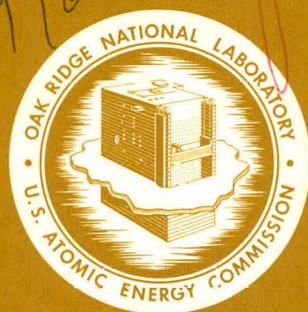


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## CATEGORY SCOPE NOTES

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

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

13. RADIOCHEMICAL PLANT SAFETY

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

14. RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

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

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

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

16. METEOROLOGICAL CONSIDERATIONS

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

17. OPERATIONAL SAFETY AND EXPERIENCE

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

18. SAFETY ANALYSIS AND DESIGN REPORTS

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

19. BIBLIOGRAPHIES

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

CATEGORY 1  
GENERAL SAFETY CRITERIA

1-17943 ALSO IN CATEGORY 17  
NOVICK S  
QUASI-SCIENTIFIC REPORTING OF FERMI FUEL MELTDOWN  
9 PAGES, 4 FIGURES, SCIENTIST AND CITIZEN 9(6), PAGE 98 THRU 104, (JUNE-JULY 1967)

WRITER ASSERTS THAT OPERATOR NOTICED NEUTRON FLUX OSCILLATION AT 20 MW, HAD OBSERVED IT MANY TIMES BEFORE AND OFTEN AT 3 PM, SWITCHED TO MANUAL CONTROL AND CONTINUED POWER INCREASE. POINTS OUT THAT THE ACCIDENT WAS A BIT WORSE THAN THE MCA... WAS NOT ONLY INCREDIBLE BUT MIGHT HAVE BEEN FAR WORSE. GLOSSARY - PPEEDER - A NUCLEAR REACTOR... IN THE FORM OF U-235. EXTREMELY SOPHISTICATED IN DESIGN. THOSE WHICH HAVE BEEN BUILT HAVE A HISTORY OF UNRELIABILITY.

AVAILABILITY - SCIENTISTS INSTITUTE FOR PUBLIC INFORMATION, 30 EAST 68TH STREET, NEW YORK, N.Y. 10021  
\*RADIATION, PUBLIC EDUCATION/ACCEPTANCE + CONTROLLER + FERMI (LMFER) + FUEL MELTDOWN + INCIDENT, GENERAL + REACTOR POWER + REACTOR, FAST

1-20637 ALSO IN CATEGORY 18  
SHUOPP WE  
NUCLEAR STANDARDS  
UNITED STATES ATOMIC ENERGY COMMISSION  
23 PAGES, NUCLEAR NEWS 10(11), PAGE 25-47, (NOVEMBER 1966)

DISCUSSIONS OF NUCLEAR-STANDARDS ACTIVITIES FROM THE VIEWPOINTS OF SEVERAL ORGANIZATIONS. (1) ANS - W. E. SHUOPP, R. G. CHALKER, AND ANN SAVOLAINEN, 12 PG. (2) USASI - F. K. MCCUNE AND MARY ELLIS, 3 PG. (3) AEC - J. T. RAINEY, M. SHAW, AND E. G. CASE, 8 PG. AEC STANDARDS ARE REGULATORY AND INCLUDE THOSE NOT NECESSARILY ASSOCIATED WITH NUCLEAR SAFETY BUT MORE WITH QUALITY CONTROL OR WITH ON-STREAM TIME.

\*CODES AND STANDARDS + OPERATING EXPERIENCE SUMMARY + REGULATION, AEC

1-21271 ALSO IN CATEGORY 15  
PROPOSED STANDARD. PROGRAM FOR TESTING BIOLOGICAL SHIELDING IN NUCLEAR REACTOR PLANTS  
AMERICAN NUCLEAR SOCIETY  
8 PAGES, 7 REFERENCES, NUCLEAR ENGINEERING BULLETIN, 5(1), (JULY 1967) ANS 6.1

THIS STANDARD DESCRIBES AN OPERATIONAL SHIELD-TESTING PROGRAM TO BE USED IN EVALUATING THE INSTALLED BIOLOGICAL SHIELDING IN NUCLEAR PLANTS. A GENERAL TESTING PROCEDURE IS OUTLINED, AND THE NECESSARY RADIATION MEASUREMENTS AND TYPES OF INSTRUMENTS ARE PRESCRIBED.

\*SHIELDING + CODES AND STANDARDS + REACTOR SAFETY SYSTEM + TESTING

1-21291 ALSO IN CATEGORY 1A  
DIABLO CANYON CONFORMANCE WITH PROPOSED GENERAL DESIGN CRITERIA  
PACIFIC GAS AND ELECTRIC COMPANY, SAN FRANCISCO, CALIF.  
8 PAGES, SEPTEMBER 8, 1967, DOCKET NO. 50-275, TYPE--PWR, MFG--WESI., At--PG+E

LISTS SIGNIFICANT PSAR (AND SUPPLEMENTS) CHAPTERS WHICH DEAL WITH EACH CRITERION OF JULY 1967.

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

\*AEC DESIGN CRITERIA + DIABLO CANYON (PWR) + REACTOR, PWR + REPORT, PSAR

1-21389  
HAYWOOD IR + ATKIN AM  
COSTS AND ECONOMICS OF HEAVY WATER MODERATED NUCLEAR PLANTS  
ATOMIC ENERGY OF CANADA LIMITED, CHALK RIVER, ONTARIO  
AECL-2946 + SM-99/36 + CONF-670913-5 +. 13 PAGES, 5 TABLES, 13 REFERENCES, SEPT. 1967, PRESENTED AT THE IAEA SYMPOSIUM ON HEAVY WATER POWER REACTORS, VIENNA, SEPT. 11-15, 1967

THE DEVELOPMENT OF HEAVY-WATER-MODERATED POWER REACTORS IN CANADA HAS INCLUDED STUDIES OF THREE COOLANT SYSTEMS - HEAVY WATER, LIGHT WATER, AND ORGANIC. ECONOMIC COMPARISONS DO NOT SHOW LARGE ADVANTAGES OF ONE SYSTEM OVER THE OTHER, BUT EACH OFFERS ITS OWN TECHNICAL AND OPERATIONAL ADVANTAGE. AS THE HEAVY-WATER-COOLED CONCEPT IS THE MOST ADVANCED TECHNICALLY, WITH PLANTS IN OPERATION, THIS SYSTEM IS USED TO SHOW DETAILS OF CAPITAL, FUEL, AND OPERATING COSTS. THE ECONOMIC ADVANTAGES AND DISADVANTAGES OF THE ALTERNATIVE COOLING SYSTEMS ARE DISCUSSED.

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

\*ECONOMIC STUDY + \*REACTOR, HWR + \*REACTOR, ORGANIC COOLED + \*REACTOR, WATER + CANADA

CATEGORY 1  
GENERAL SAFETY CRITERIA

1-21390

HOSTETLER DR + STEWART JE + HOLLAND CL + WOODS JJ  
THE EFFECTS OF SAFETY ON ECONOMICS IN A 1000-MW(E) LIQUID-METAL-COOLED FAST-BREEDER REACTOR (LMFBR)  
BABCOX AND WILCOX CO.  
1 PAGE, ANS TRANSACTIONS 10(2), PAGE 694, (JUNE 1967), PRESENTED AT THE 1967 WINTER MEETING OF THE  
AMERICAN NUCLEAR SOCIETY, CHICAGO, ILLINOIS, NOV. 5-9, 1967

IN A LIQUID-METAL-COOLED FAST-BREEDER REACTOR THERE EXISTS A TRADE-OFF BETWEEN CORE SAFETY AND ECONOMICS. RESULTS INDICATE THAT THE PRICE PAID FOR SPOILING (ANY FEATURE OF A CORE THAT IS INTRODUCED SPECIFICALLY TO IMPROVE CORE-SAFETY CHARACTERISTICS AT THE EXPENSE OF BREEDING RATIO, DOUBLING TIME, AND ECONOMICS) IS HIGH, AND THAT NEITHER THE PANCAKE NOR ANNULUS HAS A CLEAR-CUT ADVANTAGE FROM EITHER A FUEL-COST OR SAFETY STANDPOINT. A STRONG INCENTIVE THEREFORE EXISTS TO DEVELOP ENGINEERED SAFEGUARDS THAT WILL PERMIT REDUCED EMPHASIS ON SODIUM VOIDING IN CORE DESIGN.

\*ECONOMIC STUDY + \*REACTOR, BREEDER + \*REACTOR, FAST + \*REACTOR, LMC + \*SAFETY PROGRAM + DESIGN STUDY

1-21391

ROJAHN W + JACQUOT A  
THE OTTO HAHN, THE NUCLEAR POWER RESEARCH SHIP AND ITS IMPORTANCE FOR THE EUROPEAN COMMUNITY  
EUROPEAN ATOMIC ENERGY COMMUNITY  
8 PAGES, 6 FIGURES, ENERG. NUCL. (PARIS), 9, PAGE 173-180, (MAY 1967), IN FRENCH

DISCUSSES THE SIGNIFICANT PARTICIPATION OF EURATOM IN THE DEVELOPMENT OF MERCHANT MARITIME REACTORS, AS WELL AS THE JOINT FIELDS OF RESEARCH AND THEIR HARMONIOUS EXECUTION WITHIN THE EUROPEAN FRAMEWORK. THE NUCLEAR RESEARCH AND ORE-SHIP OTTO HAHN IS DESCRIBED IN DETAIL. IT WOULD APPEAR THAT COMMERCIALY COMPETITIVE NUCLEAR SHIPS COULD BE ATTAINED BY USE OF AN ADVANCED DESIGN REACTOR GENERATING 60,000 HP. EVEN THOUGH A MARKET FOR SHIP REACTORS CAN BE FORESEEN, DEVELOPMENT STILL DEPENDS ON PUBLIC FUNDS. THESE CONTRIBUTIONS COULD BE REDUCED, HOWEVER, BY JOINT ACTION OF INTERESTED SEGMENTS OF THE EUROPEAN COMMUNITY.

\*EURATOM + \*OTTO HAHN (PWR) + \*REACTOR, MARITIME + ECONOMICS

1-21392

USA STANDARD. QUALITY CONTROL FOR THE PLATE TYPE URANIUM ALUMINUM FUEL ELEMENTS  
AMERICAN NUCLEAR SOCIETY  
USAS N8.1-1967 +. 7 PAGES, 1 FIGURE, JANUARY 1967

THIS STANDARD OUTLINES THE MINIMUM QUALITY CONTROL (INCLUDING INSPECTION) REQUIREMENTS FOR THE MANUFACTURE OF THE PLATE-TYPE URANIUM-ALUMINUM FUEL ELEMENTS GENERALLY USED IN RESEARCH AND TEST REACTORS. THE FUEL ELEMENTS CONSIST OF FLAT OR CURVED PLATES OF A URANIUM-ALUMINUM ALLOY THAT IS CLAD WITH ALUMINUM. THIS STANDARD IS APPLICABLE TO FUEL ELEMENTS IN WHICH THE FUEL PLATES ARE MECHANICALLY FASTENED OR WELDED TO SIDE PLATES FOR STRUCTURAL RIGIDITY, BUT IT DOES NOT APPLY TO ELEMENTS IN WHICH THE FUEL PLATES ARE BRAZED TO THE SIDE PLATES.

AVAILABILITY - AMERICAN NUCLEAR SOCIETY, 244 E. OGDEN AVENUE, HINSDALE, ILLINOIS 60521, \$1.50 COPY

\*ALUMINUM + \*CODES AND STANDARDS + \*CORE, PLATE TYPE + \*FUEL ELEMENT + \*URANIUM + ALLOY + CLAD + QUALITY CONTROL + REACTOR, RESEARCH + REACTOR, TEST

1-21393

CRITICAL  
1 PAGE, NUCLEAR ENGINEERING 12(138), PAGE 807, (NOV. 1967)

A SMALL UTR-10 TEACHING REACTOR, SITUATED WITHIN FIVE MILES OF THE CENTER OF THE CITY OF LONDON AT THE QUEEN MARY COLLEGE'S MARSHGATE LANE SITE, WENT CRITICAL ON SEPTEMBER 26, 1967. THIS FACILITY, WITH A MAXIMUM POWER OF 50 KW FOR LIMITED PERIODS, WAS DESIGNED FOR REACTOR PHYSICS STUDIES, AND WILL ALSO BE USED IN ASSOCIATION WITH THE FIRST BRITISH DEGREE COURSE IN NUCLEAR ENGINEERING.

\*REACTOR PHYSICS + \*REACTOR, RESEARCH + \*REACTOR, TRAINING + \*SITING, URBAN + \*UNITED KINGDOM

1-21405

SEVENTH REPORT ON THE ACTIVITIES OF THE AGENCY  
EUROPEAN NUCLEAR ENERGY AGENCY, PARIS (FRANCE)  
NP-15919 +. 125 PAGES, DECEMBER 1965

REPORTS PROGRESS AND DEVELOPMENT OF COMPUTER-PROGRAM LIBRARY, INFORMATION AND DATA CENTERS, AND ESTABLISHMENT OF A COMMITTEE TO COLLATE AND DISSEMINATE INFORMATION ON REACTOR SAFETY. OTHER TOPICS INCLUDE REGULATION AND CONTROL IN FIELDS OF TRANSPORT OF RADIOACTIVE MATERIALS, WASTE DISPOSAL, AND RADIATION PROTECTION. PREDICTS INSTALLED NUCLEAR CAPACITY WILL EXPAND FROM PRESENT 4,400 MW(E) TO 12,000 BY 1970.

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

CATEGORY 1  
GENERAL SAFETY CRITERIA

1-21405 \*CONTINUED\*  
WISCONSIN 54669

ADMINISTRATIVE CONTROL + COMPUTER PROGRAM + ENEA + INFORMATION RETRIEVAL + RADIATION SAFETY AND CONTROL + REGULATION, GENERAL + TRANSPORTATION AND HANDLING + WASTE DISPOSAL, GENERAL

1-21669 ALSO IN CATEGORY 18  
PUBLIC ATTITUDES AFFECTING THE GROWTH OF ATOMIC POWER PLANTS IN CALIFORNIA  
OFFICE OF ATOMIC ENERGY DEVELOPMENT AND RADIATION PROTECTION, STATE OF CALIF., SACRAMENTO  
14 PAGES, DECEMBER 1967

A SUMMARY OF A SURVEY BY OPINION RESEARCH CORP. FOR CALIFORNIA OFFICE OF ATOMIC ENERGY DEVELOPMENT AND RADIATION PROTECTION. PAMPHLET COVERS OPINION IN SANTA MONICA, SAN LUIS OBISPO, AND SACRAMENTO, AS WELL AS A STATE-WIDE OPINION SAMPLE. THE MAIN RESULTS ARE - (1) THE GENERAL PUBLIC KNOWS LITTLE ABOUT THE NUCLEAR POWER INDUSTRY AND WANTS TO KNOW MORE, (2) ABOUT 3 TO 1 FOR NUCLEAR PLANTS NEAR THEM (SANTA MONICA, LESS THAN 2 TO 1), (3) IN ANSWER TO - ARE THERE ANY NUCLEAR POWER PLANTS IN CALIFORNIA NOW - 31%-YES, 23%-NO, AND 46%-DONT KNOW, (4) SUPPORT FOR POWER PLANT IN GENERAL AREA VARIED FROM 75% IN FAVOR, 13% DO NOT CARE, AND 7% OPPOSED AT SAN LUIS OBISPO, TO 37, 24, AND 24, RESPECTIVELY, AT SANTA MONICA, AND (5) MORE THAN 7 TO 1 FELT NUCLEAR PLANTS WERE LESS LIKELY TO CAUSE POWER FAILURE. GREATEST FEAR WAS RADIATION (17%), LESS THAN 1% WORRIED ABOUT EARTHQUAKE DAMAGE TO PLANTS.

AVAILABILITY - OFFICE OF ATOMIC ENERGY DEVELOPMENT AND RADIATION PROTECTION, SACRAMENTO, CALIFORNIA  
RADIATION, PUBLIC EDUCATION/ACCEPTANCE + REACTOR, POWER

1-21773 ALSO IN CATEGORIES 4 AND 19  
PUBLICATIONS OF LASL RESEARCH, 1966  
LOS ALAMOS SCIENTIFIC LAB., LOS ALAMOS, NEW MEXICO  
TID-24041 + MM-1144 +. 138 PAGES, SEPTEMBER 1967

PAPERS, REPORTS, BOOKS, JOURNAL ARTICLES, ETC., OF LASL PUBLISHED IN 1966 ARE LISTED ALPHABETICALLY BY AUTHOR UNDER 36 SUBJECT AREAS. INCLUDES DOCUMENTS ON AEROSPACE SAFETY, BIOLOGY AND MEDICINE, CHEMICAL KINETICS, HEALTH AND SAFETY, INSTRUMENTS, METALLURGY AND CERAMICS, REACTOR TECHNOLOGY, AND WASTE DISPOSAL.

\*BIBLIOGRAPHY + ACCIDENT, GENERAL + AEROSPACE SAFETY + BIOMEDICAL + DECONTAMINATION + DOSIMETRY, GENERAL + INSTRUMENTATION, GENERAL + WASTE DISPOSAL, GENERAL

1-21791 ALSO IN CATEGORY 14  
THERMAL POLLUTION CAUSED BY NUCLEAR POWER PLANTS  
4 PAGES, WATER RESOURCES NEWSLETTER 2(8), NOVEMBER 1967

HEARINGS ON THE THERMAL POLLUTION CAUSED BY NUCLEAR POWER PLANTS WERE ANNOUNCED BY THE SENATE PUBLIC WORKS SUBCOMMITTEE ON AIR AND WATER POLLUTION. THE HEARINGS WILL BE HELD IN NEW ENGLAND BECAUSE OF NUCLEAR POWER PLANTS PLANNED IN VERMONT AND IN MAINE. THE VERMONT PLANT AS PRESENTLY PLANNED WILL RAISE TEMPERATURE OF CONNECTICUT RIVER 15 TO 20 DEG AS IT FLOWS INTO MASSACHUSETTS.

\*HEAT SINK + \*THERMAL POLLUTION + \*WASTE DISPOSAL, GENERAL + REACTOR, POWER + RIVER, GENERAL + VERMONT YANKEE (BWR) + WASTE DISPOSAL, RIVER

1-21814 ALSO IN CATEGORY 17  
NUCLEONICS WEEK REPORTS RESULTS OF SURVEY COMPARING NUCLEAR AND NONNUCLEAR PLANTS  
2 PAGES, NUCLEONICS WEEK, PAGES 4-5 (JUNE 2, 1966)

(CONSUMERS POWER CO.) COVERS SHIPPINGPORT, DRESDEN, YANKEE, INDIAN POINT, BIG ROCK POINT, HUMBOLDT BAY, HALLAM, PIQUA, CVTR, AND FERMI FROM THE START OF OPERATIONS TO PRESENT, AND ALL THE CONVENTIONAL POWER STATIONS OF THE SAME COMPANIES. ACCIDENT RATES PER MILLION MAN-HOURS ARE LOST-TIME ACCIDENTS (NUCLEAR-2.96, NONNUCLEAR-4.14), MEDICAL CASES (58.4 VS 61.29), AND SEVERITY RATE IN DAYS LOST PER MILLION MAN HOURS (917.4 VS 738.9). WALKER SAYS THAT THE NUMBER OF EMPLOYEE RADIATION EXPOSURES ABOVE THE STATUTORY LIMIT CAN BE COUNTED ON ONE HAND.

\*INCIDENT COMPILATION + INCIDENT, GENERAL + INCIDENT, NONREACTOR + REACTOR, POWER

1-21900 ALSO IN CATEGORY 9  
PROPOSED STANDARD - CRITICALITY ACCIDENT ALARM SYSTEM  
AMERICAN NUCLEAR SOCIETY  
7 PAGES, NUCLEAR ENGINEERING BULLETIN 5(2), NOVEMBER 1967

THE USEFULNESS AND PROTECTIVE FEATURES OF CRITICALITY ALARM SYSTEMS HAVE BEEN DEMONSTRATED IN INSTANCES OF ACCIDENTAL CRITICALITY THAT HAVE OCCURRED DURING THE PROCESSING OF FISSIONABLE MATERIALS. THIS STANDARD PROVIDES GUIDANCE FOR THE ESTABLISHMENT AND MAINTENANCE OF AN ALARM SYSTEM TO INITIATE PERSONNEL EVACUATION IN THE EVENT OF ACCIDENTAL CRITICALITY. THIS STANDARD WAS PREPARED BY WORK-GROUP 5 OF SUBCOMMITTEE ANS-8 OF THE STANDARDS COMMITTEE OF THE



CATEGORY 1  
GENERAL SAFETY CRITERIA

1-21900 \*CONTINUED\*  
AMERICAN NUCLEAR SOCIETY.

AVAILABILITY - AMERICAN NUCLEAR SOCIETY, HINSDALE, ILLINOIS, \$1.50 COPY

ACCIDENT, CRITICALITY + CODES AND STANDARDS + CRITICALITY SAFETY + ENGINEERED SAFETY FEATURE +  
PROCEDURES AND MANUALS + RADIATION SAFETY AND CONTROL + REGULATION, GENERAL +  
SAFETY PRINCIPLES AND PHILOSOPHY

1-21985  
LASURTEGUI A  
SPANISH NUCLEAR LEGISLATION  
10 PAGES, ENERG. NUCL. (MADRID) 10, PAGE 509-518, (NOVEMBER-DECEMBER 1966), IN SPANISH

DESCRIBES CHRONOLOGICALLY THE SPANISH LEGISLATION ON NUCLEAR ENERGY WHICH BEGAN IN 1945. ALL ASPECTS OF THE LEGISLATION ARE DESCRIBED, E.G., REGULATION ON URANIUM MINING AND PROCESSING, LIABILITY REGARDING ACCIDENTS AT NUCLEAR PLANTS AND NUCLEAR POWERED VESSELS, SHIPMENT OF RADIOACTIVE MATERIAL, ETC. THE INTERNATIONAL AGREEMENTS REGARDING NUCLEAR ENERGY SIGNED BY SPAIN, AND MEMBERSHIP IN INTERNATIONAL ORGANIZATIONS, ARE ALSO GIVEN. A BRIEF DESCRIPTION OF THE ORGANIZATION OF THE JUNTA DE ENERGIA NUCLEAR AND OF NUCLEAR ENERGY TEACHING FACILITIES IN SPAIN ARE LISTED.

\*LAW + \*REGULATION, GENERAL + \*SPAIN + ACCIDENT, CONSEQUENCES + LIABILITY + MINING +  
TRANSPORTATION AND HANDLING

1-22143 ALSO IN CATEGORY 17  
DRL SAFETY EVALUATION OF NATIONAL BUREAU OF STANDARDS REACTOR  
USAEC DIVISION OF REACTOR LICENSING  
57 PAGES, DOCKET 50-184, AUGUST 14, 1967

CONCERNS THE 10-MWT CP-5 TYPE OF REACTOR (SINGLE LOOP, HEAVY WATER) AT GAITHERSBURG, MD. ITEMS OF INTEREST ARE - (A) ON-SITE METEOROLOGICAL TEST SHOWED THAT SITE DOES NOT DIFFER GREATLY FROM THAT AT WASHINGTON NATIONAL AIRPORT, WHERE THE DATA FOR METEOROLOGICAL EVALUATION WAS OBTAINED. (B) THE POSSIBILITY OF A SIGNIFICANT SPILL IS REMOTE, AND SOIL CONDITIONS ALLOW TIME FOR EMERGENCY MEASURES. (C) POPULATION INCREASE WAS LARGER THAN EXPECTED IN 1964. (D) ANALYSIS OF THE MAXIMUM POTENTIAL EARTHQUAKE (0.01 G) SHOWS THAT REINFORCED-CONCRETE CONFINEMENT BUILDING WOULD CRACK CONSIDERABLY BUT WOULD REMAIN INTACT AND RETAIN ITS CONFINEMENT CAPABILITY.

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

\*CONTAINMENT, LOW PRESSURE + \*METEOROLOGY + \*POPULATION DISTRIBUTION + EARTHQUAKE ENGINEERING +  
REACTOR, FLUX TRAP + REACTOR, HWR + REACTOR, RESEARCH + SAFETY EVALUATION + SITING, REACTOR + SOIL

1-22330  
JASKE RT  
AN EVALUATION OF THE USE OF SELECTIVE DISCHARGES FROM LAKE ROOSEVELT TO COOL THE COLUMBIA RIVER  
BATTELLE-NORTHWEST, RICHLAND, WASHINGTON  
BNWL-208 +. 87 PAGES, FIGURES, TABLES, 17 REFERENCES, FEBRUARY 1966

REVIEWS THE RESULTS OF AND THE GENERAL OPERATION OF THE ANNUAL COLUMBIA RIVER COOLING PROGRAM FOR 1963, 64, AND 65. VARIATIONS OF TEMPERATURE INTRODUCED BY UPSTREAM MANIPULATION OR ALTERATION OF THE NATURAL WATERCOURSE PERSIST AS FAR DOWNSTREAM AS THE HANFORD PLANT. ABOUT 85% OF THE TEMPERATURE ALTERATION, EITHER POSITIVE OR NEGATIVE, IS RETAINED, WITH A TENDENCY TOWARD VALUES OF 65% TO 75% AT LOWER FLOWS (LESS THAN 100,000 CU. FT/SEC). RESULTS REPORTED FOR PREVIOUS EFFECTS OF THE ANNUAL RIVER COOLING PROGRAM MAY HAVE BEEN OVERSTATED. A HIGH DEGREE OF INTEGRATION AMONG FLOOD CONTROL, POWER, AND COOLING-WATER USER INTERESTS IS REQUIRED TO MINIMIZE EFFECTS ON FISHERIES.

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

\*HANFORD SITE + \*THERMAL POLLUTION + BATTELLE NORTHWEST + ECOLOGICAL CONSIDERATION + REACTOR, PRODUCTION +  
RIVER, COLUMBIA

1-22458  
JASKE RT  
THE USE OF DIGITAL SYSTEMS MODELING IN THE EVALUATION OF REGIONAL WATER QUALITY INVOLVING SINGLE OR  
MULTIPLE RELEASES  
PACIFIC NORTHWEST LABORATORY  
BNWL-SA-1372 +. 22 PAGES, 10 FIGURES, 1 TABLE, AUGUST 1967, PRESENTED AT PROCEEDINGS OF AMERICAN  
INSTITUTE OF CHEMICAL ENGINEERS MEETING ON WATER POLLUTION ABATEMENT, NEW YORK, NOVEMBER 26-30, 1967

THE DEVELOPMENT OF A DIGITAL SIMULATION SYSTEM BASED ON THEORETICAL CHANNEL FLOW WAS SUCCESSFULLY ACCOMPLISHED AND USED IN A VARIETY OF CASES INVOLVING WIDELY DIVERGENT INPUT VARIABLES. THE RESULTING ACCURACY WAS WITHIN THE NORMAL CONFIDENCE BASED ON STATISTICAL TREATMENT OF EXTENDED DATA RECORDS. RIVER TEMPERATURES IN EXISTING SYSTEMS WERE SUCCESSFULLY MODELED TO WITHIN 0.25 C OVER A SIX-MONTH PERIOD.

CATEGORY 1  
GENERAL SAFETY CRITERIA

1-22458 \*CONTINUED\*  
AVAILABILITY - R. T. JASKE, PACIFIC NORTHWEST LAB.

\*THERMAL POLLUTION + BATTELLE NORTHWEST + COMPUTER PROGRAM + COMPUTER, DIGITAL + RIVER, COLUMBIA + RIVER, GENERAL

1-22459

JASKE RT

HEAT AS A POLLUTANT

GENERAL ELECTRIC, RICHLAND, WASH.

22 PAGES, 10 FIGURES, NOV. 11, 1964, PRESENTED AT SEMINAR PROCEEDINGS WATER QUALITY CONTROL FALL QUARTER - 1964, CONDUCTED BY OREGON STATE UNIVERSITY, WATER RESOURCES RESEARCH INSTITUTE, NOV. 11, 1964

DISCUSSES FOUR POINTS - (1) EFFECTS OF HEAT ON THE PLANNING AND JUSTIFICATION OF INDUSTRIAL PLANTS AND PROCESS CONDITIONS, (2) EFFECT OF TEMPERATURE ON THE COST, CHEMICAL TASTE AND ODOR, AND ESTHETIC FACTORS ON MUNICIPAL WATER SUPPLIES, (3) LEGAL ASPECTS OF STREAM REGULATION RELATED TO INCREASED THERMALISM, AND (4) IMPROVED DEFINITION OF TEMPERATURE AS A PARAMETER IN RESEARCH STUDIES OF EVERY NATURE.

\*THERMAL POLLUTION + BATTELLE NORTHWEST + RIVER, GENERAL + WATER, DRINKING + WATER, GENERAL

1-22500

GROUP SHELTER

U.S. DEPARTMENT OF AGRICULTURE

THIS IS A 10 MINUTE FILM REFERENCED ON PAGE 63 OF THE USAEC 16 MM FILM CATALOG FOR 1966-67, PRODUCED FOR THE USAEC CIVIL EFFECTS BRANCH BY THE U.S. DEPARTMENT OF AGRICULTURE, MOTION PICTURE SERVICE. FOR SALE BY THE PRODUCER, AT \$40.00 PER PRINT, INCLUDING SHIPPING CASE

A 10-MIN COLOR MOVIE DESCRIBING AN UNDERGROUND CORRUGATED-METAL ARCH SHELTER DESIGN FOR PROTECTION OF 100 PERSONS FOR TWO WEEKS OR MORE. DESIGN WAS BASED ON EXPERIENCE GAINED DURING 1957. EFFECTS TESTS AT NTS AND ON SUBSEQUENT STUDIES, IS DESCRIBED IN DETAIL IN CIVIL-EFFECTS TEST OPERATIONS REPORT CEX-58.7 - AEC GROUP SHELTER.

AVAILABILITY - AVAILABLE FOR LOAN (FREE) FROM USAEC HEADQUARTERS AND FIELD LIBRARIES. CLEARED FOR TELEVISION

FALLOUT + SHIELDING

1-22571

JASKE RT

THE USE OF A DIGITAL SIMULATION SYSTEM FOR THE MODELING AND PREDICTION OF WATER QUALITY

BATTELLE NORTHWEST

BNWL-SA-1141 A +. 10 PAGES, 4 FIGURES, PREPARED FOR PRESENTATION AT THE FOURTH INTERNATIONAL CONFERENCE ON WATER POLLUTION RESEARCH, PRAGUE, CZECHOSLOVAKIA, AUGUST 1962

SPECIAL RELEASES OF COOL WATER FROM LOWER LEVELS OF LAKE ROOSEVELT ARE MADE TO REDUCE THE TEMPERATURE OF THE COLUMBIA RIVER AT THE HANFORD PLANT. THE EVALUATION OF BENEFITS FROM THESE RELEASES HAS BEEN RENDERED INCREASINGLY DIFFICULT BY ADDITIONAL IMPOUNDMENTS ON THE RIVER BETWEEN GRAND COULEE DAM AND THE HANFORD PLANT. THE USE OF ELECTRONIC DATA PROCESSING AND OF A DIGITAL-COMPUTER SIMULATION SYSTEM PERMITTED OPERATIONS RESEARCH SUPPORTING THE PURPOSE OF OPTIMIZING THE USE OF SELECTIVE DISCHARGE FROM LAKE ROOSEVELT FOR REACTOR-PRODUCTION ENHANCEMENT AND PROTECTION OF FISHERIES.

AVAILABILITY - R. T. JASKE, BATTELLE MEMORIAL INSTITUTE, PACIFIC NORTHWEST LABORATORY, RICHLAND, WASHINGTON

\*COMPUTER, DIGITAL + \*DATA PROCESSING + \*THERMAL POLLUTION + BATTELLE NORTHWEST + ECOLOGICAL CONSIDERATION + HANFORD SITE + RIVER, COLUMBIA + SIMULATION

1-22706

JASKE RT + GUEBEL JB

EFFECTS OF DAM CONSTRUCTION ON TEMPERATURES OF COLUMBIA RIVER

BATTELLE NORTHWEST

7 PAGES, 4 TABLES, 3 FIGURES, 5 REFERENCES, J. AMERICAN WATER WORKS ASSC. 59(8), PAGES 935-942 (AUGUST 1967)

SINCE 1958, THE RICHLAND OPERATIONS OFFICE OF THE USAEC, WITH THE COOPERATION OF OTHER FEDERAL AGENCIES, HAS SPONSORED AN ANNUAL PROGRAM TO REDUCE THE TEMPERATURE OF THE COLUMBIA RIVER DURING LATE SUMMER. TO EVALUATE THE RESULTS OF THIS PROGRAM, A SYSTEM OF DATA COLLECTION POINTS WERE INSTALLED, WITH PARTICULAR EMPHASIS ON MEASUREMENT ACCURACY. THE FRICTION OF LOW-HEAD RESERVOIRS ON THE MAIN STEM OF THE COLUMBIA RIVER HAS NOT PRODUCED A SIGNIFICANT CHANGE IN THE AVERAGE RIVER TEMPERATURE. THE ERECTION OF GRAND COULEE DAM CREATED A 30-DAY DELAY IN THE TRANSPORT OF WATER THROUGH THE RESERVOIR SYSTEM. THE ERECTION OF DAMS AND RESERVOIRS DECREASES EXPECTED VARIANCE IN WATER TEMPERATURE.

\*HANFORD SITE + \*THERMAL POLLUTION + BATTELLE NORTHWEST + ECOLOGICAL CONSIDERATION + REACTOR, PRODUCTION + RIVER, COLUMBIA

CATEGORY 1  
GENERAL SAFETY CRITERIA

1-22799  
KAROLY R  
FUTURE PROBLEMS IN THE CONVERSION, TRANSPORTATION, AND STORAGE OF ENERGY. ELECTRICITY. NEW SYSTEM OF POWER GENERATION. NUCLEAR  
6 PAGES, 2 TABLES, ENFRGIA ES ATOMTECHNILSA 20, PAGE 249-254, (JUNE 1967), IN HUNGARIAN

DETAILED PAPERS DISCUSSING (IN HUNGARIAN) THE SAFETY AND ECONOMY OF NUCLEAR ENERGY ARE PRESENTED, INCLUDING A DETAILED REVIEW OF SOME REACTOR TYPES, THEIR SIZES, AND SEVERAL PROPERTIES. THE DEVELOPMENT OF BREEDERS FOR COUNTRIES WITH NO URANIUM SOURCES IS DISCUSSED. OTHER TOPICS PRESENTED ARE - REACTOR COSTS, SELECTION OF REACTOR TYPE (FUEL SUPPLY, EXPERIENCE OF COUNTRY, GEOLOGICAL WEALTH OF COUNTRY, DEMAND OF CAPITAL, COSTS OF ENERGY GENERATION, CONDITIONS OF PAYMENT, AND IMPORT DEMAND), SITING, HYDROLOGICAL CIRCUMSTANCES (COOLING WATER SUPPLY, AND WASTE REMOVAL), AND TRANSMISSION LINES (DISTANCE OF NETWORKS AND SECURITY ASPECTS). POWER GENERATION BY MAGNETOHYDRODYNAMIC GENERATORS IS ALSO DISCUSSED.

ECONOMICS + SITING, REACTOR

1-22819  
WIRTZ CB + RENN CE  
WATER TEMPERATURES AND AQUATIC LIFE  
JOHN HOPKINS UNIVERSITY, BALTIMORE, MD.  
EEI-65-901 +. 99 PAGES, 262 REFERENCES, JUNE 1, 1965

QUICK REFERENCE AND GUIDE FOR THOSE RESPONSIBLE FOR MAINTAINING FAVORABLE WATER QUALITY AS PART OF INDUSTRIAL OPERATIONS. DESIGNED TO EXAMINE EFFECTS OF CHANGES IN WATER TEMPERATURE UPON FISH LIFE AND UPON SMALL BOTTOM-LIVING ORGANISMS THAT ARE IMPORTANT IN THE FOOD ECONOMY OF FISH. DATA FROM THE REVIEW OF PERTINENT PAPERS IS ARRANGED, FOR VARIOUS TEMPERATURE RANGES, UNDER - EFFECTS OF EXPOSURE, COMPOUND STRESS EFFECTS, EFFECTS ON FEEDING AND GROWTH, EFFECTS ON REPRODUCTION AND DEVELOPMENT, EFFECTS ON MOVEMENT AND ACTIVITY, AND ENVIRONMENTAL CONDITIONS.

AVAILABILITY - EDISON ELECTRIC INSTITUTE, 750 THIRD AVENUE, NEW YORK, NEW YORK 10017, \$2.00 COPY

\*HEAT SINK + \*THERMAL POLLUTION + ESTUARY + OCEAN AND SEA + RIVER, GENERAL

1-22820  
EDINGER JE + GEYER JC  
HEAT EXCHANGE IN THE ENVIRONMENT  
JOHN HOPKINS UNIVERSITY, BALTIMORE, MD.  
EEI-65-902 +. 259 PAGES, TABLES, FIGURES, REFERENCES, JUNE 1, 1965

DEALS WITH THE PHYSICS OF HEAT-TRANSFER PHENOMENA OCCURRING IN SURFACE WATERS. IT IS DESIGNED TO ASSIST ENGINEERS AND SCIENTISTS IN CARRYING OUT TEMPERATURE COMPUTATIONS RELATED TO THE HEATING AND COOLING OF NATURAL WATERS. KNOWN PRINCIPLES OF METEOROLOGY, HYDRODYNAMICS, AND HEAT TRANSFER ARE USED TO DEVELOP GENERAL FORMULATIONS USEFUL IN THE PREDICTION OF TEMPERATURES OF INTEREST TO THE POWER INDUSTRY. SUBJECTS INCLUDE - THE STUDY OF HEATED WATER DISCHARGES, THE EXCHANGE OF HEAT BETWEEN WATER AND THE ATMOSPHERE, THE EQUILIBRIUM TEMPERATURE AND THE EXCHANGE COEFFICIENT, PROPERTIES OF THE HEAT-EXCHANGE FORMULA, ANALYSIS OF HEAT DISTRIBUTIONS, APPLICATIONS TO COOLING PONDS, APPLICATIONS TO RIVERS AND STREAMS, LAKES, AND RESERVOIRS, A STUDY OF A POWER PLANT DISCHARGE, AIR ANALYSIS OF A POWER PLANT DISCHARGE.

AVAILABILITY - EDISON ELECTRIC INSTITUTE, 750 THIRD AVENUE, NEW YORK, NEW YORK 10017, \$2.50 COPY

\*HEAT SINK + \*THERMAL POLLUTION + ESTUARY + OCEAN AND SEA + RIVER, GENERAL

1-22841 ALSO IN CATEGORY 17  
HADDAM NECK APPLIES FOR EXEMPTION FROM 10 CFR 20. 203(C)(2)--PHYSICAL CONTROL OF HIGH RADIATION AREAS  
CONNECTICUT YANKEE ATOMIC POWER COMPANY  
3 PAGES, JANUARY 3, 1968, DOCKET 50-213, TYPE--PWR, MFG--WEST., AE--STONE + WEBSTER

REQUESTS SUBSTITUTION OF PROCEDURAL AND PHYSICAL-ACCESS-CONTROL MEASURES AT ENTRANCES TO HIGH RADIATION AREAS IN LIEU OF VISIBLE OR AUDIBLE ALARMS. PHYSICAL CONTROLS INCLUDE BARRICADES AND SIGNS AT AREAS WITH RADIATION LEVELS IN EXCESS OF 0.1 R/HR, AND LOCKED WIRE MESH DOORS TO AREAS OF 1.0 R/HR. DETAILED PROCEDURAL CONTROLS ARE LISTED.

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

\*ADMINISTRATIVE CONTROL + \*RADIATION SAFETY AND CONTROL + HADDAM NECK (PWR) + HIGH RADIATION + REACTOR, PWR + REGULATION, AEC

1-22919  
JASKE RT  
A TEST SIMULATION OF THE TEMPERATURES OF THE DEERFIELD RIVER

CATEGORY 1  
GENERAL SAFETY CRITERIA

1-22919 \*CONTINUED\*  
BATTELLE NORTHWEST, RICHLAND, WASH.  
BNWL-628 +. 41 PAGES, 9 FIGURES, 3 TABLES, 6 REFERENCES, DECEMBER 1967

SUMMARIZES THE RESULTS OF A DIGITAL SIMULATION OF TEMPERATURES IN THE DEERFIELD RIVER DRAINAGE BASIN IN THE AREA OF THE YANKEE REACTOR PROJECT. STATISTICAL U TESTS PERFORMED FOR EACH SIMULATION RUN INDICATE THAT COMPUTED VALUES FOR MOST OF THE TIME PERIOD UNDER CONSIDERATION WERE LESS THAN ONE STANDARD DEVIATION OF THE OBSERVED VALUES, INDICATING A MINIMUM OF 68% CONFIDENCE IN THE ACCURACY OF THE CORRELATION.

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

\*THERMAL POLLUTION + BATTELLE NORTHWEST + REACTOR, POWER + RIVER, GENERAL + YANKEE (PWR)

1-22926  
CHRISTIAN SCIENCE MONITOR COMMENT ON PROPOSED AEC RULE CHANGES  
1 PAGE, CHRISTIAN SCIENCE MONITOR 60(9), PAGE 1, COLUMN 1, (DEC. 5, 1967)

(FIVE SHORT PARAGRAPHS IN FOCUS, ON NOV. 22, 1967, RESPECTING CHANGES TO 10 CFR 2, 50, 115) CHANGES MAY BE ROUGH ON PEOPLE WHO DO NOT WANT ATOMIC POWER PLANTS IN THEIR VICINITY. PROTESTS ABOUT WASTE-HEAT POLLUTION OF WATER WOULD NO LONGER BE HEARD BY AEC. OPPONENTS WOULD HAVE TO TAKE THEIR CASES ELSEWHERE, MOST LIKELY TO POLLUTION-CONTROL AUTHORITIES. PREHEARING CONFERENCES TO BE HELD IN WASHINGTON ARE EXPECTED TO MAKE IT MORE DIFFICULT FOR POORLY FINANCED LOCAL GROUPS TO ATTEND HEARINGS BECAUSE COSTS OF TRAVEL AND HOTEL MIGHT BE PROHIBITIVE.

\*RADIATION, PUBLIC EDUCATION/ACCEPTANCE + \*REGULATION, AEC + CONSTRUCTION PERMIT PROCESS + SITING, REACTOR + THERMAL POLLUTION

1-22927  
PROPOSED RULE MAKING FOR 10 CFR, 2, 50, 115  
6 PAGES, FEDERAL REGISTER 32(226), PAGE 16050-16053, (NOV. 22, 1967)

ISSUED FOR PUBLIC COMMENT ARE CERTAIN AMENDMENTS TO PRESENT RULES OF PRACTICE (BASED ON REGULATORY REVIEW PANEL RECOMMENDATIONS) INCLUDING - (2) INTERVENTION PETITIONS TO BE REASONABLY SPECIFIC AND TO BE DENIED IF NOT ON TIME OR OUTSIDE AEC JURISDICTION. (3) ASLB ALTERNATE MEMBERS. (4) PREHEARING CONFERENCE (TO EXCHANGE PREPARED TESTIMONY IN CONTESTED CASES) WILL BE HELD IN WASHINGTON, D. C. COMMISSION POLICY AND PRACTICE IS TO HOLD THE EVIDENTIARY HEARING IN THE VICINITY OF THE SITE OF THE PROPOSED FACILITY, TO GIVE 30 DAYS FEDERAL-REGISTER NOTICE, AND MAKE PUBLIC ANNOUNCEMENT OF (A) DATE AND PLACE FOR THE PROCEDURES TO APPEAR, (B) THE LOCATION NEAR THE SITE WHERE REPORTS ARE FILED. (5-13) DETAILS OF HEARING PROCEDURES. (1, 14, 15) NOTICE WILL BE ISSUED AT LEAST 30 DAYS BEFORE A PUBLIC HEARING.

\*RADIATION, PUBLIC EDUCATION/ACCEPTANCE + \*REGULATION, AEC + CONSTRUCTION PERMIT PROCESS + SITING, REACTOR + THERMAL POLLUTION

1-22941 ALSO IN CATEGORIES 3 AND 17  
BARCOCK AND WILCOX REPORTS PLUTONIUM NITRATE LEAKAGE FROM POLYETHYLENE BOTTLES  
BARCOCK AND WILCOX COMPANY  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 14(6), PAGE 8, (FEB. 5, 1968)

(LETTER, JAN. 17) ALTHOUGH NOT REPORTABLE UNDER 10 CFR 20, THIS IS AN EXAMPLE OF LEAKAGE AS IN YOUR HEALTH AND SAFETY BULLETIN 259, DEC. 21, 1967. ON JAN. 8, 1968, ROUTINE INSPECTION REVEALED A LEAK FROM A SMALL CRACK IN A 1-GAL POLYETHYLENE BOTTLE THAT PENETRATED THROUGH THREE 4-MIL-THICK POLYETHYLENE BAGS (TWO WITH POOR HEAT SEALS), DISSOLVED A 3-IN.-DIAM HOLE IN THE CARBON-STEEL SHELF, AND DRIPPED THROUGH TWO OTHER STEEL SHELVES. THE BOTTLE WAS QUITE STIFF, AND CRACK MAY HAVE BEEN CAUSED BY RADIOLYTIC GAS PRESSURE, RADIATION DAMAGE, OR OXIDATION. STAINLESS-STEEL SHELVING AND ACID-RESISTANT DRIP PANS ARE BEING CONSIDERED.

\*LEAK + \*STORAGE CONTAINER + INCIDENT, EQUIPMENT + NITRATE + PLASTICS + PLUTONIUM

1-22942 ALSO IN CATEGORY 17  
RUNYON D  
COULD WASHINGTON SURVIVE AN ATOMIC PLANT BLOWUP  
2 PAGES, FIGURES, THE WASHINGTON D.C. EXAMINER 1(14), PAGE 1 AND 16, (DECEMBER 7-10, 1967)

(FIRST PART.) BRIEF DISCUSSION OF THE OCT. 66 FERMI-PLANT FUEL MELTDOWN, THEN A REMINDER THAT THE PLANT CONTAINED ENOUGH U-235 TO MAKE 40 HIROSHIMA-SIZE ATOM BOMBS. REFERENCES TO LEO GOODMAN AND SCIENTISTS INSTITUTE FOR PUBLIC INFORMATION STATEMENTS - A 1957 AEC REPORT GUESSED THAT THE WORST RESULT OF A CRITICAL ACCIDENT WOULD BE THOUSANDS KILLED AND INJURED 45 MILES AWAY. (QUOTE) - THE ACCIDENT WAS A BIT WORSE THAN THE MCA... IT WAS ALSO UNFORSEEN, DESPITE ALL THE AEC'S HIGHLY TOUTED STUDIES ON THE PROBABILITY OF SUCH ACCIDENTS. OFFICIALS HAVE SINCE PUT OUT A STORY THAT THE FERMI PLANT WENT AWAY - DESPITE ALL THE AUTOMATIC CONTROLS AND BRAKES - BECAUSE A WORKER DROPPED A BRER CAN IN THE WORKS (UNQUOTE).

FERMI (LMFBR) + FUEL MELTDOWN + PROBABILITY + RADIATION, PUBLIC EDUCATION/ACCEPTANCE

CATEGORY 1  
GENERAL SAFETY CRITERIA

1-22943 ALSO IN CATEGORY 17  
RUNYON D  
INVISIBLE DEATH - POLLUTION OF THE ATOMIC AGE  
2 PAGES, FIGURES, THE WASHINGTON D. C. EXAMINER 1(15), PAGES 1 AND 8 (DECEMBER 14-17, 1967)

(SECOND OF THREE PARTS.) (QUOTE) ATOMIC POWER PLANTS GENERATE MORE CONTROVERSY THAN ELECTRICITY. THE DISPUTE OVER SAFETY IN ITSELF IS A MEASURE OF THE LACK OF KNOWLEDGE ABOUT THE INHERENT DANGERS (UNQUOTE). ARTICLE DISCUSSES FERMI AND WINDSCALE INCIDENTS, SHOWS PICTURE OF IRRADIATED AND UNIRRADIATED CHICKEN EMBRYOS. (QUOTE) THE FEDERAL GOVERNMENT QUICKLY WASHES ITS HANDS OF RESPONSIBILITY. FOR INSTANCE, RESPONSIBILITY FOR KEEPING NUCLEAR GARBAGE WAS FOISTED ON THE STATE OF NEW YORK (UNQUOTE). LEO GOODMAN HAS COMPILED A WEALTH OF ACTUAL MATERIAL - ATOMIC REACTOR ACCIDENTS (210), ATOMIC FATALITIES (129), AND ACCIDENTS INVOLVING RADIATION (968).

INCIDENT COMPILATION + RADIATION, PUBLIC EDUCATION/ACCEPTANCE

1-22944 ALSO IN CATEGORY 17  
RUNYON D  
ATOMIC ENERGY - IS IT WORTH IT  
2 PAGES, FIGURES, THE WASHINGTON D.C. EXAMINER 1(15), PAGES 8 AND 18, (DECEMBER 21-24, 1967)

(THIRD OF 3 PARTS.) ASSERTS THAT A NATIONAL FORTUNE OF BILLIONS WAS SPENT FOR 16 PLANTS THAT ARE SHAKY AT BEST OR TOTAL FAILURES. A \$120 MILLION PLANT PRODUCED ONLY \$330,000 WORTH OF ELECTRICITY BEFORE A MINOR ACCIDENT SHUT IT DOWN COMPLETELY. PIQUA CONTRACT WAS ENDED LAST WEDNESDAY AFTER TWO YEARS OF SHUTDOWN DUE TO TECHNICAL DIFFICULTIES IN THE REACTOR CORE. GOVERNMENT LOSS - \$24 MILLION. UMW ATTRIBUTED WIRTZ URANIUM-MINER LUNG-CANCER ACTION TO THIS SERIES IN THE EXAMINER. ILLUSTRATES EFFECTS OF RADIOACTIVITY WITH AEC PHOTO OF BONE DAMAGE TO RADIUM-WATCH-DIAL PAINTER, WHO TOUCHED BRUSH TO TIP OF TONGUE.

RADIATION, PUBLIC EDUCATION/ACCEPTANCE + RADIUM

1-22969 ALSO IN CATEGORY 17  
TOMS J  
NEW D. C. PAPER CRUSADES AGAINST NUCLEAR SCOURGE  
2 PAGES, 1 FIGURE, THE OAK RIDGE 20(12), PAGES 1 AND 4 (FEBRUARY 6, 1968)

(MEDILL NEWS SERVICE) DISCUSSES DEC. 7, 14, AND 21, 1967, ARTICLES IN D. C. EXAMINER BY DAMON RUNYON, JR., WHO ASSERTS THAT 200 U.S. REACTORS ARE POTENTIAL BOMBS. CITES WINDSCALE AND FERMI ACCIDENTS, AND CITES LEO GOODMAN AS COMPILING MUCH OF THE INFORMATION FROM AEC SOURCES. \*\*\* DISCUSSES AEC REPLY CITING THAT PUBLISHERS IGNORED FACTUAL ERRORS POINTED OUT AFTER FIRST ARTICLE, AND PROTESTING INACCURACIES AND DISTORTIONS. \*\*\* REP. JOHN ANDERSON, ON THE HOUSE FLOOR, STATES - (QUOTE) RARELY, IF EVER, HAVE I SEEN A MORE IRRESPONSIBLE PIECE OF JOURNALISM THAN THIS ARTICLE...PURE AND UNADULTERATED SENSATIONALISM. (UNQUOTE)

\*RADIATION, PUBLIC EDUCATION/ACCEPTANCE + FERMI (LMFBR) + INCIDENT, WINDSCALE

1-23145 ALSO IN CATEGORY 17  
ELK RIVER QUERIES AEC ON ITS RESPONSIBILITY FOR NUCLEAR SAFETY  
RURAL COOPERATIVE POWER ASSOCIATION  
3 PAGES, FEBRUARY 6, 1968, DOCKET 115-1, TYPE--BWR, MFG--A.C., AE--SGT + LUNDY

AEC-COO PROPOSES TO SUBSTITUTE A NEW CONTRACTOR (OVER THE OBJECTIONS OF RCPA) FOR NUS TO PERFORM TECHNICAL-SUPPORT CONSULTATION SURVEILLANCE IN THE AREA OF NUCLEAR REACTOR SAFETY. RCPA ASKS AEC TWO QUESTIONS - (1) DOES RCPA HAVE COMPLETE AND UNRESTRICTED RESPONSIBILITY TO CARRY OUT THE LICENSING AGENCY'S REQUIREMENTS FOR NUCLEAR REACTOR OPERATING SAFETY. (2) IF YOU DETERMINE THAT THE AUTHORIZED OPERATOR DOES NOT HAVE THIS RESPONSIBILITY, SHOULD NOT OPERATING AUTHORIZATION, TECH. SPECS., ETC., BE AMENDED TO ASSIGN THIS RESPONSIBILITY TO THE PARTIES WHOM YOU DETERMINE HAVE THIS AUTHORITY.

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

ADMINISTRATIVE CONTROL + ELK RIVER (BWR) + REACTOR, BWP + SAFETY REVIEW + TECHNICAL SPECIFICATIONS

1-23166  
MIRONE M + SANTASILIA F + COLLING F  
EXPERIMENTAL ASSESSMENT OF CORE PERFORMANCE UNDER NORMAL OPERATING CONDITIONS AND VERIFICATION OF SAFETY MARGINS AT INCREASED OUTPUT IN THE GARIGLIANO BWR POWER STATION.  
ENEL, ITALY  
1 PAGE, ENEA-(MISC), 5/902 (MAY 1966)

DESCRIBES THE OBJECTIVES OF A LONG-RANGE PHYSICS MEASUREMENT PROGRAM SET UP AT THE LATINA NUCLEAR POWER STATION. IMMEDIATE OBJECTIVE IS TO DETERMINE THE EVALUATION OF THE CORE REACTIVITY WITH IRRADIATION. PERIODIC MEASUREMENTS WILL BE MADE OF THE PARAMETERS WHICH AFFECT REACTOR SAFETY. THESE INCLUDE TEMPERATURE COEFFICIENTS OF FUEL AND MODERATOR,

CATEGORY 1  
GENERAL SAFETY CRITERIA

1-23166 \*CONTINUED\*  
CONTROL-ROD CALIBRATION, ABSORBER WORTH, REACTIVITY-BALANCE PARAMETERS, AND XENON-DECAY CHARACTERISTICS. OVERALL OBJECTIVE IS TO OBTAIN BEST POSSIBLE USE OF BOTH REACTOR AND FUEL.

\*MEASUREMENT, REACTIVITY + \*REACTOR, BWR + SENN

1-23168  
REYNOLDS AB + STEWART SL  
ANALYSIS OF THE SEFOR MOCKUP CRITICAL EXPERIMENTS IN ZPR-3  
GENERAL ELECTRIC CO., SUNNYVALE, CALIF.  
GEAP-5294 +. 54 PAGES, TABLES, REFERENCES, MARCH 1967

A DESCRIPTION OF THE RESULTS AND APPLICATIONS OF A SERIES OF CRITICAL EXPERIMENTS PERFORMED ON A MOCKUP OF SEFOR AT ZPR-3. CRITICAL MASS VALUES WERE DETERMINED FOR 1-, 2-, AND 3-SEGMENT FUEL DESIGNS. EFFECTIVENESS OF SEGMENTED FUEL IN REDUCING AXIAL EXPANSION REACTIVITY WAS DEMONSTRATED, AND RESULTS WERE AN IMPORTANT FACTOR IN SELECTION OF THE 2-SEGMENT DESIGN FOR SEFOR. MEASUREMENTS OF THE REACTIVITY WORTH OF THE RADIAL REFLECTOR ESTABLISHED THE ADEQUACY OF THE SEFOR REFLECTOR CONTROL SYSTEM. DOPPLER COEFFICIENTS WAS MEASURED. THE CALCULATED U-238 DOPPLER COEFFICIENT WAS IN AGREEMENT WITH EXPERIMENT. THE MEASURED PU-239 CONTRIBUTION TO THE SEFOR DOPPLER COEFFICIENT WAS NEAR ZERO. MAXIMUM POSITIVE REACTIVITY CAUSED BY LOSS OF SODIUM WAS MEASURED. THE MEASURED REACTIVITY WAS SMALL AND CLOSE TO THE CALCULATED VALUE. OTHER MEASUREMENTS MADE INCLUDED THE RATIO OF 1/BETA-EFFECTIVE, FISSION RATIOS, FISSION AND BORON TRAVERSES, AND PLUTONIUM WORTH DISTRIBUTION.

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

\*CRITICALITY EXPERIMENT + \*MEASUREMENT, REACTIVITY + \*SEFOR (RE) + COMPARISON, THEORY AND EXPERIENCE + CRITICAL ASSEMBLY FACILITY + DOPPLER COEFFICIENT + REACTIVITY EFFECT, EXPANSION + REACTOR, BREEDER + REACTOR, FAST + REACTOR, IMCR + SODIUM COEFFICIENT + ZPR 3 (CAF)

1-23308 ALSO IN CATEGORY 11  
NEW CONTAINMENT DESIGN LOWERS NUCLEAR PLANT CAPITAL COSTS  
WESTINGHOUSE CORPORATION  
2 PAGES, FIGURES. WESTINGHOUSE ENG., 27, PAGES 82-83 (MAY 1967)

A NEW CONCEPT IS DESCRIBED WHICH WILL DRASTICALLY REDUCE THE SIZE OF A NUCLEAR PLANT CONTAINMENT STRUCTURE. IT USES AN ICE BED TO SERVE AS A HEAT ABSORBER IN THE EVENT OF ACCIDENTAL RELEASE OF STEAM WITHIN THE CONTAINMENT STRUCTURE. ITS ADVANTAGES ARE - A SMALLER CONTAINMENT STRUCTURE, DESIGN FOR LOWER PRESSURES, WITH RESULTANT REDUCTION IN CAPITAL COSTS, RAPID ABSORPTION OF HEAT, AND A VIRTUALLY STATIC SYSTEM, WHICH CONTRIBUTES TO RELIABILITY. TESTS HAVE DEMONSTRATED THE EFFECTIVENESS OF THIS NEW CONTAINMENT CONCEPT AND HAVE CONFIRMED ENGINEERING ESTIMATES OF THE PERFORMANCE. THE ICE CONDENSER PERFORMS EQUALLY WELL OVER A WIDE RANGE OF CONDITIONS, INCLUDING A VARIETY OF ICE CONFIGURATIONS AND STEAM BLOWDOWN TIMES RANGING FROM 10 SEC TO 45 MIN.

\*CONTAINMENT DESIGN + \*CONTAINMENT, ICE CONDENSED + \*MODEL TESTING + ECONOMICS + MOCKUP

1-23376  
HOGERTON JF  
THE ARRIVAL OF NUCLEAR POWER  
11 PAGES, FIGURES, SCIENTIFIC AMERICAN 212(2), PAGES 21-31 (FEBRUARY 1968)

EXCELLENT BACKGROUND ARTICLE THAT DISCUSSES THE ECONOMIC AND PHILOSOPHICAL HISTORY OF THE SUCCESS OF NUCLEAR POWER IN THE US. PRESENTS STEP-WISE PROGRESS FROM 1942 TO 1968, INCLUDING THE FIRST PILES, PWRs, BWRs, THE HTGR, AND BREEDERS. ACTIVITIES OF THE COAL INTERESTS ARE BROUGHT OUT, TOGETHER WITH THE GROWING POPULAR INTEREST IN CLEAN AIR AND THE INCIPIENT PROBLEMS OF THERMAL POLLUTION.

\*ECONOMIC STUDY + \*REACTOR, POWER + \*PREVIEW + REACTOR, BREEDER + REACTOR, BWR + REACTOR, GCR + REACTOR, PWR

1-23391 ALSO IN CATEGORY 4  
MCALEVY RF + MAGEE RS  
A CRITERION FOR SPACE CAPSULE FIRE HAZARD MINIMIZATION  
STEVENS INSTITUTE OF TECHNOLOGY, HOBOKEN, N. J.  
1 PAGE, JOURNAL OF SPACECRAFT ROCKETS 4(10), PAGE 1390 (OCTOBER 1967)

STEVENS INSTITUTE IS ENGAGED IN A FUNDAMENTAL STUDY OF THE MECHANISM OF FLAME SPREADING OVER THE SURFACE OF IGNITING SOLID MATERIALS. RESULTS HAVE BEEN PRODUCED THAT HAVE IMPLICATIONS CONCERNING THE FIRE HAZARD ASSOCIATED WITH OXYGEN-RICH ENVIRONMENTS. AS A CONSEQUENCE OF THE SUBJECT PROGRAM, A RATIONAL BASIS FOR THE SELECTION OF MANNED CAPSULE ENVIRONMENTS HAS EMERGED FOR MINIMIZATION OF THE RATE OF FLAME SPREADING AFTER ACCIDENTAL IGNITION.

\*FIRE + \*IGNITION + \*OXYGEN + AEROSPACE SAFETY + SPACECRAFT

CATEGORY 1  
GENERAL SAFETY CRITERIA

1-23443 ALSO IN CATEGORY 6  
 DUBOVSKII BG + KAMAIEV AV + KUZNETSOV FM  
 CRITICAL PARAMETERS OF FISSIONABLE MATERIALS SYSTEMS AND NUCLEAR SAFETY (A HANDBOOK)  
 JPRS 42,322 + TT-67-32951 +: 173 PAGES, AUGUST 23, 1967, TRANSLATED FROM PP 1-226 OF KRITICHESKIE  
 PARAMETRY SISTEM S DELYASHCHIMISIYA VESHCHESTVAMI I YADERNAYA BEZOPASNOST, ATOMIC PUBLISHING HOUSE,  
 MOSCOW, 1966

ARTICLES IN THIS HANDBOOK ARE - (1) BASIC CONCEPTS OF NUCLEAR SAFETY, (2) METHODS OF DESIGNING  
 HOMOGENEOUS REACTORS, (3) CRITICALITY OF SYSTEMS OF INTERACTING SUBCRITICAL ASSEMBLIES OF  
 FISSIONABLE MATERIALS, AND (4) BASIC NORMS FOR ENSURING NUCLEAR SAFETY.

CRITICALITY SAFETY + DESIGN CRITERIA + REACTOR SAFETY SYSTEM + SAFETY ANALYSIS

1-23699 ALSO IN CATEGORY 11  
 LIBERT + BARNETT RL  
 FINAL REPORT. AN EXPERIMENTAL INVESTIGATION OF FRANGIBLE PLATE FRAGMENTATION  
 IIT RESEARCH INSTITUTE, TECHNOLOGY CENTER, CHICAGO, ILLINOIS  
 IITRI-M-6095 +. 99 PAGES, FIGURES, TABLES, 9 REFERENCES, OCT. 1966

DISCUSSES THE EFFECTS OF BLASTS (POSSIBLY FROM NUCLEAR DETONATIONS) ON PLATES. OF CONCERN ARE  
 STRUCTURAL DEBRIS AND PERSONNEL PROTECTION. EMPHASIS IS ON DYNAMIC LOADING AND TESTING FOR  
 PREDICTABLE CRACK PATTERNS.

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

CIVIL DEFENSE + MISSILE GENERATION AND PROTECTION + SHIELDING + STRESS ANALYSIS

1-23921  
 MORRISON DL  
 RESEARCH ON THE SAFETY OF NUCLEAR POWER REACTORS  
 BATTELLE MEMORIAL INSTITUTE  
 7 PAGES, 4 FIGURES, 7 REFERENCES, BATTELLE TECH. REV., 16, PAGE 3-9, (SEPT. 1967)

RESEARCH IN AREAS RELATIVE TO POWER-REACTOR SAFETY PROVIDED CONSIDERABLE INSIGHT INTO THE  
 PROBLEMS THAT MAY BE ENCOUNTERED IN THE UNLIKELY EVENT OF A MAJOR ACCIDENT. WITHIN CURRENT  
 UNDERSTANDING OF THE PROBLEMS, EFFECTIVE MEANS FOR COUNTERACTING THE ACCIDENT HAVE BEEN  
 DEvised, AND APPROACHES THAT SHOULD LEAD TO A REDUCTION IN THE PROBABILITY OF OCCURRENCE OF  
 THE ACCIDENT ARE BEING FOLLOWED. HOWEVER, IN VIEW OF THE POTENTIAL CONSEQUENCES, ADDITIONAL  
 UNDERSTANDING OF THE POSSIBLE ACCIDENT IS BEING SOUGHT THROUGH CONTINUING RESEARCH EFFORTS.

\*SAFETY ANALYSIS + \*SAFETY PRINCIPLES AND PHILOSOPHY + \*SAFETY PROGRAM + BMI + REACTOR, BWR + REACTOR, PWR

1-23923  
 MIALKI VW  
 75 YEARS OF REACTOR SAFETY  
 5 PAGES, 5 FIGURES, 3 TABLES, 9 REFERENCES, ATOMWIRTSCHAFT (12), PAGE 573-577, (DECEMBER 1967) IN GERMAN

PROTECTION FROM RADIATION IS THE MAIN ASPECT OF REACTOR SAFETY. BUT THERE ARE ALSO ECONOMIC  
 INTERESTS, WHICH PARTICULARLY CONCERN MANUFACTURERS, OPERATORS, AND INSURERS OF NUCLEAR  
 ENERGY INSTALLATIONS, WHOSE SIGNIFICANCE IS CONSIDERABLY INCREASING WITH THE RAPID GROWTH IN  
 THE UTILIZATION OF NUCLEAR ENERGY. ATTEMPTS HAVE BEEN MADE TO DERIVE JUSTIFIABLE PREDICTIONS  
 OF THE RELIABILITY OF NUCLEAR POWER STATIONS AND THEIR COMPONENTS BY MODEL CONCEPTIONS AND  
 SYSTEM ANALYSES. IT IS NECESSARY FOR THIS PURPOSE TO FIND OUT THE CAUSES OF FAILURES, I.E.,  
 TO UNDERTAKE AN EVALUATION OF PARTICULAR CASES OF DAMAGE AND THEIR REACTION ON THE OPERATION  
 OF THE INSTALLATION.

\*SAFETY PRINCIPLES AND PHILOSOPHY + \*SAFETY REVIEW + GERMANY

1-23926 ALSO IN CATEGORIES 7 AND 11  
 COTTRELL WB  
 ORNL NUCLEAR SAFETY RESEARCH AND DEVELOPMENT PROGRAM BIMONTHLY REPORT FOR NOVEMBER-DECEMBER 1967  
 OAK RIDGE NATIONAL LAB., TENN.  
 ORNL-TM-2095 +. 137 PAGES, FIGURES, TABLES, REFERENCES, FEB. 1968

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

CATEGORY 1  
GENERAL SAFETY CRITERIA

1-23926 \*CONTINUED\*

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

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

\*CHEMICAL KINETICS + \*CONTAINMENT, GENERAL + \*CSE + \*FISSION PRODUCT RETENTION + \*FISSION PRODUCT TRANSPORT + \*FISSION PRODUCT, AIRBORNE + \*IMPACT PROPERTY + \*IN PILE EXPERIMENT + \*LOFT (S-RR) + \*NOZZLE + \*OUT OF PILE LOOPS AND EXPERIMENTS + \*REACTOR, HTGR + \*STEEL + CONTAINMENT SPRAY + FISSION PRODUCT RELEASE, GENERAL + PRESSURE VESSEL



CATEGORY 2  
SITING OF NUCLEAR FACILITIES

2-20627  
SCHEIDEGGER AE  
TECTONICS OF THE ARCTIC SEISMIC BELT IN THE HEIGHT OF FAULT-PLANE SOLUTIONS OF EARTHQUAKES  
5 PAGES, BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA 56(1), PAGE 241-245, (FEBRUARY 1966)

A STATISTICAL METHOD DEvised EARLIER BY THE WRITER FOR THE TECTONIC INTERPRETATION OF FAULT-PLANE SOLUTIONS OF EARTHQUAKES IS APPLIED TO FAULT-PLANE SOLUTIONS OF ARCTIC EARTHQUAKES WHICH WERE RECENTLY PUBLISHED IN RUSSIA. IT IS SHOWN THAT THE EARTHQUAKES ON THE GREENLAND SIDE OF THE ARCTIC SEISMIC BELT REPRESENT THE SAME TECTONIC PATTERN AS SEEN ON THE MID-ATLANTIC RIDGE, WHEREAS THE EARTHQUAKES ON THE SIBERIAN SIDE ARE TECTONICALLY CONNECTED WITH THE VERK HOGAN RANGE.

\*TECTONICS + EARTHQUAKE PREDICTION + EARTHQUAKE RECORDS + EARTHQUAKE, GENERAL + SEISMIC ZONE + SOURCE MECHANISM

2-20634  
KASAHARA K + OKADA A  
ELECTRO-OPTICAL MEASUREMENT OF HORIZONTAL STRAINS ACCUMULATING IN THE SWARM EARTHQUAKE AREA  
EARTHQUAKE RESEARCH INSTITUTE  
16 PAGES, BULLETIN OF THE EARTHQUAKE RESEARCH INSTITUTE 44, PAGE 335-350, (1966)

SINCE OCTOBER 1965, THE AUTHORS REPEATED GEODIMETER SURVEYS FOR A BASE-LINE NET IN MATSUSHIRO AND OBSERVED HORIZONTAL STRAIN ACCUMULATION SUCCESSFULLY. THE FOLLOWING CONCLUSIONS WERE DRAWN - (1) STRAIN, WHICH PREDOMINATES IN THE NS-DIRECTION, ACCUMULATED MOST ACTIVELY DURING THE PERIOD OF NOVEMBER-DECEMBER 1965. MODE OF THE STRAINS AS REPRESENTED BY THE PRINCIPAL AXES HARMONIZES SURPRISINGLY WELL WITH THE SEISMIC FORCE SYSTEM THERE. (2) ACCUMULATED STRAIN ENERGY REACHED AN AMOUNT COMPARABLE TO THAT OF SEISMIC ENERGY. THESE SORTS OF INFORMATION SEEM TO SUGGEST AN INSEPARABLE RELATIONSHIP OF THE EARTH'S STRAIN TO THE SEISMIC ACTIVITY.

\*TECTONICS + EARTHQUAKE PREDICTION + EARTHQUAKE, GENERAL + INSTRUMENTATION, EARTHQUAKE + SEISMIC ZONE + SOURCE MECHANISM

2-20635  
RIKITAKE T + YAMAZAKI Y + HAGIWARA Y + KAWADA K + SAWADA M + SASAI Y + WATANABE T + MOMOSE K + YOSHINO T + OTANI K + OZAWA K + SANZAI Y  
GEOMAGNETIC AND GEoeLECTRIC STUDIES OF THE MATSUSHIRO EARTHQUAKE SWARM  
EARTHQUAKE RESEARCH INSTITUTE  
46 PAGES, BULLETIN OF THE EARTHQUAKE RESEARCH INSTITUTE 44, PAGE 363-408, (1966)

OBSERVATIONS OF CHANGES IN THE GEOMAGNETIC FIELD BY A PROTON PRECESSION MAGNETOMETER AND A SECOND-ORDER G.S.I. MAGNETOMETER WERE CARRIED OUT AT STATIONS IN THE MATSUSHIRO EARTHQUAKE AREA WHERE WE HAD AN EARTHQUAKE SWARM IN 1965. TWO SERIES OF MAGNETIC SURVEY AS WELL AS AN EARTH-CURRENT OBSERVATION WERE ALSO CONDUCTED THERE. A STRONG MAGNETIC ANOMALY ASSOCIATED WITH A VOLCANIC DOME CALLED MT. MINAKAMIYAMA WAS FOUND. COMPARISONS BETWEEN THE RESULTS OF MAGNETIC OBSERVATION THERE AND THOSE AT THE KANOZAN GEODETIC OBSERVATORY AND AT THE OSHIMA MAGNETIC OBSERVATORY SEEM TO SUGGEST OCCURRENCES OF LOCAL ANOMALOUS CHANGES IN THE GEOMAGNETIC FIELD OF THE ORDER OF 10 GAMMA THAT MIGHT BE ASSOCIATED WITH SEISMIC ACTIVITIES, ALTHOUGH ELIMINATION OF GENERAL MAGNETIC CHANGES SUCH AS MAGNETIC STORM, DAILY VARIATION, AND THE LIKE WAS NOT QUITE COMPLETE. AN ANOMALOUS CHANGE IN EARTH-CURRENTS WAS ALSO OBSERVED AT THE TIME OF A RELATIVELY LARGE EARTHQUAKE.

\*INSTRUMENTATION, EARTHQUAKE + EARTHQUAKE PREDICTION + EARTHQUAKE, GENERAL + SEISMIC ZONE + TECTONICS

2-20636  
RIKITAKE T + YAMAZAKI Y + HAGIWARA Y + KAWADA K + SAWADA M + SASAI Y + YOSHINO T  
GEOMAGNETIC AND GEoeLECTRIC STUDIES OF THE MATSUSHIRO EARTHQUAKE SWARM  
EARTHQUAKE RESEARCH INSTITUTE  
10 PP., BULLETIN OF THE EARTHQUAKE RESEARCH INSTITUTE 44, P. 409-418, (1966)

CHANGES IN THE GEOMAGNETIC TOTAL INTENSITY AT A STATION IN THE MATSUSHIRO EARTHQUAKE AREA WERE EXAMINED. THE OBSERVATION BY A PROTON PRECESSION MAGNETOMETER MAKES IT CLEAR THAT THE TOTAL INTENSITY THERE DECREASED BY A FEW GAMMAS DURING A PERIOD FROM NOV. 1965 TO FEB. 1966. A NUMBER OF SHORT-TERM FLUCTUATIONS IN THE TOTAL INTENSITY THAT MIGHT BE RELATED TO SEISMIC ACTIVITY ARE ALSO OBSERVED.

EARTHQUAKE PREDICTION + EARTHQUAKE, GENERAL + INSTRUMENTATION, EARTHQUAKE + SEISMIC ZONE + TECTONICS

2-20661  
WYSS M + BRUNE JN  
THE ALASKA EARTHQUAKE OF 28 MARCH 1964. A COMPLEX MULTIPLE RUPTURE  
7 PAGES, BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA 57(5), PAGE 1017-1023, (OCTOBER 1967)

THE SEISMOGRAMS OF THE ALASKAN EARTHQUAKE OF 28 MARCH 1964 ARE CHARACTERIZED BY MULTIPLE

CATEGORY 2  
SITING OF NUCLEAR FACILITIES

2-20661 \*CONTINUED\*

P-PHASES NOT PREDICTED BY THE TRAVEL-TIME CURVES. SEISMOGRAMS WITH LOW MAGNIFICATIONS FROM 80 STATIONS COVERING DISTANCES FROM 40 TO 90 DEG AND A WIDE RANGE OF AZIMUTHS WERE ANALYZED. THE CHARACTER OF THE P-WAVE PORTION OF THE SEISMOGRAMS IS INTERPRETED IN TERMS OF AN APPROXIMATE MULTIPLE-EVENT SOURCE MECHANISM WHERE THE PROPAGATING RUPTURE TRIGGERS LARGER DISTINCT EVENTS. SIX EVENTS WERE LOCATED USING THE GUTENBERG SINE-CURVE METHOD. THE TIMES AFTER THE INITIAL ORIGIN TIME WERE 9, 19, 28, 29, 44, AND 72 SEC, RESPECTIVELY, AND THE EVENTS WERE LOCATED 35, 66, 89, 93, 165, AND 250 KM AWAY FROM THE INITIAL EPICENTER. DIVIDING THE DISTANCE BY THE DELAY-TIME GIVES AN AVERAGE RUPTURE VELOCITY OF 3.5 KM/SEC.

EARTHQUAKE RECORDS + EARTHQUAKE, GENERAL + FAULT + SEISMOLOGY + SOURCE MECHANISM + TECTONICS

2-20729

ULLMANN W + MAAZ R

A QUANTITATIVE INTERPRETATION OF SEISMICITY AND SEISMIC ACTIVITY  
4 PAGES, 16 REFERENCES, GEOPHYSICAL J. 13 (1-3) PAGE 363-366, (JULY 1967)

A NEW METHOD FOR COMPUTING SEISMICITY WAS WORKED OUT, AND THE CONCEPT SEISMIC ACTIVITY WAS MATHEMATICALLY FORMULATED AS AN ENLARGEMENT OF SEISMICITY. FOR COMPUTATION OF SEISMIC ACTIVITY, A MATHEMATICAL REPRESENTATION OF THE ENERGY DENSITY FUNCTION OF AN EARTHQUAKE IS NEEDED. FOR THIS UNDER THE SIMPLEST SUPPOSITIONS, A HEURISTIC FUNCTION WAS CONSTRUCTED. THE MODIFICATION OF THE DEFINITION OF SEISMICITY BY USING THIS FUNCTION CAUSES AN INCREASE IN THE DEGREE OF PHYSICAL INFORMATION OF SEISMICITY.

\*EARTHQUAKE PREDICTION + EARTHQUAKE, GENERAL + ENERGY LEVEL + MATHEMATICAL STUDY + SEISMIC ZONE

2-20863

ALSO IN CATEGORY 18

SECTION I. ADDITIONAL INFORMATION ON TSUNAMIS  
PACIFIC GAS AND ELECTRIC COMPANY

55 PAGES, 18 FIGURES, 5 TABLES, 4 REFERENCES, PAGE 1-20 OF AMENDMENT 5, TO THE LICENSE APPLICATION, (FOURTH SUPPLEMENT TO DIABLO CANYON PRELIMINARY SAFETY ANALYSIS REPORT), SECTION 4, OCTOBER 19, 1967, DOCKET NO. 50-275, TYPE--PWR, MFG--WEST., AE--PG+E

SECTION I INCLUDES - (A) SUPPLEMENTARY REPORT ON TSUNAMI STUDIES, BY MARINE ADVISERS, INC. GIVES RESULTS OF A STUDY (IN RESPONSE TO AEC QUESTIONS) ON TSUNAMIS RECENTLY RECORDED IN THE PACIFIC, AND DISCUSSES POSSIBILITY OF A LARGE TSUNAMI AND WAVE RUNUP AT DIABLO CANYON. (B) 2 BULLETINS (A DEEP OFF THE COAST OF MEXICO AND CENTRAL AMERICA, AND SEISMIC ACTIVITY IN MEXICO DURING JUNE 1932). (C) REPORT BY R. E. HOUTZ ON THE 1953 SUVA TSUNAMI. (D) REPORT ON 1918 RUSSIAN TSUNAMI. (E) 2ND SUPPLEMENT TO REPORT ON TSUNAMI POTENTIAL AT DIABLO CANYON (REFRACTION OF APPROACHING TSUNAMI).

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

\*TSUNAMI + DIABLO CANYON (PWR) + EARTHQUAKE + REACTOR, PWR + REPORT, PSAR + SITING, REACTOR

2-20954

ALSO IN CATEGORY 18

APPENDIX A. PLANT SITE GEOLOGY  
PACIFIC GAS AND ELECTRIC COMPANY

14 PAGES, 1 FIGURE, PAGES 1-13 OF AMENDMENT 3 TO THE LICENSE APPLICATION (THIRD SUPPLEMENT TO DIABLO CANYON PRELIMINARY SAFETY ANALYSIS REPORT), JULY 31, 1967, DOCKET 50-275, TYPE--PWR, MFG--WEST., AE--PG+E

GEOLOGY OF THE DIABLO CANYON PWR PLANT SITE, SAN LUIS OBISPO COUNTY, CALIFORNIA (SUPPLEMENTARY REPORT II, BY RICHARD H. JOHNSON, JULY 8, 1967). APPENDIX A PRESENTS DETAILS ON RELATIONSHIPS OF FAULTS AND SHEARS AT THE SITE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 70437

AEC QUESTION + EARTHQUAKE + GEOLOGICAL CONSIDERATION, GENERAL + REACTOR, PWR + REPORT, PSAR + SITING, REACTOR

2-21917

ALSO IN CATEGORY 18

REPORT UPON FOUNDATION DYNAMICS FOR THE PROPOSED NUCLEAR POWER PLANT AT SURRY, VIRGINIA  
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

52 PAGES, 23 FIGURES, 6 REFERENCES, AMENDMENT 4 (SUPPLEMENT VOLUME 1) OF THE APPLICATION FOR LICENSE FOR SURRY 1 AND 2, OCTOBER 6, 1967, DOCKETS 50-280/281, TYPE--PWR, MFG--WEST., AF--STONE + WEBSTER

(INCORPORATED IN SURRY 1 AND 2 PSAR, AMENDMENT 4.) ANALYTICAL MODEL AND CALCULATIONS OF EARTHQUAKE RESPONSE GIVEN IN DETAIL FOR SURRY AND FOR NIGATA. ALTHOUGH WATER TABLE IS AT ELEVATION ZERO, WATER STOOD IN DRILL HOLE FROM 2 TO 20 FT ELEV. DUE TO PERCHED AND SEASONAL WATER TABLES. RELATIVE DISPLACEMENT OF STRUCTURES IS LESS THAN 3 IN. FOR MAXIMUM HYPOTHETICAL EARTHQUAKE. SOILS UNDER CONTAINMENT BUILDING ARE MORE FAVORABLE (DETAILED COMPARISON MADE) THAN AT NIGATA, JAPAN, WHERE A SET OF SEVERE EARTHQUAKES IN 1964 PRODUCED NO LIQUEFACTION OR SETTLEMENT. SITE ALSO COMPARED WITH THAT AT MALIBU. \*\*\* VERY CONSERVATIVE ESTIMATES INDICATED THAT LIQUEFACTION MIGHT OCCUR IN THE SAND UNDER THE FUEL BUILDING. REPORT SUGGESTS THAT PLANNED USE OF PILES BE REVIEWED, AND, IF PILES ARE USED, STEPS BE TAKEN TO PREVENT LIQUEFACTION.

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

CATEGORY 2  
SITING OF NUCLEAR FACILITIES

2-21917 \*CONTINUED\*

\*FOUNDATION ENGINEERING + \*LIQUEFACTION + ANALYTICAL MODEL + COMPARISON, THEORY AND EXPERIENCE + EARTHQUAKE ENGINEERING + REACTOR, PWR + SAFETY MARGIN + SITING, REACTOR + SOIL MECHANICS + SURRY 1 AND 2 (PWR)

2-22223 ALSO IN CATEGORY 18  
 PILGRIM STATION AMENDMENT 3--SUPPLEMENTARY SITE INFORMATION  
 BOSTON EDISON COMPANY, BOSTON, MASS.  
 12 PAGES, 9 FIGURES, DOCKET 50-293, TYPE--EWR, MFG--G.E., AE--BECHTEL, DECEMBER 15, 1967

TRANSMITS A REPORT ON LOAD-BEARING CHARACTERISTICS OF SOIL AND SEISMIC DESIGN CONSIDERATIONS, ALSO REVISED PSAR FIGURES ON SITE PLOT-PLAN AND GENERAL ARRANGEMENT OF BUILDINGS.

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

\*FOUNDATION ENGINEERING + PILGRIM STATION (BWR) + REACTOR, BWR + REPORT, PSAR

2-22771 ALSO IN CATEGORY 18  
 PILE FOUNDATION DESIGN  
 OMAHA PUBLIC POWER DISTRICT  
 5 PAGES OF SUPPLEMENT 4, EXHIBIT F4, TO FT. CALHOUN 1 - FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, DOCKET 50-285, TYPE--PWR, MFG--C.E., AE--GIBBS + HILL

EXTENDS INFORMATION RELATIVE TO FOUNDATIONS AS COVERED IN SECTION V-2.5.3 OF THE PSAR AND REFLECTS SUBSEQUENT DEVELOPMENTS RESULTING FROM SITE EXPLORATION. CAVITIES IN THE BEDROCK BENEATH THE PLANT SITE WERE DISCLOSED BY BORINGS. DESCRIBES THE PILES TO SUPPORT THE CLASS-I STRUCTURES, METHOD OF INSTALLATION, AND TEST PROGRAM.

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

\*FOUNDATION ENGINEERING + FT. CALHOUN (PWR) + REACTOR, PWR + REPORT, PSAR + SOIL PROPERTY, IN SITU

2-22786 ALSO IN CATEGORY 18  
 NS SAVANNAH REVISED PORT OPERATING PLAN FOR BOSTON  
 FIRST ATOMIC SHIP TRANSPORT INC., NEW YORK, NEW YORK  
 FAST-112 +. 41 PAGES, 6 FIGURES, DEC. 22, 1967, DOCKET NO. 50-238, TYPE--PWR, MFG--B+W, AE--G.G. SHARP

PLAN HAS BEEN REVISED TO INCLUDE ADDITIONAL BERTHS AT CASTLE ISLAND TERMINAL AND TO MODIFY SLIGHTLY THE PORTON HARBOR TRANSIT. PLAN ALSO REFLECTS CHANGE IN CAPE COD CANAL PILOTAGE. LOW-POPULATION-ZONE RADIUS IS 1680 FT AT MYSTIC TERMINAL AND 2400 FT AT CASTLE ISLAND TERMINAL.

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

NS SAVANNAH (PWR) + REACTOR, MARITIME + REACTOR, PWR + SITING, REACTOR

2-22911 ALSO IN CATEGORY 18  
 SALEM AMENDMENT 3 TO LICENSE APPLICATION--SITE AND NAME CHANGE AND PSAR  
 PUBLIC SERVICE ELECTRIC AND GAS COMPANY  
 6 PAGES, JAN. 22, 1968, DOCKET NO. 50-272/311, TYPE--PWR, MFG--WEST., AE--PUBLIC SERVICE OF N. J.

UNITS WERE FORMERLY CALLED BURLINGTON 1 AND 2 AND LOCATED AT BURLINGTON, N. J. NEW SITE IS AT SALEM, N. J. AMENDMENT 3 UPS PROPOSED POWER OF THE TWO PLANTS TO 3250 MWT/1095 MWE EACH. AMENDMENT 3 TRANSMITS A 4-VOLUME PSAR. ANSWERS TO QUESTIONS OF 3 JULY AND 20 JULY 1967 APPEAR IN THE BACK OF VOL 3. VOL 4 CONSISTS OF SALEM ANSWERS TO DIABLO CANYON QUESTIONS FROM AEC OF 5 AND 18 MAY, 30 JUNE, 31 AUG., 20 OCT., AND 1 NOV., 1967. SOME QUESTIONS ARE ANSWERED BY GIVING A REFERENCE TO THE PSAR.

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

AEC QUESTION + REACTOR, PWR + REPORT, SAR + SALEM 1 AND 2 (PWR) + SITING, REACTOR

2-23187  
 OROWAN E  
 FAULT DISPLACEMENT AND SEISMIC MECHANISM IN SHALLOW-FOCUS EARTHQUAKES  
 BOEING SCIENTIFIC RESEARCH LABORATORIES, SEATTLE, WASHINGTON  
 D1-82-0546 +. 29 PAGES, 6 FIGURES, REFERENCES, JUNE 1966

IF, AS FOUND BY PRESS AND JACKSON IN THE 1964 ALASKA EARTHQUAKE, THE FAULT REACHED DOWN TO DEPTHS OF 100 OR 200 KM, THE OBSERVED FAULT DISPLACEMENT AT THE SURFACE CORRESPONDS TO A STRESS DROP OF THE ORDER OF 10 BARS AT THE FAULT, FAR LESS THAN IS COMPATIBLE EVEN WITH THE LOW COMPRESSIVE STRENGTHS MEASURED BY RALEIGH AND PATERSON ON DECOMPOSING SERPENTINE. SINCE THE DISCREPANCY CANNOT BE EXPLAINED BY THE FRICTIONAL RESTRAINT OF THE COULOMB LAYER, IT IS SUGGESTED THAT THE SMALL STRESS DROP HAS TWO OTHER CAUSES - FIRST THE FAULT LAYER HARDENS WITH INCREASING DISPLACEMENT BY THE BRANCHING OF CRACKS AND ROTATION OF THE BLOCKS BETWEEN

CATEGORY 2  
SITING OF NUCLEAR FACILITIES

2-23187 \*CONTINUED\*

THEM. SECOND, THERE IS AN ASEISMIC LAYER BETWEEN THE COULOMB LAYER AND THE RALEIGH-PATERSON REGION WHICH IS TOO SOFT TO PERMIT FRICTIONAL FRACTURE AND DOES NOT CONTAIN MATERIALS OF LOW FRACTURE STRENGTH SUCH AS DECOMPOSING SERPENTINE. CALCULATIONS ON THIS BASIS GIVE CONSISTENT VALUES BOTH OF THE FAULT DISPLACEMENT AND THE ENERGY RELEASE.

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

\*FAULT + DISPLACEMENT, GENERAL + EARTHQUAKE, GENERAL + ROCK MECHANICS + SOURCE MECHANISM + TECTONICS

2-23188

SHIBATA H

RECENT DEVELOPMENT IN EARTHQUAKE RESISTANT DESIGNS FOR NUCLEAR POWER PLANTS IN JAPAN  
JAPAN ATOMIC POWER COMPANY  
3 PAGES, NIPPON GENSHEIRYOKU GAKKAISHI 8, PAGES 614-616 (NOVEMBER 1966) IN JAPANESE

RECENT DEVELOPMENTS IN EARTHQUAKE-RESISTANT DESIGNS FOR NUCLEAR POWER PLANTS IN JAPAN ARE REVIEWED TO COVER THE PERIOD SINCE PREVIOUS REPORT ON THE SAME SUBJECT. THE FIRST PART IS DEVOTED TO A COMPARISON OF THE DESIGN CONCEPTS AND PROCEDURES BETWEEN THOSE OF THE PLANTS CONSTRUCTED, UNDER CONSTRUCTION, AND BEING DESIGNED IN JAPAN. THE SECOND PART OF THE REVIEW COVERS THE PROGRESS MADE IN STUDIES IN THIS FIELD, AND THE MOVES SEEN IN GOVERNMENT QUARTERS TO UTILIZE THE RESULTS OF THESE STUDIES IN SETTING THE REGULATIONS PERTAINING TO NUCLEAR SAFETY.

\*EARTHQUAKE ENGINEERING + DESIGN CRITERIA + EARTHQUAKE, GENERAL + VIBRATION ANALYSIS

2-23189

ANDERSON DL

A SEISMIC EQUATION OF STATE

SEISMOLOGICAL LABORATORY, PASADENA, CALIF.

21 PAGES, FIGURES, TABLES, REFERENCES, GEOPHYS. JOURNAL OF THE ROYAL ASTRO. SOC. 13, PAGES 9-30 (1967)

THE BIRCH HYPOTHESIS OF A CLOSE RELATIONSHIP BETWEEN SEISMIC VELOCITY AND DENSITY IS EXTENDED AND MODIFIED SO AS TO BE IN ACCORD WITH THEORETICAL PREDICTIONS CONCERNING THE FORM OF THE EQUATION OF STATE. ALTHOUGH DEVELOPED AS A SIMPLE METHOD TO ENSURE CONSISTENCY BETWEEN THE SEISMIC VELOCITIES AND DENSITIES IN FREE OSCILLATION CALCULATIONS, THE RESULTING EQUATION OF STATE IS OF QUITE GENERAL UTILITY IN GEOPHYSICAL STUDIES WHERE THE SEISMIC VELOCITIES, RATHER THAN HYDROSTATIC PRESSURE AND TEMPERATURE, ARE THE DIRECTLY MEASURED VARIABLES.

\*SEISMOLOGY + EARTH MATERIAL, DYNAMIC PROPERTY + EARTHQUAKE, GENERAL + ROCK MECHANICS + TECTONICS

2-23190

TAJIMI H + ICHING I

A SEISMIC DESIGN OF REACTOR ENCLOSURE OF THE JAPAN POWER DEMONSTRATION REACTOR (JPDR) AND ITS ACTUAL BEHAVIOR FOR EARTHQUAKE

NIHON UNIVERSITY, JAPAN

6 PAGES, 7 FIGURES, 3 TABLES, 5 REFERENCES, BULL. JAP. SOC. MECH. ENG. 9, PAGES 294-9 (MAY 1966)

BEING SITUATED IN A FREQUENT SEISMIC AREA, A SEISMIC DESIGN ANALYSIS OF NUCLEAR REACTORS TO BE CONSTRUCTED IN THIS COUNTRY IS REQUIRED FOR SAFETY. FOR THE JPDR THE VIBRATION CHARACTERISTICS OF REACTOR CONTAINMENT STRUCTURE, FOR FACTORS SUCH AS NATURAL PERIOD AND DAMPING ACCELERATION WERE ANALYZED TO CHECK THE VALIDITY OF STATIC DESIGN EARTHQUAKE COEFFICIENT. AFTER COMPLETION OF THE PLANT, MANY SEISMIC SENSORS WERE MOUNTED ON VARIOUS PARTS OF THE ENCLOSURE STRUCTURE TO OBSERVE ITS VIBRATION CHARACTERISTICS DURING EARTHQUAKE. USING THE DATA OBTAINED FROM AN ACTUAL EARTHQUAKE, THE NATURAL PERIOD, LOCATION OF ROCKING CENTERS, ETC., WERE CALCULATED. THE CALCULATED VALUES SHOW GOOD AGREEMENT WITH THE ABOVE MENTIONED ANALYTICAL RESULTS.

\*EARTHQUAKE ENGINEERING + DESIGN CRITERIA + EARTHQUAKE RECORDS + EARTHQUAKE, GENERAL + JAPAN + STRUCTURAL INTEGRITY

2-23191

SHEPHERD R + DONALD PA

SEISMIC RESPONSE OF TORSIONALLY UNBALANCED BUILDINGS

UNIVERSITY OF CANTERBURY, CHRISTCHURCH, NEW ZEALAND + OXFORD UNIVERSITY, OXFORD, ENGLAND

18 PAGES, FIGURES, 4 TABLES, J. SOUND VIB. 6(1), PAGES 20-37 (1967)

THE PROBLEM OF APPLYING THE RESPONSE-SPECTRA TECHNIQUE TO THE DETERMINATION OF THE SEISMIC RESPONSE OF TORSIONALLY UNBALANCED BUILDINGS IS COMPLICATED BY TWO FACTORS. RECOGNITION OF ASYMMETRY INVOLVES AN INCREASE IN THE NUMBER OF DEGREES OF FREEDOM OF THE SYSTEM WHICH HAVE TO BE TAKEN INTO ACCOUNT. SECONDLY, THE COMBINATION OF INDIVIDUAL MODAL RESPONSES TO OBTAIN THE TOTAL RESPONSE OF A BUILDING MAY BE DIFFICULT SINCE THE VALIDITY OF METHODS WHICH RELY ON THE MODES HAVING SIGNIFICANTLY DIFFERENT PERIODS IS CLEARLY OPEN TO QUESTION IN CASES WHERE THE MAXIMUM RESPONSE OF THE TRANSLATIONAL AND TORSIONAL MODES OF VIBRATION OCCUR AT SIMILAR FREQUENCIES. IN THIS PAPER, THE FIRST OF THE PROBLEMS REFERRED TO ABOVE IS EXAMINED. A METHOD OF MODAL ANALYSIS SUITABLE FOR TORSIONALLY UNBALANCED BUILDINGS IS PRESENTED AND EXAMPLES OF ITS APPLICATION TO TYPICAL MULTISTOPEY STRUCTURES ARE INCLUDED.

CATEGORY 2  
SITING OF NUCLEAR FACILITIES

2-23191 \*CONTINUED\*  
\*EARTHQUAKE ENGINEERING + ACCELERATION + EARTHQUAKE, GENERAL + MATHEMATICAL STUDY + RESPONSE SPECTRUM + VIBRATION

2-23192  
HUDSON DE  
INSTRUMENTAL DATA ON STRONG EARTHQUAKE GROUND MOTIONS  
CALIFORNIA INSTITUTE OF TECHNOLOGY, PASADENA, CALIF.  
11 PAGES, 3 FIGURES, REFERENCES, ENGINEERING GEOLOGY 4(2), PAGES 31-41 (JULY 1967)

STRONG-MOTION ACCELEROGRAPHS WERE DEVELOPED FOR THE MEASUREMENT OF THE GROUND SHAKING ASSOCIATED WITH DESTRUCTIVE EARTHQUAKES. SUCH INSTRUMENTS, WHICH PRODUCE THE BASIC DATA NEEDED BY STRUCTURAL ENGINEERS FOR EARTHQUAKE-RESISTANT DESIGN, ARE SHOWN TO HAVE SPECIAL CHARACTERISTICS AND REQUIREMENTS, COMPARED WITH THOSE FOR STANDARD EQUIPMENT IN SEISMOLOGICAL LABORATORIES. THE UNITED STATES COAST AND GEODETIC SURVEY NETWORK OF STRONG-MOTION ACCELEROGRAPHS SHOULD BE EXPANDED FOR ADEQUATE COVERAGE. THE INFLUENCE OF THE LOCAL GEOLOGICAL SITE ON THE GROUND ACCELERATIONS IS IMPORTANT. INFORMATION DERIVED FROM A STUDY OF THE ACCELEROGRAMS OF PAST STRONG EARTHQUAKES IS SUMMARIZED.

\*ACCELERATION + EARTHQUAKE RECORDS + EARTHQUAKE, GENERAL + INSTRUMENTATION, EARTHQUAKE + RESPONSE SPECTRUM

2-23195  
STUDY OF ECONOMIC FEASIBILITY OF FAST BREEDER REACTOR PROTOTYPE IN NEW ENGLAND AREA. VOLUME II. GENERAL SITE SURVEY FOR NUCLEAR PLANTS IN THE NEW ENGLAND AREA  
JACKSON AND MORELAND, BOSTON, MASS.  
NYO-3530-2 +. 128 PAGES, TABLES, REFERENCES, AUGUST 18, 1967

INVESTIGATED EARTH SCIENCES AND THE GENERAL SUITABILITY OF THE NEW ENGLAND AREA FOR A FAST-BREEDER PROTOTYPE. ECONOMICS OF REACTOR SITING ARE DISCUSSED IN VIEW OF HYDROLOGY, METEOROLOGY, SEISMICITY, AND ACCESSIBILITY OF THIS SITE. THE MCA IS POSTULATED AND MAN-REM DOSES ARE TABULATED. THE MT. TOM SITE ON THE CONNECTICUT RIVER WAS JUDGED ABLE TO ACCOMMODATE THE PROPOSED PLANT.

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

\*REACTOR, BREEDER + \*REACTOR, FAST + \*SITING, REACTOR + ACCIDENT, MAXIMUM CREDIBLE (MCA) + ECONOMICS + HYDROLOGICAL CONSIDERATION, GENERAL + METEOROLOGY + THERMAL POLLUTION

2-23196  
ADAMS CA  
REMOTE SITING OF NUCLEAR POWER NO LONGER A NECESSITY  
CENTRAL ELECTRICITY GENERATING BOARD  
3 PAGES, ELECTRICAL REVIEW 180, PAGES 588-90 (APRIL 21, 1967)

PAPERS PRESENTED AT THE SYMPOSIUM ON CONTAINMENT AND SITING OF NUCLEAR POWER PLANTS (IAEA, VIENNA) ARE DISCUSSED IN A GENERAL WAY. EACH COUNTRY SEEMS TO HAVE A DIFFERENT APPROACH TO THE SITING PROBLEM, BUT IN ALL CASES IT APPEARS THAT A COMPREHENSIVE LOOK HAS BEEN TAKEN AT REACTOR SAFETY. WHATEVER THE FUTURE MAY HOLD IN THIS RESPECT, THE SYMPOSIUM HAS SHOWN THAT NUCLEAR SAFETY HAS RECEIVED SUCH COMPREHENSIVE CONSIDERATION THAT URBAN SITING CAN BE REGARDED AS A REALISTIC PROPOSAL CAPABLE OF JUSTIFICATION FOR SUITABLY DESIGNED AND TESTED PLANTS ON ANY REASONABLE BASIS OF JUDGMENT.

\*IAEA + \*SITING, REACTOR + REVIEW + SAFETY PROGRAM

2-23197 ALSO IN CATEGORY 16  
COOPER RE + RUSCHE BC  
SITE EVALUATION USING MEASURED METEOROLOGY DATA  
SAVANNAH RIVER LABORATORY  
DP-MS-67-69 + CONF-670931-3 +. 16 PAGES, FROM USAEC METEOROLOGICAL INFORMATION MEETING, CHALK RIVER, ONTARIO, CANADA, SEPTEMBER 1967

DETAILED MEASUREMENTS OF THE WIND SPEED, WIND DIRECTION, AND TEMPERATURE AT HEIGHTS UP TO 1200 FT AT THE SAVANNAH RIVER PLANT FORM THE BASIS FOR A COMPREHENSIVE ANALYSIS OF THE FREQUENCY OF OCCURRENCE OF POTENTIAL OFF-SITE DOSES. THE RESULTS WERE EXPRESSED ON CURVES IN DOSE PER UNIT RELEASE OF ACTIVITY VS DISTANCE FROM THE REACTOR, WITH PROBABILITY OF OCCURRENCE AS A PARAMETER. CURVES WERE DEVELOPED TO SHOW DOSE AS A FUNCTION OF DIRECTION AND PROBABILITY OF OCCURRENCE.

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

\*METEOROLOGY + \*SITE CLIMATOLOGY + \*SITING, GENERAL + ATMOSPHERIC DIFFUSION + DISPERSION + MEASUREMENT, GENERAL + STACK

CATEGORY 2  
SITING OF NUCLEAR FACILITIES

2-23198  
CARLBOM L + OBRADOVIC J + MOJOVIC L  
ESTIMATE OF THE PROPOSED NUCLEAR POWER PLANT SITES IN YUGOSLAVIA  
AKTIEBOLAGET ATOMENERGI, STOCKHOLM  
3 PAGES, 1 FIGURE, 1 TABLE, NUKL. ENERG. 3, PAGES 10-12 (1966), IN SIOVAK

SITES FOR NUCLEAR POWER STATIONS IN YUGOSLOVIA ARE ANALYZED. ECONOMIC COMPARISONS ARE MADE, TAKING INTO ACCOUNT ELECTRIC POWER TRANSMISSION COSTS, COSTS OF MAKING SITE ACCESSIBLE TO NORMAL MEANS OF TRANSPORTATION, LAND INVESTMENT, BUILDING COSTS (ESPECIALLY THOSE ASSOCIATED WITH SEISMICITY), EFFECT OF COOLANT WATER ON PLANT EFFICIENCY, COSTS OF WASTE DISPOSAL. THESE ANALYSES MAKE POSSIBLE THE CHOICE OF A SITE WITH SUBSTANTIALLY CLEAR INSIGHT INTO CONSEQUENCES.

\*SITING, REACTOR + \*YUGOSLAVIA + EARTHQUAKE ENGINEERING + SEISMOLOGY + WASTE DISPOSAL, GENERAL

2-23199  
PRICE HL  
SITING OF POWER REACTORS  
US ATOMIC ENERGY COMMISSION  
4 PAGES, NUCLEAR SAFETY 9(1), PAGES 1-4 (JAN. FEB. 1968)

DISCUSSES AEC REGULATIONS REGARDING REACTOR SITING AND SETS FORTH THE AEC POSITION ON THE SUBJECT AT THIS TIME. THERE ARE TWO MAJOR AREAS RELATED TO POWER REACTOR SITING THAT HAVE PROVED TO BE THE MOST TROUBLESOME - METROPOLITAN SITING AND THE LOCATION OF REACTORS IN AREAS OF HIGH SEISMICITY. THE FOLLOWING ARE PROVIDING HELP IN RESOLVING THE SAFETY QUESTIONS INVOLVED - CODES AND SPECIFICATIONS ARE BEING IMPROVED, MORE RELIABLE ENGINEERED SAFETY FEATURES ARE BEING DESIGNED, RESEARCH AND DEVELOPMENT WORK IS UNDER WAY, EXPERIENCE IN THE OPERATION OF POWER REACTORS IS BEING GAINED, AND THE DEVELOPMENT OF MORE DEFINITIVE CRITERIA IS PLANNED OR BEING CONSIDERED.

\*SITING, REACTOR + POPULATION DISTRIBUTION + SAFETY PRINCIPLES AND PHILOSOPHY + SEISMOLOGY, GENERAL

2-23326 ALSO IN CATEGORIES 18 AND 12  
PLANT PROTECTION AGAINST HURRICANE WAVE ACTION  
FLORIDA POWER CORPORATION, ST. PETERSBURG, FLORIDA  
GAI-REPORT-1650 +. 92 PAGES, FIGURES, TABLES, OCTOBER 26, 1967, CRYSTAL RIVER UNITS 3 AND 4, APPENDIX 2C, SECTION 1 OF PRELIMINARY SAFETY ANALYSIS REPORT, AMENDMENT 1, DOCKET NO. 50-302/303, TYPE--PWF, MFG--B+W, AE--GILBERT ASSOC.

AFTER REVIEWING 12 YEARS OF USWB AND CORPS OF ENGINEERS EFFORT ON ANALYZING HYDRODYNAMIC EFFECTS OF HURRICANES, THE PREDICTED MAX. PROBABLE HURRICANE (WATER LEVEL ON SITE OF 11.4 FT WITH 9-FT WAVES) PROTECTION WAS VERIFIED WITH MODEL TESTS AT U OF FLA. (MOVIE AVAILABLE). CIRCULATING-PUMPS WILL BE INUNDATED, BUT NUCLEAR SERVICE WATER PUMPS ARE INSIDE BUILDING. APPENDIX - (1) SOIL CEMENT SLOPE PROTECTION (4 PG), (2) A MODEL INVESTIGATION OF EXTREME RUNUP (15 PG), (3) NORMAL AND EXTREME LOW TIDE CONSIDERATIONS.

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

\*DESTRUCTIVE WIND + \*FLOOD + \*SITING, REACTOR + \*WEATHER, SEVERE + CRYSTAL RIVER 3 AND 4 (PWR) + ENGINEERED SAFETY FEATURE + HYDRAULIC ANALYSIS + MODEL TESTING + REACTOR, PWR + REPORT, PSAP

2-23812 ALSO IN CATEGORY 18  
MORRIS PA  
DRL RECOMMENDS EARTHQUAKE ACCELERATION FOR ZION  
AEC, DIVISION OF REACTOR LICENSING, WASHINGTON, D. C.  
LETTER TO W. B. BEHNKE, COMMONWEALTH EDISON CO., CHICAGO, ILLINOIS, 1 PAGE, FEBRUARY 21, 1968, DOCKET NO. 50-295/304, TYPE--PWR, MFG--WEST., AE--SGT + LUNDY

U.S. COAST AND GEODETIC SURVEY RECOMMENDS, WITH DRL AND USGS CONCURRING, THAT AN ACCELERATION OF 0.08 G IS ADEQUATE FOR LIKELY EARTHQUAKES, AND 0.17 G IS THE MAXIMUM GROUND ACCELERATION FOR DESIGN FOR SAFE SHUTDOWN. DRL UNDERSTANDS THAT AN AMENDMENT WILL BE FILED ON THIS BASIS.

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

\*DESIGN CRITERIA + \*EARTHQUAKE ENGINEERING + REACTOR; PWR + ZION 1 AND 2 (PWR)

2-24269 ALSO IN CATEGORY 18  
HUDSON RIVER VALLEY COMMISSION RECOMMENDS RELOCATION OF EASTON STATION  
NIAGARA MOHAWK POWER CORPORATION  
3 PAGES, ATOMIC ENERGY CLEARING HOUSE, 14(14), PAGES 22-24 (APRIL 1, 1968)

(FINDINGS, MARCH 22.) A PUBLIC HEARING WAS HELD IN ALBANY, N. Y., FEB. 28. IN THE OPINION OF THE COMMISSION, AN OFFICIAL ADVISORY AGENCY OF N.Y. STATE, FOUND THAT THE BENEFITS OF THE REACTOR AT EASTON SITE WERE OUTWEIGHED BY THE ADVERSE EFFECTS ON THE SCENIC, HISTORICAL,

CATEGORY 2  
SITING OF NUCLEAR FACILITIES

2-24269 \*CONTINUED\*

RECREATIONAL, AND NATURAL RESOURCES OF THE RIVER. FINDINGS (B) - NO PUBLIC CONCERN ON RADIOLOGICAL SAFETY IF AEC CRITERIA MET. (C,D) - PROOF THAT THERMAL-POLLUTION EFFECTS ON ECOLOGY ARE NOT DETRIMENTAL IS LACKING. LOW RIVER FLOW MAY REDUCE POWER LEVEL. (E,H) - COOLING TOWERS MAY ADVERSELY AFFECT SCENIC VALUES, WHICH THE PLANT ITSELF MAY ALSO DO.

\*REGULATION, STATE + \*SITING, REACTOR + \*THERMAL POLLUTION + EASTON (BWR) + REACTOR, BWR

CATEGORY 3  
TRANSPORTATION AND HANDLING OF RADIOACTIVE MATERIALS

3-20628  
THOMPSON JT + MORGAN JM  
NUCLEAR TRANSPORTATION  
JOHN HOPKINS UNIVERSITY + VIRGINIA MILITARY INSTITUTE  
12 PAGES, 2 FIGURES, 1 TABLE, 29 REFERENCES, NUCLEAR SAFETY 8(5), PAGE 443-454, (OCTOBER 1967)

A REVIEW OF NUCLEAR TRANSPORTATION RESEARCH PERFORMED UNDER THE COGNIZANCE OF THE USAEC WAS ACCOMPLISHED IN 1964 AND REPORTED IN 1965. THIS PAPER SUMMARIZES THE STRENGTHS AND WEAKNESSES OF THE RESEARCH PROGRAM UNDER SUCH ACCOMPLISHMENTS AS SYMPOSIA, CRITICALITY EXPERIMENTATION AND ANALYSIS, AND MODEL TESTING. IT ALSO POINTS OUT GAPS IN KNOWLEDGE, NEGLECTED AREAS, AND AREAS OF DUPLICATION, AS WELL AS THE EFFECTS OF CLASSIFICATION, LACK OF INDUSTRIAL PARTICIPATION AND COORDINATION, ETC. ALSO DISCUSSED ARE SOME OF THE PROBLEMS THAT CALL FOR RESEARCH. THESE ARE SUMMARIZED UNDER SUCH HEADINGS AS COMPARISON OF TRANSPORTATION MODES; SAFETY AND ITS COST, CRITICALITY CONTROL, INSURANCE, WEIGHT-COST RELATIONS, INTERCHANGEABILITY, SPECIALIZED SERVICES, RELATIONS WITH TRANSPORTATION GROUPS, AND REGULATIONS. ENCOURAGEMENTS FOR THE FUTURE ARE NOTED.

CODES AND STANDARDS + ECONOMICS + R AND D PROGRAM + SAFETY PRINCIPLES AND PHILOSOPHY + TRANSPORTATION AND HANDLING

3-20629  
SCHABERT HP  
CASK FOR TRANSPORTING IRRADIATED EXPERIMENTAL FUEL ELEMENTS  
SLEMENS-SCHUCKERTWERKE AG, ERLANGEN, GER.  
5 PAGES, 4 FIGURES, 1 TABLE, 7 REFERENCES, ATOMPRAxis 13, PAGE 78-82, (FEBRUARY 1967), IN GERMAN

A DRY CASK USED FOR TRANSPORTING IRRADIATED FUEL ELEMENTS HAVING A WEIGHT OF 4.3 METRIC TONS IS DESCRIBED. ONE EXPERIMENTAL FUEL ASSEMBLY PRODUCING 0.38 KW OF DECAY HEAT MAY BE SHIPPED IN THE CASK. THE LEAD SHIELD OF THE CASK REMAINS SOLID AFTER A 9-METER FREE DROP AND A SUBSEQUENT 1-HOUR FIRE, DUE TO THE USE OF A SPECIAL OUTSIDE INSULATION WHICH IS EQUIPPED WITH METALLIC STRAPS FOR DECAY-HEAT DIVERSION. THIS DESIGN CONCEPT SHOULD PROVE ADVANTAGEOUS IF APPLIED TO LARGE FUEL CASKS.

EQUIPMENT DESIGN + FIRE + HEAT TRANSFER + SHIPPING CONTAINER + THERMAL INSULATION

3-20630 ALSO IN CATEGORY 13  
LLOYD RC + CLAYTON ED  
INTERACTING ARRAYS OF CONTAINERS WITH U-233 SOLUTION  
BATTELLE NORTHWEST LAB.  
CONF-670-602 +. 12 PAGES, 8 FIGURES, ABSTRACT IN ANS TRANSACTIONS 10(1), PAGE 188 AND 189, (JUNE 1967), PAPER PRESENTED AT THE 1967 ANNUAL MEETING OF THE AMERICAN NUCLEAR SOCIETY, SAN DIEGO, CALIF., JUNE 11-15, 1967

SUBCRITICAL NEUTRON INTERACTION EXPERIMENTS WERE RUN WITH BARE AND LUCITE-REFLECTED ARRAYS OF BOTTLES OF U-233 SOLUTION. THE EFFECT ON CRITICALITY OF ADDING LUCITE MODERATOR BETWEEN THE BOTTLES WAS ALSO STUDIED. THESE EXPERIMENTS PROVIDE DATA FOR NUCLEAR-SAFETY GUIDANCE IN HANDLING, STORAGE, AND SHIPMENT OF THIS MATERIAL, AND FOR CHECKING INTERACTION CALCULATIONS. THE EFFECT OF MODERATION WAS DETERMINED BY PLACING LUCITE PLATES OF DIFFERENT THICKNESS BETWEEN BOTTLES OF THE ARRAYS. THIS WAS DONE FOR THE 2 X 2 BOTTLE REFLECTED ARRAY AND FOR THE 3 X 3 AND 4 X 4 BOTTLE BARE ARRAYS. THE THICKNESS OF LUCITE BETWEEN BOTTLES GIVING THE LARGEST REACTIVITY INCREASE IN THE REFLECTED ARRAY WAS ABOUT ONE INCH, AND IN THE BARE ARRAY ABOUT TWO INCHES.

CRITICALITY SAFETY + FUEL HANDLING + FUEL STORAGE + LIQUID FUEL + NEUTRON INTERACTION + URANIUM

3-20631  
DELL TK + MCKITTRICK N  
SHIELDED CONTAINER FOR CARRYING AND DISPENSING DOSES OF RADIOISOTOPES FOR INTRAVENOUS USE  
ST. FRANCIS HOSPITAL  
2 PAGES, 1 FIGURE, J. MED. LAB. TECHNOL., 22, PAGE 226 AND 227, (OCT. 1965)

A LEAD POT (2-3/4 IN. OD, WITH WALLS 1/2 IN. THICK) WHICH SURROUNDS COLUMNS OF TE-132 RECEIVED IN THE LAB FROM THE SUPPLIER, FORMS THE BASIC PART OF THE CONTAINER WHICH IS DESIGNED TO ACCOMMODATE BIJOU BOTTLES OF 6-ML CAPACITY. THE CONTAINER, WHICH MAY BE USED FOR CARRYING AND DISPENSING TRACER DOSES OF I-131 LABELED SUBSTANCES FOR RENAL FUNCTION AND CEREBRAL-BLOOD-FLOW STUDIES, ATTENUATES THE GAMMA RADIATION EMITTED BY THIS ISOTOPE BY OVER 95%. UNUSED DOSES MAY BE RSTERILIZED BY PLACING THE WHOLE CONTAINER IN AN AUTOCLAVE WITHOUT REMOVING THE BOTTLE.

IODINE + RADIOISOTOPE + STORAGE CONTAINER + UNITED KINGDOM

3-20633  
RADIOACTIVE CRASH CLOSES BRITISH ROAD 10 1/2 HOURS  
1 PAGE, THE NEW YORK TIMES, THURSDAY, SEPTEMBER 28, 1967



CATEGORY 3  
TRANSPORTATION AND HANDLING OF RADIOACTIVE MATERIALS

3-20633 \*CONTINUED\*

A FIVE-MILE STRETCH OF THE A-5 HIGHWAY BETWEEN MILE OAK AND WEEFORD AT TAMWORTH, STAFFORDSHIRE, WAS REOPENED AFTER A 10-1/2-HOUR SHUTDOWN CAUSED BY THE CRASH OF A TRUCK CARRYING RADIOACTIVE MATERIAL. MORE THAN 30 CANISTERS CONTAINING THORIUM NITRATE, A RADIOACTIVE OXIDIZING AGENT, WERE THROWN FROM THE TRUCK, WITH SEVERAL SPLIT OPEN. A WHITE POWDER SPILLED ON THE ROAD. FIREMEN WORE PROTECTIVE CLOTHING AS THEY WORKED TO CLEAR AWAY THE POWDER. TRUCK DRIVERS WHO HELPED MOVE SOME OF THE CANISTERS BEFORE THEIR CONTENTS BECAME KNOWN WERE KEPT AT THE SCENE FOR SEVERAL HOURS UNTIL IT WAS CERTAIN THEY HAD NOT BEEN CONTAMINATED.

ACCIDENT, RADIOISOTOPE + ACCIDENT, TRANSPORTATION + CONTAMINATION + OPERATING EXPERIENCE SUMMARY + THORIUM

3-22155 ALSO IN CATEGORIES 11 AND 12

LEFRANCOIS J  
MECHANICAL GAP TRANSFER PUMP  
COMMISSARIAT A L-ENERGIE ATOMIQUE  
BRITISH PATENT 1,068,705 +. 5 PAGES, 2 FIGURES, MAY 10, 1967

A MECHANICAL TRANSFER PUMP PARTICULARLY ADAPTED TO THE TRANSFER OF RADIOACTIVE GASES COMPRISES A LIQUID PISTON MOVING IN A COMPRESSION CHAMBER. THE CHAMBER HAS INTAKE AND DELIVERY VALVES WHOSE OPENINGS AND CLOSINGS ARE SYNCHRONIZED WITH THE MOVEMENT OF THE PISTON, WITH THE INTAKE VALVE LOCATED ON THE AXIS OF THE DELIVERY VALVE. THE DELIVERY VALVE IS MADE UP OF A FLOATING MEMBER, WHICH IS RAISED DIRECTLY FROM ITS SEATING AS A RESULT OF COMPRESSION OF THE VOLUME OF GAS PRODUCED BY THE MOVEMENT OF THE LIQUID PISTON. A PORTION OF THE COMPRESSION CHAMBER CONTAINING THE LIQUID PISTON IS FORMED BY A PAIR OF BELLOWS THAT ARE OPERABLE BOTH TO CONTRACT OR BOTH TO EXPAND TOGETHER SO AS TO ENSURE MAXIMUM LIQUID DISPLACEMENT IN THE CHAMBER.

AVAILABILITY - THE PATENT OFFICE, 25 SOUTHAMPTON BLDG., LONDON, W. C. 2, ENGLAND, \$0.49 PER COPY

\*PATENT + \*PUMP + TRACER, GAS

3-22156 ALSO IN CATEGORY 11

BAUDIFFER G + ROSSETTI L  
DEVICE FOR HANDLING AND OBSERVING ELONGATED BODIES WHICH EMIT RADIATION  
EUROPEAN ATOMIC ENERGY COMMUNITY  
BRITISH PATENT 1,058,140 +. 4 PAGES, 1 FIGURE, FEBRUARY 8, 1967

DESCRIBES A DEVICE USED IN HANDLING AND OBSERVING ELONGATED BODIES WHICH EMIT RADIATION, SUCH AS IRRADIATED FUEL RODS FROM A REACTOR. THE DEVICE CONSISTS OF A SEALED ENCLOSURE OF VERTICAL ELONGATED SHAPE SURROUNDED BY AN ADEQUATE RADIATION SHIELD WITH ONE OR MORE VIEWING PORTS. IN THE ENCLOSURE ARE GUIDES AND SUPPORT MECHANISMS FOR SUPPORTING AND HANDLING THE IRRADIATED BODY OR POD.

AVAILABILITY - THE PATENT OFFICE, 25 SOUTHAMPTON BLDG., LONDON, W. C. 2, ENGLAND, \$0.49 PER COPY

\*FUEL HANDLING MACHINE + \*PATENT + CONTAINMENT DESIGN

3-22158

BREBANT C  
TRANSIT FLASK FOR RADIOACTIVE OBJECTS  
COMMISSARIAT A L-ENERGIE ATOMIQUE  
BRITISH PATENT 1,055,918 +. 3 PAGES, 1 FIGURE, JANUARY 18, 1967

DESCRIBES AN AIR-TIGHT SHIELDED CONTAINER USED TO PROTECT AND TRANSPORT RADIOACTIVE OBJECTS SUCH AS IRRADIATED FUEL ELEMENTS. IT CONSISTS OF A HIGH-DENSITY METAL CASING, FORMING AN OUTER COVER FOR THE SHIELDING MATERIAL. THE CASING HAS AT LEAST ONE POCKET BOUNDED BY A DEFORMABLE FUSIBLE PB-SB ALLOY SHEET WHICH LIQUIFIES AT A PREDETERMINED TEMPERATURE AND ESCAPES THROUGH A PR-BI PLUG, FORMING AN EXPANSION VOLUME FOR THE SHIELDING MATERIAL.

AVAILABILITY - THE PATENT OFFICE, 25 SOUTHAMPTON BLDG., LONDON, W. C. 2, ENGLAND, \$0.49 PER COPY

\*PATENT + FIRE + LEAD + SHIELDING + SHIPPING CONTAINER

3-22159

BERNARD H  
MECHANICAL PROBLEMS ENCOUNTERED IN RESEARCH ON PACKAGING  
FRANCE. COMMISSARIAT A L-ENERGIE ATOMIQUE  
13 PAGES, 11 FIGURES, 3 REFERENCES, BULLETIN D-INFORMATIONS SCIENTIFIQUES ET TECHNIQUES 114, PAGE 39-51,  
(APRIL 1967) IN FRENCH

THE FIRST PART OF THIS PAPER DESCRIBES THE PROBLEMS IN MAKING MECHANICAL TESTS ON TYPE B PACKAGING, IF CONCLUSIONS OF GENERALLY VALID NATURE ARE TO DRAWN FROM THE RESULTS. THE SECOND PART ANALYSES THE EFFECTS DUE TO KINETIC ENERGY STORED AT THE MOMENT OF IMPACT, PARTICULARLY ON THE CLOSING SYSTEMS, WHICH MUST GUARANTEE AIRTIGHTNESS.

REGULATION, IAEA + SHIPPING CONTAINER + TEST, DESTRUCTIVE + TEST, DROP

CATEGORY 3  
TRANSPORTATION AND HANDLING OF RADIOACTIVE MATERIALS

3-22160  
BOUILLET J + MOREAU J  
PACKAGING SAFETY CRITERIA  
FRANCE. COMMISSARIAT A L-ENERGIE ATOMIQUE  
2 PAGES, BULLETIN D-INFORMATIONS SCIENTIFIQUES ET TECHNIQUES 114, PAGE 11 AND 12, (APRIL 1967). IN FRENCH

IN 1961, THE INTERNATIONAL ATOMIC ENERGY AGENCY LAID DOWN SAFETY RECOMMENDATIONS FOR THE TRANSPORT OF RADIOACTIVE MATERIALS, THESE HAVE RECENTLY BEEN REVISED. THEY ARE BEING ADOPTED THROUGHOUT THE WORLD IN THE FORM OF INTERNATIONAL AND NATIONAL REGULATIONS. THE BASIC IDEA IS TO CONCENTRATE TO A MAXIMUM ON THE SAFETY OF THE PACKAGING. WITH REGARD TO IRRADIATION RISKS, THE PACKAGING SAFETY CRITERIA ARE EXPRESSED IN A CERTAIN EFFICIENCY RANGE TO WHICH THE PACKAGES MUST RESPOND, ACCORDING TO THE ACTIVITY THEY ARE CALLED ON TO CONTAIN. AS TO CRITICALITY RISKS, THESE CRITERIA ARE EXPRESSED BY A PRECISE SET OF RULES AND HYPOTHESES TO BE RESPECTED IN THE CALCULATIONS. THE REGULATIONS THROUGHOUT SHOW AN ATTEMPT TO STRIKE A BALANCE BETWEEN THE ADMISSIBLE LEVEL OF RISK CHOSEN BY SOCIETY, AND THE PRACTICAL NEEDS OF THE LABORATORY AND OF INDUSTRY.

\*REGULATION, IAEA + \*SAFETY PRINCIPLES AND PHILOSOPHY + CODES AND STANDARDS + CRITICALITY SAFETY + SAFETY REVIEW + SHIPPING CONTAINER + TRANSPORTATION AND HANDLING

3-22161  
CAPET H + BOUILLET J  
HISTORY OF THE TRANSPORT OF RADIOACTIVE MATERIALS IN FRANCE  
FRANCE. COMMISSARIAT A L-ENERGIE ATOMIQUE  
4 PAGES, BULLETIN D-INFORMATIONS SCIENTIFIQUES ET TECHNIQUES 114, PAGE 7-10, (APRIL 1967). IN FRENCH

THE PROBLEM OF TRANSPORTING RADIOACTIVE MATERIALS BEGAN TO TAKE SHAPE SERIOUSLY IN FRANCE IN 1956-57. THE FIRST STAGE OF ITS DEVELOPMENT IS THE DRAWING UP OF REGULATIONS, WHICH ENDS AROUND 1960. COMMISSARIAT TRANSPORTS, WHICH THEN REPRESENTED ALMOST ALL NATIONAL RADIOACTIVE FREIGHT, ARE HANDLED DIRECTLY, AND THE CASES DO NOT YET BEAR THE STAMP OF THE RULING WHICH IS IN THE PROCESS OF TAKING SHAPE. THE SECOND STAGE IS THAT OF THE INDUSTRIALIZATION OF TRANSPORTS. THEIR NUMBER HAS GROWN CONSIDERABLY, AND THE CALL ON THE TRANSPORT INDUSTRY IS INCREASINGLY WIDE, TO BECOME ALMOST TOTAL IN 1963. THE THIRD STAGE IN DEVELOPMENT, WHICH IS STILL IN OPERATION AT PRESENT, IS THAT OF TECHNICAL RESEARCH INTO PACKAGING METHODS, BASED ON A SET OF REGULATIONS REVISED IN THE MEANTIME AND NOW MUCH MORE PRECISE TECHNICALLY. THE PHASE ABOUT TO BEGIN IS THAT OF ECONOMIC OPTIMIZATION.

OPERATING EXPERIENCE SUMMARY + REPORT, OPERATIONS + SAFETY PROGRAM + TRANSPORTATION AND HANDLING

3-22162  
SALTIEL L  
RESOLUTION BY ORDINATOR OF THE PROBLEM POSED BY THE STATUTORY HEAT TEST  
FRANCE. COMMISSARIAT A L-ENERGIE ATOMIQUE  
19 PAGES, 11 FIGURES, BULLETIN D-INFORMATIONS SCIENTIFIQUES ET TECHNIQUES 114, PAGE 73-80, (APRIL 1967). IN FRENCH

THE TRANSPORT REGULATIONS DEMAND PROOF FROM THE SENDERS THAT THE TRANSPORT CASTLES CAN WITHSTAND AN ACCIDENTAL FIRE. PROGRAMMES HAVE BEEN WORKED OUT TO FIND OUT THE TEMPERATURE CHANGE IN A COMPOSITE CYLINDER EXPOSED TO A FIRE RADIATING ACCORDING TO STEFANS LAW. THE PROGRAMME RESOLVES THE PARTIAL DIFFERENTIAL FOURIER EQUATION BY THE CRANK-NICHOLSON METHOD, USING A RECURSIVE PROCESS OF LINEARIZATION OF THE STRESSES AS A FUNCTION OF T4 AT TWO POINTS OF THE REGION OF INTEGRATION (THE EXTERNAL SURFACE AND INTERFACE). THE PROGRAMME HAS A SELF-GENERATING TIME CUT-OFF OF VARIABLE INTERVAL, WHICH AFFORDS MAXIMUM CALCULATION SPEED WHILE PREVENTING THE RELATIVE ERROR ON THE TEMPERATURE FROM EXCEEDING A PREDETERMINED VALUE.

\*HEAT TRANSFER + FIRE + FRANCE + REGULATION, GENERAL + SHIPPING CONTAINER

3-22163  
LENAIL B + LUCAS H + MERLE JP  
HEAT PROBLEMS ENCOUNTERED IN RESEARCH ON PACKAGING  
FRANCE. COMMISSARIAT A L-ENERGIE ATOMIQUE  
8 PAGES, BULLETIN D-INFORMATIONS SCIENTIFIQUES ET TECHNIQUES 114, PAGE 53-71, (APRIL 1967). IN FRENCH

THE STATUTORY RECOMMENDATIONS REQUIRE THAT PACKAGING DESIGNED FOR TRANSPORTING RADIOACTIVE MATERIALS SHOULD RESPECT CERTAIN SAFETY CONDITIONS UNDER BOTH NORMAL TRANSPORT CONDITIONS AND ACCIDENTAL CONDITIONS. AFTER A BRIEF OUTLINE OF THE STATUTORY OBLIGATIONS AND A REVIEW OF THE RISKS, THE METHOD OF CONDUCTING THE CALCULATIONS IS DESCRIBED FOR THE TWO QUITE DIFFERENT SETS OF CIRCUMSTANCES MENTIONED ABOVE. UNDER NORMAL CONDITIONS, THE MAIN SOURCE OF HEAT BEING THE RESIDUAL POWER OF THE FUELS, THE TEMPERATURES OF THE CASTLE AND THOSE OF ITS CONTENTS ARE CALCULATED STEP BY STEP FROM THE EXTERNAL TEMPERATURES. THE METHODS USED TO LOWER THE TEMPERATURES ARE MENTIONED BRIEFLY. UNDER TEMPORARY CONDITIONS (ACCIDENTAL CONDITIONS OF FIRE) THE PROBLEMS ENCOUNTERED AND THE METHODS USED TO SOLVE THEM ARE DESCRIBED.

\*HEAT TRANSFER + \*HIGH TEMPERATURE + FIRE + FRANCE + REGULATION, GENERAL

CATEGORY 3  
TRANSPORTATION AND HANDLING OF RADIOACTIVE MATERIALS

3-22164  
MICHEL C + PIROVANO A + MORDECHESSES-REGNIER G  
HEAT TRANSFER IN IRRADIATED FUEL TRANSPORT CASKS  
FRANCE. COMMISSARIAT A L-ENERGIE ATOMIQUE  
13 PAGES, 12 FIGURES, 2 REFERENCES, BULLETIN D-INFORMATIONS SCIENTIFIQUES ET TECHNIQUES 114, PAGE 81-93,  
(APRIL 1967). IN FRENCH

THE TRANSPORT OF NUCLEAR FUEL ELEMENTS IN CASKS FROM THE NUCLEAR REACTOR WHERE THEY ARE IRRADIATED TO THE PROCESSING PLANT POSES HEAT PROBLEMS AS A RESULT OF THE RESIDUAL POWER DUE TO FISSION PRODUCTS CONTAINED IN THESE ELEMENTS. THIS ARTICLE DESCRIBES THE THEORETICAL AND EXPERIMENTAL WORK WHICH LED TO THE DEVELOPMENT AND VERIFICATION OF ORDINATOR PROGRAMS ENABLING THE TEMPERATURE DISTRIBUTION INSIDE AND OUTSIDE PARALLELEPIPEDIC CASKS, CONTAINING FUEL CLADDINGS OF THE E.D.F. 4 TYPE, TO BE CALCULATED.

\*HEAT TRANSFER + FRANCE + FUEL ELEMENT + SHIPPING CONTAINER

3-22441  
BURET R  
TRANSPORT OF THE RAW MATERIALS OF THE URANIUM INDUSTRY -- ORES, CONCENTRATES, URANIUM METAL  
FRANCE. COMMISSARIAT A L-ENERGIE ATOMIQUE  
12 PAGES, 8 FIGURES, BULLETIN D-INFORMATIONS SCIENTIFIQUES ET TECHNIQUES 115, PAGE 45-56, (MAY 1967), IN FRENCH

THE ESSENTIAL ASPECT OF THE PROBLEM OF TRANSPORT OF RAW MATERIALS IN THE URANIUM INDUSTRY IS THE ECONOMIC ONE. THIS ARTICLE DESCRIBES THE TRANSPORTATION NECESSARY TO CARRY OUT THE PRESENT FRENCH PROGRAMME OF ANNUAL URANIUM ORE PRODUCTION. THE TECHNICAL MEANS EMPLOYED TO TRANSPORT ORES, URANIFEROUS PRECONCENTRATES PRODUCED OVERSEAS, CONCENTRATES AND URANIUM INGOTS ARE DESCRIBED. THE QUANTITIES IN METRIC TONS REPRESENTED BY THIS PROGRAM ARE INDICATED, AND AN IDEA IS GIVEN OF THE EXTENT TO WHICH THE TRANSPORTATION PRICE CONTRIBUTES TO THE COST PRICE OF NUCLEAR FUELS. THIS IS OBSERVED TO BE FAR FROM NEGLIGIBLE.

ECONOMIC STUDY + FRANCE + RAW MATERIAL + RAW MATERIAL + TRANSPORTATION AND HANDLING

3-22442  
LABROUSSE M  
STATISTICAL AND ECONOMIC DATA OF RADIOACTIVE MATERIALS TRANSPORTATION  
FRANCE. COMMISSARIAT A L-ENERGIE ATOMIQUE  
14 PAGES, 4 FIGURES, 5 TABLES, BULLETIN D-INFORMATIONS SCIENTIFIQUES ET TECHNIQUES 115, PAGE 57-70, (MAY 1967), IN FRENCH

THE ESTABLISHMENT OF A COST PRICE WHICH WOULD MEAN ANYTHING OTHER THAN A SIMPLE WRITTEN ACCOUNT MADE OUT AFTERWARDS, AND WHICH WOULD BE VALID AS A REFERENCE FOR ECONOMIC CALCULATION, MEETS WITH MANY DIFFICULTIES IN THE MATTER OF THE TRANSPORT OF RADIOACTIVE MATERIALS. HOWEVER STATISTICS SHOW THAT THE VOLUME OF THESE TRANSPORTS, WHICH HAS GROWN VERY QUICKLY SINCE 1958, HAS BEGUN TO TAKE ON A MORE UNIFORM ASPECT SINCE 1965. WE HAVE SEEN MOREOVER THAT THE TECHNICAL AND STATUTORY PROBLEMS ARE WELL DEFINED, EVEN IF THEY ARE NOT ALL SOLVED. THE TIME HAS COME THEREFORE WHEN EVALUATIONS AND ESTIMATES OF A VALID ORDER OF MAGNITUDE CAN BE MADE. WE SHALL GIVE IN TURN THE UNIT COSTS RELATIVE TO THE VARIOUS MEANS OF TRANSPORT, TO THE TYPES OF PACKING USED AND TO THE NUCLEAR RISK INSURANCE. A SYNTHESIS OF THE COST PRICE IS MADE FOR A FEW TRANSPORTS.

\*ECONOMIC STUDY + FRANCE + INSURANCE + STATISTICAL CORRELATION + TRANSPORTATION AND HANDLING

3-22443  
BOURDIER F  
TRANSPORTATION PROCEDURES OF THE CEA  
FRANCE. COMMISSARIAT A L-ENERGIE ATOMIQUE  
7 PAGES, 2 FIGURES, BULLETIN D-INFORMATIONS SCIENTIFIQUES ET TECHNIQUES 115, PAGE 37-43, (MAY 1967), IN FRENCH

IN VIEW OF THE RISKS INVOLVED IN THE TRANSPORT OF RADIOACTIVE MATERIALS, IT HAS BEEN NECESSARY TO DECREE A CERTAIN NUMBER OF SAFETY REGULATIONS TO CUT DOWN THE PROBABILITY OF AN ACCIDENT AND, IF ONE SHOULD OCCUR, TO LIMIT THE CONSEQUENCES. THE AUTHOR EXAMINES IN TURN THE PRACTICAL PROCEDURES OF A GENERAL NATURE WHICH THE USER CAN NOW FIND IN THE DECREE OF JULY 1ST 1966 (ROAD AND RAIL) THEN THE PROCEDURES SPECIFIC TO COMMISSARIAT TRANSPORTS. IN CONCLUSION, THE PROCEDURE IS SHOWN TO BE WELL FOUNDED SINCE OF 21,000 TRANSPORTS CARRIED OUT IN 9 YEARS, NOT ONE ACCIDENT CAUSED BY RADIOACTIVITY HAS BEEN RECORDED.

\*FRANCE + \*REGULATION, GENERAL + COMPARISON, THEORY AND EXPERIENCE + TRANSPORTATION AND HANDLING

3-22444  
VINARNICK L  
TECHNICAL AND PRACTICAL DESIGN OF EXPENDABLE PACKAGING FOR RADIOISOTOPES  
FRANCE. COMMISSARIAT A L-ENERGIE ATOMIQUE

CATEGORY 3  
TRANSPORTATION AND HANDLING OF RADIOACTIVE MATERIALS

3-22444 \*CONTINUED\*  
11 PAGES, 3 FIGURES, 2 TABLES, BULLETIN D-INFORMATIONS SCIENTIFIQUES ET TECHNIQUES 115, PAGE 25-35, (MAY 1967). IN FRENCH

HAVING EXPLAINED THE IMPORTANCE AND THE PURPOSE OF EXPENDABLE PACKAGING FOR RADIOISOTOPES, PARTICULARLY WITH RESPECT TO THE RETURNABLE TYPE, THE AUTHOR DESCRIBES EACH OF THE COMPONENT PARTS IN TURN. HE THEN GOES ON TO LIST THE CRITERIA ACCORDING TO WHICH THEY ARE CHOSEN AND THE MEASUREMENT METHODS USED ON THE PARCELS, AND ENDS BY MENTIONING THE TYPE-B PACKING CONTAINERS WHICH ARE IN THE PROCESS OF DEVELOPMENT.

\*RADIOISOTOPE + \*SHIPPING CONTAINER + DESIGN CRITERIA + FRANCE

3-22445  
LABROUSSE JR  
CONSTRUCTION OF PACKING CONTAINERS FOR RADIOACTIVE MATERIALS  
FRANCE. COMMISSARIAT A L-ENERGIE ATOMIQUE  
22 PAGES, 14 FIGURES, BULLETIN D-INFORMATIONS SCIENTIFIQUES ET TECHNIQUES 115, PAGE 3-24, (MAY 1967), IN FRENCH

AN OUTLINE IS GIVEN OF THE MAIN FACTORS, STATUTORY IN PARTICULAR, WHICH MUST BE TAKEN INTO CONSIDERATION WHEN A PACKING PROJECT IS BEING ESTABLISHED. THE RESULTING PROBLEMS ARE LISTED, AND, ON A FEW SPECIAL POINTS, THE POSSIBLE SOLUTIONS ARE GIVEN, WITH EMPHASIS IN CERTAIN CASES OF THE ECONOMIC FACTORS INVOLVED. SOME EXAMPLES OF TYPICAL PACKING CONTAINERS ARE GIVEN.

\*FABRICATION + \*SHIPPING CONTAINER + ECONOMIC STUDY + FRANCE + REGULATION, GENERAL

3-22809 ALSO IN CATEGORY 17  
TEAR-AWAY SLEEVE  
AEC, DIVISION OF OPERATIONAL SAFETY  
2 PAGES, 2 FIGURES, HEALTH AND SAFETY INFORMATION, 260 (JANUARY 5, 1968)

DESCRIBES A SLEEVE THAT CAN BE EASILY TORN FROM THE ARM, FITS SNUGLY, AND DOES NOT INTERFERE WITH ARM MOVEMENTS. THE SLEEVE WAS DESIGNED TO ELIMINATE THE RISK OF AN OPERATOR BEING PULLED INTO ROTATING MACHINERY AND TO PROTECT AGAINST RADIOACTIVE OR OTHER TOXIC MATERIALS. THE SLEEVE IS MADE OF AN ELASTIC COTTON YARN FASTENED BY TWO SEAMS FORMED BY HOOK AND PILE FASTENERS. DETAILS ARE SHOWN IN FIGURES.

AVAILABILITY - US ATOMIC ENERGY COMMISSION, DIVISION OF OPERATIONAL SAFETY

\*PERSONNEL PROTECTIVE DEVICE + CONTAMINATION

3-22941 ALSO IN CATEGORIES 1 AND 17  
BARCOCK AND WILCOX REPORTS PLUTONIUM NITRATE LEAKAGE FROM POLYETHYLENE BOTTLES  
BARCOCK AND WILCOX COMPANY  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 14(6), PAGE 8, (FEB. 5, 1968)

(LETTER, JAN. 17) ALTHOUGH NOT REPORTABLE UNDER 10 CFR 20, THIS IS AN EXAMPLE OF LEAKAGE AS IN YOUR HEALTH AND SAFETY BULLETIN 259, DEC. 21, 1967. ON JAN. 8, 1968, ROUTINE INSPECTION REVEALED A LEAK FROM A SMALL CRACK IN A 1-GAL POLYETHYLENE BOTTLE THAT PENETRATED THROUGH THREE 4-MIL-THICK POLYETHYLENE BAGS (TWO WITH POOR HEAT SEALS), DISSOLVED A 3-IN.-DIAM HOLE IN THE CARBON-STEEL SHELF, AND DRIPPED THROUGH TWO OTHER STEEL SHELVES. THE BOTTLE WAS QUITE STIFF, AND CRACK MAY HAVE BEEN CAUSED BY RADIOLYTIC GAS PRESSURE, RADIATION DAMAGE, OR OXIDATION. STAINLESS-STEEL MELTING AND ACID-RESISTANT DRIP PANS ARE BEING CONSIDERED.

\*LEAK + \*STORAGE CONTAINER + INCIDENT, EQUIPMENT + NITRATE + PLASTICS + PLUTONIUM

3-24217  
NEARY FJ  
DISCUSSION OF THE TRANSPORT OF NUCLEAR FUEL  
UKAEA HEALTH AND SAFETY BRANCH  
5 PAGES, 1 TABLES, JOURNAL OF THE BRITISH NUCLEAR ENERGY SOCIETY, 6(2), PAGES 182-186 (1967)

A MEETING ON THE SUBJECT OF THE TRANSPORT OF NUCLEAR FUEL WAS HELD IN LONDON AND IS REPORTED IN THIS ARTICLE. THE MAIN TOPICS WERE THE IAEA REGULATIONS AND HOW THEY HAVE BEEN MET.

OPERATING EXPERIENCE SUMMARY + REGULATION, IAEA + UNITED KINGDOM

3-24219  
SEDEN WH  
HTGR SPENT-FUEL SHIPPING COSTS  
GENERAL ATOMIC DIVISION, GENERAL DYNAMICS CORP., SAN DIEGO, CALIF.  
GAMD-7979 +. 29 PAGES, FIGURES, TABLES, AUGUST 17, 1967

COSTS WERE ESTIMATED FOR SHIPPING SPENT FUEL ELEMENTS FROM A 1000 MW(E) HTGR PLANT TO A

CATEGORY 3  
TRANSPORTATION AND HANDLING OF RADIOACTIVE MATERIALS

3-24219 \*CONTINUED\*

REPROCESSING PLANT 1000 MILES AWAY. THE FUEL WAS ASSUMED TO BE SHIPPED IN ONE OF FOUR DIFFERENT SIZE CASKS (49-, 21-, 7-, OR 3-ELEMENT CAPACITY). THE LOWEST COST OF SHIPPING THE SPENT FUEL IS REALIZED BY SHIPPING IT IN THE 49-ELEMENT CAPACITY CASK (ABOUT 22 DOLLARS PER KILOGRAM OF HEAVY METALS). THE HIGHEST COST IS REALIZED BY SHIPPING THE FUEL IN THE 7-ELEMENT CAPACITY CASK BY TRUCK (ABOUT \$85 PER KILOGRAM OF HEAVY METALS). THE COST OF SHIPPING THE FUEL BY TRUCK IS LESS THAN BY RAIL ONLY IF SHIPMENTS ARE LIMITED TO THE 3-ELEMENT CAPACITY CASK. THE SHIPPING COSTS FOR THIS CASK ARE \$71 BY TRUCK, AND \$78 BY RAIL PER KILOGRAM OF HEAVY METALS. THESE FIGURES DO NOT INCLUDE COSTS OF SHIPPING REFLECTOR ELEMENTS.

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

ECONOMIC STUDY + FUEL HANDLING + REACTOR, GCR + SHIPPING ANALYSIS + TRANSPORTATION AND HANDLING

3-24220 ALSO IN CATEGORIES 13 AND 17  
SEDEN WH  
HTGR LONG-TERM SPENT FUEL STORAGE COSTS  
GENERAL ATOMIC DIVISION, GENERAL DYNAMICS CORP., SAN DIEGO, CALIF.  
GAMD-7994 +. 27 PAGES, FIGURES, TABLES, SEPTEMBER 1, 1967

PRELIMINARY DESIGNS HAVE BEEN PREPARED, AND PRESENT-DAY COSTS HAVE BEEN ESTIMATED FOR SPENT FUEL STORAGE VAULTS CONSTRUCTED AS A PART OF A 1000 MW(E) HIGH-TEMPERATURE GAS COOLED REACTOR (HTGR) PLANT. TWO SPENT FUEL STORAGE CONCEPTS WERE DEVELOPED. IN ONE CONCEPT, THE FUEL ELEMENTS ARE STORED IN OPEN CYLINDERS AND GASEOUS NITROGEN IS CIRCULATED ACROSS THE FUEL ELEMENTS TO REMOVE THE DECAY HEAT. IN THE OTHER CONCEPT, THE FUEL ELEMENTS ARE STORED IN SEALED CONTAINERS FROM WHICH NO CONTAMINATED GRAPHITE DUST CAN ESCAPE. THEREFORE, A ONCE-THROUGH AIR COOLING SYSTEM IS USED IN WHICH THE AIR IS PASSED AROUND THE OUTSIDE WALLS OF THE CONTAINERS. THE FUEL STORAGE VAULTS FOR BOTH CONCEPTS HAVE THE SAME CAPACITY - THE AMOUNT OF FUEL DISCHARGED FROM A 1000 MW(E) REACTOR OVER A 5-YR PERIOD. AMORTIZING VAULT CAPITAL COSTS OVER A 5-YR PERIOD, THE TOTAL ANNUAL COST OF STORING THE FUEL ELEMENTS WOULD BE APPROXIMATELY \$60 PER KILOGRAM OF HEAVY METALS STORED FOR BOTH THE OPEN CYLINDER CONCEPT (UNCANNED) AND THE SEALED CONTAINER CONCEPT (CANNED).

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

\*ECONOMIC STUDY + FUEL STORAGE + REACTOR, GCR + STORAGE CONTAINER + WASTE HANDLING

3-24221  
EVANS JH  
STRUCTURAL ANALYSIS OF THE BROOKHAVEN NATIONAL LABORATORY SHIPBOARD IRRADIATOR  
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.  
ORNL-TM-2064 +. 82 PAGES, FIGURES, TABLES, JANUARY 1968

THE METHODS OF EVALUATING THE STRUCTURAL INTEGRITY OF A CONTAINER IN WHICH RADIOACTIVE MATERIAL IS SHIPPED TO SHOW COMPLIANCE WITH THE GOVERNING REGULATIONS ARE ILLUSTRATED IN THIS REPORT OF THE STRUCTURAL ANALYSIS PERFORMED ON THE BROOKHAVEN NATIONAL LABORATORY SHIPBOARD IRRADIATOR. TESTING METHODS, CALCULATORY PROCEDURES, AND OPERATING EXPERIENCE WERE APPLIED IN THE ANALYSIS OF THE CASK WITH RESPECT TO THE REGULATIONS COVERING THE GENERAL STANDARDS FOR PACKAGING, THE STRUCTURAL REQUIREMENTS, THE NORMAL CONDITIONS OF TRANSPORT, AND THE HYPOTHETICAL ACCIDENT CONDITIONS. STRUCTURAL MODIFICATIONS WERE PROPOSED TO ELIMINATE DEFICIENCIES IN THE EXISTING CASK, AND THIS ANALYSIS DEMONSTRATED THAT WITH THE PROPOSED CASK LID, LIFTING DEVICES, AND CRASH FRAME, THE IRRADIATOR COMPLIES WITH ALL THE APPLICABLE REGULATIONS.

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

ACCIDENT ANALYSIS + CONTAINMENT INTEGRITY + IMPACT SHOCK + REGULATION, GENERAL + SHIPPING CONTAINER + STRUCTURAL INTEGRITY

CATEGORY 4  
AEROSPACE SAFETY

4-21399  
BLAKE VE  
AEROSPACE NUCLEAR SAFETY  
SANDIA CORP., ALBUQUERQUE, N. MEX.  
SC-DC-67-1900 + CNF-67C614-6 +. 14 PAGES, FIGURES, JULY 1967, PRESENTED AT 2ND INTERNATIONAL SYMPOSIUM  
ON NUCLEONICS IN AEROSPACE, COLUMBUS, OHIO

OUR FUTURE IN SPACE WILL BE GOVERNED LARGELY BY THE AMOUNT OF POWER WE CAN CARRY THERE. ONE OF THE MOST PROMISING SOURCES OF POWER IS FROM THE DECAY OF RADIOACTIVE ISOTOPES. ALTHOUGH POWER LEVELS ARE NOT HIGH (THAT IS, GENERALLY BELOW 1000 WATTS ELECTRICAL), THE RELIABILITY AND LONG LIFE OF THESE SYSTEMS ARE INDEED ATTRACTIVE. THE CHALLENGE IS TO INCREASE THE SPECIFIC POWER OF THESE SYSTEMS AND AT THE SAME TIME TO INCREASE THE OVERALL SAFETY. THIS PAPER DISCUSSES THE PROBLEM CONCERNED WITH INCREASING AEROSPACE NUCLEAR SYSTEM SAFETY.

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

\*AEROSPACE SAFETY + \*SAFETY PRINCIPLES AND PHILOSOPHY + DOSE + ISOTOPIC GENERATOR + REACTOR, SPACE + SAFETY PROGRAM

4-21773 ALSO IN CATEGORIES 1 AND 15  
PUBLICATIONS OF LASL RESEARCH, 1966  
LOS ALAMOS SCIENTIFIC LAB., LOS ALAMOS, NEW MEXICO  
TID-24041 + MM-1144 +. 138 PAGES, SEPTEMBER 1967

PAPERS, REPORTS, BOOKS, JOURNAL ARTICLES, ETC., OF LASL PUBLISHED IN 1966 ARE LISTED ALPHABETICALLY BY AUTHOR UNDER 26 SUBJECT AREAS. INCLUDES DOCUMENTS ON AEROSPACE SAFETY, BIOLOGY AND MEDICINE, CHEMICAL KINETICS, HEALTH AND SAFETY, INSTRUMENTS, METALLURGY AND CERAMICS, REACTOR TECHNOLOGY, AND WASTE DISPOSAL.

\*BIBLIOGRAPHY + ACCIDENT, GENERAL + AEROSPACE SAFETY + BIOMEDICAL + DECONTAMINATION + DOSIMETRY, GENERAL + INSTRUMENTATION, GENERAL + WASTE DISPOSAL, GENERAL

4-22331 ALSO IN CATEGORY 9  
MOHLER RR + PRICE HJ  
OPTIMAL NUCLEAR REACTOR CONTROL  
NEW MEXICO UNIVERSITY, ALBUQUERQUE  
SC-CR-67-2746 +. 162 PAGES, AUGUST 1967

THE COMPUTATIONAL ASPECTS OF OPTIMUM CONTROL OF NUCLEAR-ROCKET REACTORS WAS STUDIED FOR VARIOUS CONSTRAINTS IN CONTROL AND STATE. THE CONCLUSION WAS THAT THE OPTIMAL STARTUP OF A NUCLEAR-ROCKET REACTOR IS GENERALLY A MAXIMAL-EFFORT PROCESS, CONSISTENT WITH THE VARIOUS CONSTRAINTS WHICH ARE IMPOSED ON THE VARIABLES. IN ADDITION, THE OPTIMAL SOLUTIONS REQUIRING MINIMUM FUEL CONSUMPTION ARE THE SAME AS THOSE WITH MINIMAL TIME AS THE OPTIMALITY CRITERION.

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

\*NUCLEAR ROCKET + \*REACTOR CONTROL + \*REACTOR, SPACE + THEORETICAL INVESTIGATION

4-22333 ALSO IN CATEGORY 9  
PRICE HJ + MOHLER RR  
COMPUTATION OF OPTIMAL CONTROLS FOR A NUCLEAR ROCKET REACTOR  
NEW MEXICO UNIVERSITY  
SC-CR-67-2723 +. 32 PAGES, SEPTEMBER 1967

VARIOUS OPTIMAL REACTOR CONTROL PROBLEMS WITH COMPLICATED CONSTRAINTS ARE SOLVED FOR A NUCLEAR ROCKET ENGINE. THE TECHNIQUE UTILIZES A DIGITAL COMPUTER, WITH THE NUMERICAL ALGORITHM FORMED BY A SUCCESSION OF LINEAR PROGRAMMING PROBLEMS. EACH PROGRAMMING PROBLEM HAS A SOLUTION WHICH IS USED TO RELINEARIZE THE SYSTEMS DYNAMICAL EQUATIONS.

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

\*NUCLEAR ROCKET + \*REACTOR CONTROL + \*REACTOR, SPACE + COMPUTER PROGRAM + MATHEMATICAL TREATMENT + THEORETICAL INVESTIGATION

4-22338 ALSO IN CATEGORY 9  
ENGEL FC + BISHOP AA  
TEST AND ANALYSIS OF A MANIFOLD AND RE-ENTRANT TUBE ASSEMBLY. FEASIBILITY OF A CHEMICAL POISON LOOP SYSTEM  
WESTINGHOUSE ELECTRIC CORP., PITTSBURGH, PA.  
WCAP-2870 + NASA-CR-54994 +. 80 PAGES, FIGURES, TABLES, REFERENCES, JULY 1966

AN ANALYTICAL AND EXPERIMENTAL MODEL STUDY WAS PERFORMED OF A MANIFOLD AND RE-ENTRANT TUBE

CATEGORY 4  
AEROSPACE SAFETY

4-22338 \*CONTINUED\*

CHEMICAL-POISON DISTRIBUTION SYSTEM WHICH ARE PART OF A ROCKET REACTOR-CONTROL LOOP. THE SYSTEM OPERATES BY CHANGING THE CONCENTRATION OF THE POISON (CADMIUM SULFATE) IN A WATER SOLUTION CIRCULATING THROUGH 198 PARALLEL TUBES WHICH PROJECT FROM A MANIFOLD INTO THE CORE. A SPECIAL MANIFOLD AND RE-ENTRANT TUBE ASSEMBLY WAS DESIGNED, AND A FULL-SIZE FLOW MODEL WAS MADE OF PLEXIGLAS. A SERIES OF TESTS WERE THEN PERFORMED TO PROVE THE DESIGN.

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

\*FLOW DISTRIBUTION + \*FLOW THEORY AND EXPERIMENTS + \*TEST, SYSTEM OPERABILITY + CONTROL SYSTEM + NUCLEAR ROCKET + POISON, SOLUBLE + REACTOR, SPACE + REACTOR, WATER

4-22463 ALSO IN CATEGORIES 11 AND 12

HOLCOMB WF

EXPERIENCE WITH GLOVEBOX INERT ATMOSPHERE CONTROL SYSTEM

ARGONNE NATIONAL LAB., IDAHO DIVISION, IDAHO FALLS, IDAHO

4 PAGES, 2 FIGURES, NUCLEAR ENGINEERING AND DESIGN 6(3), PAGE 213-216, (OCT. 1967)

THE HANDLING AND PREPARATION OF SODIUM FOR FUEL ELEMENTS AT THE FUEL CYCLE FACILITY FOR THE SECOND EXPERIMENTAL BREEDER REACTOR REQUIRES THE USE OF A GLOVEBOX EQUIPPED WITH A RECIRCULATING INERT ATMOSPHERE OF HIGH PURITY. THE ARGON GAS PURIFICATION SYSTEM CONSISTS OF A PALLADIUM CATALYST FOR REMOVING OXYGEN, MOLECULAR SIEVE DRYER FOR REMOVING WATER, AND A CANNED BLOWER FOR CIRCULATING THE GAS. THE PURIFICATION SYSTEM SERVES A 250 CU. FT GLOVEBOX COMPLEX AND WITH CONTINUOUS OPERATION CAN MAINTAIN AN ATMOSPHERE WITH OXYGEN IMPURITIES OF 2 PPM AND WATER IMPURITIES OF 6 PPM AT AN INLEAKAGE RATE OF 0.002 CU. FT/HR OF AIR WHILE OPERATING THE GLOVEBOX COMPLEX AT A NEGATIVE PRESSURE OF 1 IN. OF WATER.

\*ARGON + \*DECONTAMINATION + \*GLOVE BOX + \*SODIUM + OPERATING EXPERIENCE

4-22464

CASEY DF

FINAL DESIGN OF SODIUM-HEATED, MODULAR STEAM GENERATORS FOR THE SODIUM COMPONENT TEST INSTALLATION (SCTI) ATOMICS INTERNATIONAL, A DIVISION OF NORTH AMERICAN AVIATION, INC., CANOGA PARK, CALIFORNIA  
13 PAGES, 9 FIGURES, 2 TABLES, 19 REFERENCES, NUCLEAR ENGINEERING AND DESIGN 6(3), PAGE 223-235, (OCTOBER 1967)

DESCRIPTION OF DESIGN AND OPERATION CRITERIA FOR A 37-TUBE, MODULAR-TYPE, LOW-TEMPERATURE EVAPORATOR AND HIGH-TEMPERATURE SUPERHEATER FOR TESTING IN THE SODIUM COMPONENT TEST INSTALLATION (SCTI). DISCUSSION OF MECHANICAL DESIGN DETAILS AND OUTLINE OF PERFORMANCE ANALYSIS. THE EVAPORATOR AND SUPERHEATER MODULES, WHEN COMBINED, WOULD BE CAPABLE OF GENERATING STEAM AT 2400 PSI AND 1050 F.

\*DESIGN CRITERIA + \*HEAT EXCHANGER + \*SODIUM + EVAPORATION + CUT OF PILE LOOPS AND EXPERIMENTS + THERMAL ANALYSIS + THERMAL EXPERIMENT

4-22465

HOLCOMB WF

CARBURIZATION OF TYPE 304 STAINLESS STEEL IN LIQUID SODIUM

ARGONNE NATIONAL LAB., IDAHO FACILITIES, IDAHO FALLS, IDAHO

9 PAGES, 5 FIGURES, 1 TABLE, 9 REFERENCES, NUCLEAR ENGINEERING AND DESIGN 6(3), PAGE 264-272, (OCTOBER 1967)

MICROHARDNESS SCANS ACROSS TEST SPECIMENS WERE USED AS A SUITABLE METALLURGICAL TECHNIQUE FOR DETERMINING QUANTITATIVELY THE CARBURIZATION POTENTIAL OF MOLTEN SODIUM IN CONTACT WITH TYPE 304 STAINLESS STEEL. THE ADVANTAGE OF USING HARDNESS DATA IN THIS MANNER IS THAT IT COULD BE USED AS A METHOD OF ANALYSIS OF CARBURIZATION SPECIMENS WHEN CHEMICAL ANALYSES ARE NOT FEASIBLE. RESULTS INDICATED THAT MICROHARDNESS VALUES AT TEMPERATURES OF 565, 605, AND 650 C COULD BE FITTED TO CURVES CORRELATING THE HARDNESS TO CARBON CONTENT OF LIQUID SODIUM. IT WAS FOUND THAT CARBONACEOUS COMPOUNDS INTENTIONALLY MIXED IN LIQUID SODIUM GAVE A CARBON SOURCE WHICH PRODUCED CARBURIZATION IN THE STAINLESS STEEL TEST SPECIMENS. THE CAPSULE METHODS USED FOR PROVIDING AND CONTROLLING A MOLTEN SODIUM ENVIRONMENT FOR THE STAINLESS STEEL TEST SPECIMENS INDICATED A NEED FOR FURTHER STUDY IN THE USE OF VARIOUS CAPSULE-LINER MATERIALS WHICH ARE INERT TO CARBURIZATION.

\*CARBON + \*PROPERTY, PHYSICAL + \*SODIUM + \*STEEL, STAINLESS + MASS TRANSFER

4-22466

ALSO IN CATEGORY 7

KEIL H

FISSION PRODUCT TRANSFER IN THE SYSTEM. UO<sub>2</sub>/LIQUID SODIUM/STAINLESS STEEL

EUROPEAN ATOMIC ENERGY COMMUNITY, CHEMISTRY DEPARTMENT, ISPRA (ITALY)

5 PAGES, 8 FIGURES, 2 TABLES, 14 REFERENCES, ATOMKERNENERG 12(3-4), PAGE 96-100, (MARCH-APRIL 1967)

FISSION-PRODUCT TRANSFER FROM UO<sub>2</sub> POWDER THROUGH LIQUID SODIUM TOWARDS STAINLESS STEEL WAS INVESTIGATED, AND THE DIFFUSION OF FP, U, AND PU IN STAINLESS STEEL WAS MEASURED IN THE TEMPERATURE RANGE 700 TO 1000 C. DIFFUSION COEFFICIENTS AND ACTIVATION ENERGIES ARE STATED.

\*DIFFUSION COEFFICIENT + \*FISSION PRODUCT RETENTION + \*SODIUM + \*STEEL, STAINLESS +

CATEGORY 4  
AEOSPACE SAFETY

4-22466 \*CONTINUED\*  
FISSION PRODUCT RELEASE, GENERAL + FISSION PRODUCT TRANSPORT + PLUTONIUM + URANIUM DIOXIDE

4-22468 ALSO IN CATEGORY 7

CASTLEMAN AW + TANG IN  
THERMODYNAMICS OF FISSION PRODUCT SODIUM SOLUTIONS  
BROOKHAVEN NATIONAL LAB.

BNL-11611 +. 3 PAGES, 1 FIGURE, 1 TABLE, 2 REFERENCES, NOV. 1967, ABSTRACT IN ANS TRANSACTIONS 10(2),  
PRESENTED AT THE 1967 WINTER MEETING OF THE AMERICAN NUCLEAR SOCIETY, CHICAGO, ILLINOIS, NOV. 5-9, 1967

GIVES THE RESULTS OF AN INVESTIGATION OF THE REQUIRED THERMODYNAMIC PROPERTIES AND THE APPLICATION OF THESE RESULTS IN CALCULATING FISSION PRODUCT PARTIAL PRESSURES AND THE EXTENT OF THEIR VAPORIZATION. WE MEASURED THE THERMODYNAMIC PROPERTIES OF SODIUM IODIDE-SODIUM SOLUTIONS USING A CONTINUOUS VAPORIZATION TECHNIQUE. EXPERIMENTS WERE MADE OVER THE TEMPERATURE RANGE 700 TO 1100 K. THE RESULTS, WHICH ARE REPRESENTED BY THE EQUATION  $\Delta(AVE.) F-SUPERSCRIPT-E$  EQUALS  $15,900-6.8 T$ , ARE IN EXCELLENT AGREEMENT WITH OUR ESTIMATES EMPLOYING TWO METHODS, ONE BASED ON PHASE-DIAGRAM CALCULATIONS AND THE OTHER ON STATISTICAL MECHANICAL CONSIDERATIONS. THE PARTIAL PRESSURES PER MOLE FRACTION OF FISSION PRODUCTS IN SOLUTION ARE PLOTTED AS A FUNCTION OF RECIPROCAL ABSOLUTE TEMPERATURE.

\*FISSION PRODUCT RETENTION + \*SODIUM + \*THERMODYNAMICS + ANTIMONY + BARIUM + CESIUM + PROPERTY, PHYSICAL + RUBIDIUM + STRONTIUM + TELLURIUM

4-22469 ALSO IN CATEGORY 7

SALZANO FJ + ARONSON S  
THRESHOLD PRESSURES FOR THE REACTION OF SODIUM AND OTHER ALKALI METALS WITH GRAPHITE  
BROOKHAVEN NATIONAL LAB., UPTON, N. Y.

BNL-11554 + CONF-671102-11 +. 8 PAGES, FIGURES, TABLES, REFERENCES, 1967, PRESENTED AT 15TH CONFERENCE ON REMOTE SYSTEMS TECHNOLOGY AND ATOM FAIR, CHICAGO, ILLINOIS

THIS PAPER PRESENTS THE RESULTS OF A CALCULATION OF THE THRESHOLD PRESSURES FOR THE SODIUM-GRAPHITE SYSTEM BASED ON AN IONIC MECHANISM OF BONDING OF THE ALKALI-METAL TO THE GRAPHITIC LAYERS. THE THRESHOLD PRESSURE INCREASES IN THE ORDER CESIUM, RUBIDIUM, POTASSIUM, AND SODIUM. THUS, THE INITIATION OF THE REACTION BETWEEN SODIUM AND GRAPHITE REQUIRES PRESSURES WHICH ARE MORE THAN THREE ORDERS OF MAGNITUDE HIGHER THAN FOR THE OTHER ALKALI METALS.

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

\*CHEMICAL REACTION + \*GRAPHITE + \*SODIUM + CESIUM + POTASSIUM + RUBIDIUM + THEORETICAL INVESTIGATION + THERMODYNAMICS

4-22471

CUMMINGS RL  
EVALUATION OF FERRITIC STEEL IN THE SECONDARY SODIUM SYSTEM  
ATOMICS INTERNATIONAL, CANOGA PARK, CALIF.

NAA-SR-MEMO-11986(REV.) +. 21 PAGES, TABLES, REFERENCES, OCTOBER 25, 1966

THE MECHANICAL AND METALLURGICAL PROPERTIES OF FERRITIC STEELS WERE REVIEWED FOR APPLICABILITY TO CONSTRUCTION OF THE FFTF SECONDARY SODIUM SYSTEM AS REPLACEMENT FOR THE MORE COSTLY AUSTENITIC STAINLESS STEELS. MATERIALS SELECTED FOR EVALUATION UPON THE BASIS OF THEIR COST, RESISTANCE TO CORROSION IN SODIUM, AND GENERALLY GOOD MECHANICAL PROPERTIES WERE ASTM A 106, GRADE B; MEDIUM CARBON STEEL, AND 2 1/4-CHROMIUM/1-MOLYBDENUM STEEL. THE PROPERTIES OF THESE MATERIALS WERE COMPARED WITH TYPE-304 SS. THE RECOMMENDATIONS FOR THE FFTF SECONDARY SODIUM SYSTEM CONSTRUCTION ARE - (1) MAKE PIPING FROM SCHEDULE-10 TYPE-304 SS, (2) MAKE THE AIR-COOLED HEAT DUMP EXCHANGER WITH 2 1/4TH POME/1 MOLYBDENUM STEEL TUBING HAVING CARBON STEEL FINS, (3) MAKE THE PURIFICATION COLD-TPAP FROM ASTM A 106, GRADE B CARBON STEEL.

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

\*FFTF (TR) + \*SODIUM + \*STEEL + \*STEEL, STAINLESS + CORROSION + MASS TRANSFER + PROPERTY, PHYSICAL + REACTOR, FAST + REACTOR, LMCR

4-22474

EICHELBERGER RL + MCKISSON RL  
THE SOLUBILITY OF COPPER IN LIQUID SODIUM  
ATOMICS INTERNATIONAL

2 PAGES, ANS TRANSACTIONS 10(2), PAGE 495 AND 496, (NOV. 1967), PRESENTED AT THE 1967 WINTER MEETING OF THE AMERICAN NUCLEAR SOCIETY, CHICAGO, ILLINOIS, NOV. 5-9, 1967

THE SOLUBILITY OF COPPER IN SODIUM WAS MEASURED IN THE TEMPERATURE RANGE 250 TO 725 C. TWO TECHNIQUES WERE USED. THE COPPER SOURCE IN BOTH TECHNIQUES IS OFHC COPPER. IN ONE CASE, THE SOLUTE WAS IN THE FORM OF A CRUCIBLE, SO THE SODIUM WAS NOT IN CONTACT WITH ANY OTHER METAL DURING THE EQUILIBRATION.

\*COPPER + \*PROPERTY, PHYSICAL + \*SODIUM + CHEMICAL REACTION



CATEGORY 4  
AEROSPACE SAFETY

4-22476

FAUSKE HK + QUINN DJ + JEANS WC  
SODIUM FLASHING EXPERIMENT  
ARGONNE NATIONAL LAB.

3 PAGES, 1 FIGURE, 2 REFERENCES, ABSTRACT IN ANS TRANSACTIONS 10(2), PAGE 693, (NOV. 1967); PRESENTED AT THE 1967 WINTER MEETING OF THE AMERICAN NUCLEAR SOCIETY, CHICAGO, ILLINOIS, NOV. 5-9, 1967

BECAUSE OF THE LARGE INHERENT COMPRESSIBILITY ASSOCIATED WITH FLASHING LIQUID METALS, SUCH PHENOMENA AS CRITICAL FLOW AND THE VELOCITY OF SOUND BECOME IMPORTANT WHEN ATTEMPTING TO DESCRIBE THE COOLANT DYNAMICS FOLLOWING A SUDDEN LOSS OF COOLING CAPABILITY IN A FAST-BREEDER REACTOR. TO OBTAIN DATA ON CRITICAL FLOW OF MAXIMUM EXPULSION RATES OF LIQUID-SODIUM-VAPOR MIXTURES, A SODIUM-FLASHING EXPERIMENTAL ASSEMBLY WAS BUILT. THE FLASHING OF LIQUID SODIUM WAS ACHIEVED BY DECREASING THE SYSTEM PRESSURE BELOW THE SATURATION PRESSURE CORRESPONDING TO THE STAGNATION TEMPERATURE.

\*SODIUM + \*THERMAL EXPERIMENT + EVAPORATION + PROPERTY, PHYSICAL + REACTOR; LMCR + STEAM + THERMAL PROPERTY

4-22479

ALSO IN CATEGORY 7

KOONTZ RL + NELSON CT + BAURMASH L  
CHARACTERISTICS OF AEROSOLS GENERATED DURING SODIUM FIRES  
ATOMICS INTERNATIONAL

2 PAGES, 1 TABLE, 1 REFERENCE, ANS TRANSACTIONS 10(2), PAGE 689 AND 690, (NOV. 1965), PRESENTED AT THE 1967 WINTER MEETING OF THE AMERICAN NUCLEAR SOCIETY, CHICAGO, ILLINOIS, NOV. 5-9, 1967

STUDIES ARE BEING CONDUCTED TO DEVELOP EXPERIMENTAL INFORMATION AND ANALYTICAL METHODS THAT CHARACTERIZE THE RELEASE AND TRANSPORT OF EFFLUENTS GENERATED DURING A SODIUM FIRE IN A LIQUID-METAL FAST-BREEDER (LMFBR). EXPERIMENTS HAVE BEEN CONDUCTED TO STUDY THE RELEASE OF OXIDIZED SODIUM AND A SIMULATED FISSION PRODUCT CONSISTING OF NA-131-I INVOLVING VARIOUS QUANTITIES OF SODIUM IN DIFFERENT SIZED CONTAINERS AND IN VARIOUS OXYGEN ENVIRONMENTS.

\*AEROSOL + \*FIRE + \*PARTICLE SIZE + \*SODIUM + IODINE + OXYGEN + REACTOR, LMCR

4-22480

ALSO IN CATEGORY 7

HAUSKNECHT DF + GREENFIELD MA  
A MODEL DESCRIBING THE BEHAVIOR OF THE AEROSOL PRODUCED BY A SODIUM FIRE  
ATOMICS INTERNATIONAL + UCLA, SCHOOL OF MEDICINE

1 PAGE, 8 REFERENCES, ANS TRANSACTIONS 10(2), PAGE 690, (NOV. 1967), PRESENTED AT THE 1967 WINTER MEETING OF THE AMERICAN NUCLEAR SOCIETY, CHICAGO, ILLINOIS, NOV. 5-9, 1967

PREDICTION OF THE BEHAVIOR OF AEROSOLS GENERATED DURING A LARGE SODIUM FIRE IS REQUIRED IN THE SAFETY ANALYSIS OF SODIUM-COOLED FAST REACTORS. TO AID IN UNDERSTANDING AND EXTENDING THE RESULTS OF THE EXPERIMENTAL PROGRAM, A THEORETICAL EFFORT WAS UNDERTAKEN TO DEVELOP A MATHEMATICAL MODEL THAT WOULD PREDICT THE AGGLOMERATION AND DEPOSITION HISTORY OF AEROSOL PARTICLES. THE MATHEMATICAL MODEL IS BASED ON THE CLASSICAL APPROACH OF SMOLUCHOWSKI AS GENERALIZED BY MULLER AND GOLDMAN, FOR A DISTRIBUTION OF PARTICLE SIZES. NUMERICAL INTEGRATION OF THE BASIC EQUATION WAS ACCOMPLISHED FIRST BY FRIEDMAN AND SHIFFMAN, AND MORE RECENTLY BY ZEBEL, USING AN IBM-650 COMPUTER. NUMERICAL EVALUATIONS WERE PERFORMED WITH THE IMPROVED MODEL AND GOOD AGREEMENT WAS OBTAINED WITH EXPERIMENTAL RESULTS FOR MASS DISPOSITION AND PARTICLE SIZE. IT ILLUSTRATES THE IMPORTANCE OF THE ADDITIONAL AGGLOMERATION MECHANISMS IN ACHIEVING AGREEMENT WITH EXPERIMENT.

\*ANALYTICAL MODEL + \*COMPUTER PROGRAM + \*FIRE + \*SODIUM + MODEL TESTING

4-22483

ALSO IN CATEGORY 7

MURBACH EW + BOODINE JE  
DISPENSING AND SAMPLING SODIUM FOR THE LMFBR CLADDING PROJECT  
ATOMICS INTERNATIONAL

1 PAGES, ANS TRANSACTIONS 10(2), PAGE 493, (NOV. 1967), PRESENTED AT THE 1967 WINTER MEETING OF THE AMERICAN NUCLEAR SOCIETY, CHICAGO, ILLINOIS, NOV. 5-9, 1967

ONE OF THE TASKS ON THE LMFBR CLADDING PROGRAM AT ATOMICS INTERNATIONAL INVOLVES THE MAINTENANCE OF A SUPPLY OF SYSTEMS-QUALITY SODIUM, THE DISPENSING OF THIS SODIUM, AND SAMPLING OF SODIUM TEST UNITS. A SUPPLY LOOP OF OVER 150-GAL CAPACITY WAS CONSTRUCTED FOR MAINTAINING SUFFICIENT SODIUM OF CONSTANT COMPOSITION FOR THE DURATION OF THE PROGRAM. THE LOOP, WHICH OPERATES AT 500 F, IS COLD-TRAPPED AT 260 F FOR CONTROL OF OXYGEN, AND HOT-TRAPPED AT 1200 F USING A STAINLESS-STEEL FOIL TRAP FOR CONTROL OF CARBON. THE IMPURITY LEVELS IN THE SODIUM ARE LESS THAN 15 PPM CARBON, LESS THAN 10 PPM OXYGEN, AND LESS THAN 5 PPM EACH OF IRON, CHROMIUM, AND NICKEL. EXPERIENCE TO DATE HAS SHOWN THAT HIGH-PURITY SODIUM CAN BE DISPENSED AND SAMPLED WITHOUT EXCESSIVE CONTAMINATION.

\*CARBON + \*SODIUM + CHROMIUM + CONTAMINATION + DECONTAMINATION + IRON + NICKEL

4-22484

ALSO IN CATEGORY 7

PLUMLEE DE + NOVAK PE

CATEGORY 4  
AEROSPACE SAFETY

4-22484 \*CONTINUED\*  
DIRECT IN-PILE MEASUREMENT OF THE CENTRAL TEMPERATURE OF A SODIUM-BONDED MIXED-OXIDE FUEL PIN  
GENERAL ELECTRIC  
1 PAGE, 1 FIGURE, 5 REFERENCES, ANS TRANSACTIONS 10(2), PAGE 639, (NOV. 1967), PRESENTED AT THE 1967  
WINTER MEETING OF THE AMERICAN NUCLEAR SOCIETY, CHICAGO, ILLINOIS, NOV. 5-9, 1967

IN PREVIOUS EXPERIMENTS, SODIUM-BONDED MIXED-OXIDE FUEL SPECIMENS INDICATED GOOD SHORT-TERM  
PERFORMANCE UP TO LINEAR POWER GENERATION RATES OF 30 KW/FT. SATISFACTORY  
MIXED-OXIDE/SODIUM/CLADDING COMPATIBILITY WAS OBSERVED IN FUEL IRRADIATED TO 14,400 MWD/T AT  
POWERS UP TO 21 KW/FT. BECAUSE OF THESE PROMISING RESULTS, AND THE LACK OF DATA CONCERNING  
THE EFFECT OF SODIUM ON THE THERMAL CONDUCTIVITY OF MIXED-OXIDE FUEL, THIS EXPERIMENT WAS  
DESIGNED AS PART OF THE FAST CERAMIC REACTOR DEVELOPMENT PROGRAM TO PERMIT THE DIRECT  
MEASUREMENT OF THE CENTRAL FUEL TEMPERATURE OF A SODIUM-BONDED FUEL SPECIMEN WITH A  
HIGH-TEMPERATURE THERMOCOUPLE. THE RESULTS OF THIS EXPERIMENT SUPPORT THEORETICAL  
CALCULATIONS OF IMPROVED THERMAL CONDUCTIVITY OF SODIUM-BONDED FUEL MADE IN THE LITERATURE  
AND POINT TO THE POSSIBILITY OF ATTAINING SUBSTANTIALLY HIGHER POWER DENSITIES IN  
SODIUM-BONDED MIXED-OXIDE FUEL COMPARED TO GAS-BONDED FUEL.

\*DESIGN CRITERIA + \*FUEL BURNUP + \*FUEL ELEMENT + \*THERMAL EXPERIMENT + SODIUM

4-22486 ALSO IN CATEGORY 7  
HORN FL  
SOME AEROSOL PROPERTIES OF VAPORIZED FAST-REACTOR FUELS  
BROOKHAVEN NATIONAL LAB.  
3 PAGES, 1 TABLE, ABSTRACT IN ANS TRANSACTIONS 10(2), PAGE 699, (NOV. 1967), PRESENTED AT THE 1967 WINTER  
MEETING OF THE AMERICAN NUCLEAR SOCIETY, CHICAGO, ILLINOIS, NOV. 5-9, 1967

THE NATURE AND COAGULATION BEHAVIOR OF AEROSOLS FORMED DURING THE HIGH-TEMPERATURE  
VAPORIZATION OF FAST-REACTOR FUEL MATERIALS WERE INVESTIGATED. THE FUEL MATERIALS, PUO<sub>2</sub> AND  
UO<sub>2</sub>, WERE RAISED RAPIDLY ABOVE THEIR MELTING POINTS TO SIMULATE AN ACCIDENTAL RELEASE OF FUEL  
DURING A REACTOR POWER EXCURSION. INDIVIDUAL STUDIES WERE MADE WITH PUO<sub>2</sub> VAPORIZED AT 2800 C  
AND UO<sub>2</sub> VAPORIZED AT 3000 C INTO BOTH ARGON AND NITROGEN GASES. IN ADDITION, COMBINATIONS OF  
VAPORIZED PUO<sub>2</sub>-UO<sub>2</sub>, AND NA VAPORIZED INTO MOIST AIR AND MIXED WITH VAPORIZING UO<sub>2</sub> WERE ALSO  
STUDIED. THE MAXIMUM PARTICLE SIZE, WHICH WAS REACHED AT ABOUT 24 H, WAS DEPENDENT UPON THE  
INITIAL MASS CONCENTRATION. THE STANDARD DEVIATION GENERALLY REMAINED CONSTANT FOR A  
PARTICULAR RUN, BUT INCREASED AS THE MASS CONCENTRATION OF THE RUNS WAS INCREASED. THERE WAS  
NO APPARENT CORRELATION OF COAGULATION CONSTANT WITH TIME, SURFACE-TO-VOLUME RATIO, OR MASS  
CONCENTRATION IN THE RANGE OF VALUES INVESTIGATED.

\*AEROSOL PRODUCTION + \*FUEL MELTDOWN + \*PARTICLE SIZE + \*PLUTONIUM + \*SODIUM + AEROSOL +  
AEROSOL PROPERTIES + ARGON + EVAPORATION + PLUTONIUM DIOXIDE + URANIUM DIOXIDE

4-22489 ALSO IN CATEGORY 7  
KUMKUL WP + BERGER S  
FISSION-PRODUCT DEPOSITION IN A FAST-BREEDER REACTOR SYSTEM CONTAINING FAILED FUEL ELEMENTS  
ATOMICS INTERNATIONAL  
15 PAGES, TABLES, FIGURES, REFERENCES, NOVEMBER 3, 1967, ABSTRACT IN ANS TRANSACTIONS 10(2), PAGE 496,  
PRESENTED AT AMERICAN NUCLEAR SOCIETY WINTER MEETING, NOVEMBER 5-9, 1967, CHICAGO, ILLINOIS

A DESIGN OBJECTIVE FOR THE LIQUID-METAL FAST-BREEDER REACTOR (LMFBR) IS TO ALLOW FOR POSSIBLE  
OPERATION WITH SOME FAILED FUEL ELEMENTS, AND IN ADDITION, TO PERMIT ACCESS TO THE  
HEAT-EXCHANGER CELLS AFTER REACTOR SHUTDOWN. THE CONCEPT OF A SYSTEM-DEPLETION FACTOR  
PROVIDES AN INTERIM METHOD OF ESTIMATING THE FISSION-PRODUCT DEPOSITION RESULTING FROM  
FAILED-FUEL-ELEMENT OPERATION. THE SYSTEM-DEPLETION CONCEPT IS PROPOSED AS AN INTERIM METHOD  
OF MORE CLOSELY APPROXIMATING THE ACTUAL EXTENT OF DEPOSITION AND THE CONSEQUENT MAINTENANCE  
PROBLEM.

\*CESIUM + \*DEPOSITION + \*FISSION PRODUCT RETENTION + \*FISSION PRODUCT TRANSPORT + \*REACTOR, LMCR +  
\*SODIUM + CERIUM + IODINE + REACTOR, FAST + RUTHENIUM + ZIRCONIUM

4-22514 ALSO IN CATEGORY 7  
ETTINGER HJ + MOSS WD + BUSEY H  
CHARACTERISTICS OF THE AEROSOL PRODUCED FROM BURNING SODIUM AND PLUTONIUM  
LOS ALAMOS SCIENTIFIC LABORATORY, LOS ALAMOS, NEW MEXICO  
14 PAGES, 6 TABLES, 15 FIGURES, NUCLEAR SCIENCE AND ENGINEERING 30, PAGES 1-13, (OCTOBER 1967)

SAFETY ANALYSIS OF SODIUM-COOLED PLUTONIUM-FUELED FAST REACTOR PLANTS MUST BE CONCERNED WITH  
THE POSSIBILITY OF FIRES INVOLVING THESE MATERIALS. DESIGN OF AN AIR CLEANING SYSTEM FOR  
SUCH A FACILITY REQUIRES BASIC DATA DEFINING THE AEROSOL CHARACTERISTICS OF SODIUM AND  
PLUTONIUM RELEASED DURING A FIPE. WHEN PLUTONIUM ALLOY WAS BURNED UNDER REDUCED OXYGEN  
CONDITIONS, THE FRACTION AIRBORNE RANGED FROM 2 X 10<sup>-7</sup>TH TO 4 X 10<sup>-6</sup>TH. FIRES INVOLVING  
PLUTONIUM ALLOY AND SODIUM TOGETHER PRODUCED AIRBORNE PLUTONIUM-SODIUM RATIOS RANGING FROM  
0.34 TO 0.008%.

\*AEROSOL PRODUCTION + \*FIRE + \*PARTICLE SIZE + \*PLUTONIUM + \*SODIUM + AEROSOL PROPERTIES + METAL, LIQUID +  
PARTICLE SIZE DISTRIBUTION + REACTOR, FAST + REACTOR, LMCR

4-22515 ALSO IN CATEGORY 7

CATEGORY 4  
AEROSPACE SAFETY4-22515 \*CONTINUED\*  
NICHOLS RW + GITTUS JHSOME ASPECTS OF MATERIALS TECHNOLOGY OF IMPORTANCE TO THE DEVELOPMENT OF NUCLEAR REACTORS.  
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, RISLEY, ENGLAND  
TRG-REPORT-1516 +. 30 PAGES, 19 FIGURES, 19 REFERENCES, MAY 26, 1967

DESCRIBES THE EFFECTS OF IRRADIATION AND CORROSION ON STRUCTURAL MATERIALS IN THE ADVANCED GAS-COOLED REACTOR AND THE HIGH TEMPERATURE GAS-COOLED REACTOR, WITH PARTICULAR MENTION OF THE INFLUENCE OF RESISTANCE TO CORROSION ON THE SELECTION OF MATERIALS FOR HEAT EXCHANGE TUBING AND FOR THERMAL INSULATION FOILS. A MAJOR PROGRAM OF EXPERIMENTS INVOLVING A STATISTICAL EXAMINATION OF THIS PROBLEM HAS HIGHLIGHTED THE ADVANTAGES ACCRUING FROM USE OF A FINE METALLURGICAL GRAIN SIZE. WITH RESPECT TO THE STEAM GENERATING HEAVY WATER REACTOR, MENTION IS MADE OF THE ASSESSMENT OF ZIRCONIUM ALLOY PRESSURE TUBES FOR HYDROGEN AND IRRADIATION BRITTLENESS AND A TECHNIQUE BASED ON MEASURING THE CRITICAL CRACK OPENING DISPLACEMENT IS DESCRIBED WHICH MAY BE OF GENERAL VALUE FOR ASSESSING FRACTURE TOUGHNESS IN RELATION TO ENGINEERING DESIGNS. MENTION IS MADE OF SEVERAL ASPECTS OF THE CORROSION AND MASS TRANSFER OF METALS IN LIQUID SODIUM.

AVAILABILITY - UNITED KINGDOM ATOMIC ENERGY AUTHORITY

\*ALLOY + \*CORROSION + \*RADIATION EFFECT + \*STEEL + \*ZIRCONIUM + CARBON + MASS TRANSFER + METAL, LIQUID + REACTOR, GCR + REACTOR, POWER

4-22516 ALSO IN CATEGORY 7  
THOMPSON R + EVETTS MA + MOTT BW  
A SODIUM PURIFICATION AND GENERAL HANDLING FACILITY  
ATOMIC ENERGY RESEARCH ESTABLISHMENT, METALLURGY DIV., HARWELL  
AERE-R-5502 +. 12 PAGES, 3 FIGURES, 2 TABLES, JULY 1967

GIVES AN ACCOUNT OF THE DESIGN AND PERFORMANCE OF A MOLECULAR SODIUM STILL, TOGETHER WITH A VACUUM/GLOVE BOX FOR GENERAL HANDLING OF THE PURIFIED METAL. ANALYSIS OF SODIUM BOTH BEFORE AND AFTER DISTILLATION HAS BEEN MADE AND THE RESULTS REPORTED. IT IS CONCLUDED THAT IN GENERAL THE SYSTEM WORKS WELL, BUT, FOR THE PRODUCTION OF MATERIAL OF GREATER PURITY, PARTICULARLY WITH RESPECT TO CARBON, SOME MODIFICATIONS TO THE VACUUM SYSTEMS ARE REQUIRED.

AVAILABILITY - UNITED KINGDOM ATOMIC ENERGY AUTHORITY, METALLURGY DIVISION, ATOMIC ENERGY RESEARCH ESTABLISHMENT, HARWELL, BERKSHIRE

\*COOLANT CHEMISTRY + \*DECONTAMINATION + \*METAL, LIQUID + \*RECOVERY PROCESS + \*SODIUM + CARBON + REACTOR COOLANT

4-22547  
WILLIAMSON KD + BARTLIT JR + THURSTON RS  
STUDIES OF FORCED CONVECTION HEAT TRANSFER TO CRYOGENIC FLUIDS  
LOS ALAMOS SCIENTIFIC LAB., NEW MEXICO  
LA-DC-8716 + CONF-671103-3 +. 30 PAGES, 1967, FROM 60TH ANNUAL MEETING OF THE AMERICAN INSTITUTE OF CHEMICAL ENGINEERS, NEW YORK

RECENT FORCED-CONVECTION HEAT-TRANSFER STUDIES FOR LIQUID H<sub>2</sub> AND LIQUID N<sub>2</sub> WERE DIRECTED AT STEADY AND OSCILLATING FLOW, CORRELATION OF DATA FROM MANY AUTHORS, AND INSTRUMENTATION PROBLEMS. DATA WERE OBTAINED IN PIPES RANGING IN SIZE FROM 1/4 TO 4.5 IN. IN INNER DIAMETER.

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

CRYOGENICS + HEAT TRANSFER EXPERIMENT + PIPING + THERMAL EXPERIMENT

4-22549 ALSO IN CATEGORY 7  
KELLER DL  
PROGRESS RELATING TO CIVILIAN APPLICATIONS DURING OCTOBER THROUGH DECEMBER 1966  
BATTELLE MEMORIAL INST., COLUMBUS, OHIO  
BMI-1791 +. 96 PAGES, FIGURES, TABLES, JANUARY 1, 1967

THIS PROGRESS REPORT PRESENTS INFORMATION ON THE FOLLOWING - URANIUM-PLUTONIUM MONONITRIDE FUEL MATERIALS, IRRADIATION EFFECTS IN REACTOR CLADDING MATERIALS, COATED-PARTICLE FUEL MATERIALS, CERAMIC-COATED PLUTONIUM-BASE PARTICLE FUELS, PYROLYTIC-CARBON-COATED URANIUM NITRIDE, GRAPHITE COATINGS ON FUEL PARTICLES, UO<sub>2</sub>-PUO<sub>2</sub> FUEL DEVELOPMENT, AND EFFECTS OF HIGH BURNUP ON UO<sub>2</sub>-CO<sub>2</sub> AND UO<sub>2</sub>-ZRO FUELS.

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

\*FUEL ELEMENT + \*PLUTONIUM + \*TESTING + \*URANIUM + CARBIDE + CARBON + CERAMICS + COATED PARTICLE + CORROSION + FUEL REPROCESSING + GRAPHITE + NITRIDE + OXIDE + STEEL, STAINLESS

4-22555 ALSO IN CATEGORY 7  
ADWICK AG + WARNER RJ  
THE INFLUENCE OF PARTICLE SIZE DISTRIBUTION ON THE SINTERING OF CERAMIC POWDERS

CATEGORY 4  
AEROSPACE SAFETY

4-22555 \*CONTINUED\*  
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, RISLEY  
TRG-REPORT-1188(D) +. 19 PAGES, 7 FIGURES, 4 TABLES, 8 REFERENCES, 1966

ONE OF THE FACTORS THAT CAN AFFECT THE SINTERED DENSITY OF A CERAMIC IS THE PRESSING BEHAVIOR. THIS IN TURN IS INFLUENCED BY THE PARTICLE-SIZE DISTRIBUTION. FROM AN ANALYSIS OF DATA ON THE PACKING OF DENSE SPHERES AND PACKING EXPERIMENTS ON IRREGULAR SHAPED, COARSE CERAMIC PARTICLES A SERIES OF CURVES HAVE BEEN DERIVED. IT IS CLAIMED THAT THESE CURVES CAN BE USED TO RELATE THE INFLUENCE OF PARTICLE SIZE DISTRIBUTION OF THE PACKING EFFICIENCY AND ULTIMATELY ON THE SINTERING BEHAVIOR OF CERAMIC POWDERS. THE PARTICLE-SIZE DISTRIBUTIONS OF (U,PU)O<sub>2</sub> POWDERS WERE MEASURED USING THE OPTICAL MICROSCOPE. THESE DISTRIBUTIONS HAVE BEEN CORRELATED WITH SUBSEQUENT PRESSING AND SINTERING BY MEANS OF THIS ANALYSIS. GOOD AGREEMENT HAS BEEN FOUND.

AVAILABILITY - PUBLIC RELATIONS BRANCH, UKAEA, RISLEY, WARRINGTON, LANCASHIRE

\*CERAMICS + \*PARTICLE SIZE DISTRIBUTION + \*PLUTONIUM OXIDE + \*URANIUM DIOXIDE + FUEL, POWDER TYPE + PARTICLE SIZE + \*PLUTONIUM

4-22567  
HASKIN WL  
CRYOGENIC HEAT PIPE  
AIR FORCE FLIGHT DYNAMICS LAB., WRIGHT-PATTERSON AFB, OHIO  
AD-657,025 + AFFDL-TR-66-228 +. 49 PAGES, 20 FIGURES, 5 TABLES, 24 REFERENCES, JUNE 1967

A HEAT PIPE IS A METAL TUBE CONTAINING A TWO-PHASE FLUID TO TRANSPORT HEAT OVER SEVERAL FEET BY EVAPORATING LIQUID AT THE WARM END AND CONDENSING THE VAPOR AT THE COLD END. AN EXPERIMENTAL HEAT PIPE WAS CONSTRUCTED AND INSTRUMENTED TO PERMIT MEASUREMENTS OF THE HEAT TRANSPORT IN A NITROGEN VAPOR TUBE WHEREIN THE VAPOR PRESSURE AND BOUNDARY TEMPERATURES COULD BE MONITORED. NO MAJOR EFFORT WAS MADE TO OPTIMIZE THE PERFORMANCE OF THE TUBE TESTED, BUT VARIOUS DESIGNS AND OPERATING PARAMETERS WERE INVESTIGATED EXPERIMENTALLY TO DETERMINE THEIR EFFECTS ON THE THERMAL IMPEDANCE OF THE TUBE. HEAT LOADS OF UP TO 130 WATTS WERE TRANSFERRED AXIALLY IN THIS 3/4-IN.-O.D., 33-IN.-LONG HEAT PIPE WITH LESS THAN HALF THE TOTAL TEMPERATURE DROP REQUIRED BY A COPPER ROD OF COMPARABLE SIZE. THE MAIN TEMPERATURE DROPS IN THE HEAT PIPE ARE DUE TO HEAT CONDUCTION THROUGH THE TUBE WALL AND THE FLUID FILLED WICK LINER OF THE EVAPORATOR AND CONDENSER SECTIONS. WHEN THE TUBE SURFACE TEMPERATURES WERE NEAR THE CRITICAL TEMPERATURE OF NITROGEN, VAPOR FILM FORMATION CAUSED A LARGE TEMPERATURE DROP.

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

\*CRYOGENICS + \*HEAT PIPE + \*HEAT TRANSFER EXPERIMENT + \*HEAT TRANSFER, CONDUCTION + AEROSPACE SAFETY + PIPING + THERMAL EXPERIMENT

4-22568  
MCKEE JM  
REMOVAL OF OXYGEN FROM SODIUM  
UNITED NUCLEAR CORP., ELMFORD, N. Y.  
AD-648248 + UNG-5143 + AFAP1-TR-66-27 +. 63 PAGES, 12 FIGURES, 2 TABLES, REFERENCES, APRIL 1966

ANODIC ELECTROLYSIS OF OXIDE-COATED GETTERING ALLOYS IN SODIUM WAS EVALUATED AS A MEANS OF INCREASING THEIR OXYGEN-REMOVAL RATE. TWENTY-TWO ZIRCONIUM- AND THORIUM-BASE ALLOYS WERE TESTED IN SODIUM THERMAL CONVECTION LOOPS. DETECTABLE INCREASES IN GETTERING RATE WERE OBSERVED FOR UNALLOYED ZIRCONIUM AND A FEW OTHER ALLOYS WHICH FORMED ADHERENT, DENSE, BLACK FILMS. THE GAINS WERE NOT LARGE ENOUGH TO WARRANT PRACTICAL APPLICATION, APPARENTLY DUE TO ELECTRIC ARC SHORT-CIRCUITING THROUGH SMALL FILM DEFECTS. SOME OF THE ALLOYS WHICH FORMED NONADHERENT, POROUS, WHITE FILMS ACHIEVED HIGHER REMOVAL RATES THAN HAD BEEN HOPED FOR FROM ELECTROLYSIS. ZR-13 A/D T1 WAS THE BEST OF THESE. THIS ALLOY PRODUCED AN OXYGEN CONTENT OF LESS THAN 1 PPM IN SODIUM AND MAINTAINED SIGNIFICANTLY HIGHER REMOVAL RATES THAN PURE ZIRCONIUM AT ALL TEMPERATURES AND OXYGEN LEVELS.

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

\*FILM, GENERAL + \*OUT OF PILE LOOPS AND EXPERIMENTS + \*OXYGEN + \*SODIUM + ALLOY + OXIDE + REACTOR, LMCR + THERMAL EXPERIMENT + ZIRCONIUM

4-22698  
SCHAEFER H + SULLIVAN J  
RADIATION MONITORING WITH NUCLEAR EMULSIONS ON PROJECT GEMINI II. RESULTS ON THE 14-DAY MISSION GEMINI VII.  
NAVAL AEROSPACE MEDICAL INST. PENSACOLA, FLA.  
AD-649385 + NAMI-990 +. 21 PAGES, 4 REFERENCES, JAN. 11, 1967

ON THE 14-DAY MISSION OF GEMINI VII, RADIATION MONITORING WITH SMALL PACKS OF NUCLEAR EMULSIONS WITHIN THE SPACE SUITS WAS CARRIED OUT IN THE SAME WAY AS ON MISSIONS GT-IV AND V DESCRIBED EARLIER. IT WAS A SINGULAR ADVANTAGE OF GT-VII THAT THE BACKGROUND OF THE NUCLEONIC COMPONENT IN THE SEA-LEVEL/CONTROLS, WHICH THE EMULSIONS INEVITABLY ACCUMULATE DURING THE TIME BETWEEN MANUFACTURE AND DEVELOPMENT, WAS LESS THAN 4% OF THE FLIGHT EXPOSURE. BY TRACK EVALUATION OF THE GT-VII EMULSIONS, THEREFORE, A UNIQUE OPPORTUNITY AROSE TO OBTAIN STATISTICALLY SIGNIFICANT COUNTS IN SMALL EMULSION AREAS, THUS ALLOWING ANALYSIS OF LOCAL

CATEGORY 4  
AEROSPACE SAFETY

4-22698 \*CONTINUED\*  
VARIATIONS OF THE LOW-ENERGY PROTON FLUX EVEN WITHIN THE SAME FILM SHEET.

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

\*AEROSPACE SAFETY + \*MONITOR, RADIATION, PERSONNEL + \*MONITORING SYSTEM, RADIATION + \*SPACECRAFT

4-22699  
SCHNEIDER MF + JANNI JF + BRETNALL B  
PROGRAM 631A. VOLUME VI. EXPERIMENT D8. RADIATION IN SPACECRAFT.  
AIR FORCE WEAPONS LAB., KIRTLAND AFB, N. MEXICO  
AD-646555 + SSD-TR-66-115 +. 272 PAGES, MAY 1966

DESCRIBES IN TECHNICAL DETAIL THE AIR FORCE RADIATION EXPERIMENT D8, CARRIED OUT AS PART OF THE 631A PROGRAM ON THE NASA GEMINI FLIGHTS. THIS EXPERIMENT WAS CONCERNED WITH GATHERING DOSE DATA AND DEVELOPING TECHNIQUES FURTHERING THE ART OF MANNED SPACECRAFT RADIATION DOSIMETRY SYSTEMS. INFORMATION FROM D8 SHOULD BE OF SIGNIFICANT VALUE IN ENSURING MANNED MISSION SAFETY AND SUCCESS IN THE FUTURE. FROM THIS EFFORT, NEW AND INTRICATE SPACEFLIGHT-WORTHY RADIAC SYSTEMS HAVE EVOLVED. THIS RADIATION EXPERIMENT CONSISTED OF THE LATEST AVAILABLE PASSIVE DEVICES COMPLEMENTARY TO (AND CORRELATED WITH) ACTIVE IONIZATION CHAMBERS, GIVING INSTANTANEOUS DOSE DATA.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL \*AEROSPACE SAFETY + \*SPACECRAFT + RADIATION EFFECT + DOSE + DOSIMETRY INFORMATION, SPRINGFIELD, VIRGINIA \$3.00 COPY, \$0.65 MICROFICHE TRY, GENERAL + EXPERIMENT, GENERAL

4-22700  
BENDER MA + GOOCH PC + KONDO S  
THE GEMINI-3 S-4 SPACEFLIGHT-RADIATION INTERACTION EXPERIMENT  
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE  
22 PAGES, 6 FIGURES, 4 TABLES, 18 REFERENCES, RADIAT. RES., 31, PAGES 91-111 (MAY 1967)

TO TEST THE SUGGESTION THAT UNUSUAL RADIOBIOLOGICAL EFFECTS ARE ASSOCIATED WITH SPACEFLIGHT, THE S-4 EXPERIMENT WAS CARRIED OUT DURING THE GEMINI-3 MANNED SPACEFLIGHT. THE EXPERIMENT CONSISTED IN THE IRRADIATION OF DUPLICATE SERIES OF WHOLE-HUMAN-BLOOD SAMPLES SIMULTANEOUSLY ON THE GROUND AND ABOARD THE SPACECRAFT DURING THE ORBITAL PHASE OF THE FLIGHT. AFTER THE MISSION, A CYTOGENETIC ANALYSIS WAS MADE TO DETERMINE THE FREQUENCIES OF CHROMOSOME ABERRATIONS. COMPARISON OF THE GROUND AND FLIGHT RESULTS SHOWED THAT, ALTHOUGH THERE WAS NO SIGNIFICANT DIFFERENCE BETWEEN THE YIELDS OF MULTIPLE-BREAK ABERRATIONS, THE YIELD OF SINGLE-BREAK ABERRATIONS WAS SIGNIFICANTLY HIGHER IN THE FLIGHT SAMPLES.

\*AEROSPACE SAFETY + \*BIOLOGICAL + \*RADIOBIOLOGY + EXPERIMENT, GENERAL + RADIATION DAMAGE + RADIATION EFFECT + SPACECRAFT

4-23332 ALSO IN CATEGORIES 9 AND 17  
STRAHL H  
SNAP SYSTEM INSTRUMENTATION  
ATOMICS INTERNATIONAL, CANOGA PARK, CALIF.  
ANL-7380 +. 3 PAGES; 2 TABLES, 1 REFERENCE, PAGES 37-39 OF PROCEEDINGS OF THE SYMPOSIUM ON LIQUID METAL INSTRUMENTATION AND CONTROL, MARCH 2, 1967

THE EXPERIENCE GAINED DURING OPERATION OF SNAP REACTORS WITH LIQUID-METAL PROCESS INSTRUMENTATION IS PRESENTED. THIS EXPERIENCE IS BASED ON THE OPERATION OF SEVERAL SNAP REACTOR SYSTEMS AT TEMPERATURES UP TO 1300 F FOR PERIODS OF UP TO 10,000 HR. SEVERAL TYPES OF TEMPERATURE AND PRESSURE DEVICES WERE INSTALLED IN A LOOP, AND THEIR PERFORMANCES WERE COMPARED AND EVALUATED PRIOR TO SELECTION OF INSTRUMENTATION FOR THE S8DR TESTS.

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

\*INSTRUMENTATION, PROCESS + \*OPERATING EXPERIENCE SUMMARY + \*SNAP, GENERAL (SR) + HIGH TEMPERATURE + INSTRUMENTATION, FLOW + INSTRUMENTATION, LIQUID LEVEL DETECTION + INSTRUMENTATION, PRESSURE + INSTRUMENTATION, TEMPERATURE + INSTRUMENTATION, TESTING + REACTOR, LMCR + REACTOR, SPACE

4-23391 ALSO IN CATEGORY 1  
MCALEVY RF + MAGEE RS  
A CRITERION FOR SPACE CAPSULE FIRE HAZARD MINIMIZATION  
STEVENS INSTITUTE OF TECHNOLOGY, HOBOKEN, N. J.  
1 PAGE, JOURNAL OF SPACECRAFT ROCKETS 4(10), PAGE 1390 (OCTOBER 1967)

STEVENS INSTITUTE IS ENGAGED IN A FUNDAMENTAL STUDY OF THE MECHANISM OF FLAME SPREADING OVER THE SURFACE OF IGNITING SOLID MATERIALS. RESULTS HAVE BEEN PRODUCED THAT HAVE IMPLICATIONS CONCERNING THE FIRE HAZARD ASSOCIATED WITH OXYGEN-RICH ENVIRONMENTS. AS A CONSEQUENCE OF THE SUBJECT PROGRAM, A RATIONAL BASIS FOR THE SELECTION OF MANNED CAPSULE ENVIRONMENTS HAS EMERGED FOR MINIMIZATION OF THE RATE OF FLAME SPREADING AFTER ACCIDENTAL IGNITION.

\*FIRE + \*IGNITION + \*OXYGEN + AEROSPACE SAFETY + SPACECRAFT

CATEGORY 4  
AEROSPACE SAFETY

4-23855 ALSO IN CATEGORY 11  
JOHNS RH + KAUFMAN A  
FILAMENT-OVERWRAPPED METALLIC CYLINDRICAL PRESSURE VESSELS  
NASA LEWIS RESEARCH CENTER, CLEVELAND, OHIO  
6 PAGES, 8 FIGURES, 2 TABLES, 8 REFERENCES, J. SPACECRAFT ROCKETS 4(7), PAGE 872-877, (JULY 1967)

THE INFLUENCE OF MATERIAL PROPERTIES OF A WRAPPED PRESSURE VESSEL IS DETERMINED THEORETICALLY. OVERCOMING THE DIFFERENCE IN YIELD STRAINS OF WRAPPING AND BASE MATERIALS BY WINDING PRETENSION AND PLASTIC FLOW DURING PRESSURIZATION IS CONSIDERED. RESIDUAL STRESSES IN THE WRAPPING AND IN THE METAL CYLINDER ARE DISCUSSED. P. V. EFFICIENCY IS DETERMINED AS A FUNCTION OF ALLOWABLE COMPRESSIVE STRESS IN THE METAL. BUCKLING TESTS INDICATE THAT BUCKLING OF THE SHELL DUE TO PRETENSION IN THE WINDING PROBABLY WILL NOT BE A PROBLEM IN SPACE APPLICATIONS. FAILURE OF THE METAL SHELL OFTEN IS DUE TO TENSILE INSTABILITY AT HIGH PRESSURES IN THE 1.1 STRESS FIELD IMPOSED. A DEFORMATION THEORY ANALYSIS AGREED WELL WITH THE RESULTS OF 19 OF 20 TESTS OF 5.6-IN.-DIAM AL CYLINDERS WRAPPED WITH GLASS IMPREGNATED WITH EPOXY RESIN. THE WRAPPED VESSELS WERE UP TO 50% MORE EFFICIENT. FACTORS OF SAFETY (BURST PRESSURE) MAY BE 40% HIGHER THAN THOSE BASED ON STRESS IN THE METAL.

\*MODEL TESTING + \*PRESSURE VESSEL + SPACECRAFT + STRESS ANALYSIS

CATEGORY 5  
ACCIDENT ANALYSIS

5-17575  
LOPINA RF + BERGLES AE  
HEAT TRANSFER AND PRESSURE DROP IN TAPE GENERATED SWIRL FLOW  
MASSACHUSETTS INSTITUTE OF TECHNOLOGY, CAMBRIDGE, MASS.  
DSR-70, 291-47 +. 104 PAGES, 33 FIGURES, 2 TABLES, 65 REFERENCES, JUNE 1967

THE HEAT TRANSFER AND PRESSURE DROP CHARACTERISTICS OF WATER IN TAPE-GENERATED SWIRL FLOW WERE INVESTIGATED. THE TEST SECTIONS WERE ELECTRICALLY HEATED SMALL-DIAMETER NICKEL TUBES WITH TIGHT-FITTING FULL-LENGTH INCONEL TAPES OF TWIST RATIOS FROM 2.48 TO 9.2 INSIDE DIAMETERS/180 DEGREES OF TAPE TWIST. HEAT-TRANSFER COEFFICIENTS AND FRICTION FACTORS WERE DETERMINED FOR NONBOILING FORCED-CONVECTION HEATING AND COOLING, WHILE OVER-ALL PRESSURE DROP INFORMATION AND CURVES OF HEAT FLUX VERSUS WALL SUPERHEAT WERE DETERMINED FOR SURFACE BOILING CONDITIONS. IMPROVEMENTS IN HEAT TRANSFER FOR EQUAL FLOW RATES UP TO 85% WERE OBSERVED FOR THE NONBOILING SWIRL FLOWS WITH HEATING, BUT THE IMPROVEMENT WITH COOLING WAS SUBSTANTIALLY LESS. COMPARED ON THE BASIS OF EQUAL PUMPING POWER, IMPROVEMENTS IN HEAT TRANSFER UP TO 35% WERE OBSERVED FOR THE TIGHTER TAPE TWISTS. A METHOD FOR PREDICTING THE HEAT TRANSFER COEFFICIENT FOR NONBOILING SWIRL FLOWS WAS DEVELOPED.

AVAILABILITY - R.F. LOPINA AND A.E. BERGLES, MASSACHUSETTS INSTITUTE OF TECHNOLOGY, NATIONAL MAGNET LABORATORY, CAMBRIDGE, MASS.

FLOW, TWO PHASE + FLOW, VORTEX + FUEL ELEMENT + HEAT TRANSFER AUGMENTATION + HEAT TRANSFER, BOILING

5-19543  
EDFSKUTY FJ + THURSTON RS  
SIMILARITY OF FLOW OSCILLATIONS INDUCED BY HEAT TRANSFER IN CRYOGENIC SYSTEMS  
LOS ALAMOS SCIENTIFIC LAB., NEW MEXICO  
LA-DC-8595 + CONF-670912-1 +. 22 PAGES, 1967

FLOW OSCILLATIONS AT ACOUSTIC FREQUENCIES ARE OFTEN OBSERVED DURING FORCED-CONVECTION HEAT TRANSFER TO CRYOGENIC LIQUIDS. THIS PHENOMENON OCCURS IN TWO-PHASE FLOW AND AT SUPERCRITICAL PRESSURES WHEN THE FLUID UNDERGOES A LARGE CHANGE IN DENSITY SIMILAR TO A PHASE CHANGE. IT HAS BEEN POSTULATED THAT THE OSCILLATIONS ARE GENERATED DURING FILM BOILING BY THE THERMAL RESPONSE OF THE VAPOR FILM TO FLOW DISTURBANCES. THROUGH THE USE OF DIMENSIONLESS SIMILARITY NUMBERS, A CORRELATION IS SHOWN TO APPLY TO NEW DATA ON LIQUID NITROGEN AND LIQUID HYDROGEN IN 1/4-IN. I.D. AND O.D. SYSTEMS. THE 16-FOLD GEOMETRICAL SCALING VERIFIED THE SUITABILITY OF APPLYING THE OSCILLATION INCEPTION CRITERION TO AVOID OSCILLATIONS IN A WATER-TO-LIQUID-HYDROGEN HEAT EXCHANGER, WHICH SERVES AS AN ENERGY SOURCE FOR A TURBO-PUMP USED DURING NUCLEAR ROCKET ENGINE TESTS.

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

CRYOGENICS + FLOW STABILITY + FLOW, PULSATING + HEAT TRANSFER, BOILING + HEAT TRANSFER, CONVECTION

5-19544  
JUNG LS  
LOCAL BOILING VOID FOR CALCULATING MODERATOR COEFFICIENT  
WESTINGHOUSE ELECTRIC CO., PITTSBURGH, PA.  
CONF-670602 +. ABSTRACT IN ANS TRANSACTIONS 10(1), PAGE 357, PRESENTED AT AMERICAN NUCLEAR SOCIETY ANNUAL MEETING, JUNE 11-15, 1967, SAN DIEGO, CALIFORNIA

PRESENTS A METHOD FOR CALCULATING THE LOCAL BOILING VOID CONCENTRATION FOR PWRs. THE VOID CONCENTRATIONS SO CALCULATED MAY BE USED WITH THE COMPUTER CODE REVO PROPOSED BY WCAP.

FLOW, TWO PHASE + HEAT TRANSFER ANALYSIS + REACTOR, PWR + VOID COEFFICIENT

5-21319 ALSO IN CATEGORIES 6 AND 8  
WALTER C + GENCO JM  
NURLQC-1.0 A DIGITAL COMPUTER PROGRAM FOR THERMAL ANALYSIS OF A NUCLEAR-REACTOR LOSS-OF-COOLANT ACCIDENT  
BATTELLE MEMORIAL INSTITUTE, COLUMBUS, OHIO  
BMI-1907 +. 319 PAGES, FIGURES, TABLES, REFERENCES, JULY 6, 1967

NURLQC-1.0 CONTAINS MATHEMATICAL MODELS FOR MOST OF THE PROCESSES OCCURRING IN A REACTOR ACCIDENT WHICH AFFECT THE SOLID AND FLUID TEMPERATURE DISTRIBUTIONS. MODELS WERE DEVELOPED AND PROGRAMMED FOR HEAT CONDUCTION, HEAT GENERATION, THERMAL RADIATION, BOIL-OFF, MELTDOWN, POSTBLOWDOWN HEAT AND MASS-TRANSFER COEFFICIENTS, AND METAL-WATER REACTION. TEST CASES OF ACCIDENT HEAT TRANSFER IN THE LOFT REACTOR WERE CALCULATED FOR TIMES UP TO 400 SEC. CALCULATIONS WERE ALSO PERFORMED FOR A TYPICAL 600-MW(T) BWR FOR A SIMILAR PERIOD OF TIME. A TYPICAL 1000-MW(E) BWR GAVE TEMPERATURE AND METAL-WATER REACTIONS MUCH DIFFERENT FROM THOSE FOR LOFT. THE PERCENTAGE OF CLADDING REACTED WAS LESS BY MORE THAN A FACTOR OF TWO FOR THE 1000-MW(E) REACTOR THAN FOR LOFT FOR SIMILAR PERIODS OF TIME.

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

ACCIDENT, LOSS OF COOLANT + ACCIDENT, MAXIMUM CREDIBLE (MCA) + COMPUTER PROGRAM + REACTOR, GENERAL +

CATEGORY 5  
ACCIDENT ANALYSIS

5-21319 \*CONTINUED\*  
REACTOR, WATER

5-21320 ALSO IN CATEGORY 12  
EIBER RJ + MAXEY WA + DUFFY AR + ATTERBURY TJ  
INVESTIGATION OF THE INITIATION AND EXTENT OF DUCTILE PIPE RUPTURE. QUARTERLY PROGRESS REPORT FOR  
JULY-SEPTEMBER, 1967.  
BATTELLE MEMORIAL INSTITUTE  
BMI-1817 +. 15 PAGES, 12 FIGURES, 2 TABLES, 3 REFERENCES, OCTOBER 1, 1967

RUPTURES TESTS WERE MADE ON SIX PIPES, 24 IN. OD X 1.5 IN. WALL THICKNESS, MADE OF A106B  
MATERIAL. ALL TESTS WITH SUBCOOLED WATER SHOWED RELATIVELY SHORT DUCTILE FRACTURE. TESTS  
WITH WET VAPOR PROPAGATED AN END-TO-END FRACTURE AT A PROPAGATION SPEED OF 750 FT/SEC.

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

ACCIDENT, LOSS OF COOLANT + ACCIDENT, LOSS OF PRESSURE + FAILURE, PIPE

5-21321  
FABIC S  
DIGITAL COMPUTER BLOWDOWN ANALYSIS FOR LOSS-OF-FLUID TEST FACILITY. PART 1 ENGINEERING  
KAISER ENGINEERS, OAKLAND, CALIF.  
TID-24031 +. 73 PAGES, REFERENCES, MAY 1965

THIS COMPUTER PROGRAM APPLIES TO BLOWDOWN OF THE PRESSURIZED-WATER REACTOR PRIMARY COOLANT  
LOOPS. THE LOOP CONTAINS A REACTOR, PUMP, CHECK VALVE, HEAT EXCHANGER, AND PRESSURIZER.  
ONE-DIMENSIONAL AND TRANSIENT MASS BALANCE, FORCE BALANCE, AND ENERGY BALANCE EQUATIONS, FOR  
BOTH THE FLUID AND THE WETTED WALLS, ARE SOLVED NUMERICALLY, USING THE FIRST-ORDER  
DIFFERENCES IN BOTH TIME AND SPACE. THE COMPRESSIBILITY OF THE FLUID, DUE TO A CHANGE IN  
PHASE (FROM LIQUID TO STEAM), IS INCLUDED, AS WELL AS THE LOCAL HEAT TRANSFER FROM THE WALLS.  
FAUSKES CRITICAL FLOW RELATION IS MADE TO APPLY AT THE RUPTURE, AND SCHROCK AND GROSSMANS  
TWO-PHASE PRESSURE DROP CORRELATION IS INCORPORATED IN THE FORCE BALANCE EQUATION. STEAM  
TABLES, CODED IN FUNCTION FORM, PROVIDE THE EQUATIONS OF STATE FOR THE TWO-PHASE-  
THERMODYNAMIC EQUILIBRIUM IS ASSUMED TO APPLY DURING BLOWDOWN.

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

ACCIDENT, LOSS OF COOLANT + COMPUTER PROGRAM + COMPUTER, DIGITAL + LOFT (S-RR) + REACTOR, PWR +  
REACTOR, SAFETY RESEARCH

5-21322 ALSO IN CATEGORIES 6 AND 8  
KINETIC STUDIES OF HETEROGENEOUS WATER REACTORS. ANNUAL SUMMARY REPORT, 1966  
TRW SYSTEMS GROUP, REDONDO BEACH, CALIF.  
STL-372-50 +. 129 PAGES, 57 FIGURES, 3 TABLES, 44 REFERENCES, DECEMBER 1966

ANNUAL SUMMARY REPORT-1966. SUMMARIZED WORK ON - (1) THE PROCESS OF THERMAL PRESSURE  
GENERATION, (2) SHOCK-TUBE EXPERIMENTS, (3) POSSIBILITY OF DESTRUCTIVE IN-CORE PRESSURE IN  
MELTDOWN ACCIDENT, (4) IN-PILE CAPSULE MEASUREMENTS OF STEAM-VOID FORMATION, AND (5) POWER  
REACTOR INSTABILITY AND TWO-PHASE FLOW.

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

ACCIDENT, REACTIVITY + EXPLOSION + FLOW, TWO PHASE + REACTOR TRANSIENT + REACTOR, WATER + TRANSFER FUNCTION

5-21323  
SNOW AL  
DETERMINATION OF LOADS TO CREATE A FULLY PLASTIC PIPE CROSS SECTION  
BETTIS ATOMIC POWER LABORATORY, PITTSBURGH, PA.  
WAPD-TM-663 +. 43 PAGES, REFERENCES, JUNE 1967

ONE OF THE FAILURE MODES OF PIPING SYSTEMS IS GROSS YIELDING. IF PIPE LOADINGS ARE RESTRICTED  
TO VALUES WHICH EXCLUDE FULLY PLASTIC CROSS SECTIONS, GROSS YIELDING OF THE PIPE WILL NOT  
OCCUR. LIMIT-LOAD THEORY PROVIDES A SET OF RULES WHICH, IF SATISFIED, ENSURES THAT THE  
RESULTING LOADS ARE AT OR BELOW THE VALUES WHICH INITIATE GROSS YIELDING. A PROCEDURE HAS  
PREVIOUSLY BEEN DEVELOPED WHICH ESTIMATES THE LIMIT LOADS (NEGLECTING THE SHEAR LOAD) OF AN  
ELASTIC-PERFECTLY PLASTIC PIPE WHICH OBEYS THE TRESCA YIELD CRITERION. THIS REPORT DETAILS  
THE EXTENSION OF THAT ANALYSIS TO INCLUDE SHEAR EFFECTS AND GIVES LIMIT LOADS FOR BOTH TRESCA  
AND VON MISES CRITERIA.

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

PIPING + PLASTICITY + STRESS ANALYSIS



CATEGORY 5  
ACCIDENT ANALYSIS

5-21475 ALSO IN CATEGORIES 6 AND 17  
TECHNOLOGY OF BOILING WATER REACTOR STABILITY ANALYSIS  
GENERAL ELECTRIC COMPANY  
75 PAGES, 49 FIGURES, 16 REFERENCES, 4 TABLES, MEMORANDUM SCER-60, DOCKET 50-277 AND 278, TYPE--BWR, MFG--G.E., AE--BECHTEL, JULY 1967

(INCORPORATED IN PEACH BOTTOM PSAR SUPPLEMENT 2.) ASSERTED GOOD AGREEMENT BETWEEN FABLE-II PROGRAM AND KRB/GARIGLIANO ROD-OSCILLATOR DATA. APED HYDRODYNAMIC LOOP ENSURES SUCCESSFUL USE IN EXAMINING INTERCHANNEL HYDRODYNAMIC STABILITY. MODEL SUMMARIZED, BUT DATA (49 GRAPHS) IS POORLY DISCUSSED TO SUPPORT THE ASSERTION.

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

\*COMPARISON, THEORY AND EXPERIENCE + \*COMPUTER PROGRAM + \*FLOW STABILITY + PEACH BOTTOM 2 AND 3 (BWR) + REACTOR STABILITY + REACTOR, BWR

5-21810 ALSO IN CATEGORY 17  
BIG ROCK POINT SUPPLIES ADDITION INFORMATION ON PROPOSED CHANGE 13--RESULT OF TWO-PUMP TRIP ANALYSIS  
CONSUMERS POWER COMPANY  
2 PAGES, DOCKET 50-155, TYPE--BWR, MFG--G.E., AE--BECHTEL, DECEMBER 14, 1967

ANALYSIS OF 2-PUMP TRIP FOR END OF LIFE AND BEGINNING OF LIFE, AND FOR 7 X 7, 8 X 8, AND TYPE-C (11 X 11) FUEL. TABLE GIVES POWER, CORE FLOW, AND MCHFRS VS TIME 0, 1--5 SEC AFTER TRIP. MCHFR IN ALL CASES INCREASES WITH TIME (MINIMUM IS AT T EQUALS ZERO).

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

\*ACCIDENT, LOSS OF FLOW + \*BURNOUT HEAT FLUX + \*CENTERLINE MELTING + BIG ROCK POINT (BWR) + REACTOR, BWR + TECHNICAL SPECIFICATIONS

5-22116 ALSO IN CATEGORIES 7 AND 14  
KRESS TS + NELSON P  
NUMERICAL SOLUTION OF THE ISOTHERMAL FISSION-PRODUCT DEPOSITION EQUATIONS. THE PROGRAM PREDEP-II  
OAK RIDGE NATIONAL LAB., TENN.  
ORNL-TM-1970 +. 28 PAGES, 3 FIGURES, 2 REFERENCES, OCT. 1967

THE HEAT-MASS ANALOGY WAS PREVIOUSLY USED TO DEVELOP A SEMILINEAR SYSTEM OF PARTIAL DIFFERENTIAL EQUATIONS TO DESCRIBE THE ISOTHERMAL DEPOSITION OF FISSION PRODUCTS. IN THIS REPORT, THIS SYSTEM IS TRANSFORMED INTO A SYSTEM OF INTEGRAL EQUATIONS IN COMPUTATIONALLY CONVENIENT VARIABLES, AND A FINITE-DIFFERENCE METHOD FOR THE SOLUTION OF THE INTEGRAL EQUATION SYSTEM IS DESCRIBED. A BRIEF DESCRIPTION IS GIVEN OF THE COMPUTER PROGRAM PREDEP-II, WHICH ACCEPTS DATA IN TERMS OF PHYSICALLY CONVENIENT DIMENSIONLESS VARIABLES, TRANSFORMS THESE TO THE COMPUTATIONAL VARIABLES FOR MEANS OF SOLVING THE FINITE-DIFFERENCE EQUATIONS, AND FINALLY REPORTS THE RESULTS IN TERMS OF THE PHYSICAL VARIABLES.

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

COMPUTER PROGRAM + DEPOSITION + FISSION PRODUCT TRANSPORT + FISSION PRODUCT, NONVOLATILE

5-22140 ALSO IN CATEGORIES 6 AND 17  
MANHATTAN COLLEGE ZPR MODERATOR COEFFICIENT MEASUREMENTS  
MANHATTAN COLLEGE, BRONX, NEW YORK  
45 PAGES, 5 TABLES, DOCKET 50-199, DECEMBER 24, 1967

AT DRL DIRECTION (NOV. 2, 1966) MZPR MEASURED THE EXCESS REACTIVITY AT THE TEMPERATURE AT WHICH THE MODERATOR COEFFICIENT CHANGES FROM POSITIVE TO NEGATIVE. A HEAT EXCHANGER, A MIXER, AND 12 THERMISTORS WERE BOUGHT. THE MIXER CAUSED VORTEXING AND MOVEMENT OF INSTRUMENTATION AND LIGHTS IN THE CORE AND HAD TO BE MODIFIED. WITH 10 THERMISTORS IN THE CORE AND CONTROL RODS FULLY WITHDRAWN, THE REACTOR WAS SUBCRITICAL DUE TO THE POISON EFFECT OF THE COPPER LEAD WIRES. RESULTS OF THE EXPERIMENT WERE - TURNAROUND TEMPERATURE - 110 F, EXCESS REACTIVITY AT 110 F - 0.44%, WORTH OF 5 PAIRS OF THERMISTOR LEADS - 0.10%, LEAST-SQUARES TEMPERATURE/REACTIVITY RELATIONSHIP -  $(\Delta K/K)\%$  IS EQUAL TO  $-35.83 \times 10(-2ND) + 100.67 \times 10(-4TH) \times T - 45.53 \times 10(-6TH) \times T^2$ . PROBABLE ERROR IS  $2.1 \times 10(-4TH)\%$ . (INCLUDES 25-PAGE TABLE OF THERMOCOUPLE CALIBRATION.)

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

\*MODERATOR COEFFICIENT + \*REACTIVITY, EXCESS + \*TEMPERATURE COEFFICIENT + CRITICAL ASSEMBLY FACILITY + IN CORE MEASUREMENT + MEASUREMENT, GENERAL + REACTIVITY EFFECT, ANOMALOUS + TECHNICAL SPECIFICATIONS

5-22142 ALSO IN CATEGORIES 17 AND 12  
STATUS OF DRESDEN 1 CORE SPRAY SYSTEM  
COMMONWEALTH EDISON COMPANY, CHICAGO, ILL.

CATEGORY 5  
ACCIDENT ANALYSIS

5-22142 \*CONTINUED\*  
1 PAGE, DOCKET 50-10, TYPE--BWR, MFG--G.E., AE--BECHTEL, DECEMBER 19, 1967

GE RE-EVALUATED THE DESIGN-BASIS ACCIDENT AND IS DESIGNING AN EMERGENCY CORE-SPRAY SYSTEM. DRESDEN REPORTS THAT THE DESIGN AND ANALYSIS WORK ON THIS SYSTEM IS 25% COMPLETE, EXPECTED TO BE COMPLETE BY MARCH 1, 1968.

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

\*CORE SPRAY + \*MODIFICATION, SYSTEM OR EQUIPMENT + DRESDEN 1 (BWR) + EMERGENCY COOLING CONSIDERATIONS + REACTOR, BWR

5-22225 ALSO IN CATEGORY 17  
PATHFINDER ATOMIC POWER PLANT SAFEGUARDS ANALYSIS FOR SECOND CORE LOADING  
ALLIS-CHALMERS, BETHESDA, MARYLAND  
ACNP-67525 +. 108 PAGES, 15 FIGURES, 33 TABLES, REFERENCES, DOCKET 50-130, TYPE--BWR, MFG--A.C.,  
AE--PIONEER SERV., JUNE 30, 1967

DESCRIBES AND EVALUATES CORE-II COMPONENT CHANGES - (1) LOW-ENRICHMENT OXIDE SUPERHEATER FUEL (IN PLACE OF FULLY ENRICHED CERMET FUEL) FOR LONGER FUEL LIFETIME AND ECONOMY. (2) B4C PELLET IN INCONEL TUBE IN SAME CRUCIFORM PATTERN TO REPLACE PRESENT SOLID BORON-SS BOILER CONTROL BLADES. (3) BOILER FUEL RODS ARE THE SAME DIAMETER IN THE UPPER AND LOWER CORE HALVES (CORE-I FUEL HAS STEPPED-DIAMETER RODS), BUT WATER-TUBES WILL REPLACE SOME FUEL IN THE UPPER HALF TO COMPENSATE FOR STEAM VOIDING. COMPLETE CHANGES WILL TAKE PLACE OVER SEVERAL REFUELING. \*\*\* REACTOR DYNAMICS, THERMAL ANALYSIS, AND ACCIDENT ANALYSIS REPEATED. EXPERIMENTAL JUSTIFICATION MADE FOR REVISED ANALYSIS METHODS.

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

\*REFUELING + CONTROL ROD BURNUP + FUEL ELEMENT + MODIFICATION, SYSTEM OR EQUIPMENT + PATHFINDER (ISR) + REACTOR, BWR + REACTOR, INTERNAL SUPERHEAT + REPORT, OPERATIONS ANALYSIS + SAFETY ANALYSIS + TECHNICAL SPECIFICATIONS

5-22236 ALSO IN CATEGORIES 18 AND 9  
ACRS REPORT ON DIABLO CANYON  
U.S. ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.  
5 PAGES, 11 REFERENCES, DOCKET 50-275, TYPE--PWR, MFG--WEST, AE--PG+E, DECEMBER 20, 1967

ACRS BELIEVES THAT THE FOLLOWING 6 ITEMS PERTAIN TO ALL LARGE WATER-COOLED POWER REACTORS - (1) THERMAL SHOCK EFFECT OF COLD WATER INJECTION IN LOSS-OF-COOLANT ACCIDENT, (2) EFFECT OF BLOWDOWN FORCES ON CORE AND PRIMARY SYSTEM COMPONENTS, (3) EFFECT OF FUEL FAILURES ON EMERGENCY COOLING ABILITY. (4) INDEPENDENCE OF CONTROL AND PROTECTION INSTRUMENTATION--PRESENT DESIGN INADEQUATE, (5) PROMPT DETECTION OF GROSS FUEL FAILURE, (6) PRIMARY-SYSTEM QUALITY CONTROL AND IN-SERVICE INSPECTION. \*\*\* FIXED POISON (BOROSILICATE GLASS) DURING FIRST CYCLE TO ENSURE NEGATIVE MODERATOR COEFFICIENT NEEDS MORE PERFORMANCE DATA.

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

\*BLOWDOWN + \*PRESSURE VESSEL + \*THERMAL MECHANICAL EFFECT + ACCIDENT, LOSS OF COOLANT + ACRS + CONTROL ROD PROGRAM + CORE REFLOODING SYSTEM + DIABLO CANYON (PWR) + EMERGENCY COOLING CONSIDERATIONS + FAILURE, FUEL ELEMENT + FAILURE, FUEL ELEMENT + INDEPENDENCE + INSTRUMENTATION, DETECTION FAILED FUEL ELEMENT + MODERATOR COEFFICIENT + PLANT PROTECTIVE SYSTEM + POISON, FIXED + REACTOR, PWR

5-22257 ALSO IN CATEGORY 17  
MOORE JB  
SAN ONOFRE INVESTIGATES HIGH DELTA-T ACROSS B STEAM GENERATOR  
SOUTHERN CALIFORNIA EDISON CO., LOS ANGELES, CALIF.  
3 PAGES, ATOMIC ENERGY CLEARING HOUSE 14(3), PAGES 18-20 (JANUARY 15, 1968), DOCKET 50-206, TYPE--PWR,  
MFG--WEST., AE--BECHTEL

(LETTER, JANUARY 5) SINCE POWER TESTING IN JULY, CALORIMETRIC MEASUREMENTS OF PRIMARY AND SECONDARY DIFFER BY 4 TO 10%. SIX ERRATIC RESISTANCE TEMPERATURE-DETECTORS IN THE REACTOR LOOP WERE REPLACED IN NOVEMBER. IN DECEMBER, AT 405 MWE (90% LOAD), THE SG DELTA-T WAS 40/48/44 F FOR A/B/C STEAM GENERATORS, GIVING THE AVERAGE PREDICTED FOR 450 MWE (100%). ACCORDING TO RESULTS OF ANALYSIS SINCE THEN, RTDS ARE ACCURATE, BUT PIPE LOCATION AFFECTS INDICATED TEMPERATURE 5 TO 10 F. PUMP FLOWS ARE DIFFERENT (B. PUMP LOWEST), THE RANGE BEING FROM 112 TO 94%, DEPENDING ON METHOD. UNIT IS BEING HELD AT 3RD-VALVE POINT (405 MWE), WITH ALARMS SET ACCORDINGLY, FOR FURTHER STUDY.

\*REACTOR POWER + COMPARISON, THEORY AND EXPERIENCE + FLOW ORIFICE + FLOW, GENERAL + INSTRUMENTATION, ABNORMAL INDICATION + INSTRUMENTATION, TEMPERATURE + OPERATING EXPERIENCE SUMMARY + PUMP + REACTOR, PWR + SAN ONOFRE (PWR) + STEAM GENERATOR

5-22456 ALSO IN CATEGORY 17  
EBR II MEASUREMENTS OF PROMPT POWER COEFFICIENT FOILED  
ARGONNE NATIONAL LAB., ARGONNE, ILL.

CATEGORY 5  
ACCIDENT ANALYSIS

5-22456 \*CONTINUED\*  
ANL-7399 +. 7 PAGES, 5 FIGURES, 2 TABLES, PAGE 48-54 OF ARGONNE NATIONAL LABORATORY. REACTOR DEVELOPMENT PROGRAM PROGRESS REPORT, NOVEMBER 1967

TRANSFER FUNCTIONS WERE MEASURED. THE WORTH OF THE ROD USED IN ROD-DROP EXPERIMENTS CHANGES ABOVE THE 0.5-MW CALIBRATION LEVEL. DURING THE DROPPING OF THE ROD, IT SEEMS THAT ROD WORTH INCREASES ENOUGH TO CANCEL THE EFFECT OF PROMPT NEGATIVE FEEDBACK FOR 0.3 SEC. TOTAL FEEDBACK IS ABOUT 0.33 CENT. REACTIVITY DIFFERENCES BETWEEN FULL-POWER FLOW AND REDUCED-POWER FLOW CONDITIONS SEEM TO BE STEADILY INCREASING WITH FUEL BURNUP.

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

\*CONTROL ROD WORTH + \*POWER COEFFICIENT + \*TEST, PHYSICS + CONTROL ROD CALIBRATION + EBR 1 AND 2 (RE) + FUEL BURNUP + REACTOR, LMCR + REPORT, OPERATIONS ANALYSIS + RESPONSE TIME + TRANSFER FUNCTION

5-22509 ALSO IN CATEGORY 17  
SPERT DESTRUCTIVE TEST, PART-I  
PHILLIPS PETROLEUM COMPANY  
THIS IS A 15 MINUTE FILM REFERENCED ON PAGE 60 OF THE USAEC 16 MM FILM CATALOG (PROFESSIONAL LEVEL), 1966-67, PRODUCED BY PHILLIPS PETROLEUM COMPANY AS CONTRACTOR THE USAEC AT THE NATIONAL REACTOR TESTING STATION, IDAHO, FOR SALE BY TELEFILM INDUSTRIES, AT \$75.62 PER PRINT, INCLUDING SHIPPING CASE, F.O.B. HOLLYWOOD, CALIFORNIA

15-MIN COLOR MOVIE. TECHNICAL FILM DOCUMENTS THE DESTRUCTIVE TEST PROGRAM OF A HIGHLY ENRICHED A1 PLATE-TYPE CORE AT NRTS, SHOWING SPECIAL FACILITY MODIFICATIONS, TRANSIENT TESTING WITH LIMITED CORE DAMAGE. SHOWS VIEWS OF FAILED, BOWED, AND MELTED PLATES. SLOW-MOTION STUDIES SHOW FINAL CORE-DESTRUCTION TEST.

AVAILABILITY - AVAILABLE FOR LOAN (FREE) FROM USAEC HEADQUARTERS AND FIELD LIBRARIES, NOT CLEARED FOR TELEVISION

\*ACCIDENT, REACTIVITY + \*CORE, PLATE TYPE + \*TEST, DESTRUCTIVE + EXCURSION, LARGE + FAILURE, CLADDING + FAILURE, FUEL ELEMENT + FUEL ELEMENT BOWING + FUEL MELTDOWN + INCIDENT, GENERAL + REACTOR TRANSIENT + REACTOR, SAFETY RESEARCH + SPERT 1 (S-PR)

5-22697  
MCLAIN HA  
HFIR FUEL ELEMENT STEADY STATE HEAT TRANSFER ANALYSIS. REVISED VERSION  
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE  
ORNL-TM-1904 +. 203 PAGES, TABLES, FIGURES, REFERENCES, DECEMBER 1967

THE STEADY-STATE HEAT-TRANSFER ANALYSIS OF THE HFIR FUEL ELEMENTS WAS COMPLETELY REWRITTEN, USING NEW INFORMATION REGARDING THE THERMAL DEFLECTIONS OF THE FUEL PLATES. THIS ANALYSIS USES AN INTEGRAL THERMAL-HYDRAULIC MODEL WHICH SIMULTANEOUSLY ACCOUNTS FOR THE NUCLEAR, HYDRAULIC, HEAT TRANSFER, MECHANICAL, AND THE CORROSION HISTORY OF THE OPERATING REACTOR. IT SHOWS THAT THE DESIGN REQUIREMENTS FOR THE HFIR FUEL ELEMENTS HAVE BEEN MET.

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

\*FUEL ELEMENT + \*HEAT TRANSFER ANALYSIS + \*HFIR (FTR) + \*HOT SPOT FACTOR ANALYSIS + BURNOUT HEAT FLUX + COMPUTER PROGRAM + ORNL + REACTOR, FLUX TRAP + REACTOR, RESEARCH

5-22703  
TREAT CH + WILDIN MJ  
METHODS FOR ANALYZING SPECTRAL AND DIRECTIONAL EFFECTS IN RADIATIVE HEAT TRANSFER, AND EXPERIMENTAL MEASUREMENTS OF HEAT TRANSFER FROM RADIATING EXTENDED SURFACES.  
BUREAU OF ENGINEERING RESEARCH, NEW MEXICO UNIV., ALBUQUERQUE, NEW MEXICO  
SC-CR-66-2124 + ME-24 +. 72 PAGES, OCTOBER 1966

PART I OF THE REPORT DISCUSSES THE TECHNIQUES PRESENTED IN THE LITERATURE FOR TREATING RADIANT HEAT TRANSFER BETWEEN BODIES WHOSE THERMO-OPTICAL PROPERTIES ARE FUNCTIONS OF FREQUENCY AND DIRECTION. IT IS SHOWN THAT THE MORE ACCURATE APPROXIMATIONS REQUIRE MUCH DATA FOR THE THERMO-OPTICAL PROPERTIES AND THE SIMULTANEOUS SOLUTION OF LARGE NUMBERS OF LINEAR ALGEBRAIC EQUATIONS. PART II DESCRIBES THE MODELING TECHNIQUE USED TO OBTAIN EXPERIMENTAL RESULTS FOR COMPARISON WITH THE ANALYTICAL RESULTS PUBLISHED FOR ONE CONFIGURATION OF RADIATING EXTENDED SURFACES. THE DESIGN AND ASSEMBLY OF A MODEL ARE DESCRIBED. SOME OF THE EXPERIMENTAL RESULTS ARE PRESENTED, ALONG WITH THE CORRESPONDING ANALYTICAL RESULTS, AND DISCUSSED.

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

\*HEAT TRANSFER, RADIANT + HEAT EXCHANGER + HEAT TRANSFER + THERMAL PROPERTY

5-22704  
RESEARCH ON CYCLONES FOR STEAM SEPARATION IN BOILING WATER REACTORS. QUARTERLY REPORT NO. 2, APRIL 1-JUNE 30, 1965

CATEGORY 5  
ACCIDENT ANALYSIS

5-22704 \*CONTINUED\*  
KERNENERGIEANLAGEN, ALLGEMEINE ELEKTRICITAETS-GESELLSCHAFT, FRANKFURT AM MAIN, WEST GERMANY  
EURAE-1699 + EUR-2866 +. 46 PAGES, FIGURES, JUNE 1966

THE PERIOD UNDER REVIEW WAS MAINLY CONCERNED WITH TWO OBJECTIVES - (1) PREPARATION OF DATA FOR TRANSFERRING THE RESULTS OF AIR/WATER EXPERIMENTS TO THE BEHAVIOR OF THE SEPARATOR IN REACTOR OPERATING CONDITIONS. (2) FURTHER DEVELOPMENT OF THE DROP-TYPE CYCLONE WHICH PREVIOUS EXPERIMENTS PROVED TO BE APPLICABLE TO MEDIUM REACTOR OUTPUTS, FOR USE IN LARGE REACTORS. A COMPARISON OF THE RESULTS OF STEAM TESTS CARRIED OUT UNDER REACTOR CONDITIONS WITH THOSE OF AIR/WATER EXPERIMENTS SHOWS THAT THE SEPARATION IS ALWAYS BETTER WITH THE LATTER. IT HAS NOT BEEN POSSIBLE SO FAR TO GIVE ANY QUANTITATIVE INDICATIONS ON THE SEPARATING EFFICIENCY IN THE PERMISSIBLE OPERATING RANGE OF THE SEPARATORS, BUT, ON ACCOUNT OF THE QUALITATIVE AGREEMENT OF THE LOAD CURVES, THE PERMISSIBLE LOAD LIMIT OF A SEPARATOR CAN BE ESTIMATED FROM AIR/WATER EXPERIMENTS.

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

\*FLOW, TWO PHASE + \*HEAT TRANSFER, BOILING + \*REACTOR, BWR + HEAT TRANSFER + STEAM

5-22705  
FAJEAU M + SAUNIER JP  
NUMERICAL PROGRAM FOR TWO-DIMENSIONAL ANALYSIS OF THE THERMODYNAMIC BEHAVIOUR OF A BOILING LIQUID  
CENTRE D ETUDES NUCLEAIRES, COMMISSARIAT A L ENERGIE ATOMIQUE, SACLAY, FRANCE  
CEA-R-3141 +. 60 PAGES, TABLES, FIGURES, JANUARY 1967, IN FRENCH

THIS TWO-DIMENSIONAL CODE HANDLES THE FOLLOWING PROBLEMS - (1) ANALYSIS OF THERMAL EXPERIMENTS ON A WATER-LOOP AT HIGH OR LOW PRESSURE, STEADY-STATE OR TRANSIENT BEHAVIOUR. (2) ANALYSIS OF THERMAL AND HYDRODYNAMIC BEHAVIOUR OF A LIGHT WATER REACTOR HOT CHANNEL. THE FUEL ELEMENTS ARE ASSUMED TO BE FLAT PLATES. THE POWER AND PRESSURE-DROP VARIATIONS DURING TRANSIENT CONDITIONS ARE OBTAINED FROM THE COMPLEMENTARY ONE-DIMENSIONAL CODE CACTUS (CEA REPORT R-3039).

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

\*FLOW, TWO PHASE + \*HEAT TRANSFER, BOILING + HEAT TRANSFER + THERMODYNAMICS

5-22708 ALSO IN CATEGORY 8  
GENCO JM + RAINES GE  
METAL-WATER REACTIONS DURING A LOSS-OF-COOLANT ACCIDENT. THE ZIRCONIUM-STEAM REACTION  
BATTELLE-MEMORIAL INSTITUTE, COLUMBUS, OHIO  
20 PAGES, 8 FIGURES, 1 TABLE, 18 REFERENCES, OCTOBER 21, 1966, ABSTRACT IN ANS TRANSACTIONS 9(2), PAGE 555, (WINTER 1966), PAPER PRESENTED AT THE AMERICAN NUCLEAR SOCIETY WINTER MEETING, OCTOBER 30, NOVEMBER 3, 1966, PITTSBURGH, PENNSYLVANIA

DEVELOPED A CALCULATIONAL TECHNIQUE FOR DESCRIBING ANALYTICALLY THE EXTENT OF METAL-WATER REACTION THAT WOULD OCCUR IN A REACTOR COPE DURING A LOSS-OF-COOLANT ACCIDENT. ALTHOUGH THE ZIRCONIUM-STEAM REACTION WAS CONSIDERED, THIS MODEL MAY BE APPLIED TO ANY FUEL-CLADDING MATERIAL, PROVIDED THE APPROPRIATE OXIDATION KINETICS ARE AVAILABLE. THE MODEL IS PREDICTED ON THE ASSUMPTION THAT TWO BROAD TYPES OF RATE-LIMITING PHENOMENA CAN REPRESENT THE MECHANISM FOR THE OXIDATION OF ZIRCONIUM UNDER ACCIDENT CONDITIONS - (1) THE GAS-PHASE DIFFUSION OF STEAM FROM THE BULK STREAM TOWARD THE CLADDING SURFACE AND (2) THE SOLID-STATE DIFFUSION OF VARIOUS IONIC SPECIES THROUGH THE ZIRCONIUM DIOXIDE PRODUCT INTO THE BASE METAL, QUANTITATIVELY EXPRESSED AS THE PARABOLIC RATE LAW. THE APPLICABILITY OF THIS TECHNIQUE IS DEMONSTRATED USING THE LOFT REACTOR.

\*ACCIDENT, LOSS OF COOLANT + \*ANALYTICAL MODEL + \*CHEMICAL KINETICS + \*MASS TRANSFER +  
\*METAL WATER REACTION + \*ZIRCALOY + COMPUTER PROGRAM + HEAT TRANSFER ANALYSIS + LOFT (S-RR) +  
REACTOR, SAFETY RESEARCH + STEAM

5-22723 ALSO IN CATEGORY 8  
ARGONNE NATIONAL LABORATORY. CHEMICAL ENGINEERING DIVISION RESEARCH HIGHLIGHTS. MAY 1966 - APRIL 1967  
ARGONNE NATIONAL LABORATORY, ARGONNE, ILLINOIS  
ANL-7350 +. 111 PAGES, TABLES, FIGURES, REFERENCES, APRIL 1967

SUMMARY OF ANL REACTOR SAFETY PROGRAM FOR THE PERIOD MAY 1966 THROUGH APRIL 1967. THIS PROGRAM IS NOW CONCENTRATED TO (1) STUDIES RELATING TO THERMAL (WATER-COOLED) REACTORS, AND (2) STUDIES RELATING TO FAST (SODIUM-COOLED) REACTORS. ITEM-1 EFFORTS ARE DIRECTED TO ANALYTICAL STUDIES CONSIDERING THE METAL-WATER REACTION, CORE HEATUP, AND FUEL FAILURE IN LOSS-OF-COOLANT ACCIDENTS, AND TO EXPERIMENTAL STUDIES CONSIDERING THE HEATUP AND MELTDOWN OF ALUMINUM-CLAD FUEL PLATES AND ZIRCALOY-2-CLAD UO<sub>2</sub> FUEL RODS IN LOSS-OF-COOLANT AND NUCLEAR-EXCURSION ACCIDENTS. ITEM-2 EFFORTS ARE DIRECTED TO STUDIES OF THE HIGH-TEMPERATURE PHYSICAL AND TRANSPORT PROPERTIES OF FAST REACTOR FUEL MATERIALS, ENERGY TRANSFER FROM HIGH-TEMPERATURE FUEL MATERIALS TO LIQUID SODIUM AND THE SODIUM-AIR REACTION.

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

\*ACCIDENT, LOSS OF COOLANT + \*ACCIDENT, REACTIVITY + \*ALUMINUM + \*ANALYTICAL MODEL + \*CHEMICAL REACTION +  
\*FUEL MELTDOWN + \*HEAT TRANSFER EXPERIMENT + \*PROPERTY, PHYSICAL + \*SODIUM + \*TEMPERATURE TRANSIENT +  
\*URANIUM DIOXIDE + \*ZIRCALOY + ACCIDENT MODEL + AIR + ANL + COMPUTER PROGRAM + HEAT TRANSFER ANALYSIS +

CATEGORY 5  
ACCIDENT ANALYSIS

5-22723 \*CONTINUED\*  
HEAT TRANSFER, BOILING + IN PILE EXPERIMENT + OXIDATION + STEAM + TREAT (PRR)

5-22775 ALSO IN CATEGORY 17  
DRESDEN 1 SUPPLEMENT 4 TO PROPOSED CHANGE 14 - CYCLE 6 DESCRIPTION AND SAFETY EVALUATION REPORT  
COMMONWEALTH EDISON COMPANY  
6 PAGES, TABLES, FIGURES, JANUARY 17, 1968, DOCKET 50-10, TYPE--BWR, MFG.--G.E., AE--BECHTEL

ANSWERS 5 QUESTIONS (AEC LETTER OF 22 NOV. 67) ON PROPOSED CHANGE 14. QUESTION 1 COVERS  
EXPERIMENTAL FUEL ASSEMBLIES. QUESTION 2 - REFUELING ACCIDENT ANALYSIS. QUESTION 3 -  
INSTRUMENTED FUEL-ELEMENT POSITIONS. QUESTION 4 - FUEL-ELEMENT ORIENTATION. QUESTION 5 -  
TECH. -SPEC. CLARIFICATION.

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

\*AEC QUESTION + \*REFUELING + DRESDEN 1 (RWR) + REACTOR, BWR + TECHNICAL SPECIFICATIONS

5-22785 ALSO IN CATEGORY 17  
N. CAROLINA STATE (RALEIGH) PROPOSED AMENDMENT 4--REVISED MCA ANALYSIS  
NORTH CAROLINA STATE UNIVERSITY  
8 PAGES, 7 REFERENCES, JAN. 10, 1968, DOCKET NO. 50-111

MCA IS A STEP-REACTIVITY INSERTION. NEW ANALYSIS ASSUMES THAT TOTAL EXCESS REACTIVITY (1.5%)  
IS HELD DOWN BY A LONG CADMIUM TUBE PLACED IN THE VERTICAL EXPOSURE PORT, THAT THE REACTOR IS  
BROUGHT CRITICAL WITH THE CONTROL RODS FULL OUT, THEN THE TUBE IS PULLED FROM THE CORE.  
BASED ON BORAX AND SPERT DATA, MAXIMUM FUEL-PLATE-SURFACE TEMPERATURE WOULD BE 230 C, WITH AN  
ENERGY RELEASE TO PEAK POWER OF 10 KW-SEC AND RESULTS TO NO CLAD MELT OR FUEL-ELEMENT RUPTURE.

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

ACCIDENT ANALYSIS + ACCIDENT, MAXIMUM CREDIBLE (MCA) + ACCIDENT, REACTIVITY + REACTOR, POOL TYPE +  
REACTOR, RESEARCH + REPORT, SAR + TECHNICAL SPECIFICATIONS

5-22788 ALSO IN CATEGORY 17  
ASSESSMENT OF LACBWR CARRY-UNDER SEPARATORS  
ALLIS-CHALMERS MANUFACTURERS  
16 PAGES, FIGURES, JAN. 9, 1968, DOCKET NO. 115-5, TYPE--BWR, MFG--A.C., AE--SGT + LUNDY

EVEN THOUGH EXACT CAUSE OF FAILURE OF THE SIMILAR PATHFINDER FAILURE HAS NOT BEEN DETERMINED,  
DESIGN HAS LARGER MARGIN OF SAFETY AGAINST STRUCTURAL FAILURE. OUTLET VELOCITY AND PRESSURE  
DIFFERENCE ARE LESS, GIVING 1/4 THE HYDRAULIC FORCE, WHILE THE RIB STRENGTH IS 3 TIMES,  
GIVING A FACTOR-OF-12 ADVANTAGE.

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

\*SAFETY MARGIN + \*SEPARATOR + \*STRUCTURAL INTEGRITY + HYDRAULIC ANALYSIS + LACROSSE (BWR) + REACTOR, BWR +  
STRESS ANALYSIS

5-22874 ALSO IN CATEGORY 17  
EXPERIMENTAL DETERMINATION OF THE DEPARTURE FROM NUCLEATE BOILING IN LARGE ROD BUNDLES AT HIGH PRESSURES  
WESTINGHOUSE ELECTRIC CORP., ATOMIC POWER DIVISION  
WCAP-7045 +. 33 PAGES, 7 FIGURES, 11 REFERENCES, AMENDMENT 6 TO THE LICENSE APPLICATION, (FIFTH  
SUPPLEMENT TO DIABLO CANYON PRELIMINARY SAFETY ANALYSIS REPORT), NOVEMBER 6, 1967, DOCKET NO. 50-275,  
TYPE--PWR, MFG--WEST., AE-PG+E

(SUBMITTED AS DIABLO CANYON APPENDIX B TO FIFTH PSAR SUPPLEMENT). TESTS MADE AT 1600-2300  
PSIG ON A 5 X 5 ARRAY OF 7-FT-LONG INTERNALLY HEATED RODS SHOWED TONGS (W-3) CORRELATION  
DERIVED FOR FLOW INSIDE TUBES (J. NUCL. ENERGY, VOL. 21) AN AVERAGE 8% CONSERVATIVE. THIS IS  
BELIEVED DUE TO SPECIAL MIXING WAVES IN SPACER GRID. CRUD WHICH FLAKED OFF ELEMENTS AND  
CAUGHT ON GRID RAISED THE PRESSURE DROP AND DNB FLUXES. CRUD FOULING OF RODS INCREASED FOD  
TEMPERATURE 100-300 F, DOUBLED THE PRESSURE DROP, BUT DID NOT HAVE A SIGNIFICANT EFFECT ON  
DNB HEAT FLUX FOR 3 POINTS RECHECKED. BUT, AT DNB, THE SLOPE CHANGE OF HEAT FLUX VS TEMP.  
WAS NOT SO LARGE. DESPITE OBSERVATION OF TRANSITION FROM BUBBLY TO SLUG FLOW AT 30% VOID IN  
CLOSED CHANNELS, THE OPEN GEOMETRY TESTED SHOWED NO FLOW INSTABILITY (AND THUS PREMATURE  
DNB), WITH EXIT VOIDS (CALCULATED WITH THINC) OF 23-68%.

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

\*COMPARISON, THEORY AND EXPERIENCE + \*HEAT TRANSFER CORRELATION + \*HEAT TRANSFER EXPERIMENT +  
DIABLO CANYON (PWR) + DNB + FLOW BLOCKAGE + FLOW STABILITY + FUEL ELEMENT + REACTOR, PWR + REPORT, PSAR +  
SURFACE FILM DEPOSIT

5-22884 ALSO IN CATEGORY 17  
SELECTED FERMI OPERATING EXPERIENCE - OCT 1966  
POWER REACTOR DEVELOPMENT COMPANY

CATEGORY 5  
ACCIDENT ANALYSIS

5-22884 \*CONTINUED\*  
EF-38 +. 17 PAGES, TABLES, OCTOBER 1966

BRIEF REVIEW OF THE OCT. 5 MELTDOWN. AT 0345, CRITICAL ROD POSITIONS DURING HEATUP CORRELATED WELL WITH PREVIOUS MEASUREMENTS WITH THE REACTOR AT 1 MWTH. AT 1345, POWER RISE WAS STARTED, HELD TWICE FOR BOILER FEED-PUMP START. AT 1500, DURING POWER RISE, VARIATIONS IN AUTO-POWER CONTROL DUE TO ERRATIC DN/DT, SIMILAR TO PAST NOISE PICKUP. REACTOR WAS PUT IN MANUAL AND POWER RISE HALTED. NOISE DISAPPEARED UNTIL 1505, WHEN FEEDWATER CONTROLLER PUT IN AUTOMATIC. \*\*\* ASST. REACTOR ENGR. NOTED CONTROL RODS HIGHER THAN NORMAL, CHECKED CORE OUTLET TEMPS RECORDED BEHIND CONTROL PANEL AND FOUND 2 SUBASSEMBLIES 100 F HIGHER THAN BULK TO. HIGH RADIATION ALARMS STARTED, AND POWER WAS REDUCED MANUALLY.

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

\*FUEL MELTDOWN + \*INCIDENT, GENERAL + FERMI (LMFBR) + FLOW BLOCKAGE + INSTRUMENTATION, TEMPERATURE + REACTIVITY EFFECT, ANOMALOUS + REACTOR, FAST + REPORT, OPERATIONS

5-22887 ALSO IN CATEGORY 17  
MCCARTHY JF  
SELECTED FERMI OPERATING EXPERIENCES  
ATOMIC POWER DEVELOPMENT ASSOC., INC., DETROIT, MICH. + POWER REACTOR DEVELOPMENT CO., DETROIT, MICH. + DETROIT EDISON CO., MICH.  
APDA-CFE-4 +. 37 PAGES, MAY 1967

CORE-HOLDDOWN MECHANISM REMOVED, CORE SWEEP FOUND NO DEBRIS ABOVE FUEL, NOR PROJECTING ELEMENTS. REVISED FUEL-HANDLING MACHINE FOUND 2 ROWS OF FUEL THAT NEEDED EXCESSIVE FORCE TO LIFT. FOUR ADJACENT ELEMENTS, INCLUDING THE TWO THAT RAN HOT OCT. 5, COULD NOT BE LIFTED. \*\*\* BRIEF DISCUSSION SUMMARIZING ANALYSIS OF JULY/AUGUST STEAM-GENERATOR INSTABILITIES. A PRESSURE AND A TEMPERATURE RAMP CAUSED BOILING IN THE DOWNCOMER AND EVENTUAL FLOW STARVATION. PRESSURE RAMP WILL BE ELIMINATED, AND SODIUM/STEAM CONDITIONS SET TO MAINTAIN A REQUIRED DOWNCOMER HEAT-TRANSFER AREA.

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

\*FLOW STABILITY + FERMI (LMFBR) + FUEL HANDLING MACHINE + FUEL MELTDOWN + REACTOR, FAST + REPORT, OPERATIONS SUMMARY + STEAM GENERATOR

5-22894 ALSO IN CATEGORY 17  
MCCARTHY JF + NASH CR  
COMPILATION OF CURRENT TECHNICAL EXPERIENCE AT ENRICO FERMI ATOMIC POWER PLANT. MONTHLY REPORT NO. 12, JULY 1967  
ATOMIC POWER DEVELOPMENT ASSOCIATES, INC., DETROIT, MICHIGAN + POWER REACTOR DEVELOPMENT COMPANY + DETROIT EDISON CO., MICHIGAN  
APDA-CFE-12 +. 33 PAGES, FIGURES, AUGUST 1967

(PAGES 7-13) SEPARATION OF THE TWO STUCK ASSEMBLIES BY A SPECIAL CHISEL SAVED 2 MONTHS. NO FOREIGN MATERIAL WAS FOUND ON THE SUPPORT PLATE. (PAGE 14) RELEASE OF GAS IN LGADING A FUEL ELEMENT AND TRANSPORT BY BUILDING VENTILATION SYSTEM CONTAMINATED THE AREA WITH ZR-NB-95 AND SR-90. AN ADDITIONAL CHANGE HOUSE WAS CONNECTED TO THE AIRLOCK. (PAGE 16-25) PICTURES AND EXAMINATION RESULTS OF DAMAGED ELEMENTS M127 AND M098 GIVEN. (PAGE 27-28) A COMBINATION FLOW RESTRICTOR AND CHECK VALVE WILL BE INSERTED IN EACH STEAM-GENERATOR TUBE. THIS WILL INCREASE THE PART-LOAD PRESSURE DROP (PREVENTING FLOW IMBALANCES AND TUBE-SHEET FAILURES), YET ON A WATER DUMP WILL ALLOW NORMAL BACKFLOW.

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

\*FISSION GAS RELEASE + \*FLOW ORIFICE + \*REMOTE MANIPULATING AND VIEWING + CONTAMINATION + FERMI (LMFBR) + FLOW DISTRIBUTION + FLOW STABILITY + FUEL MELTDOWN + REACTOR, FAST + REPORT, OPERATIONS SUMMARY + STEAM GENERATOR + VENTILATION SYSTEM

5-22898 ALSO IN CATEGORIES 9 AND 17  
MCCARTHY JF  
COMPILATION OF CURRENT TECHNICAL EXPERIENCE AT ENRICO FERMI ATOMIC POWER PLANT. MONTHLY REPORT NO. 9, APRIL 1967  
ATOMIC POWER DEVELOPMENT ASSOCIATES, INC., DETROIT, MICH + POWER REACTOR DEVELOPMENT COMPANY + DETROIT EDISON COMPANY, MICHIGAN  
APDA-CFE-9 +. 31 PAGES, JUNE 1967

(PAGE 23) A LOW-FREQUENCY COIL TO NONDESTRUCTIVELY TEST FUEL PINS HAS A THRESHOLD OF 1000 PPM HYDRIDE, TESTED ON DELIBERATELY HYDRIDED (250-5000 PPM) PINS. (PAGE 24) BYPASS FLOW ANALYSIS OF SUBASSEMBLY LOWER NOZZLE BEING CAUGHT ON TGP OF THE SUPPORT PLATE SHOWS FLOW REDUCED BY 7%, INSUFFICIENT TO CAUSE FUEL DAMAGE. (PAGE 27) FAILURE OF A SOLENOID VALVE ALLOWED PRIMARY-SHIELD-TANK PRESSURE TO TAKE POSITIVE PRESSURE SWINGS. FAILURE BLEW A FUSE IN THE COMMON POWER SUPPLY, PREVENTING SWITCHOVER TO AN ALTERNATE SENSING LINE. MANUAL VALVES REPLACE THE SOLENOID VALVES (IN A LESS COMPLICATED APPRAY).

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

\*FAILURE, COMPONENT + \*FAILURE, SEQUENTIAL + \*FLOW DISTRIBUTION + \*TEST, NONDESTRUCTIVE + CLAD +

CATEGORY 5  
ACCIDENT ANALYSIS

5-22898 \*CONTINUED\*  
ELECTRIC POWER, NORMAL + FERMI (LMFBP) + FUEL ELEMENT + HYDRIDE + HYDRODYNAMIC ANALYSIS + INDEPENDENCE + REACTOR, FAST + REPORT, OPERATIONS SUMMARY + VALVE

5-22976 ALSO IN CATEGORY 17  
ROSUEL A + ROUVILLOIS X  
TWISTED TAPES FOR INCREASED POWER DENSITY  
SNECMA  
3 PAGES, 7 FIGURES, 7 REFERENCES, NUCLEAR ENGINEERING 13(140), PAGES 43-45 (JANUARY 1968)

ASSEMBLY WAS IRRADIATED FROM NOV. 66 TO MAY 67, EXAMINED, AND REINSERTED IN A HIGHER FLUX POSITION. ARTICLE DISCUSSES EXPERIMENTAL STUDIES (HYDRODYNAMIC LOOP WITH AIR-WATER MIXTURE AND A 4-ROD ASSEMBLY, AND LATER WITH A 4-ROD CLUSTER AT BWP CONDITIONS), CRITICAL HEAT FLUX ESTIMATES (CENTRIFUGAL ACTION REDUCES WATER ENTRAINMENT, GIVING DOUBLE THE HEAT FLUX BEFORE DRYOUT OCCURS) AND 600-MWE DESIGN ECONOMICS (ECONOMY WOULD REPRESENT 4-5% OF THE GENERATING COST).

\*HEAT TRANSFER AUGMENTATION + \*IN PILE EXPERIMENT + DNB + FLOW, VORTEX + FUEL ELEMENT + HEAT FLUX, DRYOUT + OUT OF PILE LOOPS AND EXPERIMENTS + REACTOR, BWR

5-22978 ALSO IN CATEGORY 17  
ROSENBAUM HS + DAVIES JH + PON JO  
INTERACTION OF IODINE WITH ZIRCALOY-2  
GENERAL ELECTRIC CO., SAN JOSE, CALIF.  
GEAP-5100-5 +. 43 PAGES, 27 FIGURES, 2 TABLES, 12 REFERENCES, JANUARY 1966

FAILURES DUE TO PINHOLES IN THE ZIRCALOY-2 CLADDING OF TWO RODS (OPERATED WITH CENTERLINE MELTING) REVEALED THAT IODINE HAD CONCENTRATED AT PELLET INTERFACES AT THE UPPER ENDS OF FUEL RODS (NEAR PINHOLES). IN OUT-OF-PILE STUDY, GENERAL ATTACK, PITTING, AND STRESS-CORROSION CRACKING OCCURRED. HOWEVER, THE FRACTURE MORPHOLOGY OF TEST CLADDING AND FAILED CLADDING SHOWED SIMILARITIES. (VERDICT) NO CONFIDENT CONCLUSION CAN BE DRAWN REGARDING THE ASSOCIATION OF THE IN-PILE FAILURES WITH ZIRCALOY-2/IODINE ATTACK MECHANISM.

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

\*CHEMICAL REACTION + \*FAILURE, CLADDING + \*FISSION PRODUCT, IODINE + \*ZIRCALOY + CENTERLINE MELTING + CORROSION + GETR (TF) + IN PILE LOOP + REACTOR, BWR + STRESS CORROSION

5-23169 ALSO IN CATEGORY 6  
DIFTZ KA  
QUARTERLY TECHNICAL REPORT - STEP PROJECT, APRIL 1967--JUNE 1967  
PHILLIPS PETROLEUM COMPANY  
IDO-17240 +. 73 PAGES, 50 FIGURES, 11 TABLES, 41 REFERENCES, SEPT. 1967

PROGRESS IS REPORTED UNDER SIX HEADINGS - LOFT REACTOR PHYSICS CALCULATIONS, LOFT BLOWDOWN ANALYSIS, LOFT RADIOLOGICAL STUDIES, SEMISCALE BLOWDOWN TEST PROGRAM, MEASUREMENT EVALUATION (HIGH-TEMPERATURE THERMOMETRY STUDIES), AND LOFT FM MULTIPLEX SYSTEM.

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

\*LOFT (S-RR) + BLOWDOWN + HIGH TEMPERATURE + RADIOLOGY + REACTOR PHYSICS + REACTOR, BWR + REACTOR, SAFETY RESEARCH + REACTOR, TEST

5-23314 ALSO IN CATEGORY 11  
ZWICKY EE  
AN ANALYSIS OF TURBINE MISSILES RESULTING FROM LAST-STAGE WHEEL FAILURE  
GENERAL ELECTRIC CO., SCHENECTADY, N. Y.  
TR-67SL211 +. 73 PAGES, 15 FIGURES, 3 TABLES, 7 REFERENCES, OCT. 3, 1967

THE REPORT DESCRIBES CALCULATIONS MADE TO EVALUATE THE POTENTIAL DAMAGE WHICH COULD BE DONE BY HYPOTHETICAL TURBINE MISSILES IN THE UNLIKELY EVENT OF THE FAILURE OF THE LAST-STAGE WHEEL OF A NUCLEAR MACHINE. IT IS CONCLUDED THAT THE MISSILE KINETIC ENERGY ABSORBED BY THE TURBINE CASING IS AS LARGE OR LARGER THAN PREVIOUSLY ASSUMED AND THAT A 120-DEG WHEEL FRAGMENT IS POTENTIALLY MORE DAMAGING THAN EITHER A 90- OR 180-DEG FRAGMENT. THE POTENTIAL DAMAGE INCREASES SLIGHTLY WITH LAST-STAGE WHEEL SIZE. THE CONCRETE-SLAB THICKNESSES PENETRATED FOR THE 38-, 43-, AND 52-IN. WHEELS ARE IN THE APPROXIMATE RATIOS 1, 1.01, 1.08.

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

\*FAILURE, EQUIPMENT + \*MISSILE GENERATION AND PROTECTION + \*TURBINE + ACCIDENT ANALYSIS + IMPACT PROPERTY

5-23390 ALSO IN CATEGORY 17  
HADDAM NECK AMENDMENT 17. RE-ANALYSIS OF STEAM LINE RUPTURE

CATEGORY 5  
ACCIDENT ANALYSIS

5-23390 \*CONTINUED\*  
CONNECTICUT YANKEE ATOMIC POWER COMPANY  
7 PAGES, JANUARY 8, 1968, DOCKET 50-213, TYPE--PWR, MFG.--WEST., AE--STONE + WEBSTER

REANALYSIS USES 10-SEC VALVE-CLOSURE TIME INSTEAD OF 1 SEC (SEE PROPOSED CHANGE 5, 1/9/68). 36-IN. DOUBLE STEAM-HEADER BREAK RESULTS IN AN OFF-SITE THYROID DOSE OF 0.05 REM. MAXIMUM REACTIVITY GAINS LESS THAN 1%. 24-IN. DOUBLE BREAK UPSTREAM FROM THE ISOLATION VALVES RESULTS IN A MAXIMUM REACTIVITY GAIN OF 1.01%. SHUTDOWN MARGIN IN BOTH CASES IS 3.4%, WITH MUST REACTIVE ROD STUCK OUT OF THE CORE. MAXIMUM REACTIVITY GAIN WITH NO BORON INJECTION IS 1.9%.

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

\*ACCIDENT, STEAM LINE RUPTURE + \*RESPONSE TIME + \*VALVE + CONTAINMENT PENETRATION, CLOSURE OF + HADDAM NECK (PWR) + REACTIVITY EFFECT + REACTOR, PWR + REPORT, SAR + SAFETY ANALYSIS

5-23395  
KUNII D + SUZUKI M  
PARTICLE-TO-FLUID HEAT AND MASS TRANSFER IN PACKED BEDS OF FINE PARTICLES  
UNIVERSITY OF TOKYO, TOKYO, JAPAN  
8 PAGES, 6 FIGURES, 27 REFERENCES, INT. J. HEAT MASS TRANSFER 10(7), PAGES 845-52 (JULY 1967)

BY APPLICATION OF A SIMPLE MODEL OF HEAT OR MASS TRANSFER BETWEEN SOLIDS AND FLOWING FLUID IN PACKED BEDS, EXPERIMENTAL DATA OF BOTH NUSSELT AND SHERWOOD NUMBERS REPORTED IN THE PREVIOUS LITERATURES ARE INTERPRETED THEORETICALLY IN THE RANGE OF LOW PECKET NUMBER (LESS THAN 10). THEN IT IS SUGGESTED THAT CHANNELLING OR LOCAL UNEVEN CONTACTING OF FLUIDS WITH SOLIDS IS RESPONSIBLE FOR THE FURTHER DECREASE OF APPARENT HEAT- AND MASS-TRANSFER COEFFICIENTS IN THE ABOVE SYSTEM.

\*PARTICULATE + DROPLET + FLUIDIZED BED + HEAT TRANSFER + MASS TRANSFER

5-23396  
NORDON P + DAVID HG  
COUPLED DIFFUSION OF MOISTURE AND HEAT IN HYGROSCOPIC TEXTILE MATERIALS  
CSIRO WOOL RESEARCH LABORATORIES, RYDE, SYDNEY, AUSTRALIA  
14 PAGES, 11 FIGURES, 15 TABLES, INT. J. HEAT MASS TRANSFER 10(7), PAGES 853-66 (JULY 1967)

A FINITE-DIFFERENCE SOLUTION, BASED ON THE DOUBLE-SWEEP METHOD, WAS FOUND FOR SOLVING THE NONLINEAR DIFFERENTIAL EQUATIONS THAT DESCRIBE COUPLED DIFFUSION OF HEAT AND MASS (MOISTURE) IN HYGROSCOPIC TEXTILE MATERIALS. IN ADDITION TO THE DIFFUSION EQUATIONS, A RATE EQUATION WAS INTRODUCED, DESCRIBING THE RATE OF EXCHANGE OF MOISTURE BETWEEN THE SOLID (TEXTILE FIBRES) AND THE GAS PHASE (PORE SPACE). A NUMERICAL APPLICATION OF THE THEORY WAS MADE, USING WOOL AS AN EXAMPLE FOR THE HYGROSCOPIC MATERIAL, AND, IT IS SHOWN THAT, SIMILAR TO FORCED CONVECTIVE TRANSFER, TRANSFER OF MOISTURE FROM AIR TO THE WOOL AND FROM THE WOOL TO AIR ARE NOT SYMMETRICAL PROCESSES.

\*POROUS MEDIA + HEAT TRANSFER + MASS TRANSFER

5-23397  
GLOUCHKOV LK + MIKHAILOV MD  
THE VARIATION OF HEATING MEDIUM TEMPERATURE TO RAISE A BODY AT A GIVEN TEMPERATURE IN A MINIMUM TIME  
9 PAGES, 1 FIGURE, 3 TABLES, 6 REFERENCES, INT. J. HEAT MASS TRANSFER 10(7), PAGES 867-875 (JULY 1967)

THE VARIATION OF HEATING MEDIUM TEMPERATURE NECESSARY TO RAISE A BODY AT A GIVEN TEMPERATURE IN A MINIMUM TIME WAS DETERMINED. THE RESULTS ARE GIVEN FOR A PLATE, A CYLINDER, AND A SPHERE.

\*SPHERE + HEAT TRANSFER + HEAT TRANSFER, CONDUCTION + HEAT TRANSFER, CONVECTION

5-23398  
LASSAU G + LE FUR B  
PROFILS DE CONCENTRATIONS DANS UNE COUCHE LIMITE LAMINAIRE FIGEE AVEC UNE REPARTITION CONTINUE ET DISCONTINUE DE CATALYSEUR SUR LA PAROI  
33 PAGES, 14 FIGURES, 11 REFERENCES, INT. J. HEAT MASS TRANSFER 10(7), PAGES 877-909 (JULY 1967)

A METHOD FOR INTEGRATING THE LAMINAR BOUNDARY-LAYER EQUATIONS IS PRESENTED FOR A FLUID WITH CONSTANT PROPERTIES, WITH EMPHASIS ON THE RESOLUTION OF THE DIFFUSION EQUATION. THE METHOD IS BASED ON AN ITERATIVE PROCESS. THE INTEREST OF THE METHOD LIES IN THE FACT THAT IT CAN BE USED IN CASES WHERE SIMILARITY DOES NOT APPLY. THE CORRESPONDING NUMERICAL CALCULATIONS ARE MUCH SIMPLER THAN THE CALCULATION BY FINITE DIFFERENCE METHODS. (IN FRENCH.)

\*BOUNDARY LAYER + FLOW, LAMINAR + HEAT TRANSFER + MASS TRANSFER

5-23399  
RUCKENSTEIN E



CATEGORY 5  
ACCIDENT ANALYSIS

5-23399 \*CONTINUED\*

FILM BOILING ON A HORIZONTAL SURFACE  
POLYTECHNICAL INSTITUTE, BUCHAREST, RUMANIA  
9 PAGES, 1 FIGURE, 14 REFERENCES, INT. J. HEAT MASS TRANSFER 10(7), PAGES 911-19 (JULY 1967)

AN ANALYSIS OF THE HEAT-TRANSFER PROCESS IN THE CASE OF FILM BOILING IS MADE BY TAKING INTO ACCOUNT THE TAYLOR INSTABILITY AND THE GROWTH OF THE PROMINENCES UP TO THE BUBBLE DEPARTURE. THE INITIAL RADIUS OF THE PROMINENCES IS DETERMINED BY THE TAYLOR INSTABILITY, THE FINAL RADIUS BY THE SURFACANT AND SURFACE TENSION FORCES. THE GROWTH OF THE PROMINENCES IS DUE BOTH TO THE TAYLOR INSTABILITY AND TO A PART OF THE VAPOUR GENERATED AT THE LIQUID-VAPOUR INTERFACE BY THE HEAT FLUX. THE REST OF THE VAPOUR GENERATED BY THE HEAT FLUX COMPENSATES THE DECREASE OF THE FILM THICKNESS CAUSED BY INSTABILITY AND MAINTAINS A STABLE FILM OF VAPOUR. THE APPENDIX CONTAINS EQUATIONS FOR THE DIAMETER OF THE DEPARTING BUBBLE WHICH TAKE INTO ACCOUNT ALSO THE FRICTION AND INERTIAL FORCES.

\*FILM BOILING + \*HEAT TRANSFER, BOILING + BOUNDARY LAYER + FLOW STABILITY + HEAT TRANSFER + POOL BOILING

5-23400

FROST W + KIPPENHAN CJ  
BUBBLE GROWTH AND HEAT-TRANSFER MECHANISMS IN THE FORCED CONVECTION BOILING OF WATER CONTAINING A SURFACE ACTIVE AGENT  
THE UNIVERSITY OF TENNESSEE SPACE INSTITUTE, TULLAHOMA, TENN. + UNIVERSITY OF WASHINGTON  
19 PAGES, 16 FIGURES, 3 TABLES, 12 REFERENCES, INT. J. HEAT MASS TRANSFER 10(7), PAGES 911-19 (JULY 1967)

REPORTS AN EXPERIMENTAL INVESTIGATION OF FORCED-CONVECTION BOILING IN A VERTICAL ANNULUS. THE BOILING FLUID WAS WATER BOTH PURE AND WITH VARIOUS AMOUNTS OF SURFACE ACTIVE AGENT ADDED TO REDUCE SURFACE TENSION. IN ADDITION TO SURFACE TENSION, THE VELOCITY AND SUBCOOLING WERE ALSO VARIED. IT IS CONCLUDED THAT LATENT ENERGY TRANSPORT CONTRIBUTES ABOUT 50% OF THE MEASURED HEAT FLUX IN WATER WITHOUT A SURFACE ACTIVE ADDITIVE AND SIGNIFICANTLY MORE IN WATER CONTAINING AN ADDITIVE.

\*HEAT TRANSFER, BOILING + BUBBLE + HEAT TRANSFER + HEAT TRANSFER, CONVECTION + WATER, GENERAL

5-23401

LEVY S  
FORCED CONVECTION SUBCOOLED BOILING-PREDICTION OF VAPOR VOLUMETRIC FRACTION  
GENERAL ELECTRIC COMPANY, SAN JOSE  
15 PAGES, 14 FIGURES, 4 TABLES, 18 REFERENCES, INT. J. HEAT MASS TRANSFER 10(7), PAGES 951-65 (JULY 1967)

A MODEL WAS DEVELOPED TO PREDICT THE VAPOR VOLUMETRIC FRACTION DURING FORCED-CONVECTION SUBCOOLED BOILING. THE METHOD WAS APPLIED TO A VARIETY OF TEST DATA, AND THE AGREEMENT WAS SATISFACTORY FOR A MULTITUDE OF FLOW, HEAT FLUX, AND FLUID PROPERTY CONDITIONS.

\*HEAT TRANSFER, BOILING + FLOW, TUBE + FLOW, TURBULENT + HEAT TRANSFER + HEAT TRANSFER, CONVECTION

5-23402

ALSO IN CATEGORY 19

LUIKOV AV  
HEAT TRANSFER BIBLIOGRAPHY--RUSSIAN WORKS  
B.S.S.R. ACADEMY OF SCIENCES, MINSK, U.S.S.R.  
18 PAGES, INT. J. HEAT MASS TRANSFER 10(7), PAGES 999-1014 (JULY 1967)

BIBLIOGRAPHY OF THE RUSSIAN LITERATURE.

\*BIBLIOGRAPHY + \*HEAT TRANSFER

5-23403

ROTEM Z  
THE EFFECT OF THERMAL CONDUCTION OF THE WALL UPON CONVECTION FROM A SURFACE IN A LAMINAR BOUNDARY LAYER  
THE UNIVERSITY OF BRITISH COLUMBIA, VANCOUVER  
6 PAGES, 2 FIGURES, 1 TABLE, 5 REFERENCES, INT. J. HEAT MASS TRANSFER 10(4), PAGES 461-66 (APRIL 1967)

THIS PAPER CONSIDERS THE INFLUENCE OF WALL THERMAL CONDUCTION UPON THE INTERFACE TEMPERATURE PROFILE FOR THE CASE OF A THIN HEAT-DISSIPATING WALL COOLED BY FORCED LAMINAR CONVECTION. A METHOD FOR THE RAPID APPROXIMATE CALCULATION OF BOTH THE TEMPERATURE AND THE FILM COEFFICIENT IS GIVEN FOR THE TWO CASES OF AN ALMOST ISOTHERMAL WALL AND A WALL OF ALMOST CONSTANT FLUX.

\*BOUNDARY LAYER + \*HEAT TRANSFER, CONDUCTION + HEAT TRANSFER + HEAT TRANSFER ANALYSIS

5-23404

MALLING GF + THODDS G  
ANALOGY BETWEEN MASS AND HEAT TRANSFER IN BEDS OF SPHERES--CONTRIBUTIONS DUE TO END EFFECTS  
NORTHWESTERN UNIVERSITY, EVANSTON, ILLINOIS  
10 PAGES, 8 FIGURES, 1 TABLE, 12 REFERENCES, INT. J. HEAT MASS TRANSFER 10(4), PAGES 489-498 (APRIL 1967)

MASS- AND HEAT-TRANSFER DATA OBTAINED BY THE VAPORIZATION OF WATER FROM POROUS SPHERES WERE

CATEGORY 5  
ACCIDENT ANALYSIS

5-23404 \*CONTINUED\*

USED TO CALCULATE J-FACTORS. STRICT ADIABATIC CONDITIONS WERE EMPLOYED FOR THE ATTAINMENT OF SOLELY FLUID TO PARTICLE TRANSFER. FIXED BEDS OF SEVERAL VOID FRACTIONS WERE CONSTRUCTED USING SHORT LENGTHS OF FINE FIGID WIRE TO HOLD THE SPHERES IN REGULAR GEOMETRICAL ORIENTATIONS. IN ADDITION, THE ENTRANCE AND EXIT EFFECTS WERE ELIMINATED BY EXTENDING THE ENDS OF EACH BED WITH LAYERS OF INACTIVE SOLID PLASTIC SPHERES. THE RESULTING MASS- AND HEAT-TRANSFER FACTORS POSSESSED A GOOD CORRESPONDENCE INDICATING THE EXISTENCE OF AN ANALOGY FOR THESE TRANSFER PROCESSES.

\*SPHERE + FLUIDIZED BED + HEAT TRANSFER + MASS TRANSFER

5-23405

CAMPRELL PM

MONTE CARLO METHOD FOR RADIATIVE TRANSFER

LAWRENCE RADIATION LABORATORY, LIVERMORE, CALIF.

9 PAGES, 5 FIGURES, 6 REFERENCES, INT. J. HEAT MASS TRANSFER 10(4), PAGES 519-527 (APRIL 67)

A MONTE CARLO METHOD FOR THE NUMERICAL SOLUTION OF NONLINEAR, FREQUENCY-DEPENDENT, RADIATIVE TRANSFER PROBLEMS IS DESCRIBED. THE ACCURACY OF THE METHOD IS INVESTIGATED WITH RESPECT TO THE NUMBER OF PARTICLES REQUIRED, PROPAGATION OF STATISTICAL ERROR, TRUNCATION ERROR, AND CONVERGENCE TO A KNOWN SOLUTION. THE SOLUTION OF A SIMPLE FREQUENCY-DEPENDENT RADIATIVE HEATING PROBLEM IS ILLUSTRATED. GRAY-BODY CALCULATIONS USING BOTH THE PLANCK MEAN ABSORPTION COEFFICIENT AND THE ROSSELAND MEAN FREE PATH ARE COMPARED WITH THE FREQUENCY-DEPENDENT CALCULATION.

\*HEAT TRANSFER, RADIANT + \*MONTE CARLO + HEAT TRANSFER

5-23406

LAVENDER WJ + PEI DC

THE EFFECT OF FLUID TURBULENCE ON THE RATE OF HEAT TRANSFER FROM SPHERES

DELMAR CHEMICALS LIMITED, MONTREAL + UNIVERSITY OF WATERLOO, WATERLOO, ONTARIO

11 PAGES, 6 FIGURES, 5 TABLES, 20 REFERENCES, INT. J. HEAT MASS TRANSFER 10(4), PAGES 529-539 (APRIL 1967)

THE RATE OF HEAT TRANSFER FROM A 1.25-IN-DIAM SPHERE WAS STUDIED IN A VERTICAL WIND TUNNEL. RESULTS IN BOTH HEAT TRANSFER AND DRAG INDICATE THAT THE PRODUCT OF REYNOLDS NUMBER AND TURBULENCE INTENSITY (DEFINED AS THE TURBULENT REYNOLDS NUMBER) IS AN IMPORTANT PARAMETER AND THAT THE SCALE OF TURBULENCE IS OF MINOR SIGNIFICANCE.

\*SPHERE + FLOW, TURBULENT + HEAT TRANSFER + HEAT TRANSFER CORRELATION

5-23407

WORSJUE-SCHMIDT PM

HEAT TRANSFER IN THE THERMAL ENTRANCE REGION OF CIRCULAR TUBES AND ANNULAR PASSAGES WITH FULLY DEVELOPED LAMINAR FLOW

TECHNICAL UNIVERSITY OF DENMARK, COPENHAGEN

11 PAGES, 8 TABLES, 12 REFERENCES, INT. J. HEAT MASS TRANSFER 10(4), PAGES 541-551 (APRIL 67)

SERIES SOLUTIONS OF THE TYPE FIRST PROPOSED BY MERCER ARE PRESENTED FOR LAMINAR FLOW IN TUBES AND ANNULAR PASSAGES (INCLUDING THE PLANF DUCT) WITH A STEP-CHANGE IN EITHER THE TEMPERATURE OR THE HEAT FLUX AT ONE WALL. THIS TYPE OF SOLUTION--WHICH MAY BE REGARDED AS AN EXTENSION OF THE WELL-KNOWN LEVEQUE-SOLUTION--CONSTITUTES A CONVENIENT ALTERNATIVE TO THE EIGENVALUE SOLUTIONS IN THE FIRST PART OF THE THERMAL ENTRANCE REGION, WHERE A LARGE NUMBER OF TERMS IS REQUIRED IN THE EIGENFUNCTION EXPANSIONS.

\*FLOW, ANNULAR + \*FLOW, TUBE + FLOW, LAMINAR + HEAT TRANSFER

5-23409

PRESSER KH + PIETRALLA G + HARTH K

HEAT TRANSFER AND PRESSURE DROP IN INSIDE HEATED ANNULI BY HIGH PRESSURE GAS COOLING

INSTITUT FUR REAKTORBAUELEMENTE DER KERNFORSCHUNGSANLAGE JULICH DES LANDES NORDRHEIN-WESTFALEN E.V.

12 PAGES, 16 FIGURES, 8 TABLES, 25 REFERENCES, ATOMKERNENERGIE 12(1-2), PAGES 43-54 (JANUARY 1967)

HEAT TRANSFER AND PRESSURE DROP OF THREE DIFFERENT ANNULI WITH DIAMETER RATIOS OF  $(D-SUB-4/D-SUB-1)$  EQUAL TO 1.5, 2, AND 2.67 WERE INVESTIGATED WITH TURBULENT FLOW OF CO2 TO N2. THESE MEASUREMENTS WERE CONDUCTED AT PRESSURES FROM 10 TO 60 KP/SQ. CM AND GAS TEMPERATURES FROM 200 TO 400 C. REYNOLDS NUMBERS ARE IN THE UP TO NOW NOT INVESTIGATED RANGE FROM 70,000 TO 5,000,000. THE HYDRAULIC EQUIVALENT DIAMETER WAS USED. ABSOLUTE WALL AND BULK TEMPERATURE RATIOS FROM 1.02 TO 2.3 WERE STUDIED.

\*PRESSURE DROP + FLOW, ANNULAR + HEAT TRANSFER + REACTOR, GCR

5-23410

HORI M + OUCHI Y

EFFECT OF ORIFICE PRESSURE DROP ON BURNOUT HEAT FLUX IN PARALLEL CHANNELS

JAPAN ATOMIC ENERGY RESEARCH INST., TOKYO

CATEGORY 5  
ACCIDENT ANALYSIS

5-23410 \*CONTINUED\*  
4 PAGES, 7 FIGURES, 3 REFERENCES, NIPPON GENSHIRYOKU GAKKAISHI 8, PAGES 536-9 (OCT. 1966)

AS EXEMPLIFIED IN THE CASE OF BOILING-WATER REACTORS, ORIFICING AT THE INLET OF EACH CHANNEL IS CONSIDERED TO BE EFFECTIVE IN SUPPRESSING FLOW INSTABILITY IN PARALLEL CHANNELS. IT IS ALSO EXPECTED THAT SUCH ORIFICING SHOULD AFFECT THE BURN-OUT HEAT FLUX IN PARALLEL CHANNELS. IN THIS EXPERIMENT, THE BURNOUT HEAT FLUX IN PARALLEL CHANNELS WAS MEASURED BY VARYING THE SINGLE PHASE (ORIFICE) PRESSURE DROP AND OTHER CONDITIONS (FLOW RATE AND INLET TEMPERATURE) IN ATMOSPHERIC PRESSURE. IT WAS FOUND AS A RESULT THAT BURNOUT HEAT FLUX GENERALLY BECOMES HIGHER AS THE SINGLE PHASE PRESSURE DROP IS INCREASED UNDER FIXED CONDITIONS OF FLOW RATE AND INLET TEMPERATURE. IN ONE CERTAIN CASE HOWEVER, THE BURNOUT HEAT FLUX BECAME HIGHER WITH DECREASE OF THE SINGLE PHASE PRESSURE DROP. THIS WAS PROBABLY DUE TO THE LARGE EFFECT OF NATURAL CIRCULATION CAUSED BY THE LOW FLOW RATE OF THAT PARTICULAR CASE.

\*BURNOUT HEAT FLUX + \*FLOW STABILITY + \*REACTOR, BWR + FUEL ELEMENT + PRESSURE DROP

5-23411  
HAMMITT FG + ROBINSON MJ + LAFFERTY JF  
CHOKED-FLOW ANALOGY FOR VERY LOW QUALITY TWO-PHASE FLOWS  
UNIVERSITY OF MICHIGAN, ANN ARBOR, MICHIGAN  
12 PAGES, 14 FIGURES, 1 TABLE, NUCLEAR SCIENCE AND ENGINEERING 29 (1), PAGES 131-142 (JULY 1967)

TWO THEORETICAL MODELS TO PREDICT AXIAL PRESSURE DISTRIBUTION, VOID FRACTION, AND VELOCITY IN A CAVITATING VENTURI ARE APPLIED. THE THEORETICAL PREDICTIONS ARE COMPARED WITH EXPERIMENTAL DATA FROM COLD-WATER AND MERCURY TESTS, AND GOOD AGREEMENT FOR THE PRESSURE PROFILES IS FOUND. THE PREDICTED VOID FRACTIONS ARE FOUND TO BE TOO HIGH, PROBABLY BECAUSE THE MODELS ASSUME ZERO SLIP OR NEGATIVE SLIP BETWEEN THE VAPOR AND LIQUID PHASES. THE ANALOGY BETWEEN THE CAVITATING VENTURI AND OTHER CHOKED-FLOW REGIMES IS EXPLORED. THE CAVITATING VENTURI IS AN EXAMPLE OF AN EXTREMELY LOW QUALITY TWO-PHASE CHOKED FLOW DEVICE. THE PRESENT STUDY IS THUS SOMEWHAT APPLICABLE TO THE STUDY OF LIQUID-COOLED NUCLEAR REACTOR PRESSURE VESSEL OR PIPING RUPTURES, WHICH HAVE RECEIVED CONSIDERABLE ATTENTION IN RECENT YEARS.

\*FLOW, AXIAL + \*FLOW, TWO PHASE + FLOW THEORY AND EXPERIMENTS + HEAT TRANSFER

5-23412  
LEITNAKER JM + GODFREY TG  
THERMODYNAMIC PROPERTIES OF URANIUM CARBIDES  
OAK RIDGE NATIONAL LABORATORY  
15 PAGES, 7 FIGURES, 3 TABLES, 38 REFERENCES, JOURNAL OF NUCLEAR MATERIALS 21, PAGES 175-189 (FEBRUARY 1967)

THERMODYNAMIC AND PHASE INFORMATION RELATIVE TO THE URANIUM-CARBON SYSTEM WERE ANALYZED AND SHOWN TO BE CONSISTENT. THE ANOMALOUSLY HIGH HEAT CAPACITY OF UC<sub>2</sub> IS JUSTIFIED IN THE ANALYSIS. THERMAL FUNCTIONS ARE CALCULATED FOR UC AND UC<sub>2</sub>.

\*THERMAL PROPERTY + \*THERMODYNAMICS + \*URANIUM CARBIDE

5-23413  
FEFER RC + HERRICK CC  
IDEAL GAS THERMODYNAMIC FUNCTIONS OF TERBIUM, ERBIUM, THULIUM, AND PLUTONIUM  
LOS ALAMOS SCIENTIFIC LABORATORY, LOS ALAMOS, NEW MEXICO  
5 PAGES, 5 TABLES, 15 REFERENCES, J. CHEMICAL ENGINEERING AND DATA 12(1), PAGES 85-89 (JANUARY 1967)

IMPROVED IDEAL GAS THERMODYNAMIC FUNCTIONS ARE CALCULATED FOR MONATOMIC TERBIUM, ERBIUM, THULIUM, AND PLUTONIUM, USING RECENT ENERGY-LEVEL DATA. THE FUNCTIONS ARE TABULATED FROM 100 TO 6000 K AT 100-DFG INTERVALS.

\*PROPERTY, PHYSICAL + \*THERMAL PROPERTY + \*THERMODYNAMICS + ERBIUM + PLUTONIUM

5-23414  
HARRIOTT P + BARNSTONE LA  
HEAT TRANSFER IN FLUIDIZED BEDS  
CORNELL UNIVERSITY + ESSO RESEARCH AND ENGINEERING COMPANY  
4 PAGES, 9 REFERENCES, IND. ENG. CHEM. 59(4), PAGES 55-58 (APRIL 1967)

DISCUSSES THE INCONSISTENCIES IN PUBLISHED DATA AND METHODS OF ESTIMATING THE ACTUAL COEFFICIENTS FOR PARTICLE-TO-GAS HEAT TRANSFER IN FLUID BEDS. CALCULATIONS FOR TWO FLUIDIZED-BED REACTIONS SHOW THAT THE PARTICLE-TO-GAS TEMPERATURE DIFFERENCE WILL NEARLY ALWAYS BE NEGLIGIBLE, BUT SIGNIFICANT TEMPERATURE DIFFERENCES MAY EXIST BETWEEN GAS BUBBLES AND THE DENSE BED.

\*FLUIDIZED BED + FLOW THEORY AND EXPERIMENTS + HEAT TRANSFER + HEAT TRANSFER ANALYSIS

5-23415  
KUMAR R + JAIN MK

CATEGORY 5  
ACCIDENT ANALYSIS

5-23415 \*CONTINUED\*  
HEAT TRANSFER IN COUETTE FLOW OF BINGHAM MATERIAL WITH LINEARLY VARYING WALL TEMPERATURE  
INDIAN INSTITUTE OF TECHNOLOGY, NEW DELHI, INDIA  
9 PAGES, 3 FIGURES, 1 TABLE, 14 REFERENCES, JOURNAL OF THE FRANKLIN INSTITUTE 283(3), PAGES 250-5E (MARCH 1967)

IN THIS NOTE WE ANALYZE HEAT TRANSFER DUE TO FULLY DEVELOPED LAMINAR FLOW OF BINGHAM MATERIAL BETWEEN TWO PARALLEL INFINITE PLATES WITH LINEARLY VARYING WALL TEMPERATURE. A NUMBER,  $CHI$ , DEFINED AS THE NONDIMENSIONAL LONGITUDINAL TEMPERATURE GRADIENT ALONG THE PLATE, IS INTRODUCED. WE SHOW THAT THE TEMPERATURE AT A PLACE IN THE CHANNEL IS HIGHER WHEN THE PLATES ARE MAINTAINED AT A LINEARLY DECREASING TEMPERATURE THAN WHEN THE PLATES ARE MAINTAINED AT A LINEARLY INCREASING TEMPERATURE IN THE DIRECTION OF FLOW. THE EFFECT OF DISSIPATION IS TO INCREASE THE TEMPERATURE AND THIS EFFECT IS MORE SIGNIFICANT WHEN THE FLOW REGION IS NARROWER.

5-23416  
NIJSING R + EIFLER W + DELFAU B + CAMPOSILVAN  
STUDIES ON FLUID MIXING BETWEEN SUBCHANNELS IN A BUNDLE OF FINNED TUBES  
EUPATOM, ISPRA, ITALY  
25 PAGES, 29 FIGURES, 6 TABLES, NUCLEAR ENGINEERING AND DESIGN, 5(3), PAGES 229-253 (MAY 1967)

STUDIES THE FLUID FLOW BEHAVIOUR IN A BUNDLE OF FINNED TUBES, SIMULATING THE CHARACTERISTIC PARTS OF AN ORGEL CLUSTER FUEL ELEMENT. RESULTS OBTAINED CONCERN FLOW DISTRIBUTION AND INTERSUBCHANNEL MIXING RATES. THE EXPERIMENTAL DATA WERE IN GOOD AGREEMENT WITH THE PREDICTIONS OF RELATIVELY SIMPLE HYDRODYNAMICAL MODELS.

\*FIN + \*FLOW, CROSS + FLOW THEORY AND EXPERIMENTS + FUEL ELEMENT + HEAT TRANSFER + HEAT TRANSFER AUGMENTATION

5-23417  
MILLS WJ + POREH M  
HEAT TRANSFER FROM AN ISOTHERMAL SPHERE TO A LOW PRANDTL NUMBER FLUID IN POTENTIAL FLOW  
PENNSYLVANIA STATE UNIVERSITY + ISRAEL INSTITUTE OF TECHNOLOGY, HAIFA, ISRAEL  
6 PAGES, 6 FIGURES, 2 REFERENCES, ISRAEL JOURNAL OF TECHNOLOGY, 4(3), PAGES 224-229 (1966)

THE PROBLEM OF HEAT TRANSFER FROM AN ISOTHERMAL SPHERE TO A LOW-PRANDTL-NUMBER FLUID IN A STEADY AND NONSTEADY POTENTIAL FLOW WAS TREATED ANALYTICALLY. THE SOLUTION TO THE PROBLEM IS GIVEN BY A POWER SERIES IN THE PECKET NUMBER OF WHICH THE FIRST THREE TERMS ARE CALCULATED. THE INSTANTANEOUS AND AVERAGE NUSSELT NUMBERS WERE COMPUTED AND COMPARED WITH A SIMILAR SOLUTION FOR HEAT TRANSFER FROM A SPHERE IN A STOKES FLOW.

\*METAL, LIQUID + \*SPHERE + FLOW, LAMINAR + HEAT TRANSFER

5-23418  
ZDRAVKOVIC VM  
ANALYTICAL APPROACH TO ACCIDENTAL LOSS OF COOLANT IN BWR  
4 PAGES, 3 FIGURES, 2 TABLES, 3 REFERENCES, ATOMKERNENERGIE 12(1-2), PAGES 25-28 (JANUARY-FEBRUARY 1967)  
IN GERMAN

IN THE CASE OF FEED PIPE OR OUTLET STEAM PIPE RUPTURE, IT COMES TO SUDDEN DISCHARGE OF SUPERHEATED HEAVY WATER OR STEAM INTO THE DRY WELL WHERE THE REACTOR IS LOCATED. THIS IS ACCOMPANIED BY SUDDEN AND HIGH BUILD UP OF PRESSURE, WHICH WOULD CAUSE FURTHER DAMAGE. TO SUPPRESS PRESSURE INCREASE AND TO PREVENT RADIOACTIVE CONTAMINATION OF ENVIRONMENT, THE DRY WELL IS CONNECTED BY SPECIAL VENTING PIPES TO THE WET WELL. IN THIS PAPER, THE METHOD OF CALCULATION IS DISPLAYED IN WHICH THE UNSTATIONARY REGIME OF PRESSURE FALL IS THEORETICALLY PERFORMED. DISCHARGE TIME OF LIQUID IS DESCRIBED BY TWO NEW DIMENSIONLESS NUMBERS WHICH CONTAIN ALL GEOMETRICAL AND THERMOPHYSICAL PARAMETERS OF THE REACTOR VESSEL.

\*BLOWDOWN + \*PIPING + PRESSURE TRANSIENT + REACTOR, BWR

5-23419  
MIXON FO + WHITAKER DR + ORCUTT JC  
AXIAL DISPERSION AND HEAT TRANSFER IN LIQUID-LIQUID SPRAY TOWERS  
RESEARCH TRIANGLE INSTITUTE, DURHAM, NORTH CAROLINA  
8 PAGES, 5 FIGURES, 2 TABLES, A.I.C.H.E. JOURNAL, 13(1), PAGES 21-28 (JANUARY 1967)

A RADIOTRACER TECHNIQUE WAS USED TO MEASURE AXIAL DISPERSION IN BOTH PHASES IN SPRAY TOWERS OPERATED AT AND NEAR FLOODING. A NEW METHOD THAT EXHIBITS CERTAIN ADVANTAGES OVER METHODS USED IN THE PAST IS PRESENTED FOR REDUCING SUCH DATA. IT IS DEMONSTRATED THAT AXIAL DISPERSION IN FLOODED AND NEAR-FLOODED SPRAY TOWERS IS SUFFICIENTLY SEVERE TO CONTROL COMPLETELY THEIR PERFORMANCE AS HEAT EXCHANGERS.

\*SPRAY, GENERAL + FLOW, TWO PHASE + HEAT TRANSFER + MASS TRANSFER

5-23420  
DISCHINGER RH

CATEGORY 5  
ACCIDENT ANALYSIS

5-23420 \*CONTINUED\*  
 PERFORMANCE EVALUATION OF HEAT EXCHANGERS FOR SODIUM-COOLED REACTORS. QUARTERLY TECHNICAL PROGRESS REPORT  
 NO. 6, OCTOBER 1, 1966-DECEMBER 31, 1966  
 UNITED NUCLEAR CORPORATION, ELMSFORD, N. Y.  
 UNC-5166 +. 33 PAGES, JANUARY 20, 1967

EARLY DATA FROM THE RISE-TO-POWER TESTS OF THE SCTI WERE USED TO SHAKE DOWN THE EVALUATION PROCEDURES FOR THE ALCO HEAT EXCHANGERS. SOME TENTATIVE OBSERVATIONS REGARDING THERMAL PERFORMANCE WERE MADE. A LITERATURE SEARCH WAS UNDERTAKEN TO ESTIMATE THE EFFECTS OF GAS ENTRAINMENT IN THE SODIUM ON HEAT TRANSFER. BECAUSE OF THE POSSIBILITY OF ADVERSE EFFECTS, IT WAS RECOMMENDED THAT STEPS BE TAKEN TO REDUCE THE GAS ENTRAINMENT IN THE STEAM GENERATORS, OR, PREFERABLY, TO ELIMINATE IT ALTOGETHER.

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

\*HEAT EXCHANGER + \*METAL, LIQUID + \*SODIUM + HEAT TRANSFER

5-23421  
 POPPENDIEK HF + FEIGENBUTZ LV + GREENE ND + MORTON WA + SABIN CM + CONNELLY DJ  
 INVESTIGATION OF FUNDAMENTAL MECHANISMS AND PARAMETERS THAT INFLUENCE STEADY STATE AND TRANSIENT PERFORMANCE OF RANKINE CYCLE LIQUID METAL SYSTEMS. QUARTERLY REPORT OCTOBER 1-DECEMBER 31, 1966  
 GEOSCIENCE LTD., SOLANA BEACH, CALIF.  
 SAN-677-6 + GLR-49 +. 21 PAGES, DECEMBER 1966

A HEAT-TRANSFER ANALYSIS OF THE VAPORIZATION OF A DROPLET ON A HOT ROUGH SURFACE IS PRESENTED. HEAT IS TRANSFERRED TO THE LIQUID DROP BY CONDUCTION THROUGH THE ISSUING VAPOR FILM UNDER THE DROP AND BY CONDUCTION THROUGH SURFACE ASPERITIES THAT ARE IN CONTACT WITH THE DROP. PREDICTED VAPORIZATION LIFE-TIMES ARE COMPARED WITH RESULTS FOR SMOOTH SURFACES (FILM BOILING) AND WITH EXPERIMENTAL BEHAVIOR.

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

\*DROPLET + \*MERCURY + HEAT TRANSFER + METAL, LIQUID

5-23422  
 ROGERS JT  
 HEAT TRANSFER LIMITATIONS ON NUCLEAR REACTOR FUEL ELEMENTS  
 CANADIAN GENERAL ELECTRIC, PETERBOROUGH, ONT.  
 10 PAGES, 14 FIGURES, 84 REFERENCES, THE CANADIAN JOURNAL OF CHEMICAL ENGINEERING, 44(5), PAGES 286-298  
 (OCTOBER 1966)

LIMITATIONS ON HEAT TRANSFER RATES ON FUEL ELEMENTS IN CANADIAN HEAVY-WATER-MODERATED REACTORS ARE EXAMINED. WITH ORGANIC COOLANT IN SIMPLE FLOW GEOMETRIES, HEAT FLUXES ARE LIMITED BY DEPARTURE FROM NUCLEATE BOILING (DNB), IN SIMULATED FUEL BUNDLES THE FAILURE MECHANISM CAN BE EITHER LOCALIZED DNB, OR COKE-OUT (THE FORMATION, DEPOSITION AND RAPID GROWTH OF COOLANT DECOMPOSITION PRODUCTS ON HEATED SURFACES). WITH BOILING LIGHT-WATER COOLANT, CRITICAL HEAT FLUX (CHF) IS CAUSED BY DNB AT LOW QUALITIES AND BY DRY-OUT AT HIGHER QUALITIES. PARAMETERS GOVERNING CHF IN TUBES AND ANNULI ARE FAIRLY WELL ESTABLISHED. DATA FOR FUEL BUNDLES ARE BECOMING AVAILABLE. METHODS OF INCREASING CHF AND OF RATIONALLY SETTING MARGINS OF SAFETY ON CHF ARE BEING DEVELOPED.

