

DOCKET 50-320-7 +. 655 PAGES, FIGURES, TABLES, REFERENCES, VOLUME 4, SUPPLEMENT 2, OCTOBER 31, 1968 (DOCKET 50-320)

PROVIDES MANY REVISED PSAR PAGES, PLUS SUPPLEMENT 2 (ANSWERS TO DRL QUESTIONS OF SEPT. 10, 1968, PLUS A SUPPLEMENTARY DRILLING AND GEOPHYSICAL DATA REPORT).

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

AEC QUESTION + OYSTER CREEK 2 (PWR) + REACTOR, PWR + REPORT, PSAR

CATEGORY 19
BIBLIOGRAPHIES

19-27814 ALSO IN CATEGORY 16
AIR POLLUTION BIBLIOGRAPHY
6 PAGES, ATMOSPHERIC ENVIRONMENT, 2, PAGES 297-302 (1968)

A BIBLIOGRAPHY OF 110 ARTICLES ON AIR POLLUTION, COVERING EMISSION SOURCES, ATMOSPHERIC INTERACTIONS, MEASUREMENT METHOD, CONTROL METHODS, EFFECT ON HUMAN HEALTH, EFFECT ON MATERIALS, AIR-QUALITY MEASUREMENTS, LEGAL AND ADMINISTRATIVE ASPECTS, STANDARDS AND CRITERIA, AND BASIC SCIENCES AND TECHNOLOGIES.

*ATMOSPHERIC POLLUTION + *BIBLIOGRAPHY + ADMINISTRATIVE CONTROL + INSTRUMENT, AIR SAMPLING + MEASUREMENT, GENERAL + METEOROLOGY

19-28040 ALSO IN CATEGORY 9
EVANS TW
THE EFFECTS OF IRRADIATION ON BORON CARBIDE (A LITERATURE REVIEW)
BATTTELLE-NORTHWEST, RICHLAND, WASH.
BNWL-679 +. 49 PAGES, FIGURES, TABLES, REFERENCES, FEBRUARY 1968

BORON CARBIDE IS BEING CONSIDERED FOR USE IN THE SAFETY AND SHIM RODS OF THE FAST TEST REACTOR (FTR). IRRADIATION TESTING UNDER SIMULATED FAST-REACTOR CONDITIONS WILL BE PERFORMED BEFORE COMMITMENT TO ITS USE IN THE FTR. THIS REVIEW WAS DEEMED NECESSARY PRIOR TO COMMENCEMENT OF AN IRRADIATION PROGRAM IN ORDER TO INCLUDE DATA ACQUIRED SINCE THE LAST REVIEW AND TO ASSESS THE PERTINENCE OF THE DATA FOR FAST-REACTOR APPLICATION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151
\$3.00 COPY, \$0.65 MICROFICHE

*BORON + *CARBIDE + *IRRADIATION TESTING + BIBLIOGRAPHY + BNL + INFORMATION RETRIEVAL + REACTOR, FAST + REACTOR, TEST + REVIEW + TESTING

19-28046 ALSO IN CATEGORY 15
LIN FM + CAMERON JR
A BIBLIOGRAPHY OF THERMOLUMINESCENT DOSIMETRY
WISCONSIN UNIV., MADISON
COO-1105-124 +. 60 PAGES, 1967

IN RECENT YEARS, THERE HAVE BEEN SEVERAL BIBLIOGRAPHIES LARGELY CONCERNED WITH THERMOLUMINESCENCE (TL). THE RAPID GROWTH OF THERMOLUMINESCENT DOSIMETRY (TLD) REQUIRES THAT A SEPARATE COMPREHENSIVE BIBLIOGRAPHY ON THIS SUBJECT BE COMPILED. IT IS UNAVOIDABLE THAT CERTAIN PERTINENT REFERENCES WILL HAVE BEEN UNINTENTIONALLY OMITTED, AND THE AUTHORS WOULD APPRECIATE BEING INFORMED OF THESE. IT WAS NECESSARY TO MAKE ARBITRARY DECISIONS AS TO THE EDGES OF THE SUBJECT. WE INCLUDED THOSE BASIC PAPERS ON TL AND APPLICATIONS THAT APPEARED TO HAVE A DIRECT BEARING ON TLD.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151
\$3.00 COPY, \$0.65 MICROFICHE

*BIBLIOGRAPHY + *INSTRUMENT, GENERAL

19-28075 ALSO IN CATEGORY 11
WHITMAN GD + ROBINSON GC + SAVOLAINEN AW
TECHNOLOGY OF STEEL PRESSURE VESSELS FOR WATER-COOLED NUCLEAR REACTORS
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.
ORNL-NSIC-21 +. 675 PAGES, FIGURES, TABLES, REFERENCES, DECEMBER 1967

REVIEWS CURRENT PRACTICES IN THE DESIGN AND FABRICATION OF STEEL PRESSURE VESSELS FOR LIGHT-WATER-COOLED NUCLEAR REACTORS IN PRESENT AND IMMEDIATE-FUTURE COMMERCIAL USE. THE SPECIFIED SERVICE AND PREDICTED ENVIRONMENTAL CONDITIONS ARE IDENTIFIED, ALONG WITH AN EVALUATION OF THE EFFECTS OF THESE PARAMETERS ON MATERIALS BEHAVIOR. MATERIALS FABRICATION AND MATERIALS PROPERTIES OF INTEREST IN PRESSURE-VESSEL FABRICATION ARE REVIEWED, AND THE METALLURGY OF THESE MATERIALS IS DISCUSSED. THE BASIC ASPECTS OF FRACTURE MECHANICS AND CRACK GROWTH ARE EXAMINED, WITH EMPHASIS ON THE LOW-ALLOY STEELS OF CURRENT INTEREST. THE CODES AND STANDARDS APPLIED IN THE TECHNOLOGY ARE DISCUSSED, AND AREAS WHERE AUGMENTATION AND/OR REVISION TO THESE STANDARDS APPEARS WARRANTED ARE IDENTIFIED. THE TECHNIQUES FOR POSTOPERATIONAL AND IN-SERVICE INSPECTION ARE SUMMARIZED AND EVALUATED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151,
\$3.00 COPY, \$0.65 MICROFICHE

*DESIGN CRITERIA + *FABRICATION + *PRESSURE VESSEL + *QUALITY CONTROL + *STEEL + CONTAINMENT RESEARCH AND DEVELOPMENT + CORROSION + CREEP PROPERTY + EMBRITTLEMENT + FLAW + FRACTURE TOUGHNESS + INSPECTION AND COMPLIANCE + RADIATION EFFECT + RADIOGRAPHY + REACTOR, WATER + STEEL LINEP + STRESS ANALYSIS + TEST, NONDESTRUCTIVE + WELDING + WELDS

CATEGORY 19
BIBLIOGRAPHIES

19-28076 ALSO IN CATEGORY 11
Gwaltney RC
MISSILE GENERATION AND PROTECTION IN LIGHT-WATER-COOLED POWER REACTOR PLANTS
OAK RIDGE NATIONAL LABORATORY
ORNL-NSIC-22 +. 65 PAGES, 10 FIGURES, 1 TABLE, 93 REFERENCES, SEPTEMBER 1968

THE STATE OF CURRENT TECHNOLOGY OF MISSILE GENERATION AND PROTECTION IN RELATION TO THE CAPABILITY OF MEETING THE RELEVANT DESIGN CRITERIA FOR NUCLEAR POWER PLANTS IS PRESENTED. AS PART OF THE CURRENT TECHNOLOGY, PRACTICES IN OTHER INDUSTRIES ARE DISCUSSED, AND THE AVAILABLE CALCULATIONAL TECHNIQUES AND THEIR BASES AND DEFICIENCIES ARE DESCRIBED. A GENERAL DESCRIPTION IS ALSO INCLUDED OF THE CAUSE AND NATURE OF SHOCK WAVES, THE VARIOUS KINDS OF MISSILES THAT COULD BE GENERATED IN THE EVENT OF RUPTURE OF A PRIMARY SYSTEM VESSEL, AND THE CONSIDERATIONS INVOLVED IN DESIGNING TO PROTECT AGAINST THE HARMFUL EFFECTS OF SHOCK WAVES AND MISSILES. A SUMMARY OF THE CURRENT PRACTICE FOR NUCLEAR POWER REACTOR DESIGNS IS GIVEN, GAPS IN THE RELEVANT CURRENT TECHNOLOGY ARE DISCUSSED, AND RECOMMENDATIONS ARE MADE FOR FURTHER RESEARCH AND DEVELOPMENT IN THIS FIELD.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*CONTAINMENT DESIGN + *CONTAINMENT, GENERAL + *CONTAINMENT, SHOCK GENERATION AND PROTECTION +
*MISSILE GENERATION AND PROTECTION + CONCRETE + CONTAINMENT STRUCTURE + IMPACT SHOCK + REACTOR, WATER +
STEEL + STRESS ANALYSIS

19-28077 ALSO IN CATEGORIES 11 AND 12
Zapp FC
TESTING OF CONTAINMENT SYSTEMS USED WITH LIGHT-WATER-COOLED POWER REACTORS
OAK RIDGE NATIONAL LABORATORY
ORNL-NSIC-26 +. 258 PAGES, FIGURES, TABLES, REFERENCES, AUGUST 1968

CONCLUSIONS ARE PRESENTED RELATIVE TO LEAKAGE-RATE TEST RESULTS, CONTINUOUS LEAKAGE-RATE MONITORING, AND DEVELOPMENTS THAT MAY AFFECT FUTURE TESTING REQUIREMENTS. ALSO, RECOMMENDATIONS ARE MADE RELATIVE TO PROPOSED CODES, STANDARDS, AND GUIDES, ISOLATION-VALVE TESTING, CONTAINMENT AIR-COOLING AND SPRAY SYSTEMS TESTING, AND CONTAINMENT SYSTEMS TESTING RESEARCH PROGRAMS. THE STUDIES INDICATED THAT INTEGRATED LEAKAGE-RATE TEST RESULTS ARE NOT CURRENTLY BEING REPORTED IN A MANNER THAT IS CONDUIVE TO COMPARISONS BETWEEN PLANTS OR TO AN INDEPENDENT EVALUATION OF THE ERRORS INVOLVED. IN MOST CASES THERE IS INSUFFICIENT INFORMATION PRESENTED IN THE LEAKAGE-RATE TEST REPORTS TO ADEQUATELY SUPPORT THE DEGREE OF ACCURACY CLAIMED OR TO GIVE CONFIDENCE IN THE LEAKAGE RESULT REPORTED. THE MAJORITY OF THE ERRORS ARE THE RESULT OF INADEQUATE PRECISION OF THE TEST EQUIPMENT USED, INADEQUATE TEST EQUIPMENT CALIBRATION, AND (MORE SIGNIFICANTLY) POORLY DESIGNED SAMPLING TECHNIQUES. A MAJOR NEED APPEARS TO BE THAT OF PROVIDING GUIDELINES FOR CORRECTLY DEFINING THE LEAKAGE-RATE TESTS SO THAT THE ACCURACY AND SIGNIFICANCE OF THE RESULTS CAN BE PREDICTED BEFORE THE TEST IS RUN.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*CONTAINMENT ABSOLUTE MEASURING SYSTEM + *CONTAINMENT INTEGRITY + *CONTAINMENT LEAK MONITOR +
*CONTAINMENT REFERENCE MEASURING SYSTEM + *CONTAINMENT, HIGH PRESSURE + *CONTAINMENT, ICE CONDENSER +
*CONTAINMENT, PRESSURE SUPPRESSION + *CONTAINMENT, PRESSURE VENTING + *TEST, LEAK LOCATION +
*TEST, LEAK RATE + *TEST, PROOF + CODES AND STANDARDS + CONTAINMENT LEAKAGE CONTROL +
CONTAINMENT PENETRATION, GENERAL + CONTAINMENT RESEARCH AND DEVELOPMENT + CONTAINMENT SPRAY +
CONTAINMENT STRUCTURE + CONTAINMENT VESSEL LOADING + REACTOR, WATER + STEEL

19-28512
Seddon BJ
PHYSICAL PROPERTIES OF SOME PLUTONIUM CERAMIC COMPOUNDS. A DATA MANUAL
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, RISLEY (ENGLAND). REACTOR GROUP
TRG-REPORT-1601 +. 54 PAGES, FIGURES, TABLES, 75 REFERENCES, DEC. 18, 1967

THE REPORT IS A COMPILATION OF THE BEST AVAILABLE DATA ON THE PHYSICAL PROPERTIES OF SOME OF THE PLUTONIUM COMPOUNDS WHICH ARE OF INTEREST AS FUEL MATERIALS. THESE ARE THE DIOXIDE, MONOCARBIDE, MONONITRIDE, MONOSULPHIDE, AND MONOPHOSPHIDE OF PLUTONIUM, URANIUM-PLUTONIUM DIOXIDE, URANIUM-PLUTONIUM MONOCARBIDE, URANIUM-PLUTONIUM MONONITRIDE, AND THE PLUTONIUM SILICIDES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

*BIBLIOGRAPHY + *CERAMICS + *PLUTONIUM + *PROPERTY, PHYSICAL + *URANIUM + CARBIDE + NITRIDE + OXIDE +
SILICON + SULFIDE

19-28516 ALSO IN CATEGORIES 7 AND 12
Miller HW
ANNOTATED BIBLIOGRAPHY OF CURIUM
DOW CHEMICAL COMPANY, GOLDEN, COLORADO
RFP-1081 +. 81 PAGES, MAY 1, 1968

CATEGORY 19
BIBLIOGRAPHIES

19-28516 *CONTINUED*

AN ANNOTATED BIBLIOGRAPHY OF CURIUM WAS PREPARED TO ASSIST THOSE INTERESTED IN THE CHEMISTRY AND PHYSICS OF THIS ELEMENT IN PERFORMING A RAPID SURVEY OF THE AVAILABLE LITERATURE. ONLY THE NONCLASSIFIED LITERATURE WAS ABSTRACTED. THIS BIBLIOGRAPHY IS COMPLETE TO THE YEAR 1967. IN ADDITION TO THE TWO MAIN DIVISIONS OF CHEMISTRY AND PHYSICS, THIS REPORT PROVIDES ALSO AN AUTHOR INDEX, A SUBJECT INDEX, AND AN INDEX OF ORGANIZATION SYMBOLS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA. 22151, \$3.00 COPY, \$0.65 MICROFICHE

*BIBLIOGRAPHY + *CURIUM + *PLUTONIUM + *TRANSURANIC ELEMENT + ALLOY + AMERICIUM + CHEMICAL PROPERTY + CHEMICAL REACTION + CHROMATOGRAPHY + PROPERTY, PHYSICAL + REVIEW

INFORMATION AT NSIC IS DIVIDED INTO 19 CATEGORIES. AN ITEM OF INFORMATION MAY BE KEYED TO AS MANY AS THREE OF THESE. A COLLECTION OF SELECTORS OR KEYWORDS IS USED TO DENOTE THE MAIN SAFETY RELATED POINTS COVERED IN AN ARTICLE. THE FOLLOWING INDEX IS AN ALPHABETICAL LISTING OF SELECTORS GIVING REFERENCES TO EACH ARTICLE WHICH WAS KEYED TO IT. THE CATEGORY NUMBER IS GIVEN FIRST, FOLLOWED BY THE ACCESSION NUMBER. THE ACCESSION NUMBERS ARE USED TO LOCATE BIBLIOGRAPHIC ITEMS WITHIN A CATEGORY.

