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NUCLEAR SAFETY

A BIMONTHLY REVIEW JOURNAL PREPARED BY NSIC

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

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

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PARTS AND METHOD OF INDEXING ABSTRACTS

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TABLE OF CONTENTS

	PAGE
FOREWORD	III
PARTS AND METHOD OF INDEXING ABSTRACTS	V
CATEGORY SCOPE NOTES	1
BIBLIOGRAPHY	
CATEGORY 1, GENERAL SAFETY CRITERIA	3
CATEGORY 2, SITING OF NUCLEAR FACILITIES	12
CATEGORY 3, TRANSPORTATION AND HANDLING OF RADIOACTIVE MATERIALS	20
CATEGORY 4, AEROSPACE SAFETY	23
CATEGORY 5, ACCIDENT ANALYSIS	33
CATEGORY 6, REACTOR TRANSIENTS, KINETICS, AND STABILITY	59
CATEGORY 7, FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL	94
CATEGORY 8, SOURCES OF ENERGY RELEASE UNDER ACCIDENT CONDITIONS	119
CATEGORY 9, NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS	127
CATEGORY 10, ELECTRICAL POWER SYSTEMS	167
CATEGORY 11, CONTAINMENT OF NUCLEAR FACILITIES	170
CATEGORY 12, PLANT SAFETY FEATURES	189
CATEGORY 13, RADIOCHEMICAL PLANT SAFETY	196
CATEGORY 14, RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT	199
CATEGORY 15, ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN	236
CATEGORY 16, METEOROLOGICAL CONSIDERATIONS	283
CATEGORY 17, OPERATIONAL SAFETY AND EXPERIENCE	293
CATEGORY 18, SAFETY ANALYSIS AND DESIGN REPORTS	361
CATEGORY 19, BIBLIOGRAPHIES	386
KEYWORD INDEX	387
PERSONAL AUTHOR INDEX	411
APPENDIX REFERENCE SOURCES	429

CATEGORY SCOPE NOTES

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

1. GENERAL SAFETY CRITERIA

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

2. SITING OF NUCLEAR FACILITIES

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

3. TRANSPORTATION AND HANDLING OF RADIOACTIVE MATERIALS

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

4. AEROSPACE SAFETY

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

5. ACCIDENT ANALYSIS

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

6. REACTOR TRANSIENTS, KINETICS, AND STABILITY

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

7. FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

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

8. SOURCES OF ENERGY RELEASE UNDER ACCIDENT CONDITIONS

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

9. NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

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

10. ELECTRICAL POWER SYSTEMS

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

11. CONTAINMENT OF NUCLEAR FACILITIES

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

12. PLANT SAFETY FEATURES

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

13. RADIOCHEMICAL PLANT SAFETY

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

14. RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

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

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

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

16. METEOROLOGICAL CONSIDERATIONS

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

17. OPERATIONAL SAFETY AND EXPERIENCE

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

18. SAFETY ANALYSIS AND DESIGN REPORTS

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

19. BIBLIOGRAPHIES

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

CATEGORY 1
GENERAL SAFETY CRITERIA

1-13351

NUCLEAR ENERGY

UNITED STATES COAST GUARD

CG-115 +. 2 PAGES, SEPTEMBER 1, 1964, PAGES 145-146 OF MARINE ENGINEERING REGULATIONS AND MATERIAL SPECIFICATIONS, SUBCHAPTER F

SCOPE. - (1) THE REQUIREMENTS IN THIS SUBPART APPLY TO ALL INSTALLATIONS, SYSTEMS, AND COMPONENTS THEREOF, UTILIZING NUCLEAR ENERGY FOR PROPULSION OR FOR ANY OTHER PURPOSE, OR HANDLING RADIOACTIVE MATERIALS OTHER THAN AS CARGO. (2) THE REGULATIONS COVERING THE TRANSPORTATION AND HANDLING OF RADIOACTIVE MATERIALS AS CARGO ARE CONTAINED IN PART 146 OF SUBCHAPTER N (EXPLOSIVES OR OTHER DANGEROUS ARTICLES OR SUBSTANCES AND COMBUSTIBLE LIQUIDS ON BOARD VESSELS) OF THIS CHAPTER.

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

*RADIATION SAFETY AND CONTROL + *REACTOR, MARITIME + *REGULATION, GENERAL + *TRANSPORTATION AND HANDLING

1-16759

CIVILIAN NUCLEAR POWER. THE 1967 SUPPLEMENT TO THE 1962 REPORT TO THE PRESIDENT

ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.

TID-23729 +. 59 PAGES, 9 TABLES, FEBRUARY 1967

CHANGES NOTED BETWEEN 1962 REPORT AND JANUARY 1967 SUPPLEMENT CONSIST MOSTLY OF DECREASED SUPPORT TO ADVANCED CONVERTERS. COMPREHENSIVE REVIEWS ARE CONTINUING, SO THIS DOCUMENT IS AN UPDATED DESCRIPTION TO SERVE AS BACKGROUND FOR MORE DETAILED STUDIES.

AVAILABILITY - U. S. GOVERNMENT PRINTING OFFICE, WASHINGTON, D. C. 20402, \$0.40 COPY

ECONOMICS + REACTOR, POWER + RESEARCH AND DEVELOPMENT PROGRAM

1-17088

ALSO IN CATEGORY 6

WOLFF R

THE SEFOR PROJECT - ITS SIGNIFICANCE AND PROGRESS

GENERAL ELECTRIC CO., NUCLEAR ENERGY DIVISION, SUNNYVALE, CALIFORNIA

17 PAGES, 6 FIGURES, 9 REFERENCES, PRESENTED AT AMERICAN POWER CONFERENCE 29TH ANNUAL MEETING, APRIL 25, 26, 27, 1967, CHICAGO, ILLINOIS

IMPORTANCE OF DOPPLER EFFECT IN FAST-REACTOR SAFETY. SEFOR EXPERIMENTAL PROGRAM. PLANT DESIGN. PREOPERATIONAL R AND D. CONSTRUCTION PROGRAM AND EXPERIENCE. SAFETY. TECHNICAL ACCOMPLISHMENTS. EXPERIENCE WITH A COOPERATIVE PROJECT. SCHEDULE. COST. SIGNIFICANCE OF SEFOR.

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

*SEFOR (SOUTHWEST EXP. FAST OXIDE REACTOR) + CRITICAL ASSEMBLY FACILITY + DOPPLER EFFECT + REACTOR, BREEDER + REACTOR, FAST + SAFETY ANALYSIS + ZPR 3 (ANL ZERO POWER REACTOR)

1-17303

ALSO IN CATEGORY 9

BARIHUUX A + DEBRIE G + DESNIGES D + LAVIE JM + PLANQUE M

DETECTION OF CRITICAL ACCIDENTS AT THE COMMISSARIAT A L'ENERGIE ATOMIQUE

COMMISSARIAT A L'ENERGIE ATOMIQUE, SACLAY, FRANCE. CENTRE ETUDES NUCLEAIRES

AEC-TR-6547 +. 6 PAGES, 1964. PRESENTED AT THE ANNUAL MEETING OF THE HEALTH PHYSICS SOCIETY, CINCINNATI, OHIO, JUNE 14-18, 1964

DESCRIBES DEVELOPMENT OF APPARATUS FOR DETECTING CRITICALITY ACCIDENTS. A FAST INTEGRATION DEVICE IS PREFERRED TO DETECT A RADIATION PULSE, AND A COINCIDENCE NETWORK (A) GIVES THE ALARM IF 2/6 DETECTORS SHOW RADIATION PULSES WITHIN 0.5 SEC OR (B) ISOLATES THE DEFECTIVE DETECTOR GIVING AN UNCONFIRMED PULSE. MINIMUM NUMBERS OF COMPONENTS REDUCE FALSE ALARMS. THE APPARATUS DESIGNED AT CEA WAS TESTED WITH RADIATION BURSTS FROM THE ORNL HPFR. TESTS SHOWED - THE SCINTILLATOR-PHOTOMULTIPLIER AND THE SEMICONDUCTOR DETECTOR SATISFACTORILY. ION-CHAMBER DETECTORS DO NOT SEEM SENSITIVE ENOUGH. A COMPLETE CRITICALITY ACCIDENT DETECTOR IN AN INSTALLATION USING FISSILE MATERIAL IS DESCRIBED.

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*ACCIDENT, CRITICALITY + *DESIGN STUDY + *INSTRUMENTATION, RADIATION MONITORING + FRANCE + HPFR (HEALTH PHYSICS RESEARCH REACTOR) + INSTRUMENTATION, COINCIDENT + RADIOCHEMICAL PROCESSING + REACTOR, RESEARCH

1-17332

ALSO IN CATEGORY 15

O-TOOLE TJ

STUDIES IN WORKMENS COMPENSATION AND RADIATION INJURY. VOLUME II. THE INCIDENCE, NATURE AND ADJUDICATION

CATEGORY 1
GENERAL SAFETY CRITERIA

1-17332 *CONTINUED*
OF WORKMENS COMPENSATION CLAIMS INVOLVING RADIATION EXPOSURE AND DELAYED INJURY
GEORGETOWN UNIVERSITY LAW CENTER, WASHINGTON, D.C.
97 PAGES, TABLES, 1965

THIS STUDY EXPLORES THE SCOPE AND THE NATURE OF INJURIES TO EMPLOYEES FROM IONIZING RADIATION, ESPECIALLY DELAYED INJURY APPEARING SOME TIME AFTER THE EXPOSURE. THE PURPOSE WAS TO PROVIDE A FACTUAL BACKGROUND AGAINST WHICH JUDGMENTS CAN BE MADE CONCERNING (1) THE MAGNITUDE OF THE PROBLEM OF DELAYED INJURY, AND (2) WHETHER PRESENT LAWS PERMIT A JUST AND EQUITABLE ADJUDICATION OF RADIATION-COMPENSATION CLAIMS. 129 CASES IN SIX STATES, ONTARIO, AND THE U.S. BUREAU OF EMPLOYEES COMPENSATION ARE INCLUDED, TOGETHER WITH OUTLINES OF THE COMPENSATION CLAIMS, INCLUDING DISPOSITION. 15.8% WERE GRANTED COMPENSATION, 56.8% WERE DENIED, AND 27.7% WERE OTHERWISE DISPOSED OF.

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

*LAW + *PERSONNEL EXPOSURE, RADIATION + *RADIATION INJURY, TREATMENT OF + REVIEW

1-17559 ALSO IN CATEGORIES 14 AND 12
UKAEA LIST OF PUBLICATIONS AVAILABLE TO THE PUBLIC. CUMULATION NO. 11, JANUARY-DECEMBER 1966
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, HARWELL
NP-16666 +. 129 PAGES, JANUARY 1967

THE ELEVENTH ANNUAL CUMULATION (JANUARY TO DECEMBER 1966) OF UKAEA PUBLICATIONS AVAILABLE TO THE PUBLIC IS LISTED IN 24 CATEGORIES, INCLUDING HEALTH AND SAFETY, GEOLOGY AND MINERALOGY, WASTE DISPOSAL, REACTOR PHYSICS, AND INSTRUMENTATION.

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

*BIBLIOGRAPHY + *UNITED KINGDOM + DOSE + GEOLOGICAL CONSIDERATION, GENERAL + INSTRUMENTATION, GENERAL + METEOROLOGY + TRANSPORTATION AND HANDLING + WASTE DISPOSAL, GENERAL

1-17562
TECHNICAL ESTIMATE OF THE NUCLEAR HAZARD FOR INSURANCE PURPOSES. REPORTS SUBMITTED AT THE WORKING GROUP MEETING HELD IN BRUSSELS ON JUNE 2 AND 3, 1966.
EUROPEAN ATOMIC ENERGY COMMUNITY
EUR-3078.F +. 106 PAGES, MARCH 1967 (IN FRENCH)

PRESENTS TECHNICAL DATA PROVIDED BY THE NUCLEAR INSURERS, THE NUCLEAR-INDUSTRY SUPPLIERS (REPRESENTED BY THE UNION OF INDUSTRIES OF THE EUROPEAN COMMUNITY), THE OPERATORS OF NUCLEAR INSTALLATIONS (REPRESENTED BY THE COMMITTEE FOR THE EUROPEAN COMMUNITY OF THE INTERNATIONAL UNION OF PRODUCERS AND DISTRIBUTORS OF ELECTRICAL ENERGY), THE VARIOUS NATIONAL BODIES RESPONSIBLE FOR TECHNICAL SUPERVISION, AND THE COMMISSION ITSELF. THE DATA ARE ESSENTIAL FOR RATIONAL DETERMINATION OF INSURANCE PREMIUMS IN THE NUCLEAR FIELD.

AVAILABILITY - MICROCARD EDITIONS, INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN 54660

*ENEA (EUROPEAN NUCLEAR ENERGY AGENCY) + *INSURANCE + BELGIUM

1-17567
DOAN RL
PUBLIC SAFETY ASPECTS OF NUCLEAR POWER PLANT LICENSING
AEC, DIVISION OF REACTOR LICENSING, WASHINGTON, D.C.
6 PAGES, IEEE TRANSACTIONS ON NUCLEAR SCIENCE 13(1), PAGES 120 THRU 125, (FEBRUARY 1966)

THE AEC IN ITS LICENSING ACTIVITIES GIVES ATTENTION TO VARIOUS ASPECTS OF THE SITING, DESIGN, CONSTRUCTION, AND OPERATION OF NUCLEAR POWER PLANTS. THESE ASPECTS INCLUDE THE MEASURES TAKEN TO ENSURE THE INTEGRITY OF THE NUCLEAR FUEL AND PRIMARY COOLANT SYSTEM UNDER ALL OPERATING CONDITIONS, TO PROVIDE ADEQUATE MEANS OF COPING WITH EMERGENCY SITUATIONS, AND TO LIMIT THE CONSEQUENCES OF ANY ACCIDENTS TO LEVELS THAT DO NOT ENDANGER THE HEALTH AND SAFETY OF THE PUBLIC.

*REGULATION, AEC + *USAEC (U.S. ATOMIC ENERGY COMMISSION) + CONTAINMENT, GENERAL + DESIGN CRITERIA + EMERGENCY PROCEDURE + OPERATION + SITING, REACTOR

1-17569
BERNSEN SA + GRIFFIN RF
SAFETY AND THE NUCLEAR PLANT ENGINEER
BECHTEL CORPORATION, SAN FRANCISCO, CALIFORNIA
6 PAGES, IEEE TRANSACTIONS ON NUCLEAR SCIENCE 13(1), PAGES 138 THRU 143, (FEBRUARY 1966)

NUCLEAR POWER PLANTS ARE UNIQUE WITH REGARD TO SAFETY BECAUSE OF THE COMMON VIEW THAT THERE IS SOME CLOSE CONNECTION BETWEEN THEM AND NUCLEAR WEAPONS, BECAUSE OF THE LARGE THEORETICAL HAZARD THAT A NUCLEAR PLANT PRESENTS, BECAUSE OF THE NATURE OF THE AEC REVIEW AND LICENSING PROCEDURES, AND BECAUSE OF THE RELATIVE LACK OF SAFETY STANDARDS AND CODES. THE SYSTEMS AND EQUIPMENT DIRECTLY RELATED TO THE SAFETY DESIGN OF NUCLEAR PLANTS ARE ACCIDENT-PREVENTIVE FEATURES (CHIEFLY THE REACTOR CONTROL SYSTEM) AND THE CONSEQUENCE-LIMITING FEATURES (CHIEFLY

CATEGORY 1
GENERAL SAFETY CRITERIA

1-17569 *CONTINUED*

THE CONTAINMENT STRUCTURE). IF THESE SYSTEMS FUNCTION AS DESIGNED, NO ACCIDENT OF ANY CONSEQUENCE TO THE PUBLIC WILL OCCUR. BECAUSE OF OUR SEVERAL YEARS OF SUCCESSFUL EXPERIENCE IN WATER-REACTOR SAFETY, THE LONG INDIVIDUAL SAFETY INVESTIGATIONS FOR EACH NEW PLANT CAN GRADUALLY BE STREAMLINED AND SIMPLIFIED.

*REACTOR, POWER + *SAFETY ANALYSIS + *SAFETY PRINCIPLES AND PHILOSOPHY + DESIGN CRITERIA

1-17570

BLATZ H

PRACTICAL PROBLEMS IN THE APPLICATION OF RADIATION PROTECTION STANDARDS IN THE FIELD OF PUBLIC HEALTH NEW YORK UNIVERSITY MEDICAL CENTER, N.Y., N.Y. + N.Y. CITY OFFICE OF RADIATION CONTROL 15 PAGES, 7 REFERENCES, PRESENTED AT THE FIRST INTERNATIONAL CONGRESS OF THE INTERNATIONAL RADIATION PROTECTION ASSOCIATION, SEPTEMBER 5-10, 1966, ROME

NUCLEAR STANDARDS AND RULES ARE OFTEN INCONSISTENT WITH PUBLIC-HEALTH TRADITION (WHICH IN SOME RESPECTS MAY NOT BE BAD), AND IN MANY CASES DIFFICULT IF NOT IMPOSSIBLE TO ADMINISTER ADEQUATELY WITHIN THE FRAMEWORK OF MOST PUBLIC-HEALTH AGENCY RESOURCES AND PERSONNEL. MOST OTHER HEALTH REGULATIONS WERE WRITTEN AFTER LONG EXPERIENCE WITH THE HAZARDS THEY SERVE TO CORRECT, WHEREAS MOST PRESENT RADIATION REGULATIONS ARE THE RESULT OF SPECULATION BASED UPON A LIMITED AMOUNT OF RESEARCH, MOSTLY ON ANIMALS AND PLANTS.

AVAILABILITY - PROCEEDINGS OF THE FIRST CONGRESS OF THE INTERNATIONAL RADIATION PROTECTION ASSOCIATION, PERGAMON PRESS, OXFORD, 1967

*CODES AND STANDARDS + *RADIATION SAFETY AND CONTROL + *RADIATION, PUBLIC EDUCATION/ACCEPTANCE

1-17571

PALMITER CC

THE FEDERAL RADIATION COUNCIL ITS RESPONSIBILITIES AND ACTIVITIES

FEDERAL RADIATION COUNCIL, WASHINGTON, D.C.

10 PAGES, PRESENTED AT THE FIRST INTERNATIONAL CONGRESS OF THE INTERNATIONAL RADIATION PROTECTION ASSOCIATION, SEPTEMBER 5-10, 1966, ROME

THE AEC, OHW, AND THE BUREAU OF THE BUDGET STUDIED THE RADIATION-PROTECTION ACTIVITIES WITHIN THE FEDERAL GOVERNMENT. IT WAS DECIDED THAT BASIC RADIATION PROTECTION STANDARDS AND GUIDANCE INVOLVED HEALTH, ECONOMIC, SOCIAL, AND ETHICAL CONSIDERATIONS OF SUCH IMPORTANCE THAT THE PERSON OR PERSONS MAKING THE DECISION REPRESENTED BY THAT GUIDANCE SHOULD BE PUBLICLY ACCOUNTABLE. CONSIDERATION WAS GIVEN TO VESTING THAT FUNCTION IN ONE OF THE SEVERAL AGENCIES WITH RADIATION-PROTECTION RESPONSIBILITIES. HOWEVER, NONE WAS FOUND WITH THE NECESSARY BREADTH OF RESPONSIBILITY OR JURISDICTION TO ESTABLISH SUCH POLICIES FOR THE ENTIRE FEDERAL GOVERNMENT. CONSEQUENTLY, THE PRESIDENT APPROVED THE RECOMMENDATION THAT HE BE ADVISED BY A FEDERAL RADIATION COUNCIL ON RADIATION MATTERS DIRECTLY AFFECTING HEALTH, INCLUDING GUIDANCE FOR FEDERAL AGENCIES IN THE ESTABLISHMENT AND EXECUTION OF PROGRAMS OF COOPERATION WITH STATES.

AVAILABILITY - PROCEEDINGS OF THE FIRST CONGRESS OF THE INTERNATIONAL RADIATION PROTECTION ASSOCIATION, PERGAMON PRESS, OXFORD, 1967

*FEDERAL RADIATION COUNCIL + *RADIATION PROTECTION, ORGANIZATION + CODES AND STANDARDS + UNITED STATES

1-17572

BOURGEOIS J

THE SECURITY OF REACTORS

4 PAGES, ATOMPRAXIS 11(11-12), PAGE 639, (1965)

OPERATING NUCLEAR REACTORS PRODUCE LARGE QUANTITIES OF FISSION PRODUCTS THAT EMIT HAZARDOUS RADIATIONS. IT IS CONSEQUENTLY IMPORTANT THAT THEY NOT BE DISSEMINATED OUTSIDE THE REACTORS. AN INTERMINISTERIAL COMMISSION FOR BASIC INSTALLATIONS IN NUCLEAR ENGINEERING WAS RECENTLY FORMED IN FRANCE TO APPROVE OPERATION OF LARGE REACTORS. CEA REACTORS HAVE BEEN UNDER THE CONTROL OF A COMMISSION FOR THE SAFETY OF NUCLEAR PLANTS, FORMED FIVE YEARS AGO. THESE VARIOUS AUTHORITIES HAVE THE DUTY TO EVALUATE THE RISKS CONNECTED WITH PROJECTED PLANTS AND TO DECIDE WHETHER RISKS ARE SUFFICIENTLY SMALL TO BE ACCEPTABLE.

*FRANCE + *REACTOR SAFETY SYSTEM + *REGULATION, GENERAL + REACTOR, POWER

1-17595

WITZIG WF

SAFETY ASPECTS OF NUCLEAR POWER PLANTS - A UTILITY CONSULTANTS VIEW

NUCLEAR UTILITY SERVICES, INC., WASHINGTON, D. C.

5 PAGES, 7 FIGURES, IEEE TRANSACTIONS ON NUCLEAR SCIENCE 13(1), PAGES 133 THRU 137, (FEBRUARY 1966)

PROJECTIONS OF INSTALLED NUCLEAR POWER PLANT CAPACITY ARE PROVIDED AS A BACKGROUND FOR THE SCOPE OF ACTIVITIES WITH WHICH UTILITIES WILL BE CONCERNED FOR SAFETY PURPOSES. A DESCRIPTION OF THE TYPES OF SAFETY ANALYSES IS PRESENTED AS WELL AS THE ASSUMPTIONS BASIC TO SUCH ANALYSES. ANOTHER POINT IS THE LAYER OF CONSERVATISM THAT EXISTS IN SAFEGUARDS ANALYSIS. UNLIKELY ACCIDENTS ARE POSTULATED WITH UNLIKELY RESULTS UNDER UNLIKELY CONDITIONS. HOPEFULLY, ADDITIONAL ENGINEERING ANALYSIS AND TESTS WILL SOLVE THESE PROBLEMS ONE BY ONE.

CATEGORY 1
GENERAL SAFETY CRITERIA

1-17595 *CONTINUED*
*REACTOR, POWER + *SAFETY ANALYSIS + *SAFETY EVALUATION + DESIGN CRITERIA + MAINTENANCE AND REPAIR + OPERATION

1-17596 ALSO IN CATEGORY 17
ELK RIVER CHANGE 11. REMOVABLE FUEL STORAGE RACK AND MAXIMUM K-EFFECTIVE FOR STORAGE AREA
AEC, DIVISION OF REACTOR LICENSING
6 PAGES, MAY 5, 1967, DOCKET NO. 115-1

DRL ALLOWS (1) INSTALLATION OF A REMOVABLE FUEL-STORAGE RACK (ADDITIONAL STORAGE IS NEEDED FOR THE COMPLETE UNLOADING OF THE CORE TO REPLACE THE BORON-SS CONTROL RODS WITH B4C RODS (AN 8-IN. WATER SEPARATION AND A BORAL LINER ARE USED), AND (2) A MAXIMUM OF 0.9 FOR K-EFFECTIVE OF THE FUEL-STORAGE AREA (DETAILED COMPUTER ANALYSIS SHOWS 0.746).

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

*FUEL STORAGE + CONTROL ROD BURNUP + ELK RIVER + REACTOR, BOILING WATER + SAFETY EVALUATION + TECHNICAL SPECIFICATIONS

1-17694
AEC AMENDS INDEMNITY REGULATION
U. S. ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.
PRESS RELEASE K-137 +. 2 PAGES, JUNE 6, 1967

THE AEC AMENDED PART 140 OF 10 CFR TO THE EFFECT THAT SMALL POWER AND TESTING REACTORS OF LESS THAN 100 MWE BUT MORE THAN 1 MWE BE REQUIRED TO INCREASE THEIR PRIVATE INSURANCE COVERAGE BY ABOUT 23%. THE MINIMUM LEVEL OF PROTECTION FOR SUCH REACTORS, GOVERNED BY APPLICATION OF THE FORMULA IN PART 140, WAS RAISED FROM \$3.5 MILLION. FINANCIAL PROTECTION REQUIREMENT FOR SMALL RESEARCH REACTORS REMAIN UNCHANGED.

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

*INSURANCE + *REGULATION, AEC + REACTOR, POWER + REACTOR, RESEARCH + REACTOR, TEST

1-17695
A SAFE MOSS LANDING NUCLEAR REACTOR
MONTEREY COUNTY DEMOCRATIC CENTRAL COMMITTEE, CALIFORNIA
16 PAGES, 13 REFERENCES, JANUARY 1965

THIS IS A SUPPOSEDLY OBJECTIVE REPORT PREPARED BY A PHYSICIAN, A GENETICIST, AND A GEOLOGIST ON THE QUESTIONABLE DESIRABILITY OF LOCATION OF POWER REACTOR IN CALIFORNIA. QUOTES, BOTH IN AND OUT OF CONTEXT, ARE TAKEN FROM LILIENTHAL, WALL ST. JOURNAL, NUCLEAR SAFETY, POWER REACTOR DEV. CO., SECOND GENEVA CONF., ACRS, THE UN COMMITTEE ON EFFECTS OF ATOMIC RADIATION, VARIOUS UNIVERSITY FACILITY MEMBERS, AND SENATOR J. F. KENNEDY. ABOUT ONE PAGE EACH IS DEVOTED TO SITE SELECTION, SAFEGUARDS AND ACCIDENTS, INSURANCE, SEISMOLOGY, CLIMATOLOGY, WASTES, RADIATION, SOIL, VEGETATION, ANIMALS, MARINE, EFFECTS OF RADIATION ON HUMAN, SOMATIC EFFECTS ON HUMANS, GENETIC EFFECTS OF RADIATION, RADIATION PROTECTION, FRC AND AEC.

AVAILABILITY - MONTEREY COUNTY DEMOCRATIC CENTRAL COMMITTEE, MONTEREY, CALIFORNIA

*RADIATION, PUBLIC EDUCATION/ACCEPTANCE + *REACTOR, POWER + ENGINEERED SAFETY FEATURE + FEDERAL RADIATION COUNCIL + INSURANCE + METEOROLOGY + RADIATION EFFECT + RADIATION SAFETY AND CONTROL + SEISMOLOGY + SITING, GENERAL + USAEC (U.S. ATOMIC ENERGY COMMISSION) + WASTE DISPOSAL, GENERAL

1-17874 ALSO IN CATEGORIES 2 AND 17
BOGART L
JCAE HEARING ON POWER REACTOR REGULATION - LARRY BOGART STATEMENT
3 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(28) PAGES 36-38 (SEPTEMBER 18, 1967)

REFERS TO INDIAN POINT 2 AND VERMONT YANKEE PUBLIC BEARINGS AS AN EXAMPLE THAT ASL BOARDS ARE UNRESPONSIVE TO PEOPLE MAKING LIMITED APPEARANCES, THAT THERE IS TOO LITTLE TIME AVAILABLE (30 DAYS) TO HIRE EXPENSIVE LAWYERS AND EXPERTS. CITES A SUBSTANTIAL VOLUME OF RESPECTABLE LITERATURE (PART 2, AEC AUTHORIZING LEGISLATION, 1968) THAT WE ARE NOT OUT OF THE EXPERIMENTAL WOODS. REFERENCES TRUE (AUGUST 1967) WASTE-DISPOSAL ARTICLE AS MAKING IT LOOK LIKE PROBLEM IS SOLVED, GIVING PUBLIC A FALSE SENSE OF SECURITY. VERMONT YANKEE RESIDENTS (LOCATED ON A RIVER IN A BELT OF MODERATE-INTENSITY EARTHQUAKES IN A VALLEY WHERE FOG IS COMMON AND 30-40" INVERSIONS) ARE ALARMED AND FEEL UNPROTECTED BECAUSE VY HAS SPENT MILLIONS ON SITE WORK BEFORE RECEIVING CONSTRUCTION PERMIT.

*CONGRESSIONAL ACTIVITY + *REGULATION, AEC + CONSTRUCTION PERMIT PROCESS + EARTHQUAKE, GENERAL + INDIAN POINT 2 + LAPSE RATE, STABLE + ON SITE WORK + RADIATION, PUBLIC EDUCATION/ACCEPTANCE + VERMONT YANKEE

1-17875 ALSO IN CATEGORY 17
ACKERMAN AJ

CATEGORY 1
GENERAL SAFETY CRITERIA

1-17875 *CONTINUED*
JCAE HEARING ON POWER REACTOR REGULATION - A. J. ACKERMAN STATEMENT
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(3P) PAGES 32-33 (SEPTEMBER 18, 1967)

SELECTIONS FROM HIS STATEMENTS INCLUDE - (1) REGULATORY PROGRAM CANNOT BE EXPECTED TO ENSURE PUBLIC HEALTH AND SAFETY. OPERATING EXPERIENCE IS SMALL, COMPARED WITH THE PERIL. UTILITY REACTOR-OPERATIONS ARE UNDER CONSTANT SURVEILLANCE BY SCIENTISTS AND PHYSICISTS. MAJOR FAILURES WILL PROVIDE MAJOR LESSONS AND GUIDES AS IN 60 YEARS OF STEAM-BOILER EXPERIENCE. (3) AEC IS PROVIDING GUIDANCE ON REGULATORY REQUIREMENTS, NOT ENGINEERING CRITERIA. (5) REPEAL OF PRICE-ANDERSON WOULD GIVE INCENTIVE FOR PUBLIC SAFETY. (6) ALL NUCLEAR PLANTS SHOULD BE IN CAVERNS EXCAVATED IN SOLID ROCK, AS IN THE CASE OF MANY HYDROELECTRIC PROJECTS. (8) NOT ENOUGH EXPERIENCED PEOPLE WILL BE AVAILABLE TO DESIGN, CONSTRUCT, AND OPERATE ALL THESE PLANTS. (9) UTILITIES ENTERING THE NUCLEAR FIELD HAVE NOT FAMILIARIZED THEMSELVES WITH SAFETY CONSIDERATIONS. (11) PUBLIC IS GIVEN INFORMATION ABOUT ATOMIC POWER GREATNESS BUT NOT PUBLIC-SAFETY PROBLEMS.

*CONGRESSIONAL ACTIVITY + *REGULATION, AEC + OPERATING EXPERIENCE +
RADIATION, PUBLIC EDUCATION/ACCEPTANCE + STAFFING, TRAINING, QUALIFICATION

1-17910
MANCUSO TF + SANDERS BS + BRODSKY A
FEASIBILITY STUDY OF THE CORRELATION OF LIFETIME HEALTH AND MORTALITY EXPERIENCE OF AEC AND AEC CONTRACTOR EMPLOYEES WITH OCCUPATIONAL RADIATION EXPOSURE. PROGRESS REPORT NO. 1, JUNE 1, 1964-APRIL 2, 1965
PITTSBURGH UNIV., PA. GRADUATE SCHOOL OF PUBLIC HEALTH, DEPT. OF OCCUPATIONAL HEALTH
NYO-3394-2(REV.1) +. 164 PAGES, FIGURES, 10 TABLES, REFERENCES, APRIL 1965

THE OBJECTIVE OF THIS STUDY IS TO FOLLOW COHORT EMPLOYEE POPULATIONS OF AEC CONTRACTOR INSTALLATIONS AT OAK RIDGE X10, OAK RIDGE Y12, OAK RIDGE K25, HANFORD AND SEVERAL SMALL FUEL MATERIALS PLANTS AND TO TEST THE FEASIBILITY OF USING PERSONNEL, EMPLOYMENT, MEDICAL, AND RADIATION RECORDS IN ESTABLISHING THE RELATIONSHIPS, IF ANY, BETWEEN MORTALITY PATTERNS AND LEVELS OF RADIATION EXPOSURE. PILOT STUDIES OF RADIATION EXPOSURE RECORDS OF PERSONS EXPOSED IN ATOMIC ENERGY FACILITIES WILL BE CARRIED OUT TO DETERMINE THE AVERAGE OCCUPATIONAL EXPOSURE OF THESE POPULATIONS AND APPROPRIATE CONFIDENCE LIMITS IN EXPOSURE ESTIMATES FOR INDIVIDUALS AND VARIOUS SUBPOPULATIONS.

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

*PERSONNEL EXPOSURE, RADIATION + *RADIATION EFFECT + *SAFETY STUDY

1-17911
SPANNER JC
NONDESTRUCTIVE TESTING APPLICATIONS IN THE NUCLEAR INDUSTRY
BATTTELLE-NORTHWEST, RICHLAND, WASH. PACIFIC NORTHWEST LAB.
CONF-670504-1 + BNWL-SA-1142 +. 16 PAGES, FIGURES, MARCH 3, 1967, FROM 21ST ANNUAL TECHNICAL CONFERENCE OF THE AMERICAN SOCIETY FOR QUALITY CONTROL, CHICAGO, ILL.

THE ATOMIC ENERGY COMMISSION AND ITS PRIME CONTRACTORS BECAME INVOLVED IN THE DEVELOPMENT AND APPLICATION OF ULTRASONIC AND EDDY-CURRENT TESTING TECHNIQUES BECAUSE THESE METHODS OFFERED GOOD POTENTIAL AS A MEANS FOR ASSURING THE QUALITY AND INTEGRITY OF NUCLEAR REACTOR FUEL ELEMENTS. QUALITY ASSURANCE CONSTITUTES ONLY ONE OF THE THREE PRIMARY USES FOR NDT, THE OTHER TWO ARE QUALITY DEFINITION, TO MAKE SURE THE NDT PEOPLE ARE WORKING ON THE RIGHT PROBLEM, AND QUALITY RE-ASSURANCE, TO USE NDT-EFFECTIVE TO MEASURE THE PERFORMANCE OF THE PRODUCT AFTER IT HAS BEEN PLACED IN SERVICE.

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

*QUALITY CONTROL + *TEST, NONDESTRUCTIVE + FUEL ELEMENT + INTEGRITY

1-17912
JOHNSON DB
STUDIES IN WORKMENS COMPENSATION AND RADIATION INJURY. VOLUME I
UNIVERSITY OF WISCONSIN, MADISON, WISCONSIN
335 PAGES, TABLES, 1965, THE DEPARTMENT OF LABOR AND THE ATOMIC ENERGY COMMISSION

REPRESENTATIVES OF STATE WORKMENS COMPENSATION AGENCIES, LABOR, MANAGEMENT, MEDICINE, LAW, INSURANCE, AND UNIVERSITIES MET WITH U.S. LABOR AND OFFICIALS TO REVIEW A REPORT BY D. B. JOHNSON, PROFESSOR OF ECONOMICS, UNIVERSITY OF WISCONSIN, ON FEDERAL-STATE COOPERATION IN IMPROVEMENT OF WORKMENS COMPENSATION LEGISLATION-IMPLICATIONS FOR RADIATION INJURY. SINCE 1958 IT HAS BEEN POSSIBLE FOR PERMANENTLY DISABLED WORKERS TO GET BENEFITS BOTH FROM WORKMENS COMPENSATION PROGRAMS IN THE STATES AND FROM OASDI. THE REPORT PROPOSED THAT THE FEDERAL GOVERNMENT ELIMINATE DUPLICATION OF BENEFITS IN THESE CASES AND THAT THE AMOUNT SAVED SHOULD PROVIDE THE BASIS FOR A GRANT-IN-AID TO THE STATES TO INCREASE THE LEVEL OF THEIR BENEFITS IN PERMANENT DISABILITY CASES. ONE OF THE QUID PRO QUOS WOULD BE THAT THE STATES WOULD BE REQUIRED TO MAINTAIN BENEFITS AT AN ADEQUATE LEVEL, PERHAPS TWO-THIRDS OF AVERAGE WEEKLY EARNINGS.

AVAILABILITY - U. S. GOVERNMENT PRINTING OFFICE, WASHINGTON, D. C. 20402, \$1.25 COPY

*INSURANCE + *RADIATION DAMAGE + *RADIOBIOLOGY + *REGULATION, AEC + USAEC (U.S. ATOMIC ENERGY COMMISSION)

CATEGORY 1
GENERAL SAFETY CRITERIA

1-17963 ALSO IN CATEGORY 3

BOOS H
DEVELOPMENT OF OCEAN TRANSPORT OF CONTAINERS IN FAST CARGO SHIPS, LEADING TO BETTER PROSPECTS FOR THE ADOPTION OF NUCLEAR PROPULSION
EUROPEAN ATOMIC ENERGY COMMUNITY
EUR-3285.F +. 52 PAGES, MARCH 1967, IN FRENCH

CONTAINER SHIPS MADE THEIR APPEARANCE ON THE NORTH ATLANTIC ROUTES 1966 AND THE AMOUNT OF CONTAINERIZED CARGO SHIPPED THROUGH THE MAJOR PORTS OF THE WORLD IS GROWING AT AN INCREASING RATE. THE ENORMOUS REDUCTION IN THE ANNUAL NUMBER OF DAYS SPENT IN PORT ALLOWS THE CONTAINER SHIP TO BE OPERATED AT CONSIDERABLY HIGHER ECONOMIC SPEEDS THAN HAVE PREVIOUSLY BEEN PROFITABLE FOR THE BREAKBULK CARGO SHIP. TO ATTAIN THESE SPEEDS UNUSUALLY POWERFUL PROPULSION PLANTS MUST BE INSTALLED. THE NUCLEAR MARINE INSTALLATION IS ECONOMICALLY SUPERIOR TO A FOSSIL-FUELED ONE AT HIGH POWER LEVELS AND IN COMBINATION WITH A HIGH UTILIZATION FACTOR. FAST CONTAINER SHIPS ARE THEREFORE LIKELY TO BE THE FIRST VESSELS FOR WHICH THE MARINE REACTOR WILL BE ADOPTED ON A PURELY COMMERCIAL BASIS.

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

*ECONOMIC STUDY + *REACTOR, MARITIME + OCEAN AND SEA + TRANSPORTATION AND HANDLING

1-18017

CHARLESWORTH FR + FRYER DR
NEW UK LEGISLATION. SOME TECHNICAL IMPLICATIONS OF RECENT INTERNATIONAL CONVENTIONS ON THE NUCLEAR INDUSTRY
NUCLEAR INSTALLATIONS, MINISTRY OF POWER
6 PAGES, 2 TABLES, J. BRIT. NUCL. ENRG. SOC. 5(1), PAGE 114 THRU 119, (JANUARY 1966), PRESENTED AT THE INSTITUTION OF CIVIL ENGINEERS ON 26TH JANUARY 1966

THE UK 1965 NUCLEAR INSTALLATION ACT WAS ISSUED IN RESPONSE TO THE 1960 OECD PARIS CONVENTION, THE 1963 BRUSSELS SUPPLEMENT, AND THE 1953 IAEA VIENNA CONVENTION. REGULATIONS ARE ISSUED UNDER THE ACT ONLY WHEN AN ACTIVITY HAS ARISEN OR IS FORESEEN IN WHICH AN EXCEPTIONAL HAZARD COULD ARISE FROM IONIZING RADIATIONS. THE REGULATIONS COVER SIX CLASSES OF PLANT. FIVE REGULATIONS DEAL WITH THE USE OF ENRICHED URANIUM OR PLUTONIUM, PRINCIPALLY BECAUSE THE MISHANDLING OF SUCH MATERIAL COULD GIVE RISE TO A CRITICALITY RISK.

*REGULATION, GENERAL + *UNITED KINGDOM + INSURANCE

1-18148 ALSO IN CATEGORY 17

CVTR CHANGE 13. MODIFICATION OF SPENT FUEL BASIN FOR STORAGE OF FAILED ELEMENTS
DIVISION OF REACTOR LICENSING, AEC
4 PAGES, FEBRUARY 17, 1967, DOCKET NO. 50-144, CHANGE 13 TO TECHNICAL SPECIFICATIONS

DRL ALLOWS INCREASE FROM 4 TO 10 IN THE NUMBER OF FAILED FUEL ELEMENTS STORED IN THE SPENT-FUEL BASIN. PRESENT SHIELDING REQUIREMENTS AND MOVEMENT LIMITATIONS REMAIN UNCHANGED. CENTER-TO-CENTER DISTANCE INCREASED FROM 7 TO 10 INCHES.

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

*FAILURE, FUEL ELEMENT + *FUEL STORAGE + *MODIFICATION, SYSTEM OR EQUIPMENT +
CVTR (CAROLINAS VIRGINIA TUBE REACTOR) + REACTOR, PRESSURIZED WATER + SAFETY EVALUATION +
TECHNICAL SPECIFICATIONS

1-18152 ALSO IN CATEGORY 17

CVTR CHANGE 14. REMOVAL AND STORAGE OF FUEL RODS FROM FUEL ELEMENTS
DIVISION OF REACTOR LICENSING, AEC
7 PAGES, JULY 19, 1967, DOCKET NO. 50-144, CAROLINAS VIRGINIA TUBE REACTOR

DRL ALLOWS CVTR TO DISASSEMBLE UNUSED FUEL ELEMENTS AND STORE THE RODS IN SHIPPING CONTAINERS. PRECAUTION DURING DISASSEMBLY GIVEN.

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

*FUEL STORAGE + CVTR (CAROLINAS VIRGINIA TUBE REACTOR) + FUEL ELEMENT +
REACTOR DECOMMISSIONING EXPERIENCE + REACTOR, PRESSURIZED WATER + SAFETY EVALUATION +
TECHNICAL SPECIFICATIONS

1-18210 ALSO IN CATEGORIES 2 AND 5

FARMER FR
REACTOR SAFETY AND SITING - A PROPOSED RISK CRITERION
AUTHORITY HEALTH AND SAFETY BRANCH, UNITED KINGDOM ATOMIC ENERGY AUTHORITY, RISLEY, WARRINGTON, LANCS, ENGLAND
CONF-670-602 +. 15 PAGES, 16 FIGURES, 1 TABLE, 6 REFERENCES, ABSTRACT IN ANS TRANSACTIONS 10(1), PAGE

CATEGORY 1
GENERAL SAFETY CRITERIA

1-18210 *CONTINUED*
328. PAPER PRESENTED AT THE 1967 ANNUAL MEETING OF THE AMERICAN NUCLEAR SOCIETY, SAN DIEGO, CALIFORNIA, JUNE 11-15, 1967. PAPER ALSO IN ATOM (NUMBER 128) PAGE 152, (JUNE 1967)

A METHOD OF REACTOR SITING IS DESCRIBED WHICH TAKES INTO ACCOUNT THE PROBABILITY OF OCCURRENCE OF AN EVENT AND THE RISK (IN TERMS OF I-131 RELEASE) ASSOCIATED WITH THAT EVENT. SOME VALUE OF THE PRODUCT OF THESE TWO PARAMETERS MAY BE SET AS ARBITRARY LIMIT FOR A GIVEN PLANT. METHODS OF EVALUATION OF THESE PROBABILITIES ARE GIVEN. THIS INVOLVES ESTABLISHMENT OF FAILURE-RATE DATA FOR COMPONENTS AND/OR ENGINEERING JUDGMENT FOR LARGER SYSTEMS. TYPICAL EXAMPLES ARE USED.

ACCIDENT ANALYSIS + ACCIDENT MODEL + ACCIDENT, PROBABILITY OF + SITING, GENERAL + SITING, REACTOR

1-18508 ALSO IN CATEGORIES 14 AND 17
LOGAN JE
US FISH AND WILDLIFE REPORT ON OYSTER CREEK, SEPTEMBER 22, 1967
JERSEY CENTRAL POWER AND LIGHT COMPANY, MORRISTOWN, NEW JERSEY
4 PAGES, ATOMIC ENERGY CLEARING HOUSE 12(42) PAGES 18-21 (OCTOBER 19, 1967), DOCKET NO. 50-219

(LETTER, OCTOBER 19) RECOMMENDATIONS SIMILAR TO THOSE RECENTLY MADE AT OTHER REACTORS (POSTOPERATIONAL RADIOLOGICAL SURVEY, ECOLOGICAL SURVEYS, LIMIT RADIOACTIVE DISCHARGE BELOW FISH-HARM LEVEL, ETC.). REFERS TO THERMAL BARRIERS IN OYSTER CREEK (SIX), HARM TO SHELLFISH AS THEY PUMP WATER FASTER AT HIGH TEMPERATURE AND QUALITY DETERIORATES, AND PROMOTION OF ALGAE.

*THERMAL POLLUTION + BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + HEAT SINK + OYSTER CREEK + REACTOR, BOILING WATER

1-18519
CRITICALITY GUIDE. I. INTRODUCTION TO CRITICALITY. II. PRACTICAL RULES
COMMISSARIAT A L ENERGIE ATOMIQUE, SACLAY, FRANCE
CEA-R-3114 +. 78 PAGES, FIGURES, FEBRUARY 1967, IN FRENCH

SOME ELEMENTS OF NEUTRONICS ARE PRESENTED IN A SIMPLE AND OFTEN INTUITIVE WAY. THE K-INFINITE AND K-EFFECTIVE FORMULAE ARE DERIVED AND DISCUSSED. THE LIMITING SOLID-ANGLE METHOD IS EXPLAINED AND SOME SIMPLE FORMULAE PROPOSED FOR EVALUATING THE INTERACTION BETWEEN FISSION UNITS. THE GENERAL PRINCIPLES USED IN STUDYING THE SAFETY OF NUCLEAR INSTALLATIONS USING FISSION MATTER ARE GIVEN. PRACTICAL RULES, CRITICAL MASS AND CRITICAL GEOMETRY CURVES AS WELL AS ALL THE NUMERICAL VALUES REQUIRED FOR NORMAL CRITICALITY CALCULATIONS ARE GIVEN FOR PLUTONIUM AND URANIUM AT VARIOUS DEGREES OF ENRICHMENT.

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

CRITICALITY EXPERIMENT + CRITICALITY SAFETY

1-18520 ALSO IN CATEGORY 6
PENNINGTON EM
ANALYSIS OF HIGH CONVERSION CRITICAL EXPERIMENTS
ARGONNE NATIONAL LAB., ARGONNE, ILL.
ANL-7270 +. 42 PAGES, 7 FIGURES, 28 TABLES, 31 REFERENCES, MARCH 1967

CRITICAL EXPERIMENTS PERFORMED IN THE ZPR-7 FACILITY USING HI-C OR BORAX-V FUEL AND LIGHT-WATER MODERATOR ARE ANALYZED. THE HI-C FUEL CONSISTED OF 3.04 W/O ENRICHED UO2 PELLETS STACKED IN ALUMINUM OR STAINLESS STEEL TUBING. BORAX-V FUEL USED UO2 PELLETS, 4.95 W/O ENRICHED, STACKED IN STAINLESS STEEL TUBING. ALL LATTICES HAD FUEL RODS UNIFORMLY SPACED IN SQUARE OR TRIANGULAR ARRAYS. H-TO-U-238 ATOM RATIOS VARIED FROM 4.6 TO 0.5. CALCULATIONS OF CRITICAL BUCKLINGS, REFLECTOR SAVINGS, AND VARIOUS MICROPARAMETERS ARE COMPARED WITH EXPERIMENTAL VALUES. AGREEMENT IS REASONABLY GOOD, EXCEPT FOR THE U-238-TO-U-235 FISSION RATIO. MOST CALCULATIONS USED CROSS-SECTIONS FROM GAM-I AND THERMOS IN FOUR-GROUP DIFFUSION THEORY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$2.65 MICROFICHE

*CRITICALITY EXPERIMENT + COMPARISON, THEORY AND EXPERIENCE + CROSS SECTION + REACTIVITY EFFECT + REACTOR PHYSICS

1-18536 ALSO IN CATEGORY 6
GREGGER P
DOPPLER COEFFICIENT CONTROL FOR NUCLEAR REACTORS OPERATING IN THE FAST OR INTERMEDIATE NEUTRON ENERGY SPECTRUM
U. S. PATENT 3-266-999 +. 6 PAGES, 2 FIGURES, AUGUST 15, 1966, PATENT (U.S.)

THIS PATENT RELATES TO INHERENT CONTROL FOR NUCLEAR REACTORS OF THE FAST OR INTERMEDIATE NEUTRON ENERGY TYPE. INHERENT CONTROL IS ACHIEVED BY DISTRIBUTING MODERATOR MATERIAL IN THE CORE IN A SUFFICIENT AMOUNT TO MODERATE FROM 15 TO 30% OF THE HIGH ENERGY OR FAST NEUTRONS DOWN INTO THE ENERGY RANGE OF ABOUT 10,000 IN WHICH RANGE THE DOPPLER COEFFICIENT OF REACTIVITY OF THE CORE IS MADE MORE NEGATIVE TO INCREASE NEUTRON ABSORPTION WITH INCREASE IN

CATEGORY 1
GENERAL SAFETY CRITERIA

1-18536 *CONTINUED*
TEMPERATURE OF THE CORE.

AVAILABILITY - THE U. S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D. C., (\$0.25 PER COPY)
DOPPLER COEFFICIENT + REACTIVITY EFFECT + REACTOR STABILITY + REACTOR, FAST + SHUTDOWN MECHANISM, SELF

1-18554 ALSO IN CATEGORY 15
DUNNING GM
RESPONSIBILITY AND JUDGMENT - INTERPLAY IN HEALTH PHYSICS DECISIONS
ATOMIC ENERGY COMMISSION, WASHINGTON, D.C.
4 PAGES, 1 TABLE, 6 REFERENCES, HEALTH PHYSICS 13(5), PAGES 509-12 (MAY 1967)

NUCLEAR WEAPONS TESTING AND THE DEVELOPMENT OF RADIATION PROTECTION GUIDES FURNISH TWO EXAMPLES OF THE INTERPLAY OF RESPONSIBILITY AND JUDGMENT IN HEALTH-PHYSICS DECISIONS. ONE GROUP OF PERSONS, THOSE LIVING NEAR THE NEVADA TEST SITE, HAS IN EFFECT BEEN CALLED ON TO ACCEPT SOMEWHAT MORE RADIATION EXPOSURE THAN THE AVERAGE. IN THE CASE OF RADIATION PROTECTION GUIDES IT IS NECESSARY TO BALANCE ANTICIPATED BENEFITS FROM USE OF ATOMIC ENERGY AGAINST THE POTENTIAL BIOLOGICAL RISKS AND TO BALANCE AVAILABLE PROTECTIVE ACTIONS TO REDUCE EXPOSURE AGAINST POTENTIALLY ADVERSE EFFECTS FROM SUCH ACTIONS.

*MAXIMUM PERMISSIBLE DOSE (MPD) + RADIATION PROTECTION, ORGANIZATION + RADIATION SAFETY AND CONTROL + USAEC (U.S. ATOMIC ENERGY COMMISSION)

1-18761 ALSO IN CATEGORY 6
DOERNER RC + KNAPP WG + ALMENAS KK + KARAM RA
PHYSICS MEASUREMENTS IN TUNGSTEN-BASED, ALUMINUM-REFLECTED FAST REACTORS
ARGONNE NATIONAL LAB., ILL.
ANL-7007 +. 38 PAGES, 20 FIGURES, 13 TABLES, 18 REFERENCES, MARCH 1967

AS PART OF AN ANL STUDY OF CONCEPTS FOR PROPOSED HIGH-TEMPERATURE FAST REACTORS, THIS REPORT SUMMARIZES RESULTS OF MEASUREMENTS MADE ON FOUR FAST CRITICAL EXPERIMENTS PERFORMED ON ZPR-9. IN BASIC DESIGN, FUEL IS HIGHLY ENRICHED URANIUM, MAJOR DILUENT IS TUNGSTEN-RHENIUM ALLOY, AND REFLECTOR IS A LIGHT METAL OXIDE. MEASUREMENTS INCLUDED CRITICAL MASSES AND GEOMETRY, ROSSI ALPHA, CENTRAL-FUEL AND MATERIALS WORTHS, AND SPATIAL DEPENDENCE OF FISSION RATES, AS A FUNCTION OF TUNGSTEN CONTENT OF THE CORE. EXPERIMENTAL RESULTS ARE COMPARED WITH CALCULATIONS BASED ON A ONE-DIMENSIONAL 16-GROUP DIFFUSION CODE. PROBLEMS OF DISCREPANCIES BETWEEN CALCULATED AND MEASURED PROMPT-NEUTRON LIFETIMES IS DISCUSSED. SUGGESTIONS GIVEN FOR FUTURE INVESTIGATIONS IN THE KINETICS OF THESE ASSEMBLIES.

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

COMPARISON, THEORY AND EXPERIENCE + CRITICAL ASSEMBLY FACILITY + CRITICALITY EXPERIMENT + MEASUREMENT, REACTIVITY + REACTOR PHYSICS + REACTOR, FAST + ROSSI ALPHA + ZPR 9 (ANL ZERO POWER REACTOR)

1-18762 ALSO IN CATEGORY 6
KARAM RA + ANCARANI A + HELM FH + KATO WY + MAIN GW + RUSCH GK
MEASURED PHYSICS PARAMETERS IN A ZONED FAST URANIUM CARBIDE CORE, ASSEMBLY 4Z
ARGONNE NATIONAL LAB., ILL.
ANL-7281 +. 48 PAGES, 26 FIGURES, 22 TABLES, 21 REFERENCES, DECEMBER 1966

DESCRIBES RESULTS OF REACTOR PHYSICS EXPERIMENTS ON ZPR 6 WITH A ZONED CYLINDRICAL CORE HAVING A CENTRAL REGION WITH COMPOSITION OF A 2600-LITER URANIUM CARBIDE FUELED CORE. MAJOR OBJECTIVE WAS TO TEST HOW WELL REACTOR PHYSICS PARAMETERS FOR FULL-SCALE SYSTEM CAN BE PREDICTED FROM ZONED-CORE MEASUREMENTS. MEASUREMENTS WERE MADE OF CRITICAL MASS, NEUTRON-ENERGY SPECTRUM, FISSION-RATE TRAVERSES, RADIAL DISTRIBUTIONS OF FLUXES AND IMPORTANCES OF FISSION NEUTRONS, SODIUM VOID COEFFICIENTS, REACTIVITY WORTHS OF CENTRALLY LOCATED SAMPLES, AND ROSSI-ALPHA MEASUREMENTS. COMPARISONS BETWEEN THEORETICAL CALCULATIONS AND EXPERIMENTAL RESULTS ARE DISCUSSED FOR EACH MEASUREMENT.

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

COMPARISON, THEORY AND EXPERIENCE + CRITICAL ASSEMBLY FACILITY + CRITICALITY EXPERIMENT + MEASUREMENT, REACTIVITY + REACTOR PHYSICS + REACTOR, FAST + ROSSI ALPHA + ZPR 6 (ANL ZERO POWER REACTOR)

1-18792 ALSO IN CATEGORY 18
MCELWAIN WH
JERSEY CENTRAL ASKS FOR SPEEDY CONSIDERATION TO AVOID BROWNOUT
JERSEY CENTRAL POWER AND LIGHT COMPANY, MORRISTOWN, N. J.
2 PAGES, OCTOBER 12, 1967, DOCKET NO. 50-219, ATOMIC ENERGY CLEARINGHOUSE, 13(43), PAGE 22-23, (OCTOBER 23, 1967)

(TWX TO DRL, OCT. 12, 1967) CURRENT SCHEDULE FOR FINAL DRL/ACRS REVIEW IS JAN. 1968. ANY DELAY IN FUEL LOADING PAST DEC. 15, 1967, THREATENS OUR ABILITY TO MEET LOAD DEMAND FOR THE SUMMER OF 1968. JC ASKS (1) FOR FINAL ACTION IN DECEMBER, OR (2) A LIMITED LICENSE FOR LOADING AND LOW-POWER OPERATION, OR (3) EARLY PUBLICATION OF INTENT TO ISSUE A FUEL-LOADING

CATEGORY 1
GENERAL SAFETY CRITERIA

1-18782 *CONTINUED*

LICENSE. MORE THAN 19 MILLION DOLLARS HAS BEEN SPENT IN ACCELERATING CONSTRUCTION.

*OPERATING LICENSE PROCESS + *REGULATION, AEC + ECONOMICS + OYSTER CREEK + REACTOR, BOILING WATER

CATEGORY 2
SITING OF NUCLEAR FACILITIES

2-17474 ALSO IN CATEGORY 17
KNOBLING KH + WANGERIN W
CONSTRUCTION ENGINEERING VIEWPOINT IN THE PLANNING AND CONSTRUCTION OF THE GUNDEMMINGEN NUCLEAR POWER PLANT
ALLGEMEINE ELEKTRIZITAETSGESELLSCHAFT, FRANKFURT AM MAIN
4 PAGES, 3 TABLES, AT. STROM. 12, PAGES 124-7 (SEPT. OCT. 1966) IN GERMAN

THE EFFECT OF THE CONSTRUCTION ENGINEERING ON THE SITE SELECTION, TERRAIN CHOICE, AND ARRANGEMENT OF THE PLANT IS INDICATED. SPECIAL PRECAUTIONS WITH RESPECT TO RADIATION PROTECTION IN THE CONSTRUCTION ARE DISCUSSED. (UNTRANSLATED GERMAN ARTICLE).

*OPERATING EXPERIENCE + GERMANY + REACTOR, BOILING WATER

2-17608
BARRY/PJ
CONCEPT OF A STANDARD SITE
ATOMIC ENERGY OF CANADA LTD., CHALK RIVER, ONTARIO
AECL-2682 + SM-89/5 +. 16 PAGES, 2 FIGURES, 1 TABLE, 25 REFERENCES, MARCH 1967

A STANDARD SITE IS DEFINED AND SUGGESTED AS AN APPROACH TO SITING. DIFFERENCES BETWEEN SITES (WITH MINOR EXCEPTIONS) ARE SAID TO BE INSIGNIFICANT WHEN ATMOSPHERIC DISPERSION IS CONCERNED. THIS APPROACH ESTIMATES NOT A MINIMUM DISPERSION RATE BUT THE PROBABILITY THAT ANY GIVEN RATE WILL OCCUR. WITH THE INFORMATION IN THIS FORM, A PROPERLY CALCULATED RISK CAN BE TAKEN WHEN THE REQUIRED DEGREE OF CONTAINMENT IS SPECIFIED. THE PAPER GIVES THE RESULTS OF A DIRECT EXPERIMENTAL DETERMINATION OF THE REQUIRED PROBABILITIES.

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

METEOROLOGY + SAFETY PRINCIPLES AND PHILOSOPHY + SITING, GENERAL + SITING, REACTOR

2-17614
EVERNDEN JF
MAGNITUDE DETERMINATION AT REGIONAL AND NEAR-REGIONAL DISTANCES IN THE UNITED STATES
49 PAGES, BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA 57(4), PAGES 591-639, (AUGUST 1967)

DEALS WITH THE PROBLEMS OF VARIATION OF P-SUB-N AMPLITUDES IN REGIONAL AND NEAR-REGIONAL DISTANCE RANGES (200-2100 KM). IT IS SHOWN THAT THE PATTERNS OF P-SUB-N AMPLITUDES VERSUS DELTA IN WESTERN UNITED STATES AND EASTERN UNITED STATES ARE MARKEDLY DIFFERENT AND THAT THESE DIFFERENCES ARE RELATED TO DIFFERENT VELOCITY STRUCTURES IN THE TWO REGIONS. NEITHER WESTERN NOR EASTERN UNITED STATES AMPLITUDE PATTERNS CONFORM EVEN APPROXIMATELY TO THAT PREDICTED OR SUGGESTED BY GUTENBERG AND RICHTER IN THE 1000-2000 KILOMETER RANGE. THE PREDICTED ZONE OF LOW-AMPLITUDE SIGNALS IN THAT DISTANCE RANGE DOES NOT EXIST, AND OVERESTIMATION OF MAGNITUDE BY AS MUCH AS 1.5 MAGNITUDE UNITS IS FREQUENTLY DONE BECAUSE OF FAILURE TO PROPERLY UNDERSTAND THE PATTERNS OF RADIATION.

*SEISMOLOGY, GENERAL + EARTHQUAKE EPICENTER + EARTHQUAKE, GENERAL + ENERGY LEVEL + INSTRUMENTATION, EARTHQUAKE

2-17615
CHOPRA AK
RESERVOIR-DAM INTERACTION DURING EARTHQUAKES
13 PAGES, BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA 57(4), PAGES 675-687, (AUGUST 1967)

MOST WORK, TO DATE, ON ANALYSIS OF EFFECTS OF EARTHQUAKES ON DAMS TREATS DAM AND RESERVOIR AS TWO UNCOUPLED SYSTEMS. THE IMPORTANCE OF INTERACTION BETWEEN THE TWO SYSTEMS IN DETERMINING THE WATER PRESSURE ON DAMS DURING EARTHQUAKES IS INVESTIGATED HERE. THE ANALYSIS IS APPROXIMATE AND IS AIMED AT EXPLORING THE PROBLEM. THE EARTHQUAKE ACCELERATION IS FIRST MODELED AS A STATIONARY GAUSSIAN WHITE-NOISE PROCESS. FOR THIS EXCITATION, CERTAIN QUALITATIVE CONCLUSIONS CONCERNING IMPORTANCE OF INTERACTION EFFECTS ARE DERIVED. HYDRODYNAMIC RESPONSES OF TYPICAL SYSTEMS SUBJECTED TO EL CENTRO (1940) EARTHQUAKE ARE THEN DETERMINED TO CONFIRM THESE CONCLUSIONS. ON BASIS OF THESE RESULTS, IT APPEARS THAT THE INTERACTION BETWEEN RESERVOIR AND DAM HAS SIGNIFICANT INFLUENCE ON THE HYDRODYNAMIC RESPONSES DURING EARTHQUAKE EXCITATIONS.

*INTERACTION, FOUNDATION AND STRUCTURE + EARTHQUAKE, GENERAL + FOUNDATION ENGINEERING + SOIL MECHANICS + VIBRATION ANALYSIS

2-17616
THOMPSON MC + JAMES HB
CORRECTION OF ATMOSPHERIC ERRORS IN ELECTRONIC MEASUREMENTS OF EARTH CRUST MOVEMENTS
15 PAGES, BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA 57(4), PAGES 641-655, (AUGUST 1967)

THREE METHODS ARE DESCRIBED FOR CORRECTING ELECTRONIC MEASUREMENTS OF EARTH MOVEMENT FOR

CATEGORY 2
SITING OF NUCLEAR FACILITIES

2-17616 *CONTINUED*

ATMOSPHERIC REFRACTION EFFECTS. THE EFFECTIVENESS OF TWO OF THESE IS DISCUSSED IN TERMS OF EXPERIMENTAL STUDIES USING MICROWAVE SYSTEMS. PRECISION OF ABOUT 1 PART IN 10 TO THE 9TH (1 MICRON IN 1 KM) APPEARS ATTAINABLE.

*INSTRUMENTATION, EARTHQUAKE + EARTHQUAKE PREDICTION + EARTHQUAKE, GENERAL + GEOLOGICAL CONSIDERATION, GEOPHYSICAL + GROUND MOTION

2-17617

COOK KL + SMITH RB

SEISMICITY IN UTAH, 1850 THROUGH JUNE 1965

30 PAGES, FIGURES, BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA 57(4), PAGES 689-718, (AUGUST 1967)

DURING 1850 THROUGH JUNE 1965, AT LEAST 609 EARTHQUAKES OCCURRED IN UTAH, OF WHICH AT LEAST 38 WERE DAMAGING. PERTINENT DATA OF THESE EARTHQUAKES ARE LISTED, AND AN EARTHQUAKE EPICENTER MAP OF UTAH IS PRESENTED. THE EPICENTER DETERMINATIONS OF ABOUT 344 EARTHQUAKES (ALL FELT) IN UTAH DURING 1850 THROUGH 1949 (WILLIAMS AND TAPPER, 1953) WERE NONINSTRUMENTAL. THE EPICENTERS AND MAGNITUDES AND DEPTHS OF FOCUS (WHEN DETERMINED) OF THE EARTHQUAKES DURING 1950 THROUGH JUNE 1962 (77) WERE GENERALLY INSTRUMENTAL DETERMINATIONS TAKEN FROM THE COAST AND GEODETIC SURVEY. THE EPICENTERS OF THE EARTHQUAKES DURING JULY 1962 THROUGH JUNE 1965 (188) WERE ALL INSTRUMENTAL AND WERE OBTAINED AS FOLLOWS - 23 FROM ALREADY-PUBLISHED CGS DATA, 165 BY THE UNIVERSITY OF UTAH, OF WHICH 68 EPICENTRAL DETERMINATIONS WERE ALSO MADE BY THE CGS. THE DATA SHOW RECENT EARTHQUAKE ACTIVITY IN THE EPHRAIM (1961), CACHE VALLEY (1962), AND LEVAN (1963) AREAS, AND SWARM ACTIVITY IN THE LEHMAN CAVES (1963) AREA. DURING 1962-1964, UTAH AVERAGED ABOUT .60 EARTHQUAKES PER YEAR FOR WHICH INSTRUMENTAL EPICENTER DETERMINATIONS WERE MADE.

*EARTHQUAKE RECORDS + EARTHQUAKE EPICENTER + EARTHQUAKE, GENERAL + GEOLOGICAL CONSIDERATION, GENERAL + SEISMIC ZONE

2-17618

SCAVUZZO RJ

FOUNDATION-STRUCTURE INTERACTION IN THE ANALYSIS OF WAVE MOTIONS

12 PAGES, BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA 57(4), PAGES 735-746, (AUGUST 1967)

DURING SHOCK MOTION, INERTIA FORCES OF LARGE STRUCTURES WILL INFLUENCE THE FOUNDATION MOTION LOCALLY. IN THE PRESENT STUDY, THE STRUCTURE-FOUNDATION PROBLEM IS ANALYZED BY COUPLING AN N-MASS STRUCTURE WITH A ONE-DIMENSIONAL WAVE. THE RESULTING SOLUTION IS FORMULATED AS A VOLTERRA INTEGRAL EQUATION. BY USING AN INPUT WAVE SIMILAR TO THOSE ENCOUNTERED IN EARTHQUAKE MOTIONS, THE SIGNIFICANCE OF THIS INTERACTION WAS INVESTIGATED. RESULTS SHOW THAT THE REDUCTION IN SPECTRUM ACCELERATION IS SIGNIFICANT AND DEPENDS BOTH ON STRUCTURE FREQUENCY AND WEIGHT FOR A GIVEN FOUNDATION INPUT.

*INTERACTION, FOUNDATION AND STRUCTURE + DAMPING + EARTHQUAKE ENGINEERING + EARTHQUAKE, GENERAL + FOUNDATION ENGINEERING + RESPONSE SPECTRUM + SOIL MECHANICS

2-17619

FREEDMAN HW

ESTIMATING EARTHQUAKE MAGNITUDE

14 PAGES, BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA 57(4), PAGES 747-760, (AUGUST 1967)

THE DISTURBINGLY LARGE VARIATION IN MAGNITUDE ESTIMATES OBSERVABLE IN ANY EARTHQUAKE CATALOGUE HAS LED TO THIS ANALYSIS OF ONE PARTICULAR CATALOGUE AND DEFINITION OF MAGNITUDE. THE METHOD OF THE UNITED STATES COAST AND GEODETIC SURVEY IS ANALYZED IN THE LIGHT OF THEORETICAL CONSIDERATIONS CONCERNING THE PROBABILITY DISTRIBUTION OF THE VARIABLES INVOLVED. IN PARTICULAR, THE TRUNCATION PROCEDURE SEEMS TO LEAD TO ESTIMATES WHICH CONSISTENTLY UNDERESTIMATE THE MAGNITUDE FOR LARGE EARTHQUAKES, AND PERHAPS OVERESTIMATE THE MAGNITUDE FOR SMALL ONES. ANOTHER METHOD IS SUGGESTED WHICH LEADS TO ESTIMATES WHICH ARE IN GOOD AGREEMENT WITH THOSE PROVIDED BY BERKELEY, PASADENA, AND LAMONT.

EARTHQUAKE EPICENTER + EARTHQUAKE, GENERAL + ENERGY LEVEL + INSTRUMENTATION, EARTHQUAKE

2-17620

EPSTEIN B + HOMNITZ C

A MODEL FOR THE OCCURRENCE OF LARGE EARTHQUAKES

3 PAGES, NATURE 211(5052), PAGES 954 THRU 956, (AUGUST 27, 1966)

OUTLINES A PROBABILITY MODEL WHICH SEEMS TO PROVIDE AN ADEQUATE BASIS FOR MAKING PREDICTIONS CONCERNING THE OCCURRENCE OF LARGEST EARTHQUAKES OVER TIME. THIS MODEL SHOULD BE CONSIDERED AS A FIRST APPROXIMATION. HOWEVER, DESPITE THE KNOWN LACK OF HOMOGENEITY OF EARTHQUAKE OCCURRENCE IN CALIFORNIA, THE PRESENT SIMPLIFIED APPROACH PROVIDES REASONABLE ESTIMATES FOR THE OCCURRENCE OF LARGE EARTHQUAKES WITHIN THE UNCERTAINTY OF DUE TO THE SHORTNESS OF THE HISTORICAL RECORD.

*EARTHQUAKE PREDICTION + EARTHQUAKE RECORDS + EARTHQUAKE, GENERAL + SEISMIC ZONE + SEISMOLOGY, GENERAL

CATEGORY 2
SITING OF NUCLEAR FACILITIES

2-17622
NEUMANN F
PRINCIPLES UNDERLYING THE INTERPRETATION OF SEISMOGRAMS
U.S. DEPARTMENT OF COMMERCE
17 FIGURES, 9 REFERENCES, SPECIAL PUBLICATION NO. 254, 1966.

THIS DOCUMENT COVERS THE BACKGROUND MATERIAL NEEDED TO BE ABLE TO INTERPRET SEISMOGRAMS AND THEN GOES ON TO DESCRIBE THE ACTUAL INTERPRETATION. IT IS THEREFORE AN ELEMENTARY MANUAL. MAJOR HEADINGS INCLUDE - (1) SEISMIC WAVES AND EARTH STRUCTURE, (2) RESPONSE OF SEISMOGRAPHS TO SEISMIC WAVES, (3) TRAVEL-TIME TABLES AND CHARTS, (4) INTERPRETATION OF SEISMOGRAMS, (5) OPERATIONAL PROBLEMS, (6) SEISMOLOGICAL BULLETINS AND, (7) EXAMPLES OF INTERPRETATIONS.

AVAILABILITY - U.S. GOVERNMENT PRINTING OFFICE, WASHINGTON, D.C. 20402, \$2.00 COPY

*INSTRUMENTATION, EARTHQUAKE + EARTHQUAKE EPICENTER + EARTHQUAKE RECORDS + EARTHQUAKE, GENERAL + ENERGY LEVEL + MICROSEISMICITY

2-17623
HAGIWARA T + RIKITAKE T
JAPANESE PROGRAM ON EARTHQUAKE PREDICTION
UNIVERSITY OF TOKYO, JAPAN
SCIENCE 157(3790), PAGE 761, (AUGUST 18, 1967)

THIS PAPER REVIEWS THE WORK IN PROGRESS IN THE JAPANESE EARTHQUAKE-PREDICTION PROGRAM AND DISCUSSES THE FURTHER WORK REQUIRED IN THE AREAS OF (1) GEOELECTRIC MEASUREMENTS, HORIZONTAL AND VERTICAL, (2) TIDE-GAUGE OBSERVATIONS, (3) CONTINUOUS OBSERVATION OF CRUSTAL DEFORMATION, (4) SEISMIC ACTIVITY AND GEOMAGNETISM, INCLUDING MICROEARTHQUAKES, (5) TECTONICS AND LABORATORY WORK, AND (6) DATA-PROCESSING CENTERS AND FIELD PATROLS. BASED ON THEIR PRESENT CAPABILITY, THEY WERE ABLE TO ISSUE WARNINGS OF THE DANGEROUS PERIODS, ROUGH LOCATIONS, ETC., DURING THE 1966 MATSUSHIRO EARTHQUAKE SWARM.

*EARTHQUAKE PREDICTION + EARTHQUAKE, GENERAL + INSTRUMENTATION, EARTHQUAKE + MICROEARTHQUAKE + SEISMIC ZONE + SUBSIDENCE + TECTONICS

2-17624
BURRIDGE R + KNOPOFF L
MODEL AND THEORETICAL SEISMICITY
31 PAGES, BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA 57(3), PAGES 341-371, (JUNE 1967)

A LABORATORY AND A NUMERICAL MODEL WERE CONSTRUCTED TO EXPLORE THE ROLE OF FRICTION ALONG A FAULT AS A FACTOR IN THE EARTHQUAKE MECHANISM. THE LABORATORY MODEL DEMONSTRATES THAT SMALL SHOCKS ARE NECESSARY TO THE LOADING OF POTENTIAL ENERGY INTO THE FOCAL STRUCTURE. A LARGE PART BUT NOT ALL THE STORED POTENTIAL ENERGY IS LATER RELEASED IN A MAJOR SHOCK AT THE END OF A PERIOD OF LOADING ENERGY INTO THE SYSTEM. BY PUTTING VISCOSITY INTO THE NUMERICAL MODEL, AFTERSHOCKS TAKE PLACE AFTER A MAJOR SHOCK. BOTH MODELS HAVE FEATURES WHICH DESCRIBE THE STATISTICS OF SHOCKS IN THE MAIN SEQUENCE, THE STATISTICS OF AFTERSHOCKS, AND THE ENERGY-MAGNITUDE SCALE, AMONG OTHERS.

*MODEL, EARTHQUAKE RESISTANCE + AFTERSHOCK + EARTHQUAKE, GENERAL + ENERGY LEVEL + FAULT + SOURCE MECHANISM

2-17625
ENGLEKIRK RE + MATTHIESEN RB
FORCED VIBRATION OF AN EIGHT-STORY REINFORCED CONCRETE BUILDING
16 PAGES, BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA 57(3), PAGES 421-436, (JUNE 1967)

THE DETERMINATION OF THE DYNAMIC CHARACTERISTICS OF AN EIGHT-STORY REINFORCED-CONCRETE BUILDING WAS UNDERTAKEN. LATERAL STABILITY WAS PROVIDED BY SHEAR WALLS IN ONE DIRECTION AND BY A SPACE FRAME IN THE OTHER DIRECTION, AN UNSYMMETRICAL LOCATION OF RIGID ELEMENTS PROVIDING A NATURAL COUPLING OF LATERAL AND TORSIONAL VIBRATION. A PAIR OF SYNCHRONIZED VIBRATION GENERATORS GENERATED THE DESIRED STEADY-STATE VIBRATIONS. MEASUREMENTS WERE MADE OF ONE TRANSLATIONAL MODE IN THE DIRECTION PARALLEL TO THE SPACE FRAME, AND TWO TORSIONAL MODES. A DEFINITE NONLINEARITY IN THE RESPONSE OF THE SPACE FRAME WAS OBSERVED. VALUES OF DAMPING WERE 3.5% OF CRITICAL DAMPING IN EACH DIRECTION. THE VALUE OF DYNAMIC MODULUS OF ELASTICITY THAT GAVE THE BEST ANALYTICAL RESULTS COMPARED FAVORABLY WITH STANDARD LABORATORY DETERMINED VALUES FOR DYNAMIC MODULUS OF ELASTICITY. A SIMPLE METHOD FOR OBTAINING APPROXIMATIONS TO THE NATURAL FREQUENCIES AND MODE SHAPES OF MULTISTORY SPACE FRAMES IS DISCUSSED.

*EARTHQUAKE ENGINEERING + *VIBRATION ANALYSIS + ACCELERATION + EARTHQUAKE, GENERAL + MODEL, EARTHQUAKE RESISTANCE + RESPONSE SPECTRUM

2-17626
RASMUSSEN N
WASHINGTON STATE EARTHQUAKES 1840 THROUGH 1965

CATEGORY 2
SITING OF NUCLEAR FACILITIES

2-17626 *CONTINUED*
15 PAGES, FIGURES, BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA 57(3), PAGES 463-476, (JUNE 1967)

PRESENTS A TABULATION OF ABOUT 850 EARTHQUAKES IN WASHINGTON STATE AND NEAR ITS BORDERS BETWEEN 1841 THROUGH 1965. LIST COMPILED FROM SCIENTIFIC REPORTS, NEWSPAPER ACCOUNTS, AND UNPUBLISHED EPICENTER COMPUTATIONS FROM THE UNIVERSITY OF WASHINGTON SEISMOGRAPH STATION. SHOCKS OF INTENSITY V OR LESS ARE NOT COMPLETE BEFORE ABOUT 1900 BECAUSE OF SPARSE POPULATION, MAKING REPORTING INCOMPLETE. THERE APPEARS TO BE AN INCREASE OF LARGER INTENSITY AND MAGNITUDE EARTHQUAKES SINCE 1936 IN WASHINGTON STATE, AND ESPECIALLY IN THE PUGET SOUND AREA SINCE 1949.

EARTHQUAKE EPICENTER + EARTHQUAKE RECORDS + EARTHQUAKE, GENERAL + SEISMIC ZONE

2-17627
BRUNE JN + ALLEN CR
A LOW-STRESS-DROP, LOW-MAGNITUDE EARTHQUAKE WITH SURFACE FAULTING. THE IMPERIAL, CALIFORNIA, EARTHQUAKE OF MARCH 4, 1966
14 PAGES, FIGURES, BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA 57(3), PAGES 501-514, (JUNE 1967)

RIGHT-LATERAL SURFACE DISPLACEMENT REACHING 1.5 CM OCCURRED OVER A 10-KM SECTION OF THE IMPERIAL FAULT IN ASSOCIATION WITH A MAGNITUDE-3.6 EARTHQUAKE ON MARCH 4, 1966, THE SMALLEST KNOWN EARTHQUAKE YET ASSOCIATED WITH SURFACE DISPLACEMENT. THE DISPLACEMENT IS DOCUMENTED BY FIELD OBSERVATIONS OF EN-ECHOLON CRACKING IN PAVEMENT AND THE OFFSET OF THE WHITE CENTER LINE OF HIGHWAY 80. THE ASSOCIATION OF THE OBSERVED DISPLACEMENT WITH THE MARCH 4 EARTHQUAKE IS SUPPORTED BY THE SHALLOW DEPTH OF THE EARTHQUAKE SOURCE, THE HIGH EXCITATION OF WAVES IN THE TOP LAYER OF SEDIMENTS, THE HIGH EXCITATION OF LOVE WAVES OF PERIOD 8-15 SEC, THE DISTRIBUTION OF AFTERSHOCKS, AND THE AGREEMENT BETWEEN THE SOURCE MOVEMENT AS CALCULATED FROM THE OBSERVED FAULTING AND FROM THE AMPLITUDES OF LOVE WAVES. CALCULATIONS BASED ON FAULTING THEORY INDICATE A FAULT DEPTH OF 1.1 KM, A NET MOMENT OF 2 TIMES 10^{20} TO THE 22ND DYNE-CM, A STRESS DROP OF 1.1 BAR, AND AN ENERGY RELEASE OF 10^{10} TO THE 17TH ERGS. THE REMARKABLE INTERNAL CONSISTENCY OF THE VARIOUS CALCULATIONS PROVIDES STRONG SUPPORT FOR THE FAULTING MECHANISM. IT IS SUGGESTED THAT LOW STRESS DROPS AND RELATIVELY LARGE FAULT LENGTHS MAY BE ASSOCIATED WITH MANY OTHER SMALL EARTHQUAKES AND THAT ALLOWANCE MUST BE MADE FOR A WIDE RANGE IN THE STRESS DROPS AND FAULT LENGTHS FOR ANY GIVEN MAGNITUDE RANGE.

*DISPLACEMENT, GENERAL + *FAULT + EARTHQUAKE RECORDS + EARTHQUAKE, GENERAL + ENERGY LEVEL + TECTONICS

2-17628
MATUMOTO T + WARD PL
MICROEARTHQUAKE STUDY OF MOUNT KATMAI AND VICINITY, ALASKA
LAMONT GEOLOGICAL OBSERVATORY OF COLUMBIA UNIVERSITY, PALISADES, NEW YORK
JOURNAL OF GEOPHYSICAL RESEARCH 72(10), PAGE 2557, (MAY 15, 1967)

A SEISMIC INVESTIGATION WAS MADE DURING THE SUMMER OF 1965 IN KATMAI NATIONAL MONUMENT, ALASKA. DURING 39 DAYS OF NEARLY CONTINUOUS RECORDING WITH A HIGH-GAIN HIGH-FREQUENCY TRIPARTITE ARRAY OF SEISMOMETERS, 1800 EVENTS WERE RECORDED. THE MAJORITY OF EVENTS WERE SHALLOWER THAN 10 KM, ALTHOUGH SOME OCCURRED AT DEPTHS UP TO 150 KM. MOST OF THE EVENTS WERE ASSOCIATED WITH THE VOLCANIC AXIS THAT TRENDS NORTHEAST-SOUTHWEST ALONG THE ALASKA PENINSULA. ALTHOUGH THERE ARE 15 VOLCANIC VENTS IN THE KATMAI AREA, HISTORIC VOLCANIC ACTIVITY, RANGING FROM MINOR STEAMING TO MAJOR EXPLOSIVE ERUPTIONS HAS BEEN LIMITED TO SEVEN PEAKS. SEISMIC ACTIVITY WAS GENERALLY GREATEST NEAR THE MORE RECENTLY ACTIVE VOLCANOS AND WAS QUITE LOW NEAR THE VOLCANOS WITH NO RECORD OF HISTORIC ERUPTIONS. THE NATURE OF THE EARTHQUAKES IMPLY A MIXTURE OF TECTONIC AND VOLCANIC SHOCKS IN A HIGHLY HETEROGENEOUS STRUCTURE WITH LOCALLY CONCENTRATED STRESSES. A COMPARISON OF SEISMOGRAMS RECORDED AT BROOKS, OVERLOOK, AND KATMAI CANYON SHOWS A DISAPPEARANCE OF THE S PHASE ALONG A PATH CROSSING THE VOLCANIC RANGE. A STUDY OF SPECIFIC EVENTS SUGGESTS THIS IS DUE TO A SHADOWING EFFECT BY A MAGMA CHAMBER RATHER THAN TO A SOURCE MECHANISM.

*MICROEARTHQUAKE + EARTHQUAKE RECORDS + EARTHQUAKE, GENERAL + GEOLOGICAL CONSIDERATION, GENERAL + SEISMIC ZONE

2-17629
SYKES LR
MECHANISM OF EARTHQUAKES AND NATURE OF FAULTING ON THE MID-OCEANIC RIDGES
INSTITUTE FOR EARTH SCIENCES, ESSA, LAMONT GEOLOGICAL OBSERVATORY, COLUMBIA UNIVERSITY, PALISADES, NEW YORK
JOURNAL OF GEOPHYSICAL RESEARCH 72(8), PAGE 2131, (APRIL 15, 1967)

THE MECHANISMS OF 17 EARTHQUAKES ON THE MID-OCEANIC RIDGES AND THEIR CONTINENTAL EXTENSIONS WERE INVESTIGATED USING DATA FROM THE WORLD-WIDE STANDARDIZED SEISMOGRAPH NETWORK OF THE U.S. COAST AND GEODETIC SURVEY AND FROM OTHER LONG-PERIOD SEISMOGRAPH INSTRUMENTS. TEN OF THE EARTHQUAKES OCCURRED ON FRACTURE ZONES THAT INTERSECT THE CREST OF THE MID-OCEANIC RIDGE. THE MECHANISM OF EACH OF THE SHOCKS THAT IS LOCATED ON A FRACTURE ZONE IS CHARACTERIZED BY A PREDOMINANCE OF STRIKE-SLIP MOTION ON A STEEPLY DIPPING PLANE. THE SENSE OF STRIKE-SLIP MOTION IN EACH OF THE TEN SOLUTIONS IS IN AGREEMENT WITH THAT PREDICTED FOR TRANSFORM FAULTS. THE SPATIAL DISTRIBUTION OF EARTHQUAKES ALONG FRACTURE ZONES ALSO SEEMS TO RULE OUT THE HYPOTHESIS OF SIMPLE OFFSET. THE MECHANISMS OF FOUR EARTHQUAKES ON EXTENSIONS OF THE MID-OCEANIC RIDGE SYSTEM - ONE NEAR NORTHERN SIBERIA AND THREE IN EAST AFRICA - ARE ALSO CHARACTERIZED BY A PREDOMINANCE OF NORMAL FAULTING. THE INFERRED AXES OF MAXIMUM TENSION FOR THESE SIX EVENTS ARE APPROXIMATELY PERPENDICULAR TO THE STRIKE OF THE MID-OCEANIC RIDGE SYSTEM. THE RESULTS ARE IN AGREEMENT WITH HYPOTHESES OF SPA-FLOOR GROWTH AT THE CREST OF THE MID-OCEANIC RIDGE SYSTEM.

CATEGORY 2
SITING OF NUCLEAR FACILITIES

2-17629 *CONTINUED*
*SOURCE MECHANISM + DISPLACEMENT, GENERAL + EARTHQUAKE, GENERAL + FAULT + TECTONICS

2-17633
SMITH JL + ALBEE AL
PROBLEMS OF NUCLEAR REACTOR SITING IN CALIFORNIA
CONVERSE FOUNDATION ENGINEERS, PASADENA, CALIFORNIA + CALIFORNIA INSTITUTE OF TECHNOLOGY, PASADENA, CALIFORNIA
PRESENTED AT THE ENGINEERING GEOLOGY SYMPOSIUM AT THE 79TH ANNUAL MEETING OF THE GEOLOGICAL SOCIETY OF AMERICA AT SAN FRANCISCO, CALIFORNIA, NOVEMBER 14, 1966

REVIEWS IN A VERY GENERAL SENSE THE EXPERIENCE WITH NUCLEAR REACTORS IN CALIFORNIA AS AN ILLUSTRATION OF THE INADEQUACIES OF THE CURRENT SITUATION WITH REGARD TO SITE CRITERIA. SOME DESIGN GUIDELINES FOR DISCUSSION PURPOSES ON THE EVALUATION OF POTENTIAL FAULT MOVEMENT ARE PRESENTED - (1) MAGNITUDE OF THE FAULT IN TERMS OF LENGTH AND TOTAL DISPLACEMENT, (2) DEGREE OF ACTIVITY OF THE FAULT, AND (3) THE REGIONAL PATTERN OF FAULTING.

*FAULT + DISPLACEMENT, GENERAL + EARTHQUAKE, GENERAL + GEOLOGICAL CONSIDERATION, GENERAL + SITE CRITERIA, EARTHQUAKE

2-17634
NICHOLLS HR
ROCK STRESS SURVEYS
OFFICE OF SEISMOLOGY AND GEOMAGNETISM, COAST AND GEODETIC SURVEY, ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION
4 PAGES, PAGES 131 THRU 134 OF ESSA SYMPOSIUM ON EARTHQUAKE PREDICTION, FEBRUARY 1966, ROCKVILLE, MD.

DISCUSSES REASONS WHY A MEASUREMENT OF THE ROCK STRESSES ALONG ACTIVE FAULTS WOULD BE SO INTERESTING TO SEISMOLOGIST AND EARTHQUAKE ENGINEERS. ALSO DESCRIBES THE OVERCORING METHOD OF ROCK-STRESS MEASUREMENT.

*ROCK MECHANICS + EARTHQUAKE PREDICTION + EARTHQUAKE, GENERAL + SOURCE MECHANISM + TECTONICS

2-17635
CLOUD WK
STRONG-MOTION SEISMOLOGY
OFFICE OF SEISMOLOGY AND GEOMAGNETISM, COAST AND GEODETIC SURVEY, ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION
5 PAGES, 3 FIGURES, 1 TABLE, PAGES 101 THRU 105 OF ESSA SYMPOSIUM ON EARTHQUAKE PREDICTION, FEBRUARY 1966, ROCKVILLE, MD.

BRIEF DESCRIPTION OF U. S. COAST AND GEODETIC SURVEYS STANDARD STRONG-MOTION ACCELEROGRAPH AND SEISMOSCOPE, AND THE INSTALLED NETWORK OF THESE INSTRUMENTS.

*INSTRUMENTATION, EARTHQUAKE + EARTHQUAKE ENGINEERING + EARTHQUAKE PREDICTION + EARTHQUAKE, GENERAL

2-17636
MURPHY LM
WORLDWIDE SEISMIC NETWORK
OFFICE OF SEISMOLOGY AND GEOMAGNETISM, COAST AND GEODETIC SURVEY, ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION
4 PAGES, 2 FIGURES, PAGES 53 THRU 56 OF ESSA SYMPOSIUM ON EARTHQUAKE PREDICTION, FEBRUARY 1966, ROCKVILLE, MD.

DESCRIPTION OF THE U.S. COAST AND GEODETIC SURVEYS WORLDWIDE NETWORK OF STANDARD SEISMOGRAPH STATIONS, THEIR LOCATIONS, USES, APPLICATION, AND ADVANTAGES.

*INSTRUMENTATION, EARTHQUAKE + EARTHQUAKE EPICENTER + EARTHQUAKE PREDICTION + EARTHQUAKE RECORDS + EARTHQUAKE, GENERAL + GEOLOGICAL CONSIDERATION, GEOPHYSICAL

2-17637
OLIVER JE
MICROEARTHQUAKES
LAMONT GEOLOGICAL OBSERVATORY, COLUMBIA UNIVERSITY, PALISADES, N. Y.
4 PAGES, PAGES 16 THRU 19 OF ESSA SYMPOSIUM ON EARTHQUAKE PREDICTION, FEBRUARY 1966, ROCKVILLE, MD.

REVIEWS BRIEFLY THE STATUS OF THE VARIOUS MICROEARTHQUAKE STUDIES, WHAT IS KNOWN ABOUT THE PHENOMENA, AND SOME OF AUTHORS OWN WORK IN THE FIELD.

*MICROEARTHQUAKE + EARTHQUAKE PREDICTION + EARTHQUAKE, GENERAL + TECTONICS

2-17874 ALSO IN CATEGORIES 1 AND 17

CATEGORY 2
SITING OF NUCLEAR FACILITIES

2-17874 *CONTINUED*

BOGART L

JCAE HEARING ON POWER REACTOR REGULATION - LARRY BOGART STATEMENT
3 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(38) PAGES 26-38 (SEPTEMBER 18, 1967)

REFERS TO INDIAN POINT 2 AND VERMONT YANKEE PUBLIC BEARINGS AS AN EXAMPLE THAT ASL BOARDS ARE UNRESPONSIVE TO PEOPLE MAKING LIMITED APPEARANCES, THAT THERE IS TOO LITTLE TIME AVAILABLE (30 DAYS) TO HIRE EXPENSIVE LAWYERS AND EXPERTS. CITES A SUBSTANTIAL VOLUME OF RESPECTABLE LITERATURE (PART 2, AEC AUTHORIZING LEGISLATION, 1968) THAT WE ARE NOT OUT OF THE EXPERIMENTAL WOODS. REFERENCES TRUE (AUGUST 1967) WASTE-DISPOSAL ARTICLE AS MAKING IT LOOK LIKE PROBLEM IS SOLVED, GIVING PUBLIC A FALSE SENSE OF SECURITY. VERMONT YANKEE RESIDENTS (LOCATED ON A RIVER IN A BELT OF MODERATE-INTENSITY EARTHQUAKES IN A VALLEY WHERE FOG IS COMMON AND 30-40° INVERSIONS) ARE ALARMED AND FEEL UNPROTECTED BECAUSE VY HAS SPENT MILLIONS ON SITE WORK BEFORE RECEIVING CONSTRUCTION PERMIT.

*CONGRESSIONAL ACTIVITY + *REGULATION, AEC + CONSTRUCTION PERMIT PROCESS + EARTHQUAKE, GENERAL + INDIAN POINT 2 + LAPSE RATE, STABLE + ON SITE WORK + RADIATION, PUBLIC EDUCATION/ACCEPTANCE + VERMONT YANKEE

2-18210 ALSO IN CATEGORIES 1 AND 5

FARMER FR

REACTOR SAFETY AND SITING - A PROPOSED RISK CRITERION

AUTHORITY HEALTH AND SAFETY BRANCH, UNITED KINGDOM ATOMIC ENERGY AUTHORITY, RISLEY, WARRINGTON, LANCs, ENGLAND

CONF-670-602 +. 15 PAGES, 16 FIGURES, 1 TABLE, 6 REFERENCES, ABSTRACT IN ANS TRANSACTIONS 10(1), PAGE 328. PAPER PRESENTED AT THE 1967 ANNUAL MEETING OF THE AMERICAN NUCLEAR SOCIETY, SAN DIEGO, CALIFORNIA, JUNE 11-15, 1967. PAPER ALSO IN ATOM (NUMBER 128) PAGE 152, (JUNE 1967)

A METHOD OF REACTOR SITING IS DESCRIBED WHICH TAKES INTO ACCOUNT THE PROBABILITY OF OCCURRENCE OF AN EVENT AND THE RISK (IN TERMS OF 1-131 RELEASE) ASSOCIATED WITH THAT EVENT. SOME VALUE OF THE PRODUCT OF THESE TWO PARAMETERS MAY BE SET AS ARBITRARY LIMIT FOR A GIVEN PLANT. METHODS OF EVALUATION OF THESE PROBABILITIES ARE GIVEN. THIS INVOLVES ESTABLISHMENT OF FAILURE-RATE DATA FOR COMPONENTS AND/OR ENGINEERING JUDGMENT FOR LARGER SYSTEMS. TYPICAL EXAMPLES ARE USED.

ACCIDENT ANALYSIS + ACCIDENT MODEL + ACCIDENT, PROBABILITY OF + SITING, GENERAL + SITING, REACTOR

2-18515

NAZAROV AG

THEORETICAL FOUNDATION OF INVESTIGATION OF EARTHQUAKE RESISTANCE OF STRUCTURES ON MODELS

ACADEMY OF SCIENCES OF ARMENIAN SSR

10 PAGES, PROCEEDINGS OF THE 3RD WORLD CONFERENCE ON EARTHQUAKE ENGINEERING VOL. II, PAGES 812-21, NEW ZEALAND, 1965

THE REPORT COMPREHENDS THE RESULTS OF THE THEORY OF ENLARGED SIMILARITY OF SOLID DEFORMABLE BODIES APPLICABLE TO THE MODELLING OF STRUCTURES INVESTIGATED ON SEISMIC INFLUENCES. IT IS PROVED THAT WHEN A MODELLING MATERIAL IS USED, THAT MODELS THE MECHANICAL PROPERTIES OF THE ORIGINAL FAIRLY ACCURATELY, QUITE A RELIABLE MODELLING IS EXPECTED WHEN DEALING WITH PROBLEMS OF ENGINEERING SEISMOLOGY AND THE EARTHQUAKE RESISTANCE OF STRUCTURES, INCLUDING THE STAGE OF CRACK FORMATION AND FAILURE. IT IS ESPECIALLY CONVENIENT TO CARRY OUT THE EXPERIMENTATION WHEN THERE IS EQUALITY OF ACCELERATIONS IN THE ORIGINAL AND IN THE MODEL SINCE IN THIS CASE THERE ARISES NO MORE NEED OF SPECIAL CHARGING OR EXPERIMENTING IN AN ARTIFICIAL

AVAILABILITY - R. E. OWEN, GOVERNMENT PRINTER, WELLINGTON, NEW ZEALAND, \$30.00 SFT

*MODEL, EARTHQUAKE RESISTANCE + EARTHQUAKE ENGINEERING + EARTHQUAKE, GENERAL + INSTRUMENTATION, EARTHQUAKE + VIBRATION ANALYSIS

2-18516

TAJIMI H + OHMURA M + UCHIDA T + AKINO K

OBSERVED VIBRATIONS OF A NUCLEAR REACTOR BUILDING DURING SOME WEAK EARTHQUAKES

NIHON UNIVERSITY + JAPAN ATOMIC POWER COMPANY, LTD. + JAPAN ATOMIC ENERGY RESEARCH INST.

12 PAGES, PROCEEDINGS OF THE 3RD WORLD CONFERENCE ON EARTHQUAKE ENGINEERING VOL. II, PAGES 619-30, NEW ZEALAND, 1965

A SEISMIC OBSERVATION SYSTEM OF THE CONTAINER BUILDING OF THE JAPAN POWER DEMONSTRATION REACTOR HAS RECENTLY BEEN PUT IN OPERATION. THIS PAPER PRESENTS SOME OF THE MEASUREMENT DATA AND THE RESULTS OF ANALYSES. AS A RESULT, AN OUTLINE OF VIBRATIONAL PROPERTIES OF THIS BUILDING IS DERIVED.

AVAILABILITY - R. E. OWEN, GOVERNMENT PRINTER, WELLINGTON, NEW ZEALAND

*EARTHQUAKE ENGINEERING + EARTHQUAKE RECORDS + EARTHQUAKE, GENERAL + RESPONSE SPECTRUM + VIBRATION ANALYSIS

2-18517

OKAMOTO S + HAKUNO M + KATO K + KAWAKAMI F

ON THE DYNAMICAL BEHAVIOR OF AN EARTH DAM DURING EARTHQUAKE

INSTITUTE OF INDUSTRIAL SCIENCE + TOHOKU UNIVERSITY

CATEGORY 2
SITING OF NUCLEAR FACILITIES

2-18517 *CONTINUED*
5 PAGES, PROCEEDINGS OF THE 3RD WORLD CONFERENCE ON EARTHQUAKE ENGINEERING VOL. II, PAGES 443-7, NEW ZEALAND, 1965

AUTHORS DISTRIBUTED EIGHT SEISMOMETERS ON AN EXISTING EARTHDAM, 37 M. IN HEIGHT, AND OBSERVED THE DYNAMIC BEHAVIOR OF THE DAM DURING EARTHQUAKES. IT IS SEEN THAT TWO KINDS OF THE NATURAL VIBRATION ARE EXCITED IN THE SEISMIC RESPONSE OF THE DAM. SOME OF THE DYNAMICAL PROPERTIES, FREQUENCIES, DAMPING COEFFICIENT, ETC., OF THESE NATURAL VIBRATIONS ARE DISCLOSED BY A FOURIER ANALYSIS OF THE EARTHQUAKE RECORDS.

AVAILABILITY - R. E. OWEN, GOVERNMENT PRINTER, WELLINGTON, NEW ZEALAND

*SOIL MECHANICS + EARTH MATERIAL, DYNAMIC PROPERTY + EARTHQUAKE ENGINEERING + EARTHQUAKE, GENERAL + VIBRATION ANALYSIS

2-18540
BRADY AG
STUDIES OF RESPONSE TO EARTHQUAKE GROUND MOTION
CALIFORNIA INSTITUTE OF TECHNOLOGY, EARTHQUAKE ENGINEERING RESEARCH LAB.
156 PAGES, 45 FIGURES, 5 TABLES, 26 REFERENCES, 1966

A STUDY WAS MADE OF THE ACCURACY OF ELECTRONIC DIGITAL COMPUTER CALCULATIONS OF GROUND DISPLACEMENT AND RESPONSE SPECTRA FROM STRONG-MOTION EARTHQUAKE ACCELEROGRAMS. THIS INVOLVED AN INVESTIGATION OF METHODS OF THE PREPARATORY REDUCTION OF ACCELEROGRAMS INTO A FORM USEFUL FOR THE DIGITAL COMPUTATIONS AND OF THE ACCURACY OF SUBSEQUENT DIGITAL CALCULATIONS. VARIOUS CHECKS WERE MADE FOR BOTH THE GROUND DISPLACEMENT AND RESPONSE-SPECTRA RESULTS, AND IT WAS CONCLUDED THAT THE MAIN ERRORS WERE THOSE INVOLVED IN DIGITIZING THE ORIGINAL RECORD. DIFFERENCES RESULTING FROM VARIOUS INVESTIGATORS DIGITIZING THE SAME EXPERIMENTAL RECORD MAY BECOME AS LARGE AS 100% OF THE MAXIMUM COMPUTED GROUND DISPLACEMENTS. THE SPREAD OF THE RESULTS OF GROUND DISPLACEMENT CALCULATIONS IS GREATER THAN THAT OF THE RESPONSE SPECTRA CALCULATIONS. STANDARDIZED METHODS OF ADJUSTMENT AND CALCULATION ARE RECOMMENDED, TO MINIMIZE SUCH ERRORS.

AVAILABILITY - CALIFORNIA INSTITUTE OF TECHNOLOGY, EARTHQUAKE ENGINEERING RESEARCH LABORATORY

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

2-18731 ALSO IN CATEGORIES 16 AND 18
THREE MILE ISLAND METROLOGY, GEOLOGY AND FOUNDATION CONSIDERATIONS
METROPOLITAN EDISON COMPANY
200 PAGES, TABLES, FIGURES, METROPOLITAN EDISON COMPANY THREE MILE ISLAND NUCLEAR STATION UNIT 1, PRELIMINARY SAFETY ANALYSIS REPORT, VOLUME III, SEPTEMBER 1967, DOCKET 50-289

BULK OF MATERIAL CONSISTS OF SOIL-CLASSIFICATION SHEETS OBTAINED BY GILBERT ASSOCIATES TEST BORINGS ON THE ISLAND. SEISMIC SURVEY WAS BY WESTON GEOPHYSICAL. NO EVIDENCE OF FAULTING WAS FOUND, ALTHOUGH A HYPOTHETICAL FAULT WAS PROJECTED THROUGH THE ISLAND IN 1933, BASED ON A 1929 LARGE-SCALE SURFACE MAPPING. METEOROLOGY CONSISTS OF A 1959-63 SUMMARY OF ATMOSPHERIC STABILITY AND WIND SPEED FOR OLMSTEAD AFB AND HARRISBURG-YORK AIRPORT. INCLUDED ARE FIELD REPORTS ON GEOLOGY, GROUND-WATER HYDROLOGY, SEISMOLOGY.

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

*FAULT + *FOUNDATION ENGINEERING + *HYDROLOGICAL CONSIDERATION, GENERAL + *WIND STATISTICS + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY + THREE MILE ISLAND (PWR)

2-18755
HUDSON DE + KEIGHTLEY WD + NIELSEN NN
A NEW METHOD FOR THE MEASUREMENT OF THE NATURAL PERIODS OF BUILDINGS
9 PAGES, 8 FIGURES, REFERENCES, BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA 54(1) PAGES 233-41 (FEBRUARY 1964)

THE INERTIA FORCE OBTAINED BY A MAN MOVING HIS BODY BACK AND FORTH IN SYNCHRONISM WITH THE NATURAL PERIOD OF VIBRATION OF A LARGE STRUCTURE IS SUFFICIENT TO BUILD UP A MEASURABLE AMPLITUDE OF MOTION. BY RECORDING SUCH STRUCTURAL VIBRATIONS VERSUS TIME, THE NATURAL PERIOD AND DAMPING OF SEVERAL OF THE LOWER MODES OF VIBRATION CAN BE DETERMINED. THE AMPLITUDES OF MOTION SET UP IN THIS ARE FOR MANY STRUCTURES SIGNIFICANTLY LARGER THAN CAN BE OBTAINED FROM WIND EXCITATION, WHICH HAS BEEN USED IN THE PAST FOR THE MEASUREMENT OF THE PERIOD OF THE FUNDAMENTAL MODE.

*EARTHQUAKE ENGINEERING + DAMPING + EARTH TREMOR, INDUCED + EARTHQUAKE, GENERAL + VIBRATION ANALYSIS

2-18760
LOCAL GEOMAGNETIC EVENTS ASSOCIATED WITH DISPLACEMENTS ON THE SAN ANDREAS FAULT
3 PAGES, 1 FIGURE, SCIENCE VOL. 158, PAGES 116-18 (JULY 1967)

THE PIEZOMAGNETIC PROPERTIES OF ROCK SUGGEST THAT A CHANGE IN SUBSURFACE STRESS WILL MANIFEST ITSELF AS A CHANGE IN THE MAGNETIC SUSCEPTIBILITY AND REMANENT MAGNETIZATION AND HENCE THE LOCAL GEOMAGNETIC FIELD. A DIFFERENTIAL ARRAY OF MAGNETOMETERS HAS BEEN OPERATING SINCE LATE

CATEGORY 2
SITING OF NUCLEAR FACILITIES

2-18760 *CONTINUED*

1965 ON THE SAN ANDREAS FAULT IN THE SEARCH FOR PIEZOMAGNETIC SIGNALS UNDER CONDITIONS INVOLVING ACTIVE FAULT STRESS. LOCAL CHANGES IN THE GEOMAGNETIC FIELD HAVE BEEN OBSERVED NEAR HOLLISTER, CALIF. SOME TENS OF HOURS PRECEDING THE ONSET OF ABRUPT CREEP DISPLACEMENT ON THE SAN ANDREAS FAULT.

*GEOLOGICAL CONSIDERATION, GEOPHYSICAL + EARTHQUAKE PREDICTION + EARTHQUAKE, GENERAL + INSTRUMENTATION, EARTHQUAKE + TECTONICS

2-18796

BERKMAN SC + SYMONS JM

THE TSUNAMI OF MAY 22, 1960 AS RECORDED AT TIDE STATIONS

U. S. DEPARTMENT OF COMMERCE, COAST AND GEODETIC SURVEY, WASHINGTON, D. C.

79 PAGES, FIGURES, TABLES, REFERENCES, COAST AND GEODETIC SURVEY, FEB. 1964

DESCRIBES THE ACTION AND CERTAIN CHARACTERISTICS OF THE PACIFIC TSUNAMI RESULTING FROM THE 1960 CHILEAN EARTHQUAKE. TIDE-GAGE RECORDS FROM MANY STATIONS ARE INCLUDED.

AVAILABILITY - U. S. DEPARTMENT OF COMMERCE, COAST AND GEODETIC SURVEY, WASHINGTON, D. C.

*TSUNAMI + EARTHQUAKE ENGINEERING + EARTHQUAKE RECORDS + EARTHQUAKE, GENERAL + SEICHE

2-19960

ALSO IN CATEGORY 12

PRAIRIE ISLAND NUCLEAR GENERATING PLANT FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT. VOLUME III

NORTHERN STATES POWER COMPANY, MINNEAPOLIS, MINNESOTA

300 PAGES, TABLES, FIGURES, SEPTEMBER 20, 1967, DOCKET NO. 50-282/306

CONTAINS APPENDIXES A TO I, INCLUDING, (B) METEOROLOGICAL MODEL, (D) TURBINE RUNAWAY CONSEQUENCES AND LIKELIHOOD, (E) RADIOLYTIC DECOMPOSITION OF SAFETY-INJECTION WATER, (F) SHARED-EQUIPMENT EVALUATION, (G) RADIOACTIVE SOURCES FOR CONTAINMENT LEAKAGE, (H) REPORT OF ENVIRONMENTAL STUDIES, GEOLOGY, HYDROLOGY, SEISMOLOGY, AND STRUCTURAL-DESIGN PROCEDURES.

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

FISSION PRODUCT RELEASE, GENERAL + METEOROLOGY + PRAIRIE ISLAND 1 AND 2 (PWR) + RADIOLYTIC GAS + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY + SITE CLIMATOLOGY + SITING, GENERAL + SOURCE, CONTINUOUS

CATEGORY 3
TRANSPORTATION AND HANDLING OF RADIOACTIVE MATERIALS

3-16653
KLEPPER OH
TEMPERATURE OF N.S. SAVANNAH IRRADIATED FUEL FOLLOWING A POSTULATED LOSS OF COOLANT FROM THE TRANSFER CASK
OAK RIDGE NATIONAL LAB., TENN.
ORNL-TM-1845 +. 19 PAGES, 4 FIGURES, 16 REFERENCES, JUNE 1967

THE OBJECTIVE WAS TO ESTIMATE THE TEMPERATURE OF SPENT FUEL FROM THE N.S. SAVANNAH AFTER A POSTULATED LOSS OF COOLANT FROM THE SPENT FUEL TRANSFER CASK, WHICH CARRIES ON FUEL ASSEMBLY. HAND AND DIGITAL COMPUTER CALCULATIONS WERE USED TO DETERMINE THE CASK-TEMPERATURE DISTRIBUTION AS A FUNCTION OF TIME AFTER REACTOR SHUTDOWN. RESULTS INDICATED THAT, AFTER 100 DAYS OF COOLING, THE PEAK CLADDING TEMPERATURE OF THE CENTRAL FUEL ELEMENT CAN VARY FROM 720 F TO 880 F, WITH THE VARIATION BEING DUE PRIMARILY TO CHOSEN VALUES FOR THE EMISSIVITIES OF THE FUEL CLADDING AND GUIDE TUBE. THE EMISSIVITIES CHOSEN VARIED FROM 0.5 TO 0.9 FOR THE CLADDING, AND FROM 0.5 TO 0.7 FOR THE GUIDE TUBE.

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

*ACCIDENT, HYPOTHETICAL + *FUEL ELEMENT + *N S SAVANNAH + *SHIPPING CONTAINER + ACCIDENT, LOSS OF COOLANT + COMPUTER, DIGITAL + THERMAL ANALYSIS + TRANSPORTATION AND HANDLING

3-16927 ALSO IN CATEGORIES 11 AND 13
HAHS CA
THE DESIGN AND OPERATION OF THE TRANSFER CASE AND RELATED EQUIPMENT IN THE TRANSURANIUM PROCESSING PLANT
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.
ORNL-TM-1815 +. 40 PAGES, 20 FIGURES, MAY 1967

A TRANSFER CASE WAS DESIGNED TO HANDLE HIGHLY RADIOACTIVE CARGO WITHIN THE LIMITED-ACCESS AREA OF THE TRANSURANIUM PROCESSING PLANT AT THE OAK RIDGE NATIONAL LABORATORY. THE CASE AND ITS RELATED EQUIPMENT WERE DEVELOPED TO MAKE ALPHA-CONFINED TRANSFERS OF EQUIPMENT AND MATERIAL AT NINE CELL CUBICLES IN THE CELL BANK, THE DECONTAMINATION GLOVE BOX, AND THE SOLID WASTE DISPOSAL STATION. PERHAPS THE MOST UNUSUAL FEATURE OF THIS TRANSFER SYSTEM IS THE INTERCHANGEABILITY OF THE LARGE DOOR IN THE BOTTOM OF THE TRANSFER CASE WITH THE MATING DOORS AT THE 11 TRANSFER STATIONS WHILE USING THE SAME METHOD OF SEALING FOR ALL DOORS. THE DESIGN PROBLEMS ASSOCIATED WITH THE TRANSFER CASE AND ITS RELATED EQUIPMENT, THE FINAL DESIGN, AND THE METHODS OF OPERATION DEVISED FOR THIS TRANSFER SYSTEM ARE DESCRIBED.

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

ALPHA EMITTER + CONTAINMENT DESIGN + CONTAMINATION + EQUIPMENT DESIGN + FUEL HANDLING MACHINE + TRANSURANIUM PROGRAM

3-16928 ALSO IN CATEGORY 19
SHAPPART LE + BURNS RS
INDEXED BIBLIOGRAPHY ON TRANSPORTATION AND HANDLING OF RADIOACTIVE MATERIALS
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.
ORNL-NSIC-33 +. 147 PAGES, JUNE 1967

THIS REPORT CONTAINS ABSTRACTS OF ABOUT 700 DOCUMENTS AND ARTICLES DEALING WITH SHIPPING CONTAINERS, SHIPPING REGULATIONS, AND CRITICALITY SAFETY AS IT RELATES TO SHIPPING, TRANSPORTATION ACCIDENTS, AND OTHER ASPECTS OF SAFETY IN TRANSPORTATION. THE REPORT IS CROSS-INDEXED BY AUTHOR, KEY WORD, AND REPORT NUMBER.

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

BIBLIOGRAPHY + TRANSPORTATION AND HANDLING

3-17373 ALSO IN CATEGORY 17
PENNSYLVANIA STATE UNIVERSITY RECEIVES TRITIUM CONTAMINATED PACKAGE
PENNSYLVANIA STATE UNIVERSITY
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(34), PAGE 33, (AUGUST 21, 1967)

(TWX, JULY 11) LOUISIANA STATE UNIVERSITY SHIPPED A PACKAGE CONTAINING 1 CURIE OF TRITIUM AS 1 ML OF WATER. RECEIVED BY PENNSYLVANIA STATE UNIVERSITY ON JULY 10, 1967. THE PACKING MATERIAL WAS GROSSLY CONTAMINATED, AND THE LAST TUBE WITH STOPPER APPEARED TO BE EMPTY. FURTHER INVESTIGATION UNDERWAY.

*RADIOISOTOPE + *TRANSPORTATION AND HANDLING + INCIDENT, ACTUAL, GENERAL + SHIPPING CONTAINER + TRITIUM

3-17869 ALSO IN CATEGORY 17
BARNETT EJ + CLARK L + GOSNELL JW + GWINN DA + KARAIA E + THOMPSON TJ + BROWN SH
SPENT-FUEL LOADING PROCEDURE AT MITR

CATEGORY 3
TRANSPORTATION AND HANDLING OF RADIOACTIVE MATERIALS

3-17869 *CONTINUED*

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

CONF-670-713 +. 21 PAGES, 5 FIGURES, 3 TABLES, ABSTRACT IN ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 18, (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

ELEMENTS COULD NOT BE LOADED DIRECTLY, AS STANDARD CASKS ARE TOO BIG FOR THE ACCESS HOLE TO THE STORAGE POOL. A WATER-FILLED TANK WAS INSTALLED FOR THE SHIPPING CASK TO SET IN, AND THE INTERNAL-TRANSFER CASK TRANSFERRED ELEMENTS TO IT. A CONE ENSURED THAT ANY DROPPED ELEMENT WOULD REMAIN ACCESSIBLE ABOVE THE CASK. BORAL PRESENCE IN THE 28-ELEMENT CASK WAS PROVED EASIER, USING BF3 DETECTORS AND A POLYETHYLENE INSERT BETWEEN SOURCE AND DETECTOR SO THAT BORAL DIVIDERS ABSORBED THERMAL NEUTRONS. USUAL SIMULATION TEST WITH WATER IS A FACTOR OF 10 LESS SENSITIVE BECAUSE OF FAST-NEUTRON MODERATION AT THE DETECTOR. REPORT DETAILS PREPARATIONS AND EXPERIENCE DURING END-BOX CUTTING AND INTERNAL TRANSFER. 1/M MEASUREMENTS MADE.

*FUEL HANDLING + *SHIPPING CONTAINER + CRITICALITY SAFETY + MEASUREMENT, SUBCRITICALITY + MITR (MASS. INST. OF TECH. REACTOR) + OPERATING EXPERIENCE + REACTOR, HEAVY WATER + REACTOR, RESEARCH

3-17954

ALSO IN CATEGORY 13

WILFERT GL

SPENT REACTOR FUEL. REPROCESSING REQUIREMENT, ISOTOPE CONTENT, AND TRANSPORTATION BATTELLE-NORTHWEST, RICHLAND, WASHINGTON. PACIFIC NORTHWEST LAB.

BNWL-389 +. 63 PAGES, 8 FIGURES, 14 TABLES, REFERENCES, FEBRUARY 1967

THIS REPORT ESTIMATES THE ANNUAL RATE OF SPENT FUEL THROUGHPUT FOR EACH OF FOUR SECTORS OF THE UNITED STATES AND IN ADDITION CALCULATES THE ASSOCIATED ISOTOPE PRODUCTION FOR THE YEARS 1959 THROUGH 1990. ALSO PROJECTED IS THE ANNUAL SPENT-FUEL THROUGHPUT RATE FOR THE REST OF THE FREE WORLD DURING 1971, 1976, AND 1991. METHODS OF TRANSPORTING THE SPENT FUEL AND THE COSTS OF SHIPPING ARE ANALYZED. FINALLY, THE IMPACT OF SECTOR THROUGHPUT AND TRANSPORTATION TO HANFORD IS REVIEWED IN CONNECTION WITH PRESENT COMMERCIAL REPROCESSING CAPABILITIES.

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

*ECONOMICS + *RADIOCHEMICAL PROCESSING + FUEL HANDLING + HANFORD SITE + TRANSPORTATION AND HANDLING

3-17963

ALSO IN CATEGORY 1

BUUS M

DEVELOPMENT OF OCEAN TRANSPORT OF CONTAINERS IN FAST CARGO SHIPS, LEADING TO BETTER PROSPECTS FOR THE ADOPTION OF NUCLEAR PROPULSION

EUROPEAN ATOMIC ENERGY COMMUNITY

EUR-3285.F +. 52 PAGES, MARCH 1967, IN FRENCH

CONTAINER SHIPS MADE THEIR APPEARANCE ON THE NORTH ATLANTIC ROUTES 1966 AND THE AMOUNT OF CONTAINERIZED CARGO SHIPPED THROUGH THE MAJOR PORTS OF THE WORLD IS GROWING AT AN INCREASING RATE. THE ENORMOUS REDUCTION IN THE ANNUAL NUMBER OF DAYS SPENT IN PORT ALLOWS THE CONTAINER SHIP TO BE OPERATED AT CONSIDERABLY HIGHER ECONOMIC SPEEDS THAN HAVE PREVIOUSLY BEEN PROFITABLE FOR THE BREAKBULK CARGO SHIP. TO ATTAIN THESE SPEEDS UNUSUALLY POWERFUL PROPULSION PLANTS MUST BE INSTALLED. THE NUCLEAR MARINE INSTALLATION IS ECONOMICALLY SUPERIOR TO A FOSSIL-FUELED ONE AT HIGH POWER LEVELS AND IN COMBINATION WITH A HIGH UTILIZATION FACTOR. FAST CONTAINER SHIPS ARE THEREFORE LIKELY TO BE THE FIRST VESSELS FOR WHICH THE MARINE REACTOR WILL BE ADOPTED ON A PURELY COMMERCIAL BASIS.

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

*ECONOMIC STUDY + *REACTOR, MARITIME + OCEAN AND SEA + TRANSPORTATION AND HANDLING

3-17964

PROCEEDINGS OF AEC-CONTRACTOR NUCLEAR MATERIALS MANAGEMENT MEETING AT LAWRENCE RADIATION LABORATORY, BERKELEY, CALIFORNIA, OCTOBER 3-5, 1966

SAN FRANCISCO OPERATIONS OFFICE (AEC), CALIFORNIA. CALIFORNIA UNIVERSITY, LIVERMORE. LAWRENCE RADIATION LAB.