\*DNB + \*HEAT FLUX, CRITICAL + \*HEAT FLUX, DRYOUT + \*REACTOR COOLANT + HEAT TRANSFER + REACTOR, BWR + REACTOR, ORGANIC COOLED + REACTOR, PWR

5-23423  
 MORGAN RP + YERAZUNIS S  
 HEAT AND MASS TRANSFER BETWEEN AN EVAPORATIVE INTERFACE IN A POROUS MEDIUM AND AN EXTERNAL GAS STREAM  
 RENSSELAER POLYTECHNIC INSTITUTE, TROY, NEW YORK  
 9 PAGES, 6 FIGURES, 24 REFERENCES, A.I.C.H.E. JOURNAL, 13(1), PAGES 132-140 (JANUARY 1967)

STEADY-STATE HEAT AND MASS TRANSFER BETWEEN A SUBMERGED EVAPORATIVE INTERFACE IN A POROUS MEDIUM AND AN EXTERNAL GAS STREAM WERE ANALYZED THEORETICALLY. LOCAL AND AVERAGE EVAPORATION RATES FOR LAMINAR AND TURBULENT FLOW OVER A FLAT PLATE AS WELL AS FOR FULLY DEVELOPED LAMINAR OR TURBULENT FLOW NEAR THE THERMAL ENTRY REGION OF A DUCT WERE OBTAINED AS A FUNCTION OF THE POSITION OF THE EVAPORATIVE INTERFACE. CALCULATED LOCAL EVAPORATION RATES ARE SIGNIFICANTLY LOWER THAN VALUES COMPUTED BY LUKOV, WHO DID NOT TAKE INTO ACCOUNT THE VARIATION OF EVAPORATIVE SURFACE TEMPERATURE WITH RECESSION, INDICATED BOTH BY THE PRESENT ANALYSIS AND BY OBSERVATIONS RELATED TO THE DRYING OF THICK POROUS MATERIALS. APPLICATION TO THE ANALYSIS OF THE DRYING PROCESS IS DISCUSSED.

\*POROUS DIFFUSION + HEAT TRANSFER + MASS TRANSFER

5-23424  
 REID RC + BRIAN PL + WEBER ME  
 HEAT TRANSFER AND FROST FORMATION INSIDE A LIQUID NITROGEN-COOLED TUBE  
 MASSACHUSETTS INSTITUTE OF TECHNOLOGY, CAMBRIDGE, MASS.

CATEGORY 5  
ACCIDENT ANALYSIS

5-23424 \*CONTINUED\*  
6 PAGES, 10 FIGURES, 24 REFERENCES, AICHE JOURNAL 12(6), PAGES 1190-95 (NOVEMBER 1966)

AN EXPERIMENTAL STUDY WAS UNDERTAKEN OF SIMULTANEOUS HEAT TRANSFER AND FROST DEPOSITION INSIDE A LIQUID-NITROGEN-COOLED TUBE FOR A RANGE OF HUMIDITIES AND REYNOLDS NUMBERS. THE DATA INDICATE THAT DIFFUSION OF WATER VAPOR WITHIN THE FROST LAYER CAUSED THE FROST DENSITY AND THERMAL CONDUCTIVITY TO INCREASE WITH TIME. THE INCREASE WAS SO GREAT THAT THE HEAT-TRANSFER RATE BECAME CONSTANT EVEN WHILE FROST CONTINUED TO ACCUMULATE. IN A SEPARATE STUDY, THE THERMAL CONDUCTIVITIES OF FROSTS FORMED ON A VERY COLD SURFACE WERE MEASURED AND FOUND TO BE LOWER THAN VALUES NEAR THE FREEZING POINT OF WATER.

\*CRYOGENICS + FLOW, TUBE + HEAT TRANSFER + NITROGEN

5-23425  
CHRISTIANSEN EB + JENSEN GE + TAO FS  
LAMINAR FLOW HEAT TRANSFER  
UNIVERSITY OF UTAH, SALT LAKE CITY, UTAH  
7 PAGES, 5 FIGURES, 31 REFERENCES, A.I.C.H.E JOURNAL, 12(6), PAGES 1196-1202 (NOVEMBER 1966)

NUMERICAL SOLUTIONS OF THE EQUATIONS OF MOTION AND ENERGY FOR THE HEATING OF NON-NEWTONIAN FLUIDS IN RECTILINEAR, AXISYMMETRIC LAMINAR FLOW IN TUBES OF CIRCULAR CROSS SECTION ARE EXTENDED TO THE CASE OF COOLING AT CONSTANT TUBE-WALL TEMPERATURE. THE FLUID DENSITY, HEAT CAPACITY, AND THERMAL CONDUCTIVITY ARE ASSUMED CONSTANT, BUT THE FLOW PROPERTIES ARE REPRESENTED BY A TEMPERATURE-DEPENDENT EQUATION. THE RESULTS ARE PRESENTED AS GRAPHS. THE MEAN DEVIATION OF EXPERIMENTAL DATA FOR THE COOLING OF AQUEOUS CMC AND CARBOPOL DISPERSIONS FROM THE NUMERICAL SOLUTIONS IS PLUS OR MINUS 8%.

FLOW THEORY AND EXPERIMENTS + FLOW, AXIAL + FLOW, LAMINAR + FLOW, NONNEWTONIAN + HEAT TRANSFER

5-23426  
HEAD HN + HELLUMS JD  
HEAT TRANSPORT AND TEMPERATURE DISTRIBUTIONS IN LARGE SINGLE DROPS AT LOW REYNOLDS NUMBERS--A NEW EXPERIMENTAL TECHNIQUE  
RICE UNIVERSITY, HOUSTON, TEXAS  
7 PAGES, 6 FIGURES, 1 TABLE, 10 REFERENCES, AICHE JOURNAL 12(3), PAGES 553-59 (1966)

A NEW EXPERIMENTAL TECHNIQUE WAS DEVELOPED FOR STUDY OF TRANSPORT FROM DROPS. LARGE SINGLE DROPS WERE HEATED DIELECTRICALLY WHILE SUSPENDED MOTIONLESS IN AN UNHEATED CONTINUOUS PHASE. DIRECT MEASUREMENTS OF TEMPERATURE DISTRIBUTIONS WITHIN DROPS ARE PRESENTED BOTH FOR CIRCULATING DROPS AND FOR DROPS IN WHICH SURFACE-ACTIVE MATERIALS RETARD CIRCULATION. THE RESULTS OF THE MEASUREMENTS WILL BE USEFUL IN ASSESSING THE VALIDITY OF THE VARIOUS PROPOSED MODELS.

\*DROPLET + HEAT TRANSFER + HEAT TRANSFER CORRELATION + SPRAY, GENERAL

5-23427  
WACHERS LH + BONNE H + VAN NOUHUIS HJ  
THE HEAT TRANSFER FROM A HOT HORIZONTAL PLATE TO SESSILE WATER DROPS IN THE SPHEROIDAL STATE  
LABORATORIUM VOOR FYSISCHE TECHNOLOGIE, THE NETHERLANDS  
14 PAGES, 14 FIGURES, 3 TABLES, 24 REFERENCES, CHEM. ENG. SCI 21(10), PAGES 923-36 (OCT. 66)

THE HEAT TRANSFER FROM A HOT METAL SURFACE TO A WATER DROP RESTING UPON IT WAS INVESTIGATED. THE EXPERIMENTALLY DETERMINED EVAPORATION RATE IN A SATURATED ATMOSPHERE AGREED RATHER WELL WITH THE PREDICTIONS OF A SIMPLE THEORY, IN WHICH THE BOTTOM OF THE DROP WAS ASSUMED TO BE FLAT. AGREEMENT WITH A MORE REFINED THEORY IN WHICH THE CURVATURE OF THE BOTTOM (DUE TO THE PRESSURE DROP ALONG THE BOTTOM) WAS ALSO CONSIDERED, WAS NOT SO GOOD, PROBABLY BECAUSE OF THE SMALL OSCILLATORY MOTIONS OF THE BOTTOM OF THE DROP.

\*DROPLET + \*HEAT TRANSFER CORRELATION + HEAT TRANSFER + SPRAY, GENERAL + WATER, GENERAL

5-23439 ALSO IN CATEGORIES 6 AND 7  
KIETZ KA  
QUARTERLY TECHNICAL REPORT STEP PROJECT JANUARY 1-MARCH 31, 1967  
PHILLIPS PETROLEUM COMPANY  
DDO-17239 +. 156 PAGES, 81 FIGURES, 15 TABLES, 50 REFERENCES, AUGUST 1967

THIS REPORT IS ONE OF A SERIES ON THE FOLLOWING TOPICS - LOFT DESIGN ANALYSIS, LOFT BLOWDOWN ANALYSIS, DIRECT RADIATION LEVELS DURING LOFT OPERATION, FISSION PRODUCT BEHAVIOR STUDIES, LOFT RADIOLOGICAL STUDIES, MODEL FORMULATION FOR THE SUBCOOLED DECOMPRESSION DURATION IN A PWR SYSTEM FOLLOWING A PRIMARY-COOLANT-LOOP BREAK, AND SEMISCALE BLOWDOWN TEST PROGRAM.

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

ACCIDENT, LOSS OF COOLANT + CONTAINMENT DESIGN + CORE MELTDOWN + CORE SPRAY + FISSION PRODUCT RELEASE, GENERAL + LOFT (S-RR) + REACTOR TRANSIENT + REACTOR, SAFETY RESEARCH

CATEGORY 5  
ACCIDENT ANALYSIS

5-23470 ALSO IN CATEGORY 19  
DRESDEN 3 SUMMARY MEMORANDUM ON EXCURSION ON ANALYSIS UNCERTAINTIES  
COMMONWEALTH EDISON CO., CHICAGO, ILLINOIS  
38 PAGES, FIGURES, TABLES, 17 REFERENCES, MAY 23, 1966, DOCKET NO. 50-249, TYPE--BWR, MFG--G.E., AE--SGT + LUNDY

COVERS (1) UNCERTAINTY IN CALCULATION OF PEAK ENTHALPY, (2) SECONDARY REACTIVITY EFFECTS, AND (3) UNCERTAINTY OF DAMAGE-THRESHOLD ENTHALPY LIMIT. ERRORS IN (1) ARE EITHER STATISTICAL (CALCULATIONAL UNCERTAINTIES ERRORS IN EXPERIMENTAL DATA, ETC.) OR PROBABILISTIC ARISING FROM THE STATE VARIABLES OF THE CORE. STATISTICAL ERROR IS ABOUT 10%. BEST PRESENT ESTIMATE OF THRESHOLD AT WHICH RAPID CONVEPSION OF FISSION ENERGY TO MECHANICAL ENERGY COULD TAKE PLACE DUE TO FUEL DAMAGE IS 425 CAL/GM. FOR CONSERVATISM, ENTHALPY LIMIT IS TAKEN AS THE MELTING POINT (220-280 CAL/GM).

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

\*ACCIDENT, REACTIVITY + \*EPROR ANALYSIS + AEC QUESTION + EXCURSION, LARGE + FUEL ELEMENT + PERFORMANCE LIMIT + REPORT, PSAR

5-24058 ALSO IN CATEGORIES 8 AND 12  
ZABEL CW  
LETTER FROM ACRS TO CHAIRMAN AEC  
AEC, DIVISION OF OPERATIONAL SAFETY  
3 PAGES, FEBRUARY 26, 1968, FPODM USAEC PRESS RELEASE L-42

SUBJECT - REPORT OF ADVISORY TASK FORCE ON POWER REACTOR EMERGENCY COOLING (TID-24226).  
COMMENTS ON TID-24226, ADVISORY TASK FORCE REPORT, ARE PRESENTED IN THIS LETTER.

AVAILABILITY - AEC, DIVISION OF OPERATIONAL SAFETY, WASHINGTON, D. C.

ACCIDENT ANALYSIS + ACCIDENT, LOSS OF COOLANT + ACRS + BLOWDOWN + CORE MELTDOWN + EMERGENCY COOLING CONSIDERATIONS + EMERGENCY SYSTEM + REACTOR, BWR + REACTOR, PWR + SAFETY PROGRAM

5-24059 ALSO IN CATEGORIES 8 AND 12  
REPORT OF ADVISORY TASK FORCE ON POWER REACTOR EMERGENCY COOLING  
US ATOMIC ENERGY COMMISSION  
TID-24226 +. 226 PAGES, FIGURES, TABLES, REFERENCES, 1969

CONCLUSIONS, DISCUSSIONS, AND TECHNICAL APPENDIES ARE PRESENTED AS THE FOLLOWING ITEMS - (1) PHENOMENA ASSOCIATED WITH LOSS OF COOLANT (LOC), (2) STRUCTURAL RESPONSE REQUIREMENTS TO BLOWDOWN, (3) REQUIREMENTS OF EMERGENCY CORE-COOLING (ECC) SYSTEM, (4) TECHNOLOGY OF ECC, (5) PRACTICALITY OF ECC SYSTEM, (6) RELIABILITY ANALYSIS, (7) PRIMARY SYSTEM INTEGRITY, (8) BREAK SIZE FOR EMERGENCY CORE-COOLING DESIGN, (9) SAFEGUARDS ROLE OF CONTAINMENT, (10) CORE MELTDOWN, (11) COUNTERMEASURE PRIOR TO LOSS OF CONTAINMENT INTEGRITY, (12) HANDLING OF LARGE MOLTEN MASSES.

AVAILABILITY - USAEC DIRECTOR OF REGULATION, WASHINGTON, D. C., COPY IS FREE

ACCIDENT ANALYSIS + ACCIDENT, LOSS OF COOLANT + ACRS + BLOWDOWN + CORE MELTDOWN + EMERGENCY COOLING CONSIDERATIONS + EMERGENCY SYSTEM + REACTOR, BWR + REACTOR, PWR + SAFETY PROGRAM

CATEGORY 6  
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-20587  
DOERNER RC + KNAPP WG + KARAM RA + BUTLER DK  
ZPR-9 ASSEMBLIES NO. 6-9 CRITICAL EXPERIMENTS  
ARGONNE NATIONAL LAB., ILL.  
ANL-7208 +. 104 PAGES, 86 FIGURES, TABLES, REFERENCES, MARCH 1967

A SERIES OF FAST CRITICAL ASSEMBLIES WAS STUDIED IN THE ARGONNE ZPR-9 FACILITY IN SUPPORT OF THE DESIGN EFFORT IN THE FAST-REACTOR NUCLEAR-PROPULSION PROGRAM. AN ATTEMPT WAS MADE PRIMARILY TO PROVIDE INTEGRAL MEASUREMENTS AS CHECKPOINTS FOR CROSS-SECTION SETS THAT WERE GENERATED FOR THE PROGRAM AND, SECONDARILY, TO PROVIDE DATA TO TEST THE UTILITY OF SIMPLE, ONE-DIMENSIONAL, MULTIGROUP DIFFUSION THEORY IN THE PROGRAM. A MAJOR OBJECTIVE OF THE PRESENT REPORT IS TO PRESENT THE RESULTS OF A SERIES OF CRITICAL EXPERIMENTS, EMPHASIZING THE IMPORTANT DIFFERENCES BETWEEN MEASUREMENTS MADE IN METAL-AND OXIDE-FUELED CORES AND BETWEEN ALUMINUM, A12O3, AND BED AS REFLECTOR MATERIALS.

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

CONTROL ROD WORTH + CRITICALITY EXPERIMENT + DELAYED NEUTRON + FLUX DISTRIBUTION + PROMPT NEUTRON LIFETIME + REACTIVITY COEFFICIENT + REACTIVITY EFFECT + REFLECTOR + ROSSI ALPHA

6-21124  
BARS B  
STOCHASTIC FLUCTUATIONS IN THE POWER PULSES OF TRIGA REACTORS  
TECHNICAL UNIVERSITY OF HELSINKI, OTANIEMI, FINLAND  
1 PAGE, 4 REFERENCES, NUKLEONIK 9(6), PAGE 301 (APRIL 1967)

THE STATISTICAL FLUCTUATIONS IN THE PEAK POWER AND THE RELEASED ENERGY DURING A TRIGA REACTOR POWER PULSE WERE CALCULATED AND COMPARED WITH EXPERIMENTAL OBSERVATIONS. THE THEORY DEVELOPED FOR THE FLUCTUATIONS IN THE POWER BURSTS OF PULSING REACTORS SHOWED THAT THE CHAIN REACTION HAS A MINOR INFLUENCE ON THE FLUCTUATIONS IN THE POWER PULSES PROVIDED THAT THE PRE-PULSE STEADY-STATE POWER IS SUFFICIENTLY HIGH. THE STATISTICAL FLUCTUATIONS IN THE POWER PULSES OF THE TRIGA MARK II REACTOR (FIR-1) ARISE MAINLY FROM THE VARIATIONS IN THE INJECTED REACTIVITY.

NOISE ANALYSIS + REACTOR DYNAMICS + REACTOR TRANSIENT + THEORETICAL INVESTIGATION

6-21125  
NISHIHARA H  
SPACE-DEPENDENT BEHAVIOR OF A BOILING WATER REACTOR BY AN ADIABATIC MODEL.  
KOYOTO UNIV.  
6 PAGES, 6 FIGURES, 1 TABLE, 11 REFERENCES, J. NUCL. SCI. TECHNOL. (TOKYO) 3, PAGES 528-533 (DEC. 1966)

USING AN ANALYTICAL MODEL FOR SPACE-DEPENDENT BOILING-WATER-REACTOR KINETICS BASED ON THE CONVENTIONAL ADIABATIC APPROXIMATION, SOME NUMERICAL SIMULATIONS ARE PRESENTED FOR A SAMPLE BOILING-WATER REACTOR AT 200 MW(TH), TOGETHER WITH AN ANALYSIS OF ITS SPACE-TIME BEHAVIOR. RESULTS OF THE SIMULATION STUDY INDICATE THAT SPACE-DEPENDENCE IS SIGNIFICANT WHEN THE REACTOR IS UNDERGOING A LARGE TRANSIENT, WHILE, FOR SMALL DISTURBANCES, THE REACTOR BEHAVES WITH LITTLE NUCLEAR SPACE-DEPENDENCE.

DYNAMICS, NONLINEAR + FLUX DISTRIBUTION + REACTOR DYNAMICS + REACTOR TRANSIENT + SPACE DEPENDENT DYNAMICS + THEORETICAL INVESTIGATION

6-21126  
VON HANS-JURGEN H + WOLFGANG D  
RESULTS OF ZERO-POWER EXPERIMENTS OF THE AVR REACTOR  
BROWN BOVERI/KRUPP REAKTORBAU GMBH, JUELICH, GERMANY  
3 PAGES, TABLES, FIGURES, AT. STROM., 13, PAGES 24-26 (FEB. MAR. 1967) IN GERMAN

REPORTS THE RESULTS OF ZERO-POWER EXPERIMENTS CONDUCTED ON THE AVR PEBBLE-BED REACTOR. THE REACTOR FIRST ACHIEVED CRITICALITY ON AUGUST 26, 1966. THE REACTIVITY WORTH OF THE SHUTDOWN RODS WAS DETERMINED TO BE -2%, AND THE AVERAGE VALUE OF THE TEMPERATURE COEFFICIENT OF REACTIVITY BETWEEN 25 AND 115 C WAS MEASURED TO BE  $-1.3 \times 10^{-4}$ /DEG C.

CONTROL ROD CALIBRATION + REACTOR STARTUP TESTING + REACTOR, PEBBLE BED + SHUTDOWN MARGIN + TEMPERATURE COEFFICIENT

6-21130  
LITTLE WW + HARDIE RW  
FCC-IV. A REVISED VERSION OF THE FCC FUNDAMENTAL MODE FAST REACTOR CODE.  
BATTELLE-NORTHWEST, RICHLAND, WASH., PACIFIC NORTHWEST LAB.  
BNWL-450 +. 134 PAGES, AUGUST 1967

FCC-IV IS A MULTIPURPOSE FUNDAMENTAL-MODE CODE FOR USE IN FAST REACTOR NEUTRONICS ANALYSIS.



CATEGORY 6  
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-21130 \*CONTINUED\*

THE CODE CAN BE USED TO - (1) COMPUTE RESONANCE SHIELDED CROSS SECTIONS USING DATA IN THE RUSSIAN FORMAT, (2) COMPUTE THE FUNDAMENTAL-MODE FLUX AND ADJOINT FLUX, (3) COMPUTE AND PUNCH COLLAPSED MICROSCOPIC, MACROSCOPIC, AND PERTURBATION CROSS SECTIONS, (4) COMPUTE FUEL BURNUP AT CONSTANT FLUX OR POWER DENSITY. IN A 65-K MEMORY, THE CODE CAN HANDLE 14 ISOTOPES WITH 40 ENERGY GROUPS AND 10 DOWNSCATTERING TERMS. RUNNING TIME ON A UNIVAC 1108 IS ABOUT 15 SEC.

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

COMPUTER PROGRAM + CROSS SECTION + FUEL BURNUP + REACTOR DYNAMICS

6-21235 ALSO IN CATEGORY 9

DRAGT JB

THREEFOLD CORRELATIONS AND THIRD ORDER MOMENTS IN REACTOR NOISE  
REACTOR CENTRUM NEDERLAND, PETTEN, NETHERLANDS  
7 PAGES, 2 FIGURES, NUKLEONIK, 10, PAGES 7-13 (JUNE 1967)

PRESENTS A THEORY FOR THE EVALUATION OF THIRD-ORDER MOMENTS OF NEUTRON COUNTS IN A REACTOR DUE TO THREEFOLD CORRELATION OF THE DETECTED NEUTRONS. POINT REACTOR THEORY IS USED THROUGHOUT. THE PROBABILITY FOR DETECTION OF THREE NEUTRONS IN SUCCESSION IS FOUND, AND FROM THAT THE CENTRAL MOMENTS OF THE NUMBERS OF NEUTRON COUNTS IN SPECIFIED TIME INTERVALS ARE CALCULATED, AS WELL AS THE TRIPLE AUTOCORRELATION FUNCTION FOR THE COUNT RATE. THE THREEFOLD CORRELATIONS ARE SHOWN TO BE DUE TO TWO BRANCHING PROCESSES IN THE FISSION CHAINS IN THE REACTOR. IN THE DOMINATING AND EASILY MEASURABLE PROCESS ONLY SPLITTING OF THE FISSION CHAINS INTO TWO BRANCHES IS DETECTED. A VARIANT OF THE FEYNMAN ALPHA TECHNIQUE IS PROPOSED FOR THE MEASUREMENT OF THIS EFFECT. IN THE OTHER PROCESS, TRIPLE SPLITTING OF THE FISSION CHAIN IS INVOLVED. THIS PROCESS CAN PROVIDE NEW PHYSICAL INFORMATION. IN PARTICULAR, REACTOR POWER AND EFFECTIVE DELAYED NEUTRON FRACTION CAN BE OBTAINED WITHOUT THE NEED FOR ANY OTHER STATIC MEASUREMENT. AN EXPERIMENT FOR THE MEASUREMENT OF THIS EFFECT IS PROPOSED, WHICH IS SHOWN TO BE MOST FEASIBLE FOR A FAST REACTOR.

\*NOISE ANALYSIS + MATHEMATICAL TREATMENT + REACTOR, FAST + ROSSI ALPHA + THEORETICAL INVESTIGATION

6-21241

FOX JK

COMPARISON OF ORNL CLEAN CRITICAL EXPERIMENTS WITH CALCULATIONS  
IDAHO NUCLEAR CORP., IDAHO FALLS  
IN-1120 +. 23 PAGES, 4 FIGURES, 8 TABLES, 25 REFERENCES, SEPTEMBER 1967

THE ACCURACY OF SEVERAL REACTOR CODES WAS DETERMINED BY COMPARISONS OF CALCULATIONS WITH DATA ON CLEAN CRITICAL EXPERIMENTS PERFORMED AT ORNL. ALL THE SYSTEMS STUDIED WERE MODERATED TO SOME DEGREE BY HYDROGEN. MOST OF THE COMPARISONS WERE WITH DATA ON HIGHLY ENRICHED URANIUM FUELED CORES, ALTHOUGH A FEW WERE WITH 2 TO 5% ENRICHED FUELS. A FOUR-GROUP STRUCTURE WAS USED IN ALL CASES. TRANSPORT THEORY WAS USED ONLY FOR OBTAINING FLUX-WEIGHTED CROSS SECTIONS. THE TABULATED RESULTS INDICATE THAT WITH PROPERLY WEIGHTED CONSTANTS EIGENVALUE CALCULATIONS USING DIFFUSION THEORY AGREE WELL WITH EXPERIMENTS.

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

\*COMPARISON, THEORY AND EXPERIENCE + \*CRITICALITY EXPERIMENT + COMPUTER PROGRAM + REACTOR PHYSICS + REACTOR, GENERAL + TRANSPORT THEORY

6-21242

FRUHAUF CL

TER4 - REACTOR TRANSIENT ANALYSIS PROGRAM  
KNOLLS ATOMIC POWER LAB., SCHENECTADY, N.Y.  
KAPL-M-6713(REV. A) +. 61 PAGES, REFERENCES, MAY 1967

TER4 IS A FORTRAN-IV COMPUTER PROGRAM FOR ANALYZING POWER AND TEMPERATURE TRANSIENTS IN AN OPEN-LOOP REACTOR. REACTIVITY MAY BE VARIED BY CONTROL-ROD MOTION OR BY TEMPERATURE CHANGES COMBINED WITH THE TEMPERATURE COEFFICIENT EFFECT. THE SPACE-INDEPENDENT ONE-ENERGY-GROUP REACTOR-KINETICS EQUATIONS WITH SIX DELAYED NEUTRON GROUPS ARE SOLVED FOR THE NOMINAL CHANNEL ONLY. A ONE-DIMENSIONAL HEAT-TRANSFER MODEL OF A ONE-PASS REACTOR IS USED. REPORT INCLUDES INPUT/OUTPUT DESCRIPTION AND SAMPLE PROBLEMS.

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

\*COMPUTER PROGRAM + \*REACTOR TRANSIENT + REACTOR DYNAMICS + REACTOR KINETICS + TEMPERATURE TRANSIENT

6-21243

ADALIOGLU U + OZEMRE AY

REACTOR KINETICS ACCORDING TO P1 APPROXIMATION  
ISTANBUL TEKNIK UNIVERSITESI NUKLEER ENERJİ ENSTITUSU, TURKEY + FEN FAKULTESI TEORİK FİZİK KURSUSU,  
ISTANBUL, TURKEY

6 PAGES, 3 FIGURES, 4 TABLES, 8 REFERENCES, NUKLEONIK 9(8), PAGES 367-372 (MAY 1967)

CATEGORY 6  
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-21243 \*CONTINUED\*

DERIVED THE REACTOR KINETICS EQUATIONS ACCORDING TO THE P1 APPROXIMATIONS. SPECIAL CASES WERE STUDIED FOR THE TRI RESEARCH REACTOR, USING ONE GROUP OF DELAYED NEUTRONS. THE P1 APPROXIMATION GAVE HIGHER FLUXES THAN SIMPLE DIFFUSION THEORY AFTER SOME SMALL INTERVAL FOLLOWING A POSITIVE REACTIVITY INSERTION, AND ABOUT EQUAL FLUXES FOLLOWING A NEGATIVE REACTIVITY INSERTION.

\*REACTOR TRANSIENT + EQUATION, IN HOUR + REACTOR PHYSICS + REACTOR, RESEARCH

6-21244

GANDINI A + SALVATORES M  
COMPARISON BETWEEN THE ELMOE AND THE ITERATIVE METHODS TO GENERATE TRANSPORT AND ELASTIC REMOVAL CROSS SECTIONS FOR FAST REACTOR EVALUATIONS  
COMITATO NAZIONALE PER L'ENERGIA NUCLEARE, ROME, ITALY  
RT-FIMA-(66)-3 +. 12 PAGES, TABLES, REFERENCES, 1966

ELASTIC REMOVAL AND TRANSPORT CROSS SECTIONS WERE CALCULATED FOR THE CASE OF DILUTE- $\text{PuO}_2$ - $\text{UO}_2$ , NA-COOLED FAST REACTOR USING THE ELMOE CODE AND AN ITERATIVE METHOD. COMPARISON OF THE RESULTS OBTAINED BY THE TWO METHODS INDICATES THAT THE ITERATIVE METHOD IS APPLICABLE TO TYPICAL PROBLEMS OF INTEREST.

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

CROSS SECTION + MATHEMATICAL STUDY + PLUTONIUM DIOXIDE + REACTOR, LMCP + SODIUM + TRANSPORT THEORY

6-21245

ALSO IN CATEGORIES 7 AND 12  
REPORT OF WORK IN THE 4TH QUARTER OF 1966  
COMMISSARIAL A L-ENERGIE ATOMIQUE, CADARACHE, FRANCE  
EURFNR-267 +. 89 PAGES, 1966

THIS REPORT IS ONE OF A SERIES OF REPORTS ON WORK PERFORMED UNDER THE UNITED STATES-EURATOM FAST REACTOR EXCHANGE PROGRAM. TOPICS COVERED ARE - CRITICALITY STUDIES, METALLURGY, RADIATION EFFECTS, RADIATION SHIELDING AND PROTECTION, REACTOR CONTROL, REACTOR ENGINEERING, REACTOR FUELS, AND REACTOR SAFETY.

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

ACCIDENT, REACTIVITY + CRITICALITY EXPERIMENT + FISSION PRODUCT RETENTION + REACTOR CONTROL + REACTOR DYNAMICS + REACTOR, IMCR + SODIUM

6-21247

RI AKKRIHN D + SHERWIN J + TYROR JG  
REACTOR CALCULATIONS FOR AGR  
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, WINFRITH  
11 PAGES, 6 FIGURES, 9 TABLES, 18 REFERENCES, J. BRIT. NUCL. ENERG. SOC 6(2), PAGES 144-54 (APRIL 1967)

DESCRIBES THE METHODS FOR CALCULATING ENRICHMENT REQUIREMENTS, POWER DISTRIBUTIONS, FUEL-MANAGEMENT STRATEGIES, ETC., FOR AGR-TYPE SYSTEMS. THE VARIOUS COMPUTER CODES USED IN AGR REACTOR-CORE PHYSICS STUDIES IN TERMS OF THE HOMOGENEOUS AND HETEROGENEOUS MODELS OF THE REACTOR ARE DISCUSSED WITH RESPECT TO THEIR RELATIVE ACCURACY AND SOLUTION TIMES. THE AUTHORS CONCLUDE THAT FEW-GROUP COARSE-MESH HOMOGENEOUS CODES ARE GENERALLY ADEQUATE FOR THE STUDY OF AGR CORE PERFORMANCE, EXCEPT FOR ESTIMATION OF PEAK FUEL RATINGS ADJACENT TO PERTURBATIONS IN THE LATTICE.

AGR (ADVANCED GASCOOLED REACTOR, WINDSCALE, UK) + ANALYTICAL MODEL + COMPARISON, THEORY AND EXPERIENCE + COMPUTER PROGRAM + MATHEMATICAL TREATMENT + POWER DISTRIBUTION + REACTOR, GCR + REACTOR, THERMAL + UNITED KINGDOM

6-21249

DURAND-SMET RA  
POSSIBILITIES FOR ZONING A 1700 LITER, SODIUM-COOLED FAST REACTOR FOR MEASURING THE SODIUM VOID COEFFICIENTS  
KERNFORSCHUNGSZENTRUM, KARLSRUHE  
NP-16853 + PSB-243 +. 72 PAGES, 1965

PROBLEMS ASSOCIATED WITH A LOW-ENERGY CRITICAL ASSEMBLY FOR MEASURING SODIUM-VOID COEFFICIENTS WERE EXAMINED. TO AVOID REQUIRING AN EXCESSIVE QUANTITY OF PLUTONIUM, THE ASSEMBLY IS ZONED. THIS, HOWEVER, INTRODUCES ERRORS IN THE MEASUREMENTS, WHICH MUST BE EVALUATED. THIS REPORT DESCRIBES STUDIES MADE TO DETERMINE THE CONSEQUENCES OF DIFFERENT REACTOR ZONING ON THE EXPERIMENTAL SODIUM-VOID COEFFICIENTS.

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

CRITICALITY EXPERIMENT + REACTOR, FAST + SODIUM + SODIUM COEFFICIENT + VOID COEFFICIENT

CATEGORY 6  
 REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-21250  
 CARVER JG  
 PLUTONIUM SUPCRITICAL EXPERIMENT PROGRAM. QUARTERLY REPORT NO. 11, JANUARY 1-MARCH 21, 1967.  
 GENERAL ELECTRIC CO., PLEASANTON, CALIF.  
 GEAP-5486 + EURAEC-1897 +. 12 PAGES, APRIL 3, 1967

THE TWO MAJOR OBJECTIVES OF THE PROGRAM ARE TO PROVIDE BASIC REACTOR PHYSICS DATA FOR PLUTONIUM-ENRICHED UO<sub>2</sub> FUEL LATTICES IN LIGHT WATER AND TO DEVELOP A THEORETICAL MODEL CAPABLE OF ACCURATELY PREDICTING ALL THE EXPERIMENTAL RESULTS. MAJOR EMPHASIS IS BEING GIVEN TO EVALUATING TECHNIQUES FOR CALCULATING SLOW-NEUTRON SPECTRA AND COMPUTING REACTION RATES ONCE THE SPECTRUM IS ESTABLISHED. THE REPORT SUMMARIZES WORK ACCOMPLISHED TO DATE. FINAL EXPERIMENTAL RESULTS AND CONCLUSIONS AWAIT A MORE COMPLETE DATA REDUCTION AND ANALYSIS.

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

CRITICALITY EXPERIMENT + PLUTONIUM DIOXIDE + REACTOR, WATER

6-21319 ALSO IN CATEGORIES 5 AND 8  
 WALTER C + GENCO JM  
 NURLOC-1.0 A DIGITAL COMPUTER PROGRAM FOR THERMAL ANALYSIS OF A NUCLEAR-REACTOR LOSS-OF-COOLANT ACCIDENT  
 BATTELLE MEMORIAL INSTITUTE, COLUMBUS, OHIO  
 BMI-1807 +. 319 PAGES, FIGURES, TABLES, REFERENCES, JULY 6, 1967

NURLOC-1.0 CONTAINS MATHEMATICAL MODELS FOR MOST OF THE PROCESSES OCCURRING IN A REACTOR ACCIDENT WHICH AFFECT THE SOLID AND FLUID TEMPERATURE DISTRIBUTIONS. MODELS WERE DEVELOPED AND PROGRAMMED FOR HEAT CONDUCTION, HEAT GENERATION, THERMAL RADIATION, BOIL-OFF, MELTDOWN, POSTBLOWDOWN HEAT AND MASS-TRANSFER COEFFICIENTS, AND METAL-WATER REACTION. TEST CASES OF ACCIDENT HEAT TRANSFER IN THE LOFT REACTOR WERE CALCULATED FOR TIMES UP TO 400 SEC. CALCULATIONS WERE ALSO PERFORMED FOR A TYPICAL 600-MW(T) BWR FOR A SIMILAR PERIOD OF TIME. A TYPICAL 1000-MW(E) BWR GAVE TEMPERATURE AND METAL-WATER REACTIONS MUCH DIFFERENT FROM THOSE FOR LOFT. THE PERCENTAGE OF CLADDING REACTED WAS LESS BY MORE THAN A FACTOR OF TWO FOR THE 1000-MW(E) REACTOR THAN FOR LOFT FOR SIMILAR PERIODS OF TIME.

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

ACCIDENT, LOSS OF COOLANT + ACCIDENT, MAXIMUM CREDIBLE (MCA) + COMPUTER PROGRAM + REACTOR, GENERAL + REACTOR, WATER

6-21322 ALSO IN CATEGORIES 5 AND 8  
 KINETIC STUDIES OF HETEROGENEOUS WATER REACTORS. ANNUAL SUMMARY REPORT, 1966  
 TRW SYSTEMS GROUP, REDONDO BEACH, CALIF.  
 STL-372-50 +. 129 PAGES, 57 FIGURES, 3 TABLES, 44 REFERENCES, DECEMBER 1966

ANNUAL SUMMARY REPORT-1966. SUMMARIZED WORK ON - (1) THE PROCESS OF THERMAL PRESSURE GENERATION, (2) SHOCK-TUBE EXPERIMENTS, (3) POSSIBILITY OF DESTRUCTIVE IN-CORE PRESSURE IN MELTDOWN ACCIDENT, (4) IN-PILE CAPSULE MEASUREMENTS OF STEAM-VOID FORMATION, AND (5) POWER REACTOR INSTABILITY AND TWO-PHASE FLOW.

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

ACCIDENT, REACTIVITY + EXPLOSION + FLOW, TWO PHASE + REACTOR TRANSIENT + REACTOR, WATER + TRANSFER FUNCTION

6-21435  
 PODNEY WN + SMITH HP  
 PROMPT-NEUTRON KINETICS OF A SPHERICAL-CAVITY REACTOR  
 UNIVERSITY OF CALIFORNIA, BERKELEY, CALIF.  
 8 PAGES, 4 FIGURES, NUCLEAR SCIENCE AND ENGINEERING 29 (3) PAGES 373-380 (SEPT 1967)

A SIMPLE KINETICS MODEL IS PROPOSED THAT DESCRIBES TIME DEPENDENCE OF THE PROMPT-NEUTRON POPULATION IN A CAVITY REACTOR IN TERMS OF A LINEAR FIRST-ORDER DIFFERENTIAL EQUATION FOR THE NET THERMAL-NEUTRON CURRENT AT THE CAVITY WALL. THE MODEL IS APPLICABLE IF THE CAVITY ALBEDO CHANGES SLOWLY DURING A NEUTRON LIFETIME AND DOES NOT EXCEED A SPECIFIED MAXIMUM VALUE. THIS RANGE OF APPLICABILITY IS DEFINED BY DERIVING THE KINETICS EQUATION ON THE BASIS OF AN AGE-DIFFUSION THEORY APPROXIMATION THAT DESCRIBES THE TIME DEPENDENCE OF THE THERMAL-NEUTRON FLUX AT THE CAVITY WALL IN TERMS OF A VOLTERRA INTEGRAL EQUATION OF THE SECOND KIND. THE METHOD OF DERIVING THE KINETICS EQUATION SUGGESTS A MEANS OF EXPERIMENTALLY DETERMINING THE EFFECTIVE MULTIPLICATION FACTOR AND AVERAGE NEUTRON LIFE-TIME-TO-FISSION FOR MORE COMPLEX CAVITY GEOMETRIES BY MEASURING THERMAL-NEUTRON ABSORPTION RATE IN A NONMULTIPLYING GAS IN THE CAVITY.

PROMPT CRITICALITY + PROMPT NEUTRON LIFETIME + REACTOR KINETICS + THEORETICAL INVESTIGATION

CATEGORY 6  
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-21436  
VIGIL JC  
SOLUTION OF THE REACTOR KINETICS EQUATIONS BY ANALYTIC CONTINUATION  
LOS ALAMOS SCIENTIFIC LABORATORY, LOS ALAMOS, NEW MEXICO  
10 PAGES, 10 FIGURES, 1 TABLE, NUCLEAR SCIENCE AND ENGINEERING 29 (3) PAGES 392-401 (SEPT. 1967)

A METHOD BASED ON ANALYTIC CONTINUATION, WHICH IS WELL SUITED FOR FAST DIGITAL COMPUTER APPLICATION, HAS BEEN APPLIED TO THE POINT REACTOR KINETICS EQUATIONS. THE MOST IMPORTANT CHARACTERISTIC OF THE METHOD IS THAT IT YIELDS AN ANALYTIC CRITERION FOR THE MAGNITUDE OF THE TIME STEP. THIS CRITERION IS SUCH THAT THE TIME STEP AUTOMATICALLY EXPANDS OR CONTRACTS, DEPENDING ON THE BEHAVIOR OF THE FUNCTION WITHIN EACH INTERVAL. THE USE OF THIS CRITERION TO DETERMINE THE TIME STEP GUARANTEES THAT THE FRACTIONAL ERROR IN THE RESULTS INCREASES, AT MOST, LINEARLY WITH THE NUMBER OF TIME STEPS. FURTHERMORE, THE MAGNITUDE OF THE TIME STEP DETERMINED FROM THIS CRITERION CAN BE MUCH LARGER THAN THE PROMPT-NEUTRON GENERATION TIME.

DYNAMICS, NONLINEAR + REACTOR DYNAMICS + REACTOR KINETICS + REACTOR TRANSIENT + THEORETICAL INVESTIGATION

6-21437  
SMILEY JW  
STREAK--A NUMERICAL SOLUTION FOR SPACE TIME NEUTRON DIFFUSION EQUATIONS. COMPUTER PROGRAM FOR ANALYSIS OF PROMPT NONLINEAR TRANSIENTS IN REACTORS  
PENNSYLVANIA STATE UNIVERSITY  
EPB 8-95 +. 57 PAGES, 15 FIGURES, 1 TABLE, DECEMBER 1966

STREAK IS A COMPUTER PROGRAM DESIGNED FOR ANALYZING PROMPT NEUTRON FLUX TRANSIENTS SUCH AS THOSE OF PULSED RESEARCH REACTORS, FOR HAZARD ANALYSIS OF POWER REACTORS, AND FOR ANALYZING PULSED NEUTRON EXPERIMENTS IN MULTIPLYING OR NONMULTIPLYING MEDIA. STREAK SOLVES THE NONLINEAR, ONE-DIMENSIONAL, TIME-DEPENDENT NEUTRON DIFFUSION EQUATIONS IN TWO ENERGY GROUPS. SEPARABILITY OF SPACE AND TIME IS NOT ASSUMED. UP TO SIX GROUPS OF DELAYED NEUTRONS ARE ALLOWED, AND ALMOST ANY FEEDBACK MECHANISM CAN BE INCORPORATED. A NEW METHOD OF DIRECT NUMERICAL INTEGRATION OF THE KINETICS EQUATIONS IS EMPLOYED, WHICH ALLOWS INTEGRATION TIME STEPS CONSIDERABLY LARGER THAN THOSE NORMALLY ALLOWED IN FINITE-DIFFERENCING INTEGRATION SCHEMES.

AVAILABILITY - PENNSYLVANIA STATE UNIVERSITY, ENGINEERING PUBLICATIONS, 227 HAMMOND BUILDING, UNIVERSITY PARK, PA. 16802

COMPUTER PROGRAM + DYNAMICS, NONLINEAR + FLUX DISTRIBUTION + PULSED NEUTRON TECHNIQUE + REACTOR DYNAMICS + REACTOR KINETICS + REACTOR TRANSIENT + SPACE DEPENDENT DYNAMICS

6-21438  
PROCEEDINGS OF THE CONFERENCE ON REACTOR PHYSICS, CASACCIA CENTER OF CNEN, ITALY, SEPT. 15-16, 1965  
COMITATO NAZIONALE PER L'ENERGIA NUCLEARE, RCME, ITALY  
RT-FI-(65)-13 + CONF-6509R2 +. 113 PAGES, 1966, IN ITALIAN

COLLECTION OF PAPERS DESCRIBING THE ACTIVITIES OF ORGANIZATIONS THAT DEAL IN ITALY WITH REACTOR-PHYSICS PROBLEMS.

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

CRITICALITY EXPERIMENT + FLUX DISTRIBUTION + THEORETICAL INVESTIGATION

6-21439  
CARLSMITH RS + BENNETT LL + EDISON GE + GIPT BH + THOMAS WC + WELFAR FC  
REVIEW OF MOLTEN SALT REACTOR PHYSICS CALCULATIONS  
OAK RIDGE NATIONAL LAB., TENN.  
ORNL-14-1946 +. 58 PAGES, TABLES, REFERENCES, AUGUST 16, 1967

A SET OF CALCULATIONS WAS MADE TO CHECK THE REACTIVITY AND BREEDING RATIO OF THE REFERENCE DESIGN OF THE MSBR. INsofar AS POSSIBLE, THE CROSS SECTIONS AND CALCULATIONAL METHODS WERE MADE INDEPENDENT OF THOSE USED PREVIOUSLY. THE REFERENCE COMPOSITION GAVE A K-EFF OF 0.95. WHEN THE REACTOR WAS MADE CRITICAL BY THE ADDITION OF 14% MORE U-233, THE BREEDING RATIO WAS 1.062, COMPARED WITH 1.054 IN THE PREVIOUS CALCULATIONS. OPTIMIZATION OF THE COMPOSITION WOULD PROBABLY DECREASE THIS DIFFERENCE IN BREEDING RATIO.

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

FUEL BURNUP + MSBR(IRE) + REACTIVITY EFFECT + THEORETICAL INVESTIGATION

6-21440  
GREENSPAN E  
EFFECT OF GROUP-CONSTANTS AVERAGING PROCEDURE ON FEW-GROUP REACTIVITY CALCULATIONS  
RENSSELAER POLYTECHNIC INST., TROY, N.Y.

CATEGORY 6  
 REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-21440 \*CONTINUED\*  
 RPT-328-99 + CONF-671102-6 +. 6 PAGES, 5 REFERENCES, FOR PRESENTATION AT 15TH CONFERENCE ON REMOTE SYSTEMS TECHNOLOGY AND ATOM FAIR, CHICAGO, ILL., NOVEMBER 1967

INVESTIGATED THE EXTENT TO WHICH A VARIETY OF REACTIVITY COEFFICIENTS ARE AFFECTED BY THE PROCEDURES USED TO GENERATE THE ENERGY-GROUP AVERAGED CONSTANTS FOR CALCULATING THE COEFFICIENTS. THREE GROUP-AVERAGING SCHEMES ARE COMPARED - (1) THE CONVENTIONAL PROCEDURE WHICH EMPLOYS FLUX AVERAGE CONSTANTS, (2) THE BILINEAR PROCEDURE, (3) THE CONSISTENT PROCEDURE, WHICH USES FLUX AND IMPORTANCE-FUNCTION AVERAGED CONSTANTS FOR THE FLUX AND ADJOINT EQUATIONS RESPECTIVELY.

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

CROSS SECTION + FLUX DISTRIBUTION + PERTURBATION METHOD + REACTIVITY COEFFICIENT

6-21475 ALSO IN CATEGORIES 5 AND 17  
 TECHNOLOGY OF BOILING WATER REACTOR STABILITY ANALYSIS  
 GENERAL ELECTRIC COMPANY  
 75 PAGES, 49 FIGURES, 16 REFERENCES, 4 TABLES, MEMORANDUM SCER-60, DOCKET 50-277 AND 278, TYPE--BWR, MFG--G.E., AE--BECHTEL, JULY 1967

(INCORPORATED IN PEACH BOTTOM PSAR SUPPLEMENT 2.) ASSERTED GOOD AGREEMENT BETWEEN FABLE-II PROGRAM AND KRB/GARIGLIANO ROD-OSCILLATOR DATA. APED HYDRODYNAMIC LOOP ENSURES SUCCESSFUL USE IN EXAMINING INTERCHANNEL HYDRODYNAMIC STABILITY. MODEL SUMMARIZED, BUT DATA (49 GRAPHS) IS POORLY DISCUSSED TO SUPPORT THE ASSERTION.

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

\*COMPARISON, THEORY AND EXPERIENCE + \*COMPUTER PROGRAM + \*FLOW STABILITY + PEACH BOTTOM 2 AND 3 (EWR) + REACTOR STABILITY + REACTOR, BWR

6-21735 ALSO IN CATEGORIES 8 AND 18  
 FRENCH RJ + GALLAGHER JM + MOORE JS + SALVATORI R  
 INDIAN POINT UNIT NO. 2 ROD EJECTION ANALYSIS  
 WESTINGHOUSE ELECTRIC CORP., PITTSBURGH, PA.  
 WCAP-2940 +. 108 PAGES, 45 FIGURES, 7 TABLES, 25 REFERENCES, OF SECOND SUPPLEMENT TO INDIAN POINT 2 PRELIMINARY SAFETY ANALYSIS REPORT (EXHIBIT B-2), MAY 1966, DOCKET 50-247, TYPE--PWR, MFG--WEST, AE--UNITD ENGR

(INCLUDED IN PSAR SUPPLEMENT 2.) ANALYSIS USES CHIC-KIN FOR KINETICS, AND HAS 1.5 OR 1.0 REACTIVITY % FOR EJECTED ROD (0 OR 102% POWER) AND 1.5% FOR POSITIVE MODERATOR EFFECT WITH A SCRAM AFTER 1.5 SEC. ALTHO SOME FUEL MELTING WOULD OCCUR, PEAK SYSTEM PRESSURE IS LESS THAN 6000 PSIA. A SHOCK-WAVE ANALYSIS FOR REACTOR VESSEL INDICATES THAT 1/3 OF CORE MUST BECOME MOLTEN AND DISPERSED TO DILATE VESSEL WALL UP TO 50% ULTIMATE ELONGATION (BASED ON TNT EXPERIMENTS AT NRL-WISE).

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

\*ACCIDENT ANALYSIS + \*ACCIDENT, CONTROL ROD EJECTION + EXPLOSION + FUEL MELTDOWN + INTEGRITY + PRESSURE VESSEL

6-21833 ALSO IN CATEGORY 9  
 WILLIAMS MM  
 REACTOR NOISE IN HETEROGENEOUS SYSTEMS. 1. PLATE-TYPE ELEMENTS  
 UNIVERSITY OF LONDON, ENGLAND  
 11 PAGES, 2 FIGURES, NUCLEAR SCIENCE AND ENGINEERING 30(2), PAGE 188-198 (NOVEMBER 1967)

A FORMALISM BASED UPON THE SOURCE-SINK METHOD OF HORNING, FEINBERG, AND GALANIN WAS DEVELOPED WHICH PREDICTS THE NEUTRON NOISE SPECTRUM AND TIME-DEPENDENT CORRELATION FUNCTION IN HETEROGENEOUS REACTOR SYSTEMS. THE METHOD IS APPLIED TO TWO PROBLEMS IN INFINITE-PLANE GEOMETRY - THE INFINITE LATTICE AND DETECTOR PERTURBATIONS. IN THE LATTICE PROBLEM, IT IS SHOWN THAT THE SIMPLE, HOMOGENEOUS THEORY WILL BE VALID ONLY WHEN THE LATTICE SPACING IS VERY MUCH LESS THAN THE ATTENUATION LENGTH OF A NEUTRON WAVE IN THE PURE MODERATOR. THE FLUX DEPRESSION IN THE NEIGHBORHOOD OF A NEUTRON DETECTOR IS FOUND TO INTRODUCE SIGNIFICANT CORRECTIONS TO THE NOISE SPECTRUM.

\*NOISE + \*NOISE ANALYSIS + \*REACTOR KINETICS + MATHEMATICAL TREATMENT + NOISE CROSS CORRELATION + THEORETICAL INVESTIGATION

6-21987 ALSO IN CATEGORY 17  
 SAXTON PLUTONIUM PROGRAM SEMIANNUAL PROGRESS REPORT FOR THE PERIOD ENDING JUNE 30, 1967  
 WESTINGHOUSE ELECTRIC CORP., PITTSBURGH, PA. ATOMIC POWER DIV.  
 WCAP-3385 + EURAEC-1877 +. 36 PAGES, 20 FIGURES, 3 TABLES, 4 REFERENCES, JUNE 30, 1967

REACTOR WAS SHUT DOWN 5 MONTHS TO INSTALL SUPERCRITICAL LOOP. (PAGES 5-16) THE LAST JUST-CRITICAL BORON CONCENTRATION CALCULATION BEING 10% HIGH WAS ATTRIBUTED TO EITHER (A) NONUNIFORM AXIAL FUEL-BURNUP DEPLETION IN PDQ-XY, WORTH 700 HR OUT OF A PREDICTED 9500, OR,

CATEGORY 6  
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-21987 \*CONTINUED\*

(B) LEOPARD CROSS SECTIONS INADEQUATE FOR PLUTONIUM, WORTH 250 HR. (PAGES 22-35) TWO FUEL RODS WERE GAMMA-SCANNED AND METALLOGRAPHIC SPECIMENS PREPARED. VIPAC FUEL HAD MORE CLAD-HYDRIDE (MORE MOISTURE IN FUEL) AND A REACTION LAYER (APPARENTLY FROM REDUCTION OF HYPERSTOICHIOMETRIC FUEL).

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

\*FUEL ELEMENT + \*IRRADIATION TESTING + \*PLUTONIUM DIOXIDE + FUEL, POWDER TYPE + HYDRIDE + R AND D PROGRAM + REACTIVITY EFFECT, ANOMALOUS + REACTOR, PWR + SAXTON (PWR) + STOICHIOMETRY + ZIPCALOY

6-22140 ALSO IN CATEGORIES F AND 17  
MANHATTAN COLLEGE ZPR MODERATOR COEFFICIENT MEASUREMENTS  
MANHATTAN COLLEGE, BRONX, NEW YORK  
45 PAGES, 5 TABLES, DOCKET 50-199, DECEMBER 24, 1967

AT DRL DIRECTION (NOV. 2, 1966) MZPP MEASURED THE EXCESS REACTIVITY AT THE TEMPERATURE AT WHICH THE MODERATOR COEFFICIENT CHANGES FROM POSITIVE TO NEGATIVE. A HEAT EXCHANGER, A MIXER, AND 12 THERMISTORS WERE BOUGHT. THE MIXER CAUSED VORTEXING AND MOVEMENT OF INSTRUMENTATION AND LIGHTS IN THE CORE AND HAD TO BE MODIFIED. WITH 10 THERMISTORS IN THE CORE AND CONTROL RODS FULLY WITHDRAWN, THE REACTOR WAS SUBCRITICAL DUE TO THE POISON EFFECT OF THE COPPER LEAD WIRES. RESULTS OF THE EXPERIMENT WERE - TURNAROUND TEMPERATURE - 110 F, EXCESS REACTIVITY AT 110 F - 0.44%, WORTH OF 5 PAIRS OF THERMISTOR LEADS - 0.10%, LEAST-SQUARES TEMPERATURE/REACTIVITY RELATIONSHIP -  $(\Delta K/K)\%$  IS EQUAL TO  $-35.83 \times 10^{-2ND}$  PLUS  $100.67 \times 10^{-4TH}$  TIMES T MINUS  $45.53 \times 10^{-6TH}$  TIMES T SQUARED. PROBABLE ERROR IS  $2.1 \times 10^{-4TH}\%$ . (INCLUDES 25-PAGE TABLE OF THERMOCOUPLE CALIBRATION.)

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

\*MODERATOR COEFFICIENT + \*REACTIVITY, EXCESS + \*TEMPERATURE COEFFICIENT + CRITICAL ASSEMBLY FACILITY + IN CORE MEASUREMENT + MEASUREMENT. GENERAL + REACTIVITY EFFECT, ANOMALOUS + TECHNICAL SPECIFICATIONS

6-22782 ALSO IN CATEGORY 17  
U OF WISCONSIN REPORTS ON OPERATION WITH NEWLY INSTALLED CORE  
METROPOLITAN EDISON CO.  
1 PAGE, JAN. 4, 1968, DOCKET NO. 50-156

INITIAL CRITICALITY WITH THE MODIFIED TRIGA CORE WAS REACHED ON 14 NOV. 67. THE ONLY SIGNIFICANT VARIATION IN PERFORMANCE CONCERNS THE PULSING PERFORMANCE OF THE CORE. CORE IS DIFFERENT FROM PROTOTYPE CORE IN THAT IT IS ALMOST ENTIRELY GRAPHITE REFLECTED, INCREASING THE EFFECTIVE NEUTRON CYCLE TIME FROM  $39 \times 10^{-6TH}$  SEC TO  $42 \times 10^{-6TH}$ . THIS RESULTS IN LONGER PROMPT PERIODS FOR A GIVEN REACTIVITY INSERTION. THE POWER COEFFICIENT OF REACTIVITY IS MORE NEGATIVE THAN EXPECTED.

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

\*GRAPHITE + \*PROMPT NEUTRON LIFETIME + \*REFLECTOR + POWER COEFFICIENT + REACTOR KINETICS + REACTOR, PULSED + REPORT, OPERATIONS ANALYSIS + TRIGA (RR)

6-22787 ALSO IN CATEGORY 17  
POSITIVE GRAPHITE-REFLECTOR TEMP COEFF AT U OF WASHINGTON REACTOR  
UNIVERSITY OF WASHINGTON, SEATTLE, WASH.  
2 PAGES, JAN. 4, 1968, DOCKET NO. 50-139

SINCE RAISING THE POWER FROM 10 KW TO 100, WE OBSERVE THAT THE REG. ROD MUST BE LOWERED TO MAINTAIN CRITICALITY WITH EXTENDED 100-KW RUNS. RECORDS SHOW THAT A TYPICAL RUN ADDS 0.04% DK/K. A TEST SHOWS THE COEFFICIENT TO BE ABOUT PLUS 0.0014% DK/K PER DEG F, ASSOCIATED WITH THE COOLANT WATER TEMPERATURE. THE EXCESS REACTIVITY IS TO BE COMPUTED HOURLY. IF POWER IS LESS THAN 10 KW, THE 0.595% LIMIT IS UNCHANGED. IF POWER IS TO EXCEED 10 KW, AND INITIAL REACTIVITY EXCEEDS 0.5%, THE OPERATOR IS NOT TO PROCEED UNTIL NOTIFYING REACTOR SUPERVISOR.

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

\*GRAPHITE + \*REACTIVITY EFFECT, ANOMALOUS + \*REFLECTOR + \*TEMPERATURE COEFFICIENT + POWER UPGRATING + PROCEDURES AND MANUALS + REACTOR, GRAPHITE MODERATED + REACTOR, RESEARCH

6-22801 ALSO IN CATEGORY 17  
CONTROL OF XENON INSTABILITIES IN LARGE PWRs. QUARTERLY PROGRESS REPORT FOR THE PERIOD ENDING JUNE 30, 1967  
WESTINGHOUSE ELECTRIC CORP., PITTSBURGH, PA.  
WCAP-3680-4 + EURAEC-1880 +. 72 PAGES, FIGURES, JULY 1967

REPORTS RESULTS OF GROUPS WORKING ON (1) EFFECT OF CORE PARAMETERS ON SPATIAL OSCILLATIONS, (2) REMEDIAL CONTROL PROCEDURES, AND (3) 3-DIMENSIONAL ANALYSIS. A SIMPLE CORRELATION WAS DEVELOPED TO CORRECT FOR THE ERRORS CAUSED BY USING FINITE TIME STEPS IN DIFFUSION-THEORY CALCULATIONS. AN INDEX OF THE INFLUENCE OF VARIOUS CORE PARAMETERS ON STABILITY WAS DEVELOPED.

CATEGORY 6  
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-22801 \*CONTINUED\*  
AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA \$3.00  
COPY, \$0.65 MICROFICHE

\*XENON OSCILLATION + R AND D PROGRAM + REACTOR KINETICS + REACTOR STABILITY + REACTOR, PWR

6-22830 ALSO IN CATEGORY 17  
WASHINGTON STATE U REPORTS REACTIVITY EXCESS IN CONVERTED TRIGA  
WASHINGTON STATE UNIVERSITY, PULLMAN, WASHINGTON  
3 PAGES, 1 FIGURE, JANUARY 10, 1968, DOCKET 50-57

THE WORTH OF THE CENTRAL FUEL ELEMENT (4-ROD CLUSTER) WAS PREDICTED AS \$3.61 (BASED ON A  
CYLINDRICAL CORE) BUT MEASURED AS \$5.36 AND \$5.78 IN THE ACTUAL RECTANGULAR CONFIGURATION.  
REVISED ACCIDENTAL-FUEL-ADDITION ANALYSIS GIVES 1234 C PEAK FUEL TEMP. (A RISE OF 884 C)  
INSTEAD OF 853 (LIMIT IS SET AT 1000 C). PRESENT ADMINISTRATIVE CONTROL OF LOADINGS WILL  
PREVENT SUCH ACCIDENT. IN ADDITION WE PLAN TO LIMIT FUEL TEMP. TO 100 C WHEN A CORE OPENING  
EXISTS, SO THAT PEAK FUEL TEMP. IN THE ACCIDENT WOULD NOT EXCEED 984 C. THIS WILL ALLOW  
LOW-POWER TESTING.

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

\*COMPARISON, THEORY AND EXPERIENCE + \*REACTIVITY EFFECT, ANOMALOUS + \*REACTIVITY, EXCESS +  
ACCIDENT ANALYSIS + ACCIDENT, REFUELING + REACTOR, RESEARCH + TRIGA (RR)

6-22831 ALSO IN CATEGORY 9  
CONTROL OF XENON INSTABILITIES IN LARGE PWRs. QUARTERLY PROGRESS REPORT FOR THE PERIOD ENDING SEPTEMBER  
30, 1967  
WESTINGHOUSE ELECTRIC CORP., PITTSBURGH, PA. ATOMIC POWER DIVISION  
WCAP-3680-5 + EURAEC-1925 +. 10 PAGES, OCTOBER 1967

THIS REPORT IS ONE OF A SERIES OF SUCH REPORTS CONCERNED WITH INVESTIGATING THE  
CHARACTERISTICS AND CONTROL OF SPATIAL INSTABILITIES IN LARGE PRESSURIZED-WATER REACTORS,  
WITH PARTICULAR EMPHASIS ON AZIMUTHAL XENON INSTABILITIES (X-Y PLANE). THE PROGRAM CONSISTS  
OF THE FOLLOWING TASKS - (1) EUXE-200 EFFECT OF CORE PARAMETERS ON SPATIAL OSCILLATIONS, (2)  
EUXE-300 REMEDIAL CONTROL PROCEDURES, (3) EUXE-400 THREE-DIMENSIONAL ANALYSIS.

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

INSTABILITY + REACTOR, PWR + XENON

6-22920 ALSO IN CATEGORY 17  
MOLTEN-SALT REACTOR PROGRAM. SEMIANNUAL PROGRESS REPORT FOR PERIOD ENDING FEBRUARY 28, 1967  
OAK RIDGE NATIONAL LAB., TENN.  
ORNL-4119 +. 5 PAGES, 2 FIGURES, PAGE 14-19, JULY 1967

INCLUSION OF XE-135 POISONING WITH MODIFIED XENON REMOVAL (GAS STRIPPING) PARAMETERS REDUCES  
THE STEADY-STATE REACTIVITY ANOMALY TO ABOUT 0.03% DK/K. TESTS ON THE CIRCULATING-BUBBLE  
EFFECTS (RAISING PRESSURE, OBSERVATION OF REACTIVITY AFTER A STATIONARY FUEL PERIOD) SHOWED  
THE EFFECT ABOUT 0.03% DK/K. THERE APPEARS TO HAVE BEEN A POSITIVE SHIFT OF ABOUT 0.05% DK/K  
DURING THE FIRST 1000 MW HR. THE SHIFT REMAINS CONSTANT. NO SIGNIFICANT CAUSE HAS BEEN  
FOUND. THE CHANGE IS NEAR THE ESTIMATED CONFIDENCE LIMIT (PLUS OR MINUS 0.04%) AND MUCH  
SMALLER THAN THE OPERATING LIMIT (PLUS OR MINUS 0.5% DK/K).

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

\*REACTIVITY EFFECT, ANOMALOUS + MSRE (RE) + REACTOR, MOLTEN SALT + REPORT, OPERATIONS ANALYSIS +  
VOID COEFFICIENT

6-23161  
CANOSA J  
RAMP REACTOR EXCURSIONS WITH NONLINEAR FEEDBACK  
GENERAL ELECTRIC CO., NUCLEAR TECHNOLOGY DEPT., VALLECITOS ATOMIC LAB., PLEASANTON, CALIFORNIA  
5 PAGES, 3 TABLES, 6 REFERENCES, NUKLEONIK 10(1), PAGE 41-45, (1967)

THE PROBLEM OF REACTOR EXCURSIONS CAUSED BY A RAMP REACTIVITY INSERTION IS SOLVED BY  
APPROXIMATE ANALYTICAL METHODS IN THE PROMPT APPROXIMATION WHEN THE REACTOR HAS A VERY  
GENERAL TEMPERATURE-DEPENDENT REACTIVITY FEEDBACK.

DYNAMICS, NONLINEAR + REACTIVITY EFFECT + REACTOR DYNAMICS + REACTOR TRANSIENT + TEMPERATURE COEFFICIENT

6-23162  
AN EVALUATION OF THE ATOMICS INTERNATIONAL 1000 MWE FAST BREEDER REACTOR  
CHICAGO OPERATIONS OFFICE, USAEC

CATEGORY 6  
 REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-23162 \*CONTINUED\*  
 COO-285 +. 58 PAGES, 4 FIGURES, 17 TABLES, JULY 1966

THE ATOMICS INTERNATIONAL DESIGN FOR AN LMFBR WAS EVALUATED AND COMPARED WITH AN EARLIER EVALUATION OF FOUR DESIGNS FROM OTHER FIRMS. THE COPE-REGION SODIUM-VOID EFFECT IS KEPT BELOW \$1.00 IN THIS DESIGN BY THE USE OF COUPLED MODULAR CORES. THE BLANKET DOPPLER COEFFICIENT IS HIGH - MINUS 0.016 T DK/DT. THE EVALUATORS CALCULATED SOMEWHAT DIFFERENT VALUES FOR THE IMPORTANT NUCLEAR PARAMETERS BECAUSE OF DIFFERENCES IN THE CROSS SECTIONS USED.

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

\*COUPLED CORES + \*REACTOR, BREEDER + \*REACTOR, FAST + DESIGN STUDY + DOPPLER COEFFICIENT + REACTOR DYNAMICS + REACTOR, LMCR + VOID COEFFICIENT

6-23163  
 WILSON B + ENSELMOZ JR + HARTLEY AJ  
 AXIAL STABILITY CALCULATIONS FOR A.G.R. SYSTEMS  
 UNITED KINGDOM ATOMIC ENERGY AUTHORITY, RISLEY  
 TRG-REPORT-1138 + JNFC-RKWF-P344 +. 64 PAGES, 25 FIGURES, REFERENCES, DEC. 13, 1965

THREE METHODS OF CALCULATION OF AXIAL STABILITY MODES ARE DESCRIBED - MODAL ANALYSIS, A STEADY-STATE METHOD USING THE FLIRT CODE, AN ANALOGUE METHOD. IN THE MODAL ANALYSIS, CRITERIA FOR AN ASYMMETRIC FLUX, FLATTENED FLUX AND SINUSOIDAL FLUX HAVE BEEN DERIVED WITH BOTH ONE-TERM AND THREE-TERM EXPANSIONS FOR THE HARMONIC. THE STEADY-STATE METHOD USING FLIRT YIELDS A CRITERION FOR TEMPERATURE INSTABILITY WHICH CAN ACCOMMODATE ANY FLUX DISTRIBUTION AND MORE ACCURATE HARMONIC REPRESENTATION. A PERFORMANCE CRITERION BASED ON THE TRANSIENT PERFORMANCE OF THE HARMONIC HAS BEEN PROPOSED AND STUDIED USING THE ANALOGUE METHOD. STABILITY THRESHOLDS AND THE RELATIONSHIP BETWEEN THE PERFORMANCE CRITERION AND STABILITY MARGINS HAVE BEEN OBTAINED.

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

COMPUTER, ANALOG + CONTROL ROD INTERACTION + CONTROL SYSTEM + COOLANT COEFFICIENT + REACTOR CONTROL + REACTOR DYNAMICS + REACTOR STABILITY + REACTOR TRANSIENT + SPACE DEPENDENT DYNAMICS

6-23164  
 NISHIHARA H  
 ADIABATIC MODEL FOR SPACE-DEPENDENT BOILING WATER REACTOR KINETICS  
 KYOTO UNIVERSITY  
 5 PAGES, 1 FIGURE, 10 REFERENCES, J. NUCL. SCI. TECH. (TOKYO) 3, PAGES 486-90 (NOV. 1966)

EQUATIONS ARE DERIVED FOR AXIALLY SPACE-DEPENDENT BWR FEEDBACK KINETICS. THESE EQUATIONS ARE COUPLED TO THE NEUTRON EQUATIONS THROUGH ADIABATIC APPROXIMATION. THE REACTOR IS DIVIDED INTO A NUMBER OF AXIAL REGIONS. ASSUMING A TRAPEZOIDAL DISTRIBUTION OF THE VOID AND THE WATER VELOCITY DISTRIBUTIONS ALONG THE AXIS, BALANCE EQUATIONS FOR ENERGY AND MASS ARE INTEGRATED TO YIELD THE REGION-EXIT QUANTITIES. WITH OTHER PERTINENT EQUATIONS, A COMPUTER CODE IS WRITTEN.

\*REACTOR KINETICS + \*REACTOR, BWR + REACTOR DYNAMICS + SPACE DEPENDENT DYNAMICS + THEORETICAL INVESTIGATION

6-23165  
 GEETS JM + RAJAGOPAL V  
 STUDY OF REACTOR TRANSIENTS. FINAL REPORT  
 WESTINGHOUSE ELECTRIC CORP., PITTSBURGH, PA., ATOMIC POWER DIVISION  
 CVNA-283 I. 50 PAGES, FIGURES, TABLES, JUNE 1967

FOR THE CVTR, THE RESULTS OF A SERIES OF DYNAMIC MEASUREMENTS, TOGETHER WITH AN ANALYSIS OF REACTOR TRANSIENTS AT 45 MW ARE GIVEN. DYNAMICS MEASUREMENTS WERE CARRIED OUT USING NOISE ANALYSIS AND REACTIVITY COMPUTER TECHNIQUES. ANALYSIS OF REACTOR TRANSIENTS UNDER POSTULATED ACCIDENTAL CONDITIONS WAS PREPARED TO JUSTIFY A REACTOR POWER INCREASE TO 61.7 MWTH FROM THE PREVIOUS LICENSED POWER OF 44.3 MWTH.

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

\*ACCIDENT ANALYSIS + \*CVTR (PWR) + \*REACTOR TRANSIENT + ACCIDENT, COLD COOLANT + ACCIDENT, CONTROL ROD WITHDRAWAL + ACCIDENT, LOSS OF COOLANT + REACTOR, PWR

6-23167 ALSO IN CATEGORY 17  
 BERNANDER G  
 MEASUREMENTS OF THE REACTIVITY PROPERTIES OF THE AGESTA NUCLEAR POWER REACTOR AT ZERO POWER  
 AKTIEBOLAGET ATOMENERGI, STOCKHOLM  
 AE-289 +. 43 PAGES, REFERENCES, JULY 1967

FOR THE AGESTA REACTOR, MODERATOR LEVEL AND TEMPERATURE COEFFICIENTS OF REACTIVITY AND CONTROL-ROD DIFFERENTIAL REACTIVITY WORTHS WERE DETERMINED BY PERIOD MEASUREMENTS. CRITICAL



CATEGORY 6  
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-23167 \*CONTINUED\*

MODERATOR LEVELS AND LEVEL COEFFICIENTS WERE MEASURED FOR 32, 68, AND 136 FUEL-ASSEMBLY CORES AT ROOM TEMPERATURE, FOR CORES WITH AND WITHOUT CONTROL RODS. TEMPERATURE COEFFICIENTS AND DIFFERENTIAL WORTHS WERE DETERMINED FOR THE FULLY LOADED CORE WITH FULL TANK BETWEEN 30 AND 210 C. CRITICAL POSITIONS FOR ROD COMBINATIONS WERE MEASURED AS A FUNCTION OF TEMPERATURE. COMPARISON OF CALCULATIONS WITH EXPERIMENTAL RESULTS IS DISCUSSED.

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

\*AGESTA (PWR) + \*MEASUREMENT, REACTIVITY + COMPARISON, THEORY AND EXPERIENCE + CONTROL ROD WORTH + MODERATOR COEFFICIENT + REACTOR, PWR

6-23169 ALSO IN CATEGORY 5

DIETZ KA  
QUARTERLY TECHNICAL REPORT - STEP PROJECT, APRIL 1967--JUNE 1967  
PHILLIPS PETROLEUM COMPANY  
ID0-17240 +. 73 PAGES, 50 FIGURES, 11 TABLES, 41 REFERENCES, SEPT. 1967

PROGRESS IS REPORTED UNDER SIX HEADINGS - LOFT REACTOR PHYSICS CALCULATIONS, LOFT BLOWDOWN ANALYSIS, LOFT RADIOLOGICAL STUDIES, SEMISCALE BLOWDOWN TEST PROGRAM, MEASUREMENT EVALUATION (HIGH-TEMPERATURE THERMOMETRY STUDIES), AND LOFT FM MULTIPLEX SYSTEM.

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

\*LOFT (S-RR) + BLOWDOWN + HIGH TEMPERATURE + RADIOLOGY + REACTOR PHYSICS + REACTOR, BWR + REACTOR, SAFETY RESEARCH + REACTOR, TEST

6-23170

DRAGT JB + TURKCAN E  
SOME REMARKS ON THE PRACTICAL USE OF THE P-METHOD IN REACTOR NOISE ANALYSIS  
REACTOR CENTRUM NEDERLAND, PETTEN  
3 PAGES, 9 REFERENCES, NUKLEONIK 10(2), PAGES 67-69 (FEBRUARY 6, 1967)

THE P-METHOD IN REACTOR NOISE ANALYSIS IS THE RUSSIAN TECHNIQUE OF DERIVING REACTOR PARAMETERS FROM THE EXPERIMENTALLY DETERMINED PROBABILITY P-SUB-K FOR DETECTING K NEUTRONS IN A GIVEN TIME INTERVAL. THIS PAPER DESCRIBES SOME APPROXIMATIONS FOR THE CALCULATION OF THE P-SUB-K. SOME DIFFICULTIES MET IN THE ANALYSIS OF THE EXPERIMENTAL DATA ARE DISCUSSED. MOST PRACTICAL WAY OF ANALYSIS SEEMS TO BE A NONLINEAR LEAST-SQUARES ANALYSIS, WHERE SOME PRECAUTIONS HAVE TO BE TAKEN.

\*MATHEMATICAL TREATMENT + \*NOISE ANALYSIS + STATISTICAL ANALYSIS + THEORETICAL INVESTIGATION

6-23171

WADE DC + RUBIN HH  
A NODAL CALCULATION OF A SPACE-TIME TRANSIENT USING COUPLING COEFFICIENTS WHICH ACCOUNT FOR CHANGING INTERNODAL LEAKAGES  
KNOLLS ATOMIC POWER LAB., GENERAL ELECTRIC  
2 PAGES, ANS TRANSACTION 10(1), PAGES 250-251 (JULY 1967)

IN THE NODAL TREATMENT OF SPACE-TIME KINETICS, THE NODAL AVERAGE SOURCES ARE ASSUMED TO INFLUENCE ONE ANOTHER BY MEANS OF COUPLING COEFFICIENTS WHICH MEASURE THE CONTRIBUTION TO THE INTEGRAL FISSION RATE IN NODE I OF THE FISSION SOURCE INTEGRATED OVER NODE J. TO ACCOUNT FOR CHANGING SOURCE DISTRIBUTIONS IN A REACTOR TRANSIENT, A METHOD IS PRESENTED IN WHICH THE COUPLING COEFFICIENTS ARE CONSTRUCTED FROM A PREVIOUSLY COMPUTED SERIES OF STATIC REACTOR CONFIGURATIONS WHICH BRACKET THE CONFIGURATIONS TO BE ENCOUNTERED IN THE TRANSIENT.

DYNAMICS, NONLINEAR + REACTOR DYNAMICS + REACTOR KINETICS + REACTOR TRANSIENT + SPACE DEPENDENT DYNAMICS

6-23173

KEDL RJ + HOUTZEEL A  
DEVELOPMENT OF A MODEL FOR COMPUTING XE-135 MIGRATION IN THE MSRE  
OAK RIDGE NATIONAL LABORATORY  
ORNL-4069 +. 77 PAGES, 22 FIGURES, 3 TABLES, 21 REFERENCES, JUNE 1967

THIS REPORT DEALS PRIMARILY WITH DEVELOPING A MODEL FOR COMPUTING THE MIGRATION OF XE-135 IN THE MSRE AND WITH EXPERIMENTS CONDUCTED TO ESTABLISH THE MODEL. A PREOPERATIONAL EXPERIMENT WAS RUN IN THE MSRE WITH KR-85 TRACER, AND MANY OF THE GAS-TRANSPORT CONSTANTS WERE INFERRERD FROM THE RESULTS. EQUIVALENT TRANSPORT CONSTANTS FOR CALCULATING THE XE-135 MIGRATION GAVE A POISONING OF ABOUT 1.4% WITHOUT CIRCULATING BUBBLES AND WELL BELOW 1% WITH BUBBLES. PRELIMINARY MEASUREMENTS MADE ON THE CRITICAL REACTOR SHOW XENON POISONING OF 0.3 TO 0.4%. SINCE PHYSICAL MEASUREMENTS CONFIRM THAT THERE ARE BUBBLES IN THE SYSTEM, THE CONCLUSION IS DRAWN THAT THE COMPUTATION MODEL, THE KRYPTON EXPERIMENT, AND REACTOR OPERATION AGREE.

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

REACTIVITY EFFECT + REACTOR DYNAMICS + XENON OSCILLATION

CATEGORY 6  
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-23348            ALSO IN CATEGORY 9  
DAHL RE + JACKSON JL  
MEASUREMENT OF NEUTRON FLUX IN FAST REACTOR EXPERIMENTS  
BATTELLE MEMORIAL INSTITUTE, RICHLAND, WASHINGTON  
ANL-7380 +. 7 PAGES, 5 FIGURES, 1 TABLE, 6 REFERENCES, PAGES 122-138 OF PROCEEDINGS OF THE SYMPOSIUM ON LIQUID METAL INSTRUMENTATION AND CONTROL, MARCH 3, 1967

ACCURATE MEASUREMENT OF NEUTRON FLUX AND DETERMINATION OF SPECTRA ARE CRITICAL IN FAST REACTORS FOR INTERPRETATION AND APPLICATION OF FUELS AND MATERIALS TEST DATA. RELATIVE RESPONSES OF ACTIVATION MONITORS ARE SUFFICIENTLY DIFFERENT IN FAST REACTORS TO PERQUIRE THE USE OF ADVANCED ANALYTICAL AND EXPERIMENTAL METHODS TO CHARACTERIZE THE NUCLEAR ENVIRONMENT. ACTIVATION MONITORS DISCUSSED IN THIS REPORT ARE MATERIALS CONTAINING SPECIFIC ISOTOPES THAT ARE ACTIVATED BY NEUTRONS. STUDIES ARE IN PROGRESS TO DEVELOP DOSIMETRY TECHNIQUES FOR FAST REACTOR APPLICATION.

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

\*FLUX, INTEGRATED + \*MEASUREMENT, REACTIVITY + \*NEUTRON + DOSIMETRY, GENERAL + EXPERIMENT, GENERAL + INSTRUMENTATION, NUCLEAR REACTOR, FAST

6-23358            ALSO IN CATEGORY 9  
ROUX DP  
SUBCRITICALITY MEASUREMENTS BY NEUTRON NOISE ANALYSIS  
OAK RIDGE NATIONAL LABORATORY  
ANL-7380 +. 3 PAGES, 8 REFERENCES, PAGES 180-182 OF PROCEEDINGS OF THE SYMPOSIUM ON LIQUID METAL INSTRUMENTATION AND CONTROL, MARCH 2, 1967

EVALUATES THE APPLICABILITY OF USING REACTOR FLUCTUATIONS (NOISE) TO MEASURE REACTOR PARAMETERS ON LIQUID METAL FAST BREEDER REACTORS (LMFBR) AND AS AN ON-LINE SAFETY DEVICE. REACTOR SUBCRITICALITY MEASUREMENT BY NOISE ANALYSIS HAS A FAIR CHANCE TO BE SUCCESSFULLY APPLIED IF THE MEASUREMENTS ARE LIMITED TO THOSE OF ONLY SMALL SHUTDOWN MARGIN. IN THE RANGE OF 1 TO 2 DOLLARS SUBCRITICAL, AN ACCURACY OF 10% CAN BE EXPECTED.

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

\*NEUTRON + \*NOISE ANALYSIS + CRITICALITY SAFETY + REACTOR, LMCB + SHUTDOWN MARGIN

6-23408            ALSO IN CATEGORY 17  
DODGEN HW  
MOVEMENT OF INSTRUMENTED FUEL ELEMENT BY A CONTROL ROD MAGNET  
WASHINGTON STATE UNIVERSITY  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 14(E), PAGES 32-33 (FEBRUARY 1968)

(LETTER, FEB. 7) IN A RECENTLY CONVERTED TRIGA, THERMOCOUPLE LEADS FROM A SINGLE UNCLAMPED FUEL ROD ARE IN A STAINLESS-STEEL CONDUIT, WHICH HAS A RIGHT ANGLE 7 IN. ABOVE THE ROD MAGNETS WHEN THEY ARE IN THE DOWN POSITION. INSERTION OF ANOTHER EXPERIMENT PUSHED THE ANGLE OVER NO. 3 MAGNET. ROD 3 POSITION WAS 15.2 IN. AT CRITICALITY, AND THEN WAS RAISED TO 19 IN. BEFORE PULSING, WHICH GAVE ONLY A 70 C READING. CORE CHECK SHOWED THE BEND NOT OVER THE MAGNET, BUT EXPERIMENTS SHOWED THAT FUEL ROD LIFTED 12 IN. (REMOVED \$1.80 REACTIVITY). ROD IS NOW CLAMPED.

\*ACCIDENT, REACTIVITY + \*FAILURE, ADMINISTRATIVE CONTROL + FUEL HANDLING + INSTRUMENTATION, IN CORE + REACTOR, PULSED + TRIGA (RR)

6-23434  
MILANI S + WEISS SH  
SMALL URANIUM-233 FUELED SEED-AND-BLANKET CRITICAL EXPERIMENTS (LWBR-LSBR DEVELOPMENT PROGRAM)  
WESTINGHOUSE ELECTRIC CORP., BETTIS ATOMIC POWER LAB., PITTSBURGH, PENN.  
WAPD-TM-614 +. 167 PAGES, FIGURES, TABLES, REFERENCES, NOVEMBER, 1967

TO PROVIDE FUNDAMENTAL DATA FOR URANIUM-233 AND TO VERIFY THE ABILITY TO CALCULATE THE PHYSICS CHARACTERISTICS OF SUCH SYSTEMS, EIGHT SMALL SEED-AND-BLANKET CRITICAL ASSEMBLIES WERE STUDIED. ROD-TYPE SEED FUEL ELEMENTS EITHER URANIUM-233 OR URANIUM-235 WERE UTILIZED TO PERMIT DIRECT COMPARISON OF THEIR LATTICE CHARACTERISTICS. BLANKET REGIONS CONTAINED ROD TYPE ELEMENTS OF EITHER NATURAL THO2 OR 1 W/O 233UO2-THO2 WERE COMPARED. THE EIGHT ASSEMBLIES WERE EITHER A RECTANGULAR ARRAY HAVING A CENTRAL SEED REGION SURROUNDED BY A WET BLANKET WITH A METAL-TO-WATER RATIO OF ABOUT ONE, OR A HEXAGONAL ARRAY HAVING A CENTRAL SEED REGION SURROUNDED BY A TIGHTLY PACKED DRY BLANKET WITH A METAL-TO-WATER RATIO OF ABOUT 9.2.

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

\*CRITICALITY EXPERIMENT + \*URANIUM-233 + REACTOR PHYSICS + REACTOR, BREEDER + TEST, PHYSICS + THORIUM

CATEGORY 6  
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-23436  
FOX WN + RICHMOND R + SKILLINGS DJ + WHEELER RC  
THE MEASUREMENT OF PU-239 CAPTURE TO FISSION RATIOS IN FAST REACTOR LATTICES  
UKAEA, WINFRITH + FEDERAL INSTITUTE FOR REACTOR RESEARCH, WURENLINGEN, SWITZERLAND  
17 PAGES, 11 FIGURES, 6 TABLES, 12 REFERENCES, THE JOURNAL OF THE BRITISH NUCLEAR ENERGY SOCIETY, 6(1),  
PAGES 63-79 (JANUARY 1967)

THE CAPTURE-TO-FISSION RATIO (ALPHA) OF PU-239 IS MEASURED IN ZERO-ENERGY FAST-REACTOR LATTICES BY TWO METHODS. IN THE FIRST, ALL IMPORTANT NEUTRON FISSION AND CAPTURE RATES EXCEPT CAPTURE IN PU-239 ARE MEASURED IN A LATTICE WITH INFINITE MULTIPLICATION CONSTANT NEARLY UNITY, AND ALPHA IS INFERRED FROM THE NEUTRON BALANCE. IN THE SECOND, CAPTURE AND FISSION GAMMA RAYS FROM A PU-239 SAMPLE PLACED IN A NEUTRON BEAM FROM THE REACTOR ARE OBSERVED DIRECTLY. PRELIMINARY RESULTS INDICATE CURRENT NUCLEAR DATA SETS UNDERESTIMATE ALPHA SIGNIFICANTLY.

PLUTONIUM + REACTOR PHYSICS + REACTOR, BREEDER + REACTOR, FAST

6-23437  
BARCLAY FR + WILSON DJ  
AN ANALYSIS OF GRAPHITE MODERATED URANIUM AND PLUTONIUM/URANIUM FUELLED SYSTEMS USING THE LATTICE CODE WIMS  
ATOMIC ENERGY ESTABLISHMENT, WINFRITH  
6 PAGES, 5 TABLES, 15 REFERENCES, THE JOURNAL OF THE BRITISH NUCLEAR ENERGY SOCIETY, 6(1), PAGES 61-85  
(JANUARY 1967)

THE PERFORMANCE OF THE REACTOR LATTICE CODE WIMS HAS BEEN INVESTIGATED BY THE ANALYSIS OF A SERIES OF GRAPHITE MODERATED SYSTEMS CONTAINING REGULAR LATTICES OF SINGLE RODS OF URANIUM OR PLUTONIUM/URANIUM METAL. REACTIVITY PREDICTIONS SHOW A MARKED DEPENDENCE ON RESONANCE CAPTURES IN U-238, A REDUCTION OF SOME 12% IN THESE EVENTS BEING REQUIRED TO ELIMINATE THIS EFFECT. GOOD AGREEMENT IS SHOWN IN THE COMPARISON OF FISSION REACTION RATES, WHILE TEMPERATURE COEFFICIENTS AND FINE STRUCTURE ARE REASONABLY WELL PREDICTED.

COMPUTER PROGRAM + PLUTONIUM + REACTOR PHYSICS + REACTOR, GRAPHITE MODERATED + TEMPERATURE COEFFICIENT + URANIUM

6-23438  
TAXELIUS TG  
QUARTERLY TECHNICAL REPORT SPERT PROJECT OCTOBER, NOVEMBER, DECEMBER, 1966  
PHILLIPS PETROLEUM COMPANY  
DDO-17245 +. 40 PAGES, 28 FIGURES, 2 TABLES, 10 REFERENCES, OCTOBER 1967

THIS REPORT IS ONE OF A SERIES ON THE FOLLOWING TOPICS - SPERT-III OXIDE CORE KINETICS PROGRAM, SPERT-IV CAPSULE-DRIVER-CORE SUPASSEMBLY TEST PROGRAM, AND POWER BURST FACILITY IN-PILE FUEL-TESTING PROGRAM (TREAT TEST SERIES 11 AND 12)

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

CORE, CAPSULE DRIVER (CDC) + IN PILE EXPERIMENT + REACTOR TRANSIENT + SPERT 3 (S-RR) + SPERT 4 (S-RR) + TREAT (PRR) + URANIUM DIOXIDE

6-23439 ALSO IN CATEGORIES 5 AND 7  
KIETZ KA  
QUARTERLY TECHNICAL REPORT STEP PROJECT JANUARY 1-MARCH 31, 1967  
PHILLIPS PETROLEUM COMPANY  
DDO-17239 +. 156 PAGES, 81 FIGURES, 15 TABLES, 50 REFERENCES, AUGUST 1967

THIS REPORT IS ONE OF A SERIES ON THE FOLLOWING TOPICS - LOFT DESIGN ANALYSIS, LOFT BLOWDOWN ANALYSIS, DIRECT RADIATION LEVELS DURING LOFT OPERATION, FISSION PRODUCT BEHAVIOR STUDIES, LOFT RADIOLOGICAL STUDIES, MODEL FORMULATION FOR THE SUBCOOLED DECOMPRESSION DURATION IN A PWR SYSTEM FOLLOWING A PRIMARY-COOLANT-LOOP BREAK, AND SEMISCALE BLOWDOWN TEST PROGRAM.

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

ACCIDENT, LOSS OF COOLANT + CONTAINMENT DESIGN + CORE MELTDOWN + CORE SPRAY + FISSION PRODUCT RELEASE, GENERAL + LOFT (S-PR) + REACTOR TRANSIENT + REACTOR, SAFETY RESEARCH

6-23440  
KIER PH  
ANALYSIS OF THE INITIAL CRITICAL EXPERIMENTS OF THE EBWR PLUTONIUM RECYCLE PROGRAM  
ARGONNE NATIONAL LABORATORY, ARGONNE, ILLINOIS  
ANL-7368 +. 41 PAGES, 6 FIGURES, 19 TABLES, 27 REFERENCES, AUGUST 1967

DESCRIBES THE EXPERIMENTAL RESULTS AND THE ANALYSIS OF THE EXPERIMENTAL RESULTS FOR

CATEGORY 6  
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-23440 \*CONTINUED\*

MEASUREMENTS OF TWO PLUTONIUM-FUEL CRITICAL CONFIGURATIONS, TEMPERATURE COEFFICIENTS OF REACTIVITY, BORIC ACID WORTHS, AND CONTROL-ROD BANK WORTHS. THE TEMPERATURE COEFFICIENTS AND BORIC ACID WORTHS WERE MEASURED FOR THE 26-PLUTONIUM-ASSEMBLY LOADING AND FOR THE FULL FUEL LOADINGS. THESE CRITICALITY EXPERIMENTS LED TO A REVISED COMPUTATIONAL MODEL, ALSO DESCRIBED.

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

\*CRITICALITY EXPERIMENT + \*PLUTONIUM + BORON + CONTROL ROD WORTH + FUEL COEFFICIENT + TEMPERATURE COEFFICIENT

6-23442

DIDEIKIN TS + SHISHIN BP  
DETERMINATION OF THE EFFECTIVE MULTIPLICATION COEFFICIENT OF NEUTRONS BY THE MEASUREMENT OF THE DIFFERENTIAL REACTIVITY  
5 PAGES, 1 FIGURE, 3 REFERENCES, AT. ENERGO. (USSR), 22, PAGES 113-17 (FEB. 1967)

A RELATION IS ESTABLISHED BETWEEN THE EFFECTIVE MULTIPLICATION FACTOR OF NEUTRONS IN A REACTOR AND THE EXPERIMENTAL VALUES OF REACTIVITY COEFFICIENTS, DETERMINED BY MEASUREMENTS OF DIFFERENTIAL REACTIVITIES FOR A SERIES OF CRITICAL STATES OF THE REACTOR. CORRECTION TERMS ARE GIVEN IN INTEGRAL FORM.

\*REACTOR PHYSICS + CRITICALITY EXPERIMENT + REACTIVITY EFFECT + THEORETICAL INVESTIGATION

6-23443

ALSO IN CATEGORY 1  
DUBOVSKII BG + KAMAEV AV + KIIZNETSOV FM  
CRITICAL PARAMETERS OF FISSIONABLE MATERIALS SYSTEMS AND NUCLEAR SAFETY (A HANDBOOK)  
JPRS 42,322 + TT-67-32951 +. 173 PAGES, AUGUST 23, 1967, TRANSLATED FROM PP 1-226 OF KRITICHESKIE PARAMETRY SISTEM S DELYASHCHIMISYA VESHCHESTVAMI I YADERNAYA BEZOPASNOST, ATOMIC PUBLISHING HOUSE, MOSCOW, 1966

ARTICLES IN THIS HANDBOOK ARE - (1) BASIC CONCEPTS OF NUCLEAR SAFETY, (2) METHODS OF DESIGNING HOMOGENEOUS REACTORS, (3) CRITICALITY OF SYSTEMS OF INTERACTING SUBCRITICAL ASSEMBLIES OF FISSIONABLE MATERIALS, AND (4) BASIC NORMS FOR ENSURING NUCLEAR SAFETY.

CRITICALITY SAFETY + DESIGN CRITERIA + REACTOR SAFETY SYSTEM + SAFETY ANALYSIS

6-23444

CARTWRIGHT DK + MCKNIGHT JA + PICKERING W  
MEASUREMENT OF FLUX DISTRIBUTION IN THE WINDSCALE ADVANCED GAS-COOLED REACTOR AT ZERO POWER, AND COMPARISON WITH CALCULATION  
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, RISLEY  
TRG REPORT 1360(R) +. 4 PAGES, 2 FIGURES, 7 REFERENCES, 1967, THE MATERIAL IN THIS REPORT HAS BEEN PUBLISHED IN THE PROCEEDINGS OF THE CONFERENCE ON RADIATION MEASUREMENTS IN NUCLEAR POWER ORGANIZED BY THE INSTITUTE OF PHYSICS AND THE PHYSICAL SOCIETY AND THE C.E. G.B., BERKELEY, ENGLAND, 12-16 SEPTEMBER 1966

FLUXES, DETERMINED BY MEASURING THE GAMMA-ACTIVITY OF MN-NI WIRES ACTIVATED IN TUBES IN THE AGR CORE, AGREED WITHIN A STANDARD DEVIATION OF 2% WITH THOSE CALCULATED BY LATTICE CODE ARGOSY-4 IN CONJUNCTION WITH HOMOGENEOUS REACTOR CODE TRIFID. METHODS USED ARE BRIEFLY DESCRIBED.

AVAILABILITY - INSTITUTE OF PHYSICS AND THE PHYSICAL SOCIETY AND THE C.E.G.B., BERKELEY

\*COMPARISON, THEORY AND EXPERIENCE + \*POWER DISTRIBUTION + \*REACTOR, GCR + FLUX DISTRIBUTION + TEST, PHYSICS

6-23446

ALSO IN CATEGORY 18  
ENGELMANN P + BICKEL W + DAEUNERT U + HABERMANN FW + VAN VELZE PL + WLAZE H + WITTEK G  
CONSTRUCTION AND EXPERIMENTAL EQUIPMENT OF THE KARLSRUHE FAST CRITICAL FACILITY, SNEAK  
KERNFORSCHUNGSZENTRUM, KARLSRUHE, WEST GERMANY  
KFK-471 +. 33 PAGES, 7 FIGURES, 13 REFERENCES, OCTOBER 1966

SNEAK IS A FIXED VERTICAL ASSEMBLY WITH FUEL ELEMENTS SUSPENDED FROM A TOP GRID. TWO HORIZONTAL CHANNELS WILL BE USED FOR A MATERIAL REPLACEMENT DRAWER WITH AUTOMATIC SAMPLE CHANGER, A DETECTOR OR MATERIAL TRAVERSE DEVICE, AND A PULSED NEUTRON SOURCE. FOUR VERTICAL CHANNELS CLOSE TO THE CORE CENTER ARE AVAILABLE FOR INSTALLATION OF A PILE-OSCILLATOR. A GAS-HEATED LOOP IS BEING BUILT FOR DOPPLER EXPERIMENTS. FOUR METHODS USED IN SNEAK FOR PRECISE REACTIVITY MEASUREMENTS ARE COMPARED - THE ASYMPTOTIC PERIOD METHOD, THE PILE OSCILLATOR METHOD, THE INVERSE KINETICS METHOD, AND THE AUTOROD METHOD.

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

\*CRITICAL ASSEMBLY FACILITY + \*MEASUREMENT, REACTIVITY + \*REACTOR, FAST + CONTROL ROD + DOPPLER EFFECT + OSCILLATOR, REACTIVITY + PLUTONIUM OXIDE + REACTOR CONTROL

CATEGORY 6  
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-23493 ALSO IN CATEGORY 18  
DRESDEN 2 AND 3 THERMAL LIMITS  
COMMONWEALTH EDISON COMPANY  
17 PAGES, 8 FIGURES, PAGES 3.1-1 THRU 3.2-16 OF DRESDEN 1 AND 2 FINAL SAFETY ANALYSIS REPORT, VOLUME 1,  
NOVEMBER 17, 1967, DOCKETS 50-237/249, TYPE--BWR, MFG.--G.E., AE--SGT + LUNDY

FUEL-DAMAGE LIMITS ASSUMED ARE DNR AND/OR 1% PLASTIC STRAIN IN THE ZIRC CLADDING. DESIGN MCHFR IS 1.5 AT 20% OVERPOWER (APED-3892). EXPECTED MCHFR IS 1.9 (APED-5286 HEAT-FLUX CORRELATION FOR EWRs). THE LATTICE LIMIT WILL BE THE GOVERNING CRITERION SINCE A PROPERLY CHOSEN LIMIT FOR NORMAL OPERATION CAN ENSURE THE THERMAL MARGIN AT 20% OVERPOWER CONDITIONS. MAXIMUM LINEAR HEAT RATE LIMIT WILL BE 17.5 KW/FT. THE ABOVE CRITERIA DO NOT STATE THE POWER LEVEL OR PEAKING FACTORS. THESE WILL BE DETERMINED BY THE OPERATOR, SUBJECT TO CONSTRAINTS, INCLUDING THERMAL LIMITS ABOVE.

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

BURNOUT HEAT FLUX + DRESDEN 2 (BWR) + PERFORMANCE LIMIT + REACTOR, PWR + REPORT, SAR + THERMAL CONSIDERATION

6-23831  
PENDERGAST MS  
REACTOR KINETICS MODEL. TWO MODES, WITH SUGGESTED TEST FOR DETERMINING THE REACTIVITY COUPLING COEFFICIENT  
KNOLLS ATOMIC POWER LAB., SCHENECTADY, NEW YORK  
KAPL-3160 +. 70 PAGES, FIGURES, REFERENCES, SEPT. 1966

WITH TWO-MODE REACTOR KINETICS, THE SPATIAL SHAPE OF THE POWER DENSITY IS ASSUMED TO BE A LINEAR COMBINATION OF A SYMMETRIC MODE AND A TILT MODE WITH TIME-VARYING COEFFICIENTS GIVEN BY THE TWO-MODE REACTOR KINETICS EQUATIONS. FOR A TIME SOLUTION, THE SEPARATION OF EIGENVALUES (OF THE SYMMETRIC AND TILT MODES) MUST BE KNOWN. THIS REPORT SUGGESTS A TEST FOR DETERMINING THIS QUANTITY. THE SUGGESTED TEST IS DEvised BY OBTAINING TRANSFER FUNCTIONS FOR A LEFT, A RIGHT, AND A CENTRAL ION CHAMBER WITHIN THE REACTOR. BASICALLY, THE TEST CONSISTS OF OSCILLATING THE TILT MODE AT TWO DIFFERENT FREQUENCIES, WHILE HOLDING THE SYMMETRIC MODE NEARLY STATIONARY.

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

\*REACTOR KINETICS + POWER DISTRIBUTION + REACTOR PHYSICS + SPACE DEPENDENT DYNAMICS + THEORETICAL INVESTIGATION + TRANSFER FUNCTION

6-23917  
MILLS CB  
LOW CRITICAL MASS  
LOS ALAMOS SCIENTIFIC LABORATORY, LOS ALAMOS, NEW MEXICO  
2 PAGES, 4 FIGURES, 3 REFERENCES, NUCLEAR APPLICATIONS, 4(1), PAGES 17-18 (JANUARY 1966)

VALUES OF CRITICAL MASS OF U-235, U-233, AND PU-239 ARE GIVEN FOR VARIOUS FUEL DENSITIES IN A WATER-MODERATED CORE SURROUNDED BY A THICK WATER OR BERYLLIUM REFLECTOR. A THICK BE MODERATOR IS SHOWN TO YIELD A MINIMUM CRITICAL MASS OF ONLY ONE-THIRD OF THE ENRICHED FISSIONABLE FUEL REQUIRED FOR A WATER-REFLECTED ASSEMBLY.

\*CRITICAL MASS + \*PLUTONIUM + \*URANIUM-232 + \*URANIUM-235 + BERYLLIUM + CRITICALITY SAFETY + REACTOR PHYSICS

CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-18345  
BOCKHOFF KH + MIGNECO E + THEOBALD J + WAPTENA J  
A LARGE AREA FISSION FRAGMENT DETECTOR WITH FAST RESPONSE  
CENTRAL BUREAU FOR NUCLEAR MEASUREMENTS, EURATOM, GEEL, BELGIUM  
5 PAGES, 5 FIGURES, NUCL. INSTR. AND METHODS 45, PAGE 233 THRU 237, (1966)

DESCRIBES PERFORMANCE OF A FISSION-FRAGMENT DETECTOR WHICH CAN BE USED FOR HIGH-RESOLUTION FISSION-CROSS-SECTION MEASUREMENTS. IT CONSISTS OF TWO VERY THIN PLASTIC SCINTILLATOR FOILS OF LARGE AREAS SANDWICHING A FISSION LAYER. COINCIDENCE TECHNIQUES APPLIED TO THE SIGNALS OF TWO PHOTOMULTIPLIERS WHICH VIEW THESE SCINTILLATORS ALLOW TO DISCRIMINATE FISSION FRAGMENTS AGAINST ALPHAS AND OTHER BACKGROUND SOURCES. AMPLITUDE SPECTRA AND THE DEPENDENCE OF FISSION DETECTION EFFICIENCY FROM LOCATION ON THE DETECTOR SURFACE WERE STUDIED. AS A RESULT OF AN APPLICATION OF THE DETECTOR, U-235 FISSION REACTION RATES ARE SHOWN IN FUNCTION OF NEUTRON TIME OF FLIGHT.

\*ANALYTICAL TECHNIQUE, CALIBRATION + \*INSTRUMENTATION, GENERAL + \*INSTRUMENTATION, RADIATION MONITORING + ALPHA EMITTER + FISSION RECOIL.

7-20550  
GETHARD PE + ZUMWALT LR  
DIFFUSION OF METALLIC FISSION PRODUCTS IN PYROLYTIC CARBON  
GULF GENERAL ATOMIC  
7 PAGES, FIGURES, REFERENCES, NUCLEAR APPLICATIONS, 3(11), PP. 679-685, (NOVEMBER 1967)

THE DIFFUSION OF STRONTIUM AND CESIUM THROUGH THIN LAYERS (100 MICRONS) OF ISOTROPIC PYROLYTIC CARBON WAS MEASURED OVER THE TEMPERATURE RANGE 1000 TO 1700 C. DIFFUSION COEFFICIENTS OBSERVED FOR CESIUM ARE ORDERS OF MAGNITUDE LOWER THAN THOSE FOR STRONTIUM. THE DIFFUSION RATES FOR BOTH SERIES ARE MUCH LOWER THAN THOSE OBSERVED IN PORCUS POLYCRYSTALLINE GRAPHITE, WHERE LITTLE DIFFERENCE IS SEEN BETWEEN CESIUM AND STRONTIUM. WHEN CONSTANT CHEMICAL POTENTIAL SOURCES ARE USED, CHEMICAL AND SELF-DIFFUSION MEASUREMENTS FOR STRONTIUM GIVE IDENTICAL RESULTS IN THE SR CONCENTRATION RANGE 0.01 TO 0.2 WT%. THERE IS APPARENTLY NO CONCENTRATION EFFECT FOR CESIUM OVER THE RANGE 0.00001 TO 0.15 WT%. THE DIFFERENCE BETWEEN STRONTIUM AND CESIUM DIFFUSION IN PYROLYTIC CARBON IS ATTRIBUTED TO THE GREATER STERIC EFFECT OF THE PYROLYTIC-CARBON DEFECT STRUCTURE RELATIVE TO CESIUM.

\*CARBON + \*DIFFUSION + \*FISSION PRODUCT RETENTION + \*FUEL INTEGRITY + \*PYROLYTIC + CESIUM + FISSION PRODUCT TRANSPORT + GRAPHITE + STRONTIUM

7-21245 ALSO IN CATEGORIES 6 AND 12  
REPORT OF WORK IN THE 4TH QUARTER OF 1966  
COMMISSARIAL A L-ENERGIE ATOMIQUE, CADARACHE, FRANCE  
EURFNR-267 +. 89 PAGES, 1966

THIS REPORT IS ONE OF A SERIES OF REPORTS ON WORK PERFORMED UNDER THE UNITED STATES-EURATOM FAS1 REACTOR EXCHANGE PROGRAM. TOPICS COVERED ARE - CRITICALITY STUDIES, METALLURGY, RADIATION EFFECTS, RADIATION SHIELDING AND PROTECTION, REACTOR CONTROL, REACTOR ENGINEERING, REACTOR FUELS, AND REACTOR SAFETY.

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

ACCIDENT, REACTIVITY + CRITICALITY EXPERIMENT + FISSION PRODUCT RETENTION + REACTOR CONTROL + REACTOR DYNAMICS + REACTOR, LMCB + SODIUM

7-21247 ALSO IN CATEGORIES 12 AND 17  
PIQUA REQUESTS REMOVAL OF HIGH EFFICIENCY FILTERS  
PIQUA NUCLEAR POWER FACILITY  
19 PAGES, DEC. 1, 1967, DOCKET NO. 115-2, TYPE--GCP, MFC--A.I., AE--A.I.

PIQUA REQUESTS EXEMPTION FROM TECH.-SPEC. REQUIREMENT OF VENTILATION FILTERS WHILE THE FUEL IS STORED AND THE REACTOR IS INOPERATIVE. THE FILTERS COST MORE THAN \$4000 PER YEAR. PIQUA HAS ALWAYS CONTENDED THAT THE FILTERS WERE UNNECESSARY EVEN UNDER OPERATING CONDITIONS. ENCLOSED IS A REPORT - HIGH EFFICIENCY PARTICULATE AIR FILTER EVALUATION FOR PIQUA (17 PAGES).

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

FILTER, HIGH EFFICIENCY + PIQUA (OCR) + REACTOR, ORGANIC COOLED + TECHNICAL SPECIFICATIONS + VENTILATION SYSTEM

7-21815 ALSO IN CATEGORY 17  
GULF GENERAL ATOMIC PROPOSED AMENDMENT--FUELED EXPERIMENTS IN TRIGA MARK F  
GULF GENERAL ATOMIC, INC.  
9 PAGES, 1 FIGURE, 1 TABLE, DOCKET 50-163, NOVEMBER 22, 1967

GULF-G.A. WITHDRAWS MAY 21, 1967, APPLICATION AND REQUESTS AUTHORITY TO PERFORM FUEL

CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-21815 \*CONTINUED\*

EXPERIMENTS WITH THE LIMITATION THAT THE RELEASABLE IODINE INVENTORY NOT EXCEED 1.7/F CURIES, WHERE F IS THE ACTUAL RELEASE FRACTION OF MATERIAL INVOLVED BASED ON EXISTING DATA, OR 1.0 IF NO DATA IS AVAILABLE. THIS LIMIT WAS DETERMINED FROM REACTOR-ROOM EXPOSURES, AND RESULTS IN NO APPRECIABLE OFF-SITE DOSE. ATTACHMENT 1 IS A HAZARDS ANALYSIS - CONSEQUENCES OF ACTIVITY RELEASE FROM THE TRIGA MARK F REACTOR. GULF-G.A. ASKS FOR A TEMPORARY AUTHORIZATION TO OPERATE EXPERIMENTS WITH 1.5 CURIES OF IODINE.

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

\*FISSION PRODUCT, IODINE + \*IRRADIATION TESTING + HAZARDS ANALYSIS + REACTOR, RESEARCH + TECHNICAL SPECIFICATIONS + TRIGA (RR)

7-22116 ALSO IN CATEGORIES 5 AND 14

KRESS TS + NELSON P  
NUMERICAL SOLUTION OF THE ISOTHERMAL FISSION-PRODUCT DEPOSITION EQUATIONS. THE PROGRAM PREDEP-II OAK RIDGE NATIONAL LAB., TENN.  
ORNL-TM-1970 +. 28 PAGES, 3 FIGURES, 2 REFERENCES, OCT. 1967

THE HEAT-MASS ANALOGY WAS PREVIOUSLY USED TO DEVELOP A SEMILINEAR SYSTEM OF PARTIAL DIFFERENTIAL EQUATIONS TO DESCRIBE THE ISOTHERMAL DEPOSITION OF FISSION PRODUCTS. IN THIS REPORT, THIS SYSTEM IS TRANSFORMED INTO A SYSTEM OF INTEGRAL EQUATIONS IN COMPUTATIONALLY CONVENIENT VARIABLES, AND A FINITE-DIFFERENCE METHOD FOR THE SOLUTION OF THE INTEGRAL EQUATION SYSTEM IS DESCRIBED. A BRIEF DESCRIPTION IS GIVEN OF THE COMPUTER PROGRAM PREDEP-II, WHICH ACCEPTS DATA IN TERMS OF PHYSICALLY CONVENIENT DIMENSIONLESS VARIABLES, TRANSFORMS THESE TO THE COMPUTATIONAL VARIABLES FOR MEANS OF SOLVING THE FINITE-DIFFERENCE EQUATIONS, AND FINALLY REPORTS THE RESULTS IN TERMS OF THE PHYSICAL VARIABLES.

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

COMPUTER PROGRAM + DEPOSITION + FISSION PRODUCT TRANSPORT + FISSION PRODUCT; NONVOLATILE

7-22466 ALSO IN CATEGORY 4

KEIL H  
FISSION PRODUCT TRANSFER IN THE SYSTEM. UO<sub>2</sub>/LIQUID SODIUM/STAINLESS STEEL  
EUROPEAN ATOMIC ENERGY COMMUNITY, CHEMISTRY DEPARTMENT, ISPRA (ITALY)  
5 PAGES, 8 FIGURES, 2 TABLES, 14 REFERENCES, ATOMKERNENERG 12(3-4), PAGE 96-100, (MARCH-APRIL 1967)

FISSION-PRODUCT TRANSFER FROM UO<sub>2</sub> POWDER THROUGH LIQUID SODIUM TOWARDS STAINLESS STEEL WAS INVESTIGATED, AND THE DIFFUSION OF FP, U, AND PU IN STAINLESS STEEL WAS MEASURED IN THE TEMPERATURE RANGE 700 TO 1000 C. DIFFUSION COEFFICIENTS AND ACTIVATION ENERGIES ARE STATED.

\*DIFFUSION COEFFICIENT + \*FISSION PRODUCT RETENTION + \*SODIUM + \*STEEL, STAINLESS + FISSION PRODUCT RELEASE, GENERAL + FISSION PRODUCT TRANSPORT + PLUTONIUM + URANIUM DIOXIDE

7-22468 ALSO IN CATEGORY 4

CASTLEMAN AW + TANG IN  
THERMODYNAMICS OF FISSION PRODUCT SODIUM SOLUTIONS  
BROOKHAVEN NATIONAL LAB.  
BNL-11611 +. 3 PAGES, 1 FIGURE, 1 TABLE, 2 REFERENCES, NOV. 1967, ABSTRACT IN ANS TRANSACTIONS 10(2), PRESENTED AT THE 1967 WINTER MEETING OF THE AMERICAN NUCLEAR SOCIETY, CHICAGO, ILLINOIS, NOV. 5-9, 1967

GIVES THE RESULTS OF AN INVESTIGATION OF THE REQUIRED THERMODYNAMIC PROPERTIES AND THE APPLICATION OF THESE RESULTS IN CALCULATING FISSION PRODUCT PARTIAL PRESSURES AND THE EXTENT OF THEIR VAPORIZATION. WE MEASURED THE THERMODYNAMIC PROPERTIES OF SODIUM IODIDE-SODIUM SOLUTIONS USING A CONTINUOUS VAPORIZATION TECHNIQUE. EXPERIMENTS WERE MADE OVER THE TEMPERATURE RANGE 700 TO 1100 K. THE RESULTS, WHICH ARE REPRESENTED BY THE EQUATION  $\Delta(\text{AVE.}) F\text{-SUPERSCRIPT-E} = 15,900 - 6.8 T$ , ARE IN EXCELLENT AGREEMENT WITH OUR ESTIMATES EMPLOYING TWO METHODS, ONE BASED ON PHASE-DIAGRAM CALCULATIONS AND THE OTHER ON STATISTICAL MECHANICAL CONSIDERATIONS. THE PARTIAL PRESSURES PER MOLE FRACTION OF FISSION PRODUCTS IN SOLUTION ARE PLOTTED AS A FUNCTION OF RECIPROCAL ABSOLUTE TEMPERATURE.

\*FISSION PRODUCT RETENTION + \*SODIUM + \*THERMODYNAMICS + ANTIMONY + BARIUM + CESIUM + PROPERTY, PHYSICAL + RUBIDIUM + STRONTIUM + TELLURIUM

7-22469 ALSO IN CATEGORY 4

SALZANO FJ + ARONSON S  
THRESHOLD PRESSURES FOR THE REACTION OF SODIUM AND OTHER ALKALI METALS WITH GRAPHITE  
BROOKHAVEN NATIONAL LAB., UPTON, N. Y.  
BNL-11554 + CONF-6711C2-11 +. 8 PAGES, FIGURES, TABLES, REFERENCES, 1967, PRESENTED AT 15TH CONFERENCE ON REMOTE SYSTEMS TECHNOLOGY AND ATOM FAIR, CHICAGO, ILLINOIS

THIS PAPER PRESENTS THE RESULTS OF A CALCULATION OF THE THRESHOLD PRESSURES FOR THE SODIUM-GRAPHITE SYSTEM BASED ON AN IONIC MECHANISM OF BONDING OF THE ALKALI-METAL TO THE GRAPHITIC LAYERS. THE THRESHOLD PRESSURE INCREASES IN THE ORDER CESIUM, RUBIDIUM, POTASSIUM, AND SODIUM. THUS, THE INITIATION OF THE REACTION BETWEEN SODIUM AND GRAPHITE REQUIRES PRESSURES WHICH ARE MORE THAN THREE ORDERS OF MAGNITUDE HIGHER THAN FOR THE OTHER ALKALI

CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-22469 \*CONTINUED\*  
METALS.

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

\*CHEMICAL REACTION + \*GRAPHITE + \*SODIUM + CESIUM + POTASSIUM + RUBIDIUM + THEORETICAL INVESTIGATION +  
THERMODYNAMICS

7-22472

HILLIARD RK + COLEMAN LF + MCCORMACK JD  
AEROSOL BEHAVIOR - SINGLE COMPONENT VS. MIXTURE  
BATTELLE-NORTHWEST, RICHLAND, WASH. PACIFIC NORTHWEST LAB.

1 PAGE, PAGE 70 OF ENGINEERING DEVELOPMENT DEPARTMENT QUARTERLY REPORT, JANUARY, FEBRUARY, MARCH 1966

AN IMPORTANT CONSIDERATION IN DEVELOPING A SYNTHETIC FISSION PRODUCT AEROSOL FOR MASS TRANSPORT STUDIES IS THE NUMBER OF COMPONENTS REQUIRED FOR AN AEROSOL WITH TRANSPORT PROPERTIES SIMILAR TO THAT RELEASED DURING AN ACTUAL ACCIDENT. FIVE CONTAINMENT TESTS WERE MADE IN THE ADF STAINLESS STEEL TANK USING SINGLE-COMPONENT AEROSOLS OF IODINE, CESIUM OXIDE, TELLURIUM OXIDE, BARIUM OXIDE, AND RUTHENIUM OXIDE. THEN, IN RUN 53, ALL FIVE WERE GENERATED, MIXED, PASSED OVER MULLEN STAINLESS STEEL CLAD UO<sub>2</sub>, AND INJECTED INTO THE CONTAINMENT VESSEL. TEST CONDITIONS FOR THE SIX TESTS WERE SIMILAR EXCEPT FOR THE TYPE OF AEROSOL. THE PRIMARY CONCLUSION IS THAT THE BEHAVIOR OF ANY OF THESE FIVE AEROSOL MATERIALS IS NOT SIGNIFICANTLY AFFECTED BY THE PRESENCE OR ABSENCE OF OTHER AEROSOL MATERIALS. A SECOND CONCLUSION IS THAT TELLURIUM, BARIUM, AND RUTHENIUM BEHAVED SIMILARLY, BEING LARGELY PARTICULATE, DEPOSITING ON SOLID SURFACES AND NOT WASHING OFF WITH CONTINUED STEAMING. IODINE AND CESIUM, ON THE OTHER HAND, WERE ESSENTIALLY SOLUBLE IN THE STEAM CONDENSATE. AFTER AN INITIAL RAPID DEPOSITION ON SURFACES, THEY WERE REMOVED BY THE CONDENSATE UPON CONTINUED STEAMING.

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

\*AEROSOL PRODUCTION + \*AEROSOL PROPERTIES + \*TESTING + AEROSOL + BARIUM + CESIUM + IODINE + OXIDE +  
RUTHENIUM + TELLURIUM

7-22477

RITZMAN RL + GIESEKE JA + BLUTREICH JN + MORRISON DL  
ANALYTICAL DESCRIPTION OF FISSION-PRODUCT TRANSPORT AND DEPOSITION IN CONTAINMENT VESSELS  
BATTELLE MEMORIAL INSTITUTE

1 PAGE, 2 FIGURES, 2 REFERENCES, ANS TRANSACTIONS 10(2), PAGE 714, (NOV. 1967), PRESENTED AT THE 1967  
WINTER MEETING OF THE AMERICAN NUCLEAR SOCIETY, CHICAGO, ILLINOIS, NOV. 5-9, 1967

A MATHEMATICAL MODEL WAS DEVELOPED TO DESCRIBE THE TIME-DEPENDENT BEHAVIOR OF FISSION PRODUCTS WITHIN A CONTAINMENT VESSEL. ALTHOUGH IT HAS BEEN LIMITED IN SOME RESPECTS TO FISSION-PRODUCT IODINE, THE METHOD CAN BE READILY EXTENDED TO INCLUDE OTHER CHEMICAL SPECIES. THE MODEL IS DESIGNATED CODESEP. APPLICATION OF THE MODEL TO LARGE POWER REACTOR CONTAINMENTS REVEALS THAT WITHIN THE RANGE OF EXPECTED MASS TRANSPORT RATES, THE RATE OF FISSION-PRODUCT REMOVAL WILL BE DETERMINED BY SAFETY-SYSTEMS OPERATION CHARACTERISTICS RATHER THAN BY DEPOSITION PROCESSES AT VESSEL SURFACES.

\*ANALYTICAL MODEL + \*COMPUTER PROGRAM + \*FISSION PRODUCT TRANSPORT + CONTAINMENT, GENERAL + DEPOSITION +  
MODEL TESTING

7-22478

GENCO JM + ROSENBERG HS + BERRY WE + MORRISON DL  
FISSION-PRODUCT DEPOSITION STUDIES, PART I: IODINE ON PRIMARY VESSEL SURFACES  
BATTELLE MEMORIAL INSTITUTE

2 PAGES, 1 FIGURE, 1 TABLE, 5 REFERENCES, ANS TRANSACTIONS 10(2), PAGE 714 AND 715, (NOV. 1967), PRESENTED  
AT THE 1967 WINTER MEETING OF THE AMERICAN NUCLEAR SOCIETY, CHICAGO, ILLINOIS, NOV. 5-9, 1967

EXPERIMENTS WERE PERFORMED IN STEAM-AIR AND STEAM-HYDROGEN ATMOSPHERES DELINEATING THE DEPOSITION KINETICS OF IODINE AND HI ON PREFILMED ZIRCALOY-4 (ZRO<sub>2</sub>-X) AND PREFILMED TYPE-304 STAINLESS-STEEL (R304) SURFACES. A STRAIGHT LINE REASONABLY FITS THE DATA AND REVEALS THE NEGATIVE TEMPERATURE COEFFICIENT OF IODINE DEPOSITION ON PREFILMED STAINLESS STEEL.

\*DEPOSITION + \*IODINE + \*STEAM + EXPERIMENT, GENERAL

7-22479

ALSO IN CATEGORY 4  
KOCNTZ RL + NELSON CT + BAURMASH L  
CHARACTERISTICS OF AEROSOLS GENERATED DURING SODIUM FIRES  
ATOMICS INTERNATIONAL

2 PAGES, 1 TABLE, 1 REFERENCE, ANS TRANSACTIONS 10(2), PAGE 689 AND 690, (NOV. 1965), PRESENTED AT THE  
1967 WINTER MEETING OF THE AMERICAN NUCLEAR SOCIETY, CHICAGO, ILLINOIS, NOV. 5-9, 1967

STUDIES ARE BEING CONDUCTED TO DEVELOP EXPERIMENTAL INFORMATION AND ANALYTICAL METHODS THAT CHARACTERIZE THE RELEASE AND TRANSPORT OF EFFLUENTS GENERATED DURING A SODIUM FIRE IN A LIQUID-METAL FAST-BREEDER (LMFBK). EXPERIMENTS HAVE BEEN CONDUCTED TO STUDY THE RELEASE OF



CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-22479 \*CONTINUED\*

OXIDIZED SODIUM AND A SIMULATED FISSION PRODUCT CONSISTING OF NA-131-I INVOLVING VARIOUS QUANTITIES OF SODIUM IN DIFFERENT SIZED CONTAINERS AND IN VARIOUS OXYGEN ENVIRONMENTS.

\*AEROSOL + \*FIRE + \*PARTICLE SIZE + \*SODIUM + IODINE + OXYGEN + REACTOR, LMCR

7-22480 ALSO IN CATEGORY 4  
HAUSKNECHT DF + GREENFIELD MA

A MODEL DESCRIBING THE BEHAVIOR OF THE AEROSOL PRODUCED BY A SODIUM FIRE  
ATOMICS INTERNATIONAL + UCLA, SCHOOL OF MEDICINE  
1 PAGE, 8 REFERENCES, ANS TRANSACTIONS 10(2), PAGE 690, (NOV. 1967), PRESENTED AT THE 1967 WINTER MEETING OF THE AMERICAN NUCLEAR SOCIETY, CHICAGO, ILLINOIS, NOV. 5-9, 1967

PREDICTION OF THE BEHAVIOR OF AEROSOLS GENERATED DURING A LARGE SODIUM FIRE IS REQUIRED IN THE SAFETY ANALYSIS OF SODIUM-COOLED FAST REACTORS. TO AID IN UNDERSTANDING AND EXTENDING THE RESULTS OF THE EXPERIMENTAL PROGRAM, A THEORETICAL EFFORT WAS UNDERTAKEN TO DEVELOP A MATHEMATICAL MODEL THAT WOULD PREDICT THE AGGLOMERATION AND DEPOSITION HISTORY OF AEROSOL PARTICLES. THE MATHEMATICAL MODEL IS BASED ON THE CLASSICAL APPROACH OF SMOLUCHOWSKI AS GENERALIZED BY MULLER AND GOLDMAN, FOR A DISTRIBUTION OF PARTICLE SIZES. NUMERICAL INTEGRATION OF THE BASIC EQUATION WAS ACCOMPLISHED FIRST BY FRIEDMAN AND SHIFFMAN, AND MORE RECENTLY BY ZEBEL, USING AN IBM-650 COMPUTER. NUMERICAL EVALUATIONS WERE PERFORMED WITH THE IMPROVED MODEL AND GOOD AGREEMENT WAS OBTAINED WITH EXPERIMENTAL RESULTS FOR MASS DISPOSITION AND PARTICLE SIZE. IT ILLUSTRATES THE IMPORTANCE OF THE ADDITIONAL AGGLOMERATION MECHANISMS IN ACHIEVING AGREEMENT WITH EXPERIMENT.

\*ANALYTICAL MODEL + \*COMPUTER PROGRAM + \*FIRE + \*SODIUM + MODEL TESTING

7-22481  
KRESS TS + NEILL FH

A SIMPLIFIED APPROACH TO CALCULATING CONVECTIVE PLATEOUT OF FISSION PRODUCTS  
OAK RIDGE NATIONAL LAB., TENN.  
2 PAGES, 4 REFERENCES, ANS TRANSACTIONS 10(2), PAGE 718 AND 719, (NOV. 1965), PRESENTED AT THE 1967 WINTER MEETING OF THE AMERICAN NUCLEAR SOCIETY, CHICAGO, ILLINOIS, NOV. 5-9, 1967

MANY ANALYSES OF THE TRANSPORT AND DEPOSITION OF FISSION PRODUCTS IN A REACTOR COOLANT CIRCUIT SHARE COMMON DEFICIENCIES, THE MATHEMATICAL MODELS ARE CUMBERSOME AND IMPRACTICAL TO APPLY, THE PHYSICAL MODELS ARE LIMITED IN THE CHOICE OF SURFACE REACTIONS AND DO NOT READILY DESCRIBE THE SIMULTANEOUS ADSORPTION OF SEVERAL FISSION PRODUCTS ONTO A COMMON SURFACE. A QUASI-EQUILIBRIUM IS ASSUMED TO EXIST AT ALL TIMES BETWEEN THE ADSORBATE ON THE SURFACE AND IN THE GAS STREAM IN DIRECT CONTACT WITH THE SURFACE. THIS IS EQUIVALENT TO ASSUMING THAT THE TRANSFER ACROSS THE BOUNDARY LAYER IS THE CONTROLLING RATE. AXIAL VARIATIONS ARE NOT INCLUDED IN THE DERIVATION OF THE EQUATIONS. THESE CAN BE OBTAINED, HOWEVER, BY PROGRESSIVE APPLICATION OF THE EQUATIONS IN DOWNSTREAM FINITE-DIFFERENCE REGIONS USING MASS BALANCES TO ESTABLISH THE RESPECTIVE GAS-STREAM CONCENTRATIONS. AGREEMENT WAS GOOD UNDER THE CONDITIONS OF THE COMPARISON WHICH SIMULATED CONDITIONS IN A FISSION-PRODUCT DEPOSITION EXPERIMENTAL SYSTEM AT ORNL.

\*ANALYTICAL MODEL + \*DEPOSITION + \*MODEL TESTING + FISSION PRODUCT RETENTION + FISSION PRODUCT TRANSPORT

7-22482  
MISHIMA J + HASTY RA + SCHWENDIMAN LC + BURGER LL + POSTMA AK

REMOVAL OF AIRBORNE METHYL IODIDE FROM SIMULATED REACTOR-CONTAINMENT ATMOSPHERES BY HYDRAZINE SPRAYS  
BATTELLE NORTHWEST LAB.  
1 PAGE, ANS TRANSACTIONS 10(2), PAGE 719, (NOV. 1967), PRESENTED AT THE 1967 WINTER MEETING OF THE AMERICAN NUCLEAR SOCIETY, CHICAGO, ILLINOIS, NOV. 5-9, 1967

THE USE OF HYDRAZINE AS A POSSIBLE ADDITIVE TO PRESSURE-SUPPRESSION SPRAYS IS BEING INVESTIGATED SINCE IT HOLDS SOME PROMISE AS A SCAVENGER FOR BOTH AIRBORNE MOLECULAR IODINE AND METHYL IODIDE. THE GAS-PHASE REACTION BETWEEN HYDRAZINE AND METHYL IODIDE IS SLOW. IN A TYPICAL EXPERIMENT, ONLY 10% OF THE METHYL IODIDE REACTED IN A LARGE EXCESS OF HYDRAZINE VAPOR. REMOVAL OF TRACE METHYL IODIDE FROM THE GAS PHASE TO A STATIC SOLUTION OF ALKALINE HYDRAZINE WAS MEASURED. UNDER A DECAYING TEMPERATURE REGIME WITH AN INITIAL TEMPERATURE OF 75 C, THE REMOVAL HALF-TIMES FOR AN ALKALINE 5 WT% HYDRAZINE SOLUTION RANGED FROM 25 TO 50 MIN. INCREASING THE TEMPERATURE INCREASED THE RATE OF REMOVAL.

\*ORGANIC IODIDE + \*SPRAY, GENERAL + CHEMICAL REACTION + IODINE

7-22483 ALSO IN CATEGORY 4

MURBACH EW + BODINE JF  
DISPENSING AND SAMPLING SODIUM FOR THE LMFBR CLADDING PROJECT  
ATOMICS INTERNATIONAL

1 PAGES, ANS TRANSACTIONS 10(2), PAGE 493, (NOV. 1967), PRESENTED AT THE 1967 WINTER MEETING OF THE AMERICAN NUCLEAR SOCIETY, CHICAGO, ILLINOIS, NOV. 5-9, 1967

ONE OF THE TASKS ON THE LMFBR CLADDING PROGRAM AT ATOMICS INTERNATIONAL INVOLVES THE MAINTENANCE OF A SUPPLY OF SYSTEMS-QUALITY SODIUM, THE DISPENSING OF THIS SODIUM, AND SAMPLING OF SODIUM TEST UNITS. A SUPPLY LOOP OF OVER 150-GAL CAPACITY WAS CONSTRUCTED FOR MAINTAINING SUFFICIENT SODIUM OF CONSTANT COMPOSITION FOR THE DURATION OF THE PROGRAM. THE

CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-22483 \*CONTINUED\*

LOOP, WHICH OPERATES AT 500 F, IS COLD-TRAPPED AT 260 F FOR CONTROL OF OXYGEN, AND HOT-TRAPPED AT 1200 F USING A STAINLESS-STEEL FOIL TRAP FOR CONTROL OF CARBON. THE IMPURITY LEVELS IN THE SODIUM ARE LESS THAN 15 PPM CARBON, LESS THAN 10 PPM OXYGEN, AND LESS THAN 5 PPM EACH OF IRON, CHROMIUM, AND NICKEL. EXPERIENCE TO DATE HAS SHOWN THAT HIGH-PURITY SODIUM CAN BE DISPENSED AND SAMPLED WITHOUT EXCESSIVE CONTAMINATION.

\*CARBON + \*SODIUM + \*CHROMIUM + \*CONTAMINATION + \*DECONTAMINATION + \*IRON + \*NICKEL

7-22484 ALSO IN CATEGORY 4

PLUMLEE DE + NOVAK PE

DIRECT IN-PILE MEASUREMENT OF THE CENTRAL TEMPERATURE OF A SODIUM-BONDED MIXED-OXIDE FUEL PIN GENERAL ELECTRIC

1 PAGE, 1 FIGURE, 5 REFERENCES, ANS TRANSACTIONS 10(2), PAGE 639, (NOV. 1967), PRESENTED AT THE 1967 WINTER MEETING OF THE AMERICAN NUCLEAR SOCIETY, CHICAGO, ILLINOIS, NOV. 5-9, 1967

IN PREVIOUS EXPERIMENTS, SODIUM-BONDED MIXED-OXIDE FUEL SPECIMENS INDICATED GOOD SHORT-TERM PERFORMANCE UP TO LINEAR POWER GENERATION RATES OF 30 KW/FT. SATISFACTORY MIXED-OXIDE/SODIUM/CLADDING COMPATIBILITY WAS OBSERVED IN FUEL IRRADIATED TO 14,400 MWD/T AT POWERS UP TO 21 KW/FT. BECAUSE OF THESE PROMISING RESULTS, AND THE LACK OF DATA CONCERNING THE EFFECT OF SODIUM ON THE THERMAL CONDUCTIVITY OF MIXED-OXIDE FUEL, THIS EXPERIMENT WAS DESIGNED AS PART OF THE FAST CERAMIC REACTOR DEVELOPMENT PROGRAM TO PERMIT THE DIRECT MEASUREMENT OF THE CENTRAL FUEL TEMPERATURE OF A SODIUM-BONDED FUEL SPECIMEN WITH A HIGH-TEMPERATURE THERMOCOUPLE. THE RESULTS OF THIS EXPERIMENT SUPPORT THEORETICAL CALCULATIONS OF IMPROVED THERMAL CONDUCTIVITY OF SODIUM-BONDED FUEL MADE IN THE LITERATURE AND POINT TO THE POSSIBILITY OF ATTAINING SUBSTANTIALLY HIGHER POWER DENSITIES IN SODIUM-BONDED MIXED-OXIDE FUEL COMPARED TO GAS-BONDED FUEL.

\*DESIGN CRITERIA + \*FUEL BURNUP + \*FUEL ELEMENT + \*THERMAL EXPERIMENT + \*SODIUM

7-22485

SOLDANO BA + WARD WT

UPTAKE OF METHYL IODIDE FROM WIND-TUNNEL GASES BY A SUSPENDED DROP OF WATER

OAK RIDGE NATIONAL LAB., TENN.

1 PAGE, 1 REFERENCE, ANS TRANSACTIONS 10(2), PAGE 720, (NOV. 1967), PRESENTED AT THE 1967 WINTER MEETING OF THE AMERICAN NUCLEAR SOCIETY, CHICAGO, ILLINOIS, NOV. 5-9, 1967

A STUDY OF THE TRANSPORT OF METHYL IODIDE GAS INTO A WATER DROP SUSPENDED IN A WIND TUNNEL WAS DIRECTED TOWARD AN EXAMINATION OF THE EFFECT OF SOLUTION ADDITIVES ON THIS PROCESS. CONCENTRATION OF CH<sub>3</sub>I IN THE TUNNEL GASES WAS ABOUT 0.00001 MMOLE/CC. THE WATER DROP UNDER STUDY REMAINS SUSPENDED IN THE WIND TUNNEL THROUGH THE UPWARD THRUST OF THE FLOWING GAS MIXTURE. IT APPEARS THAT THE PROCESS OF MASS TRANSFER OF CH<sub>3</sub>I INTO A WATER DROP CONTAINS BOTH ELEMENTS OF A STRICTLY GAS-WATER SURFACE INTERACTION AS WELL AS THOSE DIRECTLY RELATED TO THE SOLUTION CHEMISTRY OF THE DROPS INTERIOR.

\*ORGANIC IODIDE + \*SPRAY, GENERAL + \*DIFFUSION + \*IODINE + \*SORPTION

7-22486 ALSO IN CATEGORY 4

HORN FL

SOME AEROSOL PROPERTIES OF VAPORIZED FAST-REACTOR FUELS

BROOKHAVEN NATIONAL LAB.

3 PAGES, 1 TABLE, ABSTRACT IN ANS TRANSACTIONS 10(2), PAGE 699, (NOV. 1967), PRESENTED AT THE 1967 WINTER MEETING OF THE AMERICAN NUCLEAR SOCIETY, CHICAGO, ILLINOIS, NOV. 5-9, 1967

THE NATURE AND COAGULATION BEHAVIOR OF AEROSOLS FORMED DURING THE HIGH-TEMPERATURE VAPORIZATION OF FAST-REACTOR FUEL MATERIALS WERE INVESTIGATED. THE FUEL MATERIALS, PUO<sub>2</sub> AND UO<sub>2</sub>, WERE RAISED RAPIDLY ABOVE THEIR MELTING POINTS TO SIMULATE AN ACCIDENTAL RELEASE OF FUEL DURING A REACTOR POWER EXCURSION. INDIVIDUAL STUDIES WERE MADE WITH PUO<sub>2</sub> VAPORIZED AT 2800 C AND UO<sub>2</sub> VAPORIZED AT 3000 C INTO BOTH ARGON AND NITROGEN GASES. IN ADDITION, COMBINATIONS OF VAPORIZED PUO<sub>2</sub>-UO<sub>2</sub>, AND NA VAPORIZED INTO MOIST AIR AND MIXED WITH VAPORIZING UO<sub>2</sub> WERE ALSO STUDIED. THE MAXIMUM PARTICLE SIZE, WHICH WAS REACHED AT ABOUT 24 H, WAS DEPENDENT UPON THE INITIAL MASS CONCENTRATION. THE STANDARD DEVIATION GENERALLY REMAINED CONSTANT FOR A PARTICULAR RUN, BUT INCREASED AS THE MASS CONCENTRATION OF THE RUNS WAS INCREASED. THERE WAS NO APPARENT CORRELATION OF COAGULATION CONSTANT WITH TIME, SURFACE-TO-VOLUME RATIO, OR MASS CONCENTRATION IN THE RANGE OF VALUES INVESTIGATED.

\*AEROSOL PRODUCTION + \*FUEL MELTDOWN + \*PARTICLE SIZE + \*PLUTONIUM + \*SODIUM + \*AEROSOL + \*AEROSOL PROPERTIES + \*ARGON + \*EVAPORATION + \*PLUTONIUM DIOXIDE + \*URANIUM DIOXIDE

7-22487

TANG IN + CASTLEMAN AW

ON THE TRANSPORT OF FISSION-PRODUCT IODINE FROM MOLTEN URANIUM

BROOKHAVEN NATIONAL LAB.

3 PAGES, 1 FIGURE, 4 REFERENCES, ABSTRACT IN ANS TRANSACTIONS 10(2), PAGE 720 AND 721, (NOV. 1967), PRESENTED AT THE 1967 WINTER MEETING OF THE AMERICAN NUCLEAR SOCIETY, CHICAGO, ILLINOIS, NOV. 5-9, 1967

AN ANALYTICAL STUDY OF THE TRANSPORT OF VOLATILE FISSION PRODUCTS HAS BEEN MADE FOR THE GENERAL CASE OF DIFFUSION IN BOTH THE CONDENSED AND GAS PHASES. THE RATE OF TRANSPORT ACROSS

CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-22487 \*CONTINUED\*

THE VAPOR-LIQUID INTERFACE WAS EXPRESSED BY THE LANGMUIR EQUATION FOR VAPORIZATION, GENERALIZED FOR NONIDEAL MULTI-COMPONENT SOLUTIONS. THE SAME GENERAL MATHEMATICAL EXPRESSION IS APPLICABLE FOR THE CASE OF A DESORPTION MECHANISM OR A RATE CONTROLLED BY A FIRST-ORDER REACTION AT THE INTERFACE. EXPERIMENTAL RESULTS ON THE RELEASE OF FISSION-PRODUCT IODINE FROM MOLTEN URANIUM ARE PRESENTED IN THIS PAPER WITH EMPHASIS ON THE ELUCIDATION OF THE RELEASE MECHANISM. THE EXPERIMENTAL RESULTS ARE ADEQUATELY CORRELATED WITH AN ANALYTICAL MODEL CONSIDERING ONLY LIQUID-PHASE DIFFUSION AND AN INTERFACIAL RESISTANCE TERM.

\*ANALYTICAL MODEL + \*FISSION PRODUCT, IODINE + \*FUEL MELTDOWN + \*MODEL TESTING + URANIUM

7-22489 ALSO IN CATEGORY 4

KUNKEL WD + BERGER S  
FISSION-PRODUCT DEPOSITION IN A FAST-BREEDER REACTOR SYSTEM CONTAINING FAILED FUEL ELEMENTS  
ATOMIC INTERNATIONAL  
15 PAGES, TABLES, FIGURES, REFERENCES, NOVEMBER 3, 1967, ABSTRACT IN ANS TRANSACTIONS 10(2), PAGE 496,  
PRESENTED AT AMERICAN NUCLEAR SOCIETY WINTER MEETING, NOVEMBER 5-9, 1967, CHICAGO, ILLINOIS

A DESIGN OBJECTIVE FOR THE LIQUID-METAL FAST-BREEDER REACTOR (LMFBR) IS TO ALLOW FOR POSSIBLE OPERATION WITH SOME FAILED FUEL ELEMENTS, AND IN ADDITION, TO PERMIT ACCESS TO THE HEAT-EXCHANGER CELLS AFTER REACTOR SHUTDOWN. THE CONCEPT OF A SYSTEM-DEPLETION FACTOR PROVIDES AN INTERIM METHOD OF ESTIMATING THE FISSION-PRODUCT DEPOSITION RESULTING FROM FAILED-FUEL-ELEMENT OPERATION. THE SYSTEM-DEPLETION CONCEPT IS PROPOSED AS AN INTERIM METHOD OF MORE CLOSELY APPROXIMATING THE ACTUAL EXTENT OF DEPOSITION AND THE CONSEQUENT MAINTENANCE PROBLEM.

\*CESIUM + \*DEPOSITION + \*FISSION PRODUCT RETENTION + \*FISSION PRODUCT TRANSPORT + \*REACTOR, LMCB + \*SODIUM + CERIUM + IODINE + REACTOR, FAST + RUTHENIUM + ZIRCONIUM

7-22497 ALSO IN CATEGORY 17

AIR AND GAS CLEANING FOR NUCLEAR ENERGY  
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.  
THIS IS A 30 MINUTE FILM REFERENCED ON PAGE 60 OF THE USAEC 16 MM FILM CATALOG FOR 1966-67, PRODUCED BY OAK RIDGE NATIONAL LABORATORY, FOR SALE BY CALVIN PRODUCTIONS, AT \$86.23 PER PRINT, INCLUDING SHIPPING CASE

DISCUSSES USE, DEVELOPMENT, AND MANUFACTURE OF HIGH-EFFICIENCY FILTERS FOR NUCLEAR APPLICATIONS, INSPECTED BY AEC, AND CURRENT R AND D PROGRAMS (AT HARVARD, ORNL, AND EDGEWOOD ARSENAL). COVERS IODINE-COLLECTION SYSTEMS, AEROSOL REACTIONS ON FILTERS, RARE-GAS ABSORPTION STUDIES, ETC.

AVAILABILITY - AVAILABLE FOR LOAN (FREE) FROM USAEC HEADQUARTERS AND FIELD LIBRARIES. CLEARED FOR TELEVISION

\*FILTER, HIGH EFFICIENCY + FILTER INSPECTION + R AND D PROGRAM

7-22514 ALSO IN CATEGORY 4

ETTINGER HJ + MOSS WD + BUSBY H  
CHARACTERISTICS OF THE AEROSOL PRODUCED FROM BURNING SODIUM AND PLUTONIUM  
LOS ALAMOS SCIENTIFIC LABORATORY, LOS ALAMOS, NEW MEXICO  
14 PAGES; 6 TABLES, 15 FIGURES, NUCLEAR SCIENCE AND ENGINEERING 30, PAGES 1-13, (OCTOBER 1967)

SAFETY ANALYSIS OF SODIUM-COOLED PLUTONIUM-FUELED FAST REACTOR PLANTS MUST BE CONCERNED WITH THE POSSIBILITY OF FIRES INVOLVING THESE MATERIALS. DESIGN OF AN AIR CLEANING SYSTEM FOR SUCH A FACILITY REQUIRES BASIC DATA DEFINING THE AEROSOL CHARACTERISTICS OF SODIUM AND PLUTONIUM RELEASED DURING A FIRE. WHEN PLUTONIUM ALLOY WAS BURNED UNDER REDUCED OXYGEN CONDITIONS, THE FRACTION AIRBORNE RANGED FROM  $2 \times 10^{-7}$ TH TO  $4 \times 10^{-6}$ TH. FIRES INVOLVING PLUTONIUM ALLOY AND SODIUM TOGETHER PRODUCED AIRBORNE PLUTONIUM-SODIUM RATIOS RANGING FROM 0.34 TO 0.008%.

\*AEROSOL PRODUCTION + \*FIRE + \*PARTICLE SIZE + \*PLUTONIUM + \*SODIUM + AEROSOL PROPERTIES + METAL, LIQUID + PARTICLE SIZE DISTRIBUTION + REACTOR, FAST + REACTOR, LMCB

7-22515 ALSO IN CATEGORY 4

NICHOLS RW + GITTUS JH  
SOME ASPECTS OF MATERIALS TECHNOLOGY OF IMPORTANCE TO THE DEVELOPMENT OF NUCLEAR REACTORS.  
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, RISLEY, ENGLAND  
TRG-REPORT-1516 +. 30 PAGES, 19 FIGURES, 19 REFERENCES, MAY 26, 1967

DESCRIBES THE EFFECTS OF IRRADIATION AND CORROSION ON STRUCTURAL MATERIALS IN THE ADVANCED GAS-COOLED REACTOR AND THE HIGH TEMPERATURE GAS-COOLED REACTOR, WITH PARTICULAR MENTION OF THE INFLUENCE OF RESISTANCE TO CORROSION ON THE SELECTION OF MATERIALS FOR HEAT EXCHANGER TUBING AND FOR THERMAL INSULATION FOILS. A MAJOR PROGRAM OF EXPERIMENTS INVOLVING A STATISTICAL EXAMINATION OF THIS PROBLEM HAS HIGHLIGHTED THE ADVANTAGES ACCRUING FROM USE OF A FINE METALLURGICAL GRAIN SIZE. WITH RESPECT TO THE STEAM GENERATING HEAVY WATER REACTOR, MENTION IS MADE OF THE ASSESSMENT OF ZIRCONIUM ALLOY PRESSURE TUBES FOR HYDROGEN AND IRRADIATION BRITTLENESS AND A TECHNIQUE BASED ON MEASURING THE CRITICAL CRACK OPENING DISPLACEMENT IS DESCRIBED WHICH MAY BE OF GENERAL VALUE FOR ASSESSING FRACTURE TOUGHNESS IN

CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-22515 \*CONTINUED\*

RELATION TO ENGINEERING DESIGNS. MENTION IS MADE OF SEVERAL ASPECTS OF THE CORROSION AND MASS TRANSFER OF METALS IN LIQUID SODIUM.

AVAILABILITY - UNITED KINGDOM ATOMIC ENERGY AUTHORITY

\*ALLOY + \*CORROSION + \*RADIATION EFFECT + \*STEEL + \*ZIRCONIUM + CARBON + MASS TRANSFER + METAL, LIQUID + REACTOR, GCR + REACTOR, POWER

7-22516 ALSO IN CATEGORY 4  
THOMPSON R + EVETTS MA + MOTT BW  
A SODIUM PURIFICATION AND GENERAL HANDLING FACILITY  
ATOMIC ENERGY RESEARCH ESTABLISHMENT, METALLURGY DIV., HARWELL  
ACRE-R-5502 +. 12 PAGES, 3 FIGURES, 2 TABLES, JULY 1967

GIVES AN ACCOUNT OF THE DESIGN AND PERFORMANCE OF A MOLECULAR SODIUM STILL, TOGETHER WITH A VACUUM/GLOVE BOX FOR GENERAL HANDLING OF THE PURIFIED METAL. ANALYSIS OF SODIUM BOTH BEFORE AND AFTER DISTILLATION HAS BEEN MADE AND THE RESULTS REPORTED. IT IS CONCLUDED THAT IN GENERAL THE SYSTEM WORKS WELL, BUT, FOR THE PRODUCTION OF MATERIAL OF GREATER PURITY, PARTICULARLY WITH RESPECT TO CARBON, SOME MODIFICATIONS TO THE VACUUM SYSTEMS ARE REQUIRED.

AVAILABILITY - UNITED KINGDOM ATOMIC ENERGY AUTHORITY, METALLURGY DIVISION, ATOMIC ENERGY RESEARCH ESTABLISHMENT, HARWELL, BERKSHIRE

\*COOLANT CHEMISTRY + \*DECONTAMINATION + \*METAL, LIQUID + \*RECOVERY PROCESS + \*SODIUM + CARBON + REACTOR COOLANT

7-22529 ALSO IN CATEGORY 12  
TECHNICAL SPECIFICATIONS MANUAL  
GELMAN INSTRUMENT COMPANY, ANN ARBOR, MICHIGAN  
62 PAGES, FIGURES, TABLES, NOV. 1967

CONTAINS DESCRIPTIONS AND SPECIFICATIONS OF FILTERS, FILTER HOLDERS, AIR SAMPLERS, AND RECORDERS.

AVAILABILITY - GELMAN INSTRUMENT CO., 600 SOUTH WACNER ROAD, ANN ARBOR, MICHIGAN 48106

\*FILTER CHARACTERISTICS + \*FILTER, MEMBRANE + FILTER + FILTER, HIGH EFFICIENCY + SAMPLING + TESTING

7-22531  
IMPROVEMENTS IN OR RELATING TO APPARATUS FOR MEASURING DUST CONCENTRATION  
BRITISH PATENT 1,060,850 +. 3 PAGES, 1 FIGURE, MARCH 8, 1967

AN APPARATUS IS DESCRIBED WHICH MEASURES THE CONCENTRATION OF DUST IN A GAS. THE GAS OF WHICH THE DUST CONTENT IS TO BE MEASURED IS DRAWN THROUGH A MOVABLE OR FIXED FILTER LAYER OF PAPER, FELT, TEXTILE, OR OTHER MATERIAL. A SOURCE OF ALPHA, BETA, OR GAMMA RADIATION IS LOCATED ON ONE SIDE OF THE FILTER, WHICH IS LOADED WITH DUST. THE VALUE OF THE ATTENUATION OF THE INTENSITY OF RADIATION BY THE DUST ON THE FILTER IS MEASURED BY A GEIGER-MUELLER COUNTER.

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

\*PARTICLE SIZE DISTRIBUTION + \*SAMPLING + AEROSOL + ANALYTICAL TECHNIQUE, AIR + FILTER + INSTRUMENTATION. GENERAL

7-22532  
ASSAF G + GAT JR  
DIRECT DETERMINATION OF SHORT-LIVED RADON DAUGHTER PRODUCTS ON AIR FILTERS BY LIQUID SCINTILLATION COUNTING USING A DELAYED-COINCIDENCE TECHNIQUE  
WEIZMANN INSTITUTE OF SCIENCE, REHOVOT, ISRAEL  
9 PAGES, 5 FIGURES, 2 TABLES, 13 TABLES, NUCLEAR INSTRUMENTS AND METHODS 49, PAGES 29-37 (1967)

THE RADIOACTIVITY ON AIR FILTERS IS MEASURED BY INTERNAL SCINTILLATION COUNTING FOLLOWING IMMERSION OF THE FILTER IN A LIQUID SCINTILLATION SOLUTION. THE RESULTING TRANSPARENCY OF THE FILTER ENSURES UNIFORM COUNTING EFFICIENCY OF THE NUCLIDES, IRRESPECTIVE OF THEIR DEPTH OF PENETRATION INTO THE FILTER MEDIUM. THE HIGH COUNTING EFFICIENCY FOR BOTH ALPHA AND BETA ACTIVITY WHICH IS ACHIEVED MAKES IT POSSIBLE TO MEASURE THE  $1.6 \times 10^{-4}$  SEC BI-214/PO-214 PAIR BY DELAYED COINCIDENCE COUNTING OF THEIR SCINTILLATION PULSES. THE RELATIVE AMOUNTS OF 214PB AND 214BI ARE THEN COMPUTED FROM THE DECAY CURVE OF THIS ACTIVITY. OPTIMUM COUNTING CONDITIONS HAVE BEEN DETERMINED, THE SENSITIVITY OBTAINED ENABLES THE DETECTION OF A 6% VARIATION IN THE RATIO OF AIRBORNE 214PB AND 214BI CONCENTRATIONS AT AMBIENT CONCENTRATION LEVELS OF 0.1 DPM 214BI/LITER AIR.

\*AEROSOL + \*TESTING + \*TRACER, RADIOACTIVE + FILTER

7 22533

CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-22533 \*CONTINUED\*  
TAKAHASHI K  
EXPERIMENTS ON ADSORPTION OF RADIOACTIVE IODINE VAPOR ON SMALL METALLIC FUME PARTICLES  
KYOTO UNIVERSITY  
3 PAGES, 1 TABLE, 2 FIGURE, 4 REFERENCES, JOURNAL OF NUCLEAR SCIENCE AND TECHNOLOGY, 3(9), PAGES 401-403  
(SEPTEMBER 1966)

RADIOACTIVE IODINE RELEASED FROM NUCLEAR SPENT FUEL INTO ATMOSPHERE DURING THE COURSE OF FUEL REPROCESSING OR IN THE CASE OF REACTOR ACCIDENT CAN BE CLASSIFIED INTO THE FORMS OF (1) ELEMENTAL MOLECULE, (2) ADSORBED ON AEROSOL PARTICLES, AND (3) COMPOUND GASES. SINCE THEY SHOW CONSIDERABLY DIFFERENT PHYSICO-CHEMICAL AND BIOLOGICAL BEHAVIOURS, IT IS IMPORTANT TO DISTINGUISH THE COMPONENTS OF A MIXTURE OF THESE FORMS. IN THIS WORK, MOLECULAR IODINE VAPOR WAS GENERATED AND MIXED WITH METALLIC FUMES AND THE ADSORPTION OF IODINE VAPOR ON FUME PARTICLES WERE EVALUATED BY MEANS OF A METHOD USING A DIFFUSION TUBE. THE MEAN CONCENTRATION OF GAS OR AEROSOL PARTICLES PASSING THROUGH A CIRCULAR TUBE AS LAMINAR FLOW DECREASES BY DIFFUSIVE DEPOSITION ON THE TUBE WALL.

\*AEROSOL PROPERTIES + \*FUEL MELTDOWN + \*IODINE + AEROSOL + DEPOSITION + METAL

7-22534  
COLE HA  
AN ANALOGUE COMPUTER FOR PARTICLE SIZE ANALYSIS  
ATOMIC ENERGY RESEARCH ESTABLISHMENT, HARWELL, ENGLAND  
AERE-R-5096 + N66-35297 +. 32 PAGES, REFERENCES, FEBRUARY 1966

DESCRIBES AN ANALOGUE COMPUTER THAT OPERATES IN CONJUNCTION WITH THE KARL ZEISS PARTICLE-SIZE ANALYSER. THE ANALYSER IS USED TO MEASURE THE DIAMETER DISTRIBUTION OF BUBBLES IN A PHOTOGRAPH OF A COLUMN OF FOAM, AND THE COMPUTER MAKES USE OF THIS INFORMATION TO PROVIDE SIMULTANEOUS AND SEPARATE INDICATIONS PROPORTIONAL TO TOTAL SURFACE AREA AND VOLUME AS THE ANALYSIS PROCEEDS. THESE INDICATIONS ENABLE AN IMMEDIATE DETERMINATION OF THE MEAN SURFACE AREA OF FOAM PER UNIT VOLUME OF CONTAINED AIR FOR THE SAMPLE. THE COMPUTER MAY ALSO BE USED WITH THE ANALYSER FOR THE TOTAL AREA ANALYSIS OF PARTICLES OF APPROXIMATELY CIRCULAR SHAPE, OR FOR TOTAL AREA AND VOLUME ANALYSIS OF PARTICLES OF APPROXIMATELY SPHERICAL SHAPE.

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

\*ANALYTICAL TECHNIQUE, CALIBRATION + \*COMPUTER PROGRAM + \*FOAM + \*PARTICLE SIZE DISTRIBUTION + AEROSOL PROPERTIES

7-22535  
DADILLON J  
EXPERIMENTAL STUDY OF THE BEHAVIOR OF FISSION PRODUCTS IN CASE OF ACCIDENT IN A SWIMMING POOL REACTOR  
COMMISSARIAT A L ENERGIE ATOMIQUE, FRANCE  
6 PAGES, FIGURES, BULL. INFORM. SCI. TECH. (PARIS), 112, PAGES 13-18 (FEBRUARY 1967) IN FRENCH

IN ESTIMATING NUCLEAR RISKS CONNECTED WITH THE RUNNING OF A REACTOR, AN ESSENTIAL FACTOR, SOMETIMES NEGLECTED BECAUSE INSUFFICIENTLY KNOWN, IS THE KNOWLEDGE OF THE TYPE, AMOUNT, AND BEHAVIOUR OF THE CONTAMINATION ACTUALLY RELEASED INSIDE THE CONTAINER IN THE CASE OF AN ACCIDENT. IN THE SPECIAL CASE OF SWIMMING-POOL REACTORS, THE COOLING FLUID PROVES TO BE A VERY EFFICIENT BARRIER AGAINST CONTAMINATION. THREE EXPERIMENTS WERE CARRIED OUT IN THE REACTOR CABRI, DURING WHICH SEVERAL FUEL ELEMENT PLATES WERE MELTED INSIDE THE CORE ITSELF.

\*FISSION PRODUCT RELEASE, GENERAL + \*FUEL MELTDOWN + FUEL INTEGRITY

7-22537  
NELSON RW  
FLOW IN HETEROGENEOUS POROUS MEDIA  
BATTELLE-MEMORIAL INSTITUTE  
BNWL-SA-207 +. 9 PAGES, 1 FIGURE, REFERENCES, WATER RESOURCES RES. 2(3), PAGES 487-95 (OCTOBER 4, 1967)

THEORETICAL WORK LEADING TO THE DESCRIPTION OF FLUID FLOW IN A HETEROGENEOUS POROUS MEDIUM HAS DEVELOPED SLOWLY AND SOMEWHAT SPORADICALLY, EVEN THOUGH THE AREAS OF ENGINEERING APPLICATIONS PREDOMINANTLY INVOLVE FLOW IN A NONHOMOGENEOUS MEDIUM. IN PROVIDING A THEORETICALLY CONSISTENT BASIS FOR ANALYSIS, THE SPECIAL CHARACTERISTICS OF MACROSCOPICALLY HETEROGENEOUS MATERIALS ARE DISCUSSED TO PROVIDE ACCURATE DEFINITIONS. THE END RESULT OF THE DISCUSSION AND DERIVATION IS A SET OF RATHER GENERAL EULERIAN EQUATIONS DESCRIBING TWO-PHASE FLOW IN A MACROSCOPICALLY HETEROGENEOUS MEDIUM. THESE EQUATIONS AND THEIR REDUCED FORMS INCLUDE DESCRIPTIONS OF SOME FORTY DIFFERENT FLOW SYSTEMS. SUCH A VARIETY OF FLOW CONDITIONS IS CATEGORIZED THROUGH THE USE OF A SPECIAL TABULAR SCHEME, WHICH MAKES IT POSSIBLE TO WRITE THE APPROPRIATE EQUATIONS EFFICIENTLY.

\*FLOW THEORY AND EXPERIMENTS + \*POROUS MEDIA + \*THEORETICAL INVESTIGATION + DIFFUSION + FLOW, TWO PHASE

7-22538  
ALLEN J  
THE RELEASE OF IODINE FROM URANIUM DIOXIDE FUEL  
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, RISLEY

CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-22538 \*CONTINUED\*  
7 PAGES, 1 FIGURE, 34 REFERENCES, J. BRIT. NUCL. ENERGY SOC 6(2), PAGES 127-133 (APRIL 1967)

IODINE-131 IS THE FISSION PRODUCT OF GREATEST IMPORTANCE IN CONSIDERING THE SAFETY AND SITING OF THE ADVANCED GAS-COOLED AND THE STEAM-GENERATING HEAVY-WATER REACTORS. MUCH INFORMATION IS AVAILABLE ON THE TRANSPORT OF IODINE IN OXIDE-FUELED REACTOR SYSTEMS, BOTH FOR NORMAL OPERATION AND FOR FAULT CONDITIONS, ALTHOUGH THEORIES OF THE MECHANISM OF SOME OF THE PROCESSES ARE STILL RATHER SPECULATIVE. IT IS EXPECTED THAT THE CONSIDERABLE ACTIVITY IN THE FIELD WILL SOON LEAD TO A MORE FUNDAMENTAL UNDERSTANDING OF THE PROCESSES INVOLVED.

\*FISSION PRODUCT RELEASE, GENERAL + \*FISSION PRODUCT, IODINE + \*REACTOR, GCR + \*URANIUM DIOXIDE + DIFFUSION + FISSION RECOIL + IODINE

7-22539  
BLAKE AR + BULLOCK BL + HILTON DA  
DEPOSITS FORMED IN-PILE ON MAGNOX FUEL ELEMENT SURFACES  
CENTRAL ELECTRICITY GENERATING BOARD, BERKELEY, ENGLAND  
5 PAGES, 4 FIGURES, 1 TABLE, 4 REFERENCES, J. BRIT. NUCL. ENERGY SOC., 6, PAGES 139-43 (APRIL 1967)

DEPOSITS REMOVED FROM SPLITTER CAGES ON FUEL ELEMENTS DISCHARGED FROM THE BERKELEY AND BRADWELL REACTORS WERE EXAMINED. THE MATERIAL ON THE LOWER BERKELEY FUEL ELEMENTS WAS IDENTIFIED AS PARTIALLY OXIDIZED AND POLYMERIZED BLOWER-MOTOR OIL, WHILE THE EVIDENCE INDICATES THAT THE FINELY DIVIDED CARBON PRESENT ON UPPER ELEMENTS IS DERIVED FROM THE RADIOLYSIS OF CO. IT IS CONCLUDED THAT THE DEPOSITION VALUES OBTAINED WERE EQUILIBRIUM VALUES. THE S-35 ACTIVITY PRESENT ON FUEL ELEMENT SURFACES WAS ALSO MEASURED, AND IT IS SUGGESTED THAT THIS WAS THE RESULT OF S TRANSFER FROM THE MODERATOR.

\*CARBON + \*DEPOSITION + \*FUEL ELEMENT + \*SULFUR + FUEL HANDLING

7-22541  
CABARET J + VALENTIN A  
CONNECTION AND CLOSURE DEVICE FOR A FILTER AND FILTERS INCORPORATING SAME  
COMMISSARIAT A L ENERGIE ATOMIQUE  
BRITISH PATENT 1,058,430 +. 3 PAGES, 1 FIGURE, FEBRUARY 8, 1967

A DEVICE FOR CONNECTING AND CLOSING A FILTER UNIT TO AVOID POLLUTION OR CONTAMINATION DURING REMOVAL OR REPLACEMENT OF THE FILTER IS DESCRIBED. THE CONNECTING DEVICE IS USED BETWEEN A FILTER HOUSING AND A FLUID DELIVERY SLEEVE WHICH ENSURES THAT THE FILTER HOUSING IS CLOSED BEFORE THE HERMETIC SEAL BETWEEN THE HOUSING AND THE FLUID DELIVERY SLEEVE, WHICH IS USED TO CARRY THE FLUIDS TO BE FILTERED, IS BROKEN.

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

\*FILTER DESIGN + \*FILTER MAINTENANCE + FILTER

7-22542  
REIDEL HJ  
RADIOCHEMICAL DETERMINATION OF THE FISSION-PRODUCT RELEASE FROM COATED FUEL PARTICLES IN REACTOR IRRADIATION  
ORNL-TR-1789 + EUR-3271.D +. 8 PAGES, NOVEMBER 1966

AN IMPORTANT QUESTION IN THE USE OF COATED PARTICLES AS A NUCLEAR-FUEL CARRIER IN OPERATION OF A HIGH-TEMPERATURE GAS-COOLED REACTOR IS HOW MUCH OF THE GASEOUS AND NON-GASEOUS FISSION PRODUCTS PENETRATE THE COATING. THE PYROLYTIC CARBON COATING CAN PREVENT CONTAMINATION OF THE REACTOR COOLING CIRCUIT WITH THE HIGH-ACTIVITY FISSION PRODUCTS. AS PART OF A RESEARCH PROGRAM ON THE BEHAVIOR OF VARIOUS TYPES OF PARTICLES AS A FUNCTION OF THE OPERATING TEMPERATURE, BURN-UP ETC., WE MADE A RADIOCHEMICAL STUDY OF THE FISSION PRODUCT DISTRIBUTION WHEN THE COATED PARTICLES WERE SURROUNDED BY GRAPHITE. FOR THE ANALYTICAL SEPARATION AND DETERMINATION OF THE FISSION ELEMENTS WE USED DISTILLATION, PRECIPITATION, LIQUID EXTRACTION, AND ION EXCHANGE. THE METHODS ARE DESCRIBED BRIEFLY. TWELVE FISSION NUCLIDES WERE DETERMINED. A SURPRISINGLY HIGH MOBILITY WAS FOUND FOR BARIUM, STRONTIUM, AND YTTRIUM. THE RELEASE OF OTHER FISSION PRODUCTS WITH HIGH FISSION YIELD WAS CONSIDERABLY LOWER. SOME OF THE CONDITIONS AFFECTING THE FISSION PRODUCT YIELD ARE DISCUSSED.

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

\*COATED PARTICLE + \*DIFFUSION + \*FISSION PRODUCT RETENTION + BARIUM + STRONTIUM + YTTRIUM

7-22543  
POSTMA AK  
THERMOPHORETIC VELOCITY OF LARGE AEROSOL PARTICLES  
PACIFIC NORTHWEST LAB., BATTELLE-NORTHWEST, RICHLAND, WASHINGTON  
BNWL-163 +. 17 PAGES, NOVEMBER 1965

THE VELOCITY OF THERMAL REPULSION OF LARGE AEROSOL PARTICLES HAS BEEN CALCULATED BY OTHERS BY EQUATING THE THERMAL FORCE ON A STATIONARY PARTICLE TO THE STOKES-CUNNINGHAM VISCOUS FORCE. THIS PROCEDURE IS THEORETICALLY UNSOUND BECAUSE THE BOUNDARY CONDITIONS EMPLOYED IN THE

CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-22543 \*CONTINUED\*

VISCOUS FORCE EQUATION ARE ERRONEOUS WHEN THE PARTICLE MOVES IN A THERMAL GRADIENT. IN THE CURRENT STUDY THESE DIFFICULTIES HAVE BEEN CIRCUMVENTED BY REDERIVING THE THERMAL FORCE EQUATION, ALLOWING FOR A RELATIVE VELOCITY BETWEEN THE PARTICLE AND THE GAS STREAM. THE VELOCITY OF MOTION IS THEN CALCULATED BY SETTING THE NET FORCE ON THE PARTICLE EQUAL TO ZERO. THE VELOCITY OBTAINED BY THIS MORE REALISTIC APPROACH AGREES WITH THAT CALCULATED BY THE FORMER METHOD, WHICH IS SURPRISING IN VIEW OF THE INCORRECT BOUNDARY CONDITIONS EMPLOYED IN THE FORMER METHOD. INVESTIGATION OF THE DRAG FORCE EQUATION SHOWS THAT THE THERMAL FORCE AND THE VISCOSUS FORCE ARE EXERTED INDEPENDENTLY OF EACH OTHER, WHICH EXPLAINS THIS UNEXPECTED AGREEMENT. THE RANGE OF APPLICABILITY OF THE ANALYSIS IS EXPLAINED BY COMPARISON WITH AVAILABLE EXPERIMENTAL DATA.

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

\*AEROSOL PROPERTIES + \*FLOW THEORY AND EXPERIMENTS + AEROSOL + DIFFUSION + FLOW, GENERAL + THEORETICAL INVESTIGATION

7-22544

BOTTERILL JS + AYNLEY E

THE COLLECTION OF AIRBORNE DUSTS

5 PAGES, 6 FIGURES, 5 TABLES, 51 REFERENCES, BRITISH CHEMICAL ENGINEERING, 12(10), PAGES 1593-1597 (OCTOBER 1967)

A BROAD EXPLORATORY STUDY OF THE BEHAVIOUR OF FIBRE FILTERS WAS UNDERTAKEN. THE FIRST PART OF THE PAPER DESCRIBES THE EXPERIMENTAL RIG AND THE DEVELOPMENT OF A REPRODUCIBLE FILTER ELEMENT BUILT UP FROM REGULAR GRIDS OF COPPER WIRE TO SIMULATE A FIBRE FILTER. AIR VELOCITIES OF 450 CM/SEC WERE GENERALLY USED IN THE TESTS, AND SOLIDS LOADINGS BETWEEN 0.002 AND 0.01 GM/LITRE OF AIR. A WIDE RANGE OF MATERIALS WERE USED, AND THE CHARACTERISATION OF THEM BY PARTICLE SIZE, VOLUME SHAPE FACTOR, AND NUMBER OF PARTICLES PER GRAM, SPHERICITY, PARTICLE ADHESION, PARTICLE COHESION, PARTICLE DENSITY, AND PARTICLE DIELECTRIC CONSTANT IS ALSO DESCRIBED.

\*AEROSOL PROPERTIES + \*PARTICLE SIZE DISTRIBUTION + \*SAMPLING + AEROSOL + FILTER

7-22545

LIESE KH + HILD W

SEPARATION OF IODINE FROM FISSION PRODUCT SOLUTIONS WITH SILVER CHLORIDE ON SILICA GEL  
TECHNISCHE HOCHSCHULE, DARMSTADT, GERMANY

4 PAGES, 1 FIGURE, 1 TABLES, RADIOCHIMICA ACTA 7, PAGES 74-77 (JUNE 1967) IN GERMAN

THE IODINE PRODUCED BY FISSIONING URANIUM WAS SEPARATED IN A CARRIER-FREE FORM FROM NEARLY ALL OTHER FISSION PRODUCTS BY THE USE OF COLUMNS FILLED WITH SILVER CHLORIDE ON SILICA GEL. THE YIELDS OF CARRIER-FREE IODINE VARIED ABOUT 90%. BY ADDING VERY SMALL AMOUNTS OF CARRIER, THE YIELD COULD BE INCREASED TO ABOUT 98 TO 99% WITH BETTER REPRODUCIBILITY.

ADSORPTION + FISSION PRODUCT, IODINE + IODINE + TESTING

7-22548

WHITBY KT + VOMELA RA

RESPONSE OF SINGLE PARTICLE OPTICAL COUNTERS TO NONIDEAL PARTICLES

MECHANICAL ENGINEERING DEPARTMENT, UNIVERSITY OF MINNESOTA, MINNEAPOLIS, MINN.

15 PAGES, 15 FIGURES, 7 TABLES, REFERENCES, ENVIRONMENTAL SCIENCE AND TECHNOLOGY, 1(10), PAGES 601-614 (OCTOBER 1967)

MEASURED THE RESPONSE OF THE ROYCO PC 200, SOUTHERN RESEARCH INSTITUTE (SRI), AND BAUSCH AND LOMB (B AND L) SINGLE-PARTICLE COUNTERS TO NONIDEAL BUT MONODISPERSED AEROSOLS. AEROSOLS USED WERE POLYSTYRENE LATEX, DIOCTYLPHTHALATE, INDIA INK, AND POLYSTYRENE. THE INDICATED SIZE OF THE ABSORBING INDIA INK WAS 1/2 TO 1/5 OF THE TRUE SIZE FOR ALL OF THE COUNTERS. THE ROYCO AND SRI COUNTERS, WHICH ACCEPT LIGHT THROUGH ONLY A SMALL SOLID ANGLE, INDICATED A CONSIDERABLE SPREAD IN SIZE DISTRIBUTION FOR THE INDIA INK AND POLYSTYRENE PARTICLES (WHICH HAD SOME SURFACE ROUGHNESS). THE RESOLUTION ON ROUGH-SURFACED AEROSOLS WAS BETTER FOR THE B AND L COUNTER, WHICH ACCEPTS LIGHT THROUGH A MUCH LARGER SOLID ANGLE. EXPERIMENTS WERE ALSO PERFORMED WHICH SHOWED THAT HIGH CONCENTRATIONS OF SUBCOUNTABLE-SIZED MONODISPERSED OOP AEROSOLS (E.G., 10,000 PER CC. OF 0.25 MICRON) GENERATED A RELATIVELY MONODISPERSED DISTRIBUTION OF IMPULSES PULSES WITHIN THE COUNTING RANGE.

\*AEROSOL PRODUCTION + \*AEROSOL PROPERTIES + \*ANALYTICAL TECHNIQUE, CALIBRATION + \*SAMPLING + AEROSOL + PARTICLE SIZE + PARTICLE SIZE DISTRIBUTION

7-22549

ALSO IN CATEGORY 4

KELLER DL

PROGRESS RELATING TO CIVILIAN APPLICATIONS DURING OCTOBER THROUGH DECEMBER 1966

BATTELLE MEMORIAL INST., COLUMBUS, OHIO

BMT-1791 +. 96 PAGES, FIGURES, TABLES, JANUARY 1, 1967

THIS PROGRESS REPORT PRESENTS INFORMATION ON THE FOLLOWING - URANIUM-PLUTONIUM MONONITRIDE FUEL MATERIALS, IRRADIATION EFFECTS IN REACTOR CLADDING MATERIALS, COATED-PARTICLE FUEL MATERIALS, CERAMIC-COATED PLUTONIUM-BASE PARTICLE FUELS, PYROLYTIC-CARBON-COATED URANIUM

CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-22549 \*CONTINUED\*  
NITRIDE, GRAPHITE COATINGS ON FUEL PARTICLES, UO<sub>2</sub>-PUO<sub>2</sub> FUEL DEVELOPMENT, AND EFFECTS OF HIGH BURNUP ON UO<sub>2</sub>-CEO<sub>2</sub> AND UO<sub>2</sub>-ZPO FUELS.

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

\*FUEL ELEMENT + \*PLUTONIUM + \*TESTING + \*URANIUM + CARBIDE + CARBON + CERAMICS + COATED PARTICLE +  
CORROSION + FUEL REPROCESSING + GRAPHITE + NITRIDE + OXIDE + STEEL, STAINLESS

7-22554  
HOWES JE + RITZMAN RL + MORRISON DL + TOWNLEY GW  
INVESTIGATION OF TECHNIQUES FOR SAMPLING AND ANALYSIS OF IODINE UNDER SIMULATED REACTOR ACCIDENT CONDITIONS  
BATTELLE MEMORIAL INSTITUTE  
BMI-1914 +. 19 PAGES, 2 FIGURES, 10 TABLES, 12 REFERENCES, SEPTEMBER 27, 1967

GLASS BEADS, SILICONE-COATED GLASS BEADS, AND POTASSIUM CARBONATE WERE EVALUATED AND FOUND UNSATISFACTORY FOR DISTINGUISHING BETWEEN VARIOUS FORMS OF IODINE. WHILE ANION EXCHANGE RESINS QUANTITATIVELY RETAINED BOTH ELEMENTAL IODINE AND HI, A CATION EXCHANGE RESIN RETAINED HI NEARLY QUANTITATIVELY YET RETAINED ONLY ABOUT 3% OF ELEMENTAL IODINE IN MOIST AIR AT 80 C.

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

\*ANALYTICAL TECHNIQUE, GAS + \*ION EXCHANGE + \*SAMPLING + FILTER + FISSION PRODUCT, IODINE + IODINE +  
SIMULATION + SORPTION + STEAM

7-22555 ALSO IN CATEGORY 4  
ADWICK AG + WARMER RJ  
THE INFLUENCE OF PARTICLE SIZE DISTRIBUTION ON THE SINTERING OF CERAMIC POWDERS  
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, RISLEY  
TRG-REPORT-1188(D) +. 19 PAGES, 7 FIGURES, 4 TABLES, 8 REFERENCES, 1966

ONE OF THE FACTORS THAT CAN AFFECT THE SINTERED DENSITY OF A CERAMIC IS THE PRESSING BEHAVIOR. THIS IN TURN IS INFLUENCED BY THE PARTICLE-SIZE DISTRIBUTION. FROM AN ANALYSIS OF DATA ON THE PACKING OF DENSE SPHERES AND PACKING EXPERIMENTS ON IRREGULAR SHAPED, COARSE CERAMIC PARTICLES A SERIES OF CURVES HAVE BEEN DERIVED. IT IS CLAIMED THAT THESE CURVES CAN BE USED TO RELATE THE INFLUENCE OF PARTICLE SIZE DISTRIBUTION OF THE PACKING EFFICIENCY AND ULTIMATELY ON THE SINTERING BEHAVIOR OF CERAMIC POWDERS. THE PARTICLE-SIZE DISTRIBUTIONS OF (U,PU)O<sub>2</sub> POWDERS WERE MEASURED USING THE OPTICAL MICROSCOPE. THESE DISTRIBUTIONS HAVE BEEN CORRELATED WITH SUBSEQUENT PRESSING AND SINTERING BY MEANS OF THIS ANALYSIS. GOOD AGREEMENT HAS BEEN FOUND.

AVAILABILITY - PUBLIC RELATIONS BRANCH, UKAEA, FISLEY, WARRINGTON, LANCASHIRE

\*CERAMICS + \*PARTICLE SIZE DISTRIBUTION + \*PLUTONIUM OXIDE + \*URANIUM DIOXIDE + FUEL, POWDER TYPE +  
PARTICLE SIZE + PLUTONIUM

7-22556  
ACKLEY RD + ADAMS RE  
REMOVAL OF RADIOACTIVE METHYL IODIDE FROM STEAM-AIR SYSTEMS (TEST SERIES II)  
OAK RIDGE NATIONAL LABORATORY  
ORNL-4180 +. 23 PAGES, 1 FIGURE, 9 TABLES, 5 REFERENCES, OCTOBER 1967

TWO TYPES OF COMMERCIAL IODIZED CHARCOAL WERE EFFECTIVE FOR CH<sub>3</sub>-131I TRAPPING AT CONDITIONS AS SEVERE AS 200 F, 60 PSIA, AND 90% RELATIVE HUMIDITY. IN THIS SECOND PHASE OF THE WORK, THREE ADDITIONAL TYPES OF COMMERCIAL IODIZED CHARCOAL, TWO VARIETIES OF LABORATORY-IMPREGNATED IODIZED CHARCOAL AND TWO CHARCOAL-BASED OXIDIZING CATALYSTS WERE TESTED WITH RESPECT TO CH<sub>3</sub>-I-131 REMOVAL FROM FLOWING STEAM-AIR. THE THREE TYPES OF COMMERCIAL IODIZED CHARCOAL ALSO WERE FOUND TO BE EFFECTIVE FOR CH<sub>3</sub>-I-131 TRAPPING IN STEAM-AIR SYSTEMS. USEFUL TRAPPING CAPABILITY WAS OBSERVED AT RELATIVE HUMIDITIES HIGHER THAN 90%, BUT AT RELATIVE HUMIDITIES INDICATED TO BE AT OR NEAR 100% APPRECIABLE LOSSES IN CH<sub>3</sub>-I-131 REMOVAL EFFICIENCY WERE FREQUENTLY OBSERVED. THE TWO LABORATORY-IMPREGNATED IODIZED CHARCOALS WERE INVESTIGATED TO DETERMINE IF CERTAIN VARIATIONS IN THEIR PREPARATION MIGHT IMPROVE THEIR QUALITIES AS TRAPPING AGENTS AT VERY HIGH RELATIVE HUMIDITY. ACCORDING TO THE RESULTS OBTAINED, NEITHER OF THESE TWO MATERIALS APPEARED TO REPRESENT A SOLUTION TO THE PROBLEM ASSOCIATED WITH OPERATIONS AT VERY HIGH RELATIVE HUMIDITY. THE TWO CHARCOAL-BASED OXIDIZING CATALYSTS WERE FOUND TO BE RELATIVELY INEFFICIENT AS COMPARED TO THE PERFORMANCE OF SUITABLY IMPREGNATED IODIZED CHARCOAL.

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

\*CHARCOAL + \*CHARCOAL ADSORBENT + \*ORGANIC IODIDE + \*TESTING + FILTER, BED + STEAM

7-22558  
MERRIMAN JR + PASHLEY JH + SMILEY SH  
ENGINEERING DEVELOPMENT OF AN ABSORPTION PROCESS FOR THE CONCENTRATION AND COLLECTION OF KRYPTON AND XENON



CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-22558 \*CONTINUED\*  
SUMMARY OF PROGRESS THROUGH JULY 1, 1967  
UNION CARBIDE CORPORATION, K-25 PLANT  
K-1725 +. 51 PAGES, 10 FIGURES, 6 TABLES, 11 REFERENCES, DECEMBER 19, 1967

GAS STREAMS CONTAINING RADIOACTIVE ISOTOPES OF THE NOBLE GASES (KRYPTON AND XENON) MUST BE SAFELY PROCESSED TO ALLOW INNOCUOUS VENTING BOTH IN REACTOR ACCIDENT SITUATIONS AND IN FUTURE LARGE-SCALE IRRADIATED-FUEL-REPROCESSING OPERATIONS. ONE OF THE MOST DIRECT METHODS FOR STRIPPING KRYPTON AND XENON FROM CONTAMINATED AIR STREAMS IS SELECTIVE ABSORPTION IN A FLUOROCARBON SOLVENT, SUCH AS REFRIGERANT-12, AND A DEVELOPMENT PROGRAM HAS BEEN RECENTLY INITIATED AT THE OAK RIDGE GASEOUS DIFFUSION PLANT TO PROVIDE ENGINEERING SCALE-UP DATA FOR DESIGN OF A PLANT USING THIS TECHNIQUE. THE OPTIMIZATION STUDIES ARE WELL UNDER WAY, WITH A MATHEMATICAL MODEL OF THE PROCESS BEING CONSTRUCTED.

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

\*DESIGN CRITERIA + \*NOBLE GAS + \*SOLVENT EXTRACTION PROCESS + \*SORPTION + \*WASTE TREATMENT, GAS + ADSORPTION + KRYPTON + PLANT PROTECTIVE SYSTEM + XENON

7-22561  
BARNES RH + MCFARLING JL + KIRCHER JF + TOWNLEY CW  
ANALYTICAL STUDIES OF METHYL IODIDE FORMATION UNDER NUCLEAR REACTOR ACCIDENT CONDITIONS  
BATTELLE MEMORIAL INSTITUTE  
BMI-1816 +. 58 PAGES, 18 FIGURES, 10 TABLES, 69 REFERENCES, SEPTEMBER 15, 1967

HOMOGENEOUS EQUILIBRIUM STUDIES BASED ON TYPICAL STEAM AND AIR SYSTEMS WHERE THE TOTAL IODINE CONCENTRATION WAS VARIED FROM  $4 \times 10^{(-12)}$  TO  $4 \times 10^{(-6)}$  G-ATOM PER LITER AND THE TOTAL OXYGEN WAS VARIED OVER TWO ORDERS OF MAGNITUDE INDICATE THAT THE HIGH CH<sub>3</sub>I CONCENTRATIONS SOMETIMES OBSERVED EXPERIMENTALLY ARE PROBABLY ASSOCIATED WITH NONEQUILIBRIUM EFFECTS. PRELIMINARY CHEMICAL-KINETIC CALCULATIONS INDICATE THAT CONCENTRATIONS HIGHER THAN EQUILIBRIUM WOULD BE EXPECTED FOR CH<sub>3</sub>I FORMATION ON THE BASIS OF THE REACTION BETWEEN CH<sub>4</sub> AND I<sub>2</sub> WHERE THE PRESENCE OF OXYGEN AND ITS COMPOUNDS IS NEGLECTED. THESE PRELIMINARY CALCULATIONS CAN REPRODUCE THE LEVELS OF CH<sub>3</sub>I OBSERVED EXPERIMENTALLY. CONSIDERATION IS ALSO GIVEN TO THE EFFECTS OF RADIATION ON CH<sub>3</sub>I FORMATION AND AN EXPERIMENTAL PROGRAM WAS INITIATED TO OBTAIN APPROPRIATE G-VALUES FOR CH<sub>3</sub>I FORMATION FROM THE REACTION BETWEEN CH<sub>4</sub> AND I<sub>2</sub>.

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

\*CHEMICAL KINETICS + \*ORGANIC IODIDE + \*RADIATION EFFECT + ANALYTICAL TECHNIQUE, GAS + FISSION PRODUCT, IODINE

7-22562  
GENCO JM + BERRY DA + BERRY WE + ROSENBERG HS + CREMEANS GE + MORRISON DL  
FISSION PRODUCT DEPOSITION AND ITS ENHANCEMENT UNDER REACTOR ACCIDENT CONDITIONS. QUARTERLY PROGRESS REPORT FOR JULY--SEPTEMBER 1967  
BATTELLE MEMORIAL INSTITUTE  
BMI-X-10213 +. 62 PAGES, 20 FIGURES, 28 TABLES, 13 REFERENCES, OCTOBER 1, 1967

PROGRAM OBJECTIVES - (1) THE PERFORMANCE OF EXPERIMENTAL AND ANALYTICAL WORK DIRECTED TOWARD OBTAINING DEFINITIVE INFORMATION ON THE CHEMICAL AND PHYSICAL PROCESSES WHICH AFFECT IODINE TRANSPORT AND DEPOSITION, AND (2) THE DEVELOPMENT OF PRACTICAL COATINGS WHICH WOULD RETAIN SIGNIFICANT FRACTIONS OF FISSION-PRODUCT IODINE RELEASED IN THE EVENT OF A SERIOUS ACCIDENT IN A WATER-COOLED REACTOR. THE FOLLOWING IS A LIST OF THE MOST PROMISING CANDIDATES, AS DETERMINED BY THE RESULTS OF THE SCREENING PROGRAM - 1,10-PHENANTHROLINE, TBAM, DMAM, GENTAC, EPON 1001, GENAMID 2000, VERSAMID 100, AND VERSAMID 125. SEVERAL AMINE-CONTAINING SYSTEMS HAVE BEEN FOUND THAT SHOW HIGH PROMISE AS REACTIVE IMPREGNANTS ONTO ASBESTOS MATS. THE RESULTING COMPOSITES HAVE HIGH ADSORPTION RATES FOR ELEMENTAL IODINE, AND ARE FUNCTIONAL IN STEAM AT 115 AND 170 C. THESE MATERIALS ARE (1) TBAM, (2) 1,10-PHENANTHROLINE, (3) DMAM AND (4) GENTAC. CONCLUSIONS FROM THE ELEMENTAL IODINE SCREENING STUDIES.

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

\*COATING, SURFACE + \*FISSION PRODUCT RETENTION + \*IODINE + \*ORGANIC IODIDE + FISSION PRODUCT TRANSPORT + SURFACE, GENERAL + SURFACE, PAINTED

7-22563  
MEARS LD + ELLEMAN TS  
THE DIFFUSION OF RECOIL FISSION FRAGMENTS FROM SOLID SURFACES CALCULATED RELEASE CURVES  
NORTH CAROLINA STATE UNIVERSITY  
ORO-3508-2 +. 28 PAGES, 7 FIGURE, 7 TABLES, 4 REFERENCES, AUGUST 1967

MEASUREMENT OF FISSION-PRODUCT RELEASE FROM A FISSION-RECOIL-IMPREGNATED SURFACE DURING HEATING PROVIDES A USEFUL METHOD FOR STUDYING FISSION-PRODUCT MIGRATION IN NONFISSIONABLE SOLIDS. THIS REPORT CONTAINS TABLES AND FIGURES GIVING THE PREDICTED FRACTION OF RECOIL FISSION PRODUCTS RELEASED FROM A SPHERICAL SPECIMEN FOR DIFFERENT DIFFUSION COEFFICIENTS AND HEATING TIMES. THE DATA ARE FOR A POSTIRRADIATION EXPERIMENT IN WHICH THE SAMPLE IS HEATED AT CONSTANT TEMPERATURE AFTER IMPREGNATION WITH FISSION RECOILS.

CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-22563 \*CONTINUED\*  
AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*DIFFUSION + \*FISSION RECOIL + \*THERMAL EXPERIMENT + FISSON PRODUCT RELEASE, GENERAL + XENON

7-22564  
HILLARY JJ + GATE LF + GURNEY K  
EXPERIENCE IN TESTING INSTALLED FISSON PRODUCT TRAPPING PLANT WITH METHYL IODIDE  
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, SELLAFIELD, ENGLAND  
TRG-REPORT-1548 +. 12 PAGES, 3 FIGURE, 2 TABLES, 4 REFERENCES, JULY 18, 1967

A SIMPLE EXPERIMENTAL PROCEDURE WAS DEVELOPED, BASED ON LABELLED METHYL IODIDE, FOR THE FULL-SCALE IN-SITE TESTING OF THE CHARCOAL BED OF AN INSTALLED FISSON-PRODUCT-TRAPPING PLANT. A DECONTAMINATION FACTOR OF 1000 IS EASILY MEASURABLE FOR A 10,000-CU. FT/MIN PLANT WITH A FEW MC OF IODINE-131. TEST CARRIED OUT TO DATE ON SEVERAL PLANTS INDICATE THE NEED FOR SUCH TESTS SINCE THE RESULTS HAVE IN SOME CASES SHOWN INADEQUATE PERFORMANCE, WHICH HAS USUALLY BEEN ASSOCIATED WITH MECHANICAL LEAKAGE. THE MOST EFFECTIVE METHOD OF ACHIEVING RELIABLE SEALING APPEARS TO BE TO PASS GAS DOWNWARDS THROUGH A BED OF CHARCOAL WHICH COMPLETELY FILLS THE AVAILABLE AREA, RATHER THAN TO ATTEMPT TO SEAL AN ASSEMBLY HOLDING A BED INTO A FLANGE IN THE DUCT OR VESSEL. PROVISION SHOULD BE MADE FOR WITHDRAWING REPRESENTATIVE SAMPLES OF CHARCOAL FOR LABORATORY TESTING.

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

\*CHARCOAL ADSORBER + \*FILTER OPERATION + \*FILTER TEST EQUIPEMENT + \*ORGANIC IODIDE + \*TESTING + DECONTAMINATION FACTOR + FILTER INSTALLATION + FILTER, BED + FISSON PRODUCT, IODINE + LEAK

7-22707  
FIRST MW + VILES FJ + REIST PC + SMITH DG + UNDERHILL DW + MOELLER DW  
ANNUAL PROGRESS REPORT HARVARD AIR CLEANING LABORATORY. SEPTEMBER 1, 1966-AUGUST 31, 1967  
HARVARD UNIVERSITY, BOSTON, MASSACHUSETTS  
NYO-841-11 +. 10 PAGES, OCTOBER 1967

THIS PROGRESS REPORT INCLUDES (1) NINTH AIR CLEANING CONFERENCE, (2) IN-PLACE TESTS, (3) CLEANUP SYSTEMS FOR AIRBORNE IODINE COMPOUNDS, (4) SODIUM FILTRATION, (5) WATER REMOVAL FROM SATURATED ATMOSPHERE, (6) KRYPTON SAMPLING AND ADSORPTION, (7) UNDERGROUND DISPOSAL OF GASEOUS WASTES, (8) THE DIFFUSION-BOARD CONCEPT, (9) CONSULTING SERVICES.

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

\*AIR CLEANING + \*FILTER TEST REQUIREMENT + \*NOBLE GAS + \*SODIUM + \*WASTE TREATMENT, GAS + AEROSOL + DECONTAMINATION FACTOR + FILTER + TESTING

7-22810  
ADAMS RE + ACKLEY RD  
REMOVAL OF ELEMENTAL RADIOIODINE FROM FLOWING HUMID AIR BY IODIZED CHARCOALS  
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.  
ORNL-TM-2040 +. 25 PAGES, 2 FIGURES, 4 TABLES, 8 REFERENCES, NOVEMBER 2, 1967

CERTAIN TYPES OF IODIZED CHARCOAL HAVE BEEN FOUND TO BE USEFUL FOR TRAPPING RADIOACTIVE METHYL IODIDE. THE QUESTION HAS BEEN RAISED, HOWEVER, AS TO WHETHER OR NOT THE IODIZING PROCESS REDUCES THE CAPACITY OF THE CHARCOAL FOR ELEMENTAL IODINE (I-2) TO AN UNACCEPTABLE LEVEL. INVESTIGATION CONCERNING THIS POINT HAS BEEN MADE FOR THE CONDITIONS OF ROOM TEMPERATURE AND OF VERY HIGH RELATIVE HUMIDITY, 98% AND 100%. IN THE CASE OF THE 100% RELATIVE HUMIDITY CONDITION, THE CHARCOAL WAS CAUSED TO CONTAIN BULK PHASE LIQUID WATER, I.E., IT WAS WATERLOGGED. ACCORDING TO THE RESULTS, THE IODIZED CHARCOALS THAT WERE TESTED POSSESS AMPLE CAPACITY AT 25 C FOR I-2 WHEN THE RELATIVE HUMIDITY WAS 98%. THE WATERLOGGED IODIZED CHARCOALS EXHIBITED ERRATIC I-2 REMOVAL PERFORMANCE WHICH RANGED FROM GOOD TO FAIR. THIS SOMEWHAT UNPREDICTABLE BEHAVIOR IS PROBABLY ASSOCIATED WITH SWEEP GAS CHANNELING IN THE CHARCOAL BED RATHER THAN OVERLOADING OF THE CHARCOAL WITH I-2. OBVIOUSLY, OPERATIONAL CONDITIONS THAT MIGHT RESULT IN WATERLOGGING SHOULD BE AVOIDED IF EFFICIENT TRAPPING OF I-2 IS REQUIRED.

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

\*CHARCOAL ADSORBER + \*IODINE + \*WATER VAPOR + CHARCOAL + FILTER, BED + FISSON PRODUCT, IODINE + STEAM

7-22811  
PARSLY LF + ROW TH  
BEHAVIOR OF FISSON PRODUCTS RELEASED INTO A STEAM-AIR ATMOSPHERE FROM OVERHEATED UO-2 PREVIOUSLY IRRADIATED TO 20,000 MWDT  
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.  
ORNL-TM-1908, PART 1 +. 44 PAGES, 11 FIGURES, 12 TABLES, 10 REFERENCES, SEPTEMBER 27, 1967

CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-22811 \*CONTINUED\*

SUMMARIZES THE RESULTS OF THE FIRST RUN MADE IN THE NUCLEAR SAFETY PILOT PLANT USING ZIRCALOY-2-CLAD UO<sub>2</sub> IRRADIATED TO 20,000 MWD/T AND REIRRADIATED SHORTLY BEFORE THE RUN TO REPLENISH THE INVENTORY OF SHORT-LIVED FISSION PRODUCTS. THE RUN WAS MADE BY MELTING THE FUEL IN A PLASMA UNDER REDUCING CONDITIONS (STEAM AND FREE HYDROGEN PRESENT IN THE FURNACE) WITH A STEAM-AIR ATMOSPHERE IN THE MODEL CONTAINMENT VESSEL. IN THE MODEL CONTAINMENT VESSEL, 80-90% OF THE ACTIVITY APPARENTLY DEPOSITED DURING THE MELTDOWN PHASE WHEN A DRAFT TUBE WAS BEING USED TO MIX THE CONTAINMENT VESSEL CONTENTS. REMOVAL WAS BY CONVECTION RATHER THAN SEDIMENTATION. A SIGNIFICANT PART OF THE REMAINING MATERIAL APPARENTLY ACTED AS NUCLEI FOR A WATER FOG, WHICH THEN SETTLED. PROTOTYPES OF REMOTELY ACTUATED SAMPLERS FOR THE LOFT EXPERIMENT WERE TESTED SUCCESSFULLY.

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

\*FUEL MELTDOWN + \*NSPP + \*STEAM + \*URANIUM DIOXIDE + AIR + ALLOY + FISSION PRODUCT TRANSPORT + ZIRCONIUM

7-22917

ALSO IN CATEGORY 18

SMALL NC

CONTINUUM DILATATION MODEL FOR CREEP SWELLING OF CERAMIC NUCLEAR FUELS WITH APPLICATIONS (LWB-LSBR DEVELOPMENT PROGRAM)

BETTIS ATOMIC POWER LAB., PITTSBURGH, PA.

WAPD-TM-649 +. 44 PAGES, 13 FIGURES, 2 TABLES, 11 REFERENCES, SEPTEMBER 1967

PRESENTS A CREEP MODEL FOR THE CREEP SWELLING OF CERAMIC FUELS, INCLUDING THE EFFECTS OF FABRICATED POROSITY, FISSION-INDUCED POROSITY, AND SURFACE TENSION, USING AS A MACROSCOPIC DILATATIONAL ELEMENT A HOLLOW SPHERE WITH THE CENTRAL CAVITY PLAYING THE ROLE OF THE FABRICATED PORE, WITH FISSION GAS PORES IN THE ANNULUS REPRESENTED BY ANALOGOUS MICROSCOPIC HOLLOW SPHERES. APPENDIX DESCRIBES THE COMPUTER PROGRAM FUEL SWELL III FOR FORTPAN II.

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

\*ANALYTICAL MODEL + \*CREEP + CERAMICS + COMPUTER PROGRAM + FUEL ELEMENT + R AND D PROGRAM + REACTOR, BREEDER + REACTOR, PWR

7-22945

ALSO IN CATEGORY 18

CALCULATION OF SPRAY IODINE REMOVAL FACTOR FOR WESTINGHOUSE 2-, 3-, AND 4-LOOP PWR PUBLIC SERVICE ELECTRIC AND GAS COMPANY

7 PAGES, 7 REFERENCES. PAGES 6.3-14 THRU 6.3-20, VOLUME 2 OF SALEM 1 AND 2 PRELIMINARY SAFETY ANALYSIS

REPORT, 22 JAN. 1966, DOCKETS 50-272 AND 50-311, TYPE--PWR, MFG.--WEST., AE--PUBLIC SERVICE OF N.J.

GIVES THE TECHNICAL BASIS FOR, THE CALCULATION OF, AND THE EXPERIMENTAL VERIFICATION OF THE IODINE-REMOVAL AND DOSE-REDUCTION FACTORS, USING NAOH AS SPRAY ADDITIVE. THE REDUCTION IN THE 2-HR OFF-SITE DOSE IS 59 (2 LOOP, 60 PSIG, 286 F), 22 (3, 42, 264), AND 64 (4, 47, 270). DISCUSSES REMOVAL OF HI, CH3I, AND PARTICLES.

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

\*ADDITIVE + \*CONTAINMENT SPRAY + \*FISSION PRODUCT, IODINE + MATHEMATICAL TREATMENT + REACTOR, PWR + REDUCTION + SODIUM

7-22982

LIPSETT JJ + PALMER JF

LOCATING FUEL FAILURES BY FISSION PRODUCT DEPOSITION IN CANDU-PHW REACTORS

CHALK RIVER NUCLEAR LABS.

AECL-2766 + CONF-671119-1 +. 27 PAGES, 12 FIGURES, 3 TABLES, 14 REFERENCES, FROM CONFERENCE ON FAILED FUEL ELEMENT DETECTION, VIENNA, AUSTRIA

MANY SYSTEMS FOR LOCATING FUEL-CLADDING FAILURES ARE COSTLY AND DIFFICULT TO MAINTAIN BECAUSE THEY USUALLY EMPLOY A COMPLEX ARRANGEMENT OF SAMPLE FLOWS CONTROLLED IN LONG LENGTHS OF SMALL-DIAMETER TUBING. IN POWER REACTORS OF THE PRESSURE-TUBE TYPE, THE PROBLEM MAY BE SIMPLIFIED WITH A GE(LI) GAMMA-RAY SPECTROMETER MOUNTED NEAR THE END-FACE OF THE REACTOR AND SET TO SCAN THE OUTLET COOLANT PIPES FOR DEPOSITED FISSION PRODUCTS. EXPERIMENTS IN THE NRX REACTOR LOOPS AND IN THE NPD POWER REACTOR TESTED THIS CONCEPT, AND THE RESULTS ARE ENCOURAGING. THE EXPERIMENTAL RESULTS HAVE BEEN EXTRAPOLATED TO THE CASE OF CANDU-PHW REACTORS. IT APPEARS THAT THE TECHNIQUE WOULD BE SATISFACTORY IF A MONEL SURFACE WERE INSTALLED IN THE OUTLET COOLANT PIPE FROM EACH FUEL CHANNEL.

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

\*ANALYTICAL TECHNIQUE, CALIBRATION + \*CLAD + \*FAILURE, FUEL ELEMENT + \*FUEL INTEGRITY + \*INSTRUMENTATION, DETECTION FAILED FUEL ELEMENT + \*REACTOR, PRESSURE TUBE + DEPOSITION + EXPERIMENT, GENERAL + FAILURE, CLADDING + FISSION PRODUCT TRANSPORT + FUEL ELEMENT

7-22983

MISHIMAT J

CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-22983 \*CONTINUED\*  
METHYL IODINE BEHAVIOR IN SYSTEMS CONTAINING AIRBORNE RADIOIODINE  
BATTELLE-NORTHWEST LABORATORY, RICHLAND, WASHINGTON  
8 PAGES, 104 REFERENCES, NUCLEAR SAFETY 9(1), PAGES 35-42 (JAN-FEB 1968)

METHYL IODIDE IS THE FRACTION OF AIRBORNE RADIOIODINE MOST DIFFICULT TO RETAIN ON TRAPS CONSIDERED FOR NUCLEAR REACTORS. IN ASSESSING THE CONSEQUENCES OF POSTULATED REACTOR ACCIDENTS, INVESTIGATORS HAVE SHOWN THAT SUCH A FRACTION CAN HAVE A SERIOUS IMPACT. THE LITERATURE DESCRIBING RESEARCH AND OTHER DATA CONCERNED WITH THE FORMATION, BEHAVIOR, AND REMOVAL OF GASEOUS METHYL IODIDE IN A REACTOR CONTAINMENT SYSTEM AFTER A FUEL-MELTDOWN ACCIDENT IS REVIEWED.

\*FISSION PRODUCT, IODINE + \*ORGANIC IODIDE + \*SPRAY, GENERAL + CHEMICAL KINETICS + CONTAINMENT SPRAY + IODINE

7-22984  
HAMMER RR + NEWBY BJ + ROHDE KL  
PENETRATION OF IODINE INTO PROTECTIVE COATINGS  
IDAHO NUCLEAR CORP., IDAHO FALLS  
IN-1095 +. 9 PAGES, 8 FIGURES, 2 TABLES, 5 REFERENCES, NOVEMBER 1967

THE PENETRATION OF IODINE INTO PROTECTIVE COATINGS CHARACTERISTIC OF THOSE USED IN REACTOR CONTAINMENT BUILDINGS WAS STUDIED, AND THE FOLLOWING GENERALIZED FINDINGS RESULTED - (1) PENETRATION OF IODINE INTO THE COATING OCCURS WITH THE FOUR TYPES OF PAINT COATINGS TESTED, EPOXY, VINYL, CHLORINATED RUBBER, AND PHENOLIC. (2) THE PENETRATION IS AT LEAST IN PART REVERSIBLE. (3) THE DEGREE OF PENETRATION IS ASSOCIATED WITH THE TEMPERATURE OF THE COATING AND ITS PHYSICAL STATE. A MODEL FOR UNIDIRECTIONAL DIFFUSION IN A SEMI-INFINITE SOLID, DERIVED FROM FICKS BASIC DIFFUSION CONCEPTS, ADEQUATELY DESCRIBES THE PENETRATION OF IODINE INTO THESE COATINGS TO THICKNESSES AS GREAT AS 0.25 MM. DIFFUSIVITIES FOR IODINE (GENERATED AS I<sub>2</sub>) IN THE PROTECTIVE COATINGS TESTED RANGED FROM 10(-8TH) TO 10(-10TH) SQ. CM PER SEC. EFFECTS OF COATING TYPE, ADDITIVES, AND EXPOSURE TIME ARE ALSO REPORTED.

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

\*CONTAINMENT PAINT + \*IODINE + \*SURFACE, PAINTED + ANALYTICAL MODEL + COATING + DIFFUSION

7-22995  
NICKEL H  
ON THE USE OF BORON COMPOUNDS IN GAS-COOLED HIGH-TEMPERATURE REACTORS. II. COMPATIBILITY OF COATED PARTICLES CONTAINING BORON AND BORONATED GRAPHITE WITH GRAPHITE  
INSTITUT FÜR REAKTORWERKSTOFFE DER KERNFORSCHUNGSANLAGE JULICH  
9 PAGES, FIGURES, TABLES, REFERENCES, NUKLEONIK 9(8), PAGES 372-380 (1967) IN GERMAN

THE USE OF GRAPHITE FUEL ELEMENTS, WHICH CONTAIN BORON COMPOUNDS AS ABSORBER AND/OR BURNABLE-POISON MATERIALS, IN GAS-COOLED HIGH-TEMPERATURE REACTORS IS SUGGESTED. HEREBY THE IMPORTANT QUESTION ARISES AS TO THE STABILITY OF THE BORON COMPOUNDS IN A GRAPHITE MATRIX AT HIGH TEMPERATURES. THE SECOND PART OF THE PAPER IS PRESENTED HERE CONCERNED WITH THE COMPATIBILITY OF COATED PARTICLES CONTAINING BORON CARBIDE AND BORONATED GRAPHITE WITH GRAPHITE AT A TEMPERATURE OF 1000 C. ON THE APPLICATION OF COATED PARTICLES CONTAINING BORON IN GRAPHITE FUEL ELEMENTS OF THIS REACTOR TYPE, IT CAN BE STATED IN SUMMARY THAT ONLY PARTICLES CONTAINING A DENSE ISOTROPIC HIGH-TEMPERATURE PYROLYTIC-CARBON LAYER ARE SUITABLE. THIS STATEMENT IS BASED ON THE RESULTS OF OUR ANNEALING EXPERIMENTS AT 1000 C ON MIXTURES OF COATED PARTICLES AND GRAPHITE AND RADIATION EXPERIMENTS WITH THE SGAE.

\*BORON + \*COATED PARTICLE + \*DIFFUSION + \*GRAPHITE + \*THERMAL EXPERIMENT + CARBON + PYROLYTIC + RADIATION EFFECT

7-22986  
MAEKAWA T + NISHIZAWA, Y + SHIBAYAMA T + KAWAGUCHI O  
STUDY ON REMOVAL OF IODINE FROM ATMOSPHERE BY SPRAY. (1) REMOVAL OF IODINE BY SPRAY UNDER ATMOSPHERIC PRESSURE  
NP-TR-1537 +. 18 PAGES, TRANSLATED FROM NIPPON GENSHPYOKU GAKKAISHI 7, PAGES 563-569 (1965)

THE REMOVAL OF ELEMENTARY IODINE FROM ATMOSPHERE BY SPRAY WAS STUDIED USING A STEEL DRUM (1.5 M IN DIAM. X 3 M) FITTED WITH AN IODINE-GENERATING SYSTEM, A SPRAY NOZZLE, AN ELECTRIC HEATER, AND A GAS-SAMPLING SYSTEM. THE EXPERIMENTS WERE RUN OVER A TEMPERATURE RANGE OF 25 TO 80 C AT ATMOSPHERIC PRESSURE, AND THE REMOVAL RATE OF IODINE WAS ESTIMATED BY GAS CHROMATOGRAPHY. THE PLATEOUT RATE-CONSTANT INCREASED WITH INCREASING TEMPERATURE, BUT THE WASHOUT RATE-CONSTANT WAS INDEPENDENT OF TEMPERATURE.

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

AIR CLEANING + ANALYTICAL TECHNIQUE, AIR + CHEMICAL KINETICS + CONTAINMENT SPRAY + IODINE + SPRAY, GENERAL

7-22987 ALSO IN CATEGORY 11  
AL'AUOH FW + FUQUAI JJ + HAKIY H + VUJILANI FF + WORTON DC

CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-22987 \*CONTINUED\*  
NUCLEAR SAFETY QUARTERLY REPORT APRIL, MAY, JUNE, 1967 FOR NUCLEAR SAFETY BRANCH OF USAEC DIVISION OF REACTOR DEVELOPMENT AND TECHNOLOGY  
BATTELLE-NORTHWEST, RICHLAND, WASHINGTON  
BNWL-537 +. 33 PAGES, FIGURES, TABLES, DECEMBER 1967

THE STATUS OF THE FOLLOWING PROJECTS ARE REPORTED - CONTAINMENT SYSTEMS EXPERIMENTS (CSE), FISSION-PRODUCT-AEROSOL CONTROL, CRACK DETECTION IN PRESSURE PIPING BY ACOUSTICAL EMISSION, COLUMBIA RIVER SEDIMENTATION STUDIES, DISPOSAL OF REACTOR OFF-GAS INTO SOIL SYSTEMS, AND SIMULATION MODELING OF THERMAL GENERATION IN SELECTED RIVER SYSTEMS.

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

\*AEROSOL PRODUCTION + \*CONTAINMENT PAINT + \*CSE + \*TEST, NONDESTRUCTIVE + \*WASTE TREATMENT, FIXATION + \*WATER POLLUTION + AEROSOL + AEROSOL PROPERTIES + CONTAINMENT LEAKAGE CONTROL + CONTAINMENT SPRAY + FISSION PRODUCT TRANSPORT + FISSION PRODUCT, IODINE + ORGANIC IODIDE + PIPING + SPRAY, GENERAL + WASTE DISPOSAL, GAS + WASTE DISPOSAL, LIQUID + WASTE DISPOSAL, TERRESTRIAL

7-23311 ALSO IN CATEGORIES 11 AND 19  
PATENTS IN THE FIELD OF CAN-RUPTURE DETECTION  
COMMISSARIAT A L-ENERGIE ATOMIQUE, SACLAY (FRANCE). CENTRE D-ETUDES NUCLEAIRES  
CEA-B1B-78 +. 141 PAGES, FIGURES, OCTOBER 1967, IN FRENCH

THE ABSTRACTS OF PATENTS ISSUED IN THE PRINCIPAL INDUSTRIAL COUNTRIES ARE LISTED ACCORDING TO SEVERAL CHAPTERS PERTAINING TO THE GENERAL PRINCIPLES OF LEAK DETECTION, DETECTION ITSELF OF FISSION PRODUCTS, APPARATUS USED DIRECTLY OR IN COMBINATION WITH AND FOR THE PURPOSE OF DETECTION, THE INDICATION AND TREATMENT OF THE DATA GIVEN, THE EXAMINATION BEFORE AND AFTER USE OF CARTRIDGE JACKETS. A CUMULATION LIST IS APPENDED, GIVING IN PROGRESSIVE ORDER THE PATENT NUMBERS FOR 18 COUNTRIES TO FACILITATE THE SEARCH OF THE ABSTRACT IN THE CORRESPONDING CHAPTER.

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

\*FUEL ELEMENT + \*INSTRUMENTATION, DETECTION FAILED FUEL ELEMENT + \*TEST, LEAK LOCATION + MONITOR, RADIATION, GENERAL

7-23372  
NOTLEY MF + DESHAIES R + MACEWAN JR  
MEASUREMENTS OF THE FISSION PRODUCT GAS PRESSURES DEVELOPED IN UO-2 FUEL ELEMENTS DURING OPERATION  
ATOMIC ENERGY OF CANADA LIMITED  
AECL-2662 +. 75 PAGES, 37 FIGURES, 8 TABLES, NOVEMBER 1966

DESCRIBES EXPERIMENT AND PRESENTS RESULTS OF MEASUREMENTS. TWELVE UO2 FUEL ELEMENTS SHEATHED IN ANNEALED 304-SS WERE IRRADIATED IN THE NRX REACTOR TO A MAXIMUM BURNUP OF 3290 MWD/TON U. A SIGNIFICANT AMOUNT OF FISSION-PRODUCT GAS IN THE FUEL WAS RELEASED DURING POWER TRANSIENTS, WITH MOST OF RELEASE OCCURRING AS ELEMENT POWER WAS LOWERED. ELEMENTS WITH LESSER FUEL DENSITY INCREASED THE AMOUNT OF FP GAS RELEASED, BUT NOT PROPORTIONALLY SINCE THERE WAS MORE VOID VOLUME WITH THE LOW-DENSITY FUEL.

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

\*FUEL BURNUP + \*FUEL ELEMENT + \*PRESSURE, INTERNAL + CANADA + FISSION GAS RELEASE + FUEL, POWDER TYPE + IRRADIATION TESTING + MEASUREMENT, GENERAL + URANIUM DIOXIDE

7-23439 ALSO IN CATEGORIES 5 AND 6  
KIETZ KA  
QUARTERLY TECHNICAL REPORT STEP PROJECT JANUARY 1-MARCH 31, 1967  
PHILLIPS PETROLEUM COMPANY  
IDD-17239 +. 156 PAGES, 81 FIGURES, 15 TABLES, 50 REFERENCES, AUGUST 1967

THIS REPORT IS ONE OF A SERIES ON THE FOLLOWING TOPICS - LOFT DESIGN ANALYSIS, LOFT BLOWDOWN ANALYSIS, DIRECT RADIATION LEVELS DURING LOFT OPERATION, FISSION PRODUCT BEHAVIOR STUDIES, LOFT RADIOLOGICAL STUDIES, MODEL FORMULATION FOR THE SUBCOOLED DECOMPRESSION DURATION IN A PWR SYSTEM FOLLOWING A PRIMARY-COOLANT-LOOP BREAK, AND SEMISCALE BLOWDOWN TEST PROGRAM.

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

ACCIDENT, LOSS OF COOLANT + CONTAINMENT DESIGN + CORE MELTDOWN + CORE SPRAY + FISSION PRODUCT RELEASE, GENERAL + LOFT (S-RR) + REACTOR TRANSIENT + REACTOR, SAFETY RESEARCH

7-23488 ALSO IN CATEGORY 18  
DRESDEN 2 AND 3 SAFETY ANALYSIS INVOLVING FISSION PRODUCT RELEASE FROM FUEL  
COMMONWEALTH EDISON COMPANY  
5 PAGES, 3 TABLES, PAGES 14.2-13 THRU 14.2-17 OF DRESDEN 2 AND 3 FINAL SAFETY ANALYSIS REPORT, NOVEMBER

CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-23488 \*CONTINUED\*  
17, 1967, DOCKETS 502-39/247, TYPE--BWR, MFG.--G.E., AE--SGT + LUNDY

BASED ON EXPERIENCE, A MAXIMUM OF 1% OF THE NOBLE-GAS ACTIVITY AND 0.5% OF THE HALOGEN ACTIVITY IS ASSUMED RELEASED FROM A FUEL ROD WITH A CLAD PERFORATION. DRESDEN-1 EXPERIENCE HAS SHOWN THE FOLLOWING - (1) SOME FISSION GASES LEAK FROM THE FUEL LATTICE TO THE PLENUMS. MOST OF THE RADIOACTIVE GASES HAVE SHORT HALF-LIVES, LEAVING MOSTLY NONRADIOACTIVE GASES IN THE PLENUMS. (2) RELEASE RATE OF NOBLE GASES CAN BE ESTIMATED BY MEASURING THE RELEASES FROM A DEFECTIVE ROD. THIS GIVES AN OVERESTIMATION BECAUSE WATER AND STEAM ENTER THE BREAK, CAUSING LEAKING AND DETERIORATION OF THE UO<sub>2</sub>. \*\*\* ASSUMING CLADDING FAILURE IN 330 RODS, 4.4 X 10<sup>14</sup>TH CURIES OF NOBLE GASES AND 2.3 X 10<sup>14</sup>TH CURIES OF HALOGENS ARE RELEASED.

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

\*FISSION GAS RELEASE + \*FISSION PRODUCT RELEASE, GENERAL + DRESDEN 2 (BWR) + OPERATING EXPERIENCE SUMMARY + REACTOR, BWR + REPORT, SAR

7-23836  
FUEL ELEMENT CAN  
COMMISSARIAT A L ENERGIE ATOMIQUE  
FRENCH PATENT 1,405,324 +. 2 PAGES, MAY 31, 1965, IN FRENCH

THE MG-ZR ALLOY CAN (0.1 TO 0.7%) IS PROVIDED ON ITS INTERIOR SURFACE WITH A 0.1 TO 25 MICRON LAYER OF MG<sub>2</sub>, MgCO<sub>3</sub>, AND C BY HEATING THE CAN IN CO<sub>2</sub>. THE COMPOSITE LAYER PREVENTS THE DIFFUSION OF PU THROUGH THE CAN.

AVAILABILITY - U.S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D. C. (30 CENTS PER PAGE)

\*CLAD + \*FUEL ELEMENT + DIFFUSION + FRANCE + PATENT + PLUTONIUM

7-23837  
METHOD FOR EVACUATING AIR FROM A CANNED FUEL ELEMENT DURING ITS MANUFACTURE  
CEA  
FRENCH PATENT 1,400,493 +. 2 PAGES, APRIL 20, 1965, IN FRENCH

THE METHOD FOR REMOVING AIR FROM THE INTERIOR OF A CANNED FUEL ROD CONSISTS IN PROVIDING ONE OF THE END PLUGS WITH A NARROW AXIAL BORE THAT COMMUNICATES WITH A RADIAL GROOVE IN THE BOTTOM SURFACE OF THE PLUG, EVACUATING ENTRAPPED AIR THROUGH THE BORE, CLOSING THE BORE IN VACUUM WITH A PEG, AND BRAZING THE PEG.

AVAILABILITY - U.S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D. C. (30 CENTS PER PAGE)

\*CLAD + \*FUEL ELEMENT + AIR + FRANCE + PATENT + PRESSURE, INTERNAL

7-23911 ALSO IN CATEGORIES 9 AND 17  
SIDDALL E + SMITH JC  
COMPUTER CONTROL IN THE DOUGLAS POINT NUCLEAR POWER STATION  
ATOMIC ENERGY OF CANADA LIMITED, SHERIDAN PARK, ONTARIO  
AECL-2948 + SM-99/38 +. 19 PAGES, SEPTEMBER 1967, PAPER PRESENTED AT THE IAEA SYMPOSIUM ON HEAVY WATER POWER REACTORS, VIENNA, SEPTEMBER 11-15, 1967

BY USING TIME MULTIPLEXING TECHNIQUES, THE HIGH DATA PROCESSING CAPABILITIES OF A SINGLE DIGITAL COMPUTER CAN BE USED TO REPLACE A MULTIPLE ANALOGUE CONTROL SYSTEM WITH A CONSEQUENT SAVING IN COSTS AND SOMEWHAT BETTER OPERATION. TO TEST THIS PREMISE, AND TO GAIN AN INSIGHT INTO THE PROBLEMS, A DIGITAL COMPUTER CONTROLLER WAS INCORPORATED IN THE CONTROL SYSTEM FOR THE DOUGLAS POINT NUCLEAR POWER PLANT. MUCH USEFUL EXPERIENCE IN THE DESIGN PHASE HAS BEEN GAINED, AND OPERATING EXPERIENCE WHILE STILL LIMITED HAS BEEN ENCOURAGING.

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

\*COMPUTER CONTROL + \*OPERATING EXPERIENCE + \*REACTOR, HWR + CHALK PIVER + COMPUTER PROGRAM + IAEA + INSTRUMENTATION, CONTROL + INSTRUMENTATION, GENERAL

7-23926 ALSO IN CATEGORIES 1 AND 11  
COTTRELL WB  
ORNL NUCLEAR SAFETY RESEARCH AND DEVELOPMENT PROGRAM BIMONTHLY REPORT FOR NOVEMBER-DECEMBER 1967  
OAK RIDGE NATIONAL LAB., TENN.  
ORNL-TM-2095 +. 137 PAGES, FIGURES, TABLES, REFERENCES, FEB. 1968

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

CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-23926 \*CONTINUED\*

RELEVANT TO POTENTIAL HTGR ACCIDENT SITUATIONS. OTHER MAJOR PROJECTS INCLUDE FUEL-TRANSPORT SAFETY INVESTIGATIONS, A SERIES OF DISCUSSION PAPERS ON VARIOUS ASPECTS OF WATER-REACTOR TECHNOLOGY, AND THE STUDIES ON PRESSURE-VESSEL TECHNOLOGY. EXPERIMENTAL WORK RELATIVE TO PRESSURE-VESSEL TECHNOLOGY. EXPERIMENTAL WORK RELATIVE TO PRESSURE-VESSEL TECHNOLOGY INCLUDES INVESTIGATIONS OF THE ATTACHMENT OF NOZZLES TO SHELLS AND THE VARIABILITY OF IMPACT DATA ON LOW-ALLOY STEELS.

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

\*CHEMICAL KINETICS + \*CONTAINMENT, GENERAL + \*CSE + \*FISSION PRODUCT RETENTION + \*FISSION PRODUCT TRANSPORT + \*FISSION PRODUCT, AIRBORNE + \*IMPACT PROPERTY + \*IN PILE EXPERIMENT + \*LOFT (S-RR) + \*NOZZLE + \*OUT OF PILE LOGS AND EXPERIMENTS + \*REACTOR, HTGR + \*STEEL + CONTAINMENT SPRAY + FISSON PRODUCT RELEASE, GENERAL + PRESSURE VESSEL

7-24270 ALSO IN CATEGORIES 17 AND 13

NORTH ED

FILTER FAILURE ALLOWS HIGHER PARTICULATE RELEASE RATE

NUCLEAR FUEL SERVICES, INC., WEST VALLEY, N. Y.

4 PAGES, ATOMIC ENERGY CLEARING HOUSE, 14(14), PAGES 25-28 (APRIL 1, 1968), DOCKET 50-201

(LETTER, MARCH 24) ON MAR. 8-10, THE PARTICULATE RELEASE FROM THE STACK ALMOST EQUALLED THE MONTHLY ALLOWANCE, DUE TO FAILURE OF THE DISSOLVER OFF-GAS FILTER (PLACED IN SERVICE MAR. 7). IT HAD BEEN LOADED FOR SEVERAL MONTHS PRIOR, READING 5 R/HR. ALTHOUGH IT MET THE DOP TEST MAR. 7, EITHER THE MEDIA BECAME POROUS OR DEVELOPED A CRACK, OR THE SEALANT HARDENED AND FAILED TO SEAL. MORE PROBABLY, THE ORGANIC BINDER EMBRITTLED, FREEING THE GLASS FIBERS AND ALLOWING THEM TO VIBRATE TO THE POINT OF FAILURE, OR TO PERMIT THEM TO MOVE RELATIVE TO EACH OTHER. FILTERS WILL BE REPLACED WITHIN A SHORT TIME AFTER REMOVAL FROM SERVICE FOR HIGH PRESSURE DROP OR HIGH RADIATION.

\*FILTER, DAMAGED + \*FILTER, FIBERGLASS + \*RADIATION DAMAGE + \*RADIOACTIVITY RELEASE + \*STACK + FAILURE, EQUIPMENT + FUEL REPROCESSING + NFS

CATEGORY 5  
SOURCES OF ENERGY RELEASE UNDER ACCIDENT CONDITIONS

8-21319 ALSO IN CATEGORIES 5 AND 6  
WALTER C + GENCO JM  
NURLOC-1.0 A DIGITAL COMPUTER PROGRAM FOR THERMAL ANALYSIS OF A NUCLEAR-REACTOR LOSS-OF-COOLANT ACCIDENT  
BATTELLE MEMORIAL INSTITUTE, COLUMBUS, OHIO  
BMI-1807 +. 319 PAGES, FIGURES, TABLES, REFERENCES, JULY 6, 1967

NURLOC-1.0 CONTAINS MATHEMATICAL MODELS FOR MOST OF THE PROCESSES OCCURRING IN A REACTOR ACCIDENT WHICH AFFECT THE SOLID AND FLUID TEMPERATURE DISTRIBUTIONS. MODELS WERE DEVELOPED AND PROGRAMMED FOR HEAT CONDUCTION, HEAT GENERATION, THERMAL RADIATION, BOIL-OFF, MELTDOWN, POSTBLOWDOWN HEAT AND MASS-TRANSFER COEFFICIENTS, AND METAL-WATER REACTION. TEST CASES OF ACCIDENT HEAT TRANSFER IN THE LOFT REACTOR WERE CALCULATED FOR TIMES UP TO 400 SEC. CALCULATIONS WERE ALSO PERFORMED FOR A TYPICAL 600-MW(T) BWR FOR A SIMILAR PERIOD OF TIME. A TYPICAL 1000-MW(E) BWR GAVE TEMPERATURE AND METAL-WATER REACTIONS MUCH DIFFERENT FROM THOSE FOR LOFT. THE PERCENTAGE OF CLADDING REACTED WAS LESS BY MORE THAN A FACTOR OF TWO FOR THE 1000-MW(E) REACTOR THAN FOR LOFT FOR SIMILAR PERIODS OF TIME.

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

ACCIDENT, LOSS OF COOLANT + ACCIDENT, MAXIMUM CREDIBLE (MCA) + COMPUTER PROGRAM + REACTOR, GENERAL + REACTOR, WATER

8-21322 ALSO IN CATEGORIES 5 AND 6  
KINETIC STUDIES OF HETEROGENEOUS WATER REACTORS. ANNUAL SUMMARY REPORT, 1966  
TRW SYSTEMS GROUP, REDONDO BEACH, CALIF.  
STL-372-50 +. 129 PAGES, 57 FIGURES, 3 TABLES, 44 REFERENCES, DECEMBER 1966

ANNUAL SUMMARY REPORT-1966. SUMMARIZED WORK ON - (1) THE PROCESS OF THERMAL PRESSURE GENERATION, (2) SHOCK-TUBE EXPERIMENTS, (3) POSSIBILITY OF DESTRUCTIVE IN-CORE PRESSURE IN MELTDOWN ACCIDENT, (4) IN-PILE CAPSULE MEASUREMENTS OF STEAM-VOID FORMATION, AND (5) POWER REACTOR INSTABILITY AND TWO-PHASE FLOW.

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

ACCIDENT, REACTIVITY + EXPLOSION + FLOW, TWO PHASE + REACTOR TRANSIENT + REACTOR, WATER + TRANSFER FUNCTION

8-21735 ALSO IN CATEGORIES 6 AND 18  
FRENCH PJ + GALLAGHER JM + MOORE JS + SALVATORE R  
INDIAN POINT UNIT NO. 2 ROD EJECTION ANALYSIS  
WESTINGHOUSE ELECTRIC CORP., PITTSBURGH, PA.  
WCAP-2940 +. 108 PAGES, 45 FIGURES, 7 TABLES, 25 REFERENCES, OF SECOND SUPPLEMENT TO INDIAN POINT 2  
PRELIMINARY SAFETY ANALYSIS REPORT (EXHIBIT B-2), MAY 1966, DOCKET 50-247, TYPE--PWR, MFG--WEST, AE--UNITD ENGR

(INCLUDED IN PS&R SUPPLEMENT 2.) ANALYSIS USES CHIC-KIN FOR KINETICS, AND HAS 1.5 OR 1.0 REACTIVITY % FOR EJECTED ROD (0 OR 102% POWER) AND 1.5% FOR POSITIVE MODERATOR EFFECT WITH A SCRAM AFTER 1.5 SEC. ALTHO SOME FUEL MELTING WOULD OCCUR, PEAK SYSTEM PRESSURE IS LESS THAN 6000 PSIA. A SHOCK-WAVE ANALYSIS FOR REACTOR VESSEL INDICATES THAT 1/3 OF CORE MUST BECOME MOLTEN AND DISPERSED TO DILATE VESSEL WALL UP TO 50% ULTIMATE ELONGATION (BASED ON TNT EXPERIMENTS AT NPL-WISE).

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

\*ACCIDENT ANALYSIS + \*ACCIDENT, CONTROL ROD EJECTION + EXPLOSION + FUEL MELTDOWN + INTEGRITY + PRESSURE VESSEL

8-22473  
DAVIS RJ  
THE SIGNIFICANCE OF CHARCOAL IGNITION TEMPERATURES  
OAK RIDGE NATIONAL LAB., TENN.  
2 PAGES, ANS TRANSACTIONS 10(2), PAGE 511 AND 512, (NOV. 1967), PRESENTED AT THE 1967 WINTER MEETING OF THE AMERICAN NUCLEAR SOCIETY, CHICAGO, ILLINOIS, NOV. 5-9, 1967

CHARCOAL IGNITION TEMPERATURE IS DEFINED AS THE TEMPERATURE ABOVE WHICH OXIDATION IS SELF-SUSTAINING. EXPERIMENTALLY, IGNITION TEMPERATURE IS OBSERVED BY SLOWLY HEATING A SPECIMEN AND NOTING THE TEMPERATURE AT WHICH THE HEATING RATE SUDDENLY INCREASES. IGNITION TEMPERATURE CAN BE QUITE PRECISELY MEASURED AND REPRODUCED. IN THIS PAPER, IGNITION TEMPERATURE IS DEFINED IN TERMS OF A SIMPLE THEORETICAL MODEL. THE RESULT IS A WORKING EQUATION THAT RELATES IGNITION TEMPERATURE TO SEVERAL PARAMETERS. THESE INCLUDE, THE CHARCOAL ACTIVITY (THE EFFECTS OF PROMOTERS, INHIBITORS, AND SURFACE AREA), OXYGEN ACTIVITY (AIR VELOCITY AND OXYGEN CONCENTRATION), THE STOICHIOMETRY OF THE OVERALL CHEMICAL REACTION, AND THE ACTIVATION ENERGY OF THE RATE-DETERMINING STEP OF THE MECHANISM. THE USE OF THE WORKING EQUATION IS DEMONSTRATED. EFFECTS OF SURFACE AREA, ASH CONTENT, AND AIR VELOCITY ARE CORRELATED WITH THE WORKING EQUATION AS THE BASIS.

\*CHARCOAL + \*IGNITION TEMPERATURE + FILTER, BED + FIRE + IGNITION + OXIDATION



CATEGORY 8  
SOURCES OF ENERGY RELEASE UNDER ACCIDENT CONDITIONS

8-22584  
JENKS GH + GRIESS JC  
WATER CHEMISTRY IN PRESSURIZED AND BOILING WATER POWER REACTORS  
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.  
ORNL-4173 +. 55 PAGES, TABLES, FIGURES, REFERENCES, NOVEMBER 1967

THE CHEMICAL BEHAVIOR OF WATER IN SMALL, HERMETICALLY SEALED, TERRESTRIAL LOW-POWER REACTORS (TLPR) HAS BEEN PREDICTED FROM INFORMATION AVAILABLE IN THE LITERATURE. TITANIUM INSTEAD OF STAINLESS STEEL OR INCONEL HAS BEEN SUGGESTED A STRUCTURAL MATERIAL FOR THESE REACTORS. RADIOLYTIC GASES POSE NO PROBLEM IN PRESSURIZED-WATER REACTORS IF THE WATER IS SUFFICIENTLY PURE AND HYDROGEN IS ADDED TO IT. THEY ARE NO PROBLEM IN BOILING-WATER REACTORS IF THESE GASES RECIRCULATE IN THESE REACTORS AS PREDICTED.

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

\*COOLANT CHEMISTRY + \*CORROSION + \*RADIOLYTIC GAS + CHEMICAL KINETICS + DESIGN STUDY + CRNL + REACTOR, BWR + REACTOR, PWR

8-22690  
ISHIWATARI N  
WATER CHEMISTRY OF JPDR  
JAPAN ATOMIC ENERGY RESEARCH INST., TOKYO, JAPAN  
JAERI-1135 +. 21 PAGES, TABLES, FIGURES, REFERENCES, OCTOBER 1966

REPORTS RESULTS OF ADDITIONAL WORK ON THE WATER CHEMISTRY OF THE JAPAN POWER DEMONSTRATION REACTOR (JPDR). MEASUREMENTS OF THE RADIOLYSIS, INDUCED ACTIVITIES, AND WATER QUALITIES ARE GIVEN. RADIOLYTIC GAS AND INDUCED RADIONUCLIDE CONCENTRATIONS IN THE REACTOR WATER ARE SIMILAR TO THOSE IN THE OTHER BOILING-WATER REACTORS. THE CHEMICAL ASPECTS OF THIS REACTOR, INCLUDING THE SUPPRESSION OF THE RELEASE OF RADIOIODINE FROM THE COOLANT SYSTEM, ARE CONSIDERED EXCELLENT.

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

\*COOLANT CHEMISTRY + \*RADIOLYTIC GAS + \*RADIONUCLIDE, INDUCED + ACTIVITY BUILDUP + COOLANT PURIFICATION SYSTEM + CORROSION + JAPAN + REACTOR, BWR

8-22691  
HAMMAR L + ALLISON GM + ANDERSON AR + CARLSON F + FJELLESTAD K + INNVAER R + ROSE R  
WATER CHEMISTRY RESEARCH AT THE HALDEN BOILING HEAVY WATER REACTOR (HBWR)  
INSTITUTT FOR ATOMENERGI, HALDEN, NORWAY  
HPR-55 +. 149 PAGES, FIGURES, TABLES, REFERENCES, JUNE 1967

A WATER CHEMISTRY PROGRAM WAS PERFORMED AT THE HALDEN BOILING WATER REACTOR TO INVESTIGATE THE RADIOLYSIS OF WATER AND THE N-16 ACTIVITY IN STEAM. RADIOLYTIC GAS FORMATION WAS CONFINED LARGELY TO THE BOILING WATER WITHIN THE FUEL CHANNEL AND WAS LOWER THAN THAT FOR THE BOILING LIGHT-WATER REACTORS. ADDITION OF DEUTERIUM OR AMMONIA TO THE HEAVY WATER SUPPRESSED THE FORMATION OF RADIOLYTIC GAS BUT INCREASED THE STEAM-WATER DISTRIBUTION RATIO OF THE N-16.

\*COOLANT CHEMISTRY + \*DEUTERIUM + \*HBWR (BWR) + \*NITROGEN + \*RADIOLYTIC GAS + CHEMICAL ANALYSIS + HEAVY WATER + NORWAY + RADIONUCLIDE, INDUCED + REACTOR, BWR

8-22694  
CHAMBERLAIN HV + KOVAC LP + REICKS GH + KOVACIC EC  
TUBE WASTAGE IN SODIUM-WATER REACTION TESTS  
ATOMIC POWER DEVELOPMENT ASSOCIATES, INC.  
2 PAGES, 1 TABLE, ANS TRANSACTIONS 10(2), PAGES 691-692, PRESENTED AT THE AMERICAN NUCLEAR SOCIETY WINTER MEETING, NOVEMBER 5-9, 1967, CHICAGO, ILLINOIS

A SERIES OF TESTS WAS PERFORMED IN A SODIUM LOOP CONTAINING A WATER-FILLED TUBE BUNDLE WHERE A JET OF WATER FROM A CAPILLARY TUBE WAS ALLOWED TO IMPINGE ON A TARGET AREA LOCATED ON THE OUTSIDE OF THE TUBE BUNDLE. THE TUBE BUNDLE WAS MADE OF 1-IN.-DIAMETER, 0.120-IN.-THICK, 2-1/2 COLDY TUBING. RESULTS INDICATED THAT DECREASING THE TARGET-TO-NOZZLE DISTANCE AND INCREASING THE WATER VELOCITY THROUGH THE CAPILLARY NOZZLE INCREASED THE TARGET WASTAGE RATE SIGNIFICANTLY. THE SODIUM VELOCITY AND THE DURATION OF THE LEAK HAD NO MEASURABLE EFFECT ON THE WASTAGE RATE. METALLURGICAL EXAMINATION OF THE WASTED AREA INDICATED THAT THE EFFECT OF THE METAL-WATER REACTION ON THE TARGET WASTAGE RATE WAS NEGLIGIBLE.

\*FAILURE, TUBING + \*METAL WATER REACTION + \*SODIUM + CHEMICAL REACTION + EROSION + HEAT EXCHANGER + METAL, LIQUID

8-22695  
BERSIN GW + REICKS GH + CHAMBERLAIN HV + KOVACIC EC

CATEGORY 8  
SOURCES OF ENERGY RELEASE UNDER ACCIDENT CONDITIONS

8-22695 \*CONTINUED\*

SURFACE TEMPERATURE MEASUREMENTS IN SODIUM-WATER REACTIONS  
ATOMIC POWER DEVELOPMENT ASSOCIATES, INC.

2 PAGES, 1 TABLE, 5 REFERENCES, ANS TRANSACTIONS 10(2), PAGE 692-693, PRESENTED AT THE AMERICAN NUCLEAR SOCIETY WINTER MEETING, NOVEMBER 5-9, 1967, CHICAGO, ILLINOIS

MADE SERIES OF TESTS WHERE WATER WAS INJECTED AT A RATE OF 0.003 L9/SEC THROUGH A 0.008-IN.-DIAM CAPILLARY TUBE IN A POOL OF SODIUM TOWARDS A STAINLESS-STEEL-SHEATHED THERMOCOUPLE TARGET. MAXIMUM METAL SURFACE TEMPERATURES WERE MEASURED AS A FUNCTION OF THE DISTANCE BETWEEN THE WATER INJECTION POINT AND THE TARGET SURFACE. TEMPERATURES VARIED FROM 1538 F FOR A 1/4-IN. DISTANCE TO 700 F FOR A 1-1/2-IN. DISTANCE, AND THE ZONE FOR THE METAL-WATER REACTION APPEARED TO BE VERY LOCALIZED.

\*METAL WATER REACTION + \*SODIUM + \*TEMPERATURE GRADIENT + CHEMICAL REACTION + FAILURE, TUBING + HEAT EXCHANGER + METAL, LIQUID

8-22696

DUMM K + MAUSBECK F + SCHNITKER W

EXPERIMENTAL AND THEORETICAL INVESTIGATIONS OF SODIUM-WATER REACTIONS IN TUBES  
INTERATOM GBH, GERMANY

14 PAGES, 9 FIGURES, PAPER PRESENTED DURING CREST MEETING OF SPOCK STRUCTURE INTERACTIONS, JUNE 26-29, 1966 AT ISPRA, ITALY

SODIUM-WATER REACTIONS IN A SITUATION SIMULATING A DOUBLE-ENDED TUBE FAILURE IN SINGLE-WALL SODIUM-HEATED STEAM GENERATORS WERE INVESTIGATED EXPERIMENTALLY AND THEORETICALLY. THE THEORETICAL MODEL IS RESTRICTED TO ONE DIMENSION AND DOES NOT INCLUDE THE REFLECTED PRESSURE PULSES. REASONABLE AGREEMENT BETWEEN THEORY AND EXPERIMENT WAS OBTAINED FOR THE INITIAL PRESSURE PULSES. BECAUSE OF THE QUICK MOVEMENT OF THE REACTION FACE, SATISFACTORY MEASUREMENTS OF THE TEMPERATURES AND THE MATERIAL STRESSES WERE NOT OBTAINED.

AVAILABILITY - K DUMM, INTERATOM, BENSBERG/KOLN, FRG, GERMANY

\*CHEMICAL KINETICS + \*FAILURE, TUBING + \*HEAT EXCHANGER + \*METAL WATER REACTION + \*PRESSURE PULSE + \*SODIUM + ACCIDENT MODEL + CHEMICAL REACTION + GERMANY + METAL, LIQUID

8-22702

PALMER DJ

REACTION OF HYDROGEN WITH GRAPHITE

BRITISH PETROLEUM COMPANY, SUNBURY-ON-THAMES, ENGLAND

2 PAGES, NATURE (LONDON), 215, PAGES 388-389 (JULY 22, 1967)

EXPERIMENTS ARE REPORTED IN WHICH GRAPHITE WAS GROUND IN THE PRESENCE OF HYDROGEN AND NITROGEN. IT WAS CONCLUDED THAT THE ADSORPTION OF GASES BY THE GRAPHITE WAS DUE TO A CHEMICAL REACTION THAT TOOK PLACE DURING COMMINUTION. IT IS SUGGESTED THAT THESE REACTIONS OCCUR DUE TO SUBJECTION TO INSTANTANEOUS HIGH TEMPERATURES GENERATED BY FRICTION BETWEEN THE STEEL GRINDING BALLS.

\*CHEMISORPTION + \*GRAPHITE + \*HYDROGEN + \*NITROGEN + ADSORPTION + CHEMICAL REACTION

8-22708 ALSO IN CATEGORY 5

GENCO JM + RAINES GE

METAL-WATER REACTIONS DURING A LOSS-OF-COOLANT ACCIDENT. THE ZIRCONIUM-STEAM REACTION

BATTELLE-MEMORIAL INSTITUTE, COLUMBUS, OHIO

20 PAGES, 8 FIGURES, 1 TABLE, 18 REFERENCES, OCTOBER 21, 1966, ABSTRACT IN ANS TRANSACTIONS 9(2), PAGE 555, (WINTER 1966), PAPER PRESENTED AT THE AMERICAN NUCLEAR SOCIETY WINTER MEETING, OCTOBER 30, NOVEMBER 3, 1966, PITTSBURGH, PENNSYLVANIA

DEVELOPED A CALCULATIONAL TECHNIQUE FOR DESCRIBING ANALYTICALLY THE EXTENT OF METAL-WATER REACTION THAT WOULD OCCUR IN A REACTOR CORE DURING A LOSS-OF-COOLANT ACCIDENT. ALTHOUGH THE ZIRCONIUM-STEAM REACTION WAS CONSIDERED, THIS MODEL MAY BE APPLIED TO ANY FUEL-CLADDING MATERIAL, PROVIDED THE APPROPRIATE OXIDATION KINETICS ARE AVAILABLE. THE MODEL IS PREDICTED ON THE ASSUMPTION THAT TWO BROAD TYPES OF RATE-LIMITING PHENOMENA CAN REPRESENT THE MECHANISM FOR THE OXIDATION OF ZIRCONIUM UNDER ACCIDENT CONDITIONS - (1) THE GAS-PHASE DIFFUSION OF STEAM FROM THE BULK STREAM TOWARD THE CLADDING SURFACE AND (2) THE SOLID-STATE DIFFUSION OF VARIOUS IONIC SPECIES THROUGH THE ZIRCONIUM DIOXIDE PRODUCT INTO THE BASE METAL, QUANTITATIVELY EXPRESSED AS THE PARABOLIC RATE LAW. THE APPLICABILITY OF THIS TECHNIQUE IS DEMONSTRATED USING THE LOFT REACTOR.

\*ACCIDENT, LOSS OF COOLANT + \*ANALYTICAL MODEL + \*CHEMICAL KINETICS + \*MASS TRANSFER + \*METAL WATER REACTION + \*ZIRCALOY + COMPUTER PROGRAM + HEAT TRANSFER ANALYSIS + LOFT (S-RR) + REACTOR, SAFETY RESEARCH + STEAM

8-22711

GENCO JM

METAL-WATER REACTIONS

BATTELLE-MEMORIAL INSTITUTE

2 PAGES, 5 FIGURES, NUCLEAR MATERIALS 10(1), PAGES 32-33 (SPRING 1967)

CATEGORY 8  
SOURCES OF ENERGY RELEASE UNDER ACCIDENT CONDITIONS

8-22711 \*CONTINUED\*

TECHNICAL PROGRESS REVIEW OF SOME WORK ON METAL-WATER REACTIONS IN LOSS-OF-COOLANT ACCIDENTS. REVIEW SUMMARIZES AUTOCLAVE EXPERIMENTS DETERMINING THE EXTENT OF THE METAL-WATER REACTION DURING A TEMPERATURE TRANSIENT AND SOME CALCULATIONS FOR THE AMOUNT OF METAL-WATER REACTION ANTICIPATED IN LOFT. THE AUTOCLAVE EXPERIMENTS INDICATE THAT THERE IS BETWEEN 0.2 AND 0.3% REACTION FOR TEMPERATURE TRANSIENTS REACHING 1750 F. THE ANALYTICAL STUDIES FOR LOFT CONSIDER THAT THE OXIDATION OF ZIRCONIUM BY STEAM IS LIMITED BY (1) THE GAS-PHASE DIFFUSION OF STEAM FROM THE BULK STREAM TOWARD THE CLADDING SURFACE OR BY (2) THE SOLID-STATE DIFFUSION AS EXPRESSED BY THE PARABOLIC RATE LAW.

\*ACCIDENT, LOSS OF COOLANT + \*METAL WATER REACTION + \*REVIEW + \*ZIRCALOY + COMPUTER PROGRAM + LOFT (S-RR) + REACTOR, SAFETY RESEARCH + STEAM + TEMPERATURE TRANSIENT

8-22712

BRIDGE H + MOTTERSHEAD

A RELATION BETWEEN IRRADIATION TEMPERATURE, FLUX INTENSITY AND START-TEMPERATURE FOR STORED ENERGY RELEASE IN IRRADIATED GRAPHITE

UNIVERSITIES RESEARCH REACTOR, RISLEY, LANCS, ENGLAND + REACTOR MATERIALS LABORATORY, UKAEA, CULCHETH, LANCS., UK

6 PAGES, 4 FIGURES, 9 REFERENCES, JOURNAL OF NUCLEAR MATERIALS 20(3), PAGES 281-286 (1966)

IN GRAPHITE WHICH HAS BEEN SUBJECTED TO FAST-NEUTRON BOMBARDMENT, THE TEMPERATURE AT WHICH THE RELEASE OF STORED ENERGY COMMENCES DURING THERMAL ANNEALING AT A LINEAR RATE OF RISE OF TEMPERATURE WITH TIME, THE START TEMPERATURE IS OF THEORETICAL AND PRACTICAL INTEREST. CONSIDERATION OF DEFECTS WHICH ARE JUST STABLE UNDER THE IRRADIATION CONDITIONS IN TERMS OF VAND ANNEALING KINETICS ENABLES A TEMPERATURE REPRESENTING THE ONSET OF THE ENERGY RELEASE TO BE CALCULATED WITH SUFFICIENT PRECISION FOR USE IN PRACTICAL APPLICATIONS.

\*COMPARISON, THEORY AND EXPERIENCE + \*GRAPHITE + \*WIGNER ENERGY RELEASE + HEAT TREATMENT + RADIATION EFFECT + UNITED KINGDOM

8-22713

LINDHE S + CARLSON F + EDWALL B + BERLIN B

CHEMICAL PROBLEMS IN NUCLEAR REACTORS

AKIEBOLAGET ATOMENERGI, STOCKHOLM, SWEDEN

9 PAGES, 10 REFERENCES, SVENSK KEM. TIDSKR., 79, PAGES 113-121 (1967) IN SWEDISH

REVIEWS CHEMICAL PROBLEMS ASSOCIATED WITH THE OPERATION OF PRESSURIZED AND BOILING WATER REACTORS. DISCUSSES RADIOLYTIC GAS FORMATION AS WELL AS BUILDUP AND BEHAVIOR OF RADIOACTIVE CORROSION PRODUCTS IN STRUCTURE EXTERNAL TO THE CORE AND DEPOSITION ON FUEL ELEMENT SURFACES. PROBLEMS ON PURIFICATION OF WATER AND STEAM ARE BRIEFLY DISCUSSED.

\*COOLANT CHEMISTRY + \*RADIOLYTIC GAS + \*RADIONUCLIDE, INDUCED + \*REACTOR, WATER + \*SURFACE FILM DEPOSIT + CHEMICAL REACTION + CORROSION + SWEDEN

8-22714

GENCO JM

METAL-WATER REACTIONS

BATTELLE-MEMORIAL INSTITUTE

2 PAGES, 2 TABLES, REACTOR MATERIALS, 10(3), PAGES 166-167 (FALL 1967)

REVIEW OF PROGRESS IN THE AREA OF METAL-WATER REACTIONS. CORRELATIONS FOR THE ZIRCONIUM-STEAM REACTION ARE SUMMARIZED AND COMPARED. THE ANL EXPERIMENTS (MELTING ZIRCALOY-2-CLAD UO<sub>2</sub> FUEL RODS IN TREAT) ARE ALSO SUMMARIZED.

\*CHEMICAL KINETICS + \*FUEL MELTDOWN + \*METAL WATER REACTION + \*REVIEW + \*ZIRCALOY + CHEMICAL REACTION + TREAT (PRR)

8-22715

HEINTZ EA + PARKER WE

CATALYTIC EFFECT OF MAJOR IMPURITIES ON GRAPHITE OXIDATION

SPEER CARBON CO., NIAGARA FALLS, N. Y.

10 PAGES, 6 FIGURES, 4 TABLES, 33 REFERENCES, CARBON, 4, PAGES 473-482, (DEC. 1966)

STUDIED THE OXIDATION OF GRAPHITE IN AIR IN THE PRESENCE OF 0.1 MOLE % OF TRANSITION METALS AND INNER-TRANSITION METAL OXIDES OVER THE TEMPERATURE RANGE 600 TO 700 C. THE ACTIVATION ENERGIES FOR THESE REACTIONS COULD BE CORRELATED IN TERMS OF THE ATOMIC NUMBER AND THE ELECTRON LEVEL OF THE IMPURITY METAL IN MANY CASES.

\*ACTIVATION ENERGY + \*AIR + \*CHEMICAL KINETICS + \*GRAPHITE + \*IMPURITY + \*OXIDATION + CHEMICAL REACTION + METAL

8-22716

HAWTIN P + GIBSON JA

THE EFFECT OF DIFFUSION AND BULK GAS FLOW ON THE THERMAL OXIDATION OF POROUS CARBONS. II. DIFFUSIONAL

CATEGORY 8  
SOURCES OF ENERGY RELEASE UNDER ACCIDENT CONDITIONS

8-22716 \*CONTINUED\*  
EFFECTS IN GRAPHITE AT HIGH TEMPERATURES  
ATOMIC ENERGY RESEARCH ESTABLISHMENT, HARWELL, ENGLAND  
12 PAGES, 8 FIGURES, 1 TABLE, 9 REFERENCES, CARBON, 4, PAGES 489-500 (DEC. 1966)

THE VARIATION WITH TEMPERATURE AND OXYGEN CONCENTRATION OF THE OXIDATION RATE OF LARGE TUBULAR SPECIMENS OF GRAPHITE EXPOSED TO OXIDIZING GAS ON THE BORE SURFACE HAS BEEN EXAMINED. TEMPERATURES IN THE RANGE 550-675 C AND OXYGEN CONCENTRATIONS BETWEEN 2.5 AND 20.8% WERE STUDIED. UNDER THESE CONDITIONS, THE OVERALL RATE OF REACTION IS CONTROLLED BY THE RATE OF IN-PORE MASS TRANSPORT. THE EXPERIMENTAL RESULTS YIELD AN APPARENT ENERGY OF ACTIVATION OF 25.0 KCAL/G ATOM AND AN APPARENT ORDER OF 0.81. CALCULATIONS BASED ON THE EXTENDED MODEL GIVE A TRUE ENERGY OF ACTIVATION FOR THE GRAPHITE-OXYGEN REACTION OF 48.6 K CAL/G ATOM AND AN ORDER OF REACTION OF 0.62.

\*ACTIVATION ENERGY + \*CHEMICAL KINETICS + \*GRAPHITE + \*OXIDATION + \*OXYGEN + \*POROUS DIFFUSION + \*CARBON DIOXIDE + \*CARBON MONOXIDE + \*CHEMICAL REACTION + \*NITROGEN

8-22717  
LADD IR + WALSH PN  
COMPLEX TEMPERATURE DEPENDENCE OF THE OXIDATION OF PYROLYTIC GRAPHITE BY CO<sub>2</sub>  
UNION CARBIDE RESEARCH INST., TARRYTOWN, N. Y.  
3 PAGES, 2 FIGURES, 9 REFERENCES, CARBON, 4, PAGES 539-41 (DEC. 1966)

THE MAXIMUM-MINIMUM PHENOMENON OF THE VARIATION WITH TEMPERATURE IN THE RATE OF OXIDATION OF PYROLYTIC GRAPHITE BY CO<sub>2</sub> WAS OBSERVED. TESTS WERE PERFORMED BY IMPINGING A HIGH-VELOCITY STREAM OF GAS ON A HEATED FACE OF A FLAT SAMPLE. THE RATES WERE DETERMINED FROM BEFORE-AND-AFTER MEASUREMENTS OF THE SAMPLE THICKNESS AT CENTER OF THE AREA WHERE THE GAS IMPINGED. THE TEMPERATURE WAS MEASURED AT THIS POINT WHILE THE REACTION WAS PROCEEDING. THE MEASURED RATES ARE CHARACTERISTIC IN THE C-DIRECTION.

\*CARBON DIOXIDE + \*CHEMICAL KINETICS + \*GRAPHITE + \*OXIDATION + \*PYROLYTIC + \*CHEMICAL REACTION

8-22718  
SCHNIZLEIN JG + BAKER L + BINGLE JD  
THE IGNITION OF BINARY ALLOYS OF URANIUM  
ARGONNE NATIONAL LABORATORY, ARGONNE, ILLINOIS  
9 PAGES, 7 FIGURES, 3 TABLES, 2 REFERENCES, JOURNAL OF NUCLEAR MATERIALS, 20(1), PAGES 39-47 (1966)

REPORTS A STUDY OF THE EFFECTS OF ALLOYING ADDITIONS ON THE IGNITION OF URANIUM. THE EXPERIMENTS WERE PERFORMED BY PLACING URANIUM ALLOY CUBES IN A FLOWING OXIDIZING ATMOSPHERE WITHIN A FURNACE WHOSE TEMPERATURE WAS INCREASING AT THE RATE OF 10 C/MIN. DIFFERENCES IN SAMPLE TEMPERATURE-TIME CURVES WERE NOTED FOR BINARY URANIUM ALLOYS CONTAINING 0.5, 1, AND 2 AT. % OF 24 ELEMENTS. RESULTS WERE INTERPRETED IN TERMS OF THE EFFECT OF THE ALLOYING ADDITION ON THE PREVIOUSLY DEMONSTRATED TRANSITION OF THE OXIDE AT 400-500 C FROM A PROTECTIVE TO AN AUTOCATALYTIC FILM.

\*ALLOY + \*IGNITION + \*URANIUM + \*ANL + \*CHEMICAL REACTION

8-22719 ALSO IN CATEGORY 13  
COLBY LJ  
KINETICS OF THE REACTION OF URANIUM MONOCARBIDE WITH WATER  
ATOMIC INTERNATIONAL, NORTH AMERICAN AVIATION, INC., CALIF.  
7 PAGES, 6 FIGURES, 2 TABLES, 9 REFERENCES, JOURNAL OF THE LESS-COMMON METALS, 10(5), PAGES 425-431 (1966)

THE RATE OF HYDROLYSIS OF URANIUM CARBIDE FROM 30 TO 86.2 C WAS MEASURED BY A CONSTANT-VOLUME TECHNIQUE. AN ACTIVATION ENERGY OF 17.6 KCAL/MOLE OF UC WAS OBTAINED FROM AN AFRHENIUS PLOT OF THE DATA. THE HYDROLYSIS REACTION RATE AT 70 C WAS FOUND TO BE PROPORTIONAL TO THE SQUARE ROOT OF THE WATER CONCENTRATION WHEN 2-PROPANOL WAS USED AS A DILUENT. IT IS THEREFORE POSTULATED THAT THE RATE-DETERMINING STEP IN THE HYDROLYSIS OF URANIUM CARBIDE INVOLVES THE BREAKING OF AN O-H BOND.

\*ACTIVATION ENERGY + \*CHEMICAL KINETICS + \*URANIUM CARBIDE + \*WATER, GENERAL + \*CHEMICAL REACTION

8-22720  
MUNSTER H  
INVESTIGATIONS OF SODIUM-AIR REACTIONS  
ARGONNE NATIONAL LAB., ILL.  
ANL-TRANS-366 +. 8 PAGES, TRANSLATED FROM NUKLEONIK 7, PAGES 477-80 (1965)

SODIUM-AIR REACTIONS (FIPES) IN CLOSED SPACES WERE INVESTIGATED. A THEORETICAL MODEL WAS DEVELOPED AND COMPARED WITH TWO EXPERIMENTAL INVESTIGATIONS. THE RESULTS FROM THE CALCULATIONS AGREE WELL WITH THE EXPERIMENTAL DATA.

AVAILABILITY - JOHN CRERAR LIBRARY, 35 WEST 33RD ST., CHICAGO, ILLINOIS, \$1.10 COPY, \$0.80 MICROFICHE

\*AIR + \*COMBUSTION + \*COMPARISON, THEORY AND EXPERIENCE + \*FIRE + \*SODIUM + \*ANALYTICAL MODEL + \*CHEMICAL REACTION + \*GERMANY + \*METAL, LIQUID

CATEGORY 8  
SOURCES OF ENERGY RELEASE UNDER ACCIDENT CONDITIONS

8-22722

DAVIES RA + BRAY JA + LYONS JM  
CORROSION OF STEELS IN THE VICINITY OF A SODIUM WATER REACTION  
UNITED KINGDOM ATOMIC ENERGY AUTHORITY  
SM-85/15 +. 14 PAGES, 2 TABLES, 4 FIGURES, PRESENTED AT IAEA SYMPOSIUM ON ALKALI METAL COOLANTS,  
CORROSION STUDIES AND SYSTEM OPERATING EXPERIENCE, VIENNA, 28 NOVEMBER - 2 DECEMBER 1966

INVESTIGATED THE THINNING OF WATER TUBES DUE TO SODIUM-WATER REACTIONS IN THE VICINITY OF A LEAKING WATER TUBE IN A SODIUM-WATER HEAT EXCHANGER. TESTS SIMULATING A DOUBLE-ENDED FAILURE AND SMALL LEAKS IN A WATER TUBE WERE MADE IN A MODEL HEAT EXCHANGER. OTHER SMALL TESTS SIMULATING SMALL TUBE LEAKS WERE PERFORMED. WASTAGE OF THE ADJACENT TUBES APPEARS TO BE A DIRECT RESULT OF THE CONDITIONS DURING THE METAL-WATER REACTION. THESE INCLUDE THE DIRECTION OF THE WATER/STEAM JET FROM THE LEAKING TUBE, DISTANCE OF THE ADJACENT TUBE FROM THE LEAKING TUBE, AND THE NUMBER OF TUBES FAILING AS A RESULT OF THIS LEAK OR BREAK.

AVAILABILITY - INTERNATIONAL ATOMIC ENERGY AGENCY

\*CORROSION + \*FAILURE, TUBING + \*METAL WATER REACTION + \*SODIUM + CHEMICAL REACTION + HEAT EXCHANGER + METAL, LIQUID + STEEL, STAINLESS

8-22723

ALSO IN CATEGORY 5  
ARGONNE NATIONAL LABORATORY. CHEMICAL ENGINEERING DIVISION RESEARCH HIGHLIGHTS. MAY 1966 - APRIL 1967  
ARGONNE NATIONAL LABORATORY, ARGONNE, ILLINOIS  
ANL-7350 +. 111 PAGES, TABLES, FIGURES, REFERENCES, APRIL 1967

SUMMARY OF ANL REACTOR SAFETY PROGRAM FOR THE PERIOD MAY 1966 THROUGH APRIL 1967. THIS PROGRAM IS NOW CONCENTRATED TO (1) STUDIES RELATING TO THERMAL (WATER-COOLED) REACTORS, AND (2) STUDIES RELATING TO FAST (SODIUM-COOLED) REACTORS. ITEM-1 EFFORTS ARE DIRECTED TO ANALYTICAL STUDIES CONSIDERING THE METAL-WATER REACTION, CORE HEATUP, AND FUEL FAILURE IN LOSS-OF-COOLANT ACCIDENTS, AND TO EXPERIMENTAL STUDIES CONSIDERING THE HEATUP AND MELTDOWN OF ALUMINUM-CLAD FUEL PLATES AND ZIRCALOY-2-CLAD UO<sub>2</sub> FUEL RODS IN LOSS-OF-COOLANT AND NUCLEAR-EXCURSION ACCIDENTS. ITEM-2 EFFORTS ARE DIRECTED TO STUDIES OF THE HIGH-TEMPERATURE PHYSICAL AND TRANSPORT PROPERTIES OF FAST REACTOR FUEL MATERIALS, ENERGY TRANSFER FROM HIGH-TEMPERATURE FUEL MATERIALS TO LIQUID SODIUM AND THE SODIUM-AIR REACTION.

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

\*ACCIDENT, LOSS OF COOLANT + \*ACCIDENT, REACTIVITY + \*ALUMINUM + \*ANALYTICAL MODEL + \*CHEMICAL REACTION + \*FUEL MELTDOWN + \*HEAT TRANSFER EXPERIMENT + \*PROPERTY, PHYSICAL + \*SODIUM + \*TEMPERATURE TRANSIENT + \*URANIUM DIOXIDE + \*ZIRCALOY + ACCIDENT MODEL + AIR + ANL + COMPUTER PROGRAM + HEAT TRANSFER ANALYSIS + HEAT TRANSFER, BOILING + IN PILE EXPERIMENT + OXIDATION + STEAM + TREAT (PRR)

8-22821

GENCO JM  
METAL-WATER REACTIONS  
BATTELLE MEMORIAL INSTITUTE  
3 PAGES, 3 FIGURES, 1 TABLE, REACTOR MATERIALS 9(4), PAGES 237-239 (WINTER 1966-1967)

TECHNICAL PROGRESS REVIEW OF WORK ON METAL-WATER REACTIONS. EXPERIMENTS DETERMINING THE RATES OF THE STAINLESS-STEEL/STEAM REACTION FOR TEMPERATURES BETWEEN 1000 AND 1250 C INDICATE THAT THE REACTION RATES AFTER AN INDUCTION PERIOD COULD BE CORRELATED BY THE PARABOLIC LAW. SIMPLIFIED CALCULATIONS OF THE ANTICIPATED METAL-WATER REACTION IN LOFT SHOW THAT IT IS LESS WHEN STAINLESS-STEEL-CLAD FUEL PINS ARE USED INSTEAD OF ZIRCALOY-CLAD FUEL PINS. TREAT EXPERIMENTS SIMULATING THE LOSS-OF-COOLANT ACCIDENT CONDITIONS FOR ZIRCALOY-CLAD UO<sub>2</sub> FUEL PRODUCED 40% METAL-WATER REACTION. TREAT EXPERIMENTS SIMULATING NUCLEAR-POWER-EXCURSION CONDITIONS FOR VIBRATORILY PACKED ZIRCALOY-CLAD UO<sub>2</sub> PRODUCED THE SAME METAL-WATER REACTION AS IN THE PREVIOUS TESTS. FAILURE MECHANISM OF PRESSURIZED AND UNPRESSURIZED FUEL PINS APPEAR TO BE DIFFERENT, HOWEVER.

\*ACCIDENT ANALYSIS + \*CHEMICAL KINETICS + \*METAL WATER REACTION + \*REVIEW + \*STEEL, STAINLESS + \*TREAT (PRR) + \*ZIRCALOY + ANL + LOFT (S-RR) + REACTOR, PULSED + REACTOR, SAFETY RESEARCH + URANIUM DIOXIDE

8-22822

LEMMON AW  
METAL-WATER REACTIONS  
BATTELLE MEMORIAL INSTITUTE  
2 PAGES, 2 FIGURES, 1 TABLE, REACTOR MATERIALS 9(3), PAGE 179-180 (FALL, 1966)

TECHNICAL PROGRESS REVIEW OF ANL WORK ON METAL-WATER REACTIONS. REVIEW SUMMARIZES FURNACE EXPERIMENTS FOR DETERMINING THE NATURE OF OXIDATION OF STAINLESS STEEL BY STEAM AT HIGH TEMPERATURES. AT 1400 C, SWELLING AND FOAMING OF THE SAMPLE PREVENTS A SIMPLE INTERPRETATION OF THE REACTOR RATE IN TERMS OF ORIGINAL SAMPLE AREAS. THE MAJOR PART OF THE REACTION PRODUCT APPEARS TO BE Fe<sub>3</sub>O<sub>4</sub>, A SPINEL-TYPE COMPOUND.

\*METAL WATER REACTION + \*REVIEW + \*STEEL, STAINLESS + ANL + CHEMICAL KINETICS + STOICHIOMETRY

CATEGORY B  
SOURCES OF ENERGY RELEASE UNDER ACCIDENT CONDITIONS

8-22823  
LEMMON AW  
METAL-WATER REACTIONS  
BATTELLE MEMORIAL INSTITUTE  
2 PAGES, 2 FIGURES, 1 TABLE, REACTOR MATERIALS 9(2), PAGE 110-111 (SUMMER 1966)

TECHNICAL PROGRESS REVIEW OF ANL WORK ON METAL-WATER REACTIONS. REVIEW SUMMARIZES TREAT EXPERIMENTS USING NINE-PIN CLUSTERS OF STAINLESS STEEL OR ZIRCALOY-CLAD UO<sub>2</sub> FUEL SUBMERGED IN WATER. THE EXTENTS OF THE METAL-WATER REACTION IN THESE EXPERIMENTS AGREE WITH THOSE OBTAINED IN SIMILAR EXPERIMENTS USING A SINGLE-FUEL-PIN SPECIMEN.

\*METAL WATER REACTION + \*REVIEW + \*TREAT (PRR) + ANL + STEEL, STAINLESS + URANIUM DIOXIDE + ZIRCALOY

8-22824  
LEMMON AW  
METAL-WATER REACTIONS  
BATTELLE MEMORIAL INSTITUTE  
3 PAGES, 1 FIGURE, 1 TABLE, REACTOR MATERIALS 9(1), PAGES 41-43 (SPRING 1966)

TECHNICAL PROGRESS REVIEW OF ANL WORK ON METAL-WATER REACTIONS. REVIEW COVERS (1) FURNACE EXPERIMENTS INVESTIGATING THE BEHAVIOR OF STAINLESS-STEEL- AND ZIRCALOY-CLAD UO<sub>2</sub> FUEL PINS IN LOSS-OF-COOLANT ACCIDENTS, (2) SIMPLIFIED CALCULATIONS FOR THE ANTICIPATED METAL-WATER REACTION IN LCFT WITH ZIRCALOY-CLAD FUEL PINS, SHOWING THE IMPORTANCE OF THE STEAM FLOW THROUGH THE REACTOR CORE, (3) KINETICS OF THE REACTION OF STEAM WITH SEVERAL REFRACTORY MATERIALS, (4) SOME WORK ON THE REACTION OF STAINLESS STEEL WITH STEAM, AND (5) RESULTS OF ALUMINUM-WATER REACTION USING LASER-BEAM TECHNIQUES.

\*CHEMICAL KINETICS + \*METAL WATER REACTION + \*REVIEW + ACCIDENT ANALYSIS + ACCIDENT. LOSS OF COOLANT + ALUMINUM + ANL + METAL, REFRACTORY + STEEL, STAINLESS + ZIRCALOY

8-22834  
POESCHEL E + SKOUTAJAN R  
EXPERIMENTAL INVESTIGATION OF CHEMICAL REACTIONS OF URANIUM, URANIUM DIOXIDE, AND URANIUM CARBIDE WITH AIR AND WATER VAPOR IN THE TEMPERATURE RANGE FROM 600 TO 1300 C.  
BATTELLE INSTITUT E.V., FRANKFURT AM MAIN, WEST GERMANY  
BMW-FBK-67-13 +. 112 PAGES, FEBRUARY 1967, IN GERMAN

THE CHEMICAL REACTIONS OF URANIUM, URANIUM DIOXIDE, AND URANIUM CARBIDE WITH AIR AND WATER IN THE TEMPERATURE RANGE OF 600 TO 1300 C WERE INVESTIGATED EXPERIMENTALLY. THESE REACTIONS WERE STUDIED THERMOGRAVIMETRICALLY AT O<sub>2</sub> OR H<sub>2</sub>O PARTIAL PRESSURES OF 0.1 TO 1 ATM, RESPECTIVELY, AND A TOTAL PRESSURE OF 1 ATM. FOR U/AIR AND UC/AIR, A LINEAR TIME LAW WAS FOUND, FOR U/H<sub>2</sub>O(G) A PARABOLIC LAW, AND FOR UO<sub>2</sub>/H<sub>2</sub>O(G) A PARABOLIC OR A LINEAR LAW, DEPENDING ON THE TEMPERATURE. NO REACTION WAS OBSERVED FOR UO<sub>2</sub>/H<sub>2</sub>O(G) DURING BRIEF PERIODS. THAT OF UC/H<sub>2</sub>O(G) DEPENDS ON THE STORAGE TIME. THE ACTIVATION ENERGY FOR U/AIR AMOUNTS TO 6.4 KCAL/GRAM-ATOM, THAT OF UO<sub>2</sub>/AIR TO 7.0 AND 23.6 KCAL/MOLE IN THE VALIDITY RANGE OF THE LINEAR AND THE PARABOLIC TIME LAWS, RESPECTIVELY, AND TO 15.6 TO 18.9 KCAL/GRAM-ATOM FOR U/H<sub>2</sub>O(G).

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

\*AIR + \*CHEMICAL REACTION + \*URANIUM + \*URANIUM CARBIDE + \*URANIUM DIOXIDE + ACTIVATION ENERGY + CHEMICAL KINETICS + GERMANY + WATER VAPOR

8-22835  
HENZEL N + KLEINE-TEBRE A  
EXPERIMENTAL INVESTIGATION OF CHEMICAL REACTIONS OF URANIUM, URANIUM DIOXIDE, AND URANIUM CARBIDE WITH AIR AND WATER VAPOR IN THE TEMPERATURE RANGE BETWEEN 1000 AND 2200 C  
BATTELLE INSTITUT E.V., FRANKFURT AM MAIN, WEST GERMANY  
BMW-FBK-67-12 +. 121 PAGES, FEBRUARY 1967, IN GERMAN

THE INITIAL PHASE OF THE REACTIONS OF URANIUM, URANIUM DIOXIDE, AND URANIUM CARBIDE WITH AIR AND WATER VAPOR, ISOTHERMALLY INVESTIGATED TO 2200 C IN THE FRAMEWORK OF A REACTOR SAFETY PROGRAM, YIELDS UO<sub>2</sub>, UO<sub>2</sub> PLUS Y, OR U<sub>3</sub>O<sub>8</sub> RESPECTIVELY. REACTION RATE IS PROPORTIONAL TO THE PARTIAL PRESSURE OF THE GAS BUT HARDLY AFFECTED BY THE ABSOLUTE PRESSURE. AT STANDARD PRESSURE, IT IS A LINEAR FUNCTION OF TIME FOR SYSTEM U/AIR, FOR OTHERS A HIGHER (MAXIMUM, THIRD POWER) FUNCTION. AT 0.1 ATM PARTIAL PRESSURE IN ARGON, LINEAR TIME FUNCTIONS ARE FOUND, EXCEPT FOR UC/H<sub>2</sub>O(G) (HIGHER ORDER) AND U/H<sub>2</sub>O(G) (ERRATIC).

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

\*AIR + \*CHEMICAL REACTION + \*URANIUM + \*URANIUM CARBIDE + \*URANIUM DIOXIDE + \*WATER VAPOR + ACTIVATION ENERGY + CHEMICAL KINETICS + GERMANY + HIGH TEMPERATURE

CATEGORY 8  
SOURCES OF ENERGY RELEASE UNDER ACCIDENT CONDITIONS

8-23160  
METAL-WATER REACTIONS  
BATTELLE MEMORIAL INSTITUTE  
3 PAGES, 4 FIGURES, 1 TABLE, REACTOR MATERIALS 10(4), PAGE 230-232, (WINTER 1967-1968)

REVIEWS PROGRESS OF WORK ON METAL-WATER REACTIONS. SUMMARIZES SOME OF THE CHEMICAL KINETIC STUDIES BY ANL ON THE NICKEL-STEAM REACTION AND BY GE-NMPO ON THE ZIRCONIUM-STEAM AND THE STAINLESS-STEEL/STEAM REACTIONS.

\*CHEMICAL KINETICS + \*METAL WATER REACTION + \*NICKEL + \*REVIEW + \*STEEL, STAINLESS + \*ZIRCONIUM + ACTIVATION ENERGY + CHEMICAL REACTION + STEAM + ZIRCALOY

8-23174 ALSO IN CATEGORY 17  
EXPLOSIVES ACCIDENT/INCIDENT ABSTRACTS, SEPTEMBER 1961-JUNE 1967  
ARMED SERVICES EXPLOSIVES SAFETY BOARD, WASHINGTON, D. C.  
AD-660,020 +. 300 PAGES, OCTOBER 1967

TO GIVE GUIDANCE TO THE INTERAGENCY CHEMICAL ROCKET PROPULSION GROUP IN SOLVING PROBLEMS ON THE SENSITIVITY OF NEW PROPELLANT MATERIALS (INITIALLY N-F COMPOUNDS) ALL INCIDENTS INVOLVING RAPID SPONTANEOUS DECOMPOSITION, PRESSURE EXPLOSION, OR DETONATION WILL BE RECORDED, REPORTED, AND COMPILED. THIS IS APPARENTLY THE SECOND COMPILATION.

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

\*EXPLOSIVE, CONVENTIONAL + \*INCIDENT COMPILATION + EXPLOSION + INCIDENT, NONNUCLEAR

8-23340 ALSO IN CATEGORY 9  
CHAMBERLAIN HV  
LEAK DETECTION--SODIUM-WATER REACTIONS  
ATOMIC POWER DEVELOPMENT ASSOCIATES, INC., DETROIT, MICHIGAN  
ANL-7380 +. 4 PAGES, 3 FIGURES, 1 TABLE, 1 REFERENCE, PAGES 75-78 OF PROCEEDINGS OF THE SYMPOSIUM ON LIQUID METAL INSTRUMENTATION AND CONTROL, MARCH 2, 1967

THE PROBLEMS ASSOCIATED WITH LEAK DETECTION OF SODIUM-WATER ARE REVIEWED, AND FOUR METHODS FOR DEVICE DESIGN ARE GIVEN.

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

\*INSTRUMENTATION, PROCESS + LEAK + LEAK RATE + METAL WATER REACTION

8-23377  
SAZONOVA MV + KOMAROVA GN  
PROTECTION OF BORON CARBIDE AGAINST OXIDATION AND REACTION WITH VARIOUS MATERIALS AT 1200 C IN AIR ATMOSPHERE  
8 PAGES, 4 FIGURES, 3 TABLES, 10 REFERENCES, ZH. PRIKL. KHIM., 39 PAGES 2662-9 (DEC. 1966)

A COMPLEX SILICO-SILICIDE-BORIDE-OXIDE COATING WAS DEVELOPED FOR PROTECTION OF BORON CARBIDE AGAINST OXIDATION AND CONTACT WITH QUARTZ, CORUNDUM, BEO<sub>2</sub>, AND MOSI<sub>2</sub> AND C-FE ALLOYS IN ATMOSPHERE AT 1200 C FOR OVER 300 HR. THE PHYSICOCHEMICAL REACTIONS TAKING PLACE BETWEEN THE SILICO-SILICIDE-BORIDE-OXIDE COATING AND ITS COMPONENTS, THE BACKING MATERIAL, AND GAS MEDIA DURING FUSING OF THE COATING ON THE BORON CARBIDE HAD DECISIVE EFFECTS ON THE PROCESS OF FORMATION AND PROTECTION PROPERTIES OF THE COATING.

\*AIR + \*BORON + \*CARBIDE + \*CHEMICAL REACTION + \*COATING, SURFACE + CONTROL ROD + OXIDE + SILICON + USSR

8-23435  
ANFIMOV NA  
COMBUSTION OF GRAPHITE IN AN AIR FLOW AT HIGH TEMPERATURES  
8 PAGES, FIGURES, REFERENCES, IZV. ZN SSSR MEKH I MASHINOSTR, 5, PAGES 3-11 (1964)

THE RATES OF REACTION OF GRAPHITE WITH AIR AT TEMPERATURES GREATER THAN 3000 K WERE DETERMINED BY A MATHEMATICAL ANALYSIS. AT THESE TEMPERATURES, THE REACTION RATES ARE LIMITED BY THE RATES OF DIFFUSION OF THE VARIOUS COMPONENTS THROUGH THE BOUNDARY LAYER ADJACENT TO THE SOLID SURFACE. IN CALCULATING THE RATES, IT WAS FOUND THAT APPROXIMATION SCHEMES IN CALCULATING THE DIFFUSION CONSTANTS, SUCH AS ASSUMING THAT THE MULTICOMPONENT GAS MIXTURE IS A BINARY GAS MIXTURE, RESULTED IN A CONSIDERABLE ERROR IN THE RATE OF GRAPHITE CONSUMPTION. HOWEVER THESE APPROXIMATIONS HAD LITTLE EFFECT ON THE GRAPHITE SURFACE TEMPERATURE.

\*AIR + \*ANALYTICAL MODEL + \*CHEMICAL KINETICS + \*COMBUSTION + \*GRAPHITE + BOUNDARY LAYER, REACTING + CHEMICAL REACTION + DIFFUSION COEFFICIENT + MASS TRANSFER + MATHEMATICAL STUDY + USSR

CATEGORY 8  
SOURCES OF ENERGY RELEASE UNDER ACCIDENT CONDITIONS

8-24058 ALSO IN CATEGORIES 5 AND 12  
ZABEL CW  
LETTER FROM ACRS TO CHAIRMAN AEC  
AEC, DIVISION OF OPERATIONAL SAFETY  
3 PAGES, FEBRUARY 26, 1968, FROM USAEC PRESS RELEASE L-42

SUBJECT - REPORT OF ADVISORY TASK FORCE ON POWER REACTOR EMERGENCY COOLING (TID-24226).  
COMMENTS ON TID-24226, ADVISORY TASK FORCE REPORT, ARE PRESENTED IN THIS LETTER.

AVAILABILITY - AEC, DIVISION OF OPERATIONAL SAFETY, WASHINGTON, D. C.

ACCIDENT ANALYSIS + ACCIDENT, LOSS OF COOLANT + ACRS + BLOWDOWN + CORE MELTDOWN +  
EMERGENCY COOLING CONSIDERATIONS + EMERGENCY SYSTEM + REACTOR, BWR + REACTOR, PWR + SAFETY PROGRAM

8-24059 ALSO IN CATEGORIES 5 AND 12  
REPORT OF ADVISORY TASK FORCE ON POWER REACTOR EMERGENCY COOLING  
US ATOMIC ENERGY COMMISSION  
TID-24226 +. 226 PAGES, FIGURES, TABLES, REFERENCES, 1968

CONCLUSIONS, DISCUSSIONS, AND TECHNICAL APPENDICES ARE PRESENTED AS THE FOLLOWING ITEMS - (1) PHENOMENA ASSOCIATED WITH LOSS OF COOLANT (LOC), (2) STRUCTURAL RESPONSE REQUIREMENTS TO BLOWDOWN, (3) REQUIREMENTS OF EMERGENCY CORE-COOLING (ECC) SYSTEM, (4) TECHNOLOGY OF ECC, (5) PRACTICALITY OF ECC SYSTEM, (6) RELIABILITY ANALYSIS, (7) PRIMARY SYSTEM INTEGRITY, (8) BREAK SIZE FOR EMERGENCY CORE-COOLING DESIGN, (9) SAFEGUARDS ROLE OF CONTAINMENT, (10) CORE MELTDOWN, (11) COUNTERMEASURE PRIOR TO LOSS OF CONTAINMENT INTEGRITY, (12) HANDLING OF LARGE MOLTEN MASSES.

AVAILABILITY - USAEC DIRECTOR OF REGULATION, WASHINGTON, D. C., COPY IS FREE

ACCIDENT ANALYSIS + ACCIDENT, LOSS OF COOLANT + ACRS + BLOWDOWN + CORE MELTDOWN +  
EMERGENCY COOLING CONSIDERATIONS + EMERGENCY SYSTEM + REACTOR, BWR + REACTOR, PWR + SAFETY PROGRAM



CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-17949  
BLAHD D  
ELECTRONIC EQUIPMENT FOR THE CONTROL OF A REACTOR  
CESKOSLOVENSKA AKADEMIE VED, REZ. USTAV JADERNEHO VYZKUMU  
UJV-1632 +. 10 PAGES, DECEMBER 1966, IN CZECH

DEALS WITH ELECTRONIC EQUIPMENT FOR THE AUTOMATIC CONTROL AND PROTECTION OF A REACTOR WITH MOVING DETECTING ELEMENTS. THE EQUIPMENT PROCESSES THE PULSES FROM THE NEUTRON DETECTOR AND SUPPLIES THE OUTPUT SIGNALS FOR THE CONTROL OF THE REACTOR AND THE POSITIONS OF THE DETECTING ELEMENTS. THE ELECTRONIC EQUIPMENT CONSISTS OF A LINEAR PULSE AMPLIFIER, A PULSE DISCRIMINATOR, A LINEAR AND A LOGARITHMIC COUNTING RATE METER, A COMPARISON CIRCUIT AND PROTECTING CIRCUITS.

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

INSTRUMENTATION, LINEAR + INSTRUMENTATION, LOGARITHMIC + INSTRUMENTATION, PULSE + INSTRUMENTATION, RATE OF CHANGE + REACTOR CONTROL + REACTOR SAFETY SYSTEM

9-20638 ALSO IN CATEGORY 17  
MCCARTHY WJ + JENS WH  
ENRICO FERMI FAST BREEDER REACTOR  
POWER REACTOR DEVELOPMENT CO. + ATOMIC POWER DEVELOPMENT ASSOCIATES, INC.  
4 PAGES, NUCLEAR NEWS 10(11), PAGE 54-57, (NOVEMBER 1966)

SHORT DISCUSSION OF CURRENT STATUS, MOSTLY WHAT HAS BEEN LEARNED. AN INLET STRAINER, CORE-PLATE STANDOFF PINS, OR PROVISION FOR CROSS FLOW WOULD HELP ELIMINATE FUTURE MELTDOWNS. REACTIVITY RATE-OF-CHANGE INFORMATION AND A FASTER FISSION-PRODUCT MONITOR (DELAYED NEUTRONS AT CORE EXIT TO SUPPLEMENT PRESENT SENSITIVE COVER-GAS AS DETECTOR WITH 13-MIN TRANSPORT LAG) IS NEEDED. FEW PROVISIONS WERE MADE FOR INCIDENT RECOVERY, E.G., DIFFICULT ACCESS TO WHOLE CORE, NO PROVISION FOR DRAINING VESSEL OR FOR ON-SITE INSPECTION OF IRRADIATED FUEL.

\*FLOW BLOCKAGE + \*FUEL MELTDOWN + \*INCIDENT, GENERAL + FERMI (LMFBR) + FUEL HANDLING MACHINE + INCIDENT, RECOVERY FROM + INSTRUMENTATION, DETECTION FAILED FUEL ELEMENT + INSTRUMENTATION, OPERATING REACTIVITY + OPERATING EXPERIENCE SUMMARY + REACTOR, LMCR + REMOTE MANIPULATING AND VIEWING

9-20708  
BILLETER TR + BROWN DP  
MICROWAVE TECHNIQUES FOR REACTOR INSTRUMENTATION  
BATTELLE NORTHWEST LAB.  
16 PAGES, 8 FIGURES, 4 REFERENCES, ABSTRACT IN ANS TRANSACTIONS 10(2), PAGE 637, (NOV. 9, 1967), PRESENTED AT 1967 WINTER MEETING OF THE AMERICAN NUCLEAR SOCIETY, CHICAGO, ILLINOIS, NOVEMBER 5-9, 1967

THEORETICAL INVESTIGATIONS AND EXPERIMENTAL WORK REGARDING NEW AND PROMISING SENSORS AND INSTRUMENTATION FOR HIGH-FLUX HIGH-TEMPERATURE REACTORS ARE BEING CONDUCTED. MICROWAVE TECHNIQUES AND IN-CORE SENSORS WHICH MEASURE THERMAL-NEUTRON FLUX DENSITY, REACTOR TEMPERATURE, AND COOLANT-GAS IMPURITIES HAVE EXHIBITED PROMISING CHARACTERISTICS. FOR MEASUREMENT TECHNIQUES, THE DEVIATION OF THE RESONANT FREQUENCY OF A MICROWAVE CAVITY IS RELATED TO THE MONITORED QUANTITY.

\*COMPARISON, THEORY AND EXPERIENCE + \*INSTRUMENTATION, IN CORE + FLUX, INTEGRATED + HIGH TEMPERATURE + INSTRUMENTATION, COOLANT QUALITY + INSTRUMENTATION, NUCLEAR + INSTRUMENTATION, TEMPERATURE + MEASUREMENT, TEMPERATURE + RADIATION EFFECT + THERMAL NEUTRON

9-20709 ALSO IN CATEGORY 17  
CALLEN RC + PROUTEAU LP + FRIEDLAND AJ  
RESPONSE OF FERMI FUEL SUBASSEMBLY OUTLET THERMOCOUPLES UNDER NORMAL AND FUEL-FAILURE CONDITIONS  
ATOMIC POWER DEVELOPMENT ASSOCIATES, INC. + ELECTRICITE DE FRANCE  
2 PAGES, ANS TRANSACTIONS 10(2), PAGE 637 AND 638, (NOVEMBER 9, 1967), PRESENTED AT THE 1967 WINTER MEETING OF THE AMERICAN NUCLEAR SOCIETY, CHICAGO, ILLINOIS, NOVEMBER 5-9, 1967

HIGH-POWER TESTS INCLUDED MEASUREMENT OF CORE AND INNER RADIAL BLANKET LOCAL COOLANT OUTLET TEMPERATURES TO DETERMINE STATIC THERMAL RESPONSE. RESPONSE OF THE TEMPERATURE INSTRUMENTATION WAS EXAMINED IN ISOTHERMAL TESTS. REACTOR POWER AND ELECTROMAGNETIC FLOWMETERS WERE CALIBRATED DURING HEAT-BALANCE MEASUREMENTS ON THE STEAM-FEEDWATER SIDE OF THE STEAM GENERATORS.

\*INSTRUMENTATION CALIBRATION + \*TEST, INSTRUMENT RESPONSE + COMPARISON, THEORY AND EXPERIENCE + FERMI (LMFBR) + INSTRUMENTATION, FLOW + INSTRUMENTATION, POWER RANGE + INSTRUMENTATION, TEMPERATURE + OPERATING EXPERIENCE SUMMARY + REACTOR, FAST + REACTOR, LMCR

9-20710  
DAU GJ

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-20710 \*CONTINUED\*  
PHOTON DEPENDENCE OF THERMOCOUPLE CALIBRATION  
BATTELLE NORTHWEST LABORATORY  
1 PAGE, 2 REFERENCES, ANS TRANSACTIONS 10(2), PAGE 638, (NOVEMBER 9, 1967), PRESENTED AT THE 1967 WINTER MEETING OF THE AMERICAN NUCLEAR SOCIETY, CHICAGO, ILLINOIS, NOVEMBER 5-9, 1967

PRESENTS A METHOD TO INDICATE HOW RADIATION CAN ALTER THERMOCOUPLE CALIBRATIONS. DATA FROM AN EXPERIMENTAL GAMMA FACILITY IS ALSO PRESENTED.

\*INSTRUMENTATION, TEMPERATURE + IRRADIATION TESTING + INSTRUMENTATION CALIBRATION + TEST, INSTRUMENT RESPONSE

9-20711  
ENGSTROM SL + BENNETT RA  
ANALYSIS OF FTR CONTROL-ROD EXPERIMENTS PERFORMED IN ZPR-3 ASSEMBLY 4A AND 4BA  
BATTELLE NORTHWEST LABORATORY  
2 PAGES, 1 FIGURE, 1 REFERENCE, ANS TRANSACTIONS 10(2), PAGE 528 AND 529, (NOVEMBER 9, 1967), PRESENTED AT THE 1967 WINTER MEETING OF THE AMERICAN NUCLEAR SOCIETY, CHICAGO, ILLINOIS, NOVEMBER 5-9, 1967

REACTIVITY WORTHS OF B4C CONTROL ELEMENTS WERE MEASURED IN ZPR-3 ASSEMBLIES 4A AND 4BA IN SUPPORT OF THE DESIGN OF THE CONTROL SYSTEM OF THE FAST FLUX TEST FACILITIES (FAST TEST REACTOR). AN ANALYSIS IS GIVEN OF THESE EXPERIMENTS OBTAINED WITH FEW-GROUP, S2, TWO-DIMENSIONAL TRANSPORT THEORY.

\*CONTROL ROD WORTH + CRITICAL ASSEMBLY FACILITY + FFTF (TR) + REACTOR, FAST + REACTOR, TEST + ZPR 2 (CAF)

9-20712  
HYNDMAN RW + TUCK MR + KIRN FS  
ON-LINE TRANSFER FUNCTION ANALYSIS OF EBR-II  
ARGONNE NATIONAL LAB.  
1 PAGE, 1 FIGURE, 1 REFERENCE, ANS TRANSACTIONS 10(2), PAGE 696, PRESENTED AT THE 1967 WINTER MEETING OF THE AMERICAN NUCLEAR SOCIETY, CHICAGO, ILLINOIS, NOVEMBER 5-9, 1967

THE IBM-1620 COMPUTER WAS APPLIED TO TRANSFER-FUNCTION MEASUREMENT AND ANALYSIS TO (1) DECREASE THE TIME REQUIRED FOR DATA COLLECTION AND PROCESSING, (2) INCREASE THE ACCURACY OF THE RESULT, (3) REDUCE THE NUMBER OF PERSONNEL NECESSARY FOR THE EXPERIMENT. THE RESULTS OF THE EXPERIMENT INDICATE A TWO-TO-FOUR FOLD INCREASE IN THE ACCURACY OVER THE PREVIOUS ANALOG AND NULL DETECTION METHODS, AND RESULTS ARE AVAILABLE IMMEDIATELY ON COMPLETION OF EACH FREQUENCY POINT.

\*COMPARISON, THEORY AND EXPERIENCE + TRANSFER FUNCTION + COMPUTER, DIGITAL + DATA PROCESSING + EBR 1 AND 2 (RE) + MATHEMATICAL TREATMENT + REACTOR, BREEDER + SIMULATION

9-20713  
KUNZE JF + SIMS FL + PEID RE  
CONTROL METHODS FOR A COMPACT SPACE POWER REACTOR  
GENERAL ELECTRIC  
2 PAGES, 1 FIGURE, 1 TABLE, ANS TRANSACTIONS 10(2), PAGE 421 AND 422, (NOV. 9, 1967), PRESENTED AT THE 1967 WINTER MEETING OF THE AMERICAN NUCLEAR SOCIETY, CHICAGO, ILLINOIS, NOVEMBER 5-9, 1967

CRITICAL EXPERIMENTS WERE PERFORMED ON A SIMPLIFIED GEOMETRICAL REPRESENTATION OF THE 710 BRAYTON-CYCLE REACTOR CONCEPT. SYSTEMS WITH BERYLLIUM RADIAL REFLECTORS WERE STUDIED. MEASUREMENTS WERE ALSO MADE ON A SYSTEM WITH A STAINLESS-STEEL REFLECTOR. THE EFFECTS ON THE POWER DISTRIBUTION WERE QUITE SIGNIFICANT NEAR THE CORE EDGE FOR THE THICK BERYLLIUM-REFLECTED SYSTEMS AND ALMOST NEGLIGIBLE FOR THE STAINLESS-STEEL SYSTEM.

\*CONTROL ROD WORTH + REACTOR, SPACE + BERYLLIUM + REFLECTOR + STEEL, STAINLESS + TESTING

9-20714  
PEARSON CV  
DEVELOPMENTS IN THE ELIMINATION OF BORON LOSS DURING FABRICATION OF STAINLESS-STEEL-UO2 CERMET FUEL  
ARGONNE NATIONAL LAB.  
2 PAGES, 4 REFERENCES, ANS TRANSACTIONS 10(2), PAGE 481 AND 482, (NOVEMBER 9, 1967), PRESENTED AT THE 1967 WINTER MEETING OF THE AMERICAN NUCLEAR SOCIETY, CHICAGO, ILLINOIS, NOVEMBER 5-9, 1967

TWO TECHNIQUES FOR PREVENTING LOSS OF BORON WERE INVESTIGATED. THE FIRST INVOLVED THE USE OF A CHROMIUM CARBIDE AND NIOBIUM BARRIER COATING AND RESTRICTING FABRICATION TEMPERATURES TO LESS THAN 1175 C. THE SECOND USED BOROSILICATE GLASS BEADS DISPERSED THROUGHOUT THE CERMET. IRRADIATION TESTING OF FUEL-PLATE SAMPLES DEMONSTRATED THAT THESE MATERIALS WOULD PERFORM WELL UNDER AARR CONDITIONS.

\*CONTROL ROD FABRICATION + AARR (RR) + BORON + FUEL ELEMENT + POISON, BURNABLE + REACTOR, RESEARCH

9-20715  
GRADLER MJ + ZUKOR M + GIBSON AW

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-20715 \*CONTINUED\*  
SUPERIOR IRRADIATION PERFORMANCE OF STAINLESS-STEEL CERMET FUEL PLATES THROUGH USE OF LOW-DENSITY UO<sub>2</sub> IDAHO NUCLEAR CORP.  
1 PAGE, 2 REFERENCES, ANS TRANSACTIONS 10(2), PAGE 482, (NOV. 9, 1967), PRESENTED AT THE 1967 WINTER MEETING OF THE AMERICAN NUCLEAR SOCIETY, CHICAGO, ILLINOIS, NOVEMBER 5-9, 1967

IMPROVEMENT IN CORE LIFETIME OF UO<sub>2</sub> STAINLESS-STEEL CERMET FUEL PLATES WAS PREDICTED THROUGH USE OF AN IDEAL DISPERSION AND ELIMINATING FUEL-PARTICLE STRINGERING AND FRACTURING. IRRADIATION TESTING IN SUPPORT OF THE ARGONNE ADVANCE RESEARCH REACTOR HAS SHOWN THAT THE UO<sub>2</sub> FUEL-PARTICLE DENSITY IS ALSO OF MAJOR IMPORTANCE IN PROLONGING FUEL OPERATING LIFE. THIS WAS DETERMINED BY IRRADIATION AND EVALUATION OF CERMET FUEL PLATES MADE FROM A SINGLE BATCH OF UO<sub>2</sub> BY TWO DIFFERENT FUEL FABRICATORS, USING DIFFERENT PROCEDURES. THE PLATE WITH MORE STRINGERING AND POORER FUEL DISPERSION, BUT WITH LOWER AS-FABRICATED FUEL-PARTICLE DENSITY, EXHIBITED THE SUPERIOR PERFORMANCE.

AARR (RR) + CONTROL ROD FABRICATION + FUEL ELEMENT + IRRADIATION TESTING + REACTOR, RESEARCH + STEEL, STAINLESS + URANIUM OXIDE

9-20803  
DEVELOPMENT OF A BORON CONCENTRATION METER. QUARTERLY PROGRESS REPORT FOR THE PERIOD ENDING JANUARY 31, 1967  
WESTINGHOUSE ELECTRIC CORP., PITTSBURGH, PA.  
WCAP-3690-2 + EURAEC-1778 +. 56 PAGES, FIGURES, TABLES, FEBRUARY 1967

THIS PROGRESS REPORT IS ONE OF A SERIES. THE OVERALL OBJECTIVE OF THE PROGRAM IS TO DEVELOP, DESIGN, TEST, AND EVALUATE THE PERFORMANCE OF A PROTOTYPE BORON-CONCENTRATION METER. THE METER SHOULD BE SUITABLE FOR AUTOMATED USE IN DETERMINING BORON CONCENTRATIONS IN THE COOLANT OF A CLOSED-CYCLE, WATER-MODERATED AND COOLED POWER REACTOR. THE DESIGN OBJECTIVES FOR THE BORON METER INCLUDE A PRECISION OF PLUS OR MINUS 0.3% OR 2 PPM (WHICHEVER IS GREATER) AND A RESPONSE TIME OF ABOUT 1 MIN. NO FURTHER REPORTS IN THIS SERIES WILL BE SUMMARIZED UNLESS A SIGNIFICANT CHANGE IN THE PROGRAM OR A SIGNIFICANT ITEM OF INTEREST TO NSIC IS REPORTED.

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

COOLANT QUALITY + INSTRUMENTATION, COOLANT QUALITY + INSTRUMENTATION, SURVEILLANCE

9-20992 ALSO IN CATEGORY 18  
USE OF PART LENGTH ABSORBER RODS IN WESTINGHOUSE PRESSURIZED WATER REACTORS  
PACIFIC GAS AND ELECTRIC CO.  
WCAP-7072 +. 24 PAGES, 11 FIGURES, AMENDMENT 1 TO APPLICATION FOR LICENSE (FIRST SUPPLEMENT TO DIABLO CANYON PRELIMINARY SAFETY ANALYSIS REPORT), JUNE 1967, DOCKET 50-275, TYPE--PWR, MFG.--WEST, AE--PG+E

THE PART-LENGTH RODS, PROVIDED IN ADDITION TO THE NORMAL CONTROL-ROD SYSTEM, ARE FOR SHAPING THE AXIAL POWER DISTRIBUTION AND CONTROLLING AXIAL XENON OSCILLATIONS. 8 RODS ARE TO BE USED.

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

\*CONTROL ROD + POWER DISTRIBUTION + XENON OSCILLATION

9-21225  
JACKSON CN  
REACTOR IN-CORE REGENERATIVE NEUTRON DETECTORS INTERIM DEVELOPMENT REPORT  
BATTELLE NORTHWEST, PACIFIC NORTHWEST LAB., RICHLAND, WASHINGTON  
BNWL-430 +. 20 PAGES, 7 FIGURES, 2 TABLES, 6 REFERENCES, OCTOBER 1967

DEVELOPMENT OF REGENERATIVE U-234, U-235 NEUTRON FLUX DETECTORS IS BEING CONDUCTED. APPROPRIATE COMBINATIONS OF THE ISOTOPES ARE USED SUCH THAT THE FERTILE ATOMS TRANSMUTE, BY ABSORPTION OF THERMAL NEUTRONS, TO FISSILE ATOMS AT ABOUT THE SAME RATE AS THE FISSILE MATERIAL DEPLETES. THUS, LONG-TERM DETECTION SENSITIVITY REMAINS RELATIVELY CONSTANT FOR EXTENDED IN-CORE EXPOSURE PERIODS.

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

\*EQUIPMENT DESIGN + \*INSTRUMENTATION, COMPONENT + \*INSTRUMENTATION, IN CORE + FLUX, INTEGRATED + IN CORE MEASUREMENT + NEUTRON + TEST, INSTRUMENT RESPONSE

9-21229  
POPPER GF + LIPINSKI WC + HARPER JM  
WIDE-RANGE COUNTING-CAMPBELLING NEUTRON-FLUX DETECTION SYSTEM  
ARGONNE NATIONAL LABORATORY  
ANL-7224 +. 45 PAGES, 7 FIGURES, 2 TABLES, 10 REFERENCES, APRIL 1967

A NEUTRON-DETECTION SYSTEM THAT USES A SINGLE FIXED-POSITION NEUTRON DETECTOR TO CONTINUOUSLY MONITOR UP TO TEN DECADES OF REACTOR POWER WAS ASSEMBLED AND TESTED. SUPERIOR GAMMA DISCRIMINATION, COMPARED WITH THAT FOR CONVENTIONAL SYSTEMS, WAS REALIZED OVER THE ENTIRE NEUTRON-FLUX RANGE.

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-21229 \*CONTINUED\*  
AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA., \$3.00  
COPY, \$0.65 MICROFICHE

COMPARISON, THEORY AND EXPERIENCE + COUNTER + FLUX, INTEGRATED + INSTRUMENTATION, CAMPBELLING +  
INSTRUMENTATION, WIDE RANGE + NEUTRON

9-21230  
STRINDEHAG O  
CHERENKOV DETECTORS FOR FISSION PRODUCT MONITORING IN REACTOR COOLANT WATER  
AKTIEBOLAGET ATOMENERGI, STOCKHOLM, SWEDEN  
AE-294 +. 56 PAGES, REFERENCES, SEPTEMBER 1967

THE PROPERTIES OF CHERENKOV DETECTORS WHEN USED FOR FISSION-PRODUCT MONITORING IN WATER COOLED  
REACTORS ARE DISCUSSED. THE BASIC THEORY FOR CALCULATION OF THE DETECTOR RESPONSE IS  
PRESENTED, TAKING THE OPTICAL TRANSMISSION IN THE SAMPLE CONTAINER AND THE PROPERTIES OF THE  
PHOTOMULTIPLIER TUBE INTO ACCOUNT. SPECIAL ATTENTION IS PAID TO THE ENERGY RESOLUTION OF  
THIS TYPE OF CHERENKOV DETECTOR. FOR THE DESIGN OF PRACTICAL DETECTORS THE RESULTS FROM  
SEVERAL INVESTIGATIONS OF VARIOUS WINDOW AND REFLECTOR MATERIALS ARE GIVEN. THE SELECTION OF  
PHOTOMULTIPLIER TUBES IS BRIEFLY DISCUSSED.

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

\*INSTRUMENTATION, DETECTION FAILED FUEL ELEMENT + COMPARISON, THEORY AND EXPERIENCE + EQUIPMENT DESIGN +  
FISSION PRODUCT ACTIVITY, GROSS + INSTRUMENTATION, COMPONENT + INSTRUMENTATION, COOLANT QUALITY +  
INSTRUMENTATION, RADIATION MONITORING

9-21231  
KREJCI M + BLAZEK J + ZIKAN M  
THE DYNAMICS OF TR-O REACTOR MODERATOR LEVEL CONTROLLED BY CIRCULAR OVERFLOW--ANALOGUE SOLUTION  
CESKOSLOVENSKA AKADEMIE VED, REZ.  
UJV-1845 +. 50 PAGES, JULY 1967, IN CZECH

A CONTROL DEVICE IN THE FORM OF A CIRCULAR VERTICALLY MOVING OVERFLOW WAS DESIGNED TO CONTROL  
THE TR-O REACTOR BY HEAVY-WATER-MODERATOR LEVEL. THE DYNAMICS OF THE REACTOR HYDRAULIC  
SYSTEM WITH THE CONTROLLING OVERFLOW POSITIONED IN A SPECIAL AUXILIARY VESSEL IS SOLVED WITH  
AN ANALOGUE COMPUTER. THE ESSENTIAL NONLINEARITIES OF THE SYSTEM ARE CONSIDERED. A NUMBER  
OF VARIANTS IS INVESTIGATED WHICH INVOLVE VARIOUS CHARACTERISTIC VALUES OF THE CONTROL DEVICE.

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

\*INSTRUMENTATION, CONTROL + \*INSTRUMENTATION, FLOW + \*INSTRUMENTATION, LIQUID LEVEL DETECTION +  
REACTOR, HWR + SIMULATION

9-21232  
GRISSOM M  
SOME FIRST THOUGHTS ON THE SPR-6 REACTOR CONTROL SYSTEM  
LAWRENCE RADIATION LABORATORY, IVERMORF  
UCID-15204 +. 14 PAGES, AUGUST 2, 1967

A PNEUMATIC SERVO SYSTEM AND A GENERAL LOGIC-CONTROL SCHEME ARE PRESENTED AS A METHOD FOR  
CONTROLLING THE SPR-6 REACTOR. SOME PNEUMATIC DEVICES UTILIZING THE TECHNIQUES OF FLUIDICS  
TECHNOLOGY ARE EXAMINED.

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

\*INSTRUMENTATION, CONTRL + CONTROL SYSTEM + INSTRUMENTATION, FLUIDICS + REACTOR CONTROL + SERVOMECHANISM +  
SPACECRAFT

9-21233  
CLARK RH + BALDWIN MN  
PHYSICS VERIFICATION PROGRAM. PART II. QUARTERLY TECHNICAL REPORT, APRIL-JUNE 1967  
BARCOCK AND WILCOX CO., LYNCHBURG, VA.  
BAW-3647-5 +. 27 PAGES, FIGURES, TABLES, SEPTEMBER 1967

THE BARCOCK AND WILCOX COMPANY--NUCLEAR DEVELOPMENT CENTER, QUARTERLY TECHNICAL REPORT. ONE  
OF A SERIES OF SIMILAR REPORTS CONCERNED WITH EXPERIMENTS TO INVESTIGATE AND COMPARE THE  
RESPONSE CHARACTERISTICS OF IN-CORE AND OUT-OF-CORE STARTUP DETECTORS FOR USE WITH LARGE  
PRESSURIZED-WATER REACTORS.

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

\*INSTRUMENTATION, STARTUP + IN CORE MEASUREMENT + INSTRUMENTATION, IN CORE + REACTOR, PWR +  
SOLID STATE DEVICE

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-21234  
TIREN LI  
MEASUREMENTS AND ANALYSIS OF REACTIVITY EFFECTS IN EMPTY CHANNELS IN A FAST REACTOR  
AKTIEBOLAGET ATOMENERGI, STUOVSVIK, SWEDEN  
5 PAGES, 7 FIGURES, 2 TABLES, 11 REFERENCES, NUKLEONIK, 10, PAGES 14-18 (JUNE 1967)

MEASUREMENTS OF NEUTRON STREAMING IN EMPTY CHANNELS AND INTERFRACTION BETWEEN CHANNELS WERE MADE IN THE ZERO-ENERGY FAST REACTOR FR-0. CALCULATIONS OF THE MEASURED EFFECTS WERE MADE USING DIFFUSION THEORY WITH STREAMING-CORRECTED DIFFUSION CONSTANTS. WHILE EXACT AGREEMENT WITH EXPERIMENT WAS NOT ACHIEVED, THE CALCULATED VALUES QUALITATIVELY REPRODUCE THE EXPERIMENTAL RESULTS. THE OBSERVED STREAMING EFFECTS ARE LARGE ENOUGH TO WARRANT CONSIDERATION IN CURRENT MEASUREMENTS OF COOLANT-VOID REACTIVITIES PERFORMED IN FAST ZERO-ENERGY REACTORS.

\*MEASUREMENT, REACTIVITY + COMPARISON, THEORY AND EXPERIENCE + REACTIVITY EFFECT + REACTOR, FAST

9-21235 ALSO IN CATEGORY 6  
DRAGT JB  
THREEFOLD CORRELATIONS AND THIRD ORDER MOMENTS IN REACTOR NOISE  
REACTOR CENTRUM NEDERLAND, PETTEN, NETHERLANDS  
7 PAGES, 2 FIGURES, NUKLEONIK, 10, PAGES 7-13 (JUNE 1967)

PRESENTS A THEORY FOR THE EVALUATION OF THIRD-ORDER MOMENTS OF NEUTRON COUNTS IN A REACTOR DUE TO THREEFOLD CORRELATION OF THE DETECTED NEUTRONS. POINT REACTOR THEORY IS USED THROUGHOUT. THE PROBABILITY FOR DETECTION OF THREE NEUTRONS IN SUCCESSION IS FOUND, AND FROM THAT THE CENTRAL MOMENTS OF THE NUMBERS OF NEUTRON COUNTS IN SPECIFIED TIME INTERVALS ARE CALCULATED, AS WELL AS THE TRIPLE AUTOCORRELATION FUNCTION FOR THE COUNT RATE. THE THREEFOLD CORRELATIONS ARE SHOWN TO BE DUE TO TWO BRANCHING PROCESSES IN THE FISSION CHAINS IN THE REACTOR. IN THE DOMINATING AND EASILY MEASURABLE PROCESS ONLY SPLITTING OF THE FISSION CHAINS INTO TWO BRANCHES IS DETECTED. A VARIANT OF THE FEYNMAN ALPHA TECHNIQUE IS PROPOSED FOR THE MEASUREMENT OF THIS EFFECT. IN THE OTHER PROCESS, TRIPLE SPLITTING OF THE FISSION CHAIN IS INVOLVED. THIS PROCESS CAN PROVIDE NEW PHYSICAL INFORMATION. IN PARTICULAR, REACTOR POWER AND EFFECTIVE DELAYED NEUTRON FRACTION CAN BE OBTAINED WITHOUT THE NEED FOR ANY OTHER STATIC MEASUREMENT. AN EXPERIMENT FOR THE MEASUREMENT OF THIS EFFECT IS PROPOSED, WHICH IS SHOWN TO BE MOST FEASIBLE FOR A FAST REACTOR.