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14-26777	14-28021	14-28064	14-28701	4-27717	5-27564	5-27717	5-27901
14-28703	14-28712	14-29011	14-29012	5-29390	6-22566	6-27775	6-27906
14-29036	14-29038	14-29107	14-29111	6-28088	6-28098	9-22693	9-27906
14-29112	14-29114	14-29117	15-27862	9-27960	9-29106	9-28602	9-28754
15-28080	15-28692	15-28696	15-28701	9-28783	9-28814	9-29105	9-29155
15-28708	15-28709	15-28712	15-28713	9-29432	11-29365	12-27721	13-27777
15-28714	15-28915	15-29036	15-29038	12-28950	16-27713	16-27812	16-27962
15-29114	17-28853			16-27964	16-28735	16-29170	17-27775
CHALK RIVER				17-27906	17-28602	17-29155	18-27713
1-28019	14-28808	15-29211		COMPONENTS, MISCELLANEOUS			
CHAMBER, GAMMA				5-29196	9-28665	9-28745	9-28746
9-28787				9-29196	10-28587	11-29189	11-29190
CHAMBER, ION				11-29362	12-28746	12-29362	12-29527
9-27540	15-28080	15-28680	15-28723	12-29523	17-29762		
15-29213	15-29625			COMPUTER CONTROL			
CHARCOAL				9-27950	9-28671	9-28771	9-28778
7-25250	7-25252	7-25252	7-28405	9-28827	10-27950	17-25240	17-27771
7-28410	7-28428	7-28429	7-28436	COMPUTER PROGRAM			
7-28439	7-28447	7-28455	7-28519	4-27718	4-28760	5-27718	6-28057
7-28523	7-28597	12-28410	12-28436	6-28092	6-28093	6-28533	6-28536
12-28447	17-28436	17-28597		6-28547	6-29416	6-29421	7-28415
CHARCOAL ADSORBER				7-28425	9-27507	9-28057	9-28070
7-25250	7-25252	7-28399	7-28410	9-28671	9-29104	9-29164	9-29165
7-28428	7-28429	7-28447	7-28455	10-28102	12-28425	12-28987	12-29534
7-28517	7-28519	7-28522	7-28523	14-28756	15-26769	15-28052	15-28053
12-28410	12-28447	12-28517	15-26117	15-28702	15-28724	15-28664	15-28916
15-28612	15-28720			16-28756			
CHEMICAL ANALYSIS				COMPUTER PROGRAM, METEOROLOGICAL			
14-28082	15-28082	15-28614	15-28673	16-27964			
CHEMICAL EQUILIBRIUM				COMPUTER, ANALOG			

9-28070				11-29605	18-29605		
COMPUTER, DIGITAL				CONTAINMENT, WATER FILLED			
6-28057	9-28057	9-28814	9-28825	9-29185	9-29186	9-29187	9-29188
9-28827	14-28756	15-29625	16-28756	11-29185	11-29186	11-29187	11-29188
CONCENTRATION, AREA				CONTAMINATION			
14-28838	14-28873			4-25254	4-28458	7-25254	7-28458
CONCENTRATION, GROUND LEVEL				7-28459	7-28470	7-28473	7-28474
16-27812	16-27813	16-28595		7-28475	7-28480	12-28470	12-28473
CONCENTRATION, MAXIMUM				12-28474	12-28475	14-27527	14-28021
14-28579	15-28579	16-27811	16-28579	14-28113	14-28611	14-28681	14-28832
CONCENTRATION, PEAK TO AVERAGE				14-29010	14-29011	15-26769	15-27527
16-27812				15-27870	15-27920	15-28031	15-28052
CONCRETE				15-28065	15-28113	15-28598	15-28606
3-28886	11-28076	14-28716	14-28809	15-28614	15-28681	15-28699	15-28864
14-28811	14-28832	17-25230	19-28076	15-29035	15-29116	15-29214	15-29215
CONCRETE, PRESTRESSED				17-28470	17-28547	17-28859	
9-29602	11-28074	11-28937	18-28937	CONTROL ROD			
18-29602				9-27496	9-27497	9-27498	9-28663
CONDENSATION				9-28747	9-28754	9-28775	9-28788
17-28768				9-29617	17-29617		
CONSTRUCTION PERMIT PROCESS				CONTROL ROD BURNUP			
2-28767	18-28767			9-29617	17-28557	17-29617	
CONTAINMENT ABSOLUTE MEASURING SYSTEM				CONTROL ROD CALIBRATION			
11-28077	12-28077	19-28077		6-27623	6-29417	9-28059	17-27623
CONTAINMENT AIR COOLING				CONTROL ROD DRIVE			
11-27971	12-27971	17-27971		9-22692	9-27953	9-28106	9-28551
CONTAINMENT CONSTRUCTION				9-28555	9-28660	9-28662	9-28665
2-28767	11-28937	18-29767	18-28937	9-28669	9-28744	9-28771	9-28773
CONTAINMENT DESIGN				9-28785	9-28786	9-28825	9-28895
11-27971	11-28076	11-28789	11-29634	9-28967	9-29195	9-29197	17-25238
12-27971	12-29640	17-27710	17-27971	17-28551	17-28555	17-28771	17-28967
18-27710	18-29634	18-29640	19-28076	CONTROL ROD FABRICATION			
CONTAINMENT EQUIPMENT HATCH				9-28663	9-28747		
11-28789	11-28937	18-28937		CONTROL ROD INTERACTION			
CONTAINMENT FILTERING SYSTEM				6-28782	9-27495	9-28741	9-28782
7-28404				9-29203			
CONTAINMENT INSTRUMENTATION				CONTROL ROD SCRAM MECHANISM			
11-28074				9-27953	9-28106	9-28660	9-28805
CONTAINMENT INTEGRITY				9-29184	9-29197		
5-28502	7-28502	11-28077	11-28502	CONTROL ROD WORTH			
11-29147	12-28077	12-29147	19-28077	6-28536	6-29417	17-28547	
CONTAINMENT LEAK MONITOR				CONTROL ROD, SHIM SAFETY			
11-28077	11-29147	12-28077	12-29147	9-28661	9-28786		
15-28065	19-28077			CONTROL SYSTEM			
CONTAINMENT LEAKAGE CONTROL				5-28970	6-28089	9-27405	9-27950
11-28077	11-29147	12-28077	12-29147	9-28106	9-28661	9-28667	9-28671
19-28077				9-28736	9-28814	9-28825	9-28895
CONTAINMENT LINER				9-28970	9-29120	10-27950	
11-27848	18-27848			CONTROL, GENERAL			
CONTAINMENT PAINT				1-28601	4-27952	9-27952	12-28158
7-28473	7-28474	7-28475	12-28473	CONTROLLER			
12-28474	12-28475			1-28603	9-28603	9-28754	17-28603
CONTAINMENT PENETRATION, GENERAL				CONVECTIVE BOILING			
11-28077	11-28789	12-28077	19-28077	5-27492	5-27542	5-27555	5-27729
CONTAINMENT REFERENCE MEASURING SYSTEM				5-27730	5-29390		
11-28077	12-28077	19-28077		COOK 1 (PWR)			
CONTAINMENT RESEARCH AND DEVELOPMENT				11-28117	12-28117	19-28117	
5-28904	7-28502	11-28077	11-28077	COOLANT CHEMISTRY			
11-28502	11-29147	12-28077	12-29147	4-29457	6-27626	7-25234	7-28457
19-28075	19-28077			7-28459	7-28460	7-28511	12-28729
CONTAINMENT SPRAY				13-25234	17-27626	17-27829	17-28547
11-28077	12-28077	12-29640	18-29640	17-28561	17-28800		
19-28077				COOLANT COEFFICIENT			
CONTAINMENT STRUCTURE				6-28536	6-28802	17-28802	
9-29194	11-28076	11-28077	11-29194	COOLANT PURIFICATION SYSTEM			
12-28077	19-28076	19-28077		12-29533			
CONTAINMENT SYSTEM, OPERATION OF				COOLANT QUALITY			
5-28502	7-28502	11-28502		9-28783	17-28561		
CONTAINMENT VESSEL LOADING				COOLING, GENERAL			
11-29077	12-28077	19-28077		1-28601	5-29198	9-29198	11-29180
CONTAINMENT, GENERAL				12-29528	17-28561		
1-28601	5-28502	7-25250	7-28502	COOLING, SHUTDOWN			
11-28074	11-28076	11-28502	14-28816	9-28105	10-28105	12-28105	
15-29116	19-28076			COPPER			
CONTAINMENT, HIGH PRESSURE				12-29530	15-28719		
11-28077	12-28077	14-27627	17-27627	CORE COMPONENTS			
19-28077				9-29743	9-28745	17-28553	
CONTAINMENT, ICE CONDENSER				CORE MELTDOWN			
11-28077	12-28077	19-28077		5-28094	6-29094	6-29119	8-29094
CONTAINMENT, PRESSURE RELIEF				14-29109			
9-29104	11-28668	11-29194		CORE REFLOODING SYSTEM			
CONTAINMENT, PRESSURE SUPPRESSION				5-28769	9-29205	12-28769	18-28769
11-28077	11-29175	11-29183	12-28077	CORE SPRAY			
12-29175	12-29640	18-29640	19-28077	5-28502	5-28650	7-28502	9-28746
CONTAINMENT, PRESSURE VENTING				10-29639	11-28502	12-28746	12-29639
11-28077	11-28668	12-28077	19-28077	18-29639			
CONTAINMENT, SHOCK GENERATION AND PROTECTION				CORE, CAPSULE DRIVER (CDC)			
11-28076	19-28076			6-28088			
CONTAINMENT, SOURCE				CORROSION			
13-27723	13-28946			4-25254	4-28458	7-25254	7-28418
CONTAINMENT, UNDERGROUND				7-28452	7-28458	7-28462	9-29617

11-28075	11-29355	11-29362	12-28418	1-11229	1-27970	1-29363	4-28427
12-29362	12-29533	13-28140	13-28144	4-28759	5-28502	7-25234	7-28403
13-28629	13-29307	13-29531	13-29551	7-28404	7-28417	7-28424	7-28427
17-25239	17-28547	17-29362	17-29586	7-28431	7-28435	7-28447	7-28502
17-29617	19-28075			7-29411	9-27513	9-27540	9-28072
COSMIC RADIATION				9-28659	9-28893	9-29153	9-29155
4-28762	14-27983	15-27983		9-29159	9-29428	9-29431	10-28072
COUNTER				11-28073	11-28074	11-28075	11-28502
9-27949	9-28056	9-28070	9-28825	11-28659	11-29355	11-29363	12-28424
15-26117	15-28609	15-28723	15-29134	12-28427	12-28431	12-28435	12-28447
15-29135	15-29136			12-29363	13-22901	13-25234	13-27970
COUNTER, WHOLE BODY				13-28126	13-28435	14-28066	15-28922
13-28848	14-29036	14-29038	15-28054	15-29034	15-29116	17-29153	17-29155
15-28711	15-28848	15-28915	15-29034	18-11229	19-28075		
15-29036	15-29038	15-29221	17-28848	DESIGN STUDY			
COUPLED CORES				4-27952	4-28466	4-28467	4-28759
6-28091	6-29121			6-27957	7-28404	7-28466	7-28467
CREEP				7-29411	9-22692	9-27540	9-27541
1-29363	11-28073	11-29363	12-29363	9-27952	9-27957	9-28659	9-28818
CREEP BEHAVIOR				9-28820	9-28827	9-29209	9-29429
11-28622	18-28622			9-29602	10-28818	11-28659	12-27529
CREEP PROPERTY				12-28152	13-27529	13-27779	13-28130
4-29401	11-28075	11-29401	19-28075	13-29532	14-28066	18-27957	18-28794
CRITICAL ASSEMBLY FACILITY				18-29602			
6-21434	17-21434			DESORPTION			
CRITICAL MASS				7-28491	14-27929		
6-27746				DESTRUCTIVE TRANSIENT			
CRITICALITY EXPERIMENT				6-28533	6-29416		
5-28913	6-21434	6-22566	6-27746	DEUTERIUM			
6-28090	6-28092	6-28098	6-28913	7-28459			
6-29417	12-29528	12-29534	13-28629	DIDO (TR)			
17-21434				6-22546	12-28526	17-22546	
CRITICALITY SAFETY				DIETARY HABIT			
1-28603	6-21434	9-28603	13-27780	14-28701	14-29111	14-29112	15-28062
13-28154	13-28947	13-29950	17-21434	15-28115	15-28692	15-28701	15-28708
17-28603				15-28709	15-28711	15-28714	
CROSS SECTION				DIFFUSION			
6-27706	12-27721			5-27548	5-27571	5-27731	7-25242
CRUD				7-28419	7-28456	7-28493	7-28501
6-27626	17-27626	17-28800		7-28507	9-28749	12-27781	13-27781
CRYOGENICS				14-27527	14-28021	14-28081	14-28086
7-27520	7-27528			14-28838	15-27527	15-27927	15-28053
CURIUM				15-28081	15-28637		
6-27746	7-28516	12-28516	15-27870	DIFFUSION BOARD			
19-28516				7-28517	12-28517		
CVTR (PWR)				DIFFUSION CHANNEL			
11-29147	12-29147			14-27786	15-27786		
CYLINDER				DIFFUSION COEFFICIENT			
5-27490	5-27558	11-29365		5-27571	7-25242	7-28456	12-29173
CZECHOSLOVAKIA				14-26124	14-27929	14-28831	15-28719
14-28716				16-27813			
DAMAGE				DIFFUSIOPHORESIS			
6-29416	9-28555	9-28749	9-29617	7-28449			
17-28553	17-28555	17-29617		DILUTION			
DATA PROCESSING				14-28064	14-28081	14-28838	15-28081
6-27623	9-27507	9-28783	9-28825	15-28037			
9-28827	9-29106	9-29167	9-29602	DIRECT ENERGY CONVERSION DEVICES			
10-28103	10-28587	14-28830	15-28110	5-28971			
15-28600	17-27623	18-29602		DISPERSION			
DECAY HEAT				2-28620	14-26124	14-26178	14-28021
4-27720	5-27720	14-27919	15-27923	14-28081	14-28083	14-28620	14-28921
DECOMMISSIONING				14-29107	15-27810	15-28081	15-28637
17-25228	17-25229	17-25230	17-28546	16-27810	17-27810	18-28620	
17-28722	17-28965	17-28966		DISPLACEMENT, GENERAL			
DECONTAMINATION				6-28540	9-28540	17-28540	
4-28457	7-28457	7-28473	7-28474	DISSOLUTION			
7-28475	12-28473	12-20474	12-28475	12-27782	13-27783	13-27873	13-28176
12-28729	12-28952	13-28727	13-28952	13-28144	13-28629	13-28630	13-29176
14-28681	15-28063	15-28681	15-28699	13-29177	14-28064		
15-29329				DOPPLER COEFFICIENT			
DECONTAMINATION FACTOR				6-25945	6-27706	6-28092	6-28535
7-28410	7-28419	7-28420	12-28410	6-28536			
13-28137				DOPPLER EFFECT			
DELAYED NEUTRON				1-28163	6-27706	6-28163	9-28163
6-28535				DOSE			
DENMARK				14-28756	15-27329	15-27921	15-27923
14-26777				15-27928	15-28045	15-28062	15-28086
DEPOSITION				15-28111	15-28567	15-28608	15-28724
5-27901	7-25248	7-25250	7-27522	15-28864	15-28929	15-29029	15-29039
7-28420	7-28449	7-29520	14-27929	15-29109	15-29138	15-29213	15-29218
14-28113	14-28114	14-28677	14-28682	15-29221	15-29224	16-28756	17-29138
14-28712	14-28873	14-29110	15-27810	DOSE CALCULATION, EXTERNAL			
15-27924	15-27927	15-28084	15-28111	4-28760	4-28762	14-28114	14-28579
15-28113	15-28114	15-28682	15-28708	15-26769	15-27916	15-27928	15-28032
15-28712	15-29110	15-29135	15-29214	15-28052	15-28079	15-28114	15-28579
16-27810	17-27810			15-28724	16-28579		
DESALINATION				DOSE CALCULATION, INTERNAL			
4-25254	7-25254			4-29051	14-28114	14-28579	14-29037
DESCRIBING FUNCTION				15-27871	15-27916	15-27928	15-28032
9-27511				15-28051	15-28052	15-28062	15-28079
DESIGN CRITERIA				15-28114	15-28115	15-28579	15-28702

15-28724	15-28916	15-29037	15-29221	7-28413	7-28510	15-28608	
16-28579				ELECTROSTATIC CHARGE			
DOSE MEASUREMENT, EXTERNAL				7-28403			
15-28054	15-28568	15-28598	15-28607	ELECTROSTATIC PRECIPITATION			
15-28692	15-28927	15-29215	15-29218	7-28403	7-28409		
15-29223				ELK RIVER (BWR)			
DOSE MEASUREMENT, INTERNAL				1-28603	6-27905	6-28640	9-28603
13-28848	14-29038	15-27869	15-28054	15-28578	17-27905	17-28578	17-28603
15-28568	15-28598	15-28607	15-28848	17-28640			
15-28915	15-29038	15-29134	15-29215	EMBRITTLEMENT			
15-29217	15-29218	15-29220	15-29222	11-28073	11-28075	11-29355	11-29357
15-29223	15-29224	17-28848		11-29358	11-29360	11-29361	11-29364
DOSIMETRY, GENERAL				17-29357	19-28075		
1-26119	6-28993	7-28037	9-23172	EMERGENCY POWER, ELECTRIC			
9-27949	9-28037	9-28753	13-26119	9-28100	9-29643	10-22570	10-28100
14-23172	14-28753	15-26119	15-27328	10-28108	10-28821	10-29639	10-29643
15-27869	15-28032	15-28078	15-28079	12-29639	18-29639	18-29643	
15-28080	15-28112	15-28162	15-28567	EMERGENCY PROCEDURE			
15-28569	15-28608	15-29634	15-28679	15-28851	15-29089	17-28134	17-28557
15-28700	15-28721	15-28753	15-28927	17-28851	17-29089	18-29099	
15-28928	15-29029	15-29039	15-29213	EMERGENCY SYSTEM			
15-29218	15-29222	15-29223	15-29625	9-28105	9-29205	10-28105	12-28105
DOSIMETRY, PHOTOGRAPHIC				ENERGY LEVEL			
15-26483	15-28598	15-29108	15-29210	14-28610	15-27923	15-28609	15-28721
15-29212	15-29219	15-29224		15-29218	15-29225		
DOSIMETRY, THERMOLUMINESCENCE				ENERGY SOURCE			
5-28913	6-28913	9-27539	15-27921	9-27515	13-27723	13-28946	13-28950
15-28710	15-29219	15-29221		ENGINEERED SAFETY FEATURE			
DOUNREAY (TR)				2-25091	9-27534	9-28099	11-29147
7-28511	17-29616			12-25091	12-27534	12-29147	12-29182
DRAGON (HTGR)				14-27899	14-29626	15-27899	
9-22536	13-27779			ENRICHMENT FACILITY			
DRESDEN 1 (BWR)				13-28732			
9-28106				ENVIRONMENTAL CONDITION			
DRESDEN 2 (BWR)				1-28020	4-28051	9-27510	9-28753
1-28020				9-29152	9-29157	10-28588	14-27899
DRESDEN 3 (BWR)				14-28087	14-28753	14-28812	14-29109
1-28020	5-29094	6-29094	8-29094	14-29113	15-26117	15-27899	15-28051
DROPLET				15-28087	15-28711	15-28713	15-28753
5-27570	5-27572	5-27965	6-27965	15-28864	15-29113	15-29116	17-29152
8-27965				EQUATION OF STATE			
DYNAMICS, NONLINEAR				4-27717	5-27717	6-28533	6-29416
6-28092	6-28094	6-28533	6-29416	7-25251			
12-28158				EQUATION, GENERAL			
EARTHQUAKE ENGINEERING				15-28721	15-28916	16-27811	
11-28074				EQUIPMENT DESIGN			
FBR 1 AND 2 (RE)				3-28877	3-28878	3-28882	5-27551
5-28648	6-28562	6-28648	17-28562	5-27804	9-27497	9-27498	9-27949
ECOLOGICAL CONSIDERATION				9-27961	9-28659	9-28662	9-28663
1-28047	14-26777	14-27506	14-27786	9-28669	9-28744	9-28745	9-28747
14-27926	14-28047	14-28082	14-28688	9-28749	9-28895	9-29105	11-28659
14-28612	14-28918	14-29011	14-29110	14-27919			
15-27506	15-27786	15-28062	15-28082	EQUIPMENT, GENERAL			
15-28085	15-28637	15-29110		5-27804	11-29175	12-28626	12-28631
ECONOMIC STUDY				12-28861	12-29097	12-29172	12-29175
1-28019	3-28883	7-28419	7-28432	12-29527	12-29533	13-27777	13-27777
7-28438	12-28432	12-28438	13-27779	13-29125	13-28126	13-28143	13-28532
13-28432	14-29131			13-28727	13-28738	13-28847	13-28953
ECONOMICS				13-29100	13-29177	18-28532	
1-28163	1-29611	2-28165	2-28166	EROSION			
6-25945	6-28163	9-22475	9-27508	12-28631			
9-28163	10-28109	13-28166	14-28021	ERROR ANALYSIS			
14-28165	17-29611	18-28943		6-27906	9-27906	9-28670	15-26483
EFFLUENT				15-28700	15-28875	15-29136	15-29211
1-28047	14-28047	14-28081	14-28083	15-29213	15-29216	17-27906	
14-28816	14-28831	14-28838	14-29109	ESTUARY			
15-28045	15-28081	15-28037	15-29135	14-23082	14-28838	15-28082	
16-27962				ETR (TR)			
ELASTICITY				9-28551	17-28549	17-28550	17-28551
11-29367				EURATOM			
ELECTRIC POWER, ALTERNATE				2-28165	14-28165		
9-28105	10-28105	10-28901	12-28105	FURCHEMIE			
ELECTRIC POWER, AUXILIARY				13-28144	13-28532	18-28532	
10-22570	10-28102	10-29750		EVAPORATION			
ELECTRIC POWER, GENERAL				4-28051	5-27731	5-28971	14-27627
9-27515	9-27550	9-29100	9-28101	14-28054	15-28051	15-29135	17-27627
9-28105	9-28618	10-22570	10-27950	EXAMINATION			
10-28100	10-28101	10-28102	10-28103	1-29608	9-29153	11-28582	11-28622
10-28104	10-28105	10-28107	10-28108	11-29608	12-27783	13-27783	13-28632
10-28109	10-28587	10-28588	10-28750	17-28582	17-29153	17-29586	17-29608
10-28818	12-28105			18-28622			
ELECTRIC POWER, NORMAL				EXCAVATION, NUCLEAR			
9-28100	10-22570	10-28100	10-28102	14-28114	15-28114		
10-28901				EXCURSION, LARGE			
ELECTRICAL CONDUCTION				5-28648	6-28648	6-29416	
7-28499	9-27960	9-28499	9-28991	EXPANSION			
9-29643	10-29643	17-28541	17-28991	7-28477	9-29617	17-29617	
18-29643				EXPERIMENT, GENERAL			
ELECTRON				3-23229	5-27549	9-29106	12-24159
15-28721				12-27529	12-28526	12-28627	12-28729
ELECTRON MICROSCOPY				12-28952	12-29093	12-29099	12-29171