CONF-661711 +. 216 PAGES, 10 FIGURES, 7 TABLES, JULY 1967

REPORTS THE PROCEEDINGS OF THE AEC-CONTRACTOR NUCLEAR MATERIALS MANAGEMENT MEETING HELD IN BERKELEY, CALIFORNIA, OCTOBER 1966. ITEMS COVERED INCLUDED THE USE OF NUCLEAR MATERIALS, DEVELOPMENTS IN REGULATIONS FOR TRANSPORTATION, ACCOUNTING OF SS MATERIAL, SHIPPER-RECEIVER DIFFERENCES INVOLVING 5' U-235, PLUTONIUM FABRICATION OPERATIONS, ECONOMY AND SAFETY IN UFG PACKAGING, AND OTHERS.

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

ANALYTICAL TECHNIQUE, CALIBRATION + FUEL PUPNUP + PLUTONIUM + REGULATION, GENERAL + URANIUM HEXAFLUORIDE + WASTE HANDLING

CATEGORY 3
TRANSPORTATION AND HANDLING OF RADIOACTIVE MATERIALS

3-17965
LAWSON D
DRY STORAGE OF IRRADIATED FUEL
ENGLISH ELECTRIC COMPANY, LTD., ENGLAND
2 PAGES, 2 FIGURES, NUCLEAR ENGINEERING 12(135), PAGE 604 AND 605, (AUGUST 1967)

THE TRADITIONAL WAY OF STORING IRRADIATED FUEL ELEMENTS FOR THE REQUIRED 100 DAYS AFTER REMOVAL FROM A POWER REACTOR IS TO PLACE THEM IN A LARGE POOL OF WATER. THE DRY-STORAGE METHOD IS DISCUSSED HERE, AND THE INSTALLATION UNDER CONSTRUCTION AT WYLFA IS DESCRIBED.

*FUEL HANDLING + *STORAGE CONTAINER + CARBON DIOXIDE + HEAT TRANSFER, NATURAL CONVECTION + REACTOR, GAS COOLED + UNITED KINGDOM

3-18218 ALSO IN CATEGORY 15
PAAS HJ
MAINTAINING PERSPECTIVE THROUGHOUT THE INVESTIGATION OF A LEAKING RADIOACTIVE GASEOUS TRANSCONTINENTAL SHIPMENT
USAEC, IDAHO OPERATIONS OFFICE, IDAHO FALLS, IDAHO
5 PAGES, 4 FIGURES, 1 TABLE, HEALTH PHYSICS 13(6) PAGES 543-547 (JUNE 1967)

DESCRIBES THE INVESTIGATION AND EVALUATION OF A RADIATION INCIDENT INVOLVING LEAKAGE FROM A TRANSCONTINENTAL SHIPMENT OF RADIOACTIVE METHYL IODIDE. ALSO SETS FORTH THE CONDITIONS AND ACTIONS REQUIRED TO MINIMIZE PUBLIC IMPACT ACROSS A 2400-MILE ROUTE INVOLVING EXPOSURES TO TRUCKERS, AIRLINE CREWS, PASSENGERS, AIR TERMINAL EMPLOYEES, AND LABORATORY EMPLOYEES AT TWO LOCATIONS. DEPOSITION OF THE ESCAPED RADIOIODINE WAS IDENTIFIED IN THE THYROIDS OF FIFTY-NINE PEOPLE INCLUDING FIVE WHO EXCEEDED RECOMMENDED GUIDE VALUES. OF ALL THOSE PERSONS WITH A KNOWN EXPOSURE POTENTIAL 75% WERE EXAMINED FOR THYROID DEPOSITION. COORDINATION OF MONITORING CAPABILITIES IN WIDELY SEPARATED GEOGRAPHIC AREAS, IDENTIFYING PERSONNEL, OBTAINING THYROID MEASUREMENTS, WORKING WITH PRESS AND TELEVISION OUTLETS, AND UTILIZING THE SERVICES OF WIDELY SCATTERED PROFESSIONAL DISCIPLINES WERE AMONG THE MANY OBSTACLES OVERCOME IN MAINTAINING THE RADIOLOGICAL INCIDENT IN PERSPECTIVE.

*ACCIDENT, RADIOISOTOPE + *RADIOLOGICAL ASSISTANCE + *TRANSPORTATION AND HANDLING + AEROSOL, RADIOACTIVE + BIOLOGICAL CONCENTRATION, MAN + DOSE MEASUREMENT, INTERNAL + IODINE + RADIATION SAFETY AND CONTROL + RADIOISOTOPE + SURVEILLANCE PROGRAM

CATEGORY 4
AEROSPACE SAFETY

4-16968 ALSO IN CATEGORY 14
SIKOV MR + MAHLUM DD + MAHONY TD + SULLIVAN MF
PARTICLE SIZE AND ANIMAL AGE AS FACTORS IN EVALUATING HAZARDS FROM INGESTED RADIONUCLIDES
BATTELLE-NORTHWEST, RICHLAND, WASH.
BNWL-SA-1144 + CONF-660917-R +. 20 PAGES, 1966. FROM GASTROINTESTINAL RADIATION INJURY SYMPOSIUM,
RICHLAND, WASH.

RADIONUCLIDES AS POWER SOURCES IN SPACE AND NUCLEAR REACTORS ARE BEING DEVELOPED AS PROPULSION
SYSTEMS FOR SPACE VEHICLES. IF SUCH A DEVICE SHOULD RETURN TO EARTH WITHOUT COMPLETE BURNUP,
THE INGESTION OF INSOLUBLE RADIOACTIVE PARTICLES COULD OCCUR, IN WHICH CASE THE
GASTROINTESTINAL TRACT WOULD BE THE CRITICAL ORGAN FOR HAZARD EVALUATION. LITTLE IS KNOWN
ABOUT THE BEHAVIOR OF AND PATHOLOGY PRODUCED BY INGESTED NONABSORBED RADIOACTIVE PARTICLES IN
THE GI TRACT. THIS REPORT INCLUDES RESULTS FROM SEVERAL STUDIES EMPLOYING SIMULATED REACTOR
FUEL PARTICLES AND OTHER RADIOACTIVE PARTICLES OF VARIOUS SIZES AS WELL AS RESULTS FROM
STUDIES ON THE EFFECT OF AGE ON PASSAGE TIME OF A POORLY ABSORBED SOLUBLE RADIONUCLIDE.

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

*AEROSPACE SAFETY + *INGESTION + *PARTICLE SIZE + RADIONUCLIDE, INDUCED

4-16969 ALSO IN CATEGORY 14
DURRELL MD + WRIGHT JJ + WATTS JW
PRELIMINARY REPORT ON ENERGETIC SPACE RADIATION AND DOSE RATE ANALYSIS
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALA., MARSHALL SPACEFLIGHT CENTER
N-67-14461 + NASA-TM-X-53531 +. 43 PAGES, REFERENCES, OCTOBER 31, 1966

THE PURPOSE OF THIS STUDY IS TO PRESENT A COMPENDIUM OF THE ENVIRONMENTAL DATA ON TRAPPED AND
UNTRAPPED RADIATION AND THE CALCULATED TISSUE DOSE RATES RECEIVED FROM THESE RADIATIONS AND
THEIR SECONDARIES BEHIND VARIOUS SHIELD THICKNESSES. ENERGETIC RADIATION, AS USED HERE,
REFERS TO PARTICLES WITH ENERGIES GREATER THAN ABOUT 500 KEV. THE RESULTS SHOULD BE OF
PRACTICAL VALUE FOR PRELIMINARY ANALYSIS OF THE RADIATION HAZARD TO MAN DURING SPACE FLIGHT.

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

*AEROSPACE SAFETY + *DOSE CALCULATION, INTERNAL + COSMIC RADIATION + DOSE

4-16970
BLAKE VE
AEROSPACE NUCLEAR SAFETY
AEROSPACE NUCLEAR SAFETY DEPT., SANDIA CORPORATION, ALBUQUERQUE, N.M.
DP-1066, VOL I +. 8 PAGES, 6 FIGURES, 3 REFERENCES, MAY 1966, PAGES V-27 THRU V-34 FROM LARGE SCALE
PRODUCTION AND APPLICATIONS OF RADIOISOTOPES, PROCEEDINGS OF THE AMERICAN NUCLEAR SOCIETY NATIONAL
TOPICAL MEETING, MARCH 21-23, 1966, AUGUSTA, GEORGIA

A BRIEF HISTORY OF U.S. SPACE WORK IS PRESENTED, PLUS THE PROBLEM OF SAFETY. PRESENTED IS A
PRELIMINARY BASIS FOR CRITERIA FOR COMPARING ACCEPTABILITIES OF HAZARDS TO THE PUBLIC. THE
AUTHOR CHOOSES THE PROBLEM OF METEORITES AS AN ACCEPTABLE HAZARD FOR COMPARISON. CURVES
REGARDING SIZE, FREQUENCY OF ARRIVAL, AND LETHAL AREA ARE INCLUDED.

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

*AEROSPACE SAFETY + *SAFETY PRINCIPLES AND PHILOSOPHY + SAFETY ANALYSIS + SAFETY EVALUATION

4-16971
AIKENS A
SAFETY OF ISOTOPIC POWER SOURCES FOR TERRESTRIAL APPLICATIONS
U.S. ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.
DP-1066, VOL I +. 8 PAGES, 2 TABLES, PAGES V-35 THRU V-42 FROM LARGE SCALE PRODUCTION AND APPLICATIONS OF
RADIOISOTOPES, PROCEEDINGS OF THE AMERICAN NUCLEAR SOCIETY NATIONAL TOPICAL MEETING, MARCH 21-23, 1966,
AUGUSTA, GEORGIA

DISCUSSES GENERAL SAFETY CONSIDERATIONS CONCERNING DESIGN AND OPERATION OF ISOTOPIC POWER
SOURCES. SOURCE DESIGN AND ENVIRONMENT, IN PARTICULAR, ARE COVERED.

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

*AEROSPACE SAFETY + *ISOTOPIC GENERATOR + *SAFETY EVALUATION +
*SNAP 7 (SYSTEMS FOR NUCLEAR AUXILIARY POWER)

4-17344

CATEGORY 4
AEROSPACE SAFETY

4-17344 *CONTINUED*

JANNI JF

MEASUREMENTS OF SPACECRAFT CABIN RADIATION DISTRIBUTIONS FOR THE FOURTH AND SIXTH GEMINI FLIGHTS
AIR FORCE WEAPONS LAB., KIRTLAND AFB, NEW MEXICO
AFWL-TR-65-149 +. 34 PAGES, 17 FIGURES, 7 TABLES, 16 REFERENCES, MARCH 1967

FIVE PASSIVE DOSIMETRY PACKAGES WERE PLACED ABOARD THE GEMINI-4 AND GEMINI-6 SPACECRAFT AT POINTS OF MAXIMUM, MINIMUM, AND INTERMEDIATE SHIELDING. EACH PACKAGE CONTAINED THE FOLLOWING DOSIMETERS - PHOTOLUMINESCENT GLASS, LITHIUM FLUORIDE AND CALCIUM FLUORIDE THERMOLUMINESCENT DOSIMETERS, DISCHARGE IONIZATION CHAMBERS, NUCLEAR EMULSIONS, ACTIVATION FOILS, AND DISKS OF CELLULOSE NITRATE PLASTIC. THE RELATION OF THE SPACECRAFT SHIELDING TO THE EXPERIMENTAL RESULTS AND THE RESPONSE OF THE DETECTORS TO CHARGED PARTICLES ARE DISCUSSED. THE GREATEST VARIATION IN READINGS BETWEEN THE RESULTS FROM ANY TWO PACKAGES ON THE SAME FLIGHT WAS A FACTOR OF 2. AS ANTICIPATED, THERE WAS A GENERAL TREND OF INCREASING TOTAL DOSAGE WITH MISSION LENGTH, AND DECREASING DOSE WITH INCREASING OVERALL SHIELDING. THE MAJORITY OF THE PARTICLES THAT PENETRATED THE SPACECRAFT CABIN WERE PROTONS.

*AEROSPACE SAFETY + *DOSIMETRY, RADIOPHOTOLUMINESCENCE + *DOSIMETRY, THERMOLUMINESCENCE + *SPACECRAFT + DOSE MEASUREMENT, EXTERNAL

4-17448 ALSO IN CATEGORIES 5 AND 6

WALKER FE

A FORTRAN PROGRAM (ITEMCAL) FOR CALCULATION OF HUGONOT TEMPERATURES, ISOTHERMS, AND RELEASE ADIABATS FROM HYDRODYNAMIC DATA
LAWRENCE RADIATION LAB., LIVERMORE
UCRL-50,210 +. 30 PAGES, MARCH 27, 1967

A FORTRAN PROGRAM (ITEMCAL) WAS WRITTEN TO CALCULATE HUGONOT TEMPERATURES FROM EXPERIMENTAL HYDRODYNAMIC DATA. THE PROGRAM ALSO DERIVES A LEAST-SQUARES FIT TO THE DATA, CALCULATES ISOTHERMS AND RELEASE ADIABATS, AND GIVES GRAPHS OF DATA AND SOLUTIONS.

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

HYDRODYNAMIC ANALYSIS + SHOCK WAVE + THERMAL PROPERTY + THERMODYNAMICS

4-17504

CLEMEDSON CJ

BIOECOLOGICAL AND BIOMEDICAL MONITORING FOR ADVANCED MAN IN SPACE PROJECTS
THE MEDICAL BOARD OF THE ARMED FORCES, STOCKHOLM, SWEDEN
19 PAGES, 109 REFERENCES, PAGES 61 THRU 89 OF PROCEEDINGS OF SECOND INTERNATIONAL SYMPOSIUM OF BASIC ENVIRONMENTAL PROBLEMS ON MAN IN SPACE, PARIS, 1965

THIS PAPER REVIEWS SOME OF THE MOST PERTINENT PROBLEMS REGARDING THE HEALTH SURVEILLANCE OF A SPACE CREW DURING MISSION, AND IT DEALS ESPECIALLY WITH THE BACKGROUND TO, AND PHILOSOPHY BEHIND, THE RECOMMENDATIONS AS TO WHICH PARAMETERS SHOULD BE MEASURED RATHER THAN WITH WHICH METHODS AND TYPES OF INSTRUMENTS THAT SHOULD BE USED.

AVAILABILITY - SPRINGER-VERLAG, WIEN, NEW YORK

*AEROSPACE SAFETY + *BIOMEDICAL + *SAFETY PRINCIPLES AND PHILOSOPHY

4-17505

GRIGORYEV YG + KOVALYEV EF + LEBEDINSKY AV + NEFEDOV YG + VYSOTSKY VG + RYZHOV NI + MARKELOV BA + SMIRENNY LN + DUDKIN VE + DERBENEVA NN

CRITERIA OF RADIATION SAFETY IN PROLONGED SPACE FLIGHTS

U.S.S.R. ACADEMY OF MEDICAL SCIENCES

13 PAGES, 4 TABLES, 28 REFERENCES, PAGES 185 THRU 197 OF PROCEEDINGS OF SECOND INTERNATIONAL SYMPOSIUM ON BASIC ENVIRONMENTAL PROBLEMS OF MAN IN SPACE, PARIS, 1965

DURING LONG-TERM SPACE FLIGHTS THE DOSES OF IONIZING RADIATION AFFECTING THE HUMAN BODY AND ELEMENTS OF THE BIOCOMPLEX BECOME HAZARDOUS, THEREFORE THE PROBLEM OF PROTECTION AGAINST SPACE RADIATIONS ARISES. THE SOLUTION TO THE PROBLEM OF PROTECTION IN WORK WITH SOURCES OF IONIZING RADIATION IN TERRESTRIAL ENVIRONMENTS IS BASED UPON A GREAT NUMBER OF RADIOBIOLOGICAL AND PHYSICAL INVESTIGATIONS. IT IS UNDERSTOOD THAT ANALOGOUS INVESTIGATIONS ARE ALSO NECESSARY FOR ENSURING RADIATION SAFETY DURING SPACE FLIGHTS. THE MOST IMPORTANT TASKS INVOLVED IN THESE INVESTIGATIONS IS THE ELABORATION OF PRINCIPLES FOR ENSURING RADIATION SAFETY AND THE ESTABLISHMENT OF CRITERIA DEFINING THE SAFETY CONDITIONS OF SPACE FLIGHTS.

AVAILABILITY - SPRINGER-VERLAG, WIEN, NEW YORK

*AEROSPACE SAFETY + *BIOMEDICAL + RADIATION PROTECTION, ORGANIZATION

4-17506

ISAKOV PK + POPOV VA + SILVESTROV MM

SOME PROBLEMS OF MANS RELIABILITY IN SPACECRAFT CONTROL AND GUIDANCE SYSTEMS

U.S.S.R. ACADEMY OF MEDICAL SCIENCES

CATEGORY 4
AEROSPACE SAFETY

4-17506 *CONTINUED*

6 PAGES, 4 REFERENCES, PAGES 368 THRU 373 OF PROCEEDINGS OF SECOND INTERNATIONAL SYMPOSIUM ON BASIC ENVIRONMENTAL PROBLEMS OF MAN IN SPACE, PARIS, 1965

THE PARTICIPATION OF MAN IN THE CONTROL SYSTEM OF A SPACECRAFT INCREASES THE RELIABILITY OF THE SYSTEM AND IN MANY CASES REDUCES THE WEIGHT AND DIMENSIONS OF THE INSTRUMENTATION. IN ADDITION, TO ENSURE THE RELIABILITY OF AN UNMANNED SPACE VEHICLE IT IS NECESSARY TO USE THE PRINCIPLE OF REDUNDANCY, I.E., TO INCLUDE A RESERVE OF VARIOUS SYSTEMS AND DEVICES. THE COMBINATION OF AN OPERATOR WITH ONLY SINGLE OR DOUBLE RESERVES ACTUALLY ENSURES A RELIABLE OPERATION OF THE SPACECRAFT SYSTEMS FOR A LONG TIME. IF THE ASTRONAUT HAS AN OPPORTUNITY TO REPAIR COMPONENTS OF THE CONTROL SYSTEM THAT HAVE FAILED, THE RELIABILITY WILL BE VERY HIGH AND IN PRACTICE WILL BE LIMITED BY THE RELIABILITY OF THE OPERATOR. THE METHOD OF INCREASING THE RELIABILITY OF THE CONTROL SYSTEMS OF A SPACECRAFT BY AN OPTIMAL COMBINATION OF MAN'S FUNCTIONAL ABILITIES WITH INSTRUMENT PERFORMANCE YIELDS A CONSIDERABLY HIGHER EFFICIENCY, COMPARED WITH THE PURELY TECHNICAL APPROACH. WE CAN DRAW THE CONCLUSION THAT AN EFFECTIVE MEANS FOR EVALUATION OF THE ASTRONAUTS RELIABILITY IN THE CONTROL SYSTEMS OF A SPACECRAFT LIES IN A WIDE USE OF TECHNIQUES FOR THE SIMULATION OF CONTROL DYNAMICS AND THE OPERATORS STATE UNDER NORMAL AND EXTREME SPACE FLIGHT CONDITIONS.

AVAILABILITY - SPRINGER-VERLAG, WIEN, NEW YORK

*AEROSPACE SAFETY + *RELIABILITY ANALYSIS + REDUNDANCE

4-17535 ALSO IN CATEGORIES 5 AND 6

THURSTON RS

EFFECT OF SELF-INDUCED THERMAL-ACOUSTIC OSCILLATIONS ON HEAT TRANSFER TO HYDROGEN

LOS ALAMOS SCIENTIFIC LAB., N. MEX.

LA-3616 +. 36 PAGES, 27 FIGURES, 5 TABLES, 27 REFERENCES, DECEMBER 1966

THE EFFECT OF SELF-INDUCED THERMAL-ACOUSTIC OSCILLATIONS ON HEAT TRANSFER TO HYDROGEN IN A 0.25-IN.-I.D. BY 10-FT-LONG ELECTRICALLY HEATED STAINLESS STEEL TUBE WAS STUDIED. PRESSURES WERE VARIED FROM A SUBCRITICAL 112 PSIA TO A SUPERCRITICAL 265 PSIA. TWO ACOUSTIC MODES WERE OBSERVED. ONE, THE FIRST HARMONIC OF STANDING WAVES IN A PIPE OPEN AT BOTH ENDS, OCCURRED AT FREQUENCIES BETWEEN 70 AND 150 CPS. THE SECOND WAS HELMHOLTZ RESONANCE, THE ACOUSTIC ANALOGY TO A SPRING-MASS SYSTEM. HELMHOLTZ OSCILLATIONS WERE OBSERVED BETWEEN 4 AND 34 CPS. THE MAXIMUM HELMHOLTZ-MODE PRESSURE AMPLITUDE WAS 34 PSI, AND THE MAXIMUM FLUID TEMPERATURE AMPLITUDE WAS 100 R. HEAT TRANSFER TO HYDROGEN WAS NOT AFFECTED BY AXIALLY ORIENTED HELMHOLTZ-MODE OSCILLATIONS WITH LONG WAVE LENGTHS RELATIVE TO THE LENGTH OF THE TEST SECTION. HEAT TRANSFER TO TWO-PHASE AND SUPERCRITICAL HYDROGEN WAS INFLUENCED BY THE GENERATION OF THERMAL-ACOUSTIC OSCILLATIONS. HEAT TRANSFER IMPROVED AS THE INCEPTION OF OSCILLATIONS WAS APPROACHED, BUT ONCE OSCILLATIONS OCCURRED, INCREASING THE INTENSITY DID NOT IMPROVE THE TRANSFER.

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

CRYOGENICS + FLOW STABILITY + FLOW, HIGH SPEED + HEAT TRANSFER + HEAT TRANSFER + HEAT TRANSFER AUGMENTATION + HYDROGEN + OSCILLATION

4-17577 ALSO IN CATEGORIES 5 AND 6

FENN DB + ACKER LW + CUE HH

STEADY-STATE PERFORMANCE OF A SEVEN-TUBE NAK-COOLED POTASSIUM CONDENSER

LEWIS RESEARCH CENTER, CLEVELAND, OHIO. NASA

NASA-TN-D-4020 +. 39 PAGES, 18 FIGURES, 2 TABLES, 11 REFERENCE, JUNE 1967

POTASSIUM VAPOR WAS CONDENSED INSIDE THE TUBES OF A HORIZONTAL, MULTITUBE HEAT EXCHANGER. THE TUBES WERE COOLED WITH THE LIQUID SODIUM-POTASSIUM (NAK) FLOWING IN A COUNTER-CURRENT DIRECTION IN THE SPACE SURROUNDING THE TUBES. STEADY-STATE DATA ARE PRESENTED TO SHOW THE EFFECTS OF NAK COOLANT INLET TEMPERATURE AND COOLANT FLOW RATE ON THE CONDENSING LENGTH, THE COOLANT TEMPERATURE PROFILES, AND THE OVERALL PRESSURE DROP OF THE CONDENSER OVER A RANGE OF POTASSIUM INLET TEMPERATURES FROM 1200 TO 1500 F. A CORRELATION OF THE OVERALL PRESSURE DROP ON THE POTASSIUM SIDE OF THE CONDENSER WAS OBTAINED BY PLOTTING THE RATIO OF THE MEASURED OVERALL PRESSURE DROP TO THE VELOCITY HEAT IN THE TUBE INLET AS A FUNCTION OF THE CONDENSING-LENGTH-TO-DIAMETER RATIO.

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

CONDENSATION + HEAT TRANSFER, BOILING + HEAT TRANSFER, CONDENSATION + METAL, ALKALI + METAL, LIQUID + REACTOR, LIQUID METAL COOLED

4-17671 ALSO IN CATEGORIES 9 AND 17

WINSON RW

UPSTART - DIGITAL COMPUTER CALL PROGRAM

ATOMICS INTERNATIONAL, CANOGA PARK, CALIF.

NAA-SR-MEMO-11894 +. 222 PAGES, JUNE 10, 1966

THE UPSTART DIGITAL PROGRAM WAS DEVELOPED TO EVALUATE THE TRANSIENT RESPONSE OF THE VARIOUS SNAP REACTOR SYSTEMS UNDER DEVELOPMENT AND STUDY AT ATOMICS INTERNATIONAL. THE CODE WAS DESIGNED TO MAINTAIN THE COMPUTATIONAL SPEED AND EASE OF USE OF A SPECIAL PURPOSE CODE AND YET HAVE THE FLEXIBILITY OF A GENERAL PURPOSE DIGITAL PROGRAM. THE CODE WAS DESIGNED TO

CATEGORY 4
AEROSPACE SAFETY

4-17671 *CONTINUED*

EVALUATE THE TRANSIENT RESPONSE OF SNAP REACTOR SYSTEMS DURING STARTUP AND NORMAL OPERATION, AND TO EVALUATE SYSTEM-SAFETY CRITERIA. IT WAS FURTHER DESIRED TO USE THE CODE TO DESIGN AND EVALUATE VARIOUS REACTOR CONTROL SYSTEMS AND THE PERFORMANCE OF NEW SYSTEM CONCEPTS AND COMPONENTS.

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

COMPUTER PROGRAM + ISOTOPIC GENERATOR + REACTOR CONTROL + REACTOR STARTUP TESTING + REACTOR TRANSIENT + SNAP, GENERAL (SYSTEMS FOR NUCLEAR AUX. POWER)

4-18027 ALSO IN CATEGORY 9

SMITH AK + ZERBEL O

SNAP 10A INSTRUMENTATION AND CONTROL, DEVELOPMENT AND TESTING

ATOMICS INTERNATIONAL, SAN DIEGO, CALIFORNIA

8, PAGES, 6 FIGURES, 1 TABLE, IEEE TRANS. NUCL. SCI. 13(1), PAGE 236 THRU 243, (FEBRUARY 1966)

DESCRIBES THE SNAP 10A INSTRUMENTATION AND CONTROL SUBSYSTEMS. COMPONENT DEVELOPMENT TESTING AND QUALIFICATION TEST PROCEDURES ARE DESCRIBED AND ILLUSTRATED BY REFERENCE TO SPECIFIC CONTROL COMPONENT DEVELOPMENT TESTING. VALIDATION OF COMPONENT AND SUBSYSTEM COMPATIBILITY OBTAINED BY USE OF DEVELOPMENTAL SYSTEMS IS DISCUSSED. DEVELOPMENTAL AND QUALIFICATION TEST SYSTEMS ARE DESCRIBED WHICH ILLUSTRATE THE GROUND-TESTING ACTIVITY EMPLOYED ON THE SNAP 10A PROGRAM TO ENSURE THAT THE FLIGHT SYSTEMS ARE CAPABLE OF WITHSTANDING ALL EXPECTED ENVIRONMENTAL FACTORS WITH A HIGH DEGREE OF CONFIDENCE IN THE ABILITY OF THE SYSTEMS TO MEET PERFORMANCE REQUIREMENTS.

CONTROL SYSTEM + INSTRUMENTATION, CONTROL + SNAP 10A (SYSTEMS FOR NUCLEAR AUXILIARY POWER)

4-18028 ALSO IN CATEGORY 9

ELMIGER RA

IN-CORE TEMPERATURE CONTROL OF NRX REACTORS

WESTINGHOUSE ASTRONUCLEAR LABORATORY, PITTSBURGH, PA.

2 PAGES, 2 FIGURES, J SPACECRAFT AND ROCKETS 3(2), PAGE 262 AND 263, (FEB. 1966)

SIXTEEN THERMOCOUPLES LOCATED WITHIN SELECTED UNFUELED ELEMENTS IN THE CORE PROVIDE THE SENSING FOR A REACTOR-TEMPERATURE-CONTROL LOOP. SIGNALS ARE SENT TO A LOGIC SYSTEM THAT GENERATES AN AVERAGE AND PROVIDES FOR THE AUTOMATIC REJECTION FROM THE AVERAGE OF ANY SIGNAL THAT DEVIATES BEYOND A PRESET LIMIT FROM THE AVERAGE SIGNAL. THIS SIGNAL IS THEN SENT TO THE TEMPERATURE CONTROLLER AND TO A LIMITER CIRCUIT. THE NRX TEMPERATURE CONTROLLER IS AN INTEGRAL-PLUS-PROPORTIONAL CONTROLLER WITH LIMITS OF TRIM TO THE BASIC FLUX POWER CONTROL LOOP OF 0.5 TO 1.15.

INSTRUMENTATION, CONTROL + INSTRUMENTATION, IN CORE + INSTRUMENTATION, TEMPERATURE + KIWI + NRX (CANADIAN NATURAL U-HEAVY WATER REACTOR) + REACTOR, SPACE + ROVER PROGRAM

4-18185 ALSO IN CATEGORY 7

WULLAERT RA + FACKELMANN JM + CHUBB W

AN EVALUATION OF UC-PUC FOR SODIUM-COOLED FAST REACTORS

BATTTELLE MEMORIAL INSTITUTE, COLUMBUS LABORATORIES, COLUMBUS, OHIO

BMI-1799 +. 26 PAGES, 13 FIGURES, 30 REFERENCES, APRIL 13, 1967

IRRADIATION DATA REPORTED IN THE LITERATURE THROUGH OCTOBER 1966 FOR UC AND UC-PUC WERE ANALYZED WITH RESPECT TO THE EFFECTS OF TEMPERATURE, BURNUP, COMPOSITION, INITIAL DENSITY, AND OTHER FACTORS UPON SWELLING AND GAS RELEASE. THE RELATIONSHIP BETWEEN TEMPERATURE AND EITHER SWELLING OR GAS RELEASE APPEARS TO BE EXPONENTIAL. BELOW 1000 C, THE RELATIONSHIP BETWEEN SWELLING AND BURNUP IS LINEAR. COMPOSITIONS CONTAINING FREE URANIUM METAL SHOW RATES OF SWELLING AND GAS RELEASE WHICH INCREASE IN PROPORTION TO THE AMOUNT OF FREE METAL. IN THE RANGE OF 90 TO 100 PERCENT OF THEORETICAL DENSITY, THE AVAILABLE DATA SHOW LITTLE OR NO EFFECT OF INITIAL POROSITY UPON THE SWELLING OR GAS-RELEASE CHARACTERISTICS OF UC AND UC-PUC. THE DATA, WHICH WERE CLASSIFIED PRIMARILY ON THE BASIS OF MAXIMUM CENTERLINE TEMPERATURES, SHOW NO ADDITIONAL EFFECT OF BURNUP RATE ON SWELLING. COMPATIBILITY DATA OF PARTICULAR INTEREST TO SODIUM-COOLED FAST REACTORS ARE SUMMARIZED. DATA ARE PRESENTED SHOWING THAT THE MECHANICAL EFFECTS OF THE REACTION OF UC WITH STEAM ABOVE APPROXIMATELY 150 C ARE QUITE DIFFERENT FROM THE EFFECTS OF THE REACTION OF UC WITH WATER BELOW THIS TEMPERATURE.

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

*FISSION GAS RELEASE + *FUEL BURNUP + *RADIATION EFFECT + *SODIUM + *URANIUM CARBIDE + CARBIDE + COOLANT CHEMISTRY + CORROSION + PLUTONIUM + PROPERTY, PHYSICAL + RADIATION DAMAGE + REACTOR, FAST + REACTOR, SPACE

4-18194 ALSO IN CATEGORY 5

CLAXTON KT

THE INFLUENCE OF RADIATION ON THE INCEPTION OF BOILING IN LIQUID SODIUM

UNITED ATOMIC ENERGY RESEARCH ESTABLISHMENT, HARWELL, ENGLAND

AERE-R-5308 +. 38 PAGES, 7 FIGURES, 1 TABLE, JANUARY 1967

CATEGORY 4
AEROSPACE SAFETY

4-18194 *CONTINUED*

AN ANALYSIS WAS MADE OF THE INFLUENCE OF NUCLEAR RADIATION ON THE INITIATION OF VAPOUR BUBBLES IN THE BULK OF LIQUID SODIUM. SEVERAL TYPES OF RADIATION WERE CONSIDERED (ELECTRONS, PROTONS, ALPHA PARTICLES, PHOTONS, NEUTRONS, FISSION FRAGMENTS AND ALPHA RECOILS). THE ENERGY LOSS PER UNIT PATH LENGTH IN LIQUID SODIUM WAS CALCULATED FOR THESE DIFFERENT FORMS OF RADIATION AS A FUNCTION OF THEIR ENERGY, USING VARIOUS THEORIES. A COMPARISON OF THESE RESULTS WITH THE ENERGY REQUIREMENT FOR FORMATION OF AN EQUILIBRIUM VAPOUR BUBBLE DERIVED FROM CLASSICAL NUCLEATION THEORY HAS BEEN EFFECTED BY USE OF A CHARACTERISTIC PATH LENGTH RELATED TO THE BUBBLE RADIUS. THE ANALYSIS SUGGESTS THAT THE ONLY LIKELY FORM OF INTERACTIONS CAPABLE OF INITIATING NUCLEATION ARE KNOCKED-ON SODIUM ATOMS PRODUCED BY FAST NEUTRONS. THIS, MOREOVER, SEEMS PROBABLE ONLY AT SATURATION PRESSURES OF 10 ATM. AND ABOVE. AVERAGE BUBBLE WALL VELOCITIES NECESSARY TO ACHIEVE STABILITY WERE FOUND TO BE AN ORDER OF MAGNITUDE GREATER THAN THOSE OCCURRING AFTER THE EQUILIBRIUM CONDITION HAD BEEN REACHED.

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

*CONVECTIVE BOILING + *RADIATION EFFECT + *SODIUM + COOLANT CHEMISTRY + METAL, LIQUID + REACTOR, FAST

4-18196 ALSO IN CATEGORY 8

THURBER WC

AEC-NASA LIQUID METALS INFORMATION MEETING, HELD IN GATLINBURG, TENNESSEE, APRIL 21-23, 1965, SPONSORED BY OAK RIDGE NATIONAL LABORATORY
DIVISION OF TECHNICAL INFORMATION
CONF-650411 +. 399 PAGES, FIGURES, TABLES, APRIL 1965

THE FIFTH AEC-NASA LIQUID METALS CORROSION MEETING WAS HELD AT GATLINBURG, TENNESSEE, ON APRIL 23, 1965. THE SUBJECT MATTER WAS ALMOST EXCLUSIVELY LIMITED TO ALKALI METALS, WITH EMPHASIS CENTERING ON THEIR INTERACTIONS WITH CONTAINER MATERIALS. THE PRESENTATION OF 40 TECHNICAL PAPERS BY SOME 20 ORGANIZATIONS. SOLUBILITY STUDIES AND IMPURITY EFFECTS IN ALKALI METALS. CORROSION BY LIQUID SODIUM, NAK, AND LITHIUM. CORROSION BY BOILING ALKALI METALS.

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

*CORROSION + *LITHIUM + *METAL, LIQUID + *NAK (SODIUM POTASSIUM ALLOY) + *SODIUM + COOLANT CHEMISTRY + COOLANT QUALITY + REACTOR, FAST + REACTOR, SPACE

4-18238 ALSO IN CATEGORY 7

PASTERNAK AD

LIQUID METAL EXTRACTION OF FISSION PRODUCTS FROM URANIUM REACTOR FUELS
LAWRENCE RADIATION LAB., UNIVERSITY OF CALIFORNIA
UCRL-16108 +. 174 PAGES, REFERENCES, JANUARY 1966

THE RATE OF EXTRACTION OF A RARE-EARTH FISSION PRODUCT, LANTHANUM-140, AND ITS PRECURSOR AND BA-140 FROM THE URANIUM (5 WT%) CHROMIUM EUTECTIC BY MOLten MAGNESIUM AT 1000 C WAS MEASURED BY THE FALLING-LIQUID-DROP TECHNIQUE. USE OF THE LOW-MELTING U-CR EUTECTIC (MP 859 C) INSTEAD OF PURE URANIUM (MP 1132 C) PERMITS OPERATION AT TEMPERATURES WELL BELOW THE BOILING POINT OF MAGNESIUM. MAGNESIUM AND THE U-CR ALLOY FORM AN ESSENTIALLY IMMISCIBLE TWO-PHASE LIQUID-LIQUID SYSTEM. FISSION PRODUCTS WERE INTRODUCED IN THE U-CR ALLOY BY LIGHT NEUTRON IRRADIATION. THE RELATIVE ABUNDANCE OF LA-140 WAS DETERMINED BY SCINTILLATION COUNTING OF ITS 1.6-MEV GAMMA PHOTOPEAK. THE RELATIVE ABUNDANCE OF BA-140 WAS DETERMINED BY FOLLOWING THE DECAY OF LA-140 ACTIVITY AFTER EXTRACTION.

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

*BARIUM + *DIFFUSION + *DIFFUSION COEFFICIENT + *FISSION PRODUCT RETENTION + *LANTHANUM + CHEMICAL KINETICS + CHEMICAL REACTION + METAL, LIQUID

4-18240

CLAUDSON TT

STATUS OF PROGRAMS FOR BEHAVIOR OF IRRADIATED MATERIALS IN LIQUID SODIUM FAST BREEDER REACTORS
BATTELLE-NORTHWEST, RICHLAND, WASHINGTON
BNWL-SA-972 + CONF-661102-34 +. 27 PAGES, FROM AMERICAN SOCIETY OF MECHANICAL ENGINEERS, WINTER ANNUAL CONFERENCE, NEW YORK, NOVEMBER 27-DECEMBER 1, 1966

BEFORE THE SUCCESSFUL OPERATION OF THE FOUR PROPOSED 1000-MW(E) PROTOTYPES CAN BE ASSURED, THE ADVANCEMENT OF MATERIALS TECHNOLOGY MUST BE ACHIEVED. SOME OF THE MORE IMPORTANT PROBLEMS TO BE SOLVED INCLUDE - DETERMINE THE MECHANICAL PROPERTIES OF MATERIAL OVER A RANGE OF TEMPERATURES TO 1400 F, PROVIDE A BETTER UNDERSTANDING OF THE BASIC PHYSICAL METALLURGY OF THE ALLOYS IN TERMS OF THEIR THERMAL STABILITY AND ALLOY CONTENT, DETERMINE THE MATERIALS BEHAVIOR IN LIQUID-METAL AT TEMPERATURES EXCEEDING 1200 F IN TERMS OF CORROSION AND MASS TRANSFER KINETICS, DETERMINE THE EFFECTS OF FAST NEUTRON IRRADIATION UPON THE TENSILE, CREEP, CREEP-RUPTURE, FATIGUE, AND FRACTURE PROPERTIES OF SELECTED MATERIALS OVER A RANGE OF EXPOSURES EXCEEDING 5 X 10 TO THE 23RD NVT, STUDY THE MYRIAD OF PRACTICAL-APPLICATION PROBLEMS SUCH AS WEAR RESISTANCE, SELF-WELDING, GALLING, LOAD-BEARING QUALITIES, AND COMPATIBILITY WITH OTHER COMPONENTS. MATERIAL LIMITATIONS MUST BE DETERMINED ALSO.

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

CATEGORY 4
AEROSPACE SAFETY

4-18240 *CONTINUED*

*PROPERTY, PHYSICAL + *RADIATION DAMAGE + METAL, LIQUID + REACTOR, BREEDER + REACTOR, FAST +
REACTOR, LIQUID METAL COOLED + SODIUM

4-18271 ALSO IN CATEGORIES 16 AND 15

KREY PW

PLUTONIUM-238 FROM THE SNAP-9A BURNUP

UNITED STATES ATOMIC ENERGY COMMISSION, NEW YORK

CONF-670602 +. 16 PAGES, FIGURES, 10 REFERENCES, ABSTRACT IN TRANSACTIONS 10(1), PAGE 7, PRESENTED AT
1967 ANNUAL MEETING OF THE AMERICAN NUCLEAR SOCIETY, SAN DIEGO, CALIFORNIA, JUNE 11-15, 1967

THE BEHAVIOR OF THE SNAP-9A DERRIS PARTIALLY SUPPORTS MACHTAS PROPOSED SCHEMATIC REPRESENTATION OF STRATOSPHERIC MERIDIONAL CIRCULATION. THE TREND IN CONCENTRATION SUGGESTS A DOWNWARD FLUX BEGINNING IN THE SPRING OF EACH YEAR FOLLOWED BY AN APPARENT UPWARD FLUX IN THE FALL. LARLEYS ESTIMATES AGREE WELL WITH THE MEASURED OR ANTICIPATED MAXIMUM CONCENTRATIONS IN BOTH THE STRATOSPHERE AND TROPOSPHERE.

ATMOSPHERIC DIFFUSION, GLOBAL + FALLOUT + PLUTONIUM + STRATOSPHERE + TROPOSPHERE

4-18284 ALSO IN CATEGORY 7

ANSELIN F + BAILEY WE

THE ROLE OF FISSION PRODUCTS IN THE SWELLING OF IRRADIATED UO₂ AND (U, PU)₂O₇

CEA-FRANCE + GENERAL ELECTRIC, SUNNYVALE

CONF-670602 +. 2 PAGES, REFERENCES, ANS TRANS. 10(1), PAGES 103-104, 1967 ANNUAL MEETING, AMERICAN
NUCLEAR SOCIETY, SAN DIEGO, CALIFORNIA, JUNE 11-15, 1967

FUEL SWELLING IS PRESENTLY THE MAJOR DESIGN CONSIDERATION FOR SATISFACTORY FUEL PERFORMANCE IN FAST REACTORS. TO ESTABLISH A BETTER UNDERSTANDING OF OXIDE FUEL BEHAVIOR AT HIGH BURNUPS, AN ANALYSIS OF THE SWELLING DUE TO NONVOLATILE FISSION PRODUCTS IN BOTH UO₂ AND (PU_{0.2})(U_{0.8})₂O₇ FUEL WAS MADE. CONSIDERING THE RELATIVE THERMODYNAMIC BEHAVIOR OF THE IRRADIATED OXIDE MATRIX, THE FISSION PRODUCTS, AND THE CLAD, IT CAN BE SHOWN THAT ABOUT 0.3 AND 0.7 OXYGEN ATOM ARE AVAILABLE PER URANIUM OR PLUTONIUM FISSION, RESPECTIVELY. DEPENDING ON THE INITIAL STOICHIOMETRY OF THE FUEL, THE OXYGEN AVAILABLE FROM FISSION CAN EITHER BE DISSOLVED IN THE OXIDE MATRIX OR OXIDIZE THE STAINLESS-STEEL CLAD SO THAT A FINAL-EQUILIBRIUM STOICHIOMETRY IS REACHED AT APPROXIMATELY O/M EQUALS 2.00. THIS MAY EXPLAIN THE PRESENCE OF OXIDATION LAYERS OBSERVED AT THE FUEL-CLAD INTERFACE, AND THE INCREASING THICKNESS OF THIS LAYER WITH BURNUP.

*FUEL BURNUP + *FUEL INTEGRITY + *FUEL SEGREGATION + FISSION PRODUCT RETENTION + PROPERTY, PHYSICAL +
REACTOR, FAST

4-18285

GARCIA R + HAMMITT FG

CAVITATION DAMAGE IN LIQUID-METAL-COOLED REACTOR POWER PLANTS

AEROJET-AZUSA + UNIVERSITY OF MICHIGAN

CONF-670602 +. 2 PAGES, 1 FIGURE, 11 REFERENCES, ANS TRANS. 10(1), PAGES 142-143, 1967 ANNUAL MEETING,
AMERICAN NUCLEAR SOCIETY, SAN DIEGO, CALIFORNIA, JUNE 11-15, 1967

PUMPING AND HANDLING OF HIGH-TEMPERATURE LIQUID METALS, WHERE CAVITATION IS A PROBLEM, IS HIGHLY IMPORTANT IN THE SPACE PROGRAM, PARTICULARLY REGARDING LIQUID-METAL SNAP SYSTEMS. CAVITATION ATTACK CAN OCCUR IN BEARINGS, CLOSE-CLEARANCE PASSAGES, PUMPS, ETC. THE CAVITATION RESISTANCE OF VARIOUS STEELS AND REFRACTORY ALLOYS WAS MEASURED IN OUR LABORATORY IN MERCURY AT 70 AND 500 F AND IN LEAD-BISMUTH ALLOY AND LITHIUM AT 500 AND 1500 F UTILIZING A HIGH-TEMPERATURE ULTRASONIC VIBRATORY FACILITY. OF MATERIALS TESTED, TANTALUM-BASE ALLOYS (T-111 AND T-222) WERE THE MOST CAVITATION RESISTANT, EXCEPT FOR MERCURY AT 70 F, WHERE STAINLESS STEEL WAS BEST.

*CORROSION + *METAL, LIQUID + *PUMP + *STEEL + ALLOY + BISMUTH + LEAD + LITHIUM + MERCURY +
REACTOR, LIQUID METAL COOLED + STEEL, STAINLESS + THERMODYNAMICS

4-18291 ALSO IN CATEGORY 7

CLIFFORD JC

BEHAVIOR OF LONG-LIVED FISSION PRODUCTS IN SODIUM

LOS ALAMOS SCIENTIFIC LABORATORY

CONF-670602 +. 2 PAGES, ANS TRANS. 10(1), PAGE 336, 1967 ANNUAL MEETING, AMERICAN NUCLEAR SOCIETY, SAN
DIEGO, CALIFORNIA, JUNE 11-15, 1967

THE BEHAVIOR OF FISSION PRODUCTS RELEASED TO SODIUM COOLANT FROM FAILED OR DELIBERATELY VENTED REACTOR FUEL ELEMENTS MAY LIMIT ACCESS TO THE PRIMARY COOLANT SYSTEM AND AFFECT THE CONSEQUENCES OF A LOSS-OF-COOLANT INCIDENT. DEPENDING ON THE FISSION-PRODUCT INVENTORY ANTICIPATED IN THE COOLANT, IT MAY BE DESIRABLE TO CONCENTRATE URANIUM, PLUTONIUM, LONG-LIVED ENERGETIC GAMMA-EMITTING ISOTOPES, AND SHORT-LIVED BIOLOGICALLY HAZARDOUS ISOTOPES AT SPECIFIC LOCATIONS WITHIN THE PRIMARY SYSTEM. LONG-LIVED FISSION PRODUCTS ARE ADDED TO A SMALL, FORCED-CONVECTION SODIUM LOOP BY IMMERSING IRRADIATED PLUTONIUM-BASE FUEL IN THE SODIUM. THE BEHAVIOR OF CS-137 RELEASED FROM A METALLIC FUEL TO HOT-TRAPPED SODIUM SUGGESTS THAT CESIUM IS A MOBILE VOLATILE SPECIES WHICH IS WEAKLY ADSORBED ON STAINLESS-STEEL SURFACES OPERATING IN THE 300 TO 600 C RANGE.

CATEGORY 4
AEROSPACE SAFETY

4-18291 *CONTINUED*

*CESIUM + *COOLANT CHEMISTRY + *FISSION PRODUCT RETENTION + *METAL, LIQUID + *SODIUM + EUROPIUM +
FISSION PRODUCT TRANSPORT + REACTOR, FAST + REACTOR, LIQUID METAL COOLED + RUTHENIUM + STRONTIUM

4-18344 ALSO IN CATEGORY 7

FURUKAWA K + YAMAMOTO K + NIHEI I + IGUCHI Y

LIQUID SODIUM TECHNOLOGY DEVELOPMENT. I. TEST LOOPS, PURIFICATION METHODS, AND SUPPLEMENTARY TECHNIQUES
JAPAN ATOMIC ENERGY RESEARCH INST., TOKYO
JAERI-1129 +. 32 PAGES, FIGURES, TABLES, 11 REFERENCES, NOVEMBER 1965

THE INITIAL RESULTS OF THE DEVELOPMENT PROGRAM OF THE LIQUID SODIUM LOOPS AND THEIR ASSOCIATED TECHNOLOGY ARE REPORTED COVERING UNTIL THE END OF 1965. THE RESULTS OF CORROSION AND CARBURIZATION TESTS ARE ALSO SHOWN. IN THE TESTS, EMPHASIS WAS PLACED ON AUSTENITIC STAINLESS STEELS (304, 316, 347) FOLLOWED BY CR-MN STEELS AND REFRACTORY METALS (NB, TA, MO, ZR, AND TI). THE ANALYTICAL DATA AND BEHAVIORS ARE ALSO DESCRIBED FOR OXYGEN, CARBON, ETC., IN SODIUM. THE RESULTS OF DEVELOPMENTS, AND THE CAUTIONS TO BE TAKEN IN THEIR OPERATION ARE SHOWN FOR VARIOUS INSTRUMENTS (IMPURITY-, LEVEL-, PRESSURE- AND FLOW-METERS), PREHEATING SYSTEM, COMPONENT RECLEANING METHOD, AND HAZARD PROTECTIONS (SODIUM HANDLING, PROTECTIVE CLOTHES AND FIRE EXTINGUISHING). A SUMMARY OF THE RESULTS OBTAINED IN RESEARCH AND DEVELOPMENT EFFORTS IN TEST LOOP COMPONENTS AND AUXILIARY TECHNIQUES NECESSARY AS THE BASIS OF THE LIQUID-SODIUM TECHNOLOGY DEVELOPMENT ARE PRESENTED. ESPECIALLY, THE RESULTS OF THE DEVELOPMENT EFFORTS IN PREHEATING SYSTEM, PURIFICATION SYSTEM, AND INSTRUMENTATION, WHICH ARE NECESSARY FOR THE DESIGN, CONSTRUCTION AND OPERATION OF 1 TO APPROXIMATELY 3-IN. PIPING TEST LOOPS, WERE DESCRIBED. THE RESULTS OF THE MATERIALS CORROSION TESTS ARE DISCUSSED IN RELATION TO THE BEHAVIOR OF THE IMPURITIES. THE TECHNIQUES WERE ESTABLISHED FOR THE CHEMICAL ANALYSIS OF THE IMPURITIES IN SODIUM, RECLEANING OF THE SODIUM CONTAMINATED COMPONENTS, AND HAZARD PROTECTION.

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

*CORROSION + *SODIUM + *STEEL, STAINLESS + FIRE + JAPAN + REFRACTORY MATERIAL + STEEL

4-18347 ALSO IN CATEGORY 7

MOTZ J

INVESTIGATION OF SEVERAL FERRITIC STEELS FOR HIGH TEMPERATURE SERVICE AND THEIR APPLICABILITY IN SODIUM SYSTEMS UP TO TEMPERATURES OF ABOUT 600 C

INTERATOM GMBH, GERMANY

AT-TRANS-233 +. 11 PAGES, FIGURES, 7 REFERENCES, TRANSLATED FOR ATOMICS INTERNATIONAL, CANOGA PARK, CALIFORNIA FROM Z. METALLK., 55, PAGE 489 THRU 494, (1964)

COMMERCIAL CONSIDERATIONS LEAD TO AN INVESTIGATION OF SEVERAL FERRITIC STEELS FOR HIGH-TEMPERATURE SERVICE (OR HEAT-RESISTANT STEELS) IN ADDITION TO AUSTENITIC MATERIALS IN RESPECT TO THEIR SUITABILITY FOR COMMERCIAL SODIUM SYSTEMS UP TO 600 C. ACCORDING TO THE RESULTS OBTAINED HERE, THE STEEL 10CRMON89-10 IS SUITABLE FOR THIS PURPOSE.

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

*CORROSION + *REACTOR COOLANT + *SODIUM + *STEEL + ALLOY + METAL, LIQUID + STEEL, STAINLESS

4-18348 ALSO IN CATEGORY 7

SODIUM COOLED REACTORS FAST CERAMIC REACTOR DEVELOPMENT PROGRAM. QUARTERLY REPORT NO. 21, NOVEMBER 1966-JANUARY 1967

GENERAL ELECTRIC CO., SUNNYVALE, CALIFORNIA. ADVANCED PRODUCTS OPERATION

GEAP-5433 +. 89 PAGES, FEBRUARY 1967

THE FAST CERAMIC REACTOR DEVELOPMENT PROGRAM IS AN INTEGRATED ANALYTICAL AND EXPERIMENTAL PROGRAM DIRECTED TOWARD THE DEVELOPMENT OF FAST REACTORS EMPLOYING CERAMIC FUELS, WITH PARTICULAR ATTENTION TO MIXED PLUTONIUM-URANIUM OXIDE. ITS MAJOR OBJECTIVES ARE - DEVELOPMENT OF A RELIABLE HIGH-PERFORMANCE FAST REACTOR HAVING NUCLEAR CHARACTERISTICS WHICH PROVIDE STABLE AND SAFE OPERATION, AND DEMONSTRATION OF LOW FUEL-CYCLE COST CAPABILITY FOR SUCH A REACTOR, PRIMARILY THROUGH ACHIEVING HIGH BURNUP OF CERAMIC FUELS OPERATING AT HIGH SPECIFIC POWER, VENTED-FUEL DEVELOPMENT, TRANSIENT TESTING OF FUELS, FUEL-PERFORMANCE EVALUATION, FAST-FLUX IRRADIATION OF FUEL, REACTOR PHYSICS AND CORE ANALYSIS, FCR CLADDING EVALUATION.

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

*CERAMICS + *FUEL INTEGRITY + *SODIUM + *TESTING + COOLANT CHEMISTRY + FUEL BURNUP + METAL, LIQUID + RADIATION EFFECT + REACTOR, BREEDER + REACTOR, FAST

4-18351

THORLEY AW + TYZACK C

THE CORROSION BEHAVIOUR OF STEELS AND NICKEL ALLOYS IN HIGH TEMPERATURE SODIUM
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, REACTOR MATERIALS LABORATORY, CULCHETH, WARRINGTON
NP-16413 +. 28 PAGES, FIGURES, 1966

CATEGORY 4
AEROSPACE SAFETY

4-18351 *CONTINUED*

THE SODIUM COMPATIBILITY WORK AT REACTOR MATERIALS LABORATORY IN SUPPORT OF THE FAST-REACTOR FUEL-CLADDING PROGRAM PURSUED THE FOLLOWING OBJECTIVES - (1) STUDY OF MASS TRANSFER BY SOLUTION OR OXIDATION PROCESSES AT VARIOUS TEMPERATURES AND VELOCITIES. (2) STUDY OF THE EFFECT OF LOSS OF METAL SECTION AND CARBON PICKUP UPON MECHANICAL PROPERTIES. (3) STUDY OF THE EFFECT OF IMPOSED STRESSES ON THE CLAD MATERIAL IN A CORROSIVE AND CARBURISING ENVIRONMENT. IN ADDITION, WORK WAS DONE ON THE EVALUATION OF VARIOUS BRAZE ALLOYS IN SODIUM, AS THESE MAY BE USED FOR JOINING COMPONENTS IN FUTURE DESIGNS. THE CLADDING MATERIALS INVESTIGATED INCLUDE STAINLESS STEEL AND NICKEL ALLOYS.

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

*ALLOY + *CORROSION + *SODIUM + CARBON + NICKEL + PROPERTY, PHYSICAL

4-18354

MUNDY JN + BARR LW + SMITH FA

SELF-DIFFUSION IN POTASSIUM

ATOMIC ENERGY RESEARCH ESTABLISHMENT, HARWELL

3 PAGES, 2 FIGURES, 2 TABLES, 4 REFERENCES, PHIL MAG. 15(134), PAGES 411-13 (FEBRUARY 1967)

THE SELF-DIFFUSION OF K-42 IN POTASSIUM WAS MEASURED BETWEEN 0 AND 60 C. THE TEMPERATURE DEPENDENCE OF THE DIFFUSION COEFFICIENT IS GIVEN BY D EQUALS 0.31 PLUS OR MINUS 0.09 EXP- $(9750 \text{ PLUS OR MINUS } 150/RT)$ CM SQUARED SEC TO THE MINUS 1. BECAUSE OF THE SIMILARITIES BETWEEN SELF-DIFFUSION IN POTASSIUM AND SODIUM, IT IS CONCLUDED THAT SELF-DIFFUSION IN POTASSIUM IS ALSO BY A VACANCY MECHANISM.

*DIFFUSION + *POTASSIUM + METAL, ALKALI + METAL, LIQUID + SODIUM

4-18472

HODGKISS WS

ENVIRONMENTAL TESTING OF CONTAMINANT PRODUCING MATERIALS FROM THE INTEGRATED LIFE SUPPORT SYSTEM ATLANTIC RESEARCH CORPORATION, ALEXANDRIA, VA.

NASA-CR-794 +. 100 PAGES, 20 FIGURES, TABLES, JUNE 1967

AN EXPERIMENTAL INVESTIGATION WAS MADE OF THE PRESENT POTENTIAL AIRBORNE TRACE CONTAMINATION COMPOSITION WITHIN THE INTEGRATED LIFE SUPPORT SYSTEM (ILSS) TEST CHAMBER, LOCATED AT LANGLEY RESEARCH CENTER. SELECTED MATERIALS FROM THE ILSS WERE EXAMINED AS PROBABLE SOURCES OF CONTAMINATION UNDER SPECIFIC TIME AND TEMPERATURE CONDITIONS TO DETERMINE THEIR CHARACTERISTIC PRODUCTS OF GASEOUS EVOLVEMENT. CONTAMINATED AIR SAMPLES WERE COLLECTED AS BOTH WHOLE AIR SAMPLES AND CRYOGENICALLY TRAPPED, WITH VERIFICATION BY MASS SPECTROMETRY AND INFRARED SPECTROPHOTOMETRY. PHYSICAL AND CHEMICAL CHANGES IN THE MATERIALS DUE TO HEAT EFFECTS WERE EXAMINED BY WEIGHT CHANGES AND DIFFERENTIAL THERMAL ANALYSIS.

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

*AEROSPACE SAFETY + *ATMOSPHERIC POLLUTION + *CRYOGENICS + *SAMPLING + *SPACECRAFT + AIR CLEANING + CHROMATOGRAPHY + CONTAMINATION + THERMAL POLLUTION

4-18513

ALSO IN CATEGORY 7

AUSKERN A

RARE GAS DIFFUSION IN NONSTOICHIOMETRIC ZIRCONIUM CARBIDE

BROOKHAVEN NATIONAL LABORATORY, UPTON

BNL-10595 + 12 PAGES, 9 FIGURES, 5 TABLES, 35 REFERENCES, JOURNAL OF NUCLEAR MATERIALS 22, PAGES 257-68 (1967)

THE RELEASE OF TRACER AMOUNTS OF XE-133 FROM ZIRCONIUM CARBIDE POWDER WAS MEASURED OVER A RANGE OF POWDER COMPOSITIONS. RELEASE IS FOR THE MOST PART DIFFUSION-CONTROLLED. THE ACTIVATION ENERGY AND D-SUB-O VARY GREATLY WITH CARBON CONTENT. FOR LOW CARBON MATERIAL E-SUB-D IS LESS THAN 80 KCAL/MOLE. E-SUB-D INCREASES TO 190 KCAL/MOLE FOR ZRC-SUB-0.83. THE ACTIVATION ENERGY FOR ZRC-SUB-0.58 APPEARS CONSISTENT WITH ESTIMATES BASED ON METALLIC SYSTEMS, WHILE FOR HIGHER CARBIDES THE METALLIC MODEL UNDERESTIMATES THE ACTIVATION ENERGIES. A MODIFICATION OF THE METALLIC ACTIVATION-ENERGY MODEL, BASED ON DIFFUSION IN COVALENT SYSTEMS, IS SUGGESTED.

*CARBIDE + *DIFFUSION + *NOBLE GAS + *ZIRCONIUM + ACTIVATION ENERGY + ANALYTICAL MODEL + TITANIUM + XENON

4-18552

ALSO IN CATEGORY 15

BENTON EV + COLLVER MM

REGISTRATION OF HEAVY IONS DURING THE FLIGHT OF GEMINI VI

U.S. NAVAL RADIOLOGICAL DEFENSE LABORATORY, SAN FRANCISCO

6 PAGES, 5 FIGURES, 11 REFERENCES, HEALTH PHYSICS 13(5), PAGES 495-500 (MAY 1967)

SEVERAL SMALL DISKS OF CELLULOSE NITRATE PLASTIC WERE INCLUDED AS A PART OF A PASSIVE DOSIMETRY PACKAGE ABOARD THE GEMINI VI SPACECRAFT FOR RECORDING THE HEAVY COMPONENT OF THE SOLAR AND THE PRIMARY COSMIC RADIATION. AN AVERAGE OF 230 TRACKS/SQ. CM PER DAY WAS OBSERVED. OF THESE, ABOUT 70 TRACKS/SQ. CM WERE BACKGROUND ALPHA PARTICLE TRACKS PRODUCED BY

CATEGORY 4
AEROSPACE SAFETY

4-18552 *CONTINUED*

NATURAL RADIOACTIVITY. ABOUT 159 TRACKS/SQ. CM-DAY WERE DUE TO STOPPING ALPHA PARTICLES OF SOLAR AND GALACTIC ORIGIN. A FEW HEAVY RECOIL ION TRACKS WERE ALSO OBSERVED. ABOUT ONE TRACK/SQ. CM-DAY WAS JUDGED TO BE DUE TO THE HEAVY PRIMARY COSMIC-RAY PARTICLES. RELATIVISTIC IRON NUCLEI APPARENTLY DO NOT PRODUCE TRACKS IN THIS SENSITIVITY OF CELLULOSE NITRATE. IT APPEARS THAT BY STACKING SHEETS OF CELLULOSE NITRATE INTO SANDWICH CONFIGURATIONS IT IS POSSIBLE TO HAVE A SIMPLE AND DIRECT MEANS OF MEASURING THE INTEGRATED FLUX AND ENERGY SPECTRA OF SOLAR ALPHA PARTICLES INSIDE THE MANNED SPACECRAFT.

*SPACECRAFT + ALPHA EMITTER + COSMIC RADIATION + DOSIMETRY, GENERAL

4-18594 ALSO IN CATEGORY 9

SMITH RC + CROSBY JR + ELLIOTT EA + GALLETT RD
RADIATOR CONDENSER DESIGN MANUAL
ATOMICS INTERNATIONAL, CANOGA PARK, CALIF.
NAA-SR-MEMO-12139 +. 173 PAGES, NOVEMBER 1, 1966

THIS REPORT INCLUDES A STATE-OF-THE-ART APPROACH TO DESIGNING RADIATOR-CONDENSERS FOR MERCURY RANKINE SYSTEMS. THE DESIGN, ANALYTICAL, AND FABRICATION TECHNIQUES USED AT ATOMICS INTERNATIONAL IN THE DEVELOPMENT OF THREE TYPES OF RADIATOR CONDENSERS FOR USE ON THE SNAP-II MERCURY RANKINE PROGRAM ARE PRESENTED. THE SUCCESSFUL TESTING OF EACH TYPE INDICATES THE APPROPRIATENESS OF THE TECHNIQUES PRESENTED. THE USE OF THE MANUAL FOR FUTURE RADIATOR DESIGNS SHOULD AID IN ACHIEVING AN OPTIMUM DESIGN WITH A MINIMUM EXPENDITURE OF EFFORT IN THE DEVELOPMENT PHASE OF FUTURE PROGRAMS.

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

EQUIPMENT DESIGN + EXPERIMENT, GENERAL + HEAT TRANSFER, RADIANT + MERCURY + REACTOR, SPACE + SNAP 2 (SYSTEMS FOR NUCLEAR AUXILIARY POWER)

4-18915

ROBBINS DE + EWING O + BILLINGHAM J
A METHOD OF EVALUATING RADIATION RISKS FOR MANNED SPACE FLIGHTS
AMES RESEARCH CENTER, MOFFETT FIELD, CALIF. + MANNED SPACECRAFT CENTER, HOUSTON
16 PAGES, RADIATION RESEARCH 30(3), PAGE 541 THRU 556, (MARCH 1967)

DISCUSSES PROBLEMS CONCERNING AN EVALUATION OF THE HAZARD FROM DOSES OF IONIZING RADIATION DURING MANNED SPACE FLIGHT. A METHOD IS GIVEN FOR STATISTICALLY COMBINING SOLAR FLARE DATA WITH ASSESSMENTS OF THE LIKELIHOOD FOR BIOLOGICAL RESPONSES. THIS APPROACH IS AIMED AT SYNTHESIZING RADIOPHYSICAL AND RADIOBIOLOGICAL DATA SO THAT THE INTERFACES BETWEEN RADIATION, CREW SAFETY, AND MISSION SUCCESS CAN BE BETTER RELATED TO OTHER HAZARDS DURING MISSION PLANNING.

*AEROSPACE SAFETY + BIOMEDICAL + COSMIC RADIATION + DOSE + RADIATION EFFECT + RADIOBIOLOGY

4-18954 ALSO IN CATEGORIES 5 AND 7

PIVIROTTI TJ
MASS-RETENTION MEASUREMENTS IN A BINARY COMPRESSIBLE VORTEX FLOW
CALIFORNIA INSTITUTE OF TECHNOLOGY, PASADENA
JPL-TR-32-864 +. 23 PAGES, FIGURES, 7 TABLES, 8 REFERENCES

CONFINED BINARY VORTEX FLOW FIELDS HAVE BEEN PROPOSED AS GASEOUS-FUEL-RETENTION DEVICES FOR GAS-CORE NUCLEAR REACTORS. SEVERAL SUCH FLOWS HAVE BEEN EVALUATED IN THIS INVESTIGATION BY MEASURING THE MASS FLOW RATE OF HEAVY GAS DISCHARGING FROM THE VORTEX TUBE. HYDROGEN AND NITROGEN WERE USED TO GENERATE THE VORTEX-FLOW FIELDS, AND FREON-13 WAS USED FOR THE HEAVY GAS. AN INFRARED PHOTOMETER OPERATING AT WAVELENGTH OF NEARLY 8.3 MICRONS WAS DEVELOPED AND USED TO MEASURE THE TRANSIENT DECAY OF THE DISCHARGE RATE OF FREON AFTER AN ABRUPT CUTOFF OF FREON INLET FLOW. FROM THESE MEASUREMENTS THE AVERAGE RESIDENCE TIME OF THE FREON PARTICLES IN SEVERAL VORTEX-TUBE CONFIGURATIONS FOR SEVERAL MASS FLOW RATES OF FREON AND HYDROGEN OR NITROGEN WERE DETERMINED. THE CONCLUSION REACHED WAS THAT THESE PARTICULAR VORTEX-FLOW FIELDS DO NOT RETAIN SIGNIFICANTLY MORE FREON THAN WOULD BE CONTAINED IN THE SAME DEVICE AND UNDER THE SAME CONDITIONS OF PRESSURE AND TEMPERATURE IF NO DIFFUSION OCCURRED BETWEEN THE LIGHT AND HEAVY SPECIES.

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

DIFFUSION + FLOW THEORY AND EXPERIMENTS + FLOW, VORTEX + HYDROGEN + NITROGEN

4-18987 ALSO IN CATEGORY 7

HOFFMANN HW + ROBIN TT
A PRELIMINARY COLLATION OF THE THERMODYNAMIC AND TRANSPORT PROPERTIES OF CESIUM
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.
ORNL-TM-1755 +. 60 PAGES, 19 FIGURES, 15 TABLES, 35 REFERENCES, JUNE 1967

THIS MEMORANDUM CONSTITUTES A PRELIMINARY COLLATION OF THE THERMODYNAMIC AND TRANSPORT PROPERTIES OF SATURATED LIQUID AND VAPOR CESIUM. IT IS INTENDED TO PROVIDE A CONVENIENT AND

CATEGORY 4
AEROSPACE SAFETY

4-18987 *CONTINUED*

CONSISTENT SOURCE OF PROPERTIES FOR THOSE INVOLVED IN THE DESIGN AND EVALUATION OF POWER SYSTEMS BASED ON THERMODYNAMIC CYCLES INVOLVING CESIUM AS THE WORKING FLUID. INCLUDED IN THIS COMPILATION ARE THE THERMODYNAMIC PROPERTIES - PHYSICAL CONSTANTS AND CRITICAL-STATE CONDITIONS, SONIC VELOCITIES, PVT RELATIONSHIPS (VAPOR PRESSURE, DENSITY, AND COMPRESSIBILITY), ENTHALPY, HEAT CAPACITY, LATENT HEAT OF VAPORIZATION, ENTROPY, AND SURFACE TENSION - AND THE TRANSPORT PROPERTIES (VISCOSITY, THERMAL CONDUCTIVITY, AND ELECTRICAL RESISTIVITY). A PRELIMINARY EVALUATION OF THE DATA AVAILABLE INDICATES THE NEED FOR ADDITIONAL MEASUREMENTS OF BOTH THE THERMODYNAMIC AND TRANSPORT PROPERTIES.

AVAILABILITY - H. W. HOFFMAN OR T. T. ROBIN, JR., OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE

*CESIUM + *THERMODYNAMICS + *TRANSPORT PROPERTY

CATEGORY 5
ACCIDENT ANALYSIS

5-06683 ALSO IN CATEGORY 18
GCR-ORR LOOP 2 DESIGN
OAK RIDGE NATIONAL LABORATORY
ORNL-TM-1048 +. 117 PAGES, TABLES, FIGURES, 19 REFERENCES, JUNE 1965

THIS REPORT COVERS LOOP DESIGN, HEAT EXCHANGES, AUXILIARY SYSTEM DESIGN, CONTAINMENT CELL DESIGN, SHIELDING ANALYSIS, AND A SAFETY ANALYSIS (INCLUDING THE MCA).

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

*IN PILE LOOP + *SAFETY REVIEW (OPERATIONS, EXPERIMENTS) + ACCIDENT, LOSS OF COOLANT + ACCIDENT, MAXIMUM CREDIBLE (MCA) + CONTAINMENT, GENERAL + FUEL ELEMENT + HELIUM + IRRADIATION TESTING + MAINTENANCE, REMOTE + ORR (OAK RIDGE RESEARCH REACTOR) + REACTOR, HIGH TEMP. GAS + RESEARCH AND DEVELOPMENT PROGRAM

5-13484 ALSO IN CATEGORY 18
AEC LETTER ON EMERGENCY CORE COOLING SENT DECEMBER 8 TO CONSOLIDATED EDISON AND NORTHERN STATES POWER
CONSOLIDATED EDISON CO. OF NEW YORK, INC. + NORTHERN STATES POWER COMPANY
1 PAGES, DECEMBER 8, 1966, DOCKET NO. 50-3 AND 50-130, ATOMIC ENERGY CLEARING HOUSE 12(51), PAGE 7,
(DECEMBER 19, 1966)

ORI REQUESTS TWO ANALYSES IN ADDITION TO PRESENT CONSIDERATION OF THE NFFD FOR EMERGENCY CORE COOLING. (1) LOSS-OF-COOLANT ANALYSES FOR VARIOUS PIPE SIZES TO DEFINE THE LIMITING CONDITIONS, HEAT SINKS, AND EFFECTS ON REACTOR VESSEL INTEGRITY. (2) ANALYSES TO DETERMINE SYSTEM PERFORMANCE REQUIREMENTS TO PREVENT CORE MELTDOWN.

*EMERGENCY COOLING CONSIDERATIONS + INDIAN POINT 1 + PATHFINDER + REACTOR, BOILING WATER + REACTOR, PRESSURIZED WATER

5-16382 ALSO IN CATEGORY 6
BASSO C
THERMODYNAMICS OF TWO-PHASE DIABATIC FLOW AND RELATED INSTABILITIES
COMITATO NAZIONALE PER L'ENERGIA NUCLEARE, ROME, ITALY
RT-ING-66-20 +. 31 PAGES, 1966

EQUATIONS DEFINING THE LIMITING CONDITIONS FOR DNB OR BURNOUT ARE DERIVED FOR STEAM-WATER MIXTURES TREATED AS A SUSPENSION OF COMPRESSIBLE VAPOR IN A CONTINUOUS LIQUID PHASE.

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

DNB (DEPARTURE FROM NUCLEATE BOILING) + FLOW THEORY AND EXPERIMENTS + FLOW, TWO PHASE + HEAT FLUX, DRYOUT + THERMODYNAMICS

5-16480 ALSO IN CATEGORIES 12 AND 18
TRAUBE K
ANORDNUNG VON KÜHLWASSERUMWALZPUMPEN INNERHALB DES DRUCKGEFÄSSES VON SIEDEWASSERREAKTOREN
FACHBEREICH KERNENERGIEANLAGEN, ALLGEMEINE ELEKTRIZITÄTS-GESELLSCHAFT (AEG), FRANKFURT
16 PAGES, 6 FIGURES, 1 TABLE, NUCLEAR ENGINEERING AND DESIGN 5(2) PAGES 161-176 (MARCH 1967) IN GERMAN

AEG PROPOSES NEW VERSION OF BWR, WITH COOLANT-CIRCULATION PUMPS INSTALLED IN REACTOR VESSEL, THUS ABOLISHING EXTERNAL RECIRCULATION LOOPS AND ALLOWING A STILL MORE COMPACT CONTAINMENT DESIGN. (SECTION 1) - REVIEWS DEVELOPMENT OF COOLANT-CIRCULATION SYSTEMS AND DESCRIBES PRESENT JET PUMPS.

*PUMP, JET + *REACTOR DESCRIPTION + GERMANY + PRESSURE VESSEL + REACTOR, BOILING WATER

5-16490 ALSO IN CATEGORIES 6 AND 8
WENTZ LB
IN-PILE CAPSULE MEASUREMENTS OF TRANSIENT STEAM-VOID GROWTH AND COLLAPSE
TWR SYSTEMS, REDONDO BEACH, CALIFORNIA
STL 372-30 +. PAGES 7-23 OF ANNUAL SUMMARY REPORT FOR 1965 - KINETIC STUDIES OF HETEROGENEOUS WATER REACTORS, 109 PAGES, 38 FIGURES, 6 TABLES, 44 REFERENCES, DECEMBER 30, 1965

IN THE KEWB, REFLECTOR EXPERIMENTS WERE PERFORMED WITH A CAPSULE CONTAINING A FISSION-HEATED UISK IN WATER. STEAM-VOID GROWTH AND COLLAPSE WERE STUDIED UNDER DIFFERENT INERTIAL LOADINGS, SUBCOOLING, AND AMBIENT PRESSURE.

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

*KEWB (KINETIC EXPERIMENT ON WATER BOILERS) + ACCIDENT ANALYSIS + HEAT TRANSFER, BOILING + HYDRAULIC ANALYSIS + REACTOR TRANSIENT + REACTOR, HOMOGENEOUS + REACTOR, RESEARCH + THERMAL ANALYSIS

CATEGORY 5
ACCIDENT ANALYSIS

5-16491 ALSO IN CATEGORIES 6 AND 8

WRIGHT RW

DESTRUCTIVE PRESSURE GENERATION

TWR SYSTEMS, REDONDO BEACH, CALIFORNIA

STL 372-39 +. PAGES 24-74 OF ANNUAL SUMMARY REPORT FOR 1965 - KINETIC STUDIES OF HETEROGENEOUS WATER REACTORS, 109 PAGES, 38 FIGURES, 6 TABLES, 44 REFERENCES, DECEMBER 30, 1966

IN AN ATTEMPT TO EXPLAIN THE DESTRUCTIVE TRANSIENT IN THE SPERT-1D IT IS HYPOTHESIZED THAT THE MOLTEN ALUMINUM WAS DISPERSED BY THE WATER HAMMER OF THE COLLAPSE OF THE VAPOR BLANKET ON THE PLATE. DISCUSSION OF THE DIFFICULTY IN EXPLAINING THE OBSERVED PRESSURIZATION OF 12 LITERS OF GAS VOLUME. EXPLANATION OF THIS EFFECT BY PRESSURE AMPLIFICATION ON COLLAPSE OF THE LAST BUBBLE OF A STEAM-WATER MIXTURE. SHOCK-TUBE EXPERIMENTS SUPPORT THE ABOVE CONSIDERATIONS.

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

*DESTRUCTIVE TRANSIENT + *SPERT 1 (SPECIAL POWER EXCURSION REACTOR TEST) + CHEMICAL ANALYSIS + HYDRAULIC ANALYSIS + PRESSURE, INTERNAL + REACTOR, TEST

5-16492 ALSO IN CATEGORIES 17 AND 18

INDIAN POINT 1 CHANGE 28 - COOLANT PH REACTIVITY EFFECT TESTS

CONSOLIDATED EDISON COMPANY, NEW YORK

2 PAGES, DOCKET NO. 50-3, JUNE 22, 1967

THE TECHNICAL-SPECIFICATION LIMIT RESTRICTING PH-INDUCED REACTIVITY CHANGES TO 0.5% DELTA K/K IS SUSPENDED FOR 1 MONTH FOR TESTS AS FOLLOWS - (1) AT DIFFERENT PH CONDITIONS, (A) MOVE CONTROL RODS IN 1/2-INCH INCREMENTS AT RANDOM TIME INTERVALS BETWEEN 15 AND 150 SEC. (B) CHANGE POWER LEVEL BETWEEN 40 AND 100%. (2) ADJUST PH FROM 5.6 TO 7 IN A FEW HOURS, AND FOLLOW REACTIVITY WITH CONTROL RODS. ONLY SIGNIFICANT DEPARTURE FROM ROUTINE IS A WEEKS PRIOR OPERATION AT PH 5.6 INSTEAD OF THE NORMAL 7.0. THE MAXIMUM PH REACTIVITY CHANGE IS EXPECTED TO BE 0.8% OVER A 24-HOUR INTERVAL.

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

*COOLANT CHEMISTRY + *REACTIVITY EFFECT, ANOMALOUS + *TECHNICAL SPECIFICATIONS + INDIAN POINT 1 + PH REACTIVITY EFFECT + REACTOR, PRESSURIZED WATER + SAFETY EVALUATION + TEST, PHYSICS

5-16636 ALSO IN CATEGORY 6

SUSSKIND H. + BECKER W

PRESSURE DROP IN GEOMETRICALLY ORDERED PACKED BEDS OF SPHERES

BROOKHAVEN NATIONAL LABORATORY, NEW YORK

BNL-50016 +. 65 PAGES, 39 FIGURES, 17 TABLES, 14 REFERENCES, JUNE 1966

FRICTION-FACTOR-VS-REYNOLDS-NUMBER DIAGRAMS WERE PREPARED FROM EXPERIMENTAL DATA TAKEN ON A FULL-SIZE ORDERED-BED FAST REACTOR (OBFRR). VARIABLES - WATER VELOCITY, BED VOIDAGE, BALL SPACING, BALL DIAMETER, AND BED HEIGHT. THE ARRAY WAS A SQUARE-BASE RHOMBOHEDRAL PACKING. THE RESULTS WERE CORRELATED FOR WALL EFFECTS.

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

FLOW THEORY AND EXPERIMENTS + OBFRR (ORDERED BED FAST REACTOR) + PRESSURE DROP + REACTOR, FAST + REACTOR, PEBBLE BED

5-16637 ALSO IN CATEGORY 8

PHYSICS CHEMICAL STUDIES OF CLAD UO₂ IN POTENTIAL MELTDOWN ENVIRONMENTS

GENERAL ELECTRIC, CINCINNATI

GEMP-475A +. 299 PAGES, FIGURES, TABLES, MARCH 31, 1967

THE OBJECTIVE WAS TO DETERMINE BEHAVIOR OF ZIRCALOY-AND STAINLESS-STEEL-CLAD FUEL ELEMENTS IN STEAM AND IN STEAM PLUS AIR FROM 1200 C TO THE MELTING POINT OF UO₂. INCLUDES MEASUREMENTS OF PHYSICAL AND MECHANICAL PROPERTIES OF THE CLADDING, THE OXIDIZED CLADDING, AND UO₂ TO THEIR RESPECTIVE MELTING POINTS. INVESTIGATION INCLUDED (1) DYNAMIC TESTING OF CLAD UO₂ SAMPLES FOR THE REACTIONS WHICH OCCUR, (2) RATE MEASUREMENTS OF METAL-WATER REACTIONS, ETC., (3) THERMAL AND MECHANICAL PROPERTIES OF FUEL AND CLADDING.

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

*ACCIDENT, LOSS OF COOLANT + *FAILURE, CLADDING + *SAFETY STUDY + FUEL MELTDOWN + REACTOR, POWER + STEEL, STAINLESS + ZIRCALOY

5-16899 ALSO IN CATEGORY 6

CRITICAL INVESTIGATION ON STEADY BURNOUT. PROGRESS LETTER NO. 1

CATEGORY 5
ACCIDENT ANALYSIS

5-16899 *CONTINUED*
APPLICAZIONI E RICERCHE SCIENTIFICHE, MILAN, ITALY
EURAC-1618 + EUR-2831 +. 7 PAGES, APRIL 12, 1966

THIS FIRST PROGRESS LETTER BRIEFLY REPORTS THE WORK, PERFORMED UNDER THE EURATOM CONTRACT N.073-65-11 TEEI, FROM NOVEMBER 15, 1965 TO MARCH 30, 1966. A SHORT DESCRIPTION OF FUTURE WORK IS ALSO GIVEN.

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

BURNOUT HEAT FLUX + HEAT TRANSFER, BOILING

5-16900 ALSO IN CATEGORIES 6 AND 8
THE STEADY STATE AND DYNAMIC BEHAVIOR OF A BOILING WATER REACTOR. QUARTERLY PROGRESS REPORT NO. 21, JANUARY 1 - APRIL 1, 1966
TECHNISCHE HOOGESCHOOL, EINDHOVEN, NETHERLANDS
EURAC-1682 + WW-016-R-108 + EUR-2869 +. 22 PAGES, 15 REFERENCES, APRIL 1966

REPORTS THE MEASUREMENTS MADE TO CHECK THE INFLUENCE OF A CHANGING WATER LEVEL ON THE STEADY AS WELL AS THE NONSTEADY-STATE CHARACTERISTICS OF THE HYDRAULIC SYSTEM. THE EFFECT APPEARS NEGLIGIBLE PROVIDED THAT THE LEVEL IS ABOVE THE EDGE OF THE SHROUD. THE RESULTS OF THE 50- AND THE 60-MM SHROUD MEASUREMENTS WERE FURTHER ANALYZED. VOID FRACTION DATA WERE PLOTTED AS A FUNCTION OF THE MARTINELLI-NEELSON PARAMETER. THE FIGURES INDICATE THAT THE PARAMETER X-SUB-TT MIGHT BE SUITABLE FOR CORRELATION. BURNOUT DATA OBTAINED FROM THE MEASUREMENTS ON THE 50- AND 60-MM SHROUDS ARE GIVEN AS A FUNCTION OF SATURATION TEMPERATURE AND SUBCOOLING.

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

BURNOUT HEAT FLUX + EURATOM + FLOW, TWO PHASE + HEAT TRANSFER, BOILING + REACTOR, BOILING WATER

5-16940
STRAWBRIDGE LE + ALLARD EC + BHALLA CP
XENON-INDUCED CORE INSTABILITIES
WESTINGHOUSE ELECTRIC CORP., PITTSBURGH, PA. ATOMIC POWER DIVISION
WCAP-3269-48 +. 98 PAGES, 42 FIGURES, 2 TABLES, FEBRUARY 1965

ONE-DIMENSIONAL-DIFFUSION-THEORY ANALYSIS WAS APPLIED TO AXIAL XENON OSCILLATION, AND EFFECT OF CORE HEIGHT, POWER DISTRIBUTION, DOPPLER COEFFICIENT, AND MODERATOR COEFFICIENT. THE DOPPLER COEFFICIENT IS THE PRINCIPLE DAMPING MECHANISM (MODERATOR EFFECT RELATIVELY SMALL), BUT CONTROL SYSTEM CAN HANDLE WITHOUT LOSS OF POWER CAPABILITY IN A 10-FT PWR.

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

*MATHEMATICAL STUDY + *XENON OSCILLATION + CONTROL ROD PROGRAM + DOPPLER COEFFICIENT + POWER DISTRIBUTION + REACTOR, PRESSURIZED WATER

5-16953 ALSO IN CATEGORY 6
MUELLER A + EGGERS B + HAEFELE W
REFERENCE STUDY FOR THE 1200 MWE STEAM-COOLED FAST BREEDER REACTOR (D 1)
GESELLSCHAFT FUER KERNFORSCHUNG M.B.H., KARLSRUHE, WEST GERMANY
ORNL-TR-1541 + KFK-392 +. 291 PAGES, FIGURES, TABLES, REFERENCES, AUGUST 1966

IN THIS GENERAL STUDY OF THE WHOLE REACTOR CONCEPT, THE FOLLOWING ARE THE MAIN ITEMS OF SAFETY INTEREST - FUEL CANS (P. 141), REACTOR PRESSURE VESSEL (P. 164), FLOODING OF THE REACTORS (P. 233), DRAINING OF THE REACTOR (P. 242), DIRECT REACTIVITY DISTURBANCES (P. 263), INDIRECT REACTIVITY DISTURBANCES (P. 263), RELEASE OF FISSION PRODUCTS (P. 270).

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

*GERMANY + *REACTOR, BREEDER + *REACTOR, TEST + ACCIDENT, MAXIMUM CREDIBLE (MCA) + BETHE TAIT + EMBRITTLEMENT + FISSION GAS RELEASE + FISSION PRODUCT RELEASE, GENERAL + FISSION PRODUCT RETENTION + FISSION PRODUCT, VOLATILE + FLOODING COEFFICIENT + FUEL INTEGRITY + FUEL MELTDOWN + NOT DATA (NIL DUCTILITY TRANSITION) + REACTOR TRANSIENT + STEAM

5-16967 ALSO IN CATEGORY 11
KLEPPER OH + BELL CG
UNDERWATER CAISSON CONFINEMENT OF LARGE POWER REACTORS
OAK RIDGE NATIONAL LAB., OAK RIDGE, TENN.
ORNL-4073 +. 260 PAGES, FIGURES, TABLES, REFERENCES, JUNE 1967

THE PURPOSE OF THIS STUDY WAS TO INVESTIGATE THE FEASIBILITY AND POTENTIAL ADVANTAGES OF CONTAINING LARGE NUCLEAR POWER REACTORS IN UNDERWATER CAISSONS. THE REFERENCE DESIGN DESCRIBED CONSISTS OF A 715-MW(E) BOILING-WATER REACTOR HOUSED IN A CONCRETE CAISSON LOCATED ONE-HALF MILE OFFSHORE. THE TURBINE-GENERATOR IS LOCATED ON A TEN-ACRE ARTIFICIAL ISLAND,

CATEGORY 5
ACCIDENT ANALYSIS

5-16967 *CONTINUED*

WHICH SURROUNDS THE CAISSON. SEAWATER IS USED FOR CONTAINMENT COOLING AND TO REDUCE THE OUTLEAKAGE OF FISSION PRODUCTS IN THE EVENT OF A LOSS-OF-COOLANT ACCIDENT. IT IS ESTIMATED THAT THE ACTIVITY RELEASE RATES TO THE ENVIRONMENT WOULD BE SEVERAL ORDERS OF MAGNITUDE SMALLER THAN FOR THE CORRESPONDING ABOVE-GROUND CONTAINMENT SYSTEM. SIGNIFICANT CONTAMINATION OF THE SEA APPEARS UNLIKELY. FOR AN UNPROTECTED OCEAN SITE, ISLAND CAISSON CONTAINMENT INCREASES PLANT CAPITAL COSTS BY ABOUT \$7,000,000. IT IS SUGGESTED THAT THIS NEW CONTAINMENT APPROACH BE CONSIDERED FOR POWER REACTORS NEAR METROPOLITAN AREAS THAT REQUIRE AUGMENTED REACTOR SAFETY AND THAT ARE ADJACENT TO A SUITABLE LAKE, RIVER, OR OCEAN.

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

*DESIGN CRITERIA + *ECONOMICS + *EMERGENCY COOLING CONSIDERATIONS + *SITING, OFF SHORE + ACCIDENT ANALYSIS + CONTAINMENT PENETRATION, GENERAL + CONTAINMENT, PRESSURE SUPPRESSION + EARTHQUAKE ENGINEERING

5-17127 ALSO IN CATEGORY 17

RUST JH + MEEM JL + DAHLHEIMER J
SAFETY ANALYSIS OF POOL REACTORS
THE UNIVERSITY OF VIRGINIA, CHARLOTTESVILLE, VIRGINIA
CONF-670-713 +. 30 PAGES, 7 FIGURES, 18 REFERENCES, ABSTRACT IN ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 3, (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

THE EFFECTS OF POOL TEMPERATURE, HEAT-FLUX-DISTRIBUTION ASSUMPTIONS, FLOW RATE AND CHANNEL GEOMETRY WERE STUDIED TO OBTAIN AN ANALYTICAL PROCEDURE FOR PREDICTING BURNOUT, FLJW. INSTABILITY AND INCIPIENT BOILING IN A PLATE-TYPE CORE BEFORE UPGRATING FROM 1 TO 2 MWTH. GAMBILL CORRELATION USED FOR SUBCOOLED BURNOUT, ROHSENOW AND BERGLES FOR INCIPIENT BOILING. ANALYSIS WAS CONSERVATIVE. CHECKED AGAINST ORR DATA. REPORT PRESENTS AND DISCUSSES EQUATIONS USED. SAFETY SYSTEM SETTINGS WERE CHOSEN TO MAINTAIN A BURNOUT RATIO OF 3.2. (FOR MORE DETAILS SEE CHAP. 5 OF UVAR-17, SAFETY ANALYSIS REPORT FOR POWER UPGRATING).

*HEAT TRANSFER ANALYSIS + *MATHEMATICAL STUDY + *POWER UPGRATING + BURNOUT HEAT FLUX + FLOW STABILITY + MATHEMATICAL TREATMENT + NUCLEATE BOILING + REACTOR, POOL TYPE + SAFETY ANALYSIS

5-17146 ALSO IN CATEGORY 17

BUONI FB
FUEL PLATE TEMPERATURE STUDIES AT THE AIR FORCE NUCLEAR ENGINEERING TEST FACILITY
AIR FORCE NUCLEAR ENGINEERING TEST FACILITY, AIR FORCE INSTITUTE OF TECHNOLOGY, WRIGHT-PATTERSON AIR FORCE BASE, OHIO
CONF-670-713 + AFIT-TR-67-9 +. 80 PAGES, 22 FIGURES, 12 TABLES, REFERENCES, ABSTRACT IN ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 16, (JULY 1967), PAPER PRESENTED AT THE CONFERENCE ON REACTOR OPERATING EXPERIENCE, REACTOR OPERATIONS DIVISION OF THE AMERICAN NUCLEAR SOCIETY, ATLANTIC CITY, JUNE 23-26, 1967

THERMOCOUPLES PLACED ON THE TWO END FUEL PLATES OF THE CENTER FUEL ELEMENT MONITORED TEMPERATURE DURING TESTS TO DEMONSTRATE CONSERVATISM OF CALCULATIONS. AN ERROR WAS FOUND WHICH HAD CAUSED THE 10-MW REACTOR TO BE OPERATED AT 9 MW. (TEST 1) - A MAX. TEMPERATURE OF 201 F WAS INDICATED, WITH STEADY-STATE NATURAL CONVECTION TO THE POOL. (TEST 2) - 10.6-MW OPERATION GAVE 163 F, VS 200 F CALCULATED. (TEST 3) - AT 9 MW, WITH FULL FLOW, UNBALANCING CONTROL RODS INCREASED TEMPERATURE ONLY 2 F. (TEST 4) - SCRAM ON LOSS OF FLOW, AFTER 1 AND 37 HR OF OPERATION, GAVE A QUICK INCREASE AND THEN A DECREASE UNTIL FLOW-REVERSAL BEGAN, AND THEN STABILIZATION AT TEMPERATURE BELOW OPERATING LEVEL AS NATURAL CONVECTION TO THE POOL BEGAN. PROMPT MAXIMA WERE SAME, BUT FLOW-REVERSAL TEMPS. WERE 11 F HIGHER (152 F) FOR LONG OPERATION. (TEST 5) - WITH THE NATURAL-CONVECTION VALVES CLOSED, THE PEAK FLOW-REVERSAL TEMPS. WERE 25 F HIGHER (166) THAN IF CIRCULATION TO POOL HAD BEEN ESTABLISHED. CONCLUSION - POWER IS LIMITED TO 15 MW BY LOSS OF FLOW, 20 BY LOSS OF POWER, AND 25 BY STEADY-STATE CONDITIONS.

*ACCIDENT, LOSS OF FLOW + *TEST, PROOF + *THERMAL ANALYSIS + AF-NETR (AIR FORCE NUC. ENGINEERING TEST RCTR.) + CLAD + COMPARISON, THEORY AND EXPERIENCE + FUEL ELEMENT + MEASUREMENT, TEMPERATURE + POWER UPGRATING + REACTOR, RESEARCH

5-17167 ALSO IN CATEGORY 17

FRIEDLAND AJ
A STUDY OF THE PROBABILITY OF A FERMI SUBASSEMBLY HAVING OVERHEATED BECAUSE OF A MIGRATORY PLUG
ATOMIC POWER DEVELOPMENT ASSOCIATES, INC., DETROIT, MICHIGAN
CONF-670-713 +. 17 PAGES, 8 FIGURES, 1 TABLE, 5 REFERENCES, ABSTRACT IN ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 33, (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

REACTOR OPERATING HISTORY WAS USED TO ESTIMATE THE PROBABILITY DISTRIBUTION OF PLUG SIZE, AND THESE TO DETERMINE PROBABILITY OF OVERHEATING. THIS APPROACH COULD BE GENERALLY APPLIED. SMALL-DIAMETER PLUGS ARE UNLIKELY TO CAUSE MELTDOWN, WHILE LARGE PLUGS WOULD NOT HAVE GONE THROUGH 11 OPERATING PERIODS WITHOUT CAUSING A MELTDOWN. THE MOST PROBABLE PLUG DIAMETER IS 1.5 TIMES THE GRID-PLATE-HOLE DIAMETER AND GIVES A 0.045 PROBABILITY OF OVERHEATING. THE OVERALL PROBABILITY OF OVERHEATING WAS CALCULATED AS 15'.

*ACCIDENT, PROBABILITY OF + *FLOW BLOCKAGE + *FUEL MELTDOWN + *MATHEMATICAL TREATMENT + ANALYTICAL MODEL + COOLANT CHEMISTRY + FERMI + REACTOR, FAST + REACTOR, LIQUID METAL COOLED

CATEGORY 5
ACCIDENT ANALYSIS

5-17193 ALSO IN CATEGORIES 7 AND 11
COTTRELL WB
ORNL NUCLEAR SAFETY RESEARCH AND DEVELOPMENT PROGRAM 8MONTHLY REPORT FOR MAY - JUNE 1967
OAK RIDGE NATIONAL LAB., TENN.
ORNL-TM-1913 +. 79 PAGES, 7 FIGURES, 11 TABLES, JULY 10, 1967

INCLUDED IS WORK ON VARIOUS CHEMICAL REACTIONS, AS WELL AS RELEASE, CHARACTERIZATION, AND TRANSPORT OF FISSION PRODUCTS IN CONTAINMENT SYSTEMS UNDER VARIOUS ACCIDENT CONDITIONS AND ON PROBLEMS ASSOCIATED WITH REMOVING THESE FISSION PRODUCTS FROM GAS STREAMS. ALTHOUGH MOST OF THE WORK CONTINUES TO BE IN GENERAL SUPPORT OF WATER POWER REACTOR TECHNOLOGY, INCLUDING SOME IN DIRECT SUPPORT OF THE LOFT AND CSE PROGRAMS, SEVERAL PROJECTS ARE CONDUCTED IN SUPPORT OF THE HIGH-TEMPERATURE GAS-COOLED REACTOR (HTGR) PROGRAM, INCLUDING BOTH IN-PILE AND OUT-PILE STUDIES OF THE REACTION RATES AND FISSION PRODUCT RELEASE AND TRANSPORT PHENOMENA. OTHER MAJOR PROJECTS INCLUDE FUEL TRANSPORT SAFETY INVESTIGATIONS, A SERIES OF DISCUSSION PAPERS ON VARIOUS ASPECTS OF WATER REACTOR TECHNOLOGY, ANTISEISMIC DESIGN OF NUCLEAR FACILITIES, AND STUDIES OF PRESSURE VESSEL TECHNOLOGY. EXPERIMENTAL WORK ON PRESSURE VESSEL TECHNOLOGY INCLUDES INVESTIGATIONS OF THE ATTACHMENT OF NOZZLES TO SHELLS AND THE IMPLEMENTATION OF THIS JOINT AEC-PURC PROGRAM ON HEAVY SECTION STEEL TECHNOLOGY AND NUCLEAR PIPING PUMPS AND VALVES. SEVERAL PROJECTS DEAL WITH DEVELOPMENT OF ENGINEERING SAFEGUARDS AND THE ESTABLISHMENT OF RELEVANT CODES AND STANDARDS, WHILE ANOTHER TASK (CHORDS) DEALS WITH ESTABLISHMENT OF COMPUTER PROGRAMS FOR EVALUATING REACTOR DESIGN DATA. RECENT ACTIVITIES OF THE NSIC AND THE NUCLEAR SAFETY JOURNAL ARE ALSO DISCUSSED.

AVAILABILITY - WM. S. COTTELL, OAK RIDGE NATIONAL LAB., TENN.

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

5-17257 ALSO IN CATEGORY 6
DELCHAMBRE PH + MILLOT JP
DESCRIPTION OF REACTIVITY ACCIDENT EXPERIMENTS
COMMISSARIAT A L'ENERGIE ATOMIQUE, FRANCE
16 PAGES, 23 FIGURES, BULLETIN D-INFORMATIONS SCIENTIFIQUES ET TECHNIQUES 112, PAGES 1 THRU 16 (FEBRUARY, 1967), PRESENTED AT THE MEETING OF SPECIALISTS ON HEAT TRANSFER IN RAPID TRANSIENTS, CADARACHE, APRIL 1966

RESULTS OBTAINED FROM TWO SIMILARLY SHAPED CORES DIFFERING IN THE WIDTH OF THE COOLANT CHANNELS. A FIRST SERIES OF POWER BURSTS WITHOUT FLOW HAS BEEN PERFORMED WITH VARIOUS INITIAL TEMPERATURES. THE LOWEST PERIODS REACHED WERE ABOUT 10 MS. ON THE SECOND SERIES OF TESTS, THE INITIAL TEMPERATURE WAS ABOUT 30 C AND THE TOTAL COOLANT FLOW (DOWNWARDS) WITHIN THE CORE VARIED BETWEEN 300 AND 1200 CUBIC METERS PER HOUR (500 CUBIC METERS PER HOUR MEAN 1.70 M/S VELOCITY OF FLOW WITHIN THE CORE). THE LOWEST PERIODS REACHED RANGE ABOUT THE SAME AS IN THE PREVIOUS SERIES OF TESTS. RESULTS OBTAINED WITH OSIRIS CORE ARE FAR MORE EXHAUSTIVE THAN WITH SILOE CORE, WITH OSIRIS CORE FLOW RATES HAVE BEEN MEASURED, DURING TRANSIENTS, SHOWING THAT, FOR PERIODS SHORTER THAN 15 MS, A CONSIDERABLE AMOUNT OF WATER IS EXPELLED OUT OF THE CORE, RIGHT AT THE POWER PEAK.

*CORE, PLATE TYPE + *REACTOR TRANSIENT + ACCIDENT ANALYSIS + ACCIDENT, REACTIVITY + EXPERIMENT, GENERAL +
FRANCE + REACTOR, WATER

5-17300
ADVANCED COURSE ON FUEL ELEMENTS FOR WATER-COOLED POWER REACTORS INCLUDING SUPERHEAT ORGANIZED BY THE NETHERLANDS-NORWEGIAN REACTOR SCHOOL AT INSTITUTT FOR ATOMENERGI, NORWAY, SEPTEMBER 13-SEPTEMBER 24, 1965
NETHERLANDS-NORWEGIAN REACTOR SCHOOL, KJELLER NORWAY
KR-89 +. 316 PAGES, SEPTEMBER 1965

COLLECTION OF 15 PAPERS ON DESIGN AND STRUCTURAL INTEGRITY OF VARIOUS FUEL-ELEMENT TYPES AND MATERIALS. PRESENTED AT NETHERLANDS-NORWEGIAN REACTOR SCHOOL IN SEPT. 1965. TOPICS INCLUDE PROPERTIES OF SINTERED, VIBRATORY COMPACTED, AND SWAGED UO₂, PLUS METALLIC URANIUM. USE OF ZIRCONIUM ALLOYS, ALUMINUM, AND STAINLESS STEEL AS CANNING AND SHEATHING MATERIALS. DESIGN CONSIDERATIONS FOR ASSORTED FUEL-ELEMENT TYPES IN WATER-COOLED, STEAM-COOLED, AND SUPERHEAT REACTORS. IN-CORE INSTRUMENTATION FOR FUEL TESTING.

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

*DESIGN CRITERIA + *FUEL ELEMENT + *OPERATING EXPERIENCE + REACTOR, BOILING WATER +
REACTOR, INTERNAL SUPERHEAT + REACTOR, PRESSURIZED WATER

5-17301
ZAKER TA + WIEDERMANN AH
WATER DEPRESSURIZATION STUDIES
IIT RESEARCH INST., CHICAGO, ILL.
IITRI-578P21-26 + CONF-660650-1 +. 55 PAGES, FIGURES, REFERENCES, JUNE 1966, FROM EUROPEAN NUCLEAR ENERGY AGENCY CREST MEETING, ISPRA, ITALY

CATEGORY 5
ACCIDENT ANALYSIS

5-17301 *CONTINUED*

EXPERIMENTS WERE CONDUCTED ON RAPID DEPRESSURIZATION OF A 2-IN-DIAM. TUBE CONTAINING WATER AT INITIAL TEMPERATURES AND PRESSURES REPRESENTATIVE OF PWRS. TRANSIENT PRESSURE AND TEMPERATURE MEASUREMENTS AND HIGH-SPEED PHOTOGRAPHIC OBSERVATIONS WERE MADE IN THE PRESSURE TUBE DURING DECOMPRESSION INITIATED BY RUPTURE OF A TEMPERED GLASS DIAPHRAGM. SEVERAL CASES WERE ANALYZED THEORETICALLY FOR VARIOUS INITIAL CONDITIONS OF PRESSURE, TEMPERATURE, AND QUALITY USING THE EQUILIBRIUM THERMODYNAMIC PROPERTIES OF HOMOGENEOUS TWO-PHASE MIXTURES. A DETAILED COMPARISON OF PREDICTED PRESSURES WITH THE RESULTS OF A TYPICAL BLOWDOWN EXPERIMENT IS PRESENTED. CERTAIN FEATURES OF THE RESPONSE WHICH APPEARED TO BE IN THE NATURE OF RELAXATION PHENOMENA MAY BE EXPLAINABLE ON THE BASIS OF NONUNIFORMITIES IN INITIAL FLUID CONDITIONS. A CORRELATION WAS FOUND BETWEEN THE REACTION IMPULSE EXERTED AXIALLY ON THE RUPTURED PRESSURE TUBE AND THE TOTAL ENTHALPY INITIALLY STORED IN THE FLUID.

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

*BLOWDOWN + *OUT OF PILE LOOPS AND EXPERIMENTS + COMPARISON, THEORY AND EXPERIENCE

5-17302 ALSO IN CATEGORIES 9 AND 17
TRUSHIN JT + MILLER JK + PETRIE TW
PM-3A. SAFETY SYSTEM SET POINT ANALYSIS.
MARTIN COMPANY, BALTIMORE, MD.
MND-M3A-3146 +. 95 PAGES, JUNE 5, 1964

A PERFORMANCE ANALYSIS OF THE PRIMARY SYSTEM IS PRESENTED IN SUFFICIENT DETAIL AND FORMAT TO RE-EVALUATE THE REACTOR-SAFETY-SYSTEM SETPOINTS UNDER CHANGED CONDITIONS. STEADY-STATE OPERATING LIMITS WERE ESTABLISHED WITH NO BULK BOILING IN THE HOT CHANNEL, AND TRANSIENT ANALYSES WERE INITIATED FROM THE MOST SEVERE CONDITIONS PERMITTED BY THE RESULTS OF THE STEADY-STATE ANALYSIS. THE THERMAL LIMITATIONS IMPOSED ON THE TRANSIENT ANALYSIS WERE THAT THE DNB WILL NOT OCCUR, AND/OR THE EXIT QUALITY IN THE HOT CHANNEL WILL NOT EXCEED 15'. IN ALL CASES, THE STEADY-STATE RESTRICTION OF NO BULK BOILING PRECLUDED DNB DURING A TRANSIENT, AND THE THERMAL OPERATING LIMITS ARE DICTATED BY THE RESULTS OF THE STEADY STATE ANALYSIS. SCRAM INSTRUMENTATION ACCURACY IS SUMMARIZED, AND THE SETPOINTS ARE OBTAINED FROM THE THERMAL OPERATING LIMITS AND THE ACCURACY OF THE INSTRUMENTATION. A SAMPLE CALCULATION FOR THE DETERMINATION OF THE MAXIMUM-POWER-SCRAM SETPOINT IS PRESENTED.

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

*PERFORMANCE LIMIT + *SAFETY ANALYSIS + DNB (DEPARTURE FROM NUCLEATE BOILING) + INSTRUMENTATION, POWER RANGE + PM 3A (PORTABLE MEDIUM NUCLEAR POWER PLANT) + REACTOR, MILITARY + REACTOR, PRESSURIZED WATER

5-17349
GODFREY TG + LEITNAKER JM
A. COMPUTER PROGRAM TO CALCULATE HIGH TEMPERATURE THERMODYNAMIC FUNCTIONS
OAK RIDGE NATIONAL LAB., METALS AND CERAMICS DIVISION, TENN.
ORNL-TM-1599 +. 38 PAGES, 6 FIGURES, 7 TABLES, SEPTEMBER, 1966

A COMPUTER PROGRAM, PLOTHEAT, WAS WRITTEN WHICH USED THE METHOD OF LEAST SQUARES TO FIT HIGH-TEMPERATURES ENTHALPY DATA TO ONE OR SEVERAL SELECTED FUNCTIONS. FROM THE GENERATED EQUATION, THE HEAT CAPACITY, ENTHALPY, ENTROPY, AND THE FREE-ENERGY FUNCTION ARE CALCULATED AND TABULATED AT 100-DEG. INCREMENTS. A SUBROUTINE PACKAGE CAN BE USED WITH THE PROGRAM TO PLOT THE COMPUTED EQUATION TOGETHER WITH THE INPUT DATA, USING DIFFERENT SYMBOLS FOR EACH SET OF DATA.

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

*COMPUTER PROGRAM + *HEAT TRANSFER + *HIGH TEMPERATURE + *THERMAL PROPERTY + COMPUTER, DIGITAL

5-17354 ALSO IN CATEGORY 6
GAMBILL WR.
AN EVALUATION OF RECENT STUDIES OF HIGH FLUX HEAT TRANSFER TO GASES
OAK RIDGE NATIONAL LAB., TENN.
ORNL-TM-1877 +. 27 PAGES, 3 FIGURES, 2 TABLES, 30 REFERENCES, MAY 24, 1967

QUANTITATIVE INFORMATION RELEVANT TO THE TRANSMISSION OF HEAT TO FLOWING GASES AT HIGH HEAT FLUXES (DEFINED HERE AS A MAXIMUM EXPERIMENTAL FLUX OF AT LEAST 500,000 BTU/HR/SQ. FT WAS COLLECTED. THE DATA INCLUDES HEAT-TRANSFER-COEFFICIENT DETERMINATIONS FOR HE, H2, AND N2 IN TUBULAR, PARALL-PLATE, AND WIRE-MESH GEOMETRIES FOR PRESSURES OF 15 TO 1511 PSIA, REYNOLDS NUMBERS OF 200 TO 1,500,000, MAXIMUM HEAT FLUXES OF 580,000 TO 7,680,000 BTU/HR/SQ. FT, AND MAXIMUM SURFACE AND BULK COOLANT TEMPERATURES OF 5440 AND 4180 F, RESPECTIVELY. CORRELATIONS PROPOSED FOR HEAT-TRANSFER COEFFICIENTS ARE REVIEWED AND A RECOMMENDATION MADE FOR TURBULENT INTERNAL DUCT FLOW. GRAPHICAL RESULTS ARE GIVEN WHICH DIRECTLY RELATE SURFACE TEMPERATURE TO HEAT FLUX FOR HELIUM FLOWING THROUGH A 0.5-IN.-DIAM TUBE AT MASS VELOCITIES OF 10,000 TO 100 MILLION LB/HR/SQ. FT. AND AT BULK TEMPERATURES OF 200 TO 4000 R. FRICTION DATA ARE ALSO REVIEWED AND A CORRELATION RECOMMENDED FOR THE COMPUTATION OF FRICTION FACTORS UP TO A TEMPERATURE RATIO OF ABOUT 8.

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

CATEGORY 5
ACCIDENT ANALYSIS

5-17354 *CONTINUED*

STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

BIBLIOGRAPHY + FRICTION, GAS + HEAT TRANSFER + HEAT TRANSFER, CONVECTION + HEAT TRANSFER, GAS

5-17388

STABILITY TESTS FOR BOILING WATER REACTORS. QUARTERLY REPORT NO. 3, OCTOBER 1 - SEPTEMBER 31, 1964
ALLGEMEINE ELEKTRIZITÄTSGESELLSCHAFT, FRANKFURT AM MAIN (WEST GERMANY)
EURAC-1289 + EUR-2089 +. 55 PAGES, 1964

DESCRIBES INSTALLATION OF PURIFICATION CIRCUIT, DENSITY-MEASURING EQUIPMENT, AND RECALIBRATION OF THROUGHPUT, PRESSURE LOSS, AND SUBCOOLING INSTRUMENTATION. NUMERICAL CALCULATIONS WERE CARRIED OUT BY USING A DIGITAL PROGRAM TO DETERMINE INFLUENCE OF HEAT CAPACITY OF COOLING CHANNEL ON CHANGE IN PREHEATING-ZONE HEIGHT. ALLOWANCE MUST BE MADE FOR LOCAL DEPENDENCE OF MEAN VOID VELOCITY IN DETERMINATION OF FREQUENCY RESPONSE CURVE FOR LOCAL VARIATION OF VOID FRACTION.

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

*HEAT TRANSFER EXPERIMENT + *OUT OF PILE LOOPS AND EXPERIMENTS + EURATOM + REACTOR, BOILING WATER

5-17393

EXPERIMENTAL STUDIES OF STEAM-WATER SEPARATOR FOR BOILING WATER REACTORS
ATOMIC ENERGY COMMISSION, JAPAN

NSJ-TR-62 +. 30 PAGES, TRANSLATED FROM ISHIKAWAJIMA-HARIMA GIHO, 5(21), PAGES 11-19, (1965)

DESCRIBES TWO EXPERIMENTAL STUDIES CONDUCTED FOR DESIGN DEVELOPMENT OF PRIMARY SEPARATOR OF A STEAM-WATER SEPARATOR. (1) PRELIMINARY EXPERIMENT AT ATMOSPHERIC PRESSURE WITH AIR-WATER MIXTURE TO DETERMINE CONVERGING LENGTH OF BUBBLE, PRESSURE DROP AND STABILITY WITH VARYING FLOW RATE. (2) HIGH-PRESSURE EXPERIMENT AT 60 ATM AND SATURATED TEMPERATURE TO MEASURE EFFICIENCIES AS A FUNCTION OF FLOW RATE AND SPATIAL STEAM QUALITY DISTRIBUTION. AMONG THE CONCLUSIONS ARE RECOMMENDED FACTORS TO BE CONSIDERED IN DESIGN OF SEPARATOR - DIFFERENCES IN FLOW RATE IN SEPARATOR DIAMETER, IN BUBBLE DIAMETER, AND IN INLET STEAM QUALITY, PLUS EFFECTS OF VESSEL WALL OF SEPARATOR INTERACTIONS OF PRESSURE LOSS, AND OF CARRYUNDER.

AVAILABILITY - JOHN CRERAR LIBRARY, 35 WEST 33RD. ST., CHICAGO, ILLINOIS, 60616, \$2.60 COPY, \$1.10 MICROFICHE

*HEAT TRANSFER EXPERIMENT + *STEAM GENERATOR + JAPAN + REACTOR, BOILING WATER

5-17437

ALSO IN CATEGORIES 11 AND 12

VINCK WF + MAURER H

SOME EXAMPLES OF THE X RELATIONSHIP BETWEEN CONTAINMENT AND OTHER ENGINEERED SAFEGUARD REQUIREMENTS
ACCIDENT ANALYSIS AND SITE CONDITIONS

EURATOM

EUR/C/1474/67.E +. 30 PAGES, 2 TABLES, 24 REFERENCES, PAPER PRESENTED AT THE IAEA SYMPOSIUM ON CONTAINMENT AND SITING, VIENNA 3-7, APRIL 1967

THE PAPER REFERS PRIMARILY TO POWER REACTORS FOR WHICH EURATOM HAS BEEN INVOLVED IN SAFETY REVIEWS PERFORMED IN CLOSE COOPERATION WITH TECHNICAL ADVISORY ORGANIZATIONS CONCERNED IN THE NATIONAL LICENSING PROCEDURES. A COMPARATIVE SURVEY IS PRESENTED OF A NUMBER OF CONTAINMENT CONCEPTS AND OTHER SAFEGUARDS TO PROTECT AGAINST OR TO LIMIT THE CONSEQUENCES OF POSTULATED MAJOR ACCIDENTS. MAGNITUDES OF EXCLUSION AREAS AND POPULATION DENSITIES ARE ALSO PRESENTED. THE RESPECTIVE MERITS AND REQUIREMENTS OF ENGINEERED SAFEGUARDS AND EMERGENCY EQUIPMENT ARE DISCUSSED AS RELATED TO CONTAINMENT PROVISIONS.

*CONTAINMENT STRUCTURE + *ENGINEERED SAFETY FEATURE + ACCIDENT ANALYSIS + CONTAINMENT CONSTRUCTION + CONTAINMENT SPRAY + CONTAINMENT, MULTIPLE + CORE REFLOODING SYSTEM + CORE SPRAY + FRANCE + GERMANY + ITALY + N S SAVANNAH + NETHERLANDS + REACTOR, BOILING WATER + REACTOR, POWER + REACTOR, PRESSURIZED WATER

5-17442

ALSO IN CATEGORY 8

PHYSICO-CHEMICAL STUDIES OF CLAD UO₂ IN POTENTIAL MELTDOWN ENVIRONMENT

GENERAL ELECTRIC COMPANY, CINCINNATI, OHIO

GEMP-67 +. 15 PAGES, PAGES 151-165 FROM AEC FUELS AND MATERIALS DEVELOPMENT PROGRAM PROGRESS REPORT NO. 67. JUNE 30, 1967

ZIRCALOY-4 TUBES, INTERNALLY PRESSURIZED IN ARGON AND IN STEAM ATMOSPHERES, WERE INDUCTION-HEATED AT 0.3 C/SEC UNTIL THEY CRACKED OR EXPANDED 34%. AT PRESSURES BELOW 200 PSI, THE STEAM ALLOWED OXIDATION, WHICH STIFFENED CLADDING ENOUGH TO OBTAIN HIGHER TEMPERATURE THAN IN THE ARGON, AND CLAD CRACKING AFTER 12' EXPANSION WAS THE FAILURE MECHANISM RATHER THAN EXPANSION. HIGHER RATES FOR ZIRCALOY-4 AIR CORROSION THAN FOR STEAM OXIDATION ABOVE 1000 C ARE APPARENTLY DUE TO EFFECTS OF ZIRCONIUM NITRIDE FORMED.

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

*ACCIDENT, LOSS OF COOLANT + *FAILURE, CLADDING + *PRESSURE, INTERNAL + *ZIRCALOY + CORROSION +

CATEGORY 5
ACCIDENT ANALYSIS

5-17442 *CONTINUED*
FUEL MELTDOWN + REACTOR, POWER

5-17447 ALSO IN CATEGORY 6
KIRBY GJ + STANFORTH R + KINNEIR JH
AN INVESTIGATION INTO A POSSIBLE MECHANISM OF SUBCOOLED BURNOUT
ATOMIC ENERGY ESTABLISHMENT, WINFRITH, ENGLAND
AEEW-M-725 +. 14 PAGES, 6 FIGURES, MARCH 10, 1966

RECENT INVESTIGATIONS INTO THE CAUSE OF BURNOUT SHOWED THAT IN THE QUALITY REGIME, FILM DRYUP IS THE DOMINANT MECHANISM. VISUAL EXPERIMENTS PERFORMED AT 25 P.S.I.A. SHOWED THAT NEAR-ZERO-QUALITY LARGE BUBBLES FORM WHICH PRESS CLOSE TO THE HEATED SURFACE, LEAVING ONLY A THIN LIQUID FILM TO COOL THE HEATER. BY MEASURING THE FILM THICKNESS BETWEEN HEATER AND BUBBLES, IT WAS SHOWN THAT DRYUP OF LIQUID IS NOT THE CAUSE OF SUBCOOLED FORCED-CONVECTION BURNOUT UNDER TEST CONDITIONS.

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

BURNOUT HEAT FLUX + DNB (DEPARTURE FROM NUCLEATE BOILING) + HEAT TRANSFER

5-17448 ALSO IN CATEGORIES 4 AND 6
WALKER FE
A FORTRAN PROGRAM (ITEMCAL) FOR CALCULATION OF HUGONOT TEMPERATURES, ISOTHERMS, AND RELEASE ADIABATS FROM HYDRODYNAMIC DATA
LAWRENCE RADIATION LAB., LIVERMORE
UCRL-50,210 +. 30 PAGES, MARCH 27, 1967

A FORTRAN PROGRAM (ITEMCAL) WAS WRITTEN TO CALCULATE HUGONOT TEMPERATURES FROM EXPERIMENTAL HYDRODYNAMIC DATA. THE PROGRAM ALSO DERIVES A LEAST-SQUARES FIT TO THE DATA, CALCULATES ISOTHERMS AND RELEASE ADIABATS, AND GIVES GRAPHS OF DATA AND SOLUTIONS.

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

HYDRODYNAMIC ANALYSIS + SHOCK WAVE + THERMAL PROPERTY + THERMODYNAMICS

5-17451 ALSO IN CATEGORY 6
MAGEE PM + MCELIGOT DM
EFFECT OF PROPERTY VARIATION ON THE TURBULENT FLOW OF GASES IN TUBES. THE THERMAL ENTRY ATOMICS INTERNATIONAL, CANOGA PARK, CALIF. + UNIVERSITY OF ARIZONA, TUCSON + STANFORD UNIVERSITY, CALIF.
SU-247-04 +. 62 PAGES, FIGURES, TABLES, PREFERENCES, MARCH 15, 1967

HEAT-TRANSFER EXPERIMENTS TO AIR AND HELIUM (REYNOLDS NUMBER 10,000 TO 200,000) ARE ANALYZED. LOCAL HEAT TRANSFER AND FRICTION DATA ARE REPORTED. A METHOD OF CORRELATING DATA IS PRESENTED. COMPARISON WITH OTHER CORRELATIONS BASED ON INTEGRAL-BOUNDARY-LAYER ANALYSIS ARE PRESENTED.