\*NOISE ANALYSIS + MATHEMATICAL TREATMENT + REACTOR, FAST + ROSSI ALPHA + THEORETICAL INVESTIGATION

9-21236  
UTSURO M + SHIBATA T  
POWER NOISE SPECTRA OF A WATER REACTOR IN LOW-FREQUENCY REGION  
KYOTO UNIVERSITY  
6 PAGES, 8 FIGURES, 6 REFERENCES, J. NUCLEAR SCIENCE TECHNOLOGY (TOKYO), 4, PAGES 267-72 (JUNE 1967)

POWER-NOISE MEASUREMENTS WERE CARRIED OUT ON THE KYOTO UNIVERSITY REACTOR AT VARIOUS POWER LEVELS UNDER NATURAL CONVECTION FOR TWO KINDS OF CORE CONFIGURATION WITH DIFFERENT TEMPERATURE COEFFICIENTS OF REACTIVITY. ANALYSIS OF THE RESULTS REVEALED STRONG NOISE IN THE LOW-FREQUENCY REGION AT HIGHER LEVELS, EVEN WITH A CORE CONFIGURATION OF ESSENTIALLY ZERO TEMPERATURE COEFFICIENT OF TOTAL REACTIVITY.

\*MEASUREMENT, NOISE + FLUCTUATION + JAPAN + NOISE + NOISE ANALYSIS

9-21237  
KITANO A  
REACTOR-CONTROL DEVICE WITH CONTROL ELEMENTS WOUND AND UNWOUND  
TOKYO ELECTRIC POWER CO., INC.  
JAPANESE PATENT 1966-2240 +. 4 PAGES, 5 FIGURES, FEBRUARY 15, 1966, IN JAPANESE

IN THE REACTOR CONTROL DEVICE, CONTROL RODS WITH CONTROL ELEMENTS WOUND AND UNWOUND ARE USED. BY MEANS OF THE THIN, WIDE, AND LONG CONTROL ELEMENTS, WHICH CAN BE WOUND AND UNWOUND IN THE CONTROLLED CASE, THE NEUTRON-ABSORBING AREA CAN BE VARIED FREELY. IN AND THROUGH THE CONTROL ROD CASE IS INSTALLED A ROTARY SHAFT. ONE END OF EACH FLEXIBLE CONTROL ELEMENT LONG PLATE IS FIXED ONTO THIS SHAFT, AND THE OTHER END (OR THE PLATE ITSELF) CAN BE DRAWN OUT OF THE CASE THROUGH THE SLIT CUT IN THE CASE WALL. THE CONTROL-ELEMENT PLATES CAN BE TAKEN OUT OR PUT BACK IN THE CONTROL-ROD CASE.

CONTROL ROD + JAPAN + PATENT + REACTOR CONTROL

9-21238  
GIANNINI G + LESNONI G + PAOLETTI GM + ZAFFIRO B  
THE EFFICIENCY OF THE ABSORBERS IN THE LATINA REACTOR  
ENTE NAZIONALE PER L ENERGIA ELETTRICA, POME, ITALY  
EUR-3487.I +. 56 PAGES, JUNE 1967, IN ITALIAN

LONG-TERM VARIATIONS IN THE REACTIVITY OF THE LATINA REACTOR ARE CONTROLLED BY ALTERING THE

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-21238 \*CONTINUED\*

WEIGHT AND NUMBER OF ABSORBER CHANNELS IN THE CORE. THE MEASURES TAKEN AT 1100 AND 1500 MW/D/T RESPECTIVELY ARE DESCRIBED. THE METHODS USED TO ANALYSE THE EXPERIMENTAL DATA ARE DISCUSSED. THE METHOD OF CALCULATING THE REACTIVITY CONTROLLED BY THE ABSORBERS AND THE DISTRIBUTIONS OF INTEREST FOR PURPOSES OF PREPARING THE EXPERIMENTAL DATA, TOGETHER WITH THE RESULTS OF THEORETICAL AND EXPERIMENTAL FINDINGS, IS GIVEN.

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

\*CONTROL ROD + \*REACTIVITY EFFECT + \*REACTOR CONTROL + COMPARISON, THEORY AND EXPERIENCE + ITALY

9-21239

CONTROL ELEMENTS FOR FAST NUCLEAR REACTORS  
HITACHI LTD.

BRITISH PATENT 1,056,950 +. 4 PAGES, 9 FIGURES, FEBRUARY 1, 1967

DESIGN OF CONTROL ELEMENTS COMPRISING NEUTRON MODERATOR AND ABSORBER IS DESCRIBED. THE NEUTRON ABSORBER HAS A LARGE NEUTRON-ABSORPTION CROSS SECTION IN THE INTERMEDIATE NEUTRON ENERGY RANGE IN COMBINATION WITH A LIMITED QUANTITY OF MODERATOR MATERIAL FOR SLOWING DOWN FAST NEUTRONS PRODUCED IN THE FUFL. FAST NEUTRONS ARE THUS MODERATED AND ABSORBED.

AVAILABILITY - THE PATENT OFFICE, 25 SOUTHAMPTON BUILDING, LONDON, W.C. 2, ENGLAND, \$0.49 COPY

\*CONTROL ROD + \*FAST NEUTRON + \*MODERATOR + JAPAN + PATENT + REACTOR, FAST + UNITED KINGDOM

9-21240

WILDE N + BOLAND TJ + ANDERSON SD  
INSTRUMENT DEVELOPMENT BRANCH, ANNUAL REPORT 1966

PHILLIPS PETROLEUM CO., IDAHO FALLS

IDC-17,234 +. 99 PAGES, 87 FIGURES, 5 TABLES, 41 REFERENCES, JULY 1967

THIS REPORT IS ONE OF A SERIES OF SUCH REPORTS DESCRIBING SIGNIFICANT DEVELOPMENT ACTIVITIES IN INSTRUMENTATION AT THE NATIONAL REACTOR TESTING STATION. THE BRANCH IS COMPOSED OF THREE SECTIONS WHICH SPECIALIZE IN DETECTOR APPLICATIONS, SYSTEMS DEVELOPMENT, AND SYSTEMS ANALYSIS. THE FIRST SECTION, DETECTOR DEVELOPMENT, DESCRIBES THE ACTIVITIES REQUIRING SPECIALIZED DETECTOR OR TRANSDUCER DEVELOPMENT. THE SECOND SECTION APPLIES MORE TOWARD COMPLETE MEASUREMENT SYSTEMS OR SPECIFIC COMPONENT IMPROVEMENTS AND INCLUDES DESCRIPTIONS OF TECHNIQUES DIRECTED TOWARD A PARTICULAR APPLICATION. THE THIRD SECTION OF THIS REPORT IS DIRECTED TOWARD REPORTING ON SOLUTIONS AVAILABLE THROUGH MATHEMATICAL MODELS AS APPLIED TO SPECIFIC REACTOR PROBLEMS.

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

CONTROL, COMPUTER + DATA PROCESSING + INSTRUMENTATION, GENERAL + INSTRUMENTATION, IN CORE + INSTRUMENTATION, NUCLEAP + INSTRUMENTATION, RADIATION MONITORING + INSTRUMENTATION, SURVEILLANCE + INSTRUMENTATION, TEMPERATURE + SIMULATION + TEST, INSTRUMENT RESPONSE

9-21413

ALSO IN CATEGORY 17

INDIAN POINT 1 REPORTS STUCK CONTROL ROD  
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

4 PAGES, DOCKET 50-3, TYPE--PWR, MFG--B+W, AF--COM ED, NOVEMBER 29, 1967

DURING TESTING OF THE CONTROL RODS AFTER REFUELING, NO. 8 ROD STUCK 16 IN. FROM FULL INSERTION UPON GRAVITY SCRAM. THE CONTROL ROD AND ASSOCIATED MECHANISMS WERE REMOVED, THE SNUBBER PISTON REQUIRING FORCE. A 1-1/2-X-1/4-X-1/4-IN. PIECE OF STAINLESS STEEL WAS FLUSHED FROM THE CONTROL-ROD POSITION. METALLOGRAPHIC AND ACTIVITY TESTS INDICATED THAT IT HAD BEEN LEFT IN THE REACTOR AT THE TIME OF CONSTRUCTION, 5 YEARS AGO.

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

\*FAILURE, SCRAM MECHANISM + \*INCIDENT, EQUIPMENT + CONTROL ROD + INDIAN POINT 1 (PWR) + REACTOR, EWR + TESTING

9-21418

ALSO IN CATEGORY 17

HTGR CRITICAL FACILITY REPORTS COMPONENT FAILURE IN SCRAM CIRCUIT  
GHE GENERAL ATOMIC INC.

1 PAGE, DOCKET 50-240, NOVEMBER 22, 1967

ON NOV. 1, 1967, DURING THE MONTHLY SAFETY EQUIPMENT CHECK, IT WAS DISCOVERED THAT THE OPTICAL METER RELAY IN THE FUEL-ELEMENT TEMPERATURE-GRADIENT SCRAM CHANNEL WAS INOPERATIVE. IT WAS REPLACED BY A SPARE, AND A TEST CIRCUIT ALLOWING WEEKLY CHECKS WAS INSTALLED. MALFUNCTION WAS NOTED IN LOG BOOK BUT NOT REPORTED TO AEC UNTIL NOV. 22, 1967.

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

\*FAILURE, COMPONENT + \*FAILURE, SCRAM MECHANISM + CRITICAL ASSEMBLY FACILITY + FUEL ELEMENT + INCIDENT, EQUIPMENT + REACTOR, HTGR + TEMPERATURE GRADIENT

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-21437 ALSO IN CATEGORY 17  
NS SAVANNAH CHANGE 8--CONTROL ROD DROP TIME TEST INTERVAL  
USAEC DIVISION OF REACTOR LICENSING  
5 PAGES, DOCKET 50-238, TYPE--PWR, MFG--R+W, AE--G.G. SHARP, NOVEMBER 7, 1967

TEST INTERVAL WILL BE ANNUAL INSTEAD OF SEMIANNUAL. SCRAM TIME IS FROM FULL OUT TO 2/3  
INSERTED. IF A TEST YIELDS A DROP TIME LONGER THAN 0.8 SEC (LICENSE LIMIT IS 1.0 SEC), TEST  
INTERVAL IS REDUCED TO SEMIANNUAL.

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

\*CONTROL ROD SCRAM MECHANISM + \*RESPONSE TIME + \*TEST INTERVAL + NS SAVANNAH (PWR) + REACTOR, PWR +  
SAFETY EVALUATION + TECHNICAL SPECIFICATIONS

9-21775  
BILLETER TR + BROWN DP  
MICROWAVE MEASUREMENT OF HIGH TEMPERATURES WITHIN NUCLEAR REACTORS. INTERIM REPORT  
BATTELLE-NORTHWEST, RICHLAND, WASH. PACIFIC NORTHWEST LAB.  
BNWL-399 +. 25 PAGES, 7 FIGURES, 1 TABLE, 11 REFERENCES, OCTOBER 1967

TWO MICROWAVE METHODS OF MEASURING REACTOR IN-CORE TEMPERATURES ARE PROPOSED. MEASUREMENTS BY  
THE FIRST, THE ACTIVE SYSTEM, ARE MADE BY RELATING THE FREQUENCY SHIFT OF A MICROWAVE CAVITY  
TO THE TEMPERATURE OF ITS SURROUNDINGS. THE SECOND METHOD, A PASSIVE MEASUREMENT SYSTEM,  
REQUIRES THE USE OF A MICROWAVE RADIOMETER. ALTHOUGH PRELIMINARY, EXPERIMENTAL RESULTS  
INDICATE THAT MICROWAVE METHODS OF MONITORING REACTOR IN-CORE TEMPERATURES DURING NORMAL  
OPERATION ARE ADEQUATELY SENSITIVE AND SHOULD MATERIALLY REDUCE PROBLEMS ASSOCIATED WITH  
OTHER TYPES OF TEMPERATURE SENSORS.

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

HIGH TEMPERATURE + IN CORE MEASUREMENT + INSTRUMENTATION, IN CORE + INSTRUMENTATION, TEMPERATURE +  
MEASUREMENT, TEMPERATURE

9-21776  
FRY DN  
ON-LINE CALIBRATION OF HFIR CONTROL RODS USING THE ROD OSCILLATION TECHNIQUE  
OAK RIDGE NATIONAL LAB., TENN.  
ORNL-TM-1961 +. 17 PAGES, 7 FIGURES, 1 TABLE, SEPT. 13, 1967

THE ROD-OSCILLATION METHOD OF MEASURING DIFFERENTIAL CONTROL-ROD WORTH IS EVALUATED AT THE  
HFIR. THIS METHOD IS ATTRACTIVE FOR ON-LINE CALIBRATIONS BECAUSE THE MEASUREMENT DOES NOT  
INTERRUPT THE NORMAL OPERATION OF THE REACTOR NOR ALTER THE STEADY-STATE POWER LEVEL, AND IT  
IS RELATIVELY FAST WHEN COMPARED WITH ROD BUMP-PERIOD MEASUREMENTS. AGREEMENT IS WITHIN 2%.

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

\*CONTROL ROD CALIBRATION + \*CONTROL ROD WORTH + COMPARISON, THEORY AND EXPERIENCE + HFIR (FTR) +  
REACTOR CONTROL + REACTOR, FAST + REACTOR, TEST

9-21778  
WESOLOWSKI-LOW TA  
SOME ASPECTS OF THE BRITISH WORK ON RELIABILITY AND QUALITY IN THE INSTRUMENTATION FIELD  
GREAT BRITAIN. CENTRAL ELECTRICITY GENERATING BOARD  
2 PAGES, EURATOM - RELIABILITY OF ELECTRONIC AND SYSTEMS FOR NUCLEAR REACTOR, APRIL 12, 1967

THE BRITISH MANUFACTURERS AND USERS OF ELECTRONIC EQUIPMENT AND OF THE COMPONENTS USED THEREIN  
COOPERATE IN THE WORK OF THE ELECTRONIC RELIABILITY COMMITTEE OF THE BRITISH STANDARDS  
INSTITUTION. THE MAIN TASK IS TO PRODUCE A STANDARD AND MATHEMATICALLY CONCISE TERMINOLOGY  
OF RELIABILITY, AVAILABILITY, AND MAINTAINABILITY. IN ADDITION, SUCH SUBJECTS AS UNIFORM  
MEANS OF PRESENTATION OF THE INFORMATION ON THE RELIABILITY OF A PRODUCT, OF ITS  
SPECIFICATION, TESTS, MEASUREMENTS, AND THE METHOD FOR COLLECTING RELIABILITY DATA ARE  
STUDIED BY THE COMMITTEE.

AVAILABILITY - T. LOW, CENTRAL ELECTRICITY LABORATORIES, CLEEVE ROAD, LEATHERHEAD, SURRY, ENGLAND  
EURATOM + INSTRUMENTATION, GENERAL + RELIABILITY ANALYSIS + UNITED KINGDOM

9-21779  
ANDERSON JL  
NUCLEAR INSTRUMENT MODULE MAINTENANCE MANUAL. PART 12, OR GATE. ORNL MODEL Q-2612  
OAK RIDGE NATIONAL LAB., TENN.  
ORNL-TM-1638(P1.12) +. 13 PAGES, 1 FIGURE, 1 TABLE, SEPTEMBER 19, 1967

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-21779 \*CONTINUED\*

THE OR GATE IS USED IN REACTOR SAFETY SYSTEMS TO COMBINE SEVERAL INFORMATION SIGNALS OF A SAFETY CHANNEL INTO A SINGLE-ACTION OUTPUT WHERE IT IS DESIRED TO CAUSE SAFETY ACTION WHERE ANY ONE OR MORE OF THE SEVERAL SIGNALS IS IN THE ABNORMAL OR TRIP STATE. THE CIRCUIT ACCEPTS UP TO EIGHT LOGIC OR BISTATE INPUT SIGNALS. THE CIRCUIT, APPLICATION, MAINTENANCE PROCEDURES, AND ACCEPTANCE TESTS ARE DESCRIBED.

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

\*INSTRUMENTATION, COINCIDENT + EQUIPMENT DESIGN + INSTRUMENTATION, COMPONENT + INSTRUMENTATION, RELAY + INSTRUMENTATION, SWITCH

9-21827 ALSO IN CATEGORY 17

TIMMERMANN P

ANALYSIS OF FAILURE DATA FOR ELECTRONIC EQUIPMENT AT RISO. PERIOD 1960-1965  
DANISH ATOMIC ENERGY COMMISSION, RESEARCH ESTABLISHMENT, RISO  
SUPPLEMENT TO RISO REPORT NO. 38 +. 13 PAGES, 12 TABLES, REFERENCES, APRIL 1967, PRESENTED AT CREST MEETING, BRUSSELS

THIS SUPPLEMENTARY PAPER SUMMARIZES THE FAULT STATISTICS OF FAILURE DATA FOR ELECTRONIC EQUIPMENT AT RISO FOR THE FIVE-YEAR PERIOD 1960-1965. THE DATA ARE PRESENTED FROM A POINT OF VIEW OF RELIABILITY PREDICTIONS. THE EQUIPMENT COVERED BY THE REPORTING SYSTEM CONSISTS OF (1) LABORATORY INSTRUMENTS DESIGNED IN THE DEPARTMENT AND (2) COMMERCIAL REACTOR INSTRUMENTS BELONGING TO THE TWO RESEARCH REACTORS DR2 AND DR3.

AVAILABILITY - P. TIMMERMANN, DANISH ATOMIC ENERGY COMMISSION, DENMARK

\*FAILURE, INSTRUMENT + \*OPERATING EXPERIENCE SUMMARY + \*RELIABILITY ANALYSIS + DENMARK + REACTOR, RESEARCH + RISO

9-21828 ALSO IN CATEGORY 17

JENSEN A + RASMUSSEN + TIMMERMANN P

ANALYSIS OF FAILURE DATA FOR ELECTRONIC EQUIPMENT AT RISO  
DANISH ATOMIC ENERGY COMMISSION, RESEARCH ESTABLISHMENT, RISO  
RISO REPORT NO. 38 +. 23 PAGES, 13 TABLES, REFERENCES, SEPTEMBER, 1963, PRESENTED AT CREST MEETING, BRUSSELS, APRIL 1967

A FAILURE-REPORTING SYSTEM FOR ELECTRONIC EQUIPMENT IS DESCRIBED, AND FAULT DATA FOR SELECTED ELECTRONIC REACTOR INSTRUMENTS AND RESEARCH EQUIPMENT ARE PRESENTED. SOME AVERAGE FIGURES ARE SUGGESTED FOR ROUGH PREDICTIONS OF FAILURES IN LARGER INSTRUMENT SYSTEMS.

AVAILABILITY, JUL. GJELLERUP, 87, SOLVGADE, COPENHAGEN K. DENMARK

\*FAILURE, INSTRUMENT + \*OPERATING EXPERIENCE SUMMARY + \*RELIABILITY ANALYSIS + DENMARK + REACTOR, RESEARCH + RISO

9-21829

GIESELER H

A METHOD FOR CALCULATING RELIABILITY OF SOLID STATE REACTOR SAFETY SYSTEMS

TECHNISCHE HOCHSCHULE MUNCHEN

EUR/C/2539/67 +. 22 PAGES, 8 FIGURES, MARCH 1967, PRESENTED AT CREST MEETING, APRIL 1967

A MATHEMATICAL METHOD OF RELIABILITY CALCULATIONS OF SOLID-STATE REACTOR SAFETY SYSTEMS IS PRESENTED. THE COMPUTATION IS POSSIBLE BY MEANS OF PROBABILITY AND RELIABILITY THEORY AND LINEAR PROGRAMMING. THE BEHAVIOR OF THE SYSTEMS CAN BE DESCRIBED BY A HOMOGENEOUS MARCOVIAN PROCESS.

AVAILABILITY - H. GIESELER, TECHNISCHE HOCHSCHULE MUNCHEN, GERMANY

\*REACTOR SAFETY SYSTEM + \*RELIABILITY ANALYSIS + MATHEMATICAL TREATMENT

9-21830

HOHMANN CL + WALSH JM + HONKA EK

LIMITERS IN NERVA REACTOR CONTROL

WESTINGHOUSE ASTRONUCLEAR LABORATORY, PITTSBURGH, PENN.

6 PAGES, 8 FIGURES, 2 REFERENCES, NUCLEAR APPLICATIONS 3(11), PAGES 659-664 (NOVEMBER 1967)

LIMITER CIRCUITS, WHICH OVERRIDE SPURIOUS SIGNALS FROM NORMAL CONTROL CIRCUITS, OPERATE WHEN THEIR INPUTS (E.G., POWER OR TEMPERATURE) EXCEED PREDETERMINED SETPOINTS. INITIALLY CONCEIVED AS A NECESSITY FOR NUCLEAR ROCKET FLIGHT SYSTEMS, THEY HAVE BEEN DEVELOPED SUCCESSFULLY AND HAVE BEEN SHOWN TO BE ADVANTAGEOUS FOR GROUND TEST SYSTEMS ALSO. THUS THEY MAINTAIN VITAL REACTOR PARAMETERS WITHIN ACCEPTABLE LIMITS, ALLOWING THE REACTOR TO OPERATE WHILE THE DIFFICULTY IS BEING ATTACKED.

\*INSTRUMENTATION, CONTROL + \*INSTRUMENTATION, RELAY + CONTROL, GENERAL + INSTRUMENTATION, COMPONENT + NUCLEAR ROCKET + REACTOR CONTROL



CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-21831  
CREWS RE + HOHMANN GL  
NUCLEAR SUBSYSTEM CONTROLS FOR THE NERVA EXPERIMENTAL ENGINE  
WESTINGHOUSE ASTRONUCLEAR LABORATORY, PITTSBURGH, PENN.  
6 PAGES, 2 FIGURES, 1 TABLE, REFERENCES, NUCLEAR APPLICATIONS 3(11), PAGES 653-658 (NOVEMBER 1967)

THE NUCLEAR SUBSYSTEM CONTROLS DESCRIBED FOR THE NERVA EXPERIMENTAL ENGINE ARE THE RESULT OF A DESIGN EVOLUTION THAT BEGAN WITH THE KIWI TEST SERIES. THIS CONTROL-DEVELOPMENT PROGRAM HAS RESULTED IN A CONTROL SYSTEM FOR ETS-1 (ENGINE TEST STAND AT NUCLEAR ROCKET DEVELOPMENT STATIONS, JACKASS FLATS, NEVADA), WHICH INCLUDES NEW CONCEPTS, SUCH AS AN AUTOMATIC STARTUP CONTROLLER AND OVERRIDE CONTROLLERS, AND IMPROVED PERFORMANCE WHICH WILL FACILITATE FUTURE ENGINE TESTING.

\*INSTRUMENTATION, CONTROL + \*NUCLEAR ROCKET + CONTROL, GENERAL + CONTROLLER + REACTOR SAFETY SYSTEM

9-21832  
SPINKS N  
A BLACK-WHITE MODEL FOR INCLUDING EPITHERMAL ABSORPTION IN CALCULATION OF CONTROL-ROD WORTH  
AUSTRALIAN ATOMIC ENERGY COMMISSION, RESEARCH ESTABLISHMENT, LUCAS HEIGHTS, AUSTRALIA  
6 PAGES, 1 FIGURE, 4 TABLES, NUCLEAR SCIENCE AND ENGINEERING, 30(2), PAGE 176-181 (NOVEMBER 1967)

EPITHERMAL ABSORPTION BY CONTROL RODS IN REACTORS IS TAKEN INTO ACCOUNT BY REPLACING THE BLACK-GREY-TRANSPARENT ROD BY A BLACK-TRANSPARENT MODEL. THE LETHARGY BOUNDARY IN THE MODEL IS DETERMINED FOR 1/V ABSORBERS BY THE PRESCRIPTION THAT, AT THE BOUNDARY, HALF THE INCIDENT PARTIAL CURRENT IS ABSORBED BY THE ROD. APPLICATION OF THE MODEL TO SPACE-INDEPENDENT SPECTRUM CALCULATIONS IMPROVES THE CALCULATION TO THE EXTENT THAT, PROVIDED THE BLACK-TRANSPARENT BOUNDARY IS THE BOUNDARY BETWEEN THE GROUPS, TWO-GROUP METHODS CAN BE USED FOR CONTROL RODS IN BARE REACTORS. FOR CONTROL RODS IN REFLECTED REACTORS, THREE GROUPS ARE INDICATED. CALCULATIONS ARE PRESENTED TO DEMONSTRATE THE ACCURACIES OF THE BLACK-TRANSPARENT MODEL AND THE SMALL NUMBER OF NEUTRON ENERGY GROUPS.

\*CONTROL ROD WORTH + ANALYTICAL MODEL + COMPARISON, THEORY AND EXPERIENCE + MATHEMATICAL TREATMENT + THEORETICAL INVESTIGATION

9-21833 ALSO IN CATEGORY 6  
WILLIAMS MM  
REACTOR NOISE IN HETEROGENEOUS SYSTEMS. 1. PLATE-TYPE ELEMENTS  
UNIVERSITY OF LONDON, ENGLAND  
11 PAGES, 2 FIGURES, NUCLEAR SCIENCE AND ENGINEERING 30(2), PAGE 188-198 (NOVEMBER 1967)

A FORMALISM BASED UPON THE SOURCE-SINK METHOD OF HORNING, FEINBERG, AND GALANIN WAS DEVELOPED WHICH PREDICTS THE NEUTRON NOISE SPECTRUM AND TIME-DEPENDENT CORRELATION FUNCTION IN HETEROGENEOUS REACTOR SYSTEMS. THE METHOD IS APPLIED TO TWO PROBLEMS IN INFINITE-PLANE GEOMETRY - THE INFINITE LATTICE AND DETECTOR PERTURBATIONS. IN THE LATTICE PROBLEM, IT IS SHOWN THAT THE SIMPLE, HOMOGENEOUS THEORY WILL BE VALID ONLY WHEN THE LATTICE SPACING IS VERY MUCH LESS THAN THE ATTENUATION LENGTH OF A NEUTRON WAVE IN THE PURE MODERATOR. THE FLUX DEPRESSION IN THE NEIGHBORHOOD OF A NEUTRON DETECTOR IS FOUND TO INTRODUCE SIGNIFICANT CORRECTIONS TO THE NOISE SPECTRUM.

\*NOISE + \*NOISE ANALYSIS + \*REACTOR KINETICS + MATHEMATICAL TREATMENT + NOISE CROSS CORRELATION + THEORETICAL INVESTIGATION

9-21834  
SPINKS N  
AN ANALYSIS OF THE MUTUAL INTERACTION OF CIRCUMFERENTIAL CONTROL PLATES  
AUSTRALIAN ATOMIC ENERGY COMMISSION RESEARCH ESTABLISHMENT, LUCAS HEIGHTS, AUSTRALIA  
6 PAGES, 4 FIGURES, 2 TABLES, NUCLEAR SCIENCE AND ENGINEERING 30(2), PAGE 182-187 (NOVEMBER 1967)

FROM AN EMPIRICAL CHOICE OF THE SHADOWING OF ONE CONTROL-PLATE ELEMENT BY ANOTHER, EXPRESSIONS ARE DERIVED FOR THE REACTIVITY WORTH OF SYSTEMS OF CIRCUMFERENTIAL CONTROL PLATES. THE EXPRESSIONS CONTAIN THREE PARAMETERS WHICH ARE DETERMINED WHEN INDEPENDENT CALCULATIONS OF THREE CONTROL SYSTEMS HAVE BEEN MADE. THE PARAMETERS CAN BE EXPRESSED IN TERMS OF THE WORTH OF THE COMPLETE CONTROL PLATE, THE INCREASE IN REACTIVITY DUE TO UNSHADOWING OF AN END OF A CONTROL PLATE, AND THE DECAY CONSTANT OF THE ASSUMED EXPONENTIALLY DECAYING SHADOWING FUNCTION. APPLICATION OF THE EXPRESSIONS TO A PARTICULAR REACTOR DESIGN, WHERE CIRCUMFERENTIAL CONTROL PLATES SEPARATE CORE FROM RADIAL REFLECTOR, SHOWS THAT THE ANALYSIS IS ACCURATE FOR THOSE SITUATIONS WHERE THE NUMBER OF CONTROL PLATES IS NOT LARGE. THE ANALYSIS NEGLECTS NEUTRON ABSORPTION BY THE EDGE OF A CONTROL PLATE SO THAT IT UNDERESTIMATES REACTIVITY WORTH IN SITUATIONS INVOLVING LARGE NUMBERS OF CONTROL PLATES WHERE THE SURFACE AREA OF THE PLATE EDGES BECOMES SIGNIFICANT.

\*CONTROL ROD INTERACTION + MATHEMATICAL TREATMENT + THEORETICAL INVESTIGATION

9-21900 ALSO IN CATEGORY 1

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-21900 \*CONTINUED\*  
PROPOSED STANDARD - CRITICALITY ACCIDENT ALARM SYSTEM  
AMERICAN NUCLEAR SOCIETY  
7 PAGES, NUCLEAR ENGINEERING BULLETIN 5(2), NOVEMBER 1967

THE USEFULNESS AND PROTECTIVE FEATURES OF CRITICALITY ALARM SYSTEMS HAVE BEEN DEMONSTRATED IN INSTANCES OF ACCIDENTAL CRITICALITY THAT HAVE OCCURRED DURING THE PROCESSING OF FISSIONABLE MATERIALS. THIS STANDARD PROVIDES GUIDANCE FOR THE ESTABLISHMENT AND MAINTENANCE OF AN ALARM SYSTEM TO INITIATE PERSONNEL EVACUATION IN THE EVENT OF ACCIDENTAL CRITICALITY. THIS STANDARD WAS PREPARED BY WORK-GROUP 5 OF SUBCOMMITTEE ANS-P OF THE STANDARDS COMMITTEE OF THE AMERICAN NUCLEAR SOCIETY.

AVAILABILITY - AMERICAN NUCLEAR SOCIETY, HINSDALE, ILLINOIS, \$1.50 COPY

ACCIDENT, CRITICALITY + CODES AND STANDARDS + CRITICALITY SAFETY + ENGINEERED SAFETY FEATURE + PROCEDURES AND MANUALS + RADIATION SAFETY AND CONTROL + REGULATION, GENERAL + SAFETY PRINCIPLES AND PHILOSOPHY

9-21901  
MARCILLAT G  
AUTOMATIC CONTROL OF NUCLEAR REACTORS  
EURATOM, ISPRA, ITALY  
7 PAGES, 10 FIGURES, 1 TABLE, 5 REFERENCES, ONDE ELEC. 46, PAGES 1237-43 (NOVEMBER 1966) IN FRENCH

AFTER A REVIEW OF THE DYNAMIC PROPERTIES OF NUCLEAR REACTORS, AND OF THE CONSTRAINTS IN THE NEUTRON POWER EVOLUTIONS, A CONTROL METHOD IS DERIVED WHICH IS VALID WITHOUT MODIFICATION OF COMPUTATION FOR BOTH STATIONARY AND DYNAMICAL STATES. WITH THE AID OF A SPECIFIC CASE IT IS SHOWN THAT A SIMPLE SYSTEM CAN REALIZE AN AUTOMATIC CONTROL WITH GOOD PERFORMANCE. AN ANALOG SIMULATION OF THE PLANT AND CONTROL SYSTEM IS USED TO DEMONSTRATE THE VALIDITY OF THE VARIOUS ASSUMPTIONS AND SIMPLIFICATIONS.

\*INSTRUMENTATION, CONTROL + \*REACTOR CONTROL + COMPUTER, ANALOG + CONTROL, GENERAL + FRANCE + SIMULATION + TRANSFER FUNCTION

9-21902  
DOIREAU M  
NUCLEAR ELECTRONICS AT THE C.E.A. - ACHIEVEMENTS AND PROSPECTS  
COMMISSARIAT A L-ENERGIE ATOMIQUE  
7 PAGES, 7 FIGURES, 9 REFERENCES, ONDE ELEC. 47, PAGES 724-30 (JUNE 1967) IN FRENCH

THE EXPERIENCE ACQUIRED AT THE CEA MADE POSSIBLE THE INDUSTRIAL DEVELOPMENT OF STANDARD ELECTRONIC EQUIPMENT WHICH MEETS THE GENERAL REQUIREMENTS OF NUCLEAR RESEARCH CENTERS - RENATRAN BASIC PLUG-IN FUNCTION UNITS, FAST ELECTRONICS, AND ELECTRONIC EQUIPMENT FOR THE CONTROL OF REACTORS. AMONG OTHER ACHIEVEMENTS ARE MENTIONED THE DEVELOPMENT OF NUCLEAR DETECTORS, MULTIDIMENSIONAL ANALYZERS, THE USE OF ON-LINE COMPUTERS IN CONNECTION WITH NUCLEAR EXPERIMENTS OR FOR CENTRALIZED TREATMENT OF MEASUREMENTS. BESIDES, THE CEA HAS TAKEN PART IN THE DEVELOPMENT OF NONSPECIFIC NUCLEAR MEASURING INSTRUMENTS SUCH AS CRT OSCILLOSCOPES AND PULSE GENERATORS.

\*INSTRUMENTATION, GENERAL + \*MEASUREMENT, GENERAL + EQUIPMENT DESIGN + FRANCE + INSTRUMENTATION, COMPONENT + OPERATING EXPERIENCE SUMMARY

9-21903  
TSAPU K + IFTODE I + DOBRESKU K  
AUTOMATIC CONTROL SYSTEM FOR THE RUMANIAN VVP-S REACTOR  
5 PAGES, 3 FIGURES, 2 REFERENCES, REV. ROM. PHYS. 11, PAGES 513-17 (1966) IN RUMANIAN

IMPROVEMENTS AND A FURTHER DEVELOPMENT OF A NEW AUTOMATIC CONTROL SYSTEM FOR A VVP-S REACTOR WERE TESTED DURING EXPERIMENTAL OPERATIONS. AN AUTOMATIC UNIT FOR STANDARD TIME FUNCTION OF ALL NORMAL REACTOR OPERATIONS PERMITTED MEASURING THE EXACT TIME OF MANUAL STARTUP, THE RATE OF CONTROL-ROD MOTION CONTROLLED BY A FEEDBACK CIRCUIT, THE REDUCED INFLUENCE OF FAST PARASITIC FLUCTUATIONS ON THE CONTROL-ROD RATE, REDUCED THE NUMBER OF ELEMENTS, AND SIMPLIFIED OPERATING CONDITIONS.

CONTROL SYSTEM + REACTOR CONTROL + ROMANIA + SIMULATION + TEST, SYSTEM OPERABILITY

9-21919  
OLSEN HO  
THEORETICAL AND EXPERIMENTAL INVESTIGATION OF IMPEDANCE VOID METERS  
INSTITUTT FOR ATOMENERGI, KJELLER, NORWAY  
KR-118 +. 157 PAGES, 9 FIGURES, REFERENCES, AUGUST 1967

SURVEYS THE LITERATURE ON THEORIES ON THE DIELECTRIC CONSTANT (ELECTRIC CONDUCTIVITY OF TWO-PHASE MEDIA). IMPEDANCE VOID METERS OF DIFFERENT TYPES AND NUMBER OF ELECTRODES ARE CALIBRATED AGAINST A QUICK-CLOSING VALVES SYSTEM IN AN AIR-WATER LOOP OF CHANNEL DIAMETER 26 MM. THE INFLUENCE OF SEVERAL PARAMETERS ON THE VOID METER READINGS IS INVESTIGATED. THE EXPERIMENTAL RESULTS SHOW DEPENDENCY OF FLOW RATE, ELECTRODE GEOMETRY, AND FLOW REGIME. FROM EXPERIMENTS AND THEORETICAL CONSIDERATIONS, TWO ALTERNATIVE VOID METER GEOMETRIES ARE

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-21919 \*CONTINUED\*  
DESCRIBED.

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

\*FLOW, TWO PHASE + \*INSTRUMENTATION, FLOW + COMPARISON, THEORY AND EXPERIENCE + INSTRUMENTATION CALIBRATION

9-21920  
MCNALLY JK  
GAMMA-INDUCED SENSITIVITY LOSS IN THE PROPORTIONAL COUNTERS OF A NUCLEAR POWER PLANT  
ARMY ENGINEER REACTORS GROUP, FORT BELVOIR, VA.  
AD-634621 +. 15 PAGES, TABLES, 7 REFERENCES, JUNE 1966

SENSITIVITY OF BOTH THE B-10 LINED AND BF3 FILLED PROPORTIONAL COUNTERS DEPENDS STRONGLY UPON  
THE GAMMA FLUX INTENSITY IN WHICH THE DETECTOR IS OPERATING. LOSS OF SENSITIVITY OCCURS  
BECAUSE OF A REDUCTION IN PULSE HEIGHT AS GAMMA FLUX INCREASES. PULSES PRODUCED BY NEUTRONS  
AND BY GAMMA RAYS ARE BOTH REDUCED IN HEIGHT. THEREFORE, A LOW DISCRIMINATOR BIAS MAY BE  
USED TO MINIMIZE SENSITIVITY LOSS WITHOUT COUNTING GAMMA PULSES.

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

\*FAILURE, INSTRUMENT + \*INSTRUMENTATION, ABNORMAL INDICATION + COUNTER + FLUX, INTEGRATED + GAMMA +  
INSTRUMENTATION, NUCLEAR + NEUTRON + OPERATING EXPERIENCE SUMMARY + REACTOR, MILITARY + SM 1 (PWR)

9-21921  
BRAYDEN R + BOWMAN D + MCSHERPY L  
USE OF MOS TRANSISTORS IN SOLID-STATE RADIATION SURVEY METERS  
ARMY ELECTRONICS COMMAND, FORT MONMOUTH, NEW JERSEY  
AD-629709 + ECOM-2661 +. 13 PAGES, 3 FIGURES, 3 REFERENCES, FEB. 1966

AN ALL SOLID-STATE SURVEY METER USING AN MOS TRANSISTOR INSTEAD OF AN ELECTROMETER TUBE WAS  
DESIGNED AND CONSTRUCTED. THE SURVEY METER, USING ONE HIGH-MEGOHM RESISTOR, HAD TWO SCALE  
RANGES - 500 MR/HR AND 50 MK/HR. ADDITIONAL SCALE RANGES COULD BE OBTAINED BY USING  
ADDITIONAL HIGH-MEGOHM RESISTORS. AN ALL-SOLID-STATE SURVEY METER OFFERS DISTINCT ADVANTAGES  
OVER PRESENT-DAY TUBE MODELS. LOW COST, RELIABILITY, AND COMPACTNESS ARE A FEW OF THE MAJOR  
FEATURES. IN ADDITION, IT WILL BE POSSIBLE TO INTEGRATE THE ENTIRE CIRCUIT ON A SINGLE CHIP  
AND ENCASE IT IN A SINGLE HEADER FOR ADDITIONAL SIZE DECREASE.

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

\*INSTRUMENTATION, COMPONENT + \*INSTRUMENTATION, RADIATION MONITORING + \*INSTRUMENTATION, SURVEILLANCE +  
EQUIPMENT DESIGN + SOLID STATE DEVICE

9-21922  
WHITE OH  
DRIVE SYSTEM SELECTION HTLTR OSCILLATORS  
BATTELLE-NORTHWEST, RICHLAND, WASH.  
BNWL-535 +. 30 PAGES, FIGURES, SEPTEMBER 1966

ELEVEN SYSTEMS WERE EVALUATED IN THE SELECTION OF A POWERED DRIVE SYSTEM TO MOVE AND CONTROL  
THE MECHANICAL OSCILLATOR MECHANISM FOR THE HIGH TEMPERATURE LATTICE TEST REACTOR. THE  
MECHANISM MOVES AND POSITIONS REACTOR COMPONENTS INSIDE THE OPERATING REACTOR. OBJECTS  
WEIGHING UP TO 1200 LB ARE MOVED AT HIGH SPEEDS AND POSITIONED TO WITHIN TOLERANCES OF PLUS  
OR MINUS 0.010 IN. AN ELECTROHYDRAULIC SERVO DRIVE SYSTEM UTILIZING A SERVO VALVE WAS CHOSEN  
AS THE OSCILLATOR DRIVE. CHARACTERISTICS, ADVANTAGES, DISADVANTAGES, AND SCHEMATIC DIAGRAMS  
ARE PRESENTED AND DISCUSSED.

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

\*INSTRUMENTATION, CONTROL + \*SERVOMECHANISM + ACTUATOR + BATTELLE NORTHWEST + IN PILE EXPERIMENT +  
INSTRUMENTATION, COMPONENT + REACTOR, TEST

9-21923 ALSO IN CATEGORY 11  
PARRY DL  
NONDESTRUCTIVE FLAW DETECTION IN NUCLEAR POWER INSTALLATIONS  
PHILLIPS PETROLEUM COMPANY, IDAHO FALLS, IDAHO  
2 PAGES, AINS TRANSACTIONS 10(1), PAGES 330-331 (JUNE 1967), SAN DIEGO, CALIF.

INVESTIGATIONS WERE CONDUCTED INTO THE FEASIBILITY OF APPLYING ACOUSTIC PHENOMENA TO FLOW  
DIAGNOSTICS. THEY WERE DIRECTED AT DEVELOPING A NONDESTRUCTIVE TECHNIQUE FOR THE DETECTION  
AND DEFINITION OF FLAWS IN THE LARGE COMPLEX PRESSURE VESSELS AND PRIMARY SYSTEM OF NUCLEAR  
POWER INSTALLATIONS. THEY CONSISTED IN APPLYING THE TECHNIQUE OF DETECTION AND INTERPRETING  
ACOUSTIC EMISSIONS EMANATING FROM MATERIALS UNDER APPLIED STRESS.

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-21923 \*CONTINUED\*  
\*TEST, NONDESTRUCTIVE + \*TEST, PRESSURE VESSEL + FAILURE, PRESSURE VESSEL + INSTRUMENTATION, TESTING +  
PRESSURE VESSEL + STRESS STRAIN DATA

9-21973  
BASTL W  
EXPERIENCE ON ELECTRONIC AND ELECTROMECHANICAL EQUIPMENT IN GERMAN REACTOR PLANTS  
TECHNISCHE HOCHSCHULE, DARMSTADT  
EUR-C-2540-67 +. 20 PAGES, 11 FIGURES, 4 REFERENCES, APRIL 1967, PRESENTED AT THE ENEA COMMITTEE ON  
REACTOR SAFETY TECHNOLOGY MEETING ON RELIABILITY OF ELECTRONIC EQUIPMENT AND SYSTEMS FOR NUCLEAR REACTOR  
SAFETY, BRUSSELS, APRIL 1967

PRESENTS A REVIEW OF THE EXPERIENCE GAINED IN GERMAN POWER REACTOR PLANTS REGARDING SAFETY  
SYSTEMS AND THE ASSOCIATED EQUIPMENT (CONTROL-ROD DRIVES AND CONTROL-ROD SCRAM SYSTEMS). THE  
EFFORT OF SAFETY-SYSTEM DESIGNERS FOUND THEIR PRACTICAL EXPRESSION MAINLY IN IMPROVEMENTS OF  
RELAY SYSTEMS, THE MAIN IDEA BEING TO IMPROVE OPERABILITY AND RELIABILITY OF THE PLANT  
WITHOUT DECREASING SAFETY. THE EXAMPLES SHOWED THAT MUCH EXPERIENCE HAD BEEN GAINED FOR  
FURTHER DESIGN AND OPERATION OF SAFETY SYSTEMS AND CONTROL-ROD SYSTEMS. FAULT ANALYSIS  
PROVED VERY USEFUL.

AVAILABILITY - W. BASTL, TECHNISCHE HOCHSCHULE MUCHE, INSTITUT FUER MEB- UND REGELUNGSTECHNIK, MUCHE,  
GERMANY

\*OPERATING EXPERIENCE SUMMARY + \*REACTOR SAFETY SYSTEM + CONTROL ROD DRIVE + CONTROL ROD SCRAM MECHANISM +  
GERMANY + INSTRUMENTATION, RELAY + REACTOR, POWER

9-21974  
KAWAGUCHI C + ITO T + ARA K  
RELIABILITY OF REACTOR INSTRUMENTATION BY REDUNDANCY AND DECISION BY MAJORITY SYSTEM  
JAPAN ATOMIC ENERGY RESEARCH INSTITUTE, TOKAI-MURA IBARAKI-KEN, JAPAN  
JAERI-MEMO-2630 +. 18 PAGES, 4 FIGURES, 1 TABLE, APRIL 12, 1967, PRESENTED AT THE ENEA-COMMITTEE ON  
REACTOR SAFETY TECHNOLOGY MEETING ON RELIABILITY OF ELECTRONIC EQUIPMENT AND SYSTEMS FOR NUCLEAR REACTOR  
SAFETY, BRUSSELS, APRIL 1967

ACCORDING TO THE RESULTS OF THE STUDY ON RELIABILITY OF THE INSTRUMENT SYSTEM FOR THE JAPANESE  
MATERIAL TESTING REACTOR, THE OVERALL RELIABILITY DEPENDS ON THE RELIABILITY OF THE DEVIATION  
DETECTORS, THE AVERAGING UNIT, AND THE FAILURE-CHANNEL-DECISION UNIT.

AVAILABILITY - C. KAWAGUCHI, T. ITO, K. ARA, JAPAN ATOMIC ENERGY RESEARCH INST., TOKAI-MURA IBARAKI-KEN,  
JAPAN

\*INSTRUMENTATION, GENERAL + \*REACTOR SAFETY SYSTEM + \*RELIABILITY ANALYSIS + JAPAN + MATHEMATICAL TREATMENT

9-21975  
CHAUVIN M  
THE CONTROLS ON RAPSODIE  
FRANCE. COMMISSARIAT A L'ENERGIE ATOMIQUE  
3 PAGES, 1 FIGURE, INDUSTRIES ATOMIQUES 5(6), PAGE 84-86, (1967), IN FRENCH

DISCUSSES CONTROL WORK ON THE REACTOR RAPSODIE. REFERS TO SOME ASPECTS OF THE CONTROL  
EQUIPMENT, COMPONENT, AND SYSTEMS FROM A BRIEF INSPECTION.

\*CONTROL, GENERAL + \*REACTOR CONTROL + CONTROL SYSTEM + FRANCE + INSTRUMENTATION, CONTROL

9-21976  
TYRRELL DA + ADSHEAD H + TATTERSALL JO  
NUCLEAR REACTOR CONTROL MECHANISM  
UNITED KINGDOM ATOMIC ENERGY AUTHORITY  
BRITISH PATENT 1,070,572 +. 11 PAGES, FIGURES, JUNE 1, 1967, PATENT (BRITISH)

DESCRIBES A NUCLEAR REACTOR CONTROL MECHANISM HAVING A FLUID-OPERATED PISTON AND CYLINDER  
DEVICE TO MOVE A CONTROL UNIT RELATIVE TO A REACTOR CORE. IT PROVIDES A RACK AND ASSOCIATED  
CONTROL UNIT AND AN ESCAPEMENT MECHANISM TO COOPERATE WITH THE RACK TO SECURE STEPWISE  
MOVEMENT OF THE CONTROL UNIT.

AVAILABILITY - THE PATENT OFFICE, 25 SOUTHAMPTON BUILDING, LONDON, W.C. 2, ENGLAND, \$0.49 PER COPY

\*CONTROL ROD DRIVE + PATENT + UNITED KINGDOM

9-21977  
HIRATSUKA Y  
REACTOR CONTROL ROD  
HITACHI, LTD., JAPAN  
JAPANESE PATENT 1966-11439 +. 4 PAGES, 3 FIGURES, MAY 27, 1966, PATENT (FOREIGN) IN JAPANESE

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-21977 \*CONTINUED\*

GIVES A DESIGN FOR A CONTROL ROD THAT MOVES AMONG THE FUEL ELEMENTS AND IN THE DIRECTION OF THE AXIS OF THE FUEL ELEMENTS. IT IS SUPPORTED BY THE LATTICE PLATES. ROD-SHAPED CONTROL ELEMENTS ARE PILED UP HORIZONTALLY WITHIN THE PLATE, ONE OVER THE OTHER.

AVAILABILITY - PHOTOCOPIES MAY BE OBTAINED FROM THE U.S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D. C. \$0.30 PER PAGE

\*CONTROL ROD + CONTROL ROD INTERACTION + JAPAN + PATENT

9-22131 ALSO IN CATEGORY 17  
WNYNRC PULSTAR PROPOSED CHANGE--INSTRUMENT CALIBRATION  
WESTERN NEW YORK NUCLEAR RESEARCH CENTER, INC., BUFFALO, NEW YORK  
3 PAGES, DOCKET 50-57, DECEMBER 15, 1967

STATE UNIVERSITY OF N.Y. ASKS PERMISSION TO CALIBRATE TRANSIENT (PULSING) INSTRUMENTATION BY USE OF NEUTRON-ACTIVATED FOIL INSTEAD OF BY AN INSTRUMENTED FUEL PELLETT. IN OLD METHOD, (1) CHANGES IN PELLETT ORIENTATION AND POSITION RESULTED IN INACCURATE MEASUREMENTS, (2) PELLETT FAILED BY RADIAL CRACKING, AND (3) THERMAL INSULATION OF THE PELLETT WAS A PROBLEM. FOIL METHOD HAS PROVED RELIABLE. ALSO REQUESTED IS A CHANGE IN PULSE-ROD CALIBRATION PROCEDURE. PREVIOUSLY THE IN-HOUR METHOD WAS USED, WHICH WAS INACCURATE DUE TO XENON CHANGES. ROD WOULD BE CALIBRATED EITHER BY COMPARISON WITH A STANDARD ROD OR BY TWO OR MORE CALIBRATION PULSES SEPARATED BY ENERGY RELEASES OF NOT LESS THAN 5 MW-SEC.

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

\*INSTRUMENTATION CALIBRATION + \*INSTRUMENTATION, PULSE + INSTRUMENTATION, NUCLEAR + PULSTAR (RR) + REACTOR, PULSED + REACTOR, RESEARCH + TECHNICAL SPECIFICATIONS

9-22236 ALSO IN CATEGORIES 18 AND 5  
ACRS REPORT ON DIABLO CANYON  
U.S. ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.  
5 PAGES, 11 REFERENCES, DOCKET 50-275, TYPE--PWR, MFG--WEST, AE--PG+E, DECEMBER 20, 1967

ACRS BELIEVES THAT THE FOLLOWING 6 ITEMS PERTAIN TO ALL LARGE WATER-COOLED POWER REACTORS - (1) THERMAL SHOCK EFFECT OF COLD WATER INJECTION IN LOSS-OF-COOLANT ACCIDENT, (2) EFFECT OF BLOWDOWN FORCES ON CORE AND PRIMARY SYSTEM COMPONENTS, (3) EFFECT OF FUEL FAILURES ON EMERGENCY COOLING ABILITY. (4) INDEPENDENCE OF CONTROL AND PROTECTION INSTRUMENTATION--PRESENT DESIGN INADEQUATE, (5) PROMPT DETECTION OF GROSS FUEL FAILURE, (6) PRIMARY-SYSTEM QUALITY CONTROL AND IN-SERVICE INSPECTION. \*\*\* FIXED POISON (BOROSILICATE GLASS) DURING FIRST CYCLE TO ENSURE NEGATIVE MODERATOR COEFFICIENT NEEDS MORE PERFORMANCE DATA.

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

\*BLOWDOWN + \*PRESSURE VESSEL + \*THERMAL MECHANICAL EFFECT + ACCIDENT, LOSS OF COOLANT + ACRS + CONTROL ROD PROGRAM + CORE REFLOODING SYSTEM + DIABLO CANYON (PWR) + EMERGENCY COOLING CONSIDERATIONS + FAILURE, FUEL ELEMENT + FAILURE, FUEL ELEMENT + INDEPENDENCE + INSTRUMENTATION, DETECTION FAILED FUEL ELEMENT + MODERATOR COEFFICIENT + PLANT PROTECTIVE SYSTEM + POISON, FIXED + REACTOR, PWR

9-22258 ALSO IN CATEGORY 17  
BECK GP  
UNIVERSITY OF ILLINOIS REPORTS TRIGA PULSE ROD FAILURE  
UNIVERSITY OF ILLINOIS  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 14(3), PAGES 21-22 (JANUARY 15, 1968), DOCKET 50-151

(LETTER, JANUARY 4) (A) A BAD RELAY ALLOWED THE PULSE ROD TO BE PAISED WHEN THE SHIM ROD WAS ABOVE FULLY INSERTED WITH MODE SWITCH IN MANUAL. (B) THE PNEUMATIC SOLENOID VALVE FAILED TO DROP THE PULSE ROD ON SCRAM. THE RUBBER SEATS ON THE SIX-YEAR-OLD-VALVES WERE WORN AND OCCASIONALLY ALLOWED AIR TO LEAK TO THE TOP PORTION OF THE DIAPHRAGM, HOLDING AIR PRESSURE ON THE PISTON EVEN WHEN THE ELECTRICAL PORTION WORKED PROPERLY. THE AIR PRESSURE WAS REDUCED FROM 75 TO 40 PSI, WHERE THE ROD DID RELEASE. THE REACTOR OPERATED SATISFACTORILY. A BACKUP SAFETY SYSTEM (RELEASE OF AIR PRESSURE AT A VENT ADJACENT TO CONSOLE) WAS AVAILABLE.

\*FAILURE, COMPONENT + \*FAILURE, SCRAM MECHANISM + CONTROL ROD DRIVE + INCIDENT, EQUIPMENT + INSTRUMENTATION, RELAY + REACTOR, RESEARCH + SHUTDOWN SYSTEM, SECONDARY + TRIGA (RR) + VALVE

9-22281 ALSO IN CATEGORY 17  
CASALI F + ZAPPELLINI G  
REPORT ON THE RB1 REACTOR SAFETY SYSTEM  
COMITATO NAZIONALE PER L'ENERGIA NUCLEARE, ROME, ITALY  
RT/ING-(66)27 +. 118 PAGES, 56 FIGURES, 16 REFERENCES, DECEMBER 27, 1966. IN ITALIAN

(IN ITALIAN) A 10-W HEAVY-WATER-COOLED GRAPHITE-REFLECTED FLUX-TRAP REACTOR LOCATED IN BOLOGNA. DESCRIBES AREA AND BUILDING (5 PG), FUEL AND CONTROLS (20 PG), ALSO INCLUDES ANALYTIC STUDY OF THE INCIDENT POSSIBILITY (14 PG) AND WASTE DISPOSAL (2 PG).

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-22281 \*CONTINUED\*  
AVAILABILITY - MICROCARD EDITIONS, INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN 54669

\*REPORT, SAR + CRITICAL ASSEMBLY FACILITY + ITALY + REACTOR, FLUX TRAP + REACTOR, GRAPHITE MODERATED + REACTOR, HWR

9-22327 ALSO IN CATEGORY 17  
GARRICK BJ + GEKLER WC + GOLDFISHER L + KARCHER RH + SHIMIZU B + WILSON JH  
RELIABILITY ANALYSIS OF NUCLEAR POWER PLANT PROTECTIVE SYSTEMS  
HOLMES AND NARVER, INC., LOS ANGELES, CALIF.  
HN-190 +. 268 PAGES, FIGURES, TABLES, MAY 1967

INVESTIGATED DATA AND ANALYSIS REQUIREMENTS FOR A RELIABILITY MONITORING PROGRAM IN POWER REACTOR SAFETY. THE OBJECTIVES WERE - (1) THE DEFINITION OF A SYSTEM FOR THE COLLECTION AND ANALYSIS OF OPERATING, MAINTENANCE, INSPECTION, AND TESTING DATA ON COMPONENTS OF ENGINEERED SAFETY SYSTEMS, AND (2) THE INVESTIGATION OF TECHNIQUES FOR THE EVALUATION OF RELIABILITY AND THE APPLICATION OF THESE TECHNIQUES TO ENGINEERED SAFETY SYSTEMS TYPICAL OF WATER-COOLED AND -MODERATED POWER REACTORS. TWO METHODS WERE SELECTED, AUTOMATIC RELIABILITY MATHEMATIC MODEL (A COMPUTERIZED RELIABILITY ANALYSIS PROGRAM) AND FAULT-TREE ANALYSIS (A LOGICAL ANALYSIS CONCEPT). APPLICATIONS OF BOTH TO SAMPLE PROBLEMS, USING AVAILABLE RELIABILITY DATA, SHOWED THAT THEY PROVIDE USEFUL RELIABILITY ESTIMATES.

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

\*REACTOR SAFETY SYSTEM + \*RELIABILITY ANALYSIS + CODES AND STANDARDS + COMPUTER PROGRAM + DRESDEN 2 (BWR) + OPERATING EXPERIENCE SUMMARY + REACTOR, BWR + REACTOR, PWR + SAN ONOFRE (PWR) + YANKEE (PWR)

9-22331 ALSO IN CATEGORY 4  
MOHLER RR + PRICE HJ  
OPTIMAL NUCLEAR REACTOR CONTROL  
NEW MEXICO UNIVERSITY, ALBUQUERQUE  
SC-CR-67-2746 +. 162 PAGES, AUGUST 1967

THE COMPUTATIONAL ASPECTS OF OPTIMUM CONTROL OF NUCLEAR-ROCKET REACTORS WAS STUDIED FOR VARIOUS CONSTRAINTS IN CONTROL AND STATE. THE CONCLUSION WAS THAT THE OPTIMAL STARTUP OF A NUCLEAR-ROCKET REACTOR IS GENERALLY A MAXIMAL-EFFORT PROCESS, CONSISTENT WITH THE VARIOUS CONSTRAINTS WHICH ARE IMPOSED ON THE VARIABLES. IN ADDITION, THE OPTIMAL SOLUTIONS REQUIRING MINIMUM FUEL CONSUMPTION ARE THE SAME AS THOSE WITH MINIMAL TIME AS THE OPTIMALITY CRITERION.

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

\*NUCLEAR ROCKET + \*REACTOR CONTROL + \*REACTOR, SPACE + THEORETICAL INVESTIGATION

9-22332  
CREEK KD  
MULTI-PURPOSE REACTOR FUEL CHANNEL MONITORING SYSTEM  
GENERAL ELECTRIC CO., RICHLAND, WASHINGTON  
RL-GEN-929 (REV. 1) +. 36 PAGES, MAY 1967

THE PROCESS TUBES OF THE M-REACTOR ARE CORROSION-RESISTANT AND THOROUGHLY TESTED BUT MAY BE SUBJECT TO DAMAGE OR DETERIORATION. THE FOLLOWING PROBES HAVE BEEN DEVELOPED TO ASSESS PROCESS TUBE CONDITIONS IN THE REACTOR - A TELEVISION PROBE VISUALLY EXAMINES THE INNER SURFACE AND MEASURES PIT OR SCRATCH DEPTH, AN ULTRASONIC HYDROGEN PROBE MEASURES HYDROGEN CONTENT IN THE TUBE WALL, AN INNER-DIAMETER PROBE MEASURES TUBE CREEP. PERIPHERAL EQUIPMENT IS PROVIDED TO CLEAN AND DRY THE TUBES AND TO INSERT THE PROBES INTO THE PROCESS TUBES.

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

\*IN CORE MEASUREMENT + \*INSTRUMENTATION, IN CORE + \*INSTRUMENTATION, SURVEILLANCE + FAILURE, TUBING + MONITOR, RADIATION, TELEMETRY + NUCLEATE BOILING + TEST, NONDESTRUCTIVE

9-22333 ALSO IN CATEGORY 4  
PRICE HJ + MOHLER RR  
COMPUTATION OF OPTIMAL CONTROLS FOR A NUCLEAR ROCKET REACTOR  
NEW MEXICO UNIVERSITY  
SC-CR-67-2723 +. 32 PAGES, SEPTEMBER 1967

VARIOUS OPTIMAL REACTOR CONTROL PROBLEMS WITH COMPLICATED CONSTRAINTS ARE SOLVED FOR A NUCLEAR ROCKET ENGINE. THE TECHNIQUE UTILIZES A DIGITAL COMPUTER, WITH THE NUMERICAL ALGORITHM FORMED BY A SUCCESSION OF LINEAR PROGRAMMING PROBLEMS. EACH PROGRAMMING PROBLEM HAS A SOLUTION WHICH IS USED TO RELINEARIZE THE SYSTEMS DYNAMICAL EQUATIONS.

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

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-22333 \*CONTINUED\*  
\*NUCLEAR ROCKET + \*REACTOR CONTROL + \*REACTOR, SPACE + COMPUTER PROGRAM + MATHEMATICAL TREATMENT +  
THEORETICAL INVESTIGATION

9-22334 ALSO IN CATEGORY 17  
FUPET J + GUYOT C  
CONSIDERATIONS ON THE RELIABILITY OF SYSTEMS FOR REACTOR SAFETY (IN FRENCH)  
COMMISSARIAT A L ENERGIE ATOMIQUE, SACLAY  
40 PAGES, 16 FIGURES, PRESENTED AT ENEA COMMITTEE ON REACTOR SAFETY TECHNOLOGY MEETING OF RELIABILITY OF  
ELECTRONIC EQUIPMENT AND SYSTEMS FOR NUCLEAR REACTOR SAFETY, BRUSSELS, APRIL 1967

GIVES AN OPERATIONAL SKETCH OF THE ELECTRONIC SYSTEMS FOR THE CONTROL AND SURVEILLANCE OF  
NUCLEAR REACTORS AT CEA. THE DATA IS EVALUATED TO DETERMINE THE RELIABILITY AND MAINTENANCE  
OF THE EQUIPMENT. TWO EXAMPLES ARE GIVEN FOR DETERMINING THE EFFECT OF DIFFERENT  
TECHNOLOGIES ON RELIABILITY. THE PROVISIONAL OR EXPERIMENTAL RELIABILITY HAS A GREAT EFFECT  
ON THE DEFINITION AND REALIZATION OF MATERIALS COMPOSING THE SAFETY SYSTEMS. OPERATIONAL  
RESULTS ARE NECESSARY FOR THESE EVALUATIONS. IT IS ALSO FUNDAMENTAL NOT TO NEGLECT THE  
CONDITIONS OF INSTALLATION AND OPERATION OF THIS EQUIPMENT.

\*OPERATING EXPERIENCE SUMMARY + \*REACTOR SAFETY SYSTEM + \*RELIABILITY ANALYSIS +  
COMPARISON, THEORY AND EXPERIENCE + FRANCE

9-22338 ALSO IN CATEGORY 4  
ENGEL FC + BISHOP AA  
TEST AND ANALYSIS OF A MANIFOLD AND RE-ENTRANT TUBE ASSEMBLY. FEASIBILITY OF A CHEMICAL POISON LOOP SYSTEM  
WESTINGHOUSE ELECTRIC CORP., PITTSBURGH, PA.  
WCAP-2870 + NASA-CR-54994 +. 90 PAGES, FIGURES, TABLES, REFERENCES, JULY 1966

AN ANALYTICAL AND EXPERIMENTAL MODEL STUDY WAS PERFORMED OF A MANIFOLD AND RE-ENTRANT TUBE  
CHEMICAL-POISON DISTRIBUTION SYSTEM WHICH ARE PART OF A ROCKET REACTOR-CUMULUS LOOP. THE  
SYSTEM OPERATES BY CHANGING THE CONCENTRATION OF THE POISON (CADMIUM SULFATE) IN A WATER  
SOLUTION CIRCULATING THROUGH 198 PARALLEL TUBES WHICH PROJECT FROM A MANIFOLD INTO THE CORE.  
A SPECIAL MANIFOLD AND RE-ENTRANT TUBE ASSEMBLY WAS DESIGNED, AND A FULL-SIZE FLOW MODEL WAS  
MADE OF PLEXIGLAS. A SERIES OF TESTS WERE THEN PERFORMED TO PROVE THE DESIGN.

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

\*FLOW DISTRIBUTION + \*FLOW THEORY AND EXPERIMENTS + \*TEST, SYSTEM OPERABILITY + CONTROL SYSTEM +  
NUCLEAR ROCKET + POISON, SOLUBLE + REACTOR, SPACE + REACTOR, WATER

9-22457 ALSO IN CATEGORY 17  
EBR 2 STEAM GENERATOR LEVEL CONTROLLER MALFUNCTION  
ARGONNE NATIONAL LAB., ARGONNE, ILL.  
ANL-7399 +. 1 PAGE, PAGE 94 OF ARGONNE NATIONAL LABORATORY. REACTOR DEVELOPMENT PROGRAM PROGRESS REPORT,  
NOVEMBER 1967, DECEMBER 1967

ON THE NOV. 12, 1967, STARTUP, AT 20 MW THE PRIMARY BULK-SODIUM TEMPERATURE BEGAN INCREASING  
AND COULD NOT BE CONTROLLED BY ADJUSTING SECONDARY FLOW. A MALFUNCTION OF THE STEAM-DRUM  
WATER-LEVEL CONTROLLER/ALARM ALLOWED THE DRUM TO BOIL DRY.

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

\*CONTROLLER + \*FAILURE, COMPONENT + \*INSTRUMENTATION, LIQUID LEVEL DETECTION + EBR 1 AND 2 (RE) +  
INCIDENT, EQUIPMENT + INDEPENDENCE + REACTOR, LMCR + STEAM GENERATOR

9-22491  
OPTIMIZATION OF SOLID BURNABLE POISONS  
2 PAGES, ATOMKERNENERG 12(7-8), PAGES 285-6 (1967), IN GERMAN

ELEMENTARY CONSIDERATIONS LED TO AN OPTIMIZATION OF SOLID, BURNABLE POISONS. FOR SIMPLICITY  
IN THE EXAMPLE, ALL QUANTITIES ARE RELATED TO THE MEAN THERMAL NEUTRON FLUX IN THE ACTIVE  
CORE BY MEANS OF REACTION RATES AND SELF-SHIELDING FACTORS. SPECTRAL COUPLING OF POISON AND  
FUEL IS NEGLECTED IN A FIRST APPROXIMATION BUT CAN BE TAKEN INTO ACCOUNT IN A SECOND  
CALCULATION. THE SPACE-DEPENDENT WEIGHTING OF THE POISON BY THE IMPORTANCE IS INCLUDED IN  
THE SELF-SHIELDING FACTOR.

GERMANY + MATHEMATICAL TREATMENT + POISON, BURNABLE + THEORETICAL INVESTIGATION + THERMAL NEUTRON

9-22493 ALSO IN CATEGORY 18  
GEORGIA TECH SUPPLIES ADDITIONAL INFORMATION  
GEORGIA INSTITUTE OF TECHNOLOGY, ATLANTA, GA.  
2 PAGES, DECEMBER 14, 1967, DOCKET 50-276

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-22493 \*CONTINUED\*

(RESPONSE TO AEC QUESTIONS OF 27 APRIL 1967. NOTE - REACTOR HAD BEEN ORIGINALLY AT UNIVERSITY OF AKRON) - (1) C-RINGS WILL BE REPLACED AND TESTED TO 15 PSI TO CHECK TANK LEAKTIGHTNESS. (2) SCRAM CIRCUIT MODIFIED IN ACCORDANCE WITH AGN PRINT 2-000-721-H. (3) ALL CIRCUITS AND INSTRUMENTS WILL BE TESTED AND ROD DRIVES CHECKED BEFORE OPERATION BEGINS. A NEW IONIZATION CHAMBER WAS OBTAINED, AND THE LINEAR AND LOG-N METERS WERE OVERHAULED AT THE FACTORY.

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

\*INSTRUMENTATION, GENERAL + \*TEST, LEAK RATE + AEC QUESTION + AGN (TNG) +  
MODIFICATION, SYSTEM OR EQUIPMENT + REACTOR, RESEARCH + REACTOR, TRAINING + REPORT, PSAR + SEAL

9-22512

LENK PR + WURSTER DE + MCCREARY JC  
DEVELOPMENT OF REALISTIC REQUIREMENTS FOR PM-TYPE REACTOR INSTRUMENTATION  
BAILEY METER CO., WICKLIFFE, OHIO  
NYO-3379-1 +. 164 PAGES, JULY 30, 1965

PRESENT-DAY REACTOR INSTRUMENTATION POLICY AND IMPLEMENTATION ARE REVIEWED TO DEVELOP REALISTIC INSTRUMENTATION REQUIREMENTS FOR PM-TYPE REACTOR INSTALLATIONS. THE PROPOSED REQUIREMENTS FOR A REACTOR INSTRUMENTATION SYSTEM ARE DEVELOPED FROM AN INTIMATE KNOWLEDGE OF ELECTRONIC TECHNOLOGY, THE PRESENT POLICIES APPLICABLE TO POWER REACTOR AVAILABILITY AND SAFETY, THE STATE OF THE ART IN INSTRUMENTATION, AND THE LIMITATIONS IMPOSED BY A SMALL POWER PLANT.

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

\*DESIGN CRITERIA + \*DESIGN STUDY + \*INSTRUMENTATION, GENERAL + \*QUALITY CONTROL + PM 1 (PWR) +  
REACTOR CONTROL + REACTOR, MILITARY + REACTOR, POWER

9-22513

KUNZE JF + SIMS FL + WOOD RE  
PBF CRITICAL EXPERIMENT CONTROL ROD MEASUREMENTS  
GENERAL ELECTRIC COMPANY, IDAHO FALLS, IDAHO  
GEMP-560 +. 37 PAGES, FIGURES, TABLES, REFERENCES, OCTOBER 10, 1967

DATA AND RELATED INFORMATION ASSOCIATED WITH CONTROL-ROD MEASUREMENTS CONDUCTED WITH THE POWER BURST FACILITY CRITICAL EXPERIMENT REACTOR SYSTEM ARE PRESENTED. THE DATA INCLUDES THE CRITICAL WATER LEVELS, INCREMENTAL WATER WORTHS, PULSED-NEUTRON-GENERATOR RESULTS RELATED TO THE VARIOUS CORE GEOMETRIES AND CONTROL-POD CONFIGURATIONS. THESE RESULTS PROVIDE THE MEANS BY WHICH THE CONTROL-ROD WORTHS ARE DETERMINED. VALUES OF THE REACTIVITY WORTH OF A PARTICULAR CONTROL ROD ARE DEDUCED.

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

\*CONTROL ROD WORTH + \*CRITICALITY EXPERIMENT + CONTROL ROD INTERACTION + CRITICAL ASSEMBLY FACILITY +  
IDAHO FALLS + PBF (S-RR) + PULSED NEUTRON TECHNIQUE + REACTOR, SAFETY RESEARCH

9-22550

KAMEMOTO Y + SHIBA K + HANDA M + YAMAGISHI S + FUKUDA T + TAKAHASHI Y + TANIFUJI T + OMOPI S  
STUDIES ON CERAMIC FUELS WITH THE USE OF FISSION GAS RELEASE LOOP, (III) - NEUTRON FLUX MONITORING IN SPECIMEN CHAMBER OF FGRL BY COUNTING NITROGEN-16 GENERATED OXYGEN-16 (N,P) NITROGEN-16 REACTION IN PRIMARY COOLING WATER  
5 PAGES, 5 FIGURES, 6 REFERENCES, JOURNAL OF NUCLEAR SCIENCE AND TECHNOLOGY (TOKYO), 4, PAGES 278-282 (JUNE 1967)

FLUX MONITORING IN THE SPECIMEN CHAMBER OF FISSION GAS RELEASE LOOP (FGRL) WAS CARRIED OUT BY DIRECTLY AND CONTINUOUSLY READING WITH A GAMMA-RAY SPECTROMETER THE CONTENT OF N-16 IN THE PRIMARY COOLING WATER PRODUCED BY O-16(N,P)N-16 REACTION WITHIN THE COOLING JACKET OF FGRL. N-16 GENERATION IS NOT INFLUENCED BY GAMMA-RAY BUILD-UP IN THE REACTOR NOR BY THE TEMPERATURE IN THE SPECIMEN CHAMBER. THE DETECTOR CAN BE SIMPLY SET OUTSIDE THE PIPE THROUGH WHICH THE COOLING WATER FLOWS, BECAUSE THE HIGH-ENERGY GAMMA RAYS EMITTED DURING THE N-16 DECAY EASILY PENETRATE THE PIPE WALL.

\*INSTRUMENTATION, RADIATION MONITORING + CHAMBER, NEUTRON + IRRADIATION TESTING + JAPAN + NITROGEN +  
THERMAL NEUTRON

9-22781

ALSO IN CATEGORY 17  
U OF ILLINOIS REPORTS INTERLOCK FAILURE ALLOWING IMPROPER PULSE-SAFETY ROD OPERATION  
NUCLEAR ENGINEERING PROGRAM, UNIVERSITY OF ILLINOIS  
1 PAGE, JAN. 4, 1968, DOCKET NO. 50-151

DURING A CHECK OF INTERLOCKS, A FAILED INTERLOCK WAS DISCOVERED WHICH ALLOWED THE PULSE-SAFETY ROD TO BE RAISED WITH THE SHIM CONTROL ROD NOT FULLY INSERTED AND IN THE MANUAL MODE. THE RELAY WAS REPLACED. INTERLOCK WILL CONTINUE TO BE CHECKED ROUTINELY WITHIN TIMES SPECIFIED BY TECHNICAL SPECIFICATIONS.



CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-22781 \*CONTINUED\*  
AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*FAILURE, COMPONENT + \*INSTRUMENTATION, INTERLOCK + \*INSTRUMENTATION, RELAY + CONTROL ROD PROGRAM + OPERATING EXPERIENCE SUMMARY + REACTOR, PULSED + REACTOR, RESEARCH + TECHNICAL SPECIFICATIONS + TEST, CONTROL ROD DRIVE + TRIGA (RR)

9-22784 ALSO IN CATEGORY 17  
CATHOLIC U REPORT OF FACILITY MODIFICATIONS  
THE CATHOLIC UNIVERSITY OF AMERICA, WASHINGTON, D. C.  
4 PAGES, JAN. 8, 1968, DOCKET NO. 50-77

REACTOR SAFETY COMMITTEE AT ITS DEC. MEETING APPROVED A NEW ORGANIZATION CHART AND MODIFICATION OF THE NO. 2 ION-CHAMBER CIRCUIT SO THAT THE SIGNAL MAY BE FED TO EITHER THE PRESENT BECKMAN LOG CURRENT METER OR TO A HONEYWELL LOG-N AND PERIOD AMPLIFIER (MODEL 4639-CA-4). NOT ONLY DOES THE LATTER GIVE A LOG-N READOUT BUT IT ALSO GIVES A PERIOD READOUT AND A PERIOD SCRAM SIGNAL. THE BECKMAN UNIT WILL BE RETAINED AS A BACKUP UNIT.

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

\*INSTRUMENTATION, POWER RANGE + ADMINISTRATIVE CONTROL + AGN (TNG) + INSTRUMENTATION, PERIOD + MODIFICATION, SYSTEM OR EQUIPMENT + REACTOR, TRAINING + SAFETY REVIEW

9-22831 ALSO IN CATEGORY 6  
CONTROL OF XENON INSTABILITIES IN LARGE PWRs. QUARTERLY PROGRESS REPORT FOR THE PERIOD ENDING SEPTEMBER 30, 1967  
WESTINGHOUSE ELECTRIC CORP., PITTSBURGH, PA. ATOMIC POWER DIVISION  
WCAP-3680-5 + EURAEC-1925 +. 10 PAGES, OCTOBER 1967

THIS REPORT IS ONE OF A SERIES OF SUCH REPORTS CONCERNED WITH INVESTIGATING THE CHARACTERISTICS AND CONTROL OF SPATIAL INSTABILITIES IN LARGE PRESSURIZED-WATER REACTORS, WITH PARTICULAR EMPHASIS ON AZIMUTHAL XENON INSTABILITIES (X-Y PLANE). THE PROGRAM CONSISTS OF THE FOLLOWING TASKS - (1) EUXE-200 EFFECT OF CORE PARAMETERS ON SPATIAL OSCILLATIONS, (2) EUXE-300 REMEDIAL CONTROL PROCEDURES, (3) EUXE-400 THREE-DIMENSIONAL ANALYSIS.

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

INSTABILITY + REACTOR, PWR + XENON

9-22832  
APPLICATIONS OF ULTRASONIC ENERGY. ULTRASONIC INSTRUMENTATION FOR NUCLEAR APPLICATIONS. BIMONTHLY PROGRESS REPORT NO. 36, AUGUST 1, 1967-SEPTEMBER 30, 1967  
AEROPROJECTS, INC., WEST CHESTER, PA.  
NYG-3622-11 +. 12 PAGES, FIGURES, OCTOBER 1967

THIS REPORT IS ONE OF A SERIES OF SUCH REPORTS CONCERNED WITH THE APPLICATION OF ULTRASONICS TO MEASUREMENT PROBLEMS IN NUCLEAR REACTORS. DEVELOPMENT OF INSTRUMENTATION WAS UNDERTAKEN, BEGINNING WITH THEORY, DESIGNING A PROTOTYPE, THEN DEVELOPING AND TESTING A UNIT. TOPICS COVERED IN THIS REPORT ARE -- (1) ULTRASONIC INSTRUMENTATION FOR THE DETECTION OF INCIPIENT BOILING IN MOLTEN METAL (2) ULTRASONIC FLOWMETER FOR USE IN METAL OR FUSED-SALT SYSTEMS.

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

INSTRUMENTATION, COOLANT QUALITY + INSTRUMENTATION, FLOW + INSTRUMENTATION, IN CORE

9-22833  
HILBORN HS  
USAEC-AECL COOPERATIVE PROGRAM. MONTHLY PROGRESS REPORT, SEPTEMBER 1967  
DU PONT DE NEMOURS (E.I.) AND CO., AIKEN, S. C. SAVANNAH RIVER LAB.  
DPST-67-83-9 +. 8 PAGES, OCTOBER 10, 1967

THIS REPORT IS ONE OF A SERIES OF SUCH REPORTS CONCERNING THE COOPERATIVE EFFORTS BETWEEN THE U.S. AND CANADIAN GOVERNMENTS IN THE DEVELOPMENT OF HEAVY-WATER-MODERATED POWER REACTORS. THE TOPICS COVERED ARE - (1) PHYSICS EXPERIMENTS WITH FUEL ASSEMBLIES (SIMULATED BURNED-UP FUEL), (2) AECL IN-CORE FLUX MONITORS, AND (3) SIEVE-TRAY TESTS.

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

CANADA + COMPUTER PROGRAM + FLUX, INTEGRATED + FUEL BURNUP + HEAT TRANSFER + INSTRUMENTATION, IN CORE + IRRADIATION TESTING + PEACTOR, HWR + SAVANNAH RIVER PLANT + TESTING + TRANSPORT THEORY + UNITED STATES

9-22843 ALSO IN CATEGORY 18

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-22843 \*CONTINUED\*  
MICHIGAN STATE TRIGA REQUESTS PERMISSION TO REASSEMBLE 4 FUEL ELEMENTS  
MICHIGAN STATE UNIVERSITY  
1 PAGE, JANUARY 18, 1968, DOCKET 50-294

IT IS NECESSARY TO DISASSEMBLE 4 INSTRUMENTED ELEMENTS FOR TRANSFER FROM U OF ILLINOIS. THESE ARE TO BE REASSEMBLED IN THE STOPAGE AREA OF THE POOL OR IN A FUEL CASK SUSPENDED OVER THE POOL. THEY WILL THEN BE TESTED FOR ELECTRICAL CONTINUITY. ONLY ONE ASSEMBLY WILL BE TESTED IN THE CORE AT A TIME, THEN RETURNED TO STORAGE.

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

\*FUEL HANDLING + FUEL ELEMENT + INSTRUMENTATION, IN CORE + INSTRUMENTATION, TEMPERATURE + REACTOR, RESEARCH + TECHNICAL SPECIFICATIONS + TRIGA (RR)

9-22844 ALSO IN CATEGORY 17  
MANHATTAN COLLEGE SUPPLIES ADDITIONAL INFORMATION ON SHUTDOWN SYSTEMS  
MANHATTAN COLLEGE, BRONX, NEW YORK  
2 PAGES, DECEMBER 29, 1967, DOCKET 50-196

(1) BORON EMERGENCY SHUTDOWN SOLUTION (WORTH AT LEAST 3%) IS FORMED BY DISSOLVING MORE THAN 4915 G OF BORIC ACID IN WATER WHICH IS STORED IN 3 LARGE CARBOYS ON THE REACTOR PLATFORM (TECH. SPECS. SPECIFY THAT THEY BE AVAILABLE IN THE VICINITY OF THE CONSOLE). \*\*\*(2) DUMP TANK FOR DELIVERY OF THE BORON SOLUTION IS RULED OUT BECAUSE OF DIFFICULTY IN CLEANING CORE AFTER ACCIDENTAL TRIP. \*\*\*(3) SHUTDOWN ROD IS AN IRON PIPE, TEN FT. LONG, 13/16 IN. I.D., AND 15/16 IN. O.D., CONTAINING 1.22 LB OF B4C POWDER.

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

\*SHUTDOWN SYSTEM, SECONDARY + AEC QUESTION + AGN (TNG) + BORON + CONTROL ROD + POISON, SOLUBLE + REACTOR, RESEARCH + TECHNICAL SPECIFICATIONS

9-22882 ALSO IN CATEGORY 17  
SELECTED FERMI EXPERIENCE - JULY 1966  
POWER REACTOR DEVELOPMENT COMPANY  
EF-35 +. 11 PAGES, JULY 1966

SHUTDOWNS BEGAN JULY 15 TO REPLACE COPPER GASKET ON NO. 2 STEAM-GENERATOR WATER HEADER, AFTER SOME TESTS AT 100 MW WERE COMPLETED. MEASURED CORE OUTLET TEMPERATURE DIFFERENCES AND 8% GREATER THAN EXPECTED. \*\*\* DURING A PRESSURE RAMP FROM 950 TO 600 PSIA WITH REACTOR AT 67 MW, REACTOR INLET SODIUM TEMPERATURE BEGAN OSCILLATING AT 750 PSIA, REACHING 565 F AND CAUSING A ONE-LOOP SHUTDOWN, WHICH GAVE A LOSS-OF-FLOW SCRAM. THERE MAY BE SIGNIFICANT HEAT TRANSFER IN THE CENTRAL REGION OF THE STEAM GENERATOR, SO BOILING OCCURS TOO SOON IN THE TUBES, CAUSING FLOW INSTABILITY. A SECOND SCRAM CAME SIMILARLY, BUT FROM TOO HIGH A TEMPERATURE, DUE TO ERRATIC TR 301.

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

\*FLOW STABILITY + \*SCRAM, SPURIOUS + \*STEAM GENERATOR + FERMI (LMFBR) + INSTRUMENTATION, ABNORMAL INDICATION + INSTRUMENTATION, TEMPERATURE + OPERATING EXPERIENCE SUMMARY + REACTOR, FAST + REPORT, OPERATIONS + TEST, PLANT RESPONSE

9-22886 ALSO IN CATEGORY 17  
SELECTED FERMI OPERATING EXPERIENCE - JAN. 1967  
POWER REACTOR DEVELOPMENT COMPANY  
EF-41 +. 1 PAGE, PAGE 5 OF ENRICO FERMI ATOMIC POWER PLANT REPORT FOR JANUARY 1967

(PAGE 5) SOURCE-RANGE COUNTING RATE ON CHANNELS 1/2 ROSE BY FACTORS OF 2/3 ON JAN. 10, APPARENTLY FROM A COMMON INDETERMINATE NOISE SOURCE. CROSS COUPLING BETWEEN VARIOUS EQUIPMENT RADIATION MONITORS WAS ELIMINATED WITH FILTER CAPACITORS IN THE COMMON POWER SUPPLIES.

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

\*INSTRUMENTATION, ABNORMAL INDICATION + ELECTRIC POWER, VITAL + FERMI (LMFBR) + INDEPENDENCE + INSTRUMENTATION, STARTUP RANGE + MONITOR, RADIATION, AREA + REACTOR, FAST + REPORT, OPERATIONS

9-22890 ALSO IN CATEGORY 17  
MCCARTHY JF  
SELECTED FERMI OPERATING EXPERIENCE - JAN. 1967  
ATOMIC POWER DEVELOPMENT ASSOCIATES, INC., DETROIT, MICH. + POWER REACTOR DEVELOPMENT CO., DETROIT, MICH. + DETROIT EDISON CO., MICHIGAN  
APDA-CFE-6 +. 1 PAGE OF COMPILATION OF CURRENT TECHNICAL EXPERIENCE AT ENRICO FERMI ATOMIC POWER PLANT, MONTHLY REPORT NO. 6, JANUARY 1967, 20 PAGES, MAY 1967

(PAGE 10) A JAN. 10 DOUBLING OF THE SHUTDOWN COUNTING RATE ON CHANNELS 1 AND 2, WHICH TOOK PLACE IN 5 MIN AND LASTED ABOUT 15 HR, WAS APPARENTLY NOISE (FROM AN AC MG SET, STANDBY POWER) ENTERING THE SCALE OF TWO MODULES. DISCRIMINATION CURVES SHOWED NO CHANGE. (PG 15)

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-22890 \*CONTINUED\*

OF THE 18 1966 SCRAMS TABULATED, 5 WERE SINGLE ROD DROPS, 3 WERE LOSS OF COOLANT DUE TO HIGH FEEDWATER TEMP., TWO WERE UNKNOWN SAFETY-SYSTEM TRANSIENTS, ONE WAS DUE TO FAULTY DETECTORS, AND 4 WERE SCHEDULED. (PG 24) SUBASSEMBLY M099 SHOWED THAT TWO OF FOUR PINS HAD 2500 PPM OF HYDRIDE IN THE CLAD (VS 150 FOR OTHERS, AND 10,000 AS FAILURE THRESHOLD).

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

\*EXAMINATION + \*FUEL ELEMENT + \*INSTRUMENTATION, ABNORMAL INDICATION + \*INSTRUMENTATION, STARTUP RANGE + \*SCRAM, REAL + EMERGENCY POWER, ELECTRIC + FERMI (LMFBR) + HYDRIDE + INDEPENDENCE + REACTOR, FAST + REPORT, OPERATIONS SUMMARY + ZIRCALOY

9-22892 ALSO IN CATEGORY 17

MCCARTHY JF + NASH CP

COMPILATION OF CURRENT TECHNICAL EXPERIENCE AT ENRICO FERMI ATOMIC POWER PLANT. MONTHLY REPORT NO. 11, JUNE 1967

ATOMIC POWER DEVELOPMENT ASSOCIATES, INC., + POWER REACTOR DEVELOPMENT CO. + DETROIT EDISON COMPANY, MICHIGAN

APDA-CFE-11 +. 31 PAGES, FIGURES, AUGUST 1967

CONTAINS SUBJECT INDEX FOR CFE REPORTS 1-11. (PAGE 8) DURING VESSEL DRAINING OPERATIONS, THE COUNTING-RATE CHANNELS INCREASED A FACTOR OF 20, AND THE INTERMEDIATE-RANGE CHANNELS ROSE A FACTOR OF 10,000. SAFETY CHANNELS WERE NOT AFFECTED. SIGNALS WERE CONTINUOUS AND LASTED 6 MIN. CAUSE SUPPOSED ELECTRICAL. (PAGE 12) THE STUCK PAIR OF FUEL ELEMENTS WERE VISIBLE THROUGH BORESCOPES. (PAGE 15) VARIATION OF PREDICTED FROM MEASURED SODIUM DELTA T INCREASES WITH INCREASING DISTANCE FROM CORE CENTER. TWO MODELS WERE DEVELOPED FOR LOCAL FLOW VARIATIONS. (PAGE 17) VARIOUS CONSTRUCTION MATERIALS WERE IMMERSSED IN HOT SODIUM TO SEE IF THEY COULD RETAIN THEIR FORM.

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

\*FLOW BLOCKAGE + \*FLOW DISTRIBUTION + \*INSTRUMENTATION, ABNORMAL INDICATION + FERMI (LMFBR) + INSTRUMENTATION, INTERMEDIATE RANGE + INSTRUMENTATION, STARTUP RANGE + MATERIAL + REACTOR, FAST + REPORT, OPERATIONS SUMMARY

9-22893 ALSO IN CATEGORIES 5 AND 17

MCCARTHY JF

COMPILATION OF CURRENT TECHNICAL EXPERIENCE AT ENRICO FERMI ATOMIC POWER PLANT. MONTHLY REPORT NO. 9, APRIL 1967

ATOMIC POWER DEVELOPMENT ASSOCIATES, INC., DETROIT, MICH + POWER REACTOR DEVELOPMENT COMPANY + DETROIT EDISON COMPANY, MICHIGAN

APDA-CFE-9 +. 31 PAGES, JUNE 1967

(PAGE 23) A LOW-FREQUENCY COIL TO NONDESTRUCTIVELY TEST FUEL PINS HAS A THRESHOLD OF 1000 PPM HYDRIDE, TESTED ON DELIBERATELY HYDRIDED (250-5000 PPM) PINS. (PAGE 24) BYPASS FLOW ANALYSIS OF SUBASSEMBLY LOWER NOZZLE BEING CAUGHT ON TOP OF THE SUPPORT PLATE SHOWS FLOW REDUCED BY 7%, INSUFFICIENT TO CAUSE FUEL DAMAGE. (PAGE 27) FAILURE OF A SOLENOID VALVE ALLOWED PRIMARY-SHIELD-TANK PRESSURE TO TAKE POSITIVE PRESSURE SWINGS. FAILURE BLEW A FUSE IN THE COMMON POWER SUPPLY, PREVENTING SWITCHOVER TO AN ALTERNATE SENSING LINE. MANUAL VALVES REPLACE THE SOLENOID VALVES (IN A LESS COMPLICATED ARRAY).

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

\*FAILURE, COMPONENT + \*FAILURE, SEQUENTIAL + \*FLOW DISTRIBUTION + \*TEST, NONDESTRUCTIVE + CLAD + ELECTRIC POWER, NORMAL + FERMI (LMFBR) + FUEL ELEMENT + HYDRIDE + HYDRODYNAMIC ANALYSIS + INDEPENDENCE + REACTOR, FAST + REPORT, OPERATIONS SUMMARY + VALVE

9-22947 ALSO IN CATEGORY 17

DRESDEN I PROPOSED CHANGE 15--REFUELING WITHOUT COCKED RODS

COMMONWEALTH EDISON COMPANY, CHICAGO, ILLINOIS

4 PAGES, JANUARY 17, 1968, DCKET 50-10, TYPE--BWR, MFG--G.E., AE--BECHTEL

DRESDEN ASKS TO ELIMINATE REQUIREMENT THAT SOME CONTROL RODS BE COCKED DURING REFUELING. SHUTDOWN MARGIN AT ALL STAGES, WITH ONE ROD STUCK OUT OF CORE, WOULD HAVE TO BE AT LEAST 1%. A CONTROL ROD IN THE VICINITY OF THE REFUELING ACTIVITY WOULD BE WITHDRAWN AND REINSERTED BEFORE AND AFTER EACH FUEL ADDITION. ONE-STUCK-ROD REFUELING ACCIDENT RESULTS IN NO CLAD OR FUEL MELTING.

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

\*REFUELING + \*SHUTDOWN MARGIN + ACCIDENT, REFUELING + ADMINISTRATIVE CONTROL + CONTROL ROD + DRESDEN I (BWR) + REACTOR, BWR + TECHNICAL SPECIFICATIONS

9-22948 ALSO IN CATEGORY 17

PLUM BROOK SUPPLIES ADDITIONAL INFORMATION ON CHANGE REPORT 32--CONTROL RODS

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-22948 \*CONTINUED\*  
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, LEWIS RESEARCH CENTER  
3 PAGES, JANUARY 12, 1968, DOCKET 50-20

TESTS WITH CONTROL-ROD-BEARING MATERIALS (ZIRCALOY 32, 17-7PH STAINLESS, 6061-T6 ALUMINUM, TI-16 ALUMINUM, AND WAUKESHA METAL 8P) SHOWED WAUKESHA 8P TO HAVE THE BEST COMBINATION OF PROPERTIES, WITH 6061-T6 A1 AN ACCEPTABLE SECOND. BEARING PLATE IN ALL CASES WAS 304 STAINLESS. TEST CONDITIONS WERE - (1) VELOCITY, 12 FT/SEC (ROD DROP VELOCITY), (2) LATERAL LOADING OF 65 PSI (GREATER THAN THAT EXPECTED), AND (3) 10-MIN RUN, EQUIVALENT TO 3,000 ROD DROPS. WEAR OF BEARING MATERIAL, DAMAGE TO STAINLESS-STEEL SURFACE, AND THE INITIAL AND FINAL COEFFICIENT OF FRICTION WERE DETERMINED. \*\*\*ROD-DROP TIMES FOR THE REFLECTOR RODS WILL BE CHECKED AFTER INSTALLATION OF THE ROLLERLESS GUIDES (BEFORE OPERATION) AND RODS 6, 7, AND 8 WILL BE CHECKED MONTHLY FOR 6 MONTHS.

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

\*CONTROL ROD SCRAM MECHANISM + \*TEST, PROOF + AEC QUESTION + CONTROL ROD DRIVE + PLUM BROOK (TP) + REACTOR, TEST + RESPONSE TIME + TECHNICAL SPECIFICATIONS

9-22949 ALSO IN CATEGORY 17  
UNIVERSITY OF ILLINOIS REPORTS SOLENOID FAILURE CAUSES PULSE-SAFETY ROD TO FAIL TO DROP  
UNIVERSITY OF ILLINOIS, URBANA, ILLINOIS  
2 PAGES, JANUARY 4, 1968, DOCKET 50-151

DURING STARTUP CHECKOUT, THE PULSE-SAFETY ROD FAILED TO DROP. ROD WAS THEN DROPPED BY VENTING AIR PRESSURE. ROD THEN OPERATED PROPERLY IN REPEATED CHECKS. AFTER A SECOND FAILURE TO DROP OCCURRED DURING THE CHECKOUT, THE SOLENOID VALVE CONTROLLING THE AIR PRESSURE WAS TESTED AND FOUND TO BE THE SOURCE OF TROUBLE. SINCE NO REPLACEMENT WAS AVAILABLE, THE AIR PRESSURE WAS REDUCED FROM 75 PSI TO 40, AT WHICH THE VALVE OPERATED PROPERLY (A REPLACEMENT VALVE WAS OBTAINED). THE RUBBER SEATS IN THE 5-YEAR-OLD VALVE WERE WORN, ALLOWING LEAKAGE. \*\*\* A BACKUP SAFETY SYSTEM (RELEASE OF AIR PRESSURE WITH THE VENT NEAR THE CONSOLE) WAS AVAILABLE IN EVENT OF FAILURE DURING ROUTINE SHUTDOWN.

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

\*FAILURE, SCRAM MECHANISM + \*INCIDENT, EQUIPMENT + \*VALVE + FAILURE, EQUIPMENT + OPERATING EXPERIENCE + PRESSURE, INTERNAL + REACTOR, PULSED + SHUTDOWN SYSTEM, SECONDARY + TRIGA (RP)

9-22950 ALSO IN CATEGORY 17  
UNIVERSITY OF ILLINOIS REPORTS FAILURE IN PULSE ROD SOLENOID VALVE  
UNIVERSITY OF ILLINOIS  
2 PAGES, JANUARY 15, 1968, DOCKET 50-151

THE PULSE ROD FAILED TO DROP DURING A ROUTINE SHUTDOWN, DROPPED WHEN MANUAL VENT OPENED, BUT WITHDREW WHEN VENT CLOSED. MASTER-KEY SWITCH DROPPED ROD, AND OPERATION THEREAFTER WAS NORMAL. CAUSE APPEARS TO BE IN A NUMBER OF MICROSWITCHES, AND MECHANICAL MOVEMENT OF (AND A HOLDING CONTACT IN) THE UP-BUTTON. (TWO YEARS AGO SIMILAR DIFFICULTY WAS RELIEVED BY LUBRICATION AND SIZE REDUCTION OF THE BUTTON SLIDE.) SINGLE OCCURRENCE DOES NOT ALLOW THE FINDING THAT A COMPONENT FAILED.

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

\*FAILURE, SCRAM MECHANISM + CONTROL ROD DRIVE + FAILURE, COMPONENT + INCIDENT, EQUIPMENT + REACTOR, PULSED + TRIGA (RS) + VALVE

9-22974 ALSO IN CATEGORIES 10 AND 18  
URL REQUESTS ADDITIONAL DISCUSSION ON FOOT CALHOUN  
U. S. ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.  
1 PAGE, JANUARY 27, 1968, DOCKET 50-295, TYPE--PWR, MFG--C.E., AE--GIB6S + HILL

CONFIRMS PHONE CONVERSATION OF JANUARY 17, 1968, THAT ACRS WISHES ADDITIONAL INFORMATION BEFORE PREPARING THEIR REPORT - (1) ADEQUACY OF OFF-SITE POWER, AND GENERAL DESIGN CRITERION 39, (2) ABILITY TO INSERT CONTROL RODS IF A PRIMARY COOLANT LINE LARGER THAN 12 INCHES RUPTURES, AND (3) ADEQUACY OF THE REACTOR PROTECTION SYSTEM, ESPECIALLY THE SCRAM BUS, TO PROVIDE PROTECTION IF A SINGLE FAILURE WERE TO OCCUR.

USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*EMERGENCY POWER, ELECTRIC + \*PLANT PROTECTIVE SYSTEM + ACRS + AEC DESIGN CRITERIA + AEC QUESTION + FAILURE, SCRAM MECHANISM + FT. CALHOUN (PWR) + REACTOR, PWR + SINGLE FAILURE CRITERION

9-22992 ALSO IN CATEGORY 17  
MCCORD RV + CORBETT BL  
HIGH FLUX ISOTOPE REACTOR QUARTERLY REPORT, JULY-SEPTEMBER OF 1967  
OAK RIDGE NATIONAL LABORATORY  
ORNL-TM-2078 +. 26 PAGES, 2 FIGURES, 12 TABLES, NOVEMBER 12, 1967

SENSITIVITY LOSS OF THE IONIZATION CHAMBERS CONTINUED AS A RESULT OF BURNUP OF BORON COATING.

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-22992 \*CONTINUED\*

OPERATING INPUT CURRENT WILL BE LOWERED BY WITHDRAWING CHAMBERS TO LOWER FLUX. SUMMARIZES PROBLEMS EXPERIENCED WITH CONTROL-PLATE BEARINGS. FIRST FAILURES OCCURRED AT END OF CYCLE 4 (SEPT. 30, 1966) WHEN BEARING BALLS WORE ENOUGH TO COME OUT OF THE RACE. AT END OF CYCLE 14, FIVE OF SIXTEEN LUGS (BEARING HOLDERS) WERE MISSING FROM THE PLATES. POSSIBLE CAUSES ARE GIVEN (LATER TESTS REVEALED FAILURES DUE TO WEAK LUGS AND VIBRATIONAL STRESSES INDUCED BY COOLANT FLOW FORCES).

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

\*CONTROL ROD + \*FAILURE, SCRAM MECHANISM + FAILURE, INSTRUMENT + HFIR (FTR) + HYDRAULIC EFFECT + INSTRUMENTATION, POWER RANGE + REACTOR, FLUX TRAP + REPORT, OPERATIONS + STRESS + VIBRATION

9-23143

ALSO IN CATEGORY 17

ANALYSIS OF INOPERATIVE CONTROL ROD AT SAN ONOFRE  
SOUTHERN CALIFORNIA EDISON COMPANY

6 PAGES, JANUARY 26, 1968, DOCKET 50-260, TYPE--PWR, MFG--WEST., AE--BECHTEL

THE CAUSE OF THE MAY 19, 1967, FAILURE OF ROD G-13 WAS A FAULTY LATCH PIN IN THE MOVABLE GRIPPER ASSEMBLY, WHICH DID NOT HAVE THE PROPER THICKNESS AT ONE END, LOOSENED, AND JAMMED THE MECHANISM AT 80% WITHDRAWN. THE PIN FAILED WHERE IT WAS FLARED (TO HOLD IT IN PLACE) TO 0.009 IN. INSTEAD OF 0.25. QUALITY-CONTROL CHECKS REVEALED THAT THIS STEP HAD BEEN 100% INSPECTED AND THAT TWO PEOPLE HAD INITIALED THE SHEET. THIS IS ATTRIBUTED TO RANDOM OCCURRENCE. \*\*\* DEPENDING ON POSITION AND CORE LIFE, 12-15 RODS COULD STICK, AND THE REACTOR COULD BE SHUT DOWN BY OTHER RODS IF ANOTHER ACCIDENT IS NOT COMPOUNDED.

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

\*CONTROL ROD DRIVE + \*FAILURE, SCRAM MECHANISM + \*QUALITY CONTROL + CONTROL ROD FABRICATION + EXAMINATION + REACTOR, PWR + SAN ONOFRE (PWR)

9-23147

ATKINSON H + JAMES PR + TAIT D

DESIGN AND USE OF SIMPLE REACTIVITY METERS FOR FAST REACTORS

UNITED KINGDOM ATOMIC ENERGY AUTHORITY, DOUNREAY (SCOTLAND). REACTOR GROUP

TRG-REPORT-1526(D) +. 28 PAGES, 12 FIGURES, 7 REFERENCES, JUNE 21, 1967

TWO SIMPLE ACCURATE REACTIVITY METER SYSTEMS COSTING LESS THAN 1000 POUNDS WERE TESTED ON THE DOUNREAY FAST REACTOR. THESE DESIGNS AND A DESCRIPTION OF THE EXPERIMENTAL MEASUREMENTS AND TESTS ARE PRESENTED.

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

\*DESIGN STUDY + \*INSTRUMENTATION, OPERATING REACTIVITY + DOUNREAY (TR) + EQUIPMENT DESIGN + REACTIVITY EFFECT + REACTOR, FAST + REACTOR, TEST + UNITED KINGDOM

9-23148

ANDERSON JL

NUCLEAR INSTRUMENT MODULE MAINTENANCE MANUAL. PART 13. MAGNET CONTROL AMPLIFIER, ORNL MODEL Q-2613  
OAK RIDGE NATIONAL LAB., TENN.

ORNL-TM-1638(P1.13) +. 15 PAGES, 1 FIGURE, 2 TABLES, NOV. 2, 1967

THE AMPLIFIER IS NORMALLY USED TO CONTROL THE CURRENT TO A SCRAM-LATCH MAGNET IN A REACTOR SAFETY SYSTEM. WHEN THE BISTATE INPUT SIGNAL IS NORMAL, THE AMPLIFIER OUTPUT IS A REGULATED CURRENT ADJUSTABLE FROM 0.3 TO 2.2 AMP. WHEN THE INPUT SWITCHES TO THE ABNORMAL STATE, THE OUTPUT CURRENT IS SWITCHED TO ZERO IN LESS THAN 5 MSEC FOR A TYPICAL COMPATIBLE MAGNET DESIGN. THE CONTROL AMPLIFIER WAS DESIGNED SPECIFICALLY FOR THE HFIR 3-COIL, 2-OUT-OF-3 COINCIDENCE MAGNET SYSTEM BUT MAY BE USED FOR SINGLE-COIL MAGNETS AS WELL.

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

\*CONTROL ROD SCRAM MECHANISM + \*INSTRUMENTATION, AMPLIFIER + \*INSTRUMENTATION, CONTROL + EQUIPMENT DESIGN + HFIR (FTR) + INSTRUMENTATION, SWITCH + REACTOR, FLUX TRAP + REACTOR, RESEARCH

9-23149

ANDERSON JL

NUCLEAR INSTRUMENT MODULE MAINTENANCE MANUAL. PART 7. SERVO DEMAND DRIVE UNIT, ORNL MODEL Q-2607  
OAK RIDGE NATIONAL LAB., TENN.

ORNL-TM-1638 (PT.7) +. 13 PAGES, 1 FIGURE, 1 TABLE, NOV. 9, 1967

THIS MODULE PROVIDES A REMOTELY ADJUSTED REFERENCE VOLTAGE WHICH IS USED AS THE POWER-DEMAND SIGNAL IN A REACTOR POWER-LEVEL CONTROLLER. THE VOLTAGE VS PERCENT POWER CALIBRATION AND THE RATE OF CHANGE OF DEMAND SIGNAL ARE BOTH FIXED. THE UNIT CONSISTS OF A MOTOR-DRIVEN DUAL-PRECISION POTENTIOMETER AND ADJUSTABLE ROTARY LIMIT SWITCHES. ACCURATE EXTERNAL REFERENCE VOLTAGES ARE APPLIED ACROSS THE POTENTIOMETER SECTIONS, AND THE DEMAND SIGNALS ARE

CATEGORY . 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-23149 \*CONTINUED\*  
TAKEN FROM THE WIPERS OF THE POTENTIOMETERS.

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

\*INSTRUMENTATION, COMPONENT + \*INSTRUMENTATION, CONTROL + \*INSTRUMENTATION, POWER RANGE +  
EQUIPMENT DESIGN + INSTRUMENTATION, POSITION + SERVOMECHANISM

9-23150  
WHITT RE + DUGGINS RC  
DIGITAL COMPUTERS AS PROCESS INSTRUMENTATION  
4 PAGES, 12 REFERENCES, NUCLEAR SAFETY 9(1), PAGE 25-28, (FEB. 1968)

THE ALL-DIGITAL CONTROL SYSTEM BECOMES ATTRACTIVE ECONOMICALLY AS NUCLEAR POWER PLANTS BECOME  
LARGER AND MORE COMPLEX. A RECENT STUDY IS REVIEWED THAT CONSIDERED SATISFYING  
POWER-PLANT-INSTRUMENTATION REQUIREMENTS THROUGH THE USE OF SPECIAL-PURPOSE DIGITAL SYSTEMS.  
HOWEVER, PRESENT EXPERIMENTS INDICATES THAT IT IS ADVISABLE TO CONSIDER THE PROVED MERITS OF  
CONVENTIONAL ANALOG METHODS BEFORE MAKING ANY STRONG COMMITMENTS TO THE USE OF  
DIGITAL-CONTROL COMPUTERS.

\*COMPUTED, DIGITAL + \*INSTRUMENTATION, PROCESS + CONTROL SYSTEM + CONTROL, COMPUTER + CONTROL, GENERAL +  
INSTRUMENTATION, CONTROL + INSTRUMENTATION, GENERAL

9-23151  
HANAUER SH + WALKER CS  
PRINCIPLES OF DESIGN OF REACTOR-PROTECTION INSTRUMENT SYSTEMS  
OAK RIDGE NATIONAL LAB.  
7 PAGES, 1 FIGURE, 3 REFERENCES, NUCLEAR SAFETY 9(1), PAGE 28-34, (FEB. 1968)

DESIGN POLICY OF REACTOR PROTECTION INSTRUMENT SYSTEMS IS DISCUSSED FROM A REVIEW OF PUBLISHED  
DEFINITIONS TO THE ROLE OF THE HUMAN OPERATOR IN PLANT PROTECTION. TOPICS CONSIDERED ARE  
PERFORMANCE REQUIRED UNDER ACCIDENT CONDITIONS AND RELIABILITY OF THE DEVICES INVOLVED,  
REUNDANCY AND COINCIDENCE, TESTING AND MAINTENANCE, AND THE RELATION BETWEEN THE PROTECTION  
SYSTEM AND THE OPERATION SYSTEM.

\*SAFETY PRINCIPLES AND PHILOSOPHY + DESIGN CRITERIA + INSTRUMENTATION, PROTECTIVE + REACTOR SAFETY SYSTEM +  
REVIEW

9-23152  
WANG CC  
AUTOMATIC CONTROL SYSTEM FOR DETECTION OF NUCLEAR MAGNETIC RESONANCE  
CALIFORNIA UNIVERSITY, BERKELEY. LAWRENCE RADIATION LAB.  
UCRL-17715 +. 25 PAGES, 8 FIGURES, 1 TABLE, AUGUST 3, 1967

AN AUTOMATIC CONTROL SYSTEM FOR DETECTION OF THE NUCLEAR MAGNETIC RESONANCE IS DESCRIBED. THE  
SYSTEM IS A COMBINATION OF THE COMMERCIAL INSTRUMENTS AND THE MODULAR UNITS DEVELOPED IN THE  
LAB. THE FREQUENCY OF INTEREST IS ANYWHERE BETWEEN 100 AND 900 MHZ. THE RANGE OF THE  
FREQUENCY SWEEPING IS DETERMINED BY THE SAMPLE UNDER OBSERVATION, WHICH IS SELDOMLY OVER 100  
MHZ. THE ACCURACY OF THE FREQUENCY REPETITION IS WITHIN 100 KHZ.

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

CONTROL SYSTEM + EQUIPMENT DESIGN + INSTRUMENTATION, CONTROL + INSTRUMENTATION, NUCLEAR +  
RESONANCE OVERLAP + TEST, PHYSICS

9-23183  
COSTES D + LEBEY J + MAFFIN R  
DEVICE FOR REGULATING THE POWER LEVEL OF A NUCLEAR REACTOR  
FRANCE. COMMISSARIAT A L ENERGIE ATOMIQUE  
BRITISH PATENT 1,076,708 +. 3 PAGES, 1 FIGURE, JULY 19, 1967

THE POWER-REGULATING DEVICE CONSISTS OF AT LEAST ONE METAL CHAIN AND MEANS FOR DISPLACING IT  
WITHIN A VERTICAL CHANNEL EXTENDING THROUGH THE REACTOR COPE.

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

\*CONTROL ROD + PATENT + UNITED KINGDOM

9-23185  
LEJAILLF VJ + DUREAU G  
INSPECTION, CONTROL AND AUTOMATION OF NUCLEAR REACTORS  
8 PAGES, 5 FIGURES, ATOMPRAXIS 13(11/12), PAGES 527-544 (NOV-DEC 1967). IN GERMAN

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-23185 \*CONTINUED\*

THE FIRST PART OF THE ARTICLE INCLUDES A DESCRIPTION BY COMPAGNIE FRANCAISE THOMSON HOUSTON HOTCHKISS BRANDT OF THE PRINCIPLES AND TECHNIQUES IMPLEMENTED BY THE COMPANY IN SEVERAL REACTORS RECENTLY BUILT. THE SECOND PART IS A DETAILED DESCRIPTION OF THE AUTOMATIC FUEL-HANDLING SYSTEMS FITTED BY ALCATEL IN ELECTRICITE DE FRANCE NUCLEAR PLANTS EDF 3 AND EDF 4.

\*FUEL HANDLING + \*FUEL HANDLING MACHINE + \*INSTRUMENTATION, CONTROL + FRANCE

9-23186

DEVELOPMENT OF A BORON CONCENTRATION METER. TECHNICAL PROGRESS REPORT FOR THE PERIOD ENDING SEPTEMBER 30, 1966.

WESTINGHOUSE ELECTRIC CORP., PITTSBURGH, PA.

WCAP-3690-1 + EURAEC-1722 +. 25 PAGES, 4 FIGURES, 3 TABLES, OCTOBER 1966

THIS MONTHLY PROGRESS REPORT IS ONE OF A SERIES. THE OVERALL OBJECTIVE OF THE PROGRAM IS TO DEVELOP, DESIGN, TEST, AND EVALUATE THE PERFORMANCE OF A PROTOTYPE BORON-CONCENTRATION METER. THE METER SHOULD BE SUITABLE FOR AUTOMATED USE IN DETERMINING BORON CONCENTRATIONS IN THE COOLANT OF A CLOSED-CYCLE, WATER-MODERATED AND -COOLED POWER REACTOR. THE DESIGN OBJECTIVES FOR THE BORON METER INCLUDE A PRECISION OF PLUS OR MINUS 0.3 PERCENT OR 2 PPM (WHICHEVER IS GREATER) AND A RESPONSE TIME OF ABOUT 1 MIN.

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

BORON + INSTRUMENTATION, COOLANT QUALITY + INSTRUMENTATION, SURVEILLANCE

9-23327

SWANSON CD + WOOD AR + CONE RR

FAST FLUX TEST FACILITY INSTRUMENTATION AND CONTROL PROGRAM

BATTELLE MEMORIAL INSTITUTE, RICHLAND, WASHINGTON

ANL-7380 +. 5 PAGES, 1 FIGURE, REFERENCES, PAGES 4-8 OF PROCEEDINGS OF THE SYMPOSIUM ON LIQUID METAL INSTRUMENTATION AND CONTROL, MARCH 2, 1967

DESCRIBES THE RELATION OF THE FFTF INSTRUMENTATION AND CONTROL PROGRAM TO THE LMFBR PROGRAM. INSTRUMENTATION AND CONTROL TECHNOLOGY NEEDED TO FULFILL FFTF FUNCTIONAL TEST REQUIREMENTS, AND OPERATIONAL AND SAFETY REQUIREMENTS ARE SUMMARIZED. A BRIEF DESCRIPTION OF THE MAJOR FFTF REACTOR CONCEPTS PRESENTLY UNDER STUDY AND THE TYPES OF INSTRUMENTATION PROBLEMS ASSOCIATED WITH THESE CONCEPTS IS PRESENTED.

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

\*DESIGN CRITERIA + \*EQUIPMENT DESIGN + \*IN CORE MEASUREMENT + \*INSTRUMENTATION, GENERAL + \*INSTRUMENTATION, IN CORE + FFTF (TR) + FUEL ELEMENT + INSTRUMENTATION, TEMPERATURE + INSTRUMENTATION, TESTING + REACTOR, FAST + REACTOR, LMCR + REACTOR, TEST + SYSTEM DESCRIPTION + TEST, COMPONENT

9-23325

KNOX AE + POPPER GF

ANL PARTICIPATION IN THE FFTF INSTRUMENT DEVELOPMENT EFFORT

ARGONNE NATIONAL LABORATORY

ANL-7380 +. 6 PAGES, 4 FIGURES, 6 REFERENCES, PAGES 9-14 OF PROCEEDINGS OF THE SYMPOSIUM ON LIQUID METAL INSTRUMENTATION AND CONTROL, MARCH 2, 1967

IN-CORE INSTRUMENT DEVELOPMENT IS PROCEEDING IN THE FOLLOWING CATEGORIES - (1) FAILED-FUEL-LOCATION DETECTION, (2) SIGNAL-LEAD CONNECTORS, (3) FISSION-GAS-PRESSURE TRANSDUCERS, (4) IN-CORE FLOWMETERS, AND (5) FUEL-PIN THERMOCOUPLES. ONE OF THE PRIME OBJECTIVES OF THE PROGRAM IS TO PROVIDE BOTH THE FFTF AND THE LMFBR PROGRAM WITH THE SPECIFICATIONS NECESSARY FOR MATERIALS AND FABRICATION PROCEDURES AS WELL AS THE QUALITY CONTROL AND INSPECTION METHODS NEEDED SO THAT RELIABLE COMMERCIAL INSTRUMENTS CAN BE MADE AVAILABLE.

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

\*EQUIPMENT DESIGN + \*INSTRUMENTATION, IN CORE + INSTRUMENTATION, COMPONENT + INSTRUMENTATION, DETECTION FAILED FUEL ELEMENT + INSTRUMENTATION, FLOW + INSTRUMENTATION, PRESSURE + INSTRUMENTATION, TEMPERATURE + REACTOR, LMCR

9-23329

HINES DP + HORST KM

SETUP DEVELOPMENT ACTIVITIES

GENERAL ELECTRIC CO., SUNNYVALE, CALIF.

ANL-7380 +. 7 PAGES, 6 FIGURES, 3 REFERENCES, PAGES 15-21 OF PROCEEDINGS OF THE SYMPOSIUM ON LIQUID METAL INSTRUMENTATION AND CONTROL, MARCH 2, 1967

DEVELOPED INSTRUMENTATIONS TO MEASURE FUEL-PELLET CENTRAL TEMPERATURE, FUEL-ASSEMBLY COOLANT

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-23329 \*CONTINUED\*

TEMPERATURE AND FLOW RATE, AND TRANSIENT CORE FLUX. THE DATA FROM THESE SENSORS, IN CONJUNCTION WITH OTHER SEFOR PLANT PROCESS INSTRUMENTATIONS, WILL PROVIDE THE BASIC INFORMATION FROM WHICH THE REACTIVITY EFFECTS AND CORRELATIONS WITH CORE POWER AND TEMPERATURE WILL BE DETERMINED DURING THE SEFOR EXPERIMENTAL PROGRAM.

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

\*EQUIPMENT DESIGN + \*INSTRUMENTATION, IN CORE + CHAMBER, FISSION + HIGH TEMPERATURE + INSTRUMENTATION, FLOW + INSTRUMENTATION, NUCLEAR + INSTRUMENTATION, TEMPERATURE + REACTOR, LMCR

9-23330 ALSO IN CATEGORY 17

MORIARTY KJ

EBR-II INSTRUMENTATION EXPERIENCES

ARGONNE NATIONAL LABORATORY

ANL-7380 +. 7 PAGES, 3 FIGURES, PAGES 22-28 OF PROCEEDINGS OF THE SYMPOSIUM ON LIQUID METAL INSTRUMENTATION AND CONTROL, MARCH 2, 1967

EXPERIENCES WITH THE EBR-II PRESSURE INSTRUMENTATION, BOTH STATIC AND DIFFERENTIAL, THE TEMPERATURE-MEASURING DEVICES, AND WITH THE LEVEL INDICATIONS ARE PRESENTED. THE PROBLEMS ENCOUNTERED ARE OUTLINED, AND THE CORRECTIVE ACTION TAKEN TO RECTIFY A PROBLEM IS GIVEN WHERE POSSIBLE. THE IMPORTANCE OF PRE-INSTALLATION DATA IS STRESSED. CALIBRATION AND REPAIR PROCEDURES USED FOR FILLED SYSTEMS ARE INCLUDED FOR GENERAL INFORMATION AND TO POINT OUT THE TYPE OF INFORMATION THAT MUST BE INCLUDED IN THE PRE-INSTALLATION CALIBRATION CHECK ON A COMPONENT.

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

\*INSTRUMENTATION, PROCESS + EBR 1 AND 2 (RE) + INSTRUMENTATION, LIQUID LEVEL DETECTION + INSTRUMENTATION, PRESSURE + INSTRUMENTATION, TEMPERATURE + OPERATING EXPERIENCE SUMMARY + REACTOR, BREEDER + REACTOR, LMCR

9-23331 ALSO IN CATEGORY 17

SCOTT CC

FERMI PROCESS INSTRUMENTATION

ATOMIC POWER DEVELOPMENT ASSOCIATES, INC., DETROIT, MICHIGAN

ANL-7380 +. 8 PAGES, 12 FIGURES, PAGES 29-36 OF PROCEEDINGS OF THE SYMPOSIUM ON LIQUID METAL INSTRUMENTATION AND CONTROL, MARCH 2, 1967

OPERATING EXPERIENCE AND EQUIPMENT DESIGN ARE REVIEWED FOR THREE KINDS OF PROCESS INSTRUMENTS ON THE FERMI REACTOR. PROBLEMS ASSOCIATED WITH PLUGGED PROCESS LINES, IN-PLACE CALIBRATION, AND THE DIFFICULTY OF REMOVING UNITS FOR MAINTENANCE ARE DISCUSSED COMPONENTS.

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

\*INSTRUMENTATION, PROCESS + \*OPERATING EXPERIENCE SUMMARY + EQUIPMENT DESIGN + FERMI (LMFBR) + INSTRUMENTATION CALIBRATION + INSTRUMENTATION, FLOW + INSTRUMENTATION, PRESSURE + INSTRUMENTATION, TEMPERATURE + REACTOR, BREEDER + REACTOR, LMCR

9-23332 ALSO IN CATEGORIES 4 AND 17

STRAHL H

SNAP SYSTEM INSTRUMENTATION

ATOMICS INTERNATIONAL, CANOGA PARK, CALIF.

ANL-7380 +. 4 PAGES, 2 TABLES, 1 REFERENCE, PAGES 37-39 OF PROCEEDINGS OF THE SYMPOSIUM ON LIQUID METAL INSTRUMENTATION AND CONTROL, MARCH 2, 1967

THE EXPERIENCE GAINED DURING OPERATION OF SNAP REACTORS WITH LIQUID-METAL PROCESS INSTRUMENTATION IS PRESENTED. THIS EXPERIENCE IS BASED ON THE OPERATION OF SEVERAL SNAP REACTOR SYSTEMS AT TEMPERATURES UP TO 1300 F FOR PERIODS OF UP TO 10,000 HR. SEVERAL TYPES OF TEMPERATURE AND PRESSURE DEVICES WERE INSTALLED IN A LOOP, AND THEIR PERFORMANCES WERE COMPARED AND EVALUATED PRIOR TO SELECTION OF INSTRUMENTATION FOR THE SEFOR TESTS.

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

\*INSTRUMENTATION, PROCESS + \*OPERATING EXPERIENCE SUMMARY + \*SNAP, GENERAL (SR) + HIGH TEMPERATURE + INSTRUMENTATION, FLOW + INSTRUMENTATION, LIQUID LEVEL DETECTION + INSTRUMENTATION, PRESSURE + INSTRUMENTATION, TEMPERATURE + INSTRUMENTATION, TESTING + REACTOR, LMCR + REACTOR, SPACE

9-23333 ALSO IN CATEGORY 17

TURNER GE

SCII SODIUM INSTRUMENT OPERATING EXPERIENCE

ATOMICS INTERNATIONAL, CANOGA PARK, CALIF.

ANL-7380 +. 3 PAGES, PAGES 40-42 OF PROCEEDINGS OF THE SYMPOSIUM ON LIQUID METAL INSTRUMENTATION AND CONTROL, MARCH 2, 1967



9-23333 \*CONTINUED\*

SODIUM PRESSURES ARE MEASURED BY NAK-FILLED PRESSURE TRANSMITTERS. SODIUM LEVELS ARE MEASURED IN FOUR DIFFERENT WAYS - INDUCTION COIL GAGES, A BUBBLE GAGE, RADIATION GAGES, AND A DISPLACER-FLOAT GAGE. OPERATION OF THE FLOWMETERS AND PRESSURE TRANSMITTERS HAS BEEN QUITE SATISFACTORY, WITH NO PARTICULAR DIFFICULTIES ENCOUNTERED. EXPERIENCE WITH THE FOUR DIFFERENT LEVEL GAGES HAS POINTED OUT SOME PROBLEM AREAS WITH BUBBLES AND RADIATION-TYPE GAGES, WHEREAS OPERATION OF THE INDUCTION-COIL AND DISPLACER-FLOAT TYPES HAS BEEN GENERALLY SATISFACTORY.

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

\*INSTRUMENTATION, PROCESS + \*OPERATING EXPERIENCE SUMMARY + HIGH TEMPERATURE + INSTRUMENTATION, FLOW + INSTRUMENTATION, LIQUID LEVEL DETECTION + INSTRUMENTATION, PRESSURE

9-23334

DUNSMORE CL

TEMPERATURE PROTECTIVE CIRCUITS FOR THE HMPF FUEL-CHANNEL EXIT  
ATOMICS INTERNATIONAL, CANOGA PARK, CALIF.

ANL-7380 +. 4 PAGES, 4 FIGURES, 2 REFERENCES, PAGES 43-46 OF PROCEEDINGS OF THE SYMPOSIUM ON LIQUID METAL INSTRUMENTATION AND CONTROL, MARCH 2, 1967

THE HMPF PLANT PROTECTIVE SYSTEM INCLUDES CIRCUITS WITH THE FUNCTION OF PRECLUDING UNSAFE HIGH TEMPERATURE AND SUSTAINED FAST CHANGES IN FUEL-CHANNEL COOLANT-EXIT TEMPERATURES, EITHER IN THE INCREASING OR DECREASING DIRECTION. THE DEVELOPMENT OF THE FUEL-CHANNEL-EXIT HIGH-TEMPERATURE AND RATE-CHANGE-OF-TEMPERATURE CIRCUITS RESULTED IN A TRANSISTORIZED SYSTEM OF PLUG-IN COMPONENTS OF HIGH RELIABILITY. THE CIRCUITS HAVE BEEN DESIGNED, WHERE POSSIBLE, FOR FAIL-SAFE OPERATION IN CASE OF COMPONENT MALFUNCTION, AND FOR EASE OF MAINTENANCE AND CALIBRATION. IN ADDITION TO PROVIDING SHUTDOWN OR SCRAM SIGNALS, THE CIRCUITS ALSO PROVIDE SETBACK AND ALARM SIGNALS.

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

\*INSTRUMENTATION, PROTECTIVE + INSTRUMENTATION, CONTROL + INSTRUMENTATION, TEMPERATURE + REACTOR, LMCR

9-23335

STEELE OP

STABLE HIGH-TEMPERATURE DETECTION

ATOMICS INTERNATIONAL, CANOGA PARK, CALIF.

ANL-7380 +. 5 PAGES, 10 FIGURES, 10 REFERENCES, PAGES 47-51 OF PROCEEDINGS OF SYMPOSIUM ON LIQUID METAL INSTRUMENTATION AND CONTROL, MARCH 2, 1967

THE PLATINUM RTD AFFORDS A MORE STABLE REFERENCE TEMPERATURE-MEASURING SYSTEM THAN A THERMOCOUPLE IN THE 1200-1300 F RANGE. COMPARATIVE DRIFT RATES ARE SHOWN FOR THE PLATINUM RTD AND FOR A VARIETY OF THERMOCOUPLES FOR 10,000 HR AT THESE TEMPERATURES. THE ACCURATE DETERMINATION OF THIS DRIFT RATE BY THE USE OF ZINC AND ALUMINUM MELTING-POINT PHYSICAL STANDARDS IS DESCRIBED.

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

\*INSTRUMENTATION, TEMPERATURE + EQUIPMENT DESIGN + HIGH TEMPERATURE + MEASUREMENT, TEMPERATURE + REACTOR, LMCR

9-23337

KINZER JE

A MINIATURIZED PRESSURE SENSOR FOR LMFBR ENVIRONMENT

ATOMICS INTERNATIONAL, CANOGA PARK, CALIF.

ANL-7380 +. 2 PAGES, 2 FIGURES, 2 REFERENCES, PAGES 63-64 OF PROCEEDINGS OF THE SYMPOSIUM ON LIQUID METAL INSTRUMENTATION AND CONTROL, MARCH 2, 1967

THE ADIT (ADVANCED DEVELOPMENT IRRADIATION TECHNIQUES) PRESSURE SENSOR HAS BEEN USED TO OBTAIN PRESSURE MEASUREMENTS DURING IRRADIATIONS FOR LONG TIMES. BY MINIMIZING THE SENSITIVITY TO FLUX AND TEMPERATURE AND ATTEMPTING TO MAKE THE DEVICE AS SMALL AS POSSIBLE, CLOSE PROXIMITY TO THE PRESSURE SOURCE CAN BE ACHIEVED.

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

\*INSTRUMENTATION, PRESSURE + EQUIPMENT DESIGN

9-23338

KING EC

PRESSURE TRANSDUCERS FOR NUCLEAR REACTOR APPLICATIONS

MSA RESEARCH CORP, EVANS CITY, PA.

ANL-7380 +. 5 PAGES, 5 FIGURES, PAGES 65-69 OF PROCEEDINGS OF THE SYMPOSIUM ON LIQUID METAL INSTRUMENTATION AND CONTROL, MARCH 2, 1967

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-23338 \*CONTINUED\*

GAS PRESSURE INSIDE A FUEL PIN DURING REACTOR OPERATIONS IS MEASURED BY A MINIATURE DEVICE APPLICABLE IN A 1200 F AMBIENT. THE DEVICE CONSISTS OF A SEALING BELLOWS AND A NULL DETECTOR FOR THE BALANCING INERT GAS. A STANDARD PRESSURE TRANSDUCER FOR LIQUID ALKALI METAL UP TO 1600 F ALSO USES A BELLOWS BUT IS FORCE BALANCED BY A SPRING WITH A VERY SMALL MOTION AND UTILIZES A LINEAR VARIABLE DIFFERENTIAL TRANSFORMER.

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

\*INSTRUMENTATION, PRESSURE + EQUIPMENT DESIGN

9-23339

KING EC

LIQUID-LEVEL DETECTORS FOR LIQUID METALS

MSA RESEARCH CORP, EVANS CITY, PA.

ANL-7380 +. 5 PAGES, 5 FIGURES, PAGES 70-74 OF PROCEEDINGS OF THE SYMPOSIUM ON LIQUID METAL INSTRUMENTATION AND CONTROL, MARCH 2, 1967

THE INDUCTANCE TYPE OF LIQUID-LEVEL DETECTOR USES A SEARCH COIL IN A PROTECTIVE WELL AS THE SENSING ELEMENT. THE LEVEL IS DETECTED WHEN THE SPLIT COIL IS OUT OF INDUCTANCE BALANCE DUE TO THE PRESENCE OF A CONDUCTING FLUID OPPOSITE THE LOWER HALF OF THE COIL. THE RESISTANCE TYPE OF LIQUID-LEVEL DETECTOR UTILIZES A CHANGE IN THE RESISTANCE OF THE CIRCUIT DUE TO THE SHORTING EFFECT OF THE LIQUID METAL ON TOUCHING THE PROBE.

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

INSTRUMENTATION, LIQUID LEVEL DETECTION + METAL, LIQUID

9-23340 ALSO IN CATEGORY 8

CHAMBERLAIN HV

LEAK DETECTION--SODIUM-WATER REACTIONS

ATOMIC POWER DEVELOPMENT ASSOCIATES, INC., DETROIT, MICHIGAN

ANL-7380 +. 4 PAGES, 3 FIGURES, 1 TABLE, 1 REFERENCE, PAGES 75-78 OF PROCEEDINGS OF THE SYMPOSIUM ON LIQUID METAL INSTRUMENTATION AND CONTROL, MARCH 2, 1967

THE PROBLEMS ASSOCIATED WITH LEAK DETECTION OF SODIUM-WATER ARE REVIEWED, AND FOUR METHODS FOR DEVICE DESIGN ARE GIVEN.

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

\*INSTRUMENTATION, PROCESS + LEAK + LEAK RATE + METAL WATER REACTION

9-23341

LEMCOE MM

HIGH-TEMPERATURE ELECTRIC-RESISTANCE STRAIN-GAGE SENSORS

ATOMICS INTERNATIONAL, CANOGA PARK, CALIF.

ANL-7280 +. 12 PAGES, 13 FIGURES, PAGES 79-90 OF THE PROCEEDINGS OF THE SYMPOSIUM ON LIQUID METAL INSTRUMENTATION AND CONTROL, MARCH 2, 1967

A TECHNICAL EVALUATION OF TWO TYPES OF COMMERCIAL HIGH-TEMPERATURE ELECTRIC-RESISTANCE STRAIN GAGES, AND A SPECIAL HIGH-TEMPERATURE GAGE UNDER DEVELOPMENT AT THE LIQUID METAL ENGINEERING CENTER, ARE REPORTED. THESE GAGES, THE BLH TYPE HT 1212-5A, MICRODOT TYPE SG420, AND THE IMFC GAGE, WERE SELECTED FOR EVALUATION BECAUSE OF THE NEED FOR RELIABLE ELECTRIC-RESISTANCE STRAIN GAGES FOR HIGH-TEMPERATURE STRESS OR STRAIN MEASUREMENTS, AND PROCESS INSTRUMENTATION IN THE TEMPERATURE RANGE FROM 900 TO 1200 F

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

\*INSTRUMENTATION, TESTING + \*MEASUREMENT, STRAIN GAGE + HIGH TEMPERATURE + STRESS STRAIN DATA + TEST, INSTRUMENT RESPONSE

9-23342

IVES KD

HIGH-TEMPERATURE STRAIN GAGES AND DEFORMATION TRANSDUCERS FOR USE IN SODIUM ENVIRONMENTS

THE BABCOCK AND WILCOX CO., ALLIANCE, OHIO

ANL-7380 +. 11 PAGES, 11 FIGURES, 5 REFERENCES, PAGES 91-101 OF PROCEEDINGS OF THE SYMPOSIUM ON LIQUID METAL INSTRUMENTATION AND CONTROL, MARCH 2, 1967

TWO SIGNIFICANT DEVELOPMENTS ARE DESCRIBED IN ADAPTING WELDABLE STRAIN GAGES FOR USE IN SODIUM ENVIRONMENTS AT HIGH TEMPERATURES. THESE ARE (1) A CALIBRATING TECHNIQUE WHEREBY THE BONDED-GAGE CHARACTERISTICS OF EACH GAGE CAN BE OBTAINED PRIOR TO ACTUALLY BONDING THE GAGE TO THE STRUCTURE UNDER TEST, AND (2) TECHNIQUES FOR PROTECTING THE GAGE ELEMENT FOR VARYING TIMES FROM THE SODIUM. A BASIC TRANSDUCER FOR MEASURING DISPLACEMENTS OF SODIUM IS ALSO DISCUSSED, PLUS A LINEAR VARIABLE DIFFERENTIAL TRANSFORMER WHICH CAN BE USED FOR BOTH

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-23342 \*CONTINUED\*  
DEFORMATION AND VIBRATION MEASUREMENTS.

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

\*MEASUREMENT, STRAIN GAGE + EQUIPMENT DESIGN + HIGH TEMPERATURE + INSTRUMENTATION CALIBRATION +  
INSTRUMENTATION, POSITION + TEST, INSTRUMENT RESPONSE + VIBRATION

9-23343

PETREK JP

SODIUM-PURITY INSTRUMENTATION

ATOMIC POWER DEVELOPMENT ASSOCIATES, INC., DETROIT, MICHIGAN

ANL-7380 +. 9 PAGES, 4 FIGURES, 4 TABLES, 9 REFERENCES, PAGES 102-110 OF PROCEEDINGS OF THE SYMPOSIUM ON  
LIQUID METAL INSTRUMENTATION AND CONTROL, MARCH 2, 1967

A SODIUM TECHNOLOGY PROGRAM WAS ESTABLISHED AT ATOMIC POWER DEVELOPMENT ASSOCIATES, INC., TO  
DEVELOP AND EVALUATE IN-LINE DEVICES FOR DETECTING, MONITORING, AND CONTROLLING IMPURITIES IN  
SODIUM. THE PROGRAM ALSO INCLUDES SUPPORTING EFFORTS, INCLUDING LABORATORY ANALYTICAL  
TECHNIQUES AND THE CHEMICAL BEHAVIOR OF IMPURITIES IN SODIUM. THE DISCUSSIONS IN THIS PAPER  
ARE MAINLY ON THE EFFORT TO EVALUATE IN-LINE IMPURITY-MONITORING DEVICES.

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

\*INSTRUMENTATION, COOLANT QUALITY + CONTAMINATION + COOLANT QUALITY + INSTRUMENTATION, TESTING + SODIUM +  
TEST, INSTRUMENT RESPONSE

9-23344

MCKEE J + CAPLINGER W

CARBON METER DEVELOPMENT, AN INTERIM REPORT

UNITED NUCLEAR CORP., ELMSFORD, NEW YORK

ANL-7380 +. 7 PAGES, 10 FIGURES, 5 TABLES, PAGES 111-117 OF PROCEEDINGS OF THE SYMPOSIUM ON LIQUID METAL  
INSTRUMENTATION AND CONTROL, MARCH 2, 1967

PROSPECTS APPEAR ENCOURAGING FOR THE SUCCESSFUL DEVELOPMENT OF AN ON-LINE METER WHICH WILL  
PROVIDE A CONTINUOUS MEASUREMENT OF THE CARBURIZING POTENTIAL IN SODIUM AND OTHER  
LIQUID-METAL SYSTEMS. PROGRESS TO DATE IS PRESENTED HERE FOR COMMENT BY POTENTIAL USERS.  
THE SENSING ELEMENT IN THE SODIUM IS A CARBON PERMEABLE TUBE THROUGH WHICH DECARBURIZING GAS  
FLOWS TO A GAS ANALYZER.

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

\*INSTRUMENTATION, COOLANT QUALITY + CARBON + CONTAMINATION + EQUIPMENT DESIGN + SODIUM +  
TEST, INSTRUMENT RESPONSE

9-23345

GOLDMANN K

A TECHNIQUE FOR CALIBRATION OF ELECTROCHEMICAL OXYGEN METERS

UNITED NUCLEAR CORP., ELMSFORD, NEW YORK

ANL-7380 +. 5 PAGES, 2 FIGURES, 1 TABLE, 3 REFERENCES, PAGES 118-122 OF PROCEEDINGS OF THE SYMPOSIUM ON  
LIQUID METAL INSTRUMENTATION AND CONTROL, MARCH 3, 1967

DESCRIBES EQUIPMENT AND TECHNIQUES USED FOR CALIBRATING OXYGEN SENSORS IN POTASSIUM.  
CALIBRATION DATA ARE PRESENTED. COMMENTS ARE MADE ON THE HIGH OXYGEN DISSOLUTION AND  
GETTERING RATES OBSERVED DURING THE CALIBRATION RUNS WITH POTASSIUM. ATTEMPTS AT USING THIS  
TECHNIQUE FOR THE CALIBRATION OF OXYGEN METERS IN SODIUM ARE DESCRIBED.

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

\*INSTRUMENTATION CALIBRATION + CONTAMINATION + OXYGEN + SODIUM + TEST, INSTRUMENT RESPONSE

9-23346

WOLFSON R

COMPUTER SYSTEMS FOR FAST TEST REACTORS

CURTISS-WRIGHT CORP., EAST PATERSON, N. J.

ANL-7380 +. 2 PAGES, PAGES 126 AND 127 OF PROCEEDINGS OF THE SYMPOSIUM ON LIQUID METAL INSTRUMENTATION  
AND CONTROL, MARCH 3, 1967

A FAST TEST REACTOR FACILITY (FFTF) WILL REQUIRE AN INSTRUMENTATION SYSTEM WITH A DIGITAL  
COMPUTER AS ITS NERVE CENTER. THIS COMPUTING CENTER IS GENERALLY DESCRIBED IN TASK 35 IN THE  
LMFBR PROGRAM PLAN. THE IMPORTANT SYSTEM CONSIDERATIONS FOR SUCH A CENTER ARE DESCRIBED IN  
THIS PAPER, FROM BOTH COST AND DESIGN VIEWPOINTS.

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

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-23346 \*CONTINUED\*

\*COMPUTER CONTROL + \*INSTRUMENTATION, CONTROL + COMPUTER, DIGITAL + FFTF (TR) + REACTOR, FAST + REACTOR, TEST

9-23347

DRIVER GE

THE LMFBR COMPUTER CONTROL CENTER

BATTELLE MEMORIAL INSTITUTE, RICHLAND, WASHINGTON

ANL-7380 +. 4 PAGES, PAGES 128-131 OF PROCEEDINGS OF THE SYMPOSIUM ON LIQUID METAL INSTRUMENTATION AND CONTROL, MARCH 2, 1967

IF THE PRESENT TEND IN INSTRUMENTATION AND CONTROL SYSTEMS CONTINUES, IT IS HIGHLY LIKELY THAT LMFBRs WILL USE DIGITAL COMPUTERS TO HANDLE DATA AND CONTROL REACTORS, HEAT EXCHANGERS, AND POWER-GENERATION EQUIPMENT. WHAT IS NEEDED IS A SINGLE ORGANIZATION WHICH COMPRISES THE BEST OF KNOWLEDGE AND EXPERIENCE IN ALL PHASES OF REACTOR CONTROL, IN SHORT, A COMPUTER CONTROL CENTER. THE CENTER'S MAIN JOB WOULD BE TO PROVIDE THE LMFBR PLANT DESIGNER WITH THE SPECIALIZED HELP NEEDED TO ACQUIRE, INSTALL, AND OPERATE A COMPUTER-BASED DATA-HANDLING AND CONTROL SYSTEM.

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

\*COMPUTER CONTROL + \*INSTRUMENTATION, CONTROL + CONTROL SYSTEM + DATA PROCESSING + REACTOR, LMF

9-23348 ALSO IN CATEGORY 6

DAHL RE + JACKSON JL

MEASUREMENT OF NEUTRON FLUX IN FAST REACTOR EXPERIMENTS

BATTELLE MEMORIAL INSTITUTE, RICHLAND, WASHINGTON

ANL-7380 +. 7 PAGES, 5 FIGURES, 1 TABLE, 6 REFERENCES, PAGES 132-138 OF PROCEEDINGS OF THE SYMPOSIUM ON LIQUID METAL INSTRUMENTATION AND CONTROL, MARCH 3, 1967

ACCURATE MEASUREMENT OF NEUTRON FLUX AND DETERMINATION OF SPECTRA ARE CRITICAL IN FAST REACTORS FOR INTERPRETATION AND APPLICATION OF FUELS AND MATERIALS TEST DATA. RELATIVE RESPONSES OF ACTIVATION MONITORS ARE SUFFICIENTLY DIFFERENT IN FAST REACTORS TO REQUIRE THE USE OF ADVANCED ANALYTICAL AND EXPERIMENTAL METHODS TO CHARACTERIZE THE NUCLEAR ENVIRONMENT. ACTIVATION MONITORS DISCUSSED IN THIS REPORT ARE MATERIALS CONTAINING SPECIFIC ISOTOPES THAT ARE ACTIVATED BY NEUTRONS. STUDIES ARE IN PROGRESS TO DEVELOP DOSIMETRY TECHNIQUES FOR FAST REACTOR APPLICATION.

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

\*FLUX, INTEGRATED + \*MEASUREMENT, REACTIVITY + \*NEUTRON + DOSIMETRY, GENERAL + EXPERIMENT, GENERAL + INSTRUMENTATION, NUCLEAR + REACTOR, FAST

9-23349

JOSLIN CW

SOME CONSIDERATIONS ON SELF-POWERED DETECTORS FOR LMFBR SERVICE

REUTER-STOKES ELECTRONIC COMPONENTS, INC., CLEVELAND, OHIO

ANL-7380 +. 1 PAGE, 2 REFERENCES, PAGE 139 OF PROCEEDINGS OF THE SYMPOSIUM ON LIQUID METAL INSTRUMENTATION AND CONTROL, MARCH 2, 1967

HIGH-TEMPERATURE SERVICE (700 C) HAS NOT BEEN RECORDED FOR SELF-POWERED DETECTORS. MATERIALS AND ELECTRICAL LEAKAGE RESISTANCE SEEM TO BE THE PROBLEM. BETA-DECAY DETECTORS SHOULD PROVIDE FAIR SENSITIVITY TO FAST NEUTRONS, BUT PROMPT-RESPONSE CONVERSION DETECTORS WILL HAVE VERY LOW SENSITIVITIES. RATHER THAN FIGHT LOW NEUTRON SENSITIVITY AND HIGH GAMMA FIELDS, THE OPPOSITE OFFERS AN ATTRACTIVE ALTERNATIVE.

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

\*SELF POWERED FLUX DETECTOR + INSTRUMENTATION, NUCLEAR

9-23350

LEWIS RH

ALL-SOLID IN-CORE POWER MONITORS FOR LMFBR SERVICE

THE BABCOCK AND WILCOX COMPANY, LYNNHURNG, VA.

ANL-7380 +. 6 PAGES, 3 FIGURES, 1 TABLE, 10 REFERENCES, PAGES 140-45 OF PROCEEDINGS OF THE SYMPOSIUM ON LIQUID METAL INSTRUMENTATION CONTROL, MARCH 2, 1967

AN ALL-SOLID, SELF-POWERED, IN-CORE NEUTRON DETECTOR (RHODIUM TYPE) FOR MEASURING THE POWER DISTRIBUTION IN LARGE THERMAL POWER REACTORS WAS DEVELOPED BY BABCOCK AND WILCOX. DETECTORS OF THIS TYPE ARE ALSO NECESSARY TO ENSURE OPTIMUM PERFORMANCE OF LMFBRs. THUS, AN IN-CORE FLUX-MONITOR DEVELOPMENT PROGRAM WAS INITIATED BASED ON AN EXTENSION OF THE SAME DETECTION PRINCIPLE USED IN THE RHODIUM-TYPE DETECTOR.

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

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-23350 \*CONTINUED\*  
\*INSTRUMENTATION, IN CORE + \*SELF POWERED FLUX DETECTOR + HIGH TEMPERATURE + REACTOR, LMC R + REACTOR, THERMAL + RHODIUM + SOLID STATE DEVICE

9-23351  
KINZER JE + PARK TA  
A MINIATURIZED NEUTRON FLUX SENSOR FOR LMFBR ENVIRONMENT  
ATOMICS INTERNATIONAL, CANOGA PARK, CALIF.  
ANL-7380 +.2 PAGES, 2 FIGURES, 1 REFERENCE, PAGE 146-47 OF PROCEEDINGS OF THE SYMPOSIUM ON LIQUID METAL INSTRUMENTATION AND CONTROL, MARCH 2, 1967

THE ADIT (ADVANCED DEVELOPMENT IRRADIATION TECHNIQUES) FLUX SENSOR WAS DEVELOPED AT ATOMICS INTERNATIONAL TO MEET THE NEED FOR IN-CORE NEUTRON-SENSING DEVICE. THE DEVICE CONSISTS OF A THERMOCOUPLE IN WHICH FISSIONABLE MATERIAL HAS REPLACED THE OXIDE INSULATION AROUND THE MEASURING JUNCTION. THE TYPE OF FISSIONABLE MATERIAL USED MAY BE CHOSEN TO MATCH THE NEUTRON-FLUX ENVIRONMENT OF INTEREST.

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

\*INSTRUMENTATION, IN CORE + \*INSTRUMENTATION, NUCLEAR + FLUX, INTEGRATED + NEUTRON + REACTOR, LMC R

9-23352  
SWICKARD EO + BACASTOW JL  
HIGH TEMPERATURE NEUTRON DETECTOR TEST  
UNIVERSITY OF CALIFORNIA, LOS ALAMOS, NEW MEXICO  
ANL-7380 +. 13 PAGES, 12 FIGURES, 2 TABLES, PAGES 148-60 OF PROCEEDINGS OF THE SYMPOSIUM ON LIQUID METAL INSTRUMENTATION AND CONTROL, MARCH 2, 1967

THE TESTING OF TWO HIGH-TEMPERATURE NEUTRON DETECTORS FROM EACH OF THREE MANUFACTURERS WAS STARTED. THREE PARAMETERS WERE VARIED DURING TESTS - (1) SOURCE (NONE, NEUTRON), CHAMBER VOLTAGE (MANUFACTURERS RECOMMENDED, HIGH, LOW), AND TEMPERATURE (100 C INCREMENTS TO 600 C). ANALYSIS OF DETECTOR PERFORMANCE IS BASED ON 400-CHANNEL ANALYZER DATA. AT EACH TEMPERATURE, MEASUREMENTS OF DETECTOR (AND INTEGRAL LEAD) RESISTANCE AND CAPACITANCE ARE MADE.

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

\*INSTRUMENTATION, NUCLEAR + \*TEST, INSTRUMENT RESPONSE + COUNTER + HIGH TEMPERATURE + NEUTRON

9-23353  
LUPICA LA  
A COMPENSATED IONIZATION CHAMBER FOR THE NERVA REACTOR  
WESTINGHOUSE ELECTRIC CORP, ELMIRA, NEW YORK  
ANL-7380 +. 3 PAGES, 4 FIGURES, PAGES 161-63 OF PROCEEDINGS OF THE SYMPOSIUM ON LIQUID METAL INSTRUMENTATION AND CONTROL, MARCH 2, 1967

A COMPENSATED IONIZATION CHAMBER, THE WX-5362, WAS DEVELOPED FOR USE IN THE NERVA PROGRAM AS A NEUTRON-FLUX DETECTOR FOR REACTOR CONTROL. THE CHAMBER WAS DESIGNED TO WITHSTAND THE EXTREMES OF RADIATION, TEMPERATURE, SHOCK, AND VIBRATION ASSOCIATED WITH THE NERVA REACTOR.

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

\*CHAMBER, ION + \*INSTRUMENTATION, NUCLEAR + COUNTER + FLUX, INTEGRATED + NERVA PROGRAM + NEUTRON + REACTOR CONTROL + REACTOR, AIRCRAFT

9-23354  
GILMOUR GA  
NUCLEAR INSTRUMENTATION  
WESTINGHOUSE ELECTRIC CORP, PITTSBURGH, PA.  
ANL-7380 +. 1 PAGE, 3 REFERENCES, PAGE 164 OF PROCEEDINGS OF THE SYMPOSIUM ON LIQUID METAL INSTRUMENTATION AND CONTROL, MARCH 2, 1967

THE WESTINGHOUSE ASTRONUCLEAR LABORATORY HAS A BROAD INSTRUMENTATION AND CONTROL PROGRAM IN SUPPORT OF NERVA. ONE AREA OF DIAGNOSTIC INSTRUMENTATION IS CONCERNED WITH MEASUREMENTS OF GAMMA HEATING IN CALORIMETERS - AN ABSOLUTE DESIGN FOR SHORT REACTOR RUNS (A FEW MINUTES) AND A RATE DESIGN FOR EXTENDED RUNS.

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

\*INSTRUMENTATION, NUCLEAR + \*INSTRUMENTATION, TEMPERATURE + GAMMA + HEAT GENERATION, INTERNAL + MEASUREMENT, TEMPERATURE

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-23355  
NETSSEL JP + DAYAL Y  
MEASUREMENT OF NEUTRON FLUXES UNDER ADVERSE CONDITIONS USING CAMPBELLS METHOD  
GENERAL ELECTRIC CO., SAN JOSE, CALIF.  
ANL-7380 +. 3 PAGES, 1 FIGURE, 3 REFERENCES, PAGES 165-67 OF PROCEEDINGS OF THE SYMPOSIUM ON LIQUID METAL INSTRUMENTATION AND CONTROL, MARCH 2, 1967

DISCUSSES A METHOD FOR HANDLING THE SIGNAL FROM A LINFAR NEUTRON DETECTOR IN SUCH A MANNER THAT THE EFFECTS OF GAMMA IRRADIATION AND CABLE LEAKAGE ARE STRONGLY SUPPRESSED.

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

\*INSTRUMENTATION, CAMPBELLING + FLUX, INTEGRATED + MATHEMATICAL TREATMENT + NEUTRON

9-23356  
POPPER GF  
SOME LIMITED RESULTS FROM THE EBR-II TEST OF A COUNTING-CAMPBELLING CHANNEL  
ARGONNE NATIONAL LABORATORY  
ANL-7380 +. 2 PAGES, 2 FIGURES, PAGES 166-169 OF PROCEEDINGS OF THE SYMPOSIUM ON LIQUID METAL INSTRUMENTATION AND CONTROL, MARCH 2, 1967

A WIDE-RANGE NEUTRON-MONITORING CHANNEL BASED ON COUNTING AND CAMPBELLING HAS BEEN INSTALLED IN A J THIMBLE OF THE EBR-II. THE MEASURED RESPONSES ARE IN EXCELLENT AGREEMENT WITH THE PREDICTIONS AND SHOW THAT THE PERFORMANCE OF A CAMPBELLING CHANNEL CAN INDEED BE CALCULATED IF ALL THE ELECTRONIC SYSTEM PARAMETERS ARE ADEQUATELY DEFINED.

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

\*INSTRUMENTATION, CAMPBELLING + EBR 1 AND 2 (VE) + INSTRUMENTATION, NUCLEAR + INSTRUMENTATION, RATE OF CHANGE + INSTRUMENTATION, WIDE RANGE + REACTOR, BREEDER + REACTOR, FAST

9-23357  
KNOX AE + POPPER GF  
SOME DESIGN ASPECTS OF THE PROPOSED EBR-II INSTRUMENTED SUBASSEMBLY SYSTEM  
ARGONNE NATIONAL LABORATORY  
ANL-7380 +. 6 PAGES, 5 FIGURES, PAGES 174-79 OF PROCEEDINGS OF THE SYMPOSIUM ON LIQUID METAL INSTRUMENTATION AND CONTROL, MARCH 2, 1967

PRESENTS A CONCEPTUAL DESIGN FOR A SUBASSEMBLY SYSTEM TO PERMIT IRRADIATION OF INSTRUMENTED FUEL ELEMENTS IN THE EBR-II REACTOR. SIGNAL LEADS ARE TO BE BROUGHT OUT OF THE REACTOR AND PRIMARY TANK TO APPROPRIATE VIEWING INSTRUMENTS.

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

\*FUEL ELEMENT + \*INSTRUMENTATION, IN CORE + \*IRRADIATION TESTING + EBR 1 AND 2 (RE) + EQUIPMENT DESIGN + REACTOR, BREEDER + REACTOR, FAST

9-23358 ALSO IN CATEGORY 6  
RUUX DP  
SUBCRITICALITY MEASUREMENTS BY NEUTRON NOISE ANALYSIS  
OAK RIDGE NATIONAL LABORATORY  
ANL-7380 +. 3 PAGES, 8 REFERENCES, PAGES 100-102 OF PROCEEDINGS OF THE SYMPOSIUM ON LIQUID METAL INSTRUMENTATION AND CONTROL, MARCH 2, 1967

EVALUATES THE APPLICABILITY OF USING REACTOR FLUCTUATIONS (NOISE) TO MEASURE REACTOR PARAMETERS ON LIQUID METAL FAST BREEDER REACTORS (LMFBR) AND AS AN ON-LINE SAFETY DEVICE. REACTOR SUBCRITICALITY MEASUREMENT BY NOISE ANALYSIS HAS A FAIR CHANCE TO BE SUCCESSFULLY APPLIED IF THE MEASUREMENTS ARE LIMITED TO THOSE OF ONLY SMALL SHUTDOWN MARGIN. IN THE RANGE OF 1 TO 2 DOLLARS SUBCRITICAL, AN ACCURACY OF 10% CAN BE EXPECTED.

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

\*NEUTRON + \*NOISE ANALYSIS + CRITICALITY SAFETY + REACTOR, LMC + SHUTDOWN MARGIN

9-23359  
RANDALL RL + LOGAN D  
APPLICATION OF NOISE-ANALYSIS TECHNIQUES TO HYDRAULIC MEASUREMENTS IN LIQUID-METAL SYSTEMS  
ATOMICS INTERNATIONAL, CANOGA PARK, CALIF.  
ANL-7380 +. 6 PAGES, 7 FIGURES, 12 REFERENCES, PAGES 183-88 OF PROCEEDINGS OF THE SYMPOSIUM ON LIQUID METAL INSTRUMENTATION AND CONTROL, MARCH 2, 1967

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-23359 \*CONTINUED\*

INSTRUMENTATION AND ANALYSIS TECHNIQUES ARE DESCRIBED FOR DETECTING AND STUDYING THE FOLLOWING - ONSET OF BOILING, VOID FORMATIONS AND MOVEMENT, MECHANICAL VIBRATION OF SYSTEM COMPONENTS, VELOCITY PROFILES, FLOW PATTERNS, AND MIXING AND CROSS FLOW IN HYDRAULIC SYSTEMS. FREQUENCY AND TIME-CORRELATION ANALYSIS TECHNIQUES ARE APPLIED TO PRACTICAL PROBLEMS IN THE FIELD OF REACTOR-SYSTEM HYDRAULICS.

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

\*HYDRAULIC ANALYSIS + \*NOISE ANALYSIS + FLOW, TWO PHASE + FUEL ELEMENT + HYDRAULIC EXPERIMENT + INSTRUMENTATION, FLOW + INSTRUMENTATION, TEMPERATURE + REACTOR, LMCR + VIBRATION

9-23384

SKANBORG PZ  
BURN-OUT METER  
DANISH ATOMIC ENERGY COMMISSION, RISØ  
RISO-M-643 + R-22-67 +. 7 PAGES, OCTOBER 1967

THE SO-CALLED BURNOUT METER GIVES INFORMATION ABOUT THE COOLING CONDITIONS AT THE PLACE WHERE THE DETECTOR IS PLACED. IT IS INTENDED TO BE USED IN REACTORS TO PROTECT THE FUEL ELEMENTS. THE DETECTOR HAS TO BE PLACED AT THE OUTLET END OF THE FUEL ELEMENT. IT CONSISTS OF AN ELECTRICALLY HEATED PT WIRE.

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

\*INSTRUMENTATION, DETECTION FAILED FUEL ELEMENT + INSTRUMENTATION, TEMPERATURE + MEASUREMENT, TEMPERATURE

9-23385

AMBLARD JC + CHERUY J + GARIOD R  
COMPUTER SIMULATION OF A REACTOR AND ASSOCIATED REACTIVITY METER  
COMMISSARIAT A L ENERGIE ATOMIQUE  
14 PAGES, 8 FIGURES, BULLETIN D INFORMATIONS SCIENTIFIQUES ET TECHNIQUES, 120, PAGES 23-36 (NOVEMBER 1967)  
IN FRENCH

THIS INSTRUMENT REPRESENTS THE CHARACTERISTICS OF THE REACTOR ON THE BASIS OF AN INTRODUCED MATHEMATICAL MODEL, WHICH TAKES INTO ACCOUNT THE EXISTENCE OF SEVERAL DELAYED-NEUTRON FAMILIES. IT IS DEMONSTRATED THAT THE SIX DELAYED-NEUTRON FAMILIES CAN BE REPLACED BY THREE, INVOLVING NO MORE THAN A 1% ERROR IN THE REACTIVITY MEASUREMENT.

\*ANALOG SIMULATION + \*INSTRUMENTATION, OPERATING REACTIVITY + \*REACTOR POWER + ANALYTICAL MODEL + COMPUTER, ANALOG + DELAYED NEUTRON + MATHEMATICAL STUDY + SIMULATION

9-23386

AMBLARD JC + JOUMARD R  
DIRECT DIGITAL MONITORING OF CONTROL LOOPS BY COMPUTER  
COMMISSARIAT A L ENERGIE ATOMIQUE  
14 PAGES, 11 FIGURES, BULLETIN D INFORMATIONS SCIENTIFIQUES ET TECHNIQUES, 120, PAGES 37-50 (NOVEMBER 1967) IN FRENCH

A COMPUTERIZED TEMPERATURE-REGULATION SYSTEM IS USED TO STUDY PROBLEMS IN PROGRAMMING FOR REAL-TIME COMPUTER PROCESSING AND MULTIPLEXED DIGITAL CONTROL. THE EXPERIENCE GAINED WITH THIS PROTOTYPE WILL BE USED IN DESIGNING A SUPERVISORY CONTROL SYSTEM FOR IN-PILE THERMAL ENGINEERING EXPERIMENTS.

\*COMPUTER CONTROL + COMPUTER PROGRAM + CONTROL SYSTEM + INSTRUMENTATION, PROCESS + MEASUREMENT, TEMPERATURE

9-23387

DELCHAMBRE P  
CONTROL AND FAST DATA RECORDING IN THE EXPERIMENTAL FACILITY CABRI  
COMMISSARIAT A L ENERGIE ATOMIQUE  
6 PAGES, BULLETIN D INFORMATIONS SCIENTIFIQUES ET TECHNIQUES, 120, PAGES 51-56 (NOVEMBER 1967) IN FRENCH

A TRANSIENT CONTROL AND MONITORING CHANNEL CONTROLLED FROM A CAE-330 COMPUTER WAS INSTALLED IN CABRI, A LIGHT-WATER EXPERIMENTAL SWIMMING-POOL REACTOR. THE COMPUTER HAS SATISFACTORILY PILOTTED ABOUT 1000 EXPERIMENTS.

\*COMPUTER CONTROL + \*REACTOR, POOL TYPE + FRANCE + REACTOR, RESEARCH

9-23388

FERNIER P + LABBE J + LAGET JP  
SIMULTANEOUS DATA ACQUISITION AND PROCESSING SYSTEM USING A C.A.E. 510 COMPUTER  
COMMISSARIAT A L ENERGIE ATOMIQUE  
12 PAGES, 10 FIGURES, BULLETIN D INFORMATIONS SCIENTIFIQUES ET TECHNIQUES, 120, PAGES 71-82 (NOVEMBER 1967) IN FRENCH

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-23388 \*CONTINUED\*

DESCRIBES A DATA-PROCESSING SYSTEM INCLUDING ON-LINE COMPUTING AND USED IN MULTIPARAMETER ANALYSIS EXPERIMENTS WITH THE 12-MEV TANDUM ACCELERATOR. THE MONITOR PROGRAMME IS CAPABLE OF DIRECTING THE VARIOUS OPERATIONAL ROUTINES WITHOUT INTERRUPTING THE ACQUISITION IN REAL TIME OF NUCLEAR DATA. THE ROUTINES CAN PROCESS EITHER CURRENTLY ACQUIRED DATA OR DATA ACQUIRED DURING EARLIER EXPERIMENTS. A CONTROL CONSOLE FACILITATES ROUTINED, AND IS EQUIPPED WITH VISUALIZING AND INDICATING FACILITIES FOR THE PRESENTATION OF SEQUENCES IN PROGRESS.

\*DATA PROCESSING + ACCELERATOR + COMPUTER, DIGITAL + FRANCE

9-23389

GHFSQUIERE GL  
ADAPTATION OF COMPUTER STRUCTURES FOR THE PROCESSING OF DATA IN NUCLEAR PHYSICS  
COMMISSARIAT A L ENERGIE ATOMIQUE  
5 PAGES, BULLETIN D INFORMATIONS SCIENTIFIQUES ET TECHNIQUES, 120, PAGES 109-114 (NOVEMBER 1967) IN FRENCH

ON THE BASIS OF PAPERS PRESENTED BY OTHER AUTHORS, IT IS SHOWN THAT COMPUTERS USED IN NUCLEAR PHYSICAL EXPERIMENTS MAY BE CLASSED IN TWO MAIN CATEGORIES - THOSE EMPLOYED AS INSTRUMENTS PERTAINING TO THE EXPERIMENT, AND THOSE EMPLOYED FOR THE CONTROL AND DIRECTION OF EXPERIMENTS. THE PRESENT TENDENCY IS TOWARDS THE INTEGRATION OF THESE FUNCTIONS IN A SINGLE UNIT. THIS IS FOLLOWED BY A RECAPITULATION OF THE FUNCTIONS FULFILLED BY COMPUTERS AND BY TECHNOLOGICAL CONSIDERATIONS RELATING TO THESE VARIOUS FUNCTIONS.

\*COMPUTER CONTROL + INSTRUMENTATION, CONTROL + COMPUTER, DIGITAL + DATA PROCESSING

9-23487

ALSO IN CATEGORY 18  
DRESDEN 2 AND 3 INTERMEDIATE RANGE FLUX MONITOR SYSTEM (IRM)  
COMMONWEALTH EDISON COMPANY  
3 PAGES, PAGES 7.4-6 THRU 7.4-8 OF DRESDEN 2 AND 3 FINAL SAFETY ANALYSIS REPORT VOLUME II, NOVEMBER 17, 1967, DOCKET 50-237/249, TYPE--BWR, MFG.--G.E., AE--SGT + LUNDY

SYSTEM CONSISTS OF TWO LOGIC CHANNELS, EACH CONNECTED TO FOUR MINATURE FISSION CHAMBERS. THE CHAMBERS OF EACH CHANNEL ARE LOCATED ON A DIAGONAL OF THE CORE, WITH THE SPACING BETWEEN THE CENTER CHAMBERS LESS THAN THE SPACING BETWEEN CENTER AND OUTER CHAMBERS. WORST ROD-WITHDRAWAL ACCIDENT IS WITH THE REACTOR JUST SUBCRITICAL AND WITH THE IRMS NOT ON SCALE YET. A CONTROL ROD NEAR ONE OF THE OUTER CHAMBERS (WHICH IS ASSUMED TO BE BYPASSED) IS FULLY WITHDRAWN. THE MEASURED RELATIVE FLUX (AVERAGE FLUX EQUALS 1) AT THE NEAREST DETECTOR IS 0.01, AND THE FLUX PEAK IS ABOUT 50. RATIO OF PEAK-TO-MEASURED FLUX IS  $2.2 \times 10^{-4}$ . TRIP POINT IS  $6 \times 10^{10}$  NV, RESULTING IN A PEAK FLUX AT  $2.7 \times 10^{12}$ . FULL POWER FLUX IS  $3.5 \times 10^{13}$ .

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

\*ACCIDENT, CONTROL ROD WITHDRAWAL + INSTRUMENTATION, INTERMEDIATE RANGE + DRESDEN 2 (BWR) + REACTOR, BWR + REPORT, SAR

9-23805

ALSO IN CATEGORY 17  
MONTGOMERY CR  
SAXTON REPORTS FAILURE OF CONTROL ROD TO SEAT  
SAXTON NUCLEAR EXPERIMENTAL CORPORATION  
2 PAGES, FEBRUARY 23, 1968, ATOMIC ENERGY CLEARING HOUSE 14(10), PAGES 44-45 (MARCH 4, 1968) DOCKET 50-146

(LETTER TO ORL, FEB. 23) ON JAN. 22, THE REACTOR WAS SCRAMMED AFTER COMPLETION OF THE DAYS OPERATOR TRAINING. CONTROL-ROD 1 STOPPED 2.98 IN. ABOVE ZERO (IN.) POSITION. A ROD-EXERCISE PROGRAM WAS STARTED, AND THE ROD STUCK AT ABOUT 3 IN. ON THE 16TH AND 64TH ROD DROPS. AN ADDITIONAL 50 DROPS WERE WITHOUT FURTHER DIFFICULTY. CONCLUSION - PROBABLY A SMALL PIECE OF FOREIGN MATTER HAS LODGED IN THE ROD-DRIVE MECHANISM AND WAS REMOVED BY THE SELF-FLUSHING ACTION OF THE DASH POT.

\*FAILURE, SCRAM MECHANISM + CONTROL ROD DRIVE + REACTOR, PWR + SAXTON (PWR)

9-23932

MORIN R  
UTILIZATION OF DIGITAL COMPUTERS FOR STARTING AND RUNNING THE EDF-3 ATOMIC POWER PLANT  
AEC-TR-6913 +. 12 PAGES, TRANSLATED FROM NEUE TECH. 8, PAGES 26-32 (1966)

THE COMPLEXITY OF THE EDF-3 ATOMIC POWER PLANT LED TO THE USE OF CENTRALLY LOCATED DIGITAL COMPUTERS TO COLLECT ALL IMPORTANT DATA ON THE OPERATING CONDITIONS OF THE PLANT. THE MAIN COMPUTER PROCESSES 5500 MEASUREMENTS AND SIGNALS, RECORDS MEASURED VALUES AND SIGNALS AFTER A DISTURBANCE, MONITORS FOR LEAKAGE CONTROL OF THE FUEL CLADDING, CONTROLS STARTUP AND SHUTDOWN OPERATIONS, AND PERFORMS SOME CONTROLS AND ADAPTATIONS OF PRE-SET LIMITS. IF THE MAIN COMPUTER FAILS, ITS MOST IMPORTANT FUNCTIONS ARE TAKEN OVER AUTOMATICALLY BY AN AUXILIARY COMPUTER.

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

\*COMPUTER CONTROL + COMPUTER, DIGITAL + DATA PROCESSING + FRANCE + INSTRUMENTATION, CONTROL +



CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-23832 \*CONTINUED\*  
INSTRUMENTATION, PROCESS + INSTRUMENTATION, STARTUP + REACTOR, POWER

9-23833  
IMPROVEMENTS RELATING TO NUCLEAR REACTORS AND THEIR CONTROL  
BABCOCK AND WILCOX COMPANY  
FRENCH PATENT 1,395,504 +. 4 PAGES, MARCH 8, 1965, IN FRENCH

THE REACTOR HAS A CONTROL ELEMENT WITH A CLOSED TUBE EXTENDING INTO THE REACTOR CORE. THE TUBE CONTAINS MATERIAL OF HIGH MICROSCOPIC THERMAL NEUTRON ABSORPTION CROSS-SECTION (380 BARNs OR MORE). THE VAPOR DENSITY OF THIS MATERIAL VARIES IN ACCORDANCE WITH THE TEMPERATURE WITHIN THE CORE TO CONTROL THE REACTIVITY OF THE CORE AND MAINTAIN THE TEMPERATURE OF THE CORE AT A PREDETERMINED OPERATING VALUE.

AVAILABILITY - U.S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D. C. (30 CENTS PER PAGE)

\*REACTOR CONTROL + \*TEMPERATURE REACTIVITY EFFECT + CONTROL ROD + FRANCE + INSTRUMENTATION, TEMPERATURE + PATENT

9-23835  
FUEL ELEMENT CONTAINING A BURNABLE POISON  
REACTOR CENTRUM NEDERLAND  
FRENCH PATENT 1,425,012 +. 4 PAGES, FIGURES, DECEMBER 6, 1965, IN FRENCH

A FUEL ROD IN WHICH BURNABLE POISON DISKS ARE INTERSPERSED BETWEEN THE FUEL PELLETS IS DESCRIBED. THE DISKS CONSIST OF A DISPERSION OF A BURNABLE POISON POWDER (GRAIN SIZE 150 TO 200 MICRONS IN A MATRIX (ZR, SS, C, AL<sub>2</sub>O<sub>3</sub>, SiO<sub>2</sub>). THE POWDER DISTRIBUTION IN THE MATRIX CAN BE NONUNIFORM AND/OR THE DISKS CAN BE PERFORATED. IF THE DISKS ARE MADE MAGNETIC, THEIR REMOVAL DURING SUBSEQUENT REPROCESSING IS FACILITATED.

AVAILABILITY - U.S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D. C. (30 CENTS PER PAGE)

\*FUEL ELEMENT + \*POISON, BURNABLE + FRANCE + PATENT

9-23838  
IMPROVEMENTS IN RADIATION-RESPONSIVE PROPORTIONAL COUNTER TUBES  
PHILIPS ELECTRONICS AND PHARMACEUTICAL INDUSTRIES CORP.  
BRITISH PATENT 1,082,697 +. 3 PAGES, 1 FIGURES, SEPTEMBER 6, 1967

DESCRIBES A RARE-GAS-FILLED CYLINDRICAL PROPORTIONAL COUNTER. THE COUNTER CONSISTS OF A HOLLOW CYLINDER HAVING A CONDUCTIVE INNER SURFACE OPERATING AS A CATHODE AND A THIN WIRE AS AN ANODE. SUCH A COUNTER IS USED FOR MEASURING RADIOACTIVE RADIATION.

AVAILABILITY - THE PATENT OFFICE, 25 SOUTHAMPTON BUILDING, LONDON, W. C. 2, ENGLAND

\*INSTRUMENTATION, RADIATION MONITORING + \*MONITOR, RADIATION, GENERAL + COUNTER + PATENT + UNITED KINGDOM

9-23839  
RADIATION MEASURING INSTRUMENT  
MECEWA A.G.  
BRITISH PATENT 1,073,236 +. 4 PAGES, 1 FIGURE, REFERENCES, JUNE 21, 1967

A RADIATION MEASURING INSTRUMENT COMPRISING A DETECTION ELEMENT, A PULSE AMPLIFIER, AND A RATEMETER FOR CONTINUOUS INDICATION OF THE MEAN VALUE OF THE RADIATION INTENSITY IS DESCRIBED. THE PULSE AMPLIFIER AND THE RATEMETER HAVE TEMPERATURE-SENSITIVE CHARACTERISTICS ADJUSTED SUCH THAT THEY COMPENSATE EACH OTHER.

AVAILABILITY - THE PATENT OFFICE, 25 SOUTHAMPTON BUILDING, LONDON, W.C. 2, ENGLAND

\*INSTRUMENTATION, RADIATION MONITORING + \*MONITOR, RADIATION, GENERAL + PATENT + UNITED KINGDOM

9-23840  
MEANS FOR DETECTING RADIOACTIVE RADIATION  
GROUPEMENT ATOMIQUE ALSACIENNE ATLANTIQUE  
BRITISH PATENT 1,080,707 +. 4 PAGES, AUGUST 23, 1967.

AN IONIZATION CHAMBER IS DESIGNED WHICH OPERATES UNDER HIGH-VOLTAGE ALTERNATING CURRENT. THE IONIZATION CHAMBER CAN BE USED FOR MEASURING GAMMA NEUTRON FLUX. THE CHAMBER IS ALSO SUITABLE FOR USE IN REACTOR SAFETY SYSTEMS, AND PARTICULARLY IN APPLICATIONS WHICH CALL FOR GAS-CIRCULATION CHAMBERS.

AVAILABILITY - THE PATENT OFFICE, 25 SOUTHAMPTON BUILDING, LONDON, W. C. 2, ENGLAND

\*INSTRUMENTATION, RADIATION MONITORING + CHAMBER, ION + MONITOR, RADIATION, GENERAL + PATENT + UNITED KINGDOM

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-23841  
HOSEMANN R + WARRIKHOFF H  
DETECTOR FOR IONIZING RADIATION  
BRITISH PATENT 1,082,144 +. 7 PAGES, FIGURES, SEPTEMBER 6, 1967

A RADIATION DETECTOR IS DESCRIBED WHICH INCLUDES TWO ELECTRODES, ONE OF WHICH HAS MANY LAYERS OF DIFFERENT MATERIALS, LINED UP IN THE INTENDED DIRECTION OF THE INCIDENT RADIATION. THE MATERIALS AND THEIR THICKNESSES ARE CHOSEN FOR A GIVEN FREQUENCY RANGE OF IONIZING RADIATION. THE CHARGE FLOW BETWEEN THE ELECTRODES RESULTS FROM THE EMISSIONS FROM THE VARIOUS LAYERS AND THE DEGREE OF THEIR ABSORPTION IN ANY OTHER LAYER IN THEIR PATH IS PROPORTIONAL TO THE TIME INTEGRAL OF THE INTENSITY OF THE RADIATION.

AVAILABILITY - THE PATENT OFFICE, 25 SOUTHAMPTON BUILDING, LONDON, W. C. 2, ENGLAND

\*INSTRUMENTATION, RADIATION MONITORING + DOSIMETRY, GENERAL + INSTRUMENTATION, NUCLEAR + PATENT + UNITED KINGDOM

9-23842  
FLEXIBLE CAN FOR NUCLEAR FUEL  
GENERAL ELECTRIC COMPANY  
FRENCH PATENT 1,383,261 +. 8 PAGES, 2 FIGURES, NOVEMBER 16, 1964, IN FRENCH

THE FUEL ROD IS PROVIDED WITH A THIN CAN, WHICH PRESENTS LONGITUDINAL, U-SHAPED FOLDS EQUIDISTANTLY DISTRIBUTED AROUND THE PERIPHERY OF THE ELEMENT. THESE FOLDS ALLOW RADIAL DEFORMATION OF THE CAN IN RESPONSE TO VARIATIONS IN THE COOLANT PRESSURE OR TO DIFFERENTIAL DILATIONS WHILE A GOOD CONTACT BETWEEN FUEL AND CAN IS MAINTAINED. ALL FOLDS MAY BE DIRECTED OUTWARDLY, OR OUTWARD FOLDS MAY ALTERNATE WITH INWARD FOLDS, THE LATTER ONES THEREBY CONTACTING GROOVES IN THE FUEL BODY.

AVAILABILITY - U.S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D. C. (30 CENTS PER PAGE)

\*CONTAINMENT DESIGN + \*FUEL ELEMENT + FRANCE + PATENT

9-23843  
RARE EARTH PYROHAFNATES - A NEW IDEA FOR CONTROL ROD MATERIALS  
AMAX SPECIALTY METALS, INC., NEW YORK  
16 PAGES, JANUARY 1968

A NEW FAMILY OF HAFNIUM-BASE CERAMIC PRODUCTS FOR USE AS CONTROL-ROD MATERIALS IN COMMERCIAL NUCLEAR POWER REACTORS WAS ANNOUNCED BY AMAX SPECIALTY METALS, INC. THESE NEW MATERIALS, CALLED RARE-EARTH PYROHAFNATES ARE COMPOUNDS OF HAFNIUM OXIDE AND OXIDES OF SELECTED RARE EARTHS SUCH AS DYSPROSIUM, ERBIUM, AND HOLMIUM. THESE COMPOUNDS OFFER A COMBINATION OF EFFICIENT PERFORMANCE, AVAILABILITY, AND ECONOMY. THE DETERMINED CONTROL-ROD WORTH OF PYROHAFNATE PELLETS HAS BEEN SHOWN TO BE SUPERIOR TO THE SILVER-INDIUM-CADMIUM ALLOY NOW USED FOR POWER REACTOR CONTROL.

AVAILABILITY - AMAX SPECIALTY METALS, INC., P. O. BOX 32, ACRON, NEW YORK 14001

\*CONTROL ROD + \*MATERIAL + \*RARE EARTH + DYSPROSIUM + ERBIUM + HAFNIUM

9-23849  
COSTRELL L  
STANDARD NUCLEAR INSTRUMENT MODULES ADOPTED BY AEC COMMITTEE ON NUCLEAR INSTRUMENT MODULES. JANUARY 1968  
NATIONAL BUREAU OF STANDARDS  
TID-20893(REV.2) +. 31 PAGES, 7 FIGURES, 1 TABLE, JAN. 1968

PRESENTS SPECIFICATIONS FOR SOLID-STATE MODULAR INSTRUMENTS ADOPTED BY THE AEC COMMITTEE ON NUCLEAR INSTRUMENT MODULES FOR STANDARD NUCLEAR-INSTRUMENT MODULES. REPORT INCLUDES ALL CORRECTIONS, ADDITIONS, AND CHANGES MADE TO ORIGINAL SPECIFICATIONS.

AVAILABILITY - U.S. GOVERNMENT PRINTING OFFICE, WASHINGTON, D. C. 20402, \$0.25 PER COPY

\*CODES AND STANDARDS + \*INSTRUMENTATION, NUCLEAR + DESIGN CRITERIA + EQUIPMENT DESIGN + INSTRUMENTATION, GENERAL + SOLID STATE DEVICE

9-23850  
INSTRUMENTATION AND CONTROLS DIVISION ANNUAL PROGRESS REPORT FOR PERIOD ENDING SEPTEMBER 1, 1967  
OAK RIDGE NATIONAL LAB., TENN.  
ORNL-4219 +. 134 PAGES, FIGURES, REFERENCES, SEPT. 1, 1967

ONE OF A SERIES OF PROGRESS REPORTS (SEE NSIC-12126). TOPICS COVERED INCLUDE - BASIC INSTRUMENTATION, ELECTRONIC SYSTEMS AND COMPONENTS, RADIATION-MONITORING SYSTEMS, RADIATION-DETECTION INSTRUMENTS AND COMPONENTS, DATA HANDLING AND COMPUTATION, PROCESS INSTRUMENTATION AND CONTROL-SYSTEM ENGINEERING, PROCESS-INSTRUMENTATION DEVELOPMENT, TEST AND

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-23850 \*CONTINUED\*

CALIBRATION OF INSTRUMENTS, REACTOR INSTRUMENTATION AND CONTROL-SYSTEM ENGINEERING, REACTOR INSTRUMENTATION-AND-CONTROL DEVELOPMENT (NUCLEAR INSTRUMENTATION, PROCESS INSTRUMENTATION, COMPONENTS AND MATERIALS, SUPPORT FOR THE HIGH-VOLTAGE ACCELERATOR PROGRAM.

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

\*COMPUTER PROGRAM + \*ORNL + CONTROL SYSTEM + INSTRUMENTATION CALIBRATION + INSTRUMENTATION, CONTROL + INSTRUMENTATION, GENERAL + INSTRUMENTATION, PROCESS + INSTRUMENTATION, RADIATION MONITORING + INSTRUMENTATION, TESTING

9-23851

NEISSEL JP + GREEN WK  
CABLE FOR PULSE COUNTING AND CAMPBELLING IN-CORE INSTRUMENTATION DEVELOPMENT PROGRAM. QUARTERLY PROGRESS REPORT, OCTOBER 1964-JANUARY 1965  
GENERAL ELECTRIC CO., SAN JOSE, CALIF. ATOMIC POWER EQUIPMENT DEPT.  
GEAP-4797 +. 19 PAGES, MARCH 1965

THIS REPORT IS ONE OF A SERIES OF PROGRESS REPORTS CONCERNED WITH THE TRANSMISSION THROUGH A COAXIAL CABLE OF INFORMATION FROM AN IONIZATION OR FISSION CHAMBER INSIDE A REACTOR VESSEL TO THE ELECTRONIC EQUIPMENT OUTSIDE THE VESSEL. SIGNAL TRANSMISSION WILL BE D-C, OR PULSED, OR A-C.

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

\*ELECTRICAL CONDUCTION + ELECTRICAL CONDUCTION + INSTRUMENTATION, CAMPBELLING + INSTRUMENTATION, COMPONENT + INSTRUMENTATION, IN CORE

9-23852

STRAUSS SD  
NUCLEAR PLANT MAINTENANCE CALLS FOR INGENUITY, SHOWS NEED FOR THOROUGH TESTING  
2 PAGES, 5 FIGURES, POWER 111, PAGE 114 AND 115, (SEPTEMBER 1967)

A NEED EXISTS FOR EXTENSIVE COMPONENT TESTING AS EARLY AS POSSIBLE IN THE START-UP STAGE. BECAUSE COMPONENTS FAIL PREMATURELY DURING STARTUP DUE TO INSUFFICIENT RUN-IN AND TAKE DIFFERENT LENGTHS OF TIME TO FAIL OR EXHIBIT STRESS DURING START-UP, RUNNING TIMES OF 500-2000 HR MAY BE NEEDED. EXPERIENCE WITH TURBINES AND STEAM GENERATORS IN NUCLEAR POWER PLANTS IS USED TO SUPPORT THIS PROPOSITION.

\*MAINTENANCE AND REPAIR + \*MAINTENANCE, REMOTE + \*RELIABILITY, COMPONENT + \*TEST INTERVAL + FAILURE, COMPONENT + FAILURE, PIPE + OPERATING EXPERIENCE + REACTOR, POWER + STEAM GENERATOR + TUBING + UNITED STATES

9-23854

MOSCA G + PIZZI P  
DISTURBANCE OF POWER CONTROL BY ROD-SHIMMING  
SORIN, CENTRO RICERCA NUCLEARE - SALUGGIA (VERCELLI)  
4 PAGES, 4 FIGURES, 8 REFERENCES, ENERGIA NUCLEARE 14(10), PAGE 598-601, (OCTOBER 1967)

IN SORIN'S POOL-TYPE REACTOR AVOGADRO RS2, FOR THE AUTOMATIC POWER MAINTENANCE A COMPENSATED IONIZATION CHAMBER IS USED. SINCE IT IS REQUIRED THAT THE INDICATIONS SHOULD NOT BE INFLUENCED BY VARIATIONS OF ROD POSITIONS, IT WAS NECESSARY TO MEASURE THE DISTURBANCES (SHADOW EFFECTS) AND TO PROVIDE SYSTEMS FOR A CONTINUOUS POWER INDICATOR INDEPENDENT OF LOCAL FLUX VARIATIONS.

\*CONTROL ROD INTERACTION + CHAMBER, ION + IN CORE MEASUREMENT + REACTOR CONTROL + REACTOR, POOL TYPE + RESPONSE TIME

9-23911

ALSO IN CATEGORIES 17 AND 7

SIDDALL E + SMITH JE  
COMPUTER CONTROL IN THE DOUGLAS POINT NUCLEAR POWER STATION  
ATOMIC ENERGY OF CANADA LIMITED, SHERIDAN PARK, ONTARIO  
AECL-2948 + SM-99/38 +. 19 PAGES, SEPTEMBER 1967, PAPER PRESENTED AT THE IAEA SYMPOSIUM ON HEAVY WATER POWER REACTORS, VIENNA, SEPTEMBER 11-15, 1967

BY USING TIME MULTIPLEXING TECHNIQUES, THE HIGH DATA PROCESSING CAPABILITIES OF A SINGLE DIGITAL COMPUTER CAN BE USED TO REPLACE A MULTIPLE ANALOGUE CONTROL SYSTEM WITH A CONSEQUENT SAVING IN COSTS AND SOMEWHAT BETTER OPERATION. TO TEST THIS PREMISE, AND TO GAIN AN INSIGHT INTO THE PROBLEMS, A DIGITAL COMPUTER CONTROLLER WAS INCORPORATED IN THE CONTROL SYSTEM FOR THE DOUGLAS POINT NUCLEAR POWER PLANT. MUCH USEFUL EXPERIENCE IN THE DESIGN PHASE HAS BEEN GAINED, AND OPERATING EXPERIENCE WHILE STILL LIMITED HAS BEEN ENCOURAGING.

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

\*COMPUTER CONTROL + \*OPERATING EXPERIENCE + \*REACTOR, HWR + CHALK RIVER + COMPUTER PROGRAM + IAEA +

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-23911 \*CONTINUED\*  
INSTRUMENTATION, CONTROL + INSTRUMENTATION, GENERAL

9-23951 ALSO IN CATEGORIES 18 AND 10  
REVISED RESPONSE TO AEC QUESTIONS  
OMAHA PUBLIC POWER DISTRICT  
10 PAGES, 1 FIGURE, SUPPLEMENT 16 (AMENDMENT 16, EXHIBIT F16) TO FOOT CALHOUN FACILITY DESCRIPTION AND  
SAFETY ANALYSIS REPORT, FEBRUARY 2, 1968, DOCKET 50-285, TYPE--PWR, MFG.--C.E., AE--GIBBS + HILL

REVISES ANSWERS TO QUESTIONS 1.1, 8.4, 13.2, AND A.2. QUESTIONS ARE RELATED TO OUTSIDE  
ELECTRICAL POWER, CONTROL-ROD-INSERTION CAPABILITY DURING EARTHQUAKE, AND SCRAM-BUS  
SINGLE-FAILURE CRITERION.

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

\*ELECTRIC POWER, GENERAL + AEC QUESTION + FT. CALHOUN (PWR) + OFF SITE + REACTOR, PWR + REPORT, PSAR +  
SINGLE FAILURE CRITERION

9-24132  
BERNSTEIN DM  
RECENT DEVELOPMENTS IN MULTICHANNEL PULSE HEIGHT ANALYSERS  
5 PAGES, FIGURES, NUCLEAR ENGINEERING 13(141), PAGES 112-116 (FEBRUARY 1968)

THE MODERN MULTICHANNEL PULSE HEIGHT ANALYSER REPRESENTS A HIGHLY FLEXIBLE, INEXPENSIVE,  
DIGITAL DATA PROCESSING COMPUTER. THE ADVENT OF SOLID STATE DETECTORS WITH THEIR EXCEPTIONAL  
RESOLUTION HAS PLACED DEMANDS UPON THE MANUFACTURERS FOR THE DEVELOPMENT OF ANALYSERS WITH AS  
MANY AS 4000 CHANNELS, AND ANALOGUE TO DIGITAL CONVERTER RATES FROM 20 MC/S TO 100 MC/S. AT  
THE SAME TIME GREAT ADVANCES IN USER FLEXIBILITY HAVE BEEN EVOLVED.

\*INSTRUMENTATION, AMPLIFIER + \*INSTRUMENTATION, PULSE + COMPUTER, DIGITAL + COUNTER + DATA PROCESSING

9-24134 ALSO IN CATEGORY 17  
SELECTED ELK RIVER OPERATING EXPERIENCE  
RURAL COOPERATIVE POWER ASSOCIATION  
NUS-326 +. 54 PAGES, 5 FIGURES, 2 TABLES, ELK RIVER REACTOR OPERATIONS SAFETY ANALYSIS PROGRESS REPORT TO  
RURAL COOPERATIVE POWER ASSOCIATION, MONTHLY REPORT NO. 16, OCTOBER 1, TO OCTOBER 31, 1966

(PP. 5-11) PLATINIZED HONEYCOMB CATALYST SHOULD BE SUBSTITUTED FOR PELLETS IN THE RECOMBINER  
BECAUSE THE HONEYCOMB TYPE IS INSENSITIVE TO FLOW, TEMPERATURE, AND MOISTURE. (PG 20-26)  
VARIATION OF IODINE IN THE COOLANT WITH TIME INDICATES THAT ABOUT 9 G OF U-235 IS GIVING THIS  
ACTIVITY. (PG 27-29) A LOSS OF 10% OF THE CENTRAL-CONTROL-ROD WORTH RESTRICTS ITS LIFETIME  
TO 4.6 EFF YEARS. LIFETIME BY B4C PELLETS SWELLING OR HELIUM RELEASE EXCEEDS THAT. THE  
REGULATING ROD SHOULD BE EXCHANGED FOR A BANKED ROD EVERY 2 EFF YEARS AT THE TECH.-SPEC.  
CONTROL-ROD INSPECTION.

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

\*CONTROL ROD BURNUP + \*RECOMBINER + ACTIVITY BUILDUP + ELK RIVER (BWR) + MAIN COOLING SYSTEM +  
REACTOR, BWR + REPORT, OPERATIONS ANALYSIS + STEEL, STAINLESS

9-24138 ALSO IN CATEGORY 10  
SET ON-LINE COMPUTER FOR NUCLEAR GENERATOR  
1 PAGE, CONTROL ENGINEERING 15(3), PAGE 40, (MARCH 1968)

AEG-TELEFUNKEN (BERLIN) RECEIVED AN ORDER FOR WHICH IS CLAIMED TO BE THE FIRST ON-LINE  
COMPUTER FOR A NUCLEAR POWER STATION. THE COMPUTER WILL BE USED TO OPTIMIZE THE FUEL  
EFFICIENCY AND INCREASE THE ENERGY DENSITY IN THE REACTOR CORE AT THE GUNDEMMINGEN POWER  
STATION.

\*COMPUTER CONTROL + \*REACTOR, POWER + GERMANY + INSTRUMENTATION, CONTROL + REACTOR CONTROL

9-24154 ALSO IN CATEGORIES 17 AND 11  
SENA SHUTDOWN ATTRIBUTED TO CORE BARREL BOLT FAILURE  
1 PAGE, NUCLEAR INDUSTRY 15(2), PAGE 56, (FEB. 1968)

WESTINGHOUSE STATEMENT READS IN PART AS FOLLOWS - AS PART OF THE INVESTIGATION OF A STUCK  
CONTROL ROD, CAUSED BY INTERFERENCE IN THE CORE, INSPECTION REVEALED BROKEN PIECES OF  
CORE-BARREL BOLTS IN TWO OF THE FOUR STEAM GENERATORS. THESE BOLTS JOIN UPPER AND LOWER CORE  
BARREL. THEIR USE IS PECULIAR TO THE INTERNAL DESIGN OF SENA AND EARLIER PLANTS. REPAIR TO  
INTERNALS WILL BE CONCURRENT WITH REPAIR FOR TURBINE AND GENERATOR. REACTOR WAS SHUT DOWN  
JAN. 30, 1968.

\*CORE COMPONENTS + \*FAILURE, EQUIPMENT + \*FAILURE, SCRAM MECHANISM + ITALY + REACTOR, PWR

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-24196

HANO I + TAMURA Y

APPLICATION OF THE MAXIMUM PRINCIPLE TO REACTOR CONTROL

4 PAGES, WESEDA DAIGAKU RIKOGAKU KENKYUSHO HOKOKU, 36, PAGES 154-7 (SEPT. 1966) IN JAPANESE

A NEW COMPUTATIONAL APPROACH TO THE MINIMIZATION OF XE POISONING IS PRESENTED. SINCE THIS OPTIMIZING PROBLEM CONSTITUTES A VARIATIONAL PROBLEM WITH A NUMBER OF COMPLEX RESTRICTIONS IMPOSED ON THE SYSTEM VARIABLES, CONVENTIONAL VARIATIONAL TECHNIQUE TURNS OUT TO BE INEFFECTIVE. THE FORMULATION OF THE PROBLEM IS MADE BASED ON THE MAXIMUM PRINCIPLE, AND A FEW COMMENTS ARE GIVEN TO ITS COMPUTATIONAL ASPECT.

\*POISON, BURNABLE + \*REACTOR CONTROL + \*XENON + MATHEMATICAL TREATMENT + THEORETICAL INVESTIGATION

9-24197

GORSHKOV SI + GROMOV LF + IONAITIS RR + SHCHEGOLEVA EK

ELECTROHYDRAULIC CONTROL ROD SAFETY SYSTEM FOR SM-2 REACTOR

2 PAGES, AT. ENERG. (USSR), 22, PAGES 234-5 (MARCH 1967) (IN RUSSIAN)

AN ELECTROHYDRAULIC SAFETY ROD IS DESCRIBED. THE ABSORBER ROD IS HELD IN ITS EXTREME UPPER POSITION BY AN ELECTROMAGNET. THE SAFETY ROD IS DRIVEN INTO THE REACTOR BY CUTTING OFF THE ELECTROMAGNET. THE ROD IS REMOVED FROM THE REACTOR HYDRAULICALLY BY A PISTON WHICH RESETS THE CONTROL ROD IN ITS UPPER POSITION. THE CONTROL SYSTEM IS RELIABLE, COMPACT, SIMPLE, AND CHEAP. HENCE, IT IS SUITABLE FOR USE IN OTHER REACTORS.

\*CONTROL ROD DRIVE + REACTOR CONTROL + REACTOR, PWR + SM 2 (PWP) + TEST, CONTROL ROD DRIVE

9-24199

DEARNALEY G

SOLID-STATE RADIATION DETECTORS

UNITED KINGDOM ATOMIC ENERGY AUTHORITY, HARWELL

19 PAGES, 10 FIGURES, 1 TABLE, REFERENCES, CONTEMPORARY PHYSICS 8(6), PAGES 607-626 (1967)

A HISTORICAL SURVEY OF THE DEVELOPMENT OF SOLID-STATE DETECTORS IS GIVEN AND IT IS SHOWN WHY SEMICONDUCTOR DETECTORS ARE SUPERIOR TO THE EARLIER CRYSTAL COUNTERS. THE PHYSICAL PROCESSES WHICH OCCUR DURING THE DETECTION OF NUCLEAR RADIATION IN A SOLID-STATE DEVICE ARE CONSIDERED IN DETAIL, AND THE MERITS OF THE REVERSE-BIASED SEMICONDUCTOR JUNCTION IN SILICON OR GERMANIUM ARE SET OUT. FACTORS WHICH DETERMINE THE ENERGY RESOLUTION OF SUCH A DETECTOR ARE ANALYSED, AND ALSO THE EFFECTS OF RADIATION DAMAGE. THE PREPARATION OF SUCH DETECTORS IS NOT TREATED IN DETAIL, BUT THE PHYSICAL PRINCIPLES ON WHICH THE IMPORTANT TYPES OF DETECTOR DEPEND ARE DESCRIBED. THE FINAL SECTION SURVEYS THE FIELD OF APPLICATIONS OF SOLID-STATE DETECTORS IN NUCLEAR PHYSICS, RADIOCHEMICAL ANALYSIS, SPACE RESEARCH, MEDICINE, AND BIOLOGY.

\*EXAMINATION + \*INSTRUMENTATION, NUCLEAR + \*SOLID STATE DEVICE + COUNTER + FABRICATION + INSTRUMENTATION, COMPONENT + INSTRUMENTATION, CURRENT + INSTRUMENTATION, RADIATION MONITORING + THEORETICAL INVESTIGATION

9-24256

MORITZ U + VIERKE H + WESSER U + WOLF L + ZEISSET W

NOISE ANALYSIS ON ZERO-POWER-REACTOR SUR 100 BE

UNIVERSITY OF BERLIN

5 PAGES, ATOMKERNENERGIE, 12, PAGES 415-419 (1967) IN GERMAN

GIVES RESULTS OF NOISE ANALYSIS OF THE ZERO-POWER REACTOR SUR-100-BE. CONTINUOUS CONTROL OF A POWER REACTOR SEEMS POSSIBLE.

\*NOISE ANALYSIS + REACTOR CONTROL + REACTOR, POWER

9-24257

LNEFNICKA B + WAGNER K

COMPENSATION OF A HEAVY WATER REACTOR WITHOUT MECHANICALLY CONTROLLED ABSORBING RODS

SKODA WORKS, DEPARTMENT OF NUCLEAR POWER STATIONS

31 PAGES, PAGE 43-73 OF SBORNIK PRACI ZAVODU JADERNE ELEKTRARNY OBOROVEHO PODNIKU, SKODA, PLZEN. PLZEN, CZECHOSLOVAKIA, 1967, IN CZECH

DESCRIBES A REACTOR SHIM SYSTEM WITHOUT MECHANICALLY CONTROLLED ABSORBING RODS. THIS SERVED AS AN AID IN CHOOSING THE COMPENSATING SYSTEM FOR THE HEAVY-WATER MODERATED, GAS-COOLED, NATURAL-URANIUM FUELED REACTOR. THE POSSIBILITIES OF USING DEPLETED URANIUM, BURNABLE POISONS, ABSORBING SHEETS, MODERATOR VOIDS, AND HYDRAULICALLY CONTROLLED RODS WERE STUDIED.

\*CONTROL ROD, SHIM SAFETY + \*REACTOR CONTROL + REACTOR, GCR + REACTOR, HWR

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-24258

ZAJIC V + VLCEK J + HUDECEK M

THE DETECTION OF THE FAILING OF URANIUM FUEL ELEMENT AT THE NON-ACTIVE TESTS IN THE FLOW OF CO<sub>2</sub>.  
SKODA WORKS, DEPARTMENT OF NUCLEAR POWER STATIONS12 PAGES, PAGE 203-14 OF SBORNIK PRACI ZAVODU JADERNE ELEKTRARNY OPCROVEHO PODNIKU, SKOCA, PLZEN, PLZEN,  
CZECHOSLOVAKIA, 1967, IN CZECH

A RADIOMETRIC METHOD OF DETECTION OF U IN THE TEST NON-ACTIVE CIRCUIT WITH THE WIRE FUEL ELEMENT AND THE WAY OF A PRACTICAL APPLICATION IS DESCRIBED. THE GROWTH OF THE U CONCENTRATION IN THE CIRCUIT IS THE FUNCTION OF THE DESTRUCTION OF FUEL ELEMENT, OF THE ESCAPE OF AEROSOL FROM THE CIRCUIT AND OF ITS POSSIBLE GROUND IN PARTS OF TEST LOOP. THE PRACTICAL EXPERIENCES WITH THE APPLICATION OF THE METHOD HAS CERTIFIED THE RELIABILITY OF THE BEGINNING TESTED FUEL ELEMENT FAILURE. THE METHOD OF RADIOMETRIC DETECTION OF U IN THE TEST CIRCUIT IS EXTRAORDINARILY SENSITIVE IN COMPARISON TO SOME METHODS OF CHEMICAL ANALYSIS.

\*INSTRUMENTATION, DETECTION FAILED FUEL ELEMENT + FAILURE, FUEL ELEMENT

CATEGORY 10  
ELECTRICAL POWER SYSTEMS

10-20579 ALSO IN CATEGORY 17  
MCCARTHY JF  
SHORT ACROSS BOTH 48CV FEEDERS AT FERMI  
ATOMIC POWER DEVELOPMENT ASSOCIATES, INC. + POWER REACTOR DEVELOPMENT COMPANY + DETROIT EDISON COMPANY  
APDA-CFE-1 +. 1 PAGE, PAGE 19 OF COMPILATION OF CURRENT TECHNICAL EXPERIENCE AT ENRICO FERMI ATOMIC POWER  
PLANT, AUGUST 1966

(PG 19) THE JUNE 29 POWER OUTAGE FAILED BOTH 480-VOLT FEEDS. ONE PHASE OF ONE PRIMARY SIDE OF THE UNGROUNDED DELTA-WOUND 4800/480-V TRANSFORMER HAD SHOWN PREVIOUS SPORADIC GROUNDING. THIS GROUNDS THE AFFECTED PHASE WITHOUT CURRENT FLOW AND RAISE THE OTHER PHASES FROM 2770 TO 4900 V. ON JUNE 29, THE RAISED VOLTAGE PROBABLY TRIGGERED A WEAK SPOT IN THE OTHER FEED, RESULTING IN A PHASE-TO-PHASE SHORT THROUGH GROUND, OPENING THE 4800-V CIRCUIT BREAKERS AND DESTROYING THE CABLES. DIESEL CARRIED THE DIESEL BUS LOADS.

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

ACCIDENT, LOSS OF POWER + EMERGENCY POWER, ELECTRIC + FAILURE, SEQUENTIAL + FAILURE, SIMULTANEOUS + REPORT, OPERATIONS SUMMARY

10-22881 ALSO IN CATEGORY 17  
SELECTED FERMI OPERATING EXPERIENCE JUNE 1966  
POWER REACTOR DEVELOPMENT COMPANY  
EF-34 +. 9 PAGES, TABLES, JUNE 1966

CORE WAS RELOADED JUNE 22, AND 67-MW TESTING WAS COMPLETED. A FLOATING POWER SUPPLY HAS BEEN MADE FOR THE HIGH-SENSITIVITY FISSION COUNTER, AS THE TWO-LOOP POWER COEFFICIENT (-0.27 CENT/MW) HAS A LARGE UNCERTAINTY FROM KEITHLY INDICATION AND LOW INDICATION ON FLOWMETERS. TWO CABLE FAULTS IN THE 4.8-KV FEEDS TO PRDC GAVE A COMPLETE LOSS OF NORMAL POWER TO THE 480-V BUSES. DIESEL STARTED AND SUPPLIED 480-V VITAL POWER. NOS. 1 AND 2 STEAM GENERATORS WERE PLACED BACK IN SERVICE, AND NO. 3 DISMANTLING BEGUN. A HEAT BALANCE AT NOMINAL 67 MWTH SHOWED TRUE POWER 10-20% LESS THAN ON NUCLEAR INSTRUMENTS, AND SODIUM FLOWS LOWER THAN NOMINAL.

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

ACCIDENT, LOSS OF POWER + ELECTRIC POWER, VITAL + FERMI (LMFBR) + GENERATOR, DIESEL + INSTRUMENTATION CALIBRATION + INSTRUMENTATION, FLOW + INSTRUMENTATION, POWER RANGE + REACTOR POWER + REACTOR, FAST + REPORT, OPERATIONS

10-22885 ALSO IN CATEGORIES 11 AND 17  
MCCARTHY JF  
SELECTED FERMI OPERATING EXPERIENCE - OCT 1966  
ATOMIC POWER DEVELOPMENT ASSOC., INC., DETROIT, MICH. + POWER REACTOR DEVELOPMENT CO., DETROIT, MICH. + DETROIT EDISON CO., MICH.  
APDA-CFE-3 +. 40 PAGES, MAY 1967

TWO-DAY LEAK-RATE TEST AT 2 PSIG GAVE 100 CFM/DAY (REFERENCE) AND 7FR0 (ABSOLUTE). SPORADIC GROUND (AGAIN) IN 4800-V SYSTEM WERE TRACED TO BURIED UNDERGROUND CABLE FILLED WITH WATER - NOT UNUSUAL. ONE GROUND IN EITHER SUPPLY. \*\*\* DISCUSSES OCT. 5 FUEL MELTDOWN WITH EXACTLY SAME LANGUAGE AS FOUND IN EF-38. DISCUSSES INDICATIONS ON FISSION-PRODUCT DETECTOR BEING CALIBRATED. DISCUSSES APPARENT REACTIVITY LOSSES DURING MELTDOWN, WHICH APPARENTLY REACHED 30 CENTS JUST BEFORE THE SHUTDOWN.

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

\*ELECTRIC POWER, GENERAL + \*FUEL MELTDOWN + \*INSTRUMENTATION, DETECTION FAILED FUEL ELEMENT + \*TEST, LEAK RATE + CONTAINMENT, LOW PRESSURE + FERMI (LMFBR) + INCIDENT, GENERAL + REACTIVITY EFFECT, ANOMALOUS + REACTOR, FAST + REPORT, OPERATIONS SUMMARY

10-22974 ALSO IN CATEGORIES 9 AND 18  
DRL REQUESTS ADDITIONAL DISCUSSION ON FORT CALHOUN  
U. S. ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.  
1 PAGE, JANUARY 27, 1968, DOCKET 50-285, TYPE--PWR, MFG--C.E., AF--GIBBS + HILL

CONFIRMS PHONE CONVERSATION OF JANUARY 17, 1968, THAT ACPS WISHES ADDITIONAL INFORMATION BEFORE PREPARING THEIR REPORT - (1) ADEQUACY OF OFF-SITE POWER, AND GENERAL DESIGN CRITERION 39, (2) ABILITY TO INSERT CONTROL RODS IF A PRIMARY COOLANT LINE LARGER THAN 12 INCHES RUPTURES, AND (3) ADEQUACY OF THE REACTOR PROTECTION SYSTEM, ESPECIALLY THE SCRAM BUS, TO PROVIDE PROTECTION IF A SINGLE FAILURE WERE TO OCCUR.

USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*EMERGENCY POWER, ELECTRIC + \*PLANT PROTECTIVE SYSTEM + ACRS + AEC DESIGN CRITERIA + AEC QUESTION + FAILURE, SCRAM MECHANISM + FT. CALHOUN (PWR) + REACTOR, PWR + SINGLE FAILURE CRITERION

CATEGORY 10  
ELECTRICAL POWER SYSTEMS

10-23915 ALSO IN CATEGORY 17  
WEEKS TC

IRL MOTOR-GENERATOR FAILS IN TEST  
INDUSTRIAL REACTOR LABORATORIES, INC., PLAINSBORO, N.J.  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 14(11), PAGES 22-23 (MARCH 11, 1968), DOCKET 50-17

(LETTER, FEBRUARY 29) DURING A ROUTINE LOAD-FREE TEST ON DECEMBER 6, 1967, THE EMERGENCY GENERATOR FAILED TO FUNCTION DUE TO A DEFICIENT BUTTERFLY VANE IN A VACUUM-OPERATED AIR-BALANCE CHOKE. ON DECEMBER 27, THE AIR CHOKE WAS REPLACED BY A SOLENOID-OPERATED METERING DEVICE IN THE NATURAL-GAS FEED, ALTHOUGH MAINTENANCE HAD RESTORED ITS PERFORMANCE. NORMAL BI-WEEKLY TESTS INDICATED NO CONTINUING PROBLEMS.

\*FAILURE, COMPONENT + \*GENERATOR, DIESEL + EMERGENCY POWER, ELECTRIC + REACTOR, RESEARCH

10-23951 ALSO IN CATEGORIES 18 AND 9  
REVISED RESPONSE TO AEC QUESTIONS

OMAHA PUBLIC POWER DISTRICT  
10 PAGES, 1 FIGURE, SUPPLEMENT 16 (AMENDMENT 16, EXHIBIT F16) TO FORT CALHOUN FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, FEBRUARY 2, 1968, DOCKET 50-285, TYPE--PWR, MFG.--C.E., AE--GIBBS + HILL

REVISES ANSWERS TO QUESTIONS 1.1, 8.4, 13.2, AND 4.2. QUESTIONS ARE RELATED TO OUTSIDE ELECTRICAL POWER, CONTROL-ROD-INSERTION CAPABILITY DURING EARTHQUAKE, AND SCRAM-BUS SINGLE-FAILURE CRITERION.

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

\*ELECTRIC POWER, GENERAL + AEC QUESTION + FT. CALHOUN (PWR) + OFF SITE + REACTOR, PWR + REPORT, PSAR + SINGLE FAILURE CRITERION

10-24138 ALSO IN CATEGORY 9

SET ON-LINE COMPUTER FOR NUCLEAR GENERATOR  
1 PAGE, CONTROL ENGINEERING 15(3), PAGE 40, (MARCH 1968)

AEG-TELEFUNKEN (BEPLIN) RECEIVED AN ORDER FOR WHICH IS CLAIMED TO BE THE FIRST ON-LINE COMPUTER FOR A NUCLEAR POWER STATION. THE COMPUTER WILL BE USED TO OPTIMIZE THE FUEL EFFICIENCY AND INCREASE THE ENERGY DENSITY IN THE REACTOR CORE AT THE GUNDEMMINGEN POWER STATION.

\*COMPUTER CONTROL + \*REACTOR, POWER + GERMANY + INSTRUMENTATION, CONTROL + REACTOR CONTROL



CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-20355 ALSO IN CATEGORIES 17 AND 18  
SUPPLEMENT TO APPENDIX D--TURBINE GENERATOR FAILURES DUE TO EXCESSIVE OVERSPEEDING  
FLORIDA POWER AND LIGHT COMPANY  
4 PAGES, PAGE D1 TO D4 OF SUPPLEMENT 3 TO THE LICENSE APPLICATION AND PRELIMINARY SAFETY ANALYSIS REPORT.  
SEPTEMBER 1, 1966, DOCKET 50-250/251

ONLY TWO SUCH FAILURES ARE REPORTED, BOTH IN ENGLAND - (1) USKMOUTH - (1) FAILURE AT 170%  
OVERSPEED 8 WEEKS AFTER COMMISSIONING, (2) BLACK IRON-OXIDE FORMATION IN THE GOVERNOR FROM  
BRACKISH-WATER-CONTAMINATED OIL AND LONG SHUTDOWNS. DAMAGE IS DESCRIBED (LOW-PRESSURE WHEEL  
FOUND 150 YD AWAY). (2) CALDEP HALL-B - ONE MONTH AFTER COMMISSIONING, MAIN STEAM-ADMISSION  
VALVE STUCK FULL-OPEN WHEN LOAD DROPPED SUDDENLY. VALVE FAILURE WAS CAUSED BY PARTICLE OF  
CHILLED IRON SHOT EMBEDDED IN THE VALVE SPINDLES.

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

\*FAILURE, EQUIPMENT + \*INCIDENT, EQUIPMENT + \*MISSILE GENERATION AND PROTECTION + \*TURBINE + CONTROLLER +  
FAILURE, ADMINISTRATIVE CONTROL + QUALITY CONTROL + REACTOR STARTUP EXPERIENCE + VALVE

11-21117  
SALKIN RV  
THE EFFECT OF LOW CYCLE FATIGUE AND NEUTRON IRRADIATION ON THE MECHANICAL PROPERTIES OF LOW ALLOYED STEELS  
CENTRE NATIONAL DE RECHERCHES METALLURGIQUES  
RA-55/67 +. 26 PAGES, 18 FIGURES, 2 TABLES, 6 REFERENCES, JUNE 1967, ABSTRACT IN ANS TRANSACTIONS 10(1)  
PAGE 113, PAPER PRESENTED AT ANS MEETING, SAN DIEGO, CALIF., JUNE 11-15, 1967

DISCUSSES THE RESULTS OF EXPERIMENTS DESIGNED TO STUDY THE EFFECT OF LOW-CYCLE FATIGUE AND  
IRRADIATION ON THE TRANSITION TEMPERATURE OF PRESSURE-VESSEL STEELS. RESULTS ARE PRESENTED  
GRAPHICALLY, BUT ONLY PRELIMINARY CONCLUSIONS ARE STATED.

\*FAILURE, FATIGUE + BRITTLE FRACTURE + METAL + NOZZLE + PLASTICITY + PRESSURE VESSEL + RADIATION DAMAGE +  
STEEL + STRESS

11-21119  
HILLIER MJ  
ULTIMATE LOAD ANALYSIS OF SIMPLE STRUCTURES  
UNIVERSITY OF WATERLOO, WATERLOO, ONTARIO, CANADA  
5 PAGES, 2 FIGURES, 1 TABLE, NUCLEAR ENGINEERING AND DESIGN 5 (1) PAGES 71-75 (JAN-FEB. 1967)

THE ULTIMATE STATIC-LOAD-CARRYING CAPACITY OF A SIMPLE STRUCTURE OF DUCTILE MATERIAL,  
SUBJECTED TO PREDOMINANTLY TENSILE STRESSES, IS DEFINED AS THE LOADING AT WHICH A TENSILE  
PLASTIC INSTABILITY OCCURS, ANALOGOUS TO NECKING IN SIMPLE TENSION. A METHOD OF CALCULATION  
OF THE CRITICAL LOADING FOR THIN SHELLS SUBJECTED TO A UNIFORM STRESS SYSTEM IS OUTLINED.  
THE STRENGTH DETERMINED IN THIS WAY ALLOWS FOR THE FULL STRAIN-HARDENING CAPACITY OF THE  
MATERIAL, AS CONTRASTED WITH METHODS OF ESTIMATING THE YIELD-POINT LOAD.

\*PLASTICITY + \*STRESS ANALYSIS + BURST PRESSURE + CONTAINMENT, HIGH PRESSURE + DEFORMATION +  
FAILURE, GENERAL + STRESS.

11-21121  
YALCH JP + MCCONNELEE JE  
PLANE STRAIN CREEP AND PLASTIC DEFORMATION ANALYSIS OF A COMPOSITE TUBE  
GENERAL ELECTRIC COMPANY, CINCINNATI, OHIO  
11 PAGES, 16 FIGURES, 8 REFERENCES, NUCLEAR ENGINEERING AND DESIGN 5(1) PAGES 52-62 (JANUARY-FEBRUARY 1967)

A METHOD OF ANALYSIS AND ASSOCIATED COMPUTER PROGRAM IS DESCRIBED FOR THE GENERALIZED  
PLANE-STRAIN ANALYSIS OF TRANSIENT CREEP AND PLASTIC DEFORMATIONS OF COMPOSITE CYLINDERS.  
THE MATERIAL PROPERTIES ARE PERMITTED TO VARY WITH TEMPERATURE, AND THE AXISYMMETRIC LOADING  
CONDITIONS MAY VARY WITH TIME. THE LOADING MAY INCLUDE ANY COMBINATION OF INTERNAL PRESSURE,  
EXTERNAL PRESSURE, AXIAL LOAD AND RADIAL VARIATION OF THERMAL STRAINS. SEVERAL FORMS OF  
CREEP LAW ARE PERMITTED, INCLUDING AN ISO-CURVE PLASTIC-STRAIN LAW FOR USE IN OBTAINING  
CERTAIN PLASTICITY SOLUTIONS FROM THE CREEP SOLUTIONS.

\*CREEP BEHAVIOR + \*CREEP PROPERTY + \*CYLINDER + \*DEFORMATION + \*PLASTICITY + \*STRESS ANALYSIS +  
COMPUTER PROGRAM + CONCRETE + ELASTICITY + MATHEMATICAL STUDY + STRESS

11-21122  
TUBA IS + WEI DP  
THERMO-ELASTIC-PLASTIC STRESS DISTRIBUTION IN COMPOSITE MEDIA WITH NONUNIFORM TEMPERATURE DISTRIBUTION AND  
TEMPERATURE DEPENDENT MATERIAL PROPERTIES  
WESTINGHOUSE RESEARCH LABORATORY  
9 PAGES, 12 FIGURES, 1 TABLE, 1 REFERENCE, NUCLEAR ENGINEERING AND DESIGN 5(1) PAGES 43-51  
(JANUARY-FEBRUARY 1967)

DESCRIBES AN ELASTIC-PLASTIC GENERALIZED PLANE-STRAIN STRESS-ANALYSIS METHOD THAT CAN BE

CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-21122 \*CONTINUED\*

APPLIED TO CASES INVOLVING THERMAL AND PRESSURE LOADING WITH TEMPERATURE-DEPENDENT PROPERTIES. THE DEFORMATION THEORY OF PLASTICITY AND THE METHOD OF FINITE DIFFERENCES WERE COMBINED TO OBTAIN A SOLUTION. AN ANALYSIS OF A RECTANGULAR CLAD FUEL ELEMENT IS PRESENTED AS AN EXAMPLE.

\*FUEL ELEMENT + \*PLASTICITY + \*STRESS ANALYSIS + \*TEMPERATURE GRADIENT + CLAD + DEFORMATION + ELASTICITY + FUEL INTEGRITY + HIGH TEMPERATURE + MATHEMATICAL STUDY + PRESSURE, EXTERNAL + STRESS + STRESS STRAIN DATA

11-21185

TENTATIVE REGULATORY SUPPLEMENTARY CRITERIA FOR ASME CODE CONSTRUCTION NUCLEAR PRESSURE VESSELS  
UNITED STATES ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.  
49 PAGES, AUGUST 23, 1967

THIS DOCUMENT CONTAINS TECHNICAL SPECIFICATIONS SUPPLEMENTARY TO THOSE CONTAINED IN THE ASME CODE SECTION 3 WHICH ARE CONSIDERED NECESSARY TO GUARANTEE THE STRUCTURAL INTEGRITY OF A PRESSURE VESSEL FOR THE DURATION OF ITS SERVICE LIFE. VESSELS ARE CLASSIFIED, AND LOADING CONDITIONS ARE SPECIFIED. REQUIREMENTS INCLUDE - (1) ANALYTICAL OR EXPERIMENTAL VERIFICATION OF ALL STRESS ANALYSES, (2) AN INDEPENDENT REVIEW OF THE DESIGNER'S STRESS REPORT BY THE OWNER, (3) COMPLETE WRITTEN INSPECTION RECORDS, (4) CONSIDERATION OF MATERIAL PROPERTY CHANGES IN DESIGN, (5) NONDESTRUCTIVE INSPECTION AFTER FABRICATION AND HEAT TREATMENT, (6) A FRACTURE-MECHANICS FLAW-GROWTH ANALYSIS. FRACTURE IS SPECIFICALLY RECOGNIZED AS A POSSIBLE MODE OF FAILURE TO BE DESIGNED AGAINST.

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

\*BRITTLE FRACTURE + \*CODES AND STANDARDS + \*CONTAINMENT DESIGN + \*CONTAINMENT VESSEL LOADING + \*DESIGN CRITERIA + \*INTEGRITY + \*PRESSURE VESSEL + \*STRESS + \*STRESS ANALYSIS + \*WELDS + COMPUTER PROGRAM + CONTAINMENT INSPECTION AND MAINTENANCE + DEFORMATION + EARTHQUAKE + ELASTICITY + EMBRITTLEMENT + FLAW + FRACTURE TOUGHNESS + PLASTICITY + STEEL

11-21663

ALSO IN CATEGORY 18

DRL REQUESTS ADDITIONAL INFORMATION ON ZION STATION PSAR-STRUCTURAL DESIGN

USAEC DIVISION OF REACTOR LICENSING

6 PAGES, DOCKET 50-274 AND 50-304, TYPE--PWR, MFG--WEST., AE--SGT + LUNDY, NOVEMBER 1967

DRL ASKS 21 QUESTIONS RELATED TO STRUCTURAL AND COMPONENT DESIGN. ZION PSAR DID NOT MEET THE REQUIREMENTS OF THE AEC GUIDE FOR THE ORGANIZATION AND CONTENTS OF SAFETY ANALYSIS REPORTS (DESIGN BASES WERE NOT IDENTIFIED OR EXPLAINED, ETC.). SEISMIC-DESIGN INFORMATION WAS INCOMPLETE, AS WAS CONTAINMENT-DESIGN INFORMATION. INSPECTION AND SURVEILLANCE PROGRAMS, QUALITY CONTROL, AND TESTING WERE INADEQUATELY COVERED.

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

\*AEC DESIGN CRITERIA + AEC QUESTION + CONSTRUCTION PERMIT PROCESS + REACTOR, PWR + REPORT, PSAR + ZION 1 AND 2 (PWR)

11-21923

ALSO IN CATEGORY 9

PARRY DL

NONDESTRUCTIVE FLAW DETECTION IN NUCLEAR POWER INSTALLATIONS

PHILLIPS PETROLEUM COMPANY, IDAHO FALLS, IDAHO

2 PAGES, ANS TRANSACTIONS 10(1), PAGES 330-331 (JUNE 1967), SAN DIEGO, CALIF.

INVESTIGATIONS WERE CONDUCTED INTO THE FEASIBILITY OF APPLYING ACOUSTIC PHENOMENA TO FLOW DIAGNOSTICS. THEY WERE DIRECTED AT DEVELOPING A NONDESTRUCTIVE TECHNIQUE FOR THE DETECTION AND DEFINITION OF FLAWS IN THE LARGE COMPLEX PRESSURE VESSELS AND PRIMARY SYSTEM OF NUCLEAR POWER INSTALLATIONS. THEY CONSISTED IN APPLYING THE TECHNIQUE OF DETECTION AND INTERPRETING ACOUSTIC EMISSIONS EMANATING FROM MATERIALS UNDER APPLIED STRESS.

\*TEST, NONDESTRUCTIVE + \*TEST, PRESSURE VESSEL + FAILURE, PRESSURE VESSEL + INSTRUMENTATION, TESTING + PRESSURE VESSEL + STRESS STRAIN DATA

11-22108

REMOTE DISASSEMBLY AND EXAMINATION OF THE PM-2A REACTOR VESSEL  
IDAHO NUCLEAR CORP.

1 PAGE, 1 FIGURE, TRANSACTIONS 10(2), PAGE 666, (NOV. 1967), PRESENTED AT THE 1967 WINTER MEETING OF THE AMERICAN NUCLEAR SOCIETY, CHICAGO, ILLINOIS, NOVEMBER 5-9, 1967

ALL THE REACTOR VESSEL INTERNALS WERE REMOVED REMOTELY, AND THE VESSEL WAS MADE READY FOR REMOTE NONDESTRUCTIVE TESTING. THE VESSEL WAS FIRST TESTED IN THE AS-RECEIVED CONDITION WITH NO FAILURE. A DEFECT WAS THEN MACHINED INTO ITS WALL. THE OVERALL TEST PROGRAM CONSISTED OF EIGHT SEPARATE TEST SEQUENCES. THE DEFECT WAS ENLARGED BETWEEN EACH TEST. NEW STRAIN GAGES WERE INSTALLED AFTER EACH DEFECT ENLARGEMENT. ON NOVEMBER 18, 1966, THE VESSEL WAS PRESSURIZED, AND A BRITTLE-FRACTURE-TYPE FAILURE OCCURRED. AFTER RUPTURE OF THE VESSEL, A QUARTER-SECTION SLAB WAS REMOVED REMOTELY USING AN OXYGEN-ACETYLENE CUTTING TORCH. ONE HUNDRED SPECIMENTS (TENSILE TEST, DROP-WEIGHT TEAR TEST, CHAPPY V-NOTCH, AND WEDGE-OPENING-LOADING FRACTURE TOUGHNESS TEST) WERE MACHINED FROM THIS SLAB. THE VESSEL WAS PLACED IN STORAGE TO AWAIT ADDITIONAL FUNDING FOR FURTHER SPECIMEN PREPARATIONS AND

CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-22108 \*CONTINUED\*  
EXAMINATIONS.

\*BRITTLE FRACTURE + \*FAILURE, PRESSURE VESSEL + \*PM 2A (PWR) + \*PRESSURE VESSEL + \*TEST, DESTRUCTIVE + \*TEST, PRESSURE VESSEL + DOSIMETRY, GENERAL + STEEL + TEST, NONDESTRUCTIVE

11-22109

HAMILTON LJ + NYER R + SCHROCK VF  
PROPAGATION OF SHOCK WAVES THROUGH TWO-PHASE, TWO-COMPONENT MEDIA  
UNIVERSITY OF CALIFORNIA, BERKELEY

4 PAGES, 1 FIGURE, 3 REFERENCES, ABSTRACT IN ANS TRANSACTIONS 10(2), PAGE 660, (NOV. 1967), PRESENTED AT THE 1967 WINTER MEETING OF THE AMERICAN NUCLEAR SOCIETY, CHICAGO, ILLINOIS, NOVEMBER 5-9, 1967

A THOROUGH UNDERSTANDING OF HOW PRESSURE WAVES PROPAGATE THROUGH TWO-PHASE MEDIA IS NECESSARY FOR SAFE REACTOR DESIGN. PREVIOUS EXPERIMENTAL INVESTIGATIONS OF THE PROPAGATION OF SHOCK WAVES THROUGH TWO-PHASE MEDIA, USING A SHOCK-TUBE-TYPE APPARATUS, WERE LIMITED TO THE CASE WHERE THE WAVE PASSED THROUGH A MIXTURE THAT WAS ESSENTIALLY AT REST. A LOOP WAS CONSTRUCTED TO INVESTIGATE THE PROPAGATION OF PRESSURE WAVES IN DUCTS CARRYING TWO-PHASE MIXTURES UNDER STEADY FLOW CONDITIONS. THE FIRST SERIES OF EXPERIMENTS WAS LIMITED TO BUBBLY, TWO-COMPONENT FLOW (AIR AND WATER). FOR VOID FRACTIONS GREATER THAN 5%, THE MEASURED VALUES OF THE SHOCK SPEED ARE CONSISTENTLY LARGER THAN THOSE PREDICTED BY THE HOMOGENEOUS MODEL OF CAMPBELL AND PITCHER.

\*CONTAINMENT, SHOCK GENERATION AND PROTECTION + \*SHOCK ABSORBER + \*SHOCK WAVE + AIR + COMPARISON, THEORY AND EXPERIENCE + VOID COEFFICIENT + WATER, GENERAL

11-22110

ALSO IN CATEGORY 17

RITCHIE AB

SAFETY EXPERIENCE AND THE CONTROL OF HAZARDS IN HOT CELL OPERATIONS AT HARWELL  
UKAEA, BERKS (HARWELL)

1 PAGE, ANS TRANSACTIONS 10(2), PAGE 679, (NOV. 1967), PRESENTED AT THE 1967 WINTER MEETING OF THE AMERICAN NUCLEAR SOCIETY, CHICAGO, ILLINOIS, NOVEMBER 5-9, 1967

THE ATOMIC ENERGY RESEARCH ESTABLISHMENT AT HARWELL, ENGLAND, HAS TWO MAJOR ACTIVE-HANDLING BUILDINGS, ONE TO PROVIDE A GENERAL-PURPOSE SERVICE AND THE OTHER FOR SPECIALIZED ACTIVE-HANDLING WORK ASSOCIATED WITH THE METALLURGICAL RESEARCH PROGRAM. THIS PAPER DESCRIBES SOME OF THE INCIDENTS THAT HAVE OCCURRED SINCE THE BUILDINGS WENT INTO SERVICE IN 1957 AND GIVES EXAMPLES OF SOME OF THE EQUIPMENT AND METHODS THAT HAVE BEEN DEVELOPED TO ENSURE THAT PROPER CONTROL OF THE HAZARDS IS MAINTAINED.

\*HOT CELL + \*OPERATING EXPERIENCE SUMMARY + ADMINISTRATIVE CONTROL + CONTAINMENT ATMOSPHERE, INERT + FIRE + HARWELL + INSPECTION AND COMPLIANCE

11-22117

ALSO IN CATEGORY 17

HOWELL GR + PRINCE K

ENTRY INTO THE WINDSCALE ADVANCED GAS-COOLED REACTOR PRESSURE VESSEL  
UKAEA, WINFRITH + UNITED KINGDOM ATOMIC ENERGY AUTHORITY, LANCASHIRE, RISLEY

8 PAGES, 6 FIGURES, JOURNAL OF THE BRITISH NUCLEAR ENERGY SOCIETY 6(3), PAGE 241-248, (JULY 1967)

IN OCTOBER 1966, THE OPERATORS OF THE WINDSCALE ADVANCED GAS-COOLED REACTOR ENTERED THE MAIN PRESSURE VESSEL AND MADE THE FIRST GENERAL INSPECTION OF THE REGION WITHIN THE UPPER DOME IN THE VICINITY OF THE HOT BOX, WITHOUT REMOVAL OF IRRADIATED FUEL FROM THE REACTOR. THIS WAS MADE POSSIBLE BY THE UPPER NEUTRON SHIELD, WHICH IS A FEATURE OF THE AGR DESIGN. IN THIS ARTICLE THE DESIGN OF THIS SHIELD AND THE INSPECTIONS MADE WITHIN THE VESSEL ARE DESCRIBED, AND THE MEASURED DOSE RATES ARE COMPARED WITH ORIGINAL ESTIMATES. IT IS CONCLUDED THAT THESE MEASUREMENTS HAVE CONFIRMED THE EFFECTIVENESS OF THE SHIELD AND THAT THE ANTICIPATED INCREASE IN DOSE RATES WILL BE SUFFICIENTLY SMALL TO PERMIT FURTHER INSPECTIONS OVER THE LIFE OF THE REACTOR.

\*COMPARISON, THEORY AND EXPERIENCE + \*INSPECTION AND COMPLIANCE + \*PRESSURE VESSEL + \*WAGR (GCR) + DOSE MEASUREMENT, INTERNAL + NEUTRON + SHIELDING

11-22118

ALSO IN CATEGORY 17

NORRIS EB + IRELAND DR + LAUTZENHEISER CE

THE SECOND INSPECTION OF THE ELK RIVER REACTOR PRESSURE VESSEL AFTER OPERATION  
SOUTHWEST RESEARCH INST., SAN ANTONIO, TEX.

SWRI-1228P9-13 +. 50 PAGES, FIGURES, TABLES, REFERENCES, JULY 21, 1967

THE ELK RIVER REACTOR PRESSURE-VESSEL INSPECTION WAS AGAIN MADE BY SOUTHWEST RESEARCH INSTITUTE AFTER THE REACTOR HAD BEEN OPERATED FOR NEARLY 2 FULL-POWER YEARS. INSPECTION PROCEDURES, SIMILAR TO THOSE USED DURING THE PREVIOUS (1966) INSPECTION, ARE DISCUSSED. NO CRACKS WERE FOUND IN NOZZLES IN THE SHELL OR HEAD AND TOP-HEAD OVERLAYS. CRACKING FOUND IN THE SHELL FLANGE OVERLAY DURING THE 1966 INSPECTION HAS NOT INCREASED, AND AGAIN IT WAS CONCLUDED THAT IT DID NOT PENETRATE INTO THE BASE STEEL. DURING THE POSTOPERATIONAL PERIOD, THE SHELL-FLANGE OVERLAY WAS COATED WITH AN UNIDENTIFIED SUBSTANCE THAT SIGNIFICANTLY IMPAIRS LIQUID PENETRANT INSPECTION. AN ULTRASONIC INSPECTION OF THE VESSEL FLANGE WAS MADE TO DETERMINE IF THE CLADDING CRACKS HAD PENETRATED INTO THE BASE STEEL. THE OBSERVATIONS CONFIRMED THE RESULTS OF THE PATCH-GROUNDING INSPECTION.

CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-22118 \*CONTINUED\*  
AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA,  
\$3.00 COPY, \$0.65 MICROFICHE

\*ELK RIVER (BWR) + \*INSPECTION AND COMPLIANCE + \*INTEGRITY + \*PRESSURE VESSEL + CLAD + FLANGE +  
TEST, NONDESTRUCTIVE

11-22119  
CORROSION PROTECTION FOR PRESTRESSING TENDONS  
1 PAGE, 1 FIGURE, NUCLEAR ENGINEERING 12(137), PAGE 775, (OCTOBER 1967)

LONG-TERM CORROSION PROTECTION FOR THE FOUR-INCH-THICK STEEL PRESTRESSING TENDONS BURIED IN  
THE 11-FT-THICK WALLS OF THE CONCRETE PRESSURE VESSEL AT WYFCA NUCLEAR POWER STATION IN  
ANGLESEY HAS BEEN PERFECTED AFTER TWO YEARS OF INTENSIVE RESEARCH. A NEW METHOD OF  
PROTECTING THE CABLES, DESIGNED TO REMAIN FULLY EFFECTIVE FOR 30 YEARS (THE STATIONS  
OPERATIONAL LIFE) WAS DEvised. THE METHOD SUBJECT OF A PATENT APPLICATION CONSISTS OF  
FILLING THE METAL DUCTS WHICH SHEATH THE STEEL TENDONS WITH A HYDROCARBON COMPOUND CONTAINING  
A VOLATILE CORROSION INHIBITOR. THE CEGP STIPULATED THAT THE CHOSEN PROTECTION METHOD SHOULD  
AT ANY TIME DURING THE STATIONS LIFE ALLOW THE WITHDRAWAL AND REPLACEMENT AFTER EXAMINATION  
OF ANY OF THE TENDONS. THIS RULED OUT THE USE OF CEMENT GROUT.

\*CONTAINMENT, CORROSION PROTECTION + \*STEEL + CONCRETE, PRESTRESSED + CORROSION + PRESSURE VESSEL

11-22120  
SERPAN CZ + HAWTHORNE JR  
THROUGH-THICKNESS NOTCH DUCTILITY AND TENSION PROPERTIES AS A FUNCTION OF NEUTRON, EXPOSURE TO A SIMULATED  
PRESSURE VESSEL WALL OF A302-B STEEL  
NAVAL RESEARCH LAB., WASHINGTON, D. C.  
NRL-6575 +. 13 PAGES, FIGURES, REFERENCES, MARCH 31, 1967

NOTCH DUCTILITY AND TENSION-PROPERTY MEASUREMENTS WERE MADE WITH SPECIMENS IRRADIATED WITHIN A  
LARGE STEEL TEST ASSEMBLY SIMULATING THE PRESSURE-VESSEL WALL OF A LIGHT-WATER-MODERATED  
POWER REACTOR. THE A302-B STEEL SPECIMENS, SPACED AT INTERVALS THROUGH THE 6-IN. THICKNESS  
OF THE ASSEMBLY, SHOWED THE GREATEST EMBRITTLMENT AND TENSILE PROPERTY CHANGES FROM  
IRRADIATION LOCATIONS NEAREST THE FUEL CORE, AND CORRESPONDINGLY SMALLER CHANGES FARTHER FROM  
THE CORE. MEASURED NEUTRON FLUXES OF ENERGIES GREATER THAN 1 MEV, BASED UPON AN ASSUMED  
FISSION SPECTRUM, COMPARED WELL WITH CALCULATED SPECTRUM NEUTRON FLUXES OF ENERGIES GREATER  
THAN 1 MEV FOR ALL TEST ASSEMBLY LOCATIONS, THUS PROVIDING THE BASIS FOR FUTURE ESTIMATES OF  
PROPERTY CHANGES THROUGH THE THICKNESS OF HEAVY-WALLED REACTOR PRESSURE VESSELS.

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

\*IRRADIATION TESTING + \*STEEL + NDT DATA + PRESSURE VESSEL + TENSILE PROPERTY

11-22121  
GROUNES M + MYERS HP + HANNERZ NE  
IRRADIATION EFFECTS AT 160 TO 240 C IN SOME SWEDISH PRESSURE VESSEL STEELS  
AKTIEBOLAGET ATOMENERGI, STOCKHOLM, SWEDEN  
AE-298 +. 36 PAGES, FIGURES, TABLES, REFERENCES, SEPT. 1967

TENSILE SPECIMENS, CHARPY IMPACT SPECIMENS, AND MINIATURE IMPACT SPECIMENS OF SIX DIFFERENT  
CONDITIONS WERE IRRADIATED TO  $2.2 \times 10^{18}$  AND  $5.6 \times 10^{18}$  NEUTRONS PER SQ. CM (GREATER  
THAN 1 MEV) AT 160-240 C. THE STEELS INVESTIGATED WERE SIS 142103, 2103/R3, NO 345,  
FORWELD, FORWELD HS, AND OK 54 P. THERE IS NO CORRELATION BETWEEN THE INCREASE IN  
TRANSITION TEMPERATURE AND INITIAL TRANSITION TEMPERATURE. HOWEVER, CHANGES IN STRENGTH AND  
DUCTILITY CAN BE CORRELATED TO THE INITIAL YIELD STRENGTH.

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

\*IRRADIATION TESTING + \*NDT DATA + \*STEEL + PRESSURE VESSEL

11-22122  
GRUHL HH  
THE SIEMENS PRESTRESSED CONCRETE PRESSURE VESSEL, MARCH 1967  
SIEMENS-SCHUCKERTWERKE, GERMANY  
9 PAGES, 3 FIGURES, CRESI MEETING, APRIL 1967

PROLONGED EFFORTS HAD BEEN MADE IN THE REACTOR DEVELOPMENT DEPARTMENT OF SIEMENS TO ACHIEVE A  
SUITABLE DESIGN CONCEPT FOR APPLYING PRESTRESSED-CONCRETE CONSTRUCTION TO HIGH-PRESSURE  
VESSELS. THE SUCCESSFUL CONCLUSION OF THIS WORK WAS FOLLOWED BY A PROGRAMME DESIGNED TO  
DEVELOP THE CONCEPT OF A PRESSURE VESSEL FOR AN OPERATION PRESSURE OF 100 KG/SQ. CM AND 7.5 M  
INTERNAL DIAMETER AS FAR AS THE CONSTRUCTION STAGE. 1/3RD-SCALE MODEL OF THIS PRESSURE  
VESSEL WAS ERRECTED, AND A LARGE NUMBER OF TESTS HAVE BEEN AND WILL BE PERFORMED ON THIS  
MODEL, WHICH INCLUDE EXTENSIVE TEMPERATURE AND STRAIN MEASUREMENTS WITHIN THE CONCRETE WALL.

AVAILABILITY - H. H. GRUHL, REACTOR-DEVELOPMENT-DEP., SIEMENS AG, EFLANGEN, GERMANY

CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-22122 \*CONTINUED\*

\*CONCRETE, PRESTRESSED + \*PRESSURE VESSEL + CONTAINMENT RESEARCH AND DEVELOPMENT + GERMANY + MEASUREMENT, STRAIN GAGE + MEASUREMENT, TEMPERATURE + MODEL TESTING

11-22123

SUMMARY OF BASIC RESEARCH AND DEVELOPMENT PROGRAM FOR PRESTRESSED CONCRETE REACTOR VESSELS  
OAK RIDGE NATIONAL LAB., TENN.  
32 PAGES, 5 FIGURES, 28 REFERENCES, CREST MEETING, APRIL 1967

THE PROGRAM DESCRIBED IS AIMED AT INVESTIGATING AND IMPROVING THE BASIC TECHNOLOGY AS IT APPLIES TO CONCRETE VESSELS FOR ALL REACTOR TYPES, AND IT IS BEING COORDINATED WITH THE PROJECT-SPONSORED RESEARCH AND DEVELOPMENT WORK TO ENSURE THAT THERE IS NO UNDERSIRABLE DUPLICATION OF EFFORT. ALTHOUGH SOME WORK IN THE BASIC PROGRAM IS BEING CARRIED OUT AT THE OAK RIDGE NATIONAL LABORATORY, THE MAJORITY IS BEING SUBCONTRACTED TO DRAW ON THE EXTENSIVE KNOWLEDGE AND RESEARCH CAPABILITIES OF CONCRETE SPECIALISTS AT UNIVERSITIES AND RESEARCH LABORATORIES AND TO ESTABLISH A NUCLEUS OF CONCRETE EXPERTS WHO HAVE CONTRIBUTED TO, AND ARE FAMILIAR WITH, THE PCRV TECHNOLOGY. THE PROGRAM, AS PRESENTLY CONCEIVED, WILL EXTEND OVER A PERIOD OF FIVE OR SIX YEARS. SINCE IT HAS BEEN IN EXISTENCE FOR LESS THAN ONE YEAR, ONLY THE INITIAL EFFORTS HAVE BEEN IDENTIFIED.

AVAILABILITY - OAK RIDGE NATIONAL LAB., TENN.

\*CONCRETE, PRESTRESSED + \*PRESSURE VESSEL + CONTAINMENT RESEARCH AND DEVELOPMENT + CONTAINMENT VESSEL LOADING + CREEP BEHAVIOR + DEFORMATION + IRRADIATION TESTING + MODEL TESTING + TEST, PRESSURE VESSEL + THERMAL CONSIDERATION

11-22124

MILLE KE  
MEASUREMENTS ON THE MODEL OF A PRESTRESSED CONCRETE PRESSURE VESSEL  
TECHNISCHE UNIVERSITAT BERLIN, INSTITUT FUR BAUKONSTRUKTIONEN UND FESTIGKEIT  
5 PAGES, CREST MEETING, APRIL 1967

RESULTS INDICATE THAT THE AVERAGE STRESS IN THE CONCRETE IS ABOUT EQUAL TO THE AVERAGE STRESS PREDICTED BY CALCULATION. DUE TO THE LARGE NUMBER OF CHANNELS FOR THE PRESTRESSING REINFORCEMENT AND THE LOCALLY CONCENTRATED APPLICATION OF THE EXTERNAL FORCES, LOCAL DISTURBANCES WERE TO BE EXPECTED. AS A RESULT, A LIMITED NUMBER OF SENSORS DID NOT PRODUCE INTERPRETABLE RESULTS. A FINAL EVALUATION OF THE RESULTS OF ALL MEASUREMENTS WILL BE COMPLETED SOON. IT WILL BE POSSIBLE TO MAKE REACTOR PRESSURE VESSELS OUT OF PRECAST CONCRETE ELEMENTS WHICH ARE ASSEMBLED AND PRESTRESSED TOGETHER IN SITU. THEY OFFER THE ADVANTAGE THAT THE END CAPS CAN BE REMOVED AT A LATER DATE TO GIVE UNHINDERED ACCESS TO THE ENTIRE INTERNAL CROSS-SECTION OF THE VESSEL, AND THEY WILL BE ABLE TO RESIST THE EXPECTED LOADINGS.

AVAILABILITY - K. E. MILLE, INSTITUT FUR BAUKONSTRUKTIONEN UND FESTIGKEIT, TECHNISCHE UNIVERSITAT, BERLIN, WEST GERMANY

\*CONCRETE, PRESTRESSED + \*MODEL TESTING + \*PRESSURE VESSEL + CONTAINMENT VESSEL LOADING + MEASUREMENT, STRAIN GAGE + MEASUREMENT, TEMPERATURE

11-22125

COSTES D  
FRENCH SAFETY STUDIES ON PRESTRESSED CONCRETE PRESSURE VESSELS  
CENTRE D ETUDES NUCLEAIRES DE SACLAY, FRANCE  
5 PAGES, CREST MEETING, APRIL 1967

THE PROGRAM DID NOT BRING TO LIGHT ANY NEW HAZARDS FOR PRESTRESSED CONCRETE VESSELS SINCE ALL THE CLEAN RUPTURES WERE CAUSED EITHER BY CONSIDERABLY INCREASED PRESSURES OR BY CONSIDERABLE WEAKENING OF THE PRESTRESSING SYSTEM. THEY DO HOWEVER TEND TO SHOW THAT THERE IS A RISK OF RUPTURE WITHOUT PREVIOUS CRACKING IN THE CASE OF VERY HEAVILY CORRODED AND WELL-GROUTED TENDONS. THESE FINDINGS MAY BE THOUGHT SOMEWHAT CONTRADICTIONARY. MOREOVER, THIS TYPE OF RUPTURE WOULD HAVE LESS TENDENCY TO APPEAR IN A VESSEL SUBJECTED TO A THERMAL GRADIENT WHERE CRACKS WOULD IN THE FIRST INSTANCE APPEAR ON THE OUTSIDE.

AVAILABILITY - D. COSTES, CENTRE D-ETUDES NUCLEAIRES DE SACLAY, FRANCE

\*CONCRETE, PRESTRESSED + \*MODEL TESTING + \*PRESSURE VESSEL + \*TEST, PRESSURE VESSEL + FAILURE, GENERAL + FRANCE + MOCKUP

11-22128

COMPLIANT FLANGE VESSEL CLOSURE  
U.S. ATOMIC ENERGY COMMISSION  
FRENCH PATENT NO. 1,457,796 +. 6 PAGES, 1 FIGURE, NOVEMBER 15, 1965, IN FRENCH

THIS INVENTION RELATES TO NUCLEAR REACTOR PRESSURE VESSEL COVERS HAVING RESILIENT SEALS. THE DEVICE OF THIS INVENTION COMPRISES A FIRST FLEXIBLE BELLOWS AFFIXED TO REACTOR VESSEL COVER AND A SECOND FLEXIBLE BELLOWS AFFIXED PROXIMATE THE TOP ACCESS PORT OF NUCLEAR REACTOR PRESSURE VESSEL WHEREBY THE ABUTTING FACES OF FIRST AND SECOND BELLOWS FORM THE PRESSURE RESISTANT SEAL WHEN COVER IS PLACED OVER THE TOP ACCESS PORT OF PRESSURE VESSEL. UPWARD MOVEMENT OF COVER, DUE TO AN OVERPRESSURE TRANSIENT, WILL BE TAKEN UP BY THE EXPANSION OF

CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-22128 \*CONTINUED\*

SAID FIRST AND SECOND FLEXIBLE FLOWS TO MAINTAIN THE INTEGRITY OF THE SEAL.

AVAILABILITY - U. S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D. C., \$0.30 PER PAGE

\*FLANGE + \*PRESSURE VESSEL + \*SEAL

11-22129

SPECIAL REPORT ON FAILURE OF A BOILER DURING HYDROSTATIC TEST AT SIZEWELL NUCLEAR POWER STATION  
WEST OF SCOTLAND IRON AND STEEL INSTITUTE  
80 PAGES, 70 FIGURES, 27 TABLES, THE INSTITUTE, GLASGOW

THE PURPOSE OF THE REPORT IS TO MAKE PUBLIC THE RESULTS OF THE INVESTIGATION INTO THE FAILURE OF A BOILER UNDER HYDROSTATIC TEST AT SIZEWELL NUCLEAR POWER STATION. THE ORIGINAL INTENTION WAS MERELY TO REPORT THE METALLURGICAL AND ENGINEERING RESULTS, BUT THE METALLURGICAL FINDINGS WERE SUCH THAT IT WAS FELT RELEVANT TO INCLUDE IN THE REPORT TWO FURTHER PAPERS, ONE OF WHICH CORROBORATES THE DELETERIOUS EFFECT OF A FRACTURE ON THE IMPACT PROPERTIES OF SUCH A LOW-ALLOY STEEL, WHILST THE OTHER DESCRIBES THE WIDE PLATE FRACTURE CHARACTERISTICS OF THIS MATERIAL IN THE AS-WELDED AND STRESS-RELIEVED CONDITIONS.

AVAILABILITY - WEST OF SCOTLAND IRON AND STEEL INSTITUTE, 39 ELMBANK CRESCENT, GLASGOW

\*BRITTLE FRACTURE + \*FAILURE, COMPONENT + \*STEAM GENERATOR + \*TEST, PROOF + FRACTURE TOUGHNESS + NDT DATA

11-22155

ALSO IN CATEGORIES 7 AND 12

LEFRANCOIS J

MECHANICAL GAP TRANSFER PUMP

COMMISSARIAT A L'ENERGIE ATOMIQUE

BRITISH PATENT 1,068,709 +. 5 PAGES, 2 FIGURES, MAY 10, 1967

A MECHANICAL TRANSFER PUMP PARTICULARLY ADAPTED TO THE TRANSFER OF RADIOACTIVE GASES COMPRISES A LIQUID PISTON MOVING IN A COMPRESSION CHAMBER. THE CHAMBER HAS INTAKE AND DELIVERY VALVES WHOSE OPENINGS AND CLOSINGS ARE SYNCHRONIZED WITH THE MOVEMENT OF THE PISTON, WITH THE INTAKE VALVE LOCATED ON THE AXIS OF THE DELIVERY VALVE. THE DELIVERY VALVE IS MADE UP OF A FLOATING MEMBER, WHICH IS RAISED DIRECTLY FROM ITS SEATING AS A RESULT OF COMPRESSION OF THE VOLUME OF GAS PRODUCED BY THE MOVEMENT OF THE LIQUID PISTON. A PORTION OF THE COMPRESSION CHAMBER CONTAINING THE LIQUID PISTON IS FORMED BY A PAIR OF BELLWS THAT ARE OPERABLE BOTH TO CONTRACT OR BOTH TO EXPAND TOGETHER SO AS TO ENSURE MAXIMUM LIQUID DISPLACEMENT IN THE CHAMBER.

AVAILABILITY - THE PATENT OFFICE, 25 SOUTHAMPTON BLDG., LONDON, W. C. 2, ENGLAND, \$0.49 PER COPY

\*PATENT + \*PUMP + TRACER, GAS

11-22156

ALSO IN CATEGORY 3

BAUDIFFER G + ROSSETTI L

DEVICE FOR HANDLING AND OBSERVING ELONGATED RODS WHICH EMIT RADIATION

EUROPEAN ATOMIC ENERGY COMMUNITY

BRITISH PATENT 1,058,140 +. 4 PAGES, 1 FIGURE, FEBRUARY 8, 1967

DESCRIBES A DEVICE USED IN HANDLING AND OBSERVING ELONGATED BODIES WHICH EMIT RADIATION, SUCH AS IRRADIATED FUEL RODS FROM A REACTOR. THE DEVICE CONSISTS OF A SEALED ENCLOSURE OF VERTICAL ELONGATED SHAPE SURROUNDED BY AN ADEQUATE RADIATION SHIELD WITH ONE OR MORE VIEWING PORTS. IN THE ENCLOSURE ARE GUIDES AND SUPPORT MECHANISMS FOR SUPPORTING AND HANDLING THE IRRADIATED BODY OR ROD.

AVAILABILITY - THE PATENT OFFICE, 25 SOUTHAMPTON BLDG., LONDON, W. C. 2, ENGLAND, \$0.49 PER COPY

\*FUEL HANDLING MACHINE + \*PATENT + CONTAINMENT DESIGN

11-22157

ALSO IN CATEGORIES 12 AND 12

CARARET J + GERARD V + VALENTIN A

LIFTING MECHANISM

COMMISSARIAT A L'ENERGIE ATOMIQUE

BRITISH PATENT 1,054,939 +. 5 PAGES, 4 FIGURES. JANUARY 11, 1967

DESCRIBES A LIFTING MECHANISM USED IN A REACTOR FACILITY TO LIFT COVERS OF TANKS OR LEAK-TIGHT VESSELS USED TO TRANSFER RADIOACTIVE MATERIALS. THE LIFTING MECHANISM IS DESIGNED SO THAT UPWARD TRAVEL IS IN TWO STAGES. THE COVER IS LIFTED WHILE REMAINING PARALLEL TO THE PLANE OF THE OPENING. IN THE SECOND STAGE, THE COVER IS REMOVED SO AS TO FREE THE OPENING. THE FIRST STAGE PERMITS THE MATERIAL FROM THE LIQUID SEAL TO DRIP INTO THE VESSEL AND NOT BE DISPERSED.

AVAILABILITY - THE PATENT OFFICE, 25 SOUTHAMPTON BLDG., LONDON, W.C. 2, ENGLAND, \$0.49 PER COPY

\*PATENT + CONTAINMENT DESIGN

CATEGORY 11  
CONTAINMENT OF NUCLFAR FACILITIES

11-22191 ALSO IN CATEGORY 12  
STRAUSS SD  
NUCLEAR POWER PLANT SAFETY  
8 PAGES, FIGURES, POWER, PAGES 159-166 (JANUARY 1968)

BRIEF NONTECHNICAL DISCUSSION OF THE VARIOUS METHODS USED TO PREVENT RELEASE OF RADIOACTIVE FISSION PRODUCTS FROM BWP AND PWR POWER PLANTS. SAFEGUARDS DESCRIBED INCLUDE (1) EMERGENCY CORE-COOLING SYSTEM TO PREVENT HIGH FUEL TEMPERATURE AND (2) CONTAINMENT SYSTEMS, INCLUDING PRESSURE SUPPRESSION, PRESSURE RELIEF, CONTAINMENT COOLING, FILTRATION SYSTEMS, SPRAYS, ICE CONDENSERS, STEAM VENTING, AND SUBATMOSPHERIC CONTAINMENT.

\*ENGINEERED SAFETY FEATURE + CONTAINMENT, GENERAL + EMERGENCY COOLING CONSIDERATIONS + PLANT PROTECTIVE SYSTEM + REACTOR, BWR + REACTOR, PWR + SYSTEM DESCRIPTION

11-22463 ALSO IN CATEGORIES 4 AND 12  
HOLCOMB WF  
EXPERIENCE WITH GLOVEBOX INERT ATMOSPHERE CONTROL SYSTEM  
ARGONNE NATIONAL LAB., IDAHO DIVISION, IDAHO FALLS, IDAHO  
4 PAGES, 2 FIGURES, NUCLEAR ENGINEERING AND DESIGN 6(3), PAGE 213-216, (OCT. 1967)

THE HANDLING AND PREPARATION OF SODIUM FOR FUEL ELEMENTS AT THE FUEL CYCLE FACILITY FOR THE SECOND EXPERIMENTAL BREEDER REACTOR REQUIRES THE USE OF A GLOVEBOX EQUIPPED WITH A RECIRCULATING INERT ATMOSPHERE OF HIGH PURITY. THE ARGON GAS PURIFICATION SYSTEM CONSISTS OF A PALLADIUM CATALYST FOR REMOVING OXYGEN, MOLECULAR SIEVE DRYER FOR REMOVING WATER, AND A CANNED BLOWER FOR CIRCULATING THE GAS. THE PURIFICATION SYSTEM SERVES A 250 CU. FT GLOVEBOX COMPLEX AND WITH CONTINUOUS OPERATION CAN MAINTAIN AN ATMOSPHERE WITH OXYGEN IMPURITIES OF 2 PPM AND WATER IMPURITIES OF 6 PPM AT AN INLEAKAGE RATE OF 0.002 CU. FT/HR OF AIR WHILE OPERATING THE GLOVEBOX COMPLEX AT A NEGATIVE PRESSURE OF 1 IN. OF WATER.

\*ARGON + \*DECONTAMINATION + \*GLOVE BOX + \*SODIUM + OPERATING EXPERIENCE

11-22895 ALSO IN CATEGORIES 10 AND 17  
MCCARTHY JF  
SELECTED FERMI OPERATING EXPERIENCE - OCT 1966  
ATOMIC POWER DEVELOPMENT ASSOC., INC., DETROIT, MICH. + POWER REACTOR DEVELOPMENT CO., DETROIT, MICH. + DETROIT EDISON CO., MICH.  
APDA-CFE-3 +. 40 PAGES, MAY 1967

TWO-DAY LEAK-RATE TEST AT 2 PSIG GAVE 100 CFM/DAY (REFERENCE) AND ZERO (ABSOLUTE). SPORADIC GROUNDS (AGAIN) IN 4800-V SYSTEM WERE TRACED TO BURIED UNDERGROUND CABLE FILLED WITH WATER - NOT UNUSUAL. ONE GROUND IN EITHER SUPPLY. \*\*\* DISCUSSES OCT. 5 FUEL MELTDOWN WITH EXACTLY SAME LANGUAGE AS FOUND IN EF-38. DISCUSSES INDICATIONS ON FISSION-PRODUCT DETECTOR BEING CALIBRATED. DISCUSSES APPARENT REACTIVITY LOSSES DURING MELTDOWN, WHICH APPARENTLY REACHED 30 CENTS JUST BEFORE THE SHUTDOWN.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA \$3.00 COPY, \$0.85 MICROFICHE

\*ELECTRIC POWER, GENERAL + \*FUEL MELTDOWN + \*INSTRUMENTATION, DETECTION FAILED FUEL ELEMENT + \*TEST, LEAK RATE + CONTAINMENT, LOW PRESSURE + FERMI (LMFBR) + INCIDENT, GENERAL + REACTIVITY EFFECT, ANOMALOUS + REACTOR, FAST + REPORT, OPERATIONS SUMMARY

11-22938 ALSO IN CATEGORY 18  
ISOLATION VALVE SEAL WATER SYSTEM  
COMMONWEALTH EDISON COMPANY  
4 PAGES, PAGES 6.2.5-1 THRU 6.2.5-4 OF THE ZION STATION 1 AND 2 PRELIMINARY SAFETY ANALYSIS REPORT, VOLUME II, JUNE 15, 1967, DUCKETS 50-2957304, TYPE--PWR, MFG.--WEST., AE--SGT + LUNDY

OPERATION OF THE SYSTEM WILL REDUCE OFF-SITE DOSES A FACTOR OF 120 BY ENSURING EFFECTIVENESS OF CONTAINMENT-ISOLATION VALVES IN A LOSS-OF-COOLANT ACCIDENT. PROVIDES A WATER SEAL ON LINES WHICH COMMUNICATE WITH THE CONTAINMENT ATMOSPHERE. AUTOMATIC SEAL PROVIDED FOR THE FOLLOWING LINES - REACTOR-COOLANT-SYSTEM SAMPLE, RESIDUAL-HEAT-REMOVAL SAMPLE, LETDOWN, SAFETY-INJECTION TEST, STEAM-GENERATOR SHELL-SIDE FILL-AND-RAIN BLOWDOWN AND SAMPLE. MANUAL SEAL PROVIDED FOR SEVERAL OTHERS. SYSTEM INCLUDES AN 1100-GAL TANK AND PIPING. DESIGNED FOR 150 PSIG. OPERATION INITIATED BY SIGNAL THAT INITIATES CONTAINMENT ISOLATION. WATER IS INJECTED INSIDE PIPING BETWEEN TWO ISOLATION POINTS LOCATED OUT-SIDE CONTAINMENT AND AT PRESSURE HIGHER THAN DESIGN PRESSURE OF CONTAINMENT.

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

\*CONTAINMENT LEAKAGE CONTROL + ACCIDENT, LOSS OF COOLANT + CONTAINMENT PENETRATION, CLOSURE OF + ENGINEERED SAFETY FEATURE + REACTOR, PWR + REPORT, PSAR + ZION 1 AND 2 (PWR)

11-22987 ALSO IN CATEGORY 7

CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-22987 \*CONTINUED\*

ALBAUGH FW + FUQUAY JJ + HARTY H + VOILAND EE + WORLTON DC  
NUCLEAR SAFETY QUARTERLY REPORT APRIL, MAY, JUNE, 1967 FOR NUCLEAR SAFETY BRANCH OF USAEC DIVISION OF  
REACTOR DEVELOPMENT AND TECHNOLOGY  
BATTELLE-NORTHWEST, RICHLAND, WASHINGTON  
BNWL-537 +. 33 PAGES, FIGURES, TABLES, DECEMBER 1967

THE STATUS OF THE FOLLOWING PROJECTS ARE REPORTED - CONTAINMENT SYSTEMS EXPERIMENTS (CSE),  
FISSION-PRODUCT-AEROSOL CONTROL, CRACK DETECTION IN PRESSURE PIPING BY ACOUSTICAL EMISSION,  
COLUMBIA RIVER SEDIMENTATION STUDIES, DISPOSAL OF REACTOR OFF-GAS INTO SOIL SYSTEMS, AND  
SIMULATION MODELING OF THERMAL GENERATION IN SELECTED RIVER SYSTEMS.

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

\*AEROSOL PRODUCTION + \*CONTAINMENT PAINT + \*CSE + \*TEST, NONDESTRUCTIVE + \*WASTE TREATMENT, FIXATION +  
\*WATER POLLUTION + AEROSOL + AEROSOL PROPERTIES + CONTAINMENT LEAKAGE CONTROL + CONTAINMENT SPRAY +  
FISSION PRODUCT TRANSPORT + FISSION PRODUCT, IODINE + ORGANIC IODIDE + PIPING + SPRAY, GENERAL +  
WASTE DISPOSAL, GAS + WASTE DISPOSAL, LIQUID + WASTE DISPOSAL, TERRESTRIAL

11-23013 ALSO IN CATEGORY 18

THREE MILE ISLAND CONTAINMENT-BUILDING DESIGN SPECIFICATIONS  
METROPOLITAN EDISON COMPANY  
33 PAGES, APPENDICES 5A-F OF VOLUME 3 OF THREE MILE ISLAND PRELIMINARY SAFETY ANALYSIS REPORT, DOCKET  
50-289, TYPE--PWR, MFG.--B+W, AE--GILBERT ASSOC.

AMPLIFIED TID-7024 IS BASIC SEISMIC DESIGN. CLASS I STRUCTURES DESIGNED SO STEADY-STATE  
STRESSES, COMBINED WITH 0.06 G HORIZONTAL AND 0.04 G VERTICAL, SHALL BE WITHIN WORKING STRESS  
LIMITS, AND 0.12 G HORIZONTAL AND 0.06 G VERTICAL SHALL NOT IMPAIR FUNCTION. DAMPING FACTORS  
ARE 5% OR LESS. METHOD OF DESIGN STRESS ANALYSIS OUTLINED. BUILDING INSTRUMENTATION WILL  
REVEAL DISPLACEMENTS DURING 62.3 PSIG TEST, MADE IN 5 PSIG STEPS.

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

\*CONTAINMENT INSTRUMENTATION + \*EARTHQUAKE ENGINEERING + CONCRETE, PRESTRESSED +  
CONTAINMENT, HIGH PRESSURE + DESIGN CRITERIA + REACTOR, PWR + REPORT, PSAR + THREE MILE ISLAND (PWR)

11-23302

DURGIS F + BONVALLET C + DAWANCE G + MARECHAL JC  
COMPORTEMENT D UN CAISSON EN BETON PRECONTRAIT SOUMIS A UN GRADIENT DE TEMPERATURE ELEVE  
CENTRE D ETUDES NUCLEAIRES DE SACLAY, GIF-SUR-YVETTE, FRANCE + CENTRE EXPERIMENTAL DE RECHERCHES ET D  
ETUDES, PARIS, FRANCE  
28 PAGES, 44 FIGURES, 1 TABLE, 6 REFERENCES, NUCLEAR ENGINEERING AND DESIGN, 6(13), PAGES 273-300 (OCTOBER  
1967) IN FRENCH

IN STUDYING THE BEHAVIOUR OF A PRESTRESSED CONCRETE PRESSURE VESSEL SUBJECTED TO A HIGH  
TEMPERATURE GRADIENT, A KNOWLEDGE OF THE MECHANICAL AND THERMAL PROPERTIES OF THE CONCRETE IS  
NECESSARY. THESE PROPERTIES HAVE BEEN DETERMINED ON TEST PIECES MADE OF A STANDARD CONCRETE  
BASED ON SILICIOUS LIMESTONE GRANULATE, KEPT AT 20 C IN A CONTROLLED-HUMIDITY CELL. THESE  
PRELIMINARY STUDIES WERE FOLLOWED BY THE USE OF A LOADING MACHINE BY MEANS OF WHICH CONCRETE  
INTENDED FOR THE CONSTRUCTION OF PRESSURE VESSELS CAN BE EXAMINED FROM THE VIEWPOINT OF  
RESISTANCE TO THERMAL CYCLING. THE STUDY WAS THEN CONTINUED ON A 1/10 MODEL OF A CYLINDRICAL  
PRESTRESSED CONCRETE PRESSURE VESSEL WITH NO BASE OR LATERAL OPENING. THE VARIATION OF THE  
TEMPERATURE GRADIENT IN THE THICKNESS OF THE CYLINDER WAS FOLLOWED DURING THE VARIOUS HEATING  
CYCLES. FROM THE TESTS ON THE MODEL IT WAS POSSIBLE TO DEVELOP A METHOD OF STRUCTURAL  
ANALYSIS FOR CONCRETE PRESSURE VESSELS SUBJECTED TO A TEMPERATURE GRADIENT.

\*CONCRETE, PRESTRESSED + \*MODEL TESTING + \*PRESSURE VESSEL + \*PROPERTY, PHYSICAL + STRESS ANALYSIS +  
THERMAL ANALYSIS

11-23303

NUCLEAR SAFETY WITH ICE CUBES  
2 PAGES, 3 FIGURES, POWER ENGINEERING 71(11), PAGES 73-74 (NOVEMBER 1967)

WESTINGHOUSE HAS DEVELOPED A SYSTEM WHICH KEEPS A BLANKET OF ICE CUBES AROUND THE WALL OF THE  
CONTAINMENT VESSEL. THIS LOWERS THE CONVENTIONAL PEAK CONTAINMENT PRESSURE REQUIREMENT (40  
TO 60 PSI) DOWN TO A LEVEL OF 10 TO 15 PSI, AND, AT THE SAME TIME IT REDUCES THE SIZE OF THE  
CONTAINMENT VESSEL BY 50%. HEIGHT OF A 1000-MW PLANT DOME IS REDUCED FROM 212 TO 120 FT IN  
THE NEW DESIGN.

\*CONTAINMENT, ICE CONDENSED + CONTAINMENT RESEARCH AND DEVELOPMENT + ECONOMICS + MOCKUP + MODEL TESTING

11-23304

ENGEL M  
CALCULATION METHODS AND RESULTS OF LEAK-PATE TESTINGS ON CONTAINMENT VESSELS OF NUCLEAR POWER PLANTS  
TECHNISCHER UBERWACHUNGS-VEREIN BAYERN F.V., MUCHEM, GERMANY  
9 PAGES, FIGURES, TABLES, REFERENCES, ATOMKERNENERGIE 12 (7-8) PAGES 240-248 (1967) IN GERMAN



CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-23304 \*CONTINUED\*

A METHOD FOR THE CALCULATION OF LEAK-RATES FOR REACTOR-CONTAINMENTS IS PRESENTED, INCLUDING AMONG OTHERS A STATISTICAL ANALYSIS OF ERRORS OF MEASUREMENT. THE METHOD USES A DIGITAL-COMPUTER CODE. THUS IT IS POSSIBLE TO OBTAIN STATISTICALLY SECURED VALUES OF THE MAGNITUDE OF THE LEAK-RATE, EVEN DURING TEST PERFORMANCE. EXPERIMENTAL ARRANGEMENTS AND RESULTS OF THE TESTS ARE SHOWN FOR TWO EXAMPLES. THE ERROR OF MEASUREMENT IS ESSENTIALLY SMALLER THAN OBTAINED BY EARLIER MEASUREMENTS.

\*COMPUTER PROGRAM + \*CONTAINMENT, GENERAL + \*CONTAINMENT, HIGH PRESSURE + \*ERROR ANALYSIS + \*LEAK RATE + \*STATISTICAL ANALYSIS + TEST, LEAK RATE

11-23305

SALKIN RV + LAGASSE PE

STUDY OF EMBRITTEMENT BY PLASTIC FATIGUE OF STEELS FOR REACTOR VESSELS  
CENTRE NATIONALE DE RECHERCHES METALLURGIQUES, LIEGE, BELGIUM  
EURAE-1892 + EUR-3385 +. 128 PAGES, JULY 5, 1967

(1) THE EFFECT OF PERIODS OF MAINTENANCE AT IMPOSED MAXIMUM DEFORMATION IS TO REDUCE THE ENDURANCE TO PLASTIC FATIGUE IN BIAxIAL ALTERNATE BENDING. (2) IN THE EXPERIMENTAL CONDITIONS WHICH HAVE BEEN CONSIDERED, STRAIN-HARDENING AT 300 C PRIOR TO THE ALTERNATE BENDING FATIGUE TEST AT 300 C DOES NOT NECESSARILY INVOLVE A REDUCTION OF THE ENDURANCE TO PLASTIC FATIGUE. (3) IF A STEEL IS SUBJECTED TO ALTERNATE PLASTIC DEFORMATIONS, IT IS OBSERVED THAT, DURING THE FIRST DEFORMATION CYCLES, THE MAXIMUM STRESSES ATTAINED AND THE CHARACTERISTIC PLASTIC DEFORMATION OF EACH CYCLE ARE UNSTABLE, WHEN DEFINITE TOTAL DEFORMATIONS ARE IMPOSED ON THE MATERIAL.

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

\*EMBRITTEMENT + \*FAILURE, FATIGUE + \*STEEL + DEFORMATION + PLASTICITY + PRESSURE VESSEL + TENSILE PROPERTY

11-23306

THE MULTI-LAYER CPV CONCEPT

3 PAGES, FIGURES, NUCLEAR ENGINEERING, PAGES 926-928 (DECEMBER 1967)

THE NEW CONCEPT CONSISTS OF A VESSEL WITH TWO MULTILAYER WALLS SEPARATED BY A GAP FILLED WITH DEMINERALISED WATER. THE WATER IS KEPT AT CORE COOLANT PRESSURE BY A SIMPLE TWO-CHAMBER PRESSURE-EQUALIZATION UNIT, AND A COOLING SYSTEM IS INCORPORATED IN THE GAP.

\*CONCRETE, PRESTRESSED + \*COOLING, GENERAL + \*PRESSURE VESSEL + \*THERMAL INSULATION + CONTAINMENT LINER

11-23307

BELLAEV KI

NUCLEAR REACTOR AND PRESSURE VESSEL THEREFOR  
AKIEBOLAGFT ATOMENERGI

BRITISH PATENT 1,075,476 +. 3 PAGES, FIGURES, JULY 12, 1967

A NUCLEAR REACTOR, COOLED AND MODERATED BY PRESSURIZED FLUID, COMPRISES AN OUTER CONCRETE PRESSURE VESSEL AND AN INNER STEEL VESSEL WITH AN INTERVENING SPACE. THE DIMENSIONS OF THE LATTER ARE SO CHOSEN THAT THE PRESSURE OF FLUID IN THE INNER VESSEL CAUSES IT TO EXPAND AND CONTACT THE OUTER PRESSURE VESSEL WHICH IS BUILT TO WITHSTAND ANY FURTHER INCREASE IN PRESSURE OF THE FLUID IN THE INNER VESSEL. SPACE BETWEEN THE INNER AND OUTER VESSELS IS ORIGINALLY CREATED BY HEATING THE STEEL VESSEL UNDER PRESSURE UNTIL THE YIELD POINT OF THE STEEL VESSEL IS EXCEEDED AND THE VESSEL HAS EXPANDED TO TOUCH THE OUTER VESSEL ALL AROUND. WHEN TEMPERATURE AND PRESSURE ARE REDUCED THE STEEL VESSEL CONTRACTS UNDER ELASTIC AND THERMAL DEFORMATION LEAVING A WELL DEFINED CLEARANCE BETWEEN THE TWO.

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

\*CONTAINMENT LINER + \*PRESSURE VESSEL + \*THERMAL MECHANICAL EFFECT + CONCRETE + STEEL

11-23308

ALSO IN CATEGORY 1

NEW CONTAINMENT DESIGN LOWERS NUCLEAR PLANT CAPITAL COSTS  
WESTINGHOUSE CORPORATION

2 PAGES, FIGURES, WESTINGHOUSE ENG., 27, PAGES 82-83 (MAY 1967)

A NEW CONCEPT IS DESCRIBED WHICH WILL DRASTICALLY REDUCE THE SIZE OF A NUCLEAR PLANT CONTAINMENT STRUCTURE. IT USES AN ICE BED TO SERVE AS A HEAT ABSORBER IN THE EVENT OF ACCIDENTAL RELEASE OF STEAM WITHIN THE CONTAINMENT STRUCTURE. ITS ADVANTAGES ARE - A SMALLER CONTAINMENT STRUCTURE, DESIGN FOR LOWER PRESSURES, WITH RESULTANT REDUCTION IN CAPITAL COSTS, RAPID ABSORPTION OF HEAT, AND A VIRTUALLY STATIC SYSTEM, WHICH CONTRIBUTES TO RELIABILITY. TESTS HAVE DEMONSTRATED THE EFFECTIVENESS OF THIS NEW CONTAINMENT CONCEPT AND HAVE CONFIRMED ENGINEERING ESTIMATES OF THE PERFORMANCE. THE ICE CONDENSER PERFORMS EQUALLY WELL OVER A WIDE RANGE OF CONDITIONS, INCLUDING A VARIETY OF ICE CONFIGURATIONS AND STEAM BLOWDOWN TIMES RANGING FROM 10 SEC TO 45 MIN.

\*CONTAINMENT DESIGN + \*CONTAINMENT, ICE CONDENSER + \*MODEL TESTING + ECONOMICS + MOCKUP

CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-23309  
CAMPBELL-ALLEN D + LOW EW  
PRESSURE TESTS ON END SLABS FOR PRESTRESSED CONCRETE PRESSURE VESSELS  
UNIVERSITY OF SYDNEY, SYDNEY, N.S.W., AUSTRALIA  
15 PAGES, 3 FIGURES, 7 REFERENCES, NUCLEAR ENGINEERING AND DESIGN 6(4), PAGES 345-350 (NOVEMBER 1967)

WITH THE PRESENT TREND TOWARDS CYLINDRICAL SHAPES IN THE DESIGN OF PRESTRESSED CONCRETE PRESSURE VESSELS IT MAY BE PRESUMED THAT THE MAJORITY OF VESSELS FOR FUTURE REACTORS WILL INVOLVE THE USE OF DEEP END SLABS ANCHORED TO BARREL WALLS BY AXIAL PRESTRESSING TENDONS. THE IMPORTANCE OF ISOLATING THE END SLABS FOR EXPERIMENTAL STUDY HAS BEEN POINTED OUT BY VARIOUS REPORTS ON MODEL TESTS OF COMPLETE VESSELS. THIS ARTICLE SUMMARISES THE TEST RESULTS OF A SERIES OF PRESSURE TESTS ON TWO TYPES OF SLABS. THE TESTS WERE DESIGNED PRIMARILY TO STUDY THE INFLUENCE OF SLAB THICKNESS AND OF PRESTRESS ON THE NATURE OF THE FAILURE MODE AND ON THE MAGNITUDE OF THE ULTIMATE PRESSURE. APPLICATION OF SOME OF THE CONCLUSIONS REACHED TO THE DESIGN OF END SLABS FOR CYLINDRICAL PCPV ARE SUGGESTED.

\*CONCRETE, PRESTRESSED + \*FAILURE, PRESSURE VESSEL + \*PRESSURE VESSEL + \*SLAB + \*TEST, PROOF + CYLINDER + TEST, PRESSURE VESSEL

11-23310  
HAMADA K + HAYASHI T + OGUCHI I  
STRESS ANALYSIS OF TAPEDED TRANSITION JOINTS IN REACTOR PRESSURE VESSEL  
HITACHI LMTD., JAPAN  
ORNL-TR-1769 +. 17 PAGES, TRANSLATED FROM HITACHI HYORON, 48, PAGES P12-16 (1966)

A COMPUTER CODE, TPOIKA, WAS DEVELOPED FOR THE STRESS ANALYSIS OF TAPEDED TRANSITION JOINTS IN ATOMIC REACTOR PRESSURE VESSELS. THE CALCULATED RESULTS SHOWED GOOD AGREEMENT WITH EXPERIMENTAL RESULTS REPORTED FROM AMERICA INDICATING THAT THE CODE HAS PRACTICAL VALUE. EXAMPLES OF TAPEDED TRANSITION JOINTS BETWEEN TWO CYLINDERS AND BETWEEN CYLINDER AND SPHERE WERE DISCUSSED, AND IT WAS INDICATED THAT THERE IS SOME REASON TO EXPECT THAT SOME OF THE ASME SPECIFICATIONS WILL BE MODIFIED. THIS CODE CAN BE USED IN MANY AREAS, AND IT IS EXPECTED THAT IT WILL BE USED FOR VARIOUS TYPES OF STRESS ANALYSIS WHICH WILL BE USED TOGETHER WITH THE NECESSARY EXPERIMENTAL DATA.

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

\*PRESSURE VESSEL + \*STRESS ANALYSIS + \*WELDS + COMPARISON, THEORY AND EXPERIENCE + COMPUTER PROGRAM + FLANGE + JAPAN + NOZZLE

11-23311 ALSO IN CATEGORIES 7 AND 19  
PATENTS IN THE FIELD OF CAN-RUPTURE DETECTION  
COMMISSARIAT A L-ENERGIE ATOMIQUE, SACLAY (FRANCE). CENTRE D-ETUDES NUCLEAIRES  
CEA-B1B-78 +. 141 PAGES, FIGURES, OCTOBER 1967, IN FRENCH

THE ABSTRACTS OF PATENTS ISSUED IN THE PRINCIPAL INDUSTRIAL COUNTRIES ARE LISTED ACCORDING TO SEVERAL CHAPTERS PERTAINING TO THE GENERAL PRINCIPLES OF LEAK DETECTION, DETECTION ITSELF OF FISSION PRODUCTS, APPARATUS USED DIRECTLY OR IN COMBINATION WITH AND FOR THE PURPOSE OF DETECTION, THE INDICATION AND TREATMENT OF THE DATA GIVEN, THE EXAMINATION BEFORE AND AFTER USE OF CARTRIDGE JACKETS. A CUMULATION LIST IS APPENDED, GIVING IN PROGRESSIVE ORDER THE PATENT NUMBERS FOR 18 COUNTRIES TO FACILITATE THE SEARCH OF THE ABSTRACT IN THE CORRESPONDING CHAPTER.

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

\*FUEL ELEMENT + \*INSTRUMENTATION, DETECTION FAILED FUEL ELEMENT + \*TEST, LEAK LOCATION + MONITOR, RADIATION, GENERAL

11-23312 ALSO IN CATEGORIES 17 AND 19  
LE-LEVIER MG  
FAILURES IN PIPES AND PRESSURE VESSELS CORRELATED TO NUCLEAR POWER PLANT SERVICE  
COMMISSARIAT A L-ENERGIE ATOMIQUE, SACLAY (FRANCE). CENTRE D-ETUDES NUCLEAIRES  
CEA-B1B-79 +. 32 PAGES, SEPT. 1967, IN FRENCH

THIS BIBLIOGRAPHY DEALS WITH THE PAPERS PUBLISHED ON THE FAILURES IN PIPES AND PRESSURE VESSELS CORRELATED TO NUCLEAR POWER PLANT SERVICE. THE REFERENCES WERE SELECTED FROM BIBLIOGRAPHIC INDEXES PUBLISHED FROM 1963 TO JULY 1966 INCLUSIVE. ABSTRACTS ARE INCLUDED.

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

\*FAILURE, GENERAL + \*PIPING + \*PRESSURE VESSEL + BIBLIOGRAPHY + BRITTLE FRACTURE + STRESS ANALYSIS + TEST, BENCH + TEST, DESTRUCTIVE + TEST, NONDESTRUCTIVE

CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-23313  
FRACTURE MECHANICS EVALUATION OF REACTOR VESSEL STEELS. TECHNICAL PROGRESS REPORT FOR THE PERIOD ENDING SEPTEMBER 30, 1966.  
WESTINGHOUSE ELECTRIC CORP., PITTSBURGH, PA. ATOMIC POWER DIVISION  
WCAP-3677-1 + EURAEC-1720 +. 21 PAGES, 10 FIGURES, TABLES, OCT. 1966

AN EXPERIMENTAL PROGRAM DIRECTED TOWARDS FURTHER DEVELOPMENT AND EVALUATION OF A FRACTURE MECHANICS APPROACH TO THE PROBLEM OF BRITTLE FRACTURE OF REACTOR VESSEL MATERIALS, BASED UPON THE USE OF MODIFIED WEDGE OPENING LOADING (WOL) SPECIMENS. EXPERIMENTAL TESTING OF A GROUP OF REACTOR VESSEL STEELS WILL BE PERFORMED TO INVESTIGATE THE APPLICATION OF THE FRACTURE MECHANICS TECHNIQUE TO THESE MATERIALS IN BOTH THE UNIRRADIATED AND IRRADIATED CONDITIONS. PROCUREMENT OF THE MATERIALS WAS INITIATED. INCLUDED ARE TWO DIFFERENT HEATS OF SA533 GRADE B CLASS I (12 IN. AND 8 IN. THICK), THE NOZZLE CUTOUTS FROM THE NOK VESSEL AND CORRELATION MONITOR MATERIAL.

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

\*BRITTLE FRACTURE + \*STEEL + FRACTURE TOUGHNESS + NDT DATA + PRESSURE VESSEL + R AND D PROGRAM

11-23314 ALSO IN CATEGORY 5  
ZWICKY EE  
AN ANALYSIS OF TURBINE MISSILES RESULTING FROM LAST-STAGE WHEEL FAILURE  
GENERAL ELECTRIC CO., SCHENECTADY, N. Y.  
TR-67SL211 +. 73 PAGES, 15 FIGURES, 3 TABLES, 7 REFERENCES, OCT. 3, 1967

THE REPORT DESCRIBES CALCULATIONS MADE TO EVALUATE THE POTENTIAL DAMAGE WHICH COULD BE DONE BY HYPOTHETICAL TURBINE MISSILES IN THE UNLIKELY EVENT OF THE FAILURE OF THE LAST-STAGE WHEEL OF A NUCLEAR MACHINE. IT IS CONCLUDED THAT THE MISSILE KINETIC ENERGY ABSORBED BY THE TURBINE CASING IS AS LARGE OR LARGER THAN PREVIOUSLY ASSUMED AND THAT A 120-DEG WHEEL FRAGMENT IS POTENTIALLY MORE DAMAGING THAN EITHER A 90- OR 180-DEG FRAGMENT. THE POTENTIAL DAMAGE INCREASES SLIGHTLY WITH LAST-STAGE WHEEL SIZE. THE CONCRETE-SLAB THICKNESSES PENETRATED FOR THE 38-, 43-, AND 52-IN. WHEELS ARE IN THE APPROXIMATE RATIOS 1, 1.01, 1.08.

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

\*FAILURE, EQUIPMENT + \*MISSILE GENERATION AND PROTECTION + \*TURBINE + ACCIDENT ANALYSIS + IMPACT PROPERTY

11-23360 ALSO IN CATEGORY 17  
COE RN  
FAILURE OF CONTAINMENT ELECTRICAL PENETRATION AT SAN ONOFRE, FEB. 7  
SOUTHERN CALIFORNIA EDISON COMPANY, LOS ANGELES, CALIF.  
5 PAGES, ATOMIC ENERGY CLEARING HOUSE 14(9), PAGES 22-26 (FEBRUARY 26, 1968) DOCKET 50-206

A FIRE ON THE OUTSIDE SE SIDE OF CONTAINMENT SPHERE IN A CABLE TRAY LEADING TO A SPHERE PENETRATION CAUSED HIGH PRESSURE/TEMPERATURE INSIDE PENETRATION EPC4, FORCING THE OUTER BULKHEAD OUT OF THE SHELL ASSEMBLY. NO CAUSE FOR PENETRATION FAILURE FROM DEFECTIVE MATERIAL OR WORKMANSHIP HAS BEEN FOUND, CAUSE OF FIRE NOT REPORTED. \*\*\*EPC4 SERVED PRESSURIZER HEATERS, SAFETY INJECTION AND RESIDUAL HEAT PUMP A, FANS A2 AND A4, ROD LIFT COIL, AND AN EMERGENCY LIGHTING PANEL. ELEVEN CABLES IN EPC9 (ABOVE 4) WERE DAMAGED BY THE FIRE. DAMAGED EPC9 CABLES SERVED FAN A8 AND FOUR CONTROL RODS. \*\*\*PLANT SHUTDOWN WAS ORDERLY, WITH NO RADIATION RELEASE OR TECH.-SPECS. VIOLATION.

\*CONTAINMENT PENETRATION, ELECTRICAL + \*FAILURE, EQUIPMENT + \*FIRE + ENGINEERED SAFETY FEATURE + INDEPENDENCE + REACTOR, PWR + SAN ONOFRE (PWR) + SYSTEM OPERABILITY IN ACCIDENT

11-23484 ALSO IN CATEGORY 18  
DRESDEN 2 AND 3 DRYWELL EXPANSION GAP DESIGN  
COMMONWEALTH EDISON COMPANY  
3 PAGES, PAGES 5-2.28 THRU 5-2.30 OF DRESDEN 1 AND 2 FINAL SAFETY ANALYSIS REPORT, VOLUME 1, NOVEMBER 17, 1967, DOCKETS 50-237/249, TYPE--BWR, MFG.--G.E., AE--SGT. + LUNDY

A GAP BETWEEN THE LINER AND CONCRETE ALLOWING FOR EXPANSION IS FILLED WITH POLYURETHANE FOAM. TWO IN. OF THE FOAM IS Poured OVER THE STEEL DRYWELL SHELL, THEN COVERED WITH 1/4-IN.-THICK POLYESTER FIBER GLASS SHELL PANELS, WHICH FORM THE INNER SHELL FOR POURING THE CONCRETE. PENETRATIONS ARE SURROUNDED BY CONCENTRIC SLEEVES. ON-SITE TESTS OF THESE PROCEDURES SHOWED THAT THE FIBER GLASS WAS DISPLACED BY LESS THAN 0.25 IN. BY THE POURING AND CURING OF THE CONCRETE. THE FOAM WILL BE EXPOSED TO 2.5 X 10(7TH) RADS IN 40 YRS. GAMMA DAMAGE THRESHOLD IS BETWEEN 8 X 10(6TH) AND 4 X 10(7TH) RADS FOR POLYURETHANE ELASTOMERS. SAMPLES OF THE FOAM TO BE USED SHOW NO DETECTABLE CHANGE IN RESILIENCE UP TO 10(6TH) RADS. THE FOAM IS RATED TO 280 F AND IS SELF-EXTINGUISHING.

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

\*CONTAINMENT LINER + \*EXPANSION + \*FOAM + \*PRESSURE VESSEL + CONTAINMENT CONSTRUCTION + CONTAINMENT, PRESSURE SUPPRESSION + DRESDEN 2 (BWR) + IRRADIATION TESTING + PLASTICITY + PRESSURE VESSEL + REACTOR, BWR + REPORT, SAR

CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-23694

WITT FJ + GWALTNEY RC + GREENSTREET BL  
COMPARISON OF THEORETICAL AND EXPERIMENTAL STRESSES ON A SPHERICAL SHELL WITH A SINGLE RADIALLY ATTACHED NOZZLE

OAK RIDGE NATIONAL LAB., TENN.

ORNL-TM-1634 +. 41 PAGES, 27 FIGURES, 2 TABLES, 8 REFERENCES, NOV. 1966

TESTS WERE PERFORMED ON MODELS UNDER INTERNAL PRESSURE WITH AXIAL THRUST AND MOMENT LOADINGS ON THE NOZZLE, USING STRAIN GAGES. PARAMETERS OF INTEREST WERE NOZZLE DIMENSIONS AND LENGTH OF INTERNAL NOZZLE PROTRUSIONS. FOR THE CONFIGURATIONS TESTED, THEORETICAL AND EXPERIMENTAL VALUES FOR STRESS AND STRESS DISTRIBUTIONS WERE IN GOOD AGREEMENT, WITH BEST RESULTS FOR THINNER NOZZLES.

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

\*NOZZLE + \*SHELL + \*SPHERE + \*STRESS + COMPARISON, THEORY AND EXPERIENCE + MODEL TESTING + PRESSURE, INTERNAL + STRESS ANALYSIS

11-23695

MARCHERTAS AH

STRESS ANALYSIS OF A REACTOR CORE SUPPORT STRUCTURE CONSISTING OF TWO INTERCONNECTED MULTIREGION PLATES ARGONNE NATIONAL LAB., REACTOR ENGINEERING DIV., ARGONNE, ILLINOIS

ANL-7162 +. 85 PAGES, 19 FIGURES, 5 REFERENCES, JUNE 1967

THE STRUCTURE CONSISTS OF TWO AXISYMMETRIC MULTIREGION PLATES, LOCATED ONE ABOVE THE OTHER AND INTERCONNECTED BY CONCENTRIC RINGS OF TUBES. THIS MAIN BODY IS SUPPORTED BY CIRCULAR CYLINDRICAL SHELLS. LOADING OF THE STRUCTURE MAY BE TWOFOLD, STATIC TRANSVERSE PRESSURE ON THE PLANE OF THE PLATES OR THE SHELL WALLS, AND STEADY-STATE TEMPERATURE GRADIENTS, BOTH ALONG THE RADIUS AND ACROSS THE THICKNESS OF THE PLATES AND THE SHELLS. PLATES WITH PERFORATIONS OF TRIANGULAR CONFIGURATION MAY ALSO BE INCLUDED IN THE LIST OF REGION PROPERTIES TO BE CONSIDERED. SOLUTION TO THIS COMPOSITE-STRUCTURE PROBLEM IS OBTAINED BY MATHEMATICAL SUPERPOSITION OF ELEMENTARY THIN-PLATE, CIRCULAR-CYLINDRICAL-SHELL, AND SIMPLE BEAM PROBLEMS, USING THE MATFIX-INVERSION PROCEDURE TO SOLVE THE RESULTING SIMULTANEOUS EQUATIONS.

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

\*STRESS ANALYSIS + \*SUPPORT STRUCTURE + COMPUTER PROGRAM

11-23696

KELKAR VS

VIBRATIONS OF A HOLLOW ELASTIC CYLINDER BONDED TO A THIN CASING OF A DIFFERENT MATERIAL NASA, AMES RESEARCH CENTER, MOFFETT FIELD, CALIF.

NASA-IN-U-4221 +. 26 PAGES, 6 FIGURES, 10 REFERENCES, NOV. 1967

EXACT SOLUTIONS ARE OBTAINED TO DETERMINE THE NATURAL FREQUENCIES AND MODE SHAPES OF A THIN CYLINDRICAL SHELL SUPPORTED BY A HOLLOW CORE OF A DIFFERENT MATERIAL. MATERIALS FOR BOTH SHELL AND CORE ARE ASSUMED TO BE HOMOGENEOUS, ISOTROPIC, AND LINEARLY ELASTIC. A PERFECT BOND IS ASSUMED AT THE JUNCTION OF THE SHELL AND THE CORE. THE COMPOSITE CYLINDER IS FREE FROM STRESSES AT ITS CURVED BOUNDARIES AND IS SUPPORTED BY A DIAPHRAGM AT ITS FLAT ENDS. THE SOLUTIONS FOR THE CORE ARE BASED ON THREE-DIMENSIONAL ELASTICITY THEORY AND FOR THE SHELL ON BENDING THEORY. CURVES ARE PLOTTED TO SHOW THE VARIATION OF THE FREQUENCY WITH THE VARIATION IN CIRCUMFERENTIAL AND AXIAL WAVE NUMBERS AND IN THE RATIO OF INNER TO OUTER RADII OF THE CORE.

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

\*CYLINDER + \*VIBRATION ANALYSIS + MATHEMATICAL TREATMENT

11-23697

MCDANELS DL + SIGNORELLI PA + WEETON JW

ANALYSIS OF STRESS-RUPTURE AND CREEP PROPERTIES OF TUNGSTEN-FIBER-REINFORCED COPPER COMPOSITES

NASA, LEWIS RESEARCH CENTER, CLEVELAND, OHIO

NASA-TN-D-4173 +. 55 PAGES, 35 FIGURES, 9 TABLES, 24 REFERENCES, SEPT. 1967

EQUATIONS FOR PREDICTING THE CREEP RATE AND STRESS-RUPTURE PROPERTIES OF FIBER-REINFORCED METALLIC COMPOSITES ARE DEVELOPED. STRESS-RUPTURE AND CREEP TESTS, CONDUCTED AT 1200 AND 1500 F WERE USED TO VERIFY THE VALIDITY OF THE EQUATIONS DEVELOPED IN THE ANALYSIS. A DISCUSSION IS PRESENTED RELATING THE RESULTS OBTAINED WITH THE MODEL SYSTEM TO MORE PRACTICAL FIBER-REINFORCED COMPOSITE SYSTEMS FOR STRESS-RUPTURE APPLICATIONS. THE STRESS-RUPTURE STRENGTHS OBTAINED WITH THE TUNGSTEN-COPPER MODEL SYSTEM COMPARED FAVORABLY WITH THOSE OF EXISTING SUPERALLOYS AND DEMONSTRATED THE POTENTIAL OF FIBER-REINFORCED METALLIC COMPOSITES IN STRESS-RUPTURE APPLICATIONS AT ELEVATED TEMPERATURES.

CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-23697 \*CONTINUED\*  
AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA,  
\$3.00 COPY, \$0.65 MICROFICHE

\*COMPOSITE MATERIAL + \*STRESS ANALYSIS + COMPARISON, THEORY AND EXPERIENCE + MATHEMATICAL TREATMENT

11-23698  
HUNTER AR + SCHWARZ ME  
DEVELOPMENT AND APPLICATION OF A PHOTOELASTO-PLASTIC METHOD TO STUDY STRESS DISTRIBUTIONS IN VICINITY OF A  
SIMULATED CRACK  
LOCKHEED AIRCRAFT CORP., SUNNYVALE, CALIF.  
N67-16-663 + NASA-CR-655 +. 131 PAGES, 104 FIGURES, 1 TABLE, 16 REFERENCES, DEC. 1966

THIS METHOD UTILIZES THE FROZEN STRESS AND CREEP CHARACTERISTICS OF PLASTIC MATERIALS TO  
SIMULATE THE STRESS-STRAIN BEHAVIOR OF ALUMINUM ALLOYS. TWO POLYMERS WERE SUBJECTED TO  
THERMAL CYCLES. THE STRAIN AND BIREFRINGENCE DUE TO CREEP WERE THEN FROZEN IN SO THAT THIS  
MATERIAL COULD BE SLICED WITHOUT REFREEZING THE FROZEN STRAIN. STRESS DISTRIBUTIONS WERE  
STUDIED IN TWO THIN- AND TWO THICK-PLATE MODELS WITH CENTRAL 1/8-IN. HOLES.

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

\*NOZZLE + \*STRESS ANALYSIS + CREEP + FAULT + MODEL TESTING + STRESS STRAIN DATA

11-23699 ALSO IN CATEGORY 1  
LIBER T + BARNETT RL  
FINAL REPORT. AN EXPERIMENTAL INVESTIGATION OF FRANGIBLE PLATE FRAGMENTATION  
IIT RESEARCH INSTITUTE, TECHNOLOGY CENTER, CHICAGO, ILLINOIS  
IITRI-M-6095 +. 99 PAGES, FIGURES, TABLES, 9 REFERENCES, OCT. 1966

DISCUSSES THE EFFECTS OF BLASTS (POSSIBLY FROM NUCLEAR DETONATIONS) ON PLATES. OF CONCERN ARE  
STRUCTURAL DEBRIS AND PERSONNEL PROTECTION. EMPHASIS IS ON DYNAMIC LOADING AND TESTING FOR  
PREDICTABLE CRACK PATTERNS.

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

CIVIL DEFENSE + MISSILE GENERATION AND PROTECTION + SHIELDING + STRESS ANALYSIS

11-23801  
MCIVOR IK  
THE ELASTIC CYLINDRICAL SHELL UNDER RADIAL IMPULSE  
UNIVERSITY OF MICHIGAN, ANN ARBOR, MICHIGAN  
7 PAGES, 6 FIGURES, 7 REFERENCES, JOURNAL OF APPLIED MECHANICS 33(4), PAGES 831-37 (DECEMBER 1966)

IN THE MOTION OF AN ELASTIC CYLINDRICAL SHELL FOLLOWING IMPULSIVE PRESSURE, MARKED DEVIATIONS  
FROM LINEAR THEORY MAY OCCUR THROUGH INTERACTION OF CIRCUMFERENTIAL MEMBRANE FORCE WITH  
FLEXURAL CURVATURE. ENERGY IS TRANSFERRED IN FLEXURAL MODES OF RATHER HIGH ORDER. THE  
RESULTING FLEXURAL STRESS IS SIGNIFICANTLY HIGHER THAN THAT GIVEN BY LINEAR THEORY. INCLUDES  
SAMPLE PROBLEM.

\*CYLINDER + \*DYNAMICS, NONLINEAR + \*ELASTICITY + \*SHELL + \*STRESS ANALYSIS + SHOCK WAVE

11-23803 ALSO IN CATEGORY 18  
INDIAN POINT 2 BUCKLING OF CONTAINMENT LINER AT THE FUEL TRANSFER PENETRATION  
CONSOLIDATED EDISON COMPANY OF NEW YORK  
2 PAGES, JANUARY 1968, ATOMIC ENERGY CLEARING HOUSE, 14(10), PAGES 38-39 (MARCH 4, 1968), DOCKET 50-247

(LETTER TO DRL, JAN. 1968) THE LINER DEFORMATION WAS NOTICED DURING CONSTRUCTION. REPORT  
DESCRIBES THE QUALITY-CONTROL PROCEDURES AND TESTING OF THE LINER WELDS (CHANNELS ARE WELDED  
OVER ALL LINER SEAMS). AFTER REPAIRING THE BULGE, LEAK TESTS WERE AGAIN PERFORMED ON THE  
WELD CHANNELS IN THE VICINITY. ALL WELD-CHANNEL FILLET WELDS IN THE SAME AREA WERE  
MAGNETIC-PARTICLE INSPECTED. THE WELD-CHANNEL SYSTEM PASSED BOTH TESTS.

\*BUCKLING + \*CONTAINMENT LINER + \*CONTAINMENT PENETRATION, GENERAL + EXAMINATION + FUEL HANDLING MACHINE +  
INDIAN POINT 2 (PWR) + QUALITY CONTROL + REACTOR, PWR + TEST, LEAK RATE + TEST, NONDESTRUCTIVE + WELDS

11-23806  
SHERBY OD + SHYNE JC  
FINAL REPORT. ROLE OF DIFFUSION IN CREEP AND STRESS-RUPTURE IN SOLIDS  
STANFORD UNIVERSITY, MATERIALS SCIENCE DEPT., STANFORD, CALIFORNIA  
AD-657-197 + SU-DMS-67-35 +. 19 PAGES, 26 REFERENCES, AUGUST 1, 1967

FINAL REPORT OF RESEARCH PROGRAM. ALSO SUMMARIZES WORK DONE BETWEEN 1961 AND 67. SUBJECTS  
INCLUDE (1) INFLUENCE OF GRAIN SIZE ON CREEP BEHAVIOR, (2) INFLUENCE OF STACKING FAULT ENERGY  
ON CREEP BEHAVIOR, (3) INFLUENCE OF SECOND HARD PHASE ON MECHANICAL BEHAVIOR (COMPOSITE

CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-23806 \*CONTINUED\*  
MATERIALS), AND (4) MODES OF DEFORMATION IN HIGH-TEMPERATURE CREEP. TEN TECHNICAL REPORTS ISSUED ARE LISTED ALONG WITH 12 PUBLICATIONS, 13 TALKS, AND 26 REFERENCES.

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

CREEP + DIFFUSION + R AND D PROGRAM + SOLID + STRESS

11-23807  
STONE RM + HOCHSCHILD S  
THE EFFECT OF NOZZLE SPACING ON THE PRESSURE STRESSES AT THE INTERSECTION OF CYLINDRICAL NOZZLES AND SHELLS  
COMBUSTION ENGINEERING, INC.  
8 PAGES, 23 FIGURES, 1 TABLE, 9 REFERENCES, J. ENG. POWER, TRANSACTIONS OF THE ASME, A., 89(3), PAGE  
360-368, (JULY 1967)

A PHOTOELASTIC TEST WAS CONDUCTED TO DETERMINE IF THE STRESS INDICES OF SECTION III, ASME BOILER AND PRESSURE VESSEL CODE, MAY BE USED IN ANALYSIS OF REACTOR VESSEL DESIGNS CONTAINING CIRCUMFERENTIAL NOZZLE SPACINGS SMALLER THAN PRESENTLY ALLOWED BY THE CODE. THE FIVE CIRCUMFERENTIAL SPACINGS USED IN THE TEST WERE 109 DEG, 34, 30.2, 26.4, AND 22.5. THE STRESSES AT THE LOCATIONS OF INTEREST ARE PRESENTED AS A FUNCTION OF NOZZLE SPACING. THESE RESULTS SHOW THAT THE MAXIMUM STRESSES FOR SPACINGS BELOW THE CODE MINIMUM ARE SMALLER THAN THOSE AT THE CODE MINIMUM.

CODES AND STANDARDS + NOZZLE + PRESSURE VESSEL + STRESS + STRESS ANALYSIS

11-23809  
BOGGIO G  
PRESTRESSED CONCRETE PRESSURE VESSELS FOR BOILING WATER REACTORS. QUARTERLY REPORT NO. 4, APRIL-JUNE 1966  
GENERAL ELECTRIC CO., SAN JOSE, CALIF. ATOMIC POWER EQUIPMENT  
GEAP-5195 + EURAEC-1731 +. 20 PAGES, FIGURES, TABLES, JULY 1966

ONE OF A SERIES OF PROGRESS REPORTS ON AN R AND D PROGRAM TO DEVELOP A PRESTRESSED CONCRETE PRESSURE VESSEL FOR A BWR. PURPOSE OF THE JOINT AEC-EURATOM PROJECT IS TO ADAPT THE BWR SYSTEM. SECTIONS INCLUDE SUMMARY, STATEMENT OF PROBLEM, TECHNICAL PROGRESS, ETC.

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

CONCRETE, PRESTRESSED + DESIGN STUDY + PRESSURE VESSEL + R AND D PROGRAM + REACTOR, BWR

11-23813  
CRAIG ER + FULTON RH + DAMON JJ  
DESIGN AND TESTING OF SULEMIUM AND INSTRUMENT LEAD CONNECTOR FOR USE IN SEFOR REACTOR VESSEL  
GENERAL ELECTRIC CO., SUNNYVALE, CALIF. ADVANCED PRODUCTS OPERATION  
GEAP-5307 +. 26 PAGES, 9 FIGURES, MARCH 1967

DESCRIBES THE DESIGN AND TESTING OF A MULTI-PIN LEAD CONNECTOR FOR THE SEFOR INSTRUMENTED FUEL ASSEMBLY AND THE TESTING OF A SOLENOID FOR THE INSTRUMENTED FUEL ASSEMBLY LIFTING FIXTURE. TESTS IN A SODIUM-VAPOR/ARGON ENVIRONMENT AT TEMPERATURES UP TO 400 F DEMONSTRATED THAT THE OPERATIONAL PERFORMANCE OF THE COMPONENTS WOULD MEET OR EXCEED THE ANTICIPATED REQUIREMENTS FOR THE SEFOR OPERATION.

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

\*INSTRUMENTATION, IN COPE + \*TESTING + FUEL ELEMENT + FUEL HANDLING + REACTOR, FAST + REACTOR, LMCF + REACTOR, PULSED + SEFOR (PE) + TEST, PREOPERATIONAL + TEST, PROUD

11-23814  
YOUNGDAHL CK  
THREE-DIMENSIONAL STRESS CONCENTRATION AROUND A CYLINDRICAL HOLE IN A SEMI-INFINITE ELASTIC BODY  
ARGONNE NATIONAL LAB., ILL.  
11 PAGES, 6 FIGURES, 1 TABLE, 22 REFERENCES, J. APPL. MECH., 38(4) PAGE 855-865, (DEC. 1966)

DEVELOPED A THREE-DIMENSIONAL SOLUTION, EXACT WITHIN CLASSICAL ELASTOSTATICS, FOR THE STRESSES AND DEFORMATIONS ARISING IN A HALF-SPACE, WITH A SEMI-INFINITE TRANSVERSE CYLINDRICAL HOLE, SUBJECTED TO AN ARBITRARY UNIFORM PLANE FIELD OF STRESS PARALLEL TO THE ROUNDING PLANE. THE SOLUTION IS DEDUCED WITH THE AID OF THE PAPIKOVICH STRESS FUNCTIONS. NUMERICAL RESULTS ARE ALSO INCLUDED. THESE RESULTS EXHIBIT THE THREE-DIMENSIONAL STRESS-BOUNDARY LAYER THAT EMERGES NEAR THE EDGES OF THE HOLE IN THE ANALOGOUS PROBLEM FOR A PLATE OF FINITE THICKNESS, AS THE RATIO OF THE PLATE THICKNESS TO THE DIAMETER OF THE HOLE GROWS BEYOND ROUNDS.

\*ELASTICITY + \*MATERIAL + \*STRESS + \*STRESS ANALYSIS + LEAK

CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-23815  
WOODFORD DA + SMITH JP + MOTEFF J  
OBSERVATION OF HELIUM BUBBLES IN AN IRRADIATED AND ANNEALED AUSTENITIC STEEL  
GENERAL ELECTRIC CO., CINCINNATI, OHIO. NUCLEAR MATERIALS AND PROPULSION OPERATION  
GEMP-544 +. 29 PAGES, REFERENCES, AUGUST 25, 1967, PRESENTED AT THE AMERICAN INSTITUTE OF MECHANICAL  
ENGINEERS MEETING, CLEVELAND, OHIO

POSTIRRADIATION TRANSMISSION ELECTRON MICROSCOPY, PERFORMED ON A SPLIT HEAT OF A HIGH TEMP.  
PRECIPITATION HARDENED ALLOY (A286), CONTAINING 0.001% AND 0.010% NATURAL BORON, SHOWS THAT  
ALL THREE HEAT TREATMENTS (760, 845, AND 955 C) PRODUCED VISIBLE HELIUM BUBBLES. ANALYSIS OF  
THE BUBBLE SIZES AND SIZE DISTRIBUTION INDICATES THAT THE BUBBLE DIAMETER INCREASES WITH  
ANNEALING TEMP. AND WITH BORON CONTENT. MEASUREMENTS OF THE HELIUM VOLUME AGREE QUITE WELL  
WITH PREDICTIONS BASED ON THE B-10 CONCENTRATION AND THERMAL FLUXES. RESULTS SHOWED THAT  
NEARLY ALL THE HELIUM IS ASSOCIATED WITH DISLOCATIONS INDICATING THAT A CONTRIBUTING FACTOR  
TO RADIATION MAY BE CAUSED BY BUBBLES PINNING DISLOCATIONS IN AREAS ADJACENT TO GRAIN  
BOUNDARIES.