12-29173	12-29174	12-29528	13-23229	14-28574	14-28682	14-28687	14-28693
13-24388	13-27529	13-27530	13-27723	14-28694	14-28695	14-28701	14-28712
13-27782	13-28026	13-28125	13-28137	14-28753	14-28873	14-29013	14-29036
13-28144	13-28151	13-28156	13-28157	14-29037	14-29038	14-29110	14-29111
13-28627	13-28629	13-28632	13-28733	14-29112	14-29113	14-29117	15-27527
13-28952	13-29093	13-29099	13-29160	15-27864	15-27924	15-27927	15-28054
13-29307	13-29525	13-29530	13-29531	15-28084	15-28113	15-28114	15-28115
13-29532	13-29551	14-27913	14-27919	15-28606	15-28622	15-28627	15-28693
14-28831	14-29140	15-27921	15-28667	15-28694	15-28695	15-28696	15-28701
15-29134				15-28708	15-28712	15-28713	15-28714
EXPLOSION				15-28753	15-29035	15-29036	15-29037
1-27970	4-28757	9-28784	12-29098	15-29038	15-29110	15-29113	16-27964
13-27970	13-28127	13-29098	17-28127	FAST NEUTRON			
FABRICATION				5-28619	5-28913	6-28913	6-28993
1-29178	7-29612	9-27537	9-27538	15-27328	15-28090	15-28569	15-29210
9-29659	9-29105	11-28075	11-28659	17-28722	18-28619		
11-29355	11-29364	12-28142	12-29178	FASTENER			
13-27723	13-27779	13-29142	13-28727	1-29363	11-29363	12-29363	
13-28728	13-28730	13-29176	13-29531				
17-28548	18-29612	19-28075		11-29622	17-29616	18-28622	
FABRICATION FACILITY				FEDERAL RADIATION COUNCIL			
13-28730	13-28848	13-28849	13-28854	1-26119	13-26119	14-27983	15-26119
15-28848	17-28848	17-28849	17-28854	15-27983	15-28062		
FAILURE MODE ANALYSIS				FERMI (LMFBR)			
9-29643	10-29643	18-29643		5-29606	6-27774	6-27775	6-28801
FAILURE, CLADDING				6-28802	9-27774	17-27774	17-27775
6-28562	6-28640	7-29645	9-28664	17-27776	17-28801	17-28802	18-29606
9-28774	14-28645	17-28562	17-28640	FFTF (TS)			
17-28645	17-29586			6-29119	9-25137	10-28901	
FAILURE, COATED PARTICLE				FILM BOILING			
4-29096	7-28507			4-28649	5-27749	5-28649	
FAILURE, COMPONENT				FILM, GENERAL			
9-27512	9-27516	9-27517	9-27518	5-27749	7-28423	13-28854	15-28598
9-28058	9-28105	9-28772	9-29157	15-29108	15-29224	17-28854	
9-29160	9-29161	9-29162	9-29167	FILM, LIQUID			
9-29426	10-28105	12-29105	17-29772	5-27749	5-27901	7-28422	
FAILURE, DESIGN ERROR				FILTER			
9-27973	9-28770	9-28967	17-25241	7-25252	7-28399	7-28401	7-28402
17-27973	17-28547	17-29770	17-28967	7-28405	7-28438	7-28472	7-28473
FAILURE, EQUIPMENT				7-28474	7-28475	7-28517	7-28567
1-29568	5-29568	7-28545	9-28771	7-29180	9-23172	12-28438	12-28470
12-29640	15-28851	17-28541	17-28543	12-28473	12-28474	12-28475	12-28517
17-28544	17-28545	17-28553	17-28554	12-29180	13-29100	14-23172	15-28719
17-28771	17-28851	17-28852	18-29568	15-28723	15-29221	17-28470	17-28597
18-29640				FILTER CHARACTERISTICS			
FAILURE, FABRICATION ERROR				7-28440	7-28446	7-28492	12-28446
1-29608	11-29608	17-28552	17-29580	FILTER DESIGN			
17-29608				4-28427	7-28427	7-28524	7-29180
FAILURE, FATIGUE				12-28427	12-29180		
17-29616				FILTER EFFICIENCY			
FAILURE, FUEL ELEMENT				4-28427	7-25252	7-28401	7-28405
1-28603	1-28603	4-28605	5-27806	7-28424	7-28426	7-28427	7-28428
5-28648	6-27957	6-28648	7-28477	7-28429	7-28430	7-28435	7-28440
7-28497	7-28511	7-28513	7-28545	7-28441	7-28447	7-28450	7-28453
7-28545	7-28645	9-27957	9-28058	7-28455	7-28517	7-28524	12-28424
9-28603	9-28603	9-28664	9-28813	12-28426	12-28437	12-28435	12-28447
9-28995	12-24159	14-28645	15-28063	12-28517	13-28435	15-28441	17-28557
17-25240	17-28544	17-28545	17-28545	FILTER INSPECTION			
17-28603	17-28603	17-28617	17-28645	7-28425	7-28426	7-28431	7-28432
17-28995	18-27957	18-28934		7-28524	12-28425	12-28426	12-28431
FAILURE, GENERAL				12-28432	13-28432		
17-28968				FILTER MAINTENANCE			
FAILURE, INSTALLATION ERROR				7-28436	7-28402	12-28436	17-28436
17-29616				FILTER OPERATION			
FAILURE, INSTRUMENT				7-28425	7-28426	7-28431	7-28446
1-28603	9-27475	9-28058	9-28551	7-28492	7-28523	7-28596	12-28425
9-28603	9-28670	9-28893	9-29164	12-28426	12-28431	12-28446	13-28596
17-28547	17-28550	17-28551	17-28553	13-28849	17-28506	17-28849	
17-28603				FILTER QUALITY ASSURANCE STATION			
FAILURE, MAINTENANCE ERROR				7-28434	12-28434		
9-28551	9-28771	12-25233	17-25233	FILTER SYSTEM			
17-28544	17-28551	17-28552	17-28771	7-28424	7-28425	7-28426	7-28431
FAILURE, OPERATOR ERROR				7-28436	7-28439	7-28440	7-28442
4-29151	9-28991	9-29151	13-28858	7-28450	7-28455	7-28517	12-28424
14-27627	15-28851	17-25240	17-25241	12-28425	12-28426	12-28431	12-28436
17-27627	17-28547	17-28550	17-28850	12-28517	13-28442	17-28436	17-28442
17-28851	17-28858	17-28991	17-29151	FILTER TEST REQUIREMENT			
FAILURE, PIPE				7-28424	7-28425	7-28426	7-28431
5-27556	17-25239	17-28800	17-29616	7-28434	7-28436	7-28524	7-28525
FAILURE, PRESSURE VESSEL				12-28424	12-28425	12-28426	12-28431
1-29608	11-28580	11-29359	11-29608	12-28434	12-28436	17-28436	
15-28063	17-28580	17-29608		FILTER, ABSOLUTE			
FAILURE, SCRAM MECHANISM				7-28438	7-29180	12-28438	12-29180
9-28551	9-28602	9-28772	17-25238	FILTER, ASBESTOS			
17-28541	17-28549	17-28551	17-28558	7-28402			
17-28602	17-28772			FILTER, BED			
FAILURE, SIMULTANEOUS				7-28435	7-28439	12-28435	13-28435
17-28547				FILTER, CASCADE IMPACTOR			
FALLOUT				7-25248	7-28413	7-28521	
4-28468	4-28760	7-28468	9-28753	FILTER, COMBINATION			
14-26178	14-27527	14-28113	14-28114	7-28520			

FILTER, CYCLONE				12-27781	13-27781		
7-28409				FISSION PRODUCT, VOLATILE			
FILTER, DAMAGED				7-25226	7-25251	7-29411	13-25226
7-28596	13-28128	13-28596	17-28128	FISSION RECOIL			
17-28596				7-27520	7-27528		
FILTER, FABRIC				FLANGE			
7-28443	13-28443			7-28524	17-28544		
FILTER, FIBER				FLAW			
7-28430				11-28075	11-28580	11-29356	17-28580
FILTER, GLASS				19-28075			
7-28409	7-28434	7-28446	7-28453	FLOODING, SUPERHEATER			
7-28470	12-28434	12-28446	12-28470	12-29182			
17-28470				FLGW BLOCKAGE			
FILTER, HIGH EFFICIENCY				7-28597	9-27770	12-25233	17-25233
7-25252	7-28401	7-28434	7-28525	17-28597	17-28770		
12-28434	13-28128	17-28128		FLOW STABILITY			
FILTER, LIQUID				4-27720	5-27720	5-28035	6-27775
7-28417				9-28035	17-27775		
FILTER, MAY PACK				FLOW THEORY AND EXPERIMENTS			
7-28520				5-27566	5-27567	6-28876	17-28876
FILTER, METALLIC				FLOW, ANNULAR			
7-28492				5-27565	5-27569	5-27749	5-27901
FILTER, PAPER				5-28970	9-28970		
7-28405	7-28430	7-28441	15-28441	FLOW, AXIAL			
15-28612	15-28720			5-27490	5-27550	5-27715	5-29390
FILTER, PLASTIC				FLOW, BYPASS			
7-28446	12-28446			17-28544			
FILTER, PREFILTER				FLOW, CROSS			
7-28443	13-28443			5-27554	5-28652	5-28069	
FILTER, ROUGHING				FLOW, GENERAL			
7-28402	7-28443	13-28443		5-27492	5-27567	5-27573	5-27732
FILTER, SAND				5-27733	5-27749	6-28802	17-28802
7-28435	12-28435	13-28435		FLOW, LAMINAR			
FILTER, SCREEN				4-27720	5-27553	5-27568	5-27720
7-28402	7-28436	7-28440	12-28436	FLOW, MIST			
17-28436				5-28970	9-28970		
FILTER, TRAP				FLOW, PULSATING			
4-28458	7-28399	7-28405	7-28428	5-28651			
7-28458				FLOW, TUBE			
FILTRATION				5-27549	5-27565	5-27736	5-27901
7-28435	12-28435	13-28435	15-29625	5-28651			
FIN				FLOW, TURBULENT			
4-27718	5-27718	5-27734	5-29204	4-27720	5-27564	5-27565	5-27569
5-29207				5-27715	5-27720	5-27734	9-28829
FIRE				FLOW, TWO PHASE			
1-27970	3-28877	3-28879	3-28885	5-27492	5-27542	5-27567	5-27901
4-28605	4-28759	7-25252	7-28411	5-28035	5-28651	5-28970	5-28971
7-28428	7-28429	7-28431	7-28434	5-29202	9-27961	9-28035	9-28791
7-28446	7-28470	7-28478	8-28478	9-28970	9-29202		
9-28784	9-28991	12-28431	12-28434	FLUCTUATION			
12-28446	12-28470	13-27970	17-28134	4-27720	5-27715	5-27720	5-27733
17-28470	17-28591			5-28651			
FISSION GAS RELEASE				FLUIDIZED BED			
7-27521	7-28451	7-28493	7-28645	13-28026	13-28154	13-29524	13-29529
7-29411	12-28627	12-28687	13-28627	FLUORIDE			
14-28645	14-29109	16-27713	17-28645	7-25226	7-28460	9-27539	13-25226
18-27713				13-27530	13-27700	13-28125	13-28947
FISSION PRODUCT ACTIVITY, GROSS				13-29100	13-29551		
6-28093	14-29117			FLUORINE			
FISSION PRODUCT RELEASE, GENERAL				7-28444	13-27530	13-28125	13-28947
1-28572	5-28502	7-25226	7-25244	13-29531	14-29444	17-28800	
7-25245	7-25246	7-25247	7-25252	FLUX DISTRIBUTION			
7-28456	7-28477	7-28480	7-28502	6-27906	6-28036	6-28090	6-28782
7-28507	7-28513	7-29411	9-28058	7-27520	7-27528	9-27506	9-28036
11-28502	12-27781	12-28887	13-25226	9-28672	9-28782	15-27916	15-28080
13-27781	13-27873	13-29531	14-29112	15-29029	17-27906		
15-28065	15-28572	15-28919	17-28572	FLUX, INTEGRATED			
FISSION PRODUCT RETENTION				7-27520	7-27528		
7-25226	7-25244	7-25245	7-25246	FOAM			
7-25247	7-25250	7-28498	7-28545	1-27970	7-28423	7-28517	12-28517
7-29411	13-25226	15-28065	17-28545	13-27970			
FISSION PRODUCT TRANSPORT				FORECAST			
7-25226	7-25244	7-25245	7-25246	9-29421	9-29425	9-29426	9-29428
7-25247	7-25248	7-25251	7-28459	9-29429	9-29432		
7-28473	7-28474	7-28475	7-28513	FOUNDATION ENGINEERING			
12-28473	12-28474	12-28475	13-25226	2-28767	18-28767		
14-27786	15-27786			FRACTURE TOUGHNESS			
FISSION PRODUCT, AIRBORNE				11-28075	11-29356	11-29359	11-29364
9-28753	14-28753	14-29109	15-28753	19-28075			
FISSION PRODUCT, IODINE				FRANCE			
7-25247	7-25248	7-25250	7-27522	2-28165	5-27552	9-27496	9-28070
7-28399	7-28405	7-28410	7-28414	9-28071	9-28826	9-28995	9-29194
7-28420	7-28422	7-28423	7-28428	9-29195	11-29194	13-28130	13-28135
7-28429	7-28440	7-28441	7-28447	13-28136	13-28137	13-28138	13-28139
7-28450	7-28455	7-28459	7-28473	13-28140	13-28730	13-29176	13-29177
7-28474	7-28475	7-28519	7-28520	14-28165	14-28804	14-28816	14-28831
7-28523	7-28645	9-28058	12-28410	14-29038	15-29038	15-29212	17-28826
12-28447	12-28473	12-28474	12-28475	17-28995			
14-28645	15-28441	16-27713	17-28645	FT. ST. VRAIN (HTGR)			
18-27713				7-29612	18-29612		
FISSION PRODUCT, NONVOLATILE				FUEL BURNUP			