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

AIR + HEAT TRANSFER + HEAT TRANSFER ANALYSIS + HEAT TRANSFER EXPERIMENT + HELIUM

5-17452
BONNET C + MACKE E + MORIN R + SALOMON J
TEMPERATURE FLUCTUATIONS IN THE HEATING WALL AND IN THE BOILING LIQUID DURING NUCLEATE BOILING EUROPEAN ATOMIC ENERGY COMMUNITY, ITALY. JOINT NUCLEAR RESEARCH CENTER
EUR-3162.F +. 102 PAGES, FIGURES, REFERENCES, 1966, IN FRENCH

THE NUCLEATION PHENOMENON IN BOILING IS ACCOMPANIED BY TEMPERATURE FLUCTUATIONS BOTH IN THE HEATING WALL AND IN THE BOILING LIQUID. IN THE EXPERIMENTS REPORTED HERE IT WAS POSSIBLE TO DIRECTLY RELATE THE TEMPERATURE TRANSIENTS TO THE BUBBLE HISTORY. THIS METHOD IS CLAIMED TO GIVE A BETTER UNDERSTANDING OF THE MECHANISMS INVOLVED. THEORETICAL MODELS OF BUBBLE FORMATION ARE PROPOSED WHICH SATISFACTORILY AGREE WITH THE EXPERIMENTAL RESULTS. ALSO INFORMATION ON MICROTURBULENCE IS DRAWN FROM THE FLUID TEMP. TRANSIENTS BETWEEN THE NUCLEATION SITES.

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

FLUCTUATION + HEAT TRANSFER ANALYSIS + NUCLEATE BOILING + THERMAL ANALYSIS

5-17453 ALSO IN CATEGORIES 6 AND 8
ANTOINE AC
THERMODYNAMIC PROPERTIES OF LIQUID METAL SOLUTIONS IN THE SODIUM-MERCURY SYSTEM AT 200 C
LEWIS RESEARCH CENTER, CLEVELAND, OHIO. NASA

CATEGORY 5
ACCIDENT ANALYSIS

5-17453 *CONTINUED*

NASA-TN-D-3951 +. 11 PAGES, 2 FIGURES, 2 TABLES, 14 REFERENCES, MAY 1967

THE ELECTROMOTIVE FORCE OF SODIUM-SODIUM AMALGAM CELLS WAS MEASURED AT 150, 200, AND 250 C FOR 0.01 TO 0.15 ATOMIC FRACTION SODIUM. THE PARTIAL FREE ENERGY, PARTIAL ENTROPY, AND PARTIAL HEAT OF MIXING OF SODIUM IN SODIUM AMALGAM WERE CALCULATED. THERMODYNAMIC PROPERTIES FOR THE MERCURY WERE ALSO CALCULATED.

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

PROPERTY, PHYSICAL + THERMAL PROPERTY + THERMODYNAMICS

5-17454

ALSO IN CATEGORY 8

HAWKFR PA

THERMAL AND STRESS PERFORMANCE OF A PEBBLE BED REACTOR
AUSTRALIAN ATOMIC ENERGY COMMISSION RESEARCH ESTABLISHMENT, LUCAS HEIGHTS
AAEC/TM-344 +. 19 PAGES, REFERENCES, SEPTEMBER 1966

A METHOD FOR DETERMINING THE THERMAL AND STRESS PERFORMANCE OF A PEBBLE-BED REACTOR IS DESCRIBED FOR STEADY-STATE OPERATION. SOME RESULTS BASED ON THIS ANALYSIS ARE PRESENTED TO INDICATE LIKELY TRENDS.

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

REACTOR, PEBBLE BED + STRESS ANALYSIS + THERMAL ANALYSIS

5-17455

MAYINGER F + SCHAD O + WEIS E

RESEARCH INTO THE CRITICAL HEAT FLUX (BURNOUT) IN BOILING WATER. PROGRESS REPORT NO. 16, JULY 1, 1965 - SEPTEMBER 30, 1965

MASCHINENFABRIK AUGSBURG-NUERNBERG A. G., NUREMBERG, GERMANY
EURAC-1482 + EUR-265C +. 46 PAGES, NOVEMBER 1965

CRITICAL-HEAT-FLUX MEASUREMENTS TO BOILING, FORCED-CONVECTION WATER FROM 70 TO 100 ATM PRESSURE, ARE REPORTED. THE VARIABLES ALSO INCLUDED MASS FLOW INTO 200 TO 400 G/SQ. CM, L/D RATIOS OF 40 AND 80, AND INLET CONDITIONS FROM 50 C SUBCOOLED TO 20% INLET QUALITY. SOME TWISTED-TAPE DATA ARE REPORTED. ADDITIONAL DATA ON THE EFFECT OF HYDRAULIC DIAMETER ON THE CRITICAL HEAT FLUX WERE OBTAINED AT 70, 100, 140 ATM AND MASS FLOW OF 100 TO 250 G/CM. SQ. PULSATING AND STEADY FLOW WERE INVESTIGATED IN BOTH SERIES OF TESTS.

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

BURNOUT HEAT FLUX + COOLANT QUALITY + DNB (DEPARTURE FROM NUCLEATE BOILING) + FLOW, PULSATING + FLOW, TWO PHASE

5-17471

ALSO IN CATEGORY 12

FUJIE H

RECENT STUDIES IN NUCLEAR POWER PLANT SAFETY. III SAFETY EVALUATION OF POST INCIDENT DEVICES OF LIGHT WATER POWER REACTOR
HITACHI RESEARCH LAB., JAPAN
5 PAGES, 6 FIGURES, NIPPON GENSHIYOKU GAK. 8, PAGES 609-13 (NOVEMBER 1966) IN JAPANESE

EXPERIMENTS WERE PERFORMED ON THE COOLING EFFICIENCY OF SPRAY, THE FLOW RATE OF SATURATED WATER FROM A PRESSURE VESSEL, THE HEAT TRANSFER OF A CONTAINER-WALL SURFACE, AND THE COOLING EFFICIENCY OF CONTAINER SPRAY. MEASUREMENTS OF THE TEMPERATURE CHANGES CAUSED ON HEATED RODS (MODEL FUEL ASSEMBLY) BY SPRAY COOLING CONTRIBUTED TO THE FORMULA OF A PROPOSED THEORY TO EXPLAIN THE TEMPERATURE CHANGES. THE RELATIONSHIPS EXISTING BETWEEN DRYOUT, HEAT OUTPUT AND SPRAY FLOW RATE FOR STATIONARY CORE SPRAY COOLING WERE OBTAINED. THE FLOW RATE OF SATURATED WATER FROM A MODEL PRESSURE VESSEL WAS MEASURED AND COMPARED WITH MOODY'S THEORETICAL RESULTS. THE RELATION BETWEEN COOLING EFFICIENCY OF CONTAINER SPRAY AND INNER-PRESSURE OF THE CONTAINER WAS OBTAINED FROM EXPERIMENTS WITH A MODEL CONTAINER.

*HEAT TRANSFER EXPERIMENT + *MOCKUP + ACCIDENT, LOSS OF COOLANT + BLOWDOWN + CONTAINMENT SPRAY + CORE SPRAY + HEAT FLUX, DRYOUT + JAPAN

5-17491

ALSO IN CATEGORY 6

LESLIE DC

THE DEVELOPMENT OF FLASHING FLOW FROM EXISTING NUCLEATION SITES
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, WINFRITH
AEEW-R-575 +. 26 PAGES, 17 FIGURES, 13 REFERENCES, OCTOBER 1966

A THEORY OF FLASHING FLOW IN DUCTS WAS DEVISED AND NAMED BUBGRO. THIS IS SIMILAR TO THE THEORY OF SIMPSON AND SILVER, BUT IT IS BASED ON THE CONCEPT THAT ALL NUCLEATION SITES ARE PRESENT AT THE START OF THE FLOW. AN EXACT ANALYTICAL SOLUTION WAS FOUND FOR ONE PARTICULAR CASE, AND A COMPUTER CODE WAS WRITTEN TO ENABLE MORE GENERAL CASES TO BE STUDIED. CURVES ARE PRESENTED SHOWING THE VARIATION OF THE VOIDAGE WITH DISTANCE DOWN THE DUCT FOR A NUMBER OF

CATEGORY 5
ACCIDENT ANALYSIS

5-17491 *CONTINUED*

SPECIAL CASES. THESE INCLUDE DUCTS WITH SMOOTH CONTRACTIONS AND DUCTS WHICH FLARE OUT AFTER AN INITIAL CONTRACTION. IT IS BELIEVED THAT THIS IS THE FIRST TIME THAT COMPUTATIONS HAVE BEEN DONE ON SUCH DUCTS. SUMMARY CURVES SHOW THE DUCT LENGTH REQUIRED TO ACHIEVE A VOIDAGE OF 50% UNDER A RANGE OF INITIAL CONDITIONS. THE BUBBLE THEORY WAS COMPARED WITH THE THEORIES OF SILVER AND OF SIMPSON AND SILVER. THE THREE APPROACHES GIVE DIFFERENT VARIATIONS OF VOIDAGE WITH POSITION NEAR THE DUCT INLET. COMPARISON WITH VOIDAGE MEASUREMENTS SHOULD ENABLE THE CORRECT MODEL TO BE IDENTIFIED.

AVAILABILITY - WINFRITH SECRETARIAT, ATOMIC ENERGY ESTABLISHMENT, WINFRITH, DORCHESTER, DORSET, ENGLAND

ANALYTICAL MODEL + BLOWDOWN + FLOW, TWO PHASE

5-17492 ALSO IN CATEGORY 6

MCCLURE JA

TOODEE. A TWO DIMENSIONAL TIME DEPENDENT HEAT CONDUCTION PROGRAM

PHILLIPS PETROLEUM COMPANY, ATOMIC ENERGY DIVISION

ID0-17277 +. 162 PAGES, FIGURES, 6 REFERENCE, APRIL 1967

TOODEE IS A TWO-DIMENSIONAL, TIME-DEPENDENT HEAT-CONDUCTION COMPUTER PROGRAM WRITTEN IN THE FORTRAN IV AND MAP LANGUAGES. THIS PROGRAM IS SUITABLE FOR INVESTIGATING GENERAL TRANSIENT AND/OR STEADY-STATE PROBLEMS. TYPICAL OF (BUT NOT LIMITED TO) THE TYPE OF PROBLEMS FOR WHICH THE PROGRAM HAS BEEN USED ARE THE CALCULATION OF TEMPERATURE DISTRIBUTIONS IN FUEL ELEMENTS DURING POWER EXCURSIONS. THE MESH FOR THE PROGRAM IS FORMED BY VARIABLY SPACED ORTHOGONAL CURVES IN EITHER SLAB OR CYLINDRICAL GEOMETRY. THE CYLINDRICAL GEOMETRY MAY BE EITHER AXISYMMETRIC, WITH SPACE VARIABLES R-Z, OR POLAR, WITH SPACE VARIABLES R-THETA. CONDITIONS TO BE SPECIFIED INDEPENDENTLY AT EACH BOUNDARY ARE EITHER SURFACE TEMPERATURES OR HEAT-TRANSFER COEFFICIENTS AND EITHER EXTERIOR TEMPERATURES OR FLOW RATES.

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

COMPUTER PROGRAM + HEAT TRANSFER + HEAT TRANSFER ANALYSIS

5-17493 ALSO IN CATEGORY 6

SCHNITKER W

EXCHANGE OF HEAT UPON INJECTION OF A BOILING FLUID INTO A HOT, NONBOILING FLUID

ATOMICS INTERNATIONAL, CANOGA PARK, CALIF.

AI-TRANS-211 +. 14 PAGES, FIGURES, TRANSLATED FROM BRENNSTOFF-WAERME-KRAFT, 18, PAGES 301-6 (JUNE 1966)

PRESSURE DEVELOPMENT IN A TANK COMPLETELY FILLED WITH TERPHENYL, INTO WHICH WATER CAN LEAK FROM ABOVE AND A FLUID MIXTURE CAN ESCAPE FROM THE TERPHENYL, WAS EXPERIMENTALLY INVESTIGATED. IF THE WATER IS PARTIALLY VAPORIZED IN THE TERPHENYL AND STILL ABSORBS HEAT FROM THE TERPHENYL, THIS EXCHANGE OF HEAT IS ESSENTIAL FOR THE PRESSURE BUILDUP. AN EQUATION FOR THIS EXCHANGE IS GIVEN. IT FOLLOWS FROM THE EQUATION THAT THE PRESSURE IS NOT SIGNIFICANTLY REDUCED BECAUSE OF AN ENLARGEMENT (INCREASE IN THE DIAMETER) OF THE DRAIN-PIPE CROSS-SECTION, SINCE, BECAUSE OF THIS ENLARGEMENT, THE VOLUME OF THE DOUBLE-PHASE MIXTURE AND HENCE THE EXCHANGE OF HEAT INCREASES. ONLY WHEN SUPERHEATED STEAM IS FORMED CAN AN ENLARGEMENT HAVE A STRONGER EFFECT, WHICH HOWEVER LEADS TO PIPE DIAMETERS THAT ARE OFTEN INFEASIBLE IN PRACTICE.

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

BLOWDOWN + HEAT TRANSFER + HEAT TRANSFER, BOILING + ORGANIC COOLANT

5-17494 ALSO IN CATEGORY 6

SHEKRILADZE IG

MECHANISM OF STEAM BURBLE FORMATION

RSIC-632 + NASA-TM-X-59398 +. 14 PAGES, TRANSLATED FROM SOOBASHCH. AKAD. NAUK GRUZ. SSR, 41, PAGES 391-8 (1966)

PRESENTS THE MECHANISM OF BUBBLE FORMATION ON A WALL DURING NUCLEATE BOILING.

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

HEAT TRANSFER, BOILING

5-17495

GOODYKOONTZ JH + BROWN WF

LOCAL HEAT-TRANSFER AND PRESSURE DISTRIBUTIONS FOR FREON-113 CONDENSING IN DOWNWARD FLOW IN A VERTICAL TUBE

LEWIS RESEARCH CENTER, CLEVELAND, OHIO. NASA

NASA-TN-D-3952 +. 38 PAGES, 10 FIGURES, 1 TABLE, 13 REFERENCES, MAY 1967

LOCAL HEAT-TRANSFER DATA AND STATIC-PRESSURE DISTRIBUTIONS FOR FREON-113 CONDENSING INSIDE A VERTICAL TUBE ARE PRESENTED. THE TEST CONDENSER WAS A 0.293-INCH-INSIDE-DIAMETER BY 8-FOOT-LONG, WATER-COOLED COPPER TUBE. INCOMPLETE CONDENSING OCCURRED IN THE CONDENSER, WITH EXIT QUALITIES RANGING FROM 0.05 TO 0.40. LOCAL CONDENSING HEAT-TRANSFER COEFFICIENTS VARIED

CATEGORY 5
ACCIDENT ANALYSIS

5-17495 *CONTINUED*

FROM 3300 BTU PER HR PER SQUARE FOOT PER DEGREE F AT THE VAPOR INLET END TO 200 BTU PER HR PER SQ. FOOT PER DEGREE F AT THE DISCHARGE END. THE LOCAL CONDENSING HEAT-TRANSFER COEFFICIENTS FOR FREON-113 WERE SATISFACTORILY CORRELATED BY USING A CARPENTER-COLBURN TYPE OF RELATION FOR HIGH-VELOCITY CONDENSING. OVERALL FRICTION-PRESSURE LOSSES WERE COMPUTED AND FOUND TO BE A FUNCTION OF A GROUP OF VARIABLES USED IN SINGLE-PHASE PIPE-FRICTION PROBLEMS.

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

HEAT TRANSFER + HEAT TRANSFER EXPERIMENT + HEAT TRANSFER, CONDENSATION

5-17496

ALSO IN CATEGORY 6

BECKER KM

BURNOUT CORRELATION FOR FLOW OF BOILING WATER IN VERTICAL ROD BUNDLES

AKTIEBOLAGET ATOMENERGI, STOCKHOLM, SWEDEN

AE-276 +. 103 PAGES, FIGURES, TABLES, REFERENCES, APRIL 1967

A BURNOUT-HEAT-FLUX CORRELATION FOR BOILING WATER IN ROD BUNDLES IS PRESENTED FOR THE FOLLOWING RANGE OF VARIABLES - NUMBER OF RODS (1, 3, 6 AND 7), ROD DIAMETERS (10.05-13.80 MM), SHROUD DIAMETERS (17.42-71.0 MM), ROD CLEARANCES (3.7-8.8 MM), HEATED LENGTHS (608-4440 MM), PRESSURES (20-71 KG/SQ. CM), INLET SUBCOOLING (3-240 C), MASS VELOCITIES (180-1500 KG/SQ. M PER SEC), BURNOUT HEAT FLUXES (74-314 W/SQ. CM), BURNOUT STEAM QUALITIES (0.1-0.55).

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

BURNOUT HEAT FLUX + HEAT TRANSFER + HEAT TRANSFER ANALYSIS + HEAT TRANSFER, BOILING

5-17498

ALSO IN CATEGORY 18

LEES EA

POWER REACTOR HIGH PERFORMANCE UO2 PROJECT. PROGRESS REPORT NO. 2, NOVEMBER 1-DECEMBER 31, 1966

GENERAL ELECTRIC CO., PLEASANTON, CALIF.

GEAP-5431 + EURAEC-1824 +. 12 PAGES, FIGURES, FEBRUARY 1967

ONE OF A SERIES OF PROGRESS REPORTS ON THE JOINT AEC-EURATOM SIZ ZIRCALOY-2-CLAD UO2 FUEL RODS AT BIG ROCK POINT TO AVERAGE EXPOSURE OF 15,000 MWD/K. TWO ASSEMBLIES WILL OPERATE WITH INCIPIENT MELTING IN CENTRAL REGION OF UO2 AT RATED POWER CONDITIONS, REPRESENTING A STEP IN ELIMINATING THE NO-CENTRAL-MELT DESIGN CRITERION NOW USED. THE OTHER FOUR WILL OPERATE WITH MODERATE CENTRAL MELTING AND REPRESENT A FURTHER STEP IN OPERATIONS WHERE HOTTEST FUEL RODS IN CORE ARE UNDERGOING MODERATE MELTING.

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

*CENTERLINE MELTING + *FUEL ELEMENT + *PERFORMANCE LIMIT + *RESEARCH AND DEVELOPMENT PROGRAM + *URANIUM DIOXIDE + EURATOM + USAEC (U.S. ATOMIC ENERGY COMMISSION) + ZIRCALOY

5-17503

ALSO IN CATEGORY 17

LPTR 3 MW TEST

UNIVERSITY OF CALIFORNIA, LIVERMORE, LAWRENCE RADIATION LAB

UCRL-50147 +. 5 PAGES, 2 FIGURES, 1 TABLE, PAGES 78-82 FROM SAFETY ANALYSIS REPORT FOR THE LIVERMORE POOL TYPE REACTOR, NOVEMBER 20, 1966

ALTHOUGH TEST WAS PLANNED FOR 4 MW, IT WAS LIMITED TO 3 BY 500 F LIMIT ON LEAD. SUBCOOLED BOILING AT LEAD HAD BEEN EXPECTED TO HOLD TEMPERATURE AT 400 F. SHIELDING CLOSE TO CORE. PREDICTED FUEL HOT-SPOT TEMPERATURE FOLLOWED A STRAIGHT LINE (ON LOG-LOG PAPER) WITH POWER, 208 F WAS MEASURED AT 3.05 MW, WITH 218 F PREDICTED.

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

*POWER UPGRATING + *TEST, PROOF + CLAD + FUEL ELEMENT + LEAD + LRL (LAWRENCE RADIATION LABORATORY) + MEASUREMENT, TEMPERATURE + PERFORMANCE LIMIT + REACTOR, AEC OWNED + REACTOR, RESEARCH + SHIELDING

5-17529

ALSO IN CATEGORY 6

GREEN RE + KAY RE + COLPITTS CW

CANDU-BLW EXPERIMENTS IN ZED-2. PART II. BUCKLING AND LOSS OF COOLANT EXPERIMENTS

ATOMIC ENERGY OF CANADA LTD., CHALK RIVER, ONTARIO

AECL-2691 +. 44 PAGES, 18 FIGURES, 14 TABLES, 10 REFERENCES, MAY 1967

EXPERIMENTS WERE RUN IN SIMULATED CANDU-BLW LATTICES IN ZED-2 (SQUARE ARRAYS OF 28-ROD UO2 CLUSTERS AT A SPACING OF 27.94 CM) TO DETERMINE (A) THE MATERIAL BUCKLING OF THE LATTICE WITH H2O OR AIR AS COOLANTS, (B) THE FLUX PERTURBATION AND REACTIVITY EFFECTS OF REMOVING THE H2O COOLANT FROM 50% OF THE FUEL ASSEMBLIES IN THREE GEOMETRIC ARRANGEMENTS. THE BUCKLING FOR THE H2O-COOLED LATTICE WAS 1.166 PLUS OR MINUS 0.018 PER SQ. METER, AND FOR THE AIR-COOLED LATTICE 3.949 PLUS OR MINUS 0.039. THE LOSS-OF-COOLANT EXPERIMENTS INDICATED A SMALLER INCREASE IN REACTIVITY WHEN ALTERNATE ASSEMBLIES OR ROWS OF FUEL ASSEMBLIES WERE VOIDED THAN WHEN ONE-HALF THE LATTICE ABOUT A DIAMETER WAS VOIDED.

CATEGORY 5
ACCIDENT ANALYSIS

5-17529 *CONTINUED*

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

ACCIDENT, LOSS OF COOLANT + BUCKLING + CANDU (CANADIAN NATURAL URANIUM REACTOR) + REACTOR PHYSICS + REACTOR, HEAVY WATER + REACTOR, PRESSURE TUBE + VOID COEFFICIENT

5-17532 ALSO IN CATEGORY 6

CARVER MB

AN ANALYTICAL MODEL FOR THE PREDICTION OF HYDRODYNAMIC INSTABILITY IN PARALLEL HEATED CHANNELS
ATOMIC ENERGY OF CANADA LTD., CHALK RIVER, ONTARIO
AECL-2681 +. 32 PAGES, 4 FIGURES, 4 TABLES, 30 REFERENCES, MARCH 1967

THE PHENOMENON OF FLOW INSTABILITY IN PARALLEL HEATED CHANNELS WAS INVESTIGATED ANALYTICALLY. PARTICULAR EMPHASIS WAS GIVEN TO THE DEVELOPMENT OF AN ANALYTICAL MODEL SUITABLE FOR USE ON A DIGITAL COMPUTER. PREDICTIONS OF THE THRESHOLD OF INSTABILITY GIVEN BY THE MODEL WERE COMPARED WITH PARALLEL CHANNEL EXPERIMENTS AT AECL. GOOD AGREEMENT, PARTICULARLY AT HIGH PRESSURES. FURTHER DEVELOPMENT OF THE MODEL IS PROPOSED.

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

COMPUTER PROGRAM + COMPUTER, DIGITAL + FLOW STABILITY + FLOW THEORY AND EXPERIMENTS + FLOW, TWO PHASE + FUEL ELEMENT + HYDRODYNAMIC ANALYSIS

5-17533 ALSO IN CATEGORY 6

GRASS G

INVESTIGATIONS IN THE FIELD OF HEAT TRANSFER AS A PART OF THE EURATOM PROGRAMS

EURATOM DEPARTMENT OF HEAT TRANSFER, ISPRA

ORNL-TR-1740 +. 12 PAGES, 7 FIGURES, TRANSLATED FROM ATOMPRAXIS 12, (4/5), PP. 215-219, (1966)

BRIEF QUALITATIVE STATEMENT DESCRIBING CURRENT RESEARCH PROGRAM BEING CONDUCTED BY EURATOM ON HEAT TRANSFER IN (1) GAS REACTOR, (2) BOILING LIGHT-WATER REACTORS, HEAVY-WATER GAS-COOLED REACTORS, HEAVY-WATER PRESSURIZED-WATER REACTORS, HEAVY-WATER ORGANIC-COOLED REACTORS, AND SODIUM-COOLED FAST BREEDERS ARE REPORTED.

EURATOM + HEAT TRANSFER + RESEARCH AND DEVELOPMENT PROGRAM

5-17534 ALSO IN CATEGORIES 6 AND 17

UNDERHILL HJ

VALVE CONSTRUCTION

ATOMIC ENERGY OF CANADA, LTD.

CANADIAN PATENT 744-598 +. 7 PAGES, 4 FIGURES, OCT. 18, 1966

A DUMP-VALVE MECHANISM IS DESCRIBED TO SHUT DOWN A NUCLEAR REACTION QUICKLY BY GRAVITY FLOW OF THE HEAVY-WATER MODERATOR WHICH NORMALLY SURROUNDS THE FUEL. IN THE OPERATING POSITION, THE VALVE GATE IN THE BOTTOM OF THE REACTOR IS HELD CLOSED AGAINST GRAVITY, AND THE HEAVY-WATER HEAD BY MAGNETIC ATTRACTION. A SUITABLE GASKET ARRANGEMENT USED THE WEIGHT OF THE HEAVY WATER TO FORM A SATISFACTORILY TIGHT CLOSURE. RAPID SHUTDOWN IS ACCOMPLISHED BY CUTTING OFF THE POWER TO MAGNETIC CLOSING DEVICE. FAILURE OF THE NORMAL CONTROL SYSTEM OR POWER SUPPLY CAUSES AUTOMATIC SHUTDOWN BY REMOVAL OF THE MAGNETIC FLUX. THE VALVE OPERATES IN A PIPE OF SUCH DIAMETER THAT FISSION CEASES IN A FEW SECONDS BECAUSE HEAVY WATER SOON FALLS TO A SUBCRITICAL LEVEL.

AVAILABILITY - DEPARTMENT OF COMMERCE, WASHINGTON, D.C., (30 CENTS PER PAGE)

BLOWDOWN + HEAVY WATER + REACTOR, HEAVY WATER + REFLECTOR + VALVE

5-17535 ALSO IN CATEGORIES 4 AND 6

THURSTON RS

EFFECT OF SELF-INDUCED THERMAL-ACOUSTIC OSCILLATIONS ON HEAT TRANSFER TO HYDROGEN

LOS ALAMOS SCIENTIFIC LAB., N. MEX.

LA-3616 +. 36 PAGES, 27 FIGURES, 5 TABLES, 27 REFERENCES, DECEMBER 1966

THE EFFECT OF SELF-INDUCED THERMAL-ACOUSTIC OSCILLATIONS ON HEAT TRANSFER TO HYDROGEN IN A 0.25-IN.-I.D. BY 10-FT-LONG ELECTRICALLY HEATED STAINLESS STEEL TUBE WAS STUDIED. PRESSURES WERE VARIED FROM A SUBCRITICAL 112 PSIA TO A SUPERCRITICAL 265 PSIA. TWO ACOUSTIC MODES WERE OBSERVED. ONE, THE FIRST HARMONIC OF STANDING WAVES IN A PIPE OPEN AT BOTH ENDS, OCCURRED AT FREQUENCIES BETWEEN 70 AND 150 CPS. THE SECOND WAS HELMHOLTZ RESONANCE, THE ACOUSTIC ANALOGY TO A SPRING-MASS SYSTEM. HELMHOLTZ OSCILLATIONS WERE OBSERVED BETWEEN 4 AND 34 CPS. THE MAXIMUM HELMHOLTZ-MODE PRESSURE AMPLITUDE WAS 34 PSI, AND THE MAXIMUM FLUID TEMPERATURE AMPLITUDE WAS 100 R. HEAT TRANSFER TO HYDROGEN WAS NOT AFFECTED BY AXIALLY ORIENTED HELMHOLTZ-MODE OSCILLATIONS WITH LONG WAVE LENGTHS RELATIVE TO THE LENGTH OF THE TEST SECTION. HEAT TRANSFER TO TWO-PHASE AND SUPERCRITICAL HYDROGEN WAS INFLUENCED BY THE GENERATION OF THERMAL-ACOUSTIC OSCILLATIONS. HEAT TRANSFER IMPROVED AS THE INCEPTION OF OSCILLATIONS WAS APPROACHED, BUT ONCE OSCILLATIONS OCCURRED, INCREASING THE INTENSITY DID NOT IMPROVE THE TRANSFER.

CATEGORY 5
ACCIDENT ANALYSIS

5-17535 *CONTINUED*
AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

CRYOGENICS + FLOW STABILITY + FLOW, HIGH SPEED + HEAT TRANSFER + HEAT TRANSFER +
HEAT TRANSFER AUGMENTATION + HYDROGEN + OSCILLATION

5-17537 ALSO IN CATEGORY 6
SUBBOTIN VI + OVECHKIN OM + SOROKIN DN + KUDRYAVTSEV AP
CRITICAL HEAT FLUX IN ALKALI METAL BOILING UNDER CONDITIONS OF FREE CONVECTION
BNL-TR-138 +. 11 PAGES, 4 FIGURES, 8 REFERENCES, DECEMBER 1966, TRANSLATED FROM PAPERS PRESENTED AT IAEA SYMPOSIUM ON ALKALI METAL COOLANTS, CORROSION STUDIES, AND SYSTEM OPERATING EXPERIENCE, VIENNA, AUSTRIA, NOVEMBER 28-DECEMBER 2, 1966

FREE-CONVECTION CRITICAL-HEAT-FLUX DATA ARE PRESENTED FOR BOILING SODIUM, POTASSIUM, AND CESIUM. THE DATA ARE COMPARED WITH CORRELATIONS BY KUTATELADZE, NOYES, AND AN EXPRESSION OF THE AUTHOR AND TO DATA OBTAINED WITH ALKALI METALS BY OTHERS.

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

HEAT FLUX, CRITICAL + HEAT TRANSFER, BOILING + HEAT TRANSFER, NATURAL CONVECTION + METAL, ALKALI + METAL, LIQUID

5-17538 ALSO IN CATEGORY 6
KUJAL B + KUJAL J
CALCULATIONS FOR LOCAL BURN-UP IN A HEAVY WATER REACTOR LATTICE
CESKOSLOVENSKA AKADEMIE VED, PEZ. USTAV JADERNEHO VYZKUMU
UJV-1704 +. 23 PAGES, NOVEMBER 1966, INCZECH

A METHOD OF CALCULATING PARTICULAR PHYSICAL REACTOR PARAMETERS AS A FUNCTION OF BURNUP IS GIVEN. THE METHOD IS APPLICABLE TO HIGH BURNUP VALUES ALSO.

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

HEAVY WATER + REACTIVITY, EXCESS + REACTOR PHYSICS + REACTOR, HEAVY WATER

5-17555 ALSO IN CATEGORY 6
ZENKEVICH BA
THE EFFECT OF FLOW VELOCITY OF SUBCOOLED WATER ON CRITICAL HEAT FLUXES
WAPD-TRANS-49 +. 6 PAGES, 1 FIGURE, 14 REFERENCES, 1964, TRANSLATED FOR BETTIS ATOMIC POWER LAB., WEST MIFFLIN, PA., FROM INZH.-FIZ. ZH., 7, NO. 7, 43-6(1964).

RESULTS OF TESTS ARE GIVEN FOR A STUDY OF THE RELATION BETWEEN CRITICAL HEAT FLUX AND VELOCITY OF SUBCOOLED WATER FLOWING IN TUBES. EQUATIONS FOR CALCULATING THE CRITICAL HEAT FLUX ARE SUGGESTED.

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

DNB (DEPARTURE FROM NUCLEATE BOILING) + HEAT FLUX, DRYOUT + HEAT TRANSFER + SUBCOOLING

5-17556 ALSO IN CATEGORY 6
KORNEEV MI + PUGANOV BN
HEAT TRANSFER STUDY OF A FLOWING VAPOR-LIQUID MIXTURE IN HORIZONTAL TUBES
BNL-TR-128 +. 25 PAGES, 10 FIGURES, 2 TABLES, 1956, TRANSLATED BY STEPHEN J. AMORETTY (BROOKHAVEN NATIONAL LAB., UPTON, N.Y.), FROM TEPLOENERGETIKA, 3, NO. 6, 39-44(1956).

DISCUSSES THE RESULTS OF AN EXPERIMENTAL STUDY OF THE HEAT TRANSFER BEHAVIOR OF A FLOWING TWO-PHASE MIXTURE OF MAGNESIUM AMALGAM AND MERCURY VAPOR IN HORIZONTAL TUBES. THE CRITICAL VELOCITY OF THE LIQUID FOR UNIFORM HEAT TRANSFER OVER THE PERIMETER OF THE TUBE DURING THE FLOW OF VAPOR-LIQUID MIXTURE IS GIVEN IN TERMS OF AN EMPIRICAL FORMULA. DATA GIVEN.

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

FLOW, PULSATING + FLOW, TWO PHASE + HEAT TRANSFER, BOILING + METAL, LIQUID

5-17558 ALSO IN CATEGORY 6
MORGAN RP
A REVIEW AND DISCUSSION OF LITERATURE CONCERNING TRANSIENT HEAT TRANSFER AND STEAM FORMATION
PHILLIPS PETROLEUM CO., IDAHO FALLS, IDAHO
IDO-17226 +. 58 PAGES, 9 FIGURES, 72 REFERENCES, MARCH 1967

CATEGORY 5
ACCIDENT ANALYSIS

5-17558 *CONTINUED*

THIS DOCUMENT REVIEWS EXPERIMENTAL AND THEORETICAL INFORMATION RELEVANT TO THE PREDICTION OF FORCED-CONVECTION COOLANT BEHAVIOR IN SUBCOOLED WATER-REACTOR TRANSIENTS. EMPHASIS IS PLACED UPON THE DETERMINATION OF TRANSIENT SUBCOOLED VOID FRACTIONS AND THE DESCRIPTION OF TRANSIENT HEAT TRANSFER FROM FUEL ELEMENT SURFACES TO THE COOLANT UNDER BOTH BOILING AND NONBOILING SITUATIONS. A NUMBER OF RECOMMENDATIONS FOR IMPROVING EXISTING REACTOR-TRANSIENT COMPUTER PROGRAMS ARE MADE. IT HAS BEEN CONCLUDED THAT A COMPLETE AND RELIABLE ANALYTICAL DESCRIPTION OF REACTOR COOLANT TRANSIENT BEHAVIOR IS NOT PRESENTLY POSSIBLE, BECAUSE OF UNCERTAINTIES CONCERNING THE VALIDITY OF QUASI-STEADY METHODS DURING RAPID TRANSIENTS AND BECAUSE OF A LACK OF FUNDAMENTAL KNOWLEDGE AT THE POINT OF DEPARTURE FROM NUCLEAR BOILING AND BEYOND. DETAILED ANALYSIS OF RECENT IN-PILE AND OUT-OF-PILE TRANSIENT DATA, HOWEVER, SHOULD LEAD TO A BETTER UNDERSTANDING OF COOLANT BEHAVIOR DURING SUB-COOLED TRANSIENTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.70 COPY, \$0.65 MICROFICHE

BLOWDOWN + DNB (DEPARTURE FROM NUCLEATE BOILING) + HEAT TRANSFER, BOILING + REACTOR TRANSIENT

5-17573 ALSO IN CATEGORY 6
THE STEADY-STATE AND DYNAMIC BEHAVIOR OF A BOILING WATER REACTOR. QUARTERLY PROGRESS REPORT NO. 19, JULY 1-OCTOBER 1, 1965
TECHNISCHE HOGESCHOOL, EINDHOVEN, NETHERLANDS
EURAC-1662 + EUR-2854 + WW-016-R93 +. 25 PAGES, OCTOBER 1965

DESCRIBES DIFFICULTIES ASSOCIATED WITH A TEST-LOOP OPERATION.

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

FLOW, TWO PHASE + HEAT TRANSFER, BOILING + TRANSFER FUNCTION

5-17574 ALSO IN CATEGORY 6
FINAL REPORT FOR PERIOD NOVEMBER 1, 1963 THROUGH OCTOBER 31, 1965. AN EXPERIMENTAL AND ANALYTICAL STUDY OF THE HEAT TRANSFER AND FLOW MECHANICS OF VAPOR CONDENSING AT HIGH VELOCITIES IN SMALL STRAIGHT TUBES. UNIVERSITY OF CONNECTICUT, MECHANICAL ENGINEERING DEPARTMENT, STORRS, CONN.
119 PAGES, FIGURES, TABLES, SUBMITTED TO THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, DECEMBER 1965

AN APPARATUS WAS DEVELOPED AND EXPERIMENTS PERFORMED TO DETERMINE THE FLOW MECHANICS OF THE ANNULAR LIQUID LAYER DURING CONDENSATION OF STEAM IN A ONE-INCH-I.D. TUBE. WAVE HEIGHTS AND TROUGHS, WAVE VELOCITIES, AND WAVE LENGTHS WERE MEASURED BY MEANS OF NEEDLE-CONTACT PROBES AND ACCOMPANYING INSTRUMENTATION. THE RANGE OF VARIABLES INVESTIGATED INCLUDED LOCAL TOTAL VAPOR QUALITIES FROM 3 TO 97%, LOCAL VAPOR VELOCITIES FROM 10 FT/SEC TO NEARLY 300 FT/SEC, AND TOTAL MASS FLOW RATES OF 250 LB/HR TO OVER 1500 LB/HR OF STEAM. USING EXPERIMENTALLY DETERMINED LIQUID LAYER DATA, CALCULATIONS WERE MADE OF THE WALL AND INTERFACIAL SHEAR STRESSES. APPARENTLY, DUE TO THE COMPLEXITIES OF THE INTERFACE MECHANICS, NO CORRELATION OF THE INTERFACIAL SHEAR STRESS WAS FOUND USING THE KNOWN FLOW PARAMETERS. HOWEVER, A CORRELATION OF THE WALL SHEAR STRESS IN TERMS OF THE LIQUID LAYER FLOW PARAMETERS WAS DEVELOPED.

FLOW THEORY AND EXPERIMENTS + HEAT TRANSFER ANALYSIS + HEAT TRANSFER, CONDENSATION

5-17576 ALSO IN CATEGORIES 6 AND 8
SAVINO JM + SIEGEL R
EXPERIMENTAL AND ANALYTICAL STUDY OF THE TRANSIENT SOLIDIFICATION OF A WARM LIQUID FLOWING OVER A CHILLED FLAT PLATE
LEWIS RESEARCH CENTER, CLEVELAND, OHIO. NASA
NASA-TN-D-4015 +. 63 PAGES, 12 FIGURES, 26 REFERENCES, JUNE 1967

ANALYTICAL PREDICTIONS AND EXPERIMENTAL DATA ARE PROVIDED FOR THE TRANSIENT GROWTH OF A FROZEN LAYER THAT FORMS WHEN A WARM LIQUID FLOWS OVER ONE SIDE OF A CHILLED FLAT PLATE. THE PLATE IS COOLED TO A TEMPERATURE BELOW THE FREEZING POINT OF THE LIQUID BY A COOLANT FLOWING ALONG THE OTHER SIDE OF THE PLATE. THIS COULD BE ENCOUNTERED, FOR EXAMPLE, IN A HEAT EXCHANGER WHERE WATER IS BEING COOLED BY A FLUID AT LOW TEMPERATURE. THREE ANALYTICAL PROCEDURES WERE USED AND COMPARED FOR ACCURACY AND CONVENIENCE IN APPLICATION. ONE IS AN ITERATIVE TECHNIQUE THAT YIELDED THREE CLOSED-FORM SOLUTIONS, EACH SUCCESSIVE SOLUTION BEING A MORE ACCURATE HIGHER ORDER APPROXIMATION. NUMERICAL RESULTS FROM THE THIRD APPROXIMATION ARE PRESENTED GRAPHICALLY IN SUFFICIENT DETAIL SO THAT RAPID ESTIMATES OF FROZEN LAYER GROWTH CAN BE MADE. IN THE EXPERIMENT, WATER FLOWED OVER ONE SIDE OF A THIN INCONEL PLATE WHILE THE OTHER SIDE OF THE PLATE WAS COOLED BY FLOWING CHILLED ALCOHOL. TRANSIENT ICE GROWTH WAS INITIATED BY A SUDDEN INCREASE OF THE ALCOHOL FLOW. THE ICE THICKNESS AND THE PLATE SURFACE TEMPERATURES WERE MEASURED THROUGHOUT THE TRANSIENT GROWTH PERIOD AND COMPARED FAVORABLE WITH THEORETICALLY PREDICTED VALUES.

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

CRYOGENICS + FILTER, LIQUID + HEAT EXCHANGER + HEAT TRANSFER ANALYSIS + HEAT TRANSFER, NATURAL CONVECTION + REACTOR, LIQUID METAL COOLED + REACTOR, MOLTEN SALT

CATEGORY 5
ACCIDENT ANALYSIS

5-17577 ALSO IN CATEGORIES 6 AND 4
FENN DB + ACKER LW + COE HH
STEADY-STATE PERFORMANCE OF A SEVEN-TUBE NAK-COOLED POTASSIUM CONDENSER
LEWIS RESEARCH CENTER, CLEVELAND, OHIO. NASA
NASA-TN-D-4020 +. 39 PAGES, 18 FIGURES, 2 TABLES, 11 REFERENCE, JJUNE 1967

POTASSIUM VAPOR WAS CONDENSED INSIDE THE TUBES OF A HORIZONTAL, MULTITUBE HEAT EXCHANGER. THE TUBES WERE COOLED WITH THE LIQUID SODIUM-POTASSIUM (NAK) FLOWING IN A COUNTER-CURRENT DIRECTION IN THE SPACE SURROUNDING THE TUBES. STEADY-STATE DATA ARE PRESENTED TO SHOW THE EFFECTS OF NAK COOLANT INLET TEMPERATURE AND COOLANT FLOW RATE ON THE CONDENSING LENGTH, THE COOLANT TEMPERATURE PROFILES, AND THE OVERALL PRESSURE DROP OF THE CONDENSER OVER A RANGE OF POTASSIUM INLET TEMPERATURES FROM 1200 TO 1500 F. A CORRELATION OF THE OVERALL PRESSURE DROP ON THE POTASSIUM SIDE OF THE CONDENSER WAS OBTAINED BY PLOTTING THE RATIO OF THE MEASURED OVERALL PRESSURE DROP TO THE VELOCITY HEAT IN THE TUBE INLET AS A FUNCTION OF THE CONDENSING-LENGTH-TO-DIAMETER RATIO.

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

CONDENSATION + HEAT TRANSFER, BOILING + HEAT TRANSFER, CONDENSATION + METAL, ALKALI + METAL, LIQUID + REACTOR, LIQUID METAL COOLED

5-17579 ALSO IN CATEGORY 6
RAPIER AC
THERMAL BOWING OF FUEL ELEMENTS SUPPORTED AT SEVERAL AXIAL POSITIONS
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, SELLAFIELD, ENGLAND. REACTOR GROUP
TRG-REPORT-1395 +. 35 PAGES, 18 FIGURES, 1 TABLE, 1 REFERENCE, DECEMBER 30, 1966

DISCUSSES THE BOWING OF A ROD RESTRAINED AT EACH END AND AT TWO POINTS IN BETWEEN (A THREE-SPAN ELEMENT) DUE TO TEMPERATURE VARIATION. SPACING OF THE SUPPORTS AND ROD STABILITY ARE DISCUSSED IN DETAIL.

FAILURE, FATIGUE + FAILURE, FUEL ELEMENT + FUEL ELEMENT BOWING + STRESS ANALYSIS

5-17580 ALSO IN CATEGORY 6
NEILL JS
HEAT TRANSFER STUDIES FOR THE D2O POWER REACTOR PROGRAM. A TERMINAL STATUS REPORT OF THE WORK AT COLUMBIA UNIVERSITY
DU PONT DE NEMOURS (F.I.) AND CO., AIKEN, S. C. SAVANNAH RIVER LAB.
DP-1024 +. 79 PAGES, 32 FIGURES, 3 TABLES, 55 REFERENCES, AUGUST 1966

EXPERIMENTS RELATING TO THE HEAT-TRANSFER CAPABILITY OF FUEL ASSEMBLIES FOR A POWER REACTOR WERE CONDUCTED. THE HEAT FLUX AT BURNOUT WITH FORCED FLOW OF SUBCOOLED AND BOILING WATER AT HIGH PRESSURE WAS MEASURED FOR SEVERAL TYPES OF ASSEMBLIES - MULTIROD BUNDLES IN A CIRCULAR HOUSING, TUBULAR CHANNELS, INTERNALLY HEATED ANNULI, TUBES IN PARALL, AND TUBES COOLED ON BOTH THE INNER AND OUTER SURFACES. THE RELATION OF THE PARTICULAR TESTS TO THE DEVELOPMENT PROGRAM FOR A HEAVY-WATER-MODERATED POWER REACTOR IS DISCUSSED. THE RESULTS, TOGETHER WITH THE RECENT RESULTS FROM OTHER LABORATORIES, ARE APPLIED TO A NESTED-TUBE-ASSEMBLY DESIGN FOR A D2O-COOLED REACTOR. AREAS FOR FURTHER INVESTIGATION ARE POINTED OUT.

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

BURNOUT HEAT FLUX + DNB (DEPARTURE FROM NUCLEATE BOILING) + FLOW, TWO PHASE + FUEL ELEMENT + HEAT TRANSFER, BOILING + REACTOR, BOILING WATER + REACTOR, PRESSURE TUBE

5-17581 ALSO IN CATEGORY 6
BARNETT PG + WOOD RW
AN EXPERIMENTAL INVESTIGATION TO DETERMINE THE SCALING LAWS OF FORCED-CONVECTION BOILING HEAT TRANSFER. PART 2. AN EXAMINATION OF BURNOUT DATA FOR WATER, FREON 12 AND FREON 21 IN UNIFORMLY HEATED ROUND TUBES
ATOMIC ENERGY ESTABLISHMENT, WINFRITH, ENGLAND
AEEW-R-443 +. 61 PAGES, 19 FIGURES, 7 REFERENCES, AUGUST 1965

THE SET OF PHYSICAL PROPERTIES CONTAINING THE LATENT HEAT OF VAPORIZATION, THE LIQUID AND VAPOR DENSITIES, THE THERMAL CONDUCTIVITY AND SPECIFIC HEAT OF THE LIQUID PHASE AND THE RATE OF CHANGE OF THE DENSITY RATIO WITH PRESSURE IS SHOWN TO RELATE BURNOUT DATA FOR WATER, FREON 12, AND FREON 21 IN UNIFORMLY HEATED ROUND TUBES TO WITHIN PLUS OR MINUS 7%. APART FROM SOME RESULTS WHICH MAY CONTAIN A LARGER THAN USUAL EXPERIMENTAL ERROR, THE SAME SET IS SHOWN TO RELATE THE FREON 12 AND FREON 21 DATA TO WITHIN PLUS OR MINUS 3%. THIS OBSERVATION IS CONSISTENT WITH THE RATE OF CHANGE OF THE SATURATION TEMPERATURE, WITH PRESSURE BEING AN IMPORTANT PHYSICAL PROPERTY BECAUSE, WHEN ADDED TO THE ABOVE SET, IT PRODUCES A DIMENSIONLESS GROUP OF PROPERTIES WHICH HAS NEARLY THE SAME VALUE FOR FREONS 12 AND 21 BUT A SIGNIFICANTLY DIFFERENT VALUE FOR WATER.

AVAILABILITY - WINFRITH SECRETARIAT, ATOMIC ENERGY ESTABLISHMENT, WINFRITH, DORCHESTER, DORSET, ENGLAND
HEAT TRANSFER EXPERIMENT + HEAT TRANSFER, BOILING + HEAT TRANSFER, CONVECTION + REACTOR, BOILING WATER

CATEGORY 5
ACCIDENT ANALYSIS

5-17582 ALSO IN CATEGORIES 6 AND 8
STABILITY EXPERIMENTS FOR BOILING WATER REACTORS. QUARTERLY REPORT NO. 8, OCTOBER 1-DECEMBER 31, 1966
ALLGEMEINE ELEKTRICITAETS-GASELLSCHAFT, FRANKFURT AM MAIN, WEST GERMANY. KERNENERGIE-ANLAGEN
EURAC-1786 + EUR-3328 +. 41 PAGES, FIGURES, TABLES, REFERENCES, DECEMBER 1966

RELATIONS DESCRIBING FREQUENCY BEHAVIOR DURING THE TRANSFER OF HEAT PRODUCED UNIFORMLY IN THE HEATING TUBE TO THE COOLANT FLOWING PAST IT WERE DERIVED FROM THE FOURIER HEAT-TRANSFER EQUATION AND INCLUDED IN THE AMOK-L FORMULA PLAN. FOR THE SPECIAL CASE OF CYLINDRICAL GEOMETRY, THE HEAT OUTPUT-HEAT PER SURFACE UNIT FREQUENCY CHARACTERISTIC WAS CALCULATED AS A FUNCTION OF VARIOUS HEAT-TRANSFER COEFFICIENTS AND GIVEN AS A TABLE OR DIAGRAM. THEORETICAL AND EXPERIMENTAL RESULTS WERE COMPARED, AND THE RESULTS DISCUSSED, USING A MEASUREMENT SERIES. THE TEST FACILITY WITH THE NEW SQUARE MEASUREMENT SECTION, FOUR-ROD CLUSTER, AND VELOCITY MODERATOR WAS BROUGHT INTO SERVICE.

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

FLOW STABILITY + HEAT TRANSFER, BOILING + REACTOR, BOILING WATER + TRANSFER FUNCTION

5-17593 ALSO IN CATEGORY 17
SKOVHOLT DJ
ELK RIVER CHANGE 12, CORE THERMAL LIMIT CHANGES
DIVISION OF REACTOR LICENSING, WASHINGTON, D. C.
2 PAGES, JUNE 13, 1967, DOCKET NO. 115-1

DRL ALLOWS ELK RIVER (1) STEADY-STATE CRITICAL HEAT FLUX RATIO (CHFR) BE SET AT 2.0, (2) TRANSIENT CHFR BE 1.7, (3) LIMITING STEADY-STATE LINEAR HEAT RATE BE 15.0 KW/FT, AND (4) TO REPLACE GRIFFITH CRITICAL-HEAT-FLUX CORRELATION WITH JANSSEN-LEVY CORRELATION (APED-3892), WHICH IS MORE APPLICABLE TO REACTOR OPERATING CONDITIONS.

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

*DNB (DEPARTURE FROM NUCLEATE BOILING) + *HEAT TRANSFER CORRELATION + ELK RIVER + REACTOR, BOILING WATER + SAFETY EVALUATION + TECHNICAL SPECIFICATIONS

5-17610 ALSO IN CATEGORY 11
GALLAGHER EV
STUDIES OF REACTOR CONTAINMENT. PROGRESS REPORT FOR APRIL - MAY, 1967
ILLINOIS INSTITUTE OF TECHNOLOGY, IIT RESEARCH INSTITUTE
IITRI-578P21-29 + IITRI-T6042-29 +. 28 PAGES, 19 FIGURES, 2 REFERENCES, MAY 1967

DURING THIS REPORT PERIOD, THE PRIMARY EFFORT EXPENDED ON THE PROJECT AGREEMENT CONSISTED OF THE FOLLOWING FOUR AREAS OF ACTIVITY - (1) ANALYSIS OF DATA OBTAINED FROM EXPERIMENTS IN A WATER SHOCK TUBE USING A 6-FT-LONG DRIVER SECTION. (2) MODIFICATION OF THE 6-FT-LONG SECTION TO YIELD A 12-FT LENGTH. (3) ANALYTICAL CALCULATIONS OF BLOWDOWN OF ONE-DIMENSIONAL COMPRESSED LIQUID WATER UNDER VARIOUS INITIAL CONDITIONS. (4) DOCUMENTATION AND DESCRIPTION OF THE DATA-PROCESSING PROCEDURES USED FOR THIS PROGRAM.

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

*BLOWDOWN + *COMPUTER PROGRAM + *CONTAINMENT RESEARCH AND DEVELOPMENT + *FLOW DISTRIBUTION + *FLOW ORIFICE OR RESTRICTION + CONDENSATION + INSTRUMENTATION, TEMPERATURE + PRESSURE, INTERNAL + STEAM + WATER, GENERAL

5-17611 ALSO IN CATEGORY 11
GALLAGHER EV
STUDIES OF REACTOR CONTAINMENT. PROGRESS REPORT FOR JUNE - JULY 1967
ILLINOIS INSTITUTE OF TECHNOLOGY, IIT RESEARCH INSTITUTE
IITRI-578P21-30 +. 10 PAGES, 9 FIGURES, JULY 1967

DURING THE REPORT PERIOD, THE WORK DEALT WITH TWO MAIN AREAS OF ACTIVITY. (1) ANALYSIS AND SUMMARY OF PRESSURES IN THE AIR-FILLED DRIVER SECTION OF THE WATER SHOCK TUBE, AND (2) PERFORMANCE OF EXPERIMENTS USING THE 12-FT-LONG DRIVER SECTION. THE DATA ANALYZED FOR THE AIR PRESSURES CONSISTS ESSENTIALLY OF THOSE CASES WITH A 6-FT-LONG DRIVER SECTION, SINCE THE EXPERIMENTS WITH THE 12-FT-LONG SECTION HAVE BEEN BEGUN VERY RECENTLY, AND ONLY INITIAL RESULTS ARE AVAILABLE. PRESSURE BUILDUP IN THE CONTAINMENT VESSEL AFTER RAPID DECOMPRESSION OF WATER-COOLED POWER REACTORS WAS GIVEN ONLY LIMITED EMPHASIS IN PREFERENCE TO THE STUDY OF TRANSIENT DECOMPRESSION OF THE WATER IN THE DRIVER SECTION.

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

*BLOWDOWN + *COMPUTER PROGRAM + *CONTAINMENT RESEARCH AND DEVELOPMENT + *FLOW DISTRIBUTION + *FLOW ORIFICE OR RESTRICTION + CONDENSATION + INSTRUMENTATION, TEMPERATURE + PRESSURE, INTERNAL + STEAM + WATER, GENERAL

CATEGORY 5
ACCIDENT ANALYSIS

5-17638 ALSO IN CATEGORY 6
VOLLRADT T
INVESTIGATIONS ON CYCLONES FOR STEAM SEPARATION IN BOILING WATER REACTORS. QUARTERLY REPORT NO. 4,
OCTOBER 1-DECEMBER 31, 1966
ALLGEMEINE ELEKTRICITAETS-GASELLSCHAFT, FRANKFURT AM MAIN (WEST GERMANY). KERNENERGIEANLAGEN
EUR-3329 + EURAEC-1787 +. 72 PAGES, FIGURES, DECEMBER 1966

THE INVESTIGATIONS IN THE PERIOD UNDER REVIEW ATTEMPTED TO ANSWER THE QUESTION HOW THE
GEOMETRY OF THE MIXTURE INFLOW MUST BE DESIGNED FOR AXIALLY FED STEAM SEPARATORS ARRANGED
ALONG SEVERAL ROWS IN THE REACTOR DROP SPACE, IN ORDER TO SECURE FOR EACH CYCLONE ROW EQUAL
MASS FLOW AND UNIFORM MIXTURE QUALITY. IN THE LARGEST THROUGHPUT INVESTIGATED, AIR FLOWS DID
NOT DIFFER BY MORE THAN PLUS OR MINUS 4%, AND THE WATER FLOWS BY MORE THAN PLUS OR MINUS 6%
FROM THE AVERAGE LOAD OF THE FRONT AND REAR CYCLONE ROW.

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

*SEPARATOR + *STEAM + FLOW THEORY AND EXPERIMENTS + FLOW, TWO PHASE + REACTOR, BOILING WATER

5-17639 ALSO IN CATEGORY 6
VDOVIC J + ALUJEVIC A
STEADY HEAT FLOW OUT OF SOLIDS WITH TEMPERATURE DEPENDENT CONDUCTIVITY
NUKLEARNI INSTITUT JOZEF STEFAN
NIJS-REPORT-R-497 +. 6 PAGES, 1 FIGURE, 3 REFERENCES, FEBRUARY 1967, TO BE PUBLISHED IN ENERG. NUCL
(ROME)

THE AUTHOR SOLVES THE STEADY-STATE CONDUCTION EQUATIONS FOR HEAT GENERATION IN A SLAB, ROD,
AND SPHERE FOR THERMAL RESISTIVITY HAVING A LINEAR VARIATION WITH TEMPERATURE.

FUEL ELEMENT + HEAT TRANSFER ANALYSIS + HEAT TRANSFER, CONDUCTION

5-17640 ALSO IN CATEGORY 6
MUELLER RE
FILM BOILING HEAT TRANSFER MEASUREMENTS IN A TUBULAR TEST SECTION
GENERAL ELECTRIC CO., SAN JOSE, CALIFORNIA. ATOMIC POWER EQUIPMENT DEPT.
GEAP-5423 + EURAEC-1871 +. 35 PAGES, 17 FIGURES, 5 TABLES, REFERENCES, JANUARY 1967

A TUBULAR GEOMETRY WAS USED IN TESTS TO OBTAIN HEAT-TRANSFER DATA FOR FULLY DEVELOPED FILM
BOILING AT 1700 PSIA WITH MASS VELOCITIES OF 0.50 AND 0.75 M LB/HR/SQ. FT. FULLY DEVELOPED
FILM-BOILING COEFFICIENTS WERE MEASURED ALONG WITH STEAM-PHASE TEMPERATURES, USING A SPECIAL
TEMPERATURE PROBE. THE TEMPERATURE SHOWED QUANTITATIVELY THAT THE STEAM PHASE WAS
SUPERHEATED FOR HEAT TRANSFER FROM A DRY WALL TO A FLOWING STEAM-WATER MIXTURE.

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

FILM BOILING + HEAT TRANSFER EXPERIMENT + HEAT TRANSFER, BOILING + HEAT TRANSFER, CONVECTION +
REACTOR, BOILING WATER

5-17669 ALSO IN CATEGORY 6
GROVER GM
HEAT TRANSFER DEVICE
LOS ALAMOS, NEW MEXICO
CANADIAN PATENT 741 203 +. 10 PAGES, 3 FIGURES, AUGUST 1966

THIS IS A DEVICE ALLOWING LARGE AMOUNTS OF HEAT TRANSFER OVER LONG DISTANCES WITH A VERY SMALL
TEMPERATURE DROP ALONG THE LENGTH, THE DEVICE BEING A CONTAINER ENCLOSING A CONDENSABLE VAPOR
AND CAPILLARY MEANS ON THE INNER SURFACE OF THE CONTAINER, SAID CAPILLARY MEANS CAPABLE OF
CAUSING THE TRANSPORT OF THE CONDENSED VAPOR FROM A COOLER AREA OF THE CONTAINER TO A HOTTER
AREA.

AVAILABILITY - U.S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D. C., 30 CENTS PER PAGE

CANADA + HEAT PIPE + HEAT TRANSFER, BOILING + HEAT TRANSFER, CONDENSATION

5-17670 ALSO IN CATEGORY 6
STAUB FW
PREDICTION OF THE VOID FRACTION IN SUBCOOLED BOILING, ANNULAR FLOW, AND IDEAL BUBBLY FLOW - ASSIGNMENT
REPORT USAEC-EURATOM PERSONNEL EXCHANGE, MAY-DECEMBER 1966
GENERAL ELECTRIC CO., SCHENECTADY, NEW YORK
GEAP-5414 + EURAEC-1852 +. 116 PAGES, JANUARY 1967

PRESENTS THE DERIVATION OF A SET OF RELATIONS WHICH PERMITS PREDICTION OF THE INITIAL POINT OF
NET VAPOR GENERATION. SATISFACTORY AGREEMENT WITH DATA IS SHOWN OVER A LARGE RANGE OF FLUID

CATEGORY 5
ACCIDENT ANALYSIS

5-17670 *CONTINUED*

VELOCITY, REDUCED PRESSURE, AND FOR TWO DIFFERENT FLUIDS. A SEMIEMPIRICAL FORMULATION FOR THE LIGHT-PHASE DRIFT VELOCITY IS ANNULAR FLOW IS GIVEN AND COMPARED WITH THE DATA. REVIEWS THE METHOD FOR CALCULATING THE VOID FRACTION IN IDEAL BUBBLY FLOW, THIS IS EXTENDED AND COMPARED WITH DATA IN BOTH IDEAL AND TURBULENT BUBBLY FLOW CONDITIONS. A SUMMARY OF THE VISITS TO OTHER CENTERS BY THE AUTHOR IS INCLUDED, AS WELL AS AN ABSTRACT OF THE CONCLUSIONS TO THE ISPRA (EURATOM) CONFERENCE ON BURNOUT, JULY 1966, AND THE COMMITTEE FOR REACTOR SAFETY TECHNOLOGY MEETING OF APRIL 1966 AT CADARACHE. CURRENT WORK AT THE CENTRE D ETUDES NUCLEAIRES DE GRENOBLE IS ALSO LISTED.

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

ANALYTICAL MODEL + CREST (COMMITTEE FOR REACTOR SAFETY TECHNOLOGY) + EURATOM + FLOW, ANNULAR + FLOW, TWO PHASE + FRANCE + GERMANY + HEAT TRANSFER + HEAT TRANSFER + HEAT TRANSFER, BOILING + ITALY + UNITED KINGDOM + VOID COEFFICIENT

5-17811 ALSO IN CATEGORIES 11 AND 8

FULS GM

ACT-I, A DIGITAL PROGRAM FOR THE ANALYSIS OF THE CONTAINMENT TRANSIENT DURING A LOSS OF COOLANT ACCIDENT IN LWB

BETTIS ATOMIC POWER LAB., PITTSBURGH, PA.

WAPD-TM-693 +. 28 PAGES, FIGURES, REFERENCES, MAY 1967

THIS REPORT DESCRIBES ACT-I, A DIGITAL COMPUTER PROGRAM FOR PREDICTING THE CONTAINMENT TRANSIENT RESULTING FROM THE INJECTION OF HIGH-ENTHALPY LIQUID AND HEAT DURING A LOSS-OF-COOLANT ACCIDENT IN A PWR. THIS PROGRAM PERFORMS A FINITE-DIFFERENCE INTEGRATION OVER THE TIME OF THE TRANSIENT, ACCOUNTING FOR HEAT AND MASS ADDITIONS FROM INPUT TABLES FOR HEAT TRANSFER TO VARIOUS HEAT SINKS, INCLUDING SIMULATED SAFEGUARDS, AND FOR LEAKAGE FROM THE CONTAINER TO THE ATMOSPHERE.

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

*COMPUTER PROGRAM + *CONTAINMENT ANALYSIS + *HEAT SINK + ACCIDENT, LOSS OF COOLANT + COMPUTER, DIGITAL + CONTAINMENT DESIGN + METAL WATER REACTION + PRESSURE, INTERNAL + REACTOR, PRESSURIZED WATER + ZIRCONIUM

5-17858 ALSO IN CATEGORY 17

SAFETY ANALYSIS REPORT IN SUPPORT OF AMENDMENT TO LICENSE R-56 FOR TWO MEGAWATT OPERATION OF THE UNIVERSITY OF VIRGINIA REACTOR

UNIVERSITY OF VIRGINIA, SCHOOL OF ENGINEERING AND APPLIED SCIENCE, CHARLOTTESVILLE

UVAR-17 + ORNL-TM-662 +. 230 PAGES, 46 FIGURES, 22 TABLES, 38 REFERENCES, AUGUST 1967

REPORT COVERS (1) REQUEST FOR POWER INCREASE, (FROM 1 TO 2 MW, AND 100 TO 200 KW IN NATURAL CIRCULATION), (2) REACTOR SITE, (3) FACILITY CHANGES SINCE INITIAL STARTUP, (4) ADMINISTRATIVE PROCEDURES, (5) THERMAL-HYDRAULIC SAFETY ANALYSIS, (6) RADIATION HAZARDS, AND (7) TECH. SPECS. (EXHIBIT A IS 1964 THESIS, HAZARDS ANALYSIS OF 2-MW OPERATION, EXHIBIT B IS A STUDY OF THE SHIELD OF THE U OF VIRGINIA REACTOR, ORNL-TM-662). IN THE THERMAL-HYDRAULIC SAFETY ANALYSIS, THE AUTHOR CONTENTS THAT THE ASSUMPTIONS CONCERNING HEAT-TRANSFER CALCULATIONS ARE TOO CONSERVATIVE AND USES LATEST CORRELATIONS AND CALCULATIONS SHOWING OPERATION IS FEASIBLE AT 2 MW WITH PRESENT COOLANT FLOW RATE OF 900 GPM.

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

*HEAT TRANSFER CORRELATION + *POWER UPGRATING + MATHEMATICAL TREATMENT + REACTOR, POOL TYPE + REACTOR, RESEARCH + SAFETY ANALYSIS REPORT, GENERAL

5-17940 ALSO IN CATEGORY 17

HEAT EXCHANGER PROBLEMS AT THE HIGH FLUX BEAM REACTOR

U. S. ATOMIC ENERGY COMMISSION, DIVISION OF OPERATIONAL SAFETY, WASHINGTON, D. C.

ROE-67-8 +. 2 PAGES OF OPERATING EXPERIENCES, REACTOR SAFETY, AUGUST 18, 1967

RATTLING WAS HEARD AT FLOWS ABOVE HALF RATED IN THESE HEAT EXCHANGES SIMILAR TO ATR AND MADE BY SAME MANUFACTURER. RATTLING OCCURRED AT LOWER AND LOWER FLOWS. ALTHOUGH TEMA STANDARD IS 60 INCH UNSUPPORTED LENGTH, THE U-BENDS WERE 134 IN, AND THE U-BENDS WERE STRIKING EACH OTHER. ADDITIONAL NOZZLES WERE MADE TO CHANGE FROM COUNTERCURRENT 2-PASS FLOW TO SINGLE-PASS FLOW, LEAVING THE U-BEND IN RELATIVELY MOTIONLESS WATER. PERFORMANCE WAS RESTORED WITHOUT RATTLES FOR LESS THAN \$50,000.

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

*HEAT EXCHANGER + *VIBRATION + CODES AND STANDARDS + FAILURE, DESIGN ERROR + FAILURE, TUBING + HFBR (HIGH FLUX BEAM REACTOR) + REACTOR, FLUX TRAP + REACTOR, RESEARCH + SUPPORT STRUCTURE

5-17942

NUCLEAR REACTOR DESIGN CHECKED WITH SCALE MODELS

1 PAGE, 2 FIGURES, WESTINGHOUSE ENGINEER 27(4), PAGE 125, (JULY 1967)

CATEGORY 5
ACCIDENT ANALYSIS

5-17942 *CONTINUED*

A 1/7-SCALE MODEL OF THE INTERNAL COMPONENTS OF THE REACTOR VESSEL WAS TESTED TO CHECK CORE PRESSURE DROP AND FLOW DISTRIBUTION, AND FLOW-VIBRATION AND STRESSES. 500 PRESSURE TAPS AND 70 STRAIN GAUGES WERE USED.

*CORE COMPONENTS, MISCELLANEOUS + *FUEL ELEMENT + *MODEL TESTING + FLOW DISTRIBUTION + INDIAN POINT 2 + PRESSURE DROP + REACTOR, PRESSURIZED WATER + VIBRATION

5-17974 ALSO IN CATEGORY 17

BIG ROCK POINT FURNISHES ADDITIONAL INFORMATION ON CHANGE 10, - USE OF VIBRATORY-COMPACTED UO2 CONSUMERS POWER COMPANY
2 PAGES, SEPTEMBER 8, 1966, DOCKET NO. 50-155

BIG ROCK POINT CITES RESULTS OF TESTS ON POWDER AND PELLET FUELS, CONTENDING THAT POWDER FUELS ARE NOT MORE SUSCEPTIBLE TO RUPTURE. A STUDY WAS MADE OF VARIOUS REACTIVITY ACCIDENTS, USING DATA ON POWDER-FUEL HEAT-TRANSFER CHARACTERISTICS, SHOWING THAT SINGLE-ROD-DROP ACCIDENT DOES NOT LEAD TO FUEL DAMAGE.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON

*ACCIDENT ANALYSIS + *FUEL, POWDER TYPE + ACCIDENT, REACTIVITY + BIG ROCK POINT + REACTOR, BOILING WATER + REFUELING + STRESS

5-17999 ALSO IN CATEGORIES 11 AND 17
PROPOSAL CONCERNING BONUS EMERGENCY CORE COOLING ANALYSIS
PUERTO RICO WATER RESOURCES AUTHORITY
13 PAGES, AUGUST 11, 1967, DOCKET NO. 115-4

AEC PUERTO RICO OFFICE TRANSMITS, TO DRL, GE PROPOSAL TO CONDUCT STUDY, ALONG WITH BONUS ASSESSMENT OF THE PROPOSAL. (GE) SCOPE OF WORK IS TO COVER ACCIDENTS DUE TO EXTERNAL PIPE BREAKAGE. G.E. COMPUTER CODES WILL BE USED TO DETERMINE FUEL TEMPERATURE, CONTAINMENT VESSEL PRESSURE, CORE INTEGRITY, AND METAL-WATER REACTION DURING BLOWDOWN. EFFECT OF COPE MELTDOWN WILL BE STUDIED AND REQUIREMENTS TO PREVENT MELTDOWN STUDIED.

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

*BLOWDOWN + *CORE MELTDOWN + *EMERGENCY COOLING CONSIDERATIONS + *HEAT TRANSFER ANALYSIS + *PRESSURE, INTERNAL + ACCIDENT, LOSS OF COOLANT + BONUS (BOILING NUCLEAR SUPERHEAT PROJECT) + COMPUTER PROGRAM + CONTAINMENT, LOW PRESSURE + REACTOR, BOILING WATER + REACTOR, INTERNAL SUPERHEAT

5-18089 ALSO IN CATEGORY 18

KERR WR
HEAVY WATER ORGANIC COOLED REACTOR. SCREENING TESTS OF HYDROGEN DIFFUSION BARRIERS FOR ZIRCONIUM ATOMICS INTERNATIONAL, CANOGA PARK, CALIFORNIA + COMBUSTION ENGINEERING, INC., WINDSOR, CONN. NUCLEAR DIVISION
AI-CE-27 +. 34 PAGES, 11 FIGURES, 3 TABLES, 6 REFERENCES, AUGUST 15, 1967

TESTS IN HYDROGEN AT 750 F WITH ZIRCONIUM ALLOY CLADDING FOR USE IN ORGANIC COOLANT SHOWED PLASMA-SPRAYED AL TO BE POROUS AND INEFFECTIVE. ZR OXIDE, ZP NITRIDE, AND DIFFUSED ALUMINUM COATINGS WERE EFFECTIVE BUT SUBJECT TO PROGRESSIVE, CATASTROPHIC FAILURE DUE TO BRITTLENESS.

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

*CLAD + *COATING, SURFACE + *EMBRIITLEMENT + *HYDRIDE + *ZIRCALOY + REACTOR, HEAVY WATER + REACTOR, ORGANIC COOLED + TESTING

5-18091

SUPAN EC
HEAVY WATER ORGANIC COOLED REACTOR. DEVELOPMENT OF SAP-STEEL PRESSURE TUBE TRANSITION JOINTS FOR THE HWOCR ATOMICS INTERNATIONAL, CANOGA PARK, CALIFORNIA + COMBUSTION ENGINEERING, INC., WINDSOR, CONN. NUCLEAR DIVISION
AI-CE-46 +. 52 PAGES, 18 FIGURES, 8 TABLES, AUGUST 15, 1967

DESCRIBES A PROCESS FOR HOT-PRESS DIFFUSION BONDING OF SINTERED ALUMINUM POWDER (SAP) IN CORE PRESSURE TUBE TO A S.S. PIPE, USING TUNGSTEN AS A DIFFUSION BARRIER. THE S.S. IS WELDED TO THE OUT-OF-CORE CARBON-STEEL PIPING. JOINT EFFICIENCY OF 75% AT 750 F RELATIVE TO THE SAP TUBE HAS BEEN ACHIEVED. GIVES RESULTS OF TENSILE TESTS, THERMAL CYCLING, THERMAL SOAKING, AND METALLOGRAPHY.

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

*FABRICATION + *FAILURE, PIPE + *TESTING + MAIN COOLING SYSTEM + REACTOR, HEAVY WATER + REACTOR, ORGANIC COOLED + REACTOR, PRESSURE TUBE + THERMAL MECHANICAL EFFECT

CATEGORY 5
ACCIDENT ANALYSIS

5-18186 ALSO IN CATEGORY 8
NETTLEY PT + MARTIN WH
THE IRRADIATION BEHAVIOUR OF GRAPHITE
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, REACTOR MATERIALS LAB., CULCHETH
TRG-REPORT-1330(C) +. 7 PAGES, 8 FIGURES, 2 TABLES, 17 REFERENCES, 1966

THE RESULTS OF PREVIOUS EXPERIMENTS ON THE IRRADIATION BEHAVIOUR OF DIFFERENT GRAPHITES AND RECENT STUDIES OF THE DEFECTS PRODUCED IN GRAPHITE CRYSTALS BY FAST NEUTRON IRRADIATION HAVE LED TO THE DEVELOPMENT OF AN IRRADIATION-DAMAGE MODEL FOR GRAPHITE. THIS REPORT DESCRIBES THE MODEL. IT ALSO PRESENTS RESULTS FROM EXPERIMENTS PERFORMED TO TEST THE VALIDITY OF THE MODEL AT LARGE IRRADIATION DOSES OF FAST NEUTRONS. SEVERAL GRAPHITES, INCLUDING WELL-ORIENTED PYROLYTIC MATERIAL, WERE IRRADIATED TO TOTAL NEUTRON DOSES OF UP TO 3.3×10^6 TO THE 22ND NEUTRONS/SQ. CM IN THE DOUNREAY FAST REACTOR. THE IRRADIATION TEMPERATURE RANGE INVESTIGATED WAS 380 TO 750 C. THE RESULTANT DIMENSIONAL AND PHYSICAL PROPERTY CHANGES WERE STUDIED, AND THEIR GENERAL AGREEMENT WITH THE DAMAGE MODEL REFERRED TO ABOVE IS GOOD. PUBLISHED DATA ON THE IRRADIATION BEHAVIOUR OF GRAPHITE ABOVE 750 C WERE EXAMINED, AND ARGUMENTS ARE PRESENTED TO SHOW THAT THEY ARE IN GENERAL AGREEMENT WITH THE PROPOSED DAMAGE MODEL.

*GRAPHITE + *RADIATION DAMAGE + PROPERTY, PHYSICAL + RADIATION EFFECT + THERMAL PROPERTY

5-18194 ALSO IN CATEGORY 4
CLAXTON KT
THE INFLUENCE OF RADIATION ON THE INCEPTION OF BOILING IN LIQUID SODIUM
UNITED ATOMIC ENERGY RESEARCH ESTABLISHMENT, HARWELL, ENGLAND
AERE-R-5308 +. 38 PAGES, 7 FIGURES, 1 TABLE, JANUARY 1967

AN ANALYSIS WAS MADE OF THE INFLUENCE OF NUCLEAR RADIATION ON THE INITIATION OF VAPOUR BUBBLES IN THE BULK OF LIQUID SODIUM. SEVERAL TYPES OF RADIATION WERE CONSIDERED (ELECTRONS, PROTONS, ALPHA PARTICLES, PHOTONS, NEUTRONS, FISSION FRAGMENTS AND ALPHA RECOILS). THE ENERGY LOSS PER UNIT PATH LENGTH IN LIQUID SODIUM WAS CALCULATED FOR THESE DIFFERENT FORMS OF RADIATION AS A FUNCTION OF THEIR ENERGY, USING VARIOUS THEORIES. A COMPARISON OF THESE RESULTS WITH THE ENERGY REQUIREMENT FOR FORMATION OF AN EQUILIBRIUM VAPOUR BUBBLE DERIVED FROM CLASSICAL NUCLEATION THEORY HAS BEEN EFFECTED BY USE OF A CHARACTERISTIC PATH LENGTH RELATED TO THE BUBBLE RADIUS. THE ANALYSIS SUGGESTS THAT THE ONLY LIKELY FORM OF INTERACTIONS CAPABLE OF INITIATING NUCLEATION ARE KNOCKED-ON SODIUM ATOMS PRODUCED BY FAST NEUTRONS. THIS, MOREOVER, SEEMS PROBABLE ONLY AT SATURATION PRESSURES OF 10 ATM. AND ABOVE. AVERAGE BUBBLE WALL VELOCITIES NECESSARY TO ACHIEVE STABILITY WERE FOUND TO BE AN ORDER OF MAGNITUDE GREATER THAN THOSE OCCURRING AFTER THE EQUILIBRIUM CONDITION HAD BEEN REACHED.

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

*CONVECTIVE BOILING + *RADIATION EFFECT + *SODIUM + COOLANT CHEMISTRY + METAL, LIQUID + REACTOR, FAST

5-18209 ALSO IN CATEGORIES 11 AND 12
HARTY H + BATH JH + PEDERSEN LT + WHEELER RG + FOX JC
ENGINEERING DEVELOPMENT DEPARTMENT QUARTERLY REPORT, APRIL-JUNE 1966
BATTELLE-NORTHWEST, RICHLAND, WASHINGTON
BNWL-367 +. 76 PAGES, 18 FIGURES, 2 TABLES, APRIL 1967

PROGRESS REPORT COVERING SUCH TOPICS AS THE FAST FLUX TEST FACILITY, HEAT TRANSFER STUDIES, CROSS-FLOW MIXING BETWEEN PARALLEL FLOW, BOILING-STABILITY STUDIES, IRRADIATION DAMAGE TO REACTOR METALS, UPSTREAM BOILING BURNOUT, THE CSE, IODINE FORMS IN STEAM CONDENSATE, AND DECONTAMINATION OF COATINGS.

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

AEROSOL PROPERTIES + BURNOUT HEAT FLUX + CONTAINMENT RESEARCH AND DEVELOPMENT + CSE (CONTAINMENT SYSTEMS EXPERIMENT) + HEAT TRANSFER EXPERIMENT + HEAT TRANSFER, BOILING + IODINE + PLUTONIUM + REACTOR, LIQUID METAL COOLED + SAMPLING + STEAM

5-18210 ALSO IN CATEGORIES 2 AND 1
FARMER FR
REACTOR SAFETY AND SITING - A PROPOSED RISK CRITERION
AUTHORITY HEALTH AND SAFETY BRANCH, UNITED KINGDOM ATOMIC ENERGY AUTHORITY, RISLEY, WARRINGTON, LANCs, ENGLAND
CONF-670-672 +. 15 PAGES, 16 FIGURES, 1 TABLE, 6 REFERENCES, ABSTRACT IN ANS TRANSACTIONS 10(1), PAGE 328. PAPER PRESENTED AT THE 1967 ANNUAL MEETING OF THE AMERICAN NUCLEAR SOCIETY, SAN DIEGO, CALIFORNIA, JUNE 11-15, 1967. PAPER ALSO IN ATOM (NUMBER 128) PAGE 152, (JUNE 1967)

A METHOD OF REACTOR SITING IS DESCRIBED WHICH TAKES INTO ACCOUNT THE PROBABILITY OF OCCURRENCE OF AN EVENT AND THE RISK (IN TERMS OF I-131 RELEASE) ASSOCIATED WITH THAT EVENT. SOME VALUE OF THE PRODUCT OF THESE TWO PARAMETERS MAY BE SET AS ARBITRARY LIMIT FOR A GIVEN PLANT. METHODS OF EVALUATION OF THESE PROBABILITIES ARE GIVEN. THIS INVOLVES ESTABLISHMENT OF FAILURE-RATE DATA FOR COMPONENTS AND/OR ENGINEERING JUDGMENT FOR LARGER SYSTEMS. TYPICAL

CATEGORY 5
ACCIDENT ANALYSIS

5-18210 *CONTINUED*
EXAMPLES ARE USED.

ACCIDENT ANALYSIS + ACCIDENT MODEL + ACCIDENT, PROBABILITY OF + SITING, GENERAL + SITING, REACTOR

5-18447 ALSO IN CATEGORY 17
BIG ROCK POINT CHANGE 12. NEW CRITICAL HEAT FLUX CORRELATION
AEC, DIVISION OF REACTOR LICENSING, WASHINGTON, D. C.
11 PAGES, 1 FIGURE, 2 TABLES, MAY 26, 1967, DOCKET NO. 50-155, CONSUMERS POWER CO.

DRL ALLOWS USE OF NEW GE CAF CORRELATION (APED 5286) TO DETERMINE LIMITING THERMAL CONDITIONS (RESULTING IN AN OVERALL GAIN OF ABOUT 10 TO 50% IN CHF), WHICH PERMITS FULL POWER OPERATION UNTIL END OF FUEL CYCLE WITH A PEAK HEAT FLUX ONLY 5% MORE THAN AT MIDCYCLE. NEW CORRELATION IS BASED ON TEST MORE CLOSELY APPROXIMATING GE PEWS.

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

*BURNOUT HEAT FLUX + *HEAT TRANSFER CORRELATION + *REACTOR POWER + BIG ROCK POINT + REACTOR, BOILING WATER + SAFETY EVALUATION + TECHNICAL SPECIFICATIONS

5-18529 ALSO IN CATEGORY 6
LACIER TF
MECHANICAL ENERGY GENERATED BY THE FAILURE OF A WATERLOGGED REACTOR FUEL ROD SUBJECTED TO TRANSIENT POWER CONDITIONS
PHILLIPS PETROLEUM COMPANY
CONF-670-692 +. 8 PAGES, 6 FIGURES, ABSTRACT IN ANS TRANSACTIONS 10(1), PAGE 332 AND 333, PAPER PRESENTED AT THE 1967 ANNUAL MEETING OF THE AMERICAN NUCLEAR SOCIETY, SAN DIEGO, CALIFORNIA, JUNE 11-15, 1967

DESCRIBES RESULTS OF INITIAL TESTS IN THE SUBASSEMBLY TESTING PROGRAM, RECENTLY INITIATED AT SPERT FACILITY TO PROVIDE EMPIRICAL INFORMATION ON FUEL-DAMAGE MECHANISMS AND CONSEQUENCES. MEASURE OF DAMAGE POTENTIAL IS THE MECHANICAL ENERGY THAT CAN DO WORK ON THE CORE STRUCTURE AND CONTAINMENT SYSTEM. INVESTIGATION TO DATE INCLUDE ONE TYPE OF WATERLOGGED REACTOR FUEL SUBJECTED TO SHORT-PERIOD POWER EXCURSIONS IN THE CAPSULE-DRIVER CORE SUFFICIENT TO CAUSE FAILURE OF TEST SAMPLES. POTENTIALLY DESTRUCTIVE MECHANICAL ENERGY DETERMINED BY EVALUATING (1) THE ENERGY CONTAINED IN A COLUMN OF WATER ACCELERATED IN THE TEST CAPSULE AND (2) THE STRAIN PLUS KINETIC ENERGY OF THE CAPSULE WALL. IN THE TESTS DESCRIBED, UO₂ RODS CLAD WITH TYPE-304 STAINLESS-STEEL TUBING AND CONTAINING ABOUT 0.7 WT % WATER WERE USED. PEAK ADIABATIC FUEL TEMPERATURES AT TIME OF FAILURE WERE ABOUT 675 C. EFFICIENCIES OF CONVERSION OF TEST-FUEL ENERGY TO MECHANICAL ENERGY VARIED FROM 1.9 TO 2.5%.

CORE, CAPSULE DRIVER (CDC) + DAMAGE + FAILURE, FUEL ELEMENT WATERLOGGING + FUEL INTEGRITY + REACTOR TEST FACILITY + REACTOR TRANSIENT + SPERT 4 (SPECIAL POWER EXCURSION REACTOR TEST)

5-18729 ALSO IN CATEGORY 18
METROPOLITAN EDISON COMPANY THREE MILE ISLAND NUCLEAR STATION UNIT 1, PRELIMINARY SAFETY ANALYSIS REPORT, VOLUME II
METROPOLITAN EDISON COMPANY
250 PAGES, FIGURES, TABLES, METROPOLITAN EDISON COMPANY THREE MILE ISLAND NUCLEAR STATION UNIT 1, SEPTEMBER 1967, DOCKET 50-289

SECTIONS ON INSTRUMENTS AND CONTROLS, ELECTRICAL AND AUXILIARY SYSTEMS, WASTE DISPOSAL, TESTS AND OPERATIONS, AND SAFETY ANALYSIS. WORST OFF-SITE DOSE IS ROD-EJECTION ACCIDENT (2.6 REMS THYROID AT EXCLUSION DISTANCE, 30 DAYS). MAX. HYPOTHETICAL ACCIDENT (100% GAS, 50% IODINE, 1% SOLIDS FROM COMPLETE CORE MELTDOWN) GIVES 86-REM 2-HR THYROID DOSE AT EXCLUSION DISTANCE, AND 72 REMS AT LOW-POPULATION-ZONE DISTANCE.

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

*ACCIDENT, CONTROL ROD EJECTION + ACCIDENT ANALYSIS + ACCIDENT, HYPOTHETICAL + AIRBORNE RELEASE + DOSE + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY + THREE MILE ISLAND (PWR)

5-18737 ALSO IN CATEGORY 17
SANCBERG RO
ANALYSIS OF CVTR THERMAL-HYDRAULIC PERFORMANCE AT 65-MW OPERATION
WESTINGHOUSE ELECTRIC CORP., PITTSBURGH, PA.
CVNA-286 +. 75 PAGES, FIGURES, TABLES, REFERENCES, JUNE 1967

ORIGINAL CORE (DESIGNED FOR 65 MWF WITH 42 PRESSURE TUBES) WAS DERATED TO 47.2 MWF WHEN THE NUMBER OF TUBES WAS REDUCED TO 36. ANALYSIS IS FOR 65 MW WITH ONLY 36 TUBES. OPERATING HISTORY AFTER THE POWER UPGRATING TO 65 MW IS SUMMARIZED, INCLUDING FAILURE OF TWO FUEL ELEMENTS DURING THE SECOND CYCLE. FOUR SPECIAL HIGH-POWER-DENSITY FUEL ELEMENTS WERE USED. THREE OF THESE PLUS TWO REGULAR ELEMENTS FAILED.

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

*HYDRAULIC ANALYSIS + *POWER UPGRATING + *THERMAL CONSIDERATION + CVTR (CAROLINAS VIRGINIA TUBE REACTOR) + FAILURE, FUEL ELEMENT + OPERATING EXPERIENCE + OPERATIONS REPORT, ANALYSIS + POWER DISTRIBUTION +

CATEGORY 5
ACCIDENT ANALYSIS

5-18737 *CONTINUED*
REACTOR, HEAVY WATER + REACTOR, PRESSURE TUBE

5-18935 ALSO IN CATEGORY 18
HADDAM NECK ANALYSIS OF RADIOACTIVE RELEASE DUE TO MAIN STEAM LINE RUPTURE
CONNECTICUT YANKEE ATOMIC POWER COMPANY, BOSTON, MASS.
2 PAGES, OCTOBER 9, 1967, DOCKET NO. 50-213

ANALYSIS OF RADIOACTIVE RELEASE WITH 10-SEC MAIN-STEAM-ISOLATION VALVES CLOSURE TIME, ASSUMING
1* DEFECTIVE FUEL AND BLOWDOWN AT 6000 LB/HR, RESULTS IN A TOTAL THYROID DOSE AT SITE
BOUNDARY OF LESS THAN 50 MREM. MODERATOR COEFFICIENT WILL BE POSITIVE FOR AT LEAST 2000 HR
AT 493 MWE.

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

*ACCIDENT, STEAM LINE RUPTURE + *CONTAINMENT PENETRATION, CLOSURE OF + AIRBORNE RELEASE + DOSE +
HADDAM NECK + MAIN COOLING SYSTEM + MODERATOR COEFFICIENT + REACTOR, PRESSURIZED WATER +
TECHNICAL SPECIFICATIONS + VALVE

5-18953
BACK LH + WHITE AB
PREDICTION OF HEAT TRANSFER FROM LAMINAR BOUNDARY LAYERS WITH EMPHASIS ON LARGE FREE-STREAM VELOCITY
GRADIENTS AND HIGHLY COOLED WALLS
CALIFORNIA INSTITUTE OF TECHNOLOGY
JPL-TR-32-728 +. 18 PAGES, 7 FIGURES, TABLES, 18 REFERENCES, JUNE 1, 1965

LAMINAR-BOUNDARY-LAYER HEAT TRANSFER AND SHEAR STRESS PREDICTIONS FROM EXISTING SIMILARITY
SOLUTIONS ARE EXTENDED IN AN APPROXIMATE WAY TO PERFECT GAS FLOWS WITH A LARGE FREE-STREAM
VELOCITY GRADIENT PARAMETER AND VARIABLE DENSITY-VISCOSITY PRODUCT ACROSS THE BOUNDARY LAYER
RESULTING FROM A HIGHLY COOLED WALL. THE DIMENSIONLESS ENTHALPY GRADIENT AT THE WALL, TO
WHICH THE HEAT FLUX IS RELATED, IS FOUND NOT TO VARY APPRECIABLY WITH THE FREE STREAM
VELOCITY GRADIENT PARAMETER. THUS, THE APPLICATION OF SIMILARITY SOLUTIONS ON A LOCAL BASIS
TO PREDICT HEAT TRANSFER FROM ACCELERATED FLOWS TO AN ARBITRARY SURFACE MAY BE REASONABLE
APPROXIMATIONS INVOLVING A MINIMUM AMOUNT OF CALCULATION TIME. UNLIKE THE DIMENSIONLESS
GRADIENT AT THE WALL, THE DIMENSIONLESS VELOCITY GRADIENT AT THE WALL, TO WHICH THE SHEAR
STRESS IS RELATED, IS STRONGLY DEPENDENT ON THE FREE STREAM VELOCITY PARAMETER.

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

BOUNDARY LAYER + FLOW, LAMINAR + HEAT TRANSFER + HEAT TRANSFER ANALYSIS

5-18954 ALSO IN CATEGORIES 4 AND 7
PIVIROTTO TJ
MASS-RETENTION MEASUREMENTS IN A BINARY COMPRESSIBLE VORTEX FLOW
CALIFORNIA INSTITUTE OF TECHNOLOGY, PASADENA
JPL-TR-32-864 +. 23 PAGES, FIGURES, 7 TABLES, 8 REFERENCES

CONFINED BINARY VORTEX FLOW FIELDS HAVE BEEN PROPOSED AS GASEOUS-FUEL-RETENTION DEVICES FOR
GAS-CORE NUCLEAR REACTORS. SEVERAL SUCH FLOWS HAVE BEEN EVALUATED IN THIS INVESTIGATION BY
MEASURING THE MASS FLOW RATE OF HEAVY GAS DISCHARGING FROM THE VORTEX TUBE. HYDROGEN AND
NITROGEN WERE USED TO GENERATE THE VORTEX-FLOW FIELDS, AND FREON-13 WAS USED FOR THE HEAVY
GAS. AN INFRARED PHOTOMETER OPERATING AT WAVELENGTH OF NEARLY 8.3 MICRONS WAS DEVELOPED AND
USED TO MEASURE THE TRANSIENT DECAY OF THE DISCHARGE RATE OF FREON AFTER AN ABRUPT CUTOFF OF
FREON INLET FLOW. FROM THESE MEASUREMENTS THE AVERAGE RESIDENCE TIME OF THE FREON PARTICLES
IN SEVERAL VORTEX-TUBE CONFIGURATIONS FOR SEVERAL MASS FLOW RATES OF FREON AND HYDROGEN OR
NITROGEN WERE DETERMINED. THE CONCLUSION REACHED WAS THAT THESE PARTICULAR VORTEX-FLOW
FIELDS DO NOT RETAIN SIGNIFICANTLY MORE FREON THAN WOULD BE CONTAINED IN THE SAME DEVICE AND
UNDER THE SAME CONDITIONS OF PRESSURE AND TEMPERATURE IF NO DIFFUSION OCCURRED BETWEEN THE
LIGHT AND HEAVY SPECIES.

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

DIFFUSION + FLOW THEORY AND EXPERIMENTS + FLOW, VORTEX + HYDROGEN + NITROGEN

5-18955
BACK LH
LAMINAR BOUNDARY-LAYER HEAT TRANSFER FROM A PARTIALLY-IONIZED MONATOMIC GAS BY THE SIMILARITY APPROACH
CALIFORNIA INSTITUTE OF TECHNOLOGY
JPL-TR-32-867 +. 26 PAGES, FIGURES, TABLES, 33 REFERENCES, FEBRUARY 1, 1966

LAMINAR BOUNDARY-LAYER HEAT TRANSFER FROM A SINGLY IONIZED MONATOMIC GAS TO A HIGHLY COOLED
WALL, WITH NO APPLIED EXTERNAL ELECTRIC OR MAGNETIC FIELDS, IS ANALYZED BY THE SIMILARITY
SOLUTION APPROACH. THE GAS IS ASSUMED TO BE ELECTRICALLY NEUTRAL WITH AMBIPOLAR DIFFUSION BY
ION-ELECTRON PAIRS. IN ADDITION, EQUAL ELECTRON AND ATOM-ION TEMPERATURES ARE ASSUMED, AND
SHEATH EFFECTS ARE NOT CONSIDERED. FROM EXISTING PERFECT-GAS-SIMILARITY SOLUTIONS, THE
NUMBER OF PARAMETERS THAT NEED TO BE INVESTIGATED IS REDUCED TO THOSE DIRECTLY RELATED TO

CATEGORY 5
ACCIDENT ANALYSIS

5-18955 *CONTINUED*

IONIZATION EFFECTS. SOLUTIONS FOR THE LIMITING CASES OF A LARGE DIFFUSION RATE COMPARED TO THE NET PRODUCTION RATE OF IONS, AND FOR LOCAL EQUILIBRIUM, ARE OBTAINED FOR CONSTANT PRANDTL NUMBER AND A RANGE OF LEWIS NUMBERS. AN APPROXIMATE PREDICTION METHOD IS THEN SUGGESTED TO ACCOUNT FOR VARIABLE FREE-STREAM VELOCITY AND IONIZATION EFFECTS IN A FLOW OVER A HIGHLY COOLED WALL.

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

BOUNDARY LAYER + FLOW, LAMINAR + HEAT TRANSFER + HEAT TRANSFER ANALYSIS + PLASMA

5-18981 ALSO IN CATEGORY 17

SAXTON SUPPLIES ADDITIONAL INFORMATION ON CHANGE REQUEST 27. PH EXPERIMENTS

SAXTON NUCLEAR EXPERIMENTAL CORPORATION, SAXTON, PA.

6 PAGES, 1 TABLE, SEPTEMBER 6, 1967, DOCKET NO. 50-146

ANSWERS TO 3 AEC QUESTIONS. (1, PH RANGE) - LICENSE LIMIT IS ON ALKALI CONCENTRATION (0.0 TO 3.2 X 10⁻⁴) MOLAL) WHICH AT 500 PPM BORON AND 532 F CORRESPONDS TO A PH RANGE OF 5.5 TO 7.5. (2, THERMAL LIMITS) - WAPD TESTS (DATA GIVEN) SHOW THAT DNB HEAT FLUX IS INCREASED DUE TO FUEL-ROD CRUD. OTHER STUDIES SHOW THAT WALL TEMPERATURE IS LOWER IN NUCLEATE BOILING, FOR A GIVEN HEAT FLUX, WITH CRUD. (3, REACTIVITY RATE DUE TO PH CHANGE) - COOLANT PH CAN BE INCREASED 2 UNITS IN HALF AN HOUR. FROM PREVIOUS EXPERIMENTS, THE MAXIMUM RATE IS 0.017% DELTA K/K/HR AND A MAXIMUM TOTAL CHANGE OF 0.2%.

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

*COOLANT CHEMISTRY + *IN CORE MEASUREMENT + *SURFACE FILM DEPOSIT + DNB (DEPARTURE FROM NUCLEATE BOILING) + POISON, SOLUBLE + REACTIVITY EFFECT, ANOMALOUS + REACTOR, PRESSURIZED WATER + SAXTON + TECHNICAL SPECIFICATIONS

5-18989 ALSO IN CATEGORY 17

OSBORNE MF + LONG EL + MORGAN JG

POSTIRRADIATION EXAMINATION OF ORR LOOP 1 ADVANCED FUEL ELEMENTS

OAK RIDGE NATIONAL LABORATORY

ORNL-TM-862 +. 43 PAGES, 26 FIGURES, 2 TABLES, 5 REFERENCES

TESTED FIVE EXPERIMENTAL FUEL ELEMENTS, COMPOSED OF SINTERED UO₂ FUEL PELLETS IN SS CLADDING AND EQUIPPED WITH SPIRAL FINS TO INCREASE THE HEAT-TRANSFER AREA. CLAD TEMPERATURE WAS 1500 F, AND HEAT RATINGS WERE FROM 50,000 TO 65,000 BTU/HR-FT. PERFORMANCE WAS SATISFACTORY EXCEPT FOR TWO RUPTURED ELEMENTS, THESE CAUSED IN ONE CASE BY INSUFFICIENT COOLANT FLOW AND IN THE OTHER BY A DAMAGED AREA IN THE COOLING FINS. TWO OF THE UNFAILED ELEMENTS HAD FAULTY BRAZE JOINTS.

AVAILABILITY - M. F. OSBORNE, E. L. LONG, OR J. G. MORGAN, OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.

*EXAMINATION + *FAILURE, FUEL ELEMENT + *IRRADIATION TESTING + FAILURE, CLADDING + FIN + HEAT TRANSFER AUGMENTATION + IN PILE LOOP + OPR (OAK RIDGE RESEARCH REACTOR) + REACTOR, RESEARCH

5-19089 ALSO IN CATEGORIES 7 AND 11

WARKENTIN JK

DIRECT RADIATION LEVELS DURING LOFT OPERATION AND FOLLOWING THE LOSS-OF-COOLANT TEST

PHILLIPS PETROLEUM CO., ATOMIC ENERGY DIVISION, IDAHO OPERATIONS OFFICE

IDC-17230 +. 55 PAGES, 25 FIGURES, 6 TABLES, 20 REFERENCES, AUGUST 1967

PRESENTS THE RESULTS OF VARIOUS ANALYSES TO DETERMINE THE DIRECT RADIATION LEVELS EXPECTED IN ASSOCIATION WITH LOFT REACTOR OPERATION AND THE LOSS-OF-COOLANT EXPERIMENT. THE REACTOR PACKAGE AND CONTAINMENT BUILDING ARE BRIEFLY DESCRIBED WITH REGARD TO THE ASPECTS PERTINENT TO THE ANALYSIS. CALCULATED GAMMA DOSE RATES ARE PRESENTED (A) AS A FUNCTION OF DISTANCE INSIDE AND OUTSIDE THE CONTAINMENT BUILDING DURING FULL-POWER OPERATION, (B) AS A FUNCTION OF DISTANCE INSIDE THE CONTAINMENT BUILDING FOR DECAY TIMES RANGING FROM ONE THOUSAND TO ONE MILLION SECONDS FOLLOWING NORMAL SHUTDOWN AFTER 400 HOURS OF OPERATION, AND (C) FOR VARIOUS LOCATIONS INSIDE THE CONTAINMENT BUILDING AND AS A FUNCTION OF DISTANCE OUTSIDE THE BUILDING FOR DECAY TIMES RANGING FROM ONE THOUSAND TO ONE MILLION SECONDS FOLLOWING THE LOSS-OF-COOLANT TEST. INTEGRATED GAMMA DOSES ARE GIVEN FOR VARIOUS LOCATIONS INSIDE THE BUILDING AND AS A FUNCTION OF DISTANCE OUTSIDE THE BUILDING FOR VARIOUS PERIODS OF REACTOR OPERATION, AND FOR DECAY PERIODS OF ONE DAY AND FIVE DAYS FOLLOWING THE LOSS-OF-COOLANT TEST. CALCULATIONAL TECHNIQUES ARE PRESENTED IN THE APPENDIX.

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

ACCIDENT ANALYSIS + ACCIDENT, LOSS OF COOLANT + LOFT (LOSS OF FLUID TEST) + RADIATION DAMAGE + RADIATION EFFECT + RADIATION MODEL + REACTOR, SAFETY RESEARCH

5-19090 ALSO IN CATEGORY 11

EIBER RJ + MAXEY WA + DUFFY AR + ATTERBURY TJ

INVESTIGATION OF THE INITIATION AND EXTENT OF DUCTILE PIPE RUPTURE. PROGRESS REPORT FOR JANUARY-JUNE, 1967

CATEGORY 5
ACCIDENT ANALYSIS

5-19090 *CONTINUED*
 BATTTELLE MEMORIAL INSTITUTE, COLUMBUS, OHIO
 BMI-1813 +. 24 PAGES, 24 FIGURES, 5 TABLES, 2 REFERENCES, SEPTEMBER 1, 1967

THE PROBLEM UNDER INVESTIGATION CONCERNS THE STUDY OF THE RUPTURE CHARACTERISTICS OF DEFECTS IN REACTOR COOLANT PIPING UNDER BOILING-WATER (BW) AND PRESSURIZED-WATER (PW) CONDITIONS. THE TWO ASPECTS OF THE PROBLEM UNDER STUDY IN PHASE I OF THIS PROGRAM ARE (1) THE DETERMINATION OF THE FLAW SIZE REQUIRED TO INITIATE A FRACTURE IN PLAIN-CARBON-STEEL AND STAINLESS-STEEL REACTOR PIPING AND (2) THE DEFINITION OF CONDITIONS REQUIRED TO PRODUCE UNSTABLE PROPAGATING FRACTURES UNDER BW AND PW CONDITIONS. THE INFLUENCE OF IMPORTANT FACTORS SUCH AS PIPE DIAMETER, WALL THICKNESS, AND TEMPERATURE IS ALSO BEING INVESTIGATED. FULL-SCALE EXPERIMENTS ARE BEING CONDUCTED ON 24-IN.-DIAM, 1.50-IN. NOMINAL-WALL-THICKNESS PIPE CONTAINING ARTIFICIAL DEFECTS ENTIRELY THROUGH THE WALL, AND SURFACE DEFECTS. THE FOUR TESTS CONDUCTED UNDER PW CONDITIONS EXHIBITED RELATIVELY SHORT DUCTILE FRACTURES EXTENDING FROM THE TIPS OF THE CRACK. THE LONGEST FRACTURE EXTENSION TO DATE UNDER PW CONDITIONS HAS BEEN 18.4 IN., INCLUDING THE EXTENSION ON BOTH ENDS OF THE CRACK. THE PW CONDITIONS COVERED HAVE BEEN 75 TO 130 F SUBCOOLING OR OVERPRESSURES (ABOVE SATURATION PRESSURE) OF 1000 TO 1940 PSI. THESE OVERPRESSURES TRANSLATE INTO CIRCUMFERENTIAL STRESS LEVELS OF 5,910 TO 12,000 PSI.

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

BRITTLE FRACTURE + PIPING

5-19091 ALSO IN CATEGORY 6
 HARTY H + BATCH JM + PEDERSEN LT + WHEELER RG + FOX JC
 ENGINEERING DEVELOPMENT DEPARTMENT QUARTERLY REPORT, JULY-SEPTEMBER 1966
 BATTTELLE-NORTHWEST, RICHLAND, WASHINGTON. PACIFIC NORTHWEST LABORATORY
 BNWL-492 +. 31 PAGES, 6 FIGURES, 6 TABLES, 3 REFERENCES, AUGUST 1967

BLOWDOWN EXPERIMENTS WERE RUN AND ANALYZED BY TWO METHODS. THE CALCULATION MODEL OF MARGOLIS-REDFIELD SHOWED GOOD AGREEMENT IN LIQUID-REMAINING EXPERIMENTAL DATA.

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

ACCIDENT, LOSS OF COOLANT + BLOWDOWN + REACTOR, MILITARY + SM 2 (STATIONARY MEDIUM POWER PLANT)

5-19092 ALSO IN CATEGORY 6
 PETERSON WD + SPANIER J
 HOT-2. A TWO-DIMENSIONAL TRANSIENT HEAT CONDUCTION PROGRAM FOR THE CDC-6600
 BETTIS ATOMIC POWER LAB., PITTSBURGH, PA.
 WAPD-TM-669 +. 279 PAGES, 10 FIGURES, 2 TABLES, REFERENCES, JUNE 1967

HOT-2 IS A DIGITAL COMPUTER PROGRAM TO SOLVE TWO-DIMENSIONAL PLANE AND AXIALLY SYMMETRIC STEADY-STATE AND TRANSIENT HEAT-CONDUCTION PROBLEMS WITH DIAGONAL BOUNDARIES AND INTERFACES. MESH SPACING (AT MOST 5000 POINTS) IS COMPLETELY VARIABLE. AS MANY AS 99 REGIONS ARE PERMITTED IN ORDER TO DESCRIBE SPATIAL VARIATIONS IN MATERIAL PROPERTIES, HEAT-GENERATION RATES, AND BOUNDARY CONDITIONS. THE HEAT-GENERATION RATE AND BOUNDARY CONDITIONS MAY VARY WITH TIME. THE ALTERNATING-DIRECTION ITERATIVE METHOD IS USED TO SOLVE THE DIFFERENCE EQUATIONS, BOTH FOR TRANSIENT AND STEADY-STATE CALCULATIONS.

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

COMPUTER PROGRAM + HEAT TRANSFER, CONDUCTION

5-19093 ALSO IN CATEGORY 6
 BERGLES AE + ROOS JP + BOURNE JG
 INVESTIGATION OF BOILING FLOW REGIMES AND CRITICAL HEAT FLUX. QUARTERLY PROGRESS REPORT, AUGUST 1, 1966-MARCH 15, 1967. REPORT NO. 724
 DYNATECH CORP., CAMBRIDGE, MASS.
 NYO-3304-10 +. 35 PAGES, FIGURES, REFERENCES, JUNE 21, 1967

THE RESULTS OF PRESENT TESTS UTILIZING A CONTROLLABLE ANNULAR MIXER AND A 0.4-IN.-DIAM, 59-IN.-LONG TEST SECTION, CAN BE SUMMARIZED AS FOLLOWS - (1) ADIABATIC-FLOW-REGIME MAPS DIFFER SUBSTANTIALLY FROM DIABATIC-FLOW-REGIME MAPS. HOWEVER, IN THE ADIABATIC CASE, THE ENTERING PHASE DISTRIBUTION IS OF CRITICAL IMPORTANCE IN DETERMINING WHAT THE FLOW REGIME WILL BE AT THE TEST-SECTION EXIT. (2) FOR MINIMUM FLOW-PATTERN DISTORTION, THE STEAM- AND WATER-FEED FLOWS MUST BE CLOSE TO THE SATURATION CONDITION. (3) FLOW-REGIME AND FILM-THICKNESS MEASUREMENTS INDICATE THAT THE ENTERING WATER VELOCITY MUST BE CONTROLLED TO ESTABLISH A FLOW PATTERN COMPARABLE TO THAT WHICH WOULD EXIST IF SUBCOOLED INLET CONDITIONS WERE USED. (4) FILM-FLOW RATE AND CHF BEHAVIOR FOR MIXED-INLET CONDITIONS APPEAR TO BE COMPARABLE TO THAT OBSERVED FOR SUBCOOLED INLET CONDITIONS IF THE MIXER IS PROPERLY ADJUSTED.

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

BURNOUT HEAT FLUX + FLOW STABILITY + FLOW, TWO PHASE

CATEGORY 5
ACCIDENT ANALYSIS

5-19094 ALSO IN CATEGORIES 6 AND 17

MANDEL H

HEAVY WATER ORGANIC COOLED REACTOR. MELTING POINTS, TRANSITION ENERGIES, AND SPECIFIC HEATS OF POLYPHENYL REACTOR COOLANTS

ATOMICS INTERNATIONAL, CANOGA PARK, CALIFORNIA. COMBUSTION ENGINEERING, INC., WINDSOR, CONN. NUCLEAR DIVISION

AI-CE-58 +. 25 PAGES, 15 FIGURES, 2 TABLES, 8 REFERENCES, AUGUST 15, 1967

DIFFERENTIAL SCANNING CALORIMETRY WAS APPLIED TO STUDIES OF THE MELTING BEHAVIOR, TRANSITION ENERGIES, AND SPECIFIC HEAT OF POLYPHENYLS OF INTEREST TO ORGANIC-COOLANT TECHNOLOGY IN THE HEAVY-WATER ORGANIC-COOLED REACTOR PROGRAM. MELTING POINTS AND HEATS OF FUSION WERE DETERMINED FOR THE MAJOR CONSTITUENTS OF POLYPHENYL COOLANTS, NAMELY, BIPHENYL, ORTHO-, META-, AND PARATERPHENYL. THE MELTING CHARACTERISTICS OF TWO SYNTHETIC TERPHENYL BINARIES SIMILAR TO PROPOSED HWOOR COOLANTS (ORTHO-META ISOMER RATIOS OF 2.1 AND 1.2) WERE STUDIED WITH RESPECT TO THE EFFECT OF THE HIGH BOILER (HB) FRACTION, AND OF PARATERPHENYL ON THE MELTING TRANSITION RANGE. THE EFFECT OF HB ADDITION ON THE TWO BINARY MIXTURES IS BOTH TIME AND CONCENTRATION DEPENDENT IN THAT THE OBSERVED CRYSTALLINITY OF THE SAMPLES DECREASES WITH INCREASED HB ADDITION, AND INCREASES WITH TIME. THE ADDITION OF PARATERPHENYL INCREASES THEIR FINAL MELTING POINT. THE CALORIMETRIC CAPABILITIES WERE ALSO UTILIZED IN THE MEASUREMENT OF THE SPECIFIC HEATS OF SOLID BIPHENYL, ORTHO-, AND PARATERPHENYL.

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

ORGANIC COOLANT + PROPERTY, PHYSICAL + REACTOR, ORGANIC COOLED

5-19095 ALSO IN CATEGORY 6

HEALY JF

FLUID-PARTICLE HEAT TRANSFER COEFFICIENTS IN PACKED AND FLUIDIZED BEDS. A COMPARISON OF THE USE OF PERIODIC AND NON-PERIODIC INPUTS

RENSSELAER POLYTECHNIC INST., TROY, N.Y. DEPT. OF CHEMISTRY

RPI-3639-3 +. 125 PAGES, REFERENCES, MAY 1967

THE USE OF PULSE AND STEP TEMPERATURE INPUTS WAS INVESTIGATED TO OBTAIN THE FREQUENCY RESPONSE OF PACKED AND FLUIDIZED BEDS OF COPPER (DP = 0.0282 AND 0.0427 IN.) AND GLASS (DP = 0.0179 IN.) PARTICLES USING AIR AS THE FLUID. A 2-INCH-DIAM COLUMN WAS USED, AND DATA WERE TAKEN OVER THE PARTICLE REYNOLDS NUMBER RANGE OF 4 TO 55. THE AGREEMENT IN THE RESULTS FROM PERIODIC, PULSE, AND STEP TESTING WAS GENERALLY GOOD, EXCEPT WHERE THE FREQUENCY CONTENT OF THE PULSE OR STEP WAS SMALL (HIGH FREQUENCY AND/OR LOW AMPLITUDE RATIO). THE STEADY-STATE PERIODIC METHOD GAVE SUPERIOR ACCURACY IN THE HIGH-FREQUENCY RANGE, WHILE THE STEP IS BEST USED AT VERY LOW FREQUENCIES. AT INTERMEDIATE FREQUENCIES, ALL THREE INPUTS PRODUCED COMPARABLE RESULTS.

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

*FLOW THEORY AND EXPERIMENTS + *FLUIDIZED BED + FREQUENCY SPECTRA + PRESSURE DROP + TRANSFER FUNCTION

5-19096 ALSO IN CATEGORY 6

KENNISON RG

VIB, A COMPUTER PROGRAM FOR FLOW INDUCED SELF EXCITED VIBRATION OF A BLADE SUSPENDED IN A FLOW CHANNEL

KNOLLS ATOMIC POWER LAB., SCHENECTADY, N.Y.

KAPL-M-6721 +. 24 PAGES, 2 REFERENCES, JUNE 12, 1967

PRESENTS A COMPUTER PROGRAM FOR ANALYSIS OF FLOW-INDUCED SELF-EXCITED VIBRATION OF A BLADE SUSPENDED IN A FLOW CHANNEL. THE PROGRAM MAY BE APPLIED TO BLADE-TYPE CONTROL RODS AND OTHER SIMILAR STRUCTURES. THE PROGRAM IS WRITTEN FOR THE CDC 6600 COMPUTER AND DOES NOT REQUIRE SPECIALIZED SUBROUTINES. THE OUTPUT IDENTIFIES ALL REGIONS OF STATIC AND DYNAMIC INSTABILITY AND DEFINES THE FLOW-FREQUENCY BOUNDARY BETWEEN THE DAMPED AND DIVERGENT VIBRATION REGIONS. THE PROGRAM IS BASED ON THE ANALYSES REPORTED IN KAPL-M-6559 (RGK-20), JUNE 3, 1966, THEORETICAL ANALYSIS OF FLOW-INDUCED VIBRATION OF A BLADE SUSPENDED IN A FLOW CHANNEL (MAY 26, 1966, R. G. KENNISON AND D. R. MILLER).

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

*TURBINE BLADE, VIBRATION + COMPUTER PROGRAM + VIBRATION ANALYSIS

5-19656 ALSO IN CATEGORY 18

POINT BEACH II PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT. VOLUME III

WISCONSIN MICHIGAN POWER COMPANY + WISCONSIN ELECTRIC POWER CO.

250 PAGES, FIGURES, TABLES, REFERENCES, AUGUST 3, 1967, DOCKET NO. 50-301

DESCRIBES FOUR ENGINEERED-SAFETY-FEATURE SYSTEMS. MCA IS A LOSS OF COOLANT, RESULTING IN AN OFF-SITE DOSE OF 0.27 REM IN 2 HR. LOSS-OF-COOLANT ACCIDENT ANALYSIS IS 37 PAGES LONG. (APPENDIX A) PRIMARY COOLANT ACTIVITY, (APPENDIX B) DISPERSION, (APPENDIX C) DOSE CALCULATION MODELS, (APPENDIX D) LIKELIHOOD AND CONSEQUENCES OF TURBINE RUNAWAY, (APPENDIX E) RADIOLYTIC

CATEGORY 5
ACCIDENT ANALYSIS

5-19656 *CONTINUED*

DECOMPOSITION OF SAFETY-INJECTION WATER AND POSSIBLE EFFECTS ON CONTAINMENT TRANSIENTS,
(APPENDIX F) EVALUATION OF SHARED COMPONENTS.

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

*ACCIDENT, LOSS OF COOLANT + *ENGINEERED SAFETY FEATURE + *SHARED COMPONENTS + AIRBORNE RELEASE + DOSE +
POINT BEACH 1 AND 2 (PWR) + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-16382 ALSO IN CATEGORY 5
BASSO C
THERMODYNAMICS OF TWO-PHASE DIABATIC FLOW AND RELATED INSTABILITIES
COMITATO NAZIONALE PER ENERGIA NUCLEARE, ROME, ITALY
RT-ING-66-20 +. 31 PAGES, 1966

EQUATIONS DEFINING THE LIMITING CONDITIONS FOR DNB OR BURNOUT ARE DERIVED FOR STEAM-WATER MIXTURES TREATED AS A SUSPENSION OF COMPRESSIBLE VAPOR IN A CONTINUOUS LIQUID PHASE.

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

DNB (DEPARTURE FROM NUCLEATE BOILING) + FLOW THEORY AND EXPERIMENTS + FLOW, TWO PHASE + HEAT FLUX, DRYOUT + THERMODYNAMICS

6-16489
NEAL LG + ZIVI SM
HYDRODYNAMIC STABILITY OF NATURAL CIRCULATION BOILING SYSTEMS
TWR SYSTEMS, REDONDO BEACH, CALIFORNIA
STL-372-30 +. PAGES 75-105 OF ANNUAL SUMMARY REPORT FOR 1965 - KINETIC STUDIES OF HETEROGENEOUS WATER REACTORS, 109 PAGES, 38 FIGURES, 6 TABLES, 44 REFERENCES, DECEMBER 30, 1966

PART A OF THIS SECTION IS A SUMMARY OF STL 372-14, CONCLUDING THAT THE BEST OF THE MODELS OF HYDRODYNAMIC STABILITY IS THE STABLE-3 PROGRAM OF A. B. JONES, A LINEARIZED MODEL INCLUDING SPATIAL-DISTRIBUTION EFFECTS. PART B DESCRIBES A HIGH-PRESSURE LOOP FOR MEASUREMENT OF POWER-VOID TRANSFER FUNCTIONS, AS WELL AS INITIAL MEASUREMENT WITH THIS LOOP.

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

*REACTOR STABILITY + *REACTOR, BOILING WATER + SPACE DEPENDENT DYNAMICS + TRANSFER FUNCTION

6-16490 ALSO IN CATEGORIES 5 AND 8
WENTZ LB
IN-PILE CAPSULE MEASUREMENTS OF TRANSIENT STEAM-VOID GROWTH AND COLLAPSE
TWR SYSTEMS, REDONDO BEACH, CALIFORNIA
STL 372-30 +. PAGES 7-23 OF ANNUAL SUMMARY REPORT FOR 1965 - KINETIC STUDIES OF HETEROGENEOUS WATER REACTORS, 109 PAGES, 38 FIGURES, 6 TABLES, 44 REFERENCES, DECEMBER 30, 1965

IN THE KEWB, REFLECTOR EXPERIMENTS WERE PERFORMED WITH A CAPSULE CONTAINING A FISSION-HEATED DISK IN WATER. STEAM-VOID GROWTH AND COLLAPSE WERE STUDIED UNDER DIFFERENT INERTIAL LOADINGS, SUBCOOLING, AND AMBIENT PRESSURE.

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

*KEWB (KINETIC EXPERIMENT ON WATER BOILERS) + ACCIDENT ANALYSIS + HEAT TRANSFER, BOILING + HYDRAULIC ANALYSIS + REACTOR TRANSIENT + REACTOR, HOMOGENEOUS + REACTOR, RESEARCH + THERMAL ANALYSIS

6-16491 ALSO IN CATEGORIES 5 AND 8
WRIGHT RW
DESTRUCTIVE PRESSURE GENERATION
TWR SYSTEMS, REDONDO BEACH, CALIFORNIA
STL 372-30 +. PAGES 74-74 OF ANNUAL SUMMARY REPORT FOR 1965 - KINETIC STUDIES OF HETEROGENEOUS WATER REACTORS, 109 PAGES, 38 FIGURES, 6 TABLES, 44 REFERENCES, DECEMBER 30, 1966

IN AN ATTEMPT TO EXPLAIN THE DESTRUCTIVE TRANSIENT IN THE SPERT-1D IT IS HYPOTHESIZED THAT THE MOLTEN ALUMINUM WAS DISPERSED BY THE WATER HAMMER OF THE COLLAPSE OF THE VAPOR BLANKET ON THE PLATE. DISCUSSION OF THE DIFFICULTY IN EXPLAINING THE OBSERVED PRESSURIZATION OF 12 LITERS OF GAS VOLUME. EXPLANATION OF THIS EFFECT BY PRESSURE AMPLIFICATION ON COLLAPSE OF THE LAST BUBBLE OF A STEAM-WATER MIXTURE. SHOCK-TUBE EXPERIMENTS SUPPORT THE ABOVE CONSIDERATIONS.