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

BORON + BRITTLE FRACTURE + HEAT TREATMENT + HELIUM + STEEL

11-23816  
RIPLING EJ + CROSLEY PB  
DEVELOPMENT OF TEST PROCEDURES. FRACTURE TOUGHNESS OF REACTOR PRESSURE VESSEL STEELS. PERIOD COVERED.  
NOVEMBER 1, 1966-JANUARY 31, 1967  
MATERIALS RESEARCH LAB., INC., RICHTON PARK, ILL.  
COO-1477-7 +. 12 PAGES, MARCH 24, 1967

(PART OF DRD AND T PROJECT) A CONFIGURED DOUBLE-CANTILEVER BEAM SPECIMEN IS BEING USED IN A  
PROGRAM TO MEASURE K-SUB-IC AND CRACK-ARREST FRACTURE TOUGHNESS AS A FUNCTION OF STRAIN RATE  
AND TESTING TEMPERATURE FOR DIFFERENT ORIENTATIONS IN THE A302B STEEL PLATE. WHEN A MATERIAL  
WITH A FRACTURE TOUGHNESS EXCEEDING THE CAPACITY OF THIS SPECIMEN IS TESTED, GROSS PLASTIC  
BENDING OCCURS AT A LOAD AT WHICH PLANE STRAIN CONDITIONS PREVAIL AT THE CRACK TIP. THE LOAD  
AT THE ONSET OF PLASTIC BENDING, THEREFORE, CAN BE USED TO CALCULATE A VALUE OF K-SUB-IC  
WHICH UNDERESTIMATES THE PLANE STRAIN TOUGHNESS OF THE MATERIAL.

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

\*PRESSURE VESSEL + \*STEEL + \*TESTING + FAULT

11-23819  
COX TB  
THE RELATIONSHIP OF NITROGEN CONTENT OF AUSTENITIC STAINLESS STEELS TO STRESS CORROSION. QUARTERLY REPORT  
NO. 11, JANUARY 1-MARCH 31, 1967  
VIRGINIA POLYTECHNIC INST., BLACKSBURG. DEPT. OF METALS AND CERAMIC ENGINEERING  
EUPAEC-1938 +. 32 PAGES, REFERENCES, MARCH 1967

ONE OF A SERIES OF REPORTS ON THE SAME SUBJECT. THE OBJECTIVE OF THIS RESEARCH PROJECT IS TO  
DETERMINE THE RELATIONSHIP BETWEEN NITROGEN CONTENT OF CERTAIN COMMERCIAL AUSTENITIC  
STAINLESS STEELS AND THEIR SUSCEPTIBILITY TO STRESS CORROSION. PREVIOUS WORK INDICATED THAT  
NITROGEN INCREASES THE SUSCEPTIBILITY. OTHER WORK HAS SHOWN THAT NITROGEN IN SUFFICIENT  
AMOUNTS TO PRODUCE NITRIDES RESULTS IN MAJOR INTERNAL FRICTION PEAKS AT TEMPERATURES BELOW  
200 C.

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

\*NITROGEN + \*STEEL, STAINLESS + \*STRESS CORROSION + R AND D PROGRAM

11-23820  
STUDY OF THE BASE METAL INTENDED FOR RESEARCH ON THE BRITTLE FRACTURE OF LARGE WELDMENTS. TECHNICAL  
REPORT NO. 2, MAY 1, 1965-APRIL 30, 1966  
INSTITUT DE RECHERCHES DE LA SIDERURGIE, ST. GERMAINE-EN-LAYE (FRANCE)  
EURAE-1669 +. 31 PAGES, APRIL 30, 1966

RESULTS OF STUDIES CONCERNING SUPER ELCO NI-CR-MO STEEL REVEALED THAT THE OPTIMAL  
STRESS-RELIEF TREATMENT CORRESPONDS TO A RESIDENCE TIME OF 2 HR AT 600 C. ALSO, THE USE OF  
FAST HEAT CYCLES DECREASES THE CRITICAL QUENCH RATE AND HAS A SMALL EFFECT ON TRANSFORMATION.  
STUDIES OF MN-MO-V ALLOY STEELS ARE REPORTED ON COMPOSITION, DILATOMETRY, QUENCHING, AND  
TENSILE PROPERTIES. TESTS TO DETERMINE BRITTLE FRACTURE STRENGTH ARE REPORTED ALONG WITH  
RESULTS OF STRUCTURAL TRANSFORMATION STUDIES.

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

CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-23820 \*CONTINUED\*  
BRITTLE FRACTURE + FABRICATION + STEEL + WELDING + WELDS

11-23821  
HACKNEY BD + MCDANIEL CJ + TAGART SW  
LOW-CYCLE FATIGUE TESTING OF PARTIAL PENETRATION WELDED REACTOR VESSEL NOZZLE CONNECTIONS. PART I. TESTING TECHNIQUES  
GENERAL ELECTRIC CO., SAN JOSE, CALIF. ATOMIC POWER EQUIPMENT DEPT.  
APED-4904 + 65-APE-10 +. 33 PAGES, 9 FIGURES, 2 TABLES, REFERENCES, JUNE 1965

FIRST REPORT IN A SERIES ON THE LOW-CYCLE FATIGUE TESTING OF WELDED REACTOR-VESSEL NOZZLE CONNECTIONS. DESCRIBES THE TECHNIQUES EMPLOYED IN TESTING STRAIGHT-THROUGH AND SOCKET TYPES OF NOZZLE CONNECTIONS. TYPE-304 STAINLESS STEEL AND INCONEL-600 HOUSING MATERIALS ARE BEING TESTED AT THREE LEVELS OF TOTAL STRESS. THE EXPERIMENTAL PROGRAM IS EXPLAINED, AND THE TEST EQUIPMENT AND OPERATION OF THE TEST FACILITY IS DESCRIBED. FINALLY, A DISCUSSION OF THE ACCURACY TO WHICH TEST VARIABLES ARE DETERMINED IS PRESENTED.

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

\*NOZZLE + \*PRESSURE VESSEL + \*TESTING + \*WELDS + EXAMINATION + FAILURE, FATIGUE + WELDING

11-23823  
LAUTZENHEISER CE  
EVALUATION OF THE SERVICEABILITY OF THE ELK RIVER REACTOR PRESSURE VESSEL. QUARTERLY REPORT, OCTOBER 1, 1965-DECEMBER 31, 1965  
SOUTHWEST RESEARCH INST., SAN ANTONIO, TEX.  
SWRI-1228-4-15 +. 18 PAGES, FIGURES, JAN. 20, 1966

THE OBJECT OF THIS TECHNICAL PROGRAM IS TO EVALUATE THE SERVICEABILITY OF THE ELK RIVER REACTOR PRESSURE VESSEL BY DETERMINING THE EFFECT OF FABRICATION PROCEDURES, IRRADIATION, DISSIMILAR WELD METALLURGY AND GEOMETRY ON THE FATIGUE LIFE AND NIL DUCTILITY TRANSITION TEMPERATURE OF THE COMPLETED VESSEL. IN ADDITION, A PHASE OF THIS INVESTIGATION IS DIRECTED TOWARD THE DEVELOPMENT OF REMOTE NONDESTRUCTIVE TESTING EQUIPMENT AND TECHNIQUES FOR THE DETECTION AND MONITORING OF GROSS DEFECTS IN CRITICAL AREAS OF THE VESSEL.

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

\*PRESSURE VESSEL + CONTAINMENT ANALYSIS + ELK RIVER (BWR) + FABRICATION + RADIATION DAMAGE + REACTOR, BWR + WELDS

11-23824  
LAUTZENHEISER CE + NORRIS FB  
EVALUATION OF THE SERVICEABILITY OF THE ELK RIVER REACTOR PRESSURE VESSEL. QUARTERLY REPORT, JULY 1, 1966-SEPTEMBER 30, 1966  
SOUTHWEST RESEARCH INST., SAN ANTONIO, TEX.  
SWRI-1228P4-25 +. 33 PAGES, FIGURES, TABLES, OCTOBER 25, 1966

THE OBJECT OF THIS TECHNICAL PROGRAM IS TO EVALUATE THE SERVICEABILITY OF THE ELK RIVER REACTOR PRESSURE VESSEL BY DETERMINING THE EFFECT OF FABRICATION PROCEDURES, IRRADIATION, DISSIMILAR WELD METALLURGY, AND GEOMETRY ON THE FATIGUE LIFE AND NIL DUCTILITY TRANSITION TEMPERATURE OF THE COMPLETED VESSEL. IN ADDITION, A PHASE OF THIS INVESTIGATION IS DIRECTED TOWARD THE DEVELOPMENT OF REMOTE NONDESTRUCTIVE TESTING EQUIPMENT AND TECHNIQUES FOR THE DETECTION AND MONITORING OF GROSS DEFECTS IN CRITICAL AREAS OF THE VESSEL.

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

\*PRESSURE VESSEL + CONTAINMENT ANALYSIS + ELK RIVER (BWR) + FABRICATION + RADIATION DAMAGE + REACTOR, BWR + WELDS

11-23825  
SCHWANBECK CA  
EFFECT OF NUCLEAR RADIATION ON MATERIALS AT CRYOGENIC TEMPERATURES. FINAL REPORT  
LOCKHEED-GEORGIA CO., MAPLETTA  
N-66-24695 + NASA-CR-54881 + LAC-ER-2434 +. 303 PAGES, FIGURES, TABLES, REFERENCES, JANUARY 1965

STUDIED OF THE EFFECT OF FAST NEUTRON AND CRYOGENIC ENVIRONMENT ON THE STRUCTURAL MEMBERS OF A LIQUID-HYDROGEN NUCLEAR ROCKET. SINCE THE NEUTRON IRRADIATION EFFECTS ARE SELF-HEALING THROUGH SPONTANEOUS ANNEALING EVEN AT LOW TEMPERATURES, TESTS TO PROVIDE THE DESIRED INFORMATION CONCERNING THE COMBINED EFFECT MUST BE CONDUCTED WITH THE SPECIMENS HELD AT THE TEMPERATURE OF INTEREST DURING THE ENTIRE IRRADIATION AND TESTING PERIOD. THE PRINCIPAL OBJECTIVE OF THE PROGRAM WAS TO DETERMINE WHICH OF THE SEVERAL ALLOYS WERE LEAST SUSCEPTIBLE TO DETERIORATION OF MECHANICAL PROPERTIES IN A COMBINED NUCLEAR-CRYOGENIC ENVIRONMENT. A SECONDARY OBJECTIVE WAS TO INVESTIGATE THE POSSIBILITY OF FORMULATING THEORETICAL MODELS OF THE NATURE OF LOW-TEMPERATURE IRRADIATION EFFECTS TO ALLOW PREDICTION OF THEIR MAGNITUDE IN OTHER MATERIALS.



CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-23825 \*CONTINUED\*  
AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA,  
\$3.00 COPY, \$0.65 MICROFICHE

CRYOGENICS + MATERIAL + NUCLEAR ROCKET + RADIATION DAMAGE + RADIATION EFFECT

11-23826  
WYLIE RD  
CONSULTING REPORT ON THE INSPECTION OF EXPERIMENTAL BOILING WATER REACTOR PRESSURE VESSEL  
SOUTHWEST RESEARCH INST., SAN ANTONIO, TEX.  
SWRI-1228-65 +. 18 PAGES, FIGURES, JUNE 18, 1965

AN INSPECTION OF THE EBWR REVEALED A SERIES OF CRACKS ON THE SURFACE OF THE STAINLESS-STEEL  
RESISTANCE CLADDING OF THE PRESSURE VESSEL. DETAILS ARE PRESENTED ON THE METALLURGICAL  
EXAMINATION OF STRIPS OF STAINLESS STEEL AND BOTH SAMPLES OF CARBON STEEL AND STAINLESS STEEL  
REMOVED FROM THE VESSEL.

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

\*EXAMINATION + \*PRESSURE VESSEL + CONTAINMENT LINER + EBWR (BWR) + FAULT + OPERATING EXPERIENCE +  
REACTOR, BWR + STEEL, STAINLESS

11-23827  
COCHRAN LF  
FRACTURE MECHANICS EVALUATION OF REACTOR VESSEL STEELS. QUARTERLY PROGRESS REPORT FOR THE PERIOD ENDING  
MARCH 31, 1967  
WESTINGHOUSE ELECTRIC CORP., PITTSBURGH, PA. ATOMIC POWER DIV.  
WCAP-3677-3 + EURAEC-1829 +. 34 PAGES, FIGURES, TABLES, APRIL 1967

DESCRIBES AN EXPERIMENTAL PROGRAM DIRECTED TOWARDS FURTHER DEVELOPMENT AND EVALUATION OF A  
FRACTURE MECHANICS APPROACH TO THE PROBLEM OF BRITTLE FRACTURE OF REACTOR-VESSEL MATERIALS,  
BASED UPON THE USE OF MODIFIED WEDGE OPENING LOADING (WOL) SPECIMENS. A GROUP OF  
REACTOR-VESSEL STEELS WILL BE TESTED TO INVESTIGATE THE APPLICATION OF THE FRACTURE MECHANICS  
TECHNIQUE TO THESE MATERIALS IN BOTH THE UNIRRADIATED AND IRRADIATED CONDITIONS. SCALED-UP  
SPECIMENS WILL BE USED TO OBTAIN PREIRRADIATION DATA. IRRADIATION EFFECTS WILL BE DETERMINED  
ON SMALL SPECIMENS. GIVES RESULTS OF CURRENT TESTS AND CALCULATIONS.

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

\*PRESSURE VESSEL + \*RADIATION DAMAGE + \*STEEL + \*TESTING + RADIATION EFFECT

11-23828  
WUNDERLICH JW + BAKER NE  
EXPOSURE OF HTGR CANDIDATE CORE PLATE AND THERMAL INSULATION MATERIALS TO IMPURE HELIUM AT 1650 DEG F TO  
1850 DEG F FOR 3000 HOURS  
GENERAL DYNAMICS CORP. SAN DIEGO, CALIF. GENERAL ATOMIC DIVISION  
GAMD-7377 +. 33 PAGES, DECEMBER 29, 1966

THE FOLLOWING MATERIALS WERE EXPOSED IN HE CONTAINING 3000 PPM CO AND H<sub>2</sub> AT 1650 AND 1850 F -  
RENE 41, INCONEL X, HASTELLOY X, 304 STAINLESS STEEL, 430 STAINLESS, AND INCOLOY 800.  
CHANGES IN MECHANICAL PROPERTIES AND MICROSTRUCTURES WERE EVALUATED AFTER 500- AND 1500-HR  
EXPOSURES OF THE ABOVE MATERIALS, AND AFTER 3000 HR FOR 430 STAINLESS AND HASTELLOY X. THE  
RESULTS SHOW THAT 430 STAINLESS STEEL IS THE BEST CHOICE AS METALLIC THERMAL INSULATION  
MATERIAL IN AN HTGR, ALTHOUGH HASTELLOY X IS LEAST AFFECTED BY THE ENVIRONMENT.

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

\*TESTING + CORE COMPONENTS + DESIGN STUDY + INCONEL + MATERIAL + STEEL, STAINLESS + TEST, PROOF +  
THERMAL INSULATION

11-23844  
THE PRESTRESSED CONCRETE VESSELS. THE G2-G3 REACTORS OPERATIONAL TESTS  
ORNL-TR-1264 +. 15 PAGES, APRIL 1966

THE CONCRETE ITSELF HAS SHOWN NO VISIBLE SIGN OF WEAR AND TEAR WORTHY OF NOTE. NORMAL  
SURVEILLANCE IS CARRIED OUT, AND THE REACTOR AS A WHOLE HAS UNDERGONE NO CHANGE. THE  
FORCE-MEASURING SUPPORTING BLOCKS MONITORING THE TENSION IN THE CABLES, INSTALLED IN 1962 AND  
1963, ARE ALSO KEPT UNDER CONSTANT SURVEILLANCE. THE CABLES HAVE BEHAVED MOST  
SATISFACTORILY. ONLY A FEW OF THE GIRDLING CABLES HAVE RECENTLY SHOWN ABNORMAL BEHAVIOR.  
THESE SUFFERED SOME CORROSION WHERE A SECOND LAYER OF CONCRETE WAS APPLIED TO THE VESSEL  
AFTER THE CABLES WERE TENSIONED.

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

CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-23844 \*CONTINUED\*  
\*CONCRETE, PRESTRESSED + \*PRESSURE VESSEL + CONTAINMENT, GENERAL + FRANCE + OPERATING EXPERIENCE + REACTOR, GCR + REACTOR, GRAPHITE MODERATED + STEEL

11-23845  
ZIENKIEWICZ OC + WATSON M  
SOME CREEP EFFECTS IN STRESS ANALYSIS WITH PARTICULAR REFERENCE TO CONCRETE PRESSURE VESSELS  
UNIVERSITY OF WALES, SWANSEA, GREAT BRITAIN  
7 PAGES, 6 FIGURES, 9 REFERENCES, NUCLEAR ENGINEERING AND DESIGN, 4(4), PAGES 406-412 (NOVEMBER 1966)

DESCRIPTION OF A GENERAL PROCESS OF STRESS ANALYSIS FOR MATERIALS OF LINEAR VISCO-ELASTIC NATURE USING AN INTEGRAL FORMULATION OF THE VISCO-ELASTIC PROPERTIES. THE FULL SOLUTION IS ACCOMPLISHED IN A STEP-BY-STEP MANNER, USING TIME INTERVALS DURING WHICH THE STRESSES ARE TAKEN TO REMAIN CONSTANT. THE CHANGE OF THE CREEP STRAIN TAKING PLACE DURING SUCH A TIME INTERVAL LEADS TO AN INCOMPATIBILITY WHICH IS CORRECTED BY AN ELASTIC SOLUTION AT THE END OF EACH INTERVAL. THE ELASTIC SOLUTION AT ANY STAGE IS ACCOMPLISHED BY THE USE OF THE FINITE-ELEMENT METHOD. COMPUTATIONAL PROBLEMS ARE DISCUSSED, AND THE APPLICATION OF THE METHOD TO THE VISCO-ELASTIC ANALYSIS OF CONCRETE PRESSURE VESSELS IS OUTLINED.

CONCRETE, PRESTRESSED + ELASTICITY + PRESSURE VESSEL + STRESS ANALYSIS

11-23846  
HARROP J + ABDUL-KARIM RM  
STRESSES AND DEFLECTIONS IN CIRCULAR PLATES WITH SQUARE PITCH PERFORATIONS  
UNIVERSITY OF LEEDS, 2, ENGLAND  
9 PAGES, 8 FIGURES, 5 TABLES, 8 REFERENCES, NUCLEAR ENGINEERING AND DESIGN, 6(5), PAGES 421-439 (DECEMBER 1967)

DISCUSSES A METHOD FOR CALCULATING THE DEFLECTIONS AND STRESSES DEVELOPED IN CIRCULAR PLATES WITH SQUARE-PITCH PERFORATIONS WHEN THE PLATES ARE SUBJECTED TO UNIFORM LATERAL PRESSURE, BASED UPON THE ELEMENTAL DISK CONCEPT FOR THE DETERMINATION OF THE EFFECTIVE ELASTIC MODULUS OF THE PERFORATED ZONE. THE PROPOSED METHOD IS USED TO GIVE RESULTS FOR COMPARISON WITH EXPERIMENTAL RESULTS OBTAINED BY OTHER INVESTIGATORS ON THREE PLATE MODELS. THE METHOD GIVES A 5% OVERESTIMATE OF DEFLECTIONS, POSSIBLY DUE TO NEGLECT OF STIFFENING EFFECT OF THE OVERHANGING RIM PORTION OF THE PLATE OUTSIDE THE SUPPORT CIRCLE.

\*DEFORMATION + \*STRESS + COMPARISON, THEORY AND EXPERIENCE + MATHEMATICAL TREATMENT + PRESSURE, INTERNAL

11-23847  
POLLET H  
FORMATION OF VERY HIGH STRENGTH CONCRETES (GREATER THAN 1000 KG/CM SQUARED)  
ORNL-TR-1358 +. 6 PAGES, TRANSLATED FROM ANN. INST. TECH. BATIMENT TRAV. PUBLICS, 16, PAGES 1425-1426 (1965)

THREE METHODS SUGGESTED BY INTERNATIONAL PRESTRESSED CONCRETE FEDERATION FOR PRODUCING 1000-KG/SQ. CM COMPRESSIVE STRENGTH CONCRETE ARE - (1) USE A REACTIVE, SPECIALLY CRUSHED AGGREGATE, (2) USE THE REACTION BETWEEN SILICA (POSSIBLY FLYASH) AND LIME, (3) TRIAXIAL REINFORCEMENT. \*\*\* THE ICAM LAB AT LILLE HAS TRIED (1) CONTINUED WORK ON RESIN BONDING, (2) FORMATION OF A REACTIVE AGGREGATE USING NATURAL CEMENT (UNSUCCESSFUL), (3) USE OF EPOXY RESIN (ARALDITE) AS A BINDER (UNSATISFACTORY), (4) ARTIFICIAL AGGREGATES. THIS LAST METHOD GAVE THE BEST RESULTS AND IS DISCUSSED IN THIS REPORT.

AVAILABILITY - JOHN CREPAR LIBRARY, 35 WEST 33RD. ST., CHICAGO, ILLINOIS

\*CONCRETE + \*CONCRETE, PRESTRESSED + R AND D PROGRAM

11-23855 ALSO IN CATEGORY 4  
JOHNS RH + KAUFMAN A  
FILAMENT-OVERWRAPPED METALLIC CYLINDRICAL PRESSURE VESSELS  
NASA LEWIS RESEARCH CENTER, CLEVELAND, OHIO  
6 PAGES, 9 FIGURES, 2 TABLES, 8 REFERENCES, J. SPACECRAFT ROCKETS 4(7), PAGE 872-877, (JULY 1967)

THE INFLUENCE OF MATERIAL PROPERTIES OF A WRAPPED PRESSURE VESSEL IS DETERMINED THEORETICALLY. OVERCOMING THE DIFFERENCE IN YIELD STRAINS OF WRAPPING AND BASE MATERIALS BY WINDING PRETENSION AND PLASTIC FLOW DURING PRESSURIZATION IS CONSIDERED. RESIDUAL STRESSES IN THE WRAPPING AND IN THE METAL CYLINDER ARE DISCUSSED. P. V. EFFICIENCY IS DETERMINED AS A FUNCTION OF ALLOWABLE COMPRESSIVE STRESS IN THE METAL. BUCKLING TESTS INDICATE THAT BUCKLING OF THE SHELL DUE TO PRETENSION IN THE WINDING PROBABLY WILL NOT BE A PROBLEM IN SPACE APPLICATIONS. FAILURE OF THE METAL SHELL OFTEN IS DUE TO TENSILE INSTABILITY AT HIGH PRESSURES IN THE 1,1 STRESS FIELD IMPOSED. A DEFORMATION THEORY ANALYSIS AGREES WELL WITH THE RESULTS OF 19 OF 20 TESTS OF 5.6-IN.-DIAM AL CYLINDERS WRAPPED WITH GLASS IMPREGNATED WITH EPOXY RESIN. THE WRAPPED VESSELS WERE UP TO 50% MORE EFFICIENT. FACTORS OF SAFETY (BURST PRESSURE) MAY BE 40% HIGHER THAN THOSE BASED ON STRESS IN THE METAL.

\*MODEL TESTING + \*PRESSURE VESSEL + SPACECRAFT + STRESS ANALYSIS

CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-23856  
DUBOIS F + BONVALET C + DAWANCE G + MARECHAL JC  
BEHAVIOR OF A PRESTRESSED CONCRETE PRESSURE VESSEL SUBJECTED TO A HIGH TEMPERATURE GRADIENT  
CENTRE D ETUDES NUCLEAIRES DE SACLAY, FRANCE  
ORNL-TR-1343 + CEA-R-2829 +. 111 PAGES, DEC. 1965

GIVES RESULTS OF TESTS ON A 1/10TH-SCALE MODEL WITHOUT SIDE OPENINGS AND WITHOUT A BASE, HEATED INTERNALLY AND AIR-COOLED EXTERNALLY. CABLE PRESTRESS WAS 80 KG/SQ. CM. THERMAL GRADIENT WAS 160 C. MEASUREMENTS INCLUDED OVERALL AND LOCAL DEFORMATION, WATER CONTENT, ELASTIC MODULUS, CABLE STRESS AND CREEP, AND CRACK DEPTH. CABLE CREEP REACHED 20 TO 30%. DYNAMIC ELASTIC MODULUS DECREASED BY HALF, AND CRACKS 8 TO 12 CM DEEP AND 2 TO 3 MM WIDE APPEARED IN NON-PRESTRESSED CONCRETE.

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

\*CONCRETE, PRESTRESSED + \*PRESSURE VESSEL + \*TEMPERATURE GRADIENT + MODEL TESTING + PROPERTY, PHYSICAL + TESTING

11-23857  
GUFCAAUD A + ROQUES C  
THE USE OF AUSTENITIC STEEL AS CONSTRUCTION MATERIAL FOR THE PRESSURE VESSEL OF THE FAST REACTOR RAPSODIE  
SOCIETE DES FORGES ET ATELIERS DU CREUSOT, PARIS (FRANCE)  
EURFNR-92F + CONF-777-1 + EUR-1642.F +. 37 PAGES, FIGURES, REFERENCES, 1964, TRANSLATION OF REPORT  
CEA-TP-1593, PRESENTED AT SYMPOSIUM ON MATERIALS FOR COOLING REACTORS WITH SODIUM, NEW YORK, NOV. 1963

DISCUSSES CHOICE OF AN 18/8-TYPE STEEL. ADVANTAGES ARE ITS CREEP RESISTANCE AND CORROSION RESISTANCE IN SODIUM. PRINCIPAL DISADVANTAGE IS THE HIGH EXPANSION COEFFICIENT, WHICH COULD CAUSE LARGE THERMAL STRESSES. HOWEVER, THE STRENGTH OF THE STEEL AT HIGH TEMPERATURE ALLOWS FOR A THIN WALL, REDUCING TEMPERATURE GRADIENTS. 18/8-MO STEEL WAS CHOSEN OVER 18/8-NB AS A RESULT OF TESTS, WHICH ARE DESCRIBED.

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

\*PRESSURE VESSEL + \*STEEL + CREEP BEHAVIOR + EXPANSION + REACTOR, FAST + REACTOR, LMCOR + TEMPERATURE GRADIENT + TESTING

11-23860  
MCGHIE RD  
FAILURE MECHANISMS OF SHELLS CONFINED IN CAVITIES. TECHNICAL REPORT NO. 67-2. FINAL REPORT  
CALIFORNIA UNIV., DAVIS. DEPT. OF CIVIL ENGINEERING  
UCRL-13325 +. 100 PAGES, FIGURES, AUGUST 1967

CONSIDERED THE DEFORMATION OF A THIN CIRCULAR RING OF UNIFORM THICKNESS CONTAINED IN A RIGID CIRCULAR CAVITY HAVING SMALL INITIAL CLEARANCE BETWEEN THE RING AND CAVITY. THE DISPLACEMENT OF THE RING PRODUCED BY AN ACCELERATION OF THE RIGID CAVITY IN THE PLANE OF THE RING IS ANALYZED USING NONLINEAR SHELL THEORY. STEADY-STATE ACCELERATION ONLY IS CONSIDERED SO THAT THE INERTIA FORCES CAN BE TREATED AS STATIC LOADS. DESIGN PARAMETERS CONSIDERED ARE INITIAL CLEARANCE, RING THICKNESS, AND ACCELERATION MAGNITUDE. THE FRICTION BETWEEN THE RING AND CAVITY IS ASSUMED TO BE ZERO. NUMERICAL VALUES OF THE SOLUTION TO THE LINEAR PORTION OF THE GOVERNING EQUATIONS ARE COMPARED WITH AVAILABLE TEST DATA.

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

\*MATHEMATICAL TREATMENT + \*SHELL + FAULT + STRESS ANALYSIS

11-23861 ALSO IN CATEGORY 17  
COWAN A + COWBURN KJ  
CRITICAL CRACK-LENGTH MEASUREMENTS IN HYDRIDED ZIRCALOY-2 PRESSURE TUBES  
UKAEA, LANCASHIRE (CULHETHCH)  
6 PAGES, 11 FIGURES, 1 TABLE, 8 REFERENCES, JOURNAL OF THE INSTITUTE OF METALS 95(10), PAGE 302 THRU 307, (OCTOBER 1967)

DESCRIBES THE FIRST OF A SERIES OF TESTS ON PRESSURE TUBES WITH SLITS CUT THROUGH THE WALL BEFORE PRESSURIZING TO FAILURE. UP TO 300 C, FAILURE OCCURRED BY FAST PROPAGATION OF CRACKS INITIATED AT THE ENDS OF THE SLITS. INCREASING THE HYDROGEN CONTENT OF THE TUBES CAUSED EMBRITTLEMENT. WITH A DECREASE IN THE CRITICAL CRACK LENGTH AT 300 C, THE EFFECT OF 400 PPM HYDROGEN WAS COMPARATIVELY SMALL. THE CRITICAL CRACK LENGTH IS ABOUT 4 IN. AT THE OPERATING TEMPERATURE AND PRESSURE OF THE S.G.H.W. REACTOR (300 C, 16,000 LB/SQ. IN.). THIS LENGTH IS ORDERS OF MAGNITUDE GREATER THAN THE LENGTH THAT CAN BE DETECTED IN SERVICE AND IS ALSO GREATER THAN THE LENGTH OF DEFECT THAT WOULD BE EXPECTED TO GIVE RISE TO SLOW LEAKAGE BEFORE FAILURE.

\*FAULT + \*HYDRIDE + \*REACTOR, PRESSURE TUBE + \*ZIRCALOY + BRITTLE FRACTURE

CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-23862

BECKA J

WELDING PROBLEMS ON THE CZECHOSLOVAK REACTOR PRESSURE VESSEL  
SKODA WORKS, PILSEN (CZECHOSLOVAKIA)  
AEC-TR-6954 +. 14 PAGES, FIGURES, REFERENCES, MARCH 14, 1967

SEVERAL WELDING PROCEDURES WERE TRIED EXPERIMENTALLY ON THE SHORTENED MODEL OF THE PRESSURE VESSEL, INCLUDING CIRCUMFERENTIAL MANUAL ARC WELDING, SEMIAUTOMATIC CO<sub>2</sub> INERT GAS WELDING, AUTOMATIC UP WELDING, AND ELECTRO-SLAG WELDING. GIVES WELDING PROCEDURES FOR THE PRESSURE VESSEL OF THE FIRST CZECHOSLOVAK NUCLEAR POWER PLANT.

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

CZECHOSLOVAKIA + MODEL TESTING + WELDING + WELDS

11-23863

MAHONEY JB + SALERNO VL

ANALYSIS OF A CIRCULAR CYLINDRICAL SHELL PERFORATED BY A LARGE NUMBER OF RADIAL HOLES  
APPLIED TECHNOLOGY ASSOCIATES, INC., RAMSEY, N. J.  
8 PAGES, 5 FIGURES, 7 REFERENCES, JOURNAL OF ENGINEERING FOR POWER 89(3), PAGE 325 THRU 332, (JULY 1967)

DISCUSSES A CIRCULAR CYLINDRICAL SHELL PERFORATED BY MANY RADIALY ALIGNED CIRCULAR HOLES THAT PIERCE ITS SURFACE IN REPEATING RECTANGULAR PATTERNS. EIGHT EFFECTIVE-STIFFNESS COEFFICIENTS ARE DEVELOPED BY COMPARING THE ELASTIC STRAIN ENERGY DENSITY FOR AN IDEALIZED PERFORATED CYLINDRICAL SHELL ELEMENT TO THE ENERGY DENSITY OF AN ORTHOTROPIC ELEMENT. GENERAL EQUATIONS ARE OBTAINED BY UTILIZING THESE EIGHT COEFFICIENTS. THE GENERAL SET OF EQUATIONS IS REDUCED TO THE USUAL THREE PARTIAL DIFFERENTIAL EQUATIONS (IN TERMS OF THE U, V, AND W DISPLACEMENTS), WHICH ARE SOLVED FOR TWO CASES - COMPLETELY PERFORATED, PARTIALLY PERFORATED.

\*CYLINDER + \*SHELL + \*STRESS ANALYSIS + MATHEMATICAL TREATMENT

11-23908

GIBBONS WG + MIKOLEIT AE + O'DONNELL WJ

FATIGUE PROPERTIES OF IRRADIATED PRESSURE VESSEL STEELS

BETTIS ATOMIC POWER LAB., PITTSBURGH, PA.

WAPD-T-1864 + CONF-660627-2 +. 46 PAGES, FROM AMERICAN SOCIETY FOR TESTING AND MATERIALS, 69TH ANNUAL MEETING, ATLANTIC CITY, JUNE 1966

THE EFFECTS OF NEUTRON IRRADIATION ON THE UNNOTCHED STRAIN-CYCLED FATIGUE PROPERTIES OF PRESSURE VESSEL STEELS WERE EVALUATED, USING TWO HEATS OF A302 LOW ALLOY STEEL AND ONE HEAT OF A212B CARBON SILICON STEEL. RESULTS FROM ROOM-TEMPERATURE TESTS ON NONIRRADIATED MATERIAL WERE COMPARED WITH THOSE FROM MATERIAL IRRADIATED UP TO  $6 \times 10^{19}$  NVT. THE FATIGUE NOTCH SENSITIVITIES OF THESE MATERIALS WERE INVESTIGATED, USING V-NOTCH SPECIMENS WITH 2- 10-MIL ROOT RADII RESPECTIVELY. RESULTS WERE COMPARED WITH THEORETICAL PREDICTIONS.

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

\*FAILURE, FATIGUE + \*PRESSURE VESSEL + \*RADIATION EFFECT + \*STEEL + RADIATION DAMAGE + TESTING

11-23909

LAUTZENHEISER CE

STUDY OF METHODS OF INITIATING A CRACK IN THE PM2A VESSEL

SOUTHWEST RESEARCH INST., SAN ANTONIO

SWRI-1220-91 +. 27 PAGES, FIGURES, TABLES, AUGUST 19, 1964

A BRIEF STUDY WAS MADE OF THREE METHODS FOR STARTING CRACKS IN A302 GRADE B STEEL - (1) IMPACT LOADING (1/8 CHISEL), (2) NOTCHING AND FATIGUE CYCLING, AND (3) PLACEMENT OF BRITTLE-WELD CRACK-STARTER BEAD ON SPECIMEN, NOTCHING OF BEAD, AND FATIGUE CYCLING. THE WELD-FATIGUE CYCLING METHOD IS BEST.

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

\*FAULT + \*PM 2A (PWR) + \*PRESSURE VESSEL + \*TESTING + REACTOR, PWR

11-23910

SIEGFRIED W

ON THE THEORY OF NOTCH-BRITTLENESS IN STEELS OCCUPYING DURING TIME-TO-RUPTURE TESTS

BATTELLE MEMORIAL INSTITUTE, GENEVA, SWITZERLAND

EURAEC-1350 + EUR-2325.E + CONF-650607-2 +. 78 PAGES, FROM AMERICAN SOCIETY OF MECHANICAL ENGINEERS,  
BERKELEY, APRIL 26, 1965

CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-23910 \*CONTINUED\*

DISCUSSES INTERNAL CHANGES, DISTRIBUTION OF STRESSES. THE DIFFERENCE BETWEEN THE TIME-TO-RUPTURE CURVES FOR UNNOTCHED AND NOTCHED BARS CAN PRIMARILY BE EXPLAINED BY THE INTERACTION OF THREE EFFECTS - RELAXATION OF THE STRESS PEAK WITH TIME, FORMATION AND PROPAGATION OF FISSURES, AND INHIBITION OF PLASTIC DEFORMATION OWING TO THE FORMATION OF A TRIDIMENSIONAL STATE OF STRESS.

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

\*BRITTLE FRACTURE + \*STEEL + \*TESTING + THERMAL MECHANICAL EFFECT

11-23912

PRITCHARD PS + WILDIN MW  
TEMPERATURE AND STRESS DISTRIBUTIONS PRODUCED IN LONG CIRCULAR CYLINDERS COOLED BY EMISSION OF THERMAL RADIATION. FINAL REPORT  
NEW MEXICO UNIVERSITY, ALBUQUERQUE  
SC-DC-66-2366 + ME-19 +. 116 PAGES, FIGURES, REFERENCES, NOVEMBER 1965

PART I CONTAINS EXPERIMENTAL RESULTS, DESCRIPTION OF EQUIPMENT, AND TECHNIQUES. FOUND RELATIVELY GOOD AGREEMENT BETWEEN THEORY AND EXPERIMENT. PART II GIVES A STATEMENT OF THE PROBLEM, OUTLINES THE LOGIC AND EVIDENCE LEADING TO AN ANSWER, AND GIVES THE CONCLUSIONS.

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

\*CYLINDER + \*HEAT TRANSFER, RADIANT + \*STRESS + \*THERMAL MECHANICAL EFFECT + COMPARISON, THEORY AND EXPERIENCE

11-23913

FRASER MC  
POSTIRRADIATION EVALUATION OF ZIRCALOY-2 PRTR PRESSURE TUBES. PART III  
GENERAL ELECTRIC CO., RICHLAND, WASHINGTON  
HW-84540 +. 15 PAGES, REFERENCES, DECEMBER 15, 1964

AN ADDITIONAL THREE ZIRCALOY-2 PRESSURE TUBES WERE DISCHARGED FROM THE PRTR REACTOR, AND SPECIMENS FROM TWO OF THESE AND FROM OTHER TUBES WERE BURST TESTED. IRRADIATED AND UNIRRADIATED SPECIMENS OF PRTR ZIRCALOY-2 PRESSURE TUBES WERE USED FOR ROOM-TEMPERATURE CRACK-PROPAGATION TESTS. THE RESULTS OF VACUUM-FUSION ANALYSIS FOR HYDROGEN CONTENT OF SPECIMENS TAKEN FROM ALL OF THE DISCHARGED PRTR ZIRCALOY-2 PRESSURE TUBES ARE GIVEN.

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

\*EXAMINATION + \*REACTOR, PRESSURE TUBE + \*TEST, DESTRUCTIVE + FAULT + HYDRIDE + IRRADIATION TESTING + PRTR (TR) + REACTOR, TEST + ZIRCALOY

11-23926

ALSO IN CATEGORIES 7 AND 1

COTTRELL WB  
ORNL NUCLEAR SAFETY RESEARCH AND DEVELOPMENT PROGRAM BIMONTHLY REPORT FOR NOVEMBER-DECEMBER 1967  
OAK RIDGE NATIONAL LAB., TENN.  
ORNL-TM-2095 +. 137 PAGES, FIGURES, TABLES, REFERENCES, FEB. 1968

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

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

\*CHEMICAL KINETICS + \*CONTAINMENT, GENERAL + \*CSE + \*FISSION PRODUCT RETENTION + \*FISSION PRODUCT TRANSPORT + \*FISSION PRODUCT, AIRBORNE + \*IMPACT PROPERTY + \*IN PILE EXPERIMENT + \*LOFT (S-RR) + \*NOZZLE + \*OUT OF PILE LOOPS AND EXPERIMENTS + \*REACTOR, HTGR + \*STEEL + CONTAINMENT SPRAY + FISSION PRODUCT RELEASE, GENERAL + PRESSURE VESSEL

11-23930  
LUKS VH

CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-23930 \*CONTINUED\*  
PRESTRESSED CONCRETE REACTOR PRESSURE VESSELS  
KERNFORSCHUNGSANLAGE, JULICH, GERMANY  
6 PAGES, 5 FIGURES, 1 TABLE, 19 REFERENCES, ATOMWIRTSCHAFT 11(11), PAGE 535 THRU 540, (NOVEMBER 1966) IN  
GERMAN

GENERAL DISCUSSION OF PCRVs BUILT, BEING BUILT, AND PLANNED, WITH EMPHASIS ON THE GERMAN  
THORIUM HIGH-TEMP. REACTOR (THTR). DISCUSSES GEOMETRY, THERMAL INSULATION, COOLING,  
COATINGS, CONSTRUCTION PROCEDURES. DESCRIBES EURATOM F AND D PROGRAM FOR PCRV DEVELOPMENT,  
INCLUDING WORK BY KRUPP ON LAMINAR VESSELS, AND THE SIEMENS FIRM DEVELOPMENT OF A 100 ATM.,  
300 C VESSEL MODEL.

\*CONCRETE, PRESTRESSED + \*PRESSURE VESSEL + GERMANY + LAYER + REACTOR, GCR + REACTOR, PEBBLE BED

11-24154 ALSO IN CATEGORIES 17 AND 0  
SENA SHUTDOWN ATTRIBUTED TO CORE BARREL FOLT FAILURE  
1 PAGE, NUCLEAR INDUSTRY 15(2), PAGE 56, (FEB. 1968)

WESTINGHOUSE STATEMENT READS IN PART AS FOLLOWS - AS PART OF THE INVESTIGATION OF A STUCK  
CONTROL ROD, CAUSED BY INTERFERENCE IN THE CORE, INSPECTION REVEALED BROKEN PIECES OF  
CORE-BARREL BOLTS IN TWO OF THE FOUR STEAM GENERATORS. THESE BOLTS JOIN UPPER AND LOWER CORE  
BARREL. THEIR USE IS PECULIAR TO THE INTERNAL DESIGN OF SENA AND EARLIER PLANTS. REPAIR TO  
INTERVALS WILL BE CONCURRENT WITH REPAIR FOR TURBINE AND GENERATOR. REACTOR WAS SHUT DOWN  
JAN. 30, 1968.

\*CORE COMPONENTS + \*FAILURE, EQUIPMENT + \*FAILURE, SCRAM MECHANISM + ITALY + REACTOR, PWR

11-24188 ALSO IN CATEGORY 17  
ELK RIVER SHUTDOWN BECAUSE OF COOLANT LEAK  
RURAL COOPERATIVE POWER ASSOCIATION  
1 PAGE, TWX TO AEC, MARCH 14, 1968, DOCKET 115-1, TYPE--BWR, MFG--A.C., AE--SGT + LUNDY

AT 1700 HOURS ON MARCH 13, DEPRESSURIZATION OF THE REACTOR WAS BEGUN, IN COMPLIANCE WITH  
TECHNICAL-SPECIFICATION SECTION 4.9 (REACTOR-VESSEL LEAKAGE-MONITORING SPECIFICATION). A  
DETAILED REPORT ALONG WITH A PROGRAM FOR REPRESSURIZING AND FURTHER TESTING WILL BE SUBMITTED.

\*LEAK + \*PRESSURE VESSEL + ELK RIVER (BWR) + FAILURE, PRESSURE VESSEL + INCIDENT, EQUIPMENT +  
MAIN COOLING SYSTEM + OPERATING EXPERIENCE SUMMARY + REACTOR, BWR

11-24822  
HACKNEY RD + MCDANIEL CJ  
LOW-CYCLE FATIGUE TESTING OF PARTIAL PENETRATION WELDED REACTOR VESSEL NOZZLE CONNECTIONS. PART II.  
FABRICATION ASPECTS  
GENERAL ELECTRIC CO., SAN JOSE, CALIF. ATOMIC POWER EQUIPMENT DEPT.  
APED-4904 \*. 25 PAGES, FIGURES, TABLES, JULY 1966

SECOND REPORT IN A SERIES ON LOW-CYCLE FATIGUE TESTING OF PARTIAL PENETRATION WELDED  
REACTOR-VESSEL NOZZLE CONNECTIONS. DEALS WITH FABRICATION ASPECTS OF THE PROGRAM. PART I OF  
THIS SERIES OF REPORTS WAS CONCERNED WITH THE TESTING TECHNIQUES EMPLOYED IN THE PROGRAM, AND  
HAS BEEN PUBLISHED AS APED-4904. THE FABRICATION OF STRAIGHT-THROUGH AND SOCKET NOZZLE  
CONNECTIONS IS DISCUSSED INsofar AS SEQUENCE AND AREAS OF DIFFICULTY IN FABRICATION ARE  
CONCERNED.

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

\*NOZZLE + \*PRESSURE VESSEL + \*WELDS + FABRICATION + FAILURE, FATIGUE + WELDING

CATEGORY 12  
PLANT SAFETY FEATURES

12-20739 ALSO IN CATEGORY 14

PIHULEAC I

DECONTAMINATION OF SURFACES AND OBJECTS CONTAMINATED WITH RADIOACTIVE MATERIALS. IV. EXPERIMENTAL PART. USE OF INDIGENOUS LAUNDERING AGENTS FOR THE DECONTAMINATION OF TEXTILE MATERIALS  
6 PAGES, 5 FIGURES, 4 REFERENCES, REV. CHIM. (BUCHAREST), 17, PAGES 697-702 (NOV. 1966) IN RUMANIAN

TO PROTECT LATER USERS, CONTAMINATING RADIOACTIVE MATERIALS MUST BE REMOVED FROM SPECIAL PROTECTIVE EQUIPMENT OR ORDINARY CLOTHING BY WASHING THEM IN SPECIAL LAUNDERING SOLUTIONS. TESTS WITH COTTON SPECIMENS SOAKED IN AQUEOUS SOLUTIONS CONTAINING I-131, BA-131, P-32, CE-141, AND FE-59 REVEALED THAT BEST RESULTS WERE OBTAINED BY WASHING THEM WITH A SOLUTION CONTAINING 0.2% OF A DETERGENT AND 0.3% OF A COMPLEXING AGENT, SUCH AS SODIUM HEXAMETAPHOSPHATE OF SODIUM EDTA. THREE WASHING AND RINSING CYCLES OF 5-MIN. DURATION EACH WERE BEST. THE DETERGENTS DERO-40, PENETROL, AND ALBA SUPER, OF RUMANIAN MANUFACTURE, WERE USED IN THE TESTS, WHICH WERE CARRIED OUT BY DETERMINING THE COUNT RATE AT VARIOUS STAGES OF THE DECONTAMINATION PROCESS.

\*DECONTAMINATION + RADIATION PROTECTION, CHEMICAL

12-20991 ALSO IN CATEGORY 18

ULTIMATE STRENGTH CRITERIA TO ENSURE NO LOSS OF FUNCTION OF PIPING AND VESSELS UNDER EARTHQUAKE LOADING  
PACIFIC GAS AND ELECTRIC CO.

WCAP-5890 +. 47 PAGES, 17 FIGURES, 2 TABLES, 9 REFERENCES, JUNE 12, 1967, AMENDMENT 1 TO LICENSE APPLICATION (FIRST SUPPLEMENT TO DIABLO CANYON PRELIMINARY SAFETY ANALYSIS REPORT), JULY 10, 1967, DOCKET 50-275, TYPE--PWR, MFG.--WEST, AE--PG+E

WESTINGHOUSE REPORT DISCUSSES AND FORMULATES DESIGN CRITERIA AND COVERS ANALYTICAL PROCEDURES IN ANALYSIS OF PIPING AND CONTAINERS.

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

\*EARTHQUAKE ENGINEERING + \*PIPING + ANALYTICAL MODEL + CONTAINMENT ANALYSIS + DESIGN CRITERIA + MATHEMATICAL TREATMENT

12-21245 ALSO IN CATEGORIES 6 AND 7

REPORT OF WORK IN THE 4TH QUARTER OF 1966  
COMMISSARIAL A L-ENERGIE ATOMIQUE, CADARACHE, FRANCE  
EURFNR-267 +. 99 PAGES, 1966

THIS REPORT IS ONE OF A SERIES OF REPORTS ON WORK PERFORMED UNDER THE UNITED STATES-EURATOM FAST REACTOR EXCHANGE PROGRAM. TOPICS COVERED ARE - CRITICALITY STUDIES, METALLURGY, RADIATION EFFECTS, RADIATION SHIELDING AND PROTECTION, REACTOR CONTROL, REACTOR ENGINEERING, REACTOR FUELS, AND REACTOR SAFETY.

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

ACCIDENT, REACTIVITY + CRITICALITY EXPERIMENT + FISSION PRODUCT RETENTION + REACTOR CONTROL + REACTOR DYNAMICS + REACTOR, LMLR + SODIUM

12-21297 ALSO IN CATEGORIES 7 AND 17

PIQUA REQUESTS REMOVAL OF HIGH EFFICIENCY FILTERS  
PIQUA NUCLEAR POWER FACILITY

19 PAGES, DEC. 1, 1967, DOCKET NO. 115-2, TYPE--OCR, MFG--A.I., AE--A.I.

PIQUA REQUESTS EXEMPTION FROM TECH.-SPEC. REQUIREMENT OF VENTILATION FILTERS WHILE THE FUEL IS STORED AND THE REACTOR IS INOPERATIVE. THE FILTERS COST MORE THAN \$4000 PER YEAR. PIQUA HAS ALWAYS CONTENDED THAT THE FILTERS WERE UNNECESSARY EVEN UNDER OPERATING CONDITIONS. ENCLOSED IS A REPORT - HIGH EFFICIENCY PARTICULATE AIR FILTER EVALUATION FOR PIQUA (17 PAGES).

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

FILTER, HIGH EFFICIENCY + PIQUA (OCR) + REACTOR, ORGANIC COOLED + TECHNICAL SPECIFICATIONS + VENTILATION SYSTEM

12-21320 ALSO IN CATEGORY 5

EIBER RJ + MAXEY WA + DUFFY AP + ATTERRURY TJ

INVESTIGATION OF THE INITIATION AND EXTENT OF DUCTILE PIPE RUPTURE. QUARTERLY PROGRESS REPORT FOR  
JULY-SEPTEMBER, 1967.

BATTELLE MEMORIAL INSTITUTE

BMI-1817 +. 15 PAGES, 12 FIGURES, 2 TABLES, 3 REFERENCES, OCTOBER 1, 1967

RUPTURES TESTS WERE MADE ON SIX PIPES, 24 IN. OD X 1.5 IN. WALL THICKNESS, MADE OF A106B MATERIAL. ALL TESTS WITH SUBCOOLED WATER SHOWED RELATIVELY SHORT DUCTILE FRACTURE. TESTS WITH WET VAPOUR PROPAGATED AN END-TO-END FRACTURE AT A PROPAGATION SPEED OF 750 FT/SEC.

CATEGORY 12  
PLANT SAFETY FEATURES

12-21320 \*CONTINUED\*

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

ACCIDENT, LOSS OF COOLANT + ACCIDENT, LOSS OF PRESSURE + FAILURE, PIPE

12-21929 ALSO IN CATEGORY 18  
MONTICELLO AMENDMENT 3 TO PSAR--DESCRIPTION OF ENGINEERED SAFEGUARDS  
NORTHERN STATES POWER COMPANY, MINNEAPOLIS, MINN.

89 PAGES, FIGURES, TABLES, MONTICELLO NUCLEAR GENERATING PLANT, THIRD AMENDMENT TO CONSTRUCTION PERMIT APPLICATION, DOCKET NO. 50-263, TYPE--BWR, MFG--G.E., AE--GECHTEL, DECEMBER 29, 1966

AMENDMENT 3 CONSISTS OF REVISED PAGES TO THE PSAR, DESCRIBING THE REVISED ENGINEERED SAFEGUARDS SYSTEMS AND CORRECTING MINOR ERRORS.

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

\*ENGINEERED SAFETY FEATURE + MONTICELLO (BWR) + REACTOR, BWR + REPORT, PSAR

12-22142 ALSO IN CATEGORIES 17 AND 5  
STATUS OF DRESDEN 1 CORE SPRAY SYSTEM  
COMMONWEALTH EDISON COMPANY, CHICAGO, ILL.  
1 PAGE, DOCKET 50-10, TYPE--BWR, MFG--G.E., AE--BECHTEL, DECEMBER 19, 1967

GE RE-EVALUATED THE DESIGN-BASIS ACCIDENT AND IS DESIGNING AN EMERGENCY COPE-SPRAY SYSTEM. DRESDEN REPORTS THAT THE DESIGN AND ANALYSIS WORK ON THIS SYSTEM IS 25% COMPLETE, EXPECTED TO BE COMPLETE BY MARCH 1, 1968.

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

\*CORE SPRAY + \*MODIFICATION, SYSTEM OR EQUIPMENT + DRESDEN 1 (BWR) + EMERGENCY COOLING CONSIDERATIONS + REACTOR, BWR

12-22155 ALSO IN CATEGORIES 3 AND 11  
LEFRANCOIS J  
MECHANICAL GAP TRANSFER PUMP  
COMMISSARIAT A L-ENERGIE ATOMIQUE  
BRITISH PATENT 1,069,709 +. 5 PAGES, 2 FIGURES, MAY 10, 1967

A MECHANICAL TRANSFER PUMP PARTICULARLY ADAPTED TO THE TRANSFER OF RADIOACTIVE GASES COMPRISES A LIQUID PISTON MOVING IN A COMPRESSION CHAMBER. THE CHAMBER HAS INTAKE AND DELIVERY VALVES WHOSE OPENINGS AND CLOSINGS ARE SYNCHRONIZED WITH THE MOVEMENT OF THE PISTON, WITH THE INTAKE VALVE LOCATED ON THE AXIS OF THE DELIVERY VALVE. THE DELIVERY VALVE IS MADE UP OF A FLOATING MEMBER, WHICH IS RAISED DIRECTLY FROM ITS SEATING AS A RESULT OF COMPRESSION OF THE VOLUME OF GAS PRODUCED BY THE MOVEMENT OF THE LIQUID PISTON. A PORTION OF THE COMPRESSION CHAMBER CONTAINING THE LIQUID PISTON IS FORMED BY A PAIR OF BELLOWS THAT ARE OPERABLE BOTH TO CONTRACT OR BOTH TO EXPAND TOGETHER SO AS TO ENSURE MAXIMUM LIQUID DISPLACEMENT IN THE CHAMBER.

AVAILABILITY - THE PATENT OFFICE, 25 SOUTHAMPTON BLDG., LONDON, W. C. 2, ENGLAND, \$0.49 PER COPY

\*PATENT + \*PUMP + TRACFP, GAS

12-22157 ALSO IN CATEGORIES 13 AND 11  
CABARET J + GERARD V + VALENTIN A  
LIFTING MECHANISM  
COMMISSARIAT A L-ENERGIE ATOMIQUE  
BRITISH PATENT 1,054,239 +. 5 PAGES, 4 FIGURES, JANUARY 11, 1967

DESCRIBES A LIFTING MECHANISM USED IN A REACTOR FACILITY TO LIFT COVERS OF TANKS OR LEAK-TIGHT VESSELS USED TO TRANSFER RADIOACTIVE MATERIALS. THE LIFTING MECHANISM IS DESIGNED SO THAT UPWARD TRAVEL IS IN TWO STAGES. THE COVER IS LIFTED WHILE REMAINING PARALLEL TO THE PLANE OF THE OPENING. IN THE SECOND STAGE, THE COVER IS REMOVED SO AS TO FREE THE OPENING. THE FIRST STAGE PERMITS THE MATERIAL FROM THE LIQUID SEAL TO DRIP INTO THE VESSEL AND NOT BE DISPersed.

AVAILABILITY - THE PATENT OFFICE, 25 SOUTHAMPTON BLDG., LONDON, W.C. 2, ENGLAND, \$0.49 PER COPY

\*PATENT + \*CONTAINMENT DESIGN

12-22191 ALSO IN CATEGORY 11  
STRAUSS SD  
NUCLEAR POWER PLANT SAFETY  
8 PAGES, FIGURES, POWER, PAGES 150-166 (JANUARY 1968)

BRIEF NONTECHNICAL DISCUSSION OF THE VARIOUS METHODS USED TO PREVENT RELEASE OF RADIOACTIVE



CATEGORY 12  
PLANT SAFETY FEATURES

12-22191 \*CONTINUED\*

FISSION PRODUCTS FROM BWR AND PWR POWER PLANTS. SAFEGUARDS DESCRIBED INCLUDE (1) EMERGENCY CORE-COOLING SYSTEM TO PREVENT HIGH FUEL TEMPERATURE AND (2) CONTAINMENT SYSTEMS, INCLUDING PRESSURE SUPPRESSION, PRESSURE RELIEF, CONTAINMENT COOLING, FILTRATION SYSTEMS, SPRAYS, ICE CONDENSERS, STEAM VENTING, AND SUBATMOSPHERIC CONTAINMENT.

\*ENGINEERED SAFETY FEATURE + CONTAINMENT, GENERAL + EMERGENCY COOLING CONSIDERATIONS + PLANT PROTECTIVE SYSTEM + REACTOR, BWR + REACTOR, PWR + SYSTEM DESCRIPTION

12-22463 ALSO IN CATEGORIES 4 AND 11

HOLCOMB WF

EXPERIENCE WITH GLOVEBOX INERT ATMOSPHERE CONTROL SYSTEM

ARGONNE NATIONAL LAB., IDAHO DIVISION, IDAHO FALLS, IDAHO

4 PAGES, 2 FIGURES, NUCLEAR ENGINEERING AND DESIGN 6(3), PAGE 213-216, (OCT. 1967)

THE HANDLING AND PREPARATION OF SODIUM FOR FUEL ELEMENTS AT THE FUEL CYCLE FACILITY FOR THE SECOND EXPERIMENTAL BREEDER REACTOR REQUIRES THE USE OF A GLOVEBOX EQUIPPED WITH A RECIRCULATING INERT ATMOSPHERE OF HIGH PURITY. THE ARGON GAS PURIFICATION SYSTEM CONSISTS OF A PALLADIUM CATALYST FOR REMOVING OXYGEN, MOLECULAR SIEVE DRYER FOR REMOVING WATER, AND A CANNED BLOWER FOR CIRCULATING THE GAS. THE PURIFICATION SYSTEM SERVES A 250 CU. FT GLOVEBOX COMPLEX AND WITH CONTINUOUS OPERATION CAN MAINTAIN AN ATMOSPHERE WITH OXYGEN IMPURITIES OF 2 PPM AND WATER IMPURITIES OF 6 PPM AT AN INLEAKAGE RATE OF 0.002 CU. FT/HR OF AIR WHILE OPERATING THE GLOVEBOX COMPLEX AT A NEGATIVE PRESSURE OF 1 IN. OF WATER.

\*ARGON + \*DECONTAMINATION + \*GLOVE BOX + \*SODIUM + OPERATING EXPERIENCE

12-22523 ALSO IN CATEGORY 17

WOLTER EE

ELK RIVER CITED FOR NON-COMPLIANCE

RURAL COOPERATIVE POWER ASSOCIATION, ELK RIVER, MINN.

1 PAGE, ATOMIC ENERGY CLEARING HOUSE 14(4), PAGE 26 (JANUARY 22, 1968), DOCKET 115-1; TYPE--BWR,

MFG--A.C., AE--SGT + LUNDY

(LETTER, DEC. 4.) THREE ITEMS CITED AFTER AN OCT. 2-3 INSPECTION OF JULY 26 ACTIVITY - (1) EMERGENCY CORE-COOLING AND PRIMARY MAKEUP SYSTEM WERE IN CAPABLE OF INJECTING WATER INTO THE PRIMARY COOLING SYSTEM DURING 75% POWER OPERATION. (2) FORESEEABLE PLANT EMERGENCY NOT COVERED BY DETAILED WRITTEN PROCEDURES, ESPECIALLY SINCE THIS TYPE OF SITUATION HAD HAPPENED BEFORE. (3) TYGON TUBING WAS SUBSTITUTED FOR CARBON STEEL IN PRESSURE-RELIEF PIPING. \*\*\* ALSO NOTES POWER RAISED TO 100% TO RAISE THE APPARENT CORE WATER LEVEL AFTER A LOW-WATER-LEVEL ALARM.

\*COOLANT PURIFICATION SYSTEM + \*EMERGENCY PROCEDURE + \*MAINTENANCE AND REPAIR + CORE REFLOODING SYSTEM + FAILURE, ADMINISTRATIVE CONTROL + INSPECTION AND COMPLIANCE + LEAK + PRESSURE RELIEF + TECHNICAL SPECIFICATIONS

12-22529 ALSO IN CATEGORY 7

TECHNICAL SPECIFICATIONS MANUAL

GELMAN INSTRUMENT COMPANY, ANN ARBOR, MICHIGAN

62 PAGES, FIGURES, TABLES, NOV. 1967

CONTAINS DESCRIPTIONS AND SPECIFICATIONS OF FILTERS, FILTER HOLDERS, AIR SAMPLERS, AND RECORDERS.

AVAILABILITY - GELMAN INSTRUMENT CO., 600 SOUTH WAGNER ROAD, ANN ARBOR, MICHIGAN 48106

\*FILTER CHARACTERISTICS + \*FILTER, MEMBRANE + FILTER + FILTER, HIGH EFFICIENCY + SAMPLING + TESTING

12-23177 ALSO IN CATEGORIES 13 AND 17

NUCLEAR FUEL SERVICES, INC. AUTHORIZED TO RESUME OPERATIONS

U.S. ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.

3 PAGES, JANUARY 24, 1968, DOCKET 50-201

LETTER FROM DIVISION OF MATERIAL LICENSING BASES AUTHORIZATION ON CHANGE 6 IN TECH. SPEC. 7.4, LICENSE CSF-1. \*\*\*FOR BASIS OF AEC ACTION, SEE LETTERS NSF TO AEC, DATED JANUARY 13, 15, 1968.

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

\*LICENSING STATUS OF NUCLEAR PROJECTS + \*NFS + \*RADIATION SAFETY AND CONTROL + \*RADIOCHEMICAL PLANT SAFETY + INSPECTION AND COMPLIANCE + TECHNICAL SPECIFICATIONS

12-23179 ALSO IN CATEGORY 13

COHENDY G + RIBES C + NIEZBORALA F + LE BOUHELLEC J

DECONTAMINATION OF INSTALLATIONS IN IRRADIATED FUEL PROCESSING PILOT-PLANT

COMMISSARIAT A L ENERGIE ATOMIQUE, CHUSCLAN, FRANCE

CATEGORY 12  
PLANT SAFETY FEATURES

12-23179 \*CONTINUED\*  
CEA-R-2104 +. 28 PAGES, OCTOBER 1966, IN FRENCH

PROCEDURES USED IN THE DECONTAMINATION OF 9 CELLS OF THE IRRADIATED FUEL PROCESSING PILOT PLANT ARE DESCRIBED. THE OPERATIONS RESULTED INTERNAL DECONTAMINATION OF CIRCUITS AND EXTERNAL DECONTAMINATION OF CELL APPARATUS AND THE CELLS THEMSELVES. THE DECONTAMINATING AGENTS USED FOR THE RINSINGS WERE PRINCIPALLY NITRIC ACID AND SODIUM CARBONATE (SOMETIMES MIXED WITH TARTARIC ACID), SODIUM FLUORIDE IN NITRIC ACID SOLUTION, AND EDTA IN ALKALINE SOLUTION. THE DECONTAMINATING EFFECT OF SODIUM FLUORIDE ON ZIRCONIUM AND OF EDTA ON RUTHENIUM AND CERIUM WAS VERIFIED.

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

\*RADIOCHEMICAL PROCESSING + DECONTAMINATION + HOT CELL

12-23180 ALSO IN CATEGORY 13  
KARLSRUHE REPROCESSING PLANT  
KERNFORSCHUNGSZENTRUM, KARLSRUHE, GERMANY  
ORNL-TR-1768 + GWK-7 +. 15 PAGES, TRANSLATED FROM GERMAN

GENERAL DESCRIPTION COVERING SITE, DESIGN, CONSTRUCTION, FACILITIES, PROCESS, WASTE, SAFETY, AND COST.

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

\*RADIOCHEMICAL PROCESSING + DESIGN CRITERIA + GEOLOGICAL CONSIDERATION, GENERAL + GERMANY + HYDROLOGICAL CONSIDERATION, GENERAL + PLUTONIUM + RADIOCHEMICAL PLANT SAFETY + SAFETY PRINCIPLES AND PHILOSOPHY + SITE CLIMATOLOGY + SITING, CHEMICAL PROCESS PLANT + SOLVENT EXTRACTION PROCESS + URANIUM + URANIUM OXIDE + WASTE DISPOSAL, GENERAL

12-23191 ALSO IN CATEGORY 13  
WARNER BF  
THE NEW WINDSCALE SEPARATION PLANT. DESIGN AND EXPERIENCE  
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, SELLAFIELD, ENGLAND  
4 PAGES, 4 FIGURES, 3 REFERENCES, KERntechnik 9, PAGES 249-252 (JUNE 1967)

GENERAL DESCRIPTION COVERING FEED AND PRODUCT SPECIFICATIONS, CHOICE OF FLOWSHEET, MAIN FEATURES OF PROCESS, NUCLEAR HAZARDS CONTROL, EFFLUENT DISPOSAL, DESIGN FEATURES, AND OPERATIONAL EXPERIENCE.

\*RADIOCHEMICAL PLANT SAFETY + \*RADIOCHEMICAL PROCESSING + \*UNITED KINGDOM + \*WINDSCALE + CRITICALITY SAFETY + DESIGN CRITERIA + PLUTONIUM + SOLVENT EXTRACTION PROCESS + URANIUM DIOXIDE + WASTE DISPOSAL, GENERAL

12-23376 ALSO IN CATEGORIES 18 AND 7  
PLANT PROTECTION AGAINST HURRICANE WAVE ACTION  
FLORIDA POWER CORPORATION, ST. PETERSBURG, FLORIDA  
CAI-REPORT-1450 +. 92 PAGES, FIGURES, TABLES, OCTOBER 26, 1967, CRYSTAL RIVER UNITS 3 AND 4, APPENDIX 2C, SECTION 1 OF PRELIMINARY SAFETY ANALYSIS REPORT, AMENDMENT 1, DOCKET NO. 50-3027303. TYPE--PWR, MFG--P+W, AE--GILBERT ASSOC.

AFTER REVIEWING 12 YEARS OF USWB AND CORPS OF ENGINEERS EFFORT ON ANALYZING HYDRODYNAMIC EFFECTS OF HURRICANES, THE PREDICTED MAX. PROBABLE HURRICANE (WATER LEVEL ON SITE OF 11.4 FT WITH 9-FT WAVES) PROTECTION WAS VERIFIED WITH MODEL TESTS AT U OF FLA. (MOVIE AVAILABLE). CIRCULATING-PUMPS WILL BE INUNDED, BUT NUCLEAR SERVICE WATER PUMPS ARE INSIDE BUILDING. APPENDIX - (1) SOIL CEMENT SLOPE PROTECTION (4 PG), (2) A MODEL INVESTIGATION OF EXTREME RUNUP (15 PG), (3) NORMAL AND EXTREME LOW TIDE CONSIDERATIONS.

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

\*DESTRUCTIVE WIND + \*FLOOD + \*SITING, REACTOR + \*WEATHER, SEVEPE + CRYSTAL RIVER 3 AND 4 (PWR) + ENGINEERED SAFETY FEATURE + HYDRAULIC ANALYSIS + MODEL TESTING + REACTOR, PWR + REPORT, PSAR

12-23485 ALSO IN CATEGORY 18  
DRESDEN 2 AND 3 EMERGENCY CORE COOLING SYSTEMS AVAILABILITY ANALYSIS  
COMMONWEALTH EDISON COMPANY  
5 PAGES, 2 FIGURES, 5 REFERENCES, PAGES 6-2.45 THRU 6-2.47 OF DRESDEN 2 AND 3 FINAL SAFETY ANALYSIS REPORT, NOVEMBER 17, 1967, DOCKETS 50-237/249. TYPE--SWR, MFG.--G.E., AE--SGT + LUNDY

ANALYSES FOR TWO CASES (A SMALL BREAK AND A LARGE ONE) INCLUDE AVAILABILITY BLOCK DIAGRAMS. LEAST AVAILABLE SYSTEMS FOR SMALL BREAKS ARE HPCI (0.920) AND LPCI (0.9925). TOTAL COMPOSITE SYSTEM AVAILABILITY IS 1 MINUS 14 X 10(-7TH), DUE MAINLY TO THE HIGH AVAILABILITY OF FEEDWATER SYSTEM. (IF NORMAL AUXILIARY POWER FAILS - HENCE NO FEEDWATER - AVAILABILITY IS REDUCED TO 1 MINUS 12 X 10(-4TH).) FOR LARGE BREAKS, LEAST AVAILABLE SYSTEM IS LPCI (0.9925). COMPOSITE SYSTEM AVAILABILITY IS 1 MINUS 15 X 10(-6TH). WITHOUT AC POWER, IT IS 1 MINUS 12 X 10(-5TH).

CATEGORY 12  
PLANT SAFETY FEATURES

12-23485 \*CONTINUED\*  
AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

CORE REFLOODING SYSTEM + CORE SPRAY + DRESDEN 2 (BWR) + ENGINEERED SAFETY FEATURE + FAILURE MODE ANALYSIS + REACTOR, BWR + RELIABILITY ANALYSIS + REPORT, SAP

12-23871 ALSO IN CATEGORY 13  
CLEANSING AGENTS FOR PURIFYING SURFACES CONTAMINATED BY RADIOACTIVE MATERIALS  
UNITED KINGDOM ATOMIC ENERGY AUTHORITY  
FRENCH PATENT 1-303-673 +. 3 PAGES, AUGUST 6, 1962, PATENT (FOREIGN), IN FRENCH

PARTICULATE OR LIQUID RADIOACTIVE MATERIAL CAN BE REMOVED FROM A SURFACE BY APPLYING A LIQUID CONTAINING A FILM-FORMING MATERIAL (PREFERABLY NATURAL INDIA-RUBBER LATEX) AND A DETERGENT, AND SUBSEQUENTLY STRIPPING THE FORMED FLEXIBLE FILM FROM THE SURFACE. SEVERAL COMPOSITIONS ARE GIVEN.

AVAILABILITY - PHOTOCOPIES MAY BE OBTAINED FROM THE U.S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D. C., (\$0.30 PER COPY)

\*DECONTAMINATION + \*SURFACE, GENERAL + FRANCE + RADIATION SAFETY AND CONTROL + RADIOCHEMICAL PLANT SAFETY

12-23944 ALSO IN CATEGORY 13  
ROTREKL B  
METHOD OF DETERMINING THE CONTAMINABILITY AND DECONTAMINABILITY OF MATERIALS USED IN NUCLEAR ENGINEERING  
4 PAGES, KERNENERGIE, 10, PAGE 211 THRU 214, (JULY 1967) IN GERMAN

DESCRIBES A NEW METHOD FOR DETERMINING THE CONTAMINABILITY AND DECONTAMINABILITY OF PAINTS. REPRODUCIBLE AND COMPARABLE RESULTS WERE OBTAINED USING THE DROP TECHNIQUE OF DEPOSITION AND A NEW EQUIPMENT FOR RINSING THE CONTAMINATING SOLUTIONS.

\*COATING, SURFACE + \*RADIOCHEMICAL PLANT SAFETY + COATING + CONTAMINATION + DECONTAMINATION + SURFACE CONTAMINATION

12-24058 ALSO IN CATEGORIES 5 AND 8  
ZABEL CW  
LETTER FROM ACRS TO CHAIRMAN AEC  
AEC, DIVISION OF OPERATIONAL SAFETY  
3 PAGES, FEBRUARY 26, 1968, FROM USAEC PRESS RELEASE L-42

SUBJECT - REPORT OF ADVISORY TASK FORCE ON POWER REACTOR EMERGENCY COOLING (TID-24226). COMMENTS ON TID-24226, ADVISORY TASK FORCE REPORT, ARE PRESENTED IN THIS LETTER.

AVAILABILITY - AEC, DIVISION OF OPERATIONAL SAFETY, WASHINGTON, D. C.

ACCIDENT ANALYSIS + ACCIDENT, LOSS OF COOLANT + ACRS + BLOWDOWN + CORE MELTDOWN + EMERGENCY COOLING CONSIDERATIONS + EMERGENCY SYSTEM + REACTOR, BWR + REACTOR, PWR + SAFETY PROGRAM

12-24059 ALSO IN CATEGORIES 5 AND 8  
REPORT OF ADVISORY TASK FORCE ON POWER REACTOR EMERGENCY COOLING  
US ATOMIC ENERGY COMMISSION  
TID-24226 +. 226 PAGES, FIGURES, TABLES, REFERENCES, 1968

CONCLUSIONS, DISCUSSIONS, AND TECHNICAL APPENDICES ARE PRESENTED AS THE FOLLOWING ITEMS - (1) PHENOMENA ASSOCIATED WITH LOSS OF COOLANT (LOC), (2) STRUCTURAL RESPONSE REQUIREMENTS TO BLOWDOWN, (3) REQUIREMENTS OF EMERGENCY CORE-COOLING (ECC) SYSTEM, (4) TECHNOLOGY OF ECC, (5) PRACTICALITY OF ECC SYSTEM, (6) RELIABILITY ANALYSIS, (7) PRIMARY SYSTEM INTEGRITY, (8) BREAK SIZE FOR EMERGENCY CORE-COOLING DESIGN, (9) SAFEGUARDS ROLE OF CONTAINMENT, (10) CORE MELTDOWN, (11) COUNTERMEASURE PRIOR TO LOSS OF CONTAINMENT INTEGRITY, (12) HANDLING OF LARGE MOLTEN MASSES.

AVAILABILITY - USAEC DIRECTOR OF REGULATION, WASHINGTON, D. C., COPY IS FREE

ACCIDENT ANALYSIS + ACCIDENT, LOSS OF COOLANT + ACRS + BLOWDOWN + CORE MELTDOWN + EMERGENCY COOLING CONSIDERATIONS + EMERGENCY SYSTEM + REACTOR, BWR + REACTOR, PWR + SAFETY PROGRAM

12-24192  
ISTOMINA AG + SHTUKKENBERG YM  
THE CONTROL OF THE CONTAMINATION OF SURFACES WITH TRITIUM OXIDES AND DEACTIVATION MEASURES  
7 PAGES, MED. RADIOL. 12(7), PAGES 61-7 (JULY 1967) (IN RUSSIAN)

THE CONTAMINATION OF SIX MATERIALS BY TRITIUM OXIDES IS REPORTED. A METHOD IS PROPOSED FOR THE MEASUREMENT OF THE CONTAMINATION OF SURFACES, AND AN ASSESSMENT IS GIVEN OF DECONTAMINATION METHODS FOR SURFACES POLLUTED BY TRITIUM OXIDES.

\*CONTAMINATION + \*DECONTAMINATION + OXIDE + RADIOCHEMICAL PLANT SAFETY + TRITIUM

CATEGORY 12  
PLANT SAFETY FEATURES

12-24277 ALSO IN CATEGORY 17

CALDWELL R  
MILLING MACHINE ACCIDENT  
NUCLEAR MATERIALS AND EQUIPMENT CORP., APOLLO, PA.  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE, 14(14), PAGE 33-24 (APRIL 1, 1968)

(LETTER, FEB. 16) ON DEC. 14, 1967, A TECHNICIAN AMPUTATED HIS HAND IN A GLOVE BOX BY REACHING PAST THE CUTTER TO ADJUST A NITROGEN HOSE, ORDINARILY DONE WITH THE MACHINE OFF. THE HAND WAS DECONTAMINATED AND GRAFTED BACK ON, BUT WARMTH FAILED TO RETURN. \*\*\* CHANGES MADE WERE - (1) ADD 2 SWITCHES IN MOTOR CIRCUIT SO BOTH HANDS ARE NEEDED TO OPERATE MACHINE. (2) AN INTERLOCK PREVENTS OPERATION WHEN ACCESS TO CUTTING TOOLS IS OPEN. (3-6) SWITCHES RELAPED AND RELOCATED, LIGHTING IMPROVED, AND INDICATOR LIGHTS INSTALLED.

\*CONTAMINATION + INCIDENT, NONREACTOR + MODIFICATION, SYSTEM OR EQUIPMENT + PERSONNEL PROTECTIVE DEVICE + RADIATION INJURY, TREATMENT OF + REMOTE MANIPULATING AND VIEWING

12-24278 ALSO IN CATEGORIES 15 AND 17

OVER EXPOSURES TO GAMMA RADIATION, LAST HALF 1967  
NUCLEAR MATERIALS AND EQUIPMENT CORP., APOLLO, PA.  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE, 14(14), PAGE 34 (APRIL 1, 1968)

(LETTER, FEB. 29) (1) THREE 18-YEAR OLD EMPLOYEES EXCEEDED 1.25 REMS IN THE QUARTER, AND WERE REMOVED FROM EXPOSURE UNTIL 5(N-18) ALLOWS RETURN. WE WERE AWARE OF THE AM-241 PRESENT IN ZPPR FUEL BUT WERE NOT AWARE OF THE 18-YEAR-OLDS. PU DUST EMITS MORE X RAY BECAUSE OF LITTLE SELF-SHIELDING. (2) A 19-YEAR-OLD WAS TAKEN FROM HANDLING ZPPR AM-241-CONTAMINATED CRUCIBLES. (3) A SOURCE TECHNICIAN EXCEEDED LIFETIME LIMITS DURING THE FOURTH QUARTER. HIS JULY 1967 FILM BADGE HAD BEEN DAMAGED, AND EXPOSURE OMITTED. ESTIMATION YIELDED OVEREXPOSURE. (4) JAN.-MAR. 68 EXPOSURE TO SOURCE FOREMAN EXCEEDED 3 REMS.

\*AMERICIUM + \*FABRICATION + \*FUEL ELEMENT + \*PERSONNEL EXPOSURE, RADIATION + PLUTONIUM + SOURCE, RADIATION + X-RAY

12-24279 ALSO IN CATEGORIES 15 AND 17

OVER EXPOSURE TO AIR CONCENTRATIONS AT APOLLO  
ATOMIC ENERGY COMMISSION  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE, 14(14), PAGE 35 (APRIL 1, 1968)

(LETTER, MAR. 1) FIVE OPERATORS WERE EXPOSED TO MORE THAN 40 MPC-HOURS/WEEK. EACH WAS WEARING A RESPIRATOR, BUT NASAL CONTAMINATION EXCEEDED LIMITS, SO NO CREDIT WAS TAKEN. EXPOSURES WERE DETECTED WITH PERSONAL AIR SAMPLERS. ONE EXPOSURE OCCURRED DURING CLEANUP OF A CP-2 FURNACE. TWO OCCURRED DURING CRP-3 DISSOLVING OPERATIONS. TWO OCCURRED DURING FILTER HANDLING. FILTERS ARE ROUTINELY BAGGED, BUT OCCASIONALLY A BAG IS PUNCTURED.

\*FABRICATION + \*FUEL ELEMENT + \*INHALATION + MAXIMUM PERMISSIBLE CONCENTRATION (MPC) + PERSONNEL EXPOSURE, RADIATION

CATEGORY 13  
RADIOCHEMICAL PLANT SAFETY

13-20630 ALSO IN CATEGORY 3

LLOYD RC + CLAYTON ED  
INTERACTING ARRAYS OF CONTAINERS WITH U-233 SOLUTION  
BATTELLE NORTHWEST LAB.CONF-670-602 +. 12 PAGES, 8 FIGURES, ABSTRACT IN ANS TRANSACTIONS 10(1), PAGE 186 AND 189, (JUNE 1967),  
PAPER PRESENTED AT THE 1967 ANNUAL MEETING OF THE AMERICAN NUCLEAR SOCIETY, SAN DIEGO, CALIF., JUNE  
11-15, 1967

SUBCRITICAL NEUTRON INTERACTION EXPERIMENTS WERE RUN WITH BARE AND LUCITE-REFLECTED ARRAYS OF BOTTLES OF U-233 SOLUTION. THE EFFECT ON CRITICALITY OF ADDING LUCITE MODERATOR BETWEEN THE BOTTLES WAS ALSO STUDIED. THESE EXPERIMENTS PROVIDE DATA FOR NUCLEAR-SAFETY GUIDANCE IN HANDLING, STORAGE, AND SHIPMENT OF THIS MATERIAL, AND FOR CHECKING INTERACTION CALCULATIONS. THE EFFECT OF MODERATION WAS DETERMINED BY PLACING LUCITE PLATES OF DIFFERENT THICKNESS BETWEEN BOTTLES OF THE ARRAYS. THIS WAS DONE FOR THE 2 X 2 BOTTLE REFLECTED ARRAY AND FOR THE 3 X 3 AND 4 X 4 BOTTLE BARE ARRAYS. THE THICKNESS OF LUCITE BETWEEN BOTTLES GIVING THE LARGEST REACTIVITY INCREASE IN THE REFLECTED ARRAY WAS ABOUT ONE INCH, AND IN THE BARE ARRAY ABOUT TWO INCHES.

CRITICALITY SAFETY + FUEL HANDLING + FUEL STORAGE + LIQUID FUEL + NEUTRON INTERACTION + URANIUM

13-20716

STIMMELL GL + CORRIGAN JE + HOWARD NC  
CONVERSION OF A BETA-GAMMA HOT CELL FOR EXAMINATION OF PLUTONIUM-ENRICHED FUEL CAPSULES  
GENERAL ELECTRIC, PLEASANTON, CALIFORNIA1 PAGE, 1 REFERENCE, ANS TRANSACTIONS 10(2), PAGE 673, (NOVEMBER 9, 1967), PRESENTED AT THE 1967 WINTER  
MEETING OF THE AMERICAN NUCLEAR SOCIETY, CHICAGO, ILLINOIS, NOVEMBER 5-9, 1967

ONE OF THE FOUR EXISTING MULTICURIE BETA-GAMMA CELLS IN THE RADIOACTIVE MATERIALS LABORATORY AT THE VALLECITOS NUCLEAR CENTER WAS CONVERTED INTO AN ALPHA-BETA-GAMMA FACILITY. THE CELL IS NOW CAPABLE OF PERFORMING EXAMINATIONS OF PU-ENRICHED FUELED EXPERIMENTS.

\*BUILDING + \*FUEL REPROCESSING + \*HOT CELL + REACTOR, BWR + V5WR (BWR)

13-21194 ALSO IN CATEGORIES 14 AND 15

GLAUBERMAN H + BOOTHMANN WR + BRESLIN AJ  
STUDIES OF THE SIGNIFICANCE OF SURFACE CONTAMINATION  
USAEC, HEALTH AND SAFETY LAB10 PAGES, 3 FIGURES, 6 TABLES, 5 REFERENCES, PAGES 169 TO 178 OF SURFACE CONTAMINATION, PERGAMON PRESS,  
NEW YORK, PROCEEDINGS OF A SYMPOSIUM HELD AT GATLINBURG, TENN., JUNE 1964

STUDIES ARE REPORTED ON SURFACE AND AIRBORNE CONTAMINATION IN PLUTONIUM- AND URANIUM-PROCESSING FACILITIES AND IN A BERYLLIUM REFINERY. THE DATA INDICATE THAT AIR-SURFACE CONTAMINATION RELATIONS DERIVED AT ONE FACILITY WILL NOT BE VALID AT ANOTHER EXCEPT BY COINCIDENCE. FOR URANIUM FACILITIES AND THE BERYLLIUM FACILITY, LIMITS OF SURFACE CONTAMINATION WOULD APPEAR TO BE MEANINGLESS BECAUSE SOURCES OF CONTAMINATION OTHER THAN SURFACE CONTAMINATION ARE PREDOMINANT IN TERMS OF CONCENTRATION IN AIR. FOR MATERIALS OF GREATER SPECIFIC ACTIVITY THAN URANIUM, SUCH AS PLUTONIUM, SURFACE CONTAMINATION CAN BE THE SOURCE OF EXCESSIVE DUST CONCENTRATION IN AIR.

AVAILABILITY - PERGAMON PRESS, 44-01 21ST. ST., LUNG ISLAND CITY, NEW YORK 11101

\*CONTAMINATION + AEROSOL + BERYLLIUM + PLUTONIUM + SURFACE CONTAMINATION + URANIUM

13-22157 ALSO IN CATEGORIES 11 AND 12

CABARET J + GERARD V + VALENTIN A  
LIFTING MECHANISM  
COMMISSARIAT A L ENERGIE ATOMIQUE

BRITISH PATENT 1,054,839 +. 5 PAGES, 4 FIGURES, JANUARY 11, 1967

DESCRIBES A LIFTING MECHANISM USED IN A REACTOR FACILITY TO LIFT COVERS OF TANKS OR LEAK-TIGHT VESSELS USED TO TRANSFER RADIOACTIVE MATERIALS. THE LIFTING MECHANISM IS DESIGNED SO THAT UPWARD TRAVEL IS IN TWO STAGES. THE COVER IS LIFTED WHILE REMAINING PARALLEL TO THE PLANE OF THE OPENING. IN THE SECOND STAGE, THE COVER IS REMOVED SO AS TO FREE THE OPENING. THE FIRST STAGE PERMITS THE MATERIAL FROM THE LIQUID SEAL TO DRIP INTO THE VESSEL AND NOT BE DISPERSED.

AVAILABILITY - THE PATENT OFFICE, 25 SOUTHAMPTON BLDG., LONDON, W.C. 2, ENGLAND, \$0.49 PER COPY

\*PATENT + CONTAINMENT DESIGN

13-22259 ALSO IN CATEGORY 17

RUNION TC  
NFS-AEC CORRESPONDENCE REGARDING MANAGEMENT CONTROL  
NUCLEAR FUEL SERVICES, INC., NEW YORK

4 PAGES, ATOMIC ENERGY CLEARING HOUSE 14(3), PAGES 23-26 (JANUARY 15, 1968)

CATEGORY 13  
RADIOCHEMICAL PLANT SAFETY

13-22259 \*CONTINUED\*

(NFS TELEGRAM, JAN. 3) PRESIDENT OF NFS STATES THAT MATTERS REFERRED TO IN LETTER ARE A COMPLETE SURPRISE, AS OPERATIONS HAVE BEEN AND ARE CONDUCTED WITHIN LIMITS. MEETING ARRANGED. (COMPLIANCE DIVISION LETTER, DEC. 28) SUMMARIZES 1967 CORRESPONDENCE AND INSPECTION REPORTS (WE INFORMED YOU THAT NUMBER AND PATTERN OF DEFICIENCIES, IF CONTINUED, COULD ADVERSELY AFFECT PUBLIC HEALTH AND SAFETY. WE REQUESTED YOU MODIFY COMPANY MANAGEMENT SYSTEM TO CONTROL PLANT OPERATIONS TO ENSURE THAT EQUIPMENT AND ADMINISTRATIVE CONTROLS WERE ADEQUATE.) REQUEST NFS SUSPEND OPERATIONS IN HIGH-RADIATION-LEVEL AREAS. REVIEW TRAINING EQUIPMENT AND ENTRY INTO THESE AREAS, REVIEW AND UPDATE HP PROCEDURES AND VENTILATION SYSTEMS. APPENDIXES A AND B SUMMARIZE TWO INSPECTION REPORTS.

\*ADMINISTRATIVE CONTROL + \*FAILURE, ADMINISTRATIVE CONTROL + FUEL REPROCESSING + INSPECTION AND COMPLIANCE + NFS + RADIATION SAFETY AND CONTROL

13-22436 ALSO IN CATEGORY 17

NUMEC CITED FOR NON-COMPLIANCE

NUCLEAR MATERIALS AND EQUIPMENT CORP., APOLLO, PA.

3 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(21), PAGES 28-30 (MAY 22, 1967)

(LETTER, MARCH 24) LICENSE SNM-414 (NGV. 30, 1966, EXPLOSION) THE HEAT-KILL OF EXCESS H2O2 HAD NOT BEEN REVIEWED BY THE SAFETY COMMITTEE, AND THE PLUTONIUM CONTENT WAS 10 X PERMISSIBLE. \*\*\*LICENSE 37-4456-3 (JAN. 14, 1967, IR-193 RELEASE) MATERIALS WERE NOT UNDER THE SPECIFIED SUPERVISORS. TECHNICIANS DID NOT SURVEY THEMSELVES, NOR WAS THE MONITORING INSTRUMENTATION WORKING PROPERLY. INDIVIDUAL HAD NOT BEEN ADEQUATELY INSTRUCTED IN RADIATION-SAFETY PRECAUTIONS. \*\*\*SINCE EARLY 1966, DEFICIENCIES HAVE RECURRED, AND THE NUMBER IS INCREASING. THIS APPEARS TO INDICATE ABSENCE OF EFFECTIVE MANAGEMENT CONTROLS TO ENSURE COMPLIANCE WITH SAFETY PROCEDURES.

\*EXPLOSION + FAILURE, ADMINISTRATIVE CONTROL + HOT CELL + INCIDENT, GENERAL + INSPECTION AND COMPLIANCE + IRIIDIUM + PLUTONIUM + SPECIAL NUCLEAR MATERIAL + STAFFING, TRAINING, QUALIFICATION

13-22437 ALSO IN CATEGORY 17

NUMEC REPLIES TO COMPLIANCE CITATION OF MARCH 24, 1967

NUCLEAR MATERIALS AND EQUIPMENT CORP., APOLLO, PA.

2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(21), PAGES 30-31 (MAY 22, 1967)

(LETTER, APRIL 13) INDICATES PUZZLEMENT BY GENERAL INDICTMENT OF MANAGEMENT SAFETY CONTROLS. FACILITY IS NOT STATIC IN NATURE OF WORK, WHICH IS EXPANDING, AND DRAFT AND FULL EMPLOYMENT CAUSES EMPLOYEE MIGRATION. WE ARE INCREASING THE HP STAFF, AND AN INTERNAL REPORT FORM FOR DEFICIENCY CORRECTION HAS BEEN ESTABLISHED. THE APOLLO PLANT HAS TWICE AS MANY EMPLOYEES, AND WE INCREASED THE STAFF BY 107 IN 1966. TO MAINTAIN THIS NUMBER, WE HIRED AND TRAINED 534 PEOPLE.

\*STAFFING, TRAINING, QUALIFICATION + FAILURE, ADMINISTRATIVE CONTROL + INSPECTION AND COMPLIANCE + RADIATION SAFETY AND CONTROL

13-22438 ALSO IN CATEGORY 17

PUECHL KH

NUMEC REPORTS EXPOSURES TO AIRBORNE PLUTONIUM

NUCLEAR MATERIALS AND EQUIPMENT CORP., APOLLO, PA.

2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(21), PAGES 31-32 (MAY 22, 1967)

(LETTER, MAY 10) THREE TECHNICIANS WERE EXPOSED ON APRIL 17 (56.2, 63, AND 68 MPC-HR) BECAUSE OF A PUNCTURED GLOVE-BOX GLOVE. SURVEY AT THE TIME REVEALED A COVERALL SLEEVE CONTAMINATED TO 50,000 CPM IN SPOTS.

\*INHALATION + CONTAMINATION + GLOVE BOX + INCIDENT, EQUIPMENT + PERSONNEL EXPOSURE, RADIATION + PLUTONIUM

13-22521 ALSO IN CATEGORY 17

MALLINCKRODT REPLIES TO NGV. 30, 1967 NON-COMPLIANCE CITATION

MALLINCKRODT CHEMICAL WORKS, ST. LOUIS, MO.

4 PAGES, ATOMIC ENERGY CLEARING HOUSE 14(4), PAGES 22-25 (JANUARY 22, 1968)

(LETTER, DEC. 20.) ACTION TAKEN IN PRODUCTION OF I-131 DIAGNOSTIC CAPSULES INCLUDES MORNING MONITORING OF WORKER THYROID AND IMMEDIATE INVESTIGATION, USE OF DISPOSABLE GLOVES, GENERAL HP ON-THE-JOB TRAINING OF WORKERS, A DAILY SURVEY OF REFUSE CONTAINERS. COMPILATION OF EVIDENCE REVEALS THAT THE PROBLEM IS (QUOTE) PRINCIPALLY ONE OF IMPROVING WORKING HABITS AND ATTITUDES RATHER THAN EXPOSURES OF PERSONNEL TO HIGH AIRBORNE RADIOACTIVITY CONCENTRATION (UNQUOTE).

\*RADIATION SAFETY AND CONTROL + ADMINISTRATIVE CONTROL + FAILURE, ADMINISTRATIVE CONTROL + FISSION PRODUCT, IODINE + INHALATION + INSPECTION AND COMPLIANCE + STAFFING, TRAINING, QUALIFICATION

13-22526  
CRUNIN DF

ALSO IN CATEGORIES 15 AND 17

CATEGORY 13  
RADIOCHEMICAL PLANT SAFETY

13-22526 \*CONTINUED\*

UNITED NUCLEAR REPORTS OVEREXPOSURE TO AIRBORNE ACTIVITY  
UNITED NUCLEAR CORP., NEW HAVEN, CONN.  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 14(4), PAGE 27 (JANUARY 22, 1968)

(LETTER, DEC. 13.) THREE RECEIVED 1.5 TIMES MAXIMUM ALLOWABLE WEEKLY EXPOSURE, IN FOUR HOURS, TO AIRBORNE ALPHA EMITTER DURING CLEANUP OPERATIONS. MSA COMFO RESPIRATORS WITH TYPE-II ULTRAFILTERS WERE WORN. NO PROTECTION FACTOR ASSUMED. \*\*\* INCREASED HP COVERAGE AND EXPOSURE CONTROL DURING NONROUTINE OPERATIONS WILL BE PROVIDED. APPLICATION WAS MADE FOR USE OF A RESPIRATORY PROTECTION FACTOR.

\*DECONTAMINATION + \*INHALATION + \*PERSONNEL EXPOSURE, RADIATION + ALPHA EMITTER + FILTER EFFICIENCY + FILTER, GAS MASK + PERSONNEL PROTECTIVE DEVICE

13-22719 ALSO IN CATEGORY 8

COLBY LJ  
KINETICS OF THE REACTION OF URANIUM MONOCARBIDE WITH WATER  
ATOMICS INTERNATIONAL, NORTH AMERICAN AVIATION, INC., CALIF.  
7 PAGES, 6 FIGURES, 2 TABLES, 9 REFERENCES, JOURNAL OF THE LESS-COMMON METALS, 10(6), PAGES 425-431 (1966)

THE RATE OF HYDROLYSIS OF URANIUM CARBIDE FROM 30 TO 86.2 C WAS MEASURED BY A CONSTANT-VOLUME TECHNIQUE. AN ACTIVATION ENERGY OF 17.6 KCAL/MOLE OF UC WAS OBTAINED FROM AN ARRHENIUS PLOT OF THE DATA. THE HYDROLYSIS REACTION RATE AT 70 C WAS FOUND TO BE PROPORTIONAL TO THE SQUARE ROOT OF THE WATER CONCENTRATION WHEN 2-PROPANOL WAS USED AS A DILUENT. IT IS THEREFORE POSTULATED THAT THE RATE-DETERMINING STEP IN THE HYDROLYSIS OF URANIUM CARBIDE INVOLVES THE BREAKING OF AN O-H BOND.

\*ACTIVATION ENERGY + \*CHEMICAL KINETICS + \*URANIUM CARBIDE + \*WATER, GENERAL + CHEMICAL REACTION

13-22853 ALSO IN CATEGORY 17

AEC-COMPLIANCE AUTHORIZES NFS CONTINUED OPERATION UNDER PLAN OF ACTION  
UNITED STATES ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.  
13 PAGES, ATOMIC ENERGY CLEARING HOUSE 14(5), PAGE 29-41, (JAN. 30, 1968), DOCKET NO. 50-201

(TWX, JAN. 19) AGREES WITH PLAN OF ACTION AND SCHEDULE OF EXCEPTIONS OUTLINED IN JAN. 13/15 LETTERS. (NFS LETTER, JAN. 13.) REPLIES IN DETAIL TO DEC. 28 LETTER. NFS BELIEVES CONTAMINATION-CONTROL PROBLEMS WERE CAUSED BY VENTILATION SYSTEM BEING MARGINAL FOR UPSET CONDITIONS AND FOR HIGH BURNUP FUEL, AND TO UNEXPECTED FREQUENCY OF MAINTENANCE IN HANDLING EQUIPMENT - VENT MODIFICATIONS AND DECONTAMINATION FACILITY WILL BE COMPLETE BY APRIL 68. MANY PROBLEMS RESULT FROM LACK OF COMMUNICATION - MANY REMEDIAL STEPS BEGAN AFTER YOUR OCT. 67 INSPECTION AND WE DID NOT FURNISH YOU PROGRESS REPORTS. ADDITIONALLY, AMBIGUITIES (E.G. ADEQUATE CONTROLS) IN AEC REGULATIONS AND OUR TECH. SPECS. POSE MORE OF A PROBLEM IN THE FIELD.

\*MAINTENANCE AND REPAIR + \*VENTILATION SYSTEM + ADMINISTRATIVE CONTROL + DECONTAMINATION + FUEL REPROCESSING + INSPECTION AND COMPLIANCE + MODIFICATION, SYSTEM OR EQUIPMENT + NFS + TECHNICAL SPECIFICATIONS

13-23175

HUSZAGH DW + KUKACKA LE + STEINBERG M  
RADIATION FACILITY FOR USE WITH HAZARDOUS CHEMICAL SYSTEMS  
BROOKHAVEN NATIONAL LAB., UPTON, NEW YORK  
BNL-11550 + CONF-671102-7 +. 13 PAGES, FOR PRESENTATION AT 15TH CONFERENCE ON REMOTE SYSTEMS TECHNOLOGY AND ATOM FAIR, CHICAGO, ILL.

DESCRIBES FACILITY IN WHICH HIGHLY EXPLOSIVE GAS AND HIGH LEVELS OF RADIATION ARE JOINTLY PRESENT, FOR EXAMPLE, THE POLYMERIZATION AND COPOLYMERIZATION OF ETHYLENE THROUGH RADIATION-INDUCED REACTIONS.

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

\*RADIOCHEMICAL PLANT SAFETY + DESIGN CRITERIA + EXPLOSION + HOT CELL

13-23176

WEST GA + WATSON CD  
SAFETY STUDIES OF THE SHEARLEACH PROCESSING OF ZIRCALOY-2-CLAD SPENT NUCLEAR FUELS  
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE  
ORNL-4061 +. 14 PAGES, FIGURES, TABLES, REFERENCES, OCTOBER 1967

STUDY WAS CONDUCTED BY MEANS OF A LITERATURE SEARCH, IGNITION TESTS, SHEARING, AND ABRASIVE-DISK SAWING. CONCLUDED THAT SHEAR-LEACH PROCESSING CAN BE ACCOMPLISHED SAFELY, PROVIDED THAT APPROPRIATE PRECAUTIONS ARE TAKEN. BIBLIOGRAPHY INCLUDED.

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

\*RADIOCHEMICAL PLANT SAFETY + \*RADIOCHEMICAL PROCESSING + FIRE + FUEL REPROCESSING + URANIUM DIOXIDE +

CATEGORY 13  
RADIOCHEMICAL PLANT SAFETY

13-23176 \*CONTINUED\*  
ZIRCALOY

13-23177 ALSO IN CATEGORIES 17 AND 12  
NUCLEAR FUEL SERVICES, INC. AUTHORIZED TO RESUME OPERATIONS  
U.S. ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.  
3 PAGES, JANUARY 24, 1968, DOCKET 50-201

LETTER FROM DIVISION OF MATERIAL LICENSING BASES AUTHORIZATION ON CHANGE 6 IN TECH. SPEC. 7.4,  
LICENSE CSF-1. \*\*\*FOR BASIS OF AEC ACTION, SEE LETTERS NSF TO AEC, DATED JANUARY 13, 15,  
1968.

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

\*LICENSING STATUS OF NUCLEAR PROJECTS + \*NFS + \*RADIATION SAFETY AND CONTROL +  
\*RADIOCHEMICAL PLANT SAFETY + INSPECTION AND COMPLIANCE + TECHNICAL SPECIFICATIONS

13-23178  
BARGHUSEN JJ  
VOLATILITY PROCESSES  
ARGONNE NATIONAL LABORATORY, ARGONNE, ILLINOIS  
8 PAGES, 3 FIGURES, 26 REFERENCES, REACTOR AND FUEL-PROCESSING TECHNOLOGY, 10(3), PAGES 226-233 (SUMMER  
1967)

SEVERAL PROCESSES DESCRIBED. OF SAFETY INTEREST IS DISCUSSION OF ENVIRONMENTAL CONTAMINATION  
CONTROL, AND VOLATILE-FLUORIDE FISSION-PRODUCT RETENTION BY ADSORPTION AND FILTRATION (PAGES  
230-32).

\*RADIOCHEMICAL PLANT SAFETY + \*RADIOCHEMICAL PROCESSING + ADSORPTION + FILTER + FILTER CHARACTERISTICS +  
FISSION PRODUCT RETENTION

13-23179 ALSO IN CATEGORY 12  
COHENDY G + RIBES C + NIEZBORALA F + LE BOUELLEC J  
DECONTAMINATION OF INSTALLATIONS IN IRRADIATED FUEL PROCESSING PILOT-PLANT  
COMMISSARIAT A L'ENERGIE ATOMIQUE, CHUSCLAN, FRANCE  
CEA-R-3104 +. 28 PAGES, OCTOBER 1966, IN FRENCH

PROCEDURES USED IN THE DECONTAMINATION OF 9 CELLS OF THE IRRADIATED FUEL PROCESSING PILOT  
PLANT ARE DESCRIBED. THE OPERATIONS RESULTED INTERNAL DECONTAMINATION OF CIRCUITS AND  
EXTERNAL DECONTAMINATION OF CELL APPARATUS AND THE CELLS THEMSELVES. THE DECONTAMINATING  
AGENTS USED FOR THE RINSINGS WERE PRINCIPALLY NITRIC ACID AND SODIUM CARBONATE (SOMETIMES  
MIXED WITH TARTARIC ACID), SODIUM FLUORIDE IN NITRIC ACID SOLUTION, AND EDTA IN ALKALINE  
SOLUTION. THE DECONTAMINATING EFFECT OF SODIUM FLUORIDE ON ZIRCONIUM AND OF EDTA ON  
RUTHENIUM AND CERIUM WAS VERIFIED.

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

\*RADIOCHEMICAL PROCESSING + DECONTAMINATION + HOT CELL

13-23180 ALSO IN CATEGORY 12  
KARLSRUHE REPROCESSING PLANT  
KERNFORSCHUNGSZENTRUM, KARLSRUHE, GERMANY  
ORNL-TR-1768 + GWK-7 +. 15 PAGES, TRANSLATED FROM GERMAN

GENERAL DESCRIPTION COVERING SITE, DESIGN, CONSTRUCTION, FACILITIES, PROCESS, WASTE, SAFETY,  
AND COST.

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

\*RADIOCHEMICAL PROCESSING + DESIGN CRITERIA + GEOLOGICAL CONSIDERATION, GENERAL + GERMANY +  
HYDROLOGICAL CONSIDERATION, GENERAL + PLUTONIUM + RADIOCHEMICAL PLANT SAFETY +  
SAFETY PRINCIPLES AND PHILOSOPHY + SITE CLIMATOLOGY + SITING, CHEMICAL PROCESS PLANT +  
SOLVENT EXTRACTION PROCESS + URANIUM + URANIUM OXIDE + WASTE DISPOSAL, GENERAL

13-23181 ALSO IN CATEGORY 12  
WARNER BF  
THE NEW WINDSCALE SEPARATION PLANT. DESIGN AND EXPERIENCE  
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, SELLAFIELD, ENGLAND  
4 PAGES, 4 FIGURES, 3 REFERENCES, KERNTFCHNIK 9, PAGES 249-252 (JUNE 1967)

GENERAL DESCRIPTION COVERING NUCLEAR FEED AND PRODUCT SPECIFICATIONS, CHOICE OF FLOWSHEET, MAIN  
FEATURES OF PROCESS, NUCLEAR HAZARDS CONTROL, EFFLUENT DISPOSAL, DESIGN FEATURES, AND  
OPERATIONAL EXPERIENCE.



CATEGORY 13  
RADIOCHEMICAL PLANT SAFETY

13-23181 \*CONTINUED\*  
 \*RADIOCHEMICAL PLANT SAFETY + \*RADIOCHEMICAL PROCESSING + \*UNITED KINGDOM + \*WINDSCALE +  
 CRITICALITY SAFETY + DESIGN CRITERIA + PLUTONIUM + SOLVENT EXTRACTION PROCESS + URANIUM DIOXIDE +  
 WASTE DISPOSAL, GENERAL

13-23315 ALSO IN CATEGORY 17  
 FREDRICKSON RL  
 ABBOTT LABS REPORTS HIGH I-131 IN THYROID  
 ABBOTT LABORATORIES, CHICAGO, ILL.  
 2 PAGES, ATOMIC ENERGY CLEARING HOUSE 14(8), PAGES 35-36 (FEBRUARY 19, 1968)

(LETTER, JAN. 3) ROUTINE THYROID COUNTING ON NOVEMBER 27 REVEALED ONE PERSON WITH 0.34  
 MICROCURIE (247% PERMISSIBLE) OF I-131. HIS FOURTH-QUARTER THYROID EXPOSURE WAS 5.56 REMS.  
 NO INCIDENTS OCCURRED, NOR DID AIR SAMPLES INDICATE CONCENTRATION TO EXPLAIN THIS. SEVERAL  
 WORKERS SHOWED ELEVATED THYROID BURDENS IN 1967, WITH NO OBEVIOUS EXPLANATION. WE ARE  
 RE-EVALUATING AIR FLOW IN FUME HOODS.

\*FISSION PRODUCT, IODINE + \*INHALATION + \*PERSONNEL EXPOSURE, RADIATION + RADIOISOTOPE + VENTILATION SYSTEM

13-23316 ALSO IN CATEGORY 17  
 WILSON SD  
 RELEASE OF 352 POUNDS OF UF<sub>6</sub> AT GE-SAN JOSE  
 GENERAL ELECTRIC, SAN JOSE, CALIF.  
 1 PAGE, ATOMIC ENERGY CLEARING HOUSE 14(8), PAGE 36 (FEBRUARY 19, 1968)

(LETTER, JAN. 25) THE RELEASE IN BLDG. J ON DEC. 30, 1967, MAY HAVE DAMAGED A \$20,000  
 FLUORIDE-MEASURING INSTRUMENT, BUT NO EXPOSURE OR RELEASE OCCURRED. A MECHANIC TIGHTENED A  
 LEAKING CAP ON 1/4-IN. BRASS PIPE NIPPLE, WHICH BROKE OFF BEFORE HE APPLIED FORCE. HE WAS  
 WEARING A FULL-FACE FILTERED-AIR MASK. 90% OF THE MATERIAL HAS BEEN RECOVERED.

AIRBORNE RELEASE + MAINTENANCE AND REPAIR + URANIUM HEXAFLUORIDE

13-23364 ALSO IN CATEGORY 17  
 RUNION TC  
 NFS DISCUSSES COMPLIANCE CITATION  
 NUCLEAR FUEL SERVICES  
 4 PAGES, ATOMIC ENERGY CLEARING HOUSE 14(9), PAGES 28-31 (FEBRUARY 26, 1968) DOCKET 50-201

(LETTER, FEB. 2) WITH THE EXCEPTION OF ITEM 1A OF THE SEPT. 26-29 CITATION (FAILURE OF AN  
 INDIVIDUAL TO FOLLOW NFS PROCEDURE, THE INDIVIDUAL IS NO LONGER EMPLOYED BY NFS), THE  
 ACTIVITIES CITED WERE IN COMPLIANCE WITH TECHNICAL SPECIFICATIONS AND 10 CFR 10 AND 55.  
 DETAILED DISCUSSION FOLLOWS.

\*INSPECTION AND COMPLIANCE + FAILURE, ADMINISTRATIVE CONTROL + NFS + RADIOCHEMICAL PROCESSING

13-23365 ALSO IN CATEGORIES 15 AND 17  
 BAIN EE  
 NFS REPORTS EXPOSURE  
 NUCLEAR FUEL SERVICES, INC.  
 2 PAGES, ATOMIC ENERGY CLEARING HOUSE, 14(9), PAGES 31-32 (FEBRUARY 26, 1968)

(LETTER, FEB. 2) THE FOURTH-QUARTER FILM BADGE OF A PLUTONIUM PRODUCTION PLANT WORKER  
 INDICATED 3.07 REMS EXTERNAL WHOLE-BODY GAMMA RADIATION. HIS 1967 TOTAL IS 3.53 REMS AND  
 LIFETIME TOTAL 9.18. \*\*\*ALL STATIONS WITH SIGNIFICANT PLUTONIUM WILL BE SHIELDED, AND THE  
 CURRENT EXPOSURE RATE WILL BE POSTED DAILY.

\*PERSONNEL EXPOSURE, RADIATION + FUEL REPROCESSING + PLUTONIUM + RADIATION SAFETY AND CONTROL

13-23433  
 MOSELEY JD + ROBINSON HN  
 STATIC BED REACTOR FOR STUDIES OF A PLUTONIUM HEXAFLUORIDE VOLATILITY PROCESS  
 OOW CHEMICAL COMPANY, GOLDEN, COLORADO  
 RFP-1048 +. 19 PAGES, FIGURES, DECEMBER 5, 1967

STUDIES WERE BEGUN TO FIND IF CHEMICAL SEPARATION AND PURIFICATION OF PLUTONIUM FROM WASTE  
 MATERIAL COULD BE ACHIEVED WITH FLUORIDE VOLATILITY PROCESSES. EQUIPMENT DESIGNED FOR THE  
 PROJECT AND THE PROCEDURES DEVELOPED FOR USE ARE DESCRIBED. SAFETY DEVICES ARE DISCUSSED ON  
 PAGE 12.

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

\*RADIOCHEMICAL PLANT SAFETY + \*RADIOCHEMICAL PROCESSING + EQUIPMENT, GENERAL +  
 FLUORIDE VOLATILITY PROCESSES + FLUORINE + PLUTONIUM + PLUTONIUM DIOXIDE + WASTE HANDLING

CATEGORY 13  
RADIOCHEMICAL PLANT SAFETY

13-23871 ALSO IN CATEGORY 12  
CLEANSING AGENTS FOR PURIFYING SURFACES CONTAMINATED BY RADIOACTIVE MATERIALS  
UNITED KINGDOM ATOMIC ENERGY AUTHORITY  
FRENCH PATENT 1-303-673 +. 3 PAGES, AUGUST 6, 1962, PATENT (FOREIGN), IN FRENCH

PARTICULATE OR LIQUID RADIOACTIVE MATERIAL CAN BE REMOVED FROM A SURFACE BY APPLYING A LIQUID CONTAINING A FILM-FORMING MATERIAL (PREFERABLY NATURAL INDIA-RUBBER LATEX) AND A DETERGENT, AND SUBSEQUENTLY STRIPPING THE FORMED FLEXIBLE FILM FROM THE SURFACE. SEVERAL COMPOSITIONS ARE GIVEN.

AVAILABILITY - PHOTOCOPIES MAY BE OBTAINED FROM THE U.S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D. C., (\$0.30 PER COPY)

\*DECONTAMINATION + \*SURFACE, GENERAL + FRANCE + RADIATION SAFETY AND CONTROL + RADIOCHEMICAL PLANT SAFETY

13-23943  
BAPGHUSEN JJ  
VOLATILITY PROCESSES  
5 PAGES, 2 FIGURES, 22 REFERENCES, REACTOR AND FUEL REPROCESSING TECHNOLOGY 10(4), PAGE 309 THRU 313, (FALL 1967)

REVIEW OF CURRENT TECHNOLOGY. DISCUSSES BEHAVIOR OF VOLATILE FISSION-PRODUCT HALOGEN COMPOUNDS FROM PROCESSING OXIDE FUELS.

\*FISSION PRODUCT RELEASE, GENERAL + \*FLUORIDE VOLATILITY PROCESSES + \*FUEL REPROCESSING + \*RADIOCHEMICAL PROCESSING + FLUORIDE + MAGNESIUM + MOLYBDENUM + NEPTUNIUM + PLUTONIUM OXIDE + SODIUM + SORPTION + TECHNETIUM + URANIUM OXIDE

13-23944 ALSO IN CATEGORY 12  
ROTREKL B  
METHOD OF DETERMINING THE CONTAMINABILITY AND DECONTAMINABILITY OF MATERIALS USED IN NUCLEAR ENGINEERING  
4 PAGES, KERNENERGIE, 10, PAGE 211 THRU 214, (JULY 1967) IN GERMAN

DESCRIBES A NEW METHOD FOR DETERMINING THE CONTAMINABILITY AND DECONTAMINABILITY OF PAINTS. REPRODUCIBLE AND COMPARABLE RESULTS WERE OBTAINED USING THE DROP TECHNIQUE OF DEPOSITION AND A NEW EQUIPMENT FOR RINSING THE CONTAMINATING SOLUTIONS.

\*COATING, SURFACE + \*RADIOCHEMICAL PLANT SAFETY + COATING + CONTAMINATION + DECONTAMINATION + SURFACE CONTAMINATION

13-23945  
DE LOS SANTOS F + IRANZO E  
EVALUATION OF THE RISKS IN THE PROCESS FOR THE PRODUCTION OF URANIUM TETRAFLUORIDE  
JUNTA DE ENERGIA NUCLEAR, MADRID  
14 PAGES, 15 FIGURES, ENERG. NUCL. (MADRID), 11 (45), PAGE 21 THRU 34, (JAN.-FEB. 1967), (IN SPANISH)

EACH OF THE STEPS IN THE INDUSTRIAL PRODUCTION OF UF<sub>4</sub> IS ANALYZED TO DETERMINE THE RISKS OF EACH. THE DANGERS IN EACH STEP ARE EVALUATED, AND THE MOST ADEQUATE MEANS OF PROTECTION ARE ESTABLISHED.

\*RADIOCHEMICAL PLANT SAFETY + \*RADIOCHEMICAL PROCESSING + FLUORIDE + URANIUM

13-24220 ALSO IN CATEGORIES 13 AND 17  
SFDFH WH  
HTGR LONG-TERM SPENT FUEL STORAGE COSTS  
GENERAL ATOMIC DIVISION, GENERAL DYNAMICS CORP., SAN DIEGO, CALIF.  
CAMD-7904 1. 27 PAGES, FIGURES, TABLES, SEPTEMBER 1, 1967

PRELIMINARY DESIGNS HAVE BEEN PREPARED, AND PRESENT-DAY COSTS HAVE BEEN ESTIMATED FOR SPENT FUEL STORAGE VAULTS CONSTRUCTED AS A PART OF A 1000 MW(E) HIGH-TEMPERATURE GAS COOLED REACTOR (HTGR) PLANT. TWO SPENT FUEL STORAGE CONCEPTS WERE DEVELOPED. IN ONE CONCEPT, THE FUEL ELEMENTS ARE STORED IN OPEN CYLINDERS AND GASEOUS NITROGEN IS CIRCULATED ACROSS THE FUEL ELEMENTS TO REMOVE THE DECAY HEAT. IN THE OTHER CONCEPT, THE FUEL ELEMENTS ARE STORED IN SEALED CONTAINERS FROM WHICH NO CONTAMINATED GRAPHITE DUST CAN ESCAPE. THEREFORE, A ONCE-THROUGH AIR COOLING SYSTEM IS USED IN WHICH THE AIR IS PASSED AROUND THE OUTSIDE WALLS OF THE CONTAINERS. THE FUEL STORAGE VAULTS FOR BOTH CONCEPTS HAVE THE SAME CAPACITY - THE AMOUNT OF FUEL DISCHARGED FROM A 1000 MW(E) REACTOR OVER A 5-YR PERIOD. AMORTIZING VAULT CAPITAL COSTS OVER A 5-YR PERIOD, THE TOTAL ANNUAL COST OF STORING THE FUEL ELEMENTS WOULD BE APPROXIMATELY \$60 PER KILOGRAM OF HEAVY METALS STORED FOR BOTH THE OPEN CYLINDER CONCEPT (UNCANNED) AND THE SEALED CONTAINER CONCEPT (CANNED).

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

CATEGORY 13  
RADIOCHEMICAL PLANT SAFETY

13-24220 \*CONTINUED\*  
\*ERGONOMIC STUDY + FUEL STORAGE + REACTOR, GCR + STORAGE CONTAINER + WASTE HANDLING

13-24270 ALSO IN CATEGORIES 17 AND 7  
NORTH ED  
FILTER FAILURE ALLOWS HIGHER PARTICULATE RELEASE RATE  
NUCLEAR FUEL SERVICES, INC., WEST VALLEY, N. Y.  
4 PAGES, ATOMIC ENERGY CLEARING HOUSE, 14(14), PAGES 25-28 (APRIL 1, 1968), DOCKET 50-201

(LETTER, MARCH 24) ON MAR. 8-10, THE PARTICULATE RELEASE FROM THE STACK ALMOST EQUALED THE MONTHLY ALLOWANCE, DUE TO FAILURE OF THE DISSOLVER OFF-GAS FILTER (PLACED IN SERVICE MAR. 7). IT HAD BEEN LOADED FOR SEVERAL MONTHS PRIOR, READING 5 R/HR. ALTHOUGH IT MET THE DOP TEST MAR. 7, EITHER THE MEDIA BECAME POROUS OR DEVELOPED A CRACK, OR THE SEALANT HARDENED AND FAILED TO SEAL. MORE PROBABLY, THE ORGANIC BINDER EMBRITTLED, FREEING THE GLASS FIBERS AND ALLOWING THEM TO VIBRATE TO THE POINT OF FAILURE, OR TO PERMIT THEM TO MOVE RELATIVE TO EACH OTHER. FILTERS WILL BE REPLACED WITHIN A SHORT TIME AFTER REMOVAL FROM SERVICE FOR HIGH PRESSURE DROP OR HIGH RADIATION.

\*FILTER, DAMAGED + \*FILTER, FIBERGLASS + \*RADIATION DAMAGE + \*RADIOACTIVITY RELEASE + \*STACK + FAILURE, EQUIPMENT + FUEL REPROCESSING + NFS

13-24274 ALSO IN CATEGORIES 17 AND 15  
PERSONNEL OVEREXPOSURES DURING FOURTH QUARTER 1967  
NUCLEAR FUEL SERVICES, INC.  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE, 14(14), PAGE 32 (APRIL 1, 1968), DOCKET 50-201

(LETTER, FEB. 19) REPORT DESCRIBES OVEREXPOSURES AND CORRECTIVE ACTIONS. (WHOLE BODY) - 3 EMPLOYEES RECEIVED 3.1, 3.2, AND 3.4 REMS. (SKIN) - THREE RECEIVED 7.7, 8.2, AND 9.8 REMS. (EXTREMITY) - SIX RECEIVED 10.02, 19.11, 19.41, 19.62, 20.55, AND 20.56 REMS, ALL DUE TO SPOT SOURCES. \*\*\* CHANGES TO SOP FOR CONTAMINATED WORK AREAS, TO EQUIPMENT TO MINIMIZE CONTACT MAINTENANCE, AND TO IMPROVE VENTILATION ARE BEING UNDERTAKEN. A MANIPULATOR REPAIR AND DECONTAMINATION FACILITY IS BEING BUILT.

\*PERSONNEL EXPOSURE, RADIATION + CONTAMINATION + FUEL REPROCESSING + MAINTENANCE AND REPAIR + MODIFICATION, SYSTEM OR EQUIPMENT + NFS

13-24280 ALSO IN CATEGORY 17  
NUMEC CITED FOR NON-COMPLIANCE  
NUCLEAR MATERIALS AND EQUIPMENT CORP. APOLLO, PA.  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE, 14(14), PAGE 35 (APRIL 1, 1968)

(LETTER, FEB. 21) CITATIONS AFTER AN INSPECTION WERE FOR THE FOLLOWING REASONS - (1) PERSONNEL HAVE BYPASSED THE CHANGE AREAS BY FREQUENT USE OF REAR DOORS. (2) NUMEC FAILED TO REPORT A 3.76-REM EXPOSURE DURING THE FIRST QUARTER OF CY 1966. \*\*\* (REPLY, MAR. 5) WE ARE PLEASED NO NONCOMPLIANCE NOTED TO SNM-145 AND 37-4456-3 LICENSES. THIS REFLECTS OUR EFFORT. (1) BYPASSING IS NOT ROUTINE. WAS USED ONLY FOR IN-PLANT TRANSFER OF CONSTRUCTION MATERIAL, AND DOORS HAVE BEEN POSTED. TRAINING CLASS HAS BEEN HELD ON USE OF CHANGE ROOMS. MATERIAL NOW STORED ELSEWHERE. (2) THIS WAS AN OVERSIGHT. IN SEPT. 1967, AN OVERINSPECTION PROCEDURE WAS INSTITUTED.

\*INSPECTION AND COMPLIANCE + FAILURE, ADMINISTRATIVE CONTROL + PERSONNEL EXPOSURE, RADIATION + SPECIAL NUCLEAR MATERIAL

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-18834  
GOELDNER RW  
CONCENTRATION OF SOLUTIONS CONTAINING RADIOACTIVE MATERIALS BY EVAPORATION  
AQUA-CHEM, INC.  
BRITISH PATENT 1-063-533 +. 4 PAGES, 1 FIGURE, MARCH 20, 1967, PATENT (BRITISH)

A METHOD FOR CONCENTRATING RADIOACTIVE MATERIALS BY EVAPORATION FROM A WASTE SOLUTION SUCH AS A REACTOR COOLANT STREAM IS DESCRIBED. IN ADDITION TO THE CONCENTRATION OF RADIOACTIVE WASTE, BORON COMPOUNDS MAY BE SEPARATED FROM THE LIQUID. THE METHOD IS USED TO PRODUCE A LIQUID PRODUCT OF LOWER RADIOACTIVITY FROM A FEED MATERIAL OF HIGHER RADIOACTIVITY. THE FORMER MAY BE RETURNED TO THE REACTOR COOLANT SYSTEM FOR REUSE AND THE LATTER DISPOSED OF.

AVAILABILITY - THE PATENT OFFICE, 25 SOUTHAMPTON BUILDING, LONDON, W.C.2, ENGLAND, (£0.49 PER COPY)

\*EVAPORATION + \*PATENT + \*REACTOR COOLANT + BORON + CONCRETE + DESIGN CRITERIA + WASTE DISPOSAL, SOLID

14-20558  
VELTEN PJ  
RESOLUTION OF STRONTIUM-89 AND STRONTIUM-90 IN ENVIRONMENTAL MEDIA BY AN INSTRUMENTAL TECHNIQUE  
ROBERT A. TAFT SAN. ENGG. CENTER, CINCINNATI, OHIO  
4 PAGES, 4 TABLES, 7 REFERENCES, NUCLEAR INSTRUMENTS AND METHODS, 42(1), PAGES 169-72 (JUNE 1966)

THE BETA EMISSIONS OF SR-89 AND SR-90 ARE RESOLVED BY OBSERVING THE GROWTH OF THE Y-90 AND DECAY OF SR-89. THE RATIO OF COUNT RATE OF SR-90 AND THE INGROWN Y-90 TO THAT OF THE PARENT SR-90 AT ANY TIME IS PREDETERMINED. TWO MEASUREMENTS OF THE TOTAL RADIOSTRONTIUM FRACTIONS ARE MADE AT AN INTERVAL OF 7 TO 14 DAYS. EQUATING THIS RATIO AND THE DECAY FACTOR FOR SR-89 WITH THESE TWO MEASUREMENTS, TWO EQUATIONS CAN BE SET UP AND SOLVED SIMULTANEOUSLY TO EXPRESS THE INDIVIDUAL COUNT RATE OF THE TWO STRONTIUM ISOTOPES. THE COUNT RATE OF THE SR-90 IS CORRECTED FOR SELF-ABSORPTION LOSSES BY RELATING THE OVERALL DETECTION EFFICIENCY OF SR-90 TO THAT OF Y-90, AN ENERGETIC BETA EMITTER WITH NO SAMPLE-ABSORPTION LOSSES AT THE THICKNESS STUDIED. THIS TECHNIQUE DIFFERS FROM CONVENTIONAL METHODS IN THAT NEITHER ADDITIONAL CHEMISTRY NOR THE USE OF ABSORBERS IS REQUIRED AS A DIFFERENTIATING TOOL.

\*ANALYTICAL TECHNIQUE, GENERAL + INSTRUMENTATION, NUCLEAR + INSTRUMENTATION, RADIATION MONITORING + STRONTIUM + UNITED STATES

14-20574 ALSO IN CATEGORY 15  
TADMOR J + COWSER KE  
UNDERGROUND DISPOSAL OF KR-85 FROM NUCLEAR FUEL REPROCESSING PLANTS  
OAK RIDGE NATIONAL LAB., TENN.  
CONF-670602 +. 2 PAGES, 5 REFERENCES, ANS TRANSACTIONS 10(1) PAGES 159 AND 160 (JUNE 1967), PRESENTED AT THE 1967 ANNUAL MEETING OF THE AMERICAN NUCLEAR SOCIETY, SAN DIEGO, CALIFORNIA, JUNE 11-15, 1967

REPORT INDICATES THAT, CONSIDERING ADSORPTION AND MOLECULAR DIFFUSION OF KR-85, UNDERGROUND DISPOSAL OF KR-85 FROM REPROCESSING PLANTS MAY BE FEASIBLE, PROVIDED THAT A SUITABLE GEOLOGIC SETTING IS AVAILABLE AT THE PLANT SITE.

\*WASTE DISPOSAL, GAS + KRYPTON + WASTE DISPOSAL, ATMOSPHERIC + WASTE DISPOSAL, TERRESTRIAL

14-20738 ALSO IN CATEGORY 15  
DEJAEGERE R  
RADIOBIOLOGICAL EFFECTS OF TRACERS USED IN PLANT PHYSIOLOGY  
UNIVERSITY LIBRE, BRUSSELS  
9 PAGES, 2 FIGURES, 5 TABLES, 21 REFERENCES, ANN. GEMBLoux, 70, PAGES 12-20 (1964) IN FRENCH

THE USE OF RADIOACTIVE TRACERS IN BIOLOGICAL EXPERIMENTS IS BASED ON THE PREMISE THAT THE TRACERS IN BIOLOGICAL EXPERIMENTS DO NOT INFLUENCE NORMAL PROCESSES IN THE CELL. EVIDENCE IS PRESENTED THAT THIS CONDITION IS NOT ALWAYS REALIZED AND THAT IN SOME INSTANCES RADIATION FROM THE RADIOACTIVE TRACER AFFECTS CELLULAR METABOLISM. POSSIBLE MECHANISMS WHEREBY A STIMULATING EFFECT MAY OCCUR, INCLUDING EFFECTS ON THE AUXIN SYSTEM, ARE DISCUSSED. IT IS CONCLUDED THAT THE BIOLOGICAL EFFECTS OF RADIOELEMENTS USED AS TRACERS ARE NOT ALWAYS NEGLIGIBLE AND THAT IT IS NOT ALWAYS POSSIBLE TO PREDICT WHETHER THEY WILL STIMULATE OR INHIBIT.

\*RADIOBIOLOGY + FRANCE + RADIATION EFFECT + RADIOISOTOPE

14-20739 ALSO IN CATEGORY 12  
PIHULEAC I  
DECONTAMINATION OF SURFACES AND OBJECTS CONTAMINATED WITH RADIOACTIVE MATERIALS. IV. EXPERIMENTAL PART. USE OF INDIGENOUS LAUNDERING AGENTS FOR THE DECONTAMINATION OF TEXTILE MATERIALS  
6 PAGES, 5 FIGURES, 4 REFERENCES, REV. CHIM. (BUCHAREST), 17, PAGES 697-702 (NOV. 1966) IN RUMANIAN

TO PROTECT LATER USERS, CONTAMINATING RADIOACTIVE MATERIALS MUST BE REMOVED FROM SPECIAL PROTECTIVE EQUIPMENT OR ORDINARY CLOTHING BY WASHING THEM IN SPECIAL LAUNDERING SOLUTIONS.

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-20739 \*CONTINUED\*

TESTS WITH COTTON SPECIMENS SOAKED IN AQUEOUS SOLUTIONS CONTAINING I-131, BA-131, P-32, CE-141, AND FE-59 REVEALED THAT BEST RESULTS WERE OBTAINED BY WASHING THEM WITH A SOLUTION CONTAINING 0.2% OF A DETERGENT AND 0.2% OF A COMPLEXING AGENT, SUCH AS SODIUM HEXAMETAPHOSPHATE OR SODIUM EDTA. THREE WASHING AND RINSING CYCLES OF 5-MIN. DURATION EACH WERE BEST. THE DETERGENTS DERO-40, PENETROL, AND ALBA SUPER, OF RUMANIAN MANUFACTURE, WERE USED IN THE TESTS, WHICH WERE CARRIED OUT BY DETERMINING THE COUNT RATE AT VARIOUS STAGES OF THE DECONTAMINATION PROCESS.

\*DECONTAMINATION + RADIATION PROTECTION, CHEMICAL

14-21137 ALSO IN CATEGORY 15

GREEN FL

USES AND SAFETY ASPECTS OF THE LOW-ENERGY SOURCE YB-169  
VISO CORP., BURLINGTON, MASS.

5 PAGES, 1 TABLE, 3 FIGURES, 6 REFERENCES, AMERICAN INDUSTRIAL HYGIENE ASSOCIATION JOURNAL, 27, PAGES 444-448 (SEPT. OCT. 1966)

THE RADIOACTIVE SOURCE YTTERBIUM-169 EMITS A 52-KEV CHARACTERISTIC XRAY AND VARIOUS GAMMA RAYS WITH ENERGIES FROM 65 KEV TO 310 KEV. YTTERBIUM SOURCES IN SMALL EXPOSURE UNITS WEIGHING ABOUT 20 POUNDS ARE USEFUL FOR RADIOGRAPHY OF CASTINGS, WELDMENTS, ASSEMBLIES, AND OTHER FORMS OF VARIOUS MATERIALS, SUCH AS ALUMINUM, MAGNESIUM, IRON, PLASTICS, AND WOOD. RADIOGRAPHY WITH YB-169 PRODUCES NO HAZARD FROM ELECTRICAL SHOCK OR EXPLOSION. RADIATION SCATTERED FROM AIR, THE OBJECT, AND SURROUNDING MATERIALS IS LESS WITH YB-169 THAN WITH CONVENTIONAL X-RAY SOURCES, IR-192, OR CO-60. THEREFORE, PORTABLE RADIOGRAPHIC APPLICATIONS CAN BE MADE WITH LESS DIFFICULTY IN PROTECTION OF PERSONNEL.

\*RADIOGRAPHY + GAMMA + SOURCE, RADIATION + X-RAY + YTTERBIUM

14-21141 ALSO IN CATEGORY 15

LITTLE JB

ENVIRONMENTAL HAZARDS - IONIZING RADIATION  
HARVARD SCHOOL OF PUBLIC HEALTH, BOSTON, MASS.

10 PAGES, 4 TABLES, 25 REFERENCES, NEW ENGLAND JOURNAL OF MEDICINE, 275, PAGES 929-938 (OCT. 27, 1966)

REVIEWS EVIDENCE POINTING TO FACTS THAT SUPPORT THE THEORIES THAT THE MAJOR BIOLOGIC EFFECTS OF IONIZING RADIATION AT LOW DOSES AND LOW DOSE RATES ARE CARCINOGENIC AND THAT THE PRODUCTION OF GENETIC MUTATIONS IN THE GONADS IS PASSED ON TO OFFSPRING. THE BIOLOGICAL EFFECTS OF IONIZING RADIATIONS ON INDIVIDUALS AND POPULATIONS ARE DISCUSSED. CONSIDERATION WAS GIVEN TO THE MANY POSSIBLE SOURCES OF RADIATION THAT CAN BE HAZARDOUS TO MAN.

\*RADIATION DAMAGE + \*RADIOBIOLOGY + RADIATION IN PERSPECTIVE + RADIATION INJURY, TREATMENT OF + RADIOLOGY

14-21142

SEIDLER H + NAERTIG M

THE REMOVAL OF SR-90 FROM MILK. PART I. SURVEY OF LITERATURE AND EXPERIMENTS ON THE USE OF BONE PREPARATIONS AS ADSORBENTS.

INSTITUT FUER ERNAEHRUNG, POTSDAM-REHBRUECKE, GERMANY

9 PAGES, 1 FIGURE, REFERENCES, NAHRUNG, 9, PAGES 735-43 (1965) IN GERMAN

REVIEWS PREVIOUS REPORTS (55) RELATING TO HAZARDS OF FALLOUT SR-90 IN DAIRY PRODUCTS AND ITS REMOVAL FROM MILK. DISCUSSES FACTORS THAT MUST BE CONSIDERED RELATIVE TO THE NECESSITY FOR DECONTAMINATING RESTRICTED QUANTITIES OF MILK IN CASE OF A NUCLEAR DISASTER. ALSO DEALS WITH ARE THE DISTRIBUTION OF SR-90 IN MILK AND THE REDUCTION OF THE SR-90 ACTIVITY IN MILK AND MILK PRODUCTS THAT CAN BE OBTAINED BY SIMPLE PROCEDURES. A SURVEY IS GIVEN OF THE RESULTS OF INVESTIGATIONS ON THE EFFICIENCY OF BONE PREPARATIONS IN REMOVING SR-90 FROM MILK. SURVEYS PUBLICATIONS DEALING WITH THE DECONTAMINATION OF MILK BY MEANS OF RESIN ION EXCHANGERS. THE COST OF SR-90 REMOVAL BY VARIOUS METHODS IS ALSO ESTIMATED.

\*BIOLOGICAL CONCENTRATION, GENERAL + \*BIOLOGICAL CONCENTRATION, MILK + ADSORPTION + BIOLOGICAL CONCENTRATION, FOOD + GERMANY + ION EXCHANGE + STRONTIUM

14-21162 ALSO IN CATEGORY 15

SAMACHSON J + SCHECK J + SPENCER H

RADIOCALCIUM ABSORPTION AT DIFFERENT TIMES OF DAY  
VETERANS ADMINISTRATION HOSPITAL, HINES, ILL.

3 PAGES, 1 TABLE, 8 REFERENCES, AMERICAN JOURNAL CLIN. NUTR. 18, PAGES 449-51 (JUNE 1966)

TO DETERMINE WHETHER THE ABSORPTION OF CALCIUM DIFFERED AT DIFFERENT TIMES OF THE DAY, TRACER DOSES OF CA-47 WERE ADMINISTERED WITH THE MORNING AND EVENING MEAL, IN SEPARATE STUDIES, TO PATIENTS WHO WERE ON A CONSTANT DIETARY INTAKE IN THE METABOLIC WARD. THE TRACER DOSE WAS GIVEN TO TWO PATIENTS ON A LOW CALCIUM INTAKE, TWO ON A MEDIUM CALCIUM INTAKE, AND TWO ON A HIGH INTAKE. THE VARIABILITY OF ABSORPTION FROM MORNING TO EVENING DOSES WITH ANY LEVEL OF CALCIUM INTAKE WAS ABOUT EQUAL TO THE VARIABILITY OF REPEATED MORNING DOSES INGESTED ON DIFFERENT DAYS, AND THE ABSORPTION OF CALCIUM WAS NOT CONSISTENTLY GREATER AT EITHER TIME OF DAY. IT THEREFORE APPEARED THAT THE INGESTION OF RADIOCALCIUM WITH A SINGLE MEAL REFLECTED WITH REASONABLE ACCURACY THE ABSORPTION OF CALCIUM DURING THE DAY.

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-21162 \*CONTINUED\*  
BIOLOGICAL CONCENTRATION, MAN + BIOMEDICAL + CALCIUM + DIETARY HABIT + RADIOBIOLOGY

14-21186  
FISH BR  
SURFACE CONTAMINATION  
415 PAGES, FIGURES, TABLES, REFERENCES, PERGAMON PRESS, NEW YORK, 1967 PROCEEDINGS OF A SYMPOSIUM HELD AT  
GATLINBURG, TENNESSEE, JUNE 1964

CONTAINS 54 PAPERS AND ABSTRACTS ON SURFACE CONTAMINATION. TOPICS INCLUDE PROPERTIES OF  
AEROSOLS, INSTRUMENTATION FOR MEASUREMENT OF AEROSOLS, HEALTH HAZARDS, SURFACE PROPERTIES,  
ADSORPTION, REDISPERSION, DECONTAMINATION, CLEAN ROOMS, ETC.

AVAILABILITY - PERGAMON PRESS, 44-01 21ST ST., LONG ISLAND CITY, NEW YORK 11101

\*DECONTAMINATION + \*SURFACE CONTAMINATION + ADSORPTION + ADSORPTION SURFACE + AEROSOL + DISPERSION +  
RADIOISOTOPE

14-21187  
DAVIS LP  
DEPOSITION OF SUBMICRON-SIZE PARTICLES IN VENTILATION DUCTS  
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.  
8 PAGES, 6 FIGURES, 4 REFERENCES, PAGES 121 TO 128 SURFACE CONTAMINATION, PERGAMON PRESS, NEW YORK,  
PROCEEDINGS OF A SYMPOSIUM HELD AT GATLINBURG, TENN., JUNE 1964

A 54-SQ.-IN. CONCRETE VENTILATION DUCT 1000 FT LONG, USED TO VENT SEVERAL HIGH-LEVEL  
RADIOACTIVITY FACILITIES TO A FAN BELOW A MAIN STACK, WAS USED TO STUDY THE DEPOSITION  
BEHAVIOR OF PARTICLES OF 0.001 MICRON TO 1.0 MICRON WITH CONCENTRATIONS FROM 1 TO 1000 MG/CU.  
METER. AN EQUATION WAS DEVELOPED THAT PROVIDES A PLAUSIBLE MEANS OF PREDICTING DECREASES IN  
CONCENTRATION DUE TO DEPOSITION. THE PREDICTED DECREASE IN CONCENTRATION FOR THE  
CONCENTRATION INVESTIGATED IS NEGLIGIBLE, BUT THE CONTAMINATION ON THE DUCT WALLS CANNOT BE  
OVERLOOKED.

AVAILABILITY - PERGAMON PRESS, 44-01 21ST ST., LONG ISLAND CITY, NEW YORK 11101

\*DEPOSITION + AEROSOL + MATHEMATICAL TREATMENT + VENTILATION SYSTEM

14-21188  
SPANGLER GW + WILLIS CA  
PERMISSIBLE CONTAMINATION LIMITS  
UNIVERSITY OF CALIFORNIA, LOS ANGELES + ATOMICS INTERNATIONAL, CANOGA PARK, CALIF.  
8 PAGES, 5 FIGURES, 1 TABLE, 17 REFERENCES, PAGES 151 TO 158 OF SURFACE CONTAMINATION, PERGAMON PRESS, NEW  
YORK, PROCEEDINGS OF A SYMPOSIUM HELD AT GATLINBURG, TENN., JUNE 1964

TWO APPROACHES TO THE DETERMINATION OF PCL VALUES BASED ON HAZARDOUS WERE CONSIDERED. EACH  
NUCLIDE MAY BE CONSIDERED INDIVIDUALLY, OR THE CONSERVATIVE UPPER-BOUND APPROACH CAN BE  
APPLIED. THE UPPER-BOUND METHOD WAS CHOSEN. IT WAS CONCLUDED - (1) SURFACE CONTAMINATION  
HAZARDS ARE NOT COMPLETELY CONTROLLED BY THE ESTABLISHED MPD, MPC-AIR, AND MPC-WATER LIMITS.  
(2) PERMISSIBLE CONTAMINATION LIMITS BASED ON A CONSERVATIVE ASSESSMENT OF POTENTIAL  
INHALATION AND DIRECT RADIATION HAZARD ARE SUFFICIENT TO PROTECT AGAINST OTHER SURFACE  
CONTAMINATION HAZARDS. (?) CURRENT DATA APPEARS INSUFFICIENT FOR THE ESTABLISHMENT OF  
SPECIFIC PCL VALUES FOR INDIVIDUAL ISOTOPES.

AVAILABILITY - PERGAMON PRESS, 44-01 21ST ST., LONG ISLAND CITY, NEW YORK 11101

\*CONTAMINATION + DOSE CALCULATION, INTERNAL + RADIOISOTOPE

14-21189  
MORGAN GB + GALBRAITH EH + GILCREAS FW  
THE ADSORPTION OF VARIOUS RADIOISOTOPES UPON SELECTED MATERIALS  
U.S. PUBLIC HEALTH SERVICE, CINCINNATI, OHIO  
10 PAGES, 4 FIGURES, 8 TABLES, 4 REFERENCES, PAGES 35 TO 44 OF SURFACE CONTAMINATION, PERGAMON PRESS, NEW  
YORK, PROCEEDINGS OF A SYMPOSIUM HELD AT GATLINBURG, TENN., JUNE 1964

THE ADSORPTION OF RADIOISOTOPES UPON COMMON CONSTRUCTION MATERIALS WAS INVESTIGATED.  
RADIOISOTOPES WERE CONTAINED IN SOLUTIONS AT PH 6.0, WITH AN IONIC STRENGTH OF ABOUT 0.0004.  
MATERIALS INVESTIGATED WERE LIME GLASS, PYREX, PARAFFIN, MYLAR, POLYPROPYLENE, POLYETHYLENE,  
BUTADIENE RUBBER, AND NEOPRENE RUBBER. ADSORPTION ON GLASS IS A FUNCTION OF ALKALI OXIDES IN  
THE GLASS. HIGH-SILICA GLASS ADSORBS LESS THAN LIME GLASS. ADSORPTION DECREASES AS PH  
DECREASES. ZN-65 WAS ADSORBED TO THE GREATEST EXTENT. POLYETHYLENE AND POLYPROPYLENE WERE  
LEAST ADSORBENT. NEOPRENE RUBBER, BECAUSE OF ITS MOLECULAR CONFIGURATION, ADSORBS TO THE  
EXTENT THAT IT SHOULD BE CLASSIFIED AS AN ION EXCHANGE RESIN.

AVAILABILITY - PERGAMON PRESS, 44-01 21ST ST., LONG ISLAND CITY, NEW YORK 11101

\*ADSORPTION + MATERIAL + RADIOISOTOPE

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-21190  
JONES IS + POND SF  
SCME EXPERIMENTS TO DETERMINE THE RESUSPENSION FACTOR OF PLUTONIUM FROM VARIOUS SURFACES  
9 PAGES, 8 FIGURES, 2 TABLES, 7 REFERENCES, PAGES 83 TO 92 OF SURFACE CONTAMINATION, PERGAMON PRESS, NEW YORK, PROCEEDINGS OF A SYMPOSIUM HELD AT GATLINBURG, TENN., JUNE 1964

EXPERIMENTS WERE MADE FOR DERIVING SUSPENSION FACTORS FOR PU-239 DEPOSITED IN THE FORM OF POWDERED OXIDE AND NITRATE ON DIFFERENT TYPES OF FLOOR SURFACES. ANALYSIS OF SAMPLES OF AIRBORNE PLUTONIUM COLLECTED INDICATED THAT ONLY 10-20% OF THE ACTIVITY IS ASSOCIATED WITH PARTICLES OF RESPIRABLE SIZE. RESUSPENSION FACTORS RELATIVE TO ACTIVITY IN THE LABORATORY WERE DEVELOPED. IT WAS CONCLUDED THAT WORKING LIMITS IN USE IN THE UKAEA ARE VALID FOR MOST PRACTICAL CIRCUMSTANCES.

AVAILABILITY - PERGAMON PRESS, 44-01 21ST ST., LONG ISLAND CITY, NEW YORK, 11101

\*CONTAMINATION + AEROSOL + PLUTONIUM + RESUSPENSION + SURFACE CONTAMINATION + UNITED KINGDOM

14-21191  
BRUNSKILL RT  
THE RELATIONSHIP BETWEEN SURFACE AND AIRBORNE CONTAMINATION  
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, WINDSCALE  
13 PAGES, 3 FIGURES, 6 TABLES, 7 REFERENCES, PAGES 93 TO 105 OF SURFACE CONTAMINATION, PERGAMON PRESS, NEW YORK, PROCEEDINGS OF A SYMPOSIUM HELD AT GATLINBURG, TENN., JUNE 1964

GUIDE LIMITS ARE PROVIDED FOR BY THE ICRP FOR THE CONTROLLING AIRBORNE CONTAMINATION. THIS STUDY WAS DESIGNED TO OBTAIN PRACTICAL INFORMATION ON THE RESUSPENSION FACTORS ASSOCIATED WITH CONTAMINATED SURFACES AND CONTAMINATED CLOTHING. A REAPPRAISAL OF DERIVED WORKING LIMITS FOR SURFACE-CONTAMINATION LEVELS IN THE LIGHT OF ALL THE AVAILABLE EXPERIMENTAL EVIDENCE APPEARS TO BE JUSTIFIED.

AVAILABILITY - PERGAMON PRESS, 44-01 21ST ST., LONG ISLAND CITY, NEW YORK 11101

\*CONTAMINATION + AEROSOL + SURFACE CONTAMINATION + UNITED KINGDOM

14-21192 ALSO IN CATEGORY 15  
DUNSTER HJ  
THE CONCEPT OF DERIVED WORKING LIMITS FOR SURFACE CONTAMINATION  
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, HARWELL  
9 PAGES, 1 FIGURE, 2 TABLES, 4 REFERENCES, PAGES 139 TO 147 OF SURFACE CONTAMINATION, PERGAMON PRESS, NEW YORK, PROCEEDINGS OF A SYMPOSIUM HELD AT GATLINBURG, TENN., JUNE 1964

AN OPERATIONAL HEALTH-PHYSICS MEASUREMENT MUST EITHER PROVIDE A BASIS FOR DECISIONS ON CONTROL MEASURES OR MUST CONTRIBUTE TO THE INTERPRETATION OF OTHER DATA TO PROVIDE A BASIS FOR SUCH DECISIONS. WITH THE AID OF A NUMBER OF SIMPLIFYING ASSUMPTIONS, IT IS POSSIBLE TO CALCULATE DERIVED WORKING LIMITS OF SKIN CONTAMINATION FROM THE ICRP RECOMMENDATIONS.

AVAILABILITY - PERGAMON PRESS, 44-01 21ST ST., LONG ISLAND CITY, NEW YORK 11101

\*CONTAMINATION + ALPHA EMITTER + BETA EMITTER + HARWELL + SURFACE CONTAMINATION + UNITED KINGDOM

14-21193 ALSO IN CATEGORY 15  
BLATZ H + EISENBUD M  
THE ESTABLISHMENT OF LIMITS FOR RADIOACTIVE SURFACE CONTAMINATION  
NEW YORK UNIVERSITY MEDICAL CENTER  
5 PAGES, 3 FIGURES, 1 TABLE, 2 REFERENCES, PAGES 163 TO 167 OF SURFACE CONTAMINATION, PERGAMON PRESS, NEW YORK, PROCEEDINGS OF A SYMPOSIUM HELD AT GATLINBURG, TENN., JUNE 1964

THERE DOES NOT SEEM TO HAVE BEEN ESTABLISHED ANY RELIABLE RELATION BETWEEN SURFACE CONTAMINATION AND HEALTH HAZARD. THE RANGE OF LIMITS BEING USED TODAY FOR ALPHA-EMITTING MATERIALS APPEARS TO BE OF ABOUT THE RIGHT ORDER OF MAGNITUDE AS A CONVENIENT MEANS OF KEEPING SURFACE CONTAMINATION WITHIN REASONABLE LIMITS. IF THE MAINTENANCE OF THESE LIMITS IMPOSES AN UNREASONABLE COST OR INCONVENIENCE, THE LIMITS MAY BE EXCEEDED IF TECHNICAL CONSIDERATIONS PERMIT, IN WHICH CASE A PROGRAM OF AIR SAMPLING AND BIOASSAY SHOULD BE INSTITUTED.

AVAILABILITY - PERGAMON PRESS, 44-01 21ST ST., LONG ISLAND CITY, NEW YORK 11101

\*CONTAMINATION + ORNL + RADIATION IN PERSPECTIVE + RADIUM + SURFACE CONTAMINATION

14-21194 ALSO IN CATEGORIES 15 AND 13  
GLAUBERMAN H + BOOTHMANN WR + BRESLIN AJ  
STUDIES OF THE SIGNIFICANT OF SURFACE CONTAMINATION  
USAEC, HEALTH AND SAFETY LAB  
10 PAGES, 3 FIGURES, 6 TABLES, 5 REFERENCES, PAGES 169 TO 178 OF SURFACE CONTAMINATION, PERGAMON PRESS,

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-21194 \*CONTINUED\*  
NEW YORK, PROCEEDINGS OF A SYMPOSIUM HELD AT GATLINBURG, TENN., JUNE 1964

STUDIES ARE REPORTED ON SURFACE AND AIRBORNE CONTAMINATION IN PLUTONIUM- AND URANIUM-PROCESSING FACILITIES AND IN A BERYLLIUM REFINERY. THE DATA INDICATE THAT AIR-SURFACE CONTAMINATION RELATIONS DERIVED AT ONE FACILITY WILL NOT BE VALID AT ANOTHER EXCEPT BY COINCIDENCE. FOR URANIUM FACILITIES AND THE BERYLLIUM FACILITY, LIMITS OF SURFACE CONTAMINATION WOULD APPEAR TO BE MEANINGLESS BECAUSE SOURCES OF CONTAMINATION OTHER THAN SURFACE CONTAMINATION ARE PREDOMINANT IN TERMS OF CONCENTRATION IN AIR. FOR MATERIALS OF GREATER SPECIFIC ACTIVITY THAN URANIUM, SUCH AS PLUTONIUM, SURFACE CONTAMINATION CAN BE THE SOURCE OF EXCESSIVE DUST CONCENTRATION IN AIR.

AVAILABILITY - PERGAMON PRESS, 44-01 21ST. ST., LONG ISLAND CITY, NEW YORK 11101

\*CONTAMINATION + AEROSOL + BERYLLIUM + PLUTONIUM + SURFACE CONTAMINATION + URANIUM

14-21195  
PRINCE JR + WANG CH  
A METHOD FOR EVALUATING SURFACE CONTAMINATION OF SOFT BETA EMITTERS  
OREGON STATE UNIVERSITY  
5 PAGES, 4 TABLES, 8 REFERENCES, PAGES 179 TO 183 OF SURFACE CONTAMINATION, PERGAMON PRESS, NEW YORK, PROCEEDINGS OF A SYMPOSIUM HELD AT GATLINBURG, TENN., JUNE 1964

THE PURPOSE OF THIS REPORT IS TO SHOW HOW THE TECHNIQUE OF LIQUID SCINTILLATION COUNTING OF PAPER STRIPS CAN BE APPLIED TO THE PROBLEM OF EVALUATING SWIPES FROM SURFACES CONTAMINATED WITH SOFT BETA EMITTERS. FACTORS TO BE CONSIDERED IN APPLICATION OF THE METHOD ARE - (1) THE COUNTING EFFICIENCY, WHICH CAN BE AFFECTED BY THE TYPE OF FILTER PAPER, THE COMPOSITION OF THE COUNTING SOLUTION, AND THE SOLUBILITY OF THE RADIOCONTAMINANT IN THE COUNTING SOLUTION, AND (2) THE PARAMETERS WHICH INFLUENCE THE SWIPE TEST SUCH AS SURFACE POROSITY, WET OR DRY SWIPE, ETC.

AVAILABILITY - PERGAMON PRESS, 44-01 21ST ST., LONG ISLAND CITY, NEW YORK 11101

\*CONTAMINATION + BETA EMITTER + SURFACE CONTAMINATION + TRITIUM

14-21196 ALSO IN CATEGORY 15  
DUMMER JE  
EVALUATION OF SR-90 + Y-90 SURFACE CONTAMINATION USING RADIATION SURVEY INSTRUMENTS  
LOS ALAMOS SCIENTIFIC LABORATORY, NEW MEXICO  
11 PAGES, 7 FIGURES, 6 TABLES, 25 REFERENCES, PAGES 185 TO 195 OF SURFACE CONTAMINATION, PERGAMON PRESS, NEW YORK, PROCEEDINGS OF A SYMPOSIUM HELD AT GATLINBURG, TENN., JUNE 1964

THIS WORK WAS DESIGNED TO PROVIDE (1) A RELATIONSHIP BETWEEN GAMMA-RADIATION SURVEY-METER READINGS AND THE QUANTITY OF BETA EMITTER ON VARIOUS SURFACES, AND (2) A CORRELATION BETWEEN TRUE SURFACE DOSE RATE AND THE INDICATED CONTACT DOSE RATE AS MEASURED WITH SURVEY-TYPE INSTRUMENTS FOR A BETA-EMITTING ISOTOPE. AN INDICATED 0.05 MR/HR WOULD BE MEASURED FROM A 0.0006-MICROCURIE POINT SOURCE OR FROM AN EXTENDED SOURCE OF  $1.2 \times 10^{-5}$  MICROCURIE PER SQ. CM. THE SURFACE DOSE RATE FROM SUCH A POINT SOURCE WOULD BE 1.2 MRAD PER HR, AND FROM THE EXTENDED SOURCE, 0.28 MRAD/HR.

AVAILABILITY - PERGAMON PRESS, 44-01 21ST ST., LONG ISLAND CITY, NEW YORK 11101

\*CONTAMINATION + DOSE CALCULATION, EXTERNAL + SURVEY, RADIATION, GENERAL + STRONTIUM + SURFACE CONTAMINATION + SURVEY, RADIATION, ENVIRONMENTAL + YTTRIUM

14-21197  
WILSON R + VIVIAN GA  
PERFORMANCE OF SURFACE CONTAMINATION DETECTORS FOR ONTARIO HYDRO MAXIMUM PERMISSIBLE LEVELS OF SURFACE CONTAMINATION  
MEDICAL SERVICES DIVISION, ONTARIO HYDRO, TORONTO  
4 PAGES, 3 FIGURES, 2 TABLES, 3 REFERENCES, PAGES 197 TO 200 OF SURFACE CONTAMINATION, PERGAMON PRESS, NEW YORK, PROCEEDINGS OF A SYMPOSIUM HELD AT GATLINBURG, TENN., JUNE 1964

THE RESPONSE OF A GIVEN DECONTAMINATION DETECTOR TO SURFACE CONTAMINATION DEPENDS ON THE TECHNIQUE OF THE USER. THIS IS A REPORT OF THE TECHNIQUE USED TO DETERMINE THE BEHAVIOR OF THE SURFACE CONTAMINATION DETECTORS AT THE NPD AND THE RESPONSE OF THESE INSTRUMENTS FOR MAXIMUM PERMISSIBLE LEVELS OF SURFACE CONTAMINATION.

AVAILABILITY - PERGAMON PRESS, 44-01 21ST ST., LONG ISLAND CITY, NEW YORK 11101

\*CONTAMINATION + CANADA + FISSION PRODUCT ACTIVITY, GROSS + SURFACE CONTAMINATION + SURVEY, RADIATION, GENERAL

14-21198  
ROYSTER GW + DIRNEY RF  
TECHNIQUES FOR ASSESSING REMOVABLE SURFACE CONTAMINATION  
NATIONAL BUREAU OF STANDARDS  
7 PAGES, 7 FIGURES, 1 TABLE, PAGES 201 TO 207 OF SURFACE CONTAMINATION, PERGAMON PRESS, NEW YORK,



CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-21198 \*CONTINUED\*  
PROCEEDINGS OF A SYMPOSIUM HELD IN GATLINBURG, TENN., JUNE 1964

THE PURPOSE OF THE STUDY WAS TO EVALUATE THE SMEAR AND ADHESIVE-PAPER METHODS FOR MEASURING SURFACE CONTAMINATION AND TO COMPARE THESE WITH A NEW METHOD OF SAMPLE COLLECTION EMPLOYING AIR IMPINGEMENT TO REDISPERSE LOOSE CONTAMINATION AND COLLECTION OF THE RESULTING AIRBORNE MATERIAL ON A FILTER. IT WAS FOUND THAT CONVENTIONAL MEASURING TECHNIQUES FOR EVALUATING THE HAZARD ARISING FROM DEPOSITED RADIOACTIVITY ARE GROSSLY NONQUANTITATIVE. ALL VARIABLES WHICH MATERIALLY AFFECT REDISPERSION SHOULD BE TAKEN INTO CONSIDERATION WHEN EVALUATING A SPECIFIC SITUATION.

AVAILABILITY - PERGAMON PRESS, 44-01 21ST ST., LONG ISLAND CITY, NEW YORK 11101

\*CONTAMINATION + SAMPLING + SURFACE CONTAMINATION + SURVEY, RADIATION, GENERAL

14-21199  
KERRIGAN WJ.  
PREPARATION OF STANDARDIZED TEST DUSTS  
SAVANNAH RIVER LABORATORY, AIKEN, SOUTH CAROLINA  
8 PAGES, 11 FIGURES, 7 REFERENCES, PAGES 219 TO 226 OF SURFACE CONTAMINATION, PERGAMON PRESS, NEW YORK, PROCEEDINGS OF A SYMPOSIUM HELD IN GATLINBURG, TENN., JUNE 1964

THE TWO-STEP OPERATION DESCRIBED PRODUCES A DUST WHOSE FREQUENCY DISTRIBUTION IS GREATER THAN 0.2 MICRON BUT LESS THAN 44.0 MICRONS. THIS DUST CAN BE STORED IN A SEALED VIAL AND REDISPERSED AS REQUIRED. THE DUST IS SIZED BY THE LESS ELABORATE AND LESS EXPENSIVE METHODS OF OPTICAL MICROSCOPY.

AVAILABILITY - PERGAMON PRESS, 44-01 21ST ST., LONG ISLAND CITY, NEW YORK 11101

\*AEROSOL + ALUMINUM + URANIUM

14-21200  
PUTZIER EA  
SOME NEW DEVICES USED IN PLUTONIUM CONTAMINATION CONTROL  
THE DOW CHEMICAL COMPANY, GOLDEN, COLORADO  
5 PAGES, 5 FIGURES, PAGES 229 TO 233 SURFACE CONTAMINATION, PERGAMON PRESS, NEW YORK, PROCEEDINGS OF A SYMPOSIUM HELD IN GATLINBURG, TENN., JUNE 1964

THREE SIMPLE DEVICES WERE DEVELOPED TO DETECT AND CONTROL CONTAMINATION RELEASE. THEY ARE THE ALPHA FLASHER (A TRANSISTORIZED AIR PROPORTIONAL COUNTER), THE DOWNDRAFT GLOVE CHANGE HOOD, AND THE GLOVE CHANGE RING.

AVAILABILITY - PERGAMON PRESS, 44-01 21ST ST., LONG ISLAND CITY, NEW YORK, 11101

\*CONTAMINATION + INSTRUMENTATION, RADIATION MONITORING + AEROSOL + AIR + PLUTONIUM + RADIOACTIVITY RELEASE

14-21201  
FRANKE TH  
ESTIMATION OF THE DOSE RATE OF FALLOUT DEPOSITION BY X-RAY SPECTROMETRY  
MAX PLANCK-INSTITUT FUR BIOPHYSIK, FRANKFURT, GERMANY  
4 PAGES, 4 FIGURES, 7 REFERENCES, PAGES 257 TO 260 OF SURFACE CONTAMINATION, PERGAMON PRESS, NEW YORK, PROCEEDINGS OF A SYMPOSIUM HELD IN GATLINBURG, TENN., JUNE 1964

A MOBILE UNIT FOR DETECTING FALLOUT WAS DEVELOPED. DATA TAKEN WITH THE EQUIPMENT SHOWED THAT IT WAS POSSIBLE TO DETECT DOSE RATES WHICH WERE ONLY A FEW PERCENT OF THE RATE OF THE NATURAL AMBIENT RADIATION.

AVAILABILITY - PERGAMON PRESS, 44-01 21ST ST., LONG ISLAND CITY, NEW YORK, 11101

\*CONTAMINATION + FALLOUT + INSTRUMENTATION, RADIATION MONITORING + GERMANY + SPECTROMETRY, GAMMA + SURFACE CONTAMINATION

14-21202 ALSO IN CATEGORY 15  
GRAHAM ED + STODDART PG + SEVERN FW  
PLUTONIUM MONITORING TECHNIQUES FOR ZPR-III  
ARGONNE NATIONAL LABORATORY, IDAHO DIVISION  
6 PAGES, 3 REFERENCES, PAGES 293 TO 298 SURFACE CONTAMINATION, PERGAMON PRESS, NEW YORK, PROCEEDINGS OF A SYMPOSIUM HELD IN GATLINBURG, TENN., JUNE 1964

DESCRIBES TECHNIQUES AND PROCEDURES FOR MONITORING AND CONTAMINATION CONTROL FOR THE ZPR III (PLUTONIUM FUEL LOADING).

AVAILABILITY - PERGAMON PRESS, 44-01 21ST ST., LONG ISLAND CITY, NEW YORK, 11101

\*CONTAMINATION + MONITORING SYSTEM, RADIATION + CRITICAL ASSEMBLY FACILITY + PLUTONIUM + SURFACE CONTAMINATION + ZPR 3 (CAF)

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-21203 ALSO IN CATEGORY 15

SAXBY WN + HOLE JA

PRACTICAL ASPECTS OF SURFACE CONTAMINATION CONTROL AT A.W.R.E.

UNITED KINGDOM ATOMIC ENERGY AUTHORITY

9 PAGES, 1 TABLE, 1 REFERENCE, PAGES 299 TO 307 OF SURFACE CONTAMINATION, PERGAMON PRESS, NEW YORK, PROCEEDINGS OF A SYMPOSIUM HELD IN GATLINBURG, TENN., JUNE 1964

TWELVE YEARS OF OPERATING EXPERIENCE AT THE AWE HAS NOT RESULTED IN ANY CONTINUING SIGNIFICANT SURFACE CONTAMINATION PROBLEM IN WORKING AREAS EITHER FOR RADIOACTIVE MATERIALS OR BERYLLIUM. THIS SATISFACTORY STATE OF AFFAIRS ARISES PARTLY FROM INSISTENCE ON A HIGH STANDARD OF CONTAINMENT, AND THE CONTROL OF ACCESS TO AREAS IN WHICH THE MATERIALS ARE WORKED. OTHER REASONS CAN BE ASCRIBED TO THE STANDARD OF TRAINING AND SUPERVISION AMONGST OPERATIONAL STAFF, TO THE CAREFUL PLANNING OF EQUIPMENT AND PROCESSES IN CONSULTATION WITH THE SAFETY SERVICES, AND TO THE PRESENCE OF HEALTH PHYSICS SURVEY STAFF PERMANENTLY WORKING IN THE HANDLING FACILITIES. THERE IS NO DIFFICULTY IN WORKING WELL WITHIN THE SURFACE CONTAMINATION LIMITS SET BY THE UKAEA, AND IT IS CONSIDERED THAT THESE PROVIDE REASONABLE GUIDES. INSTRUMENTS AND TECHNIQUES ARE AVAILABLE FOR ASSESSING SURFACE CONTAMINATION AT LEVELS BELOW THESE LIMITS.

AVAILABILITY - PERGAMON PRESS, 44-01 21ST ST., LONG ISLAND CITY, NEW YORK 11101

\*CONTAMINATION + BERYLLIUM + PLUTONIUM + SURFACE CONTAMINATION + THORIUM + URANIUM

14-21204 ALSO IN CATEGORY 15

BURTON LK + COLE JS

ENVIRONMENTAL RADIOACTIVITY AND BODY BURDEN

CENTRAL ELECTRICITY GENERATING BOARD, BERKELEY

8 PAGES, 8 FIGURES, 8 REFERENCES, PAGES 309 TO 316 OF SURFACE CONTAMINATION, PERGAMON PRESS, NEW YORK, PROCEEDINGS OF A SYMPOSIUM IN GATLINBURG, TENN., JUNE 1964

DESCRIBES THE PROGRAM AND EQUIPMENT TO BE USED AT CEGB POWER STATIONS FOR MEASURING ENVIRONMENTAL CONTAMINATION AND BODY BURDENS.

AVAILABILITY - PERGAMON PRESS, 44-01 21ST ST., LONG ISLAND CITY, NEW YORK 11101

\*CONTAMINATION + \*DOSE MEASUREMENT, INTERNAL + AIR + ALPHA EMITTER + ANALYTICAL TECHNIQUE, URINE + BIOLOGICAL CONCENTRATION, MAN + COUNTER, WHOLE BODY + PLUTONIUM + SAMPLING + UNITED KINGDOM + URANIUM

14-21205

LOYSEN P

ECONOMICS OF BUILDING DECONTAMINATION

USAEC, HEALTH AND SAFETY LABORATORY, NEW YORK

7 PAGES, 2 TABLES, PAGES 361 TO 367 OF SURFACE CONTAMINATION, PERGAMON PRESS, NEW YORK, PROCEEDINGS OF A SYMPOSIUM IN GATLINBURG, TENN., JUNE 1964

DESCRIBES THE PROBLEMS INVOLVED IN DECONTAMINATING AND/OR DISMANTLING CONTAMINATED BUILDINGS. THE BUILDINGS HAD BEEN USED FOR PROCESSING, FABRICATION, RESEARCH, DIAL PAINTING, AND WAREHOUSING OPERATIONS INVOLVING URANIUM, THORIUM, PLUTONIUM, BERYLLIUM, AND RADIUM. COSTS VARIED FROM \$0.11 PER SQ. FT. TO \$2.54 PER SQ. FT.

AVAILABILITY - PERGAMON PRESS, 44-01 21ST ST., LONG ISLAND CITY, NEW YORK 11101

\*CONTAMINATION + BERYLLIUM + ECONOMICS + PLUTONIUM + RADIUM + SURFACE CONTAMINATION + THORIUM + URANIUM

14-21206

NISHIWAKI Y + NISHIOKA H

ON THE REMOVAL OF THE RADIOACTIVE SURFACE CONTAMINATIONS

TOKYO INSTITUTE OF TECHNOLOGY

13 PAGES, 8 FIGURES, 6 TABLES, 10 REFERENCES, PAGES 377 TO 389 OF SURFACE CONTAMINATION, PERGAMON PRESS, NEW YORK, PROCEEDINGS OF A SYMPOSIUM HELD IN GATLINBURG, TENN., JUNE 1964

REPORTS THE EFFECTIVENESS OF DECONTAMINATION OPERATIONS ARE A FUNCTION OF THE DECONTAMINATING AGENT AND THE CONDITION OF THE CONTAMINATED SURFACE. EXPERIMENTS WITH GLASS, COTTON CLOTH, AND FOLIAGE, USING SR-89, I-125, AND MIXED FISSION PRODUCTS AS CONTAMINATING AGENTS.

AVAILABILITY - PERGAMON PRESS, 44-01 21ST ST., LONG ISLAND CITY, NEW YORK, 11101

\*CONTAMINATION + \*DECONTAMINATION + CALCIUM + FISSION PRODUCT ACTIVITY, GROSS + IODINE + JAPAN + STRONTIUM

14-21207

CLARE GW

THE DECONTAMINATION SERVICE AT A.E.R.F., HARWELL

UNITED KINGDOM ATOMIC ENERGY AUTHORITY, HARWELL

20 PAGES, 10 FIGURES, PAGES 391 TO 410 OF SURFACE CONTAMINATION, PERGAMON PRESS, NEW YORK, PROCEEDINGS OF

CATEGORY 14  
RADIOISOTOPE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-21207 \*CONTINUED\*  
A SYMPOSIUM HELD IN GATLINBURG, TENN., JUNE 1964

DESCRIBES DECONTAMINATION PROCEDURES AND FACILITIES AT HARWELL. INCLUDES DRAWINGS, PHOTOGRAPHS, AND COPIES OF THE FORMS USED IN ADMINISTRATIVE CONTROL.

AVAILABILITY - PERGAMON PRESS, 44-01 21ST ST., LONG ISLAND CITY, NEW YORK, 11101

\*DECONTAMINATION + ECONOMICS + EQUIPMENT, GENERAL + HARWELL + PROCEDURES AND MANUALS + UNITED KINGDOM

14-21252  
SHINN AF  
FRESHWATER FISH IN A NUCLEAR DISASTER  
OAK RIDGE NATIONAL LABORATORY  
ORNL-P-2954 + CONF-67G208-1 +. 12 PAGES, 3 TABLES, 12 REFERENCES, FROM 1ST COMMERCIAL FISH FARMING CONFERENCE, COLLEGE STATION, TEXAS

FRESH-WATER FISH FARMS OFFER RELATIVELY INVULNERABLE SOURCES OF HIGH QUALITY PROTEIN WHICH WOULD SIGNIFICANTLY CONTRIBUTE TO THE MAINTENANCE OF ADEQUATE PROTEIN INTAKE, AT LEAST IN THEIR SURROUNDING AREAS AFTER A NUCLEAR ATTACK. SPORT FISHING COULD YIELD ABOUT 20% OF AVAILABLE EDIBLE FISH.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA., \$2.00 COPY, \$0.65 MICROFICHE

\*BIOLOGICAL CONCENTRATION, GENERAL + \*CIVIL DEFENSE + BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + BIOLOGICAL CONCENTRATION, FOOD + BIOTA + RADIOBIOLOGY

14-21253 ALSO IN CATEGORY 15

BREUER F  
DOSE TO THE THYROID FROM INTAKE OF TE-132. INGESTION OR INHALATION OF TRANSPORTABLE COMPOUNDS  
COMITATO NAZIONALE PER L'ENERGIA NUCLEARE, ROME, ITALY  
RT/PROT-166)27 +. 11 PAGES, 3 TABLES, 9 REFERENCES, 1966

THE HIGHEST RISK TO THE POPULATION AS THE RESULT OF AN ACCIDENT TO A REACTOR WOULD BE THE INGESTION AND INHALATION OF RADIOIODINE. ONE SOURCE OF IODINE-132 WOULD BE THE DECAY OF TELLURIUM-132. THIS REPORT PRESENTS A CALCULATION OF DOSE TO THE ADULT THYROID DUE TO INHALATION AND TO INGESTION.

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

\*RADIOBIOLOGY + \*TELLURIUM + FALLOUT + INGESTION + INHALATION + IODINE + ITALY + RADIATION DAMAGE

14-21254 ALSO IN CATEGORY 15

WILLARD CH  
INHALATION AND RETENTION OF PU-239 MICROSPHERES IN BEAGLE DOGS  
BATTELLE-NORTHWEST, RICHLAND, WASHINGTON  
BNWL-SA-1105 + CONF-670610-4 +. 10 PAGES, 4 FIGURES, 2 TABLES, JULY 14, 1967, FROM 12TH ANNUAL MEETING OF THE HEALTH PHYSICS SOCIETY, WASHINGTON, D. C.

IN THE FIRST EXPERIMENT, 22 DOGS WERE EXPOSED TO AIR IN WHICH PLUTONIUM-239 DIOXIDE PARTICLES (50 MICRONS IN DIAM) WERE DISPERSED. IN THE SECOND EXPERIMENT, SINGLE OR SEVERAL 50-, 120-, OR 150-MICRON PARTICLES WERE PLACED IN THE LUNGS OF 29 DOGS BY INTUBATION WHILE ANESTHETIZED. WHOLE-BODY LONGITUDINAL SCANNING WAS USED TO FOLLOW THE COURSE OF THE PARTICLES IN THE DOGS. INHALED PLUTONIUM PARTICLES WERE CLEARED BY ALL DOGS BY 16 DAYS AFTER EXPOSURE. PARTICLES PLACED IN LUNG BY INTUBATION WERE CLEARED MORE SLOWLY, BUT ONLY THREE DOGS RETAINED PARTICLES PAST SIX MONTHS. NO BIOLOGICAL EFFECTS HAVE BEEN OBSERVED EXCEPT FOR A POSSIBLE LYMPHOPENIA IN ONE DOG, WHICH RETAINED A 300-MICRON PARTICLE FOR OVER A YEAR.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA., \$2.00 COPY, \$0.65 MICROFICHE

\*RADIOBIOLOGY + AEROSOL + AIRBORNE RELEASE + BATTELLE NORTHWEST + INHALATION + PARTICLE SIZE + PARTICLE, RADIOACTIVE + PLUTONIUM + RADIATION DAMAGE

14-21257  
OZISIK MN + HUGHES D  
EFFECTS OF NON-QUIESCENT ATMOSPHERE IN CONTAINMENT VESSELS ON DISPERSION OF FISSION PRODUCTS. PROGRESS REPORT NO. 3  
NORTH CAROLINA STATE UNIVERSITY  
TID-23863 +. 19 PAGES, REFERENCES, APRIL 1967

THE DEPOSITION OF AIRBORNE FISSION PRODUCTS ON INNER SURFACES OF REACTOR VESSELS AND ON EQUIPMENT SURFACES WAS EVALUATED MATHEMATICALLY. THE RESULTS WERE COMPARED WITH SIMULTANEOUS DEPOSITION AND CONDENSATION MEASUREMENTS IN THE NUCLEAR SAFETY PILOT PLANT AT ORNL.

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

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-21257 \*CONTINUED\*

\*FISSION PRODUCT TRANSPORT + \*MATHEMATICAL STUDY + CONDENSATION + CONTAINMENT, GENERAL + DEPOSITION

14-21259 ALSO IN CATEGORY 15

ATTILLA H

THE EFFECT OF NUCLEAR POWER PLANTS ON THEIR ENVIRONMENT

ORNL-TR-1773 +. 17 PAGES, 1 FIGURE, 4 TABLES, TRANSLATED FROM ENERGIA ES ATOMTECHNIKA 20, PAGES 75-91 (1967)

A NUCLEAR POWER PLANT IS CONSIDERED AS A PLANT PRODUCING RADIOACTIVE WASTE. SEVERAL OPERATIONAL EXPERIENCES GAINED IN CONNECTION WITH THE DISPOSAL OF LIQUID RADIOACTIVE WASTES ARE PRESENTED. THE FORMATION AND COMPOSITION OF GASEOUS RADIOACTIVE WASTES ARE DISCUSSED. THE HANDLING OF RADIOACTIVE DUST AND GASES IS CONSIDERED. THE DISCHARGING INTO THE ATMOSPHERE OF RADIOACTIVE AIR AND THE FACTORS INFLUENCING THE MOVEMENT OF CONTAMINATION ARE DISCUSSED. THE RESULTING CONCENTRATION IS CALCULATED. THE EVALUATION OF THE PLANT LOCATION IN TERMS OF SAFETY IS DESCRIBED. CONSIDERATIONS RELATED TO DETERMINING THE SIZE OF THE EXCLUSION ZONES TO BE USED AT THE POWER PLANT ARE PRESENTED.

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

\*WASTE DISPOSAL, GENERAL + \*WASTE MANAGEMENT + \*WASTE STORAGE + HUNGARY + WASTE DISPOSAL, GAS + WASTE DISPOSAL, LIQUID + WASTE DISPOSAL, SOLID

14-21260 ALSO IN CATEGORY 15

PUERTO RICO NUCLEAR CENTER ANNUAL REPORT 1966

PUERTO RICO UNIVERSITY

PRNC-102 +. 242 PAGES, FIGURES, TABLES, REFERENCES, SEPTEMBER 1967

ACTIVITIES ARE IN THE FOLLOWING CATEGORIES - EDUCATION AND TRAINING (INCLUDING NUCLEAR SCIENCE AND TECHNOLOGY, NUCLEAR ENGINEERING, RADIOISOTOPE APPLICATIONS AND OTHER), BIOLOGICAL AND MEDICAL RESEARCH PROGRAMS (INCLUDING MARINE BIOLOGY, TERRESTRIAL ECOLOGY, RADIATION CHEMISTRY, SCHISTOSOMA MANSONI PROJECT, AND SUGARCANE BORER PROJECT), PHYSICAL RESEARCH PROGRAMS (NEUTRON DIFFRACTION, SOLID STATE PHYSICS, AND HOT-ATOM CHEMISTRY), AND RADIATION PRESERVATION OF TROPICAL FOODSTUFFS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA., \$2.00 COPY, \$0.65 MICROFICHE

\*RADIATION DAMAGE + \*RADIOBIOLOGY + BIOMEDICAL + ECOLOGICAL CONSIDERATION + HEALTH PHYSICS TRAINING + PUERTO RICO + SOLID STATE DEVICE

14-21264

KULEBAKINA LG

MAXIMUM CONCENTRATION FACTORS OF SR-90 FOR BROWN ALGAE

INST. OF BIOLOGY OF SOUTH SEAS, ACADEMY OF SCIENCES, UKRAINIAN SSR

3 PAGES, 3 TABLES, 10 REFERENCES, DOPOV. AKAD. NAUK UKR. RSR, 10, PAGE 1318-1320, (1966), IN UKRAINIAN

THE MAXIMUM CONCENTRATION FACTOR OF SR-90 FOR CYSTOSEIRA BARBATA WAS DETERMINED. IT IS EQUAL TO 55. THE VALUES OF THE CONCENTRATION FACTORS OF SR-90 IN THIS SPECIES POSSIBLY DO NOT DEPEND ON THE SEASON.

\*BIOLOGICAL CONCENTRATION, GENERAL + BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + FALLOUT + STRONTIUM + USSR

14-21265 ALSO IN CATEGORY 15

PICKARD RC + FRY RM

ADMINISTRATION OF RADIOLOGICAL HEALTH PROGRAMS WITHIN THE STATE GOVERNMENT

KENTUCKY HEALTH DEPT., FRANKFORT

5 PAGES, AMER. J. PUBLIC HEALTH, 57, PAGE 290-294, (FEB. 1967)

ADMINISTRATIVE ASPECTS OF A RADIATION SURVEILLANCE DEPARTMENT ARE CONSIDERED, WITH EMPHASIS ON STAFF, EQUIPMENT, BUDGET, METHODS, LEGISLATION AND REGULATIONS, GOALS, AND REPORTS. A MULTIDISCIPLINE PROGRAM IS NECESSARY BECAUSE OF THE COMPLEX INTERRELATIONS BETWEEN RADIOLOGICAL HEALTH, MEDICAL AND DENTAL PRACTICE, ENGINEERING, TRANSPORTATION, INDUSTRY, LABOR, AGRICULTURE, CIVIL DEFENSE, SPACE EXPLORATION, AND OTHER REGULATORY ORGANIZATIONS. FACILITIES REQUIRED FOR A RADIOLOGICAL HEALTH PROGRAM AND THE PROCUREMENT OF RADIATION MONITORING AND MEASURING EQUIPMENT ARE DISCUSSED. AN IMPORTANT POINT IN THE SELECTION OF INSTRUMENTATION IS THE EASE OF MAINTENANCE OR THE AVAILABILITY OF QUALIFIED PERSONNEL TO ENSURE ACCURATELY FUNCTIONING EQUIPMENT AT ALL TIMES. IT IS IMPORTANT THAT STATE STATUTES BE SOUNDLY ESTABLISHED TO DEVELOP A PROGRAM UNDER PROPER LEGISLATION.

\*RADIATION PROTECTION, ORGANIZATION + \*RADIATION SAFETY AND CONTROL + ADMINISTRATIVE CONTROL + RADIOLOGICAL ASSISTANCE + REGULATION, STATE

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-21266  
IWASHIMA K + YAMAGATA N  
ENVIRONMENTAL CONTAMINATION WITH RADIORUTHENIUM 1961-1965  
INST. OF PUBLIC HEALTH, TOKYO  
21 PAGES, 3 FIGURES, 17 TABLES, 20 REFERENCES, J. RADIAT. RES. (JAP.) 7, PAGE 91-111, (JUNE 1966)

SUMMARIZES THE RESULTS OF MEASUREMENTS OF MEDIUM-LIVED RU-103 AND RU-106 IN AIRBORNE PARTICLES, FALLOUT, SURFACE SOIL, RIVER WATER, SEAWATER, FOODSTUFFS, COMPLETE DIET, AND HUMAN MUSCLE AND LUNGS DURING 1961-1965. THE MAIN PASSAGE ROUTE OF RU-103 WAS FOUND THROUGH THE FRESH LEAFY VEGETABLES, WHILE RU-106 WAS SUPPLIED BY DIFFERENT ROUTES, I.E., 77% BY PLANT MATERIALS RAISED ON LAND, 6% BY FOODSTUFFS OF ANIMAL ORIGIN, AND THE REMAINDER BY SEAWEED. THE CONCENTRATION WAS HIGHEST IN THE LAST ITEM. THE MAXIMUM PERMISSIBLE CONCENTRATION OF RU-106 IN SEAWATER WAS SUGGESTED AS  $3 \times 10^{-6}$ TH MICROCURIE/ML.

\*BIOLOGICAL CONCENTRATION, FOOD + \*FALLOUT + \*MAXIMUM PERMISSIBLE CONCENTRATION (MPC) + BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + BIOLOGICAL CONCENTRATION, MAN + BIOLOGICAL CONCENTRATION, VEGETATION + JAPAN + OCEAN AND SEA + RUTHENIUM

14-21269  
JACKSON WB + CARPENTER ML  
RADIOISOTOPE CYCLING IN TERRESTRIAL COMMUNITIES AT ENIWEKOK ATOLL  
BOWLING GREEN STATE UNIV., OHIO  
COO-1485-13 + CONF-670503-25 +. 13 PAGES, MAY 15, 1967, PRESENTED AT 2ND NATIONAL SYMPOSIUM ON RADIOECOLOGY, ANN ARBOR, MICH.

STUDIES IN THE SIMPLIFIED TERRESTRIAL ENVIRONMENT AT ENIWEKOK SHOWED A CLOSE CORRELATION BETWEEN THE RADIATION LEVELS OF 137-CESIUM IN SOIL, PLANTS, AND THE ONLY TERRESTRIAL MAMMALS, POLYNESIAN AND ROOF RATS. BECAUSE OF THE SHORT FOOD CHAIN, A CLOSE CORRELATION BETWEEN TESTING ACTIVITY AND THE PRESENCE OF RADIOISOTOPES IN THE ECOSYSTEM EXISTS, AND VARIATION IN EXPOSURE CONDITIONS ARE APPARENT IN ELEMENTS OF THE NATIVE BIOTA. CONTINUED USE OF THESE ISOLATED AND RELATIVELY UNDISTURBED MAMMAL POPULATIONS FOR THE STUDY OF LONG-TERM RADIATION EFFECTS IS URGED.

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

\*FALLOUT + \*TEST, WEAPONS (HP ASPECTS) + BIOLOGICAL CONCENTRATION, ANIMAL + BIOLOGICAL CONCENTRATION, GENERAL + CESIUM + ECOLOGICAL CONSIDERATION + RADIOBIOLOGY

14-21270  
NEUHOLD JM + SHARMA RK  
INTERACTING EFFECTS OF GAMMA RADIATION AND SODIUM HALIDE CONCENTRATIONS ON RAINBOW TROUT  
UTAH STATE UNIV., LOGAN. DEPT. OF WILDLIFE RESOURCES  
COO-1421-4 + CONF-670503-26 +. 28 PAGES, MAY 1967, PRESENTED AT 2ND NATIONAL SYMPOSIUM ON RADIOECOLOGY, ANN ARBOR, MICH.

MORTALITY OF CS-137 GAMMA-IRRADIATED RAINBOW TROUT SUBJECTED TO AQUARIUM-MEDIUM LEVELS OF NAF, NAEL, NABR, AND NAI DISPLAYED SIGNIFICANT RESPONSE TO EITHER TIME BY GAMMA DOSE; TIME BY SODIUM HALIDE CONCENTRATION, OR GAMMA DOSE BY SODIUM HALIDE CONCENTRATION INTERACTIONS. THE INTERACTIONS WERE CONCLUDED TO BE CAUSED BY RADIATION-INDUCED CHANGES IN OXYGEN UPTAKE, SODIUM UPTAKE, AND EXCRETION.

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

\*ECOLOGICAL CONSIDERATION + AQUATIC ORGANISMS + BROMINE + CHLORINE + FLUORINE + IODINE + RADIATION DAMAGE + RADIOBIOLOGY + SODIUM

14-21272 ALSO IN CATEGORY 15  
PUBLIC HEALTH IMPLICATIONS OF RADON EMITTED FROM URANIUM MILL TAILINGS PILES.  
U. S. PUBLIC HEALTH SERVICE, U. S. DEPT. OF HEALTH, EDUCATION, AND WELFARE, NATIONAL CENTER FOR RADIOLOGICAL HEALTH, ROCKVILLE, MARYLAND  
HEW-531 +. 1 PAGE, NOVEMBER 3, 1967

THE PUBLIC HEALTH SERVICE AND USAEC AGREED ON A JOINT PROJECT TO PROVIDE TECHNICAL ASSISTANCE TO STATES AND INDUSTRY IN EVALUATING PUBLIC-HEALTH IMPLICATIONS OF RADON EMISSION FROM URANIUM-MILL TAILINGS PILES. WORK TO BE PERFORMED INCLUDES (1) THE DEVELOPMENT OF TECHNIQUES FOR SAMPLING AIR FOR RADON CONTENT IN THE VICINITY OF URANIUM TAILINGS, (2) DETERMINATION OF THE EFFECT UPON RADON EMISSIONS WHEN TAILINGS ARE COVERED WITH EARTH OR PAVING MATERIAL, (3) EVALUATION OF ATMOSPHERIC CONCENTRATIONS NEAR TAILING PILES, AND (4) THE PREPARATION, IF NECESSARY, OF RECOMMENDATIONS FOR THE CONTROL OF RADON EXPOSURE.

AVAILABILITY - PUBLIC HEALTH SERVICE, ROCKVILLE, MARYLAND

\*WASTE DISPOSAL, GENERAL + AIR + MILLING + RADIOISOTOPE + RADON + SAMPLING + URANIUM + USAEC

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-21273 ALSO IN CATEGORY 15  
THE DAY H-BOMBS FELL ON PALOMARES  
9 PAGES, FIGURES, SATURDAY REVIEW L(4), PAGE 21-27, 39-40, (JAN. 28, 1967)

U.S. STRATEGIC AIR COMMAND BOMBERS CARRYING NUCLEAR WEAPONS ARE IN THE AIR AT ALL TIMES. ONE YEAR AGO-ON JANUARY 17, 1966, ONE OF THEM, A B-52, COLLIDED WITH A KC-135 JET TANKER DURING A REFUELING OPERATION OVER THE MEDITERRANEAN SEA NEAR THE SPANISH VILLAGE OF PALOMARES. AMONG THE RAIN OF DEBRIS WERE FOUR HYDROGEN BOMBS. THE SEARCH FOR THEM LASTED NEARLY THREE MONTHS AND COST AN ESTIMATED \$90,000,000. THIS ARTICLE IS THE STORY OF WHAT HAPPENED IN THE VILLAGE.

\*ACCIDENT, GENERAL + \*SURVEY, RADIATION, EMERGENCY + AIRCRAFT + PLUTONIUM + SURVEY, RADIATION, ENVIRONMENTAL

14-21274  
DE LORA SORIA F + DIAZ NOGUEIPA E + LOPEZ PEREZ B  
TREATMENT OF RADIOACTIVE WASTES RESULTING FROM THE REPROCESSING OF IRRADIATED FUELS. SOLUTIONS ADOPTED BY J.E.N. I. LIQUID WASTES OF LOW AND MEDIUM RADIOACTIVITY  
16 PAGES, 2 FIGURES, 9 TABLES, 56 REFERENCES, ENERG. NUCL. (MADRID), 10, PAGE 280-295, (JULY-AUGUST 1966)  
IN SPANISH

VARIOUS WAYS OF PROCESSING LIQUID RADIOACTIVE WASTES OF LOW AND MEDIUM RADIOACTIVITY ARE DESCRIBED. METHODS DESCRIBED INCLUDE HYDROXIDE FLOCCULATION, PHOSPHATE TREATMENTS, COPRECIPITATION OF SULFIDES, AND FERROCYANIDE TREATMENTS. IONIC INTERCHANGES, BIOLOGICAL TREATMENTS, AND OTHER METHODS ARE ALSO CONSIDERED. THE METHODS ADOPTED BY THE JEN FOR THE CIES PLANT ARE GIVEN.

\*WASTE TREATMENT, GENERAL + ION EXCHANGE + SPAIN + WASTE TRTAMENT, LIQUID

14-21275  
BOHMAN VR + BLINCOE C + WADE MA + LESPERANCE AL + FOUNTAIN EL  
ACCUMULATION OF STRONTIUM IN ROVINE BONES  
UNIV. OF NEVADA, RENO  
3 PAGES, 2 FIGURES, 2 TABLES, 13 REFERENCES, J. AGR. FOOD CHEM. 14, PAGE 413-415, (JULY-AUGUST 1966)

THE SR, SR-90, AND CA CONTENT OF ROVINE BONE ASH FROM NEVADA RANGE CATTLE AT THREE LOCATIONS WAS STUDIED FROM 1958 TO 1962, INCLUSIVE. THE LEVEL OF SR-90 WAS INFLUENCED MORE BY WORLD NUCLEAR TESTING THAN BY LOCATION OF THE ANIMALS WITHIN THE STATE. PEAK CONCENTRATIONS OCCURRED IN 1959 (1 YEAR AFTER INITIATION OF THE MORATORIUM) AND IN 1962 (1 YEAR AFTER TESTING WAS RESUMED). TOTAL SR WAS CHARACTERISTIC OF THE LOCATION OF THE HERD. WHEN A HERD WAS MOVED FROM AN AREA OF HIGH CONCENTRATION TO A CORRESPONDINGLY LOW AREA, THE TOTAL SR IN THE BONE ASH GRADUALLY BECAME SIMILAR TO THAT IN THE NEW ENVIRONMENT. THE SR-90 CONTENT OF THE ASH WAS UNRELATED TO EITHER TOTAL SR OR CA. CA LEVEL WAS RELATED TO TOTAL SR, BUT THE CORRELATION WAS NOT HIGH (R EQUAL TO 0.5).

\*BIOLOGICAL CONCENTRATION, ANIMAL + \*FALLOUT + CALCIUM + RADIOBIOLOGY + STRONTIUM

14-21276  
BONHOTE PA  
SOLAR EVAPORATION OF LOW LEVEL RADIOACTIVE SLUDGE  
AUSTRALIAN ATOMIC ENERGY COMMISSION  
4 PAGES, 2 FIGURES, 3 REFERENCES, ATOM. ENERG. AUSTRAL. 9(3), PAGE 14-17, (JULY 1966)

STUDIED SOLAR EVAPORATION AS A METHOD OF FURTHER PROCESSING THE SLUDGE (3.5 TO 5.0% SOLIDS, 0.01 MICROCURIE/ML) PRODUCED FROM A SCAVENGING/FLOCCULATION TREATMENT OF LOW-LEVEL EFFLUENT AT LUCAS HEIGHTS. PRELIMINARY EXPERIMENTS SHOWED THAT FILTERS COULD BE DISPENSED WITH AND THAT THE SLUDGE COULD BE DRIED IN THE OPEN WITH LITTLE OR NO CONTAMINATION SPREAD. A FULL-SIZE EVAPORATOR OF 927 SQ. FT AREA WAS DESIGNED TO COPE WITH THE SLUDGE PRODUCTION OF 15,000 GAL/YR. THE DRYING PROCEEDS UNTIL THE SLUDGE CAN BE CUT INTO BLOCKS, AND, AT THE END OF DRYING, THE BLOCKS ARE SHOVELLED INTO DRUMS FOR BURIAL. THE PERFORMANCE IN 16 MONTHS OPERATION IS DESCRIBED. THE VOLUME REDUCTION FACTOR AVERAGES 14, AND THE MOISTURE CONTENT OF THE DRIED SLUDGE AVERAGES 27%.

\*WASTE TREATMENT, GENERAL + AUSTRALIA + EVAPORATION + WASTE TREATMENT, LIQUID

14-21279  
CAUTION RECOMMENDED FOR HANDLING AND SHIPPING POLYETHYLENE BOTTLES OF PLUTONIUM NITRATE  
USAEC DIVISION OF OPERATIONAL SAFETY  
2 PAGES, INFORMATION HEALTH AND SAFETY, ISSUE NO. 259, NOVEMBER 20, 1967

GROSS LEAKAGE OF PLUTONIUM NITRATE SOLUTION FROM 10-LITER POLYETHYLENE BOTTLES OCCURRED WHILE THEY WERE IN STORAGE. THE BOTTLES WERE FILLED IN JANUARY 1967, AND THE LEAKS WERE FOUND EARLY IN JULY DURING INSPECTION AND PREPARATION FOR SHIPMENT. THE PLUTONIUM SOLUTION SEEPED THROUGH VERY FINE CRACKS IN THE BOTTOMS OF THE 10-LITER BOTTLES. MORE THAN 10% OF THE BOTTLES IN STORAGE HAD DEVELOPED LEAKS. IN SOME CASES, LEAKAGE WAS SUFFICIENT TO FLOAT THE

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-21279 \*CONTINUED\*  
BOTTLES IN THEIR CONTAINMENT VESSELS. THIS EXAMPLE OF LEAKAGE IS ONE OF A SERIES OF OPERATING DIFFICULTIES ENCOUNTERED WITH THESE BOTTLES.

AVAILABILITY - USAEC, DIVISION OF OPERATIONAL SAFETY, WASHINGTON, D. C.

\*SHIPPING CONTAINER + LEAK + PLUTONIUM + USAEC

14-21280  
STANDARD FOR UNIFORM DDP TESTING OF CANISTERS AND FILTER PAPER  
USAEC, DIVISION OF OPERATIONAL SAFETY  
2 PAGES, USAEC INFORMATION HEALTH AND SAFETY, ISSUE NO. 258, NOVEMBER 15, 1967

BETTER UNIFORMITY IN TESTING GAS-MASK CANISTERS, RESPIRATOR CARTRIDGES, AND FILTER PAPER WITH THE DDP (DIOCTYL PHTHALATE) PENETROMETER CAN BE EXPECTED FROM A PROJECT SPONSORED BY THE DIVISION OF OPERATIONAL SAFETY, AEC HEADQUARTERS. THE PROJECT, ESTABLISHED IN 1966 IN COOPERATION WITH INDUSTRY, PROVIDED STANDARD ORIFICE REFERENCE PLATES CALIBRATED FOR ACCURATE AIRFLOW REGULATION BY THE U.S. NATIONAL BUREAU OF STANDARDS.

AVAILABILITY - USAEC, DIVISION OF OPERATIONAL SAFETY, WASHINGTON, D. C.

\*FILTER + FILTER, GAS MASK + FILTER, HIGH EFFICIENCY + FILTER, PAPER + TESTING + USAEC

14-21292 ALSO IN CATEGORY 15  
ZARKOVIC G + FAJGELJ A + POPOVIC N  
PENETRATION OF IODINE-131 THROUGH THE INTACT HUMAN SKIN  
MEDICAL COLL., SARAJEVO, YUGOSLAVIA  
9 PAGES, 2 FIGURES, 2 TABLES, ARHIV Hig. RADA TOKSIKOL., 16, PAGES 319-27 (1965), (IN CROATIAN)

RESULTS ARE REPORTED FROM AN INVESTIGATION ON THE PERCUTANEOUS PENETRATION OF I-131 IN 17 MEN AND 12 WOMEN DURING 48 HOURS AFTER THE APPLICATION OF 80 TO 100 MICROCURIES OF NA-131I UNDER A PLASTIC OCCLUSIVE DRESSING. SODIUM PERCHLORATE, 100 MG, WAS FED DAILY TO PREVENT THYROID UPTAKE OF THE ISOTOPE. ABSORPTION WAS FOUND HIGHER IN WOMEN, AND HIGHER ON THE DORSAL THAN PALMAR SURFACE OF THE HAND.

\*RADIOBIOLOGY + IODINE + YUGOSLAVIA

14-21293 ALSO IN CATEGORY 15  
ANNUAL REPORT (ON RADIOLOGICAL SCIENCES) 1965  
NATIONAL INST. OF RADIOLOGICAL SCIENCES, CHIBA, JAPAN  
NIPS-5 +. 84 PAGES, DECEMBER 1966

REPORTS WORK IN PHYSICS, CHEMISTRY, BIOLOGICAL STUDIES, PHYSIOLOGY, GENETICS, MEDICAL STUDIES, AND ENVIRONMENTAL STUDIES.

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

\*ACCIDENT, CRITICALITY + \*COUNTER, WHOLE BODY + \*DOSE + \*ENVIRONMENTAL CONDITION + \*RADIATION DAMAGE + \*RADIOBIOLOGY + ALPHA EMITTER + BIOMEDICAL + DOSE CALCULATION, EXTERNAL + GAMMA + JAPAN + STRONTIUM + X-RAY

14-21284  
LEVI VH  
THE TREATMENT OF HIGHLY RADIOACTIVE WASTE SOLUTIONS  
6 PAGES, 5 FIGURES, 1 TABLE, 9 REFERENCES, ATOMWIRTSCHAFT 12(6), PAGES 317-322 (JUNE 1967) IN GERMAN

SURVEYS THE PROBLEMS IN THE DISPOSAL OF RADIOACTIVE WASTES.

\*WASTE DISPOSAL, GENERAL + FUEL REPROCESSING + GERMANY + WASTE DISPOSAL, OCEAN + WASTE DISPOSAL, SALT + WASTE DISPOSAL, SOLID + WASTE DISPOSAL, TERRESTRIAL

14-21289 ALSO IN CATEGORY 15  
VAN MIDDLESWORTH L  
STUDIES IN IODINE METABOLISM. PROGRESS REPORT, JULY 1966--JULY 1967  
UNIVERSITY OF TENNESSEE, MEMPHIS  
ORO-1643-071 +. 23 PAGES, JULY 31, 1967

PRESENTS 1966-67 STUDY OF IODINE METABOLISM AND ASSOCIATED BIOLOGICAL STUDIES, THYROID DISEASE, RADIUM IN ANIMAL THYROIDS, AND RADIOACTIVE IODINE FALLOUT AS OBSERVED IN ANIMAL THYROIDS.

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

\*FALLOUT + \*RADIOBIOLOGY + IODINE + RADIUM

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-21290  
ELIASON JR  
EARTH SCIENCES WASTE DISPOSAL INVESTIGATIONS, JULY--DECEMBER 1966  
BATTELLE-NORTHWEST, RICHLAND, WASHINGTON  
BNWL-432 +. 17 PAGES, 2 FIGURES, 2 TABLES, REFERENCES, JUNE 14, 1967

EVALUATES GROUNDWATER CONTAMINATION RESULTING FROM DISPOSAL OF PLANT EFFLUENTS. THE EXTENT OF GROSS BETA AND TRITIUM CONTAMINATION IN GROUND WATER IS PRESENTED.

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

\*GROUND WATER, GENERAL + \*WASTE DISPOSAL, GENERAL + BATTELLE NORTHWEST + CESIUM + GROSS ALPHA + GROSS BETA + GROUND WATER, NUCLIDE OCCURRENCE + HANFORD SITE + RHODIUM + RUTHENIUM + STPONTIUM + TRITIUM + WASTE DISPOSAL, LIQUID + WASTE DISPOSAL, TERRESTRIAL

14-21304  
CASSIDY SH + CROCKER GR  
SENSITIVITY ANALYSIS OF THE RADIAL DISTRIBUTION MODEL. SENSITIVITY TO CARRIER MATERIAL, YIELD AND TYPE OF FISSION  
NAVAL RADIOLOGICAL DEFENSE LAB., SAN FRANCISCO, CALIF.  
USNRDL-TR-67-70 +. 26 PAGES, FIGURES, TABLES, 14 REFERENCES, MAY 22, 1967

THE U.S. NAVAL RADIOLOGICAL DEFENSE LABORATORY DEVELOPED A METHOD FOR CALCULATING THE DISTRIBUTION OF FISSION-PRODUCT NUCLIDES AMONG FALLOUT PARTICLES AS A FUNCTION OF SIZE. CALCULATIONS FROM THIS PARTICLE ACTIVITY MODULE OF RADIONUCLIDE FRACTIONATION IN LAND-SURFACE NUCLEAR BURSTS HAVE BEEN TESTED FOR SENSITIVITY TO THREE KINDS OF INPUT PARAMETER VARIATION - (1) VARIATION IN WEAPON YIELD, (2) VARIATION IN TYPE OF FISSION AND (3) DIFFERENCE IN SOLIDIFICATION TEMPERATURE OF THE CARRIER MATERIAL (SILICATE SOIL OR CORAL). DURING THE CALCULATIONS, A FOURTH INPUT PARAMETER, PARTICLE-SIZE DISTRIBUTION, WAS UNCHANGED. THE CALCULATIONS SHOW THE MODEL TO BE RELATIVELY INSENSITIVE TO VARIATION IN WEAPON YIELD AND TYPE OF FISSION. THE CALCULATIONS AT A SOLIDIFICATION TEMPERATURE APPROPRIATE TO CORAL (2867 K) INDICATED THAT PARTICLES SMALLER THAN 47 MICRONS IN DIAMETER CONTRIBUTE ABOUT 70% OF THE TOTAL EXPOSURE RATE, WHILE THE CALCULATIONS AT THE SILICATE SOIL SOLIDIFICATION TEMPERATURE (1673 K) INDICATE ABOUT 60%. THE PROPORTIONS OF THE 1-HR EXPOSURE RATE CONTRIBUTED BY VOLATILE, MIXED, AND REFRACTORY FISSION-PRODUCT CHAINS ARE CONSIDERABLY DIFFERENT FOR THE TWO SOLIDIFICATION TEMPERATURES. THE TEMPERATURE SENSITIVITY OF THE MODEL SHOULD BE INVESTIGATED IN MORE DETAIL SINCE THERE IS REASON TO BELIEVE THAT CHANGES IN FRACTIONATION BEHAVIOR WHICH ARE NOT APPARENT AT 1 HOUR AFTER BURST MIGHT BE IMPORTANT AT LATER TIMES.

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

\*FALLOUT + \*FISSION PRODUCT TRANSPORT + COMPUTER PROGRAM + COMPUTER, DIGITAL + FISSION PRODUCT, AIRBORNE + TEST, WEAPONS (HP ASPECTS)

14-21305  
PLATT AM  
FIXATION OF RADIOACTIVE RESIDUES. RESEARCH AND DEVELOPMENT ACTIVITIES QUARTERLY PROGRESS REPORT, APRIL-JUNE 1967  
BATTELLE-NORTHWEST, RICHLAND, WASH. PACIFIC NORTHWEST LAB.  
BNWL-507 +. 39 PAGES, 7 FIGURES, 11 TABLES, AUGUST 1967

WORK DURING THE QUARTER IS REPORTED ON POT SOLIDIFICATION, PHOSPHATE GLASS SOLIDIFICATION, ENGINEERING DEVELOPMENT/DESIGN VERIFICATION TESTS, SPRAY SOLIDIFICATION, PRODUCT CHARACTERISTICS AND STORAGE, INTERMEDIATE AND LOW LEVEL WASTES.

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

\*WASTE TREATMENT, GENERAL + BATTELLE NORTHWEST + GLASS + MATERIAL + WASTE STORAGE + WASTE TREATMENT, EQUIPMENT + WASTE TREATMENT, FIXATION

14-21307  
HILL AJ  
REMOVAL OF SLUDGE FROM HIGH ACTIVITY WASTE TANKS  
DU PONT DE NEMOURS (E.I.) AND CO., AIKEN, S. C. SAVANNAH RIVER LAB.  
DP-1093 +. 27 PAGES, 17 FIGURES, JULY 1967

AQUEOUS RADIOACTIVE WASTES FROM THE SEPARATIONS PROCESSES AT THE SAVANNAH RIVER PLANT ARE STORED UNDERGROUND IN LARGE, CARBON STEEL TANKS, AND COOLED BY WATER FLOWING THROUGH A NETWORK OF VERTICAL AND HORIZONTAL COOLING COILS. TO CONSERVE SPACE, THE SUPERNATANT SOLUTIONS ARE REMOVED PERIODICALLY FROM THE TANKS, CONCENTRATED BY EVAPORATION, AND TRANSFERRED TO OTHER TANKS FOR LONG-TERM STORAGE. DURING STORAGE OF THE WASTES PRIOR TO CONCENTRATION, PRECIPITATED SLUDGE ACCUMULATES IN THE BOTTOM OF THE TANKS. EQUIPMENT AND TECHNIQUES THAT HAVE BEEN DEVELOPED FOR REMOVAL OF SLUDGE FROM WASTE TANKS ARE DESCRIBED IN THIS REPORT. HIGH VELOCITY JETS OF WATER ARE USED TO DISPERSE THE SLUDGE INTO A SLURRY THAT CAN BE REMOVED WITH CENTRIFUGAL PUMPS. THE DEVELOPMENT PROGRAM CULMINATED IN REMOVAL OF



CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-21307 \*CONTINUED\*

SLUDGE FROM TWO WASTE TANKS. THE SECOND TEST, INCORPORATING THE RESULTS OF EXPERIENCE GAINED IN THE FIRST, WAS THE MORE SUCCESSFUL, GREATER THAN 95% OF A 1.5-FOOT LAYER OF SLUDGE WAS REMOVED DURING FIVE HOURS OF OPERATION.

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

\*WASTE MANAGEMENT + \*WASTE STORAGE + EVAPORATION + SAVANNAH RIVER PLANT + WASTE TREATMENT, LIQUID + WASTE TREATMENT, SOLID

14-21309

FALLOUT PROGRAM. QUARTERLY SUMMARY REPORT, JUNE 1, 1967 - SEPTEMBER 1, 1967. APPENDIX NEW YORK OPERATIONS OFFICE (AEC), N.Y. HEALTH AND SAFETY LAB. HASL-193(APP.) +. 202 PAGES, FIGURES, TABLES, OCTOBER 1, 1967

TABULATED DATA ARE PRESENTED FOR SR-90 AND SR-89 AT WORLD LAND SITES, FISSION PRODUCT AND ACTIVATION PRODUCT RADIONUCLIDES IN MONTHLY DEPOSITION AT SELECTED SITES, RADIOSTRONTIUM DEPOSITION AT ATLANTIC OCEAN WEATHER STATIONS, AND RADIOSTRONTIUM IN MILK AND TAP WATER.

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

\*BIOLOGICAL CONCENTRATION, MILK + \*FALLOUT + \*WATER, GENERAL + CESIUM + PRECIPITATION + RADIOISOTOPE + RADIONUCLIDE, INDUCED + STRONTIUM

14-21311

ALSO IN CATEGORY 15

PACIFIC NORTHWEST LABORATORY MONTHLY ACTIVITIES REPORT, SEPT. 1966, ON AEC DIVISION OF BIOLOGY AND MEDICINE PROGRAMS  
BATTELLE-NORTHWEST, RICHLAND, WASHINGTON  
BNWL-335(REV.) +. 21 PAGES, OCTOBER 1966

WORK REPORTED INCLUDES STUDIES ON RADIATION EFFECTS - GENERAL, TOXICITY OF RADIOELEMENTS, INCLUDING TOXICITY AND METABOLISM OF RADIONUCLIDES IN AQUATIC ORGANISMS, EFFECT OF RADIOSTRONTIUM IN MINIATURE SWINE, SPACE NUCLEAR SYSTEMS STUDIES, COMBATING DETRIMENTAL EFFECTS OF RADIATION, MOLECULAR AND CELLULAR LEVEL STUDIES, ENVIRONMENTAL RADIATION STUDIES INCLUDING THE ESKIMO FOOD CHAIN, TERRESTRIAL ECOLOGY, COLUMBIA RIVER ECOLOGY, TEMPERATURE EFFECTS ON METABOLISM OF AQUATIC ORGANISMS, EARTH SCIENCES, RADIOACTIVE FALLOUT RATES AND MECHANISMS, PRECIPITATION-SCAVENGING STUDIES, MARINE SCIENCES, RADIOLOGICAL AND HEALTH PHYSICS, RADIATION INSTRUMENTS.

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

\*BIOMEDICAL + \*DOSIMETRY, GENERAL + \*FALLOUT + \*MONITORING PROGRAM, ENVIRONMENTAL + \*RADIATION DAMAGE + \*RADIATION SAFETY AND CONTROL + \*RADIOBIOLOGY + BATTELLE NORTHWEST + BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + BIOLOGICAL CONCENTRATION, MAN + CESIUM + CHEMICAL REACTION + COUNTER, WHOLE BODY + DOSIMETRY, PHOTOGRAPHIC + ECOLOGICAL CONSIDERATION + INHALATION + INSTRUMENTATION, RADIATION MONITORING + OCEAN AND SEA + PLUTONIUM + PRECIPITATION + RIVER, COLUMBIA + STRONTIUM

14-21312

ODIUM HT

HYDROGEN BUDGET AND COMPARTMENTS IN THE RAIN FOREST AT EL VERDE, PUERTO RICO, PERTINENT TO CONSIDERATION OF TRITIUM METABOLISM

PUERTO RICO NUCLEAR CENTER, MAYAGUEZ

BMI-171-002 +. 36 PAGES, TABLES, REFERENCES, JUNE 1, 1967

FROM DATA ON RAINFALL, THROUGHFALL, STEAMFLOW, EVAPORATION, TRANSPIRATION, PERCOLATION, PHOTOSYNTHESIS, AND RESPIRATION FROM THE MONTANE FOREST AT EL VERDE, PUERTO RICO, A HYDROGEN COMPARTMENTAL DIAGRAM WITH FLOW RATES AND COMPARTMENTAL STORAGE WAS PREPARED. THE DIAGRAM PERMITS COMPUTATION OF TRANSIENT PHENOMENA FOR THE FLOW OF TRITIUM IN A TROPICAL FOREST, ASSUMING A KNOWLEDGE OF THE EXTENT AND THE DURATION OF THE TRACER INPUT. A MATHEMATICAL MODEL FOR TRITIUM TRANSFER, BASED UPON THIS DIAGRAM, IS GIVEN IN THE APPENDIX. THE STORY AT EL VERDE IS FOUND TO BE SOMEWHAT COMPARABLE TO THAT OF PANAMA DURING ITS WET SEASON BECAUSE THEIR RAINFALL AND SATURATION DEFICITS ARE SIMILAR.

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

\*EXCAVATION, NUCLEAR + \*PLOWSHARE PROGRAM + ECOLOGICAL CONSIDERATION + TRITIUM

14-21314

ALSO IN CATEGORY 15

LUCKS H + MARCOWITZ SM

A SURVEY OF RADIATION DOSES AND INDUCED ACTIVITY AT THE ZGS FROM SEPT. 1965 TO SEPT. 1966  
ARGONNE NATIONAL LABORATORY, ARGONNE, ILL.

5 PAGES, 6 FIGURES, 16 REFERENCES, IEEE TRANSACTIONS ON NUCLEAR SCIENCE 14(3), PAGES 985-89 (JUNE 1967)

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-21314 \*CONTINUED\*

TO LEARN THE DISTRIBUTION OF RADIATION AROUND AN ACCELERATOR QUANTITATIVELY, A PROGRAM FOR MONITORING THE DISTRIBUTION OF INDUCED ACTIVITY AND TOTAL RADIATION DOSE IN THE ZERO GRADIENT SYNCHROTRON PING BUILDING WAS STARTED IN 1965. THIS PAPER IS AN ATTEMPT TO COMPILE THE DATA TO SEE IF DEFINITE PATTERNS EXIST, TO EXTRACT USEFUL CALCULATION CONSTANTS, AND TO EXTRAPOLATE THE TOTAL DOSES RECEIVED BY COMPONENTS SINCE THE STARTUP OF THE ZGS. SOME OF THE RELATIONSHIPS EXAMINED ARE - (1) THE DISTRIBUTION OF DOSE RECEIVED BY COMPONENTS OF THE ZGS PER OPERATING HOUR OR PER CIRCULATING PROTON, (2) THE DISTRIBUTION OF INDUCED ACTIVITY, AND (3) THE RATIO OF INDUCED ACTIVITY TO AVERAGE DOSE AT THE SAME LOCATION.

\*ACTIVATION + \*DOSE + \*DOSE MEASUREMENT, EXTERNAL + \*DOSIMETRY, GENERAL + ACCELERATOR + ACTIVATION PRODUCT + ANL + DOSIMETRY, THERMOLUMINESCENCE + RADIONUCLIDE, INDUCED

14-21317 ALSO IN CATEGORY 15

TALENTI M + CIGNA A

PROBLEM OF RADIOACTIVE MINERAL WATERS FROM THE HYGIENIC POINT OF VIEW  
UNIVERSITY OF ROME

4 PAGES, 6 REFERENCES, NUOVI ANN. IG. MICROBIOL., 15, PAGES 568-71 (NOV-DEC. 1964) IN ITALIAN

RADIOACTIVE WATERS ARE DEFINED IN ITALY AS THOSE WHICH CONTAIN MORE THAN 4 NCI/1. MORE EXACTLY, WEAKLY ACTIVE WATERS CONTAIN 1-30 NCI/1, ACTIVE WATERS CONTAIN 30-150 NCI/1, STRONGLY ACTIVE WATERS CONTAIN MORE THAN 150 NCI/1. OTHER CLASSIFICATIONS BASED ON RADIUM ARE DISCUSSED. THE BASIS OF DETERMINATIONS ON RN-222 AND RA-226 IS OUTLINED. PREVIOUS MEASUREMENTS ON ITALIAN WATERS IN GENERAL HAVE BEEN CARRIED OUT WITH INADEQUATE EQUIPMENT FOR DISTINGUISHING THE CONTRIBUTIONS FROM THESE ISOTOPES. THE SCINTILLATION CHAMBER APPEARS TO BE ADAPTED PARTICULARLY WELL TO THE DETERMINATION OF RN-222 IN EQUILIBRIUM WITH RA-226, AS DISTINGUISHED FROM EXCESS RN-222. THE MAX ADMISSIBLE CONCENTRATION OF RA-226 IN WATER IS 1 PCI/1, AVOIDANCE OF CONTINUED USE OF MORE ACTIVE WATERS IS SUGGESTED. THIS VALUE FOR THE GENERAL POPULATION MAY BE ALTERED BY RECENT STUDIES ON THE RATIO BETWEEN RA CONTENT IN WATER AND IN THE HUMAN BODY. CONTRIBUTIONS OF EACH NUCLIDE TO TOTAL ACTIVITY OF ITALIAN MINERAL WATERS WILL BE STUDIED IN THE FUTURE.

\*GROUND WATER, GENERAL + GROUND WATER, NUCLIDE OCCURRENCE + ITALY + RADIUM + RADON

14-21325

MOISIO T + MIETTINEN JK

CS-137 AND I-131 IN FINNISH MILK FROM SEPT. 1962 TO AUG. 1963

BIOCHEMICAL INST., HELSINKI

2 PAGES, 1 TABLE, 1 REFERENCE, SUOMEN KEM., P. 36, PAGES 175-6 (1963)

PERIODIC MEASUREMENTS OF CS-137 AND I-131 CONTENT IN MILK WERE MADE ON SAMPLES TAKEN FROM THE LARGEST TANKS (5000 TO 15,000 LITERS) OF THREE CENTRAL DAIRIES IN HELSINKI, JOENSUU, AND JOVANIEMI. THE SAMPLES REPRESENTED ONE DAYS MILK FROM 50 TO SEVERAL HUNDRED FARMS WITHIN ABOUT 100 KM OF EACH DAIRY.

\*BIOLOGICAL CONCENTRATION, GENERAL + \*FALLOUT + BIOLOGICAL CONCENTRATION, FOOD + BIOLOGICAL CONCENTRATION, MILK + CESIUM + FINLAND + IODINE

14-21327

BLANC, D + FONTAN J + GUEDAILA D

MEASUREMENT OF THE THORON FLUX LEAVING THE SOIL

3 PAGES, 2 FIGURES, 5 REFERENCES, COMPT. REND., SER. A AND B, 264, PAGES 491-3 (FEB. 6, 1967) IN FRENCH

A COLLECTOR MOUNTED ON AN IONIZATION CHAMBER GIVES DIRECTLY THE VALUE OF THE RELEASE OF THORON ON A SURFACE OF APPROXIMATELY 1 SQ. METER IN LESS THAN 10 MIN. THE MINIMUM VALUE MEASURABLE IS  $4 \times 10^{-17}$ TH CURIE PER SQ. CM PER SEC. THE RELEASE IS GENERALLY 100 TIMES GREATER.

\*INSTRUMENTATION, RADIATION MONITORING + \*MONITOR, RADIATION, GAS + FRANCE + RADIOISOTOPE + THORON

14-21329 ALSO IN CATEGORY 15

ROBERTS IC

EFFLUENT MONITORING AND EVALUATION - A POWER REACTOR DESIGN GUIDE

BATTELLE-NORTHWEST, RICHMOND, WASHINGTON

BNWL-251(REV) +. 78 PAGES, FIGURES, TABLES, MAY 1967

THIS REPORT IS DIRECTED TOWARD POWER-REACTOR PRACTICES AND, PARTICULARLY, TO CONDITIONS EXISTING DURING NORMAL OPERATION OF POWER REACTORS. IT DOES NOT INCLUDE EVALUATION OF ACCIDENT CONDITIONS. THE MATERIAL IN THE DOCUMENT WAS SELECTED TO MEET THE NEEDS OF READERS WHO WISH TO UNDERSTAND THE BASIC REQUIREMENTS OF MONITORING. DOES NOT SUPPLY COOKBOOK PROCEDURES.

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

\*MONITORING PROGRAM, ENVIRONMENTAL + \*REACTOR, POWER + \*WASTE DISPOSAL, GENERAL + BATTELLE NORTHWEST + EFFLUENT + ENVIRONMENTAL CONDITION + EQUIPMENT, GENERAL + IODINE + RADIOISOTOPE + REGULATION, AEC + SAMPLING + WASTE DISPOSAL, GAS + WASTE DISPOSAL, LIQUID

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-21330  
GODBEE HW + DAVIS NM + SHOCKLEY WE  
DISPERSION OF SIMULATED HIGH-LEVEL RADIOACTIVE WASTE POWDERS IN A GLASS MATRIX  
OAK RIDGE NATIONAL LABORATORY  
ORNL-TM-1697 +. 15 PAGES, 4 FIGURES, 3 TABLES, AUGUST 4, 1967

HIGH-LEVEL WASTE POWDERS SUCH AS THOSE FROM THE FLUIDIZED-BED VOLATILITY PROCESS (FBVP) OR THOSE FROM SPRAY CALCINATION OF WASTE SOLUTIONS FROM AQUEOUS FUEL PROCESSING SCHEMES MAY REQUIRE SOME TREATMENT BEYOND SEALING THE UNTREATED POWDER IN A DISPOSAL POT. THESE POWDERS MAY BE DISPERSED (NOT DISSOLVED) IN A GLASS MATRIX TO YIELD A TWO-PHASE POWDER-GLASS SYSTEM WITH IMPROVED CHEMICAL AND PHYSICAL PROPERTIES. REPRESENTATIVE MATERIALS FROM THE SPRAY CALCINATION OF PUREX WASTE AND FROM THE FLUIDIZED-BED VOLATILITY PROCESS WERE CHANGED FROM FREE-FLOWING DUSTY POWDERS TO HARD, STRONG, VOID-FREE SOLIDS BY DISPERSING THEM IN LEAD SILICATE GLASSES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA., \$2.00 COPY, \$0.65 MICROFICHE

\*WASTE TREATMENT, GENERAL + CALCINATION + GRNL + WASTE TREATMENT, FIXATION + WASTE TREATMENT, SOLID

14-21332  
LAMBRINO VI  
THE STUDY OF THE DECONTAMINATION OF RADIOACTIVE SOLUTIONS WHICH CONTAIN SR-90 USING ION EXCHANGERS  
INSTITUT DE MEDECINE ET DE PHARMACIE, BUCHAREST  
41 PAGES, FIGURES, TABLES, REFERENCES, COMPT. REND. ACAD. BULG. SCIENCE., 19, PAGES 487-90 (1966)

THE DECONTAMINATION CAPACITY OF ALUMINOSILICATE ION EXCHANGERS FOR THE ELIMINATION OF SR-90 FROM SOLUTIONS WAS STUDIED. THE DEGREE OF DECONTAMINATION WAS DETERMINED BY A DYNAMIC METHOD (FILTRATION USING A FILTRATION COLUMN) AND A STATIC METHOD (TIME OF CONTACT) AS A FUNCTION OF TIME OF THE QUANTITY OF ALUMINOSILICATES USED. THE DYNAMIC METHOD SHOWED THAT THE DEGREE OF DECONTAMINATION BEGAN WITH A SHARP INCREASE SO THAT AFTER 10 MIN OF FILTRATION THE DECONTAMINATION ATTAINED VALUES BETWEEN 80 AND 90%, WITH A MAXIMUM OF 92%. THE RESULTS OBTAINED BY THE STATIC METHOD SHOWED THAT THE DEGREE OF DECONTAMINATION WAS PROPORTIONAL TO THE CONTACT TIME AND TO THE QUANTITY OF ALUMINOSILICATE USED.

\*ION EXCHANGE + DECONTAMINATION + STRONTIUM

14-21343  
SANTHOLZER V  
RESULTS OF MEASUREMENTS AND ANALYSES OF NUCLEAR FALLOUT UP TO THE BEGINNING OF 1965  
7 PAGES, 3 FIGURES, 1 TABLE, 26 REFERENCES, CZECH. J. PHYS 15, PAGES 506-12 (1965)

AS A RESULT OF THE CESSATION OF NUCLEAR TESTS IN THE ATMOSPHERE, THERE WAS A FURTHER DECREASE IN THE ACTIVITY OF DRY FALLOUT AND RAINOUT, AS WELL AS IN GROUND-LEVEL AIR, IN 1964. THE DAILY ACTIVITIES DECREASED TO THE ORDER OF TENTHS OF  $\mu\text{Ci}/\text{sq. km}$ . FROM APRIL TO AUGUST AN INCREASE IN THE ACTIVITY WAS AGAIN SEEN, WHICH WAS CAUSED BY THE DESCENT OF RADIOACTIVE DUST FROM THE STRATOSPHERE TO THE TROPOSPHERE AS A CONSEQUENCE OF METEOROLOGICAL FACTORS. SEASONAL VARIATION WAS NOT SO PRONOUNCED IN 1964 AS IN 1963, WHEN THE ACTIVITY INCREASED IN MAY AND JUNE TO 6 OR 7 TIMES THAT OF FEBRUARY AND MARCH. IN 1964 THE ACTIVITY INCREASED 3 FOLD. THE CONCEPT OF THE EXISTENCE OF A STRATOSPHERIC RESERVOIR OF ARTIFICIAL RADIOACTIVITY, FORMED AS A RESULT OF NUCLEAR TESTS, WAS THUS CONFIRMED, AS WAS THE EXISTENCE OF A CERTAIN RESIDENCE TIME OF RADIOACTIVE DUST IN THE STRATOSPHERE.

\*FALLOUT + CZECHOSLOVAKIA + MONITORING PROGRAM, ENVIRONMENTAL + RAINOUT + STRATOSPHERE + TEST, WEAPONS (HP ASPECTS) + TROPOSPHERE

14-21344 ALSO IN CATEGORY 15  
MALYKHIN VM + MOISEEV AA + SHAMOV VP  
ON THE CALCULATION OF THE DOSE LOADS FOR THE BONE TISSUE IN CASE OF ACUTE SR-90 POISONING  
2 PAGES, 2 FIGURES, CIG. SANIT 9, PAGES 62-3 (SEPTEMBER 1966) IN RUSSIAN

A BIOLOGICAL MODEL FOR THE UPTAKE OF STRONTIUM-90 BY HUMANS WAS USED FOR DETERMINING THE DOSE TO BONE TISSUE. THE INTEGRAL BONE DOSE WAS COMPUTED CONSIDERING THE AMOUNT OF ACTIVITY INTRODUCED INTO THE ORGANISM DURING ACUTE POISONING WITH STRONTIUM-90, THE AMOUNT OF ACTIVITY MEASURED IN VIVO AT ARBITRARY TIMES DURING THE YEARS FOLLOWING ACUTE POISONING, AND THE AMOUNT OF STRONTIUM-90 EXCRETED DAILY (IN URINE AND FECES) BY THE PATIENTS FOLLOWING ACUTE POISONING WITH STRONTIUM-90.

\*DOSE + BIOLOGICAL CONCENTRATION, MAN + DOSE CALCULATION, INTERNAL + RADIOBIOLOGY + STRONTIUM + USSR

14-21345  
SANSOM BF  
THE METABOLISM OF CS-137 IN DAIRY COWS  
AGRICULTURAL RESEARCH COUNCIL INST. FOR RESEARCH ON ANIMAL DISEASES, COMPTON, ENGLAND

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-21345 \*CONTINUED\*  
5 PAGES, 3 FIGURES, 5 TABLES, REFERENCES, J. AGR. SCI. 66, PAGES 389-93 (JUNE 1966)

IN THE UNITED KINGDOM DURING 1961 THE AVERAGE HUMAN DIET CONTAINED SIX TIMES AS MUCH CS-137 AS SR-90, AND IN 1962 AND 1963 THIS RATIO HAD INCREASED TO ABOUT 15. MOST OF THIS, BETWEEN 70 AND 90%, IS CONTRIBUTED BY DAIRY PRODUCTS AND MEAT. THE METABOLISM OF CS-137 IN DAIRY COWS WAS STUDIED AFTER SINGLE ORAL AND INTRAVENOUS DOSES AND DURING TWICE-DAILY ORAL DOSING FOR 28 DAYS. GASTROINTESTINAL ABSORPTION OF CS-137 WAS ABOUT 70 TO 80% OF THE ORAL DOSES. AFTER 28 DAYS OF CONTINUOUS FEEDING, THE MEAN CONCENTRATION OF CS-137 IN MILK WAS 0.84% DAILY DOSE/LITER, AND THE BODY BURDEN OF THE ISOTOPE VARIED BETWEEN 5.7 AND 8.2 TIMES THE DAILY INTAKE. WHEN FEEDING OF CS-137 STOPPED, THE CONCENTRATION OF THE ISOTOPE IN MILK FELL BY A FACTOR OF 5 IN 8 DAYS, BY A FACTOR OF 10 IN 16 DAYS, BY A FACTOR OF 20 IN 32 DAYS, AND THEREAFTER EXPONENTIALLY WITH A HALF-LIFE OF 30 DAYS. THE CONCENTRATIONS OF THE ISOTOPE IN MUSCLE DECREASED AT FIRST SLOWLY BUT FINALLY ALSO EXPONENTIALLY WITH A HALF-LIFE OF ABOUT 30 DAYS. IN ITS SECRETION INTO MILK, CS-137 BEHAVES SIMILARLY TO POTASSIUM, BUT THE RELATIVE IMPORTANCE OF THE URINARY AND FECAL EXCRETORY ROUTES FOR CS-137 ARE REVERSED AS COMPARED WITH POTASSIUM.

\*BIOLOGICAL CONCENTRATION, ANIMAL + \*BIOLOGICAL CONCENTRATION, MILK + \*FALLOUT + CESIUM + STRONTIUM + UNITED KINGDOM

14-21346  
MCCLAIN WC + BRADSHAW PL + EMPSON FM  
DISPOSAL OF HIGH LEVEL SOLIDIFIED WASTES IN SALT MINES  
OAK RIDGE NATIONAL LABORATORY  
ORNL-P-3053 + CONF-670512-3 +. 22 PAGES, 1967, FROM JOINT IAEA/ENEA SYMPOSIUM ON THE DISPOSAL OF RADIOACTIVE WASTES INTO THE GROUND, VIENNA, AUSTRIA

PROJECT SALT VAULT, AN EXPERIMENT DEMONSTRATING THE DISPOSAL OF HIGH-LEVEL RADIOACTIVE SOLID WASTES, WAS OPERATED FROM NOVEMBER 1965 TO JUNE 1967. IRRADIATED FUEL ASSEMBLIES FROM THE ENGINEERING TEST REACTOR, SUPPLEMENTED WITH ELECTRICAL HEAT WERE USED INSTEAD OF ACTUAL WASTES. THE FEASIBILITY AND SAFETY OF HANDLING RADIOACTIVE MATERIALS IN AN UNDERGROUND ENVIRONMENT WAS DEMONSTRATED. THE STABILITY OF THE SALT UNDER THE EFFECTS OF HEAT AND RADIATION WAS SHOWN, AS WELL AS THE CAPABILITY OF SOLVING MINOR STRUCTURAL PROBLEMS BY STANDARD MINING METHODS. THE DATA OBTAINED ON THE CREEP AND PLASTIC FLOW CHARACTERISTICS OF THE SALT WILL MAKE IT POSSIBLE TO ARRIVE AT A SUITABLE MINE DESIGN FOR A DISPOSAL FACILITY FOR ANY DESIRED DEGREE OF ROOM CLOSURE.

\*WASTE DISPOSAL, GENERAL + ORNL + WASTE DISPOSAL, SALT + WASTE DISPOSAL, SOLID + WASTE STORAGE

14-21347  
MCCLAIN WC  
HYDRAULIC FRACTURING AS A WASTE DISPOSAL METHOD  
OAK RIDGE NATIONAL LABORATORY  
ORNL-P-3054 + CONF-670512-4 +. 20 PAGES, FROM JOINT IAEA/ENEA SYMPOSIUM ON THE DISPOSAL OF RADIOACTIVE WASTES INTO THE GROUND, VIENNA, AUSTRIA, 1967

ORNL DEVELOPED A METHOD OF WASTE DISPOSAL BASED ON THE OIL-FIELD METHOD OF HYDRAULIC FRACTURING. THIS WORK REACHED FRUITFULNESS IN DECEMBER 1966 AND IN APRIL 1967 WHEN TWO INJECTIONS WERE CARRIED OUT TOTALING 65,000 AND 80,000 GAL, RESPECTIVELY, OF RESIDUES FROM A NEW WASTE EVAPORATOR. THIS EVAPORATOR CONCENTRATES THE NORMAL LABORATORY WASTES ABOUT 15 TO 20 TIMES AND WILL PRODUCE ABOUT 150,000 TO 200,000 GAL OF WASTE ANNUALLY, CONTAINING UP TO 0.5 CI/GAL. IT IS EXPECTED TO DISPOSE OF THIS CONCENTRATE IN 80,000-GAL BATCHES AT 4- TO 6-MONTH INTERVALS.

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

\*WASTE DISPOSAL, GENERAL + ORNL + WASTE DISPOSAL, HYDRAULIC FRACTURING + WASTE DISPOSAL, LIQUID

14-21349 ALSO IN CATEGORY 15  
ROSENTHAL HL + BIRD JT + GILSTER JE + PINTO PV + ONCILL S  
SR-90 CONTENT OF DECIDUOUS TEETH OF CHILDREN  
WASHINGTON UNIVERSITY, ST. LOUIS  
7 PAGES, 5 FIGURES, 3 TABLES, 17 REFERENCES, J. DENT. RES. 45, PAGES 343-9 (MAR.-APR. 1966)

TO DETERMINE THE USEFULNESS OF DECIDUOUS TEETH AS A MEASURE OF SR-90 BODY BURDEN, STUDIES WERE UNDERTAKEN TO DEFINE THE VARIATION IN THE SR-90 CONTENT OF THE VARIOUS TYPES OF DECIDUOUS TEETH. THE SR-90 CONTENT OF DECIDUOUS TOOTH CROWNS INCREASED FROM 0.15 TO 4.7 PC SR-90/C CA BETWEEN 1947 AND 1958, RESPECTIVELY, FOR CHILDREN BORN IN THE ST. LOUIS AREA AND WHO WERE BOTTLE-FED FROM BIRTH. THE VARIATION OF SR-90 CONTENT IN DECIDUOUS INCISORS, CUSPIDS, AND FIRST AND SECOND MOLARS, BETWEEN CARIOUS AND SOUND TEETH OR BETWEEN TEETH FROM CHILDREN WHO WERE BREAST-FED OR BOTTLE-FED DURING THE TIME OF TOOTH FORMATION WAS LESS THAN 30%.

\*BIOLOGICAL CONCENTRATION, MAN + \*FALLOUT + BIOMEDICAL + RADIOBIOLOGY + STRONTIUM + UNITED STATES

14-21356  
NUCLEAR SAFETY

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-21356 \*CONTINUED\*  
ISRAEL ATOMIC ENERGY COMMISSION, YAVNE  
IA-1082 +. 19 PAGES, PAGES 217-235 OF RESEARCH LABORATORIES ANNUAL REPORT, JANUARY-DECEMBER 1965, JUNE 1966

THE SAFETY AND HAZARDS EVALUATION STUDIES CONNECTED WITH THE PROPOSED DUAL-PURPOSE REACTOR FOR SEA WATER DESALINATION AND ELECTRICITY WERE CONTINUED. SEVERAL PAGES DEVOTED TO PROGRESS MADE IN EVALUATING HAZARDS TO THE ENVIRONMENT RESULTING FROM AN ACCIDENT.

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

ACCIDENT, CONSEQUENCES + ENVIRONMENTAL CONDITION + FISSION PRODUCT RELEASE, GENERAL + HAZARDS ANALYSIS + ISRAEL + REACTOR, DESALINATION

14-21360 ALSO IN CATEGORY 15  
WILSON AR + SPIERS FW  
FALLOUT CESIUM-137 AND POTASSIUM IN NEW-BORN INFANTS  
UNIVERSITY OF LEEDS, LEEDS  
5 PAGES, 6 FIGURES, 6 TABLES, 8 REFERENCES, NATURE 215(5100), PAGES 470-4 (JULY 29, 1967)

NEW TECHNIQUES OF LOW-BACKGROUND COUNTING HAVE MADE POSSIBLE THE MEASUREMENT OF INTAKE AND RETENTION OF NATURAL POTASSIUM AND CS-137 IN INFANTS. THE BIOLOGICAL HALF-LIVES OF BOTH K AND CS-137 ARE 5 TO 10 TIMES LOWER THAN THE CORRESPONDING VALUES IN ADULTS.

\*BIOLOGICAL CONCENTRATION, FOOD + \*CESIUM + \*FALLOUT + BIOLOGICAL CONCENTRATION, MAN + BIOLOGICAL CONCENTRATION, MILK + COUNTER, WHOLE BODY + POTASSIUM + UNITED KINGDOM

14-21362 ALSO IN CATEGORY 15  
CROCKER GR + CONNORS MA  
GAMMA-EMISSION DATA FOR THE CALCULATION OF EXPOSURE RATES FROM NUCLEAR DEBRIS. VOL. 1. FISSION PRODUCTS NAVAL RADIOLOGICAL DEFENSE LAB., SAN FRANCISCO, CALIF.  
USNRDL-TR-876 +. 82 PAGES, 1 FIGURE, 9 REFERENCES, JUNE 10, 1965

PHOTON ENERGIES AND PHOTON ABUNDANCES HAVE BEEN COMPILED AND SUMMARIZED FOR SOME FISSION-PRODUCT AND OTHER RADIONUCLIDES, USING DATA REPORTED IN THE LITERATURE UP TO JUNE 1963. THE DATA ARE PRESENTED IN TABULAR FORM, LISTING PHOTON ENERGIES AND ABUNDANCES FOR GAMMA RAYS, BETA RAYS, AND X RAYS EMITTED. A LIST OF MULTIPLIERS IS ALSO PRESENTED FOR CONVERTING ACTIVITIES OF THE RADIONUCLIDES TO INFINITE-PLANE EXPOSURE RATES.

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

\*DOSE + \*FALLOUT + DOSE CALCULATION, EXTERNAL + GAMMA + NUCLEAR EXPLOSION DEBRIS

14-21363 ALSO IN CATEGORY 15  
NG YC + THOMPSON SE  
PREDICTION OF THE MAXIMUM DOSAGE TO MAN FROM THE FALLOUT OF NUCLEAR DEVICES. II. ESTIMATION OF THE MAXIMUM DOSE FROM INTERNAL EMITTERS  
LAWRENCE RADIATION LABORATORY, LIVERMORE  
UCRL-50163(Pt.2) +. 25 PAGES, 8 TABLES, 19 REFERENCES, DECEMBER 14, 1966

DESCRIBES A METHOD FOR ESTIMATING THE MAXIMUM INTERNAL DOSE THAT COULD RESULT FROM THE DEPOSITION OF RADIONUCLIDES RELEASED TO THE ATMOSPHERE. BY MEANS OF THIS ANALYSIS ONE CAN IDENTIFY THE NUCLIDES THAT COULD CONTRIBUTE MOST TO THE INTERNAL DOSE, AND DETERMINE THE CONTRIBUTION OF EACH NUCLIDE TO THE TOTAL DOSE. THE CALCULATIONS REQUIRED TO ESTIMATE THE MAXIMUM DOSE TO THE WHOLE BODY ARE PRESENTED TO ILLUSTRATE THE OVERALL METHOD. THE RESULTS ARE SHOWN TO SERVE THE BASIC AIMS OF PRESHOT RAD-SAFE ANALYSIS AND OF GUIDANCE FOR POSTSHOT DOCUMENTATION. THE USEFULNESS OF THE ANALYSIS IN PROVIDING GUIDANCE FOR DEVICE DESIGN IS FURTHER POINTED OUT.

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

\*BIOLOGICAL CONCENTRATION, FOOD + \*DOSE + \*FALLOUT + COMPUTER PROGRAM + COMPUTER, DIGITAL + DOSE CALCULATION, INTERNAL + FISSION PRODUCT TRANSPORT + IODINE + LRL + TEST, WEAPONS (HP ASPECTS)

14-21366  
MAWSON CA  
PHILOSOPHY AND PRACTICE OF WASTE MANAGEMENT AT CRNL  
ATOMIC ENERGY OF CANADA LTD., CHALK RIVER, ONTARIO  
AECL-2710 +. 21 PAGES, 3 TABLES, 4 REFERENCES, FEBRUARY 1967

THE HISTORY OF DEVELOPMENT OF WASTE-MANAGEMENT PRACTICES AT CRNL IS OUTLINED. THE POLICY HAS BEEN TO DEVELOP A SYSTEM THAT COULD BE OPERATED SAFELY AT A SITE CLOSE TO A BUILT-UP AREA AND TO DEMONSTRATE THE CONSTRUCTION AND USE OF FACILITIES THAT CAN BE MADE AND OPERATED AT A REASONABLE COST. THE WASTE FACILITIES ARE DESCRIBED, AND AN ACCOUNT IS GIVEN OF EXPERIMENTS DESIGNED TO TEST THE BEHAVIOUR OF FISSION PRODUCTS MOVING THROUGH THE GROUNDWATER ZONE. OTHER EXPERIMENTS ON DISPERSION OF RADIONUCLIDES THROUGH THE ENVIRONMENT ARE OUTLINED. THE

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-21366 \*CONTINUED\*

BASIS FOR SETTING WORKING LIMITS FOR CERTAIN TYPES OF DISPOSALS IS GIVEN, ESPECIALLY THE CONNECTION BETWEEN MAXIMUM DISCHARGE LEVELS TO THE RIVER AND THE MPC(WATER) RECOMMENDATIONS OF THE ICRP. IT IS SHOWN THAT WASTE AT PRESENT PUMPED TO REACTOR PIT 2 COULD BE DISCHARGED TO THE RIVER WITHOUT APPROACHING THE ICRP LIMITS, BUT IT IS POINTED OUT THAT THIS WOULD CAUSE A LARGE INCREASE IN SR-90 AND CS-137 IN THE RIVER WATER.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA., \$2.00 COPY, \$0.65 MICROFICHE

\*WASTE DISPOSAL, GENERAL + \*WASTE MANAGEMENT + CANADA + CESIUM + CHALK RIVER + STRONTIUM + WASTE DISPOSAL, RIVER + WASTE DISPOSAL, TERRESTRIAL + WASTE HANDLING

14-21369

OLIVER S + BARBER SA  
MECHANISMS FOR THE MOVEMENT OF MN, FE, B, CU, ZN, AL, AND SR FROM ONE SOIL TO THE SURFACE OF SOYBEAN ROOTS (GLYCINE MAX)

PURDUE UNIVERSITY, LAFAYETTE, IND.

3 PAGES, 4 TABLES, 7 REFERENCES, SOIL SCI. SOC. AMER., PROC., 30, PAGES 468-70 (JULY-AUGUST 1966)

THE ROLE OF ROOT INTERCEPTION, MASS FLOW, AND DIFFUSION IN SUPPLYING IONS TO SOYBEANS GROWING IN A LEACHED SUBSOIL WAS INVESTIGATED. ROOT INTERCEPTION WAS THE MAIN MECHANISM FOR THE SUPPLY OF CU, AL, AND SR TO THE SOYBEAN ROOTS. MASS FLOW WAS THE MOST IMPORTANT FOR B, AND DIFFUSION WAS THE MOST IMPORTANT FOR MN, FE, AND ZN. THE MOST SIGNIFICANT MECHANISMS WILL LIKELY VARY WITH THE CROP, CLIMATE, AND SOIL.

\*SOIL + IRON + MANGANESE + SOIL, RADIONUCLIDE MOVEMENT THROUGH + STRONTIUM

14-21370

ISHIYAMA T + MATSUMURA T

DECONTAMINATION OF RADIOACTIVE RUTHENIUM BY CELLULOSE DERIVATIVE-BENTONITE FLOCCULATION  
RADIATION CENTER OF OSAKA PREFECTURE, JAPAN

6 PAGES, 6 FIGURES, 2 TABLES, 9 REFERENCES, RADIOISOTOPES (TOKYO) NO. 15, PAGES 181-6 (JULY 1966) IN JAPANESE

THE UTILIZATION OF CELLULOSE ION EXCHANGER AS THE AGENT FOR THE BENTONITE FLOCCULATION OF RADIOACTIVE WASTE WATER WAS INVESTIGATED, AND THE DECONTAMINATION PROPERTIES OF CELLULOSE ION EXCHANGER-BENTONITE FLOCCULATION WERE STUDIED WITH RESPECT TO THE REMOVAL OF RADIOACTIVE NITROSYLRUTHENIUM IONS. THE DEAE CELLULOSE-BENTONITE FLOCCULATION WAS ESPECIALLY EFFECTIVE IN REMOVING THE NITRONITROSYLRUTHENIUM COMPLEX, ACHIEVING A REMOVAL HIGHER THAN 90%, WHERE THE FORMATION OF ORGANO-CLAY COMPLEX THROUGH THE COMBINATION OF DEAE CELLULOSE AND BENTONITE PARTICLES WAS ASSUMED TO PLAY AN IMPORTANT ROLE IN INCREASING THE REMOVAL OF RADIOACTIVE RUTHENIUM, POSSIBLY BECAUSE OF THE HIGH ADSORPTION CAPACITY OF ORGANO-CLAY COMPLEX FOR THE COMPLEXED ANION.

\*RADIOCHEMICAL ANALYSIS + \*WASTE TREATMENT, LIQUID + ION EXCHANGE + JAPAN + RADIOCHEMICAL PROCESSING

14-21374

ALSO IN CATEGORY 15

PROCEEDINGS OF THE CONFERENCE ON RADIATION BIOLOGY HELD AT THE OAK RIDGE ASSOCIATED UNIVERSITIES, OAK RIDGE, TENN., AUGUST 2-5, 1965

OAK RIDGE NATIONAL LABORATORY + UT-AEC AGRICULTURAL RESEARCH LAB., OAK RIDGE, TENN. + OAK RIDGE ASSOCIATED UNIVERSITIES, INC., TENN.

CONF-650847 +. 63 PAGES, FIGURES, REFERENCES, JUNE 1967

THE PURPOSE OF THE CONFERENCE WAS TO ENABLE TEACHERS, PARTICULARLY THOSE IN UNDERGRADUATE COLLEGES, TO BECOME FAMILIAR WITH THE FUNDAMENTAL PRINCIPLES OF RADIATION BIOLOGY, AND TO DISCUSS HOW INFORMATION FROM RADIATION STUDIES CAN BE INCORPORATED INTO THE UNDERGRADUATE CURRICULUM. SUBJECTS INCLUDE - RADIATION BIOLOGY AS A SCIENCE, RADIATION EFFECTS AT THE CELLULAR LEVEL, RADIATION EFFECTS IN MAMMALIAN TISSUES, RADIATION EFFECTS IN PLANTS, AEC BIOMEDICAL RESEARCH PROGRAMS, AND REPORTS OF GROUP DISCUSSIONS ON INCLUSION OF RADIATION BIOLOGY IN UNDERGRADUATE COURSES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA., \$2.00 COPY, \$0.65 MICROFICHE

\*RADIATION DAMAGE + \*RADIOBIOLOGY + BIOMEDICAL

14-21376

HIMES FL + MANGAROE A

INFLUENCE OF ORGANIC COMPOUNDS ON THE MOVEMENT OF STRONTIUM IN SOILS AND ON THE UPTAKE BY PLANTS  
OHIO AGRICULTURAL RESEARCH AND DEVELOPMENT CENTER, WOOSTER, OHIO

CONF-651-114-2 + GMEILIN-AED-CONF-65-344-1 +. 18 PAGES, 8 FIGURES, 2 TABLES, NOVEMBER 1965, PRESENTED AT AMERICAN SOCIETY OF AGRONOMY, 1965 ANNUAL MEETING, COLUMBUS, OHIO, OCT. 31-NOV. 5, 1965

THE STABILITY CONSTANTS RANGED FROM 1.42 TO 14.46. THE SOILS FORMED UNDER NEUTRAL CONDITIONS HAD HIGHER CONSTANTS THAN THOSE FORMED UNDER VERY ACID CONDITIONS. THE STABILITY CONSTANTS INCREASED WHEN THE CLAY MINERALS AND OTHER HF-SOLUBLE MATERIALS WERE REMOVED. THE UPTAKE OF SR DECREASED RAPIDLY AS THE STABILITY CONSTANTS FOR THE SR-ORGANIC MATTER INCREASED FROM 5 TO

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-21376 \*CONTINUED\*

9. THE PHYTIC ACID SOLUTION WAS VERY EFFECTIVE IN LEACHING SR FROM THE SOIL COLUMNS. NITRILOTRIACETIC ACID AND EDTA WERE USUALLY INTERMEDIATE IN EFFICIENCY OF LEACHING AND THE OTHER COMPOUNDS WERE LESS EFFECTIVE. THE WATER EXTRACT OF THE AB-38 SOIL WAS VERY EFFICIENT IN LEACHING SF FROM ANOTHER SAMPLE OF AB-38 SOIL.

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

\*SOIL, RADIONUCLIDE MOVEMENT THROUGH + ECOLOGICAL CONSIDERATION + FALLOUT + STRONTIUM

14-21377 ALSO IN CATEGORY 15  
BIOENVIRONMENTAL AND RADIOLOGICAL-SAFETY FEASIBILITY STUDIES ATLANTIC-PACIFIC INTEROCEANIC CANAL  
BATTELLE MEMORIAL INST., COLUMBUS, OHIO  
BMI-171-003 +. 102 PAGES, JANUARY 13, 1967

INTERIM REPORT OF PROGRESS ON THE STUDIES UNDER MANAGEMENT OF BATTELLE-COLUMBUS. CONCERNED PRIMARILY WITH STUDIES BEING MADE AND THOSE BEING PLANNED BY BATTELLE-COLUMBUS SUBCONTRACTORS. SUBJECTS DISCUSSED INCLUDE - DOSE ESTIMATION, HUMAN ECOLOGY (PANAMA), AGRICULTURAL ECOLOGY, TERRESTRIAL ECOLOGY, HYDROLOGY AND RADIONUCLIDE DISTRIBUTION, FRESHWATER ECOLOGY, PHYSICOCHEMICAL OCEANOGRAPHY, ESTERINE AND MARINE ECOLOGY, SPECIFIC-ACTIVITY APPROACH, MARINE ECOLOGY AND RESOURCES, DATA EVALUATION PLAN.

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

\*DOSE + \*ECOLOGICAL CONSIDERATION + \*HYDROLOGICAL CONSIDERATION, GENERAL + \*PLOWSHARE PROGRAM + DOSE CALCULATION, EXTERNAL + DOSE CALCULATION, INTERNAL + ESTUARY + OCEAN AND SEA + PLOWSHARE PROGRAM, ATLANTIC-PACIFIC CANAL + RADIOBIOLOGY

14-21378

VOSS GL

BIOENVIRONMENTAL AND RADIOLOGICAL-SAFETY FEASIBILITY STUDIES ATLANTIC-PACIFIC INTEROCEANIC CANAL. MARINE RESOURCES AND ECOLOGY. PHASE I FINAL REPORT  
MIAMI UNIV., FLA. INST. OF MARINE SCIENCE  
BMI-171-005 +. 143 PAGES, FIGURES, MARCH 6, 1967

SUBJECTS DISCUSSED INCLUDE - MICROBIOLOGY, MARINE INVERTEBRATES OF POTENTIAL USE AS FOOD, MARINE FISHERIES, ECOLOGICAL DESCRIPTION (THE ATLANTIC), ECOLOGICAL DESCRIPTION (THE PACIFIC), IMPORTANT FISHES FROM ATLANTIC AND PACIFIC, AND BIBLIOGRAPHIES OF PERTINENT LITERATURE.

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

\*ECOLOGICAL CONSIDERATION + \*FALLOUT + \*PLOWSHARE PROGRAM + AQUATIC ORGANISMS + ESTUARY + OCEAN AND SEA + PLOWSHARE PROGRAM, ATLANTIC-PACIFIC CANAL

14-21379

RICKARD WH

CESIUM-137 IN LITTER AND UNDERSTORY VEGETATION

BIOLOGY DEPT., BATTELLE MEMORIAL INSTITUTE, PACIFIC NORTHWEST LAB., RICHLAND, WASHINGTON  
BNSA-215 +. 6 PAGES, 1 FIGURE, 1 TABLE, 7 REFERENCES, NORTHWEST SCI., 40(1), PAGE 25-30, (1966)

CESIUM-137 DERIVED FROM WORLDWIDE FALLOUT WAS MEASURED IN THE UNDERSTORY VEGETATION AND LEAF LITTER OF THREE DIFFERENT MATURE CONIFER STANDS IN THE CASCADE MOUNTAINS OF WASHINGTON IN SEPTEMBER, 1964. THE CONCENTRATION IN UNDERSTORY SHRUBS WAS MORE OR LESS SIMILAR AMONG THE THREE STANDS. HOWEVER, MORE WAS PRESENT IN THE UNDERSTORY IN THE HEMLOCK (TSUGA BETEROPHYLLA) STAND WHEN EXPRESSED AS CS-137 PER SQUARE METER OF GROUND BECAUSE OF THE MORE LUXURIANT UNDERSTORY GROWTH IN THIS HABITAT. CESIUM-137 IN LEAF LITTER WAS MOST ABUNDANT IN A FIR (ABIES AMABILIS) STAND NEAR THE MOUNTAIN SUMMIT. THE LEAF LITTER OF A HEMLOCK STAND IN A HIGH-PRECIPITATION REGION WEST OF THE MOUNTAINS HAD HIGHER CONCENTRATIONS THAN DID THE LITTER FROM A PONDEROSA PINE (PINUS PONDEROSA) STAND FROM A LOWER-PRECIPITATION REGION EAST OF THE MOUNTAINS.

\*FALLOUT + \*RADIOBIOLOGY + BATTELLE NORTHWEST + BIOLOGICAL CONCENTRATION, VEGETATION + CESIUM + PRECIPITATION + RAINOUT

14-21380

MCCORMICK JF

EFFECTS OF IONIZING RADIATION ON A PINE FOREST

NORTH CAROLINA UNIV., CHAPEL HILL, DEPT. OF BOTANY

ORO-3299-6 + CONF-670503-21 +. 22 PAGES, MAY 1, 1967, PRESENTED AT 2ND NATIONAL SYMPOSIUM ON RADIOECOLOGY, ANN ARBOR, MICHIGAN

A SLASH-LONGLEAF PINE FOREST WAS EXPOSED TO A PORTABLE 9200-CURIE CS-137 SOURCE FOR 200 HOURS. THE ECOLOGICAL EFFECTS OF RADIATION HAVE BEEN INTERPRETED ON THE BASIS OF SIX PARAMETERS - (1) SPECIES MORTALITY, (2) INHIBITION OF APICAL AND LATERAL GROWTH, (3) INFLUENCE OF SPECIES

CATEGORY 14  
 RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-21380 \*CONTINUED\*

AGE AND SIZE UPON RADIATION SENSITIVITY, (4) MICROENVIRONMENTAL CHANGES, (5) CHANGES IN THE HERBACEOUS UNDERSTORY, AND (6) THE RECOVERY PATTERN OF LETHALLY IRRADIATED AREAS. THE FOREST IS THE MOST RADIATION SENSITIVE ECOSYSTEM YET INVESTIGATED. DOMINANT SPECIES WERE KILLED BY EXPOSURES OF 3KP AND GROWTH INHIBITION RESULTED FROM EXPOSURES AS LOW AS 100R. ECOSYSTEM RECOVERY WAS RAPID. LETHALLY IRRADIATED PINES WERE REPLACED BY HETEROTHECA SUBSILLARIS AND OTHER SPECIES CHARACTERISTIC OF OLD FIELD SUCCESSION. THE PINE FOREST IS 25-50X AS SENSITIVE AS HERBACEOUS OLD FIELD AND OUTCROP ECOSYSTEMS, 10-15X AS SENSITIVE AS A TROPICAL RAIN FOREST, AND 5-10X AS SENSITIVE AS A DECIDUOUS EVERGREEN FOREST. ESTIMATES OF CONIFEROUS FOREST RADIATION SENSITIVITY EXCEED BY 5-6 ORDERS OF MAGNITUDE THE LEVELS OF RADIOACTIVITY FOUND IN THE NATURAL FOREST, BUT FOREST SENSITIVITY FALLS WELL WITHIN THE RANGE OF EXPOSURE DOSES PREDICTED FOR A HYPOTHETICAL NUCLEAR WAR.

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

\*RADIATION DAMAGE + \*RADIOBIOLOGY + ECOLOGICAL CONSIDERATION

14-21381

RURMANN FJ + FRIES GF + ANDERSON MJ + STODDARD GE  
 INFLUENCE OF GRAZING INTENSITY ON RADIOSTRONTIUM CONCENTRATIONS IN MILK  
 U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE, CINCINNATI, OHIO + U.S. DEPARTMENT OF AGRICULTURE, BELTSVILLE, MARYLAND + DEPARTMENT OF DAIRY INDUSTRY, UTAH STATE UNIVERSITY, LOGAN  
 5 PAGES, 2 FIGURES, 16 REFERENCES, J. DAIRY SCI., 49, PAGE 1219-1222, (OCTOBER 1966)

THE EFFECT OF GRAZING INTENSITY ON RADIOSTRONTIUM CONCENTRATIONS IN MILK WAS STUDIED BY COMPARING MILK OF TWO GROUPS OF HOLSTEIN COWS GRAZED ROTATIONALLY. ONE GROUP WAS INCLUDED IN THE MAIN HERD, ON A NORMAL ROTATIONAL GRAZING SYSTEM, AND THE OTHER GROUP FOLLOWED THE MAIN HERD ONE PLOT BEHIND. MILK SAMPLES FROM THE GROUP FOLLOWING THE MAIN HERD SHOWED A SIGNIFICANT INCREASE AT THE 1% LEVEL IN STRONTIUM-90 UNITS AND STRONTIUM-89 UNITS. A SIGNIFICANT, POSITIVE LINEAR CORRELATION FOR S.U. 90 AND S.U. 89 IN MILK BETWEEN THE GROUPS WAS OBTAINED. DURING THE EXPERIMENTAL PERIOD, A HERD OF HOLSTEIN CATTLE WITHOUT ACCESS TO PASTURE, CONSUMING A WEIGHTED AMOUNT OF FEED, SECRETED 1.5% OF THEIR STRONTIUM-90 INTAKE INTO THE MILK.

\*BIOLOGICAL CONCENTRATION, FOOD + \*FALLOUT + BIOLOGICAL CONCENTRATION, ANIMAL FEED +  
 BIOLOGICAL CONCENTRATION, MILK + STRONTIUM

14-21382 ALSO IN CATEGORY 15

HEASLIP MB  
 ECOLOGICAL SIGNIFICANCE OF NEUTRON AND GAMMA RADIATION ON DORMANT AND PHYSIOLOGICALLY ACTIVE SEED AND SEEDLINGS OF TREE SPECIES NATIVE TO THE EASTERN DECIDUOUS FOREST. PROGRESS REPORT.  
 MOREHEAD STATE UNIV., KY.  
 ORD-2066-11 +. 39 PAGES, TABLES, REFERENCES, JUNE 1967

TO DETERMINE WHETHER FAST NEUTRONS AND GAMMAS ARE ADDITIVE OR INDEPENDENT IN ACTION, THE RELATIVE RADIOSENSITIVITY OF SEED SAMPLES EXPOSED TO 16 COMBINATIONS OF FAST NEUTRONS AND GAMMAS WERE INVESTIGATED. THE RELATIVE EFFECTS OF WATER ON FAST NEUTRONS AND GAMMA ACTIVITY WERE DETERMINED BY EXPOSING SOAKED AND NONSOAKED SEED SAMPLES TO VARIOUS LEVELS OF FAST NEUTRONS OR GAMMAS.

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

\*RADIATION DAMAGE + \*RADIOBIOLOGY + ECOLOGICAL CONSIDERATION + GAMMA + NEUTRON

14-21384

YAMAGATA N + IWASHIMA K  
 RADIOACTIVE CONTAMINATION IN THE HARBOURS OF SASEBO AND YOKOSUKA  
 DEPT. OF RADIOLOGICAL HEALTH, THE INSTITUTE OF PUBLIC HEALTH, TOKYO  
 10 PAGES, 7 FIGURES, 4 TABLES, 10 REFERENCES, KENKYU HOKOKU 14, PAGE 183-193, (1965), IN JAPANESE

SURVEYED ENVIRONMENTAL RADIOACTIVITIES IN THE HARBOURS OF SASEBO AND YOKOSUKA AT WHICH UNITED STATES NUCLEAR-POWERED SUBMARINES WERE EXPECTED TO CALL. SEAWATER, SEAWEEDS, SHELLFISH, FISH, AND BOTTOM MUD SAMPLES WERE COLLECTED DURING THE PERIOD 30 SEPTEMBER 1964-11 MARCH 1965 AND ANALYZED FOR MN-54, ZN-65 AND PU-106 BY USING A GAMMA-RAY SPECTROMETRY. THE CONCENTRATION FACTORS FROM SEAWATER TO MARINE ORGANISMS WERE ABOUT 0.01 OR HIGHER. NO SIGNIFICANT INDICATION OF THE EFFECT OF CALL OF THE SHIPS HAS BEEN FOUND SO FAR ON THE CONTAMINATION LEVELS. THE LEVELS WERE LOWER BY FACTORS OF 10 OR MORE IN PU-106 AND 100 OR MORE IN MN-54 AND ZN-65, COMPARED WITH THE MAXIMUM PERMISSIBLE CONCENTRATION IN SEAWATER FOR THE GENERAL PUBLIC, AS TENTATIVELY ESTABLISHED BY ONE OF THE AUTHORS.

\*BIOLOGICAL CONCENTRATION, GENERAL + \*ENVIRONMENTAL CONDITION + \*FALLOUT +  
 BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + JAPAN + MANGANESE + RUTHENIUM + SPECTROMETRY, GAMMA + ZINC

14-21307

ALSO IN CATEGORY 15

RECHT P  
 GENERAL STUDIES ON RADIATION ACCIDENTS. REPORT PRESENTED AT THE SYMPOSIUM ON ACCIDENTAL IRRADIATIONS IN



CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-21387 \*CONTINUED\*

INDUSTRY

EUROPEAN ATOMIC ENERGY COMMUNITY

15 PAGES, 5 TABLES, 25 REFERENCES, J. BELGE RADIOL., 50, PAGE 96-110, (1967) IN FRENCH

THIS SURVEY COMPRISES TWO PARTS. THE FIRST PART IS DEVOTED TO A LIST OF ACCIDENTAL IRRADIATIONS, AS COMPILED FROM AN ANALYSIS OF CERTAIN INFORMATION SUPPLIED, AND TO THE GENERAL LESSONS THAT CAN BE LEARNED THEREFROM. WHEREAS THE MOST SERIOUS ACCIDENTS HAVE SO FAR OCCURRED IN CRITICAL ASSEMBLIES, EXPERIMENTAL REACTORS AND CHEMICAL PLANTS, THE SCATTERED LOCATION OF OTHER RADIOACTIVITY SOURCES PRESENTS A NUMBER OF PROBLEMS AS REGARDS REGULATIONS AND CONTROL. THE SECOND PART DEALS WITH THE ADMINISTRATIVE AND MEDICO-LEGAL ASPECTS OF ACCIDENTAL IRRADIATIONS AND THE AUTHOR RAISES VARIOUS PROBLEMS AND QUESTIONS CONCERNING THE MEANING OF THE TERM ACCIDENTAL IRRADIATION AND ITS MEDICO-LEGAL IMPLICATIONS, BY CONSIDERING THE IMMEDIATE EFFECTS, THE THRESHOLD DOSES, AND THE DELAYED EFFECTS.

\*ACCIDENT, GENERAL + \*RADIATION PROTECTION, ORGANIZATION + \*RADIOCHEMICAL PLANT SAFETY + ACCIDENT, CRITICALITY + BELGIUM + RADIATION DAMAGE + RADIATION SAFETY AND CONTROL + RADIOBIOLOGY

14-21445

ALSO IN CATEGORY 15

RIEL GK

CONCENTRATION OF RADIOACTIVE ISOTOPES IN ENVIRONMENTAL WATER MEASURED BY UNDERWATER GAMMA SPECTROMETRY NAVAL ORDNANCE LAB., WHITE OAK, MD.

AD-648810 +. 208 PAGES, DECEMBER 20, 1966

RECENTLY DEVELOPED UNDERWATER GAMMA-RAY SPECTROMETERS WERE USED TO MEASURE THE CONCENTRATIONS OF GAMMA-EMITTING ISOTOPES IN EXTREMELY DILUTE SOLUTIONS CORRESPONDING TO A CONCENTRATION OF ABOUT 10<sup>-14</sup> GRAM PER LITER. THE IDENTIFICATION OF SPECIFIC ISOTOPES IS POSSIBLE BECAUSE THE UNDERWATER SPECTROMETERS ARE CAPABLE OF MEASURING THE GAMMA-RAY ENERGIES OF THE SOURCES. GAMMA RADIATION BACKGROUND SPECTRA WERE MEASURED IN MANY BODIES OF WATER. THE SPECTROMETERS COUNTING EFFICIENCY WAS MEASURED FOR 17 RADIOACTIVE ISOTOPES DISSOLVED IN WATER AS STANDARDS.

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

\*REACTOR POWER + \*SPECTROMETRY, GAMMA + \*WATER POLLUTION + ENVIRONMENTAL CONDITION + FISSION PRODUCT TRANSPORT + GAMMA EMITTER + RADIOISOTOPE

14-21446

ALSO IN CATEGORY 15

KIMEL WR + FAW RE + FARAN JA + MINGLE JO + RUBIN RM

SCATTERING OF FALLOUT RADIATION FROM CEILINGS OF PROTECTIVE STRUCTURES. SPECIAL REPORT

KANSAS ENGINEERING EXPERIMENT STATION, MANHATTAN

AD-645908 + SR-72 +. 176 PAGES, JULY 1966

MADE A THOROUGH STUDY OF THE CEILING-SHINE PROBLEM. CEILING SHINE IS DEFINED AS THAT CONTRIBUTION TO THE RADIATION DOSE RATE IN A PROTECTIVE STRUCTURE RESULTING FROM FALLOUT RADIATION ENTERING THE STRUCTURE THROUGH APERTURES IN VERTICAL WALLS AND SCATTERING DOWNWARD FROM THE CEILING. A SYSTEMATIC ANALYTICAL ANALYSIS OF THIS PROBLEM, VERIFIED EXPERIMENTALLY, RESULTED IN A SET OF DESIGN CURVES. THESE CURVES YIELD THE CEILING SHINE REDUCTION FACTOR IN ANY CONCRETE STRUCTURE AS A FUNCTION OF BUILDING DIMENSIONS, SIZE AND LOCATION OF APERTURES, AND DETECTOR LOCATION.

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

\*DOSIMETRY, GENERAL + \*FALLOUT + \*SAFETY ANALYSIS + \*SCATTERING (SKYSHINE) + ENVIRONMENTAL CONDITION + RADIATION SAFETY AND CONTROL + STRUCTURAL INTEGRITY

14-21665

ALSO IN CATEGORY 15

BAKER RC + DAVIS KA

ENVIRONMENTAL MONITORING SUMMARY FOR THE PADUCAH PLANT FOR 1965 AND 1966

PADUCAH GASEOUS DIFFUSION PLANT, KY.

KY-543 +. 11 PAGES, TABLES, SEPTEMBER 1, 1967

OUTDOOR MONITORING OF AIR, WATER, AND VEGETATION IN THE VICINITY OF THE PADUCAH PLANT IS SUMMARIZED FOR 1965-1966. EFFLUENTS FROM THE PADUCAH GASEOUS DIFFUSION PLANT OPERATIONS WERE CHANNELLED AND CONTROLLED AS NECESSARY FOR THE ENVIRONMENTAL CONCENTRATIONS OF CHEMICALS AND RADIOACTIVITY IN AIR, WATER, AND VEGETATION TO BE AT ACCEPTABLY LOW LEVELS.

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

\*GROSS ALPHA + \*GROSS BETA + \*GROSS GAMMA + \*MONITOR, RADIATION, ENVIRONMENTAL + \*SAMPLING + GROUND WATER, NUCLIDE OCCURRENCE + MONITOR, RADIATION, AIR + MONITOR, RADIATION, GROUND SURFACE + MONITOR, RADIATION, LIQUID

14-21667

ALSO IN CATEGORY 15

PESTANER JF + LOVE DL

A COMPUTER PROGRAM FOR IDENTIFYING AND MEASURING COMPONENTS IN A MIXTURE OF GAMMA-EMITTING RADIONUCLIDES

CATEGORY 14  
 RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-21667 \*CONTINUED\*  
 NAVAL RADIOLOGICAL DEFENSE LAB., SAN FRANCISCO  
 USNRDL-TR-67-46 +. 48 PAGES, 15 FIGURES, MARCH 1, 1967

PROBLEM - IN A STUDY OF THE PHYSICAL AND CHEMICAL SPECIES OF RADIOACTIVE DEBRIS RESULTING FROM AN UNDERWATER NUCLEAR EXPLOSION, COMPLEX MIXTURES OF RADIONUCLIDES, SOMETIMES OF FAIRLY LOW ACTIVITY, ARE TO BE ANALYZED. A COMPUTER PROGRAM FOR RESOLVING THE GAMMA PULSE-HEIGHT DISTRIBUTION OF A WEAKLY ACTIVE MIXTURE OF GAMMA EMITTERS INTO ITS COMPONENTS IS REQUIRED. FINDINGS - A COMPUTER PROGRAM WAS DEVELOPED AND THEN TESTED SUCCESSFULLY ON THE GAMMA PULSE-HEIGHT DISTRIBUTION OF A SYNTHETIC MIXTURE OF 3 RADIONUCLIDES, EACH HAVING SEVERAL PHOTOPEAKS OVER A 2-MEV RANGE. THE PROGRAM IS BASED ON AN ITERATIVE SUBTRACTION TECHNIQUE AND IS PROMISING BECAUSE ERRORS IN THE ANALYSIS WERE SMALL (0.5 TO 2.0%), ALTHOUGH MANY POSSIBLE REFINEMENTS IN THE PROGRAM HAVE NOT YET BEEN MADE.

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

\*COMPUTER PROGRAM + \*GAMMA EMITTER + \*RADIOCHEMICAL ANALYSIS + MEASUREMENT, REACTIVITY + NUCLEAR DETONATION

14-21668 ALSO IN CATEGORY 15

PORTER SW + SLABACK LA  
 MEASUREMENT OF TRITIUM SURFACE CONTAMINATION  
 ARMED FORCES RADIOBIOLOGY RESEARCH INST., BETHESDA, MD.  
 AD-640910 + AFRR1-SP-66-13 + CONF-660403-4 +. 18 PAGES, REFERENCES, JULY 1966, FROM INTERNATIONAL SYMPOSIUM ON RADIOLOGICAL PROTECTION OF THE WORKER BY THE DESIGN AND CONTROL OF HIS ENVIRONMENT, BOURNEMOUTH, ENG.

DESCRIBES SEVERAL METHODS FOR MEASURING TRITIUM SURFACE CONTAMINATION IN REACTOR, ACCELERATOR, AND TRITIUM OXIDE ENVIRONMENTS. THE PROBLEMS ASSOCIATED WITH THE PRESENTLY USED METHOD OF WINDOWLESS FLOW-PROPORTIONAL COUNTING ARE DISCUSSED. A NEW METHOD OF UTILIZING SPECIAL MEMBRANE SWIPE PAPERS COUNTED IN A LIQUID SCINTILLATION SYSTEM IS DESCRIBED. THE DATA FROM SINGLE CHANNEL AND CHANNEL RATIO LIQUID SCINTILLATION COUNTING TECHNIQUES, VARIOUS SWIPE PAPERS AND VARIOUS TRITIUM ABSORPTION AGENTS ARE PRESENTED WITH A STATISTICAL ANALYSIS. VARIOUS FACTORS AFFECTING LIQUID SCINTILLATION COUNTING OF INORGANIC TRITIUM ARE DISCUSSED. THIS METHOD GIVES ABOUT 20% EFFICIENCY WITH GOOD STATISTICS, VERSUS 1% EFFICIENCY AND VERY POOR COUNTING STATISTICS FOR FLOW-PROPORTIONAL COUNTING OF TRITIUM ON SWIPE PAPERS. FROM THE STANDPOINT OF OVERALL COUNTING EFFICIENCY, REPRODUCIBILITY OF COUNTS, EASE OF COUNTING, AND PHYSICAL STRENGTH, THE VINYL MEMBRANE VM-1 PAPER COUNTED IN DIOXANE WAS BEST FOR GENERAL TRITIUM SURFACE-CONTAMINATION MEASUREMENTS.

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

\*COUNTER + \*MEASUREMENT, GENERAL + \*STATISTICAL ANALYSIS + \*TRITIUM + ACCELERATOR + CONTAMINATION + OXIDE + REACTOR POWER

14-21712 ALSO IN CATEGORY 15

DAVIS LW + BAKER WL + SUMMERS DL  
 ANALYSIS OF JAPANESE NUCLEAR CASUALTY DATA  
 DIKWOOD CORP., ALBUQUERQUE, NEW MEXICO  
 USNRDL-TRC-46 + DC-PP-1054 +. 326 PAGES, 69 FIGURES, 15 TABLES, 11 REFERENCES, APRIL 1966

SUMMARIZES THE RESULTS OF A DETAILED DATA REDUCTION AND CASUALTY STUDY MADE ON OVER 35,000 PERSONS SUBJECTED TO THE NUCLEAR ATTACK ON HIROSHIMA AND NAGASAKI, JAPAN, IN 1945. GRAPHICAL AND TABULAR PRESENTATIONS ARE MADE OF PERTINENT DATA TO SHOW THAT AN EXCELLENT CASE EXISTS FOR MORE RELIABLE CONCLUSIONS OF A WIDER VARIETY THAN HAVE HERETOFORE BEEN AVAILABLE. THE FREE-FIELD WEAPONS EFFECTS ARE PRESENTED FOR BOTH JAPANESE CITIES TO ALLOW THE ASSOCIATION OF A GIVEN EFFECTS LEVEL WITH A PARTICULAR PERCENTAGE OF MORTALITY OR INJURY. SUCH COMPARISONS INDICATE THAT THE INITIAL NUCLEAR RADIATION PLAYED A DOMINANT ROLE IN THE DEATHS OF THERMALLY SHIELDED PEOPLE IN BOTH CITIES. OTHER POST-ATTACK DATA ARE GIVEN FOR THOSE PERSONS KILLED IMMEDIATELY, THOSE RESCUED BY OTHERS, THOSE WHO WERE KILLED.

AVAILABILITY - DEFENSE DOCUMENTATION CENTER, CAMERON STATION, ALEXANDRIA, VA.

\*DATA PROCESSING + \*JAPAN + \*NUCLEAR DETONATION + \*STATISTICAL ANALYSIS + \*SURVEILLANCE PROGRAM + CIVIL DEFENSE + HAZARDS ANALYSIS + POPULATION EXPOSURE

14-21713 ALSO IN CATEGORY 16

CRAWFORD TV  
 LONG RANGE DIFFUSION OF THE NRX/EST EP-4A EFFLUENT CLOUD  
 LAWRENCE RADIATION LABORATORY, LIVERMORE  
 UCRL-50,299 +. 49 PAGES, 39 FIGURES, 5 TABLES, 23 REFERENCES, JUNE 1967

DISCUSSES THE GENERATION, MOVEMENT, AND DIFFUSION OF THE EFFLUENT CLOUD PRODUCED BY THE NRX/EST EP-4A REACTOR EXPERIMENT OF MARCH 25, 1966. INITIAL SIZE AND TIME-DEPENDENT METEOROLOGICAL PARAMETERS ALONG THE TRAJECTORY WERE USED AS INPUT INTO A CLOUD-DIFFUSION CALCULATION WITH 2BPUFF, A COMPUTER CODE DEVELOPED BY CRAWFORD. COMPARISON OF CALCULATIONS WITH DATA INDICATE AGREEMENT, WITHIN A FACTOR OF TWO, FOR AIR CONCENTRATIONS OUT TO TWO DAYS, SURFACE AIR CONCENTRATION, DRY DEPOSITION, VERTICAL CONCENTRATION PROFILE SHAPE, AND CLOUD SIZE.

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-21713 \*CONTINUED\*  
AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA., \$3.00  
COPY, \$0.65 MICROFICHE

\*COMPUTER PROGRAM, METEOROLOGICAL + \*DEPOSITION + \*DIFFUSION + \*EXPERIMENT, GENERAL + \*NUCLEAR ROCKET +  
ATMOSPHERIC STABILITY + CONCENTRATION, AREA + CONCENTRATION, GROUND LEVEL + FALLOUT +  
MONITOR, RADIATION, AIR + MONITOR, RADIATION, GROUND SURFACE

14-21715 ALSO IN CATEGORY 17  
TRITIUM RELEASE FROM MIT REACTOR DUE TO HEAT EXCHANGER LEAK  
MASSACHUSETTS INSTITUTE OF TECHNOLOGY, CAMBRIDGE, MASS.  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(18), PAGES 14-15 (MAY 1, 1967)

(LETTER, MARCH 24) A TUBE LEAK WAS INDICATED FEB. 21 AND PROVED ON FEB. 23. 60 LITERS OF D2O,  
CONTAINING 67.9 CURIES OF TRITIUM, HAD LEAKED INTO THE 20,000-GAL SECONDARY SYSTEM. URINE  
SAMPLES FROM THREE REACTOR-OPERATIONS PERSONNEL WHO SHUT DOWN THE COOLING TOWER WERE 0.29 TO  
0.51 MICROCURIE/LITER, BELOW MPC. BLOWDOWN TO THE SEWER AND COOLING TOWER EVAPORATION WERE  
BOTH BELOW MPC.

\*FAILURE, TUBING + \*HEAT EXCHANGER + \*TRITIUM + EFFLUENT + INHALATION + REACTOR, HWR

14-21716 ALSO IN CATEGORY 17  
NUCLEAR FUEL SERVICES REPORTS ON WASTE EVAPORATOR LEAK OF FEBRUARY 15, 1967  
NUCLEAR FUEL SERVICES, INC., WEST VALLEY, NEW YORK  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(18), PAGES 15-16 (MAY 1, 1967)

(LETTER, MARCH 14) DURING TRANSFER OF EVAPORATOR BOTTOMS TO WASTE STORAGE, A TECHNICIAN  
ENTERED THE PUMP ROOM AND DISCOVERED A LEAK IN A PIPING TEE. ABOUT 2100 LITERS WENT TO THE  
INTERCEPTOR FROM FLOOR DRAINS. THE INTERCEPTOR WAS NOT BEING DISCHARGED, CONTAINED 37,000  
GALLONS, AND WAS 200 MK/HR AT THE RAILING. THE INTERCEPTOR CONTENTS WERE RETURNED FOR  
REWORK, AND THEY WERE BYPASSED FOR ROUTINE DISCHARGES DURING NONOPERATING PERIODS.

\*FAILURE, PIPE + \*WASTE TREATMENT, GENERAL + EVAPORATION + LEAK + NFS + RADIOCHEMICAL PROCESSING

14-21718 ALSO IN CATEGORY 17  
BURTS AVAGE EM  
U.S. RADIUM CORP. REPORTS 6 EXCESSIVE STACK DISCHARGES  
U.S. RADIUM CORP., BLOOMSBURG, PA.  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(18), PAGES 21-22 (MAY 1, 1967)

(LETTER, MARCH 22) DISCHARGES DURING THE FIRST QUARTER OF 1967 WERE 18.26, 126.09, 63.94,  
201.37, 15.44, AND 61.74 TIMES MPC PRIMARILY INSTANTANEOUS CONVERSION OF TRITIUM GAS IN WATER  
TO HTO, SO THAT PERMISSIBLE CONCENTRATIONS OF H (SUB) IN A FACILITY WITH NORMAL HUMIDITY WILL  
PROBABLY RESULT IN CONCENTRATIONS OF H(S) ABOVE MPC.

\*AIRBORNE RELEASE + \*STACK + \*TRITIUM + CHEMICAL REACTION + MAXIMUM PERMISSIBLE CONCENTRATION (MPC) +  
SORPTION

14-21747  
DUNAWAY PB + LEWIS LL + STORY JD + PAYNE JA + INGLIS JM  
RADIATION EFFECTS IN THE SORICIDAE, CRICETIDAE, AND MURIDAE  
OAK RIDGE NATIONAL LAB., TENN.  
ORNL-P-3212 + CONF-670503-23 +. 27 PAGES, REFERENCES, 1967. FROM 2ND NATIONAL SYMPOSIUM ON RADIOECOLOGY,  
ANN ARBOR, MICH.

EFFECTS OF ACUTE, CO-60 GAMMA IRRADIATION UNDER CONTROLLED CONDITIONS IN THE LABORATORY WERE  
COMPARED IN SIX SPECIES OF RODENTS IN THE CRICETIDAE, TWO SPECIES IN THE MURIDAE, AND TWO  
SPECIES OF SHREWS IN THE SORICIDAE. ESTIMATES OF LD(50/30) FOR THESE TEN SPECIES RANGED FROM  
525 TO 1069 RADS. THE MOST RADIO-RESISTANT SPECIES (TWO SPECIES OF PEROMYSCUS) AND THE MOST  
RADIOSENSITIVE SPECIES (ORYZOMYS PALUSTRIS) WERE CRICETIDS. AVERAGE SURVIVAL TIMES AT  
HIGHEST RADIATION DOSES (1560-2040 RADS) WERE LONGER AMONG CRICETIDS (5.6-8.1 DAYS) THAN IN  
MURIDS (4.4 - 5.1 DAYS) OR SORICIDS (3.5 - 4.2 DAYS), AND INTERSPECIFIC VARIATION WAS  
MANIFESTED WITHIN FAMILIES.

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

\*ECOLOGICAL CONSIDERATION + \*RADIATION DAMAGE + COBALT + ORNL + RADIOBIOLOGY

14-21748 ALSO IN CATEGORY 15  
MCGINNIS JT + GOLLEY FB  
BIOENVIRONMENTAL AND RADIOLOGICAL-SAFETY FEASIBILITY STUDIES ATLANTIC-PACIFIC INTEROCEANIC CANAL.  
TERRESTRIAL ECOLOGY. PHASE I. FINAL REPORT  
GEORGIA UNIV., ATHENS, INSTITUTE OF RADIATION ECOLOGY  
BMI-171-011 +. 114 PAGES, FIGURES, APRIL 19, 1967

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-21748 \*CONTINUED\*

THE VEGETATION IN EASTERN PANAMA AND NORTHWESTERN COLUMBIA IS DOMINATED BY TROPICAL FOREST TYPES. EXCEPTIONS ARE THE AREAS CONVERTED FROM FORESTS TO AGRICULTURAL USES AND THE EXTENSIVE MARSHES IN THE RIO ATRATO FLOOD PLAIN. THIS STUDY IS CONCERNED WITH A DEFINITION OF THE COMPARTMENTS OF THE ECOSYSTEM, DESCRIPTION OF THE COMPARTMENTS, AND THE RELATION OF THE NATIVE POPULATIONS TO THE TERRESTRIAL ENVIRONMENT.

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

\*ECOLOGICAL CONSIDERATION + \*FALLOUT + BIOLOGICAL CONCENTRATION, GENERAL + PLOWSHARE PROGRAM

14-21749 ALSO IN CATEGORY 15

GAMBLE JF + POPENOE H

BIOENVIRONMENTAL AND RADIOLOGICAL-SAFETY FEASIBILITY STUDIES ATLANTIC-PACIFIC INTEROCEANIC CANAL.

AGRICULTURAL ECOLOGY. PHASE I FINAL REPORT

FLORIDA UNIV., GAINESVILLE. INST. OF FOOD AND AGRICULTURAL SCIENCES

BMI-171-010 +. 40 PAGES, REFERENCES, APRIL 14, 1967

DESCRIBES THE SYSTEM OF AGRICULTURE USED IN THE AREA. PRESENTS APPLICABLE INFORMATION FROM SIMILAR AGRICULTURAL SYSTEMS. ANALYZES THE SPECIAL FEATURES OF THE AGRICULTURAL SYSTEMS THAT MAY INFLUENCE NUCLIDE UPTAKE AND CONCENTRATION.

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

\*BIOLOGICAL CONCENTRATION, GENERAL + \*ECOLOGICAL CONSIDERATION + \*FALLOUT + AGRICULTURAL CONSIDERATION + BIOLOGICAL CONCENTRATION, FOOD + PLOWSHARE PROGRAM

14-21750 ALSO IN CATEGORY 15

TEMPLETON WL

BIOENVIRONMENTAL AND RADIOLOGICAL-SAFETY FEASIBILITY STUDIES ATLANTIC-PACIFIC INTEROCEANIC CANAL.

FRESHWATER ECOLOGY. PHASE I FINAL REPORT

BATTELLE-NORTHWEST, RICHLAND, WASH. PACIFIC NORTHWEST LAB.

BMI-171-008 +. 121 PAGES, MARCH 14, 1967

THE PURPOSE OF THIS PROGRAM IS TO PLAN AND MAKE STUDIES IN FRESHWATER ECOLOGY TO ACQUIRE DATA NEEDED TO EVALUATE AND PREDICT THE POTENTIAL RADIATION HAZARDS TO HUMANS IN THE REGIONS OF NUCLEAR EXCAVATIONS IN THE DEFINED AREAS OF CENTRAL AMERICA. PHASE I CONSISTS OF STUDIES BASED ON AVAILABLE INFORMATION.

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

\*BIOLOGICAL CONCENTRATION, GENERAL + \*ECOLOGICAL CONSIDERATION + \*FALLOUT + BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + BIOLOGICAL CONCENTRATION, FOOD + PLOWSHARE PROGRAM + RIVER, GENERAL

14-21751 ALSO IN CATEGORY 15

LUWMAN FG

BIOENVIRONMENTAL AND RADIOLOGICAL-SAFETY FEASIBILITY STUDIES ATLANTIC-PACIFIC INTEROCEANIC CANAL.

ESTUARINE AND MARINE ECOLOGY. PHASE I FINAL REPORT

PUERTO RICO NUCLEAR CENTER, MAYAGUEZ

BMI-171-007 +. 86 PAGES, TABLES, REFERENCES, MARCH 29, 1967

THE PURPOSE OF THE PROGRAM IN ESTUARINE AND MARINE ECOLOGY IS TO DETERMINE THE RADIONUCLIDES THAT WOULD PRESENT POTENTIAL HAZARDS TO MAN IN HIS ASSOCIATION WITH THE ESTUARINE AND MARINE ENVIRONMENT OF THE CENTRAL AMERICAN Isthmus AND HIS DERIVATION OF FOODS THEREFROM. THE METHODS TO BE USED (SPECIFIC-ACTIVITY APPROACH), TOGETHER WITH LIMITED FIELD COLLECTIONS AND ANALYSES, ARE REPORTED.

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

\*BIOLOGICAL CONCENTRATION, GENERAL + \*ECOLOGICAL CONSIDERATION + \*FALLOUT + BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + BIOLOGICAL CONCENTRATION, FOOD + OCEAN AND SEA + PLOWSHARE PROGRAM

14-21755 ALSO IN CATEGORY 15

HABERER K

MEASUREMENTS OF ALPHA ACTIVITY IN THICK TEST LAYERS FOR MONITORING THE ENVIRONMENT

2 PAGES, 1 FIGURE, 3 REFERENCES, ATOMPRAXIS 13(10), PAGE 443 AND 444, (1967) IN GERMAN

BASED ON PREVIOUS WORK, A NOMOGRAM WAS DESIGNED FOR RAPID ENERGY AND MATRIX CORRECTION OF ALPHA-ACTIVITY MEASUREMENTS IN THICK-SATURATION LAYERS. THE ADVANTAGES OF THIS METHOD FOR SAMPLES WITH LOW ALPHA ACTIVITY, SUCH AS OCCUR IN ENVIRONMENTAL MONITORING, ARE DESCRIBED.

\*INSTRUMENTATION, NUCLEAR + \*MONITOR, RADIATION, ENVIRONMENTAL + GERMAN +

CATEGORY 14  
RADIOISOTOPE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-21755 \*CONTINUED\*  
INSTRUMENTATION, RADIATION MONITORING

14-21756 ALSO IN CATEGORY 15  
FISCHER HF + PAFFRATH D + PETERS W  
MEASUREMENTS OF RADIOACTIVITY AT DIFFERENT ALTITUDES OF THE ATMOSPHERE DURING ARRIVAL AND PASSAGE OF FRESH FISSION PRODUCTS  
4 PAGES, 4 FIGURES, 19 REFERENCES, ATOMPRAXIS 13(10), PAGE 444-447, (1967) IN GERMAN

AFTER THE THIRD CHINESE NUCLEAR WEAPON TEST, FLIGHTS AT ALTITUDES UP TO 12,500 M WERE PERFORMED FOR COLLECTING AEROSOL ON FIBER FILTERS. THE METHOD OF SAMPLING IS DESCRIBED. THE FRACTION OF FRESH DEBRIS TO TOTAL AMOUNT OF DEBRIS IS DETERMINED BY THE BETA DISINTEGRATION CURVES OF THE SAMPLES. VERTICAL PROFILES OF THE SPECIFIC BETA-ACTIVITY OF THE AIR FOR OLD AND FRESH FISSION PRODUCTS ARE REPRESENTED BY GRAPHS. THESE RESULTS ARE COMPARED WITH OUR MEASUREMENTS AFTER THE FIRST AND SECOND CHINESE NUCLEAR TEST. IN ADDITION TO FISSION PRODUCTS OF THE NUCLEAR EXPLOSION, WE IDENTIFIED THE NEUTRON-INDUCED NUCLIDES U-237 AND NP-239 BY GAMMA-RAY SPECTROMETRY.

\*FALLOUT + \*FILTER, FIBER + \*MONITORING PROGRAM, ENVIRONMENTAL + AEROSOL + AIR + AIRBORNE RELEASE + BETA EMITTER + GERMANY + NEPTUNIUM + RADIOISOTOPE, INDUCED + SPECTROMETRY, GAMMA + URANIUM

14-21757 ALSO IN CATEGORY 15  
PORTER SW + VERRELLI DM  
A BRIEF DESCRIPTION OF THE AFRRI-TRIGA MARK F REACTOR METHODS FOR CONTROLLING DISCHARGES, ENVIRONMENTAL SURVEILLANCE AND EMERGENCY PLANS  
ARMED FORCES RADIOBIOLOGY RESEARCH INST., BETHESDA, MD.  
AD-645546 + AFRRI-SP-66-17 +. 23 PAGES, FIGURES, REFERENCES, JULY 1966

DESCRIBES THE FOLLOWING FEATURES OF THE REACTOR -- THE REACTOR AND ASSOCIATED EXPERIMENTAL FACILITIES, REMOTE-AERIAL MONITORING SYSTEM, AIR-HANDLING AND MONITORING SYSTEM, PERIMETER-MONITORING SYSTEM, REACTOR-ROOM CONFINEMENT, REACTOR-COOLANT MONITORING SYSTEM, WASTE-DISPOSAL SYSTEM, AND EMERGENCY PROCEDURES.

\*MONITORING PROGRAM, ENVIRONMENTAL + \*SURVEILLANCE PROGRAM + \*WASTE DISPOSAL, GENERAL + RADIATION PROTECTION, ORGANIZATION + RADIATION SAFETY AND CONTROL + REACTOR COOLANT + SHIELDING + TRIGA (RR)

14-21758  
ENVIRONMENTAL SAMPLING RESULTS (IN CALIFORNIA)  
DEPARTMENT OF HEALTH  
36 PAGES, 5 FIGURES, 14 TABLES, RADIOLOGICAL HEALTH NEWS 6(3), (JULY 1967)

DATA ARE PRESENTED FOR ANALYSES OF SAMPLES OF VARIOUS MEDIA (AIR, MILK, RAIN, SNOW, DOMESTIC WATER, SEWAGE, AND DIET). FALLOUT FROM THE CHINESE WEAPONS TESTS IN 1966 INCREASED FALLOUT IN CALIFORNIA IMMEDIATELY.

\*BIOLOGICAL CONCENTRATION, GENERAL + \*FALLOUT + \*MONITORING PROGRAM, ENVIRONMENTAL + BIOLOGICAL CONCENTRATION, FOOD + BIOLOGICAL CONCENTRATION, MILK + PRECIPITATION + RAINOUT + TEST, WEAPONS (HP ASPECTS)

14-21765  
TILLES D  
EXTRATERRESTRIAL EXCESS AR-36 AND AR-38 CONCENTRATIONS AS POSSIBLE ACCUMULATION-RATE INDICATORS FOR SEA SEDIMENTS  
HARVARD UNIVERSITY, CAMBRIDGE, MASS.  
6 PAGES, REFERENCES, ICARUS 7, PAGES 94-9 (JULY 1967)

MEASUREMENTS OF EXCESS AR-36 AND AR-38, RELEASED AT HIGH TEMPERATURES FROM MINERAL CONCENTRATES OF FINE-GRAINED SEDIMENT, MAY BE USEFUL FOR DETERMINING AVERAGE SEDIMENTATION RATES IN MARINE SEDIMENTS. ASSUMPTIONS ARE REQUIRED ABOUT LONG-TERM AVERAGE CONSTANCY OF INFLUX OF INTERPLANETARY DUST TO EARTH, OF RARE-GAS CONCENTRATION IN THIS DUST, AND ABOUT MINERAL STABILITY IN THE MARINE ENVIRONMENT. THESE ASSUMPTIONS CAN BE EXAMINED EXPERIMENTALLY BY STUDY OF SAMPLES WHOSE SEDIMENTATION RATE IS RELIABLY DETERMINED BY OTHER METHODS. IF THE NECESSARY CONDITIONS ARE FULFILLED, THE GREATEST ATTRACTIONS OF THIS METHOD ARE ITS UNIVERSAL APPLICABILITY, ITS INDEPENDENCE OF LOCAL GEOCHEMICAL ENVIRONMENT OR GEOLOGIC HISTORY, AND ITS NONLIMITATION BY HALF-LIFE.

\*ARGON + \*ENVIRONMENTAL CONDITION + \*GEOLOGICAL CONSIDERATION, GEOPHYSICAL + \*SEDIMENT + ANALYTICAL TECHNIQUE, AIR + ANALYTICAL TECHNIQUE, SOLID + ANALYTICAL TECHNIQUE, WATER + COSMIC RADIATION

14-21768 ALSO IN CATEGORY 15  
COWSER KE + BEATTIE JR  
CONSEQUENCES OF ACTIVITY RELEASE - RISKS TO THE POPULATION AND THE INDIVIDUAL FROM IODINE RELEASES UNITED KINGDOM ATOMIC ENERGY AUTHORITY  
16 PAGES, 6 FIGURES, 4 TABLES, 40 REFERENCES, NUCLEAR SAFETY 8(6), PAGE 573-588, (DECEMBER 1967)

CATEGORY 14  
 RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-21768 \*CONTINUED\*

THE INHALATION OF RADIOACTIVE IODINE LEADS TO A DOSE OF RADIATION IN THE THYROID GLAND, AND THERE MAY BE A RISK OF DEVELOPING THYROID CANCER. THIS RISK IS EVALUATED FOR A REACTOR IN OR NEAR A POPULATED AREA BY ASSESSING THE TOTAL NUMBER OF CASES LIKELY TO ARISE IN THE POPULATED AREA AND BY ASSESSING THE RISK TO ANY INDIVIDUAL LIVING NEAR THE REACTOR. IN THESE CALCULATIONS A POPULATION DISTRIBUTION IS ASSUMED THAT REPRESENTS POTENTIAL URBAN REACTOR SITES, AND ACCOUNT IS TAKEN OF PROBABLE METEOROLOGICAL CONDITIONS AND DOSE-RISK RELATIONS OF THE INTERNATIONAL COMMISSION ON RADIOLOGICAL PROTECTION. FROM A POSTULATED LIMIT LINE OF ACCIDENT FREQUENCY VS SEVERITY, A CALCULATION DERIVES AN AVERAGE CASUALTY RATE FOR THE POPULATION AND AN ANNUAL RISK RATE FOR THE INDIVIDUAL. THESE ARE SHOWN TO BE EXCEEDINGLY SMALL COMPARED WITH THE NORMAL CASUALTY RATE IN THE SAME POPULATION AND WITH THE RISKS RUN BY THE INDIVIDUAL IN THE COURSE OF NORMAL LIVING.

\*BIOLOGICAL CONCENTRATION, MAN + \*INHALATION + \*IODINE + \*POPULATION EXPOSURE + DOSE + HAZARDS ANALYSIS + METEOROLOGY + PERSONNEL EXPOSURE, RADIATION

14-21769 ALSO IN CATEGORY 15

DEVIK F

RADIOACTIVE CONTAMINATION OF OUR ENVIRONMENT FOLLOWING NUCLEAR SCMB TESTS, AND RADIATION-INDUCED CANCER STATENS INSTITUTT FOR STRALEHYGIENE, OSLO  
 3 PAGES, 5 REFERENCES, TIDSSKR. NORSKE LAEGFOREN., 85, PAGE 1779-1781, (DECEMBER 1965) IN NORWEGIAN

RADIATION HAZARDS RESULTING FROM HUMAN INTAKE OF FALLOUT RADIONUCLIDES ARE DISCUSSED IN RELATION TO THE CONCLUSIONS AND RECOMMENDATIONS OF THE THIRD REPORT OF THE UNITED NATIONS SCIENTIFIC COMMITTEE ON THE EFFECTS OF ATOMIC RADIATION (NEW YORK 1964). THE REPORT GIVES AN ESTIMATE OF ENVIRONMENTAL RADIATION DOSE FROM RADIOACTIVE FALLOUT IN 1965 AND REVIEWS DATA PERTINENT TO DOSE-EFFECT RELATIONS WITH RESPECT TO MALIGNANT DISEASES. THE AUTHOR POINTS OUT THAT THE AVERAGE FALLOUT RADIATION DOSE TO THE POPULATION IN NORWAY IS NOT LIKELY TO DIFFER BY ANY CONSIDERABLE FACTOR FROM THE AVERAGE VALUES CALCULATED FOR THE WORLD POPULATION, BUT LOCAL VARIATIONS MAY BE CONSIDERABLE AND MERIT FURTHER INVESTIGATIONS. IN THIS CONNECTION IT IS MENTIONED THAT COMMON TERMS SUCH AS RADIATION HAZARD, DANGER, RISK, ETC., WHEN USED IN PUBLIC DISCUSSIONS ARE NOT ALWAYS ADEQUATE. THEY SHOULD BE AVOIDED UNLESS IT IS MADE CLEAR WHAT THEY ARE INTENDED TO CONVEY. IF THEY SHOULD BE REPLACED BY UNEQUIVOCAL TERMS.

\*DOSE + \*ENVIRONMENTAL CONDITION + \*NUCLEAR DETONATION + \*RADIONUCLIDE, INDUCED + CONTAMINATION + FALLOUT + HAZARD, RELATIVE + NORWAY

14-21770 ALSO IN CATEGORY 15

CURTIS GB + PETTY JS

A PROGRAM TO COMPUTE BETA RADIATION DOSAGE. VOLUME I. PROGRAM DESCRIPTION. FINAL REPORT  
 AMERICAN RESEARCH CORP., FULLERTON, CALIF.  
 TID-24023 (VOL.1) + APC-67-48 +. 123 PAGES, AUGUST 1, 1967

AMERICAN RESEARCH CORPORATION DEVELOPED A COMPUTER PROGRAM TO CALCULATE BETA RADIATION DOSAGES TO TISSUE INCURRED FROM CONTACT WITH RADIOACTIVE FALLOUT PARTICLES CONTAINING MIXED FISSION PRODUCTS. VERSIONS OF THE BETA RADIATION DOSAGE PROGRAM WERE PREPARED FOR THE CDC 3600 AND IBM 7094 COMPUTERS. VERSATILE INPUT/OUTPUT PROCEDURES PROVIDE CONTROL OVER THE SELECTION AND ARRANGEMENT OF OUTPUT PARAMETERS. MANY TABLES, FUNCTIONS, AND PARAMETERS, CONSIDERED INPUT QUANTITIES IN MOST PROGRAMS, WERE INCORPORATED INTO THIS PROGRAM. THESE QUANTITIES MAY BE TREATED AS OPTIONAL INPUTS WHERE DESIRED. VOLUME I OF THIS REPORT DISCUSSES THE TECHNICAL AND PROGRAMMING APPROACHES USED AND DESCRIBES THE PROGRAM IN GENERAL TERMS. VOLUME II CONTAINS DETAILED INSTRUCTIONS FOR THE USE OF THE PROGRAM AS WELL AS PROGRAM LISTINGS.

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

\*BETA EMITTER + \*COMPUTER PROGRAM + \*DOSIMETRY, GENERAL + \*FALLOUT + FISSION PRODUCT RELEASE, GENERAL + NUCLEAR DETONATION

14-21771 ALSO IN CATEGORY 15

PETTY JS + CURTIS GB

A PROGRAM TO COMPUTE BETA RADIATION DOSAGE. VOLUME II. USERS MANUAL AND PROGRAM LISTINGS. FINAL REPORT  
 AMERICAN RESEARCH CORP., FULLERTON, CALIF.  
 TID-24023 (VOL.2) + ARC-67-49 +. 204 PAGES, AUGUST 1, 1967

AMERICAN RESEARCH CORPORATION DEVELOPED A COMPUTER PROGRAM TO CALCULATE BETA RADIATION DOSAGES TO TISSUE INCURRED FROM CONTACT WITH RADIOACTIVE PARTICLES CONTAINING MIXED FISSION PRODUCTS. THE PROGRAM IS CAPABLE OF EVALUATING BETA RADIATION DOSAGES ARISING FROM CONTACT WITH PARTICLES ORIGINATING FROM A NUCLEAR WEAPON DETONATION AS WELL AS PARTICLES RESULTING FROM THE DESTRUCTION OF A NUCLEAR PROPULSION REACTOR. VERSIONS OF THE PROGRAM TO COMPUTE BETA RADIATION DOSAGE WERE PREPARED FOR THE CDC 3600 AND IBM 7094 COMPUTERS. VERSATILE INPUT/OUTPUT PROCEDURES PROVIDE CONTROL OVER THE SELECTION AND ARRANGEMENT OF OUTPUT PARAMETERS, CONSIDERED INPUT QUANTITIES IN MOST PROGRAMS, WERE INCORPORATED INTO THIS PROGRAM. THESE QUANTITIES MAY BE TREATED AS OPTIONAL INPUTS WHERE DESIRED.

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

\*BETA EMITTER + \*COMPUTER PROGRAM + \*NUCLEAR DETONATION + DOSIMETRY, GENERAL + FALLOUT

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-21780

ABSTRACTS OF PAPERS, WATER AND DESALINATION INFORMATION MEETING, MARCH 28-29, 1967  
OAK RIDGE NATIONAL LAB., TENN.  
ORNL-4115 +. 77 PAGES, 2 FIGURES, 2 TABLES, 4 REFERENCES, MARCH 1967

PRESENTS FOUR ABSTRACTS WHICH HAVE AS THEIR BASIS VARIOUS PUBLICATIONS IN CONNECTION WITH THE CLINCH RIVER STUDY, ORNL-4035. SUBJECTS ARE - DILUTION, DISPERSION, AND MASS TRANSPORT OF ELEMENTS IN THE CLINCH-TENNESSEE RIVERS, RADIOACTIVITY IN BOTTOM SEDIMENT OF THE CLINCH RIVER, ELEMENT UPTAKE IN FISH AND OTHER AQUATIC ANIMALS, AND EVALUATION OF RADIATION DOSE TO MAN FROM RADIONUCLIDES RELEASED TO THE CLINCH RIVER.

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

\*BIOLOGICAL CONCENTRATION, GENERAL + \*DOSE + \*WASTE DISPOSAL, GENERAL +  
BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + PIOTA + DOSE CALCULATION, EXTERNAL +  
DOSE CALCULATION, INTERNAL + ORNL + RADIOBIOLOGY + RIVER, CLINCH + RIVER, TENNESSEE +  
SURFACE WATER, NUCLIDE OCCURRENCE + WASTE DISPOSAL, LIQUID + WASTE DISPOSAL, RIVER

14-21781

STRUXNESS EG + CARRIGAN PH + CHURCHILL MA + COWSEP KE + MORTON RJ + NELSON DJ + PARKER FL  
COMPREHENSIVE REPORT OF THE CLINCH RIVER STUDY  
OAK RIDGE NATIONAL LAB., TENN.  
ORNL-4035 +. 126 PAGES, FIGURES, TABLES, REFERENCES, APRIL 1967

SUMMARIZES THE STUDY MADE DURING THE PERIOD 1960-1964 OF THE EFFECT OF RELEASE OF RADIOACTIVE MATERIAL TO THE CLINCH RIVER AT OAK RIDGE NATIONAL LABORATORY BEGINNING IN 1943. THE STUDY WAS A JOINT EFFORT OF THE USAEC, THE U. S. GEOLOGICAL SURVEY, THE U. S. PUBLIC HEALTH SERVICE, THE TENNESSEE VALLEY AUTHORITY, THE TENNESSEE DEPT. OF PUBLIC HEALTH, THE TENNESSEE STREAM POLLUTION CONTROL BOARD, THE TENNESSEE GAME AND FISH COMMISSION, AND THE OAK RIDGE NATIONAL LABORATORY.

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

\*BIOLOGICAL CONCENTRATION, GENERAL + \*DOSE + \*WASTE DISPOSAL, GENERAL + \*WASTE MANAGEMENT +  
BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + PIOTA + DOSE CALCULATION, EXTERNAL +  
DOSE CALCULATION, INTERNAL + ORNL + RADIOBIOLOGY + RIVER, CLINCH + RIVER, TENNESSEE +  
SURFACE WATER, NUCLIDE OCCURRENCE + WASTE DISPOSAL, RIVER

14-21782

FREDRIKSSON L + ERIKSSON A  
STUDIES ON PLANT ACCUMULATION OF FISSION PRODUCTS UNDER SWEDISH CONDITIONS. VII. PLANT ABSORPTION OF SR-90 AND CS-137 FROM SOIL AS INFLUENCED BY SOIL ORGANIC MATTER  
FORSVARETS FORSKNINGANSTALT, STOCKHOLM (SWEDEN)  
FOA-04-4485-4623 +. 26 PAGES, 9 TABLES, 10 REFERENCES, JULY 1966

THE INFLUENCE OF SOIL ORGANIC MATTER ON THE MOBILITY AND PLANT AVAILABILITY OF SR-90 AND CS-137 HAS BEEN STUDIED IN LABORATORY AND POT EXPERIMENTS. A FIELD SURVEY OF THE CONTENT OF CS-137 IN HAY FROM SOILS DIFFERING IN CONTENT OF ORGANIC MATTER HAS ALSO BEEN PERFORMED. THE OVERALL RESULTS OF THE INVESTIGATION SHOW THAT UNDER THE CONDITIONS PREVAILING IN SWEDEN IN THE SUMMER OF 1963 FROM 3 TO 25 PER CENT - DEPENDING ON SOIL TYPE - OF THE CS-137 FOUND IN HAY ORIGINATED FROM DEPOSITS IN THE SOIL WHILE FROM 75 TO 97 PER CENT WAS COLLECTED BY DIRECT UPTAKE OR ADSORPTION FROM THE ATMOSPHERE.

AVAILABILITY - USAEC, DIVISION OF TECHNICAL INFORMATION EXTENSION, OAK RIDGE, TENNESSEE

\*BIOLOGICAL CONCENTRATION, GENERAL + \*FALLOUT + BIOLOGICAL CONCENTRATION, ANIMAL FEED +  
BIOLOGICAL CONCENTRATION, VEGETATION + CESIUM + STRONTIUM + SWEDEN

14-21784

ALSO IN CATEGORY 15

TAMPLIN AR  
PREDICTION OF THE MAXIMUM DOSAGE TO MAN FROM THE FALLOUT OF NUCLEAR DEVICES. I. ESTIMATION OF THE MAXIMUM CONTAMINATION OF AGRICULTURAL LAND  
CALIFORNIA UNIV., LIVERMORE. LAWRENCE RADIATION LAB.  
UCRL-50163 (PT. 1) +. 28 PAGES, FIGURES, TABLES, REFERENCES, JANUARY 3, 1967

PART I OF THIS REPORT PRESENTS A SEMIEMPIRICAL APPROACH TOWARD ESTIMATING THE MAXIMUM CONTAMINATION OF AGRICULTURAL LAND BY RADIONUCLIDES PRODUCED BY NUCLEAR DEVICES. IT IS BASED UPON THE MAXIMUM FALLOUT LEVELS OBSERVED SUBSEQUENT TO ALL PREVIOUS TESTS OF NUCLEAR DEVICES AND APPLIES TO CLOUD TRAVEL TIMES OR FALLOUT ARRIVAL TIMES RANGING FROM 1 TO 50 HR AND BEYOND.