6-27626	6-28535	6-28621	6-28640	9-29200	13-28126	14-29037	15-26483
6-28876	6-29621	7-25247	7-28477	15-27523	15-27928	15-28052	15-28079
7-28500	9-28621	9-28743	12-27721	15-28919	15-29037	15-29138	17-29138
17-27625	17-27626	17-28548	17-28556	GAMMA EMITTER			
17-28617	17-28621	17-28640	17-28641	5-28913	6-28913	6-28993	9-22530
17-28876				14-28712	14-29012	15-27922	15-28055
FUEL COEFFICIENT				15-28065	15-28090	15-28567	15-28609
6-28535				15-28680	15-28702	15-28712	15-28864
FUEL CONVERSION				15-28915	15-28923	15-29221	
1-27970	13-24388	13-27970	13-28127	GARIGLIANO (BWR)			
13-28151	13-26658	17-28127	17-28858	6-27906	9-27906	17-27906	
FUEL ELEMENT				GAS			
1-29178	4-29006	5-27490	5-28639	15-28690			
5-28971	5-29136	5-29204	7-25247	GENERATOR, BATTERY			
7-25252	7-28451	7-28477	7-28492	9-27837	10-27837	17-27937	
7-28500	7-28513	7-29411	7-29612	GENERATOR, ENGINE			
9-27537	9-27538	9-29105	9-29196	15-22570	10-29610	10-29639	12-29639
12-24159	12-24796	12-27721	12-27783	17-29610	18-29639		
12-28142	12-28626	12-28627	12-28887	GEOLOGICAL CONSIDERATION, GENERAL			
12-29171	12-29172	12-29174	12-29178	2-25091	2-28166	12-25091	13-28166
13-27779	13-27783	13-28142	13-28627	14-27999	14-27919	14-28083	14-28703
13-28727	13-28728	13-28730	13-28848	14-28803	14-28804	14-28805	14-28812
13-28949	13-28854	13-28953	13-29176	14-28915	14-28816	14-28917	14-28823
13-29177	13-29178	13-29531	14-27919	14-28634	14-28856	14-28872	15-27896
14-28064	15-28848	17-25240	17-27710	GEOLOGICAL CONSIDERATION, GEOCHEMICAL			
17-28548	17-28556	17-28848	17-28849	14-28083	14-28931		
17-28854	17-29586	18-27710	18-28639	GEOLOGICAL CONSIDERATION, GEOPHYSICAL			
18-29612				14-28093			
FUEL ELEMENT BOWING				GERMANY			
1-28603	6-28562	6-28860	9-28603	5-29196	9-28672	9-28783	9-28925
17-28562	17-28603			9-29196	10-29108	13-28953	14-28905
FUEL ELEMENT CLUSTER				14-28806	15-28920	15-28925	15-29034
5-27550	5-27554	5-27559	5-27732	18-28935	18-28942		
5-28623	12-29173	17-28623		GETR (TR)			
FUEL EXPANSION COEFFICIENT				6-28770	17-28770		
6-28860				GINNA (PWR)			
FUEL HANDLING				11-28937	18-28937		
1-28601	6-28036	9-28036	9-28747	GLASS			
9-29203	12-28861	12-29097	17-28583	1-28855	3-28955	13-27782	13-28130
FUEL HANDLING MACHINE				13-29307	13-29524	14-28908	
12-29097	17-28768			GLOVE BOX			
FUEL INTEGRITY				1-27970	1-28560	9-29208	11-28560
4-25254	4-28605	4-28755	6-28088	13-27970	13-28127	13-28732	15-29217
7-25243	7-25244	7-25245	7-25254	17-28127	17-28560		
7-28493	7-28494	7-28498	7-28507	GODIVA (FBR)			
7-28513	9-27537	9-27538		9-22536			
FUEL MELTDOWN				GOLD			
4-28684	5-28648	5-29094	6-28648	15-27924			
6-29094	7-25247	7-25252	7-20416	GRAPHITE			
7-28513	7-28521	8-29094	14-29109	5-27548	7-25243	7-25244	7-25245
FUEL REPROCESSING				13-27779	13-28622		
1-27784	1-27970	3-23229	5-27784	GROSS BETA			
7-28435	7-28496	7-28596	10-22570	15-28599	15-28600		
12-27529	12-27783	12-28435	12-28952	GROUND WATER, GENERAL			
12-29093	12-29099	13-22901	13-23229	14-27527	14-28804	15-27527	
13-27529	13-27530	13-27777	13-27780	GROUND WATER, NUCLIDE OCCURRENCE			
13-27782	13-27783	13-27873	13-27970	14-28021			
13-28026	13-28125	13-28127	13-28128	GUIDE			
13-29129	13-28130	13-29135	13-28136	1-29618	17-29618	18-29619	
13-28137	13-28138	13-28139	13-28140	HADDAM NECK (PWR)			
13-28141	13-28143	13-28144	13-28154	11-27971	12-27971	17-27971	17-28583
13-28155	13-28156	13-28157	13-28435	HALOGEN			
13-28532	13-28596	13-28629	13-28630	7-28517	12-28517		
13-28632	13-28733	13-28947	13-28952	HANFORD SITE			
13-28953	13-28954	13-28955	13-28956	1-28047	12-29093	13-29093	14-28047
13-29093	13-29098	13-29100	13-29176	15-28637	15-28708		
13-29177	13-29307	13-29524	13-29525	HAPWELL			
13-29529	13-29530	13-29531	13-29532	6-22546	17-22546		
13-29551	14-28064	14-28066	14-28808	HATCH (BWR)			
14-28838	15-27910	15-28612	17-28127	1-28584	17-28584		
17-28128	17-28129	17-28596	18-27784	HAZARDS ANALYSIS			
18-28532				1-26119	1-27784	1-28572	1-29609
FUEL SEGREGATION				4-28051	5-27784	13-26119	14-28114
5-27965	6-27965	8-27965		14-28610	15-26119	15-27921	15-28051
FUEL STORAGE				15-28052	15-28114	15-28572	15-28920
1-28603	4-28759	6-27626	9-28603	16-29370	17-28572	17-29609	18-27784
9-29602	17-27626	17-28543	17-28603	18-29609			
18-29602				HBWR (BWR)			
FUEL, METALLIC TYPE				7-28645	9-28056	9-28058	9-28671
12-29098	13-28730	13-29098	17-28548	14-28645	17-25240	17-28642	17-28645
17-28556				17-29586			
FUEL, PELLET TYPE				HEALTH PHYSICS TRAINING			
5-28639	7-28451	7-28456	7-28496	1-29607	14-27785	15-27785	15-27830
12-28627	12-29098	12-29171	13-27779	15-28032	15-28924	15-29607	17-27785
13-28627	13-28632	13-28730	13-29098	17-27830	17-28763	17-29607	
13-29532	18-28639			HEAT EXCHANGER			
FUEL, POWDER TYPE				5-27551	5-27559	5-27570	5-28653
5-28639	7-28480	9-27537	9-27538	5-29201	5-29201		
18-28639				HEAT FLUX, CRITICAL			
GAMMA				5-27749			
7-28037	7-28519	9-28037	9-28056	HEAT FLUX, DRYOUT			

5-27901				13-28155	13-28727	13-28731	
HEAT GENERATION, INTERNAL				HOT CHANNEL			
4-27718	5-27549	5-27718	5-28648	5-27551	5-27559		
5-28913	6-28648	6-28913		HUMBOLDT BAY (BWR)			
HEAT GENERATION, NONUNIFORM				5-27837	10-27937	17-27937	
4-27718	5-27718			HUMIDITY			
HEAT PIPE				7-25250	7-25251	7-28300	7-28405
5-28971				7-28415	7-28428	7-28430	7-28431
HEAT SINK				7-28432	7-28439	7-28518	7-28525
4-27718	5-27718	5-28970	5-28971	12-28421	12-28432	13-28432	
9-28970	17-28768			HYDRAULIC ANALYSIS			
HEAT TRANSFER				12-28152	14-28866		
3-28879	5-27490	5-27492	5-27542	HYDRAULIC EFFECT			
5-27543	5-27549	5-27550	5-27551	5-27715	9-28746	9-28895	12-28746
5-27552	5-27553	5-27554	5-27555	HYDRAULIC EXPERIMENT			
5-27556	5-27563	5-27564	5-27565	5-28651			
5-27569	5-27570	5-27571	5-27572	HYDRIDE			
5-27573	5-27729	5-27730	5-27732	2-28620	7-28501	14-28620	18-28620
5-27734	5-27735	5-27736	5-28035	HYDRODYNAMIC ANALYSIS			
5-29196	5-29198	5-29202	5-29204	4-27720	5-27720	14-28816	
5-29207	7-27520	7-27528	5-28035	HYDROGEN			
9-29196	9-29198	9-29202	12-29179	5-29094	6-29094	7-25234	7-28418
HEAT TRANSFER ANALYSIS				7-28452	7-28481	7-28501	9-29094
4-27718	4-28649	5-27490	5-27550	8-29095	12-28418	12-29098	13-25234
5-27563	5-27565	5-27566	5-27568	13-29098	15-27922	16-28116	
5-27569	5-27570	5-27571	5-27573	HYDROLOGICAL CONSIDERATION, GENERAL			
5-27718	5-27729	5-27730	5-27735	2-23166	13-28166	14-27527	14-27899
5-27736	5-28639	5-28649	5-28653	14-27929	14-28574	14-28611	14-28806
18-28639				14-28812	14-28832	14-28833	14-28834
HEAT TRANSFER AUGMENTATION				14-28836	14-29032	15-27527	15-27899
5-28623	17-28623			15-28637			
HEAT TRANSFER COEFFICIENT				IAEA			
5-27558	5-27569	5-27571		6-28993	16-28116		
HEAT TRANSFER CORRELATION				ICRP			
4-28649	5-27550	5-27553	5-27558	4-28051	13-22901	13-28848	14-28694
5-27563	5-27564	5-27565	5-27566	14-29807	15-27915	15-28031	15-28051
5-27568	5-28649	5-28652	5-28969	15-28062	15-28086	15-28694	15-28718
5-29390				15-28848	15-28916	15-29108	15-29211
HEAT TRANSFER EXPERIMENT				15-29213	15-29214	15-29215	15-29218
5-27543	5-27550	5-27553	5-27559	15-29221	17-28348		
5-27563	5-27564	5-27568	5-27732	ICRU			
5-27901	5-27965	5-28652	5-28969	15-28608			
6-27965	8-27965	12-29171	12-29528	IDAHO FALLS			
HEAT TRANSFER, BOILING				13-22901	13-29529		
5-27492	5-27542	5-27543	5-27555	IGNITION			
5-27729	5-27730	5-27965	5-28828	7-25252	7-28439	7-28446	7-28455
6-27965	8-27965	9-28828		7-28470	7-28478	8-28478	12-28446
HEAT TRANSFER, CONDENSATION				12-28470	17-28470		
5-27570	11-27971	12-27971	17-27971	IGNITION TEMPERATURE			
HEAT TRANSFER, CONDUCTION				7-25252	7-28428	7-28429	7-28439
4-27718	5-27553	5-27555	5-27718	IMPACT PROPERTY			
HEAT TRANSFER, CONVECTION				4-29401	7-28494	11-29401	
5-27490	5-27549	5-27551	5-27554	IMPACT SHOCK			
5-27559	5-27565	5-27566	5-27569	7-28494	11-28076	19-28076	
5-27732	5-27734	5-27736	5-27965	IMPURITY			
5-28652	5-28653	5-28969	6-27965	1-29178	12-29178	13-29178	
8-27965				IN PILE EXPERIMENT			
HEAT TRANSFER, GAS				4-25249	6-28593	7-25244	7-25245
5-27733	5-27734			7-25246	7-25247	7-28400	7-28440
HEAT TRANSFER, NATURAL CONVECTION				7-28462	7-28477	7-28493	7-28497
4-27718	4-28649	5-27549	5-27555	12-29171	17-25241		
5-27558	5-27563	5-27564	5-27568	IN PILE LOOP			
5-27718	5-27736	5-28649		5-27806	5-28619	5-28639	7-28440
HEAT TRANSFER, RADIANT				17-28550	18-28619	18-28639	
4-27718	5-27718			INCIDENT COMPILATION			
HEAT TRANSFER, SUPERCRITICAL				9-29617	17-29617		
5-27715				INCIDENT, EQUIPMENT			
HEAT TRANSFER, TWO PHASE				9-27837	9-27973	10-27837	17-27837
5-27492	5-27542	5-27555		17-27973	17-28850		
HEAT TREATMENT				INCIDENT, EXPOSURE			
11-29357	11-29358	11-29360	11-29364	15-28604	15-28851	17-28604	17-28851
17-29357				17-28968			
HEAVY WATER				INCIDENT, FATALITY			
9-28038				15-28604	17-28604		
HEIGHT OF RISE				INCIDENT, GENERAL			
15-27810	16-27810	16-27811	16-27962	1-28572	1-29609	15-28572	17-28572
16-28595	16-28735	17-27810		17-28859	17-29609	18-29609	
HELIUM				INCIDENT, HUMAN ERROR			
5-27548	7-25247	7-28511	9-29106	6-27626	15-29217	17-27626	
12-27531	12-29171	13-27531	13-28143	INCIDENT, NONREACTOR			
HFIR (FTR)				6-21434	17-21434		
7-25234	9-27956	13-25234	17-28547	INCIDENT, RECOVERY FROM			
17-28548				3-29614	15-29614	17-29614	
HIGH RADIATION				INCIDENT, SL 1			
15-29224				1-28572	15-28572	17-28572	
HIGH TEMPERATURE				INCIDENT, WINDSCALE			
1-29363	4-25249	4-27717	5-27717	1-28572	15-28572	17-28572	
5-28648	5-28971	6-28648	7-25243	INCIDENT, WOOD RIVER			
9-28781	9-29643	10-29643	11-29363	1-28572	15-28572	17-28572	
12-28142	12-29363	13-28142	18-29643	INDEPENDENCE			
HOT CELL				9-27973	10-29639	12-29639	17-27973

18-29639					INSTRUMENT, IN CORE				
INDIA					6-28621	6-28802	9-25177	9-28621	
7-28442	7-28443	13-28442	13-28443		9-28672	9-28771	9-28776	9-28791	
14-28682	15-28682	17-28442			9-28825	9-29105	9-29120	17-28621	
INDIAN POINT 1 (PWR)					17-28771	17-28802			
5-28769	6-28938	12-28769	17-28768		INSTRUMENT, INDEPENDENT				
17-28938	18-28769				9-27973	15-28569	17-27973		
INDIAN POINT 2 (PWR)					INSTRUMENT, LINEAR				
2-25091	5-29094	6-29094	8-29094		14-28611				
12-25091					INSTRUMENT, LIQUID LEVEL DETECTION				
INDIAN POINT 3 (PWR)					7-28545	9-27837	9-27973	9-28825	
9-29643	10-29643	11-29634	18-29634		10-27837	17-27837	17-27973	17-28545	
18-29643					INSTRUMENT, LOGARITHMIC				
INDUSTRIAL SAFETY					9-27958				
15-29139	17-28134	17-29139			INSTRUMENT, METEOROLOGICAL				
INFORMATION RETRIEVAL					15-27810	16-27810	16-28024	16-28594	
1-29568	1-29609	5-29568	9-28040		17-27810				
10-28103	10-28107	17-29609	18-29568		INSTRUMENT, NUCLEAR				
18-29609	19-28040				5-28828	6-28036	6-28621	7-27520	
INGESTION					7-27528	9-22530	9-27540	9-28036	
14-27983	14-28114	14-28579	14-28694		9-28056	9-28070	9-28071	9-28621	
15-27983	15-28114	15-28579	15-28694		9-28670	9-28828	9-29120	15-28680	
16-28579					17-28621				
INHALATION					INSTRUMENT, OPERATING REACTIVITY				
4-28051	4-29096	13-28127	13-28849		9-28672				
14-28579	14-29037	15-26117	15-28051		INSTRUMENT, PERIOD				
15-28084	15-28086	15-28568	15-28579		9-27955				
15-28916	15-29037	15-29214	15-29215		INSTRUMENT, POSITION				
15-29225	16-20579	17-28127	17-28849		9-28672	9-28771	9-28788	9-28995	
INSPECTION AND COMPLIANCE					17-28771				
9-28991	11-28075	11-28580	11-29355		INSTRUMENT, POWER RANGE				
11-29362	12-29362	13-28854	13-28857		9-27624	9-28823	17-27624		
13-28954	13-28955	13-28956	15-28857		INSTRUMENT, PRESSURE				
17-28580	17-28854	17-28856	17-28857		1-28603	9-28603	9-28777	9-28792	
17-28859	17-28891	17-29362	19-28075		11-28668	11-29147	12-29147	17-28603	
INSTABILITY					INSTRUMENT, PROCESS				
4-27720	5-27720	6-28057	9-28057		5-29201	9-22475	9-25177	9-28671	
9-28754	9-29432				9-29201	11-28668	17-28544		
INSTRUMENT CALIBRATION					INSTRUMENT, PULSE				
9-27624	9-28829	15-29034	15-29212		9-27958	9-28070	9-28071	9-28920	
15-29225	15-29329	15-29625	17-27624		9-28825				
17-28852					INSTRUMENT, RADIATION MONITORING				
INSTRUMENT, ABNORMAL INDICATION					7-28037	7-28522	9-22530	9-23172	
6-28540	9-27624	9-27837	9-28039		9-27539	9-27940	9-28037	9-28060	
9-28540	9-28670	9-28771	9-28893		9-28070	9-28670	9-28672	9-28753	
9-28991	10-27837	17-27624	17-27837		9-28783	9-28787	9-28813	9-29200	
17-28540	17-28550	17-28646	17-28771		14-23172	14-28060	14-28753	15-27920	
17-28991					15-27925	15-28032	15-28060	15-28111	
INSTRUMENT, AIR SAMPLING					15-28600	15-28700	15-28720	15-28753	
7-28408	16-27814	16-29170	19-27814		15-28875	15-28919	15-28922	15-28923	
INSTRUMENT, AMPLIFIER					15-28928	15-29034	15-29134	15-29213	
9-27955	9-27958	9-29071	9-28825		15-29229				
9-29162	17-28547				INSTRUMENT, RATE OF CHANGE				
INSTRUMENT, COINCIDENT					9-27955				
9-28071					INSTRUMENT, RECORDER				
INSTRUMENT, COMPONENT					9-28672				
6-28036	9-23184	9-27507	9-27508		INSTRUMENT, RELAY				
9-27512	9-27515	9-27541	9-27959		9-27959	9-28038	9-28741	9-29772	
9-28036	9-28056	9-28070	9-28071		10-28750	17-28772			
9-28776	9-28777	9-28791	9-28792		INSTRUMENT, SHUTDOWN REACTIVITY				
9-28820	9-28825	9-28853	9-28897		6-29569	17-29569			
9-29120	9-29156	9-29157	9-29168		INSTRUMENT, STARTUP				
9-29432	10-28097				9-28778	9-28823			
INSTRUMENT, CONTROL					INSTRUMENT, STARTUP RANGE				
9-27496	9-27950	9-28038	9-28039		6-28640	9-28823	17-28640		
9-28661	9-28667	9-28671	9-28736		INSTRUMENT, SURVEILLANCE				
9-28746	9-28776	9-28814	9-28820		9-28672				
9-28827	9-29120	10-27950	12-28746		INSTRUMENT, SWITCH				
INSTRUMENT, COOLANT QUALITY					10-28750	17-28549			
5-29198	9-25177	9-29198			INSTRUMENT, TEMPERATURE				
INSTRUMENT, CURRENT					6-27774	9-27774	9-28056	9-28825	
5-28828	9-27954	9-27955	9-27956		9-29105	11-29147	12-29147	17-27774	
9-27960	9-28825	9-28826			INSTRUMENT, TESTING				
INSTRUMENT, DETECTION FAILED FUEL ELEMENT					9-27510	9-27954	9-27956	9-29120	
1-28603	6-28562	9-28058	9-28603		INSTRUMENT, VOLTAGE				
9-28664	9-28774	9-28813	9-28995		9-27954	10-28750			
17-28562	17-28603	17-28995			INSURANCE				
INSTRUMENT, FLOW					3-28884				
5-29202	7-28596	9-27961	9-28825		INTERACTION, SOIL AND STRUCTURE				
9-28829	9-29202	9-29208	13-28546		15-28032				
17-28596					IODINE				
INSTRUMENT, FUEL SCANNING					3-29229	7-25247	7-25248	7-25250	
9-22530	9-28893				7-27422	7-28390	7-28405	7-28410	
INSTRUMENT, GENERAL					7-28418	7-28439	7-28440	7-28441	
1-28601	5-28035	5-28502	7-28498		7-28447	7-28450	7-28481	7-28518	
7-28502	7-28520	7-28521	7-28525		7-28519	7-28520	7-28522	7-28523	
9-22475	9-28035	9-28071	9-28069		12-28410	12-28418	12-28447	13-28229	
9-28499	9-28749	9-28818	9-28825		14-28113	14-28687	14-29038	14-29113	
9-29120	10-28818	11-28502	15-28046		14-29117	15-27027	15-28113	15-28441	
15-28078	15-28679	15-29029	15-29216		15-28612	15-29687	15-29714	15-29718	
19-28046					15-28710	15-28720	15-28915	15-29038	