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

*DESTRUCTIVE TRANSIENT + *SPERT 1 (SPECIAL POWER EXCURSION REACTOR TEST) + CHEMICAL ANALYSIS + HYDRAULIC ANALYSIS + PRESSURE, INTERNAL + REACTOR, TEST

6-16636 ALSO IN CATEGORY 5
SUSSKIND H + BECKER W
PRESSURE DROP IN GEOMETRICALLY ORDERED PACKED BEDS OF SPHERES
BROOKHAVEN NATIONAL LABORATORY, NEW YORK
BNL-50016 +. 65 PAGES, 39 FIGURES, 17 TABLES, 14 REFERENCES, JUNE 1966

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-16636 *CONTINUED*

FRICION-FACTOR-VS-REYNOLDS-NUMBER DIAGRAMS WERE PREPARED FROM EXPERIMENTAL DATA TAKEN ON A FULL-SIZE ORDERED-BED FAST REACTOR (OBF). VARIABLES - WATER VELOCITY, BED VOIDAGE, BALL SPACING, BALL DIAMETER, AND BED HEIGHT. THE ARRAY WAS A SQUARE-BASE RHOMBOHEDRAL PACKING. THE RESULTS WERE CORRELATED FOR WALL EFFECTS.

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

FLOW THEORY AND EXPERIMENTS + OBF (ORDERED BED FAST REACTOR) + PRESSURE DROP + REACTOR, FAST + REACTOR, PEBBLE BED

6-16762 ALSO IN CATEGORY 18

SMITH GG + BECK JW + GLICKSTEIN SS

ANNULAR SEED-BLANKET REACTOR CRITICAL EXPERIMENTS

WESTINGHOUSE ELECTRIC CORP., BETTIS ATOMIC POWER LAB., PITTSBURGH

WAPD-TM-621 +. 53 PAGES, 36 FIGURES, 11 TABLES, 10 REFERENCES, FEBRUARY, 1967

A SERIES OF 1-, 2-, AND 3-MODULE CORES WAS MOCKED UP, USING HIGHLY ENRICHED UO₂ SEEDS AND THORIA BLANKETS TO OBTAIN THE USUAL INFORMATION PLUS INTERMODULAR COUPLING. DESIGN MODEL AGREED WITH EXPERIMENTAL RESULTS EXCEPT FOR FLUX NEAR INTERFACE.

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

*CRITICALITY EXPERIMENT + COUPLED CORES + REACTOR, BREEDER + REACTOR, PRESSURIZED WATER

6-16899 ALSO IN CATEGORY 5

CRITICAL INVESTIGATION ON STEADY BURNOUT. PROGRESS LETTER NO. 1

APPLICAZIONI E RICERCHE SCIENTIFICHE, MILAN, ITALY

EURAC-1618 + EUR-2831 +. 7 PAGES, APRIL 12, 1966

THIS FIRST PROGRESS LETTER BRIEFLY REPORTS THE WORK, PERFORMED UNDER THE EURATOM CONTRACT N.073-65-11 TEEI, FROM NOVEMBER 15, 1965 TO MARCH 30, 1966. A SHORT DESCRIPTION OF FUTURE WORK IS ALSO GIVEN.

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

BURNOUT HEAT FLUX + HEAT TRANSFER, BOILING

6-16900 ALSO IN CATEGORIES 5 AND 8

THE STEADY STATE AND DYNAMIC BEHAVIOR OF A BOILING WATER REACTOR. QUARTERLY PROGRESS REPORT NO. 21, JANUARY 1 - APRIL 1, 1966

TECHNISCHE HOGESCHOOL, EINDHOVEN, NETHERLANDS

EURAC-1582 + WW-016-R-108 + EUR-2869 +. 22 PAGES, 15 REFERENCES, APRIL 1966

REPORTS THE MEASUREMENTS MADE TO CHECK THE INFLUENCE OF A CHANGING WATER LEVEL ON THE STEADY AS WELL AS THE NONSTEADY-STATE CHARACTERISTICS OF THE HYDRAULIC SYSTEM. THE EFFECT APPEARS NEGLIGIBLE PROVIDED THAT THE LEVEL IS ABOVE THE EDGE OF THE SHROUD. THE RESULTS OF THE 50- AND THE 60-MM SHROUD MEASUREMENTS WERE FURTHER ANALYZED. VOID FRACTION DATA WERE PLOTTED AS A FUNCTION OF THE MARTINELLI-NELSON PARAMETER. THE FIGURES INDICATE THAT THE PARAMETER X-SUB-TT MIGHT BE SUITABLE FOR CORRELATION. BURNOUT DATA OBTAINED FROM THE MEASUREMENTS ON THE 50- AND 60-MM SHROUDS ARE GIVEN AS A FUNCTION OF SATURATION TEMPERATURE AND SUBCOOLING.

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

BURNOUT HEAT FLUX + EURATOM + FLOW, TWO PHASE + HEAT TRANSFER, BOILING + REACTOR, BOILING WATER

6-16953 ALSO IN CATEGORY 5

MUELLER A + EGGERS B + HAEFELE W

REFERENCE STUDY FOR THE 1000 MWE STEAM-COOLED FAST BREEDER REACTOR (D 1)

GESELLSCHAFT FUER KERNFORSCHUNG M.B.H., KARLSRUHE, WEST GERMANY

ORNL-TR-1541 + KFK-392 +. 291 PAGES, FIGURES, TABLES, REFERENCES, AUGUST 1966

IN THIS GENERAL STUDY OF THE WHOLE REACTOR CONCEPT, THE FOLLOWING ARE THE MAIN ITEMS OF SAFETY INTEREST - FUEL CANS (P. 141), REACTOR PRESSURE VESSEL (P. 164), FLOODING OF THE REACTORS (P. 231), DRAINING OF THE REACTOR (P. 242), DIRECT REACTIVITY DISTURBANCES (P. 263), INDIRECT REACTIVITY DISTURBANCES (P. 263), RELEASE OF FISSION PRODUCTS (P. 270).

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

*GERMANY + *REACTOR, BREEDER + *REACTOR, TEST + ACCIDENT, MAXIMUM CREDIBLE (MCA) + BETHE TAIT + EMBRITTLEMENT + FISSION GAS RELEASE + FISSION PRODUCT RELEASE, GENERAL + FISSION PRODUCT RETENTION + FISSION PRODUCT, VOLATILE + FLOODING COEFFICIENT + FUEL INTEGRITY + FUEL MELTDOWN + NDT DATA (NIL DUCTILITY TRANSITION) + REACTOR TRANSIENT + STEAM

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-16984 ALSO IN CATEGORY 9
MCGILL IS + CROOK MJ
THERMO-FLUX VARIATIONS IN THE PLUTO TYPE RESEARCH REACTORS DUE TO CONTROL-ABSORBER MOVEMENT
ATOMIC ENERGY RESEARCH ESTABLISHMENT, HARWELL, ENGLAND
AERE-M-1819 +. 22 PAGES, 10 FIGURES, 3 TABLES, NOVEMBER 1966

THE THERMAL-FLUX VARIATIONS OCCURRING IN THE PLUTO-TYPE RESEARCH REACTORS DUE TO CONTROL-ABSORBER MOVEMENT ARE ILLUSTRATED BY MEASUREMENTS OBTAINED IN THE DAPHNE ZERO-ENERGY MOCKUP. CONTROL BY BOTH THE ORIGINAL SEMAPHORE-ARM-TYPE COARSE-CONTROL ABSORBERS AND VERTICAL CONTROL RODS IS CONSIDERED.

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

*PLUTO (UK) + CONTROL ROD + CONTROL SYSTEM + REACTOR KINETICS + THERMAL NEUTRON

6-16985
HELMICK HH + CHEZEM CG
SUMMARY OF COUPLED KIWI EXPERIENCE
LOS ALAMOS SCIENTIFIC LAB., N. MEXICO
LA-DC-8516 + CONF-670107-3 +. 8 PAGES, FROM AMERICAN NUCLEAR SOCIETY, COUPLED REACTOR KINETICS CONFERENCE, COLLEGE STATION, TEXAS, 1965

NEUTRONIC STABILITY OF A TWO-CORE CLUSTER OF NUCLEAR ROCKET ENGINES OF THE KIWI AND PHOEBUS-I CLASS OVER THE INTERESTING RANGE OF COUPLING PARAMETERS CONFIRMED BY TRANSFER FUNCTION AND PULSED NEUTRON SOURCE BEHAVIOR. INTERPRETATION OF THE PULSED BEHAVIOR OF THE SYSTEM POINTS TOWARD THE EXISTENCE OF SMALL, DAMPED OSCILLATIONS IN THE NEUTRON POPULATION OF THE PASSIVE CORE FOLLOWING INTRODUCTION OF PULSE INTO THE ACTIVE CORE.

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

*COUPLED CORES + KIWI + REACTOR STABILITY

6-16986
SEALE RL + HANSEN GE
CALCULATION OF INTERACTION PARAMETERS FOR LOOSELY COUPLED REACTOR SYSTEMS
LOS ALAMOS SCIENTIFIC LAB., N. MEX.
LA-DC-8511 + CONF-670107-6 +. 15 PAGES, FROM AMERICAN NUCLEAR SOCIETY, COUPLED REACTOR KINETICS CONFERENCE, COLLEGE STATION, TEXAS, 1965

THE PROBLEM CHARACTERIZED BY THE TITLE IS RELATED TO THE RESPONSE OF NUMEROUS SINGLE DETECTORS TO A COMPLEX SOURCE, AND TO THE PROBLEM OF A COMPLICATED DETECTOR EXPOSED TO SEVERAL SOURCES.

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

*COUPLED CORES + REACTOR KINETICS

6-16987
BEAR JL + JUDGE FD + VENERUS ER
THE APPLICATION OF SYNTHESIS TECHNIQUES TO THE CALCULATIONS OF THREE-DIMENSIONAL REACTIVITY COEFFICIENT DISTRIBUTIONS
KNOLLS ATOMIC POWER LAB., SCHENECTADY, N. Y.
KAPL-P-3186 + CONF-6610C1-44 +. 8 PAGES, FROM 14TH CONFERENCE ON REMOTE SYSTEMS AND TECH., PITTSBURGH, PA., 1966, AMERICAN NUCLEAR SOCIETY

THE MULTICHANNEL SYNTHESIS TECHNIQUE IS A USEFUL AND RAPID TOOL FOR CALCULATING COMPLEX THREE-DIMENSIONAL REACTORS. THE METHOD PROVIDES FLUX AND POWER DISTRIBUTIONS AND THE ASSOCIATED REACTIVITY LEVEL. IN THIS PAPER, THE PROCEDURE IS EXTENDED TO THE CALCULATION OF SPATIAL-REACTIVITY-COEFFICIENT DISTRIBUTIONS.

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

DANGER COEFFICIENT + REACTIVITY COEFFICIENT + SPACE DEPENDENT DYNAMICS

6-16988
MIHALCZO JT
ROSSI-ALPHA AND PULSED NEUTRON MEASUREMENTS IN SUBCRITICAL COUPLED URANIUM-METAL CYLINDERS
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE
ORNL-P-2854 + CONF-670107-4 +. 22 PAGES, 11 FIGURES, 3 TABLES, FROM AMERICAN NUCLEAR SOCIETY, COUPLED REACTOR KINETICS CONFERENCE, COLLEGE STATION, TEXAS, 1965

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-16988 *CONTINUED*

PAIRS OF COAXIAL 27.94-CM-DIAM CYLINDERS OF UNMODERATED AND UNREFLECTED URANIUM METAL ASSEMBLED WITH 36.94 CM BETWEEN THE FLAT SURFACES. PROMPT-NEUTRON TIME BEHAVIOR MEASURED BY ROSSI-ALPHA AND BY PULSED-NEUTRON TECHNIQUES. RESULTS COMPARED WITH CALCULATION KINETICS OF A COUPLED-CORE ASSEMBLY. MONTE CARLO METHOD WAS USED TO CALCULATE THE COUPLING COEFFICIENTS AND THE FLIGHT TIME.

AVAILABILITY - DIVISION OF TECHNICAL INFORMATION, OAK RIDGE, TENN.

*COUPLED CORES + *METAL + *URANIUM + CRITICALITY EXPERIMENT + MONTE CARLO + PROMPT NEUTRON LIFETIME + PULSED NEUTRON TECHNIQUE + REACTOR KINETICS + ROSSI ALPHA

6-17009

SEGAL BM + HORNE RE

MEASUREMENT OF SODIUM WORTH IN THE ENRICO FERMI REACTOR

ATOMIC POWER DEVELOPMENT ASSOCIATES, INC., DETROIT

APDA-NTS-7 +. 40 PAGES, FIGURES, TABLES, SEPTEMBER 1966

BETWEEN NOVEMBER 18 AND DECEMBER 10, 1963 THE AXIALLY AVERAGED (OR COLUMNAR) CORE WORTH OF SODIUM WAS OBTAINED AT SEVEN CORE RADII BY MEASURING THE REACTIVITY OF SEVEN PAIRS OF CORE LOADINGS, EACH PAIR CONTAINING FOUR SPECIAL SUBASSEMBLIES IN SEPARATED LOCATIONS AT EQUAL RADII FROM THE CORE CENTER. THE SPECIAL SUBASSEMBLIES WERE VOIDED OF SODIUM IN THE FIRST LOADING OF EACH PAIR AND FILLED FOR THE SECOND. THE COLUMNAR CORE WORTH OF SODIUM WAS POSITIVE, VARYING FROM 1.82 CENTS/KG TO 2.19 CENTS/KG. THE EXISTENCE OF NEGATIVE SODIUM TEMPERATURE AND VOID COEFFICIENT OF REACTIVITY IS THUS CONFIRMED. GOOD AGREEMENT WITH THE VALUE FOR TOTAL CORE SODIUM WORTH OF APPROXIMATELY 1.9 CENTS/KG ESTIMATED FROM THE ZPR-III FERMI CRITICAL EXPERIMENT AND MULTIGROUP DIFFUSION THEORY.

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

*FERMI + *MEASUREMENT, GENERAL + *SODIUM COEFFICIENT + CRITICAL ASSEMBLY FACILITY + MEASUREMENT, REACTIVITY + REACTOR, BREEDER + REACTOR, FAST + REACTOR, LIQUID METAL COOLED + ZPR 3 (ANL ZERO POWER REACTOR)

6-17014

ALSO IN CATEGORY 9

LACEY PG

LOCAL FISSION POWER DISTRIBUTIONS AROUND CONTROL RODS AND CONTROL ROD FOLLOWERS IN SIMULATED PWR CORES WESTINGHOUSE ELECTRIC CORP., PITTSBURGH, PA., ATOMIC POWER DIVISION
WCAP-3269-35 +. 89 PAGES, FIGURES, TABLES, REFERENCES, SEPT. 1964

LOCAL FISSION-POWER DISTRIBUTIONS AROUND CRUCIFORM CONTROL RODS AND CONTROL-ROD FOLLOWERS FOR A TYPICAL PRESSURIZED-WATER REACTOR CRITICAL EXPERIMENT. DATA TAKEN BY GAMMA SCANNING TYPICAL FUEL RODS. DISCUSSES ANALYTIC AND EXPERIMENTAL TECHNIQUES.

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

*POWER DISTRIBUTION + CONTROL ROD WORTH

6-17015

MATTHEWS RL

TWO MODE KINETICS EQUATIONS

KNOLLS ATOMIC POWER LABORATORY, SCHENECTADY, N. Y.

KAPL-M-6576 +. 18 PAGES, OCTOBER, 1966

PRESENTS A DERIVATION OF THE TWO-MODE REACTOR-KINETICS EQUATIONS AND SHOWS HOW THE PERTURBATION STUDY PROGRAM (PSP) MAY BE USED TO YIELD THE REQUIRED REACTIVITY COMPONENTS.

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

*PERTURBATION METHOD + *REACTOR KINETICS + COMPUTER, DIGITAL

6-17016

ALSO IN CATEGORY 9

FLANAGAN CA

PRESCRIPTION FOR DIFFUSION THEORY REPRESENTATION OF FUEL CLUSTERS CONTAINING CONTROL RODS BASED ON MONTE CARLO CORRELATION OF CAPTURE PROBABILITIES.

BETTIS ATOMIC POWER LABORATORY, WEST MIFFLIN, PA.

WAPD-T-1841 + CONF-651101-69 +. 18 PAGES, REFERENCES, FROM 13TH CONF. ON REMOTE SYSTEMS TECHNOLOGY, WASHINGTON, D.C., NOVEMBER 1965, ANS MEETING

THIS PAPER DESCRIBES A METHOD OF FORCE-FITTING P-1 APPROXIMATION CALCULATIONS WHICH CONTAIN EXPLICITLY REPRESENTED CONTROL RODS BY CORRELATING CAPTURE PROBABILITIES DETERMINED BY MONTE CARLO CALCULATIONS. THE METHOD IS EMPIRICALLY BASED. THE METHOD, WHEN TESTED, APPEARS TO IMPROVE CALCULATIONAL RESULTS IN TWO AND THREE DIMENSIONS RELATIVE TO EXPERIMENT.

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

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-17016 *CONTINUED*
*CONTROL ROD WORTH + *MONTE CARLO

6-17033
MOTTA M
FAST REACTORS. CALCULATION OF THE TRANSIENTS IN PROMPT EXCURSIONS
COMITATO NAZIONALE PER L'ENERGIA NUCLEARE, ITALY
UCRL-TRANS-10086 +. 35 PAGES, REFERENCES, TRANSLATED FOR UNIVERSITY OF CALIFORNIA, LAWRENCE RADIATION
LAB., LIVERMORE, FROM ENERG. NUCL. (MILAN), 13, PAGES 359-70, (1966)

A METHOD OF CALCULATING THE TRANSIENTS IN A PROMPT-CRITICAL FAST REACTOR IS DESCRIBED. THE
TELEGRAPH EQUATION AND THE STOKES-NAVIER EQUATION OF FLUID DYNAMICS ARE COMPARED TO EXPLAIN
THE SHOCK-WAVE TREATMENT AND THE HYDRODYNAMIC-THERMODYNAMIC PART OF THE CALCULATIONS,
INTRODUCED IN A CODE FOR DIGITAL COMPUTERS.

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

*REACTOR TRANSIENT + *REACTOR, FAST + COMPUTER, DIGITAL + EXCURSION, LARGE + HYDRAULIC ANALYSIS +
SHOCK WAVE + SPACE DEPENDENT DYNAMICS

6-17034
MACMILLAN DB
ASYMPTOTIC NUMERICAL SOLUTION OF THE REACTOR KINETICS EQUATIONS
KNOLLS ATOMIC POWER LAB., SCHENECTADY, N. Y.
KAPL-M-6581 +. 20 PAGES, TABLES, NOVEMBER 2, 1966

A FAMILY OF ASYMPTOTIC METHODS IS GIVEN BY MEANS OF WHICH APPROXIMATE NUMERICAL SOLUTIONS MAY
BE OBTAINED FOR THE REACTOR KINETICS EQUATIONS, OR FOR ANY SYSTEM OF EQUATIONS INCLUDING THE
REACTOR KINETICS EQUATIONS. THE METHODS ARE ACCURATE AND EFFICIENT AND MAY BE USED WITH
STANDARD DIFFERENTIAL-EQUATION-SOLVER SUBROUTINES. ASYMPTOTIC METHODS MAY BE SIMILARLY
DEVELOPED FOR OTHER PROBLEMS IN WHICH SOME OF THE VARIABLES ARE STABLE AND HAVE VERY SHORT
TIME CONSTANTS.

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

*COMPUTER, DIGITAL + *REACTOR KINETICS

6-17035 ALSO IN CATEGORY 9
CHRISTENSEN PS
A DESCRIPTION OF THE PILE OSCILLATORS AT DR 1.
DANISH ATOMIC ENERGY COMMISSION, RISØ. RESEARCH ESTABLISHMENT
RISO-134 +. 41 PAGES, FIGURES, REFERENCES, JUNE 1966

DESCRIPTION OF PILE OSCILLATORS AT DR1 (A HOMOGENEOUS REACTOR). TWO TYPES OF OSCILLATORS -
GLOBAL AND A LOCAL OSCILLATOR. THE GLOBAL OSCILLATOR IS USED IN TWO POSITIONS - IN THE
CENTRE AND AT THE EDGE OF THE CORE, IN ORDER TO BE ABLE TO SEPARATE THE ABSORBING AND THE
SCATTERING PROPERTIES OF A GIVEN SAMPLE. THE LOCAL OSCILLATOR IS SITUATED IN THE REFLECTOR
OF THE REACTOR AND UTILIZES AN ANNULAR BORON-COATED IONIZATION CHAMBER MADE AT RISØ.

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

*DENMARK + *OSCILLATOR, REACTIVITY + TRANSFER FUNCTION

6-17036
BABALA D
NEUTRON COUNTING STATISTICS IN NUCLEAR REACTORS
INSTITUTT FOR ATOMENERGI, KJELLER, NORWAY
KR-114 +. 99 PAGES, FIGURES, TABLES, REFERENCES, NOVEMBER 1966

THE NEUTRON-COUNTING STATISTICS OF A ZERO-POWER REACTOR IS TREATED ON THE BASIS OF THE
KOLMOGOROV THEORY OF BRANCHING PROCESSES. THE STATISTICAL PROPERTIES OF A SEQUENCE OF
NEUTRON COUNTS, CURRENTLY USED FOR EXPERIMENTAL DETERMINATION OF REACTOR KINETIC PARAMETERS,
FOLLOW FROM ONE BASIC FORMULA. RESULTS OF ROSSI ALPHA EXPERIMENTS EXPLAINED. A NEW
EXPERIMENTAL METHOD - INTERVAL DISTRIBUTION MEASUREMENT - WAS SUGGESTED AND USED FOR
DETERMINING THE PROMPT-DECAY CONSTANTS OF THE NORA REACTOR. SPACE AND ENERGY DEPENDENCE ARE
NUMERICALLY ILLUSTRATED FOR A REFERENCE SLAB REACTOR.

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

*NORWAY + NOISE ANALYSIS + ROSSI ALPHA + SPACE DEPENDENT DYNAMICS

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-17038

LEMANSKA M + YIFTAH S

INVESTIGATION OF MATERIAL REPLACEMENT PROBLEMS BY THE PERTURBATION METHOD
ISRAEL ATOMIC ENERGY COMMISSION, YAVNE. SOREQ NUCLEAR RESEARCH CENTER
IA-1112 +. 22 PAGES, 21 TABLES, REFERENCES, JANUARY 1967

THIS PAPER GIVES THE COMPUTED RESULTS OF THE REACTIVITY CONTRIBUTIONS OBTAINED BY SUBSTITUTING SAMPLES OF VARIOUS MATERIALS IN BOTH THE ZPR-III ASSEMBLIES AND THE SMALL FAST CRITICAL ASSEMBLIES JEZEBEL, GODIVA, AND TOPSY. THE CALCULATIONS ARE PERFORMED WITH THE MULTIGROUP TRANSPORT PERTURBATION CODE PERTR, FOR SPHERICAL GEOMETRY AND THE YDM CROSS-SECTION TABLES.

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

COMPUTER, DIGITAL + CRITICAL ASSEMBLY FACILITY + DANGER COEFFICIENT + REACTOR, FAST + THEORETICAL INVESTIGATION + ZPR 3 (ANL ZERO POWER REACTOR)

6-17039

LEMANSKA M + YIFTAH S

MULTIGROUP TRANSPORT PERTURBATION ALTAC CODE FOR THE PHILCO-2000 COMPUTER
ISRAEL ATOMIC ENERGY COMMISSION, YAVNE. SOREQ NUCLEAR RESEARCH CENTER
IA-1105 +. 18 PAGES, DECEMBER 1966

PERTR IS A FIRST-ORDER PERTURBATION CODE BASED ON THE MULTIGROUP MULTIREGION TRANSPORT EQUATION FOR SPHERICAL GEOMETRY. IT IS PROGRAMMED FOR THE PHILCO-2000 COMPUTER IN ALTAC MNEMONIC LANGUAGE. THE CODE MAY BE USED TO CALCULATE A CHANGE IN K-EFF OBTAINED BY PERTURBATIONS OF THE MATERIAL CROSS SECTIONS IN A SINGLE REGION OF A REACTOR. THE TOTAL AND ANGULAR FLUXES AND ADJOINT FLUXES REQUIRED BY THE PERTURBATION FORMULA ARE OBTAINED BY SNG-TAC AND SNGAD CODES (RELATED TO IA-1069).

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

*DANGER COEFFICIENT + COMPUTER, DIGITAL + REACTIVITY EFFECT + THEORETICAL INVESTIGATION

6-17040

LEMANSKA M + YIFTAH S

THE MULTIGROUP DIFFUSION PERTURBATION ALTAC CODE FOR THE PHILCO-2000 COMPUTER
ISRAEL ATOMIC ENERGY COMMISSION, YAVNE. SOREQ NUCLEAR RESEARCH CENTER
IA-1069 +. 20 PAGES, REFERENCES, DECEMBER 1966

PERDIF IS A FIRST-ORDER PERTURBATION CODE BASED ON THE MULTIGROUP MULTIREGION DIFFUSION EQUATION FOR SPHERICAL GEOMETRY. IT IS PROGRAMMED FOR THE PHILCO-2000 COMPUTER IN ALTAC MNEMONIC LANGUAGE. THE CODE MAY BE USED TO CALCULATE THE CHANGE IN K-EFF OBTAINED BY PERTURBATIONS OF THE MATERIAL CROSS SECTIONS IN A SINGLE REGION OF A REACTOR. THE FLUXES AND ADJOINT FLUXES REQUIRED BY THE PERTURBATION FORMULA ARE OBTAINED BY THE DIFAL AND DIFAD CODES (RELATED TO IA-1105).

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

*COMPUTER, DIGITAL + *DANGER COEFFICIENT + REACTIVITY EFFECT + THEORETICAL INVESTIGATION

6-17041

ALSO IN CATEGORY 9

JAKEMAN D

PHYSICS OF NUCLEAR REACTORS

1 PAGE, JOURNAL OF THE FRANKLIN INSTITUTE 282(6), PAGE 403 (DECEMBER 1966), A REVIEW OF BOOK -- THE PHYSICS OF NUCLEAR REACTORS, BY D. JAKEMAN, 356 PAGES, AMERICAN ELSEVIER PUBLISHING CO, 1966

CHAPTERS 8 AND 9 DEAL WITH REACTIVITY CHANGES AND CONTROL OF NUCLEAR REACTORS, WITH SPECIAL CONSIDERATION OF GAS-COOLED GRAPHITE-MODERATED REACTORS.

*CONTROL, GENERAL + *REACTIVITY EFFECT + REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED

6-17042

PACILIO N

REVIEW OF STATISTICAL METHODS FOR REACTOR PARAMETER MEASUREMENTS DEVELOPED AT C.S.N. CASACCIA
COMITATO NAZIONALE PER L'ENERGIA NUCLEARE, ROME, ITALY

RT/FI-66-37 +. 37 PAGES, PAPER PRESENTED AT THE FIRST ITALIAN-POLISH SEMINAR ON REACTOR PHYSICS HELD IN SWIERK, POLAND, OCTOBER 3-8, 1966

SUMMARY OF NOISE-ANALYSIS WORK AT CNEN, INVOLVING ANALYSIS OF THE THEORETICAL PROPERTIES OF NEUTRON DISTRIBUTION IN A STEADY-STATE REACTOR, AND MEASUREMENT OF THE PROMPT NEUTRON DECAY EIGEN VALUES, REACTIVITY WORTHS, AND REACTIVITY-DEPENDENT COEFFICIENTS OF SEVERAL

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-17042 *CONTINUED*
CONFIGURATIONS OF THE ROSPO REACTOR.

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

*ITALY + *NOISE ANALYSIS + EXPERIMENT, GENERAL + REACTIVITY COEFFICIENT + REACTIVITY EFFECT + THEORETICAL INVESTIGATION

6-17043 ALSO IN CATEGORY 9
CLARK RH + BALDWIN MN + PETTUS WG + PITTS TG + FLICKINGER RB
PHYSICS VERIFICATION PROGRAM. FINAL REPORT.
BABCOCK AND WILCOX CO., LYNCHBURG, VA. RESEARCH AND DEVELOPMENT DIVISION
BAW-3647-03 +. 183 PAGES, TABLES, MARCH 1967

THIS REPORT ON THE PHYSICS-VERIFICATION PROGRAM AT BABCOCK AND WILCOX REFERS TO WATER-MODERATED, SLIGHTLY ENRICHED URANIUM DIOXIDE LATTICES. AMONG OTHER THINGS, THE TEMPERATURE AND VOID COEFFICIENTS ARE DISCUSSED.

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

*URANIUM OXIDE + EXPERIMENT, GENERAL + REACTOR, WATER + TEMPERATURE COEFFICIENT + THEORETICAL INVESTIGATION + VOID COEFFICIENT

6-17044
GARELIS E
CONSIDERATIONS OF THE REFLECTOR EFFECT IN THE PULSED NEUTRON PROBLEM
CALIFORNIA UNIVERSITY, LIVERMORE. LAWRENCE RADIATION LABORATORY
UCRL-70366 + CONF-670501-9 +. 14 PAGES, 7 REFERENCES, MARCH 27, 1967

TIME-DEPENDENT SOLUTION OF A PULSED, REFLECTED SLAB REACTOR, USING ONE-ENERGY-GROUP DIFFUSION THEORY. CENTRALLY LOCATED SOURCE. PRIMARY PURPOSE IS TO INVESTIGATE THE EFFECT OF THE INHOMOGENEITY INTRODUCED BY THE REFLECTOR. COMPARISON OF REACTIVITY AS DETERMINED FROM A STATIC CALCULATION WITH REACTIVITY AS DETERMINED FROM DYNAMIC CONSIDERATIONS.

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

PULSED NEUTRON TECHNIQUE + REFLECTOR + THEORETICAL INVESTIGATION

6-17045
ANDERSON CA
HIGH FREQUENCY TRANSFER FUNCTION MEASUREMENTS FOR COUPLED FAST POWER REACTORS
LOS ALAMOS SCIENTIFIC LAB., N. MEXICO
LA-DC-8299 + CONF-670107-1 +. 42 PAGES, FIGURES, 1967

THE REASONS FOR, AND PROBLEMS OF, MEASURING TRANSFER FUNCTIONS OF FAST REACTORS IN GENERAL ARE DISCUSSED, WITH EMPHASIS ON THE NEED FOR MEASUREMENTS OF COUPLED TRANSFER FUNCTIONS IN THE HIGH-FREQUENCY DOMAIN. THE MEASURING TECHNIQUES ARE ANALYZED. USE OF AN INTENSE PULSED NEUTRON SOURCE IS OF PARTICULAR INTEREST.

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

*COUPLED CORES + *REACTOR, FAST + *TRANSFER FUNCTION + THEORETICAL INVESTIGATION

6-17070
WILLIAMS MM
AN APPLICATION OF SLOWING DOWN KERNELS TO THERMAL NEUTRON DENSITY FLUCTUATIONS IN NUCLEAR REACTORS
NUCLEAR ENGINEERING DEPT., QUEEN MARY COLLEGE, UNIVERSITY OF LONDON
20 PAGES, 1 TABLE, 17 REFERENCES, JOURNAL OF NUCLEAR ENERGY 21(4), PAGES 321-340, (APRIL 1967)

SIMPLE WORKING EXPRESSIONS FOR THE VARIANCE, THE CORRELATION FUNCTION, AND THE POWER SPECTRAL DENSITY (PSD) IN TERMS OF THE INFINITE-MEDIUM SLOWING-DOWN KERNEL. THE METHOD INCLUDES THE EFFECTS OF DETECTORS, DELAYED NEUTRONS, AND SLOWING-DOWN TIME. FREQUENCY CHARACTERISTICS OF THE DETECTION APPARATUS ACCOUNTED FOR. THE DOMINANT BREAK FREQUENCY OF THE FUNDAMENTAL-MODE COMPONENT IN THE POWER-SPECTRAL DENSITY IS MARKEDLY DEPENDENT ON THE SLOWING-DOWN LENGTHS OF THE DELAYED NEUTRONS, WHICH CAN LEAD TO APPRECIABLE CORRECTIONS TO THE EXPERIMENTALLY CALCULATED NEUTRON LIFETIME IN CERTAIN SYSTEMS.

DELAYED NEUTRON + NOISE ANALYSIS + PROMPT NEUTRON LIFETIME + THEORETICAL INVESTIGATION

6-17071
AKCASU AZ + AKHTAR P

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-17071 *CONTINUED*

ASYMPTOTIC STABILITY OF XENON- AND TEMPERATURE-CONTROLLED POINT REACTORS
BROOKHAVEN NATIONAL LAB., UPTON, NEW YORK
9 PAGES, 2 FIGURES, 12 REFERENCES, JOURNAL OF NUCLEAR ENERGY 21(4), PAGES 341-349, (APRIL 1967)

THE QUESTION OF ASYMPTOTIC STABILITY IN THE LARGE (ASL) FOR POINT REACTORS WITH NONLINEAR FEEDBACK IS FORMULATED IN GENERAL TERMS. THE RESULTS ARE APPLIED TO THE STUDY OF XENON OSCILLATIONS IN THE PRESENCE OF TEMPERATURE EFFECTS, AND CONDITIONS FOR THEIR ASL ARE OBTAINED. THE REGION OF ASL IN THE PLANE OF EQUILIBRIUM FLUX VS. TEMPERATURE COEFFICIENT IS DETERMINED AND COMPARED WITH THE REGION OF LINEAR STABILITY PREVIOUSLY OBTAINED. A CRITERION FOR BOUNDEDNESS OF THE XENON OSCILLATIONS IN THE ABSENCE OF TEMPERATURE EFFECTS IS ALSO GIVEN.

*TEMPERATURE COEFFICIENT + *XENON OSCILLATION + DYNAMICS, NONLINEAR + REACTOR STABILITY + THEORETICAL INVESTIGATION

6-17072

LELLOUCHE GS
XENON GLOBAL STABILITY
BROOKHAVEN NATIONAL LAB., UPTON, NEW YORK
2 PAGES, 2 FIGURES, 1 REFERENCE, JOURNAL OF NUCLEAR ENERGY 21(6), PAGES 519 AND 520, (JUNE 1967)

REGARDING THE ASYMPTOTIC STABILITY IN THE LARGE (GLOBAL STABILITY) OF A XENON-TEMPERATURE FEEDBACK SYSTEM, A CRITERION IS PRESENTED WHICH IS LESS RESTRICTIVE THAN THAT OF AKCASU AND AKHTAR, JOURNAL OF NUCLEAR ENERGY 21, PAGE 341.

*TEMPERATURE COEFFICIENT + *XENON OSCILLATION + DYNAMICS, NONLINEAR + REACTOR STABILITY + THEORETICAL INVESTIGATION

6-17073

MASTERS CF + CADY KB
A PROCEDURE FOR EVALUATING MODIFIED PULSED-NEUTRON-SOURCE EXPERIMENTS IN SUBCRITICAL NUCLEAR REACTORS
NUCLEAR REACTOR LABORATORY, CORNELL UNIVERSITY, ITHACA, NEW YORK
11 PAGES, 8 FIGURES, 25 REFERENCES, NUCLEAR SCIENCE AND ENGINEERING 29(2), PAGES 272-282, (AUGUST 1967)

THE THEORETICAL INTERPRETATION ALLOWS THE REACTIVITIES MEASURED BY THE ABOVE THREE MODIFIED PULSED-SOURCE TECHNIQUES TO BE EASILY CALCULATED AND COMPARED TO MORE CONVENTIONAL DEFINITIONS OF REACTIVITY. THE CALCULATIONS CAN BE PERFORMED BY ANY STANDARD SOURCE-ITERATION CODE THAT HAS BEEN MODIFIED TO SOLVE THE INHOMOGENEOUS PROBLEM.

PULSED NEUTRON TECHNIQUE + REACTIVITY, NEGATIVE + SHUTDOWN MARGIN + THEORETICAL INVESTIGATION

6-17074

PRESKITT CA + NEPHEW EA + BROWN JR + VAN HOWE KR
INTERPRETATION OF PULSED-SOURCE EXPERIMENTS IN THE PEACH BOTTOM HTGR
OAK RIDGE NATIONAL LAB., TENN. + DIVISION OF GENERAL DYNAMICS, GENERAL ATOMIC, JOHN JAY HOPKINS LAB. FOR PURE AND APPLIED SCIENCE, SAN DIEGO, CALIF.
13 PAGES, 4 FIGURES, 7 TABLES, 21 REFERENCES, NUCLEAR SCIENCE AND ENGINEERING 29(2), PAGES 283-295, (AUGUST 1967)

A GENERAL DESCRIPTION OF PULSED-SOURCE EXPERIMENTS IS DEVELOPED FROM THE TIME-DEPENDENT REACTOR EQUATIONS. THE INTERPRETATION OF EXPERIMENTS IS DISCUSSED, TAKING INTO ACCOUNT DIFFERENCES IN SHAPE AND SPECTRUM BETWEEN THE FUNDAMENTAL PROMPT AND DELAYED MODES, AND THE INFLUENCE OF PROMPT AND DELAYED HARMONIC MODES. PULSED-SOURCE DATA OBTAINED DURING THE ZERO-POWER COMMISSIONING PROGRAM OF THE PEACH BOTTOM REACTOR ARE INTERPRETED IN TERMS OF REACTIVITY. USING AN IN-HOUR ANALYSIS, GOOD ACCURACY IS OBTAINED BY INCORPORATING DETAILED CALCULATIONS INTO THE INTERPRETATION. IT IS SHOWN THAT THE SPACE-DEPENDENT VARIATION OF THE REACTIVITY DEDUCED FROM MODIFIED PULSED-SOURCE TECHNIQUES MAY EXCEED A FACTOR OF 10 IN SYSTEMS LIKE THE PEACH BOTTOM REACTOR.

*PEACH BOTTOM 1 + EXPERIMENT, GENERAL + PULSED NEUTRON TECHNIQUE + REACTIVITY, EXCESS + REACTIVITY, NEGATIVE + REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED + THEORETICAL INVESTIGATION

6-17075

SHER R
SOLUTIONS OF THE TIME-DEPENDENT ONE-GROUP DIFFUSION EQUATIONS FOR REFLECTED SYSTEMS
NUCLEAR ENGINEERING DIVISION, DEPARTMENT OF MECHANICAL ENGINEERING, STANFORD UNIVERSITY, STANFORD, CALIFORNIA
4 PAGES, 4 FIGURES, 8 REFERENCES, NUCLEAR SCIENCE AND ENGINEERING 29(2), PAGES 302-305, (AUGUST 1967)

ANALYSIS OF PULSED NEUTRON AND ROSSI-ALPHA EXPERIMENTS IN REFLECTED REACTORS.

PULSED NEUTRON TECHNIQUE + REFLECTOR + ROSSI ALPHA + THEORETICAL INVESTIGATION

6-17076

LINDEMAN AJ + RUBY L

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-17076 *CONTINUED*
SUBCRITICAL REACTIVITY FROM NEUTRON STATISTICS
DEPARTMENT OF NUCLEAR ENGINEERING, UNIVERSITY OF CALIFORNIA, BERKELEY, CALIFORNIA
3 PAGES, 2 TABLES, 9 REFERENCES, NUCLEAR SCIENCE AND ENGINEERING 29(2), PAGES 308-310, (AUGUST 1967)

BY MEANS OF VARIOUS METHODS BASED ON NEUTRON STATISTICS, SUBCRITICAL MEASUREMENTS WERE CARRIED OUT ON AN AGN-201 REACTOR.

EXPERIMENT, GENERAL + NOISE ANALYSIS + SHUTDOWN MARGIN + THEORETICAL INVESTIGATION

6-17079
SAITO K
NOISE-EQUIVALENT SOURCE IN NUCLEAR REACTORS
DIVISION OF POWER REACTOR DEVELOPMENT, JAPAN ATOMIC ENERGY RESEARCH INSTITUTE, TOKAI-MURA, IBARAKI-KEN, JAPAN
13 PAGES, 28 REFERENCES, NUCLEAR SCIENCE AND ENGINEERING 28(3), PAGES 384-396, (JUNE 1967)

PROPERTIES OF THE RANDOM NOISE SOURCE, WHICH GIVES RISE TO INHERENT STATISTICAL FLUCTUATIONS IN NUCLEAR REACTORS, STUDIED ASSUMING THAT THE MACROSTOCHASTIC VARIABLES CHARACTERIZING THE STATE OF THE NUCLEAR SYSTEM FOLLOW THE MARKOFFIAN RANDOM PROCESS. THIS LEADS TO UNIFIED INTERPRETATION OF PHENOMENOLOGICAL STATEMENTS USED REPEATEDLY IN THE PREVIOUS REACTOR-NOISE THEORY. (1) THE LANGEVIN TECHNIQUE IS TO BE APPLIED, (2) THE NOISE SOURCE IS ASSUMED TO BE WHITE, (3) THE SCHOTTKY FORMULA IS TO BE APPLIED TO DETERMINE THE NOISE SPECTRAL DENSITY. THE IMPORTANCE OF THE SO-CALLED NYQUIST THEOREM IS POINTED OUT FOR ESTABLISHING THE LANGEVIN METHOD. EXTENSIVE REFERENCES.

*NOISE ANALYSIS + REACTOR STABILITY + THEORETICAL INVESTIGATION

6-17081
SAITO K
ON THE NOISE-EQUIVALENT SOURCE IN A ZERO-POWER REACTOR
DIVISION OF POWER REACTOR DEVELOPMENT, JAPAN ATOMIC ENERGY RESEARCH INSTITUTE, TOKAI-MURA, IBARAKI-KEN, JAPAN
5 PAGES, 1 TABLE, 12 REFERENCES, NUCLEAR SCIENCE AND ENGINEERING 28(3), PAGES 452-456, (JUNE 1967)

THE PRESENT NOTE POINTS OUT THAT THE CORRECT SPECTRAL DENSITY OF NEUTRON FLUCTUATIONS IS OBTAINED COMPLETELY IN THE FRAMEWORK OF THE MOORE-COHN FORMALISM. IN OTHER WORDS, THE SPECTRAL DENSITY OF THE RANDOM DRIVING FORCE IN ZERO-POWER REACTORS CAN BE ASSUMED TO BE WHITE EVEN IF DELAYED-NEUTRON EFFECTS ARE TAKEN INTO ACCOUNT AND CAN BE DETERMINED BY THE SCHOTTKY FORMULA, WHEN THE MOORE-COHN FORMALISM IS APPLIED TO THE NEUTRON-PRECURSOR VECTOR FIELD.

*NOISE ANALYSIS + THEORETICAL INVESTIGATION

6-17082
TAVEL MA + CLANCY BE + POMRANING GC
THE USE OF NOETHERS THEOREM IN REACTOR PHYSICS
BROOKHAVEN NATIONAL LAB., UPTON, L.I., NEW YORK
9 PAGES, 10 REFERENCES, NUCLEAR SCIENCE AND ENGINEERING, 29(1), PAGES 58-66, (JULY 1967)

NOETHERS THEOREM IS USED FOR INSTANCE TO ESTABLISH AN ANALOGY BETWEEN CLASSICAL MECHANICS AND TIME-DEPENDENT DIFFUSION THEORY.

*REACTOR KINETICS + THEORETICAL INVESTIGATION

6-17083
LARRIMORE JA
PHYSICS OF PERIODICALLY PULSED REACTORS AND BOOSTERS. STEADY-STATE CONDITION, POWER PULSE CHARACTERISTICS, AND KINETICS
DURATOM, ISPRA, VARESE, ITALY
24 PAGES, 16 FIGURES, 1 TABLE, 23 REFERENCES, NUCLEAR SCIENCE AND ENGINEERING, 29(1), PAGES 87-110, (JULY 1967)

SEVERAL ASPECTS OF THE PHYSICS OF PERIODICALLY PULSED REACTORS AND BOOSTERS TREATED ON THE BASIS OF THE POINT NEUTRON KINETICS MODEL. STEADY-STATE OPERATING CONDITIONS ESTABLISHED FROM DELAYED-NEUTRON PRECURSOR AND ENERGY BALANCES. THE DEPENDENCE OF THE POWER PULSE CHARACTERISTICS AND, IN PARTICULAR, THE POWER PULSE HALFWIDTH ON THE PRINCIPAL REACTOR PARAMETERS DERIVED FOR BOTH TYPES OF SYSTEMS. RELATIONS FOR THE KINETICS OF PULSED REACTORS AND BOOSTERS ARE GIVEN, AND RELATIVE SENSITIVITIES TO REACTIVITY CHANGES ARE DISCUSSED. DESIGN EXAMPLES ILLUSTRATE PULSE CHARACTERISTICS ACHIEVABLE IN PRACTICAL SYSTEMS. PHYSICS-DESIGN REQUIREMENTS AND PERFORMANCE LIMITATIONS FOR HIGH-POWER PULSED REACTORS AND PULSED BOOSTERS ARE MENTIONED.

*REACTOR TRANSIENT + PULSED NEUTRON TECHNIQUE + REACTOR, TEST + THEORETICAL INVESTIGATION

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-17084

HARDY J + PALOWITCH BL

THE EFFECTIVE RESONANCE INTEGRAL AND DOPPLER COEFFICIENT OF THORIUM-OXIDE RODS

BETTIS ATOMIC POWER LAB., WEST MIFFLIN, PA.

11 PAGES, 9 FIGURES, 6 TABLES, 19 REFERENCES, NUCLEAR SCIENCE AND ENGINEERING 29(1), PAGES 111-121, (JULY 1967)

THE EFFECTIVE RESONANCE-CAPTURE INTEGRAL OF THO₂ WAS MEASURED AT 300 AND 1200 K FOR RODS RANGING IN DIAMETER FROM 0.4 TO 3.0 CM. THE MEASUREMENTS WERE DONE BY AN ACTIVATION TECHNIQUE RELATIVE TO THE DILUTE RESONANCE INTEGRAL OF THORIUM. CALCULATED RESONANCE INTEGRALS OBTAINED USING CURRENT CROSS SECTIONS AND CALCULATIONAL METHODS WERE IN GOOD AGREEMENT WITH EXPERIMENTAL RESULTS.

*DOPPLER COEFFICIENT + *OXYGEN + *THORIUM + EXPERIMENT, GENERAL + THEORETICAL INVESTIGATION

6-17085

STACHURA SJ + BLAINE RA

REACTOR DYNAMICS SIMULATOR DEVELOPMENT

ATOMICS INTERNATIONAL, DIVISION OF NORTH AMERICAN AVIATION, INC., CANOGA PARK, CALIFORNIA

NAA-SR-12,010 +. 2 PAGES, PAGE 205 AND 206 OF ANNUAL TECHNICAL PROGRESS REPORT. AEC UNCLASSIFIED PROGRAMS, FISCAL YEAR 1966, AUGUST 31, 1966

ENLARGING THE CAPACITY OF THE AIROS CODE, PROGRAMMING THE INPUT GENERATION ROUTINE, AND INCORPORATING PHASE-CHANGE MODELS FOR FUEL MELTING AND COOLANT VOIDING. EVALUATIONS ARE IN PROGRESS TO DETERMINE THE BEST APPROACH TOWARD TREATING SPACE-DEPENDENT KINETICS, WITH PARTICULAR EMPHASIS ON POSSIBLE MODIFICATIONS TO AIROS.

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

*REACTOR, FAST + FUEL MELTDOWN + SODIUM COEFFICIENT + SPACE DEPENDENT DYNAMICS + THEORETICAL INVESTIGATION + VOID COEFFICIENT

6-17086

ANNUAL TECHNICAL PROGRESS REPORTS. AEC UNCLASSIFIED PROGRAMS, FISCAL YEAR 1966

ATOMICS INTERNATIONAL, DIVISION OF NORTH AMERICAN AVIATION, INC., CANOGA PARK, CALIF.

NAA-SR-12,010 +. 307 PAGES, FIGURES, TABLES, PAGES 207 AND 209, AUGUST 31, 1966

COMPARISON OF OUR PREVIOUS MEASUREMENTS WITH THEORY DISCLOSED A POTENTIALLY SERIOUS DISCREPANCY BETWEEN THEORY AND EXPERIMENT, TRACEABLE TO LOW-ENERGY ABSORPTIONS AND APPROACHING 50% AT THE LOWER SURFACE/MASS RATIOS. REEVALUATION OF ASSUMPTIONS ABOUT EFFECTIVE CADMIUM CUTOFF UNCOVERED A SOURCE OF FAIRLY LARGE ERROR. SIMILAR EVALUATIONS OF ASSUMPTIONS ABOUT NONRESONANT SELF-SHIELDING ALSO CONTRIBUTED TO REDUCING THE DISCREPANCY. THESE TWO EFFECTS EXPLAIN ABOUT HALF OF THE DISCREPANCY. MEASUREMENTS OF THE DOPPLER EFFECT IN THE PRESENCE OF RESONANCE OVERLAP.

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

*DOPPLER EFFECT + CADMIUM + EXPERIMENT, GENERAL + GOLD + RESONANCE OVERLAP + SELF SHIELDING + THEORETICAL INVESTIGATION + TUNGSTEN

6-17087

ALSO IN CATEGORY 9

KIER PH + TOPPEL BJ + JONES RF

INITIAL CRITICAL EXPERIMENTS OF THE EBWR PLUTONIUM RECYCLE PROGRAM

ARGONNE NATIONAL LAB., ARGONNE, ILLINOIS

3 PAGES, 5 REFERENCES, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PENNSYLVANIA, OCTOBER 30-NOVEMBER 3, 1966, TRANSACTIONS OF AMERICAN NUCLEAR SOCIETY 9(2), PAGE 446

IN THE INITIAL CRITICAL EXPERIMENTS OF EBWR PLUTONIUM LOADING, THE FOLLOWING QUANTITIES, AMONG OTHERS, WERE MEASURED - BORIC ACID WORTH AND AVERAGE UNIFORM TEMPERATURE COEFFICIENT. COMPARISON WITH THEORY NOT ENTIRELY SATISFACTORY.

*EBWR (EXPERIMENTAL BOILING WATER REACTOR) + BORON + CHEMICAL SHIM + CONTROL ROD WORTH + EXPERIMENT, GENERAL + PLUTONIUM DIOXIDE + REACTOR, BOILING WATER + TEMPERATURE COEFFICIENT + THEORETICAL INVESTIGATION

6-17088

ALSO IN CATEGORY 1

WOLFE B

THE SEFOR PROJECT - ITS SIGNIFICANCE AND PROGRESS

GENERAL ELECTRIC CO., NUCLEAR ENERGY DIVISION, SUNNYVALE, CALIFORNIA

17 PAGES, 6 FIGURES, 9 REFERENCES, PRESENTED AT AMERICAN POWER CONFERENCE 29TH ANNUAL MEETING, APRIL 25, 26, 27, 1967, CHICAGO, ILLINOIS

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-17088 *CONTINUED*

IMPORTANCE OF DOPPLER EFFECT IN FAST-REACTOR SAFETY. SEFOR EXPERIMENTAL PROGRAM. PLANT DESIGN. PREOPERATIONAL R AND D. CONSTRUCTION PROGRAM AND EXPERIENCE. SAFETY. TECHNICAL ACCOMPLISHMENTS. EXPERIENCE WITH A COOPERATIVE PROJECT. SCHEDULE. COST. SIGNIFICANCE OF SEFOR.

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

*SEFOR (SOUTHWEST EXP. FAST OXIDE REACTOR) + CRITICAL ASSEMBLY FACILITY + DOPPLER EFFECT + REACTOR, BREEDER + REACTOR, FAST + SAFETY ANALYSIS + ZPR 3 (ANL ZERO POWER REACTOR)

6-17089

HAHN OJ + WHITTIER AC

FIRST CRITICAL AND PHYSICS MEASUREMENTS FOR THE ORGANIC COOLED, D₂O MODERATED REACTOR WR-1 CANADIAN GENERAL ELECTRIC COMPANY LTD.

5 PAGES, 7 FIGURES, 4 REFERENCES, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PENNSYLVANIA, OCTOBER 30-NOVEMBER 3, 1966, TRANSACTIONS OF AMERICAN NUCLEAR SOCIETY 9(2), PAGE 446

REFERS TO THE WHITESHELL REACTOR NO. 1 (VERTICAL PRESSURE TUBE, ORGANIC COOLED, HEAVY-WATER MODERATED). PRIMARY MEANS OF REACTIVITY CONTROL IS VARIATION OF MODERATOR LEVEL. NO ARTIFICIAL NEUTRON SOURCE IN STARTUP. GRAPHS FOR MODERATOR TEMPERATURE COEFFICIENT AND COOLANT TEMPERATURE COEFFICIENT. EXPERIMENTALLY, THESE COEFFICIENTS ARE FOUND TO BE ALMOST INDEPENDENT OF EACH OTHER. COOLANT VOID EXPERIMENTS. POWER COEFFICIENT DUE TO FUEL TEMPERATURE CHANGE ONLY, INCLUDING STRUCTURAL CHANGES SUCH AS BOWING OF FUEL RODS.

CANADA + COOLANT COEFFICIENT + FUEL ELEMENT BOWING + HEAVY WATER + MEASUREMENT, GENERAL + MODERATOR COEFFICIENT + ORGANIC COOLANT + POWER COEFFICIENT + REACTOR CONTROL + TEMPERATURE COEFFICIENT + THEORETICAL INVESTIGATION + THERMAL MECHANICAL EFFECT + VOID COEFFICIENT

6-17131

ALSO IN CATEGORY 17

WOODRUFF RW

EFFECT OF DISSOLVED HELIUM IN SRE

ATUMICS INTERNATIONAL, SAN DIEGO, CALIFORNIA

CONF-670-713 +. 2 PAGES, 4 REFERENCES, ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 5 AND 6, (JULY 1967), CONFERENCE ON REACTOR OPERATING EXPERIENCE, REACTOR OPERATIONS DIVISION OF THE AMERICAN NUCLEAR SOCIETY, ATLANTIC CITY, JULY 23-26, 1967

SOLUBILITY OF INERT COVER GASES (HE OR AR) WILL BE A DESIGN PROBLEM IN LIQUID-METAL-COOLED REACTORS. SRE TRANSIENTS (20 F AND 25' ON NEUTRON FLUX) OCCURRED ABOUT DAILY AND LASTED 1 SEC - THE CORE TRANSIENT TIME. COVER-GAS BUBBLES WERE THOUGHT TO ACCUMULATE AT A HEAT-EXCHANGER-OUTLET UNTIL ENOUGH VOLUME CHECKED FLOW AND SWEEPED OUT A LARGE BUBBLE. SMALL BUBBLES WERE NOT TRAPPED BUT PASSED CONTINUOUSLY THROUGH THE CORE, PROBABLY ACCOUNTING FOR THE NOISE-SPECTRUM DEVIATION FROM A WHITE SPECTRUM. BLEED LINES AT TRAPS, AND DE-ENTRAINMENT AT REACTOR INLETS SHOULD BE USED. ARGON WOULD HAVE SIGNIFICANTLY REDUCED THE VOLUME OF THE GAS TRANSPORTED.

*COOLANT QUALITY + *HELIUM + *REACTIVITY EFFECT, ANOMALOUS + NOISE + REACTOR, AEC OWNED + REACTOR, LIQUID METAL COOLED + SRE (SODIUM REACTOR EXPERIMENT)

6-17132

KLICKMAN AE + TAMAN SU

THE STABILITY OF THE ENRICO FERMI REACTOR UNDER AUTOMATIC CONTROL

ATOMIC POWER DEVELOPMENT ASSOCIATES, INC.

CONF-670-713 +. 2 PAGES, 2 FIGURES, ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 6 AND 7, (JULY 1967), CONFERENCE ON REACTOR OPERATING EXPERIENCE, REACTOR OPERATIONS DIVISION OF THE AMERICAN NUCLEAR SOCIETY, ATLANTIC CITY, JULY 23-26, 1967

TRANSFER-FUNCTION MEASUREMENTS SHOWED A RESONANCE WHEN UNDER AUTOCONTROL (REG.-ROD VELOCITY MADE PROPORTIONAL TO TIME DERIVATIVE OF NEUTRON FLUX). NYQUIST ANALYSIS SHOWED THAT THIS WAS NOT A SIGN OF INSTABILITY (BECAUSE OF PHASE-ANGLE CONSIDERATIONS), THE MARGIN BEING 68 DEG AT 67 MW AND INCREASING WITH POWER. ANOTHER NYQUIST ANALYSIS (ONE GROUP OF DELAYED NEUTRONS AND NO FEEDBACK OTHER THAN AUTOCONTROL) SHOWED A BROAD RANGE OF STABLE VALUES, BUT A RANGE OF REALISTIC VALUES FOR WHICH INSTABILITY COULD OCCUR.

*REACTOR STABILITY + CONTROL SYSTEM + FERMI + REACTOR, FAST + REACTOR, LIQUID METAL COOLED + TRANSFER FUNCTION

6-17153

ALSO IN CATEGORY 17

TALBOY JH + SAVIO RP + HERBST DA

SOME APPLICATIONS OF AN INVERSE KINETICS COMPUTER PROGRAM TO THE MEASUREMENT OF REACTIVITY

ARGONNE NATIONAL LABORATORY, ARGONNE, ILLINOIS

CONF-670-713 +. 2 PAGES, 1 REFERENCE, ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 23 AND 24, (JULY 1967), CONFERENCE ON REACTOR OPERATING EXPERIENCE, REACTOR OPERATIONS DIVISION OF THE AMERICAN NUCLEAR SOCIETY, ATLANTIC CITY, JULY 23-26, 1967

MEASUREMENTS INCLUDE - (CP-5) MEASUREMENT OF TEMPERATURE COEFFICIENT THAT TERMINATED A SLOW POWER INCREASE AGREED WITH STATIC MEASUREMENTS, AS DID THE WORTH OF THE TOP REFLECTOR DURING

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-17153 *CONTINUED*

A MODERATOR DUMP. (JUGGERNAUT) SHAPE OF THE FINE-CONTROL-ROD-WORTH CURVE DEPENDS ON OTHER CONTROL-ROD POSITIONS. (JANUS) FUEL-TEMPERATURE COEFFICIENT WAS HALF THAT CALCULATED, DUE TO POSITIVE COEFFICIENT OF COOLANT WATER.

*INSTRUMENTATION, OPERATING REACTIVITY + *OPERATING EXPERIENCE + ANL (ARGONNE NATIONAL LABORATORY) + COMPARISON, THEORY AND EXPERIENCE + CONTROL ROD CALIBRATION + COOLANT COEFFICIENT + CP-5 (CHICAGO PILE NO. 5) + FUEL COEFFICIENT + JANUS (BIOLOGICAL IRRADIATION FACILITY) + MODERATOR COEFFICIENT + POWER COEFFICIENT + REFLECTOR

6-17155 ALSO IN CATEGORY 17

ALLIGOOD FM + WYKE TF + WILLOUGHBY W
AT POWER MEASUREMENTS OF TEMPERATURE COEFFICIENTS OF REACTIVITY
CAROLINAS VIRGINIA NUCLEAR POWER ASSOCIATES, INC., PARR, SOUTH CAROLINA + VIRGINIA ELECTRIC AND POWER COMPANY + DUKE POWER COMPANY
CONF-670-713 +. 14 PAGES, 9 FIGURES, 1 TABLE, 3 REFERENCES, ABSTRACT IN ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 24, (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

PRIMARY-COOLANT AND MODERATOR-TEMPERATURE COEFFICIENTS WERE MEASURED DURING STARTUP, RATHER THAN DURING SHUTDOWN, TO MINIMIZE TIME. THIS NEEDED GOOD XENON-REACTIVITY DATA TO MAKE NECESSARY CORRECTION. DURING THE SEVERAL HOURS OF PRIMARY-COOLANT HEATUP, AT 5% POWER, MODERATOR TEMPERATURE WAS HELD CONSTANT, AND COEFFICIENT DETERMINED FROM ROD MOTION. WITH REACTOR AT TEMPERATURE, MODERATOR TEMPERATURE WAS VARIED TO COMPENSATE FOR XENON CHANGES, AND COEFFICIENT INFERRED FROM XENON CALCULATIONS. WHILE THIS REACTIVITY-BALANCE METHOD IS LESS PRECISE, IT GIVES A SATISFACTORY MEASUREMENT WITHOUT ADDING SIGNIFICANTLY TO THE SHUTDOWN TIME.

*COOLANT COEFFICIENT + *MODERATOR COEFFICIENT + *REACTIVITY COEFFICIENT + *TEST, PHYSICS + CVTR (CAROLINAS VIRGINIA TUBE REACTOR) + MEASUREMENT, GENERAL + REACTOR, HEAVY WATER + REACTOR, PRESSURE TUBE + XENON

6-17244

GEMMELL W
PHYSICS ASPECTS OF DISPERSED FUEL REACTORS CONTAINING THORIA
AUSTRALIAN ATOMIC ENERGY COMMISSION RESEARCH ESTABLISHMENT, LUCAS HEIGHTS, AUSTRALIA
STI-DOC-10/52 +. 13 PAGES, 5 FIGURES, 5 TABLES, 16 REFERENCES, PAGES 33-45 IN UTILIZATION OF THORIUM IN POWER REACTORS, SERIES 52, APRIL 1966

IN THIS GENERAL ARTICLE, CHAPTER 4.1 (PAGE 40 FF) IS OF SAFETY INTEREST. IT DISCUSSES THE DESIRED REDUCTION IN THE NEGATIVE TEMPERATURE COEFFICIENT BY INCREASE IN PARTICLE SIZE, AND THE INFLUENCE OF PARTICLE SIZE ON TRANSIENTS CAUSED BY ONE-PERCENT EXCESS REACTIVITY INSERTION.

AVAILABILITY - INTERNATIONAL ATOMIC ENERGY AGENCY (NEW YORK OR GENEVA), \$9.00 COPY

DOPPLER COEFFICIENT + FUEL SEGREGATION + REACTOR DYNAMICS + RESONANCE OVERLAP + THORIUM

6-17245

SINGH RS
PHYSICS ASPECTS OF LARGE THORIUM-FUELED FAST REACTORS
ATOMIC ENERGY ESTABLISHMENT TROMBAY, BOMBAY, INDIA
STI-DOC-10/52 +. 9 PAGES, 4 TABLES, 9 REFERENCES, PAGES 118-126 OF UTILIZATION OF THORIUM IN POWER REACTORS, SERIES 52, APRIL 1966

OF SAFETY INTEREST IS THIS GENERAL ARTICLE ARE THE REMARKS ON REACTIVITY COEFFICIENTS. THE TOTAL SODIUM COEFFICIENT REMAINS NEGATIVE UNDER ALL CONDITIONS. THE DOPPLER COEFFICIENT IS ALSO NEGATIVE, BOTH FOR THE U-233-TH SYSTEM AND THE PU-239-THORIUM SYSTEM.

AVAILABILITY - INTERNATIONAL ATOMIC ENERGY AGENCY (NEW YORK OR GENEVA), \$8.00 COPY

*DOPPLER COEFFICIENT + *SODIUM COEFFICIENT + COMPUTER, DIGITAL + PLUTONIUM + THEORETICAL INVESTIGATION + THORIUM + URANIUM-233 + VOID COEFFICIENT

6-17246

TOMODA C + SAWAI S
THORIUM FUEL UTILIZATION RESEARCH IN JAPAN
ATOMIC ENERGY BUREAU, SCIENCE AND TECHNOLOGY AGENCY, TOKYO + JAPAN ATOMIC ENERGY RESEARCH INSTITUTE, IBARAKI-KEN, JAPAN
STI-DOC-10/52 +. 8 PAGES, 5 FIGURES, PAGES 138-145 IN UTILIZATION OF THORIUM IN POWER REACTORS, SERIES 52, APRIL 1966

OF SAFETY INTEREST ARE CRITICAL ASSEMBLY MEASUREMENTS OF CONTROL-ROD WORTH, REACTIVITY WORTH OF FUEL ELEMENTS, AND ROSSI ALPHA IN THE SEMI-HOMOGENEOUS REACTOR.

AVAILABILITY - INTERNATIONAL ATOMIC ENERGY AGENCY (NEW YORK OR GENEVA) \$8.00 COPY

CONTROL ROD WORTH + CRITICALITY EXPERIMENT + FUEL COEFFICIENT + JAPAN + MEASUREMENT, REACTIVITY +

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-17246 *CONTINUED*
REACTOR, HOMOGENEOUS + ROSSI ALPHA + THEORETICAL INVESTIGATION + THORIUM

6-17247
HERMANS ME + KERSTEN JA + WARSCHAUER KA + WENT JJ
THE THORIUM CYCLE AND THE HOMOGENEOUS SUSPENSION REACTOR PROJECT
EURATOM + REACTOR CENTORUM, NETHERLANDS + KEMA, ARNHEM, NETHERLANDS
STI-DOC-10/52 +. 19 PAGES, 6 FIGURES, 1 TABLE, 8 REFERENCES, PAGES 146-164 IN UTILIZATION OF THORIUM IN
POWER REACTORS, SERIES 52, APRIL 1966

OF POSSIBLE SAFETY INTEREST ARE THE FOLLOWING - DOUBLE CONTAINMENT OF KSTR (KEMA SUSPENSION
TEST REACTOR) (PAGE 152), REMOVAL OF FISSION FRAGMENTS (PAGE 155), NUCLEAR STABILITY (PAGE
161). BESIDES, ALMOST ALL OTHER ASPECTS SUCH AS FUEL CHEMICAL STABILITY, FUEL RHEOLOGY AND
HYDRODYNAMICS, CAKING, IRRADIATION STABILITY, EROSION, SETTLING ETC., HAVE INDIRECT SAFETY
IMPLICATIONS.

AVAILABILITY - INTERNATIONAL ATOMIC ENERGY AGENCY (NEW YORK OR GENEVA)

*SLURRY REACTOR + CONTAINMENT, MULTIPLE + FISSION PRODUCT RETENTION + NETHERLANDS + REACTOR STABILITY +
TEMPERATURE COEFFICIENT + THORIUM + URANIUM-233

6-17257 ALSO IN CATEGORY 5
DELCHAMBRE PH + MILLOT JP
DESCRIPTION OF REACTIVITY ACCIDENT EXPERIMENTS
COMMISSARIAT A L'ENERGIE ATOMIQUE, FRANCE
16 PAGES, 23 FIGURES, BULLETIN D-INFORMATIONS SCIENTIFIQUES ET TECHNIQUES 112, PAGES 1 THRU 16 (FEBRUARY,
1967), PRESENTED AT THE MEETING OF SPECIALISTS ON HEAT TRANSFER IN RAPID TRANSIENTS, CADARACHE, APRIL 1966

RESULTS OBTAINED FROM TWO SIMILARLY SHAPED CORES DIFFERING IN THE WIDTH OF THE COOLANT
CHANNELS. A FIRST SERIES OF POWER BURSTS WITHOUT FLOW HAS BEEN PERFORMED WITH VARIOUS
INITIAL TEMPERATURES. THE LOWEST PERIODS REACHED WERE ABOUT 10 MS. ON THE SECOND SERIES OF
TESTS, THE INITIAL TEMPERATURE WAS ABOUT 30 C AND THE TOTAL COOLANT FLOW (DOWNWARDS) WITHIN
THE CORE VARIED BETWEEN 300 AND 1200 CUBIC METERS PER HOUR (500 CUBIC METERS PER HOUR MEAN
1.70 M/S VELOCITY OF FLOW WITHIN THE CORE). THE LOWEST PERIODS REACHED RANGE ABOUT THE SAME
AS IN THE PREVIOUS SERIES OF TESTS. RESULTS OBTAINED WITH OSIRIS CORE ARE FAR MORE
EXHAUSTIVE THAN WITH SILOE CORE, WITH OSIRIS CORE FLOW RATES HAVE BEEN MEASURED, DURING
TRANSIENTS, SHOWING THAT, FOR PERIODS SHORTER THAN 15 MS, A CONSIDERABLE AMOUNT OF WATER IS
EXPULSED OUT OF THE CORE, RIGHT AT THE POWER PEAK.

*CORE, PLATE TYPE + *REACTOR TRANSIENT + ACCIDENT ANALYSIS + ACCIDENT, REACTIVITY + EXPERIMENT, GENERAL +
FRANCE + REACTOR, WATER

6-17331
STABILITY ANALYSIS OF REACTOR SYSTEMS VIA LYAPUNOV'S SECOND METHOD
ARGONNE NATIONAL LAB., ARGONNE, ILLINOIS
4 PAGES, 9 REFERENCES, TRANSACTIONS OF AMERICAN NUCLEAR SOCIETY 9(2) PAGE 457 (1966) PRESENTED AT ANS
WINTER MEETING, 1966, PITTSBURGH

TECHNIQUE FOR FINDING LYAPUNOV FUNCTIONS FOR THE CLASS OF NONLINEAR PARTIAL DIFFERENTIAL
EQUATIONS ARISING FROM A REACTOR SYSTEM WHICH TAKES INTO ACCOUNT THE COUPLING OF HEAT
TRANSFER, HYDRODYNAMICS, AND TIME-DEPENDENT NEUTRON DIFFUSION. FIRST, A GENERALIZED LYAPUNOV
FUNCTION WAS DEVELOPED FOR THE LINEARIZED REACTOR SYSTEM. THE RESULT PROVIDES THE SUFFICIENT
CONDITIONS FOR SYSTEM STABILITY (AND/OR ASYMPTOTICAL STABILITY) WITH RESPECT TO THE
DISTRIBUTED SYSTEM PARAMETERS. A NEW LYAPUNOV FUNCTION FOR THE NONLINEAR REACTOR SYSTEM WAS
CONSTRUCTED BY ADDING NONLINEAR TERMS TO THAT OF THE LINEAR SYSTEM. THE RESULT DETERMINES
THE REGION OF STABILITY AND INDICATES THE PROPER FEEDBACK FUNCTIONS WHICH WOULD ENSURE THE
GLOBAL STABILITY OF THE SYSTEM.

*DYNAMICS, NONLINEAR + *LYAPUNOV'S FUNCTION + *SPACE DEPENDENT DYNAMICS + HYDRAULIC ANALYSIS +
REACTOR STABILITY + THEORETICAL INVESTIGATION + THERMAL ANALYSIS

6-17354 ALSO IN CATEGORY 5
GAMBILL WR
AN EVALUATION OF RECENT STUDIES OF HIGH FLUX HEAT TRANSFER TO GASES
OAK RIDGE NATIONAL LAB., TENN.
ORNL-TM-1877 +. 27 PAGES, 3 FIGURES, 2 TABLES, 30 REFERENCES, MAY 24, 1967

QUANTITATIVE INFORMATION RELEVANT TO THE TRANSMISSION OF HEAT TO FLOWING GASES AT HIGH HEAT
FLUXES (DEFINED HERE AS A MAXIMUM EXPERIMENTAL FLUX OF AT LEAST 500,000 BTU/HR/SQ. FT WAS
COLLECTED. THE DATA INCLUDES HEAT-TRANSFER-COEFFICIENT DETERMINATIONS FOR HE, H2, AND N2 IN
TUBULAR, PARALLEL-PLATE, AND WIRE-MESH GEOMETRIES FOR PRESSURES OF 15 TO 1511 PSIA, REYNOLDS
NUMBERS OF 200 TO 1,500,000, MAXIMUM HEAT FLUXES OF 580,000 TO 7,680,000 BTU/HR/SQ. FT, AND
MAXIMUM SURFACE AND BULK COOLANT TEMPERATURES OF 5440 AND 4180 F, RESPECTIVELY. CORRELATIONS
PROPOSED FOR HEAT-TRANSFER COEFFICIENTS ARE REVIEWED AND A RECOMMENDATION MADE FOR TURBULENT
INTERNAL DUCT FLOW. GRAPHICAL RESULTS ARE GIVEN WHICH DIRECTLY RELATE SURFACE TEMPERATURE TO
HEAT FLUX FOR HELIUM FLOWING THROUGH A 0.5-IN.-DIAM TUBE AT MASS VELOCITIES OF 10,000 TO 100
MILLION LB/HR/SQ. FT. AND AT BULK TEMPERATURES OF 200 TO 4000 R. FRICTION DATA ARE ALSO
REVIEWED AND A CORRELATION RECOMMENDED FOR THE COMPUTATION OF FRICTION FACTORS UP TO A

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-17354 *CONTINUED*
TEMPERATURE RATIO OF ABOUT 8.

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

BIBLIOGRAPHY + FRICTION, GAS + HEAT TRANSFER + HEAT TRANSFER, CONVECTION + HEAT TRANSFER, GAS

6-17364 ALSO IN CATEGORY 17

MACPHEE J + LUMB RF
THE TRANSIENT CHARACTERISTICS OF A NEW PULSE RESEARCH REACTOR
ATOMICS DIVISION, AMERICAN MACHINE AND FOUNDRY COMPANY, YORK, PA. + WESTERN NEW YORK NUCLEAR RESEARCH CENTER, INC., BUFFALO, N. Y.
STI/PUB/104 (VOL. 2) + CONF-650504-B +. 14 PAGES, 6 FIGURES, 2 TABLES, 3 REFERENCES, PAGES 575 THRU 588 OF PULSED NEUTRON RESEARCH. VOL. II. PROCEEDINGS SERIES. PROCEEDINGS OF THE SYMPOSIUM HELD AT KARLSRUHE, MAY 10-14, 1965

DETAILED PHYSICS PARAMETERS OF PULSTAR, A 5-MW STEADY-STATE REACTOR (10,000-MW PULSE WITH A WIDTH, AT HALF HEIGHT, OF 10 MS). THE TRANSIENT CHARACTERISTICS DESCRIBED INCLUDE PERIOD VS REACTIVITY, POWER VS REACTIVITY, ENERGY VS PERIOD, BURST-SHAPE PARAMETERS, AND FUEL AND CLADDING TEMPERATURES. NEUTRON SPECTRUM AND FLUX DISTRIBUTION DATA IN THE EXPERIMENTAL FACILITIES ARE INCLUDED.

AVAILABILITY - INTERNATIONAL ATOMIC ENERGY AGENCY (NEW YORK OR GENEVA), \$18.60 COPY

*REACTOR DESCRIPTION + *REACTOR TRANSIENT + FLUX DISTRIBUTION + NEUTRON + REACTIVITY EFFECT + REACTOR, PULSED + TEMPERATURE TRANSIENT

6-17433

ANNUAL REPORT, JULY 1, 1966
BROOKHAVEN NATIONAL LAB., UPTON, N. Y.
BNL-994 +. 254 PAGES, FIGURES, TABLES, JULY 1, 1966

PROBLEMS OF 2-PHASE FLOW, COUPLED FAST-REACTOR CORES, THEORY OF DYNAMIC STABILITY, CRITICAL ASSEMBLIES OF GRAPHITE-MODERATED CORES DETERMINING THE PROMPT-NEUTRON GENERATION TIME AND TEMPERATURE COEFFICIENT. THESE ITEMS ARE ONLY BRIEFLY DISCUSSED ON PAGE 49, WITHOUT ANY QUANTITATIVE DATA.

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

BNL (BROOKHAVEN NATIONAL LABORATORY) + COUPLED CORES + FLOW, TWO PHASE + HYDRAULIC ANALYSIS + PROMPT NEUTRON LIFETIME + REACTOR, FAST + TEMPERATURE COEFFICIENT

6-17441

EDELMANN M + MURLEY TE + STEGEMANN D
INVESTIGATION OF PROMPT NEUTRON KINETICS IN THE FAST-THERMAL ARGONAUT-REACTOR STARK BY NOISE ANALYSIS
KERNFORSCHUNGSZENTRUM, KARLSRUHE, INSTITUT FÜR NEUTRONENPHYSIK UND REAKTORTECHNIK
KFK-522 + CONF-670 107-7 +. 17 PAGES, 10 FIGURES, 2 TABLES, 17 REFERENCES, JANUARY 1967

PROMPT-NEUTRON KINETIC BEHAVIOR OF FAST-THERMAL ARGONAUT REACTOR STARK ANALYZED BY MODAL EXPANSION. FUNDAMENTAL AND IMPORTANT HIGHER MODES. DECAY OF PROMPT-NEUTRON CHAINS. ROSSI-ALPHA MEASUREMENTS, PROBABILITY DISTRIBUTION ANALYSIS. DESCRIPTION OF INSTRUMENTATION. ONLY FUNDAMENTAL MODE OBSERVABLE IN THERMAL ZONE, BUT HIGHER MODES OBSERVABLE IN FAST ZONE.

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

*REACTOR, HALF FAST + COUPLED CORES + GERMANY + INSTRUMENTATION, GENERAL + NOISE ANALYSIS + ROSSI ALPHA + SPACE DEPENDENT DYNAMICS

6-17447 ALSO IN CATEGORY 5

KIRBY GJ + STANFORTH R + KINNEIR JH
AN INVESTIGATION INTO A POSSIBLE MECHANISM OF SUBCOOLED BURNOUT
ATOMIC ENERGY ESTABLISHMENT, WINFRITH, ENGLAND
AEEW-M-725 +. 14 PAGES, 6 FIGURES, MARCH 10, 1966

RECENT INVESTIGATIONS INTO THE CAUSE OF BURNOUT SHOWED THAT IN THE QUALITY REGIME, FILM DRYUP IS THE DOMINANT MECHANISM. VISUAL EXPERIMENTS PERFORMED AT 25 P.S.I.A. SHOWED THAT NEAR-ZERO-QUALITY LARGE BUBBLES FORM WHICH PRESS CLOSE TO THE HEATED SURFACE, LEAVING ONLY A THIN LIQUID FILM TO COOL THE HEATER. BY MEASURING THE FILM THICKNESS BETWEEN HEATER AND BUBBLES, IT WAS SHOWN THAT DRYUP OF LIQUID IS NOT THE CAUSE OF SUBCOOLED FORCED-CONVECTION BURNOUT UNDER TEST CONDITIONS.

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

BURNOUT HEAT FLUX + DNB (DEPARTURE FROM NUCLEATE BOILING) + HEAT TRANSFER

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-17448 ALSO IN CATEGORIES 4 AND 5

WALKER FE

A FORTRAN PROGRAM (ITEMCAL) FOR CALCULATION OF HUGONOT TEMPERATURES, ISOTHERMS, AND RELEASE ADIABATS FROM HYDRODYNAMIC DATA

LAWRENCE RADIATION LAB., LIVERMORE

UCRL-50,210 +. 30 PAGES, MARCH 27, 1967

A FORTRAN PROGRAM (ITEMCAL) WAS WRITTEN TO CALCULATE HUGONOT TEMPERATURES FROM EXPERIMENTAL HYDRODYNAMIC DATA. THE PROGRAM ALSO DERIVES A FAST-SQUARES FIT TO THE DATA, CALCULATES ISOTHERMS AND RELEASE ADIABATS, AND GIVES GRAPHS OF DATA AND SOLUTIONS.

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

HYDRODYNAMIC ANALYSIS + SHOCK WAVE + THERMAL PROPERTY + THERMODYNAMICS

6-17451 ALSO IN CATEGORY 5

MAGEE PM + MCELIGOT DM

EFFECT OF PROPERTY VARIATION ON THE TURBULENT FLOW OF GASES IN TUBES. THE THERMAL ENTRY

ATOMICS INTERNATIONAL, CANOGA PARK, CALIF. + UNIVERSITY OF ARIZONA, TUCSON + STANFORD UNIVERSITY, CALIF.

SU-247-04 +. 62 PAGES, FIGURES, TABLES, REFERENCES, MARCH 15, 1967

HEAT-TRANSFER EXPERIMENTS TO AIR AND HELIUM (REYNOLDS NUMBER 10,000 TO 200,000) ARE ANALYZED. LOCAL HEAT TRANSFER AND FRICTION DATA ARE REPORTED. A METHOD OF CORRELATING DATA IS PRESENTED. COMPARISON WITH OTHER CORRELATIONS BASED ON INTEGRAL-BOUNDARY-LAYER ANALYSIS ARE PRESENTED.

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

AIR + HEAT TRANSFER + HEAT TRANSFER ANALYSIS + HEAT TRANSFER EXPERIMENT + HELIUM

6-17453 ALSO IN CATEGORIES 5 AND 8

ANIQUINE AL

THERMODYNAMIC PROPERTIES OF LIQUID METAL SOLUTIONS IN THE SODIUM-MERCURY SYSTEM AT 200 C

LEWIS RESEARCH CENTER, CLEVELAND, OHIO. NASA

NASA-TN-D-3951 +. 11 PAGES, 2 FIGURES, 2 TABLES, 14 REFERENCES, MAY 1967

THE ELECTROMOTIVE FORCE OF SODIUM-SODIUM AMALGAM CELLS WAS MEASURED AT 150, 200, AND 250 C FOR 0.01 TO 0.15 ATOMIC FRACTION SODIUM. THE PARTIAL FREE ENERGY, PARTIAL ENTROPY, AND PARTIAL HEAT OF MIXING OF SODIUM IN SODIUM AMALGAM WERE CALCULATED. THERMODYNAMIC PROPERTIES FOR THE MERCURY WERE ALSO CALCULATED.

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

PROPERTY, PHYSICAL + THERMAL PROPERTY + THERMODYNAMICS

6-17491 ALSO IN CATEGORY 5

LESLIE DC

THE DEVELOPMENT OF FLASHING FLOW FROM EXISTING NUCLEATION SITES

UNITED KINGDOM ATOMIC ENERGY AUTHORITY, WINFRITH

AEEW-R-505 +. 26 PAGES, 17 FIGURES, 13 REFERENCES, OCTOBER 1966

A THEORY OF FLASHING FLOW IN DUCTS WAS DEVISED AND NAMED BUBGRO. THIS IS SIMILAR TO THE THEORY OF SIMPSON AND SILVER, BUT IT IS BASED ON THE CONCEPT THAT ALL NUCLEATION SITES ARE PRESENT AT THE START OF THE FLOW. AN EXACT ANALYTICAL SOLUTION WAS FOUND FOR ONE PARTICULAR CASE, AND A COMPUTER CODE WAS WRITTEN TO ENABLE MORE GENERAL CASES TO BE STUDIED. CURVES ARE PRESENTED SHOWING THE VARIATION OF THE VOIDAGE WITH DISTANCE DOWN THE DUCT FOR A NUMBER OF SPECIAL CASES. THESE INCLUDE DUCTS WITH SMOOTH CONTRACTIONS AND DUCTS WHICH FLARE OUT AFTER AN INITIAL CONTRACTION. IT IS BELIEVED THAT THIS IS THE FIRST TIME THAT COMPUTATIONS HAVE BEEN DONE ON SUCH DUCTS. SUMMARY CURVES SHOW THE DUCT LENGTH REQUIRED TO ACHIEVE A VOIDAGE OF 50% UNDER A RANGE OF INITIAL CONDITIONS. THE BUBGRO THEORY WAS COMPARED WITH THE THEORIES OF SILVER AND OF SIMPSON AND SILVER. THE THREE APPROACHES GIVE DIFFERENT VARIATIONS OF VOIDAGE WITH POSITION NEAR THE DUCT INLET. COMPARISON WITH VOIDAGE MEASUREMENTS SHOULD ENABLE THE CORRECT MODEL TO BE IDENTIFIED.

AVAILABILITY - WINFRITH SECRETARIAT, ATOMIC ENERGY ESTABLISHMENT, WINFRITH, DORCHESTER, DORSET, ENGLAND

ANALYTICAL MODEL + SLOWDOWN + FLOW, TWO PHASE

6-17492 ALSO IN CATEGORY 5

MCCLURE JA

TOODEE. A TWO DIMENSIONAL TIME DEPENDENT HEAT CONDUCTION PROGRAM

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-17492 *CONTINUED*

PHILLIPS PETROLEUM COMPANY, ATOMIC ENERGY DIVISION
ID0-17277 +. 162 PAGES, FIGURES, 6 REFERENCE, APRIL 1967

TOODEE IS A TWO-DIMENSIONAL, TIME-DEPENDENT HEAT-CONDUCTION COMPUTER PROGRAM WRITTEN IN THE FORTRAN IV AND MAP LANGUAGES. THIS PROGRAM IS SUITABLE FOR INVESTIGATING GENERAL TRANSIENT AND/OR STEADY-STATE PROBLEMS. TYPICAL OF (BUT NOT LIMITED TO) THE TYPE OF PROBLEMS FOR WHICH THE PROGRAM HAS BEEN USED ARE THE CALCULATION OF TEMPERATURE DISTRIBUTIONS IN FUEL ELEMENTS DURING POWER EXCURSIONS. THE MESH FOR THE PROGRAM IS FORMED BY VARIABLY SPACED ORTHOGONAL CURVES IN EITHER SLAB OR CYLINDRICAL GEOMETRY. THE CYLINDRICAL GEOMETRY MAY BE EITHER AXISYMMETRIC, WITH SPACE VARIABLES R-Z, OR POLAR, WITH SPACE VARIABLES R-THETA. CONDITIONS TO BE SPECIFIED INDEPENDENTLY AT EACH BOUNDARY ARE EITHER SURFACE TEMPERATURES OR HEAT-TRANSFER COEFFICIENTS AND EITHER EXTERIOR TEMPERATURES OR FLOW RATES.

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

COMPUTER PROGRAM + HEAT TRANSFER + HEAT TRANSFER ANALYSIS

6-17493 ALSO IN CATEGORY 5

SCHNITKER W

EXCHANGE OF HEAT UPON INJECTION OF A BOILING FLUID INTO A HOT, NONBOILING FLUID
ATOMIC INTERNATIONAL, CANOGA PARK, CALIF.

AI-TRANS-211 +. 14 PAGES, FIGURES, TRANSLATED FROM BRENNSTOFF-WAERME-KRAFT, 18, PAGES 391-6 (JUNE 1966)

PRESSURE DEVELOPMENT IN A TANK COMPLETELY FILLED WITH TERPHENYL, INTO WHICH WATER CAN LEAK FROM ABOVE AND A FLUID MIXTURE CAN ESCAPE FROM THE TERPHENYL, WAS EXPERIMENTALLY INVESTIGATED. IF THE WATER IS PARTIALLY VAPORIZED IN THE TERPHENYL AND STILL ABSORBS HEAT FROM THE TERPHENYL, THIS EXCHANGE OF HEAT IS ESSENTIAL FOR THE PRESSURE BUILDUP. AN EQUATION FOR THIS EXCHANGE IS GIVEN. IT FOLLOWS FROM THE EQUATION THAT THE PRESSURE IS NOT SIGNIFICANTLY REDUCED BECAUSE OF AN ENLARGEMENT (INCREASE IN THE DIAMETER) OF THE DRAIN-PIPE CROSS-SECTION, SINCE, BECAUSE OF THIS ENLARGEMENT, THE VOLUME OF THE DOUBLE-PHASE MIXTURE AND HENCE THE EXCHANGE OF HEAT INCREASES. ONLY WHEN SUPERHEATED STEAM IS FORMED CAN AN ENLARGEMENT HAVE A STRONGER EFFECT, WHICH HOWEVER LEADS TO PIPE DIAMETERS THAT ARE OFTEN INFEASIBLE IN PRACTICE.

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

BLOWDOWN + HEAT TRANSFER + HEAT TRANSFER, BOILING + ORGANIC COOLANT

6-17494 ALSO IN CATEGORY 5

SHEKRILADZE IG

MECHANISM OF STEAM BUBBLE FORMATION

RSIC-632 + NASA-TM-X-59398 +. 14 PAGES, TRANSLATED FROM SOOBSHCH. AKAD. NAUK GRUZ. SSR, 41, PAGES 391-8 (1966)

PRESENTS THE MECHANISM OF BUBBLE FORMATION ON A WALL DURING NUCLEATE BOILING.

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

HEAT TRANSFER, BOILING

6-17496 ALSO IN CATEGORY 5

BECKER KM

BURNOUT CORRELATION FOR FLOW OF BOILING WATER IN VERTICAL ROD BUNDLES

AKTIEBOLAGET ATOMENERGI, STOCKHOLM, SWEDEN

AE-276 +. 103 PAGES, FIGURES, TABLES, REFERENCES, APRIL 1967

A BURNOUT-HEAT-FLUX CORRELATION FOR BOILING WATER IN ROD BUNDLES IS PRESENTED FOR THE FOLLOWING RANGE OF VARIABLES - NUMBER OF RODS (1, 3, 6 AND 7), ROD DIAMETERS (10.05-13.80 MM), SHROUD DIAMETERS (17.42-71.0 MM), ROD CLEARANCES (3.7-8.8 MM), HEATED LENGTHS (608-4440 MM), PRESSURES (20-71 KG/SQ. CM), INLET SUBCOOLING (3-240 C), MASS VELOCITIES (80-1500 KG/SQ. M PER SEC), BURNOUT HEAT FLUXES (74-314 W/SQ. CM), BURNOUT STEAM QUALITIES (0.1-0.55).

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

BURNOUT HEAT FLUX + HEAT TRANSFER + HEAT TRANSFER ANALYSIS + HEAT TRANSFER, BOILING

6-17497 ALSO IN CATEGORY 17

ENGLAND TR + HARTFIELD GL + DEREMER RK

XENON SPATIAL STABILITY IN LARGE SEED-BLANKET REACTORS

WESTINGHOUSE ELEC. CORP., PITTSBURGH, PENNSYLVANIA, BETTIS ATOMIC POWER LAB

WAPD-TM-606 +. 177 PAGES, 48 FIGURES, 9 TABLES, 48 REFERENCES, APRIL 1967

GENERAL MODAL ANALYSIS WAS DEVELOPED UTILIZING CURRENT MULTIDIMENSIONAL-DIFFUSION COMPUTER PROGRAMS. VALIDITY OF ANALYTICAL METHODS IS DOCUMENTED BY (1) EXACT ONE-DIMENSIONAL STUDIES, (2) COMPARISONS WITH OBSERVED SHIPPINGPORT INSTABILITIES, (3) LSBR ANALOG STUDIES IN TWO AND

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-17497 *CONTINUED*

THREE DIMENSIONS. EFFECT OF GEOMETRY, POWER DISTRIBUTION, FUEL TYPES AND COMPOSITIONS, TEMPERATURE FEEDBACK, HIGHER-ORDER TRANSPORT, AND REACTOR LIFETIME ON STABILITY ARE EXAMINED. BOTH DIGITAL AND ANALOG STUDIES SHOW MODERATOR AND DOPPLER COEFFICIENTS TO BE STRONG STABILIZING INFLUENCES. LSBR DESIGNS WILL BE STABLE TO XENON OSCILLATIONS BECAUSE OF DOPPLER COEFFICIENT AND YIELD ADVANTAGE INHERENT TO TH-232/U-233 FUEL CYCLE.

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

*MATHEMATICAL TREATMENT + *XENON OSCILLATION + ANALYTICAL MODEL + COMPARISON, THEORY AND EXPERIENCE + COMPUTER PROGRAM + REACTOR STABILITY + REACTOR, PRESSURIZED WATER + REACTOR, WATER + SHIPPINGPORT

6-17501 ALSO IN CATEGORY 18
STUDIES OF FUEL MIGRATION IN MIXED OXIDE SITUATION
ARGONNE NATIONAL LAB., ARGONNE, ILL.

ANL-7317 +. 3 PAGES, 2 FIGURES, PAGES 11C-112 FROM REACTOR DEVELOPMENT PROGRAM PROGRESS REPORT, MARCH 1967

AN EXPERIMENTAL PROGRAM IS UNDERWAY TO STUDY REDISTRIBUTION OF PU IN (U,PU)O₂ FAST CERAMIC FUELS, SINCE REDISTRIBUTION MIGHT CAUSE MELTING OF PU-RICH AREAS AT LOWER TEMPERATURE. PRELIMINARY MEASUREMENTS WITH (CE,U)O₂ PELLETS SHOWED CERIUM MIGRATION TO THE HOT END WITH A 1310 C/CM GRADIENT AFTER 93 HR. THE THERMAL-GRADIENT FURNACE WAS MOVED TO A GLOVE BOX FOR USE WITH (U,PU)O₂ PELLETS (8C' U).

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

*FUEL SEGREGATION + *PLUTONIUM OXIDE + *TEMPERATURE GRADIENT + *URANIUM OXIDE + CERIUM + FUEL ELEMENT + REACTOR, FAST + SAFETY STUDY

6-17522
REACTOR SAFETY
BROOKHAVEN NATIONAL LABORATORY

BNL-50,023 +. 2 PAGES, FIGURES, PAGES 10-11 OF BROOKHAVEN NATIONAL LABORATORY ANNUAL REPORT, DECEMBER 31, 1966

STUDIES INDICATE THAT STABILIZATION OF LARGE, FAST, SODIUM-COOLED REACTORS MIGHT BE ACCOMPLISHED BY SPLITTING THE CORE AXIALLY INTO 3 REGIONS, AND SEPARATING THEM WITH A FOOT-THICK PLENUM OF SODIUM. ON EXPANSION OF THE SODIUM, THE REACTIVITY DECREASES BECAUSE OF INCREASED NEUTRON LEAKAGE.

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

*COUPLED CORES + *REACTOR STABILITY + *TEMPERATURE REACTIVITY EFFECT + BNL (BROOKHAVEN NATIONAL LABORATORY) + REACTOR COOLANT + REACTOR, LIQUID METAL COOLED + SODIUM

6-17529 ALSO IN CATEGORY 5
GREEN RE + KAY RE + COLPITTS CW
CANDU-BLW EXPERIMENTS IN ZED-2. PART II. BUCKLING AND LOSS OF COOLANT EXPERIMENTS
ATOMIC ENERGY OF CANADA LTD., CHALK RIVER, ONTARIO
AECL-2691 +. 44 PAGES, 18 FIGURES, 14 TABLES, 10 REFERENCES, MAY 1967

EXPERIMENTS WERE RUN IN SIMULATED CANDU-BLW LATTICES IN ZED-2 (SQUARE ARRAYS OF 28-ROD UO₂ CLUSTERS AT A SPACING OF 27.94 CM) TO DETERMINE (A) THE MATERIAL BUCKLING OF THE LATTICE WITH H₂O OR AIR AS COOLANTS, (B) THE FLUX PERTURBATION AND REACTIVITY EFFECTS OF REMOVING THE H₂O COOLANT FROM 50% OF THE FUEL ASSEMBLIES IN THREE GEOMETRIC ARRANGEMENTS. THE BUCKLING FOR THE H₂O-COOLED LATTICE WAS 1.166 PLUS OR MINUS 0.018 PER SQ. METER, AND FOR THE AIR-COOLED LATTICE 3.949 PLUS OR MINUS 0.039. THE LOSS-OF-COOLANT EXPERIMENTS INDICATED A SMALLER INCREASE IN REACTIVITY WHEN ALTERNATE ASSEMBLIES OR ROWS OF FUEL ASSEMBLIES WERE VOIDED THAN WHEN ONE-HALF THE LATTICE ABOUT A DIAMETER WAS VOIDED.

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

ACCIDENT, LOSS OF COOLANT + BUCKLING + CANDU (CANADIAN NATURAL URANIUM REACTOR) + REACTOR PHYSICS + REACTOR, HEAVY WATER + REACTOR, PRESSURE TUBE + VOID COEFFICIENT

6-17532 ALSO IN CATEGORY 5
CARVER MB
AN ANALYTICAL MODEL FOR THE PREDICTION OF HYDRODYNAMIC INSTABILITY IN PARALLEL HEATED CHANNELS
ATOMIC ENERGY OF CANADA LTD., CHALK RIVER, ONTARIO
AECL-2681 +. 32 PAGES, 4 FIGURES, 4 TABLES, 30 REFERENCES, MARCH 1967

THE PHENOMENON OF FLOW INSTABILITY IN PARALLEL HEATED CHANNELS WAS INVESTIGATED ANALYTICALLY. PARTICULAR EMPHASIS WAS GIVEN TO THE DEVELOPMENT OF AN ANALYTICAL MODEL SUITABLE FOR USE ON A DIGITAL COMPUTER. PREDICTIONS OF THE THRESHOLD OF INSTABILITY GIVEN BY THE MODEL WERE COMPARED WITH PARALLEL CHANNEL EXPERIMENTS AT AECL. GOOD AGREEMENT, PARTICULARLY AT HIGH

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-17532 *CONTINUED*
PRESSURES. FURTHER DEVELOPMENT OF THE MODEL IS PROPOSED.

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

COMPUTER PROGRAM + COMPUTER, DIGITAL + FLOW STABILITY + FLOW THEORY AND EXPERIMENTS + FLOW, TWO PHASE + FUEL ELEMENT + HYDRODYNAMIC ANALYSIS

6-17533 ALSO IN CATEGORY 5
GRASS G
INVESTIGATIONS IN THE FIELD OF HEAT TRANSFER AS A PART OF THE EURATOM PROGRAMS
EURATOM DEPARTMENT OF HEAT TRANSFER, ISPRA
ORN-TR-1740 +. 12 PAGES, 7 FIGURES, TRANSLATED FROM ATOMPRAXIS 12, (4/5), PP. 215-219, (1966)

BRIEF QUALITATIVE STATEMENT DESCRIBING CURRENT RESEARCH PROGRAM BEING CONDUCTED BY EURATOM ON HEAT TRANSFER IN (1) GAS REACTOR, (2) BOILING LIGHT-WATER REACTORS, HEAVY-WATER GAS-COOLED REACTORS, HEAVY-WATER PRESSURIZED-WATER REACTORS, HEAVY-WATER ORGANIC-COOLED REACTORS, AND SODIUM-COOLED FAST BREEDERS ARE REPORTED.

EURATOM + HEAT TRANSFER + RESEARCH AND DEVELOPMENT PROGRAM

6-17534 ALSO IN CATEGORIES 5 AND 17
UNDERHILL HJ
VALVE CONSTRUCTION
ATOMIC ENERGY OF CANADA, LTD.
CANADIAN PATENT 744-598 +. 7 PAGES, 4 FIGURES, OCT. 18, 1966

A DUMP-VALVE MECHANISM IS DESCRIBED TO SHUT DOWN A NUCLEAR REACTION QUICKLY BY GRAVITY FLOW OF THE HEAVY-WATER MODERATOR WHICH NORMALLY SURROUNDS THE FUEL. IN THE OPERATING POSITION, THE VALVE GATE IN THE BOTTOM OF THE REACTOR IS HELD CLOSED AGAINST GRAVITY, AND THE HEAVY-WATER HEAD BY MAGNETIC ATTRACTION. A SUITABLE GASKET ARRANGEMENT USED THE WEIGHT OF THE HEAVY WATER TO FORM A SATISFACTORILY TIGHT CLOSURE. RAPID SHUTDOWN IS ACCOMPLISHED BY CUTTING OFF THE POWER TO MAGNETIC CLOSING DEVICE. FAILURE OF THE NORMAL CONTROL SYSTEM OR POWER SUPPLY CAUSES AUTOMATIC SHUTDOWN BY REMOVAL OF THE MAGNETIC FLUX. THE VALVE OPERATES IN A PIPE OF SUCH DIAMETER THAT FISSION CEASES IN A FEW SECONDS BECAUSE HEAVY WATER SOON FALLS TO A SUBCRITICAL LEVEL.

AVAILABILITY - DEPARTMENT OF COMMERCE, WASHINGTON, D.C., (30 CENTS PER PAGE)

BLOWDOWN + HEAVY WATER + REACTOR, HEAVY WATER + REFLECTOR + VALVE

6-17535 ALSO IN CATEGORIES 5 AND 4
THURSTON RS
EFFECT OF SELF-INDUCED THERMAL-ACOUSTIC OSCILLATIONS ON HEAT TRANSFER TO HYDROGEN
LOS ALAMOS SCIENTIFIC LAB., N. MEX.
LA-3616 +. 36 PAGES, 27 FIGURES, 5 TABLES, 27 REFERENCES, DECEMBER 1966

THE EFFECT OF SELF-INDUCED THERMAL-ACOUSTIC OSCILLATIONS ON HEAT TRANSFER TO HYDROGEN IN A 3.25-IN.-I.D. BY 10-FT-LONG ELECTRICALLY HEATED STAINLESS STEEL TUBE WAS STUDIED. PRESSURES WERE VARIED FROM A SUBCRITICAL 112 PSIA TO A SUPERCRITICAL 265 PSIA. TWO ACOUSTIC MODES WERE OBSERVED. ONE, THE FIRST HARMONIC OF STANDING WAVES IN A PIPE OPEN AT BOTH ENDS, OCCURRED AT FREQUENCIES BETWEEN 70 AND 150 CPS. THE SECOND WAS HELMHOLTZ RESONANCE, THE ACOUSTIC ANALOGY TO A SPRING-MASS SYSTEM. HELMHOLTZ OSCILLATIONS WERE OBSERVED BETWEEN 4 AND 34 CPS. THE MAXIMUM HELMHOLTZ-MODE PRESSURE AMPLITUDE WAS 34 PSI, AND THE MAXIMUM FLUID TEMPERATURE AMPLITUDE WAS 100 R. HEAT TRANSFER TO HYDROGEN WAS NOT AFFECTED BY AXIALLY ORIENTED HELMHOLTZ-MODE OSCILLATIONS WITH LONG WAVE LENGTHS RELATIVE TO THE LENGTH OF THE TEST SECTION. HEAT TRANSFER TO TWO-PHASE AND SUPERCRITICAL HYDROGEN WAS INFLUENCED BY THE GENERATION OF THERMAL-ACOUSTIC OSCILLATIONS. HEAT TRANSFER IMPROVED AS THE INCEPTION OF OSCILLATIONS WAS APPROACHED, BUT ONCE OSCILLATIONS OCCURRED, INCREASING THE INTENSITY DID NOT IMPROVE THE TRANSFER.

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

CRYOGENICS + FLOW STABILITY + FLOW, HIGH SPEED + HEAT TRANSFER + HEAT TRANSFER + HEAT TRANSFER AUGMENTATION + HYDROGEN + OSCILLATION

6-17537 ALSO IN CATEGORY 5
SUBBOTIN VI + OVECHKIN DM + SOROKIN DN + KUDRYAVTSEV AP
CRITICAL HEAT FLUX IN ALKALI METAL BOILING UNDER CONDITIONS OF FREE CONVECTION
BNL-TR-138 +. 11 PAGES, 4 FIGURES, 8 REFERENCES, DECEMBER 1966, TRANSLATED FROM PAPERS PRESENTED AT IAEA SYMPOSIUM ON ALKALI METAL COOLANTS, CORROSION STUDIES, AND SYSTEM OPERATING EXPERIENCE, VIENNA, AUSTRIA, NOVEMBER 28-DECEMBER 2, 1966

FREE-CONVECTION CRITICAL-HEAT-FLUX DATA ARE PRESENTED FOR BOILING SODIUM, POTASSIUM, AND CESIUM. THE DATA ARE COMPARED WITH CORRELATIONS BY KUTATELADZE, NOYES, AND AN EXPRESSION OF THE AUTHOR AND TO DATA OBTAINED WITH ALKALI METALS BY OTHERS.

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-17537 *CONTINUED*

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HEAT FLUX, CRITICAL + HEAT TRANSFER, BOILING + HEAT TRANSFER, NATURAL CONVECTION + METAL, ALKALI + METAL, LIQUID

6-17538 ALSO IN CATEGORY 5

KUJAL B + KUJAL J

CALCULATIONS FOR LOCAL BURN-UP IN A HEAVY WATER REACTOR LATTICE

ČESKOSLOVENSKÁ AKADEMIE VED, ŘEZ. ÚSTAV JADERNEHO VÝZKUMU

UJV-1704 +. 23 PAGES, NOVEMBER 1966, INCZECH

A METHOD OF CALCULATING PARTICULAR PHYSICAL REACTOR PARAMETERS AS A FUNCTION OF BURNUP IS GIVEN. THE METHOD IS APPLICABLE TO HIGH BURNUP VALUES ALSO.

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

HEAVY WATER + REACTIVITY, EXCESS + REACTOR PHYSICS + REACTOR, HEAVY WATER

6-17539 ALSO IN CATEGORY 17

CHANGE 2. JUSTIFICATION OF LESS-NEGATIVE CORE VOID COEFFICIENT OF UNIVERSITY OF MISSOURI (COLUMBIA) REACTOR

AEC, DIVISION OF REACTOR LICENSING

3 PAGES, MARCH 14, 1967, DOCKET NO. 50-186, UNIVERSITY OF MISSOURI

AEC ALLOWS A CHANGE IN AVERAGE CORE VOID COEFFICIENT FROM -2 TIMES 10^{-3} TO THE MINUS 3 TO -1.2×10^{-3} DELTA K/K . PREVIOUSLY (CHANGE 1), THE MODERATOR TEMPERATURE COEFFICIENT WAS FOUND TO BE LESS NEGATIVE. THE LESS-NEGATIVE VALUES, MEASURED IN INITIAL PHYSICS TESTS, REQUIRED THAT THE REACTOR BE SHUT DOWN UNTIL THE REACTIVITY-ACCIDENT ANALYSIS WAS REPEATED. CENTRAL-TEST-HOLE VOID COEFFICIENTS INDICATE THAT LESS REACTIVITY IS ADDED BY ACCIDENTAL VOIDING THAN WAS PREDICTED.

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

*COMPARISON, THEORY AND EXPERIENCE + *REACTOR STARTUP TESTING + *VOID COEFFICIENT + ACCIDENT, REACTIVITY + REACTOR, FLUX TRAP + REACTOR, RESEARCH + SAFETY EVALUATION + TECHNICAL SPECIFICATIONS + TEMPERATURE COEFFICIENT + TEST, PHYSICS

6-17555 ALSO IN CATEGORY 5

ZENKEVICH BA

THE EFFECT OF FLOW VELOCITY OF SUBCOOLED WATER ON CRITICAL HEAT FLUXES

WAPD-TRANS-49 +. 6 PAGES, 1 FIGURE, 14 REFERENCES, 1964, TRANSLATED FOR BETTIS ATOMIC POWER LAB., WEST MIFFLIN, PA., FROM INZH.-FIZ. Zh., 7, NO. 7, 43-6(1964).

RESULTS OF TESTS ARE GIVEN FOR A STUDY OF THE RELATION BETWEEN CRITICAL HEAT FLUX AND VELOCITY OF SUBCOOLED WATER FLOWING IN TUBES. EQUATIONS FOR CALCULATING THE CRITICAL HEAT FLUX ARE SUGGESTED.

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

DNB (DEPARTURE FROM NUCLEATE BOILING) + HEAT FLUX, DRYOUT + HEAT TRANSFER + SUBCOOLING

6-17556 ALSO IN CATEGORY 5

KORNEEV MI + PUGANOV BN

HEAT TRANSFER STUDY OF A FLOWING VAPOR-LIQUID MIXTURE IN HORIZONTAL TUBES

BNL-TR-178 +. 25 PAGES, 10 FIGURES, 2 TABLES, 1956, TRANSLATED BY STEPHEN J. AMORETTY (BROOKHAVEN NATIONAL LAB., UPTON, N.Y.), FROM TEPLOENERGETIKA, 3, NO. 6, 39-44(1956).

DISCUSSES THE RESULTS OF AN EXPERIMENTAL STUDY OF THE HEAT TRANSFER BEHAVIOR OF A FLOWING TWO-PHASE MIXTURE OF MAGNESIUM AMALGAM AND MERCURY VAPOR IN HORIZONTAL TUBES. THE CRITICAL VELOCITY OF THE LIQUID FOR UNIFORM HEAT TRANSFER OVER THE PERIMETER OF THE TUBE DURING THE FLOW OF VAPOR-LIQUID MIXTURE IS GIVEN IN TERMS OF AN EMPIRICAL FORMULA. DATA GIVEN.

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

FLOW, PULSATING + FLOW, TWO PHASE + HEAT TRANSFER, BOILING + METAL, LIQUID

6-17558 ALSO IN CATEGORY 5

MORGAN RP

A REVIEW AND DISCUSSION OF LITERATURE CONCERNING TRANSIENT HEAT TRANSFER AND STEAM FORMATION PHILLIPS PETROLEUM CO., IDAHO FALLS, IDAHO

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-17559 *CONTINUED*
100-17226 +. 58 PAGES, 8 FIGURES, 72 REFERENCES, MARCH 1967

THIS DOCUMENT REVIEWS EXPERIMENTAL AND THEORETICAL INFORMATION RELEVANT TO THE PREDICTION OF FORCED-CONVECTION COOLANT BEHAVIOR IN SUBCOOLED WATER-REACTOR TRANSIENTS. EMPHASIS IS PLACED UPON THE DETERMINATION OF TRANSIENT SUBCOOLED VOID FRACTIONS AND THE DESCRIPTION OF TRANSIENT HEAT TRANSFER FROM FUEL ELEMENT SURFACES TO THE COOLANT UNDER BOTH BOILING AND NONBOILING SITUATIONS. A NUMBER OF RECOMMENDATIONS FOR IMPROVING EXISTING REACTOR-TRANSIENT COMPUTER PROGRAMS ARE MADE. IT HAS BEEN CONCLUDED THAT A COMPLETE AND RELIABLE ANALYTICAL DESCRIPTION OF REACTOR COOLANT TRANSIENT BEHAVIOR IS NOT PRESENTLY POSSIBLE, BECAUSE OF UNCERTAINTIES CONCERNING THE VALIDITY OF QUASI-STEADY METHODS DURING RAPID TRANSIENTS AND BECAUSE OF A LACK OF FUNDAMENTAL KNOWLEDGE AT THE POINT OF DEPARTURE FROM NUCLEAR BOILING AND BEYOND. DETAILED ANALYSIS OF RECENT IN-PILE AND OUT-OF-PILE TRANSIENT DATA, HOWEVER, SHOULD LEAD TO A BETTER UNDERSTANDING OF COOLANT BEHAVIOR DURING SUB-COOLED TRANSIENTS.

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

BLOWDOWN + ONB (DEPARTURE FROM NUCLEATE BOILING) + HEAT TRANSFER, BOILING + REACTOR TRANSIENT

6-17565
ENGELMANN P + BOHME R + BRUHN G + DURAND-SMET R + FOELL WK + HABERMANN FWA + SCHRODER R + WINTZER D
INITIAL EXPERIMENTS IN THE KARLSRUHE FAST CRITICAL FACILITY, SNEAK
KERNFORSCHUNGSZENTRUM, KARLSRUHE, GERMANY
KFK-472 +. 31 PAGES, 19 FIGURES, 11 TABLES, 17 REFERENCES, OCTOBER 1966

PROBLEMS OF SIMULATING CORES IN SNEAK, TO INVESTIGATE FEATURES OF SODIUM- AND STEAM-COOLED PLUTONIUM OXIDE REACTORS, INCLUDE PU FUEL SHORTAGE, THE LOW PU-240 CONTENT OF THE FUEL, LACK OF FISSION PRODUCTS, THE HETEROGENEITY OF THE AVAILABLE FUEL (PLATE TYPE), AND THE DIFFERENCE BETWEEN TEMPERATURES OF THE EXPERIMENT AND A POWER REACTOR. PREPARATIONS NECESSARY TO DETERMINE THE SODIUM-VOID REACTIVITY EFFECTS WITH SUFFICIENT ACCURACY WERE DISCUSSED. THE PROGRAM FOR MEASURING THE STEAM DENSITY COEFFICIENT IS GIVEN WITH DISCUSSIONS OF THE NECESSARY CORRECTIONS. THE DOPPLER-MEASUREMENTS PROGRAM PLANNED FOR THE SNEAK ASSEMBLIES IS OUTLINED. RESULTS ARE GIVEN OF A STUDY TO SIMULATE, WITH STABLE ISOTOPES, THE FISSION-PRODUCT INVENTORY OF A TYPICAL STEAM-COOLED FAST REACTOR OF 300 MW WITH A BURNUP OF 2300 MWD PER TON.

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

*MOCKUP + *REACTOR, FAST + CRITICAL ASSEMBLY FACILITY + DOPPLER EFFECT + FUEL BURNUP + MEASUREMENT, REACTIVITY + REACTOR, LIQUID METAL COOLED + REACTOR, POWER + VOID COEFFICIENT

6-17573 ALSO IN CATEGORY 5
THE STEADY-STATE AND DYNAMIC BEHAVIOR OF A BOILING WATER REACTOR. QUARTERLY PROGRESS REPORT NO. 19, JULY 1-OCTOBER 1, 1965
TECHNISCHE HOGESCHOOL, EINDHOVEN, NETHERLANDS
EURAC-1662 + EUR-2854 + WW-016-R93 +. 25 PAGES, OCTOBER 1965

DESCRIBES DIFFICULTIES ASSOCIATED WITH A TEST-LOOP OPERATION.

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

FLOW, TWO PHASE + HEAT TRANSFER, BOILING + TRANSFER FUNCTION

6-17574 ALSO IN CATEGORY 5
FINAL REPORT FOR PERIOD NOVEMBER 1, 1963 THROUGH OCTOBER 31, 1965. AN EXPERIMENTAL AND ANALYTICAL STUDY OF THE HEAT TRANSFER AND FLOW MECHANICS OF VAPOR CONDENSING AT HIGH VELOCITIES IN SMALL STRAIGHT TUBES UNIVERSITY OF CONNECTICUT, MECHANICAL ENGINEERING DEPARTMENT, STORRS, CONN.
119 PAGES, FIGURES, TABLES, SUBMITTED TO THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, DECEMBER 1965

AN APPARATUS WAS DEVELOPED AND EXPERIMENTS PERFORMED TO DETERMINE THE FLOW MECHANICS OF THE ANNULAR LIQUID LAYER DURING CONDENSATION OF STEAM IN A ONE-INCH-I.D. TUBE. WAVE HEIGHTS AND TROUGHS, WAVE VELOCITIES, AND WAVE LENGTHS WERE MEASURED BY MEANS OF NEEDLE-CONTACT PROBES AND ACCOMPANYING INSTRUMENTATION. THE RANGE OF VARIABLES INVESTIGATED INCLUDED LOCAL TOTAL VAPOR QUALITIES FROM 3 TO 97%, LOCAL VAPOR VELOCITIES FROM 10 FT/SEC TO NEARLY 300 FT/SEC, AND TOTAL MASS FLOW RATES OF 250 LB/HR TO OVER 1500 LB/HR OF STEAM. USING EXPERIMENTALLY DETERMINED LIQUID LAYER DATA, CALCULATIONS WERE MADE OF THE WALL AND INTERFACIAL SHEAR STRESSES. APPARENTLY, DUE TO THE COMPLEXITIES OF THE INTERFACE MECHANICS, NO CORRELATION OF THE INTERFACIAL SHEAR STRESS WAS FOUND USING THE KNOWN FLOW PARAMETERS. HOWEVER, A CORRELATION OF THE WALL SHEAR STRESS IN TERMS OF THE LIQUID LAYER FLOW PARAMETERS WAS DEVELOPED.

FLOW THEORY AND EXPERIMENTS + HEAT TRANSFER ANALYSIS + HEAT TRANSFER, CONDENSATION

6-17576 ALSO IN CATEGORIES 5 AND 8
SAVINO JM + SIEGEL R
EXPERIMENTAL AND ANALYTICAL STUDY OF THE TRANSIENT SOLIDIFICATION OF A WARM LIQUID FLOWING OVER A CHILLED

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-17576 *CONTINUED*
FLAT PLATE

LEWIS RESEARCH CENTER, CLEVELAND, OHIO. NASA
NASA-TN-D-4015 +. 63 PAGES, 12 FIGURES, 26 REFERENCES, JUNE 1967

ANALYTICAL PREDICTIONS AND EXPERIMENTAL DATA ARE PROVIDED FOR THE TRANSIENT GROWTH OF A FROZEN LAYER THAT FORMS WHEN A WARM LIQUID FLOWS OVER ONE SIDE OF A CHILLED FLAT PLATE. THE PLATE IS COOLED TO A TEMPERATURE BELOW THE FREEZING POINT OF THE LIQUID BY A COOLANT FLOWING ALONG THE OTHER SIDE OF THE PLATE. THIS COULD BE ENCOUNTERED, FOR EXAMPLE, IN A HEAT EXCHANGER WHERE WATER IS BEING COOLED BY A FLUID AT LOW TEMPERATURE. THREE ANALYTICAL PROCEDURES WERE USED AND COMPARED FOR ACCURACY AND CONVENIENCE IN APPLICATION. ONE IS AN ITERATIVE TECHNIQUE THAT YIELDED THREE CLOSED-FORM SOLUTIONS, EACH SUCCESSIVE SOLUTION BEING A MORE ACCURATE HIGHER ORDER APPROXIMATION. NUMERICAL RESULTS FROM THE THIRD APPROXIMATION ARE PRESENTED GRAPHICALLY IN SUFFICIENT DETAIL SO THAT RAPID ESTIMATES OF FROZEN LAYER GROWTH CAN BE MADE. IN THE EXPERIMENT, WATER FLOWED OVER ONE SIDE OF A THIN INCONEL PLATE WHILE THE OTHER SIDE OF THE PLATE WAS COOLED BY FLOWING CHILLED ALCOHOL. TRANSIENT ICE GROWTH WAS INITIATED BY A SUDDEN INCREASE OF THE ALCOHOL FLOW. THE ICE THICKNESS AND THE PLATE SURFACE TEMPERATURES WERE MEASURED THROUGHOUT THE TRANSIENT GROWTH PERIOD AND COMPARED FAVORABLE WITH THEORETICALLY PREDICTED VALUES.

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

CRYOGENICS + FILTER, LIQUID + HEAT EXCHANGER + HEAT TRANSFER ANALYSIS + HEAT TRANSFER, NATURAL CONVECTION + REACTOR, LIQUID METAL COOLED + REACTOR, MOLTEN SALT

6-17577 ALSO IN CATEGORIES 5 AND 4
FENN DB + ACKER LW + COE MH
STEADY-STATE PERFORMANCE OF A SEVEN-TUBE NAK-COOLED POTASSIUM CONDENSER
LEWIS RESEARCH CENTER, CLEVELAND, OHIO. NASA
NASA-TN-D-4020 +. 39 PAGES, 18 FIGURES, 2 TABLES, 11 REFERENCE, JUNE 1967

POTASSIUM VAPOR WAS CONDENSED INSIDE THE TUBES OF A HORIZONTAL, MULTITUBE HEAT EXCHANGER. THE TUBES WERE COOLED WITH THE LIQUID SODIUM-POTASSIUM (NAK) FLOWING IN A COUNTER-CURRENT DIRECTION IN THE SPACE SURROUNDING THE TUBES. STEADY-STATE DATA ARE PRESENTED TO SHOW THE EFFECTS OF NAK COOLANT INLET TEMPERATURE AND COOLANT FLOW RATE ON THE CONDENSING LENGTH, THE COOLANT TEMPERATURE PROFILES, AND THE OVERALL PRESSURE DROP OF THE CONDENSER OVER A RANGE OF POTASSIUM INLET TEMPERATURES FROM 1200 TO 1500 F. A CORRELATION OF THE OVERALL PRESSURE DROP ON THE POTASSIUM SIDE OF THE CONDENSER WAS OBTAINED BY PLOTTING THE RATIO OF THE MEASURED OVERALL PRESSURE DROP TO THE VELOCITY HEAT IN THE TUBE INLET AS A FUNCTION OF THE CONDENSING-LENGTH-TO-DIAMETER RATIO.