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

\*DOSE + \*FALLOUT + \*PLOWSHARE PROGRAM + \*SOIL, NUCLIDE OCCURRENCE + \*AIRBORNE RELEASE + DIFFUSION +  
DOSE CALCULATION, EXTERNAL + LRL + RAINOUT + TEST, WEAPONS (HP ASPECTS)

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-21786 ALSO IN CATEGORY 15  
RADIOLOGICAL HEALTH RESEARCH. SUMMARY REPORT, JULY-1965-DECEMBER 1966  
PUBLIC HEALTH SERVICE, ROCKVILLE, MD.  
NP-16856 +. 120 PAGES, 45 FIGURES, TABLES, 1966

REPORTS ACTIVITIES OF THE RESEARCH BRANCH, DIVISION OF RADIOLOGICAL HEALTH, PUBLIC HEALTH SERVICE FOR THE 18 MONTHS BEFORE ITS REORGANIZATION IN JANUARY 1967. WORK IS REPORTED IN THE FIELDS OF RADIATION BIOLOGY, EPIDEMIOLOGY, AND ENVIRONMENTAL SCIENCES.

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

\*DOSE + \*FALLOUT + \*RADIATION DAMAGE + \*RADIOBIOLOGY + BIOMEDICAL + DOSE CALCULATION, EXTERNAL + DOSE CALCULATION, INTERNAL + DOSIMETRY, GENERAL + ENVIRONMENTAL CONDITION + RADIOCHEMICAL PROCESSING + RADIOLOGY

14-21791 ALSO IN CATEGORY 1  
THERMAL POLLUTION CAUSED BY NUCLEAR POWER PLANTS  
4 PAGES, WATER RESOURCES NEWSLETTER 2(8), NOVEMBER 1967

HEARINGS ON THE THERMAL POLLUTION CAUSED BY NUCLEAR POWER PLANTS WERE ANNOUNCED BY THE SENATE PUBLIC WORKS SUBCOMMITTEE ON AIR AND WATER POLLUTION. THE HEARINGS WILL BE HELD IN NEW ENGLAND BECAUSE OF NUCLEAR POWER PLANTS PLANNED IN VERMONT AND IN MAINE. THE VERMONT PLANT AS PRESENTLY PLANNED WILL RAISE TEMPERATURE OF CONNECTICUT RIVER 15 TO 20 DEG AS IT FLOWS INTO MASSACHUSETTS.

\*HEAT SINK + \*THERMAL POLLUTION + \*WASTE DISPOSAL, GENERAL + REACTOR, POWER + RIVER, GENERAL + VERMONT YANKEE (BWR) + WASTE DISPOSAL, RIVER

14-21798  
HAJEK BF  
PLUTONIUM AND AMERICIUM MOBILITY IN SOILS  
BATTELLE-NORTHWEST, RICHLAND, WASH. PACIFIC NORTHWEST LAB.  
BNWL-CC-925 +. 9 PAGES, NOVEMBER 28, 1966

LABORATORY-SCALE DIFFUSION AND LEACHING EXPERIMENTS SHOW THAT ONLY A SMALL AMOUNT OF PU FROM SURFACE SOIL MATERIAL IN THE 216-2-9 CRIB IS MOBILE. ABOUT 0.1% OF THE PU CAN BE LEACHED BY INVADING GROUNDWATER. HOWEVER, THE LEACH RATE IS SLOW, AND PLUTONIUM MIGRATION, AFTER BEING LEACHED INTO LOWER SOIL LAYERS, IS ABOUT 10,000 TIMES LESS THAN THE TRANSPORTING SOLUTION VELOCITY. MOVEMENT BY DIFFUSION WILL BE NEGLIGIBLE IN A TEN-HALF-LIFE PERIOD.

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

\*GROUND WATER, GENERAL + \*SOIL, RADIONUCLIDE MOVEMENT THROUGH + \*WASTE DISPOSAL, GENERAL + AMERICIUM + BATTELLE NORTHWEST + GROUND WATER, NUCLIDE OCCURRENCE + PLUTONIUM + WASTE DISPOSAL, LIQUID + WASTE DISPOSAL, TERRESTRIAL

14-21799  
RICKARD WH  
SODIUM AND POTASSIUM ACCUMULATION BY GREASEWOOD AND HOPSAGE LEAVES  
BIOLOGY LAB., HANFORD LABORATORIES, GENERAL ELECTRIC CO., RICHLAND, WASHINGTON 99352  
HW-SA-3561 +. 4 PAGES, 1 FIGURE, 2 TABLES, 9 REFERENCES, BOTANICAL GAZETTE 126(2), PAGE 116-119, (JUNE 1965)

DURING THEIR ANNUAL LEAF-RETENTION PERIODS IN 1963, GREASEWOOD AND HOPSAGE LEAVES ACCUMULATED LARGE AMOUNTS OF SODIUM AND POTASSIUM, RESPECTIVELY. HOPSAGE LEAVES ABSCISSED IN MID-JULY AFTER SOIL MOISTURE IN THE UPPER METER OF SOIL PROFILE BECAME DEPLETED. LEAF DROP WAS PRECEDED BY ABOUT 6 WEEKS OF LOWERED LEAF-MOISTURE CONTENT. GREASEWOOD LEAVES PERSISTED THROUGHOUT THE SUMMER MONTHS WITHOUT GROSS CHANGES IN LEAF-MOISTURE CONTENT, INDICATING THAT GREASEWOOD WAS OBTAINING WATER FROM A DEEP WATER TABLE. MINERAL UPTAKE, LEAF ABSCISSION, AND THE SUBSEQUENT DECAY OF LEAVES RESULTED IN INCREASED SODIUM AND POTASSIUM CONTENT IN THE SOILS BENEATH GREASEWOOD AND HOPSAGE, RESPECTIVELY. CHEATGRASS PLANTS GROWING NEAR GREASEWOOD CANOPIES HAD A HIGHER SODIUM CONTENT THAN THOSE GROWING ADJACENT TO HOPSAGE CANOPIES OR IN ADJACENT INTERSHRUB AREAS.

\*BIOLOGICAL CONCENTRATION, GENERAL + \*BIOLOGICAL CONCENTRATION, VEGETATION + BATTELLE NORTHWEST + CALCIUM + HANFORD SITE + POTASSIUM + SODIUM

14-21800  
MORTON RJ  
STATUS REPORT NO. 6 ON CLINCH RIVER STUDY  
OAK RIDGE NATIONAL LAB., TENN.  
ORNL-3941 +. 82 PAGES, 9 FIGURES, 9 TABLES, 29 REFERENCES, NOV. 1966



CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-21800 \*CONTINUED\*

THIS IS THE LAST IN A SERIES OF REPORTS ON THE CLINCH RIVER STUDY WHICH WAS SUMMARIZED IN ORNL-4035. THIS REPORT INCLUDES RADIONUCLIDE CORRELATIONS IN WATER SAMPLES FROM THE CLINCH AND TENNESSEE RIVERS, COLLECTION AND ANALYSIS OF FISH AND OTHER AQUATIC ORGANISMS, HYDROLOGIC, MEASUREMENTS AND ANALYSES, SAFETY-EVALUATION STUDIES, AND COMPUTER SIMULATION OF THE FATE OF RADIOACTIVE WASTES IN STREAMS.

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

\*RIVER, GENERAL + \*WASTE DISPOSAL, GENERAL + \*WASTE DISPOSAL, RIVER + ORNL + RIVER, CLINCH + RIVER, TENNESSEE + WASTE DISPOSAL, LIQUID

14-21930

BLANCO RE + PARKER FL  
WASTE TREATMENT AND DISPOSAL SEMIANNUAL PROGRESS REPORT, JULY-DECEMBER 1966  
OAK RIDGE NATIONAL LAB., TENN.  
ORNL-TM-1887 +. 139 PAGES, FIGURES, TABLES, REFERENCES, NOV. 1967

TOPICS COVERED IN THIS REPORT ARE - TREATMENT OF HIGH-LEVEL RADIOACTIVE WASTE, TREATMENT OF LOW- AND INTERMEDIATE-LEVEL RADIOACTIVE WASTE, ENGINEERING, ECONOMICS, AND SAFETY EVALUATIONS IN CONNECTION WITH POWER-REACTOR WASTE MANAGEMENT, SEPARATION OF NOBLE GASES FROM AIR USING PERMELECTIVE MEMBRANES, EARTHQUAKES AND REACTOR PLANT DESIGN, DISPOSAL IN NATURAL SALT FORMATIONS, DISPOSAL BY HYDRAULIC FRACTURING, FATE OF RADIONUCLIDES IN TERRESTRIAL ENVIRONMENT, APPLICATION OF MINERAL EXCHANGE, SAFETY EVALUATIONS.

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

\*EARTHQUAKE, GENERAL + \*SAFETY EVALUATION + \*WASTE DISPOSAL, HYDRAULIC FRACTURING + \*WASTE DISPOSAL, SALT + \*WASTE DISPOSAL, TERRESTRIAL + \*WASTE MANAGEMENT + \*WASTE TREATMENT, FIXATION + CESIUM + COBALT + DOSE MEASUREMENT, EXTERNAL + ENVIRONMENTAL CONDITION + GEOLOGICAL CONSIDERATION, GENERAL + GEOLOGICAL CONSIDERATION, SALT STRUCTURE + KRYPTON + MINERAL EXCHANGE + REACTOR, POWER + ROCK MECHANICS + TRITIUM + WASTE DISPOSAL, GENERAL + WASTE STORAGE + WASTE TREATMENT, LIQUID + WASTE TREATMENT, SOLID + WATER TREATMENT

14-21931 ALSO IN CATEGORY 15

HEALTH PHYSICS DIVISION ANNUAL PROGRESS REPORT FOR PERIOD ENDING JULY 31, 1967. PART VI. HEALTH PHYSICS TECHNOLOGY  
OAK RIDGE NATIONAL LAB., TENN.  
ORNL-4168 +. 46 PAGES, 37 FIGURES, 17 TABLES, 63 REFERENCES, PAGE 185-230, OCT. 1967

STUDIES ARE DIVIDED INTO TWO SECTIONS - (1) AEROSOL PHYSICS INCLUDES STUDIES OF BASIC PARTICLE PHYSICS, RETENTION OF PARTICLES ON THE SKIN AND OTHER SURFACES, GENERATION OF AEROSOLS, AND EXPECTED DOSE FROM RADIOACTIVE PARTICLES DEPOSITED ON THE SKIN. (2) APPLIED INTERNAL DOSIMETRY INCLUDES STUDIES WITH THE IN VIVO GAMMA-RAY SPECTROMETRY FACILITY, DETECTION AND MEASUREMENT OF SR-90 INTERNAL CONTAMINATION, ELIMINATION OF INJECTED HG-202, ABSORPTION OF 17-KEV X-RAYS FROM TRANSURANIC ELEMENT, AND A NEW ANALYTICAL PROCEDURE FOR RADIOSTRONTIUM IN ENVIRONMENTAL SAMPLES.

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

\*AEROSOL + \*ANALYTICAL TECHNIQUE, GENERAL + \*COUNTER, WHOLE BODY + \*DECONTAMINATION + \*DOSE CALCULATION, EXTERNAL + AEROSOL PRODUCTION + AEROSOL PROPERTIES + AEROSOL, RADIOACTIVE + ANALYTICAL TECHNIQUE, FOOD + ANALYTICAL TECHNIQUE, SOLID + ANALYTICAL TECHNIQUE, VEGETATION + ANALYTICAL TECHNIQUE, WATER + MERCURY + RADIUM + STRONTIUM + YTTRIUM

14-21935

HEALTH PHYSICS DIVISION ANNUAL PROGRESS REPORT FOR PERIOD ENDING JULY 31, 1967. PART I. RADIOACTIVE WASTE DISPOSAL  
OAK RIDGE NATIONAL LAB., TENN.  
ORNL-4168 +. 60 PAGES, 33 FIGURES, 8 TABLES, 99 REFERENCES, PAGE 1-60, OCTOBER 1967

RESEARCH IS REPORTED ON - (1) FATE OF RADIONUCLIDES IN TERRESTRIAL ENVIRONMENT, (2) DISPOSAL BY HYDRAULIC FRACTURING, (3) DISPOSAL IN NATURAL SALT FORMATIONS, (4) APPLICATION OF MINERAL EXCHANGE TO REACTOR TECHNOLOGY, (5) ENGINEERING, ECONOMIC, AND SAFETY EVALUATIONS, (6) EARTHQUAKES AND REACTOR DESIGN, (7) DOSE-ESTIMATION STUDIES RELATED TO PROPOSED CONSTRUCTION OF AN ATLANTIC-PACIFIC INTEROCEANIC CANAL WITH NUCLEAR EXPLOSIVES, AND (8) RELATED COOPERATIVE PROJECTS.

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

\*EARTHQUAKE ENGINEERING + \*ECONOMICS + \*MINERAL EXCHANGE + \*SAFETY EVALUATION + \*WASTE DISPOSAL, HYDRAULIC FRACTURING + \*WASTE DISPOSAL, SALT + \*WASTE DISPOSAL, TERRESTRIAL + BIOLOGICAL CONCENTRATION, VEGETATION + CESIUM + CURIUM + DOSE CALCULATION, EXTERNAL + DOSE CALCULATION, INTERNAL + GEOLOGICAL CONSIDERATION, SALT STRUCTURE + KRYPTON + ORNL + PLOWSHARE PROGRAM + ROCK MECHANICS + SOIL, RADIONUCLIDE MOVEMENT THROUGH + SORPTION + TRITIUM + WASTE DISPOSAL, GAS + WASTE MANAGEMENT + WASTE STORAGE

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-21936

ANZAI I + MAEDA K

SIMPLIFIED METHOD OF URINARY URANIUM ANALYSIS FOR RADIATION PROTECTION MEASURES  
TOKYO UNIV.

6 PAGES, 9 FIGURES, 8 REFERENCES, NIPPON GENSHIRYOKU GAKKAISHI 9, PAGE 321-326, (JUNE 1967), IN JAPANESE

A METHOD OF URINARY URANIUM ANALYSIS USING A SODIUM FLUORIDE PELLET WAS DEVELOPED. A PREDETERMINED VOLUME OF URINE NOT PREVIOUSLY SUBJECTED TO ANY CHEMICAL TREATMENT WAS DROPPED ON A PELLET OF SODIUM FLUORIDE (NAF) POWDER, AND AFTER DRYING, WAS SINTERED IN AN ELECTRIC FURNACE FOR ABOUT 10 MIN AT 950 C. WHEN THE SINTERED PELLET WAS EXPOSED TO ULTRAVIOLET LIGHT, IT EMITTED FLUORESCENCE OF A WAVELENGTH CHARACTERISTIC OF URANIUM, AND OF INTENSITY FAIRLY WELL PROPORTIONAL IN A WIDE RANGE TO THE CONCENTRATION OF URANIUM IN THE SAMPLE URINE. THIS METHOD CAN BE EFFECTIVELY USED FOR QUANTITATIVE ANALYSIS OF URINARY URANIUM IN RADIATION PROTECTION MEASURES.

\*ANALYTICAL TECHNIQUE, URINE + \*RADIOCHEMICAL ANALYSIS + DOSIMETRY, THERMOLUMINESCENCE + JAPAN + URANIUM

14-21937

MARCUS FR

ROLE OF WASTE MANAGEMENT AT EUROCHEMIC  
EUROPEAN COMPANY FOR THE CHEMICAL PROCESSING OF IRRADIATED FUELS

4 PAGES, 1 FIGURE, 1 TABLE, ATOMPRAXIS 12(1), PAGE 50-53, (JAN. 1966)

THE EUROCHEMIC PLANT IS LOCATED IN A DENSELY POPULATED EUROPEAN INLAND AREA WHERE RELEASE OF RADIOACTIVITY TO THE ENVIRONMENT ARE EXTREMELY LIMITED. WASTE MANAGEMENT AT EUROCHEMIC IS DESIGNED TO (1) REDUCE THE AMOUNT OF WASTE AS FAR AS PRACTICAL, (2) SEGREGATE THE DIFFERENT CATEGORIES OF WASTE AT THEIR ORIGIN, THUS PERMITTING INDIVIDUAL TREATMENT OR UTILIZATION, (3) DESIGN METHODS OF TREATMENT TO REDUCE THE VOLUMES OF WASTE, (4) DESIGN SAFE STORAGE INSTALLATIONS, (5) PROVIDE FOR PERPETUAL CARE OF STORED WASTE, (6) PROMOTE RESEARCH INTO SOLIDIFICATION METHODS, (7) PREVENT UNDESIRABLE ESCAPE OF ACTIVITY IN THE WASTE RELEASED, (8) DESIGN WASTE-HANDLING SYSTEMS AT MINIMUM COST.

\*WASTE MANAGEMENT + EUROCHEMIC + WASTE DISPOSAL, GAS + WASTE DISPOSAL, LIQUID + WASTE DISPOSAL, SOLID + WASTE TREATMENT, GENERAL

14-21938

ENVIRONMENTAL RADIOACTIVITY IN NEW ZEALAND AND RESULTS OF EXTENDED MONITORING OF FALLOUT FROM FRENCH NUCLEAR TESTS IN THE PACIFIC. QUARTERLY REPORT, APRIL-JUNE 1966

NATIONAL RADIATION LAB., CHRISTCHURCH (NEW ZEALAND)

NP-16416 + NRL-F-21 +. 51 PAGES, TABLES, 1966

REPORTS MONITORING OF ENVIRONMENTAL RADIOACTIVE CONTAMINATION IN NEW ZEALAND AND THE PACIFIC AREAS WITH WHICH IT IS ASSOCIATED. DATA ARE INCLUDED ON THE FOLLOWING - BETA ACTIVITY OF AIR SAMPLES NEAR GROUND LEVEL, TOTAL AMOUNT OF BETA ACTIVITY OF FALLOUT DEPOSITED ON THE GROUND, SR-89 AND SR-90 CONTENT IN RAIN, SR-90 AND CS-137 CONTENT IN MILK, BETA ACTIVITY IN AIR AND RAINWATER, AND I-131 IN MILK AND CATTLE THYROIDS. AGE ESTIMATION OF FISSION PRODUCTS IN AIR FILTERS WAS MADE BY MEASUREMENT OF THE RADIOACTIVE DECAY IN THESE SAMPLES.

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

\*BIOLOGICAL CONCENTRATION, MILK + \*FALLOUT + \*MONITORING PROGRAM, ENVIRONMENTAL + AIR + BIOLOGICAL CONCENTRATION, ANIMAL + CESIUM + ENVIRONMENTAL CONDITION + IODINE + NEW ZEALAND + RAINFALL + STRONTIUM + TEST, WEAPONS (HP ASPECTS)

14-21944

KHASAWNEH FE + BARBER SA

INVESTIGATIONS OF CA-SR ADSORPTION SELECTIVITY IN CLAYS AND SOILS

PURDUE RESEARCH FOUNDATION, LAFAYETTE, IND.

COO-1495-1 + CONF-660820-1 +. 9 PAGES, AUGUST 18, 1966, PRESENTED AT ANNUAL MEETING OF SOIL SCIENCE SOCIETY OF AMERICA, STILLWATER, OKLA.

RESULTS OF STUDIES ON CA AND SR IN 64 SOILS FROM INDIANA LED TO THE FOLLOWING CONCLUSIONS. THE RANGE IN SELECTIVITY OF CA-SR EXCHANGE REACTION IN UNTREATED SOILS IS WIDER THAN HAS BEEN REPORTED SO FAR. A SIX-FOLD RANGE IS REPORTED, 0.36-2.11. THIS RANGE IS NARROWED DOWN CONSIDERABLY BY ELIMINATING THE EFFECT OF OTHER EXCHANGEABLE IONS AND OF DIFFERENT LEVELS OF SOLUBLE SALTS. THERE IS A NEGATIVE CORRELATION BETWEEN SELECTIVITY COEFFICIENT AND ORGANIC MATTER CONTENT. DESTROYING THE ORGANIC MATTER OF SOIL BY H<sub>2</sub>O<sub>2</sub> RESULTED IN A PRONOUNCED INCREASE IN SR SELECTIVITY. SELECTIVITY OF A MUCK SOIL ALSO INDICATED PREFERENCE FOR CA. THE PREFERENCE OF SOIL ORGANIC MATTER FOR CA OVER SR IS IMPORTANT IN MODIFYING THE OVERALL PREFERENCE OF SOIL FOR EITHER OF THESE IONS.

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

\*ECOLOGICAL CONSIDERATION + \*FALLOUT + \*MINERAL EXCHANGE + \*SOIL, RADIONUCLIDE MOVEMENT THROUGH + CALCIUM + STRONTIUM

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-21945           ALSO IN CATEGORY 15  
PASTERNAK B + LIUZZI A + BERK HW  
STATISTICAL ANALYSIS OF ENVIRONMENTAL AND TOTAL BODY GAMMA-RAY SCINTILLATION SPECTRA. PROGRESS REPORT,  
OCTOBER 1, 1965-SEPTEMBER 30, 1966  
NEW YORK, N. Y. INST. OF ENVIRONMENTAL MEDICINE  
NYO-3136-3 +. 54 PAGES, FIGURES, TABLES, REFERENCES, OCT. 31, 1966

DISCUSSES THE USE OF COMPUTER PROGRAMS FOR ANALYZING THE GAMMA SPECTRUM OF RADIONUCLIDES IN ENVIRONMENTAL SAMPLES INCLUDING VEGETATION, SOIL MUD, WATER, MILK, FISH, AND HUMAN TISSUE.

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

\*BIOLOGICAL CONCENTRATION, GENERAL + \*COMPUTER PROGRAM + \*COUNTER, WHOLE BODY + \*RADIOBIOLOGY + \*SPECTROMETRY, GAMMA + BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + BIOLOGICAL CONCENTRATION, MAN + BIOLOGICAL CONCENTRATION, MILK + BIOLOGICAL CONCENTRATION, VEGETATION + BIOMEDICAL + BISMUTH + CESIUM + COBALT + COMPUTER, DIGITAL + GAMMA + IRON + RADIUM

14-21946  
MADSHUS K  
LEVELS OF CS-137 IN NORWEGIAN LAMB AND SHEEP, 1964-1966  
NORSK RADIUMHOSPITAL, OSLO. NORSK HYDROS INST. FOR CANCER RESEARCH, OSLO. STRØEMME, AKSEL  
NYO-3364-28 +. 10 PAGES, FIGURES, TABLES, REFERENCES, 1966

DATA ARE PRESENTED ON THE CONTENT OF CS-137 IN SHEEP IN NORWAY FROM 1964 THROUGH 1966. SAMPLES FROM SHEEP AND LAMBS WERE ANALYZED. A DECREASE IN CS CONTENT DURING THIS TIME WAS NOTED.

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

\*BIOLOGICAL CONCENTRATION, FOOD + \*FALLOUT + \*RADIOBIOLOGY + BIOLOGICAL CONCENTRATION, ANIMAL + CESIUM + NORWAY

14-21947           ALSO IN CATEGORY 15  
EDVARDSSON KA + HAGSGARD S + SWENSSON A  
DECONTAMINATION EXPERIMENTS ON INTACT PIG SKIN CONTAMINATED WITH BETA-GAMMA-EMITTING NUCLIDES  
AKTIEBOLAGET ATOMENERGI, STOCKHOLM (SWEDEN)  
AE-255 +. 35 PAGES, FIGURES, TABLES, REFERENCES, NOV. 1966

MOST OF THE EXPERIMENTS USED I-131 AS NAI IN WATER AS THE CONTAMINATING AGENT BECAUSE IT WAS THE MOST DIFFICULT TO REMOVE. VARIABLES INVESTIGATED INCLUDED TIME BETWEEN CONTAMINATION AND DECONTAMINATION, EFFECTIVENESS OF SOAP AND OTHER CLEANSERS, TEMPERATURE OF WATER, PRESENCE OF OIL ON THE SKIN, AND PROTECTIVE OINTMENTS.

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

\*DECONTAMINATION + \*RADIOCHEMICAL PLANT SAFETY + BETA EMITTER + CALCIUM + CESIUM + CONTAMINATION + GAMMA EMITTER + IODINE + PHOSPHORUS + SODIUM + SWEDEN + THALLIUM

14-21948           ALSO IN CATEGORY 15  
CULLEN TL  
DOSIMETRIC MEASUREMENTS IN BRAZILIAN REGIONS OF HIGH NATURAL RADIOACTIVITY LEADING TO CYTOGENETIC STUDIES  
PONTIFÍCIA UNIVERSIDADE CATÓLICA DO RIO DE JANEIRO (BRAZIL). INSTITUTO DE FISICA  
NYO-2577-8 + CONF-660920-7 +. 17 PAGES, REFERENCES, 1966, PRESENTED AT 1ST INTERNATIONAL CONGRESS OF THE  
INTERNATIONAL RADIATION PROTECTION ASSN., ROME, ITALY

REPORTS DOSIMETRIC MEASUREMENTS MADE IN GUARAPARI, BRAZIL, A CITY BUILT ON MONAZITE SANDS. LITHIUM FLUORIDE DOSIMETERS WERE USED TO RECONSTRUCT THE LIFETIME DOSE OF SELECTED INDIVIDUALS REPRESENTING VARIOUS SECTIONS OF THE CITY, ALL AGE BRACKETS, AND BOTH SEXES. THE AVERAGE DOSE RATE FOR THE 317 PEOPLE MEASURED WAS 636 MR/YR. POPULATION MOVEMENT ON A DAILY BASIS WITHIN THE CITY TENDED TO EQUALIZE THE DOSE. ATTEMPTS TO MEASURE INTERNAL CONTAMINATION WERE INCONCLUSIVE. HOWEVER, IT IS BELIEVED THAT INTIMATE CONTACT WITH CONTAMINATED SURFACES AND DUST IN THE AIR IS THE SOURCE OF BODY BURDENS THAT MAY HAVE CYTOLOGICAL SIGNIFICANCE.

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

\*DOSE MEASUREMENT, EXTERNAL + \*DOSE MEASUREMENT, INTERNAL + \*DOSIMETRY, GENERAL + \*RADIOBIOLOGY + \*SURVEY, RADIATION, ENVIRONMENTAL + BRAZIL + DOSIMETRY, THERMOLUMINESCENCE + SOIL, NUCLIDE OCCURRENCE + THORIUM

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-21949  
FOLSOM TR  
STUDIES OF BACKGROUND RADIOACTIVITY LEVELS IN THE MARINE ENVIRONMENT NEAR SOUTHERN CALIFORNIA. REPORT NO. IMR-TR-922-66-A  
SCRIPPS INSTITUTION OF OCEANOGRAPHY, LA JOLLA, CALIF. CALIFORNIA UNIV., LA JOLLA. INST. OF MARINE RESOURCES  
TID-23476 +. 43 PAGES, FIGURES, TABLES, REFERENCES, NOV. 1, 1966.

STUDIED PACIFIC COASTAL BACKGROUND RADIOACTIVITY LEVELS IN THE AREA OF SOUTHERN CALIFORNIA THAT MAY BE CHANGED BY AN EXPANDING POPULATION AND INCREASED USE OF RADIOISOTOPES AND NUCLEAR POWER. SEWAGE, SLUDGES, AND DRIFT FERTILIZER FROM THE LOS ANGELES HYPERION PLANT WERE MONITORED FOR GAMMA-EMITTING RADIOISOTOPES. SAMPLES FROM 8 OTHER CITY SEWAGE PLANTS WERE ALSO MONITORED. THE MARINE ENVIRONMENTS NEAR POINT ARGUELLO AND THE PACIFIC OCEAN NEAR THE CALIFORNIA COAST WERE MONITORED FOR FALLOUT AND DEBRIS FROM SNAP DEVICES.

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

\*ENVIRONMENTAL CONDITION + \*FALLOUT + \*MONITORING PROGRAM, ENVIRONMENTAL + \*WASTE DISPOSAL, GENERAL + BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + CESIUM + GAMMA EMITTER + OCEAN AND SEA + PLUTONIUM + POLONIUM + SPACECRAFT

14-21951  
PICKERING DC + ALEKSAKLIN RM  
BOOK REVIEW OF RADIOACTIVE CONTAMINATION OF SOIL AND PLANTS  
1 PAGE, NATURE 212(5066), PAGE 1028, (DEC. 3, 1966)

THIS BOOK, TRANSLATED FROM THE RUSSIAN, DEALS WITH NATURE AND PROPERTIES OF RADIONUCLIDES, THE NATURE OF FALLOUT, THE UPTAKE OF FISSION FRAGMENTS (PRINCIPALLY SR AND CS) BY PLANTS, AND MEANS OF RESTRICTING UPTAKE BY PLANTS.

\*BIOLOGICAL CONCENTRATION, VEGETATION + \*FALLOUT + \*FISSION PRODUCT TRANSPORT + CESIUM + SOIL, RADIONUCLIDE MOVEMENT THROUGH + STRONTIUM + USSR

14-21952  
BARTLETT BJ + RUSSELL RS  
PRECEDENCE OF FUTURE LEVELS OF LONG-LIVED FISSION PRODUCTS IN MILK  
GREAT BRITAIN, AGRICULTURAL RESEARCH COUNCIL  
4 PAGES, 5 TABLES, 28 REFERENCES, NATURE 209(5028), PAGE 1062-1065, (MARCH 12, 1966)

EVALUATES PROBABLE FUTURE LEVELS OF SR-90 AND CS-137 IN MILK RESULTING FROM FALLOUT IN THE UNITED KINGDOM. SUGGESTED THAT AN APPRECIABLY LARGER FRACTION OF THE TOTAL DOSE COMMITMENT IS DUE TO CS-137 AND A SMALLER FRACTION TO SR-90 THAN HITHERTO ASSUMED.

\*BIOLOGICAL CONCENTRATION, GENERAL + \*BIOLOGICAL CONCENTRATION, MILK + \*DOSE + \*FALLOUT + BIOLOGICAL CONCENTRATION, FOOD + CESIUM + DOSE CALCULATION, INTERNAL + STRONTIUM + UNITED KINGDOM

14-21953  
PLATT AM + COOLEY CR  
WASTE SOLIDIFICATION PROTOTYPE PROGRAM  
BATTELLE NORTHWEST LABORATORY  
4 PAGES, 5 FIGURES, 6 REFERENCES, ATOMICS 18(4), PAGE 22-25, (JULY 8, 1966)

DESCRIBES THE WASTE-SOLIDIFICATION-PROTOTYPE PROGRAM INCORPORATING THE DEMONSTRATION OF SPRAY SOLIDIFICATION, POT CALCINATION, AND PHOSPHATE-GLASS SOLIDIFICATION.

\*WASTE DISPOSAL, GENERAL + \*WASTE TREATMENT, FIXATION + \*WASTE TREATMENT, GENERAL + \*WASTE TREATMENT, LIQUID + BATTELLE NORTHWEST + CALCINATION + GLASS

14-21954 ALSO IN CATEGORIES 15 AND 18  
SURVEY OF ENVIRONMENTAL RADIOACTIVITY IN THE VICINITY OF INDIAN POINT STATION, FEBRUARY 1, 1967 THROUGH JULY 31, 1967  
CONSOLIDATED EDISON COMPANY OF NEW YORK  
17 PAGES, 4 FIGURES, 8 TABLES, AUGUST 18, 1967, DOCKET NO. 50-3, TYPE--PWR, MFG--B+W, AE--CON ED

REPORTS RESULTS OF MONITORING OF PARTICLES IN AIR, FALLOUT, HUDSON RIVER MUD, ALGAE, VEGETATION, SOIL, LAKE WATER, HUDSON RIVER WATER, AND BACKGROUND GAMMA RADIATION. NO SIGNIFICANT CHANGES IN BACKGROUND RADIATION WERE FOUND.

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

\*MONITORING PROGRAM, ENVIRONMENTAL + \*SURVEY, RADIATION, ENVIRONMENTAL + ENVIRONMENTAL CONDITION + FALLOUT + INDIAN POINT 1 (PWR) + REACTOR, PWR + STACK

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-21957 ALSO IN CATEGORY 15  
PETROV RV + PRAVETSKII VN + STEPANOV YS + SHALNOV MI  
RADIOACTIVE FALLOUT. PHYSICS, BIOLOGICAL EFFECTS AND PROTECTIVE MEASURES  
AEC-TR-6634 + IPST-CAT.-1508 +. 140 PAGES, 1963, (TRANSLATION OF ZASHCHITA OT RADIOAKTIVNYKH OSADKOV,  
GOSUDARSTVENNOE IZDATEL STVO, MEDITSINSKOI LITERATURY, MOSCOW, 1963.)

AN ABSTRACT OF THIS MONOGRAPH WAS PREPARED ON THE ORIGINAL RUSSIAN-LANGUAGE PUBLICATION AND  
APPEARED IN NSA VOL. 18 AS NUMBER 8567.

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

\*DECONTAMINATION + \*DOSIMETRY, GENERAL + \*FALLOUT + \*INSTRUMENTATION, RADIATION MONITORING +  
DOSE MEASUREMENT, EXTERNAL + RADIATION PROTECTION, ORGANIZATION + RADIOBIOLOGY + USSR

14-21959 ALSO IN CATEGORY 15  
FRANEA EP + RIBEIRE CC + TEJTAKOWSKI M + LONDRES H + SANTOS H + ALBUQUERQUE HA  
SURVEY OF RADIOACTIVE CONTENT OF FOOD GROWN ON BRAZILIAN AREAS OF HIGH NATURAL RADIOACTIVITY  
BRAZIL UNIV., RIO DE JANEIRO. INSTITUTO DE BIOFISICA  
NYO-3273-5 + CONF-650523-2 +. 15 PAGES, 1965, PRESENTED AT SYMPOSIUM ON RADIATION AND TERRESTRIAL  
ECOSYSTEMS, RICHLAND, WASH.

TWO TYPES OF HIGH-BACKGROUND REGIONS WERE STUDIED IN BRAZIL - THE MONAZITE SAND REGION ALONG  
THE ATLANTIC COAST AND THE ZONE OF VELEIANE INTUSIVES IN THE INLAND STATE OF MINAS GERAIS.  
IN BOTH REGIONS, THERE ARE GROUPS OF POPULATION LIVING ON VARIABLE FIELDS OF RADIATION  
RANGING FROM 0.02 TO 1.0 MR/H. THE MOST REPRESENTATIVE TOWNS AND VILLAGES ON THESE AREAS  
ARE BEING INTENSIVELY STUDIED TO INVESTIGATE POSSIBLE LONG-TERM CONSEQUENCES TO HUMAN BEINGS  
OF CONTINUOUS EXPOSURE TO THESE LEVELS OF RADIATION. FOOD PRODUCED ON THE AREAS HAVE BEEN  
EXTENSIVELY SAMPLED AND ASSAYED FOR THEIR RADIOACTIVE CONTENT. TOTAL ALPHA COUNTING,  
FAST-ALPHA-PAIR COINCIDENCE COUNTING, RADIOCHEMICAL ANALYSIS OF RA-226, RA-228, AND TH-228,  
AS WELL AS GAMMA AND ALPHA SPECTROMETRY WERE USED.

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

\*BIOLOGICAL CONCENTRATION, FOOD + \*BIOLOGICAL CONCENTRATION, GENERAL + \*SOIL + \*SOIL, NUCLIDE OCCURRENCE +  
BIOLOGICAL CONCENTRATION, VEGETATION + BIOMEDICAL + BRAZIL + RADIUM + RADON + THORIUM

14-21964  
FALLOUT IN NEW ZEALAND CONTAMINATED LEAD  
2 PAGES, NATURE 213(5072), PAGE 115 AND 116, (JAN. 14, 1967)

STUDIES BY THE NEW ZEALAND METEOROLOGICAL SERVICE, THE INSTITUTE OF NUCLEAR SCIENCES, AND THE  
NATIONAL RADIATION LABORATORY SHOW THAT THE FRENCH NUCLEAR WEAPONS TESTING PROGRAM IN THE  
TUAMOTU ARCHIPELAGO WILL ADD FRACTIONALLY BUT NOT SIGNIFICANTLY TO THE LONG-LIVED  
RADIOACTIVITY IN NEW ZEALAND. THE GENERAL LEVEL OF RADIOACTIVE CONTAMINATION IN THE SOUTHERN  
HEMISPHERE SHOULD REMAIN BELOW THAT IN THE NORTHERN.

\*FALLOUT + \*TEST, WEAPONS (HP ASPECTS) + FRANCE + NEW ZEALAND + SIKONIUM

14-21965  
RAJAMA J, NIKKILA OE, MAKELA P  
STRONTIUM-90 IN FINNISH AND SOME IMPORTED CEREALS DURING THE HARVEST PERIOD 1963-64  
THE STATE INSTITUTE FOR TECHNICAL RESEARCH, LABORATORY FOR FOOD RESEARCH AND TECHNOLOGY, OTANIEMI,  
HELSINKI, FINLAND.  
2 PAGES, 1 FIGURE, 1 TABLE, 5 REFERENCES, NATURE 211(5045), PAGE 213 AND 214, (JULY 9, 1966)

CA AND SR-90 WERE DETERMINED IN FINNISH AND IN IMPORTED WHEAT AND RYE, BOTH WHOLE GRAIN AND  
FLOUR. IMPORTED GRAIN CONTAINS LESS SR-90. THIS APPEARS TO BE DUE TO A DIFFERENCE IN TIME  
OF HARVESTING.

\*BIOLOGICAL CONCENTRATION, GENERAL + \*FALLOUT + \*STRONTIUM + ARGENTINA + BIOLOGICAL CONCENTRATION, FOOD +  
BIOLOGICAL CONCENTRATION, VEGETATION + CANADA + FINLAND + UNITED STATES + USSR

14-21966  
PALUMBO RF  
RADIONUCLIDES IN FOODS FROM THE CENTRAL PACIFIC, 1962  
UNIVERSITY OF WASHINGTON  
3 PAGES, 1 FIGURE, 3 TABLES, 8 REFERENCES, NATURE 209(5029), PAGE 1190-1192, (MARCH 19, 1966)

DURING THE ATMOSPHERIC TESTS OF NUCLEAR DEVICES NEAR CHRISTMAS ISLAND IN 1962 (OPERATION  
DOMINIC) A SURVEY WAS CONDUCTED TO DETERMINE THE CONTRIBUTION OF RADIONUCLIDES FROM THESE  
TESTS TO THE FOODS IN THE CENTRAL PACIFIC. THE RESULTS SHOWED THAT RADIOACTIVE FALLOUT INTO  
THE CENTRAL PACIFIC FROM THE ATMOSPHERIC DETONATION OF NUCLEAR DEVICES DURING THE DOMINIC

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-21966 \*CONTINUED\*

SERIES WAS BARELY DETECTABLE. IT WAS MANY THOUSANDFOLD LESS THAN THE LOCAL FALLOUT FROM SURFACE AND UNDERWATER DETONATIONS OF NUCLEAR DEVICES AT BIKINI AND ENIWETOK.

\*BIOLOGICAL CONCENTRATION, GENERAL + \*FALLOUT + \*TEST, WEAPONS (HP ASPECTS) + BARIUM + BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + BIOLOGICAL CONCENTRATION, FOOD + BIOLOGICAL CONCENTRATION, VEGETATION + CESIUM + COBALT + IODINE + LANTHANUM + NIOBIUM + POTASSIUM + RUTHENIUM + ZINC + ZIRCONIUM

14-21967

RICKARD WH

FIELD OBSERVATIONS OF FALLOUT ACCUMULATION BY PLANTS IN NATURAL HABITATS

BIOLOGY DEPT., BATTELLE-NORTHWEST, RICHLAND, WASHINGTON

HW-SA-3652 +. 3 PAGES, 2 FIGURES, 1 TABLE, 9 REFERENCES, J. RANGE MGT. 18(3), PAGE 3-5, (MAY 1965)

FALLOUT ACCUMULATION BY ABOVE-GROUND PARTS WAS RELATED TO THE DIFFERENCES IN LEAF AND TWIG STRUCTURE AND TIME ORGANS WERE EXPOSED TO ATMOSPHERE. TREES APPEARED TO LESSEN FALLOUT ACCUMULATION BY UNDERSTORY SHRUBS.

\*BIOLOGICAL CONCENTRATION, GENERAL + \*BIOLOGICAL CONCENTRATION, VEGETATION + \*FALLOUT + BATTELLE NORTHWEST + CESIUM + CESIUM + MANGANESE + NIOBIUM + PRASEODYMIUM + RHODIUM + RUTHENIUM + ZINC + ZIRCONIUM

14-21978

ALSO IN CATEGORY 15

STFINKAMP RC + COHEN NL + HUTSON C + KUNKEL H

DIET MODEL FOR MEASURING RADIOACTIVITY EXPOSURE THROUGH FOOD-PILOT STUDY

DEPARTMENT OF HEALTH, CALIFORNIA

9 PAGES, 2 FIGURES, 3 TABLES, 5 REFERENCES, RADIOLOGICAL HEALTH DATA AND REPORTS 8(10), PAGE 565-573, (OCT. 1967)

THIS PAPER REPORTS A PILOT STUDY DESIGNED TO TEST THE HYPOTHESIS THAT THE HOUSE DIET OF A HOSPITAL MAY SERVE AS A MODEL FOR THE DIET OF AN ADULT POPULATION REGIONALLY SERVED BY THE HOSPITAL IN ORDER TO MEASURE RADIOACTIVITY EXPOSURE THROUGH FOOD INTAKE. YEARLY AND SEASONAL QUANTITIES OF 37 SUBCATEGORIES OF NINE MAJOR FOOD GROUPS WERE COMPARED FOR A BERKELEY HOSPITAL HOUSE DIET AND DIETS OF BERKELEY AND OTHER SAN FRANCISCO BAY AREA RESIDENTS. RESULTS INDICATE THAT THE HOSPITAL HOUSE DIETS WHILE DIFFERING IN CERTAIN RESPECTS FROM FOOD INTAKE OF THE POPULATION, MAY PROVIDE AN ESTIMATE OF NEAR-MAXIMUM INTAKE OF FOODS SIGNIFICANT FOR RADIOACTIVE CONTENT.

\*BIOLOGICAL CONCENTRATION, GENERAL + \*FALLOUT + BIOLOGICAL CONCENTRATION, FOOD + BIOLOGICAL CONCENTRATION, MILK + DIETARY HABIT

14-21979

LEVINE H + KIRK WP + RECHEN HJ

PLUTONIUM AND STRONTIUM-90 IN PRECIPITATION, AUGUST 1966 THROUGH MARCH 1967

U.S. PUBLIC HEALTH SERVICE

3 PAGES, 1 TABLE, 6 REFERENCES, RADIOLOGICAL HEALTH DATA AND REPORTS 9(10), PAGE 574-576, (OCT. 1967)

GIVES PU AND SR-90 IN PRECIPITATION AT EIGHT STATIONS.

\*FALLOUT + \*SURVEILLANCE PROGRAM + MONITORING PROGRAM, ENVIRONMENTAL + PLUTONIUM + PRECIPITATION + STRONTIUM + TEST, WEAPONS (HP ASPECTS)

14-21980

DATA. SECTION I. MILK AND FOOD

43 PAGES, FIGURES, TABLES, REFERENCES, RADIOLOGICAL HEALTH DATA AND REPORTS 9(10), PAGE 577-619, (OCTOBER 1967)

IN SECTION I (MILK AND FOOD), DATA ARE REPORTED FOR THE NATIONAL CANADIAN AND PAN-AMERICAN MILK-SAMPLING PROGRAMS AND FOR THE COLORADO, FLORIDA, OKLAHOMA, TENNESSEE, AND TEXAS MILK-SURVEILLANCE NETWORKS. NATIONAL, UNITED KINGDOM, AND CALIFORNIA DIET-SURVEILLANCE ACTIVITIES ARE REPORTED. IN SECTION II, GROSS RADIOACTIVITY IN SURFACE WATER OF THE UNITED STATES AND RADIOACTIVITY IN MINNESOTA MUNICIPAL SUPPLIES ARE REPORTED. IN SECTION III, RADIOACTIVITY IN AIRBORNE PARTICLES AND PRECIPITATION IN THE UNITED STATES, CANADA, MEXICO, AND PAN-AMERICAN COUNTRIES ARE REPORTED. IN SECTION IV, ENVIRONMENTAL SURVEILLANCE AT BETTIS AND KNOLLS ATOMIC POWER LABORATORIES, AND AT SIC PROTOTYPE REACTOR FACILITY IS REPORTED. REPORTS THREE UNDERGROUND NUCLEAR DETONATIONS AT THE NEVADA TEST SITE DURING SEPTEMBER 1967.

\*FALLOUT + \*SURVEILLANCE PROGRAM + BIOLOGICAL CONCENTRATION, FOOD + BIOLOGICAL CONCENTRATION, GENERAL + BIOLOGICAL CONCENTRATION, MILK + MONITORING PROGRAM, ENVIRONMENTAL + PARTICULATE + PRECIPITATION

14-21993

ALSO IN CATEGORY 15

FLETCHER W + LOUTIT JF + PAPWORTH DG

INTERPRETATION OF LEVELS OF SR-90 IN HUMAN BONE

UNITED KINGDOM ATOMIC ENERGY AUTHORITY, CHESTER, ENG.

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-21993 \*CONTINUED\*  
6 PAGES, 3 FIGURES, 7 TABLES, 17 REFERENCES, BRIT. MED. J., 2, PAGE 1225-1230, (NOVEMBER 19, 1966)

NEW DATA ON SR-90 IN BONE, DERIVED SINCE THE CONSIDERABLE INCREASE IN FALLOUT FOLLOWING THE 1961-2 NUCLEAR-WEAPON DETONATIONS IN THE ATMOSPHERE, ARE REPORTED. THE RESULTS FOR 1962-4 REFLECTED THE INCREASE OF CONTAMINATION OF FOOD FOLLOWING THE MASSIVE TESTING OF NUCLEAR WEAPONS IN 1961-2. MAXIMUM CONCENTRATIONS WITHIN ANY ONE YR CONTINUED TO OCCUR IN INFANTS AROUND 1 YR OLD, AND THIS MAX WAS REACHED AT ABOUT 4 MONTHS OF AGE. IN CHILDREN AND ADOLESCENTS, VALUES WERE LOWER AND MUCH LESS VARIABLE BETWEEN INDIVIDUALS AND DOMICILE. IN CONTRAST WITH ADULTS, MANY OF WHOSE BONES, FOR EXAMPLE, VERTEBRAE, SHOWED SUBSTANTIALLY HIGHER CONCENTRATIONS THAN OTHERS, THERE WAS LITTLE VARIATION WITHIN THE SKELETON IN CHILDREN AND EVEN ADOLESCENTS. IT IS THUS POSSIBLE IN JUVENILES TO TAKE THE CONCENTRATIONS OF SR-90 OBSERVED IN ONE BONE AS REPRESENTATIVE OF THE WHOLE SKELETON, AND THUS TO DERIVE BODY BURDENS ACCORDING TO AGE AND YEAR.

\*BIOLOGICAL CONCENTRATION, MAN + \*FALLOUT + BIOMEDICAL + RADIOBIOLOGY + STRONTIUM + TEST, WEAPONS (HP ASPECTS) + UNITED KINGDOM

14-21994  
OSBORNE RV  
MONITORING FOR TRITIUM AT LOW LEVELS  
ATOMIC ENERGY OF CANADA LTD., CHALK RIVER, ONTARIO. CHALK RIVER NUCLEAR LABS.  
AECL-2700 + CONF-670604-6 +. 9 PAGES, 10 FIGURES, 8 REFERENCES, JULY 1967, PRESENTED AT IAEA SYMPOSIUM ON INSTRUMENTS AND TECHNIQUES FOR THE ASSESSMENT OF AIRBORNE RADIOACTIVITY IN NUCLEAR OPERATION, VIENNA, AUSTRIA

DIRECT MEASUREMENT OF TRITIATED WATER VAPOUR (HTO) IN AIR AT LEVELS BELOW 1 MPC (AIR) IS DIFFICULT WITH EXISTING INSTALLED OR PORTABLE MONITORS. HOWEVER, AN INDIRECT MEASUREMENT CAN BE OBTAINED BY MAKING FREQUENT ROUTINE DETERMINATIONS OF THE AMOUNT OF TRITIUM ABSORBED BY THE WORKERS WHO ARE CHRONICALLY EXPOSED. IN ADDITION, INDIVIDUAL DOSES MAY BE ESTIMATED DIRECTLY. FOR THIS APPROACH TO AREA MONITORING TO BE USEFUL TO A HEALTH PHYSICIST, RAPID, DIRECT MEASUREMENT OF HTO INTAKE IS NEEDED. IT WILL DETECT BODY BURDENS OF TRITIUM RESULTING FROM CHRONIC EXPOSURES TO 0.05 (MPC)A. URINE IS VOIDED INTO A URINAL ATTACHED TO THE ANALYSER, A SAMPLE IS AUTOMATICALLY METERED AND MIXED WITH LIQUID SCINTILLATOR AND THE TRITIUM ACTIVITY IS THEN MEASURED. THE ASSAY TAKES LESS THAN 2 MIN. PERFORMANCE OF THE INSTRUMENT IS AUTOMATICALLY CHECKED BY PROCESSING STANDARD AND BACKGROUND SAMPLES.

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

\*ANALYTICAL TECHNIQUE, URINE + \*BIOLOGICAL CONCENTRATION, MAN + \*TRITIUM + ADSORPTION + CANADA + CHALK RIVER + INSTRUMENTATION, RADIATION MONITORING

14-21995  
BUSH WR  
REVIEW OF CHALK RIVER EXPERIENCE WITH TRITIATED HEAVY WATER  
ATOMIC ENERGY OF CANADA LTD., CHALK RIVER, ONTARIO  
AECL-2755 + CONF-670218-1 +. 17 PAGES, 6 FIGURES, 4 TABLES, 7 REFERENCES, JULY 1967, PRESENTED AT SYMPOSIUM ON INSTRUMENTATION, EXPERIENCE AND PROBLEMS IN HEALTH PHYSICS TRITIUM CONTROL, ALBUQUERQUE, N. MEX.

THE GROWTH OF THE TRITIUM (HTO) HAZARD IN THE NRU REACTOR BUILDING IS REVIEWED, AND THE METHODS AND EXPOSURE GUIDES INTRODUCED TO KEEP THE HAZARD UNDER CONTROL ARE OUTLINED. HTO INTAKES ARE CLASSIFIED AS REMOVAL, CAUTION, MINOR, OR NEGLIGIBLE, DEPENDING ON THE HTO CONCENTRATION IN URINE. REMOVAL EXPOSURES (20 MICROCURIES/LITER) ARE INVESTIGATED, AND A REPORT OF THE EXPOSURE INCIDENT IS DISTRIBUTED TO ALL BRANCHES. THE AVERAGE HTO DOSE RECEIVED IN 50 REMOVAL EXPOSURES IN 1966 WAS 230 MREM, RECEIVED MOSTLY FROM MINOR AND NEGLIGIBLE EXPOSURES. OUR LARGEST HTO EXPOSURE RESULTED IN A DOSE OF 4700 MREM, AND 19 OTHER SINGLE EXPOSURES HAVE EXCEEDED 500 MREM. MOST OF THESE RESULTED FROM INTAKE OF HTO VAPOUR THROUGH THE UNWETTED SKIN OF MEN WEARING AIR-SUPPLIED MASKS AND COTTON COVERALLS.

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

\*DOSE + \*REACTOR, HWR + \*TRITIUM + ADSORPTION + BIOMEDICAL + CANADA + CHALK RIVER + DOSE CALCULATION, INTERNAL + RADIOBIOLOGY

14-21996 ALSO IN CATEGORY 15  
MATSUOKA O + TANAKA E  
GAMMA LABELLING WITH SR-85 FOR IN VIVO MEASUREMENT OF SR-90. AN ATTEMPT FOR THE IN VIVO MEASUREMENT OF SR-90 AND Y-90 IN INTERNALLY EXPOSED ANIMALS  
NATIONAL INST. OF RADIOLOGICAL SCIENCES, CHIBA, JAPAN  
8 PAGES, 8 FIGURES, 1 TABLE, 10 REFERENCES, RADIOISOTOPES (TOKYO), 21, PAGE 261-268, (SEPTEMBER 1966), IN JAPANESE

IN THE STUDY ON THE BIOLOGICAL EFFECT OF INTERNAL EXPOSURE, THE EVALUATION OF ABSORBED DOSE DUE TO DEPOSITED RADIONUCLIDE IN THE ORGAN OF INTEREST IS ESSENTIAL. STRONTIUM-90 IS ONE OF THE MOST-STUDIED RADIONUCLIDES AMONG THE BONE-SEEKING ISOTOPES, BUT ITS BEHAVIOR IN THE LIVING BODY IS NOT CLEARLY UNDERSTOOD. A NEW GAMMA-LABELING METHOD WAS DEVELOPED TO DETERMINE THE AMOUNT OF SR-90 IN VIVO. A MIXTURE OF SR-90 AND SMALL AMOUNT (2 TO 5% IN ACTIVITY) OF SR-85 IS ADMINISTERED TO THE ANIMAL AND THE GAMMA RAYS (0.513 MEV) FROM SR-85

CATEGORY 14  
RADIOISOTOPE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-21996 \*CONTINUED\*

ARE MEASURED WITH A SCINTILLATION COUNTER. THE COUNTING EFFICIENCY SHOULD BE DETERMINED BEFOREHAND WITH THE ORIGINAL MIXTURE SOLUTION. YTTRIUM-90 ACTIVITY EXISTING WITH SR-90 IS MEASURED BY ITS BREMSSTRAHLUNG EFFECT IF NECESSARY.

\*COUNTER, WHOLE BODY + \*FALLOUT + \*RADIOBIOLOGY + BIOLOGICAL CONCENTRATION, ANIMAL + BIOMEDICAL + GAMMA + JAPAN + RADIOISOTOPE + STRONTIUM + YTTRIUM

14-21997

HEINEMANN B + BALDI EJ + MARSHALL RD + SPARLING EM + WALTER HE + FOOKS JH  
LARGE-SCALE FIXED-BED-ION-EXCHANGE SYSTEM FOR REMOVING SR-90 FROM FLUID MILK. II. COMPOSITIONAL STUDIES  
PRODUCERS CREAMERY CO., SPRINGFIELD, MO. + DEPARTMENT OF HEALTH, EDUCATION AND WELFARE  
5 PAGES, TABLES, 19 REFERENCES, J. DAIRY SCI., 50, PAGE 426-430, (MARCH 1967)

NINE RUNS OF 45,400 LITERS OF MILK PER 8-HR DAY WERE MADE, RESULTING IN AN AVERAGE OF 91.7% REMOVAL OF ENVIRONMENTAL LEVELS OF SR-90. NO SIGNIFICANT INCREASE IN MICROBIAL POPULATION OCCURRED DURING THE RUNS, AND THE KEEPING QUALITY OF THE PROCESSED MILK APPEARED TO BE SATISFACTORY. FLAVOR SCORES AVERAGED 37.2 AFTER PROCESSING, A DECREASE OF 0.6 FROM THE UNTREATED SAMPLES. MINOR COMPOSITIONAL CHANGES WERE FOUND IN FREEZING POINT, CURD TENSION, TITRATABLE ACIDITY, AND ASH. THERE WAS AN INCREASE OF 0.36% IN CONCENTRATION OF POTASSIUM CITRATE, DUE TO ACIDIFICATION AND NEUTRALIZATION OF THE MILK. THE REMAINING COMPONENTS TESTED SHOWED INSIGNIFICANT CHANGES.

\*BIOLOGICAL CONCENTRATION, MILK + \*FALLOUT + ION EXCHANGE + STRONTIUM

14-22112

THOMAS WA + AUERBACH SI + OLSON JS  
ACCUMULATION AND CYCLING OF CALCIUM BY FLOWERING DOGWOOD TREES (THESIS)  
OAK RIDGE NATIONAL LAB., HEALTH PHYSICS DIVISION, RADIATION ECOLOGY SECTION, TENN.  
ORNL-TM-1910 +. 153 PAGES, 15 FIGURES, 37 TABLES, 27 REFERENCES, AUGUST 1967

DISTRIBUTION OF CALCIUM IN FLOWERING DOGWOOD TREES AND MAJOR PATHWAYS OF CALCIUM CIRCULATION IN THE TREE-SOIL SYSTEM WERE STUDIED TO EVALUATE THE FUNCTION OF THIS COMMON UNDERSTORY SPECIES IN THE CYCLING OF AN ESSENTIAL ELEMENT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA, \$2.00 COPY, \$0.65 MICROFICHE

\*BIOLOGICAL CONCENTRATION, GENERAL + BIOLOGICAL CONCENTRATION, VEGETATION + CALCIUM + ORNL + RADIOISOTOPE

14-22116

ALSO IN CATEGORIES 5 AND 7  
KRESS TS + NELSON P  
NUMERICAL SOLUTION OF THE ISOTHERMAL FISSION-PRODUCT DEPOSITION EQUATIONS. THE PROGRAM PREDEP-II  
OAK RIDGE NATIONAL LAB., TENN.  
ORNL-TM-1970 +. 28 PAGES, 3 FIGURES, 2 REFERENCES, OCT. 1967

THE HEAT-MASS ANALOGY WAS PREVIOUSLY USED TO DEVELOP A SEMILINEAR SYSTEM OF PARTIAL DIFFERENTIAL EQUATIONS TO DESCRIBE THE ISOTHERMAL DEPOSITION OF FISSION PRODUCTS. IN THIS REPORT, THIS SYSTEM IS TRANSFORMED INTO A SYSTEM OF INTEGRAL EQUATIONS IN COMPUTATIONALLY CONVENIENT VARIABLES, AND A FINITE-DIFFERENCE METHOD FOR THE SOLUTION OF THE INTEGRAL EQUATION SYSTEM IS DESCRIBED. A BRIEF DESCRIPTION IS GIVEN OF THE COMPUTER PROGRAM PREDEP-II, WHICH ACCEPTS DATA IN TERMS OF PHYSICALLY CONVENIENT DIMENSIONLESS VARIABLES, TRANSFORMS THESE TO THE COMPUTATIONAL VARIABLES FOR MEANS OF SOLVING THE FINITE-DIFFERENCE EQUATIONS, AND FINALLY REPORTS THE RESULTS IN TERMS OF THE PHYSICAL VARIABLES.

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

COMPUTER PROGRAM + DEPOSITION + FISSION PRODUCT TRANSPORT + FISSION PRODUCT, NONVOLATILE

14-22150

ALSO IN CATEGORY 15  
NEUSTROEV GV + PODYMAKHIN VN  
ON THE RESPIRATION OF SALMON ROE (SALMO SALAR L.) UNDER CONDITIONS OF RADIOACTIVE CONTAMINATION OF THE WATER  
AEC-TR-6670 +. 3 PAGES, 1 FIGURE, 6 REFERENCES, PAGES 181-183, TRANSLATED FROM RADIOBIOLOGIYA 6(1), PAGES 115-116 (1966)

THE DEVELOPMENT OF SALMON ROE IN AN AQUARIUM CONTAINING  $1 \times 10^{-6}$ TH CI/LITER OF CS-137 WAS OBSERVED. THE OXYGEN CONSUMPTION WAS HIGHER FOR THE ROE EXPOSED TO CS-137 THAN FOR THE ROE IN UNCONTAMINATED WATER.

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

\*RADIOBIOLOGY + BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + CESIUM + USSR



CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-22151

KHMELEVA NN + LAVRENTEVA GM  
ON THE ACCUMULATION OF RADIOISOTOPES OF STRONTIUM, YTTRIUM, AND CERIUM BY FILAMENTOUS ALGAE IN THE PRESENCE OF EDTA AND DISSOLVED ORGANIC MATTER  
ACADEMY OF SCIENCES UKRAINIAN SSR, SEVASTOPOL  
AEC-TR-6770 +. 7 PAGES, 3 TABLES, 36 REFERENCES, PAGES 184-191, TRANSLATED FROM RADIOBIOLOGIYA 6(1), PAGES 117-121 (1966)

EDTA REDUCED THE ACCUMULATION OF CE AND Y BY FILAMENTOUS ALGAE. ACCUMULATION OF SR WAS NOT CHANGED. EDTA WAS MOST EFFECTIVE IN PREVENTING UPTAKE WHEN PRESENT IN CONCENTRATIONS APPROXIMATING THE SALT CONTENT OF THE WATER. DISSOLVED ORGANIC MATTER HAD NO EFFECT.

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

\*BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + \*RADIOBIOLOGY + CERIUM + STRONTIUM + USSR + YTTRIUM

14-22154

NEUSTROEV GV + PODYMAKHIN VN  
ON THE RATE OF DEVELOPMENT OF SALMON (SALMO SALIAR L.) ROE UNDER CONDITIONS OF RADIOACTIVE POLLUTION OF THE HYDROSPHERE WITH SR-90 PLUS Y-90  
AEC-TR-6771 +. 4 PAGES, 2 FIGURES, 1 REFERENCE, PAGES 230-233, TRANSLATED FROM RADIOBIOLOGIYA 6(2), PAGES 321-323 (1966)

THE DEVELOPMENT OF SALMON ROE IN AQUARIA POLLUTED WITH SR/Y-90 WAS OBSERVED. THERE WAS NO DIFFERENCE IN RATE OF DEVELOPMENT AND HATCHING OF LARVAE AT CONCENTRATIONS OF 10(-6TH, -8TH, -10TH) CURIE PER LITER. HOWEVER THE PERCENTAGE OF LETHALITY AND NUMBER OF DEFORMITIES WAS HIGHER IN THE SYSTEM WITH THE HIGHER LEVEL OF RADIOACTIVITY.

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

\*RADIATION DAMAGE + \*RADIOBIOLOGY + BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + FALLOUT + STRONTIUM + USSR + YTTRIUM

14-22237

WHICKER FW  
FALLOUT RADIONUCLIDES IN MULE DEER  
COLORADO STATE UNIVERSITY, FORT COLLINS  
TID-22653 +. 4 PAGES, 1965

FALLOUT MAY AFFECT WILDLIFE POPULATIONS TO VARIOUS DEGREES, DEPENDING UPON A HOST OF ECOLOGICAL CIRCUMSTANCES. KNOWLEDGE OF THE BEHAVIOR OF FALLOUT MUST BE COMBINED WITH A THOROUGH ECOLOGICAL CONCEPT OF EACH SPECIES IN ORDER TO ASSESS POTENTIAL HAZARDS. IT MUST BE STRESSED THAT AT PRESENT THERE IS NO APPARENT DANGER FROM WORLD-WIDE FALLOUT TO WILDLIFE. HOWEVER, NOW IS THE TIME TO FIND OUT ABOUT POSSIBLE FUTURE HAZARDS BEFORE WE ARE ACTUALLY FALLEN WITH THEM.

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

\*ECOLOGICAL CONSIDERATION + \*FALLOUT + BIOLOGICAL CONCENTRATION, ANIMAL + BIOLOGICAL CONCENTRATION, ANIMAL FEED + CESIUM + IODINE + STRONTIUM

14-22239

RALKOVA J + SAIDL J  
SOLIDIFICATION OF HIGH-LEVEL RADIOACTIVE WASTES. PART 3. THE DIFFUSION AND ELUTION RATES OF RADIONUCLIDES INCORPORATED IN BASALTS  
INSTITUT FUER KERNFORSCHUNG, PRAGUE  
4 PAGES, 2 FIGURES, 3 TABLES, 20 REFERENCES, KERNENERGIE 10, PAGES 161-4 (MAY 1967)

THE SAFE RETENTION OF HIGH-LEVEL RADIOACTIVE WASTES AND THE REMOVAL OF THE INCORPORATED NUCLIDES WAS STUDIED. THE DIFFUSION AND ELUTION OF CS-137 AND SR-90 IN GLASS AND IN MOLTEN BASALT WERE INVESTIGATED. THE DIFFUSION COEFFICIENTS OBTAINED ARE SUFFICIENTLY LOW FOR ACCOMPLISHING THE LEGAL REQUIREMENTS ON OBSERVING THE MAXIMUM PERMISSIBLE CONCENTRATIONS OF ACTIVITY IN CONTACT WITH WATER.

\*WASTE TREATMENT, FIXATION + CESIUM + CZECHOSLOVAKIA + DIFFUSION + STRONTIUM + WASTE DISPOSAL, TERRESTRIAL

14-22240

ALSO IN CATEGORY 15  
THE TECHNICAL BASIS FOR LEGISLATION ON IRRADIATED FOOD. REPORT OF A JOINT FAO-IAEA-WHO EXPERT COMMITTEE--ROME, APRIL 21-28, 1966  
WORLD HEALTH ORGANIZATION  
37 PAGES, 1 TABLE, WORLD HEALTH ORGAN., TECH. REP. SER., NO. 316, PAGES 1-37 (1966)

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-22240 \*CONTINUED\*

GENERAL PRINCIPLES GOVERNING THE PRODUCTION AND USE OF IRRADIATED FOOD ARE CONSIDERED, ALONG WITH RECOMMENDATIONS FOR THE ESTABLISHMENT OF LEGISLATION AND CONTROL. RECOMMENDED TECHNICAL PROCEDURES AND TESTS REQUIRED TO PERMIT AN EVALUATION OF THE SAFETY FOR CONSUMPTION OF IRRADIATED FOOD ARE OUTLINED, INCLUDING TESTS FOR MICROBIOLOGICAL SAFETY. IT IS RECOMMENDED THAT DISTRIBUTION OF A SPECIFIED IRRADIATED FOOD INTENDED FOR GENERAL PUBLIC CONSUMPTION SHOULD BE PERMITTED ONLY AFTER ACCEPTANCE BY THE APPROPRIATE GOVERNMENT AUTHORITY OF EVIDENCE THAT THE FOOD IS SAFE FOR HUMAN CONSUMPTION.

AVAILABILITY - WORLD HEALTH ORGANIZATION, GENEVA, \$1.00 COPY

IAEA + RADIATION DAMAGE + RADIOBIOLOGY + UNITED NATIONS

14-22243

LEFILLATRE G + SCHEIDHAUER J + RODIER J

PROCESS FOR THE PRODUCTION OF SOLID PRODUCTS CONTAINING RADIOACTIVE WASTE MATERIAL AND PRODUCTS OBTAINED ACCORDING TO SAID PROCESS

COMMISSARIAT A L'ENERGIE ATOMIQUE

CANADIAN PATENT 754,476 +. 12 PAGES, MARCH 14, 1967

LOW-ACTIVITY RADIOACTIVE WASTE IN THE FORM OF AN AQUEOUS PASTE IS MIXED WITH SEMIFLUID BITUMEN BELOW 95 C IN THE PRESENCE OF A WETTING AGENT. MOST OF THE WATER CAN THEN BE REMOVED BY DECANTATION OR OTHER MECHANICAL MEANS. RESIDUAL WATER IS DISTILLED OFF. ADDITIONAL MIXING WITH MORE BITUMEN AT A TEMPERATURE SUFFICIENT TO ALLOW POURING IS THE LAST STEP. BLOCKS OF SUITABLE PLASTICITY ARE OBTAINED FOR BURIAL IN THE GROUND.

AVAILABILITY - THE U.S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D. C., \$0.30 PER PAGE

\*WASTE DISPOSAL, TERRESTRIAL + \*WASTE TREATMENT, FIXATION + CANADA + PATENT + WASTE TREATMENT, LIQUID + WASTE TREATMENT, SOLID

14-22244

YOSHINAGA T

LEVELING AND ROTATING APPARATUS FOR SOLIDIFYING RADIOACTIVE LIQUID WASTE

HITACHI LTD.

JAPANESE PATENT 1966-11690 +. 5 PAGES, FIGURES, TABLES, MAY 31, 1966, IN JAPANESE

THE APPARATUS PROPOSED IS FOR SOLIDIFYING A RADIOACTIVE LIQUID WASTE BY MIXING WITH CEMENT. THE SUPPORT HOLDING A CAN (IN WHICH A LIQUID WASTE AND CEMENT ARE TO BE PLACED FOR THE SOLIDIFICATION) IS INSTALLED ROTATABLY (FOR LEVELLING THE CAN) ON THE TRUCK. THE TRUCK RUNS BACK AND FORTH IN THE APPARATUS. THE ROTATABLY SUPPORT IS OPERATED REMOTELY BY MEANS OF A GEAR ATTACHED TO THE SUPPORT, AND A ROD WITH THE OPERATING HANDLE, THE THREADED END OF WHICH ENGAGES WITH THE SUPPORT GEAR. FURTHER THE TRUCK IS PROVIDED WITH ROLLERS FOR ROTATING THE CAN WHEN IT IS LEVELLED (I.E., BROUGHT DOWN). THE LENGTH OF SPRAY OF THE ROLLERS CAN BE ADJUSTED ACCORDING TO THE DIMENSION OF THE CAN.

AVAILABILITY - THE U.S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D.C., \$0.30 PER PAGE

\*WASTE TREATMENT, FIXATION + JAPAN + PATENT + WASTE TREATMENT, LIQUID

14-22245

MIRONOV OG

EFFECT OF EXTRACTED SEAWEEDS ON THE MIGRATION OF SR-90 AND CS-137 FROM OCEANS AND SEAS TO THE FIRM LAND INST. OF BIOLOGY OF SOUTHERN SEAS, USSR

1 PAGE, RYBN. KHOZLY 11, PAGE 17 (1965) IN RUSSIAN

THE POSSIBLE SPREAD OF STRONTIUM-90 AND CESIUM-137 CONTAINED IN EXTRACTED SEAWEEDS IS REVIEWED ON THE BASIS OF PUBLISHED SOVIET AND FOREIGN SOURCES. THE ACCUMULATION OF RADIOACTIVE ISOTOPES PER UNIT WEIGHT IN THE EXTRACTED SEAWEEDS WAS MANY TIMES GREATER THAN IN FISH TAKEN FROM THE WATER. IT APPROACHED THE ACCUMULATIONS OF STRONTIUM AND CESIUM IN MOLLUSCS AND CRUSTACEANS. THEREFORE, THE EFFECT OF SEAWEEDS ON THE SPREAD OF RADIOACTIVE SUBSTANCES CANNOT BE NEGLECTED.

\*BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + \*FALLOUT + BIOLOGICAL CONCENTRATION, VEGETATION + CESIUM + OCEAN AND SEA + STRONTIUM + USSR

14-22246

REISSIG H

EMPIRICAL FACTORS FOR EVALUATING THE CONTAMINATION OF AGRICULTURAL PLANTS WITH RADIOACTIVE FISSION PRODUCTS TAKING INTO ACCOUNT THE WORLD-WIDE FALLOUT OF NUCLEAR TESTS

TECHNISCHE UNIVERSITÄT, DRESDEN

7 PAGES, 7 TABLES, 9 REFERENCES, KERENERGIE 10, PAGES 131-7 (APRIL 1967) IN GERMAN

IN PREVIOUS STUDIES, THE SR-90 CONTAMINATION OF AGRICULTURAL PLANTS IN THE TERRITORY OF THE GERMAN DEMOCRATIC REPUBLIC DURING THE PERIOD FROM 1960 TO 1963 WAS STUDIED. FROM THESE AND OTHER DATA, EMPIRICAL FACTORS FOR EVALUATING THE SR-90 CONTAMINATION OF THE PLANTS WERE CALCULATED, INCLUDING THE AVERAGE RELATIONSHIPS BETWEEN FALLOUT INTENSITY AND SURFACE CONTAMINATION OR GROUND CONTAMINATION AND UPTAKE BY THE ROOTS. USING EMPIRICAL FACTORS, THE

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-22246 \*CONTINUED\*

FUTURE CONTAMINATION OF THE AGRICULTURAL PLANTS MAY BE CALCULATED WITH SUFFICIENT ACCURACY WHEN FALLOUT INTENSITY OR GROUND CONTAMINATION IS KNOWN.

\*BIOLOGICAL CONCENTRATION, VEGETATION + \*FALLOUT + BIOLOGICAL CONCENTRATION, FOOD + CONTAMINATION + GERMANY + SOIL + SOIL, RADIONUCLIDE MOVEMENT THROUGH

14-22247

SAIDL J + RALKOVA J

SOLIDIFICATION OF HIGH-LEVEL RADIOACTIVE WASTES. PART 2. BASALT AS THE FAVORABLE INCORPORATION AND FIXATION MEDIUM

INST. OF NUCLEAR RESEARCH, CZECHOSLOVAK ACADEMY OF SCIENCES

4 PAGES, 1 FIGURE, 7 TABLES, 8 REFERENCES, KERNENERGIE 10, PAGES 128-31 (APRIL 1967) IN GERMAN

SILICATE GLASSES SHOWED GOOD PROPERTIES, ESPECIALLY HIGH CHEMICAL RESISTANCE, FOR FIXATION OF HIGH-LEVEL RADIOACTIVE WASTES. FROM DETAILED INVESTIGATIONS ON THE SILICATE MATERIALS IT WAS FOUND THAT BASALTS HAVE ESSENTIAL ADVANTAGES COMPARED WITH CONVENTIONAL GLASS. AFTER THERMAL TREATMENT, THE BASALTS ARE TRANSFORMED FROM THE VITREOUS STATE INTO THE RECRYSTALLIZED ONE. DUE TO THIS RECRYSTALLIZATION, PHYSICAL AND CHEMICAL CHANGES OCCURRED, RESULTING IN THE IMPROVEMENT OF THE CHEMICAL RESISTIVITY, MECHANICAL STRENGTH, HARDNESS, ETC.

\*WASTE TREATMENT, FIXATION + CZECHOSLOVAKIA + WASTE TREATMENT, LIQUID + WASTE TREATMENT, SOLID

14-22280

METHOD OF DISPOSING OF WASTE MATERIALS PARTICULARLY RADIOACTIVE WASTE  
HALLIBURTON COMPANY

BRITISH PATENT 1,054,740 +. 14 PAGES, 1 FIGURE, 6 TABLES, JANUARY 11, 1967

DESCRIBES A METHOD FOR THE SUBTERRANEAN DISPOSAL OF RADIOACTIVE WASTE. THE METHOD CONSISTS IN PRODUCING A WELLBORE HAVING A CASING WHICH PENETRATES A FRACTURED EARTH FORMATION. A LOW-VISCOSITY SLURRY CONTAINING THE WASTE MATERIAL, WATER, HYDRAULIC CEMENT, CLAYS, AN AGENT WHICH REACTS CHEMICALLY WITH THE CEMENT RETARDING ITS SETTING. THE SLURRY IS INJECTED INTO THE FRACTURE AND ALLOWED TO SET, WHICH CONFINES THE RADIOACTIVE WASTE TO THE FORMATION.

AVAILABILITY - THE PATENT OFFICE, 25 SOUTHAMPTON BUILDING, W. C. 2, LONDON ENGLAND, \$0.49 PER COPY

\*WASTE DISPOSAL, HYDRAULIC FRACTURING + PATENT + UNITED KINGDOM + WASTE DISPOSAL, LIQUID

14-22329

ALSO IN CATEGORY 15

REES DJ

HEALTH PHYSICS. PRINCIPLES OF RADIATION PROTECTION

242 PAGES, FIGURES, TABLES, REFERENCES, THE M.I.T. PRESS, MASSACHUSETTS INSTITUTE OF TECHNOLOGY, CAMBRIDGE, MASSACHUSETTS, 1967

THIS MONOGRAPH IS AN ATTEMPT TO PRESENT THE PRINCIPLES OF RADIATION PROTECTION AND TO MAKE AVAILABLE IN A SINGLE VOLUME THE MORE IMPORTANT NUMERICAL DATA USED IN RADIATION-PROTECTION APPLICATIONS. IT IS ASSUMED THAT THE READER HAS NO PREVIOUS KNOWLEDGE OF THE SUBJECT, AS FAR AS POSSIBLE, ARGUMENTS ARE DEVELOPED FROM FIRST PRINCIPLES SO THAT THE BOOK WILL BE OF USE TO THOSE WITH LIMITED TRAINING IN PHYSICS, CHEMISTRY, BIOLOGY, AND MATHEMATICS. CHAPTERS INCLUDE - (1) RADIATION PROTECTION, (2) MATTER AND RADIATION, (3) RADIOACTIVITY AND X-RAYS, (4) THE INTERACTION OF IONIZING RADIATION WITH MATTER, (5) RADIATION DOSIMETRY, (6) THE BIOLOGICAL EFFECTS OF IONIZING RADIATION, (7) BASIC STANDARDS OF RADIATION PROTECTION, (8) PROTECTION AGAINST INTERNAL RADIATION, (9) PROTECTION AGAINST EXTERNAL RADIATION, (10) DESIGN OF RADIOISOTOPE LABORATORIES, AND (11) RADIATION PROTECTION MEASUREMENTS.

AVAILABILITY - THE M.I.T. PRESS, MASSACHUSETTS INSTITUTE OF TECHNOLOGY, CAMBRIDGE, MASSACHUSETTS

\*RADIATION PROTECTION, ORGANIZATION + \*RADIOISOTOPE + \*X-RAY + DOSE CALCULATION, EXTERNAL + DOSE CALCULATION, INTERNAL + DOSIMETRY, GENERAL + GAMMA + GAMMA EMITTER + HEALTH PHYSICS TRAINING + ICRP + RADIATION DAMAGE + RADIOBIOLOGY

14-22492

ALSO IN CATEGORY 16

EFFECT OF SOME IONS IN THE ATMOSPHERE ON THE FALLOUT IN 1964 TO 1966

HYGIENISCH-EPIDEMIOLOGISCHE KREISINSTITUT, BRATISLAVA

5 PAGES, 2 FIGURES, 5 TABLES, 14 REFERENCES, KERNENERGIE 10, PAGES 164-8 (MAY 1967), IN GERMAN

THE RADIOACTIVE FALLOUT ON THE TERRITORY OF WESTERN SLOVAKIA, CSSR, WAS OBSERVED DURING 1964 TO 1966. THE TOTAL BETA-RAY ACTIVITY, THE SR-90 AND CS-137 CONTENTS, THE AMOUNT OF STABLE IONS IN THE FALLOUT AS WELL AS THE SALTS DISSOLVED IN THE ATMOSPHERIC PRECIPITATION WERE DETERMINED. THE ISOTOPIC CONTENT DECREASED CONTINUOUSLY, AND THE VOLUMINOUS ATMOSPHERIC PRECIPITATIONS DURING 1965 DID NOT RAISE THE FALLOUT RADIOACTIVITY. THE ION CONTENT IN THE FALLOUT WAS INCREASED BY THE INFLUENCE OF THE PRECIPITATIONS.

\*CESIUM + \*PRECIPITATION + \*STRONTIUM + BETA EMITTER + FALLOUT + MEASUREMENT, REACTIVITY + RAINOUT + WASHOUT

CATEGORY 14  
RADIOISOTOPE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-22501 ALSO IN CATEGORY 17

HIGH ACTIVITY WASTE

ARGONNE NATIONAL LABORATORY

THIS IS A 17 MINUTE FILM REFERENCED ON PAGE 64 OF THE USAEC 16 MM FILM CATALOG (PROFESSIONAL LEVEL) FOR 1966-67, PRODUCED BY USAEC'S ARGONNE NATIONAL LABORATORY, FOR SALE BY BYRON MOTION PICTURES, IN ENGLISH, FRENCH, SPANISH, OR RUSSIAN, AT \$36.75 PER PRINT, INCLUDING SHIPPING CASE, F.O.B. WASHINGTON, D.C., IN COLOR

A 17-MIN COLOR FILM BY ARGONNE NATIONAL LAB. THIS TECHNICAL FILM DESCRIBES METHODS FOR SOLIDIFYING HIGH-ACTIVITY WASTES AND REDUCING THEIR VOLUME BY A FACTOR OF 10. PROCESS INCLUDES POT AND SPRAY CALCINATION, AND THE FLUIDIZED-BED CALCINER WITH A 100-LITER/HR CAPACITY. USE OF SALT MINES FOR WASTE DISPOSAL IS DISCUSSED.

AVAILABILITY - ENGLISH VERSION AVAILABLE FOR LOAN (FREE) FROM USAEC HEADQUARTERS AND FIELD LIBRARIES, CLEARED FOR TELEVISION

\*WASTE DISPOSAL, SALT + \*WASTE TREATMENT, LIQUID + WASTE TREATMENT, SOLID

14-22574

OZENDA PP

THE ROLE OF PLANTS IN CONTINENTAL RADIO-ECOLOGY - THE CASE OF THE TRENoble SITE

COMMISSARIAT A L ENERGIE ATOMIQUE

6 PAGES, REFERENCES, BULLETIN D INFORMATIONS SCIENTIFIQUES ET TECHNIQUES, 119, PAGES 3-8 (OCTOBER 1967) IN FRENCH

REVIEW OF THE PRINCIPLES RELATING TO THE METHODS OF RADIOECOLOGY AS COMPARED WITH THOSE OF GENERAL ECOLOGY, AND OUTLINE OF THE RESEARCH NOW BEING CARRIED OUT IN THIS FIELD BY THE PLANT BIOLOGY LABORATORIES OF THE CENTRE OF NUCLEAR STUDIES IN COLLABORATION WITH THE GRENOBLE SCIENCE FACULTY.

ECOLOGICAL CONSIDERATION + FRANCE + RADIOBIOLOGY

14-22576

GAGNAIRE J + CHAMEL A + GERARD G + LACHEL B

ATTEMPT TO INTERPRET THE FLUCTUATIONS OF RADIO-ELEMENT CONCENTRATION IN BLACK POPLAR

COMMISSARIAT A L ENERGIE ATOMIQUE

11 PAGES, FIGURES, REFERENCES, BULLETIN D INFORMATIONS SCIENTIFIQUES ET TECHNIQUES, 119, PAGES 27-37 (OCTOBER 1967) IN FRENCH

THE BLACK POPLAR IS CHARACTERISTIC OF PLANTS ASSOCIATED WITH RIVER BANKS. THE EFFECT OF CLIMATIC, PHYSIOLOGICAL, AND CHEMICAL FACTORS ON THE LOCALIZATION AND CONCENTRATION CAPABILITIES FOR CA-45, SR-85, RU-106, CS-137, CE-144 IN POPLAR HAS BEEN STUDIED. THE VARIATIONS OF K-40 AND CS-137 CONCENTRATIONS ARE COMPARED FOR LEAVES OF POPLAR, WILLOW, ELDER, REED. THE CONCENTRATIONS ARE RELATED TO THE SPECIES AND THE ORGAN AND ARE RELATED WITH THE DIFFERENT STAGES OF THE LIFE CYCLE. THE DETECTION OF CS-137 POLLUTION IN AIR BY THE MEASURE OF ITS CONCENTRATION IN LEAVES DOES NOT ALLOW AN ADEQUATE CHECK DURING THE WHOLE OF THE VEGETABLE PERIOD.

\*BIOLOGICAL CONCENTRATION, VEGETATION + \*ECOLOGICAL CONSIDERATION + CALCIUM + CERIUM + CESIUM + FALLOUT + FRANCE + POTASSIUM + RADIOISOTOPE + RUTHENIUM + STRONTIUM

14-22577

FOURCY PA + FER A + PORET C + NEUBURGER M + GARREC JP

USE FOR RADIOACTIVATION ANALYSIS IN RADIOECOLOGICAL STUDIES

COMMISSARIAT A L ENERGIE ATOMIQUE

10 PAGES, FIGURES, REFERENCES, BULLETIN D INFORMATIONS SCIENTIFIQUES ET TECHNIQUES, 119, PAGES 39-48 (OCTOBER 1967) IN FRENCH

RADIOELEMENTS RESPONSIBLE FOR CONTAMINATION OF THE ENVIRONMENT AND THE FOOD CHAIN, ARE, SOONER OR LATER, ISOTOPICALLY DILUTED BY CORRESPONDING STABLE ELEMENTS, PRESENT IN STUDIED MATERIALS. RADIOECOLOGY, SCIENCE OF RADIOACTIVITY TRANSFERS THROUGH LIVING ORGANISMS, TAKES ADVANTAGE FROM PRECISE MINERAL ANALYSIS OF BIOLOGICAL MATERIAL. BUT, THIS ANALYSIS CONCERNS NOT ONLY RELATIVELY ABUNDANT ELEMENTS AS SODIUM, POTASSIUM, AND CALCIUM, BUT ALSO TRACE ELEMENTS MORE OR LESS STUDIED IN THEIR STABLE FORM, AS CESIUM AND STRONTIUM. RADIOACTIVATION ANALYSIS IS OFTEN CONVENIENT EITHER FOR GENERALITY OR SENSIBILITY. APPLICATION OF THE METHOD TO PLANTS AND WATER IS EXPOSED.

\*ACTIVATION + \*ECOLOGICAL CONSIDERATION + ANALYTICAL TECHNIQUE, FOOD + ANALYTICAL TECHNIQUE, VEGETATION + ANALYTICAL TECHNIQUE, WATER + CALCIUM + CESIUM + FRANCE + POTASSIUM + SODIUM + STRONTIUM

14-22803

MARSHALL RD + SPARLING EM + HFINEMANN BH

REMOVING RADIOISOTOPE FROM FRESH MILK

PRODUCERS CREAMERY COMPANY, SPRINGFIELD, MISSOURI

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-22803 \*CONTINUED\*  
PB-175 709 +. 193 PAGES, FIGURES, TABLES, REFERENCES, JUNE 1966

LABORATORY INVESTIGATIONS AND FULL-SCALE TESTS SHOWED THE FEASIBILITY OF FULL-SCALE PROCESSING OF MILK FOR CONTINUOUS REMOVAL OF IODINE-131 AND STRONTIUM-90 BY A COMBINED ANION-CATION FIXED-RESIN-BED SYSTEM. THE FULL-SCALE RUNS OF NEARLY 1,000,000 POUNDS OF GRADE-A WHOLE MILK REMOVED MORE THAN 99% OF I-131 AND 94.6 AND 90.0% OF SR-85 AND -90, RESPECTIVELY. THE DATA INDICATE THE PLANT PRODUCED MILK OF ACCEPTABLE QUALITY AT AN ESTIMATED COST OF 6.3 CENTS PER QUART, AS COMPARED WITH 2.3 CENTS PER QUART FOR SR-90 REMOVAL ALONE.

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

\*BIOLOGICAL CONCENTRATION, MILK + \*ION EXCHANGE + \*RADIOCHEMICAL PROCESSING + FALLOUT + IODINE + STRONTIUM

14-22804  
AARKROG A + LIPPERT J  
EU-155 IN DEBRIS FROM NUCLEAR WEAPONS  
ATOMIC ENERGY COMMISSION, RISØ, DENMARK  
3 PAGES, 1 FIGURE, 2 TABLES, 19 REFERENCES, SCIENCE, 157, PAGES 425-427 (JULY 28, 1967)

THE LITHIUM-DRIFTED GERMANIUM DETECTOR ENABLES DETERMINATION OF EUROPIUM-155 ON A ROUTINE BASIS IN ENVIRONMENTAL SAMPLES CONTAMINATED WITH DEBRIS FROM NUCLEAR WEAPONS. FROM MEASUREMENTS OF EUROPIUM-155, CESIUM-144, AND STRONTIUM-90 IN AIR FILTERS COLLECTED BETWEEN 1961 AND 1966, THE YIELD OF EUROPIUM-155 FROM WEAPONS WAS ESTIMATED AT 1400 ATOMS PER MILLION FISSIONS, WHICH IS CLOSE TO THE YIELD FROM FAST FISSION OF URANIUM-238.

\*FALLOUT + \*NUCLEAR EXPLOSION DEBRIS + CESIUM + DENMARK + EUROPIUM + STRONTIUM + TEST, WEAPONS (HP ASPECTS)

14-22805 ALSO IN CATEGORY 15  
PFEIFFER EW  
HAZARDS OF IODINE-131 FALLOUT IN UTAH  
UNIVERSITY OF MONTANA  
2 PAGES, SCIENCE 158(3799), PAGES 397-398 (OCTOBER 20, 1967)

PRESENTS A BRIEF SUMMARY OF THE PROGRAMS TO BE PRESENTED AT AAS MEETING DECEMBER 1967 ON FALLOUT OF IODINE IN SOUTHERN UTAH RESULTING FROM WEAPONS TESTING IN SOUTHERN NEVADA. IT IS SUGGESTED THAT THYROID DOSES OF 50 TO 120 RADS MAY HAVE BEEN RECEIVED BY CHILDREN IN SOUTHERN UTAH WHO WERE 2 TO 5 YEARS OLD DURING 1952-1955.

\*DOSE CALCULATION, INTERNAL + \*FALLOUT + \*IODINE + \*TEST, WEAPONS (HP ASPECTS) + BIOLOGICAL CONCENTRATION; MAN

14-22806  
MOTOJIMA K + RANNO S + TAMURA N  
DETERMINATION OF RADIOACTIVE COBALT IN REACTOR COOLANT WATER BY SOLVENT EXTRACTION  
JAPAN ATOMIC ENERGY RESEARCH INSTITUTE, TOKAIMURA, IBARAKI-KEN, JAPAN  
5 PAGES, 1 FIGURE, 3 TABLES, 5 REFERENCES, TALANTA, 14, PAGES 1179-1183 (1967)

DESCRIBES A RAPID EXTRACTION SEPARATION METHOD FOR THE RADIOCHEMICAL DETERMINATION OF COBALT-58 AND COBALT-60 IN REACTOR COOLANT WATER. AFTER ADJUSTMENT OF THE PH OF THE SAMPLE WATER TO 5.0-5.5, COBALT DIETHYLDITHIOCARBAMATE IS EXTRACTED WITH BENZENE. OTHER NUCLIDES, E.G., MANGANESE-54 AND -56, COPPER-64 AND IRON-59, WHICH ARE USUALLY PRESENT IN REACTOR COOLANT WATER, ARE ALSO EXTRACTED TOGETHER WITH COBALT. HOWEVER, THEY CAN BE READILY REMOVED BY WASHING THE EXTRACT WITH MERCURY(II) CHLORIDE SOLUTION. THE COBALT-58 AND -60 ACTIVITIES ARE MEASURED BY GAMMA COUNTING OF AN ALIQUOT OF THE WASHED EXTRACT. TRACE AMOUNTS OF RADIOACTIVE COBALT IN 500 ML OF SAMPLE WATER CAN BE QUANTITATIVELY EXTRACTED WITHOUT THE USE OF CARRIER. THE SEPARATION COULD BE FINISHED IN 15 MIN AND AN AVERAGE RECOVERY OF 99.5% WAS OBTAINED, WITH A RELATIVE STANDARD DEVIATION OF 1.4% (25 EXPERIMENTS).

\*ANALYTICAL TECHNIQUE, WATER + \*REACTOR COOLANT + COBALT + COPPER + IRON + JAPAN + MANGANESE + , SOLVENT EXTRACTION PROCESS

14-22807  
KAYE SV + NELSON DJ  
ANALYSIS OF SPECIFIC-ACTIVITY CONCEPT AS RELATED TO ENVIRONMENTAL CONCENTRATION OF RADIONUCLIDES  
6 PAGES, 5 FIGURES, 16 REFERENCES, NUCLEAR SAFETY 9(1), PAGES 53-58 (JAN. FEB. 1968)

THE SPECIFIC-ACTIVITY TECHNIQUE IS REVIEWED AND EVALUATED FOR ESTIMATING HAZARDS TO MAN FROM CONSUMING FOOD OR WATER DERIVED FROM RADIOACTIVITY-CONTAMINATED AQUATIC ENVIRONMENTS. PERTINENT LITERATURE ON PAST APPLICATIONS OF THIS TECHNIQUE IS DISCUSSED, AND THE FINDINGS ARE INTERPRETED. A SPECIFIC-ACTIVITY MODEL PROPOSED BY THE NATIONAL ACADEMY OF SCIENCES-NATIONAL RESEARCH COUNCIL IS EVALUATED WITH AN ANALYSIS OF THE TIME-DEPENDENT PARAMETERS (BIOLOGICAL HALF-TIME, PHYSICAL HALF-LIFE, AND BIOLOGICAL GROWTH) TO DETERMINE THE SENSITIVITY OF THE CALCULATED MAXIMUM ALLOWABLE SPECIFIC ACTIVITY OF RADIOACTIVITY IN AQUATIC ENVIRONMENT TO CHANGES IN THE PARAMETERS. IN ALL CASES THE GUIDANCE GIVEN BY THE SPECIFIC-ACTIVITY APPROACH IS CONSERVATIVE. THE MAJOR RESTRICTION ON APPLICATION OF THE SPECIFIC-ACTIVITY MODELS APPEARS TO BE INCOMPLETE MIXING AND DIFFERING BIOLOGICAL

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-22807 \*CONTINUED\*  
AVAILABILITY BETWEEN THE RADIOISOTOPE AND THE STABLE-ISOTOPE ANALOG.

ECOLOGICAL CONSIDERATION + ENVIRONMENTAL CONDITION + FISSION PRODUCT TRANSPORT + ORNL + RADIOISOTOPE

14-22812  
NEILL RH + SNAVELY DR  
STATE HEALTH DEPARTMENT SAMPLING CRITERIA FOR SURVEILLANCE OF RADIOACTIVITY IN MILK  
US PUBLIC HEALTH SERVICE  
7 PAGES, 8 TABLES, 3 FIGURES, REFERENCES, RADIOLOGICAL HEALTH DATA AND REPORTS 8 (11), PAGES 621-627  
(NOVEMBER 1967)

THIS REPORT SUMMARIZES CRITERIA USED BY THE STATES IN SETTING UP THEIR MILK-SAMPLING PROGRAMS FOR MEASUREMENT OF RADIOACTIVITY AND THE SAMPLE TYPING, COLLECTION POINTS, AND MEASUREMENTS USED. ALSO INCLUDED ARE THE TIMES REQUIRED BY THE STATES FROM SAMPLE COLLECTION TO THE FINAL RADIOACTIVITY CONCENTRATIONS OF THE VARIOUS RADIOISOTOPES FOUND IN MILK.

\*FALLOUT + \*SURVEILLANCE PROGRAM + BIOLOGICAL CONCENTRATION, MILK

14-22813 ALSO IN CATEGORY 15  
DATA - SECTION IV. OTHER DATA  
US PUBLIC HEALTH SERVICE  
10 PAGES, 7 TABLES, 4 FIGURES, RADIOLOGICAL HEALTH DATA AND REPORTS 8(11), PAGES 664-673 (NOVEMBER 1967)

THIS SECTION CONTAINS REPORT ON SR-90 IN HUMAN VERTABRAE COLLECTED IN 1966 IN NEW YORK CITY AND IN SAN FRANCISCO. REPORTS ENVIRONMENTAL SURVEYS FOR THREE SITES OF THE LAWRENCE RADIATION LABORATORY (JULY-DECEMBER 1966) AND OF MOUND LABORATORY (JULY-DECEMBER AND ANNUAL SUMMARY 1966). THE USAEC REPORTED UNDERGROUND NUCLEAR TESTS AT THE NEVADA TEST SITE ON OCTOBER 18, 1967, AND ON OCTOBER 25. IN ADDITION THE AEC REPORTED SEISMIC DATA ON OCTOBER 17 AND OCTOBER 23, 1967, INDICATING SOVIET NUCLEAR TESTS IN SIBERIA.

\*FALLOUT + \*MONITORING PROGRAM, ENVIRONMENTAL + \*SURVEILLANCE PROGRAM + BIOLOGICAL CONCENTRATION, MAN + LRL + MOUND LABORATORY + STRONTIUM + TRITIUM + WATER, GENERAL

14-22815  
DATA. SECTION I, MILK AND FOOD, SECTION II, WATER, SECTION III, AIR AND DEPOSITION  
US PUBLIC HEALTH SERVICE  
21 PAGES, TABLES, FIGURES, REFERENCES, RADIOLOGICAL HEALTH DATA AND REPORTS 8(11), PAGES 628-647 (NOVEMBER 1967)

SECTION I. DATA ARE REPORTED FOR THE NATIONAL AND INTERNATIONAL MILK-SURVEILLANCE PROGRAMS (UNITED STATES, CANADA, PAN-AMERICAN), STATE MILK SURVEILLANCE (CONNECTICUT, INDIANA, IOWA, MICHIGAN, MINNESOTA, NEW YORK, AND PENNSYLVANIA). FOOD AND DIET SURVEILLANCE (CONNECTICUT). SECTION II CONTAINS DATA ON GROSS ACTIVITY IN U. S. SURFACE WATERS, NEW YORK TAP WATER, AND COAST-GUARD WATER SUPPLIES IN ALASKA, SECTION III CONTAINS DATA FROM THE RADIATION SURVEILLANCE NETWORK, CANADIAN AIR AND PRECIPITATION MONITORING, MEXICAN AIR MONITORING, PAN-AMERICAN AIR SAMPLING, AND PLUTONIUM IN AIRBORNE PARTICULATES AND PRECIPITATION, AND STRONTIUM-90 IN PRECIPITATION.

\*FALLOUT + BIOLOGICAL CONCENTRATION, FOOD + BIOLOGICAL CONCENTRATION, MILK + MONITORING PROGRAM, ENVIRONMENTAL + PARTICULATE + PLUTONIUM + PRECIPITATION + STRONTIUM + SURVEILLANCE PROGRAM + WATER, DRINKING + WATER, GENERAL

14-22816  
ZIEGLER CA + PAPANICOLAOS J + SELLERS B  
RADIOISOTOPE GAUGE FOR MONITORING SUSPENDED SEDIMENT IN RIVERS AND STREAMS  
PARAMETRICS, INC., WALTHAM, MASS.  
9 PAGES, 6 FIGURES, 2 REFERENCES, INT. J. APPL. RADIAT. ISOTOP. 18, PAGES 585-93 (AUGUST 1967)

THE PROBLEM OF DETERMINING THE AMOUNT OF WATER-CARRIED SUSPENDED SEDIMENT IS OF INCREASING IMPORTANCE IN AREAS CONCERNED WITH AGRICULTURE, NAVIGATION, AND WATER CONSERVATION. CONVENTIONAL POINT-SAMPLING METHODS HAVE PROVED INADEQUATE TO MEET CURRENT HYDROLOGY PLANNING NEEDS BECAUSE SHORT-TERM CONCENTRATION EXCURSIONS CANNOT BE MONITORED. A GAUGE BASED ON THE USE OF RADIATION FROM A RADIOISOTOPE SOURCE, HAVING THE CAPABILITY OF CONTINUOUSLY MEASURING SEDIMENT CONCENTRATION OVER A RANGE OF 1000-50,000 PPM, WAS DESIGNED, DEVELOPED AND TESTED. THE SYSTEM IS CAPABLE OF OPERATING AND RECORDING DATA UNATTENDED FOR A PERIOD OF 7-1/2 DAYS ON INTERNAL POWER, THUS CONSTITUTING A COMPLETELY AUTOMATIC MONITORING SYSTEM. THE THEORY OF OPERATION, ERROR ANALYSIS, CALIBRATION METHODS, OPERATING PROCEDURES, AND TEST RESULTS, ARE PRESENTED.

\*INSTRUMENTATION, GENERAL + \*RADIOISOTOPE + \*SEDIMENT + RIVER, GENERAL + UNITED STATES + WATER, GENERAL

14-22817  
TAUBER H  
COPENHAGEN RADIOCARBON MEASUREMENTS. VIII. GEOGRAPHIC VARIATIONS IN ATMOSPHERIC C-14 ACTIVITY

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-22817 \*CONTINUED\*  
NATIONAL MUSEUM, COPENHAGEN  
11 PAGES, 1 FIGURE, REFERENCES, RADIOCARBON 9, PAGES 246-56 (1967)

MEASUREMENTS OF BOMB-PRODUCED C-14 IN CEREALS AND GRASSES IN THE NORTHERN HEMISPHERE FROM 1956 THROUGH 1966 ARE PRESENTED. SAMPLES WERE MEASURED TO DETERMINE THE YEARLY ADDITION OF C-14 AT A SINGLE LOCALITY AND TO DETECT POSSIBLE GEOGRAPHIC VARIATIONS IN THE DISTRIBUTION AND UPTAKE OF BOMB-PRODUCED C-14 IN TERRESTRIAL PLANT MATERIAL DURING YEARS WITH GREATLY VARYING ADDITIONS OF C-14.

BIOLOGICAL CONCENTRATION, VEGETATION + CARBON + DENMARK + TEST, WEAPONS (HP ASPECTS)

14-22928  
BLOMEKE JO + HARRINGTON FE  
MANAGEMENT OF RADIOACTIVE WASTES AT NUCLEAR POWER STATIONS  
OAK RIDGE NATIONAL LAB., TENN.  
ORNL-4070 +. 101 PAGES, FIGURES, TABLES, 44 REFERENCES, JAN. 1968

AS A PRELIMINARY STEP IN ASSESSING WASTE-DISPOSAL OPERATIONS IN THE EXPANDING NUCLEAR POWER INDUSTRY, THE OPERATING EXPERIENCE IN WASTE MANAGEMENT AT THE DRESDEN-1, BIG ROCK POINT, HUMBOLDT BAY, ELK RIVER, INDIAN POINT-1, AND YANKEE POWER STATIONS IS REVIEWED. ALL THESE PLANTS HAVE OPERATED WITHIN AUTHORIZED LIMITS AT COSTS ESTIMATED TO RANGE BETWEEN 2 AND 10% OF ANNUAL OPERATING COSTS. GASEOUS RELEASE RATES HAVE RANGED FROM AS LOW AS 10 TO THE MINUS 5% TO 30% OF ALLOWABLE, AND LIQUID WASTES FROM 0.0002% TO 9.9%. TRITIUM RELEASES HAVE BEEN BELOW 1% OF ALLOWABLE IN ALL CASES. IT IS CONCLUDED THAT WASTE-MANAGEMENT PRACTICES HAVE BEEN ADEQUATE AND THAT NO PROBLEMS ARE ANTICIPATED.

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

\*WASTE DISPOSAL, GAS + \*WASTE DISPOSAL, LIQUID + \*WASTE DISPOSAL, SOLID + \*WASTE MANAGEMENT +  
RADIONUCLIDE, INDUCED + REACTOR, BWR + REACTOR, POWER + REACTOR, PWR + TRITIUM +  
WASTE DISPOSAL, ATMOSPHERIC + WASTE DISPOSAL, RIVER + WASTE SOURCE AND TYPE

14-22971 ALSO IN CATEGORY 16  
QUARTERLY SUMMARY REPORT SEPTEMBER 1 THROUGH DECEMBER 1, 1967 APPENDIX TO HEALTH AND SAFETY LABORATORY  
FALLOUT PROGRAM  
USAEC, NEW YORK OPERATIONS OFFICE  
HASL-194, APPENDIX +. 200 PAGES, FIGURES, TABLES, JANUARY 1, 1968

TABULAR DATA FOR (A) SR-90 AND -89 IN MONTHLY DEPOSITION AT WORLD LAND SITES, (B) FISSION-PRODUCT AND ACTIVATION-PRODUCT RADIONUCLIDES IN MONTHLY DEPOSITION AT SELECTED SITES, (C) RADIOSTRONTIUM DEPOSITION AT ATLANTIC OCEAN WEATHER STATIONS, (D) RADIOSTRONTIUM IN MILK AND TAP WATER.

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

\*DEPOSITION + \*MONITORING PROGRAM, ENVIRONMENTAL + ANALYTICAL TECHNIQUE, MILK + FALLOUT + RAINOUT + STRONTIUM + WATER, DRINKING

14-23153 ALSO IN CATEGORY 15  
RILEY JP + TONGUDAI M  
CESIUM AND RUBIDIUM IN SEA WATER  
UNIVERSITY OF LIVERPOOL  
4 PAGES, REFERENCES, CHEMICAL GEOLOGY 1, PAGES 291-4 (DEC. 1966)

A CATION EXCHANGE SCHEME WAS DEVELOPED FOR SEPARATING CS AND PB FROM SEA WATER PRIOR TO THEIR SPECTROGRAPHIC DETERMINATION. CONCENTRATIONS OF 119 PLUS OR MINUS 4 MICROGRAMS RB/1 AND 0.55 PLUS OR MINUS 0.06 MICROGRAM CS/1 WERE FOUND FOR IRISH SEA SURFACE WATER AND FOR WATER FROM THE NORTH ATLANTIC.

\*ANALYTICAL TECHNIQUE, LIQUID + \*CESIUM + \*ION EXCHANGE + \*RUBIDIUM + ACTIVATION

14-23154 ALSO IN CATEGORY 15  
KOPANDA JJ  
RESIDUAL TRITIUM AT SEDAN CRATER  
CALIFORNIA UNIV., LIVERMORE. LAWRENCE RADIATION LAB.  
UCRL-70292 + CONF-670503-9 +. 36 PAGES, APRIL 2, 1967, PRESENTED AT 2ND NATIONAL SYMPOSIUM ON  
RADIOECOLOGY, ANN ARBOR, MICHIGAN

RESIDUAL TRITIUM FROM THE SEDAN THERMONUCLEAR DETONATION, 6 JULY 1962, WAS SCAVENGED BY OR ENTRAINED IN THE 5-6 MILLION TONS OF EARTH MATERIALS MOVED BY THE DETONATION. AS A RESULT, THE SEDAN POST-SHOT ENVIRONMENT CONTAINED A MOST SIGNIFICANT BIOLOGICAL TRACER IN THE FORM OF THO. RESIDUAL TRITIUM (THO) IS FOUND IN MICROCURIE CONCENTRATIONS IN THE INTERSTITIAL WATER OF THE SEDAN THROWOUT SOIL, AND IN THE LOOSE TISSUE WATER OF PLANTS WHICH HAVE FE-INVADDED THE NEW SUBSTRATUM DEPOSITED ON THE LANDSCAPE ADJACENT TO THE CRATER. TRITIUM IS PRESENT NOT ONLY IN THE LOOSE TISSUE WATER OF VASCULAR PLANTS GROWING ON THE SEDAN THROWOUT, BUT A

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-23154 \*CONTINUED\*

COMPARABLE LEVEL IS ALSO FOUND IN THE TISSUE-BOUND HYDROGEN OF THESE PLANTS. HERBIVORES, MAINLY HETEROMYID RODENTS, WHICH HAVE RE-INVAGED THE SEDAN POST-SHOT ENVIRONMENT AND RESIDE THERE, ALSO HAVE TRITIUM CONCENTRATIONS IN THEIR BODY WATER BETWEEN 1 AND 3 MICROCURIE/ML. THESE BODY-WATER TRITIUM CONCENTRATIONS ARE CLOSELY RELATED TO THE LEVELS OF TRITIUM IN THE PLANT TISSUE-BOUND HYDROGEN. THE INTERNAL DOSE TO THE RESIDENT MAMMAL AT SEDAN CRATER FROM RESIDUAL TRITIUM IS ESTIMATED TO BE BETWEEN 18 AND 268 RAD, OR ABOUT 10 TIMES THAT FROM EXTERNAL RADIATION SOURCES RESULTING FROM THE DETONATION.

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

\*ECOLOGICAL CONSIDERATION + \*NUCLEAR DETONATION + \*TRITIUM + BIOLOGICAL CONCENTRATION, GENERAL + DIETARY HABIT + HYDROGEN

14-23155 ALSO IN CATEGORY 15

NELSON WC + WHICKER FW

CS-137 IN SOME COLORADO GAME FISH, 1965-66

COLORADO DEPT. OF GAME, FISH, AND PARKS. COLORADO STATE UNIV., FOR COLLINS. DEPT. OF RADIOLOGY AND RADIATION BIOLOGY

COO-1156-21 + CONF-670503-1 +. 23 PAGES, JAN. 1967, PRESENTED AT 2ND NATIONAL SYMPOSIUM ON RADIOECOLOGY, ANN ARBOR, MICHIGAN

IN 1965 AND 1966 THE CS-137 CONCENTRATION IN MUSCLE TISSUE OF 132 FISH REPRESENTING EIGHT GAME FISH SPECIES FROM 23 COLORADO WATERS VARIED FROM NONDETECTABLE (LESS THAN 50 PC/KGM) TO 5800 PC/KGM. WATERS SAMPLED INCLUDED 3 PLAINS, 2 FOOTHILLS, 5 MONTANE AND 12 ALPINE RESERVOIRS AND LAKES AS WELL AS ONE TROUT STREAM. ELEVATION OF THESE WATERS VARIED FROM 1,528 TO 3,498 METERS. LAKE DEPTHS VARIED FROM 1-45 METERS, LAKE AREAS FROM 1.4 TO 230 HECTARES AND LAKE WATERSHED AREAS, WHERE MEASURED, FROM 53-2; 480 HECTARES. CONDUCTIVITY OF WATERS VARIED FROM 8 TO 1390 MICROMHOS AND POTASSIUM CONCENTRATION FROM 0.1 TO 3.1 PPM. BASED ON 6 SAMPLES, CS-137 CONCENTRATIONS WERE 2 TO 7 TIMES GREATER IN 1965 THAN 1966. BIOLOGICAL CONCENTRATIONS OF CS-137 ARE GIVEN FOR DIFFERENT LOCATIONS.

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

\*BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + \*CESIUM + \*SAMPLING, HIGH ALTITUDE + COUNTER + DIETARY HABIT + ECOLOGICAL CONSIDERATION + FALLOUT + RADIOBIOLOGY

14-23156 ALSO IN CATEGORY 15

PALMER HE + WOGMAN NA + COOPER JA

THE DETERMINATION OF THE DEPTH AND AMOUNT OF PU-239 IN WOUNDS WITH SI(LI) DETECTORS

BATTELLE-NORTHWEST, RICHLAND, WASH. PACIFIC NORTHWEST LAB.

BNWL-SA-1261 + CONF-670521-4 + CONF-670610-1 +. 17 PAGES, MAY 15, 1967, PRESENTED AT THE 12TH ANNUAL MEETING OF THE HEALTH PHYSICS SOCIETY, WASHINGTON, D. C.

A METHOD HAS BEEN DEVELOPED FOR DEFINING THE AVERAGE DEPTH OF PU-239 IN WOUNDS BY X-RAY SPECTROMETRY USING A LITHIUM DRIFTED SILICON DETECTOR. THE USE OF THIS METHOD ON ACTUAL PU WOUND CASES IS DESCRIBED.

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

\*COUNTER + \*INSTRUMENTATION, CONTROL + \*PLUTONIUM + \*X-RAY

14-23158 ALSO IN CATEGORY 15

MORLEY F

ENVIRONMENTAL MONITORING ASSOCIATED WITH DISCHARGES OF RADIOACTIVE WASTE DURING 1966 FROM U.K.A.E.A. ESTABLISHMENTS

UNITED KINGDOM ATOMIC ENERGY AUTHORITY, HARWELL (ENGLAND). AUTHORITY HEALTH AND SAFETY BRANCH AHSB(RP)R-79 +. 20 PAGES, 20 TABLES, 6 REFERENCES, AUGUST 1967

THIS REPORT DESCRIBES THE RESULTS OF THE ENVIRONMENTAL MONITORING UNDERTAKEN TO CONFIRM THAT THE DISCHARGES OF RADIOACTIVE WASTE DURING 1966 FROM EACH OF THE PRINCIPAL UKAEA ESTABLISHMENTS PRODUCED NO HAZARD IN THE ENVIRONMENT. THE RESULTS OF THIS MONITORING ARE SUMMARIZED AND ARE COMPARED WITH DERIVED WORKING LIMITS TO FACILITATE AN APPRECIATION OF THE STANDARDS OF SAFETY ACHIEVED.

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

\*HAZARDS ANALYSIS + \*MONITORING PROGRAM, ENVIRONMENTAL + \*WASTE TREATMENT, GENERAL + WASTE DISPOSAL, LIQUID + WASTE DISPOSAL, SOLID

14-23321 ALSO IN CATEGORY 15

FREKE AM + DOLPHIN GW

A SUMMARY OF RESEARCH AND DEVELOPMENT WORK CARRIED OUT IN 1966 IN HEALTH AND SAFETY DEPARTMENTS OF THE UNITED KINGDOM ATOMIC ENERGY AUTHORITY



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RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-23321 \*CONTINUED\*  
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, HARWELL, ENGLAND  
AHSB(RP)M-46 +. 54 PAGES, SEPTEMBER 1967

THIS MEMORANDUM LISTS 193 PROJECTS ON WHICH RESEARCH OR DEVELOPMENT WORK HAS BEEN CARRIED OUT IN HEALTH AND SAFETY DEPARTMENTS OF THE UKAEA DURING 1966. THE OBJECT OF THIS MEMORANDUM IS TO PROVIDE INFORMATION ABOUT CURRENT RESEARCH AND DEVELOPMENT WORK WHICH MAY BE HELPFUL TO THOSE PLANNING RESEARCH PROGRAMMES. REFERENCES ARE GIVEN TO THE PUBLISHED PAPERS RESULTING FROM WORK CARRIED OUT ON THE PROJECTS DURING THE YEAR.

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

\*DOSIMETRY, GENERAL + \*RADIOLOGY + \*SPECTROMETRY, NEUTRON + \*UNITED KINGDOM + AQUATIC ORGANISMS + FALLOUT + INSTRUMENTATION, RADIATION MONITORING + NEUTRON

14-23379 ALSO IN CATEGORY 16  
MURAYAMA N  
OBSERVATIONAL EVIDENCE ON TRANSPORT OF RADIOACTIVITY AND OZONE THROUGH THE TROPOPAUSE  
JAPAN METEOROLOGICAL AGENCY, TOKYO  
14 PAGES, FIGURES, REFERENCES, GEOPHYSICAL MAGAZINE (TOKYO), 33, PAGES 149-162 (NOV. 1966)

EXTRAORDINARILY HIGH RADIOACTIVITY WAS RECORDED BY A GAMMA-ACTIVITY SONDE LAUNCHED AT TATENO, IN THE LAYER BETWEEN 500 AND 300 MB LEVELS IN THE REGION OF STRONG UPPER FRONTS EXTRUDING DOWN FROM THE TROPOPAUSE. THIS IS DISCUSSED IN TERMS OF AN INSTANCE OF THE RADIOACTIVE DUSTS ORIGINATING IN THE STRATOSPHERE BEING TRANSFERRED INTO THE TROPOSPHERE THROUGH THE TROPOPAUSE BREAK BY DISTURBANCES DEVELOPED IN THE UPPER TROPOSPHERE. THE RESULTS ARE COMPARED WITH VERTICAL-OZONE-DISTRIBUTION FINDINGS.

\*FALLOUT + \*JAPAN + \*STRATOSPHERE + \*TROPOSPHERE + AEROSOL, RADIOACTIVE + ANALYTICAL TECHNIQUE, AIR + ATMOSPHERIC CIRCULATION, GLOBAL + NUCLEAR EXPLOSION DEBRIS

14-23878 ALSO IN CATEGORY 16  
KAURANEN P + KULMALA A + MATTSSON R  
FISSION PRODUCTS OF UNUSUAL COMPOSITION IN FINLAND  
DEPT. OF RADIOCHEMISTRY, UNIVERSITY OF HELSINKI + FINNISH METEOROLOGICAL OFFICE, HELSINKI  
4 PAGES, 5 FIGURES, 2 TABLES, 13 REFERENCES, NATURE 216(5112), PAGE 238 THRU 241, (OCTOBER 1967)

A CLOUD OF FRESH, HIGHLY FRACTIONATED FISSION PRODUCTS WAS OBSERVED IN FINLAND BETWEEN DECEMBER 21 AND 26, 1966. THEY SEEMED TO COME FROM CENTRAL ASIA AND WERE PROBABLY THE PRODUCT OF AN UNDERGROUND NUCLEAR TEST. PRESENTS CONCENTRATION DATA AND METEOROLOGICAL CONDITIONS.

\*AEROSOL, RADIOACTIVE + \*FALLOUT + ATMOSPHERIC DIFFUSION + FINLAND

14-23880 ALSO IN CATEGORY 16  
ALDAZ L  
SURFACE AIR RADIOACTIVITY AND OZONE AT AMUNDSEN-SCOTT STATION (90 S), ANTARCTICA  
UNIV. OF N. MEX., ALBUQUERQUE  
2 PAGES, 1 FIGURE, 4 REFERENCES, NATURE (LONDON), 215, PAGE 722 AND 723, (AUGUST 1967)

CONTINUOUS MEASUREMENTS OF SURFACE-AIR RADIOACTIVITY LEVELS AT THE SOUTH POLE FROM 1959 TO 1963 HAVE PREVIOUSLY BEEN REPORTED, AND ADDITIONAL DATA UP TO 1965 ARE PRESENTED IN THIS COMMUNICATION. SURFACE-OZONE RECORDS FOR 1962 TO 1965 ARE ALSO GIVEN. FISSION PRODUCT AND OZONE DATA ARE PRESENTED GRAPHICALLY, AND A YEARLY OSCILLATION FOR BOTH SETS OF DATA IS OBSERVED, OPPOSITE IN PHASE, AND WITH A 6-MONTH PHASE DIFFERENCE. IT IS POSSIBLE THAT SEASONAL VARIATIONS IN ATMOSPHERIC EXCHANGE BETWEEN THE MIDDLE LATITUDES OF THE NORTHERN HEMISPHERE AND THE POLAR REGIONS ARE SOMEHOW CONTROLLING THE OBSERVED ANNUAL OSCILLATION OF RADIOACTIVITY AND OZONE IN THE SURFACE AIR AT THE SOUTH POLE.

\*ATMOSPHERIC CIRCULATION, GLOBAL + \*FALLOUT + AEROSOL, RADIOACTIVE + ATMOSPHERIC DIFFUSION, GLOBAL + OZONE

14-23902 ALSO IN CATEGORY 15  
BELLAICHE G + PAUTOT G + ANGUENOT F + COURTOIS G  
NATURAL RADIOACTIVITY OF MARINE SEDIMENTS ALONG THE ESTEREL COASTS  
LABORATOIRE DE GEODYNAMIQUE SOURS-MARINE, VILLEFRANCHE-SUR-MER, FRANCE CEA, SACLAY, FRANCE  
4 PAGES, 3 FIGURES, 4 REFERENCES, COMPT. REND., SER. D., 264, PAGE 2545 THRU 2548, (MAY 29, 1967), (IN FRENCH)

THE RADIOACTIVITY OF THE COASTAL MARINE SEDIMENTS PRESENTS WELL-DEFINED CHARACTERISTICS, WHICH CAN BE EXPLAINED BY THE ACTION OF DIFFERENT HYDRODYNAMIC AGENTS SUCH AS SEA SWELLS AND SOME CURRENTS ON THE SEDIMENTARY PARTICLES OF DIFFERENT RADIOACTIVITY.

\*MONITOR, RADIATION, ENVIRONMENTAL + \*SURFACE WATER, NUCLIDE OCCURRENCE + \*SURFACE WATER, SEDIMENT + FRANCE

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-23914 ALSO IN CATEGORY 15

TAGI H + LIM EK  
FUNDAMENTAL STUDIES ON BEHAVIOR OF CESIUM IN FIXATION OF RADIOACTIVITY IN CERAMIC SPONGES  
TOKYO INSTITUTE OF TECHNOLOGY  
86 PAGES, BULL. TOKYO INST. TECHNOL. NO. 71, PAGES 1-86 (MARCH 1966)

ONE METHOD FOR DISPOSING OF FISSION-PRODUCT WASTES FROM THE REPROCESSING OF THE SPENT URANIUM FUELS IS THE FIXATION OF THE FISSION PRODUCTS ON CERAMIC SPONGES, WHICH ARE THEN STORED UNDERGROUND. THE FIXATION OF HIGH-LEVEL RADIOACTIVITY IS DESCRIBED. STUDIES WERE MADE ON THE LEACHABILITY FOR LONG-TERM UNDERGROUND STORAGE, MECHANISMS OF THE FIXATION, AND ADSORBABILITY OF THE RADIONUCLIDE CS-137. THE CONCLUSIONS ON THE BEHAVIOR OF CS-137 IN THE FIXATION OF RADIOACTIVE WASTES IN CERAMIC SPONGES ARE AS FOLLOWS - CERAMIC SPONGES HAVING 56 TO 65% POROSITY WERE PREPARED FROM MATERIALS INCLUDING DIATOMITE, BENTONITE OR CLAY, AND FELDSPAR. THE COMPOSITIONS FOUND TO BE PROMISING ARE 60 TO 70% DIATOMITE, 20 TO 30% BENTONITE, AND 10% FELDSPAR.

\*CERAMICS + \*CESIUM + \*WASTE DISPOSAL, SOLID + \*WASTE TREATMENT, FIXATION + FUEL ELEMENT + URANIUM

14-24060 ALSO IN CATEGORY 15

MAMURO T + MATSUNAMI T + FUJITA A  
RADIONUCLIDE FRACTIONATION IN FALLOUT PARTICLES FROM AN AIR BURST  
DEPT. OF HEALTH PHYSICS AND INSTRUMENTATION, RADIATION CENTER OF OSAKA PREFECTURE, SHINKE-CHO 704, SAKAI-SHI, OSAKA, JAPAN  
17 PAGES, 22 FIGURES, 5 TABLES, 14 REFERENCES, HEALTH PHYSICS 14(3), PAGE 223 THRU 239, (JUNE 15, 1967)

RADIONUCLIDE FRACTIONATION IN INDIVIDUAL HOT PARTICLES (HIGHLY RADIOACTIVE FALLOUT PARTICLES) FROM THE THIRD CHINESE NUCLEAR EXPLOSION ON 9 MAY, 1966, HAS BEEN INVESTIGATED BY GAMMA-RAY SPECTROMETRY. ACTIVITIES OF TEN RADIONUCLIDES (ZR-95, ZR-97, MO-99, BA-140, CE-141, CE-143, CE-144, ND-147, U-237 AND NP-239) WERE MEASURED, AND THE INITIAL ATOM NUMBERS OF THESE NUCLIDES CONTAINED IN EACH SAMPLE WERE ESTIMATED. TO EXPRESS THE DEGREE OF FRACTIONATION, THE FRACTIONATION FACTORS DEFINED WITH RESPECT TO ZR-95 WERE CALCULATED FOR EACH SAMPLE.

\*CHINA + \*FALLOUT + \*ISOTOPIC FRACTIONATION + \*PARTICLE, RADIOACTIVE + BARIUM + CERIUM + MOLYBDENUM + NEPTUNIUM + NIOBIUM + SPECTROMETRY, GAMMA + URANIUM + ZIRCONIUM

14-24061 ALSO IN CATEGORY 15

PERSSON RB  
CS-134/CS-137 ACTIVITY RATIO IN THE BIOSPHERE FROM 1956 UNTIL 1966  
RADIATION PHYSICS DEPT., UNIV. OF LUND, LUND, SWEDEN  
10 PAGES, 4 FIGURES, 6 TABLES, 39 REFERENCES, HEALTH PHYSICS, 14(2), PAGE 241 THRU 250, (JUNE 26, 1967)

CS-134 AND CS-137 ACTIVITIES WERE MEASURED IN SAMPLES OF LICHEN, MOSS, AND REINDEER MEAT COLLECTED IN SWEDEN. THE CS-134/CS-137 ACTIVITY RATIOS IN VEGETATION COINCIDE WITHIN THE EXPERIMENTAL UNCERTAINTY WITH THOSE FOR REINDEER MEAT. GAMMA-RAY SPECTRA FROM THE ANNUALLY PERFORMED WHOLE-BODY MEASUREMENTS ON LAPPS WERE ANALYZED. THE TOTAL GLOBAL INJECTION OF CS-134 WAS ESTIMATED TO BE ABOUT 200 KCI UP TO 1958, INSIGNIFICANT DURING 1959-1961, AND ABOUT 50 KCI DURING 1961-1962. SINCE 1962, NO SIGNIFICANT INJECTION OF CS-134 HAS BEEN DETECTED. DIFFERENT WAYS OF GENERATING CS-134 HAVE BEEN CONSIDERED.

\*ALASKA + \*BIOLOGICAL CONCENTRATION, GENERAL + \*CESIUM + \*SPECTROMETRY, GAMMA + COUNTER, WHOLE BODY + MONITOR, RADIATION, ENVIRONMENTAL

14-24063 ALSO IN CATEGORY 15

ENVIRONMENTAL SAMPLING RESULTS  
26 PAGES, 6 FIGURES, 9 TABLES, RADIOLOGICAL HEALTH NEWS, 6(4) PAGES 2 TO 26 (OCT. 1967)

COLLECTING AND ANALYZING SAMPLES OF VARIOUS MEDIA IS CARRIED ON THROUGHOUT CALIFORNIA WITH THE ASSISTANCE OF SEVERAL COOPERATING AGENCIES AND ORGANIZATIONS. ALL SAMPLES ARE SENT TO THE SANITATION AND RADIATION LABORATORY OF THE STATE DEPARTMENT OF PUBLIC HEALTH, WHERE THEY ARE ASSAYED FOR THEIR RADIOACTIVITY. THE RESULTS ARE COMPILED, INTERPRETED, AND PUBLISHED BY THE BUREAU OF RADIOLOGICAL HEALTH. THE SAMPLING PROGRAM ENCOMPASSES AIRBORNE PARTICLES, RAINFALL, DOMESTIC WATER, SEWAGE, MILK, DIET, AND SNOW, PLUS SPECIAL STUDIES.

\*ANALYTICAL TECHNIQUE, GENERAL + \*MONITOR, RADIATION, ENVIRONMENTAL + \*SAMPLING + RADIOLOGY + STATE PROGRAM

14-24066 ALSO IN CATEGORY 16

MAMURO T  
PHYSICO-CHEMICAL PROPERTIES OF FALLOUT PARTICLES IN RELATION TO BURST CONDITIONS  
RADIATION CENTER OF OSAKA PREFECTURE, SHINKECHO 704, SAKAI-SHI, OSAKA (JAPAN)  
6 PAGES, 3 FIGURES, 2 TABLES, 18 REFERENCES, ATOMPRAXIS 14(1), PAGE 24 THRU 29, (JAN. 1968)

PHYSICO-CHEMICAL PROPERTIES OF HIGHLY RADIOACTIVE FALLOUT PARTICLES COLLECTED IN JAPAN SHORTLY AFTER SOVIET OR CHINESE NUCLEAR EXPLOSIONS ARE DESCRIBED AND DISCUSSED BRIEFLY IN RELATION TO BURST CONDITIONS. CONSIDERABLE DIFFERENCES ARE FOUND BETWEEN FALLOUT PARTICLES FROM AIR

CATEGORY 14  
 RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-24066 \*CONTINUED\*

BURSTS AND THOSE FROM SURFACE BURSTS (SHAPE, COLOR, MATRIX MATERIAL, SPECIFIC ACTIVITY, RELATION BETWEEN THE INITIAL ATOM NUMBER OF THE RADIONUCLIDE AND THE PARTICLE VOLUME, RADIONUCLIDE FRACTIONATION, AND U AND PU CONTENT).

\*AEROSOL, RADIOACTIVE + \*RADIOCHEMICAL ANALYSIS + FALLOUT + JAPAN

14-24214 ALSO IN CATEGORY 15

DEVORET R + LEVY C

BIOLOGICAL AND MEDICAL ASPECTS OF RADIOPROTECTION

30 PAGES, PAGES 775-EG4 OF RADIOBIOLOGIE APPLIQUEE, TOME III. (LOISELEUR, J. (ED)), PARIS, GAUTHIER-VILLARS, 1966, IN FRENCH

THE BIOLOGICAL AND MEDICAL ASPECTS OF PROTECTION AGAINST RADIATION ARE SUMMARIZED. THE VARIABLES THAT CONDITION THE GRAVITY OF RADIOLESIONS ARE OUTLINED. THE LESIONS CAUSED BY ACUTE AND CHRONIC IRRADIATION ARE DESCRIBED. THE LONG-TERM CONSEQUENCES OF IRRADIATION, I.E., CANCER INDUCTION, SHORTENING OF THE AVERAGE LIFE SPAN, AND GENETIC EFFECTS, ARE CONSIDERED IN SOME DETAIL. THE PRESENT LEVEL OF THE IRRADIATION OF THE GENERAL POPULATION FROM NATURAL RADIOACTIVITY, MEDICAL IRRADIATION, FALLOUT, AND EVENTUAL IRRADIATION AS A RESULT OF A NUCLEAR INDUSTRIAL DEVELOPMENT IS CALCULATED. PROFESSIONAL EXPOSURE IS DISCUSSED AND EXAMPLES ARE GIVEN. THE LAWS GOVERNING RADIOPROTECTION ARE OUTLINED. THE CLINICAL AND BIOLOGICAL MONITORING REGULATIONS ARE GIVEN.

\*BIOLOGICAL CONCENTRATION, MAN + \*FALLOUT + \*POPULATION EXPOSURE + MONITOR, RADIATION, ENVIRONMENTAL + RADIATION INJURY, TREATMENT OF

14-24215 ALSO IN CATEGORY 15

KRONGAUZ AN + KOLOTILOVA VG + LYAPIDEVSKII VK + PAVLOVA TG + TITOV AA

DOSE FIELDS OF CO60 GAMMA RADIATION IN SURFACE LAYERS OF TISSUE-EQUIVALENT SUBSTANCE

6 PAGES, MED. RADIOL, 12(7), PAGES 9-14 (JULY 1967) IN RUSSIAN

EXPERIMENTAL STUDIES WERE MADE OF THE DISTRIBUTION OF ABSORBED DOSES OF CO-60 GAMMA RADIATION IN SURFACE LAYERS OF A PLEXIGLASS PHANTOM WITH THE AID OF SCINTILLATION AND TRANSISTORIZED DETECTORS. CALIBRATION OF DETECTORS WAS PERFORMED BY THE IONIZATION DOSIMETER IN IDENTICAL CONDITIONS OF IRRADIATION. THE DISTRIBUTION OF DEPTH ABSORBED DOSES DEPENDING ON THE VALUE OF THE IRRADIATION FIELD IS DESCRIBED.

\*COBALT + \*DOSE + \*DOSIMETRY, GENERAL + BIOLOGICAL CONCENTRATION, MAN

14-24216 ALSO IN CATEGORY 15

YOSHIDA Y

MONITORING OF AIR CONTAMINATION AT JPDR (JAPAN POWER DEMONSTRATION REACTOR)

JAPAN ATOMIC ENERGY RESEARCH INST., TOKYO

5 PAGES, GENSHIRYOKU KOGYO, 12(10), PAGES 49-53 (OCT. 1966) IN JAPANESE

TRACES OF RARE GASES AS FISSION PRODUCTS AND I-131 HAVE BEEN DETECTED IN THE OFF-GAS AND REACTOR WATER, RESPECTIVELY, SINCE DIRECT-CYCLE, BOILING-WATER REACTOR JPDR (THERMAL OUTPUT 45 MW, ELECTRICAL OUTPUT 12 MW) OPERATED IN DEC. 1964. THE MONITORING SYSTEM AT JPDR CONSISTS OF NAI COUNTERS FOR GASES, GM COUNTERS FOR DUST, AND FIVE SAMPLING PIPINGS (ONE FOR OFF-GAS DUCTS, TWO FOR TURBINE ROOMS, AND TWO WITH EMERGENCY SHUT-OFF DEVICES FOR REACTOR VESSEL). AIR CONTAMINATION WHICH OCCURRED FROM JANUARY TO MARCH 1965 ARE GIVEN. A DESCRIPTION IS ALSO MADE OF THE LEAKAGE OF FISSION PRODUCT GASES FROM A CONNECTOR IN THE OFF-GAS PANEL, AND AIR CONTAMINATION DURING THE BREAKAGE OF REACTOR INSTRUMENTS.

\*CONTAMINATION + \*IODINE + \*LEAK + \*MONITORING SYSTEM, RADIATION + \*REACTOR, BWR + COUNTER + JAPAN + REACTOR POWER + SAMPLING + THERMAL CONSIDERATION

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-20565  
GOLDMAN L + HORNBY P  
PERSONNEL PROTECTION FROM HIGH ENERGY LASERS  
CHILDRENS HOSPITAL RESEARCH FOUNDATION, CINCINNATI  
5 PAGES, 8 REFERENCES, AMERICAN INDUSTRIAL HYGIENE ASSOCIATION JOURNAL 25, PAGES 553-7 (NOVEMBER-DECEMBER 1965)

PREVENTION OF EYE AND SKIN INJURIES IN THE USE OF LASERS IS CONSIDERED FROM THE POINT OF VIEW OF PERSONNEL CONTROL AND AREA CONTROL. THE FIRST CONCERN IN LASER PROTECTION IS THE EYE, NOT ONLY FROM IMPACT OF THE DIRECT BEAM BUT ALSO FROM THE REFLECTION FROM SURFACES. PROCEDURES FOR EYE PROTECTION ARE DISCUSSED. AREA CONTROL INCLUDES USE OF DARK, DULL, NONREFLECTING SURFACES IN THE LAB, USE OF EXTENSIVE BLACK, HEAVY FELT DRAPES, AND USE OF DEVICES TO ATTEMPT TO FOCUS ON THE TARGET AREA AND TO OBSERVE THE EFFECTS ON THE TARGET AREA WITHOUT DIRECT OBSERVATION OF THE TARGET. PROTECTION FOR THE EYE REQUIRES A GOGGLE WITH SUFFICIENT PROTECTIVE MATERIAL AND SO FITTED THAT STRAY LIGHT CANNOT COME IN FROM ANY ANGLE. IT IS RECOMMENDED THAT AS A RULE PERSONNEL NOT WORK IN THE DARK, SINCE THE RATIO OF EYE ACCEPTANCE AREA IN THE DARK TO THAT IN THE LIGHT IS 16 TO 1.

\*LASER + PERSONNEL PROTECTIVE DEVICE + RADIATION PROTECTION, ORGANIZATION + RADIOBIOLOGY

15-20574 ALSO IN CATEGORY 14  
TADMOR J + COWSER KE  
UNDERGROUND DISPOSAL OF KR-85 FROM NUCLEAR FUEL REPROCESSING PLANTS  
OAK RIDGE NATIONAL LAB., TENN.  
CONF-670602 +. 2 PAGES, 5 REFERENCES, ANS TRANSACTIONS 10(1) PAGES 159 AND 160 (JUNE 1967), PRESENTED AT THE 1967 ANNUAL MEETING OF THE AMERICAN NUCLEAR SOCIETY, SAN DIEGO, CALIFORNIA, JUNE 11-15, 1967

REPORT INDICATES THAT, CONSIDERING ADSORPTION AND MOLECULAR DIFFUSION OF KR-85, UNDERGROUND DISPOSAL OF KR-85 FROM REPROCESSING PLANTS MAY BE FEASIBLE, PROVIDED THAT A SUITABLE GEOLOGIC SETTING IS AVAILABLE AT THE PLANT SITE.

\*WASTE DISPOSAL, GAS + KRYPTON + WASTE DISPOSAL, ATMOSPHERIC + WASTE DISPOSAL, TERRESTRIAL

15-20736  
KOSSEL F  
RADIATION DOSAGE, DOSE UNIT, AND DOSAGE DETERMINATION  
INSTITUT FUER WASSER-, BODENUND LUFTHYGIENE, BERLIN  
7 PAGES, 1 FIGURE, 1 TABLE, 12 REFERENCES, ROENTGENPRAXIS 18, PAGE 179-184, (AUGUST 1965), IN GERMAN

THE FACTOR EXPRESSING DOSE FOR SOFT TISSUES IS RELATIVELY CONSTANT FOR ALMOST ALL VOLTAGES. IN BONE, THE EFFECTS OF IRRADIATION ARE MUCH GREATER AND VARY EXTENSIVELY WITH RADIATION ENERGY. WITH INCREASING VOLTAGE, THE ENERGY ABSORBED ALSO DECREASES, AND THE DIFFERENCE IN ABSORPTION BETWEEN SOFT TISSUES AND BONE BECOMES LESS. THIS REDUCES THE ABILITY TO DIFFERENTIATE BETWEEN THESE TISSUES IN X-RAY PHOTOGRAPHY, WHILE TO OBTAIN MORE UNIFORM DOSAGE IN X-RAY THERAPY HIGH VOLTAGES ARE USED. THE RELATIVE BIOLOGICAL EFFECTS OF VARIOUS TYPES OF RADIATION ARE - FOR X, BETA, AND GAMMA RADIATIONS, 1. FOR FAST NEUTRONS, PROTONS UP TO 10 MEV, AND ALPHA PARTICLES, 10. FOR HEAVY NUCLEI, 20.

\*DOSE + DOSE MEASUREMENT, EXTERNAL + GERMANY + RADIATION UNIT + RADIOLOGY

15-20737  
RACH K  
BASIC CONCEPTS FOR THE USE OF RADIOACTIVITY IN MEDICINE. A REFRESHER COURSE. 3. DOSE AND EFFICIENCY  
FRFIF UNIV., BRFLIN  
7 PAGES, 7 FIGURES, ROENTGENPRAXIS 18, PAGE 161-167, (JULY 1965), IN GERMAN

REVIEWS THE UNITS USED TO MEASURE AND EVALUATE RADIATION DOSE. THESE INCLUDE THE ION DOSE, MEASURED IN TERMS OF THE R AS EQUAL TO  $2.58 \times 10^{-9}$  COULOMB/KG, AND THE ABSORBED DOSE, MEASURED AS THE RAD, WHICH IS EQUAL TO 100 ERG/G. THESE TWO UNITS ARE RELATED TO EACH OTHER BY A FACTOR THAT VARIES WITH THE TYPE OF MATERIAL IRRADIATED AND THE TYPE OF RADIATION INVOLVED. THE ABSORBED DOSE IS MODIFIED BY THE RELATIVE BIOLOGICAL EFFECT OF THE RADIATION CONCERNED. GENERALLY, THE RELATIVE BIOLOGICAL EFFECT AMOUNTS TO 1 FOR X-RAY, BETA, AND GAMMA RADIATION, TO 10 FOR ALPHA OR PROTON RADIATION, AND TO 20 FOR HEAVY NUCLEI. CALCULATION OF THE GAMMA DOSE FACTOR IS ILLUSTRATED, AND ITS SIGNIFICANCE IN ESTIMATION OF DOSE IS SHOWN. THE CONCEPT OF HALF-VALUE THICKNESS LAYER FOR SEVERAL MATERIALS IS DESCRIBED AND DISCUSSED. IT IS ILLUSTRATED BY EVALUATION OF RESIDUAL ACTIVITY AS A FUNCTION OF HALF-VALUE THICKNESS.

\*DOSE + BETA EMITTER + GAMMA + GERMANY + RADIATION INJURY, TREATMENT OF + RADIOLOGY + X-RAY

15-20738 ALSO IN CATEGORY 14  
DEJAEGERE R  
RADIOBIOLOGICAL EFFECTS OF TRACERS USED IN PLANT PHYSIOLOGY  
UNIVERSITY LIBRE, BRUSSELS  
9 PAGES, 2 FIGURES, 5 TABLES, 21 REFERENCES, ANN. GEMBOUX, 70, PAGES 12-20 (1964) IN FRENCH

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-20738 \*CONTINUED\*

THE USE OF RADIOACTIVE TRACERS IN BIOLOGICAL EXPERIMENTS IS BASED ON THE PREMISE THAT THE TRACERS IN BIOLOGICAL EXPERIMENTS DO NOT INFLUENCE NORMAL PROCESSES IN THE CELL. EVIDENCE IS PRESENTED THAT THIS CONDITION IS NOT ALWAYS REALIZED AND THAT IN SOME INSTANCES RADIATION FROM THE RADIOACTIVE TRACER AFFECTS CELLULAR METABOLISM. POSSIBLE MECHANISMS WHEREBY A STIMULATING EFFECT MAY OCCUR, INCLUDING EFFECTS ON THE AUXIN SYSTEM, ARE DISCUSSED. IT IS CONCLUDED THAT THE BIOLOGICAL EFFECTS OF RADIOELEMENTS USED AS TRACERS ARE NOT ALWAYS NEGLIGIBLE AND THAT IT IS NOT ALWAYS POSSIBLE TO PREDICT WHETHER THEY WILL STIMULATE OR INHIBIT.

\*RADIOBIOLOGY + FRANCE + RADIATION EFFECT + RADIOISOTOPE

15-20740

COOPER G + COOPER JB

RADIATION HAZARDS TO MOTHER AND FETUS

UNIVERSITY OF TENNESSEE, MEMPHIS

11 PAGES, 2 TABLES, 24 REFERENCES, CLIN. OBSTET. GYNECOL., 9, PAGES 11-21 (MARCH 1966)

IN MAN, EVIDENCE INDICATES THAT THE PERIOD FROM THE SECOND TO SIXTH WEEK OF GESTATION IS PROBABLY THE MOST SUSCEPTIBLE TO RADIATION DAMAGE. THIS IS THE PERIOD WHEN PREGNANCY MAY BE UNSUSPECTED. EXPOSURE AT LATE STAGES IN GESTATION MAY CAUSE LESS OBVIOUS CHANGES. DOSES AS LOW AS 25 RADS HAVE PRODUCED MALFORMATIONS IN EXPERIMENTAL ANIMALS IF GIVEN AT CRITICAL PERIODS. THE THRESHOLD LEVELS FOR SOMATIC AND GENETIC EFFECTS TO THE FETUS AND THE MATERNAL GONADS HAVE NOT BEEN ESTABLISHED, BUT THE EFFECTS APPEAR TO BE PROPORTIONAL TO THE RADIATION DOSE. IN CHILDHOOD, CANCER AND LEUKEMIA MAY DEVELOP AFTER VERY LOW LEVELS OF IRRADIATION, PERHAPS AS LOW AS 1 R. THUS, INTRAUTERINE RADIATION EVEN FOR MEDICAL DIAGNOSTIC PURPOSES INVOLVES A HAZARD.

\*RADIOLOGY + RADIOBIOLOGY + UNITED STATES + X-RAY

15-20741

DAVIDANNE S

RADIATION - BENEFITS AND HAZARDS

ST. JOHNS HOSPITAL, TULSA, OKLAHOMA

7 PAGES, 1 FIGURE, 3 REFERENCES, HOSPITAL PROGRESS 47, PAGES 50-6 (SEPT. 1966)

REVIEWS EFFECTS OF IONIZING RADIATIONS AND HAZARDS ASSOCIATED WITH THEIR USE, ESPECIALLY WITH REFERENCE TO THEIR USE IN MEDICAL RADIOLOGY. THE PROBLEM OF DETERMINING WHAT DOSES OF RADIATION CAN BE PERMITTED, WITHOUT BIOLOGICAL DAMAGE RESULTING, IS DISCUSSED AS WELL AS PERMISSIBLE DOSES TO WHICH AN INDIVIDUAL MAY BE EXPOSED WITHOUT SUFFERING APPRECIABLE BODILY INJURY DURING HIS LIFETIME. PRELIMINARY TO AN OUTLINE OF THE POSSIBLE DANGERS TO ANYONE WORKING WITH X-RAYS OR RADIOACTIVE MATERIALS, THE BIOLOGICAL EFFECTS PRODUCED AT VARIOUS DOSE LEVELS ARE CONSIDERED, AND HOW DIAGNOSTIC AND THERAPEUTIC LEVELS OF RADIATION CONTRIBUTE TO THESE. A TABLE GIVES THE APPROXIMATE DOSES OF RADIATION DELIVERED TO THE SKIN DURING VARIOUS DIAGNOSTIC PROCEDURES. GENETIC ASPECTS OF MEDICAL IRRADIATION ARE ALSO EXAMINED.

\*RADIOLOGY + GAMMA + RADIATION IN PERSPECTIVE + RADIATION INJURY, TREATMENT OF + UNITED STATES + X-RAY

15-20742

SCHLUNGBAUM W

TECHNIC AND INDICATION FOR RADIOTHERAPY WITH SEALED BETA IRRADIATORS

STAETISCHE KRANKENHAUS, BERLIN-SPANDAU, GERMANY

8 PAGES, 13 FIGURES, 1 TABLE, ROENTGENPRAXIS 18, PAGES 201-8 (SEPT. 1965) IN GERMAN

DOSE FALL-OFF FOR VARIOUS Y-90 SEALED BETA IRRADIATION SOURCES IS REVIEWED. OTHER SOURCES OF BETA RADIATION ARE DISCUSSED, INCLUDING I-131, AU-198, P-32, AND SR-90--Y-90. THE DETAILS OF TREATMENT FOR THOSE VARIOUS PATHOLOGICAL CONDITIONS ARE PRESENTED, WITH DESCRIPTIONS OF THE APPLICATORS AND METHODS AVAILABLE. DOSE LEVELS AT THE SURFACE OF THE APPLICATORS ARE ILLUSTRATED, AND TISSUE ISODOSE CURVES ARE PLOTTED.

\*RADIOLOGY + BETA EMITTER + DOSE + GERMANY + RADIOISOTOPE + YTTRIUM

15-20743

RADIATION HYGIENE AND PRACTICE IN DENTISTRY

2 PAGES, 2 REFERENCES, JOURNAL OF THE AMERICAN DENTISTRY ASSOCIATION 74, PAGES 1032-3 (APRIL 1967)

THE PROGRAM OF THE AMERICAN DENTAL ASSOCIATION TO PROMOTE RADIATION HYGIENE IS OUTLINED. THIS PROGRAM IS CONCERNED WITH PROTECTION OF THE PATIENT (INCLUDING RECOMMENDATIONS AS TO FREQUENCY OF RADIOGRAPHIC EXAMINATION AND USE OF PROTECTIVE COVERINGS), PROTECTION OF OFFICE PERSONNEL (INCLUDING A DISCUSSION OF SHIELDING, RADIATION BARRIERS, AND MONITORING SERVICES), GUIDELINES FOR MINIMIZING RADIATION EXPOSURE (INCLUDING COLLIMATION, FILTRATION, AND OTHER PERTINENT FACTORS), EXPOSURE-CONTROL FACTORS (INCLUDING TIMERS, CONVERSION TECHNIQS, FILM SPEED, KILOVOLTAGE, AND MILLIAMPERAGE), AND VISUALIZATION FACTORS (INCLUDING DARKROOM PROCEDURES AND ILLUMINATION TECHNIQS).

\*RADIOLOGY + UNITED STATES + X-RAY

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-21136

POBEDINSKII MN + FEOKTISTOV VI + FUNSHTEIN LV  
AUTORADIOGRAPHY OF THE NATURAL RADIOACTIVITY IN NORMAL TISSUES OF MEN AND ANIMALS.  
CENTRAL SCIENTIFIC-RESEARCH INST. OF ROENTGEN-RADIOLOGY, Leningrad  
6 PAGES, ZH. NAUCH. PRIKL. FOTOGR. KINEMATOGR., 11, PAGES 321-326 (SEPT. OCT. 1966) IN RUSSIAN

THE FOLLOWING PRECAUTIONS ARE STRESSED IN MAKING AUTORADIOGRAPHIC DETERMINATIONS - ABSOLUTELY CLEAN PHOTOGRAPHIC MATERIAL, FREEDOM OF THE EMULSION LAYER FROM RADIOACTIVITY, MINIMUM EXPOSURE TIME TO AVOID ACCIDENTAL IRRADIATION. THE WORK SHOULD BE DONE AWAY FROM THE RADIOLOGICAL LABORATORY.

\*RADIOLOGY + BIOLOGICAL CONCENTRATION, ANIMAL + BIOLOGICAL CONCENTRATION, MAN + RADIOGRAPHY + USSR

15-21137

ALSO IN CATEGORY 14

GREEN FL  
USES AND SAFETY ASPECTS OF THE LOW-ENERGY SOURCE YB-169  
VISO CORP., BURLINGTON, MASS.  
5 PAGES, 1 TABLE, 3 FIGURES, 6 REFERENCES, AMERICAN INDUSTRIAL HYGIENE ASSOCIATION JOURNAL, 27, PAGES 444-448 (SEPT. OCT. 1966)

THE RADIOACTIVE SOURCE YTTERBIUM-169 EMITS A 52-KEV CHARACTERISTIC XRAY AND VARIOUS GAMMA RAYS WITH ENERGIES FROM 65 KEV TO 310 KEV. YTTERBIUM SOURCES IN SMALL EXPOSURE UNITS WEIGHING ABOUT 20 POUNDS ARE USEFUL FOR RADIOGRAPHY OF CASTINGS, WELDMENTS, ASSEMBLIES, AND OTHER FORMS OF VARIOUS MATERIALS, SUCH AS ALUMINUM, MAGNESIUM, IRON, PLASTICS, AND WOOD. RADIOGRAPHY WITH YB-169 PRODUCES NO HAZARD FROM ELECTRICAL SHOCK OR EXPLOSION. RADIATION SCATTERED FROM AIR, THE OBJECT, AND SURROUNDING MATERIALS IS LESS WITH YB-169 THAN WITH CONVENTIONAL X-RAY SOURCES, IR-192, OR CO-60. THEREFORE, PORTABLE RADIOGRAPHIC APPLICATIONS CAN BE MADE WITH LESS DIFFICULTY IN PROTECTION OF PERSONNEL.

\*RADIOGRAPHY + GAMMA + SOURCE, RADIATION + X-RAY + YTTERBIUM

15-21138

BARATTA EJ + FERRI ES  
RADIONUCLIDES IN SELECTED HUMAN TISSUES  
PUBLIC HEALTH SERVICE, WINCHESTER, MASS.  
6 PAGES, 8 TABLES, 11 REFERENCES, AMERICAN INDUSTRIAL HYGIENE ASSOCIATION JOURNAL, 27, PAGES 436-442 (SEPT.-OCT. 1966)

THE CONCENTRATIONS OF SP-90, CS-137, AND PO-210 IN VARIOUS HUMAN TISSUES HAVE BEEN MEASURED AT THE NORTHEASTERN RADIOLOGICAL HEALTH LABORATORY SINCE 1965. THE GREATEST CONCENTRATION OF CESIUM-137 WAS FOUND IN THE PSOAS MUSCLE. THE SOFT-TISSUE CONCENTRATION OF STRONTIUM-90 WAS HIGHEST IN PSOAS MUSCLE OF MALES, BUT THIS TISSUE CONTAINED THE LOWEST CONCENTRATION FOR FEMALES. THE HIGHEST CONCENTRATION OF POLONIUM-210 WAS OBSERVED IN THE LIVER. IN GENERAL, HIGHER CONCENTRATIONS OF THIS RADIONUCLIDE WERE OBSERVED IN ORGANS FROM SMOKERS THAN IN THOSE FROM NONSMOKERS. COMPARISON OF THE RELATIVE DISTRIBUTION OF RADIONUCLIDES OBSERVED IN THIS STUDY TO THE VALUES USED IN COMPUTING MAXIMUM PERMISSIBLE CONCENTRATIONS FOR RADIATION WORKERS REVEALED A NUMBER OF DIFFERENCES. ON THIS BASIS IT WOULD APPEAR THAT CONSIDERABLY MORE EFFORT IS REQUIRED ON THE DETERMINATION OF THE BODY DISTRIBUTION OF THE MORE COMMON RADIONUCLIDES BEING INGESTED BY THE POPULATION TODAY.

\*BIOLOGICAL CONCENTRATION, GENERAL + \*BIOLOGICAL CONCENTRATION, MAN + CESIUM + POLONIUM + RADIOBIOLOGY + STRONTIUM

15-21140

GRIFFMAN J  
PROTECTION OF PERSONNEL OPERATING LASERS  
CINCINNATI GENERAL HOSPITAL, CINCINNATI, OHIO  
4 PAGES, 9 REFERENCES, THE AMERICAN JOURNAL OF MEDICAL ELECTRONICS, 2, PAGES 235-238 (OCT.-DEC. 1963)

EFFECTS OF LASER RADIATION ON ANIMAL TISSUES ARE REVIEWED, AND THE FOLLOWING MEASURES FOR PROTECTION OF PERSONNEL OPERATING LASERS ARE RECOMMENDED - (1) THE LASER BEAM SHOULD NOT BE OBSERVED DIRECTLY WHETHER THE SUBJECT WEARS SO-CALLED PROTECTIVE GLASSES OR NOT. THE HEAD SHOULD BE TURNED AWAY WHEN THE LASER IS FIRED, UNLESS THE LASER OPERATION IS COMPLETELY ENCLOSED OR SURROUNDED BY SCREENS. (2) PERSONNEL OPERATING LASERS SHOULD HAVE THEIR EYES CHECKED (FUNDUS EXAMINATIONS) AT INTERVALS BY AN OPHTHALMOLOGIST. (3) ANY LASER OPERATOR WHO HAS ANY AFTERIMAGE IMMEDIATELY AFTER A LASER FIRING SHOULD CONSULT THE EYE DOCTOR AT ONCE TO LOOK FOR RETINAL DAMAGE. (4) IT IS ESSENTIAL TO AVOID CONTACT OF THE SKIN WITH THE LASER BEAM IN ANY TYPE OF FIRING. (5) IN WORK WITH HIGH-ENERGY LASERS, CONTACT OF ANY PORTION OF THE BODY WITH THE DIRECT BEAM SHOULD BE AVOIDED, AND IF CONTACT OCCURS, A PHYSICIAN SHOULD EXAMINE THE SITE FOR IMMEDIATE OR DELAYED DAMAGE. (6) FOR WORK WITH HIGH-ENERGY LASERS, PROTECTIVE CREAMS OR CLOTHING THAT ARE PRESENTLY AVAILABLE CANNOT BE RELIED UPON.

\*RADIATION DAMAGE + LASER + RADIOBIOLOGY

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-21141 ALSO IN CATEGORY 14  
LITTLE JB  
ENVIRONMENTAL HAZARDS - IONIZING RADIATION  
HARVARD SCHOOL OF PUBLIC HEALTH, BOSTON, MASS.  
10 PAGES, 4 TABLES, 35 REFERENCES, NEW ENGLAND JOURNAL OF MEDICINE, 275, PAGES 929-938 (OCT. 27, 1966)

REVIEWS EVIDENCE POINTING TO FACTS THAT SUPPORT THE THEORIES THAT THE MAJOR BIOLOGIC EFFECTS OF IONIZING RADIATION AT LOW DOSES AND LOW DOSE RATES ARE CARCINOGENIC AND THAT THE PRODUCTION OF GENETIC MUTATIONS IN THE GONADS IS PASSED ON TO OFFSPRING. THE BIOLOGICAL EFFECTS OF IONIZING RADIATIONS ON INDIVIDUALS AND POPULATIONS ARE DISCUSSED. CONSIDERATION WAS GIVEN TO THE MANY POSSIBLE SOURCES OF RADIATION THAT CAN BE HAZARDOUS TO MAN.

\*RADIATION DAMAGE + \*RADIOBIOLOGY + RADIATION IN PERSPECTIVE + RADIATION INJURY, TREATMENT OF + RADIOLOGY

15-21160  
OHLSEN H + HERRMANN D  
ON THE DETERMINATION OF THE POPULATION BURDEN FROM NATURAL EXTERNAL RADIATION ON THE TERRITORY OF THE G.D.R.  
STAATLICHE ZENTRALE FUER STRAHLENSCHUTZ, DCR, BERLIN  
7 PAGES, 7 FIGURES, 28 REFERENCES, KERNENERGIE 9, PAGES 390-6 (DECEMBER 1966) IN GERMAN

REPORTS DOSE RATES MEASURED BY A 23-1 IONIZATION CHAMBER IN THE TERRITORY OF THE GDR. MOREOVER, DOSE RATES ARE DETERMINED FROM RESULTS OF RADIOGEOLOGICAL (PARTIALLY AIRBORNE AND CARBORNE) MEASUREMENTS. THE TERRESTRIAL COMPONENT OF THE DOSE RATE IN OPEN AIR IS STUDIED UNDER CHARACTERISTIC CONDITIONS IN THE ENVIRONS OF THE POINTS OF MEASUREMENTS (FOREST, FIELD, ROAD, ETC.) AND IN THE GEOLOGICAL UNDERGROUND STRUCTURE (GRANITE, CRETACEOUS FORMATION, ETC.). A MEAN TERRESTRIAL DOSE RATE OF 90 MR/YR FOLLOWS FROM A METHOD OF AVERAGING THE RESULTS WITH REGARD TO THE VARIOUS FRACTIONS OF THE POPULATIONS AS WEIGHTING FACTORS. THE ATTEMPT OF ESTIMATING THE MEAN GONAD DOSE FROM EXTERNAL RADIATION OF TERRESTRIAL AND COSMIC SOURCES GIVES AN AMOUNT OF 109 MR/YR FOR THE WHOLE POPULATION. THIS RESULT IS SATISFACTORY IN ACCORDANCE WITH INTERNATIONAL RESERVATION AS TO FURTHER DOSE RATE MEASUREMENTS ON THE INSIDE OF BUILDINGS.

\*DOSE + \*ENVIRONMENTAL CONDITION + DOSE CALCULATION, EXTERNAL + GERMANY + RADIOISOTOPE

15-21161  
SNYDER WS  
STANDARD MAN IN RELATION TO INTERNAL RADIATION DOSE CONCEPTS  
OAK RIDGE NATIONAL LABORATORY  
7 PAGES, 6 FIGURES, 12 REFERENCES, AMERICAN INDUSTRIAL HYGIENE ASSOCIATION JOURNAL 27, PAGES 539-45 (NOVEMBER-DECEMBER)

THE EXTENSION OF THE STANDARD MAN CONCEPT, INSOFAR AS RADIATION PROTECTION IS CONCERNED, IS CONSIDERED TO PROVIDE A BASIS FOR ESTIMATION OF DOSE WHEN EXPOSURE OF A POPULATION IS IN QUESTION. DISCUSSION IS ORGANIZED AROUND THREE MAIN CONSIDERATIONS - PHYSICAL AND CHEMICAL DATA CONCERNING THE PRINCIPAL ORGANS AND TISSUES, METABOLIC DATA CONCERNING BODILY INTAKE AND EXCRETIONS, AND RANGES OF INDIVIDUAL VARIATION THAT ARE NOT UNCOMMON AND MEANS OF ALLOWING FOR THESE DIFFERENCES.

\*DOSE + DOSE CALCULATION, EXTERNAL + DOSE CALCULATION, INTERNAL + ORNL

15-21162 ALSO IN CATEGORY 14  
SAMACHSON J + SCHECK J + SPENCER H  
RADIOCALCIUM ABSORPTION AT DIFFERENT TIMES OF DAY  
VETERANS ADMINISTRATION HOSPITAL, HINES, ILL.  
3 PAGES, 1 TABLE, 8 REFERENCES, AMERICAN JOURNAL CLIN. NUTR. 18, PAGES 449-51 (JUNE 1966)

TO DETERMINE WHETHER THE ABSORPTION OF CALCIUM DIFFERED AT DIFFERENT TIMES OF THE DAY, TRACER DOSES OF CA-47 WERE ADMINISTERED WITH THE MORNING AND EVENING MEAL, IN SEPARATE STUDIES, TO PATIENTS WHO WERE ON A CONSTANT DIETARY INTAKE IN THE METABOLIC WARD. THE TRACER DOSE WAS GIVEN TO TWO PATIENTS ON A LOW CALCIUM INTAKE, TWO ON A MEDIUM CALCIUM INTAKE, AND TWO ON A HIGH INTAKE. THE VARIABILITY OF ABSORPTION FROM MORNING TO EVENING DOSES WITH ANY LEVEL OF CALCIUM INTAKE WAS ABOUT EQUAL TO THE VARIABILITY OF REPEATED MORNING DOSES INGESTED ON DIFFERENT DAYS, AND THE ABSORPTION OF CALCIUM WAS NOT CONSISTENTLY GREATER AT EITHER TIME OF DAY. IT THEREFORE APPEARED THAT THE INGESTION OF RADIOCALCIUM WITH A SINGLE MEAL REFLECTED WITH REASONABLE ACCURACY THE ABSORPTION OF CALCIUM DURING THE DAY.

BIOLOGICAL CONCENTRATION, MAN + BIOMEDICAL + CALCIUM + DIETARY HABIT + RADIOBIOLOGY

15-21192 ALSO IN CATEGORY 14  
DUNSTER HJ  
THE CONCEPT OF DERIVED WORKING LIMITS FOR SURFACE CONTAMINATION  
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, HARWELL  
9 PAGES, 1 FIGURE, 2 TABLES, 4 REFERENCES, PAGES 139 TO 47 OF SURFACE CONTAMINATION, PERGAMON PRESS, NEW

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-21192 \*CONTINUED\*  
YORK, PROCEEDINGS OF A SYMPOSIUM HELD AT GATLINBURG, TENN., JUNE 1964

AN OPERATIONAL HEALTH-PHYSICS MEASUREMENT MUST EITHER PROVIDE A BASIS FOR DECISIONS ON CONTROL MEASURES OR MUST CONTRIBUTE TO THE INTERPRETATION OF OTHER DATA TO PROVIDE A BASIS FOR SUCH DECISIONS. WITH THE AID OF A NUMBER OF SIMPLIFYING ASSUMPTIONS, IT IS POSSIBLE TO CALCULATE DERIVED WORKING LIMITS OF SKIN CONTAMINATION FROM THE ICRP RECOMMENDATIONS.

AVAILABILITY - PERGAMON PRESS, 44-01 21ST ST., LONG ISLAND CITY, NEW YORK 11101

\*CONTAMINATION + ALPHA EMITTER + BETA EMITTER + HAPWELL + SURFACE CONTAMINATION + UNITED KINGDOM

15-21193 ALSO IN CATEGORY 14

BLATZ H + EISENBUD M

THE ESTABLISHMENT OF LIMITS FOR RADIOACTIVE SURFACE CONTAMINATION  
NEW YORK UNIVERSITY MEDICAL CENTER

5 PAGES, 3 FIGURES, 1 TABLE, 2 REFERENCES, PAGES 163 TO 167 OF SURFACE CONTAMINATION, PERGAMON PRESS, NEW YORK, PROCEEDINGS OF A SYMPOSIUM HELD AT GATLINBURG, TENN., JUNE 1964

THERE DOES NOT SEEM TO HAVE BEEN ESTABLISHED ANY RELIABLE RELATION BETWEEN SURFACE CONTAMINATION AND HEALTH HAZARD. THE RANGE OF LIMITS BEING USED TODAY FOR ALPHA-EMITTING MATERIALS APPEARS TO BE OF ABOUT THE RIGHT ORDER OF MAGNITUDE AS A CONVENIENT MEANS OF KEEPING SURFACE CONTAMINATION WITHIN REASONABLE LIMITS. IF THE MAINTENANCE OF THESE LIMITS IMPOSES AN UNREASONABLE COST OR INCONVENIENCE, THE LIMITS MAY BE EXCEEDED IF TECHNICAL CONSIDERATIONS PERMIT, IN WHICH CASE A PROGRAM OF AIR SAMPLING AND BIOASSAY SHOULD BE INSTITUTED.

AVAILABILITY - PERGAMON PRESS, 44-01 21ST. ST., LONG ISLAND CITY, NEW YORK 11101

\*CONTAMINATION + ORNL + RADIATION IN PERSPECTIVE + RADIUM + SURFACE CONTAMINATION

15-21194 ALSO IN CATEGORIES 14 AND 13

GAIBERMAN H + BOOTMANN WR + BRESLIN AJ

STUDIES OF THE SIGNIFICANT OF SURFACE CONTAMINATION  
USAEC, HEALTH AND SAFETY LAB

10 PAGES, 3 FIGURES, 6 TABLES, 5 REFERENCES, PAGES 169 TO 178 OF SURFACE CONTAMINATION, PERGAMON PRESS, NEW YORK, PROCEEDINGS OF A SYMPOSIUM HELD AT GATLINBURG, TENN., JUNE 1964

STUDIES ARE REPORTED ON SURFACE AND AIRBORNE CONTAMINATION IN PLUTONIUM- AND URANIUM-PROCESSING FACILITIES AND IN A BERYLLIUM REFINERY. THE DATA INDICATE THAT AIR-SURFACE CONTAMINATION RELATIONS DERIVED AT ONE FACILITY WILL NOT BE VALID AT ANOTHER EXCEPT BY COINCIDENCE. FOR URANIUM FACILITIES AND THE BERYLLIUM FACILITY, LIMITS OF SURFACE CONTAMINATION WOULD APPEAR TO BE MEANINGLESS BECAUSE SOURCES OF CONTAMINATION OTHER THAN SURFACE CONTAMINATION ARE PREDOMINANT IN TERMS OF CONCENTRATION IN AIR. FOR MATERIALS OF GREATER SPECIFIC ACTIVITY THAN URANIUM, SUCH AS PLUTONIUM, SURFACE CONTAMINATION CAN BE THE SOURCE OF EXCESSIVE DUST CONCENTRATION IN AIR.

AVAILABILITY - PERGAMON PRESS, 44-01 21ST. ST., LONG ISLAND CITY, NEW YORK 11101

\*CONTAMINATION + AEROSOL + BERYLLIUM + PLUTONIUM + SURFACE CONTAMINATION + URANIUM

15-21196 ALSO IN CATEGORY 14

DUMMER JE

EVALUATION OF SR-90 + Y-90 SURFACE CONTAMINATION USING RADIATION SURVEY INSTRUMENTS  
LOS ALAMOS SCIENTIFIC LABORATORY, NEW MEXICO

11 PAGES, 7 FIGURES, 5 TABLES, 25 REFERENCES, PAGES 185 TO 195 OF SURFACE CONTAMINATION, PERGAMON PRESS, NEW YORK, PROCEEDINGS OF A SYMPOSIUM HELD AT GATLINBURG, TENN., JUNE 1964

THIS WORK WAS DESIGNED TO PROVIDE (1) A RELATIONSHIP BETWEEN GAMMA-RADIATION SURVEY-METER READINGS AND THE QUANTITY OF BETA EMITTER ON VARIOUS SURFACES. AND (2) A CORRELATION BETWEEN TRUE SURFACE DOSE RATE AND THE INDICATED CONTACT DOSE RATE AS MEASURED WITH SURVEY-TYPE INSTRUMENTS FOR A BETA-EMITTING ISOTOPE. AN INDICATED 0.05 MR/HR WOULD BE MEASURED FROM A 0.0006-MICROCURIE POINT SOURCE OR FROM AN EXTENDED SOURCE OF  $1.8 \times 10^{-5}$  (5TH) MICROCURIE PER SQ. CM. THE SURFACE DOSE RATE FROM SUCH A POINT SOURCE WOULD BE 1.2 MRAD PER HR, AND FROM THE EXTENDED SOURCE, 0.28 MRAD/HR.

AVAILABILITY - PERGAMON PRESS, 44-01 21ST ST., LONG ISLAND CITY, NEW YORK 11101

\*CONTAMINATION + \*DOSE CALCULATION, EXTERNAL + \*SURVEY, RADIATION, GENERAL + STRONTIUM + SURFACE CONTAMINATION + SURVEY, RADIATION, ENVIRONMENTAL + YTTRIUM

15-21202 ALSO IN CATEGORY 14

GRAHAM ED + STODDART PG + SEVERN FW

PLUTONIUM MONITORING TECHNIQUES FOR ZPR-III  
ARGONNE NATIONAL LABORATORY, IDAHO DIVISION

6 PAGES, 3 REFERENCES, PAGES 293 TO 298 SURFACE CONTAMINATION, PERGAMON PRESS, NEW YORK, PROCEEDINGS OF A SYMPOSIUM HELD IN GATLINBURG, TENN., JUNE 1964



CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-21202 \*CONTINUED\*  
DESCRIBES TECHNIQUES AND PROCEDURES FOR MONITORING AND CONTAMINATION CONTROL FOR THE ZPR III (PLUTONIUM FUEL LOADING).

AVAILABILITY - PERGAMON PRESS, 44-01 21ST ST., LONG ISLAND CITY, NEW YORK, 11101

\*CONTAMINATION + \*MONITORING SYSTEM, RADIATION + CRITICAL ASSEMBLY FACILITY + PLUTONIUM + SURFACE CONTAMINATION + ZPR 3 (CAF)

15-21203 ALSO IN CATEGORY 14  
SAXBY WN + HOLE JA  
PRACTICAL ASPECTS OF SURFACE CONTAMINATION CONTROL AT A.W.R.E.  
UNITED KINGDOM ATOMIC ENERGY AUTHORITY  
9 PAGES, 1 TABLE, 1 REFERENCE, PAGES 299 TO 307 OF SURFACE CONTAMINATION, PERGAMON PRESS, NEW YORK, PROCEEDINGS OF A SYMPOSIUM HELD IN GATLINBURG, TENN., JUNE 1964

TWELVE YEARS OF OPERATING EXPERIENCE AT THE AWRE HAS NOT RESULTED IN ANY CONTINUING SIGNIFICANT SURFACE CONTAMINATION PROBLEM IN WORKING AREAS EITHER FOR RADIOACTIVE MATERIALS OR BERYLLIUM. THIS SATISFACTORY STATE OF AFFAIRS ARISES PARTLY FROM INSISTENCE ON A HIGH STANDARD OF CONTAINMENT, AND THE CONTROL OF ACCESS TO AREAS IN WHICH THE MATERIALS ARE WORKED. OTHER REASONS CAN BE ASCRIBED TO THE STANDARD OF TRAINING AND SUPERVISION AMONGST OPERATIONAL STAFF, TO THE CAREFUL PLANNING OF EQUIPMENT AND PROCESSES IN CONSULTATION WITH THE SAFETY SERVICES, AND TO THE PRESENCE OF HEALTH PHYSICS SURVEY STAFF PERMANENTLY WORKING IN THE HANDLING FACILITIES. THERE IS NO DIFFICULTY IN WORKING WELL WITHIN THE SURFACE CONTAMINATION LIMITS SET BY THE UKAEA, AND IT IS CONSIDERED THAT THESE PROVIDE REASONABLE GUIDES. INSTRUMENTS AND TECHNIQUES ARE AVAILABLE FOR ASSESSING SURFACE CONTAMINATION AT WELL BELOW THESE LIMITS.

AVAILABILITY - PERGAMON PRESS, 44-01 21ST ST., LONG ISLAND CITY, NEW YORK 11101

\*CONTAMINATION + BERYLLIUM + PLUTONIUM + SURFACE CONTAMINATION + THORIUM + URANIUM

15-21204 ALSO IN CATEGORY 14  
BURTON LK + COLE JS  
ENVIRONMENTAL RADIOACTIVITY AND BODY BURDEN  
CENTRAL ELECTRICITY GENERATING BOARD, BERKELEY  
8 PAGES, 9 FIGURES, 8 REFERENCES, PAGES 309 TO 316 OF SURFACE CONTAMINATION, PERGAMON PRESS, NEW YORK, PROCEEDINGS OF A SYMPOSIUM IN GATLINBURG, TENN., JUNE 1964

DESCRIBES THE PROGRAM AND EQUIPMENT TO BE USED AT CEGB POWER STATIONS FOR MEASURING ENVIRONMENTAL CONTAMINATION AND BODY BURDENS.

AVAILABILITY - PERGAMON PRESS, 44-01 21ST ST., LONG ISLAND CITY, NEW YORK 11101

\*CONTAMINATION + \*DOSE MEASUREMENT, INTERNAL + AIR + ALPHA EMITTER + ANALYTICAL TECHNIQUE, URINE + BIOLOGICAL CONCENTRATION, MAN + COUNTER, WHOLE BODY + PLUTONIUM + SAMPLING + UNITED KINGDOM + URANIUM

15-21224 ALSO IN CATEGORY 16  
TRUNDLE AS + STORV EJ  
AERIAL RADIOLOGICAL MEASURING SYSTEM. PART IV. EQUIPMENT AND PROCEDURES THROUGH FISCAL YEAR 1966  
EDGERTON, GERMESHAUSEN AND GRIER, INC., SANTA BARBARA, CALIF.  
CEX-59.4(P.T.4) + FGG-1123-2023 +. 57 PAGES, FIGURES, TABLES, 11 REFERENCES, MARCH 1966

DESCRIBES THE AERIAL RADIOLOGICAL MEASURING SYSTEM (ARMS-II) OPERATED BY EG&G, INC., FOR THE DIVISION OF BIOLOGY AND MEDICINE, USAEC. DESIGNED TO MEASURE RADIOACTIVITY OVER LARGE AREAS, THE ARMS-II SYSTEM CONSISTS OF SODIUM IODIDE SCINTILLATION DETECTORS, RADIATION- AND POSITIONING-MEASURING INSTRUMENTS, AND DATA-READOUT INSTRUMENTS. THE METHOD OF OPERATION AND DATA INTERPRETATION ARE DISCUSSED AND EVALUATED, AND RECOMMENDATIONS ARE MADE FOR IMPROVING THE SYSTEM.

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

\*AIRCRAFT + \*INSTRUMENTATION, RADIATION MONITORING + \*MONITOR, RADIATION, BACKGROUND + MONITOR, RADIATION, ENVIRONMENTAL + MONITOR, RADIATION, TELEMETRY + SURVEY, RADIATION, AERIAL

15-21253 ALSO IN CATEGORY 14  
BREUER F  
DOSE TO THE THYROID FROM INTAKE OF TE-132. INGESTION OR INHALATION OF TRANSPORTABLE COMPOUNDS  
COMITATO NAZIONALE PER L ENERGIA NUCLEARE, ROME, ITALY  
RT/PROT-(66)27 +. 11 PAGES, 3 TABLES, 9 REFERENCES, 1966

THE HIGHEST RISK TO THE POPULATION AS THE RESULT OF AN ACCIDENT TO A REACTOR WOULD BE THE INGESTION AND INHALATION OF RADIOIODINE. ONE SOURCE OF IODINE-132 WOULD BE THE DECAY OF TELLURIUM-132. THIS REPORT PRESENTS A CALCULATION OF DOSE TO THE ADULT THYROID DUE TO INHALATION AND TO INGESTION.

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

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-21253 \*CONTINUED\*  
\*RADIOBIOLOGY + \*TELLURIUM + FALLOUT + INGESTION + INHALATION + IODINE + ITALY + RADIATION DAMAGE

15-21254  
VAN MIDDLESWORTH L  
STUDIES IN IODINE METABOLISM. EIGHTEEN YEAR PROGRESS SUMMARY, 1948-1967  
UNIVERSITY OF TENNESSEE, MEMPHIS  
ORO-1643-083 +. 18 PAGES, JULY 31, 1967

SUMMARIZES THE RESULTS OF 20 YEARS OF STUDY OF THE METABOLISM OF IODINE. THE PROGRAM WAS INITIATED TO STUDY THE CAUSES AND PREVENTION OF GOITER, ALONG WITH IODINE METABOLISM. OTHER INFORMATION DEVELOPED INCLUDED MONITORING OF FALLOUT THROUGH ANIMAL THYROIDS, DETECTION OF THE PRESENCE OF RADIUM IN SOME ANIMAL THYROIDS, AND THE NEED FOR ADDING IODINE TO BABY FOOD.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA., \$2.00 COPY, \$0.65 MICROFICHE

\*BIOMEDICAL + \*RADIOBIOLOGY + BIOLOGICAL CONCENTRATION, ANIMAL + BIOLOGICAL CONCENTRATION, FOOD + BIOLOGICAL CONCENTRATION, MAN + FALLOUT + IODINE

15-21256 ALSO IN CATEGORY 14

WILLARD OH  
INHALATION AND RETENTION OF PU-238 MICROSPHERES IN BEAGLE DOGS  
BATTELLE-NORTHWEST, RICHLAND, WASHINGTON  
BNWL-SA-1105 + CONF-670610-4 +. 10 PAGES, 4 FIGURES, 2 TABLES, JULY 14, 1967, FROM 12TH ANNUAL MEETING OF THE HEALTH PHYSICS SOCIETY, WASHINGTON, D. C.

IN THE FIRST EXPERIMENT, 22 DOGS WERE EXPOSED TO AIR IN WHICH PLUTONIUM-239 DIOXIDE PARTICLES (50 MICRONS IN DIAM) WERE DISPERSED. IN THE SECOND EXPERIMENT, SINGLE OR SEVERAL 50-, 120-, OR 150-MICRON PARTICLES WERE PLACED IN THE LUNGS OF 29 DOGS BY INTUBATION WHILE ANESTHETIZED. WHOLE-BODY LONGITUDINAL SCANNING WAS USED TO FOLLOW THE COURSE OF THE PARTICLES IN THE DOGS. INHALED PLUTONIUM PARTICLES WERE CLEARED BY ALL DOGS BY 16 DAYS AFTER EXPOSURE. PARTICLES PLACED IN LUNG BY INTUBATION WERE CLEARED MORE SLOWLY, BUT ONLY THREE DOGS RETAINED PARTICLES PAST SIX MONTHS. NO BIOLOGICAL EFFECTS HAVE BEEN OBSERVED EXCEPT FOR A POSSIBLE LYMPHOPENIA IN ONE DOG, WHICH RETAINED A 300-MICRON PARTICLE FOR OVER A YEAR.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA., \$2.00 COPY, \$0.65 MICROFICHE

\*RADIOBIOLOGY + AEROSOL + AIRBORNE RELEASE + BATTELLE NORTHWEST + INHALATION + PARTICLE SIZE + PARTICLE, RADIOACTIVE + PLUTONIUM + RADIATION DAMAGE

15-21258  
DUNSTER HJ  
THE APPLICATION AND INTERPRETATION OF ICRP RECOMMENDATIONS IN THE UNITED KINGDOM ATOMIC ENERGY AUTHORITY (JUNE 1967)  
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, HARWELL  
AHSB(RP)R-78 +. 20 PAGES, 1 FIGURE, 7 TABLES, 17 REFERENCES, JUNE 1967

THE CURRENT RECOMMENDATIONS OF THE INTERNATIONAL COMMISSION ON RADIOLOGICAL PROTECTION WERE ENDORSED FOR USE IN THE UNITED KINGDOM BY THE MEDICAL RESEARCH COUNCIL AND ADOPTED BY THE UNITED KINGDOM ATOMIC ENERGY AUTHORITY. THIS REPORT SUMMARIZES THE PRINCIPAL RECOMMENDATIONS AND GIVES GUIDANCE ON HOW THEY SHOULD BE INTERPRETED AND, WHERE NECESSARY, EXTENDED FOR USE IN THE AUTHORITY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA., \$2.00 COPY, \$0.65 MICROFICHE

\*RADIATION SAFETY AND CONTROL + ICRP + RADIATION PROTECTION, ORGANIZATION + UNITED KINGDOM

15-21259 ALSO IN CATEGORY 14

ATTILLA H  
THE EFFECT OF NUCLEAR POWER PLANTS ON THEIR ENVIRONMENT  
ORNL-TR-1773 +. 17 PAGES, 1 FIGURE, 4 TABLES, TRANSLATED FROM ENERGIA ES ATOMTECHNIKA 20, PAGES 75-91 (1967)

A NUCLEAR POWER PLANT IS CONSIDERED AS A PLANT PRODUCING RADIOACTIVE WASTE. SEVERAL OPERATIONAL EXPERIENCES GAINED IN CONNECTION WITH THE DISPOSAL OF LIQUID RADIOACTIVE WASTES ARE PRESENTED. THE FORMATION AND COMPOSITION OF GASEOUS RADIOACTIVE WASTES ARE DISCUSSED. THE HANDLING OF RADIOACTIVE DUST AND GASES IS CONSIDERED. THE DISCHARGING INTO THE ATMOSPHERE OF RADIOACTIVE AIR AND THE FACTORS INFLUENCING THE MOVEMENT OF CONTAMINATION ARE DISCUSSED. THE RESULTING CONCENTRATION IS CALCULATED. THE EVALUATION OF THE PLANT LOCATION IN TERMS OF SAFETY IS DESCRIBED. CONSIDERATIONS RELATED TO DETERMINING THE SIZE OF THE EXCLUSION ZONES TO BE USED AT THE POWER PLANT ARE PRESENTED.

AVAILABILITY -- CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA 22151, \$2.00 COPY, \$0.65 MICRONEGATIVE

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-21259 \*CONTINUED\*

\*WASTE DISPOSAL, GENERAL + \*WASTE MANAGEMENT + \*WASTE STORAGE + HUNGARY + WASTE DISPOSAL, GAS +  
WASTE DISPOSAL, LIQUID + WASTE DISPOSAL, SOLID

15-21260 ALSO IN CATEGORY 14  
PUERTO RICO NUCLEAR CENTER ANNUAL REPORT 1966  
PUERTO RICO UNIVERSITY  
PRNC-102 +. 249 PAGES, FIGURES, TABLES, REFERENCES, SEPTEMBER 1967

ACTIVITIES ARE IN THE FOLLOWING CATEGORIES - EDUCATION AND TRAINING (INCLUDING NUCLEAR SCIENCE AND TECHNOLOGY, NUCLEAR ENGINEERING, RADIOISOTOPE APPLICATIONS AND OTHER), BIOLOGICAL AND MEDICAL RESEARCH PROGRAMS (INCLUDING MARINE BIOLOGY, TERRESTRIAL ECOLOGY, RADIATION CHEMISTRY, SCHISTOSOMA MANSONI PROJECT, AND SUGARCANE BORER PROJECT), PHYSICAL RESEARCH PROGRAMS (NEUTRON DIFFRACTION, SOLID STATE PHYSICS, AND HOT-ATOM CHEMISTRY), AND RADIATION PRESERVATION OF TROPICAL FOODSTUFFS.

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

\*RADIATION DAMAGE + \*RADIOBIOLOGY + BIOMEDICAL + ECOLOGICAL CONSIDERATION + HEALTH PHYSICS TRAINING + PUERTO RICO + SOLID STATE DEVICE

15-21261 ALSO IN CATEGORY 16  
RADIOLOGICAL PHYSICS DIVISION ANNUAL REPORT, JULY 1965 TO JUNE 1966  
ARGONNE NATIONAL LAB., ILL.  
ANL-7220 +. 124 PAGES, 92 FIGURES, 29 TABLES, REFERENCES, 1966

PROGRAMS COVERED IN THIS REPORT INCLUDE - THOROTRAST DETECTION CHARACTERISTICS OF NAI CRYSTALS OF VARIOUS SIZES, THERMOLUMINESCENT DOSIMETRY OF INTERNAL BETA RAY EMITTERS, UV LASER EXCITATION FOR ULTRASENSITIVE PHOTOLUMINESCENT DOSIMETRY, THERMOLUMINESCENCE IN BONE, GEOMETRICAL AND PHYSICAL PARAMETERS IN WHOLE-BODY GAMMA-RAY SPECTROMETRY MEASUREMENTS, PROGRESS IN LOW-RADIOACTIVITY PHOTOMULTIPLIER TUBES, A STOCHASTIC THEORY OF RECRYSTALLIZATION AND POWER-FUNCTION RETENTION, THE PROLIFERATIVE CAPACITY OF STEM CELLS FROM THE MARROW OF ISOTOPICALLY LABELED BONE (PRELIMINARY EXPERIMENTS), RADIUM-226 AND THE NATURAL AIRBORNE NUCLIDES LEAD-210 AND POLONIUM-210 IN ARCTIC BIOTA, RADON IN COAL MINES, ATMOSPHERIC RADON MONITOR, COMPUTER ANALYSIS OF BONE AUTORADIOGRAPHS, EXCHANGEABLE BONE CALCIUM, ANALYSIS OF SMOKE-PLUME PHOTOGRAPHS, CALCULATION OF EFFECTIVE STACK HEIGHT, METEOROLOGICAL INSTRUMENTS FOR USE IN THE ATOMIC ENERGY INDUSTRY, DIFFUSION OF A SCALE-MODEL SMOKE PLUME, THERMOLUMINESCENT DOSIMETRY, AND ENVIRONMENTAL RADIATION STUDIES.

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

\*BIOLOGICAL CONCENTRATION, GENERAL + \*DOSIMETRY, GENERAL + \*INSTRUMENTATION, METEOROLOGICAL + \*METEOROLOGY + AIRBORNE RELEASE + ANL + BIOMEDICAL + CALCIUM + DIFFUSION + DOSIMETRY, THERMOLUMINESCENCE + LEAD + POLONIUM + RADIOBIOLOGY + RADIOGRAPHY + RADIUM + SPECTROMETRY, GAMMA + STACK

15-21262  
CACHO C + GALVAO JP + RAPOSO JS  
RADIATION PROTECTION IN PORTUGAL  
JUNTA DE ENERGIA NUCLEAR, SACAVERM (PORTUGAL). LABORATORIO DE FISICA E ENGENHARIA NUCLEARES  
LFEN-55 + CONF-65098A-2 +. 14 PAGES, 1966, IN PORTUGUESE, PRESENTED AT 10TH BRAZILIAN AND 1ST PORTUGUESE CONGRESS ON RADIOLOGY, RIO DE JANEIRO, BRAZIL

REVIEWS THE DEVELOPMENT IN PORTUGAL OF RADIATION PROTECTION STANDARDS AND THE ORGANIZATION OF OFFICIAL BODIES TO SUPERVISE RADIATION PROTECTION STANDARDS.

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

PORTUGAL + RADIATION PROTECTION, ORGANIZATION + RADIATION SAFETY AND CONTROL

15-21263  
SUROVIEC HJ  
MICROWAVE OVEN RADIATION HAZARDS IN FOOD-VENDING ESTABLISHMENTS  
PENNSYLVANIA DEPT. OF HEALTH, MEADVILLE  
4 PAGES, 2 TABLES, 9 REFERENCES, ARCH. ENVIRON. HEALTH, 14, PAGE 465-472, (MARCH 1967)

PREVENTION OF RADIATION LEAKAGE FROM MICROWAVE OVENS IS DESCRIBED. OF THE UNITS MONITORED, 71% RELEASED RADIATION IN EXCESS OF 1 MILLIWATT/SQ.CM, AND 16% RELEASED RADIATION LEVELS OF 10 MILLIWATTS/SG. CM OR ABOVE. THE RADIATION INTENSITIES RELEASED APPEARED TO DEPEND ON THE DESIGN OF THE DOORS, WITH SLIDING DOORS PROVIDING THE BEST SEAL. MEASURES TO MINIMIZE THE POSSIBILITY OF OVEREXPOSURE INCLUDE - (1) THE CONSTRUCTION OF OVENS SHOULD UTILIZE DESIGN FEATURES WHICH PREVENT THE RELEASE OF MICROWAVE RADIATION, (2) INTERLOCK SYSTEMS SHOULD BE DESIGNED TO PREVENT CIRCUMVENTION OF THEIR USE, (3) UNITS SHOULD BE ADEQUATELY LABELED TO ALERT OWNERS AND OPERATORS OF THE RISK OF OPERATING UNITS IN A MANNER OTHER THAN THE PRESCRIBED PROCEDURE, (4) OWNERS, OPERATORS, AND SERVICE PERSONNEL SHOULD BE MADE AWARE OF THE HAZARD OF EXPOSURE TO MICROWAVE RADIATION, (5) UNITS SHOULD BE MONITORED PERIODICALLY TO

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-21263 \*CONTINUED\*  
DETECT LEAKAGE OF FAULTY OPERATIONAL DEVICES.

\*RADIATION DAMAGE + BIOMEDICAL + RADIOBIOLOGY

15-21265 ALSO IN CATEGORY 14  
PICKARD RC + FRY RM  
ADMINISTRATION OF RADIOLOGICAL HEALTH PROGRAMS WITHIN THE STATE GOVERNMENT  
KENTUCKY HEALTH DEPT., FRANKFORT  
5 PAGES, AMER. J. PUBLIC HEALTH, 57, PAGE 290-294, (FEB. 1967)

ADMINISTRATIVE ASPECTS OF A RADIATION SURVEILLANCE DEPARTMENT ARE CONSIDERED, WITH EMPHASIS ON STAFF, EQUIPMENT, BUDGET, METHODS, LEGISLATION AND REGULATIONS, GOALS, AND REPORTS. A MULTIDISCIPLINE PROGRAM IS NECESSARY BECAUSE OF THE COMPLEX INTERRELATIONS BETWEEN RADIOLOGICAL HEALTH, MEDICAL AND DENTAL PRACTICE, ENGINEERING, TRANSPORTATION, INDUSTRY, LABOR, AGRICULTURE, CIVIL DEFENSE, SPACE EXPLORATION, AND OTHER REGULATORY ORGANIZATIONS. FACILITIES REQUIRED FOR A RADIOLOGICAL HEALTH PROGRAM AND THE PROCUREMENT OF RADIATION MONITORING AND MEASURING EQUIPMENT ARE DISCUSSED. AN IMPORTANT POINT IN THE SELECTION OF INSTRUMENTATION IS THE EASE OF MAINTENANCE OR THE AVAILABILITY OF QUALIFIED PERSONNEL TO ENSURE ACCURATELY FUNCTIONING EQUIPMENT AT ALL TIMES. IT IS IMPORTANT THAT STATE STATUTES BE SOUNDLY ESTABLISHED TO DEVELOP A PROGRAM UNDER PROPER LEGISLATION.

\*RADIATION PROTECTION, ORGANIZATION + \*RADIATION SAFETY AND CONTROL + ADMINISTRATIVE CONTROL + RADIOLOGICAL ASSISTANCE + REGULATION, STATE

15-21267  
FRENCH RL + TOMPKINS KW + GARRETT CW  
CALCULATED GAMMA-RAY DOSE DISTRIBUTIONS IN A PHANTOM EXPOSED TO FALLOUT AND SIMULATED FALLOUT  
RADIATION RESEARCH ASSOCIATES, INC., FORT WORTH, TEX.  
RRA-T71 +. 69 PAGES, FIGURES, TABLES, REFERENCES, FEBRUARY 1967

GAMMA-RAY DEPTH-DOSE DISTRIBUTIONS IN A PHANTOM EXPOSED TO FALLOUT AND TO SIMULATED FALLOUT WERE CALCULATED BY THE MONTE CARLO METHOD. THE PHANTOM CONSISTED OF A TISSUE EQUIVALENT VERTICAL RIGHT CYLINDER 60 CM HIGH AND 30 CM IN DIAMETER. THE CENTER OF THE PHANTOM WAS 3 FT 8 IN. (111.8 CM) ABOVE A SMOOTH GROUND SURFACE UNIFORMLY CONTAMINATED WITH U-235 FISSION PRODUCTS. THE ENERGY AND ANGLE DISTRIBUTION OF THE GAMMA RAYS INCIDENT UPON THE PHANTOM WERE TAKEN FROM PREVIOUS MONTE CARLO CALCULATIONS. THE DEPTH-DOSE DISTRIBUTIONS WERE FOUND TO BE RELATIVELY INSENSITIVE TO FALLOUT AGE OVER THE PERIOD INVESTIGATED (1 HOUR TO 9 DAYS). THE DOSE RATE AT THE CENTER OF THE PHANTOM IS APPROXIMATELY 65% OF THE FREE-FIELD DOSE RATE, WHILE THAT AT THE LATERAL SURFACE IS ABOUT 80%. EXCEPT NEAR THE EXTREMITIES, THE DOSE RATE ALONG THE VERTICAL AXIS OF THE PHANTOM VARIES AT APPROXIMATELY THE SAME RATE WITH HEIGHT ABOVE GROUND AS DOES THE FREE-FIELD DOSE RATE. NEARLY HALF THE DOSE RATE AT THE CENTER OF THE PHANTOM IS FROM PHOTONS THAT HAVE HAD PREVIOUS COLLISIONS IN THE PHANTOM.

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

\*DOSE CALCULATION, EXTERNAL + \*FALLOUT + COMPUTER PROGRAM + COMPUTER, DIGITAL + FISSION PRODUCT ACTIVITY, GROSS + MONTE CARLO

15-21268  
DROULERS Y + MAS P + SCIERS P  
DEVICE FOR DETECTING AND/OR MEASURING THE INTENSITY OF MIXED RADIATION  
COMMISSARIAT A L'ENERGIE ATOMIQUE, FRANCE  
BRITISH PATENT 1,054,796 +. 4 PAGES, 1 FIGURE, NOV. 1, 1967, PATENT (BRITISH)

A DEVICE FOR MEASURING THE INTENSITY OF MIXED RADIATION AND WHICH MAY ALSO BE USED TO INDICATE THE TYPE OF RADIATION IN A REFLECTOR OR MODERATOR FLUID, SUCH AS LIGHT OR HEAVY WATER OR OTHER ORGANIC LIQUIDS OF A NUCLEAR REACTOR IS DESCRIBED. THE INSTRUMENT CONSISTS OF A STAINLESS-STEEL WATERTIGHT CASING, A CORE IN THE CASING, AND A THERMOCOUPLE. THE COLD JUNCTION OF THE THERMOCOUPLE IS SUBJECT TO THE AMBIENT TEMPERATURE OF THE REACTOR MEDIUM. THE CORE IN THE CASING IS HEATED BY DECELERATING NEUTRONS AND ELECTRONS FROM THE REACTOR MEDIUM. THE CORE IS HEATED IN ACCORDANCE WITH THE INTENSITY OF THE RADIATION. THE HOT JUNCTION OF THE THERMOCOUPLE IS IN CONTACT WITH THE CORE AND THE TEMPERATURE DIFFERENCE BETWEEN THE THERMOCOUPLE JUNCTIONS PROVIDES A SIGNAL WHICH IS AN INDICATION OF THE INTENSITY OF THE RADIATION. GRAPHITE CORES ARE SENSITIVE TO ALL KINDS OF RADIATION. LEAD AND BI ARE SENSITIVE TO GAMMA RAYS AND POLYETHYLENE AND POLYSTYRENE ARE SENSITIVE TO THE SUM OF FAST NEUTRONS AND GAMMA RAYS. CONSECUTIVE MEASUREMENTS MADE WITH DIFFERENT CORES AT THE SAME PLACE GIVE AN INDICATION OF THE ENERGY CORRESPONDING TO EACH KIND OF RADIATION.

AVAILABILITY - THE PATENT OFFICE, 25 SOUTHAMPTON BUILDING, LONDON, W.C. 2, ENGLAND, \$0.49 PER COPY

\*INSTRUMENTATION, RADIATION MONITORING + ELECTRON + FRANCE + GAMMA + INSTRUMENTATION, NUCLEAR + NEUTRON

15-21271 ALSO IN CATEGORY 1  
PROPOSED STANDARD. PROGRAM FOR TESTING BIOLOGICAL SHIELDING IN NUCLEAR REACTOR PLANTS  
AMERICAN NUCLEAR SOCIETY  
8 PAGES, 7 REFERENCES, NUCLEAR ENGINEERING BULLETIN, 5(1), (JULY 1967) ANS 6.1

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-21271 \*CONTINUED\*

THIS STANDARD DESCRIBES AN OPERATIONAL SHIELD-TESTING PROGRAM TO BE USED IN EVALUATING THE INSTALLED BIOLOGICAL SHIELDING IN NUCLEAR PLANTS. A GENERAL TESTING PROCEDURE IS OUTLINED, AND THE NECESSARY RADIATION MEASUREMENTS AND TYPES OF INSTRUMENTS ARE PRESCRIBED.

\*SHIELDING + CODES AND STANDARDS + REACTOR SAFETY SYSTEM + TESTING

15-21272 ALSO IN CATEGORY 14

PUBLIC HEALTH IMPLICATIONS OF RADON EMITTED FROM URANIUM MILL TAILINGS PILES  
U. S. PUBLIC HEALTH SERVICE, U. S. DEPT. OF HEALTH, EDUCATION, AND WELFARE, NATIONAL CENTER FOR RADIOLOGICAL HEALTH, ROCKVILLE, MARYLAND  
HEW-S31 +. 1 PAGE, NOVEMBER 3, 1967

THE PUBLIC HEALTH SERVICE AND USAEC AGREED ON A JOINT PROJECT TO PROVIDE TECHNICAL ASSISTANCE TO STATES AND INDUSTRY IN EVALUATING PUBLIC-HEALTH IMPLICATIONS OF RADON EMISSION FROM URANIUM-MILL TAILINGS PILES. WORK TO BE PERFORMED INCLUDES (1) THE DEVELOPMENT OF TECHNIQUES FOR SAMPLING AIR FOR RADON CONTENT IN THE VICINITY OF URANIUM TAILINGS, (2) DETERMINATION OF THE EFFECT UPON RADON EMISSIONS WHEN TAILINGS ARE COVERED WITH EARTH OR PAVING MATERIAL, (3) EVALUATION OF ATMOSPHERIC CONCENTRATIONS NEAR TAILING PILES, AND (4) THE PREPARATION, IF NECESSARY, OF RECOMMENDATIONS FOR THE CONTROL OF RADON EXPOSURE.

AVAILABILITY - PUBLIC HEALTH SERVICE, ROCKVILLE, MARYLAND

\*WASTE DISPOSAL, GENERAL + AIR + MILLING + RADIOISOTOPE + RADON + SAMPLING + URANIUM + USAEC

15-21273 ALSO IN CATEGORY 14

THE DAY H-BOMBS FELL ON PALOMARES  
9 PAGES, FIGURES, SATURDAY REVIEW L(4), PAGE 21-27, 39-40, (JAN. 28, 1967)

U.S. STRATEGIC AIR COMMAND BOMBERS CARRYING NUCLEAR WEAPONS ARE IN THE AIR AT ALL TIMES. ONE YEAR AGO-ON JANUARY 17, 1966, ONE OF THEM, A B-52, COLLIDED WITH A KC-135 JET TANKER DURING A REFUELING OPERATION OVER THE MEDITERRANEAN SEA NEAR THE SPANISH VILLAGE OF PALOMARES. AMONG THE RAIN OF DEBRIS WERE FOUR HYDROGEN BOMBS. THE SEARCH FOR THEM LASTED NEARLY THREE MONTHS AND COST AN ESTIMATED \$90,000,000. THIS ARTICLE IS THE STORY OF WHAT HAPPENED IN THE VILLAGE.

\*ACCIDENT, GENERAL + \*SURVEY, RADIATION, EMERGENCY + AIRCRAFT + PLUTONIUM + SURVEY, RADIATION, ENVIRONMENTAL

15-21278

ROTHE WE + HUYCKE EJ + BUTTERFIELD JL + BLUMENSTOCK JW  
IONIZING RADIATION INJURY, PREVENTION AND TREATMENT. ANNUAL PROGRESS REPORT  
ARMY MEDICAL RESEARCH UNIT, EUROPE  
AD-626384 + AD-475,645 +. 22 PAGES, OCTOBER 1965

A SLIGHT DECREASE IN THE AVERAGE TOTAL BODY-BURDEN CS-137 OF NORMAL PERSONS WAS OBSERVED FROM JAN. 1964 THROUGH MAY 1965 - FROM ABOUT 200 TO 150 PICO-CURIES CS-137 PER GRAM OF BODY POTASSIUM. CLINICAL STUDIES WERE CONTINUED. THESE INCLUDED FOLLOW-UP TESTING OF PERSONS WITH CARCINOMA OF THE THYROID, IRON ABSORPTION IN ANEMIC PATIENTS, AND VITAMIN B-12 ABSORPTION IN PATIENTS. CONTINUED MEASUREMENTS OF BODY BURDENS OF RADIUM AND THOROTRAST WERE DONE IN SELECTED PERSONS. THE 2-PI LIQUID SCINTILLATION WHOLE BODY COUNTER WAS MODIFIED TO ASSAY WHOLE BODY BURDENS OF STRONTIUM-90. THE MINIMUM SENSITIVITY OF SUCH A WHOLE BODY BURDEN ASSAY IS CALCULATED TO BE 70 NANOCURIES SR-90. MEASUREMENTS OF ENVIRONMENTAL LEVELS OF ALPHA EMITTING RADIOISOTOPES IN WATER, FOOD, SNAILS, AND HUMAN TEETH AND BONE WERE CONTINUED. PERSONNEL OCCUPATIONALLY EXPOSED TO RADIOISOTOPES WERE MONITORED FOR POSSIBLE INTERNAL CONTAMINATION. ADENINE WAS TESTED FOR IMPROVING THE IN VIVO VIABILITY OF RED BLOOD CELLS STORED IN A STANDARD WAY FOR 42 DAYS. LEAN BODY MASS CHANGES OCCURRING DURING AIRBORNE TRAINING WERE QUANTITATED IN TWO MILITARY GROUPS.

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

\*RADIOBIOLOGY + CESIUM + COUNTER, WHOLE BODY + PERSONNEL EXPOSURE, RADIATION + RADIUM + STRONTIUM

15-21281

SINCLAIR KF  
THE RELATIONSHIP BETWEEN THE RADIOBIOLOGICAL EFFECTS TABLE AND TACTICAL MILITARY RADIATION MEASUREMENT SYSTEM DESIGN  
NAVAL RADIOLOGICAL DEFENSE LAB., SAN FRANCISCO  
USNRDL-TR-67-67 +. 36 PAGES, 3 FIGURES, 5 TABLES, 18 REFERENCES, MAY 29, 1967

THE TACTICAL RADIATION MEASUREMENT SYSTEMS ARE USED IN THE MILITARY PRIMARILY FOR THE ACQUISITION OF RADIATION DATA FOR ENTRY TO THE RADIOBIOLOGICAL EFFECTS TABLE (RET). THE TABLE PROVIDES THE BRIDGE NEEDED TO TRANSLATE A RADIATION MEASUREMENT TO INFORMATION REGARDING THE PRESENT AND PROBABLE FUTURE (SHORT TERM) OPERATIONAL EFFECTIVENESS OF A MILITARY GROUP. AT PRESENT, THE RET IS STATED IN TERMS OF EXPOSURE IN ROENTGENS OR ABSORBED DOSE IN RADS (AIR), AND THE RADIACT INSTRUMENTS ARE CALIBRATED IN EITHER OF THESE UNITS IN A FREE-AIR POINT SOURCE GEOMETRY. THIS RESULTS IN LARGE ERRORS UNDER CERTAIN FIELD CONDITIONS. THE ERRORS IN FALLOUT AND INITIAL RADIATION FIELDS CAN BE GREATLY MINIMIZED BY CORRELATING THE EFFECTS TABLE WITH MIDLINE DOSE AND RETAINING THE PRESENT CALIBRATION METHOD FOR THE

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-21281 \*CONTINUED\*  
DEVICES. FOR NEUTRONS, IT IS ESSENTIAL THAT THE BIOLOGICAL EFFECTIVENESS VS ENERGY CONSIDERATION BE TAKEN INTO ACCOUNT. OTHERWISE, NO SIGNIFICANT IMPROVEMENT CAN BE MADE.

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

\*DOSE + \*DOSIMETRY, GENERAL + DOSE CALCULATION, EXTERNAL + DOSE MEASUREMENT, EXTERNAL + FALLOUT + GAMMA + NEUTRON

15-21282 ALSO IN CATEGORY 14  
ZARKOVIC G + FAJGELJ A + POPOVIC N  
PENETRATION OF IODINE-131 THROUGH THE INTACT HUMAN SKIN  
MEDICAL COLL., SARAJEVO, YUGOSLAVIA  
9 PAGES, 2 FIGURES, 2 TABLES, ARHIV Hig. RADA TOKSIKOL., 16, PAGES 319-27 (1965), (IN CRUATIAN)

RESULTS ARE REPORTED FROM AN INVESTIGATION ON THE PERCUTANEOUS PENETRATION OF I-131 IN 17 MEN AND 12 WOMEN DURING 48 HOURS AFTER THE APPLICATION OF 80 TO 100 MICROCURIES OF NA-131I UNDER A PLASTIC OCCLUSIVE DRESSING. SODIUM PERCHLORATE, 100 MG, WAS FED DAILY TO PREVENT THYROID UPTAKE OF THE ISOTOPE. ABSORPTION WAS FOUND HIGHER IN WOMEN, AND HIGHER ON THE DORSAL THAN PALMAR SURFACE OF THE HAND.

\*RADIOBIOLOGY + IODINE + YUGOSLAVIA

15-21283 ALSO IN CATEGORY 14  
ANNUAL REPORT (ON RADIOLOGICAL SCIENCES) 1965  
NATIONAL INST. OF RADIOLOGICAL SCIENCES, CHIBA, JAPAN  
NIRS-5 +. 84 PAGES, DECEMBER 1966

REPORTS WORK IN PHYSICS, CHEMISTRY, BIOLOGICAL STUDIES, PHYSIOLOGY, GENETICS, MEDICAL STUDIES, AND ENVIRONMENTAL STUDIES.

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

\*ACCIDENT, CRITICALITY + \*COUNTER, WHOLE BODY + \*DOSE + \*ENVIRONMENTAL CONDITION + \*RADIATION DAMAGE + \*RADIOBIOLOGY + ALPHA EMITTER + BIOMEDICAL + DOSE CALCULATION, EXTERNAL + GAMMA + JAPAN + STRONTIUM + X-RAY

15-21285  
CURTIS HJ  
RECOVERY OF MAMMALIAN CHROMOSOMES FROM RADIATION INJURY  
BROOKHAVEN NATIONAL LABORATORY, UPTON, N.Y.  
BNL-11515 + CONF-670632-1 +. 23 PAGES, FROM SYMPOSIUM ON RECOVERY AND REPAIR MECHANISMS IN RADIOBIOLOGY, UPTON, N.Y.

THE PURPOSE OF THIS WORK WAS TO EXAMINE EXISTING EVIDENCE AND TO SUPPLY SOME NEW DATA ON THE MECHANISM OF THESE REPAIR PROCESSES AS THEY RELATE TO THE DELAYED EFFECTS OF RADIATION.

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

\*RADIATION DAMAGE + BIOMEDICAL + BNL + RADIOBIOLOGY

15-21287  
GROSS AL + KIBLER GK  
GAS CHROMATOGRAPHIC ANALYSIS OF BODY FLUIDS FOLLOWING MIDDLETHAL IRRADIATION. FINAL REPORT  
SOUTHWEST RESEARCH INST., SAN ANTONIO, TEXAS  
AD-631232 +. 14 PAGES, DECEMBER 15, 1965

THE PURPOSE OF THIS PROGRAM WAS TO SCREEN A LARGE NUMBER OF CHEMICALS TO DETERMINE WHAT ALTERATIONS RESULT FROM RADIATION EXPOSURE. THE RESULTS OF ALL THE ANALYSES FAILED TO DEMONSTRATE ANY CHANGES IN BODY-FLUID CHEMISTRY THAT COULD BE IN ANY WAY RELATED TO IRRADIATION OF THE EXPERIMENTAL ANIMALS. THE COMPOUNDS OBSERVED INCLUDE ALDEHYDES, KETONES, ALCOHOLS, THICETHERS, LACTONES, MORE THAN 20 AMINO ACIDS, AND A GREAT MANY COMPOUNDS THAT WERE NOT IDENTIFIED IN THE REPORT.

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

\*RADIATION DAMAGE + ANALYTICAL TECHNIQUE, URINE + CHROMATOGRAPHY + RADIOBIOLOGY

15-21289 ALSO IN CATEGORY 14  
VAN MIDDLESWORTH L  
STUDIES IN IODINE METABOLISM. PROGRESS REPORT, JULY 1966--JULY 1967  
UNIVERSITY OF TENNESSEE, MEMPHIS

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-21289 \*CONTINUED\*  
ORO-1643-071 +. 23 PAGES, JULY 31, 1967

PRESENTS 1966-67 STUDY OF IODINE METABOLISM AND ASSOCIATED BIOLOGICAL STUDIES, THYROID DISEASE, RADIUM IN ANIMAL THYROIDS, AND RADIOACTIVE IODINE FALLOUT AS OBSERVED IN ANIMAL THYROIDS.

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

\*FALLOUT + \*RADIOBIOLOGY + IODINE + RADIUM

15-21303  
YABLONOVITCH E  
HEALTH PHYSICS APPLICATIONS OF A THIN SILICON DETECTOR  
ATOMIC ENERGY OF CANADA LTD., CHALK RIVER (ONTARIO). CHALK RIVER NUCLEAR LABS.  
AECL-2766 +. 11 PAGES, 5 FIGURES, 1 TABLE, 5 REFERENCES, AUGUST 1967

A TOTALLY DEPLETED, SILICON, DE/DX COUNTER (200 MICRONS THICK) WAS TESTED FOR USE IN GENERAL PURPOSE DOSIMETRY. THE RESPONSE TO ALPHA, BETA, AND GAMMA RAYS AS WELL AS TO FAST NEUTRONS IS PRESENTED, AND THE MEASUREMENTS INDICATE A DETECTOR OF UNUSUAL VERSATILITY.

AVAILABILITY - ATOMIC ENERGY OF CANADA, LTD., CHALK RIVER, ONTARIO, CANADA, \$0.50 COPY

\*INSTRUMENTATION, RADIATION MONITORING + \*SOLID STATE DEVICE + CANADA + CHALK RIVER + DOSE MEASUREMENT; EXTERNAL + DOSIMETRY, GENERAL + GAMMA

15-21306  
PERISSIN-PIRASSET F  
CHARACTERISTICS OF BREATHING APPARATUS USED IN HEALTH PHYSICS  
COMMISSARIAT A L'ENERGIE ATOMIQUE, FONTENAY-AUX-ROSES (FRANCE). CENTRE D-ETUDES NUCLEAIRES  
CEA-R-3234 +. 66 PAGES, FIGURES, TABLES, REFERENCES, JUNE 1967, IN FRENCH

THE PRESENT STATE OF KNOWLEDGE MAKES IT POSSIBLE TO ENVISAGE THE CALCULATION OF DOSES ABSORBED BY VARIOUS PARTS OF THE RESPIRATION APPARATUS FOLLOWING INHALATION OF RADIOACTIVE DUSTS CONTAINED IN AEROSOLS. AFTER RECALLING CERTAIN ANATOMICAL AND HISTOLOGICAL CONSIDERATIONS, THE AUTHOR PRESENTS VARIOUS CURVES SHOWING THE DEPOSITION OF DUSTS IN THE THREE PARTS OF THE BREATHING APPARATUS - THE RHINE-PHARYNX, THE TRACHEA AND WINDPIPE, THE PULMONARY PARENCHYMA. THE DUSTS CAN BE CLASSIFIED IN THREE GROUPS OF BIOLOGICAL SOLUBILITY ACCORDING TO WHICH THE RATES OF ELIMINATION OF THE PARTICLES FROM THE ORGANS ARE DIFFERENT. A SYNTHESIS OF THESE DATA IS GIVEN IN ELIMINATION DIAGRAMS. IN ORDER TO CALCULATE THE DOSES IT IS NECESSARY FURTHERMORE TO KNOW CERTAIN ANATOMICAL AND PHYSIOLOGICAL CHARACTERISTICS OF A STANDARD MAN.

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

\*DOSE + \*INHALATION + BIOMEDICAL + DOSE CALCULATION; INTERNAL + FRANCE + RADIOBIOLOGY + RADIOISOTOPES

15-21308  
RAMSDEN D + SPEIGHT RG  
THE MEASUREMENT OF PU-239 IN VIVO. A PROGRESS REPORT  
ATOMIC ENERGY ESTABLISHMENT, WINFRITH (ENGLAND)  
AEEW-R-494 +. 27 PAGES, 8 FIGURES, 3 TABLES, 20 REFERENCES, APRIL 1967

EXPERIENCE IN THE OPERATION OF A PROTOTYPE SYSTEM FOR THE DETECTION AND ESTIMATION OF INSOLUBLE PLUTONIUM-239 IN THE LUNGS IS DESCRIBED. THE SYSTEM CONSISTS OF A LOW BACKGROUND XENON-FILLED, MULTIWIRED PROPORTIONAL COUNTER USED IN CONJUNCTION WITH A LARGE AREA, THIN WINDOWED, SODIUM IODIDE CRYSTAL. A REALISTIC CHEST PHANTOM IS USED TO CALIBRATE THE DETECTORS FOR PLUTONIUM-239 AND AMERICIUM-241. THE VARIATIONS IN DETECTOR BACKGROUNDS CAUSED BY THE PRESENCE OF A HUMAN SUBJECT ARE DESCRIBED, AND THE SOURCES OF ERROR AND THEIR MAGNITUDE ARISING BOTH FROM THE DETECTION SYSTEM AND THE CALIBRATION PROCEDURE ARE DISCUSSED IN DETAIL. THE USE OF THE EQUIPMENT IN A FEW CASES OF ACCIDENTAL INHALATION OF PLUTONIUM-239 IS DESCRIBED. THE LIMIT OF DETECTION OF THE PRESENT EQUIPMENT IS GIVEN AS 0.012 MICROCURIES PU-239.

AVAILABILITY - ATOMIC ENERGY ESTABLISHMENT, WINFRITH, DORCHESTER, DORSET, ENGLAND

\*INSTRUMENTATION, RADIATION MONITORING + \*RADIOBIOLOGY + AMERICIUM + COUNTER + COUNTER, WHOLE BODY + PLUTONIUM + UNITED KINGDOM

15-21311 ALSO IN CATEGORY 14  
PACIFIC NORTHWEST LABORATORY MONTHLY ACTIVITIES REPORT, SEPT. 1966, ON AEC DIVISION OF BIOLOGY AND MEDICINE PROGRAMS  
BATTELLE-NORTHWEST, RICHLAND, WASHINGTON  
BNWL-335 (REV.) +. 21 PAGES, OCTOBER 1966

WORK REPORTED INCLUDES STUDIES ON RADIATION EFFECTS - GENERAL, TOXICITY OF RADIOELEMENTS, INCLUDING TOXICITY AND METABOLISM OF RADIONUCLIDES IN AQUATIC ORGANISMS, EFFECT OF

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-21311 \*CONTINUED\*

RADIOSTRONTIUM IN MINIATURE SWINE, SPACE NUCLEAR SYSTEMS STUDIES, COMBATING DETRIMENTAL EFFECTS OF RADIATION, MOLECULAR AND CELLULAR LEVEL STUDIES, ENVIRONMENTAL RADIATION STUDIES INCLUDING THE ESKIMO FOOD CHAIN, TERRESTRIAL ECOLOGY, COLUMBIA RIVER ECOLOGY, TEMPERATURE EFFECTS ON METABOLISM OF AQUATIC ORGANISMS, EARTH SCIENCES, RADIOACTIVE FALLOUT RATES AND MECHANISMS, PRECIPITATION-SCAVENGING STUDIES, MARINE SCIENCES, RADIOLOGICAL AND HEALTH PHYSICS, RADIATION INSTRUMENTS.

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

\*BIOMEDICAL + \*DOSIMETRY, GENERAL + \*FALLOUT + \*MONITORING PROGRAM, ENVIRONMENTAL + \*RADIATION DAMAGE + \*RADIATION SAFETY AND CONTROL + \*RADIOBIOLOGY + BATTELLE NORTHWEST + BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + BIOLOGICAL CONCENTRATION, MAN + CESIUM + CHEMICAL REACTION + COUNTER, WHOLE BODY + DOSIMETRY, PHOTOGRAPHIC + ECOLOGICAL CONSIDERATION + INHALATION + INSTRUMENTATION, RADIATION MONITORING + OCEAN AND SEA + PLUTONIUM + PRECIPITATION + RIVER, COLUMBIA + STRONTIUM

15-21313

GILBERT WS

RADIATION PROBLEMS WITH HIGH-ENERGY PROTON ACCELERATORS

LAWRENCE RADIATION LABORATORY, BERKELEY, CALIF.

12 PAGES, 11 FIGURES, 2 TABLES, 9 REFERENCES, IEEE TRANSACTIONS ON NUCLEAR SCIENCE 14(3), PAGES 965-76 (JUNE 1967), ALSO UCRL-17141

THE DISCUSSION IS RESTRICTED TO MACHINES IN THE MULTI-GEV ENERGY RANGE AND OF THE ALTERNATING-GRADIENT SYNCHROTRON TYPE. THE RADIATION PROBLEMS CAN BE DIVIDED INTO THOSE PRODUCED BY ACCELERATORS WHILE RUNNING AND THOSE ASSOCIATED WITH THE SHUT-DOWN MACHINE. THE EXPENSE AND DIFFICULTY OF COPING WITH THESE RADIATION PROBLEMS INFLUENCE THE CHOICE OF DESIGN BEAM INTENSITY.

\*RADIATION SAFETY AND CONTROL + \*RADIONUCLIDE, INDUCED + ACCELERATOR + ACTIVATION + AIR + LRL + RADIATION PROTECTION, ORGANIZATION + SHIELDING + WATER, GENERAL

15-21314

ALSO IN CATEGORY 14

LUCKS H + MARCOWITZ SM

A SURVEY OF RADIATION DOSES AND INDUCED ACTIVITY AT THE ZGS FROM SEPT. 1965 TO SEPT. 1966

ARGONNE NATIONAL LABORATORY, ARGONNE, ILL.

5 PAGES, 6 FIGURES, 16 REFERENCES, IEEE TRANSACTIONS ON NUCLEAR SCIENCE 14(3), PAGES 985-89 (JUNE 1967)

TO LEARN THE DISTRIBUTION OF RADIATION AROUND AN ACCELERATOR QUANTITATIVELY, A PROGRAM FOR MONITORING THE DISTRIBUTION OF INDUCED ACTIVITY AND TOTAL RADIATION DOSE IN THE ZERO GRADIENT SYNCHROTRON RING BUILDING WAS STARTED IN 1965. THIS PAPER IS AN ATTEMPT TO COMPILE THE DATA TO SEE IF DEFINITE PATTERNS EXIST, TO EXTRACT USEFUL CALCULATION CONSTANTS, AND TO EXTRAPOLATE THE TOTAL DOSES RECEIVED BY COMPONENTS SINCE THE STARTUP OF THE ZGS. SOME OF THE RELATIONSHIPS EXAMINED ARE - (1) THE DISTRIBUTION OF DOSE RECEIVED BY COMPONENTS OF THE ZGS PER OPERATING HOUR OR PER CIRCULATING PROTON, (2) THE DISTRIBUTION OF INDUCED ACTIVITY, AND (3) THE RATIO OF INDUCED ACTIVITY TO AVERAGE DOSE AT THE SAME LOCATION.

\*ACTIVATION + \*DOSE + \*DOSE MEASUREMENT, EXTERNAL + \*DOSIMETRY, GENERAL + ACCELERATOR + ACTIVATION PRODUCT + ANL + DOSIMETRY, THERMOLUMINESCENCE + RADIONUCLIDE, INDUCED

15-21315

WYCKOFF JM

RADIOACTIVITY PRODUCED BY A LINAC

NATIONAL BUREAU OF STANDARDS, WASHINGTON, D. C.

2 PAGES, 3 REFERENCES, IEEE TRANSACTIONS ON NUCLEAR SCIENCE 14(3), PAGES 990-91 (JUNE 1967)

MORE THAN 40 MATERIALS WERE IRRADIATED IN THE 100-MEV BREMSSTRAHLUNG BEAM FROM THE NBS LINAC. THE MAJOR CONTRIBUTIONS TO THE GAMMA-RAY SPECTRUM FROM THE RADIOACTIVE PRODUCTS WERE MEASURED USING A GE-LI DETECTOR. MEASUREMENTS WERE MADE OF GAMMA RAYS OF CONCERN IN THE 30-MIN TO 30-DAY TIME INTERVAL, BUT THIS INCLUDES IN SOME CASES GAMMA RAYS FROM NUCLIDES WITH HALF-LIVES AS LONG AS 30 YEARS. EIGHTEEN OF THE SAMPLES WERE PURE MATERIALS, AND 24 WERE COMMONLY USED STRUCTURAL, SHIELDING, ELECTRICAL AND MECHANICAL COMPONENTS. IN SEVERAL IMPORTANT CASES, NUCLIDES PRODUCED BY MULTIPLE PARTICLE EMISSION DOMINATE THE PICTURE.

\*ACTIVATION + \*RADIONUCLIDE, INDUCED + ACCELERATOR + ACTIVATION PRODUCT + GAMMA + NBS

15-21316

SPOKAS CE

THE NBS LINAC MASTER CONTROL AND PERSONNEL PROTECTION SYSTEM

NATIONAL BUREAU OF STANDARDS, WASHINGTON, D. C.

6 PAGES, 2 FIGURES, IEEE TRANSACTIONS ON NUCLEAR SCIENCE 14(3), PAGES 1016-21 (JUNE 1967)

THE OPERATION OF THE NBS LINEAR ACCELERATOR AND ITS BEAM-HANDLING EQUIPMENT WAS INTEGRATED WITH PERSONNEL AND EQUIPMENT-PROTECTION SAFEGUARDS AND WITH THE OCCUPANCY REQUIREMENTS OF THE LINAC COMPLEX. A MODE SWITCH IS USED TO SELECT BEAM DIRECTION AND EXPERIMENTAL AREA, AND TO PROGRAM THE REQUIREMENTS FOR PERSONNEL PROTECTION INTERLOCKS, BEAM HANDLING SYSTEM



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15-21316 \*CONTINUED\*

CONDITIONS, BUILDING MECHANICAL SERVICES, EXPERIMENTAL AREA SERVICES, AND LINAC OPERATION. THE SYSTEM INCLUDES VISIBLE AND AUDIBLE DEVICES TO INDICATE DEGREE OF READINESS, HAZARDS, FAULTS, INTERLOCK INFORMATION, ZONE OF OPERATION AND EMERGENCY SITUATIONS. A FORCED INSPECTION OF POTENTIALLY DANGEROUS ZONES, PROGRAMMED CUED TAPED WARNING ANNOUNCEMENTS, KEY INTERLOCKS, AND FLEXIBILITY ARE BUILT-IN FEATURES. IT OFFERS THE CAPABILITY OF PROVIDING MAXIMUM PROTECTION TO PERSONNEL AGAINST ENVIRONMENTAL RADIATION HAZARDS AND ALLOWS UTILIZATION OF A MAXIMUM OF LABORATORY SPACE FOR VARIED BEAM CONDITIONS.

\*MONITOR, RADIATION, GENERAL + \*RADIATION PROTECTION, ORGANIZATION + \*RADIATION SAFETY AND CONTROL + ACCELERATOR + ENVIRONMENTAL CONDITION + MONITOR, RADIATION, PERSONNEL + NBS

15-21317 ALSO IN CATEGORY 14

TALENTI M + CIGNA A  
PROBLEM OF RADIOACTIVE MINERAL WATERS FROM THE HYGIENIC POINT OF VIEW  
UNIVERSITY OF ROME

4 PAGES, 6 REFERENCES, NUOVI ANN. IG. MICROBIOL., 15, PAGES 568-71 (NOV-DEC. 1964) IN ITALIAN

RADIOACTIVE WATERS ARE DEFINED IN ITALY AS THOSE WHICH CONTAIN MORE THAN 4 NCI/1. MOPE EXACTLY, WEAKLY ACTIVE WATERS CONTAIN 1-30 NCI/1, ACTIVE WATERS CONTAIN 30-150 NCI/1, STRONGLY ACTIVE WATERS CONTAIN MORE THAN 150 NCI/1. OTHER CLASSIFICATIONS BASED ON RA CONTENT ARE DISCUSSED. THE BASIS OF DETERMINATIONS ON RN-222 AND RA-226 IS OUTLINED. PREVIOUS MEASUREMENTS ON ITALIAN WATERS IN GENERAL HAVE BEEN CARRIED OUT WITH INADEQUATE EQUIPMENT FOR DISTINGUISHING THE CONTRIBUTIONS FROM THESE ISOTOPES. THE SCINTILLATION CHAMBER APPEARS TO BE ADAPTED PARTICULARLY WELL TO THE DETERMINATION OF RN-222 IN EQUILIBRIUM WITH RA-226, AS DISTINGUISHED FROM EXCESS RN-222. THE MAX ADMISSIBLE CONCENTRATION OF RA-226 IN WATER IS 1 PCI/1, AVOIDANCE OF CONTINUED USE OF MORE ACTIVE WATERS IS SUGGESTED. THIS VALUE FOR THE GENERAL POPULATION MAY BE ALTERED BY RECENT STUDIES ON THE RATIO BETWEEN RA CONTENT IN WATER AND IN THE HUMAN BODY. CONTRIBUTIONS OF EACH NUCLIDE TO TOTAL ACTIVITY OF ITALIAN MINERAL WATERS WILL BE STUDIED IN THE FUTURE.

\*GROUND WATER, GENERAL + GROUND WATER, NUCLIDE OCCURRENCE + ITALY + RADIUM + RADON

15-21324

DZANTIEV BG + KOVALEVA EP  
CHEMICAL METHODS IN NUCLEAR REACTOR RADIATION DOSIMETRY  
INST. OF NUCLEAR ENGINEERING, MINSK

5 PAGES, 4 TABLES, 1 TABLE, 4 REFERENCES, SER. FIZ. TEKH. NAVUK, NO. 1, PAGES 47-51 (1967) IN RUSSIAN

THE OXIDATION OF FERROUS ION TO FERRIC, AND THE RATE OF CONSUMPTION OF GLUCOSE CAN BE USED TO MEASURE GAMMA DOSE AND MIXED GAMMA-NEUTRON DOSE IN A REACTOR. THE GLUCOSE LOSS CAN BE MEASURED BY THE CHANGE IN OPTICAL ACTIVITY OF THE SOLUTION OR FROM THE CHANGE IN ABSORPTION SPECTRUM OF THE IRRADIATED GLUCOSE SOLUTION. THESE VARIOUS MODIFICATIONS OF CHEMICAL DOSIMETRY GIVE CONCORDANT RESULTS. THE CONTRIBUTION OF FAST NEUTRONS IS 20 TO 30% OF THE TOTAL DOSE, AS DETERMINED BY GLUCOSE DOSIMETRY. THE DOSE IN THE CENTER OF THE REACTOR IS 1260 RADS/SEC BY FERROUS SULFATE DOSIMETRY, WHICH IS IN GOOD AGREEMENT WITH A VALUE OF 1220 RADS/SEC AS DETERMINED BY GLUCOSE DOSIMETRY. AN IONIZATION METHOD ALSO GAVE A VALUE IN GOOD AGREEMENT WITH THE TWO VALUES OBTAINED BY CHEMICAL DOSIMETRY. ON ADDING BORIC ACID TO THE GLUCOSE SOLUTION, A VALUE OF  $1.5 \times 10^{12}$  IS OBTAINED FOR THE NEUTRON FLUX. THUS, CHEMICAL DOSIMETRY CAN BE USED TO DETERMINE NEUTRON FLUX, ESPECIALLY IF SELF-SHIELDING BY THE BORON IS TAKEN INTO ACCOUNT.

\*DOSIMETRY, GENERAL + GAMMA + NEUTRON + REACTOR, GENERAL + USSR

15-21326

GOLDMAN L + HORNBY D  
SAFETY IN THE CHEMICAL LABORATORY. XXV. LASER LABORATORY DESIGN AND PERSONNEL PROTECTION FROM HIGH ENERGY LASERS

CHILDRENS HOSPITAL RESEARCH FOUNDATION, CINCINNATI  
12 PAGES, 9 REFERENCES, J. CHEM. EDUC. 43, PAGES A335-46 (APRIL 1966)

LASERS OPERATED IN THE Q-SWITCHED MODE CAN NOW GENERATE POWER OUTPUTS AS HIGH AS GIGAWATTS. WITH THE GENERATION OF SECOND AND FOURTH HARMONICS, LASER GENERATION IN THE UV RANGE IS NOW POSSIBLE. WITH SUCH SIGNIFICANT ENERGY AND POWER OUTPUTS, IT IS OBVIOUS THAT PERSONNEL WORKING WITH LASERS MUST BE PROTECTED. THE PROTECTION PROGRAM DESCRIBED CENTERS ABOUT THE FOLLOWING DESIGN AND OPERATIONAL FEATURES - (1) PERSONNEL CONTROL (EYE, EXPOSED SKIN, AND INHALATION), (2) AREA CONTROL (AVOIDANCE OF SPECTRAL REFLECTANCE, PROPER VENTILATION, AND AVOIDANCE OF ELECTRICAL SHOCK).

\*RADIATION PROTECTION, ORGANIZATION + \*RADIATION SAFETY AND CONTROL + BIOMEDICAL + LASER

15-21328

OVERDOSES FROM LINEAR ACCELERATOR  
2 PAGES, LANCET 2, PAGES 212-13 (JULY 23, 1966)

ON FEB. 11, 1966, A FAULT IN THE CONTROL SYSTEM OF THE 8-MEV LINEAR ACCELERATOR AT HAMMERSMITH HOSPITAL CAUSED AN OVERDOSE TO BE GIVEN TO THREE PATIENTS UNDERGOING ELECTRONBEAM THERAPY. THE EFFECTS ON TWO OF THE PATIENTS WERE SEVERE. IN THE THIRD, SLIGHT. THE COMMITTEE OF

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-21328 \*CONTINUED\*

INQUIRY DID NOT REPORT ON THE CONDITION OF THE PATIENTS OR THE ILLNESSES FOR WHICH THEY WERE BEING TREATED, BUT THE TWO SEVERELY AFFECTED PATIENTS ARE STILL HOSPITALIZED. THE INQUIRY DISCLOSED THAT THE COINCIDENCE OF TWO RARE EVENTS LED TO THE FAILURE OF A CONTROL SYSTEM THAT HAD OPERATED WITHOUT MISHAP SINCE 1958.

\*FAILURE, SEQUENTIAL + \*INCIDENT, NONREACTOR + \*RADIOLOGY + ACCELERATOR + FAILURE, COMPONENT + FAILURE, INSTRUMENT + RADIATION INJURY, TREATMENT OF + UNITED KINGDOM

15-21329 ALSO IN CATEGORY 14  
ROBERTS IC  
EFFLUENT MONITORING AND EVALUATION - A POWER REACTOR DESIGN GUIDE  
BATTELLE-NORTHWEST, RICHLAND, WASHINGTON  
BNWL-251(REV) +. 78 PAGES, FIGURES, TABLES, MAY 1967

THIS REPORT IS DIRECTED TOWARD POWER-REACTOR PRACTICES AND, PARTICULARLY, TO CONDITIONS EXISTING DURING NORMAL OPERATION OF POWER REACTORS. IT DOES NOT INCLUDE EVALUATION OF ACCIDENT CONDITIONS. THE MATERIAL IN THE DOCUMENT WAS SELECTED TO MEET THE NEEDS OF READER WHO WISH TO UNDERSTAND THE BASIC REQUIREMENTS OF MONITORING. DOES NOT SUPPLY COOKBOOK PROCEDURES.

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

\*MONITORING PROGRAM, ENVIRONMENTAL + \*REACTOR, POWER + \*WASTE DISPOSAL, GENERAL + BATTELLE NORTHWEST + EFFLUENT + ENVIRONMENTAL CONDITION + EQUIPMENT, GENERAL + IODINE + RADIOISOTOPE + REGULATION, AEC + SAMPLING + WASTE DISPOSAL, GAS + WASTE DISPOSAL, LIQUID

15-21331  
CUSIMANO JP  
EXPERIMENTAL OBSERVATIONS IN THERMOLUMINESCENT DOSIMETRY AT THE NATIONAL REACTOR TESTING STATION  
IDAHO OPERATIONS OFFICE, AEC, IDAHO FALLS  
ID0-12060 +. 10 PAGES, 10 FIGURES, 9 REFERENCES, MARCH 1967

LITHIUM FLUORIDE IS AN ALMOST IDEAL DOSIMETRIC MATERIAL FOR IONIZING RADIATION. A COMMERCIAL THERMOLUMINESCENT DOSIMETRY SYSTEM WAS PURCHASED, AND MUCH EXPERIMENTAL WORK WAS DONE TO DETERMINE THE EFFICIENCY AND RELIABILITY OF A LITHIUM FLUORIDE SYSTEM, AS WELL AS OF VARIOUS LITHIUM FLUORIDE DOSIMETERS. EFFORTS WERE CONCENTRATED ON EVALUATING A LITHIUM FLUORIDE-TEFLON DOSIMETER. THIS DOSIMETER IS A 13-MM TEFLON DISK 0.4 MM THICK WITH 29 MG OF LITHIUM FLUORIDE PHOSPHOR OF ABOUT 200 TYLER MESH UNIFORMLY DISTRIBUTED IN THE TEFLON MATRIX. IT IS UNBREAKABLE, LEAKPROOF, AND ENSURES AN EVEN DISTRIBUTION OF THE LITHIUM FLUORIDE PHOSPHOR DURING IRRADIATION AND DURING THE CRITICAL READOUT CYCLE. THE ROUTINE HANDLING IS QUITE SIMPLE AND ELIMINATES MOST OF THE PROBLEMS OF OTHER DOSIMETERS. AN INTENSIVE PROGRAM OF TESTING WAS PERFORMED TO DETERMINE ACCURACY, REPRODUCIBILITY, RESPONSE TO LIGHT, HEAT, HUMIDITY AND HANDLING, AS WELL AS TO BETA AND GAMMA RADIATION. SATISFACTORY RESULTS CONCERNING THE ABOVE CONSIDERATIONS ARE DISCUSSED AS WELL AS OTHER TESTS, SUCH AS THE APPLICATION OF LITHIUM FLUORIDE IN REACTOR-DESTRUCT-TEST DOSIMETRY USING TISSUE-EQUIVALENT PHANTOMS.

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

\*DOSIMETRY, GENERAL + DOSE MEASUREMENT, EXTERNAL + DOSIMETRY, THERMOLUMINESCENCE + IDAHO FALLS

15-21333  
STONE GR + THURNGATE JH  
EXPERIMENTALLY DETERMINED PROTON-RECOIL SPECTRA IN TISSUE-EQUIVALENT MATERIAL FROM 3- AND 15-MEV NEUTRONS  
OAK RIDGE NATIONAL LABORATORY  
ORNL-TM-1927 +. 85 PAGES, FIGURES, TABLES, OCTOBER 1967

AN EXPERIMENT WAS CONDUCTED TO MEASURE THE ENERGY SPECTRUM OF CHARGED PARTICLES PRODUCED AS A FUNCTION OF POSITION IN A TISSUE-EQUIVALENT PHANTOM IRRADIATED WITH MONOENERGETIC 3- OR 15-MEV NEUTRONS. THE CHARGED PARTICLES WERE MEASURED WITH SEMICONDUCTOR DETECTORS COVERED WITH A THIN COATING OF PARAFFIN TO PROTECT THEM FROM THE SUGAR-UREA TISSUE-EQUIVALENT SOLUTION. ONE DETECTOR WAS A SURFACE-BARRIER TRANSMISSION TYPE, AND THE OTHER WAS A LI-DRIFTED SI DETECTOR IN THE SHAPE OF A CUBE. THE SECOND DETECTOR HAD FOUR SIDES WHICH HAD NO DEAD LAYER SO THAT PROTON, D, N, AND C IONS WERE MEASURED AS WELL AS RECOIL PROTONS. DATA OBTAINED ARE CONSISTENT WITH THEORIES OF NEUTRON MODERATION. CAREFUL MEASUREMENTS WERE MADE TO DETERMINE THE CONTRIBUTION OF N,P AND N,ALPHA REACTIONS IN THE DETECTORS AND THE EFFECTS OF NEUTRONS SCATTERED FROM THE WALLS AND FLOOR SURROUNDING THE EXPERIMENTAL SET UP. THESE CONTRIBUTED LESS THAN 10% UNDER WORST-CASE CONDITIONS. THE DATA OBTAINED WILL BE COMPARED WITH THE RESULTS OF A COMPUTATIONAL PROGRAM NOW UNDERWAY TO VERIFY THE CALCULATIONS.

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

\*DOSE + \*DOSIMETRY, GENERAL + DOSE MEASUREMENT, EXTERNAL + NEUTRON + ORNL

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-21344 ALSO IN CATEGORY 14  
MALYKHIN VM + MOISEEV AA + SHAMOV VP  
ON THE CALCULATION OF THE DOSE LOADS FOR THE BONE TISSUE IN CASE OF ACUTE SR-90 POISONING  
2 PAGES, 2 FIGURES, GIG. SANIT 9, PAGES 62-3 (SEPTEMBER 1966) IN RUSSIAN

A BIOLOGICAL MODEL FOR THE UPTAKE OF STRONTIUM-90 BY HUMANS WAS USED FOR DETERMINING THE DOSE TO BONE TISSUE. THE INTEGRAL BONE DOSE WAS COMPUTED CONSIDERING THE AMOUNT OF ACTIVITY INTRODUCED INTO THE ORGANISM DURING ACUTE POISONING WITH STRONTIUM-90, THE AMOUNT OF ACTIVITY MEASURED IN VIVO AT ARBITRARY TIMES DURING THE YEARS FOLLOWING ACUTE POISONING, AND THE AMOUNT OF STRONTIUM-90 EXCRETED DAILY (IN URINE AND FECES) BY THE PATIENTS FOLLOWING ACUTE POISONING WITH STRONTIUM-90.

\*DOSE + BIOLOGICAL CONCENTRATION, MAN + DOSE CALCULATION, INTERNAL + RADIOBIOLOGY + STRONTIUM + USSR

15-21349 ALSO IN CATEGORY 14  
ROSENTHAL HL + BIRD JT + GILSTER JE + PINTO PV + ONEILL S  
SR-90 CONTENT OF DECIDUOUS TEETH OF CHILDREN  
WASHINGTON UNIVERSITY, ST. LOUIS  
7 PAGES, 5 FIGURES, 3 TABLES, 17 REFERENCES, J. DENT. RES. 45, PAGES 343-9 (MAR.-APR. 1966)

TO DETERMINE THE USEFULNESS OF DECIDUOUS TEETH AS A MEASURE OF SR-90 BODY BURDEN, STUDIES WERE UNDERTAKEN TO DEFINE THE VARIATION IN THE SR-90 CONTENT OF THE VARIOUS TYPES OF DECIDUOUS TEETH. THE SR-90 CONTENT OF DECIDUOUS TOOTH CROWNS INCREASED FROM 0.15 TO 4.7 PC SR-90/G CA BETWEEN 1947 AND 1958, RESPECTIVELY, FOR CHILDREN BORN IN THE ST. LOUIS AREA AND WHO WERE BOTTLE-FED FROM BIRTH. THE VARIATION OF SR-90 CONTENT IN DECIDUOUS INCISORS, CUSPIDS, AND FIRST AND SECOND MOLARS, BETWEEN CARIOUS AND SOUND TEETH OR BETWEEN TEETH FROM CHILDREN WHO WERE BREAST-FED OR BOTTLE-FED DURING THE TIME OF TOOTH FORMATION WAS LESS THAN 30%.

\*BIOLOGICAL CONCENTRATION, MAN + \*FALLOUT + BIOMEDICAL + RADIOBIOLOGY + STRONTIUM + UNITED STATES

15-21358  
MCLAUGHLIN WL + CHALKLEY L  
LOW ATOMIC NUMBER DYE SYSTEMS FOR IONIZING RADIATION MEASUREMENT  
NATIONAL BUREAU OF STANDARDS, WASHINGTON  
8 PAGES, 11 FIGURES, 4 TABLES, PHOTOGRAPHIC SCIENCE AND ENGINEERING 9(3), PAGES 159-66 (MAY-JUNE 1965)

IN RADIOTHERAPY, RADIATION PROCESSING, AND INTENSE-BEAM DOSIMETRY, THE PROBLEMS OF ISODOSE MEASUREMENT AND DEPTH-DOSE DISTRIBUTION STUDIES ON A MICROSCOPIC SCALE HAVE NOT BEEN SOLVED SATISFACTORILY BY CONVENTIONAL RADIATION MEASUREMENT SYSTEMS. ORGANIC DYE SYSTEMS, ALTHOUGH CONSIDERABLY LESS SENSITIVE THAN MOST SILVER HALIDE EMULSIONS, LEAD TO MUCH SMALLER ERRORS IN THE INTERPRETATION OF THEIR RESPONSE TO INTENSE IONIZING RADIATION BEAMS, DUE TO LOWER SPECTRAL SENSITIVITY VARIATION. COLORLESS DERIVATIVES OF TRIPHENYLMETHANE DYES, SUCH AS STABILIZED FORMS OF PARAROSANILINE NITRILES, SHOW SPECIAL POTENTIAL FOR DOSIMETRY, BECAUSE OF THE HIGH INTENSITY OF COLOR FORMED UPON IRRADIATION, THE STABILITY OF COLOR AFTER IRRADIATION, THE ABSENCE OF RESPONSE TO WAVELENGTHS LONGER THAN 330 MILLIMICRONS, THE ABSENCE OF RECIPROCITY FAILURE, AND THE CAPABILITY OF BEING INCORPORATED EASILY INTO A NUMBER OF MEDIA.

\*DOSE + \*DOSIMETRY, GENERAL + DOSIMETRY, PHOTOGRAPHIC + GAMMA + NBS + X-RAY

15-21359  
MCLAUGHLIN WL  
MICROSCOPIC VISUALIZATION OF DOSE DISTRIBUTIONS  
NATIONAL BUREAU OF STANDARDS, WASHINGTON, D. C.  
14 PAGES, 6 FIGURES, 56 REFERENCES, INTERNATIONAL JOURNAL OF APPLIED RADIATION AND ISOTOPES, VOL. 17, PAGES 85-96 (1966)

COLORLESS CYANIDES OF TRIPHENYLMETHANE DYES WHEN SUITABLY ACTIVATED CAN BE MADE INTO FILMS THAT BECOME DEEPLY COLORED UPON IRRADIATION WITH SHORT-WAVE ULTRAVIOLET AND IONIZING RADIATIONS BUT ARE NOT SENSITIVE TO NEAR ULTRAVIOLET RADIATION OR VISIBLE LIGHT. THE RESPONSE RANGE FOR X RAYS, GAMMA RAYS, AND ELECTRONS IS ABOUT 10(5TH) TO 10(8TH) RADS. EXPERIMENTS SHOW THAT, BECAUSE OF THEIR STABILITY, LOW ENERGY DEPENDENCE, AND HIGH SPATIAL RESOLUTION, THESE SOLID SYSTEMS HAVE EXCELLENT POTENTIAL FOR VISUAL INSPECTION OF HIGH-LEVEL DOSE DISTRIBUTIONS ON A MICROSCOPIC SCALE. SINCE MOLECULAR EXCITATIONS DUE TO LOW-ENERGY SECONDARIES ARE MOST IMPORTANT TO THE OVERALL RADIATION EFFECTS, THE RELATIVELY LARGE SENSITIVITY OF SUCH DYE SYSTEMS EXPECTED IN THE INTERMEDIATE AND FAR ULTRAVIOLET MAY REPRESENT AN ADVANTAGE IN DOSIMETRY.

\*DOSE + \*DOSIMETRY, GENERAL + GAMMA + NBS + X-RAY

15-21360 ALSO IN CATEGORY 14  
WILSON AR + SPIERS FW  
FALLOUT CESIUM-137 AND POTASSIUM IN NEW-BORN INFANTS  
UNIVERSITY OF LEEDS, LEEDS

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-21360 \*CONTINUED\*  
5 PAGES, 6 FIGURES, 6 TABLES, 8 REFERENCES, NATURE 215(5100), PAGES 470-4 (JULY 29, 1967)

NEW TECHNIQUES OF LOW-BACKGROUND COUNTING HAVE MADE POSSIBLE THE MEASUREMENT OF INTAKE AND RETENTION OF NATURAL POTASSIUM AND CS-137 IN INFANTS. THE BIOLOGICAL HALF-LIVES OF BOTH K AND CS-137 ARE 5. TO 10 TIMES LOWER THAN THE CORRESPONDING VALUES IN ADULTS.

\*BIOLOGICAL CONCENTRATION, FOOD + \*CESIUM + \*FALLOUT + BIOLOGICAL CONCENTRATION, MAN + BIOLOGICAL CONCENTRATION, MILK + COUNTER, WHOLE BODY + POTASSIUM + UNITED KINGDOM

15-21361

KLATNEK N

CONTRIBUTION TO RADIATION PROTECTION IN ACCIDENT SURGERY

4 PAGES, 5 FIGURES, 2 TABLES, REFERENCES, ARCH. ORTHOPAED, UNFALLCHIR., 57, PAGES 129-32 (JANUARY 4, 1965) IN GERMAN

RADIOPROTECTIVE TECHNIQUES AND DEVICES USED IN THIS LAB INCLUDE FILM DOSIMETERS, AN IMAGE-INTENSIFIER TELEVISION-VIEWER ARRANGEMENT, REMOTE-CONTROL DEVICES FOR POSITIONING FILM CASSETTES, AND EXTENSION TABLES. EXPOSURE TIME FOR PERSONNEL IS MINIMIZED WHEREVER POSSIBLE. TO PROTECT THE PATIENT FROM OVEREXPOSURE AS MUCH AS POSSIBLE, THE AREA TO BE PHOTOGRAPHED IS MARKED OUT BEFOREHAND, AND THE POSITION OF CENTRAL BEAM PREDETERMINED. THE BEAM IS FOCUSED PRECISELY, AND STANDARDIZED, HIGHLY SENSITIVE FILM IS USED. RUBBERIZED PB PLATES ARE USED FOR PROTECTION OF THE GONADS WHEN PHOTOGRAPHS OF THE PELVIC AREA ARE TAKEN.

\*RADIULOGY + DOSE + DOSIMETRY, GENERAL + GERMANY + RADIATION INJURY, TREATMENT OF

15-21362 ALSO IN CATEGORY 14

CROCKER GR + CONNORS MA

GAMMA-EMISSION DATA FOR THE CALCULATION OF EXPOSURE RATES FROM NUCLEAR DEBRIS. VOL. 1. FISSION PRODUCTS NAVAL RADIOLOGICAL DEFENSE LAB., SAN FRANCISCO, CALIF.

USNRDL-TR-876 +. 82 PAGES, 1 FIGURE, 9 REFERENCES, JUNE 10, 1965

PHOTON ENERGIES AND PHOTON ABUNDANCES HAVE BEEN COMPILED AND SUMMARIZED FOR SOME FISSION-PRODUCT AND OTHER RADIONUCLIDES, USING DATA REPORTED IN THE LITERATURE UP TO JUNE 1963. THE DATA ARE PRESENTED IN TABULAR FORM, LISTING PHOTON ENERGIES AND ABUNDANCES FOR GAMMA RAYS, BETA RAYS, AND X RAYS EMITTED. A LIST OF MULTIPLIERS IS ALSO PRESENTED FOR CONVERTING ACTIVITIES OF THE RADIONUCLIDES TO INFINITE-PLANE EXPOSURE RATES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA., \$3.00 COPY, \$0.55 MICROFICHE

\*DOSE + \*FALLOUT + DOSE CALCULATION, EXTERNAL + GAMMA + NUCLEAR EXPLOSION DEBRIS

15-21363

ALSO IN CATEGORY 14

NG YC + THOMPSON SE

PREDICTION OF THE MAXIMUM DOSAGE TO MAN FROM THE FALLOUT OF NUCLEAR DEVICES. II. ESTIMATION OF THE MAXIMUM DOSE FROM INTERNAL EMITTERS

LAWRENCE RADIATION LABORATORY, LIVERMORE

UCRL-50163(PT.2) +. 25 PAGES, 8 TABLES, 19 REFERENCES, DECEMBER 14, 1966

DESCRIBES A METHOD FOR ESTIMATING THE MAXIMUM INTERNAL DOSE THAT COULD RESULT FROM THE DEPOSITION OF RADIONUCLIDES RELEASED TO THE ATMOSPHERE. BY MEANS OF THIS ANALYSIS ONE CAN IDENTIFY THE NUCLIDES THAT COULD CONTRIBUTE MOST TO THE INTERNAL DOSE, AND DETERMINE THE CONTRIBUTION OF EACH NUCLIDE TO THE TOTAL DOSE. THE CALCULATIONS REQUIRED TO ESTIMATE THE MAXIMUM DOSE TO THE WHOLE BODY ARE PRESENTED TO ILLUSTRATE THE OVERALL METHOD. THE RESULTS ARE SHOWN TO SERVE THE BASIC AIMS OF PRESHOT RAD-SAFE ANALYSIS AND OF GUIDANCE FOR POSTSHOT DOCUMENTATION. THE USEFULNESS OF THE ANALYSIS IN PROVIDING GUIDANCE FOR DEVICE DESIGN IS FURTHER POINTED OUT.

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

\*BIOLOGICAL CONCENTRATION, FOOD + \*DOSE + \*FALLOUT + COMPUTER PROGRAM + COMPUTER, DIGITAL + DOSE CALCULATION, INTERNAL + FISSION PRODUCT TRANSPORT + IODINE + LRL + TEST, WEAPONS (HP ASPECTS)

15-21364

IRVING DC + ALSMILLER RG + MORAN HS

TISSUE CURRENT-TO-DOSE CONVERSION FACTORS FOR NEUTRONS WITH ENERGIES FROM 0.5 TO 60 MEV

OAK RIDGE NATIONAL LABORATORY

ORNL-4032 +. 87 PAGES, FIGURES, TABLES, 9 REFERENCES, AUGUST 1967

TO ASSIST IN THE EVALUATION OF THE HAZARD ASSOCIATED WITH EXPOSURE TO HIGH-ENERGY NEUTRONS, A MONTE CARLO COMPUTER PROGRAM WAS USED TO CALCULATE THE ENERGY DEPOSITION AS A FUNCTION OF DEPTH IN A 30-CM-THICK INFINITE SLAB OF TISSUE RESULTING FROM NEUTRONS INCIDENT ON THE SLAB AT ENERGIES UP TO 60 MEV. THE PROGRAM TREATED NONELASTIC AND ELASTIC INTERACTIONS, INCLUDING EVAPORATION PROCESSES AND NUCLEAR RECOILS. CASES OF BOTH NORMAL AND ISOTROPIC INCIDENCES WERE CALCULATED FOR NEUTRONS OF 0.5, 2, 10, 18, 30, AND 60 MEV. FROM THESE DATA, CURRENT-TO-DOSE CONVERSION FACTORS WERE EXTRACTED FOR THE AVERAGE WHOLE-BODY DOSE, THE DOSE

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-21364 \*CONTINUED\*

AT A 5-CM DEPTH, AND THE MAXIMUM DOSE. A SET OF QUALITY FACTORS WAS ADOPTED FOR TRANSFORMING RAD DOSE TO REM DOSE, BUT DETAILED ENERGY DEPOSITION DATA ARE ALSO PRESENTED SO THAT ANY PREFERRED SET OF QUALITY FACTORS CAN BE USED TO OBTAIN ESTIMATES OF THE REM DOSE.

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

\*DOSE + \*DOSE CALCULATION, EXTERNAL + COMPUTER PROGRAM + COMPUTER, DIGITAL + MONTE CARLO + NEUTPON + ORNL

15-21365

THE STANDARDISATION OF PRESSURIZED SUITS  
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, HARWELL  
AHSB(RP)R-76 +. 18 PAGES, 7 FIGURES, 8 REFERENCES, JUNE 1967

A WORKING PARTY WAS FORMED TO DRAFT STANDARDS FOR LIGHT-DUTY PRESSURIZED SUITS. THIS REPORT DESCRIBES THE WORK LEADING TO THE SPECIFICATIONS. FEW DIFFERENT TYPES OF BLOUSES, HOODS, AND OVERSUITS WERE IN USE IN UKAEA, AND PREPARATION OF STANDARDS PRESENTED LITTLE DIFFICULTY. A NEW AUTHORITY STANDARD WAS ADOPTED FOR PERSONNEL AIR HOSE. A SPECIFICATION OF PREFERRED DESIGN CHARACTERISTICS FOR PERSONNEL AIR-HOSE COUPLINGS WAS PREPARED. THE STANDARD SPECIFICATIONS TAKE ACCOUNT OF THE FEW MINOR CHANGES SHOWN BY USE TO BE NECESSARY.

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

\*EQUIPMENT, GENERAL + EQUIPMENT DESIGN + HARWELL + PERSONNEL PROTECTIVE DEVICE + UNITED KINGDOM

15-21368

RACH K  
BASIC PRINCIPLES FOR THE USE OF RADIOACTIVITY IN MEDICINE. VII. RADIATION BURDEN AND RADIATION DANGER  
FRIEIE UNIVERSITY, BERLIN  
5 PAGES, 2 FIGURES, ROENTGENPRAXIS 19, PAGES 70-4 (MARCH 1966) IN GERMAN

REVIEWS BRIEFLY THE QUESTION OF RADIOSENSITIVITY AND THE EFFECTS OF SINGLE ACUTE WHOLE-BODY IRRADIATION. GENETIC RADIATION INJURIES ARE DEFINED AND COMPARED WITH MANIFESTATIONS OF SOMATIC INJURIES. GONADAL EXPOSURE FROM A THORACIC X RAY AMOUNTS TO 0.04 MR. IN BERLIN THE NATURALLY OCCURRING RADIATION EXPOSURE OF THE GONADS AMOUNTS TO ABOUT 10 MR/MONTH. IN THE SWISS MOUNTAINS, BECAUSE OF THE RADIATION FROM THE ROCKS, IT IS ABOUT 26 MR/MONTH. ONE MONTHS GONADAL EXPOSURE TO RADIATION AT THIS RATE IS EQUIVALENT TO 400 THORACIC X RAYS. THE ENVIRONMENTAL GONADAL RADIATION BURDEN IS COMPARED WITH THE EXPOSURES RECEIVED FROM OTHER RADIATION SOURCES. LEGAL REGULATIONS FOR USE OF RADIATION AND RADIATION PROTECTION ARE DISCUSSED.

\*RADIATION DAMAGE + \*RADIOBIOLOGY + DOSE CALCULATION, EXTERNAL + GERMANY + RADIATION INJURY, TREATMENT OF + RADIOLOGY

15-21371

HISADA K + HIRAKI T  
STUDY ON THE MEDICAL UNIVERSAL HUMAN COUNTER. III. SIMULTANEOUS PERFORMANCE OF ISOSENSITIVE SCANNING AND BILAMINOSCANING  
KANAZAWA UNIVERSITY, JAPAN  
5 PAGES, 8 FIGURES, 5 REFERENCES, RADIOISOTOPES (TOKYO) NO. 15, PAGES 354-8 (NOVEMBER 1966) IN JAPANESE

FOR PRACTICAL CONVENIENCE A NEW TECHNIQUE WAS DEVELOPED TO PERFORM AN ISOSENSITIVE SCAN AND BI-LAMINOSCAN SIMULTANEOUSLY AT ONE SCANNING. THE ESSENTIAL FEATURES ARE THE ADDITION OF TWO OBLIQUE PLACED DETECTORS TO THE TWO OPPOSED DETECTORS SYSTEM AND THE MODE TO MIX THE SIGNALS ADDITIVELY FROM EACH DETECTOR IN THREE COMBINATIONS, RECORDING THEM SIMULTANEOUSLY WITH FOUR HEADS OF MECHANICAL MULTIDOT TAPPER, TWO SHEETS OF LAMINOSCAN UPPER AND LOWER, ONE ISOSENSITIVE SCAN, AND ONE CONVENTIONAL ANTERIOR SCAN. THIS SYSTEM CAN BE A HELP TO DISCLOSE THE SMALLER LESIONS IN THE DIMENSIONALLY THICK ORGAN.

\*COUNTER + COUNTER, WHOLE BODY + JAPAN + RADIATION DAMAGE + RADIOBIOLOGY + RADIOLOGY

15-21373

CLIFFORD CE + WAIT GD  
AIR-GROUND INTERFACE EFFECTS ON THE EXPOSURE FROM ELEVATED CS-137 GAMMA SOURCES  
DEFENCE RESEARCH BOARD, OTTAWA, CANADA  
3 PAGES, 1 FIGURE, 2 TABLES, 12 REFERENCES, NUCLEAR SCIENCE AND ENGINEERING 27(2), PAGES 483-485 (FEBRUARY 1967)

THIS NOTE INDICATES THAT INFINITE-MEDIUM CALCULATIONS OF THE EXPOSURE DOSE IN AIR OR AIR-LIKE MATERIALS CAN BE APPLIED TO PROBLEMS INVOLVING ELEVATED, UNIFORMLY DISTRIBUTED GAMMA SOURCES WITHOUT INTRODUCING LARGE ERRORS. FOR INDIVIDUAL ELEVATED SOURCES, THE EFFECTS OF THE AIR-GROUND INTERFACE COULD BE MOST PRONOUNCED. HOWEVER, FOR MANY PROBLEMS IT SHOULD BE POSSIBLE TO APPLY THE BOUNDARY-CORRECTION FACTORS CALCULATED BY BERGER FOR A SOURCE ON THE GROUND, WITH AN ACCURACY OF PLUS OR MINUS 20%.

\*DOSE + AIR + CANADA + CESIUM + DOSE CALCULATION, EXTERNAL + SHIELDING

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-21374 ALSO IN CATEGORY 14  
PROCEEDINGS OF THE CONFERENCE ON RADIATION BIOLOGY HELD AT THE OAK RIDGE ASSOCIATED UNIVERSITIES, OAK RIDGE, TENN., AUGUST 2-5, 1965  
OAK RIDGE NATIONAL LABORATORY + UT-AEC AGRICULTURAL RESEARCH LAB., OAK RIDGE, TENN. + OAK RIDGE ASSOCIATED UNIVERSITIES, INC., TENN.  
CONF-650947 +. 63 PAGES, FIGURES, REFERENCES, JUNE 1967

THE PURPOSE OF THE CONFERENCE WAS TO ENABLE TEACHERS, PARTICULARLY THOSE IN UNDERGRADUATE COLLEGES, TO BECOME FAMILIAR WITH THE FUNDAMENTAL PRINCIPLES OF RADIATION BIOLOGY, AND TO DISCUSS HOW INFORMATION FROM RADIATION STUDIES CAN BE INCORPORATED INTO THE UNDERGRADUATE CURRICULUM. SUBJECTS INCLUDE - RADIATION BIOLOGY AS A SCIENCE, RADIATION EFFECTS AT THE CELLULAR LEVEL, RADIATION EFFECTS IN MAMMALIAN TISSUES, RADIATION EFFECTS IN PLANTS, AEC BIOMEDICAL RESEARCH PROGRAMS, AND REPORTS OF GROUP DISCUSSIONS ON INCLUSION OF RADIATION BIOLOGY IN UNDERGRADUATE COURSES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA., \$2.00 COPY, \$0.65 MICROFICHE

\*RADIATION DAMAGE + \*RADIOBIOLOGY + BIOMEDICAL

15-21377 ALSO IN CATEGORY 14  
BIOENVIRONMENTAL AND RADIOLOGICAL-SAFETY FEASIBILITY STUDIES ATLANTIC-PACIFIC INTEROCEANIC CANAL BATTELLE MEMORIAL INST., COLUMBUS, OHIO  
BMT-171-003 +. 102 PAGES, JANUARY 13, 1967

INTERIM REPORT OF PROGRESS ON THE STUDIES UNDER MANAGEMENT OF BATTELLE-COLUMBUS. CONCERNED PRIMARILY WITH STUDIES BEING MADE AND THOSE BEING PLANNED BY BATTELLE-COLUMBUS SUBCONTRACTORS. SUBJECTS DISCUSSED INCLUDE - DOSE ESTIMATION, HUMAN ECOLOGY (PANAMA), AGRICULTURAL ECOLOGY, TERRESTRIAL ECOLOGY, HYDROLOGY AND RADIONUCLIDE DISTRIBUTION, FRESHWATER ECOLOGY, PHYSIOCHEMICAL OCEANOGRAPHY, ESTERINE AND MARINE ECOLOGY, SPECIFIC-ACTIVITY APPROACH, MARINE ECOLOGY AND RESOURCES, DATA EVALUATION PLAN.

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

\*DOSE + \*ECOLOGICAL CONSIDERATION + \*HYDROLOGICAL CONSIDERATION, GENERAL + \*PLOWSHARE PROGRAM + DOSE CALCULATION, EXTERNAL + DOSE CALCULATION, INTERNAL + ESTUARY + OCEAN AND SEA + PLOWSHARE PROGRAM, ATLANTIC-PACIFIC CANAL + RADIOBIOLOGY

15-21382 ALSO IN CATEGORY 14  
HEASLIP MB  
ECOLOGICAL SIGNIFICANCE OF NEUTRON AND GAMMA RADIATION ON DORMANT AND PHYSIOLOGICALLY ACTIVE SEED AND SEEDLINGS OF TREE SPECIES NATIVE TO THE EASTERN DECIDUOUS FOREST. PROGRESS REPORT.  
MOREHEAD STATE UNIV., KY.  
DRO-2066-11 +. 38 PAGES, TABLES, REFERENCES, JUNE 1967

TO DETERMINE WHETHER FAST NEUTRONS AND GAMMAS ARE ADDITIVE OR INDEPENDENT IN ACTION, THE RELATIVE RADIOSENSITIVITY OF SEED SAMPLES EXPOSED TO 16 COMBINATIONS OF FAST NEUTRONS AND GAMMAS WERE INVESTIGATED. THE RELATIVE EFFECTS OF WATER ON FAST NEUTRONS AND GAMMA ACTIVITY WERE DETERMINED BY EXPOSING SOAKED AND NONSOAKED SEED SAMPLES TO VARIOUS LEVELS OF FAST NEUTRONS OR GAMMAS.

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

\*RADIATION DAMAGE + \*RADIOBIOLOGY + ECOLOGICAL CONSIDERATION + GAMMA + NEUTRON

15-21383  
BENDER MA  
EFFECTS OF RADIATION ON CHROMOSOMES  
OAK RIDGE NATIONAL LAB., TENN.  
ORNL-P-3201 + CONF-670709-2 +. 46 PAGES, 1967, PRESENTED AT SYMPOSIUM ON PEACEFUL USES OF ATOMIC RADIATION, RIO DE JANEIRO, BRAZIL

THE STUDY OF CHROMOSOMAL ABERRATIONS IN HUMAN CELLS WAS BEGUN IN 1956. IT WAS MADE POSSIBLE BY THE USE OF TISSUE CULTURES AND OF HYPOTONIC PREFIXATION TREATMENTS. THE START OF HUMAN CYTOGENETICS MAY BE DATED FROM THE DISCOVERY IN 1956 BY TJIO AND LEVAN THAT THE HUMAN DIPLOID CHROMOSOME NUMBER WAS REALLY 46 INSTEAD OF 48. THE DEVELOPMENT OF A PRACTICAL METHOD FOR OBTAINING CHROMOSOME PREPARATIONS FROM PERIPHERAL BLOOD SAMPLES CONTRIBUTED TO FURTHER GROWTH OF HUMAN CYTOGENETICS, BUT AUTHOR ADDS THAT THE SEARCH FOR CLINICALLY USEFUL KNOWLEDGE OF CHROMOSOMAL ABNORMALITIES HAS BEEN DISAPPOINTING, SOMETIMES EVEN DISTRESSING. MANY TRIVIALITIES APPEAR IN THE LITERATURE AS IMPORTANT DISCOVERIES. HANDROLLED NOMENCLATURE ABOUNDS, ADDING TO THE CONFUSION. SOME DATA IS QUESTIONABLE, LEADING TO FALSE CONCLUSIONS.

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

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-21383 \*CONTINUED\*.  
\*RADIATION DAMAGE + \*RADIOBIOLOGY + ORNL

15-21385  
LINIECKI J + KARNIEWICZ W + SPODENKIEWICZ T  
ON THE DOMINANT CAUSE OF INDIVIDUAL VARIATION IN CS-137 BODY CONTENT  
INST. OCCUP. MED., LGDZ, POLAND  
4 PAGES, 1 FIGURE, 2 TABLES, 8 REFERENCES, NUKLEONIKA 11(6), PAGE 455-458, (1966)

FROM DATA ON BODY BURDEN AND EXCRETION OF CS-137 BY EIGHT YOUNG HEALTHY ADULTS, APPROXIMATE VALUES OF BIOLOGICAL HALF-LIFE OF CAESIUM (LONG-TERM COMPONENT) WERE CALCULATED ASSUMING A STATE OF (OR CLOSE TO) METABOLIC EQUILIBRIUM. HIGHLY SIGNIFICANT CORRELATION BETWEEN INDIVIDUAL VALUES OF BODY BURDEN AND HALF-LIFE WAS OBTAINED, WHEREAS NO CORRELATION WAS APPARENT OF BODY LEVELS WITH EXCRETION/INTAKE. IT IS POSTULATED THEREFORE, THAT INDIVIDUAL VARIATION IN TURNOVER RATE OF CAESIUM IS MAINLY RESPONSIBLE FOR OBSERVED DISTRIBUTION OF CS-137 IN URBAN POPULATION, SUBSISTING ON SIMILAR SOURCE ON MARKETED FOOD.

\*RADIOBIOLOGY + BIOLOGICAL CONCENTRATION, FOOD + BIOLOGICAL CONCENTRATION, MAN + CESIUM + DIETARY HABIT + POLAND

15-21386  
CZOSNOWSKA W  
STRONTIUM AND CALCIUM EXCRETION IN URINE OF MAN  
DEPT. RAD. PROTECTION, INST. OCCUP. MED. LGDZ, POLAND  
12 PAGES, 3 FIGURES, 6 TABLES, 26 REFERENCES, NUKLEONIKA 11(6), PAGE 459-470, (1966)

THE CA AND SR-90 INTAKE AND EXCRETION WAS STUDIED UNDER HOSPITAL CONDITIONS IN 10 ADULTS OVER A PERIOD OF TWO WEEKS. THE PATIENTS WERE DIVIDED INTO TWO SUBGROUPS ACCORDING TO COMPOSITION OF THE DIET AND INTAKE OF CALCIUM WHICH ON THE AVERAGE AMOUNTED TO 1.3 AND 0.79 PER DAY, RESPECTIVELY. THE AVERAGE DIETARY INTAKE OF SR-90 IN TWO SUBGROUPS WAS 28.8 AND 16.7 PCI/DAY, RESPECTIVELY. THE EXCRETION OF SR-90 AND OF CA, WHEN EXPRESSED AS A PERCENTAGE OF INTAKE VARIED IN TWO SUBGROUPS, HOWEVER THE RATIO SR-90/CA (URINE) DIVIDED BY SR/CA (FOOD) WAS RELATIVELY CONSTANT AT ABOUT 0.75. ON THE OTHER HAND, IN INDIVIDUALS THE RATIO VARIED SYSTEMATICALLY WITH CALCIUM EXCRETION RATE IN URINE. ON THE BASIS OF OWN AND OTHER AUTHORS DATA A MORE GENERAL RELATIONSHIP BETWEEN THE RATIO AND CA EXCRETION IN URINE WAS ESTABLISHED.

\*RADIOBIOLOGY + ANALYTICAL TECHNIQUE, URINE + BIOLOGICAL CONCENTRATION, MAN + CALCIUM + POLAND + STRONTIUM

15-21387 ALSO IN CATEGORY 14  
RECHT P  
GENERAL STUDIES ON RADIATION ACCIDENTS. REPORT PRESENTED AT THE SYMPOSIUM ON ACCIDENTAL IRRADIATIONS IN INDUSTRY  
EUROPEAN ATOMIC ENERGY COMMUNITY  
15 PAGES, 5 TABLES, 25 REFERENCES, J. BELGF RADIOL., 50, PAGE 96-110, (1967) IN FRENCH

THIS SURVEY COMPRISES TWO PARTS. THE FIRST PART IS DEVOTED TO A LIST OF ACCIDENTAL IRRADIATIONS, AS COMPILED FROM AN ANALYSIS OF CERTAIN INFORMATION SUPPLIED, AND TO THE GENERAL LESSONS THAT CAN BE LEARNED THEREFROM. WHEREAS THE MOST SERIOUS ACCIDENTS HAVE SO FAR OCCURRED IN CRITICAL ASSEMBLIES, EXPERIMENTAL REACTORS AND CHEMICAL PLANTS, THE SCATTERED LOCATION OF OTHER RADIOACTIVITY SOURCES PRESENTS A NUMBER OF PROBLEMS AS REGARDS REGULATIONS AND CONTROL. THE SECOND PART DEALS WITH THE ADMINISTRATIVE AND MEDICO-LEGAL ASPECTS OF ACCIDENTAL IRRADIATIONS AND THE AUTHOR RAISES VARIOUS PROBLEMS AND QUESTIONS CONCERNING THE MEANING OF THE TERM ACCIDENTAL IRRADIATION AND ITS MEDICO-LEGAL IMPLICATIONS, BY CONSIDERING THE IMMEDIATE EFFECTS, THE THRESHOLD DOSES, AND THE DELAYED EFFECTS.

\*ACCIDENT, GENERAL + \*RADIATION PROTECTION, ORGANIZATION + \*RADIOCHEMICAL PLANT SAFETY + ACCIDENT, CRITICALITY + BELGIUM + RADIATION DAMAGE + RADIATION SAFETY AND CONTROL + RADIOBIOLOGY

15-21388  
MALLON BJ  
CORRELATION OF HEAT OF FUSION AND OPTICAL DENSITY IN PENTON WITH ABSORBED DOSE USING A PROPOSED SPECTRUM FOR THE XRD-6 X-RAY MACHINE  
CALIFORNIA, UNIVERSITY, LAWRENCE RADIATION LAB., LIVERMORE  
UCRL-50-293 +. 16 PAGES, 13 FIGURES, 3 TABLES, 16 REFERENCES, MAY 1967

INFORMATION ON THE SPECTRUM OF COMMERCIAL X-RAY MACHINES DOES NOT RESOLVE THE RANGE BELOW 10 KEV BECAUSE OF THE DIFFICULTY OF GETTING ACCURATE SPECTRAL MEASUREMENTS IN THIS REGION. PENTON (POLY-3, 3-(BISCHLOROMETHYL)-OXETANE) IS A CANDIDATE FOR THE STUDY OF THIS REGION SINCE IT IS RELATIVELY TRANSPARENT TO RADIATION ABOVE 15 KEV AND RAPIDLY BECOMES INCREASINGLY ABSORBENT BELOW THIS ENERGY. STUDIES OF PENTON INDICATE THAT IN RANGE OF X-RAY ENERGY OF 5 TO 15 KEV AND ABSORBED DOSES OF 0 TO 400 CAL/G, THE HEATS OF FUSION OF SAMPLES ANNEALED AFTER EXPOSURE AND MELTING POINTS OF SAMPLES HEATED TO 230 C AND NATURALLY COOLED TO ROOM TEMPERATURE APPEAR TO BE RELIABLE MEASURES OF DOSAGE.

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

\*DOSIMETRY, GENERAL + \*RADIATION EFFECT + LRL + X-RAY

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-21445 ALSO IN CATEGORY 14

RIEL GK

CONCENTRATION OF RADIOACTIVE ISOTOPES IN ENVIRONMENTAL WATER MEASURED BY UNDERWATER GAMMA SPECTROMETRY  
NAVAL ORDNANCE LAB., WHITE OAK, MD.  
AD-648810 +. 208 PAGES, DECEMBER 20, 1966

RECENTLY DEVELOPED UNDERWATER GAMMA-RAY SPECTROMETERS WERE USED TO MEASURE THE CONCENTRATIONS OF GAMMA-EMITTING ISOTOPES IN EXTREMELY DILUTE SOLUTIONS CORRESPONDING TO A CONCENTRATION OF ABOUT 10(-14TH) GRAM PER LITER. THE IDENTIFICATION OF SPECIFIC ISOTOPES IS POSSIBLE BECAUSE THE UNDERWATER SPECTROMETERS ARE CAPABLE OF MEASURING THE GAMMA-RAY ENERGIES OF THE SOURCES. GAMMA RADIATION BACKGROUND SPECTRA WERE MEASURED IN MANY BODIES OF WATER. THE SPECTROMETERS COUNTING EFFICIENCY WAS MEASURED FOR 17 RADIOACTIVE ISOTOPES DISSOLVED IN WATER AS STANDARDS.

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

\*REACTOR POWER + \*SPECTROMETRY, GAMMA + \*WATER POLLUTION + ENVIRONMENTAL CONDITION + FISSION PRODUCT TRANSPORT + GAMMA EMITTER + RADIATION DOSE

15-21446 ALSO IN CATEGORY 14

KIMEL WR + FAW RE + BARAN JA + MINGLE JC + RUBIN RM  
SCATTERING OF FALLOUT RADIATION FROM CEILINGS OF PROTECTIVE STRUCTURES. SPECIAL REPORT  
KANSAS ENGINEERING EXPERIMENT STATION, MANHATTAN  
AD-645908 + SR-72 +. 176 PAGES, JULY 1966

MADE A THOROUGH STUDY OF THE CEILING-SHINE PROBLEM. CEILING SHINE IS DEFINED AS THAT CONTRIBUTION TO THE RADIATION DOSE RATE IN A PROTECTIVE STRUCTURE RESULTING FROM FALLOUT RADIATION ENTERING THE STRUCTURE THROUGH APERTURES IN VERTICAL WALLS AND SCATTERING DOWNWARD FROM THE CEILING. A SYSTEMATIC ANALYTICAL ANALYSIS OF THIS PROBLEM, VERIFIED EXPERIMENTALLY, RESULTED IN A SET OF DESIGN CURVES. THESE CURVES YIELD THE CEILING SHINE REDUCTION FACTOR IN ANY CONCRETE STRUCTURE AS A FUNCTION OF BUILDING DIMENSIONS, SIZE AND LOCATION OF APERTURES, AND DETECTOR LOCATION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA, \$2.00 COPY, \$0.65 MICROFICHE

\*DOSIMETRY, GENERAL + \*FALLOUT + \*SAFETY ANALYSIS + \*SCATTERING (SKYSHINE) + ENVIRONMENTAL CONDITION + RADIATION SAFETY AND CONTROL + STRUCTURAL INTEGRITY

15-21447

HARRIS WS + METZLER RE + LAWSON ME

INSTALLATION AND TESTING OF AN AUTOMATIC REMOTE RADIOLOGICAL MONITORING SYSTEM. FINAL REPORT  
GAUTNEY AND JONES COMMUNICATIONS, INC., WASHINGTON, D. C.  
AD-647350 +. 127 PAGES, 44 FIGURES, JULY 1966

AN AUTOMATIC REMOTE RADIOLOGICAL MONITORING SYSTEM WHICH WAS DEVELOPED UNDER AN OCD RESEARCH CONTRACT BY NUCLEAR-CHICAGO CORPORATION HAS BEEN INSTALLED IN A COMMUNITY AND TESTED FOR OPERATIONAL CHARACTERISTICS. THE SYSTEM AS DELIVERED WAS CAPABLE OF BEING OPERATED VIA LANDLINE TELEMETRY LINKS BUT CONSIDERABLE ENGINEERING EFFORT WAS REQUIRED TO EFFECT AN INTERFACE WITH A VHF RADIO LINK. EXTENSIVE MODIFICATION OF BOTH THE BASE STATION AND REMOTE STATION TRANSCIVERS AS WELL AS THE MONITORING EQUIPMENT WAS PERFORMED. THE SYSTEM WAS DEPLOYED IN MONTGOMERY COUNTY, MARYLAND, WHICH COMPRISES AN AREA OF APPROXIMATELY FIVE HUNDRED SQUARE MILES. THE UNITS WERE INSTALLED ON COUNTY SCHOOL PROPERTIES DISTRIBUTED THROUGHOUT THE COUNTY, AND THE DEPLOYMENT PATTERN INCLUDES PATH LENGTHS RANGING FROM THREE AND ONE HALF TO FIFTEEN AND ONE HALF MILES OVER ROLLING TERRAIN. THE SYSTEM IS NOW OPERATIONAL AND IS BEING EVALUATED, UNDER A SEPARATE CONTRACT, FOR EFFECTIVENESS IN ITS PRESENT FORM AND FOR IMPROVEMENTS IN RELIABILITY AND OPERABILITY.

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

\*MONITORING SYSTEM, RADIATION + \*RESEARCH CONTRACT + \*TEST, SYSTEM OPERABILITY + OPERATING EXPERIENCE SUMMARY + TEST, BENCH

15-21664 ALSO IN CATEGORY 17

OHIO STATE UNIVERSITY REPORTS NONCOMPLIANCE WITH RADIATION MONITOR REQUIREMENTS  
OHIO STATE UNIVERSITY, COLUMBUS, OHIO  
6 PAGES, DOCKET 50-150, NOVEMBER 24, 1967

TECHNICAL SPECIFICATIONS REQUIRE A PORTABLE BETA-GAMMA SURVEY METER WITH A RANGE OF 0.01 MR/HR TO 50 R/HR. THE ONLY SUCH INSTRUMENT AT THE FACILITY, A RAD GUN, WAS REPORTED INOPERATIVE ON AUGUST 29, 1967, AND WAS SHIPPED FOR REPAIRS ON OCT. 30, 1967. OPERATIONS CONTINUED UNTIL THE SITUATION WAS REALIZED DURING STARTUP ON NOVEMBER 8, 1967. SUPERVISION BELIEVES THIS WAS A TECHNICALITY BECAUSE TWO OPERABLE INSTRUMENTS (2.5 AND 5 R/HR) WERE AVAILABLE.

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



CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-21664 \*CONTINUED\*  
\*MONITOR, RADIATION, GENERAL + REACTOR, POOL TYPE + REACTOR, RESEARCH + TECHNICAL SPECIFICATIONS

15-21665 ALSO IN CATEGORY 14  
BAKER RC + DAVIS KA  
ENVIRONMENTAL MONITORING SUMMARY FOR THE PADUCAH PLANT FOR 1965 AND 1966  
PADUCAH GASEOUS DIFFUSION PLANT, KY.  
KY-543 +. 11 PAGES, TABLES, SEPTEMBER 1, 1967

OUTDOOR MONITORING OF AIR, WATER, AND VEGETATION IN THE VICINITY OF THE PADUCAH PLANT IS SUMMARIZED FOR 1965-1966. EFFLUENTS FROM THE PADUCAH GASEOUS DIFFUSION PLANT OPERATIONS WERE CHANNLED AND CONTROLLED AS NECESSARY FOR THE ENVIRONMENTAL CONCENTRATIONS OF CHEMICALS AND RADIOACTIVITY IN AIR, WATER, AND VEGETATION TO BE AT ACCEPTABLY LOW LEVELS.

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

\*GROSS ALPHA + \*GROSS BETA + \*GROSS GAMMA + \*MONITOR, RADIATION, ENVIRONMENTAL + \*SAMPLING +  
GROUND WATER, NUCLIDE OCCURRENCE + MONITOR, RADIATION, AIR + MONITOR, RADIATION, GROUND SURFACE +  
MONITOR, RADIATION, LIQUID

15-21666  
MCCUIRE SA  
NEUTRON ACTIVATION PROBABILITY FOR SODIUM IN MAN  
LOS ALAMOS SCIENTIFIC LAB., N. MEXICO  
LA-3721 +. 6 PAGES, 2 FIGURES, 1 TABLE, 6 REFERENCES, SEPTEMBER 2, 1966

KNOWLEDGE OF THE NEUTRON ACTIVATION OF BLOOD SODIUM CAN BE USED TO CALCULATE AN ACCIDENTAL NEUTRON DOSE IF THE NEUTRON SPECTRUM AND THE NEUTRON CAPTURE PROBABILITY OF THE MAN AS A FUNCTION OF ENERGY ARE BOTH KNOWN. THIS REPORT DESCRIBES CALCULATIONS OF THE NEUTRON CAPTURE PROBABILITY OF A 136-LB MAN, A 200-LB MAN, AND 30-CM-, 24-CM-, AND 18-CM-DIA BY 60-CM-HIGH CYLINDERS. THE CAPTURE PROBABILITY OF A MAN WAS FOUND TO BE BELOW THAT OF THE 30-CM-DIA CYLINDER AT ALL ENERGIES AND MUCH CLOSER TO THE CAPTURE PROBABILITY OF THE 18-CM-DIA CYLINDER. BELOW 0.1 MEV, THE CAPTURE PROBABILITY OF A 136-LB MAN AVERAGES ABOUT 20% LOWER THAN THAT OF THE 30-CM-DIA CYLINDER. ABOVE 0.1 MEV, THE GAP WIDENS RAPIDLY UNTIL THE CAPTURE PROBABILITY AT 2 MEV IS TWICE AS GREAT FOR THE CYLINDER AS FOR THE MAN. THE MANS POSITION WITH RESPECT TO THE NEUTRON BEAM WAS FOUND TO HAVE A CONSIDERABLE EFFECT. THE CAPTURE PROBABILITY AVERAGES ABOUT 20% LOWER FOR A MAN STANDING SIDE-ON TO THE BEAM THAN FOR ONE FACING IT.

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

\*DOSE CALCULATION, INTERNAL + \*NEUTRON + \*PLASMA + \*SODIUM + ACTIVATION + BIOLOGICAL CONCENTRATION, MAN +  
MONTE CARLO

15-21667 ALSO IN CATEGORY 14  
PESTNER JF + LOVE DL  
A COMPUTER PROGRAM FOR IDENTIFYING AND MEASURING COMPONENTS IN A MIXTURE OF GAMMA-EMITTING RADIONUCLIDES  
NAVAL RADIOLOGICAL DEFENSE LAB., SAN FRANCISCO  
USNROL-TR-67-46 +. 48 PAGES, 15 FIGURES, MARCH 1, 1967

PROBLEM - IN A STUDY OF THE PHYSICAL AND CHEMICAL SPECIES OF RADIOACTIVE DEBRIS RESULTING FROM AN UNDERWATER NUCLEAR EXPLOSION, COMPLEX MIXTURES OF RADIONUCLIDES, SOMETIMES OF FAIRLY LOW ACTIVITY, ARE TO BE ANALYZED. A COMPUTER PROGRAM FOR RESOLVING THE GAMMA PULSE-HEIGHT DISTRIBUTION OF A WEAKLY ACTIVE MIXTURE OF GAMMA EMITTERS INTO ITS COMPONENTS IS REQUIRED. FINDINGS - A COMPUTER PROGRAM WAS DEVELOPED AND THEN TESTED SUCCESSFULLY ON THE GAMMA PULSE-HEIGHT DISTRIBUTION OF A SYNTHETIC MIXTURE OF 3 RADIONUCLIDES, EACH HAVING SEVERAL PHOTOPEAKS OVER A 2-MEV RANGE. THE PROGRAM IS BASED ON AN ITERATIVE SUBTRACTION TECHNIQUE AND IS PROMISING BECAUSE ERRORS IN THE ANALYSIS WRE SMALL (0.5 TO 2.0%), ALTHOUGH MANY POSSIBLE REFINEMENTS IN THE PROGRAM HAVE NOT YET BEEN MADE.

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

\*COMPUTER PROGRAM + \*GAMMA EMITTER + \*RADIOCHEMICAL ANALYSIS + MEASUREMENT, REACTIVITY + NUCLEAR DETONATION

15-21668 ALSO IN CATEGORY 14  
PORTER SW + SLABACK LA  
MEASUREMENT OF TRITIUM SURFACE CONTAMINATION  
ARMED FORCES RADIOBIOLOGY RESEARCH INST., BETHESDA, MD.  
AD-640810 + AFRR1-SP-66-13 + CONF-660403-4 +. 18 PAGES, REFERENCES, JULY 1966, FROM INTERNATIONAL SYMPOSIUM ON RADIOLOGICAL PROTECTION OF THE WORKER BY THE DESIGN AND CONTROL OF HIS ENVIRONMENT, BOURNEMOUTH, ENG.

DESCRIBES SEVERAL METHODS FOR MEASURING TRITIUM SURFACE CONTAMINATION IN REACTOR, ACCELERATOR, AND TRITIUM OXIDE ENVIRONMENTS. THE PROBLEMS ASSOCIATED WITH THE PRESENTLY USED METHOD OF WINDOWLESS FLOW-PROPORTIONAL COUNTING ARE DISCUSSED. A NEW METHOD OF UTILIZING SPECIAL

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-21668 \*CONTINUED\*

MEMBRANE SWIPE PAPERS COUNTED IN A LIQUID SCINTILLATION SYSTEM IS DESCRIBED. THE DATA FROM SINGLE CHANNEL AND CHANNEL RATIO LIQUID SCINTILLATION COUNTING TECHNIQUES, VARIOUS SWIPE PAPERS AND VARIOUS TRITIUM ABSORPTION AGENTS ARE PRESENTED WITH A STATISTICAL ANALYSIS. VARIOUS FACTORS AFFECTING LIQUID SCINTILLATING COUNTING OF INORGANIC TRITIUM ARE DISCUSSED. THIS METHOD GIVES ABOUT 20% EFFICIENCY WITH GOOD STATISTICS, VERSUS 1% EFFICIENCY AND VERY POOR COUNTING STATISTICS FOR FLOW-PROPORTIONAL COUNTING OF TRITIUM ON SWIPE PAPERS. FROM THE STANDPOINT OF OVERALL COUNTING EFFICIENCY, REPRODUCIBILITY OF COUNTS, EASE OF COUNTING, AND PHYSICAL STRENGTH, THE VINYL MEMBRANE VM-1 PAPER COUNTED IN DIOXANE WAS BEST FOR GENERAL TRITIUM SURFACE-CONTAMINATION MEASUREMENTS.

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

\*COUNTER + \*MEASUREMENT, GENERAL + \*STATISTICAL ANALYSIS + \*TRITIUM + ACCELERATOR + CONTAMINATION + OXIDE + REACTOR POWER

15-21712 ALSO IN CATEGORY 14

DAVIS LW + BAKER VL + SUMMERS DL  
ANALYSIS OF JAPANESE NUCLEAR CASUALTY DATA  
DIKWOOD CORP., ALBUQUERQUE, NEW MEXICO

USNRDL-TRC-46 + DC-EP-1054 +. 326 PAGES, 69 FIGURES, 15 TABLES, 11 REFERENCES, APRIL 1966

SUMMARIZES THE RESULTS OF A DETAILED DATA REDUCTION AND CASUALTY STUDY MADE ON OVER 35,000 PERSONS SUBJECTED TO THE NUCLEAR ATTACK ON HIROSHIMA AND NAGASAKI, JAPAN, IN 1945. GRAPHICAL AND TABULAR PRESENTATIONS ARE MADE OF PERTINENT DATA TO SHOW THAT AN EXCELLENT BASE EXISTS FOR MORE RELIABLE CONCLUSIONS OF A WIDER VARIETY THAN HAVE HERETOFORE BEEN AVAILABLE. THE FREE-FIELD WEAPONS EFFECTS ARE PRESENTED FOR BOTH JAPANESE CITIES TO ALLOW THE ASSOCIATION OF A GIVEN EFFECTS LEVEL WITH A PARTICULAR PERCENTAGE OF MORTALITY OR INJURY. SUCH COMPARISONS INDICATE THAT THE INITIAL NUCLEAR RADIATION PLAYED A DOMINANT ROLE IN THE DEATHS OF THERMALLY SHIELDED PEOPLE IN BOTH CITIES. OTHER POST-ATTACK DATA ARE GIVEN FOR THOSE PERSONS KILLED IMMEDIATELY, THOSE RESCUED BY OTHERS, THOSE WHO WERE KILLED.

AVAILABILITY - DEFENSE DOCUMENTATION CENTER, CAMERON STATION, ALEXANDRIA, VA.

\*DATA PROCESSING + \*JAPAN + \*NUCLEAR DETONATION + \*STATISTICAL ANALYSIS + \*SURVEILLANCE PROGRAM + CIVIL DEFENSE + HAZARDOUS ANALYSIS + POPULATION EXPOSURE

15-21714 ALSO IN CATEGORY 17

SIX-REM EXPOSURE AT AVONDALE SHIPYARDS DURING RADIOGRAPHY  
AVONDALE SHIPYARDS, INC., NEW ORLEANS

2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(18), PAGES 13-14, (MAY 1, 1967)

(TWX, APRIL 7) RADIOGRAPHER SUPERVISOR RECEIVED 6 REMS WHEN A 65-CURIE IR-192 SOURCE STUCK IN THE SOURCE CABLE. THE OPERATOR DID NOT RECEIVE A DOSE ON DOSIMETERS.

\*PERSONNEL EXPOSURE, RADIATION + \*RADIOGRAPHY + FAILURE, EQUIPMENT + INCIDENT, EQUIPMENT

15-21717 ALSO IN CATEGORY 17

NUCLEAR FUEL SERVICES CITED FOR NON-COMPLIANCE  
NUCLEAR FUEL SERVICES, INC., WEATON, MD.

5 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(18), PAGES 16-20 (MAY 1, 1967)

(LETTER, MARCH 15) CITATION IS FOR INADEQUATE RADIATION MONITORING OF STACK AND OF DECONTAMINATION OPERATIONS, AND 35/27 MISSING FILM BADGES FOR 2ND/3RD QUARTER OF 1966. LETTER ALSO REQUESTS DATA ON BETTER CONTROL OF VENTILATION (SNOW PLUGGING OF MAIN INTAKE, INFLATABLE SEALS ON OUTSIDE DOOR, AND SIMULTANEOUS OPENING OF BOTH AIRLOCK DOORS.) NFS LETTER OF JANUARY 3 ASSERTED IN REPLY TO AEC LETTER OF DECEMBER 13, 1966 THAT ACTION WAS BEING TAKEN ON POINTS NOTED.

\*INSPECTION AND COMPLIANCE + \*SURVEY, RADIATION, GENERAL + \*VENTILATION SYSTEM + NFS + RADIOCHEMICAL PROCESSING + STACK

15-21719 ALSO IN CATEGORY 17

BRANTLEY JC

NUCLEAR SCIENCE AND ENGINEERING CORP. REPLIES TO MARCH 10 COMPLIANCE LETTER  
NUCLEAR SCIENCE AND ENGINEERING CORPORATION, PITTSBURGH, PA.

2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(18), PAGES 20-21 (MAY 1, 1967)

(LETTER, MARCH 27) ACKNOWLEDGES THAT (1) HEALTH PHYSICS PROGRAM WAS INADEQUATE DURING PERIOD, DUE TO LACK OF EQUIPMENT, (2) HP FUNCTIONS WERE NOT CONSCIENTIOUS, AND (3) MANAGEMENT CONTROLS WERE SLOW TO IDENTIFY THIS. BRIEFLY DISCUSSES 9 ITEMS (AIR SURVEYS, EFFLUENT-AIR SURVEYS, UNRESTRICTED-AREA RADIATION FIELDS, LEAK TESTING OF SEALED SOURCES, RADIOLOGICAL SAFETY INSTRUCTION, RADIATION/CONTAMINATION MONITORING PROGRAM, EXTREMITY DOSES, SURVEY RECORDS).

\*INSPECTION AND COMPLIANCE + MONITORING SYSTEM, RADIATION + STAFFING, TRAINING, QUALIFICATION + SURVEY, RADIATION, GENERAL

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-21720 ALSO IN CATEGORY 17  
STEERMAN JJ  
UNIVERSITY OF ILLINOIS REPORTS SKIN EXPOSURE TO P-32  
UNIVERSITY OF ILLINOIS, URBANA, ILL.  
3 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(1F), PAGES 22-24 (MAY 1, 1967)

(LETTER, MARCH 31) THE INDIVIDUAL ASSUMED THAT THE FIRST FEW DROPS OF SOLUTION FROM THE ION EXCHANGE COLUMN WOULD NOT BE VERY HOT AND DID NOT CHECK WITH INSTRUMENTS WHEN HE FOUND HIS GLOVE TORN. FILM BADGE SHOWED 300 MREM BETA AND 13 MR GAMMA (WHOLE BODY). ESTIMATES OF DOSE TO HANDS/THUMB ARE 7.3/147 RADS. IN THE BACK-CALCULATION OF THE HAND DOSE, DECONTAMINATION FACTORS FOR THE VARIOUS TREATMENTS WERE ESTIMATED USING A SIMILAR EXPOSURE AND TREATMENT OF A BABY PIGS SKIN.

\*DECONTAMINATION + \*FAILURE, OPERATOR ERROR + \*ION EXCHANGE + BETA EMITTER + PERSONNEL EXPOSURE, RADIATION + PERSONNEL PROTECTIVE DEVICE + PHOSPHORUS

15-21748 ALSO IN CATEGORY 14  
MCGINNIS JT + GOLLEY FE  
BIOENVIRONMENTAL AND RADIOLOGICAL-SAFETY FEASIBILITY STUDIES ATLANTIC-PACIFIC INTEROCEANIC CANAL. TERRESTRIAL ECOLOGY. PHASE I. FINAL REPORT  
GEORGIA UNIV., ATHENS, INSTITUTE OF RADIATION ECOLOGY  
BMI-171-011 +. 114 PAGES, FIGURES, APRIL 19, 1967

THE VEGETATION IN EASTERN PANAMA AND NORTHWESTERN COLUMBIA IS DOMINATED BY TOPICAL FOREST TYPES. EXCEPTIONS ARE THE AREAS CONVERTED FROM FORESTS TO AGRICULTURAL USES AND THE EXTENSIVE MARSHES IN THE RIO ATRATO FLOOD PLAIN. THIS STUDY IS CONCERNED WITH A DEFINITION OF THE COMPARTMENTS OF THE ECOSYSTEM, DESCRIPTION OF THE COMPARTMENTS, AND THE RELATION OF THE NATIVE POPULATIONS TO THE TERRESTRIAL ENVIRONMENT.

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

\*ECOLOGICAL CONSIDERATION + \*FALLOUT + BIOLOGICAL CONCENTRATION, GENERAL + PLOWSHARE PROGRAM

15-21749 ALSO IN CATEGORY 14  
GAMBLE JF + PDPENDE H  
BIOENVIRONMENTAL AND RADIOLOGICAL-SAFETY FEASIBILITY STUDIES ATLANTIC-PACIFIC INTEROCEANIC CANAL. AGRICULTURAL ECOLOGY. PHASE I FINAL REPORT  
FLORIDA UNIV., GAINESVILLE. INST. OF FOOD AND AGRICULTURAL SCIENCES  
BMI-171-010 +. 40 PAGES, REFERENCES, APRIL 14, 1967

DESCRIBES THE SYSTEM OF AGRICULTURE USED IN THE AREA. PRESENTS APPLICABLE INFORMATION FROM SIMILAR AGRICULTURAL SYSTEMS. ANALYZES THE SPECIAL FEATURES OF THE AGRICULTURAL SYSTEMS THAT MAY INFLUENCE NUCLIDE UPTAKE AND CONCENTRATION.

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

\*BIOLOGICAL CONCENTRATION, GENERAL + \*ECOLOGICAL CONSIDERATION + \*FALLOUT + AGRICULTURAL CONSIDERATION + BIOLOGICAL CONCENTRATION, FOOD + PLOWSHARE PROGRAM

15-21750 ALSO IN CATEGORY 14  
TEMPLETON WL  
BIOENVIRONMENTAL AND RADIOLOGICAL-SAFETY FEASIBILITY STUDIES ATLANTIC-PACIFIC INTEROCEANIC CANAL. FRESHWATER ECOLOGY. PHASE I FINAL REPORT  
BATTELLE-NORTHWEST, RICHLAND, WASH. PACIFIC NORTHWEST LAB.  
BMI-171-008 +. 121 PAGES, MARCH 14, 1967

THE PURPOSE OF THIS PROGRAM IS TO PLAN AND MAKE STUDIES IN FRESHWATER ECOLOGY TO ACQUIRE DATA NEEDED TO EVALUATE AND PREDICT THE POTENTIAL RADIATION HAZARDS TO HUMANS IN THE REGIONS OF NUCLEAR EXCAVATIONS IN THE DEFINED AREAS OF CENTRAL AMERICA. PHASE I CONSISTS OF STUDIES BASED ON AVAILABLE INFORMATION.

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

\*BIOLOGICAL CONCENTRATION, GENERAL + \*ECOLOGICAL CONSIDERATION + \*FALLOUT + BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + BIOLOGICAL CONCENTRATION, FOOD + PLOWSHARE PROGRAM + RIVER, GENERAL

15-21751 ALSO IN CATEGORY 14  
LOWMAN FG  
BIOENVIRONMENTAL AND RADIOLOGICAL-SAFETY FEASIBILITY STUDIES ATLANTIC-PACIFIC INTEROCEANIC CANAL. ESTUARINE AND MARINE ECOLOGY. PHASE I FINAL REPORT

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-21751 \*CONTINUED\*  
PUERTO RICO NUCLEAR CENTER, MAYAGUEZ  
BMI-171-007 +. 86 PAGES, TABLES, REFERENCES, MARCH 29, 1967

THE PURPOSE OF THE PROGRAM IN ESTUARINE AND MARINE ECOLOGY IS TO DETERMINE THE RADIONUCLIDES THAT WOULD PRESENT POTENTIAL HAZARDS TO MAN IN HIS ASSOCIATION WITH THE ESTUARINE AND MARINE ENVIRONMENT OF THE CENTRAL AMERICAN Isthmus AND HIS DERIVATION OF FOODS THEREFROM. THE METHODS TO BE USED (SPECIFIC-ACTIVITY APPROACH), TOGETHER WITH LIMITED FIELD COLLECTIONS AND ANALYSES, ARE REPORTED.

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

\*BIOLOGICAL CONCENTRATION, GENERAL + \*ECOLOGICAL CONSIDERATION + \*FALLOUT + BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + BIOLOGICAL CONCENTRATION, FOOD + OCEAN AND SEA + PLOWSHARE PROGRAM

15-21754  
DIETRICH E + KONIG LA  
PROBLEMS OF RADIATION PROTECTION IN CONNECTION WITH TRITIUM  
KERNFORSCHUNGSZENTRUM, KARLSRUHE, GERMANY  
4 PAGES, 5 TABLES, 34 REFERENCES, ATOMPAXIS 13(10), PAGE 454-457, (NOVEMBER 1967) IN GERMAN

PRESENTS A SURVEY ON PROBLEMS CONNECTED WITH THE SUPERVISION OF PROTECTION MEASURES CROPPING UP WITH THE USE OF TRITIUM. SOLUTIONS ARE OFFERED. A SHORT REPORT DESCRIBING TRITIUM SUPERVISION AT THE FR-2 REACTOR IS ADDED.

\*RADIATION PROTECTION, ORGANIZATION + RADIATION SAFETY AND CONTROL + TRITIUM

15-21755 ALSO IN CATEGORY 14  
HABERER K  
MEASUREMENTS OF ALPHA ACTIVITY IN THICK TEST LAYERS FOR MONITORING THE ENVIRONMENT  
2 PAGES, 1 FIGURE, 3 REFERENCES, ATOMPAXIS 13(10), PAGE 443 AND 444, (1967) IN GERMAN

BASED ON PREVIOUS WORK, A NOMOGRAM WAS DESIGNED FOR RAPID ENERGY AND MATRIX CORRECTION OF ALPHA-ACTIVITY MEASUREMENTS IN THICK-SATURATION LAYERS. THE ADVANTAGES OF THIS METHOD FOR SAMPLES WITH LOW ALPHA ACTIVITY, SUCH AS OCCUR IN ENVIRONMENTAL MONITORING, ARE DESCRIBED.

\*INSTRUMENTATION, NUCLEAR + \*MONITOR, RADIATION, ENVIRONMENTAL + GERMANY + INSTRUMENTATION, RADIATION MONITORING

15-21756 ALSO IN CATEGORY 14  
FISCHER HF + PAFFRATH D + PETERS W  
MEASUREMENTS OF RADIOACTIVITY AT DIFFERENT ALTITUDES OF THE ATMOSPHERE DURING ARRIVAL AND PASSAGE OF FRESH FISSION PRODUCTS  
4 PAGES, 4 FIGURES, 19 REFERENCES, ATOMPAXIS 13(10), PAGE 444-447, (1967) IN GERMAN

AFTER THE THIRD CHINESE NUCLEAR WEAPON TEST, FLIGHTS AT ALTITUDES UP TO 12,500 M WERE PERFORMED FOR COLLECTING AEROSOL ON FIBER FILTERS. THE METHOD OF SAMPLING IS DESCRIBED. THE FRACTION OF FRESH DERRIS TO TOTAL AMOUNT OF DEBRIS IS DETERMINED BY THE BETA DISINTEGRATION CURVES OF THE SAMPLES. VERTICAL PROFILES OF THE SPECIFIC BETA-ACTIVITY OF THE AIR FOR OLD AND FRESH FISSION PRODUCTS ARE REPRESENTED BY GRAPHS. THESE RESULTS ARE COMPARED WITH OUR MEASUREMENTS AFTER THE FIRST AND SECOND CHINESE NUCLEAR TEST. IN ADDITION TO FISSION PRODUCTS OF THE NUCLEAR EXPLOSION, WE IDENTIFIED THE NEUTRON-INDUCED NUCLIDES U-237 AND NP-239 BY GAMMA-RAY SPECTROMETRY.

\*FALLOUT + \*FILTER, FIBER + \*MONITORING PROGRAM, ENVIRONMENTAL + AEROSOL + AIR + AIRBORNE RELEASE + BETA EMITTER + GERMANY + NEPTUNIUM + RADIONUCLIDE, INDUCED + SPECTROMETRY, GAMMA + URANIUM

15-21757 ALSO IN CATEGORY 14  
PORTER SW + VERRELLI DM  
A BRIEF DESCRIPTION OF THE AFRR1-TRIGA MARK F REACTOR METHODS FOR CONTROLLING DISCHARGES, ENVIRONMENTAL SURVEILLANCE AND EMERGENCY PLANS  
ARMED FORCES RADIOBIOLOGY RESEARCH INST., BETHESDA, MD.  
AD-645546 + AFRR1-SP-66-17 +. 23 PAGES, FIGURES, REFERENCES, JULY 1966

DESCRIBES THE FOLLOWING FEATURES OF THE REACTOR - THE REACTOR AND ASSOCIATED EXPERIMENTAL FACILITIES, REMOTE-AREA MONITORING SYSTEM, AIR-HANDLING AND MONITORING SYSTEM, PERIMETER-MONITORING SYSTEM, REACTOR-ROOM CONFINEMENT, REACTOR-COOLANT MONITORING SYSTEM, WASTE-DISPOSAL SYSTEM, AND EMERGENCY PROCEDURES.

\*MONITORING PROGRAM, ENVIRONMENTAL + \*SURVEILLANCE PROGRAM + \*WASTE DISPOSAL, GENERAL + RADIATION PROTECTION, ORGANIZATION + RADIATION SAFETY AND CONTROL + REACTOR COOLANT + SHIELDING + TRIGA (RR)

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-21759

GITLIN JH + LAWRENCE PS  
POPULATION EXPOSURE TO X-RAYS U.S. 1964. A REPORT ON THE PUBLIC HEALTH SERVICE X-RAY EXPOSURE STUDY  
U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE  
PHS-PUB-1519 +. 217 PAGES, 32 FIGURES, 38 TABLES, 1964

THE PRINCIPAL OBJECTIVE OF THIS STUDY WAS TO PROVIDE ESTIMATES OF POPULATION EXPOSURE, BY TYPE OF EXAMINATION OR PROCEDURE, FOR A VARIETY OF DEMOGRAPHIC AND X-RAY-FACILITY CHARACTERISTICS. THE X-RAY EXPERIENCE OF THE U.S. POPULATION IN 1964 IS EXPRESSED IN TERMS OF THE NUMBER AND RATE OF PERSONS EXPOSED DURING X-RAY VISITS FOR VARIOUS TYPES OF EXAMINATIONS OR PROCEDURES BY SUCH CHARACTERISTICS AS AGE, RACE, SEX, AND BY TYPE OF FACILITY AND SPECIALTY OF THE PRACTITIONER.

AVAILABILITY - U.S. GOVERNMENT PRINTING OFFICE, WASHINGTON, D. C. 20402, \$1.50 COPY

\*POPULATION EXPOSURE + DOSE MEASUREMENT, EXTERNAL + RADIATION PROTECTION, ORGANIZATION + RADIOLOGY + X-RAY

15-21761

ISAACKS RE + HAZZARD DG + BARTH J + WALKER JP  
NUTRITIONAL EVALUATION OF MILK PROCESSED FOR REMOVAL OF CATIONIC RADIONUCLIDES. FEEDING STUDIES  
VETERANS ADMINISTRATION HOSPITAL, CORAL GABLES, FLA.  
5 PAGES, 7 TABLES, 15 REFERENCES, J. AGR. FOOD CHEM. 15, PAGES 300-4 (MARCH-APRIL 1967)

RATS AND PIGS WERE FED DRIED WHOLE MILK PROCESSED FOR REMOVAL OF CATIONIC RADIONUCLIDES BY ION EXCHANGE TECHNIQUES. THE THIAMINE, NIACIN, AND VITAMIN B-6 CONTENTS WERE DECREASED BY 50, 27, AND 15%, RESPECTIVELY, AND K CONTENT INCREASED 80% COMPARED WITH THE CONTROL MILK. THERE WAS NO SIGNIFICANT DIFFERENCE IN RATE OF GROWTH OR IN BLOOD SERUM CATIONS, IN EITHER RATS OR PIGS, BETWEEN ANIMALS FED PROCESSED WHOLE MILK OR FED THE CONTROL WHOLE MILK. THERE WAS SIGNIFICANTLY GREATER URINE K EXCRETION FROM PIGS FED PROCESSED MILK OR CONTROL MILK PLUS K CITRATE AS COMPARED WITH PIGS FED THE CONTROL WHOLE MILK. ONE EXPERIMENT SHOWED A SIGNIFICANTLY GREATER EXCRETION OF NA FROM PIGS FED CONTROL WHOLE MILK PLUS K CITRATE AS COMPARED WITH PIGS FED CONTROL WHOLE MILK. ON THE BASIS OF EARLIER CHEMICAL ANALYSES AND THESE FEEDING EXPERIMENTS, THE ION EXCHANGE TREATMENT OF MILK FOR REMOVAL OF CATION RADIONUCLIDES DOES NOT SERIOUSLY AFFECT THE NUTRITIVE QUALITIES.