15-29113				17-28544	17-28545	17-28547	17-28562
ION EXCHANGE				18-29606			
7-28500	13-28630	14-26178	14-28021	MAINTENANCE AND REPAIR			
14-28574	14-28815	14-28833	14-28836	6-27626	9-29158	9-29423	10-22570
14-29117	15-28079	15-28673		12-25233	17-25233	17-25239	17-27626
IRON				17-28968			
15-28708				MAINTENANCE, REMOTE			
IRRADIATION TESTING				12-28027	12-28861	12-29097	13-28731
4-25249	4-25253	7-25234	7-25244	13-28956			
7-25245	7-25246	7-25247	7-25253	MANGANESE			
7-29612	9-27539	9-27960	9-28040	14-28712	15-28712		
9-28551	9-28555	9-28893	9-28898	MASS TRANSFER			
12-24796	12-28526	12-28627	12-29171	5-27548	5-27571	5-27572	5-27573
12-29172	12-29174	13-24388	13-25234	5-27574	5-27731	7-28418	12-27531
13-28627	13-28632	15-27921	15-29039	12-27781	12-28418	13-27531	13-27781
17-25240	17-27710	17-28542	17-28549	14-27929			
17-28550	17-28551	17-28552	17-28553	MATERIAL			
17-28554	17-28555	17-28556	17-29586	1-29363	4-29401	9-28659	11-28659
18-27710	18-29612	19-28040		11-29355	11-29356	11-29363	11-29364
ISOTOPIC FRACTIONATION				11-29401	12-29363		
14-29107				MATHEMATICAL STUDY			
ISOTOPIC GENERATOR				5-27490	5-27566	5-27567	5-27572
13-28150				5-27574	7-28481	14-27785	14-28807
ITALY				15-27786			
1-29611	12-28627	13-28627	14-28812	MATHEMATICAL TREATMENT			
14-28921	16-28594	17-29611		1-28163	2-28620	5-27548	5-27731
JAPAN				5-28828	6-22560	6-28163	6-28766
1-28601	2-27738	2-27739	3-28879	6-28782	6-28822	6-28876	9-22560
3-28886	6-22560	7-29180	9-22560	9-27509	9-27516	9-27517	9-27535
9-27497	9-27498	9-28660	9-28661	9-28097	9-28163	9-28782	9-28822
9-28662	9-28663	9-28741	9-28743	9-28828	9-29104	9-29156	9-29161
9-28744	9-28745	9-28746	9-28747	9-29168	9-29422	9-29423	9-29424
9-28773	9-28778	9-28779	9-28780	10-29102	10-28588	11-27971	12-27781
9-28781	9-28786	9-28788	9-28790	12-27971	13-27781	14-26178	14-27929
9-28791	9-28792	9-28819	9-29181	14-28579	14-28620	14-29036	14-29626
9-29184	9-29185	9-29186	9-29187	15-28579	15-28719	15-28927	15-29036
9-29188	11-28789	11-29175	11-29183	16-27962	16-28579	16-28595	17-27971
11-29185	11-29186	11-29187	11-29188	17-28617	17-28876	18-28620	
11-29189	11-29190	12-27967	12-28626	MAXIMUM PERMISSIBLE BODY BURDEN			
12-28746	12-29175	12-29180	12-29182	14-28694	14-29036	15-28095	15-28112
13-28728	15-28612	15-28615	15-28692	15-28694	15-28711	15-28916	15-28928
15-28717	15-28928			15-29026	15-29215	15-29218	15-29223
KAPL				MAXIMUM PERMISSIBLE CONCENTRATION (MPC)			
6-29121				2-28620	14-28579	14-28620	14-28681
KARLSRUHE				14-28694	14-29033	15-28031	15-28112
13-28953				15-28579	15-28681	15-28694	15-29214
KEWAUNEE (PWR)				15-29215	16-28579	18-28620	
17-27710	18-27710			MAXIMUM PERMISSIBLE DOSE (MPD)			
KIWI TNT (S-RP)				14-28681	14-29037	15-27916	15-28079
14-29109				15-28110	15-28681	15-29037	15-29039
KRYPTON				15-29212	16-28595		
7-27521	7-28417	7-28419	7-28444	MEASUREMENT, GENERAL			
12-27529	13-27529	14-28444	15-28612	5-27570	5-27733	13-28143	15-26483
15-28867	15-28919			15-28080	15-28607	15-28608	15-29210
LACROSSE (BWR)				16-27614	19-27814		
6-27623	9-27624	9-28967	11-29360	MEASUREMENT, REACTIVITY			
11-29362	12-29362	17-27623	17-27624	6-29569	15-28055	15-28084	15-28679
17-28987	17-29362			15-28680	15-28629	15-28635	17-29569
LASL				MEASUREMENT, STRAIN GAGE			
15-28604	17-28604			11-29367			
LAW				MEASUREMENT, TEMPERATURE			
14-28810				5-27733	9-28056		
LEAK				MERCURY			
1-28603	5-29199	7-28524	7-28545	13-29176	17-28856		
9-28551	9-28603	9-28770	9-29198	METAL			
9-29208	11-29189	13-28143	17-28543	1-29178	7-27521	7-28452	7-28491
17-28544	17-28545	17-28551	17-28603	9-28749	12-29178	13-29178	
17-28646	17-28770	17-28853	17-29616	METAL WATER REACTION			
LEAK RATE				5-29094	6-29094	9-29094	
7-28524	9-29208	11-29147	12-29147	METAL, ALKALI			
13-28143	13-28155			4-27717	5-27542	5-27717	5-28969
LIAPUNOV'S FUNCTION				6-28749			
6-22560	6-28094	9-22560		METAL, LIQUID			
LIQUID FUEL				4-25254	4-28506	5-27543	5-27550
13-29530				5-27552	5-27553	5-27554	5-27732
LITHIUM				5-28650	5-28971	7-25254	7-28411
9-27539	12-28152	12-28729	13-29530	7-28412	7-28477	7-28506	7-28517
LOFT (S-RR)				9-25177	9-27541	12-28152	12-28517
5-29094	6-29094	7-28472	7-28474	METEOROLOGICAL SUPPORT			
7-28475	7-28513	8-29094	12-28473	14-28701	15-27927	15-28701	16-29370
12-28474	12-28475			METEOROLOGY			
LRL				1-28020	2-25091	2-28164	2-28165
15-27921	17-28134			2-28166	13-28166	14-28087	14-28087
LUBRICATION				14-28165	14-28433	14-28692	14-28810
17-28552				14-29109	14-29114	15-27810	15-27922
MAGNESIUM				15-28087	15-28606	15-28682	15-28692
4-28605	13-28144	13-29176	13-29530	15-29114	16-27810	16-27814	16-28024
14-27926				16-28116	16-28735	16-29170	16-29370
MAIN COOLING SYSTEM				17-27810	17-28433	19-27814	
5-29606	6-27774	6-28562	7-28545	MEXICO			
6-27774	17-25228	17-25229	17-27774	12-28437	14-28437		

MILITARY CONSIDERATION

15-29035

MILLING

13-28849 13-28857 15-28857 17-28849

17-28857

MILLSTONE POINT (BWR)

16-27713 18-27713

MINING

1-26119 13-26119 14-28066 14-28806

14-28834 15-26119 15-27871 15-28021

MISSILE GENERATION AND PROTECTION

11-28076 17-27710 18-27710 19-28076

MIST

7-28436 12-28436 17-28436

MOCKUP

11-28074

MODEL TESTING

1-28020 4-28051 7-27520 7-27528

14-26178 14-27786 14-28803 14-28807

14-29626 15-27786 15-28051 15-28053

15-28086

MODIFICATION, SYSTEM OR EQUIPMENT

1-28603 9-28603 13-27873 17-25239

17-28542 17-28557 17-28603 17-28768

MOLECULAR SIEVE

7-28473 7-28474 7-28475 7-28522

12-28473 12-28474 12-28475

MOLTEN FUEL

4-28605 5-27965 6-27965 7-25226

8-27965 13-25226 13-28141 13-29551

MOLYBDENUM

13-28135 17-28859

MONITOR, RADIATION, AIR

7-28441 9-28060 14-28060 15-28055

15-28060 15-28441 15-28578 15-28867

15-28675 15-28920 17-28578 17-28768

MONITOR, RADIATION, BACKGROUND

14-28087 14-29012 15-27920 15-27922

15-28045 15-28054 15-28055 15-28087

15-28019 15-28920 15-28923

MONITOR, RADIATION, EMERGENCY

15-28065 15-28569

MONITOR, RADIATION, ENVIRONMENTAL

1-26119 9-28060 13-26119 14-27506

14-28060 14-28681 14-28693 14-28695

14-29131 15-26119 15-27506 15-27864

15-27927 15-28044 15-28045 15-28054

15-28060 15-28062 15-28085 15-28087

15-28066 15-28614 15-28680 15-28681

15-28693 15-28695 15-28696 15-28924

15-28927 15-29211 15-29213

MONITOR, RADIATION, GAS

7-28441 7-28522 9-28813 15-28441

15-28612

MONITOR, RADIATION, GENERAL

7-28037 7-28441 9-22530 9-27949

9-28037 13-26126 14-29023 14-29131

15-28441 15-28578 15-28699 15-29116

17-28578

MONITOR, RADIATION, GROUND SURFACE

15-28920 15-29035

MONITOR, RADIATION, LIQUID

9-23172 14-23172 14-28835 14-28836

15-28920

MONITOR, RADIATION, PERSONNEL

9-29200 13-28732 14-28694 14-28695

15-27528 15-27864 15-27920 15-27925

15-28031 15-28065 15-28111 15-28609

15-28694 15-28695 15-28700 15-28928

15-29108 15-29210 15-29212 15-29214

15-29219 15-29220 15-29224

MONITOR, RADIATION, SAMPLING

15-27864

MONITOR, RADIATION, STACK

15-28567 15-28720

MONITORING PROGRAM, ENVIRONMENTAL

13-27873 15-28920 15-29215 15-29216

16-28116

MONITORING SYSTEM, RADIATION

9-28058 15-28920

MONTE CARLO

9-27507 9-29164 9-29166 15-27928

MSRE (RE)

7-25226 9-27954 9-28754 9-29106

12-28027 13-25226 13-28141

MTR (TR)

9-28555 17-25237 17-28552 17-28553

17-28554 17-28555

NAK

5-27732

NBS

15-28721

NCRP

15-27915 15-28062 15-29108

NEPTUNIUM

13-28135 13-28150

NERVA PROGRAM

4-27952 9-27952 15-27830 17-27830

NEUTRON

6-28782 7-28037 9-27949 9-28037

9-28056 9-28672 9-28743 9-28782

9-29106 13-28126 14-27993 14-28712

15-27870 15-27923 15-27928 15-27983

15-28052 15-28079 15-28679 15-28712

15-28724 17-28593

NEUTRON INTERACTION

7-27520 7-27528

NEVADA TEST SITE

14-29109

NEW ZEALAND

15-28696

NFS

7-28596 13-27873 13-28128 13-28129

13-28596 13-28954 13-28955 13-28956

17-28128 17-28129 17-28596

NINE MILE POINT (BWR)

3-29615 13-29615 17-29615

NIOBIUM

4-25249 12-29172 14-29111

NITRIDE

4-25249 19-28512

NITROGEN

4-20457 5-27548 7-28457

NOBLE GAS

3-23229 7-27521 7-28419 7-28440

7-28444 7-28517 12-28517 13-23229

14-28444

NOISE

17-28550

NOISE ANALYSIS

6-27906 6-28090 6-28095 6-28827

9-27906 9-28822 9-29106 17-27906

NOISE CROSS CORRELATION

6-29569 17-29569

NORWAY

7-28645 9-28056 9-28059 14-28645

14-29112 17-28645 17-29586

NOZZLE

7-28411 11-29267

NPD 2 (HWR)

12-29097

NRTS

13-22901 13-29529 13-29532 14-28830

14-29626

NRU (TR)

12-29097

NS SAVANNAH (PWR)

7-28597 12-25233 17-25233 17-28597

NSIC

1-29609 17-29609 18-29609

NSPP

7-28418 12-28418

NUCLEAR ATTACK

15-28615 15-28634 15-28717

NUCLEAR DETONATION

14-27527 14-28677 14-28687 14-29013

14-29036 14-29038 14-29112 14-29113

15-26769 15-27527 15-27863 15-29044

15-28606 15-28687 15-28696 15-28699

15-29708 15-29035 15-29036 15-29038

15-29113 16-29370

NUCLEAR EXPLOSION DEBRIS

4-25757 14-28114 15-28114

NUCLEAR ROCKET

4-27952 9-27952 9-29199

NUCLEATE BOILING

5-27492 5-27729 5-27730 17-27972

NUMERICAL METHOD

5-27569

OBSTRUCTION

9-28551 17-25238 17-28551

OCEAN AND SEA

1-28010 2-28620 3-28886 14-24683

14-27999 14-28081 14-28082 14-28620

14-29013 14-29110 15-27899 15-28053

15-28081 15-28092 15-28627 15-29110

18-28620

OCONEE 1, 2, AND 3 (PWR)