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

CONDENSATION + HEAT TRANSFER, BOILING + HEAT TRANSFER, CONDENSATION + METAL, ALKALI + METAL, LIQUID + REACTOR, LIQUID METAL COOLED

6-17579 ALSO IN CATEGORY 5
RAPIER AC
THERMAL BOWING OF FUEL ELEMENTS SUPPORTED AT SEVERAL AXIAL POSITIONS
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, SELLAFIELD, ENGLAND. REACTOR GROUP
TRG-REPORT-1395 +. 35 PAGES, 18 FIGURES, 1 TABLE, 1 REFERENCE, DECEMBER 30, 1966

DISCUSSES THE BOWING OF A ROD RESTRAINED AT EACH END AND AT TWO POINTS IN BETWEEN (A THREE-SPAN ELEMENT) DUE TO TEMPERATURE VARIATION. SPACING OF THE SUPPORTS AND ROD STABILITY ARE DISCUSSED IN DETAIL.

FAILURE, FATIGUE + FAILURE, FUEL ELEMENT + FUEL ELEMENT BOWING + STRESS ANALYSIS

6-17580 ALSO IN CATEGORY 5
NEILL JS
HEAT TRANSFER STUDIES FOR THE D2O POWER REACTOR PROGRAM. A TERMINAL STATUS REPORT OF THE WORK AT COLUMBIA UNIVERSITY
DU PONT DE NEMOURS (E.I.) AND CO., AIKEN, S. C. SAVANNAH RIVER LAB.
DP-1024 +. 79 PAGES, 32 FIGURES, 3 TABLES, 55 REFERENCES, AUGUST 1966

EXPERIMENTS RELATING TO THE HEAT-TRANSFER CAPABILITY OF FUEL ASSEMBLIES FOR A POWER REACTOR WERE CONDUCTED. THE HEAT FLUX AT BURNOUT WITH FORCED FLOW OF SUBCOOLED AND BOILING WATER AT HIGH PRESSURE WAS MEASURED FOR SEVERAL TYPES OF ASSEMBLIES - MULTIROD BUNDLES IN A CIRCULAR HOUSING, TUBULAR CHANNELS, INTERNALLY HEATED ANNULI, TUBES IN PARALLEL, AND TUBES COOLED ON BOTH THE INNER AND OUTER SURFACES. THE RELATION OF THE PARTICULAR TESTS TO THE DEVELOPMENT PROGRAM FOR A HEAVY-WATER-MODERATED POWER REACTOR IS DISCUSSED. THE RESULTS, TOGETHER WITH THE RECENT RESULTS FROM OTHER LABORATORIES, ARE APPLIED TO A NESTED-TUBE-ASSEMBLY DESIGN FOR A D2O-COOLED REACTOR. AREAS FOR FURTHER INVESTIGATION ARE POINTED OUT.

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

BURNOUT HEAT FLUX + DND (DEPARTURE FROM NUCLEATE BOILING) + FLOW, TWO PHASE + FIFTH FIFTH + HEAT TRANSFER, BOILING + REACTOR, BOILING WATER + REACTOR, PRESSURE TUBE

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-17581 ALSO IN CATEGORY 5

BARNETT PG + WOOD RW

AN EXPERIMENTAL INVESTIGATION TO DETERMINE THE SCALING LAWS OF FORCED-CONVECTION BOILING HEAT TRANSFER. PART 2. AN EXAMINATION OF BURNOUT DATA FOR WATER, FREON 12 AND FREON 21 IN UNIFORMLY HEATED ROUND TUBES ATOMIC ENERGY ESTABLISHMENT, WINFRITH, ENGLAND AEEW-R-443 +. 61 PAGES, 19 FIGURES, 9 REFERENCES, AUGUST 1965

THE SET OF PHYSICAL PROPERTIES CONTAINING THE LATENT HEAT OF VAPORIZATION, THE LIQUID AND VAPOR DENSITIES, THE THERMAL CONDUCTIVITY AND SPECIFIC HEAT OF THE LIQUID PHASE AND THE RATE OF CHANGE OF THE DENSITY RATIO WITH PRESSURE IS SHOWN TO RELATE BURNOUT DATA FOR WATER, FREON 12, AND FREON 21 IN UNIFORMLY HEATED ROUND TUBES TO WITHIN PLUS OR MINUS 7%. APART FROM SOME RESULTS WHICH MAY CONTAIN A LARGER THAN USUAL EXPERIMENTAL ERROR, THE SAME SET IS SHOWN TO RELATE THE FREON 12 AND FREON 21 DATA TO WITHIN PLUS OR MINUS 3%. THIS OBSERVATION IS CONSISTENT WITH THE RATE OF CHANGE OF THE SATURATION TEMPERATURE, WITH PRESSURE BEING AN IMPORTANT PHYSICAL PROPERTY BECAUSE, WHEN ADDED TO THE ABOVE SET, IT PRODUCES A DIMENSIONLESS GROUP OF PROPERTIES WHICH HAS NEARLY THE SAME VALUE FOR FREONS 12 AND 21 BUT A SIGNIFICANTLY DIFFERENT VALUE FOR WATER.

AVAILABILITY - WINFRITH SECRETARIAT, ATOMIC ENERGY ESTABLISHMENT, WINFRITH, DORCHESTER, DORSET, ENGLAND
HEAT TRANSFER EXPERIMENT + HEAT TRANSFER, BOILING + HEAT TRANSFER, CONVECTION + REACTOR, BOILING WATER

6-17582 ALSO IN CATEGORIES 5 AND 8

STABILITY EXPERIMENTS FOR BOILING WATER REACTORS. QUARTERLY REPORT NO. 8, OCTOBER 1-DECEMBER 31, 1966 ALLGEMEINE ELEKTRICITAETS-GASELLSCHAFT, FRANKFURT AM MAIN, WEST GERMANY. KERNENERGIE-ANLAGEN EURAEC-1786 + EUR-3328 +. 41 PAGES, FIGURES, TABLES, REFERENCES, DECEMBER 1966

RELATIONS DESCRIBING FREQUENCY BEHAVIOR DURING THE TRANSFER OF HEAT PRODUCED UNIFORMLY IN THE HEATING TUBE TO THE COOLANT FLOWING PAST IT WERE DERIVED FROM THE FOURIER HEAT-TRANSFER EQUATION AND INCLUDED IN THE AMOK-L FORMULA PLAN. FOR THE SPECIAL CASE OF CYLINDRICAL GEOMETRY, THE HEAT OUTPUT-HEAT PER SURFACE UNIT FREQUENCY CHARACTERISTIC WAS CALCULATED AS A FUNCTION OF VARIOUS HEAT-TRANSFER COEFFICIENTS AND GIVEN AS A TABLE OR DIAGRAM. THEORETICAL AND EXPERIMENTAL RESULTS WERE COMPARED, AND THE RESULTS DISCUSSED, USING A MEASUREMENT SERIES. THE TEST FACILITY WITH THE NEW SQUARE MEASUREMENT SECTION, FOUR-ROD CLUSTER, AND VELOCITY MODERATOR WAS BROUGHT INTO SERVICE.

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

FLOW STABILITY + HEAT TRANSFER, BOILING + REACTOR, BOILING WATER + TRANSFER FUNCTION

6-17638 ALSO IN CATEGORY 5

VOLLRADT T

INVESTIGATIONS ON CYCLONES FOR STEAM SEPARATION IN BOILING WATER REACTORS. QUARTERLY REPORT NO. 4, OCTOBER 1-DECEMBER 31, 1966 ALLGEMEINE ELEKTRICITAETS-GASELLSCHAFT, FRANKFURT AM MAIN (WEST GERMANY). KERNENERGIEANLAGEN EUR-3329 + EURAEC-1787 +. 72 PAGES, FIGURES, DECEMBER 1966

THE INVESTIGATIONS IN THE PERIOD UNDER REVIEW ATTEMPTED TO ANSWER THE QUESTION HOW THE GEOMETRY OF THE MIXTURE INFLOW MUST BE DESIGNED FOR AXIALLY FED STEAM SEPARATORS ARRANGED ALONG SEVERAL ROWS IN THE REACTOR DROP SPACE, IN ORDER TO SECURE FOR EACH CYCLONE ROW EQUAL MASS FLOW AND UNIFORM MIXTURE QUALITY. IN THE LARGEST THROUGHPUT INVESTIGATED, AIR FLOWS DID NOT DIFFER BY MORE THAN PLUS OR MINUS 4%, AND THE WATER FLOWS BY MORE THAN PLUS OR MINUS 6% FROM THE AVERAGE LOAD OF THE FRONT AND REAR CYCLONE ROW.

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

*SEPARATOR + *STEAM + FLOW THEORY AND EXPERIMENTS + FLOW, TWO PHASE + REACTOR, BOILING WATER

6-17639 ALSO IN CATEGORY 5

VDOVIC J + ALUJEVIC A

STEADY HEAT FLOW OUT OF SOLIDS WITH TEMPERATURE DEPENDENT CONDUCTIVITY

NUKLEARNI INSTITUT JOZEF STEFAN

NIJS-REPORT-R-497 +. 6 PAGES, 1 FIGURE, 3 REFERENCES, FEBRUARY 1967, TO BE PUBLISHED IN ENERG. NUCL (ROME)

THE AUTHOR SOLVES THE STEADY-STATE CONDUCTION EQUATIONS FOR HEAT GENERATION IN A SLAB, ROD, AND SPHERE FOR THERMAL RESISTIVITY HAVING A LINEAR VARIATION WITH TEMPERATURE.

FUEL ELEMENT + HEAT TRANSFER ANALYSIS + HEAT TRANSFER, CONDUCTION

6-17640 ALSO IN CATEGORY 5

MUELLER RE

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-17640 *CONTINUED*
FILM BOILING HEAT TRANSFER MEASUREMENTS IN A TUBULAR TEST SECTION
GENERAL ELECTRIC CO., SAN JOSE, CALIFORNIA. ATOMIC POWER EQUIPMENT DEPT.
GEAP-5423 + EURAEC-1871 +. 35 PAGES, 17 FIGURES, 5 TABLES, REFERENCES, JANUARY 1967

A TUBULAR GEOMETRY WAS USED IN TESTS TO OBTAIN HEAT-TRANSFER DATA FOR FULLY DEVELOPED FILM BOILING AT 1000 PSIA WITH MASS VELOCITIES OF 0.50 AND 0.75 M LB/HR/SQ. FT. FULLY DEVELOPED FILM-BOILING COEFFICIENTS WERE MEASURED ALONG WITH STEAM-PHASE TEMPERATURES, USING A SPECIAL TEMPERATURE PROBE. THE TEMPERATURE SHOWED QUANTITATIVELY THAT THE STEAM PHASE WAS SUPERHEATED FOR HEAT TRANSFER FROM A DRY WALL TO A FLOWING STEAM-WATER MIXTURE.

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

FILM BOILING + HEAT TRANSFER EXPERIMENT + HEAT TRANSFER, BOILING + HEAT TRANSFER, CONVECTION + REACTOR, BOILING WATER

6-17669 ALSO IN CATEGORY 5
GROVER GM
HEAT TRANSFER DEVICE
LOS ALAMOS, NEW MEXICO
CANADIAN PATENT 741 203 +. 10 PAGES, 3 FIGURES, AUGUST 1966

THIS IS A DEVICE ALLOWING LARGE AMOUNTS OF HEAT TRANSFER OVER LONG DISTANCES WITH A VERY SMALL TEMPERATURE DROP ALONG THE LENGTH, THE DEVICE BEING A CONTAINER ENCLOSING A CONDENSABLE VAPOR AND CAPILLARY MEANS ON THE INNER SURFACE OF THE CONTAINER, SAID CAPILLARY MEANS CAPABLE OF CAUSING THE TRANSPORT OF THE CONDENSED VAPOR FROM A COOLER AREA OF THE CONTAINER TO A HOTTER AREA.

AVAILABILITY - U.S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D. C., 30 CENTS PER PAGE

CANADA + HEAT PIPE + HEAT TRANSFER, BOILING + HEAT TRANSFER, CONDENSATION

6-17679 ALSO IN CATEGORY 5
STAUB FW
PREDICTION OF THE VOID FRACTION IN SUBCOOLED BOILING, ANNULAR FLOW, AND IDEAL BUBBLY FLOW - ASSIGNMENT
REPORT USAEC-EURATOM PERSONNEL EXCHANGE, MAY-DECEMBER 1966
GENERAL ELECTRIC CO., SCHENECTADY, NEW YORK
GEAP-5414 + EURAEC-1852 +. 116 PAGES, JANUARY 1967

PRESENTS THE DERIVATION OF A SET OF RELATIONS WHICH PERMITS PREDICTION OF THE INITIAL POINT OF NET VAPOR GENERATION. SATISFACTORY AGREEMENT WITH DATA IS SHOWN OVER A LARGE RANGE OF FLUID VELOCITY, REDUCED PRESSURE, AND FOR TWO DIFFERENT FLUIDS. A SEMIEMPIRICAL FORMULATION FOR THE LIGHT-PHASE DRIFT VELOCITY IS ANNULAR FLOW IS GIVEN AND COMPARED WITH THE DATA. REVIEWS THE METHOD FOR CALCULATING THE VOID FRACTION IN IDEAL BUBBLY FLOW, THIS IS EXTENDED AND COMPARED WITH DATA IN BOTH IDEAL AND TURBULENT BUBBLY FLOW CONDITIONS. A SUMMARY OF THE VISITS TO OTHER CENTERS BY THE AUTHOR IS INCLUDED, AS WELL AS AN ABSTRACT OF THE CONCLUSIONS TO THE ISPRA (EURATOM) CONFERENCE ON BURNOUT, JULY 1966, AND THE COMMITTEE FOR REACTOR SAFETY TECHNOLOGY MEETING OF APRIL 1966 AT CADARACHE. CURRENT WORK AT THE CENTRE D ETUDES NUCLEAIRES DE GRENoble IS ALSO LISTED.

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

ANALYTICAL MODEL + CREST (COMMITTEE FOR REACTOR SAFETY TECHNOLOGY) + EURATOM + FLOW, ANNULAR + FLOW, TWO PHASE + FRANCE + GERMANY + HEAT TRANSFER + HEAT TRANSFER + HEAT TRANSFER, BOILING + ITALY + UNITED KINGDOM + VOID COEFFICIENT

6-18132 ALSO IN CATEGORY 9
SASTRE C
NOISE MEASUREMENTS IN A REACTOR STARTUP
BROOKHAVEN NATIONAL LABORATORY
CONF-670-602 + BNL-11243 +. 7 PAGES, 2 FIGURES, ABSTRACT IN ANS TRANSACTIONS 10(1), PAGE 216, (JUNE 1967), PAPER PRESENTED AT THE ANNUAL MEETING OF THE AMERICAN NUCLEAR SOCIETY, SAN DIEGO, CALIFORNIA, JUNE 11-15, 1967

PROBLEM - MONITOR REACTOR STABILITY DURING INITIAL STARTUP OF THE HFBR. APPROACH - REACTOR-TRANSFER FUNCTIONS WERE MEASURED WITH NOISE-ANALYSIS TECHNIQUES, USING A WAVE ANALYZER AND MAGNETIC-TAPE TIME-COMPRESSION METHODS. TRANSFER FUNCTION WAS EXAMINED FOR CHANGES IN SHAPE AT VARIOUS POWER LEVELS.

*MEASUREMENT, NOISE + *REACTOR STABILITY + *TRANSFER FUNCTION + HFBR (HIGH FLUX BEAM REACTOR)

6-18195 ALSO IN CATEGORIES 8 AND 7
DICKERMAN CE + ROBINSON LE + SOWA ES + MONAWECK JH + AUGUST C
TREAT MELTDOWN OF IRRADIATED METALLIC FAST-REACTOR FUEL IN AN INERT ATMOSPHERE
ARGONNE NATIONAL LABORATORY, ARGONNE, ILLINOIS
13 PAGES, 10 FIGURES, 3 TABLES, 29 REFERENCES, NUCLEAR APPLICATIONS 3(8)- 461-473 (AUG. 1967)

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-18195 *CONTINUED*

BEHAVIOR OF TWO TYPES OF IRRADIATED METALLIC FAST-REACTOR FUEL PINS UNDER TRANSIENT HEATING IN AN INERT-GAS ATMOSPHERE IN THE TREAT REACTOR WAS STUDIED UNDER CONDITIONS RANGING UP TO COMPLETE MELTDOWN. IRRADIATION-INDUCED CHANGES IN FAILURE THRESHOLDS, MODES OF FAILURE, AND POST-FAILURE FUEL MOTION WERE SIGNIFICANT BUT NOT ENOUGH TO MAKE GROSS CHANGES IN THE COURSE OF AN ACCIDENT. THE AMOUNT OF SWELLING OBSERVED IN THE POSTEXPERIMENTAL FUEL RESIDUE WAS LARGE ENOUGH TO HAVE PLAYED A SIGNIFICANT ROLE IN DETERMINING THE COURSE OF A MELTDOWN ACCIDENT.

*FUEL MELTDOWN + *TESTING + EBR 1 AND 2 (EXPERIMENTAL BREEDER REACTORS) + FAILURE, CLADDING + FAILURE, FUEL ELEMENT + FERMI + REACTOR, BREEDER + REACTOR, FAST + REACTOR, LIQUID METAL COOLED + SODIUM + TREAT (TRANSIENT TEST REACTOR FACILITY) + VOID COEFFICIENT

6-18203 ALSO IN CATEGORY 9
DEMUTH HB + DUERRE KH + SCHILLING FP + STILES CE
SYSTEM DYNAMICS STUDY FOR THE ULTRA HIGH TEMPERATURE REACTOR EXPERIMENT
LOS ALAMOS SCIENTIFIC LAB., N. MEXICO
LA-3561 +. 260 PAGES, FIGURES, AUGUST 30, 1966

PROBLEM - STUDY THE DYNAMICS OF THE UHTREX SYSTEM. APPROACH - DETAILED MATHEMATICAL MODELS OF THE SYSTEM WERE DEVELOPED AND USED IN DIGITAL COMPUTER PROGRAMS IN BOTH THE TIME DOMAIN AND FREQUENCY DOMAIN. THE REPORT GIVES CLEAR AND DETAILED DESCRIPTIONS OF THE MODELS. THE PROGRAMS WERE USED TO EXAMINE SYSTEM STABILITY, STEADY-STATE OPERATING CONDITIONS, AND VARIOUS ACCIDENT TRANSIENTS.

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

*ACCIDENT ANALYSIS + *REACTOR DYNAMICS + *REACTOR STABILITY + COMPUTER PROGRAM + COMPUTER, DIGITAL + MATHEMATICAL STUDY + REACTOR, GAS COOLED + UHTREX (ULTRA HIGH TEMP. REACTOR EXPERIMENT)

6-18223
ANDERSON CA
DEVELOPMENT OF CALCULATIONAL METHODS FOR FAST REACTOR SAFETY ANALYSIS AT LASL
LOS ALAMOS SCIENTIFIC LABORATORY, LOS ALAMOS, NEW MEXICO
LA-3683-MS +. 22 PAGES, 10 FIGURES, 17 REFERENCES, APRIL 24, 1967

SURVEYS THE TECHNIQUES OF FAST-REACTOR SAFETY ANALYSIS CURRENTLY IN USE AND UNDER DEVELOPMENT AT LASL. INCLUDES DISCUSSIONS OF CODES USED IN EXCURSION CALCULATIONS ASSOCIATED WITH THE MAXIMUM CREDIBLE ACCIDENT, AND OF PROBLEMS RELATING TO INTRODUCTION OF THE EQUATION OF STATE OF THE REACTOR CORE UNDER ACCIDENT CONDITIONS INTO THE EXCURSION CALCULATIONS. PROMISING MEASUREMENT TECHNIQUES FOR DETERMINING THE EQUATION OF STATE ARE NOTED. OTHER COMPUTING DEVELOPMENTS ARE DISCUSSED RELATING TO TRANSIENT ANALYSIS OF THE NEUTRONICS, HYDRODYNAMICS, AND HEAT TRANSFER UNDER LESS SEVERE CONDITIONS THAN THE MAXIMUM CREDIBLE ACCIDENT. THIS INCLUDES NEW METHODS IN THE TREATMENT OF THE POINT-KINETICS EQUATIONS, IN THE TRANSIENT TEMPERATURE RESPONSE OF FUEL RODS AND ASSOCIATED COOLANT, AND IN TRANSIENT CONVECTION PROBLEMS. BRIEF DESCRIPTION IS GIVEN OF A COMPUTER PROGRAM USED FOR THE TRANSIENT ANALYSIS OF AN ENTIRE FAST REACTOR PLANT, AND RESULTS OF A TYPICAL CALCULATION INVOLVING AN IMPOSED INCREASE IN POWER DEMAND ARE SHOWN.

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

ACCIDENT ANALYSIS + ACCIDENT, MAXIMUM CREDIBLE (MCA) + COMPUTER PROGRAM + EQUATION OF STATE + REACTOR DYNAMICS + REACTOR, FAST

6-18224
HARDIE RW + LITTLE WW
PERT-IV. A TWO-DIMENSIONAL PERTURBATION CODE IN FORTRAN-IV
BATTELLE-NORTHWEST, RICHLAND, WASHINGTON. PACIFIC NORTHWEST LAB.
BNWL-409 +. 87 PAGES, 2 REFERENCES, APRIL 1967

PERT-IV IS A TWO-DIMENSIONAL (R-Z, X-Y, R-THETA), FIRST-ORDER PERTURBATION-THEORY CODE FOR COMPUTING REACTIVITY-COEFFICIENT TRAVERSES, ACTIVITY TRAVERSES, THE NEUTRON-GENERATION TIME, AND THE EFFECTIVE DELAYED NEUTRON FRACTION. THE INPUT FLUX AND ADJOINT FLUX CAN BE TAKEN DIRECTLY FROM 2-D CALCULATIONS OR SYNTHESIZED (BY THE CODE) FROM 1-D CALCULATIONS. IN A 65K MEMORY (AND 4 TAPES), THE CODE CAN HANDLE 35 MATERIALS, 26 ENERGY GROUPS, AND A 50 X 50 SPATIAL MESH. RUNNING TIME ON A UNIVAC 1107 IS ABOUT 3 MINUTES. INPUT INSTRUCTIONS, A SAMPLE CASE, AND A FORTRAN-IV SOURCE-DECK LISTING ARE GIVEN IN THE APPENDIX. THE CODE IS COMPATIBLE WITH THE ONE-DIMENSIONAL DTF-IV AND TWO-DIMENSIONAL 2DF TRANSPORT THEORY CODES FROM LOS ALAMOS. IN FACT, THE GENERALIZED INPUT PORTIONS OF THESE PROGRAMS WERE INCORPORATED INTO THE PERT-IV CODE.

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

DELAYED NEUTRON + PERTURBATION METHOD + PROMPT NEUTRON LIFETIME + REACTIVITY COEFFICIENT

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-18274
KAY RE

ZONE CONTROL ABSORBER EXPERIMENTS IN ZED-2
ATOMIC ENERGY OF CANADA LIMITED, CHALK RIVER, ONTARIO
AECL-2694 +. 27 PAGES, 16 FIGURES, 12 TABLES, 6 REFERENCES, MAY 1967

IT IS PROPOSED TO USE LIGHT-WATER-FILLED ZONE-CONTROL ABSORBERS IN CANDU-TYPE POWER REACTORS. THIS REPORT DESCRIBES MEASUREMENTS MADE WHEN ALUMINUM TUBES OF VARIOUS DIAMETERS CONTAINING LIGHT WATER OR AIR ARE PLACED INTERSTITIALLY IN A SIMULATED CANDU-BLW LATTICE IN ZED-2. MEASUREMENTS WERE MADE OF THE DETAILED NEUTRON DENSITY DISTRIBUTIONS IN AND ABOUT THE PERTURBATIONS AND THEIR RELATIVE REACTIVITY EFFECTS ON THE LATTICE. THE RESULTS OF THE EXPERIMENTS WILL PROVIDE A NORMALIZATION FOR THE COMPUTER CODES USED IN THE DESIGN OF ZONE-CONTROL ABSORBERS IN CANDU-TYPE REACTORS.

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

*CANDU (CANADIAN NATURAL URANIUM REACTOR) + CONTROLLER + FLUX DISTRIBUTION + REACTIVITY EFFECT + REACTOR CONTROL

6-18275

KERLIN TW

FREQUENCY-RESPONSE TESTING

UNIVERSITY OF TENNESSEE, KNOXVILLE, TENN.

7 PAGES, 5 FIGURES, 1 TABLE, 30 REFERENCES, NUCLEAR SAFETY 8(4), PAGES 339-345 (SUMMER 1967)

THIS REVIEW ARTICLE DESCRIBES METHODS OF FREQUENCY-RESPONSE TESTING TO DETERMINE THE DYNAMIC BEHAVIOR OF A REACTOR SYSTEM. IN ADDITION TO THE CLASSICAL OSCILLATOR, A NUMBER OF TEST SIGNALS ARE AVAILABLE WHICH OFFER SIGNIFICANT ADVANTAGES. THESE ARE (1) MULTIFREQUENCY SINE WAVES, (2) SQUARE WAVES, (3) MULTIFREQUENCY BINARY SEQUENCES, (4) PSEUDORANDOM BINARY SEQUENCES, (5) PSEUDORANDOM TERNARY SEQUENCES, (6) PULSES, AND (7) STEPS. THESE SIGNALS ARE DESCRIBED AND THEIR SPECTRAL CHARACTERISTICS, POWER UTILIZATION, AND EASE OF APPLICATION ARE COMPARED. BIBLIOGRAPHY COVERS NUMEROUS APPLICATIONS.

FREQUENCY SPECTRA + OSCILLATOR, REACTIVITY + REACTOR DYNAMICS + REACTOR KINETICS + REACTOR STABILITY + RESPONSE SPECTRUM + TEST, PLANT RESPONSE + TRANSFER FUNCTION

6-18276

DUFFEY RB + HALL RS

A REASSESSMENT OF THE SPERT DESTRUCTIVE TEST

BERKELEY NUCLEAR LABORATORIES, CENTRAL ELECTRICITY GENERATING BOARD

RD/B/N855 +. 24 PAGES, 3 FIGURES, 20 REFERENCES, JUNE 1967

IN A SPERT INCIDENT IN A REACTOR, COOLANT IS PRESUMED TO BE ACCELERATED TOWARDS HOT FUEL WITH SUBSEQUENT GENERATION OF DESTRUCTIVE PRESSURES. THE EVIDENCE OF SUCH AN INCIDENT IS EXAMINED FROM THE RECORDS OF THE SINGLE SPERT DESTRUCTIVE TEST. A MODEL IS PRESENTED IN WHICH A REALISTIC ESTIMATE IS MADE OF THE TIME AVAILABLE FOR THE ENERGY TRANSFER PROCESSES. THE SIGNIFICANCE OF THE TEST TO THE SAFETY OF LARGE FAST REACTORS IS REVIEWED, AND ATTENTION IS CALLED TO THE AREAS WHERE FURTHER WORK IS REQUIRED, NOTABLY BUBBLE- AND VAPOR-BLANKET FORMATION AND SUBSEQUENT BEHAVIOR.

AVAILABILITY - BERKELEY NUCLEAR LABORATORIES, RESEARCH AND DEVELOPMENT DEPT., BERKELEY, GLOUCESTERSHIRE, ENGLAND

ACCIDENT ANALYSIS + ACCIDENT, CRITICALITY + CORE MELTDOWN + DESTRUCTIVE TRANSIENT + HYDRAULIC EFFECT + SPERT 1 (SPECIAL POWER EXCURSION REACTOR TEST) + TEST, DESTRUCTIVE

6-18277

HSU C

STABILITY ANALYSIS OF REACTOR SYSTEMS VIA LYAPUNOV'S SECOND METHOD

ARGONNE NATIONAL LABORATORY, ARGONNE, ILL.

4 PAGES, 9 REFERENCES, J. BASIC ENG. TRANS. ASME, D 89(2), 307-310 (JUNE 1967)

A TECHNIQUE IS DEVELOPED FOR FINDING LYAPUNOV FUNCTIONS FOR THE CLASS OF NONLINEAR PARTIAL DIFFERENTIAL EQUATIONS ARISING FROM A REACTOR SYSTEM WHICH TAKES INTO ACCOUNT THE COUPLING OF HEAT TRANSFER, HYDRODYNAMICS, AND TIME-DEPENDENT NEUTRON DIFFUSION. FIRST, A GENERALIZED LYAPUNOV FUNCTION IS DEVELOPED FOR THE LINEARIZED REACTOR SYSTEM. THIS PROVIDES THE SUFFICIENT CONDITIONS FOR SYSTEM STABILITY. A NEW LYAPUNOV FUNCTION FOR THE NONLINEAR REACTOR SYSTEM IS THEN FORMED BY ADDING NONLINEAR TERMS TO THAT OF THE LINEAR SYSTEM. THE REGION OF STABILITY AND THE PROPER FEEDBACK FUNCTION WHICH ENSURES THE GLOBAL STABILITY OF THE SYSTEM ARE THEN DETERMINABLE.

EQUATION; GENERAL + LYAPUNOV'S FUNCTION + REACTOR STABILITY

6-18278

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-18278 *CONTINUED*

MATTHEWS JD

TEMPLE - A COMPUTER PROGRAM FOR TRANSFORMING REACTOR TRANSFER FUNCTIONS FROM THE FREQUENCY DOMAIN TO THE TIME DOMAIN, AND VICE VERSA
UNITED KINGDOM ATOMIC ENERGY ESTABLISHMENT, WINFRITH, ENGLAND
AEW-M-728 +. 16 PAGES, 3 FIGURES, REFERENCES, MARCH 1967

A COMPUTER PROGRAM TEMPLE IS DESCRIBED WHICH EMPLOYS NUMERICAL INTEGRATION TO CONVERT TRANSFER FUNCTIONS FROM THE FREQUENCY TO THE TIME DOMAIN (AND VICE VERSA). WHILST SPECIFICALLY DESIGNED FOR FAST REACTOR FUNCTIONS IT HAS APPLICATIONS IN MANY OTHER FIELDS, INCLUDING HEAT TRANSFER AND ELECTRIC CIRCUIT THEORY.

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

*TRANSFER FUNCTION + COMPUTER PROGRAM

6-18279

JUNOD E

MEASUREMENT OF THE FLUX GRADIENT IN THE IRRADIATION CARTRIDGE OF THE PNEUMATIC SILOE - THERMAL NEUTRONS
COMMISSARIAT A L ENERGIE ATOMIQUE, GRENoble, FRANCE. CENTRE D ETUDES NUCLEAIRES
NP-16608 +. 6 PAGES, APRIL 1965, (IN FRENCH)

A SIGNIFICANT THERMAL FLUX GRADIENT WAS MEASURED IN THE IRRADIATION CARTRIDGE IN THE PNEUMATIC TUBE IN THE REFLECTOR OF THE SWIMMING-POOL REACTOR SILOE. A THERMAL FLUX VARIATION OF ABOUT 7.5% DURING A DAY WAS ALSO MEASURED.

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

*IN PILE LOOP + FLUX DISTRIBUTION + IRRADIATION TESTING + REACTOR, POOL TYPE

6-18280

TAN S

SOLUTION OF REACTOR KINETICS EQUATIONS BY B.W.K. APPROXIMATION

MIDDLE EAST TECHNICAL UNIVERSITY, ANKARA

4 PAGES, 3 FIGURES, 6 REFERENCES, NUKLEONIK 8, PAGES 480-3 (NOVEMBER 1966)

AN EXPLICIT SOLUTION IS OBTAINED FOR THE POINT REACTOR KINETICS EQUATIONS WITH ARBITRARILY VARYING REACTIVITY INSERTIONS BY MEANS OF THE B.W.K. APPROXIMATION. FEEDBACK EFFECTS ARE NEGLECTED, AND ONE GROUP OF DELAYED NEUTRONS IS ASSUMED. SOLUTIONS FOR STEP, RAMP AND SINUSOIDAL INPUTS ARE DERIVED AND COMPARED WITH SOLUTIONS OBTAINED BY DIGITAL TECHNIQUES. CONDITIONS FOR THE VALIDITY OF THE SOLUTIONS ARE INVESTIGATED. THE METHOD IS FOUND TO BE ESPECIALLY APPLICABLE FOR SINUSOIDAL REACTIVITY VARIATIONS.

ANALYTICAL MODEL + EQUATION, GENERAL + MATHEMATICAL STUDY + MATHEMATICAL TREATMENT + REACTOR KINETICS

6-18201

HWANG RN + OTT K

COMPARISON AND ANALYSIS OF THEORETICAL DOPPLER-COEFFICIENT RESULTS FOR FAST REACTORS

ARGONNE NATIONAL LABORATORY

ANL-7269 +. 18 PAGES, 15 FIGURES, 5 TABLES, 13 REFERENCES, DECEMBER 1966

COMPARISON AND ANALYSIS OF THE THEORETICAL DOPPLER COEFFICIENT FOR FAST REACTORS AS CALCULATED INDEPENDENTLY AT ANL AND KFK WERE MADE. THE FACTORS THAT AFFECT THE MAGNITUDE AS WELL AS THE TEMPERATURE BEHAVIOR OF THE DOPPLER COEFFICIENT WERE EXAMINED IN GREAT DETAIL. THE RESULTS OF THIS STUDY ARE INDICATIVE OF THE POSSIBLE CAUSES OF SIGNIFICANT DISCREPANCIES IN THE PREVIOUS COMPARISON OF THIS KIND.

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

COMPARISON, THEORY AND EXPERIENCE + DOPPLER COEFFICIENT + DOPPLER EFFECT + REACTOR, FAST

6-18202

STACEY WM + ADAMS CH

THE TIME-INTEGRATED METHOD - QUASI-STATIC NEUTRON SPACE-TIME APPROXIMATION

GENERAL ELECTRIC, KNOLLS ATOMIC POWER LABORATORY

CONF-670602 +. 15 PAGES, 4 FIGURES, ABSTRACT IN ANS TRANS. 10(1), PAGES 251-252, PAPER PRESENTED AT 1967 ANNUAL MEETING, AMERICAN NUCLEAR SOCIETY, SAN DIEGO, CALIF., JUNE 11-15, 1967

A QUASI-STATIC MODEL FOR SPACE-TIME NEUTRONICS CALCULATIONS WHICH USES CONVENTIONAL CODES IS DESCRIBED. THE MODEL IMPROVES UPON THE EARLIER ADIABATIC MODEL IN THAT THE DELAYED NEUTRON PRECURSOR DISTRIBUTION IS NOT ASSUMED TO BE IDENTICAL TO THE FLUX DISTRIBUTION THROUGHOUT THE EXCURSION. INSTEAD, THE PRECURSOR EQUATIONS ARE INTEGRATED OVER THE TIME INTERVAL WITH THE ASSUMPTION THAT THE LOCAL FISSION RATE VARIES LINEARLY IN TIME. SUBSTITUTING THE PRECURSOR DISTRIBUTIONS INTO THE NEUTRON DIFFUSION EQUATIONS GIVES A SET OF EQUATIONS HAVING THE FORM OF A CONSTANT SOURCE PROBLEM WHICH CAN BE SOLVED BY STANDARD PROGRAMS. THE ACCURACY AND COMPUTATIONAL ECONOMY OF THE MODEL IS ILLUSTRATED BY SAMPLE CALCULATIONS OF TYPICAL REACTOR TRANSIENTS.

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-18292 *CONTINUED*
ANALYTICAL MODEL + EXCURSION, LARGE + FLUX TILT + MATHEMATICAL TREATMENT + REACTOR KINETICS + SPACE DEPENDENT DYNAMICS

6-18305 ALSO IN CATEGORY 17
BERTINI A + LA PAROLA GL + MONTAIS P + PLEINEVAUX C
EXPERIMENTAL DETERMINATION OF CORE REACTIVITY BUILD-UP WITH IRRADIATION IN THE LATINA NUCLEAR POWER PLANT
ENTE NAZIONALE PER L'ENERGIA ELETTRICA + EURATOM
8 PAGES, 2 FIGURES, ENERGIA NUCLEARE 14(1) PAGES 10-17 (JANUARY 1967)

PLANNED EXPERIMENT PROGRAM FOR COMPARING THEORETICAL AND EXPERIMENTAL VALUES BY PERIODIC MEASUREMENTS OF TEMPERATURE COEFFICIENTS, ROD CALIBRATION, ABSORBER WORTH, ETC., ON LATINA AND ZERO-POWER REACTORS.

*FUEL BURNUP + *REACTIVITY, EXCESS + COMPARISON, THEORY AND EXPERIENCE + ITALY + REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED + RESEARCH AND DEVELOPMENT PROGRAM

6-18520 ALSO IN CATEGORY 1
PENNINGTON EM
ANALYSIS OF HIGH CONVERSION CRITICAL EXPERIMENTS
ARGONNE NATIONAL LAB., ARGONNE, ILL.
ANL-7270 +. 42 PAGES, 7 FIGURES, 28 TABLES, 31 REFERENCES, MARCH 1967

CRITICAL EXPERIMENTS PERFORMED IN THE ZPR-7 FACILITY USING H₂O OR BORAX-V FUEL AND LIGHT-WATER MODERATOR ARE ANALYZED. THE H₂O FUEL CONSISTED OF 3.04 W/O ENRICHED UO₂ PELLETS STACKED IN ALUMINUM OR STAINLESS STEEL TUBING. BORAX-V FUEL USED UO₂ PELLETS, 4.95 W/O ENRICHED, STACKED IN STAINLESS STEEL TUBING. ALL LATTICES HAD FUEL RODS UNIFORMLY SPACED IN SQUARE OR TRIANGULAR ARRAYS. H-TO-U-238 ATOM RATIOS VARIED FROM 4.6 TO 0.5. CALCULATIONS OF CRITICAL BUCKLINGS, REFLECTOR SAVINGS, AND VARIOUS MICROPARAMETERS ARE COMPARED WITH EXPERIMENTAL VALUES. AGREEMENT IS REASONABLY GOOD, EXCEPT FOR THE U-238-TO-U-235 FISSION RATIO. MOST CALCULATIONS USED CROSS-SECTIONS FROM GAM-I AND THERMOS IN FOUR-GROUP DIFFUSION THEORY.

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

*CRITICALITY EXPERIMENT + COMPARISON, THEORY AND EXPERIENCE + CROSS SECTION + REACTIVITY EFFECT + REACTOR PHYSICS

6-18521
BRICKSTOCK A + DAVIES AR
RSKF-A REACTOR KINETICS CODE FOR THE IBM 7030
ATOMIC WEAPONS RESEARCH ESTABLISHMENT, ALDERMASTON, ENGLAND
AWRE-D-4/66 +. 29 PAGES, FEBRUARY 1966

DESCRIPTION OF A CODE WHICH WILL SOLVE A LARGE VARIETY OF ONE-GROUP, SPACE-INDEPENDENT REACTOR KINETIC PROBLEMS. RESPONSE TO A VARIETY OF REACTIVITY VARIATIONS MAY BE FOLLOWED, INCLUDING STEP CHANGES, ROD DRIVES, AND GRAVITY DROPS. VARIOUS SHUT-DOWN MECHANISMS MAY BE INITIATED BY SPECIFIC POWER LEVEL OR PERIOD TRIPS. INTEGRATION IS FAST AND AUTOMATIC IN THE SENSE THAT INTEGRATING INTERVAL IS COMPUTED BY THE CODE AT EACH TIME STEP. TEMPERATURE COEFFICIENTS AND UP TO 20 GROUPS OF DELAYED NEUTRONS MAY BE INCLUDED. DETAILED INSTRUCTIONS ARE GIVEN FOR PREPARING THE INPUT DATA, AND SIX TEST PROBLEMS ARE GIVEN AS ILLUSTRATIONS.

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

COMPUTER PROGRAM + COMPUTER, DIGITAL + CONTROL ROD SCRAM MECHANISM + REACTOR KINETICS

6-18522 ALSO IN CATEGORY 18
SCHMIDT WH
CORE CALCULATIONS FOR SANDIA PULSE REACTOR II (SPR II)
SANDIA CORP., ALBUQUERQUE, N. MEX.
SC-RR-66-2643 +. 31 PAGES, 16 FIGURES, 5 TABLES, MAY 1967

A SUMMARY OF RESULTS AND CALCULATION METHODS, AS WELL AS JUSTIFICATION FOR CERTAIN DESIGN CRITERIA, IS PRESENTED FOR THE SANDIA PULSE REACTOR II (SPR II). TWO-DIMENSIONAL MULTIGROUP NEUTRON-TRANSPORT-THEORY CALCULATIONS WERE MADE WITH THE LASL ODK COMPUTER PROGRAM. THE RESULTS INCLUDE CORE SIZE, REACTIVITY WORTHS OF CORE COMPONENTS, AND TEMPERATURE AND NEUTRON FLUX PROFILES. SPR II IS A SUPER-GODIVA TYPE OF REACTOR, SIMILAR TO THE HEALTH PHYSICS RESEARCH REACTOR AT OAK RIDGE.

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

DESIGN CRITERIA + DESIGN STUDY + HPRR (HEALTH PHYSICS RESEARCH REACTOR) + REACTOR, FAST BURST + REACTOR, FLUX TRAP + REACTOR, PULSED + REACTOR, RESEARCH

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-18523
GARELIS E
REACTOR KINETICS OF A REFLECTED SLAB
GENERAL ELECTRIC CO., VALLECITOS ATOMIC LAB., PLEASANTON, CALIFORNIA
8 PAGES, 4 FIGURES, 14 REFERENCES, NUKLEONIK 9(4), PAGE 187 THRU 194, (MARCH 1967)

ANALYSIS OF THE PULSED TIME BEHAVIOR OF A REFLECTED-SLAB REACTOR IS PRESENTED, USING A SIMPLE ONE-GROUP SYMMETRICALLY REFLECTED DIFFUSION-THEORY MODEL WITH DELAYED NEUTRONS. A COMPARISON OF THIS MODEL WITH A BARE ASSEMBLY SHOWS THE EFFECT INTRODUCED BY THE INHOMOGENEITY OF A REFLECTOR. THE ANALYSIS GIVES A COMPARISON OF THE REACTIVITY AS DETERMINED FROM A STATIC CALCULATION WITH THE REACTIVITY AS DETERMINED FROM DYNAMIC MEASUREMENTS. AS A NUMERICAL EXAMPLE, THE SPACE-TIME DEPENDENCE OF THE FLUX IS DETERMINED FOR A PULSED SYSTEM WITH CONSTANTS TYPICAL OF A WATER-MODERATED REFLECTED REACTOR. STATIC AND DYNAMIC REACTIVITY DETERMINATIONS ARE COMPARED FOR THE SYSTEM.

PULSED NEUTRON TECHNIQUE + REACTOR KINETICS + SPACE DEPENDENT DYNAMICS

6-18524
BLISS HE + DRISCOLL MJ + KAPLAN I + THOMPSON TJ
USE OF THE PULSED-NEUTRON SOURCE TECHNIQUE TO DETERMINE VALUES OF K IN SUBCRITICAL LATTICES
MASSACHUSETTS INSTITUTE OF TECHNOLOGY
CONF-670-602 +. 6 PAGES, 2 TABLES, 2 REFERENCES, ABSTRACT IN ANS TRANSACTION 10(1), PAGE 196 AND 197,
PAPER PRESENTED AT THE 1967 ANNUAL MEETING OF THE AMERICAN NUCLEAR SOCIETY, SAN DIEGO, CALIFORNIA, JUNE 11-15, 1967

THE PULSED-NEUTRON TECHNIQUE WAS USED TO OBTAIN VALUES OF K-INF. IN SEVERAL SUBCRITICAL SLIGHTLY ENRICHED URANIUM LATTICES MODERATED BY HEAVY WATER IN THE MIT LATTICE FACILITY. THE RESULTS WERE COMPARED WITH VALUES OBTAINED BY THREE OTHER METHODS, AND GOOD AGREEMENT WAS FOUND. THE AUTHORS CONCLUDED THAT THE PULSED-NEUTRON TECHNIQUE PROVIDES A USEFUL TOOL FOR STUDYING SUBCRITICAL ASSEMBLIES, REQUIRING LESS TIME TO MAKE THE MEASUREMENTS AND TO ANALYZE THE DATA THAN THE OTHER METHODS.

CRITICAL ASSEMBLY FACILITY + MEASUREMENT, REACTIVITY + PULSED NEUTRON TECHNIQUE + REACTIVITY, NEGATIVE

6-18525
VIGIL JC
ULTRA-HIGH TEMPERATURE REACTOR EXPERIMENT (UHTREX) TRANSIENTS
LOS ALAMOS SCIENTIFIC LAB., N. MEX.
LA-3605-MS +. 25 PAGES, 28 FIGURES, 2 TABLES, 3 REFERENCES, SEPTEMBER 1, 1966

THE POINT REACTOR KINETICS EQUATIONS WITH SIX GROUPS OF DELAYED NEUTRONS WERE USED TO EVALUATE THREE TYPES OF TRANSIENTS IN THE UHTREX REACTOR. THEY ARE - (1) WITHDRAWAL OF ONE PLUG ROD AT THE DESIGN SPEED OF 18 IN. PER MIN, STARTING FROM ZERO POWER, (2) STARTING FROM 3-MW DELAYED CRITICAL, AND (3) SCRAMS FROM 3-MW DELAYED CRITICAL. NONE OF THESE TRANSIENTS WOULD RESULT IN SERIOUS DAMAGE TO THE REACTOR. HOWEVER, IN CASE 2, FUEL-PARTICLE MELTING OCCURS IF THE TRANSIENT IS NOT SCRAMMED. STRESSING OF THE FUEL ELEMENTS MAY OCCUR IN CASE 1.

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

REACTOR KINETICS + REACTOR TRANSIENT + REACTOR, GAS COOLED + UHTREX (ULTRA HIGH TEMP. REACTOR EXPERIMENT)

6-18526
BAERS B
STOCHASTIC FLUCTUATIONS IN THE POWER BURST OF A REACTOR
TECHNICAL UNIVERSITY OF HELSINKI, DEPARTMENT OF TECHNICAL PHYSICS, OTANIEMI, FINLAND
5 PAGES, 1 FIGURE, 14 REFERENCES, NUKLEONIK 9, PAGE 118 THRU 122, (FEB. 1967)

THEORETICAL STUDY OF THE STATISTICAL FLUCTUATIONS IN THE POWER BURSTS OF REACTORS HAVING PROMPT NEGATIVE TEMPERATURE COEFFICIENTS. THE BASIC EQUATION IS A PROBABILITY-GENERATING FUNCTION DESCRIBING THE STATE OF THE REACTOR AND WHICH IS RELATED TO THE PROBABILITY-DENSITY FUNCTION. THE VARIANCE IN THE PEAK POWER AND RELEASED ENERGY DURING A POWER BURST IS SOLVED APPROXIMATELY BY NEGLECTING THE DELAYED NEUTRONS AND ASSUMING THAT THE NEUTRON REMOVAL PROBABILITY IS A LINEAR FUNCTION OF THE STORED ENERGY IN THE FUEL. THE RELATIVE VARIANCE IN THE PEAK POWER IS FOUND TO BE THE SAME AS THE RELATIVE VARIANCE IN THE NEUTRON POPULATION IN THE PRE-PULSE STEADY STATE.

ANALYTICAL MODEL + EXCURSION, LARGE + MATHEMATICAL TREATMENT + MEASUREMENT, NOISE + REACTOR KINETICS + REACTOR, FAST BURST + STATISTICAL FLUCTUATION

6-18527
MURLEY TE
CALCULATING THE PROMPT-NEUTRON LIFETIME IN FAST REACTORS
WESTINGHOUSE ELECTRIC CORP., ATOMIC POWER DIVISION

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-18527 *CONTINUED*

CONF-670-602 +. 6 PAGES, 5 REFERENCES, ABSTRACT IN ANS TRANSACTIONS 10(1), PAGE 268 AND 269, PAPER PRESENTED AT 1967 ANNUAL MEETING OF THE AMERICAN NUCLEAR SOCIETY, SAN DIEGO, CALIFORNIA, JUNE 11-15, 1967

IN MOST FAST CRITICAL ASSEMBLIES STUDIED TO DATE, DISCREPANCIES HAVE BEEN REPORTED BETWEEN MEASURED AND CALCULATED PROMPT-NEUTRON LIFETIMES, WITH CALCULATE LIFETIMES TOO LOW. THIS PAPER PRESENTS A DERIVATION SHOWING THAT PART OF THIS DISCREPANCY IS DUE TO USING THE WRONG FLUX AND ADJOINT IN CALCULATING LIFETIMES. DIRECTION OF IMPROVING CALCULATION IS SUGGESTED AND SUPPORTED BY COMPARISON OF CALCULATED LIFETIMES AND LIFETIMES INFERRED FROM ROSSI-ALPHA EXPERIMENTS.

ARGONAUT (ARGONNE NUC ASSEMBLY, UNIV TRAINING) + COMPARISON, THEORY AND EXPERIENCE + PROMPT NEUTRON LIFETIME + REACTOR, FAST + REACTOR, TRAINING + ROSSI ALPHA

6-18528

HETRICK DL

AN ILLUSTRATION OF THE DESTABILIZING EFFECT OF DELAYED NEUTRONS IN THE LINEAR TWO-TEMPERATURE REACTOR MODEL UNIVERSITY OF ARIZ.

CONF-670-602 +. 6 PAGES, 2 FIGURES, 1 TABLE, 3 REFERENCES, ABSTRACT IN ANS TRANSACTIONS 10(1), PAGE 249 AND 249, PAPER PRESENTED AT THE 1967 ANNUAL MEETING OF THE AMERICAN NUCLEAR SOCIETY, SAN DIEGO, CALIFORNIA, JUNE 11-15, 1967

AN EXAMPLE OF A DESTABILIZING EFFECT OF DELAYED NEUTRONS ON A REACTOR IS SHOWN BASED ON A LINEARIZED, TWO-TEMPERATURE, POINT-KINETIC REACTOR MODEL. THE METHOD IS TO COMPARE RESULTS FROM THE PROMPT-JUMP APPROXIMATION WITH A CASE OF NO DELAYED NEUTRONS, WITH THE LATTER HAVING AN EFFECTIVE GENERATION TIME CHOSEN SO THAT THE TWO MODELS COMPARED HAVE THE SAME LOW-FREQUENCY BEHAVIOR. A RESULT OF ANALYSIS IS A NECESSARY CONDITION FOR THE EXISTENCE OF CASES STABLE WITHOUT DELAYED NEUTRONS AND UNSTABLE WITH ONE GROUP OF DELAYED NEUTRONS. THIS CONDITION IS IN THE FORM OF AN INEQUALITY INVOLVING THE ONE-GROUP DECAY CONSTANT AND THE HEAT-TRANSFER TIME CONSTANTS.

DELAYED NEUTRON + MATHEMATICAL STUDY + REACTOR KINETICS + REACTOR STABILITY

6 18529

ALSO IN CATEGORY 6

LAGIER TF

MECHANICAL ENERGY GENERATED BY THE FAILURE OF A WATERLOGGED REACTOR FUEL ROD SUBJECTED TO TRANSIENT POWER CONDITIONS

PHILLIPS PETROLEUM COMPANY

CONF-670-602 +. 8 PAGES, 6 FIGURES, ABSTRACT IN ANS TRANSACTIONS 10(1), PAGE 332 AND 333, PAPER PRESENTED AT THE 1967 ANNUAL MEETING OF THE AMERICAN NUCLEAR SOCIETY, SAN DIEGO, CALIFORNIA, JUNE 11-15, 1967

DESCRIBES RESULTS OF INITIAL TESTS IN THE SUBASSEMBLY TESTING PROGRAM, RECENTLY INITIATED AT SPERT FACILITY TO PROVIDE EMPIRICAL INFORMATION ON FUEL-DAMAGE MECHANISMS AND CONSEQUENCES. MEASURE OF DAMAGE POTENTIAL IS THE MECHANICAL ENERGY THAT CAN DO WORK ON THE CORE STRUCTURE AND CONTAINMENT SYSTEM. INVESTIGATION TO DATE INCLUDE ONE TYPE OF WATERLOGGED REACTOR FUEL SUBJECTED TO SHORT-PERIOD POWER EXCURSIONS IN THE CAPSULE-DRIVER CORE SUFFICIENT TO CAUSE FAILURE OF TEST SAMPLES. POTENTIALLY DESTRUCTIVE MECHANICAL ENERGY DETERMINED BY EVALUATING (1) THE ENERGY CONTAINED IN A COLUMN OF WATER ACCELERATED IN THE TEST CAPSULE AND (2) THE STRAIN PLUS KINETIC ENERGY OF THE CAPSULE WALL. IN THE TESTS DESCRIBED, UO₂ RODS CLAD WITH TYPE-304 STAINLESS-STEEL TUBING AND CONTAINING ABOUT 9.7 WT % WATER WERE USED. PEAK ADIABATIC FUEL TEMPERATURES AT TIME OF FAILURE WERE ABOUT 675 C. EFFICIENCIES OF CONVERSION OF TEST-FUEL ENERGY TO MECHANICAL ENERGY VARIED FROM 1.9 TO 2.5%.

CORE, CAPSULE DRIVER (CDC) + DAMAGE + FAILURE, FUEL ELEMENT WATERLOGGING + FUEL INTEGRITY + REACTOR TEST FACILITY + REACTOR TRANSIENT + SPERT 4 (SPECIAL POWER EXCURSION REACTOR TEST)

6-18531

COOK JL

FISSION INTERFERENCE WITH DOPPLER BROADENING

ATOMIC ENERGY COMMISSION, AUSTRALIA

5 PAGES, 7 REFERENCES, AUS. J. PHYS. 20(1), PAGE 67 THRU 71, (1967)

THE MULTILEVEL INTERFERENCE TERM BETWEEN TWO RESONANCES OF THE SAME SPIN AND PARITY IS EXAMINED AND TRANSFORMED TO AN EXPRESSION THAT ALLOWS THE EVALUATION OF THE DOPPLER-BROADENED CROSS SECTION IN TERMS OF KNOWN FUNCTIONS. FOR FISSIONABLE NUCLIDES, IT IS SHOWN THAT FOR CASES OF PRACTICAL INTEREST THE FISSION-INTERFERENCE CORRECTION CAN BE EXPRESSED IN TERMS OF STANDARD CONTOUR FUNCTIONS, WITHIN EXPERIMENTAL ERROR.

CROSS SECTION + DOPPLER EFFECT + REACTIVITY COEFFICIENT + RESONANCE OVERLAP

6-18532

MCGRATH EJ

THE ANALYTICAL DETERMINATION OF POWER SPECTRAL DENSITIES IN NUCLEAR REACTORS HAVING A REACTIVITY FEEDBACK COEFFICIENT

THOMPSON RAMO WOOLDRIDGE INC.

CONF-670-602 +. 16 PAGES, 1 FIGURE, 9 REFERENCES, ABSTRACT IN ANS TRANSACTIONS 10(1), PAGE 289 AND 290, PAPER PRESENTED AT 1967 ANNUAL MEETING OF THE AMERICAN NUCLEAR SOCIETY, SAN DIEGO, CALIFORNIA, JUNE 11-15, 1967

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-18532 *CONTINUED*

DISCUSSES ESTIMATION OF THE POWER-SPECTRAL DENSITY IN REACTORS WHICH EXHIBIT ANOMALOUS STRUCTURE DUE TO FEEDBACK OR SIGNAL CONTENT. A LINEARIZED THEORY DERIVABLE FROM THE APPROPRIATE FOKKER-PLANCK EQUATION IS THEN USED TO STUDY THE SPECTRUM OF A REACTOR WITH A NEGATIVE TEMPERATURE COEFFICIENT OF REACTIVITY. IT IS SEEN THAT DISTINCT DIFFERENCES CAN EXIST IN BOTH THE QUALITATIVE AND QUANTITATIVE ASPECTS OF THE SPECTRA WHEN COMPARED WITH THE USUAL APPROACH THAT EMPLOYS THE SQUARE MODULUS OF THE REACTOR TRANSFER FUNCTION.

FREQUENCY SPECTRA + NOISE ANALYSIS + REACTIVITY COEFFICIENT + REACTOR DYNAMICS + STATISTICAL FLUCTUATION + TRANSFER FUNCTION

6-18533

BOUNTON AR + BAIRD QL + PLUMLEE KE + REDMAN WC + ROBINSON WR + STANFORD GS
HIGH CONVERSION CRITICAL EXPERIMENTS
ARGONNE NATIONAL LAB., ARGONNE, ILLINOIS
ANL-7203 +. 81 PAGES, 44 FIGURES, 25 TABLES, 34 REFERENCES, JANUARY 1967

THE HIGH-CONVERSION CRITICALITY EXPERIMENTS PROGRAM MEASURED NUCLEAR PARAMETERS OF LIGHT-WATER-MODERATED, SLIGHTLY ENRICHED, URANIUM OXIDE LATTICES FOR H-TO-U-238 ATOM RATIOS FROM ABOUT 5 TO 0.5. THE INITIAL CONVERSION RATIO, U-238-TO-U-235 FISSION RATIO, U-238 CAPTURE CADMIUM RATIO, THERMAL DISADVANTAGE FACTOR, AND CADMIUM RATIOS WERE MEASURED IN THE FULL RANGE OF LATTICES. BUCKLINGS, CRITICAL MASSES, AND REFLECTOR SAVINGS WERE MEASURED IN THE LOOSER ASSEMBLIES. THE FUEL WAS 4.95-W/O OR 3.04-W/O ENRICHED UO₂. ALL CORES WERE CONSTRUCTED IN THE ZPR-7 FACILITY, PROVIDING AN INFINITE RADIAL H₂O REFLECTOR. INFORMATION ON TEMPERATURE COEFFICIENT AND CONTROL-ELEMENT AND VARIOUS MATERIAL WORTHS IS INCLUDED.

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

CONTROL ROD WORTH + CRITICALITY EXPERIMENT + MEASUREMENT, REACTIVITY + TEMPERATURE COEFFICIENT + TEST, PHYSICS

6-18535

BLAINE RA + BERLAND RF
SIMULATION OF REACTOR DYNAMICS. VOLUME I. DESCRIPTION OF AIROS II-A
ATOMICS INTERNATIONAL, A DIVISION OF NORTH AMERICAN AVIATION, INC.
NAA-SR-12452 +. 115 PAGES, FIGURES, TABLES, 14 REFERENCES, SEPTEMBER 5, 1967

CODE AIROS II-A SOLVES THE SPACE-INDEPENDENT REACTOR-KINETICS EQUATION AND DETERMINES REACTIVITY BY SOLVING DISCRETIZED EQUATIONS REPRESENTING THE SPATIAL HEAT- AND MASS-TRANSFER MODEL FOR SEVERAL FUEL CHANNELS, INCLUDING FUEL MELTING, COOLANT BACKING, VAPORIZATION, AND BURNOUT. FILM COEFFICIENT MAY VARY WITH FLOW. PROVISION IS MADE FOR FLOW DECAY AND AFTERGLOW HEATING. SCRAMS CAN BE INITIATED BY SENSING ANY QUANTITY CALCULATED. THE CODE CAN OPTIONALLY CALCULATE THE INITIAL TEMPERATURES. UP TO 400 FEEDBACK AND 15 DELAYED-NEUTRON EQUATIONS ARE ALLOWED. AIROS II-A IS IN FORTRAN H LEVEL. REPORT INCLUDES FLOW CHART, SAMPLE INPUT AND OUTPUT. DOES NOT LIST CODE.

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

COMPUTER PROGRAM + HEAT TRANSFER + MASS TRANSFER + MATHEMATICAL TREATMENT + REACTOR KINETICS + REACTOR PHYSICS

6-18536

ALSO IN CATEGORY 1

GREEBLER P
DOPPLER COEFFICIENT CONTROL FOR NUCLEAR REACTORS OPERATING IN THE FAST OR INTERMEDIATE NEUTRON ENERGY SPECTRUM
U. S. PATENT 3-266-998 +. 6 PAGES, 2 FIGURES, AUGUST 16, 1966, PATENT (U.S.)

THIS PATENT RELATES TO INHERENT CONTROL FOR NUCLEAR REACTORS OF THE FAST OR INTERMEDIATE NEUTRON ENERGY TYPE. INHERENT CONTROL IS ACHIEVED BY DISTRIBUTING MODERATOR MATERIAL IN THE CORE IN A SUFFICIENT AMOUNT TO MODERATE FROM 15 TO 30% OF THE HIGH ENERGY OR FAST NEUTRONS DOWN INTO THE ENERGY RANGE OF ABOUT 10,000 IN WHICH RANGE THE DOPPLER COEFFICIENT OF REACTIVITY OF THE CORE IS MADE MORE NEGATIVE TO INCREASE NEUTRON ABSORPTION WITH INCREASE IN TEMPERATURE OF THE CORE.

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

DOPPLER COEFFICIENT + REACTIVITY EFFECT + REACTOR STABILITY + REACTOR, FAST + SHUTDOWN MECHANISM, SELF

6-18537

LEONI G + SANTAROSSA G
CRITICAL COMPARISON BETWEEN THEORETICAL AND EXPERIMENTAL TRANSIENTS OF THE ENRICO FERMI PWR
COMITATO NAZIONALE PER L'ENERGIA NUCLEARE, ITALY + COMITATO NAZIONALE PER LE RICERCHE NUCLEARI, ITALY
10 PAGES, 6 FIGURES, ENERGIA NUCL. 14(2), PAGE 71 THRU 80, (FEBRUARY 1967)

A COMPARISON IS MADE BETWEEN RESULTS OBTAINED DURING A PROGRAM OF DYNAMIC EXPERIMENTS CARRIED OUT ON THE ENRICO FERMI NUCLEAR POWER PLANT AT TRINO VERCELLESE, AND THOSE OBTAINED FROM

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-18537 *CONTINUED*

MATHEMATICAL MODELS. IT IS SHOWN THAT, EVEN WITH RELATIVELY SIMPLE MODELS, A REASONABLY GOOD AGREEMENT CAN BE OBTAINED BETWEEN THEORETICAL AND EXPERIMENTAL RESULTS. AN EVALUATION IS MADE BY MEANS OF THE ABOVE COMPARISON REGARDING THE VALIDITY OF THE MAIN SIMPLIFYING ASSUMPTIONS ON WHICH THE MODELS ARE BASED.

*COMPARISON, THEORY AND EXPERIENCE + MATHEMATICAL TREATMENT + REACTOR DYNAMICS + REACTOR TRANSIENT + REACTOR, PRESSURIZED WATER + TEST, PLANT RESPONSE

6-18713 ALSO IN CATEGORY 9

FRISCH W + SCHOENFELD E
CALCULATION PROGRAM FOR THE DYNAMICS AND STABILITY OF A FAST POWER REACTOR
KERNFORSCHUNGSZENTRUM, KARLSRUHE, WEST GERMANY. INSTITUT FÜR REAKTORENTWICKLUNG
EURFNR-206F + KFK-465 +. 97 PAGES, REFERENCES, JUNE 1966

THE PROGRAMS WERE DEVELOPED FOR THE DYNAMICS INVESTIGATION AND THE STABILITY CALCULATIONS OF SODIUM-COOLED FAST POWER REACTORS. ANALOG PROGRAMS ARE FOR DYNAMICAL INVESTIGATIONS OF THE CORE AND THE ENTIRE PRIMARY COOLING SYSTEM. FOR STABILITY INVESTIGATIONS, TWO FORTRAN PROGRAMS ARE AVAILABLE.

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

ANALOG SIMULATION + ANALYTICAL MODEL + COMPUTER PROGRAM + REACTOR, FAST + REACTOR, MOLTEN SALT

6-18718 ALSO IN CATEGORY 9

HETRICK D + SCHMIDT L + THEODORE R
EXAMPLE OF TWO-REGION REACTOR STABILITY WITH DELAYED NEUTRONS
ARIZONA UNIV., TUCSON. DEPT. OF NUCLEAR ENGINEERING
TID-23844 +. 25 PAGES, 1966

THE LINEARIZED POINT-REACTOR MODEL IN THE PROMPT-JUMP APPROXIMATION IS USED WITH A SIMPLE TWO-REGION LUMPED-PARAMETER MODEL FOR HEAT TRANSFER TO ANALYZE REACTOR STABILITY. THE EFFECT OF NEGLECTING DELAYED NEUTRONS IS DISCUSSED, AND AN EXAMPLE IS PRESENTED WHICH SHOWS THAT DELAYED NEUTRONS CAN IMPAIR STABILITY UNDER CERTAIN CONDITIONS. RESULTS ARE PRESENTED AS STABILITY REGIONS IN A PARAMETER SPACE OF THE TWO REACTIVITY COEFFICIENTS AND AS POWER-TEMPERATURE PHASE-PLANE PLOTS OBTAINED WITH AN ANALOGUE COMPUTER. A WIDE RANGE OF STABILITY IS DEMONSTRATED FOR COMBINATIONS OF PROMPT-POSITIVE AND DELAYED-NEGATIVE REACTIVITY FEEDBACK.

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

ANALYTICAL MODEL + COMPUTER, ANALOG + DELAYED NEUTRON + REACTIVITY COEFFICIENT + THEORETICAL INVESTIGATION

6-18741 ALSO IN CATEGORY 9

CASALI F + CASINI G + CENERINI R + CORDANI G + RUSTICHELLI F + STURM B + ZAPPELLINI G
CHARACTERISTICS AND DESIGN OF A FACILITY FOR K-INF MEASUREMENTS ON D2O LATTICES IN THE RB-1 REACTOR
COMITATO NAZIONALE PER L'ENERGIA NUCLEARE, BOLOGNA + CENTRO DI CALCOLO
EUR-3484.E +. 32 PAGES, JUNE 1967

IN THE FRAME OF THE COOPERATION BETWEEN EURATOM AND CNEN, A D2O FACILITY WAS INSTALLED IN THE RB-1 PILE OF BOLOGNA. THIS WILL PERMIT THE EXECUTION OF K-INF MEASUREMENTS, ACCORDING TO THE PCTR TECHNIQUE, ON HEAVY-WATER LATTICES. THE EXPERIMENTAL PROGRAM WILL DEAL FIRST WITH THE MEASUREMENTS ON ORGEL-TYPE FUEL ELEMENTS (NATURAL URANIUM CLUSTERS) AND IT WILL CONTINUE WITH THE ANALYSIS OF LATTICES IN THE FRAMEWORK OF THE CIRENE PROJECT. THE K-INF EXPERIMENTS WILL BE COMPLETED BY A SERIES OF DETAILED PARAMETER MEASUREMENTS SUCH AS INITIAL CONVERSION RATIO, FAST FISSION RATIO, ETC., BY THE ACTIVATION TECHNIQUE.

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

BUCKLING + EXPERIMENT, GENERAL + FUEL ELEMENT + FUEL ELEMENT BOWING + HEAVY WATER + ITALY + REACTOR, RESEARCH + URANIUM, NATURAL

6-18761 ALSO IN CATEGORY 1

DOERNER RC + KNAPP WG + ALMENAS KK + KARAM RA
PHYSICS MEASUREMENTS IN TUNGSTEN-BASED, ALUMINUM-REFLECTED FAST REACTORS
ARGONNE NATIONAL LAB., ILL.
ANL-7007 +. 38 PAGES, 20 FIGURES, 13 TABLES, 18 REFERENCES, MARCH 1967

AS PART OF AN ANL STUDY OF CONCEPTS FOR PROPOSED HIGH-TEMPERATURE FAST REACTORS, THIS REPORT SUMMARIZES RESULTS OF MEASUREMENTS MADE ON FOUR FAST CRITICAL EXPERIMENTS PERFORMED ON ZPR-9. IN BASIC DESIGN, FUEL IS HIGHLY ENRICHED URANIUM, MAJOR DILUENT IS TUNGSTEN-RHENIUM ALLOY, AND REFLECTOR IS A LIGHT METAL OR OXIDE. MEASUREMENTS INCLUDED CRITICAL MASSES AND GEOMETRY, ROSSI ALPHA, CENTRAL-FUEL AND MATERIALS WORTH, AND SPATIAL DEPENDENCE OF FISSION RATES, AS A FUNCTION OF TUNGSTEN CONTENT OF THE CORE. EXPERIMENTAL RESULTS ARE COMPARED WITH CALCULATIONS BASED ON A ONE-DIMENSIONAL 16-GROUP DIFFUSION CODE. PROBLEMS OF DISCREPANCIES BETWEEN CALCULATED AND MEASURED PROMPT-NEUTRON LIFETIMES IS DISCUSSED. SUGGESTIONS GIVEN FOR

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-18761 *CONTINUED*
FUTURE INVESTIGATIONS IN THE KINETICS OF THESE ASSEMBLIES.

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

COMPARISON, THEORY AND EXPERIENCE + CRITICAL ASSEMBLY FACILITY + CRITICALITY EXPERIMENT + MEASUREMENT, REACTIVITY + REACTOR PHYSICS + REACTOR, FAST + ROSSI ALPHA + ZPR 9 (ANL ZERO POWER REACTOR)

6-18762 ALSO IN CATEGORY 1
KARAM RA + ANCARANI A + HELM FH + KATO WY + MAIN GW + RUSCH GK
MEASURED PHYSICS PARAMETERS IN A ZONED FAST URANIUM CARBIDE CORE, ASSEMBLY 4Z
ARGONNE NATIONAL LAB., ILL.
ANL-7281 +. 48 PAGES, 26 FIGURES, 22 TABLES, 21 REFERENCES, DECEMBER 1966

DESCRIBES RESULTS OF REACTOR PHYSICS EXPERIMENTS ON ZPR 6 WITH A ZONED CYLINDRICAL CORE HAVING A CENTRAL REGION WITH COMPOSITION OF A 2600-LITER URANIUM CARBIDE FUELED CORE. MAJOR OBJECTIVE WAS TO TEST HOW WELL REACTOR PHYSICS PARAMETERS FOR FULL-SCALE SYSTEM CAN BE PREDICTED FROM ZONED-CORE MEASUREMENTS. MEASUREMENTS WERE MADE OF CRITICAL MASS, NEUTRON-ENERGY SPECTRUM, FISSION-RATE TRAVERSES, RADIAL DISTRIBUTIONS OF FLUXES AND IMPORTANCES OF FISSION NEUTRONS, SODIUM VOID COEFFICIENTS, REACTIVITY WORTHS OF CENTRALLY LOCATED SAMPLES, AND ROSSI-ALPHA MEASUREMENTS. COMPARISONS BETWEEN THEORETICAL CALCULATIONS AND EXPERIMENTAL RESULTS ARE DISCUSSED FOR EACH MEASUREMENT.

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

COMPARISON, THEORY AND EXPERIENCE + CRITICAL ASSEMBLY FACILITY + CRITICALITY EXPERIMENT + MEASUREMENT, REACTIVITY + REACTOR PHYSICS + REACTOR, FAST + ROSSI ALPHA + ZPR 6 (ANL ZERO POWER REACTOR)

6-18763
KAPLAN S
COMPUTATIONAL METHODS FOR THE SOLUTION OF REALISTIC SPACE-TIME DYNAMICS PROBLEMS
WESTINGHOUSE ELECTRIC CORPORATION, PITTSBURGH
CONF-670-602 +. 15 PAGES, 91 REFERENCES, ABSTRACT IN ANS TRANSACTIONS 10(1), PAGE 203, (JUNE 1967)

THE ADIABATIC, MODAL, AND NODAL METHODS FOR SOLUTION OF REALISTIC SPACE-TIME REACTOR DYNAMICS PROBLEMS ARE VERY BRIEFLY APPRAISED.

MATHEMATICAL TREATMENT + REACTOR DYNAMICS + REACTOR PHYSICS + SPACE DEPENDENT DYNAMICS

6-18765
UOTINEN VO + WILLIAMS LD
EXPERIMENTS AND CALCULATIONS FOR H₂O-MODERATED ASSEMBLIES CONTAINING UO₂-2 WT% PUO₂ FUEL RODS
PACIFIC NORTHWEST LABORATORY, BATTELLE NORTHWEST
BNWL-SA-1107 +. 36 PAGES, 10 FIGURES, 7 TABLES, 20 REFERENCES, ABSTRACT IN ANS TRANSACTIONS 10(1), PAGE 186 AND 187, (JUNE 1967)

CRITICAL EXPERIMENTS IN THE PLUTONIUM RECYCLE CRITICAL FACILITY (PRCF) WERE DONE FOR SIX HEXAGONAL LATTICES OF UO₂ 2% PUO₂ FUEL RODS WITH THREE VARYING PERCENTAGES OF PLUTONIUM ISOTOPES, AND H₂O REFLECTOR. MEASUREMENTS INCLUDED CRITICAL MASS, MODERATOR-VOID WORTH, MODERATOR TEMPERATURE AND LEVEL REACTIVITY COEFFICIENTS, SPATIAL FLUX DISTRIBUTION, BUCKLINGS, ROD WORTH. REFLECTOR-SAVINGS MEASUREMENTS BY A CRITICAL-FLUX-SHAPE METHOD AND BY A SUBCRITICAL METHOD ARE COMPARED. EXPERIMENTS ARE COMPARED WITH 1-D TWO-REGION FOUR-GROUP DIFFUSION CALCULATIONS, USING CODES HFN, THERMOS, AND HRG. RADIAL BUCKLINGS AGREE WITHIN 10%, OTHER QUANTITIES WITHIN MUCH LESS.

COMPARISON, THEORY AND EXPERIENCE + CONTROL ROD WORTH + CRITICALITY EXPERIMENT + MODERATOR COEFFICIENT + PLUTONIUM DIOXIDE + POWER DISTRIBUTION + PRTR (PLUTONIUM RECYCLE TEST REACTOR) + REACTIVITY COEFFICIENT + REACTOR, HEAVY WATER + REACTOR, PRESSURE TUBE + TEMPERATURE COEFFICIENT + TEST, PHYSICS + URANIUM DIOXIDE

6-18766 ALSO IN CATEGORY 9
LONG JK + HESS AL + MCVEAN RL + PERSIANI PJ + ULRICH AJ + BAIRD QL + BENNETT RA + ENGSTROM SL
FFTF CRITICAL EXPERIMENTS-CONTROL-ROD STUDIES ON ZPR-3
ARGONNE NATIONAL LAB., ARGONNE, ILL. + PACIFIC NORTHWEST LABORATORY
CONF-670-602 +. 12 PAGES, FIGURES, 1 TABLE, ABSTRACT IN ANS TRANSACTIONS 10(1), PAGE 269 AND 270, (JUNE 1967), PAPER PRESENTED AT THE 1967 ANNUAL MEETING OF THE AMERICAN NUCLEAR SOCIETY, SAN DIEGO, CALIFORNIA, JUNE 11-15, 1967

CONTROL-ROD EXPERIMENTS WERE PERFORMED IN ZPR-3 ASSEMBLY 48 WITH TWO 100-DEGREE SECTORS OF THE BLANKET REPLACED BY A NICKEL/STAINLESS-STEEL/SODIUM COMPOSITION TO SIMULATE THE FFTF REFLECTOR ENVIRONMENT. THE CONTROL RODS CONTAINED BORON CARBIDE UNIFORMLY DISTRIBUTED ALONG A 54-INCH LENGTH, AND EITHER DISTRIBUTED OVER THE CROSS SECTION OF A ZPR-3 TUBE OR BUNCHED AT ITS CENTER. BESIDES CENTRAL IN-CORE MEASUREMENTS, INTERACTIONS OF CLUSTERS OF IDENTICAL RODS WERE COMPARED WITH THE SUM OF THE SEPARATE RODS. WORTH DISTRIBUTIONS AXIALLY AND RADially WERE MEASURED.

CONTROL ROD INTERACTION + CONTROL ROD WORTH + CRITICAL ASSEMBLY FACILITY + FFTF (TR) + REACTOR, FAST +

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-18766 *CONTINUED*
REACTOR, TEST + TEST, PHYSICS + ZPR 3 (ANL ZERO POWER REACTOR)

6-18769 ALSO IN CATEGORY 9
PROTSIK R
EPITHERMAL CAPTURE AND FISSION DISTRIBUTION IN A FUEL ROD. THE COMPUTER CODE REAX
GENERAL ELECTRIC CO., SAN JOSE, CALIFORNIA. ADVANCED PRODUCTS OPERATION
GEAP-4973 +. 67 PAGES, REFERENCES, APRIL 1966

THE REAX CODE WAS WRITTEN TO PROVIDE A MEANS OF ANALYZING THE EFFECTIVENESS OF THERMAL FLUX FILTERS IN REDUCING THE POWER DEPRESSION IN A HIGHLY ENRICHED FUEL PIN. AN EXTENSION OF THE COMPUTER CODE DOPIE, REAX CALCULATES, AS A FUNCTION OF RADIUS AND ENERGY, THE EPITHERMAL CAPTURE AND FISSION EVENTS AND CROSS SECTIONS IN A HOMOGENEOUS, UNIFORM-TEMPERATURE FUEL ROD IMMERSSED IN A HOMOGENEOUS MEDIUM. RADIAL POWER DISTRIBUTIONS CALCULATED FOR BOTH FILTERED AND UNFILTERED, URANIUM AND MIXED-OXIDE FUEL PINS, TO BE TEST IRADIATED IN TREAT, ARE PRESENTED.

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

COMPUTER PROGRAM + FLUX DISTRIBUTION + FUEL ELEMENT + REACTOR, BREFEDER + REACTOR, FAST + REACTOR, MOLTEN SALT + SEFOR (SOUTHWEST EXP. FAST OXIDE REACTOR)

6-18771 ALSO IN CATEGORY 9
SCHWALM D
DETERMINING THE REGION OF ASYMPTOTIC STABILITY OF A COUPLED REACTOR WITH LINEAR POWER FEEDBACK
EUROPEAN ATOMIC ENERGY COMMUNITY, ISPRA, ITALY. JOINT NUCLEAR RESEARCH CENTER
EUR-3465.E + CONF-670107-R +. 36 PAGES, APRIL 1967, FROM AMERICAN NUCLEAR SOCIETY, COUPLED REACTOR KINETICS CONFERENCE, COLLEGE STATION, TEX.

THE REGION OF STABILITY IN STATE SPACE WAS STUDIED FOR A TWO-CORE SYSTEM BY MEANS OF LIAPUNOV'S DIRECT METHOD. WHERE THERE IS POWER FEEDBACK, THE DYNAMICAL EQUATIONS ARE NONLINEAR. FOR THE LINEARIZED SYSTEM, LIAPUNOV FUNCTIONS ARE CONSTRUCTED BY THREE TECHNIQUES AND APPLIED TO THE NONLINEAR SYSTEM. THUS THE REGION OF STABILITY IN STATE SPACE CAN EASILY BE ESTIMATED IN THE TWO-DIMENSIONAL CASE. THE EFFECT OF DELAYED NEUTRONS ON THE STABILITY BEHAVIOUR WAS ALSO STUDIED. THIS LED TO A PROBLEM OF AT LEAST THREE DIMENSIONS. FOR THE CASE OF CONSTANT POWER FEEDBACK TRANSFER FUNCTIONS, IT WAS SHOWN IN SPECIAL NUMERICAL EXAMPLES THAT THE REGIONS OF STABILITY IN PARAMETER AND STATE SPACE REMAIN UNCHANGED FOR VANISHING DISTURBANCES OF THE INITIAL CONDITIONS OF THE PRECURSORS.

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

DELAYED NEUTRON + LIAPUNOV'S FUNCTION + REACTOR CONTROL + THEORETICAL INVESTIGATION + TRANSFER FUNCTION

6-18963 ALSO IN CATEGORY 9
DAHLBERG RC. + MANGAN D
LINEAR ANALYSIS OF XENON INSTABILITY IN HIGH-TEMPERATURE GAS-COOLED REACTORS
GENERAL DYNAMICS CORP., SAN DIEGO, CALIF. GENERAL ATOMIC DIVISION
GAMD-7213 +. 26 PAGES, REFERENCES, JULY 29, 1966

THE PROBLEM OF SPATIAL XENON STABILITY IN THE HTGR WAS EXAMINED, USING A METHOD DEVELOPED BY J. C. STEWARD. THE SPECIFIC POWER AT WHICH THE HTGR BECOMES UNSTABLE (IN A CLASSICAL SENSE) WITH RESPECT TO XENON OSCILLATIONS WAS COMPUTED AS A FUNCTION OF THE THERMAL GROUP INFINITE MULTIPLICATION CONSTANT, THE HARDNESS OF THE THERMAL SPECTRUM, REACTOR SIZE, AND THE DEGREE OF FLUX FLATTENING. IT WAS FOUND THAT - (1) AN UNSTABLE SITUATION PROBABLY EXISTS IN THE 1000-MW(E) HTGRS OF GREATEST INTEREST, NAMELY, THE HIGH-POWER-DENSITY DESIGNS. (2) THE COLORADO REACTOR APPEARS STABLE AGAINST XENON INSTABILITIES. HOWEVER, IF FLUX FLATTENING IN THE RADIAL DIRECTION IS ACHIEVED, THE STABILITY MARGIN MAY NOT BE LARGE. (3) THE STABILIZING EFFECT OF THE TEMPERATURE COEFFICIENT CAN BE SIGNIFICANT FOR COEFFICIENTS WHICH ARE AS NEGATIVE AS ABOUT -4×10^{-5} TH/DEG C IN THE OPERATING RANGE.

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

REACTOR CONTROL + REACTOR, HIGH TEMP. GAS + XENON + XENON OSCILLATION

6-19091 ALSO IN CATEGORY 5
HARTY H + BATCH JM + PEDERSEN LT + WHEELER RC + FOX JC
ENGINEERING DEVELOPMENT DEPARTMENT QUARTERLY REPORT, JULY-SEPTEMBER 1966
BATTELLE-NORTHWEST, RICHLAND, WASHINGTON. PACIFIC NORTHWEST LABORATORY
BNWL-492 +. 31 PAGES, 6 FIGURES, 6 TABLES, 3 REFERENCES, AUGUST 1967

BLOWDOWN EXPERIMENTS WERE RUN AND ANALYZED BY TWO METHODS. THE CALCULATION MODEL OF MARGOLIS-REDFIELD SHOWED GOOD AGREEMENT IN LIQUID-REMAINING EXPERIMENTAL DATA.

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

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-19091 *CONTINUED*
ACCIDENT, LOSS OF COOLANT + BLOWDOWN + REACTOR, MILITARY + SM 2 (STATIONARY MEDIUM POWER PLANT)

6-19092 ALSO IN CATEGORY 5
PETERSON WD + SPANIER J
HOT-2. A TWO-DIMENSIONAL TRANSIENT HEAT CONDUCTION PROGRAM FOR THE CDC-6600
BETTIS ATOMIC POWER LAB., PITTSBURGH, PA.
WAPD-TM-669 +. 279 PAGES, 10 FIGURES, 2 TABLES, REFERENCES, JUNE 1967

HOT-2 IS A DIGITAL COMPUTER PROGRAM TO SOLVE TWO-DIMENSIONAL PLANE AND AXIALLY SYMMETRIC STEADY-STATE AND TRANSIENT HEAT-CONDUCTION PROBLEMS WITH DIAGONAL BOUNDARIES AND INTERFACES. MESH SPACING (AT MOST 5000 POINTS) IS COMPLETELY VARIABLE. AS MANY AS 99 REGIONS ARE PERMITTED IN ORDER TO DESCRIBE SPATIAL VARIATIONS IN MATERIAL PROPERTIES, HEAT-GENERATION RATES, AND BOUNDARY CONDITIONS. THE HEAT-GENERATION RATE AND BOUNDARY CONDITIONS MAY VARY WITH TIME. THE ALTERNATING-DIRECTION ITERATIVE METHOD IS USED TO SOLVE THE DIFFERENCE EQUATIONS, BOTH FOR TRANSIENT AND STEADY-STATE CALCULATIONS.

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

COMPUTER PROGRAM + HEAT TRANSFER, CONDUCTION

6-19093 ALSO IN CATEGORY 5
BERGLES AE + ROOS JP + BOURNE JG
INVESTIGATION OF BOILING FLOW REGIMES AND CRITICAL HEAT FLUX. QUARTERLY PROGRESS REPORT, AUGUST 1,
1966-MARCH 15, 1967. REPORT NO. 724
DYNATECH CORP., CAMBRIDGE, MASS.
NYO-3304-10 +. 35 PAGES, FIGURES, REFERENCES, JUNE 21, 1967

THE RESULTS OF PRESENT TESTS UTILIZING A CONTROLLABLE ANNULAR MIXER AND A 0.4-IN.-DIAM, 59-IN.-LONG TEST SECTION, CAN BE SUMMARIZED AS FOLLOWS - (1) ADIABATIC-FLOW-REGIME MAPS DIFFER SUBSTANTIALLY FROM DIABATIC-FLOW-REGIME MAPS. HOWEVER, IN THE ADIABATIC CASE, THE ENTERING PHASE DISTRIBUTION IS OF CRITICAL IMPORTANCE IN DETERMINING WHAT THE FLOW REGIME WILL BE AT THE TEST-SECTION EXIT. (2) FOR MINIMUM FLOW-PATTERN DISTORTION, THE STEAM- AND WATER-FEED FLOWS MUST BE CLOSE TO THE SATURATION CONDITION. (3) FLOW-REGIME AND FILM-THICKNESS MEASUREMENTS INDICATE THAT THE ENTERING WATER VELOCITY MUST BE CONTROLLED TO ESTABLISH A FLOW PATTERN COMPARABLE TO THAT WHICH WOULD EXIST IF SUBCOOLED INLET CONDITIONS WERE USED. (4) FILM-FLOW RATE AND CHF BEHAVIOR FOR MIXED-INLET CONDITIONS APPEAR TO BE COMPARABLE TO THAT OBSERVED FOR SUBCOOLED INLET CONDITIONS IF THE MIXER IS PROPERLY ADJUSTED.

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

BURNOUT HEAT FLUX + FLOW STABILITY + FLOW, TWO PHASE

6-19094 ALSO IN CATEGORIES 5 AND 17
MANDEL H
HEAVY WATER ORGANIC COOLED REACTOR. MELTING POINTS, TRANSITION ENERGIES, AND SPECIFIC HEATS OF POLYPHENYL REACTOR COOLANTS
ATOMICS INTERNATIONAL, CANOGA PARK, CALIFORNIA. COMBUSTION ENGINEERING, INC., WINDSOR, CONN. NUCLEAR DIVISION
AI-CE-58 +. 25 PAGES, 15 FIGURES, 2 TABLES, 8 REFERENCES, AUGUST 15, 1967

DIFFERENTIAL SCANNING CALORIMETRY WAS APPLIED TO STUDIES OF THE MELTING BEHAVIOR, TRANSITION ENERGIES, AND SPECIFIC HEAT OF POLYPHENYLS OF INTEREST TO ORGANIC-COOLANT TECHNOLOGY IN THE HEAVY-WATER ORGANIC-COOLED REACTOR PROGRAM. MELTING POINTS AND HEATS OF FUSION WERE DETERMINED FOR THE MAJOR CONSTITUENTS OF POLYPHENYL COOLANTS, NAMELY, BIPHENYL, ORTHO-, META-, AND PARATERPHENYL. THE MELTING CHARACTERISTICS OF TWO SYNTHETIC TERPHENYL BINARIES SIMILAR TO PROPOSED HWOCR COOLANTS (ORTHO-META ISOMER RATIOS OF 2.1 AND 1.2) WERE STUDIED WITH RESPECT TO THE EFFECT OF THE HIGH BOILER (HB) FRACTION, AND OF PARATERPHENYL ON THE MELTING TRANSITION RANGE. THE EFFECT OF HB ADDITION ON THE TWO BINARY MIXTURES IS BOTH TIME AND CONCENTRATION DEPENDENT IN THAT THE OBSERVED CRYSTALLINITY OF THE SAMPLES DECREASES WITH INCREASED HB ADDITION, AND INCREASES WITH TIME. THE ADDITION OF PARATERPHENYL INCREASES THEIR FINAL MELTING POINT. THE CALORIMETRIC CAPABILITIES WERE ALSO UTILIZED IN THE MEASUREMENT OF THE SPECIFIC HEATS OF SOLID BIPHENYL, ORTHO-, AND PARATERPHENYL.

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

ORGANIC COOLANT + PROPERTY, PHYSICAL + REACTOR, ORGANIC COOLED

6-19095 ALSO IN CATEGORY 5
HEALY JE
FLUID-PARTICLE HEAT TRANSFER COEFFICIENTS IN PACKED AND FLUIDIZED BEDS. A COMPARISON OF THE USE OF PERIODIC AND NON-PERIODIC INPUTS
RENSSELAER POLYTECHNIC INST., TROY, N.Y. DEPT. OF CHEMISTRY
RPI-3639-3 +. 125 PAGES, REFERENCES, MAY 1967

CATEGORY 6
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-19095 *CONTINUED*

THE-USE OF PULSE AND STEP TEMPERATURE INPUTS WAS INVESTIGATED TO OBTAIN THE FREQUENCY RESPONSE OF PACKED AND FLUIDIZED BEDS OF COPPER (DP = 0.0282 AND 0.0427 IN.) AND GLASS (DP = 0.0179 IN.) PARTICLES USING AIR AS THE FLUID. A 2-INCH-DIAM COLUMN WAS USED, AND DATA WERE TAKEN OVER THE PARTICLE REYNOLDS NUMBER RANGE OF 4 TO 55. THE AGREEMENT IN THE RESULTS FROM PERIODIC, PULSE, AND STEP TESTING WAS GENERALLY GOOD, EXCEPT WHERE THE FREQUENCY CONTENT OF THE PULSE OR STEP WAS SMALL (HIGH FREQUENCY AND/OR LOW AMPLITUDE RATIO). THE STEADY-STATE PERIODIC METHOD GAVE SUPERIOR ACCURACY IN THE HIGH-FREQUENCY RANGE, WHILE THE STEP IS BEST USED AT VERY LOW FREQUENCIES. AT INTERMEDIATE FREQUENCIES, ALL THREE INPUTS PRODUCED COMPARABLE RESULTS.

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

*FLOW THEORY AND EXPERIMENTS + *FLUIDIZED BED + FREQUENCY SPECTRA + PRESSURE DROP + TRANSFER FUNCTION

6-19096

ALSO IN CATEGORY 5

KENNISON RG

RVIB, A COMPUTER PROGRAM FOR FLOW INDUCED SELF EXCITED VIBRATION OF A BLADE SUSPENDED IN A FLOW CHANNEL KNOLLS ATOMIC POWER LAB., SCHENECTADY, N.Y.

KAPL-M-6721 +. 24 PAGES, 2 REFERENCES, JUNE 12, 1967

PRESENTS A COMPUTER PROGRAM FOR ANALYSIS OF FLOW-INDUCED SELF-EXCITED VIBRATION OF A BLADE SUSPENDED IN A FLOW CHANNEL. THE PROGRAM MAY BE APPLIED TO BLADE-TYPE CONTROL RODS AND OTHER SIMILAR STRUCTURES. THE PROGRAM IS WRITTEN FOR THE CDC 6600 COMPUTER AND DOES NOT REQUIRE SPECIALIZED SUBROUTINES. THE OUTPUT IDENTIFIES ALL REGIONS OF STATIC AND DYNAMIC INSTABILITY AND DEFINES THE FLOW-FREQUENCY BOUNDARY BETWEEN THE DAMPED AND DIVERGENT VIBRATION REGIONS. THE PROGRAM IS BASED ON THE ANALYSES REPORTED IN KAPL-M-6559 (RGK-20), JUNE 3, 1966, THEORETICAL ANALYSIS OF FLOW-INDUCED VIBRATION OF A BLADE SUSPENDED IN A FLOW CHANNEL (MAY 26, 1966, R. G. KENNISON AND D. R. MILLER).

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

*TURBINE BLADE, VIBRATION + COMPUTER PROGRAM + VIBRATION ANALYSIS

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-16406

VILES FJ + YODER RE + REIST PC + FIRST MW

AIR CLEANING STUDIES PROGRESS REPORT FOR JULY 1, 1964 TO AUGUST 31, 1965.

HARVARD AIR CLEANING LAB., BOSTON, MASSACHUSETTS

NYO-841-4 +. 99 PAGES, 17 FIGURES, 14 TABLES, 49 REFERENCES

AIR-BORNE CONTAMINANTS EMITTED FROM NUCLEAR REACTORS DURING NORMAL OPERATIONS OR AFTER AN ACCIDENT MAY BE HIGHLY RADIOACTIVE AND REQUIRE VERY RELIABLE CONTROL TO ENSURE NEGLIGIBLE EXPOSURES TO WORKERS AND THE PUBLIC. ALTHOUGH CONSIDERABLE PROGRESS HAS BEEN MADE IN DEFINING THE NATURE AND STATE OF THESE CONTAMINANTS AND SUITABLE METHODS FOR THEIR CONTROL, FURTHER RESEARCH IS REQUIRED TO DEVELOP MORE EFFICIENT AND ECONOMICAL MEANS OF CONTROL FOR THE VARIOUS CONDITIONS THAT MAY BE ENCOUNTERED IN PRACTICE. THIS PROGRESS REPORT CONTAINS A BRIEF REVIEW OF PROBLEMS AND SUGGESTED AREAS FOR INVESTIGATIONS ASSOCIATED WITH THE REMOVAL OF TWO PRINCIPAL CONTAMINANTS (KRYPTON-85, IODINE-131 AND ITS COMPOUNDS) FROM REACTOR ATMOSPHERES. ALSO INCLUDED ARE BRIEF DISCUSSIONS OF PROJECTS IN PROGRESS. TOPICAL REPORTS ARE TO BE ISSUED AT THE END OF THESE STUDIES.

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

*AEROSOL + *AIR CLEANING + *FILTER + *FILTER, TRAP + *IODINE + *NOBLE GAS + CHARCOAL + DIFFUSION BOARD + ELECTROSTATIC PRECIPITATION + FIRE + FLUIDIZED BED + FOAM + KRYPTON + METAL, LIQUID + PARTICLE SIZE + SODIUM

7-16924

ALSO IN CATEGORY 12

LUBY CS

INFLUENCE OF IRRADIATION TEMPERATURE ON THE RADIATION STABILITY OF COATED PARTICLE FUEL

GENERAL ATOMIC DIVISION OF GENERAL DYNAMICS, SAN DIEGO, CALIF.

GA-7226 +. 24 PAGES, 14 FIGURES, 1 TABLE, 6 REFERENCES, DECEMBER 1, 1966, ANS TRANS 9(2) PAGE 422 (1966)

THE TESTS AND IRRADIATION CAPSULES WERE DESIGNED SO THAT THE IRRADIATION PARAMETERS COULD BE MEASURED AND CLOSELY CONTROLLED. THE COATED PARTICLES USED IN THE STUDIES CONSISTED OF TWO-LAYER (BISO) AND THREE-LAYER (TRIPLEX) PYROLYTIC-CARBON COATINGS ON THORIUM AND/OR URANIUM CARBIDE OR OXIDE FUEL PARTICLES. IT IS CONCLUDED THAT THE TEMPERATURE OF IRRADIATION IS ONE OF THE MOST IMPORTANT PARAMETERS INFLUENCING COATED-PARTICLE FUEL STABILITY UNDER IRRADIATION. THIS IS BELIEVED TO BE DUE TO THE INCREASE IN FISSION-GAS PRESSURE ACTING ON THE COATING. THICKER COATINGS ARE REQUIRED FOR HIGH-TEMPERATURE OPERATION. THE STUDIES ALSO DEMONSTRATED THAT COATED PARTICLES WITH TWO- AND THREE-LAYER PYROLYTIC-CARBON COATINGS AND ADEQUATE FUEL CONTENTS HAVE GOOD STABILITY WELL BEYOND THE TEMPERATURES ANTICIPATED IN AN HTGR.

*CARBIDE + *CARBON + *COATED PARTICLE + *FAST NEUTRON + *HIGH TEMPERATURE + *INTEGRITY + *PYROLYTIC + *RADIATION DAMAGE + *REACTOR, HIGH TEMP. GAS + *THORIUM + *URANIUM + FISSION PRODUCT RETENTION

7-17124

ALSO IN CATEGORY 17

MINER D + FLETCHER WD + KITZES AS + TAYLOR GR

A FACILITY FOR THE PERFORMANCE EVALUATION OF FULL SIZE CHARCOAL FILTERS IN REMOVING RADIO-IODINE

WESTINGHOUSE ELECTRIC CORPORATION, ATOMIC POWER DIVISION, PITTSBURGH, PA.

CONF-670-713 +. 22 PAGES, 13 FIGURES, ABSTRACT IN ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 1, (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

TRANSPORTABLE FACILITY TESTS IN A CLOSED LOOP UP TO 1000 CFM WITH SATURATED WATER VAPOR AT 320 F AND 100 PSIG. METHYL IODIDE TRACED WITH I-131 IS INJECTED WITH NITROGEN. METHYL IODIDE IS DETECTED WITH A GAS CHROMATOGRAPH AND AN ELECTRON-CAPTURE DETECTOR (MIN. SENSITIVITY, 3 MG/CU. METER). ACTIVITY IS DETECTED ON MOLECULAR-SIEVES AND CHARCOAL WITH A WELL-TYPE SCINTILLATION DETECTOR (MIN. SENSITIVITY, 5 TIMES 10 TO THE MINUS 5TH MICROCURIE/LITER).

*CHARCOAL + *FILTER + *SYSTEM DESCRIPTION + *TEST, FILTER + ORGANIC IODIDE + REACTOR, POWER

7-17125

ALSO IN CATEGORIES 17 AND 15

DRAPER WE

EFFLUENT AND FILTER MONITOR SYSTEM

GENERAL DYNAMICS, FORT WORTH DIVISION

CONF-670-713 + FZK-336 +. 36 PAGES, 7 FIGURES, 2 TABLES, 13 REFERENCES, ABSTRACT IN ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 1, (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

THE 10,000-CFM GTR TEST-CELL VENTILATION AIR IS PASSED THROUGH HIGH-EFFICIENCY AND CHARCOAL FILTERS (INSTALLED SEPT. 1966) AND EXHAUSTED UP A STACK. INITIAL CHARCOAL INSTALLED-TESTS WITH R12 WERE UNSATISFACTORY BECAUSE OF ALMOST INSTANTANEOUS BREAKTHROUGH AT 50 FT/MIN. BANANA OIL WAS USED. QUARTERLY TESTS ARE MADE WITH ELEMENTAL IODINE IN THE LAB ON A CHARCOAL SAMPLE. THE BANANA-OIL TEST IS USED EACH TIME THE FILTER IS DISTURBED. THE MONITORING SYSTEM ALARMS WHEN EITHER I-131 OR AR-41 REACHES A STACK CONCENTRATION (ALSO THE MINIMUM DETECTABLE) EQUIVALENT TO 1 MPC OFF-SITE. SAMPLE AIR PASSES THROUGH CHARCOAL TRAP (WITH BETA-GAMMA COINCIDENCE FOR I-131) TO A HOLDUP VOLUME (WITH TWO SOLID-STATE DETECTORS FOR AR-41).

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-17125 *CONTINUED*

*ARGON + *FISSION PRODUCT, IODINE + *MONITOR, RADIATION, STACK + *SYSTEM DESCRIPTION + REACTOR, AEC OWNED + REACTOR, TEST

7-17193 ALSO IN CATEGORIES 11 AND 5
COTTRELL WB

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

ORNL-TM-1913 +. 79 PAGES, 7 FIGURES, 11 TABLES, JULY 10, 1967

INCLUDED IS WORK ON VARIOUS CHEMICAL REACTIONS, AS WELL AS RELEASE, CHARACTERIZATION, AND TRANSPORT OF FISSION PRODUCTS IN CONTAINMENT SYSTEMS UNDER VARIOUS ACCIDENT CONDITIONS AND ON PROBLEMS ASSOCIATED WITH REMOVING THESE FISSION PRODUCTS FROM GAS STREAMS. ALTHOUGH MOST OF THE WORK CONTINUES TO BE IN GENERAL SUPPORT OF WATER POWER REACTOR TECHNOLOGY, INCLUDING SOME IN DIRECT SUPPORT OF THE LOFT AND CSE PROGRAMS, SEVERAL PROJECTS ARE CONDUCTED IN SUPPORT OF THE HIGH-TEMPERATURE GAS-COOLED REACTOR (HTGR) PROGRAM, INCLUDING BOTH IN-PILE AND OUT-PILE STUDIES OF THE REACTION RATES AND FISSION PRODUCT RELEASE AND TRANSPORT PHENOMENA. OTHER MAJOR PROJECTS INCLUDE FUEL TRANSPORT SAFETY INVESTIGATIONS, A SERIES OF DISCUSSION PAPERS ON VARIOUS ASPECTS OF WATER REACTOR TECHNOLOGY, ANTISEISMIC DESIGN OF NUCLEAR FACILITIES, AND STUDIES OF PRESSURE VESSEL TECHNOLOGY. EXPERIMENTAL WORK ON PRESSURE VESSEL TECHNOLOGY INCLUDES INVESTIGATIONS OF THE ATTACHMENT OF NOZZLES TO SHELLS AND THE IMPLEMENTATION OF THIS JOINT AEC-PURC PROGRAM ON HEAVY SECTION STEEL TECHNOLOGY AND NUCLEAR PIPING PUMPS AND VALVES. SEVERAL PROJECTS DEAL WITH DEVELOPMENT OF ENGINEERING SAFEGUARDS AND THE ESTABLISHMENT OF RELEVANT CODES AND STANDARDS, WHILE ANOTHER TASK (CHORDS) DEALS WITH ESTABLISHMENT OF COMPUTER PROGRAMS FOR EVALUATING REACTOR DESIGN DATA. RECENT ACTIVITIES OF THE NSIC AND THE NUCLEAR SAFETY JOURNAL ARE ALSO DISCUSSED.

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

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

7-17311:

DAVIS RE

PATTERNS OF AEROSOL PARTICLES SETTLING IN STREAMLINE FLOW IN A STRAIGHT HORIZONTAL TUBE
AEC, HEALTH AND SAFETY LABORATORY + UKAFA, WINFRITH
2 PAGES, 2 REFERENCES, ATMOSPHERIC ENVIRONMENT 1(1), PAGES 69-70 (1967)

DISCUSSION OF JOURNAL ARTICLES. WE AGREE THAT THE MOST SIGNIFICANT PART OF OUR WORK IS THE POSSIBILITY OF MEASURING PARTICLE DENSITY BY MEANS OF THE SETTLING PATTERN. TO ACHIEVE THIS AIM, WE HAVE NOW DEVELOPED EQUATIONS WHICH EXPLICITLY GIVE THE SETTLING VELOCITY AS A FUNCTION OF THE TUBE DIAMETER, TUBE LENGTH, FLOW RATE, AND QUANTITY, WHICH IS THE FRACTION OF TUBE DIAMETER THE TOP OF THE CLOUD HAS SETTLED ALONG THE TUBE VERTICAL CENTERLINE. DETAILS OF THE METHOD, WITH EXPERIMENTAL CONFIRMATION, ARE GIVEN IN A NEW PAPER BY THE AUTHORS AND WILL BE PUBLISHED IN THE AMERICAN INDUSTRIAL HYGIENE ASSOCIATION JOURNAL.

*AEROSOL + *DEPOSITION + COMPARISON, THEORY AND EXPERIENCE

7-17312

SILVERMAN I. + MCGREEVY G

APPLICATION OF THE POLLAK-NOLAN NUCLEUS COUNTER TO THE ROUTINE TESTING OF AIR FILTERS
HARVARD SCHOOL OF PUBLIC HEALTH, BOSTON, MASS.

10 PAGES, 7 FIGURES, 4 TABLES, 9 REFERENCES, ATMOSPHERIC ENVIRONMENT 1(1) PAGES 1-10 (1967)

THE POLLAK-NOLAN NUCLEUS COUNTER APPEARS SUITABLE FOR QUANTITATIVE MEASUREMENT OF FILTER EFFICIENCY ON A COUNT BASIS, PROVIDED THAT THE NATURE OR CONCENTRATION OF THE PARTICLES IS NOT SUCH THAT SPONTANEOUS CONDENSATION TAKES PLACE IN THE COUNTER WHEN THE AEROSOL IS INTRODUCED. FOR QUALITATIVE TESTING, THE COUNTER WOULD BE USEFUL EVEN IN THOSE CASES WHERE SPONTANEOUS CONDENSATION DOES OCCUR.

*AEROSOL + *AIR CLEANING + *FILTER + *FILTER EFFICIENCY + FILTER, FIBER + FILTER, GLASS + FILTER, PAPER + PARTICLE SIZE + PARTICLE SIZE DISTRIBUTION + TEST, FILTER + TEST, FILTER SYSTEM

7-17315

FILTER FOR REMOVING DUST AND MIST ON ONE STEP

1 PAGE, 1 FIGURE, CHEMICAL AND ENGINEERING NEWS 45(10) PAGE 52 (MARCH 6, 1967)

FILTER REMOVES DUST AND MIST IN ONE STEP. SYSTEM FOR FILTERING PLANT EXHAUST GASES. THE FILTER, DESIGNED TO REMOVE MIXTURES OF SUBMICRON DUSTS AND MISTS FROM PLANT EXHAUST GASES, USES AN IRRIGATED, FELTED FIBER PAD. THE COMMERCIAL-INSTALLATION DESIGN IS FOR A 56,000-C.F.M. FILTER WITH A HOUSING OF GLASS-FIBER-REINFORCED POLYESTER RESIN. THE FILTER HAS BEEN QUOTED AT \$36,500. ESTIMATES PUT A PRICE OF \$100,000 ON AUXILIARIES--A LIQUOR SPRAY RECIRCULATION SYSTEM, GAS BLOWER, AND NECESSARY DUCT WORK. THIS PRICE ALSO INCLUDES STRUCTURAL WORK FOR PUTTING THE UNIT AT A HEIGHT OF 100 FEET TO MATCH ASSOCIATED EQUIPMENT.

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-17315 *CONTINUED*
*FILTER SYSTEM + *MIST + *PARTICULATE + AEROSOL + FILTER, FIBER + OXIDE + TITANIUM

7-17320
BAFFIGO V + GEREVINE T
STUDY OF FISSION GAS RELEASE FROM UO₂ SAMPLES IRRADIATED AT VARIOUS DOSES. ANNUAL REPORT, NOVEMBER 1, 1965-OCTOBER 31, 1966, SPECIAL REPORT NO. 1
SOCIETA RICERCHE IMPIANTI NUCLEARI, SALUGGIA, ITALY. CENTRO RICERCHE NUCLEARI
EURAC-1802 + EUR-3343 +. 20 PAGES

SCOPE OF THE RESEARCH IS TO STUDY THE DEPENDENCE UPON THE IRRADIATION DOSE OF THE D
COEFFICIENT OF XENON DIFFUSION IN UO₂, AS MEASURED IN POSTIRRADIATION ANNEALING EXPERIMENTS.
THIS PHENOMENON WAS RECENTLY OBSERVED BOTH IN UO₂ SINTERS (ALSO WITHIN EURATOM-USAEC CONTRACT
NO. 021-60-9RDI) AND IN SINGLE CRYSTALS. THE MEASUREMENTS WERE MADE ON UO₂ PELLETS,
IRRADIATED UP TO DOSES WITHIN A FEW MWD/T AND ABOUT 8000 MWD/T AND ON FUSED UO₂ SAMPLES OF
FOUR DIFFERENT ORIGINS, IRRADIATED UP TO DOSES WITHIN A FEW MWD/T AND ABOUT 2000 MWD/T.

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

*FISSION GAS RELEASE + *IRRADIATION TESTING + *URANIUM DIOXIDE + DIFFUSION COEFFICIENT + FUEL BURNUP +
MEASUREMENT, TEMPERATURE + XENON

7-17321
KELLER JH + DUCE FA + CAPTAN FO
RETENTION OF IODINE ON SELECTED PARTICULATE FILTERS AND A POROUS SILVER MEMBRANE BEING CONSIDERED FOR THE
LOFT MAYPACK
IDAHO NUCLEAR CORP., NATIONAL REACTOR TESTING STATION, IDAHO FALLS, IDAHO
IN-1078 +. 11 PAGES, 3 REFERENCES, MAY, 1967

DATA ARE PRESENTED FOR THE RETENTION OF IODINE BY THREE PARTICULATE FILTERS AND A POROUS
SILVER MEMBRANE AT ROOM TEMPERATURE. THE MEASURED IODINE RETENTIONS ARE A FUNCTION OF THE
WEIGHT OF IODINE INCIDENT ON THE FILTERS. THE PARTICULATE FILTERS RETAINED A LARGER
PERCENTAGE OF THE INCIDENT IODINE AT LOW IODINE EXPOSURES. THE POROUS SILVER MEMBRANE,
THOUGH A GOOD IODINE TRAP, LOST ITS HIGH RETENTION EFFICIENCY AT LOW IODINE EXPOSURES.

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

*FILTER + *FILTER, MEMBRANE + *FISSION PRODUCT RETENTION + *IODINE + *PARTICULATE + CHARCOAL +
FILTER EFFICIENCY + FILTER, MAY PACK + LOFT (LOSS OF FLUID TEST) + ORGANIC IODIDE +
REACTOR, PRESSURIZED WATER + SILVER + SORPTION

7-17322
MILLER CE + BROWNING WE
THE ADEQUACY OF SCALE-UP IN EXPERIMENTS ON FISSION PRODUCT BEHAVIOR IN REACTOR ACCIDENTS. PART II.
RECOMMENDED ADDITIONAL NUCLEAR SAFETY SCALE-UP EXPERIMENTS
OAK RIDGE NATIONAL LAB., REACTOR CHEMISTRY DIVISION, TENN.
ORNL-4021 +. 33 PAGES, 13 FIGURES, 1 TABLE, 9 REFERENCES, DECEMBER, 1966

WE CONCLUDED IN A PREVIOUS REPORT (ORNL-3901) THAT SCALING OF EXPERIMENTS ON FISSION-PRODUCT
RELEASE AND TRANSPORT IN THE U.S. NUCLEAR SAFETY PROGRAM DOES NOT SEEM ADEQUATE IN THAT A
VERY LARGE EXTRAPOLATION WILL BE NECESSARY TO COMPARE PRESENTLY AVAILABLE DATA TO THAT
OBTAINED FROM LOFT. IN THIS REPORT WE PROPOSE TWO EXPERIMENTS AT ONE AND TEN PERCENT THE
SIZE OF LOFT (BASED ON THE MASS OF FUEL) IN ORDER TO FILL THE GAP IN SCALING. WITH THE
ADDITION OF EXPERIMENTS AT THESE TWO SCALE LEVELS, THE SCALING RANGE OF EXPERIMENTS ON
FISSION-PRODUCT BEHAVIOR WILL UNIFORMLY COVER FIVE ORDERS OF MAGNITUDE BETWEEN SMALL-SCALE
EXPERIMENTS AND LOFT.

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

*FISSION PRODUCT RELEASE, GENERAL + *FISSION PRODUCT TRANSPORT + *FUEL MELTDOWN +
*RESEARCH AND DEVELOPMENT PROGRAM + *URANIUM DIOXIDE + CSE (CONTAINMENT SYSTEMS EXPERIMENT) +
IN PILE EXPERIMENT + LOFT (LOSS OF FLUID TEST) + PBF (POWER BURST FACILITY)

7-17323
BROOKS HR + FRENCH RL
FIZDIZ. A FORTRAN IV COMPUTER PROGRAM FOR CALCULATING THE DIFFUSION OF RADIOACTIVE FISSION GASES FROM A
HOLE IN A REACTOR FUEL ELEMENT
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, SELLAFIELD, ENGLAND
PG-REPORT-778 +. 19 PAGES, 2 FIGURES, 2 REFERENCES, 1967

FIZDIZ IS AN IBM 7090 PROGRAM WRITTEN IN FORTRAN IV, WHICH CALCULATES THE DIFFUSION OF
RADIOACTIVE FISSION GASES ALONG THE INTERSPACE AND OUT OF A HOLE IN A REACTOR FUEL ELEMENT.

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

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-17323 *CONTINUED*
*COMPUTER PROGRAM + *DIFFUSION + *FISSION GAS RELEASE + *FUFL ELEMENT + ANALYTICAL MODEL +
DIFFUSION COEFFICIENT + FISSIION PRODUCT RELEASE, GENERAL

7-17324 ALSO IN CATEGORY 11
RAINEY RH
CRITERIA FOR NOBLE-GAS REMOVAL USING PERMSELECTIVE MEMBRANES
OAK RIDGE NATIONAL LAB., TENN.
ORNL-TM-1822 +. 7 PAGES, 2 FIGURES, 4 REFERENCES, APRIL 3, 1967

CRITERIA WERE DEFINED FOR EXPERIMENTS DESIGNED TO DEVELOP A PROCESS FOR REMOVING NOBLE GASES FROM A REACTOR CONTAINMENT SHELL UNDER ACCIDENT CONDITIONS. THE EFFECT OF THESE CRITERIA ON THE PRECESSING RATE OF THE GAS IN THE CONTAINMENT SHELL WAS CALCULATED. WHEN THE CHARACTERISTICS OF THE PERMSELECTIVE MEMBRANES (SILICONE RUBBER) TO BE USED IN THIS PROGRAM HAVE BEEN DETERMINED, THE PROCESSING RATES WILL BE USED TO ESTABLISH EQUIPMENT SIZE, AND PROCESSING COSTS. THE TOTAL COST WILL THEN BE COMPARED WITH THE COST OF THE DOWNTIME OF THE REACTOR.

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

*CONTAINMENT, GENERAL + *FILTER, MEMBRANE + *FISSION PRODUCT RETENTION + *NOBLE GAS + DESIGN CRITERIA +
DESIGN STUDY + ECONOMICS + KRYPTON + REACTOR, WATER + XENON

7-17325
CASTLEMAN AW + TANG IN
VAPORIZATION OF FISSION PRODUCTS FROM IRRADIATED FUELS - I. EXPERIMENTAL METHOD AND GENERAL
FISSION-PRODUCT BEHAVIOR
BROOKHAVEN NATIONAL LAB., UPTON, NEW YORK
6 PAGES, 2 FIGURES, 1 TABLE, 13 REFERENCES, NUCLEAR SCIENCE AND ENGINEERING 29(2), PAGES 159 THRU 164,
(AUGUST, 1967)

REPORTS THE RESULTS OF AN EXPERIMENTAL STUDY OF THE BEHAVIOR OF FISSION PRODUCTS RELEASED FROM METALLIC URANIUM AND A U-3.5% MO ALLOY INTO HELIUM AND AIR. A THERMOCHROMATOGRAPHIC TECHNIQUE FOR INVESTIGATING THE NATURE OF LOW-CONCENTRATION GAS SPECIES IS DESCRIBED AND APPLIED TO THE RELEASE OF BA, LA, CE, AND MO FROM IRRADIATED FUELS. BA, LA, AND CE, WHICH DEPOSIT AT HIGH TEMPERATURE IN HE, ARE NOT SIGNIFICANTLY RELEASED INTO AIR BECAUSE OF THE LOW VOLATILITY OF THEIR RESPECTIVE OXIDES. MO, WHICH IS QUITE NONVOLATILE IN HE, IS RELEASED AS MOO3 IN AIR.

*ALLOY + *ANALYTICAL TECHNIQUE, GENERAL + *FISSION PRODUCT RELEASE, GENERAL + *FUEL ELEMENT + *MOLYBDENUM +
*URANIUM + AIP + BARIUM + CERIUM + HELIUM + HIGH TEMPERATURE + LANTHANUM + OXIDE

7-17327 ALSO IN CATEGORIES 13 AND 14
MISHIMA J
PLUTONIUM RELEASE STUDIES I. RELEASE FROM THE IGNITED METAL
BATTELLE-NORTHWEST, RICHLAND, WASHINGTON. PACIFIC NORTHWEST LAB.
BNWL-205 +. 26 PAGES, FIGURES, TABLES, REFERENCES, DECEMBER 13, 1965

SIX PLUTONIUM RODS, 1/4-INCH IN DIAMETER AND 3/4-INCHES LONG, WERE IGNITED IN DRY AIR AT TEMPERATURES RANGING FROM 410 TO 650 C. AIR DRAWN OVER THE SPECIMENS AT VELOCITIES RANGING FROM 3.3 TO 50 CM/SEC WAS EXAMINED FOR PARTICULATE PLUTONIUM OXIDE. PLUTONIUM OXIDE ENTRAINMENT RANGED FROM 3×10 TO THE MINUS 6TH TO 5×10 TO THE MINUS 5TH %. THE ENTIRE OXIDE PRODUCED WAS SUBSEQUENTLY SIZED BY ELUTRIATION-SIEVING. THE QUANTITY OF PARTICULATE MATERIAL LESS THAN 15 MICRONS DEPENDED ON THE MECHANICAL WORK USED IN SIZING THE PARTICLES. INCREASING PARTICLE SIZE IS FOUND WITH INCREASING OXIDATION TEMPERATURES. THE AMOUNT AND RATE OF RELEASE UNDER ANY STATED CONDITIONS DEPENDS ON FRIABILITY AND THE FORCES TO WHICH THE OXIDE MASS IS SUBJECTED. RESULTS OF THIS STUDY WERE COMPARED WITH OTHER DATA RELATING TO PARTICLE SIZE AND FRACTIONAL RELEASE FROM IGNITED PLUTONIUM. REASONABLE AGREEMENT WAS NOTED.

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

*AIRBORNE RELEASE + *IGNITION + *PLUTONIUM + OXIDATION + PARTICLE SIZE + PARTICLE SIZE DISTRIBUTION +
PLUTONIUM OXIDE + THERMAL CONSIDERATION

7-17328
POSTMA AK
RELEASE OF NOBLE GASES FROM AQUEOUS SOLUTION
BATTELLE-NORTHWEST, RICHLAND, WASHINGTON. PACIFIC NORTHWEST LAB.
BNWL-CC-484 +. 12 PAGES, JANUARY 10, 1966

THE RELEASE RATE OF A NOBLE GAS FROM WATER SOLUTION WAS STUDIED FROM A MASS-TRANSFER STANDPOINT. THE FACTOR WHICH CONTROLS THE RELEASE RATE IS THE RATE OF SURFACE RENEWAL, OR EQUIVALENTLY, THE LIQUID FILM COEFFICIENT, K-SUB-L. THE NUMERICAL VALUE OF K-SUB-L DEPENDS ON THE DEGREE OF MIXING IN THE LIQUID, HENCE CANNOT BE ACCURATELY PREDICTED FOR MOST PRACTICAL SITUATIONS. EXPERIMENTAL MEASUREMENTS OF OTHERS ARE USED TO ARRIVE AT EXPECTED LIMITS ON THE TIME OF RELEASE. EXPERIMENTS ARE BRIEFLY DESCRIBED WHICH WOULD ALLOW A MORE

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-17328 *CONTINUED*

ACCURATE PREDICTION OF RELEASE TIME FOR A GIVEN WATER BASIN.