\*DIETARY HABIT + \*ECOLOGICAL CONSIDERATION + \*EXPERIMENT, GENERAL + \*RADIATION PROTECTION, CHEMICAL + BIOLOGICAL CONCENTRATION, ANIMAL + BIOLOGICAL CONCENTRATION, MILK

15-21762

ISAACKS RE + HAZZARD DG + BARTH J + FOOKS JH + EDMONDSON LF  
NUTRITIONAL EVALUATION OF MILK PROCESSED FOR REMOVAL OF CATIONIC RADIONUCLIDES. CHEMICAL ANALYSIS  
VETERANS ADMINISTRATION HOSPITAL, CORAL GABLES, FLA.  
5 PAGES, 1 FIGURE, 4 TABLES, 31 REFERENCES, J. AGR. FOOD CHEM. 15, PAGES 295-9 (MARCH-APRIL 1967)

STUDIED CHEMICAL CONSTITUENTS OF MILK, WHICH HAD BEEN TREATED WITH AMBERLITE IR-120 RESIN, IN THE CA MG-K NA CYCLE. COMPARISONS OF RESULTS OBTAINED ON CONTROL AND RESIN-TREATED MILK SAMPLES SHOWED NO SIGNIFICANT CHANGE IN TOTAL SOLIDS, BUTTERFAT, PROTEIN, FLAVOR QUALITY, CAROTENE, VITAMIN A, RIBOFLAVIN, PANTOTHENIC ACID, FOLIC ACID, OR VITAMIN B-12. THE ASH, POTASSIUM, AND CITRIC ACID CONTENTS OF THE RESIN-TREATED MILK INCREASED NEARLY 14, 80, AND 100%, RESPECTIVELY, COMPARED WITH CONTROL MILK. THE THIAMINE, NIACIN, AND VITAMIN B-6 CONTENTS OF THE PROCESSED MILK DECREASED 50, 27, AND 15%, RESPECTIVELY. THE DATA INDICATE THAT 86% OF THE FREE THIAMINE AND 20% OF THE BOUND THIAMINE ARE REMOVED FROM THE MILK BY THE RESIN TREATMENT. THE COPPER CONTENT OF THE RESIN-TREATED MILK WAS REDUCED ABOUT 23%.

\*ANALYTICAL TECHNIQUE, MILK + \*BIOLOGICAL CONCENTRATION, MILK + \*EXPERIMENT, GENERAL + CALCIUM + HAZARDS ANALYSIS + ION EXCHANGE + MAGNESIUM + POTASSIUM + RADIATION PROTECTION, CHEMICAL + SODIUM

15-21763

BARNABY CF + SMITH T  
PERFORMANCE OF A LARGE-AREA WHOLE-BODY COUNTER  
LONDON UNIVERSITY  
7 PAGES, 8 FIGURES, 3 TABLES, REFERENCES, J. SCI. INSTRUM. 44, PAGES 499-505 (JULY 1967)

DESCRIBES THE DESIGN AND PERFORMANCE OF A CHEAP BUT SENSITIVE WHOLE-BODY COUNTER WHICH INCORPORATES A LARGE-AREA ORGANIC SCINTILLATOR IN THE FORM OF A MOVABLE DETECTOR. THE PERFORMANCE AND SENSITIVITY OF THE COUNTER ARE SHOWN TO BE ADEQUATE FOR A LARGE NUMBER OF CLINICAL INVESTIGATIONS USING AMOUNTS OF ADMINISTERED RADIOACTIVITY WELL BELOW THE MAXIMUM BODY BURDENS RECOMMENDED BY THE ICRP. AN INVESTIGATION OF THE SENSITIVITY OF THE COUNTING EFFICIENCY TO THE SOURCE-DETECTOR GEOMETRY HAS LED TO THE ADOPTION OF A COUNTING TECHNIQUE WHICH IS RELATIVELY INDEPENDENT OF THE LOCATION OF A POINT SOURCE WITHIN THE TRUNK REGION OF A SUBJECT. USE OF THIS METHOD PERMITS THE MEASUREMENT OF THE NATURAL K-40 CONTENT OF A STANDARD MAN TO 3% ACCURACY OF COUNTING STATISTICS IN A COUNTING TIME OF 1000 SEC. FOR CHEAPNESS, A CHALK SHIELD WAS USED, AND THE COST OF MATERIALS FOR A COUNTER BASED ON THIS DESIGN, BUT USING AN EFFICIENT LIQUID SCINTILLATOR, COULD BE AS LOW AS 300 POUNDS STERLING, EXCLUDING THE COST OF ELECTRONIC UNITS.

\*COUNTER, WHOLE BODY + \*EQUIPMENT DESIGN + \*RADIONUCLIDE, INDUCED + GAMMA EMITTER + ICRP +

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-21763 \*CONTINUED\*  
MAXIMUM PERMISSIBLE BODY BURDEN + POTASSIUM + SHIELDING + SOURCE, RADIATION

15-21764  
BOOKER DV + CHAMBERLAIN AC + RUNDO J + MUIR DC + THOMPSON ML  
ELIMINATION OF 5-MICRON PARTICLES FROM THE HUMAN LUNG  
ATOMIC ENERGY RESEARCH ESTABLISHMENT, HARWELL  
4 PAGES, 3 FIGURES, 1 TABLE, 5 REFERENCES, NATURE 215, PAGES 30-3 (JULY 1, 1967)

DESCRIBES AN APPARATUS THAT WILL PROVIDE A CONTINUOUS AND REGULAR AEROSOL OF 5-MICRON PARTICLES OF POLYSTYRENE LABELLED WITH CR-51. THE ELIMINATION OF THE LABELLED PARTICLES FROM THE LUNGS AFTER A SINGLE INHALATION BY HUMAN BEINGS IS FOLLOWED BY EXTERNAL GAMMA-RAY MEASUREMENTS.

\*AEROSOL, RADIOACTIVE + \*CHROMIUM + \*DOSE MEASUREMENT, INTERNAL + \*INHALATION + EQUIPMENT DESIGN + GAMMA EMITTER + PARTICLE SIZE + PARTICLE, RADIOACTIVE

15-21766  
SPENCER H + LEWIN I + SAMACHSON J  
EFFECT OF MAGNESIUM ON RADIOSTRONTIUM EXCRETION IN MAN  
VETERANS ADMINISTRATION HOSPITAL, HINES, ILL.  
9 PAGES, 1 FIGURES, 7 TABLES, 25 REFERENCES, INT. J. APPL. RADIAT. ISOTOP., 18, PAGES 407-15 (JUNE 1967)

THE EFFECT OF INTRAVENOUSLY ADMINISTERED MAGNESIUM ON RADIOSTRONTIUM EXCRETION WAS STUDIED UNDER STRICTLY CONTROLLED DIETARY CONDITIONS IN MAN. THE RESULTS WERE COMPARED WITH THOSE OBTAINED WITH EQUI-MOLAR AMOUNTS OF CALCIUM IN THE SAME PATIENTS. A SINGLE TRACER DOSE OF SR-95C12 WAS GIVEN INTRAVENOUSLY IN THE CONTROL, THE MAGNESIUM, AND THE CALCIUM STUDIES. INFUSIONS OF MAGNESIUM SULFATE OR OF CALCIUM GLUCONATE WERE GIVEN ON THE DAY OF THE INTRAVENOUS INJECTION OF SR-85 AND ON THE SUBSEQUENT TWO DAYS. BOTH MAGNESIUM AND CALCIUM INCREASED THE URINARY EXCRETION OF SR-85, BUT CALCIUM WAS MORE EFFECTIVE THAN MAGNESIUM IN MOST CASES. THE DIFFERENCE IN EFFECT APPEARED TO BE DUE TO DIFFERENCES IN URINARY CALCIUM EXCRETION INDUCED BY INTRAVENOUS CALCIUM AND MAGNESIUM, THE INFUSIONS OF CALCIUM RESULTING IN HIGHER EXCRETION OF URINARY CALCIUM THAN THE INFUSIONS OF MAGNESIUM. THERE WAS NO EFFECT OF EITHER INTRAVENOUS MAGNESIUM OR INTRAVENOUS CALCIUM ON FECAL SR-85 EXCRETION.

\*CALCIUM + \*MAGNESIUM + \*RADIONUCLIDE, INDUCED + \*STRONTIUM + BIOLOGICAL CONCENTRATION, MAN + COUNTER + DIETARY HABIT + DOSE MEASUREMENT, INTERNAL

15-21768 ALSO IN CATEGORY 14  
COWSER KE + BFATTIE JS  
CONSEQUENCES OF ACTIVITY RELEASE - RISKS TO THE POPULATION AND THE INDIVIDUAL FROM IODINE RELEASES  
UNITED KINGDOM ATOMIC ENERGY AUTHORITY  
16 PAGES, 6 FIGURES, 4 TABLES, 40 REFERENCES, NUCLEAR SAFETY 8(6), PAGE 573-588, (DECEMBER 1967)

THE INHALATION OF RADIOACTIVE IODINE LEADS TO A DOSE OF RADIATION IN THE THYROID GLAND, AND THERE MAY BE A RISK OF DEVELOPING THYROID CANCER. THIS RISK IS EVALUATED FOR A REACTOR IN OR NEAR A POPULATED AREA BY ASSESSING THE TOTAL NUMBER OF CASES LIKELY TO ARISE IN THE POPULATED AREA AND BY ASSESSING THE RISK TO ANY INDIVIDUAL LIVING NEAR THE REACTOR. IN THESE CALCULATIONS A POPULATION DISTRIBUTION IS ASSUMED THAT REPRESENTS POTENTIAL URBAN REACTOR SITES, AND ACCOUNT IS TAKEN OF PROBABLE METEOROLOGICAL CONDITIONS AND DOSE-RISK RELATIONS OF THE INTERNATIONAL COMMISSION ON RADIOLOGICAL PROTECTION. FROM A POSTULATED LIMIT LINE OF ACCIDENT FREQUENCY VS SEVERITY, A CALCULATION DERIVES AN AVERAGE CASUALTY RATE FOR THE POPULATION AND AN ANNUAL RISK RATE FOR THE INDIVIDUAL. THESE ARE SHOWN TO BE EXCEEDINGLY SMALL COMPARED WITH THE NORMAL CASUALTY RATE IN THE SAME POPULATION AND WITH THE RISKS RUN BY THE INDIVIDUAL IN THE COURSE OF NORMAL LIVING.

\*BIOLOGICAL CONCENTRATION, MAN + \*INHALATION + \*IODINE + \*POPULATION EXPOSURE + DOSE + HAZARDS ANALYSIS + METEOROLOGY + PERSONNEL EXPOSURE, RADIATION

15-21769 ALSO IN CATEGORY 14  
DEVIK F  
RADIOACTIVE CONTAMINATION OF OUR ENVIRONMENT FOLLOWING NUCLEAR BOMB TESTS, AND RADIATION-INDUCED CANCER  
STATENS INSTITUTT FOR STRALEHYGIENE, OSLO  
3 PAGES, 5 REFERENCES, TIDSSKR. NORSKE LAEGFOREN., 85, PAGE 1770-1781, (DECEMBER 1965) IN NORWEGIAN

RADIATION HAZARDS RESULTING FROM HUMAN INTAKE OF FALLOUT RADIONUCLIDES ARE DISCUSSED IN RELATION TO THE CONCLUSIONS AND RECOMMENDATIONS OF THE THIRD REPORT OF THE UNITED NATIONS SCIENTIFIC COMMITTEE ON THE EFFECTS OF ATOMIC RADIATION (NEW YORK 1964). THE REPORT GIVES AN ESTIMATE OF ENVIRONMENTAL RADIATION DOSE FROM RADIOACTIVE FALLOUT IN 1965 AND REVIEWS DATA PERTINENT TO DOSE-EFFECT RELATIONS WITH RESPECT TO MALIGNANT DISEASES. THE AUTHOR POINTS OUT THAT THE AVERAGE FALLOUT RADIATION DOSE TO THE POPULATION IN NORWAY IS NOT LIKELY TO DIFFER BY ANY CONSIDERABLE FACTOR FROM THE AVERAGE VALUES CALCULATED FOR THE WORLD POPULATION, BUT LOCAL VARIATIONS MAY BE CONSIDERABLE AND MERIT FURTHER INVESTIGATIONS. IN THIS CONNECTION IT IS MENTIONED THAT COMMON TERMS SUCH AS RADIATION HAZARD, DANGER, RISK, ETC., WHEN USED IN PUBLIC DISCUSSIONS ARE NOT ALWAYS ADEQUATE. THEY SHOULD BE AVOIDED UNLESS IT IS MADE CLEAR WHAT THEY ARE INTENDED TO CONVEY, OR THEY SHOULD BE REPLACED BY UNEQUIVOCAL TERMS.

\*DOSE + \*ENVIRONMENTAL CONDITION + \*NUCLEAR DETONATION + \*RADIONUCLIDE, INDUCED + CONTAMINATION + FALLOUT +

CATEGORY 15  
 ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-21769 \*CONTINUED\*  
 HAZARD, RELATIVE + NORWAY

15-21770 ALSO IN CATEGORY 14  
 CUPTIS GB + PETTY JS  
 A PROGRAM TO COMPUTE BETA RADIATION DOSAGE. VOLUME I. PROGRAM DESCRIPTION. FINAL REPORT  
 AMERICAN RESEARCH CORP., FULLERTON, CALIF.  
 TID-24033(VOL.1) + ARC-67-48 +. 123 PAGES, AUGUST 1, 1967

AMERICAN RESEARCH CORPORATION DEVELOPED A COMPUTER PROGRAM TO CALCULATE BETA RADIATION DOSAGES TO TISSUE INCURRED FROM CONTACT WITH RADIOACTIVE FALLOUT PARTICLES CONTAINING MIXED FISSION PRODUCTS. VERSIONS OF THE BETA RADIATION DOSAGE PROGRAM WERE PREPARED FOR THE CDC 3600 AND IBM 7094 COMPUTERS. VERSATILE INPUT/OUTPUT PROCEDURES PROVIDE CONTROL OVER THE SELECTION AND ARRANGEMENT OF OUTPUT PARAMETERS. MANY TABLES, FUNCTIONS, AND PARAMETERS, CONSIDERED INPUT QUANTITIES IN MOST PROGRAMS, WERE INCORPORATED INTO THIS PROGRAM. THESE QUANTITIES MAY BE TREATED AS OPTIONAL INPUTS WHERE DESIRED. VOLUME I OF THIS REPORT DISCUSSES THE TECHNICAL AND PROGRAMMING APPROACHES USED AND DESCRIBES THE PROGRAM IN GENERAL TERMS. VOLUME II CONTAINS DETAILED INSTRUCTIONS FOR THE USE OF THE PROGRAM AS WELL AS PROGRAM LISTINGS.

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

\*BETA EMITTER + \*COMPUTER PROGRAM + \*DOSIMETRY, GENERAL + \*FALLOUT + FISSION PRODUCT RELEASE, GENERAL +  
 NUCLEAR DETONATION

15-21771 ALSO IN CATEGORY 14  
 PETTY JS + CURTIS GB  
 A PROGRAM TO COMPUTE BETA RADIATION DOSAGE. VOLUME II. USERS MANUAL AND PROGRAM LISTINGS. FINAL REPORT  
 AMERICAN RESEARCH CORP., FULLERTON, CALIF.  
 TID-24033 (VOL.2) + ARC-67-49 +. 204 PAGES, AUGUST 1, 1967

AMERICAN RESEARCH CORPORATION DEVELOPED A COMPUTER PROGRAM TO CALCULATE BETA RADIATION DOSAGES TO TISSUE INCURRED FROM CONTACT WITH RADIOACTIVE PARTICLES CONTAINING MIXED FISSION PRODUCTS. THE PROGRAM IS CAPABLE OF EVALUATING BETA RADIATION DOSAGES ARISING FROM CONTACT WITH PARTICLES ORIGINATING FROM A NUCLEAR WEAPON DETONATION AS WELL AS PARTICLES RESULTING FROM THE DESTRUCTION OF A NUCLEAR PROPULSION REACTOR. VERSIONS OF THE PROGRAM TO COMPUTE BETA RADIATION DOSAGE WERE PREPARED FOR THE CDC 3600 AND IBM 7094 COMPUTERS. VERSATILE INPUT/OUTPUT PROCEDURES PROVIDE CONTROL OVER THE SELECTION AND ARRANGEMENT OF OUTPUT PARAMETERS, CONSIDERED INPUT QUANTITIES IN MOST PROGRAMS, WERE INCORPORATED INTO THIS PROGRAM. THESE QUANTITIES MAY BE TREATED AS OPTIONAL INPUTS WHERE DESIRED.

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

\*BETA EMITTER + \*COMPUTER PROGRAM + \*NUCLEAR DETONATION + DOSIMETRY, GENERAL + FALLOUT

15-21784 ALSO IN CATEGORY 14  
 TAMPLIN AR  
 PREDICTION OF THE MAXIMUM DOSAGE TO MAN FROM THE FALLOUT OF NUCLEAR DEVICES. I. ESTIMATION OF THE  
 MAXIMUM CONTAMINATION OF AGRICULTURAL LAND  
 CALIFORNIA UNIV., LIVERMORE. LAWRENCE RADIATION LAB.  
 UCRL-50163 (PT. 1) +. 26 PAGES, FIGURES, TABLES, REFERENCES, JANUARY 3, 1967

PART I OF THIS REPORT PRESENTS A SEMIEMPIRICAL APPROACH TOWARD ESTIMATING THE MAXIMUM CONTAMINATION OF AGRICULTURAL LAND BY RADIONUCLIDES PRODUCED BY NUCLEAR DEVICES. IT IS BASED UPON THE MAXIMUM FALLOUT LEVELS OBSERVED SUBSEQUENT TO ALL PREVIOUS TESTS OF NUCLEAR DEVICES AND APPLIES TO CLOUD TRAVEL TIMES OR FALLOUT ARRIVAL TIMES RANGING FROM 1 TO 50 HR AND BEYOND.

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

\*DOSE + \*FALLOUT + \*PLOWSHARE PROGRAM + \*SOIL, NUCLIDE OCCURRENCE + AIRBORNE RELEASE + DIFFUSION +  
 DOSE CALCULATION, EXTERNAL + LRL + RAINOUT + TEST, WEAPONS (HP ASPECTS)

15-21786 ALSO IN CATEGORY 14  
 RADIOLOGICAL HEALTH RESEARCH. SUMMARY REPORT, JULY-1965-DECEMBER 1966  
 PUBLIC HEALTH SERVICE, ROCKVILLE, MD.  
 NP-16856 +. 120 PAGES, 45 FIGURES, TABLES, 1966

REPORTS ACTIVITIES OF THE RESEARCH BRANCH, DIVISION OF RADIOLOGICAL HEALTH, PUBLIC HEALTH SERVICE FOR THE 18 MONTHS BEFORE ITS REORGANIZATION IN JANUARY 1967. WORK IS REPORTED IN THE FIELDS OF RADIATION BIOLOGY, EPIDEMIOLOGY, AND ENVIRONMENTAL SCIENCES.

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

\*DOSE + \*FALLOUT + \*RADIATION DAMAGE + \*RADIOBIOLOGY + BIOMEDICAL + DOSE CALCULATION, EXTERNAL +  
 DOSE CALCULATION, INTERNAL + DOSIMETRY, GENERAL + ENVIRONMENTAL CONDITION + RADIOCHEMICAL PROCESSING +

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-21786 \*CONTINUED\*  
RADIOLOGY

15-21787  
PACIFIC NORTHWEST LABORATORY ANNUAL REPORT FOR 1966 TO THE USAEC DIVISION OF BIOLOGY AND MEDICINE. VOL. II - PHYSICAL SCIENCES. PART 4. INSTRUMENTATION  
BATTELLE-NORTHWEST, RICHLAND, WASHINGTON  
BNWL-481-4 +. 51 PAGES, FIGURES, TABLES, REFERENCES, AUGUST 1967

REPORTS DEVELOPMENT ON THE FOLLOWING INSTRUMENTATION SYSTEMS - AQUATIC-ENVIRONMENT DOSE-RATE MONITOR, MINIATURE DOSE-RATE-MEASUREMENT INSTRUMENT, LIVE-TIME AND HALF-LIFE CONTROL OF SCANNER FOR WHOLE-BODY-RADIATION COUNTER, MEASUREMENT OF MIXED-FIELD NEUTRON AND GAMMA DOSE RATES, WOUND COUNTING WITH SOLID-STATE DETECTORS, COUNTING OF PLUTONIUM IN THE LUNG, ANIMAL ACTIVITY MONITOR DEVELOPMENT, TIDAL VOLUME AIR MEASUREMENT, ACCELERATOR ION-BEAM-CURRENT REGULATOR, PROGRESS ON DEVELOPMENT OF ELECTRONICS FOR SOLID-STATE DIODE DETECTORS, SURFACE-CONTOURED-DIODE INVESTIGATIONS, PROGRESS IN X-RAY/ALPHA STUDIES WITH SOLID-STATE DETECTORS, NEUTRON-SENSITIVE CRITICALITY-ALARM SYSTEM, IMPROVEMENTS IN RAINDROP-CHARGE-MEASURING SYSTEMS.

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

\*COUNTER + \*INSTRUMENTATION, RADIATION MONITORING + \*MONITOR, RADIATION, ENVIRONMENTAL + \*MONITOR, RADIATION, PERSONNEL + ACCELERATOR + ALPHA EMITTER + BATTELLE NORTHWEST + COUNTER, WHOLE BODY + GAMMA + INSTRUMENTATION, NUCLEAR + NEUTRON + PLUTONIUM + RADIOBIOLOGY + SOLID STATE DEVICE + X-RAY

15-21788  
BOND VP  
CELLULAR BASIS OF ACUTE RADIATION DEATH IN THE MAMMAL  
BROOKHAVEN NATIONAL LAB., UPTON, N.Y.  
BNL-50064 +. 15 PAGES, 20 FIGURES, 1 TABLE, 9 REFERENCES, FEB. 8, 1967

THE EFFECTS OF RADIATION DELIVERED TO THE ENTIRE BODY ARE DESCRIBED, AND CONDITIONS UNDER WHICH SUBEXPOSURE OF HUMAN BEINGS MAY BE ENCOUNTERED ARE OUTLINED. IT IS DEMONSTRATED THAT THE COMPLICATED CLINICAL PICTURE SEEN AS THE RESULT OF SUCH EXPOSURE HAS ITS GENESIS PRIMARILY IN THE DEPLETION OF CELLULAR ELEMENTS IN THE PERIPHERAL BLOOD. IT IS FURTHER SHOWN THAT THE TIME COURSE AND DOSE RELATIONSHIP SEEN CAN BE EXPLAINED SATISFACTORILY ON THE BASIS OF THE KINETICS OF THE CELL POPULATIONS INVOLVED AND THE KNOWN CELLULAR RADIOBIOLOGY THAT PERTAINS TO THESE CELLS. THE BODY IS NORMALLY IN A STATE OF DYNAMIC CELLULAR EQUILIBRIUM, AND WHILE SOME PERTURBATIONS OF THE SYSTEM CAN BE ADJUSTED FOR, SEVERE OR SERIOUS PERTURBATION, HOWEVER, RESULTS IN DISEASE OR DEATH IF EQUILIBRIUM IS NOT REESTABLISHED. RADIATION IS BUT ONE OF THE MANY HARMFUL AGENTS THAT CAN UPSET THE CELLULAR EQUILIBRIUM AND LEAD TO SERIOUS ILLNESS AND DEATH.

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

\*BIOMEDICAL + \*RADIATION DAMAGE + BNL + RADIATION IN PERSPECTIVE + RADIOBIOLOGY

15-21790  
GLOVER JR  
ANALYSIS OF RADIATION DEPTH DOSE DATA  
ROCHESTER UNIVERSITY, N. Y.  
UR-49-837 +. 167 PAGES, FIGURES, TABLES, 1967

DEPTH-DOSE DATA FROM THE BRITISH JOURNAL OF RADIOLOGY, SUPPLEMENT NO. 10, 1961, WAS ANALYZED TO RECTIFY THE FACT THAT IN THE 72 YEARS SINCE THE DISCOVERY OF X RAYS, NO SINGLE ANALYTIC METHOD OF COMPUTING CENTRAL-AXIS PERCENTAGE DEPTH DOSE HAD BEEN PRODUCED WHICH HAD BEEN SHOWN TO BE APPLICABLE OVER ALL DEPTHS FROM THE POINT OF MAXIMUM IONIZATION, ALL SURFACE FIELD AREAS, AND WHICH WOULD APPLY OVER THE ENTIRE RANGE OF FOCAL-SKIN DISTANCES AND QUALITIES OF INTEREST IN RADIOLOGIC PHYSICS.

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

\*DOSE + DOSE CALCULATION, EXTERNAL + RADIOLOGY + X-RAY

15-21792  
DEWERD LA + CAMERON JR  
A TLD READER FOR MBE DOSIMETERS  
WISCONSIN UNIVERSITY, MADISON  
COO-1105-125 +. 7 PAGES, 2 REFERENCES, JULY 15, 1967

DESCRIBES A READER UNIT FOR THE MBE THERMOLUMINESCENT DOSIMETERS. REPRODUCIBILITY OF THE READER-DOSIMETER COMBINATION WAS THE SAME AS THAT STATED BY MBE.

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



CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-21792 \*CONTINUED\*  
\*DOSIMETRY, GENERAL + DOSIMETRY, THERMOLUMINESCENCE + GAMMA

15-21793  
RHYNER CR + CAMERON JR  
PRE-IRRADIATION ANNEALING EFFECTS ON THE THERMOLUMINESCENCE AND OPTICAL ABSORPTION IN LiF-MG AND LiF  
(TLD-100)  
WISCONSIN UNIVERSITY, MADISON  
COO-1105-134 +. 12 PAGES, 4 REFERENCES, JULY 15, 1967

THE SUBSTANCES BEING STUDIED WERE INITIALLY ANNEALED 30 MIN AT 400 C, FOLLOWED BY PREANNEALING  
4 HR AT 150 C. AFTER COOLING, THE SAMPLES WERE IRRADIATED TO 100, 10,000, 100,000 AND A  
MILLION R WITH CS-137 GAMMA RAYS. THE MODIFIED GLOW CURVES ARE PRESENTED.

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

\*DOSIMETRY, GENERAL + \*RADIATION EFFECT + CESIUM + DOSIMETRY, THERMOLUMINESCENCE + GAMMA

15-21794  
RYUFUKU H  
ORTHONORMAL EXPANSION CODE ACOF FOR ANALYSIS OF NEUTRON SPECTRA AND DOSE EQUIVALENT RATES  
JAPAN ATOMIC ENERGY RESEARCH INST., TOKYO  
JAERI-1140 +. 11 PAGES, APRIL 1967

ACOF IS AN IBM 7044 CODE TO OBTAIN NEUTRON SPECTRA AND DOSE-EQUIVALENT RATES BY ORTHONORMAL  
EXPANSION METHODS. AN ORTHONORMAL SET OF FUNCTION IS OBTAINED BY SELECTING BASE FUNCTIONS  
AND A DENSITY FUNCTION TO BE ORTHONORMALIZED BY THE SCHMIDT METHOD OR BY PREPARING  
CONVENTIONAL ORTHOGONAL FUNCTIONS (FOURIER, BESSEL FUNCTION, AND LAGUERRE POLYNOMIALS) IN THE  
SUBROUTINE. THIS CODE CAN BE USED FOR THE ANALYSIS OF SPECTRA AND DOSE-EQUIVALENT RATES NOT  
ONLY OF NEUTRONS BUT ALSO OF PHOTONS, AND FURTHER APPLIED TO SUCH AN ANALOGOUS PROBLEM AS  
CALCULATION OF THE SPATIAL DISTRIBUTION OF RADIOACTIVE SUBSTANCE. THE TIME SPENT IN  
CALCULATION IS ABOUT ONE MINUTE IN THE CASE WHERE TEN DETECTORS AND THIRTY THREE ENERGY MESH  
POINTS ARE TREATED.

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

\*COMPUTER PROGRAM + \*DOSE + COMPUTEP, DIGITAL + DOSE CALCULATION, EXTERNAL + GAMMA + NEUTRON

15-21795  
THE ROLE OF NUCLEOTIDE METABOLISM IN THE REPAIR OF RADIATION INJURY. SEMIANNUAL PROGRESS REPORT, OCTOBER  
1, 1966-APRIL 1, 1967.  
ARKANSAS UNIVERSITY, LITTLE ROCK  
N. 07 23267 + NASA-CP-83540 +. 8 PAGES, 1967

REPORT COVERS THE EARLY PHASES OF THE STUDY. THE EFFECT OF CO-60 IRRADIATION OF STUDY CELLS  
IS REPORTED.

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

\*RADIATION DAMAGE + BIOMEDICAL + COBALT + GAMMA + RADIOBIOLOGY

15-21931 ALSO IN CATEGORY 14  
HEALTH PHYSICS DIVISION ANNUAL PROGRESS REPORT FOR PERIOD ENDING JULY 31, 1967. PART VI. HEALTH PHYSICS  
TECHNOLOGY  
OAK RIDGE NATIONAL LAB., TENN.  
ORNL-4168 +. 46 PAGES, 37 FIGURES, 17 TABLES, 63 REFERENCES, PAGE 185-230, OCT. 1967

STUDIES ARE DIVIDED INTO TWO SECTIONS - (1) AEROSOL PHYSICS INCLUDES STUDIES OF BASIC PARTICLE  
PHYSICS, RETENTION OF PARTICLES ON THE SKIN AND OTHER SURFACES, GENERATION OF AEROSOLS, AND  
EXPECTED DOSE FROM RADIOACTIVE PARTICLES DEPOSITED ON THE SKIN. (2) APPLIED INTERNAL  
DOSIMETRY INCLUDES STUDIES WITH THE IN VIVO GAMMA-RAY SPECTROMETRY FACILITY, DETECTION AND  
MEASUREMENT OF SR-Y-90 INTERNAL CONTAMINATION, ELIMINATION OF INJECTED HG-203, ABSORPTION OF  
17-KEV X-RAYS FROM TRANSURANIC ELEMENT, AND A NEW ANALYTICAL PROCEDURE FOR RADIOSTRONTIUM IN  
ENVIRONMENTAL SAMPLES.

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

\*AEROSOL + \*ANALYTICAL TECHNIQUE, GENERAL + \*COUNTER, WHOLE BODY + \*DECONTAMINATION +  
\*DOSE CALCULATION, EXTERNAL + AEROSOL PRODUCTION + AEROSOL PROPERTIES + AEROSOL, RADIOACTIVE +  
ANALYTICAL TECHNIQUE, FOOD + ANALYTICAL TECHNIQUE, SOLID + ANALYTICAL TECHNIQUE, VEGETATION +  
ANALYTICAL TECHNIQUE, WATER + MERCURY + RADIUM + STRONTIUM + YTTRIUM

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-21932  
HEALTH PHYSICS DIVISION ANNUAL PROGRESS REPORT FOR PERIOD ENDING JULY 31, 1967. PART V. INTERNAL DOSIMETRY  
OAK RIDGE NATIONAL LAB., TENN.  
ORNL-4168 +. 56 PAGES, 35 FIGURES, 16 TABLES, 60 REFERENCES, PAGE 233-288, OCTOBER 1967

STUDIES ARE REPORTED ON CALCULATING EFFECTIVE ENERGY FOR USE IN INTERNAL DOSE CALCULATIONS, DISTRIBUTION OF DOSE IN THE BODY FROM GAMMA DISTRIBUTED UNIFORMLY IN AN ORGAN, DOSE FROM EXPOSURE TO A POINT GAMMA SOURCE, AN AGE-DEPENDENT MODEL FOR BODILY RETENTION OF CESIUM, A DOSIMETRIC STUDY FOR THE ADMINISTRATION OF MERCURY-LABELED NEOHYDRIN, PREDICTION OF PLUTONIUM BODY BURDEN FROM EXCRETIONS DATA. UNDER STABLE-ELEMENT METABOLISM ARE A LONG-TERM STUDY OF INTAKE AND EXCRETION OF STABLE ELEMENTS AND A DISCUSSION OF THE TISSUE-ANALYSIS ACTIVITIES.

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

\*BIOLOGICAL CONCENTRATION, MAN + \*DOSE + \*DOSE CALCULATION, INTERNAL + CESIUM + GAMMA EMITTER + MAXIMUM PERMISSIBLE BODY BURDEN + MERCURY + PLUTONIUM + SOURCE, POINT + SOURCE, VOLUME

15-21933  
HEALTH PHYSICS DIVISION ANNUAL PROGRESS REPORT FOR PERIOD ENDING JULY 31, 1967. PART IV. RADIATION DOSIMETRY  
OAK RIDGE NATIONAL LAB., TENN.  
ORNL-4168 +. 19 PAGES, 18 FIGURES, 3 TABLES, 44 REFERENCES, PAGE 291-311, OCTOBER 1967

RESEARCH IS REPORTED ON (CHAP. 21) ICHIRAN STUDIES (DOSE EVALUATION FOR HIROSHIMA AND NAGASAKI), (CHAP. 22) SPECTROMETRY AND DOSIMETRY RESEARCH, (CHAP. 23) DOSIMETRY APPLICATIONS, (CHAP. 24) HEALTH PHYSICS RESEARCH REACTOR AND DOSAR LOW-ENERGY ACCELERATOR OPERATIONS.

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

\*ACCELERATOR + \*DOSE + \*DOSE CALCULATION, EXTERNAL + \*DOSIMETRY, RADIOPHOTOLUMINESCENCE + \*HPRP (FBR) + \*SPECTROMETRY, NEUTRON + GAMMA + INSTRUMENTATION, RADIATION MONITORING + NEUTRON + REACTOR, RESEARCH + SHIELDING

15-21939  
EISENBU D + PETROW HG  
RADIOACTIVITY STUDIES. ANNUAL PROGRESS REPORT, DECEMBER 1, 1965-NOVEMBER 30, 1966  
NEW YORK UNIV., N. Y. INST. OF ENVIRONMENTAL MEDICINE  
NYO-3086-6 +. 128 PAGES, FIGURES, OCTOBER 1, 1966

REPORTS PROGRESS ON (1) ESTIMATES OF TOTAL BODY RADIUM IN THE NEW JERSEY DIAL PAINTERS, (2) STUDY OF THE DISTRIBUTION OF RA-226, RA-228, PB-210, AND TH-228 IN BONE AND SOFT TISSUE OF RADIUM DIAL PAINTERS, (3) SPECTROPHOTOMETRIC DETERMINATION OF THORIUM IN BONE ASH, (4) DETERMINATION OF LEAD IN BONE ASH BY ATOMIC ABSORPTION SPECTROPHOTOMETRY, (5) SEQUENTIAL ANALYSIS OF PB-210, TH-228, TH, RA-228, AND RA-226 IN A SINGLE SAMPLE OF BONE ASH, (6) DISTRIBUTION OF THORON DAUGHTERS IN RATS FOLLOWING INHALATION, (7) DISCUSSION OF POSSIBLE MECHANISMS INVOLVED IN THE APPARENT CONCENTRATION OF RA-226 AND PB-210 IN AORTA AND THYROID.

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

\*ANALYTICAL TECHNIQUE, GENERAL + \*BIOLOGICAL CONCENTRATION, MAN + \*RADIATION DAMAGE + \*RADIOBIOLOGY + BIOLOGICAL CONCENTRATION, ANIMAL + BIOMEDICAL + LEAD + RADIUM + THORON

15-21940  
BERKE HL + VORWALD AJ  
THE RESPONSE OF THE RESPIRATORY TRACT AND LUNG TO INHALED STABLE AND RADIOACTIVE ISOTOPES OF CERTAIN ELEMENTS. FINAL REPORT, APRIL 15, 1962-APRIL 14, 1966  
WAYNE STATE UNIV., DETROIT, MICH. DEPT. OF OCCUPATIONAL AND ENVIRONMENTAL HEALTH  
TID-23456 +. 55 PAGES, NOV. 1, 1966

PROGRESS IS REPORTED ON STUDIES ON THE DISTRIBUTION OF INHALED RADIOACTIVE AEROSOLS OF RARE-EARTH COMPOUNDS IN RATS AND DOGS AND THE RESPONSES EVOKED BY THE DEPOSITED RADIOISOTOPES. RESULTS ARE ALSO INCLUDED FROM A STUDY ON THE EFFECTS OF VARIOUS DOSES OF X RADIATION ON THE SIZE OF LYMPHOCYTES IN RATS. THE DESIGN OF A DOUBLE-WALLED INHALATION CHAMBER ATTACHED TO ANIMAL HOUSING QUARTERS, THE DESIGN OF AN AEROSOL GENERATOR, AND THE DESIGN OF AN AEROSOL SAMPLE ARE DESCRIBED. SCHEMATIC SKETCHES ARE INCLUDED.

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

\*AEROSOL + \*DOSE + \*INGESTION + \*INHALATION + \*RADIOBIOLOGY + DOSE CALCULATION, INTERNAL + EUROPIUM + RADIOISOTOPE

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-21942

AUXIER JA

THE PRESENT STATUS OF NEUTRON MONITORING FOR PERSONNEL PROTECTION

OAK RIDGE NATIONAL LAB., TENN.

ORNL-P-2467 + SM-76-67 + CONF-660807-4 +. 27 PAGES, FIGURES, REFERENCES, 1966, PRESENTED AT SYMPOSIUM ON NEUTRON MONITORING FOR RADIOLOGICAL PROTECTION, VIENNA, AUSTRIA

DEVELOPMENTS IN NEUTRON DOSIMETRY DURING THE PAST 20 YEARS ARE REVIEWED, INCLUDING SCINTILLATION SYSTEMS, CYLINDRICAL OR SPHERICAL MODERATORS WITH THERMAL NEUTRON DETECTORS LOCATED ON THE AXES OR AT THE CENTERS, PROPORTIONAL COUNTERS, SOLID-STATE DETECTORS, THERMOLUMINESCENT AND PHOTOLUMINESCENT SYSTEMS, LIQUID IONIZATION CHAMBERS, AND THE USE OF HEAVY-ION TRACKS IN INSULATING SOLIDS. IT IS SPECULATED THAT THE MOST SIGNIFICANT CHANGE IN THE FIELD OF RADIOLOGICAL MONITORING WILL BE THE SUBSTITUTION OF SOLID-STATE DEVICES FOR THE FILM AND NUCLEAR EMULSIONS IN PERSONAL DOSIMETERS, AND IT IS FORESEEN THAT SOLID-STATE DETECTORS AND OPERATIONAL ANALYZERS WILL BE USED FOR MEASUREMENTS OF ABSORBED DOSE, LET, AND OTHER FACTORS.

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

\*DOSIMETRY, GENERAL + \*INSTRUMENTATION, RADIATION MONITORING + \*NEUTRON + \*SOLID STATE DEVICE + \*SPECTROMETRY, NEUTRON + DOSIMETRY, PHOTOGRAPHIC + DOSIMETRY, RADIOPHOTOLUMINESCENCE + DOSIMETRY, THERMOLUMINESCENCE + ORNL

15-21943

GUTTMAN PH

CONSIDERATION OF THE ROLE OF AUTOIMMUNITY IN AGEING AND IN THE LATE EFFECTS OF IRRADIATION

CALIFORNIA UNIV., SAN FRANCISCO. MEDICAL CENTERS

UCSF-34P41-15 + CONF-660635-4 +. 6 PAGES, REFERENCES, AUGUST 3, 1966, PRESENTED AT INTERNATIONAL COLLOQUIUM ON RADIATION AND AGING, SEMMERING, AUSTRIA

A KIDNEY DISEASE KNOWN AS INTERCAPILLARY GLOMERULOSCLEROSIS (IGS) OCCURS IN AGING MICE, RATS, AND HAMSTERS. THE PATHOLOGICAL CHANGES OF THIS DISEASE ARE ACCELERATED BY X RADIATION. A LATENT PERIOD PRECEDES THE ONSET OF DEMONSTRABLE CHANGES. THE POSSIBILITY OF AN AUTOIMMUNE FACTOR IN THE PATHOGENESIS OF IGS OF AGING AND IRRADIATED MICE WAS CONSIDERED. ATTEMPTS WERE MADE TO MODIFY THE COURSE OF RADIOINDUCED RENAL LESIONS BY ALTERING THE IMMUNE RESPONSE OF THE ANIMALS. MECHANISMS BY WHICH RADIATION MAY INDUCE ANTIGENIC RESPONSE ARE DISCUSSED. THE POSSIBLE ROLE OF VIRUSES IN INDUCTION OF AUTOIMMUNE DISEASE IS DISCUSSED.

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

\*RADIATION DAMAGE + BIOMEDICAL + RADIOBIOLOGY + X-RAY

15-21945

ALSO IN CATEGORY 14

PASTERNAK A + ILLIOTT A + BERK HW

STATISTICAL ANALYSIS OF ENVIRONMENTAL AND TOTAL BODY GAMMA-RAY SCINTILLATION SPECTRA. PROGRESS REPORT,

OCTOBER 1, 1965-SEPTEMBER 30, 1966

NEW YORK, N. Y. INST. OF ENVIRONMENTAL MEDICINE

NYO-3136-3 +. 54 PAGES, FIGURES, TABLES, REFERENCES, OCT. 31, 1966

DISCUSSES THE USE OF COMPUTER PROGRAMS FOR ANALYZING THE GAMMA SPECTRUM OF RADIONUCLIDES IN ENVIRONMENTAL SAMPLES INCLUDING VEGETATION, SOIL MUD, WATER, MILK, FISH, AND HUMAN TISSUE.

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

\*BIOLOGICAL CONCENTRATION, GENERAL + \*COMPUTER PROGRAM + \*COUNTER, WHOLE BODY + \*RADIOBIOLOGY + \*SPECTROMETRY, GAMMA + BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + BIOLOGICAL CONCENTRATION, MAN + BIOLOGICAL CONCENTRATION, MILK + BIOLOGICAL CONCENTRATION, VEGETATION + BIOMEDICAL + BISMUTH + CESIUM + COBALT + COMPUTER, DIGITAL + GAMMA + IRON + RADIUM

15-21947

ALSO IN CATEGORY 14

EDVARDSSON KA + HAGSGARD S + SWENSSON A

DECONTAMINATION EXPERIMENTS ON INTACT PIG SKIN CONTAMINATED WITH BETA-GAMMA-EMITTING NUCLIDES

AKTIEBOLAGET ATOMENERGI, STOCKHOLM (SWEDEN)

AE-255 +. 35 PAGES, FIGURES, TABLES, REFERENCES, NOV. 1966

MOST OF THE EXPERIMENTS USED I-131 AS NAI IN WATER AS THE CONTAMINATING AGENT BECAUSE IT WAS THE MOST DIFFICULT TO REMOVE. VARIABLES INVESTIGATED INCLUDED TIME BETWEEN CONTAMINATION AND DECONTAMINATION, EFFECTIVENESS OF SOAP AND OTHER CLEANSERS, TEMPERATURE OF WATER, PRESENCE OF OIL ON THE SKIN, AND PROTECTIVE OINTMENTS.

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

\*DECONTAMINATION + \*RADIOCHEMICAL PLANT SAFETY + BETA EMITTER + CALCIUM + CESIUM + CONTAMINATION +

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-21947 \*CONTINUED\*  
GAMMA EMITTER + IODINE + PHOSPHORUS + SODIUM + SWEDEN + THALLIUM

15-21948 ALSO IN CATEGORY 14  
CULLEN TL

DOSIMETRIC MEASUREMENTS IN BRAZILIAN REGIONS OF HIGH NATURAL RADIOACTIVITY LEADING TO CYTOGENETIC STUDIES  
PONTIFICIA UNIVERSIDADE CATOLICA DO RIO DE JANEIRO (BRAZIL). INSTITUTO DE FISICA  
NYO-2577-8 + CONF-660920-7 +. 17 PAGES, REFERENCES, 1966, PRESENTED AT 1ST INTERNATIONAL CONGRESS OF THE  
INTERNATIONAL RADIATION PROTECTION ASSN., ROME, ITALY

REPORTS DOSIMETRIC MEASUREMENTS MADE IN GUARAPARI, BRAZIL, A CITY BUILT ON MONAZITE SANDS.  
LITHIUM FLUORIDE DOSIMETERS WERE USED TO RECONSTRUCT THE LIFETIME DOSE OF SELECTED  
INDIVIDUALS REPRESENTING VARIOUS SECTIONS OF THE CITY, ALL AGE BRACKETS, AND BOTH SEXES. THE  
AVERAGE DOSE RATE FOR THE 317 PEOPLE MEASURED WAS 636 MR/YR. POPULATION MOVEMENT ON A DAILY  
BASIS WITHIN THE CITY TENDED TO EQUALIZE THE DOSE. ATTEMPTS TO MEASURE INTERNAL  
CONTAMINATION WERE INCONCLUSIVE. HOWEVER, IT IS BELIEVED THAT INTIMATE CONTACT WITH  
CONTAMINATED SURFACES AND DUST IN THE AIR IS THE SOURCE OF BODY BURDENS THAT MAY HAVE  
CYTOLOGICAL SIGNIFICANCE.

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

\*DOSE MEASUREMENT, EXTERNAL + \*DOSE MEASUREMENT, INTERNAL + \*DOSIMETRY, GENERAL + \*RADIOBIOLOGY +  
\*SURVEY, RADIATION, ENVIRONMENTAL + BRAZIL + DOSIMETRY, THERMOLUMINESCENCE + SOIL, NUCLIDE OCCURRENCE +  
THORIUM

15-21954 ALSO IN CATEGORIES 14 AND 18

SURVEY OF ENVIRONMENTAL RADIOACTIVITY IN THE VICINITY OF INDIAN POINT STATION, FEBRUARY 1, 1967 THROUGH  
JULY 31, 1967  
CONSOLIDATED EDISON COMPANY OF NEW YORK  
17 PAGES, 4 FIGURES, 8 TABLES, AUGUST 18, 1967, DOCKET NO. 50-3, TYPE--PWR, MFG--B+W, AE--CON ED

REPORTS RESULTS OF MONITORING OF PARTICLES IN AIR, FALLOUT, HUDSON RIVER MUD, ALGAE,  
VEGETATION, SOIL, LAKE WATER, HUDSON RIVER WATER, AND BACKGROUND GAMMA RADIATION. NO  
SIGNIFICANT CHANGES IN BACKGROUND RADIATION WERE FOUND.

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

\*MONITORING PROGRAM, ENVIRONMENTAL + \*SURVEY, RADIATION, ENVIRONMENTAL + ENVIRONMENTAL CONDITION +  
FALLOUT + INDIAN POINT 1 (PWR) + REACTOR, PWR + STACK

15-21957 ALSO IN CATEGORY 14

PETROV RV + PRAVETSKII VN + STEPANOV YS + SHALNOV MI  
RADIOACTIVE FALLOUT. PHYSICS, BIOLOGICAL EFFECTS AND PROTECTIVE MEASURES  
AEC-TR-6634 + IPST-CAT.-1509 +. 140 PAGES, 1963, (TRANSLATION OF ZASHCHITA OT RADIOAKTIVNYKH OSADKOV,  
GOSUDARSTVENNOE IZDATEL STVO, MEDITSINSKOI LITERATURY, MOSCOW, 1963.)

AN ABSTRACT OF THIS MONOGRAPH WAS PREPARED ON THE ORIGINAL RUSSIAN-LANGUAGE PUBLICATION AND  
APPEARED IN NSA VOL. 18 AS NUMBER 8567.

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

\*CONTAMINATION + \*DOSIMETRY, GENERAL + \*FALLOUT + \*INSTRUMENTATION, RADIATION MONITORING +  
DOSE MEASUREMENT, EXTERNAL + RADIATION PROTECTION, ORGANIZATION + RADIOBIOLOGY + USSR

15-21958

GEYH M + LORCH S  
MEASUREMENT OF THE TERRESTRIAL COMPONENT OF THE NATURAL GAMMA-ENVIRONMENTAL RADIATION IN THE FEDERAL  
REPUBLIC OF GERMANY  
GERMANY. BUNDESINISTERIUM FÜR WISSENSCHAFTLICHE FORSCHUNG  
BMWF-FB-K-66-42 +. 65 PAGES, DECEMBER 1966, IN GERMAN

MEASUREMENTS FOR THE DETERMINATION OF THE TERRESTRIAL COMPONENT OF THE NATURAL ENVIRONMENTAL  
GAMMA RADIATION IN THE FEDERAL REPUBLIC OF GERMANY ARE REPORTED. THESE MEASUREMENTS WERE  
CARRIED OUT ON ROADS AND IN BUILDINGS BY SCINTILLOMETERS. THE AVERAGE DOSE RATE ON THE ROADS  
WAS 34.2, IN BUILDINGS 70.0 (MR/YEAR). THESE RESULTS ARE IN ACCORD WITH THOSE OF OTHER  
COUNTRIES. THE AVERAGE DOSE RATE MEASURED ON THE ROADS DIFFERS IN VARIOUS REGIONS OF  
GEOLOGICAL UNIFORMITY. SINCE THE AVERAGE STAYING TIME OF MAN IN THE DIFFERENT ENVIRONMENTS  
OF LIFE IS UNKNOWN, A COMPUTATION OF THE AVERAGE RADIATION LOAD RATE OF THE POPULATION WAS  
NOT MADE.

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

\*DOSE + \*DOSE MEASUREMENT, EXTERNAL + \*ENVIRONMENTAL CONDITION + GAMMA + GERMANY

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-21959 ALSO IN CATEGORY 14  
FRANEA EP + RIBEIRE CC + TEITAKOWSKI M + LONDRES H + SANTOS H + ALBUQUERQUE HA  
SURVEY OF RADIOACTIVE CONTENT OF FOOD GROWN ON BRAZILIAN AREAS OF HIGH NATURAL RADIOACTIVITY  
BRAZIL UNIV., RIO DE JANEIRO. INSTITUTO DE BIOFISICA  
NYO-3273-5 + CONF-650523-2 +. 15 PAGES, 1965, PRESENTED AT SYMPOSIUM ON RADIATION AND TERRESTRIAL  
ECOSYSTEMS, RICHLAND, WASH.

TWO TYPES OF HIGH-BACKGROUND REGIONS WERE STUDIED IN BRAZIL - THE MONAZITE SAND REGION ALONG  
THE ATLANTIC COAST AND THE ZONE OF VELEANIE INTRUSIVES IN THE INLAND STATE OF MINAS GERAIS.  
IN BOTH REGIONS, THERE ARE GROUPS OF POPULATION LIVING ON VARIABLE FIELDS OF RADIATION  
RANGING FROM 0.08 TO 1.0 MR/H. THE MOST REPRESENTATIVE TOWNS AND VILLAGES ON THESE AREAS  
ARE BEING INTENSIVELY STUDIED TO INVESTIGATE POSSIBLE LONG-TERM CONSEQUENCES TO HUMAN BEINGS  
OF CONTINUOUS EXPOSURE TO THESE LEVELS OF RADIATION. FOOD PRODUCED ON THE AREAS HAVE BEEN  
EXTENSIVELY SAMPLED AND ASSAYED FOR THEIR RADIOACTIVE CONTENT. TOTAL ALPHA COUNTING,  
FAST-ALPHA-PAIR COINCIDENCE COUNTING, RADIOCHEMICAL ANALYSIS OF RA-226, RA-228, AND TH-228,  
AS WELL AS GAMMA AND ALPHA SPECTROMETRY WERE USED.

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

\*BIOLOGICAL CONCENTRATION, FOOD + \*BIOLOGICAL CONCENTRATION, GENERAL + \*SOIL + \*SOIL, NUCLIDE OCCURRENCE +  
BIOLOGICAL CONCENTRATION, VEGETATION + BIOMEDICAL + BRAZIL + RADIUM + RADON + THORIUM

15-21960  
AWSCHALOM M + LARSEN FL + SASS RE  
THE RADIATIONS MEASUREMENTS GROUP AT THE PRINCETON-PENNSYLVANIA 3 GEV PROTON SYNCHROTRON  
PRINCETON-PENNSYLVANIA ACCELERATOR, PRINCETON, J. J.  
PPAD-569E + CONF-651109-3 +. 41 PAGES, FIGURES, OCTOBER 13, 1965, PRESENTED AT 1ST SYMPOSIUM ON  
ACCELERATOR RADIATION DOSIMETRY AND EXPERIENCE, UPTON, N. Y.

PRESENTS A BRIEF DESCRIPTION OF THE PRINCETON-PENNSYLVANIA 3-BEV PROTON SYNCHROTRON. A SURVEY  
OF THE EXPERIMENTS CARRIED OUT IN THE AREAS OF ROUTINE HEALTH PHYSICS AND RADIATION STUDIES  
IS GIVEN.

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

\*ACCELERATOR + \*RADIATION PROTECTION, ORGANIZATION + \*RADIATION SAFETY AND CONTROL + DOSE +  
DOSE MEASUREMENT, EXTERNAL + DOSIMETRY, GENERAL

15-21961  
FLIEDNER TM  
THE BASIC PRINCIPLES OF DIAGNOSIS AND THERAPY IN RADIATION ACCIDENTS  
EUROPEAN ATOMIC ENERGY COMMUNITY  
1 PAGE, STRAHLENSCHUTZ IN FORSCHUNG UND PRAXIS, 6, PAGE 245-259, (1966)

IN RADIATION ACCIDENTS IN NUCLEAR PLANTS IT IS DESIRABLE TO ASCERTAIN WHETHER THE RADIATION  
BURDEN OF THE VICTIMS IS SUCH THAT THEIR SURVIVAL IS (A) IMPOSSIBLE OR UNLIKELY, (B) POSSIBLE  
(PROVIDED THAT ALL THERAPEUTIC POSSIBILITIES ARE EXPLOITED), OR (C) IMPROBABLE.

\*RADIATION DAMAGE + \*RADIATION INJURY, TREATMENT OF + \*RADIOBIOLOGY + GERMANY

15-21962  
EVALUATION AND TREATMENT OF AN ACUTE INTERNAL EXPOSURE TO PLUTONIUM  
ROCKY FLATS DIV., DOW CHEMICAL CO., GOLDEN, COLO.  
CONF-650302-6 + RFP-446 +. 29 PAGES, REFERENCES, MARCH 9, 1965, PRESENTED AT IAEA SYMPOSIUM ON PERSONNEL  
DOSIMETRY FOR ACCIDENTAL HIGH-LEVEL EXPOSURE TO EXTERNAL AND INTERNAL RADIATION, VIENNA

DESCRIBES AN ACCIDENT IN WHICH AN INDIVIDUAL RECEIVED AN INTERNAL EXPOSURE TO PLUTONIUM  
THROUGH INJURY TO HIS LEFT HAND AND BY INHALATION AND INGESTION. THE COURSE OF TREATMENT TO  
THE INDIVIDUAL, EXCRETION DATA, AND BODY-COUNTER DATA IS PRESENTED ALONG WITH A DISCUSSION OF  
METHODS AND EQUIPMENT.

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

\*ANALYTICAL TECHNIQUE, URINE + \*PLUTONIUM + \*RADIATION PROTECTION, CHEMICAL + \*RADIOBIOLOGY +  
ACCIDENT, NONNUCLEAR + COUNTER, WHOLE BODY + ROCKY FLATS

15-21963  
BODDY K  
A SHADOW-SHIELDED WHOLE-BODY COUNTER OF HIGH SENSITIVITY  
SCOTTISH RESEARCH REACTOR CENTRE, EAST KILBRIDE (SCOTLAND)  
SRRC-11/65 +. 12 PAGES, 7 REFERENCES, 1964

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-21963 \*CONTINUED\*

NO HOSPITAL IN SCOTLAND PRESENTLY POSSESSES OR HAS EASY ACCESS TO A WHOLE-BODY COUNTER OF HIGH SENSITIVITY, DESPITE THE WIDESPREAD INTEREST IN USING SUCH A FACILITY IN MEDICAL RESEARCH. IN VIEW OF THE LIMITATIONS OF A CENTRAL FACILITY SITED IN A SINGLE HOSPITAL, OR ELSEWHERE, THE CONCEPT OF A MOBILE WHOLE-BODY COUNTER OF SENSITIVITY EQUAL TO THAT OF A STEEL OR LEAD ROOM INSTALLATION IS PARTICULARLY ATTRACTIVE. TO FIND A SUITABLE LIGHTWEIGHT SHIELD, PRELIMINARY SHIELDING STUDIES WERE UNDERTAKEN, AND A PROTOTYPE SHADOW-SHIELDED WHOLE-BODY COUNTER WAS MADE FROM MATERIALS AND EQUIPMENT ORIGINALLY ACQUIRED FOR OTHER PURPOSES. THE DETECTOR IS A 3 X 3-IN. SODIUM IODIDE CRYSTAL LOCATED IN A CENTRAL SHIELD. SCANNING-BED GEOMETRY IS USED IN WHICH THE SUBJECT PASSES BENEATH THE DETECTOR.

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

\*COUNTER, WHOLE BODY + \*DOSE + \*INSTRUMENTATION, RADIATION MONITORING + DOSE MEASUREMENT, INTERNAL + SHIELDING + UNITED KINGDOM

15-21969

ILIC-POPJVIC J

USE OF POLYVINYL-CHLORIDE FILM FOR ELECTRON BEAM DOSIMETRY  
DANISH ATOMIC ENERGY COMMISSION, RISØ. RESEARCH ESTABLISHMENT  
RISO-141 +. 18 PAGES, FIGURES, TABLES, REFERENCES, SEPT. 1966

THE SUITABILITY OF A HOMOPOLYMER TYPE OF PVC FILM (QCA-5960, 0.015 IN. THICK) AS A HIGH-DOSE ELECTRON DOSIMETER (1-5 MEGARADS) WAS INVESTIGATED. DIFFERENT HEAT TREATMENTS WERE APPLIED TO OBTAIN A REASONABLE STORAGE STABILITY AND AN APPROXIMATELY LINEAR RELATIONSHIP BETWEEN OPTICAL DENSITY AND DOSE OVER THE DOSE RANGE FROM 0.5 TO 5 MEGARADS. THE SPECTRAL RANGE WAS 3900 TO 5000 Å. THE EFFECT OF THE DOSE RATE ON THE COLORATION OF PVC WAS STUDIED.

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

\*DOSIMETRY, GENERAL + DENMARK + DOSE + DOSE MEASUREMENT, EXTERNAL + DOSE MEASUREMENT, INTERNAL

15-21970

NIRSCHL JC

SOLID-STATE ELECTROMETER FOR PORTABLE RADIATION MONITOR  
ARMY ELECTRONICS COMMAND, FORT MONMOUTH, N. J.  
AD-639587 + ECOM-2736 +. 19 PAGES, FIGURES, REFERENCES, AUGUST 1966

DESCRIBES A SOLID-STATE ELECTROMETER IN WHICH A METAL-OXIDE SEMICONDUCTOR FIELD EFFECT TRANSISTOR (MOS FET) IS USED IN THE HIGH-IMPEDANCE INPUT STAGE. THE RANGE OF CURRENT MEASUREMENT IS FROM 10<sup>-12</sup>TH TO 10<sup>-8</sup>TH AMP. THE DESIGN OF THE ELECTROMETER LENDS ITSELF TO APPLICATION IN A PORTABLE RADIATION SURVEY METER, AFFORDING HIGH LINEARITY, FAST RESPONSE, INSTANT WARMUP, AND LOW POWER CONSUMPTION.

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

\*INSTRUMENTATION, RADIATION MONITORING + \*MONITOR, RADIATION, GENERAL + INSTRUMENTATION, NUCLEAR + MONITOR, RADIATION, GENERAL PRACTICE + SOLID STATE DEVICE

15-21978

ALSO IN CATEGORY 14

STEINKAMP RC + COHEN NL + HUTSON E + KUNKEL H  
DIET MODEL FOR MEASURING RADIOACTIVITY EXPOSURE THROUGH FOOD-PILOT STUDY  
DEPARTMENT OF HEALTH, CALIFORNIA  
9 PAGES, 2 FIGURES, 2 TABLES, 5 REFERENCES, RADIOLOGICAL HEALTH DATA AND REPORTS 8(10), PAGE 565-573, (OCT. 1967)

THIS PAPER REPORTS A PILOT STUDY DESIGNED TO TEST THE HYPOTHESIS THAT THE HOUSE DIET OF A HOSPITAL MAY SERVE AS A MODEL FOR THE DIET OF AN ADULT POPULATION REGIONALLY SERVED BY THE HOSPITAL IN ORDER TO MEASURE RADIOACTIVITY EXPOSURE THROUGH FOOD INTAKE. YEARLY AND SEASONAL QUANTITIES OF 37 SUBCATEGORIES OF NINE MAJOR FOOD GROUPS WERE COMPARED FOR A BERKELEY HOSPITAL HOUSE DIET AND DIETS OF BERKELEY AND OTHER SAN FRANCISCO BAY AREA RESIDENTS. RESULTS INDICATE THAT THE HOSPITAL HOUSE DIETS WHILE DIFFERING IN CERTAIN RESPECTS FROM FOOD INTAKE OF THE POPULATION, MAY PROVIDE AN ESTIMATE OF NEAR-MAXIMUM INTAKE OF FOODS SIGNIFICANT FOR RADIOACTIVE CONTENT.

\*BIOLOGICAL CONCENTRATION, GENERAL + \*FALLOUT + BIOLOGICAL CONCENTRATION, FOOD + BIOLOGICAL CONCENTRATION, MILK + DIETARY HABIT

15-21992

RADIATION ACCIDENT AT HAMMERSMITH

1 PAGE, BRIT. MED. J., PAGE 233, (JULY 23, 1966)

THREE PATIENTS AT THE HAMMERSMITH HOSPITAL (LONDON) RECEIVED AN OVERDOSE OF ELECTRONS WHILE BEING TREATED FROM THE HOSPITAL'S 2-MEV LINEAR ACCELERATOR. THE ACCIDENT WAS DUE TO A VERY RARE COMBINATION OF CIRCUMSTANCES - AN IRREGULARITY OF CURRENT THAT OCCURRED ABOUT ONCE A

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-21992 \*CONTINUED\*  
YEAR FOR A FEW DAYS, AND A SIMULTANEOUS FAILURE OF THE DOSIMETER, NOT IMMEDIATELY NOTICEABLE.

\*ACCELERATOR + \*ACCIDENT, GENERAL + \*RADIOLOGY + RADIATION DAMAGE + RADIATION INJURY, TREATMENT OF + UNITED KINGDOM + X-RAY

15-21993 ALSO IN CATEGORY 14  
FLETCHER W + LOUITT JF + PAPWORTH DG  
INTERPRETATION OF LEVELS OF SR-90 IN HUMAN BONE  
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, CHESTER, ENG.  
6 PAGES, 3 FIGURES, 7 TABLES, 17 REFERENCES, BRIT. MED. J., 2, PAGE 1225-1230, (NOVEMBER 19, 1966)

NEW DATA ON SR-90 IN BONE, DERIVED SINCE THE CONSIDERABLE INCREASE IN FALLOUT FOLLOWING THE 1961-2 NUCLEAR-WEAPON DETONATIONS IN THE ATMOSPHERE, ARE REPORTED. THE RESULTS FOR 1962-4 REFLECTED THE INCREASE OF CONTAMINATION OF FOOD FOLLOWING THE MASSIVE TESTING OF NUCLEAR WEAPONS IN 1961-2. MAXIMUM CONCENTRATIONS WITHIN ANY ONE YR CONTINUED TO OCCUR IN INFANTS AROUND 1 YR OLD, AND THIS MAX WAS REACHED AT ABOUT 4 MONTHS OF AGE. IN CHILDREN AND ADOLESCENTS, VALUES WERE LOWER AND MUCH LESS VARIABLE BETWEEN INDIVIDUALS AND DOMICILE. IN CONTRAST WITH ADULTS, MANY OF WHOSE BONES, FOR EXAMPLE, VERTEBRAE, SHOWED SUBSTANTIALLY HIGHER CONCENTRATIONS THAN OTHERS, THERE WAS LITTLE VARIATION WITHIN THE SKELETON IN CHILDREN AND EVEN ADOLESCENTS. IT IS THUS POSSIBLE IN JUVENILES TO TAKE THE CONCENTRATIONS OF SR-90 OBSERVED IN ONE BONE AS REPRESENTATIVE OF THE WHOLE SKELETON, AND THUS TO DERIVE BODY BURDENS ACCORDING TO AGE AND YEAR.

\*BIOLOGICAL CONCENTRATION, MAN + \*FALLOUT + BIOMEDICAL + RADIOBIOLOGY + STRONTIUM + TEST, WEAPONS (HP ASPECTS) + UNITED KINGDOM

15-21996 ALSO IN CATEGORY 14  
MATSUOKA O + TANAKA E  
GAMMA LABELLING WITH SR-85 FOR IN VIVO MEASUREMENT OF SR-90. AN ATTEMPT FOR THE IN VIVO MEASUREMENT OF SR-90 AND Y-90 IN INTERNALLY EXPOSED ANIMALS  
NATIONAL INST. OF RADIOLOGICAL SCIENCES, CHIBA, JAPAN  
8 PAGES, 8 FIGURES, 1 TABLE, 10 REFERENCES, RADIOISOTOPES (TOKYO), 21, PAGE 261-268, (SEPTEMBER 1966), IN JAPANESE

IN THE STUDY ON THE BIOLOGICAL EFFECT OF INTERNAL EXPOSURE, THE EVALUATION OF ABSORBED DOSE DUE TO DEPOSITED RADIONUCLIDE IN THE ORGAN OF INTEREST IS ESSENTIAL. STRONTIUM-90 IS ONE OF THE MOST-STUDIED RADIONUCLIDES AMONG THE BONE-SEEKING ISOTOPES, BUT ITS BEHAVIOR IN THE LIVING BODY IS NOT CLEARLY UNDERSTOOD. A NEW GAMMA-LABELING METHOD WAS DEVELOPED TO DETERMINE THE AMOUNT OF SR-90 IN VIVO. A MIXTURE OF SR-90 AND SMALL AMOUNT (2 TO 5% IN ACTIVITY) OF SR-85 IS ADMINISTERED TO THE ANIMAL AND THE GAMMA RAYS (0.513 MEV) FROM SR-85 ARE MEASURED WITH A SCINTILLATION COUNTER. THE COUNTING EFFICIENCY SHOULD BE DETERMINED BEFOREHAND WITH THE ORIGINAL MIXTURE SOLUTION. YTTRIUM-90 ACTIVITY EXISTING WITH SR-90 IS MEASURED BY ITS BREMSSTRAHLUNG EFFECT IF NECESSARY.

\*COUNTER, WHOLE BODY + \*FALLOUT + \*RADIOBIOLOGY + BIOLOGICAL CONCENTRATION, ANIMAL + BIOMEDICAL + GAMMA + JAPAN + RADIOISOTOPES + STRONTIUM + YTTRIUM

15-22111  
GUPTON ED  
ALPHA AIR MONITOR FOR PU-239  
OAK RIDGE NATIONAL LAB., TENN.  
ORNL-TM-2011 +. 15 PAGES, 4 FIGURES, 2 TABLES, 4 REFERENCES, SEPTEMBER 27, 1967

AN ALPHA AIR MONITOR WHICH WILL RELIABLY DETECT 8 MPC-HR OF PU-239 IN THE PRESENCE OF RADON AND DAUGHTERS, IN CONCENTRATIONS WHICH VARY BY FACTORS OF MORE THAN 100, AND IN VARYING, MODERATE LEVELS OF GAMMA RADIATION WAS DEVELOPED AND FIELD TESTED. BEGINNING WITH AN EXPERIMENTAL DEVICE IN 1956, MORE REFINED MODELS HAVE BEEN PROGRESSIVELY DESIGNED AND TESTED. THE LATEST MODEL HAS GOOD SENSITIVITY AND RELIABILITY, WITH UNCOMPLICATED DESIGN AND OPERATION. THE PRINCIPAL OF OPERATION IS BASED ON THE ALPHA-TO-BETA PARTICLE EMISSION-RATE RATIO OF THE COLLECTED AIR SAMPLE.

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

\*ALPHA EMITTER + \*MONITOR, RADIATION, AIR + \*PLUTONIUM + INSTRUMENTATION, RADIATION MONITORING

15-22147  
SCHAEFER HJ + SULLIVAN JJ  
RADIATION MONITORING WITH NUCLEAR EMULSIONS ON PROJECT GEMINI. I. EXPERIMENTAL DESIGN AND EVALUATION. PROCEDURES--PARTIAL RESULTS ON MISSIONS 4 AND 5.  
NAVAL SCHOOL OF AVIATION MEDICINE, PENSACOLA, FLA.  
N-66-26692 + NASA-CR-75036 +. 17 PAGES, FEB. 18, 1966

SMALL PACKS OF NUCLEAR AND ORDINARY FILM-BADGE EMULSIONS, COMBINED WITH THERMOLUMINESCENT AND OTHER KINDS OF RADIATION SENSORS IN COMPACT, PLIABLE UNITS, WERE WORN BY ASTRONAUTS ON GEMINI MISSIONS 4 AND 5. THESE FILMS SHOW THAT ON GEMINI ORBITS, THE BULK OF THE TOTAL MISSION DOSE WAS DUE TO TRAPPED PROTONS IN THE SOUTH ATLANTIC ANOMALY. THE LARGE FRACTION OF LOW-ENERGY

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-22147 \*CONTINUED\*

PARTICLES IN THE TRAPPED RADIATION CREATES MARKED DIFFERENCES IN THE FLUX AT DIFFERENT LOCATIONS WITHIN THE VEHICLE DUE TO LOCAL ABSORPTION EFFECTS. MARKED VARIATIONS OCCUR ONLY MILLIMETERS APART.

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

\*DOSIMETRY, PHOTOGRAPHIC + \*DOSIMETRY, THERMOLUMINESCENCE + \*MONITORING PROGRAM, ENVIRONMENTAL + DOSIMETRY, GENERAL + SPACECRAFT

15-22148

SAFNER EL + FRIEDMAN BI + KEREIAKES JG + PERRY H

METABOLIC CHANGES IN HUMANS FOLLOWING TOTAL-BODY IRRADIATION. SUMMARY REPORT. FEBRUARY 1960-APRIL 1966  
CINCINNATI UNIVERSITY, OHIO

AD-646667 + DASA-1844 +. 174 PAGES, 22 FIGURES, 28 TABLES, SEPTEMBER 1, 1966

SUMMARIZES THE DATA ACCUMULATED FROM 50 PATIENTS WHO HAD BEEN GIVEN TOTAL OR PARTIAL BODY IRRADIATION AT THE UNIVERSITY OF CINCINNATI MEDICAL CENTER FROM FEB. 1960 THROUGH APRIL 1966. PSYCHOLOGICAL, HEMATOLOGICAL, METABOLIC, IMMUNOLOGICAL, AND CHROMOSOMAL FINDINGS ARE STATISTICALLY ANALYZED, AND SOME IMPLICATIONS CONCERNING REDUCTION IN COMBAT EFFECTIVENESS OF MILITARY PERSONNEL EXPOSED TO IONIZING RADIATION ARE DRAWN.

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

\*RADIATION DAMAGE + \*RADIATION INJURY, TREATMENT OF + \*RADIOBIOLOGY + \*RADIOLOGY + BIOMEDICAL

15-22149

BYCHKOVSKAYA IB

SOME PRINCIPLES OF THE DYNAMICS OF THE DYING-OFF OF IRRADIATED BIOLOGICAL SPECIMENS  
MINISTRY OF HEALTH USSR, Leningrad

AEC-TR-6770 +. 10 PAGES, 5 FIGURES, 31 REFERENCES, PAGES 56-65, TRANSLATED FROM RADIOBIOLOGIYA 6(1), PAGES 39-45 (1966)

THE PUBLISHED LITERATURE ON IRRADIATION OF BIOLOGICAL MATERIAL (ORGANISM) IS EVALUATED WITH REFERENCE TO THE MECHANISM OF DEATH. THE VARIATION AMONG ORGANISMS FROM FURINATES TO INFUSORIA ARE STUDIED.

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

\*RADIATION DAMAGE + \*RADIOBIOLOGY + USSR

15-22150

ALSO IN CATEGORY 14

NEUSTROEV GV + PODYMAKHIN VN

ON THE RESPIRATION OF SALMON ROE (SALMO SALAR L.) UNDER CONDITIONS OF RADIOACTIVE CONTAMINATION OF THE WATER

AEC-TR-6670 +. 3 PAGES, 1 FIGURE, 6 REFERENCES, PAGES 181-183, TRANSLATED FROM RADIOBIOLOGIYA 6(1), PAGES 115-116 (1966)

THE DEVELOPMENT OF SALMON ROE IN AN AQUARIUM CONTAINING  $1 \times 10^{(-6)}$  CI/LITER OF CS-137 WAS OBSERVED. THE OXYGEN CONSUMPTION WAS HIGHER FOR THE ROE EXPOSED TO CS-137 THAN FOR THE ROE IN UNCONTAMINATED WATER.

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

\*RADIOBIOLOGY + BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + CESIUM + USSR

15-22152

CHERKASOVA LS + KOLDGBSKAYA FO + KUKUSHKINA VA + MIRONOVA TM + REMBERGER VG + TAITIS MY + FOMICHENKO KV  
EFFECTS OF NEUTRON IRRADIATION UPON THE PROCESSES OF TISSUE METABOLISM  
ACADEMY OF SCIENCES BELORUSSIAN SSR, MINSK

AEC-TR-6771 +. 8 PAGES, 5 FIGURES, 3 TABLES, 9 REFERENCES, PAGES 25-33, TRANSLATED FROM RADIOBIOLOGIYA 6(2), PAGES 179-184 (1966)

EXPERIMENTS WERE MADE WITH RATS TO DETERMINE THE EFFECT OF NEUTRON IRRADIATION ON MAMMALIAN TISSUE. TOTAL NEUTRON IRRADIATION AT A DOSE OF ABOUT 12 RADS CHANGES THE DIRECTION IN THE PROCESSES OF CARBOHYDRATE ENERGY AND PROTEIN METABOLISM OF THE CENTRAL NERVOUS SYSTEM, SKELETAL MUSCLE, AND LIVER. THE PRESENCE OF THESE CHANGES 30 DAYS AFTER IRRADIATION CONFIRMS THE POSSIBILITY OF LONG-TERM RESPONSES OF THE ORGANISM TO NEUTRON IRRADIATION.

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

\*RADIATION DAMAGE + \*RADIOBIOLOGY + BIOMEDICAL + NEUTRON



CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-22153  
MOSKALEV YI + PETROVICH IK + STRELTSOVA VN  
ON THE BIOLOGICAL EFFECTS OF POLONIUM-210  
AEC-TR-6771 +. 12 PAGES, 5 FIGURES, 2 TABLES, 14 REFERENCES, PAGES 34-45, TRANSLATED FROM RADIOBIOLOGIYA  
6(2), PAGES 185-193 (1966)

CITES DATA ON THE INFLUENCE OF PO-210 WITHIN A BROAD RANGE OF DOSES UPON THE LIFETIME OF ANIMALS, THE COMPOSITION OF THE PERIPHERAL BLOOD, WEIGHT, AND FREQUENCY OF TUMORAL AND NONTUMORAL FORMS OF PATHOLOGICAL PROCESSES IN THE LONG-TERM PERIODS. VALUES OF LD-50 FOR PERIODS TO 480 DAYS ARE REPORTED. IN ACUTE AND SUBACUTE FORMS OF INJURY BY PO-210 THE FEMALES WERE MORE SENSITIVE THAN MALES, BUT THERE WAS NO DIFFERENCE IN LONG-TERM PERIODS. IN LONG-TERM PERIODS, THE RATS DEVELOP BOTH NONTUMORAL AND TUMORAL FORMS OF LONG-TERM EFFECTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA., \$2.00 COPY, \$0.65 MICROFICHE

\*RADIATION DAMAGE + POLONIUM + RADIOBIOLOGY + USSR

15-22238  
LAUGHLIN JS  
BIOLOGICAL AND CLINICAL DOSIMETRY. ANNUAL PROGRESS REPORT, JULY 1, 1966--JUNE 1, 1967  
SLOAN-KETTERING INST. FOR CANCER RESEARCH, NEW YORK  
NYO-3510-3 +. 17 PAGES, JULY 6, 1967

PROGRESS IS REPORTED ON ABSORBED DOSE MEASUREMENTS WITH MICROCALORIMETER, BIOLOGICAL EFFECTIVENESS OF ELECTRONS AS A FUNCTION OF DEPTH, DOSIMETRY OF ULTRAHIGH-INTENSITY RADIATION SOURCES, INTERLABORATORY COMPARISON, SOLID-STATE-DETECTOR EVALUATION, APPROXIMATION OF THE EFFICIENCY OF THE PHOTOELECTRIC EFFECT IN SILICON AND GERMANIUM DIODE, AND EVALUATION OF A THIN-WINDOW COMMERCIAL DIODE.

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

\*DOSIMETRY, GENERAL + \*RADIOBIOLOGY + BETA EMITTER + DOSIMETRY, THERMOLUMINESCENCE + GAMMA + SOLID STATE DEVICE

15-22240 ALSO IN CATEGORY 14  
THE TECHNICAL BASIS FOR LEGISLATION ON IRRADIATED FOOD. REPORT OF A JOINT FAO-IAEA-WHO EXPERT COMMITTEE--ROME, APRIL 21-28, 1966  
WORLD HEALTH ORGANIZATION  
37 PAGES, 1 TABLE, WORLD HEALTH ORGAN., TECH. REP. SER., NO. 316, PAGES 1-37 (1966)

GENERAL PRINCIPLES GOVERNING THE PRODUCTION AND USE OF IRRADIATED FOOD ARE CONSIDERED, ALONG WITH RECOMMENDATIONS FOR THE ESTABLISHMENT OF LEGISLATION AND CONTROL. RECOMMENDED TECHNICAL PROCEDURES AND TESTS REQUIRED TO PERMIT AN EVALUATION OF THE SAFETY FOR CONSUMPTION OF IRRADIATED FOOD ARE OUTLINED, INCLUDING TESTS FOR MICROBIOLOGICAL SAFETY. IT IS RECOMMENDED THAT DISTRIBUTION OF A SPECIFIC IRRADIATED FOOD INTENDED FOR GENERAL PUBLIC CONSUMPTION SHOULD BE PERMITTED ONLY AFTER ACCEPTANCE BY THE APPROPRIATE GOVERNMENT AUTHORITY OF EVIDENCE THAT THE FOOD IS SAFE FOR HUMAN CONSUMPTION.

AVAILABILITY - WORLD HEALTH ORGANIZATION, GENEVA, \$1.00 COPY

IAEA + RADIATION DAMAGE + RADIOBIOLOGY + UNITED NATIONS

15-22241  
SOLDATOVA VA + KIRSANOVA GI  
ASSESSMENT OF CONDITIONS OF WORK AND STATE OF HEALTH OF MEDICAL ROENTGENOLOGISTS  
7 PAGES, 2 FIGURES, 7 TABLES, MED. RADIOL. 12(6), PAGES 73-9 (JUNE 1967)

THE ARTICLE IS CONCERNED WITH THE OUT-PATIENT EXAMINATION OF 990 ROENTGENOLOGISTS AND IN-PATIENT EXAMINATION OF 125 PERSONS. AN ANALYSIS OF STUDIES OF THE OUT-PATIENT GROUP SHOWED A QUITE SATISFACTORY STATE OF HEALTH FOR ROENTGENOLOGISTS. THE SYMPTOM COMPLEX OF CHRONIC RADIATION SICKNESS WAS REVEALED ONLY IN 1% OF CASES IN PERSONS WORKING IN THE PAST WITH ABOVE-STANDARD LOADINGS. UPON A METICULOUS EXAMINATION, THE AUTHORS ESTABLISHED SOME INSIGNIFICANT DEVIATIONS IN THE STATE OF HEALTH, WHICH CORRELATED WITH THE TOTAL IRRADIATION DOSE.

\*RADIOLOGY + MONITOR, RADIATION, PERSONNEL + PERSONNEL EXPOSURE, RADIATION + USSR

15-22242  
LOW BACKGROUND RADIATION DETECTION  
BECKMAN INSTRUMENTS INC.  
BRITISH PATENT 1,070,657 +. 6 PAGES, 4 FIGURES, 2 TABLES, JUNE 1, 1967

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-22242 \*CONTINUED\*

DESCRIBES A RADIATION DETECTION SYSTEM COMPOSED OF A BETA DETECTOR AND COSMIC-RAY DETECTOR CONNECTED WITH AN ANTICOINCIDENCE CIRCUIT AND SHIELDING SURROUNDING BOTH DETECTORS.

AVAILABILITY - THE PATENT OFFICE, 25 SOUTHAMPTON BUILDING, LONDON, W. C. 2, ENGLAND, \$0.49 PER COPY

\*INSTRUMENTATION, RADIATION MONITORING + BETA EMITTER + COSMIC RADIATION + INSTRUMENTATION, NUCLEAR + PATENT + UNITED KINGDOM

15-22253

RADIOACTIVE CORPSES

1 PAGE, BRITISH MEDICAL JOURNAL 1, PAGE 331 (MAY 6, 1967)

HAZARDS ASSOCIATED WITH HANDLING CADAVERS BEARING CLINICAL RADIOISOTOPES ARE CONSIDERED, PARTICULARLY WITH REFERENCE TO A RECENT REPORT PERTINENT TO THIS PROBLEM ISSUED BY THE AUSTRALIAN NATIONAL HEALTH AND MEDICAL RESEARCH COUNCIL. WHEN A PATIENT DIES IN HOSPITAL, A RADIOISOTOPE GIVEN TO A PATIENT A FEW DAYS BEFORE DEATH MAY BE FORGOTTEN, SO THAT THERE IS A POTENTIALLY SERIOUS RISK TO THE POST MORTEM ROOM ATTENDANT, PATHOLOGIST, OR EMBALMER. THE AUSTRALIAN REPORT SETS OUT A CODE OF PRACTICE FOR THE SAFE HANDLING OF CORPSES CONTAINING RADIOACTIVE SUBSTANCES AND DEALS CONCISELY AND CLEARLY WITH THE MAIN PROBLEMS.

\*RADIOLOGY + RADIATION INJURY, TREATMENT OF + RADIATION PROTECTION, ORGANIZATION + RADIATION SAFETY AND CONTROL

15-22329

ALSO IN CATEGORY 14

REES DJ

HEALTH PHYSICS. PRINCIPLES OF RADIATION PROTECTION

242 PAGES, FIGURES, TABLES, REFERENCES, THE M.I.T. PRESS, MASSACHUSETTS INSTITUTE OF TECHNOLOGY, CAMBRIDGE, MASSACHUSETTS, 1967

THIS MONOGRAPH IS AN ATTEMPT TO PRESENT THE PRINCIPLES OF RADIATION PROTECTION AND TO MAKE AVAILABLE IN A SINGLE VOLUME THE MORE IMPORTANT NUMERICAL DATA USED IN RADIATION-PROTECTION APPLICATIONS. IT IS ASSUMED THAT THE READER HAS NO PREVIOUS KNOWLEDGE OF THE SUBJECT, AS FAR AS POSSIBLE, ARGUMENTS ARE DEVELOPED FROM FIRST PRINCIPLES SO THAT THE BOOK WILL BE OF USE TO THOSE WITH LIMITED TRAINING IN PHYSICS, CHEMISTRY, BIOLOGY, AND MATHEMATICS. CHAPTERS INCLUDE - (1) RADIATION PROTECTION, (2) MATTER AND RADIATION, (3) RADIOACTIVITY AND X-RAYS, (4) THE INTERACTION OF IONIZING RADIATION WITH MATTER, (5) RADIATION DOSIMETRY, (6) THE BIOLOGICAL EFFECTS OF IONIZING RADIATION, (7) BASIC STANDARDS OF RADIATION PROTECTION, (8) PROTECTION AGAINST INTERNAL RADIATION, (9) PROTECTION AGAINST EXTERNAL RADIATION, (10) DESIGN OF RADIOISOTOPE LABORATORIES, AND (11) RADIATION PROTECTION MEASUREMENTS.

AVAILABILITY - THE M.I.T. PRESS, MASSACHUSETTS INSTITUTE OF TECHNOLOGY, CAMBRIDGE, MASSACHUSETTS

\*RADIATION PROTECTION, ORGANIZATION + \*RADIOISOTOPE + \*X-RAY + DOSE CALCULATION, EXTERNAL + DOSE CALCULATION, INTERNAL + DOSIMETRY, GENERAL + GAMMA + GAMMA EMITTER + HEALTH PHYSICS TRAINING + ICRP + RADIATION DAMAGE + RADIOBIOLOGY

15-22432

ALSO IN CATEGORY 17

WARD WT

GENERAL DYNAMICS REPORTS RADIATION OVEREXPOSURES

GENERAL DYNAMICS CORP., FT. WORTH, TEXAS

1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(21), PAGE 26 (MAY 22, 1967)

(LETTER, APRIL 25) DURING AUTHORIZED USE OF BY-PRODUCT MATERIAL, TWO OD/FORT WORTH EMPLOYEES WERE EXPOSED TO 3.2 AND 3.1 REMS THE FIRST FOUR WEEKS OF CALENDAR 1966 AT CAMP MCCOY, WISC. FILM-BADGE RESULTS WERE RECEIVED DEC. 4, 1966. CONTROL OF PERSONNEL EXPOSURES BY LIMITING POKET-DOSIMETER TOTALS SUFFICIENTLY BELOW LIMITS TO ALLOW FOR DOSIMETER-RESPONSE VARIATION SHOULD PREVENT FUTURE OVEREXPOSURE.

\*MONITOR, RADIATION, PERSONNEL + \*SAFETY MARGIN + BYPRODUCT MATERIAL + FAILURE, ADMINISTRATIVE CONTROL + INCIDENT, HUMAN ERROR + PERSONNEL EXPOSURE, RADIATION + RADIATION SAFETY AND CONTROL

15-22433

ALSO IN CATEGORY 17

MASSE FX

MIT REPORTS ASSAY ERROR RESULTS IN CLINICAL OVEREXPOSURE

MASSACHUSETTS INSTITUTE OF TECHNOLOGY, CAMBRIDGE, MASS.

1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(21), PAGE 26 (MAY 22, 1967)

(LETTER, MARCH 20) AN ADULT MALE WAS ADMINISTERED IODINE TO BE EQUIVALENT TO 200 MICROCURIES OF I-125, WELL BELOW THAT AUTHORIZED (5 MICROCURIES/KG). ANALYSIS OF THE ROUTINE BIO-SAMPLES INDICATED ADMINISTRATION IN EXCESS OF 200. CHECKING REVEALED THAT A FACTOR-OF-TEN ASSAY ERROR HAD BEEN MADE BY THE PHARMACEUTICAL COMPANY. METHIMAZOLE WAS GIVEN FOR EIGHT DAYS AFTER IODINE TO INCREASE TURNOVER. CALCULATED DOSE IS 50 RADS BEFORE METHIMAZOLE AND 100 RADS THEREAFTER TO INFINITY. WE NORMALLY DOUBLE-CHECK MATERIAL BUT NOW WILL PERFORM ROUTINE GROSS ASSAY ON ALL SUCH INCOMING MATERIAL.

FAILURE, ADMINISTRATIVE CONTROL + INCIDENT, HUMAN ERROR + IODINE + PERSONNEL EXPOSURE, RADIATION + RADIOLOGY

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-22434 ALSO IN CATEGORY 17  
MALSON HA  
MONSANTO REPORTS THREE EXPOSED TO AIRBORNE PU-238  
MONSANTO RESEARCH CORP., DAYTON, OHIO  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(21), PAGE 27 (MAY 22, 1967)

(LETTER, APRIL 7) ON FEB. 13, 1967, HIGH CONCENTRATIONS OF AIRBORNE PU-238 WERE DISCOVERED IN A GLOVE-BOX AREA. THE INDIVIDUALS WERE ASSIGNED MAXIMUM EXPOSURE PERIODS OF 1 HR, 1 HR, AND 15 MIN, RESPECTIVELY, TO A MAXIMUM OF  $1.01 \times 10^{-8}$ TH MICROCURIE/CC. (CAUSE) FAILURE OF GLOVES TO WITHSTAND DELETERIOUS EFFECTS OF PU-238. DIFFERENT TYPE OF GLOVES AND MORE FREQUENT MONITORING WILL BE CORRECTIVE STEPS. REPORT IS LATE BECAUSE OF A MATHEMATICAL ERROR IN CONSIDERING EXPOSURE TIME VS WEEKLY MPC FOR INSOLUBLE PU-238 IN AIR.

\*FAILURE, COMPONENT + \*GLOVE BOX + INHALATION + PERSONNEL EXPOSURE, RADIATION + PLUTONIUM

15-22435 ALSO IN CATEGORY 17  
NFS CITED FOR NON-COMPLIANCE WITH 10 CFR 20  
NUCLEAR FUEL SERVICES, INC., WHEATON, MD.  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(21), PAGES 27-28 (MAY 22, 1967)

(LETTER, APRIL 26) BASED ON INSPECTIONS JANUARY-MARCH 1967, CITATION WAS ISSUED. (1) STACK MONITORING WAS INOPERATIVE DURING FIRST HOUR OF DEC. DISSOLUTIONS OPERATIONS. DOORS TO HIGH RADIATION AREAS WERE NOT LOCKED. (2) MAINTENANCE WORKERS WERE NOT SUPPLIED PERSONNEL MONITORING TO DETERMINE RADIATION DOSE TO HANDS AND FOREARMS. (3) VARIOUS WORKERS WERE NOT ADEQUATELY INSTRUCTED IN RADIATION SAFETY PROBLEMS AND TECHNIQUES. (4) SURVEYS WERE NOT PERFORMED WHEN IT WAS NECESSARY TO EVACUATE THE LAUNDRY BECAUSE OF THE FIXED AIR-SAMPLER READING.

FUEL REPROCESSING + INSPECTION AND COMPLIANCE + MONITOR, RADIATION, PERSONNEL + MONITOR, RADIATION, STACK + NFS + STAFFING, TRAINING, QUALIFICATION + SURVEY, GENERAL

15-22488  
MERRITT WF  
MONITORING OF RADIOACTIVE NOBLE GASES IN AIR  
ATOMIC ENERGY OF CANADA LTD., CHALK RIVER, ONTARIO  
AECL-2696 +. 10 PAGES, 4 FIGURES, 3 TABLES, 3 REFERENCES, JUNE 1967

THE RADIOACTIVE NOBLE GAS CONTENT (AR-41, XE-133, XE-135) OF 400-LITER AIR SAMPLES COLLECTED IN METEOROLOGICAL BALLONS WAS MEASURED BY GAMMA-RAY SPECTROMETRY. PARTICLES AND VOLATILES WERE REMOVED BY A FILTER AND A BED OF ACTIVATED CHARCOAL IN THE SAMPLE LINE. THE BALLONS WERE PLACED OVER A 7.6 CM X 7.6 CM NaI(Tl) CRYSTAL INSIDE A LARGE LEAD CASTLE (76 X 76 X 76 CM) WITH 10 CM OF SHIELDING ON ALL SIDES. THE COUNTING EFFICIENCY OF THE CRYSTAL WITH VARYING VOLUMES OF GAS IN THE BALLONS WAS MEASURED AND OPTIMUM CONDITIONS WERE SELECTED.

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

\*ANALYTICAL TECHNIQUE, CALIBRATION + \*INSTRUMENTATION, RADIATION MONITORING + \*MONITOR, RADIATION, GAS + \*NOBLE GAS + ARGON + MONITORING SYSTEM, RADIATION + XENON

15-22518 ALSO IN CATEGORY 17  
FREDERICKSON RL  
ABBOTT LAB REPORTS EXCESSIVE IODINE AIR CONCENTRATIONS  
ABBOTT LABORATORIES, NORTH CHICAGO, ILL.  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 14(4), PAGE 19 (JANUARY 22, 1968)

(LETTER, DECEMBER 4.) ROUTINE THYROID COUNTING ON NOVEMBER 6 REVEALED A THYROID BURDEN 113% OF PERMISSIBLE. THE INDIVIDUAL WORKS IN THE RADIOPHARMACEUTICAL FILLING GROUP, NOT WHERE VOLATILE I-131 IS ORDINARILY PRESENT. WE HAVE NO AIR-SAMPLING RESULTS IN HIS AREA FOR THE PERIOD IN QUESTION. INVESTIGATION FAILED TO DISCOVER A REASON FOR THE THYROID ACTIVITY MEASURED.

AIRBORNE RELEASE + FISSION PRODUCT, IODINE + SURVEILLANCE PROGRAM

15-22519 ALSO IN CATEGORY 17  
ATOMICS INTERNATIONAL CITED FOR NON-COMPLIANCE  
ATOMICS INTERNATIONAL, CANOGA PARK, CALIFORNIA  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 14(4), PAGE 20 (JANUARY 22, 1968)

(LETTER, DECEMBER 27.) A SEPT. 29-29, 1967, INVESTIGATION OF 1966 AND 1967 EXPOSURES SHOWED THE FOLLOWING - SURVEYS WERE INADEQUATE TO DETERMINE AIRBORNE CONCENTRATIONS OF URANIUM. THE U-234 SOLUBLE LIMITS WERE USED RATHER THAN THE LIMITS FOR INSOLUBLE U-234. GENERAL ROOM-AIR SAMPLES USED TO EVALUATE EXPOSURES WERE A FACTOR OF TEN LESS THAN THE BREATHING-ZONE SAMPLES. TIMELY REPORTS TO AEC WERE NOT FILED.

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-22519 \*CONTINUED\*  
AIRBORNE RELEASE + INSPECTION AND COMPLIANCE + MONITOR, RADIATION, AIR + SAMPLING + SURVEILLANCE PROGRAM

15-22520 ALSO IN CATEGORY 17  
BIG ROCK POINT NON-COMPLIANCE CITATION  
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN  
3 PAGES, ATOMIC ENERGY CLEARING HOUSE 14(4), PAGES 20-22 (JANUARY 22, 1968), DOCKET 50-155, TYPE--BWR,  
MFG--G.E., AE--BECHTEL

(LETTER, NOVEMBER 20.) CITATION FOR INADEQUATE SURVEY TO EVALUATE RADIATION HAZARDS IN THE SEPT. 12, 1967, TEMPORARY REPAIR OF A RUPTURED DIAPHRAGM IN THE AIR-EJECTOR SYSTEM. PROCEDURES DO NOT CONTAIN ADEQUATE INSTRUCTION ON EVALUATION OF RADIATION HAZARDS IN HIGH RADIATION AREAS. (REPLY, DEC. 22.) CASE WAS EXCEPTIONAL, DUE TO FIRST-TIME APPEARANCE OF A HIGH BETA/GAMMA RATIO (7 RATHER THAN 2 OR 3) IN PROCESS STEAM AND TO SPORADIC PUFFING OF THE OFF-GAS LEAK. \*\*\* INCIDENT WAS REVIEWED WITH STAFF, SECTION ADDED TO MANUAL, AND NEW RADIATION-SCREENING LEVELS ADDED. A BETA-DETECTING INSTRUMENT WILL BE USED ON ALL WORK IN MORE THAN 1 REM/HR. NEW SURVEY INSTRUMENTS AND CALIBRATION SOURCE WERE ORDERED.

\*MAINTENANCE AND REPAIR + \*PERSONNEL EXPOSURE, RADIATION + \*REACTOR OFFGAS + BETA EMITTER + BIG ROCK POINT (BWR) + FAILURE, ADMINISTRATIVE CONTROL + FAILURE, OPERATOR ERROR + INSPECTION AND COMPLIANCE + MONITOR, RADIATION, PERSONNEL + PROCEDURES AND MANUALS + REACTOR, BWR + SURVEY, RADIATION, GENERAL

15-22526 ALSO IN CATEGORIES 13 AND 17  
CRONIN DP  
UNITED NUCLEAR REPORTS OVEREXPOSURE TO AIRBORNE ACTIVITY  
UNITED NUCLEAR CORP., NEW HAVEN, CONN.  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 14(4), PAGE 27 (JANUARY 22, 1968)

(LETTER, DEC. 12.) THREE RECEIVED 1.5 TIMES MAXIMUM ALLOWABLE WEEKLY EXPOSURE, IN FOUR HOURS, TO AIRBORNE ALPHA EMITTER DURING CLEANUP OPERATIONS. MSA COMFO RESPIRATORS WITH TYPE-II ULTRAFILTERS WERE WORN. NO PROTECTION FACTOR ASSUMED. \*\*\* INCREASED HP COVERAGE AND EXPOSURE CONTROL DURING NONROUTINE OPERATIONS WILL BE PROVIDED. APPLICATION WAS MADE FOR USE OF A RESPIRATORY PROTECTION FACTOR.

\*DECONTAMINATION + \*INHALATION + \*PERSONNEL EXPOSURE, RADIATION + ALPHA EMITTER + FILTER EFFICIENCY + FILTER, GAS MASK + PERSONNEL PROTECTIVE DEVICE

15-22527 ALSO IN CATEGORY 17  
BURTSavage EM  
U.S. RADIUM ASKS CLARIFICATION OF BREATHING ZONE SAMPLES  
U.S. RADIUM CORP., BLOOMSBURG, PA.  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 14(4), PAGE 27 (JANUARY 22, 1968)

(LETTER, NOV. 28.) REPORTS EXCESSIVE CONCENTRATIONS OF AIRBORNE AMERICIUM DURING WEEK OF SEPT. 4, 1967. THIS WAS NOT REPORTED ON OCT. 18 BECAUSE WE INTERPRETED 10 CFR 20.103 TO MEAN THAT ROOM-AIR CONCENTRATIONS APPLY TO ANY PERSONNEL NOT SAMPLED IN THEIR BREATHING ZONES. HOWEVER, ALL PERSONS WERE BZ SAMPLED SIMULTANEOUSLY, WHICH WAS CONSIDERED MORE VALID THAN ROOM-AIR SAMPLES, AND THUS 5 PERSONS WERE NOT REPORTED, WHILE 4 WERE REPORTED ON THE BASIS OF THEIR B-Z SAMPLES. PLEASE CLARIFY THIS INTERPRETATION.

\*INHALATION + \*PERSONNEL PROTECTIVE DEVICE + \*SAMPLING + AMERICIUM + INSPECTION AND COMPLIANCE + PERSONNEL EXPOSURE, RADIATION + RADIATION SAFETY AND CONTROL + REGULATION, AEC

15-22551  
FURUTA Y + KANEMORI Y  
EXPERIMENTAL STUDIES ON GAMMA-RAY DOSE RATES FROM A CO-60 CYLINDRICAL SOURCE  
JAPAN ATOMIC ENERGY RESEARCH INSTITUTE + MITSUI SHIPBUILDING AND ENGINEERING CO., LTD.  
7 PAGES, 2 FIGURES, 1 TABLE, NUCLEAR SCIENCE AND ENGINEERING 30, PAGES 261-267 (1967)

GAMMA-RAY DOSE RATES FROM A CO-60 CYLINDRICAL SOURCE WERE OBTAINED EXPERIMENTALLY IN THE RADIAL DIRECTION AT THE HALF-HEIGHT OF THE SOURCE. THE CONCEPT OF THE DOSE-BUILDUP FACTOR WAS INTRODUCED FOR A VOLUME SOURCE. THE FACTOR FOR A CYLINDRICAL SOURCE WHICH IS REPRESENTED AS A FUNCTION OF THE DISTANCE BETWEEN SOURCE AND DETECTION POINT, HAS A VALUE OF ABOUT FIVE AT THE POINT NEAREST TO THE SOURCE SURFACE. THE FACTOR THEN DECREASES RAPIDLY, PASSES THROUGH A MINIMUM VALUE, AND APPROACHES A CONSTANT VALUE. THESE FEATURES WERE ANALYZED EXPERIMENTALLY WITH A LINE AND A DISK SOURCE. AN EMPIRICAL FORMULA FOR THE DOSE-BUILDUP FACTOR IS PROPOSED WHICH AGREES WITH THE EXPERIMENTAL VALUES TO WITHIN ABOUT PLUS OR MINUS 15%.

\*DOSE MEASUREMENT, EXTERNAL + COBALT + JAPAN

15-22572  
KHOL G  
PERSONAL DOSIMETRY IN THE USE OF RADIATION FOR NONDESTRUCTIVE MATERIALS TESTING

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-22572 \*CONTINUED\*  
4 PAGES, 1 FIGURE, 7 TABLES, JAD. ENERG., 12, PAGES 146-9 (APRIL 1966). IN CZECH

THE REQUIREMENTS OF THE CZECHOSLOVAK REGULATIONS CONCERNING THE PERFORMANCE OF PERSONAL DOSIMETERS WORN BY WORKERS ENGAGED IN THE NONDESTRUCTIVE TESTING OF MATERIALS BY RADIOACTIVE METHODS ARE MET BY TWO TYPES OF DOSIMETERS, WHICH ARE, HOWEVER, UNSUITABLE FOR WORK ON BETATRONS. FOR PERSONS WORKING WITH X-RAYS, FILM-BADGE DOSIMETERS AND BLIND CHAMBERS ARE APPROVED, WHEREAS FILM-BADGE DOSIMETERS AND POCKET IONIZATION CHAMBERS ARE MANDATORY FOR WORK WITH RADIOISOTOPES. AN ACCURACY OF PLUS OR MINUS 10 TO 25% IS REGARDED AS SUFFICIENT.

\*DOSIMETRY, GENERAL + \*DOSIMETRY, PHOTOGRAPHIC + ACCELERATOR + CZECHOSLOVAKIA + DOSE MEASUREMENT, EXTERNAL + RADIOISOTOPE + X-RAY

15-22573  
DOBRYNA B M

A STUDY OF THE PHYSIOLOGICAL FUNCTION AND HISTOLOGICAL CHANGES IN THYROIDS IRRADIATED WITH RADIOACTIVE IODINE. ANNUAL REPORT, JUNE 1, 1966-JUNE 1, 1967  
WESTERN RESERVE UNIVERSITY, CLEVELAND, OHIO  
COO-1243-8 +. 8 PAGES, 6 REFERENCES, JUNE 28, 1967

A BROAD STUDY HAS BEEN MADE OF PHYSIOLOGICAL AND MORPHOLOGICAL CHANGES PRODUCED BY IODINE-131 IN THE THYROID OF ANIMALS AND MAN. ACTIVITIES COVERED INCLUDE - THE STUDY OF RADIATION EFFECTS ON THYROID FUNCTION IN CLINICAL SUBJECTS GIVEN I-131, NUCLEAR CHANGES IN HUMAN RADIATED THYROID TISSUE, A STUDY OF NUCLEAR CHANGES AT THE TIME OF NEOPLASM FORMATION FOLLOWING I-131 IN RAT THYROIDS, CHROMOSOMAL ABNORMALITIES IN CIRCULATING LEUKOCYTES OF PATIENTS TREATED WITH I-131, AND X-RAY RADIATION EFFECT ON THE THYROID.

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

\*RADIATION DAMAGE + \*RADIOBIOLOGY + BIOMEDICAL + IODINE + RADIOLOGY + X-RAY

15-22802

KOCH R + SEITER I + MOENIG H  
INVESTIGATIONS ON BIOLOGICAL RADIATION PROTECTION. PART 79. EFFECTS OF RESERPINE, NARCOTICS, AND BODY TEMPERATURE ON UTILIZATION OF RADIOIRON WITH RADIATION-CONDITIONED INJURIES  
UNIVERSITY OF FREIBURG  
11 PAGES, 4 FIGURES, 5 TABLES, STRAHLENTHERAPIE 133, PAGES 296-306 (JUNE 1967) IN GERMAN

THE EFFECTS OF FASTING, MAGAPHEN, NEMBUTAL, RESERPINE, AND A MIXTURE OF ATOSIL, DOLANTIN, AND MEGAPHEN ON FE-59 METABOLISM IN WHOLE-BODY X-IRRADIATED MICE WERE STUDIED. RESERPINE PROVOKED A DROP IN BODY TEMPERATURE AND A DECREASE IN FE-59 UPTAKE. IT ALSO EXERTED A STRONG RADIOPROTECTIVE EFFECT. PROTECTIVE EFFECTS WERE ALSO OBSERVED WITH MEGAPHEN AND THE MIXTURE OF ATOSIL, DOLANTIN, AND MEGAPHEN AT A DOSE OF 75 R. FASTING AND NEMBUTAL DECREASED FE-59 INCORPORATION.

\*RADIATION DAMAGE + \*RADIOBIOLOGY + GERMANY + IRON + RADIATION INJURY, TREATMENT OF + RADIATION PROTECTION, CHEMICAL + X-RAY

15-22805

ALSO IN CATEGORY 14

PFEIFFER EW  
HAZARDS OF IODINE-131 FALLOUT IN UTAH  
UNIVERSITY OF MONTANA  
2 PAGES, SCIENCE 158(3799), PAGES 397-398 (OCTOBER 20, 1967)

PRESENTS A BRIEF SUMMARY OF THE PROGRAMS TO BE PRESENTED AT AAS MEETING DECEMBER 1967 ON FALLOUT OF IODINE IN SOUTHERN UTAH RESULTING FROM WEAPONS TESTING IN SOUTHERN NEVADA. IT IS SUGGESTED THAT THYROID DOSES OF 50 TO 120 RADS MAY HAVE BEEN RECEIVED BY CHILDREN IN SOUTHERN UTAH WHO WERE 2 TO 5 YEARS OLD DURING 1952-1955.

\*DOSE CALCULATION, INTERNAL + \*FALLOUT + \*IODINE + \*TEST, WEAPONS (HP ASPECTS) + BIOLOGICAL CONCENTRATION, MAN

15-22808

SCHNEIDER C + LINDEN WA  
WHOLE-BODY MEASUREMENTS WITH NAI CRYSTALS. SENSITIVITY AND ACCURACY OF MEASUREMENTS WITH VARIOUS DETECTOR ARRANGEMENTS.  
UNIVERSITY OF HAMBURG  
20 PAGES, 12 FIGURES, 1 TABLE, STRAHLENTHERAPIE 133, PAGES 213-232 (JUNE 1967) IN GERMAN

A WHOLE-BODY COUNTER WITH FOUR NAI CRYSTAL DETECTORS WAS USED AS A REFERENCE IN EVALUATION OF A SINGLE-CRYSTAL DEVICE WITH TILTING CHAIR, LINE ARRANGEMENT OF THE DETECTORS, AND SIMPLE SCAN MEASUREMENTS WITH TWO AND FOUR DETECTORS. HIGHEST SENSITIVITY FOR GAMMA SOURCES WAS OBTAINED WITH THE TILTING CHAIR. FOUR DETECTORS IN LINE WERE MOST EFFECTIVE IN MEASURING IRREGULAR DISTRIBUTED SOURCES. THE LINEAR ARRANGEMENT IS MOST EFFECTIVE FOR RADIOPROTECTIVE INVESTIGATIONS. FOR CLINICAL USE, THE LINE DEVICE OR THE MODIFIED SCAN MEASUREMENTS ARE BEST SUITED.

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-22808 \*CONTINUED\*  
COUNTER, WHOLE BODY + GERMANY + INSTRUMENTATION CALIBRATION

15-22813 ALSO IN CATEGORY 14  
DATA - SECTION IV. OTHER DATA  
US PUBLIC HEALTH SERVICE  
10 PAGES, 7 TABLES, 4 FIGURES, RADIOLOGICAL HEALTH DATA AND REPORTS 8(11), PAGES 664-673 (NOVEMBER 1967)

THIS SECTION CONTAINS REPORT ON SR-90 IN HUMAN VERTABRAE COLLECTED IN 1966 IN NEW YORK CITY AND IN SAN FRANCISCO. REPORTS ENVIRONMENTAL SURVEYS FOR THREE SITES OF THE LAWRENCE RADIATION LABORATORY (JULY-DECEMBER 1966) AND OF MOUND LABORATORY (JULY-DECEMBER AND ANNUAL SUMMARY 1966). THE USAEC REPORTED UNDERGROUND NUCLEAR TESTS AT THE NEVADA TEST SITE ON OCTOBER 18, 1967, AND ON OCTOBER 25. IN ADDITION THE AEC REPORTED SEISMIC DATA ON OCTOBER 17 AND OCTOBER 23, 1967, INDICATING SOVIET NUCLEAR TESTS IN SIBERIA.

\*FALLOUT + \*MONITORING PROGRAM, ENVIRONMENTAL + \*SURVEILLANCE PROGRAM + BIOLOGICAL CONCENTRATION, MAN + LRL + MOUND LABORATORY + STRONTIUM + TRITIUM + WATER, GENERAL

15-22818  
HERNADI F + NAGY Z  
CHEMICAL RADIATION-PROTECTIVE AGENTS  
GYOGYSZERTANI INTEZET DEBRECEN, HUNGARY  
7 PAGES, 3 FIGURES, ORV. HETILAP 106, PAGES 1369-75 (JULY 18, 1965), IN HUNGARIAN

A SURVEY OF CHEMICAL RADIOPROTECTORS IS GIVEN WHICH INCLUDES 45 REFERENCES. THE BIOLOGICAL EFFECTS OF IONIZING RADIATION ARE DISCUSSED IN RELATION TO THE ACTION OF THE VARIOUS CHEMICAL RADIOPROTECTIVE AGENTS. THERE ARE DIFFERENT MECHANISMS THROUGH WHICH THE RADIO-SENSITIVITY OF EACH SYSTEM MAY BE REDUCED BY THE USE OF DIFFERENT CHEMICAL AGENTS. VARIOUS CHEMICAL AGENTS OF DIFFERING STRUCTURES MAY SHOW SIMILAR PROTECTIVE EFFECTS BY THE SAME MECHANISM. AT THE SAME TIME, THE SAME CHEMICAL AGENT MAY ACT BY A DIFFERENT PROTECTIVE MECHANISM, DEPENDING ON THE SYSTEM TO WHICH IT IS APPLIED. IT IS POSSIBLE FOR VARIOUS MECHANISMS TO ACT SIMULTANEOUSLY IN THE SAME SYSTEM. RESEARCH ON THE MECHANISM OF THE EFFECT OF CHEMICAL RADIOPROTECTORS IS LINKED CLOSELY WITH RESEARCH ON THE ANALYSIS OF RADIATION SENSITIVITY OF THE TARGET SUBSTANCE (E.G., DNA).

\*RADIATION PROTECTION, CHEMICAL + BIOMEDICAL + HUNGARY + RADIATION DAMAGE + RADIATION INJURY. TREATMENT OF + RADIOBIOLOGY

15-22826 ALSO IN CATEGORY 17  
SECOND DRL INFORMATION LETTER ON RADIOGRAPHERS OVEREXPOSURE  
USAEC, DIVISION OF STATE AND LICENSEE RELATIONS, WASHINGTON, D. C.  
6 PAGES, INFORMATION LETTER TO ALL RADIOGRAPHY LICENSEES, JUNE 14, 1965

SUMMARIZES 14 INCIDENTS THAT OCCURRED SINCE FIRST LETTER (MARCH 1963). AGAIN, THE CAUSE FOR MOST OF THEM (DOSES 1 TO 16 PEMS) CAN BE TRACED TO THE FAILURE OF RADIOGRAPHERS TO PROPERLY USE RADIATION-SURVEY INSTRUMENTS. ASKS CONTINUED INTEREST OF LICENSEE. MANAGEMENT TO REVIEW OPERATIONS AND EQUIPMENT AND TO STRESS SOUND PROCEDURES AND ATTENTION TO EQUIPMENT.

AVAILABILITY - USAEC, DIVISION OF STATE AND LICENSEE RELATIONS, WASHINGTON, D. C.

FAILURE, OPERATOR ERROR + INCIDENT, HUMAN ERROR + INFORMATION RETRIEVAL + PERSONNEL EXPOSURE, RADIATION + RADIATION SAFETY AND CONTROL + RADIOGRAPHY

15-22827 ALSO IN CATEGORY 17  
DRL INFORMATION LETTER ON RADIOGRAPHERS OVEREXPOSURE  
U. S. ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.  
6 PAGES, INFORMATION LETTER TO ALL RADIOGRAPHY LICENSEES, MARCH 1963

GIVES ONE-PARAGRAPH DESCRIPTIONS OF 14 CASES (DOSES, 2 TO 6 REMS) WHERE RADIOGRAPHERS WERE EXPOSED TO UNSHIELDED SOURCES (DUE TO WARNING-SYSTEM FAILURES OR HEEDLESS ACTION) WHICH COULD HAVE BEEN PREVENTED HAD THE OPERATOR USED SURVEY INSTRUMENTS EACH TIME (AS IN 10 CFR 34.43). ASKS THE LICENSEES TO REQUIRE THAT RADIOGRAPHERS READ LETTER AND TO STRESS PROPER USE OF SURVEY INSTRUMENTS IN PERIODIC TRAINING PROGRAMS.

AVAILABILITY - USAEC, DIVISION OF LICENSING AND REGULATION, WASHINGTON, D. C.

\*INCIDENT, HUMAN ERROR + \*RADIOGRAPHY + FAILURE, OPERATOR ERROR + INFORMATION RETRIEVAL + PERSONNEL EXPOSURE, RADIATION + RADIATION SAFETY AND CONTROL

15-22929  
CLOUTIER RJ + O-FOGHLUDHA F + COMAS FV  
CONFERENCE ON DOSIMETRY OF TOTAL-BODY IRRADIATIONS BY EXTERNAL PHOTON BEAMS, OAK RIDGE, TENN., FEBRUARY 23-24, 1967  
OAK RIDGE ASSOCIATED UNIVERSITIES, INC., TENN.  
CONF-670219 +. 32 PAGES, 2 FIGURES, 4 TABLES, 31 REFERENCES, FEB. 1967

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-22929 \*CONTINUED\*

SUMMARIZES DISCUSSIONS AT THE CONFERENCE. THE PURPOSE OF THE CONFERENCE WAS TO REVIEW WORK ON TOTAL-BODY IRRADIATION AND, IF POSSIBLE, TO ARRIVE AT A CONSENSUS ON A UNIFORM WAY OF REPORTING THE DOSE DELIVERED. DISCUSSION WAS RESTRICTED TO PHOTON IRRADIATION, WITH EMPHASIS ON THE PHYSICAL RATHER THAN ON THE BIOLOGICAL ASPECTS. IT WAS SUGGESTED THAT - (1) THE CHARACTERISTICS OF THE RADIATION FIELD USED SHOULD BE STATED, (2) THE AVERAGE DOSE IN THE TARGET ORGAN AND THE METHOD OF CALCULATION OR MEASUREMENT SHOULD BE GIVEN, (3) THE MAXIMUM AND MINIMUM DOSES IN THE REGION OF INTEREST OR SOME OTHER INDICATION OF THE DEGREE OF NONUNIFORMITY SHOULD BE REPORTED.

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

\*DOSE + \*RADIOBIOLOGY + DOSE MEASUREMENT, EXTERNAL + GAMMA + RADIATION INJURY, TREATMENT OF + RADIOLOGY + X-RAY

15-22930

KAKINA VK

CHANGE IN THE SECRETORY ACTIVITY OF THE THYROID GLAND AFTER TOTAL X-RAY IRRADIATION  
AEC-TR-6601 +. 4 PAGES, 2 TABLES, 3 REFERENCES, RADIOBIOLOGY 5(4), PAGE 56-59, (1965)

MATURE MALE RATS WERE SUBJECTED TO SINGLE TOTAL X-RAY IRRADIATION OF 75, 500, AND 800 R, FOLLOWING WHICH 1 MILLICURIE OF I-131 WAS GIVEN AT VARIOUS PERIODS AFTER IRRADIATION. EVALUATION OF THE RAT THYROIDS INDICATES THAT SECRETION AND ELIMINATION OF THE THYROXINE WERE DISTURBED.

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

\*RADIATION DAMAGE + \*RADIOBIOLOGY + BIOMEDICAL + IODINE + USSR + X-RAY

15-22931

BIBIKOVA AF + LEREDEV BI

MORPHOLOGICAL CHANGES IN THE NERVOUS SYSTEM OF DOGS UNDER THE ACTION OF HIGH-ENERGY PROTONS  
AEC-TR-6601 +. 5 PAGES, 3 FIGURES, 10 REFERENCES, RADIOBIOLOGY 5(4), PAGE, 116-120, (1965)

WORK IS REPORTED ON CHANGES IN THE NERVOUS SYSTEM OF DOGS AS A RESULT OF A SINGLE TOTAL IRRADIATION BY 510-MEV PROTONS. THE EFFECT OF PROTON IRRADIATION IS SIMILAR TO THAT OF GAMMA AND BETA RADIATION.

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

\*RADIATION DAMAGE + BETA EMITTER + GAMMA + RADIOBIOLOGY + USSR

15-23153

ALSO IN CATEGORY 14

RILEY JP + TONGUDAI M

CESIUM AND RUBIDIUM IN SEA WATER

UNIVERSITY OF LIVERPOOL

4 PAGES, REFERENCES, CHEMICAL GEOLOGY 1, PAGES 291-4 (DEC. 1966)

A CATION EXCHANGE SCHEME WAS DEVELOPPED FOR SEPARATING CS AND RB FROM SEA WATER PRIOR TO THEIR SPECTROGRAPHIC DETERMINATION. CONCENTRATIONS OF 119 PLUS OR MINUS 4 MICROGRAMS RB/1 AND 0.55 PLUS OR MINUS 0.06 MICROGRAM CS/1 WERE FOUND FOR IRISH SEA SURFACE WATER AND FOR WATER FROM THE NORTH ATLANTIC.

\*ANALYTICAL TECHNIQUE, LIQUID + \*CESIUM + \*ION EXCHANGE + \*RUBIDIUM + ACTIVATION

15-23154

ALSO IN CATEGORY 14

KORANDA JJ

RESIDUAL TRITIUM AT SEDAN CRATER

CALIFORNIA UNIV., LIVERMORE. LAWRENCE RADIATION LAB.

UCRL-70292 + CONF-670503-9 +. 36 PAGES, APRIL 2, 1967, PRESENTED AT 2ND NATIONAL SYMPOSIUM ON RADIOECOLOGY, ANN ARBOR, MICHIGAN

RESIDUAL TRITIUM FROM THE SEDAN THERMONUCLEAR DETONATION, 6 JULY 1962, WAS SCAVENGED BY OR ENTRAINED IN THE 5-6 MILLION TONS OF EARTH MATERIALS MOVED BY THE DETONATION. AS A RESULT, THE SEDAN POST-SHOT ENVIRONMENT CONTAINED A MOST SIGNIFICANT BIOLOGICAL TRACER IN THE FORM OF THO. RESIDUAL TRITIUM (THO) IS FOUND IN MICROCURIE CONCENTRATIONS IN THE INTERSTITIAL WATER OF THE SEDAN THROWOUT SOIL, AND IN THE LOOSE TISSUE WATER OF PLANTS WHICH HAVE RE-INVADDED THE NEW SUBSTRATUM DEPOSITED ON THE LANDSCAPE ADJACENT TO THE CRATER. TRITIUM IS PRESENT NOT ONLY IN THE LOOSE TISSUE WATER OF VASCULAR PLANTS GROWING ON THE SEDAN THROWOUT, BUT A COMPARABLE LEVEL IS ALSO FOUND IN THE TISSUE-BOUND HYDROGEN OF THESE PLANTS. HERBIVORES, MAINLY HETEROMYID RODENTS, WHICH HAVE RE-INVADDED THE SEDAN POST-SHOT ENVIRONMENT AND RESIDE THERE, ALSO HAVE TRITIUM CONCENTRATIONS IN THEIR BODY WATER BETWEEN 1 AND 3 MICROCURIE/ML. THESE BODY-WATER TRITIUM CONCENTRATIONS ARE CLOSELY RELATED TO THE LEVELS OF TRITIUM IN THE PLANT TISSUE-BOUND HYDROGEN. THE INTERNAL DOSE TO THE RESIDENT MAMMAL AT SEDAN CRATER FROM RESIDUAL TRITIUM IS ESTIMATED TO BE BETWEEN 18 AND 268 RAD, OR ABOUT 10 TIMES THAT FROM

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-23154 \*CONTINUED\*  
EXTERNAL RADIATION SOURCES RESULTING FROM THE DETONATION.

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

\*ECOLOGICAL CONSIDERATION + \*NUCLEAR DETONATION + \*TRITIUM + BIOLOGICAL CONCENTRATION, GENERAL +  
DIETARY HABIT + HYDROGEN

15-23155 ALSO IN CATEGORY 14  
NELSON WC + WHICKER FW  
CS-137 IN SOME COLORADO GAME FISH, 1965-66  
COLORADO DEPT. OF GAME, FISH, AND PARKS. COLORADO STATE UNIV., FOR COLLINS. DEPT. OF RADIOLOGY AND  
RADIATION BIOLOGY  
COO-1156-21 + CONF-670503-1 +. 23 PAGES, JAN. 1967, PRESENTED AT 2ND NATIONAL SYMPOSIUM ON RADIOECOLOGY,  
ANN ARBOR, MICHIGAN

IN 1965 AND 1966 THE CS-137 CONCENTRATION IN MUSCLE TISSUE OF 132 FISH REPRESENTING EIGHT GAME  
FISH SPECIES FROM 23 COLORADO WATERS VARIED FROM NONDETECTABLE (LESS THAN 50 PC/KGM) TO 5800  
PC/KGM. WATERS SAMPLED INCLUDED 3 PLAINS, 2 FOOTHILLS, 5 MONTANE AND 12 ALPINE RESERVOIRS  
AND LAKES AS WELL AS ONE TROUT STREAM. ELEVATION OF THESE WATERS VARIED FROM 1,538 TO 3,498  
METERS. LAKE DEPTHS VARIED FROM 1-45 METERS, LAKE AREAS FROM 1.4 TO 230 HECTARES AND LAKE  
WATERSHED AREAS, WHERE MEASURED, FROM 53-2, 400 HECTARES. CONDUCTIVITY OF WATERS VARIED FROM  
8 TO 1390 MICROMHOS AND POTASSIUM CONCENTRATION FROM 0.1 TO 3.1 PPM. BASED ON 6 SAMPLES,  
CS-137 CONCENTRATIONS WERE 2 TO 7 TIMES GREATER IN 1965 THAN 1966. BIOLOGICAL CONCENTRATIONS  
OF CS-137 ARE GIVEN FOR DIFFERENT LOCATIONS.

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

\*BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + \*CESIUM + \*SAMPLING, HIGH ALTITUDE + COUNTER +  
DIETARY HABIT + ECOLOGICAL CONSIDERATION + FALLOUT + RADIOBIOLOGY

15-23156 ALSO IN CATEGORY 14  
PALMER HE + WOGMAN NA + COOPER JA  
THE DETERMINATION OF THE DEPTH AND AMOUNT OF PU-239 IN WOUNDS WITH SILICI DETECTORS  
BATTELLE-NORTHWEST, RICHLAND, WASH. PACIFIC NORTHWEST LAB.  
BNWL-SA-1261 + CONF-670521-4 + CONF-670610-1 +. 17 PAGES, MAY 15, 1967, PRESENTED AT THE 12TH ANNUAL  
MEETING OF THE HEALTH PHYSICS SOCIETY, WASHINGTON, D. C.

A METHOD HAS BEEN DEVELOPED FOR DEFINING THE AVERAGE DEPTH OF PU-239 IN WOUNDS BY X-RAY  
SPECTROMETRY USING A LITHIUM DRIFTED SILICON DETECTOR. THE USE OF THIS METHOD ON ACTUAL PU  
WOUND CASES IS DESCRIBED.

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

\*COUNTER + \*INSTRUMENTATION, CONTROL + \*PLUTONIUM + \*X-RAY

15-23158 ALSO IN CATEGORY 14  
MORLEY F  
ENVIRONMENTAL MONITORING ASSOCIATED WITH DISCHARGES OF RADIOACTIVE WASTE DURING 1966 FROM U.K.A.E.A.  
ESTABLISHMENTS  
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, HARWELL (ENGLAND). AUTHORITY HEALTH AND SAFETY BRANCH  
AHSB(RP)R-79 +. 20 PAGES, 20 TABLES, 6 REFERENCES, AUGUST 1967

THIS REPORT DESCRIBES THE RESULTS OF THE ENVIRONMENTAL MONITORING UNDERTAKEN TO CONFIRM THAT  
THE DISCHARGES OF RADIOACTIVE WASTE DURING 1966 FROM EACH OF THE PRINCIPAL UKAEA  
ESTABLISHMENTS PRODUCED NO HAZARD IN THE ENVIRONMENT. THE RESULTS OF THIS MONITORING ARE  
SUMMARIZED AND ARE COMPARED WITH DERIVED WORKING LIMITS TO FACILITATE AN APPRECIATION OF THE  
STANDARDS OF SAFETY ACHIEVED.

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

\*HAZARDS ANALYSIS + \*MONITORING PROGRAM, ENVIRONMENTAL + \*WASTE TREATMENT, GENERAL +  
WASTE DISPOSAL, LIQUID + WASTE DISPOSAL, SOLID

15-23159  
DIGGLE WR + GAUNT AJ + MELHUIS KR + NEWMAN EF  
METHODS IN USE AT D.F.R.E. FOR THE MEASUREMENT OF BURN-UP OF NUCLEAR FUELS AND NEUTRON DOSE  
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, DOUNREAY (SCOTLAND). REACTOR GROUP  
TRG-REPORT-1494 +. 35 PAGES, 2 FIGURES, TABLES, 22 REFERENCES, APRIL 17, 1967

THE METHODS CURRENTLY IN USE AT DERE FOR BOTH BURNUP AND NEUTRON-DOSE MEASUREMENTS ARE  
DESCRIBED, AND THE CALCULATIONS AND NUCLEAR DATA USED ARE GIVEN. METHODS INCLUDE -  
MEASUREMENT OF CHANGES IN ISOTOPIC COMPOSITION OF FUEL, MEASUREMENT OF RADIOACTIVE AND STABLE  
FISSION PRODUCTS, AND THE USE OF FLUX MONITORS. THE LIMITATION AND ACCURACY OF EACH METHOD



CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-23159 \*CONTINUED\*  
IS DISCUSSED.

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

\*ANALYTICAL TECHNIQUE, GENERAL + \*DOSE MEASUREMENT, EXTERNAL + \*DOSE MEASUREMENT, INTERNAL +  
\*ERROR ANALYSIS + \*FUEL BURNUP + COBALT + DOSE + DOSE CALCULATION, EXTERNAL + DOSE CALCULATION, INTERNAL +  
NEUTRON + URANIUM

15-23300

MINAMI K + WATANABE K + FUKUDA S + NARITOMI M  
AIRBORNE PLUTONIUM MONITOR WITH ALPHA SPECTROMETER  
JAPAN ATOMIC ENERGY RESEARCH INST., TOKYO  
8 PAGES, 9 FIGURES, 7 REFERENCES, RADIOISOTOPES (TOKYO) 16, PAGES 383-90 (AUG. 1967) IN JAPANESE

AN ALPHA AIR MONITOR WAS DEVELOPED TO DETECT THE VERY LOW LEVELS OF AIRBORNE PLUTONIUM AND FOR  
ROUTINE AIR MONITORING AT THE PLUTONIUM HANDLING LABORATORY OF JAERI. THE RESULTS OF  
PERFORMANCE TESTS OF THIS DEVICE IS DESCRIBED, AND THE DETECTABILITY FOR AIRBORNE PLUTONIUM  
IS DISCUSSED.

\*MONITOR, RADIATION, AIR + \*PLUTONIUM + \*SPECTROMETRY, ALPHA + AIRBORNE RELEASE + FILTER + JAPAN

15-23319 ALSO IN CATEGORY 17

SOLARI AJ  
UNIVERSITY OF MICHIGAN REPORTS A POSSIBLE OVEREXPOSURE  
UNIVERSITY OF MICHIGAN, ANN ARBOR, MICHIGAN  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 14(8), PAGE 39 (FEBRUARY 26, 1968)

(LETTER, DEC. 27, 1968) A GRADUATE STUDENT WAS A TEMPORARY DISHWASHER AT THE NUCLEAR MEDICINE  
UNIT FROM APRIL 24 AUGUST 31, 1967. HIGHEST RADIATION LEVELS IN THE HOT ROOM WHERE SHE  
WORKED WERE 1-2 MR/HR. FILM BADGE REPORT DATED OCT. 3 GIVES A 1,680 AND 610 MR RECORD.  
PERSON IS NO LONGER A STUDENT AND CANNOT BE TRACED. SOME BELIEVE SHE MAY HAVE LEFT HER LAB  
COAT AND BADGE IN THE HOT ROOM.

\*PERSONNEL EXPOSURE, RADIATION + INCIDENT, NONREACTOR + RADIATION SAFETY AND CONTROL

15-23320

BENES A  
EXPERIMENTAL CONTRIBUTION ON THE PROBLEM OF THE RESORPTION AND REMOVAL OF RADIOACTIVE SUBSTANCES FROM THE  
BURNED SURFACE  
5 PAGES, 9 FIGURES, REFERENCES, ZENTRALBL. CHIR., 90, PAGES 1121-1125 (1965) IN GERMAN

BURNED SURFACES OF SKIN AND WOUNDS CONTAMINATED WITH RADIOACTIVITY CAN BE DECONTAMINATED BY  
WASHING WITH WATER OR BY EXCISION. THE MOST EFFECTIVE WAY IS TO EXCISE VESSELS OR REMOVE THE  
TISSUES ENTIRELY.

CONTAMINATION + DECONTAMINATION + RADIOACTIVITY RELEASE

15-23321 ALSO IN CATEGORY 14

FREKE AM + DOLPHIN GW  
A SUMMARY OF RESEARCH AND DEVELOPMENT WORK CARRIED OUT IN 1966 IN HEALTH AND SAFETY DEPARTMENTS OF THE  
UNITED KINGDOM ATOMIC ENERGY AUTHORITY  
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, HARWELL, ENGLAND  
AHSB(RP)M-46 +. 54 PAGES, SEPTEMBER 1967

THIS MEMORANDUM LISTS 193 PROJECTS ON WHICH RESEARCH OR DEVELOPMENT WORK HAS BEEN CARRIED OUT  
IN HEALTH AND SAFETY DEPARTMENTS OF THE UKAEA DURING 1966. THE OBJECT OF THIS MEMORANDUM IS  
TO PROVIDE INFORMATION ABOUT CURRENT RESEARCH AND DEVELOPMENT WORK WHICH MAY BE HELPFUL TO  
THOSE PLANNING RESEARCH PROGRAMMES. REFERENCES ARE GIVEN TO THE PUBLISHED PAPERS RESULTING  
FROM WORK CARRIED OUT ON THE PROJECTS DURING THE YEAR.

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

\*DOSIMETRY, GENERAL + \*RADIOLOGY + \*SPECTROMETRY, NEUTRON + \*UNITED KINGDOM + AQUATIC ORGANISMS + FALLOUT +  
INSTRUMENTATION, RADIATION MONITORING + NEUTRON

15-23322

HANKINS DE  
PROCEEDINGS OF THE USAEC FIRST SYMPOSIUM ON ACCELERATOR RADIATION DOSIMETRY AND EXPERIENCE.  
DIVISION OF TECHNICAL INFORMATION, U.S. ATOMIC ENERGY COMMISSION  
CONF-651109 +. 662 PAGES, TABLES, FIGURES, PROCEEDINGS OF THE USAEC FIRST SYMPOSIUM ON ACCELERATOR  
RADIATION DOSIMETRY AND EXPERIENCE, HELD AT BROOKHAVEN NATIONAL LABORATORY, UPTON, NEW YORK, NOVEMBER  
3-5, 1965

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-23322 \*CONTINUED\*

THIS SYMPOSIUM WAS HELD AT BROOKHAVEN NATIONAL LABORATORY, UPTON, NEW YORK, NOV. 1965, AND DEALT WITH - (1) ACCELERATOR-PRODUCED RADIATION ENVIRONMENTS, (2) SPECIAL TECHNIQUES AS NEUTRON CONTRIBUTION TO REM DOSE, DOSIMETRY, FAST NEUTRON AND HIGH-ENERGY-PARTICLE SPECTROMETRY, AND OTHERS, (3) HIGH-ENERGY DOSIMETRY AND SHIELDING, (4) SPECIAL PROBLEM AREAS OF RADIATION, AND (5) BIOLOGICAL ASPECTS.

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

ACCELERATOR + BNL + COUNTER, WHOLE BODY + DOSE + DOSIMETRY, GENERAL + MEASUREMENT, GENERAL + MONITOR, RADIATION, ENVIRONMENTAL + NEUTRON + SHIELDING

15-23362 ALSO IN CATEGORY 17

CLIFFORD FL

RADIOGRAPHY OVEREXPOSURE AT BOSTON NAVAL SHIPYARDS, 11 DEC. 1967  
BOSTON NAVAL SHIPYARD, BOSTON, MASS.

2 PAGES, ATOMIC ENERGY CLEARING HOUSE 14(9), PAGES 27-28 (FEBRUARY 26, 1968)

(LETTER, JAN. 9) THE RADIOGRAPHER IN CHARGE FAILED TO SURVEY THE RETURN OF THE SOURCE AFTER EACH EXPOSURE AND UPON COMPLETION OF THE WORK. HIS ASSISTANT WORE DOSIMETER AND FILM BADGE (800 MR, GAMMA), BUT THIS WAS THOUGHT THE LEAST EXPOSURE. A HELPER CARRIED THE COILED TUBE BACK TO THE STORAGE ROOM. \*\*\*ANOTHER RADIOGRAPHER SURVEYED THE CONCRETE STORAGE ROOM, AND OBSERVED HIGH READINGS. \*\*\*RE-ENACTMENT LED TO ESTIMATE OF 2.2 REMS, 0.8 REM (AS INDICATED BY FILM BADGE), AND 4.2 TO 230 REMS FOR THE THIRD MAN. THE LATTER DOSE WOULD RESULT IF THE SOURCE IN THE COILED TUBE WERE AT MAXIMUM PROXIMITY TO THE BODY WHILE HAND-CARRIED. \*\*\*CORRECTIVE STEPS INCLUDE - ALL NDT LAB EMPLOYEES REQUIRED TO WEAR FILM BADGE, A CRITIQUE HELD FOR RADIOGRAPHERS, PLANS TO RE-EXAMINE RADIOGRAPHERS YEARLY, AND PROCUREMENT OF AUDIBLE MONITORING DEVICES.

\*PERSONNEL EXPOSURE, RADIATION + \*RADIOGRAPHY + DOSE CALCULATION, EXTERNAL + FAILURE, OPERATOR ERROR

15-23365 ALSO IN CATEGORIES 13 AND 17

BAIN EE

NFS REPORTS EXPOSURE

NUCLEAR FUEL SERVICES, INC.

2 PAGES, ATOMIC ENERGY CLEARING HOUSE, 14(9), PAGES 31-32 (FEBRUARY 26, 1968)

(LETTER, FEB. 2) THE FOURTH-QUARTER FILM BADGE OF A PLUTONIUM PRODUCTION PLANT WORKER INDICATED 3.07 REMS EXTERNAL WHOLE-BODY GAMMA RADIATION. HIS 1967 TOTAL IS 3.57 REMS AND LIFETIME TOTAL 9.19. \*\*\*ALL STATIONS WITH SIGNIFICANT PLUTONIUM WILL BE SHIELDED, AND THE CURRENT EXPOSURE RATE WILL BE POSTED DAILY.

\*PERSONNEL EXPOSURE, RADIATION + FUEL REPROCESSING + PLUTONIUM + RADIATION SAFETY AND CONTROL

15-23428

DUTRANNOIS J + KOELBIG KS

FORTRAN PROGRAMMES FOR THE TREATMENT OF PERSONNEL MONITORING DATA

EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH, GENEVA

CERN-67-28 +. 44 PAGES, 14 FIGURES, REFERENCES, SEPTEMBER 29, 1967

THE PERSONNEL MONITORING AT CERN IS BASED ON THE INFORMATION RECORDED ON PERSONAL FILM-BADGES. THE FIRST PROBLEM IS TO CALCULATE THE EXTERNAL RADIATION EXPOSURE DOSE AND THE SECOND PROBLEM CONSISTS OF THE INTERPRETATION OF THE OBSERVED DATA AND THE COMPUTATION OF THE INTEGRATED DOSES FOR A GIVEN PERIOD, FOR MANY PEOPLE, IN A CONVENIENTLY SHORT TIME. OTHER ASPECTS OF THE PROGRAMME DEAL WITH SUCH REQUIREMENTS AS IDENTIFICATION, DOSE COMPUTATION, ACCUMULATED DATA, AND SPECIAL INFORMATION. A DESCRIPTION OF THE MAIN PROGRAMMES, WEEKLY AND MONTHLY, ARE GIVEN ALONG WITH STATISTICAL TREATMENT AS A REQUIREMENT FOR THE PROGRAMME.

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

\*DOSE CALCULATION, EXTERNAL + \*MONITORING PROGRAM, ENVIRONMENTAL + \*STATISTICAL ANALYSIS + DOSE CALCULATION, INTERNAL + MONITOR, RADIATION, PERSONNEL + SWITZERLAND

15-23429

THOMAS J

INTERPRETATION OF ABSOLUTE MEASUREMENTS OF RADIOACTIVE SOURCE STRENGTH BY THE 4 PI BETA-GAMMA-COINCIDENCE METHOD

DANISH ATOMIC ENERGY COMMISSION, RISØ

RISØ-142 +. 85 PAGES, FIGURES, TABLES, REFERENCES, OCTOBER 1966

THE PRESENT REPORT DEALS WITH THE INTERPRETATION OF ABSOLUTE MEASUREMENTS OF RADIOACTIVE SOURCE STRENGTH BY THE 4-PI BETA-GAMMA-COINCIDENCE METHOD. AFTER A DESCRIPTION OF THE STATISTICAL BEHAVIOUR OF A GENERALIZED MULTISCALER INSTRUMENT, THE SPECIAL CASE OF THE BETA-GAMMA-COINCIDENCE METHOD IS EVALUATED. THE THEORY IS DEMONSTRATED BY THE MEASUREMENT OF AU-198 IN GOLD FOILS, WHERE THE FINAL ACCURACY IS SHOWN TO BE BETWEEN 0.1 AND 0.2%. SPECIAL ATTENTION IS GIVEN TO THE COUNT-RATE-DEPENDENT CORRECTIONS, WHICH ARE HEREFOR MEASURED DIRECTLY BY MEANS OF THE SUBSTITUTION METHOD.

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-23429 \*CONTINUED\*  
AVAILABILITY - MICROCARD EDITIONS, INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN 54669

\*COUNTER + \*MEASUREMENT, GENERAL + \*SOURCE, RADIATION + \*STATISTICAL ANALYSIS + BETA EMITTER + DOSE + GAMMA + GOLD

15-23430  
GHOSH SK  
RPD CRITICALITY DOSIMETER  
DEPARTMENT OF NATIONAL HEALTH AND WELFARE, CANADA  
RPD-52 +. 27 PAGES, 4 FIGURES, 7 TABLES, DECEMBER 1967

THE RPD CRITICALITY DOSIMETER, DEVELOPED BY THE RADIATION PROTECTION DIVISION OF CANADA, IS PRESENTED IN THIS ARTICLE, ALONG WITH THE DESIGN AND CONSTRUCTION, FUNCTIONS OF THE DOSIMETER COMPONENTS, AND METHOD OF USE.

AVAILABILITY - DEPARTMENT OF NATIONAL HEALTH AND WELFARE, CANADA, RADIATION PROTECTION DIVISION, BROOKFIELD ROAD, OTTAWA, CANADA

\*DOSE + \*DOSIMETRY, GENERAL + \*UNITED KINGDOM + BETA EMITTER + COPPER + GAMMA + GOLD + INDIUM + SULFUR + THERMAL NEUTRON + X-RAY

15-23431  
PEABODY CO + PRESTON HE  
PLASTIC SACHET DOSIMETER CONTAINING LITHIUM FLUORIDE POWDER FOR SURFACE AND FINGER-TIP DOSIMETRY  
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, WINFRITH  
AEEW-R-497 +. 18 PAGES, 6 FIGURES, 8 TABLES, 9 REFERENCES, OCTOBER 1967

A DOSIMETER IS DESCRIBED, CONSISTING OF 30 MG OF THERMOLUMINESCENT LITHIUM FLUORIDE POWDER CONTAINED IN A PLASTIC SACHET. MEASUREMENTS OF ITS SENSITIVITY FOR PHOTONS AND BETA RAYS ARE PRESENTED AND DISCUSSED. IT IS SHOWN TO PROVIDE A CONVENIENT, ACCURATE AND RELIABLE METHOD OF MEASURING DIRECTLY THE FINGER-TIP RADIATION DOSE OF WORKERS HANDLING RADIOACTIVE MATERIALS, SURFACE DOSES FROM SUCH MATERIALS AND DOSES IN GENERAL OPERATIONAL AND EXPERIMENTAL WORK.

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

\*DESIGN CRITERIA + \*DOSIMETRY, GENERAL + \*SOURCE, RADIATION + BETA EMITTER + GAMMA + X-RAY

15-23868 ALSO IN CATEGORY 17  
SELECTED CVTR OPERATING EXPERIENCE  
CAROLINAS VIRGINIA NUCLEAR POWER ASSOCIATES, INC., PARR, S. C.  
32 PAGES, MONTHLY OPERATING REPORT, OCTOBER 1966

(PG 20) - EVALUATED SENSITIVITY OF VARIOUS AIRBORNE-TRITIUM MONITORING INSTRUMENTS TO MIXTURES OF TRITIUM AND FISSION GASES IN CONTAINMENT FOLLOWING A FUEL FAILURE EARLY IN THE MONTH. XENON READ HIGHER BY A FACTOR OF 10 OVER THE ACTUAL CONCENTRATION. ACTUAL TRITIUM CONCENTRATION OF THE MIXTURE WAS ONLY 1/5TH THAT INDICATED. (PG 26) - ON STARTUP AFTER THE SECOND REFUELING, AFTER 1.5 HR AT 90% POWER, A FUEL FAILURE OCCURRED. TESTS THE REST OF THE MONTH SHOWED THIS WAS IN U-TUBE B3 (CONTAINING HIGH-POWER-DENSITY FUEL), AND THE LEAK REPRESENTED LESS THAN 1% FAILED FUEL, PROBABLY ONE ROD.

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

\*FAILURE, FUEL ELEMENT + \*INSTRUMENTATION, ABNORMAL INDICATION + \*MONITOR, RADIATION, AIR + \*TRITIUM + \*XENON + CVTR (PWR) + REACTOR, HWR + REACTOR, PRESSURE TUBE + REACTOR, PWR + REPORT, OPERATIONS

15-23900  
ROGERS EJ  
A PORTABLE NEUTRON DOSE EQUIVALENT METER  
BROOKHAVEN NATIONAL LAB., UPTON, NEW YORK  
7 PAGES, 4 FIGURES, 1 TABLE, 3 REFERENCES, IEEE TRANS. NUCL. SCI., 14(5), PAGE 8 THRU 14, (OCTOBER 23, 1967)

A PORTABLE, BATTERY-OPERATED FAST-NEUTRON MONITOR WAS DEVELOPED FOR USE AT REACTORS AND ACCELERATORS. THE INSTRUMENT EMPLOYS A POLYETHYLENE LOADED PROPORTIONAL COUNTER AND READS DIRECTLY IN BIOLOGICALLY EQUIVALENT UNITS FOR NEUTRONS FROM 0.1 MEV TO OVER 15 MEV ON EIGHT SCALES RANGING FROM 2 MREM PER HOUR TO 6000 MREM PER HOUR. ELECTRONIC VOLTAGE REGULATION AND THE USE OF FIELD-EFFECT TRANSISTORS IN THE INTEGRATING AND TIMING CIRCUITS PROVIDE A STABILITY OF CALIBRATION FAR BEYOND THAT NORMALLY ASSOCIATED WITH PORTABLE SURVEY INSTRUMENTS.

\*ACCELERATOR + \*INSTRUMENTATION, RADIATION MONITORING + \*NEUTRON + \*REACTOR POWER + COUNTER + DOSE

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-23901

KAVTELADZE BM + DATUKISHVILI NM

CONTENT OF SR-90 IN LEAVES AND FRUITS OF SOME FRUIT TREES

INST. OF BOTANY, TBILISI, USSR

3 PAGES, 1 TABLE, 8 REFERENCES, SOOBSHCH. AKAD. NAUK GRUZ. SSR, 46, PAGE 195-197, (APRIL 1967), (IN RUSSIAN)

THE CONTENT AND DISTRIBUTION OF ATMOSPHERIC DEPOSITS OF SR-90 IN VARIOUS ORGANS WERE STUDIED IN FRUIT TREES IN GEORGIAN SSR. THE RESULTS OF THE INVESTIGATIONS IN 1964, USING THE LEAVES AND FRUITS, SHOWED THAT A COMPARABLY HIGH CONTENT OF SR WAS FOUND IN BERE BOCK PEAR, NAPOLEON CHERRY, AND KEVADZE PEACH TREES. IN OTHER CASES, THE CONTENT OF SR-90 WAS NEGLIGIBLE AND DID NOT EXCEED  $0.25 \times 10^{-10}$  CI/KG. THE LEAVES CONTAINED MORE SR-90 THAN THE FRUIT, AND THE SR-90 TAKEN UP BY THE ROOTS WAS NEGLIGIBLE IN THE FRUIT.

\*ATMOSPHERIC DIFFUSION + \*BIOLOGICAL CONCENTRATION, FOOD + \*STRONTIUM + \*USSR + ENVIRONMENTAL CONDITION

15-23902

ALSO IN CATEGORY 14

BELLAICHE G + PAUTOT G + ANGUENOT F + COURTOIS G

NATURAL RADIOACTIVITY OF MARINE SEDIMENTS ALONG THE ESTEREL COASTS

LABORATOIRE DE GEODYNAMIQUE SOURS-MARINE, VILLEFRANCHE-SUR-MER, FRANCE CEA, SACLAY, FRANCE

4 PAGES, 3 FIGURES, 4 REFERENCES, COMPT. REND., SER. D., 264, PAGE 2545 THRU 2548, (MAY 29, 1967), (IN FRENCH)

THE RADIOACTIVITY OF THE COASTAL MARINE SEDIMENTS PRESENTS WELL-DEFINED CHARACTERISTICS, WHICH CAN BE EXPLAINED BY THE ACTION OF DIFFERENT HYDRODYNAMIC AGENTS SUCH AS SEA SWELLS AND SOME CURRENTS ON THE SEDIMENTARY PARTICLES OF DIFFERENT RADIOACTIVITY.

\*MONITOR, RADIATION, ENVIRONMENTAL + \*SURFACE WATER, NUCLIDE OCCURRENCE + \*SURFACE WATER, SEDIMENT + FRANCE

15-23903

SPENCER H

EFFECT OF LOW AND HIGH CALCIUM INTAKE ON SR-90 METABOLISM IN ADULT MAN

VETERANS ADMINISTRATION HOSPITAL, HINES, ILL.

9 PAGES, 2 FIGURES, 6 TABLES, 23 REFERENCES, INT. J. APPL. RADIAT. ISOTOP., 18, PAGE 605-614, (AUGUST 1967)

BALANCES OF SR-90 WAS DETERMINED IN MAN UNDER CONSTANT DIETARY CONDITIONS DURING LOW AND HIGH CALCIUM INTAKE, BUT DURING A SIMILAR INTAKE OF SR-90. TEN PATIENTS WERE STUDIED DURING LOW CALCIUM INTAKE (AVERAGE 213 MG CA/DAY) AND 10 PATIENTS DURING HIGH CALCIUM INTAKE (AVERAGE 1718 MG CA/DAY), THE LATTER BEING ACHIEVED BY ADDING CALCIUM GLUCONATE TABLETS TO THE CONSTANT LOW CALCIUM DIET. THE AVERAGE SR-90 INTAKE WAS SIMILAR DURING LOW AND HIGH CALCIUM INTAKE, 4.6 PCI/DAY AND 5.7 PCI/DAY, RESPECTIVELY. THE AVERAGE SR-90 BALANCE WAS SLIGHTLY MORE NEGATIVE DURING HIGH CALCIUM INTAKE. THERE WAS NO SIGNIFICANT DIFFERENCE BETWEEN THE PERCENT NET ABSORPTION OF SR-90 DURING THE INTAKE OF THE LOW AND HIGH CALCIUM DIETS, 12.2% VERSUS 6.5% OF THE SR-90 INTAKE, RESPECTIVELY. THE SR-90/CA RATIOS OF THE DIET, URINE, AND STOOL WERE DETERMINED AND THE OBSERVED RATIOS (O.R.) WERE CALCULATED.

\*BIOLOGICAL CONCENTRATION, MAN + \*CALCIUM + \*DIETARY HABIT + \*STRONTIUM

15-23904

RAY S + DODD CG + MUCHOW GM + NELSON GF + KAUP DJ

DERIVATION AND EXPERIMENTAL VERIFICATION OF AN EQUATION FOR EXPOSURE-DOSE RATE DUE TO X-RAY CONTINUA OWENS-ILLINOIS TECHNICAL CENTER, TOLEDO, OHIO

5 PAGES, 2 FIGURES, 1 TABLE, J. APPL. PHYS., 38, PAGE 3122-3126, (JULY 1967)

AN EQUATION WAS DERIVED FOR THE EXPOSURE-DOSE RATE DUE TO RADIATION EMITTED BY X-RAY TUBES AND TRANSMITTED THROUGH MEDIA THAT ABSORB ALL CHARACTERISTIC RADIATION. THE PARAMETERS INVOLVED ARE THE OPERATING VOLTAGE AND CURRENT OF THE TUBE AND THE LINEAR ABSORPTION COEFFICIENT AND THICKNESS OF THE ABSORBING MEDIA. EXPERIMENTAL VERIFICATION OF THE EQUATION SHOWS THAT EXPOSURE-DOSE RATES CAN BE CALCULATED WITHIN PLUS OR MINUS 6% ON A RELATIVE BASIS.

\*COUNTER + \*DOSE + \*X-RAY + ELECTRON

15-23905

SANDERS M

AIR SAMPLING METHOD AND APPARATUS

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

U.S. PATENT 3-348-044 +, 2 PAGES, 2 REFERENCES, OCTOBER 17, 1967, PATENT (U.S.)

A METHOD AND APPARATUS FOR CORRELATING THE COLLECTION OF SAMPLES TAKEN AT DIFFERENT TIMES AND PLACES ON SEPARATE FILTER PAPERS WITH THE DISPLAY OF DATA FROM ANALYSIS OF SUCH SAMPLES ARE DESCRIBED. FILTER PAPERS FOR COLLECTING THE SAMPLES ARE PLACED IN APERTURES PROVIDED IN PRECODED DATA PROCESSING CARDS WHICH ARE THEN PLACED IN SPECIAL HOLDERS PERMITTING PASSAGE OF GASEOUS ATMOSPHERE THROUGH THE FILTER PAPER WHILE HOLDING IT TAUT. THE CARDS ARE REMOVED FROM THE HOLDERS, THE ANALYSES PERFORMED, THE RESULTS AUTOMATICALLY PUNCHED ONTO THE CARDS,

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-23905 \*CONTINUED\*

THE CARDS DUPLICATED IN UNCONTAMINATED FORM, AND THE DUPLICATE CARDS TABULATED TO PROVIDE A DATA DISPLAY.

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

\*AIR + \*PATENT + \*SAMPLING + DATA PROCESSING + FILTER

15-23914 ALSO IN CATEGORY 14

TAGI H + LIM EK

FUNDAMENTAL STUDIES ON BEHAVIOR OF CESIUM IN FIXATION OF RADIOACTIVITY IN CERAMIC SPONGES

TOKYO INSTITUTE OF TECHNOLOGY

86 PAGES, BULL. TOKYO INST. TECHNOL. NO. 71, PAGES 1-86 (MARCH 1966)

ONE METHOD FOR DISPOSING OF FISSION-PRODUCT WASTES FROM THE REPROCESSING OF THE SPENT URANIUM FUELS IS THE FIXATION OF THE FISSION PRODUCTS ON CERAMIC SPONGES, WHICH ARE THEN STORED UNDERGROUND. THE FIXATION OF HIGH-LEVEL RADIOACTIVITY IS DESCRIBED. STUDIES WERE MADE ON THE LEACHABILITY FOR LONG-TERM UNDERGROUND STORAGE, MECHANISMS OF THE FIXATION, AND ADSORBABILITY OF THE RADIONUCLIDE CS-137. THE CONCLUSIONS ON THE BEHAVIOR OF CS-137 IN THE FIXATION OF RADIOACTIVE WASTES IN CERAMIC SPONGES ARE AS FOLLOWS - CERAMIC SPONGES HAVING 56 TO 65% POROSITY WERE PREPARED FROM MATERIALS INCLUDING DIATOMITE, BENTONITE OR CLAY, AND FELDSPAR. THE COMPOSITIONS FOUND TO BE PROMISING ARE 60 TO 70% DIATOMITE, 20 TO 30% BENTONITE, AND 10% FELDSPAR.

\*CERAMICS + \*CESIUM + \*WASTE DISPOSAL, SOLID + \*WASTE TREATMENT, FIXATION + FUEL ELEMENT + URANIUM

15-23937

LASER RADIATION CAUSES IRREPARABLE EYE DAMAGE

2 PAGES, CHEM. ENG. NEWS, 45(45), PAGE 23 AND 24, (OCTOBER 23, 1967)

LASER RADIATION MAY DO IRREPARABLE DAMAGE TO THE RETINA, CAUSING LOSS OF VISION. Q-SWITCHED LASERS ARE THE MOST DANGEROUS, WHILE SOME CONTINUOUS-WAVE LASERS CAN BE HARMLESS. BECAUSE OF THESE HAZARDS, CONTROLS ARE FAVORED.

\*BIOLOGICAL CONCENTRATION, MAN + \*LASER + \*RADIATION DAMAGE

15-24060 ALSO IN CATEGORY 14

MAMURO T + MATSUNAMI T + FUJITA A

RADIONUCLIDE FRACTIONATION IN FALLOUT PARTICLES FROM AN AIR BURST

DEPT. OF HEALTH PHYSICS AND INSTRUMENTATION, RADIATION CENTER OF OSAKA PREFECTURE, SHINKE-CHO 704,

SAKAI-SHI, OSAKA, JAPAN

17 PAGES, 22 FIGURES, 5 TABLES, 14 REFERENCES, HEALTH PHYSICS 14(3), PAGE 223 THRU 239, (JUNE 15, 1967)

RADIONUCLIDE FRACTIONATION IN INDIVIDUAL HOT PARTICLES (HIGHLY RADIOACTIVE FALLOUT PARTICLES) FROM THE THIRD CHINESE NUCLEAR EXPLOSION ON 9 MAY, 1966, HAS BEEN INVESTIGATED BY GAMMA-RAY SPECTROMETRY. ACTIVITIES OF TEN RADIONUCLIDES (ZR-95, ZR-97, MO-99, BA-140, CE-141, CE-143, CE-144, ND-147, U-237 AND NP-239) WERE MEASURED, AND THE INITIAL ATOM NUMBERS OF THESE NUCLIDES CONTAINED IN EACH SAMPLE WERE ESTIMATED. TO EXPRESS THE DEGREE OF FRACTIONATION, THE FRACTIONATION FACTORS DEFINED WITH RESPECT TO ZR-95 WERE CALCULATED FOR EACH SAMPLE.

\*CHINA + \*FALLOUT + \*ISOTOPIC FRACTIONATION + \*PARTICLE, RADIOACTIVE + BARIUM + CERIUM + MOLYBDENUM + NEPTUNIUM + NIOBIUM + SPECTROMETRY, GAMMA + URANIUM + ZIRCONIUM

15-24061 ALSO IN CATEGORY 14

PERSSON RB

CS-134/CS-137 ACTIVITY RATIO IN THE BIOSPHERE FROM 1956 UNTIL 1966

RADIATION PHYSICS DEPT., UNIV. OF LUND, LUND, SWEDEN

10 PAGES, 4 FIGURES, 6 TABLES, 39 REFERENCES, HEALTH PHYSICS, 14(3), PAGE 241 THRU 250, (JUNE 26, 1967)

CS-134 AND CS-137 ACTIVITIES WERE MEASURED IN SAMPLES OF LICHEN, MOSS, AND REINDEER MEAT COLLECTED IN SWEDEN. THE CS-134/CS-137 ACTIVITY RATIOS IN VEGETATION COINCIDE WITHIN THE EXPERIMENTAL UNCERTAINTY WITH THOSE FOR REINDEER MEAT. GAMMA-RAY SPECTRA FROM THE ANNUALLY PERFORMED WHOLE-BODY MEASUREMENTS ON LAPPS WERE ANALYZED. THE TOTAL GLOBAL INJECTION OF CS-134 WAS ESTIMATED TO BE ABOUT 200 KCI UP TO 1958, INSIGNIFICANT DURING 1959-1961, AND ABOUT 50 KCI DURING 1961-1962. SINCE 1962, NO SIGNIFICANT INJECTION OF CS-134 HAS BEEN DETECTED. DIFFERENT WAYS OF GENERATING CS-134 HAVE BEEN CONSIDERED.

\*ALASKA + \*BIOLOGICAL CONCENTRATION, GENERAL + \*CESIUM + \*SPECTROMETRY, GAMMA + COUNTER, WHOLE BODY + MONITOR, RADIATION, ENVIRONMENTAL

15-24062

SCHAYES R + BROOKE C + KOZLOWITZ I + LHEUREUX M

NEW DEVELOPMENTS IN THERMOLUMINESCENT DOSIMETRY

MANUFACTURE BELGE DE LAMPES ET DE MATERIEL ELECTRONIQUE S.A. 80, RUE DES DEUX GARES, BRUXELLES, BELGIQUE

13 PAGES, 17 FIGURES, 13 REFERENCES, HEALTH PHYSICS, 14(3), PAGE 251 THRU 263, (JUNE 16, 1967)

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-24062 \*CONTINUED\*

AFTER A SURVEY OF USABLE PHOSPHORS AND THEIR EFFICIENCY, AN OPERATIONAL SYSTEM OF THERMOLUMINESCENT DOSIMETRY IS PRESENTED. THE EFFECT OF PEAK HEIGHT VS INTEGRAL MEASUREMENT OF THE GLOW CURVE IS INVESTIGATED. THE MAIN CHARACTERISTICS OF THE VARIOUS THERMOLUMINESCENT DOSIMETER TYPES ARE SUMMARIZED, AND THE RANGE AND LIMITS OF USE STUDIED. ALL KNOWN METHODS FOR MULTIPLE READINGS OF THERMOLUMINESCENT DOSIMETERS ARE DESCRIBED.

\*DOSE + \*DOSIMETRY, THERMOLUMINESCENCE + MEASUREMENT, GENERAL + MONITOR, RADIATION, PERSONNEL

15-24063 ALSO IN CATEGORY 14

ENVIRONMENTAL SAMPLING RESULTS

26 PAGES, 6 FIGURES, 9 TABLES, RADIOLOGICAL HEALTH NEWS, 6(4) PAGES 2 TO 26 (GCT. 1967)

COLLECTING AND ANALYZING SAMPLES OF VARIOUS MEDIA IS CARRIED ON THROUGHOUT CALIFORNIA WITH THE ASSISTANCE OF SEVERAL COOPERATING AGENCIES AND ORGANIZATIONS. ALL SAMPLES ARE SENT TO THE SANITATION AND RADIATION LABORATORY OF THE STATE DEPARTMENT OF PUBLIC HEALTH, WHERE THEY ARE ASSAYED FOR THEIR RADIOACTIVITY. THE RESULTS ARE COMPILED, INTERPRETED, AND PUBLISHED BY THE BUREAU OF RADIOLOGICAL HEALTH. THE SAMPLING PROGRAM ENCOMPASSES AIRBORNE PARTICLES, RAINFALL, DOMESTIC WATER, SEWAGE, MILK, DIET, AND SNOW, PLUS SPECIAL STUDIES.

\*ANALYTICAL TECHNIQUE, GENERAL + \*MONITOR, RADIATION, ENVIRONMENTAL + \*SAMPLING + RADIOLOGY + STATE PROGRAM

15-24214 ALSO IN CATEGORY 14

DEVORET R + LEVY C

BIOLOGICAL AND MEDICAL ASPECTS OF RADIOPROTECTION

30 PAGES, PAGES 775-804 OF RADIOBIOLOGIE APPLIQUEE, TOME III. (LOISELEUR, J. (ED)), PARIS, GAUTHIER-VILLARS, 1966, IN FRENCH

THE BIOLOGICAL AND MEDICAL ASPECTS OF PROTECTION AGAINST RADIATION ARE SUMMARIZED. THE VARIABLES THAT CONDITION THE GRAVITY OF RADIOLESIONS ARE OUTLINED. THE LESIONS CAUSED BY ACUTE AND CHRONIC IRRADIATION ARE DESCRIBED. THE LONG-TERM CONSEQUENCES OF IRRADIATION, I.E., CANCER INDUCTION, SHORTENING OF THE AVERAGE LIFE SPAN, AND GENETIC EFFECTS, ARE CONSIDERED IN SOME DETAIL. THE PRESENT LEVEL OF THE IRRADIATION OF THE GENERAL POPULATION FROM NATURAL RADIOACTIVITY, MEDICAL IRRADIATION, FALLOUT, AND EVENTUAL IRRADIATION AS A RESULT OF A NUCLEAR INDUSTRIAL DEVELOPMENT IS CALCULATED. PROFESSIONAL EXPOSURE IS DISCUSSED AND EXAMPLES ARE GIVEN. THE LAWS GOVERNING RADIOPROTECTION ARE OUTLINED. THE CLINICAL AND BIOLOGICAL MONITORING REGULATIONS ARE GIVEN.

\*BIOLOGICAL CONCENTRATION, MAN + \*FALLOUT + \*POPULATION EXPOSURE + MONITOR, RADIATION, ENVIRONMENTAL + RADIATION INJURY, TREATMENT OF

15-24215 ALSO IN CATEGORY 14

KRONGAUZ AN + KOLOTILOVA VG + LYAPIDEVSKII VK + PAVLOVA TG + TITOV AA

DOSE FIELDS OF CO-60 GAMMA RADIATION IN SURFACE LAYERS OF TISSUE-EQUIVALENT SUBSTANCE

6 PAGES, MED. RADIOL, 12(7), PAGES 9-14 (JULY 1967) IN RUSSIAN

EXPERIMENTAL STUDIES WERE MADE OF THE DISTRIBUTION OF ABSORBED DOSES OF CO-60 GAMMA RADIATION IN SURFACE LAYERS OF A PLEXIGLASS PHANTOM WITH THE AID OF SCINTILLATION AND TRANSISTORIZED DETECTORS. CALIBRATION OF DETECTORS WAS PERFORMED BY THE IONIZATION DOSIMETER IN IDENTICAL CONDITIONS OF IRRADIATION. THE DISTRIBUTION OF DEPTH ABSORBED DOSES DEPENDING ON THE VALUE OF THE IRRADIATION FIELD IS DESCRIBED.

\*COBALT + \*DOSE + \*DOSIMETRY, GENERAL + BIOLOGICAL CONCENTRATION, MAN

15-24216 ALSO IN CATEGORY 14

YOSHIDA Y

MONITORING OF AIR CONTAMINATION AT JPDR (JAPAN POWER DEMONSTRATION REACTOR)

JAPAN ATOMIC ENERGY RESEARCH INST., TOKYO

5 PAGES, GENSHIRYOKU KOGYO, 12(10), PAGES 49-53 (CCT. 1966) IN JAPANESE

TRACES OF RARE GASES AS FISSION PRODUCTS AND I-131 HAVE BEEN DETECTED IN THE OFF-GAS AND REACTOR WATER, RESPECTIVELY, SINCE DIRECT-CYCLE, BOILING-WATER REACTOR JPDR (THERMAL OUTPUT 45 MW, ELECTRICAL OUTPUT 12 MW) OPERATED IN DEC. 1964. THE MONITORING SYSTEM AT JPDR CONSISTS OF NA1 COUNTERS FOR GASES, GM COUNTERS FOR DUST, AND FIVE SAMPLING PIPINGS (ONE FOR OFF-GAS DUCTS, TWO FOR TURBINE ROOMS, AND TWO WITH EMERGENCY OUT-OFF DEVICES FOR REACTOR VESSEL). AIR CONTAMINATION WHICH OCCURRED FROM JANUARY TO MARCH 1965 ARE GIVEN. A DESCRIPTION IS ALSO MADE OF THE LEAKAGE OF FISSION PRODUCT GASES FROM A CONNECTOR IN THE OFF-GAS PANEL, AND AIR CONTAMINATION DURING THE BREAKAGE OF REACTOR INSTRUMENTS.

\*CONTAMINATION + \*IODINE + \*LEAK + \*MONITORING SYSTEM, RADIATION + \*REACTOR, SWR + COUNTER + JAPAN + REACTOR POWER + SAMPLING + THERMAL CONSIDERATION

15-24271 ALSO IN CATEGORY 17

FREDRICKSON RL

EXPOSURE TO EXCESSIVE AIRBORNE IODINE-131

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-24271 \*CONTINUED\*  
ABBOTT LABORATORIES, NORTH CHICAGO, ILL.  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE, 14(14), PAGE 30 (APRIL 1, 1968)

(LETTER, FEB. 19) AS INDICATED IN THE FEB. 6 LETTER, RESPIRATORY PROTECTION IS BEING USED UNTIL HOOD REVISIONS CORRECT THE AIRBORNE-RELEASE PROBLEM (INADEQUATE AIR VELOCITY). AN EMPLOYEE WAS EXPOSED TO I-131 IN AIR FOR A TOTAL OF 416 MPC-HOURS (JAN. 23-29) AND FOR 164 MPC-HOURS (FEB. 2-8). HIS AVERAGE THYROID BURDEN IN THIS PERIOD WAS 34%, WITH A HIGH OF 52%, INDICATING THAT ADEQUATE RESPIRATORY PROTECTION HAD BEEN PROVIDED.

\*FISSION PRODUCT, IODINE + \*PERSONNEL EXPOSURE, RADIATION + \*PERSONNEL PROTECTIVE DEVICE + INCIDENT, GENERAL + INHALATION

15-24272 ALSO IN CATEGORY 17  
INABILITY OF JUMA HOOD TO PREVENT IODINE RELEASE  
ABBOTT LABORATORIES, NORTH CHICAGO, ILL.  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE, 14(14), PAGE 30 (APRIL 1, 1968)

(LETTER, FEB. 6) A WORKER WAS EXPOSED TO EXCESSIVE CONCENTRATION OF I-131 IN AIR, AS HIS THYROID AVERAGED 373% PERMISSIBLE I-131 (DEC. 14-20, 1967). AN UNEXPECTED RELEASE OCCURRED DURING PREPARATION OF RADIO-IODO-INSULIN, CONTAMINATING HIS HEAD. HIS QUARTERLY THYROID DOSE IS 5.98 REMS. \*\*\* ALL FUME HOODS IN THE BUILDING HAVE HAD FACE VELOCITY RE-EVALUATED. PENDING MODIFICATION TO PROVIDE HIGH-VELOCITY AIRFLOW OR BETTER CONTAINMENT, CERTAIN JOBS WILL REQUIRE RESPIRATORY EQUIPMENT AND BREATHING-ZONE SAMPLERS. ROUTINE THYROID COUNTING WILL BE TWICE PER WEEK INSTEAD OF ONCE.

\*FISSION PRODUCT, IODINE + \*INHALATION + \*PERSONNEL EXPOSURE, RADIATION + DOSE + GLOVE BOX + INCIDENT, GENERAL + PERSONNEL PROTECTIVE DEVICE + VENTILATION SYSTEM

15-24273 ALSO IN CATEGORY 17  
LEWIS WH  
HAND OVEREXPOSURE DURING MAINTENANCE  
NUCLEAR FUEL SERVICE, INC.  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE, 14(14), PAGES 31-32 (APRIL 1, 1968), DOCKET 50-201

(LETTER, JAN. 31) ON DEC. 27, 1967, A MAINTENANCE FOREMAN INSPECTED EQUIPMENT IN THE GP-CELL DRANE ROOM FOR 30 MIN. HIS THERMOLUMINESCENT DOSIMETERS (FINGER RINGS) READ 160 RADS. AN HP RESURVEY SHOWED A MAX. DOSE RATE OF 16 RADS/HR. 26 TLD FINGER RINGS ON HIS GLOVE SHOWED AN AVERAGE OF 21 RADS/HR. WITH A MAX. OF 90.6 RADS/HR AT THE PALM. THE AVERAGE HAND EXPOSURE IS ESTIMATED AT 44 RADS. \*\*\* THE BETA/GAMMA RATIO USED IN TIME LIMITS IS NOW INCREASED. GLOVES WHICH DECREASE HAND EXPOSURE YET WHICH ARE FLEXIBLE ENOUGH FOR WORK ARE BEING TESTED.

\*CONTAMINATION + \*DOSIMETRY, THERMOLUMINESCENCE + \*PERSONNEL PROTECTIVE DEVICE + BETA EMITTER + FUEL REPROCESSING + INCIDENT, GENERAL + MAINTENANCE AND REPAIR + NFS

15-24274 ALSO IN CATEGORIES 17 AND 13  
PERSONNEL OVEREXPOSURES DURING FOURTH QUARTER 1967  
NUCLEAR FUEL SERVICES, INC.  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE, 14(14), PAGE 32 (APRIL 1, 1968), DOCKET 50-201

(LETTER, FEB. 19) REPORT DESCRIBES OVEREXPOSURES AND CORRECTIVE ACTIONS. (WHOLE BODY) - 3 EMPLOYEES RECEIVED 3.1, 3.2, AND 3.4 REMS. (SKIN) - THREE RECEIVED 7.7, 8.2, AND 9.8 REMS. (EXTREMITY) - SIX RECEIVED 10.02, 19.11, 19.41, 19.62, 20.55, AND 20.56 REMS, ALL DUE TO SPGT SOURCES. \*\*\* CHANGES TO SOP FOR CONTAMINATED WORK AREAS, TO EQUIPMENT TO MINIMIZE CONTACT MAINTENANCE, AND TO IMPROVE VENTILATION ARE BEING UNDERTAKEN. A MANIPULATOR REPAIR AND DECONTAMINATION FACILITY IS BEING BUILT.

\*PERSONNEL EXPOSURE, RADIATION + CONTAMINATION + FUEL REPROCESSING + MAINTENANCE AND REPAIR + MODIFICATION, SYSTEM OR EQUIPMENT + NFS

15-24278 ALSO IN CATEGORIES 12 AND 17  
OVER EXPOSURES TO GAMMA RADIATION, LAST HALF 1967  
NUCLEAR MATERIALS AND EQUIPMENT CORP., APOLLO, PA.  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE, 14(14), PAGE 34 (APRIL 1, 1968)

(LETTER, FEB. 29) (1) THREE 18-YEAR OLD EMPLOYEES EXCEEDED 1.25 REMS IN THE QUARTER, AND WERE REMOVED FROM EXPOSURE UNTIL 5(N-16) ALLOWS RETURN. WE WERE AWARE OF THE AM-241 PRESENT IN ZPPR FUEL BUT WERE NOT AWARE OF THE 18-YEAR-OLDS. PU DUST EMITS MORE X RAY BECAUSE OF LITTLE SELF-SHIELDING. (2) A 19-YEAR-OLD WAS TAKEN FROM HANDLING ZPPR AM-241-CONTAMINATED CRUCIBLES. (3) A SOURCE TECHNICIAN EXCEEDED LIFETIME LIMITS DURING THE FOURTH QUARTER. HIS JULY 1967 FILM BADGE HAD BEEN DAMAGED, AND EXPOSURE OMITTED. ESTIMATION YIELDED OVEREXPOSURE. (4) JAN.-MAR. 66 EXPOSURE TO SOURCE FOREMAN EXCEEDED 3 REMS.

\*AMERICIUM + \*FABRICATION + \*FUEL ELEMENT + \*PERSONNEL EXPOSURE, RADIATION + PLUTONIUM + SOURCE, RADIATION + X-RAY

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-24279 ALSO IN CATEGORIES 12 AND 17  
OVER EXPOSURE TO AIR CONCENTRATIONS AT APOLLO  
ATOMIC ENERGY COMMISSION  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE, 14(14), PAGE 35 (APRIL 1, 1968)

(LETTER, MAR. 1) FIVE OPERATORS WERE EXPOSED TO MORE THAN 40 MPC-HOURS/WEEK. EACH WAS WEARING A RESPIRATOR, BUT NASAL CONTAMINATION EXCEEDED LIMITS, SO NO CREDIT WAS TAKEN. EXPOSURES WERE DETECTED WITH PERSONAL AIR SAMPLERS. ONE EXPOSURE OCCURRED DURING CLEANUP OF A CP-2 FURNACE. TWO OCCURRED DURING CRP-3 DISSOLVING OPERATIONS. TWO OCCURRED DURING FILTER HANDLING. FILTERS ARE ROUTINELY RAGGED, BUT OCCASIONALLY A BAG IS PUNCTURED.

\*FABRICATION + \*FUEL ELEMENT + \*INHALATION + MAXIMUM PERMISSIBLE CONCENTRATION (MPC) +  
PERSONNEL EXPOSURE, RADIATION



CATEGORY 16  
METEOROLOGICAL CONSIDERATIONS

16-20692  
KOGAN RM + FRIDMAN SD  
EFFECT OF SOIL MOISTURE ON THE STRUCTURE OF THE GAMMA FIELD IN THE ATMOSPHERE NEAR THE EARTH  
INST. OF APPLIED GEOPHYSICS, MOSCOW  
4 PAGES, 2 FIGURES, 1 TABLE, 2 REFERENCES, IZV. AKAD. NAUK SSSR, FIZ. ZEMLI, 3, PAGE 82-88, (MARCH 1967),  
IN RUSSIAN

ASSUMING A CONSTANT CONCENTRATION OF RADIOACTIVITY IN THE SOIL, THE INTENSITY OF PRIMARY RADIATION IS A FUNCTION ONLY OF THE SOIL MOISTURE. IN RAINY PERIODS, THE GAMMA FLUX IS SUBSTANTIALLY DECREASED, AND THE ENERGY COMPOSITION OF THE GAMMA QUANTA IS DISTORTED. A WAIT OF 16 TO 30 HR AFTER A RAINFALL IS ADVISABLE IN TAKING GAMMA-RAY FIELD MEASUREMENTS SO AS TO HAVE NORMAL SOIL MOISTURE.

\*PRECIPITATION + \*SOIL, NUCLIDE OCCURRENCE + \*STATISTICAL ANALYSIS + CONCENTRATION, GROUND LEVEL + GAMMA + MONITOR, RADIATION, GROUND SURFACE + USSR

16-21133  
KRUGER P  
TRANSPORT OF RADIOACTIVE AEROSOLS ACROSS THE TRADE WIND INVERSION AT HAWAII  
STANFORD UNIVERSITY, STANFORD, CALIFORNIA  
12 PAGES, 8 FIGURES, 4 TABLES, REFERENCES, TELLUS 19(3), PAGES 380-391 (1967)

RADIOACTIVITY CONCENTRATION MEASUREMENTS IN AEROSOL AND PRECIPITATION SAMPLES COLLECTED ALONG THE SLOPES OF MAUNA LOA VOLCANO IN HAWAII WERE EXAMINED IN RELATION TO VERTICAL PROFILES OF TEMPERATURE AND HUMIDITY IN THE ATMOSPHERE ACROSS THE TRADE-WIND INVERSION. THE GRADIENT OF RADIOACTIVE AEROSOL CONCENTRATION IN THE AIR WITH HEIGHT IS RELATED TO THE HUMIDITY PROFILE AND THE CHARACTER OF THE TRADE-WIND INVERSION. THE RATIO OF GROSS BETA CONCENTRATION IN AIR AND RAIN GIVES A PARAMETER WITH DIMENSIONS OF MIXING RATIO, WHICH MAY BE OF POTENTIAL USE IN DETERMINING RAINOUT EFFICIENCIES.

\*AEROSOL, RADIOACTIVE + \*CONCENTRATION, AREA + ANALYTICAL TECHNIQUE, AIR + ATMOSPHERIC STABILITY + EXPERIMENT, GENERAL + GROSS BETA + STRONTIUM + WIND PROFILE

16-21134  
MEKHON KO KP  
SIMPLIFIED THEORETICAL NOTION OF CONTAMINANT REMOVAL BY PRECIPITATION FROM THE ATMOSPHERE  
HYDROMETEOROLOGICAL SERVICE OF THE USSR, MOSCOW, RUSSIA  
9 PAGES, 2 TABLES, 3 FIGURES, 19 REFERENCES, TELLUS, 19(3), PAGES 467-476 (1967)

PROCESSES OF CONTAMINANT WASHOUT AND RAINOUT FROM THE ATMOSPHERE BY PRECIPITATION ARE CONSIDERED. FORMULAS OF DECREASING CONTAMINANT CONCENTRATION IN PRECIPITATION AND IN THE AIR AS A FUNCTION OF DURATION OF PRECIPITATION ARE DEDUCED. COEFFICIENTS OF CONTAMINANT WASHOUT (BELOW THE CLOUD) AND RAINOUT (IN THE CLOUD LAYER OF THE ATMOSPHERE) FOR GASES AND AEROSOLS ARE DETERMINED FROM COMPARISON OF THEORETICAL CURVES WITH EXPERIMENTAL DATA. RAINOUT OF ALMOST ALL THE GASES OF THE ATMOSPHERE IS AT LEAST A FACTOR OF 10 LESS THAN THAT OF AEROSOLS.

\*CONCENTRATION, GROUND LEVEL + \*RAINOUT + AEROSOL + ATMOSPHERIC DIFFUSION + FALLOUT + MATHEMATICAL TREATMENT + PRECIPITATION + THEORETICAL INVESTIGATION + WASHOUT

16-21222  
SOTOBAYASHI T + SUZUKI T + KOYAMA S  
GEOCHEMICAL FRACTIONATION OF NP-239 IN FRESH NUCLEAR DEBRIS THROUGH THE ATMOSPHERE  
NIIGATA UNIV., JAPAN  
1 PAGE, 1 FIGURE, 3 REFERENCES, BULL. CHEM. SOC. JAP., 40, PAGE 1555, (JUNE 1967)

HIGHLY FRACTIONATED FISSION PRODUCTS WERE DETECTED WITHIN 36 HR AFTER THE THIRD CHINESE NUCLEAR TEST. DATA SUGGEST THAT GRAVITATIONAL AND METEOROLOGICAL FORCES AND DIFFERENCES IN SIZE AND DENSITY CAUSE PARTICLE SEPARATION IN AN ATOMIC CLOUD. OBSERVATIONS SHOW FRACTIONATION BEHAVIOR OF NP-239 TO BE MODIFIED AND THAT PARTICLE SEPARATION TAKES PLACE IN 1.5 DAYS TRAVEL IN THE CLOUDS.

\*AEROSOL, RADIOACTIVE + \*JAPAN + \*SAMPLING + ATMOSPHERIC CIRCULATION, GLOBAL + ATMOSPHERIC DIFFUSION, GLOBAL + FALLOUT

16-21223  
BARRY PJ  
DISPERSION AND DIFFUSION OF STACK RELEASES  
ATOMIC ENERGY OF CANADA LIMITED, CHALK RIVER, ONTARIO  
AECL-2760 +. 20 PAGES, 6 FIGURES, 2 TABLES, JULY 1967

THIS REPORT IS BASED ON THE REFRESHER COURSE ON DISPERSION AND DIFFUSION OF STACK RELEASES, GIVEN AT THE HEALTH PHYSICS SOCIETY ANNUAL GENERAL MEETING IN WASHINGTON, D. C., JUNE 18-22, 1967. IT IS A SIMPLE INTRODUCTION TO THE USE OF DIFFUSION EQUATIONS FOR PREPARING ESTIMATES OF ENVIRONMENTAL CONCENTRATIONS OF MATERIALS DISCHARGED INTO THE ATMOSPHERE. THE EQUATIONS

CATEGORY 16  
METEOROLOGICAL CONSIDERATIONS

16-21223 \*CONTINUED\*

ARE DERIVED FROM FIRST PRINCIPLES WITH A MINIMUM OF MATHEMATICS AND IN SUCH A WAY AS TO ILLUSTRATE THEIR USES AND LIMITATIONS.

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

\*DIFFUSION + \*EQUATION, GENERAL + \*SOURCE, GROUND LEVEL + ATMOSPHERIC STABILITY + CONCENTRATION, GROUND LEVEL + DISPERSION + GAUSSIAN PLUME FORMULA + SOURCE, ELEVATED + SUTTON DIFFUSION FORMULA

16-21224 ALSO IN CATEGORY 15

TRUNDLE AS + STORY EJ

AERIAL RADIOLOGICAL MEASURING SYSTEM. PART IV. EQUIPMENT AND PROCEDURES THROUGH FISCAL YEAR 1966  
EDGERTON, GERMESHAUSEN AND GRIER, INC., SANTA BARBARA, CALIF.

CFX-59.4(PT.4) + EOC-1183-2083 +. 57 PAGES, FIGURES, TABLES, 11 REFERENCES, MARCH 1966

DESCRIBES THE AERIAL RADIOLOGICAL MEASURING SYSTEM (ARMS-II) OPERATED BY EG&G, INC., FOR THE DIVISION OF BIOLOGY AND MEDICINE, USAEC. DESIGNED TO MEASURE RADIOACTIVITY OVER LARGE AREAS, THE ARMS-II SYSTEM CONSISTS OF SODIUM IODIDE SCINTILLATION DETECTORS, RADIATION- AND POSITIONING-MEASURING INSTRUMENTS, AND DATA-READOUT INSTRUMENTS. THE METHOD OF OPERATION AND DATA INTERPRETATION ARE DISCUSSED AND EVALUATED, AND RECOMMENDATIONS ARE MADE FOR IMPROVING THE SYSTEM.

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

\*AIRCRAFT + \*INSTRUMENTATION, RADIATION MONITORING + \*MONITOR, RADIATION, BACKGROUND + MONITOR, RADIATION, ENVIRONMENTAL + MONITOR, RADIATION, TELEMETRY + SURVEY, RADIATION, AERIAL

16-21261 ALSO IN CATEGORY 15

RADIOLOGICAL PHYSICS DIVISION ANNUAL REPORT, JULY 1965 TO JUNE 1966

ARGONNE NATIONAL LAB., ILL.

ANL-7220 +. 124 PAGES, 92 FIGURES, 29 TABLES, REFERENCES, 1966

PROGRAMS COVERED IN THIS REPORT INCLUDE - THOROTRAST DETECTION CHARACTERISTICS OF NAI CRYSTALS OF VARIOUS SIZES, THERMOLUMINESCENT DOSIMETRY OF INTERNAL BETA RAY EMITTERS, UV LASER EXCITATION FOR ULTRASENSITIVE PHOTOLUMINESCENT DOSIMETRY, THERMOLUMINESCENCE IN BONE, GEOMETRICAL AND PHYSICAL PARAMETERS IN WHOLE-BODY GAMMA-RAY SPECTROMETRY MEASUREMENTS, PROGRESS IN LOW-RADIOACTIVITY PHOTOMULTIPLIER TUBES, A STOCHASTIC THEORY OF RECRYSTALLIZATION AND POWER-FUNCTION RETENTION, THE PROLIFERATIVE CAPACITY OF STEM CELLS FROM THE MARROW OF ISOTOPICALLY LABELED BONE (PRELIMINARY EXPERIMENTS), RADIUM-226 AND THE NATURAL AIRBORNE NUCLIDES LEAD-210 AND POLONIUM-210 IN ARCTIC BIOTA, RADON IN COAL MINES, ATMOSPHERIC RADON MONITOR, COMPUTER ANALYSIS OF BONE AUTORADIOGRAPHS, EXCHANGEABLE BONE CALCIUM, ANALYSIS OF SMOKE-PLUME PHOTOGRAPHS, CALCULATION OF EFFECTIVE STACK HEIGHT, METEOROLOGICAL INSTRUMENTS FOR USE IN THE ATOMIC ENERGY INDUSTRY, DIFFUSION OF A SCALE-MODEL SMOKE PLUME, THERMOLUMINESCENT DOSIMETRY, AND ENVIRONMENTAL RADIATION STUDIES.

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

\*BIOLOGICAL CONCENTRATION, GENERAL + \*DOSIMETRY, GENERAL + \*INSTRUMENTATION, METEOROLOGICAL + \*METEOROLOGY + AIRBORNE RELEASE + ANL + BIOMEDICAL + CALCIUM + DIFFUSION + DOSIMETRY, THERMOLUMINESCENCE + LEAD + POLONIUM + RADIOBIOLOGY + RADIOGRAPHY + RADIUM + SPECTROMETRY, GAMMA + STACK

16-21475 ALSO IN CATEGORY 17

FLUX OSCILLATION INCIDENT AT GARIGLIANO DURING ROD IMBALANCE

GENERAL ELECTRIC COMPANY

2 PAGES, PAGES 11 AND 14 OF MEMORANDUM SCER-60, DOCKET 50-277 AND 278, TYPE--BWR, MFG--G.E., AE--BECHTEL, JULY 1967

BEFORE A SCHEDULED ROD-OSCILLATION EXPERIMENT, A FLUX OSCILLATION OF ABOUT 8-10% AT 1/3 HERTZ OCCURRED IN A TEST-LOOP CHANNEL NEAR A CONTROL ROD STUCK AT A POSITION ABOUT 30 IN. MORE WITHDRAWN THAN SYMMETRICALLY PLACED RODS. CHANNEL OUTLET WAS RESTRICTED BY A FLOW METER. OSCILLATION INDICATED ON IN-CORE INSTRUMENTATION LASTED FROM 3 TO 5 MIN AND WAS TERMINATED BY INSERTING AN ADJACENT ROD 15 IN. OTHER CHANNELS ALSO SHOWED FLUX OSCILLATIONS, WITH THE AMPLITUDE DECREASING WITH DISTANCE FROM THE DRIVING CHANNEL.

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

\*FLOW STABILITY + CONTROL ROD PROGRAM + FAILURE, SCRAM MECHANISM + INCIDENT, GENERAL + INSTRUMENTATION, ABNORMAL INDICATION + INSTRUMENTATION, IN COPE + REACTOR STABILITY + REACTOR, BWR + SENS

16-21713 ALSO IN CATEGORY 14

CRAWFORD TV

LONG RANGE DIFFUSION OF THE NRX/EST EP-4A EFFLUENT CLOUD

LAWRENCE RADIATION LABORATORY, LIVEPMORE

UCRL-50,299 +. 49 PAGES, 39 FIGURES, 5 TABLES, 23 REFERENCES, JUNE 1967

CATEGORY 16  
METEOROLOGICAL CONSIDERATIONS

16-21713 \*CONTINUED\*

DISCUSSES THE GENERATION, MOVEMENT, AND DIFFUSION OF THE EFFLUENT CLOUD PRODUCED BY THE NRX/EST EP-4A REACTOR EXPERIMENT OF MARCH 25, 1966. INITIAL SIZE AND TIME-DEPENDENT METEOROLOGICAL PARAMETERS ALONG THE TRAJECTORY WERE USED AS INPUT INTO A CLOUD-DIFFUSION CALCULATION WITH ZBPUFF, A COMPUTER CODE DEVELOPED BY CRAWFORD. COMPARISON OF CALCULATIONS WITH DATA INDICATE AGREEMENT, WITHIN A FACTOR OF TWO, FOR AIR CONCENTRATIONS OUT TO TWO DAYS, SURFACE AIR CONCENTRATION, DRY DEPOSITION, VERTICAL CONCENTRATION PROFILE SHAPE, AND CLOUD SIZE.

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

\*COMPUTER PROGRAM, METEOROLOGICAL + \*DEPOSITION + \*DIFFUSION + \*EXPERIMENT, GENERAL + \*NUCLEAR ROCKET + ATMOSPHERIC STABILITY + CONCENTRATION, APEA + CONCENTRATION, GROUND LEVEL + FALLOUT + MONITOR, RADIATION, AIR + MONITOR, RADIATION, GROUND SURFACE

16-21767

HALITSKY J + KARMIN I + MAGONY G  
RESEARCH PROJECT. TRANSVERSE JET PLUMES. TECHNICAL PROGRESS REPORT, APRIL 1-OCTOBER 31, 1966  
NEW YORK UNIV., N. Y. GEOPHYSICAL SCIENCES LAB.  
NYO-3673-1 +. 25 PAGES, FIGURES, TABLES, OCTOBER 1966

TECHNICAL PROGRESS REPORT, APRIL 1-OCT. 31, 1966. TOPICS ARE - CONSTRUCTION OF TEST FACILITIES, ASSEMBLY AND CHECKOUT OF INSTRUMENTS, PERFORMANCE OF PRELIMINARY TESTS IN BOTH SUBDIVISION 1 (FIELD TESTS) AND SUBDIVISION 2 (HIGH-TURBULENCE TUNNEL TESTS), AS DESCRIBED IN THE RESEARCH PROPOSAL.

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

\*EXPERIMENT, GENERAL + \*INSTRUMENTATION CALIBRATION + \*TEST, SYSTEM OPERABILITY + INSTRUMENTATION, METEOROLOGICAL + TURBULENCE, SHEAR (WIND) + WIND TUNNEL EXPERIMENT

16-21925

SINGER IA + BUSCH NE + FRIZZOLA JA  
MICROMETEOROLOGY OF THE TURBULENT FLOW FIELD IN THE ATMOSPHERIC SURFACE BOUNDARY LAYER  
BROOKHAVEN NATIONAL LAB., UPTON, N.Y.  
BNL-11800 + CONF-670943-1 +. 50 PAGES, AUGUST 31, 1967, FROM INTERNATIONAL RESEARCH SEMINAR ON WIND EFFECTS ON BUILDINGS AND STRUCTURES, OTTAWA, CANADA

OUTLINES THE BACKGROUND FOR THE MONIN-OBUKHOV SIMILARITY HYPOTHESES, WHICH DESCRIBES THE HEIGHT DEPENDENCE OF VARIOUS TURBULENT FLOW PARAMETERS IN A THERMALLY STRATIFIED SURFACE BOUNDARY LAYER. A RECENT ANALYSIS OF SPECTRAL DATA TAKEN AT BROOKHAVEN NATIONAL LABORATORY UNDER THERMALLY NEUTRAL AND UNSTABLE CONDITIONS IS PRESENTED AND COMPARED WITH OTHER ANALYSES.

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

\*ATMOSPHERIC STABILITY + \*TURBULENCE, STATISTICS + \*WIND PROFILE + EXPERIMENT, GENERAL + LAPSE RATE, ADIABATIC, NEUTRAL + LAPSE RATE, UNSTABLE + MICROMETEOROLOGY + WIND STATISTICS

16-21926

MATSUO S + FRIEDMAN I  
DEUTERIUM CONTENT IN FRACTIONALLY COLLECTED RAINWATER  
U.S. GEOLOGICAL SURVEY, DENVER, COLORADO  
3 PAGES, 2 FIGURES, 1 TABLE, 9 REFERENCES, JOURNAL OF GEOPHYSICAL RESEARCH 72(24), PAGES 6374-76 (DECEMBER 15, 1967)

PRESENTS THE DEUTERIUM AND CHLORIDE CONTENTS OF TOKYO RAINWATER SERIALY COLLECTED FROM A VARIETY OF RAIN TYPES. THE COLLECTION WAS MADE FOR EVERY 1 MM OF RAIN. PRESENTS THE CHANGES IN DEUTERIUM AND CHLORIDE CONCENTRATIONS AS FUNCTIONS OF RAINFALL INTENSITY.

\*AEROSOL, RADIOACTIVE + \*DEUTERIUM + \*RAINOUT + ANALYTICAL TECHNIQUE, WATER + ATMOSPHERIC DIFFUSION + METEOROLOGY + WASHOUT

16-21927

JOHNSON WB  
A COMPACT PORTABLE TEMPERATURE RECORDER  
INSTITUTES FOR ENVIRONMENTAL RESEARCH, ATMOSPHERIC TURBULENCE AND DIFFUSION LAB.  
ESSA-TR-IERTM-ATDL-6 +. 7 PAGES, 3 FIGURES, 1 TABLE, 1 REFERENCE, OCTOBER 1967

DESIGN OF A COMPACT, PORTABLE, TEMPERATURE RECORDER SUITABLE FOR USE IN A SMALL AIRPLANE TO TAKE HORIZONTAL AND VERTICAL PROFILES OF AIR TEMPERATURE.

AVAILABILITY - MR. W. E. JOHNSON, JR. - STANFORD RESEARCH INSTITUTE, 333 RAVENSWOOD AVE., MENLO PARK, CALIF.

\*INSTRUMENTATION, METEOROLOGICAL + \*INSTRUMENTATION, TEMPERATURE + INSTRUMENTATION CALIBRATION + MEASUREMENT, TEMPERATURE

CATEGORY 16  
METEOROLOGICAL CONSIDERATIONS

16-22196

LANDRY MJ + LOCHNER JR  
GB-LIDAR SYSTEM

SANDIA CORP., ALBUQUERQUE, NEW MEXICO

SC-DC-67-1948 + CONF-671015-1 +. 21 PAGES, SEPTEMBER 1967, FROM SEMINAR IN DEPTH ON LASER RANGE  
INSTRUMENTATION, EL PASO, TEXAS

SANDIA LABORATORY DEVELOPED A MOBILE LASER (LIDAR) SYSTEM FOR DETECTING ARTIFICIAL CLOUDS COMPOSED OF ABLATIVE MATERIALS FROM RE-ENTRY VEHICLES. A STANDARD RADAR SYSTEM CANNOT DETECT SUCH A CLOUD, MUCH LESS THE DESTINATION OF THE PARTICLES, NOR CAN OTHER CONVENTIONAL DETECTING SYSTEMS. THE LIDAR SYSTEM SHOULD NOT ONLY DETECT SUCH A CLOUD BUT SHOULD ALSO GIVE INFORMATION ON ITS DENSITY, ITS TRAJECTORY, AND THE DISPERSION RATES OF ITS CONSTITUENTS.

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

\*ABLATION + \*LASER + \*MEASUREMENT, GENERAL + \*REENTRY, ATMOSPHERIC + DIFFUSION + DISPERSION + INSTRUMENTATION, METEOROLOGICAL + REACTOR, SPACE

16-22450

MARSH KJ + FOSTER MD

AN EXPERIMENTAL STUDY OF THE DISPERSION OF THE EMISSIONS FROM CHIMNEYS IN READING--I THE STUDY OF LONG-TERM AVERAGE CONCENTRATIONS OF SULPHUR DIOXIDE

THE BRITISH PETROLEUM CO. LTD., SUNBURY-ON-THAMES, MIDDLESEX, ENGLAND

24 PAGES, 11 FIGURES, 7 REFERENCES, ATMOSPHERIC ENVIRONMENT 1(5), PAGES 527-50 (SEPT. 1967)

THE DISPERSION OF SULFUR DIOXIDE IN THE TOWN OF READING WAS STUDIED FOR 15 MONTHS. IT IS SHOWN THAT, OF VARIOUS METEOROLOGICAL VARIABLES EXAMINED, THE AMBIENT AIR TEMPERATURE HAS THE PREDOMINANT EFFECT ON THE SULFUR DIOXIDE CONCENTRATION IN THE AIR. THE ANNUAL AVERAGE CONCENTRATION OF SULFUR DIOXIDE AT INDIVIDUAL SITES IS STRONGLY CORRELATED WITH LOCAL INSTALLATIONS EMITTING THEIR EFFLUENTS FROM CHIMNEYS LESS THAN 21 M HIGH. A POLLUTION DOSE FOR THE TOWN AS A WHOLE SHOWS THAT THERE IS AN EXCESS OF SULFUR DIOXIDE ARRIVING FROM THE EAST, ATTRIBUTED TO POLLUTION FROM LONDON.

\*ATMOSPHERIC POLLUTION + \*SOURCE, ELEVATED + \*STACK + ANALYTICAL MODEL + CONCENTRATION, AREA + CONCENTRATION, GROUND LEVEL + SULFUR DIOXIDE

16-22451

LAWRENCE EN

ATMOSPHERIC POLLUTION DURING SPELLS OF LOW-LEVEL AIR TEMPERATURE INVERSION

METEOROLOGICAL OFFICE, BRACKNELL, BERKS., ENGLAND

16 PAGES, 5 FIGURES, 7 TABLES, 5 REFERENCES, ATMOSPHERIC ENVIRONMENT 1(5), PAGES 561-76 (SEPTEMBER 1967)

AIR-TEMPERATURE PROFILE DATA FOR CRAWLEY, SUSSEX, AND AIR-POLLUTION DATA FOR KEW OBSERVATORY, FOR THE FIVE WINTER HALF-YEARS FROM OCTOBER 1960 TO MARCH 1965 INCLUSIVE, WERE USED TO EXAMINE THE DEPENDENCE OF THE DAILY MEAN CONCENTRATION OF ATMOSPHERIC SULFUR DIOXIDE ON THE HEIGHT OF THE LOW-LEVEL AIR TEMPERATURE INVERSION BASE AND TO DEMONSTRATE A TENDENCY FOR A DAILY INCREASE OF AIR POLLUTION DURING SPELLS OF PERSISTENT LOW-LEVEL AIR-TEMPERATURE INVERSIONS.

\*ATMOSPHERIC POLLUTION + \*ATMOSPHERIC STABILITY + \*CONCENTRATION, AREA + ANALYTICAL TECHNIQUE, AIR + ATMOSPHERIC DIFFUSION + SOURCE, VOLUME + SULFUR DIOXIDE

16-22452

MUNN RE + COLE AF

SOME STRONG-WIND DOWNWASH DIFFUSION MEASUREMENTS AT DOUGLAS POINT, ONTARIO, CANADA

METEOROLOGICAL SERVICE OF CANADA, TORONTO + OCCUPATIONAL HEALTH DIVISION, OTTAWA

4 PAGES, 6 FIGURES, 1 TABLE, 4 REFERENCES, ATMOSPHERIC ENVIRONMENT 1(5), PAGES 601-04 (SEPTEMBER 1967)

ELEVEN EMISSIONS OF URANINE WERE MADE FROM THE TOP OF A 46-M STEEL STACK AT THE CANDU NUCLEAR POWER GENERATING STATION. IN MOST CASES, WINDS WERE LIGHT TO MODERATE, AND THE SAMPLING ARCS WERE 1500 TO 7500 M FROM THE SOURCE. GRAPHS ILLUSTRATE THE DIFFUSION PATTERNS THAT MAY DEVELOP DURING STRONG WINDS. THEY SUGGEST THAT DOWNWASH CONDITIONS IN A BUILT-UP AREA WITH MANY SHORT CHIMNEYS MUST BE VERY COMPLICATED.

\*CONCENTRATION, GROUND LEVEL + \*SOURCE, ELEVATED + EFFLUENT + EXPERIMENT, GENERAL + PLUME BEHAVIOR, GENERAL + STACK + WASTE DISPOSAL, ATMOSPHERIC + WIND PROFILE

16-22492

ALSO IN CATEGORY 14

EFFECT OF SOME IONS IN THE ATMOSPHERE ON THE FALLOUT IN 1964 TO 1966

HYGIENISCH-EPIDEMIOLOGISCHE KEISINSTITUT, BRATISLAVA

5 PAGES, 2 FIGURES, 5 TABLES, 14 REFERENCES, KERNENERGIE 10, PAGES 164-8 (MAY 1967), IN GERMAN

THE RADIOACTIVE FALLOUT ON THE TERRITORY OF WESTERN SLOVAKIA, CSSR, WAS OBSERVED DURING 1964

CATEGORY 16  
METEOROLOGICAL CONSIDERATIONS

16-22492 \*CONTINUED\*

TO 1966. THE TOTAL BETA-RAY ACTIVITY, THE SR-90 AND CS-137 CONTENTS, THE AMOUNT OF STABLE IONS IN THE FALLOUT AS WELL AS THE SALTS DISSOLVED IN THE ATMOSPHERIC PRECIPITATION WERE DETERMINED. THE ISOTOPIC CONTENT DECREASED CONTINUOUSLY, AND THE VOLUMINOUS ATMOSPHERIC PRECIPITATIONS DURING 1965 DID NOT RAISE THE FALLOUT RADIOACTIVITY. THE ION CONTENT IN THE FALLOUT WAS INCREASED BY THE INFLUENCE OF THE PRECIPITATIONS.

\*CESIUM + \*PRECIPITATION + \*STRONTIUM + BETA EMITTER + \*FALLOUT + MEASUREMENT, REACTIVITY + RAINCUT + WASHOUT

16-22921

SMITH ME

REDUCTION OF AMBIENT AIR CONCENTRATIONS OF POLLUTANTS BY DISPERSION FROM HIGH STACKS  
BROOKHAVEN NATIONAL LAB.

8 PAGES, 5 FIGURES, 2 TABLES, 10 REFERENCES, NUCLEAR SAFETY 9(1), PAGE 46-54, (FEB. 1968)

STACKS THAT REACH 500 FT OR MORE ABOVE GROUND HAVE BECOME SYMBOLIC OF GOOD INDUSTRIAL AIR-POLLUTION PRACTICE. THIS PAPER SPECIFIES, TO THE BEST OF CURRENT KNOWLEDGE, THE BENEFITS AND LIMITATIONS ASSOCIATED WITH HIGH STACKS. IT ALSO REVIEWS UNRESOLVED QUESTIONS ABOUT STACK-GAS BEHAVIOR, INCLUDING PLUME RISE, INVERSION BREAKUP FUMIGATIONS, AND THE EFFECTS OF MAJOR TERRAIN FEATURES. THERE IS NO QUESTION THAT THE HIGH STACK IS AN EXTREMELY EFFECTIVE DEVICE FOR REDUCING GROUND-LEVEL CONCENTRATIONS, BUT ADDITIONAL STUDY IS NEEDED TO MAKE SURE THAT STACKS ARE FULLY EXPLOITED.

\*CONCENTRATION, GROUND LEVEL + \*CONCENTRATION, MAXIMUM + \*SOURCE, ELEVATED + ATMOSPHERIC STABILITY + HEIGHT OF RISE + PLUME BEHAVIOR, GENERAL + STACK

16-22922

GATZ DF

LOW-ALTITUDE INPUT OF ARTIFICIAL RADIOACTIVITY TO A SEVERE CONVECTIVE STORM. COMPARISON WITH DEPOSITION UNIVERSITY OF MICHIGAN, ANN ARBOR

6 PAGES, 7 FIGURES, 3 TABLES, 9 REFERENCES, J. APPL. METEOROL., 6, PAGE 530-535, (JUNE 1967)

CONCENTRATIONS OF ARTIFICIAL RADIOACTIVITY AND PLANT POLLENS IN RAIN VARY IN PHASE DURING CONVECTIVE STORMS. COMPREHENSIVE MESOMETEOROLOGICAL AND RADIOCHEMICAL DATA COLLECTED FROM A SEGMENT OF THE SEVERE SQUALL LINE IN CENTRAL OKLAHOMA ON 10 MAY 1964 WERE USED IN THE ANALYSIS. THE RADIOACTIVITY INFLOW RATE BELOW 650 MB WAS ESTIMATED KINEMATICALLY USING SERIAL SOUNDINGS IN THE STORM INFLOW AND THE CONCENTRATION OF RADIOACTIVITY IN GROUND-LEVEL AIR. TOTAL INPUT WAS COMPUTED BY MULTIPLYING THE INFLOW RATE BY THE TIME REQUIRED FOR THE STORM TO CROSS A NETWORK OF 10 GROUND-LEVEL RAIN SAMPLERS. COMPARISON OF INFLOW AND DEPOSITION OVER THE SAMPLER NETWORK SHOWS THAT INFLOW OF AIRBORNE RADIOACTIVITY TO THE STORM AT LOW ALTITUDES CAN ACCOUNT FOR ARTIFICIAL RADIOACTIVITY DEPOSITED IN THE RAIN.

\*AEROSOL, RADIOACTIVE + \*PRECIPITATION + \*RAINOUT + DEPOSITION + EXPERIMENT, GENERAL + RADIOCHEMICAL ANALYSIS + WATER VAPOR

16-22924

LOCKHART LB + PATTERSON RL + SAUNDERS AW

ATMOSPHERIC RADIOACTIVITY IN ANTARCTICA 1956-1963

U.S. NAVAL RESEARCH LAB., WASH., D. C.

18 PAGES, 7 FIGURES, 5 TABLES, 23 REFERENCES, NOV. 3, 1965

CONTINUOUS MEASUREMENTS OF THE RADIOACTIVE AEROSOL CONTENT OF THE SURFACE AIR IN ANTARCTICA HAVE BEEN MADE SINCE 1956, FIRST AT LITTLE AMERICA AND LATER AT THE AMUNDSEN-SCOTT SOUTH POLE STATION. BOTH THE RADIOACTIVITY DUE TO BOMB-PRODUCED FISSION PRODUCTS AND TO THE NATURALLY OCCURRING RADIONUCLIDES OF THE RADON AND THORON SERIES WERE MEASURED. THE NATURAL RADIOACTIVITY WAS LOWER THAN THAT AT ANY OTHER GEOGRAPHICAL LOCATION. THE FISSION-PRODUCT CONCENTRATIONS WERE EQUAL TO OR GREATER THAN THOSE OBSERVED IN THE SOUTHERNMOST PARTS OF SOUTH AMERICA. WELL-DEFINED SEASONAL VARIATIONS WERE NOTED, WITH MAXIMA IN THE SUMMER.

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

\*AEROSOL, RADIOACTIVE + \*RADIOCHEMICAL ANALYSIS + ATMOSPHERIC CIRCULATION, GLOBAL + FALLOUT + RADON + SAMPLING + STRONTIUM + THORON

16-22925

CSANADY GT

ON THE PROBLEM OF THE EFFECTIVE CHIMNEY HEIGHT

WATERLOO UNIV., ONTARIO

NYO-3685-12 + CONF-670931-14 +. 25 PAGES, SEPTEMBER 1967, PRESENTED AT USAEC METEOROLOGICAL INFORMATION MEETING, CHALK RIVER, ONTARIO, CANADA

PRESENTS THEORETICAL MODELS OF THE EFFECTIVE CHIMNEY HEIGHT FOR HOT AND COLD PLUMES. IN VERY STRONG WINDS, A HOT BUOYANT PLUME BEHAVES VERY MUCH AS A COLD PLUME. PRESENTS EQUATIONS OF THE CRITICAL WIND SPEEDS FOR MAXIMUM CONCENTRATIONS FOR A CONSTANT WIND SPEED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA,

CATEGORY 16  
METEOROLOGICAL CONSIDERATIONS

16-22925 \*CONTINUED\*  
\$3.00 COPY, \$0.65 MICROFICHE

\*BUOYANT RISE + \*HEIGHT OF RISE + \*STACK + ATMOSPHERIC STABILITY + CONCENTRATION, GROUND LEVEL + EFFLUENT + SOURCE, ELEVATED + THEORETICAL INVESTIGATION + WIND PROFILE

16-22970  
KEISCH B + KOCH RC + LEVINE AS + ROFSMEP J + WINNOWSKI WS  
I-129--A NEW ATMOSPHERIC TRACER  
NUCLEAR SCIENCE AND ENGINEERING CORP., PITTSBURGH, PA.  
NSC-120 + NYO-3201-1 +. 99 PAGES, FIGURES, TABLES, AUGUST 1965

TWO I-129 LABELED TRACERS, DIIDOFLUORESCFIN AND TRIFLUOROMETHYL IODIDE, WERE DEVELOPED FOR USE AS AN AEROSOL AND A GASEOUS TRACER RESPECTIVELY. DETAILED DESCRIPTIONS OF THE METHODS FOR SYNTHESIS, DISSEMINATION, COLLECTION, AND ANALYSIS OF THESE TRACERS ARE GIVEN. RESULTS, ESSENTIALLY IN AGREEMENT WITH THEORETICAL PREDICTIONS, WERE OBTAINED TO DISTANCES OF 64 KM FOR THE AEROSOL TRACER. THE RESULTS FOR THE GASEOUS TRACER WERE INCONCLUSIVE DUE TO THE ACCIDENTAL USE OF CONTAMINATED CHARCOAL AS THE GAS-SAMPLING MEDIA. CALCULATIONS SHOW THAT THE I-129 TRACER METHOD CAN BE EFFECTIVE OVER RANGES UP TO 800 KM.

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

\*ATMOSPHERIC DIFFUSION EXPERIMENT + \*NRTS + \*TRACER, FLUORESCENT + \*TRACER, GAS + AEROSOL, RADIOACTIVE + CONCENTRATION, GROUND LEVEL + DISPERSION + INSTRUMENTATION, METEOROLOGICAL + IODINE

16-22971 ALSO IN CATEGORY 14  
QUARTERLY SUMMARY REPORT SEPTEMBER 1 THROUGH DECEMBER 1, 1967 APPENDIX TO HEALTH AND SAFETY LABORATORY FALLOUT PROGRAM  
USAEC, NEW YORK OPERATIONS OFFICE  
HASL-184, APPENDIX +. 200 PAGES, FIGURES, TABLES, JANUARY 1, 1968

TABULAR DATA FOR (A) SR-90 AND -89 IN MONTHLY DEPOSITION AT WORLD LAND SITES, (B) FISSION-PRODUCT AND ACTIVATION-PRODUCT RADIONUCLIDES IN MONTHLY DEPOSITION AT SELECTED SITES, (C) RADIOSTRONTIUM DEPOSITION AT ATLANTIC OCEAN WEATHER STATIONS, (D) RADIOSTRONTIUM IN MILK AND TAP WATER.

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

\*DEPOSITION + \*MONITORING PROGRAM, ENVIRONMENTAL + ANALYTICAL TECHNIQUE, MILK + FALLOUT + RAINOUT + STRONTIUM + WATER, DRINKING

16-22972  
SOMAN SD + ABRAHAM P  
ESTIMATION OF DILUTION RATE FACTORS FOR TRITIATED WATER VAPOUR FROM A REACTOR STACK  
BHARHA ATOMIC RESEARCH CENTRE, BOMBAY, INDIA  
5 PAGES, 1 FIGURE, 2 TABLES, 12 REFERENCES, HEALTH PHYSICS PERGAMON PRESS 1967, VOL. 13, PAGES 1117-1121

TRITIUM IS PRESENT IN THE EFFLUENT AIR FROM NUCLEAR REACTORS, USING HEAVY WATER AS MODERATOR OR AS COOLANT OR BOTH, AS TRITIATED WATER VAPOUR. AS TRITIUM IS LONG-LIVED, THE ESTIMATION OF TRITIUM IN AIR AT DIFFERENT LOCATIONS CAN PROVIDE A GOOD INDICATION OF THE DILUTION OBTAINED AT THESE POINTS IF THE CONCENTRATION OF TRITIUM IN THE EXHAUST GASES IS ALSO MEASURED SIMULTANEOUSLY. COLD-FINGER SAMPLES FROM THE CIRUS EXHAUST SYSTEM HAVE BEEN ANALYSED FOR TRITIUM CONTENT TO ESTIMATE THE RATE OF RELEASE OF TRITIUM. THE METHODS ADOPTED FOR THE COLLECTION OF SAMPLES AT DIFFERENT LOCATIONS IN THE CENTRE, ESTIMATION OF TRITIUM CONCENTRATIONS, AND THE RESULTS OBTAINED ARE PRESENTED. A PORTABLE SAMPLER DEVELOPED AT TROMBAY HAS BEEN USED FOR THE COLLECTION OF MOISTURE SAMPLES FROM DIFFERENT LOCATIONS.

\*CONCENTRATION, GROUND LEVEL + \*EXPERIMENT, GENERAL + \*SOURCE, ELEVATED + DILUTION + EFFLUENT + INDIA + SUTTON DIFFUSION FORMULA + TRITIUM + WASTE DISPOSAL, ATMOSPHERIC + WATER VAPOR

16-23197 ALSO IN CATEGORY 2  
COOPER RE + RUSCHE BC  
SITE EVALUATION USING MEASURED METEOROLOGICAL DATA  
SAVANNAH RIVER LABORATORY  
DP-MS-67-69 + CONF-670931-2 +. 16 PAGES, FROM USAEC METEOROLOGICAL INFORMATION MEETING, CHALK FIVER, ONTARIO, CANADA, SEPTEMBER 1967

DETAILED MEASUREMENTS OF THE WIND SPEED, WIND DIRECTION, AND TEMPERATURE AT HEIGHTS UP TO 1200 FT AT THE SAVANNAH RIVER PLANT FORM THE BASIS FOR A COMPREHENSIVE ANALYSIS OF THE FREQUENCY OF OCCURRENCE OF POTENTIAL OFF-SITE DOSES. THE RESULTS WERE EXPRESSED ON CURVES IN DOSE PER UNIT RELEASE OF ACTIVITY VS DISTANCE FROM THE REACTOR, WITH PROBABILITY OF OCCURRENCE AS A PARAMETER. CURVES WERE DEVELOPED TO SHOW DOSE AS A FUNCTION OF DIRECTION AND PROBABILITY OF OCCURRENCE.

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

CATEGORY 16  
METEOROLOGICAL CONSIDERATIONS

16-23197 \*CONTINUED\*  
\*METEOROLOGY + \*SITE CLIMATOLOGY + \*SITING, GENERAL + \*ATMOSPHERIC DIFFUSION + DISPERSION +  
MEASUREMENT, GENERAL + STACY

16-23379 ALSO IN CATEGORY 14  
MURAYAMA N  
OBSERVATIONAL EVIDENCE ON TRANSPORT OF RADIOACTIVITY AND OZONE THROUGH THE TROPOPAUSE  
JAPAN METEOROLOGICAL AGENCY, TOKYO  
14 PAGES, FIGURES, REFERENCES, GEOPHYSICAL MAGAZINE (TOKYO), 33, PAGES 149-162 (NOV. 1966)

EXTRAORDINARILY HIGH RADIOACTIVITY WAS RECORDED BY A GAMMA-ACTIVITY SONDE LAUNCHED AT TATENO,  
IN THE LAYER BETWEEN 500 AND 300 MB LEVELS IN THE REGION OF STRONG UPPER FRONTS EXTRUDING  
DOWN FROM THE TROPOPAUSE. THIS IS DISCUSSED IN TERMS OF AN INSTANCE OF THE RADIOACTIVE DUSTS  
ORIGINATING IN THE STRATOSPHERE BEING TRANSFERRED INTO THE TROPOSPHERE THROUGH THE TROPOPAUSE  
BREAK BY DISTURBANCES DEVELOPED IN THE UPPER TROPOSPHERE. THE RESULTS ARE COMPARED WITH  
VERTICAL-OZONE-DISTRIBUTION FINDINGS.

\*FALLOUT + \*JAPAN + \*STRATOSPHERE + \*TROPOSPHERE + AEROSOL, RADIOACTIVE + ANALYTICAL TECHNIQUE, AIR +  
ATMOSPHERIC CIRCULATION, GLOBAL + NUCLEAR EXPLOSION DEBRIS

16-23380  
DANIELSEN EF + DIERCKS JW  
STUDY OF THE TROPOPAUSE BASED ON NUMERICAL INTEGRATION OF THE POTENTIAL VORTICITY EQUATION. FINAL REPORT  
PART 1.  
PENNSYLVANIA STATE UNIVERSITY, UNIVERSITY PARK, PENN.  
NYO-3317-1 +. 43 PAGES, FEBRUARY 1967

TROPOPAUSE FOLDING WITH ITS DOWNWARD AND SOUTHWARD TRANSPORT OF RADIOACTIVITY PROVIDES A  
DIRECT LINK BETWEEN THE STRATOSPHERIC RESERVOIR AND THE TROPOSPHERIC MECHANISMS RESPONSIBLE  
FOR SURFACE DEPOSITION. A NUMERICAL EXPERIMENT WAS CONDUCTED TO STUDY THE ADVECTION OF  
TROPOPAUSE. THE NUMERICAL MODEL AND THE RELEVANT EQUATIONS ARE DISCUSSED. THE INITIAL AND  
PREDICTED POSITIONS OF THE TROPOPAUSE ARE ILLUSTRATED BY VERTICAL CROSS-SECTION.

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

\*ATMOSPHERIC CIRCULATION, GLOBAL + \*COMPUTER PROGRAM, METEOROLOGICAL + \*FALLOUT +  
ATMOSPHERIC DIFFUSION, GLOBAL + MATHEMATICAL TREATMENT + STRATOSPHERE + TROPOSPHERE

16-23878 ALSO IN CATEGORY 14  
KAURANEN P + KULMALA A + MATTSSON R  
FISSION PRODUCTS OF UNUSUAL COMPOSITION IN FINLAND  
DEPT. OF RADIOCHEMISTRY, UNIVERSITY OF HELSINKI + FINNISH METEOROLOGICAL OFFICE, HELSINKI  
4 PAGES, 5 FIGURES, 2 TABLES, 13 REFERENCES, NATURE 216(5112), PAGE 238 THRU 241, (OCTOBER 1967)

A CLOUD OF FRESH, HIGHLY FRACTIONATED FISSION PRODUCTS WAS OBSERVED IN FINLAND BETWEEN  
DECEMBER 21 AND 26, 1966. THEY SEEMED TO COME FROM CENTRAL ASIA AND WERE PROBABLY THE  
PRODUCT OF AN UNDERGROUND NUCLEAR TEST. PRESENTS CONCENTRATION DATA AND METEOROLOGICAL  
CONDITIONS.

\*AEROSOL, RADIOACTIVE + \*FALLOUT + ATMOSPHERIC DIFFUSION + FINLAND

16-23880 ALSO IN CATEGORY 14  
ALDAZ L  
SURFACE AIR RADIOACTIVITY AND OZONE AT AMUNDSEN-SCOTT STATION (90 S), ANTARCTICA  
UNIV. OF N. MEX., ALBUQUERQUE  
2 PAGES, 1 FIGURE, 4 REFERENCES, NATURE (LONDON), 215, PAGE 722 AND 723, (AUGUST 1967)

CONTINUOUS MEASUREMENTS OF SURFACE-AIR RADIOACTIVITY LEVELS AT THE SOUTH POLE FROM 1959 TO  
1963 HAVE PREVIOUSLY BEEN REPORTED, AND ADDITIONAL DATA UP TO 1965 ARE PRESENTED IN THIS  
COMMUNICATION. SURFACE-OZONE RECORDS FOR 1962 TO 1965 ARE ALSO GIVEN. FISSION PRODUCT AND  
OZONE DATA ARE PRESENTED GRAPHICALLY, AND A YEARLY OSCILLATION FOR BOTH SETS OF DATA IS  
OBSERVED, OPPOSITE IN PHASE, AND WITH A 6-MONTH PHASE DIFFERENCE. IT IS POSSIBLE THAT  
SEASONAL VARIATIONS IN ATMOSPHERIC EXCHANGE BETWEEN THE MIDDLE LATITUDES OF THE NORTHERN  
HEMISPHERE AND THE POLAR REGIONS ARE SOMEHOW CONTROLLING THE OBSERVED ANNUAL OSCILLATION OF  
RADIOACTIVITY AND OZONE IN THE SURFACE AIR AT THE SOUTH POLE.

\*ATMOSPHERIC CIRCULATION, GLOBAL + \*FALLOUT + AEROSOL, RADIOACTIVE + ATMOSPHERIC DIFFUSION, GLOBAL + OZONE

16-23883  
SQUIRES AM  
AIR POLLUTION. THE CONTROL OF SO-2 FROM POWER STACKS. PART I - THE REMOVAL OF SULFUR FROM FUELS  
THE CITY COLLEGE OF THE CITY UNIVERSITY OF NEW YORK  
9 PAGES, 7 FIGURES, 35 REFERENCES, CHEMICAL ENGINEERING 74(23), PAGE 260-268, (NOV. 1967)

CATEGORY 16  
METEOROLOGICAL CONSIDERATIONS

16-23883 \*CONTINUED\*

THIS FIRST OF FOUR ARTICLES ON THE CURBING OF AIR POLLUTION THROUGH THE CONTROL OF SULFUR DIOXIDE EMISSION FROM POWER-STATION STACKS LOOKS INTO THE TECHNOLOGY AND ECONOMICS OF REMOVING SULFUR FROM FUELS BEFORE THEY ARE BURNED.

\*CONTROL, GENERAL + \*ECONOMIC STUDY + \*SULFUR DIOXIDE + EFFLUENT + STACK

16-24064

SANTOS AA

ATMOSPHERIC DIFFUSION IN THE ANALYSIS OF NUCLEAR RISKS

JUNTA DE ENERGIA NUCLEAR, MADRID

9 PAGES, 7 FIGURES, 30 REFERENCES, ENERG. NUCL. (MADRID), 11(45), PAGE 37 THRU 45, (FEB. 1967), (IN SPANISH)

THE EQUATIONS USED TO EVALUATE THE ATMOSPHERIC DIFFUSION IN THE ANALYSIS OF NUCLEAR RISKS ARE PRESENTED. ESCAPE OF GASEOUS PRODUCTS AT GROUND LEVEL AND CHIMNEY LEVEL IS CONSIDERED. PARTIAL RESULTS FROM THE NUMERICAL EVALUATION OF THE EQUATIONS ARE PRESENTED. THE METHODS USED FOR THE DETERMINATION OF THE METEOROLOGICAL PARAMETERS ARE OUTLINED.

\*ATMOSPHERIC DIFFUSION + \*THEORETICAL INVESTIGATION + MATHEMATICAL TREATMENT + SOURCE, ELEVATED + SOURCE, GROUND LEVEL

16-24065

BLUME W + ZINDLER H

RADIOACTIVITY IN AIR, ATMOSPHERIC PRECIPITATIONS, AND FALLOUT IN BERLIN-FRIEDRICHSHAFEN FROM 1959 TO 1966

STAATLICHE ZENTRALE FUER STRAHLENSCHUTZ, BERLIN

7 PAGES, KERNENERGIE, 10, PAGE 223 THRU 229, (JULY 1967), (IN GERMAN)

DISCUSSES THE CONTAMINATION OF THE ATMOSPHERE (AIR, PRECIPITATION, FALLOUT) IN BERLIN-FRIEDRICHSHAFEN FROM 1959 TO 1966 AS A RESULT OF NUCLEAR TESTS. THE METHODS USED FOR MEASURING THE TOTAL BETA ACTIVITY AND FOR MEASURING THE SR-90 AND SR-89 CONTENTS ARE BRIEFLY DESCRIBED. THE RESULTS ARE PRESENTED. ON THE BASIS OF THE PERCENTAGE OF SR-90 OF THE TOTAL ACTIVITY AND THE SR-89/SR-90 RATIO, AGE AND ORIGIN OF THE FISSION PRODUCTS DEPOSITED ARE DISCUSSED.

\*AEROSOL, RADIOACTIVE + \*FALLOUT + \*GERMANY + ATMOSPHERIC CIRCULATION, GLOBAL + MEASUREMENT, GENERAL + RAINOUT

16-24066

ALSO IN CATEGORY 14

MAMURO T

PHYSICO-CHEMICAL PROPERTIES OF FALLOUT PARTICLES IN RELATION TO BURST CONDITIONS

RADIATION CENTER OF OSAKA PREFECTURE, SHINKECHO 704, SAKAI-SHI, OSAKA (JAPAN)

6 PAGES, 3 FIGURES, 2 TABLES, 18 REFERENCES, ATOMPRAXIS 14(1), PAGE 24 THRU 28, (JAN. 1968)

PHYSICO-CHEMICAL PROPERTIES OF HIGHLY RADIOACTIVE FALLOUT PARTICLES COLLECTED IN JAPAN SHORTLY AFTER SOVIET OR CHINESE NUCLEAR EXPLOSIONS ARE DESCRIBED AND DISCUSSED BRIEFLY IN RELATION TO BURST CONDITIONS. CONSIDERABLE DIFFERENCES ARE FOUND BETWEEN FALLOUT PARTICLES FROM AIR BURSTS AND THOSE FROM SURFACE BURSTS (SHAPE, COLOR, MATRIX MATERIAL, SPECIFIC ACTIVITY, RELATION BETWEEN THE INITIAL ATOM NUMBER OF THE RADIONUCLIDE AND THE PARTICLE VOLUME, RADIONUCLIDE FRACTIONATION, AND U AND PU CONTENT).

\*AEROSOL, RADIOACTIVE + \*RADIOCHEMICAL ANALYSIS + FALLOUT + JAPAN

16-24067

HENDERSON RW

CHARACTERISTICS OF THE RADIOACTIVE POLLUTANT FROM GROUND TESTING OF NUCLEAR PROPULSION REACTORS

LOS ALAMOS SCIENTIFIC LAB., N. MEX.

LA-DC-8524 + CONF-670704-3 +. 11 PAGES, FIGURES, REFERENCES, 1967, PRESENTED AT THE IAEA SYMPOSIUM ON INSTRUMENTS AND TECHNIQUES FOR THE ASSESSMENT OF AIRBORNE RADIOACTIVITY IN NUCLEAR OPERATIONS, VIENNA, AUSTRIA

DISCUSSES RESULTS OF ATMOSPHERIC DIFFUSION DURING TESTS OF PROJECT ROVER. RESULTS SHOW THAT GASEOUS FRACTION SUFFERS MORE LATERAL DIFFUSION THAN THE PARTICULATE FRACTION, AND THEY ARE NOT DEPLETED RELATIVE TO EACH OTHER WITH DISTANCE. CONFIRMS THAT THE ASSUMPTION OF THE MAJOR ROLE PLAYED BY IMPACTION AND GRAVITATIONAL SETTLING IS OF LITTLE IMPORTANCE IN DEPLETING SMALL PARTICLES.

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

\*ATMOSPHERIC DIFFUSION EXPERIMENT + \*ROVER PROGRAM + COMPARISON, THEORY AND EXPERIENCE + DEPOSITION + PARTICLE SIZE DISTRIBUTION + PLUME BEHAVIOR, GENERAL



CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-16494 ALSO IN CATEGORY 18  
NS SAVANNAH CHANGE 6 - AUXILIARY COOLING WHILE IN DRY DOCK  
FIRST ATOMIC SHIP TRANSPORT, INC., HOBOKEN, NEW JERSEY  
3 PAGES, DOCKET NO. 50-238, JUNE 26, 1967

DRL APPROVES CHANGE 6 TO ALLOW USE OF A 100-GPM PORTABLE PUMP AND THE INSTALLED LETDOWN COOLERS AS SUBSTITUTES FOR THE PRIMARY COOLANT PUMP FOR HEAT REMOVAL, WHEN NET POSITIVE SUCTION HEAD CANNOT BE MET.

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

\*TECHNICAL SPECIFICATIONS + AUXILIARY COOLING + NS SAVANNAH (PWR) + REACTOR, MARITIME + REACTOR, PWR + SAFETY EVALUATION + SHUTDOWN COOLING SYSTEM

17-17165  
CORDIN RA  
FUEL ACCOUNTABILITY EXPERIENCE OF YANKEE ATOMIC ELECTRIC COMPANY  
YANKEE ATOMIC ELECTRIC COMPANY  
CONF-670-713 +. 9 PAGES, ABSTRACT IN ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 32, (JULY 1967), PAPER PRESENTED AT THE CONFERENCE ON REACTOR OPERATING EXPERIENCE, REACTOR OPERATIONS DIVISION OF THE AMERICAN NUCLEAR SOCIETY, ATLANTIC CITY, JULY 23-26, 1967

YANKEE HAS BEEN ABLE TO SATISFY AEC, IAEA, AND PUBLIC ACCOUNTANT WITHOUT DIFFICULTY AND WITHOUT ADDING A LARGE GROUP OF EMPLOYEES. AUDITS ARE, IN ESSENCE, REDUCED TO TWO QUESTIONS - (1) DOES THE SYSTEM TRUTHFULLY REFLECT BALANCE OF HIGHLY VALUABLE (AND UNSEEN) MATERIAL, AND (2) ARE PROPER ENTRIES MADE.

REACTOR, PWR + REFUELING + YANKEE (PWR)

17-17458  
KANTOR ME + MENZEL HF + SCHLICHT RW + WESTLAKE WJ  
ENGINEERING TESTS DURING THE INITIAL OPERATION OF THE PEACH BOTTOM HTGR  
GENERAL ATOMIC, SAN DIEGO, CALIF.  
GA-8040 + CONF-670 602 +. 27 PAGES, 14 FIGURES, JUNE 16, 1967, ALSO ANS TRANS. 10(1) PAGES 319-320, 1967 ANNUAL MEETING OF THE AMERICAN NUCLEAR SOCIETY, SAN DIEGO, CALIF., JUNE 11-15, 1967

STEAM GENERATORS, PARTICULARLY TEMPERATURE TRANSIENTS IN THEIR TUBE-SHEETS, ARE THE CONTROLLING EQUIPMENT IN APPROACH-TO-POWER TESTING. COMPUTER CODES HEAT (FOR STEAM GENERATORS) AND BLOOD (FOR REACTOR KINETICS) WERE COMBINED TO YIELD CORE REACTIVITY AND TEMPERATURE DISTRIBUTION FOR ALL POWERS AND COOLANT FLOWS, AND TRANSIENT STUDIES PERFORMED ON PEACH BOTTOM TRAINER SIMULATOR ANALOG COMPUTER. COOLANT AND STEAM-GENERATOR DATA AND INSTRUMENT CALIBRATIONS WERE MADE AS POWER LEVEL ROSE FROM 0 TO 30% POWER WITH CONSTANT MASS FLOW RATE. AT 30%, RESPONSE TO SCRAM, LOOP ISOLATION, AND SETBACK WERE RECORDED. AS POWER ROSE ABOVE 30%, MASS FLOW INCREASED TO MAINTAIN CONSTANT STEAM CONDITIONS THROUGH FULL POWER WHILE TESTS CONTINUED. STEAM GENERATOR NEEDED REBAFFLING AND COOLED ROOM AIR DIRECTED TO SG HEAD TO MAINTAIN DESIGN TEMPERATURE.

\*TEST, PLANT RESPONSE + PEACH BOTTOM 1 (HTGR) + REACTOR, GCR + REACTOR, HTGR + STEAM GENERATOR + TEMPERATURE TRANSIENT

17-17943 ALSO IN CATEGORY 1  
NOVICK S  
QUASI-SCIENTIFIC REPORTING OF FERMI FUEL MELTDOWN  
9 PAGES, 4 FIGURES, SCIENTIST AND CITIZEN 9(6), PAGE 98 THRU 104, (JUNE-JULY 1967)

WRITER ASSERTS THAT OPERATOR NOTICED NEUTRON FLUX OSCILLATION AT 20 MW, HAD OBSERVED IT MANY TIMES BEFORE AND OFTEN AT 3 PM, SWITCHED TO MANUAL CONTROL AND CONTINUED POWER INCREASE. POINTS OUT THAT THE ACCIDENT WAS A BIT WORSE THAN THE MCA...WAS NOT ONLY INCREDIBLE BUT MIGHT HAVE BEEN FAR WORSE. GLOSSARY - BREEDER - A NUCLEAR REACTOR...IN THE FORM OF U-235. EXTREMELY SOPHISTICATED IN DESIGN. THOSE WHICH HAVE BEEN BUILT HAVE A HISTORY OF UNRELIABILITY.

AVAILABILITY - SCIENTISTS INSTITUTE FOR PUBLIC INFORMATION, 30 EAST 68TH STREET, NEW YORK, N.Y. 10021

\*RADIATION, PUBLIC EDUCATION/ACCEPTANCE + CONTROLLER + FERMI (LMFER) + FUEL MELTDOWN + INCIDENT, GENERAL + REACTOR POWER + REACTOR, FAST

17-20355 ALSO IN CATEGORIES 11 AND 18  
SUPPLEMENT TO APPENDIX D--TURBINE GENERATOR FAILURES DUE TO EXCESSIVE OVERSPEEDING  
FLORIDA POWER AND LIGHT COMPANY  
4 PAGES, PAGE D1 TO D4 OF SUPPLEMENT 3 TO THE LICENSE APPLICATION AND PRELIMINARY SAFETY ANALYSIS REPORT.  
SEPTEMBER 1, 1966, DOCKET 50-250/251

ONLY TWO SUCH FAILURES ARE REPORTED, BOTH IN ENGLAND - (1) USKMOUTH - (1) FAILURE AT 170%

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-20355 \*CONTINUED\*

OVERSPEED 8 WEEKS AFTER COMMISSIONING, (2) BLACK IRON-OXIDE FORMATION IN THE GOVERNOR FROM BRACKISH-WATER-CONTAMINATED OIL AND LONG SHUTDOWNS. DAMAGE IS DESCRIBED (LOW-PRESSURE WHEEL FOUND 150 YD AWAY). (2) CALDER HALL-P - ONE MONTH AFTER COMMISSIONING, MAIN STEAM-ADMISSION VALVE STUCK FULL-OPEN WHEN LOAD DROPPED SUDDENLY. VALVE FAILURE WAS CAUSED BY PARTICLE OF CHILLED IRON SHOT EMBEDDED IN THE VALVE SPINDLES.

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

\*FAILURE, EQUIPMENT + \*INCIDENT, EQUIPMENT + \*MISSILE GENERATION AND PROTECTION + \*TURBINE + CONTROLLER + FAILURE, ADMINISTRATIVE CONTROL + QUALITY CONTROL + REACTOR STARTUP EXPERIENCE + VALVE

17-20356

SUPPLEMENT TO APPENDIX D--TURBINE GENERATOR ROTOR FAILURES CAUSED PRIMARILY BY SEVERE STRESS CONCENTRATIONS FLORIDA POWER AND LIGHT COMPANY

4 PAGES, PAGE 05 TO 06 OF SUPPLEMENT 3 TO THE TURKEY POINT 3 AND 4 LICENSE APPLICATION AND PRELIMINARY SAFETY ANALYSIS REPORT. SEPTEMBER 1, 1966, DOCKET NO. 50-250/251

(1) CROMBY STATION - FAILURE AT 5% OVERSPEED TEST DUE TO HOLES THAT HAD BEEN DRILLED IN THE ROTOR TO REPAIR FABRICATION DAMAGE. (2) ARIZONA P.S. ROTOR AT FACTORY FAILED AT LESS THAN RATED SPEED DUE TO INTERNAL CRACKS (WHICH HAD BEEN PREVIOUSLY DETECTED BY SONIC TESTING). (3) P. G. AND E. PITTSBURGH STATION - UNIT 1 ROTOR BODY SPLIT IN HALF DURING A 10% OVERSPEED TRIP-TEST, DUE TO A SONICALLY-UNDETECTED INCLUSION (ALSO FOUND IN UNIT 3).

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

\*INCIDENT, EQUIPMENT + \*MISSILE GENERATION AND PROTECTION + \*QUALITY CONTROL + FAILURE, EQUIPMENT + REACTOR, PWR + TEST, NONDESTRUCTIVE + TESTING + TURBINE + TURKEY POINT 3 AND 4 (PWR)

17-20357

SUPPLEMENT TO APPENDIX D--TURBINE WHEEL AND SPINDLE FAILURE FLORIDA POWER AND LIGHT COMPANY

4 PAGES, PAGE 09 THROUGH 012 OF SUPPLEMENT 3 TO THE LICENSE APPLICATION AND PRELIMINARY SAFETY ANALYSIS REPORT. SEPTEMBER 1, 1966, DOCKET 50-250/251

(1) TANNERS CREEK - WHEEL FAILURE DUE TO POOR HEAT TREATMENT AND A STRESS-RAISER HOLE WHERE NOTCH BUCKET ATTACHED TO WHEEL. (2) RIDGELAND - SPINDLE FAILURE DUE TO FALCES OR CRACKS CREATED DURING HEAT TREATMENT, WHICH WERE DETECTED SONICALLY BUT CONSIDERED HARMLESS.

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

\*INCIDENT, EQUIPMENT + FAILURE, ADMINISTRATIVE CONTROL + FAILURE, EQUIPMENT + MISSILE GENERATION AND PROTECTION + TEST, NONDESTRUCTIVE + TURBINE + TURBINE BLADE, VIBRATION

17-20579

ALSO IN CATEGORY 10

MCCARTHY JF

SHORT ACROSS BOTH 480V FEEDERS AT FERMI

ATOMIC POWER DEVELOPMENT ASSOCIATES, INC. + POWER REACTOR DEVELOPMENT COMPANY + DETROIT EDISON COMPANY APDA-CFE-1 +. 1 PAGE, PAGE 19 OF COMPILATION OF CURRENT TECHNICAL EXPERIENCE AT ENRICO FERMI ATOMIC POWER PLANT. AUGUST 1966

(PG 19) THE JUNE 29 POWER OUTAGE FAILED BOTH 480-VOLT FEEDS. ONE PHASE OF ONE PRIMARY SIDE OF THE UNGROUNDED DELTA-WOUND 4800/480-V TRANSFORMER HAD SHOWN PREVIOUS SPORADIC GROUNDING. THIS GROUNDS THE AFFECTED PHASE WITHOUT CURRENT FLOW AND RAISE THE OTHER PHASES FROM 2770 TO 4800 V. ON JUNE 29, THE RAISED VOLTAGE PROBABLY TRIGGERED A WEAK SPOT IN THE OTHER FEED, RESULTING IN A PHASE-TO-PHASE SHORT THROUGH GROUND, OPENING THE 4800-V CIRCUIT BREAKERS AND DESTROYING THE CABLES. DIESEL CARRIED THE DIESEL BUS LOADS.

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

ACCIDENT, LOSS OF POWER + EMERGENCY POWER, ELECTRIC + FAILURE, SEQUENTIAL + FAILURE, SIMULTANEOUS + REPORT, OPERATIONS SUMMARY

17-20580

MCCARTHY JF

COMPILATION OF CURRENT TECHNICAL EXPERIENCE AT ENRICO FERMI ATOMIC POWER PLANT

ATOMIC POWER DEVELOPMENT ASSOCIATES, INC. + POWER REACTOR DEVELOPMENT COMPANY + DETROIT EDISON COMPANY APDA-CFE-1 +. 35 PAGES, TABLES, FIGURES, AUGUST 1966

THIS IS ONE OF A SERIES OF MONTHLY REPORTS WHOSE USUAL CONTENT INCLUDES SUMMARY, DATA AND STATISTICS, NUCLEAR TEST PROGRAM, PLANT TEST PROGRAM, OTHER OPERATING EXPERIENCES, MAINTENANCE AND ADDITIONS. USUALLY CONTAINS BRIEF SUMMARIES WITHOUT REPORTING DETAILED ANALYSES OF OCCURRENCES EARLIER THAN THE REPORTING PERIOD.

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

FERMI (LMFBR) + REACTOR, FAST + REPORT, OPERATIONS SUMMARY

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-20638 ALSO IN CATEGORY 9  
MCCARTHY WJ + JENS WH  
ENRICO FERMI FAST BREEDER REACTOR  
POWER REACTOR DEVELOPMENT CO. + ATOMIC POWER DEVELOPMENT ASSOCIATES, INC.  
4 PAGES, NUCLEAR NEWS 10(11), PAGE 54-57, (NOVEMBER 1966)

SHORT DISCUSSION OF CURRENT STATUS, MOSTLY WHAT HAS BEEN LEARNED. AN INLET STRAINER, CORE-PLATE STANDOFF PINS, OR PROVISION FOR CROSS FLOW WOULD HELP ELIMINATE FUTURE MELTDOWNS. REACTIVITY RATE-OF-CHANGE INFORMATION AND A FASTER FISSION-PRODUCT MONITOR (DELAYED NEUTRONS AT CORE EXIT TO SUPPLEMENT PRESENT SENSITIVE COVER-GAS AS DETECTOR WITH 13-MIN TRANSPORT LAG) IS NEEDED. FEW PROVISIONS WERE MADE FOR INCIDENT RECOVERY, E.G., DIFFICULT ACCESS TO WHOLE CORE, NO PROVISION FOR DRAINING VESSEL OR FOR ON-SITE INSPECTION OF IRRADIATED FUEL.

\*FLOW BLOCKAGE + \*FUEL MELTDOWN + \*INCIDENT, GENERAL + FERMI (LMFBR) + FUEL HANDLING MACHINE + INCIDENT, RECOVERY FROM + INSTRUMENTATION, DETECTION FAILED FUEL ELEMENT + INSTRUMENTATION, OPERATING REACTIVITY + OPERATING EXPERIENCE SUMMARY + REACTOR, LMCR + REMOTE MANIPULATING AND VIEWING

17-20707  
CALIFORNIA STATE PUBLIC OPINION SURVEY ON ACCEPTABILITY OF NUCLEAR POWER PLANTS  
1 PAGE, NUCLEONICS WEEK 8(47), PAGE 7, (NOVEMBER 23, 1967)

A STATE-WIDE PUBLIC OPINION SURVEY BY THE CALIFORNIA OFFICE OF ATOMIC ENERGY DEVELOPMENT AND RADIATION PROTECTION FOUND A 3-TO-1 RATIO IN FAVOR OF A NUCLEAR POWER PLANT IN THEIR AREA (RANGE WAS 2-1 TO 10-1), INCLUDING AREAS WHERE PLANTS HAVE BEEN PROPOSED. SEVERAL POLLSTER CONCLUSIONS - (1) PEOPLE DO NOT KNOW THAT NUCLEAR PLANTS ARE IN CALIFORNIA, (2) MAJORITY OF THOSE INTERVIEWED FEEL THAT SCARE TACTICS ARE USED BY OPPONENTS OF NUCLEAR POWER PLANTS.

\*RADIATION, PUBLIC EDUCATION/ACCEPTANCE + \*STATE PROGRAM + REACTOR, POWER

17-20709 ALSO IN CATEGORY 9  
CALLEN RC + PROUTEAU LP + FRIEDLAND AJ  
RESPONSE OF FERMI FUEL SUBASSEMBLY OUTLET THERMOCOUPLES UNDER NORMAL AND FUEL-FAILURE CONDITIONS  
ATOMIC POWER DEVELOPMENT ASSOCIATES, INC. + ELECTRICITE DE FRANCE  
2 PAGES, ANS TRANSACTIONS 10(2), PAGE 637 AND 638, (NOVEMBER 9, 1967), PRESENTED AT THE 1967 WINTER MEETING OF THE AMERICAN NUCLEAR SOCIETY, CHICAGO, ILLINOIS, NOVEMBER 5-9, 1967

HIGH-POWER TESTS INCLUDED MEASUREMENT OF CORE AND INNER RADIAL BLANKET LOCAL COOLANT OUTLET TEMPERATURES TO DETERMINE STATIC THERMAL RESPONSE. RESPONSE OF THE TEMPERATURE INSTRUMENTATION WAS EXAMINED IN ISOTHERMAL TESTS. REACTOR POWER AND ELECTROMAGNETIC FLOWMETERS WERE CALIBRATED DURING HEAT-BALANCE MEASUREMENTS ON THE STEAM-FEEDWATER SIDE OF THE STEAM GENERATORS.

\*INSTRUMENTATION CALIBRATION + \*TEST, INSTRUMENT RESPONSE + COMPARISON, THEORY AND EXPERIENCE + FERMI (LMFBR) + INSTRUMENTATION, FLOW + INSTRUMENTATION, POWER RANGE + INSTRUMENTATION, TEMPERATURE + OPERATING EXPERIENCE SUMMARY + REACTOR, FAST + REACTOR, LMCR

17-20835  
DRL TERMINATED AGN-201, SERIAL NO. 103M, LICENSE  
AEC, DIVISION OF REACTOR LICENSING, WASHINGTON, D. C.  
6 PAGES, DOCKET NO. 50-32, OCTOBER 26, 1967

REACTOR, AT AERIJET-GENERAL FACILITY IN SAN RAMON, CALIF., HAS BEEN DISMANTLED AND COMPONENT PARTS PLACED IN PLASTIC BAGS AND STORED. PARTS AND FUEL WERE TRANSFERRED TO IDAHO STATE UNIVERSITY ON AUGUST 8, 1967.

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

AGN (TNG) + LICENSING STATUS OF NUCLEAR PROJECTS + REACTOR DECOMMISSIONING + REACTOR, TRAINING

17-21082  
THE BR-2 ACCIDENT  
1 PAGE, NUCLEAR ENGINEERING 12(137), PAGE 730 (OCTOBER 1967)

ALPHA CONTAMINATION (CM-242) WAS SPREAD THROUGHOUT THE CONTAINMENT BUILDING WHEN RUPTURED CAPSULES OF AM-241 WERE REMOVED AFTER 46 DAYS OF IRRADIATION. DECONTAMINATION OF THE PRIMARY CIRCUIT PRESENTED TWO PROBLEMS. THE MATERIAL WAS IN THE FORM OF AN INSOLUBLE METALLIC OXIDE, AND ION EXCHANGE COLUMNS HAD NO EFFECT. ALSO, THAT WHICH PLATED OUT ON THE SURFACES WAS VERY TIGHTLY BOUND. LANTHANUM NITRATE WAS ADDED TO THE SYSTEM (PH 6), AIDING REMOVAL BY THE ION EXCHANGE COLUMNS. THE LANTHANUM PLUS A LOW SYSTEM PH HAD SOME SURFACE-STRIPPING EFFECT.

\*CONTAMINATION + \*CURIUM + \*DECONTAMINATION + \*INCIDENT, RECOVERY FROM + AMERICIUM + CHEMICAL REACTION + COOLANT PURIFICATION SYSTEM + ION EXCHANGE + LANTHANUM + MAIN COOLING SYSTEM + REACTOR, RESEARCH

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-21083

BENNETT MJ + HUMPHRIES PW + WILLIAMS DE  
STUDY OF IRRADIATION EFFECTS ON OXIDATION OF STAINLESS STEEL  
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, HARWELL  
6 PAGES, 7 FIGURES, 2 REFERENCES, NUCLEAR ENGINEERING 12(137), PAGES 758-763 (OCT. 1967)

DESCRIBES THE EQUIPMENT AND TECHNIQUES FOR STUDYING THE EFFECTS OF FISSION-NEUTRON AND FISSION-FRAGMENT IRRADIATION ON THE GASEOUS OXIDATION OF STAINLESS STEELS AT TEMPERATURES BETWEEN 600 AND 850 C. NO RESULTS GIVEN EXCEPT STATEMENT THAT UNDER CERTAIN CIRCUMSTANCES RESULTS INDICATE THAT OXIDATION BEHAVIOR IS INFLUENCED BY IRRADIATION.

\*EQUIPMENT, GENERAL + \*IRRADIATION TESTING + CORROSION + IN PILE LOOP + OXIDATION + STEEL, STAINLESS

17-21171

TRAINING SIMULATOR AT BERKELEY  
1 PAGE, NUCLEAR ENGINEERING 12(137), PAGE 773 (OCTOBER 1967)

BRIEFLY DISCUSSES CAPABILITIES OF SIMULATOR USED FOR REACTOR OPERATOR TRAINING. AN ANALOG COMPUTER IS PRE-PROGRAMMED FOR SIMULATION OF THE MAGNOX AND AGR SYSTEMS. A FIVE-POINT AXIAL SIMULATION OF THE TEMPERATURE DISTRIBUTION ALONG A FULL CHANNEL IS PROVIDED. DEMONSTRATIONS INCLUDE LOSS OF COOLANT, XENON POISONING EFFECTS, FUEL AND MODERATOR TEMPERATURE COEFFICIENT VARIATIONS, AND POSITIVE OR NEGATIVE REACTIVITY INJECTIONS. TWO TYPES OF TRAINING COURSES ARE CARRIED OUT, ONE INTRODUCTORY, THE OTHER TO TEST THE OPERATORS SKILL AT RECOGNIZING FAULTS.

\*REACTOR CONTROL + \*SIMULATION + \*STAFFING, TRAINING, QUALIFICATION + OPERATION

17-21172

EXPERIMENTAL BERYLLIUM OXIDE REACTOR PROGRAM QUARTERLY PROGRESS REPORT  
GENERAL DYNAMICS, GENERAL ATOMIC DIVISION  
GA-5238 +. 48 PAGES, MARCH 31, 1964

ONE OF A SERIES OF PROGRESS REPORTS. TOPICS INCLUDE CONSTRUCTION PROGRESS, MATERIALS DEVELOPMENT, AND PERSONNEL STAFFING.

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

EBOR (GCR) + R AND D PROGRAM + REACTOR, BEO MODERATED

17-21175

QUARTERLY OPERATING REPORT (OF SHIPPINGPORT ATOMIC POWER STATION), SECOND QUARTER 1966  
DUQUESNE LIGHT CO., SHIPPINGPORT, PA.  
DLCS-5000265 +. 21 PAGES, JUNE 1966

THE TURBINE THROTTLE VALVES TRIPPED CLOSED DURING A WEEKLY CHECK, APPARENTLY DUE TO INSUFFICIENT PULLBACK PRESSURE ON THE LATCH HANDLE PRIOR TO RELEASING THE HANDLE TO ENGAGE THE TRIP LATCH. OPERATIONS, MAINTENANCE, AND COOLANT CHEMISTRY ARE BRIEFLY DISCUSSED.

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

COOLANT CHEMISTRY + FAILURE, OPERATOR ERROR + MAINTENANCE AND REPAIR + REACTOR, PWR + REPORT, OPERATIONS + SHIPPINGPORT (PWR)

17-21176

QUARTERLY OPERATING REPORT (OF SHIPPINGPORT ATOMIC POWER STATION), FIRST QUARTER 1966  
DUQUESNE LIGHT CO., SHIPPINGPORT, PA.  
DLCS-5000166 +. 28 PAGES, MARCH 1966

TESTS INDICATE THAT OPERATION AT A HIGH PH STOPS CRUD BUILDUP AND THE CORRESPONDING DEGRADATION OF CORE-FLOW PRESSURE DROP. THE HEAT-DISSIPATION SYSTEM WAS OPERATED AT FULL CAPACITY FOR 48 HR TO DEMONSTRATE THE FULL-POWER CAPABILITY OF CORE 2. ONE SCRAM RESULTED WHEN A ROD WAS DROPPED BECAUSE OF IMPROPER SYNCHRONIZATION BETWEEN BUSES WHILE TRANSFERRING THE ROD TO THE SPARE BUS. ANOTHER SCRAM WAS INITIATED BY A FAULTY VALVE-POSITION INDICATOR. COLD WEATHER CREATED FREEZING IN THE CONTROL-AIR LINER OF THE PUMPS ON THE HEAT-DISSIPATION SYSTEM.

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

COOLANT CHEMISTRY + FAILURE, INSTRUMENT + FAILURE, MAINTENANCE ERROR + FAILURE, OPERATOR ERROR + FLOW ORIFICE + POWER UPGRATING + REACTOR, PWR + REPORT, OPERATIONS + SCRAM, SPURIOUS + SHIPPINGPORT (PWR) + SURFACE FILM DEPOSIT

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-21177

INDICENTS RESULTING FROM POOR COMMUNICATION  
DUQUESNE LIGHT CO., SHIPPINGPORT, PA.  
DLCS-5000465 +. 1 PAGE, PAGE 10 OF QUARTERLY OPERATING REPORT (OF SHIPPINGPORT ATOMIC POWER STATION),  
FOURTH QUARTER 1965, DECEMBER 1965

SIPHON DRAINING OF THE REACTOR VESSEL RESULTED FROM A LACK OF COMMUNICATION. THE LEVEL DROPPED 9 IN. PREPARATIONS FOR FLUSHING WERE STARTED BEFORE THE PROCEDURE WAS APPROVED AND DISTRIBUTED. HASTE AND CONFUSION DURING A TEST RESULTED IN 2 CONTROL RODS BEING DROPPED FROM THE FULL-OUT POSITION. WHEN RECORDER TROUBLE INTERRUPTED THE TESTING, THE TWO RODS WERE HELD AT THE UPPER LIMIT, AWAITING REPAIRS. DURING THE ENSUING PERIOD, PERMISSION WAS GRANTED TO A TECHNICIAN (APPARENTLY WITHOUT NOTIFYING THE OPERATING SUPERVISOR) TO DE-ENERGIZE A CONTROL DRAWER, WHICH RESULTED IN UNLATCHING OF THE RODS.

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

\*FAILURE, ADMINISTRATIVE CONTROL + \*INCIDENT, HUMAN ERROR + REACTOR, PWR + REPORT, OPERATIONS + SHIPPINGPORT (PWR)

17-21179

QUARTERLY OPERATING REPORT (OF SHIPPINGPORT ATOMIC POWER STATION), THIRD QUARTER 1965  
DUQUESNE LIGHT CO., SHIPPINGPORT, PA.  
DLCS-5000365 +. 34 PAGES, SEPT. 1965

A SCRAM RESULTED WHEN THE LOW-PRESSURE PROTECTION CUTOFF SWITCH WAS RESET SINCE THE ANNUCCIATOR HAD CLEARED. THE INSTRUMENT WHICH ACTUATES THE ANNUCCIATOR WAS READING 50 PSIG HIGHER THAN THAT WHICH ACTUATES THE SCRAM. ANOTHER SCRAM OCCURRED DUE TO MALFUNCTION OF A COOLANT-LOOP TH INDICATOR. DESCRIBES TESTS COMPLETED TO VERIFY SATISFACTORY OPERATION AT 150 MW.

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

\*TEST, PLANT RESPONSE + FAILURE, ADMINISTRATIVE CONTROL + FAILURE, INSTRUMENT + POWER UPGRATING + REACTOR, PWR + REPORT, OPERATIONS + SCRAM, SPURIOUS + SHIPPINGPORT (PWR)

17-21180

QUARTERLY OPERATING REPORT (OF SHIPPINGPORT ATOMIC POWER STATION), SECOND QUARTER 1965  
DUQUESNE LIGHT CO., SHIPPINGPORT, PA.  
DLCS-5000265 +. 46 PAGES, JUNE 1965

FOUR SCRAMS OCCURRED (TWO DUE TO MALFUNCTIONING SWITCHES, ONE DUE TO INADVERTENT SHORTING OF SIGNAL LEADS FROM THE NUCLEAR PROTECTION SYSTEM, AND ONE FROM AN ELECTRICAL SPIKE ON THE NUCLEAR INSTRUMENTATION). ONE CONTROL ROD DROPPED TO THE BOTTOM OF THE CORE WHILE ANOTHER WAS BEING TRANSFERRED TO THE SPARE INVERTER (ERRONEOUS SYNCHRONIZATION-INDICATION OF A POSITION SYNCHRO). LEAKS OCCURRED IN THE MISIURE=SEPARATOR STEAM-INLET-PIPE CLOW DUC TO WET STEAM EROSION. BUILDUP OF ERODED AREAS IS BEING PERFORMED.

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

\*SCRAM, SPURIOUS + EPOSION + FAILURE, INSTRUMENT + FAILURE, MAINTENANCE ERROR + FAILURE, OPERATOR ERROR + FAILURE, PIPE + INSTRUMENTATION, SWITCH + REACTOR, PWR + REPORT, OPERATIONS + SHIPPINGPORT (PWR) + STEAM

17-21181

QUARTERLY OPERATING REPORT (OF SHIPPINGPORT ATOMIC POWER STATION), FIRST QUARTER 1965  
DUQUESNE LIGHT CO., SHIPPINGPORT, PA.  
DLCS-5000156 +. 43 PAGES, MARCH 1965

DESIGN-PRESSURE TESTS WERE PERFORMED IN PREPARATION FOR CORE-2 POWER OPERATION. A FUEL-PORT WELD LEAK WAS DETECTED ON THE VESSEL HEAD. RADIOGRAPHS REVEALED DEFECTS IN ALL 8 MAIN-STEAM STOP VALVES DUE TO POOR-QUALITY CASTINGS. PITTING OR CRACKS WERE FOUND IN ALL THE TUBES OF THE MAIN-UNIT CONDENSER-AIR OFF-TAKE SECTION AND CALLED FOR COMPLETE RETUBING. ONE SPURIOUS SCRAM RESULTED FROM A FALSE LEVEL SIGNAL.

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

\*TEST, PLANT RESPONSE + COPROSION + FAILURE, GENERAL + FAILURE, TUBING + POWER UPGRATING + REACTOR, PWR + REPORT, OPERATIONS + SCRAM, SPURIOUS + SHIPPINGPORT (PWR) + VALVE

17-21182

MONTHLY OPERATING REPORT, OCTOBER 1964

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-21182 \*CONTINUED\*  
DUQUESNE LIGHT CO., SHIPPINGPORT, PENNA.  
DLCS-5001064 +. 35 PAGES, OCTOBER 1964

SHUTDOWN WAS CONTINUED FOR MODIFICATION OF THE PLANT FOR CORE-2 OPERATION, REFUELING OPERATION, AND OVERHAUL OF THE MAIN TURBINE.

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

\*MAINTENANCE AND REPAIR + MODIFICATION, SYSTEM OR EQUIPMENT + POWER UPGRATING + REACTOR, PWR + REFUELING + REPORT, OPERATIONS + SHIPPINGPORT (PWR)

17-21184  
SASTRE C  
HFBR PHYSICS STARTUP MANUAL  
BROOKHAVEN NATIONAL LAB., UPTON, N. Y.  
BNL-9591 +. 46 PAGES, OCTOBER 1965

GIVES PROCEDURES FOR INITIAL REACTOR LOADING, CALIBRATION OF CONTROL RODS, AND MEASUREMENT OF REACTIVITY EFFECTS DUE TO PRESSURE, FLOW, TEMPERATURE, AND XENON.

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

\*REACTOR STARTUP TESTING + CONTROL ROD CALIBRATION + HFBR (RR) + MEASUREMENT, REACTIVITY + PROCEDURES AND MANUALS + REACTOR, HWP + REACTOR, RESEARCH

17-21208  
QUARTERLY OPERATING REPORT (OF SHIPPINGPORT ATOMIC POWER STATION), THIRD QUARTER 1966  
DUQUESNE LIGHT CO., SHIPPINGPORT, PA.  
DLCS-5000366 +. 25 PAGES, SEPTEMBER 1966

TESTS CONTINUED TO DETERMINE THE MINIMUM PH REQUIRED TO ARREST CORE PRESSURE DROP RESULTING FROM CRUD DEPOSITION ON CORE SURFACES. SHUTDOWNS WERE REQUIRED FOR REPAIR OF A HEAT EXCHANGER (TUBE) LEAK AND A PIPE RUPTURE ON THE CONDENSATE STORAGE TANK MAKEUP AND RETURN HEADER.

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

COOLANT CHEMISTRY + FAILURE, PIPE + FAILURE, TUBING + FLOW URIFICE + HEAT EXCHANGER + MAINTENANCE AND REPAIR + REACTOR, PWR + REPORT, OPERATIONS + SHIPPINGPORT (PWR) + SURFACE FILM DEPOSIT

17-21209  
HBWR QUARTERLY PROGRESS REPORT, JULY-SEPTEMBER 1965  
INSTITUTT FOR ATOMENERGI, HALDEN (NORWAY). OECD HALDEN REAKTOR PROSJEKT  
HPR-64 +. 121 PAGES, FIGURES, TABLES, REFERENCES, OCTOBER 1965

DISCUSSES IN DETAIL THE LOCATING AND REMOVAL OF A FAILED TEST FUEL ELEMENT. THE LOCATING INVOLVED THE SYSTEMATIC FLUX DEPRESSION OF LOCAL AREAS OF THE CORE AND MEASUREMENT OF THE CORRESPONDING CHANGE IN THE FISSION-PRODUCT RELEASE. ONE SCRAM RESULTED FROM AN ACCIDENTAL SHORT CIRCUIT DURING MAINTENANCE, ANOTHER FROM A POWER FAILURE TO THE GRIP COIL ON A REGULATING ROD. THEORETICAL STUDIES OF HYDRODYNAMICS OF TUBULAR FUEL ASSEMBLIES ARE DESCRIBED. REPORTS PROGRESS ON IRRADIATION TESTS OF FUEL ASSEMBLIES.

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

\*FAILURE, FUEL ELEMENT + FAILURE, INSTRUMENT + FAILURE, OPERATOR ERROR + FUEL ELEMENT + HBWR (BWR) + HYDRODYNAMIC ANALYSIS + IRRADIATION TESTING + NORWAY + REACTOR, BWR + REPORT, OPERATIONS + SCRAM, SPURIOUS

17-21210  
HBWR QUARTERLY PROGRESS REPORT, OCTOBER TO DECEMBER 1966  
INSTITUTT FOR ATOMENERGI, HALDEN, NORWAY  
HPR-71 +. 94 PAGES, FIGURES, TABLES, REFERENCES, FEBRUARY 1967

ONE OF A SERIES OF PROGRESS REPORTS. TOPICS INCLUDE IRRADIATION TESTING OF FUEL ASSEMBLIES, FUEL BURNUP EXPERIMENTS, TEST FUEL ELEMENT FAILURES, AND HYDRODYNAMIC STUDIES OF TUBULAR FUEL ASSEMBLIES.

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

\*HYDRODYNAMIC ANALYSIS + \*IRRADIATION TESTING + FAILURE, FUEL ELEMENT + FUEL BURNUP + FUEL ELEMENT + HBWR (BWR) + NORWAY + REACTOR, BWR + REPORT, OPERATIONS

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-21212

SHIBATA S

KYOTO UNIVERSITY NUCLEAR REACTOR ONE YEAR AFTER CRITICALITY  
KYOTO UNIV.

6 PAGES, 2 FIGURES, 5 TABLES, GENSHIRYOKU KOGYO, 12, PAGE 33-38, (FEB. 1966) IN JAPANESE

DIFFICULTIES EXPERIENCED INCLUDE (1) POWER FLUCTUATIONS DUE TO SMALL WORTH OF REGULATING ROD, (2) COIL FAILURES ON CONTROL-ROD MAGNETS CAUSED BY HUMIDITY AND HIGH TEMPERATURE, AND (3) BEAM-TUBE SHIELDING. A DEVICE WAS INSTALLED TO OBTAIN MONOENERGETIC NEUTRON BEAMS. FUTURE PLANS ARE DISCUSSED.

\*OPERATING EXPERIENCE SUMMARY + CONTROL ROD WORTH + ENVIRONMENTAL CONDITION + FAILURE, DESIGN ERROR + FAILURE, SCRAM MECHANISM + JAPAN + REACTOR, RESEARCH + SHIELDING

17-21213

TROY WW

TRAINING PLANT-PROTECTION PERSONNEL

SANDIA CORP., ALBUQUERQUE, N. MEX.

SC-DC-66-1903 +. 7 PAGES, AUGUST 1966

DISCUSSES THE TRAINING OF SECURITY PERSONNEL. SANDIA LABORATORY FOUND THEIR TRAINING PROGRAM OUTDATED AND INEFFECTIVE. THE REVISED PROGRAM STRESSED STIMULATING GUARDS TO LEARN RATHER THAN CRAMMING INFORMATION. PROGRAM NOW INCLUDES PERCEPTION TESTS, PRACTICAL PROBLEM SOLVING, PROGRAMMED TEACHING, ROLE-PLAYING EXERCISES, AND DISCUSSION PERIODS.

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

\*STAFFING, TRAINING, QUALIFICATION

17-21215

EVALUATION STUDY OF HASTELLOY X AS A NUCLEAR CLADDING. QUARTERLY PROGRESS REPORT, APRIL-JUNE 30, 1967  
AEROJET-GENERAL CORP., SAN RAMON, CALIF. NUCLEAR PRODUCTS AND SERVICES GROUP  
AGN-8232 +. 35 PAGES, 18 FIGURES, 4 TABLES, REFERENCES, AUGUST 1967

REPORTS THE EFFECTS OF AGING AT TEMPERATURES OF 1450 TO 2000 F. DATA GIVEN ON OXIDATION WEIGHT CHANGE AND CREEP.

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

\*HEAT TREATMENT + \*THERMAL MECHANICAL EFFECT + ALLOY + CLAD + CREEP + OXIDATION

17-21216

ENRICO FERMI MELTDOWN

4 PAGES, 5 FIGURES, NUCLEAR ENGINEERING 2(138), PAGE 843-846; (NOV. 1967)

THE CAUSE OF THE MELTDOWN IS ATTRIBUTED TO A FOREIGN BODY 8 TO 10 IN. LONG AND 3 TO 4 IN. WIDE, WHICH BLOCKED THE COOLANT FLOW IN SEVERAL FUEL CHANNELS. THE EXTENT OF DAMAGE TO FUEL ELEMENTS IS DESCRIBED. STATES THAT INFORMATION WAS AVAILABLE IN THE CONTROL ROOM, WHICH, IF IT HAD BEEN CLEARLY PRESENTED TO OPERATORS, THEY MIGHT HAVE ACTED IN TIME TO PREVENT THE MELTING. INCIDENT INDICATES (1) A STRAINER AT INLET PLENUM IS DESIRABLE, (2) A DELAYED-NEUTRON DETECTOR NEEDED FOR QUICKER INDICATIONS OF FAILURE, (3) DESIGN SHOULD ALLOW FOR ACCESS TO WHOLE CORE AND BLANKET UNDER UNUSUAL CONDITIONS, (4) VESSEL DRAIN SYSTEM NEEDED, AND (5) IMPROVED DETECTION TECHNIQUES.

\*FLOW BLOCKAGE + \*FUEL MELTDOWN + ACCIDENT, LOSS OF FLOW + FAILURE, ADMINISTRATIVE CONTROL + FAILURE, FUEL ELEMENT + FAILURE, GENERAL + FERMI (LMFBR) + INCIDENT, GENERAL + OPERATING EXPERIENCE SUMMARY + REACTOR, LMCR

17-21292

DRL REQUESTS ADDITIONAL INFORMATION ON HUMBOLDT BAY PROPOSED CHANGE 22

AEC, DIVISION OF REACTOR LICENSING

5 PAGES, NOV. 20, 1967, DOCKET NO. 50-133, TYPE--BWR, MFG--G.E., AE-BECHTEL

8 QUESTIONS, INCLUDING (1) ELECTRIC-POWER-SYSTEM RELIABILITY, (2) REACTOR-PROTECTION-SYSTEM FAILURE-MODE ANALYSIS, (3) CONTAINMENT ISOLATION, (4) REFUELING INTERLOCK SYSTEM, (5) PRIMARY-SYSTEM INSPECTION AND SURVEILLANCE PROGRAM, (7) CONTROL-ROD INTERLOCKS, AND (8) UPDATING OF TECH. SPECS.

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

HUMBOLDT BAY (BWR) + REACTOR, BWR + TECHNICAL SPECIFICATIONS

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-21295  
PLUM BROOK MOCK-UP REACTOR CHANGE REPORT 6 - FOR YEAR ENDED 31 OCT. 67  
NASA LEWIS RESEARCH CENTER, PLUM BROOK STATION, CLEVELAND, OHIO  
7 PAGES, OCTOBER 31, 1967, DOCKET NO. 50-185

A MANUAL DRIVE SYSTEM WAS ADDED TO THE NUCLEAR-POWER-LIMITING-SYSTEM INSTRUMENT THIMBLES, AND A MOCKUP OF THE PLUM BROOK REACTOR HB-6 TEST FACILITY WAS INSTALLED. REVISED PAGES TO THE FINAL HAZARDS SUMMARY ARE ATTACHED.

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

HAZARDS ANALYSIS + MOCKUP + MODIFICATION, SYSTEM OR EQUIPMENT + PLUM BROOK (TR) + REACTOR, TEST + REPORT, OPERATIONS SUMMARY

17-21296  
IIT RESEARCH INSTITUTE SUPPLIES ADDITIONAL INFORMATION ON ARR DECOMMISSIONING  
ILLINOIS INSTITUTE OF TECHNOLOGY, IIT RESEARCH INSTITUTE  
3 PAGES, DEC. 1, 1967, DOCKET NO. 50-1

IITRI REQUESTED PERMISSION TO POSSESS BUT NOT OPERATE THEIR HOMOGENEOUS SOLUTION REACTOR. ARRANGEMENTS ARE BEING MADE WITH AI FOR TECHNICAL HELP. THE FUEL IS TO BE STORED IN THE CORE INSTEAD OF THE DRAIN TANK FOR BETTER SAFETY, AND THE CONTROL-ROD MOTORS ARE TO BE DISCONNECTED AND THE RODS BLOCKED IN PLACE.

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

\*REACTOR DECOMMISSIONING + CRITICALITY SAFETY + FUEL STORAGE + REACTOR, HOMOGENEOUS + REACTOR, RESEARCH

17-21297 ALSO IN CATEGORIES 7 AND 12  
PIQUA REQUESTS REMOVAL OF HIGH EFFICIENCY FILTERS  
PIQUA NUCLEAR POWER FACILITY  
19 PAGES, DEC. 1, 1967, DOCKET NO. 115-2, TYPE--OCR, MFG--A.I., AE--A.I.

PIQUA REQUESTS EXEMPTION FROM TECH.-SPEC. REQUIREMENT OF VENTILATION FILTERS WHILE THE FUEL IS STORED AND THE REACTOR IS INOPERATIVE. THE FILTERS COST MORE THAN \$4000 PER YEAR. PIQUA HAS ALWAYS CONTENDED THAT THE FILTERS WERE UNNECESSARY EVEN UNDER OPERATING CONDITIONS. ENCLOSED IS A REPORT - HIGH EFFICIENCY PARTICULATE AIR FILTER EVALUATION FOR PIQUA (17 PAGES).

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

FILTER, HIGH EFFICIENCY + PIQUA (UCK) + REACTOR, ORGANIC COOLED + TECHNICAL SPECIFICATIONS + VENTILATION SYSTEM

17-21298  
PEACH BOTTOM ATOMIC POWER STATION MONTHLY REPORT NO. 20  
PHILADELPHIA ELECTRIC CO., PEACH BOTTOM ATOMIC POWER STATION  
15 PAGES, OCT. 1967, DOCKET NO. 50-171, TYPE--HTGR, MFG--G.A., AE BECHTEL

A 6-DAY SHUTDOWN WAS REQUIRED TO REPAIR A LEAKING VALVE BONNET ON THE NO. 1 STEAM-GENERATOR DRUM. MAINTENANCE, FACILITY CHANGES, AND TESTS ARE ALSO DISCUSSED.

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

FAILURE, EQUIPMENT + MAINTENANCE AND REPAIR + PEACH BOTTOM 1 (HTGR) + REACTOR, HTGR + REPORT, OPERATIONS + STEAM GENERATOR

17-21299  
BONUS NUCLEAR POWER PLANT MONTHLY REPORT NO. 8  
PUERTO RICO WATER RESOURCES AUTHORITY, SAN JUAN, PUERTO RICO  
18 PAGES, 7 TABLES, AUGUST 1967, DOCKET NO. 115-4, TYPE--BWR, MFG--C.E., AE--JACKSON + MORELAND

RESULTS OF TESTS INDICATE THAT THE REDUCTION IN CIRCULATING FLOW IS REAL AND NOT A FALSE RECORDER INDICATION. A CORE-PLATE INSPECTION WILL BE MADE. DURING CONTROL-ROD-DROP TESTS, A SUPERHEATER ROD FAILED TO DROP DUE TO INTERFERENCE OF THE DRIVE-PACKAGE COVER, WHICH HAD BEEN IMPROPERLY PLACED.

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

\*FLOW ORIFICE + BONUS (ISR) + CONTROL ROD + FAILURE, INSTALLATION ERROR + FAILURE, SCRAM MECHANISM + REACTOR, INTERNAL SUPERHEAT + REPORT, OPERATIONS



CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-21300  
BONUS NUCLEAR POWER PLANT MONTHLY REPORT NO. 7  
PUERTO RICO WATER RESOURCES AUTHORITY  
12 PAGES, 1 TABLE, JULY 1967, DOCKET NO. 115-4, TYPE--BWR, MFG--C.E., AE--JACKSON + MOPELAND

A SHUTDOWN WAS REQUIRED DUE TO EXCESSIVE ARCING AND VIBRATIONS IN THE MOTOR-GENERATOR THAT SUPPLIES THE INSTRUMENT BUS. A SCRAM OCCURRED WHEN A POWER LEAD TO THE WATER-FLOW INSTRUMENTATION WAS ERRONEOUSLY DISCONNECTED. AIRBORNE ACTIVITY INCREASED IN THE CONTAINMENT BUILDING AFTER TWO SCRAMS DUE TO AN UNIDENTIFIED LEAK. A DECREASE WAS NOTED IN THE RECORDER FOR CIRCULATING-WATER PUMP FLOW BUT HAS NOT BEEN DETERMINED TO BE REAL OR MERELY TROUBLE WITH INDICATOR.

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

BONUS (ISR) + ELECTRIC POWER, NORMAL + FAILURE, EQUIPMENT + FAILURE, OPERATOR ERROR + FLOW ORIFICE + RADIOACTIVITY RELEASE + REACTOR, INTERNAL SUPERHEAT + REPORT, OPERATIONS + SCRAM, SPURIOUS

17-21335  
BREIZY CE  
SODIUM-COOLED REACTORS FAST CERAMIC REACTOR DEVELOPMENT PROGRAM. QUARTERLY REPORT NO. 17, NOVEMBER 1965-JANUARY 1966  
GENERAL ELECTRIC CO., SAN JOSE, CALIF. ADVANCED PRODUCTS OPERATION  
GEAP-5098 +. 80 PAGES, FIGURES, TABLES, REFERENCES, FEB. 1966

ONE OF A SERIES OF PROGRESS REPORTS. TOPICS INCLUDE IRRADIATION TESTING OF MIXED PU-U OXIDES, GAP-CONDUCTIVITY EXPERIMENTS, FUEL BURNUP, REACTOR PHYSICS AND CORE ANALYSIS, VENTED-FUEL DEVELOPMENT, AND CLADDING-COMPATIBILITY STUDIES.

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

CLAD + FUEL BURNUP + FUEL ELEMENT + HEAT CONDUCTANCE, FUEL TO CLAD + IRRADIATION TESTING + PLUTONIUM OXIDE + R AND D PROGRAM + REACTOR PHYSICS + REACTOR, LMCR + SODIUM + URANIUM OXIDE

17-21336  
RESEARCH PROGRAM FOR THE GARIGLIANO NUCLEAR POWER STATION. QUARTERLY REPORT NO. 13  
ENTE NAZIONALE PER L-ENERGIA ELETTRICA, ROME (ITALY)  
EURAC-1910 + EUR-3395 +. 18 PAGES, JULY 1, 1967

ONE OF A SERIES OF PROGRESS REPORTS. TOPICS DISCUSSED INCLUDE DATA LOGGING, IRRADIATION TESTING OF PRESSURE-VESSEL SPECIMENS, INSTRUMENTED FUEL ASSEMBLIES, AND POWER-UPDATING STUDIES.

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

DATA PROCESSING + FUEL ELEMENT + IRRADIATION TESTING + ITALY + POWER UPDATING + R AND D PROGRAM + REACTOR, BWR

17-21339  
CARVER JG  
PLUTONIUM SUBCRITICAL EXPERIMENT PROGRAM. QUARTERLY REPORT NO. 12, APRIL 1-JUNE 30, 1967  
GENERAL ELECTRIC CO., PLEASANTON, CALIF. NUCLEAR TECHNOLOGY DEPT.  
GEAP-5513 + EURAC-1913 +. 13 PAGES, 2 REFERENCES, JUNE 30, 1967

DISCUSSES THE MEASUREMENT OF FISSION RATES AND RESONANCE ABSORPTION RATES OF PU-H<sub>2</sub>O FUEL LATTICES AT VARIOUS TEMPERATURES AND WATER-FUEL RATIOS.

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

\*MEASUREMENT, GENERAL + FUEL ELEMENT + PLUTONIUM + R AND D PROGRAM + REACTOR PHYSICS

17-21340  
JONES CF  
STAFFING NUCLEAR PLANTS  
NUS CORPORATION  
4 PAGES, 2 FIGURES, 1 TABLE, POWER ENGINEERING 71(12), PAGES 54-57 (DECEMBER 1967)

UTILITIES MUST TRAIN THEIR OWN EMPLOYEES SINCE THERE IS ALREADY A SHORTAGE OF NUCLEAR ENGINEERS. MANPOWER REQUIREMENTS ARE DISCUSSED. A 65-MAN ORGANIZATION IS RECOMMENDED AS A MINIMUM FOR A SINGLE NUCLEAR UNIT. THE REQUIREMENTS FOR PLANTS WITH UP TO 4 UNITS ARE GIVEN. THE POWER OUTPUT IN THE RANGE 500-1000 MWE HAS LITTLE EFFECT ON MANPOWER REQUIREMENTS. SCHEDULING FOR BUILDING A PLANT STAFF IS DISCUSSED. THE SUPERINTENDENT, OPERATIONS

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-21340 \*CONTINUED\*  
SUPERVISOR, AND TECHNICAL SUPERVISORS SHOULD START TRAINING 4-5 YEARS BEFORE FUEL LOADING.

\*ADMINISTRATIVE CONTROL + \*STAFFING, TRAINING, QUALIFICATION + REACTOR, POWER

17-21341  
PREPARE TO REFUEL  
2 PAGES, 1 TABLE, 3 REFERENCES, POWER ENGINEERING 71(12); PAGES 70-71 (DECEMBER 1967)

THE LIMITED EXPERIENCE IN REFUELING COMMERCIAL REACTORS IS DISCUSSED. EXTENSIVE PLANNING IS REQUIRED TO MINIMIZE OUTAGE TIME. SPECIFIC PROCEDURES SHOULD BE WRITTEN. FUEL-ASSEMBLY FLOW CHANNELS SHOULD BE ANALYZED FOR I-131 AS SOON AS POSSIBLE AFTER THE HEAD IS REMOVED TO DETECT CLAD LEAKS. INSPECTIONS SHOULD BE MADE EARLY SO PROBLEMS UNCOVERED CAN BE CORRECTED WITHOUT EXTENDING OUTAGE. TOOLING SHOULD BE SIMPLE. OPERATION DURING EMERGENCIES IS BRIEFLY CONSIDERED.

\*REFUELING + OPERATING EXPERIENCE SUMMARY + REACTOR, POWER + SYSTEM OPERABILITY IN ACCIDENT

17-21342  
LEES EA  
POWER REACTOR HIGH PERFORMANCE UO2 PROGRAM. PROGRESS REPORT NO. 4. APRIL 1 - JUNE 30, 1967  
GENERAL ELECTRIC, PLEASANTON, CALIF.  
GEAP-5521 + EURAEC-1906 +. 22 PAGES, FIGURES, JULY 1967

ONE OF A SERIES OF PROGRESS REPORTS. TOPICS INCLUDE CENTRAL MELTING OF ZR-2-CLAD RODS, FUEL-ROD DESIGN, CRITICAL-HEAT-FLUX TESTS AND ANALYSIS, AND FABRICATION.

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

\*CENTERLINE MELTING + DESIGN STUDY + FABRICATION + FUEL ELEMENT + HEAT TRANSFER ANALYSIS + IRRADIATION TESTING + R AND D PROGRAM

17-21350  
VENDRYES G + DENIELOU G  
RAPSODIE, THE FRENCH FAST NEUTRON REACTOR  
COMMISSARIAT A L-ENERGIE ATOMIQUE  
3 PAGES, 1 FIGURE, INDUSTRIES ATOMIQUES 11(5/6), PAGES 49-51 (1967) IN FRENCH

INTEGRATING RAPSODIE WITHIN THE FAST-REACTOR PROGRAM IN FRANCE IS DISCUSSED. THE PRELIMINARY STUDIES AND THE CONSTRUCTION OF THE REACTOR ARE GIVEN. THE RESULTS OBTAINED DURING THE FINAL STAGE OF THE START-UP AND THOSE EXPECTED DURING OPERATION ARE OUTLINED. A BRIEF COMMENT ON THE PHENIX REACTOR IS INCLUDED.

FRANCE + REACTOR STARTUP TESTING + REACTOR, BREEDER + REACTOR, LMCR

17-21351  
CHAUVIN M + ROSENHOLC M  
THE CONSTRUCTION OF RAPSODIE  
COMMISSARIAT A L-ENERGIE ATOMIQUE  
7 PAGES, 4 FIGURES, 2 TABLES, INDUSTRIES ATOMIQUES 11(5/6), PAGES 52-50 (1967) IN FRENCH

THE MAIN CONSTRUCTION PHASES OF RAPSODIE, FROM THE DECISION TO ERECT THE REACTOR AT CADARACHE TO THE BEGINNING OF THE START-UP AND TO THE MOMENT WHEN THE REACTOR BECAME FIRST CRITICAL, ARE DESCRIBED. THE ESSENTIAL FEATURES OF RAPSODIE AND THE DIFFICULTIES ENCOUNTERED DURING ITS CONSTRUCTION ARE DISCUSSED.

FRANCE + REACTOR DESCRIPTION + REACTOR, BREEDER + REACTOR, LMCR

17-21352  
CHAPELOT A + LELAIT P  
SOME ASPECTS OF THE DRIVE-CONTROL OF RAPSODIE  
COMMISSARIAT A L-ENERGIE ATOMIQUE  
11 PAGES, 5 FIGURES, INDUSTRIES ATOMIQUES 11(5/6), PAGES 60-70 (1967) IN FRENCH

SOME OF THE ASPECTS OF THE CONTROL SYSTEM AND THE GENERAL PRINCIPLES OF THE AUTOMATION DESIGN ARE DISCUSSED. THE SAFETY MECHANISMS APPLIED IN THE CONTROL OF COMPONENTS OF THE PLANT AND IN SAFETY OPERATIONS, HOWEVER, DEMAND MUCH MORE ELABORATE TECHNOLOGICAL STRUCTURES AND METHODS. THE IMPORTANCE OF CONVENTIONAL MEASURING AND REGULATION DEVICES IS STRESSED. SOME SPECIFIC CONTROL AND MEASURING SYSTEMS DESIGNED FOR OPERATION WITH SODIUM ARE DESCRIBED. A DATA-PROCESSING SYSTEM COMPLETES THE CLASSICAL INDICATING UNITS AND ASSUMES THE MORE SUBTLE CONTROL AND PROCESSING OPERATIONS.

\*CONTROL SYSTEM + \*SYSTEM DESCRIPTION + CONTROL PGD DRIVE + DATA PROCESSING + FRANCE + MEASUREMENT, GENERAL + REACTOR SAFETY SYSTEM + REACTOR, BREEDER + REACTOR, LMCR

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-21353  
PONTIER R  
THE TESTING AND STARTING UP OF RAPSODIE  
COMMISSARIAT A L-ENERGIE ATOMIQUE  
5 PAGES, 1 FIGURE, INDUSTRIES ATOMIQUES 11(5/6), PAGES 87-91 (1967) IN FRENCH

DESCRIBES THE STARTUP OF THE RAPSODIE. LISTS MAIN PHASES OF THE COURSE OF TESTS, PROBLEMS ENCOUNTERED, AND RESULTS.

\*REACTOR STARTUP TESTING + FRANCE + REACTOR, BREEDER + REACTOR, LMCR + TEST, PHYSICS

17-21354  
ARDENNES NUCLEAR POWER PLANT. QUARTERLY REPORT NO. 7, JAN. 1--MARCH 31, 1964  
SOCIETE D ENERGIE NUCLEAIRE FRANCO-BELGE DES ARDENNES, CHOOZ-LEZ-GIVET, FRANCE  
TID-20953 +. 31 PAGES, APRIL 24, 1964

REPORTS THE CONSTRUCTION STATUS. VESSEL, PRESSURIZER, STEAM GENERATORS, ETC., ARE STILL BEING FABRICATED.

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

FRANCE + REACTOR, PWR

17-21355  
WESTERMEIR JT + BELSON JD + SINGLETON JL  
PM-1 ANNUAL SUMMARY REPORT, NOVEMBER 1, 1963--OCTOBER 1, 1964  
AIR FORCE WEAPONS LAB., KIRTLAND AFB, N. MEXICO  
AD-618376 + WL-TR-65-91 +. 139 PAGES, JULY 1965

GIVES RESULTS OF CONTROL-ROD-WORTH TESTS, TEMPERATURE-COEFFICIENT MEASUREMENTS, AND XENON-BUILDUP DATA. AN EVALUATION OF THE SUBSYSTEMS IS GIVEN AND PROBLEM AREAS DENOTED. SCRAMS RESULTED FROM MALFUNCTIONS OF PRIMARY-PUMP OVERLOAD HEATER, MAIN-GENERATOR STATIC EXCITER, MAIN-STEAM STOP-VALVE SOLENOID, FEEDWATER PUMP, AND SCRAM-BYPASS COUPLER. MODIFICATIONS ARE DESCRIBED. OTHER TOPICS INCLUDE PERSONNEL AND TRAINING, MAINTENANCE, SAFETY, AND COST ANALYSIS.

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

CONTROL ROD WORTH + ECONOMICS + FAILURE, EQUIPMENT + MAINTENANCE AND REPAIR + MODIFICATION, SYSTEM OR EQUIPMENT + OPERATION + PM 1 (PWR) + REACTIVITY EFFECT + REACTOR, MILITARY + REACTOR, PWR + REPORT, OPERATIONS + SCRAM, SPURIOUS + STAFFING, TRAINING, QUALIFICATION + TEMPERATURE COEFFICIENT + XENON

17-21394  
MONTHLY OPERATING REPORT. SEPTEMBER 1966  
CAROLINAS VIRGINIA NUCLEAR POWER ASSOCIATES, INC., PARR, S. C.  
CVNA-264 +. 29 PAGES, NOVEMBER 1967

PLANT WAS SHUT DOWN DURING SEPT., AND A CONTAINMENT LEAK TEST WAS MADE (AT 13 PSIG), GIVING AN ACCIDENT LEAK RATE OF 0.184%/DAY (VS 0.5%/DAY ALLOWED). SECOND REFUELING (12 ELEMENTS) WAS PERFORMED. REPORT CONTAINS THE USUAL ITEMS (COCLANT CHEMISTRY, HEALTH PHYSICS, ETC).

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

\*REPORT, OPERATIONS + \*TEST, LEAK RATE + CVTR (PWR) + REACTOR, HWR + REACTOR, PRESSURE TUBE + REACTOR, PWR

17-21395  
MONTHLY OPERATING REPORT, JULY 1965  
CAROLINAS VIRGINIA NUCLEAR POWER ASSOCIATES, INC., PARR, S. C.  
CVNA-262 +. 31 PAGES, SEPTEMBER 7, 1966

REACTOR WAS SHUT DOWN MANUALLY TWICE DUE TO LOSS OF 480-V POWER FROM PARR STEAM PLANT (WHICH RUNS THE FEEDWATER PUMPS). PLANT WAS AVAILABLE 99.66%. REACTOR WAS OPERATED AT 81% UNTIL JULY 19TH, WHEN POWER WAS INCREASED TO 91%. DUE TO HOT WEATHER AND TO SAND AND GRAVEL WHICH PLUGGED THE STRAINERS ON THE RIVFF-WATER BOOSTER PUMPS, DIFFICULTY WAS EXPERIENCED IN HOLDING THE VAPOR CONTAINER TEMPERATURE BELOW THE MAXIMUM 120 F.

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

\*AUXILIARY COOLING SYSTEM + CVTR (PWR) + REACTOR, HWR + REACTOR, PRESSURE TUBE + REACTOR, PWR +

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-21395 \*CONTINUED\*  
REPORT, OPERATIONS

17-21396  
PIQUA NUCLEAR POWER FACILITY MONTHLY OPERATING REPORT NO. 42. OCTOBER 1966  
PIQUA NUCLEAR POWER FACILITY, OHIO  
COO-652-32 +. 20 PAGES, OCTOBER 1967

UPON STARTUP OF THE MAIN COOLING SYSTEM A FLOW RATE OF 11,000 GPM WAS OBTAINED (VS THE 16,000 EXPECTED). EACH MAIN-PUMP-SUCTION STRAINER CONTAINED ABOUT 1/2 GAL OF COKE (PARTICLE SIZE UP TO 3/4 IN.). RE-STARTUP STILL SHOWED LOSS OF FLOW RATE. 1/2 GAL OF COKE WAS REMOVED FROM THE P-1B STRAINER BUT ONLY ABOUT 1 PINT FROM THE P-1A. 14,300 GPM FLOW RATE WAS REACHED, BUT STRAINERS AGAIN PLUGGED. AFTER 36 HR, COOLANT-SYSTEM PRESSURES AND FLOW HAD STABILIZED.

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

\*COOLANT QUALITY + \*MAIN COOLING SYSTEM + PIQUA (OCR) + REACTOR, ORGANIC COOLED + REPORT, OPERATIONS

17-21397  
REACTOR OPERATIONS SAFETY ANALYSIS MONTHLY REPORT NO. 15, SEPTEMBER 1-30, 1966  
NUCLEAR UTILITY SERVICES, INC., WASHINGTON, D. C.  
NUS-317 +. 138 PAGES, FIGURES, TABLES, REFERENCES, NOV. 7, 1966

SHIELD-COOLING-SYSTEM RADIATION LEVELS INCREASED FROM 20 MR/HR TO ABOUT 50 MR/HR IN SEPT. DUE TO USE OF POTASSIUM DICHROMATE AS A CORROSION INHIBITOR, PROBABLY FROM THE FORMATION OF K-42. RADIATION LEVELS IN GENERAL, HOWEVER, WERE LOW. REPORT COVERS USUAL SUBJECTS (COOLANT CHEMISTRY, HEALTH PHYSICS, I AND C, ETC.).

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

\*ADDITIVE + \*AUXILIARY COOLING SYSTEM + \*COOLANT CHEMISTRY + \*CORROSION + ACTIVATION PRODUCT + ELK RIVER (BWR) + POTASSIUM + REACTOR, BWR + REPORT, OPERATIONS

17-21399  
ANNUAL REPORT OF THE DEPARTMENT OF ATOMIC ENERGY, GOVERNMENT OF INDIA, 1965-1966  
DEPARTMENT OF ATOMIC ENERGY, BOMBAY, INDIA  
NP-15950 +. 60 PAGES, 1966

ONE OF A SERIES OF PROGRESS REPORTS. TOPICS INCLUDE CONSTRUCTION PROGRESS OF NEW POWER REACTORS, RADIATION PROTECTION, FUEL REPROCESSING, RADIOBIOLOGY, THEORETICAL NUCLEAR PHYSICS STUDIES, AND SPACE RESEARCH.

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

FUEL REPROCESSING + INDIA + RADIATION SAFETY AND CONTROL + RADIOBIOLOGY + REACTOR, POWER + REVIEW

17-21401  
AQUEOUS HOMOGENEOUS SUSPENSION REACTOR PROJECT. ANNUAL REPORT. PART A, RESEARCH AND DEVELOPMENT KIURING VAN FICTIOTTECHNISCHE MATERIALEN, N.V., ARNHEM- NETHERLANDS  
NP-16168 (PT A) +. 28 PAGES, FIGURES, 1965

TECHNIQUES WERE DEVELOPED TO PRODUCE THIN-METAL OR THO2 COATINGS ON FUEL PARTICLES TO MINIMIZE OBSERVED IRRADIATION DAMAGE. THE MOST SERIOUS PROBLEM EXPECTED, THAT OF HARD CAKE FORMATIONS IN THE SYSTEM, HAS NOT OCCURRED. ALSO REPORTS IRRADIATION TESTING, INSTRUMENT DEVELOPMENT, OPERATION OF PUMPS AND VALVES, MEASUREMENTS OF RADIOLYTIC GAS PRODUCTION, AND HEALTH PHYSICS ASPECTS OF THE FUEL IRRADIATIONS.

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

COATED PARTICLE + INSTRUMENTATION, GENERAL + IRRADIATION TESTING + MEASUREMENT, GENERAL + NETHERLANDS + R AND D PROGRAM + RADIATION SAFETY AND CONTROL + RADIOLYTIC GAS + REACTOR, CIRCULATING FUEL

17-21403  
RESEARCH LABORATORIES SEMIANNUAL REPORT, JULY-DECEMBER 1964  
ISRAEL ATOMIC ENERGY COMMISSION, YAVNE. SERO NUCLEAR RESEARCH CENTER  
IA-1021 +. 174 PAGES, DECEMBER 1964

POOL-WATER ACTIVITY AT THE ISRAEL RESEARCH REACTOR INCREASED BY A FACTOR OF 20 ON SEPT. 10. GAMMA ANALYSIS INDICATED A FUEL-ELEMENT LEAK. PROGRESS REPORTED ON STUDIES OF HAZARDS EVALUATION AND SITE SELECTION FOR A DUAL-PURPOSE REACTOR (DESALTING-ELECTRICITY). FALLOUT MONITORING AT THE IRR SITE IS DISCUSSED. BETA AIR ACTIVITY IS 1/10 BELOW LAST YEARS.

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-21403 \*CONTINUED\*  
AVAILABILITY - MICROCARD EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM,  
WISCONSIN 54669

FAILURE, FUEL ELEMENT + FALLOUT + HAZARDS ANALYSIS + ISRAEL + RADIOACTIVITY RELEASE +  
REACTOR, DESALINATION + REACTOR, POOL TYPE + SITING, GENERAL

17-21404  
DRAGON HIGH TEMPERATURE REACTOR PROJECT SEVENTH ANNUAL REPORT, 1965-1966  
ORGANIZATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT, PARIS, FRANCE  
NP-16272 +. 132 PAGES, REFERENCES, MARCH 31, 1966

THE HOT PRESSURE TEST, APPROACH TO POWER, AND AN EXTENDED RUN AT 10 MW WERE COMPLETED.  
STICKING OF CONTROL RODS DUE TO BOWING (TEMPERATURE DIFFERENCE BETWEEN THE INNER AND OUTER  
FACINGS) WAS CORRECTED BY DESIGNING A NEW ROD SPLIT INTO 4 SECTIONS. MALFUNCTIONING OF  
BYPASS VALVES WAS ATTRIBUTED TO OPERATING TEMPERATURES ABOVE THE DESIGN VALUE. NEW POSITION  
INDICATORS AND WATER-COOLED JACKETS WERE INSTALLED. OTHER TOPICS INCLUDE IRRADIATION TESTING  
OF FUEL PARTICLES, RADIATION EFFECTS ON GRAPHITE CORROSION, AND REACTOR PHYSICS.

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

COATED PARTICLE + CONTROL ROD + CORROSION + DRAGON (HTGR) + FAILURE, GENERAL + FAILURE, SCRAM MECHANISM +  
GRAPHITE + IRRADIATION TESTING + MODIFICATION, SYSTEM OR EQUIPMENT + R AND D PROGRAM + RADIATION EFFECT +  
REACTOR PHYSICS + REACTOR STARTUP EXPERIENCE + REACTOR, HTGR + TEST, SYSTEM OPERABILITY + VALVE

17-21406  
NERO DEVELOPMENT PROGRAMME. REPORT COVERING THE PERIOD JUNE 1964-DECEMBER 1965  
REACTOR CENTRUM NEDERLAND, PETTEN  
EUR-3125.E +. 30 PAGES, FIGURES, TABLES, 1966

REPORTS PROGRESS IN DEVELOPMENT OF A PRESSURIZED-WATER REACTOR FOR MARINE PROPULSION. TOPICS  
INCLUDE CRITICAL EXPERIMENTS, INCORPORATION OF BURNABLE POISON IN UO<sub>2</sub>, IRRADIATION TESTING,  
CORROSION AND EROSION, STRESS ANALYSIS, STEAM-GENERATOR PERFORMANCE, CONTROL RODS AND DRIVES,  
SHIELDING, AND AUXILIARY SYSTEMS.

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

CONTROL ROD + CONTROL ROD DRIVE + CORROSION + CRITICALITY EXPERIMENT + EROSION + IRRADIATION TESTING +  
NETHERLANDS + POISON, BURNABLE + R AND D PROGRAM + REACTOR, MARITIME + REACTOR, PWR + SHIELDING +  
STEAM GENERATOR + STRESS ANALYSIS

17-21408  
RABIN SA + ATRAZ BG + BADER MB + BUSBOOM HJ + HAZEL VE  
EXAMINATION AND EVALUATION OF RUPTURE IN EVESR SUPERHEAT FUEL ROD WITH 0.012-INCH-THICK INCOLOY-800  
CLADDING  
GENERAL ELECTRIC CO., SUNNYVALE, CALIF. ADVANCED PRODUCTS OPERATION  
GEAP-5416 +. 72 PAGES, FIGURES, TABLES, REFERENCES, JANUARY 1967

PREMATURE FAILURES WERE OBSERVED IN ONE 0.008-IN.-WALL ROD AND IN ONE 0.012-IN.-WALL ROD OF  
THE MARK-III EXPERIMENTAL FUEL. CLADDING IS INCOLOY-800. FAILURES WERE IN REGION OF MAXIMUM  
POWER IN PEAK-POWER ROD. MOST REASONABLE EXPLANATION IS LOW-CYCLE FATIGUE, ACCELERATED BY  
HIGHER-THAN-DESIGN CLADDING TEMPERATURES. NO SIGNS OF RAPID CORROSION, SUCH AS HAVE BEEN  
ASSOCIATED WITH TYPE-304 SS, WERE FOUND.

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

\*FAILURE, FUEL ELEMENT + CLAD + FAILURE, FATIGUE + INCONEL + REACTOR, INTERNAL SUPERHEAT +  
THERMAL MECHANICAL EFFECT + VESR (ISR)

17-21409  
BALFOUR MG + FOSTER ES + FERRARI HM + PAXSON E + KORTHEUER JD + WATLEY LS  
DESIGN, FABRICATION, AND OPERATION OF THE CVTR HIGH POWER, HIGH-BURNUP TEST ASSEMBLIES  
WESTINGHOUSE ELECTRIC CORP., PITTSBURGH, PA. ATOMIC POWER DIVISION  
CVNA-274 +. 102 PAGES, FIGURES, TABLES, REFERENCES, JUNE 1967

FOUR TEST ASSEMBLIES WERE DESIGNED TO ACHIEVE HIGH POWER LEVELS AND BURNUPS BEYOND THE PRESENT  
CONSERVATIVE OPERATING LIMITS FOR POWER REACTORS. EACH TEST ASSEMBLY CONSISTED OF SIX UO<sub>2</sub>  
RODS AND 13 DUMMY (A1203) RODS, CLAD WITH EITHER FREE-STANDING OR THIN-WALL ZIRCALOY-4 AND  
ALTERNATIVELY WITH STAINLESS STEEL. THE UO<sub>2</sub> RODS WERE DESIGNED FOR 25.08 AND 20.90 KW/FT AND  
PEAK BURNUPS OF 50,000 AND 41,670 MWD/MTU, RESPECTIVELY. AN OPERATION HISTORY FOR THE  
ASSEMBLIES IS PRESENTED. THREE OF THE FOUR TEST ASSEMBLIES DEVELOPED DEFECTS, AND  
IRRADIATION WAS TERMINATED PREMATURELY. AN ANALYSIS OF CLADDING BEHAVIOR OF THE ASSEMBLIES  
BASED UPON THEIR POWER HISTORY WAS PERFORMED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA,

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-21409 \*CONTINUED\*  
\$3.00 COPY, \$0.65 MICROFICHE

\*FUEL BURNUP + \*FUEL ELEMENT + \*IRRADIATION TESTING + \*PERFORMANCE LIMIT + CLAD + R AND D PROGRAM

17-21410  
GRIFFIN US  
DEFORMATION AND COLLAPSE OF FUEL ROD CLADDING DUE TO EXTERNAL PRESSURE  
WESTINGHOUSE ELECTRIC CORP., BETTIS ATOMIC POWER LAB., PITTSBURGH  
WAPD-TM-591 +. 44 PAGES, 19 FIGURES, 1 TABLE, 13 REFERENCES, JANUARY 1967

DERIVES MATHEMATICAL FORMULAS AND GIVES METHODS FOR ANALYZING THE EFFECTS OF EXTERNAL PRESSURE ON ZIRCALOY-CLAD FUEL RODS. INELASTIC AND CREEP COLLAPSE, INELASTIC DEFORMATION (OVALITY), SHRINKAGE, DIMPLING, AND AXIAL WRINKLING ARE DISCUSSED. SAME COMPARISON WITH EXPERIMENTAL RESULTS IS INCLUDED. FORMULAS FOR CRITICAL PRESSURES AND CONDITIONS LEADING TO EACH TYPE OF FAILURE ARE GIVEN.

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

\*FAILURE, CLADDING + \*PRESSURE, EXTERNAL + ANALYTICAL MODEL + COMPARISON, THEORY AND EXPERIENCE + MATHEMATICAL TREATMENT + R AND D PROGRAM + ZIRCALOY

17-21411  
BONUS CHANGE 6 - OPERATION WITH FAILED FUEL ELEMENTS  
AEC, DIVISION OF REACTOR LICENSING  
4 PAGES, NOV. 28, 1967, DOCKET NO. 115-4, TYPE--BWR, MFG--C.E., AE-JACKSON + MORELAND

PREVIOUS LIMITS FOR OPERATION WERE 1% FAILED FUEL IN THE BOILER REGION AND 2.5% IN THE SUPERHEATER. LIMIT ON COOLANT I-131 CONCENTRATION (THE ONLY CHECK ON FAILED FUEL) WAS 35 MICROCURIES/CC. 1% FAILED BOILER FUEL CORRESPONDS TO 16 MICROCURIES/CC I-131. THEREFORE, THE ABOVE LIMITS ARE REPLACED BY A SINGLE LIMIT OF 15 MICROCURIES/CC ON I-131.

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

\*COOLANT QUALITY + \*FAILURE, FUEL ELEMENT + BONUS (ISR) + FISSION PRODUCT RETENTION + REACTOR, INTERNAL SUPERHEAT + SAFETY EVALUATION + TECHNICAL SPECIFICATIONS

17-21412  
DRL ISSUES LICENSE AND TECHNICAL SPECIFICATIONS TO UNC PROOF TEST FACILITY  
AEC, DIVISION OF REACTOR LICENSING  
18 PAGES, DEC. 2, 1967, DOCKET NO. 50-290

COPE (FOR PROOF TEST OF FUEL ELEMENTS) IS A TANK TYPE, WITH SCRAM FROM TWO SAFETY RODS AND A QUICK WATER DUMP. FACILITY IS LOCATED AT PAWLING, N.Y. WATER TEMPERATURE MUST RANGE BETWEEN 190 AND 60 F. DUMP TIME MUST BE LESS THAN 100 SEC THROUGH A 6-IN. SOLENOID VALVE. MAXIMUM EXCESS REACTIVITY IS 1.1%. FUEL IS LIMITED TO UO2 WITH LESS THAN 5% ENRICHMENT.

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

\*IRRADIATION TESTING + CRITICAL ASSEMBLY FACILITY + TECHNICAL SPECIFICATIONS

17-21413 ALSO IN CATEGORY 9  
INDIAN POINT 1 REPORTS STUCK CONTROL ROD  
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.  
4 PAGES, DOCKET 50-3, TYPE--PWR, MFG--B+W, AE--CON FD, NOVEMBER 29, 1967

DURING TESTING OF THE CONTROL RODS AFTER REFUELING, NO. 2 ROD STUCK 16 IN. FROM FULL INSERTION UPON GRAVITY SCRAM. THE CONTROL ROD AND ASSOCIATED MECHANISMS WERE REMOVED, THE SNUBBER PISTON REQUIRING FORCE. A 1-1/2-X-1/4-X-1/4-IN. PIECE OF STAINLESS STEEL WAS FLUSHED FROM THE CONTROL-ROD POSITION. METALLOGRAPHIC AND ACTIVITY TESTS INDICATED THAT IT HAD BEEN LEFT IN THE REACTOR AT THE TIME OF CONSTRUCTION, 5 YEARS AGO.

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

\*FAILURE, SCRAM MECHANISM + \*INCIDENT, EQUIPMENT + CONTROL ROD + INDIAN POINT 1 (PWR) + PEACTOP, BWR + TESTING

17-21414  
PLUM BROOK CHANGE 22 - INSTALLATION OF NEW PENETRATIONS IN REACTOR TANK HEAD  
AEC, DIVISION OF REACTOR LICENSING, WASHINGTON, D. C.  
4 PAGES, NOV. 27, 1967, DOCKET NO. 50-30

DPL ALLOWS INSTALLATION OF 11 FOUR-INCH PENETRATIONS IN THE DISHED HEAD, AS REQUESTED IN CHANGE REPORT 33. PENETRATIONS WILL BE 304 SS. REACTOR HEAD IS MILD STEEL, LINED WITH SS.

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-21414 \*CONTINUED\*

NASA WILL USE A MASS-SPECTROMETER-TYPE HELIUM LEAK DETECTOR FOR CHECKING THE WELDS. MINIMUM HEAD-CLAD THICKNESS IS CHANGED TO 0.062 IN. (VS 0.075) TO CORRECT AN ERROR IN THE TECH. SPECS.