5-29094 6-29094 9-29094

OFF GAS

7-28596 9-27837 10-27937 12-27529

13-27529 13-28026 13-28596 13-29630

17-27837	17-28596			PALISADES POINT (PWR)			
OMRE (RE)				5-29094	6-29094	8-29094	
7-28460				PARTICLE SIZE			
OPERATING EXPERIENCE				7-25248	7-28408	7-28411	7-28412
3-28883	6-28540	6-28562	7-25226	7-28413	7-28415	7-28416	7-28421
7-28399	7-28402	7-28404	7-28406	7-28422	7-28425	7-28430	7-28478
7-28407	7-28409	7-28410	7-28426	7-28480	7-28510	7-28521	8-28478
7-28431	7-28432	7-28434	7-28435	12-28425	15-28052	15-28875	15-29215
7-28436	7-28438	7-28439	7-28442	15-29216			
7-28447	7-28492	7-28523	7-28597	PARTICLE SIZE DISTRIBUTION			
9-22530	9-28056	9-28058	9-28099	4-28755	4-28757	4-29096	7-25248
9-28101	9-28106	9-28540	9-28783	7-28408	7-28415	7-28416	7-28521
9-28826	9-28827	9-28897	9-29163	14-29107	15-28084	15-29214	15-29215
10-28101	10-28103	10-28104	10-28107	PARTICLE, RADIOACTIVE			
10-28109	10-28587	10-28897	11-29357	4-28051	4-29096	14-29107	15-28051
12-28410	12-28426	12-28431	12-28432	15-28052	15-28609	15-28720	16-29170
12-28434	12-28435	12-28436	12-28438	PARTICULATE			
12-28447	13-22901	13-25226	13-28135	7-27522	7-28401	7-28432	7-28453
13-28432	13-28435	13-28442	14-28433	7-28510	7-28517	12-28432	12-28517
14-29033	17-25241	17-28433	17-28436	13-28432	14-28082	14-28693	14-29107
17-28442	17-28540	17-28546	17-28547	14-29113	15-27864	15-28082	15-28693
17-28548	17-28562	17-28597	17-28826	15-29113			
17-29357				PARTITION COEFFICIENT			
OPERATING EXPERIENCE SUMMARY				7-28645	14-28645	17-28645	
1-29608	6-22546	7-28645	11-29147	PATENT			
11-29608	12-29147	13-28848	14-28645	3-28882	5-29196	5-29198	5-29201
15-28848	17-22546	17-25238	17-28541	5-29202	5-29204	5-29207	7-29180
17-28542	17-28561	17-28645	17-28800	9-27495	9-27496	9-27497	9-27498
17-28848	17-28853	17-29577	17-29608	9-28660	9-28661	9-28662	9-28663
18-28934	18-28943			9-28664	9-28665	9-28667	9-28669
OPERATION				9-28736	9-28741	9-28743	9-28744
9-28039	9-28787	14-28066	15-29138	9-28745	9-28746	9-28747	9-28773
17-29138				9-28774	9-28775	9-28776	9-28777
OPERATOR ACTION				9-28778	9-28779	9-28780	9-28781
4-29151	9-29151	9-29152	9-29153	9-28785	9-28786	9-28788	9-28790
9-29155	17-29151	17-29152	17-29153	9-28791	9-28792	9-28819	9-29181
17-29155				9-29184	9-29185	9-29186	9-29187
ORGANIC COOLANT				9-29188	9-29194	9-29195	9-29196
5-28619	5-28650	5-29390	18-28619	9-29197	9-29198	9-29199	9-29200
ORGANIC IODIDE				9-29201	9-29202	9-29203	9-29205
7-25250	7-27522	7-28399	7-28414	9-29206	9-29208	11-28668	11-28789
7-28418	7-28420	7-28422	7-28423	11-29175	11-29183	11-29185	11-29186
7-28428	7-28429	7-28441	7-28447	11-29187	11-29188	11-29189	11-29190
7-28455	7-28473	7-28474	7-28475	11-29194	12-28626	12-28746	12-28861
7-28518	7-28519	7-28522	7-28523	12-29175	12-29180	12-29182	13-28727
12-28418	12-28447	12-28473	12-28474	13-28720	13-29176	13-29177	15-28922
12-28475	15-28441	17-28557		15-28923			
ORNL				PBF (S-RR)			
3-23229	9-27954	9-27955	9-27956	9-22536			
9-27958	9-27959	9-28754	9-29106	PEACH BOTTOM 1 (HTGR)			
10-22570	12-28027	13-23229	13-28126	6-29876	7-28545	7-29612	17-28544
13-28732	14-28703	14-28830	14-29140	17-28545	17-28617	17-29876	18-29612
15-27915	15-28054	15-28609	15-28721	PERFORMANCE LIMIT			
17-28559				9-29152	9-29153	11-29361	15-28700
ORP (RR)				17-29152	17-29153		
17-28641				PERSONNEL EXPOSURE, RADIATION			
OSCILLATION				1-25235	13-28848	13-28654	15-28604
6-28069	6-28091			15-28785	15-28848	15-28851	17-28604
OSCILLATOR, REACTIVITY				17-23848	17-28850	17-28851	17-28854
6-28621	6-28801	6-29569	9-28621	17-28856	17-28958	18-25235	
17-27972	17-28621	17-28801	17-29569	PERSONNEL PROTECTIVE DEVICE			
GUT OF PILE LOOPS AND EXPERIMENTS				11-28789	13-28949	13-28954	13-28857
4-28458	4-28506	5-27749	7-25245	15-28700	15-28857	15-29039	17-28849
7-25246	7-25247	7-28458	7-28460	17-28854	17-28857		
7-28506				PERTURBATION METHOD			
OXIDATION				6-28536	6-28847		
5-29094	6-29094	7-25243	7-25252	PH REACTIVITY EFFECT			
7-27521	7-28460	7-28478	7-28480	6-27626	6-28938	17-27626	17-27829
8-28478	8-29094	14-28579	15-28579	17-28938			
15-29135	16-28579			PHANTOM, HUMAN BODY			
OXIDE				15-27916	15-28710	15-29224	
4-25249	4-28458	4-28605	5-27554	PHASE CHANGE			
7-25251	7-28412	7-28413	7-28415	4-28649	5-28649	5-28651	5-29390
7-28430	7-28458	7-28477	7-28480	PHOSPHATE			
13-24388	19-28512			13-28307	13-29524	13-29525	15-28055
OXYGEN				PHOSPHORUS			
4-25254	4-28506	4-29401	5-29094	15-28037			
6-29094	7-25234	7-25254	7-28478	PILGRIM (BWR)			
7-28506	8-28478	8-29094	8-29095	2-28767	18-28767		
11-29401	13-25234	14-27786	14-28918	PIPING			
15-27786	16-28116			1-28601	5-27804	9-28770	9-28823
OYSTER CREEK 1 (BWR)				9-29194	11-28073	11-28582	11-28622
10-29639	12-29639	12-29640	15-29089	11-29189	11-29190	11-29194	17-25232
17-29089	18-29089	18-29091	18-29637	17-28582	17-28770	17-28966	18-28622
18-29639	18-29640			PIQUA (OCR)			
OYSTER CREEK 2 (PWR)				17-25228	17-25229	17-25730	17-28722
2-29646	18-29646			17-28966			
OZONE				PLANT PROTECTIVE SYSTEM			
15-29029				9-22603	9-28072	9-28784	9-28823
PAKISTAN				10-28072	14-28681	15-28681	15-28924
9-28059				PLASTICITY			

7-28524	14-27919			17-25228	17-27877	17-28580	17-29257
PLASTICS				17-29362	17-29608	18-29602	19-28075
4-25253	7-25253	7-28499	7-28524	PRESSURE, EXTERNAL			
9-28499				6-28802	17-28902		
PLATINUM				PRESSURE, INTERNAL			
4-28605	7-28462			1-29263	5-28648	5-28651	6-28648
PLOWSHARE PROGRAM				7-28451	11-29363	11-29367	12-29363
14-28114	15-26769	15-29114	16-29370	17-28556			
PLUM BROOK (TR)				PRESSURIZER			
17-28542				17-27625			
PLUME BEHAVIOR, GENERAL				PROBABILITY			
15-27810	16-27810	16-27962	16-28735	1-29568	5-29569	9-27534	9-27535
17-27810				9-29104	9-29158	9-29160	9-29164
PLUTO (TR)				9-29166	9-29424	10-28108	12-27524
6-22546	17-22546			18-29568			
PLUTONIUM				PROCEDURES AND MANUALS			
3-23229	4-28467	4-28468	4-28605	1-27970	1-28560	3-28985	6-28876
4-28755	6-27746	7-28415	7-28416	9-29100	9-28794	10-28100	11-28560
7-28448	7-28467	7-28468	7-28477	13-27970	17-28134	17-28560	17-28617
7-28480	7-28494	7-29495	7-28500	17-28876			
7-28516	12-28516	12-29534	13-23229	PROMPT NEUTRON LIFETIME			
13-24388	13-27530	13-27780	13-28127	6-28535	6-28536	6-28847	
13-28139	13-28150	13-28620	13-28848	PROPERTY, PHYSICAL			
13-28854	13-29531	13-29551	15-27923	4-25249	4-25253	4-27717	4-29401
15-28063	15-28084	15-28086	15-28568	5-27717	5-27965	5-27965	7-25234
15-28724	15-28848	15-28915	15-29217	7-25242	7-25248	7-25253	7-28450
15-29225	17-28127	17-28849	17-28854	7-28451	7-28494	7-28495	7-28516
19-28512	19-28516			7-28524	8-27965	11-28074	11-28622
PLUTONIUM DIOXIDE				11-29360	11-29364	11-29365	11-29401
5-27965	6-27965	7-28477	7-28494	12-24796	12-28516	13-25234	19-28622
8-27965	13-27780	13-28950	15-28916	19-28512	19-28516		
PLUTONIUM OXIDE				PRTR (TR)			
13-28140				15-28063			
PM 2A (PWR)				PULSED NEUTRON TECHNIQUE			
11-29359				6-28090	6-28092		
POISON, BURNABLE				PUMP			
6-29621	9-27537	9-27538		9-29038	9-28967	12-29640	17-28552
POISON, FIXED				17-28553	17-28768	17-28967	18-29640
9-29602	9-28819	13-28154	17-28602	PYROCHEMICAL			
POISON, SOLUBLE				13-29530			
6-27626	6-28938	9-28661	9-28790	PYROLYTIC			
9-28991	9-29181	13-28154	17-27626	7-25243	7-25244	7-25245	7-29507
17-28938	17-28991			QUALITY CONTROL			
POLAND				9-28100	9-28659	9-28783	9-29431
9-27540				10-28100	10-28104	11-28075	11-28659
POLONIUM				11-29355	11-29360	11-29364	17-25230
4-28051	15-28051	15-29135		19-28075			
POOL BUILDING				R AND D PROGRAM			
4-28649	5-28649	5-28650		5-29606	6-28036	6-28974	7-28597
POPULATION DISTRIBUTION				9-28036	9-29120	9-29431	11-29356
2-27738	2-28165	14-28165	14-28610	14-27899	14-28081	14-29626	15-26769
POPULATION EXPOSURE				15-27899	15-28081	15-28875	17-25240
14-27983	14-28579	14-29694	14-28810	17-28556	17-28597	17-28617	17-28876
14-28811	14-28812	14-29036	14-29110	18-29606			
15-27460	15-27923	15-27927	15-27983	RADIATION DAMAGE			
15-28062	15-28110	15-28579	15-28606	4-25249	4-25253	5-28619	7-25244
15-28683	15-28694	15-28708	15-28714	7-25245	7-25246	7-25253	7-29497
15-28717	15-28718	15-28864	15-28924	7-28499	7-28519	9-28499	9-28893
15-29035	15-29036	15-29110	15-29219	13-27777	15-27460	15-28110	15-28717
15-29222	16-28579			15-28725	15-29108	15-29223	18-28619
POROUS MEDIA				RADIATION EFFECT			
14-26124				1-26119	4-25249	4-25253	4-28762
POTASSIUM				7-25234	7-25244	7-25245	7-25246
4-27717	5-27543	5-27717	12-28729	7-25253	7-28418	7-28462	7-28497
14-26777	14-27926			7-28499	7-28519	9-27960	9-28499
POWER COEFFICIENT				9-28893	11-28075	11-29355	11-29361
6-27775	6-28562	17-27775	17-28562	11-29362	12-28418	12-29362	13-25234
POWER DISTRIBUTION				13-26119	15-26119	15-27460	15-27915
6-27905	17-27905			15-28078	15-28079	15-28110	15-28615
PRECIPITATION				15-28634	15-28683	15-28717	15-28725
7-28449	14-26178	14-28574	14-28682	15-29211	17-29548	17-29362	19-28075
14-28693	14-28810	14-28836	14-29010	RADIATION EXPOSURE, RECORD KEEPING			
14-29013	15-27522	15-28578	15-28599	14-28677	14-29110	15-27460	15-28615
15-28682	15-28693	15-28696	15-28699	15-28725	15-29110	15-29329	
15-28713	16-28116	16-29170	17-28578	RADIATION IN PERSPECTIVE			
PRESSURE DROP				1-28572	15-28572	17-28572	
4-27720	5-27720	7-28596	9-28967	RADIATION INJURY TREATMENT			
13-28596	17-28596	17-28967		15-27460	15-28674	15-28634	15-29139
PRESSURE PULSE				15-29217	17-28604	17-28968	17-29139
7-28492				RADIATION MODEL			
PRESSURE RELIEF				4-29169	14-27929	14-28688	14-29010
11-29175	12-29175	17-28646		15-29084			
PRESSURE TRANSIENT				RADIATION PROTECTION, CHEMICAL			
5-27556	5-27965	6-27965	6-27965	15-29162	15-29134		
PRESSURE VESSEL				RADIATION PROTECTION, ORGANIZATION			
1-28601	1-29608	9-27837	9-28659	1-28618	9-28925	14-28610	14-28681
9-29602	10-27837	11-28073	11-28074	14-28693	14-28694	14-28695	15-27915
11-28075	11-28580	11-28659	11-29355	15-28615	15-28618	15-28681	15-28692
11-29356	11-29357	11-29350	11-29359	15-28694	15-28695	15-28714	15-28924
11-29360	11-29361	11-29362	11-29364	15-28925	15-29108	15-29116	15-29212
11-29365	11-29367	11-29608	12-29362	15-29218	15-29219	17-28618	

RADIATION SAFETY AND CONTROL

1-26119 1-28560 1-29619 2-28166
 4-28051 5-28502 7-28442 7-28470
 7-28502 7-28645 9-28925 11-28502
 11-28560 12-28437 12-28470 12-28526
 13-26119 13-28166 13-28442 13-28854
 14-27527 14-27785 14-27859 14-27913
 14-27919 14-27983 14-28021 14-28114
 14-28437 14-28610 14-28645 14-28681
 14-28694 14-28695 14-28703 14-28757
 14-28805 14-28806 14-28810 14-28832
 14-28834 14-28836 14-29032 14-29037
 15-26119 15-27328 15-27460 15-27527
 15-27785 15-27870 15-27899 15-27909
 15-27915 15-27920 15-27925 15-27927
 15-27983 15-28031 15-28032 15-28044
 15-28045 15-28051 15-28054 15-28063
 15-28065 15-28079 15-28110 15-28112
 15-28114 15-28162 15-28619 15-28681
 15-28694 15-28695 15-28696 15-28700
 15-28925 15-29037 15-29108 15-29116
 15-29138 15-29210 15-29211 15-29212
 15-29215 15-29329 17-27785 17-28134
 17-28442 17-28470 17-28557 17-28560
 17-28618 17-28645 17-28854 17-28968
 17-29138

RADIATION UNIT

14-28610 15-28608 15-28679 15-29108

RADIATION, PUBLIC EDUCATION/ACCEPTANCE

1-28572 1-28584 14-28811 15-28572
 15-28924 17-28572 17-28584

RADIOACTIVITY RELEASE

7-28406 7-28407 13-28127 14-28833
 15-28063 15-28567 15-28606 15-28714
 15-28864 15-29135 17-28127

RADIOBIOLOGY

1-26119 13-26119 15-26119 15-27328
 15-27460 15-28078 15-28604 15-29108
 17-28604

RADIOCHEMICAL ANALYSIS

14-28682 14-29107 15-28682

RADIOCHEMICAL PLANT SAFETY

7-28435 7-28440 7-28442 7-28443
 12-28435 12-28437 13-28435 13-28442
 13-28443 14-28437 17-28442

RADIOCHEMICAL PROCESSING

3-23229 13-23229 13-28150 13-28732
 15-28720

RADIOGRAPHY

11-28075 15-28710 15-28851 17-28850
 17-28851 19-28075

RADIOISOTOPE

1-27970 4-28466 4-28467 4-28468
 7-28442 7-28443 7-28459 7-28466
 7-28467 7-28468 7-28511 13-27723
 13-27970 13-28126 13-28127 13-28150
 13-28442 13-28443 13-28732 13-28946
 13-28950 14-28831 14-29011 15-28720
 17-20127 17-28442 17-28856

RADIOLOGICAL ASSISTANCE

1-27784 5-27784 14-28114 14-28681
 15-27909 15-27910 15-27925 15-28044
 15-28053 15-28114 15-28578 15-28600
 15-28606 15-28681 15-29035 15-29139
 17-28578 17-29139 18-27784

RADIOLOGY

14-27506 15-27506 15-28615 15-28702
 15-28718 15-28725

RADIOLYTIC GAS

7-25234 7-28400 7-28418 9-27837
 10-27837 12-28418 13-25234 15-28723
 17-27625 17-27837 17-28800

RADIONUCLIDE, INDUCED

7-28400 14-27929 14-28688 15-27328

RADIUM

14-29014 15-26117 15-28078 15-28085
 15-28115 15-28692 15-28725

RADON

15-26117 15-27871 15-27922 15-28031
 15-28078

RAINOUT

14-28574 14-28682 14-28687 14-28693
 15-28682 15-28687 15-28693 15-28696
 16-29170

RAPSODIE (LMCR)

5-27552

REACTIVITY COEFFICIENT

6-28090 6-28536 6-28847 6-29417

REACTIVITY EFFECT

6-28802 6-28876 9-28059 9-28667
 9-28741 9-28743 9-29206 17-28617

17-28802 17-28876
REACTIVITY EFFECT, ANOMALOUS

6-27626 6-28540 6-28562 6-28621
 6-28876 9-28540 9-28555 9-28621
 9-28771 9-28991 17-25241 17-27626
 17-28540 17-28549 17-28555 17-28562
 17-28617 17-28621 17-28771 17-28776
 17-28991

REACTIVITY EFFECT, EXPANSION

6-27775 6-28860 17-27775

REACTIVITY EFFECT, VOID

17-25240

REACTIVITY, EXCESS

9-28602 17-28602

REACTOR CONTROL

1-28163 4-27952 5-28035 6-22560
 6-28089 6-28163 6-28666 9-22536
 9-22560 9-22692 9-27495 9-27496
 9-27952 9-28035 9-28163 9-28555
 9-28666 9-28671 9-28736 9-28741
 9-28743 9-28747 9-28754 9-28778
 9-28779 9-28780 9-28781 9-28814
 9-28826 9-29181 9-29206 17-28555
 17-28826

REACTOR COOLANT

1-28636 5-28970 5-28971 9-28970
 12-28729 12-29179 17-28561

REACTOR DESCRIPTION

6-27957 9-27957 9-29209 11-29605
 17-28641 17-28642 18-27831 18-27957
 18-29605

REACTOR DYNAMICS

1-28163 6-22560 6-28089 6-28090
 6-29091 6-28092 6-28163 6-28533
 6-28766 6-28822 6-29369 6-29416
 9-22560 9-28163 9-28822 9-29209