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

*FISSION GAS RELEASE + *NOBLE GAS + *REACTOR, WATER + *RELEASE RATE + *WATER, GENERAL + *ACCIDENT ANALYSIS + *COMPARISON, THEORY AND EXPERIENCE + *KRYPTON + *MASS TRANSFER + *XENON

7-17329 ALSO IN CATEGORY 19

GOOD EG

FISSION PRODUCT BEHAVIOR LITERATURE REVIEW

PHILLIPS PETROLEUM CO., IDAHO FALLS, IDAHO. ATOMIC ENERGY DIVISION

ID0-17237 +. 24 PAGES, REFERENCES, FEBRUARY, 1967

A LITERATURE SURVEY WAS MADE OF THE DATA ON FISSION-PRODUCT RELEASE, TRANSPORT, AND DEPOSITION. THIS REPORT PRESENTS A BIBLIOGRAPHY OF THE LITERATURE THAT APPEARS APPLICABLE TO THE DEVELOPMENT OF ANALYTICAL METHODS FOR CALCULATING FISSION-PRODUCT BEHAVIOR FOLLOWING A LOSS-OF-COOLANT ACCIDENT INVOLVING A WATER-COOLED UO₂-FUELED REACTOR.

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

*BIBLIOGRAPHY + *DEPOSITION + *FISSION PRODUCT RELEASE, GENERAL + *FISSION PRODUCT TRANSPORT + *ACCIDENT, LOSS OF COOLANT + *REACTOR, WATER + *URANIUM DIOXIDE

7-17330 ALSO IN CATEGORY 13

SMITH SR + WEST DL

DETERMINATION OF VOLATILE COMPOUNDS OF FISSION-PRODUCT IODINE

SAVANNAH RIVER LABORATORY, E.I. DUPONT DE NEMOURS AND CO., AIKEN, SOUTH CAROLINA

3 PAGES, 1 FIGURE, 3 TABLES, 6 REFERENCES, NUCLEAR APPLICATIONS 3(1), PAGES 43 THRU 45, (JANUARY, 1967)

ORGANIC IODIDES, PRESUMABLY DERIVED FROM INTERACTION BETWEEN FISSION-PRODUCT IODINE AND PROCESS SOLVENT, WERE DETECTED AND IDENTIFIED BY GAS CHROMATOGRAPHY IN THE EXHAUST AIR FROM THE PUREX PROCESS AT THE SAVANNAH RIVER PLANT. THREE OF TEN PEAKS OBTAINED WERE TENTATIVELY IDENTIFIED AS ALKYL IODIDES BY THE BEHAVIOR OF THE DETECTED COMPOUNDS AND THE RELATIVE RESPONSE OF AN ELECTRON ABSORPTION DETECTOR VS A FLAME IONIZATION DETECTOR.

*AIRBORNE RELEASE + *ANALYTICAL TECHNIQUE, GAS + *FUEL REPROCESSING + *ORGANIC IODIDE + *CHROMATOGRAPHY + *RADIOCHEMICAL PROCESSING + SAVANNAH RIVER PLANT

7-17347

WHITBY KT + LUNDGREN DA

MECHANICS OF AIR CLEANING

UNIVERSITY OF MINNESOTA + PENNSYLVANIA STATE UNIVERSITY

5 PAGES, 9 FIGURES, 2 TABLES, TRANSACTIONS OF AMERICAN SOCIETY OF AGRICULTURAL ENGINEERS 8(3), PAGES 342-344 AND 351-352, (1965)

THIS PAPER REVIEWS THE PRINCIPAL AIR-CLEANING MECHANISMS AND PRESENTS WHAT IS BELIEVED TO BE THE BEST WORKING EQUATIONS FOR CALCULATING THE CONTRIBUTIONS OF THE VARIOUS MECHANISMS. RESULTS OF CALCULATIONS OF THE CONTRIBUTION OF EACH OF THE IMPORTANT MECHANISMS TO THE COLLECTION OF AIR-BORNE DUST ARE PRESENTED FOR FOUR FILTERS OF DIFFERENT PERFORMANCE RANGES.

*AIR CLEANING + *THEORETICAL INVESTIGATION + *AEROSOL PROPERTIES + *COMPARISON, THEORY AND EXPERIENCE + *DESIGN CRITERIA + *FILTER EFFICIENCY + *FILTER THEORY, IMPACTION + *FILTER THEORY, INTERCEPTION + *FILTER, ABSOLUTE + *FILTER, ELECTROSTATIC + *FILTER, FIBER + *FILTER, HIGH EFFICIENCY + *FILTER, ROUGHING + *PRESSURE DROP

7-17369 ALSO IN CATEGORY 17

MCCORD RV + CORBETT BL

TARGET ROD CLAD RUPTURE DETECTION

OAK RIDGE NATIONAL LAB., TENN.

ORNL-TM-1895 +. 7 PAGES, 1 FIGURE, 1 TABLE, PAGES 20-26 OF HIGH FLUX ISOTOPE REACTOR QUARTERLY REPORT, JANUARY, FEBRUARY, AND MARCH OF 1967

(PAGES 20-26) CLADDING FAILURES ON TRANSPLUTONIUM-ISOTOPE-PRODUCTION RODS WERE DISCOVERED AS A RESULT OF ROUTINE MANUAL SAMPLING OF THE PRIMARY WATER SYSTEM AND ANALYZING FOR ALPHA ACTIVITY. THE SYSTEM BETA-GAMMA MONITORS GAVE NO INDICATION. INDIVIDUAL RODS WERE TESTED BY PLACING THEM IN A CLOSED WATER LOOP CONTAINING A SMALL DEMINERALIZER. RESIN WAS CHANGED AFTER EACH RUN AND A GAMMA SPECTRUM ANALYSIS MADE. ALL RODS SUSPECTED OF LEAKING FISSION PRODUCTS WERE REMOVED FOR HOT-CELL INSPECTION. FOUR FAILURES WERE VERIFIED. THE PRIMARY ALPHA SOURCE IS CM-244 IN PARTICULATE FORM. REMOVAL OF THE CM BY DEMINERALIZERS IS NOT EFFECTIVE, AND FILTERS WITH 5-MICRON PORES WILL BE TRIED.

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

*FAILURE, CLADDING + *OPERATING EXPERIENCE + *ALPHA EMITTER + *ANALYTICAL TECHNIQUE, GENERAL + *CURIUM +

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-17369 *CONTINUED*

FISSION PRODUCT RELEASE, GENERAL + HFIR (HIGH FLUX ISOTOPE REACTOR) + MAIN COOLING SYSTEM + MEASUREMENT, GENERAL + OPERATIONS REPORT, GENERAL + REACTOR, AEC OWNED + REACTOR, FLUX TRAP + REACTOR, RESEARCH + REACTOR, TEST

7-17374 ALSO IN CATEGORIES 13 AND 17

UNITED NUCLEAR FUEL RECOVERY RELEASE ESTIMATED AT LESS THAN 1 GRAM U235
UNITED NUCLEAR CORPORATION, NEW HAVEN, CONN.

2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(34), PAGES 33 AND 34, (AUGUST 21, 1967)

(TWX, JULY 25) WOOD RIVER JUNCTION FUELS RECOVERY PLANT SHUT DOWN OXYGEN-BURNING SYSTEM 8 (IN SNM 777) BECAUSE A RUPTURED EXHAUST FILTER WAS SUSPECTED TO HAVE RELEASED U-235, ESTIMATED AT LESS THAN 1 GRAM. INVESTIGATION UNDERWAY.

*AIRBORNE RELEASE + *FILTER, DAMAGED + *URANIUM + FUEL REPROCESSING + INCIDENT, ACTUAL, GENERAL

7-17438

LARK PD

SIZING OF NONSPHERICAL PARTICLES AND A METHOD OF REPRESENTING THEIR SIZE DISTRIBUTIONS
UNIVERSITY OF NEW SOUTH WALES, KENSINGTON, AUSTRALIA

5 PAGES, 10 FIGURES, ANALYTICAL CHEMISTRY 39(1) PAGES 55-59 (1967)

MANY SINGLE MEASURES OF PARTICLE SIZE HAVE BEEN PROPOSED BUT THESE ARE NOT SUITABLE FOR NONSPHERICAL PARTICLES. SUCH PARTICLES ARE BEST CHARACTERIZED BY THE LENGTH AND BREADTH OF THE PROFILES THEY PRESENT WHEN LYING IN THEIR STABLE POSITIONS. EQUIPMENT IS DESCRIBED WHICH SIMPLIFIES THE TASK OF OBTAINING THESE MEASUREMENTS FROM PHOTOMICROGRAPHS. THE DIMENSIONS CAN BE PLOTTED ON A TRIANGULAR CHART FROM WHICH BOTH SHAPE AND THE MORE USUAL NUMBER, SURFACE, AND VOLUME OR WEIGHT DISTRIBUTIONS ARE OBTAINABLE. THE PROCEDURE IS ILLUSTRATED FOR TWO VARIETIES OF TITANIUM DIOXIDE PIGMENT.

*ANALYTICAL TECHNIQUE, SOLID + *PARTICLE SIZE + *PARTICLE SIZE DISTRIBUTION

7-17684

HOOKE R + BRODY TP

SATURATING RATE LAW IN CHEMISORPTION AND OXIDATION

WESTINGHOUSE RESEARCH LABORATORIES, PITTSBURGH, PA.

2 PAGES, JOURNAL OF CHEMICAL PHYSICS 42 PAGES 4311-12 (1965)

LETTER TO THE EDITOR SHOWING THAT A SATURATING LOGARITHMIC RATE LAW CAN BE DERIVED WITH A MINIMUM OF ASSUMPTIONS. ASSUME THAT AN ACTIVE SITE IS FILLED WHEN OCCUPIED BY A SINGLE MOLECULE AND THAT THE MOLECULE IN EFFECT COVERS NEIGHBORING SITES. PROBLEM - DESCRIBE ADSORPTION AS IT INCREASES WITH TIME. A REASONABLE SOLUTION CAN BE FOUND (AND IS PRESENTED) IF ONE FURTHER ASSUMES THAT ALL SITES HAVE THE SAME NUMBER OF NEIGHBORING SITES AND THAT ONLY CHEMISORPTION IS THE RATE-CONTROLLING FACTOR.

*ANALYTICAL MODEL + *CHEMISORPTION + *OXIDATION + ADSORPTION + CHEMICAL KINETICS

7-17685

PARRISH EC + SCHNEIDER RW

THE INSPECTION AND TESTING OF INSTALLED, HIGH-EFFICIENCY PARTICULATE AIR FILTERS AT ORNL

OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.

ORNL-P-3030 +. 20 PAGES, 3 FIGURES, 4 REFERENCES, 1967

THE PAPER COVERS IN DETAIL (1) THE IN-PLATE TEST USED AT ORNL, INVOLVING THE USE OF A POLYDISPERSE AEROSOL OF DIOCTYLPHTHALATE AND PHOTOMETRIC, LIGHT-SCATTERING TECHNIQUES, (2) JUSTIFICATION FOR USING A POLYDISPERSE INSTEAD OF A MONODISPERSE AEROSOL, AND (3) A COMPUTER PROGRAM WHICH AUTOMATICALLY SCHEDULES IN-PLACE TESTS OF FILTRATION SYSTEMS AND REPORTS ALL RESULTS. SUBSIDIARY ADVANTAGES OF A COMPUTER PROGRAM ARE ALSO DISCUSSED.

*FILTER INSPECTION + *FILTER, HIGH EFFICIENCY + *TEST, FILTER SYSTEM + AEROSOL + AIR CLEANING + ORNL (OAK RIDGE NATIONAL LABORATORY) + PARTICLE SIZE + PARTICULATE + TEST, DOP FILTER

7-17975

ALSO IN CATEGORY 17

GEORGIA TECH APPLIES FOR LICENSE TO DISMANTLE, POSSESS, SHIP, AND STORE THE U OF AKRON AGN 261

GEORGIA INSTITUTE OF TECHNOLOGY, ENGINEERING EXPERIMENT STATION, ATLANTA, GEORGIA

2 PAGES, JANUARY 18, 1967, DOCKET NO. 50-276

GEORGIA TECH. APPLIES FOR LICENSE TO TAKE POSSESSION OF THE REACTOR, AND SUPPLIES PROPOSED PLAN BY WHICH GEORGIA TECH. WILL DISMANTLE REACTOR UNDER AKRON SUPERVISION, THEN MOVE THE PARTS TO GEORGIA TECH. FOR STORAGE.

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

*REACTOR DECOMMISSIONING EXPERIENCE + *TRANSPORTATION AND HANDLING +

AGN (TRAINING REACTOR, AKRON-ET-GEN. NUCLEONICS) + CONTROL ROD + FUEL ELEMENT + REACTOR, TRAINING

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-18014

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 JANUARY-MARCH, 1967
BATTELLE MEMORIAL INSTITUTE, COLUMBUS, OHIO
BMI-X-10193 + EURAEC-1847 +. 64 PAGES, 20 FIGURES, 16 TABLES, 19 REFERENCES, APRIL 1, 1967

PRELIMINARY REPORT. THE PRESENT PROGRAM WAS UNDERTAKEN IN THE PURSUIT OF TWO MAJOR 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.

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

*FISSION PRODUCT RETENTION + *FISSION PRODUCT TRANSPORT + *IODINE + *ORGANIC IODIDE + ADSORPTION +
CHEMICAL REACTION + COATING, SURFACE + COPPER + DEPOSITION + IRON + NICKEL + STEAM + STEEL, STAINLESS +
THERMAL CONSIDERATION + ZIRCALOY

7-18185

ALSO IN CATEGORY 4

WULLAERT RA + FACKELMANN JM + CHUBB W
AN EVALUATION OF UC-PUC FOR SODIUM-COOLED FAST REACTORS
BATTELLE MEMORIAL INSTITUTE, COLUMBUS LABORATORIES, COLUMBUS, OHIO
BMI-1799 +. 26 PAGES, 13 FIGURES, 30 REFERENCES, APRIL 13, 1967

IRRADIATION DATA REPORTED IN THE LITERATURE THROUGH OCTOBER 1966 FOR UC AND UC-PUC WERE
ANALYZED WITH RESPECT TO THE EFFECTS OF TEMPERATURE, BURNUP, COMPOSITION, INITIAL DENSITY,
AND OTHER FACTORS UPON SWELLING AND GAS RELEASE. THE RELATIONSHIP BETWEEN TEMPERATURE AND
EITHER SWELLING OR GAS RELEASE APPEARS TO BE EXPONENTIAL. BELOW 1000 C, THE RELATIONSHIP
BETWEEN SWELLING AND BURNUP IS LINEAR. COMPOSITIONS CONTAINING FREE URANIUM METAL SHOW RATES
OF SWELLING AND GAS RELEASE WHICH INCREASE IN PROPORTION TO THE AMOUNT OF FREE METAL. IN THE
RANGE OF 90 TO 100 PERCENT OF THEORETICAL DENSITY, THE AVAILABLE DATA SHOW LITTLE OR NO
EFFECT OF INITIAL POROSITY UPON THE SWELLING OR GAS-RELEASE CHARACTERISTICS OF UC AND UC-PUC.
THE DATA, WHICH WERE CLASSIFIED PRIMARILY ON THE BASIS OF MAXIMUM CENTERLINE TEMPERATURES,
SHOW NO ADDITIONAL EFFECT OF BURNUP RATE ON SWELLING. COMPATIBILITY DATA OF PARTICULAR
INTEREST TO SODIUM-COOLED FAST REACTORS ARE SUMMARIZED. DATA ARE PRESENTED SHOWING THAT THE
MECHANICAL EFFECTS OF THE REACTION OF UC WITH STEAM ABOVE APPROXIMATELY 150 C ARE QUITE
DIFFERENT FROM THE EFFECTS OF THE REACTION OF UC WITH WATER BELOW THIS TEMPERATURE.

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

*FISSION GAS RELEASE + *FUEL BURNUP + *RADIATION EFFECT + *SODIUM + *URANIUM CARBIDE + CARBIDE +
COOLANT CHEMISTRY + CORROSION + PLUTONIUM + PROPERTY, PHYSICAL + RADIATION DAMAGE + REACTOR, FAST +
REACTOR, SPACE

7-18187

BARNES RS + NELSON RS

THEORIES OF SWELLING AND GAS RETENTION IN REACTOR MATERIALS
ATOMIC ENERGY RESEARCH ESTABLISHMENT, METALLURGY DIVISION, HARWELL
AERE-R-4952 +. 30 PAGES, 8 FIGURES, 2 TABLES, 26 REFERENCES, JUNE 1965

THE INERT GASES SO FREQUENTLY PRODUCED IN NUCLEAR MATERIALS DURING IRRADIATION READILY
PRECIPITATE AS SMALL BUBBLES. BECAUSE OF THEIR INSOLUBILITY, THE SUBSEQUENT BEHAVIOUR OF THE
GASES IS DETERMINED BY THE BEHAVIOUR OF THESE BUBBLES. THUS THEY DETERMINE BOTH HOW MUCH GAS
IS RELEASED AND THE SWELLING WHICH IS PRODUCED BY THE GAS RETAINED. IT IS SHOWN THAT BUBBLES
CAN MIGRATE BODILY UNDER THE INFLUENCE OF VARIOUS DRIVING FORCES AND BY VARYING MECHANISMS
AND THAT IN MOST PRACTICAL CASES DIPECTED MIGRATION DUE TO TEMPERATURE GRADIENTS, STRESS
GRADIENTS, AND MOVING DISLOCATION LINES OR GRAIN BOUNDARIES IS MORE IMPORTANT THAN BROWNIAN
MOTION, EXCEPT PERHAPS IN THE CASE OF A SHORT FURNACE ANNEAL. ANALYSIS OF THE VARIOUS
DRIVING FORCES SHOWS THAT WHEREAS SMALL BUBBLES ARE DOMINATED BY THE BEHAVIOUR OF DISLOCATION
LINES, AS THEIR SIZE INCREASES THE TEMPERATURE GRADIENT BECOMES MORE IMPORTANT. THUS IT IS
IMPORTANT FOR THE TEMPERATURE GRADIENT TO BE KNOWN.

*DIFFUSION + *FUEL INTEGRITY + *NOBLE GAS + FUEL BURNUP + PROPERTY, PHYSICAL + TEMPERATURE GRADIENT +
URANIUM DIOXIDE + URANIUM OXIDE

7-18188

ALSO IN CATEGORY 8

BAKER L + BINGLE JD

THE KINETICS OF OXIDATION OF URANIUM BETWEEN 300 AND 625 C
ARGONNE NATIONAL LAB., ARGONNE, ILL.

11 PAGES, 7 FIGURES, 4 TABLES, 15 REFERENCES, JOURNAL OF NUCLEAR MATERIALS 20(2), PAGE 11-21, (1966)

STUDIES OF THE ISOTHERMAL OXIDATION OF URANIUM IN THE 300 AND 625 C TEMPERATURE RANGE WERE
MADE IN A METAL HEAT SINK REACTION CELL DESIGNED TO MINIMIZE SELF-HEATING. DATA WITH TWO

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-18188 *CONTINUED*

SOURCES OF PURE URANIUM AS WELL AS 1 AT. % COPPER AND 1 AT. % ALUMINUM ALLOYS OF URANIUM SHOWED SUBSTANTIALLY IDENTICAL SELF-ACCELERATING REACTION RATES UP TO 400 C. OXIDATION WITH PURE URANIUM AND THE COPPER ALLOY UNDERWENT A TRANSITION TO A SLOWER REACTION IN WHICH THE OXIDE WAS SOMEWHAT PROTECTIVE ABOVE 500 C, WITH THE COPPER ALLOY CONSIDERABLY MORE PROTECTIVE THAN THE PURE METAL. THE SELF-ACCELERATING REACTION CONTINUED TO HIGHER TEMPERATURES FOR THE ALUMINUM ALLOY. THERE IS EVIDENCE LINKING THIS CHANGE IN THE REACTION KINETICS AT 450 C WITH A CHANGED CHARACTER OF THE OXIDE. EMPIRICAL EQUATIONS HAVE BEEN FORMULATED TO EXPRESS THE RESULTS OF ISOTHERMAL OXIDATION STUDIES FOR PURE URANIUM ABOVE 300 C. THE CHANGE IN REACTION KINETICS AT 450 C WAS LINKED WITH A CORRESPONDING CHANGE IN THE CHARACTER OF THE OXIDE AT THE SAME TEMPERATURE.

*IGNITION + *URANIUM + ACCIDENT, GENERAL + CHEMICAL KINETICS + CHEMICAL REACTION + OXIDATION

7-18189 ALSO IN CATEGORY 8

BAKER L + SCHNIZLEIN JC + BINGLE JD

THE IGNITION OF URANIUM

ARGONNE NATIONAL LAB., ARGONNE, ILL.

17 PAGES, 11 FIGURES, 2 TABLES, 16 REFERENCES, JOURNAL OF NUCLEAR MATERIALS 20(2), PAGE 22-39, (1966)

EXPERIMENTAL STUDIES ARE REPORTED OF THE IGNITION OF PURE URANIUM. MOST OF THE EXPERIMENTS WERE PERFORMED BY PLACING THE METAL SAMPLES IN A FLOWING OXIDIZING ATMOSPHERE (EITHER AIR OR OXYGEN) WITHIN A FURNACE WHOSE TEMPERATURE WAS INCREASING AT THE RATE OF 10 C/MIN. THE IGNITION TEMPERATURES OF SINGLE PIECES OF URANIUM CAN BE ADEQUATELY EXPLAINED AS A THERMAL IGNITION IN TERMS OF A BALANCE OF HEAT LOSSES AND HEAT GENERATED BY OXIDATION OF THE METAL. APPLYING OXIDATION-RATE DATA OBTAINED FROM ISOTHERMAL OXIDATION STUDIES BETWEEN 300 AND 625 C AND REASONABLE VALUES FOR THE HEAT TRANSFER COEFFICIENT AND EMISSIVITY, SIMULATED BURNING CURVES WERE CALCULATED. THESE PROVIDE IGNITION TEMPERATURES WHICH AGREE REASONABLY WELL WITH EXPERIMENTALLY DETERMINED VALUES FOR SAMPLES OF VARIOUS SPECIFIC AREAS. THE SHARP BREAK IN IGNITION TEMPERATURE FOR SAMPLES HAVING A SPECIFIC AREA BETWEEN 2 AND 7 CM²/G RESULTS FROM THE TRANSITION IN THE OXIDATION KINETICS AT APPROXIMATELY 450 C FROM ACCELERATING AT LOWER TEMPERATURES TO PROTECTIVE AT HIGHER TEMPERATURES. THE TRANSITION IN OXIDATION KINETICS IS AFFECTED IN VARIOUS MANNERS BY METALLURGICAL FORM, IMPURITIES, OXIDIZING MEDIA, AND SAMPLE SPECIFIC AREA.

*IGNITION + *URANIUM + ACCIDENT, GENERAL + CHEMICAL KINETICS + CHEMICAL REACTION + OXIDATION

7-18190 ALSO IN CATEGORY 8

SCHNIZLEIN JC + BAKER L + BINGLE JD

THE IGNITION OF BINARY ALLOYS OF URANIUM

ARGONNE NATIONAL LAB., ARGONNE, ILL.

9 PAGES, 7 FIGURES, 3 TABLES, 2 REFERENCES, JOURNAL OF NUCLEAR MATERIALS 20(2), PAGE 39-47, (1966)

REPORTS THE EFFECT OF ALLOYING ADDITIONS ON THE IGNITION OF URANIUM. ADDITIONS OF ALUMINUM IN PARTICULAR AND CERTAIN OTHER ALLOYS INCLUDING BERYLLIUM, BISMUTH, CARBON, LEAD, MOLYBDENUM, NIOBIUM, PALLADIUM, PLATINUM, RUTHENIUM, SILICON, TITANIUM, AND VANADIUM INHIBITED THE OXIDE TRANSITION AND THEREBY LOWERED THE IGNITION TEMPERATURE. ANOTHER EFFECT PRODUCED, NOTABLY BY COPPER (BUT ALSO BY BISMUTH, LEAD, PALLADIUM, PLATINUM, RUTHENIUM AND VANADIUM), WAS AN INCREASE IN THE PROTECTIVENESS OF THE OXIDE FORMED AT TEMPERATURES GREATER THAN 500 C. VERY COMPLEX BUT REPRODUCIBLE TEMPERATURE-TIME CURVES WERE OBTAINED WHEN BOTH EFFECTS OCCURRED WITH THE SAME ALLOY. ALLOYING ADDITIONS OF CERIUM, CHROMIUM, HYDROGEN, IRON, NICKEL, RHODIUM, SILVER, TANTALUM, THORIUM, AND ZIRCONIUM HAD NO SIGNIFICANT EFFECT ON THE IGNITION BEHAVIOR OF URANIUM AT THE LOW CONCENTRATION LEVELS STUDIED.

*ALLOY + *IGNITION + *URANIUM + ACCIDENT, GENERAL + CHEMICAL KINETICS + CHEMICAL REACTION + OXIDATION

7-18191

DEXTER AH + LAPSLEY AC

PHOTONEUTRON MONITOR FOR DETECTING REACTOR FUEL ELEMENT FAILURES

U.S. PATENT 3-293-434 +. 4 PAGES, DECEMBER 30, 1966, PATENT (U.S.)

THIS INVENTION RELATES GENERALLY TO AN APPARATUS AND METHOD FOR THE MONITORING FLUID STREAMS FOR THE DETECTION OF RADIATIONS EMANATING THEREFROM, AND MORE PARTICULARLY TO THE DETECTION OF FAILED FUEL ELEMENTS IN OPERATING NUCLEAR REACTORS. DETECTION OF RADIOACTIVITY LEAKS INTO NUCLEAR REACTOR COOLANT OR MODERATOR SYSTEMS IS AN IMPORTANT PART OF REACTOR INSTRUMENTATION.

AVAILABILITY - THE U.S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D.C., 25 CENTS PER COPY

*FAILURE, FUEL ELEMENT + *INSTRUMENTATION, FUEL SCANNING + COOLANT CHEMISTRY + FISSION PRODUCT RELEASE, GENERAL + INSTRUMENTATION, GENERAL + MONITOR, RADIATION, GENERAL

7-18192

ALSO IN CATEGORIES 12 AND 13

WALLACE RM

METHOD FOR DECONTAMINATING NUCLEAR FUELS

CANADIAN PATENT 740-368 +. 13 PAGES, 5 TABLES, AUGUST 9, 1966, PATENT (FOREIGN)

THIS INVENTION RELATES TO A METHOD FOR IMPROVING THE DECONTAMINATION OF NEUTRON-IRRADIATED NUCLEAR FUELS FROM THEIR FISSION PRODUCTS IN AQUEOUS SOLUTIONS BY ADDING BARBITURIC ACID TO

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-18192 *CONTINUED*

THE AQUEOUS SOLUTION AND DIGESTING SAME AT ELEVATED TEMPERATURE BEFORE SOLVENT EXTRACTION OR ION EXCHANGE. IMPROVED DECONTAMINATION OF URANIUM AND PLUTONIUM FROM RUTHENIUM BY SOLVENT EXTRACTION FROM AN AQUEOUS ACID SOLUTION IS EFFECTED BY ADDING BARBITURIC ACID TO THE AQUEOUS SOLUTION AND DIGESTING BEFORE EXTRACTION.

AVAILABILITY - DEPARTMENT OF COMMERCE, WASHINGTON, D.C., 30 CENTS PER PAGE

*DECONTAMINATION + *FISSION PRODUCT, SEPARATION FROM WASTE + *FUEL HANDLING + *FUEL REPROCESSING + PLUTONIUM + REACTOR, FAST + RUTHENIUM + URANIUM

7-18193 ALSO IN CATEGORY 11

HOLM DM + MOORE BM

DETECTION OF PLUTONIUM PENETRATIONS THROUGH CONTAINERS AT HIGH TEMPERATURE

LOS ALAMOS SCIENTIFIC LABORATORY, N. MEX.

LA-3654 +. 16 PAGES, 7 FIGURES, 4 REFERENCES, DECEMBER 1966

A DETECTION SYSTEM WAS BUILT FOR MONITORING PLUTONIUM PENETRATION THROUGH TANTALUM CAPSULES BY COUNTING ALPHA PARTICLES WITH SILICON SURFACE-BARRIER DETECTORS. SMALL AMOUNTS OF PLUTONIUM (0.1 MICROGRAM) CAN BE DETECTED ON THE SURFACE OF THE TEST CAPSULE WHILE IT IS AT 1160 C IN A HIGH VACUUM. THE DETECTORS ARE KEPT COOL BY PLACING THEM IN WATER-COOLED HEAD ASSEMBLIES AND SHIELDING THEM FROM THERMAL RADIATION BY SIX THIN NICKEL FOILS. ALPHA PARTICLES FROM PLUTONIUM LOSE ABOUT 1.5 MEV OF THEIR ENERGY IN TRAVERSING THE FOILS. A TOTAL RUNNING TIME OF 18,548 HR WAS LOGGED ON TWO SYSTEMS, DURING WHICH TIME 116 CAPSULES WERE TESTED. NO OPERATOR WAS REQUIRED BECAUSE THE EXPERIMENT WAS AUTOMATICALLY SHUT DOWN WHEN THE LEAK REACHED A PREDETERMINED VALUE.

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

*ANALYTICAL TECHNIQUE, CALIBRATION + *FAILURE, CLADDING + *PLUTONIUM + ACCIDENT, MONITOR + ALPHA EMITTER + INSTRUMENTATION, ABNORMAL INDICATION + REACTOR, FAST

7-18195 ALSO IN CATEGORIES 6 AND 8

DICKERMAN CE + ROBINSON LE + SOWA ES + MONAWECK JH + AUGUST C

TREAT MELTDOWN OF IRRADIATED METALLIC FAST-REACTOR FUEL IN AN INERT ATMOSPHERE

ARGONNE NATIONAL LABORATORY, ARGONNE, ILLINOIS

13 PAGES, 10 FIGURES, 3 TABLES, 29 REFERENCES, NUCLEAR APPLICATIONS 3(8)- 461-473 (AUG. 1967)

BEHAVIOR OF TWO TYPES OF IRRADIATED METALLIC FAST-REACTOR FUEL PINS UNDER TRANSIENT HEATING IN AN INERT-GAS ATMOSPHERE IN THE TREAT REACTOR WAS STUDIED UNDER CONDITIONS RANGING UP TO COMPLETE MELTDOWN. IRRADIATION-INDUCED CHANGES IN FAILURE THRESHOLDS, MODES OF FAILURE, AND POST-FAILURE FUEL MOTION WERE SIGNIFICANT BUT NOT ENOUGH TO MAKE GROSS CHANGES IN THE COURSE OF AN ACCIDENT. THE AMOUNT OF SWELLING OBSERVED IN THE POSTEXPERIMENTAL FUEL RESIDUE WAS LARGE ENOUGH TO HAVE PLAYED A SIGNIFICANT ROLE IN DETERMINING THE COURSE OF A MELTDOWN ACCIDENT.

*FUEL MELTDOWN + *TESTING + EBR 1 AND 2 (EXPERIMENTAL BREEDER REACTORS) + FAILURE, CLADDING + FAILURE, FUEL ELEMENT + FERMI + REACTOR, BREEDER + REACTOR, FAST + REACTOR, LIQUID METAL COOLED + SODIUM + TREAT (TRANSIENT TEST REACTOR FACILITY) + VOID COEFFICIENT

7-18208 ALSO IN CATEGORY 9

EPLER EP

OPERATING EXPERIENCE WITH SYSTEMS DESIGNED FOR MANEUVERABILITY AND HIGH AVAILABILITY

OAK RIDGE NATIONAL LAB., TENN.

ORNL-P-3011 + CONF-670314-3 +. 9 PAGES, 1967, PRESENTED AT LIQUID METAL INSTRUMENTATION AND CONTROL SYMPOSIUM, IDAHO FALLS, IDAHO

THE REQUIREMENT OF MANEUVERABILITY IN HIGH-PERFORMANCE REACTORS LED TO THE DEVELOPMENT OF A SECOND GENERATION OF REACTOR CONTROL AND PROTECTIVE SYSTEMS AT ORNL. THESE SYSTEMS, DESIGNED FOR GENERAL APPLICATION, HAVE BEEN INSTALLED IN THE MSRE, A HIGH-TEMPERATURE MOLTEN-SALT REACTOR, THE ABERDEEN PULSE REACTOR (A FAST-BURST REACTOR), AND IN THE HFIR (A 100-MW(T) HIGH-FLUX PRODUCTION REACTOR). THE SYSTEMS APPLIED TO THE HFIR CONSIST OF THREE WIDE-RANGE STARTUP CHANNELS, THREE REGULATING CHANNELS, AND A PROTECTIVE SYSTEM CONSISTING OF THREE SAFETY CHANNELS. ALL USE SOLID-STATE COMPONENTS AND ARE MODULAR IN CONSTRUCTION. EXPERIENCE HAS BEEN GAINED WITH THIS EQUIPMENT DURING LOW-POWER OPERATION, WHICH BEGAN A YEAR AGO, AND FULL-POWER OPERATION OVER THE PAST SIX MONTHS.

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

HFIR (HIGH FLUX ISOTOPE REACTOR) + INSTRUMENTATION, PROTECTIVE + MSRE (MOLTEN SALT REACTOR EXPERIMENT) + OPERATING EXPERIENCE + REACTOR CONTROL + REACTOR, MOLTEN SALT + REACTOR, PULSED + REACTOR, RESEARCH + REACTOR, TEST

7-18212

NUCLEAR REACTOR FUELED WITH SUSPENDED PARTICULATES

U. S. ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-18212 *CONTINUED*
BRITISH PATENT 1-010-644 +. 3 PAGES, MARCH 8, 1963, PATENT (FOREIGN)

THIS REACTOR IS A SYSTEM COMPRISING A REACTOR VESSEL CONNECTED IN SERIES WITH PIPES, A HEAT EXCHANGER AND A FLUID PUMP. THE REACTOR VESSEL CONTAINS A CRITICAL MASS OF FISSIONABLE MATERIAL IN PARTICULATE FORM, AND THE REMAINDER OF THE VOLUME IN THE SYSTEM IS FILLED WITH LIQUID SODIUM. A JET PUMP IS IN OPERATIVE RELATION WITH THE UPPER SURFACE OF THE CRITICAL MASS AND CONNECTS TO A CENTRIFUGAL SEPARATION DEVICE. THE HIGH-VELOCITY LIQUID SODIUM PICKS UP THE PARTICULATES FROM A HOT ZONE THEREOF, AND THE MIXTURE OF LIQUID SODIUM AND PARTICULATE FUEL PASSES THROUGH THE CENTRIFUGAL SEPARATOR SO THAT THE PARTICULATE FUEL IS RETURNED TO THE CRITICAL MASS AT A COOLED ZONE THEREOF AND THE HOT SODIUM PASSES OUT OF THE REACTOR TO THE HEAT EXCHANGER.

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

*FUEL, POWDER TYPE + FUEL HANDLING + PARTICULATE + SODIUM

7-18213
REITER R + CARNUTH W
THE PARTICLE SPECTRUM OF AN AEROSOL CHARGED WITH RN DAUGHTER PRODUCTS
FRAUNHOFER-GESELLSCHAFT ZUR FÖRDERUNG DER ANGEWANDTEN FORSCHUNG, GARMISCH-PARTENKIRCHEN, GER.
2 PAGES, 2 FIGURES, NATURWISSENSCHAFTEN 54, PAGE 40 AND 41, (JANUARY 1967). IN GERMAN

THE PARTICLE SPECTRUM AND THE ACTIVITY DISTRIBUTION IN A MINE WITH A RN CONTENT OF THE WATER OF 20×10 TO THE MINUS 8TH MICROCURIE/CC WERE DETERMINED. THE RESULTS ARE GRAPHED AND SHOW THAT THE FREQUENCY DISTRIBUTION OF THE PARTICLES HAVE ESSENTIALLY A VERY BROAD MAXIMUM D EQUALS 0.04 AND 0.1 MICRON. THE RADIOACTIVITY ALSO EXHIBITS A MAXIMUM AT THE SMALLER DIAMETERS OF THE PARTICLES. A SECOND MAXIMUM OF THE ACTIVITY WAS FOUND BETWEEN D EQUALS 0.008 AND 0.02 MICRON. IT WAS DETERMINED THAT ABOUT 37% OF THE ACTIVITY OCCURS AT MAXIMUM 1, AND 50% AT MAXIMUM 2.

*AEROSOL + *PARTICLE SIZE DISTRIBUTION + *RADON + PARTICLE SIZE

7-18214
LEE T + WEBER CW
PARTICLE SIZE DISTRIBUTION MEASUREMENT IN THE 200 TO 1200 Å RANGE
UNION CARBIDE CORP., OAK RIDGE GASEOUS DIFFUSION PLANT K-25, TENN.
5 PAGES, 5 FIGURES, 4 TABLES, 21 REFERENCES, ANALYT. CHEM. 39(6), PAGE 620 THRU 624, (MAY 1967)

A RELATIVELY CHEAP METHOD FOR PARTICLE-SIZE-DISTRIBUTION MEASUREMENTS IN THE 200- TO 1200-Å RANGE WAS DEVELOPED FOR A VARIETY OF POWDERS, INCLUDING CLAYS. THE METHOD UTILIZES 20-KC ULTRASONICS TO DEAGGLOMERATE AND DISPERSE THE POWDER SAMPLE IN AN AQUEOUS MEDIUM. A CONTINUOUS-FLOW CENTRIFUGE APPLYING FORCES UP TO $60,000 \times G$ TO DIVIDE THE SLURRY INTO SIZE FRACTIONS (BASED ON STOKES LIMITING DIAMETERS) AND A GRAVIMETRIC PROCEDURE (OR REFRACTIVE-INDEX MEASUREMENTS) TO DETERMINE THE SOLID CONTENT OF EACH FRACTION. THE SIMPLE STAIRMAND CALCULATION IS APPLIED TO CORRECT FOR SIMULTANEOUS SETTLING OF FINE PARTICLES. THE METHOD WAS APPLIED TO LINDE TYPE-B ALUMINA POLISHING POWDER, AND THE RESULTS HAVE BEEN COMPARED WITH ELECTRON MICROSCOPY MEASUREMENTS. ALUMINA, A MAJOR CONSTITUENT OF CLAYS, PERMITTED DEVELOPMENT WITH A PURE COMPOUND OF KNOWN DENSITY. WITHIN THE LIMITATIONS OF THE EQUIPMENT, EXPERIMENTAL FACTORS WHICH INFLUENCE ACCURACY ARE OPTIMIZED. DEVIATIONS FROM BASIC CENTRIFUGATION THEORY ARE DISCUSSED.

*ANALYTICAL TECHNIQUE, CALIBRATION + *PARTICLE SIZE DISTRIBUTION + *WATER TREATMENT + PARTICLE SIZE

7-18215
GARLAND JA
THE ADSORPTION OF IODINE BY ATMOSPHERIC PARTICLES
ATOMIC ENERGY RESEARCH ESTABLISHMENT, HARWELL
14 PAGES, 9 FIGURES, 5 TABLES, 17 REFS, JOURNAL OF NUCLEAR ENERGY 21(9)- 687-700 (SEPT. 1967)

LABORATORY-SCALE EXPERIMENTS ON THE ATTACHMENT OF IODINE SHOW THAT AN APPRECIABLE PROPORTION OF AIRBORNE IODINE BECOMES ATTACHED TO PARTICLES NATURALLY PRESENT IN THE ATMOSPHERE. THE RATE OF ATTACHMENT IS SLOW, THE VALUES OF THE ACCOMMODATION COEFFICIENT LYING IN THE RANGE 0.002 TO 0.01. AUTORADIOGRAPHIC EXPERIMENTS AND CONSIDERATION OF THE MASS ADSORBED SUGGEST THAT MOST OF THE PARTICLES ADSORB IODINE. IODINE DESORBS SLOWLY FROM PARTICLES, SO THAT AN EQUILIBRIUM IS SET UP, WITH A CONSIDERABLE PROPORTION OF THE IODINE PRESENT AS VAPOUR. THIS FACT MAY BE IMPORTANT IN DETERMINING THE LONG-TERM TRAVEL AND DEPOSITION OF IODINE RELEASED TO THE ATMOSPHERE. MOST OF THE ADSORBED IODINE IS FOUND ON SUBMICRON PARTICLES BUT THE PROPORTION OF THE ADSORBED ACTIVITY FOUND IN LARGER SIZE RANGES IS SOMEWHAT GREATER IN THE CASE OF IODINE THAN FOR THORON DAUGHTERS.

*ADSORPTION + *AIRBORNE RELEASE + *IODINE + *PARTICULATE + ATMOSPHERIC CHEMISTRY +
FISSION PRODUCT TRANSPORT + FISSION PRODUCT, IODINE + PARTICLE SIZE

7-18216
JENNISON W + CLARK ML
MEASUREMENT OF KR AND XE FISSION PRODUCT RETENTION IN IRRADIATED FUEL ELEMENTS
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, DOUNREAY, ENGLAND

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-18216 *CONTINUED*
TRG-REPORT-1382 +. 16 PAGES, 4 FIGURES, 2 TABLES, 1967

DESCRIBES THE MEASUREMENT OF FISSION GASES RETAINED IN MIXED OXIDE AND CARBIDE IRRADIATED FUEL SPECIMENS. SAMPLES WEIGHING BETWEEN 1 AND 3 G ARE DISSOLVED IN ACID UNDER REFLUX, HELIUM IS PASSED THROUGH THE APPARATUS, THE LIBERATED FISSION GASES BEING DRIED AND TRAPPED IN ACTIVATED CHARCOAL AT THE TEMPERATURE OF LIQUID NITROGEN. GASES OTHER THAN KRYPTON AND XENON ARE ALMOST ENTIRELY REMOVED BY DISTILLATION FROM THE COLD TRAP. THE GAS FRACTION CONTAINING KR AND XE IS COLLECTED AND MEASURED BY AN AUTOMATIC TOEPLER SYSTEM. AN ALIQUOT OF THIS FRACTION IS ANALYSED BY MASS SPECTROMETRY, AND THE MEASURED KRYPTON AND XENON CAN BE RELATED TO THE WEIGHT OF FUEL DISSOLVED, AS DETERMINED BY CHEMICAL ANALYSIS AND MASS SPECTROMETRY.

AVAILABILITY - HER MAJESTYS STATIONERY OFFICE, LONDON

*FISSION GAS RELEASE + *FISSION PRODUCT RETENTION + *KRYPTON + *XENON + ANALYTICAL TECHNIQUE, CALIBRATION + CARBIDE + FISSION PRODUCT TRANSPORT + FISSION PRODUCT, VOLATILE, + FUEL ELEMENT + OXIDE

7-18217
STANDARD METHOD FOR PARTICLE SIZE DETERMINATION
PENNSYLVANIA DEPARTMENT OF HEALTH
3 PAGES, 1 FIGURE, TABLES, 13 REFERENCES, DUST TOPICS 4(3), PAGES 12-14 (AUGUST 1967)

THE PENNSYLVANIA DEPT. OF HEALTH WILL USE METHODS TO ASSESS SIZE-WEIGHT FRACTIONS OF PARTICULATE MATTER, AS PART OF THE PROCEDURES SPECIFIED IN THE GUIDES FOR COMPLIANCE WITH REGULATION IV. THE METHODS WERE CHOSEN TO PERMIT ISOKINETIC CAPTURE OF THE PARTICULATE MATTER WITHOUT ALTERING THE PHYSICAL PROPERTIES OF THE DUST. THE REPORT DESCRIBES COLLECTION AND ANALYTICAL PROCEDURES.

*ANALYTICAL TECHNIQUE, AIR + *FILTER CHARACTERISTICS + *FILTER, MEMBRANE + *PARTICLE SIZE + FILTER, + PARTICLE SIZE DISTRIBUTION + PARTICULATE

7-18225
DEVELL L + HESBOL R + BACHOFNER E
TRAPPING OF IODINE IN WATER POOLS AT 100 C
AKRIEBOLAGET ATOMENERGI, STOCKHOLM
CONF-670,402 + SM-89/15 +. 18 PAGES, 5 FIGURES, 3 TABLES, 9 REFERENCES, PRESENTED AT THE INTERNATIONAL ATOMIC ENERGY AGENCY SYMPOSIUM ON THE CONTAINMENT AND SITING OF NUCLEAR POWER PLANTS, VIENNA, APRIL 3-7, 1967

EXPERIMENTS AND CALCULATIONS ON TRAPPING MOLECULAR IODINE IN LABORATORY AND LARGE-SCALE BOILING WATER POOLS ARE DESCRIBED. VARIABLE PARAMETERS ARE PH (10-12), IODINE CONCENTRATION (0.001-1 PPM) AND MASS-TRANSFER CONDITIONS (BUBBLE SIZE AND TIME OF INTERACTION). AFTER REACTION OF MOLECULAR IODINE WITH WATER, A CERTAIN FRACTION, DETERMINED BY PH AND IODINE CONCENTRATION, IS RETAINED AS MOLECULAR IODINE. THIS PART IS AVAILABLE FOR RELEASE WITH EXHAUSTED STEAM ACCORDING TO THE PARTITION PROPERTIES OF MOLECULAR IODINE. LABORATORY EXPERIMENTS SHOW THAT REESTABLISHMENT OF CHEMICAL EQUILIBRIUM DID NOT SEEM TO OCCUR WHEN MOLECULAR IODINE IS REMOVED FROM THE WATER POOL. THUS, PRACTICALLY, THE FRACTION FIRST HYDROLYSED IS PERMANENTLY TRAPPED. RESULTS FROM THE LARGE-SCALE STUDY ARE IN AGREEMENT WITH THESE FINDINGS AND SHOW THAT SUPERHEATED STEAM, UNDER CERTAIN CONDITIONS, CAN BE EFFECTIVELY DECONTAMINATED OF IODINE EVEN BY A BOILING WATER POOL WITH NO NET STEAM-CONDENSATION CAPACITY. EQUATIONS FOR PREDICTING TWO-PHASE (STEAM/WATER) TRANSFER OF VOLATILE IODINE AS A FUNCTION OF PHYSICAL PARAMETERS ARE DEVELOPED AND TESTED.

AVAILABILITY - INTERNATIONAL ATOMIC ENERGY AGENCY (NEW YORK OR GENEVA)

*FISSION PRODUCT RETENTION + *IODINE + *OUT OF PILE LOOPS AND EXPERIMENTS + *POOL BOILING + *WATER VAPOR + CHEMICAL REACTION + CONTAINMENT FILTERING SYSTEM + FISSION PRODUCT TRANSPORT + FISSION PRODUCT, IODINE + SPRAY, GENERAL + STEAM

7-18226
BILLARD F
FRENCH PRACTICE IN THE REMOVAL OF RADIOACTIVE IODIDES
CENTRE D-ETUDES NUCLEAIRES DE FONTENAY-AUX-ROSES, FRANCE
SM-89/19 + CONF-670,402 +. 25 PAGES, 13 FIGURES, 1 TABLE, 30 REFERENCES, PRESENTED AT THE INTERNATIONAL ATOMIC ENERGY AGENCY SYMPOSIUM ON THE CONTAINMENT AND SITING OF NUCLEAR POWER PLANTS, VIENNA, APRIL 3-7, 1967

RECENT STUDIES BY BRITISH AND AMERICAN SCIENTISTS HAVE DISCLOSED THE PRESENCE OF PENETRATING FORMS OF IODINE, ESPECIALLY METHYL IODIDE, IN FISSION PRODUCTS RELEASED AFTER REACTOR ACCIDENTS. THE PAPER DEALS WITH THE EFFORTS MADE TO ESTABLISH WHICH OF THE VARIOUS METHODS PROPOSED FOR THE REMOVAL OF THESE NUCLIDES ARE SUITED TO CONDITIONS IN FRANCE. THE FIRST PART OF THE PAPER CONTAINS THE RESULTS OF A STUDY ON THE TRAPPING OF METHYL IODIDE WITH FRENCH-MADE ACTIVATED CARBONS IMPREGNATED WITH POTASSIUM IODIDE OR TRIETHYLENE DIAMINE. THE SECOND PART DESCRIBES THE AUXILIARY EQUIPMENT WHICH IT HAS BEEN DECIDED SHOULD BE INCORPORATED IN REACTORS AND THE METHODS OF INSPECTION ADOPTED BOTH FOR MANUFACTURE AND FOR USE IN SITU.

AVAILABILITY - INTERNATIONAL ATOMIC ENERGY AGENCY (NEW YORK OR GENEVA)

*CHARCOAL ADSORBER + *FISSION PRODUCT, IODINE + *IODINE + *ORGANIC IODIDE + AIR CLEANING + CHARCOAL + FISSION PRODUCT RETENTION + FISSION PRODUCT TRANSPORT

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-18227
 ABBEY F + HILLARY JJ
 FISSION PRODUCT REMOVAL FOR REACTORS WITH VENTED CONTAINMENT
 UNITED KINGDOM ATOMIC ENERGY AUTHORITY, HEALTH AND SAFETY BRANCH, RISLEY, WARRINGTON + UNITED KINGDOM
 ATOMIC ENERGY AUTHORITY, REACTOR GROUP, WINDSCALE, SELLAFIELD, UK
 SM-89/36 + CONF-670402 +. 22 PAGES, 7 FIGURES, 4 TABLES, 12 REFERENCES, PRESENTED AT INTERNATIONAL
 ATOMIC ENERGY AGENCY SYMPOSIUM ON THE CONTAINMENT AND SITING OF NUCLEAR POWER PLANTS, VIENNA, APRIL 3-7,
 1967

IN ONE FORM OF LOW-PRESSURE VENTED CONTAINMENT, THE REINFORCED-CONCRETE BIOLOGICAL SHIELD
 FORMS THE PRIMARY CONTAINMENT. IF THE COOLANT CIRCUIT IS RUPTURED, STEAM IN THE PRIMARY
 CONTAINMENT WOULD BE VENTED TO PIPES SUBMERGED IN A DEEP-WATER POND SITUATED IN A COMPARTMENT
 OF THE SECONDARY CONTAINMENT. IN THE EXPERIMENTAL WORK DESCRIBED, LARGE-SCALE ENGINEERING
 RIGS WERE USED TO INVESTIGATE THE REMOVAL OF IODINE AND AEROSOLS FROM STEAM-AIR MIXTURES
 DISCHARGED INTO WATER.

AVAILABILITY - INTERNATIONAL ATOMIC ENERGY AGENCY (NEW YORK OR GENEVA)

*AEROSOL + *FISSION PRODUCT RETENTION + *IODINE + *OUT OF PILE LOOPS AND EXPERIMENTS + *POOL BOILING +
 AIR CLEANING + CHEMICAL REACTION + CONTAINMENT FILTERING SYSTEM + FISSION PRODUCT TRANSPORT +
 FISSION PRODUCT, IODINE + SPRAY, GENERAL + STEAM

7-18228 ALSO IN CATEGORY 12
 BEATTIE JR
 TESTING OF REACTOR FILTER SYSTEMS IN THE UKAEA
 UNITED KINGDOM ATOMIC ENERGY AUTHORITY, HEALTH AND SAFETY BRANCH, RISLEY, WARRINGTON, UK
 SM-89/37 + CONF-670402 +. 8 PAGES, 1 TABLE, 10 REFERENCES, PRESENTED AT INTERNATIONAL ATOMIC ENERGY
 AGENCY SYMPOSIUM ON THE CONTAINMENT AND SITING OF NUCLEAR POWER PLANTS, VIENNA, APRIL 3-7, 1967

THE METHODS CURRENTLY IN USE OR UNDER DEVELOPMENT FOR TESTING FILTER AND ABSORBER SYSTEMS
 INSTALLED ON REACTORS IN THE UKAEA ARE DISCUSSED, AND SOME TYPICAL RESULTS FOR OPERATIONAL
 FILTER AND ABSORBER SYSTEMS ARE PRESENTED.

AVAILABILITY - INTERNATIONAL ATOMIC ENERGY AGENCY (NEW YORK OR GENEVA)

*CHARCOAL ADSORBER + *FILTER EFFICIENCY + *FILTER SAFETY EVALUATION + *FILTER TEST REQUIREMENT + *TESTING +
 AEROSOL + AIR CLEANING + CHARCOAL + CONTAINMENT RESEARCH AND DEVELOPMENT + FILTER INSPECTION

7-18229
 CORNELISSENS EC + VAN DER LUGT G + VAN DER PLAS TH
 ON THE ADSORPTION OF GASEOUS METHYL IODIDE ON ACTIVE CARBONS
 KEURING VON ELECTROTECHNISCHE MATERIALEN, N.V., NETHERLANDS
 SM-89/43 + CONF-670402 +. 12 PAGES, 1 FIGURE, 2 TABLES, 10 REFERENCES, PRESENTED AT INTERNATIONAL ATOMIC
 ENERGY AGENCY SYMPOSIUM ON THE CONTAINMENT AND SITING OF NUCLEAR POWER PLANTS, VIENNA, APRIL 3-7, 1967

THE IMPREGNATION OF ACTIVE CARBONS IS KNOWN TO BE A USEFUL MEANS OF IMPROVING THE ABILITY OF
 THESE CARBONS TO RETAIN METHYL IODIDE, WHICH MIGHT BE FORMED DURING THE ACCIDENTAL RELEASE OF
 FISSION PRODUCTS FROM A REACTOR. SOME BASIC WORK WAS DONE ON BOTH IMPREGNATED AND
 UNIMPREGNATED MATERIALS, WHICH INVOLVED THE TEXTURE, THE REACTION OF MEI WITH THE
 IMPREGNANTS, THE ADSORPTION OF MEI ON THE CARBONS UNDER DRY AND WET CONDITIONS AT DIFFERENT
 TEMPERATURES. IT WAS FOUND THAT THE CARBONS ARE HIGHLY MICROPOROUS. A LARGE PART OF THIS
 POROSITY DISAPPEARS ON IMPREGNATION WITH ORGANIC AMINES. THESE IMPREGNANTS REACT CHEMICALLY
 WITH THE METHYL IODIDE, WHICH IS THEREBY FIXED ON THE CARBON. FOR CARBON WHICH IS
 IMPREGNATED WITH KI, A RAPID EXCHANGE REACTION TAKES PLACE BETWEEN THE METHYL IODIDE AND KI
 UNDER BOTH DRY AND WET CONDITIONS. CONSEQUENTLY MOST OF THE IODINE ACTIVITY CAN BE REMOVED
 FROM THE GAS.

AVAILABILITY - INTERNATIONAL ATOMIC ENERGY AGENCY, (NEW YORK OR GENEVA)

*CHARCOAL ADSORBER + *FISSION PRODUCT RETENTION + *FISSION PRODUCT, IODINE + *ORGANIC IODIDE +
 AIR CLEANING + CHARCOAL + FILTER, TRAP + FISSION PRODUCT TRANSPORT + IODINE + SURFACE, GENERAL

7-18238 ALSO IN CATEGORY 4
 PASTERNAK AD
 LIQUID METAL EXTRACTION OF FISSION PRODUCTS FROM URANIUM REACTOR FUELS
 LAWRENCE RADIATION LAB., UNIVERSITY OF CALIFORNIA
 UCRL-16108 +. 174 PAGES, REFERENCES, JANUARY 1966

THE RATE OF EXTRACTION OF A RARE-EARTH FISSION PRODUCT, LANTHANUM-140, AND ITS PRECURSOR AND
 BA-140 FROM THE URANIUM (5 WT%) CHROMIUM EUTECTIC BY MOLTEN MAGNESIUM AT 1000 C WAS MEASURED
 BY THE FALLING-LIQUID-DROP TECHNIQUE. USE OF THE LOW-MELTING U-CR EUTECTIC (MP 859 C)
 INSTEAD OF PURE URANIUM (MP 1132 C) PERMITS OPERATION AT TEMPERATURES WELL BELOW THE BOILING
 POINT OF MAGNESIUM. MAGNESIUM AND THE U-CR ALLOY FORM AN ESSENTIALLY IMMISCIBLE TWO-PHASE
 LIQUID-LIQUID SYSTEM. FISSION PRODUCTS WERE INTRODUCED IN THE U-CR ALLOY BY LIGHT NEUTRON
 IRRADIATION. THE RELATIVE ABUNDANCE OF LA-140 WAS DETERMINED BY SCINTILLATION COUNTING OF
 ITS 1.6-MEV GAMMA PHOTOPEAK. THE RELATIVE ABUNDANCE OF BA-140 WAS DETERMINED BY FOLLOWING
 THE DECAY OF LA-140 ACTIVITY AFTER EXTRACTION.

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-18238 *CONTINUED*

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

*BARIUM + *DIFFUSION + *DIFFUSION COEFFICIENT + *FISSION PRODUCT RETENTION + *LANTHANUM +
CHEMICAL KINETICS + CHEMICAL REACTION + METAL, LIQUID

7-18239 ALSO IN CATEGORY 8

BLAKELY JP + RUTHERFORD JL + OVERHOLSER LG
OXIDATION OF FUELED AND UNFUELED GRAPHITE SPHERES BY STEAM
OAK RIDGE NATIONAL LABORATORY
ORNL-P-1416 +. 30 PAGES, 1966

THE OXIDATION OF VARIOUS FUELED AND UNFUELED GRAPHITE SPHERES BY STEAM WAS DETERMINED AT 80C, 900, AND 1000 C, USING STEAM. THE FUELED SPHERES CONTAINED PYROLYTIC-CARBON-COATED UC2 OR (U,TH)C2 PARTICLES DISPERSED IN GRAPHITE MATRICES. REACTION RATES WERE DETERMINED FROM WEIGHT CHANGES AND ANALYSES OF THE EFFLUENT GASES. THE EFFECT OF BURNOFF ON THE REACTION RATE WAS FOUND TO BE QUITE PRONOUNCED. THE MARKED DIFFERENCES IN THE CO-TO-CO2 RATIOS IN THE EFFLUENT GASES APPEAR TO BE ASSOCIATED WITH BOTH THE DEGREE OF BURNOFF AND PURITY OF THE GRAPHITE. BET SURFACE AREA AND MERCURY-POROSIMETRY DATA OBTAINED FOR SEVERAL OXIDIZED UNFUELED SPHERES ARE INCLUDED.

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

*GRAPHITE + *OXIDATION + *STEAM + FUEL INTEGRITY + OUT OF PILE LOOPS AND EXPERIMENTS + URANIUM CARBIDE

7-18241

FORSYTH RS + BLACKADDER WH + RONQVIST N
BURN-UP DETERMINATION BY HIGH RESOLUTION GAMMA SPECTROMETRY - FISSION PRODUCT MIGRATION STUDIES
AKTIEBOLAGET ATOMENERGI, STOCKHOLM, SWEDEN
AE-272 +. 21 PAGES, APRIL 1967

THE MIGRATION OF SOLID FISSION PRODUCTS, IN PARTICULAR CS AND RU, IN HIGH-TEMPERATURE OXIDE FUEL CAN CREATE A SEVERE PROBLEM DURING THE APPLICATION OF NONDESTRUCTIVE BURNUP METHODS EMPLOYING GAMMA SPECTROMETRY, SINCE CS-137 IS OTHERWISE THE MOST CONVENIENT LONG-LIVED BURNUP MONITOR AND RU-106 CAN BE USED TO DISTINGUISH BETWEEN FISSIONS IN U-235 AND PU-239. AS PART OF AN EXPERIMENTAL PROGRAM TO DEVELOP BURNUP METHODS GAMMA-SCANNING EXPERIMENTS WERE RUN ON SLICES OF IRRADIATED UO2 PELLETS, USING A LITHIUM-DRIFTED GERMANIUM DETECTOR. THE USEFULNESS OF THE TECHNIQUE FOR MIGRATION STUDIES WAS DEMONSTRATED BY COMPARING THE FISSION-PRODUCT-DISTRIBUTION CURVES ACROSS THE SPECIMEN DIAMETERS WITH THE MICROSTRUCTURE OF THE SPECIMENS AFTER POLISHING AND ETCHING.

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

*ANALYTICAL TECHNIQUE, GENERAL + *CESIUM + *DIFFUSION + *RUTHENIUM + FISSION PRODUCT TRANSPORT +
PLUTONIUM + URANIUM DIOXIDE

7-18242

STEINBERG M
FISSION RECOIL SYNTHESIS
BROOKHAVEN NATIONAL LABORATORY, UPTON, NEW YORK
12 PAGES, 11 FIGURES, 6 TABLES, CHEMICAL ENGINEERING PROGRESS 62(9) PAGES 105-116 (SEPT. 1966)

ULTIMATELY, CHEMONUCLEAR PROCESSES HAVE THE CAPABILITY OF PRODUCING LARGE QUANTITIES OF LOW-RISK BASIC CHEMICALS, SUCH AS FIXED NITROGEN, SYNTHESIS GAS, AND OZONE, AT COSTS WHICH ARE COMPARABLE WITH THOSE PRESENTLY POSSIBLE IN CONVENTIONAL PROCESSES. EIGHTY-FOUR PERCENT OF THE NUCLEAR ENERGY RELEASED IN THE FISSIONING OF URANIUM AND PLUTONIUM NUCLEAR FUEL IS INITIALLY CARRIED OFF BY FISSION FRAGMENT ISOTOPES AS KINETIC RECOIL ENERGY. AN IMPORTANT PROPERTY OF HIGH-ENERGY RADIATION IS THAT THE INTERACTIONS AND RESULTANT CHEMICAL CHANGES CAN BE MADE TO TAKE PLACE AT A LOW BULK TEMPERATURE IN THE MATERIAL. THE TEMPERATURE EQUIVALENT TO THE TRANSLATIONAL ENERGY OF A FISSION FRAGMENT AND ITS INTERACTION IS MANY MILLIONS OF DEGREES.

*FISSION RECOIL + *IN PILE EXPERIMENT + *IN PILE LOOP + CARBON DIOXIDE + CHEMICAL REACTION + NITROGEN +
OZONE + THERMODYNAMICS

7-18246 ALSO IN CATEGORY 11

VIVIAN JE + BRIAN PL + KRUKONIS VJ
GAS ABSORPTION IN PACKED COLUMNS - LIQUID PHASE RESISTANCE IN THE LOADING REGION
MASSACHUSETTS INSTITUTE OF TECHNOLOGY, CAMBRIDGE, MASS.
2 PAGES, 3 FIGURES, A.I.C.H.E.J 13(1), PAGES 174-175 (JANUARY 1967)

DATA ON LIQUID-PHASE-CONTROLLED GAS ABSORPTION IN THE LOADING REGIME ARE PRESENTED. CARBON DIOXIDE WAS DESORBED FROM WATER BY USING A 6-IN.-DIAM TOWER AND 1/2-AND 3/4-IN. CERAMIC RINGS. BELOW THE LOADING POINT, H-SUB-L INCREASES APPROXIMATELY AS THE 0.25 POWER OF THE LIQUID RATE AND IS INDEPENDENT OF GAS RATE. IN THE LOADING REGIME, HOWEVER, IT WAS FOUND THAT AT HIGH GAS RATES H-SUB-L INCREASES LESS RAPIDLY AND MAY EVEN DECREASE WITH INCREASE IN

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-18246 *CONTINUED*

LIQUID RATE, AND THAT AT LOW GAS RATES H-SUB-L INCREASES MORE RAPIDLY WITH AN INCREASE IN LIQUID RATE. AT INTERMEDIATE GAS RATES, THE EFFECT OF LIQUID RATE ON H-SUB-L IS INTERMEDIATE. THESE EFFECTS ARE EXPLAINED ON THE BASIS OF THE INTERACTION OF THE GAS AND LIQUID FLOW RATES AND THE EFFECT OF THIS INTERACTION ON K-SUB-L AND A. THE RESULTS SUGGEST THAT IN SOME CASES TOWER CAPACITY MAY BE INCREASED WITHOUT INCREASING H-SUB-L.

*ADSORPTION + *CARBON DIOXIDE + *CHEMISORPTION + AIR CLEANING + CONTAINMENT DESIGN + NOBLE GAS

7-18250 ALSO IN CATEGORY 17

RIGGS CO + HASSELL LD
RADIOACTIVE IODINE RELEASE FROM PM-3A CONTAINMENT VESSELS
MARTIN COMPANY, BALTIMORE, MD.
MND-M3A-3108(P.T. B) +. 26 PAGES, REFERENCES, NOVEMBER 15, 1963

A CONSERVATIVE ANALYSIS OF THE IODINE RELEASE FROM THE PM-3A NUCLEAR POWER PLANT, BASED ON THE METHOD OF TID-14844 MODIFIED FOR LEAK RATES TO 5' PER DAY AND DIFFERENT METEOROLOGICAL CONDITIONS, ESTABLISHES THAT THE 72-HR INTEGRATED DOSE TO THE THYROID WOULD NOT EXCEED 243 RADS IN THE WORST CASE. IT IS CONCLUDED, THEREFORE, THAT UNDUE HAZARD TO PERSONNEL DOES NOT EXIST IN THE EVENT OF A MAXIMUM CREDIBLE ACCIDENT.

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

*FISSION PRODUCT, IODINE + *HAZARD, RELATIVE + *IODINE + *OPERATING EXPERIENCE +
CONTAINMENT LEAKAGE CONTROL + FISSION PRODUCT RELEASE, GENERAL + HAZARDS ANALYSIS + PRESSURE VESSEL

7-18251

SOMORJAI GA
CALCULATED DIFFUSION-CONTROLLED EVAPORATION RATES OF ELEMENTS FROM GERMANIUM
7 PAGES, 2 FIGURES, 1 TABLE, 37 REFERENCES, TRANS. ASM 57, PAGE 36-32 (1964)

THE EVAPORATION RATES OF MANY COMPOUNDS INTO VACUUM WERE APPRECIABLY LOWER THAN THAT OF THEIR MAXIMUM EVAPORATION RATES, CALCULATED FROM EQUILIBRIUM VAPOR-PRESSURE MEASUREMENTS. THE LOW EVAPORATION RATE IS BELIEVED DUE TO A RATE-LIMITING SURFACE REACTION WHICH PRECEDES THE DESORPTION STEP. DIFFUSION OF THE EVAPORATING SPECIES TO THE SURFACE CAN ALSO BE THE RATE-DETERMINING STEP IN THE EVAPORATION PROCESS. THE IMPURITY-GERMANIUM SYSTEMS ARE DEPICTED TO DEMONSTRATE DIFFUSION-GOVERNED VAPORIZATION. THE OVERALL EVAPORATION RATES WERE DERIVED AND CALCULATED FOR A NUMBER OF IMPURITIES.

*DIFFUSION + *DIFFUSION COEFFICIENT + *EVAPORATION + *VAPOR, VAPOR PRESSURE + ALLOY + CHEMICAL KINETICS +
FISSION PRODUCT RELEASE, GENERAL + METAL + PROPERTY, PHYSICAL + THERMODYNAMICS

7-18284

ALSO IN CATEGORY 4
ANSELIN F + BAILEY WE

THE ROLE OF FISSION PRODUCTS IN THE SWELLING OF IRRADIATED UO₂ AND (U, PU)₂
CEA-FRANCE + GENERAL ELECTRIC, SUNNYVALE
CONF-670602 +. 2 PAGES, REFERENCES, ANS TRANS. 10(1), PAGES 103-104, 1967 ANNUAL MEETING, AMERICAN NUCLEAR SOCIETY, SAN DIEGO, CALIFORNIA, JUNE 11-15, 1967

FUEL SWELLING IS PRESENTLY THE MAJOR DESIGN CONSIDERATION FOR SATISFACTORY FUEL PERFORMANCE IN FAST REACTORS. TO ESTABLISH A BETTER UNDERSTANDING OF OXIDE FUEL BEHAVIOR AT HIGH BURNUPS, AN ANALYSIS OF THE SWELLING DUE TO NONVOLATILE FISSION PRODUCTS IN BOTH UO₂ AND (PU_{0.2}U_{0.8})₂ FUEL WAS MADE. CONSIDERING THE RELATIVE THERMODYNAMIC BEHAVIOR OF THE IRRADIATED OXIDE MATRIX, THE FISSION PRODUCTS, AND THE CLAD, IT CAN BE SHOWN THAT ABOUT 0.3 AND 0.7 OXYGEN ATOM ARE AVAILABLE PER URANIUM OR PLUTONIUM FISSION, RESPECTIVELY. DEPENDING ON THE INITIAL STOICHIOMETRY OF THE FUEL, THE OXYGEN AVAILABLE FROM FISSION CAN EITHER BE DISSOLVED IN THE OXIDE MATRIX OR OXIDIZE THE STAINLESS-STEEL CLAD SO THAT A FINAL-EQUILIBRIUM STOICHIOMETRY IS REACHED AT APPROXIMATELY O/M EQUALS 2.00. THIS MAY EXPLAIN THE PRESENCE OF OXIDATION LAYERS OBSERVED AT THE FUEL-CLAD INTERFACE, AND THE INCREASING THICKNESS OF THIS LAYER WITH BURNUP.

*FUEL BURNUP + *FUEL INTEGRITY + *FUEL SEGREGATION + FISSION PRODUCT RETENTION + PROPERTY, PHYSICAL +
REACTOR, FAST

7-18286

ALSO IN CATEGORY 17
KIRSLIS SS + BLANKENSHIP FF + GRIMES WR
FISSION-PRODUCT BEHAVIOR IN MOLTEN SALT REACTORS
OAK RIDGE NATIONAL LABORATORY

CONF-670602 +. 2 PAGES, ANS TRANS. 10(1), PAGES 155-156, 1967 ANNUAL MEETING, AMERICAN NUCLEAR SOCIETY, SAN DIEGO, CALIFORNIA, JUNE 11-15, 1967

THE SUCCESSFUL POWER OPERATION OF THE MOLTEN SALT REACTOR EXPERIMENT (MSRE) AT ORNL FOR THE LAST YEAR PROVIDED THE OPPORTUNITY FOR STUDYING THE CHEMICAL BEHAVIOR OF FISSION PRODUCTS IN A MOLTEN-SALT FUEL UNDER REALISTIC OPERATING CONDITIONS. THOSE FISSION PRODUCTS WITH STABLE FLUORIDES DID NOT DEPOSIT ON THE METAL AND GRAPHITE. EVIDENCE WAS SEEN OF RARE-GAS PENETRATION INTO GRAPHITE, WITH DEEPER PENETRATION AND FLATTER CONCENTRATION GRADIENTS FOR THE DAUGHTERS OF LONG-LIVED RARE GASES.

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-18286 *CONTINUED*

*MOLTEN FUEL + *OPERATING EXPERIENCE + *REACTOR, MOLTEN SALT + ALLOY + COOLANT CHEMISTRY +
FISSION PRODUCT TRANSPORT + GRAPHITE + LIQUID FUEL

7-18287

CHILENSKAS AA

FISSION-PRODUCT AND ACTINIDE DISTRIBUTION DURING REPROCESSING OF IRRADIATED UO₂ BY THE FLUID-BED FLUORIDE
VOLATILITY METHOD

ARGONNE NATIONAL LABORATORY, ARGONNE, ILL.

CONF-670602 +. 1 PAGE, 2 REFERENCES, ANS TRANS. 10(1), PAGE 157, 1967 ANNUAL MEETING, AMERICAN NUCLEAR
SOCIETY, SAN DIEGO, CALIFORNIA, JUNE 11-15, 1967

A SMALL-SCALE FACILITY IS BEING OPERATED AT ARGONNE NATIONAL LABORATORY TO DEMONSTRATE THE
PROCESSING OF IRRADIATED NUCLEAR REACTOR FUELS BY A FLUID-BED FLUORIDE-VOLATILITY PROCESS.
IN THE CURRENT SCHEME, ENVISIONED FOR THE PROCESSING OF LOW-ENRICHMENT URANIUM OXIDE FUELS,
THE FUEL THAT IS LOADED INTO THE FLUID-BED REACTOR, IS CHEMICALLY DECLAD, AND THE UO₂ IS
CONVERTED TO POWDERED U₃O₈ BY OXIDATION AT ABOUT 400 C. THE REMOVAL OF URANIUM AND ITS
QUANTITATIVE SEPARATION FROM PLUTONIUM IS EFFECTED BY THE USE OF BR₂ GAS TO SELECTIVELY
VOLATILIZE THE URANIUM AS UF₆ WHILE LEAVING THE PLUTONIUM AS THE NONVOLATILE PUF₆ IN THE
REACTOR BED. THE PLUTONIUM IS VOLATILIZED IN THE FINAL STEP BY THE FORMATION OF PUF₆ WITH
ELEMENTAL FLUORINE AT REACTOR-BED TEMPERATURES GRADUALLY INCREASED FROM 300 TO 550 C.

*FISSION PRODUCT RELEASE, GENERAL + *FUEL HANDLING + *FUEL REPROCESSING + CHEMICAL REACTION +
FISSION PRODUCT TRANSPORT + FISSION PRODUCT, VOLATILE + PLUTONIUM + URANIUM DIOXIDE

7-18288

ALSO IN CATEGORY 11

WATSON GM + PEREZ RB + FONTANA MH

EFFECTS OF CONTAINMENT SYSTEM SIZE ON FISSION-PRODUCT BEHAVIOR

UNIVERSITY OF FLORIDA + OAK RIDGE NATIONAL LABORATORY

CONF-670602 +. 2 PAGES, ANS TRANS. 10(1), PAGES 339-340, 1967 ANNUAL MEETING, AMERICAN NUCLEAR SOCIETY,
SAN DIEGO, CALIF., JUNE 11-15, 1967

SIMPLE MATHEMATICAL MODELS TO AID IN THE DETERMINATION OF EFFECTS OF CONTAINMENT SIZE ON
PLATE-OUT BEHAVIOR OF IODINE WERE POSTULATED. TWO GENERAL CLASSES OF SYSTEMS WERE
CONSIDERED, DEPENDING ON ABSENCE OR PRESENCE OF STEAM. A MODEL FOR PREDICTING THE
MASS-TRANSFER COEFFICIENTS USING FILM THEORY AND BOUNDARY LAYER ANALYSIS WAS DEVELOPED FOR
THE DRY CASES BASED ON ROUGH APPROXIMATIONS CONCERNING THE FLOW VELOCITY STRUCTURE WITHIN THE
CONTAINMENT SHELL, THESE FLOWS BEING INDUCED BY NATURAL CONVECTION.

*ANALYTICAL MODEL + *CONTAINMENT DESIGN + *CONTAINMENT RESEARCH AND DEVELOPMENT + *IODINE +
*MATHEMATICAL STUDY + DIFFUSION + FISSION PRODUCT TRANSPORT + MASS TRANSFER + ORGANIC IODIDE + STEAM +
SURFACE TO VOLUME RATIO

7-18289

PARKER GW + BUCHHEIT H

LOW-PRESSURE CASCADE IMPACTOR AS A TOOL FOR THE STUDY OF SIZE DISTRIBUTION OF FISSION-PRODUCT AEROSOLS
OAK RIDGE NATIONAL LABORATORY + HAHN-MEITNER INSTITUTE, GERMANY

CONF-670602 +. 2 PAGES, 1 TABLE, 2 REFERENCES, ANS TRANS. 10(1), PAGES 338-339, 1967 ANNUAL MEETING,
AMERICAN NUCLEAR SOCIETY, SAN DIEGO, CALIFORNIA, JUNE 11-15, 1967

THE AIRBORNE PARTICLES PRODUCED IN A REACTOR ACCIDENT CARRY A LARGE AMOUNT OF HIGHLY
RADIOACTIVE FISSION PRODUCTS. LARGE PARTICLES DROP OUT OF THE ATMOSPHERE QUICKLY, AND ONLY
THOSE PARTICLES SMALLER THAN A FEW MICRONS IN DIAMETER REMAIN AIRBORNE LONG ENOUGH TO
CONSTITUTE A HAZARD IN THE REACTOR ENVIRONMENT. THE SUITABILITY OF THE MODIFIED ANDERSEN
SAMPLER (AS) FOR SAMPLING AND SIZE SEPARATION OF SMALL PARTICLES WAS TESTED, USING SEVERAL
RADIOACTIVELY LABELED PARTICLES SMALLER THAN 1 MICRON IN DIAMETER. IN ALL CASES, THE MAIN
PORTION OF THE ACTIVITY WAS FOUND IN THE SAMPLER AND ONLY A SMALL PORTION ON THE BACKUP
FILTER. THIS MEANS THAT THE AS WAS ADEQUATELY EFFICIENT FOR THE AEROSOL UNDER INVESTIGATION.

*FILTER + *PARTICLE SIZE DISTRIBUTION + AEROSOL + AEROSOL PROPERTIES + FILTER IMPACTION + PARTICLE SIZE

7-18290

HILLIARD RK + MCCORMACK JD + COLEMAN LF

A COMPARISON OF IODINE CONTAINMENT BEHAVIOR--SIMULATED AEROSOL VS IRRADIATED SOURCES
PACIFIC NORTHWEST LABORATORY

CONF-670-602 +. 1 PAGE, 1 TABLE, 2 REFERENCES, ANS TRANS. 10(1), PAGE 338, 1967 ANNUAL MEETING, AMERICAN
NUCLEAR SOCIETY, SAN DIEGO, CALIFORNIA, JUNE 11-15, 1967

SIMULATED FISSION-PRODUCT AEROSOLS WILL BE USED IN THE CONTAINMENT SYSTEMS EXPERIMENT (CSE) TO
STUDY THE TRANSPORT OF FISSION PRODUCTS UNDER VARIOUS ACCIDENT CONDITIONS, BOTH WITH AND
WITHOUT THE INFLUENCE OF ENGINEERED SAFEGUARDS. THE PROGRAM CALLS FOR REPETITIVE RELEASES OF
LARGE MASSES OF FISSION-PRODUCT AEROSOLS, A REQUIREMENT WELL MET BY THE USE OF SIMULANTS BUT
IMPRACTICAL WITH HIGH BURNUP FUEL. ALTHOUGH SIMULATION GIVES GREAT BENEFITS, IT IS JUSTIFIED
ONLY IF CONTAINMENT BEHAVIOR IS IDENTICAL TO OR CAN BE CORRELATED WITH REAL FISSION PRODUCTS.
THIS PAPER REPORTS THE RESULTS OF AN INITIAL VERIFICATION OF THIS SIMILARITY. OTHER TESTS
ARE IN PROGRESS. CONCLUSIONS ARE THAT THE EFFECTIVE GAS-PHASE MASS TRANSFER COEFFICIENTS
WERE NEARLY IDENTICAL BUT DEPENDENT ON STEAM-CONDENSATION RATE, THAT MORE OF THE SIMULANT WAS
RETAINED IN THE CONDENSATE AND LESS ON THE WALLS, THAT SLOW RELEASE AT NEAR CLAD-MELTING

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-18290 *CONTINUED*

TEMPERATURES MAY OCCLUDE IODINE IN FUEL AND CLAD PARTICLES AND THAT EQUILIBRIUM GAS CONCENTRATION WAS ATTAINED WHEN ORGANIC IODINE FORMS PREDOMINATED.

*AEROSOL + *AEROSOL PRODUCTION + *AEROSOL PROPERTIES + *CONTAINMENT RESEARCH AND DEVELOPMENT + *IODINE + AEROSOL, RADIOACTIVE + CSE (CONTAINMENT SYSTEMS EXPERIMENT) + FISSION PRODUCT TRANSPORT + FISSION PRODUCT, IODINE + MASS TRANSFER + OUT OF PILE LOOPS AND EXPERIMENTS + STEAM

7-18291 ALSO IN CATEGORY 4

CLIFFORD JC

BEHAVIOR OF LONG-LIVED FISSION PRODUCTS IN SODIUM

LOS ALAMOS SCIENTIFIC LABORATORY

CONF-670602 +. 2 PAGES, ANS TRANS. 10(1), PAGE 336, 1967 ANNUAL MEETING, AMERICAN NUCLEAR SOCIETY, SAN DIEGO, CALIFORNIA, JUNE 11-15, 1967

THE BEHAVIOR OF FISSION PRODUCTS RELEASED TO SODIUM COOLANT FROM FAILED OR DELIBERATELY VENTED REACTOR FUEL ELEMENTS MAY LIMIT ACCESS TO THE PRIMARY COOLANT SYSTEM AND AFFECT THE CONSEQUENCES OF A LOSS-OF-COOLANT INCIDENT. DEPENDING ON THE FISSION-PRODUCT INVENTORY ANTICIPATED IN THE COOLANT, IT MAY BE DESIRABLE TO CONCENTRATE URANIUM, PLUTONIUM, LONG-LIVED ENERGETIC GAMMA-EMITTING ISOTOPES, AND SHORT-LIVED BIOLOGICALLY HAZARDOUS ISOTOPES AT SPECIFIC LOCATIONS WITHIN THE PRIMARY SYSTEM. LONG-LIVED FISSION PRODUCTS ARE ADDED TO A SMALL, FORCED-CONVECTION SODIUM LOOP BY IMMERSING IRRADIATED PLUTONIUM-BASE FUEL IN THE SODIUM. THE BEHAVIOR OF CS-137 RELEASED FROM A METALLIC FUEL TO HOT-TRAPPED SODIUM SUGGESTS THAT CESIUM IS A MOBILE VOLATILE SPECIES WHICH IS WEAKLY ADSORBED ON STAINLESS-STEEL SURFACES OPERATING IN THE 300 TO 600 C RANGE.

*CESIUM + *COOLANT CHEMISTRY + *FISSION PRODUCT RETENTION + *METAL, LIQUID + *SODIUM + EUROPIUM + FISSION PRODUCT TRANSPORT + REACTOR, FAST + REACTOR, LIQUID METAL COOLED + RUTHENIUM + STRONTIUM

7-18292

LORENZ RA + PARKER GW

FISSION-PRODUCT RELEASE FROM WATER-REACTOR TRANSIENT ACCIDENTS SIMULATED IN TREAT

OAK RIDGE NATIONAL LABORATORY

CONF-670602 +. 1 PAGE, ANS TRANS. 10(1), PAGE 340, 1967 ANNUAL MEETING, AMERICAN NUCLEAR SOCIETY, SAN DIEGO, CALIFORNIA, JUNE 11-15, 1967

IN EACH EXPERIMENT, A REACTOR ACCIDENT WAS SIMULATED BY FIRST PREHEATING THE FUEL AUTOCLAVE TO ABOUT 120 C, EXECUTING THE TRANSIENT WHICH RESULTED IN MELTING OF THE FUEL SPECIMEN, AND ALLOWING THE TRANSIENT-GENERATED AEROSOL TO LEAVE THE FUEL AUTOCLAVE. STEAM WAS CONDENSED AND COLLECTED IN WATER TRAPS, AND NONCONDENSABLE GASES PASSED THROUGH A SERIES OF FILTER PAPERS AND CHARCOAL-LOADED PAPERS INTO A GAS-COLLECTION TANK. TO SIMULATE ACCIDENT AFTER-HEAT, THE AUTOCLAVE WAS HEATED ELECTRICALLY TO ABOUT 300 C FOR ONE HOUR TO BOIL OUT ANY WATER REMAINING IN IT.

*CLAD + *FISSION PRODUCT RELEASE, GENERAL + *FUEL MELTDOWN + *IN PILE EXPERIMENT + *URANIUM DIOXIDE + ALLOY + FISSION PRODUCT TRANSPORT + STEAM + ZIRCONIUM

7-18344 ALSO IN CATEGORY 4

FURUKAWA K + YAMAMOTO K + NIHEI I + IGUCHI Y

LIQUID SODIUM TECHNOLOGY DEVELOPMENT. I. TEST LOOPS, PURIFICATION METHODS, AND SUPPLEMENTARY TECHNIQUES

JAPAN ATOMIC ENERGY RESEARCH INST., TOKYO

JAERI-1129 +. 32 PAGES, FIGURES, TABLES, 11 REFERENCES, NOVEMBER 1965

THE INITIAL RESULTS OF THE DEVELOPMENT PROGRAM OF THE LIQUID SODIUM LOOPS AND THEIR ASSOCIATED TECHNOLOGY ARE REPORTED COVERING UNTIL THE END OF 1965. THE RESULTS OF CORROSION AND CARBURIZATION TESTS ARE ALSO SHOWN. IN THE TESTS, EMPHASIS WAS PLACED ON AUSTENITIC STAINLESS STEELS (304, 316, 347) FOLLOWED BY CR-MO STEELS AND REFRACTORY METALS (NB, TA, MO, ZR, AND TI). THE ANALYTICAL DATA AND BEHAVIORS ARE ALSO DESCRIBED FOR OXYGEN, CARBON, ETC., IN SODIUM. THE RESULTS OF DEVELOPMENTS, AND THE CAUTIONS TO BE TAKEN IN THEIR OPERATION ARE SHOWN FOR VARIOUS INSTRUMENTS (IMPURITY-, LEVEL-, PRESSURE- AND FLOW-METERS), PREHEATING SYSTEM, COMPONENTS CLEANING METHOD, AND HAZARD PROTECTIONS (SODIUM HANDLING, PROTECTIVE CLOTHES AND FIRE EXTINGUISHING). A SUMMARY OF THE RESULTS OBTAINED IN RESEARCH AND DEVELOPMENT EFFORTS IN TEST LOOP COMPONENTS AND AUXILIARY TECHNIQUES NECESSARY AS THE BASIS OF THE LIQUID-SODIUM TECHNOLOGY DEVELOPMENT ARE PRESENTED. ESPECIALLY, THE RESULTS OF THE DEVELOPMENT EFFORTS IN PREHEATING SYSTEM, PURIFICATION SYSTEM, AND INSTRUMENTATION, WHICH ARE NECESSARY FOR THE DESIGN, CONSTRUCTION AND OPERATION OF 1 TO APPROXIMATELY 3-IN. PIPING TEST LOOPS, WERE DESCRIBED. THE RESULTS OF THE MATERIALS CORROSION TESTS ARE DISCUSSED IN RELATION TO THE BEHAVIOR OF THE IMPURITIES. THE TECHNIQUES WERE ESTABLISHED FOR THE CHEMICAL ANALYSIS OF THE IMPURITIES IN SODIUM, CLEANING OF THE SODIUM CONTAMINATED COMPONENTS, AND HAZARD PROTECTION.

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

*CORROSION + *SODIUM + *STEEL, STAINLESS + FIRE + JAPAN + REFRACTORY MATERIAL + STEEL

7-18346

STRINGHAG O

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-18346 *CONTINUED*

A BURST CAN DETECTION SYSTEM UTILIZING COMBINED FISSION GAS MONITORING AND ELECTROSTATIC PRECIPITATION
AB ATOMENERGI, STUOSSVIK, SWEDEN
11 PAGES, 9 FIGURES, 4 TABLES, 8 REFERENCES, NUCL. INSTR. AND METHODS 48(1), PAGE 45 THRU 55, (FEBRUARY
11, 1967)

A BURST-CAN-DETECTION SYSTEM IS DESCRIBED WHOSE DETECTOR UNIT CAN BE USED BOTH FOR FISSION-GAS
MONITORING AND ELECTROSTATIC PRECIPITATION. THE SYSTEM WHEN INSTALLED IN A REACTOR TEST LOOP
SHOWED A VERY HIGH SENSITIVITY WHEN CALIBRATED WITH ZR/U FOILS.

*FISSION GAS RELEASE + *IN PILE LOOP + *INSTRUMENTATION, RADIATION MONITORING +
INSTRUMENTATION, DETECTION FAILED FUEL ELEMENT + MONITOR, RADIATION, SAMPLING + TESTING

7-18347 ALSO IN CATEGORY 4

MOTZ J
INVESTIGATION OF SEVERAL FERRITIC STEELS FOR HIGH TEMPERATURE SERVICE AND THEIR APPLICABILITY IN SODIUM
SYSTEMS UP TO TEMPERATURES OF ABOUT 600 C
INTERATOM GMBH, GERMANY
AI-TRANS-233 +. 11 PAGES, FIGURES, 7 REFERENCES, TRANSLATED FOR ATOMICS INTERNATIONAL, CANOGA PARK,
CALIFORNIA FROM Z. METALLK., 55, PAGE 489 THRU 494, (1964)

COMMERCIAL CONSIDERATIONS LEAD TO AN INVESTIGATION OF SEVERAL FERRITIC STEELS FOR
HIGH-TEMPERATURE SERVICE (OR HEAT-RESISTANT STEELS) IN ADDITION TO AUSTENITIC MATERIALS IN
RESPECT TO THEIR SUITABILITY FOR COMMERCIAL SODIUM SYSTEMS UP TO 600 C. ACCORDING TO THE
RESULTS OBTAINED HERE, THE STEEL 10CRMONB9-10 IS SUITABLE FOR THIS PURPOSE.

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

*CORROSION + *REACTOR COOLANT + *SODIUM + *STEEL + ALLOY + METAL, LIQUID + STEEL, STAINLESS

7-18348 ALSO IN CATEGORY 4

SODIUM COOLED REACTORS FAST CERAMIC REACTOR DEVELOPMENT PROGRAM. QUARTERLY REPORT NO. 21, NOVEMBER
1966-JANUARY 1967
GENERAL ELECTRIC CO., SUNNYVALE, CALIFORNIA. ADVANCED PRODUCTS OPERATION
GEAP-5433 +. 89 PAGES, FEBRUARY 1967

THE FAST CERAMIC REACTOR DEVELOPMENT PROGRAM IS AN INTEGRATED ANALYTICAL AND EXPERIMENTAL
PROGRAM DIRECTED TOWARD THE DEVELOPMENT OF FAST REACTORS EMPLOYING CERAMIC FUELS, WITH
PARTICULAR ATTENTION TO MIXED PLUTONIUM-URANIUM OXIDE. ITS MAJOR OBJECTIVES ARE -
DEVELOPMENT OF A RELIABLE HIGH-PERFORMANCE FAST REACTOR HAVING NUCLEAR CHARACTERISTICS WHICH
PROVIDE STABLE AND SAFE OPERATION, AND DEMONSTRATION OF LOW FUEL-CYCLE COST CAPABILITY FOR
SUCH A REACTOR, PRIMARILY THROUGH ACHIEVING HIGH BURNUP OF CERAMIC FUELS OPERATING AT HIGH
SPECIFIC POWER, VENTED-FUEL DEVELOPMENT, TRANSIENT TESTING OF FUELS, FUEL-PERFORMANCE
EVALUATION, FAST-FLUX IRRADIATION OF FUEL, REACTOR PHYSICS AND CORE ANALYSIS, FCR CLADDING
EVALUATION.

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

*CERAMICS + *FUEL INTEGRITY + *SODIUM + *TESTING + COOLANT CHEMISTRY + FUEL BURNUP + METAL, LIQUID +
RADIATION EFFECT + REACTOR, BREEDER + REACTOR, FAST

7-18349

HALLER WA + PERKINS RW + NIELSEN JM
CESIUM-137 DETERMINATION IN FISSION PRODUCTS BY DIRECT BETA-GAMMA COINCIDENCE COUNTING
PACIFIC NORTHWEST LABORATORY, RICHLAND, WASHINGTON 99352
8 PAGES, 6 FIGURES, 5 TABLES, 6 REFERENCES, NUCLEAR APPLICATIONS 3(7), PAGE 436 THRU 443, (JULY 1967)

AN INSTRUMENTAL METHOD WAS DEvised AND TESTED FOR THE DIRECT MEASUREMENT OF CS-137 IN FISSION
PRODUCT MIXTURES. THE METHOD IS BASED ON BETA-GAMMA COINCIDENCE COUNTING AND INVOLVES BETA
COUNTING OF THE MIXTURE IN A LIQUID OR PLASTIC SCINTILLATOR WHILE SIMULTANEOUSLY MEASURING
THE GAMMA-RAY SPECTRUM WITH A NAI(11) DETECTOR-MULTICHANNEL ANALYZER ARRANGEMENT. CESIUM-137
IS UNIQUE AMONG THE LONG-LIVED FISSION PRODUCTS IN THAT ITS DECAY (ACTUALLY ITS 8A-137
DAUGHTER, $T_{1/2} = 2.8$ MIN) DOES NOT INVOLVE A PROMPT BETA-GAMMA COINCIDENCE. THE CS-137 IS
THEN MEASURED FROM A NONCOINCIDENCE GAMMA SPECTRUM WITH COMPARATIVELY LITTLE INTERFERENCE
FROM THE OTHER FISSION PRODUCTS. THE METHOD IS NOT DIRECTLY APPLICABLE TO RECENTLY
IRRADIATED FUELS BUT HAS BEEN APPLIED TO THE QUANTITATIVE MEASUREMENT OF CS-137 IN 8-MONTH-,
1.3-YEAR- AND 2.0-YEAR-OLD MATERIAL WITH STANDARD DEVIATIONS OF ABOUT 3, 0.8, AND 0.7%,
RESPECTIVELY.

*ANALYTICAL TECHNIQUE, CALIBRATION + *CESIUM + *TRACER, RADIOACTIVE + ANALYTICAL TECHNIQUE, GENERAL +
FISSION PRODUCT TRANSPORT + TRACER, GENERAL

7-18350

SPANGLER CW + LOTT SK + JONCICH MJ
REACTIONS OF GRAPHITE UNDER EXPLODING WIRE CONDITIONS
DEPARTMENT OF CHEMISTRY, MICHAEL FARADAY LABORATORIES, NORTHERN ILLINOIS UNIVERSITY, DEKALB, ILLINOIS

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-18350 *CONTINUED*
3 PAGES, 3 FIGURES, 2 TABLES, 14 REFERENCES, ELECTROCHEM. TECH. 5(5-6), PAGE 214 THRU 217, (MAY 6, 1967)

GRAPHITE RODS AND YARN WERE EXPLODED IN AIR, HYDROGEN, AND OXYGEN. THE OSCILLOSCOPIC TRACINGS OF CURRENT VS. TIME WERE DIFFERENT FROM THOSE PREVIOUSLY REPORTED FOR METALS. THE PRODUCTS OBTAINED FROM THE REACTION WITH HYDROGEN WERE IDENTIFIED BY MASS SPECTROGRAPHY AND SEEM TO CORRESPOND RATHER WELL WITH PREVIOUSLY REPORTED REACTIONS OF MONOATOMIC CARBON. THE TYPES AND DISTRIBUTION OF PRODUCTS CAN BE EXPLAINED ON THE BASIS OF INTERMEDIATE METHYLENE FORMATION. REACTION WITH OXYGEN IS DEPENDENT ON THE RELATIVE OXYGEN AVAILABILITY. IF OXYGEN IS A MINOR COMPONENT, CARBON MONOXIDE FORMATION IS FAVORED. CARBON DIOXIDE IS FORMED PREFERENTIALLY IN PURE OXYGEN.

*EXPLOSION + *GRAPHITE + *OXIDATION + CARBON + CHEMICAL REACTION + DEUTERIUM + HIGH TEMPERATURE + HYDROGEN

7-18352
FEATES FS + SACH RS
THE EFFECT OF GASEOUS ADDITIVES ON THE REACTION BETWEEN CARBON DIOXIDE AND GRAPHITE INDUCED BY VACUUM ULTRA-VIOLET RADIATION
ATOMIC ENERGY RESEARCH ESTABLISHMENT, HARWELL, BERKSHIRE, ENGLAND
7 PAGES, 3 FIGURES, 1 TABLE, 28 REFERENCES, CARBON 3, PAGE 261-267, (1966)

THE RATE AT WHICH GRAPHITE IS GASIFIED ON EXPOSURE TO PHOTOLYSED CARBON DIOXIDE IS REDUCED BY ADDITION OF 0.1 V/O METHANE. AN INTERPRETATION IS PROPOSED INVOLVING THE DECOMPOSITION OF METHANE INTO METHYL AND METHYLENE RADICALS, WHICH SUBSEQUENTLY REACT WITH THE GRAPHITE SURFACE. THE ADDITION OF OTHER SOURCES OF METHYLENE OR METHYL RADICALS (OIAZOMETHANE, KETENE, AZOMETHANE, AND ACETONE) ALSO REDUCE CARBON GASIFICATION. ACETYLENE, ETHYLENE, AND NITRIC OXIDE INHIBIT OXIDATION BY GAS-PHASE SCAVENGING OF OXYGEN ATOMS.

*CARBON DIOXIDE + *GRAPHITE + *OXIDATION + CARBON MONOXIDE + CHEMICAL REACTION + TRACER, GAS + TRACER, RADIOACTIVE

7-18353
BOWKETT KM + CHADDERTON LT + NORDEN H + RALPH B
FISSION FRAGMENT DAMAGE IN TUNGSTEN
CAMBRIDGE UNIVERSITY
7 PAGES, 5 FIGURES, 4 REFERENCES, PHIL. MAG. 15(134), PAGES 415-21 (FEBRUARY 1967)

THE STUDY OF FISSION-FRAGMENT DAMAGE IN TUNGSTEN BY FIELD-ION MICROSCOPY DESCRIBED IN AN EARLIER PAPER (BOWKETT ET AL., 1965) WAS CONTINUED. SPECIMENS WERE BOMBARDED WITH A COLLIMATED BEAM OF FISSION FRAGMENTS AT A MEASURED INCLINATION TO THE SPECIMEN AXIS, GIVING RESULTS WHICH SHOWED THAT IN SMALL SPECIMENS A COLUMN OF MATERIAL CAN BE PUSHED OUT ALONG THE FISSION FRAGMENT PATH. THESE FINDINGS LEND SUPPORT TO THE EXPLANATION ADVANCED FOR THE LIGHT-CONTRAST TRACKS OBSERVED BY ELECTRON MICROSCOPY OF THIN FOILS THAT HAVE BEEN IRRADIATED WITH FISSION FRAGMENTS (E.G., BOWDEN AND CHADDERTON, 1962).

*ELECTRON MICROSCOPY + *FISSION RECOIL + *RADIATION DAMAGE + *TUNGSTEN + RADIATION EFFECT

7-18475
MATTHEWS JB
MASS LOSS AND DISTORTION OF FREELY FALLING WATER DROPS IN AN ELECTRIC FIELD
INSTITUTE OF ATMOSPHERIC PHYSICS, UNIVERSITY OF ARIZONA, TUCSON, ARIZONA
7 PAGES, 5 FIGURES, JOURNAL OF GEOPHYSICAL RESEARCH 72(12), PAGE 3007 THRU 3013, (JUNE 15, 1967)

THE DEFORMATION AND RUPTURE OF FREELY FALLING WATER DROPS (4.3 AND 5.6 MM IN DIAMETER) IN HIGH ELECTRIC FIELDS HAVE BEEN STUDIED. IN CONFIRMATION OF OBSERVATIONS BY EARLIER WORKERS, THE DROPS BECAME GREATLY DISTORTED WHEN A CRITICAL FIELD WAS REACHED. WITH CONTINUED EXPOSURE TO THE FIELD OR INCREASE IN THE MAGNITUDE OF THE FIELD, FILAMENTS WERE DRAWN FROM THE DROPS. MASS LOSS FROM THE DROPS WAS MEASURED AND IS GIVEN AS A FUNCTION OF EXPOSURE TIME AND MAGNITUDE OF THE ELECTRIC FIELD. FOR A GIVEN DROP SIZE, THE CRITICAL FIELD WAS DEPENDENT ON EXPOSURE TIME FOR EXPOSURES OF LESS THAN 300 MSEC. DISTORTION OF THE DROPS IN THE FIELD WAS MEASURED, AND CONFIRMATION WAS MADE FOR TAYLOR'S CRITERION THAT DROPS BECAME UNSTABLE WHEN DISTORTED IN AN ELECTRIC FIELD UNTIL THEIR LENGTH IS 1.9 TIMES THEIR EQUATORIAL DIAMETER. THE POSSIBLE SIGNIFICANCE OF THE RESULTS TO PROCESSES OCCURRING IN A THUNDERCLOUD IS CONSIDERED.

*ELECTROSTATIC CHARGE + *ELECTROSTATIC PRECIPITATION + *PARTICLE SIZE + *SPRAY, GENERAL + ANALYTICAL TECHNIQUE, CALIBRATION + FILTER SPRAY + SEPARATOR + STEAM + WATER VAPOR

7-18509
HALL HJ
THE TECHNOLOGY OF GAS CLEANING - STATE OF THE ART
THE NEW YORK ACADEMY OF SCIENCES
18 PAGES, 13 FIGURES, 2 TABLES, 22 REFERENCES, TRANSACTIONS OF THE NEW YORK ACADEMY OF SCIENCES 11(29), PAGES 147-164 (DECEMBER 1966)

REVIEWS THE TECHNOLOGY AVAILABLE AND PROVED FOR CONTROLLING PARTICULATE EMISSIONS FROM STATIONARY SOURCES. IN VIEW OF THE IMPORTANCE OF AND LEGISLATIVE PRESSURE FOR REDUCING SULFUR OXIDE EMISSIONS, THE STATE OF THE ART OF CONTROLLING THIS SOURCE OF POLLUTION IS

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-18509 *CONTINUED*

DISCUSSED IN REASONABLE DETAIL. THE CONTROL OF MOTOR-VEHICLE EXHAUST, A MAJOR SOURCE OF POLLUTION IN CITIES, HAS BEEN DISCUSSED IN RECENT LITERATURE AND WILL NOT BE TREATED HERE.

*AIR CLEANING + *AIRBORNE RELEASE + *ATMOSPHERIC POLLUTION + ELECTROSTATIC PRECIPITATION + FILTER + FILTER, CASCADE IMPACTOR + FILTER, COMMERCIAL + FILTER, CYCLONE + FILTER, ROUGHING + PARTICULATE + SCRUBBER + SPRAY, GENERAL

7-18510

HATTORI S

IODINE BEHAVIOR

CHUBU ELECTRIC POWER CO., JAPAN

4 PAGES, 2 FIGURES, 4 TABLES, NIPPON GENSHIRYOKU GAKKAISHI 9, PAGES 656-9 (DEC. 1966)

THE COMMITTEE ON FISSION PRODUCTS RELEASE IS COMPOSED OF TWO STUDY GROUPS. GROUP A DEALS WITH FISSION-PRODUCT BEHAVIOR IN THE FUEL AND RELEASE THEREOF FROM THE FUEL. GROUP B DIRECTS ITS ACTIVITIES TOWARD QUANTITATIVE EVALUATION OF THE PHYSICAL AND CHEMICAL BEHAVIOR OF FISSION PRODUCTS RELEASED INTO THE SINGLE OR MIXED PHASES OF WATER, STEAM, AND AIR IN A NUCLEAR POWER PLANT. A BRIEF DESCRIPTION OF SOME INFORMATIVE DATA FROM A SELECTION OF PAPERS TAKEN UP AND CONSIDERED IN GROUP B IS PRESENTED.

*FISSION PRODUCT RELEASE, GENERAL + *FISSION PRODUCT, IODINE + *STEAM + FISSION PRODUCT TRANSPORT + IODINE + SPRAY, GENERAL + WATER VAPOR

7-18511

CASTLEMAN AW + TANG IN + MUNKELWITZ HR

AN INVESTIGATION OF THE CHEMICAL STATES OF IODINE AT LOW CONCENTRATIONS IN AN AQUEOUS ENVIRONMENT

BROOKHAVEN NATIONAL LABORATORY, UPTON, NEW YORK

BNL-11329 +. 24 PAGES, 3 FIGURES, 5 TABLES, APRIL 1967, ALSO IN JOURNAL OF INORGANIC AND NUCLEAR CHEMISTRY

THE CHEMICAL STATES OF IODINE IN AN AQUEOUS ENVIRONMENT, AT VERY LOW CONCENTRATIONS AND AT TEMPERATURES OF 1000 TO 1300 C, WERE INVESTIGATED, USING IODINE PRODUCED BY NEUTRON FISSION OF U, UO₂, AND UO₃. THE RESULTS SHOW THAT THE FINAL FORMS OF IODINE DEPEND ON THE CHEMICAL NATURE OF THE ENVIRONMENT, BEING LARGELY ELEMENTAL IN A NEUTRAL OR OXIDIZING ATMOSPHERE AND LARGELY IODIDE RADICAL IN A REDUCING ATMOSPHERE. ONLY THE REACTION $I + H_2 \rightarrow HI + H$ CAN ACCOUNT FOR THE EXTENT AND RATE OF FORMATION OF HI OBSERVED WHEN TRACER-LEVEL IODINE IS RELEASED INTO STEAM CONTAINING HYDROGEN. METHYL IODIDE IS PRODUCED BY REACTIONS BETWEEN ATOMIC IODINE AND IMPURITIES IN THE SYSTEM. ALL EXPERIMENTAL RESULTS CAN BE EXPLAINED ON THE BASIS OF KNOWN IODINE STATES.

*FISSION PRODUCT, IODINE + *ORGANIC IODIDE + *SPRAY, GENERAL + *STEAM + HYDROGEN + IODINE + METAL + OXIDE + TRACER, RADIOACTIVE + URANIUM + URANIUM DIOXIDE + WATER VAPOR

7-18512

YAJIMA S + KAMEMOTO Y + SHIBA K + HANDA M + YAMAGISHI S + FUKUDA T + TAKAHASHI Y + TANIFUJI T + OMORI S

STUDIES OF CERAMIC FUELS WITH THE USE OF FISSION GAS RELEASE LOOP. I. FISSION GAS RELEASE FROM

UO₂-GRAPHITE MIXTURE DURING IRRADIATION

TOHOKU UNIVERSITY, SENDAI + JAPAN ATOMIC ENERGY COMMISSION

7 PAGES, 8 FIGURES, 14 REFERENCES, J. NUCLEAR SCIENCE AND TECHNOLOGY (TOKYO) 4, PAGES 164-170 (APRIL 1967)

FISSION GAS RELEASE FROM A UO₂-GRAPHITE MIXTURE WAS STUDIED DURING IRRADIATION WITH THE USE OF THE FISSION GAS RELEASE LOOP IN THE JRR-3 REACTOR. THE RELEASE RATES OF FISSION KRYPTON AND XENON INCREASED PROPORTIONALLY WITH NEUTRON FLUX (6 X 10 TO THE 10TH TO 12TH N/CM SQUARED SEC) AND EXPONENTIALLY WITH TEMPERATURE (400 TO ABOUT 1,000 C). A BURST OF FISSION GAS WAS OBSERVED WHEN THE SPECIMEN WAS ABRUPTLY HEATED TO A HIGHER TEMPERATURE. THESE RESULTS CAN BE EXPLAINED BY A MECHANISM WHEREBY FISSION GAS IS TRAPPED IN DEFECTS CREATED IN GRAPHITE BY FISSION FRAGMENTS AND RELEASED THROUGH ANNEALING OF THE DEFECTS.

*FISSION GAS RELEASE + *GRAPHITE + *IN PILE EXPERIMENT + *NOBLE GAS + *URANIUM DIOXIDE + KRYPTON + RADIATION DAMAGE + RADIATION EFFECT + TESTING + XENON

7-18513

ALSO IN CATEGORY 4

AUSKERN A

RARE GAS DIFFUSION IN NONSTOICHIOMETRIC ZIRCONIUM CARBIDE

BROOKHAVEN NATIONAL LABORATORY, UPTON

BNL-10595 + 12 PAGES, 9 FIGURES, 5 TABLES, 35 REFERENCES, JOURNAL OF NUCLEAR MATERIALS 22, PAGES 257-68 (1967)

THE RELEASE OF TRACER AMOUNTS OF XE-133 FROM ZIRCONIUM CARBIDE POWDER WAS MEASURED OVER A RANGE OF POWDER COMPOSITIONS. RELEASE IS FOR THE MOST PART DIFFUSION-CONTROLLED. THE ACTIVATION ENERGY AND D-SUB-O VARY GREATLY WITH CARBON CONTENT. FOR LOW CARBON MATERIAL E-SUB-D IS LESS THAN 80 KCAL/MOLE. E-SUB-D INCREASES TO 190 KCAL/MOLE FOR ZRC-SUB-O.83. THE ACTIVATION ENERGY FOR ZRC-SUB-O.58 APPEARS CONSISTENT WITH ESTIMATES BASED ON METALLIC SYSTEMS, WHILE FOR HIGHER CARBIDES THE METALLIC MODEL UNDERESTIMATES THE ACTIVATION ENERGIES. A MODIFICATION OF THE METALLIC ACTIVATION-ENERGY MODEL, BASED ON DIFFUSION IN COVALENT SYSTEMS, IS SUGGESTED.

*CARBIDE + *DIFFUSION + *NOBLE GAS + *ZIRCONIUM + ACTIVATION ENERGY + ANALYTICAL MODEL + TITANIUM + XENON

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-18514
MALINAUSKAS AP + RUTHERFORD JL + EVANS RB
GAS TRANSPORT IN MSRE MODERATOR GRAPHITE. I. REVIEW OF THEORY AND COUNTERDIFFUSION EXPERIMENTS
OAK RIDGE NATIONAL LABORATORY, TENN.
ORNL-4148 +. 39 PAGES, 7 FIGURES, 6 TABLES, SEPT. 1967

THE AUTHORS DEVELOP EQUATIONS DESCRIBING GAS TRANSPORT IN POROUS MEDIA. THE EXPERIMENTAL FINDINGS ARE LIMITED BUT SIGNIFICANT. UNDER MSRE CONDITIONS IT APPEARS QUITE JUSTIFIABLE TO IGNORE NORMAL DIFFUSION EFFECTS IN GAS TRANSPORT COMPUTATIONS. THIS MEANS THAT ALL THE GASEOUS-DIFFUSION INFORMATION NECESSARY TO CORRELATE FISSION-PRODUCT-MIGRATION DATA MAY BE GAINED THROUGH SIMPLE PERMEABILITY MEASUREMENTS. THE MORE COMPLEX INTERDIFFUSION EXPERIMENTS ARE NOT REQUIRED. THUS A COMPLETE FLOW-PROPERTY SURVEY OF ALL MSRE MODERATOR MATERIALS CAN BE PERFORMED WITH A MINIMUM EXPENDITURE OF TIME AND EFFORT.

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

*DIFFUSION + *FISSION PRODUCT TRANSPORT + *GRAPHITE + *POROUS DIFFUSION + *POROUS MEDIA + *REACTOR, MOLTEN SALT + DIFFUSION COEFFICIENT + FISSION GAS RELEASE + FISSION PRODUCT RELEASE, GENERAL + MODERATOR + MSRE (MOLTEN SALT REACTOR EXPERIMENT) + TRANSPORT THEORY

7-18518
GENCO JM + BERRY DA + BERRY WE + ROSENBERG HS + CREMEANS GF + PRICE RB + MORRISON DL
FISSION PRODUCT DEPOSITION AND ITS ENHANCEMENT UNDER REACTOR ACCIDENT CONDITIONS. QUARTERLY PROGRESS REPORT, APRIL - JUNE 1967
BATTTELLE MEMORIAL INSTITUTE, COLUMBUS, OHIO
BMI-X-10202 + EURAEC-1904 +. 53 PAGES, 15 TABLES, 23 FIGURES, 7 REFERENCES, JULY 1, 1967

THE PROGRAM WAS UNDERTAKEN IN THE PURSUIT OF TWO MAJOR 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.

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

*COATED PARTICLE + *COATING, SURFACE + *FISSION PRODUCT RETENTION + *FISSION PRODUCT, IODINE + *IODINE + *ORGANIC IODIDE + ANALYTICAL TECHNIQUE, CALIBRATION + COATING + CONTAINMENT ANALYSIS + CONTAINMENT FILTERING SYSTEM + FISSION PRODUCT TRANSPORT + MASS TRANSFER

7-18579
TROFIMOV AM + PANKOV AM + KOVARSKII AP
KINETICS OF ADSORPTION OF XE-133 FROM AIR MEDIA BY CARBON ADSORBENT
6 PAGES, 6 FIGURES, 2 TABLES, RADIOKHIMIYA 8, PAGES 24C-5 (1966)

THE RATES OF ADSORPTION AND DESORPTION OF XE-133 FROM THE AIR BY VARIOUS ACTIVATED CARBONS AND AT VARIOUS FILTRATION SPEEDS (11.3, 28.7, 45.8, AND 58.6 CC/SQ. CM/MIN WERE STUDIED. THE MASS-EXCHANGE COEFFICIENT WAS DETERMINED AS A FUNCTION OF THE RATE OF GAS MACROCOMPONENT FLOW. THE EXPERIMENT WITH ONE TYPE OF CARBON (SKT) SHOWED THAT AT THE INVESTIGATED RATE THE MASS-EXCHANGE COEFFICIENT WAS NOT AFFECTED BY THE SORBENT GRAIN DIAMETER. IT WAS ALSO FOUND THAT XE-133 HAD DIFFERENT ADSORPTION AND DESORPTION RATES.

*CHARCOAL ADSORBENT + *NOBLE GAS + *TESTING + ADSORPTION + AIR CLEANING + CHARCOAL + XENON

7-18590
MADELAINE G + PARNIANPOUR H
CONTRIBUTION TO THE STUDY OF THE PENETRATION OF AEROSOLS IN FILTERS
CEN, FONTENAY-AUX-ROSES, FRANCE
8 PAGES, 6 FIGURES, 1 TABLE, ANN. OCCUP. HYG. 12, PAGES 31-8 (JANUARY 1967)

DESCRIBES A SIMPLE METHOD FOR STUDYING THE PENETRATION OF AEROSOLS INTO THE INTERIOR OF VARIOUS TYPES OF FILTERS IN COMMON USE, WITH PARTICULAR REGARD TO ALPHA EMITTERS. COEFFICIENTS OF ABSORPTION WERE DETERMINED. MEASUREMENTS WERE CONFINED MAINLY TO THE ACTIVE DEPOSITS OF RADON AND THORON, WHICH ARE ALWAYS PRESENT IN THE ATMOSPHERE AND USEFULLY SERVE AS TRACERS FOR THE STUDY OF NATURAL AEROSOLS.

*ALPHA EMITTER + *ALPHA FACILITIES + *FILTER EFFICIENCY + *PARTICLE, RADIOACTIVE + *TRACER, RADIOACTIVE + AEROSOL + FILTER + PARTICULATE + TESTING

7-18591
SILVERMAN L
FOAM ENCAPSULATION METHOD AND APPARATUS OF NUCLEAR REACTOR SAFETY
CANADIAN PATENT 737,841 + U.S. PATENT 268,840 +. 11 PAGES, FIGURES, 1 TABLE, JULY 5, 1966

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-18581 *CONTINUED*

THIS INVENTION RELATES TO A METHOD OF ENCAPSULATING DANGEROUS GAS AND SUSPENDED PARTICULATES RELEASED IN A GASEOUS ATMOSPHERE COMPRISING THE STEPS OF - (A) PREPARING A LIQUID FOAMING SOLUTION CONTAINING AT LEAST ONE INGREDIENT CAPABLE OF REACTING WITH SAID DANGEROUS GAS TO FORM A SOLID REACTION PRODUCT, AND (B) FOAMING SAID SOLUTION WITH SAID ATMOSPHERE TO PRODUCE BUBBLES IN WHICH THE AFOREMENTIONED REACTION TAKE PLACE AND SUBSTANTIALLY ALL OF THE PARTICULATES TRAPPED WITH SAID FOAM DIFFUSE INTO THE WALLS OF SAID BUBBLES TO BE TRAPPED BY THE FOAMING SOLUTION FOR CONVENIENT REMOVAL AND DISPOSAL.

AVAILABILITY - CANADIAN PATENT OFFICE, OTTAWA, CANADA

*FISSION PRODUCT RELEASE, GENERAL + *FOAM + *PARTICLE, RADIOACTIVE + PARTICULATE + REACTOR OFFGAS

7-18582 ALSO IN CATEGORY 12

WHITFIELD WJ

LAMINAR FLOW AIR HOOD APPARATUS

PATENT 3,273,323 +. 10 PAGES, 7 FIGURES, REFERENCES, DECEMBER 24, 1963

THIS PATENT RELATES TO A LAMINAR-FLOW AIR-HOOD APPARATUS WHICH MAY BE USED FOR ISOLATING WORKERS FROM TOXIC SUBSTANCES BEING WORKED ON. THE AIR HOOD INCLUDES SUBMICRON FILTERS FOR REMOVING UNDESIRABLE PARTICLES SUCH AS RADIOACTIVE MATERIALS, FLUIDS, OR OTHER CONTAMINANTS FROM THE AIR LAMINARLY FLOWING THROUGH THE WORKING CHAMBER OF THE HOOD. THE APPARATUS INCLUDES SEPARATE BLOWER SYSTEMS FOR DRAWING AIR INTO AND FOR EXHAUSTING AIR OUT OF THE DEVICE, AND ADJUSTMENTS MAY BE MADE TO PROVIDE A BALANCED AIR FLOW CONDITION OR AIR INFLOW OR OUTFLOW CONDITIONS.

AVAILABILITY - U.S. PATENT OFFICE, DEPT. OF COMMERCE, WASHINGTON, D.C., \$0.25 COPY

*AIR CLEANING + *FILTER + *FLOW, LAMINAR + *RADIOACTIVITY, RELEASE + *VENTILATION SYSTEM + CHEMICAL TOXICITY + PARTICLE, RADIOACTIVE + PARTICULATE

7-18583 ALSO IN CATEGORY 12

FRENCH JE, ET AL

DELAY BED SYSTEM FOR PURIFICATION OF NUCLEAR FUEL ELEMENT PURGE STREAM

U.S. PATENT 3,278,386 +. 8 PAGES, 4 TABLES, REFERENCES, AUGUST 14, 1964

THIS PATENT RELATES TO A SYSTEM FOR MAINTAINING THE RELATIVE PURITY OF THE COOLANT STREAM OF A HIGH-TEMPERATURE GAS-COOLED REACTOR. A PURGE STREAM WHICH HAS FLOWED THROUGH A FUEL ELEMENT IS DIRECTED THROUGH A DELAY BED COMPRISING A SERIES OF ADSORBENT PORTIONS AND HEAT EXCHANGERS. EACH ADSORBENT PORTION IS PRECEDED BY A HEAT EXCHANGER OF SUFFICIENT CAPACITY TO COOL THE FISSION PRODUCT-LADEN GASEOUS STREAM TO LESS THAN 200 F PRIOR TO ENTRY INTO THE ADSORBENT PORTION, AND THE ADSORBENT PORTION CONTAINS A PERMEABLE SUBSTANCE OF HIGH XENON-ADSORBENT CAPACITY, THE QUANTITY BEING SUCH THAT THE HEAT PRODUCED BY DECAY OF RADIOACTIVE ISOTOPES DELAYED BY CONTINUED ADSORPTION AND DESORPTION ON THE SUBSTANCE DOES NOT RAISE THE TEMPERATURE OF THE STREAM BEYOND 450 F. THE TOTAL NUMBER OF ADSORPTION PORTIONS IS SUFFICIENT TO DELAY THE MAJOR PORTION OF XE-137 A SUFFICIENT TIME TO DECAY TO PLATEOUT DAUGHTERS CS-137 AND BA-137M.