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

\*CONTAINMENT PENETRATION, GENERAL + \*PRESSURE VESSEL + PLUM BROOK (TR) + REACTOR, TEST + SAFETY EVALUATION + STEEL + TECHNICAL SPECIFICATIONS

17-21415

NS SAVANNAH REPORTS FAILURE OF VENT PIPING IN A PRIMARY COOLANT PUMP  
FIRST ATOMIC SHIP TRANSPORT INC.  
2 PAGES, NOV. 27, 1967, DOCKET NO. 50-238, TYPE--PWR, MFG--B+W, AE--G.G. SHARP

WHILE ANCHORED AT THE PACIFIC ENTRANCE TO THE PANAMA CANAL, A RISE IN THE CONTAINMENT DRAIN-TANK LEVEL LED TO THE DISCOVERY OF THE FAILED PIPING. INITIAL LEAK RATE WAS 12 GPH, INCREASING OVER THE NEXT 5 HR TO 120 GPH, AT WHICH TIME THE PLANT WAS SHUT DOWN. THE STARBOARD LOOP WAS SHUT DOWN, AND THE SHIP HEADED FOR NEW YORK FOR REPAIRS, USING ONLY THE PORT LOOP AND AT REDUCED SPEED. A NEW FITTING WAS INSTALLED AND A VIBRATION DAMPENER ADDED.

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

\*ACCIDENT, LOSS OF COOLANT + \*FAILURE, PIPE + \*INCIDENT, EQUIPMENT + NS SAVANNAH (PWR) + PUMP + REACTOR, MARITIME + REACTOR, PWR

17-21417

LA CROSSE SUPPLIES ADDITIONAL INFORMATION ON COOLANT FLOW CALCULATIONS AND EXPERIMENTS  
ALLIS-CHALMERS, BETHESDA, MARYLAND  
4 PAGES, 1 FIGURE, 1 TABLE, NOV. 17, 1967, DOCKET NO. 115-5, TYPE--BWR, MFG--A.C., AE--SGT + LUNDY

IN ANSWER TO AEC QUESTIONS ON PROPOSED CHANGE IN MINIMUM PUMP-SPEED SETTINGS, LA CROSSE GIVES RESULTS OF COLD-FLOW PRESSURE-DROP EXPERIMENTS TO VERIFY CALCULATIONS. CALCULATED PRESSURE DROP IN MAIN COOLANT SYSTEM IS ABOUT 10% MORE THAN EXPERIMENTAL VALUE. PRESSURE DROP ACROSS CORE IS GREATER THAN CALCULATED, RESULTING IN A FLOW DECREASE OF ONLY 0.55%, HOWEVER.

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

\*COMPARISON, THEORY AND EXPERIENCE + \*PRESSURE DROP + FLOW THEORY AND EXPERIMENTS + LACROSSE (BWR) + MAIN COOLING SYSTEM + MEASUREMENT, GENERAL + REACTOR, BWR + TECHNICAL SPECIFICATIONS

17-21418

ALSO IN CATEGORY 5  
HTGR CRITICAL FACILITY REPORTS COMPONENT FAILURE IN SCRAM CIRCUIT  
GULF GENERAL ATOMIC INC.  
1 PAGE, DOCKET 50-240, NOVEMBER 22, 1967

ON NOV. 1, 1967, DURING THE MONTHLY SAFETY EQUIPMENT CHECK, IT WAS DISCOVERED THAT THE OPTICAL METER RELAY IN THE FUEL-ELEMENT TEMPERATURE-GRADIENT SCRAM CHANNEL WAS INOPERATIVE. IT WAS REPLACED BY A SPARE, AND A TEST CIRCUIT ALLOWING WEEKLY CHECKS WAS INSTALLED. MALFUNCTION WAS NOTED IN LOG BOOK BUT NOT REPORTED TO AEC UNTIL NOV. 22, 1967.

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

\*FAILURE, COMPONENT + \*FAILURE, SCRAM MECHANISM + CRITICAL ASSEMBLY FACILITY + FUEL ELEMENT + INCIDENT, EQUIPMENT + REACTOR, HTGR + TEMPERATURE GRADIENT

17-21426

PEACH BOTTOM 1 APPLIES FOR CREDIT FOR BREATHING APPARATUS  
PHILADELPHIA ELECTRIC COMPANY  
12 PAGES, 1 TABLE, DOCKET NO. 50-171, TYPE--HTGR, MFG--G.A., AE--BECHTEL, NOVEMBER 20, 1967

SINCE (IN MAKING MODIFICATIONS TO THE STEAM GENERATOR SO THAT RATED POWER CAN BE REACHED) IT MAY BE NECESSARY TO ENTER THE STEAM GENERATOR (WHERE AIRBORNE RADIOACTIVITY LEVELS MAY EXCEED  $3 \times 10^{-10}$ TH) MICROCURIE/CC), PEACH BOTTOM HAS APPLIED FOR CREDIT FOR USE OF MASK, ETC. NINE PIECES OF EQUIPMENT (MSA DUSTFACE MASK, FULL-FACE MASK, ETC.) ARE DESCRIBED AND PROTECTION FACTORS ARE GIVEN. GUIDELINES (2 PAGES) FOR THEIR USE ARE GIVEN.

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

\*AEROSOL, RADIOACTIVE + \*AIR CLEANING + \*PERSONNEL PROTECTIVE DEVICE + FILTER EFFICIENCY + FILTER, GAS MASK + MODIFICATION, SYSTEM OR EQUIPMENT + PEACH BOTTOM 1 (HTGR) + REACTOR, HTGR + STEAM GENERATOR

17-21427

IIT RESEARCH INSTITUTE REQUEST DEACTIVATION OF ARR(L-54) REACTOR  
IIT RESEARCH INSTITUTE, CHICAGO, ILL.

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-21427 \*CONTINUED\*  
3 PAGES, DOCKET 50-1, NOVEMBER 17, 1967

IITRI (ARMOUR RESEARCH FOUNDATION) REQUESTS THAT LICENSE BE AMENDED TO ALLOW POSSESSION WITHOUT OPERATION OF THEIR HOMOGENEOUS-SOLUTION-TYPE REACTOR. OPERATION MAY BE RESUMED IN THE FUTURE. FACILITY WILL BE LOCKED, AND ENTERED ONLY FOR MAINTENANCE AND MONITORING. REACTOR STATUS WILL BE CHECKED DAILY.

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

REACTOR DECOMMISSIONING + REACTOR, HOMOGENEOUS + REACTOR, RESEARCH + TECHNICAL SPECIFICATIONS

17-21428  
DRL REQUESTS ADDITIONAL INFORMATION ON DRESDEN 1 CYCLE 6 FUEL LOADING  
USAEC DIVISION OF REACTOR LICENSING, WASHINGTON, D. C.  
2 PAGES, DOCKET NO. 50-10, TYPE--BWR, MFG--G.F., AE--BECHTEL, NOVEMBER 12, 1967

DRL LISTS 5 QUESTIONS CONCERNING PROPOSED TECHNICAL SPECIFICATIONS CHANGE (SEPT. 14, 1967) TO ALLOW TYPE-VI REPLACEMENT FUEL. (QUESTION 1) - WHAT SPECIAL ASSEMBLIES WILL BE USED IN CYCLE 6. (QUESTION 2) - REFUELING ACCIDENT. (QUESTION 3) - SPECIAL INSTRUMENTED TYPE-VI FUEL. (QUESTION 4) - FUEL ELEMENT ORIENTATION. (QUESTION 5) - CLARIFY ITEM 2 OF PROPOSED CHANGE.

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

\*REFUELING + AEC QUESTION + DRESDEN 1 (PWR) + REACTOR, BWR + TECHNICAL SPECIFICATIONS

17-21429  
SAXTON AMENDMENT 3 TO CHANGE REQUEST 25--TESTING OF SAFETY VALVE ANTI-SLIMMED DEVICES  
SAXTON NUCLEAR EXPERIMENTAL CORPORATION, SAXTON, PA.  
4 PAGES, DOCKET 50-146, TYPE--PWR, MFG--WFST., AE--GILBERT ASSOC., NOVEMBER 21, 1967

(ANSWER TO AEC QUESTION II.4.5.) INITIALLY EACH VALVE WILL BE INDIVIDUALLY TESTED AT ACTUAL OPERATING CONDITIONS TO VERIFY THAT THE DEVICE DOES NOT IMPEDE THE POPPING ACTION OF THE SAFETY VALVE. THE CONTROL CIRCUITS WILL BE RETESTED ONCE EVERY 6 MONTHS TO VERIFY FUNCTIONAL PERFORMANCE.

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

\*FLOW, PULSATING + MODIFICATION, SYSTEM OR EQUIPMENT + REACTOR, PWR + SAXTON (PWR) + TECHNICAL SPECIFICATIONS + VALVE

17-21431  
UCC STERLING FOREST REACTOR REPORT OF FACILITY CHANGES  
UNION CARBIDE CORP., TUXEDO, N.Y.  
2 PAGES, DOCKET 50-54, NOVEMBER 20, 1967

CHANGES INCLUDE (1) VOLTAGE REGULATOR INSTALLED TO STOP LOG-N NOISE CAUSED BY LARGE EXTERNAL POWER VARIATIONS (10-15%), (2) VENTILATION-SYSTEM MODIFICATIONS, AND (3) STAIRWAY REPLACES LADDER TO ROOF OF RADIOCHEM LAB.

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

MODIFICATION, SYSTEM OR EQUIPMENT + REACTOR, POOL TYPE + REACTOR, RESEARCH + REPORT, OPERATIONS SUMMARY

17-21432 ALSO IN CATEGORY 9  
NS SAVANNAH CHANGE 8--CONTROL ROD DROP TIME TEST INTERVAL  
USAEC DIVISION OF REACTOR LICENSING  
5 PAGES, DOCKET 50-228, TYPE--PWR, MFG--B+W, AE--G.G. SHARP, NOVEMBER 7, 1967

TEST INTERVAL WILL BE ANNUAL INSTEAD OF SEMI-ANNUAL. SCRAM TIME IS FROM FULL OUT TO 2/3 INSERTED. IF A TEST YIELDS A DROP TIME LONGER THAN 0.8 SEC (LICENSE LIMIT IS 1.0 SEC), TEST INTERVAL IS REDUCED TO SEMI-ANNUAL.

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

\*CONTROL ROD SCRAM MECHANISM + \*RESPONSE TIME + \*TEST INTERVAL + NS SAVANNAH (PWR) + REACTOR, PWR + SAFETY EVALUATION + TECHNICAL SPECIFICATIONS

17-21433  
NS SAVANNAH INCIDENT REPORT NO. 48--VALVE FAILURE  
FIRST ATOMIC SHIP TRANSPORT INC.  
7 PAGES, 1 FIGURE, DOCKET 50-238, TYPE--PWR, MFG--B+W, AE--G.G. SHAPP, DECEMBER 4, 1967

AN INCREASE IN PRESSURE IN THE SALT-WATER COOLING CIRCUIT REQUIRED THE SHIP TO RETURN TO HOBOKEN FOR REPAIR SINCE IT COULD NOT BE ESTABLISHED WHETHER THERE WAS A LEAK IN THE



CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-21433 \*CONTINUED\*

EMERGENCY COOLER. THE CAUSE WAS DUE TO FAILURE TO SEAT OF THE INLET AND EXIT VALVES ON THE EMERGENCY COOLING SYSTEM, ALLOWING A SMALL AMOUNT OF PRIMARY WATER AT 508 F TO FLOW THROUGH THE NORMALLY ISOLATED SYSTEM. THE HEAT TRANSFER CAUSED WATER IN THE ISOLATED SALT-WATER COOLING CIRCUIT TO EXPAND, THEREBY INCREASING THE PRESSURE. PRIOR INCIDENT 29 (JAN. 16, 1967) HAD SHOWN SIMILAR RESPONSE. (INCIDENT CONSIDERED INSIGNIFICANT BUT REPORTED BECAUSE OF WIDESPREAD INTEREST OF PRESS AND NEWS MEDIA AND THEIR TENDENCY TO OVERPLAY AND DISTORT FACTS.)

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

\*FAILURE, EQUIPMENT + \*VALVE + FAILURE, TUBING + HEAT EXCHANGER + NS SAVANNAH (PWR) + REACTOR, PWR + SHUTDOWN COOLING SYSTEM

17-21448

CVNPA ASKS FOR DELAY IN SEALING CVTR CONTAINMENT PENETRATIONS  
CAROLINAS VIRGINIA NUCLEAR POWER ASSOCIATES, INC., PARR, SOUTH CAROLINA  
2 PAGES, DOCKET 50-144, TYPE--PWR, MFG--WEST., AE--STONE + WEBSTER, DECEMBER 8, 1967

DECOMMISSIONING PROGRAM, SCHEDULED FOR COMPLETION SOON, REQUIRES THAT PENETRATIONS BE WELDED SHUT. CVNPA IS NEGOTIATING A SUBCONTRACT TO MAKE TESTS ON THE CONTAINMENT. CVNPA REQUESTS PERMISSION TO BLGCK THESE PENETRATIONS BUT NOT WELD THEM UNTIL A DECISION IS MADE ON THE TESTS.

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

\*CONTAINMENT, GENERAL + \*REACTOR DECOMMISSIONING + \*TESTING + CVTR (PWR) + REACTOR, GRAPHITE MODERATED + REACTOR, PRESSURE TUBE + REACTOR, PWR

17-21449

VA HOSPITAL AMENDMENT 4--AUTHORIZATION FOR USE OF A 2-CURIE SOURCE  
USAEC, DIVISION OF REACTOR LICENSING  
5 PAGES, DOCKET 50-131, DECEMBER 12, 1967

DRL ALLOWS USE OF A 2-CURIE AM-BE NEUTRON STARTUP SOURCE AS AN ALTERNATIVE TO THE PRESENTLY AUTHORIZED PO-BE SOURCE. NEW SOURCE IS A PELLETIZED MIXTURE OF AMO2-BE, DOUBLY ENCAPSULATED IN STAINLESS STEEL.

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

\*SOURCE, NEUTRON + DECAY HEAT + REACTOR, RESEARCH + SAFETY EVALUATION + TRIGA (RR)

17-21450

NS SAVANNAH REVISED PROPOSED CHANGE 15--ELIMINATION OF NUCLEAR ADVISOR POSITION  
FIRST ATOMIC SHIP TRANSPORT, INC.  
7 PAGES, 1 TABLE, DOCKET 50-238, TYPE--PWR, MFG--B+W, AE--G.G. SHRAP

THE POSITION OF NUCLEAR ADVISER WAS ESTABLISHED IN 1964 WHEN THE OPERATING CREW HAD LITTLE EXPERIENCE. FAST BELIEVES THAT THIS POSITION IS NO LONGER REQUIRED BECAUSE THE CREW AND SHORE STAFF HAS SUFFICIENT EXPERIENCE AND TRAINING. LETTER DESCRIBES THE TRAINING, TESTING, AND EXPERIENCE FOR ENGINEERING AND DECK OFFICERS. (NOTE - THIS REQUEST WAS WITHDRAWN FOR FURTHER STUDY, DECEMBER 11, 1967.)

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

NS SAVANNAH (PWR) + REACTOR, PWR + STAFFING, TRAINING, QUALIFICATION + TECHNICAL SPECIFICATIONS

17-21451

NS SAVANNAH WITHDRAWS REQUEST FOR ELIMINATION OF POSITION OF NUCLEAR ADVISOR  
FIRST ATOMIC SHIP TRANSPORT INC  
1 PAGE, DOCKET 50-238, TYPE--PWR, MFG--B+W, AE--G.G. SHARP, DECEMBER 11, 1967

(PROPOSED CHANGE 15 OF MAY 15, 1967, MODIFIED JULY 24, 1967.) FAST ASKS THAT REQUEST AS MODIFIED BE WITHDRAWN FOR FURTHER STUDY AND FUTURE RESUBMITTAL.

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

NS SAVANNAH (PWR) + REACTOR, PWR + STAFFING, TRAINING, QUALIFICATION + TECHNICAL SPECIFICATIONS

17-21454

OREGON STATE AGN-201 REPORTS FAILURE OF HIGH VOLTAGE CABLE TO MEET SPECIFICATIONS  
OREGON STATE UNIVERSITY  
2 PAGES, DOCKET 50-106, DECEMBER 6, 1967

ORIGINAL CABLE TO CHANNEL 1 WAS UNDERRATED AND HAS BEEN REPLACED. PROPORTIONAL BF3 COUNTER HAD BEEN BEHAVING POORLY, AND THE PLATEAU WAS AT 2000-2450 V (VS 1750-1950, ACCORDING TO

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-21454 \*CONTINUED\*  
MANUFACTURER). WITH NEW CABLE AND CONNECTORS, OPERATION IS MUCH IMPROVED AND PLATEAU IS 1850.  
AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*FAILURE, COMPONENT + \*INSTRUMENTATION, NUCLEAR + ELECTRICAL CONDUCTION + PERFORMANCE LIMIT + REACTOR, RESEARCH + TRIGA (RR)

17-21475 ALSO IN CATEGORIES 5 AND 6  
TECHNOLOGY OF BOILING WATER REACTOR STABILITY ANALYSIS  
GENERAL ELECTRIC COMPANY  
75 PAGES, 49 FIGURES, 16 REFERENCES, 4 TABLES, MEMORANDUM SCEP-60, DOCKET 50-277 AND 278, TYPE--BWR, MFG--G.E., AE--BECHTEL, JULY 1967

(INCORPORATED IN PEACH BOTTOM PSAR SUPPLEMENT 2.) ASSEPTED GOOD AGREEMENT BETWEEN FABLE-II PROGRAM AND KFS/GARIGLIANO ROD-OSCILLATOR DATA. APED HYDRODYNAMIC LOOP ENSURES SUCCESSFUL USE IN EXAMINING INTERCHANNEL HYDRODYNAMIC STABILITY. MODEL SUMMARIZED, BUT DATA (49 GRAPHS) IS POORLY DISCUSSED TO SUPPORT THE ASSERTION.

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

\*COMPARISON, THEORY AND EXPERIENCE + \*COMPUTER PROGRAM + \*FLOW STABILITY + PEACH BOTTOM 2 AND 3 (BWR) + REACTOR STABILITY + REACTOR, BWR

17-21476 ALSO IN CATEGORY 16  
FLUX OSCILLATION INCIDENT AT GARIGLIANO DURING ROD IMBALANCE  
GENERAL ELECTRIC COMPANY  
2 PAGES, PAGES 11 AND 14 OF MEMORANDUM SCEP-60, DOCKET 50-277 AND 278, TYPE--BWR, MFG--G.E., AE--BECHTEL, JULY 1967

BEFORE A SCHEDULED ROD-OSCILLATION EXPERIMENT, A FLUX OSCILLATION OF ABOUT 8-10% AT 1/3 HERTZ OCCURRED IN A TEST-LOOP CHANNEL NEAR A CONTROL ROD STUCK AT A POSITION ABOUT 30 IN. MORE WITHDRAWN THAN SYMMETRICALLY PLACED RODS. CHANNEL OUTLET WAS RESTRICTED BY A FLOW METER. OSCILLATION INDICATED ON IN-CORE INSTRUMENTATION LASTED FROM 3 TO 5 MIN AND WAS TERMINATED BY INSERTING AN ADJACENT ROD 15 IN. OTHER CHANNELS ALSO SHOWED FLUX OSCILLATIONS, WITH THE AMPLITUDE DECREASING WITH DISTANCE FROM THE DRIVING CHANNEL.

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

\*FLOW STABILITY + CONTROL ROD PROGRAM + FAILURE, SCRAM MECHANISM + INCIDENT, GENERAL + INSTRUMENTATION, ABNORMAL INDICATION + INSTRUMENTATION, IN CORE + REACTOR STABILITY + REACTOR, BWR + SENN

17-21661  
AMENDMENT 1 TO APPLICATION FOR LACROSSE LICENSE TRANSFER TO DAIRYLAND POWER  
DAIRYLAND POWER COOPERATIVE, LA CROSSE, WISCONSIN  
115 PAGES, DOCKET 115-5, TYPE--BWR, MFG--A.C., AE--SGT + LUNDY

DOCUMENT SETS FORTH (1) QUALIFICATIONS OF UNITED NUCLEAR CORPORATION AS APPLICABLE TO TECHNICAL-SUPPORT SERVICES TO DAIRYLAND POWER AND (2) SUMMARY PROCEDURES UNDER WHICH DAIRYLAND AND UNC WILL WORK IN OBTAINING AND PERFORMING SUCH SERVICES. CONSISTS MAINLY OF UNC PERSONNEL SUMMARIES.

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

LACROSSE (BWR) + REACTOR, BWR + STAFFING, TRAINING, QUALIFICATION

17-21664 ALSO IN CATEGORY 15  
OHIO STATE UNIVERSITY REPORTS NONCOMPLIANCE WITH RADIATION MONITOR REQUIREMENTS  
OHIO STATE UNIVERSITY, COLUMBUS, OHIO  
6 PAGES, DOCKET 50-150, NOVEMBER 24, 1967

TECHNICAL SPECIFICATIONS REQUIRE A PORTABLE BETA-GAMMA SURVEY METER WITH A RANGE OF 0.01 MR/HR TO 50 R/HR. THE ONLY SUCH INSTRUMENT AT THE FACILITY, A RAD GUN, WAS REPORTED INOPERATIVE ON AUGUST 29, 1967, AND WAS SHIPPED FOR REPAIRS ON OCT. 30, 1967. OPERATIONS CONTINUED UNTIL THE SITUATION WAS REALIZED DURING STARTUP ON NOVEMBER 8, 1967. SUPERVISION BELIEVES THIS WAS A TECHNICALITY BECAUSE TWO OPERABLE INSTRUMENTS (2.5 AND 5 R/HR) WERE AVAILABLE.

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

\*MONITOR, RADIATION, GENERAL + REACTOR, POOL TYPE + REACTOR, RESEARCH + TECHNICAL SPECIFICATIONS

17-21670  
FULTONBERG DN  
CORROSION OF ALUMINUM IN WATER  
WESTINGHOUSE ELECTRIC CORPORATION, PITTSBURGH, PA.

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-21670 \*CONTINUED\*  
NASA-CR-899 + WCAP-7029 +. 76 PAGES, 21 FIGURES, 18 TABLES, 11 REFERENCES, OCTOBER 1967

GIVES RESULTS OF TESTS (IN AUTOCLAVES AND PUMP LOOPS) DETERMINING THE AMOUNT OF CORROSION AND HYDROGEN GENERATION IN ALUMINUM AT CONDITIONS TYPICAL OF THE MODERATOR OF THE TUNGSTEN WATER-MODERATOR REACTOR. CONCLUSION WAS THAT H<sub>2</sub> GENERATION COULD BE EXCESSIVE BUT THAT FURTHER EXPERIMENTS ARE NECESSARY TO PREDICT GENERATION RATES. ALSO COVERS TREATMENT OF THE AL TO REDUCE THE H<sub>2</sub> GENERATION.

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

\*ALUMINUM + \*COOLANT CHEMISTRY + \*CORROSION + HYDROGEN + SURFACE FILM DEPOSIT

17-21714 ALSO IN CATEGORY 15  
SIX-REM EXPOSURE AT AVONDALE SHIPYARDS DURING RADIOGRAPHY  
AVONDALE SHIPYARDS, INC., NEW ORLEANS  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(18), PAGES 13-14, (MAY 1, 1967)

(TWX, APRIL 7) RADIOGRAPHER SUPERVISOR RECEIVED 6 REMS WHEN A 65-CURIE IR-192 SOURCE STUCK IN THE SOURCE CABLE. THE OPERATOR DID NOT RECEIVE A DOSE ON DOSIMETERS.

\*PERSONNEL EXPOSURE, RADIATION + \*RADIOGRAPHY + FAILURE, EQUIPMENT + INCIDENT, EQUIPMENT

17-21715 ALSO IN CATEGORY 14  
TRITIUM RELEASE FROM MIT REACTOR DUE TO HEAT EXCHANGER LEAK  
MASSACHUSETTS INSTITUTE OF TECHNOLOGY, CAMBRIDGE, MASS.  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(18), PAGES 14-15 (MAY 1, 1967)

(LETTER, MARCH 24) A TUBE LEAK WAS INDICATED FEB. 21 AND PROVED ON FEB. 23. 60 LITERS OF D<sub>2</sub>O, CONTAINING 67.8 CURIES OF TRITIUM, HAD LEAKED INTO THE 20,000-GAL SECONDARY SYSTEM. URINE SAMPLES FROM THREE REACTOR-OPERATIONS PERSONNEL WHO SHUT DOWN THE COOLING TOWER WERE 0.29 TO 0.91 MICROCURIE/LITER, BELOW MPC. BLOWDOWN TO THE SFWR AND COOLING TOWER EVAPORATION WERE BOTH BELOW MPC.

\*FAILURE, TUBING + \*HEAT EXCHANGER + \*TRITIUM + EFFLUENT + INHALATION + REACTOR, HWR

17-21716 ALSO IN CATEGORY 14  
NUCLEAR FUEL SERVICES REPORTS ON WASTE EVAPORATOR LEAK OF FEBRUARY 15, 1967  
NUCLEAR FUEL SERVICES, INC., WEST VALLEY, NEW YORK  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(18), PAGES 15-16 (MAY 1, 1967)

(LETTER, MARCH 14) DURING TRANSFER OF EVAPORATOR BOTTOMS TO WASTE STORAGE, A TECHNICIAN ENTERED THE PUMP ROOM AND DISCOVERED A LEAK IN A PIPING TEE. ABOUT 2100 LITERS WENT TO THE INTERCEPTOR FROM FLOOR DRAINS. THE INTERCEPTOR WAS NOT BEING DISCHARGED, CONTAINED 37,000 GALLONS, AND WAS 200 MR/HR AT THE RAILING. THE INTERCEPTOR CONTENTS WERE RETURNED FOR REWORK, AND THEY WERE BYPASSED FOR ROUTINE DISCHARGES DURING NONOPERATING PERIODS.

\*FAILURE, PIPE + \*WASTE TREATMENT, GENERAL + EVAPORATION + LEAK + NFS + RADIOCHEMICAL PROCESSING

17-21717 ALSO IN CATEGORY 15  
NUCLEAR FUEL SERVICES CITED FOR NON-COMPLIANCE  
NUCLEAR FUEL SERVICES, INC., WEATON, MD.  
5 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(18), PAGES 16-20 (MAY 1, 1967)

(LETTER, MARCH 15) CITATION IS FOR INADEQUATE RADIATION MONITORING OF STACK AND OF DECONTAMINATION OPERATIONS, AND 35/27 MISSING FILM BADGES FOR 2ND/3RD QUARTER OF 1966. LETTER ALSO REQUESTS DATA ON BETTER CONTROL OF VENTILATION (SNOW PLUGGING OF MAIN INTAKE, INFLATABLE SEALS ON OUTSIDE DOOR, AND SIMULTANEOUS OPENING OF BOTH AIRLOCK DOORS.) NFS LETTER OF JANUARY 3 ASSERTED IN REPLY TO AEC LETTER OF DECEMBER 13, 1966 THAT ACTION WAS BEING TAKEN ON POINTS NOTED.

\*INSPECTION AND COMPLIANCE + \*SURVEY, RADIATION, GENERAL + \*VENTILATION SYSTEM + NFS + RADIOCHEMICAL PROCESSING + STACK

17-21718 ALSO IN CATEGORY 14  
BURTSVAGE EM  
U.S. RADIUM CORP. REPORTS 6 EXCESSIVE STACK DISCHARGES  
U.S. RADIUM CORP., BLOOMSBURG, PA.  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(18), PAGES 21-22 (MAY 1, 1967)

(LETTER, MARCH 22) DISCHARGES DURING THE FIRST QUARTER OF 1967 WERE 18.26, 126.09, 63.94, 291.37, 15.44, AND 61.74 TIMES MPC PRIMARILY INSTANTANEOUS CONVERSION OF TRITIUM GAS IN WATER TO HTO, SO THAT PERMISSIBLE CONCENTRATIONS OF H (SUB) IN A FACILITY WITH NORMAL HUMIDITY WILL PROBABLY RESULT IN CONCENTRATIONS OF H(S) ABOVE MPC.

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-21718 \*CONTINUED\*  
\*AIRBORNE RELEASE + \*STACK + \*TRITIUM + CHEMICAL REACTION + MAXIMUM PERMISSIBLE CONCENTRATION (MPC) +  
SORPTION

17-21719 ALSO IN CATEGORY 15  
BRANTLEY JC  
NUCLEAR SCIENCE AND ENGINEERING CORP. REPLIES TO MARCH 10 COMPLIANCE LETTER  
NUCLEAR SCIENCE AND ENGINEERING CORPORATION, PITTSBURGH, PA.  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(18), PAGES 20-21 (MAY 1, 1967)

(LETTER, MARCH 27) ACKNOWLEDGES THAT (1) HEALTH PHYSICS PROGRAM WAS INADEQUATE DURING PERIOD,  
DUE TO LACK OF EQUIPMENT, (2) HP FUNCTIONS WERE NOT CONSCIENTIOUS, AND (3) MANAGEMENT  
CONTROLS WERE SLOW TO IDENTIFY THIS. BRIEFLY DISCUSSES 9 ITEMS (AIR SURVEYS, EFFLUENT-AIR  
SURVEYS, UNRESTRICTED-AREA RADIATION FIELDS, LEAK TESTING OF SEALED SOURCES, RADIOLOGICAL  
SAFETY INSTRUCTION, RADIATION/CONTAMINATION MONITORING PROGRAM, EXTREMITY DOSES, SURVEY  
RECORDS).

\*INSPECTION AND COMPLIANCE + MONITORING SYSTEM, RADIATION + STAFFING, TRAINING, QUALIFICATION +  
SURVEY, RADIATION, GENERAL

17-21720 ALSO IN CATEGORY 15  
STEERMAN JJ  
UNIVERSITY OF ILLINOIS REPORTS SKIN EXPOSURE TO P-32  
UNIVERSITY OF ILLINOIS, URBANA, ILL.  
3 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(18), PAGES 22-24 (MAY 1, 1967)

(LETTER, MARCH 31) THE INDIVIDUAL ASSUMED THAT THE FIRST FEW DROPS OF SOLUTION FROM THE ION  
EXCHANGE COLUMN WOULD NOT BE VERY HOT AND DID NOT CHECK WITH INSTRUMENTS WHEN HE FOUND HIS  
GLOVE TORN. FILM BADGE SHOWED 300 MREM BETA AND 13 MR GAMMA (WHOLE BODY). ESTIMATES OF DOSE  
TO HANDS/THUMB ARE 7.3/147 RADS. IN THE BACK-CALCULATION OF THE HAND DOSE, DECONTAMINATION  
FACTORS FOR THE VARIOUS TREATMENTS WERE ESTIMATED USING A SIMILAR EXPOSURE AND TREATMENT OF A  
BABY PIGS SKIN.

\*DECONTAMINATION + \*FAILURE, OPERATOR ERROR + \*ION EXCHANGE + BETA EMITTER +  
PERSONNEL EXPOSURE, RADIATION + PERSONNEL PROTECTIVE DEVICE + PHOSPHORUS

17-21752  
GOIDANICH G  
DISCHARGE AND BY-PASS SAFETY VALVE FOR HIGH-PRESSURE BOILERS. SOME DATA ON DESIGN OF THE VALVE FOR  
THERMONUCLEAR PLANT  
5 PAGES, 7 FIGURES, TERMOTECNICA (MILAN), 20, PAGE 524-528, (1966), IN ITALIAN

THE DESIGN OF A DISCHARGE VALVE AND A PRESTATED BYPASS VALVE FOR USE IN HIGH-PRESSURE BOILERS  
IN THERMOELECTRIC PLANTS ARE GIVEN. THE RIGID EQUIPMENTS PLACED ON VALVES FOR USE IN  
NUCLEAR POWER PLANTS ARE OUTLINED. THE DESIGN OF SOME TYPICAL VALVES IS GIVEN.

\*ITALY + \*VALVE

17-21753  
ARGONNE NATIONAL LABORATORY. REACTOR DEVELOPMENT PROGRAM PROGRESS REPORT. OCTOBER 1967  
ARGONNE NATIONAL LAB., ARGONNE, ILLINOIS  
ANS-7391 +. 185 PAGES, FIGURES, TABLES, NOV. 30, 1967

ONE OF A SERIES OF REPORTS COVERING EBR II, ZPR 3, ZPPR, AAGR, LMFBR, ETC. OVER HALF CONCERNS  
THE LIQUID-METAL FAST-BREEDER PROGRAM. (EBR II) AN OSCILLATOR ROD WAS INSTALLED IN PLACE OF  
A CONTROL ROD. INITIAL TESTS INDICATED DIFFICULTIES (PREVIOUSLY EXPERIENCED) WITH RUBBING AT  
LOW FREQUENCIES.

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

\*CONTROL ROD DRIVE + \*OSCILLATOR, REACTIVITY + REACTOR, BREEDER + REACTOR, FAST + REACTOR, LMCR +  
REACTOR, RESEARCH + REPORT, OPERATIONS

17-21809  
PROPOSED ISSUANCE OF SEXTON AMENDMENT 3--POWER UPGRATING  
USAEI DIVISION OF REACTOR LICENSING  
20 PAGES, DOCKET 40-146, TYPE--PWR, MFG--WEST., AE--GILBERT ASSOC., DECEMBER 26, 1967

THIS WOULD ALLOW OPERATION AT 35 MWT FOR ABOUT 3500 MWT DAYS. BEFORE ISSUANCE, DRL WILL  
VERIFY THAT MODIFICATIONS DESCRIBED IN THE APPLICATION AND SUPPLEMENTS ARE SATISFACTORILY  
COMPLETED. HIGHER POWER, AT END OF CORE II, IS TO GAIN INFORMATION AT OPERATING CONDITIONS  
SIMILAR TO PLANNED PWRs. PEAK SPECIFIC POWER (19.1 KW/FT) IS 0.6 ABOVE THE HIGHEST YET  
APPROVED (INDIAN POINT 2). W-3 DNB DURING NORMAL OPERATION IS 1.52 VS LATEST PWRs, WHICH  
ARE 1.82. STATISTICAL ANALYSIS FOR WORST OVER-POWER CASE PREDICTS 0.74 RODS MIGHT EXPERIENCE

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-21809 \*CONTINUED\*  
DNB.

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

\*DNB + \*POWER UPGRATING + \*REACTOR POWER + PERFORMANCE LIMIT + REACTOR, PWR + REACTOR, TEST + SAFETY EVALUATION + SAXTON (PWR) + TECHNICAL SPECIFICATIONS

17-21810 ALSO IN CATEGORY 5  
BIG ROCK POINT SUPPLIES ADDITION INFORMATION ON PROPOSED CHANGE 13--RESULT OF TWO-PUMP TRIP ANALYSIS  
CONSUMERS' POWER COMPANY  
2 PAGES, DOCKET 50-155, TYPE--BWR, MFG--G.E., AE--BFCHELT, DECEMBER 14, 1967

ANALYSIS OF 2-PUMP TRIP FOR END OF LIFE AND BEGINNING OF LIFE, AND FOR 7 X 7, 8 X 8, AND TYPE-C (11 X 11) FUEL. TABLE GIVES POWER, CORE FLOW, AND MCHFERS VS TIME 0, 1--5 SEC AFTER TRIP. MCHFR IN ALL CASES INCREASES WITH TIME (MINIMUM IS AT T EQUALS ZERO).

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

\*ACCIDENT, LOSS OF FLOW + \*BURNOUT HEAT FLUX + \*CENTERLINE MELTING + BIG ROCK POINT (BWR) + REACTOR, BWR + TECHNICAL SPECIFICATIONS

17-21811  
GULF GENERAL ATOMIC TRIGA MARK F CHANGE 9--INTERM OPERATION OF FUELED EXPERIMENTS  
USAEC DIVISION OF REACTOR LICENSING  
2 PAGES, DOCKET 50-163, DECEMBER 19, 1967

DRL GIVES INTERIM APPROVAL FOR FUEL EXPERIMENTS SO LONG AS THE TOTAL IODINE INVENTORY IN THE EXPERIMENTS DOES NOT EXCEED 1.5 CURIES. GULF/GENERAL ATOMIC ASKED (NOV. 22, 1967) FOR A LIMIT OF 1.77F CURIES, WHERE F IS THE RELEASE FACTOR, BUT ASKED FOR INTERIM APPROVAL OF THE 1.5-CURIE LIMIT DUE TO THE IMMEDIATE NEED TO PERFORM CERTAIN EXPERIMENTS.

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

\*FISSION PRODUCT, IODINE + \*IRRADIATION TESTING + FISSION PRODUCT RELEASE, GENERAL + REACTOR, RESEARCH + SAFETY EVALUATION + TECHNICAL SPECIFICATIONS + TRIGA (RR)

17-21812  
EVESR PROPOSED AMENDMENT 15--UTILIZATION OF DISMANTLED EVESR COMPONENTS  
GENERAL ELECTRIC COMPANY, SAN JOSE, CALIF.  
7 PAGES, DOCKET 50-183, DECEMBER 20, 1967

PROPOSED AMENDMENT 14 REQUESTED LICENSE TERMINATION. PROPOSED AMENDMENT 15 PROPOSES A SECOND COURSE OF ACTION SINCE LICENSE TERMINATION DOES NOT APPEAR POSSIBLE AT THIS TIME. THE REACTOR HAS BEEN DEACTIVATED AND DEFUELED. GE WISHES TO MAKE NONREACTOR USE OF THE FACILITY, INCLUDING MAKING VARIOUS TESTS AND EXPERIMENTS ON THE COMPONENTS AND SYSTEMS. THE ONLY SIGNIFICANT SOURCE OF RADIOACTIVITY IS THE PRESSURE VESSEL; AND NO EXPERIMENTS ARE PLANNED FOR IT. ADMINISTRATIVE CONTROL WILL BE SIMILAR TO THAT FOR AN OPERATING REACTOR.

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

REACTOR DECOMMISSIONING + REACTOR, BWR + REACTOR, INTERNAL SUPERHEAT + VESR (ISR)

17-21813  
DRL REQUESTS THAT DAIRYLAND POWER SUPPLY INFORMATION RETENTION OF RECORDS  
USAEC, DIVISION OF REACTOR LICENSING, WASHINGTON, D. C.  
2 PAGES, DOCKET 115-5, TYPE--BWR, MFG--A.C., AE--SGT + LUNDY, DECEMBER 26, 1967

- DRL BELIEVES THAT SINCE (1) THE RECORDS CONCERNING CONSTRUCTION AND DESIGN MAY BE VERY IMPORTANT IN RESOLVING FUTURE PROBLEMS, (2) ALLIS-CHALMERS IS GOING OF THE NUCLEAR BUSINESS, AND (3) THE RECORDS ARE NOW STORED AT SEVERAL LOCATIONS, THE RECORDS SHOULD BE RETAINED AND ACCESSIBLE TO THE OPERATING AGENCY FOR FUTURE USE.

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

ADMINISTRATIVE CONTROL + INFORMATION RETRIEVAL + LACROSSE (BWR) + REACTOR, BWR

17-21814 ALSO IN CATEGORY 1  
NUCLEONICS WEEK REPORTS RESULTS OF SURVEY COMPARING NUCLEAR AND NONNUCLEAR PLANTS  
2 PAGES, NUCLEONICS WEEK, PAGES 4-5 (JUNE 2, 1966)

(CONSUMERS' POWER CO.) COVERS SHIPPINGPORT, DRESDEN, YANKEE, INDIAN POINT, BIG ROCK POINT, HUMBOLDT BAY, HALLAM, PIQUA, CVTR, AND FERMI FROM THE START OF OPERATIONS TO PRESENT, AND ALL THE CONVENTIONAL POWER STATIONS OF THE SAME COMPANIES. ACCIDENT RATES PER MILLION MAN-HOURS ARE LOST-TIME ACCIDENTS (NUCLEAR-2.96, NONNUCLEAR-4.14), MEDICAL CASES (58.4 VS 61.29), AND

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-21814 \*CONTINUED\*

SEVERITY RATE IN DAYS LOST PER MILLION MAN HOURS (917.4 VS 738.9). WALKER SAYS THAT THE NUMBER OF EMPLOYEE RADIATION EXPOSURES ABOVE THE STATUTORY LIMIT CAN BE COUNTED ON ONE HAND.

\*INCIDENT COMPILATION + INCIDENT, GENERAL + INCIDENT, NONREACTOR + REACTOR, POWER

17-21815 ALSO IN CATEGORY 7

GULF GENERAL ATOMIC PROPOSED AMENDMENT--FUELED EXPERIMENTS IN TRIGA MARK F

GULF GENERAL ATOMIC, INC.

9 PAGES, 1 FIGURE, 1 TABLE, DOCKET 50-162, NOVEMBER 22, 1967

GULF-G.A. WITHDRAWS MAY 21, 1967, APPLICATION AND REQUESTS AUTHORITY TO PERFORM FUEL EXPERIMENTS WITH THE LIMITATION THAT THE RELEASABLE IODINE INVENTORY NOT EXCEED 1.7/F CURIES, WHERE F IS THE ACTUAL RELEASE FRACTION OF MATERIAL INVOLVED BASED ON EXISTING DATA, OR 1.0 IF NO DATA IS AVAILABLE. THIS LIMIT WAS DETERMINED FROM REACTOR-ROOM EXPOSURES, AND RESULTS IN NO APPRECIABLE OFF-SITE DOSE. ATTACHMENT 1 IS A HAZARDS ANALYSIS - CONSEQUENCES OF ACTIVITY RELEASE FROM THE TRIGA MARK F REACTOR. GULF-G.A. ASKS FOR A TEMPORARY AUTHORIZATION TO OPERATE EXPERIMENTS WITH 1.5 CURIES OF IODINE.

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

\*FISSION PRODUCT, IODINE + \*IRRADIATION TESTING + HAZARDS ANALYSIS + REACTOR, RESEARCH + TECHNICAL SPECIFICATIONS + TRIGA (99)

17-21827 ALSO IN CATEGORY 9

TIMMERMANN P

ANALYSIS OF FAILURE DATA FOR ELECTRONIC EQUIPMENT AT RISO. PERIOD 1960-1965

DANISH ATOMIC ENERGY COMMISSION, RESEARCH ESTABLISHMENT, RISO

SUPPLEMENT TO RISO REPORT NO. 38 +. 13 PAGES, 12 TABLES, REFERENCES, APRIL 1967, PRESENTED AT CREST MEETING, BRUSSELS

THIS SUPPLEMENTARY PAPER SUMMARIZES THE FAULT STATISTICS OF FAILURE DATA FOR ELECTRONIC EQUIPMENT AT RISO FOR THE FIVE-YEAR PERIOD 1960-1965. THE DATA ARE PRESENTED FROM A POINT OF VIEW OF RELIABILITY PREDICTIONS. THE EQUIPMENT COVERED BY THE REPORTING SYSTEM CONSISTS OF (1) LABORATORY INSTRUMENTS DESIGNED IN THE DEPARTMENT AND (2) COMMERCIAL REACTOR INSTRUMENTS BELONGING TO THE TWO RESEARCH REACTORS DR2 AND DR3.

AVAILABILITY - P. TIMMERMANN, DANISH ATOMIC ENERGY COMMISSION, DENMARK

\*FAILURE, INSTRUMENT + \*OPERATING EXPERIENCE SUMMARY + \*RELIABILITY ANALYSIS + DENMARK + REACTOR, RESEARCH + RISO

17-21828 ALSO IN CATEGORY 9

JENSEN A + RASMUSSEN + TIMMERMANN P

ANALYSIS OF FAILURE DATA FOR ELECTRONIC EQUIPMENT AT RISO

DANISH ATOMIC ENERGY COMMISSION, RESEARCH ESTABLISHMENT, RISO

RISO REPORT NO. 38 +. 22 PAGES, 13 TABLES, REFERENCES, SEPTEMBER, 1963, PRESENTED AT CREST MEETING, BRUSSELS, APRIL 1967

A FAILURE-REPORTING SYSTEM FOR ELECTRONIC EQUIPMENT IS DESCRIBED, AND FAULT DATA FOR SELECTED ELECTRONIC REACTOR INSTRUMENTS AND RESEARCH EQUIPMENT ARE PRESENTED. SOME AVERAGE FIGURES ARE SUGGESTED FOR ROUGH PREDICTIONS OF FAILURES IN LARGER INSTRUMENT SYSTEMS.

AVAILABILITY, JUL. GJELLERUP, 87, SOLVGATE, COPENHAGEN K. DENMARK

\*FAILURE, INSTRUMENT + \*OPERATING EXPERIENCE SUMMARY + \*RELIABILITY ANALYSIS + DENMARK + REACTOR, RESEARCH + RISO

17-21918

COSTNER RA + CRAMER EN + SCOTT RL

REACTOR OPERATOR STUDY HANDBOOK--VOLUME II--RADIATION SAFETY AND CONTROL

OAK RIDGE NATIONAL LABORATORY

ORNL-TM-2034 +. 181 PAGES, FIGURES, TABLES, JANUARY 1968

PART OF A 5 VOLUME SET OF PROGRAMMED INSTRUCTION. EACH CHAPTER INCLUDES A SELF-TEST. CHAPTER HEADINGS ARE ATOMS (8 PGS), IONIZATION (19 PGS), RADIATION UNITS (19 PGS), HEALTH HAZARDS OF RADIATION (28 PGS), RADIATION PROTECTION METHODS (53 PGS), AND RADIOACTIVE CONTAMINATION PROTECTIVE MEASURES (34 PGS). \*\*\* BOOK INTENDED FOR OPERATORS TRAINING IN UNDERSTANDING THE IMPORTANT ASPECTS OF RADIATION SAFETY NECESSARY FOR HIGH LICENSING PURPOSES AND GOOD OPERATION. USEFUL REGARDLESS OF THE REACTOR TYPE.

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

\*RADIATION SAFETY AND CONTROL + \*STAFFING, TRAINING, QUALIFICATION + HEALTH PHYSICS TRAINING + PROCEDURES AND MANUALS

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-21928  
SURRY AMENDMENT 2 TO LICENSE APPLICATION REVISED PAGES TO PSAR  
VIRGINIA ELECTRIC AND POWER CO., RICHMOND, VA.  
6 PAGES, DOCKET 50-260/281, TYPE--PWR, MFG--WEST, AE--STONE + WEBSTER, JULY 5, 1967

AMENDMENT 2 CONSISTS OF REVISED AND ADDITIONAL PAGES TO THE PSAR, SECTION 14 (SAFETY ANALYSIS).

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

\*ACCIDENT ANALYSIS + \*SAFETY ANALYSIS + REACTOR, PWR + REPORT, PSAR + SURRY 1 AND 2 (PWR)

17-21987 ALSO IN CATEGORY 6  
SAXTON PLUTONIUM PROGRAM SEMIANNUAL PROGRESS REPORT FOR THE PERIOD ENDING JUNE 30, 1967  
WESTINGHOUSE ELECTRIC CORP., PITTSBURGH, PA. ATOMIC POWER DIV.  
WCAP-3385 + EURAEC-1877 +. 36 PAGES, 20 FIGURES, 3 TABLES, 4 REFERENCES, JUNE 30, 1967

REACTOR WAS SHUT DOWN 5 MONTHS TO INSTALL SUPERCRITICAL LOOP. (PAGES 5-16) THE LAST JUST-CRITICAL BOPON CONCENTRATION CALCULATION BEING 10% HIGH WAS ATTRIBUTED TO EITHER (A) NONUNIFORM AXIAL FUEL-BURNUP DEPLETION IN PDQ-XY, WORTH 700 HR OUT OF A PREDICTED 9500, OR, (B) LEOPARD CROSS SECTIONS INADEQUATE FOR PLUTONIUM, WORTH 250 HR. (PAGES 22-35) TWO FUEL RODS WERE GAMMA-SCANNED AND METALLOGRAPHIC SPECIMENS PREPARED. VIPAC FUEL HAD MORE CLAD-HYDRIDE (MORE MOISTURE IN FUEL) AND A REACTION LAYER (APPARENTLY FROM REDUCTION OF HYPERSTOICHIOMETRIC FUEL).

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

\*FUEL ELEMENT + \*IRRADIATION TESTING + \*PLUTONIUM DIOXIDE + FUEL, POWDER TYPE + HYDRIDE + R AND D PROGRAM + REACTIVITY EFFECT, ANOMALOUS + REACTOR, PWR + SAXTON (PWR) + STOICHIOMETRY + ZIRCALOY

17-21991  
PAXSON E + SMALLEY WR  
ENGINEERING AND METALLURGICAL EVALUATION OF THE YANKEE CORE I SPENT FUEL  
WESTINGHOUSE ELECTRIC CORP., PITTSBURGH, PA. ATOMIC POWER DIV.  
WCAP-6084 +. 171 PAGES, 130 FIGURES, 15 TABLES, 36 REFERENCES, JUNE 1967

CONCLUSION WAS THAT UO<sub>2</sub> FUEL AND SS-348 CLAD HAD PERFORMED SATISFACTORILY UP TO 46,000 MWD/MTU AND DOSES OF  $8 \times 10^{21}$  NEUTRONS GREATER THAN 1 MEV. 16 FUEL ASSEMBLIES WERE EXAMINED AND 71 FUEL RODS DESTRUCTIVELY TESTED. CLAD TUBE-BURSTS WERE MADE, AND UO<sub>2</sub> MELTING POINT WAS DETERMINED AS A FUNCTION OF FUEL BURNUP. SURFACE FILM DEPOSITS, SCRATCHES, RUB MARKS FROM CONTROL RODS, DISCOLORATIONS, EXTENT OF EROSION, ETC., DESCRIBED. A 2-IN.-LONG, 0.07-IN.-THICK PIECE OF FOLDED SHEET METAL FOUND IN AN ASSEMBLY CAUSED NO OPERATIONAL PROBLEMS.

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

\*EXAMINATION + \*FUEL PURNUP + \*FUEL ELEMENT + CLAD + DAMAGE + FLOW BLOCKAGE + MATERIAL + PROPERTY, PHYSICAL + R AND D PROGRAM + REACTOR, PWR + STEEL, STAINLE33 + SURFACE FILM DEPOSIT + URANIUM DIOXIDE + YANKEE (PWR)

17-22107  
NUCLEAR ENERGY - IMPROVING THE BREEDER  
1 PAGE, TIME MAGAZINE, PAGE 64, (JAN. 5, 1968)

A ONE-COLUMN ARTICLE BRIEFLY DESCRIBES THE OCT. 1966 FERMI INCIDENT, THE SEARCH FOR ITS CAUSE, AND PLANS FOR REMOVING THE FOREIGN OBJECT. LESSONS LEARNED ARE - WARNING SYSTEMS SHOULD BE COMPUTERIZED TO GIVE EARLIER INDICATIONS, STRAINERS SHOULD BE INSTALLED IN COOLING SYSTEMS, AND DESIGN SHOULD ALLOW FASTER DISMANTLING, INSPECTION, AND REPAIR.

\*RADIATION, PUBLIC EDUCATION/ACCEPTANCE + FERMI (LMFBR) + FILTER, SCREEN + FLOW BLOCKAGE + INCIDENT, GENERAL + MAIN COOLING SYSTEM + MAINTENANCE AND REPAIR + PLANT PROTECTIVE SYSTEM + REACTOR, BREEDER + REACTOR, FAST

17-22110 ALSO IN CATEGORY 11  
RITCHIE AS  
SAFETY EXPERIENCE AND THE CONTROL OF HAZARDOUS IN HOT CELL OPERATIONS AT HARWELL  
UKAEA, BERKS (HARWELL)  
1 PAGE, ANS TRANSACTIONS 10(2), PAGE 679, (NOV. 1967), PRESENTED AT THE 1967 WINTER MEETING OF THE AMERICAN NUCLEAR SOCIETY, CHICAGO, ILLINOIS, NOVEMBER 5-9, 1967

THE ATOMIC ENERGY RESEARCH ESTABLISHMENT AT HARWELL, ENGLAND, HAS TWO MAJOR ACTIVE-HANDLING BUILDINGS, ONE TO PROVIDE A GENERAL-PURPOSE SERVICE AND THE OTHER FOR SPECIALIZED ACTIVE-HANDLING WORK ASSOCIATED WITH THE METALLURGICAL RESEARCH PROGRAM. THIS PAPER

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-22110 \*CONTINUED\*

DESCRIBES SOME OF THE INCIDENTS THAT HAVE OCCURRED SINCE THE BUILDINGS WENT INTO SERVICE IN 1957 AND GIVES EXAMPLES OF SOME OF THE EQUIPMENT AND METHODS THAT HAVE BEEN DEVELOPED TO ENSURE THAT PROPER CONTROL OF THE HAZARDS IS MAINTAINED.

\*HOT CELL + \*OPERATING EXPERIENCE SUMMARY + ADMINISTRATIVE CONTROL + CONTAINMENT ATMOSPHERE, INERT + FIRE + HARWELL + INSPECTION AND COMPLIANCE

17-22117 ALSO IN CATEGORY 11

HOWELL GR + PRINCE K

ENTRY INTO THE WINDSCALE ADVANCED GAS-COOLED REACTOR PRESSURE VESSEL

UKAEA, WINFRITH + UNITED KINGDOM ATOMIC ENERGY AUTHORITY, LANCASHIRE, RISLEY

8 PAGES, 6 FIGURES, JOURNAL OF THE BRITISH NUCLEAR ENERGY SOCIETY 6(3), PAGE 241-248, (JULY 1967)

IN OCTOBER 1966, THE OPERATORS OF THE WINDSCALE ADVANCED GAS-COOLED REACTOR ENTERED THE MAIN PRESSURE VESSEL AND MADE THE FIRST GENERAL INSPECTION OF THE REGION WITHIN THE UPPER DOME IN THE VICINITY OF THE HUI BOX, WITHOUT REMOVAL OF IRRADIATED FUEL FROM THE REACTOR. THIS WAS MADE POSSIBLE BY THE UPPER NEUTRON SHIELD, WHICH IS A FEATURE OF THE AGR DESIGN. IN THIS ARTICLE THE DESIGN OF THIS SHIELD AND THE INSPECTIONS MADE WITHIN THE VESSEL ARE DESCRIBED, AND THE MEASURED DOSE RATES ARE COMPARED WITH ORIGINAL ESTIMATES. IT IS CONCLUDED THAT THESE MEASUREMENTS HAVE CONFIRMED THE EFFECTIVENESS OF THE SHIELD AND THAT THE ANTICIPATED INCREASE IN DOSE RATES WILL BE SUFFICIENTLY SMALL TO PERMIT FURTHER INSPECTIONS OVER THE LIFE OF THE REACTOR.

\*COMPARISON, THEORY AND EXPERIENCE + \*INSPECTION AND COMPLIANCE + \*PRESSURE VESSEL + \*WAGR (GCR) + DOSE MEASUREMENT, INTERNAL + NEUTRON + SHIELDING

17-22118 ALSO IN CATEGORY 11

NORRIS EB + IRELAND DR + LAUTZENHEISER CE

THE SECOND INSPECTION OF THE ELK RIVER REACTOR PRESSURE VESSEL AFTER OPERATION

SOUTHWEST RESEARCH INST., SAN ANTONIO, TEX.

SWRI-12289-13 +. 50 PAGES, FIGURES, TABLES, REFERENCES, JULY 21, 1967

THE ELK RIVER REACTOR PRESSURE-VESSEL INSPECTION WAS AGAIN MADE BY SOUTHWEST RESEARCH INSTITUTE AFTER THE REACTOR HAD BEEN OPERATED FOR NEARLY 2 FULL-POWER YEARS. INSPECTION PROCEDURES, SIMILAR TO THOSE USED DURING THE PREVIOUS (1966) INSPECTION, ARE DISCUSSED. NO CRACKS WERE FOUND IN NOZZLES IN THE SHELL OR HEAD AND TOP-HEAD OVERLAYS. CRACKING FOUND IN THE SHELL FLANGE OVERLAY DURING THE 1966 INSPECTION HAS NOT INCREASED, AND AGAIN IT WAS CONCLUDED THAT IT DID NOT PENETRATE INTO THE BASE STEEL. DURING THE POSTOPERATIONAL PERIOD, THE SHELL-FLANGE OVERLAY WAS COATED WITH AN UNIDENTIFIED SUBSTANCE THAT SIGNIFICANTLY IMPAIRS LIQUID PENETRANT INSPECTION. AN ULTRASONIC INSPECTION OF THE VESSEL FLANGE WAS MADE TO DETERMINE IF THE CLADDING CRACKS HAD PENETRATED INTO THE BASE STEEL. THE OBSERVATIONS CONFIRMED THE RESULTS OF THE PATCH-GRINDING INSPECTION.

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

\*ELK RIVER (BWR) + \*INSPECTION AND COMPLIANCE + \*INTEGRITY + \*PRESSURE VESSEL + CLAD + FLANGE + TEST, NONDESTRUCTIVE

17-22131 ALSO IN CATEGORY 9

WNYNRC PULSTAR PROPOSED CHANGE--INSTRUMENT CALIBRATION

WESTERN NEW YORK NUCLEAR RESEARCH CENTER, INC., BUFFALO, NEW YORK

3 PAGES, DOCKET 50-57, DECEMBER 15, 1967

STATE UNIVERSITY OF N.Y. ASKS PERMISSION TO CALIBRATE TRANSIENT (PULSING) INSTRUMENTATION BY USE OF NEUTRON-ACTIVATED FOIL INSTEAD OF BY AN INSTRUMENTED FUEL PELLETT. IN OLD METHOD, (1) CHANGES IN PELLETT ORIENTATION AND POSITION RESULTED IN INACCURATE MEASUREMENTS, (2) PELLETT FAILED BY RADIAL CRACKING, AND (3) THERMAL INSULATION OF THE PELLETT WAS A PROBLEM. FOIL METHOD HAS PROVED RELIABLE. ALSO REQUESTED IS A CHANGE IN PULSE-ROD CALIBRATION PROCEDURE. PREVIOUSLY THE IN-HOUR METHOD WAS USED, WHICH WAS INACCURATE DUE TO XENON CHANGES. ROD WOULD BE CALIBRATED EITHER BY COMPARISON WITH A STANDARD ROD OR BY TWO OR MORE CALIBRATION PULSES SEPARATED BY ENERGY RELEASES OF NOT LESS THAN 5 MW-SEC.

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

\*INSTRUMENTATION CALIBRATION + \*INSTRUMENTATION, PULSE + INSTRUMENTATION, NUCLEAR + PULSTAR (RR) + REACTOR, PULSED + REACTOR, RESEARCH + TECHNICAL SPECIFICATIONS

17-22132

HUMBOLDT BAY ADDENDUM D TO PROPOSED CHANGE 22--ANSWERS TO AEC QUESTIONS

PACIFIC GAS AND ELECTRIC COMPANY, SAN FRANCISCO, CALIF.

42 PAGES, FIGURES, TABLES, DOCKET NO. 50-132, TYPE--RWR, MFG--G.E., AE--BECHTEL, DECEMBER 15, 1967

RESPONSE TO THE QUESTIONS OF DRL LETTER (NOV. 20, 1967) REQUESTING ADDITIONAL INFORMATION ON PROPOSED CHANGE 22. QUESTIONS COVER EMERGENCY POWER SYSTEM, REACTOR PROTECTION SYSTEM, CONTAINMENT ISOLATION SYSTEM, REFUELING, SURVEILLANCE PROGRAM, CONTROL-ROD PROGRAM.



CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-22132 \*CONTINUED\*  
AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*AEC QUESTION + HUMBOLT BAY (BWR) + REACTOR, BWR + TECHNICAL SPECIFICATIONS

17-22140 ALSO IN CATEGORIES 5 AND 6  
MANHATTAN COLLEGE ZPR MODERATOR COEFFICIENT MEASUREMENTS  
MANHATTAN COLLEGE, BRONX, NEW YORK  
45 PAGES, 5 TABLES, DOCKET 50-199, DECEMBER 24, 1967

AT DRL DIRECTION (NOV. 2, 1966) MZPR MEASURED THE EXCESS REACTIVITY AT THE TEMPERATURE AT WHICH THE MODERATOR COEFFICIENT CHANGES FROM POSITIVE TO NEGATIVE. A HEAT EXCHANGER, A MIXER, AND 12 THERMISTORS WERE BOUGHT. THE MIXER CAUSED VORTEXING AND MOVEMENT OF INSTRUMENTATION AND LIGHTS IN THE CORE AND HAD TO BE MODIFIED. WITH 10 THERMISTORS IN THE CORE AND CONTROL RODS FULLY WITHDRAWN, THE REACTOR WAS SUBCRITICAL DUE TO THE POISON EFFECT OF THE COPPER LEAD WIRES. RESULTS OF THE EXPERIMENT WERE - TURNAROUND TEMPERATURE - 110 F, EXCESS REACTIVITY AT 110 F - 0.44%, WORTH OF 5 PAIRS OF THERMISTOR LEADS - 0.10%, LEAST-SQUARES TEMPERATURE/REACTIVITY RELATIONSHIP -  $(\Delta K/K)\%$  IS EQUAL TO  $-35.83 \times 10(-2ND)$  PLUS  $100.67 \times 10(-4TH)$  TIMES T MINUS  $45.53 \times 10(-6TH)$  TIMES T SQUARED. PROBABLE ERROR IS  $2.1 \times 10(-4TH)\%$ . (INCLUDES 25-PAGE TABLE OF THERMOCOUPLE CALIBRATION.)

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

\*MODERATOR COEFFICIENT + \*REACTIVITY, EXCESS + \*TEMPERATURE COEFFICIENT + CRITICAL ASSEMBLY FACILITY + IN CORE MEASUREMENT + MEASUREMENT, GENERAL + REACTIVITY EFFECT, ANOMALOUS + TECHNICAL SPECIFICATIONS

17-22142 ALSO IN CATEGORIES 5 AND 12  
STATUS OF DRESDEN 1 CORE SPRAY SYSTEM  
COMMONWEALTH EDISON COMPANY, CHICAGO, ILL.  
1 PAGE, DOCKET 50-10, TYPE--BWR, MFG--G.E., AE--BECHTEL, DECEMBER 19, 1967

GE RE-EVALUATED THE DESIGN-BASIS ACCIDENT AND IS DESIGNING AN EMERGENCY CORE-SPRAY SYSTEM. DRESDEN REPORTS THAT THE DESIGN AND ANALYSIS WORK ON THIS SYSTEM IS 25% COMPLETE, EXPECTED TO BE COMPLETE BY MARCH 1, 1968.

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

\*CORE SPRAY + \*MODIFICATION, SYSTEM OR EQUIPMENT + DRESDEN 1 (BWR) + EMERGENCY COOLING CONSIDERATIONS + REACTOR, BWR

17-22143 ALSO IN CATEGORY 1  
DRL SAFETY EVALUATION OF NATIONAL BUREAU OF STANDARDS REACTOR  
USAEC DIVISION OF REACTOR LICENSING  
57 PAGES, DOCKET 50-184, AUGUST 14, 1967

CONCERNS THE 10-MWT CP-5 TYPE OF REACTOR (SINGLE LOOP, HEAVY WATER) AT GAITHERSBURG, MD. ITEMS OF INTEREST ARE - (A) ON-SITE METEOROLOGICAL TEST SHOWED THAT SITE DOES NOT DIFFER GREATLY FROM THAT AT WASHINGTON NATIONAL AIRPORT, WHERE THE DATA FOR METEOROLOGICAL EVALUATION WAS OBTAINED. (B) THE POSSIBILITY OF A SIGNIFICANT SPILL IS REMOTE, AND SOIL CONDITIONS ALLOW TIME FOR EMERGENCY MEASURES. (C) POPULATION INCREASE WAS LARGER THAN EXPECTED IN 1964. (D) ANALYSIS OF THE MAXIMUM POTENTIAL EARTHQUAKE (0.01 G) SHOWS THAT REINFORCED-CONCRETE CONFINEMENT BUILDING WOULD CRACK CONSIDERABLY BUT WOULD REMAIN INTACT AND RETAIN ITS CONFINEMENT CAPABILITY.

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

\*CONTAINMENT, LOW PRESSURE + \*METEOROLOGY + \*POPULATION DISTRIBUTION + EARTHQUAKE ENGINEERING + REACTOR, FLUX TRAP + REACTOR, HWR + REACTOR, RESEARCH + SAFETY EVALUATION + SITING, REACTOR + SOIL

17-22165  
AMENDMENT 32 TO LA CROSSE CONSTRUCTION AUTHORIZATION--TECHNICAL SPECIFICATIONS  
ALLIS-CHALMERS, BETHESDA, MARYLAND  
ACNP-67511 +. 48 PAGES, 2 FIGURES, 1 TABLE, DOCKET 115-5, TYPE--BWR, MFG--A.C., AE--SGT + LUNDY, MARCH 2, 1967

GIVES TECHNICAL SPECIFICATIONS. CATEGORIES ARE - SITE, DESIGN AND PERFORMANCE OF SYSTEMS, ADMINISTRATIVE AND PROCEDURAL SAFEGUARDS, OPERATING LIMITATIONS, MAINTENANCE, AND INITIAL STARTUP AND POWER OPERATION.

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

\*TECHNICAL SPECIFICATIONS + LACROSSE (BWR) + REACTOR, BWR + REPORT, PSAR

17-22192  
NUCLEAR POWER GROWTH SPURS MORE TRAINING

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-22192 \*CONTINUED\*  
2 PAGES, CHEMICAL AND ENGINEERING NEWS, PAGES 29-30 (JANUARY 1, 1968)

BRIEFLY REVIEWS THE EXPANSION OF EDUCATIONAL INSTITUTIONS AND PROGRAMS TO MEET THE DEMAND FOR NUCLEAR SCIENTISTS AND ENGINEERS. DISCUSSED NUCLEAR-SCIENCE-CENTER PROGRAMS AT OREGON STATE UNIVERSITY, NORTH CAROLINA STATE UNIVERSITY, AND LOWELL TECH. ANNUAL DEMAND UNTIL 1973 IS 3880 B.S. AND 2350 M.S. OR PH.D.S. (CURRENT ANNUAL SUPPLY IS 2500 B.S. AND 1500 M.S. OR PH.DS. IN FISCAL 1967, AEC SPENT \$9.4 MILLION FOR NUCLEAR EDUCATION. \*\*\* RENSSELAER POLYTECH AND PENN STATE HAVE TRAINED REACTOR OPERATIONS FOR UTILITIES. DIRECTOR OF AEC EDUCATION DIVISION SAYS - (1) IMMEDIATE PROBLEM IS RETRAINING COMPANY PERSONNEL, AND (2) UNTIL NOW, GREATEST STRESS HAS BEEN PLACED ON PH.D.-LEVEL EDUCATION (RESEARCH), BUT ALL SCHOOLS SHOULD RE-EXAMINE THEIR ROLES IN RETRAINING OR CONTINUING EDUCATION IN TERMS OF APPLICATIONS.

\*STAFFING, TRAINING, QUALIFICATION

17-22193  
JONES CF  
STAFFING NUCLEAR PLANTS  
NUS CORP., WASHINGTON, D. C.  
3 PAGES, 2 TABLES, POWER ENGINEERING 72(1), PAGES 47-49 (JANUARY 1968)

DISCUSSES NEED OF LONG-TERM PLANNING FOR DEVELOPMENT OF TRAINED PEOPLE FOR BOTH MANAGEMENT AND SUPPORT. TO MAN NUCLEAR PLANTS NOW ON ORDER, AN AVERAGE ADDITION OF 30 TRAINED OPERATING AND SUPPORT PEOPLE WILL BE NEEDED EVERY MONTH FOR 6 YEARS. BIGGEST PROBLEM WILL BE PROVIDING OPERATING EXPERIENCE BECAUSE HIGH COST OF OUTAGE ON BASE-LOAD SECOND-GENERATION REACTORS WILL EXCLUDE THEIR USE AS TRAINING FACILITIES.

\*STAFFING, TRAINING, QUALIFICATION

17-22224 ALSO IN CATEGORY 18  
PATHFINDER PROPOSED AMENDMENT 42--STORAGE OF CORE II FUEL  
ALLIS-CHALMERS, BETHESDA, MARYLAND  
4 PAGES, DOCKET 50-130, TYPE--BWR, MFG--A.C., AE--PIONEER SERV., JULY 28, 1967

REQUESTS TECHNICAL-SPECIFICATION CHANGES TO PERMIT RECEIPT AND STORAGE OF CORE-II TYPE OF FUEL, WHICH IS SLIGHTLY DIFFERENT FROM CORE-I FUEL. ATTACHED IS ACNP-67525 \*\* SAFEGUARDS ANALYSIS FOR SECOND CORE LOADING. \*\* CHANGES ARE - (1) LOW-ENRICHMENT SUPERHEATER FUEL IN PLACE OF CERMET, (2) B4C PELLETS-IN-TUBES CONTROL RODS IN PLACE OF BORON-SS CRUCIFORM RODS, AND (3) BOILER FUEL RODS HAVE UNIFORM DIAMETER WITH SOME WATER-FILLED RODS IN THE STEAM-VOIDED UPPER REGION IN PLACE OF STEPPED-DIAMETER FUEL RODS.

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

\*FUEL STORAGE + CONTROL ROD + FUEL ELEMENT + MODIFICATION, SYSTEM OR EQUIPMENT + PATHFINDER (ISR) + REACTOR, BWR + REACTOR, INTERNAL SUPERHEAT + TECHNICAL SPECIFICATIONS

17-22225 ALSO IN CATEGORY 5  
PATHFINDER ATOMIC POWER PLANT SAFEGUARDS ANALYSIS FOR SECOND CORE LOADING  
ALLIS-CHALMERS, BETHESDA, MARYLAND  
ACNP-67525 +. 108 PAGES, 15 FIGURES, 33 TABLES, REFERENCES, DOCKET 50-130, TYPE--BWR, MFG--A.C., AE--PIONEER SERV., JUNE 30, 1967

DESCRIBES AND EVALUATES CORE-II COMPONENT CHANGES - (1) LOW-ENRICHMENT OXIDE SUPERHEATER FUEL (IN PLACE OF FULLY ENRICHED CERMET FUEL) FOR LONGER FUEL LIFETIME AND ECONOMY. (2) B4C PELLET IN INCONEL TUBE IN SAME CRUCIFORM PATTERN TO REPLACE PRESENT SOLID BORON-SS BOILER CONTROL BLADES. (3) BOILER FUEL RODS ARE THE SAME DIAMETER IN THE UPPER AND LOWER CORE HALVES (CORE-I FUEL HAS STEPPED-DIAMETER RODS), BUT WATER-TUBES WILL REPLACE SOME FUEL IN THE UPPER HALF TO COMPENSATE FOR STEAM VOIDING. COMPLETE CHANGES WILL TAKE PLACE OVER SEVERAL REFUELING. \*\*\* REACTOR DYNAMICS, THERMAL ANALYSIS, AND ACCIDENT ANALYSIS REPEATED. EXPERIMENTAL JUSTIFICATION MADE FOR REVISED ANALYSIS METHODS.

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

\*REFUELING + CONTROL ROD BURNUP + FUEL ELEMENT + MODIFICATION, SYSTEM OR EQUIPMENT + PATHFINDER (ISR) + REACTOR, BWR + REACTOR, INTERNAL SUPERHEAT + REPORT, OPERATIONS ANALYSIS + SAFETY ANALYSIS + TECHNICAL SPECIFICATIONS

17-22226  
ACRS REPORT ON BIG ROCK POINT PROPOSED EXPERIMENTAL FUEL  
U.S. ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.  
3 PAGES, DOCKET 50-155, TYPE--BWR, MFG--G.E., AE--BECHTEL, DECEMBER 20, 1967

SIX DEVELOPMENTAL FUEL ASSEMBLIES ARE DESIGNED TO TEST OPERATION WITH CENTERLINE MELTING. TWO (WITH 0.57-IN.-DIAM RODS) WILL BE AT INCIDENT MELTING, FOUR (WITH 0.7-IN.-DIAM RODS) WITH CONSIDERABLE CENTER MELTING. AFTER 3000-MWD/T, TEST FUEL WILL BE REMOVED FOR EXAMINATION. ACRS RECOMMENDS THAT 0.7-IN.-DIAM ROD FUEL NOT BE REPLACED IN REACTOR UNTIL COMPLETION AND DRL REVIEW OF DESTRUCTIVE TEST ON 4 FUEL RODS. PROPOSED PLANT MODIFICATIONS TO INCREASE

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-22226 \*CONTINUED\*

SAFETY INCLUDE (1) INSTALLATION OF AN ADDITIONAL EXTERNAL POWER LINE (NEARLY COMPLETED), (2) SINGLE-FAILURE ANALYSIS OF SAFETY INSTRUMENTATION, (3) CONTROL-ROD-NOZZLE SUPPORT STRUCTURE TO PROTECT AGAINST ROD EJECTION, AND (4) MODIFICATION OF EMERGENCY CORE-COOLING SYSTEM TO IMPROVE ITS PROTECTIVE CAPACITY.

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

\*CENTERLINE MELTING + \*IRRADIATION TESTING + ACRS + BIG ROCK POINT (BWR) + FUEL ELEMENT + MODIFICATION, SYSTEM OR EQUIPMENT + REACTOR, BWR + TECHNICAL SPECIFICATIONS

17-22256

ERRATIC BEHAVIOR OF LA CROSSE MAIN PUMP DISCHARGE ROTOVALVES  
ALLIS-CHALMERS

2 PAGES, ATOMIC ENERGY CLEARING HOUSE 14(3), PAGES 15-16 (JANUARY 15, 1968), DOCKET 115-2, TYPE--OCR,  
MFG--A.I., AE--A.I.

(LETTER, DECEMBER 29, 1967) ON DECEMBER 2, CIRCULATION-PUMP 1B TRIPPED DUE TO SEAL-INJECTION DIFFICULTIES, AND THE ROTOVALVE FAILED TO CLOSE AND PREVENT BACKFLOW. PUMP TACHOMETER AND INTERLOCKS WERE ALL RIGHT. ON DECEMBER 5, THE 1A VALVE FAILED TO OPEN. LEATHER CUPS ON THE PISTONS WERE HARD AND STIFF, AND PISTON CRACKED. ON DECEMBER 18, VALVES TESTED PROPERLY. ON DECEMBER 27 AND 28, 1A VALVE AGAIN FAILED TO CLOSE, AND THE 1B ALARM UNIT RESPONDED ERRATICALLY TO THE TACHOMETER SIGNAL. PLANT IS BEING SHUT DOWN SO CORRECTIONS CAN BE MADE.

\*FAILURE, EQUIPMENT + \*MAIN COOLING SYSTEM + \*MAINTENANCE AND REPAIR + \*VALVE + LACROSSE (BWR) + OPERATING EXPERIENCE SUMMARY + PUMP + REACTOR, BWR + TECHNICAL SPECIFICATIONS

17-22257 ALSO IN CATEGORY 5

MOORE JB

SAN ONOFRE INVESTIGATES HIGH DELTA-T ACROSS B STEAM GENERATOR  
SOUTHERN CALIFORNIA EDISON CO., LOS ANGELES, CALIF.

3 PAGES, ATOMIC ENERGY CLEARING HOUSE 14(3), PAGES 18-20 (JANUARY 15, 1968), DOCKET 50-206, TYPE--PWR,  
MFG--WEST., AE--BECHTEL

(LETTER, JANUARY 5) SINCE POWER TESTING IN JULY, CALORIMETRIC MEASUREMENTS OF PRIMARY AND SECONDARY DIFFER BY 4 TO 10%. SIX ERRATIC RESISTANCE TEMPERATURE-DETECTORS IN THE REACTOR LOOP WERE REPLACED IN NOVEMBER. IN DECEMBER, AT 405 MWE (90% LOAD), THE SG DELTA-T WAS 40/48/44 F FOR A/B/C STEAM GENERATORS, GIVING THE AVERAGE PREDICTED FOR 450 MWE (100%). ACCORDING TO RESULTS OF ANALYSIS SINCE THEN, RTDS ARE ACCURATE, BUT PIPE LOCATION AFFECTS INDICATED TEMPERATURE 5 TO 10 F. PUMP FLOWS ARE DIFFERENT (B PUMP LOWEST), THE RANGE BEING FROM 112 TO 94%, DEPENDING ON METHOD. UNIT IS BEING HELD AT 3RD-VALVE POINT (405 MWE), WITH ALARMS SET ACCORDINGLY, FOR FURTHER STUDY.

\*REACTOR POWER + COMPARISON, THEORY AND EXPERIENCE + FLOW ORIFICE + FLOW, GENERAL + INSTRUMENTATION, ABNORMAL INDICATION + INSTRUMENTATION, TEMPERATURE + OPERATING EXPERIENCE SUMMARY + PUMP + REACTOR, PWR + SAN ONOFRE (PWR) + STEAM GENERATOR

17-22258 ALSO IN CATEGORY 9

BECK GP

UNIVERSITY OF ILLINOIS REPORTS TRIGA PULSE ROD FAILURE  
UNIVERSITY OF ILLINOIS

2 PAGES, ATOMIC ENERGY CLEARING HOUSE 14(3), PAGES 21-22 (JANUARY 15, 1968), DOCKET 50-151

(LETTER, JANUARY 4) (A) A BAD RELAY ALLOWED THE PULSE ROD TO BE RAISED WHEN THE SHIM ROD WAS ABOVE FULLY INSERTED WITH MODE SWITCH IN MANUAL. (B) THE PNEUMATIC SOLENOID VALVE FAILED TO DROP THE PULSE ROD ON SCRAM. THE RUBBER SEATS ON THE SIX-YEAR-OLD VALVES WERE WORN AND OCCASIONALLY ALLOWED AIR TO LEAK TO THE TOP PORTION OF THE DIAPHRAGM, HOLDING AIR PRESSURE ON THE PISTON EVEN WHEN THE ELECTRICAL PORTION WORKED PROPERLY. THE AIR PRESSURE WAS REDUCED FROM 75 TO 40 PSI, WHERE THE ROD DID RELEASE. THE REACTOR OPERATED SATISFACTORILY. A BACKUP SAFETY SYSTEM (RELEASE OF AIR PRESSURE AT A VENT ADJACENT TO CONSOLE) WAS AVAILABLE.

\*FAILURE, COMPONENT + \*FAILURE, SCRAM MECHANISM + CONTROL ROD DRIVE + INCIDENT, EQUIPMENT + INSTRUMENTATION, RELAY + REACTOR, RESEARCH + SHUTDOWN SYSTEM, SECONDARY + TRIGA (RR) + VALVE

17-22259 ALSO IN CATEGORY 13

RUNION TC

NFS-AEC CORRESPONDENCE REGARDING MANAGEMENT CONTROL  
NUCLEAR FUEL SERVICES, INC., NEW YORK

4 PAGES, ATOMIC ENERGY CLEARING HOUSE 14(3), PAGES 23-26 (JANUARY 15, 1968)

(NFS TELEGRAM, JAN. 3) PRESIDENT OF NFS STATES THAT MATTEPS REFERRED TO IN LETTER ARE A COMPLETE SURPRISE, AS OPERATIONS HAVE BEEN AND ARE CONDUCTED WITHIN LIMITS. MEETING ARRANGED. (COMPLIANCE DIVISION LETTER, DEC. 28) SUMMARIZES 1967 CORRESPONDENCE AND INSPECTION REPORTS (WE INFORMED YOU THAT NUMBER AND PATTERN OF DEFICIENCIES, IF CONTINUED, COULD ADVERSELY AFFECT PUBLIC HEALTH AND SAFETY. WE REQUESTED YOU MODIFY COMPANY MANAGEMENT SYSTEM TO CONTROL PLANT OPERATIONS TO ENSURE THAT EQUIPMENT AND ADMINISTRATIVE CONTROLS WERE ADEQUATE.) REQUEST NFS SUSPEND OPERATIONS IN HIGH-RADIATION-LEVEL AREAS, REVIEW TRAINING EQUIPMENT AND ENTRY INTO THESE AREAS, REVIEW AND UPDATE HP PROCEDURES AND VENTILATION

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17-22259 \*CONTINUED\*  
SYSTEMS. APPENDIXES A AND B SUMMARIZE TWO INSPECTION REPORTS.

\*ADMINISTRATIVE CONTROL + \*FAILURE, ADMINISTRATIVE CONTROL + FUEL REPROCESSING +  
INSPECTION AND COMPLIANCE + NFS + RADIATION SAFETY AND CONTROL

17-22279 ALSO IN CATEGORY 18

LOFTNESS RL  
NUCLEAR POWER PLANTS, DESIGN, OPERATING EXPERIENCE, AND ECONOMICS  
ATOMICS INTERNATIONAL  
548 PAGES, FIGURES, TABLES, REFERENCES, D. VAN NOSTRAND COMPANY, INC., PRINCETON, NEW JERSEY, TORONTO, NEW  
YORK, LONDON, 1964

AFTER 80 PAGES OF ENGINEERING PRINCIPLES AND REACTOR FUELS AND MATERIALS, BOOK BECOMES A SET  
OF 3-PAGE DESCRIPTIONS OF 121 REACTORS, SUBDIVIDED INTO VARIOUS TYPES. \*\*\*ADEQUATE AS A  
COMPILATION OF OUTSTANDING FEATURES OF VARIOUS PLANTS BUILT BEFORE 1964.

AVAILABILITY - D. VAN NOSTRAND CO., INC., 24 WEST 40 ST., NEW YORK 19, N. Y., \$12.00 COPY

\*REACTOR DESCRIPTION + REACTOR, POWER

17-22281 ALSO IN CATEGORY 9

CASATI F + ZAPPELLINI G  
REPORT ON THE RB1 REACTOR SAFETY SYSTEM  
COMITATO NAZIONALE PER L'ENERGIA NUCLEARE, ROME, ITALY  
RT/ING-(66)27 +. 118 PAGES, 56 FIGURES, 16 REFERENCES, DECEMBER 27, 1966. IN ITALIAN

(IN ITALIAN) A 10-W HEAVY-WATER-COOLED GRAPHITE-REFLECTED FLUX-TRAP REACTOR LOCATED IN  
BOLOGNA. DESCRIBES AREA AND BUILDING (5 PG), FUEL AND CONTROLS (20 PG), ALSO INCLUDES  
ANALYTIC STUDY OF THE INCIDENT POSSIBILITY (14 PG) AND WASTE DISPOSAL (2 PG).

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

\*REPORT, SAR + CRITICAL ASSEMBLY FACILITY + ITALY + REACTOR, FLUX TRAP + REACTOR, GRAPHITE MODERATED +  
REACTOR, HWR

17-22292

REACTOR OPERATIONS SAFETY ANALYSIS MONTHLY REPORT NO. 27, SEPT 1-SEPT. 30, 1967  
NUS CORPORATION, WASHINGTON, D. C.  
NUS-411 +. 75 PAGES, FIGURES, TABLES, REFERENCES, SEPTEMBER 1967

ON SEPTEMBER 25, SECONDARY-WATER ACTIVITY LEVELS BEGAN A STEADY INCREASE OF 50% (WELL BELOW  
THE ALARM POINT), AND PRIMARY COOLANT-IODINE/I-131 CONCENTRATIONS INCREASED BY FACTORS OF 2/4  
RESPECTIVELY (A POSSIBLE MINOR FUEL FAILURE). \*\*\* STUDY (29 PAGES) SHOWS OPERATION BEYOND  
EARLY 1969 NOT POSSIBLE UNLESS ADDITIONAL FUEL IS OBTAINED.

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

\*FAILURE, FUEL ELEMENT + ELK RIVER (BWR) + FUEL BURNUP + REACTOR, BWR + REPORT, OPERATIONS ANALYSIS +  
SAFETY REVIEW

17-22283

REACTOR OPERATIONS SAFETY ANALYSIS MONTHLY REPORT NO 24, JUNE 1 TO JUNE 30, 1967  
NUS CORP., WASHINGTON, D. C.  
NUS-401 +. 50 PAGES, FIGURES, TABLES, JUNE 1967

ONE OF A SERIES OF MONTHLY PROGRESS REPORTS WHOSE USUAL CONTENT DEALS WITH (A) HEALTH PHYSICS,  
WASTE DISPOSAL AND SAFEGUARDS, (B) CHEMISTRY AND MATERIALS, (C) INSTRUMENTATION AND CONTROL,  
(D) REACTOR PLANT ENGINEERING, (E) PROGRESS OF AEC-SPONSORED R AND D, (F) SAFETY COMMITTEE  
MEETINGS.

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

\*SAFETY REVIEW + ELK RIVER (BWR) + REACTOR, BWR + REPORT, OPERATIONS ANALYSIS

17-22327 ALSO IN CATEGORY 9

GARRICK BJ + GEKLER WC + GOLDFISHER L + KARCHER RH + SHIMIZU B + WILSON JH  
RELIABILITY ANALYSIS OF NUCLEAR POWER PLANT PROTECTIVE SYSTEMS  
HOLMES AND NARVER, INC., LOS ANGELES, CALIF.  
HN-190 +. 268 PAGES, FIGURES, TABLES, MAY 1967

INVESTIGATED DATA AND ANALYSIS REQUIREMENTS FOR A RELIABILITY MONITORING PROGRAM IN POWER  
REACTOR SAFETY. THE OBJECTIVES WERE - (1) THE DEFINITION OF A SYSTEM FOR THE COLLECTION AND

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-22327 \*CONTINUED\*

ANALYSIS OF OPERATING, MAINTENANCE, INSPECTION, AND TESTING DATA ON COMPONENTS OF ENGINEERED SAFETY SYSTEMS, AND (2) THE INVESTIGATION OF TECHNIQUES FOR THE EVALUATION OF RELIABILITY AND THE APPLICATION OF THESE TECHNIQUES TO ENGINEERED SAFETY SYSTEMS TYPICAL OF WATER-COOLED AND -MODERATED POWER REACTORS. TWO METHODS WERE SELECTED, AUTOMATIC RELIABILITY MATHEMATIC MODEL (A COMPUTERIZED RELIABILITY ANALYSIS PROGRAM) AND FAULT-TREE ANALYSIS (A LOGICAL ANALYSIS CONCEPT). APPLICATIONS OF BOTH TO SAMPLE PROBLEMS, USING AVAILABLE RELIABILITY DATA, SHOWED THAT THEY PROVIDE USEFUL RELIABILITY ESTIMATES.

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

\*REACTOR SAFETY SYSTEM + \*RELIABILITY ANALYSIS + CODES AND STANDARDS + COMPUTER PROGRAM + DRESDEN 3 (BWR) + OPERATING EXPERIENCE SUMMARY + REACTOR, RWR + REACTOR, PWR + SAN ONOFRE (PWR) + YANKEE (PWR)

17-22334 ALSO IN CATEGORY 5

FURET J + GUYOT C

CONSIDERATIONS ON THE RELIABILITY OF SYSTEMS FOR REACTOR SAFETY (IN FRENCH)  
COMMISSARIAT A L ENERGIE ATOMIQUE, SACLAY

40 PAGES, 16 FIGURES, PRESENTED AT ENEA COMMITTEE ON REACTOR SAFETY TECHNOLOGY MEETING OF RELIABILITY OF ELECTRONIC EQUIPMENT AND SYSTEMS FOR NUCLEAR REACTOR SAFETY, BRUSSELS, APRIL 1967

GIVES AN OPERATIONAL SKETCH OF THE ELECTRONIC SYSTEMS FOR THE CONTROL AND SURVEILLANCE OF NUCLEAR REACTORS AT CEA. THE DATA IS EVALUATED TO DETERMINE THE RELIABILITY AND MAINTENANCE OF THE EQUIPMENT. TWO EXAMPLES ARE GIVEN FOR DETERMINING THE EFFECT OF DIFFERENT TECHNOLOGIES ON RELIABILITY. THE PROVISIONAL OR EXPERIMENTAL RELIABILITY HAS A GREAT EFFECT ON THE DEFINITION AND REALIZATION OF MATERIALS COMPOSING THE SAFETY SYSTEMS. OPERATIONAL RESULTS ARE NECESSARY FOR THESE EVALUATIONS. IT IS ALSO FUNDAMENTAL NOT TO NEGLECT THE CONDITIONS OF INSTALLATION AND OPERATION OF THIS EQUIPMENT.

\*OPERATING EXPERIENCE SUMMARY + \*REACTOR SAFETY SYSTEM + \*RELIABILITY ANALYSIS + COMPARISON, THEORY AND EXPERIENCE + FRANCE

17-22342

PLUM BROOK MOCK-UP REACTOR OPERATIONS REPORT FOR YEAR ENDED 31 OCT 67  
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, LEWIS RESEARCH CENTER, PLUM BROOK STATION, SANDUSKY, OHIO  
6 PAGES, NOV. 30, 1967, DOCKET NO. 50-185

REPORT COVERS POWER HISTORY, SHUTDOWNS (8 UNSCHEDULED - 5 FROM 1 AND C NOISE AND 3 FROM POOR MAGNET CONTACT), CORE-LOADING CHANGES, AND A LIST OF EXPERIMENTS.

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

MOCKUP + PLUM BROOK (TR) + REACTOR, RESEARCH + REACTOR, TEST + REPORT, OPERATIONS SUMMARY

17-22432 ALSO IN CATEGORY 15

WARU W1

GENERAL DYNAMICS REPORTS RADIATION OVEREXPOSURES

GENERAL DYNAMICS CORP., FT. WORTH, TEXAS

1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(21), PAGE 26 (MAY 22, 1967)

(LETTER, APRIL 25) DURING AUTHORIZED USE OF BY-PRODUCT MATERIAL, TWO GD/FORT WORTH EMPLOYEES WERE EXPOSED TO 3.2 AND 3.1 REMS THE FIRST FOUR WEEKS OF CALENDAR 1966 AT CAMP MCCOY, WISC. FILM-BADGE RESULTS WERE RECEIVED DEC. 9, 1966. CONTROL OF PERSONNEL EXPOSURES BY LIMITING POCKET-DOSIMETER TOTALS SUFFICIENTLY BELOW LIMITS TO ALLOW FOR DOSIMETER-RESPONSE VARIATION SHOULD PREVENT FUTURE OVEREXPOSURE.

\*MONITOR, RADIATION, PERSONNEL + \*SAFETY MARGIN + BYPRODUCT MATERIAL + FAILURE, ADMINISTRATIVE CONTROL + INCIDENT, HUMAN ERROR + PERSONNEL EXPOSURE, RADIATION + RADIATION SAFETY AND CONTROL

17-22433 ALSO IN CATEGORY 15

MASSE FX

MIT REPORTS ASSAY ERROR RESULTS IN CLINICAL OVEREXPOSURE

MASSACHUSETTS INSTITUTE OF TECHNOLOGY, CAMBRIDGE, MASS.

1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(21), PAGE 26 (MAY 22, 1967)

(LETTER, MARCH 20) AN ADULT MALE WAS ADMINISTERED IODINE TO BE EQUIVALENT TO 200 MICROCURIES OF I-125, WELL BELOW THAT AUTHORIZED (5 MICROCURIES/KG). ANALYSIS OF THE ROUTINE BIO-SAMPLES INDICATED ADMINISTRATION IN EXCESS OF 200. CHECKING REVEALED THAT A FACTOR-OF-TEN ASSAY ERROR HAD BEEN MADE BY THE PHARMACEUTICAL COMPANY. METHIMAZOLE WAS GIVEN FOR EIGHT DAYS AFTER IODINE TO INCREASE TURNOVER. CALCULATED DOSE IS 50 RADS BEFORE METHIMAZOLE AND 100 RADS THEREAFTER TO INFINITY. WE NORMALLY DOUBLE-CHECK MATERIAL BUT NOW WILL PERFORM ROUTINE GROSS ASSAY ON ALL SUCH INCOMING MATERIAL.

FAILURE, ADMINISTRATIVE CONTROL + INCIDENT, HUMAN ERROR + IODINE + PERSONNEL EXPOSURE, RADIATION + RADIOLOGY

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-22434 ALSO IN CATEGORY 15  
MALSON HA  
MONSANTO REPORTS THREE EXPOSED TO AIRBORNE PU-238  
MONSANTO RESEARCH CORP., DAYTON, OHIO  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(21), PAGE 27 (MAY 22, 1967)

(LETTER, APRIL 7) ON FEB. 13, 1967, HIGH CONCENTRATIONS OF AIRBORNE PU-238 WERE DISCOVERED IN A GLOVE-BOX AREA. THE INDIVIDUALS WERE ASSIGNED MAXIMUM EXPOSURE PERIODS OF 1 HP, 1 HR, AND 15 MIN, RESPECTIVELY, TO A MAXIMUM OF  $1.01 \times 10^{-8}$ TH) MICROCURIE/CC. (CAUSE) FAILURE OF GLOVES TO WITHSTAND DELETERIOUS EFFECTS OF PU-238. DIFFERENT TYPE OF GLOVES AND MORE FREQUENT MONITORING WILL BE CORRECTIVE STEPS. REPORT IS LATE BECAUSE OF A MATHEMATICAL ERROR IN CONSIDERING EXPOSURE TIME VS WEEKLY MPC FOR INSOLUBLE PU-238 IN AIR.

\*FAILURE, COMPONENT + \*GLOVE BOX + INHALATION + PERSONNEL EXPOSURE, RADIATION + PLUTONIUM

17-22435 ALSO IN CATEGORY 15  
NFS CITED FOR NON-COMPLIANCE WITH 10 CFR 20  
NUCLEAR FUEL SERVICES, INC., WHEATON, MD.  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(21), PAGES 27-28 (MAY 22, 1967)

(LETTER, APRIL 26) BASED ON INSPECTIONS JANUARY-MARCH 1967, CITATION WAS ISSUED. (1) STACK MONITORING WAS INOPERATIVE DURING FIRST HOUR OF DEC. DISSOLUTIONS OPERATIONS. DOORS TO HIGH RADIATION AREAS WERE NOT LOCKED. (2) MAINTENANCE WORKERS WERE NOT SUPPLIED PERSONNEL MONITORING TO DETERMINE RADIATION DOSE TO HANDS AND FOREARMS. (3) VARIOUS WORKERS WERE NOT ADEQUATELY INSTRUCTED IN RADIATION SAFETY PROBLEMS AND TECHNIQUES. (4) SURVEYS WERE NOT PERFORMED WHEN IT WAS NECESSARY TO EVACUATE THE LAUNDRY BECAUSE OF THE FIXED AIR-SAMPLER READING.

FUEL REPROCESSING + INSPECTION AND COMPLIANCE + MONITOR, RADIATION, PERSONNEL + MONITOR, RADIATION, STACK + NFS + STAFFING, TRAINING, QUALIFICATION + SURVEY, GENERAL

17-22436 ALSO IN CATEGORY 13  
NUMEC CITED FOR NON-COMPLIANCE  
NUCLEAR MATERIALS AND EQUIPMENT CORP., APOLLO, PA.  
3 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(21), PAGES 28-30 (MAY 22, 1967)

(LETTER, MARCH 24) LICENSE SNM-414 (NOV. 30, 1966, EXPLOSION) THE HEAT-KILL OF EXCESS H2O2 HAD NOT BEEN REVIEWED BY THE SAFETY COMMITTEE, AND THE PLUTONIUM CONTENT WAS 10 X PERMISSIBLE. \*\*\*LICENSE 37-4456-3 (JAN. 14, 1967, IR-193 RELEASE) MATERIALS WERE NOT UNDER THE SPECIFIED SUPERVISORS. TECHNICIANS DID NOT SURVEY THEMSELVES, NOR WAS THE MONITORING INSTRUMENTATION WORKING PROPERLY. INDIVIDUAL HAD NOT BEEN ADEQUATELY INSTRUCTED IN RADIATION-SAFETY PRECAUTIONS. \*\*\*SINCE EARLY 1966, DEFICIENCIES HAVE RECURRED, AND THE NUMBER IS INCREASING. THIS APPEARS TO INDICATE ABSENCE OF EFFECTIVE MANAGEMENT CONTROLS TO ENSURE COMPLIANCE WITH SAFETY PROCEDURES.

\*EXPLOSION + FAILURE, ADMINISTRATIVE CONTROL + HOT CELL + INCIDENT, GENERAL + INSPECTION AND COMPLIANCE + IRIIDIUM + PLUTONIUM + SPECIAL NUCLEAR MATERIAL + STAFFING, TRAINING, QUALIFICATION

17-22437 ALSO IN CATEGORY 13  
NUMEC REPLIES TO COMPLIANCE CITATION OF MARCH 24, 1967  
NUCLEAR MATERIALS AND EQUIPMENT CORP., APOLLO, PA.  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(21), PAGES 30-31 (MAY 22, 1967)

(LETTER, APRIL 13) INDICATES PUZZLEMENT BY GENERAL INDICTMENT OF MANAGEMENT SAFETY CONTROLS. FACILITY IS NOT STATIC IN NATURE OF WORK, WHICH IS EXPANDING, AND DRAFT AND FULL EMPLOYMENT CAUSES EMPLOYEE MIGRATION. WE ARE INCREASING THE HP STAFF, AND AN INTERNAL REPORT FORM FOR DEFICIENCY CORRECTION HAS BEEN ESTABLISHED. THE APOLLO PLANT HAS TWICE AS MANY EMPLOYEES, AND WE INCREASED THE STAFF BY 107 IN 1966. TO MAINTAIN THIS NUMBER, WE HIRED AND TRAINED 534 PEOPLE.

\*STAFFING, TRAINING, QUALIFICATION + FAILURE, ADMINISTRATIVE CONTROL + INSPECTION AND COMPLIANCE + RADIATION SAFETY AND CONTROL

17-22438 ALSO IN CATEGORY 13  
PUECHL KH  
NUMEC REPORTS EXPOSURES TO AIRBORNE PLUTONIUM  
NUCLEAR MATERIALS AND EQUIPMENT CORP., APOLLO, PA.  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(21), PAGES 31-32 (MAY 22, 1967)

(LETTER, MAY 10) THREE TECHNICIANS WERE EXPOSED ON APRIL 17 (56.2, 63, AND 68 MPC-HR) BECAUSE OF A PUNCTURED GLOVE-BOX GLOVE. SURVEY AT THE TIME REVEALED A COVERALL SLEEVE CONTAMINATED TO 50,000 CPM IN SPOTS.

\*INHALATION + CONTAMINATION + GLOVE BOX + INCIDENT, EQUIPMENT + PERSONNEL EXPOSURE, RADIATION + PLUTONIUM

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-22447  
BARKLEY HB + ROBINSON RA + SCHUH RM  
GUIDE FOR RADIATION EFFECTS EXPERIMENTS  
LEWIS RESEARCH CENTER  
2 PAGES, NUCLEAR NEWS 10(12), PAGES 48-49 (DECEMBER 1967)

DESCRIBES A GUIDE, DEVELOPED BY THE STAFF AT PLUM BROOK, WHICH DEFINES THE EXPERIMENT ENVIRONMENT, AND HOW TO REPORT THE DATA TO ENSURE AN ADEQUATE DESCRIPTION. THE GUIDE LISTS SENSORS AND THE RANGE, PRECISION, OBSERVED FAILURES, PECULIARITIES, AND SHOWS WHICH ENVIRONMENTAL PARAMETERS AFFECT SELECTED PROPERTIES OF THE MATERIALS. PURPOSE OF GUIDE IS TO HELP ENSURE THAT EXPERIMENT INFORMATION SATISFIES EXPERIMENTERS NEEDS AND IS USEFUL TO OTHERS.

\*MEASUREMENT, GENERAL + \*PROCEDURES AND MANUALS + \*RADIATION EFFECT + ENVIRONMENTAL CONDITION + EXPERIMENT, GENERAL + IN PILE LOOP + INSTRUMENTATION, GENERAL + PLUM BROOK (TR) + REACTOR, TEST

17-22456 ALSO IN CATEGORY 5  
EBR II MEASUREMENTS OF PROMPT POWER COEFFICIENT FOILED  
ARGONNE NATIONAL LAB., ARGONNE, ILL.  
ANL-7399 +. 7 PAGES, 5 FIGURES, 2 TABLES, PAGE 48-54 OF ARGONNE NATIONAL LABORATORY. REACTOR DEVELOPMENT PROGRAM PROGRESS REPORT, NOVEMBER 1967

TRANSFER FUNCTIONS WERE MEASURED. THE WORTH OF THE ROD USED IN ROD-DROP EXPERIMENTS CHANGES ABOVE THE 0.5-MW CALIBRATION LEVEL. DURING THE DROPPING OF THE ROD, IT SEEMS THAT ROD WORTH INCREASES ENOUGH TO CANCEL THE EFFECT OF PROMPT NEGATIVE FEEDBACK FOR 0.3 SEC. TOTAL FEEDBACK IS ABOUT 0.33 CENT. REACTIVITY DIFFERENCES BETWEEN FULL-POWER FLOW AND REDUCED-POWER FLOW CONDITIONS SEEM TO BE STEADILY INCREASING WITH FUEL BURNUP.

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

\*CONTROL ROD WORTH + \*POWER COEFFICIENT + \*TEST, PHYSICS + CONTROL ROD CALIBRATION + EBR 1 AND 2 (RE) + FUEL BURNUP + REACTOR, LMCR + REPORT, OPERATIONS ANALYSIS + RESPONSE TIME + TRANSFER FUNCTION

17-22457 ALSO IN CATEGORY 9  
EBR 2 STEAM GENERATOR LEVEL CONTROLLER MALFUNCTION  
ARGONNE NATIONAL LAB., ARGONNE, ILL.  
ANL-7399 +. 1 PAGE, PAGE 94 OF ARGONNE NATIONAL LABORATORY. REACTOR DEVELOPMENT PROGRAM PROGRESS REPORT, NOVEMBER 1967, DECEMBER 1967

ON THE NOV. 12, 1967, STARTUP, AT 20 MW THE PRIMARY BULK-SODIUM TEMPERATURE BEGAN INCREASING AND COULD NOT BE CONTROLLED BY ADJUSTING SECONDARY FLOW. A MALFUNCTION OF THE STEAM-DRUM WATER-LEVEL CONTROLLER/ALARM ALLOWED THE DRUM TO BOIL DRY.

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

\*CONTROLLER + \*FAILURE, COMPONENT + \*INSTRUMENTATION, LIQUID LEVEL DETECTION + EBR 1 AND 2 (RE) + INCIDENT, EQUIPMENT + INDEPENDENCE + REACTOR, LMCR + STEAM GENERATOR

17-22460  
IZATT JA + SCOBIE J  
CHARACTERISTICS OF THE UTP-100 REACTOR  
THE SCOTTISH RESEARCH REACTOR CENTRE, EAST KILBRIDE  
11 PAGES, 14 FIGURES, 3 TABLES, 7 REFERENCES, JOURNAL OF THE BRITISH NUCLEAR ENERGY SOCIETY 6(4), PAGE 343-353, (OCTOBER 1967)

100-KW MODIFIED ARGONAUT USING 2 PARALLEL FLAT-SIDED TANKS (58 X 20 X 6 IN.), 18 IN. APART IN A GRAPHITE BLOCK (4 X 4 X 5 FT). CRITICAL MASS AT STARTUP WAS LEAST 50 G MORE THAN COULD BE LOADED, POSSIBLY DUE TO (A) FUEL-DENSITY UNCERTAINTY, (B) USE OF BRITISH GRAPHITE, (C) HIGHER MAGNESIUM CONTENT IN ALUMINUM STRUCTURE THAN SPECIFIED, (D) LARGER CONTROL RODS IN THE CORE, AND WITHDRAWN ROD HAS CONSIDERABLE REACTIVITY EFFECT. DECAY-HEAT EXPERIMENTS - 2 HR AT 100 KW, FOLLOWED BY SCRAM AND WATER DUMP SHOWED FUEL ELEMENTS HEATED FROM 30 C TO A PEAK OF 55 C IN 50 MIN. PLOT IS DISCONTINUOUS AT TWO POINTS. RADIATION LEVEL AT COOLANT DUMP TANK (10 TIMES PERMITTED LEVEL) WAS REDUCED BY USE OF A SHIELDED DELAY TANK, BUT THIS CAUSED RANDOM COOLANT LEVEL PRESSURE SURGES. AT LOW POWER LEVELS, SPURIOUS SIGNALS WERE PICKED UP IN THE 60-FT IONIZATION CHAMBER LEAD.

\*REACTOR STARTUP TESTING + ACCIDENT, LOSS OF COOLANT + ARGONAUT (TNG) + OPERATING EXPERIENCE + REACTOR DESCRIPTION + REACTOR, RESEARCH + TEST, PROOF

17-22495 ALSO IN CATEGORY 18  
PATHFINDER CHANGE 15--STORAGE OF CORE II FUEL  
USAEC, DIVISION OF REACTOR LICENSING  
5 PAGES, AUGUST 9, 1967, DOCKET 50-130, TYPE--BWR, MFG--A.C., AE--PIONEER SEPV.

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-22495 \*CONTINUED\*

ORL ALLOWS STORAGE OF THE FUFL FOR CORE II. BOTH BOILER AND SUPERHEATED ELEMENTS ARE DIFFERENT FROM PRESENT FUEL. STORAGE ARRAY RESULTS IN A K-EFF LESS THAN 0.6 EVEN IF FLOODED.

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

\*FUEL STORAGE + PATHFINDER (ISR) + REACTOR, BWR + REACTOR, INTERNAL SUPERHEAT + REFUELING + SAFETY EVALUATION + TECHNICAL SPECIFICATIONS

17-22497 ALSO IN CATEGORY 7  
AIR AND GAS CLEANING FOR NUCLEAR ENERGY  
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.  
THIS IS A 30 MINUTE FILM REFERENCED ON PAGE 60 OF THE USAEC 16 MM FILM CATALOG FOR 1966-67, PRODUCED BY OAK RIDGE NATIONAL LABORATORY, FOR SALE BY CALVIN PRODUCTIONS, AT \$96.23 PER PRINT, INCLUDING SHIPPING CASE

DISCUSSES USE, DEVELOPMENT, AND MANUFACTURE OF HIGH-EFFICIENCY FILTERS FOR NUCLEAR APPLICATIONS, INSPECTED BY AEC, AND CURRENT R AND D PROGRAMS (AT HARVARD, ORNL, AND EDGEWOOD ARSENAL). COVERS IODINE-COLLECTION SYSTEMS, AEROSOL REACTIONS ON FILTERS, RARE-GAS ABSORPTION STUDIES, ETC.

AVAILABILITY - AVAILABLE FOR LOAN (FREE) FROM USAEC HEADQUARTERS AND FIELD LIBRARIES. CLEARED FOR TELEVISION

\*FILTER, HIGH EFFICIENCY + FILTER INSPECTION + R AND D PROGRAM

17-22501 ALSO IN CATEGORY 14  
HIGH ACTIVITY WASTE

ARGONNE NATIONAL LABORATORY  
THIS IS A 17 MINUTE FILM REFERENCED ON PAGE 64 OF THE USAEC 16 MM FILM CATALOG (PROFESSIONAL LEVEL) FOR 1966-67, PRODUCED BY USAEC'S ARGONNE NATIONAL LABORATORY, FOR SALE BY BYRON MOTION PICTURES, IN ENGLISH, FRENCH, SPANISH, OR RUSSIAN, AT \$36.75 PER PRINT, INCLUDING SHIPPING CASE, F.O.B. WASHINGTON, D.C., IN COLOR

A 17-MIN COLOR FILM BY ARGONNE NATIONAL LAB. THIS TECHNICAL FILM DESCRIBES METHODS FOR SOLIDIFYING HIGH-ACTIVITY WASTES AND REDUCING THEIR VOLUME BY A FACTOR OF 10. PROCESS INCLUDES POT AND SPRAY CALCINATION, AND THE FLUIDIZED-BED CALCINER WITH A 100-LITER/HR CAPACITY. USE OF SALT MINE FOR WASTE DISPOSAL IS DISCUSSED.

AVAILABILITY - ENGLISH VERSION AVAILABLE FOR LOAN (FREE) FROM USAEC HEADQUARTERS AND FIELD LIBRARIES, CLEARED FOR TELEVISION

\*WASTE DISPOSAL, SALT + \*WASTE TREATMENT, LIQUID + WASTE TREATMENT, SOLID

17-22504

RADIOLOGICAL ASSISTANCE

USAEC, IDAHO OPERATIONS OFFICE

THIS IS A 26.5 MINUTE FILM REFERENCED ON PAGE 67 OF THE USAEC 16 MM FILM CATALOG FOR 1966-67, PRODUCED FOR THE USAEC BY J. L. FEIERBACHER WITH THE TECHNICAL ASSISTANCE OF THE AEC'S DIVISION OF OPERATIONAL SAFETY AND AEC'S IDAHO OPERATIONS OFFICE.

A 26.5-MIN AEC-PRODUCED MOVIE EXPLAINING THE AEC RADIOLOGICAL ASSISTANCE PROGRAM. TEAMS STATIONED AROUND THE COUNTRY ARE AVAILABLE WHEN THERE IS DANGER TO PUBLIC SAFETY. TO PROVIDE TECHNICAL ASSISTANCE, FILM SHOWS THREE MOCK INCIDENTS (LOSS OF A 5-CURIE CO RADIOGRAPHIC SOURCE, PU VAPOR RELEASE AT A LAB, AND FIRE AT A URANIUM PROCESSING PLANT AND THE RADIOLOGICAL ASSISTANCE TEAMS ACTIONS. WHILE FILM IS NOT TECHNICALLY PERFECT (SOME MONITORING SLOPPY, ETC.), FILM SERVES ITS PURPOSE OF INFORMING OF THE AVAILABILITY OF THE SERVICE.

AVAILABILITY - AVAILABLE FOR LOAN (FREE) FROM USAEC HEADQUARTERS AND FIELD LIBRARIES, CLEARED FOR TELEVISION

\*RADIOLOGICAL ASSISTANCE + STAFFING, TRAINING, QUALIFICATION

17-22509 ALSO IN CATEGORY 5

SPERT DESTRUCTIVE TEST, PART-I

PHILLIPS PETROLEUM COMPANY

THIS IS A 15 MINUTE FILM REFERENCED ON PAGE 60 OF THE USAEC 16 MM FILM CATALOG (PROFESSIONAL LEVEL), 1966-67, PRODUCED BY PHILLIPS PETROLEUM COMPANY AS CONTRACTOR TO THE USAEC AT THE NATIONAL REACTOR TESTING STATION, IDAHO, FOR SALE BY TELEFILM INDUSTRIES, AT \$75.62 PER PRINT, INCLUDING SHIPPING CASE, F.O.B. HOLLYWOOD, CALIFORNIA

15-MIN COLOR MOVIE. TECHNICAL FILM DOCUMENTS THE DESTRUCTIVE TEST PROGRAM OF A HIGHLY ENRICHED A1 PLATE-TYPE CORE AT NRTS, SHOWING SPECIAL FACILITY MODIFICATIONS, TRANSIENT TESTING WITH LIMITED CORE DAMAGE. SHOWS VIEWS OF FAILED, BOWED, AND MELTED PLATES. SLOW-MOTION STUDIES SHOW FINAL CORE-DESTRUCTION TEST.

AVAILABILITY - AVAILABLE FOR LOAN (FREE) FROM USAEC HEADQUARTERS AND FIELD LIBRARIES, NOT CLEARED FOR



CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-22509 \*CONTINUED\*  
TELEVISION

\*ACCIDENT, REACTIVITY + \*CORE, PLATE TYPE + \*TEST, DESTRUCTIVE + EXCURSION, LARGE + FAILURE, CLADDING + FAILURE, FUEL ELEMENT + FUEL ELEMENT BOWING + FUEL MELTDOWN + INCIDENT, GENERAL + REACTOR TRANSIENT + REACTOR, SAFETY RESEARCH + SPERT 1 (S-RK)

17-22518 ALSO IN CATEGORY 15  
FREDERICKSON RL  
ABBOTT LAB REPORTS EXCESSIVE IODINE AIR CONCENTRATIONS  
ABBOTT LABORATORIES, NORTH CHICAGO, ILL.  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 14(4), PAGE 19 (JANUARY 22, 1968)

(LETTER, DECEMBER 4.) ROUTINE THYROID COUNTING ON NOVEMBER 6 REVEALED A THYROID BURDEN 113% OF PERMISSIBLE. THE INDIVIDUAL WORKS IN THE RADIOPHARMACEUTICAL FILLING GROUP, NOT WHERE VOLATILE I-131 IS ORDINARILY PRESENT. WE HAVE NO AIR-SAMPLING RESULTS IN HIS AREA FOR THE PERIOD IN QUESTION. INVESTIGATION FAILED TO DISCOVER A REASON FOR THE THYROID ACTIVITY MEASURED.

AIRBORNE RELEASE + FISSION PRODUCT, IODINE + SURVEILLANCE PROGRAM

17-22519 ALSO IN CATEGORY 15  
ATOMICS INTERNATIONAL CITED FOR NON-COMPLIANCE  
ATOMICS INTERNATIONAL, CANOGA PARK, CALIFORNIA  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 14(4), PAGE 20 (JANUARY 22, 1968)

(LETTER, DECEMBER 27.) A SEPT. 28-29, 1967, INVESTIGATION OF 1966 AND 1967 EXPOSURES SHOWED THE FOLLOWING - SURVEYS WERE INADEQUATE TO DETERMINE AIRBORNE CONCENTRATIONS OF URANIUM. THE U-234 SOLUBLE LIMITS WERE USED RATHER THAN THE LIMITS FOR INSOLUBLE U-234. GENERAL ROOM-AIR SAMPLES USED TO EVALUATE EXPOSURES WERE A FACTOR OF TEN LESS THAN THE BREATHING-ZONE SAMPLES. TIMELY REPORTS TO AEC WERE NOT FILED.

AIRBORNE RELEASE + INSPECTION AND COMPLIANCE + MONITOR, RADIATION, AIR + SAMPLING + SURVEILLANCE PROGRAM

17-22520 ALSO IN CATEGORY 15  
BIG ROCK POINT NON-COMPLIANCE CITATION  
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN  
3 PAGES, ATOMIC ENERGY CLEARING HOUSE 14(4), PAGES 20-22 (JANUARY 22, 1968), DOCKET 50-155, TYPE--BWR, MFG--G.E., AE--BECHTEL

(LETTER, NOVEMBER 28.) CITATION FOR INADEQUATE SURVEY TO EVALUATE RADIATION HAZARDS IN THE SEPT. 12, 1967, TEMPORARY REPAIR OF A RUPTURED DIAPHRAGM IN THE AIR-EJECTOR SYSTEM. PROCEDURES DO NOT CONTAIN ADEQUATE INSTRUCTION ON EVALUATION OF RADIATION HAZARDS IN HIGH RADIATION AREAS. (REPLY, DEC. 22.) CASE WAS EXCEPTIONAL, DUE TO FIRST-TIME APPEARANCE OF A HIGH BETA/GAMMA RATIO (7 RATHER THAN 2 OR 3) IN PROCESS STEAM AND TO SPORADIC PUFFING OF THE OFF-GAS FAK. \*\*\* INCIDENT WAS REVIEWED WITH STAFF, SECTION ADDED TO MANUAL, AND NEW RADIATION-SCREENING LEVELS ADDED. A BETA-DETECTING INSTRUMENT WILL BE USED ON ALL WORK IN MORE THAN 1 REM/HR. NEW SURVEY INSTRUMENTS AND CALIBRATION SOURCE WERE ORDERED.

\*MAINTENANCE AND REPAIR + \*PERSONNEL EXPOSURE, RADIATION + \*REACTOR OFFGAS + BETA EMITTER + BIG ROCK POINT (BWR) + FAILURE, ADMINISTRATIVE CONTROL + FAILURE, OPERATOR ERROR + INSPECTION AND COMPLIANCE + MONITOR, RADIATION, PERSONNEL + PROCEDURES AND MANUALS + REACTOR, BWR + SURVEY, RADIATION, GENERAL

17-22521 ALSO IN CATEGORY 13  
MALLINCKRODT REPLIES TO NOV. 30, 1967 NON-COMPLIANCE CITATION  
MALLINCKRODT CHEMICAL WORKS, ST. LOUIS, MO.  
4 PAGES, ATOMIC ENERGY CLEARING HOUSE 14(4), PAGES 22-25 (JANUARY 22, 1968)

(LETTER, DEC. 20.) ACTION TAKEN IN PRODUCTION OF I-131 DIAGNOSTIC CAPSULES INCLUDES MORNING MONITORING OF WORKER THYROID AND IMMEDIATE INVESTIGATION, USE OF DISPOSABLE GLOVES, GENERAL HP ON-THE-JOB TRAINING OF WORKERS, A DAILY SURVEY OF REFUSE CONTAINERS. COMPILATION OF EVIDENCE REVEALS THAT THE PROBLEM IS (QUOTE) PRINCIPALLY ONE OF IMPROVING WORKING HABITS AND ATTITUDES RATHER THAN EXPOSURES OF PERSONNEL TO HIGH AIRBORNE RADIOACTIVITY CONCENTRATION (UNQUOTE).

\*RADIATION SAFETY AND CONTROL + ADMINISTRATIVE CONTROL + FAILURE, ADMINISTRATIVE CONTROL + FISSION PRODUCT, IODINE + INHALATION + INSPECTION AND COMPLIANCE + STAFFING, TRAINING, QUALIFICATION

17-22522  
NUMEC REPORTS AMPUTATION IN A GLOVE BOX  
NUCLEAR MATERIALS AND EQUIPMENT CORP., APDLO, PA.  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 14(4), PAGE 25 (JANUARY 22, 1968)

(TWX, DEC. 15.) ON DEC. 14, 1967, A TECHNICIAN OPERATING A MILLING MACHINE IN A GLOVE BOX

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-22522 \*CONTINUED\*

AMPUTATED HIS HAND. HE WAS TAKEN TO A PITTSBURGH HOSPITAL AND THE HAND GRAFTED BACK ON THE ARM. ESTIMATES INDICATE LESS THAN 10 MICROCURIES OF INSOLUBLE AM/PU IN THE WOUND. REMOTE MACHINERY OPERATIONS ARE SHUT DOWN PENDING REVIEW.

\*GLOVE BOX + \*INCIDENT, NONREACTOR + AMERICIUM + CONTAMINATION + PLUTONIUM + RADIATION INJURY, TREATMENT OF

17-22523 ALSO IN CATEGORY 12

WOLTER EE

ELK RIVER CITED FOR NON-COMPLIANCE

RURAL COOPERATIVE POWER ASSOCIATION, ELK RIVER, MINN.

1 PAGE, ATOMIC ENERGY CLEARING HOUSE 14(4), PAGE 26 (JANUARY 22, 1968), DOCKET 115-1, TYPE--RWP, MFG--A.C., AE--SGT + LUNDY

(LETTER, DEC. 4.) THREE ITEMS CITED AFTER AN OCT. 2-3 INSPECTION OF JULY 26 ACTIVITY - (1) EMERGENCY CORE-COOLING AND PRIMARY MAKEUP SYSTEM WERE IN CAPABLE OF INJECTING WATER INTO THE PRIMARY COOLING SYSTEM DURING 75% POWER OPERATION. (2) FORESEEABLE PLANT EMERGENCY NOT COVERED BY DETAILED WRITTEN PROCEDURES, ESPECIALLY SINCE THIS TYPE OF SITUATION HAD HAPPENED BEFORE. (3) TYGON TUBING WAS SUBSTITUTED FOR CARBON STEEL IN PRESSURE-RELIEF PIPING. \*\*\* ALSO NOTES POWER RAISED TO 100% TO RAISE THE APPARENT CORE WATER LEVEL AFTER A LOW-WATER-LEVEL ALARM.

\*COOLANT PURIFICATION SYSTEM + \*EMERGENCY PROCEDURE + \*MAINTENANCE AND REPAIR + CORE REFLOODING SYSTEM + FAILURE, ADMINISTRATIVE CONTROL + INSPECTION AND COMPLIANCE + LEAK + PRESSURE RELIEF + TECHNICAL SPECIFICATIONS

17-22524

NUMEC REPORTS AIR EXPOSURE USING

NUCLEAR MATERIALS AND EQUIPMENT CORP., APOLLO, PA.

2 PAGES, ATOMIC ENERGY CLEARING HOUSE 14(4), PAGES 25-26 (JANUARY 22, 1968)

(DECEMBER 13.) ONE APOLLO CRP-3 OPERATOR WAS EXPOSED IN NOVEMBER TO AIRBORNE CONCENTRATIONS OF ENRICHED URANIUM EXCEEDING 40 MPC-HR/WEEK. THE DISSOLVING OPERATIONS WILL BE REVISED, AND FUME HOODS WILL BE REPLACED WITH GLOVE BOXES.

\*INHALATION + \*PERSONNEL EXPOSURE, RADIATION + GLOVE BOX + URANIUM-235

17-22525

NUMEC REPORTS AIRBORNE RADIOACTIVITY

NUCLEAR MATERIALS AND EQUIPMENT CORP., APOLLO, PA.

1 PAGE, ATOMIC ENERGY CLEARING HOUSE 14(4), PAGE 26 (JANUARY 22, 1968)

(LETTER, NOV. 13.) TWO CP-1 OPERATORS WERE EXPOSED TO AIR CONCENTRATIONS EXCEEDING 40 MPC-HR/WEEK WHILE LOADING A LOW-ENRICHMENT HAMMERMILL WITHOUT ADEQUATE VENTILATION. LOCAL EXHAUST IS BEING DESIGNED. \*\*\* APPARENTLY TWO OTHERS WERE EXPOSED (AS SHOWN BY ROUTINE BIOASSAY) WHILE CLEANING UP AFTER A COOLING-WATER LINE BROKE IN A CONTAMINATED HOOD AND LEAKED ON THE FLOOR. FIXED AIR SAMPLERS SHOWED NO DETECTABLE ACTIVITY. ANALYTICAL WORKERS WERE REINSTRUCTED TO CALL HEALTH AND SAFETY BEFORE CLEANING UP SPILLS.

\*DECONTAMINATION + \*INHALATION + \*PERSONNEL EXPOSURE, RADIATION + \*VENTILATION SYSTEM + FAILURE, OPERATOR ERROR

17-22526

ALSO IN CATEGORIES 13 AND 15

CROWIN OF

UNITED NUCLEAR REPORTS OVEREXPOSURE TO AIRBORNE ACTIVITY

UNITED NUCLEAR CORP., NEW HAVEN, CONN.

1 PAGE, ATOMIC ENERGY CLEARING HOUSE 14(4), PAGE 27 (JANUARY 22, 1968)

(LETTER, DEC. 13.) THREE RECEIVED 1.5 TIMES MAXIMUM ALLOWABLE WEEKLY EXPOSURE, IN FOUR HOURS, TO AIRBORNE ALPHA EMITTER DURING CLEANUP OPERATIONS. MSA COMFO RESPIRATORS WITH TYPE-II ULTRAFILTERS WERE WORN. NO PROTECTION FACTOR ASSUMED. \*\*\* INCREASED HP COVERAGE AND EXPOSURE CONTROL DURING NONROUTINE OPERATIONS WILL BE PROVIDED. APPLICATION WAS MADE FOR USE OF A RESPIRATORY PROTECTION FACTOR.

\*DECONTAMINATION + \*INHALATION + \*PERSONNEL EXPOSURE, RADIATION + ALPHA EMITTER + FILTER EFFICIENCY + FILTER, GAS MASK + PERSONNEL PROTECTIVE DEVICE

17-22527

ALSO IN CATEGORY 15

BURTSVAVAGE EM

U.S. RADIUM ASKS CLARIFICATION OF BREATHING ZONE SAMPLES

U.S. RADIUM CORP., BLOOMSBURG, PA.

1 PAGE, ATOMIC ENERGY CLEARING HOUSE 14(4), PAGE 27 (JANUARY 22, 1968)

(LETTER, NOV. 28.) REPORTS EXCESSIVE CONCENTRATIONS OF AIRBORNE AMERICIUM DURING WEEK OF SEPT. 4, 1967. THIS WAS NOT REPORTED ON OCT. 18 BECAUSE WE INTERPRETED 10 CFR 20.103 TO MEAN

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-22527 \*CONTINUED\*

THAT ROOM-AIR CONCENTRATIONS APPLY TO ANY PERSONNEL NOT SAMPLED IN THEIR BREATHING ZONES. HOWEVER, ALL PERSONS WERE BZ SAMPLED SIMULTANEOUSLY, WHICH WAS CONSIDERED MORE VALID THAN ROOM-AIR SAMPLES, AND THUS 5 PERSONS WERE NOT REPORTED, WHILE 4 WERE REPORTED ON THE BASIS OF THEIR B-Z SAMPLES. PLEASE CLARIFY THIS INTERPRETATION.

\*INHALATION + \*PERSONNEL PROTECTIVE DEVICE + \*SAMPLING + AMERICIUM + INSPECTION AND COMPLIANCE + PERSONNEL EXPOSURE, RADIATION + RADIATION SAFETY AND CONTROL + REGULATION, AEC

17-22528

A REVIEW OF RECENT CRITICALITY AND REACTOR INCIDENTS AT USAEC INSTALLATIONS  
DIVISION OF OPERATIONAL SAFETY, USAEC  
CONF-660412 +. 21 PAGES, 22 REFERENCES, 4 TABLES, PRESENTED AT SYMPOSIUM OF ACCIDENTAL IRRADIATION AT PLACE OF WORK, NICE, FRANCE, APRIL 25-29, 1966

TABULATES 60 INCIDENTS (1961 THROUGH 65), MANY NOT AT REACTORS BUT OF MORE IMPORTANCE. DISCUSSES THE LESSONS TO BE LEARNED FROM THEIR RECOVERY OPERATIONS. (SL1) - IF VICTIM SURVIVES THE DOSE, THE RESCUERS WILL. CONVENTIONAL AMBULANCES WITH DUST-TIGHT DRIVERS COMPARTMENTS AND PROVISION FOR SHIELDING ARE ADEQUATE. HOSPITAL STAFF TRAINED IN HANDLING CONTAMINATED VICTIMS IS IMPORTANT. EMERGENCY-DCSE CRITERIA AND MONITORS ARE NEEDED.

AVAILABILITY - FRED SHON, USAEC, DIVISION OF OPERATIONAL SAFETY, WASHINGTON, D. C.

\*INCIDENT, RECOVERY FROM + EMERGENCY PROCEDURE + INCIDENT COMPILATION + INCIDENT, SL 1 + REPORT, OPERATIONS ANALYSIS

17-22552

PEACH BOTTOM 1 MONTHLY OPERATIONS REPORT NO. 21.  
PHILADELPHIA ELECTRIC COMPANY  
14 PAGES, NOVEMBER 1967, DOCKET 50-171, TYPE--HTGR, MFG.--G.A., AE--BECHTEL

A TWO-DAY OUTAGE WAS REQUIRED TO REPAIR A LEAKING FLANGE ON THE FEEDWATER LINE OUTSIDE THE CONTAINMENT. BUILDUP OF RA-88 ON THE ABSOLUTE FILTERS WAS TRACED TO A LEAKING BELLOW SEAL ASSEMBLY ON THE B TRANSFER COMPRESSOR DISCHARGE VALVE. IMPURITIES IN THE HELIUM LEAKING FROM THE BELLOW INCLUDED KR-88, WHICH DECAYS TO RB-88. OTHER MAINTENANCE REPORTED INCLUDING CLEANING OF PLASTIC COVERS OF CONSOLE PERIOD METERS WITH ANTI-STATIC SOLUTION TO FREE INDICATOR NEEDLES, WHICH WERE AFFECTED BY STATIC CHARGES ON THE COVERS.

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

\*FAILURE, EQUIPMENT + FLANGE + INSTRUMENTATION, ABNORMAL INDICATION + LEAK + MAINTENANCE AND REPAIR + PEACH BOTTOM 1 (HTGR) + PERIOD METER + REACTOR, HTGR + REPORT, OPERATIONS + VALVE

17-22553

PEACH BOTTOM 1 - DESCRIPTION OF STEAM GENERATOR SHELL COOLING SYSTEMS  
PHILADELPHIA ELECTRIC COMPANY  
21 PAGES, 5 FIGURES, DECEMBER 1967, DOCKET 50-171, TYPE--HTGR, MFG.--G.A., AE--BECHTEL

DESCRIBES THE SYSTEM INSTALLED TO COOL THE LOWER HEAD OF THE STEAM GENERATOR. SYSTEM CIRCULATES ROOM ATMOSPHERE PAST HEAD AND COOLS IT. HIGH OUTLET HELIUM TEMPERATURES WERE OBSERVED AFTER REPLACEMENT OF THE SS SUPERHEATER TUBES WITH INCOLOY-800. SEVERAL BAFFLE MODIFICATIONS WERE MADE UNTIL THE TEMPERATURES WERE REDUCED TO DESIGN VALUES, BUT HIGH SHELL TEMPERATURES ON THE BOTTOM HEAD PERSISTED. THE CAUSE OF THE HIGH TEMPERATURES ON THE LOWER HEAD HAS NOT BEEN DETERMINED, AND THIS COOLING SYSTEM IS TEMPORARY.

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

\*AUXILIARY COOLING SYSTEM + \*MODIFICATION, SYSTEM OR EQUIPMENT + \*STEAM GENERATOR + FAILURE, DESIGN ERROR + FLOW DISTRIBUTION + HEAT TRANSFER + PEACH BOTTOM 1 (HTGR) + REACTOR, HTGR

17-22579

IRL REPORTS CORROSIVE FAILURE OF PRIMARY PIPING  
INDUSTRIAL REACTOR LABORATORIES, INC.  
2 PAGES, JANUARY 11, 1968, DOCKET 50-17

WATER LEAKAGE DURING A DECEMBER 28 PRESSURE TEST OF THE HOLDUP TANK LED TO DISCOVERY OF EXTENSIVE PITTING OF THE 10-IN.-DIAM ALUMINUM PRIMARY-COOLANT LINES, AND 3- TO 4-IN. DEMINERALIZER LINES. PIPE WILL BE REPLACED WITH 304 SCHED-10 STAINLESS STEEL, WITH INTERVENING DIELECTRIC DEVICES AT FLANGES TO ALUMINUM.

\*ALUMINUM + \*CORROSION + \*FAILURE, PIPE + \*MAIN COOLING SYSTEM + MAINTENANCE AND REPAIR + REACTOR, RESEARCH + STEEL, STAINLESS

17-22580

RADIOACTIVE INSPECTION OF AGR

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-22580 \*CONTINUED\*  
1 PAGE, ELEC. REVIEW 179, PAGE 889 (DECEMBER 9, 1966)

ENGINEERS HAVE SAFELY ENTERED THE AGR DURING AN ANNUAL INSPECTION, DEMONSTRATING THAT IT IS SAFE TO CARRY OUT MAINTENANCE AND INSPECTION INSIDE THE PRESSURE VESSEL DESPITE THE PRESENCE OF A FULL CHARGE OF RADIOACTIVE FUEL IN THE CORE. REACTOR WAS BUILT WITH AN INTERNAL SHIELD TO REDUCE NUCLEAR RADIATION TO A LEVEL THAT WOULD ALLOW ENTRY FOR INSPECTION EVEN WITH THE REACTOR FULLY FUELED, ENSURING THAT REGULAR INTERNAL INSPECTION AND MAINTENANCE CAN BE UNDERTAKEN.

\*EXAMINATION + \*PRESSURE VESSEL + OPERATING EXPERIENCE SUMMARY + REACTOR, GCR + WAGR (GCR)

17-22582  
RODERICK C  
R AND D FOR NUCLEAR PLANTS PAVED WAY FOR SAN ONOFRE  
2 PAGES, 1 FIGURE, POWER, 111(8), PAGES 104-105 (AUGUST 1967)

VERY BRIEFLY REVIEWS WESTINGHOUSE-AEC JOINT PROGRAM ON CLOSED-CYCLE LARGE-REACTOR DEVELOPMENT. 20%-THINNER SS-CLADDING OBTAINED BY SPRING CLIPS INSTEAD OF BY BRAZING THE FUEL RODS. ROD-CLUSTER CONTROL ELIMINATED POWER PEAKS AND SHORTENED REACTOR VESSEL. ZONED LOADING AND CHEMICAL SHIM REDUCED POWER PEAKING. CHECK VALVES ELIMINATED BY PUMP REDESIGN. LARGER PUMPS AND STEAM GENERATORS REDUCED NUMBER OF LOOPS.

R AND D PROGRAM + REACTOR, PWR + SAN ONOFRE (PWR)

17-22621  
PEACH BOTTOM 1 QUARTERLY PROGRESS REPORT FOR PERIOD ENDING OCTOBER 31, 1967  
GULF GENERAL ATOMIC INCORPORATED  
GA-8370 +. 45 PAGES, 24 FIGURES, 5 TABLES, NOVEMBER 30, 1967

PLANT THERMAL-EFFICIENCY TESTS INDICATE THAT PERFORMANCE IS EXCEEDING THE PREDICTED VALUES AT THE LOWER POWER LEVELS (2.5% AT 40% FULL POWER). OF A 20% DISCREPANCY BETWEEN CALCULATED AND ACTUAL XENON EQUILIBRIUM REACTIVITY WORTH, 5% IS ATTRIBUTED TO AXIAL EFFECTS. FURTHER STUDY TO BE MADE. REPAIRS WERE MADE TO A LEAK IN THE FEEDWATER PIPING, TO CRACKED WELDS BETWEEN BAFFLES IN A STEAM GENERATOR, AND TO LEAKING GASKETS ON STEAM-GENERATOR DUMP VALVES. XENON BUILDUP AND DECAY, TEMPERATURE COEFFICIENT, ROD CALIBRATION, POWER COEFFICIENT AND FISSION-GAS-RELEASE TESTS REPORTED.

\*REACTIVITY EFFECT, ANOMALOUS + \*TFST, PLANT RESPONSE + COMPARISON, THEORY AND EXPERIENCE + CONTROL ROD CALIBRATION + FISSION GAS RELEASE + MAINTENANCE AND REPAIR + PEACH BOTTOM 1 (HTGR) + POWER COEFFICIENT + REACTOR, HTGR + REPORT, OPERATIONS + STEAM GENERATOR + TEMPERATURE COEFFICIENT + THERMAL CONSIDERATION + XENON

17-22775 ALSO IN CATEGORY 5  
DRESDEN 1 SUPPLEMENT A TO PROPOSED CHANGE 14 - CYCLE 6 DESCRIPTION AND SAFETY EVALUATION REPORT  
COMMONWEALTH EDISON COMPANY  
6 PAGES, TABLES, FIGURES, JANUARY 17, 1968, DOCKET 50-10, TYPE--BWR, MFG.--G.E., AE--BECHTEL

ANSWERS 5 QUESTIONS (AEC LETTER OF 22 NOV. 67) ON PROPOSED CHANGE 14. QUESTION 1 COVERS EXPERIMENTAL FUEL ASSEMBLIES. QUESTION 2 - REFUELING ACCIDENT ANALYSIS. QUESTION 3 - INSTRUMENTED FUEL-ELEMENT POSITIONS. QUESTION 4 - FUEL-ELEMENT ORIENTATION. QUESTION 5 - TECH. -SPEC. CLARIFICATION.

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

\*AEC QUESTION + \*REFUELING + DRESDEN 1 (BWR) + REACTOR, BWR + TECHNICAL SPECIFICATIONS

17-22781 ALSO IN CATEGORY 5  
U OF ILLINOIS REPORTS INTERLOCK FAILURE ALLOWING IMPROPER PULSE-SAFETY ROD OPERATION  
NUCLEAR ENGINEERING PROGRAM, UNIVERSITY OF ILLINOIS  
1 PAGE, JAN. 4, 1968, DOCKET NO. 50-151

DURING A CHECK OF INTERLOCKS, A FAILED INTERLOCK WAS DISCOVERED WHICH ALLOWED THE PULSE-SAFETY ROD TO BE RAISED WITH THE SHIM CONTROL ROD NOT FULLY INSERTED AND IN THE MANUAL MODE. THE RELAY WAS REPLACED. INTERLOCK WILL CONTINUE TO BE CHECKED ROUTINELY WITHIN TIMES SPECIFIED BY TECHNICAL SPECIFICATIONS.

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

\*FAILURE, COMPONENT + \*INSTRUMENTATION, INTERLOCK + \*INSTRUMENTATION, RELAY + CONTROL ROD PROGRAM + OPERATING EXPERIENCE SUMMARY + REACTOR, PULSE + REACTOR, RESEARCH + TECHNICAL SPECIFICATIONS + TEST, CONTROL ROD DRIVE + TRIGA (RR)

17-22782 ALSO IN CATEGORY 6  
U OF WISCONSIN REPORTS ON OPERATION WITH NEWLY INSTALLED CORE

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-22782 \*CONTINUED\*  
METROPOLITAN EDISON CO.  
1 PAGE, JAN. 4, 1968, DOCKET NO. 50-156

INITIAL CRITICALITY WITH THE MODIFIED TRIGA CORE WAS REACHED ON 14 NOV. 67. THE ONLY SIGNIFICANT VARIATION IN PERFORMANCE CONCERNS THE PULSING PERFORMANCE OF THE CORE. CORE IS DIFFERENT FROM PROTOTYPE CORE IN THAT IT IS ALMOST ENTIRELY GRAPHITE REFLECTED, INCREASING THE EFFECTIVE NEUTRON CYCLE TIME FROM  $39 \times 10^{-6}$ TH) SEC TO  $42 \times 10^{-6}$ TH). THIS RESULTS IN LONGER PROMPT PERIODS FOR A GIVEN REACTIVITY INSERTION. THE POWER COEFFICIENT OF REACTIVITY IS MORE NEGATIVE THAN EXPECTED.

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

\*GRAPHITE + \*PROMPT NEUTRON LIFETIME + \*REFLECTOR + POWER COEFFICIENT + REACTOR KINETICS + REACTOR, PULSED + REPORT, OPERATIONS ANALYSIS + TRIGA (RR)

17-22783  
YANKEE PROPOSED CHANGE 80 - MODIFICATION OF CHARGING AND VOLUME CONTROL SYSTEM  
METROPOLITAN EDISON CO.  
2 PAGES, JAN. 4, 1968, DOCKET NO. 50-29, TYPE PWR, MFG--WEST., AE--STONE + WEBSTER

ASKS TO INSTALL A SINGLE CONTROLLABLE ORIFICE (6-100 GPM) TO A SINGLE BLEEDLINE AND BLOCK, BUT NOT REMOVE THE PARALLEL BLEED LINES FOR ONE OR TWO CORE LIFETIMES (IN CASE OF UNFORESEEN PROBLEMS). WEAR HAS NECESSITATED THE REPLACEMENT OF THE 2 SMALLER ORIFICES, AND LEAKAGE OF THE BLEED CONTROL VALVES HAS BEEN A PROBLEM. REPAIRS ARE DIFFICULT. THE REQUESTED CHANGE WOULD REDUCE SERVICE REQUIREMENTS.

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

\*COOLANT PURIFICATION SYSTEM + \*FLOW ORIFICE + \*VALVE + FAILURE, EQUIPMENT + LEAK + MODIFICATION, SYSTEM OR EQUIPMENT + OPERATING EXPERIENCE SUMMARY + REACTOR, PWR + TECHNICAL SPECIFICATIONS + YANKEE (PWR)

17-22784 ALSO IN CATEGORY 9  
CATHOLIC U REPORT OF FACILITY MODIFICATIONS  
THE CATHOLIC UNIVERSITY OF AMERICA, WASHINGTON, D. C.  
4 PAGES, JAN. 8, 1968, DOCKET NO. 50-77

REACTOR SAFETY COMMITTEE AT ITS DEC. MEETING APPROVED A NEW ORGANIZATION CHART AND MODIFICATION OF THE NO. 2 ION-CHAMBER CIRCUIT SO THAT THE SIGNAL MAY BE FED TO EITHER THE PRESENT BECKMAN LOG CURRENT METER OR TO A HONEYWELL LOG-N AND PERIOD AMPLIFIER (MODEL 4639-CA-4). NOT ONLY DOES THE LATTER GIVE A LOG-N READOUT BUT IT ALSO GIVES A PERIOD READOUT AND A PERIOD SCRAM SIGNAL. THE BECKMAN UNIT WILL BE RETAINED AS A BACKUP UNIT.

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

\*INSTRUMENTATION, POWER RANGE + ADMINISTRATIVE CONTROL + AGN (TNG) + INSTRUMENTATION, PERIOD + MODIFICATION, SYSTEM OR EQUIPMENT + REACTOR, TRAINING + SAFETY REVIEW

17-22785 ALSO IN CATEGORY 5  
N. CAROLINA STATE (RALEIGH) PROPOSED AMENDMENT 4-REVISED MCA ANALYSIS  
NORTH CAROLINA STATE UNIVERSITY.  
8 PAGES, 7 REFERENCES, JAN. 10, 1968, DOCKET NO. 50-111

MCA IS A STEP-REACTIVITY INSERTION. NEW ANALYSIS ASSUMES THAT TOTAL EXCESS REACTIVITY (1.5%) IS HELD DOWN BY A LONG CADMIUM TUBE PLACED IN THE VERTICAL EXPOSURE PORT, THAT THE REACTOR IS BROUGHT CRITICAL WITH THE CONTROL RODS FULL OUT, THEN THE TUBE IS PULLED FROM THE CORE. BASED ON BORAX AND SPERT DATA, MAXIMUM FUEL-PLATE-SURFACE TEMPERATURE WOULD BE 230 C, WITH AN ENERGY RELEASE TO PEAK POWER OF 10 KW-SEC AND RESULTS TO NO CLAD MELT OR FUEL-ELEMENT RUPTURE.

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

ACCIDENT ANALYSIS + ACCIDENT, MAXIMUM CREDIBLE (MCA) + ACCIDENT, REACTIVITY + REACTOR, POOL TYPE + REACTOR, RESEARCH + REPORT, SAR + TECHNICAL SPECIFICATIONS

17-22787 ALSO IN CATEGORY 6  
POSITIVE GRAPHITE-REFLECTOR TEMP COEFF AT U OF WASHINGTON REACTOR  
UNIVERSITY OF WASHINGTON, SEATTLE, WASH.  
2 PAGES, JAN. 4, 1966, DOCKET NO. 50-139

SINCE RAISING THE POWER FROM 10 KW TO 100, WE OBSERVE THAT THE REG. ROD MUST BE LOWERED TO MAINTAIN CRITICALITY WITH EXTENDED 100-KW RUNS. RECORDS SHOW THAT A TYPICAL RUN ADDS 0.04% DK/K. A TEST SHOWS THE COEFFICIENT TO BE ABOUT PLUS 0.0014% DK/K PER DEG F, ASSOCIATED WITH THE COOLANT WATER TEMPERATURE. THE EXCESS REACTIVITY IS TO BE COMPUTED HOURLY. IF POWER IS LESS THAN 10 KW, THE 0.585% LIMIT IS UNCHANGED. IF POWER IS TO EXCEED 10 KW, AND INITIAL REACTIVITY EXCEEDS 0.5%, THE OPERATOR IS NOT TO PROCEED UNTIL NOTIFYING REACTOR SUPERVISOR.

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

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-22787 \*CONTINUED\*  
\*GRAPHITE + \*REACTIVITY EFFECT, ANOMALOUS + \*REFLECTOR + \*TEMPERATURE COEFFICIENT + POWER UPGRATING +  
PROCEDURES AND MANUALS + REACTOR, GRAPHITE MODERATED + REACTOR, RESEARCH

17-22788 ALSO IN CATEGORY 5  
ASSESSMENT OF LACBWR CARRY-UNDER SEPARATORS  
ALLIS-CHALMERS MANUFACTURERS  
16 PAGES, FIGURES, JAN. 9, 1968, DOCKET NO. 115-5, TYPE--BWR, MFG--A.C., AE--SGT + LUNDY

EVEN THOUGH EXACT CAUSE OF FAILURE OF THE SIMILAR PATHFINDER FAILURE HAS NOT BEEN DETERMINED,  
DESIGN HAS LARGER MARGIN OF SAFETY AGAINST STRUCTURAL FAILURE. OUTLET VELOCITY AND PPESSURE  
DIFFERENCE ARE LESS, GIVING 1/4 THE HYDRAULIC FORCE, WHILE THE RIB STRENGTH IS 3 TIMES,  
GIVING A FACTOR-OF-12 ADVANTAGE.

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

\*SAFETY MARGIN + \*SEPARATOR + \*STRUCTURAL INTEGRITY + HYDRAULIC ANALYSIS + LACROSSE (BWR) + REACTOR, BWR +  
STRESS ANALYSIS

17-22901 ALSO IN CATEGORY 6  
CONTROL OF XENON INSTABILITIES IN LARGE PWRs. QUARTERLY PROGRESS REPORT FOR THE PERIOD ENDING JUNE 30,  
1967  
WESTINGHOUSE ELECTRIC CORP., PITTSBURGH, PA.  
WCAP-3680-4 + EURAEC-1880 +. 72 PAGES, FIGURES, JULY 1967

REPORTS RESULTS OF GROUPS WORKING ON (1) EFFECT OF CORE PARAMETERS ON SPATIAL OSCILLATIONS,  
(2) REMEDIAL CONTROL PROCEDURES, AND (3) 3-DIMENSIONAL ANALYSIS. A SIMPLE CORRELATION WAS  
DEVELOPED TO CORRECT FOR THE ERRORS CAUSED BY USING FINITE TIME STEPS IN DIFFUSION-THEORY  
CALCULATIONS. AN INDEX OF THE INFLUENCE OF VARIOUS CORE PARAMETERS ON STABILITY WAS  
DEVELOPED.

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

\*XENON OSCILLATION + R AND D PROGRAM + REACTOR KINETICS + REACTOR STABILITY + REACTOR, PWR

17-22909 ALSO IN CATEGORY 3  
TEAR-AWAY SLEEVE  
AEC, DIVISION OF OPERATIONAL SAFETY  
2 PAGES, 2 FIGURES, HEALTH AND SAFETY INFORMATION, 260 (JANUARY 5, 1968)

DESCRIBES A SLEEVE THAT CAN BE EASILY TURN FROM THE ARM, FITS SNUGLY, AND DOES NOT INTERFERE  
WITH ARM MOVEMENTS. THE SLEEVE WAS DESIGNED TO ELIMINATE THE RISK OF AN OPERATOR BEING  
PULLED INTO ROTATING MACHINERY AND TO PROTECT AGAINST RADIOACTIVE OR OTHER TOXIC MATERIALS.  
THE SLEEVE IS MADE OF AN ELASTIC COTTON YARN FASTENED BY TWO SEAMS FORMED BY HOOK AND PILE  
FASTENERS. DETAILS ARE SHOWN IN FIGURES.

AVAILABILITY - US ATOMIC ENERGY COMMISSION, DIVISION OF OPERATIONAL SAFETY

\*PERSONNEL PROTECTIVE DEVICE + CONTAMINATION

17-22825  
LICENSES FOR RADIOGRAPHY, AND RADIATION SAFETY REQUIREMENTS FOR RADIOGRAPHIC OPERATIONS  
U. S. ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.  
10-CFR-34 +. 3 PAGES, JUNE 29, 1965

(SUB-PART A) - REVIEWS REQUIREMENTS FOR ISSUANCE OF SEALED-SOURCE LICENSE. (SUB-PART B,  
RADIATION SAFETY REQUIREMENTS) - EQUIPMENT CONTROL (LOCKING, STORING, LEAK TESTING,  
LOGBOOKS). PERSONAL SAFETY (TRAINING, WRITTEN PROCEDURES, DOSE MONITORING). PRECAUTIONARY  
PROCEDURES (DIRECT SURVEILLANCE, POSTING, SURVEY AFTER USAGE).

AVAILABILITY - U. S. ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.

\*RADIOGRAPHY + \*REGULATION, AEC + RADIATION SAFETY AND CONTROL

17-22926 ALSO IN CATEGORY 15  
SECOND DRL INFORMATION LETTER ON RADIOGRAPHERS OVEREXPOSURE  
USAEC, DIVISION OF STATE AND LICENSE RELATIONS, WASHINGTON, D. C.  
6 PAGES, INFORMATION LETTER TO ALL RADIOGRAPHY LICENSEES, JUNE 14, 1965

SUMMARIZES 14 INCIDENTS THAT OCCURRED SINCE FIRST LETTER (MARCH 1963). AGAIN, THE CAUSE FOR  
MOST OF THEM (DOSES 1 TO 16 REMS) CAN BE TRACED TO THE FAILURE OF RADIOGRAPHERS TO PROPERLY  
USE RADIATION-SURVEY INSTRUMENTS. ASKS CONTINUED INTEREST OF LICENSEE. MANAGEMENT TO REVIEW  
OPERATIONS AND EQUIPMENT AND TO STRESS SOUND PROCEDURES AND ATTENTION TO EQUIPMENT.

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-22826 \*CONTINUED\*

AVAILABILITY - USAEC, DIVISION OF STATE AND LICENSEE RELATIONS, WASHINGTON, D. C.

FAILURE, OPERATOR ERROR + INCIDENT, HUMAN ERROR + INFORMATION RETRIEVAL + PERSONNEL EXPOSURE, RADIATION + RADIATION SAFETY AND CONTROL + RADIOGRAPHY

17-22827 ALSO IN CATEGORY 15

DRL INFORMATION LETTER ON RADIOGRAPHERS OVEREXPOSURE

U. S. ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.

6 PAGES, INFORMATION LETTER TO ALL RADIOGRAPHY LICENSEES, MARCH 1963

GIVES ONE-PARAGRAPH DESCRIPTIONS OF 14 CASES (DOSES, 2 TO 6 REMS) WHERE RADIOGRAPHERS WERE EXPOSED TO UNSHIELDED SOURCES (DUE TO WARNING-SYSTEM FAILURES OR HEEDLESS ACTION) WHICH COULD HAVE BEEN PREVENTED HAD THE OPERATOR USED SURVEY INSTRUMENTS EACH TIME (AS IN 10 CFR 34.43). ASKS THE LICENSEES TO REQUIRE THAT RADIOGRAPHERS READ LETTER AND TO STRESS PROPER USE OF SURVEY INSTRUMENTS IN PERIODIC TRAINING PROGRAMS.

AVAILABILITY - USAEC, DIVISION OF LICENSING AND REGULATION, WASHINGTON, D. C.

\*INCIDENT, HUMAN ERROR + \*RADIOGRAPHY + FAILURE, OPERATOR ERROR + INFORMATION RETRIEVAL + PERSONNEL EXPOSURE, RADIATION + RADIATION SAFETY AND CONTROL

17-22828

BIG ROCK POINT CONTROL ROD JAMMED

CONSUMERS POWER COMPANY, JACKSON, MICHIGAN

2 PAGES, JANUARY 9, 1968, DOCKET 50-155, TYPE--BWR, MFG--G.E., AE--BECHTEL

ON DECEMBER 25, 1967, ROUTINE EXERCISING OF PERIPHERAL DRIVE F5 SHOWED THAT THE ROD WOULD NOT WITHDRAW AFTER BEING INSERTED ONE NOTCH FROM ITS FULLY WITHDRAWN POSITION. IT WOULD INSERT, BUT APPARENTLY A FOREIGN OBJECT IN THE HOUSING CATCHES ON THE DRIVE-INDEX-TUBE NOTCHES. SINCE POWER HAS BEEN REDUCED TO 60 MWE TO CONSERVE REACTIVITY JUST BEFORE REFUELING, ROD HAS BEEN VALVED OUT OF SERVICE. SHUTDOWN-MARGIN CALCULATIONS SHOW REACTOR SUBCRITICAL AT LEAST 1% WITH ALL RODS IN BUT F-5 AND ADJACENT ONE WITHDRAWN.

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

\*FAILURE, SCRAM MECHANISM + BIG ROCK POINT (BWR) + REACTOR, BWR + SHUTDOWN MARGIN

17-22829

UCLA LIMITS COOLANT TEMPERATURE

UNIVERSITY OF CALIFORNIA, LOS ANGELES, CALIF.

1 PAGE, JANUARY 8, 1968, DOCKET 50-142

NEW TEMPERATURE LIMITATION FOR THE 500-KW EXPERIMENT IS 212 F MIXED MEAN COOLANT TEMP., MEASURED BY THERMOCOUPLES INSTALLED IN THE OUTLET FLOW OF THE CENTER (HOTTEST) CORE BOXES. CONFIRMS ORAL AGREEMENT OF JAN. 4.

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

\*HIGH TEMPERATURE + \*PERFORMANCE LIMIT + HEAT TRANSFER, BOILING + MAIN COOLING SYSTEM + POWER UPGRADING + REACTOR, RESEARCH

17-22930

ALSO IN CATEGORY 6

WASHINGTON STATE U REPORTS REACTIVITY EXCESS IN CONVERTED TRIGA

WASHINGTON STATE UNIVERSITY, PULLMAN, WASHINGTON

3 PAGES, 1 FIGURE, JANUARY 10, 1968, DOCKET 50-57

THE WORTH OF THE CENTRAL FUEL ELEMENT (4-POD CLUSTER) WAS PREDICTED AS \$3.61 (BASED ON A CYLINDRICAL CORE) BUT MEASURED AS \$5.36 AND \$5.78 IN THE ACTUAL RECTANGULAR CONFIGURATION. REVISED ACCIDENTAL-FUEL-ADDITION ANALYSIS GIVES 1234 C PEAK FUEL TEMP. (A RISE OF 884 C) INSTEAD OF 853 (LIMIT IS SET AT 1000 C). PRESENT ADMINISTRATIVE CONTROL OF LOADCINGS WILL PREVENT SUCH ACCIDENT. IN ADDITION WE PLAN TO LIMIT FUEL TEMP. TO 100 C WHEN A CORE OPENING EXISTS, SO THAT PEAK FUEL TEMP. IN THE ACCIDENT WOULD NOT EXCEED 984 C. THIS WILL ALLOW LOW-POWER TESTING.

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

\*COMPARISON, THEORY AND EXPERIENCE + \*REACTIVITY EFFECT, ANOMALOUS + \*REACTIVITY, EXCESS + ACCIDENT ANALYSIS + ACCIDENT, REFUELING + REACTOR, RESEARCH + TRIGA (RR)

17-22937

GENERAL ELECTRIC REQUESTS PERMISSION TO COMPLETE DISMANTLING OF THE THERMAL CRITICAL ASSEMBLY

GENERAL ELECTRIC COMPANY, SAN JOSE, CALIF.

5 PAGES, JANUARY 8, 1968, DOCKET 50-24

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-22837 \*CONTINUED\*

AMENDMENT TO ALLOWED PARTIAL DISMANTLING AND POSSESSION BUT NOT OPERATION. GE WANTS TO FINISH THE DISMANTLING AND CLEAR THE BUILDING FOR OTHER USES. NONE OF THE REACTOR COMPONENTS LEFT ARE RADIOACTIVE.

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

CRITICAL ASSEMBLY FACILITY + REACTOR DECOMMISSIONING + TECHNICAL SPECIFICATIONS

17-22838

GENERAL ELECTRIC REQUESTS TERMINATION OF MIXED SPECTRUM CRITICAL ASSEMBLY LICENSE  
GENERAL ELECTRIC COMPANY, SAN JOSE, CALIF.  
4 PAGES, JANUARY 8, 1968, DOCKET 50-203

MSCA HAS BEEN COMPLETELY DISMANTLED AND DISPOSED OF. REACTOR COMPONENTS HAD NO DETECTABLE SURFACE CONTAMINATION. SOME PARTS WITH INDUCED ACTIVITY WERE PACKAGED AS RADIOACTIVE WASTE.

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

CRITICAL ASSEMBLY FACILITY + LICENSING STATUS OF NUCLEAR PROJECTS + REACTOR DECOMMISSIONING

17-22839

UNIVERSITY OF KANSAS PROPOSED AMENDMENT ALLOWING USE OF PU-239 FOILS  
THE UNIVERSITY OF KANSAS, LAWRENCE, KANSAS  
2 PAGES, DECEMBER 15, 1967, DOCKET 50-148

THREE THRESHOLD FOILS (LIKE THOSE USED IN HURST NUCLEAR-ACCIDENT DOSIMETERS) CONSISTING OF 3 G OF PU-239 SEALED IN COPPER CUPS ARE TO BE USED AS FAST-NEUTRON-THRESHOLD DETECTORS IN EXPERIMENTS USING THE PNEUMATIC TUBE OR VARIOUS BEAM PURIS BY THE RADIATION BIOPHYSICS DEPARTMENT. THESE FOILS ARE NOW AT ORNL, WHERE THEY ARE USED IN THE HRR (FAST-BURST REACTOR).

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

\*FLUX DISTRIBUTION + PLUTONIUM + IN CORE MEASUREMENT + IRRADIATION TESTING + REACTOR, POOL TYPE + REACTOR, RESEARCH + TECHNICAL SPECIFICATIONS

17-22840

HADDAM NECK PROPOSED CHANGE 5--MAIN STEAM ISOLATION VALVE CLOSURE TIME  
CONNECTICUT YANKEE ATOMIC POWER COMPANY  
4 PAGES, JANUARY 9, 1968, DOCKET 50-213, TYPE--PWR, MFG--WEST., AE--STONE + WEBSTER

REQUESTS THAT SPECIFICATION BE CHANGED TO REQUIRE VERIFICATION OF 10-SEC CLOSURE TIME (VS 1 SEC). VALUES CANNOT BE TESTED AT ACCIDENT CONDITIONS, AND CLOSURE TIMES OF 1.5 TO 4.6 SEC (AVG., 2.8) WERE OBTAINED AT ABOUT 50% DESIGN PRESSURE DROP. STEAM-LINE RUPTURE IS REANALYZED IN PROPOSED AMENDMENT 17, ASSUMING A 10-SEC DELAY IN CLOSURE TIME. OFF-SITE THYROID DOSE IS LESS THAN 0.05 REM.

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

\*CONTAINMENT PENETRATION, CLOSURE OF + RESPONSE TIME + TEST, SYSTEM OPERABILITY + VALVE + ACCIDENT, STEAM LINE RUPTURE + HADDAM NECK (PWR) + REACTOR, PWR + TECHNICAL SPECIFICATIONS + TEST, PROOF

17-22841

ALSO IN CATEGORY 1  
HADDAM NECK APPLIES FOR EXEMPTION FROM 10 CFR 20. 203(C)(2)--PHYSICAL CONTROL OF HIGH RADIATION AREAS  
CONNECTICUT YANKEE ATOMIC POWER COMPANY  
3 PAGES, JANUARY 3, 1968, DOCKET 50-213, TYPE--PWR, MFG--WEST., AE--STONE + WEBSTER

REQUESTS SUBSTITUTION OF PROCEDURAL AND PHYSICAL-ACCESS-CONTROL MEASURES AT ENTRANCES TO HIGH RADIATION AREAS IN LIEU OF VISIBLE OR AUDIBLE ALARMS. PHYSICAL CONTROLS INCLUDE BARRICADES AND SIGNS AT AREAS WITH RADIATION LEVELS IN EXCESS OF 0.1 R/HR, AND LOCKED WIRE MESH DOORS TO AREAS OF 1.0 R/HR. DETAILED PROCEDURAL CONTROLS ARE LISTED.

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

\*ADMINISTRATIVE CONTROL + RADIATION SAFETY AND CONTROL + HADDAM NECK (PWR) + HIGH RADIATION + REACTOR, PWR + REGULATION, AEC

17-22844

ALSO IN CATEGORY 9  
MANHATTAN COLLEGE SUPPLIES ADDITIONAL INFORMATION ON SHUTDOWN SYSTEMS  
MANHATTAN COLLEGE, BRONX, NEW YORK  
2 PAGES, DECEMBER 29, 1967, DOCKET 50-199

(1) BORON EMERGENCY SHUTDOWN SOLUTION (WORTH AT LEAST 3%) IS FORMED BY DISSOLVING MORE THAN 4915 G OF BORIC ACID IN WATER WHICH IS STORED IN 3 LARGE CARBOYS ON THE REACTOR PLATFORM



CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-22844 \*CONTINUED\*

(TECH. SPECS. SPECIFY THAT THEY BE AVAILABLE IN THE VICINITY OF THE CONSOLE). \*\*\* (2) DUMP TANK FOR DELIVERY OF THE BORON SOLUTION IS RULED OUT BECAUSE OF DIFFICULTY IN CLEANING CORE AFTER ACCIDENTAL TRIP. \*\*\* (3) SHUTDOWN ROD IS AN IRON PIPE, TEN FT. LONG, 13/16 IN. I.D., AND 15/16 IN. O.D., CONTAINING 1.22 LB OF B4C POWDER.

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

\*SHUTDOWN SYSTEM, SECONDARY + AEC QUESTION + AGN (TNG) + BORON + CONTROL ROD + POISON, SOLUBLE + REACTOR, RESEARCH + TECHNICAL SPECIFICATIONS

17-22845

DOW CHEMICAL TRIGA REPORTS FACILITY DEVIATIONS FROM THE SAR  
THE DOW CHEMICAL COMPANY, MIDLAND, MICHIGAN  
2 PAGES, JANUARY 8, 1966, DOCKET 50-264

COMPLIANCE INSPECTOR POINTED OUT THESE DIFFERENCES DURING INITIAL OPERATION. (SAFETY ANALYSIS REPORT DESCRIPTION FOLLOWS ACTUAL SITUATION.) (1) POISON ROD IS 19 IN. LONG (NEARLY 20). (2) CONCRETE BIOLOGICAL SHIELD IS 3 FT. THICK (1 FT). (3) VENTILATION FLOW IS 1500 CFM INTAKE AND 1700 EXHAUST (450 AND 500). (4) TWO SETS OF LOUVRES IN SERIES IN VENTILATION SYSTEM (1 SET). (5) AREA RADIATION MONITOR IS ON REACTOR ROOM EAST WALL (CONTROL-ROD-DRIVE PLATFORM). (6) WATER-PURIFICATION-SYSTEM PILOT LIGHT IS ON WALL BY CONSOLE (ON CONSOLE), AND (2) WATER RADIOACTIVITY LEVEL MONITOR HAS ONLY AN ALARM BELL (ALARM BELL AND VISIBLE ALARM) AND THE METER ON THIS MONITOR IS SEPARATE FROM WATER-TEMPERATURE METER (SINGLE METER WITH 2 SENSORS).

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

\*MODIFICATION, SYSTEM OR EQUIPMENT + \*REPORT, SAR + INSPECTION AND COMPLIANCE + MONITOR, RADIATION, AREA + REACTOR, RESEARCH + TRIGA (RP)

17-22846

LACROSSE ANSWERS ACRS QUESTION CONCERNING CONTROL ROD NOZZLE PROBLEMS  
DAIRYLAND POWER COOPERATIVE, LA CROSSE, WISCONSIN  
2 PAGES, JANUARY 8, 1968, DOCKET 115-5, TYPE--BWR, MFG--A.C., AE--SGT + LUNDY

IN RESPONSE TO AN ACRS QUESTION OF WHAT SIMILARITIES EXIST BETWEEN OYSTER CREEK NOZZLE PROBLEMS AND LACROSSE NOZZLE DESIGN, LACROSSE TRANSMITS TELEGRAM FROM R. WYLIE, SOUTHWEST RESEARCH INSTITUTE. TELEGRAM DESCRIBES WELDING OF NOZZLE IN HEAD AND GIVES QUALITY CONTROL PROCEDURES. NOZZLES ARE OF INCONEL 600 AND ARE INSTALLED WITH PARTIAL PENETRATION WELDS AT THE SHOP.

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

\*CONTROL ROD DRIVE + \*NOZZLE + ACRS + AEC QUESTION + COMPARISON, REACTOR CHARACTERISTICS + FABRICATION + FAULT + LACROSSE (BWR) + PRESSURE VESSEL + QUALITY CONTROL + REACTOR, BWR + WELDING + WELDS

17-22851

ALSO IN CATEGORY 18

ITEM 4 - REVISED PROCESS FLOW DIAGRAMS AND A REVISED TABLE LISTING VALVES  
SOUTHERN CALIFORNIA EDISON COMPANY + SAN DIEGO GAS AND ELECTRIC COMPANY  
17 PAGES, 3 TABLES, 13 FIGURES, PAGES 28 THRU 44 OF SUPPLEMENT 2 TO THE FINAL SAFETY ANALYSIS REPORT FOR SAN ONOFRE NUCLEAR GENERATING STATION, MAY 31, 1966, DOCKET 50-206, TYPE--PWR, MFG.--WEST, AE--BECHTEL

LIST ALL VALVES, INCLUDING CLASS, TYPE, NORMAL POSITION, METHOD OF ACTUATION, AND FAIL-SAFETY.  
FLOW DIAGRAMS ARE FOR MISCELLANEOUS WATER SYSTEMS, FEEDWATER AND CONDENSATE SYSTEM,  
COMPRESSED-AIR SYSTEM, AIR-CONDITIONING SYSTEM, REACTOR COOLANT SYSTEM, ETC.

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

\*SYSTEM DESCRIPTION + \*VALVE + AUXILIARY COOLING SYSTEM + CONTAINMENT PENETRATION, GENERAL + CORE REFLOODING SYSTEM + MAIN COOLING SYSTEM + REACTOR, PWR + REPORT, SAR + SAN ONOFRE (PWR) + VENTILATION SYSTEM + WASTE DISPOSAL, GENERAL

17-22853

ALSO IN CATEGORY 13

AEC-COMPLIANCE AUTHORIZES NFS CONTINUED OPERATION UNDER PLAN OF ACTION  
UNITED STATES ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.  
13 PAGES, ATOMIC ENERGY CLEARING HOUSE 14(5), PAGE 29-41, (JAN. 30, 1968), DOCKET NO. 50-201

(TWX, JAN. 19) AGREES WITH PLAN OF ACTION AND SCHEDULE OF EXCEPTIONS OUTLINED IN JAN. 13/15 LETTERS. (NFS LETTER, JAN. 13.) REPLIES IN DETAIL TO DEC. 28 LETTER. NFS BELIEVES CONTAMINATION-CONTROL PROBLEMS WERE CAUSED BY VENTILATION SYSTEM BEING MARGINAL FOR UPSET CONDITIONS AND FOR HIGH BURNUP FUEL, AND TO UNEXPECTED FREQUENCY OF MAINTENANCE IN HANDLING EQUIPMENT - VENT MODIFICATIONS AND DECONTAMINATION FACILITY WILL BE COMPLETE BY APRIL 60. MANY PROBLEMS RESULT FROM LACK OF COMMUNICATION - MANY REMEDIAL STEPS BEGAN AFTER YOUR OCT. 67 INSPECTION AND WE DID NOT FURNISH YOU PROGRESS REPORTS. ADDITIONALLY, AMBIGUITIES (E.G. ADEQUATE CONTROLS) IN AEC REGULATIONS AND OUR TECH. SPECS. POSE MORE OF A PROBLEM IN THE FIELD.

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-22853 \*CONTINUED\*

\*MAINTENANCE AND REPAIR + \*VENTILATION SYSTEM + ADMINISTRATIVE CONTROL + DECONTAMINATION + FUEL REPROCESSING + INSPECTION AND COMPLIANCE + MODIFICATION, SYSTEM OR EQUIPMENT + NFS + TECHNICAL SPECIFICATIONS

17-22874 ALSO IN CATEGORY 5  
EXPERIMENTAL DETERMINATION OF THE DEPARTURE FROM NUCLEATE BOILING IN LARGE ROD BUNDLES AT HIGH PRESSURES WESTINGHOUSE ELECTRIC CORP., ATOMIC POWER DIVISION  
WCAP-7045 +. 23 PAGES, 7 FIGURES, 11 REFERENCES, AMENDMENT 6 TO THE LICENSE APPLICATION, (FIFTH SUPPLEMENT TO DIABLO CANYON PRELIMINARY SAFETY ANALYSIS REPORT), NOVEMBER 6, 1967, DOCKET NO. 50-275, TYPE--PWR, MFG--WEST., AE-PG+E

(SUBMITTED AS DIABLO CANYON APPENDIX B TO FIFTH PSAR SUPPLEMENT). TESTS MADE AT 1600-2300 PSIG ON A 5 X 5 ARRAY OF 7-FT-LONG INTERNALLY HEATED RODS SHOWED TONGS (W-3) CORRELATION DERIVED FOR FLOW INSIDE TUBES (J. NUCL. ENERGY, VOL. 21) AN AVERAGE 8% CONSERVATIVE. THIS IS BELIEVED DUE TO SPECIAL MIXING WAVES IN SPACER GRID. CRUD WHICH FLAKED OFF ELEMENTS AND CAUGHT ON GRID RAISED THE PRESSURE DROP AND DNB FLUXES. CRUD FOULING OF RODS INCREASED FLOW TEMPERATURE 100-200 F, DOUBLED THE PRESSURE DROP, BUT DID NOT HAVE A SIGNIFICANT EFFECT ON DNB HEAT FLUX FOR 3 POINTS RECHECKED. BUT, AT DNB, THE SLOPE CHANGE OF HEAT FLUX VS TEMP. WAS NOT SO LARGE. DESPITE OBSERVATION OF TRANSITION FROM PURBLY TO SLUG FLOW AT 30% VOID IN CLOSED CHANNELS, THE OPEN GEOMETRY TESTED SHOWED NO FLOW INSTABILITY (AND THUS PREMATURE DNB), WITH EXIT VOIDS (CALCULATED WITH THINC) OF 23-68%.

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

\*COMPARISON, THEORY AND EXPERIENCE + \*HEAT TRANSFER CORRELATION + \*HEAT TRANSFER EXPERIMENT + DIABLO CANYON (PWR) + DNB + FLOW BLOCKAGE + FLOW STABILITY + FUEL ELEMENT + REACTOR, PWR + REPORT, PSAR + SURFACE FILM DEPOSIT

17-22881 ALSO IN CATEGORY 10  
SELECTED FERMI OPERATING EXPERIENCE JUNE 1966  
POWER REACTOR DEVELOPMENT COMPANY  
EF-34 +. 9 PAGES, TABLES, JUNE 1966

CORE WAS RELOADED JUNE 22, AND 67-MW TESTING WAS COMPLETED. A FLOATING POWER SUPPLY HAS BEEN MADE FOR THE HIGH-SENSITIVITY FISSION COUNTER, AS THE TWO-LOOP POWER COEFFICIENT (-0.27 CENT/MW) HAS A LARGE UNCERTAINTY FROM KEITHLY INDICATION AND LOW INDICATION ON FLOWMETERS. TWO CABLE FAULTS IN THE 4.8-KV FEEDS TO PRDC GAVE A COMPLETE LOSS OF NORMAL POWER TO THE 480-V BUSES. DIESEL STARTED AND SUPPLIED 480-V VITAL POWER. NOS. 1 AND 2 STEAM GENERATORS WERE PLACED BACK IN SERVICE, AND NO. 3 DISMANTLING BEGUN. A HEAT BALANCE AT NOMINAL 67 MWTH SHOWED TRUF POWER 10-20% LESS THAN ON NUCLEAR INSTRUMENTS, AND SODIUM FLOWS LOWER THAN NOMINAL.

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

ACCIDENT, LOSS OF POWER + ELECTRIC POWER, VITAL + FERMI (LMFBR) + GENERATOR, DIESEL + INSTRUMENTATION CALIBRATION + INSTRUMENTATION, FLOW + INSTRUMENTATION, POWER RANGE + REACTOR POWER + REACTOR, FAST + REPORT, OPERATIONS

17-22882 ALSO IN CATEGORY 9  
SELECTED FERMI EXPERIENCE - JULY 1966  
POWER REACTOR DEVELOPMENT COMPANY  
EF-35 +. 11 PAGES, JULY 1966

SHUTDOWNS BEGAN JULY 15 TO REPLACE COPPER GASKET ON NO. 2 STEAM-GENERATOR WATER HEADER, AFTER SOME TESTS AT 100 MW WERE COMPLETED. MEASURED CORE OUTLET TEMPERATURE DIFFERENCES AND 9% GREATER THAN EXPECTED. \*\*\* DURING A PRESSURE RAMP FROM 950 TO 600 PSIA WITH REACTOR AT 67 MW, REACTOR INLET SODIUM TEMPERATURE BEGAN OSCILLATING AT 750 PSIA, REACHING 585 F AND CAUSING A ONE-LOOP SHUTDOWN, WHICH GAVE A LOSS-OF-FLOW SCRAM. THERE MAY BE SIGNIFICANT HEAT TRANSFER IN THE CENTRAL REGION OF THE STEAM GENERATOR, SO BOILING OCCURS TOO SOON IN THE TUBE, CAUSING FLOW INSTABILITY. A SECOND SCRAM CAME SIMILARLY, BUT FROM TOO HIGH A TEMPERATURE, DUE TO ERRATIC TE 301.

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

\*FLOW STABILITY + \*SCRAM, SPURIOUS + \*STEAM GENERATOR + FERMI (LMFBR) + INSTRUMENTATION, ABNORMAL INDICATION + INSTRUMENTATION, TEMPERATURE + OPERATING EXPERIENCE SUMMARY + REACTOR, FAST + REPORT, OPERATIONS + TEST, PLANT RESPONSE

17-22983  
MCCARTHY JF  
SELECTED FERMI OPERATING EXPERIENCES - AUGUST 1966  
ATOMIC POWER DEVELOPMENT ASSOCIATES, INC. + POWER REACTOR DEVELOPMENT COMPANY + DETROIT EDISON COMPANY  
APDA-CFE-1 +. 25 PAGES, FIGURES, TABLES, DECEMBER 1966

FIRST REPORT OF A SERIES TO RECORD TESTS AND OPERATING EXPERIENCE THAT MAY BE SIGNIFICANT FOR LATER FAST-BREEDER REACTORS. SUMMARIZES TESTS RUN IN JULY AND AUGUST AT 67 AND 100 MW THERMAL.

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-22883 \*CONTINUED\*  
AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

FERMI (LMFBR) + REACTOR, FAST + REPORT, OPERATIONS SUMMARY

17-22884 ALSO IN CATEGORY 5  
SELECTED FERMI OPERATING EXPERIENCE - OCT 1966  
POWER REACTOR DEVELOPMENT COMPANY  
EF-38 +. 17 PAGES, TABLES, OCTOBER 1966

BRIEF REVIEW OF THE OCT. 5 MELTDOWN. AT 0345, CRITICAL ROD POSITIONS DURING HEATUP CORRELATED WELL WITH PREVIOUS MEASUREMENTS WITH THE REACTOR AT 1 MWTH. AT 1345, POWER RISE WAS STARTED, HELD TWICE FOR BOILER FEED-PUMP START. AT 1500, DURING POWER RISE, VARIATIONS IN AUTO-POWER CONTROL DUE TO ERRATIC DN/DT, SIMILAR TO PAST NOISE PICKUP. REACTOR WAS PUT IN MANUAL AND POWER RISE HALTED. NOISE DISAPPEARED UNTIL 1505, WHEN FEEDWATER CONTROLLER PUT IN AUTOMATIC. \*\*\* ASST. REACTOR ENGR. NOTED CONTROL RODS HIGHER THAN NORMAL, CHECKED CORE OUTLET TEMPS RECORDED BEHIND CONTROL PANEL AND FOUND 2 SUBASSEMBLIES 100 F HIGHER THAN BULK TO. HIGH RADIATION ALARMS STARTED, AND POWFP WAS REDUCED MANUALLY.

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

\*FUEL MELTDOWN + \*INCIDENT, GENERAL + FERMI (LMFBR) + FLOW BLOCKAGE + INSTRUMENTATION, TEMPERATURE + REACTIVITY EFFECT, ANOMALOUS + REACTOR, FAST + REPORT, OPERATIONS

17-22885 ALSO IN CATEGORIES 11 AND 10  
MCCARTHY JF  
SELECTED FERMI OPERATING EXPERIENCE - OCT 1966  
ATOMIC POWER DEVELOPMENT ASSOC., INC., DETROIT, MICH. + POWER REACTOR DEVELOPMENT CO., DETROIT, MICH. + DETROIT EDISON CO., MICH.  
APDA-CFE-3 +. 40 PAGES, MAY 1967

TWO-DAY LEAK-RATE TEST AT 2 PSIG GAVE 100 CFM/DAY (REFERENCE) AND ZERO (ABSOLUTE). SPORADIC GROUNDS (AGAIN) IN 4800-V SYSTEM WERE TRACED TO BURIED UNDERGROUND CABLE FILLED WITH WATER - NOT UNUSUAL. ONE GROUND IN EITHER SUPPLY. \*\*\* DISCUSSES OCT. 5 FUEL MELTDOWN WITH EXACTLY SAME LANGUAGE AS FOUND IN EF-38. DISCUSSES INDICATIONS ON FISSION-PRODUCT DETECTOR BEING CALIBRATED. DISCUSSES APPARENT REACTIVITY LOSSES DURING MELTDOWN, WHICH APPARENTLY REACHED 30 CENTS JUST BEFORE THE SHUTDOW. N.

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

\*ELECTRIC POWER, GENERAL + \*FUEL MELTDOWN + \*INSTRUMENTATION, DETECTION FAILED FUEL ELEMENT + \*TEST, LEAK RATE + CONTAINMENT, LOW PRESSURE + FERMI (LMFBR) + INCIDENT, GENERAL + REACTIVITY EFFECT, ANOMALOUS + REACTOR, FAST + REPORT, OPERATIONS SUMMARY

17 22986  
SELECTED FERMI OPERATING EXPERIENCE - NOV. 1966  
POWER REACTOR DEVELOPMENT COMPANY  
EF-39 +. 7 PAGES, NOVEMBER 1966

AFTER RAISING THE CORE-HOLDDOWN MECHANISM, THE FUEL-HANDLING MACHINE WAS MODIFIED TO MAKE IT MORE SENSITIVE TO LIFTING FORCES. THE TWO SUBASSEMBLIES WHICH RAN HOT ON OCT. 5, AND THE TWO ADJACENT, REQUIRE MUCH MORE FORCE TO RAISE THEM.

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

\*FUEL HANDLING MACHINE + FERMI (LMFBR) + FUEL MELTDOWN + REACTOR, FAST + REPORT, OPERATIONS

17-22887 ALSO IN CATEGORY 5  
MCCARTHY JF  
SELECTED FERMI OPERATING EXPERIENCES  
ATOMIC POWER DEVELOPMENT ASSOC., INC., DETROIT, MICH. + POWER REACTOR DEVELOPMENT CO., DETROIT, MICH. + DETROIT EDISON CO., MICH.  
APDA-CFE-4 +. 37 PAGES, MAY 1967

CORE-HOLDDOWN MECHANISM REMOVED, COPE SWEEP FOUND NO DEBRIS ABOVE FUEL, NOR PROJECTING ELEMENTS. REVISED FUEL-HANDLING MACHINE FOUND 2 ROWS OF FUEL THAT NEEDED EXCESSIVE FORCE TO LIFT. FOUR ADJACENT ELEMENTS, INCLUDING THE TWO THAT RAN HOT OCT. 5, COULD NOT BE LIFTED. \*\*\* BRIEF DISCUSSION SUMMARIZING ANALYSIS OF JULY/AUGUST STEAM-GENERATOR INSTABILITIES. A PRESSURE AND A TEMPERATURE RAMP CAUSED BOILING IN THE DOWNCOMER AND EVENTUAL FLOW STARVATION. PRESSURE RAMP WILL BE ELIMINATED, AND SODIUM/STEAM CONDITIONS SET TO MAINTAIN A REQUIRED DOWNCOMER HEAT-TRANSFER AREA.

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

\*FLOW STABILITY + FERMI (LMFBR) + FUEL HANDLING MACHINE + FUEL MELTDOWN + REACTOR, FAST + REPORT, OPERATIONS SUMMARY + STEAM GENERATOR

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-22888

MCCARTHY J

SELECTED FERMI OPERATING EXPERIENCE - DEC. 1966  
ATOMIC POWER DEVELOPMENT ASSOCIATES, INC., DETROIT, MICH. + POWER REACTOR DEVELOPMENT CO., DETROIT, MICH.  
+ DETROIT EDISON CO., MICH  
APDA-CFE-5 +. 32 PAGES, MAY 1967

SIX FUEL ELEMENTS WERE REMOVED. ONLY ONE SHOWED DISTORTION. CALCULATIONS SHOWED THAT FUEL OVERHEATING MAY HAVE EXISTED WITHOUT DAMAGING THE UPPER BLANKET PINS, SO THIS EASY METHOD OF INSPECTION WAS RULED OUT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA

\*EXAMINATION + \*FUEL ELEMENT + FERMI (LMFEP) + FUEL HANDLING + FUEL MELTDOWN + REACTOR, FAST + REPORT, OPERATIONS SUMMARY

17-22889

ALSO IN CATEGORY 9

SELECTED FERMI OPERATING EXPERIENCE - JAN. 1967  
POWER REACTOR DEVELOPMENT COMPANY

EF-41 +. 1 PAGE, PAGE 5 OF ENRICO FERMI ATOMIC POWER PLANT REPORT FOR JANUARY 1967

(PAGE 5) SOURCE-RANGE COUNTING RATE ON CHANNELS 1/2 ROSE BY FACTORS OF 2/3 ON JAN. 10, APPARENTLY FROM A COMMON INDETERMINATE NOISE SOURCE. CROSS COUPLING BETWEEN VARIOUS EQUIPMENT RADIATION MONITORS WAS ELIMINATED WITH FILTER CAPACITORS IN THE COMMON POWER SUPPLIES.

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

\*INSTRUMENTATION, ABNORMAL INDICATION + ELECTRIC POWER, VITAL + FERMI (LMFBR) + INDEPENDENCE + INSTRUMENTATION, STARTUP RANGE + MONITOR, RADIATION, AREA + REACTOR, FAST + REPORT, OPERATIONS

17-22890

ALSO IN CATEGORY 9

MCCARTHY JF

SELECTED FERMI OPERATING EXPERIENCE - JAN. 1967

ATOMIC POWER DEVELOPMENT ASSOCIATES, INC., DETROIT, MICH. + POWER REACTOR DEVELOPMENT CO., DETROIT, MICH.  
+ DETROIT EDISON CO., MICHIGAN

APDA-CFE-6 +. 1 PAGE OF COMPILATION OF CURRENT TECHNICAL EXPERIENCE AT ENRICO FERMI ATOMIC POWER PLANT, MONTHLY REPORT NO. 6, JANUARY 1967, 30 PAGES, MAY 1967

(PAGE 10) A JAN. 10 DOUBLING OF THE SHUTDOWN COUNTING RATE ON CHANNELS 1 AND 2, WHICH TOOK PLACE IN 5 MIN AND LASTED ABOUT 15 HR, WAS APPARENTLY NOISE (FROM AN AC MG SET, STANDBY POWER) ENTERING THE SCALE OF TWO MODULES. DISCRIMINATION CURVES SHOWED NO CHANGE. (PG 15) OF THE 18 1966 SCRAMS TABULATED, 5 WERE SINGLE ROD DROPS, 3 WERE LOSS OF COOLANT DUE TO HIGH FEEDWATER TEMP., TWO WERE UNKNOWN SAFETY-SYSTEM TRANSIENTS, ONE WAS DUE TO FAULTY DETECTORS, AND 4 WERE SCHEDULED. (PG 24) SUBASSEMBLY M099 SHOWED THAT TWO OF FOUR PINS HAD 2500 PPM OF HYDRIDE IN THE CLAD (VS 150 FOR OTHERS, AND 10,000 AS FAILURE THRESHOLD).

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

\*EXAMINATION + \*FUEL ELEMENT + \*INSTRUMENTATION, ABNORMAL INDICATION + \*INSTRUMENTATION, STARTUP RANGE + \*SCRAM, PEAL + EMERGENCY POWER, ELECTRIC + FERMI (LMFBR) + HYDRIDE + INDEPENDENCE + REACTOR, FAST + REPORT, OPERATIONS SUMMARY + ZIRCALOY

17-22891

MCCARTHY JF

SELECTED FERMI OPERATING EXPERIENCE - FEB. 1967

ATOMIC POWER DEVELOPMENT ASSOCIATES, INC., DETROIT, MICH. + POWER REACTOR DEVELOPMENT CO., DETROIT, MICH.  
+ DETROIT EDISON CO., MICHIGAN

APDA-CFE-7 +. 1 PAGE, PAGE 23 OF COMPILATION OF CURRENT TECHNICAL EXPERIENCE AT ENRICO FERMI ATOMIC POWER PLANT. MONTHLY REPORT NO 7, FEBRUARY 1967. MAY 1967

(PAGE 23) RECURRENT TUBE-TO-TUBE-SHEET LEAKAGE IN THE STEAM GENERATOR (SG) WILL BE REPAIRED WITH A NEWLY DEVELOPED TIG WELDING PROCESS, WITH A ROYALTY PAID FOR EACH WELD. AFTER 1200 TUBES OF NO. 1 SC ARE WELDED, THE UNIT WILL BE THERMALLY SHOCKED BY VENTING WATER, AND TESTED.

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

\*FAILURE, TUBING + \*WELDING + FERMI (LMFBR) + MAINTENANCE AND REPAIR + REACTOR, FAST + REPORT, OPERATIONS SUMMARY + STEAM GENERATOR

17-22892

ALSO IN CATEGORY 9

MCCARTHY JF + NASH CF

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-22892 \*CONTINUED\*  
 COMPILATION OF CURRENT TECHNICAL EXPERIENCE AT ENRICO FERMI ATOMIC POWER PLANT. MONTHLY REPORT NO. 11,  
 JUNE 1967  
 ATOMIC POWER DEVELOPMENT ASSOCIATES, INC., + POWER REACTOR DEVELOPMENT CO. + DETROIT EDISON COMPANY,  
 MICHIGAN  
 APDA-CFE-11 +. 31 PAGES, FIGURES, AUGUST 1967

CONTAINS SUBJECT INDEX FOR CFE REPORTS 1-11. (PAGE 8) DURING VESSEL DRAINING OPERATIONS, THE  
 COUNTING-RATE CHANNELS INCREASED A FACTOR OF 20, AND THE INTERMEDIATE-RANGE CHANNELS ROSE A  
 FACTOR OF 10,000. SAFETY CHANNELS WERE NOT AFFECTED. SIGNALS WERE CONTINUOUS AND LASTED 6  
 MIN. CAUSE SUPPOSED ELECTRICAL. (PAGE 12) THE STUCK PAIR OF FUEL ELEMENTS WERE VISIBLE  
 THROUGH BORESCOPES. (PAGE 15) VARIATION OF PREDICTED FROM MEASURED SODIUM DELTA T INCREASES  
 WITH INCREASING DISTANCE FROM CORE CENTER. TWO MODELS WERE DEVELOPED FOR LOCAL FLOW  
 VARIATIONS. (PAGE 17) VARIOUS CONSTRUCTION MATERIALS WERE IMMERSSED IN HOT SODIUM TO SEE IF  
 THEY COULD RETAIN THEIR FORM.

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

\*FLOW BLOCKAGE + \*FLOW DISTRIBUTION + \*INSTRUMENTATION, ABNORMAL INDICATION + FERMI (LMFBR) +  
 INSTRUMENTATION, INTERMEDIATE RANGE + INSTRUMENTATION, STARTUP RANGE + MATERIAL + REACTOR, FAST +  
 REPORT, OPERATIONS SUMMARY

17-22893  
 SELECTED FERMI OPERATING EXPERIENCE--JULY 1967  
 POWER REACTOR DEVELOPMENT COMPANY  
 8 PAGES, JULY 1967, DOCKET 50-16, TYPE--LMFBR, MFG--APDA, AE--COMMONWEALTH ASSOC.

(PAGES 1-3) THE TWO STUCK ELEMENTS WERE SEPARATED, REMOVED, AND SHIPPED TO BATTELLE. NO  
 ABNORMALITIES OR OTHER SIGNS OF FLOW BLOCKAGE WERE FOUND OTHER THAN THE AREAS WHICH HAD  
 MELTED TOGETHER.

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

\*FUEL MELTDOWN + \*REMOTE MANIPULATING AND VIEWING + FERMI (LMFBR) + FUEL HANDLING MACHINE + REACTOR, FAST +  
 REPORT, OPERATIONS

17-22894 ALSO IN CATEGORY 5  
 MCCARTHY JF + NASH CR  
 COMPILATION OF CURRENT TECHNICAL EXPERIENCE AT ENRICO FERMI ATOMIC POWER PLANT. MONTHLY REPORT NO. 12,  
 JULY 1967  
 ATOMIC POWER DEVELOPMENT ASSOCIATES, INC., DETROIT, MICHIGAN + POWER REACTOR DEVELOPMENT COMPANY + DETROIT  
 EDISON CO., MICHIGAN  
 APDA-CFE-12 +. 33 PAGES, FIGURES, AUGUST 1967

(PAGES 7-13) SEPARATION OF THE TWO STUCK ASSEMBLIES BY A SPECIAL CHISEL SAVED 2 MONTHS. NO  
 FOREIGN MATERIAL WAS FOUND ON THE SUPPORT PLATE. (PAGE 14) RELEASE OF GAS IN LOADING A FUEL  
 ELEMENT AND TRANSPORT BY BUILDING VENTILATION SYSTEM CONTAMINATED THE AREA WITH ZR-NB-95 AND  
 SR-90. AN ADDITIONAL CHANGE HOUSE WAS CONNECTED TO THE AIRLOCK. (PAGE 16-25) PICTURES AND  
 EXAMINATION RESULTS OF DAMAGED ELEMENTS M127 AND M098 GIVEN. (PAGE 27-28) A COMBINATION FLOW  
 RESTRICTOR AND CHECK VALVE WILL BE INSERTED IN EACH STEAM-GENERATOR TUBE. THIS WILL INCREASE  
 THE PART-LOAD PRESSURE DROP (PREVENTING FLOW IMBALANCES AND TUBE-SHEET FAILURES), YET ON A  
 WATER DUMP WILL ALLOW NORMAL BACKFLOW.

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

\*FISSION GAS RELEASE + \*FLOW ORIFICE + \*REMOTE MANIPULATING AND VIEWING + CONTAMINATION + FERMI (LMFBR) +  
 FLOW DISTRIBUTION + FLOW STABILITY + FUEL MELTDOWN + REACTOR, FAST + REPORT, OPERATIONS SUMMARY +  
 STEAM GENERATOR + VENTILATION SYSTEM

17-22895  
 MCCARTHY JF  
 COMPILATION OF CURRENT TECHNICAL EXPERIENCE AT ENRICO FERMI ATOMIC POWER PLANT. MONTHLY REPORT NO. 13,  
 AUGUST 1967  
 ATOMIC POWER DEVELOPMENT ASSOCIATES, INC., DETROIT, MICHIGAN + POWER REACTOR DEVELOPMENT COMPANY + DETROIT  
 EDISON COMPANY  
 APDA-CFE-13 +. 26 PAGES, OCTOBER 1967

(PAGES 16-20) BRIEF DISCUSSION AND PICTURES OF SUBASSEMBLIES M098 AND M127, CUT APART IN BMI  
 HOT CELL.

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

\*EXAMINATION + \*FUEL MELTDOWN + FERMI (LMFBR) + HOT CELL + REACTOR, FAST + REPORT, OPERATIONS SUMMARY

17-22896  
 SELECTED FERMI OPERATION EXPERIENCE--NOVEMBER 1967

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-22896 \*CONTINUED\*  
POWER REACTOR DEVELOPMENT COMPANY  
PRDC-EF-51 +. 7 PAGES, NOVEMBER 1967, DOCKET 50-16, TYPE--LMFR, MFG--APDA, AE--COMMONWEALTH ASSOC.

PHOTOGRAPHS OF THE FOREIGN OBJECT WHICH BLOCKED FLOW WERE GIVEN TO A PHOTO INTERPRETER FOR DIMENSIONAL DRAWINGS AND STEROSCOPIC VIEWING. OBJECT IS SLIGHTLY MAGNETIC. SEVEN FUEL PINS OF M122 WERE SWOLLEN, NOTICEABLY AT THE END CAPS. CAUSE NOT YET UNDERSTOOD.

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

EXPANSION + FERMI (LMFR) + FLOW BLOCKAGE + FUEL ELEMENT + REACTOR, FAST + REMOTE MANIPULATING AND VIEWING + REPORT, OPERATIONS

17-22897  
MCCARTHY JF  
COMPILATION OF CURRENT TECHNICAL EXPERIENCE AT ENRICO FERMI ATOMIC POWER PLANT. CURRENT EXPERIENCE SERIES ATOMIC POWER DEVELOPMENT ASSOCIATES, INC., DETROIT, MICHIGAN + POWER REACTOR DEVELOPMENT CO., DETROIT, MICHIGAN + DETROIT EDISON CO., MICHIGAN  
APDA-CFE-8 +. 32 PAGES, FIGURES, MARCH 1967

THIS IS A MONTHLY PROGRESS REPORT WHICH CONTAINS INFORMATION ON (I) CURRENT EXPERIENCE, (II) DATA AND STATISTICS, (III) NUCLEAR TEST PROGRAM (IV) PLANT TEST PROGRAM (V) OTHER OPERATING EXPERIENCE, AND (VI) MAINTENANCE AND ADDITIONS.

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

\*OPERATING EXPERIENCE + \*REPORT, OPERATIONS ANALYSIS + FERMI (LMFR) + MAINTENANCE AND REPAIR + REACTOR, BREEDER + REACTOR, FAST + TEST, PLANT RESPONSE

17-22898 ALSO IN CATEGORIES 8 AND 9  
MCCARTHY JF  
COMPILATION OF CURRENT TECHNICAL EXPERIENCE AT ENRICO FERMI ATOMIC POWER PLANT. MONTHLY REPORT NO. 9, APRIL 1967  
ATOMIC POWER DEVELOPMENT ASSOCIATES, INC., DETROIT, MICH + POWER REACTOR DEVELOPMENT COMPANY + DETROIT EDISON COMPANY, MICHIGAN  
APDA-CFE-9 +. 31 PAGES, JUNE 1967

(PAGE 23) A LOW-FREQUENCY COIL TO NONDESTRUCTIVELY TEST FUEL PINS HAS A THRESHOLD OF 1000 PPM HYDRIDE, TESTED ON DELIBERATELY HYDRIDED (250-5000 PPM) PINS. (PAGE 24) BYPASS FLOW ANALYSIS OF SUBASSEMBLY LOWER NOZZLE BEING CAUGHT ON TOP OF THE SUPPORT PLATE SHOWS FLOW REDUCED BY 7%, INSUFFICIENT TO CAUSE FUEL DAMAGE. (PAGE 27) FAILURE OF A SOLENOID VALVE ALLOWED PRIMARY-SHIELD-TANK PRESSURE TO TAKE POSITIVE PRESSURE SWINGS. FAILURE BLEW A FUSE IN THE COMMON POWER SUPPLY. PREVENTING SWITCHOVER TO AN ALTERNATE SENSING LINE. MANUAL VALVES REPLACE THE SOLENOID VALVES (IN A LESS COMPLICATED ARRANGEMENT).

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA., \$2.00 COPY, \$0.65 MICROFICHE

\*FAILURE, COMPONENT + \*FAILURE, SEQUENTIAL + \*FLOW DISTRIBUTION + \*TEST, NONDESTRUCTIVE + CLAD + ELECTRIC POWER, NORMAL + FERMI (LMFR) + FUEL ELEMENT + HYDRIDE + HYDRODYNAMIC ANALYSIS + INDEPENDENCE + REACTOR, FAST + REPORT, OPERATIONS SUMMARY + VALVE

17-22899  
MCCARTHY JF  
COMPILATION OF CURRENT TECHNICAL EXPERIENCE AT ENRICO FERMI ATOMIC POWER PLANT  
ATOMIC POWER DEVELOPMENT ASSOCIATES, INC., DETROIT, MICHIGAN + POWER REACTOR DEVELOPMENT CO., DETROIT, MICHIGAN + DETROIT EDISON CO., MICHIGAN  
APDA-CFE-10 +. 30 PAGES, JULY 1967

MONTHLY PROGRESS REPORT. CONTAINS INFORMATION ON (I) CURRENT EXPERIENCE, (II) DATE AND STATISTICS, (III) NUCLEAR TEST PROGRAM (IV) PLANT TEST PROGRAM, (V) OTHER OPERATING EXPERIENCE, AND (VI) MAINTENANCE AND ADDITIONS.

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

\*OPERATING EXPERIENCE + FERMI (LMFR) + MAINTENANCE AND REPAIR + REACTOR, BREEDER + REACTOR, FAST + TEST, PLANT RESPONSE

17-22900  
SELECTED FERMI OPERATING EXPERIENCE - AUGUST 1966  
POWER REACTOR DEVELOPMENT COMPANY  
PRDC-EF-36 +. 11 PAGES, DOCKET 50-16, AUGUST 1966

THIS REPORT IS ONE OF A SERIES. SEEMS ADEQUATE IN DEPTH. COVERS OPERATIONS, HEALTH PHYSICS, MAINTENANCE AND MODIFICATIONS, NONNUCLEAR TEST PROGRAM, AND FACILITY CHANGE.

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

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-22900 \*CONTINUED\*  
\*REPORT, OPERATIONS SUMMARY + FERMI (LMFBR) + MAINTENANCE AND REPAIR + MODIFICATION, SYSTEM OR EQUIPMENT + OPERATING EXPERIENCE + REACTOR, FAST + REACTOR, LMCF + REPORT, OPERATIONS

17-22912  
PON GA  
CANDU-BLW-250  
ATOMIC ENERGY OF CANADA LTD., SHERIDAN PARK, ONTARIO  
AECL-2942 + CONF-670917-6 +. 20 PAGES, 11 FIGURES, 1 TABLE, 1 REFERENCE, SEPT. 1967, PRESENTED AT SYMPOSIUM ON HEAVY WATER POWER REACTORS, VIENNA, AUSTRIA

DESCRIBES A 250-MWE PROTOTYPE CANDU BOILING-LIGHT-WATER, HEAVY-WATER-MODERATED PLANT NEAR GENTILLY, ON THE ST. LAWRENCE RIVER. PRESSURE TUBES ARE OF ZR-NB. STABILITY THRESHOLD (CALCULATED TO BE 200% FULL POWER, USING THE HYDRA CODE) IS DISCUSSED IN TERMS OF THE ANALYTICAL MODEL AND VOID FEEDBACK. POWER COEFFICIENT IS POSITIVE.

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

\*REACTOR DESCRIPTION + ANALYTICAL MODEL + CANADA + CANDU (HWR) + POWER COEFFICIENT + REACTOR, BWR + REACTOR, HWR + REACTOR, PRESSURE TUBE

17-22914  
MYC HD  
CARBON REMOVAL FROM SRE SODIUM FOLLOWING PEP MODIFICATIONS  
ATOMICS INTERNATIONAL, CANOGA PARK, CALIF.  
NAA-SR-12410 +. 73 PAGES, 19 FIGURES, 8 TABLES, NOV. 1, 1967

DESCRIBES AND EVALUATES CHEMICAL, MICROHARDNESS TRAVERSE, AND METALLOGRAPHIC METHODS FOR MEASURING SODIUM CARBURIZING EFFECTS ON 304 SS. AN ESTIMATED 43.3 LB OF CARBON WAS REMOVED, LEAVING ABOUT 1.5 LB. ADDITIONAL HOT-TRAPPING (AT 1200F) TIME TO REDUCE CONTENT TO GIVE CLADDING UNRESTRICTED SERVICE LIFE IS 2.7 MONTHS, AND TO PROTECT MAIN INTERMEDIATE HEAT EXCHANGER IS 0.8 TO 8 MONTHS. A SMALL BYPASS LOOP FOR EXPOSING SAMPLE SPECIMENS IS DESCRIBED.

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

\*CARBON + \*COOLANT CHEMISTRY + \*DECONTAMINATION + CLAD + COOLANT PURIFICATION SYSTEM + REACTOR, LMCR + SRE (RE) + STEEL

17-22915  
DOLLEZJAL N  
NUCLEAR REACTORS OF BELOJARSK-TYPE  
NAUK, MOSCOW  
4 PAGES, 2 FIGURES, 1 TABLE, TEKNISK TIDSKRIF (STOCKHOLM) 20, PAGES 489-492 (1967) IN SWEDISH

THE DEVELOPMENT OF NUCLEAR POWER REACTORS FOR COMMERCIAL ENERGY PRODUCTION IN THE SOVIET UNION HAS FOLLOWED ITS OWN TREND. THE NEAREST EQUIVALENT IS THE FIRST PU-PRODUCING REACTOR IN THE UNITED STATES. GRAPHITE IS USED AS MODERATOR AND LIGHT WATER AS COOLANT. THE PRESSURE-TUBE CORE HAS ADVANTAGES COMPARED WITH THE PRESSURE-VESSEL TYPE. THE FIRST REACTOR OF 100 MWE HAS BEEN IN OPERATION FOR TWO YEARS. THE NEXT REACTOR TO BE CONSTRUCTED IS OF 200 MWE. A SURVEY IS GIVEN ON THE DEVELOPMENT HISTORY, DESIGN DETAILS, AND OPERATION EXPERIENCES.

\*REACTOR DESCRIPTION + REACTOR, GRAPHITE MODERATED + REACTOR, INTERNAL SUPERHEAT + REACTOR, PRESSURE TUBE + USSR

17-22920 ALSO IN CATEGORY 6  
MOLTEN-SALT REACTOR PROGRAM. SEMI-ANNUAL PROGRESS REPORT FOR PERIOD ENDING FEBRUARY 28, 1967  
OAK RIDGE NATIONAL LAB., TENN.  
ORNL-4119 +. 5 PAGES, 2 FIGURES, PAGE 14-18, JULY 1967

INCLUSION OF XE-135 POISONING WITH MODIFIED XENON REMOVAL (GAS STRIPPING) PARAMETERS REDUCES THE STEADY-STATE REACTIVITY ANOMALY TO ABOUT 0.03% DK/K. TESTS ON THE CIRCULATING-BUBBLE EFFECTS (RAISING PRESSURE, OBSERVATION OF REACTIVITY AFTER A STATIONARY FUEL PERIOD) SHOWED THE EFFECT ABOUT 0.03% DK/K. THERE APPEARS TO HAVE BEEN A POSITIVE SHIFT OF ABOUT 0.05% DK/K DURING THE FIRST 1000 MW HR. THE SHIFT REMAINS CONSTANT. NO SIGNIFICANT CAUSE HAS BEEN FOUND. THE CHANGE IS NEAR THE ESTIMATED CONFIDENCE LIMIT (PLUS OR MINUS 0.04%) AND MUCH SMALLER THAN THE OPERATING LIMIT (PLUS OR MINUS 0.5% DK/K).

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

\*REACTIVITY EFFECT, ANOMALOUS + MSRE (RE) + REACTOR, MOLTEN SALT + REPORT, OPERATIONS ANALYSIS + VOID COEFFICIENT

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-22941 ALSO IN CATEGORIES 3 AND 1  
BARCOCK AND WILCOX REPORTS PLUTONIUM NITRATE LEAKAGE FROM POLYETHYLENE BOTTLES  
BARCOCK AND WILCOX COMPANY  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 14(6), PAGE 8, (FEB. 5, 1968)

(LETTER, JAN. 17) ALTHOUGH NOT REPORTABLE UNDER 10 CFR 20, THIS IS AN EXAMPLE OF LEAKAGE AS IN YOUR HEALTH AND SAFETY BULLETIN 259, DEC. 21, 1967. ON JAN. 8, 1968, ROUTINE INSPECTION REVEALED A LEAK FROM A SMALL CRACK IN A 1-GAL POLYETHYLENE BOTTLE THAT PENETRATED THROUGH THREE 4-MIL-THICK POLYETHYLENE BAGS (TWO WITH PGOR HEAT SEALS), DISSOLVED A 3-IN.-DIAM HOLE IN THE CARBON-STEEL SHELF, AND DRIPPED THROUGH TWO OTHER STEEL SHELVES. THE BOTTLE WAS QUITE STIFF, AND CRACK MAY HAVE BEEN CAUSED BY RADIOLYTIC GAS PRESSURE, RADIATION DAMAGE, OR OXIDATION. STAINLESS-STEEL SHELVING AND ACID-RESISTANT DRIP PANS ARE BEING CONSIDERED.

\*LEAK + \*STORAGE CONTAINER + INCIDENT, EQUIPMENT + NITRATE + PLASTICS + PLUTONIUM

17-22942 ALSO IN CATEGORY 1  
RUMYON D  
COULD WASHINGTON SURVIVE AN ATOMIC PLANT BLOWUP  
2 PAGES, FIGURES, THE WASHINGTON D.C. EXAMINER 1(14), PAGE 1 AND 16, (DECEMBER 7-10, 1967)

(FIRST PART.) BRIEF DISCUSSION OF THE OCT. 66 FERMI-PLANT FUEL MELTDOWN, THEN A REMINDER THAT THE PLANT CONTAINED ENOUGH U-235 TO MAKE 40 HIRSHIMA-SIZE ATOM BOMBS. REFERENCES TO LEO GOODMAN AND SCIENTISTS INSTITUTE FOR PUBLIC INFORMATION STATEMENTS - A 1957 AEC REPORT GUESSED THAT THE WORST RESULT OF A CRITICAL ACCIDENT WOULD BE THOUSANDS KILLED AND INJURED 45 MILES AWAY. (QUOTE) - THE ACCIDENT WAS A BIT WORSE THAN THE MCA ... IT WAS ALSO UNFORSEEN, DESPITE ALL THE AEC'S HIGHLY TOUTED STUDIES ON THE PROBABILITY OF SUCH ACCIDENTS. OFFICIALS HAVE SINCE PUT OUT A STORY THAT THE FERMI PLANT WENT HAYWIRE - DESPITE ALL THE AUTOMATIC CONTROLS AND BRAKES - BECAUSE A WORKER DROPPED A BEEF CAN IN THE WORKS (UNQUOTE).

FERMI (LAFBP) + FUEL MELTDOWN + PROBABILITY + RADIATION, PUBLIC EDUCATION/ACCEPTANCE

17-22943 ALSO IN CATEGORY 1  
RUMYON D  
INVISIBLE DEATH - POLLUTION OF THE ATOMIC AGE  
2 PAGES, FIGURES, THE WASHINGTON D. C. EXAMINER 1(15), PAGES 1 AND 8 (DECEMBER 14-17, 1967)

(SECOND OF THREE PARTS.) (QUOTE) ATOMIC POWER PLANTS GENERATE MORE CONTROVERSY THAN ELECTRICITY. THE DISPUTE OVER SAFETY IN ITSELF IS A MEASURE OF THE LACK OF KNOWLEDGE ABOUT THE INHERENT DANGERS (UNQUOTE). ARTICLE DISCUSSES FERMI AND WINDSCALE INCIDENTS, SHOWS PICTURE OF IRRADIATED AND UNIRRADIATED CHICKEN EMBRYOS. (QUOTE) THE FEDERAL GOVERNMENT QUICKLY WASHES ITS HANDS OF RESPONSIBILITY. FOR INSTANCE, RESPONSIBILITY FOR KEEPING NUCLEAR GARBAGE WAS POSTED ON THE STATE OF NEW YORK (UNQUOTE). LEO GOODMAN HAS COMPILED A WEALTH OF ACTUAL MATERIAL - ATOMIC REACTOR ACCIDENTS (210), ATOMIC FATALITIES (129), AND ACCIDENTS INVOLVING RADIATION (968).

INCIDENT COMPILATION + RADIATION, PUBLIC EDUCATION/ACCEPTANCE

17-22944 ALSO IN CATEGORY 1  
RUMYON D  
ATOMIC ENERGY - IS IT WORTH IT  
2 PAGES, FIGURES, THE WASHINGTON D.C. EXAMINER 1(15), PAGES 8 AND 18, (DECEMBER 21-24, 1967)

(THIRD OF 3 PARTS.) ASSERTS THAT A NATIONAL FORTUNE OF BILLIONS WAS SPENT FOR 16 PLANTS THAT ARE SHAKY AT BEST OR TOTAL FAILURES. A \$120 MILLION PLANT PRODUCED ONLY \$330,000 WORTH OF ELECTRICITY BEFORE A MINOR ACCIDENT SHUT IT DOWN COMPLETELY. PIQUA CONTRACT WAS ENDED LAST WEDNESDAY AFTER TWO YEARS OF SHUTDOWN DUE TO TECHNICAL DIFFICULTIES IN THE REACTOR CORE. GOVERNMENT LOSS - \$24 MILLION. UMW ATTRIBUTED WIRTZ URANIUM-MINER LUNG-CANCER ACTION TO THIS SERIES IN THE EXAMINER. ILLUSTRATES EFFECTS OF RADIOACTIVITY WITH AEC PHOTO OF BONE DAMAGE TO RADIUM-WATCH-DIAL PAINTER, WHO TOUCHED BRUSH TO TIP OF TONGUE.

RADIATION, PUBLIC EDUCATION/ACCEPTANCE + RADIUM

17-22946  
UNIVERSITY OF WYOMING YEARLY OPERATIONS SUMMARY FOR AEC  
THE UNIVERSITY OF WYOMING, LARAMIE, WYOMING  
1 PAGE, JANUARY 4, 1968, DOCKET 50-122

DURING THE YEAR, NO CHANGES OCCURRED THAT AFFECT LICENSE R-55. SUBMITTED IN ACCORDANCE WITH 10 CFR 50.59.

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

REACTOR, RESEARCH + REPORT, OPERATIONS SUMMARY



CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-22947 ALSO IN CATEGORY 9  
DRESDEN 1 PROPOSED CHANGE 15--REFUELING WITHOUT COCKED RODS  
COMMONWEALTH EDISON COMPANY, CHICAGO, ILLINOIS  
4 PAGES, JANUARY 17, 1968, DOCKET 50-10, TYPE--BWR, MFG--G.E., AE--BECHTEL

DRESDEN ASKS TO ELIMINATE REQUIREMENT THAT SOME CONTROL RODS BE COCKED DURING REFUELING. SHUTDOWN MARGIN AT ALL STAGES, WITH ONE ROD STUCK OUT OF CORE, WOULD HAVE TO BE AT LEAST 1%. A CONTROL ROD IN THE VICINITY OF THE REFUELING ACTIVITY WOULD BE WITHDRAWN AND REINSERTED BEFORE AND AFTER EACH FUEL ADDITION. ONE-STUCK-ROD REFUELING ACCIDENT RESULTS IN NO CLAD OR FUEL MELTING.

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

\*REFUELING + \*SHUTDOWN MARGIN + ACCIDENT, REFUELING + ADMINISTRATIVE CONTROL + CONTROL ROD + DRESDEN 1 (BWR) + REACTOR, BWR + TECHNICAL SPECIFICATIONS

17-22948 ALSO IN CATEGORY 9  
PLUM BROOK SUPPLIES ADDITIONAL INFORMATION ON CHANGE REPORT 32--CONTROL RODS  
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, LEWIS RESEARCH CENTER  
3 PAGES, JANUARY 12, 1968, DOCKET 50-30

TESTS WITH CONTROL-ROD-BEARING MATERIALS (ZIRCALOY 32, 17-7PH STAINLESS, 6061-T6 ALUMINUM, TI-16 ALUMINUM, AND WAUKESHA METAL 88) SHOWED WAUKESHA 88 TO HAVE THE BEST COMBINATION OF PROPERTIES, WITH 6061-T6 AS AN ACCEPTABLE SECOND. BEARING PLATE IN ALL CASES WAS 304 STAINLESS. TEST CONDITIONS WERE - (1) VELOCITY, 12 FT/SEC (POD DROP VELOCITY), (2) LATERAL LOADING OF 65 PSI (GREATER THAN THAT EXPECTED), AND (3) 10-MIN RUN, EQUIVALENT TO 3,000 ROD DROPS. WEAR OF BEARING MATERIAL, DAMAGE TO STAINLESS-STEEL SURFACE, AND THE INITIAL AND FINAL COEFFICIENT OF FRICTION WERE DETERMINED. \*\*\*ROD-DROP TIMES FOR THE REFLECTOR RODS WILL BE CHECKED AFTER INSTALLATION OF THE ROLLERLESS GUIDES (BEFORE OPERATION) AND RODS 6, 7, AND 8 WILL BE CHECKED MONTHLY FOR 6 MONTHS.

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

\*CONTROL ROD SCRAM MECHANISM + \*TEST, PROOF + AEC QUESTION + CONTROL ROD DRIVE + PLUM BROOK (TR) + REACTOR, TEST + RESPONSE TIME + TECHNICAL SPECIFICATIONS

17-22949 ALSO IN CATEGORY 9  
UNIVERSITY OF ILLINOIS REPORTS SOLENOID FAILURE CAUSES PULSE-SAFETY ROD TO FAIL TO DROP  
UNIVERSITY OF ILLINOIS, URBANA, ILLINOIS  
2 PAGES, JANUARY 4, 1968, DOCKET 50-151

DURING STARTUP CHECKOUT, THE PULSE-SAFETY ROD FAILED TO DROP. ROD WAS THEN DROPPED BY VENTING AIR PRESSURE. ROD THEN OPERATED PROPERLY IN REPEATED CHECKS. AFTER A SECOND FAILURE TO DROP OCCURRED DURING THE CHECKOUT, THE SOLENOID VALVE CONTROLLING THE AIR PRESSURE WAS TESTED AND FOUND TO BE THE SOURCE OF TROUBLE. SINCE NO REPLACEMENT WAS AVAILABLE, THE AIR PRESSURE WAS REDUCED FROM 75 PSI TO 40, AT WHICH THE VALVE OPERATED PROPERLY (A REPLACEMENT VALVE WAS OBTAINED). THE RUBBER SEATS IN THE 6-YEAR-OLD VALVE WERE WORN, ALLOWING LEAKAGE. \*\*\* A BACKUP SAFETY SYSTEM (RELEASE OF AIR PRESSURE WITH THE VENT NEAR THE CONSOLE) WAS AVAILABLE IN EVENT OF FAILURE DURING ROUTINE SHUTDOWN.

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

\*FAILURE, SCRAM MECHANISM + \*INCIDENT, EQUIPMENT + \*VALVE + FAILURE, EQUIPMENT + OPERATING EXPERIENCE + PRESSURE, INTERNAL + REACTOR, PULSED + SHUTDOWN SYSTEM, SECONDARY + TRIGA (RR)

17-22950 ALSO IN CATEGORY 9  
UNIVERSITY OF ILLINOIS REPORTS FAILURE IN PULSE ROD SOLENOID VALVE  
UNIVERSITY OF ILLINOIS  
2 PAGES, JANUARY 15, 1968, DOCKET 50-151

THE PULSE ROD FAILED TO DROP DURING A ROUTINE SHUTDOWN, DROPPED WHEN MANUAL VENT OPENED, BUT WITHDREW WHEN VENT CLOSED. MASTER-KEY SWITCH DROPPED ROD, AND OPERATION THEREAFTER WAS NORMAL. CAUSE APPEARS TO BE IN A NUMBER OF MICROSWITCHES, AND MECHANICAL MOVEMENT OF (AND A HOLDING CONTACT IN) THE UP-BUTTON. (TWO YEARS AGO SIMILAR DIFFICULTY WAS RELIEVED BY LUBRICATION AND SIZE REDUCTION OF THE BUTTON SLIDE.) SINGLE OCCURRENCE DOES NOT ALLOW THE FINDING THAT A COMPONENT FAILED.

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

\*FAILURE, SCRAM MECHANISM + CONTROL ROD DRIVE + FAILURE, COMPONENT + INCIDENT, EQUIPMENT + REACTOR, PULSED + TRIGA (PR) + VALVE

17-22951  
G.G.A. APFA-III PROPOSED CHANGES TO TECHNICAL SPECIFICATIONS

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-22951 \*CONTINUED\*  
GULF GENERAL ATOMIC INCORPORATED  
4 PAGES, JANUARY 3, 1968, DOCKET 50-252

CHANGES INCLUDE - (1) CHANGED DEFINITION OF SHUTDOWN TO ALLOW POWER KEY SWITCH TO BE ON. (2) CHANGE IN PERIOD SCRAM SET-POINT FROM 0.3 TO 0.1 SEC IN AUTOMATIC MODE. THIS PERIOD CORRESPONDS TO 50.95 REACTIVITY, WHICH IS THE EXCESS REACTIVITY SET-POINT (SEC.6.6). THE 0.2-SEC PERIOD CORRESPONDS TO 50.96; THE EXCESS REACTIVITY ALLOWED. (3) CHANGE IN SHUTDOWN STORAGE REQUIREMENTS TO ALLOW MORE FLEXIBILITY IN OPERATION OF FAST-SPECTRUM CELL. (4) CHANGE EXPERIMENTAL REACTIVITY LIMIT FROM \$10 TO \$8 TO COMPENSATE FOR AN ERROR IN WORTH OF SAFETY BLOCK (SEE 17 JULY 67 LETTER).

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

ADMINISTRATIVE CONTROL + CRITICAL ASSEMBLY FACILITY + INSTRUMENTATION, PERIOD + MODIFICATION, SYSTEM OR EQUIPMENT + REACTIVITY, EXCESS + REACTOR SAFETY SYSTEM + REACTOR, FAST BURST + TECHNICAL SPECIFICATIONS

17-22952  
GSA TRIGA MARK III CHANGE 5--DETERMINATION OF SHUTDOWN MARGIN  
USAEC, DIVISION OF REACTOR LICENSING, WASHINGTON, D. C.  
3 PAGES, JANUARY 23, 1968, DOCKET 50-227

DRL ALLOWS DETERMINATION OF SHUTDOWN MARGIN BY A ROD-DROP TECHNIQUE AS AN ALTERNATIVE TO THE PRESENT NEGATIVE-PERIOD METHOD. SHUTDOWN MARGIN MUST BE AT LEAST \$0.10 WITH THE MOST REACTIVE ROD STUCK OUT. OLD METHOD IS TIME-CONSUMING.

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

\*MEASUREMENT, REACTIVITY + \*SHUTDOWN MARGIN + CONTROL ROD WORTH + REACTOR, RESEARCH + SAFETY EVALUATION + TECHNICAL SPECIFICATIONS + TRIGA (RR)

17-22953  
U OF VIRGINIA REPORT OF TESTS AND FACILITY MODIFICATIONS  
UNIVERSITY OF VIRGINIA  
3 PAGES, JANUARY 16, 1968, DOCKET 50-62

URANIUM-STAINLESS RODS (INSPECTED AT 2168.72 MWH) SHOW NO CRACKING OR CHIPPING AND LITTLE OXIDE BUILDUP. ROD NO. 1 GAGED AT MORE THAN 0.90 IN. BUT LESS THAN 0.95. OTHERS - 0.90 IN., 30-40 R/HR AT 1 IN. THERE WERE NO SIGNIFICANT CHANGES IN DROP TIMES. TWO LIQUID-WASTE TANKS (5000 GAL EACH) WERE INSTALLED. A NEW DELTA-TEMP. MEASURING SYSTEM (USING PLATINUM RESISTANCE BULBS) WAS INSTALLED. A POOL SKIMMER WAS INSTALLED.

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

\*CONTROL ROD + \*RESPONSE TIME + CONTROL ROD BURNUP + EXAMINATION + INSTRUMENTATION, TEMPERATURE + MEASUREMENT, TEMPERATURE + MODIFICATION, SYSTEM OR EQUIPMENT + REACTOR, POOL TYPE + REACTOR, RESEARCH + REPORT, OPERATIONS SUMMARY + WASTE DISPOSAL, GENERAL

17-22954  
NORTHROP REPORTS FAILURE OF TRIGA MARK-F FUEL ELEMENT  
NORTHROP CORPORATION, BEVERLY HILLS, CALIFORNIA  
1 PAGE, JANUARY 18, 1968, DOCKET 50-187

FAILURE WAS DISCOVERED WHEN ELEMENT WAS DIFFICULT TO REMOVE FROM CORE (FOR ROUTINE MEASUREMENT). A SMALL BLISTER IN THE CLADDING AT THE MIDDLE OF THE ELEMENT WAS ABOUT 0.1 IN. IN DIAM/AND 0.05 IN. HIGH, APPARENTLY DUE TO CLAD WEAKNESS. ELEMENT WAS FROM C-RING AND HAD RECEIVED 96.43 MW-HR OF STEADY-STATE OPERATION AND \$3705 OF PULSING OPERATION. IT HAD ELONGATED 0.02 IN. SINCE PURCHASE, BUT NO BOWING WAS APPARENT. NO MEASURABLE FISSION-PRODUCT RELEASE.

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

\*FAILURE, CLADDING + EXAMINATION + INCIDENT, GENERAL + REACTOR, PULSED + TRIGA (RR)

17-22955  
LACROSSE REPORTS ELIMINATION OF ROTQVALVE PROBLEMS  
ALLIS-CHALMERS MFG. COMPANY  
2 PAGES, JANUARY 22, 1968, DOCKET 115-5, TYPE--BWR, MFG.--A.C., AE--SGT + LUNDY

(ON 29 DEC. 67, LACROSSE REPORTED ERRATIC BEHAVIOR OF THE DISCHARGE ROTQVALVES IN THE FORCED CIRCULATION LOOPS). THE VALVES ARE DOUBLE-ACTUATING - THE PLUG IS DRIVEN INTO ITS SEAT AT THE LIMITS OF TRAVEL. IN BETWEEN WHICH IT MOVES FREELY WITH NO CONTACT OF SEATING FACES. A MANUFACTURERS REPRESENTATIVE DETERMINED THAT THE VALVES WERE BEING WEDGED TOO FAR IN THE SEAT WHEN COLD. THE PLUG LEADS THE SEAT DURING HEATUP, CAUSING BINDING DURING MOVEMENT. AFTER READJUSTMENT, THE VALVES WORKED PROPERLY. \*\*\* CLOSURE TIMES, AT VARIOUS TEMPERATURES AND FLOW, WERE BETWEEN 13.2 AND 14.5 SEC AND SHOWED A SLIGHT DECREASE WITH INCREASED FLOW.

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-22955 \*CONTINUED\*  
AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*RESPONSE TIME + \*VALVE + FLOW, RECIRCULATION + LACROSSE (BWR) + MAIN COOLING SYSTEM + REACTOR, BWR + TESTING

17-22957  
DOW CHEMICAL PROPOSED AMENDMENT 2 - USE OF AN AM-BE SOURCE  
DOW CHEMICAL COMPANY, MIDLAND, MICHIGAN  
4 PAGES, JANUARY 12, 1968, DOCKET 50-264

REQUESTS USE OF AN AM-BE SOURCE IN PLACE OF PRESENT PO-BE SOURCE. ORIGINAL PLAN TO SUBSTITUTE AN ANTIMONY SOURCE FOR THE PO-BE SOURCE (BECAUSE THE FORMER GREW IN STRENGTH AND THE LATTER DIMINISHED FROM IRRADIATION) IS NOT PRACTICAL BECAUSE OF LESS FULL-POWER OPERATION THAN PLANNED AND BECAUSE SOURCE CONTAINER IS LONG AND THIN, FAVORING AN ALPHA REACTION BUT MITIGATING AGAINST AN EFFICIENT GAMMA REACTION. CALCULATIONS SHOW FISSION RATE OF 6 WATTS (4 WATTS/GRAM, COMPARED WITH TRIGA FUEL VALUE OF 10 W/GRAM AT 1 MW).

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

\*AMERICIUM + \*MATHEMATICAL TREATMENT + \*SOURCE, NEUTRON + \*THERMAL ANALYSIS + MODIFICATION, SYSTEM OR EQUIPMENT + REACTOR, RESEARCH + TRIGA (RR)

17-22958  
U OF WYOMING YEARLY OPERATION SUMMARY FOR AEC  
UNIVERSITY OF WYOMING, LARAMIE, WYOMING  
1 PAGE, JANUARY 16, 1968, DOCKET 50-122

REPORTS 1 NEW MEMBER TO TAKE THE PLACE OF ONE LEAVING THE REACTOR HAZARDS COMMITTEE

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

REACTOR, RESEARCH + REPORT, OPERATIONS SUMMARY + SAFETY REVIEW

17-22959  
PEACH BOTTOM CHANGE REQUEST #5 - FT. ST. VRAIN PROOF TEST FUEL ELEMENTS  
PHILADELPHIA ELECTRIC COMPANY  
4 PAGES, OCTOBER 26, 1967, DOCKET 50-171, TYPE--HTGR, MFG--G.A., AE--BECHTEL

REQUESTS ADDITION OF TECH.-SPEC. SECTION 7 - TEST ELEMENTS. SECTION 7-1 GIVES REVISED FUEL ELEMENT DESCRIPTION. TWO FUEL ELEMENTS ARE TO BE IRRADIATED FOR 300 FPD, AFTER WHICH AT LEAST ONE ELEMENT WILL BE REMOVED. THE REMAINING ELEMENT WILL BE IRRADIATED AT MOST UNTIL THE NEXT REFUELING.

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

\*FUEL ELEMENT + \*IRRADIATION TESTING + \*TEST, PROOF + PEACH BOTTOM 1 (HTGR) + REACTOR, HTGR + TECHNICAL SPECIFICATIONS

17-22960  
PEACH BOTTOM 1 CHANGE REQUEST #5. SAFETY ANALYSIS REPORT - FUEL ELEMENT PROOF TEST  
PHILADELPHIA ELECTRIC COMPANY  
39 PAGES, 15 FIGURES, 4 TABLES, 19 REFERENCES, OCTOBER 26, 1967, DOCKET 50-171, TYPE--HTGR, MFG--G.A., AE--BECHTEL

REPORT COVERS TWO FT. ST. VRAIN PROOF-TEST FUEL ELEMENTS TO BE IRRADIATED AT PEACH BOTTOM. THESE HAVE A HIGHER URANIUM/LOWER THORIUM-CONTENT AND NO BURNABLE POISONS BUT WILL HAVE LITTLE EFFECT ON CORE REACTIVITY (INCREASE PER ELEMENT IS 0.012%). TOLERANCE IN URANIUM LOADING IS 3%, BUT THORIUM TOLERANCE IS BROAD (15%) TO ALLOW FOR VARIATION IN FUEL-PARTICLE AND FUEL-ROD PARAMETERS.

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

\*FUEL ELEMENT + \*IRRADIATION TESTING + \*TEST, PROOF + PEACH BOTTOM 1 (HTGR) + REACTOR, HTGR + SAFETY ANALYSIS + TECHNICAL SPECIFICATIONS

17-22969 ALSO IN CATEGORY 1  
TOMS J  
NEW D. C. PAPER CRUSADES AGAINST NUCLEAR SCOURGE  
2 PAGES, 1 FIGURE, THE OAK RIDGER 20(12), PAGES 1 AND 4 (FEBRUARY 6, 1968)

(MEDILL NEWS SERVICE) DISCUSSES DEC. 7, 14, AND 21, 1967, ARTICLES IN D. C. EXAMINER BY DAMON RUNYON, JR., WHO ASSERTS THAT 200 U.S. REACTORS ARE POTENTIAL BOMBS. CITES WINDSCALE AND FERMI ACCIDENTS, AND CITES LEO GODDARD AS COMPILING MUCH OF THE INFORMATION FROM AEC SOURCES. \*\*\* DISCUSSES AEC REPLY CITING THAT PUBLISHERS IGNORED FACTUAL ERRORS POINTED OUT AFTER FIRST

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-22959 \*CONTINUED\*

ARTICLE, AND PROTESTING INACCURACIES AND DISTORTIONS. \*\*\* REP. JOHN ANDERSON, ON THE HOUSE FLOOR, STATES - (QUOTE) RAPELY, IF EVER, HAVE I SEEN A MORE IRRESPONSIBLE PIECE OF JOURNALISM THAN THIS ARTICLE...PUPE AND UNADULTERATED SENSATIONALISM. (UNQUOTE)

\*RADIATION, PUBLIC EDUCATION/ACCEPTANCE + FERMI (LMFER) + INCIDENT, WINDSCALE

17-22973

PEACH BOTTOM 1 REPORTS INCREASED HELIUM ACTIVITY  
PHILADELPHIA ELECTRIC COMPANY

1 PAGE, JANUARY 15, 1968, DOCKET 50-171, TYPE--HTGR, MFG--G.A., AE--BECHTEL

(TELEGRAM TO AEC) PEACH BOTTOM SHUT DOWN 1/11/68 FOR MAINTENANCE WORK AND INSPECTION OF THE CORE COMPONENTS, SO THE REQUESTED TECH.-SPEC. CHANGE (OF JAN. 2, 1968) TO SECTION 4.3 IS WITHDRAWN. \*\*\*INFORMATION WILL BE FURNISHED AEC ON INCREASED ACTIVITY WHICH RECENTLY OCCURRED IN THE PRIMARY HELIUM SYSTEM.

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

ACTIVITY BUILDUP + COOLANT CHEMISTRY + PEACH BOTTOM 1 (HTGR) + REACTOR COOLANT + REACTOR, HTGR + TECHNICAL SPECIFICATIONS

17-22976

ALSO IN CATEGORY 5

ROSUEL A + ROUVILLONIS X  
TWISTED TAPES FOR INCREASED POWER DENSITY  
SNECMA

3 PAGES, 7 FIGURES, 7 REFERENCES, NUCLEAR ENGINEERING 13(140), PAGES 43-45 (JANUARY 1968)

ASSEMBLY WAS IRRADIATED FROM NOV. 66 TO MAY 67, EXAMINED, AND REINSERTED IN A HIGHER FLUX POSITION. ARTICLE DISCUSSES EXPERIMENTAL STUDIES (HYDRODYNAMIC LOOP WITH AIR-WATER MIXTURE AND A 4-ROD ASSEMBLY, AND LATER WITH A 4-ROD CLUSTER AT BWP CONDITIONS), CRITICAL HEAT FLUX ESTIMATES (CENTRIFUGAL ACTION REDUCES WATER ENTRAINMENT, GIVING DOUBLE THE HEAT FLUX BEFORE DRYOUT OCCURS) AND 600-MWE DESIGN ECONOMICS (ECONOMY WOULD REPRESENT 4-5% OF THE GENERATING COST).

\*HEAT TRANSFER AUGMENTATION + \*IN PILE EXPERIMENT + DNB + FLOW, VORTEX + FUEL ELEMENT + HEAT FLUX, DRYOUT + OUT OF PILE LOOPS AND EXPERIMENTS + REACTOR, BWR

17-22977

SEMIANNUAL PROGRESS REPORT NO. 10 JANUARY 1--JUNE 30, 1967 PIQUA NUCLEAR POWER FACILITY REACTOR OPERATIONS ANALYSIS PROGRAM

ATOMICS INTERNATIONAL, CANOGA PARK, CALIFORNIA

NAA-SR-12,561 +. 109 PAGES, 40 FIGURES, 24 TABLES, NOVEMBER 1, 1967

REACTOR WAS FLUSHED, INSPECTED, AND PLACED IN DRY LAYUP. REPORT SECTIONS ARE - (I) REVIEW OF OPERATIONS, 26 PG (A FUEL ELEMENT WITH THERMOCOUPLES ON THE CLAD WILL MONITOR FOULING BUILDUP), (II) OPERATIONS ANALYSIS, 21 PAGES (MOSTLY INFLUENCE OF SURFACE-FILM BUILDUP ON FUEL TEMPERATURE), AND (III) COOLANT CHEMISTRY, 53 PAGES (INCLUDES CHARACTERIZATION OF MODERATOR CORE DEPOSITS).

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

\*SURFACE FILM DEPOSIT + PIQUA (OCR) + REACTOR, ORGANIC COOLED + REPORT, OPERATIONS ANALYSIS

17-22978

ALSO IN CATEGORY 5

ROSENBAUM HS + DAVIES JH + PON JO  
INTERACTION OF IODINE WITH ZIRCALOY-2  
GENERAL ELECTRIC CO., SAN JOSE, CALIF.

GEAP-5100-5 +. 43 PAGES, 27 FIGURES, 2 TABLES, 12 REFERENCES, JANUARY 1966

FAILURES DUE TO PINHOLES IN THE ZIRCALOY-2 CLADDING OF TWO RODS (OPERATED WITH CENTERLINE MELTING) REVEALED THAT IODINE HAD CONCENTRATED AT PELLET INTERFACES AT THE UPPER ENDS OF FUEL RODS (NEAR PINHOLES). IN OUT-OF-PILE STUDY, GENERAL ATTACK, PITTING, AND STRESS-CORROSION CRACKING OCCURRED. HOWEVER, THE FRACTURE MORPHOLOGY OF TEST CLADDING AND FAILED CLADDING SHOWED SIMILARITIES. (VERDICT) NO CONFIDENT CONCLUSION CAN BE DRAWN REGARDING THE ASSOCIATION OF THE IN-PILE FAILURES WITH ZIRCALOY-2/IODINE ATTACK MECHANISM.

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

\*CHEMICAL REACTION + \*FAILURE, CLADDING + \*FISSION PRODUCT, IODINE + \*ZIRCALOY + CENTERLINE MELTING + CORROSION + GETR (TP) + IN PILE LOOP + REACTOR, BWR + STRESS CORROSION

17-22990

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-22990 \*CONTINUED\*

BOEHNE EW

SOME RELATED FAILURES OF MEN AND EQUIPMENT

I-1-E CIRCUIT BREAKER COMPANY, PHILADELPHIA, PA.

9 PAGES, 8 FIGURES, PAGES 642 TO 650 OF PROCEEDINGS OF THE AMERICAN POWER CONFERENCE, VOLUME XXIX, APRIL 25, 1967

(PREMISE) THERE IS NO SUCH THING AS A FAILURE OF A PIECE OF EQUIPMENT. RESPONSE OBEYS BASIC LAWS OF NATURE FAITHFULLY. THE FAILURES OF MEN AND THE SO-CALLED FAILURES OF EQUIPMENT ARE INTIMATELY RELATED AND INSEPARABLE, BUT WE DIRECT OUR WEATH FIRST ON THE EQUIPMENT AND THEN ON THE SUPPLIER. (DISCUSSION FOLLOWS ON HIGH-VOLTAGE PROTECTIVE DEVICES, EXAMPLE OF ADDING A CAPACITOR TO GROUND BETWEEN OIL-BREAKER FOR AN ELECTRIC-ARC FURNACE AND TRANSFORMER). THEN DISCUSSES HUMAN FAILURES (COMMUNICATION, SEEK INFORMATION, FALSE PRIDE, PATIONALIZATION, AND EDUCATIONAL PROGRAMS TO AVOID THESE). PLEADS FOR EXAMINING BOTH THE IMMEDIATE CAUSE OF EQUIPMENT MALPPERFORMANCE AND THE HUMAN CONTRIBUTIONS.

AVAILABILITY - AMERICAN POWER CONFERENCE, ILLINOIS INSTITUTE OF TECHNOLOGY, TECHNOLOGY CENTER, CHICAGO, ILLINOIS 60616

\*FAILURE, DESIGN ERROR + \*INCIDENT, EQUIPMENT + FAILURE, EQUIPMENT + INFORMATION RETRIEVAL

17-22991

AMES WC + LUX JA

AN EXPERIMENTAL INVESTIGATION OF HYDROGEN DAMAGE IN BOILER TUBING

PUBLIC SERVICE ELECTRIC AND GAS COMPANY, LINDEN, N.J. + BABCOCK AND WILCOX, OHIO

15 PAGES, 14 FIGURES, 3 TABLES, 4 REFERENCES, PAGES 763 TO 777 OF PROCEEDINGS OF THE AMERICAN POWER CONFERENCE, VOLUME XXIX, APRIL 25, 1967

DISCUSSES RESULTS OF 6-YEAR STUDY ON INDUCING HYDROGEN INTO CARBON STEEL, WHERE LARGER VOLUME OF METHANE FORMED BURSTS GRAINS. DAMAGE IS A SECONDARY FORM OF CORROSION, WHEN HYDROGEN RELEASED IN PRIMARY CORROSION CANNOT ESCAPE A HARD, BRITTLE OVERLAY. A CORROSIVE CONTAMINANT IS REQUIRED FOR DAMAGE IN LESS THAN SEVEPAL THOUSAND HOURS. STEAM QUALITY IS NOT IMPORTANT. TUBES WITH DEPOSITS ARE MORE SUSCEPTABLE THAN CLEAN TUBES. CONTAMINATION NEEDED IS BELOW THRESHOLD OF SPECIFIC CONDUCTIVITY MEASUREMENTS, AND HYDROGEN EVALUATION IS NOT A RELIABLE INDICATION THAT DAMAGE IS IN PROCESS.

AVAILABILITY - AMERICAN POWER CONFERENCE, ILLINOIS INSTITUTE OF TECHNOLOGY, TECHNOLOGY CENTER, CHICAGO, ILLINOIS 60616

\*HYDRIDE + \*OUT OF PILE LOOPS AND EXPERIMENTS + COOLANT CHEMISTRY + CORROSION + EMBRITTLEMENT + FAILURE, CLADDING + FAILURE, TUBING + STEEL + SURFACE FILM DEPOSIT

17-22992 ALSO IN CATEGORY 9

MCCORD RV + CORBETT PL

HIGH FLUX ISOTOPE REACTOR QUARTERLY REPORT, JULY-SEPTEMBER OF 1967

OAK RIDGE NATIONAL LABORATORY

ORNL-TM-2078 +. 26 PAGES, 2 FIGURES, 12 TABLES, NOVEMBER 13, 1967

SENSITIVITY LOSS OF THE IONIZATION CHAMBERS CONTINUED AS A RESULT OF BURNUP OF BORON COATING. OPERATING INPUT CURRENT WILL BE LOWERED BY WITHDRAWING CHAMBERS TO LOWER FLUX. SUMMARIZES PROBLEMS EXPERIENCED WITH CONTROL-PLATE BEARINGS. FIRST FAILURES OCCURRED AT END OF CYCLE 4 (SEPT. 30, 1966) WHEN BEARING BALLS WORE ENOUGH TO COME OUT OF THE RACE. AT END OF CYCLE 14, FIVE OF SIXTEEN LUGS (BEARING HOLDERS) WERE MISSING FROM THE PLATES. POSSIBLE CAUSES ARE GIVEN (LATER TESTS REVEALED FAILURES DUE TO WEAK LUGS AND VIBRATIONAL STRESSES INDUCED BY COOLANT FLOW FORCES).

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

\*CONTROL ROD + \*FAILURE, SCRAM MECHANISM + FAILURE, INSTRUMENT + HFIR (FTR) + HYDRAULIC EFFECT + INSTRUMENTATION, POWER RANGE + REACTOR, FLUX TRAP + REPORT, OPERATIONS + STRESS + VIBRATION

17-22993

MCCORD RV + CORBETT BL

CURIUM DECONTAMINATION OF PRIMARY COOLANT SYSTEM

OAK RIDGE NATIONAL LABORATORY

ORNL-TM-2078 +. 4 PAGES, 1 TABLE, 1 FIGURE, PAGES 17-20 OF HIGH FLUX ISOTOPE REACTOR QUARTERLY REPORT, JULY-SEPTEMBER OF 1967

CONTAMINATION BY TRANSPLUTONIUM ISOTOPES OCCURRED DUE TO SUCCESSIVE RUPTURE OF 16 TARGET RODS. MAIN CONTAMINANT WAS CURIUM-244, AN ALPHA EMITTER. DEMINERALIZERS AND FILTERS WERE NOT EFFECTIVE IN REMOVING CONTAMINANTS FROM SYSTEM. LANTHANUM NITRATE WAS INTRODUCED TO GIVE A SYSTEM CONCENTRATION OF 1 PPM LA. THE LA SEEMED TO IONIZE THE CM AND ENABLED THE DEMINERALIZERS TO STRIP IT FROM THE SYSTEM.

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

\*DECONTAMINATION + COOLANT CHEMISTRY + CURIUM + HFIR (FTR) + LANTHANUM + MAIN COOLING SYSTEM + REACTOR, FLUX TRAP + REPORT, OPEATIONS

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-23143 ALSO IN CATEGORY 9  
ANALYSIS OF INOPERATIVE CONTROL ROD AT SAN ONOFRE  
SOUTHERN CALIFORNIA EDISON COMPANY  
6 PAGES, JANUARY 26, 1968, DOCKET 50-260, TYPE--PWR, MFG--WEST., AE--BECHTEL

THE CAUSE OF THE MAY 19, 1967, FAILURE OF ROD G-13 WAS A FAULTY LATCH PIN IN THE MOVABLE GRIPPER ASSEMBLY, WHICH DID NOT HAVE THE PROPER THICKNESS AT ONE END, LOOSENED, AND JAMMED THE MECHANISM AT 80% WITHDRAWN. THE PIN FAILED WHERE IT WAS FLARED (TO HOLD IT IN PLACE) TO 0.009 IN. INSTEAD OF 0.25. QUALITY-CONTROL CHECKS REVEALED THAT THIS STEP HAD BEEN 100% INSPECTED AND THAT TWO PEOPLE HAD INITIALED THE SHEET. THIS IS ATTRIBUTED TO RANDOM OCCURRENCE. \*\*\* DEPENDING ON POSITION AND CORE LIFE, 12-15 RODS COULD STICK, AND THE REACTOR COULD BE SHUT DOWN BY OTHER RODS IF ANOTHER ACCIDENT IS NOT COMPOUNDED.

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

\*CONTROL ROD DRIVE + \*FAILURE, SCRAM MECHANISM + \*QUALITY CONTROL + CONTROL ROD FABRICATION + EXAMINATION + REACTOR, PWR + SAN ONOFRE (PWR)

17-23144  
INDIAN POINT 1 ANALYSIS OF EFFECTS OF LOST MATERIAL IN VESSEL  
CONSOLIDATED EDISON COMPANY OF NEW YORK  
5 PAGES, FEBRUARY 6, 1968, DOCKET 50-2, TYPE--PWR, MFG--B+W, AE--CON ED

(FFB, 6, TWX) LETTER OF NOV. 2, 1967, REPORTED FINDING EXTRANEIOUS MATERIAL ON TOP OF CORE. WEIGHT OF MISSING COMPONENTS IS 4 OZ. OR LESS. SOURCE TUBE VIBRATING AT 20 CPS COULD WEAR THROUGH 0.109-IN.-THICK STAINLESS-STEEL CLADDING IN 40 YEARS BUT HIGHLY IMPROBABLE. PUFFING WOULD NOT INCREASE IRON CONTENT OF WATER ENOUGH TO MONITOR. SCRAM TIMES AND NEUTRON TRACES AFTER SCRAM SHOW NO INDICATION OF STICKING RODS. \*\*\* IF ALL 6 SOURCE CAPSULES WERE TO RELEASE THE PO OF RE, NORMAL DILUTION TAKES IT BELOW MPC. ANALYSIS OF PRIMARY COOLANT SHOWED 1 PICOCURIE/LITER, ABOUT AS IN ORDINARY TAP WATER. ROUTINE NEUTRON SURVEYS OF PIPING WILL LOCATE ANY INTACT CAPSULE.

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

CLAD + FAILURE, SCRAM MECHANISM + HAZARDS ANALYSIS + INDIAN POINT 1 (PWR) + PRESSURE VESSEL + REACTOR, PWR + SOURCE, NEUTRON

17-23145 ALSO IN CATEGORY 1  
ELK RIVER QUERIES AEC ON ITS RESPONSIBILITY FOR NUCLEAR SAFETY  
RURAL COOPERATIVE POWER ASSOCIATION  
3 PAGES, FEBRUARY 6, 1968, DOCKET 115-1, TYPE--BWR, MFG--A.C., AE--SGT + LUNDY

AEC-CO PROPOSES TO SUBSTITUTE A NEW CONTRACTOR (OVER THE OBJECTIONS OF RCPA) FOR NUS TO PERFORM TECHNICAL-SUPPORT CONSULTATION SURVEILLANCE IN THE AREA OF NUCLEAR REACTOR SAFETY. RCPA ASKS AEC TWO QUESTIONS - (1) DOES RCPA HAVE COMPLETE AND UNRESTRICTED RESPONSIBILITY TO CARRY OUT THE LICENSING AGENCYS REQUIREMENTS FOR NUCLEAR REACTOR OPERATING SAFETY. (2) IF YOU DETERMINE THAT THE AUTHORIZED OPERATOR DOES NOT HAVE THIS RESPONSIBILITY, SHOULD NOT OPERATING AUTHORIZATION, TECH. SPECS., ETC., BE AMENDED TO ASSIGN THIS RESPONSIBILITY TO THE PARTIES WHOM YOU DETERMINE HAVE THIS AUTHORITY.

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

ADMINISTRATIVE CONTROL + ELK RIVER (BWR) + REACTOR, BWR + SAFETY REVIEW + TECHNICAL SPECIFICATIONS

17-23167 ALSO IN CATEGORY 6  
BERNANDER G  
MEASUREMENTS OF THE REACTIVITY PROPERTIES OF THE AGESTA NUCLEAR POWER REACTOR AT ZERO POWER  
AKTIEBOLAGET ATOMENERGI, STOCKHOLM  
AE-289 +. 43 PAGES, REFERENCES, JULY 1977

FOR THE AGESTA REACTOR, MODERATOR LEVEL AND TEMPERATURE COEFFICIENTS OF REACTIVITY AND CONTROL-ROD DIFFERENTIAL REACTIVITY WORTHS WERE DETERMINED BY PERIOD MEASUREMENTS. CRITICAL MODERATOR LEVELS AND LEVEL COEFFICIENTS WERE MEASURED FOR 32, 66, AND 136 FUEL-ASSEMBLY CORES AT ROOM TEMPERATURE, FOR CORES WITH AND WITHOUT CONTROL RODS. TEMPERATURE COEFFICIENTS AND DIFFERENTIAL WORTHS WERE DETERMINED FOR THE FULLY LOADED CORE WITH FULL TANK BETWEEN 30 AND 210 C. CRITICAL POSITIONS FOR ROD COMBINATIONS WERE MEASURED AS A FUNCTION OF TEMPERATURE. COMPARISON OF CALCULATIONS WITH EXPERIMENTAL RESULTS IS DISCUSSED.

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

\*AGESTA (PWR) + \*MEASUREMENT, REACTIVITY + COMPARISON, THEORY AND EXPERIENCE + CONTROL ROD WORTH + MODERATOR COEFFICIENT + REACTOR, PWR

17-23174 ALSO IN CATEGORY 8

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-23174 \*CONTINUED\*  
EXPLOSIVES ACCIDENT/INCIDENT ABSTRACTS, SEPTEMBER 1961-JUNE 1967  
ARMED SERVICES EXPLOSIVES SAFETY BOARD, WASHINGTON, D. C.  
AD-660,020 +. 300 PAGES, OCTOBER 1967

TO GIVE GUIDANCE TO THE INTERAGENCY CHEMICAL ROCKET PROPULSION GROUP IN SOLVING PROBLEMS ON THE SENSITIVITY OF NEW PROPELLANT MATERIALS (INITIALLY N-F COMPOUNDS) ALL INCIDENTS INVOLVING RAPID SPONTANEOUS DECOMPOSITION, PRESSURE EXPLOSION, OR DETONATION WILL BE RECORDED, REPORTED, AND COMPILED. THIS IS APPARENTLY THE SECOND COMPILATION.

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

\*EXPLOSIVE, CONVENTIONAL + \*INCIDENT COMPILATION + EXPLOSION + INCIDENT, NONNUCLEAR

17-23177. ALSO IN CATEGORIES 13 AND 12  
NUCLEAR FUEL SERVICES, INC. AUTHORIZED TO RESUME OPERATIONS  
U.S. ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.  
3 PAGES, JANUARY 24, 1968, Docket 50-201

LETTER FROM DIVISION OF MATERIAL LICENSING BASES AUTHORIZATION ON CHANGE 6 IN TECH. SPEC. 7.4, LICENSE CSF-1. \*\*\*FOR BASIS OF AEC ACTION, SEE LETTERS NSF TO AEC, DATED JANUARY 13, 15, 1968.

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

\*LICENSING STATUS OF NUCLEAR PROJECTS + \*NFS + \*RADIATION SAFETY AND CONTROL +  
\*RADIOCHEMICAL PLANT SAFETY + INSPECTION AND COMPLIANCE + TECHNICAL SPECIFICATIONS

17-23312 ALSO IN CATEGORIES 11 AND 19  
LE-LEVIER MG  
FAILURES IN PIPES AND PRESSURE VESSELS CORRELATED TO NUCLEAR POWER PLANT SERVICE  
COMMISSARIAT A L-ENERGIE ATOMIQUE, SACLAY (FRANCE). CENTRE D-ETUDES NUCLEAIRES  
CEA-B18-79 +. 32 PAGES, SEPT. 1967, IN FRENCH

THIS BIBLIOGRAPHY DEALS WITH THE PAPERS PUBLISHED ON THE FAILURES IN PIPES AND PRESSURE VESSELS CORRELATED TO NUCLEAR POWER PLANT SERVICE. THE REFERENCES WERE SELECTED FROM BIBLIOGRAPHIC INDEXES PUBLISHED FROM 1963 TO JULY 1966 INCLUSIVE. ABSTRACTS ARE INCLUDED.

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

\*FAILURE, GENERAL + \*PIPING + \*PRESSURE VESSEL + BIBLIOGRAPHY + BRITTLE FRACTURE + STRESS ANALYSIS +  
TEST, BENCH + TEST, DESTRUCTIVE + TEST, NONDESTRUCTIVE

17-23315 ALSO IN CATEGORY 13  
FREDRICKSON RL  
ABBOTT LABS REPORTS HIGH I-131 IN THYROID  
ABBOTT LABORATORIES, CHICAGO, ILL.  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 14(6), PAGES 35-36 (FEBRUARY 19, 1968)

(LETTER, JAN. 3) ROUTINE THYROID COUNTING ON NOVEMBER 27 REVEALED ONE PERSON WITH 0.34 MICROCURIE (247% PERMISSIBLE) OF I-131. HIS FOURTH-QUARTER THYROID EXPOSURE WAS 5.56 REMS. NO INCIDENTS OCCURRED, NOR DID AIR SAMPLES INDICATE CONCENTRATION TO EXPLAIN THIS. SEVERAL WORKERS SHOWED ELEVATED THYROID BURDENS IN 1967, WITH NO OBVIOUS EXPLANATION. WE ARE RE-EVALUATING AIR FLOW IN FUME HOODS.

\*FISSION PRODUCT, IODINE + \*INHALATION + \*PERSONNEL EXPOSURE, RADIATION + RADIOISOTOPE + VENTILATION SYSTEM

17-23316 ALSO IN CATEGORY 13  
WILSON RD  
RELEASE OF 352 POUNDS OF UF<sub>6</sub> AT GE-SAN JOSE  
GENERAL ELECTRIC, SAN JOSE, CALIF.  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 14(6), PAGE 36 (FEBRUARY 19, 1968)

(LETTER, JAN. 25) THE RELEASE IN BLDG. J ON DEC. 30, 1967, MAY HAVE DAMAGED A \$20,000 FLUORIDE-MEASURING INSTRUMENT, BUT NO EXPOSURE OR RELEASE OCCURRED. A MECHANIC TIGHTENED A LEAKING CAP ON 1/4-IN. BRASS PIPE NIPPLE, WHICH BROKE OFF BEFORE HE APPLIED FORCE. HE WAS WEARING A FULL-FACE FILTERED-AIR MASK. 90% OF THE MATERIAL HAS BEEN RECOVERED.

AIRBORNE RELEASE + MAINTENANCE AND REPAIR + URANIUM HEXAFLUORIDE

17-23317  
PRINCETON UNIVERSITY CITED FOR NONCOMPLIANCE  
PRINCETON UNIVERSITY, PRINCETON, NEW JERSEY

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-23317 \*CONTINUED\*  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 14(P), PAGES 36-37 (FEBRUARY 19, 1968)

(LETTER, DEC. 15) FOLLOWING A CF-252 RELEASE DURING GLOVE-BOX OPERATIONS SEPT. 19, 1967, PRINCETON CITED FOR INADEQUATE SURVEYS, DELAYED NOTICE, AND NOT FOLLOWING RADIATION SAFETY GUIDE IN NOT USING A GLOVE BOX. (REPLY, JAN. 3) A COMPLETE REVIEW OF CF-252 HANDLING PROCEDURES HAS RESULTED IN INTENSIFIED SURVEILLANCE.

\*CALIFORNIUM + \*CONTAMINATION + \*FAILURE, ADMINISTRATIVE CONTROL + INSPECTION AND COMPLIANCE + RADIATION SAFETY AND CONTROL

17-23318  
U. S. RADIUM CORP. CITED FOR NONCOMPLIANCE  
U.S. RADIUM CORPORATION  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 14(P), PAGES 37-38 (FEBRUARY 19, 1968)

(LETTER, JAN. 5) CITATION FOR NOT INFORMING EMPLOYEES OF POSSIBLE PRESENCE OF 3 CURIES OF LOST AM-241. (REPLY, JAN. 12) MAJOR CHANGES IN ORGANIZATION SINCE JAN. 1 INCLUDE ONE MAN TAKING FULL RESPONSIBILITY FOR LAB OPERATIONS, CHANGES IN PROCEDURES, AND A NEW PLANT IN 1968. CORRECTIVE STEPS ARE - (1) ACCESS TO LAB LIMITED TO OPERATORS ENGAGED IN PROCESS, WHO ARE ALSO RESPONSIBLE FOR CLEANUP, (2) NO BULK ORDERS PLACED, SEPARATE VIALS ORDERED FOR EACH COMPACT, (3) MORE OPERATORS TO BE HIRED.

\*AMERICIUM + \*INSPECTION AND COMPLIANCE + \*SOURCE, RADIATION, LOST + DECONTAMINATION + GLOVE BOX + RADIATION SAFETY AND CONTROL + SOURCE, NEUTRON

17-23319 ALSO IN CATEGORY 15  
SOLARI AJ  
UNIVERSITY OF MICHIGAN REPORTS A POSSIBLE OVEREXPOSURE  
UNIVERSITY OF MICHIGAN, ANN ARBOR, MICHIGAN  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 14(P), PAGE 39 (FEBRUARY 26, 1968)

(LETTER, DEC. 27, 1968) A GRADUATE STUDENT WAS A TEMPORARY DISHWASHER AT THE NUCLEAR MEDICINE UNIT FROM APRIL 24 AUGUST 31, 1967. HIGHEST RADIATION LEVELS IN THE HOT ROOM WHERE SHE WORKED WERE 1-2 MR/HR. FILM BADGE REPORT DATED OCT. 3 GIVES A 1,580 AND 610 MR RECORD. PERSON IS NO LONGER A STUDENT AND CANNOT BE TRACED. SOME BELIEVE SHE MAY HAVE LEFT HER LAB COAT AND BADGE IN THE HOT ROOM.

\*PERSONNEL EXPOSURE, RADIATION + INCIDENT, NONREACTOR + RADIATION SAFETY AND CONTROL

17-23330 ALSO IN CATEGORY 9  
MORIARTY KJ  
EBR-II INSTRUMENTATION EXPERIENCES  
ARGONNE NATIONAL LABORATORY  
ANL-7390 +. 7 PAGES, 3 FIGURES, PAGES 22-28 OF PROCEEDINGS OF THE SYMPOSIUM ON LIQUID METAL INSTRUMENTATION AND CONTROL, MARCH 2, 1967

EXPERIENCES WITH THE EBR-II PRESSURE INSTRUMENTATION, BOTH STATIC AND DIFFERENTIAL, THE TEMPERATURE-MEASURING DEVICES, AND WITH THE LEVEL INDICATIONS ARE PRESENTED. THE PROBLEMS ENCOUNTERED ARE OUTLINED, AND THE CORRECTIVE ACTION TAKEN TO RECTIFY A PROBLEM IS GIVEN WHERE POSSIBLE. THE IMPORTANCE OF PRE-INSTALLATION DATA IS STRESSED. CALIBRATION AND REPAIR PROCEDURES USED FOR FILLED SYSTEMS ARE INCLUDED FOR GENERAL INFORMATION AND TO POINT OUT THE TYPE OF INFORMATION THAT MUST BE INCLUDED IN THE PRE-INSTALLATION CALIBRATION CHECK ON A COMPONENT.

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

\*INSTRUMENTATION, PROCESS + EBR 1 AND 2 (RE) + INSTRUMENTATION, LIQUID LEVEL DETECTION + INSTRUMENTATION, PRESSURE + INSTRUMENTATION, TEMPERATURE + OPERATING EXPERIENCE SUMMARY + REACTOR, BREEDER + REACTOR, LMCR

17-23331 ALSO IN CATEGORY 9  
SCOTT CC  
FERMI PROCESS INSTRUMENTATION  
ATOMIC POWER DEVELOPMENT ASSOCIATES, INC., DETROIT, MICHIGAN  
ANL-7390 +. 8 PAGES, 12 FIGURES, PAGES 29-36 OF PROCEEDINGS OF THE SYMPOSIUM ON LIQUID METAL INSTRUMENTATION AND CONTROL, MARCH 2, 1967

OPERATING EXPERIENCE AND EQUIPMENT DESIGN ARE REVIEWED FOR THREE KINDS OF PROCESS INSTRUMENTS ON THE FERMI REACTOR. PROBLEMS ASSOCIATED WITH PLUGGED PROCESS LINES, IN-PLACE CALIBRATION, AND THE DIFFICULTY OF REMOVING UNITS FOR MAINTENANCE ARE DISCUSSED COMPONENTS.

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

\*INSTRUMENTATION, PROCESS + \*OPERATING EXPERIENCE SUMMARY + EQUIPMENT DESIGN + FERMI (LMFBR) + INSTRUMENTATION CALIBRATION + INSTRUMENTATION, FLOW + INSTRUMENTATION, PRESSURE +



CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-23331 \*CONTINUED\*  
INSTRUMENTATION, TEMPERATURE + REACTOR, BREEDER + REACTOR, LMCR

17-23332 ALSO IN CATEGORIES 4 AND 9  
STRAHL H  
SNAP SYSTEM INSTRUMENTATION  
ATOMICS INTERNATIONAL, CANOGA PARK, CALIF.  
ANL-7380 +. 3 PAGES, 2 TABLES, 1 REFERENCE, PAGES 37-39 OF PROCEEDINGS OF THE SYMPOSIUM ON LIQUID METAL INSTRUMENTATION AND CONTROL, MARCH 2, 1967

THE EXPERIENCE GAINED DURING OPERATION OF SNAP REACTORS WITH LIQUID-METAL PROCESS INSTRUMENTATION IS PRESENTED. THIS EXPERIENCE IS BASED ON THE OPERATION OF SEVERAL SNAP REACTOR SYSTEMS AT TEMPERATURES UP TO 1300 F FOR PERIODS OF UP TO 10,000 HR. SEVERAL TYPES OF TEMPERATURE AND PRESSURE DEVICES WERE INSTALLED IN A LOOP, AND THEIR PERFORMANCES WERE COMPARED AND EVALUATED PRIOR TO SELECTION OF INSTRUMENTATION FOR THE S8DR TESTS.

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

\*INSTRUMENTATION, PROCESS + \*OPERATING EXPERIENCE SUMMARY + \*SNAP, GENERAL (SR) + HIGH TEMPERATURE + INSTRUMENTATION, FLOW + INSTRUMENTATION, LIQUID LEVEL DETECTION + INSTRUMENTATION, PRESSURE + INSTRUMENTATION, TEMPERATURE + INSTRUMENTATION, TESTING + REACTOR, LMCR + REACTOR, SPACE

17-23333 ALSO IN CATEGORY 9  
TURNER GE  
SCTI SODIUM INSTRUMENT OPERATING EXPERIENCE  
ATOMICS INTERNATIONAL, CANOGA PARK, CALIF.  
ANL-7380 +. 3 PAGES, PAGES 40-42 OF PROCEEDINGS OF THE SYMPOSIUM ON LIQUID METAL INSTRUMENTATION AND CONTROL, MARCH 2, 1967

SODIUM PRESSURES ARE MEASURED BY NAK-FILLED PRESSURE TRANSMITTERS. SODIUM LEVELS ARE MEASURED IN FOUR DIFFERENT WAYS - INDUCTION COIL GAGES, A BUBBLE GAGE, RADIATION GAGES, AND A DISPLACER-FLOAT GAGE. OPERATION OF THE FLOWMETERS AND PRESSURE TRANSMITTERS HAS BEEN QUITE SATISFACTORY, WITH NO PARTICULAR DIFFICULTIES ENCOUNTERED. EXPERIENCE WITH THE FOUR DIFFERENT LEVEL GAGES HAS POINTED OUT SOME PROBLEM AREAS WITH BUBBLES AND RADIATION-TYPE GAGES, WHEREAS OPERATION OF THE INDUCTION-COIL AND DISPLACER-FLOAT TYPES HAS BEEN GENERALLY SATISFACTORY.

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

\*INSTRUMENTATION, PROCESS + \*OPERATING EXPERIENCE SUMMARY + HIGH TEMPERATURE + INSTRUMENTATION, FLOW + INSTRUMENTATION, LIQUID LEVEL DETECTION + INSTRUMENTATION, PRESSURE

17-23360 ALSO IN CATEGORY 11  
GOS NN  
FAILURE OF CONTAINMENT ELECTRICAL PENETRATION AT SAN ONOFRE, FEB. 7  
SOUTHERN CALIFORNIA EDISON COMPANY, LOS ANGELES, CALIF.  
5 PAGES, ATOMIC ENERGY CLEARING HOUSE 14(9), PAGES 22-26 (FEBRUARY 26, 1968) DOCKET 50-206

A FIRE ON THE OUTSIDE SE SIDE OF CONTAINMENT SPHERE IN A CABLE TRAY LEADING TO A SPHERE PENETRATION CAUSED HIGH PRESSURE/TEMPERATURE INSIDE PENETRATION EPC4, FORCING THE OUTER BULKHEAD OUT OF THE SHELL ASSEMBLY. NO CAUSE FOR PENETRATION FAILURE FROM DEFECTIVE MATERIAL OR WORKMANSHIP HAS BEEN FOUND, CAUSE OF FIRE NOT REPORTED. \*\*\*EPC4 SERVED PRESSURIZER HEATERS, SAFETY INJECTION AND RESIDUAL HEAT PUMP A, FANS A2 AND A4, ROD H LIFT COIL, AND AN EMERGENCY LIGHTING PANEL. ELEVEN CABLES IN EPC9 (ABOVE 4) WERE DAMAGED BY THE FIRE. DAMAGED EPC9 CABLES SERVED FAN A8 AND FOUR CONTROL RODS. \*\*\*PLANT SHUTDOWN WAS ORDERLY, WITH NO RADIATION RELEASE OR TECH.-SPECS. VIOLATION.

\*CONTAINMENT PENETRATION, ELECTRICAL + \*FAILURE, EQUIPMENT + \*FIRE + ENGINEERED SAFETY FEATURE + INDEPENDENCE + REACTOR, PWR + SAN ONOFRE (PWR) + SYSTEM OPERABILITY IN ACCIDENT

17-23361  
ONEIL RW  
EXPOSURE DURING WELDING AT WATERTOWN ARSENAL REACTOR  
ARMY MATERIALS AND MECHANICS RESEARCH CENTER, WATERTOWN, MASS.  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 14(9), PAGE 27 (FEBRUARY 26, 1968) DOCKET 50-47

(LETTER DEC. 15) A WELDER RECEIVED 1.1 TO 1.3 REMS AUG.-SEPT. 1967 WHILE WELDING IN A GAMMA FIELD (PRODUCED BY MATERIALS ACTIVATED BY UTILIZATION OF REACTOR LICENSE R-65) OF 25-200 MR/HR. SINCE THIS WAS RECEIVED UNDER CONTROLLED CONDITIONS, AND SINCE WELDER HAD NO PRIOR OCCUPATIONAL EXPOSURE, NO FURTHER ACTION IS CONTEMPLATED.

\*PERSONNEL EXPOSURE, RADIATION + POWER UPGRATING + REACTOR, POOL TYPE + WELDING

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-23362 ALSO IN CATEGORY 15

CLIFFORD FL  
RADIOGRAPHY OVEREXPOSURE AT BOSTON NAVAL SHIPYARDS, 11 DEC. 1967  
BOSTON NAVAL SHIPYARD, BOSTON, MASS.  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 14(9), PAGES 27-29 (FEBRUARY 26, 1968)

(LETTER, JAN. 9) THE RADIOGRAPHER IN CHARGE FAILED TO SURVEY THE RETURN OF THE SOURCE AFTER EACH EXPOSURE AND UPON COMPLETION OF THE WORK. HIS ASSISTANT WORE DOSIMETER AND FILM BADGE (800 MR, GAMMA), BUT THIS WAS THOUGHT THE LEAST EXPOSURE. A HELPER CARRIED THE COILED TUBE BACK TO THE STOREROOM. \*\*\*ANOTHER RADIOGRAPHER SURVEYED THE CONCRETE STORAGE ROOM, AND OBSERVED HIGH READINGS. \*\*\*RE-ENACTMENT LED TO ESTIMATE OF 2.2 REMS, 0.8 REM (AS INDICATED BY FILM BADGE), AND 4.2 TO 230 REMS FOR THE THIRD MAN. THE LATTER DOSE WOULD RESULT IF THE SOURCE IN THE COILED TUBE WERE AT MAXIMUM PROXIMITY TO THE BODY WHILE HAND-CARRIED.  
\*\*\*CORRECTIVE STEPS INCLUDE - ALL NDT LAB EMPLOYEES REQUIRED TO WEAR FILM BADGE, A CRITIQUE HELD FOR RADIOGRAPHERS, PLANS TO RE-EXAMINE RADIOGRAPHERS YEARLY, AND PROCUREMENT OF AUDIBLE MONITORING DEVICES.

\*PERSONNEL EXPOSURE, RADIATION + \*RADIOGRAPHY + DOSE CALCULATION, EXTERNAL + FAILURE, OPERATOR ERROR

17-23363

CLIFFORD FL  
RADIOGRAPHY EXPOSURE AT ELECTRIC BOAT, JAN. 30, 1967  
GENERAL DYNAMICS CORP., GROTON, CONN.  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 14(9), PAGE 28 (FEBRUARY 26, 1968)

(TRX, JAN. 30) FILM-BADGE INTERPRETATION GAVE A CALCULATED 14.6-REM GAMMA EXPOSURE FROM A 25-CURIE IR-192 SOURCE. THE RADIOGRAPHER WAS PLACED UNDER CARE OF THE DIVISION MEDICAL DIRECTOR.

INCIDENT, GENERAL + PERSONNEL EXPOSURE, RADIATION + RADIOGRAPHY

17-23364 ALSO IN CATEGORY 15

RUNION TC  
NFS DISCUSSES COMPLIANCE CITATION  
NUCLEAR FUEL SERVICES  
4 PAGES, ATOMIC ENERGY CLEARING HOUSE 14(9), PAGES 28-31 (FEBRUARY 26, 1968) DOCKET 50-201

(LETTER, FEB. 2) WITH THE EXCEPTION OF ITEM 1A OF THE SEPT. 26-29 CITATION (FAILURE OF AN INDIVIDUAL TO FOLLOW NFS PROCEDURE, THE INDIVIDUAL IS NO LONGER EMPLOYED BY NFS), THE ACTIVITIES CITED WERE IN COMPLIANCE WITH TECHNICAL SPECIFICATIONS AND 10 CFR 10 AND 55. DETAILED DISCUSSION FOLLOWS.

\*INSPECTION AND COMPLIANCE + FAILURE, ADMINISTRATIVE CONTROL + NFS + RADIOCHEMICAL PROCESSING

17-23365 ALSO IN CATEGORIES 13 AND 15

BAIN EE  
NFS REPORTS EXPOSURE  
NUCLEAR FUEL SERVICES, INC.  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE, 14(9), PAGES 31-32 (FEBRUARY 26, 1968)

(LETTER, FEB. 2) THE FOURTH-QUARTER FILM BADGE OF A PLUTONIUM PRODUCTION PLANT WORKER INDICATED 3.07 REMS EXTERNAL WHOLE-BODY GAMMA RADIATION. HIS 1967 TOTAL IS 3.53 REMS AND LIFETIME TOTAL 9.18. \*\*\*ALL STATIONS WITH SIGNIFICANT PLUTONIUM WILL BE SHIELDED, AND THE CURRENT EXPOSURE RATE WILL BE POSTED DAILY.

\*PERSONNEL EXPOSURE, RADIATION + FUEL REPROCESSING + PLUTONIUM + RADIATION SAFETY AND CONTROL

17-23366

U OF MARYLAND CITED FOR NONCOMPLIANCE  
UNIVERSITY OF MARYLAND, COLLEGE PARK, MD.  
3 PAGES, ATOMIC ENERGY CLEARING HOUSE, 14(9), PAGES 32-34 (FEBRUARY 26, 1968)

(LETTER, JAN. 15) A DEC. 5-7 INSPECTION REVEALED (1) INCINERATOR ASH RESIDUES WERE NOT SURVEYED, (2) SEALED SOURCES WERE NOT LEAK-CHECKED, (3-5) RECORDS WERE NOT KEPT. THE RADIATION SAFETY OFFICER MADE ONLY 3 SURVEYS IN 30 MONTHS. (REPLY, JAN. 29) RADIATION SAFETY COMMITTEE INVESTIGATION SHOWS A UNIQUE SET OF CIRCUMSTANCES. ONE RADIATION SAFETY OFFICER WAS SERIOUSLY ILL DURING 1966 AND WAS UNABLE TO FULFILL ALL HIS RESPONSIBILITIES. FOLLOWING HIS DEATH, THE SECOND RSO, HIRED JAN. 1967, HAD TO TRAIN A NEW SECRETARY AT A TIME WHEN HE HIMSELF WAS NEW TO THE CAMPUS. OPERATIONAL CONTINUITY WAS THEREFORE LOST. HE LEFT THE UNIVERSITY AT THE END OF DEC. 1967, BUT HIS INTERIM REPLACEMENT HAS BEEN A LICENSED SENIOR REACTOR OPERATOR SINCE JULY 1964, A USER OF RADIOACTIVE MATERIAL SINCE 1952, AND A MEMBER OF THE REACTOR SAFETY COMMITTEE. WHILE HE IS LEAVING JUNE 30, 1968, THE NEW RSO WILL OVERLAP A MONTH. THE SECRETARY IS DUE FOR PROMOTION AND TRANSFER BUT HAS BEEN DIRECTED TO REMAIN UNTIL A NEW SECRETARY IS FULLY TRAINED.

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-23366 \*CONTINUED\*

\*INSPECTION AND COMPLIANCE + BYPRODUCT MATERIAL + FAILURE, ADMINISTRATIVE CONTROL + RADIATION SAFETY AND CONTROL

17-23367

U OF MARYLAND REPLY ON SPD AVAILABILITY  
UNIVERSITY OF MARYLAND, COLLEGE PARK, MD.  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE, 14(9), PAGES 34-35 (FEBRUARY 26, 1968) DOCKET 50-166

(LETTER, JAN. 9) REPLY TO DEC. 22, 1967, AEC LETTER. (1) IF AT ANY TIME THE OPERATOR OR REACTOR DIRECTOR FIND THE SENIOR OPERATOR NOT AVAILABLE, HE WILL SHUT THE REACTOR DOWN. (2) ON SEPT. 25 AND NOV. 14, WE ASKED FOR SSO EXAMS FOR THE NEW REACTOR DIRECTOR (DR. AKIN) AND, ON DEC. 6, 1967, FOR HE AND FOR MR. ELKADY. \*\*\*WHILE THE UNIVERSITY IS SEEKING A REPLACEMENT FOR THE RADIATION SAFETY OFFICER, DR. AKIN IS CARRYING OUT HIS REACTOR DUTIES.

\*STAFFING, TRAINING, QUALIFICATION + INSPECTION AND COMPLIANCE + REACTOR, RESEARCH

17-23368

CRAMER FN  
SECONDARY REASONS FOR INCORPORATING NUCLEAR SAFETY IN NUCLEAR ENGINEERING CURRICULA  
6 PAGES, 4 FIGURES, REFERENCES, NUCLEAR SAFETY, 9(1), PAGES 55-64 (JAN. FEB. 1968)

TWO DISCUSSIONS GIVEN. FIRST, SOCIAL PERSPECTIVE - MAJOR PORTION OF DISCUSSION DEVOTED TO EMPHASIZING THAT PUBLIC ACCEPTANCE OF THE SAFETY RECORD IS POOR AND THERE IS A NEED FOR REALISM. SECOND, SYSTEMS ENGINEERING APPROACH - NUCLEAR-SAFETY ENGINEERING IS NOT A PROFESSION BUT A SPECIALIZATION WITHIN NUCLEAR ENGINEERING, AND A SEPARATE COURSE IN NUCLEAR SAFETY IS DESIRABLE TO INCREASE THE ENGINEERS AWARENESS OF SAFETY PROBLEMS.

\*STAFFING, TRAINING, QUALIFICATION + RADIATION, PUBLIC EDUCATION/ACCEPTANCE + SAFETY PRINCIPLES AND PHILOSOPHY

17-23370

PEACH BOTTOM ATOMIC POWER STATION MONTHLY OPERATIONS REPORT NO. 22  
PHILADELPHIA ELECTRIC COMPANY  
14 PAGES, DECEMBER 1967, DOCKET 50-171, TYPE--HTGR, MFG--G.A., AE--BECHTEL

A TWO-DAY OUTAGE OCCURRED FOR AEC EXAMINATIONS AND TEST BLASTING FOR RAILROAD EXCAVATION. FAILURE OF A SOLENOID VALVE ON A SAMPLE LINE RESULTED IN VAPORIZATION OF THE LIQUID NITROGEN IN THE KR-95 TRAP, WHICH DESORBED THE CONTAMINANTS HELD IN THE TRAP. THE PRIMARY SYSTEM ACTIVITY INCREASED TO PEAKS OF 15 CURIES AND 50 PPM. CORRECTION OF PROBLEM RETURNED ACTIVITY TO 300 MILLICURIES. LEAKS IN FITTINGS ON THE DELAY-BED MOISTURE MONITOR RESULTED IN KR-88 CONTAMINATION IN THE AIR ROOM.

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

\*ACTIVITY BUILDUP + COOLANT PURIFICATION SYSTEM + FAILURE, INSTRUMENT + VALVE + CONTAMINATION + KRYPTON + MAIN COOLING SYSTEM + PEACH BOTTOM 1 (HTGR) + REACTOR, GCR + REACTOR, GRAPHITE MODERATED + REACTOR, HTGR + REPORT, OPERATIONS

17-23375

MODIFICATION OF PLUM BROOK CONTROL ROD GUIDES  
NASA, LEWIS RESEARCH CENTER  
6 PAGES, FEBRUARY 5, 1968, DOCKET 50-30

TECHNICAL-SPECIFICATION CHANGE AUTHORIZES REPLACEMENT OF THE UPPER ROLLER GUIDES FOR FIVE REFLECTOR CONTROL RODS WITH ROLLERLESS GUIDE BEARINGS. THE MATERIALS TESTED WHICH EXHIBITED THE BEST FRICTION WEAR PROPERTIES ARE WAUKESHA METAL 2P AND 6061-T6 ALUMINUM. CHANGE ALLOWS USE OF THESE OR COMPARABLE MATERIALS. PURPOSE OF CHANGE IS TO FACILITATE DESIGN OF A NEW 2-PIECE UPPER GRID TO ELIMINATE THE NEED TO REMOVE EXPERIMENTS WITH ELECTRICAL LEADS FROM THE LATTICE REFLECTOR LOCATIONS EACH TIME THE CORE IS RELOADED.

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

\*MODIFICATION, SYSTEM OR EQUIPMENT + TECHNICAL SPECIFICATIONS + CONTROL ROD DRIVE + CORE COMPONENTS + FRICTION + PLUM BROOK (TR) + REACTOR, TEST

17-23390

ALSO IN CATEGORY 5

HADDAM NECK AMENDMENT 17. RE-ANALYSIS OF STEAM LINE RUPTURE  
CONNECTICUT YANKEE ATOMIC POWER COMPANY  
7 PAGES, JANUARY 9, 1968, DOCKET 50-213, TYPE--PWR, MFG.--WEST., AE--STONE + WEBSTER

REANALYSIS USES 10-SEC VALVE-CLOSURE TIME INSTEAD OF 1 SEC (SEE PROPOSED CHANGE 5, 1/9/68). 36-IN. DOUBLE STEAM-HEADER BREAK RESULTS IN AN OFF-SITE THYROID DOSE OF 0.05 REM. MAXIMUM REACTIVITY GAINS LESS THAN 1%. 24-IN. DOUBLE BREAK UPSTREAM FROM THE ISOLATION VALVES RESULTS IN A MAXIMUM REACTIVITY GAIN OF 1.01%. SHUTDOWN MARGIN IN BOTH CASES IS 3.4%, WITH

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-23390 \*CONTINUED\*  
MGST REACTIVE ROD STUCK OUT OF THE CORE. MAXIMUM REACTIVITY GAIN WITH NO BORDON INJECTION IS 1.9%.

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

\*ACCIDENT, STEAM LINE RUPTURE + \*RESPONSE TIME + \*VALVE + CONTAINMENT PENETRATION, CLOSURE OF + HADDAM NECK (PWR) + REACTIVITY EFFECT + REACTOR, PWR + REPORT, SAR + SAFETY ANALYSIS

17-23408 ALSO IN CATEGORY 6  
DODGEN HW  
MOVEMENT OF INSTRUMENTED FUEL ELEMENT BY A CONTROL ROD MAGNET  
WASHINGTON STATE UNIVERSITY  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 14(8), PAGES 32-33 (FEBRUARY 1968)

(LETTER, FEB. 7) IN A RECENTLY CONVERTED TRIGA, THERMOCOUPLE LEADS FROM A SINGLE UNCLAMPED FUEL ROD ARE IN A STAINLESS-STEEL CONDUIT, WHICH HAS A RIGHT ANGLE 7 IN. ABOVE THE ROD MAGNETS WHEN THEY ARE IN THE DOWN POSITION. INSERTION OF ANOTHER EXPERIMENT PUSHED THE ANGLE OVER NO. 3 MAGNET. ROD 3 POSITION WAS 15.2 IN. AT CRITICALITY, AND THEN WAS RAISED TO 19 IN. BEFORE PULSING, WHICH GAVE ONLY A 70 C READING. CORE CHECK SHOWED THE BEND NOT OVER THE MAGNET, BUT EXPERIMENTS SHOWED THAT FUEL ROD LIFTED 12 IN. (REMOVED \$1.80 REACTIVITY). ROD IS NOW CLAMPED.

\*ACCIDENT, REACTIVITY + \*FAILURE, ADMINISTRATIVE CONTROL + FUEL HANDLING + INSTRUMENTATION, IN CORE + REACTOR, PULSED + TRIGA (RR)

17-23904  
WOLTER EE  
AEC-RCPA CORRESPONDENCE ON RESPONSIBLE CONSULTANTS  
RURAL COOPERATIVE POWER ASSOCIATION + DIVISION OF REACTOR LICENSING  
3 PAGES, FEBRUARY 12, 1968, ATOMIC ENERGY CLEARING HOUSE 14(10), PAGES 42-44 (MARCH 4, 1968) DOCKET 115-1

(TWX AND LETTERS, FEB. 12, 15, ET SEQ.) AN EXCHANGE OF CORRESPONDENCE ESTABLISHED THAT (1) DRL REGARDS CHOICE OF CONSULTANT AS BETWEEN RCPA AND AEC-COO, ALTHOUGH RCPA HAS RESPONSIBILITY OF MAINTAINING STAFF AND CONSULTANTS. (2) RCPA FEELS THE SITUATION AND ISSUES HAVE BECOME DISTORTED, AND PROGRESS TO EXTEND THE NUS CORP. CONTRACT TIL JAN. 31, 1969, TO COVER OPERATIONAL SAFETY AND SURVEILLANCE. (3) AEC-COO ACCEPTS THE TECHNICAL COMPETENCE OF NUS, BUT AEC PREFERENCES THAT CERTAIN SERVICES BE PERFORMED BY UNC, AND WILL DIRECTLY REIMBURSE UNC. RCPA MAY REIMBURSE NUS FOR SERVICES PERFORMED FOR RCPA. THE AEC WILL NOT. REQUESTS RCPA OPERATE ELK RIVER TO FULFILL CONTRACT.

\*ADMINISTRATIVE CONTROL + \*SAFETY REVIEW + ELK RIVER (BWR) + REACTOR, BWR + TECHNICAL SPECIFICATIONS

17-23905 ALSO IN CATEGORY 9  
MONTGOMERY CR  
SAXTON REPORTS FAILURE OF CONTROL ROD TO SEAT  
SAXTON NUCLEAR EXPERIMENTAL CORPORATION  
2 PAGES, FEBRUARY 23, 1968, ATOMIC ENERGY CLEARING HOUSE 14(10), PAGES 44-45 (MARCH 4, 1968) DOCKET 50-146

(LETTER TO DRL, FEB. 23) ON JAN. 22, THE REACTOR WAS SCRAMMED AFTER COMPLETION OF THE DAYS OPERATOR TRAINING. CONTROL-ROD 1 STOPPED 2.98 IN. ABOVE ZERO (IN.) POSITION. A ROD-EXERCISE PROGRAM WAS STARTED, AND THE ROD STUCK AT ABOUT 3 IN. ON THE 16TH AND 64TH ROD DROPS. AN ADDITIONAL 50 DROPS WERE WITHOUT FURTHER DIFFICULTY. CONCLUSION - PROBABLY A SMALL PIECE OF FOREIGN MATTER HAS LODGED IN THE ROD-DRIVE MECHANISM AND WAS REMOVED BY THE SELF-FLUSHING ACTION OF THE DASH POT.

\*FAILURE, SCRAM MECHANISM + CONTROL ROD DRIVE + REACTOR, PWR + SAXTON (PWR)

17-23861 ALSO IN CATEGORY 11  
COWAN A + COWBURN KJ  
CRITICAL CRACK-LENGTH MEASUREMENTS IN HYDRIDED ZIRCALOY-2 PRESSURE TUBES  
UKAEA, LANCASTHIRE (CULTHETCH)  
6 PAGES, 11 FIGURES, 1 TABLE, 8 REFERENCES, JOURNAL OF THE INSTITUTE OF METALS 95(10), PAGE 302 THRU 307, (OCTOBER 1967)

DESCRIBES THE FIRST OF A SERIES OF TESTS ON PRESSURE TUBES WITH SLITS CUT THROUGH THE WALL BEFORE PRESSURIZING TO FAILURE. UP TO 300 C, FAILURE OCCURRED BY FAST PROPAGATION OF CRACKS INITIATED AT THE ENDS OF THE SLITS. INCREASING THE HYDROGEN CONTENT OF THE TUBES CAUSED BRITTLENESS. WITH A DECREASE IN THE CRITICAL CRACK LENGTH AT 300 C, THE EFFECT OF 400 PPM HYDROGEN WAS COMPARATIVELY SMALL. THE CRITICAL CRACK LENGTH IS ABOUT 4 IN. AT THE OPERATING TEMPERATURE AND PRESSURE OF THE S.G.H.W. REACTOR (300 C, 16,000 LB/SQ. IN.). THIS LENGTH IS ORDERS OF MAGNITUDE GREATER THAN THE LENGTH THAT CAN BE DETECTED IN SERVICE AND IS ALSO GREATER THAN THE LENGTH OF DEFECT THAT WOULD BE EXPECTED TO GIVE RISE TO SLOW LEAKAGE BEFORE FAILURE.

\*FAULT + \*HYDRIDE + \*REACTOR, PRESSURE TUBE + \*ZIRCALOY + BRITTLE FRACTURE

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-23368 ALSO IN CATEGORY 15  
SELECTED CVTR OPERATING EXPERIENCE  
CAROLINAS VIRGINIA NUCLEAR POWER ASSOCIATES, INC., PARR, S. C.  
32 PAGES, MONTHLY OPERATING REPORT, OCTOBER 1966

(PG 20) - EVALUATED SENSITIVITY OF VARIOUS AIRBORNE-TRITIUM MONITORING INSTRUMENTS TO MIXTURES OF TRITIUM AND FISSION GASES IN CONTAINMENT FOLLOWING A FUEL FAILURE EARLY IN THE MONTH. XENON READ HIGHER BY A FACTOR OF 10 OVER THE ACTUAL CONCENTRATION. ACTUAL TRITIUM CONCENTRATION OF THE MIXTURE WAS ONLY 1/5TH THAT INDICATED. (PG 26) - ON STARTUP AFTER THE SECOND REFUELING, AFTER 1.5 HR AT 90% POWER, A FUEL FAILURE OCCURRED. TESTS THE NEXT OF THE MONTH SHOWED THIS WAS IN U-TUBE B3 (CONTAINING HIGH-POWER-DENSITY FUEL), AND THE LEAK REPRESENTED LESS THAN 1% FAILED FUEL, PROBABLY ONE ROD.

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

\*FAILURE, FUEL ELEMENT + \*INSTRUMENTATION, ABNORMAL INDICATION + \*MONITOR, RADIATION, AIR + \*TRITIUM + \*XENON + CVTR (PWR) + REACTOR, HWR + REACTOR, PRESSURE TUBE + REACTOR, PWR + REPORT, OPERATIONS

17-23869  
PIQUA MONTHLY OPERATING REPORT NO. 43  
PIQUA NUCLEAR POWER FACILITY, OHIO  
COO-652-33 +. 19 PAGES, NOV. 1966

PROGRESS REPORT. THE USUAL CONTENTS ARE DIVIDED BETWEEN HIGH-LIGHTS, PLANT PERFORMANCE DATA, ADMINISTRATION, TESTING AND ANALYSIS, HEALTH AND SAFETY, MAINTENANCE, AND MODIFICATION.

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

\*MAINTENANCE AND REPAIR + \*RADIATION SAFETY AND CONTROL + \*TESTING + PIQUA (OCR) + REACTOR, ORGANIC COOLED + REPORT, OPERATIONS

17-23874  
MIKESELL RE  
TRIGA EXPERIMENTAL AND IRRADIATION FACILITIES FOR RESEARCH AND DEVELOPMENT  
GENERAL DYNAMICS CORP., SAN DIEGO, CALIF. GENERAL ATOMIC DIV.  
GA-1995 (REV.5) +. 67 PAGES, FIGURES, NOV. 1, 1966

BRIEF DESCRIPTION OF THREE TRIGA REACTORS, EXPERIMENTAL FACILITIES AVAILABLE FOR RENT AT GA-SAN DIEGO CALIF. APTX FLUXES RANGE FROM (FAST)  $3.3 \times 10^{13}$ TH, (THERMAL)  $4.4 \times 10^{13}$ TH, (GAMMA RADS/SEC)  $9.9 \times 10^{14}$ TH, ALL AT 1.5 MW STEADY STATE. FLUX/DOSE AVAILABLE WITH 6400-MW PULSES ARE - (FAST)  $1.4 \times 10^{17}$ TH AND  $9.5 \times 10^{14}$ TH, (THERMAL)  $1.9 \times 10^{17}$ TH AND  $1.2 \times 10^{15}$ TH, (GAMMA)  $4.2 \times 10^{18}$ TH AND  $2.8 \times 10^{16}$ TH. PULSE CHARACTERISTICS, FLUX DISTRIBUTIONS, AND SUPPLEMENTARY SERVICES DESCRIBED.

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

\*IRRADIATION FACILITY + \*SYSTEM DESCRIPTION + FLUX DISTRIBUTION + IRRADIATION TESTING + REACTOR, RESEARCH + TRIGA (RR)

17-23911 ALSO IN CATEGORIES 9 AND 7  
SIDALL E + SMITH JE  
COMPUTER CONTROL IN THE DOUGLAS POINT NUCLEAR POWER STATION  
ATOMIC ENERGY OF CANADA LIMITED, SHERIDAN PARK, ONTARIO  
AECL-2943 + SM-99/38 +. 19 PAGES, SEPTEMBER 1967, PAPER PRESENTED AT THE IAEA SYMPOSIUM ON HEAVY WATER POWER REACTORS, VIENNA, SEPTEMBER 11-15, 1967

BY USING TIME MULTIPLEXING TECHNIQUES, THE HIGH DATA PROCESSING CAPABILITIES OF A SINGLE DIGITAL COMPUTER CAN BE USED TO REPLACE A MULTIPLE ANALOGUE CONTROL SYSTEM WITH A CONSEQUENT SAVING IN COSTS AND SOMEWHAT BETTER OPERATION. TO TEST THIS PREMISE, AND TO GAIN AN INSIGHT INTO THE PROBLEMS, A DIGITAL COMPUTER CONTROLLER WAS INCORPORATED IN THE CONTROL SYSTEM FOR THE DOUGLAS POINT NUCLEAR POWER PLANT. MUCH USEFUL EXPERIENCE IN THE DESIGN PHASE HAS BEEN GAINED, AND OPERATING EXPERIENCE WHILE STILL LIMITED HAS BEEN ENCOURAGING.

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

\*COMPUTER CONTROL + \*OPERATING EXPERIENCE + \*REACTOR, HWR + CHALK RIVER + COMPUTER PROGRAM + IAEA + INSTRUMENTATION, CONTROL + INSTRUMENTATION, GENERAL

17-23915 ALSO IN CATEGORY 10  
WEEKS TC

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-23915 \*CONTINUED\*  
IRL MOTOR-GENERATOR FAILS IN TEST  
INDUSTRIAL REACTOR LABORATORIES, INC., PLAINSBORO, N.J.  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 14(11), PAGES 22-23 (MARCH 11, 1968), DOCKET 50-17

(LETTER, FEBRUARY 29) DURING A ROUTINE LOAD-FREE TEST ON DECEMBER 6, 1967. THE EMERGENCY GENERATOR FAILED TO FUNCTION DUE TO A DEFICIENT BUTTERFLY VANE IN A VACUUM-OPERATED AIR-BALANCE CHOKE. ON DECEMBER 27, THE AIR CHOKE WAS REPLACED BY A SCIENCE-OPERATED METERING DEVICE IN THE NATURAL-GAS FEED, ALTHOUGH MAINTENANCE HAD RESTORED ITS PERFORMANCE. NORMAL BI-WEEKLY TESTS INDICATED NO CONTINUING PROBLEMS.

\*FAILURE, COMPONENT + \*GENERATOR, DIESEL + EMERGENCY POWER, ELECTRIC + REACTOR, RESEARCH

17-24134 ALSO IN CATEGORY 9  
SELECTED ELK RIVER OPERATING EXPERIENCE  
RURAL COOPERATIVE POWER ASSOCIATION  
NUS-326 +. 54 PAGES, 5 FIGURES, 2 TABLES, ELK RIVER REACTOR OPERATIONS SAFETY ANALYSIS PROGRESS REPORT TO RURAL COOPERATIVE POWER ASSOCIATION, MONTHLY REPORT NO. 16, OCTOBER 1, TO OCTOBER 31, 1966

(PP. 5-11) PLATINIZED HONEYCOMB CATALYST SHOULD BE SUBSTITUTED FOR PELLETS IN THE RECOMBINER BECAUSE THE HONEYCOMB TYPE IS INSENSITIVE TO FLOW, TEMPERATURE, AND MOISTURE. (PG 20-26) VARIATION OF IODINE IN THE COOLANT WITH TIME INDICATES THAT ABOUT 9 G OF U-235 IS GIVING THIS ACTIVITY. (PG 27-29) A LOSS OF 10% OF THE CENTRAL-CONTROL-ROD WORTH RESTRICTS ITS LIFETIME TO 4.6 EFF YEARS. LIFETIME BY B4C PELLETS SWELLING OR HELIUM RELEASE EXCEEDS THAT. THE REGULATING ROD SHOULD BE EXCHANGED FOR A BAKED ROD EVERY 2 EFF YEARS AT THE TECH.-SPEC. CONTROL-ROD INSPECTION.

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

\*CONTROL ROD BURNUP + \*RECOMBINER + ACTIVITY BUILDUP + ELK RIVER (BWR) + MAIN COOLING SYSTEM + REACTOR, BWR + REPORT, OPERATIONS ANALYSIS + STEEL, STAINLESS

17-24154 ALSO IN CATEGORIES 11 AND 9  
SENA SHUTDOWN ATTRIBUTED TO CORE BARREL BOLT FAILURE  
1 PAGE, NUCLEAR INDUSTRY 15(2), PAGE 5A. (FEB. 1968)

WESTINGHOUSE STATEMENT READS IN PART AS FOLLOWS - AS PART OF THE INVESTIGATION OF A STUCK CONTROL ROD, CAUSED BY INTERFERENCE IN THE CORE, INSPECTION REVEALED BROKEN PIECES OF CORE-BARREL BOLTS IN TWO OF THE FOUR STEAM GENERATORS. THESE BOLTS JOIN UPPER AND LOWER CORE BARREL. THEIR USE IS PECULIAR TO THE INTERNAL DESIGN OF SENA AND EARLIER PLANTS. REPAIR TO INTERNALS WILL BE CONCURRENT WITH REPAIR FOR TURBINE AND GENERATOR. REACTOR WAS SHUT DOWN JAN. 30, 1968.

\*CORE COMPONENTS + \*FAILURE, EQUIPMENT + \*FAILURE, SCRAM MECHANISM + ITALY + REACTOR, PWR

17-24188 ALSO IN CATEGORY 11  
ELK RIVER SHUTDOWN BECAUSE OF COOLANT LEAK  
RURAL COOPERATIVE POWER ASSOCIATION  
1 PAGE, TWX TO AEC, MARCH 14, 1963, DOCKET 115-1, TYPE--BWR, MFG--A.C., AE--SGT + LUNDY

AT 1700 HOURS ON MARCH 13, DEPRESSURIZATION OF THE REACTOR WAS BEGUN, IN COMPLIANCE WITH TECHNICAL-SPECIFICATION SECTION 4.9 (REACTOR-VESSEL LEAKAGE-MONITORING SPECIFICATION). A DETAILED REPORT ALONG WITH A PROGRAM FOR REPRESSURIZING AND FURTHER TESTING WILL BE SUBMITTED.

\*LEAK + \*PRESSURE VESSEL + ELK RIVER (BWR) + FAILURE, PRESSURE VESSEL + INCIDENT, EQUIPMENT + MAIN COOLING SYSTEM + OPERATING EXPERIENCE SUMMARY + REACTOR, BWR

17-24220 ALSO IN CATEGORIES 3 AND 12  
SEDEN WH  
HTGR LONG-TERM SPENT FUEL STORAGE COSTS  
GENERAL ATOMIC DIVISION, GENERAL DYNAMICS CORP., SAN DIEGO, CALIF.  
GAMD-7994 +. 27 PAGES, FIGURES, TABLES, SEPTEMBER 1, 1967

PRELIMINARY DESIGNS HAVE BEEN PREPARED, AND PRESENT-DAY COSTS HAVE BEEN ESTIMATED FOR SPENT FUEL STORAGE VAULTS CONSTRUCTED AS A PART OF A 1000 MW(E) HIGH-TEMPERATURE GAS COOLED REACTOR (HTGR) PLANT. TWO SPENT FUEL STORAGE CONCEPTS WERE DEVELOPED. IN ONE CONCEPT, THE FUEL ELEMENTS ARE STORED IN OPEN CYLINDERS AND GASEOUS NITROGEN IS CIRCULATED ACROSS THE FUEL ELEMENTS TO REMOVE THE DECAY HEAT. IN THE OTHER CONCEPT, THE FUEL ELEMENTS ARE STORED IN SEALED CONTAINERS FROM WHICH NO CONTAMINATED GRAPHITE DUST CAN ESCAPE. THEREFORE, A ONCE-THROUGH AIR COOLING SYSTEM IS USED IN WHICH THE AIR IS PASSED AROUND THE OUTSIDE WALLS OF THE CONTAINERS. THE FUEL STORAGE VAULTS FOR BOTH CONCEPTS HAVE THE SAME CAPACITY - THE AMOUNT OF FUEL DISCHARGED FROM A 1000 MW(E) REACTOR OVER A 5-YR PERIOD. AMORTIZING VAULT CAPITAL COSTS OVER A 5-YR PERIOD, THE TOTAL ANNUAL COST OF STORING THE FUEL ELEMENTS WOULD BE APPROXIMATELY \$60 PER KILOGRAM OF HEAVY METALS STORED FOR BOTH THE OPEN CYLINDER CONCEPT (UNCANNED) AND THE SEALED CONTAINER CONCEPT (CANNED).

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

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-24220 \*CONTINUED\*  
COPY, \$0.65 MICROFICHE

\*ECONOMIC STUDY + FUEL STORAGE + REACTOR, GCR + STORAGE CONTAINER + WASTE HANDLING

17-24270 ALSO IN CATEGORIES 13 AND 7  
NORTH ED  
FILTER FAILURE ALLOWS HIGHER PARTICULATE RELEASE RATE  
NUCLEAR FUEL SERVICES, INC., WEST VALLEY, N. Y.  
4 PAGES, ATOMIC ENERGY CLEARING HOUSE, 14(14), PAGES 25-28 (APRIL 1, 1968), DOCKET 50-201

(LETTER, MARCH 24) ON MAR. 8-10, THE PARTICULATE RELEASE FROM THE STACK ALMOST EQUALED THE MONTHLY ALLOWANCE, DUE TO FAILURE OF THE DISSOLVER OFF-GAS FILTER (PLACED IN SERVICE MAR. 7). IT HAD BEEN LOADED FOR SEVERAL MONTHS PRIOR, FEADING 5 R/HR. ALTHOUGH IT MET THE DOP TEST MAR. 7, EITHER THE MEDIA BECAME POREOUS OR DEVELOPED A CRACK, OR THE SEALANT HARDENED AND FAILED TO SEAL. MORE PROBABLY, THE ORGANIC BINDER EMBRITTLED, FREEING THE GLASS FIBERS AND ALLOWING THEM TO VIBRATE TO THE POINT OF FAILURE, OR TO PERMIT THEM TO MOVE RELATIVE TO EACH OTHER. FILTERS WILL BE REPLACED WITHIN A SHORT TIME AFTER REMOVAL FROM SERVICE FOR HIGH PRESSURE DROP OR HIGH RADIATION.

\*FILTER, DAMAGED + \*FILTER, FIBERGLASS + \*RADIATION DAMAGE + \*RADIOACTIVITY RELEASE + \*STACK + FAILURE, EQUIPMENT + FUEL REPROCESSING + NFS

17-24271 ALSO IN CATEGORY 15  
FREDRICKSON RL  
EXPOSURE TO EXCESSIVE AIRBORNE IODINE-131  
ABBOTT LABORATORIES, NORTH CHICAGO, ILL.  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE, 14(14), PAGE 30 (APRIL 1, 1968)

(LETTER, FEB. 19) AS INDICATED IN THE FEB. 6 LETTER, RESPIRATORY PROTECTION IS BEING USED UNTIL HOOD REVISIONS CORRECT THE AIRBORNE-RELEASE PROBLEM (INADEQUATE AIR VELOCITY). AN EMPLOYEE WAS EXPOSED TO I-131 IN AIR FOR A TOTAL OF 416 MPC-HOURS (JAN. 23-29) AND FOR 164 MPC-HOURS (FEB. 2-8). HIS AVERAGE THYROID BURDEN IN THIS PERIOD WAS 34%, WITH A HIGH OF 52%, INDICATING THAT ADEQUATE RESPIRATORY PROTECTION HAD BEEN PROVIDED.

\*FISSION PRODUCT, IODINE + \*PERSONNEL EXPOSURE, RADIATION + \*PERSONNEL PROTECTIVE DEVICE + INCIDENT, GENERAL + INHALATION

17-24272 ALSO IN CATEGORY 15  
INABILITY OF JUMA HOOD TO PREVENT IODINE RELEASE  
ABBOTT LABORATORIES, NORTH CHICAGO, ILL.  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE, 14(14), PAGE 30 (APRIL 1, 1968)

(LETTER, FEB. 6) A WORKER WAS EXPOSED TO EXCESSIVE CONCENTRATION OF I-131 IN AIR, AS HIS THYROID AVERAGED 373% PERMISSIBLE I-131 (DFC. 14-20, 1967). AN UNEXPECTED RELEASE OCCURRED DURING PREPARATION OF RADIO-IODO-INSULIN, CONTAMINATING HIS HEAD. HIS QUARTERLY THYROID DOSE IS 6.09 REMS. \*\*\* ALL FUME HOODS IN THE BUILDING HAVE HAD FACE VELOCITY RE-EVALUATED. PENDING MODIFICATION TO PROVIDE HIGH-VELOCITY AIRFLOW OR BETTER CONTAINMENT, CERTAIN JOBS WILL REQUIRE RESPIRATORY EQUIPMENT AND BREATHING-ZONE SAMPLERS. ROUTINE THYROID COUNTING WILL BE TWICE PER WEEK INSTEAD OF ONCE.

\*FISSION PRODUCT, IODINE + \*INHALATION + \*PERSONNEL EXPOSURE, RADIATION + DOSE + GLOVE BOX + INCIDENT, GENERAL + PERSONNEL PROTECTIVE DEVICE + VENTILATION SYSTEM

17-24273 ALSO IN CATEGORY 15  
LEWIS WH  
HAND OVEREXPOSURE DURING MAINTENANCE  
NUCLEAR FUEL SERVICE, INC.  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE, 14(14), PAGES 31-32 (APRIL 1, 1968), DOCKET 50-201

(LETTER, JAN. 31) ON DEC. 27, 1967, A MAINTENANCE FOREMAN INSPECTED EQUIPMENT IN THE GP-CELL DRANE ROOM FOR 30 MIN. HIS THERMOLUMINESCENT DOSIMETERS (FINGER RINGS) READ 160 RADS. AN HP RESURVEY SHOWED A MAX. DOSE RATE OF 16 RADS/HR. 26 TLD FINGER RINGS ON HIS GLOVE SHOWED AN AVERAGE OF 21 RADS/HR, WITH A MAX. OF 90.6 RADS/HR AT THE PALM. THE AVERAGE HAND EXPOSURE IS ESTIMATED AT 44 RADS. \*\*\* THE BETA/GAMMA RATIO USED IN TIME LIMITS IS NOW INCREASED. GLOVES WHICH DECREASE HAND EXPOSURE YET WHICH ARE FLEXIBLE ENOUGH FOR WORK ARE BEING TESTED.

\*CONTAMINATION + \*DOSIMETRY, THERMOLUMINESCENCE + \*PERSONNEL PROTECTIVE DEVICE + BETA EMITTER + FUEL REPROCESSING + INCIDENT, GENERAL + MAINTENANCE AND REPAIR + NFS

17-24274 ALSO IN CATEGORIES 15 AND 17  
PERSONNEL OVEREXPOSURES DURING FOURTH QUARTER 1967  
NUCLEAR FUEL SERVICES, INC.  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE, 14(14), PAGE 32 (APRIL 1, 1968), DOCKET 50-201

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-24274 \*CONTINUED\*

(LETTER, FEB. 19) REPORT DESCRIBES OVEREXPOSURES AND CORRECTIVE ACTIONS. (WHOLE BODY) - 3 EMPLOYEES RECEIVED 3.1, 3.2, AND 3.4 REMS. (SKIN) - THREE RECEIVED 7.7, 8.2, AND 9.8 REMS. (EXTREMITY) - SIX RECEIVED 10.02, 19.11, 19.41, 19.62, 20.55, AND 20.56 REMS, ALL DUE TO SPOT SOURCES. \*\*\* CHANGES TO SOP FOR CONTAMINATED WORK AREAS, TO EQUIPMENT TO MINIMIZE CONTACT MAINTENANCE, AND TO IMPROVE VENTILATION ARE BEING UNDERTAKEN. A MANIPULATOR REPAIR AND DECONTAMINATION FACILITY IS BEING BUILT.

\*PERSONNEL EXPOSURE, RADIATION + CONTAMINATION + FUEL REPROCESSING + MAINTENANCE AND REPAIR + MODIFICATION, SYSTEM OR EQUIPMENT + NFS

17-24275

SPENCER SW

LARGEST RADIATION SOURCES

BROWN UNIVERSITY, PROVIDENCE, R.I.

2 PAGES, ATOMIC ENERGY CLEARING HOUSE, 14(14), PAGES 32-33 (APRIL 1, 1968)

(LETTER, DEC. 2, 1967) THE SEVEN SOURCES (CO-57, THREE CS-137, BA-133, NA-22 AND CO-60) WERE PURCHASED AUG. 27, 1965, LISTED AS 5-10 MICROCURIES EACH. ALL ARE GENERALLY LICENSED, SEALED IN PLASTIC, STORED IN TWO WOODEN CASES. BUILDINGS ARE BEING SEARCHED, AND PERSONNEL QUESTIONED.

\*SOURCE, RADIATION, LOST + OPERATING EXPERIENCE SUMMARY

17-24276

LEROY GM

LOSS OF SODIUM IODIDE DURING SHIPMENT

METROPOLITAN HOSPITAL, DETROIT, MICH.

1 PAGE, ATOMIC ENERGY CLEARING HOUSE, 14(14), PAGE 23 (APRIL 1, 1968)

(LETTER, FEB. 22) ON FEB. 20, TWENTY 100-MICROCURIE CAPSULES OF NAI-125 WERE RECEIVED AT METROPOLITAN AIRPORT AND PLACED IN A TRUCK. AFTER A DELIVERY AT GREENFIELD, THE DRIVER DISCOVERED THE BACK DOOR OPEN AND THE ISOTOPE GONE. THIS WAS REPORTED TO POLICE. A SIMILAR PACKAGE WAS SHOWN ON TV, HAZARDS DESCRIBED REALISTICALLY, AND RETURN REQUESTED. IT HAS NOT APPEARED AS OF FEB. 22.

\*SOURCE, RADIATION, LOST

17-24277

ALSO IN CATEGORY 12

CALDWELL R

MILLING MACHINE ACCIDENT

NUCLEAR MATERIALS AND EQUIPMENT CORP., APOLLO, PA.