REACTOR KINETICS

6-28036 6-28088 6-28089 6-29090
 6-28091 6-28092 6-28666 6-28766
 6-29121 9-28036 9-28666

REACTOR PHYSICS

6-22546 6-28069 6-28766 6-28876
 6-29621 17-22546 17-28876

REACTOR POWER

1-28019 1-28020 1-28047 5-28828
 9-28828 14-28047 14-28694 14-28695
 14-28811 15-27927 15-28054 15-28614
 15-28694 15-28695 15-28919 17-17173

REACTOR SAFETY SYSTEM

1-28163 6-28163 9-22536 9-22693
 9-27973 9-28038 9-28039 9-28072
 9-28099 9-28163 9-28775 9-28820
 9-28823 9-29185 9-29186 9-29187
 9-29188 10-28072 11-29185 11-29186
 11-29187 11-29188 17-27973

REACTOR STABILITY

6-27908 6-28054 6-28089 6-28091
 6-28094 6-28801 6-29369 9-27906
 17-27906 17-28801

REACTOR STARTUP EXPERIENCE

5-27552 6-27906 9-27906 17-27906

REACTOR STARTUP TESTING

6-27623 17-27623 17-27710 17-28641
 17-29577 18-27710

REACTOR TEST FACILITY

6-28036 9-28036

REACTOR TRANSIENT

5-28648 6-28088 6-28089 6-28092
 6-28533 6-28648 6-29416 7-25247

REACTOR, AEC OWNED

5-28913 6-28562 6-28913 7-25234
 7-28424 9-22536 9-27954 9-27956
 12-28424 13-25234 15-28063 17-28556
 17-28562

REACTOR, AIRCRAFT

4-29758

REACTOR, BREEDER

3-23229 4-25249 4-25254 5-29606
 6-25945 6-28036 7-25254 7-29411
 9-28036 12-27531 13-23229 13-27531
 18-28794 18-29606

REACTOR, BWR

1-28020 1-28584 1-28603 1-29608
 1-29611 1-29618 2-28620 2-28767
 3-29615 5-28035 5-28648 5-28651
 6-27623 6-27905 6-27906 6-28640
 6-28648 7-25234 7-28645 9-22693
 9-27624 9-27837 9-27906 9-28035
 9-28056 9-28058 9-28106 9-28602
 9-28603 9-28671 9-28672 9-28780
 9-28781 9-28783 9-28895 9-28967

10-27837	10-28108	10-29821	10-29639	17-28559	17-28995		
10-29668	11-29360	11-29362	11-29608	REACTOR, POWER			
12-27967	12-28631	12-29362	12-29639	1-11229	1-27794	1-28584	1-28602
12-29640	13-25234	13-29615	14-28620	1-29565	1-29608	1-29609	1-29611
14-28645	15-28578	15-29089	16-27713	1-29618	5-27734	5-27784	6-28792
17-25238	17-25240	17-27623	17-27624	6-28876	9-22692	9-27973	9-28106
17-27837	17-27905	17-27906	17-28578	9-28603	9-28736	9-28770	9-28778
17-28584	17-28602	17-28603	17-28640	9-28782	9-29602	10-28103	10-29108
17-28642	17-28645	17-28763	17-28965	11-28582	11-29608	12-28528	12-28524
17-28967	17-29089	17-29362	17-29586	14-27785	14-28873	14-29033	15-27785
17-29608	17-29611	17-29615	17-29618	15-29922	15-29139	17-27785	17-27973
18-27713	18-28620	18-28767	18-29089	17-28172	17-28582	17-28584	17-28603
18-29091	18-29618	18-29637	18-29639	17-28646	17-28762	17-28770	17-28876
18-29640				17-29139	17-29565	17-29608	17-29609
REACTOR, FAST				17-29611	17-29618	18-11229	18-27784
1-28163	3-23229	4-25249	4-25254	18-28925	19-28602	18-29609	18-29618
4-28457	4-28506	5-29606	6-25945	REACTOR, PRESSURE TUBE			
6-27706	6-28036	6-28098	6-28163	1-29568	5-28623	5-29568	11-28622
6-28562	6-29119	7-25234	7-25254	12-29097	15-28063	17-28623	17-28900
7-28448	7-28457	7-28477	7-28506	17-29577	18-28622	18-29568	
7-28511	7-29411	9-25177	9-28036	REACTOR, PULSED			
9-28040	9-28163	10-28901	12-28158	5-27906	5-27965	5-28648	6-27965
12-29527	13-23229	13-25234	17-28562	6-28648	7-25234	8-27665	9-22536
18-28794	18-29542	18-29606	19-28040	9-22536	9-28825	13-25234	14-28087
REACTOR, FAST BURST				15-27928	15-28087		
9-22536				REACTOR, PWR			
REACTOR, FLUX TRAP				1-29608	1-29611	1-29618	2-29646
5-28913	6-28766	6-28913	9-27956	5-28639	5-28740	5-29202	6-27626
9-27956	9-28772	17-28547	17-28548	6-28069	6-29038	6-29569	7-28734
17-28556	17-28772	18-28638		7-28597	9-28106	9-28771	9-28991
REACTOR, GCR				9-29202	9-29645	10-28821	10-29643
1-28163	1-29611	5-27734	6-28163	11-27848	11-27971	11-28117	11-28937
7-25242	7-25243	7-25244	7-25245	11-29357	11-29358	11-29359	11-29605
7-25246	7-28424	9-28163	9-29602	11-29608	11-29634	12-25233	12-27721
12-28424	12-28631	12-29171	17-29561	12-27971	12-28117	12-28769	13-25234
17-29611	18-28943	18-29602		14-27677	17-25233	17-25238	17-27625
REACTOR, GENERAL				17-27626	17-27627	17-27710	17-27929
1-27970	1-29178	11-29175	12-24796	17-27971	17-28172	17-28173	17-28583
12-27529	12-27531	12-27721	12-27781	17-28597	17-28768	17-28771	17-28800
12-27783	12-27967	12-28142	12-28158	17-29038	17-29091	17-29357	17-29608
12-28526	12-28626	12-28627	12-28729	17-29611	17-29618	18-27710	18-27847
12-28861	12-28887	12-28952	12-29093	18-27848	18-28117	18-28620	19-28769
12-29098	12-29171	12-29172	12-29174	18-28937	18-29605	18-29618	18-29634
12-29175	12-29178	12-29179	13-27529	18-29643	18-29645	18-29646	
13-27531	13-27779	13-27781	13-27783	REACTOR, RESEARCH			
13-27970	13-28142	13-28143	13-28157	1-27784	5-27784	5-28913	6-22546
13-28627	13-28730	13-28731	13-28952	6-28540	6-28562	6-29621	6-28766
13-29093	13-29098	13-29170		6-28913	6-28903	6-29569	9-22536
REACTOR, GRAPHITE MODERATED				9-26091	9-27956	9-27960	9-27973
17-28561				9-28059	9-28540	9-28621	9-28663
REACTOR, HTGR				9-29754	9-28772	9-28905	9-29617
6-28876	7-25247	7-28424	7-28445	14-27785	15-27785	17-22546	17-25238
7-28545	7-29612	9-22536	12-27781	17-25241	17-26091	17-27785	17-27972
12-28424	12-28887	13-27779	13-27781	17-27973	17-28540	17-28541	17-28556
13-28026	13-28156	17-28445	17-28544	17-28557	17-28558	17-28562	17-28621
17-28545	17-28617	17-28876	18-29612	17-28641	17-28772	17-28995	17-29560
REACTOR, HWR				17-29617	18-27784	18-28638	
1-29568	5-29568	6-22566	6-28766	REACTOR, SAFETY RESEARCH			
9-28779	11-28622	12-28526	12-29097	5-27906	5-27965	5-28648	6-27965
12-29173	15-28063	17-28642	17-28800	6-28088	6-28648	7-28473	7-28474
17-29577	18-28622	18-29568		7-28475	7-28513	8-27965	9-22536
REACTOR, INTERNAL SUPERHEAT				12-28473	12-28474	12-28475	14-29109
17-28546				REACTOR, SGHWR			
REACTOR, LMCR				18-27831			
1-28163	3-23229	4-25254	5-27552	REACTOR, SPACE			
6-28163	6-28562	7-25254	7-28511	4-28467	4-28468	4-28684	4-28755
9-25177	9-27541	9-28163	9-29195	4-28750	4-28760	7-28487	7-28488
10-28901	12-29533	13-23229	13-27777	12-28152	13-28026	15-28086	
17-28562	17-29616			REACTOR, SUPERCRITICAL PRESSURE			
REACTOR, LMFBR				5-28639	18-28639		
1-28163	4-28506	5-27804	5-29606	REACTOR, TEST			
6-27774	6-27775	6-28163	6-28801	5-28619	6-22546	6-28562	6-29119
6-28802	7-28506	7-29411	9-27774	7-29511	9-25177	9-28040	9-28551
9-28163	9-29120	12-29179	12-29527	9-28555	9-28770	9-29105	9-29617
12-29533	17-27774	17-27775	17-27776	10-28901	17-28526	15-28063	17-22546
17-28801	17-28802	17-29616	18-28942	17-25237	17-28542	17-28549	17-28550
18-29606				17-28551	17-28552	17-28553	17-28554
REACTOR, MARITIME				17-28555	17-28562	17-28641	17-28770
1-28601	9-28818	10-28818		17-29616	17-29617	18-28619	19-28040
REACTOR, MILITARY				REACTOR, WATER			
9-22692	9-27950	10-27950	11-29357	7-25234	9-28106	11-28075	11-28076
11-29358	11-29359	17-29357		11-28077	11-29355	12-24159	12-28077
REACTOR, MOLTEN SALT				12-28631	12-28729	13-25234	19-28075
7-25226	9-27954	9-29106	12-27531	19-28076	19-28077		
12-28027	13-25226	13-27531	13-28141	RECOMBINER			
REACTOR, ORGANIC COOLED				17-28800			
7-28460	7-28493	17-25228	17-25229	RECOVERY PROCESS			
17-25230	17-28722	17-28966		7-28500	14-27919		
REACTOR, POOL TYPE				REDUNDANCE			
6-28098	9-27973	9-28995	17-25239	9-27513	9-27516	9-27535	9-29163
17-27973	17-28541	17-28543	17-28557	9-29165	9-29166	9-29423	9-29427

PEENTRY, ATMOSPHERIC				RESONANCE OVERLAP			
4-28755	4-28757	4-28759	4-28760	6-27706			
REFLECTOR				RESPONSE TIME			
6-28540	9-28540	17-28540		1-29618	5-28653	6-27774	9-27774
REFRACTORY MATERIAL				10-29610	17-27774	17-29610	17-29618
4-25249				18-29618			
REFUELING				REVIEW			
6-27905	6-28640	9-28602	9-29602	4-28760	6-28036	6-28666	7-29516
17-27905	17-28602	17-28640	18-29602	7-28517	9-28036	9-28040	9-28666
REGULATION, AEC				9-28825	9-28826	9-28897	9-29159
1-11229	1-25235	1-28855	1-29609	9-29431	10-28807	11-29355	12-28516
3-28855	11-28074	17-29609	18-11229	12-28517	17-28541	17-28826	19-28040
18-25235	18-29609			19-29516			
REGULATION, GENERAL				RHENIUM			
1-28601	1-28618	2-27729	15-28618	4-28605	12-28142	13-28142	
17-28618				RIVER, CLINCH			
REGULATION, IAEA				15-28054			
3-28884				RIVER, COLUMBIA			
RELEASE RATE				1-28047	14-28047	14-28081	14-28082
7-28480				14-28083	14-29032	15-28081	15-28082
RELIABILITY ANALYSIS				15-28637			
4-29151	9-22693	9-27507	9-27509	RIVER, GENERAL			
9-27510	9-27511	9-27512	9-27514	1-28019	1-28020	14-27786	14-28611
9-27516	9-27518	9-27534	9-27535	14-28918	14-29014	15-27796	
9-28097	9-28099	9-28100	9-28101	ROCK MECHANICS			
9-28105	9-28106	9-28920	9-29104	14-28803	14-28804	14-28831	14-28866
9-29151	9-29152	9-29153	9-29155	ROVER PROGRAM			
9-29159	9-29165	9-29168	9-29420	4-28757	15-27927		
9-29421	9-29422	9-29423	9-29425	RUBIDIUM			
9-29426	9-29428	9-29429	9-29430	14-28021			
10-28100	10-28101	10-28102	10-28105	RUSSELLVILLE (PWR)			
10-28107	10-28108	10-28109	10-28587	11-27848	18-27847	18-27848	
10-28901	12-27534	12-27967	12-28105	RUTHENIUM			
17-29151	17-29152	17-29153	17-29155	14-28712	14-28915	14-29107	15-28614
RELIABILITY, COMPONENT				15-28712			
9-23164	9-27508	9-27512	9-27513	SAFETY ANALYSIS			
9-27514	9-27515	9-28818	9-28893	1-29568	1-29609	2-27739	2-27739
9-28897	9-29156	9-29157	9-29160	4-28466	5-29568	7-28466	12-27967
9-29161	9-29164	9-29167	9-29420	12-28158	13-27790	14-28804	17-29609
9-29424	9-29426	9-29432	10-28104	18-29568	18-29609		
10-28587	10-28818	10-28897		SAFETY EVALUATION			
RELIABILITY, SYSTEM				9-26001	12-28526	13-28141	17-26041
1-29611	9-22475	9-27514	9-27534	SAFETY MARGIN			
9-28106	9-28818	9-29104	9-29158	9-28741	11-27848	18-27848	
9-29160	9-29162	9-29163	9-29166	SAFETY PRINCIPLES AND PHILOSOPHY			
9-29420	9-29421	9-29422	9-29425	1-11229	1-27970	1-28572	3-29885
9-29427	9-29430	10-28103	10-28587	4-29169	9-22693	13-27970	14-28433
10-28588	10-28750	10-28818	12-27534	15-28572	17-28134	17-28433	17-28557
12-27967	17-29611			17-28572	18-11229		
REMOTE MANIPULATING AND VIEWING				SAFETY PROGRAM			
3-29614	3-29615	11-28582	13-28731	4-29169	17-28134		
13-29615	15-29614	17-27776	17-28582	SAFETY REVIEW			
17-29614	17-29615	17-29616		1-28603	4-28760	6-27905	6-28640
REPORT, OPERATIONS				9-28603	13-28141	17-27905	17-28557
6-27623	6-27626	6-28640	7-28545	17-28603	17-28640		
9-27624	9-28101	9-28551	9-28555	SAMARIUM			
9-28602	9-28667	10-28101	13-27873	6-28876	17-28876		
14-21627	17-25237	17-25240	17-27623	SAMPLING			
17-27624	17-27625	17-27626	17-27627	7-25248	7-27522	7-28440	7-28445
17-27776	17-28542	17-28544	17-28545	7-28473	7-28474	7-28475	7-28520
17-28547	17-28549	17-28550	17-28551	7-28521	9-29430	12-28473	12-28474
17-28552	17-28553	17-28554	17-28555	12-28475	13-28956	14-28087	14-28693
17-28558	17-28602	17-28640	17-28646	14-29107	14-29109	14-29110	15-27909
17-28966	17-28967			15-27910	15-27921	15-28044	15-28087
REPORT, OPERATIONS ANALYSIS				15-28111	15-28600	15-28693	15-28696
1-28603	6-27774	6-27775	6-27906	15-28710	15-28723	15-28875	15-28924
7-28645	9-27774	9-27906	9-28603	15-29110	15-29215	15-29216	15-29320
9-28995	14-28645	17-27774	17-27775	17-28445			
17-27929	17-27906	17-28603	17-28645	SAN ONOFRE (PWR)			
17-28800	17-28995			9-28771	9-28991	17-28771	17-28991
REPORT, OPERATIONS SUMMARY				SAVANNAH RIVER PLANT			
9-27837	10-27637	17-27837	17-27972	7-28436	7-28439	7-28496	12-28436
17-28541	17-28768	17-28965		14-28064	14-28836	15-27870	15-28720
REPORT, PSAR				17-28436			
2-29646	9-29643	10-29643	10-29648	SAXTON (PWR)			
11-27848	11-28117	11-29634	12-28117	5-28639	17-28172	17-28173	18-28639
17-27710	18-27710	18-27847	18-27848	SCRAM, REAL			
18-28117	18-28638	18-29634	18-29643	6-27774	9-27774	9-27837	10-27837
18-29645	18-29646			17-25240	17-27625	17-27774	17-27837
REPORT, REVIEW OF SAR				17-28544	17-28550	17-28646	
4-28760				SCRUBBER			
REPORT, SAR				7-28403	7-28417		
1-11229	4-28684	10-29639	11-28937	SEAL			
12-29639	12-29640	13-28532	15-29089	9-28551	17-25228	17-28541	17-28551
17-29089	18-11229	18-28532	18-28937	SEDIMENT			
18-28942	18-29089	18-29091	18-29637	14-27929	14-28021	14-28082	14-28083
18-29639	18-29640			15-27864	15-28082		
RESEARCH CONTRACT				SEISMOLOGY			
7-28513	14-28806			2-28165	14-27527	14-28165	14-28912
RESIN				15-27527			
14-29117				SEISMOLOGY, GENERAL			