AVAILABILITY - U.S. PATENT OFFICE, DEPT. OF COMMERCE, WASHINGTON, D.C., \$0.25 COPY

*ADSORPTION + *DECAY HEAT + *NOBLE GAS + HEAT EXCHANGER + HEAT TRANSFER + XENON

7-18584 ALSO IN CATEGORY 12

HATCH LP, ET AL

PARTICLE FILTER

U.S. PATENT 3,252,271 +. 6 PAGES, REFERENCES, APRIL 3, 1964

PATENT RELATES TO A FLUIDIZED-BED REACTOR HAVING A MEMBRANE-COVERED SECOND GAS OUTLET MEANS LOCATED AT A POINT BETWEEN THE CONVENTIONAL GAS INLET AND OUTLET MEANS CAPABLE OF FORMING A STATIC BED OF A PORTION OF THE FLUIDIZED PARTICLES TO PREVENT FINES FROM ESCAPING FROM THE REACTOR.

AVAILABILITY - U.S. PATENT OFFICE, DEPT. OF COMMERCE, WASHINGTON, D.C., \$0.25 COPY

*FILTER + *FLUIDIZED BED + *PARTICULATE + FILTER, MEMBRANE + HEAT TRANSFER + MASS TRANSFER

7-18586 ALSO IN CATEGORY 12

KEILHOLTZ GW

AIR-CLEANING SYSTEMS AS ENGINEERED SAFEGUARDS IN NUCLEAR REACTOR CONTAINMENT

OAK RIDGE NATIONAL LABORATORY

11 PAGES, 39 REFERENCES, NUCLEAR SAFETY 8(4), PAGES 360-370 (SUMMER 1967)

THE FUNCTIONS OF AIR-CLEANING SYSTEMS DURING NORMAL REACTOR OPERATIONS AND AS ENGINEERED SAFEGUARDS ARE REVIEWED, WITH SPECIAL REFERENCE TO THE RETENTION OF AIRBORNE RADIOACTIVITY BY HIGH-EFFICIENCY PARTICULATE AIR (HEPA) FILTERS AND CHARCOAL ADSORBERS UNDER POSSIBLE ACCIDENT CONDITIONS. THE COMBINATION OF AN HEPA FILTER FOR PARTICLES AND AN IMPREGNATED CHARCOAL BED FOR GASES SEEMS TO BE GENERALLY ACCEPTED AS THE BEST AVAILABLE TRAPPING SYSTEM FOR FISSION PRODUCTS (E.G., IODINE) RELEASED FROM IRRADIATED FUELS. THE DIOCTYL PHTHALATE TESTS ARE

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-18586 *CONTINUED*

SATISFACTORY FOR IN-PLACE TESTING OF THE PARTICULATE RETENTION EFFICIENCY OF HEPA FILTERS.
THE COMPLETE FILTER UNIT SHOULD ALSO BE TESTED FOR HEAT RESISTANCE AND MECHANICAL STRENGTH.

*AIR CLEANING + *CHARCOAL ADSORBER + *ENGINEERED SAFETY FEATURE + *FILTER EFFICIENCY +
*FISSION PRODUCT, IODINE + *TEST, FILTER SYSTEM + FILTER + FILTER CHARACTERISTICS + FILTER INSPECTION +
FILTER INSTALLATION + FILTER TEST REQUIREMENT + IODINE + TESTING + VENTILATION SYSTEM

7-18587

CARROLL RM

FISSION-GAS BEHAVIOR IN FUEL MATERIALS

OAK RIDGE NATIONAL LABORATORY

9 PAGES, 1 FIGURE, 51 REFERENCES, NUCLEAR SAFETY 8(4), PAGES 345-353 (SUMMER 1967)

RECENT PUBLICATIONS THAT RELATE TO THE BEHAVIOR OF FISSION GAS IN FUEL MATERIALS ARE REVIEWED. THE MIGRATION AND RELEASE OF FISSION GAS FROM SOLIDS PRESENTS A RATHER CONSISTENT PATTERN OF ISOLATED GAS ATOMS MOVING COMPARATIVELY SWIFTLY BY AN INTERSTITIAL PROCESS UNTIL TRAPPED ON A DEFECT IN THE STRUCTURE OF THE SOLID. THE DEFECT CAN BE INHERENT TO THE SOLID (SUCH AS A GRAIN BOUNDARY), OR IT CAN BE PRODUCED BY RADIATION. SMALL CLUSTERS OF GAS ATOMS ARE ALSO MOBILE. RECOIL AND KNOCKOUT RELEASE OCCUR AT ALL TEMPERATURES, BUT THE SURFACE CONDITIONS AND HISTORY OF THE FUEL CAN HAVE A STRONG INFLUENCE ON THE AMOUNT OF RELEASE BY THESE MECHANISMS. THE ENGINEERING APPROACH TO FISSION-GAS PRESSURE WITHIN A FUEL ELEMENT IS REVIEWED.

*DIFFUSION + *FISSION PRODUCT RELEASE, GENERAL + *FISSION RECOIL + *FUEL INTEGRITY + *NOBLE GAS +
FUEL BURNUP + RADIATION EFFECT

7-18588

NISHIZAWA Y + MAEKAWA T + KAWAGUCHI O + OSHIMA S

RECENT STUDIES IN NUCLEAR POWER PLANT SAFETY. 1. STUDY ON REMOVAL OF IODINE FROM ATMOSPHERE BY SPRAY
MITSUBISHI ATOMIC POWER INDUSTRY, INC., OMIYA, JAPAN

5 PAGES, 11 FIGURES, NIPPON GENSHIYOKU GAKKAISHI 8, PAGES 598-602 (NOVEMBER 1966)

CONCERNS THE RESULTS OF EXPERIMENTS SIMULATING THE IODINE WASHOUT EFFECT PROVIDED BY A CONTAINER SPRAY IN AN ACCIDENT. A STAINLESS-STEEL DRUM 1.5 M IN DIAMETER AND 3 M HIGH WAS USED AS A SMALL-SCALE MODEL OF THE CONTAINER. THE REMOVAL RATE OF IODINE FROM AN ATMOSPHERE OF PRESSURIZED STEAM OF 100 TO 150 C (SATURATED STEAM PRESSURE) BY SPRAY (SPRAY WATER TEMP., 25 C) (RATE, 25 TO 200 L/HR) WAS DETERMINED FROM AN ANALYSIS OF IODINE IN GAS PHASE. THE RESULT INDICATED THAT THE IODINE HAD BEEN REMOVED BY THE SPRAY AT A RATE PROPORTIONAL TO THE SPRAY RATE AND THAT THE REMOVAL RATE INCREASED WITH DECREASING INITIAL IODINE CONCENTRATION IN THE DRUM.

*FILTER SPRAY + *IODINE + *SPRAY, GENERAL + FISSION PRODUCT, IODINE + STEAM + WATER VAPOR

7-18589

JUTZE GA + FOSTER KE

RECOMMENDED STANDARD METHOD FOR ATMOSPHERIC SAMPLING OF FINE PARTICULATE MATTER BY FILTER MEDIA--HIGH VOLUME SAMPLER

GELMAN INSTRUMENT COMPANY

9 PAGES, FIGURES, TABLES, J. AIR POLLUT. CONTR. ASS. 17(1), PAGES 17-25 (JANUARY 1967)

A HIGH-VOLUME SAMPLER IS DESCRIBED FOR SAMPLING LARGE VOLUMES OF AIR FOR SUSPENDED PARTICLES. THE SAMPLER CONSISTS OF A SPECIALLY HOUSED VACUUM-SWEEPER MOTOR TO WHICH IS ATTACHED A FILTER HOLDER OR ADAPTER. IN DETERMINING GROSS ALPHA ACTIVITY, THE 8 BY 10 IN. FIBERGLASS FILTER IS WEIGHED AND COUNTED AFTER 2 DAYS TO ALLOW DECAY OF THE NATURAL ALPHA PARTICLES. THE SAMPLES ARE RECOUNTED AFTER 4 TO 7 DAYS TO ESTABLISH THE DECAY IN TERMS OF APPARENT HALF-LIFE OF THE RADIOACTIVE MATERIAL. COUNTING IS DONE WITH A PROPORTIONAL-GAS-FLOW COUNTING CHAMBER. THE USE OF THIS METHOD AND EQUIPMENT PERMITS THE RADIOACTIVITY OF THE SAMPLE AND THE AVERAGE HALF-LIFE OF THE RADIOISOTOPES TO BE DETERMINED.

*AIRBORNE RELEASE + *MONITOR, RADIATION, AIR + *SAMPLING + ALPHA EMITTER + FILTER + PARTICLE, RADIOACTIVE +
PARTICULATE

7-18590

MOHAI B + MAKRANCZY J + PAPPS

THE MEASUREMENT OF GAS ABSORPTION

INSTITUTE OF GENERAL AND INORGANIC CHEMISTRY, UNIVERSITY OF INDUSTRIAL CHEMICAL, HUNGARY

4 PAGES, 1 FIGURE, CHEM-ING-TECH 38(11), PAGES 1192-5 (NOVEMBER 1966)

DESCRIBES A METHOD FOR MEASURING GAS ABSORPTION AT HIGHER PRESSURES, IN WHICH THE SAMPLES ARE REMOVED NOT FROM THE LIQUID PHASE AS IN THE PAST BUT FROM THE GAS PHASE. THE ABSORPTION ISOTHERM CAN BE CALCULATED FROM THE DESORBED QUANTITIES OF GAS WHICH ARE MEASURED WITH A STEPWISE EXPANSION OF THE GAS WHICH IS COMPRESSED IN THE AUTOCLAVE. THE METHOD HAS THE ADVANTAGE THAT THE QUANTITY OF ABSORBENT REMAINS CONSTANT DURING THE ENTIRE EXPERIMENT AND THAT ALL MEASUREMENTS ARE RECORDED WITH THE SAME WEIGHED CHARGE.

*ADSORPTION + *ANALYTICAL TECHNIQUE, CALIBRATION + CHEMISORPTION + PRESSURIZER

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-18719 ALSO IN CATEGORIES 9 AND 14
WESLEY EJ + NYBERG RA
COMPARISON OF CESIUM IODIDE AND SODIUM IODIDE FOR UNDERWATER RADIATION DETECTION SYSTEMS
NAVAL RADIOLOGICAL DEFENSE LAB., SAN FRANCISCO, CALIFORNIA
AD-633752 + USNRDL-TR-1012 +. 16 PAGES, APRIL 21, 1966

COMPARES NAI AND CSI SCINTILLATION DETECTORS FOR APPLICATION TO AN ULTRASENSITIVE UNDERWATER DETECTION SYSTEM. A SERIES OF MEASUREMENTS ARE REPORTED ON THE RESPONSE OF EACH CRYSTAL TO THE GAMMA RAYS FROM K-40 DISTRIBUTED IN WATER, THE ATTENUATION OF THE INTEGRATED COUNT RATE BY ALUMINUM AND STEEL ABSORBERS SURROUNDING THE DETECTOR AND THE BACKGROUND COUNT RATE FROM CONTAMINANTS ON THE CRYSTAL-PHOTOTUBE ASSEMBLY AND PRESSURE HOUSINGS. IT IS CONCLUDED THAT, FOR DEEP-SUBMERGENCE WORK WITH DETECTORS OF EQUIVALENT SIZE, A CSI SYSTEM IS THE MOST SENSITIVE AND, WHEN COMPARED IN TERMS OF A SPECIFIC DETECTION CAPABILITY, THE LEAST EXPENSIVE. TO COMPLETE THE EVALUATION, THE ASSUMPTION THAT CSI CAN BE OPERATED TO ALL DEPTHS WITHOUT A PRESSURE VESSEL MUST BE CONFIRMED.

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

GAMMA + INSTRUMENTATION, RADIATION MONITORING + OCEAN AND SEA

7-18738 ALSO IN CATEGORY 17
SANDBERG RO
CVTR SECOND CYCLE FUEL FAILURES AT 65 MW
WESTINGHOUSE ELECTRIC COMPANY, PITTSBURGH, PA.
CVNA-286 +. 1 PAGE, PAGE 2 OF ANALYSIS OF CVTR THERMAL-HYDRAULIC PERFORMANCE AT 65-MW OPERATION, JUNE 1967

TWO STANDARD AND 3 OUT OF 4 SPECIAL HIGH-POWER-DENSITY ELEMENTS FAILED AT 13.6 AND 21.2 KW/FT PEAK POWER DENSITIES RESPECTIVELY. THREE AND POSSIBLY FOUR OF THESE FAILURES OCCURRED DURING A SPECIAL PUSHED POWER TEST WITH CONTROL RODS BANKED. OTHER STANDARD ELEMENTS SURVIVED 14.2 KW/FT. FAILURE MECHANISM HAS NOT BEEN DETERMINED. DNB IS HIGHLY UNLIKELY DUE TO THERMAL-HYDRAULIC CONDITIONS. FLOW BEHAVIOR INDICATES CONSIDERABLE CRUD BUILDUP ON FUEL RODS.

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

*FAILURE, FUEL ELEMENT + *SURFACE FILM DEPOSIT + CVTR (CAROLINAS VIRGINIA TUBE REACTOR) + DNB (DEPARTURE FROM NUCLEATE BOILING) + FISSION PRODUCT RELEASE, GENERAL + OPERATING EXPERIENCE + POWER DISTRIBUTION + REACTOR, PRESSURE TUBE + REACTOR, PRESSURIZED WATER

7-18922 ALSO IN CATEGORY 17
ACRS REPORT ON EVESR PROPOSED CHANGE 17 - CORE PARAMETER CHANGES
UNITED STATES ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.
2 PAGES, 4 REFERENCES, AUGUST 16, 1967, DOCKET NO. 50-183

PRINCIPAL PROPOSED CHANGES ARE - (1) INCREASE IN MAX. SPECIFIC POWER (33 W/G TO 50), (2) INCREASE IN STANDARD BWR-TYPE FUEL, (3) INCREASE IN MAX. CLAD TEMPERATURES, (4) CONTROL-ROD-PROGRAM CHANGES (TO DECREASE PROBABILITY AND CONSEQUENCES OF A SEVERE REACTIVITY ACCIDENT). ITEMS 1, 2, AND 3 PERMIT MORE-ADVANCED FUEL ELEMENTS. EVESR EXPERIENCE WITH FUEL FAILURES IS CITED. PROBLEMS HAVE BEEN ENCOUNTERED WITH THE EFFICIENCY OF THE CHARCOAL OFF-GAS FILTER UNDER SERVICE CONDITIONS, SO A VIGOROUS SURVEILLANCE PROGRAM RESULTED.

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

*CHARCOAL + *FILTER + ACCIDENT, REACTIVITY + ACRS (ADVISORY COMMITTEE ON REACTOR SAFEGUARDS) + FUEL ELEMENT + IRRADIATION TESTING + REACTOR OFFGAS + REACTOR, INTERNAL SUPERHEAT + SAFETY REVIEW (OPERATIONS, EXPERIMENTS) + TECHNICAL SPECIFICATIONS + VESR (VALLECITOS EXP. SUPERHEAT REACTOR-ESADA)

7-18954 ALSO IN CATEGORIES 5 AND 4
PIVIROTTO TJ
MASS-RETENTION MEASUREMENTS IN A BINARY COMPRESSIBLE VORTEX FLOW
CALIFORNIA INSTITUTE OF TECHNOLOGY, PASADENA
JPL-TR-32-864 +. 23 PAGES, FIGURES, 7 TABLES, 8 REFERENCES

CONFINED BINARY VORTEX FLOW FIELDS HAVE BEEN PROPOSED AS GASEOUS-FUEL-RETENTION DEVICES FOR GAS-CORE NUCLEAR REACTORS. SEVERAL SUCH FLOWS HAVE BEEN EVALUATED IN THIS INVESTIGATION BY MEASURING THE MASS FLOW RATE OF HEAVY GAS DISCHARGING FROM THE VORTEX TUBE. HYDROGEN AND NITROGEN WERE USED TO GENERATE THE VORTEX-FLOW FIELDS, AND FREON-13 WAS USED FOR THE HEAVY GAS. AN INFRARED PHOTOMETER OPERATING AT WAVELENGTH OF NEARLY 8.3 MICRONS WAS DEVELOPED AND USED TO MEASURE THE TRANSIENT DECAY OF THE DISCHARGE RATE OF FREON AFTER AN ABRUPT CUTOFF OF FREON INLET FLOW. FROM THESE MEASUREMENTS THE AVERAGE RESIDENCE TIME OF THE FREON PARTICLES IN SEVERAL VORTEX-TUBE CONFIGURATIONS FOR SEVERAL MASS FLOW RATES OF FREON AND HYDROGEN OR NITROGEN WERE DETERMINED. THE CONCLUSION REACHED WAS THAT THESE PARTICULAR VORTEX-FLOW FIELDS DO NOT RETAIN SIGNIFICANTLY MORE FREON THAN WOULD BE CONTAINED IN THE SAME DEVICE AND UNDER THE SAME CONDITIONS OF PRESSURE AND TEMPERATURE IF NO DIFFUSION OCCURRED BETWEEN THE LIGHT AND HEAVY SPECIES.

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-18954 *CONTINUED*
AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VIRGINIA,
\$3.00 COPY, \$0.65 MICROFICHE

DIFFUSION + FLOW THEORY AND EXPERIMENTS + FLOW, VORTEX + HYDROGEN + NITROGEN

7-18957
PARSLY LF
REMOVAL OF ELEMENTAL IODINE FROM STEAM-AIR ATMOSPHERES BY REACTIVE SPRAYS
OAK RIDGE NATIONAL LABORATORY
ORNL-TM-1911 +. 36 PAGES, 5 FIGURES, 12 REFERENCES, OCTOBER 1967

DESCRIBES A COMPUTER PROGRAM FOR CALCULATING MASS-TRANSFER RATES FOR REMOVING I2 FROM STEAM-AIR ATMOSPHERES BY REACTIVE SPRAYS. INCLUDES PROCEDURES FOR CALCULATING THE TRANSPORT PROPERTIES REVEALED IN THE MASS-TRANSFER-RATE CALCULATIONS. THE CALCULATIONS PREDICT HALF-LIVES FOR I2 REMOVAL OF 30 SECONDS OR LESS, INDICATING THAT AN EFFECTIVE SPRAY SYSTEM CAN PREVENT THE LEAKAGE OF I2 FROM A CONTAINMENT BUILDING. THE REMOVAL HALF-LIVES ARE NOT GREATLY AFFECTED BY TEMPERATURE UP TO 150 C. EXPERIMENTS ARE PLANNED TO VERIFY THE CALCULATED RESULTS. THESE ARE BASED ON I2, AND WHILE WE WOULD EXPECT HI TO BE REMOVED AT LEAST AS FAST, WE BELIEVE THAT REMOVAL OF ORGANIC IODIDES AND PARTICULATE MATTER WOULD PROBABLY BE SLOWER.

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

*COMPUTER PROGRAM + *FILTER SPRAY + *FISSION PRODUCT, IODINE + *IODINE + *SPRAY, GENERAL + CHEMICAL KINETICS + MASS TRANSFER + ORGANIC IODIDE + PARTICULATE

7-18987 ALSO IN CATEGORY 4
HOFFMANN HW + ROBIN TT
A PRELIMINARY COLLATION OF THE THERMODYNAMIC AND TRANSPORT PROPERTIES OF CESIUM
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.
ORNL-TM-1755 +. 60 PAGES, 19 FIGURES, 15 TABLES, 35 REFERENCES, JUNE 1967

THIS MEMORANDUM CONSTITUTES A PRELIMINARY COLLATION OF THE THERMODYNAMIC AND TRANSPORT PROPERTIES OF SATURATED LIQUID AND VAPOR CESIUM. IT IS INTENDED TO PROVIDE A CONVENIENT AND CONSISTENT SOURCE OF PROPERTIES FOR THOSE INVOLVED IN THE DESIGN AND EVALUATION OF POWER SYSTEMS BASED ON THERMODYNAMIC CYCLES INVOLVING CESIUM AS THE WORKING FLUID. INCLUDED IN THIS COMPILATION ARE THE THERMODYNAMIC PROPERTIES - PHYSICAL CONSTANTS AND CRITICAL-STATE CONDITIONS, SONIC VELOCITIES, PVT RELATIONSHIPS (VAPOR PRESSURE, DENSITY, AND COMPRESSIBILITY), ENTHALPY, HEAT CAPACITY, LATENT HEAT OF VAPORIZATION, ENTROPY, AND SURFACE TENSION - AND THE TRANSPORT PROPERTIES (VISCOSITY, THERMAL CONDUCTIVITY, AND ELECTRICAL RESISTIVITY). A PRELIMINARY EVALUATION OF THE DATA AVAILABLE INDICATES THE NEED FOR ADDITIONAL MEASUREMENTS OF BOTH THE THERMODYNAMIC AND TRANSPORT PROPERTIES.

AVAILABILITY - H. W. HOFFMAN OR T. T. ROBIN, JR., OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE

*CESIUM + *THERMODYNAMICS + *TRANSPORT PROPERTY

7-18990
COTTRELL WB
DISTRIBUTION OF FISSION PRODUCTS FOLLOWING A NUCLEAR INCIDENT
OAK RIDGE NATIONAL LABORATORY
ORNL-TM-1899 +. 39 PAGES, 13 FIGURES, 8 TABLES, 6 REFERENCES, JUNE 21, 1967, (A PAPER PREPARED FOR PRESENTATION AT THE 152 NATIONAL MEETING OF THE AMERICAN CHEMICAL SOCIETY, NEW YORK CITY, SEPTEMBER 12-16, 1966)

THE DATA ON FISSION-PRODUCT RELEASE FROM ACTUAL REACTOR INCIDENTS AND SIMULATED ACCIDENTS WAS REVIEWED. FROM THE FORMER IT WAS EVIDENT THAT THE MEASURED RELEASES, GENERALLY NOBLE GAS, WERE BUT A FRACTION OF THAT FOR WHICH THE SYSTEMS HAD BEEN DESIGNED AND THAT THE CONSEQUENT RADIATION INJURIES EVEN TO RADIATION WORKERS CONSTITUTE A VERY SMALL FRACTION OF THEIR INJURIES. THE EXTENSIVE RESEARCH AND DEVELOPMENT SPONSORED BY THE AEC ON FISSION-PRODUCT BEHAVIOR UNDER SIMULATED ACCIDENT CONDITIONS HAS RESULTED IN AN UNDERSTANDING OF THE RELEASE MECHANISM AS A FUNCTION OF MANY ACCIDENT PARAMETERS. FURTHERMORE, SINCE CONSEQUENCE-LIMITING SAFETY FEATURES ARE MORE DEMONSTRABLE AND ACCEPTABLE THAN ACCIDENT-LIMITING SAFEGUARDS, THE THRUST OF THE R AND D PROGRAM IS TOWARD THE TRANSPORT AND REMOVAL OF RELEASED FISSION PRODUCTS AND THE VERIFICATION OF THIS BEHAVIOR IN LARGE-SCALE EXPERIMENTS.

AVAILABILITY - W. B. COTTRELL, UNION CARBIDE CORP., Y-12 PLANT, OAK RIDGE, TENN.

*ACCIDENT, GENERAL + *FISSION PRODUCT RELEASE, GENERAL + *FISSION PRODUCT TRANSPORT + *SAFETY PRINCIPLES AND PHILOSOPHY + *SAFETY STUDY + ACCIDENT ANALYSIS + FISSION GAS RELEASE + FISSION PRODUCT, AIRBORNE + FISSION PRODUCT, SEPARATION FROM WASTE + IN PILE EXPERIMENT + OUT OF PILE LOOPS AND EXPERIMENTS

7-18994
KEDL RJ
A MODEL FOR COMPUTING THE MIGRATION OF VERY SHORT LIVED NOBLE GASES INTO MSRE GRAPHITE

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-18994 *CONTINUED*
OAK RIDGE NATIONAL LAB., TENN.
ORNL-TM-1810 +. 26 PAGES, 4 FIGURES, 1 TABLE, 6 REFERENCES, JULY 1967

A MODEL DESCRIBING THE MIGRATION OF VERY SHORT-LIVED NOBLE GASES FROM THE FUEL SALT TO THE GRAPHITE IN THE MSRE CORE WAS DEVELOPED. FROM THE MIGRATION RATE, THE MODEL COMPUTES (WITH CERTAIN LIMITATIONS) THE DAUGHTER-PRODUCT DISTRIBUTION IN GRAPHITE AS A FUNCTION OF REACTOR OPERATIONAL HISTORY. NOBLE-GAS DAUGHTER-PRODUCT CONCENTRATIONS (RA-140, CE-141, SR-89, AND Y-91) WERE MEASURED IN GRAPHITE SAMPLES REMOVED FROM THE MSRE CORE AFTER 7800 MWHR OF POWER OPERATION. CONCENTRATIONS OF THESE ISOTOPES COMPUTED WITH THIS MODEL COMPARE FAVORABLY WITH MEASURED VALUES.

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

*ANALYTICAL MODEL + *DIFFUSION + *GRAPHITE + *NOBLE GAS + COMPUTER PROGRAM + MOLTEN FUEL + MSRE (MOLTEN SALT REACTOR EXPERIMENT) + REACTOR, CIRCULATING FUEL + REACTOR, MOLTEN SALT

7-19089 ALSO IN CATEGORIES 5 AND 11
WARKENTIN JK
DIRECT RADIATION LEVELS DURING LOFT OPERATION AND FOLLOWING THE LOSS-OF-COOLANT TEST
PHILLIPS PETROLEUM CO., ATOMIC ENERGY DIVISION, IDAHO OPERATIONS OFFICE
ID0-17238 +. 55 PAGES, 25 FIGURES, 6 TABLES, 20 REFERENCES, AUGUST 1967

PRESENTS THE RESULTS OF VARIOUS ANALYSES TO DETERMINE THE DIRECT RADIATION LEVELS EXPECTED IN ASSOCIATION WITH LOFT REACTOR OPERATION AND THE LOSS-OF-COOLANT EXPERIMENT. THE REACTOR PACKAGE AND CONTAINMENT BUILDING ARE BRIEFLY DESCRIBED WITH REGARD TO THE ASPECTS PERTINENT TO THE ANALYSIS. CALCULATED GAMMA DOSE RATES ARE PRESENTED (A) AS A FUNCTION OF DISTANCE INSIDE AND OUTSIDE THE CONTAINMENT BUILDING DURING FULL-POWER OPERATION, (B) AS A FUNCTION OF DISTANCE INSIDE THE CONTAINMENT BUILDING FOR DECAY TIMES RANGING FROM ONE THOUSAND TO ONE MILLION SECONDS FOLLOWING NORMAL SHUTDOWN AFTER 400 HOURS OF OPERATION, AND (C) FOR VARIOUS LOCATIONS INSIDE THE CONTAINMENT BUILDING AND AS A FUNCTION OF DISTANCE OUTSIDE THE BUILDING FOR DECAY TIMES RANGING FROM ONE THOUSAND TO ONE MILLION SECONDS FOLLOWING THE LOSS-OF-COOLANT TEST. INTEGRATED GAMMA DOSES ARE GIVEN FOR VARIOUS LOCATIONS INSIDE THE BUILDING AND AS A FUNCTION OF DISTANCE OUTSIDE THE BUILDING FOR VARIOUS PERIODS OF REACTOR OPERATION, AND FOR DECAY PERIODS OF ONE DAY AND FIVE DAYS FOLLOWING THE LOSS-OF-COOLANT TEST. CALCULATIONAL TECHNIQUES ARE PRESENTED IN THE APPENDIX.

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

ACCIDENT ANALYSIS + ACCIDENT, LOSS OF COOLANT + LOFT (LOSS OF FLUID TEST) + RADIATION DAMAGE + RADIATION EFFECT + RADIATION MODEL + REACTOR, SAFETY RESEARCH

CATEGORY 8
SOURCES OF ENERGY RELEASE UNDER ACCIDENT CONDITIONS

8-04716
KEIL AA
RADIATION CONTROL FOR FIRE AND OTHER EMERGENCY FORCES
NEW YORK FIRE DEPARTMENT
241 PAGES, 55 REFERENCES, 1960, PUBLISHED BY THE NATIONAL FIRE PROTECTION ASSOCIATION, BOSTON, MASS.

HANDBOOK DESCRIBES RADIOLOGICAL UNIT ORGANIZED BY THE N.Y. FIRE DEPARTMENT TO INSPECT LOCATIONS WHERE RADIOACTIVE MATERIALS ARE STORED, EVALUATE FIRE EMERGENCY INCIDENTS, AND TRAIN PEOPLE IN MONITORING AND FIRE-FIGHTING WHERE RADIOACTIVITY IS INVOLVED. CHAPTERS INCLUDE LIVING WITH RADIOACTIVITY, TERMINOLOGY, HUMAN EXPOSURE TO RADIATION, EXPOSURE CONTROL, RADIOLOGICAL INSTRUMENTS, OPERATIONAL PROCEDURES, DECONTAMINATION PROCEDURES, PRACTICE TRAINING FOR FIRE CREWS, COMMON USES OF RADIOACTIVE MATERIALS, RADIOACTIVE MATERIAL IN TRANSPORTATION, EFFECTS OF NUCLEAR BOMBS, AND MONITORING FALLOUT.

*FIRE + *HEALTH PHYSICS TRAINING + CIVIL DEFENSE + FALLOUT + STAFFING, TRAINING, QUALIFICATION

8-16490 ALSO IN CATEGORIES 5 AND 6
WENTZ LB
IN-PILE CAPSULE MEASUREMENTS OF TRANSIENT STEAM-VOID GROWTH AND COLLAPSE
TWR SYSTEMS, REDONDO BEACH, CALIFORNIA
STL 372-30 +. PAGES 7-23 OF ANNUAL SUMMARY REPORT FOR 1965 - KINETIC STUDIES OF HETEROGENEOUS WATER REACTORS, 109 PAGES, 38 FIGURES, 6 TABLES, 44 REFERENCES, DECEMBER 30, 1965

IN THE KEWB, REFLECTOR EXPERIMENTS WERE PERFORMED WITH A CAPSULE CONTAINING A FISSION-HEATED DISK IN WATER. STEAM-VOID GROWTH AND COLLAPSE WERE STUDIED UNDER DIFFERENT INERTIAL LOADINGS, SUBCOOLING, AND AMBIENT PRESSURE.

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

*KEWB (KINETIC EXPERIMENT ON WATER BOILERS) + ACCIDENT ANALYSIS + HEAT TRANSFER, BOILING + HYDRAULIC ANALYSIS + REACTOR TRANSIENT + REACTOR, HOMOGENEOUS + REACTOR, RESEARCH + THERMAL ANALYSIS

8-16491 ALSO IN CATEGORIES 5 AND 6
WRIGHT RW
DESTRUCTIVE PRESSURE GENERATION
TWR SYSTEMS, REDONDO BEACH, CALIFORNIA
STL 372-30 +. PAGES 24-74 OF ANNUAL SUMMARY REPORT FOR 1965 - KINETIC STUDIES OF HETEROGENEOUS WATER REACTORS, 109 PAGES, 38 FIGURES, 6 TABLES, 44 REFERENCES, DECEMBER 30, 1966

IN AN ATTEMPT TO EXPLAIN THE DESTRUCTIVE TRANSIENT IN THE SPERT-10 IT IS HYPOTHESIZED THAT THE MOLTEN ALUMINUM WAS DISPERSED BY THE WATER HAMMER OF THE COLLAPSE OF THE VAPOR BLANKET ON THE PLATE. DISCUSSION OF THE DIFFICULTY IN EXPLAINING THE OBSERVED PRESSURIZATION OF 12 LITERS OF GAS VOLUME. EXPLANATION OF THIS EFFECT BY PRESSURE AMPLIFICATION ON COLLAPSE OF THE LAST BUBBLE OF A STEAM-WATER MIXTURE. SHOCK-TUBE EXPERIMENTS SUPPORT THE ABOVE CONSIDERATIONS.

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

*DESTRUCTIVE TRANSIENT + *SPERT 1 (SPECIAL POWER EXCURSION REACTOR TEST) + CHEMICAL ANALYSIS + HYDRAULIC ANALYSIS + PRESSURE, INTERNAL + REACTOR, TEST

8-16637 ALSO IN CATEGORY 5
PHYSICS CHEMICAL STUDIES OF CLAD UO₂ IN POTENTIAL MELTDOWN ENVIRONMENTS
GENERAL ELECTRIC, CINCINNATI
GEMP-475A +. 299 PAGES, FIGURES, TABLES, MARCH 31, 1967

THE OBJECTIVE WAS TO DETERMINE BEHAVIOR OF ZIRCALOY-AND STAINLESS-STEEL-CLAD FUEL ELEMENTS IN STEAM AND IN STEAM PLUS AIR FROM 1200 C TO THE MELTING POINT OF UO₂. INCLUDES MEASUREMENTS OF PHYSICAL AND MECHANICAL PROPERTIES OF THE CLADDING, THE OXIDIZED CLADDING, AND UO₂ TO THEIR RESPECTIVE MELTING POINTS. INVESTIGATION INCLUDED (1) DYNAMIC TESTING OF CLAD UO₂ SAMPLES FOR THE REACTIONS WHICH OCCUR, (2) RATE MEASUREMENTS OF METAL-WATER REACTIONS, ETC., (3) THERMAL AND MECHANICAL PROPERTIES OF FUEL AND CLADDING.

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

*ACCIDENT, LOSS OF COOLANT + *FAILURE, CLADDING + *SAFETY STUDY + FUEL MELTDOWN + REACTOR, POWER + STEEL, STAINLESS + ZIRCALOY

8-16900 ALSO IN CATEGORIES 5 AND 6
THE STEADY STATE AND DYNAMIC BEHAVIOR OF A BOILING WATER REACTOR. QUARTERLY PROGRESS REPORT NO. 21, JANUARY 1 - APRIL 1, 1966
TECHNISCHE HOGESCHOOL, EINDHOVEN, NETHERLANDS

CATEGORY 8
SOURCES OF ENERGY RELEASE UNDER ACCIDENT CONDITIONS

8-16900 *CONTINUED*
EURAC-1682 + WW-016-R-108 + EUR-2869 +. 22 PAGES, 15 REFERENCES, APRIL 1966

REPORTS THE MEASUREMENTS MADE TO CHECK THE INFLUENCE OF A CHANGING WATER LEVEL ON THE STEADY AS WELL AS THE NONSTEADY-STATE CHARACTERISTICS OF THE HYDRAULIC SYSTEM. THE EFFECT APPEARS NEGLIGIBLE PROVIDED THAT THE LEVEL IS ABOVE THE EDGE OF THE SHROUD. THE RESULTS OF THE 50- AND THE 60-MM SHROUD MEASUREMENTS WERE FURTHER ANALYZED. VOID FRACTION DATA WERE PLOTTED AS A FUNCTION OF THE MARTINELLI-NELSON PARAMETER. THE FIGURES INDICATE THAT THE PARAMETER X_{SUB-TT} MIGHT BE SUITABLE FOR CORRELATION. BURNOUT DATA OBTAINED FROM THE MEASUREMENTS ON THE 50- AND 60-MM SHROUDS ARE GIVEN AS A FUNCTION OF SATURATION TEMPERATURE AND SUBCOOLING.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.70 COPY, \$0.65 MICROFICHE

BURNOUT HEAT FLUX + EURATOM + FLOW, TWO PHASE + HEAT TRANSFER, BOILING + REACTOR, BOILING WATER

8-17018 ALSO IN CATEGORY 12
BOISSON H + CHAPPELLIER A + DEBIAR A + SAVORIN J
STUDY OF PLUTONIUM FIRE EXTINCTION IN GLOVE BOXES
CENTRE D ETUDES NUCLEAIRES, SACLAY, FRANCE
CEA-R-2931 +. 16 PAGES, 4 FIGURES, DECEMBER 1965 (IN FRENCH)

THE REPORT CONCERNS ATTEMPTS TO EXTINGUISH FIRES IN URANIUM - CHOSEN AS A BASIS FOR COMPARISON - AND IN PLUTONIUM, THESE BEING CONTAINED IN GLOVE BOXES. THE EXTINGUISHING POWDERS TEC AND MG-10 WERE TRIED AND COMPARED. THE METAL WAS DEALT WITH RESPECTIVELY IN THE FORM OF BILLETS, COMPACT CHIPS, AND THIN SHAVINGS. IN EACH CASE, FIRE CONTROL WAS WITHOUT DIFFICULTY. ONE MUST ALLOW A CERTAIN TIME FOR COOLING. THE POWDER MG-10 SHOWED VERY GOOD RESULTS. MOREOVER, THE TRIALS PROVED THAT DENSELY PACKED SHAVINGS ARE A VERY REAL SECURITY FACTOR. THE INTERIOR LAYOUT OF THE GLOVE BOXES OUGHT TO BE SUCH AS TO RENDER EXTINCTION AS EASY AS POSSIBLE.

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

*FIRE + *GLOVE BOX + *METAL + EXPERIMENT, GENERAL + PLUTONIUM + URANIUM

8-17037
BAKER L + SCHNIZLEIN JG + BINGLE JD
THE IGNITION OF URANIUM
ARGONNE NATIONAL LAB., ARGONNE, ILLINOIS
17 PAGES, 11 FIGURES, 2 TABLES, 16 REFERENCES, JOURNAL OF NUCLEAR MATERIALS 20(1), PAGE 22-38, (JULY, 1966)

CONCERNS EXPERIMENTAL STUDIES OF THE IGNITION OF PURE URANIUM. MOST OF THE WORK WAS DONE BY PLACING METAL SAMPLES IN A FLOWING OXIDIZING ATMOSPHERE (EITHER AIR OR OXYGEN) WITHIN A FURNACE WHOSE TEMPERATURE WAS INCREASING. IGNITION IN AIR OR OXYGEN WAS FOLLOWED BY SPONTANEOUS THERMOCYCLING. A SIMPLE MATHEMATICAL MODEL BASED ON ISOTHERMAL-REACTION-RATE LAWS AND SIMPLE HEAT-TRANSFER LAWS YIELDED AN IGNITION-TEMPERATURE--SPECIFIC-AREA RELATIONSHIP WHICH AGREED WELL WITH THE EXPERIMENTAL RESULTS. IT WAS CONCLUDED THAT URANIUM IGNITIONS IN AIR AND OXYGEN ARE THERMAL IGNITIONS THAT CAN BE EXPLAINED IN TERMS OF A HEAT BALANCE.

*CHEMICAL REACTION + *COMBUSTION + *IGNITION + *OXIDATION + *PYROPHORIC REACTION + *URANIUM + AIR + ANL (ARGONNE NATIONAL LABORATORY) + HEAT TRANSFER ANALYSIS + OXYGEN + THERMAL EXPERIMENT

8-17357
LINDHE S + CARLSON F + EDWALL B + BERLIN B
CHEMICAL PROBLEMS IN NUCLEAR REACTORS
AB ATOMENERGI, SWEDEN
9 PAGES, 1 FIGURE, SVENSK KEMISK TIDSKRIFT 79(2) PAGES 113-121 (1967), IN SWEDISH

REVIEW OF THE PRODUCTION OF RADIOLYTIC GASES AND RADIOACTIVE CORROSION PRODUCTS IN PRESSURIZED AND BOILING-WATER REACTORS. BUILDUP OF RADIOACTIVITY ON THE FUEL ELEMENT AND THE PRIMARY COOLANT SYSTEM SURFACES DUE TO THESE CORROSION PRODUCTS IS DISCUSSED.

*ACTIVATION PRODUCT + *ACTIVITY BUILDUP + *RADIOLYTIC GAS + *REACTOR COOLANT + CHEMICAL REACTION + CORROSION + HYDROGEN + NITROGEN + SWEDEN + WATER, GENERAL

8-17359
GIBBY RL
REACTION OF MOLTEN UO₂ WITH WATER
BATTELLE-NORTHWEST, RICHLAND, WASHINGTON
BNWL-362 +. 10 PAGES, 3 FIGURES, 2 TABLES, JANUARY 1967

REACTION OF MOLTEN UO₂ WITH WATER WAS INVESTIGATED BY ALLOWING MELTED UO₂ TO FALL INTO WATER. OXYGEN-TO-METAL RATIOS INCREASED FROM AN INITIAL VALUE OF 2.002 TO VALUES BETWEEN 2.06 AND 2.16, DEPENDING ON THE INITIAL WATER TEMPERATURE (30 TO 250 C). ATTEMPTS TO MEASURE ANY PRESSURE TRANSIENTS WERE GENERALLY UNSUCCESSFUL. RAPID INJECTION OF MOLTEN UO₂ INTO WATER DID NOT PRODUCE A POWDERED PRODUCT, BUT THE QUENCHED UO₂ WAS VERY FRIABLE AND COULD BE READILY REDUCED TO A COARSE POWDER.

CATEGORY 8
SOURCES OF ENERGY RELEASE UNDER ACCIDENT CONDITIONS

8-17359 *CONTINUED*
AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*METAL WATER REACTION + *MOLTEN FUEL + *URANIUM DIOXIDE + BATTELLE NORTHWEST + CHEMICAL REACTION + FUEL MELTDOWN + PARTICLE SIZE DISTRIBUTION

8-17361
IVINS RO + TEVEBAUGH AD + BINGLE JD + ET AL
REACTOR SAFETY - METAL-WATER REACTIONS
ARGONNE NATIONAL LABORATORY, ARGONNE, ILL.
ANL-7225 +. 5 PAGES, 3 FIGURE, PAGES 164-168 FROM ARGONNE NATIONAL LABORATORY. CHEMICAL ENGINEERING DIVISION SEMIANNUAL REPORT, JANUARY-JUNE 1966

SEMIANNUAL PROGRESS REPORT OF WORK ON METAL-WATER REACTIONS. ITEMS REPORTED FOR THIS PERIOD ARE - (1) REACTION OF FLOWING STEAM WITH STAINLESS-STEEL-CLAD AND ZIRCALOY-2-CLAD UO₂-CORE SIMULATED FUEL ELEMENTS IN A FURNACE, (2) PROPOSAL FOR LARGE-SCALE SIMULATION EXPERIMENTS OF THE LOSS-OF-COOLANT ACCIDENT, (3) CALCULATION OF THE EXTENT OF METAL-WATER REACTION DURING SUCH AN ACCIDENT (CHEMLOC PROGRAM), (4) STUDIES OF THE ALUMINUM-WATER REACTIONS BY THE LASER-HEATING METHOD, (5) PHOTOGRAPHIC STUDIES OF ALUMINUM-CLAD FUEL-PLATE SAMPLES IN TREAT, AND (6) STUDIES OF ZIRCALOY-2-CLAD UO₂-CORE SIMULATED FUEL ELEMENTS IN TREAT, INCLUDING THE LOSS-OF-COOLANT (FLAT-TOP TRANSIENT) EXPERIMENTS.

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

*ACCIDENT, LOSS OF COOLANT + *ALUMINUM + *FUEL MELTDOWN + *METAL WATER REACTION + *STEEL, STAINLESS + *ZIRCALOY + ACCIDENT ANALYSIS + ANL (ARGONNE NATIONAL LABORATORY) + CHEMICAL REACTION + COMPUTER PROGRAM + LASER HEATING + MOLTEN FUEL + STEAM + THERMAL ANALYSIS + TREAT (TRANSIENT TEST REACTOR FACILITY) + URANIUM DIOXIDE

8-17362
FISCHER DE
METAL OXIDATION AND IGNITION KINETICS
ARGONNE NATIONAL LABORATORY, ARGONNE, ILL.
ANL-7225 +. 10 PAGES, FIGURES, TABLES, PAGES 204-213 FROM ARGONNE NATIONAL LABORATORY. CHEMICAL ENGINEERING DIVISION SEMI-ANNUAL REPORT, JANUARY-JUNE 1966

A BRIEF SERIES OF BURNING TESTS WERE PERFORMED WITH U-PU-MO AND U-PU-11 ALLOYS TO DETERMINE WHETHER SELF-SUSTAINING OR PROPAGATING COMBUSTION COULD BE INDUCED IN UNCLAD PLATES OF THESE MATERIALS. SELF-SUSTAINING REACTIONS WERE INDUCED IN SAMPLES OF BOTH ALLOYS, BUT PROPAGATING REACTIONS GENERALLY WERE NOT. IT WAS CONCLUDED FROM KINETIC ANALYSIS OF THE SELF-SUSTAINING REACTIONS THAT THEY WERE VERY DEPENDENT ON THE RATE OF HEAT LOSS FROM THE SPECIMENS.

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

*IGNITION + *MOLYBDENUM + *OXIDATION + *PLUTONIUM + *TITANIUM + *URANIUM + AIR + ALLOY + ANL (ARGONNE NATIONAL LABORATORY) + CHEMICAL REACTION + COMBUSTION

8-17442 ALSO IN CATEGORY 5
PHYSICO-CHEMICAL STUDIES OF CLAD UO₂ IN POTENTIAL MELTDOWN ENVIRONMENT
GENERAL ELECTRIC COMPANY, CINCINNATI, OHIO
GEMP-67 +. 15 PAGES, PAGES 151-155 FROM AEC FUELS AND MATERIALS DEVELOPMENT PROGRAM PROGRESS REPORT NO. 67. JUNE 30, 1967

ZIRCALOY-4 TUBES, INTERNALLY PRESSURIZED IN ARGON AND IN STEAM ATMOSPHERES, WERE INDUCTION-HEATED AT 0.3 C/SEC UNTIL THEY CRACKED OR EXPANDED 34%. AT PRESSURES BELOW 200 PSI, THE STEAM ALLOWED OXIDATION, WHICH STIFFENED CLADDING ENOUGH TO OBTAIN HIGHER TEMPERATURE THAN IN THE ARGON, AND CLAD CRACKING AFTER 12% EXPANSION WAS THE FAILURE MECHANISM RATHER THAN EXPANSION. HIGHER RATES FOR ZIRCALOY-4 AIR CORROSION THAN FOR STEAM OXIDATION ABOVE 1000 C ARE APPARENTLY DUE TO EFFECTS OF ZIRCONIUM NITRIDE FORMED.

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

*ACCIDENT, LOSS OF COOLANT + *FAILURE, CLADDING + *PRESSURE, INTERNAL + *ZIRCALOY + CORROSION + FUEL MELTDOWN + REACTOR, POWER

8-17453 ALSO IN CATEGORIES 5 AND 6
ANTOINE AC
THERMODYNAMIC PROPERTIES OF LIQUID METAL SOLUTIONS IN THE SODIUM-MERCURY SYSTEM AT 200 C
LEWIS RESEARCH CENTER, CLEVELAND, OHIO. NASA
NASA-TN-D-3951 +. 11 PAGES, 2 FIGURES, 2 TABLES, 14 REFERENCES, MAY 1967

THE ELECTROMOTIVE FORCE OF SODIUM-SODIUM AMALGAM CELLS WAS MEASURED AT 150, 200, AND 250 C FOR 0.01 TO 0.15 ATOMIC FRACTION SODIUM. THE PARTIAL FREE ENERGY, PARTIAL ENTROPY, AND PARTIAL HEAT OF MIXING OF SODIUM IN SODIUM AMALGAM WERE CALCULATED. THERMODYNAMIC PROPERTIES FOR THE

CATEGORY 8
SOURCES OF ENERGY RELEASE UNDER ACCIDENT CONDITIONS

8-17453 *CONTINUED*
MERCURY WERE ALSO CALCULATED.

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

PROPERTY, PHYSICAL + THERMAL PROPERTY + THERMODYNAMICS

8-17454 ALSO IN CATEGORY 5
HAWKER PA
THERMAL AND STRESS PERFORMANCE OF A PEBBLE BED REACTOR
AUSTRALIAN ATOMIC ENERGY COMMISSION RESEARCH ESTABLISHMENT, LUCAS HEIGHTS
AAEC/TM-344 +. 19 PAGES, REFERENCES, SEPTEMBER 1966

A METHOD FOR DETERMINING THE THERMAL AND STRESS PERFORMANCE OF A PEBBLE-BED REACTOR IS DESCRIBED FOR STEADY-STATE OPERATION. SOME RESULTS BASED ON THIS ANALYSIS ARE PRESENTED TO INDICATE LIKELY TRENDS.

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

REACTOR, PEBBLE BED + STRESS ANALYSIS + THERMAL ANALYSIS

8-17564
MATHEWS RL
EXPLOSION AND DETONATION LIMITS FOR AN OXYGEN-HYDROGEN-WATER-VAPOR SYSTEM
KNOLLS ATOMIC POWER LAB., SCHENECTADY, N.Y.
KAPL-M-6564 +. 54 PAGES, FIGURES, JUNE 1966

A CONSERVATIVE SET OF LIMITS FOR THE ALLOWABLE OXYGEN CONCENTRATION IN AN OXYGEN-HYDROGEN WATER-VAPOR SYSTEM WITHOUT DANGER OF EXPLOSION OR DETONATION WAS DEFINED AND EVALUATED. THESE LIMITS ARE CONSIDERED AS A FUNCTION OF VARIOUS TEMPERATURES AND WATER-VAPOR CONDITIONS, AND THEY ARE EXPRESSED FOR BOTH SUPERHEATED VAPOR CONDITIONS AND FOR ISOTHERMAL TEMPERATURE CONDITIONS.

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

*AIR + *COMBUSTION + *EXPLOSION + *IGNITION + *OXYGEN + ACCIDENT MODEL + CHEMICAL KINETICS + CHEMICAL REACTION + COMPARISON, THEORY AND EXPERIENCE + KAPL (KNOLLS ATOMIC POWER LABORATORY) + NITROGEN + WATER VAPOR

8-17576 ALSO IN CATEGORIES 5 AND 6
SAVINO JM + SIEGEL R
EXPERIMENTAL AND ANALYTICAL STUDY OF THE TRANSIENT SOLIDIFICATION OF A WARM LIQUID FLOWING OVER A CHILLED FLAT PLATE
LEWIS RESEARCH CENTER, CLEVELAND, OHIO. NASA
NASA-TN-D-4015 +. 63 PAGES, 12 FIGURES, 26 REFERENCES, JUNE 1967

ANALYTICAL PREDICTIONS AND EXPERIMENTAL DATA ARE PROVIDED FOR THE TRANSIENT GROWTH OF A FROZEN LAYER THAT FORMS WHEN A WARM LIQUID FLOWS OVER ONE SIDE OF A CHILLED FLAT PLATE. THE PLATE IS COOLED TO A TEMPERATURE BELOW THE FREEZING POINT OF THE LIQUID BY A COOLANT FLOWING ALONG THE OTHER SIDE OF THE PLATE. THIS COULD BE ENCOUNTERED, FOR EXAMPLE, IN A HEAT EXCHANGER WHERE WATER IS BEING COOLED BY A FLUID AT LOW TEMPERATURE. THREE ANALYTICAL PROCEDURES WERE USED AND COMPARED FOR ACCURACY AND CONVENIENCE IN APPLICATION. ONE IS AN ITERATIVE TECHNIQUE THAT YIELDED THREE CLOSED-FORM SOLUTIONS, EACH SUCCESSIVE SOLUTION BEING A MORE ACCURATE HIGHER ORDER APPROXIMATION. NUMERICAL RESULTS FROM THE THIRD APPROXIMATION ARE PRESENTED GRAPHICALLY IN SUFFICIENT DETAIL SO THAT RAPID ESTIMATES OF FROZEN LAYER GROWTH CAN BE MADE. IN THE EXPERIMENT, WATER FLOWED OVER ONE SIDE OF A THIN INCONEL PLATE WHILE THE OTHER SIDE OF THE PLATE WAS COOLED BY FLOWING CHILLED ALCOHOL. TRANSIENT ICE GROWTH WAS INITIATED BY A SUDDEN INCREASE OF THE ALCOHOL FLOW. THE ICE THICKNESS AND THE PLATE SURFACE TEMPERATURES WERE MEASURED THROUGHOUT THE TRANSIENT GROWTH PERIOD AND COMPARED FAVORABLE WITH THEORETICALLY PREDICTED VALUES.

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

CRYOGENICS + FILTER, LIQUID + HEAT EXCHANGER + HEAT TRANSFER ANALYSIS + HEAT TRANSFER, NATURAL CONVECTION + REACTOR, LIQUID METAL COOLED + REACTOR, MOLTEN SALT

8-17582 ALSO IN CATEGORIES 5 AND 6
STABILITY EXPERIMENTS FOR BOILING-WATER REACTORS. QUARTERLY REPORT NO. 8, OCTOBER 1-DECEMBER 31, 1966
ALLGEMEINE ELEKTRICITAETS-GESellschaft, FRANKFURT AM MAIN, WEST GERMANY. KERNENERGIE-ANLAGEN
EURAC-1786 + EUR-3328 +. 41 PAGES, FIGURES, TABLES, REFERENCES, DECEMBER 1966

RELATIONS DESCRIBING FREQUENCY BEHAVIOR DURING THE TRANSFER OF HEAT PRODUCED UNIFORMLY IN THE HEATING TUBE TO THE COOLANT FLOWING PAST IT WERE DERIVED FROM THE FOURIER HEAT-TRANSFER EQUATION AND INCLUDED IN THE AMOK-L FORMULA PLAN. FOR THE SPECIAL CASE OF CYLINDRICAL GEOMETRY, THE HEAT OUTPUT-HEAT PER SURFACE UNIT FREQUENCY CHARACTERISTIC WAS CALCULATED AS A

CATEGORY 8
SOURCES OF ENERGY RELEASE UNDER ACCIDENT CONDITIONS

8-17582 *CONTINUED*

FUNCTION OF VARIOUS HEAT-TRANSFER COEFFICIENTS AND GIVEN AS A TABLE OR DIAGRAM. THEORETICAL AND EXPERIMENTAL RESULTS WERE COMPARED, AND THE RESULTS DISCUSSED, USING A MEASUREMENT SERIES. THE TEST FACILITY WITH THE NEW SQUARE MEASUREMENT SECTION, FOUR-ROD CLUSTER, AND VELOCITY MODERATOR WAS BROUGHT INTO SERVICE.

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

FLOW STABILITY + HEAT TRANSFER, BOILING + REACTOR, BOILING WATER + TRANSFER FUNCTION

8-17584 ALSO IN CATEGORIES 12 AND 13

BARGHUSEN JJ + JONKE AA

SAFETY CONSIDERATIONS IN THE PROCESSING OF PLUTONIUM AND RADIOACTIVE MATERIALS

ARGONNE NATIONAL LABORATORY

3 PAGES, 1 FIGURE, 1 TABLE, 6 REFERENCES, POWER REACTOR TECHNOLOGY AND REACTOR FUEL PROCESSING 10(2), PAGES 170 THRU 172, (SPRING 1967)

RESULTS OF STUDIES OF ANION-EXCHANGE-RESIN (NITRATE FORM) TO DETERMINE IGNITION TEMPERATURES ARE REPORTED. DATA ARE PRESENTED FOR BOTH LOADED AND UNLOADED SYSTEMS, USING VARIOUS OPERATING CONDITIONS FOR DIFFERENT METHODS OF PREPARING THE BEDS. SAFE STORAGE METHODS FOR ANION-EXCHANGE RESINS ARE RECOMMENDED.

*IGNITION + *ION EXCHANGE + *PLUTONIUM + *RADIOCHEMICAL PROCESSING + FIRE + RESIN

8-17811 ALSO IN CATEGORIES 5 AND 11

FULS GM

ACT-I. A DIGITAL PROGRAM FOR THE ANALYSIS OF THE CONTAINMENT TRANSIENT DURING A LOSS OF COOLANT ACCIDENT IN LWB

BETTIS ATOMIC POWER LAB., PITTSBURGH, PA.

WAPD-TM-693 +. 28 PAGES, FIGURES, REFERENCES, MAY 1967

THIS REPORT DESCRIBES ACT-I, A DIGITAL COMPUTER PROGRAM FOR PREDICTING THE CONTAINMENT TRANSIENT RESULTING FROM THE INJECTION OF HIGH-ENTHALPY LIQUID AND HEAT DURING A LOSS-OF-COOLANT ACCIDENT IN A PWR. THIS PROGRAM PERFORMS A FINITE-DIFFERENCE INTEGRATION OVER THE TIME OF THE TRANSIENT, ACCOUNTING FOR HEAT AND MASS ADDITIONS FROM INPUT TABLES FOR HEAT TRANSFER TO VARIOUS HEAT SINKS, INCLUDING SIMULATED SAFEGUARDS, AND FOR LEAKAGE FROM THE CONTAINER TO THE ATMOSPHERE.

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

*COMPUTER PROGRAM + *CONTAINMENT ANALYSIS + *HEAT SINK + ACCIDENT, LOSS OF COOLANT + COMPUTER, DIGITAL + CONTAINMENT DESIGN + METAL WATER REACTION + PRESSURE, INTERNAL + REACTOR, PRESSURIZED WATER + ZIRCONIUM

8-18186 ALSO IN CATEGORY 5

NETTLEY PT. + MARTIN WH

THE IRRADIATION BEHAVIOUR OF GRAPHITE

UNITED KINGDOM ATOMIC ENERGY AUTHORITY, REACTOR MATERIALS LAB., CULCHETH

TRG-REPORT-1330(C) +. 7 PAGES, 8 FIGURES, 2 TABLES, 17 REFERENCES, 1966

THE RESULTS OF PREVIOUS EXPERIMENTS ON THE IRRADIATION BEHAVIOUR OF DIFFERENT GRAPHITES AND RECENT STUDIES OF THE DEFECTS PRODUCED IN GRAPHITE CRYSTALS BY FAST NEUTRON IRRADIATION HAVE LED TO THE DEVELOPMENT OF AN IRRADIATION-DAMAGE MODEL FOR GRAPHITE. THIS REPORT DESCRIBES THE MODEL. IT ALSO PRESENTS RESULTS FROM EXPERIMENTS PERFORMED TO TEST THE VALIDITY OF THE MODEL AT LARGE IRRADIATION DOSES OF FAST NEUTRONS. SEVERAL GRAPHITES, INCLUDING WELL-ORIENTED PYROLYTIC MATERIAL, WERE IRRADIATED TO TOTAL NEUTRON DOSES OF UP TO 3.3×10 TO THE 22ND NEUTRONS/SQ. CM IN THE DOUNREAY FAST REACTOR. THE IRRADIATION TEMPERATURE RANGE INVESTIGATED WAS 380 TO 750 C. THE RESULTANT DIMENSIONAL AND PHYSICAL PROPERTY CHANGES WERE STUDIED, AND THEIR GENERAL AGREEMENT WITH THE DAMAGE MODEL REFERRED TO ABOVE IS GOOD. PUBLISHED DATA ON THE IRRADIATION BEHAVIOUR OF GRAPHITE ABOVE 750 C WERE EXAMINED, AND ARGUMENTS ARE PRESENTED TO SHOW THAT THEY ARE IN GENERAL AGREEMENT WITH THE PROPOSED DAMAGE MODEL.

*GRAPHITE + *RADIATION DAMAGE + PROPERTY, PHYSICAL + RADIATION EFFECT + THERMAL PROPERTY

8-18188 ALSO IN CATEGORY 7

BAKER L + BINGLE JD

THE KINETICS OF OXIDATION OF URANIUM BETWEEN 300 AND 625 C

ARGONNE NATIONAL LAB., ARGONNE, ILL.

11 PAGES, 7 FIGURES, 4 TABLES, 15 REFERENCES, JOURNAL OF NUCLEAR MATERIALS 20(2), PAGE 11-21, (1966)

STUDIES OF THE ISOTHERMAL OXIDATION OF URANIUM IN THE 300 AND 625 C TEMPERATURE RANGE WERE MADE IN A METAL HEAT SINK REACTION CELL DESIGNED TO MINIMIZE SELF-HEATING. DATA WITH TWO SOURCES OF PURE URANIUM AS WELL AS 1 AT. % COPPER AND 1 AT. % ALUMINUM ALLOYS OF URANIUM SHOWED SUBSTANTIALLY IDENTICAL SELF-ACCELERATING REACTION RATES UP TO 400 C. OXIDATION WITH PURE URANIUM AND THE COPPER ALLOY UNDERWENT A TRANSITION TO A SLOWER REACTION IN WHICH THE OXIDE WAS SOMEWHAT PROTECTIVE ABOVE 500 C, WITH THE COPPER ALLOY CONSIDERABLY MORE PROTECTIVE

CATEGORY 8
SOURCES OF ENERGY RELEASE UNDER ACCIDENT CONDITIONS

8-18188 *CONTINUED*

THAN THE PURE METAL. THE SELF-ACCELERATING REACTION CONTINUED TO HIGHER TEMPERATURES FOR THE ALUMINUM ALLOY. THERE IS EVIDENCE LINKING THIS CHANGE IN THE REACTION KINETICS AT 450°C WITH A CHANGED CHARACTER OF THE OXIDE. EMPIRICAL EQUATIONS HAVE BEEN FORMULATED TO EXPRESS THE RESULTS OF ISOTHERMAL OXIDATION STUDIES FOR PURE URANIUM ABOVE 300°C. THE CHANGE IN REACTION KINETICS AT 450°C WAS LINKED WITH A CORRESPONDING CHANGE IN THE CHARACTER OF THE OXIDE AT THE SAME TEMPERATURE.

*IGNITION + *URANIUM + ACCIDENT, GENERAL + CHEMICAL KINETICS + CHEMICAL REACTION + OXIDATION

8-18189 ALSO IN CATEGORY 7

BAKER L + SCHNIZLEIN JG + BINGLE JD

THE IGNITION OF URANIUM

ARGONNE NATIONAL LAB., ARGONNE, ILL.

17 PAGES, 11 FIGURES, 2 TABLES, 16 REFERENCES, JOURNAL OF NUCLEAR MATERIALS 20(2), PAGE 22-38, (1966)

EXPERIMENTAL STUDIES ARE REPORTED OF THE IGNITION OF PURE URANIUM. MOST OF THE EXPERIMENTS WERE PERFORMED BY PLACING THE METAL SAMPLES IN A FLOWING OXIDIZING ATMOSPHERE (EITHER AIR OR OXYGEN) WITHIN A FURNACE WHOSE TEMPERATURE WAS INCREASING AT THE RATE OF 10 C/MIN. THE IGNITION TEMPERATURES OF SINGLE PIECES OF URANIUM CAN BE ADEQUATELY EXPLAINED AS A THERMAL IGNITION IN TERMS OF A BALANCE OF HEAT LOSSES AND HEAT GENERATED BY OXIDATION OF THE METAL. APPLYING OXIDATION-RATE DATA OBTAINED FROM ISOTHERMAL OXIDATION STUDIES BETWEEN 300 AND 625 C AND REASONABLE VALUES FOR THE HEAT TRANSFER COEFFICIENT AND EMISSIVITY, SIMULATED BURNING CURVES WERE CALCULATED. THESE PROVIDE IGNITION TEMPERATURES WHICH AGREE REASONABLY WELL WITH EXPERIMENTALLY DETERMINED VALUES FOR SAMPLES OF VARIOUS SPECIFIC AREAS. THE SHARP BREAK IN IGNITION TEMPERATURE FOR SAMPLES HAVING A SPECIFIC AREA BETWEEN 2 AND 7 CM²/G RESULTS FROM THE TRANSITION IN THE OXIDATION KINETICS AT APPROXIMATELY 450 C FROM ACCELERATING AT LOWER TEMPERATURES TO PROTECTIVE AT HIGHER TEMPERATURES. THE TRANSITION IN OXIDATION KINETICS IS AFFECTED IN VARIOUS MANNERS BY METALLURGICAL FORM, IMPURITIES, OXIDIZING MEDIA, AND SAMPLE SPECIFIC AREA.

*IGNITION + *URANIUM + ACCIDENT, GENERAL + CHEMICAL KINETICS + CHEMICAL REACTION + OXIDATION

8-18190 ALSO IN CATEGORY 7

SCHNIZLEIN JG + BAKER L + BINGLE JD

THE IGNITION OF BINARY ALLOYS OF URANIUM

ARGONNE NATIONAL LAB., ARGONNE, ILL.

9 PAGES, 7 FIGURES, 3 TABLES, 2 REFERENCES, JOURNAL OF NUCLEAR MATERIALS 20(2), PAGE 39-47, (1966)

REPORTS THE EFFECT OF ALLOYING ADDITIONS ON THE IGNITION OF URANIUM. ADDITIONS OF ALUMINUM PARTICULAR AND CERTAIN OTHER ALLOYS INCLUDING BERYLLIUM, BISMUTH, CARBON, LEAD, MOLYBDENUM, NIOBIUM, PALLADIUM, PLATINUM, RUTHENIUM, SILICON, TITANIUM, AND VANADIUM INHIBITED THE OXIDE TRANSITION AND THEREBY LOWERED THE IGNITION TEMPERATURE. ANOTHER EFFECT PRODUCED, NOTABLY BY COPPER (BUT ALSO BY BISMUTH, LEAD, PALLADIUM, PLATINUM, RUTHENIUM AND VANADIUM), WAS AN INCREASE IN THE PROTECTIVENESS OF THE OXIDE FORMED AT TEMPERATURES GREATER THAN 500 C. VERY COMPLEX BUT REPRODUCIBLE TEMPERATURE-TIME CURVES WERE OBTAINED WHEN BOTH EFFECTS OCCURRED WITH THE SAME ALLOY. ALLOYING ADDITIONS OF CERIUM, CHROMIUM, HYDROGEN, IRON, NICKEL, RHODIUM, SILVER, TANTALUM, THORIUM, AND ZIRCONIUM HAD NO SIGNIFICANT EFFECT ON THE IGNITION BEHAVIOR OF URANIUM AT THE LOW CONCENTRATION LEVELS STUDIED.

*ALLOY + *IGNITION + *URANIUM + ACCIDENT, GENERAL + CHEMICAL KINETICS + CHEMICAL REACTION + OXIDATION

8-18195 ALSO IN CATEGORIES 6 AND 7

DICKERMAN CE + ROBINSON LE + SOWA ES + MONAWICK JH + AUGUST C

TREAT MELTDOWN OF IRRADIATED METALLIC FAST-REACTOR FUEL IN AN INERT ATMOSPHERE

ARGONNE NATIONAL LABORATORY, ARGONNE, ILLINOIS

13 PAGES, 10 FIGURES, 3 TABLES, 29 REFERENCES, NUCLEAR APPLICATIONS 3(8)- 461-473 (AUG. 1967)

BEHAVIOR OF TWO TYPES OF IRRADIATED METALLIC FAST-REACTOR FUEL PINS UNDER TRANSIENT HEATING IN AN INERT-GAS ATMOSPHERE IN THE TREAT REACTOR WAS STUDIED UNDER CONDITIONS RANGING UP TO COMPLETE MELTDOWN. IRRADIATION-INDUCED CHANGES IN FAILURE THRESHOLDS, MODES OF FAILURE, AND POST-FAILURE FUEL MOTION WERE SIGNIFICANT BUT NOT ENOUGH TO MAKE GROSS CHANGES IN THE COURSE OF AN ACCIDENT. THE AMOUNT OF SWELLING OBSERVED IN THE POSTEXPERIMENTAL FUEL RESIDUE WAS LARGE ENOUGH TO HAVE PLAYED A SIGNIFICANT ROLE IN DETERMINING THE COURSE OF A MELTDOWN ACCIDENT.

*FUEL MELTDOWN + *TESTING + EBR 1 AND 2 (EXPERIMENTAL BREEDER REACTORS) + FAILURE, CLADDING + FAILURE, FUEL ELEMENT + FERMI + REACTOR, BREEDER + REACTOR, FAST + REACTOR, LIQUID METAL COOLED + SODIUM + TREAT (TRANSIENT TEST REACTOR FACILITY) + VOID COEFFICIENT

8-18196 ALSO IN CATEGORY 4

THURBER WC

AEC-NASA LIQUID METALS INFORMATION MEETING, HELD IN GATLINBURG, TENNESSEE, APRIL 21-23, 1965, SPONSORED BY

OAK RIDGE NATIONAL LABORATORY

DIVISION OF TECHNICAL INFORMATION

CONF-650,411 +. 399 PAGES, FIGURES, TABLES, APRIL 1965

THE FIFTH AEC-NASA LIQUID METALS CORROSION MEETING WAS HELD AT GATLINBURG, TENNESSEE, ON APRIL

CATEGORY 8
SOURCES OF ENERGY RELEASE UNDER ACCIDENT CONDITIONS

8-18196 *CONTINUED*

23, 1965. THE SUBJECT MATTER WAS ALMOST EXCLUSIVELY LIMITED TO ALKALI METALS, WITH EMPHASIS CENTERING ON THEIR INTERACTIONS WITH CONTAINER MATERIALS. THE PRESENTATION OF 40 TECHNICAL PAPERS BY SOME 20 ORGANIZATIONS. SOLUBILITY STUDIES AND IMPURITY EFFECTS IN ALKALI METALS. CORROSION BY LIQUID SODIUM, NAK, AND LITHIUM. CORROSION BY BOILING ALKALI METALS.

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

*CORROSION + *LITHIUM + *METAL, LIQUID + *NAK (SODIUM POTASSIUM ALLOY) + *SODIUM + COOLANT CHEMISTRY + COOLANT QUALITY + REACTOR, FAST + REACTOR, SPACE

8-18239 ALSO IN CATEGORY 7

BLAKELY JP + RUTHERFORD JL + OVERHOLSER LG
OXIDATION OF FUELED AND UNFUELED GRAPHITE SPHERES BY STEAM
OAK RIDGE NATIONAL LABORATORY
ORNL-P-1416 +. 30 PAGES, 1966

THE OXIDATION OF VARIOUS FUELED AND UNFUELED GRAPHITE SPHERES BY STEAM WAS DETERMINED AT 800, 900, AND 1000 C, USING STEAM. THE FUELED SPHERES CONTAINED PYROLYTIC-CARBON-COATED UC2 OR (U,TH)C2 PARTICLES DISPERSED IN GRAPHITE MATRICES. REACTION RATES WERE DETERMINED FROM WEIGHT CHANGES AND ANALYSES OF THE EFFLUENT GASES. THE EFFECT OF BURNOFF ON THE REACTION RATE WAS FOUND TO BE QUITE PRONOUNCED. THE MARKED DIFFERENCES IN THE CO-TO-CO2 RATIOS IN THE EFFLUENT GASES APPEAR TO BE ASSOCIATED WITH BOTH THE DEGREE OF BURNOFF AND PURITY OF THE GRAPHITE. BET SURFACE AREA AND MERCURY-POROSIMETRY DATA OBTAINED FOR SEVERAL OXIDIZED UNFUELED SPHERES ARE INCLUDED.

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

*GRAPHITE + *OXIDATION + *STEAM + FUEL INTEGRITY + OUT OF PILE LOOPS AND EXPERIMENTS + URANIUM CARBIDE

8-18442 ALSO IN CATEGORIES 11 AND 17

AEC ALLOWS HUMBOLDT BAY (U LOAD) FINAL QUARTER OF TYPE II FUEL ASSEMBLIES
AEC, DIVISION OF REACTOR LICENSING, WASHINGTON, D. C.
1 PAGE, SEPTEMBER 28, 1967, DOCKET NO. 50-133, PACIFIC GAS AND ELECTRIC CO.

PRINCIPAL CONSIDERATION CONCERNING NEW ZIRC-CLAD CORE IS CONTAINMENT-SYSTEM ABILITY TO WITHSTAND THE PRESSURE THAT MIGHT BE GENERATED FROM A METAL-WATER REACTION FOLLOWING LOSS OF COOLANT. DRL AGREES THAT SUFFICIENT MARGIN EXISTS FOR REASONABLE ASSURANCE AGAINST CONTAINMENT RUPTURE, BASED ON MAY 17 AND AUG. 23 LETTERS.

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

*ACCIDENT, LOSS OF COOLANT + *CLAD + *FUEL ELEMENT + *METAL WATER REACTION + CONTAINMENT INTEGRITY + HUMBOLDT BAY + PRESSURE, INTERNAL + REACTOR, BOILING WATER + ZIRCALOY

8-18634 ALSO IN CATEGORY 11

GAST K + SCHIKARSKI W
CONTAINMENT OF A LARGE SODIUM-COOLED FAST BREEDER REACTOR
KERNFORSCHUNGSZENTRUM, KARLSRUHE, FEDERAL REPUBLIC OF GERMANY
SM-89/7 + CONF-670-402 +. 15 PAGES, 7 FIGURES, 1 TABLE, 5 REFERENCES. APRIL 1967

FOLLOWING THE CONCEPTUAL DESIGN STUDY FOR A 1000-MW SODIUM-COOLED FAST BREEDER REACTOR, THE CONCEPTUAL DESIGN OF A 300-MW PROTOTYPE REACTOR IS CURRENTLY UNDER WAY AT KARLSRUHE RESEARCH CENTRE. FOR THE PROTOTYPE REACTOR, A RATHER CONSERVATIVE SAFETY ASSESSMENT WAS CHOSEN TO COMPENSATE FOR INCOMPLETE KNOWLEDGE OF DETAILED NUCLEAR AND THERMODYNAMIC BEHAVIOR IN A LARGE ACCIDENT. DOUBLE CONTAINMENT WILL THEREFORE BE PROVIDED, THE INNER CONTAINMENT BEING DESIGNED FOR THE POTENTIAL CONSEQUENCES OF A NUCLEAR EXCURSION WITH DESTRUCTIVE ENERGY RELEASE, AND FOR PREVENTION OF LARGE SODIUM FIRES. THE OUTER CONTAINMENT WILL SERVE AS A FINAL BARRIER FOR FISSION PRODUCTS AND OTHER RADIOACTIVE AEROSOLS. THE CONTAINMENT CONCEPT IS AIMED AT INDEPENDENCE IN SITE SELECTION.

AVAILABILITY - NATIONAL AGENCY FOR INTERNATIONAL PUBLICATIONS, INC., 317 EAST 34TH STREET, NEW YORK, NEW YORK. 10016

*CONTAINMENT ANALYSIS + *REACTOR, FAST + ACCIDENT, MAXIMUM CREDIBLE (MCA) + CONTAINMENT, MULTIPLE + DESIGN STUDY + ENERGY SOURCE + GERMANY + REACTOR, LIQUID METAL COOLED

8-18744

GOODMAN L
EFFECTS OF A SODIUM-WATER REACTION IN A MODULAR STEAM GENERATOR, AN EXPERIMENTAL STUDY
ATOMICS INTERNATIONAL, CANOGA PARK
AI-66-152 +. 88 PAGES, 37 FIGURES, 7 REFERENCES, SEPT. 24, 1966

QUALITATIVE TESTS WERE PERFORMED TO SIMULATE THE SIZE, CONFIGURATIONS, AND OPERATING CONDITIONS OF A SINGLE MODULE IN A SODIUM-HEATED STEAM GENERATOR. THE OBJECTIVE WAS TO DETERMINE THE FEASIBILITY OF DESIGNING AND OPERATING A STEAM GENERATOR CAPABLE OF

CATEGORY 8
SOURCES OF ENERGY RELEASE UNDER ACCIDENT CONDITIONS

8-18744 *CONTINUED*

WITHSTANDING THE SODIUM-WATER REACTION IN CASE OF A TUBE FAILURE, WITHOUT EXPOSING THE REST OF THE STEAM-GENERATING PLANT TO UNDEF HAZARDS. MAXIMUM RECORDED PRESSURES RESULTING FROM A SUDDEN TUBE FAILURE APPEARED TO BE LIMITED TO THE MAXIMUM STEAM OR WATER PRESSURE AVAILABLE, AND RELATED TO THE RUPTURE PRESSURE OF THE TUBE. IT WAS CONCLUDED THAT IT IS POSSIBLE TO DESIGN AND OPERATE SUCH A STEAM GENERATOR ABLE TO WITHSTAND THE EFFECTS OF A SUDDEN TUBE FAILURE.

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

*DAMAGE + *FAILURE, TUBING + *HEAT EXCHANGER + *METAL WATER REACTION + *SODIUM + *TEST, COMPONENT + ATOMICS INTERNATIONAL + CHEMICAL REACTION + METAL, LIQUID

8-18958

ROW TH

INTERACTION OF MOLTEN UO₂ AND REFRACTORY MATERIAL

OAK RIDGE NATIONAL LABORATORY

ORNL-TM-1828 +. 25 PAGES, 14 FIGURES, 5 REFERENCES, JUNE 26, 1967

A SERIES OF EXPERIMENTS WAS MADE IN WHICH FIVE REFRACTORY MATERIALS WERE EXPOSED TO VERY HIGH TEMPERATURES (PLASMA TORCH). IN SOME OF THE EXPERIMENTS, UO₂ WAS KEPT MOLTEN FOR 20-25 MIN ON A BLOCK OF REFRACTORY MATERIAL TO DETERMINE THE DEGREE OF INTERACTION BETWEEN THE TWO. Al₂O₃, MgO, SiC, AND ZrO₂ REFRACTORY-GRADE MATERIALS AND GRAPHITE EXHIBED GOOD RESISTANCE TO PENETRATION. CONCRETE AND SAND BEHAVIOR UNDER HEATING WITHOUT UO₂ WAS POOR, AND THEY WERE NOT CONSIDERED FOR FURTHER TESTS.

AVAILABILITY - T. H. ROW, OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.

*CONCRETE + *EXPERIMENT, GENERAL + *GRAPHITE + *MOLTEN FUEL + *URANIUM DIOXIDE + CHEMICAL REACTION + ORNL (OAK RIDGE NATIONAL LABORATORY)

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-16429 ALSO IN CATEGORIES 17 AND 18
BIG ROCK POINT CHANGES TO MAIN STEAM BYPASS VALVE AND SECOND TRANSMISSION LINE
CONSUMERS POWER COMPANY, JACKSON, MICH.
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(27) PAGE 15(JULY 3, 1967), DOCKET 50-155

(LETTER JUNE 23.) FOLLOWING THE INCIDENT (ACC NO. 11038) OF AUGUST 8, 1966, THE MAIN STEAM BYPASS VALVE WAS PLACED IN MANUAL ABOVE 50 MWE SINCE IT WOULD NOT PREVENT SCRAM OR A LINE LOSS OF THIS CHANGE. EDITORIAL OMISSION KEPT THIS FACT OUT OF THE SEMIANNUAL REPORT. SINCE SOME FAILURE INCIDENCE WILL ALWAYS BE PRESENT IN THIS SYSTEM, A DC-MOTOR-OPERATED ISOLATION VALVE WILL BE ADDED AS A BACKUP VALVE. A 46-KV LINE WILL BE BROUGHT TO THE PLANT WITH AUTOMATIC THROWOVER TO PROVIDE A SECOND SOURCE OF NORMAL STATION POWER. TESTING OF THE NEW BYPASS-VALVE CONTROLS AT HIGH POWER IS DEFERRED TO MINIMIZE THE NUMBER OF THERMAL TRANSIENTS TO THE FUEL, BECAUSE OF THEIR PAST FAILURES.

*MODIFICATION, SYSTEM OR EQUIPMENT + ACCIDENT, LOAD REJECTION + BIG ROCK POINT + EMERGENCY POWER, ELECTRIC + FAILURE, EQUIPMENT + FAILURE, FUEL ELEMENT + MAIN COOLING SYSTEM + REACTOR, BOILING WATER + TEST, PROOF + VALVE

9-16942
LEROY C + ROBIN L + JACQUIN JC + CORNUDET A + CHAZAL G + MERLE JP + GUILLEMARD B
BLOWING LOOP IN TITC EL 4 REACTOR. CO₂ FLOW CONTROL ANALOGUE STUDY.
COMMISSARIAT A L-ENERGIE ATOMIQUE, SACLAY (FRANCE.) CENTRE D-ETUDES NUCLEAIRES
CEA-R-2793 +. 112 PAGES, MAY 1966 (IN FRENCH)

PROBLEM - DEVELOP A CONTROL SYSTEM FOR THE COOLANT SYSTEM FOR THE EL4 REACTOR. APPROACH - AN ANALOG COMPUTER MODEL OF COOLING CIRCUIT AND TURBOBLOWER UNITS WAS DEVELOPED. THIS MODEL WAS USED TO DEVELOP AND TEST A CONTROL SYSTEM. RESULTS - REPORT SHOWS SIMULATED BEHAVIOR OF COOLING SYSTEM WITH AND WITHOUT AUTOMATIC CONTROL.

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

*ANALOG SIMULATION + *CONTROL SYSTEM + *MAIN COOLING SYSTEM + COMPUTER PROGRAM + DESIGN STUDY + REACTOR, GAS COOLED

9-16943
POPPER GF + KNOX AE
FART IN-CORE INSTRUMENT DEVELOPMENT
ARGONNE NATIONAL LAB., ILL.
ANL-7161 +. 75 PAGES, 33 FIGURES, 19 TABLES, 46 REFERENCES, JULY 1966

PROBLEM - MEASURE FUEL-PIN AND COOLANT TEMPERATURES, COOLANT FLOW RATES WITHIN FUEL ASSEMBLIES, FISSION-GAS PRESSURE IN FUEL PINS, AND NEUTRON AND GAMMA FLUXES IN AN EXPERIMENTAL SODIUM-COOLED FAST REACTOR. APPROACH - THE FOLLOWING INSTRUMENTATION WAS DEVELOPED FOR INSTRUMENTED FUEL SUBASSEMBLIES - FUEL-PIN THERMOCOUPLES, COOLANT THERMOCOUPLES, TURBINE FLOWMETERS, MAGNETIC FLOWMETERS, THERMAL FLOWMETERS, THERMAL FLOWMETERS (USING A HEATER AND MEASUREMENT OF TEMPERATURE USE), AND ELECTRICAL CONNECTORS AND CABLES. RESULTS - A PORTION OF THE INSTRUMENTATION WAS TESTED WITH TEMPERATURE AND RADIATION BEFORE PROJECT WAS TERMINATED.

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

*INSTRUMENTATION, FLOW + *INSTRUMENTATION, IN CORE + *INSTRUMENTATION, TEMPERATURE + EQUIPMENT DESIGN + FFTF (TR) + MEASUREMENT, TEMPERATURE + REACTOR, BREEDER + REACTOR, FAST + REACTOR, LIQUID METAL COOLED + SODIUM + TEST, INSTRUMENT RESPONSE

9-16984 ALSO IN CATEGORY 6
MCGILL IS + CROOK MJ
THERMO-FLUX VARIATIONS IN THE PLUTO TYPE RESEARCH REACTORS DUE TO CONTROL-ABSORBER MOVEMENT
ATOMIC ENERGY RESEARCH ESTABLISHMENT, HARWELL, ENGLAND
AERE-M-1819 +. 22 PAGES, 10 FIGURES, 3 TABLES, NOVEMBER 1966

THE THERMAL-FLUX VARIATIONS OCCURRING IN THE PLUTO-TYPE RESEARCH REACTORS DUE TO CONTROL-ABSORBER MOVEMENT ARE ILLUSTRATED BY MEASUREMENTS OBTAINED IN THE DAPHNE ZERO-ENERGY MOCKUP. CONTROL BY BOTH THE ORIGINAL SEMAPHORE-ARM-TYPE COARSE-CONTROL ABSORBERS AND VERTICAL CONTROL RODS IS CONSIDERED.

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

*PLUTO (UK) + CONTROL ROD + CONTROL SYSTEM + REACTOR KINETICS + THERMAL NEUTRON

9-16998

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-16998 *CONTINUED*

SASTRE C

FISSION-RATE MEASUREMENT USING REACTOR NOISE
BROOKHAVEN NATIONAL LABORATORY

1 PAGE, 4 REFERENCES, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PENNSYLVANIA, OCTOBER 30-NOVEMBER 3, 1966, TRANSACTIONS OF AMERICAN NUCLEAR SOCIETY 9(2), PAGE 507

SPONTANEOUS FLUCTUATIONS IN NEUTRON DENSITY CAN BE USED TO INFER THE FISSION RATE IN A MECHANICALLY AND THERMALLY QUIET REACTOR. THIS TECHNIQUE WAS TESTED AT BROOKHAVEN NATIONAL LABORATORY AND FOUND USEFUL FOR CALIBRATING LOW-POWER-REACTOR INSTRUMENTS AND FOR CALIBRATING REACTORS DURING COMMISSIONING EXPERIMENTS PRIOR TO POWER ESCALATION. THE TECHNIQUE WAS USED DURING THE STARTUP OF THE BROOKHAVEN HIGH FLUX RESEARCH REACTOR. EXTRAPOLATION OF LOW-POWER CALIBRATION WAS WITHIN 2% OF MEASUREMENTS OF HIGH-POWER INSTRUMENTATION.

*MEASUREMENT, NOISE + *NOISE ANALYSIS + *REACTOR POWER

9-16999

KO YC + MA PY + CHIEN JP

THE MEASUREMENT OF REACTOR NOISE BY MEANS OF A MULTISCALER ANALYZER
NATIONAL TSING HUA UNIVERSITY, CHINA

2 PAGES, 1 FIGURE, 3 REFERENCES, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PENNSYLVANIA, OCTOBER 30-NOVEMBER 3, 1966, TRANSACTIONS OF AMERICAN NUCLEAR SOCIETY 9(2), PAGE 507 AND 508

DYNAMIC FILTERS AND FM RECORDERS ARE BEING WIDELY USED TO MEASURE REACTOR NOISE. THE RESULTS OF SUCH MEASUREMENTS CAN BE USED TO DEDUCE THE IMPORTANT INFORMATION ABOUT THE REACTOR TRANSFER FUNCTION. A SIMPLE BF-3 PROPORTIONAL COUNTER CONNECTED TO A MULTISCALER ANALYZER CAN DO THE SAME JOB AS THAT OF THE ELABORATED EQUIPMENT.

*FREQUENCY SPECTRA + *MEASUREMENT, NOISE + *NOISE ANALYSIS + TRANSFER FUNCTION

9-17000

FORD WE + HANAUER SH

MEASUREMENT OF GAMMA EFFECTS ON OBSERVED SUBCRITICAL POWER SPECTRAL DENSITY
UNIVERSITY OF TENNESSEE

2 PAGES, 1 FIGURE, 3 REFERENCES, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PENNSYLVANIA, OCTOBER 30-NOVEMBER 3, 1966, TRANSACTIONS OF AMERICAN NUCLEAR SOCIETY 9(2), PAGE 508 AND 509

TO MEASURE THE GAMMA EFFECT, MEASUREMENTS WERE MADE ON A COLD-CLEAN BULK SHIELDING REACTOR CORE IN THE POOL CRITICAL ASSEMBLY. THE REACTOR WAS KEPT IN A KNOWN STATIC SUBCRITICAL CONDITION. GAMMA FLUX WAS VARIED BY CHANGING THE SEPARATION DISTANCE BETWEEN THE DETECTOR AND A 42,000-CI CO-60 GAMMA SOURCE. THE REACTIVITY AT ONE-DOLLAR SUBCRITICAL COULD BE DETERMINED BY NOISE ANALYSIS.

*FREQUENCY SPECTRA + *NOISE ANALYSIS + CHAMBER, ION + GAMMA + MEASUREMENT, NOISE + MEASUREMENT, SUBCRITICALITY

9-17002

UHRIG RE

REACTIVITY MEASUREMENTS USING NOISE TECHNIQUES
UNIVERSITY OF FLORIDA

2 PAGES, 14 REFERENCES, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PENNSYLVANIA, OCTOBER 30-NOVEMBER 3, 1966, TRANSACTIONS OF AMERICAN NUCLEAR SOCIETY 9(2), PAGE 522 AND 523

IT MAY BE POSSIBLE TO DIRECTLY MEASURE REACTIVITY BY MATCHING THE EXPERIMENTALLY MEASURED IMPULSE-RESPONSE FUNCTION WITH THE THEORETICALLY CALCULATED SPATIALLY DEPENDENT IMPULSE-RESPONSE FUNCTION. SPATIALLY DEPENDENT REACTOR-KINETICS STUDIES WERE MADE BY USING THE CROSS-CORRELATION TECHNIQUE BETWEEN TWO DETECTORS LOCATED AT DIFFERENT POSITIONS THROUGHOUT THE SUBCRITICAL ASSEMBLY. THIS TECHNIQUE APPEARS TO HOLD MUCH PROMISE FOR CERTAIN KINDS OF MEASUREMENTS AND IN CERTAIN SPECIFIC GEOMETRIES. IT MAY BE POSSIBLE TO APPLY SIMPLIFIED NOISE TECHNIQUES IN LARGE REACTORS.

*MEASUREMENT, REACTIVITY + *MEASUREMENT, SUBCRITICALITY + *NOISE ANALYSIS + *NOISE CROSS CORRELATION + MEASUREMENT, NOISE

9-17003

HANAUER SH + TRINKO JR + BUHL AR + ROUX DP

SUBCRITICAL REACTIVITY MEASUREMENT USING FLUCTUATIONS FROM A PULSE-TYPE DETECTOR
UNIVERSITY OF TENNESSEE + OAK RIDGE NATIONAL LAB., TENN.

1 PAGE, 4 REFERENCES, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PENNSYLVANIA, OCTOBER 30-NOVEMBER 3, 1966, TRANSACTIONS OF AMERICAN NUCLEAR SOCIETY 9(2), PAGE 523

PULSE-TYPE DETECTORS WERE USED IN PLACE OF INTEGRATING CURRENT-TYPE DETECTORS TO OVERCOME THE OBSTACLE OF LARGE GAMMA-RAY INTENSITIES ASSOCIATED WITH SHUT-DOWN REACTORS AFTER A PERIOD OF OPERATION. THE POOL CRITICAL FACILITY WAS USED IN THESE EXPERIMENTS. AT PRESENT, THE STATISTICAL UNCERTAINTIES IN THE PULSE-DETECTOR MEASUREMENTS ARE SOMEWHAT GREATER THAN FOR CURRENT-FLUCTUATION MEASUREMENTS. FURTHER WORK IS PLANNED IN THIS AREA ALSO.

*COUNTER + *MEASUREMENT, REACTIVITY + *MEASUREMENT, SUBCRITICALITY + *NOISE ANALYSIS + MEASUREMENT, NOISE

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-17004

ROUX DP

OPTIMIZATION OF REACTOR-SHUTDOWN MARGIN MEASUREMENTS IN HIGH-GAMMA FLUXES

OAK RIDGE NATIONAL LAB., TENN.

2 PAGES, 4 REFERENCES, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PENNSYLVANIA, OCTOBER 30-NOVEMBER 3, 1966, TRANSACTIONS OF AMERICAN NUCLEAR SOCIETY 9(2), PAGE 523 AND 524

THE QUALITY OF REACTOR-SHUTDOWN-MARGIN MEASUREMENTS MADE BY NEUTRON NOISE ANALYSIS IS DEGRADED BY HIGH GAMMA-RAY INTENSITIES PRODUCED BY RESIDUAL FISSION PRODUCTS, SO A STUDY WAS MADE TO DERIVE AN EQUATION THAT CAN BE USED TO QUANTITATIVELY PREDICT THIS DEGRADING EFFECT. BECAUSE OF THE STATISTICAL NATURE OF THE DETECTION PROCESS, AN UNCORRELATED DETECTOR NEUTRON NOISE IS SUPERIMPOSED ON THE CORRELATED NEUTRON POPULATION FLUCTUATIONS. IN PRESENCE OF A GAMMA-FLUX BACKGROUND, AN ADDITIONAL FREQUENCY-INDEPENDENT BACKGROUND ALSO DUE TO THE STATISTICAL NATURE OF THE GAMMA-DETECTION PROCESS OCCURS.

*CHAMBER, ION + *MEASUREMENT, REACTIVITY + *MEASUREMENT, SUBCRITICALITY + *NOISE ANALYSIS + GAMMA + MEASUREMENT, NOISE

9-17005

MEYER P + GARELIS E

PULSED-NEUTRON MEASUREMENTS IN POWER REACTORS

GENERAL ELECTRIC, SAN JOSE, CALIFORNIA

3 PAGES, 2 FIGURES, 1 TABLE, 4 REFERENCES, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PENNSYLVANIA, OCTOBER 30-NOVEMBER 3, 1966, TRANSACTIONS OF AMERICAN NUCLEAR SOCIETY 9(2), PAGE 524-526

THE PULSED-NEUTRON METHOD CONSISTS OF INJECTING SHORT BURSTS OF NEUTRONS INTO A REACTOR CORE AND MEASURING THE RESULTANT NEUTRON DENSITY AS A FUNCTION OF TIME. IN ADDITION TO THE COMPLETE RESPONSE, THIS MEASUREMENT YIELDS A UNIQUE REACTOR PARAMETER, NAMELY, THE FUNDAMENTAL PROMPT-DECAY CONSTANT. THIS METHOD ALSO YIELDS A VALUE OF REACTIVITY. MEASUREMENTS WERE CARRIED OUT ON THE HUMBOLDT BAY POWER REACTOR AND ON THE VALLECITOS EXPERIMENTAL SUPERHEAT REACTOR EVESR. RESULTS COMPARED FAVORABLY WITH THE USUAL CORE CALCULATIONS.

*MEASUREMENT, REACTIVITY + *MEASUREMENT, SUBCRITICALITY + *PULSED NEUTRON TECHNIQUE + HUMBOLDT BAY + REACTOR, BOILING WATER + REACTOR, INTERNAL SUPERHEAT + VESR (VALLECITOS EXP. SUPERHEAT REACTOR-ESADA)

9-17006

PRESKITT CA + BROWN JR + NEPHEW EA + VAN HOWE KR

USE OF PULSED-SOURCE TECHNIQUE FOR REACTIVITY MEASUREMENTS OF THE PEACH BOTTOM HTCR

OAK RIDGE NATIONAL LAB., TENN. + GENERAL DYNAMICS, GENERAL ATOMIC DIVISION, SAN DIEGO, CALIFORNIA

2 PAGES, 1 TABLE, 8 REFERENCES, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PENNSYLVANIA, OCTOBER 30-NOVEMBER 3, 1966, TRANSACTIONS OF AMERICAN NUCLEAR SOCIETY 9(2), PAGE 526 AND 527

THE DECAY CONSTANTS OF EXPONENTIALLY DECAYING MODES ARE THE ONLY ENTIRELY SPACE-INDEPENDENT QUANTITIES THAT ARE DIRECTLY MEASURABLE IN SUBCRITICAL PULSED-SOURCE EXPERIMENTS. OTHER QUANTITIES, TYPICALLY SOME FUNCTION OF THE RATIO OF PROMPT-AND DELAYED-MODE AMPLITUDES, WHICH ARE INCLUDED IN MODIFIED PULSED-SOURCE TECHNIQUES CAN INTRODUCE A GROSS SPATIAL DEPENDENCE WHEN THESE METHODS ARE USED TO INFER THE REACTIVITY OF THE SYSTEM. THIS MEASURED VARIATION IS WELL EXPLAINED BY THE INFLUENCE OF KINETIC DISTORTION ON THE FUNDAMENTAL PROMPT MODE.

*MEASUREMENT, REACTIVITY + *MEASUREMENT, SUBCRITICALITY + *PULSED NEUTRON TECHNIQUE + PEACH BOTTOM 1 + REACTOR, GAS COOLED

9-17007

DEMARMELS P + GOZANI T + HURLIMANN T + WINKLER H

MODIFIED ROD-DROP MEASUREMENTS

FEDERAL INSTITUTE, SWITZERLAND

1 PAGE, 7 REFERENCES, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PENNSYLVANIA, OCTOBER 30-NOVEMBER 3, 1966, TRANSACTIONS OF AMERICAN NUCLEAR SOCIETY 9(2), PAGE 527

THE BASIC ADVANTAGES OF THE ROD-DROP (RD) TECHNIQUE ARE ITS BUILT-IN EQUIPMENT IN EACH REACTOR AND ITS ALMOST UNLIMITED APPLICABILITY TO ALL TYPES OF REACTORS WITH DIFFERENT HISTORIES OF OPERATIONS. THIS PAPER DESCRIBES THE USE OF POSTROP DATA ONLY IN DETERMINING THE REACTIVITY CHANGE FROM STEADY STATE. THERE WAS CLOSE AGREEMENT BETWEEN THIS METHOD AND THE MODIFIED PULSED-NEUTRON-SOURCE TECHNIQUE.

*CONTROL ROD CALIBRATION + *CONTROL ROD WORTH + *MEASUREMENT, REACTIVITY + *MEASUREMENT, SUBCRITICALITY + *TEST, DROP

9-17014

ALSO IN CATEGORY 6

LACEY PG

LOCAL FISSION POWER DISTRIBUTIONS AROUND CONTROL RODS AND CONTROL ROD FOLLOWERS IN SIMULATED PWR CORES
WESTINGHOUSE ELECTRIC CORP., PITTSBURGH, PA., ATOMIC POWER DIVISION
WCAP-3269-35 +. 89 PAGES, FIGURES, TABLES, REFERENCES, SEPT. 1964

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-17014 *CONTINUED*

LOCAL FISSION-POWER DISTRIBUTIONS AROUND CRUCIFORM CONTROL RODS AND CONTROL-ROD FOLLOWERS FOR A TYPICAL PRESSURIZED-WATER REACTOR CRITICAL EXPERIMENT. DATA TAKEN BY GAMMA SCANNING TYPICAL FUEL RODS. DISCUSSES ANALYTIC AND EXPERIMENTAL TECHNIQUES.

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

*POWER DISTRIBUTION + CONTROL ROD WORTH

9-17016 ALSO IN CATEGORY 6

FLANAGAN CA
PRESCRIPTION FOR DIFFUSION THEORY REPRESENTATION OF FUEL CLUSTERS CONTAINING CONTROL RODS BASED ON MONTE CARLO CORRELATION OF CAPTURE PROBABILITIES.
BETTS ATOMIC POWER LABORATORY, WEST MIFFLIN, PA.
WAPD-T-1841 + CONF-651101-69 +. 18 PAGES, REFERENCES, FROM 13TH CONF. ON REMOTE SYSTEMS TECHNOLOGY, WASHINGTON, D.C., NOVEMBER 1965, ANS MEETING

THIS PAPER DESCRIBES A METHOD OF FORCE-FITTING P-1 APPROXIMATION CALCULATIONS WHICH CONTAIN EXPLICITLY REPRESENTED CONTROL RODS BY CORRELATING CAPTURE PROBABILITIES DETERMINED BY MONTE CARLO CALCULATIONS. THE METHOD IS EMPIRICALLY BASED. THE METHOD, WHERE TESTED, APPEARS TO IMPROVE CALCULATIONAL RESULTS IN TWO AND THREE DIMENSIONS RELATIVE TO EXPERIMENT.

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

*CONTROL ROD WORTH + *MONTE CARLO

9-17017

PARRY DL
NONDESTRUCTIVE FLAW DETECTION BY USE OF ACOUSTIC EMISSIONS
PHILLIPS PETROLEUM COMPANY, IDAHO FALLS, IDAHO, ATOMIC ENERGY DIV.
IDO-17230 +. 35 PAGES, 32 FIGURES, 1 TABLE, MAY 1967

WHEN A METAL IS BEING STEADILY STRESSED, TWO DISTINCT TYPES OF ACOUSTIC EMISSIONS ARE PRODUCED - (A) A HIGH-AMPLITUDE PULSE OR BURST-TYPE SIGNAL AND/OR (B) CONTINUOUS EMISSIONS OF HIGH FREQUENCY OCCURRING RANDOMLY AT VARYING AMPLITUDES. THE SIGNAL EMITTED FROM A PARTICULAR METAL OR ALLOY DEPENDS ON THE METAL CHARACTERISTICS. ACOUSTIC SIGNALS HAVE BEEN SUCCESSFULLY DETECTED, RECORDED, AND ANALYZED FROM THE PM-2A HALF-SCALE AND FULL-SCALE PRESSURE VESSELS TESTED UNDER CONDITIONS OF APPLIED STRESS. THE DATA THUS FAR DERIVED FROM THE ACOUSTIC-EMISSION TEST PROGRAM GIVE POSITIVE ENCOURAGEMENT THAT ACOUSTIC-ANALYSIS TECHNIQUES HOLD A DEFINITE PROMISE FOR THE DEVELOPMENT OF A PRESSURE VESSEL AND PRIMARY-LOOP ON-LINE SAFEGUARDS SYSTEM.

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

*FLAW + *TEST, NONDESTRUCTIVE + *TEST, PRESSURE VESSEL + INSTRUMENTATION, GENERAL + MEASUREMENT, NOISE + PM 2A (PORTABLE MEDIUM NUCLEAR POWER PLANT) + REACTOR, PRESSURIZED WATER

9-17035 ALSO IN CATEGORY 6

CHRISTENSEN PS
A DESCRIPTION OF THE PILE OSCILLATORS AT DR 1.
DANISH ATOMIC ENERGY COMMISSION, RISØ. RESEARCH ESTABLISHMENT
RISO-134 +. 41 PAGES, FIGURES, REFERENCES, JUNE 1966

DESCRIPTION OF PILE OSCILLATORS AT DR1 (A HOMOGENEOUS REACTOR). TWO TYPES OF OSCILLATORS - GLOBAL AND A LOCAL OSCILLATOR. THE GLOBAL OSCILLATOR IS USED IN TWO POSITIONS - IN THE CENTRE AND AT THE EDGE OF THE CORE, IN ORDER TO BE ABLE TO SEPARATE THE ABSORBING AND THE SCATTERING PROPERTIES OF A GIVEN SAMPLE. THE LOCAL OSCILLATOR IS SITUATED IN THE REFLECTOR OF THE REACTOR AND UTILIZES AN ANNULAR BORON-COATED IONIZATION CHAMBER MADE AT RISØ.

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

*DENMARK + *OSCILLATOR, REACTIVITY + TRANSFER FUNCTION

9-17041 ALSO IN CATEGORY 6

JAKEMAN D
PHYSICS OF NUCLEAR REACTORS
1 PAGE, JOURNAL OF THE FRANKLIN INSTITUTE 282(6), PAGE 403 (DECEMBER 1966), A REVIEW OF BOOK -- THE PHYSICS OF NUCLEAR REACTORS, BY D. JAKEMAN, 356 PAGES, AMERICAN ELSEVIER PUBLISHING CO, 1966

CHAPTERS 8 AND 9 DEAL WITH REACTIVITY CHANGES AND CONTROL OF NUCLEAR REACTORS, WITH SPECIAL CONSIDERATION OF GAS-COOLED GRAPHITE-MODERATED REACTORS.

*CONTROL, GENERAL + *REACTIVITY EFFECT + REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-17043 ALSO IN CATEGORY 6
CLARK RH + BALDWIN MN + PETTUS WG + PITTS TG + FLICKINGER RB
PHYSICS VERIFICATION PROGRAM. FINAL REPORT.
BABCOCK AND WILCOX CO., LYNCHBURG, VA. RESEARCH AND DEVELOPMENT DIVISION
BAW-3647-03 +. 188 PAGES, TABLES, MARCH 1967

THIS REPORT ON THE PHYSICS-VERIFICATION PROGRAM AT BABCOCK AND WILCOX REFERS TO
WATER-MODERATED, SLIGHTLY ENRICHED URANIUM DIOXIDE LATTICES. AMONG OTHER THINGS, THE
TEMPERATURE AND VOID COEFFICIENTS ARE DISCUSSED.

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

*URANIUM OXIDE + EXPERIMENT, GENERAL + REACTOR, WATER + TEMPERATURE COEFFICIENT +
THEORETICAL INVESTIGATION + VOID COEFFICIENT

9-17087 ALSO IN CATEGORY 6
KIER PH + TOPPEL BJ + JONES RF
INITIAL CRITICAL EXPERIMENTS OF THE EBWR PLUTONIUM RECYCLE PROGRAM
ARGONNE NATIONAL LAB., ARGONNE, ILLINOIS
3 PAGES, 5 REFERENCES, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PENNSYLVANIA, OCTOBER
30-NOVEMBER 3, 1966, TRANSACTIONS OF AMERICAN NUCLEAR SOCIETY 9(2), PAGE 446

IN THE INITIAL CRITICAL EXPERIMENTS OF EBWR PLUTONIUM LOADING, THE FOLLOWING QUANTITIES, AMONG
OTHERS, WERE MEASURED - BORIC ACID WORTH AND AVERAGE UNIFORM TEMPERATURE COEFFICIENT.
COMPARISON WITH THEORY NOT ENTIRELY SATISFACTORY.

*EBWR (EXPERIMENTAL BOILING WATER REACTOR) + BORON + CHEMICAL SHIM + CONTROL ROD WORTH +
EXPERIMENT, GENERAL + PLUTONIUM DIOXIDE + REACTOR, BOILING WATER + TEMPERATURE COEFFICIENT +
THEORETICAL INVESTIGATION

9-17126 ALSO IN CATEGORY 17
HERBST DA + KUNCL LG + TALBOY JH
A CHERENKOV COUNTER FOR DETECTING FISSION PRODUCTS IN REACTOR WATER
ARGONNE NATIONAL LAB., ARGONNE, ILLINOIS
CONF-670-713 +. 2 PAGES, 1 TABLE, 1 REFERENCE, ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 2 AND 3,
(JULY 1967, CONFERENCE ON REACTOR OPERATING EXPERIENCE, REACTOR OPERATIONS DIVISION OF THE AMERICAN
NUCLEAR SOCIETY, ATLANTIC CITY, JULY 23-26, 1967)

A DETECTOR WAS INSTALLED IN THE JUGGERNAUT REACTOR, WITH CHERENKOV DETECTOR SET TO REJECT LIGHT
PULSES COMING FROM BETA ENERGIES LESS THAN 2.81 MEV. N-16 BETA IS REDUCED BY MONITORING WITH
65-SEC TIME DELAY AFTER LEAVING THE CORE. MINIMUM SENSITIVITY IS EQUIVALENT TO 5 TIMES 10 TO
THE MINUS 3 MICROCURIE/CC, WHICH IS EQUIVALENT TO AN UNCLAD FUEL AREA OF 0.5 SQ. CM.

*INSTRUMENTATION, DETECTION FAILED FUEL ELEMENT + ANL (ARGONNE NATIONAL LABORATORY) +
OPERATING EXPERIENCE + REACTOR, AEC OWNED + REACTOR, RESEARCH

9-17129 ALSO IN CATEGORY 17
ZANDT JR
RELATING OPERATING EXPERIENCE, PREVENTIVE MAINTENANCE, AND RELIABILITY ANALYSES
GENERAL ELECTRIC ATOMIC POWER LABORATORY, VALLECITOS
CONF-670-713 +. 2 PAGES, ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 4 AND 5, (JULY 1967), CONFERENCE
ON REACTOR OPERATING EXPERIENCE, REACTOR OPERATIONS DIVISION OF THE AMERICAN NUCLEAR SOCIETY, ATLANTIC
CITY, JULY 23-26, 1967

RELIABILITY-ANALYSIS APPLICATION TO MAINTENANCE AND TO I AND C REDESIGN WAS BEGUN IN JUNE 1966
TO REDUCE THE SPURIOUS SCRAM RATE. ACCURATE COMPONENT-FAILURE HISTORY WAS BEGUN, AND
MAINTENANCE REPROGRAMMED (E.G., FOR THE 2/3 LOW PRIMARY DELTA-P SYSTEM, THE FAILURE RATE OF
THE DELTA-P MICROSWITCH GOVERNS THE SYSTEM FAILURE RATE, WHICH IS 1 IN 2000 YEARS. THUS,
MAINTENANCE COULD BE REDUCED). AN 8-YEAR-OLD 1/1 RELAY-SCRAM SYSTEM WAS KEPT AS A BACKUP
AFTER A NEW 2/3 SOLID-STATE CIRCUIT WAS INSTALLED. SUBSEQUENTLY IT WAS SHOWN VERY UNRELIABLE
AND WAS REMOVED. SIMILARLY, THE REACTOR-OUTLET-TEMP. SCRAM WAS UNRELIABLE, AND A BACKUP TO
THE 2/3 FLUX SCRAM.

*MAINTENANCE AND REPAIR + *OPERATING EXPERIENCE + *RELIABILITY ANALYSIS +
GETR (GENERAL ELECTRIC TEST REACTOR) + INSTRUMENTATION, COINCIDENT + INSTRUMENTATION, FLOW +
INSTRUMENTATION, RELAY + INSTRUMENTATION, TEMPERATURE + REACTOR SAFETY SYSTEM + REACTOR, TEST +
SCRAM, SPURIOUS

9-17130 ALSO IN CATEGORY 17
BATES AE + EPLER EP + OAKES LC
OPERATING EXPERIENCE WITH THE HFIR PROTECTION SYSTEM
OAK RIDGE NATIONAL LAB., TENN.
CONF-670-713 +. 15 PAGES, 1 FIGURE, 1 TABLE, ABSTRACT IN ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-17130 *CONTINUED*

5, (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

HFIR HAS A 3-CHANNEL GENERAL-COINCIDENCE SYSTEM (ANY 2 QUANTITIES IN DIFFERENT CHANNELS EXCEEDING TRIP POINT CAUSE SCRAM). FEW PROBLEMS HAVE OCCURRED IN DAILY TEST OF CHANNEL (COMPLETE FROM SENSOR TO SCRAM MAGNET), AND THEY CAN BE PROMPTLY SOLVED. UNWANTED SCRAMS HAVE NOT OCCURRED. ONLY 3 SCRAMS HAVE OCCURRED IN THE YEAR OF FULL-POWER OPERATION. FIELD-EFFECT TRANSISTORS NEED SPECIAL TREATMENT IN THE FIELD, E.G., A GROUND TO FET SIGNAL LEAD WHILE REPLACING AMPLIFIER TO AVOID SHOCK DUE TO CABLE-VOLTAGE BUILDUP, DIODES ADDED TO PREVENT FET PUNCTURE ON NOISE SPIKE.

*OPERATING EXPERIENCE + *REACTOR SAFETY SYSTEM + FAILURE, COMPONENT + HFIR (HIGH FLUX ISOTOPE REACTOR) + INSTRUMENTATION, COINCIDENT + INSTRUMENTATION, TESTING + REACTOR, AEC OWNED + REACTOR, FLUX TRAP

9-17141

ALSO IN CATEGORY 17

MARTIN RD

A LOW COST SHIM-SAFETY ROD FOR POOL TYPE REACTORS

PHOENIX MEMORIAL LABORATORY, THE UNIVERSITY OF MICHIGAN, ANN ARBOR, MICHIGAN

CONF-670-713 +. 18 PAGES, 7 FIGURES, 15 REFERENCES, ABSTRACT IN ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 13, (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

PLACED 0.090-IN. CD BETWEEN CONCENTRIC CYLINDERS OF 304SS TUBES AND USED 8 SUCH 0.5-IN.-OD CYLINDERS TO REPLACE THE CONVENTIONAL B4C POOL-REACTOR CONTROL ROD. THE REACTIVITY WORTH IS 0.98 THAT OF THE B4C, INSTEAD OF THE 0.82 GIVEN BY THE 1.5' SOLID B-SS ROD USED TO OVERCOME THE OBJECTIONABLE SWELLING OF THE B4C. IT TOOK \$150 IN MATERIALS AND 40 HR OF MACHINIST TIME. HYDRAULIC TESTS SHOW THE 10-LB ROD HAS NO VIBRATION, IS 5 LB LIGHTER THAN THE B-SS, AND 4 LB HEAVIER THAN THE B4C. LIFETIME IS ESTIMATED AS 3000 MWD. DEVELOPMENTAL PROGRAM DESCRIBED.

*CONTROL ROD BURNUP + CONTROL ROD FABRICATION + CONTROL ROD WORTH + CONTROL ROD, SHIM SAFETY + OPERATIONS REPORT, ANALYSIS + REACTOR, POOL TYPE + REACTOR, RESEARCH

9-17154

ALSO IN CATEGORY 17

LONG H + SCHLICHT R + VAN HOWE K + WEIMAN A

USE OF AN ON-LINE REACTIVITY COMPUTER TO CALIBRATE CONTROL RODS AT POWER

GENERAL ATOMIC, DIVISION OF GENERAL DYNAMICS, SAN DIEGO, CALIFORNIA

CONF-670-713 + GA-8104 +. 14 PAGES, 6 FIGURES, ABSTRACT IN ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 24, (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

THE AVERAGE CURRENT FROM 4 POWER-RANGE ION CHAMBERS FEEDS THE COMPUTER, AND BOTH ROD POSITION AND INSTANTANEOUS REACTIVITY ARE FED TO A RECORDER. AT PEACH BOTTOM, TEMPERATURE FEEDBACK REACTIVITY IS 5-10% THAT OF MOVING THE ROD. A ROD CALIBRATION WAS MADE WHILE GOING FROM ZERO TO FULL POWER. AT ZERO POWER, GROUP 8 GAVE THE SAME AS THE DISTRIBUTED-POISON TECHNIQUE. GROUP 5 SHOWED A SHIFT OF WORTH TO THE BOTTOM OF THE CORE (COMPARED WITH THE DISTRIBUTED-POISON METHOD) BECAUSE IN GOING FROM 10 TO 65 MWTH THE CORE BOTTOM BECOMES SIGNIFICANTLY COOLER, CHANGING THE NEUTRON FLUX DISTRIBUTION.

*INSTRUMENTATION, OPERATING REACTIVITY + *OPERATING EXPERIENCE + CONTROL ROD CALIBRATION + FLUX DISTRIBUTION + PEACH BOTTOM 1 + REACTOR, GAS COOLED + TEMPERATURE REACTIVITY EFFECT

9-17302

ALSO IN CATEGORIES 5 AND 17

TRUSHIN JT + MILLER JK + PETRIE TW

PM-3A. SAFETY SYSTEM SET POINT ANALYSIS.

MARTIN COMPANY, BALTIMORE, MD.

MND-M3A-3146 +. 95 PAGES, JUNE 5, 1964

A PERFORMANCE ANALYSIS OF THE PRIMARY SYSTEM IS PRESENTED IN SUFFICIENT DETAIL AND FORMAT TO RE-EVALUATE THE REACTOR-SAFETY-SYSTEM SETPOINTS UNDER CHANGED CONDITIONS. STEADY-STATE OPERATING LIMITS WERE ESTABLISHED WITH NO BULK BOILING IN THE HOT CHANNEL, AND TRANSIENT ANALYSES WERE INITIATED FROM THE MOST SEVERE CONDITIONS PERMITTED BY THE RESULTS OF THE STEADY-STATE ANALYSIS. THE THERMAL LIMITATIONS IMPOSED ON THE TRANSIENT ANALYSIS WERE THAT THE DNB WILL NOT OCCUR, AND/OR THE EXIT QUALITY IN THE HOT CHANNEL WILL NOT EXCEED 15%. IN ALL CASES, THE STEADY-STATE RESTRICTION OF NO BULK BOILING PRECLUDED DNB DURING A TRANSIENT, AND THE THERMAL OPERATING LIMITS ARE DICTATED BY THE RESULTS OF THE STEADY STATE ANALYSIS. SCRAM INSTRUMENTATION ACCURACY IS SUMMARIZED, AND THE SETPOINTS ARE OBTAINED FROM THE THERMAL OPERATING LIMITS AND THE ACCURACY OF THE INSTRUMENTATION. A SAMPLE CALCULATION FOR THE DETERMINATION OF THE MAXIMUM-POWER-SCRAM SETPOINT IS PRESENTED.

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

*PERFORMANCE LIMIT + *SAFETY ANALYSIS + DNB (DEPARTURE FROM NUCLEATE BOILING) + INSTRUMENTATION, POWER RANGE + PM 3A (PORTABLE MEDIUM NUCLEAR POWER PLANT) + REACTOR, MILITARY + REACTOR, PRESSURIZED WATER

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-17303 ALSO IN CATEGORY 1
BARTHOUX A + DEBRIE G + DESNEIGES P + LAVIE JM + PLANQUE M
DETECTION OF CRITICAL ACCIDENTS AT THE COMMISSARIAT A L'ENERGIE ATOMIQUE
COMMISSARIAT A L'ENERGIE ATOMIQUE, SACLAY, FRANCE. CENTRE D'ETUDES NUCLEAIRES
AEC-TR-6547 +. 6 PAGES, 1964, PRESENTED AT THE ANNUAL MEETING OF THE HEALTH PHYSICS SOCIETY, CINCINNATI,
OHIO, JUNE 14-18, 1964

DESCRIBES DEVELOPMENT OF APPARATUS FOR DETECTING CRITICALITY ACCIDENTS. A DOSE INTEGRATION
DEVICE IS PREFERRED TO DETECT A RADIATION PULSE, AND A COINCIDENCE NETWORK (A) GIVES THE
ALARM IF 2/6 DETECTORS SHOW RADIATION PULSES WITHIN 0.5 SEC OR (B) ISOLATES THE DEFECTIVE
DETECTOR GIVING AN UNCONFIRMED PULSE. MINIMUM NUMBERS OF COMPONENTS REDUCE FALSE ALARMS.
THE APPARATUS DESIGNED AT CEA WAS TESTED WITH RADIATION BURSTS FROM THE ORNL HPRR. TESTS
SHOWED - THE SCINTILLATOR-PHOTOMULTIPLIER AND THE SEMICONDUCTOR DETECTOR SATISFACTORILY.
ION-CHAMBER DETECTORS DO NOT SEEM SENSITIVE ENOUGH. A COMPLETE CRITICALITY ACCIDENT DETECTOR
IN AN INSTALLATION USING FISSILE MATERIAL IS DESCRIBED.