2 PAGES, ATOMIC ENERGY CLEARING HOUSE, 14(14), PAGE 33-24 (APRIL 1, 1968)

(LETTER, FEB. 16) ON DEC. 14, 1967, A TECHNICIAN AMPUTATED HIS HAND IN A GLOVE BOX BY REACHING PAST THE CUTTER TO ADJUST A NITROGEN HOSE, ORDINARILY DONE WITH THE MACHINE OFF. THE HAND WAS DECONTAMINATED AND GRAFTED BACK ON, BUT WARMTH FAILED TO RETURN. \*\*\* CHANGES MADE WERE - (1) ADD 2 SWITCHES IN MOTOR CIRCUIT SO BOTH HANDS ARE NEEDED TO OPERATE MACHINE. (2) AN INTERLOCK PREVENTS OPERATION WHEN ACCESS TO CUTTING TOOLS IS OPEN. (3-6) SWITCHES RELABELED AND RELOCATED, LIGHTING IMPROVED, AND INDICATOR LIGHTS INSTALLED.

\*CONTAMINATION + INCIDENT, NONREACTOR + MODIFICATION, SYSTEM OR EQUIPMENT + PERSONNEL PROTECTIVE DEVICE + RADIATION INJURY, TREATMENT OF + REMOTE MANIPULATING AND VIEWING

17-24278

ALSO IN CATEGORIES 12 AND 15

OVER EXPOSURES TO GAMMA RADIATION, LAST HALF 1967

NUCLEAR MATERIALS AND EQUIPMENT CORP., APOLLO, PA.

1 PAGE, ATOMIC ENERGY CLEARING HOUSE, 14(14), PAGE 34 (APRIL 1, 1968)

(LETTER, FEB. 29) (1) THREE 18-YEAR OLD EMPLOYEES EXCEEDED 1.25 REMS IN THE QUARTER, AND WERE REMOVED FROM EXPOSURE UNTIL 5(N-16) ALLOWS RETURN. WE WERE AWARE OF THE AM-241 PRESENT IN ZPPR FUEL BUT WERE NOT AWARE OF THE 18-YEAR-OLDS. PU DUST EMITS MORE X RAY BECAUSE OF LITTLE SELF-SHIELDING. (2) A 19-YEAR-OLD WAS TAKEN FROM HANDLING ZPPR AM-241-CONTAMINATED CRUCIBLES. (3) A SOURCE TECHNICIAN EXCEEDED LIFETIME LIMITS DURING THE FOURTH QUARTER. HIS JULY 1967 FILM BADGE HAD BEEN DAMAGED, AND EXPOSURE OMITTED. ESTIMATION YIELDED OVEREXPOSURE. (4) JAN.-MAR. 65 EXPOSURE TO SOURCE FOREMAN EXCEEDED 3 REMS.

\*AMERICIUM + \*FABRICATION + \*FUEL ELEMENT + \*PERSONNEL EXPOSURE, RADIATION + PLUTONIUM + SOURCE, RADIATION + X-RAY

17-24279

ALSO IN CATEGORIES 12 AND 15

OVER EXPOSURE TO AIR CONCENTRATIONS AT APOLLO

ATOMIC ENERGY COMMISSION

1 PAGE, ATOMIC ENERGY CLEARING HOUSE, 14(14), PAGE 35 (APRIL 1, 1968)



CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-24279 \*CONTINUED\*

(LETTER, MAR. 1) FIVE OPERATORS WERE EXPOSED TO MORE THAN 40 MPC-HOURS/WEEK. EACH WAS WEARING A RESPIRATOR, BUT NASAL CONTAMINATION EXCEEDED LIMITS, SO NO CREDIT WAS TAKEN. EXPOSURES WERE DETECTED WITH PERSONAL AIR SAMPLERS. ONE EXPOSURE OCCURRED DURING CLEANUP OF A CP-2 FURNACE. TWO OCCURRED DURING CRP-2 DISSOLVING OPERATIONS. TWO OCCURRED DURING FILTER HANDLING. FILTERS ARE ROUTINELY BAGGED, BUT OCCASIONALLY A BAG IS PUNCTURED.

\*FABRICATION + \*FUEL ELEMENT + \*INHALATION + MAXIMUM PERMISSIBLE CONCENTRATION (MPC) + PERSONNEL EXPOSURE, RADIATION

17-24280 ALSO IN CATEGORY 13

NUMEC CITED FOR NON-COMPLIANCE

NUCLEAR MATERIALS AND EQUIPMENT CORP. APOLLO, PA.

1 PAGE, ATOMIC ENERGY CLEARING HOUSE, 14(14), PAGE 35 (APRIL 1, 1968)

(LETTER, FEB. 21) CITATIONS AFTER AN INSPECTION WERE FOR THE FOLLOWING REASONS - (1) PERSONNEL HAVE BYPASSED THE CHANGE AREAS BY FREQUENT USE OF REAR DOORS. (2) NUMEC FAILED TO REPORT A 3.76-REM EXPOSURE DURING THE FIRST QUARTER OF CY 1966. \*\*\* (REPLY, MAR. 5) WE ARE PLEASED NO NONCOMPLIANCE NOTED TO SNM-145 AND 37-4456-2 LICENSES. THIS REFLECTS OUR EFFORT. (1) BYPASSING IS NOT ROUTINE. WAS USED ONLY FOR IN-PLANT TRANSFER OF CONSTRUCTION MATERIAL, AND DOORS HAVE BEEN POSTED. TRAINING CLASS HAS BEEN HELD ON USE OF CHANGE ROOMS. MATERIAL NOW STORED ELSEWHERE. (2) THIS WAS AN OVERSIGHT. IN SEPT. 1967, AN OVERINSPECTION PROCEDURE WAS INSTITUTED.

\*INSPECTION AND COMPLIANCE + FAILURE, ADMINISTRATIVE CONTROL + PERSONNEL EXPOSURE, RADIATION + SPECIAL NUCLEAR MATERIAL

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-16494 ALSO IN CATEGORY 17  
NS SAVANNAH CHANGE 6 - AUXILIARY COOLING WHILE IN DRY DOCK  
FIRST ATOMIC SHIP TRANSPORT, INC., HOBOKEN, NEW JERSEY  
3 PAGES, DOCKET NO. 50-238, JUNE 26, 1967

DRL APPROVES CHANGE 6 TO ALLOW USE OF A 100-GPM PORTABLE PUMP AND THE INSTALLED LETDOWN COOLERS AS SUBSTITUTES FOR THE PRIMARY COOLANT PUMP FOR HEAT REMOVAL, WHEN NET POSITIVE SUCTION HEAD CANNOT BE MET.

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

\*TECHNICAL SPECIFICATIONS + AUXILIARY COOLING + NS SAVANNAH (PWR) + REACTOR, MARITIME + REACTOR, PWR + SAFETY EVALUATION + SHUTDOWN COOLING SYSTEM

18-20138  
THREE MILE ISLAND PRELIMINARY SAFETY ANALYSIS REPORT, VOLUME 4, SUPPLEMENT 1  
METROPOLITAN EDISON COMPANY  
287 PAGES, 58 FIGURES, 11 TABLES, 22 REFERENCES, OCTOBER 2, 1967, DOCKET NO. 50-289, TYPE--PWR, MFG--R+W,  
AE--GILBERT ASSOC.

NINETY ANSWERS TO QUESTIONS ASKED BY DRL ARE SUBMITTED IN SUPPLEMENT 1 (VOLUME 4 OF THREE MILE ISLAND PSAR).

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

AEC QUESTION + REACTOR, PWR + REPORT, PSAR + THREE MILE ISLAND (PWR)

18-20230  
TURKEY POINT 3 AND 4 - PRELIMINARY SAFETY ANALYSIS REPORT, SUPPLEMENT 2  
FLORIDA POWER AND LIGHT CO.  
175 PAGES, 21 FIGURES, 6 TABLES, 14 REFERENCES, SUPPLEMENT 2 TO THE LICENSE APPLICATION AND PRELIMINARY SAFETY ANALYSIS REPORT, AUGUST 11, 1967

REPLIES TO 40 DFL QUESTIONS OF JUNE 24, 1966.

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

AEC QUESTION + REACTOR, PWR + REPORT, PSAR + TURKEY POINT 3 AND 4 (PWR)

18-20295  
SUPPLEMENT 3 TO THE LICENSE APPLICATION AND PRELIMINARY SAFETY ANALYSIS REPORT FOR TURKEY POINT NUCLEAR GENERATING UNITS NO. 3 AND NO. 4  
FLORIDA POWER AND LIGHT COMPANY  
162 PAGES, 22 FIGURES, 13 REFERENCES, SEPTEMBER 1, 1966, DOCKETS NO. 50-250 AND NO. 50-251

59 QUESTIONS ASKED BY DLP ON JULY 27, 1966, ARE ANSWERED. FOUR APPENDICES ALSO INCLUDED. LIVER DESIGN (10 QUESTIONS). STRUCTURAL DESIGN (21). CONSTRUCTION MATERIAL (5). CONSTRUCTION PRACTICE (10). ACCEPTANCE AND IN-SERVICE SURVEILLANCE CRITERIA (3). MISSILE PROTECTION (10).

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

\*REPORT, PSAR + \*TURKEY POINT 3 AND 4 (PWR) + AEC QUESTION + REACTOR, PWR

18-20352  
APPENDIX B--QUALITY CONTROL PROCEDURES FOR FIELD WELDING  
FLORIDA POWER AND LIGHT COMPANY  
10 PAGES, PAGE B-1 THROUGH B-10 OF SUPPLEMENT 3 TO THE LICENSE APPLICATION AND PRELIMINARY SAFETY ANALYSIS REPORT. SEPTEMBER 1, 1966, DOCKET 50-250 AND 50-251

DISCUSS QUALIFICATION OF WELDING INSPECTORS AND WELDERS, WELD SPECIFICATIONS, AND INSTRUCTIONS FOR BECHTEL INSPECTORS, INCLUDING TEST PROCEDURES.

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

\*QUALITY CONTROL + \*WELOS + AEC QUESTION + CONTAINMENT CONSTRUCTION + EXAMINATION + REACTOR, PWR + REPORT, PSAR + TURKEY POINT 3 AND 4 (PWR) + WELDING

18-20355 ALSO IN CATEGORIES 11 AND 17  
SUPPLEMENT TO APPENDIX D--TURBINE GENERATOR FAILURES DUE TO EXCESSIVE OVERSPEEDING  
FLORIDA POWER AND LIGHT COMPANY

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-20355 \*CONTINUED\*  
4 PAGES, PAGE D1 TO D4 OF SUPPLEMENT 3 TO THE LICENSE APPLICATION AND PRELIMINARY SAFETY ANALYSIS REPORT.  
SEPTEMBER 1, 1966, DOCKET 50-250/251

ONLY TWO SUCH FAILURES ARE REPORTED, BOTH IN ENGLAND - (1) USKMOUTH - (1) FAILURE AT 170% OVERSPEED 8 WEEKS AFTER COMMISSIONING, (2) BLACK IRON-OXIDE FORMATION IN THE GOVERNOR FROM BRACKISH-WATER-CONTAMINATED OIL AND LONG SHUTDOWNS. DAMAGE IS DESCRIBED (LOW-PRESSURE WHEEL FOUND 150 YD AWAY). (2) CALDER HALL-B - ONE MONTH AFTER COMMISSIONING, MAIN STEAM-ADMISSION VALVE STUCK FULL-OPEN WHEN LOAD DROPPED SUDDENLY. VALVE FAILURE WAS CAUSED BY PARTICLE OF CHILLED IRON SHOT EMBEDDED IN THE VALVE SPINDLES.

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

\*FAILURE, EQUIPMENT + \*INCIDENT, EQUIPMENT + \*MISSILE GENERATION AND PROTECTION + \*TURBINE + CONTROLLER + FAILURE, ADMINISTRATIVE CONTROL + QUALITY CONTROL + REACTOR STARTUP EXPERIENCE + VALVE

18-20355  
SUPPLEMENT NO. 5 TO PRELIMINARY SAFETY ANALYSIS REPORT FOR TURKEY POINT  
FLORIDA POWER AND LIGHT COMPANY  
133 PAGES, 25 FIGURES, 2 TABLES, 51 REFERENCES, OCTOBER 7, 1966, DOCKET NO. 50-250 AND 50-251.

ANSWERS TO 17 QUESTIONS FROM DLP, SEPTEMBER 23, 1966, ARE GIVEN. INCLUDED ARE RESULTS OF INVESTIGATION INTO CHARACTERISTICS OF WAVES THAT COULD REACH THE PLANT (APPENDIX A). ALSO INCLUDED ARE REVISED ANSWERS TO QUESTIONS 10.0 THROUGH 10.6 FROM SUPPLEMENT 2. (25 QUESTIONS ARE ANSWERED IN SUPPLEMENT 5.)

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

AEC QUESTION + REACTOR, PWR + REPORT, PSAR + TURKEY POINT 3 AND 4 (PWR)

18-20357 ALSO IN CATEGORY 1  
SHOUPP WE  
NUCLEAR STANDARDS  
UNITED STATES ATOMIC ENERGY COMMISSION  
23 PAGES, NUCLEAR NEWS 10(11), PAGE 25-47, (NOVEMBER 1966)

DISCUSSIONS OF NUCLEAR-STANDARDS ACTIVITIES FROM THE VIEWPOINTS OF SEVERAL ORGANIZATIONS. (1) ANS - A. E. SHOUPP, R. G. CHALKER, AND ANN SAVOLAINEN, 12 PG. (2) USASI - F. K. MCCUNE AND MARY ELLIS, 3 PG. (3) AEC - J. T. RAINEY, M. SHAW, AND E. G. CASE, 8 PG. AEC STANDARDS ARE REGULATORY AND INCLUDE THOSE NOT NECESSARILY ASSOCIATED WITH NUCLEAR SAFETY BUT MORE WITH QUALITY CONTROL OR WITH ON-STREAM TIME.

\*CODES AND STANDARDS + OPERATING EXPERIENCE SUMMARY + REGULATION, AEC

18-20362  
AMENDMENT 5, TO THE LICENSE APPLICATION (FOURTH SUPPLEMENT TO DIABLO CANYON PRELIMINARY SAFETY ANALYSIS REPORT)  
PACIFIC GAS AND ELECTRIC COMPANY  
147 PAGES, 54 FIGURES, 10 TABLES, 14 REFERENCES, OCTOBER 19, 1967, DOCKET NO. 50-275, TYPE--PWR,  
MFG--WEST., AE--PG+E

SUPPLEMENT 4 CONTAINS - (1) ADDITIONAL TSUNAMI INFORMATION, (2) REVISION 1 OF WCAP-5890, ULTIMATE STRENGTH CRITERIA TO ENSURE NO LOSS OF FUNCTION OF PIPING AND VESSELS UNDER EARTHQUAKE LOADING, (3) ADDITIONAL INFORMATION AND CORRECTIONS TO SUPPLEMENTS 1, 2, AND 3, AND (4) REVISED PAGES TO PSAR. ALSO INCLUDES FINANCIAL DATA IN RESPONSE TO DRL LETTER OF 11 JULY 67 AND THE 1966 ANNUAL REPORT.

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

DIABLO CANYON (PWR) + EARTHQUAKE ENGINEERING + REACTOR, PWR + REPORT, PSAR + TSUNAMI

18-20363 ALSO IN CATEGORY 2  
SECTION I. ADDITIONAL INFORMATION ON TSUNAMIS  
PACIFIC GAS AND ELECTRIC COMPANY  
55 PAGES, 18 FIGURES, 5 TABLES, 4 REFERENCES, PAGE 1-20 OF AMENDMENT 5, TO THE LICENSE APPLICATION, (FOURTH SUPPLEMENT TO DIABLO CANYON PRELIMINARY SAFETY ANALYSIS REPORT), SECTION 4, OCTOBER 19, 1967, DOCKET NO. 50-275, TYPE--PWR, MFG--WEST., AE--PG+E

SECTION I INCLUDES - (A) SUPPLEMENTARY REPORT ON TSUNAMI STUDIES, BY MARINE ADVISERS, INC. GIVES RESULTS OF A STUDY (IN RESPONSE TO AEC QUESTIONS) ON TSUNAMIS RECENTLY RECORDED IN THE PACIFIC, AND DISCUSSES POSSIBILITY OF A LARGE TSUNAMI AND WAVE RUNUP AT DIABLO CANYON. (B) 2 BULLETINS (A DEEP OFF THE COAST OF MEXICO AND CENTRAL AMERICA, AND, SEISMIC ACTIVITY IN MEXICO DURING JUNE 1932). (C) REPORT BY R. E. HOUTZ ON THE 1953 SUVA TSUNAMI. (D) REPORT ON 1918 RUSSIAN TSUNAMI. (E) 2ND SUPPLEMENT TO REPORT ON TSUNAMI POTENTIAL AT DIABLO CANYON (REFRACTION OF APPROACHING TSUNAMI).

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

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-20863 \*CONTINUED\*  
\*TSUNAMI + DIABLO CANYON (PWR) + EARTHQUAKE + REACTOR, PWR + FFQPT, PSAR + SITING, REACTOR

18-20954 ALSO IN CATEGORY 2  
APPENDIX A. PLANT SITE GEOLOGY  
PACIFIC GAS AND ELECTRIC COMPANY  
14 PAGES, 1 FIGURE, PAGES 1-13 OF AMENDMENT 3 TO THE LICENSE APPLICATION (THIRD SUPPLEMENT TO DIABLO CANYON PRELIMINARY SAFETY ANALYSIS REPORT), JULY 31, 1967, DOCKET 50-275, TYPE--PWR, MFG--WEST., AE--PG+E

GEOLOGY OF THE DIABLO CANYON POWER PLANT SITE, SAN LUIS OBISPO COUNTY, CALIFORNIA  
(SUPPLEMENTARY REPORT II, BY RICHARD H. JOHNSON, JULY 6, 1967). APPENDIX A PRESENTS DETAILS ON RELATIONSHIPS OF FAULTS AND SHEARS AT THE SITE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20422

AEC QUESTION + EARTHQUAKE + GEOLOGICAL CONSIDERATION, GENERAL + REACTOR, PWR + REPORT, PSAR + SITING, REACTOR

18-20991 ALSO IN CATEGORY 12  
ULTIMATE STRENGTH CRITERIA TO ENSURE NO LOSS OF FUNCTION OF PIPING AND VESSELS UNDER EARTHQUAKE LOADING  
PACIFIC GAS AND ELECTRIC CO.  
WCAP-5890 +. 47 PAGES, 17 FIGURES, 2 TABLES, 9 REFERENCES, JUNE 12, 1967, AMENDMENT 1 TO LICENSE APPLICATION (FIRST SUPPLEMENT TO DIABLO CANYON PRELIMINARY SAFETY ANALYSIS REPORT), JULY 10, 1967, DOCKET 50-275, TYPE--PWR, MFG--WEST, AE--PG+E

WESTINGHOUSE REPORT DISCUSSES AND FORMULATES DESIGN CRITERIA AND COVERS ANALYTICAL PROCEDURES IN ANALYSIS OF PIPING AND CONTAINERS.

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

\*EARTHQUAKE ENGINEERING + \*PIPING + ANALYTICAL MODEL + CONTAINMENT ANALYSIS + DESIGN CRITERIA + MATHEMATICAL TREATMENT

18-20992 ALSO IN CATEGORY 9  
USE OF PART LENGTH ABSORBER RODS IN WESTINGHOUSE PRESSURIZED WATER REACTORS  
PACIFIC GAS AND ELECTRIC CO.  
WCAP-7072 +. 24 PAGES, 11 FIGURES, AMENDMENT 1 TO APPLICATION FOR LICENSE (FIRST SUPPLEMENT TO DIABLO CANYON PRELIMINARY SAFETY ANALYSIS REPORT), JUNE 1967, DOCKET 50-275, TYPE--PWR, MFG--WEST, AE--PG+E

THE PART-LENGTH RODS, PROVIDED IN ADDITION TO THE NORMAL CONTROL-ROD SYSTEM, ARE FOR SHAPING THE AXIAL POWER DISTRIBUTION AND CONTROLLING AXIAL XENON OSCILLATIONS. 8 RODS ARE TO BE USED.

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

\*CONTROL ROD + POWER DISTRIBUTION + XENON OSCILLATION

18-21211  
SCHLECHTENDAHLE G + CRAMER M + GAST K  
SAFETY FEATURES OF A 300MW SODIUM COOLED FAST BREEDER REACTOR (NA2)  
KERNFORSCHUNGSZENTRUM, KARLSRUHE, GERMANY  
KFK-611 + EURFNR-368 +. 25 PAGES, 10 FIGURES, 2 TABLES, 10 REFERENCES, JUNE 1967

PRESENTS A BRIEF DESCRIPTION OF THE DESIGN AND SUMMARIZES RESULTS OF THE ACCIDENT ANALYSIS FOR REACTIVITY PERTURBATIONS, COOLANT-SYSTEM FAILURES, AND SAFETY-SYSTEM FAILURE. THE CONTAINMENT DESIGN IS BASED ON THE REQUIREMENTS OF A NUCLEAR ACCIDENT RESULTING FROM A SEVERE COMPONENT FAILURE COINCIDING WITH FAILURE OF THE PREVENTIVE SAFEGUARDS. THE DESIGN-BASIS ACCIDENT WOULD RESULT IN 2-HR DOSES AT 500 METERS OF 0.98 REM TO THE BONES AND 0.17 REM TO THE THYROID.

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

\*ACCIDENT ANALYSIS + ACCIDENT, LOSS OF FLOW + ACCIDENT, REACTIVITY + CONTAINMENT, GENERAL + DESIGN STUDY + GERMANY + REACTOR, LMCR

18-21214  
HECKER R + RAUSCH W + SCHULTEN K  
DEVELOPMENT OF HIGH-TEMPERATURE THERMAL REACTORS IN GERMANY  
BROWN BOVERI/KRUPP REAKTORBAU G.M.B.H., DUESSELDORF (WEST GERMANY). KERNFORSCHUNGSANLAGE, JUELICH (WEST GERMANY)  
EUR-3493E + CONF-661213-1 +. 32 PAGES, 3 REFERENCES, APRIL 12, 1967, PRESENTED AT 9TH INTERNATIONAL MEETING ON NUCLEAR ENERGY, MILAN, ITALY

DISCUSSES THE STATUS AND ECONOMICAL ASPECTS OF THREE HIGH-TEMPERATURE REACTOR PROJECTS (AVR, THTR, GHH) UNDER DEVELOPMENT IN GERMANY. THE TWO DEVELOPMENT APPROACHES ARE - (1) THE DIRECT

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-21214 \*CONTINUED\*

COUPLING OF GAS TURBINE AND HIGH-TEMPERATURE REACTOR WHICH CAN LOWER THE CAPITAL COST AND GIVE HIGHER EFFICIENCY, AND (2) THE PEBBLE-BED CONCEPT, WHICH DEMONSTRATES OPTIMUM FLEXIBILITY FOR FUEL MANAGEMENT.

AVAILABILITY - MICROCARD EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN 54660

ECONOMICS + GERMANY + REACTOR, HTGR + REACTOR, PEBBLE BED + REVIEW

18-21217

HARANO H + GANNO S + SUMIZU K + OHNISHI S + KIMURA N + IMAI T + TSUZUKI T  
GAMMA-RAY IRRADIATION FACILITY FOR BIOCHEMICAL RESEARCH  
KYOTO UNIV.

15 PAGES, 8 FIGURES, 5 TABLES, 12 REFERENCES, J. RADIAT. RES. (JAP.) 7, PAGE 67-82, (JUNE 1966)

DESCRIBES THE DESIGN, OPERATION, AND DOSE RATES OF A 100-CURIE CO-60 IRRADIATION FACILITY. DOSE RATES OF 6000 TO 50,000 R/HP ARE POSSIBLE. THE FACILITY IS EQUIPPED WITH A TEMPERATURE-CONTROL SYSTEM AND A SYSTEM FOR CIRCULATING LIQUIDS DURING EXPOSURE.

\*IRRADIATION TESTING + \*RADIOBIOLOGY + CHEMICAL REACTION + JAPAN + RADIATION EFFECT

18-21218

LOW-ENRICHED PM REPLACEMENT CORE. EVALUATION OF CORE DESIGNS USING ALTERNATE PRESSURE VESSEL HEADS  
HITTMAN ASSOCIATES, INC., BALTIMORE, MD.  
HIT-3593-27 +. 37 PAGES, FIGURES, TABLES, REFERENCES, MAY 12, 1966

TWO CORE DESIGNS ARE EVALUATED WHICH ARE NOT RESTRICTED TO BE COMPATIBLE WITH THE PM-1 AND -3A PRESSURE-VESSEL HEADS. A COMPARISON OF THE ALTERNATIVE DESIGNS TO ONE WHICH IS COMPATIBLE WITH BOTH VESSEL HEADS INDICATES THAT THE ALTERNATIVES ARE INFERIOR IN REGARD TO COST, LIFETIME, AND THERMAL PERFORMANCE.

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

\*DESIGN STUDY + \*FUEL ELEMENT + ECONOMICS + MODIFICATION, SYSTEM OR EQUIPMENT + PM 1 (PWR) + PM 3A (PWR) + REACTOR, MILITARY + REACTOR, PWR + THERMAL ANALYSIS

18-21219

GOFFARD JW + MARSHALL RK  
IRRADIATION BEHAVIOR OF ZIRCALOY-2 CLAD THORIUM-URANIUM-ZIRCONIUM FUEL ELEMENTS. INTERIM REPORT NO. 1  
BATTELLE-NORTHWEST, RICHLAND, WASH. PACIFIC NORTHWEST LAB.  
BNWL-479 +. 29 PAGES, 13 FIGURES, 6 TABLES, 9 REFERENCES, SEPT. 1967

PERFORMANCE OF 7 ZIRC-2-CLAD, TH/2.5% ENRICHED U-1% ZR ALLOY FUEL ELEMENTS HAS BEEN EXCELLENT TO BURNUPS OF 2.1 AT. % (18,600 MWD/T). VOLUME EXPANSION WAS ABOUT EQUAL TO THAT EXPECTED FROM THE FISSION-PRODUCT FRAGMENTS. METALLOGRAPHIC EXAMINATION OF A 1.4% BURNUP ELEMENT SHOWED NO EVIDENCE OF FUEL POROSITY AND LITTLE CRYSTALLOGRAPHIC DAMAGE. VOLUME EXPANSION WAS 1.6% FUEL-VOLUME INCREASE. LENGTH INCREASE WAS 1%. DIAMETER, 0.4%.

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

\*CLAD + \*FUEL ELEMENT + \*IRRADIATION TESTING + BATTELLE NORTHWEST + R AND D PROGRAM + THORIUM + URANIUM + ZIRCALOY + ZIRCONIUM

18-21220

PLUMLEE KE + CRAIG DS + DATES LR + JULIANO JO + KELBER CN + LENNOX DH  
ADDENDA TO THE HAZARDS SUMMARY REPORT ON THE OXIDE CRITICAL EXPERIMENTS  
ARGONNE NATIONAL LAB., ILL.  
ANL-5715(ADD.) +. 65 PAGES, 5 FIGURES, 3 TABLES, MARCH 1967

REPORT CONTAINS ADDENDA I, II, AND III (ALL PREVIOUSLY ISSUED WITHOUT REPORT NUMBERS). ADDENDUM I COVERS REPLACEMENT OF THE PRESENT ZPR-7 CORE WITH ONE FOR THE ARGONNE HIGH FLUX REACTOR (A LIGHT-WATER FLUX-TRAP CORE) AND GIVES RESULTS OF THE AHER CRITICAL ASSEMBLY EXPERIMENTS. ADDENDUM II COVERS HIGH-CONVERSION CRITICAL EXPERIMENTS. ADDENDUM III COVERS INTERNAL-SUPERHEATER CRITICAL EXPERIMENTS, INCLUDING BORAX V.

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

\*HAZARDS ANALYSIS + CRITICAL ASSEMBLY FACILITY + R AND D PROGRAM + REPORT, SAR

18-21221

HEAVY WATER ORGANIC COOLED REACTOR. QUARTERLY TECHNICAL PROGRESS REPORT, APRIL-JUNE 1966

CATEGORY 1P  
SAFETY ANALYSIS AND DESIGN REPORTS

18-21221 \*CONTINUED\*  
ATOMICS INTERNATIONAL, CANOGA PARK, CALIF. COMBUSTION ENGINEERING, INC., WINDSOR, CONN.  
AI-CE-54 +. 214 PAGES, 68 FIGURES, 44 TABLES, OCTOBER 1, 1967

ONE OF A SERIES OF REPORTS COVERING RESEARCH AND DEVELOPMENT IN PWOOR PROGRAM. REPORT  
INCLUDES RESULTS OF TESTING OF VARIOUS STRUCTURAL MATERIALS (ESPECIALLY THE SAP-STEEL JOINTS)  
AND AN EVALUATION OF THE MCA.

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

CORE COMPONENTS + R. AND D PROGRAM + REACTOR, HWR + REACTOR, ORGANIC COOLED

18-21291 ALSO IN CATEGORY 1  
DIABLO CANYON CONFORMANCE WITH PROPOSED GENERAL DESIGN CRITERIA  
PACIFIC GAS AND ELECTRIC COMPANY, SAN FRANCISCO, CALIF.  
8 PAGES, SEPTEMBER 8, 1967, DOCKET NO. 50-275, TYPE--PWR, MFG--WEST., AE--PG+E

LISTS SIGNIFICANT PSAR (AND SUPPLEMENTS) CHAPTERS WHICH DEAL WITH EACH CRITERION OF JULY 1967.

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

\*AEC DESIGN CRITERIA + DIABLO CANYON (PWR) + REACTOR, PWR + REPORT, PSAR

18-21293  
COLUMBIA U. (N.Y.) ASKS FOR CONSTRUCTION PERMIT EXTENTION  
COLUMBIA UNIVERSITY, CITY OF NEW YORK  
1 PAGE, NOV. 30, 1967, DOCKET NO. 50-208

SINCE LICENSING REVIEW MAY NOT BE COMPLETED BY 31 DEC. 67, WHEN CONSTRUCTION PERMIT EXPIRES,  
AN EXTENTION TO 30 JUNE 68 IS REQUESTED. REACTOR IS A TRIGA MK II.

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

CONSTRUCTION PERMIT PROCESS + REACTOR, RESEARCH + TRIGA (RR)

18-21334  
HOCKING JE  
PRELIMINARY DESIGN REPORT-PROTOTYPE STEAM GENERATOR. VOL. 3. EFFECTS OF SODIUM-WATER REACTION ON STEAM  
GENERATOR. SODIUM-HEATED STEAM GENERATOR DEVELOPMENT  
BARCOCK AND WILCOX CO., BARBERTON, OHIO. BOILER DIV.  
BAW-1280-28(VOL.3) +. 140 PAGES, TABLES, NOVEMBER 15, 1965

SUMMARIZES THE RESULTS OF AN ANALYSIS OF A SINGLE-TUBE-WALL STEAM GENERATOR TO DETERMINE THE  
MAXIMUM NUMBER OF TUBES THAT MAY FAIL AS A RESULT OF AN INITIAL LEAK FROM A SINGLE TUBE.  
CONSIDERS THE EFFECTS OF STRAIN HARDENING, CORROSION, SUPPORT VIBRATION, LOCALIZED BULGE  
FAILURE, STRUCTURAL FAILURES, AND THE CREDIBILITY OF OVERHEATING THE SHELL AND LINER.

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

\*METAL WATER REACTION + \*STEAM GENERATOR + CORROSION + DESIGN STUDY + FAILURE, TUBING + SODIUM +  
STRUCTURAL INTEGRITY + VIBRATION

18-2133P  
HOCKING JE  
PRELIMINARY DESIGN REPORT-PROTOTYPE STEAM GENERATOR. VOL. 2. STRESS ANALYSIS. SODIUM-HEATED STEAM  
GENERATOR DEVELOPMENT  
BARCOCK AND WILCOX CO., BARBERTON, OHIO. BOILER DIV.  
BAW-1280-28(VOL.2) +. 184 PAGES, NOVEMBER 15, 1965

SUMMARIZES THE ANALYTICAL RESULTS, ASSUMPTIONS, AND METHODS OF SOLUTION FOR STRESS PROBLEMS TO  
ENSURE STRUCTURAL INTEGRITY UNDER BOTH STEADY-STATE AND TRANSIENT CONDITIONS.

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

\*STEAM GENERATOR + \*STRESS ANALYSIS + DESIGN STUDY + SODIUM + STRUCTURAL INTEGRITY

18-21400  
AQUEOUS HOMOGENEOUS SUSPENSION REACTOR PROJECT. PART B, KSTR. DESIGN AND CONSTRUCTION, ANNUAL REPORT  
KEURING VON ELEKTROTECHNISCHE MATERIALEN, N.V., NETHERLANDS  
NP-16168 (PT. B) +. 27 PAGES, 1965

REPORTS ONLY THE DESIGN AND CONSTRUCTION PROGRESS OF THE KEMA SUSPENSION TEST REACTOR.

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-21400 \*CONTINUED\*

AVAILABILITY - MICROCARD EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN,  
54666

DESIGN STUDY + NETHERLANDS + R AND D PROGRAM + REACTOR, CIRCULATING FUEL

18-21416

DRL NOTICE OF PROPOSED ISSUANCE OF CONSTRUCTION PERMIT FOR GULF G.A. EXPERIMENTAL CRITICAL FACILITY  
AEC, DIVISION OF REACTOR LICENSING, WASHINGTON, D. C.  
11 PAGES; NOV. 22, 1967, DOCKET NO. 50-234

AUTHORIZES GULF-G.A. TO MODIFY THE EXPERIMENTAL CRITICAL FACILITY TO PERFORM THE THERMIONIC CRITICAL EXPERIMENT IN THE CELL FORMERLY HOUSING THE TUNGSTEN NUCLEAR ROCKET CRITICAL FACILITY AT TORREY PINES. FACILITY WILL BE USED TO CHECK ANALYTICAL METHODS AND CROSS-SECTION DATA USED IN DESIGN OF THERMIONIC POWER REACTOR CORES. FACILITY IS DESIGNED TO SURVIVE A 0.25-G EARTHQUAKE. FUEL ELEMENTS CONSIST OF 1-IN. LAMINATED BLOCKS OF ENRICHED URANIUM FOIL. SPRING-LOADED SCREWS ARE RELEASED AT ABOUT 105 C (WHEN THE PHENOXY SLEEVES RESTRAINING THEM MELT). THESE SPRINGS SEPARATE THE FUEL BLOCKS AND SHUT DOWN THE ASSEMBLY. THERMAL EXPANSION OF THE FUEL ITSELF IS SUFFICIENT TO CONTAIN A PROMPT POWER BURST. THE CORE WILL BE SURROUNDED BY A CAGE TO PREVENT A FAT-MAN ACCIDENT.

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

CRITICAL ASSEMBLY FACILITY + REACTOR, FAST + SAFETY EVALUATION + SHUTDOWN MECHANISM, SELF

18-21430

GEORGIA TECH APPLIES FOR LICENSE TO OPERATE AGN-201  
GEORGIA INSTITUTE OF TECHNOLOGY, ATLANTA, GA.  
27 PAGES, 3 FIGURES, DOCKET NO. 50-276, NOVEMBER 17, 1967

GEORGIA TECH APPLIES FOR LICENSE FOR REACTOR OBTAINED FROM UNIVERSITY OF AKRON. GIVES FINANCIAL, ADMINISTRATIVE, AND PERSONNEL INFORMATION. EXCESS REACTIVITY IS 0.5% BARE, 0.65% WITH EXPERIMENTS. MAXIMUM POWER IS 0.1 WATT.

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

AGN (TNG) + LICENSING STATUS OF NUCLEAR PROJECTS + REACTOR, TRAINING

18-21442

PM-3A TYPE 2 CORE SAFEGUARDS ANALYSES  
HITTMAN ASSOCIATES, INC., BALTIMORE, MD.  
HIT-3616-4 +. 58 PAGES; FIGURES, TABLES, JANUARY 14, 1966

PRESENTS RESULTS OF ANALYSIS OF ACCIDENTS WHICH INCLUDE COLD STARTUP, REACTIVITY INSERTION, COLD WATER, LOSS OF COOLANT, SECONDARY SYSTEM TRANSIENTS, AND A REFUELING ACCIDENT. A GUIDE-RAIL SYSTEM WAS RECOMMENDED TO PREVENT THE CORE FROM TURNING OVER IN REFUELING. THE FISSION-PRODUCT INVENTORY WAS CALCULATED FOR END OF CORE LIFE (24 MW-YR). FOR 1/2 HR AFTER SHUTDOWN, THE TOTAL IS 13.1 MILLION CURIES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA., \$3.00  
COPY, \$0.65 MICROFICHE\*ACCIDENT ANALYSIS + ACCIDENT, COLD COOLANT + ACCIDENT, LOSS OF COOLANT + ACCIDENT, REACTIVITY +  
FUEL HANDLING + MODIFICATION, SYSTEM OR EQUIPMENT + PM 3A (PWR) + REACTOR, MILITARY + REACTOR, PWR

18-21444

HENDRIE JM + SHEEHAN TV  
REPORT ON HFBR MODIFICATIONS AND TESTS PREPARATORY TO OPERATING AUTHORIZATION  
BROOKHAVEN NATIONAL LABORATORY, UPTON, N.Y.  
BNL-9308 +. 75 PAGES, AUGUST 1965

DESCRIBES MODIFICATIONS, TESTS, AND SAFETY PROCEDURES WHICH WERE COMPLETED AS REQUIRED BY ACRS PRIOR TO OPERATION BY DESCRIBING THE AS-IS SITUATION WITHOUT INDICATING THE CHANGES (26 PAGES). OPERATING LIMITS AND EMERGENCY PROCEDURES ARE INCLUDED IN THE APPENDICES (45 PAGES).

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA., \$3.00  
COPY, \$0.65 MICROFICHEEMERGENCY PROCEDURE + HFBR (PP) + MODIFICATION, SYSTEM OR EQUIPMENT + REACTOR, HWR + REACTOR, RESEARCH +  
TECHNICAL SPECIFICATIONS + TEST, PREOPERATIONAL

18-21452

WISCONSIN ELECTRIC POWER BECAME HALF OWNER OF POINT BEACH I  
USAEC, DIVISION OF REACTOR LICENSING  
5 PAGES, POINT BEACH I, AMENDMENT 1 TO CONSTRUCTION PERMIT, DOCKET 50-266, TYPE--PWR, MFG--WEST.,

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-21452 \*CONTINUED\*  
AE--BECHTEL, DECEMBER 18, 1967

WISCONSIN POWER COMPANY RETAINS RESPONSIBILITY FOR DESIGN AND CONSTRUCTION. POINT BEACH 1 IS  
A 1396-MWT PWR IN MANITOWOC COUNTY, WISCONSIN.

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

POINT BEACH 1 AND 2 (PWR) + REACTOR, PWR + REPORT, SAR

18-21455  
AMENDMENT NO. 3, SURRY POWER STATION UNITS 1 AND 2, TABULATION AND CHANGES  
VIRGINIA ELECTRIC AND POWER COMPANY, RICHMOND, VA.  
30 PAGES, 10 REFERENCES, 2 TABLES, 2 FIGURES, DOCKET 50-280/281, TYPE--PWR, MFG--WEST, AE--STONE +  
WEBSTER, AUGUST 24, 1967

AMENDMENT 3 INCLUDES SUPPLEMENTAL ANSWERS TO SEVEN QUESTIONS (9.1 THROUGH 9.7) ON SITE AND  
ENVIRONMENTAL CONSIDERATIONS. THIS INFORMATION WAS REQUESTED BY AEC ON AUGUST 14, 1967.

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

AEC QUESTION + REACTOR, PWR + REPORT, PSAR + SITING, REACTOR + SURRY 1 AND 2 (PWR)

18-21463  
KASS S  
CORROSION AND HYDROGEN PICKUP OF ZIRCALOY IN CONCENTRATED LITHIUM HYDROXIDE SOLUTIONS  
WESTINGHOUSE ELECTRIC CORP., PITTSBURGH, PA.  
WAPD-TM-656 +. 52 PAGES, 40 FIGURES, 5 TABLES, 13 REFERENCES, OCTOBER 1967

DESCRIBES A METHOD FOR EXPERIMENTALLY PRODUCING A PREDETERMINED DEGREE OF HYDRIDING.  
PROCEDURE CAN BE ALTERED TO YIELD EITHER UNIFORM HYDROGEN DISTRIBUTION OR HYDRIDE RIMS.  
PROCEDURE IS SIMPLE. HANDLES BOTH LARGE AND SMALL SPECIMENS AND CAN BE DONE AT LOW  
TEMPERATURES TO LIMIT TEMPERATURE EFFECTS.

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

\*CLAD + HYDRIDE + ZIRCALOY + BRITTLE FRACTURE + COOLANT CHEMISTRY + FAILURE, CLADDING + LITHIUM +  
R AND D PROGRAM

18-21464  
SUPPLEMENT NO. 2 TO THE PRELIMINARY SAFETY ANALYSIS REPORT OF PEACH BOTTOM ATOMIC POWER STATION, UNITS 2  
AND 3  
PHILADELPHIA ELECTRIC COMPANY  
93 PAGES, 52 FIGURES, 4 TABLES, 16 REFERENCES, DOCKET 50-277 AND 50-278, TYPE--BWR, MFG--G.E.,  
AE--BECHTEL, SEPTEMBER 9, 1967

SUPPLEMENT 2 CONTAINS ANSWERS TO 6 (OF 7) QUESTIONS PUT BY AEC IN LETTER OF AUGUST 18, 1967.  
ANSWER TO QUESTION 1 WILL BE SUBMITTED LATER. ALSO INCLUDED IS INFORMATION RELATING TO  
MATTERS DISCUSSED AT AEC REVIEW MEETING OF SEPTEMBER 1, 1967, AND A REPORT MEMORANDUM SCER-60  
(TECHNOLOGY OF BOILING WATER REACTOR STABILITY ANALYSIS) JULY 1967, APED-GE.

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

AEC QUESTION + PEACH BOTTOM 2 AND 3 (BWR) + REACTOR, BWR + REPORT, PSAR

18-21662  
DRL REQUESTS ADDITIONAL INFORMATION ON 3 MILE ISLAND CONSTRUCTION PERMIT  
USAEC DIVISION OF REACTOR LICENSING  
6 PAGES, DOCKET 50-248, TYPE--PWR, MFG--E+W, AE--GILBERT ASSOC., NOVEMBER 22, 1967

ATTACHED LIST OF QUESTIONS INDICATE ADDITIONAL INFORMATION NEEDED, AS DISCUSSED IN OCT. 17-19,  
1967, MEETING. CATEGORIES OF QUESTIONS ARE - GENERAL (3), SITE (2), STRUCTURAL DESIGN (7),  
REACTOR DESIGN (4), ENGINEERED SAFETY FEATURES (7), INSTRUMENTATION AND CONTROL (7).

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

AEC QUESTION + REACTOR, PWR + REPORT, PSAR + THREE MILE ISLAND (PWR)

18-21663 ALSO IN CATEGORY 11  
DRL REQUESTS ADDITIONAL INFORMATION ON ZION STATION PSAR-STRUCTURAL DESIGN  
USAEC DIVISION OF REACTOR LICENSING  
6 PAGES, DOCKET 50-274 AND 50-304, TYPE--PWR, MFG--WEST., AE--SGT + LUNDY, NOVEMBER 1967

DRL ASKS 21 QUESTIONS RELATED TO STRUCTURAL AND COMPONENT DESIGN. ZION PSAR DID NOT MEET THE



CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-21653 \*CONTINUED\*  
REQUIREMENTS OF THE AEC GUIDE FOR THE ORGANIZATION AND CONTENTS OF SAFETY ANALYSIS REPORTS (DESIGN BASES WERE NOT IDENTIFIED OR EXPLAINED, ETC.). SEISMIC-DESIGN INFORMATION WAS INCOMPLETE, AS WAS CONTAINMENT-DESIGN INFORMATION. INSPECTION AND SURVEILLANCE PROGRAMS, QUALITY CONTROL, AND TESTING WERE INADEQUATELY COVERED.

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

\*AEC DESIGN CRITERIA + AEC QUESTION + CONSTRUCTION PERMIT PROCESS + REACTOR, PWR + REPORT, PSAR + ZION 1 AND 2 (PWR)

18-21669 ALSO IN CATEGORY 1  
PUBLIC ATTITUDES AFFECTING THE GROWTH OF ATOMIC POWER PLANTS IN CALIFORNIA  
OFFICE OF ATOMIC ENERGY DEVELOPMENT AND RADIATION PROTECTION, STATE OF CALIF., SACRAMENTO  
14 PAGES, DECEMBER 1967

A SUMMARY OF A SURVEY BY OPINION RESEARCH CORP. FOR CALIFORNIA OFFICE OF ATOMIC ENERGY DEVELOPMENT AND RADIATION PROTECTION. PAMPHLET COVERS OPINION IN SANTA MONICA, SAN LUIS OBISPO, AND SACRAMENTO, AS WELL AS A STATE-WIDE OPINION SAMPLE. THE MAIN RESULTS ARE - (1) THE GENERAL PUBLIC KNOWS LITTLE ABOUT THE NUCLEAR POWER INDUSTRY AND WANTS TO KNOW MORE, (2) ABOUT 3 TO 1 FOR NUCLEAR PLANTS NEAR THEM (SANTA MONICA, LESS THAN 2 TO 1), (3) IN ANSWER TO - ARE THERE ANY NUCLEAR POWER PLANTS IN CALIFORNIA NOW - 31%-YES, 23%-NO, AND 46%-DONT KNOW, (4) SUPPORT FOR POWER PLANT IN GENERAL AREA VARIED FROM 75% IN FAVOR, 13% DO NOT CARE, AND 7% OPPOSED AT SAN LUIS OBISPO, TO 37, 24, AND 24, RESPECTIVELY, AT SANTA MONICA, AND (5) MORE THAN 7 TO 1 FELT NUCLEAR PLANTS WERE LESS LIKELY TO CAUSE POWER FAILURE. GREATEST FEAR WAS RADIATION (17%), LESS THAN 1% WORRIED ABOUT EARTHQUAKE DAMAGE TO PLANTS.

AVAILABILITY - OFFICE OF ATOMIC ENERGY DEVELOPMENT AND RADIATION PROTECTION, SACRAMENTO, CALIFORNIA  
RADIATION, PUBLIC EDUCATION/ACCEPTANCE + PEACTOR, POWER

18-21721  
SECOND SUPPLEMENT TO PRELIMINARY SAFETY ANALYSIS REPORT. INDIAN POINT NUCLEAR GENERATING UNIT NO. 2  
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.  
157 PAGES, 54 FIGURES, 27 REFERENCES, 8 TABLES, DOCKET 50-247, TYPE--PWR, MFG--WEST., AE--UNITD ENGR, MAY 1966

THIS EXHIBIT ANSWERS 13 QUESTIONS RAISED BY AEC REGULATORY STAFF IN LETTER DATED MAY 11, 1966, REGARDING CONTAINMENT DESIGN, LOSS-OF-COOLANT ACCIDENT DETAILS, AND EMERGENCY COOLING.

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

AEC QUESTION + INDIAN POINT 2 (PWR) + REACTOR, PWR + REPORT, PSAR

18-21735 ALSO IN CATEGORIES 6 AND 8  
FRENCH RJ + GALLAGHER JM + MOORE JS + SALVATORI R  
INDIAN POINT UNIT NO. 2 ROD EJECTION ANALYSIS  
WESTINGHOUSE ELECTRIC CORP., PITTSBURGH, PA.  
WCAP-2940 +. 106 PAGES, 45 FIGURES, 7 TABLES, 25 REFERENCES, OF SECOND SUPPLEMENT TO INDIAN POINT 2  
PRELIMINARY SAFETY ANALYSIS REPORT (EXHIBIT B-2), MAY 1966, DOCKET 50-247, TYPE--PWR, MFG--WEST,  
AE--UNITD ENGR

(INCLUDED IN PSAR SUPPLEMENT 2.) ANALYSIS USES CHIC-KIN FOR KINETICS, AND HAS 1.5 OR 1.0 REACTIVITY % FOR EJECTED ROD (0 OR 102% POWER) AND 1.5% FOR POSITIVE MODERATOR EFFECT WITH A SCRAM AFTER 1.5 SEC. ALTHO SOME FUEL MELTING WOULD OCCUR, PEAK SYSTEM PRESSURE IS LESS THAN 6000 PSIA. A SHOCK-WAVE ANALYSIS FOR REACTOR VESSEL INDICATES THAT 1/3 OF CUPE MUST BECOME MOLTEN AND DISPERSED TO DILATE VESSEL WALL UP TO 50% ULTIMATE ELONGATION (BASED ON TNT EXPERIMENTS AT NRL-WISE).

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

\*ACCIDENT ANALYSIS + \*ACCIDENT, CONTROL ROD EJECTION + EXPLOSION + FUEL MELTDOWN + INTEGRITY + PRESSURE VESSEL

18-21797  
FRISCH A + HELLER F + HUEBSCHMANN W + MALANG S + MUELLER A + SCHIKARSKI W + SMIDT D + WOITE G  
SAFETY ASPECTS OF STEAM COOLED FAST BREEDER REACTORS  
KERNFORSCHUNGSZENTRUM, KARLSRUHE  
KFK-613 +. 29 PAGES, 18 FIGURES, 8 REFERENCES, JUNE 1967

PRESENTS SOME RESULTS OF THE DYNAMIC AND SAFETY ANALYSIS OF THE FIRST GERMAN 1000-MWE STEAM-COOLED FAST-BREEDER REACTOR DESIGN. CONCLUSIONS ARE - (1) ALTHOUGH CONTROL SYSTEM IS NEEDED, NO OSCILLATIONS WILL OCCUR WITHOUT DNF. (2) DYNAMIC BEHAVIOR COULD BE IMPROVED BY MOVING REHEATERS. (3) THE LOSS-OF-COOLANT ACCIDENT REQUIRES A RELIABLE EMERGENCY COOLING SYSTEM AND ISOLATING VALVES. (4) SOME CONDITIONS REQUIRE THAT THE REACTOR NOT BE SCRAMMED AFTER FAILURE OF A BLOWER OR STEAM GENERATOR. (5) BEHAVIOR DURING TURBINE-LOAD CHANGES IS STRONGLY DEPENDENT ON THE DENSITY COEFFICIENT.

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-21797 \*CONTINUED\*

AVAILABILITY - MICROCARC EDITION, INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN 54669

\*REACTOR DYNAMICS + \*SAFETY ANALYSIS + ACCIDENT, LOSS OF COOLANT + ACCIDENT, LOSS OF FLOW + GERMANY + REACTOR STABILITY + REACTOR, BREEDER + REACTOR, FAST + REACTOR, GCR + STEAM

18-21806

PEACH BOTTOM 1 CHANGE 5--IRRADIATION OF TEST FUEL ELEMENTS

USAEC DIVISION OF REACTOR LICENSING

9 PAGES, DOCKET 50-171, TYPE--HTGR, MFG--G.A., AE--BECHTEL, DECEMBER 21, 1967

AUTHORIZES OPERATION WITH UP TO 5 FT. ST. VRAIN PROTOTYPE PROOF-TEST ELEMENTS, CONTAINING BOTH PYROLYTIC-CARBON-COATED AND SILICON-CARBIDE-COATED FUEL PARTICLES. THE TEST ELEMENT DOES NOT HAVE A PURGE STREAM TO REMOVE FISSION PRODUCTS AND CONTAINS 447 GRAMS OF FULLY ENRICHED U, COMPARED WITH 312 FOR A STANDARD ELEMENT. CORE IRRADIATION LOCATIONS AND A LIMIT OF 5 TEST ELEMENTS ARE SPECIFIED.

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

\*SAFETY EVALUATION + \*TECHNICAL SPECIFICATIONS + COATED PARTICLE + FUEL ELEMENT + IRRADIATION TESTING + PEACH BOTTOM 1 (HTGR) + REACTOR, HTGR + SILICON

18-21916

15 TELEGRAMS TO THE PRESIDENT PROTESTING CONSTRUCTION OF VERMONT YANKEE

1 PAGE, ATOMIC ENERGY CLEARING HOUSE 14(2), PAGE 32 (JANUARY 8, 1968) DOCKET 50-271, TYPE-BWR, MFG--G.E., AE--EBASCO

FIFTEEN TELEGRAMS FROM INDIVIDUALS TO THE PRESIDENT PROTESTING CONSTRUCTION OF THE PLANT WERE FORWARDED TO THE AEC FOR (QUOTE) SUITABLE ACKNOWLEDGMENT OR OTHER APPROPRIATE HANDLING (UNQUOTE).

\*CONSTRUCTION PERMIT PROCESS + \*RADIATION, PUBLIC EDUCATION/ACCEPTANCE + REACTOR, BWR + VERMONT YANKEE (BWR)

18-21917

ALSO IN CATEGORY 2

REPORT UPON FOUNDATION DYNAMICS FOR THE PROPOSED NUCLEAR POWER PLANT AT SURRY, VIRGINIA

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

52 PAGES, 23 FIGURES, 6 REFERENCES, AMENDMENT 4 (SUPPLEMENT VOLUME 1) OF THE APPLICATION FOR LICENSE FOR SURRY 1 AND 2, OCTOBER 6, 1967, DOCKETS 50-280/281, TYPE--PWR, MFG--WEST, AE--STONE + WEBSTER

(INCORPORATED IN SURRY 1 AND 2 PSAR, AMENDMENT 4.) ANALYTICAL MODEL AND CALCULATIONS OF EARTHQUAKE RESPONSE GIVEN IN DETAIL FOR SURRY AND FOR NIGATA. ALTHOUGH WATER TABLE IS AT ELEVATION ZERO, WATER STOOD IN DRILL HOLE FROM 2 TO 20 FT ELEV. DUE TO PERCHED AND SEASONAL WATER TABLES. RELATIVE DISPLACEMENT OF STRUCTURES IS LESS THAN 3 IN. FOR MAXIMUM HYPOTHETICAL EARTHQUAKE. SOILS UNDER CONTAINMENT BUILDING ARE MORE FAVORABLE (DETAILED COMPARISON MADE) THAN AT NIGATA, JAPAN, WHERE A SET OF SEVERE EARTHQUAKES IN 1964 PRODUCED NO LIQUEFACTION OR SETTLEMENT. SITE ALSO COMPARED WITH THAT AT MALIBU. \*\*\* VERY CONSERVATIVE ESTIMATES INDICATED THAT LIQUEFACTION MIGHT OCCUR IN THE SAND UNDER THE FUEL BUILDING. REPORT SUGGESTS THAT PLANNED USE OF PILES BE REVIEWED, AND, IF PILES ARE USED, STEPS BE TAKEN TO PREVENT LIQUEFACTION.

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

\*FOUNDATION ENGINEERING + \*LIQUEFACTION + ANALYTICAL MODEL + COMPARISON, THEORY AND EXPERIENCE + EARTHQUAKE ENGINEERING + REACTOR, PWR + SAFETY MARGIN + SITING, REACTOR + SOIL MECHANICS + SURRY 1 AND 2 (PWR)

18-21924

NINE MILE POINT AMENDMENT 3 TO PSAR--REVISED PAGES AND TECH SPECS.

LEPOEUF, LAMB AND LEHY, WASHINGTON, D. C.

164 PAGES, FIGURES, TABLES, NINE-MILE POINT UNIT 1, THIRD AMENDMENT TO THE FINAL SAFETY ANALYSIS REPORT; JULY 17, 1967, DOCKET NO. 50-220, TYPE--BWR, MFG--G.E., AE--NIAGARA MOHAWK

AMENDMENT 3 CONSISTS OF REVISED PAGES TO VOLS. I AND II OF THE PSAR, AND VOL. III - TECHNICAL SPECIFICATIONS.

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

NINE MILE POINT (BWR) + REACTOR, BWR + REPORT, PSAR + TECHNICAL SPECIFICATIONS

18-21929

ALSO IN CATEGORY 12

MONTICELLO AMENDMENT 3 TO PSAR--DESCRIPTION OF ENGINEERED SAFEGUARDS

NORTHERN STATES POWER COMPANY, MINNEAPOLIS, MINN.

83 PAGES, FIGURES, TABLES, MONTICELLO NUCLEAR GENERATING PLANT, THIRD AMENDMENT TO CONSTRUCTION PERMIT APPLICATION, DOCKET NO. 50-263, TYPE--PWR, MFG--G.E., AE--GECHTEL, DECEMBER 29, 1966

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-21929 \*CONTINUED\*  
AMENDMENT 3 CONSISTS OF REVISED PAGES TO THE PSAR, DESCRIBING THE REVISED ENGINEERED SAFEGUARDS SYSTEMS AND CORRECTING MINOR ERRORS.

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

\*ENGINEERED SAFETY FEATURE + MONTICELLO (BWR) + REACTOR, BWR + REPORT, PSAR

18-21954 ALSO IN CATEGORIES 15 AND 14  
SURVEY OF ENVIRONMENTAL RADIOACTIVITY IN THE VICINITY OF INDIAN POINT STATION, FEBRUARY 1, 1967 THROUGH JULY 31, 1967  
CONSOLIDATED EDISON COMPANY OF NEW YORK  
17 PAGES, 4 FIGURES, 6 TABLES, AUGUST 18, 1967, DOCKET NO. 50-3, TYPE--PWR, MFG--B+W, AE--CON ED

REPORTS RESULTS OF MONITORING OF PARTICLES IN AIR, FALLOUT, HUDSON RIVER MUD, ALGAE, VEGETATION, SOIL, LAKE WATER, HUDSON RIVER WATER, AND BACKGROUND GAMMA RADIATION. NO SIGNIFICANT CHANGES IN BACKGROUND RADIATION WERE FOUND.

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

\*MONITORING PROGRAM, ENVIRONMENTAL + \*SURVEY, RADIATION, ENVIRONMENTAL + ENVIRONMENTAL CONDITION + FALLOUT + INDIAN POINT 1 (PWR) + REACTOR, PWR + STACK

18-21971  
VERMONT YANKEE COOLING TOWER OPERATION  
4 PAGES, NUCLEAR INDUSTRY 14(12), PAGE 8-11, (DEC. 1967)

REVIEWS CAPITAL AND OPERATING COSTS OF VARIOUS TOWER, CONDENSER, AND OPEN/CLOSED CYCLES. INDUCED-DRAFT TOWERS (OPERATED IN SUMMER BASED ON WATER TEMP. INCREASE OF 4 F) WILL BE USED WITH PREVIOUSLY ORDERED SINGLE-PASS CONDENSER (TO SAVE CANCELLATION COSTS). ARTICLE DISCUSSES ATTITUDES OF VARIOUS DESIGN, AE, AND GOVERNMENT BODIES.

\*COOLING TOWER + \*MAIN COOLING SYSTEM + \*THERMAL POLLUTION + REACTOR, BWR + VERMONT YANKEE (BWR)

18-21972  
AIELLO P + AMADESI P + AZZONI P  
FAST FUEL ELEMENT TESTING REACTOR (P.E.C.). PRELIMINARY DESIGN STUDY. SECTION I  
COMITATO NAZIONALE PER L'ENERGIA NUCLEARE, BOLOGNA (ITALY)  
OFNL-TR-1786 + ARV-66-45 + . 60 PAGES, JULY 31, 1966

THE PEC REACTOR IS THE PRINCIPAL PROJECT IN THE CNEN (ITALY) FAST-REACTOR PROGRAM AND IS DESIGNED TO CARRY OUT IRRADIATION EXPERIMENTS ON FUEL-ELEMENT PROTOTYPES. FLUXES OF  $2.5 \times 10^{15}$  AND A POWER DENSITY OF LESS THAN 1 MW/LITER ARE EXPECTED, WITH THE POSSIBILITY OF REACHING  $9 \times 10^{15}$  AND 3 MW/LITER WITH ADVANCED CORES. REACTOR IS TO BE IN OPERATION IN 1972.

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

DESIGN STUDY + ITALY + REACTOR, FAST

18-21982  
QUAD CITIES AMENDMENT 1--PROVISION FOR QUAD CITIES UNIT 2  
COMMONWEALTH EDISON COMPANY, CHICAGO, ILL.  
106 PAGES, 42 FIGURES, TABLES, DOCKET 50-265, 50-254, TYPE--BWR, MFG--G.E., AE--SGT + LUNDY, AUGUST 16, 1966

PROVIDES SUBSTITUTE PAGES FOR QUAD CITIES 1 PSAR, DATED MAY 31, 1966, TO CONVERT IT TO A PSAR FOR A 2-UNIT PLANT. A SEPARATE PSAR FOR THE SECOND UNIT WILL NOT BE MADE. THE CHANGED LINES ARE INDICATED, MOST OF WHICH APPEAR TO BE SIMPLE CLARIFICATIONS OF LANGUAGE (E.G., CHANGE THE UNIT TO EACH UNIT). A FEW NEW ITEMS - SHARED COMPONENTS.

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

\*SHARED COMPONENTS + QUAD CITIES 1 AND 2 (BWR) + REACTOR, BWR + REPORT, PSAR

18-22105  
HARDE R + STROEHR KW  
THE COMPACT SODIUM-COOLED NUCLEAR REACTOR FACILITY IN KARLSRUHE (KNK)  
ANS-TRANS-519 + . 19 PAGES, FIGURES, TRANSLATED FROM ATOMWIRT. ATOMTECH., 11, PAGE 354-360, (1966)

THE 20-MWE EXPERIMENTAL POWER PLANT AT THE NUCLEAR RESEARCH CENTER HAS STEEL-JACKETED UO<sub>2</sub> FUEL AND ZIRCONIUM HYDRIDE MODERATOR. THE THERMAL REACTOR WILL BE USED TO TEST FAST-BREEDER FUELS. A FAST CORE IS A POSSIBILITY UNDER STUDY.

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-22105 \*CONTINUED\*  
\*REACTOR DESCRIPTION + FUEL ELEMENT + GERMANY + HYDRIDE + IRRADIATION TESTING + REACTOR, LMCP + REACTOR, TEST + ZIRCONIUM

18-22106  
HEAVY WATER ORGANIC COOLED REACTOR. STATUS AND POTENTIAL, JUNE 1967  
ATOMICS INTERNATIONAL, CANOGA PARK, CALIF. + COMBUSTION ENGINEERING, INC., WINDSOR, CONN.  
A1-CE-87 +. 129 PAGES, 21 FIGURES, 19 TABLES, 54 REFERENCES, AUGUST 21, 1967

ONE OF A SERIES OF REPORTS USUALLY COVERING (1) HWOCR CONCEPT, (2) PLANT DESCRIPTION AND EVALUATION, AND (3) R AND D STATUS (COOLANT, FUEL ASSEMBLY, PRESSURE TUBE, ON-POWER REFUELING MACHINE, COMPONENTS, CONTROL AND SAFETY).

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

\*R AND D PROGRAM + HWOCR (HEAVY WATER ORGANIC COOLED REACTOR)

18-22141  
MICHIGAN STATE UNIVERSITY TRIGA PSAR ADDENDUM-PSAR CHANGES  
MICHIGAN STATE UNIVERSITY, EAST LANSING, MICHIGAN  
12 PAGES, 2 FIGURES, 1 TABLE, DOCKET 50-264, DECEMBER 11, 1967

CHANGES INCLUDE THE FOLLOWING - (1) NORMAL REACTOR-ROOM AIR-EXHAUST RATE WAS INCREASED FROM 600 CFM TO 1200 BY INCREASING FAN SPEED TO ENSURE A CAPACITY OF 150 CFM THROUGH THE ABSOLUTE FILTER SYSTEM DURING AN EMERGENCY. (2) FUEL CASKS WILL BE BROUGHT IN THROUGH A HALLWAY (INSTEAD OF BY BOOM THROUGH A WINDOW) SO THAT REACTOR ROOM WILL BE CLOSED DURING FUEL TRANSFER. ENCLOSED AS PSAR APPENDIX 10 IS THE STANDARD TRIGA REPORT - FAILURE-MODE ANALYSIS FOR THE MICHIGAN STATE UNIVERSITY TRIGA MARK-1 CONSOLF SCRAM-AND-ROD-CONTROL CIRCUITS.

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

\*REFUELING + \*VENTILATION SYSTEM + CONTROL POD SCRAM MECHANISM + FAULT TREE ANALYSIS + REACTOR, RESEARCH + REPORT, PSAR + TRIGA (RR)

18-22144  
AGRS REPORT ON THE NATIONAL BUREAU OF STANDARDS REACTOR  
USAEC DIVISION OF REACTOR LICENSING  
7 PAGES, FEBRUARY 17, 1967, DOCKET 50-184

NBS AGREED TO MAKE 4 REVISIONS TO THE REACTOR BEFORE STARTUP. AGRS RECOMMENDED THAT ANY EXPERIMENTS INVOLVING THE POSSIBILITY OF LARGE CHEMICAL-ENERGY RELEASE BE REVIEWED BY DPL. PROPOSED CRYOGENICS FACILITY SHOULD BE REVIEWED BY DRL WHEN APPROPRIATE. AGRS APPROVED THE REVISED VENTILATION-MONITORING SYSTEM AND CONTAINMENT TESTS.

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

AGRS + CHEMICAL REACTION + CONTAINMENT SYSTEM, OPERATION OF + ENERGY SOURCE + IRRADIATION TESTING + MODIFICATION, SYSTEM OF EQUIPMENT + MONITORING SYSTEM, RADIATION + NBS + REACTOR, FLUX TRAP + REACTOR, HWR + REACTOR, RESEARCH + SAFETY EVALUATION + TESTING + VENTILATION SYSTEM

18-22194  
DEAN RA  
REACTOR CORE THERMAL PERFORMANCE  
WESTINGHOUSE ELECTRIC CORP., PITTSBURGH, PA.  
2 PAGES, 4 FIGURES, POWER ENGINEERING 72(1), PAGES 44-46 (JANUARY 1968)

IMPROVEMENTS IN THE THERMAL CYCLE WHICH CONTRIBUTED TO THE RAPID DEVELOPMENT OF PWRs INCLUDE (1) RAISING THE AVERAGE/PEAK HEAT-GENERATION RATE BY BETTER FUEL MANAGEMENT, (2) MINIMIZING VARIATIONS IN FUEL ASSEMBLY FABRICATION, (3) IMPROVED FLOW AND POWER DISTRIBUTION, AND (4) IMPROVED FLOW MIXING. IN A TYPICAL 1960 REACTOR, THE HOT-CHANNEL FACTOR WAS 3.36. NOW, WITH IMPROVED CORE DESIGN AND MORE REALISTIC CALCULATIONS, THE FACTOR HAS BEEN REDUCED TO 1.70. OTHER FACTORS INCLUDE HIGHER PRESSURES, INCREASED FLOW RATES, AND LARGER HEAT-TRANSFER AREAS.

\*POWER UPGRATING + \*THERMAL CONSIDERATION + HEAT TRANSFER + HOT CHANNEL FACTOR + PERFORMANCE LIMIT + REACTOR, PWR

18-22223 ALSO IN CATEGORY 2  
PILGRIM STATION AMENDMENT 3--SUPPLEMENTARY SITE INFORMATION  
BOSTON EDISON COMPANY, BOSTON, MASS.  
12 PAGES, 9 FIGURES, DOCKET 50-293, TYPE--BWP, MFG--G.E., AF--BECHTEL, DECEMBER 15, 1967

TRANSMITS A REPORT ON LOAD-BEARING CHARACTERISTICS OF SOIL AND SEISMIC DESIGN CONSIDERATIONS, ALSO REVISED PSAR FIGURES ON SITE PLOT-PLAN AND GENERAL ARRANGEMENT OF BUILDINGS.

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-22223 \*CONTINUED\*  
AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*FOUNDATION ENGINEERING + PILGRIM STATION (BWP) + REACTOR, BWR + REPORT, PSAR

19-22224 ALSO IN CATEGORY 17  
PATHFINDER PROPOSED AMENDMENT 42--STORAGE OF CORE II FUEL  
ALLIS-CHALMERS, BETHESDA, MARYLAND  
4 PAGES, DOCKET 50-130, TYPE--BWR, MFG--A.C., AF--PIONEER SERV., JULY 28, 1967

REQUESTS TECHNICAL-SPECIFICATION CHANGES TO PERMIT RECEIPT AND STORAGE OF CORE-II TYPE OF FUEL, WHICH IS SLIGHTLY DIFFERENT FROM CORE-I FUEL. ATTACHED IS ACNP-67525 \*\* SAFEGUARDS ANALYSIS FOR SECOND CORE LOADING. \*\* CHANGES ARE - (1) LOW-ENRICHMENT SUPERHEATER FUEL IN PLACE OF CERAFET, (2) B4C PELLETS-IN-TUBES CONTROL RODS IN PLACE OF BORON-SS CRUCIFORM RODS, AND (3) BOILER FUEL RODS HAVE UNIFORM DIAMETER WITH SOME WATER-FILLED RODS IN THE STEAM-VOIDED UPPER REGION IN PLACE OF STEPPED-DIAMETER FUEL RODS.

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

\*FUEL STORAGE + CONTROL ROD + FUEL ELEMENT + MODIFICATION, SYSTEM OR EQUIPMENT + PATHFINDER (ISR) + REACTOR, BWR + REACTOR. INTERNAL SUPERHEAT + TECHNICAL SPECIFICATIONS

18-22236 ALSO IN CATEGORIES 5 AND 9  
ACRS REPORT ON DIABLO CANYON  
U.S. ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.  
5 PAGES, 11 REFERENCES, DOCKET 50-275, TYPE--PWR, MFG--WEST, AE--PG+E, DECEMBER 20, 1967

ACRS BELIEVES THAT THE FOLLOWING 6 ITEMS PERTAIN TO ALL LARGE WATER-COOLED POWER REACTORS - (1) THERMAL SHOCK EFFECT OF COLD WATER INJECTION IN LOSS-OF-COOLANT ACCIDENT, (2) EFFECT OF BLOWDOWN FORCES ON CORE AND PRIMARY SYSTEM COMPONENTS, (3) EFFECT OF FUEL FAILURES ON EMERGENCY COOLING ABILITY, (4) INDEPENDENCE OF CONTROL AND PROTECTION INSTRUMENTATION--PRESENT DESIGN INADEQUATE, (5) PROMPT DETECTION OF GROSS FUEL FAILURE, (6) PRIMARY-SYSTEM QUALITY CONTROL AND IN-SERVICE INSPECTION. \*\*\* FIXED POISON (BOROSILICATE GLASS) DURING FIRST CYCLE TO ENSURE NEGATIVE MODERATOR COEFFICIENT NEEDS MORE PERFORMANCE DATA.

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

\*BLOWDOWN + \*PRESSURE VESSEL + \*THERMAL MECHANICAL EFFECT + ACCIDENT, LOSS OF COOLANT + ACRS + CONTROL ROD PROGRAM + CORE REFLOODING SYSTEM + DIABLO CANYON (PWR) + EMERGENCY COOLING CONSIDERATIONS + FAILURE, FUEL ELEMENT + FAILURE, FUEL ELEMENT + INDEPENDENCE + INSTRUMENTATION, DETECTION FAILED FUEL ELEMENT + MODERATOR COEFFICIENT + PLANT PROTECTIVE SYSTEM + POISON, FIXED + REACTOR, PWR

18-22279 ALSO IN CATEGORY 17  
FITNESS OF  
NUCLEAR POWER PLANTS. DESIGN, OPERATING EXPERIENCE, AND ECONOMIC  
ATOMICS INTERNATIONAL  
548 PAGES, FIGURES, TABLES, REFERENCES, D. VAN NOSTRAND COMPANY, INC., PRINCETON, NEW JERSEY, TORONTO, NEW YORK, LONDON, 1964

AFTER 30 PAGES OF ENGINEERING PRINCIPLES AND REACTOR FUELS AND MATERIALS, BOOK BECOMES A SET OF 3-PAGE DESCRIPTIONS OF 121 REACTORS, SUBDIVIDED INTO VARIOUS TYPES. \*\*\*ADEQUATE AS A COMPILATION OF OUTSTANDING FEATURES OF VARIOUS PLANTS BUILT BEFORE 1964.

AVAILABILITY - D. VAN NOSTRAND CO., INC., 24 WEST 40 ST., NEW YORK 18, N. Y., \$12.00 COPY

\*REACTOR DESCRIPTION + REACTOR, POWER

18-22339  
DRL REQUESTS ADDITIONAL INFORMATION ON PRAIRIE ISLAND PSAR  
USAEC DIVISION OF REACTOR LICENSING, WASHINGTON, D. C.  
3 PAGES, DOCKET 50-282 AND 50-306, TYPE--PWR, MFG--WEST., AE--PIONEER SERV., DEC. 29, 1967

DRL ACKNOWLEDGES RECEIPT OF AMENDMENT 2 TO PSAR AND ASKS FOR ADDITIONAL INFORMATION IN CERTAIN AREAS, INCLUDING INFORMATION REQUESTED NOV. 15 AND 21, 1967 (I AND C DESIGN, POSTACCIDENT INSTRUMENTATION, RESULTS OF SMALL COOLANT BREAKS - 0.55 SQ. FT OR LESS, AND INFORMATION ON PART-LENGTH CONTROL RODS). QUESTIONS ON CONTAINMENT DESIGN (SIMILAR TO INDIAN POINT 1) RESULT SINCE THIS IS FIRST TIME THIS DESIGN HAS BEEN USED IN A BIG PWR. AVERAGE POWER DENSITY IS 18% HIGHER THAN FOR PREVIOUSLY APPROVED PWRs.

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

\*AEC QUESTION + CONTAINMENT DESIGN + CONTROL ROD + INSTRUMENTATION, GENERAL + PRAIRIE ISLAND 1 AND 2 (PWR) + REACTOR, PWR + REPORT, PSAR

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-22493 ALSO IN CATEGORY 9  
GEORGIA TECH SUPPLIES ADDITIONAL INFORMATION  
GEORGIA INSTITUTE OF TECHNOLOGY, ATLANTA, GA.  
2 PAGES, DECEMBER 14, 1967, DOCKET 50-276

(RESPONSE TO AEC QUESTIONS OF 27 APRIL 1967. NOTE - REACTOR HAD BEEN ORIGINALLY AT UNIVERSITY OF AKRON) - (1) O-RINGS WILL BE REPLACED AND TESTED TO 15 PSI TO CHECK TANK LEAK TIGHTNESS. (2) SCRAM CIRCUIT MODIFIED IN ACCORDANCE WITH AGN PRINT 2-000-721-H. (3) ALL CIRCUITS AND INSTRUMENTS WILL BE TESTED AND ROD DRIVES CHECKED BEFORE OPERATION BEGINS. A NEW IONIZATION CHAMBER WAS OBTAINED, AND THE LINEAR AND LOG-N METERS WERE OVERHAULED AT THE FACTORY.

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

\*INSTRUMENTATION, GENERAL + \*TEST, LEAK RATE + AEC QUESTION + AGN (TNG) + MODIFICATION, SYSTEM OF EQUIPMENT + REACTOR, RESEARCH + REACTOR, TRAINING + REPORT, PSAR + SEAL

18-22494  
VERMONT YANKEE PSAR AMENDMENT 4--REPLY TO ACRS COMMENTS ON BROWNS FERRY  
VERMONT YANKEE NUCLEAR POWER COMPANY, RUTLAND, VERMONT  
17 PAGES, APRIL 28, 1967, DOCKET 50-271, TYPE--BWR, MFG--G.E., AE--EBASCO

SUBMITS VERMONT YANKEE'S POSITION CONCERNING ACRS COMMENTS (14 MARCH 67) ON BROWNS FERRY BECAUSE OF THE SIMILARITIES BETWEEN THE TWO. ITEMS COVERED ARE (1) EFFECT OF FUEL CLADDING FAILURE ON EMERGENCY COOLING (2) COPE-SPRAY EFFECTIVENESS, (3) EMERGENCY-POWER-CONTROL SYSTEMS, (4) INSTRUMENTATION IMPROVEMENTS, (5) ISOLATION-VALVE TESTING, (6) FUEL MISORIENTATION, (7) FUEL FAILURES DUE TO IMPROPER COOLING, (8) FUEL-DAMAGE LIMIT, (9) ROD-BLOCK-MONITOR, SYSTEM DESIGN, (10) DIESEL-GENERATOR TESTING, (11) QUALITY ASSURANCE AND INSPECTION OF THE PRIMARY SYSTEM, (12) IN-SERVICE INSPECTION, (13) STARTUP PROGRAM AND (14) INCREASED SAFETY MARGINS.

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

\*CONTAINMENT PENETRATION, CLOSURE OF + \*CORE SPRAY + \*EMERGENCY COOLING CONSIDERATIONS + \*FAILURE, CLADDING + \*INSTRUMENTATION, GENERAL + ACCIDENT, REFUELING + ACRS + AEC QUESTION + CONTROL ROD DRIVE + EMERGENCY POWER, ELECTRIC + EXAMINATION + FLOW BLOCKAGE + FUEL ELEMENT + GENERATOR, DIESEL + PERFORMANCE LIMIT + QUALITY CONTROL + REACTOR, BWR + REPORT, PSAR + SAFETY MARGIN + SURVEILLANCE PROGRAM + TEST, PROOF + VALVE + VERMONT YANKEE (BWR)

18-22495 ALSO IN CATEGORY 17  
PATHFINDER CHANGE 15--STORAGE OF CORE II FUEL  
USAEC, DIVISION OF REACTOR LICENSING  
5 PAGES, AUGUST 9, 1967, DOCKET 50-130, TYPE--BWR, MFG--A.C., AE--PIONEER SERV.

DRL ALLOWS STORAGE OF THE FUEL FOR CORE II. BOTH BOILER AND SUPERHEATER ELEMENTS ARE DIFFERENT FROM PRESENT FUEL. STORAGE ARRAY RESULTS IN A K-EFF LESS THAN 0.6 EVEN IF FLOODED.

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

\*FUEL STORAGE + PATHFINDER (ISR) + REACTOR, BWR + REACTOR, INTERNAL SUPERHEAT + REFUELING + SAFETY EVALUATION + TECHNICAL SPECIFICATIONS

18-22511  
DRL REQUESTS ADDITIONAL INFORMATION ON PILGRIM STATION  
USAEC DIVISION OF REACTOR LICENSING, WASHINGTON, D. C.  
14 PAGES, DECEMBER 13, 1967, DOCKET 50-293, TYPE--BWR, MFG--G.E., AE--BFCHELT

IN ADDITION TO 50 DETAILED QUESTIONS, DRL ASKS FOR GENERAL INFORMATION ON PRINCIPAL DESIGN CRITERIA, OCEANOGRAPHIC AND METEOROLOGICAL PROGRAMS, SUBSURFACE INVESTIGATION, AND A SEISMIC ANALYSIS.

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

\*AEC QUESTION + PILGRIM STATION (BWR) + REACTOR, BWR + REPORT, PSAR

18-22591  
GIMSTEDT O + SANDSTRÖM S  
THE NUCLEAR POWER STATION AT OSKARSHAMN  
AKTIEBOLAGET ATOMENERGI, STOCKHOLM  
1 PAGE, 1 FIGURE, ENFRG. NUCLEAIRE 5(5), PAGE 298 (SEPTEMBER 1967)

BRIEF DESCRIPTION (IN FRENCH) OF SWEDISH OSKARSHAMN 400-MWE BWR, TO BE IN OPERATION IN 1970.

REACTOR DESCRIPTION + REACTOR, BWR + SWEDEN

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-22583  
EPEL LG + LEVINE M + NUGENT G + PAPSICK FJ  
THE ORDERED-BED FAST REACTOR CONCEPT (1000-MW(E) REACTOR DESIGN)  
BROOKHAVEN NATIONAL LABORATORY, INC.  
BNL-50027 +. 37 PAGES, 15 FIGURES, 19 TABLES, 20 REFERENCES, JUNE 1966

1000-MWE PLANT WILL HAVE A DOUBLING TIME OF 11 YEARS, TOTAL ENERGY COST 3.28 MILLS/KWE-HR.  
USES URANIUM CARBIDE SPHERES COOLED BY LIQUID SODIUM. \*\*\* BRIEF REVIEW OF REACTOR PHYSICS  
AND ENGINEERING ASPECTS, ECONOMIC ANALYSIS.

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

\*DESIGN STUDY + \*REACTOR DESCRIPTION + REACTOR, FAST + REACTOR, LMCF + REACTOR, ORDERED BED, FAST

18-22771 ALSO IN CATEGORY 2  
PILE FOUNDATION DESIGN  
OMAHA PUBLIC POWER DISTRICT  
5 PAGES OF SUPPLEMENT 4, EXHIBIT F4, TO FT. CALHOUN 1 - FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT,  
DOCKET 50-295, TYPE--PWR, MFG--C.E., AE--GIBBS + HILL

EXTENDS INFORMATION RELATIVE TO FOUNDATIONS AS COVERED IN SECTION V-2.5.3 OF THE PSAR AND  
REFLECTS SUBSEQUENT DEVELOPMENTS RESULTING FROM SITE EXPLORATION. CAVITIES IN THE BEDROCK  
BENEATH THE PLANT SITE WERE DISCLOSED BY BORINGS. DESCRIBES THE PILES TO SUPPORT THE CLASS-I  
STRUCTURES. METHOD OF INSTALLATION, AND TEST PROGRAM.

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

\*FOUNDATION ENGINEERING + FT. CALHOUN (PWR) + REACTOR, PWR + REPORT, PSAR + SOIL PROPERTY, IN SITU

18-22786 ALSO IN CATEGORY 2  
NS SAVANNAH REVISED PORT OPERATING PLAN FOR BOSTON  
FIRST ATOMIC SHIP TRANSPORT INC., NEW YORK, NEW YORK  
FAST-112 +. 41 PAGES, 6 FIGURES, DEC. 22, 1967, DOCKET NO. 50-238, TYPE--PWR, MFG--B+W, AE--G.G. SHARP

PLAN HAS BEEN REVISED TO INCLUDE ADDITIONAL BERTHS AT CASTLE ISLAND TERMINAL AND TO MODIFY  
SLIGHTLY THE BOSTON HARBOR TRANSIT. PLAN ALSO REFLECTS CHANGE IN CAPE COD CANAL PILOTAGE.  
LOW-POPULATION-ZONE RADIUS IS 1600 FT AT MYSTIC TERMINAL AND 2400 FT AT CASTLE ISLAND  
TERMINAL.

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

NS SAVANNAH (PWR) + REACTOR, MARITIME + REACTOR, PWR + SITING, REACTOR

18-22800  
DALLF DORNE M + DALLFELZ J + KUCHLE M  
SOME ASPECTS OF THE FEASIBILITY OF A HIGH-FLUX REACTOR  
KERNFORSCHUNGSZENTRUM, KARLSRUHE (WEST GERMANY)  
KFK-579 +. 35 PAGES, 6 FIGURES, 5 TABLES, 26 REFERENCES, JUNE 1967

DISCUSSES NEED FOR A HIGHER-FLUX REACTOR; THE POSSIBLE EXPERIMENTAL USAGE, AND CORE MATERIALS  
TO BE USED IN SUCH A REACTOR. APART FROM DECREASING THE TIME TO DO AN EXPERIMENT, IT WOULD ALSO  
INCREASE THE SIGNAL-TO-NOISE RATIO OF THE RESOLUTION. 3 COOLANTS (H<sub>2</sub>O, Na, H<sub>2</sub>) WERE  
ANALYZED, WITH SUPERCRITICAL WATER HAVING THE BEST PROPERTIES. PRESSURE DROP ACROSS THE CORE  
WOULD BE ABOUT 750 PSI DUE TO HIGH VELOCITY AND SMALL CHANNELS. INCONEL 625 WAS CHOSEN FOR  
CLAD, WITH AN SS 16-13 MATRIX FOR UO<sub>2</sub> 93% ENRICHED. CORE WOULD BE AN HFIR-TYPE ARRANGEMENT.

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

DESIGN STUDY + PERFORMANCE LIMIT + REACTOR, FLUX TRAP + REACTOR, RESEARCH

18-22836  
ACRS REPORT ON SAN ONOFRE  
U. S. ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.  
3 PAGES, OCTOBER 8, 1966, DOCKET 50-206, TYPE--PWR, MFG--WEST., AE--BECHTEL

REACTOR-VESSEL SURVEILLANCE PROGRAM USES 8 CAPSULES, CONTAINING VESSEL MATERIALS, BETWEEN THE  
THERMAL SHIELD AND THE VESSEL. SEPARATE CABINETS WILL BE PROVIDED FOR THE PRESSURIZED LEVEL  
AND PRESSURE CONTROL TRANSMITTERS TO REDUCE THE LIKELIHOOD OF SIMULTANEOUS FAILURE.  
EMERGENCY POWER WILL BE SUPPLIED BY 2 DIESEL GENERATORS.

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

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-22836 \*CONTINUED\*  
\*PRESSURE VESSEL + SURVEILLANCE PROGRAM + ACRS + EMERGENCY POWER, ELECTRIC + INDEPENDENCE + REACTOR, PWR + REPORT, SAR + SAN ONDFRE (PWR)

18-22842  
GEORGIA TECH PROPOSED AMENDMENT--INITIAL STARTUP PROCEDURE  
GEORGIA INSTITUTE OF TECHNOLOGY  
3 PAGES, JANUARY 15, 1968, DOCKET 50-276

PROCEDURE TO BE FOLLOWED IN PERFORMING INITIAL EXPERIMENT IS THAT GIVEN IN BIEHL ET AL. (ELEMENTARY REACTOR EXPERIMENTATION). EXCEPT (1) PU-BE SOURCE IN AN ACCESS PORT INSTEAD OF PO-BE IN THE GLORY HOLE, (2) ONLY 2 AUXILIARY NEUTRON DETECTORS WILL BE USED, AND (3) INITIAL LOADING WILL BE WITH LOWER HALF OF CORE FUELED BUT WITH POLYETHYLENE IN THE UPPER HALF.

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

\*REACTOR STARTUP TESTING + AGN (TNG) + INSTRUMENTATION, NUCLEAR + REACTOR, TRAINING + SOURCE, NEUTRON + TECHNICAL SPECIFICATIONS

18-22843 ALSO IN CATEGORY 9  
MICHIGAN STATE TRIGA REQUESTS PERMISSION TO REASSEMBLE 4 FUEL ELEMENTS  
MICHIGAN STATE UNIVERSITY  
1 PAGE, JANUARY 18, 1968, DOCKET 50-294

IT IS NECESSARY TO DISASSEMBLE 4 INSTRUMENTED ELEMENTS FOR TRANSFER FROM U OF ILLINOIS. THESE ARE TO BE REASSEMBLED IN THE STORAGE AREA OF THE POOL OR IN A FUEL CASK SUSPENDED OVER THE POOL. THEY WILL THEN BE TESTED FOR ELECTRICAL CONTINUITY. ONLY ONE ASSEMBLY WILL BE TESTED IN THE CORE AT A TIME, THEN RETURNED TO STORAGE.

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

\*FUEL HANDLING + FUEL ELEMENT + INSTRUMENTATION, IN CORE + INSTRUMENTATION, TEMPERATURE + REACTOR, RESEARCH + TECHNICAL SPECIFICATIONS + TRIGA (RR)

18-22847  
SAN ONDFRE AMENDMENT 11 - SUPPLEMENT 2 TO FSAR  
SOUTHERN CALIFORNIA EDISON COMPANY + SAN DIEGO GAS AND ELECTRIC COMPANY  
50 PAGES, TABLES, FIGURES, REFERENCES, MAY 31, 1966, DOCKET 50-206, TYPE--PWR, MFG--WEST., AE--BECHTEL

SUPL. 2 ANSWERS 4 QUESTIONS ON SURVEILLANCE PROGRAM, STARTUP ACCIDENT, MAXIMUM CONTROL-POD WORTH, AND HYDROGEN PIPE. ALSO INCLUDED IS THE FSAR REFERENCE-DRAWING LIST, LIST OF VALVES, AND REVISED FLOW DIAGRAMS.

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

AEC QUESTION + REACTOR, PWR + REPORT, SAR + SAN ONDFRE (PWR)

18-22851 ALSO IN CATEGORY 17  
ITEM 4 - REVISED PROCESS FLOW DIAGRAMS AND A REVISED TABLE LISTING VALVES  
SOUTHERN CALIFORNIA EDISON COMPANY + SAN DIEGO GAS AND ELECTRIC COMPANY  
17 PAGES, 3 TABLES, 13 FIGURES, PAGES 28 THRU 44 OF SUPPLEMENT 2 TO THE FINAL SAFETY ANALYSIS REPORT FOR SAN ONDFRE NUCLEAR GENERATING STATION, MAY 31, 1966, DOCKET 50-206, TYPE--PWR, MFG--WEST, AE--BECHTEL

LIST ALL VALVES, INCLUDING CLASS, TYPE, NORMAL POSITION, METHOD OF ACTUATION, AND FAIL-SAFETY. FLOW DIAGRAMS ARE FOR MISCELLANEOUS WATER SYSTEMS, FEEDWATER AND CONDENSATE SYSTEM, COMPRESSED-AIR SYSTEM, AIR-CONDITIONING SYSTEM, REACTOR COOLANT SYSTEM, ETC.

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

\*SYSTEM DESCRIPTION + VALVE + AUXILIARY COOLING SYSTEM + CONTAINMENT PENETRATION, GENERAL + CORE REFLODDING SYSTEM + MAIN COOLING SYSTEM + REACTOR, PWR + REPORT, SAR + SAN ONDFRE (PWR) + VENTILATION SYSTEM + WASTE DISPOSAL, GENERAL

18-22854  
ACRS REPORT ON THREE MILE ISLAND  
UNITED STATES ATOMIC ENERGY COMMISSION  
2 PAGES. ATOMIC ENERGY CLEARING HOUSE 14(E), PAGE 42 AND 43. (JAN. 30, 1969)

(JAN. 17) FAVORABLE REPORT INCLUDES RECOMMENDATIONS - (1) DIFFERENT PRINCIPLE FOR A SECOND SENSOR TO INITIATE ECCS ACTION, (2) REVISE SCRAM BUS SG THAT ALL DROP IF EITHER D-C FEEDER IS DE-ENERGIZED, (3) FULLEST SEPARATION BETWEEN CONTROL AND PROTECTION SYSTEMS, (4) DEVELOPMENT OF PROMPT DETECTION FOR GROSS FUEL FAILURE. ADVISES REGULATORY STAFF TO REVIEW BLOWDOWN EFFECTS ON CORE INTERNALS, THERMAL SHOCK OF ECCS OPERATION ON REACTOR VESSEL. SUGGESTS EXPERIMENTAL VERIFICATION THAT NORMAL VIBRATION WILL NOT UNSEAT CORE-BARREL CHECK VALVES BETWEEN HOT AND COLD LEG.



CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-22954 \*CONTINUED\*  
ACRS + CONSTRUCTION PERMIT PROCESS + REACTOR, PWR + SAFETY REVIEW + THREE MILE ISLAND (PWR)

18-22910  
RUSSELVILLE RESPONSE TO THE 70 CONSTRUCTION PERMIT CRITERIA  
ARKANSAS POWER AND LIGHT CO.  
29 PAGES, JAN. 22, 1968, DOCKET NO. 50-312

RESPONDS TO THE JULY 11, 1967, CRITERIA WITH A SHORT SUMMARY PARAGRAPH AND DETAILED PSAR REFERENCES FOR EACH SEPARATE CRITERION.

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

AEC DESIGN CRITERIA + REACTOR, PWR + REPORT, PSAR + RUSSELLVILLE (PWR)

18-22911 ALSO IN CATEGORY 2  
SALEM AMENDMENT 3 TO LICENSE APPLICATION-SITE AND NAME CHANGE AND PSAR  
PUBLIC SERVICE ELECTRIC AND GAS COMPANY  
6 PAGES, JAN. 22, 1968, DOCKET NO. 50-272/311, TYPE--PWR, MFG--WEST., AE--PUBLIC SERVICE OF N. J.

UNITS WERE FORMERLY CALLED BURLINGTON 1 AND 2 AND LOCATED AT BURLINGTON, N. J. NEW SITE IS AT SALEM, N. J. AMENDMENT 3 UPS PROPOSED POWER OF THE TWO PLANTS TO 3250 MWT/1095 MWE EACH. AMENDMENT 3 TRANSMITS A 4-VOLUME PSAR. ANSWERS TO QUESTIONS OF 3 JULY AND 29 JULY 1967 APPEAR IN THE BACK OF VOL 3. VOL 4 CONSISTS OF SALEM ANSWERS TO DIABLO CANYON QUESTIONS FROM AEC OF 5 AND 18 MAY, 30 JUNE, 31 AUG., 20 OCT., AND 1 NOV., 1967. SOME QUESTIONS ARE ANSWERED BY GIVING A REFERENCE TO THE PSAR.

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

AEC QUESTION + REACTOR, PWR + REPORT, SAP + SALEM 1 AND 2 (PWR) + SITING, REACTOR

18-22912  
HUNTERSTON B  
2 PAGES, 2 FIGURES, NUCLEAR ENGINEERING 12(139), PAGE 924 AND 925, (DEC. 1967)

TWO 1250-MW(E) AGRS (IN SCOTLAND), VERY SIMILAR TO HINKLEY POINT B. GAS CIRCULATORS ARE ENCAPSULATED TO PROVIDE DOUBLE CONTAINMENT. THERE ARE 12 ONCE-THROUGH BOILER UNITS TO EACH REACTOR, 3 TO A QUADRANT. METHANE IS ADDED TO THE COOLANT TO REDUCE GRAPHITE CORROSION. DRYERS KEEP WATER PRODUCED IN CORE (FROM METHANE) AT AROUND 250 PPM. THERE ARE NO VACANCIES IN THE FUEL LATTICE, AS IN EARLIER AGRS, AND THE GRAPHITE IS MUCH MORE STABLE. THE REACTOR FOLLOWS TURBINE LOAD DEMAND AUTOMATICALLY.

REACTOR DESCRIPTION + REACTOR, SCR + REACTOR, GRAPHITE MODERATED + UNITED KINGDOM

18-22917 ALSO IN CATEGORY 7  
SMALL NC  
CONTINUUM DILATATION MODEL FOR CREEP SWELLING OF CERAMIC NUCLEAR FUELS WITH APPLICATIONS (LWB-LSBR DEVELOPMENT PROGRAM)  
BETTIS ATOMIC POWER LAB., PITTSBURGH, PA.  
WAPD-TM-649 +. 44 PAGES, 13 FIGURES, 2 TABLES, 11 REFERENCES, SEPTEMBER 1967

PRESENTS A CREEP MODEL FOR THE CREEP SWELLING OF CERAMIC FUELS, INCLUDING THE EFFECTS OF FABRICATED POROSITY, FISSION-INDUCED POROSITY, AND SURFACE TENSION, USING AS A MACROSCOPIC DILATATIONAL ELEMENT A HOLLOW SPHERE WITH THE CENTRAL CAVITY PLAYING THE ROLE OF THE FABRICATED PORE, WITH FISSION GAS PORES IN THE ANNULUS REPRESENTED BY ANALOGOUS MICROSCOPIC HOLLOW SPHERES. APPENDIX DESCRIBES THE COMPUTER PROGRAM FUEL SWELL III FOR FORTRAN II.

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

\*ANALYTICAL MODEL + \*CREEP + CERAMICS + COMPUTER PROGRAM + FUEL ELEMENT + R AND D PROGRAM + REACTOR, BREEDER + REACTOR, PWR

18-22935  
ZION 1 AND 2 AMENDMENT 3 - RESPONSE TO NOV. 20, 1967 DRL QUESTIONS  
COMMONWEALTH EDISON COMPANY  
30 PAGES, FIGURES, REFERENCES, DECEMBER 20, 1967, DOCKETS 50-295/204, TYPE--PWR, MFG--WEST, AE--SGT + LUNDY

RESPONDS TO QUESTIONS ON (I) SEISMIC CRITERIA AND ENGINEERING, (II) CONTAINMENT DESIGN, (III) QUALITY ASSURANCE, AND (IV) OTHERS. SOME ANSWERED BY REFERENCE TO AMENDMENT 2. ALSO INCLUDES REVISED PSAR PAGES.

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

CATEGORY 19  
SAFETY ANALYSIS AND DESIGN REPORTS

18-22935 \*CONTINUED\*  
AEC QUESTION + REACTOR, PWR + REPORT, PSAR + ZION 1 AND 2 (PWR)

18-22936  
ZION 1 AND 2 PRELIMINARY SAFETY ANALYSIS REPORT, VOL. 1  
COMMONWEALTH EDISON COMPANY  
400 PAGES, TABLES, FIGURES, REFERENCES, JUNE 15, 1967, DOCKET 50-295/304, TYPE--PWR, MFG.--WEST., AE--SGT + LUNDY

DESCRIBES THE TWO 4-COOLANT-LOOP PWRs, EACH RATED AT 3250 MWT/1085 MWE, WITH STRETCH TO 3391/1129. SIMILAR TO INDIAN POINT 2 BUT WITH AN 18% INCREASE IN AVERAGE HEAT FLUX. FUEL IS UO2 PELLETS IN ZR TUBES. CONTROL BY CLUSTERS OF AG-CD-IN IN SS CLADDING PLUS BORON CHEMICAL SHIM. CONTAINED BY A STEEL-LINED PRESTRESSED-CONCRETE STRUCTURE WITH DESIGN PRESSURE OF 47 PSIG AND LEAK RATE LESS THAN 0.1%. ADDITIONAL SAFEGUARDS INCLUDE SAFETY INJECTION, CONTAINMENT VENTILATION AND SPRAY SYSTEMS. THREE DIESEL GENERATORS SUPPLY POWER FOR OPERATING POSTACCIDENT EQUIPMENT. VESSEL PENETRATION HAVE A DOUBLE CONTAINMENT WHICH IS CONTINUOUSLY PRESSURIZED ABOVE DESIGN PRESSURE. LINER WELDS ARE ALSO COVERED BY STEEL CHANNELS AND ARE SIMILARLY PRESSURIZED.

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

\*REPORT, PSAR + CONTAINMENT LEAKAGE CONTROL + CONTAINMENT LINER + REACTOR DESCRIPTION + REACTOR, PWR + WELDS + ZION 1 AND 2 (PWR)

18-22938 ALSO IN CATEGORY 11  
ISOLATION VALVE SEAL WATER SYSTEM  
COMMONWEALTH EDISON COMPANY  
4 PAGES, PAGES 6.2.5-1 THRU 6.2.5-4 OF THE ZION STATION 1 AND 2 PRELIMINARY SAFETY ANALYSIS REPORT, VOLUME II, JUNE 15, 1967, DOCKETS 50-295/204, TYPE--PWR, MFG.--WEST., AE--SGT + LUNDY

OPERATION OF THE SYSTEM WILL REDUCE OFF-SITE DOSES A FACTOR OF 120 BY ENSURING EFFECTIVENESS OF CONTAINMENT-ISOLATION VALVES IN A LOSS-OF-COOLANT ACCIDENT. PROVIDES A WATER SEAL ON LINES WHICH COMMUNICATE WITH THE CONTAINMENT ATMOSPHERE. AUTOMATIC SEAL PROVIDED FOR THE FOLLOWING LINES - REACTOR-COOLANT-SYSTEM SAMPLE, RESIDUAL-HEAT-REMOVAL SAMPLE, LFTDOWN, SAFETY-INJECTION TEST, STEAM-GENERATOR SHELL-SIDE FILL-AND-RAIN BLOWDOWN AND SAMPLE. MANUAL SEAL PROVIDED FOR SEVERAL OTHERS. SYSTEM INCLUDES AN 1100-GAL TANK AND PIPING. DESIGNED FOR 150 PSIG. OPERATION INITIATED BY SIGNAL THAT INITIATES CONTAINMENT ISOLATION. WATER IS INJECTED INSIDE PIPING BETWEEN TWO ISOLATION POINTS LOCATED OUT-SIDE CONTAINMENT AND AT PRESSURE HIGHER THAN DESIGN PRESSURE OF CONTAINMENT.

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

\*CONTAINMENT LEAKAGE CONTROL + ACCIDENT, LOSS OF COOLANT + CONTAINMENT PENETRATION, CLOSURE OF + ENGINEERED SAFETY FEATURE + REACTOR, PWR + REPORT, PSAR + ZION 1 AND 2 (PWR)

18-22939  
ZION 1 AND 2 PRELIMINARY SAFETY ANALYSIS REPORT - VOLUME 3  
COMMONWEALTH EDISON COMPANY  
400 PAGES, TABLES, FIGURES, REFERENCES, NOVEMBER 28, 1967, DOCKETS 50-295/304, TYPE--PWR, MFG.--WEST., AE--SGT + LUNDY

CONTAINS ANSWERS (FOR ZION 1 AND 2) TO 213 QUESTIONS DIRECTED BY DRL TO PACIFIC GAS AND ELECTRIC WITH RESPECT TO DIABLO CANYON CONCERNING PLANT LAYOUT, CONTAINMENT, INSTRUMENTATION AND CONTROLS, ENGINEERED SAFETY FEATURES, AND ACCIDENT ANALYSIS.

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

\*AEC QUESTION + \*REPORT, PSAR + REACTOR, PWR + ZION 1 AND 2 (PWR)

18-22940  
ZION 1 AND 2, PRELIMINARY SAFETY ANALYSIS REPORT - VOLUME IV  
COMMONWEALTH EDISON COMPANY  
350 PAGES, TABLES, FIGURES, REFERENCES, NOVEMBER 28, 1967, DOCKETS 50-295/304, TYPE--PWR, MFG.--WEST., AE--SGT. + LUNDY

CONTAINS (1) AN EVALUATION OF CRITERIA TO ENSURE NO LOSS OF FUNCTION OF PIPING AND VESSELS UNDER MAXIMUM POTENTIAL EARTHQUAKE LOADINGS, (2) ANSWERS (FOR ZION 1 AND 2) TO 79 DRL QUESTIONS DIRECTED TO WISCONSIN-MICHIGAN POWER CO., AND (3) ANSWERS TO 50 DRL QUESTIONS DIRECTED TO COMMONWEALTH EDISON.

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

\*AEC QUESTION + \*REPORT, PSAR + REACTOR, PWR + ZION 1 AND 2 (PWR)

18-22945 ALSO IN CATEGORY 7

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-22945 \*CONTINUED\*  
CALCULATION OF SPRAY IODINE REMOVAL FACTOR FOR WESTINGHOUSE 2-, 3-, AND 4-LOOP PWR  
PUBLIC SERVICE ELECTRIC AND GAS COMPANY  
7 PAGES, 7 REFERENCES, PAGES 6.3-14 THRU 6.3-20, VOLUME 2 OF SALEM 1 AND 2 PRELIMINARY SAFETY ANALYSIS  
REPORT, 22 JAN. 1968, DOCKETS 50-272 AND 50-311, TYPE--PWR, MFG.--WEST., AE--PUBLIC SERVICE OF N.J.

GIVES THE TECHNICAL BASIS FOR, THE CALCULATION OF, AND THE EXPERIMENTAL VERIFICATION OF THE  
IODINE-REMOVAL AND DOSE-REDUCTION FACTORS, USING NAOH AS SPRAY ADDITIVE. THE REDUCTION IN  
THE 2-HR OFF-SITE DOSE IS 59 (2 LOOP, 50 PSIG, 286 F), 22 (3, 42, 264), AND 64 (4, 47, 270).  
DISCUSSES REMOVAL OF HI, CH3I, AND PARTICLES.

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

\*ADDITIVE + \*CONTAINMENT SPRAY + \*FISSION PRODUCT, IODINE + MATHEMATICAL TREATMENT + REACTOR, PWR +  
REDUCTION + SODIUM

18-22956  
PROPOSED ISSUANCE OF MICHIGAN STATE TRIGA CONSTRUCTION PERMIT  
DIVISION OF REACTOR LICENSING, USAEC  
12 PAGES, JANUARY 25, 1968, DOCKET 50-794

REACTOR IS BEING MOVED FROM THE U OF ILLINOIS. THE TRIGA MARK-1 WILL BE OPERATED AT 250 KW  
STEADY STATE AND PULSED TO 1.5%, RESULTING IN AN 8 MW-SEC RELEASE. MAXIMUM EXCESS REACTIVITY  
IS 2.25%. TESTS AT THE SITE INDICATE THAT, IN COMPLETE LOSS OF POOL WATER, THE SURROUNDING  
WATER TABLE IS SUCH THAT ABOUT 1? FT OF WATER REMAINS ABOVE THE CORE.

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

\*SAFETY EVALUATION + ACCIDENT, LOSS OF COOLANT, + CONSTRUCTION PERMIT PROCESS + REACTOR, PULSED + TRIGA (RR)

18-22961  
SAN ONOFRE AMENDMENT 13 - SUPPLEMENT 3 TO PSAR - ANSWERS TO AEC QUESTIONS  
SOUTHERN CALIFORNIA EDISON COMPANY + SAN DIEGO GAS AND ELECTRIC COMPANY  
14 PAGES, TABLES, FIGURES, SEPTEMBER 21, 1966, DOCKET 50-206, TYPE--PWR, MFG.--WEST, AE--BECHTEL

SUPPLEMENT 3 CONTAINS ANSWERS TO 7 QUESTIONS ON CONTROL-ROD-PATTERN REFUELING ACCIDENT,  
THERMAL DESIGN, REACTIVITY, SAFETY INJECTION SYSTEM, PUMPS, AND POSSIBLE EVACUATION OF SAN  
CLEMENTE. THE APPENDIX CONTAINS INFORMATION ON PRIMARY AND SECONDARY SOURCE, MONITORING OF  
NEW FUEL, AND ROD-POSITION INDICATION. ROD-POSITION MONITORING SYSTEM HAS BEEN ADDED TO  
CONTINUOUSLY MONITOR ALL CONTROL RODS.

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

\*INSTRUMENTATION, POSITION + \*SOURCE, NEUTRON + AEC QUESTION + CONTROL ROD + FUEL STORAGE + REACTOR, PWR +  
REPORT, SAR + SAN ONOFRE (PWR)

18-22974 ALSO IN CATEGORIES 9 AND 10  
DRL REQUESTS ADDITIONAL DISCUSSION ON FORT CALHOUN  
U. S. ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.  
1 PAGE, JANUARY 27, 1968, DOCKET 50-295, TYPE--PWR, MFG.--C.F., AE--GIBBS + HILL

CONFIRMS PHONE CONVERSATION OF JANUARY 17, 1968, THAT ACRS WISHES ADDITIONAL INFORMATION  
BEFORE PREPARING THEIR REPORT - (1) ADEQUACY OF OFF-SITE POWER, AND GENERAL DESIGN CRITERION  
39, (2) ABILITY TO INSERT CONTROL RODS IF A PRIMARY COOLANT LINE LARGER THAN 12 INCHES  
RUPTURES, AND (3) ADEQUACY OF THE REACTOR PROTECTION SYSTEM, ESPECIALLY THE SCRAM BUS, TO  
PROVIDE PROTECTION IF A SINGLE FAILURE WERE TO OCCUR.

USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*EMERGENCY POWER, ELECTRIC + \*PLANT PROTECTIVE SYSTEM + ACRS + AEC DESIGN CRITERIA + AEC QUESTION +  
FAILURE, SCRAM MECHANISM + FT. CALHOUN (PWR) + REACTOR, PWR + SINGLE FAILURE CRITERION

18-22975  
ZION 1 AND 2 AMENDMENT 2--RESPONSE TO DRL QUESTIONS  
U.S. ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.  
64 PAGES, FIGURES, TABLES, NOVEMBER 28, 1967, DOCKET 50-304, TYPE--PWR, MFG.--WEST, AE--GILBERT ASSOC.

CONTAINS REVISED PAGES TO PSAR FOR VOLUMES I AND II, AND VOLUMES III AND IV, WHICH ARE  
ADDITIONS TO THE PSAR. VOLUME III CONTAINS ANSWERS (ON ZION 1 AND 2) TO 213 QUESTIONS  
DIRECTED BY DRL TO PACIFIC GAS AND ELECTRIC ON MAY 5 AND 8, JUNE 30, AND AUGUST 31, 1967,  
WITH RESPECT TO DIABLO CANYON CONCERNING PLANT LAYOUT, CONTAINMENT, INSTRUMENTATION AND  
CONTROLS, ENGINEERED SAFETY FEATURES, AND ACCIDENT ANALYSIS. VOLUME IV CONTAINS (1) AN  
EVALUATION OF CRITERIA TO ENSURE NO LOSS OF FUNCTION OF PIPING AND VESSELS UNDER MAXIMUM  
POTENTIAL EARTHQUAKE LOADINGS, (2) ANSWERS TO 79 DRL QUESTIONS DIRECTED TO WISCONSIN-MICHIGAN  
POWER CO., NOVEMBER 1, 1966, AND (3) ANSWERS TO 50 DRL QUESTIONS DIRECTED TO COMMONWEALTH  
EDISON ON AUGUST 31 AND OCTOBER 18, 1967.

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

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-22975 \*CONTINUED\*  
\*AEC QUESTION + \*REPORT, PSAR + REACTOR, PWR + ZION 1 AND 2 (PWR)

18-22979  
ZION 1 AND 2 AMENDMENT 1--CHANGE OF CONSTRUCTION PERMIT APPLICATION TO REFLECT 2 UNITS  
COMMONWEALTH EDISON COMPANY  
100 PAGES, FIGURES, TABLES, AUGUST 15, 1967, DOCKET 50-295 AND 50-304, TYPE--PWR, MFG--WEST, AE--SGT + LUNDY

CONTAINS APPLICATION FOR CONSTRUCTION PERMIT FOR A SECOND PWR TO BE KNOWN AS ZION 2, PLUS REVISED PAGES TO THE PSAR, WHICH REFLECT CONCURRENT CONSTRUCTION OF 2 UNITS WHICH SHARE SOME COMPONENTS, SYSTEMS, AND FACILITIES. SYSTEMS IN WHICH COMPONENTS ARE SHARED INCLUDE SPARE DIESEL GENERATOR, CHEMICAL AND VOLUME CONTROL, AUXILIARY COOLANT, FUEL HANDLING, PLANT FIRE PROTECTION, SERVICE WATER, STEAM AND POWER CONVERSION, RADIOACTIVE-WASTE DISPOSAL, AND SEVERAL BUILDINGS.

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

\*REPORT, PSAR + REACTOR, PWR + ZION 1 AND 2 (PWR)

18-22980  
THREE MILE ISLAND AMENDMENT 1  
METROPOLITAN EDISON COMPANY  
250 PAGES, FIGURES, TABLES, JULY 21, 1967, DOCKET 50-289, TYPE--PWR, MFG--B+W, AE--GILBERT ASSOC.

PROVIDES REVISED PAGES FOR PSAR TO REFLECT FOLLOWING CHANGES - (1) COOLING TOWERS REPLACE COOLING POND, (2) RACK AND PINION CONTROL-ROD DRIVES, (3) CHANGE IN THE NUMBER OF REACTOR-BUILDING-ATMOSPHERE COOLING UNITS AND MAKEUP PUMPS. ADDITIONAL DATA ON REACTOR AND CORE DESIGN ALSO GIVEN.

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

CONTROL ROD DRIVE + COOLING TOWER + REACTOR, PWR + REPORT, PSAR + THREE MILE ISLAND (PWR)

18-22981  
PEACH BOTTOM 2 AND 3 CONSTRUCTION PERMIT, ASLB DECISION  
PHILADELPHIA ELECTRIC COMPANY  
19 PAGES, FEBRUARY 1968, DOCKET 50-277/278, TYPE--BWR, MFG--G.E., AE--BECHTEL

DECISION REVIEWS BRIEFLY OUTSTANDING DESIGN AND SAFETY FEATURES OF THE PLANT, DISCUSSES THE INTERVENTION BY CITY OF DOVER, DELAWARE, AND CONCLUDES WITH REASONABLE ASSURANCE THAT SAFETY QUESTIONS CAN BE RESOLVED BEFORE CONSTRUCTION IS COMPLETED AND THAT OPERATION CAN BE WITHOUT UNDUE RISK TO HEALTH AND SAFETY OF THE PUBLIC. DENIES INTERVENTION.

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

\*CONSTRUCTION PERMIT PROCESS + ASLB + PEACH BOTTOM 2 AND 3 (BWR) + REACTOR, BWR

18-22982  
GOSLEE DW + FRANK L  
METHOD OF PRODUCING NUCLEAR FUEL ELEMENTS OF STAINLESS STEEL COATED UO<sub>2</sub> PARTICLES  
US PATENT 3,218,605 +. 8 PAGES, 7 FIGURES, REFERENCES, MAY 9, 1967

THIS PATENT RELATES TO A PROCESS FOR DIRECTLY FORMING FISSIONABLE UO<sub>2</sub> PARTICLES INTO A TUBULAR SHAPE DISPERSION HAVING A RETAINING MATRIX IN WHICH STAINLESS-STEEL-COATED SPHERICAL UO<sub>2</sub> PARTICLES ARE EXTRUDED AT LOW TEMPERATURE WITH A BINDER DIRECTLY TO FORM A TUBE, AND THE BINDER IS REMOVED FOR FURTHER PROCESSING IN WHICH A STAINLESS-STEEL CLADDING IS INTIMATELY BONDED TO THE TUBE BY HOT ISOSTATIC PRESSING.

AVAILABILITY - THE U. S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D. C. (25 CENTS PER COPY)

\*COATED PARTICLE + \*FUEL ELEMENT + FABRICATION + PATENT + STEEL, STAINLESS + URANIUM DIOXIDE

18-22989  
SUPPLEMENT 14 TO THE FT. CALHOUN FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT  
OMAHA PUBLIC POWER DISTRICT  
60 PAGES, AMENDMENT 14 TO FT. CALHOUN 1 LICENSE APPLICATION (SUPPLEMENT 14 TO PDSAR) 2 JANUARY 1968,  
EXHIBIT #14 OF DOCKET 50-295, TYPE--PWR, MFG.--C.E., AE--GIBBS + HILL

THE PURPOSE OF THIS SUPPLEMENT IS TO REVISE, CORRECT, AND UPDATE THE PRELIMINARY SAFETY ANALYSIS REPORT AND TO BE A GUIDE TO THE APPLICATION AS AMENDED. FOR EACH SECTION OF THE PSAR THERE IS A CORRESPONDING SECTION IN THIS SUPPLEMENT WHICH (1) OUTLINES THE SIGNIFICANT CHANGES WHICH HAVE OCCURRED SINCE THE ORIGINAL FILING WHICH AFFECT THAT SECTION, (2) REFERS THE READER TO THOSE PORTIONS OF LATER AMENDMENTS WHICH CONTAIN FURTHER INFORMATION RELATING TO THAT SECTION AND, (3) LISTS EACH REVISION IN OR CORRECTION TO THE SECTION. THIS

CATEGORY 1<sup>B</sup>  
SAFETY ANALYSIS AND DESIGN REPORTS

18-22989 \*CONTINUED\*

SUPPLEMENT CONTAINS NO INFORMATION NOT ALREADY SUBMITTED TO THE AEC REGULATORY STAFF BY WRITTEN AMENDMENT TO THE APPLICATION.

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

FT. CALHOUN (PWR) + REACTOR, PWR + REPORT, PSAR

18-22994

THREE MILE ISLAND NUCLEAR STATION PRELIMINARY SAFETY ANALYSIS REPORT AMENDMENT 5  
METROPOLITAN EDISON COMPANY  
50 PAGES, DECEMBER 22, 1967, DOCKET 50-289, TYPE--PWR, MFG--B+W, AE--GILBERT ASSOC.

PROVIDE REVISED PSAR PAGES, REVISED ANSWERS TO PREVIOUSLY ANSWERED QUESTIONS, AND PSAR SUPPLEMENT 4 (ON PAGE ENTITLED, EMERGENCY CORE COOLING SYSTEM, CHANGES TO PROVIDE INDEPENDENCE BETWEEN THE SUBSYSTEMS).

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

AEC QUESTION + REACTOR, PWR + REPORT, PSAR + THREE MILE ISLAND (PWR)

18-23010

THREE MILE ISLAND AMENDMENT 6  
METROPOLITAN EDISON COMPANY  
100 PAGES, TABLES, FIGURES, REFERENCES, DOCKET 50-289, JANUARY 8, 1968, TYPE--PWR, MFG.--B + W,  
AE--GILBERT ASSOC.

CONSISTS OF REVISED PSAR PAGES AND REVISED ANSWERS TO EARLIER QUESTIONS. REFLECTS THE REDESIGN OF THE EMERGENCY CORE-COOLING SYSTEM AS FILED IN AMENDMENT 5.

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

\*AEC QUESTION + REACTOR, PWR + REPORT, PSAR + THREE MILE ISLAND (PWR)

18-23011

ZION STATION 1 AND 2 AMENDMENT 4  
COMMONWEALTH EDISON COMPANY  
250 PAGES, TABLES, FIGURES, REFERENCES, DOCKETS 50-295/304, JANUARY 29, 1967, TYPE--PWR, MFG.--WEST.,  
AE--SGT + LUNDY

PROVIDES REVISED PSAR PAGES, ANSWERS TO DIABLO CANYON QUESTIONS OF OCT. 26, NOV. 1, AND DEC. 20, 1967. INCLUDES ANSWERS TO DRL QUESTIONS ON ZION OF JAN. 15, 1967. THE LATTER REQUESTS ADDITIONAL INFORMATION ON (I) CONTROL AND SAFETY INSTRUMENTATION, (II) REMOTE SHUTDOWN CAPABILITY, (III) RADIATION-MONITORING SYSTEMS, (IV) VENTILATION SYSTEMS FOR THE CONTAINMENT AND AUXILIARY BUILDING, (V) ACCIDENT ANALYSIS, AND (VI) CERTAIN SPECIFIC QUESTIONS.

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

\*AEC QUESTION + REACTOR, PWR + REPORT, PSAR + ZION 1 AND 2 (PWR)

18-23013

ALSO IN CATEGORY 11

THREE MILE ISLAND CONTAINMENT-BUILDING DESIGN SPECIFICATIONS  
METROPOLITAN EDISON COMPANY  
33 PAGES, APPENDICES 5A-F OF VOLUME 3 OF THREE MILE ISLAND PRELIMINARY SAFETY ANALYSIS REPORT, DOCKET 50-289, TYPE--PWR, MFG.--B+W, AE--GILBERT ASSOC.

AMPLIFIED TID-7024 IS BASIC SEISMIC DESIGN. CLASS I STRUCTURES DESIGNED SO STEADY-STATE STRESSES. COMBINED WITH 0.06 G HORIZONTAL AND 0.04 G VERTICAL, SHALL BE WITHIN WORKING STRESS LIMITS, AND 0.12 G HORIZONTAL AND 0.06 G VERTICAL SHALL NOT IMPAIR FUNCTION. DAMPING FACTORS ARE 5% OR LESS. METHOD OF DESIGN STRESS ANALYSIS OUTLINED. BUILDING INSTRUMENTATION WILL REVEAL DISPLACEMENTS DURING 23.3 PSIG TEST, MADE IN 5 PSIG STEPS.

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

\*CONTAINMENT INSTRUMENTATION + \*EARTHQUAKE ENGINEERING + CONCRETE, PRESTRESSED + CONTAINMENT, HIGH PRESSURE + DESIGN CRITERIA + REACTOR, PWR + REPORT, PSAR + THREE MILE ISLAND (PWR)

18-23014

DRESDEN 2 AMENDMENT - CHANGES TO UNIT 2 PSAR TO REFLECT ADDITION OF UNIT 3.  
COMMONWEALTH EDISON COMPANY  
75 PAGES, TABLES, MARCH 30, 1966, DOCKET 50-237, TYPE--BWR, MFG.--G.E., AE--SGT. + LUNDY

INCLUDES (1) CHANGES IN INTERCONNECTIONS AND EQUIPMENT SHARING BETWEEN UNITS, (2) CHANGES DUE TO INCREASE OF 2% IN UNIT-2 TURBINE SIZE, AND (3) MODIFICATIONS DURING FINAL DESIGN WORK.

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-23014 \*CONTINUED\*  
AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

DRESDEN 2 (BWR) + MODIFICATION, SYSTEM OR EQUIPMENT + REACTOR, BWR + REPORT, PSAR + SHARED COMPONENTS

18-23015  
DRESDEN 3 PSAR AMENDMENT 5 - EMERGENCY CORE COOLING  
GENERAL ELECTRIC COMPANY, ATOMIC PRODUCTS DIVISION, SAN JOSE, CALIF.  
150 PAGES, TABLES, FIGURES, AUGUST 19, 1966, DOCKET 50-249, TYPE--BWR, MFG.--G.E., AE--SGT. + LUNDY

CONSISTS OF TWO REPORTS - (1) DESCRIPTION AND EVALUATION OF DRESDEN UNIT-3  
EMERGENCY-CORE-COOLING PROVISIONS (26 JULY, 66), AND (2) PROVISIONS FOR EMERGENCY CORE  
COOLING - DRESDEN UNIT 3 (10 AUG. 66).

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

CORE REFLOODING SYSTEM + CORE SPRAY + DRESDEN 3 (BWR) + EMERGENCY COOLING CONSIDERATIONS + REACTOR, BWR +  
REPORT, PSAR

18-23016  
DRESDEN 3 PSAR AMENDMENT 1 - ADDITIONS TO PSAR  
COMMONWEALTH EDISON COMPANY  
40 PAGES, TABLES, FIGURES, DOCKET 50-237, JULY 9, 1965, TYPE--BWR, MFG.--G.E., AE--SGT. + LUNDY

AMENDMENT 1 INCLUDES (1) APPENDIX F (PLANT SIMILARITIES AND DIFFERENCES - COMPARISON WITH  
DYSTER CREEK AND NINE MILE POINT), (2) A BIBLIOGRAPHY WHICH LISTS DOCUMENTS AND PAPERS  
REFERRED TO IN VOL. 1, AND (3) PAGES VIII-5-1 AND D-3, WHICH WERE OMITTED FROM VOL. 1.

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

BIBLIOGRAPHY + DRESDEN 2 (BWR) + REACTOR, BWR + REPORT, PSAR

18-23017  
DRESDEN 3 PSAR AMENDMENT 3 - EXCURSION ANALYSIS AND REVISED PAGES  
COMMONWEALTH EDISON COMPANY  
5 PAGES, MAY 26, 1966, DOCKET 50-249, TYPE--BWR, MFG.--G.E., AE--SGT. + LUNDY

AMENDMENT 3 CONSISTS OF (1) SUMMARY MEMORANDUM ON EXCURSION ANALYSIS IN ANSWER TO QUESTION 3  
(12 MAY, 1966), AND (2) REVISED PAGES V-3-24 AND XI-2-7 (ON CORE SPRAY).

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

AEC QUESTION + DRESDEN 2 (BWR) + REACTOR, BWR + REPORT, PSAR

18-23018  
ACRS REPORT ON DRESDEN UNIT 3  
DIVISION OF REACTOR LICENSING, U.S. ATOMIC ENERGY COMMISSION  
3 PAGES, LETTER TO GLENN T. SEABORG FROM W. T. MANLY, NOVEMBER 24, 1965, DOCKET 50-237, TYPE--BWR,  
MFG.--G.E., AE--SGT. + LUNDY

RECOMMENDS (1) STUDIES OF PIPE WHIP AND MISSILE GENERATION, (2) STUDY OF REACTIVITY EFFECT OF  
FUEL MOVEMENT (DURING LOSS OF COOLANT), (3) SPECIAL CARE IN ISOLATION-VALVE DESIGN.

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

ACRS + DRESDEN 2 (BWR) + MISSILE GENERATION AND PROTECTION + REACTIVITY EFFECT, SLUMP + REACTOR, BWR +  
REVIEW

18-23019  
ACRS REPORT ON DRESDEN UNIT 3  
DIVISION OF REACTOR LICENSING, U.S. ATOMIC ENERGY COMMISSION  
4 PAGES, LETTER TO DR. GLENN T. SEABORG FROM DAVID OKRENT, AUGUST 16, 1966, DOCKET 50-249, TYPE--BWR,  
MFG.--G.E., AE--SGT. + LUNDY

RECOMMENDS - (1) THAT DRL FOLLOW THE G.E. DEVELOPMENT PROGRAMS ON JET PUMPS, EMERGENCY-COOLING  
TESTING, AND EFFECT (ON CORE COOLING) DUE TO REACTIVITY TRANSIENTS. (2) STUDY OF BLOWDOWN  
FORCES ON CORE COMPONENTS. (3) REVIEW OF DESIGN AND FABRICATION TECHNIQUES FOR THE ENTIRE  
PRIMARY SYSTEM. (4) STUDY OF POSSIBILITY OF IN-SERVICE TESTING OF EQUIPMENT AND SYSTEMS.

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

ACRS + CORE COMPONENTS + DRESDEN 2 (BWR) + EMERGENCY COOLING CONSIDERATIONS + REACTOR, BWR + REVIEW

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-23020

DRESDEN 3 PSAR AMENDMENT 4 - ADDITIONAL INFORMATION

COMMONWEALTH EDISON COMPANY

39 PAGES, TABLES, FIGURES, JULY 8, 1966, DOCKET 50-249, TYPE--BWR, MFG.--G.E., AE--SGT + LUNDY

CONTAINS 3 REVISED PAGES (ON ROD-BLOCK FUNCTION OF CONTROL SYSTEM AND SECONDARY-CONTAINMENT DESIGN BASIS), A MEMORANDUM ON FINANCIAL RESPONSIBILITY, AND THE COMMONWEALTH EDISON 1965 ANNUAL REPORT.

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

DRESDEN 3 (BWR) + REACTOR, BWR + REPORT, PSAR

18-23030

PALISADES POINT PSAR AMENDMENT 5 - ANSWERS TO AEC QUESTIONS

CONSUMERS POWER COMPANY

25 PAGES, 4 TABLES, 8 FIGURES, 1 REFERENCE, DOCKET 50-255, NOVEMBER 2, 1966, TYPE--PWR, MFG.--C.E.,

AE--BECHTEL

SUPPLIES ADDITIONAL INFORMATION ON PREVIOUS QUESTIONS CONCERNING PSAR AND PSAR AMENDMENTS 1 THRU 4, AS REQUESTED INFORMALLY BY DPL. \*\*\* A SECOND FULL-CAPACITY AUXILIARY FUEL PUMP (TURBINE DRIVEN) WILL BE INSTALLED.

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

\*PUMP + AEC QUESTION + EMERGENCY POWER, NONELECTRIC + PALISADES POINT (PWR) + REACTOR, PWR + REPORT, PSAR

18-23037

PALISADES POINT PSAR AMENDMENT 2 - ANSWERS TO AEC QUESTIONS

CONSUMERS POWER COMPANY

54 PAGES, 19 FIGURES, 3 TABLES, 9 REFERENCES, SEPTEMBER 12, 1966, DOCKET 50-255, TYPE--PWR, MFG.--C.E., AE--BECHTEL

AMENDMENT 2 PRESENTS INFORMATION ON QUESTIONS 12 AND 13 WHICH WERE NOT ANSWERED IN AMENDMENT 1, IN DPL LETTER OF AUGUST 2, 1966. 22 QUESTIONS ARE ANSWERED.

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

AEC QUESTION + PALISADES POINT (PWR) + REACTOR, PWR + REPORT, PSAR

18-23055

PALISADES PLANT

CONSUMERS POWER COMPANY, PALISADES PLANT

125 PAGES, 20 FIGURES, 15 TABLES, 9 REFERENCES, APPLICATION FOR REACTOR CONSTRUCTION PERMIT AND OPERATING LICENSE, AMEND. 4, NOVEMBER 29, 1966, DOCKET 50-255, TYPE--PWR, MFG--GE., AE--BECHTEL

VARIOUS ITEMS OF ADDITIONAL OR REVISED INFORMATION ARE FURNISHED. 25 QUESTIONS ON CONTAINMENT INFORMALLY REQUESTED BY DPL ARE ANSWERED. INCLUDES THE FOLLOWING APPENDIXES - (A) SPECIFICATION FOR SPLICING REINFORCING BAR, USING THE CADWELD PROCESS, (B) DATA ON FREYSSINET PRESTRESSED SYSTEM, AND (C) COMPRESSIVE TESTS OF 90-WIRE ANCHOR-HEAD ASSEMBLY.

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

AEC QUESTION + CONCRETE + CONCRETE, PRESTRESSED + PALISADES POINT (PWR) + REACTOR, PWR + REPORT, PSAR + STEEL

18-23182

ACRS REPORT ON THREE MILE ISLAND

DIVISION OF REACTOR LICENSING, AEC

3 PAGES, REFERENCES, LETTER TO GLEN SEABOY FROM CARROLL W. ZABEL, JANUARY 17, 1968, DOCKET 50-289, TYPE--PWR, MFG--B+W, AE--GILBERT ASSOC.

ACRS RECOMMENDS (1) A SECOND SENSOR OF DIFFERENT PRINCIPLE BE USED TO INITIATE ECCS ACTION, (2) REDESIGN SO EITHER ROD-DRIVE-FEEDER-LOSS DROPS ALL RODS, (3) SEPARATION OF CONTROL AND GP PROTECTION SYSTEMS, (4) DEVELOPMENT OF A PROMPT DETECTOR OF GROSS FUEL FAILURE. REGULATORY SHOULD REVIEW SLOWDOWN FORCES. EXPERIMENT SHOULD VERIFY THAT CORE-BARREL CHECK VALVES DO NOT VIBRATE OPEN IN NORMAL OPERATION.

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

\*ACRS + \*REVIEW + CONSTRUCTION PERMIT PROCESS + REACTOR, PWR + THREE MILE ISLAND (PWR)

CATEGORY 15  
SAFETY ANALYSIS AND DESIGN REPORTS

18-23324  
CRYSTAL RIVER AMENDMENT 3  
FLORIDA POWER COOPERATIVE  
CRYSTAL RIVER 3 AND 4 LICENSE APPLICATION AMENDMENT 2, FEBRUARY 7, 1967, DOCKETS 50-302/303, TYPE--PWR,  
MFG--B + W, AE--GILBERT ASSOC.

INCLUDES REVISED PSAR PAGES AND PSAP PAGES AND PSAR SUPPLEMENT 1 (ANSWERS TO DRL QUESTIONS OF  
JAN. 19, 1968) TO INCLUDE INFORMATION ON ENGINEERING CHANGES DEVELOPED SINCE THE PSAR  
SUBMISSION OF AUG. 10, 1967.

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

AEC QUESTION + REACTOR, PWR + REPORT, PSAR

18-23325  
CRYSTAL RIVER UNITS 3 AND 4 - PSAR AMENDMENT 1  
FLORIDA POWER CORPORATION, ST. PETERSBURG, FLORIDA  
412 PAGES, FIGURES, TABLES, REFERENCES, JAN. 15, 1968, DOCKET NO. 50-302/303, TYPE--PWR, MFG--B+W,  
AE--GILBERT ASSOC.

AMENDMENTS CONSISTS OF REVISED PSAP PAGES WITH A FEW NEW PARAGRAPHS AND FIGURES, ALSO A NEW  
SECT. 1 OF APPENDIX 2C, ENTITLED, PLANT PROTECTION AGAINST HURRICANE WAVE ACTION.

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

CRYSTAL RIVER 3 AND 4 (PWR) + REACTOR, PWR + REPORT, PSAR

18-23326 ALSO IN CATEGORIES 2 AND 12  
PLANT PROTECTION AGAINST HURRICANE WAVE ACTION  
FLORIDA POWER CORPORATION, ST. PETERSBURG, FLORIDA  
GAI-REPORT-1450 +. 92 PAGES, FIGURES, TABLES, OCTOBER 26, 1967, CRYSTAL RIVER UNITS 3 AND 4, APPENDIX 2C,  
SECTION 1 OF PRELIMINARY SAFETY ANALYSIS REPORT, AMENDMENT 1, DOCKET NO. 50-302/303, TYPE--PWR, MFG--B+W,  
AE--GILBERT ASSOC.

AFTER REVIEWING 12 YEARS OF USWB AND CORPS OF ENGINEERS EFFORT ON ANALYZING HYDRODYNAMIC  
EFFECTS OF HURRICANES, THE PREDICTED MAX. PROBABLE HURRICANE (WATER LEVEL ON SITE OF 11.4 FT  
WITH 9-FT WAVES) PROTECTION WAS VERIFIED WITH MODEL TESTS AT U OF FLA. (MOVIE AVAILABLE).  
CIRCULATING-PUMPS WILL BE INUNDATED, BUT NUCLEAR SERVICE WATER PUMPS ARE INSIDE BUILDING.  
APPENDIX - (1) SOIL CEMENT SLOPE PROTECTION (4 PG), (2) A MODFL INVESTIGATION OF EXTREME  
RUNUP (15 PG), (3) NORMAL AND EXTREME LOW TIDE CONSIDERATIONS.

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

\*DESTRUCTIVE WIND + \*FLOOD + \*SITING, REACTOR + \*WEATHER, SEVERE + CRYSTAL RIVER 3 AND 4 (PWR) +  
ENGINEERED SAFETY FEATURE + HYDRAULIC ANALYSIS + MODEL TESTING + REACTOR, PWR + REPORT, PSAR

18-23369  
KAPLAN SI  
SAFETY IN HIGH-TEMPERATURE GAS-COOLED REACTORS  
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.  
6 PAGES, 1 FIGURE, 31 REFERENCES, NUCLEAR SAFETY, 9(1), PAGES 4-9 (JAN. FEB. 1968)

DESCRIBES A TYPICAL HTGR. SAFETY ADVANTAGE OVER LIQUID-COOLED REACTORS INCLUDE FREEDOM FROM  
REACTIVITY EFFECTS DUE TO VOIDS AND MODERATOR-DENSITY CHANGES. THE HELIUM COOLANT IS  
CHEMICALLY INERT. DISCUSSES THE REACTOR PHYSICS, CORE INTEGRITY, FISSION-PRODUCT RELEASE  
FROM COATED-PARTICLE FUEL, AND ENGINEERED SAFEGUARDS. REVIEWS NEEDS FOR CONTINUING RESEARCH  
PROGRAM.

\*REVIEW + COATED PARTICLE + CONCRETE, PRESTRESSED + CONTAINMENT INTEGRITY + COOLANT CHEMISTRY +  
ENGINEERED SAFETY FEATURE + FISSION PRODUCT RETENTION + FISSION PRODUCT TRANSPORT +  
MODERATOR COEFFICIENT + PRESSURE VESSEL + REACTIVITY EFFECT + REACTOR PHYSICS + REACTOR STABILITY +  
REACTOR, HTGR + VOID COEFFICIENT

18-23371  
MORISON WG  
MULTI-UNIT ASPECTS OF THE PICKERING GENERATING STATION  
ATOMIC ENERGY OF CANADA LTD., SHERIDAN PARK, ONTARIO  
AECL-2941 + CNFC-67017-9 +. 17 PAGES, 0 FIGURES, SEPTEMBER 1967, FROM SYMPOSIUM ON HEAVY WATER POWER  
REACTORS, VIENNA, AUSTRIA

DESCRIBES THE 6-UNIT STATION. EACH UNIT IS A CANDU-TYPE REACTOR, 500 MWE, PRESSURIZED HEAVY  
WATER, NATURAL UO<sub>2</sub>, HORIZONTAL PRESSURE TUBE. ON-LINE REFUELING IS PLANNED. A SINGLE  
CONTAINMENT ENVELOPE SYSTEM FOR 4 UNITS CONSISTS OF THE 4 REACTOR BUILDINGS, THE  
PRESSURE-RELIEF DUCT, AND THE VACUUM BUILDING. ALSO DISCUSSES COST SAVINGS FROM MULTIPLE



CATEGORY 1P  
SAFETY ANALYSIS AND DESIGN REPORTS

18-23371 \*CONTINUED\*

UNIT CONSTRUCTION, DESIGN, CONSTRUCTION, EQUIPMENT PROCUREMENT, AND SAFETY CONSIDERATIONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA \$3.00  
COPY, \$0.65 MICROFICHE\*REACTOR DESCRIPTION + \*SYSTEM DESCRIPTION + CANADA + CANDU (HWR) + CONTAINMENT, LOW PRESSURE +  
REACTOR, HWR + REACTOR, PRESSURE TUBE

18-23446 ALSO IN CATEGORY 6

ENGELMANN P + BICKEL W + DAFUNERT U + HABERMANN FW + VAN VELZE PL + WLAZE H + WITTEK G  
CONSTRUCTION AND EXPERIMENTAL EQUIPMENT OF THE KARLSRUHE FAST CRITICAL FACILITY, SNEAK  
KERNFORSCHUNGSZENTRUM, KARLSRUHE, WEST GERMANY  
KFK-471 +. 33 PAGES, 7 FIGURES, 13 REFERENCES, OCTOBER 1966SNEAK IS A FIXED VERTICAL ASSEMBLY WITH FUEL ELEMENTS SUSPENDED FROM A TOP GRID. TWO  
HORIZONTAL CHANNELS WILL BE USED FOR A MATERIAL REPLACEMENT DRAWER WITH AUTOMATIC SAMPLE  
CHANGER, A DETECTOR OR MATERIAL TRAVERSE DEVICE, AND A PULSED NEUTRON SOURCE. FOUR VERTICAL  
CHANNELS CLOSE TO THE CORE CENTER ARE AVAILABLE FOR INSTALLATION OF A PILE-OSCILLATOR. A  
GAS-HEATED LOOP IS BEING BUILT FOR DOPPLER EXPERIMENTS. FOUR METHODS USED IN SNEAK FOR  
PRECISE REACTIVITY MEASUREMENTS ARE COMPARED - THE ASYMPTOTIC PERIOD METHOD, THE PILE  
OSCILLATOR METHOD, THE INVERSE KINETICS METHOD, AND THE AUTOROD METHOD.

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

\*CRITICAL ASSEMBLY FACILITY + \*MEASUREMENT, REACTIVITY + \*REACTOR, FAST + CONTROL ROD + DOPPLER EFFECT +  
OSCILLATOR, REACTIVITY + PLUTONIUM OXIDE + REACTOR CONTROL

18-23470 ALSO IN CATEGORY 5

DRESDEN 3 SUMMARY MEMORANDUM ON EXCURSION ON ANALYSIS UNCERTAINTIES  
COMMONWEALTH EDISON CO., CHICAGO, ILLINOIS38 PAGES, FIGURES, TABLES, 17 REFERENCES, MAY 23, 1966, DOCKET NO. 50-249, TYPE--BWR, MFG--G.E., AE--SGT +  
LUNDYCOVERS (1) UNCERTAINTY IN CALCULATION OF PEAK ENTHALPY, (2) SECONDARY REACTIVITY EFFECTS, AND  
(3) UNCERTAINTY OF DAMAGE-THRESHOLD ENTHALPY LIMIT. ERRORS IN (1) ARE EITHER STATISTICAL  
(CALCULATIONAL UNCERTAINTIES ERRORS IN EXPERIMENTAL DATA, ETC.) OR PROBABILISTIC ARISING FROM  
THE STATE VARIABLES OF THE CORE. STATISTICAL ERROR IS ABOUT 10%. BEST PRESENT ESTIMATE OF  
THRESHOLD AT WHICH RAPID CONVERSION OF FISSION ENERGY TO MECHANICAL ENERGY COULD TAKE PLACE  
DUE TO FUEL DAMAGE IS 425 CAL/GM. FOR CONSERVATISM, ENTHALPY LIMIT IS TAKEN AS THE MELTING  
POINT (220-280 CAL/GM).

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

\*ACCIDENT, REACTIVITY + \*ERROR ANALYSIS + AEC QUESTION + EXCURSION, LARGE + FUEL ELEMENT +  
PERFORMANCE LIMIT + REPORT, PSAR

18-23471

DRESDEN 3 PSAR AMENDMENT 3 - REVISED PAGES AND ADDITIONAL INFORMATION  
COMMONWEALTH EDISON CO., CHICAGO, ILLINOIS38 PAGES, FIGURES, TABLES, 17 REFERENCES, MAY 23, 1966, DOCKET NO. 50-249, TYPE--BWR, MFG--G.E., AE--SGT +  
LUNDYAMENDMENT 3 SUBMITS REVISED PAGES V-3-24 AND XI-2-7 TO INDICATE CHANGES IN CORE SPRAY COOLING  
SYSTEM. IT ALSO CONTAINS A SUMMARY MEMORANDUM ON EXCURSION-ANALYSIS UNCERTAINTIES. PREPARED  
IN RESPONSE TO VARIOUS QUESTIONS BY AEC DRL AND ACRS, SPECIFICALLY TO QUESTION 3 BY DIRECTOR,  
DRL, IN LETTER DATED MAY 13, 1966.

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

AEC QUESTION + DRESDEN 2 (BWR) + REACTOR, BWR + REPORT, PSAR

18-23472

DRESDEN 3 PSAR AMENDMENT 2 - ANSWERS TO AEC QUESTIONS  
COMMONWEALTH EDISON CO., CHICAGO, ILLINOIS

18 PAGES, 1 FIGURE, REFERENCES, MAY 1966, DOCKET NO. 50-249, TYPE--BWR, MFG--G.E., AE--SGT + LUNDY

AMENDMENT 2 CONTAINS 9 ANSWERS TO QUESTIONS RAISED BY AEC IN LETTER DATED APRIL 12, 1966.  
QUESTIONS PERTAIN TO INFORMATION SUBMITTED IN AMENDMENT 1.

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

AEC QUESTION + DRESDEN 2 (BWR) + REACTOR, BWR + REPORT, PSAR

18-23482

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-23482 \*CONTINUED\*  
DRESDEN 2 AND 3 FINAL SAFETY ANALYSIS REPORT  
COMMONWEALTH EDISON COMPANY  
450 PAGES, TABLES, FIGURES, REFERENCES, NOVEMBER 17, 1967. DOCKETS 50-237 AND 249, TYPE--BWR, MFG.--G.E., AE--SGT + LUNDY

SAR IS FOR OPERATION OF 2 BWRs (2527 MWT/209 MWE). PLANT DESIGN AND ANALYSIS REPORTS WERE FOR 2255 MWT/715 MWE OPERATION. \*\*\*VOL. 1 COVERS (1) SUMMARY, (2) SITE, (3) REACTOR, (4) COOLANT SYSTEM, (5) CONTAINMENT, AND (6) ENGINEERED SAFEGUARDS. \*\*\* STEAM-LINE FLOW RESTRICTORS LIMIT FLOW TO 175%. INSTALLED DRYWELL INERT ATMOSPHERE EQUIPMENT WILL NOT BE USED. AS EMERGENCY CORE COOLING ALLOWS ONLY A NEGLIGIBLE VOLUME OF HYDROGEN FORMED FROM METAL-WATER REACTIONS. EXCLUSION RADIUS IS ABOUT 0.5 MILE. NEAREST POPULATION CENTER IS JOLIET, ILL. (14 MILES).

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

CONTAINMENT ATMOSPHERE, INERT + DRESDEN 2 (BWR) + POWER UPGRATING + REACTOR, BWR + REPORT, SAR

18-23483 ALSO IN CATEGORY 6  
DRESDEN 2 AND 3 THERMAL LIMITS  
COMMONWEALTH EDISON COMPANY  
17 PAGES, 8 FIGURES, PAGES 3.1-1 THRU 3.2-16 OF DRESDEN 1 AND 2 FINAL SAFETY ANALYSIS REPORT, VOLUME 1, NOVEMBER 17, 1967. DOCKETS 50-237/249. TYPE--BWR, MFG.--G.E., AE--SGT + LUNDY

FUEL-DAMAGE LIMITS ASSUMED ARE DNB AND/OR 1% PLASTIC STRAIN IN THE ZIRC CLADDING. DESIGN MCFR IS 1.5 AT 20% OVERPOWER (APED-3892). EXPECTED MCFR IS 1.9 (APED-5266 HEAT-FLUX CORRELATION FOR BWRs). THE LATTICE LIMIT WILL BE THE GOVERNING CRITERION SINCE A PROPERLY CHOSEN LIMIT FOR NORMAL OPERATION CAN ENSURE THE THERMAL MARGIN AT 20% OVERPOWER CONDITIONS. MAXIMUM LINEAR HEAT RATE LIMIT WILL BE 17.5 KW/FT. THE ABOVE CRITERIA DO NOT STATE THE POWER LEVEL OR PEAKING FACTORS. THESE WILL BE DETERMINED BY THE OPERATOR, SUBJECT TO CONSTRAINTS, INCLUDING THERMAL LIMITS ABOVE.

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

BURNOUT HEAT FLUX + DRESDEN 2 (BWR) + PERFORMANCE LIMIT + REACTOR, BWR + REPORT, SAR + THERMAL CONSIDERATION

18-23484 ALSO IN CATEGORY 11  
DRESDEN 2 AND 3 DRYWELL EXPANSION GAP DESIGN  
COMMONWEALTH EDISON COMPANY  
3 PAGES, PAGES 5-2.28 THRU 5-2.30 OF DRESDEN 1 AND 2 FINAL SAFETY ANALYSIS REPORT, VOLUME 1, NOVEMBER 17, 1967. DOCKETS 50-237/249, TYPE--BWR, MFG.--G.E., AE--SGT, + LUNDY

A GAP BETWEEN THE LINER AND CONCRETE ALLOWING FOR EXPANSION IS FILLED WITH POLYURETHANE FOAM. TWO IN. OF THE FOAM IS POURED OVER THE STEEL DRYWELL SHELL, THEN COVERED WITH 1/4-IN.-THICK POLYESTER FIBER GLASS SHELL PANELS, WHICH FORM THE INNER SHELL FOR POURING THE CONCRETE. PENETRATIONS ARE SURROUNDED BY CONCENTRIC SLEEVES. ON-SITE TESTS OF THESE PROCEDURES SHOWED THAT THE FIBER GLASS WAS DISPLACED BY LESS THAN 0.25 IN. BY THE POURING AND CURING OF THE CONCRETE. THE FOAM WILL BE EXPOSED TO 2.5 X 10<sup>17</sup>TH RADS IN 40 YRS. GAMMA DAMAGE THRESHOLD IS BETWEEN 9 X 10<sup>16</sup>TH AND 4 X 10<sup>17</sup>TH RADS FOR POLYURETHANE ELASTOMERS. SAMPLES OF THE FOAM TO BE USED SHOW NO DETECTABLE CHANGE IN RESILIENCE UP TO 10<sup>16</sup>TH RADS. THE FOAM IS RATED TO 250 F AND IS SELF-EXTINGUISHING.

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

\*CONTAINMENT LINER + \*EXPANSION + \*FOAM + \*PRESSURE VESSEL + CONTAINMENT CONSTRUCTION + CONTAINMENT, PRESSURE SUPPRESSION + DRESDEN 2 (BWR) + IRRADIATION TESTING + PLASTICITY + PRESSURE VESSEL + REACTOR, BWR + REPORT, SAR

18-23485 ALSO IN CATEGORY 12  
DRESDEN 2 AND 3 EMERGENCY CORE COOLING SYSTEMS AVAILABILITY ANALYSIS  
COMMONWEALTH EDISON COMPANY  
5 PAGES, 2 FIGURES, 5 REFERENCES, PAGES 6-2.45 THRU 6-2.47 OF DRESDEN 2 AND 3 FINAL SAFETY ANALYSIS REPORT, NOVEMBER 17, 1967, DOCKETS 50-237/249, TYPE--BWR, MFG.--G.E., AE--SGT + LUNDY

ANALYSES FOR TWO CASES (A SMALL BREAK AND A LARGE ONE) INCLUDE AVAILABILITY BLOCK DIAGRAMS. FAST AVAILABLE SYSTEMS FOR SMALL BREAKS ARE HPCI (0.920) AND LPCI (0.925). TOTAL COMPOSITE SYSTEM AVAILABILITY IS 1 MINUS 14 X 10<sup>17</sup>TH, DUE MAINLY TO THE HIGH AVAILABILITY OF FEEDWATER SYSTEM. (IF NORMAL AUXILIARY POWER FAILS - HENCE NO FEEDWATER - AVAILABILITY IS REDUCED TO 1 MINUS 12 X 10<sup>14</sup>TH.) FOR LARGE BREAKS, FAST AVAILABLE SYSTEM IS LPCI (0.925). COMPOSITE SYSTEM AVAILABILITY IS 1 MINUS 15 X 10<sup>16</sup>TH. WITHOUT AC POWER, IT IS 1 MINUS 12 X 10<sup>15</sup>TH.

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

CORE REFLOODING SYSTEM + CORE SPRAY + DRESDEN 2 (BWR) + ENGINEERED SAFETY FEATURE + FAILURE MODE ANALYSIS + REACTOR, BWR + RELIABILITY ANALYSIS + REPORT, SAR

18-23486

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-23486 \*CONTINUED\*  
DRESDEN 2 AND 3 SAFETY ANALYSIS REPORT. VOLUME II  
COMMONWEALTH EDISON COMPANY  
500 PAGES, TABLES, FIGURES, REFERENCES, NOVEMBER 17, 1967, DOCKET 50-237/249, TYPE--BWR, MFG.--G.E.,  
AE--SGT + LUNDY

VOL. II CONTAINS CHAPTERS (7) I AND C, (8) ELECTRICAL SYSTEM (9) RADWASTE SYSTEM, (10) AUXILIARY SYSTEMS, (11) STEAM SYSTEM, (12) STRUCTURES, (13) OPERATIONS, AND (14) SAFETY ANALYSIS (31 PG). \*\*\* LOSS-OF-COOLANT ACCIDENT RESULTS ARE GIVEN IN A TABLE SHOWING 2-HR AND FULL-TERM THYROID DOSE, PASSING-CLOUD WHOLE-BODY FALLOUT, AND WASHOUT DOSES FOR VARIOUS METEOROLOGICAL CONDITIONS AT DISTANCES FROM 0.5 TO 12 MILES. EXCLUSION-RADIUS 2-HR THYROID DOSE IS  $5 \times 10^{-6}$ TH REM (UNSTABLE 2-MPH WIND). LARGEST FULL-TERM WHOLE-BODY DOSE AT 12 MILES (POP. CENTER DISTANCE IS 14 MILES) IS  $6.5 \times 10^{-5}$ TH REM (STABLE WIND, 2-MPH). THYROID DOSE AT THE EXCLUSION RADIUS IS  $1.2 \times 10^{-3}$ RD REM. WORST OFF-SITE THYROID DOSE FOLLOWS THE ROD-DROP ACCIDENT ( $2.1 \times 10^{-3}$ RD REM).

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

\*REPORT, SAR + ACCIDENT ANALYSIS + ACCIDENT, LOSS OF COOLANT + ACCIDENT, STEAM LINE RUPTURE + AIRBORNE RELEASE + DOSE + DRESDEN 2 (BWR) + REACTOR, BWR

18-23487 ALSO IN CATEGORY 9  
DRESDEN 2 AND 3 INTERMEDIATE RANGE FLUX MONITOR SYSTEM (IRM)  
COMMONWEALTH EDISON COMPANY  
3 PAGES, PAGES 7.4-6 THRU 7.4-8 OF DRESDEN 2 AND 3 FINAL SAFETY ANALYSIS REPORT VOLUME II, NOVEMBER 17, 1967, DOCKET 50-237/249, TYPE--BWP, MFG.--G.E., AE--SGT + LUNDY

SYSTEM CONSISTS OF TWO LOGIC CHANNELS, EACH CONNECTED TO FOUR MINATURE FISSION CHAMBERS. THE CHAMBERS OF EACH CHANNEL ARE LOCATED ON A DIAGONAL OF THE CORE, WITH THE SPACING BETWEEN THE CENTER CHAMBERS LESS THAN THE SPACING BETWEEN CENTER AND OUTER CHAMBERS. WORST ROD-WITHDRAWAL ACCIDENT IS WITH THE REACTOR JUST SUBCRITICAL AND WITH THE IRMS NOT ON SCALE YET. A CONTROL ROD NEAR ONE OF THE OUTER CHAMBERS (WHICH IS ASSUMED TO BE BYPASSED) IS FULLY WITHDRAWN. THE MEASURED RELATIVE FLUX (AVERAGE FLUX EQUALS 1) AT THE NEAREST DETECTOR IS 0.01, AND THE FLUX PEAK IS ABOUT 50. RATIO OF PEAK-TO-MEASURED FLUX IS  $2.2 \times 10^{-4}$ TH. TRIP POINT IS  $6 \times 10^{18}$ TH NV, RESULTING IN A PEAK FLUX AT  $2.7 \times 10^{12}$ TH. FULL POWER FLUX IS  $3.5 \times 10^{13}$ TH.

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

\*ACCIDENT, CONTROL ROD WITHDRAWAL + \*INSTRUMENTATION, INTERMEDIATE RANGE + DRESDEN 2 (BWR) + REACTOR, BWR + REPORT, SAR

18-23488 ALSO IN CATEGORY 7  
DRESDEN 2 AND 3 SAFETY ANALYSIS INVOLVING FISSION PRODUCT RELEASE FROM FUEL  
COMMONWEALTH EDISON COMPANY  
5 PAGES, 3 TABLES, PAGES 14.2-13 THRU 14.2-17 OF DRESDEN 2 AND 3 FINAL SAFETY ANALYSIS REPORT, NOVEMBER 17, 1967, DOCKETS 50-237/247, TYPE--BWR, MFG.--G.E., AE--SGT + LUNDY

BASED ON EXPERIENCE, A MAXIMUM OF 1% OF THE NOBLE-GAS ACTIVITY AND 0.5% OF THE HALOGEN ACTIVITY IS ASSUMED RELEASED FROM A FUEL ROD WITH A CLAD PERFORATION. DRESDEN-1 EXPERIENCE HAS SHOWN THE FOLLOWING - (1) SOME FISSION GASES LEAK FROM THE FUEL LATTICE TO THE PLENUMS. MOST OF THE RADIOACTIVE GASES HAVE SHORT HALF-LIVES, LEAVING MOSTLY NONRADIOACTIVE GASES IN THE PLENUMS. (2) RELEASE RATE OF NOBLE GASES CAN BE ESTIMATED BY MEASURING THE RELEASES FROM A DEFECTIVE ROD. THIS GIVES AN OVERESTIMATION BECAUSE WATER AND STEAM ENTER THE BREAK, CAUSING LEAKING AND DETERIORATION OF THE UO<sub>2</sub>. \*\*\* ASSUMING CLADDING FAILURE IN 330 RODS,  $4.4 \times 10^{14}$ TH CURIES OF NOBLE GASES AND  $2.3 \times 10^{14}$ TH CURIES OF HALOGENS ARE RELEASED.

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

\*FISSION GAS RELEASE + \*FISSION PRODUCT RELEASE, GENERAL + DRESDEN 2 (BWR) + OPERATING EXPERIENCE SUMMARY + REACTOR, BWR + REPORT, SAR

18-23489  
QUAD CITIES 1 AND 2 PSAR AMENDMENT 2 - ANSWERS TO AEC QUESTIONS  
COMMONWEALTH EDISON COMPANY  
126 PAGES, 8 TABLES, 13 FIGURES, 23 REFERENCES, OCTOBER 18, 1966, DOCKET 50-254 AND 50-265, TYPE--BWR,  
MFG.--G.E., AE--EBASCO

ANSWERS ARE GIVEN TO 19 QUESTIONS POSED BY AEC IN A LETTER DATED OCTOBER 12, 1966. ADDITIONAL INFORMATION REQUESTED BY TELEPHONE OCTOBER 14, 1966, IS ALSO SUBMITTED.

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

AEC QUESTION + QUAD CITIES 1 AND 2 (BWR) + REACTOR, BWR + REPORT, PSAR

18-23600  
FORT CALHOUN STATION-UNIT NO. 1. FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, SUPPLEMENT NO. 2,  
EXHIBIT F2

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-23600 \*CONTINUED\*  
OMAHA PUBLIC POWER DISTRICT  
220 PAGES, 46 FIGURES, 6 TABLES, 10 REFERENCES, SEPT. 16, 1967, DOCKET NO. 50-285, TYPE--PWR, MFG--C.E.,  
AE--GIBBS + HILL

CONTAINS ANSWERS TO 93 QUESTIONS RAISED BY DRL IN LETTERS OF JUNE 14 AND JULY 20, 1967.

USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*AEC QUESTION + FT. CALHOUN (PWR) + REACTOR, PWR + REPORT, PSAR

18-23803 ALSO IN CATEGORY 11  
INDIAN POINT 2 BUCKLING OF CONTAINMENT LINER AT THE FUEL TRANSFER PENETRATION  
CONSOLIDATED EDISON COMPANY OF NEW YORK  
2 PAGES, JANUARY 1968, ATOMIC ENERGY CLEARING HOUSE, 14(10), PAGES 38-39 (MARCH 4, 1968), DOCKET 50-247

(LETTER TO DRL, JAN. 1968) THE LINER DEFORMATION WAS NOTICED DURING CONSTRUCTION. REPORT DESCRIBES THE QUALITY-CONTROL PROCEDURES AND TESTING OF THE LINER WELDS (CHANNELS ARE WELDED OVER ALL LINER SEAMS). AFTER REPAIRING THE BULGE, LEAK TESTS WERE AGAIN PERFORMED ON THE WELD CHANNELS IN THE VICINITY. ALL WELD-CHANNEL FILLET WELDS IN THE SAME AREA WERE MAGNETIC-PARTICLE INSPECTED. THE WELD-CHANNEL SYSTEM PASSED BOTH TESTS.

\*BUCKLING + \*CONTAINMENT LINER + \*CONTAINMENT PENETRATION, GENERAL + EXAMINATION + FUEL HANDLING MACHINE + INDIAN POINT 2 (PWR) + QUALITY CONTROL + REACTOR, PWR + TEST, LEAK RATE + TEST, NONDESTRUCTIVE + WELDS

18-23812 ALSO IN CATEGORY 2  
MORRIS PA  
DRL RECOMMENDS EARTHQUAKE ACCELERATION FOR ZION  
AEC, DIVISION OF REACTOR LICENSING, WASHINGTON, D. C.  
LETTER TO W. R. BEHNKE, COMMONWEALTH EDISON CO., CHICAGO, ILLINOIS, 1 PAGE, FEBRUARY 21, 1968, DOCKET NO. 50-295/304, TYPE--PWR, MFG--WEST., AE--SGT + LUNDY

U.S. COAST AND GEODETIC SURVEY RECOMMENDS, WITH DRL AND USGS CONCURRING, THAT AN ACCELERATION OF 0.08 G IS ADEQUATE FOR LIKELY EARTHQUAKES, AND 0.17 G IS THE MAXIMUM GROUND ACCELERATION FOR DESIGN FOR SAFE SHUTDOWN. DPL UNDERSTANDS THAT AN AMENDMENT WILL BE FILED ON THIS BASIS.

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

\*DESIGN CRITERIA + \*EARTHQUAKE ENGINEERING + REACTOR, PWR + ZION 1 AND 2 (PWR)

18-23950  
REVISED RESPONSE TO AEC QUESTIONS  
OMAHA PUBLIC POWER DISTRICT  
35 PAGES, FIGURES, TABLES, SUPPLEMENT 15 (AMENDMENT 15, EXHIBIT F-15) TO FORT CALHOUN FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT. JANUARY 26, 1968, DOCKET 50-285, TYPE--PWR, MFG--C.E., AE--GIBBS + HILL

SUPPLEMENTS AND REVISES ANSWERS TO QUESTIONS 9.1, 9.2, 10.4, 14.6, 14.7, AND 14.9. \*\*\*THIS SET REVISES THE EXCLUSION-BOUNDARY DOSES TO ACCOUNT FOR A REDUCTION OF EXCLUSION DISTANCE FROM 1290 TO 973 FT BECAUSE CLEAR TITLE HAS NOT BEEN OBTAINED TO THE LAND ON THE OPPOSITE SIDE OF THE MISSOURI RIVER. IN MOST CASES THE CHANGE IS RELATIVELY MINOR, E.G., THE 2-HR THYROID DOSE WITH REDUCTION FACTOR FOR CHARCOAL CHANGES FROM 92.4 TO 89 REMS. \*\*\*IN ADDITION, SUPPLIES EXHIBIT C1 (SUPPLEMENTARY FINANCIAL INFORMATION).

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

\*AIRBORNE RELEASE + \*WASTE + \*FISSION PRODUCT, IODINE + AEC QUESTION + FT. CALHOUN (PWR) + REACTOR, PWR + REPORT, PSAR

18-23951 ALSO IN CATEGORIES 10 AND 9  
REVISED RESPONSE TO AEC QUESTIONS  
OMAHA PUBLIC POWER DISTRICT  
10 PAGES, 1 FIGURE, SUPPLEMENT 16 (AMENDMENT 16, EXHIBIT F16) TO FORT CALHOUN FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, FEBRUARY 2, 1968, DOCKET 50-285, TYPE--PWR, MFG--C.E., AE--GIBBS + HILL

REVISES ANSWERS TO QUESTIONS 1.1, 2.4, 13.2, AND 4.2. QUESTIONS ARE RELATED TO OUTSIDE ELECTRICAL POWER, CONTROL-ROD-INSERTION CAPABILITY DURING EARTHQUAKE, AND SCRAM-BUS SINGLE-FAILURE CRITERION.

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

\*ELECTRIC POWER, GENERAL + AEC QUESTION + FT. CALHOUN (PWR) + OFF SITE + REACTOR, PWR + REPORT, PSAR + SINGLE FAILURE CRITERION

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-23952

AMENDMENT 1, RESPONSE TO AEC QUESTIONS  
NIAGARA MOHAWK POWER CORPORATION, SYRACUSE, NEW YORK  
100 PAGES, TABLES, FIGURES, FIRST SUPPLEMENT (EXHIBIT 9-1) TO EASTON PSAR, MARCH 1968, DOCKET 50-300,  
TYPE--BWR, MFG.--G.E., AE--STONE + WEBSTER

AMENDMENT 1 TRANSMITS THE FIRST SUPPLEMENT TO THE EASTON PSAR, (1) INDICATING PSAR SECTIONS DISCUSSING THE GENERAL DESIGN CRITERIA OF JULY 67, (2) INDICATING PSAR SECTIONS AND FIRST SUPPLEMENT ANSWERS WHICH RESPOND TO RECENT ACRS COMMENTS, AND (3) RESPONSE TO 55 QUESTIONS OF FEB. 2, 1968 AS FOLLOWS - GENERAL (3), SITE (3), STRUCTURE (9), REACTOR AND INTERNALS (1), REACTOR COOLANT SYSTEM (2), CONTAINMENT (8), ENGINEERED SAFETY FEATURES (5), RAD-WASTE (1), ACCIDENT ANALYSIS (2), ELECTRICAL SYSTEMS (6), REACTOR OPERATION (1), AND INSTRUMENTATION (12).

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

ACRS + AEC DESIGN CRITERIA + AEC QUESTION + EASTON (BWR) + REACTOR, BWR + REPORT, PSAR

18-24157

SHAW M + WHITMAN M  
NUCLEAR POWER - SUDDENLY HERE  
U.S. ATOMIC ENERGY COMMISSION, WASHINGTON, D.C.  
13 PAGES, FIGURES, SCIENCE AND TECHNOLOGY, 75, PAGE 22 THRU 34, (MARCH 1968)

QUITE GENERAL, BIG-PICTURE DISCUSSION OF INCREASE IN POWER-REACTOR CAPACITY AND PROJECTION. REFERENCE TO BROWNOUTS AND BURDEN ON NEWER AND MORE COMPLEX REACTORS. BRIEF DISCUSSION OF VARIOUS REACTOR TYPES (U.S. AND ABROAD), BREEDING, AND NEED FOR FAST BREEDERS. ENDS WITH DISCUSSION OF ACCIDENTS, QUALITY CONTROL, AND DESALINATION.

\*ECONOMICS + \*SYSTEM DESCRIPTION + REACTOR, POWER

18-24269

ALSO IN CATEGORY 2  
HUDSON RIVER VALLEY COMMISSION RECOMMENDS RELOCATION OF EASTON STATION  
NIAGARA MOHAWK POWER CORPORATION  
3 PAGES, ATOMIC ENERGY CLEARING HOUSE, 14(14), PAGES 22-24 (APRIL 1, 1968)

(FINDINGS, MARCH 22.) A PUBLIC HEARING WAS HELD IN ALBANY, N. Y., FEB. 28. IN THE OPINION OF THE COMMISSION, AN OFFICIAL ADVISORY AGENCY OF N.Y. STATE, FOUND THAT THE BENEFITS OF THE REACTOR AT EASTON SITE WERE OUTWEIGHED BY THE ADVERSE EFFECTS ON THE SCENIC, HISTORICAL, RECREATIONAL, AND NATURAL RESOURCES OF THE RIVER. FINDINGS (B) - NO PUBLIC CONCERN ON RADIOLOGICAL SAFETY IF AEC CRITERIA MET. (C,D) - PROOF THAT THERMAL-POLLUTION EFFECTS ON ECOLOGY ARE NOT DETRIMENTAL IS LACKING. LOW RIVER FLOW MAY REDUCE POWER LEVEL. (E,H) - COOLING TOWERS MAY ADVERSELY AFFECT SCENIC VALUES, WHICH THE PLANT ITSELF MAY ALSO DO.

\*REGULATION, STATE + \*SITING, REACTOR + \*THERMAL POLLUTION + EASTON (BWR) + REACTOR, BWR

CATEGORY 18  
BIBLIOGRAPHIES

19-21773 ALSO IN CATEGORIES 4 AND 1  
PUBLICATIONS OF LASL RESEARCH, 1966  
LOS ALAMOS SCIENTIFIC LAB., LOS ALAMOS, NEW MEXICO  
TID-24041 + MM-1144 +. 138 PAGES, SEPTEMBER 1967

PAPERS, REPORTS, BOOKS, JOURNAL ARTICLES, ETC., OF LASL PUBLISHED IN 1966 ARE LISTED ALPHABETICALLY BY AUTHOR UNDER 36 SUBJECT AREAS. INCLUDES DOCUMENTS ON AEROSPACE SAFETY, BIOLOGY AND MEDICINE, CHEMICAL KINETICS, HEALTH AND SAFETY, INSTRUMENTS, METALLURGY AND CERAMICS, REACTOR TECHNOLOGY, AND WASTE DISPOSAL.

\*BIBLIOGRAPHY + ACCIDENT, GENERAL + AEROSPACE SAFETY + BIOMEDICAL + DECONTAMINATION + COSMETRY, GENERAL + INSTRUMENTATION, GENERAL + WASTE DISPOSAL, GENERAL

19-22284  
SUPPLEMENTAL INSERT SHEETS FOR ENGINEERING MATERIALS LIST  
USAEC DIVISION OF TECHNICAL INFORMATION  
TID-4100 (SUPPL. 42) +. 60 PAGES, DECEMBER 1967

SUPPLEMENTAL SHEETS FOR ADDITION TO AN EXTENSIVE LIST OF ENGINEERING DRAWINGS IN THE TID-4100 SERIES OF REPORTS.

AVAILABILITY - USAEC DIVISION OF TECHNICAL INFORMATION, FREE

\*ENGINEERING DRAWING LIST

19-22496  
AEC 16MM FILM CATALOG--PROFESSIONAL LEVEL  
US ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.  
97 PAGES, USAEC FILM CATALOG, 1966-67

GIVES A BRIEF DESCRIPTION (100 TO 200 WORDS) OF ABOUT 200 AEC MOTION PICTURES WHICH ARE AVAILABLE FREE ON LOAN FOR PUBLIC, NONPROFIT EXHIBITION. INFORMATION IS INCLUDED ON WHERE AND HOW TO BORROW. TITLES RANGE FROM CLEAN AIR IS A BREEZE TO A 2-FILM SET ON THE SL-1 ACCIDENT.

BIBLIOGRAPHY + STAFFING, TRAINING, QUALIFICATION

19-23311 - ALSO IN CATEGORIES 7 AND 11  
PATENTS IN THE FIELD OF CAN-RUPTURE DETECTION  
COMMISSARIAT A L-ENERGIE ATOMIQUE, SACLAY (FRANCE). CENTRE D-ETUDES NUCLEAIRES  
CEA-819-78 +. 141 PAGES, FIGURES, OCTOBER 1967, IN FRENCH

THE ABSTRACTS OF PATENTS ISSUED IN THE PRINCIPAL INDUSTRIAL COUNTRIES ARE LISTED ACCORDING TO SEVERAL CHAPTERS PERTAINING TO THE GENERAL PRINCIPLES OF LEAK DETECTION, DETECTION ITSELF OF FISSION PRODUCTS, APPARATUS USED DIRECTLY OR IN COMBINATION WITH AND FOR THE PURPOSE OF DETECTION, THE INDICATION AND TREATMENT OF THE DATA GIVEN, THE EXAMINATION BEFORE AND AFTER USE OF CARTRIDGE JACKETS. A CUMULATION LIST IS APPENDED, GIVING IN PROGRESSIVE ORDER THE PATENT NUMBERS FOR 18 COUNTRIES TO FACILITATE THE SEARCH OF THE ABSTRACT IN THE CORRESPONDING CHAPTER.

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

\*FUEL ELEMENT + \*INSTRUMENTATION, DETECTION FAILED FUEL ELEMENT + \*TEST, LEAK LOCATION + MONITOR, RADIATION, GENERAL

19-23312 ALSO IN CATEGORIES 11 AND 17  
LE-LEVIER MG  
FAILURES IN PIPES AND PRESSURE VESSELS CORRELATED TO NUCLEAR POWER PLANT SERVICE  
COMMISSARIAT A L-ENERGIE ATOMIQUE, SACLAY (FRANCE). CENTRE D-ETUDES NUCLEAIRES  
CEA-819-79 +. 32 PAGES, SEPT. 1967, IN FRENCH

THIS BIBLIOGRAPHY DEALS WITH THE PAPERS PUBLISHED ON THE FAILURES IN PIPES AND PRESSURE VESSELS CORRELATED TO NUCLEAR POWER PLANT SERVICE. THE REFERENCES WERE SELECTED FROM BIBLIOGRAPHIC INDEXES PUBLISHED FROM 1963 TO JULY 1966 INCLUSIVE. ABSTRACTS ARE INCLUDED.

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

\*FAILURE, GENERAL + \*PIPING + \*PRESSURE VESSEL + BIBLIOGRAPHY + BRITTLE FRACTURE + STRESS ANALYSIS + TEST, BENCH + TEST, DESTRUCTIVE + TEST, NONDESTRUCTIVE

CATEGORY 19  
BIBLIOGRAPHIES

19-23402 ALSO IN CATEGORY 5  
LUTKOV AV  
HEAT TRANSFER BIBLIOGRAPHY--RUSSIAN WORKS  
B.S.S.R. ACADEMY OF SCIENCES, MINSK, U.S.S.R.  
18 PAGES, INT. J. HEAT MASS TRANSFER 10(7), PAGES 999-1014 (JULY 1967)

BIBLIOGRAPHY OF THE RUSSIAN LITERATURE.

\*BIBLIOGRAPHY + \*HEAT TRANSFER

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 DENGTE 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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	15-21314	15-21315	15-21666	15-23152		16-22970	16-23379	16-23878	16-23880
						16-24065	16-24066	17-21426	16-23880
					AEROSPACE SAFETY	1-21773	1-23391	4-21398	4-21773
						4-22567	4-22698	4-22700	4-23391
						19-21773			
					AGESTA (PWR)	6-23167	17-23167		
					AGN (TNG)	9-22493	9-22784	9-22844	17-20835
						17-22784	17-22644	18-21430	18-22493
					AGP (ADVANCED GASCOOLED REACTOR, WINDSCALE, UK)	18-22842			
						6-21247			



AGRICULTURAL CONSIDERATION					ATMOSPHERIC DIFFUSION				
14-21749	15-21749				2-23197	14-23878	15-23901	16-21134	
AIR					16-21926	15-22451	16-23197	16-23878	
5-22723	7-22911	7-22837	9-22715		16-24064				
8-22720	8-22723	8-22834	8-22835		ATMOSPHERIC DIFFUSION EXPERIMENT				
8-23377	8-23425	11-22109	14-21200		16-22970	16-24067			
14-21204	14-21272	14-21756	14-21938		ATMOSPHERIC DIFFUSION, GLOBAL				
15-21204	15-21272	15-21313	15-21373		14-23880	16-21222	16-23380	16-23880	
15-21756	15-23905				ATMOSPHERIC POLLUTION				
AIR CLEANING					16-22450	16-22451			
7-22707	7-22986	17-21426			ATMOSPHERIC STABILITY				
AIRBORNE RELEASE					14-21713	16-21133	16-21223	16-21713	
13-23316	14-21256	14-21718	14-21756		16-21925	16-22451	16-22921	16-22925	
14-21784	15-21256	15-21261	15-21756		AUSTRALIA				
15-21784	15-22518	15-22519	15-23300		14-21276				
16-21261	17-21718	17-22518	17-22519		AUXILIARY COOLING				
17-23316	18-23486	18-23950			17-16494	18-16494			
AIRCRAFT					AUXILIARY COOLING SYSTEM				
14-21272	15-21274	15-21272	16-21224		17-21395	17-21397	17-22553	17-22851	
ALASKA					18-22851				
14-24061	15-24061				BARIUM				
ALLOY					4-22468	7-22468	7-22472	7-22542	
1-21392	4-22515	4-22568	7-22515		14-21966	14-24060	15-24060		
7-22811	8-22719	17-21215			BATTELLE NORTHWEST				
ALPHA EMITTER					1-22330	1-22458	1-22459	1-22571	
7-18345	13-22526	14-21192	14-21204		1-22706	1-22919	9-21922	14-21256	
14-21283	15-21192	15-21204	15-21283		14-21290	14-21305	14-21311	14-21329	
15-21787	15-22111	15-22526	17-22526		14-21379	14-21798	14-21799	14-21953	
ALUMINUM					14-21967	15-21256	15-21311	15-21329	
1-21392	5-22723	8-22723	8-22824		15-21787	18-21215			
14-21199	17-21670	17-22579			BELGIUM				
AMERICIUM					14-21387	15-21387			
12-24278	14-21798	15-21306	15-22527		BEPYLLIUM				
15-24278	17-21082	17-22522	17-22527		6-23917	9-20713	13-21194	14-21194	
17-22957	17-23318	17-24278			14-21202	14-21205	15-21194	15-21203	
ANALOG SIMULATION					BETA EMITTER				
9-23385					14-21192	14-21195	14-21756	14-21770	
ANALYTICAL MODEL					14-21771	14-21947	14-22492	15-20737	
2-21917	4-22480	5-22708	5-22723		15-20742	15-21192	15-21720	15-21756	
6-21247	7-22477	7-22480	7-22481		15-21770	15-21771	15-21947	15-22238	
7-22487	7-22917	7-22984	8-22708		15-22242	15-22520	15-22931	15-23429	
8-22720	8-22723	8-23435	9-21832		15-23430	15-23431	15-24273	16-22492	
9-23385	12-20991	16-22450	17-21410		17-21720	17-22520			
17-22912	18-20991	18-21917	18-22917		BIPLIOGRAPHY				
ANALYTICAL TECHNIQUE, AIR					1-21773	4-21773	5-23402	11-23312	
7-22531	7-22986	14-21755	14-23379		17-23312	18-23016	19-21773	19-22496	
16-21133	16-22451	16-23379			19-23312	19-23402			
ANALYTICAL TECHNIQUE, CALIBRATION					EIG ROCK POINT (BWR)				
7-18345	7-22534	7-22548	7-22982		5-21810	15-22520	17-21810	17-22226	
15-22488					17-22520	17-22828			
ANALYTICAL TECHNIQUE, FOOD					BIOLOGICAL CONCENTRATION, ANIMAL				
14-21931	14-22577	15-21921			14-21269	14-21275	14-21345	14-21938	
ANALYTICAL TECHNIQUE, GAS					14-21946	14-21996	14-22237	15-21136	
7-22554	7-22561				15-21254	15-21761	15-21939	15-21996	
ANALYTICAL TECHNIQUE, GENERAL					BIOLOGICAL CONCENTRATION, ANIMAL FEED				
14-20558	14-21931	14-24063	15-21931		14-21381	14-21782	14-22237		
15-21939	15-23159	15-24063			BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS				
ANALYTICAL TECHNIQUE, LIQUID					14-21252	14-21284	14-21285	14-21311	
14-23153	15-23153				14-21384	14-21750	14-21751	14-21780	
ANALYTICAL TECHNIQUE, MILK					14-21781	14-21945	14-21949	14-21966	
14-22471	15-21762	16-22971			14-22150	14-22151	14-22154	14-22245	
ANALYTICAL TECHNIQUE, SOLID					14-23155	15-21311	15-21750	15-21751	
14-21765	14-21931	15-21931			15-21945	15-22150	15-23155		
ANALYTICAL TECHNIQUE, URINE					BIOLOGICAL CONCENTRATION, FOOD				
14-21204	14-21936	14-21994	15-21204		14-21142	14-21252	14-21266	14-21325	
15-21287	15-21386	15-21962			14-21360	14-21362	14-21381	14-21749	
ANALYTICAL TECHNIQUE, VEGETATION					14-21750	14-21751	14-21750	14-21946	
14-21931	14-22577	15-21931			14-21952	14-21959	14-21965	14-21966	
ANALYTICAL TECHNIQUE, WATER					14-21978	14-21980	14-22246	14-22815	
14-21765	14-21931	14-22577	14-22806		15-21254	15-21360	15-21363	15-21385	
15-21931	16-21926				15-21745	15-21750	15-21751	15-21959	
ANL					15-21978	15-23901			
5-22723	8-22719	8-22723	8-22821		BIOLOGICAL CONCENTRATION, GENERAL				
8-22822	9-22823	8-22824	14-21314		14-21142	14-21252	14-21264	14-21269	
15-21261	15-21314	16-21261			14-21325	14-21384	14-21748	14-21749	
ANTIMONY					14-21750	14-21751	14-21758	14-21780	
4-22468	7-22468				14-21781	14-21782	14-21799	14-21945	
AQUATIC ORGANISMS					14-21952	14-21959	14-21965	14-21966	
14-21270	14-21378	14-23321	15-23321		14-21967	14-21978	14-21980	14-22112	
ARGENTINA					14-23154	14-24061	15-21138	15-21261	
14-21965					15-21748	15-21749	15-21750	15-21751	
ARGON					15-21945	15-21959	15-21978	15-23154	
4-22463	4-22486	7-22486	11-22463		15-24061	16-21261			
12-22463	14-21765	15-22488			BIOLOGICAL CONCENTRATION, MAN				
ARGONAUT (TNG)					14-21162	14-21204	14-21266	14-21311	
17-22460					14-21344	14-21345	14-21360	14-21768	
ASLB					14-21945	14-21993	14-21994	14-22805	
18-22981					14-22813	14-24214	14-24215	15-21136	
ATMOSPHERIC CIRCULATION, GLOBAL					15-21138	15-21162	15-21204	15-21254	
14-23379	14-23890	16-21222	16-22924		15-21311	15-21344	15-21349	15-21360	
16-23379	16-23380	16-23880	16-24065		15-21385	15-21386	15-21666	15-21766	

15-21768	15-21932	15-21930	15-2194F	CARBIDE	4-22549	7-22549	8-22377	
15-21953	15-22205	15-22215	15-23903	CARBON	4-22465	4-22483	4-22515	4-22516
15-23937	15-24214	15-24215			4-22549	4-20550	7-22483	7-22515
BIOLOGICAL CONCENTRATION, MILK					7-22516	7-22530	7-22540	7-22985
14-21142	14-21309	14-21325	14-21345		9-23344	14-22217	17-22914	
14-21360	14-21381	14-21758	14-2193F	CARBON DIOXIDE	8-22716	8-22717		
14-21945	14-21952	14-21978	14-21980	CARBON MONOXIDE	8-22716			
14-21997	14-22203	14-22212	14-22215					
15-21360	15-21761	15-21762	15-21945	CENTERLINE MELTING	5-21910	5-22978	17-21342	17-21810
15-21978					17-22226	17-2297F		
BIOLOGICAL CONCENTRATION, VEGETATION				CERAMICS	4-22540	4-22555	7-22549	7-22555
14-21266	14-21379	14-21782	14-21799		7-22917	14-23914	15-22914	18-22917
14-21935	14-21945	14-21951	14-21959	CERIUM	4-22489	7-22489	14-21967	14-22151
14-21965	14-21966	14-21967	14-22112		14-22576	14-24060	15-24060	
14-22245	14-22246	14-22576	14-22817	CESIUM	4-22468	4-22469	4-22489	7-20550
15-21945	15-21959				7-22469	7-22469	7-22472	7-22489
BIO MEDICAL					14-21269	14-21290	14-21309	14-21311
1-21773	4-21773	4-22700	14-21162		14-21325	14-21349	14-21350	14-21366
14-21260	14-21283	14-21311	14-21349		14-21379	14-21382	14-21930	14-21935
14-21374	14-21786	14-21945	14-21959		14-2193F	14-21945	14-21946	14-21967
14-21593	14-21595	14-21996	15-21162		14-21949	14-21951	14-21952	14-21966
15-21254	15-21260	15-21261	15-21263		14-21967	14-22150	14-22237	14-22239
15-21293	15-21295	15-21306	15-21311		14-22245	14-22492	14-22576	14-22577
15-21326	15-21349	15-21374	15-21796		14-22804	14-22153	14-22155	14-22914
15-2172F	15-21795	15-21936	15-21943		14-24061	15-2113F	15-21278	15-21311
15-21945	15-21959	15-21993	15-21996		15-21360	15-21373	15-21385	15-21793
15-22148	15-22152	15-22573	15-22818		15-21932	15-21945	15-21947	15-22150
15-22930	16-21261	19-21773			15-22153	15-22155	15-22914	15-24061
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14-21252	14-21780	14-21781			7-23911	9-23911	14-21366	14-21954
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14-21945	15-21945			CHAMBER, FISSION	9-23329			
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9-22236	12-24058	12-24059	18-22236	CHARCOAL ADSORBER	7-22556	7-22564	7-22810	
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17-21299	17-21300	17-21411			8-22824	8-22834	8-22835	8-23160
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6-23440	7-22985	9-23377	9-20714		4-22469	4-22474	5-22723	5-22978
9-22844	9-23196	11-23915	14-16834		7-22469	7-22482	8-22694	8-22695
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14-21366	14-21965	14-21994	14-21995					
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CODES AND STANDARDS					CONTAINMENT INSTRUMENTATION				
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6-21475	6-22930	6-23167	6-23444		CONTAINMENT PENETRATION, CLOSURE OF				
8-22712	8-22720	8-20708	9-20709		5-23390	11-22938	17-22840	17-23390	
9-20712	9-21229	9-21230	9-21234		18-22494	18-22938			
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16-24067	17-20709	17-21410	17-21417		11-23803	17-21414	17-22851	18-22851	
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16-22921					17-23317	17-23370	17-24273	17-24274	
CONCRETE					17-24277				
11-21121	11-23307	11-23847	14-18834		CONTRCL ROD				
18-23055					6-23446	8-23377	9-20992	9-21237	
CONCRETE, PRESTRESSED					9-21238	9-21239	9-21413	9-21977	
11-22119	11-22122	11-22127	11-22124		9-22344	9-22947	9-22992	9-23183	
11-22125	11-23013	11-23302	11-23306		9-23833	9-23043	17-21299	17-21404	
11-23309	11-23809	11-23844	11-23845		17-21406	17-21413	17-22224	17-22844	
11-23847	11-23856	11-23930	18-23013		17-22947	17-22953	17-22992	18-20992	
18-23055	18-23369				18-22224	18-22339	18-22961	18-23446	
CONDENSATION					CONTROL ROD BURNUP				
14-21257					5-22225	9-24134	17-22225	17-22953	
CONSTRUCTION PERMIT PROCESS					17-24134				
1-22926	1-22927	11-21663	18-21293		CONTROL ROD CALIBRATION				
13-21663	18-21916	18-22854	18-22954		5-22456	6-21126	9-21776	17-21184	
19-22961	18-23182				17-22456	17-22621			
CONTAINMENT ANALYSIS					CONTROL ROD DRIVE				
11-23823	11-23824	12-20991	18-20991		9-21973	9-21974	9-22258	9-22948	
CONTAINMENT ATMOSPHERE, INERT					9-22950	9-23143	9-23805	9-24197	
11-22110	17-22110	18-23482			17-21352	17-21406	17-21753	17-22258	
CONTAINMENT CONSTRUCTION					17-22846	17-22948	17-22950	17-23143	

17-23375	17-23805	18-22494	18-22950	15-21983	15-21996	15-22808	15-23322
CONTROL ROD FABRICATION				15-24061			
9-20714	9-20715	9-23143	17-23143	COUPLED CORES			
CONTROL ROD INTERACTION				5-23167			
6-23163	9-21834	9-21977	9-22513	CREEP			
9-23854				7-22917	11-23698	11-23806	17-21215
CONTROL ROD PROGRAM				18-22917			
5-22236	9-22236	9-22781	16-21476	CREEP BEHAVIOR			
17-21476	17-22781	18-22236		11-21121	11-22123	11-23857	
CONTROL ROD SCRAM MECHANISM				CREEP PROPERTIES			
9-21432	9-21973	9-22948	9-23148	11-21121			
17-21432	17-22948	18-22141		CRITICAL ASSEMBLY FACILITY			
CONTROL ROD WORTH				1-23168	5-22140	5-22140	6-23446
5-22456	6-20587	6-23167	6-23440	9-20711	9-21418	9-22281	9-22513
9-20711	9-20713	9-21776	9-21832	14-21202	15-21202	17-21412	17-21418
9-22513	17-21212	17-21355	17-22456	17-22140	17-22281	17-22837	17-22838
17-22952	17-23167			17-22951	18-21220	18-21416	18-22446
CONTROL ROD, SHIM SAFETY				CRITICAL MASS			
9-24257				6-23917			
CONTROL SYSTEM				CRITICALITY EXPERIMENT			
4-22338	6-23163	9-21232	9-21903	1-23168	6-20587	6-21241	6-21245
9-21975	9-22338	9-23150	9-23152	6-21240	6-21250	6-21438	6-23434
9-23347	9-23386	9-23850	17-21252	6-23440	6-23442	7-21245	9-22513
CONTROL, COMPUTER				12-21245	17-21406		
9-21240	9-23150			CRITICALITY SAFETY			
CONTROL, GENERAL				1-21000	1-23442	7-20630	3-22160
9-21830	9-21831	9-21901	9-21975	6-23358	6-23443	6-23517	9-21900
9-23150	16-23883			9-23358	12-23181	13-20630	13-23181
CONTROLLER				17-21206			
1-17943	9-21831	9-22457	11-20355	CROSS SECTION			
17-17943	17-20355	17-22457	18-20355	6-21130	6-21244	6-21440	
COOLANT CHEMISTRY				CRYOGENICS			
4-22516	7-22516	8-22594	9-22690	4-22547	4-22587	5-19543	5-23424
8-22691	8-22713	17-21175	17-21176	11-23825			
17-21208	17-21397	17-21670	17-22914	CRYSTAL RIVER 3 AND 4 (PWR)			
17-22973	17-22991	17-22993	18-21463	2-23226	12-23326	18-23325	18-23326
18-23369				CSE			
COOLANT COEFFICIENT				1-23926	7-22987	7-23926	11-22987
6-23163				11-23926			
COOLANT PURIFICATION SYSTEM				CUPIUM			
8-22690	12-22523	17-21092	17-22523	14-21925	17-21092	17-22993	
17-22782	17-22914	17-23370		CVTR (PWR)			
COOLANT QUALITY				6-23165	15-23866	17-21294	17-21395
9-20803	9-23343	17-21396	17-21411	17-21448	17-23868		
COOLING TOWER				CYLINDER			
16-21971	18-22990			11-21121	11-23300	11-23696	11-23801
COOLING, GENERAL				11-23863	11-23812		
11-23306				CZECHOSLOVAKIA			
COPPER				11-23862	14-21343	14-22239	14-22247
4-22474	14-22906	15-23430		15-22572			
CORE COMPONENTS				DAMAGE			
9-24154	11-23828	11-24154	17-23375	17-21991			
17-24154	18-21221	18-23019		DATA PROCESSING			
CORE MELTDOWN				1-22571	9-20712	9-21240	9-23347
5-23439	5-24058	5-24059	6-23439	9-23368	9-23389	9-23832	9-24132
7-23439	9-24058	9-24059	17-24058	14-21712	15-21712	15-23905	17-21336
12-24059				17-21352			
CORE REFLOODING SYSTEM				DECAY HEAT			
5-22236	9-22236	12-22523	12-23485	17-21449			
17-22523	17-22851	18-22236	18-22851	DECONTAMINATION			
18-23615	19-23485			1-21773	4-21773	4-22463	4-22483
CORE SPRAY				4-22516	7-22483	7-22516	11-22463
5-22142	5-23439	6-23439	7-23439	12-20739	12-22463	12-23179	12-23871
12-22142	12-23485	17-22142	18-22484	12-23944	12-24192	13-22526	13-22852
18-23015	19-23485			13-23179	13-23871	13-23944	14-20739
CORE, CAPSULE DRIVER (CDC)				14-21186	14-21206	14-21207	14-21332
6-23438				14-21931	14-21947	14-21957	15-21720
CORE, PLATE TYPE				15-21941	15-21947	15-21957	15-22526
1-21392	5-22509	17-22509		15-23320	17-21682	17-21720	17-22525
CORROSION				17-22526	17-22852	17-22914	17-22993
4-22471	4-22515	4-22549	5-22578	17-23518	19-21773		
7-22515	7-22549	8-22584	8-22690	DECONTAMINATION FACTOR			
8-22713	9-22722	11-22119	17-21083	7-22564	7-22707		
17-21181	17-21397	17-21404	17-21406	DEFORMATION			
17-21670	17-22579	17-22978	17-22991	11-21119	11-21121	11-21122	11-21185
18-21324				11-22123	11-23305	11-23846	
COSMIC RADIATION				DELAYED NEUTRON			
14-21765	15-22242			6-20587	9-23385		
COUNTER				DFNMARK			
9-21229	9-21920	9-23352	9-23353	9-21827	9-21828	14-22804	14-22817
9-23838	9-24132	9-24109	14-21668	15-21969	17-21827	17-21828	
14-23155	14-23156	14-24216	15-21308	DEPOSITION			
15-21371	15-21660	15-21766	19-21787	4-22480	5-22116	7-22116	7-22477
15-23155	15-23156	15-23429	15-23900	7-22478	7-22481	7-22489	7-22533
15-23904	15-24216			7-22539	7-22982	14-21187	14-21257
COUNTER, WHOLE BODY				14-21713	14-22116	14-22971	16-21713
14-21204	14-21283	14-21311	14-21360	16-22922	16-22971	16-24067	
14-21931	14-21945	14-21996	14-24061	DESIGN CRITERIA			
15-21204	15-21278	15-21283	15-21308	1-23443	2-23188	2-23190	2-23812
15-21311	15-21360	15-21371	15-21763	3-22444	4-22464	4-22484	6-23443
15-21787	15-21931	15-21945	15-21962	7-22484	7-22558	9-22512	9-23151

9-23327	9-23849	11-21185	11-23013	14-21446	14-21770	14-21771	14-21786
12-20991	12-22180	12-23181	13-23175	14-21948	14-21957	14-22329	14-23321
13-23180	13-23181	14-18934	15-23431	14-24215	15-21261	15-21281	15-21303
18-20991	18-23013	18-23912		15-21311	15-21314	15-21324	15-21331
DESIGN STUDY				15-21333	15-21358	15-21356	15-21361
1-21350	6-23162	3-22584	9-22512	15-21388	15-21446	15-21770	15-21771
9-23147	11-23809	11-23828	17-21342	15-21786	15-21792	15-21793	15-21942
18-21211	16-21218	18-21334	18-21328	15-21948	15-21957	15-21960	15-21969
18-21400	18-21972	18-22583	18-22800	15-22147	15-22238	15-22329	15-22572
DESTRUCTIVE WIND				15-23321	15-23322	15-23430	15-23431
2-23326	12-23326	13-23326		15-24215	16-21261	19-21773	
DEUTERIUM				OGSIMETRY, PHOTOGRAPHIC			
9-22691	16-21926			14-21311	15-21311	15-21358	15-21942
DIABLO CANYON (PWR)				15-22147	15-22572		
1-21291	2-20863	5-22236	5-22874	DOSIMETRY, RADIOPHOTOLUMINESCENCE			
9-22236	17-22874	18-20862	18-20863	15-21933	15-21942		
18-21291	18-22236			DOSIMETRY, THERMOLUMINESCENCE			
DIETARY HABIT				14-21314	14-21936	14-21948	15-21261
14-21162	14-21978	14-23154	14-23155	15-21314	15-21331	15-21792	15-21793
15-21162	15-21385	15-21761	15-21766	15-21942	15-21948	15-22147	15-22238
15-21978	15-23154	15-23155	15-23903	15-24062	15-24273	16-21261	17-24273
DIFFUSION				DOWNREAY (TR)			
7-20550	7-22485	7-22537	7-22538	5-23147			
7-22542	7-22543	7-22562	7-22984	DRAGON (HTGR)			
7-22985	7-23836	11-23806	14-21713	17-21404			
14-21784	14-22239	15-21261	15-21784	DRESDEN 1 (BWR)			
16-21223	16-21261	16-21713	16-22196	5-22142	5-22775	9-22947	12-22142
DIFFUSION COEFFICIENT				17-21428	17-22142	17-22775	17-22947
4-22466	7-22466	8-23435		DRESDEN 2 (BWR)			
DILUTION				6-23483	7-23488	9-23487	11-23484
16-22972				12-23485	18-23014	18-23016	18-23017
DISPERSION				18-23018	18-23019	18-23471	18-23472
2-23197	14-21186	16-21223	16-22196	18-23482	18-23483	18-23484	18-23485
16-22970	16-23197			18-23486	18-23487	18-23488	
DISPLACEMENT, GENERAL				DRESDEN 3 (BWR)			
2-23197				5-22327	17-22327	18-23015	18-23020
DNB				DROPLET			
5-22874	5-22976	5-23422	17-21809	5-23395	5-23421	5-23426	5-23427
17-22974	17-22976			DYNAMICS, NONLINEAR			
DOPPLER COEFFICIENT				6-21125	6-21436	6-21437	6-23161
1-23168	6-23162			6-23171	11-23801		
DOPPLER EFFECT				DYSPROSIUM			
6-23446	18-23446			9-23843			
DOSE				EARTH MATERIAL, DYNAMIC PROPERTY			
4-21398	14-21283	14-21314	14-21344	2-23189			
14-21362	14-21363	14-21377	14-21768	EARTHQUAKE			
14-21769	14-21780	14-21781	14-21784	2-20863	2-20954	11-21185	18-20863
14-21786	14-21952	14-21955	14-24215	18-20954			
15-20736	15-20737	15-20742	15-21160	EARTHQUAKE ENGINEERING			
15-21161	15-21281	15-21285	15-21306	1-22143	2-21917	2-23188	2-23190
15-21314	15-21333	15-21344	15-21358	2-23191	2-23198	2-23812	11-23013
15-21359	15-21361	15-21362	15-21363	12-20991	14-21935	17-22143	18-20862
15-21364	15-21373	15-21377	15-21768	18-20991	18-21917	18-23013	18-23812
15-21769	15-21784	15-21786	15-21790	EARTHQUAKE PREDICTION			
15-21794	15-21932	15-21933	15-21940	2-20627	2-20634	2-20635	2-20636
15-21958	15-21960	15-21963	15-21969	2-20729			
15-22929	15-23159	15-23322	15-23429	EARTHQUAKE RECORDS			
15-23430	15-23900	15-23904	15-24062	2-20627	2-20661	2-23190	2-23192
15-24215	15-24272	17-24272	18-23486	EARTHQUAKE, GENERAL			
18-23950				2-20627	2-20634	2-20635	2-20636
DOSE CALCULATION, EXTERNAL				2-20661	2-20729	2-23187	2-23188
14-21196	14-21293	14-21362	14-21377	2-23189	2-23190	2-23191	2-23192
14-21780	14-21781	14-21784	14-21786	14-21930			
14-21931	14-21935	14-22329	15-21160	EASTON (BWR)			
15-21161	15-21196	15-21267	15-21281	2-24269	18-23952	18-24269	
15-21283	15-21362	15-21364	15-21268	EBOR (GCR)			
15-21373	15-21377	15-21784	15-21786	17-21172			
15-21790	15-21794	15-21931	15-21933	EBR 1 AND 2 (RE)			
15-22329	15-23159	15-23362	15-23428	5-22456	9-20712	9-22457	9-23330
17-23362				9-23356	9-23357	17-22456	17-22457
DOSE CALCULATION, INTERNAL				17-23330			
14-21188	14-21344	14-21363	14-21377	EBWR (BWR)			
14-21780	14-21781	14-21786	14-21935	11-23826			
14-21952	14-21995	14-22329	14-22605	ECOLOGICAL CONSIDERATION			
15-21161	15-21306	15-21344	15-21363	1-22330	1-22571	1-22706	14-21260
15-21377	15-21666	15-21786	15-21932	14-21269	14-21270	14-21311	14-21312
15-21940	15-22329	15-22805	15-23159	14-21376	14-21377	14-21378	14-21380
15-23428				14-21382	14-21747	14-21748	14-21749
DOSE MEASUREMENT, EXTERNAL				14-21750	14-21751	14-21944	14-22237
14-21314	14-21930	14-21948	14-21957	14-22574	14-22576	14-22577	14-22807
15-20736	15-21281	15-21303	15-21314	14-23154	14-23155	15-21260	15-21311
15-21331	15-21333	15-21759	15-21948	15-21377	15-21382	15-21748	15-21749
15-21957	15-21958	15-21960	15-21969	15-21750	15-21751	15-21761	15-23154
15-22551	15-22572	15-22929	15-23159	15-23155			
DOSE MEASUREMENT, INTERNAL				ECONOMIC STUDY			
11-22117	14-21204	14-21948	15-21204	1-21389	1-21390	1-23376	3-22441
15-21764	15-21766	15-21946	15-21963	3-22442	3-22445	3-24219	3-24220
15-21969	15-23159	17-22117		13-24220	16-23883	17-24220	
DOSIMETRY, GENERAL				ECONOMICS			
1-21773	4-21773	6-23348	9-23348	1-21391	1-22799	1-23308	2-23195
9-23841	11-22108	14-21311	14-21314	3-20628	11-23303	11-23308	14-21205

14-21207	14-21935	17-21355	18-21214	14-21937				
18-21218	18-24157			EUROPIUM				
EFFLUENT				14-22804	15-21940			
14-21329	14-21715	15-21329	16-22452	EVAPORATION				
16-22925	16-22972	16-23883	17-21715	4-22464	4-22476	4-22486	7-22486	
ELASTICITY				14-16834	14-21276	14-21307	14-21716	
11-21121	11-21122	11-21185	11-23601	17-21716				
11-23914	11-23845			EXAMINATION				
ELECTRIC POWER, GENERAL				9-22990	9-23143	9-24199	11-23803	
9-23951	10-22885	10-23951	11-22885	11-23821	11-23826	11-23913	17-21991	
17-22885	18-23951			17-22580	17-22858	17-22890	17-22895	
ELECTRIC POWER, NORMAL				17-22953	17-22554	17-23143	18-20352	
5-22895	9-22895	17-21300	17-22898	18-22494	18-23803			
ELECTRIC POWER, VITAL				EXCAVATION, NUCLEAR				
9-22899	10-22891	17-22881	17-22889	14-21312				
ELECTRICAL CONDUCTION				EXCURSION, LARGE				
9-23951	9-23851	17-21454		5-22509	5-22470	17-22509	18-23470	
ELECTRON				EXPANSION				
15-21268	15-23904			11-23484	11-23657	17-22896	18-23464	
ELK RIVER (BWR)				EXPERIMENT, GENERAL				
1-23145	9-24134	11-22118	11-23823	4-22700	6-23348	7-22478	7-22982	
11-23924	11-24188	17-21397	17-22118	9-23348	14-21713	15-21761	15-21762	
17-22282	17-22283	17-23145	17-23804	16-21133	16-21713	16-21767	16-21925	
17-24134	17-24199			16-22452	16-22622	16-22972	17-22447	
EMBELLISHMENT				EXPLOSION				
11-21195	11-23395	17-22991		5-21322	6-21322	6-21735	8-21322	
EMERGENCY COOLING CONSIDERATIONS				8-21735	8-23174	13-22436	13-23175	
5-22142	5-22236	5-24058	5-24059	17-22426	17-23174	18-21735		
9-24058	9-24059	9-22236	11-22191	EXPLOSIVE, CONVENTIONAL				
12-22142	12-22191	12-24058	12-24059	5-23174	17-23174			
17-22142	18-22236	18-22494	18-23015	FABRICATION				
18-23019				3-22445	9-24199	11-23820	11-23823	
EMERGENCY POWER, ELECTRIC				11-23824	11-24822	12-24278	12-24279	
9-22899	9-22974	10-20579	10-22974	15-24278	15-24279	17-21342	17-22546	
10-23615	17-20579	17-22990	17-22915	17-24278	17-24279	18-22988		
18-22494	18-22836	18-22974		FAILURE MODE ANALYSIS				
EMERGENCY POWER, NONELECTRIC				12-23485	18-23485			
18-23010				FAILURE, ADMINISTRATIVE CONTROL				
EMERGENCY PROCEDURE				6-23408	11-20355	12-22523	13-22259	
12-22523	17-22523	17-22528	18-21444	13-22436	13-22427	13-22521	13-22364	
EMERGENCY SYSTEM				13-24280	15-22422	15-22433	15-22520	
5-24059	5-24059	8-24058	9-24059	17-20355	17-20357	17-21177	17-21179	
12-24058	12-24059			17-21216	17-22259	17-22432	17-22433	
ENFA				17-22436	17-22437	17-22520	17-22521	
1-21405				17-22523	17-23317	17-23264	17-23366	
ENERGY LEVEL				17-23405	17-24280	18-20355		
7-20729				FAILURE, CLADDING				
ENERGY SOURCE				5-22509	5-22578	7-22992	17-21410	
10-22144				17-22509	17-22954	17-22978	17-22991	
ENGINEERED SAFETY FEATURE				18-21463	18-22494			
1-21900	2-23326	9-21900	11-22191	FAILURE, COMPONENT				
11-22938	11-23360	12-21929	12-22191	5-22898	9-21418	9-22258	9-22457	
12-23326	12-23495	17-23350	18-21929	9-22721	9-22809	9-22950	9-23952	
18-22939	18-23326	18-23350	18-23495	10-23915	11-22129	15-21328	15-22434	
ENGINEERING DRAWING LIST				17-21435	17-21454	17-22258	17-22434	
19-22254				17-22457	17-22781	17-22898	17-22950	
ENVIRONMENTAL CONDITION				17-23915				
14-21293	14-21329	14-21354	14-21384	FAILURE, DESIGN ERROR				
14-21445	14-21446	14-21765	14-21769	17-21212	17-22553	17-22990		
14-21786	14-21920	14-21928	14-21940	FAILURE, EQUIPMENT				
14-21954	14-22007	15-21160	15-21293	5-23314	7-24270	9-22949	9-24154	
15-21316	15-21329	15-21445	15-21446	11-20355	11-23314	11-23260	11-24154	
15-21769	15-21786	15-21954	15-21958	13-24270	15-21714	17-20355	17-20356	
15-23901	17-21212	17-22447	18-21054	17-20357	17-21298	17-21300	17-21355	
EQUATION, GENERAL				17-21433	17-21714	17-22256	17-22552	
16-21223				17-22783	17-22940	17-22990	17-23360	
EQUATION, IN HOUR				17-24154	17-24270	18-20355		
6-21243				FAILURE, FATIGUE				
EQUIPMENT DESIGN				11-21117	11-23305	11-23821	11-23908	
3-20629	9-21225	9-21230	9-21779	11-24822	17-21409			
9-21902	9-21921	9-23147	9-23148	FAILURE, FIJI ELEMENT				
9-23149	9-23152	9-23327	9-23328	5-22236	5-22236	5-22509	7-22982	
9-23329	9-23331	9-23335	9-23337	9-22236	9-22236	9-24258	15-23868	
9-23338	9-23342	9-23344	9-23357	17-21209	17-21210	17-21216	17-21403	
9-23945	15-21365	15-21762	15-21764	17-21409	17-21411	17-22292	17-22509	
17-23231				17-23868	18-22236	18-22236		
EQUIPMENT, GENERAL				FAILURE, GENERAL				
13-23433	14-21207	14-21220	15-21320	11-21119	11-22125	11-23317	17-21181	
15-21365	17-21093			17-21216	17-21404	17-23312	19-23312	
ERBIUM				FAILURE, INSTALLATION ERROR				
5-23413	9-23842			17-21299				
EROSION				FAILURE, INSTRUMENT				
8-22484	17-21190	17-21406		6-21627	9-21828	9-21920	9-22992	
ERROR ANALYSIS				15-21328	17-21176	17-21179	17-21180	
5-23470	11-23204	15-22150	18-23470	17-21209	17-21827	17-21828	17-22992	
ESTUARY				17-23370				
1-22910	1-22820	14-21377	14-21378	FAILURE, MAINTENANCE ERROR				
15-21377				17-21176	17-21180			
EURATOM				FAILURE, OPERATOR ERROR				
1-21391	9-21778			15-21720	15-22520	15-22826	15-22827	
EURACHEMIC				15-23362	17-21175	17-21176	17-21180	

17-21209	17-21300	17-21720	17-22520	FILTER CHARACTERISTICS	7-22529	12-22529	13-23178	
17-22525	17-22926	17-22827	17-23362	FILTER DESIGN	7-22541			
FAILURE, PIPE				FILTER EFFICIENCY	13-22526	15-22526	17-21426	17-22526
5-21320	9-23852	12-21320	14-21714	FILTER INSPECTION	7-22497	17-22497		
17-21190	17-21208	17-21415	17-21716	FILTER INSTALLATION	7-22564			
17-22579				FILTER MAINTENANCE	7-22541			
FAILURE, PRESSURE VESSEL				FILTER OPERATION	7-22564			
9-21923	11-21923	11-22108	11-23309	FILTER TEST REQUIREMENT	7-22564	7-22707		
11-24188	17-24198			FILTER, BED	7-22556	7-22564	7-22810	8-22473
FAILURE, SCRAM MECHANISM				FILTER, DAMAGED	7-24270	13-24270	17-24270	
9-21413	9-21418	9-22259	9-22949	FILTER, FIBER	14-21756	15-21756		
9-22950	9-22974	9-22902	9-23143	FILTER, FIBERGLASS	7-24270	13-24270	17-24270	
9-23905	9-24154	10-22974	11-24154	FILTER, GAS MASK	13-22526	14-21280	15-22526	17-21426
16-21476	17-21212	17-21295	17-21404	FILTER, HIGH EFFICIENCY	7-21297	7-22497	7-22529	12-21297
17-21415	17-21418	17-21476	17-22258	FILTER, MEMBRANE	12-22529	14-21280	17-21297	17-22497
17-22928	17-22940	17-22950	17-22992	FILTER, PAPER	7-22529	12-22529		
17-23143	17-23144	17-23805	17-24154	FILTER, SCREEN	14-21280			
18-22974				FILTER, FIN	17-22107			
FAILURE, SEQUENTIAL				FIN	5-23416			
5-22898	9-22898	10-20579	15-21328	FINLAND	14-21325	14-21965	14-23878	16-23878
17-20579	17-22898			PIPE	1-23391	3-22629	3-22158	3-22162
FAILURE, SIMULTANEOUS					3-22163	4-22479	4-22480	4-22514
10-20579	17-20579				4-23391	7-22479	7-22480	7-22514
FAILURE, TURNING					8-22473	8-22720	11-22110	11-23360
9-22694	9-22695	8-22696	5-22722		13-23176	17-22110	17-23360	
9-22332	14-21715	17-21181	17-21208	FISSION GAS RELEASE	5-22894	7-23372	7-23488	17-22521
17-21433	17-21715	17-22891	17-22991		17-22894	18-23488		
18-21334					9-21230	14-21197	14-21206	15-21267
FALLOUT					1-23926	4-22466	5-23439	6-23439
1-22500	14-21201	14-21253	14-21264		7-22466	7-22538	7-22538	7-22563
14-21266	14-21269	14-21275	14-21289		7-23439	7-23488	7-23926	11-23926
14-21304	14-21300	14-21311	14-21325		13-23943	14-21356	14-21770	15-21770
14-21343	14-21345	14-21340	14-21360	FISSION PRODUCT RETENTION	1-22926	4-22466	4-22468	4-22489
14-21362	14-21363	14-21376	14-21378		6-21245	7-20550	7-21245	7-22466
14-21379	14-21381	14-21384	14-21446		7-22466	7-22481	7-22489	7-22542
14-21713	14-21740	14-21740	14-21750		7-22562	7-23526	11-23526	12-21245
14-21751	14-21756	14-21758	14-21769		12-23178	17-21411	18-23369	
14-21770	14-21771	14-21782	14-21784	FISSION PRODUCT TRANSPORT	1-23926	4-22466	4-22489	5-22116
14-21786	14-21938	14-21944	14-21946		1-23926	4-22466	4-22466	7-22477
14-21949	14-21951	14-21952	14-21954		14-21445	14-21951	14-22116	14-22807
14-21957	14-21964	14-21965	14-21966		15-21363	15-21445	18-23369	
14-21967	14-21978	14-21979	14-21980		7-22481	7-22489	7-22562	7-22811
14-21993	14-21996	14-21997	14-22154		7-22582	7-22987	7-23926	11-22987
14-22237	14-22245	14-22246	14-22492		11-23926	14-21257	14-21304	14-21363
14-22576	14-22803	14-22804	14-22805		14-21445	14-21951	14-22116	14-22807
14-22912	14-22813	14-22815	14-22971		15-21363	15-21445	18-23369	
14-23155	14-23321	14-23375	14-23878	FISSION PRODUCT, AIRBORNE	1-23926	7-23926	11-23926	14-21304
14-23880	14-24060	14-24066	14-24214		5-22978	7-21815	7-22487	7-22538
15-21253	15-21254	15-21267	15-21281		7-22545	7-22554	7-22561	7-22564
15-21289	15-21311	15-21340	15-21360		7-22810	7-22945	7-22983	7-22987
15-21362	15-21363	15-21446	15-21748		11-22987	13-22521	13-23215	15-22518
15-21749	15-21750	15-21751	15-21756		15-24271	15-24272	17-21811	17-21815
15-21769	15-21770	15-21771	15-21784		17-22518	17-22521	17-22978	17-23315
15-21786	15-21954	15-21957	15-21978		17-24271	17-24272	18-22945	18-23950
15-21993	15-21996	15-22805	15-22813	FISSION PRODUCT, NONVOLATILE	5-22116	7-22116	14-22116	
15-22155	15-23321	15-24060	15-24214		7-18345	7-22538	7-22563	
16-21134	16-21222	16-21713	16-22492	FLANGE	11-22118	11-22126	11-23310	17-22118
16-22924	16-22971	16-23375	16-23380		17-22552			
16-23878	16-23940	16-24066	16-24066	FLAW				
17-21402	18-21954				11-21185			
FAST NEUTRON				FLOOD				
9-21239								
FAULT								
2-20561	2-23187	11-23598	11-23816					
11-23826	11-23860	11-23961	11-23909					
11-23913	17-22846	17-23861						
FAULT TREE ANALYSIS								
18-22141								
FERMI (LMFBR)								
1-17942	1-22942	1-22969	5-22884					
5-22887	5-22894	5-22898	9-20638					
9-20709	9-22882	9-22889	9-22890					
9-22892	9-22898	9-23321	10-22881					
10-22895	11-22885	17-17943	17-20590					
17-20638	17-20709	17-21216	17-22107					
17-22981	17-22882	17-22883	17-22884					
17-22885	17-22886	17-22887	17-22888					
17-22889	17-22890	17-22891	17-22892					
17-22893	17-22894	17-22895	17-22896					
17-22897	17-22898	17-22899	17-22900					
17-22942	17-22969	17-23321						
FFTF (TR)								
4-22471	9-20711	9-23327	9-23346					
FILM BOILING								
5-23399								
FILM, GENERAL								
4-22568								
FILTER								
7-22529	7-22531	7-22532	7-22541					
7-22544	7-22554	7-22707	12-22529					
13-23178	14-21280	15-23300	15-23905					

2-23726	12-23326	18-23326		FUEL BURNUP			
FLOW BLOCKAGE				4-22484	5-22456	6-21130	6-21436
5-22974	5-22864	9-20636	9-22992	7-22484	7-23372	9-22833	15-23159
17-20639	17-21216	17-21991	17-22107	17-21210	17-21335	17-21409	17-21991
17-22874	17-22884	17-22892	17-22896	17-22292	17-22456		
19-22494				FUEL COEFFICIENT			
FLJW DISTRIBUTION				6-23440			
4-22338	5-22894	5-22899	9-22738	FUEL ELEMENT			
9-22892	9-22898	17-22552	17-22892	1-21392	3-22164	4-22484	4-22549
17-22894	17-22898			5-17575	5-22225	5-22697	5-22874
FLOW ORIFICE				5-22898	5-22976	5-23410	5-23416
5-22257	5-22894	17-21176	17-21208	5-23470	6-21987	7-22484	7-22539
17-21299	17-21300	17-22257	17-22783	7-22549	7-22917	7-22982	7-23311
17-22894				7-23372	7-23836	7-23837	9-20714
FLOW STABILITY				9-20715	9-21418	9-22843	9-22890
5-19543	5-21475	5-22874	5-22887	9-22899	9-22727	9-23357	9-23359
5-22894	5-23399	5-23410	6-21475	9-23835	9-23882	11-21122	11-23311
9-22892	16-21476	17-21475	17-21476	11-23813	17-24278	12-24279	14-23914
17-22874	17-22892	17-22887	17-22894	15-23914	15-24278	15-24279	17-21209
FLOW THEORY AND EXPERIMENTS				17-21210	17-21335	17-21336	17-21339
4-22338	5-23411	5-23414	5-23416	17-21342	17-21409	17-21418	17-21987
5-23425	7-22537	7-22543	9-22336	17-21991	17-22224	17-22225	17-22226
17-21417				17-22874	17-22888	17-22900	17-22896
FLOW, ANNULAR				17-22898	17-22959	17-22960	17-22976
5-23407	5-23409			17-24278	17-24279	18-21218	18-21219
FLOW, AXIAL				18-21808	18-22195	18-22224	18-22494
5-23411	5-23425			18-22843	18-22917	18-22988	18-23470
FLOW, CROSS				19-23711			
5-23416				FUEL ELEMENT ROWING			
FLOW, GENERAL				5-22509	17-22509		
5-22257	7-22543	17-22257		FUEL HANDLING			
FLOW, LAMINAR				2-20639	3-24219	6-23408	7-22534
5-23398	5-23407	5-23417	5-23425	9-22847	9-23185	11-23813	13-20630
FLOW, NONNEWTONIAN				17-22888	17-23408	18-21442	18-22843
5-23425				FUEL HANDLING MACHINE			
FLOW, PULSATING				3-22156	5-22887	9-20638	9-23185
5-19543	17-21429			11-22156	11-22803	17-20638	17-22886
FLOW, RECIRCULATION				17-22887	17-22892	18-23803	
17-22955				FUEL INTEGRITY			
FLOW, TUBE				7-20550	7-22525	7-22982	11-21122
5-23401	5-23407	5-23424		FUEL MELTDOWN			
FLOW, TURBULENT				1-17943	1-22942	4-22486	5-22509
5-23401	5-23406			5-22723	5-22884	5-22887	5-22894
FLOW, TWO PHASE				6-21725	7-22486	7-22487	7-22533
5-17575	5-19544	5-21322	5-22704	7-22535	7-22611	8-21735	8-22714
5-22705	5-23411	5-23419	6-21322	8-22723	9-20638	10-22885	11-22885
7-22537	8-21322	9-21919	9-23359	17-17943	17-20638	17-21216	17-22509
FLOW, VORTEX				17-22884	17-22885	17-22886	17-22887
5-17575	5-22976	17-22976		17-22888	17-22892	17-22894	17-22895
FLUCTUATION				17-22942	18-21735		
9-21236				FUEL REPROCESSING			
FLUIDIZED BED				4-22549	7-22549	7-24270	13-20716
5-23395	5-23404	5-23414		13-22259	17-22852	13-23176	13-23365
FLUORIDE				13-23943	13-24270	13-24274	14-21284
13-23943	13-23945			15-22435	15-23365	15-24273	15-24274
FLUORIDE VOLATILITY PROCESSES				17-21399	17-22259	17-22435	17-22853
13-23433	13-23943			17-23365	17-24270	17-24273	17-24274
FLUORINE				FUEL STORAGE			
13-23433	14-21270			3-20630	3-24220	13-20630	13-24220
FLUX DISTRIBUTION				17-21294	17-22724	17-22495	17-24220
6-20587	6-21125	6-21427	6-21438	18-22724	18-22495	18-22961	
6-21440	6-23444	17-22839	17-23874	FUEL, POWDER TYPE			
FLUX, INTEGRATED				4-22555	6-21987	7-22555	7-23372
6-23348	9-20708	9-21225	9-21229	17-21987			
9-21920	9-22833	9-23348	9-23351	GAMMA			
9-23353	9-23355			9-21920	9-23354	14-21137	14-21283
FOAM				14-21362	14-21362	14-21945	14-21996
7-22524	11-23484	18-23484		14-22329	15-20777	15-20741	15-21137
FOUNDATION ENGINEERING				15-21268	15-21281	15-21283	15-21303
2-21917	2-22223	2-22771	18-21917	15-21315	15-21324	15-21358	15-21359
18-22223	18-22771			15-21362	15-21362	15-21787	15-21792
FRACTURE TOUGHNESS				15-21793	15-21794	15-21795	15-21933
11-21185	11-22125	11-23313		15-21945	15-21959	15-21996	15-22238
FRANCE				15-22729	15-22929	15-22931	15-23429
3-22162	3-22163	3-22164	3-22441	15-23430	15-22431	16-20692	
3-22442	3-22443	3-22444	3-22445	GAMMA EMITTER			
7-23336	7-23637	9-21901	9-21902	14-21445	14-21667	14-21947	14-21949
9-21975	9-22334	9-22105	9-22387	14-22329	15-21445	15-21667	15-21763
9-23388	9-23832	9-23832	9-23835	15-21764	15-21932	15-21947	15-22329
9-23842	11-22125	11-23844	12-23871	GAUSSIAN PLUME FORMULA			
13-23871	14-20738	14-21327	14-21964	16-21223			
14-22574	14-22576	14-22577	14-23902	GENERATOR, DIESEL			
15-20738	15-21268	15-21306	15-23902	10-22881	10-23915	17-22001	17-23915
17-21350	17-21351	17-21352	17-21353	19-22494			
17-21354	17-22334			GEOLOGICAL CONSIDERATION, GENERAL			
FRICITION				2-20954	12-23180	13-23180	14-21930
17-23375				18-20954			
FT. CALHOUN (PWR)				GEOLOGICAL CONSIDERATION, GEOPHYSICAL			
2-22771	9-22974	9-23951	10-22974	14-21765			
10-23951	18-22771	18-22974	18-22999	GEOLOGICAL CONSIDERATION, SALT STRUCTURE			
18-23600	18-23959	18-23951		14-21930	14-21935		



GERMANY				HEAT TRANSFER AUGMENTATION			
1-23923	8-22696	8-22720	9-22834	5-17575	5-22976	5-23416	17-22976
8-22835	9-21973	9-22491	9-24138	HEAT TRANSFER CORRELATION			
10-24138	11-22122	11-23930	12-23190	5-22874	5-23406	5-23426	5-23427
13-23180	14-21142	14-21201	14-21284	17-22874			
14-21755	14-21756	14-22746	15-20736	HEAT TRANSFER EXPERIMENT			
15-20737	15-20742	15-21160	15-21361	4-22547	4-22567	5-22723	5-22874
15-21368	15-21755	15-21756	15-21958	8-22723	17-22874		
15-21961	15-22802	15-22806	16-24065	HEAT TRANSFER, BOILING			
18-21211	18-21214	18-21797	18-22105	5-17575	5-19543	5-22704	5-22705
GETR (TR)				5-22723	5-23399	5-23400	5-23401
5-22978	17-22978			8-22723	17-22829		
GLASS				HEAT TRANSFER, CONDUCTION			
14-21305	14-21953			4-22567	5-23397	5-23403	
GLOVE BOX				HEAT TRANSFER, CONVECTION			
4-22463	11-22463	12-22463	13-22438	5-19543	5-23397	5-23400	5-23401
15-22434	15-24272	17-22434	17-22438	HEAT TRANSFER, RADIANT			
17-22522	17-22524	17-23316	17-24272	5-22703	5-23405	11-23912	
GOLD				HEAT TREATMENT			
15-23429	15-23430			8-22712	11-23815	17-21215	
GRAPHITE				HEAVY WATER			
4-22469	4-22549	6-22782	6-22787	6-22691			
7-20550	7-22469	7-22549	7-22995	HEIGHT OF ROSE			
9-22792	8-22712	8-22715	8-22716	16-22921	16-22925		
8-22717	8-23435	17-21404	17-22782	HELIUM			
17-22787				11-23815			
GROSS ALPHA				HFBR (RR)			
14-21290	14-21665	15-21665		17-21184	18-21444		
GROSS BETA				HFIR (FTR)			
14-21290	14-21665	15-21665	16-21133	5-22697	9-21776	9-22992	9-23148
GROSS GAMMA				17-22992	17-22993		
14-21665	15-21665			HIGH RADIATION			
GROUND WATER, GENERAL				1-22841	17-22841		
14-21290	14-21317	14-21798	15-21317	HIGH TEMPERATURE			
GROUND WATER, NUCLIDE OCCURRENCE				3-22163	4-23322	5-23169	6-23169
14-21290	14-21317	14-21665	14-21798	8-22835	9-20708	9-21775	9-23329
15-21317	15-21665			9-23332	9-23333	9-23335	9-23341
HADDAM NECK (PWR)				9-23342	9-23350	9-23352	11-21122
1-22841	5-23390	17-22840	17-22841	17-22929	17-23332	17-23333	
17-23390				HOT CELL			
HAFNIUM				11-22110	12-23174	13-20716	13-22436
9-23843				13-23175	13-23179	17-22110	17-22436
HANFORD SITE				17-22895			
1-22320	1-22571	1-22706	14-21290	HOT CHANNEL FACTOR			
14-21799				18-22194			
HARKWELL				HOT SPOT FACTOR ANALYSIS			
11-22110	14-21192	14-21207	15-21192	5-22697			
15-21365	17-22110			HPPR (FBR)			
HAZARD, RELATIVE				15-21933			
14-21769	15-21769			HUMBOLT BAY (BWR)			
HAZARDS ANALYSIS				17-21292	17-22132		
7-21815	14-21356	14-21712	14-21768	HUNGARY			
14-23158	15-21712	15-21762	15-21768	14-21259	15-21259	15-22618	
15-23158	17-21295	17-21403	17-21815	HWOCR (HEAVY WATER ORGANIC COOLED REACTOR)			
17-23144	18-21220			18-22106			
HBWR (BWR)				HYDRAULIC ANALYSIS			
8-22691	17-21209	17-21210		2-23326	5-22788	9-23359	12-23326
HEALTH PHYSICS TRAINING				17-22708	18-23326		
14-21260	14-22329	15-21260	15-22329	HYDRAULIC EFFECT			
17-21918				9-22992	17-22992		
HEAT CONDUCTANCE, FUEL TO CLAD				HYDRAULIC EXPERIMENT			
17-21335				9-23359			
HEAT EXCHANGER				HYDRIDE			
4-22464	5-22703	5-23420	8-22694	5-22898	6-21987	9-22890	9-22898
8-22695	8-22696	8-22722	14-21715	11-23861	11-23913	17-21987	17-22890
17-21208	17-21433	17-21715		17-22898	17-22991	17-23861	18-21463
HEAT FLUX, CRITICAL				18-22105			
5-23422				HYDRODYNAMIC ANALYSIS			
HEAT FLUX, DRYOUT				5-22898	9-22898	17-21209	17-21210
5-22976	5-23422	17-22976		17-22898			
HEAT GENERATION, INTERNAL				HYDROGEN			
9-23354				8-22702	14-23154	15-23154	17-21670
HEAT PIPE				HYDROLOGICAL CONSIDERATION, GENERAL			
4-22567				2-23195	12-23180	13-23180	14-21377
HEAT SINK				15-21377			
1-21791	1-22819	1-22820	14-21791	IAEA			
HEAT TRANSFER				2-23196	7-23411	9-23911	14-22240
3-20629	3-22162	3-22163	3-22164	15-22240	17-23911		
5-22703	5-22704	5-22705	5-23395	ICRP			
5-23396	5-23397	5-23398	5-23399	14-22329	15-21256	15-21763	15-22329
5-23400	5-23401	5-23402	5-23403	IDAHO FALLS			
5-23404	5-23405	5-23406	5-23407	9-22513	15-21331		
5-23409	5-23411	5-23414	5-23416	IGNITION			
5-23417	5-23419	5-23420	5-23421	1-23391	4-23391	8-22473	8-22718
5-23422	5-23423	5-23424	5-23425	IGNITION TEMPERATURE			
5-23426	5-23427	9-22833	17-22553	8-22473			
18-22194	19-23402			IMPACT PROPERTY			
HEAT TRANSFER ANALYSIS				1-23926	5-23314	7-23926	11-23314
5-19544	5-22697	5-22708	5-22723	11-23926			
5-23403	5-23414	8-22708	8-22723	IMPACT SHOCK			
17-21342				3-24221			

IMPURITY									
8-22715									
IN CORE MEASUREMENT									
5-22140	6-22140	9-21725	9-21233						
9-21775	9-22232	9-23327	9-23654						
17-22140	17-22839								
IN PILE EXPERIMENT									
1-23926	5-22723	5-22976	6-23438						
7-23926	8-22723	9-21927	11-23926						
17-22976									
IN PILE LOOP									
5-22978	17-21083	17-22447	17-22978						
INCIDENT COMPILATION									
1-21814	1-22943	8-23174	17-21814						
17-22528	17-22943	17-23174							
INCIDENT, EQUIPMENT									
1-22941	3-22941	9-21413	9-21418						
9-22259	9-22457	9-22949	9-22950						
11-20355	11-24189	13-22438	15-21714						
17-20355	17-20356	17-20357	17-21413						
17-21415	17-21418	17-21714	17-22258						
17-22439	17-22457	17-22941	17-22949						
17-22950	17-22999	17-24188	18-20355						
INCIDENT, GENERAL									
1-17947	1-21814	5-22509	5-22884						
9-20638	10-22885	11-22885	13-22436						
15-24271	15-24272	15-24273	16-21476						
17-17943	17-20639	17-21216	17-21476						
17-21814	17-22107	17-22436	17-22509						
17-22894	17-22885	17-22954	17-23363						
17-24271	17-24272	17-24273							
INCIDENT, HUMAN ERROR									
15-22432	15-22433	15-22826	15-22827						
17-21177	17-22432	17-22433	17-22826						
17-22827									
INCIDENT, NONNUCLEAR									
8-23174	17-23174								
INCIDENT, NONREACTOR									
1-21914	12-24277	15-21328	15-22319						
17-21814	17-22522	17-22319	17-24277						
INCIDENT, RECOVERY FROM									
9-20638	17-20638	17-21082	17-22528						
INCIDENT, SL 1									
17-22528									
INCIDENT, WINDSCALE									
1-22969	17-22969								
INCONEL									
11-23828	17-21408								
INDEPENDENCE									
5-22236	5-22899	9-22236	9-22457						
9-22899	9-22899	9-22899	11-23360						
17-22457	17-22899	17-22899	17-22899						
17-23360	18-22236	18-22899							
INDIA									
16-22972	17-21399								
INDIAN POINT 1 (DWF)									
9-21413	14-21954	15-21954	17-21413						
17-23144	18-21954								
INDIAN POINT 2 (DWR)									
11-23903	18-21721	18-23603							
INDIUM									
15-23430									
INFORMATION RETRIEVAL									
1-21405	15-22826	15-22827	17-21813						
17-22826	17-22827	17-22990							
INGESTION									
14-21253	15-21253	15-21940							
INHALATION									
12-24279	13-22438	13-22521	13-22526						
13-23315	14-21253	14-21256	14-21311						
14-21715	14-21768	15-21253	15-21256						
15-21306	15-21311	15-21764	15-21768						
15-21940	15-22434	15-22526	15-22527						
15-24271	15-24272	15-24273	17-21715						
17-22434	17-22438	17-22521	17-22524						
17-22525	17-22526	17-22527	17-23315						
17-24271	17-24272	17-24273							
INSPECTION AND COMPLIANCE									
11-22110	11-22117	11-22118	12-22523						
12-23177	13-22259	13-22436	13-22437						
13-22521	13-22523	13-23177	13-23264						
13-24280	15-21717	15-21719	15-22435						
15-22519	15-22520	15-22527	17-21717						
17-21719	17-22110	17-22117	17-22118						
17-22750	17-22735	17-22736	17-22737						
17-22519	17-22520	17-22521	17-22522						
17-22527	17-22845	17-22853	17-23177						
17-23317	17-23318	17-23364	17-23366						
17-23367	17-24280								
INSTABILITY									
6-22821	9-22831								
INSTRUMENTATION CALIBRATION									
9-20709	9-20710	9-21919	9-22131						
9-23331	9-23342	9-23345	9-23850						
10-22881	15-22808	16-21757	16-21927						
17-20709	17-22131	17-22881	17-23331						
INSTRUMENTATION, ABNORMAL INDICATION									
5-22257	9-21920	9-22882	9-22889						
9-22890	9-22892	15-23858	16-21476						
17-21476	17-22257	17-22552	17-22882						
17-22890	17-22890	17-22892	17-22868						
INSTRUMENTATION, AMPLIFIER									
9-23148	9-24132								
INSTRUMENTATION, CAMPFELLING									
9-21229	9-23355	9-23356	9-23851						
INSTRUMENTATION, COINCIDENT									
9-21779									
INSTRUMENTATION, COMPONENT									
9-21225	9-21230	9-21779	9-21830						
9-21902	9-21921	9-21922	9-23149						
9-23328	9-23851	9-24199							
INSTRUMENTATION, CONTROL									
7-23911	9-21221	9-21232	9-21830						
9-21831	9-21901	9-21922	9-21975						
9-23149	9-23149	9-23150	9-23152						
9-23185	9-23334	9-23346	9-23347						
9-23399	9-23832	9-23950	9-25911						
9-24136	10-24138	14-23156	15-23156						
17-23911									
INSTRUMENTATION, COOLANT QUALITY									
9-20708	9-20803	9-21230	9-22832						
9-23186	9-23343	9-23344							
INSTRUMENTATION, CURRENT									
9-24109									
INSTRUMENTATION, DETECTION FAILED FUEL ELEMENT									
5-22236	7-22992	7-23311	9-20638						
9-21230	9-22236	9-23228	9-23384						
9-24259	10-22985	11-22885	11-23311						
17-20638	17-22865	18-22236	18-23311						
INSTRUMENTATION, EARTHQUAKE									
2-20624	2-20635	2-20636	2-23192						
INSTRUMENTATION, FLOW									
4-23332	9-20709	9-21231	9-21919						
9-22832	9-23328	9-23329	9-23331						
9-23332	9-23333	9-23359	10-22881						
17-20709	17-22881	17-23331	17-23332						
17-23332									
INSTRUMENTATION, FLUIDICS									
9-21232									
INSTRUMENTATION, GENERAL									
1-21773	4-21773	7-18345	7-22531						
7-23911	9-21240	9-21778	9-21902						
9-21974	9-22402	9-22512	9-23150						
9-23327	9-23849	9-23850	9-25911						
14-22916	17-21401	17-22447	17-23911						
18-22339	18-22493	18-22494	19-21775						
INSTRUMENTATION, IN CORE									
6-23408	9-20709	9-21225	9-21233						
9-21240	9-21775	9-22332	9-22832						
9-22833	9-22843	9-23327	9-23328						
9-23329	9-23350	9-23351	9-23357						
9-23951	11-23813	16-21476							

INSTRUMENTATION, POWER RANGE				9-20715	9-22550	9-22833	9-23357
9-21709	9-22784	9-22992	9-23149	11-22120	11-22121	11-22173	11-23484
10-22821	17-20709	17-22784	17-22881	11-23913	17-21083	17-21209	17-21210
17-22992				17-21335	17-21336	17-21342	17-21401
INSTRUMENTATION, PRESSURE				17-21404	17-21406	17-21409	17-21412
4-23332	9-23329	9-23330	9-23331	17-21811	17-21815	17-21987	17-22226
9-23332	9-23333	9-23337	9-23338	17-22829	17-22959	17-22960	17-23874
17-23330	17-23331	17-23332	17-23333	18-21217	18-21219	18-21608	18-22105
INSTRUMENTATION, PROCESS				18-22144	18-23484		
4-23332	8-23340	9-23150	9-23330	ISOTOPIC FRACTIONATION			
9-23331	9-23332	9-23333	9-23340	14-24060	15-24060		
9-23386	9-23832	9-23850	17-23330	ISOTOPIC GENERATOR			
17-23331	17-23332	17-23333		4-21398			
INSTRUMENTATION, PROTECTIVE				ISRAEL			
9-23151	9-23334			14-21356	17-21403		
INSTRUMENTATION, PULSE				ITALY			
9-17949	9-22131	9-24132	17-22131	9-21238	9-22281	9-24154	11-24154
INSTRUMENTATION, RADIATION MONITORING				14-21253	14-21317	15-21253	15-21317
7-19345	9-21230	9-21240	9-21921	17-21336	17-21752	17-22281	17-24154
9-22550	9-23638	9-23839	9-23840	18-21972			
9-23841	9-23850	9-24199	14-20598	JAPAN			
14-21200	14-21201	14-21311	14-21327	2-23190	8-22690	9-21236	9-21237
14-21755	14-21957	14-21994	14-23321	9-21239	9-21974	9-21977	9-22550
15-21224	15-21266	15-21303	15-21308	11-23310	14-21206	14-21266	14-21283
15-21311	15-21755	15-21787	15-21933	14-21370	14-21384	14-21712	14-21936
15-21942	15-21957	15-21967	15-21970	14-21996	14-22244	14-22806	14-23379
15-22111	15-22242	15-22468	15-23321	14-24066	14-24216	15-21283	15-21371
15-23900	16-21274			15-21712	15-21996	15-22551	15-23300
INSTRUMENTATION, RATE OF CHANGE				15-24216	16-21222	16-23379	16-24066
9-17949	9-23356			17-21212	18-21217		
INSTRUMENTATION, RELAY				KRYPTON			
9-21779	9-21830	9-21973	9-22258	7-22558	14-20574	14-21930	14-21935
9-22781	17-22258	17-22781		15-20574	17-23270		
INSTRUMENTATION, STARTUP				LACROSSE (BWR)			
9-21233	9-23832			5-22788	17-21417	17-21651	17-21813
INSTRUMENTATION, STARTUP RANGE				17-22165	17-22256	17-22788	17-22846
9-22889	9-22890	9-22892	17-22889	17-22955			
17-22900	17-22892			LANTHANUM			
INSTRUMENTATION, SURVEILLANCE				14-21966	17-21082	17-22993	
9-20802	9-21240	9-21921	9-22332	LAPSE RATE, ADIABATIC, NEUTRAL			
9-23156				16-21925			
INSTRUMENTATION, SWITCH				LAPSE RATE, UNSTABLE			
9-21770	9-23148	17-21180		16-21925			
INSTRUMENTATION, TEMPERATURE				LASER			
4-23322	3-22257	5-22984	9-20708	15-20565	15-21140	15-21326	15-23937
9-20709	9-20710	9-21240	9-21775	16-22196			
9-22845	9-22882	9-23327	9-23328	LAW			
9-23320	9-23330	9-23331	9-23332	1-21985			
9-23334	9-23335	9-23354	9-23359	LAYER			
9-23384	9-23833	16-21927	17-20709	11-23930			
17-22257	17-22882	17-22884	17-22952	LEAD			
17-23350	17-23331	17-23332	18-22642	3-22158	15-21261	15-21939	16-21261
INSTRUMENTATION, TESTING				LEAK			
4-23332	9-21923	9-23327	9-23332	1-22941	3-22941	7-22564	8-23340
9-23341	9-23343	9-23850	11-21923	9-23340	11-23814	11-24188	12-22523
17-23332				14-21279	14-21716	14-24216	15-24216
INSTRUMENTATION, WIDE RANGE				17-21716	17-22522	17-22552	17-22783
9-21224	9-23358			17-22941	17-24158		
INSURANCE				LEAK RATE			
3-22442				8-23340	9-23340	11-23304	
INTEGRITY				LIABILITY			
6-21735	8-21735	11-21185	11-22118	1-21985			
17-22116	18-21735			LICENSING STATUS OF NUCLEAR PROJECTS			
IODINE				12-23177	13-23177	17-26835	17-22838
3-20631	4-22479	4-22480	7-22472	17-23177	18-21420		
7-22478	7-22479	7-22482	7-22485	LIQUEFACTION			
7-22499	7-22533	7-22530	7-22545	2-21917	10-21917		
7-22534	7-22562	7-22810	7-22982	LIQUID FUEL			
7-22984	7-22986	14-21206	14-21253	3-20630	13-20630		
14-21270	14-21282	14-21289	14-21325	LITHIUM			
14-21329	14-21363	14-21768	14-21938	18-21463			
14-21947	14-21956	14-22237	14-22902	LOFT (S-RR)			
14-22305	14-24216	15-21253	15-21254	1-23926	5-21321	5-22708	5-23169
15-21252	15-21289	15-21320	15-21363	5-23439	6-23169	6-23439	7-23439
15-21758	15-21947	15-22433	15-22573	7-23926	8-22708	8-22711	8-22821
15-22805	15-22930	15-24216	16-22970	11-23926			
17-22423				LPL			
ION EXCHANGE				14-21363	14-21784	14-22813	15-21313
7-22554	14-21142	14-21274	14-21332	15-21363	15-21368	15-21784	15-22813
14-21370	14-21997	14-22803	14-23152	MAGNESIUM			
15-21720	15-21762	15-23153	17-21082	13-23943	15-21762	15-21766	
17-21720				MAIN COOLING SYSTEM			
IRIDIUM				9-24134	11-24188	17-21082	17-21396
13-22436	17-22436			17-21417	17-22107	17-22256	17-22579
IRON				17-22829	17-22851	17-22955	17-22993
4-22462	7-22483	14-21369	14-21945	17-23370	17-24134	17-24188	18-21971
14-22806	15-21945	15-22802		18-22851			
IRRADIATION FACILITY				MAINTENANCE AND REPAIR			
17-23874				9-23852	12-22523	13-22853	13-23316
IRRADIATION TESTING				13-24274	15-22520	15-24273	15-24274
6-21987	7-21815	7-23372	9-20710	17-21175	17-21182	17-21208	17-21298

17-21355	17-22107	17-22256	17-22520	7-22477	7-22480	7-22481	7-22487
17-22522	17-22552	17-22579	17-22671	11-22122	11-22123	11-22124	11-22125
17-22853	17-22891	17-22897	17-22899	11-23302	11-23303	11-23308	11-23654
17-22900	17-23316	17-23860	17-24273	11-23698	11-23855	11-23856	11-23862
17-24274				12-23326	1P-23326		
MAINTENANCE, REMOTE				MODERATOR			
9-23852				9-21239			
MANGANESE				MODERATOR COEFFICIENT			
14-21369	14-21384	14-21967	14-22806	5-22140	5-22236	6-22140	6-23167
MASS TRANSFER				9-22236	17-22140	17-22167	18-22236
4-22465	4-22471	4-22515	5-22708	18-23360			
5-23395	5-23396	5-23398	5-23404	MODIFICATION, SYSTEM OR EQUIPMENT			
5-23419	5-23423	7-22515	8-22708	5-22142	5-22225	9-22403	9-22784
8-23435				12-22142	12-24277	13-22853	13-24274
MATERIAL				15-24274	17-21182	17-21295	17-21355
9-22892	9-23843	11-23814	11-23825	17-21404	17-21426	17-21429	17-21431
11-23878	14-21180	14-21305	17-21991	17-22142	17-22224	17-22225	17-22226
17-22892				17-22553	17-22783	17-22784	17-22845
MATHEMATICAL STUDY				17-22853	17-22900	17-22951	17-22953
2-20729	2-23191	5-21244	8-23435	17-22957	17-23375	17-24274	17-24277
9-23385	11-21121	11-21122	14-21257	18-21218	18-21442	18-21444	18-22144
MATHEMATICAL TREATMENT				18-22224	1P-22499	18-23014	
4-22533	6-21235	6-21247	6-21833	MOLYBDENUM			
5-23170	7-22945	9-20712	9-21235	12-23943	14-24060	15-24060	
9-21829	9-21832	9-21833	9-21834	MONITOR, RADIATION, AIR			
9-21974	9-22333	9-22401	9-23355	14-21665	14-21713	15-21655	15-22111
9-24196	11-23696	11-23697	11-23846	15-22519	15-23300	15-23868	16-21713
11-23860	11-23863	12-20991	14-21187	17-22519	17-23868		
16-21134	16-23380	16-24064	17-21410	MONITOR, RADIATION, AREA			
17-22957	18-20891	18-22945		9-22889	17-22845	17-22869	
MAXIMUM PERMISSIBLE BODY BURDEN				MONITOR, RADIATION, BACKGROUND			
15-21763	15-21932			15-21224	16-21224		
MAXIMUM PERMISSIBLE CONCENTRATION (MPC)				MONITOR, RADIATION, ENVIRONMENTAL			
12-24279	14-21245	14-21718	15-24279	14-21655	14-21755	14-23902	14-24061
17-21719	17-24279			14-24063	14-24214	15-21224	15-21665
MEASUREMENT, GENERAL				15-21755	15-21787	15-23322	15-23902
2-23197	5-22140	5-22140	7-23372	15-24061	15-24063	15-24214	16-21224
2-21902	14-21668	15-21668	15-23322	MONITOR, RADIATION, GAS			
15-23425	15-24062	16-22196	16-23197	14-21327	15-22488		
16-24065	17-21339	17-21352	17-21401	MONITOR, RADIATION, GENERAL			
17-21417	17-22140	17-22447		7-23311	9-23838	9-23839	9-23840
MEASUREMENT, NOISE				11-23311	15-21316	15-21664	15-21970
9-21236				17-21664	19-22311		
MEASUREMENT, REACTIVITY				MONITOR, RADIATION, GENERAL PRACTICE			
1-23166	1-23168	6-23167	6-23348	15-21970			
6-23446	9-21234	9-23348	14-21667	MONITOR, RADIATION, GROUND SURFACE			
14-22492	15-21667	15-22492	17-21184	14-21665	14-21713	15-21665	16-20692
17-22952	17-23167	18-23446		14-21713			
MEASUREMENT, STRAIN GAGE				MONITOR, RADIATION, LIQUID			
9-23341	9-23342	11-22122	11-22124	14-21665	15-21665		
MEASUREMENT, TEMPERATURE				MONITOR, RADIATION, PERSONNEL			
2-20708	9-21775	9-23335	9-23354	4-22698	15-21316	15-21787	15-22241
6-23364	9-23396	11-22122	11-22124	15-22432	15-22435	15-22520	15-23428
16-21927	17-22953			15-24062	17-22432	17-22435	17-22520
MERCURY				MONITOR, RADIATION, STACK			
5-23421	14-21931	15-21931	15-21932	15-22435	17-22435		
METAL				MONITOR, RADIATION, TELEMETRY			
7-22933	8-22715	11-21117		9-22332	15-21224	16-21224	
METAL WATER REACTION				MONITORING PROGRAM, ENVIRONMENTAL			
5-22708	8-22694	9-22695	8-22696	14-21311	14-21320	14-21343	14-21756
8-22708	8-22711	8-22714	8-22722	14-21757	14-21758	14-21938	14-21949
8-22821	8-22822	8-22823	9-22824	14-21954	14-21979	14-21990	14-22813
8-23160	5-23340	9-23340	18-21334	14-22815	14-22971	14-22158	15-21311
METAL, LIQUID				15-21329	15-21756	15-21757	15-21954
4-22514	4-22515	4-22516	5-23417	15-22147	15-22812	15-22158	15-23428
5-23420	5-23421	7-22514	7-22515	16-22971	18-21954		
7-22516	8-22694	8-22695	8-22696	MONITORING SYSTEM, RADIATION			
8-22720	8-22722	9-23334		4-22698	14-21202	14-24216	15-21202
METAL, REFRACTORY				15-21447	15-21719	15-22488	15-24216
8-22824				17-21710	18-22144		
METEOROLOGY				MONTE CARLO			
1-22143	2-23195	2-23197	14-21768	5-23405	15-21267	15-21364	15-21666
15-21261	15-21758	15-21261	16-21926	MONTECELLO (BWR)			
16-23197	17-22143			12-21929	18-21929		
MICROMETEOROLOGY				MOUND LABORATORY			
16-21925				14-22813	15-22813		
MILLING				MSR (RE)			
14-21272	15-21272			6-21439			
MINERAL EXCHANGE				MSRE (RE)			
14-21930	14-21935	14-21944		6-22920	17-22920		
MINING				NBS			
1-21985				15-21715	15-21216	15-21358	15-21359
MISSILE GENERATION AND PROTECTION				18-22144			
1-23698	5-23314	11-20355	11-23314	NDT DATA			
11-23699	17-20355	17-20356	17-20357	11-22120	11-22121	11-22129	11-23313
18-20355	18-23018			NFPT (NIJ)			
MOCKUP				13-23943	14-21756	14-24060	15-21756
1-23308	11-22125	11-23303	11-23308	15-24060			
17-21295	17-22342			NEFVA PROGRAM			
MODEL TESTING				9-23353			
1-23308	2-23326	4-22480	4-23855	NETHERLANDS			

17-21401	17-21406	18-21400			17-21216	17-21341	17-21827	17-21828
NEUTRON					17-22110	17-22256	17-22257	17-22327
6-23348	6-23356	9-21225	9-21229		17-22334	17-22580	17-22781	17-22783
9-21920	9-23348	9-23351	9-23352		17-22882	17-23330	17-23331	17-23332
9-23353	9-23355	9-23356	11-22117		17-23333	17-24188	17-24275	18-20637
14-21382	14-23321	15-21268	15-21281		18-23488			
15-21324	15-21333	15-21364	15-21382		OPERATION			
15-21666	15-21797	15-21794	15-21933		17-21171	17-21355		
15-21942	15-22152	15-23159	15-23221		ORGANIC IODIDE			
15-23322	15-23900	17-22117			7-22482	7-22485	7-22556	7-22561
NEUTRON INTERACTION					7-22562	7-22564	7-22983	7-22987
3-20630	13-20630				11-22987			
NEW ZEALAND					ORNL			
14-21938	14-21964				5-22697	8-22564	9-23650	14-21193
NFS					14-21330	14-21346	14-21347	14-21747
7-24270	12-23177	13-22259	13-22853		14-21780	14-21781	14-21800	14-21935
13-23177	13-23364	13-24270	13-24274		14-22112	14-22807	15-21161	15-21193
14-21716	15-21717	15-22435	15-24273		15-21333	15-21364	15-21383	15-21942
15-24274	17-21716	17-21717	17-22259		OSCILLATOR, REACTIVITY			
17-22435	17-22853	17-23177	17-23364		6-23446	17-21753	18-23446	
17-24270	17-24273	17-24274			OTTO HAHN (PWR)			
NICKEL					1-21391			
4-22483	7-22483	8-23160			CUT OF PILE LOOPS AND EXPERIMENTS			
NINE MILE POINT (BWR)					1-23926	4-22464	4-22568	5-22976
18-21924					7-23926	11-23926	17-22976	17-22991
NIOBIUM					OXIDATION			
14-21966	14-21967	14-24060	15-24060		5-22723	8-22473	8-22715	8-22716
NITRATE					6-22717	8-22723	17-21083	17-21215
1-22941	3-22941	17-22941			OXIDE			
4-22549	7-22549				4-22549	4-22568	7-22472	7-22549
NITROGEN					8-23377	12-24192	14-21668	15-21668
5-23424	8-22691	8-22702	8-22716		OXYGEN			
9-22550	11-23819				1-23391	4-22479	4-22568	4-23391
NOBLE GAS					7-22479	8-22716	9-23345	
7-22558	7-22707	15-22488			OZONE			
NOISE					14-23880	16-23880		
5-21833	9-21236	9-21833			PALISADES POINT (PWR)			
NOISE ANALYSIS					18-23030	18-23037	18-23055	
6-21124	6-21235	6-21833	6-23170		PARTICLE SIZE			
6-23358	9-21235	9-21236	9-21833		4-22479	4-22486	4-22514	4-22555
9-23358	9-23359	9-24256			7-22479	7-22486	7-22514	7-22548
NOISE CROSS CORRELATION					7-22555	14-21256	15-21256	15-21764
6-21833	9-21833				PARTICLE SIZE DISTRIBUTION			
NORWAY					4-22514	4-22555	7-22514	7-22531
8-22691	14-21769	14-21946	15-21769		7-22534	7-22544	7-22548	7-22555
17-21209	17-21210				16-24067			
NOZZLE					PARTICLE, RADIOACTIVE			
1-23926	7-23926	11-21117	11-23310		14-21256	14-24060	15-21256	15-21764
11-23694	11-23698	11-23807	11-23821		15-24060			
11-23926	11-24822	17-22846			PARTICULATE			
NRTS					5-23395	14-21980	14-22815	
16-22970					PATENT			
NS SAVANNAH (PWP)					3-22155	3-22156	3-22158	7-23836
2-22786	9-21432	17-16494	17-21415		7-23837	9-21237	9-21239	9-21976
17-21432	17-21433	17-21450	17-21451		9-21977	9-23183	9-23833	9-23835
18-16494	18-22786				9-23838	9-23839	9-23840	9-23841
NSPP					9-23942	11-22155	11-22156	11-22157
7-22811					12-22155	12-22157	13-22157	14-18834
NUCLEAR DETONATION					14-22143	14-22244	14-22250	15-22242
14-21667	14-21712	14-21769	14-21770		15-23905	18-22988		
14-21771	14-23154	15-21667	15-21712		PATHFINDER (ISR)			
15-21769	15-21770	15-21771	15-23154		5-22225	17-22224	17-22225	17-22495
NUCLEAR EXPLOSION DEBRIS					18-22224	18-22495		
14-21362	14-22804	14-23379	15-21362		PBF (S-RR)			
16-23379					9-22513			
NUCLEAR ROCKET					PEACH BOTTOM 1 (HTGR)			
4-22331	4-22333	4-22338	9-21830		17-17458	17-21298	17-21426	17-22552
9-21831	9-22331	9-22333	9-22338		17-22553	17-22621	17-22959	17-22960
11-23825	14-21713	16-21713			17-22973	17-23370	18-21808	
NUCLEATE BOILING					PEACH BOTTOM 2 AND 3 (BWR)			
9-22332					5-21475	6-21475	17-21475	18-21464
OCEAN AND SEA					18-22981			
1-22819	1-22820	14-21266	14-21311		PERFORMANCE LIMIT			
14-21377	14-21378	14-21751	14-21949		5-23470	6-23483	17-21409	17-21454
14-22245	15-21311	15-21377	15-21751		17-21809	17-22829	18-22194	18-22494
OFF SITE					18-22600	18-23470	18-23483	
9-23951	10-23951	18-23951			PERIOD METER			
OPERATING EXPERIENCE					17-22552			
4-22463	7-23911	9-22949	9-23857		PERSONNEL EXPOSURE, RADIATION			
9-23911	11-22463	11-23826	11-23844		12-24278	12-24279	13-22438	13-22526
12-22463	17-22460	17-22897	17-22899		13-23315	13-23265	13-24274	13-24280
17-22900	17-22949	17-23911			14-21768	15-21278	15-21714	15-21720
OPERATING EXPERIENCE SUMMARY					15-21768	15-22241	15-22432	15-22433
1-20637	3-20633	3-22161	3-24217		15-22434	15-22520	15-22526	15-22527
4-23332	5-22257	7-23488	9-20638		15-22826	15-22827	15-23319	15-23362
9-20709	9-21827	9-21828	9-21902		15-23365	15-24271	15-24272	15-24274
9-21920	9-21973	9-22327	9-22334		15-24278	15-24279	17-21714	17-21720
9-22781	9-22892	9-23330	9-23331		17-22432	17-22433	17-22434	17-22438
9-23332	9-23333	11-22110	11-24188		17-22520	17-22524	17-22525	17-22526
15-21447	17-20638	17-20709	17-21212		17-22527	17-22826	17-22827	17-23315
					17-23319	17-23361	17-23362	17-23363

17-23365	17-24271	17-24272	17-24274	5-23399			
17-24278	17-24279	17-24280		POPULATION DISTRIBUTION			
PERSONNEL PROTECTIVE DEVICE				1-22147	2-23199	17-22143	
3-22809	12-24277	12-22526	15-20565	POPULATION EXPOSURE			
15-21365	15-21720	15-22526	15-22527	14-21712	14-21768	14-24214	15-21712
15-24271	15-24272	15-24273	17-21426	15-21759	15-21768	15-24214	
17-21720	17-22526	17-22527	17-22809	POREOUS DIFFUSION			
17-24271	17-24272	17-24273	17-24277	5-23423	8-22716		
PERTURBATION METHOD				POREOUS MEDIA			
6-21440				5-23396	7-22537		
PHOSPHORUS				PORTUGAL			
14-21947	15-21720	15-21947	17-21720	15-21262			
PILGRIM STATION (BWR)				POTASSIUM			
2-22223	18-22223	18-22511		4-22469	7-22469	14-21360	14-21799
PIPING				14-21966	14-22576	14-22577	15-21360
4-22547	4-22547	5-21373	5-23418	15-21762	15-21763	17-21397	
7-22987	11-22987	11-23312	12-20591	POWER COEFFICIENT			
17-23312	18-20591	19-23312		5-22456	6-22782	17-22456	17-22621
PIQUA (OCR)				17-22782	17-22912		
7-21297	12-21297	17-21297	17-21396	POWER DISTRIBUTION			
17-22977	17-23869			6-21247	6-23444	6-23831	9-20992
PLANT PROTECTIVE SYSTEM				18-20592			
5-22236	7-22558	9-22236	9-22974	POWER UPDATING			
10-22974	11-22191	12-22191	17-22107	6-22787	17-21176	17-21179	17-21181
18-22236	18-22974			17-21187	17-21536	17-21809	17-22787
PLASMA				17-22829	17-23261	18-22194	18-23482
15-21666				PRAIRIE ISLAND 1 AND 2 (PWR)			
PLASTICITY				18-22339			
5-21323	11-21117	11-21119	11-21121	PRASEODYMIUM			
11-21122	11-21185	11-23305	11-23484	14-21967			
18-23494				PRECIPITATION			
PLASTICS				14-21309	14-21311	14-21379	14-21758
1-22941	3-22941	17-22941		14-21074	14-21980	14-22492	14-22915
FLOWSHARE PROGRAM				15-21311	16-20692	16-21134	16-22492
14-21312	14-21377	14-21378	14-21748	16-22927			
14-21749	14-21750	14-21751	14-21784	PRESSURE DROP			
14-21935	15-21277	15-21748	15-21749	5-23409	5-23410	17-21417	
15-21750	15-21751	15-21784		PRESSURE PULSE			
FLOWSHARE PROGRAM, ATLANTIC-PACIFIC CANAL				8-22496			
14-21377	14-21378	15-21377		PRESSURE RELIEF			
PLUM BROOK (TR)				12-22523	17-22523		
9-22949	17-21295	17-21414	17-22342	PRESSURE TRANSIENT			
17-22447	17-22949	17-23375		5-23410			
PLUME BEHAVIOR, GENERAL				PRESSURE VESSEL			
16-22452	16-22921	16-24067		1-23926	4-23855	5-22236	6-21735
PLUTONIUM				7-23926	8-21735	9-21923	9-22236
1-22941	3-22941	4-22466	4-22486	11-21117	11-21185	11-21923	11-22108
4-22514	4-22549	4-22559	5-23413	11-22117	11-22118	11-22119	11-22120
5-23436	6-23437	6-23440	6-23917	11-22171	11-22122	11-22123	11-22124
7-22466	7-22486	7-22514	7-22549	11-22125	11-22128	11-23302	11-23305
7-22555	7-23836	12-23180	12-23181	11-23306	11-23307	11-23309	11-23310
12-24278	13-21194	13-22436	13-22438	11-23312	11-23313	11-23484	11-23484
13-23180	13-23181	13-23365	13-23433	11-23507	11-23809	11-23816	11-23821
14-21190	14-21194	14-21200	14-21202	11-23523	11-23824	11-23826	11-23827
14-21203	14-21204	14-21205	14-21256	11-23944	11-23845	11-23855	11-23856
14-21273	14-21279	14-21311	14-21788	11-23857	11-23908	11-23909	11-23926
14-21249	14-21579	14-22815	14-23156	11-23930	11-24188	11-24822	17-21414
15-21194	15-21202	15-21203	15-21204	17-22117	17-22118	17-22580	17-22846
15-21256	15-21273	15-21308	15-21311	17-23144	17-23312	17-24188	18-21735
15-21787	15-21932	15-21962	15-22111	18-22226	18-22836	18-23369	18-23484
15-22434	15-23156	15-23300	15-23365	18-23484	18-23512		
15-24276	17-21339	17-22434	17-22436	PRESSURE, EXTERNAL			
17-22438	17-22522	17-22829	17-22841	11-21122	17-21410		
17-23365	17-24278			PRESSURE, INTERNAL			
PLUTONIUM DIOXIDE				7-23372	7-23837	9-22949	11-23694
4-22486	6-21244	6-21250	6-21987	11-23946	17-22949		
7-22486	13-23433	17-21997		PROBABILITY			
PLUTONIUM OXIDE				1-22942	17-22942		
4-22555	6-23446	7-22555	13-23943	PROCEDURES AND MANUALS			
17-21335	18-23446			1-21900	6-22787	9-21900	14-21207
PM 1 (PWR)				15-22520	17-21184	17-21918	17-22447
9-22512	17-21355	18-21218		17-22520	17-22787		
PM 2A (PWR)				PROMPT CRITICALITY			
11-22108	11-23909			6-21435			
PM 3A (PWR)				PROMPT NEUTRON LIFETIME			
18-21218	18-21442			6-20587	6-21435	6-22782	17-22782
POINT BEACH 1 AND 2 (PWR)				PROPERTY, PHYSICAL			
18-21452				4-22465	4-22468	4-22471	4-22474
POISON, BURNABLE				4-22476	5-22723	5-23415	7-22468
8-20714	9-22491	9-23835	9-24196	8-22723	11-23302	11-23856	17-21991
17-21406				FRTR (TR)			
POISON, FIXED				11-23913			
5-22236	9-22236	18-22236		PUERTO RICO			
POISON, SOLUBLE				14-21260	15-21260		
4-22338	9-22338	9-22944	17-22844	PULSED NEUTRON TECHNIQUE			
PPI AND				6-21437	9-22513		
15-21385	15-21386			PULSTAR (PP)			
POLONIUM				9-22131	17-22131		
14-21949	15-21138	15-21261	15-22153	PUMP			
16-21261				3-22155	5-22257	11-22155	12-22155
POOL BOILING				17-21415	17-22254	17-22257	18-23030

PYROLYTIC				14-21380	14-21387	14-21387	14-21747
7-20550	7-22985	8-22717		14-21780	14-21781	14-21786	14-21945
QUAD CITIES 1 AND 2 (PWR)				14-21946	14-21948	14-21957	14-21993
15-21982	15-23489			14-21995	14-21996	14-22150	14-22151
QUALITY CONTROL				14-22154	14-22240	14-22329	14-22574
1-21392	9-22512	9-23143	11-20355	14-23155	15-20565	15-20738	15-20740
11-23803	17-20355	17-20356	17-22846	15-21128	15-21140	15-21141	15-21162
17-23143	18-20352	19-20355	18-22494	15-21253	15-21254	15-21256	15-21260
18-23903				15-21261	15-21263	15-21278	15-21282
R AND D PROGRAM				15-21283	15-21285	15-21287	15-21289
3-20628	6-21987	5-22901	7-22497	15-21306	15-21308	15-21311	15-21344
7-22917	11-23313	11-23806	11-23809	15-21349	15-21368	15-21371	15-21374
11-23919	11-23847	17-21172	17-21325	15-21377	15-21382	15-21383	15-21385
17-21336	17-21339	17-21342	17-21401	15-21386	15-21387	15-21786	15-21787
17-21404	17-21406	17-21409	17-21410	15-21788	15-21795	15-21939	15-21940
17-21987	17-21991	17-22497	17-22582	15-21943	15-21945	15-21948	15-21957
17-22801	18-21219	18-21220	18-21221	15-21961	15-21962	15-21993	15-21996
18-21400	18-21463	18-22106	18-22917	15-22148	15-22149	15-22150	15-22152
RADIATION DAMAGE				15-22153	15-22238	15-22240	15-22329
4-22700	7-24270	11-21117	11-23823	15-22573	15-22802	15-22818	15-22929
11-23924	11-23825	11-23827	11-23908	15-22930	15-22931	15-23155	16-21261
13-24270	14-21141	14-21253	14-21256	17-21399	18-21217		
14-21260	14-21270	14-21282	14-21311	RADIOCHEMICAL ANALYSIS			
14-21374	14-21380	14-21382	14-21387	14-21370	14-21667	14-21936	14-24066
14-21747	14-21784	14-22154	14-22240	15-21667	16-22922	16-22924	16-24066
14-22329	15-21140	15-21141	15-21253	RADIOCHEMICAL PLANT SAFETY			
15-21256	15-21260	15-21263	15-21283	12-23177	12-23180	12-23181	12-23871
15-21295	15-21287	15-21311	15-21268	12-23944	12-24192	13-23175	13-23176
15-21371	15-21374	15-21382	15-21383	13-23177	13-23178	13-23180	13-23181
15-21387	15-21786	15-21788	15-21795	13-23433	13-23671	13-23944	13-23945
15-21939	15-21943	15-21961	15-21992	14-21387	14-21947	15-21387	15-21947
15-22148	15-22149	15-22152	15-22153	17-23177			
15-22240	15-22329	15-22573	15-22802	RADIOCHEMICAL PROCESSING			
15-22818	15-22930	15-22931	15-23937	12-23179	12-23180	12-23181	13-23176
17-24270				13-23178	13-23179	13-23180	13-23181
RADIATION EFFECT				13-23364	13-23433	13-23943	13-23945
4-22515	4-22700	7-22515	7-22561	14-21370	14-21716	14-21786	14-22803
7-22985	9-22712	9-20708	11-23825	15-21717	15-21786	17-21716	17-21717
11-23827	11-23908	14-20738	15-20738	17-23364			
15-21388	15-21793	17-21404	17-22447	RADIOGRAPHY			
19-21217				14-21137	15-21136	15-21137	15-21261
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14-21141	14-21193	15-20741	15-21141	16-21261	17-21714	17-22825	17-22826
15-21193	15-21788			17-22827	17-23362	17-23363	
RADIATION INJURY, TREATMENT OF				RADIOISOTOPE			
12-24277	14-21141	14-24214	15-20737	3-20631	3-22444	13-23315	14-20738
15-20741	15-21141	15-21328	15-21361	14-21186	14-21188	14-21189	14-21272
15-21368	15-21951	15-21992	15-22148	14-21309	14-21327	14-21329	14-21445
15-22253	15-22802	15-22818	15-22929	14-21996	14-22112	14-22329	14-22576
15-24214	17-22522	17-24277		14-22807	14-22816	15-20738	15-20742
RADIATION PROTECTION, CHEMICAL				15-21160	15-21272	15-21306	15-21329
12-20739	14-20739	15-21741	15-21762	15-21445	15-21940	15-21996	15-22329
15-21962	15-22802	15-22818		15-22572	17-23315		
RADIATION PROTECTION, ORGANIZATION				RADIOLOGICAL ASSISTANCE			
14-21265	14-21387	14-21757	14-21957	14-21265	15-21265	17-22504	
14-22329	15-20565	15-21258	15-21262	RADIOLOGY			
15-21265	15-21313	15-21316	15-21326	5-23169	6-23169	14-21141	14-21786
15-21397	15-21754	15-21757	15-21759	14-23321	14-24063	15-20736	15-20737
15-21957	15-21960	15-22253	15-22329	15-20740	15-20741	15-20742	15-20743
RADIATION SAFETY AND CONTROL				15-21136	15-21141	15-21328	15-21361
1-21405	1-21900	1-22841	5-21900	15-21368	15-21371	15-21759	15-21786
12-23177	12-23871	13-22259	13-22437	15-21790	15-21992	15-22148	15-22241
13-22521	13-23177	13-23365	13-23871	15-22253	15-22433	15-22573	15-22929
14-21265	14-21311	14-21387	14-21446	15-23321	15-24063	17-22433	
14-21757	15-21258	15-21262	15-21265	RADIOLYTIC GAS			
15-21311	15-21313	15-21216	15-21326	8-22584	8-22690	8-22691	8-22713
15-21397	15-21446	15-21754	15-21757	17-21401			
15-21960	15-22253	15-22432	15-22527	RADIONUCLIDE, INDUCED			
15-22826	15-22827	15-23319	15-23365	8-22690	8-22691	8-22713	14-21309
17-21399	17-21401	17-21918	17-22259	14-21314	14-21756	14-21769	14-22928
17-22432	17-22437	17-22521	17-22527	15-21313	15-21314	15-21215	15-21756
17-22825	17-22826	17-22827	17-22841	15-21763	15-21766	15-21769	
17-23177	17-23317	17-23318	17-23319	RADIUM			
17-23365	17-23366	17-23865		1-22944	14-21193	14-21205	14-21289
RADIATION UNIT				14-21317	14-21931	14-21945	14-21959
15-20736				15-21193	15-21261	15-21278	15-21289
RADIATION, PUBLIC EDUCATION/ACCEPTANCE				15-21317	15-21931	15-21939	15-21945
1-17943	1-21669	1-22926	1-22927	15-21959	16-21261	17-22944	
1-22942	1-22943	1-22944	1-22969	RADON			
17-17943	17-20707	17-22107	17-22942	14-21272	14-21217	14-21959	15-21272
17-22943	17-22944	17-22969	17-23368	15-21317	15-21959	16-22924	
18-21669	18-21916			PAINOUT			
RADIOACTIVITY RELEASE				14-21343	14-21379	14-21758	14-21784
7-24270	13-24270	14-21200	15-23320	14-21938	14-22492	14-22971	15-21784
17-21300	17-21403	17-24370		16-21134	16-21926	16-22492	16-22922
RADIOBIOLOGY				16-22971	16-24065		
4-22700	14-20738	14-21141	14-21162	PURE EARTH			
14-21252	14-21253	14-21256	14-21260	9-23843			
14-21269	14-21270	14-21275	14-21282	RAW MATERIAL			
14-21283	14-21289	14-21311	14-21344	3-22441	3-22441		
14-21349	14-21374	14-21377	14-21379	REACTIVITY COEFFICIENT			

6-20587	6-21440			REACTOR, BWR			
REACTIVITY EFFECT				1-23145	1-23166	1-23376	1-23921
5-23390	6-20587	6-21439	6-23161	2-22223	2-24260	5-21475	5-21810
6-23173	6-23442	9-21234	9-21238	5-22142	5-22225	5-22704	5-22775
9-23147	17-21355	17-23390	18-23359	5-22788	5-22976	5-22978	5-23169
REACTIVITY EFFECT, ANOMALOUS				5-23410	5-23418	5-23422	5-24058
5-22140	5-22884	6-21087	6-22140	5-24059	6-21475	6-23164	6-23169
6-22787	6-22830	6-22920	10-22885	6-23483	7-23488	8-22584	8-22690
11-22885	17-21987	17-22140	17-22621	8-22691	8-24056	8-24059	9-21413
17-22787	17-22830	17-22884	17-22885	9-22327	9-22947	9-23487	9-24134
17-22920				11-22191	11-23484	11-23809	11-23823
REACTIVITY EFFECT, EXPANSION				11-23824	11-23826	11-24188	12-21929
1-23168				12-22142	12-22191	12-23485	12-24058
REACTIVITY EFFECT, SLUMP				12-24059	13-20716	14-22928	14-24216
19-23018				15-22520	15-24216	16-21476	17-21205
REACTIVITY, EXCESS				17-21210	17-21292	17-21336	17-21397
5-22140	6-22920	17-22140		17-21413	17-21417	17-21428	17-21475
17-22930	17-22951			17-21476	17-21661	17-21810	17-21812
REACTOR CONTROL				17-21813	17-22132	17-22142	17-22165
4-22331	4-22333	6-21245	6-23163	17-22224	17-22225	17-22226	17-22256
6-23446	7-21245	9-17949	9-21232	17-22282	17-22283	17-22327	17-22495
9-21237	9-21238	9-21776	9-21830	17-22520	17-22775	17-22788	17-22828
9-21901	9-21903	9-21975	9-22331	17-22846	17-22912	17-22947	17-22955
9-22333	9-22512	9-23353	9-23833	17-22976	17-22977	17-23145	17-23804
9-23854	9-24138	9-24196	9-24197	17-24134	17-24188	18-21464	18-21918
9-24256	9-24257	10-24138	17-21245	18-21924	18-21929	18-21971	18-21982
17-21171	18-23446			18-22223	18-22224	18-22494	18-22495
REACTOR COOLANT				18-22511	18-22581	18-22981	18-23014
4-22516	5-23422	7-22516	14-18834	18-23015	18-23016	18-23017	18-23018
14-21757	14-22806	15-21757	17-22973	18-23019	18-23020	18-23471	18-23472
REACTOR DECOMMISSIONING				18-23482	18-23483	18-23484	18-23485
17-20835	17-21246	17-21427	17-21448	18-23484	18-23487	18-23488	18-23489
17-21812	17-22837	17-22838		18-23552	18-24269		
REACTOR DESCRIPTION				REACTOR, CIRCULATING FUEL			
17-21351	17-22279	17-22460	17-22912	17-21401	18-21400		
17-22915	18-22105	18-22279	18-22581	REACTOR, DESALINATION			
18-22583	18-22913	18-22926	18-23371	14-21356	17-21403		
REACTOR DYNAMICS				REACTOR, FAST			
5-21124	6-21125	6-21130	6-21272	1-17943	1-21390	1-23168	2-23165
6-21245	6-21436	6-21437	6-23161	4-22471	4-22480	4-22514	5-22864
6-23162	6-23163	6-23164	6-23171	5-22987	5-22994	5-22898	6-21235
6-23173	7-21245	12-21245	18-21797	6-21249	6-23162	6-23348	6-23436
REACTOR KINETICS				6-23446	7-22489	7-22514	9-20705
6-21242	6-21435	6-21436	6-21437	9-20711	9-21234	9-21235	9-21239
6-21833	6-22782	6-22901	6-23164	9-21776	9-22882	9-22899	9-22890
6-23171	6-23831	9-21833	17-22782	9-22892	9-22898	9-23147	9-23327
17-22901				9-23346	9-23348	9-23356	9-23357
REACTOR OFFGAS				10-22881	10-22885	11-22885	11-23813
15-22520	17-22520			11-23857	17-17943	17-20590	17-20709
REACTOR PHYSICS				17-21753	17-22107	17-22881	17-22882
1-21393	5-23169	6-21241	6-21243	17-22883	17-22884	17-22885	17-22886
5-23169	6-23434	6-23436	6-23437	17-22887	17-22888	17-22889	17-22890
6-23442	6-23831	6-23917	17-21355	17-22891	17-22892	17-22893	17-22894
17-21339	17-21404	18-23369		17-22895	17-22896	17-22897	17-22898
REACTOR POWER				17-22899	17-22900	18-21416	18-21797
1-17943	5-22257	9-23395	10-22881	18-21972	18-22583	18-23446	
14-21445	14-21668	14-24216	15-21445	REACTOR, FAST BURST			
15-21668	15-23900	15-24216	17-17943	17-22951			
17-21809	17-22257	17-22881		REACTOR, FLUX TRAP			
REACTOR SAFETY SYSTEM				1-22143	5-22697	9-22281	9-22992
1-21271	1-23443	6-23443	9-17949	9-23148	17-22143	17-22281	17-22992
9-21929	9-21831	9-21973	9-21974	17-22993	18-22144	18-22800	
9-22327	9-22334	9-23151	15-21271	REACTOR, GCR			
17-21352	17-22327	17-22334	17-22951	1-23376	3-24219	3-24220	4-22515
REACTOR STABILITY				5-23409	6-21247	6-23444	7-22515
5-21475	6-21475	6-22801	6-23163	7-22538	9-24257	11-23844	11-23930
16-21476	17-21475	17-21476	17-22801	13-24220	17-17459	17-22580	17-23370
18-21797	18-23369			17-24220	18-21797	18-22913	
REACTOR STARTUP EXPERIENCE				REACTOR, GENERAL			
11-20355	17-20355	17-21404	18-20355	5-21310	6-21241	6-21319	8-21319
REACTOR STARTUP TESTING				15-21324			
6-21126	17-21194	17-21350	17-21353	REACTOR, GRAPHITE MODERATED			
17-22460	18-22842			6-22787	6-23437	9-22281	11-23844
REACTOR TRANSIENT				17-21448	17-22281	17-22787	17-22915
5-21322	5-22509	5-23439	6-21124	17-23370	18-22913		
6-21125	6-21242	6-21243	6-21322	REACTOR, HOMOGENEOUS			
6-21436	6-21437	6-23161	6-23163	17-21296	17-21427		
5-23165	6-23171	6-23438	6-23439	REACTOR, HTGR			
7-23439	8-21322	17-22509		1-23926	7-23926	9-21418	11-23926
REACTOR, AIRCRAFT				17-17458	17-21299	17-21404	17-21418
9-23353				17-21426	17-22552	17-22553	17-22621
REACTOR, BEW MODERATED				17-22959	17-22960	17-22973	17-23370
17-21172				18-21214	18-21608	18-23360	
REACTOR, BEEDEP				REACTOR, HWP			
1-21390	1-23168	1-23376	2-23195	1-21389	1-22143	7-22911	9-21231
6-23162	6-23434	6-23438	7-22517	9-22281	9-22833	9-23911	9-24257
9-20712	9-23330	9-23331	9-23356	14-21715	14-21995	15-23868	17-21184
9-23357	17-21350	17-21351	17-21352	17-21394	17-21395	17-21715	17-22143
17-21353	17-21753	17-22107	17-22897	17-22281	17-22912	17-23868	17-23911
17-22499	17-23330	17-23331	18-21797	18-21221	18-21444	18-22144	18-23371
18-22917				REACTOR, INTERNAL SUPP HEAT			



5-22225	17-21299	17-21300	17-21408	18-22910	18-22911	18-22917	18-22935
17-21411	17-21812	17-22224	17-22225	18-22926	18-22926	18-22939	18-22940
17-22495	17-22915	18-22224	18-22495	18-22945	18-22961	18-22974	18-22975
REACTOR, LMCR				18-22979	18-22980	18-22989	18-22994
1-21390	1-23168	4-22471	4-22476	18-23010	18-23011	18-23013	18-23030
4-22479	4-22489	4-22514	4-22568	18-23037	18-23055	18-23182	18-23324
4-23332	5-22456	6-21244	6-21245	18-23325	18-23326	18-23600	18-23803
6-23162	6-23358	7-21245	7-22479	18-23812	18-23650	18-23951	
7-22489	7-22514	9-20638	9-20709	REACTOR, RESEARCH			
9-22457	9-23327	9-23328	9-23329	1-21392	1-21393	1-22143	5-22697
9-23330	9-23331	9-23332	9-23334	5-22785	6-21243	6-22787	6-22830
9-23335	9-23347	9-23350	9-23351	7-21915	9-20714	9-20715	9-21827
9-23358	9-23359	11-23813	11-23857	9-21628	9-22151	9-22258	9-22492
12-21245	17-20638	17-20709	17-21216	9-22781	9-22843	9-22844	9-23148
17-21335	17-21350	17-21351	17-21352	9-23387	10-23915	15-21664	15-21933
17-21353	17-21753	17-22456	17-22457	17-21082	17-21184	17-21212	17-21296
17-22900	17-22914	17-23330	17-23331	17-21427	17-21431	17-21449	17-21454
17-23332	18-21211	18-22105	18-22583	17-21664	17-21753	17-21811	17-21815
REACTOR, MARITIME				17-21827	17-21828	17-22131	17-22143
1-21391	2-22786	17-16494	17-21406	17-22258	17-22342	17-22460	17-22575
17-21415	18-16494	18-22786		17-22781	17-22785	17-22787	17-22829
REACTOR, MILITARY				17-22830	17-22830	17-22844	17-22845
9-21920	9-22512	17-21355	18-21218	17-22946	17-22952	17-22953	17-22957
18-21442				17-22958	17-23267	17-23874	17-23915
REACTOR, MOLTEN SALT				18-21293	18-21444	18-22141	18-22144
6-22920	17-22920			18-22493	18-22800	18-22843	
REACTOR, ORDERED BED, FAST				REACTOR, SAFETY RESEARCH			
18-22583				5-21321	5-22509	5-22709	5-23169
REACTOR, ORGANIC COOLED				5-23430	6-23169	6-23439	7-23439
1-21389	5-23422	7-21297	12-21297	8-22708	8-22711	8-22821	9-22513
17-21297	17-21396	17-22977	17-23869	17-22509			
18-21221				REACTOR, SPACE			
REACTOR, PEBBLE BED				4-21398	4-22331	4-22333	4-22338
5-21126	11-23930	18-21214		4-23332	9-20713	9-22331	9-22333
REACTOR, POOL TYPE				9-22338	9-23332	16-22196	17-23332
5-22785	9-23387	9-23854	15-21664	REACTOR, TEST			
17-21405	17-21431	17-21664	17-22785	1-21392	5-23169	6-23169	9-20711
17-22839	17-22952	17-23361		9-21776	9-21922	9-22948	9-23147
REACTOR, POWER				9-23327	9-23346	11-22913	17-21295
1-21669	1-21791	1-21814	1-22919	17-21414	17-21609	17-22342	17-22447
1-23376	4-22515	7-22515	9-21973	17-22946	17-23375	18-22105	
9-22512	9-23832	9-23852	9-24138	REACTOR, THERMAL			
9-24256	10-24138	14-21329	14-21791	6-21247	9-23350		
14-21930	14-22928	15-21320	17-20707	REACTOR, TRAINING			
17-21340	17-21341	17-21399	17-21814	1-21393	9-22493	9-22784	17-20835
17-22279	18-21669	18-22279	18-24157	17-22784	18-21430	18-22493	18-22842
REACTOR, PRESSURE TURE				REACTOR, WATER			
7-22982	11-23861	11-23913	15-23868	1-21389	4-22338	5-21319	5-21322
17-21394	17-21395	17-21448	17-22912	6-21250	6-21319	6-21322	8-21319
17-22915	17-23861	17-23868	18-23371	8-21322	8-22713	9-22338	
REACTOR, PRODUCTION				RECOMBINER			
1-22330	1-22705			9-24134	17-24134		
REACTOR, PULSED				RECOVERY PROCESS			
6-22782	6-23408	8-22921	9-22131	4-22516	7-22516		
9-22781	9-22949	9-22950	11-23813	REDUCTION			
17-22131	17-22781	17-22782	17-22949	7-22945	18-22945		
17-22950	17-22954	17-23408	18-22956	REENTRY, ATMOSPHERIC			
REACTOR, PWR				16-22196			
1-21291	1-22841	1-23376	1-23921	REFLECTOR			
2-20863	2-20954	2-21917	2-22771	6-20567	6-22787	6-22787	9-20713
2-22786	2-22911	2-23326	2-23812	17-22782	17-22787		
5-19544	5-21321	5-22236	5-22257	REFUELING			
5-22874	5-23390	5-23422	5-24058	5-22225	5-22775	9-22947	17-17165
5-24059	6-21987	6-22801	6-22831	17-21182	17-21341	17-21428	17-22225
6-23165	6-23167	7-22917	7-22945	17-22495	17-22775	17-22947	18-22141
8-22584	8-24058	8-24059	9-21233	18-22495			
9-21432	9-22236	9-22327	9-22831	REGULATION, AEC			
9-22974	9-23143	9-23805	9-23951	1-20627	1-22841	1-22926	1-22927
9-24154	9-24197	10-22974	10-23951	14-21329	15-21329	15-22527	17-22527
11-21663	11-22191	11-22938	11-23013	17-22825	17-22841	18-20637	
11-23360	11-23803	11-23909	11-24154	REGULATION, GENERAL			
12-22191	12-23326	12-24058	12-24059	1-21405	1-21900	1-21985	3-22162
14-21954	14-22928	15-21954	15-23868	3-22163	3-22443	3-22445	3-24221
17-16494	17-17165	17-20356	17-21175	9-21900			
17-21176	17-21177	17-21179	17-21180	REGULATION, IAEA			
17-21181	17-21182	17-21208	17-21354	3-22159	3-22160	3-24217	
17-21355	17-21394	17-21395	17-21406	REGULATION, STATE			
17-21415	17-21429	17-21432	17-21433	2-24269	14-21265	15-21265	18-24265
17-21448	17-21450	17-21451	17-21809	RELIABILITY ANALYSIS			
17-21928	17-21987	17-21991	17-22257	9-21778	9-21827	9-21828	9-21829
17-22327	17-22582	17-22783	17-22801	9-21974	9-22327	9-22334	12-23485
17-22840	17-22841	17-22851	17-22874	17-21827	17-21828	17-22327	17-22334
17-23143	17-23144	17-23167	17-23360	18-23485			
17-23390	17-23805	17-23868	17-24154	RELIABILITY, COMPONENT			
18-16494	18-20138	18-20230	18-20295	9-23852			
18-20352	18-20365	18-20862	18-20863	PEMOT MANIPULATING AND VIEWING			
18-20954	18-21218	18-21291	18-21442	5-22894	9-20638	12-24277	17-20638
18-21452	18-21455	18-21662	18-21663	17-22893	17-22894	17-22896	17-24277
18-21721	18-21917	18-21954	18-22194	REPORT, OPERATIONS			
18-22236	18-22339	18-22771	18-22786	3-22161	5-22884	9-22892	9-22889
18-22836	18-22847	18-22851	18-22854	9-22992	10-22881	15-23868	17-21175

17-21176	17-21177	17-21179	17-21190	4-22468	4-22469	7-22468	7-22469
17-21181	17-21192	17-21206	17-21209	14-23153	15-23152		
17-21210	17-21298	17-21299	17-21300	RUMANIA			
17-21355	17-21394	17-21395	17-21396	9-21903			
17-21397	17-21753	17-22552	17-22621	FUSSELLVILLE (PWR)			
17-22881	17-22882	17-22884	17-22886	18-22910			
17-22889	17-22893	17-22896	17-22900	RUTHENIUM			
17-22992	17-22993	17-23370	17-23668	4-22489	7-22472	7-22489	14-21266
17-23869				14-21290	14-21384	14-21966	14-21967
REPORT, OPERATIONS ANALYSIS				14-22576			
5-22225	5-22456	6-22782	5-22920	SAFETY ANALYSIS			
9-24134	17-22225	17-22282	17-22283	1-23443	1-23921	5-22225	5-23390
17-22456	17-22528	17-22782	17-22897	6-23443	14-21446	15-21446	17-21928
17-22920	17-22977	17-24134		17-22225	17-22960	17-22300	18-21797
REPORT, OPERATIONS SUMMARY				SAFETY EVALUATION			
5-22887	5-22894	5-22899	9-22890	1-22143	9-21432	14-21930	14-21935
9-22892	9-22898	10-20576	10-22885	17-16494	17-21411	17-21414	17-21432
11-22885	17-20579	17-20590	17-21295	17-21449	17-21809	17-21811	17-22142
17-21431	17-22342	17-22882	17-22985	17-22465	17-22952	18-16494	18-21416
17-22887	17-22898	17-22890	17-22891	18-21808	18-22144	18-22495	18-22956
17-22892	17-22894	17-22895	17-22898	SAFETY MARGIN			
17-22900	17-22946	17-22953	17-22958	2-21917	5-22788	15-22432	17-22432
REPORT, PSAR				17-22788	18-21917	18-22494	
1-21291	2-20863	2-20954	2-22223	SAFETY PRINCIPLES AND PHILOSOPHY			
2-22771	2-23326	5-22974	5-23470	1-21900	1-23921	1-23923	2-23199
9-22493	9-23951	10-23951	11-21663	3-20628	3-22160	4-21598	9-21900
11-22938	11-23013	12-21929	12-23326	9-23151	12-23180	13-22180	17-23368
17-21929	17-22165	17-22874	18-20138	SAFETY PROGRAM			
18-20220	18-20295	18-20352	18-20365	1-21390	1-23921	2-22196	3-22161
18-20962	18-20863	18-20954	18-21291	4-21398	5-24058	5-24058	8-24058
18-21455	18-21464	18-21562	18-21663	8-24059	12-24058	12-24059	
18-21721	18-21924	18-21929	18-21992	SAFETY REVIEW			
19-22141	18-22223	19-22339	18-22493	1-23145	1-23923	3-22160	5-22784
18-22494	18-22511	18-22771	18-22910	17-22282	17-22283	17-22784	17-22958
18-22935	18-22936	18-22938	18-22939	17-23145	17-23804	18-22854	
18-22940	18-22975	18-22979	18-22990	SALEM 1 AND 2 (PWR)			
19-22989	18-22994	18-23010	18-23011	2-22911	18-22911		
18-23013	18-23014	18-23015	18-23016	SAMPLING			
18-23017	18-23020	18-23030	18-23037	7-22529	7-22531	7-22544	7-22548
18-23055	18-23324	18-23325	18-23326	7-22554	12-22529	14-21198	14-21204
18-23470	18-23471	18-23472	18-23489	14-21272	14-21279	14-21665	14-24062
18-23600	18-23950	18-23951	18-23952	14-24216	15-21204	15-21272	15-21329
REPORT, SAR				15-21665	15-22519	15-22827	15-23905
2-22911	5-22785	5-23390	6-23483	15-24063	15-24216	16-21222	16-22924
7-23498	9-22251	9-23497	11-23494	17-22510	17-22827		
12-23485	17-22281	17-22785	17-22845	SAMPLING, HIGH ALTITUDE			
17-22851	17-23390	18-21220	18-21452	14-23155	15-23155		
18-22836	18-22847	18-22851	18-22851	JAN CHODURE (PWR)			
19-22961	18-23482	18-23483	18-23484	5-22257	9-22327	9-23143	11-23360
18-23485	18-23486	18-23487	18-23488	17-22257	17-22327	17-22982	17-22851
RESEARCH CONTRACT				17-23143	17-23260	18-22836	18-22847
15-21447				18-22951	18-22961		
RESONANCE OVERLAP				SAVANNAH RIVER PLANT			
9-23152				9-22833	14-21307		
RESPONSE SPECTRUM				SAXTON (PWR)			
2-23191	2-23192			6-21987	9-23805	17-21429	17-21809
RESPONSE TIME				17-21987	17-23805		
5-22456	5-23390	9-21432	9-22948	SCATTERING (SKYSHINE)			
9-23854	17-21432	17-22456	17-22840	14-21446	15-21446		
17-22948	17-22953	17-22955	17-23290	SCRAM, REAL			
RESUSPENSION				9-22890	17-22890		
14-21190				SCRAM, SPURIOUS			
REVIEW				9-22882	17-21176	17-21179	17-21180
1-23376	2-23196	8-22711	8-22714	17-21181	17-21209	17-21700	17-21355
8-22921	5-22822	8-22823	8-22824	17-22882			
8-23160	9-23151	17-21399	19-21214	SEAL			
18-23019	10-23019	18-23182	18-23369	9-22493	11-22128	10-22493	
RHODIUM				SEDIMENT			
9-23350	14-21290	14-21967		14-21765	14-22816		
RISQ				SEFOR (RE)			
9-21927	9-21828	17-21827	17-21828	1-23168	11-23613		
RIVER, CLINCH				SEISMIC ZONE			
14-21780	14-21781	14-21800		2-20627	2-20634	2-20635	2-20636
RIVER, COLUMBIA				2-20729			
1-22370	1-22458	1-22571	1-22706	SEISMULUSY			
14-21311	15-21311			2-20661	2-23189	2-22198	
RIVER, GENERAL				SEISMOLOGY, GENERAL			
1-21791	1-22458	1-22459	1-22819	2-23199			
1-22920	1-22919	14-21750	14-21791	SELF POWERED FLUX DETECTOR			
14-21900	14-22916	15-21750		9-23349	9-23350		
RIVER, TENNESSEE				SENN			
14-21780	14-21781	14-21800		1-23166	16-21476	17-21476	
ROCK MECHANICS				SEPARATOR			
2-23187	2-23189	14-21930	14-21935	5-22788	17-22768		
ROCKY FLATS				SEPVOMECHANISM			
15-21962				9-21232	9-21022	9-23149	
ROSSI ALPHA				SHARED COMPONENTS			
6-20587	6-21235	9-21235		16-21982	18-23014		
ROVER PROGRAM				SHELL			
15-24067				11-23604	11-23601	11-23860	11-23863
RUBIDIUM				SHIELDING			

1-21271	1-22500	1-23695	2-22158	14-21369	14-21376	14-21798	14-21935
11-23117	11-23699	14-21757	15-21271	14-21944	14-21951	14-22246	
15-21313	15-21773	15-21757	15-21763	SOLID			
15-21933	15-21963	15-23322	17-21212	11-23806			
17-21406	17-22117			SOLID STATE DEVICE			
SHIPPING ANALYSIS				9-21233	9-21921	9-23350	9-23849
2-24219				9-24199	14-21260	15-21260	15-21303
SHIPPING CONTAINER				15-21787	15-21942	15-21970	15-22238
3-20629	3-22156	3-22156	3-22160	SOLVENT EXTRACTION PROCESS			
3-22162	3-22164	3-22444	3-22445	7-22558		12-23181	13-23180
3-24221	14-21279			13-23181	14-22806		
SHIPPINGPORT (PWR)				SORPTION			
17-21175	17-21176	17-21177	17-21179	7-22485	7-22554	7-22558	13-23943
17-21190	17-21181	17-21182	17-21208	14-21718	14-21935	17-21718	
SHOCK ABSORBER				SOURCE MECHANISM			
11-22109				2-20627	2-20634	2-20661	2-23167
SHOCK WAVE				SOURCE, ELEVATED			
11-22109	11-23901			16-21223	16-22450	16-22452	16-22921
SHUTDOWN COOLING SYSTEM				16-22925	16-22972	16-24064	
17-16494	17-21433	18-16494		SOURCE, GROUND LEVEL			
SHUTDOWN MARGIN				16-21223	16-24064		
6-21126	6-23358	9-22947	9-23358	SOURCE, NEUTRON			
17-22328	17-22947	17-22952		17-21449	17-22957	17-23144	17-23318
SHUTDOWN MECHANISM, SFLF				18-22842	18-22961		
19-21416				SOURCE, POINT			
SHUTDOWN SYSTEM, SECONDARY				15-21932			
9-22258	9-22844	9-22949	17-22258	SOURCE, RADIATION			
17-22844	17-22949			12-24278	14-21137	15-21137	15-21763
SILICON				15-23429	15-23431	15-24278	17-24278
8-23377	18-21808			SOURCE, RADIATION, LOST			
SIMULATION				17-23318	17-24275	17-24276	
1-22571	7-22554	9-20712	9-21231	SOURCE, VOLUME			
9-21240	9-21901	9-21903	9-23385	15-21932	16-22451		
17-21171				SPACE DEPENDENT DYNAMICS			
SINGLE FAILURE CRITERION				6-21125	6-21437	6-23163	6-23164
9-22974	9-23951	10-22974	10-23951	6-23171	6-23831		
19-22974	19-23951			SPACECRAFT			
SITE CLIMATOLOGY				1-23391	4-22498	4-22700	4-23391
2-23197	12-23190	13-23180	16-23197	4-23855	9-21232	11-23855	14-21949
SITING, CHEMICAL PROCESS PLANT				15-22147			
12-23190	13-23180			SPAIN			
SITING, GENERAL				1-21985	14-21274		
2-23197	16-23197	17-21403		SPECIAL NUCLEAR MATERIAL			
SITING, REACTOR				13-22436	13-24280	17-22436	17-24280
1-22143	1-22799	1-22926	1-22927	SPECTROMETRY, ALPHA			
2-20863	2-20954	2-21917	2-22786	15-23300			
2-22911	2-23195	2-23196	2-23198	SPECTROMETRY, GAMMA			
2-23199	2-23326	2-24269	12-23326	14-21201	14-21384	14-21445	14-21756
17-22143	18-20863	18-20954	18-21455	14-21945	14-24060	14-24061	15-21261
18-21917	16-22786	16-22911	18-23326	15-21445	15-21756	15-21945	15-24060
18-24269				15-24061	16-21261		
SITING, URBAN				SPECTROMETRY, NEUTRON			
1-21393				14-23321	15-21933	15-21942	15-23321
SLAB				SPERT 1 (S-PP)			
11-23309				5-22509	17-22509		
SM 1 (PWR)				SPERT 3 (S-RR)			
9-21920				6-23438			
SM 2 (PWR)				SPERT 4 (S-RR)			
9-24197				6-23438			
SNAP, GENERAL (SP)				SPHERE			
4-23352	9-23332	17-23332		5-23397	5-23404	5-23406	5-23417
SODIUM				11-23694			
4-22463	4-22464	4-22465	4-22466	SPRAY, GENERAL			
4-22468	4-22469	4-22471	4-22474	5-23419	5-23426	5-23427	7-22482
4-22476	4-22479	4-22480	4-22483	7-22485	7-22983	7-22986	7-22987
4-22484	4-22486	4-22489	4-22514	11-22987			
4-22516	4-22568	5-22723	5-23420	SRE (RE)			
5-21244	5-21245	5-21249	7-21245	17-22914			
7-22466	7-22468	7-22469	7-22479	STACK			
7-22480	7-22482	7-22484	7-22486	2-23197	7-24270	13-24270	14-21718
7-22499	7-22514	7-22516	7-22707	14-21954	15-21261	15-21717	15-21954
7-22945	8-22694	9-22695	9-22696	16-21261	16-22450	16-22452	16-22921
9-22720	8-22722	8-22723	9-23343	16-22925	16-23197	16-23883	17-21717
9-23344	9-23345	11-22463	12-21245	17-21718	17-24270	18-21954	
12-22463	13-23943	14-21270	14-21799	STAFFING, TRAINING, QUALIFICATION			
14-21947	14-22577	15-21666	15-21762	13-22436	13-22437	13-22521	15-21719
15-21947	17-21335	18-21334	18-21338	15-22435	17-21171	17-21213	17-21340
18-22945				17-21355	17-21450	17-21451	17-21661
SODIUM COEFFICIENT				17-21719	17-21918	17-22192	17-22193
1-23168	6-21240			17-22435	17-22436	17-22437	17-22504
SOIL				17-22521	17-23367	17-23368	19-22496
1-22143	14-21369	14-21950	14-22246	STATE PROGRAM			
15-21959	17-22143			14-24063	15-24063	17-20707	
SOIL MECHANICS				STATISTICAL ANALYSIS			
2-21917	18-21917			6-23170	11-23304	14-21668	14-21712
SOIL PROPERTY, IN SITU				15-21668	15-21712	15-23428	15-23429
2-22771	18-22771			16-20692			
SOIL, NUCLIDE OCCURRENCE				STATISTICAL CORRELATION			
14-21784	14-21949	14-21959	15-21784	3-22442			
15-21945	15-21950	16-20692		STEAM			
SOIL, RADIONUCLIDE MOVEMENT THROUGH				4-22476	5-22704	5-22708	5-22723

7-22478	7-22554	7-22556	7-22810	14-23902	15-23902		
7-22511	8-22708	9-22711	8-22723	SURFACE, GENERAL			
9-23160	17-21180	18-21797		7-22562	12-23871	13-23871	
STEAM GENERATOR				SURFACE, PAINTED			
5-22257	5-22897	5-22894	9-22457	7-22562	7-22584		
9-22882	9-23852	11-22129	17-17458	SURRY 1 AND 2 (PWR)			
17-21298	17-21406	17-21426	17-22257	2-21917	17-21928	18-21455	18-21917
17-22457	17-22553	17-22671	17-22882	SURVEILLANCE PROGRAM			
17-22897	17-22891	17-22894	18-21334	14-21712	14-21757	14-21979	14-21980
18-21338				14-22812	14-22813	14-22815	15-21712
STEEL				15-21757	15-22518	15-22519	15-22813
1-23926	4-22471	4-22515	7-22515	17-22518	17-22519	18-22494	18-22836
7-23926	11-21117	11-21185	11-22102	SURVEY, GENERAL			
11-22119	11-22120	11-22121	11-23305	15-22435	17-22435		
11-23307	11-23313	11-23815	11-23816	SURVEY, RADIATION, AERIAL			
11-23920	11-23827	11-23844	11-23857	15-21224	16-21224		
11-23908	11-23910	11-23926	17-21414	SURVEY, RADIATION, EMERGENCY			
17-22914	17-22991	18-23055		14-21273	15-21273		
STEEL, STAINLESS				SURVEY, RADIATION, ENVIRONMENTAL			
4-22465	4-22466	4-22471	4-22549	14-21196	14-21273	14-21948	14-21954
7-22466	7-22549	8-22722	8-22821	15-21196	15-21273	15-21948	15-21954
8-22822	8-22823	9-22924	9-23160	18-21954			
9-20713	9-20715	9-24134	11-23819	SURVEY, RADIATION, GENERAL			
11-23826	11-23828	17-21082	17-21991	14-21196	14-21197	14-21198	15-21196
17-22579	17-24134	18-22998		15-21717	15-21719	15-22520	17-21717
STOICHIOMETRY				17-21719	17-22520		
6-21987	9-22822	17-21987		SUTTON DIFFUSION FORMULA			
STORAGE CONTAINER				16-21223	16-22972		
1-22941	3-20631	3-22941	3-24220	SWEDEN			
13-24220	17-22941	17-24220		8-22713	14-21782	14-21947	15-21947
STRATOSPHERE				18-22581			
14-21343	14-23379	16-23379	16-23380	SWITZERLAND			
STRESS				15-23420			
9-22992	11-21117	11-21119	11-21121	SYSTEM DESCRIPTION			
11-21122	11-21185	11-23694	11-23806	9-23327	11-22191	12-22191	17-21352
11-23807	11-23814	11-23846	11-23912	17-22851	17-23874	18-22851	18-23371
17-22992				18-24157			
STRESS ANALYSIS				SYSTEM OPERABILITY IN ACCIDENT			
1-23697	4-23855	5-21322	5-22788	11-23360	17-21341	17-23360	
11-21119	11-21121	11-21122	11-21185	TECHNETIUM			
11-23302	11-23310	11-23312	11-23694	13-23943			
11-23695	11-23697	11-23698	11-23699	TECHNICAL SPECIFICATIONS			
11-23901	11-23807	11-23814	11-23845	1-23145	5-21810	5-22140	5-22225
11-23855	11-23860	11-23863	17-21406	5-22775	5-22785	6-22140	7-21257
17-22788	17-23312	18-21338	19-23312	7-21815	9-21432	9-22131	9-22781
STRESS CORROSION				9-22943	9-22844	9-22947	9-22948
5-22978	11-23819	17-22978		12-21297	12-22523	12-23177	13-22853
STRESS STRAIN DATA				13-23177	15-21664	17-16494	17-21292
9-21923	9-23341	11-21122	11-21923	17-21297	17-21411	17-21412	17-21414
11-23698				17-21417	17-21427	17-21428	17-21429
STRONTIUM				17-21432	17-21450	17-21451	17-21664
4-22468	7-20550	7-22468	7-22542	17-21809	17-21810	17-21811	17-21815
14-20558	14-21142	14-21196	14-21206	17-22131	17-22132	17-22140	17-22165
14-21264	14-21275	14-21283	14-21290	17-22224	17-22225	17-22226	17-22256
14-21309	14-21311	14-21337	14-21344	17-22495	17-22523	17-22775	17-22781
14-21345	14-21349	14-21366	14-21369	17-22783	17-22785	17-22837	17-22839
14-21376	14-21381	14-21782	14-21931	17-22840	17-22844	17-22853	17-22857
14-21938	14-21944	14-21951	14-21952	17-22948	17-22951	17-22952	17-22955
14-21964	14-21965	14-21979	14-21993	17-22960	17-22973	17-23145	17-23177
14-21996	14-21997	14-22151	14-22154	17-23375	17-23804	18-16494	18-21444
14-22237	14-22237	14-22245	14-22492	18-21808	18-21924	18-22224	18-22495
14-22576	14-22577	14-22802	14-22804	18-22842	18-22843		
14-22813	14-22815	14-22971	15-21138	TECTONICS			
15-21196	15-21278	15-21292	15-21311	2-20627	2-20634	2-20635	2-20636
15-21344	15-21349	15-21386	15-21766	2-20661	2-23187	2-23189	
15-21931	15-21993	15-21996	15-22813	TELLURIUM			
15-23901	15-23903	16-21123	16-22492	4-22468	7-22468	7-22472	14-21253
16-22924	16-22971			15-21853			
STRUCTURAL INTEGRITY				TEMPERATURE COEFFICIENT			
2-23190	3-24221	5-22788	14-21446	5-22140	6-21126	6-22140	6-22787
15-21446	17-22788	18-21334	18-21338	6-23161	6-23437	6-23440	17-21355
SULFUR				17-22140	17-22621	17-22787	
7-22539	15-23430			TEMPERATURE GRADIENT			
SULFUR DIOXIDE				8-22695	9-21418	11-21122	11-23856
16-22450	16-22451	16-23883		11-23857	17-21418		
SUPPORT STRUCTURE				TEMPERATURE REACTIVITY EFFECT			
11-23695				9-23833			
SURFACE CONTAMINATION				TEMPERATURE TRANSIENT			
12-23944	13-21194	13-23944	14-21186	5-22727	6-21242	8-22711	8-22723
14-21190	14-21191	14-21192	14-21193	17-17458			
14-21194	14-21195	14-21196	14-21197	TENSILE PROPERTY			
14-21198	14-21201	14-21202	14-21203	11-22120	11-23305		
14-21205	15-21192	15-21193	15-21194	TEST INTERVAL			
15-21196	15-21202	15-21203		9-21432	9-23852	17-21432	
SURFACE FILM DEPOSIT				TEST, BENCH			
5-22474	8-22713	17-21176	17-21208	11-23312	15-21447	17-23312	19-23312
17-21670	17-21591	17-22874	17-22977	TEST, COMPONENT			
17-22991				9-23327			
SURFACE WATER, NUCLIDE OCCURRENCE				TEST, CONTROL ROD DRIVE			
14-21780	14-21781	14-23902	15-23902	9-22781	9-24197	17-22781	
SURFACE WATER, SEDIMENT				TEST, DESTRUCTIVE			

3-22159	5-22509	11-22108	11-23312	3-20633	6-23434	14-21203	14-21205
11-23913	17-22509	17-23312	19-23312	14-21948	14-21959	15-21203	15-21948
TEST, DROP				15-21959	18-21219		
3-22159				THORON			
TEST, INSTRUMENT RESPONSE				14-21327	15-21939	16-22924	
9-20709	9-20710	9-21225	9-21240	THREE MILE ISLAND (PWR)			
9-23341	9-23342	9-23343	9-23344	11-23013	18-20138	18-21662	18-22854
9-23345	9-23352	17-20709		18-22980	18-22994	18-23010	18-23013
TEST, LEAK LOCATION				18-23182			
7-23311	11-23311	19-23311		TRACER, FLUORESCENT			
TEST, LEAK RATE:				16-22970			
9-22493	10-22885	11-22885	11-23304	TRACER, GAS			
11-23803	17-21394	17-22885	18-22493	3-22155	11-22155	12-22155	16-22970
18-23803				TRACER, RADIOACTIVE			
TEST, NONDESTRUCTIVE				7-22532			
5-22898	7-22987	9-21923	9-22332	TRANSFER FUNCTION			
9-22898	11-21923	11-22108	11-22118	5-21322	5-22456	6-21322	6-23831
11-22987	11-23312	11-23803	17-20356	8-21322	9-20712	9-21901	17-22456
17-20357	17-22118	17-22898	17-23312	TRANSPORT THEORY			
19-23603	19-23312			6-21241	6-21244	9-22833	
TEST, PHYSICS				TRANSPORTATION AND HANDLING			
5-22456	6-23434	6-23444	9-23152	1-21405	1-21985	3-20628	3-22160
17-21353	17-22456			3-22161	3-22441	3-22442	3-22443
TEST, PLANT RESPONSE				3-24219			
9-22882	17-17458	17-21179	17-21181	TREAT (PRR)			
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FOLLOWING IS A LIST OF AUTHORS WHOSE DOCUMENTS  
HAVE BEEN ABSTRACTED IN THIS PUBLICATION

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