14-28834				6-25945	6-28535	6-28536	
SEPARATOR				SOIL			
7-28419				14-26777	14-28807	14-28809	14-28810
SERVOMECHANISM				14-28812	14-28816	14-28832	14-28833
9-28895				14-28872	15-27864	15-27922	
SETPOINT				SOIL PROPERTY, IN SITU			
16-27713	18-27713			14-27926	14-29010		
SHELL				SOIL, NUCLIDE OCCUPRENEE			
11-29365	11-29367			14-29011	14-29012	14-29014	14-29114
SHIELDING				15-27922	15-29114		
1-28601	4-29169	6-28540	7-28400	SOIL, RADIONUCLIDE MOVEMENT THROUGH			
9-28540	9-28967	12-28152	13-28854	14-26124	14-26178	14-27926	14-28021
15-28032	15-29116	15-29138	17-28540	14-28574	14-28688	14-28815	14-28833
17-28583	17-28722	17-28854	17-28967	14-28836	14-29010	14-29014	15-28614
17-29138				SOL-GEL PROCESS			
SHIPPING ANALYSIS				13-24388			
9-28659	11-28659			SOLID STATE DEVICE			
SHIPPING CONTAINER				9-27508	9-27539	9-27540	9-27541
3-23229	3-28877	3-28878	3-28879	9-28820	9-28893	9-29161	
3-28882	3-28886	13-23229		SOLVENT EXTRACTION PROCESS			
SHIPPINGPORT (PWR)				3-23229	13-23229	13-27777	13-28026
6-27957	6-29369	9-27957	17-27629	13-28129	13-28136	13-28137	13-28139
17-28646	18-27957			13-28139	13-28140	13-28144	13-28151
SHOCK ABSORBER				13-28532	13-28630	13-29532	15-28673
9-28745	9-28775	9-28788		17-28129	18-28532		
SHUTDOWN COOLING SYSTEM				SORPTION			
12-25233	17-25233			7-25250	7-28491	14-26178	14-27926
SHUTDOWN MARGIN				14-27929	14-29021	14-28872	14-29032
6-27623	6-27905	6-28640	6-29569	15-27328	15-28080	15-28719	15-28915
9-26091	17-26091	17-27623	17-27905	15-29275			
17-28640	17-29569			SOURCE MATERIAL			
SHUTDOWN MECHANISM, SELF				1-25235	1-28855	3-28855	13-28857
9-29199				13-28858	15-28857	17-28557	17-29857
SHUTDOWN SYSTEM, SECONDARY				17-29858	18-25235		
9-28770	9-28790	9-28819	9-28991	SOURCE, CONTINUOUS			
17-28770	17-28991			1-28603	9-28603	15-28053	16-27713
SILICON				17-28603	19-27713		
4-25249	7-25244	7-25245	19-28512	SOURCE, ELEVATED			
SILVER				16-27812	16-27813		
7-28520	7-28522	15-29135		SOURCE, LINE			
SIMULATION				16-27813			
1-28020	1-29618	4-27952	7-25247	SOURCE, NEUTRON			
7-25252	9-27952	9-28754	9-28825	6-28840	6-28802	17-28640	17-28902
17-29618	18-29618			SOURCE, POINT			
SINGLE FAILURE CRITERION				14-26124	15-28053		
9-29643	10-29643	18-29643		SOURCE, RADIATION			
SINTERING				13-27723	15-28053	15-28079	15-28606
9-27537	9-27538	13-29532	14-28808	15-28679	15-29136	15-29138	17-28852
SITE CLIMATOLOGY				17-28853	17-29138		
14-28809	14-28810	14-28812	14-28835	SPACE DEPENDENT DYNAMICS			
16-28024	16-28594			6-28069	6-28095	5-28533	6-29801
SITE CRITERIA, EARTHQUAKE				6-29121	6-29369	17-28961	
14-28810				SPACECRAFT			
SITING, GENERAL				4-28466	4-28467	4-28468	4-29160
1-28019	1-28020	2-28164	2-28166	7-28466	7-29467	7-28468	14-29109
13-28166	14-28021	14-28433	14-29010	15-28086			
17-28433				SPAIN			
SITING, OFF SHORE				14-28834			
2-28164	2-28620	14-28620	17-27972	SPECIAL NUCLEAR MATERIAL			
18-28620				13-28848	13-28849	13-29854	13-28857
SITING, REACTOR				15-28848	15-28857	17-28849	17-28949
1-27784	2-25091	2-27738	2-27739	17-28854	17-28857		
5-27784	12-25091	15-28614	18-27784	SPECTROMETRY, GAMMA			
SITING, URBAN				9-28783	15-27863	15-27020	15-28713
2-27739				SPERT, ALL (S-PR)			
SITING, WASTE DISPOSAL				6-29088			
2-28165	14-28165	14-28866	14-28921	SPHERE			
SM 1A (PWR)				5-27563	5-27571	5-27965	5-28652
11-29357	11-29358	17-29357		5-28969	6-27965	8-27965	11-29267
SMOKE				SPRAY, GENERAL			
4-28051	15-28051			5-27572	7-28402	7-28410	7-28411
SNAP 2 (SR)				7-28421	7-28422	7-28423	7-28455
4-28758				7-28513	7-29517	12-28410	12-29517
SNAP 27 (SR)				13-29524			
15-28086				STACK			
SNAP, GENERAL (SR)				1-28603	7-28445	9-28603	15-27810
4-28467	4-28468	4-28684	4-28755	15-27864	15-28567	16-27713	16-27810
4-28760	7-28467	7-28469		16-27811	16-27962	16-28595	16-28735
SNOW				17-27810	17-28445	17-28603	18-27713
15-27922				STAFFING			
SODIUM				1-29618	17-29619	18-29619	
3-23229	4-25254	4-28457	4-28458	STATE PROGRAM			
4-28506	4-29401	5-27543	5-27552	17-28968			
5-27554	5-27806	5-27965	5-28648	STATISTICAL ANALYSIS			
5-28969	6-27965	6-28648	7-25254	9-22184	9-27511	9-29156	9-29164
7-28411	7-28412	7-28415	7-28448	9-29420	10-28107	10-28109	10-28597
7-29457	7-28458	7-28477	7-28506	14-29107	15-29136	15-29216	16-28024
8-27965	9-25177	9-27541	9-28749	STATISTICAL CORRELATION			
11-29401	12-29179	12-29533	13-23229	3-28853	9-29422	9-29424	14-29107
13-29100	15-28915			15-28725	15-29215		
SODIUM COEFFICIENT				STATISTICAL FLUCTUATION			

15-29136				15-28600	15-28696	15-28924	15-29110
STEAM				17-25239	17-28578	17-28582	17-28853
4-28457	5-27570	5-27749	5-29094	17-29362			
5-29390	6-29094	7-25234	7-25243	SURVEY, RADIATION, EMERGENCY			
7-25247	7-28430	7-28431	7-28452	1-27784	5-27784	14-27785	15-27785
7-28457	7-28519	7-28522	7-28525	17-27785	18-27784		
8-29094	9-28781	9-28823	12-28431	SURVEY, RADIATION, ENVIRONMENTAL			
13-25234	18-28794			14-28087	14-28693	14-28701	14-29111
STEAM GENERATOR				15-28087	15-28693	15-28701	15-28711
1-28603	7-28545	9-28603	17-28545	15-29224			
17-28603				SURVEY, RADIATION, GENERAL			
STEEL				15-28692			
1-29363	4-29401	11-28073	11-29075	SURVEY, RADIATION, USPHS			
11-28076	11-28077	11-28580	11-28937	15-28599	15-28600	15-28624	
11-29355	11-29356	11-29357	11-29358	SUTTON DIFFUSION FORMULA			
11-29359	11-29360	11-29361	11-29363	16-27811			
11-29364	11-29401	12-28077	12-29363	SWEDEN			
17-28580	17-29357	18-28937	19-28075	9-23172	9-28813	9-28898	14-23172
19-28076	19-28077			SWITZERLAND			
STEEL LINER				12-29173	14-28811		
11-28074	11-28075	19-28075		SYSTEM CAPABILITY			
STEEL, STAINLESS				5-28769	9-29643	10-29639	10-29643
4-29401	5-29094	6-29094	7-28413	12-28769	12-29639	18-28769	19-29639
7-28430	7-28462	7-28473	7-28474	18-29643			
7-28475	8-29094	11-29401	12-24796	SYSTEM DESCRIPTION			
12-28473	12-28474	12-28475	12-29528	4-29169	5-28639	5-29198	5-29606
12-29534	13-28144	13-29100	13-29530	7-29612	9-22530	9-23172	9-28039
17-25239	17-28556	17-28557		9-28106	9-28823	9-29198	10-22570
STOICHIOMETRY				10-28750	14-23172	5-28055	18-28639
5-29094	6-29094	8-29094		18-29606	18-29612		
STORAGE CONTAINER				TANTALUM			
3-28878	13-28946	14-28716	17-28543	4-25249	13-27723	15-28598	
17-28557	17-28646			TECHNETIUM			
STRATOSPHERE				17-28859			
14-28687	15-28687	15-28696	15-28699	TECHNICAL SPECIFICATIONS			
16-27964	16-28116			7-28596	9-26091	12-25233	13-28596
STRESS				14-28804	17-25233	17-26001	17-28546
1-29363	9-29162	11-29361	11-29363	17-28559	17-28596		
11-29365	12-29363	14-28866		TELLURIUM			
STRESS ANALYSIS				7-25251	7-28450		
5-27804	7-28477	7-28498	9-27518	TEMPERATURE COEFFICIENT			
11-27848	11-28073	11-28074	11-28075	6-28089	6-29417		
11-28076	11-28622	11-28937	18-27848	TEMPERATURE GRADIENT			
18-28622	18-28937	19-28075	19-28076	1-28047	5-27566	5-27715	7-25248
STRESS CORROSION				11-29362	12-29362	14-28047	17-29362
12-28729	17-28800			TEMPERATURE REACTIVITY EFFECT			
STRONTIUM				1-28019	1-28020	6-28666	6-28860
4-28467	4-28468	7-25251	7-28467	6-28876	9-28666	14-28803	17-28876
7-28458	14-24683	14-26178	14-26777	TEMPERATURE TRANSIENT			
14-27076	14-28621	14-28677	14-28682	5-27733	5-27735	5-28648	5-28651
14-28701	14-28703	14-28815	14-29011	5-28653	5-28969	5-29004	6-27774
14-29013	14-29110	14-29111	14-29114	6-28088	6-28648	6-29094	8-29094
14-29117	15-28115	15-28637	15-28673	9-27774	12-25233	17-25233	17-27774
15-28682	15-28692	15-28696	15-28701	TENSILE PROPERTY			
15-28708	15-28714	15-28915	15-29110	4-25253	4-29401	7-25253	11-29401
15-29114				TEST INTERVAL			
STRUCTURAL INTEGRITY				9-29425			
11-29356	11-29358	11-29634	16-29634	TEST, COMPONENT			
SUB FIDE				9-23184	9-27510	9-27618	9-27952
19-28512				9-28100	9-29150	10-28100	
SUPPORT STRUCTURE				TEST, CONTROL ROD DRIVE			
12-28626	14-28803			9-27953			
SURFACE CONTAMINATION				TEST, DESTRUCTIVE			
7-25250	7-28480	14-26178	14-27929	4-28757	11-29356		
14-28677	14-28682	14-28712	14-28873	TEST, DOP FILTER			
14-29113	14-29114	15-26769	15-27924	7-28401	7-28424	7-28425	7-28426
15-28063	15-28680	15-28682	15-28712	7-28426	7-28449	12-28424	12-28425
15-28864	15-29113	15-29114		12-28426	12-28436	17-28436	
SURFACE FILM DEPOSIT				TEST, FILTER			
6-27676	17-27626	17-27829		4-28427	7-28390	7-28401	7-28427
SURFACE TO VOLUME RATIO				7-28429	7-28430	7-28431	7-28455
7-28478	8-28478			7-28492	7-28510	7-28523	7-28525
SURFACE WATER, DISPOSAL MEDIA				7-28597	12-28427	12-28431	17-28597
14-28811				TEST, FILTER SYSTEM			
SURFACE WATER, GENERAL				4-28427	7-28402	7-28409	7-28410
14-27527	14-28611	15-27527	15-29924	7-28424	7-28427	7-28431	7-28447
17-28722				7-28517	12-28410	12-28424	12-28427
SURFACE WATER, NUCLIDE OCCURRENCE				12-28431	12-28447	12-28517	
14-28574	14-28701	14-28812	14-28873	TEST, INSTRUMENT RESPONSE			
14-28918	14-29010	14-29014	14-29032	6-27774	9-22693	9-27541	9-27774
14-29110	14-29117	15-27909	15-28578	9-27054	9-27956	9-27961	9-28749
15-28614	15-28683	15-28701	15-29110	9-28754	9-28820	9-28829	9-28893
17-28578				9-28905	9-29120	17-27774	17-28995
SURFACE, GENERAL				TEST, LEAK LOCATION			
5-29204				11-28077	12-28077	17-25232	19-28077
SURFACE, PAINTED				TEST, LEAK RATE			
7-25250	7-28420			9-28664	11-28077	11-29147	12-28077
SURVEILLANCE PROGRAM				12-25147	14-27627	17-25228	17-27627
11-28592	11-29355	11-29362	12-29362	19-28077			
13-27873	14-29110	14-29111	15-27910	TEST, NONDESTRUCTIVE			
15-28044	15-28045	15-28578	15-28599	1-29608	9-22530	9-28664	11-28075

11-29356	11-29608	17-29608	19-28075	TRAINING	1-27784	1-29565	1-29607	1-29618
TEST, ON LINE	9-27534	9-28814	12-27534		4-29151	5-27784	9-28771	9-29151
TEST, PHYSICS	6-27775	6-28801	6-28802		14-27785	15-27526	15-27785	15-27810
	9-29156	17-27775	17-28801		15-29607	16-27526	16-27713	16-27810
	17-28938		17-28802		17-17173	17-27526	17-27785	17-27810
TEST, PLANT RESPONSE					17-27972	17-28172	17-28173	17-28581
	4-28758	15-28612			17-28763	17-28771	17-29151	17-29565
TEST, PREOPERATIONAL					17-29607	17-29618	18-27713	18-27784
	4-28758				18-29618			
TEST, PRESSURE VESSEL					TRANSFER FUNCTION			
	11-28074	11-29359			5-28828	6-27906	6-28621	6-28801
TEST, PROOF					6-28822	6-29569	9-27512	9-27906
	11-28077	11-29356	12-28077	19-28077	9-28621	9-28754	9-28822	9-28828
TEST, SYSTEM OPERABILITY					17-27906	17-28621	17-28801	17-29569
	4-28758	9-22692	9-27534	9-28754	TRANSPORT PROPERTY			
	10-29610	12-27534	17-29610		5-27574	7-25242	14-27527	14-27786
TESTING					14-27929	14-28574	14-28712	15-27527
	4-25254	4-28758	4-29096	4-29401	15-27786	15-28712		
	7-25254	9-23184	9-27510	9-27534	TRANSPORT THEORY			
	9-27537	9-27538	9-28040	9-28664	6-28847	6-29621		
	11-29147	11-29401	12-24159	12-27529	TRANSPORTATION AND HANDLING			
	12-27534	12-28142	12-28729	12-28952	2-28166	3-28883	9-28659	11-28659
	12-29093	12-29147	13-27529	13-27530	13-28166	14-27919		
	13-28125	13-28142	13-28143	13-28144	TRANSURANIUM ELEMENT			
	13-20155	13-28730	13-28731	13-28946	7-28516	12-28516	19-28516	
	13-28952	13-28953	13-29093	14-28687	TRANSURANIUM PROGRAM			
	15-28044	15-28606	15-28687	15-28696	15-28054			
	15-28708	19-28040			TREAT (PRR)			
THALLIUM					5-27806	5-27965	5-28648	6-27965
	14-28815				6-28648	8-27965		
THEORETICAL INVESTIGATION					TRIGA (RR)			
	1-28163	5-27549	5-27567	5-27729	6-28540	6-28621	9-22536	9-27960
	5-27730	6-22560	6-27706	6-28036	9-28540	9-28621	17-25238	17-28540
	6-28057	6-28069	6-28163	6-28666	17-28621			
	6-28782	6-28822	6-28860	6-29119	TRITIUM			
	6-29121	7-28448	7-28481	7-28498	1-28560	7-28491	9-28925	11-28560
	7-28501	9-22475	9-22560	9-22693	14-27527	14-28579	14-28688	14-28826
	9-28036	9-28057	9-28163	9-28666	14-29033	15-27527	15-27609	15-27910
	9-28782	9-28822	9-29427	9-29430	15-27925	15-28579	15-28723	15-28925
	12-27531	12-28887	13-27531	13-28950	15-29220	16-28116	16-28579	17-28560
	15-28927				TROPOSPHERE			
THERMAL ANALYSIS					14-28687	15-28687	15-28696	15-28699
	4-27718	5-27718	5-27965	6-27965	TUBING			
	7-28501	8-27965	11-27971	12-27971	5-29007	7-27522	7-28520	
	12-28152	17-27971			TUNGSTEN			
THERMAL CONSIDERATION					4-25249	12-28142	13-28142	
	1-28019	1-28636	14-28807	14-28836	TURBINE			
	15-27328				12-28631	17-28544		
THERMAL EXPERIMENT					TURBULENCE, CONVECTIVE			
	3-28879	5-28648	6-28648		5-27715	5-28652		
THERMAL MECHANICAL EFFECT					TURBULENCE, MECHANICAL			
	5-27735				16-28735			
THERMAL NEUTRON					TURKEY POINT 3 AND 4 (PWR)			
	5-28913	6-28913	6-28953	7-27520	5-29094	6-29094	8-29094	
	7-27528	15-27916	15-28569	15-28928	UHTREX (GCF)			
	15-29213	17-28722			7-28424	12-28424		
THERMAL POLLUTION					UMRR (RR)			
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FOLLOWING IS A LIST OF AUTHORS WHOSE DOCUMENTS
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CROSBIE RE				7-28498		
6-28091				DRIVER GE		
CROUSE DJ				9-28827		
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6-28766				DUBROVIN KP		
CSNADY GT				12-29172		
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DUNCOMBE E		17-25237		
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9-29200		5-27572		
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GOLDMAN MI				14-28574			
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