AVAILABILITY - JOHN CRERAR LIBRARY, 35 WEST 33RD ST., CHICAGO, ILLINOIS 60616, \$1.10 COPY, \$0.60
MICROFICHE

*ACCIDENT, CRITICALITY + *DESIGN STUDY + *INSTRUMENTATION, RADIATION MONITORING + FRANCE +
HPRR (HEALTH PHYSICS RESEARCH REACTOR) + INSTRUMENTATION, COINCIDENT + RADIOCHEMICAL PROCESSING +
REACTOR, RESEARCH

9-17337 ALSO IN CATEGORY 17
TEODOSIC V
FUEL LEAKAGE DETECTION IN WATER REACTORS. A REVIEW
DANISH ATOMIC ENERGY COMMISSION, RISØ. RESEARCH ESTABLISHMENT
RISO-M-496 + R-9-66 +. 33 PAGES, REFERENCES, DECEMBER, 1966

GENERAL REVIEW OF FAILED-ELEMENT DETECTION AND LOCATION SYSTEMS FOR WATER-COOLED REACTORS,
WITH APPLICATION TO THE DK-400 PROJECT. SOME IMPORTANT PARAMETERS (RELEASE RATIO, SIGNAL TO
BACKGROUND RATIO, DISCRIMINATION RATIO) ARE DISCUSSED AND EVALUATED. TYPES OF FAILURE ARE
DISCUSSED, AND POSSIBLE MONITORING DEVICES (GROSS-GAMMA, DELAYED-NEUTRON, GASEOUS FISSION
PRODUCT, IODINE, AND TRACER) ARE GIVEN. ASSERTS THAT NO OPERATING FEEDBACK SYSTEM NOW EXISTS
WHICH MEETS DK-400 CRITERION, BUT WHEN ONE IS BUILT A TRACER MONITORING SYSTEM COULD BE
EMPLOYED. TRACER PARENTS (PROBABLY RARE EARTHS) WILL BE MIXED WITH FUEL AND CHECKS RUN TO
DETECT TRACER DAUGHTERS IN COOLANT. INFLUENCE OF STATE OF REACTOR CORE ON IMPORTANT FEEDBACK
PARAMETERS IS DISCUSSED IN APPENDICES.

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

*DESIGN STUDY + *INSTRUMENTATION, DETECTION FAILED FUEL ELEMENT + *OPERATING EXPERIENCE + DENMARK +
REACTOR, BOILING WATER + REACTOR, POWER + REACTOR, PRESSURIZED WATER

9-17351
TALLACKSON JR + MOORE RL + DITTO SJ
INSTRUMENTATION AND CONTROLS DEVELOPMENT FOR MOLTEN-SALT BREEDER REACTORS
OAK RIDGE NATIONAL LAB., TENN.
ORNL-TM-1856 +. 36 PAGES, 1 TABLE, 2 REFERENCES, MAY 22, 1967

INSTRUMENTATION IN USE IN THE MSRE PROVIDES A GOOD BASIS FOR DEVELOPING THE INSTRUMENTATION
FOR LARGE MOLTEN-SALT BREEDER REACTORS. THE DEVELOPMENT WOULD INVOLVE PRIMARILY THE TESTING
AND IMPROVEMENT OF PRESENT COMPONENTS AND SYSTEMS. NEW OR MUCH IMPROVED DEVICES ARE REQUIRED
FOR MEASURING FLOWS AND PRESSURES OF MOLTEN SALTS IN THE FUEL AND BLANKET CIRCULATING
SYSTEMS. NO PROBLEMS ARE FORESEEN THAT SHOULD DELAY THE DESIGN OR CONSTRUCTION OF A BREEDER
REACTOR EXPERIMENT.

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

*INSTRUMENTATION, GENERAL + *INSTRUMENTATION, NUCLEAR + *INSTRUMENTATION, PROCESS + EQUIPMENT DESIGN +
REACTOR, REFRIGER + REACTOR, MOLTEN SALT + REVIEW

9-17352
ANDERSON JL
NUCLEAR INSTRUMENT MODULE MAINTENANCE MANUAL. PART I, CHAMBER VOLTAGE MONITOR AND TEST UNIT, ORNL MODEL
Q-2601
OAK RIDGE NATIONAL LAB., TENN.
ORNL-TM-1638 (PT. I) +. 17 PAGES, 1 FIGURE, 1 TABLE, APRIL 13, 1967

A CHAMBER VOLTAGE MONITOR AND TEST UNIT (A SPECIAL-PURPOSE MODULE) WAS DESIGNED TO SUPPLY
SIGNALS FOR TESTING THE RESPONSE OF PARTS OF A REACTOR SAFETY SYSTEM UTILIZING ORNL MODULAR
REACTOR INSTRUMENTATION, SERIES Q-2600. THE UNIT SUPPLIES A CALIBRATED CURRENT RAMP AT TWO
DIFFERENT RATES FOR CHECKING THE RESPONSE AND APPROXIMATE CALIBRATION OF BOTH NEUTRON FLUX
LEVEL AND RATE-OF-CHANGE-OF-FLUX-LEVEL TRIPS AND ASSOCIATED SIGNAL AMPLIFIERS, AN ADJUSTABLE
STEADY-STATE TEST CURRENT, AND A CIRCUIT WHICH CONTINUOUSLY MONITORS ION-CHAMBER POLARIZING

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-17352 *CONTINUED*
VOLTAGE. THE CIRCUIT, APPLICATION, MAINTENANCE PROCEDURES, AND ACCEPTANCE TESTS FOR THE UNIT ARE DESCRIBED.

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

*INSTRUMENTATION, NUCLEAR + *INSTRUMENTATION, PROTECTIVE + *INSTRUMENTATION, TESTING + EQUIPMENT DESIGN + MAINTENANCE AND REPAIR + TEST, SYSTEM OPERABILITY

9-17463 ALSO IN CATEGORY 17
COOPER WM + EDWARDS J
OPERATIONAL AND TRAINING EXPERIENCE WITH THE JASON REACTOR
ROYAL NAVAL COLLEGE, GREENWICH, UK
4 PAGES, 3 REFERENCES, EURO NUCLEAR 3(4), PAGES 179-182 (APRIL 1966)

10-KW ARGONAUT DESIGN. MAINTENANCE TIME IS ABOUT 20% OF REACTOR TIME. FAULTS INCLUDE VALVE FAILURES AND AN UPWARD VARIATION OF THE LOGARITHMIC CHANNEL UPPER TRIP LEVEL. COURSES VARY FROM A TWO-WEEK INTRODUCTORY COURSE TO A ONE-YEAR ADVANCED COURSE ON POST-GRADUATE LEVEL. MAXIMUM OF FOUR STUDENTS WORK ON REACTOR AT A TIME, AND 340 HAVE BEEN TRAINED SINCE COMMISSIONING PERIOD. EXPERIMENTAL USES OF FOIL-COUNTING LABORATORY AND REACTOR OSCILLATOR (A ROTATING PLATE OF CADMIUM WHICH ALLOWS NEUTRON ABSORBER AREA TO BE VARIED) ARE DESCRIBED.

*OPERATING EXPERIENCE + FAILURE, INSTRUMENT + INSTRUMENTATION, POWER RANGE

9-17479 ALSO IN CATEGORY 17
SMITH RR + DOE CB
CLADDING FAILURE SIMULATION TESTS IN EBR-II
ARGONNE NATIONAL LAB., ILL.
ANL-7067 +. 24 PAGES, 17 FIGURES, 1 TABLE, REFERENCES, DECEMBER 1966

TESTS, USING A SINGLE UNCLAD FUEL ROD, ON (1) CWD (CHANGED WIRE DETECTOR, BASED ON DETECTION OF FISSION GAS IN THE CORE COVER GAS), AND (2) FERD (FUEL ELEMENT RUPTURE DETECTOR), BASED ON DETECTION OF DELAYED-NEUTRON-EMITTING FISSION PRODUCTS IN PRIMARY COOLANT. COUNTING RATES WERE MEASURED WITH NORMAL CONDITIONS AND WITH A SINGLE UNCLAD MARK-1A FUEL PIN IN THE CORE. SIGNAL-TO-NOISE RATIOS ARE 12 FOR CWD AND 6.7 FOR FERD. FERD HAS A MUCH SHORTER TIME RESPONSE (23 SEC) BUT WILL NOT USUALLY RESPOND TO FAILURES IN THE FUEL-ROD GAS PLENUM. SINCE CWD IS SENSITIVE TO BOTH BOND-TYPE AND GAS-TYPE FAILURES, THE SYSTEMS COMPLEMENT.

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

*INSTRUMENTATION, DETECTION FAILED FUEL ELEMENT + *TEST, PROOF +
EBR 1 AND 2 (EXPERIMENTAL BREEDER REACTORS) + OPERATIONS REPORT, ANALYSIS + REACTOR, AEC OWNED + REACTOR, LIQUID METAL COOLED

9-17508 ALSO IN CATEGORY 17
CHANGE 3. MODIFICATIONS TO INSTRUMENT AND DUE TO HEAT EXCHANGER TUBE FAILURE
AEC, DIVISION OF REACTOR LICENSING
5 PAGES, APRIL 14, 1967, DOCKET NO. 50-193, RHODE ISLAND ATOMIC ENERGY COMMISSION

AEC ALLOWS U. OF RHODE ISLAND TO (1) INCREASE SECONDARY COOLANT ACTIVITY LIMIT TO THAT OF 10 CFR 20 PERTAINING TO IDENTIFIED ISOTOPES, (2) PERMIT REPLACEMENT OF AN ALUMINUM-TUBED HEAT EXCHANGER BY A LIKE ONE OF STAINLESS STEEL, (3) REPLACE SCINTILLATION-DETECTOR AREA GAMMA MONITORS BY MORE RELIABLE DETECTORS OF A DIFFERENT TYPE, (4) REMOVE REQUIREMENT FOR SCRAM IN EVENT OF LOSS OF VOLTAGE IN STARTUP AND PERIOD CHANNELS BECAUSE COMPENSATED CHAMBERS (USED FOR POWER AND LOG-N CHANNELS) ARE BEING REPLACED WITH A DIFFERENT DESIGN AND HAVE INDEPENDENT POWER SUPPLIES.

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

*HEAT EXCHANGER + *INSTRUMENTATION, INTERMEDIATE RANGE + *MODIFICATION, SYSTEM OR EQUIPMENT +
*REACTOR COOLANT + *WASTE DISPOSAL, LIQUID + ACTIVITY BUILDUP + ELECTRIC POWER, VITAL + FAILURE, TUBING + REACTOR, POOL TYPE + REACTOR, RESEARCH + SAFETY EVALUATION + TECHNICAL SPECIFICATIONS

9-17513 ALSO IN CATEGORIES 10 AND 17
BIG ROCK POINT ASSERTS MANUAL/AUTO OPERATION OF TURBINE BYPASS VALVE IS NOT IN TECH. SPECS.
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 PAGES, JUNE 23, 1967, DOCKET NO. 50-155, BIG ROCK POINT NUCLEAR REACTOR

AFTER NOVEMBER 1966, THE MAIN STEAM BYPASS VALVE WAS OPERATED MANUALLY ABOVE 50 MW(E), AS EXPERIENCE INDICATES THAT THE BYPASS VALVE WILL PROBABLY NOT PREVENT A SCRAM AT LOAD REJECTIONS ABOVE 50 MW, PENDING FURTHER TESTS AND ADJUSTMENTS. A THOROUGH TEST PROGRAM IS UNDESIRABLE DUE TO THE EFFECT OF THERMAL TRANSIENTS ON THE FUEL FAILURES THAT HAVE BEEN EXPERIENCED ON THE STAINLESS STEEL AND R AND D FUELS. A BACKUP STATION POWER SUPPLY (A 46-KV LINE) AND AN ISOLATION VALVE (JUST BEFORE THE BYPASS VALVE) ARE TO BE INSTALLED DURING THE NEXT REFUELING, BECAUSE OF THE AUGUST 8, 1966, OCCURRENCE.

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-17513 *CONTINUED*
AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTROLLER + *EMERGENCY POWER, ELECTRIC + *VALVE + BIG ROCK POINT + CONTAINMENT PENETRATION, CLOSURE OF +
ELECTRIC POWER, NORMAL + FAILURE, FUEL ELEMENT + INSPECTION AND COMPLIANCE + REACTOR, BOILING WATER +
TECHNICAL SPECIFICATIONS

9-17551
DIERCKX R + MARCHAL A + VAN WAUWE A
A SIMPLIFIED DIRECT REACTIVITY METER FOR D2O-MODERATED SYSTEMS
EURATOM RESEARCH CENTER, ISPRA, ITALY
6 PAGES, 6 FIGURES, 7 TABLES, 7 REFERENCES, NUCLEAR APPLICATIONS 3(9), PAGES 532 THRU 539, (SEPTEMBER 1967)

THE METER CONSISTS OF AN IONIZATION CHAMBER AND A PORTABLE ANALOG COMPUTER, THE TR-10. THE
METER WAS USED TO STUDY DELAYED-NEUTRON GROUPS IN A SIMPLIFIED REACTOR MODEL AND TO MAKE
MEASUREMENTS ON TWO REACTORS - ECO, A COLD REACTOR, AND ISPRA-1, A REACTOR WITH A STRONG
LONG-LIVED PHOTONEUTRON SOURCE. THE MEASUREMENTS PERFORMED WITH THE DIRECT REACTIVITY METER
WERE COMPARED WITH NORMAL ROD-DROP MEASUREMENT TECHNIQUES AND PERIOD MEASUREMENT TECHNIQUES
AND AGREED IN GENERAL TO PLUS OR MINUS 2%. THE LONG-LIVED SOURCE TERM, WHICH DEPENDS ON THE
REACTOR OPERATION HISTORY, HAD A PRECISION OF BETTER THAN PLUS OR MINUS 1%.

COMPUTER, ANALOG + CONTROL ROD CALIBRATION + INSTRUMENTATION, NUCLEAR +
INSTRUMENTATION, OPERATING REACTIVITY + MEASUREMENT, REACTIVITY + REACTOR KINETICS

9-17553
GOLDSTEIN C
HANFORD SAFEGUARD SYSTEM GUARANTEES SHUT-DOWN REACTOR STAYS THAT WAY
2 PAGES, NUCLEONICS 25(1), PAGES 58 AND 59, (JANUARY 1967)

THE SAFING SYSTEM IS A NEUTRON-ABSORBENT TARGET MATERIAL CONTAINED IN A WIRE OR TAPE
POSITIONED IN A REACTOR CORE AND EXTERNALLY SEALED TO SHOW AN INSPECTOR THAT IT HAS REMAINED
IN ITS POSITION BETWEEN INSPECTIONS. THE KEY TO ITS EFFECTIVENESS IS THAT ALL MAJOR
COMPONENTS, THE TAPE, THE HARDWARE THAT SECURES IT, AND THE SEAL ARE GIVEN UNIQUE X-RAY
SIGNATURES OR FINGERPRINTS TO PREVENT TAMPERING OR SUBSTITUTION.

ADMINISTRATIVE CONTROLS AND PRACTICES + HANFORD PRODUCTION REACTOR + INSPECTION AND COMPLIANCE +
SURVEILLANCE PROGRAM

9-17554
GLASS FM
NEUTRON MONITOR AND BURST DETECTOR
US PATENT 3 303 343 +. 2 PAGES, 1 FIGURE, FEBRUARY 7, 1967

PATENT RELATES TO A SYSTEM WHICH COMBINES A CONVENTIONAL COUNT-RATE CIRCUIT FOR MEASURING
GRADUAL CHANGES IN NEUTRON DOSE RATE, AND A CIRCUIT FOR DETECTING FAST EXCURSIONS IN NEUTRON
DOSE RATE.

AVAILABILITY - THE U.S. PATENT OFFICE, DEPT. OF COMMERCE, WASHINGTON, D.C., 25 CENTS PER COPY

COUNTER + INSTRUMENTATION, NUCLEAR + INSTRUMENTATION, RATE OF CHANGE + INSTRUMENTATION, SURVEILLANCE +
NEUTRON + PATENT

9-17560
ANDERSON JL
SAFETY-SYSTEM DESIGN PROBLEMS
OAK RIDGE NATIONAL LABORATORY
3 PAGES, 14 REFERENCES, NUCLEAR SAFETY 8(4), PAGES 354-356 (SUMMER 1967)

SAFETY SYSTEMS FOR NUCLEAR REACTORS HAVE IMPROVED LITTLE OVER THE PAST 10 YEARS. SOME REASONS
FOR THIS INCLUDE SEPARATION OF THE SYSTEM DESIGN AND ANALYSIS, INSTRUMENTED PACKAGES BASED ON
COMMERCIAL AVAILABILITY RATHER THAN ON SYSTEM REQUIREMENTS, AND AN INORDINATE CONCERN WITH
SELF-TESTING CIRCUITS AND FAIL-SAFE CONCEPTS. ELECTRICAL AND PHYSICAL SEPARATION TO PROVIDE
INDEPENDENCE OF INSTRUMENT CHANNELS CONTINUES TO BE VITAL.

DESIGN CRITERIA + INSTRUMENTATION, PROTECTIVE + SAFETY PRINCIPLES AND PHILOSOPHY

9-17561
MCLEAN TL
SOME ASPECTS OF RELIABILITY IN REACTOR INSTRUMENT SYSTEMS
OAK RIDGE NATIONAL LABORATORY
4 PAGES, 22 REFERENCES, NUCLEAR SAFETY 8(4), PAGES 356-359 (SUMMER 1967)

AN EXAMINATION OF THE SENSITIVITY OF REACTOR PROTECTION SYSTEMS TO VARIOUS TYPES OF FAILURES
IS ONE APPLICATION OF THIS TECHNOLOGY. OTHER USES INCLUDE COMPARISON OF THE VARIOUS
CONFIGURATIONS USED IN REACTOR SAFETY SYSTEMS AND THE DEVELOPMENT OF HIGHER RELIABILITY

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-17561 *CONTINUED*

SYSTEMS. BY USING THE PRECEPTS OF RELIABILITY ENGINEERING, A DESIGNER CAN COMPARE INSTRUMENTS OR SYSTEMS AND DETERMINE WHICH WILL PROBABLY BE MORE DEPENDABLE.

RELIABILITY ANALYSIS + RELIABILITY, SYSTEM

9-17583

ECKSTEIN HP
STUDIES OF RANDOM NOISE. AN ANNOTATED BIBLIOGRAPHY
REDSTONE ARSENAL, REDSTONE SCIENTIFIC INFORMATION CENTER, ALABAMA
RSIC-619 +. 47 PAGES, DECEMBER 1966

THIS BIBLIOGRAPHY CONTAINS A SELECTION OF PAPERS, MOST OF THEM ANNOTATED, ON NOISE AND THE EFFECTS OF NOISE ON SIGNALS. CONSEQUENTLY, SEVERAL SURVEYS OF INFORMATION THEORY AND PAPERS DEALING WITH INTERDEPENDENT ASPECTS ARE INCLUDED. SOURCES OF THE CONTAMPLATED NOISE WERE EITHER ENVIRONMENTAL OR INHERENT IN THE EQUIPMENT, WHICH INCLUDES EFFECTS OF BOTH THE ATMOSPHERE AND OTHER TRANSMITTERS. ACCORDINGLY, SEVERAL STUDIES INCLUDE NON-GAUSSIAN AS WELL AS GAUSSIAN NOISE.

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

BIBLIOGRAPHY + NOISE

9-17590

ALSO IN CATEGORY 17

SKOVHOLT DJ
BONUS CHANGE 3. ROD DRIVE MODIFICATION
DIVISION OF REACTOR LICENSING, WASHINGTON, D. C.
4 PAGES, MAY 26, 1967, DOCKET NO. 115-4

DRL ALLOWS BONUS TO MODIFY TWO CONTROL-ROD DRIVES TO OBTAIN DATA ON PERFORMANCE OF TWO MODIFIED DRIVES BEFORE MAKING THE MODIFICATION TO THE OTHER 15. MODIFICATIONS ARE (1) ADDITION OF CIRCULAR TORQUE SPRING TO DRIVE MOTOR TO INCREASE TORQUE-TO-FRICTION RATIO, (2) ADDITION OF A CENTRIFUGAL BRAKE TO LIMIT ROD-DROP VELOCITY, AND (3) ADDITION OF AN OIL RESERVOIR FOR THE SHOCK ABSORBER. ROD-DROP TIMES HAVE BEEN EXCESSIVE AT TIMES. SHOCK HAS DISTORTED THE RODS.

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

*MODIFICATION, SYSTEM OF EQUIPMENT + BONUS (BOILING NUCLEAR SUPERHEAT PROJECT) + CONTROL ROD DRIVE + FAILURE, SCRAM MECHANISM + REACTOR, INTERNAL SUPERHEAT + TECHNICAL SPECIFICATIONS

9-17642

ALSO IN CATEGORY 15

RUSSELL JA + KNOWLES DJ
DESCRIPTION OF FACILITY CONTAMINATION ALARM SYSTEM INSTALLED IN THE PHYSICAL EXAMINATION HOT CELLS, BUILDING 3025
OAK RIDGE NATIONAL LAB., TENN.
ORNL-TM-1873+. 19 PAGES, 7 FIGURES, 2 TABLES, MAY 18, 1967

THREE BETA-GAMMA AIR MONITORS CONTINUOUSLY AND AUTOMATICALLY MONITOR AIR CONTAMINATION. THE SYSTEM ALSO SOUNDS LOCAL ALARMS AND INDICATES ABNORMAL CONDITIONS TO THE OPERATING AREA. OPERATORS ARE FIRST WARNED WHEN A MONITOR REACHES A PRESET CAUTION LEVEL. A SECOND WARNING IS GIVEN WHEN THE HIGH-LEVEL SETPOINT IS REACHED. THE BUILDING EVACUATION SYSTEM OPERATES AUTOMATICALLY WHEN TWO OR MORE AIR MONITORS DETECT A HIGH LEVEL OF AIR CONTAMINATION.

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

*HOT CELL + *MONITORING SYSTEM, RADIATION + MONITOR, RADIATION, AIR + ORNL (OAK RIDGE NATIONAL LABORATORY)

9-17646

ALSO IN CATEGORY 17

NASA-ZPR-1 CHANGE 1. PULSED NEUTRON EXPERIMENTS, MODIFIED CONTROL CIRCUITS TO ALLOW AEC, DIVISION OF REACTOR LICENSING
4 PAGES, FEBRUARY 10, 1967, DOCKET NO. 50-75, NASA ZERO POWER REACTOR I

DRL ALLOWS ZPR-1 TO PERFORM PULSED-NEUTRON EXPERIMENTS. MODIFICATIONS ARE NECESSARY IN MONITORING CIRCUITS, SYSTEMS, AND EQUIPMENT. EXPERIENCE WITH ZPR-2 SHOWED NO UNEXPECTED PROBLEMS WHILE PULSING. EXTERNAL 14-MEV SOURCE WITH REPETITION RATE UP TO 10 PULSES/SEC AND MAXIMUM STRENGTH OF 10 MILLION NEUTRONS/PULSE.

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

*CONTROL SYSTEM + *MODIFICATION, SYSTEM OF EQUIPMENT + *PULSED NEUTRON TECHNIQUE + CRITICAL ASSEMBLY FACILITY + SAFETY EVALUATION + TECHNICAL SPECIFICATIONS + WATER BOILER

9-17654

ALSO IN CATEGORY 17

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-17654 *CONTINUED*

SAN ONOFRE CHANGE 1. BYPASS OF PRESSURIZER HIGH LEVEL TRIP LOW POWERS
SOUTHERN CALIFORNIA EDISON COMPANY, LOS ANGELES, CALIFORNIA
5 PAGES, APRIL 19, 1967, DOCKET NO. 50-206

REQUESTS CHANGE TO ALLOW THE PRESSURIZER HIGH-LEVEL TRIP TO BE BYPASSED AT POWER LEVELS OF LESS THAN 10% FULL POWER. THEY CONTEND THAT IF A SUSTAINED MISMATCH BETWEEN PRIMARY AND SECONDARY SYSTEM OCCURRED (AN IMPROBABLE EVENT), THE RESULTING INSURGE WOULD BE WITHIN THE CAPACITY OF A SINGLE SAFETY VALVE. PRESENT LIMITATIONS WOULD MAKE COLD CONTROL-ROD TESTS (AS PRESENTLY PLANNED) DIFFICULT IF NOT IMPOSSIBLE.

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

*INSTRUMENTATION, LIQUID LEVEL DETECTION + *PRESSURIZER + *REACTOR SAFETY SYSTEM + PRESSURE RELIEF + REACTOR STARTUP TESTING + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS + SAN ONOFRE + TECHNICAL SPECIFICATIONS + VALVE

9-17656

ALSO IN CATEGORY 17

MORRIS PA

PEACH BOTTOM 1 CHANGE 3. REACTIVITY INSERTION RATES AND ROD MOVEMENT SPECIFICATIONS
AEC, DIVISION OF REACTOR LICENSING, WASHINGTON, D. C.
3 PAGES, MARCH 8, 1967, DOCKET NO. 50-171, PEACH BOTTOM 1

AEC ALLOWS (1) INCREASE IN PERMITTED REACTIVITY INSERTION RATES TO 2 TIMES 10 TO THE MINUS 4 DELTA RHO PER SECOND FOR INDIVIDUAL RODS, AND 2.5 TIMES THAT FOR A 3-ROD GROUP, AND (2) DEVIATION FROM NORMAL ROD-MOVEMENT PATTERNS FOR PERIODIC TESTS WHEN BELOW 0.01% OF FULL POWER.

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

*CONTROL ROD PROGRAM + *CONTROL ROD WORTH + *RATE + PEACH BOTTOM 1 + REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED + REACTOR, HIGH TEMP. GAS + SAFETY EVALUATION + TECHNICAL SPECIFICATIONS

9-17671

ALSO IN CATEGORIES 4 AND 17

WINSON RW

UPSTART - DIGITAL COMPUTER CALL PROGRAM
ATOMICS INTERNATIONAL, CANOGA PARK, CALIF.
NAA-SR-MEMO-11894 +. 222 PAGES, JUNE 10, 1966

THE UPSTART DIGITAL PROGRAM WAS DEVELOPED TO EVALUATE THE TRANSIENT RESPONSE OF THE VARIOUS SNAP REACTOR SYSTEMS UNDER DEVELOPMENT AND STUDY AT ATOMICS INTERNATIONAL. THE CODE WAS DESIGNED TO MAINTAIN THE COMPUTATIONAL SPEED AND EASE OF USE OF A SPECIAL PURPOSE CODE AND YET HAVE THE FLEXIBILITY OF A GENERAL PURPOSE DIGITAL PROGRAM. THE CODE WAS DESIGNED TO EVALUATE THE TRANSIENT RESPONSE OF SNAP REACTOR SYSTEMS DURING STARTUP AND NORMAL OPERATION, AND TO EVALUATE SYSTEM-SAFETY CRITERIA. IT WAS FURTHER DESIGNED TO USE THE CODE TO DESIGN AND EVALUATE VARIOUS REACTOR CONTROL SYSTEMS AND THE PERFORMANCE OF NEW SYSTEM CONCEPTS AND COMPONENTS.

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

COMPUTER PROGRAM + ISOTOPIC GENERATOR + REACTOR CONTROL + REACTOR STARTUP TESTING + REACTOR TRANSIENT + SNAP, GENERAL (SYSTEMS FOR NUCLEAR AUX. POWER)

9-17833

ALSO IN CATEGORY 17

BARKLEY HB

ANNUAL REPORT OF OPERATIONS AND MODIFICATION AT PLUMBROOK FOR PERIOD ENDING JUNE 30, 1967
LEWIS RESEARCH CENTER, SANDUSKY, OHIO
7 PAGES, 1 FIGURES, JULY 24, 1967, DOCKET NO. 50-30

MODIFICATIONS ARE - (A) REPAIR OF WORN TABS ON UPPER GRID PLATE, (B) REPLACEMENT OF ION CHAMBERS, AND (C) MODIFICATION OF DRAINAGE DITCHES. NEW GRID-PLATE TABS ARE STAINLESS STEEL, OLD WERE INTEGRALLY CAST WITH THE ALUMINUM GRID PLATE. ORIGINAL ION CHAMBERS WERE IN HORIZONTAL THIMBLES. THE NEW BORON-LINED CHAMBERS ARE MOUNTED VERTICALLY ON THE INNERMOST THERMAL SHIELD. THEY WERE RELOCATED TO PROVIDE A NEARLY CONSTANT SIGNAL AT A GIVEN POWER, TO ELIMINATE POSITIONING DEVICES, AND PROVIDE BETTER RADIATION-RESISTANT CABLES.

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

*INSTRUMENTATION, ABNORMAL INDICATION + *INSTRUMENTATION, POWER RANGE + *MODIFICATION, SYSTEM OR EQUIPMENT + OPERATING EXPERIENCE + OPERATIONS SUMMARY FOR AEC + PLUM BROOK + REACTOR, TEST

9-17855

ALSO IN CATEGORY 18

REED COLLEGE SUPPLIES ADDITIONAL INFORMATION FOR LICENSE APPLICATION TRIGA III
REED COLLEGE, PORTLAND, OREGON
11 PAGES, 4 FIGURES, 1 TABLE, JULY 5, 1967, DOCKET NO. 50-298

REED COLLEGE SUBMITS COPIES OF A GENERAL ATOMICS REPORT ENTITLED FAILURE-MODE ANALYSIS FOR

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-17855 *CONTINUED*

TRIGA MARK-III STEADY-STATE CONSOLE SCRAM AND ROD-CONTROL CIRCUITS.

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

*FAILURE, SCRAM MECHANISM + *SINGLE FAILURE CRITERION + CONTROL ROD DRIVE + FAULT TREE ANALYSIS + TECHNICAL SPECIFICATIONS + TRIGA (TRAINING REACTOR, ISOTOPES, G.A.)

9-17857 ALSO IN CATEGORY 17

USGS TRIGA AMENDMENT 2, APPENDIX C. FAILURE MODE ANALYSIS FOR TRIGA MARK III CONSOLE SCRAM AND ROD CONTROL CIRCUITS

UNITED STATES DEPARTMENT OF THE INTERIOR, GEOLOGICAL SURVEY, WASHINGTON, D. C.

11 PAGES, 4 FIGURES, 1 TABLE, MAY 1967, DOCKET NO. 50-274

GA REPORT, EVALUATE POSSIBLE ROD CONTROL AND SCRAM CIRCUIT FAILURE. DESCRIBES IN A GENERAL MANNER THE CONTROL CIRCUITRY AND SCRAM LOGIC. THE ROD-DRIVE MOTOR IS NORMALLY PREVENTED FROM RUNNING BY HAVING THE SAME AC SIGNAL ON BOTH MOTOR WINDINGS, AND INDIVIDUAL PUSH BUTTONS BREAK ONE OR THE OTHER CIRCUITS FOR ROD MOVEMENT. A FAILURE CAUSING A BREAK IN EITHER CIRCUIT WOULD CAUSE THE ROD TO MOVE IN OR OUT. THE ELEMENTS IN EACH CIRCUIT ARE PUSH BUTTONS, RELAY AND CONNECTOR CONTACTS, AND RESISTORS. SINCE ROD DRIVES AND CONTROLS ARE INDEPENDENT, A FAILURE CAN CAUSE MOVEMENT OF ONLY ONE ROD. SINCE ALL SCRAM CIRCUIT RELAYS ARE FAIL SAFE, AND THE 6 CHANNELS ARE INDEPENDENT, 6 INDIVIDUAL SIMULTANEOUS FAILURES ARE NEEDED TO DISABLE THE SCRAM CIRCUIT.

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

*CONTROL ROD DRIVE + *FAULT TREE ANALYSIS + FAILURE, COMPONENT + FAILURE, SCRAM MECHANISM + SAFE FAILURE CRITERION + SINGLE FAILURE CRITERION + TRIGA (TRAINING REACTOR, ISOTOPES, G.A.)

9-17862 ALSO IN CATEGORY 17

ANNUAL REPORT OF OPERATIONS AND MODIFICATION OF U OF VIRGINIA REACTOR FOR PERIOD ENDING 27, JANUARY 1965 UNIVERSITY OF VIRGINIA, CHARLOTTESVILLE

UVAR-17 +. 3 PAGES, PAGE 14 THRU 16 OF SAFETY ANALYSIS REPORT IN SUPPORT OF AMENDMENT TO LICENSE R-66 FOR TWO MEGAWATT OPERATION OF THE UNIVERSITY OF VIRGINIA REACTOR, JANUARY 27, 1965, DOCKET NO. 50-62

FIVE MODIFICATIONS LISTED INCLUDE INTERLOCK INSTALLED TO PREVENT OPERATION ABOVE 100 KW WITHOUT COOLANT HEADER RAISED INTO PROPER POSITION. REACTOR BRIDGE WAS MOVED ACCIDENTALLY WITH HEADER UP, DAMAGING GUIDE PINS. HEADER LIFTING DEVICE LATER STUCK IN VARIOUS POSITIONS AND UPON DISASSEMBLY OF CORE AND DRAINING OF POOL, A FROZEN BEARING WAS FOUND. NEW, HEAVIER PARTS WERE INSTALLED. RISK WAS FOUND IN THAT THE LIFTING MECHANISM MIGHT STICK IN UP POSITION, STOPPING HEADER FROM FALLING UPON LOSS OF FLOW. AN INTERLOCK WAS INSTALLED TO PROHIBIT OPERATION ABOVE 100 KW WITH LIFTING MECHANISM IN UP POSITION.

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

*FAILURE, OPERATOR ERROR + *HEAT TRANSFER, NATURAL CONVECTION + *MAIN COOLING SYSTEM + EMERGENCY COOLING CONSIDERATIONS + FAILURE, EQUIPMENT + INSTRUMENTATION, INTERLOCK + MODIFICATION, SYSTEM OR EQUIPMENT + OPERATIONS SUMMARY FOR AEC + REACTOR, POOL TYPE + REACTOR, RESEARCH

9-17863 ALSO IN CATEGORY 17

ANNUAL REPORT OF OPERATIONS AND MODIFICATION OF U OF VIRGINIA REACTOR FOR PERIOD ENDING 20 JANUARY, 1966 UNIVERSITY OF VIRGINIA, CHARLOTTESVILLE

UVAR-17 +. 3 PAGES, PAGE 17 THRU 19 OF SAFETY ANALYSIS REPORT IN SUPPORT OF AMENDMENT TO LICENSE R-66 FOR TWO MEGAWATT OPERATION OF THE UNIVERSITY OF VIRGINIA REACTOR, JANUARY 20, 1966, DOCKET NO. 50-62

FIVE MODIFICATIONS LISTED INCLUDING (2) A 125% FULL-POWER SCRAM CAUSED WHEN SERVO SYSTEM CONTINUED TO PULL ROD AFTER OPERATOR TURNED OFF THE LINEAR RECORDER (SLIDE WIRE GIVES SERVO ERROR, AND POWER WAS BELOW SETPOINT) TO CHANGE CHART PAPER. CHANGES MADE TO THROW REACTOR OFF SERVO WHEN RECORDER IS OFF. (2A) ON APRIL 4, REACTOR WAS OPERATED AT 200 KW, TWICE INDICATED POWER, DUE TO MOVEMENT OF THERMAL COLUMN AWAY FROM THE CORE. THE NEXT DAY, A STARTUP TO 7 MW CAUSED HIGH RADIATION LEVEL ALARM FROM DEMINERALIZER ROOM, AS POWER LEVEL WAS 2 MW. GAMMA COUNTER WAS MOUNTED ABOVE CORE TO GIVE ALARM AT 15G% FULL POWER. (3) HIGH-RADIATION-LEVEL SCRAM TRACED TO EPOXY RESIN USED TO MOUNT THERMOCOUPLES. (4) REACTOR OPERATED 1/2 HR WITH POOL TEMPERATURE UP TO 98.4 F (95 F LICENSE MAXIMUM). (5) SOME EVIDENCE OF CONTROL-ROD FLAKING OBSERVED DURING ANNUAL INSPECTION.

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

*CONTROL ROD BURNUP + *INSTRUMENTATION, ABNORMAL INDICATION + CONTROL SYSTEM + FAILURE, OPERATOR ERROR + IRRADIATION FACILITY + MODIFICATION, SYSTEM OR EQUIPMENT + OPERATIONS SUMMARY FOR AEC + REACTOR POWER + REACTOR, POOL TYPE + REACTOR, RESEARCH + SCRAM, REAL

9-17893 ALSO IN CATEGORY 10

HOLLADAY RL

THE FUNCTIONS AND PERFORMANCE OF THE CONSUMERS BIG ROCK POINT PROCESS COMPUTER SYSTEM GENERAL ELECTRIC CO., SAN JOSE, CALIFORNIA. ATOMIC POWER EQUIPMENT DEPT.

GEAP-5297 +. 108 PAGES, FIGURES, REFERENCES, OCTOBER 1966

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-17893 *CONTINUED*

DESCRIBES THE ON-LINE COMPUTER SYSTEM DEVELOPED FOR AND INSTALLED IN THE CONSUMERS POWER COMPANY, BIG ROCK POINT NUCLEAR POWER PLANT IN CHAPLEVOIX, MICHIGAN. IT WILL SCAN REACTOR AND PLANT SENSORS PERIODICALLY, EXECUTE REACTOR-CORE AND PLANT-PERFORMANCE CALCULATIONS, LOG THE RESULTS. IN ADDITION, ALL MEASUREMENTS AND CERTAIN CALCULATED PARAMETERS ARE COMPARED WITH PREDEFINED LIMITS, AND ALARMS ARE ACTIVATED IF A LIMIT IS EXCEEDED. THIS REPORT DISCUSSES THE DEVELOPMENT AND PERFORMANCE OF THE PROGRAM SYSTEM, DESCRIBES THE HARDWARE AND SOFTWARE, AND GIVES A DETAILED DESCRIPTION OF THE THERMAL-HYDRAULIC FUNCTIONS DEVELOPED FOR THE SYSTEM.

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

BIG ROCK POINT + COMPUTER CONTROL + COMPUTER PROGRAM + DATA PROCESSING + ELECTRIC POWER, GENERAL + INSTRUMENTATION, ABNORMAL INDICATION + REACTOR, BOILING WATER

9-17938

ETHERINGTON EW

AN ANALYSIS OF THE COMMISSIONING TESTS OF THE DELAYED NEUTRON MONITOR ON THE D.M.T.R. BOILING WATER LOOP UNITED KINGDOM ATOMIC ENERGY AUTHORITY, DOUNREAY, SCOTLAND. REACTOR GROUP TRG-REPORT-1416(D) +. 22 PAGES, 6 FIGURES, 6 TABLES, 6 REFERENCES, FEBRUARY 2, 1967

THE DELAYED-NEUTRON MONITORS NOW IN USE WITH THE BOILING-WATER LOOP IN DMTR CONSISTS OF THREE BF3 COUNTERS PLACED NEAR THE STEAM/WATER SEPARATOR. THE SYSTEM WAS TESTED, USING THE SIGNAL ARISING FROM N-17 AND FROM THE URANIUM CONTAMINATION OF THE FUEL CANS, AND THE RESULTS WERE COMPARED WITH A DETAILED THEORETICAL ANALYSIS OF ITS OPERATION. THE TESTS ESTABLISHED THAT THE MINIMUM DETECTABLE SIGNAL WAS THAT FROM A HOLE OF EFFECTIVE AREA ABOUT 0.01 SQ. CM AT POSITION OF MAXIMUM FLUX.

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

DELAYED NEUTRON + DOUNREAY (UK) + INSTRUMENTATION, DETECTION FAILED FUEL ELEMENT + REACTOR, BOILING WATER + REACTOR, BREEDER + REACTOR, FAST

9-17944

SCHRAUB FA

ISOKINETIC SAMPLING PROBE TECHNIQUE. APPLIED TO TWO-COMPONENT, TWO-PHASE FLOW GENERAL ELECTRIC CO., SAN JOSE, CALIFORNIA. ATOMIC POWER EQUIPMENT DEPT. GEAP-5287 +. 45 PAGES, FIGURES, REFERENCES, NOVEMBER 1966

ISOKINETIC SAMPLING PROVIDES LOCAL TIME-AVERAGE VALUES OF GAS VELOCITY, LIQUID VELOCITY, VOID FRACTION, AND QUALITY IN TWO-PHASE FLOW. THE ISOKINETIC SAMPLING TECHNIQUE AS APPLIED TO ADIABATIC, INCOMPRESSIBLE, TWO-COMPONENT, GAS-LIQUID FLOW (AIR-WATER) IS DESCRIBED. LIMITATIONS AND PROBLEMS IN TECHNIQUES, TYPICAL RESULTS, AND OPERATING EXPERIENCE WITH SMALL-DIAMETER PROBES (SAMPLING DIAMETERS NEAR 0.03 INCH) ARE EMPHASIZED. THE TECHNIQUE CONSISTS OF TWO PARTS - (1) EXPERIMENTAL DETERMINATION OF LOCAL FLOW RATES AND IMPACT PRESSURE, AND (2) ANALYSIS TO RELATE THESE EXPERIMENTAL RESULTS TO LOCAL VOID FRACTION. EXPERIMENT PROCEDURES AND PROBLEMS ARE DISCUSSED AT LENGTH. THE RESULTS OF DIFFERENT ANALYSES ARE COMPARED, AND A PREFERRED DATA-REDUCTION PROCEDURE IS RECOMMENDED. TYPICAL RESULTS (SECTION III) SHOW THAT CONSISTENT AND USEFUL RESULTS ARE POSSIBLE WHEN ISOKINETIC SAMPLING IS USED WITH CARE.

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

FLOW THEORY AND EXPERIMENTS + FLOW, TWO PHASE + INSTRUMENTATION, FLOW

9-17950

TATTEGRAIN A

INSTRUMENTATION PROBLEMS IN WATER REACTOR DYNAMICS

CENTRE D ETUDES NUCLEAIRES DE CADARACHE, FRANCE

14 PAGES, 14 FIGURES, 7 REFERENCES, BULLETIN D INFORMATIONS SCIENTIFIQUES ET TECHNIQUES 112, PAGES 27-40 (FEBRUARY 1967), IN FRENCH

THE VARIOUS MEASUREMENT METHODS USED FOR TESTS PERFORMED ON THE CABRI REACTOR, AND THE CHARACTERISTICS OF THE MEASUREMENT FACILITIES, ARE SUMMED UP. THE LIMITS IMPOSED BY THE METHODS (BANDWIDTH, DISTURBANCE BROUGHT IN BY THE SENSORS) AND BY THE ELECTRONICS SYSTEMS (ACCURACY, MULTIPLEXING RATE) ARE MORE DEEPLY INVESTIGATED.

FRANCE + INSTRUMENTATION, GENERAL + MEASUREMENT, GENERAL + REACTOR, WATER

9-17951

BOHL H + MARLOWE OJ

EXPERIENCES IN PRODUCING A MODULAR COMPUTER PROGRAM

BETTIS ATOMIC POWER LAB., PITTSBURGH, PA.

WAPD-T-1975 CONF-670205-1 +. 19 PAGES, FIGURES, REFERENCES, JANUARY 1967, FROM WESTINGHOUSE SOFTWARE SYMPOSIUM, PITTSBURGH, PA.

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-17951 *CONTINUED*

DEVELOPMENT OF THE MODULAR COMPUTER PROGRAM PAX WAS INFLUENCED BY THE HISTORY OF THE INDIVIDUAL PROGRAMS (MULTIDIMENSIONAL NEUTRON-DIFFUSION) WHICH MADE UP THE MODULES, BY THE NEED TO MAKE IT USEFUL EVEN BEFORE COMPLETION, BY ITS INHERENT SIZE AND COMPLEXITY, BY THE IMPENDING COMPUTER REPLACEMENT, AND BY THE NEED FOR COMMUNICATION IN THE AREAS OF DOCUMENTATION AND TRAINING. SEVERAL PROBLEMS WHICH AROSE DURING THE DEVELOPMENT HAVE NOT YET BEEN SOLVED.

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

COMPUTER PROGRAM + STAFFING, TRAINING, QUALIFICATION

9-17952

FOLSOM TR + WEITZ WE + MOORE JM
AUTOMATICALLY CONVERTING A STANDARD NUMERICAL STRIP PRINTER SO AS TO COMBINE TWO-DIMENSIONAL PULSE ANALYZER INFORMATION INTO A CONVENIENT PAGE
SCRIPPS INSTITUTION OF OCEANOGRAPHY, LA JOLLA, CALIFORNIA
TID-23746 +. 34 PAGES, REFERENCES, JANUARY 15, 1967

DIGITAL INFORMATION IN THE MEMORY MATRIX OF A TWO-DIMENSIONAL PULSE-HEIGHT ANALYZER CAN NOW BE READ OUT INTO A PAGE CONVENIENT TO STUDY AND FILE. THE 4096 NUMBER MATRIX ON THIS PAGE, OBTAINED AUTOMATICALLY IN ABOUT 4 MINUTES, PERMITS IMMEDIATE INSPECTION OF SIGNAL PEAKS. THIS NEW SYSTEM IS ESPECIALLY USEFUL FOR STUDY OF ARRAYS OF VERY SMALL NUMBERS DERIVED FROM MEASUREMENTS OF VERY SMALL TRACES OF RADIONUCLIDES.

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

INSTRUMENTATION, PULSE + INSTRUMENTATION, RADIATION MONITORING + INSTRUMENTATION, RECORDER + INSTRUMENTATION, SURVEILLANCE

9-17973

ALSO IN CATEGORIES 15 AND 17
BIG ROCK POINT PROPOSED USE OF ION CHAMBERS INSTEAD OF SCINTILLATION DETECTORS FOR OFF-GAS MONITORING
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
4 PAGES, SEPTEMBER 6, 1966, DOCKET NO. 50-155

CHANGE IN THE AIR-EJECTOR OFF-GAS MONITORING SYSTEM WOULD INCREASE RELIABILITY OF SYSTEM AND ENSURE TECH. SPECS. ARE MET AS TO RANGE TO BE MONITORED (0.0001 TO 10 CURIES/SEC). FORMERLY THIS RANGE COULD NOT BE MET. CONDENSATION IN SAMPLE VOLUME ALSO CAUSED ERRATIC OPERATION. SYSTEM HAS BEEN OPERATING 11 MONTHS WITH EXCELLENT RELIABILITY AND SENSITIVITY, AND HAS BEEN USED AT VSWR AND HUMBOLDT BAY.

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

*CHAMBER, ION + *MODIFICATION, SYSTEM OR EQUIPMENT + *REACTOR OFFGAS + BIG ROCK POINT + INSTRUMENTATION, AIR SAMPLING + MONITOR, RADIATION, AIR + OPERATING EXPERIENCE + REACTOR, BOILING WATER + TECHNICAL SPECIFICATIONS

9-18018

ALSO IN CATEGORY 11

IRVINE WH
DEVELOPMENTS IN THE PERIODIC INSPECTION OF REACTOR PRIMARY CIRCUIT PRESSURE COMPONENTS OF NUCLEAR REACTORS
UKAEA, AUTHORITY HEALTH AND SAFETY BRANCH, SAFEGUARDS DIVISION
AHSB(S)-R-115 +. 14 PAGES, 5 FIGURES, 8 REFERENCES, 1966

TECHNIQUES FOR PERIODIC INSPECTION OF THE REACTOR VESSEL SHELL ARE BRIEFLY DESCRIBED. THESE ARE - OPERATIONAL STRAIN MEASUREMENT, INDIRECT VIEWING AND MATERIAL MONITORING. METHODS OF ESTABLISHING REACTOR PRESSURE COMPONENT INTEGRITY BASED ON FRACTURE MECHANICS ARE BEING DEVELOPED. THIS APPROACH AND ITS IMPLICATIONS ARE DISCUSSED.

FAILURE, PRESSURE VESSEL + INSTRUMENTATION, PRESSURE + PRESSURE VESSEL + SHELL + SURVEILLANCE PROGRAM

9-18019

MAKRA S
A DEVICE FOR THE MEASUREMENT OF AVERAGE NEUTRON ENERGIES
CENTRAL RESEARCH INSTITUTE FOR PHYSICS, PUBLISHING GROUP, BUDAPEST
M-17 +. 11 PAGES, 7 FIGURES, 3 REFERENCES, 1965

LIKE THE BONNER SPHERES, THIS DEVICE IS USED TO INVESTIGATE LOW NEUTRON FLUXES. IT IS A RELATIVELY SIMPLE DEVICE, WITH HIGH-SENSITIVITY. IT IS ESSENTIALLY A THERMAL NEUTRON COUNTER MOUNTED IN A POLYETHYLENE CYLINDER WITH POLYETHYLENE DISKS SERVING AS A MODERATOR. THE MODERATOR THICKNESS IS VARIED IN APPROPRIATE STEPS AND THE COUNTING RATE OF THE THERMAL NEUTRON DETECTOR RECORDED.

AVAILABILITY - CENTRAL RESEARCH INSTITUTE FOR PHYSICS, PUBLISHING GROUP, BUDAPEST

INSTRUMENTATION, NUCLEAR + INSTRUMENTATION, RADIATION MONITORING + NEUTRON

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-18027 ALSO IN CATEGORY 4
SMITH AK + ZERBEL D
SNAP 10A INSTRUMENTATION AND CONTROL, DEVELOPMENT AND TESTING
ATOMICS INTERNATIONAL, SAN DIEGO, CALIFORNIA
8 PAGES, 6 FIGURES, 1 TABLE, IEEE TRANS. NUCL. SCI. 13(1), PAGE 236 THRU 243, (FEBRUARY 1966)

DESCRIBES THE SNAP 10A INSTRUMENTATION AND CONTROL SUBSYSTEMS. COMPONENT DEVELOPMENT TESTING AND QUALIFICATION TEST PROCEDURES ARE DESCRIBED AND ILLUSTRATED BY REFERENCE TO SPECIFIC CONTROL COMPONENT DEVELOPMENT TESTING. VALIDATION OF COMPONENT AND SUBSYSTEM COMPATIBILITY OBTAINED BY USE OF DEVELOPMENTAL SYSTEMS IS DISCUSSED. DEVELOPMENTAL AND QUALIFICATION TEST SYSTEMS ARE DESCRIBED WHICH ILLUSTRATE THE GROUND-TESTING ACTIVITY EMPLOYED ON THE SNAP 10A PROGRAM TO ENSURE THAT THE FLIGHT SYSTEMS ARE CAPABLE OF WITHSTANDING ALL EXPECTED ENVIRONMENTAL FACTORS WITH A HIGH DEGREE OF CONFIDENCE IN THE ABILITY OF THE SYSTEMS TO MEET PERFORMANCE REQUIREMENTS.

CONTROL SYSTEM + INSTRUMENTATION, CONTROL + SNAP 10A (SYSTEMS FOR NUCLEAR AUXILIARY POWER)

9-18028 ALSO IN CATEGORY 4
ELMIGER RA
IN-CORE TEMPERATURE CONTROL OF NRX REACTORS
WESTINGHOUSE ASTRONUCLEAR LABORATORY, PITTSBURGH, PA.
2 PAGES, 2 FIGURES, J SPACECRAFT AND POCKETS 3(2), PAGE 262 AND 263, (FEB. 1966)

SIXTEEN THERMOCOUPLES LOCATED WITHIN SELECTED UNFUELED ELEMENTS IN THE CORE PROVIDE THE SENSING FOR A REACTOR-TEMPERATURE-CONTROL LOOP. SIGNALS ARE SENT TO A LOGIC SYSTEM THAT GENERATES AN AVERAGE AND PROVIDES FOR THE AUTOMATIC REJECTION FROM THE AVERAGE OF ANY SIGNAL THAT DEVIATES BEYOND A PRESET LIMIT FROM THE AVERAGE SIGNAL. THIS SIGNAL IS THEN SENT TO THE TEMPERATURE CONTROLLER AND TO A LIMITER CIRCUIT. THE NRX TEMPERATURE CONTROLLER IS AN INTEGRAL-PLUS-PROPORTIONAL CONTROLLER WITH LIMITS OF TRIM TO THE BASIC FLUX POWER CONTROL LOOP OF 0.5 TO 1.15.

INSTRUMENTATION, CONTROL + INSTRUMENTATION, IN CORE + INSTRUMENTATION, TEMPERATURE + KIWI + NRX (CANADIAN NATURAL U-HEAVY WATER REACTOR) + REACTOR, SPACE + ROVER PROGRAM

9-18029
OCCHIPINTI ES + MIX PE + STUTHEIT JS + FIELD FR
HIGH-FLUX OPERATION VIA ANALOG COMPUTER
E.I. DU PONT DE NEMOURS AND COMPANY, AIKEN, SOUTH CAROLINA
8 PAGES, 8 FIGURES, 2 TABLES, 4 REFERENCES, NUCLEAR APPLICATIONS 2(5), PAGE 363 THRU 370, (OCTOBER 1966)

AN ANALOG COMPUTER WAS DEVELOPED TO MEASURE THE SAFETY FACTOR AGAINST FILM-BOILING BURNOUT OF REACTOR FUEL SURFACES. THE INSTRUMENT WAS USED AS AN AID IN MANUAL CONTROL OF POWER IN ONE HEAVY-WATER-COOLED AND -MODERATED PRODUCTION REACTOR WHICH OPERATED WITH A SPECIFIC POWER OF OVER 220 KW/G OF U-235 AND AT NEUTRON FLUX LEVELS UP TO 6×10^{10} TO THE 15TH NEUTRONS/SQ. CM/SEC. THE COMPUTER DEMONSTRATED HIGH RELIABILITY AND FLEXIBILITY. DRIFT IN INSTRUMENT ERROR WAS INSIGNIFICANT THROUGHOUT ABOUT ONE YEAR OF OPERATION.

COMPUTER, ANALOG + INSTRUMENTATION, CONTROL + INSTRUMENTATION, IN CORE + REACTOR, WATER + SAVANNAH RIVER PLANT

9-18030
TULSON GM + TABOADA A
MSRE CONTROL ELEMENTS. MANUFACTURE, INSPECTION, DRAWINGS, AND SPECIFICATIONS
OAK RIDGE NATIONAL LABORATORY, METALS AND CERAMICS DIVISION, TENN.
ORNL-4123 +. 53 PAGES, FIGURES, JULY 1967

THE CONTROL ELEMENTS FOR THE MOLTEN SALT REACTOR ARE GD203-A1203 BUSHINGS CANNED IN INCONEL. THE REPORT INCLUDES MATERIAL SELECTION AND DEVELOPMENT OF FABRICATION METHODS. THE CAN WAS MADE FROM FULLY INSPECTED INCONEL CLOSED BY FOUR TIG WELDS. THE BUSHINGS WERE MADE BY CONVENTIONAL PRESSING AND SINTERING METHODS AFTER A SPECIAL PREREACTION STEP WAS USED. THE BUSHINGS WERE GIVEN THERMAL-SHOCK TESTS, WEIGHED, DIMENSIONALLY INSPECTED, AND GIVEN A FINAL VISUAL INSPECTION FOR CHIPS OR CRACKS. AS-BUILT DRAWINGS, SPECIFICATIONS, AND MANUFACTURING PROCEDURES ARE INCLUDED. BY METHODS DESCRIBED, 160 MSRE CONTROL ROD ELEMENTS WERE MANUFACTURED.

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

CONTROL ROD + CONTROL ROD FABRICATION + MSRE (MOLTEN SALT REACTOR EXPERIMENT) + REACTOR, MOLTEN SALT

9-18031
HOLLADAY JH + KNOWLES DJ
DESCRIPTION OF FACILITY RADIATION AND CONTAMINATION ALARM SYSTEMS INSTALLED IN THE TRANSURANIUM PROCESSING PLANT, BUILDING 7920

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-18031 *CONTINUED*
OAK RIDGE NATIONAL LAB., TENN.
ORNL-TM-1766 +. 21 PAGES, 9 FIGURES, 2 TABLES, APRIL 3, 1967

A RADIATION-MONITORING SYSTEM CONTINUOUSLY AND AUTOMATICALLY DETERMINES THE CONDITIONS IN THE ENTIRE FACILITY AND RECORDS THIS INFORMATION AT A CENTRAL CONTROL PANEL. WHEN PRESET VALUES ARE EXCEEDED, AUDIBLE AND VISUAL ALARMS INSIDE AND OUTSIDE OF THE BUILDING ARE ACTUATED. ALPHA CONSTANT AIR MONITORS SOUND A BUZZER TO INDICATE A CAUTION ALARM AT 500 COUNTS/MIN. AND A BELL (HIGH-LEVEL ALARM) AT 800 COUNTS/MIN. BETA-GAMMA CONSTANT AIR MONITORS SOUND CAUTION ALARMS AT 1000 COUNTS/MIN. AND HIGH-LEVEL ALARMS AT 4000 COUNTS/MIN. THE GAMMA MONITORS SOUND A BELL AT 7.5 MR/HR. BUILDING EVACUATION ALARMS ARE ACTUATED FROM COINCIDENCE MODULES, 2 OUT OF 6 SELECTED ALPHA MONITORS ON THE FIRST FLOOR OR 2 OUT OF 4 ON THE SECOND FLOOR, OR 2 OUT OF 4 SELECTED BETA-GAMMA MONITORS.

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

INSTRUMENTATION, AIR SAMPLING + INSTRUMENTATION, RADIATION MONITORING + INSTRUMENTATION, REDUNDANT + INSTRUMENTATION, SURVEILLANCE + MONITOR, RADIATION, AIR + MONITOR, RADIATION, ENVIRONMENTAL + MONITORING SYSTEM, RADIATION

9-18033
EMEL'YANOV IY + GREBENNIKOV KV
CONTROL ROD OPERATION IN HIGH TEMPERATURE REACTORS
5 PAGES, 4 FIGURES, 14 REFERENCES, AT. ENERGIYA 22(5), PAGES 367 THRU 371, (1967), IN RUSSIAN

PRESENTS DATA ON THE DEVELOPMENT AND CONSTRUCTION OF HIGH-TEMPERATURE RODS AND THE ABSORBER USED IN THEM. THE RODS DESCRIBED ARE STEEL CONTAINING ALLOYED BORON AS ABSORBER, FOR AN OPERATING TEMPERATURE OF 600 C, SITUATED IN DRY CHANNELS WITH COOLED WALLS, AND RODS OF GRAPHITE WITH RARE EARTH AS ABSORBER, USED WITHOUT ANY SPECIAL COOLING IN THE ACTIVE ZONE WITH GRAPHITE MODERATOR, HEATED TO 2200 C.

BORON + CONTROL ROD FABRICATION + GRAPHITE + HIGH TEMPERATURE + RARE EARTH

9-18034
ANNO JN
FACTORS INFLUENCING THE EFFECTS OF REACTOR RADIATIONS ON ELECTRICAL COMPONENTS
BATTELLE MEMORIAL INSTITUTE, COLUMBUS, OHIO
8 PAGES, 5 FIGURES, 14 REFERENCES, NUCLEAR APPLICATIONS 2(5), PAGE 371 THRU 378, (OCTOBER 1966)

EXPERIMENTS PERFORMED AT THE BATTELLE RESEARCH REACTOR INDICATE THAT THE OUTPUT OF ELECTRICAL COMPONENTS IS INFLUENCED BY RADIATION ENVIRONMENT IN SEVERAL WAYS. GAMMA RADIATION PRODUCES ELECTRON EMISSION FROM METALS, VARYING FROM 6.38×10 TO THE MINUS 16TH A/SQ. CM PER R/H FOR ALUMINUM TO 6.1×10 THE MINUS 16TH A/SQ. CM PER R/H FOR URANIUM. THE GAMMAS ALSO IONIZE RESIDUAL GAS IN THE EXPERIMENT TEST SECTION AND PRODUCE HEATING IN THE COMPONENTS. THERMAL NEUTRONS AFFECT ELECTRICAL COMPONENTS PRINCIPALLY THROUGH REACTIONS LEADING TO THE EMISSION OF BETA PARTICLES. FAST NEUTRONS AND ELECTRONS (FROM VARIOUS SOURCES) SPUTTER ATOMS FROM THE SURFACE OF MATERIALS. THE RESISTANCE OF INSULATORS MAY BE DRASTICALLY ALTERED IN A RADIATION FIELD, PRINCIPALLY BY PHOTOCONDUCTION. THE MAGNITUDE OF SEVERAL OF THESE EFFECTS OF RADIATION IS ILLUSTRATED BY A SIMPLE IN-PILE EXPERIMENT.

IN PILE EXPERIMENT + INSTRUMENTATION, ABNORMAL INDICATION + INSTRUMENTATION, GENERAL + RADIATION EFFECT

9-18035
DAVISON HW + HEATH CA + LOWEN W
CONTROL OF A NUCLEAR REACTOR WITH A GASEOUS CONTROL SYSTEM
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, CLEVELAND, OHIO. LEWIS RESEARCH CENTER
NASA-TN-D-4093 +. 68 PAGES, 37 FIGURES, 5 TABLES, 14 REFERENCES, AUGUST 1967

A CONTROL SYSTEM UTILIZING A NEUTRON-ABSORBING GAS, HELIUM-3, WAS INVESTIGATED FOR USE WITH A WATER-MODERATED REACTOR. A STATIC GAS SYSTEM IS FINELY DISTRIBUTED THROUGHOUT THE REACTOR CORE TO MINIMIZE FLUX-DEPRESSION EFFECTS BY THE CONTROL MEDIUM. REACTIVITY CONTROL IS PERFORMED BY CONTROLLED PRESSURIZATION OF THE HELIUM. INVESTIGATIONS WERE PERFORMED IN THE AREAS OF HELIUM-3 CONTAINMENT AND THERMAL AND NEUTRONIC STABILITY DURING OPERATION. POTENTIAL ACCIDENT SITUATIONS ARE LIMITED BY USING FLOW-RESTRICTING ORIFICES IN THE SYSTEM AND BY PROVIDING A POSITIVE-WATER-PRESSURE SEAL ON THE CONTROL SYSTEM. THE POSSIBILITY OF POSITIVE POWER COEFFICIENTS OF REACTIVITY WITH A GASEOUS POISON SYSTEM WAS EXAMINED. CONFIGURATIONS OF A CONTROL ELEMENT WITH SMALL TEMPERATURE AND DENSITY GRADIENTS AND A DISTRIBUTION SYSTEM THAT PROVIDES A NEGATIVE POWER COEFFICIENT ARE PRESENTED. THE CONCEPT OF REACTOR CONTROL WITH HELIUM-3 IN METAL CONTROL ELEMENTS LOCATED IN THE MODERATOR REGION APPEARS FEASIBLE FOR THE SYSTEM INVESTIGATED.

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

CONTROL SYSTEM + HELIUM + REACTOR CONTROL + REACTOR, WATER + THEORETICAL INVESTIGATION

9-18036

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-18036 *CONTINUED*

SCHUCH NJ
DESIGN AND ANALYSIS OF THE POWER CONTROL SYSTEM OF THE FAST ZERO ENERGY REACTOR FR-0
AKTIEBOLAGET ATOMENERGI, STOCKHOLM, SWEDEN
AE-262 +. 72 PAGES, REFERENCES, DECEMBER 1966

DESCRIBES THE POWER CONTROL BY MEANS OF THE FINE-CONTROL ROD AND THE DESIGN OF THE CONTROL SYSTEM OF THE FAST ZERO-ENERGY REACTOR FR-0, (STUDSVIK, SWEDEN). VARIABLE ELECTRONIC END-STOPS FOR THE CONTROL RODS WERE DESIGNED BECAUSE OF THE SPECIAL CONSTRUCTION OF THE REACTOR AND CONTROL ROD. NOISE IN THE CONTROL SYSTEM CAUSED BY THE REACTOR, DETECTOR, AND ELECTRONICS DISTURBED THE CONTROL SYSTEM AT THE LOWER POWER LEVELS. THE SYSTEM WAS SIMULATED ON AN ANALOG COMPUTER, TAKING INTO ACCOUNT THE NONLINEARITIES OF THE CONTROL SYSTEM AND NOISE.

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

COMPUTER, ANALOG + CONTROL ROD + NOISE + REACTOR CONTROL + SWEDEN

9-18040 ALSO IN CATEGORY 17

G.A. NOTIFIES DRL OF DIFFERENCE IN PREDICTED AND MEASURED WORTH OF SAFETY BLOCK
GENERAL ATOMIC, DIVISION OF GENERAL DYNAMICS CORPORATION, SAN DIEGO, CALIFORNIA
2 PAGES, JULY 17, 1967, DOCKET NO. 50-253

G.A. FOUND, BY CONTROL ROD COMPENSATION AND REACTIVITY-METER-CALIBRATION TESTS, THE WORTH OF THE CAM DRIVEN PORTION OF THE SAFETY BLOCK TO BE \$4.70 VS \$7.00 GIVEN IN THE TECH. SPECS. TECH.-SPEC.-CHANGE REQUEST WILL BE MADE AFTER FURTHER TESTS. \$7.00 FIGURE WAS BASED ON AN EXTRAPOLATION FROM LRL INFORMATION, WHICH CONCERNED A LONGER CAM TRAVEL, INDICATING A NONLINEAR RELATIONSHIP. TOTAL SCRAM AVAILABLE IN SAFETY BLOCK IS STILL \$21. CONTROL-ROD TOTAL REACTIVITY WAS MEASURED AT \$4.79, IN GOOD AGREEMENT WITH PREDICTION.

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

*COMPARISON, THEORY AND EXPERIENCE + *EXTRAPOLATION FACTOR + *SHUTDOWN SYSTEM, SECONDARY + CONTROL ROD WORTH + OPERATING EXPERIENCE + REACTIVITY, EXCESS + REACTOR, FAST BURST + TECHNICAL SPECIFICATIONS

9-18131

SEIFRITZ W + STEGEMANN D
AN ON-LINE REACTIVITY METER USING THE TWO-DETECTOR CROSS CORRELATION TECHNIQUE FOR SHUTDOWN REACTIVITY MEASUREMENTS
KERNFORSCHUNGSZENTRUM, KARLSRUHE, GERMANY
CONF-670-602 +. 6 PAGES, 4 FIGURES, 4 REFERENCES, ABSTRACT IN ANS TRANSACTIONS, 10(1), PAGE 283, (JUNE 1967), PAPER PRESENTED AT THE ANNUAL MEETING OF THE AMERICAN NUCLEAR SOCIETY, SAN DIEGO, CALIFORNIA, JUNE 11-15, 1967

PROBLEM - MEASURE SHUTDOWN REACTIVITY. APPROACH - AN ON-LINE REACTIVITY METER WAS DESIGNED FOR MEASUREMENTS OF SHUTDOWN REACTIVITY AS WELL AS FOR OBSERVATION OF THE APPROACH TO CRITICAL DURING LOADING OPERATIONS IN FAST AND THERMAL REACTOR SYSTEMS. THE METER USES THE TWO-DETECTOR CROSS-POWER SPECTRAL-DENSITY METHOD, WHICH HAS THE ADVANTAGE OF SUPPRESSING THE UNCORRELATED NOISE BACKGROUND AND REDUCING THE DETECTOR EFFICIENCY REQUIRED.

*INSTRUMENTATION, FLUCTUATION + *INSTRUMENTATION, SHUTDOWN REACTIVITY + *MEASUREMENT, SUBCRITICALITY + *NOISE ANALYSIS + NOISE CROSS CORRELATION

9-18132

ALSO IN CATEGORY 6

SASTRE C
NOISE MEASUREMENTS IN A REACTOR STARTUP
BROOKHAVEN NATIONAL LABORATORY
CONF-670-602 + BNL-11243 +. 7 PAGES, 2 FIGURES, ABSTRACT IN ANS TRANSACTIONS 10(1), PAGE 216, (JUNE 1967), PAPER PRESENTED AT THE ANNUAL MEETING OF THE AMERICAN NUCLEAR SOCIETY, SAN DIEGO, CALIFORNIA, JUNE 11-15, 1967

PROBLEM - MONITOR REACTOR STABILITY DURING INITIAL STARTUP OF THE HFBR. APPROACH - REACTOR-TRANSFER FUNCTIONS WERE MEASURED WITH NOISE-ANALYSIS TECHNIQUES, USING A WAVE ANALYZER AND MAGNETIC-TAPE TIME-COMPRESSION METHODS. TRANSFER FUNCTION WAS EXAMINED FOR CHANGES IN SHAPE AT VARIOUS POWER LEVELS.

*MEASUREMENT, NOISE + *REACTOR STABILITY + *TRANSFER FUNCTION + HFBR (HIGH FLUX BEAM REACTOR)

9-18133

ALSO IN CATEGORY 18

INTERIM SAFETY EVALUATION REPORT. ARMY PULSE RADIATION FACILITY REACTOR TRANSPORTER
SAFETY OFFICE, OFFICE OF THE CHIEF OF ENGINEERS, DEPARTMENT OF THE ARMY, WASHINGTON, D.C.
ARCHS-67-6 +. 12 PAGES, 4 FIGURES, APRIL 1967

AT-FACTORY INSPECTION REVEALS THAT CERTAIN CIRCUITS PROTECTING AGAINST PHYSICAL DAMAGE TO CORE DID NOT SATISFY THE SINGLE-FAILURE CRITERION. (1) A SINGLE ELECTRICAL OR MECHANICAL FAILURE COULD RESULT IN DROP OF CORE FROM ELEVATED POSITION. (2) A SINGLE ELECTRICAL FAILURE COULD CLOSE THE STORAGE-PIT DOOR ON CORE. (3) A SINGLE ELECTRIC FAILURE COULD DRIVE THE REACTOR

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-18133 *CONTINUED*
AGAINST PIT WALL.

AVAILABILITY - SAFETY OFFICE, OFFICE OF THE CHIEF OF ENGINEERS, DEPARTMENT OF THE ARMY, WASHINGTON, D.C.
20315

*REMOTE MANIPULATING AND VIEWING + *SINGLE FAILURE CRITERION + CONTROL SYSTEM + FAILURE, COMPONENT +
REACTOR, FAST BURST + REACTOR, MILITARY + REACTOR, RESEARCH + SAFETY EVALUATION + TEST, PREOPERATIONAL

9-18138 ALSO IN CATEGORIES 12 AND 17
INDIAN POINT PROPOSED CHANGE IN BORON INJECTION SYSTEM TEST INTERVAL
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC., NEW YORK
2 PAGES, JULY 10, 1967, DOCKET NO. 50-3, INDIAN POINT I

REQUESTS INCREASE IN TEST INTERVAL FROM MONTHLY TO SEMIANNUALLY ON THE BASIS OF OPERATING
EXPERIENCE AND THE INHERENT RELIABILITY OF THE BORON SYSTEM. NEAR END OF CORE LIFE, THE
INCREASED BORON CONCENTRATION DUE TO TESTING HAS AN ADVERSE EFFECT ON REACTOR OPERATIONS, AS
SEVERAL HUNDRED PPM OF BORON ARE ADDED TO THE COOLANT.

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

*OPERATING EXPERIENCE + *SHUTDOWN SYSTEM, SECONDARY + *TEST INTERVAL + *TEST, SYSTEM OPERABILITY + BORON +
INDIAN POINT I + POISON, SOLUBLE + REACTOR, PRESSURIZED WATER + TECHNICAL SPECIFICATIONS

9-18157 ALSO IN CATEGORY 17
UCC-ND PROPOSED CHANGE 5. HIGH FLUX REVERSE SET POINT INCREASE
UNION CARBIDE CORPORATION, TUXEDO, NEW YORK
6 PAGES, 1 FIGURE, AUGUST 17, 1966, DOCKET 50-54

UNION CARBIDE REQUESTS CHANGE IN HIGH-FLUX-REVERSE SET-POINT OF LOG-N FROM 115 TO 125% FULL
POWER. FULL POWER IS 5 MW. CHAMBER GIVES AN APPARENT 15% INCREASE IN POWER DUE TO XENON
GROWTH. ANALYSIS AT A FLOW RATE OF 2100 GPM (NORMAL FLOW IS 2200) SHOWS NO LOCALIZED BOILING
AT 125% FULL POWER. A TRIP ON THE CORE TEMPERATURE DIFFERENTIAL ACTUATES AN AUDIBLE AND
VISUAL ALARM WHEN DROP EXCEEDS 16 F, WHICH WOULD BE CAUSED BY EITHER 102% POWER OR 2155-GPM
COOLANT FLOW.

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

*INSTRUMENTATION, POWER RANGE + *INSTRUMENTATION, SWITCH + BURNOUT HEAT FLUX + HOT SPOT +
INSTRUMENTATION, ABNORMAL INDICATION + INSTRUMENTATION, TEMPERATURE + REACTOR, POOL TYPE +
REACTOR, RESEARCH + TECHNICAL SPECIFICATIONS + XENON

9-18159 ALSO IN CATEGORY 17
HADDAM NECK PROPOSED CHANGE 1. NO REDUCTION IN HIGH-STEAM-FLOW TRIP SETPOINT AT LOW POWER
CONNECTICUT YANKEE ATOMIC POWER COMPANY, BOSTON, MASS.
2 PAGES, JULY 31, 1967, DOCKET NO. 50-213, PROPOSED CHANGE TO TECHNICAL SPECIFICATION

HADDAM NECK REQUESTS ELIMINATION OF REQUIREMENT THAT HIGH-STEAM-FLOW TRIP BE LOWERED FROM 140%
NORMAL FULL POWER FLOW TO 65% AT POWER LEVELS BELOW 15% FULL POWER. THE TRIP PROVIDES
PROTECTION AGAINST LARGE STEAM-LINE RUPTURE. CALCULATIONS SHOW A MINIMUM 200% STEAM FLOW
EVEN AT ZERO POWER.

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

*INSTRUMENTATION, FLOW + ACCIDENT, STEAM LINE RUPTURE + HADDAM NECK + REACTOR, PRESSURIZED WATER +
TECHNICAL SPECIFICATIONS

9-18160 ALSO IN CATEGORY 17
HADDAM NECK CHANGE 2. BYPASSING OF THE CERTAIN TRIPS BELOW 10% FULL POWER
DIVISION OF REACTOR LICENSING, AEC
2 PAGES, AUGUST 28, 1967, DOCKET 50-213, CHANGE TO TECHNICAL SPECIFICATIONS

ORL ALLOWS BYPASSING OF THE VARIABLE LOW-PRESSURE AND LOW-COOLANT-FLOW TRIPS BELOW 10% FULL
POWER, AS ORIGINALLY INTENDED. VLP TRIP MAY BE BYPASSED BECAUSE ITS PROTECTION IS NOT NEEDED
BELOW 10% POWER. LOW-COOLANT-FLOW TRIP MAY BE BYPASSED BECAUSE NATURAL CIRCULATION COULD
COOL THE CORE IF NECESSARY BELOW 10% POWER.

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

*INSTRUMENTATION, FLOW + *INSTRUMENTATION, PRESSURE + EMERGENCY COOLING CONSIDERATIONS + HADDAM NECK +
REACTOR, PRESSURIZED WATER + TECHNICAL SPECIFICATIONS

9-18168 ALSO IN CATEGORY 17
INDIAN POINT REQUESTS MODIFICATION OF CHANGE 24 - COOLANT FLOW RATE
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-18168 *CONTINUED*
2 PAGES, AUGUST 29, 1966, DOCKET NO. 50-3, INDIAN POINT 1

CHANGE 24 (JULY 27, 1966) DELETED COOLANT-FLOW LIMIT FOR 45 DAYS TO ALLOW FLOW RATE TEST. ON AUGUST 2, A LEAK IN BOILER 14 MADE TEST IMPOSSIBLE UNTIL FIXED. INDIAN POINT ASKS THAT CHANGE 24 BE EFFECTIVE UNTIL NOVEMBER 14, 1966, OR FOR 45 DAYS WITH ALL PUMPS OPERATING, WHICHEVER COMES FIRST. TESTS IN MAY INDICATED THAT THE TEMPERATURE-INSTRUMENT CALIBRATION HAD SHIFTED, SO THE TEMPERATURE RISE AT POWER IS LESS THAN PREDICTED, THEREFORE COOLANT FLOW IS PROBABLY MUCH HIGHER THAN THE 55 MILLION LB/HR RECENTLY CALCULATED (WHICH MADE CHANGE 24 NECESSARY).

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

*FAILURE, TUBING + *INSTRUMENTATION, ABNORMAL INDICATION + INDIAN POINT 1 + INSTRUMENTATION CALIBRATION + INSTRUMENTATION, TEMPERATURE + REACTOR, POWER + REACTOR, PRESSURIZED WATER + STEAM GENERATOR + TECHNICAL SPECIFICATIONS

9-18172
WEAVER LE + VANASSE RE
STATE VARIABLE FEEDBACK CONTROL OF MULTIREGION REACTORS
UNIVERSITY OF ARIZONA, TUCSON, ARIZONA
8 PAGES, 7 FIGURES, NUCLEAR SCIENCE AND ENGINEERING 29(2) PAGES 264-271 (AUGUST 1967)

PRESENTS AN APPROACH TO REACTOR CONTROL THAT IS A RESULT OF MODERN CONTROL THEORY, AND IS BASED ON THE CONTROL POLICY OF FEEDING BACK ALL THE STATE VARIABLES THROUGH CONSTANT GAIN ELEMENTS. THE VALUES OF THESE ELEMENTS OR FEEDBACK COEFFICIENTS DEPEND UPON THE DESIRED SYSTEM DYNAMICS, WHICH IS SPECIFIED IN TERMS OF THE SYSTEM TRANSFER FUNCTION. THROUGH STATE-VARIABLE FEEDBACK DESIGN, THE DESIRED SYSTEM DYNAMICS CAN BE REALIZED EXACTLY. SIMULATION STUDIES HAVE SHOWN THAT, FOR THE MODELS CONSIDERED, THE SENSITIVITY OF PARAMETER VARIATIONS WITH RESPECT TO SYSTEM DYNAMICS WAS RELATIVELY LOW. SINCE THIS METHOD DEPENDS ON FEEDING BACK ALL THE SYSTEM VARIABLES, IT IS PARTICULARLY AMENABLE TO THE CONTROL OF THE MULTIREGION REACTORS. WITH THE RECENT EMPHASIS ON SPATIAL KINETICS, THIS METHOD OF REACTOR CONTROL IS THE LOGICAL NEXT STEP. CONSIDERATION IS GIVEN TO THE CASE WHEN ALL THE STATE OR SYSTEM VARIABLES ARE NOT AVAILABLE FOR MEASUREMENT.

REACTOR CONTROL + SIMULATION + THEORETICAL INVESTIGATION + TRANSFER FUNCTION

9-18173 ALSO IN CATEGORY 10
MOINEREAU M
SYSTEMS OF DATA PROCESSING EMPLOYED FOR MONITORING AND OPERATING NUCLEAR POWER STATIONS
4 PAGES, 3 FIGURES, TECH. MOD. 57, PAGE 403 THRU 406, (AUGUST-SEPT. 1965), IN FRENCH

EXAMPLES OF DATA-PROCESSING-SYSTEMS APPLICATIONS IN EXPERIMENTAL NUCLEAR REACTORS ARE PRESENTED, AND COMPUTER APPLICATIONS IN NUCLEAR POWER STATIONS ARE DISCUSSED. FUNCTIONS PROVIDED BY THESE SYSTEMS INCLUDE SURVEILLANCE OF ANALOG MEASUREMENTS OR ALL-OR-NOTHING CHANNELS (FAILURE OR STATE CONTACTS) AND PROCESSING OF BURST-SLUG DETECTION. STANDARD SYSTEMS OF DATA PROCESSING FOR MONITORING AND AUTOMATING NUCLEAR POWER STATIONS ARE DESCRIBED.

DATA PROCESSING + ELECTRIC POWER, NORMAL + INSTRUMENTATION, DETECTION FAILED FUEL ELEMENT + INSTRUMENTATION, SURVEILLANCE

9-18174
BYRD JS
SOLID-STATE CIRCUIT FOR A REACTOR PERIOD SIMULATOR
SAVANNAH RIVER LABORATORY, AIKEN, S. C.
DP-1119 +. 8 PAGES, 1 FIGURE, 2 REFERENCES, JULY 1967

A SOLID-STATE CIRCUIT WAS CONSTRUCTED THAT PROVIDES AN EXPONENTIALLY RISING OR FALLING ELECTRIC CURRENT FROM 10 TO THE MINUS 12TH TO 0.001 AMP. THIS CIRCUIT IS USED IN A CONVENIENT AND RELIABLE PERIOD SIMULATOR THAT TESTS THE ELECTRONIC RESPONSE OF INSTRUMENTS MONITORING THE NEUTRON FLUX LEVEL IN A REACTOR.

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

INSTRUMENTATION, CURRENT + INSTRUMENTATION, TESTING + TEST, INSTRUMENT RESPONSE

9-18203 ALSO IN CATEGORY 8
DEMUTH HB + DUERRE KH + SCHILLING FP + STILES CF
SYSTEM DYNAMICS STUDY FOR THE ULTRA HIGH TEMPERATURE REACTOR EXPERIMENT
LOS ALAMOS SCIENTIFIC LAB., N. MEXICO
LA-3561 +. 260 PAGES, FIGURES, AUGUST 30, 1966

PROBLEM - STUDY THE DYNAMICS OF THE UHTREX SYSTEM. APPROACH - DETAILED MATHEMATICAL MODELS OF THE SYSTEM WERE DEVELOPED AND USED IN DIGITAL COMPUTER PROGRAMS IN BOTH THE TIME DOMAIN AND FREQUENCY DOMAIN. THE REPORT GIVES CLEAR AND DETAILED DESCRIPTIONS OF THE MODELS. THE PROGRAMS WERE USED TO EXAMINE SYSTEM STABILITY, STEADY-STATE OPERATING CONDITIONS, AND VARIOUS ACCIDENT TRANSIENTS.

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-18203 *CONTINUED*

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

*ACCIDENT ANALYSIS + *REACTOR DYNAMICS + *REACTOR STABILITY + COMPUTER PROGRAM + COMPUTER, DIGITAL + MATHEMATICAL STUDY + REACTOR, GAS COOLED + UHTREX (ULTRA HIGH TEMP. REACTOR EXPERIMENT)

9-18204

SIMON WA + VAN HOWE KR

GASP-II. A COMPUTER CODE FOR BURNUP-INDEPENDENT POWER SHAPING BY FUEL ZONING INCORPORATING A POISON SEARCH GENERAL DYNAMICS CORP., SAN DIEGO, CALIFORNIA. GENERAL ATOMIC DIVISION GA-6689 +. 142 PAGES, FIGURES, REFERENCES, OCTOBER 11, 1965

CONTAINS THE DERIVATION OF THE CRITERIA WHICH MUST BE MET TO ACHIEVE A STABLE POWER DISTRIBUTION WITH ANY DESIRED SHAPE CORE, AND A DESCRIPTION OF THE COMPUTER CODE GASP-II, WHICH EMPLOYS THESE CRITERIA TO ACHIEVE ANY DESIRED BURNUP-INVARIANT POWER DISTRIBUTION.

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

COMPUTER PROGRAM + IN CORE MEASUREMENT + POWER DISTRIBUTION

9-18205

SPARKS DW + TESSIER JH

STABILITY IMPROVEMENT FOR NUCLEAR REACTOR AUTOMATIC CONTROL SYSTEM

FRENCH PATENT 1-395-221 + ORNL-TR-1455 +. 14 PAGES, 4 FIGURES, MAY 1964

THE INVENTION CONCERNS AUTOMATIC CONTROL SYSTEMS FOR REACTORS, AND, MORE PARTICULARLY, A PROCESS FOR IMPROVING THEIR STABILITY. IT HAS THE OBJECT OF ESTABLISHING A CONTROL PROCESS PERMITTING A SAFE COMMAND OF VARIATIONS OF THE POWER LEVEL OF THE REACTOR OVER SHORT PERIODS. (PATENT APPLICATION FILED IN THE U.S.A. ON 5/21/63 UNDER NO. 282.181).

AVAILABILITY - JOHN CRERAR LIBRARY, 35 WEST 33RD. ST., CHICAGO, ILLINOIS, 60616

PATENT + REACTOR CONTROL + REACTOR STABILITY

9-18206

CAMBE H + CHARETON H + LEVALLET H + PAZIAUD A

RAPSDIE SIMULATOR, PURPOSE AND DESIGN

CENTRE D-ETUDES NUCLEAIRES, CADARACHE, FRANCE

10 PAGES, 11 FIGURES, ENERGIE NUCLEAIRE 8(2), PAGE 94 THRU 103, (MARCH-APRIL 1966), IN FRENCH

THE SIMULATOR (BRIEFLY DESCRIBED HERE) HAS TWO DISTINCT SECTIONS - (1) A CONTROL ROOM INCLUDING A FULL-SCALE DRAWING OF THE RAPSDIE BOARD, ONE CABINET WITH SAFETY CIRCUITS, METERS AND VARIOUS RELAYS, ONE MONITORING DESK FOR TECHNICAL OPERATORS SCHOOLS. (2) AN ENGINE ROOM, WHERE THE REACTOR ITSELF IS SIMULATED WITH ITS THERMAL SECTION (CORE, HEAT EXCHANGERS, PIPE-SYSTEM LAGGING) AS WELL AS THE NEUTRON SECTION. THE CONTROL AND MEASUREMENT CIRCUITS ARE ALSO SIMULATED. SEVERAL SIMULATION PROGRAMS WERE CARRIED OUT AT FIRST FOR A CRITICAL STUDY OF THE DESK DESIGN, AND THEN FOR STUDIES ON STARTING PROCEDURE. THE MOST IMPORTANT RESULTS ARE GIVEN. THE DIFFERENT POSSIBILITIES OF USING THE SIMULATOR ARE THEN REVIEWED, ESPECIALLY A STUDY OF THE CONTROL OF AIR FLOW IN THE FINAL EXCHANGER, THE STUDY OF A POWER STABILIZER, AND STUDIES ON BREAKDOWNS.

COMPUTER PROGRAM + COMPUTER, ANALOG + SIMULATION

9-18207

PRESKITT CA + BROWN JR + NEPHEW EA + VAN HOWE KR

INTERPRETATION OF PULSED SOURCE EXPERIMENTS IN THE PEACH BOTTOM HTGR

OAK RIDGE NATIONAL LAB., TENN.

ORNL-TM-1646 +. 47 PAGES, 4 FIGURES, 7 TABLES, 21 REFERENCES, SEPTEMBER 20, 1966, ABSTRACT IN ANS TRANSACTIONS 9(2), PAGE 526, PAPER PRESENTED AT THE 1966 WINTER MEETING, PITTSBURGH, PA., OCTOBER 30-NOVEMBER 3, 1966

A GENERAL DESCRIPTION OF PULSED-SOURCE EXPERIMENTS WAS DEVELOPED FROM THE TIME-DEPENDENT REACTOR EQUATIONS. THE INTERPRETATION OF EXPERIMENTS IS DISCUSSED, TAKING INTO ACCOUNT DIFFERENCES IN SHAPE BETWEEN THE FUNDAMENTAL PROMPT AND DELAYED MODES AND THE INFLUENCE OF PROMPT AND DELAYED HARMONIC MODES. USING A GENERAL REACTOR MODEL, THE CONDITIONS WERE DERIVED UNDER WHICH THE GARELIS-RUSSELL TECHNIQUE IS MODALLY INDEPENDENT AND UNDER WHICH THE GOZANI BRACKETING PROCEDURE IS VALID. PULSED-SOURCE DATA OBTAINED DURING THE ZERO-POWER COMMISSIONING PROGRAM OF THE PEACH BOTTOM REACTOR WERE INTERPRETED IN TERMS OF REACTIVITY. USING AN IN-HOUR ANALYSIS, GOOD ACCURACY WAS OBTAINED BY INCORPORATING DETAILED CALCULATIONS INTO THE INTERPRETATION. IT WAS SHOWN THAT THE SPACE-DEPENDENT VARIATION OF THE REACTIVITY DEDUCED FROM MODIFIED PULSED SOURCE TECHNIQUES MAY EXCEED A FACTOR OF TEN IN SYSTEMS LIKE THE PEACH BOTTOM REACTOR.

EXPERIMENT, GENERAL + PEACH BOTTOM 1 + PULSED NEUTRON TECHNIQUE + REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED + THEORETICAL INVESTIGATION

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-18208 ALSO IN CATEGORY 7
EPLER EP

OPERATING EXPERIENCE WITH SYSTEMS DESIGNED FOR MANEUVERABILITY AND HIGH AVAILABILITY
OAK RIDGE NATIONAL LAB., TENN.

ORNL-P-3011 + CONF-670314-3 +. 9 PAGES, 1967, PRESENTED AT LIQUID METAL INSTRUMENTATION AND CONTROL SYMPOSIUM, IDAHO FALLS, IDAHO

THE REQUIREMENT OF MANEUVERABILITY IN HIGH-PERFORMANCE REACTORS LED TO THE DEVELOPMENT OF A SECOND GENERATION OF REACTOR CONTROL AND PROTECTIVE SYSTEMS AT ORNL. THESE SYSTEMS, DESIGNED FOR GENERAL APPLICATION, HAVE BEEN INSTALLED IN THE MSRE, A HIGH-TEMPERATURE MOLTEN-SALT REACTOR, THE ABERDEEN PULSE REACTOR (A FAST-BURST REACTOR), AND IN THE HFIR (A 100-MW (T) HIGH-FLUX PRODUCTION REACTOR). THE SYSTEMS APPLIED TO THE HFIR CONSIST OF THREE WIDE-RANGE STARTUP CHANNELS, THREE REGULATING CHANNELS, AND A PROTECTIVE SYSTEM CONSISTING OF THREE SAFETY CHANNELS. ALL USE SOLID-STATE COMPONENTS AND ARE MODULAR IN CONSTRUCTION. EXPERIENCE HAS BEEN GAINED WITH THIS EQUIPMENT DURING LOW-POWER OPERATION, WHICH BEGAN A YEAR AGO, AND FULL-POWER OPERATION OVER THE PAST SIX MONTHS.

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

HFIR (HIGH FLUX ISOTOPE REACTOR) + INSTRUMENTATION, PROTECTIVE + MSRE (MOLTEN SALT REACTOR EXPERIMENT) + OPERATING EXPERIENCE + REACTOR CONTROL + REACTOR, MOLTEN SALT + REACTOR, PULSED + REACTOR, RESEARCH + REACTOR, TEST

9-18283
TEST REPORT FOR PROMPT BURST CRITICAL ASSEMBLY MACHINE SUPER KUKLA
BALDWIN-LIMA-HAMILTON CORP., PHILADELPHIA, PA.
UCRL-13137 +. 306 PAGES, FIGURES, TABLES, OCTOBER 9, 1964

DESCRIBES SHOP TESTS OF THE SUPER KUKLA SHIM ROD, BURST ROD, AND SCRAM-SYSTEM MACHINERY AND DEVICES FOR INSTALLING OR REPLACING ALL OR PART OF ITS FUEL. (SUPER KUKLA IS A DEVICE FOR GENERATING SHORT BURSTS OF NEUTRONS. IT CONSISTS OF TWO SEMICYLINDERS OF U-10 W/O MO ALLOY BROUGHT TOGETHER BY A HYDRAULIC PNEUMATIC SYSTEM. SIX SHIM RODS ADJUST CRITICALITY. SIX BURST RODS IN THE LOWER SEMICYLINDER ARE INSERTED TO PRODUCE BURSTS, AFTER WHICH THE MACHINERY QUICKLY SEPARATES THE SEMICYLINDERS AND WITHDRAWS THE BURST RODS.) ALL MACHINERY WAS AGAIN TESTED AFTER REASSEMBLY AT TEST SITE AND MET DESIGN CRITERIA.

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

EQUIPMENT, GENERAL + MEASUREMENT, STRAIN GAGE + REACTOR, FAST BURST + TEST, COMPONENT + TEST, CONTROL ROD DRIVE + TEST, SYSTEM OPERABILITY

9-18317 ALSO IN CATEGORY 17
INDIAN POINT 1 CHANGE 27. MINIMUM NUMBER OF POWER RANGE DETECTORS
AEC, DIVISION OF REACTOR LICENSING, WASHINGTON, D.C.
5 PAGES, MAY 15, 1967, DOCKET NO. 50-3

DRL AUTHORIZES OPERATION WITH A MINIMUM OF 6 DETECTORS FURNISHING OVER-POWER PROTECTION AT 110% FULL POWER. 18 DETECTORS AROUND THE CORE (IN 3 PLANES) ARE CONNECTED TO GIVE 9 (2 OUT OF 3) SIGNALS AND ONE CORE-MIDPLANE SIGNAL FOR FLUX-FLOW COMPARISON. SAFETY EVALUATION CONSIDERS AXIAL AND RADIAL POWER SHIFTS AND FLUX FLOW PROTECTION.

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

*INSTRUMENTATION, POWER RANGE + *POWER DISTRIBUTION + INDIAN POINT 1 + INSTRUMENTATION, COINCIDENT + REACTOR, PRESSURIZED WATER + SAFETY EVALUATION + TECHNICAL SPECIFICATIONS

9-18360
GIORDANO P + MATHIS A + SCANDOLLARI G
THE DESIGN OF A NONLINEAR REACTOR CONTROL SYSTEM
COMITATO NAZIONALE PER L'ENERGIA NUCLEARE, ROME, ITALY
10 PAGES, 17 FIGURES, 5 REFERENCES, IEEE TRANS. ON NUCLEAR SCIENCE NS12(2), PAGES 2-11 (APRIL 1965)

DESCRIBES THE DESIGN PROCEDURE FOR A NONLINEAR REACTOR CONTROL SYSTEM. IT CONTAINS TWO NONLINEARITIES, SEPARATED BY A LINEAR SECTION (A DEAD BAND, NORMALLY USED TO REDUCE THE NOISE EXCITATION OF THE CONTROL SYSTEM, AND A GEAR BACKLASH, WHICH IN THIS CASE IS PARTICULARLY IMPORTANT, DUE TO THE FACT THAT THE CONTROL ELEMENTS ARE CYLINDERS WITH LIMITED EFFECTIVE ANGULAR RANGE). THE TYPE OF ELECTRICAL MOTORS WAS ALSO DEFINED (SLO-SYN MOTORS, WHICH CAN OPERATE AS SYNCHRONOUS OR STEPPING MOTORS). THE WORK WAS DEVELOPED USING ANALOG AND ANALYTICAL METHODS IN PARALLEL. THE FINAL CONTROL SCHEME (A VELOCITY SERVO WITH STEPPING MOTORS) WAS THOROUGHLY TESTED ON THE ANALOG COMPUTER WITH NOISY INPUTS AND THEORETICALLY STUDIED WITH A DESCRIBING-FUNCTION METHOD EXTENDED TO THE CASE OF SYSTEMS WITH MULTIPLE NONLINEARITIES CONNECTED BY LINEAR SECTIONS.

ANALOG SIMULATION + ANALYTICAL MODEL + REACTOR CONTROL + THEORETICAL INVESTIGATION + TRANSFER FUNCTION

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-18361
KJAERHEIM G
MEASURING FUEL ROD CENTRE TEMPERATURES
INSTITUTE FOR ATOMENERGI, NORWAY
5 PAGES, 8 FIGURES, 1 TABLE, EURONUCLEAR 2(2), PAGES 72-76 (FEBRUARY 1965)

THE CENTRAL UD2 FUEL TEMPERATURE WAS MEASURED AT HBWR. THIS ARTICLE DESCRIBES THE MECHANICAL DESIGN OF THE THERMOCOUPLES AND THE INSTALLATIONS TECHNIQUE USED. MEASUREMENTS WERE MADE USING W/RE AND W/W 26 PERCENT RE THERMOCOUPLES ON THREE INSTRUMENTED FUEL ASSEMBLIES. THE RESULTS AGREE FAIRLY WELL WITH CALCULATED TEMPERATURES, WITHIN THE RANGE IN WHICH THERMAL CONDUCTIVITY DATA ARE AVAILABLE. WHEN THE REACTOR IS OPERATING AT STEADY STATE, THE SIGNALS FROM THE CENTRAL OXIDE THERMOCOUPLES ARE MORE UNSTABLE THAN SIGNALS FROM OTHER THERMOCOUPLES IN THE REACTOR.

IN CORE MEASUREMENT + INSTRUMENTATION, IN CORE + INSTRUMENTATION, TEMPERATURE + MEASUREMENT, TEMPERATURE

9-18362
SHA WT + BONILLA CF
OUT-OF-PILE STEAM-FRACTION DETERMINATION BY NEUTRON-BEAM ATTENUATION
COLUMBIA UNIVERSITY, NEW YORK
7 PAGES, 8 FIGURES, 13 REFERENCES, NUCLEAR APPLICATIONS 1(1), PAGES 69-73 (FEBRUARY 1965)

A NEW METHOD FOR DETERMINING THE STEAM (VOID) FRACTION IN A BOILING-WATER OUT-OF-PILE TEST SECTION WAS THEORETICALLY ANALYZED AND EXPERIMENTALLY VERIFIED WITH AIR VOIDS AT ROOM TEMPERATURE. THE METHOD UTILIZED THE COMBINED MODERATION AND ATTENUATION OF NEUTRONS FROM AN SB-BE SOURCE BY THE BOILING WATER IN WHICH BORON WAS DISSOLVED. THE METHOD IS APPLICABLE TO MULTI-ROD TEST SECTIONS WITH VOID FRACTIONS UP TO 25% OR MORE, AND IS SENSITIVE ENOUGH TO DETECT VOID FRACTIONS AS SMALL AS 3% OR LESS.

*OUT OF PILE LOOPS AND EXPERIMENTS + *STEAM + *VOID COEFFICIENT + ANTIMONY + BERYLLIUM + BORON

9-18363
HIKIDO K + BRYNSVOLD GV
EXCURSION-LIMITING FUSE FOR THE MIXED SPECTRUM CRITICAL ASSEMBLY
GENERAL ELECTRIC COMPANY, SAN JOSE, CALIF.
6 PAGES, 8 FIGURES, 2 REFERENCES, NUCLEAR APPLICATIONS 1(1), PAGES 33-38 (FEBRUARY 1965)

AN EXCURSION-LIMITING FUSE HAS BEEN INCORPORATED INTO THE DESIGN OF THE MIXED SPECTRUM CRITICAL ASSEMBLY. THIS FUSE PROVIDES AN ULTIMATE SHUTDOWN MECHANISM, BACKING UP THE SAFETY SYSTEM AND PREVENTING CLAD PERFORATION. THE UNIQUE AND IMPORTANT FEATURES OF THIS FUSE ARE - (1) THE LOAD-CARRYING FISSIONABLE MATERIAL IS SUPPORTED IN A SIMPLE MANNER THAT PROVIDES EXCELLENT THERMAL ISOLATION FROM THE SURROUNDINGS AND ADEQUATE SPACE TO DEFORM WITHOUT INTERFERENCE WITH THE DECOUPLING ACTION. (2) THE PORTION OF THE COUPLING DEVICE WHERE THE MECHANICAL SEPARATION TAKES PLACE IS LOCATED AWAY FROM THE LOAD-CARRYING FISSIONABLE MATERIAL WHICH TRIGGERS THE ACTION. TESTS SHOW THAT THIS FUSE DOES NOT RELEASE THE FUEL ELEMENTS DURING NORMAL OPERATION BUT THAT IT WILL ACTUATE IN THE EVENT OF AN EXCURSION.

EXCURSION, LARGE + REACTOR FUSE + SHUTDOWN MECHANISM, SELF + TEST, SYSTEM OPERABILITY

9-18364
BENOIT P + PHILIS C
CALIBRATED RADIOACTIVE SOURCES--ABSOLUTE MEASUREMENTS USING A 4-PI BETA-GAMMA APPARATUS
COMMISSARIAT A L ENERGIE ATOMIQUE, SACLAY
CEA-R-2711 +. 128 PAGES, MARCH 1965, IN FRENCH

THE PRINCIPLE OF THE STANDARDIZATION OF THE RADIOISOTOPES BY THE 4-PI BETA-GAMMA COINCIDENCE METHOD IS REVIEWED. SOME THEORETICAL EXAMPLES ARE GIVEN, EMPHASIZING INSTRUMENTAL COINCIDENCES AND THEIR CORRECTIONS. THE APPARATUS IS DESCRIBED, AND THE CHOICE OF EXPERIMENTAL CONDITIONS FOR MANY ISOTOPES IS DISCUSSED. RESULTS ARE GIVEN AND DISCUSSED. THE PREPARATION OF THE SOURCE IS DESCRIBED.

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

*INSTRUMENTATION CALIBRATION + *INSTRUMENTATION, COINCIDENT + *SOURCE, RADIATION + FRANCE + RADIOISOTOPE

9-18365
SEIDEN N
RELIABILITY THROUGH REDUNDANCY
GENERAL PRECISION AEROSPACE, LITTLE FALLS, N.J.
2 PAGES, 1 FIGURE, 1 REFERENCE, ELECTRONIC INDUSTRIES 24(7), PAGES 65-6 (JULY 1965)

COVERS THE BASIC RELATIONSHIPS USED IN RELIABILITY. POINTS TO AN APPROXIMATION (EQUATION 10) WHICH CAN BE MADE TO GREATLY SIMPLIFY THE EVALUATION OF REDUNDANCY.

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-18365 *CONTINUED*
*INSTRUMENTATION, REDUNDANT + *RELIABILITY ANALYSIS

9-18366 ALSO IN CATEGORY 15
HOLROYD RA + COLLIER KG + THIELF AW
A CHEMICAL METHOD TO DETERMINE THE FAST-NEUTRON FRACTION OF THE DOSE RATE IN A NUCLEAR REACTOR
ATOMICS INTERNATIONAL, CANOGA PARK, CALIF.
2 PAGES, 1 TABLE, 5 REFERENCES, ANS TRANS. 10(1), PAGES 54-55, 1967 ANNUAL MEETING ANS, SAN DIEGO, CALIF.,
JUNE 11-15, 1967

DESCRIBES A CHEMICAL METHOD FOR DETERMINING DOSE RATE AND FAST-NEUTRON FRACTION OF THE DOSE
RATE TO WHICH A MATERIAL IS EXPOSED. THE PRINCIPLE IS THE MEASUREMENT OF THE RADIOLYTIC
HYDROGEN YIELD FROM TWO SUBSTANCES - CYCLOHEXANE AND BENZENE.

CHEMICAL ANALYSIS + DOSE MEASUREMENT, EXTERNAL + FAST NEUTRON

9-18367
JACKSON CN
REGENERATIVE IN-CORE THERMAL-NEUTRON DETECTOR
BATTELLE-NORTHWEST LABORATORY
2 PAGES, 1 FIGURE, 2 REFERENCES, ANS TRANS. 10(1), PAGES 310-11, 1967 ANNUAL MEETING OF AMERICAN NUCLEAR
SOCIETY, SAN DIEGO, CALIF., JUNE 11-15, 1967

TO ACHIEVE SUSTAINED SENSITIVITY DURING EXTENDED USE, A REGENERATIVE NEUTRON CHAMBER IS BEING
DEVELOPED. THE REGENERATIVE COATING OF 90% U-234 AND 10% U-235 PRODUCES A NEARLY CONSTANT
SIGNAL IN AN EXPERIMENTAL PERFORMANCE EQUIVALENT TO AN EXPOSURE OF ABOUT 10 YEARS IN A
COMMERCIAL REACTOR.

IN CORE MEASUREMENT + INSTRUMENTATION, IN CORE + INSTRUMENTATION, NUCLEAR + THERMAL NEUTRON + URANIUM

9-18368
ZANOT JR
AS FOUND RELIABILITY OF GETR SAFETY SYSTEMS
GENERAL ELECTRIC, VALLECITOS
2 PAGES, 1 FIGURE, ANS TRANS. 10(1), PAGES 325-6, 1967 ANNUAL MEETING OF AMERICAN NUCLEAR SOCIETY, SAN
DIEGO, CALIF., JUNE 11-15, 1967

DESCRIBES HOW RELIABILITY ANALYSIS WAS APPLIED TO THE GENERAL ELECTRIC TEST REACTOR AT
PLEASANTON, CALIF. CONSEQUENTLY, THE REACTOR-INLET-TEMPERATURE INSTRUMENTATION WAS REPLACED
WITH A MORE RELIABLE UNIT. ALSO, THE PRESSURE-CONTROL INSTRUMENTATION IS SCHEDULED FOR
REPLACEMENT BECAUSE THE PREDICTED FAILURE RATE WAS UNECONOMICAL.

GETR (GENERAL ELECTRIC TEST REACTOR) + INSTRUMENTATION, PRESSURE + INSTRUMENTATION, TEMPERATURE +
REACTOR, TEST + RELIABILITY ANALYSIS

9-18369
CREEK KO
MULTIPURPOSE REACTOR FUEL CHANNEL MONITORING SYSTEM
GENERAL ELECTRIC, RICHLAND
1 PAGE, ANS TRANS. 10(1), PAGES 327, 1967 ANNUAL MEETING OF AMERICAN NUCLEAR SOCIETY, SAN DIEGO CALIF.,
JUNE 11-15, 1967

A MONITORING SYSTEM, COMPOSED OF INTERCHANGEABLE PROBES AND A DRIVE MECHANISM, WAS DEVELOPED
FOR INTERNAL INSPECTION OF THE 53-FOOT-LONG, 2.7-IN.-DIAMETER ZIRCALOY PROCESS TUBES OF THE
REACTOR AT HANFORD. SEPARATE PROBE HEADS WERE DESIGNED TO MONITOR THE PROCESS TUBES FOR
POSSIBLE MECHANICAL DAMAGE, CORROSION, CREEP, AND HYDRIDING.

HANFORD PRODUCTION REACTOR + INSTRUMENTATION, FUEL SCANNING + INSTRUMENTATION, IN CORE +
REACTOR, PRODUCTION

9-18370
ROSENTHAL HR + SZYMOWIAK FA + GEORGE CH
HYDROGEN REACTIVITY CONTROL EXPERIMENT - PERFORMANCE AND RESULTS
MARTIN COMPANY
2 PAGES, ANS TRANS. 10(1), PAGES 366-7, 1967 ANNUAL MEETING OF AMERICAN NUCLEAR SOCIETY, SAN DIEGO,
CALIF., JUNE 11-15, 1967

HYDROGEN REACTIVITY CONTROL, A NEW CONCEPT OF REACTOR CONTROL IS UNIQUE IN THAT IT IS
MECHANICALLY PASSIVE. THIS PAPER DESCRIBES THE IMPLEMENTATION, OPERATING POINTS, AND RESULTS
OF AN EXPERIMENT TO DEMONSTRATE THE LOAD-FOLLOWING CAPABILITIES OF SUCH A CONTROL SYSTEM.
THE EXPERIMENT DEMONSTRATED THAT THE HYDROGEN-REACTIVITY CONTROL SYSTEM EFFECTED STABLE
CONTROL OF A NUCLEAR REACTOR BY RESPONDING TO VARYING LOAD DEMANDS AND TO REACTOR
PERTURBATIONS SUCH AS WOULD BE EXPERIENCED IN REACTOR BURNUP THROUGHOUT CORE LIFETIME.

HYDROGEN + REACTIVITY EFFECT + REACTOR CONTROL

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-18371
TAKAMATSU S + MONTA K
COMPUTER CONTROL OF RESEARCH REACTOR TTR-1
NAIG NUCLEAR RESEARCH LABORATORY, JAPAN + TOKYO SHIBURA ELECTRIC, INC.
2 PAGES, 2 REFERENCES, ANS TRANS. 10(1), PAGES 368-369, 1967 ANNUAL MEETING OF AMERICAN NUCLEAR SOCIETY,
SAN DIEGO, CALIF., JUNE 11-15, 1967

THIS SYSTEM IS COMPOSED OF A MAIN COMPUTER (TOSBAC-3225A), A SATELLITE COMPUTER (ALARM SCANNER), AN OUTPUT DEVICE, AND A CONSOLE. IN THIS SYSTEM, THE CONTROL PANEL, INSTRUMENTS, AND CONTROL-ROD SYSTEM ARE THE SAME AS WERE ALREADY IN USE. ITS OPERATION INCLUDES THE FOLLOWING STAGES - (1) SELF-CHECK OF COMPUTER SYSTEM, (2) REACTOR INSTRUMENT CHECK, AND CALIBRATION, (3) ALARM AND SCRAM-FUNCTION CHECK, (4) CONTROL-ROD-DRIVE-MECHANISM CHECK, (5) REACTOR OPERATIONS, (6) SHUTDOWN CHECK. THE REACTOR IS NOW BEING OPERATED SATISFACTORILY BY THIS SYSTEM.

COMPUTER, DIGITAL + CONTROL, COMPUTER + INSTRUMENTATION, CONTROL + JAPAN + REACTOR CONTROL + REACTOR, RESEARCH

9-18379
APPLICATIONS OF ULTRASONIC ENERGY - ULTRASONIC INSTRUMENTATION FOR NUCLEAR APPLICATIONS. BIMONTHLY PROGRESS REPORT NO. 26, COVERING PERIOD FROM DECEMBER 1, 1965 - JANUARY 31, 1966
AEROPROJECTS INC.
NYO-3622-1 +. 11 PAGES, 2 FIGURES, 1 TABLE, FEBRUARY 1966

THIS PROGRESS REPORT IS ONE OF A SERIES CONCERNED WITH THE APPLICATION OF ULTRASONIC TECHNIQUES TO MEASUREMENT PROBLEMS IN NUCLEAR REACTORS. DEVELOPMENT OF INSTRUMENTATION WAS UNDERTAKEN, BEGINNING WITH THEORY, DESIGNING A PROTOTYPE, THEN DEVELOPING AND TESTING A UNIT. SUCCEEDING REPORTS WILL BE SUMMARIZED WHEN NEW PROJECTS ARE BEGUN. TOPICS COVERED IN THIS REPORT ARE - (1) ULTRASONIC INSTRUMENTATION FOR THE DETECTION OF INCIPIENT BOILING IN MOLTEN METAL, (2) ULTRASONIC FLOWMETER FOR USE IN MOLTEN METAL OR FUSED SALT SYSTEMS.

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

INSTRUMENTATION, COOLANT QUALITY + INSTRUMENTATION, FLOW + INSTRUMENTATION, IN CORE

9-18420
FUEL-ELEMENT LEAK DETECTION
3 PAGES, 12 REFERENCES, NUCLEAR SAFETY 4(1), PAGE 52 THRU 60, (SEPTEMBER 1962)

NEW DEVICES FOR THE DETECTION AND LOCATION OF FUEL CLADDING FAILURES ARE - (1) THE AUTOMATIC GAS CHROMATOGRAPH AND (2) THE ISOTOPIC EXCHANGE COLUMN. A DEVICE FOR EXPOSING FUEL ELEMENTS FOR POOL-TYPE REACTORS TO LEAKAGE FLUX AND THEN EXAMINING THEM FOR CLADDING DEFECTS, AND A DEVICE FOR DETECTING MINUTE AMOUNTS OF FISSIONABLE CONTAMINANTS ON NEW FUEL PLATES, WERE ALSO DEVELOPED. A FEW REPORTS CONCERNING THE RECENT APPLICATION OF COMMONLY USED DEVICES TO NEW POWER REACTORS ARE ALSO REVIEWED.

CHROMATOGRAPHY + FAILURE, CLADDING + INSTRUMENTATION, DETECTION FAILED FUEL ELEMENT

9-18427
MARKILLIE WR
TECHNIQUE TO EVALUATE PROCESS CONTROL AND DATA HANDLING INSTRUMENTATION
BATTELLE-NORTHWEST, PICHLAND, WASHINGTON. PACIFIC NORTHWEST LAB.
BNWL-447 +. 97 PAGES, 10 TABLES, 12 REFERENCES, AUGUST 1967

A FIGURE-OF-MERIT MODEL WAS DEVELOPED TO EVALUATE SEVERAL PROCESS-CONTROL AND DATA-HANDLING INSTRUMENTATION CONCEPTS PROPOSED FOR THE FAST FLUX TEST FACILITY. THE MODEL FIRST PROVIDES FOR CONSIDERATION OF EACH INSTRUMENTATION CONCEPT ACCORDING TO ITS PERFORMANCE IN TERMS OF SAFETY, OPERATING CONTINUITY, DATA HANDLING, CONTROL QUALITY, HUMAN FACTORS, AND FLEXIBILITY. IT THEN DIRECTS THE COMPARISON OF THAT PERFORMANCE WITH PROCESS-CONTROL AND DATA-HANDLING REQUIREMENTS INCLUDED AS PART OF THE EVALUATION TECHNIQUE. THE RESULT OF SUCH A COMPARISON IS A MEASURE OF INSTRUMENTATION-CONCEPT WORTH EXPRESSED BOTH QUALITATIVELY AND QUANTITATIVELY. THE MEASURE OF WORTH AND THE COST OF EACH CONCEPT BECOME A BASIS FOR COMPARING THE CONCEPTS AND LEAD TO THE SELECTION OF ONE OF THEM FOR THE FACILITY.

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

DATA PROCESSING + DESIGN CRITERIA + INSTRUMENTATION, CONTROL + INSTRUMENTATION, GENERAL + INSTRUMENTATION, PROCESS

9-18430
BLALOCK TV
MINIMUM-NOISE PULSE SHAPING WITH NEW DOUBLE DELAY-LINE FILTERS IN NUCLEAR PULSE AMPLIFIERS

CATEGORY 7
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-18430 *CONTINUED*

OAK RIDGE NATIONAL LAB., TENN.

9 PAGES, 10 FIGURES, THE REVIEW OF SCIENTIFIC INSTRUMENTS 36(10), PAGE 1448 THRU 1456, (OCTOBER 1965)

THREE NEW DOUBLE DELAY-LINE FILTERS FOR PULSE AMPLIFIERS WERE DEVELOPED TO CIRCUMVENT THE POOR NOISE PERFORMANCE OF CONVENTIONAL DOUBLE DELAY-LINE FILTERS. THE OPERATING PRINCIPLE OF THE NEW FILTERS IS THE ALTERATION OF THE NOISE SPECTRUM STORED IN THE DELAY LINES PRIOR TO THE SIGNAL ARRIVAL. WITH ONE OF THE NEW FILTERS, A SYMMETRICAL BIPOLAR OUTPUT PULSE WAS OBTAINED THAT HAD A MEASURED NOISE LINEWIDTH OF 1.6 KEV FWHM SI (189 RMS ELECTRONS) FOR 5 PF EXTERNAL CAPACITANCE, 4.2 MICROSECOND DELAY-LINE LENGTH AND 1.4 MICROSECOND RC INTEGRATING TIME-CONSTANT. THE NOISE LINEWIDTH SLOPE WAS 0.05 KEV/PF.

FILTER + INSTRUMENTATION, AMPLIFIER + MEASUREMENT, NOISE + NOISE

9-18435 ALSO IN CATEGORY 17

FAILURE MODE ANALYSIS FOR THE COLUMBIA UNIV. TRIGA MARK II CONSOLE SCRAM AND ROD CONTROL CIRCUITS
COLUMBIA UNIVERSITY, NEW YORK

14 PAGES, 2 FIGURES, 1 TABLE, SEPTEMBER 28, 1967, DOCKET NO. 50-208

CONCLUDES NO COMMON TIEPOINT IN ROD-UP CIRCUITS, SO 3 FAILURES NEEDED TO RUN 3 RODS UP. SIMILARLY, SEVERAL RELAYS IN SCRAM CIRCUIT ARE INSTALLED SO A SINGLE POWER-CIRCUIT FAILURE CANNOT DISABLE AUTOMATIC SCRAMS. SIX SIMULTANEOUS INDEPENDENT FAILURES MUST OCCUR TO DISABLE BOTH AUTOMATIC AND MANUAL SCRAMS. NO CASE WAS FOUND WHERE A SHORT CIRCUIT COULD DEFEAT THE ENTIRE SCRAM CIRCUIT.

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

*CONTROL SYSTEM + *FAULT TREE ANALYSIS + *REACTOR SAFETY SYSTEM + FAILURE, SIMULTANEOUS + REACTOR, RESEARCH + SINGLE FAILURE CRITERION + TRIGA (TRAINING REACTOR, ISOTOPES, G.A.)

9-18445 ALSO IN CATEGORY 17

INDIAN POINT 1 PROPOSED CHANGE 29. INCREASE IN BORON INJECTION SYSTEM TEST INTERVAL
CONSOLIDATED EDISON CO., NEW YORK

2 PAGES, JULY 10, 1967, DOCKET NO. 50-3

REQUEST FOR A SEMIANNUAL TEST (INSTEAD OF MONTHLY) IS BASED ON CONFIDENCE IN OPERATING EXPERIENCE AND INHERENT RELIABILITY OF THE SYSTEM. PRESENT TESTING REQUIREMENTS CONTRIBUTE AN ADDITIONAL FEW PPM OF BORON, WHICH IS OF IMPORTANCE ESPECIALLY AT END OF LIFE.

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

*RELIABILITY, SYSTEM + *SHUTDOWN SYSTEM, SECONDARY + *TEST INTERVAL + INDIAN POINT 1 + OPERATING EXPERIENCE + POISON, SOLUBLE + REACTOR, PRESSURIZED WATER + TECHNICAL SPECIFICATIONS

9-18470 ALSO IN CATEGORY 17

CUTHBERTSON JD

OPERATING EXPERIENCE AND DEVELOPMENT ON WIGNER TYPE RIGS

TRG-REPORT-1404 + CONF-660521 +. 3 PAGES, 1 FIGURE, DEC. 5, 1966, PAGES 69-73 FROM IN-PILE IRRADIATION EQUIPMENT AND TECHNIQUES, SYMPOSIUM HELD AT HARWELL, MAY 1966

BRIEF DESCRIPTION OF THE RIG COMMONLY USED FOR IRRADIATING NONFISSILE MATERIALS (E.G., GRAPHITE) AND OUTLINE OF THE KIND OF OPERATION FAILURES EXPERIENCED. POSTIRRADIATION EXAMINATION OF FAILED RIGS IS REVIEWED, DESIGN WEAKNESSES ARE NOTED, AND SUBSEQUENT IMPROVEMENTS DESCRIBED HAVE INCREASED RIG LIFETIME FROM 1 MONTH TO 9 MONTHS, PRIMARILY THRU MAKING HEATER LEADS OF 80-20 NICHROME, ELIMINATING MOISTURE FROM ASBESTOS-RESIN SCALS, INCREASING ALUMINA FROM 50 TO 90% TO GIVE POWER INSULATOR FRACTURES, REDUCING THERMOCOUPLE FAILURE RATE FROM 5 TO 1% BY LOW-MOISTURE INSULATORS, AND PROVIDING MORE-EVEN GAS GAPS BY INCREASING THE NUMBER OF STANDOFF PINS AGAINST THE SPECIMEN.

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

*IN PILE LOOP + *OPERATING EXPERIENCE + DIDO (UK) + FAILURE, COMPONENT + GRAPHITE + INSTRUMENTATION, TEMPERATURE + IRRADIATION TESTING + RADIATION DAMAGE + REACTOR, TEST

9-18503

CONTROL OF XENON INSTABILITIES IN LARGE PHRS. QUARTERLY PROGRESS REPORT FOR THE PERIOD ENDING DECEMBER 31, 1966

WESTINGHOUSE ELECTRIC CORP., PITTSBURGH, PA.

WCAP-3680-2 + EURAEC-1781 +. 44 PAGES, FIGURES, TABLES, JANUARY 1967

THIS PROGRESS REPORT IS ONE OF A SERIES 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. SUCCEEDING REPORTS WILL BE SUMMARIZED WHENEVER NEW TOPICS ARE BEGUN.

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-18503 *CONTINUED*

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

INSTABILITY + REACTOR, PRESSURIZED WATER + XENON

9-18507 ALSO IN CATEGORY 17

VER PLANCK DW

TRIGA STUCK ROD AT GENERAL ATOMIC, SEPTEMBER 8, 1967

GENERAL DYNAMICS, SAN DIEGO, CALIF.

1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(42) PAGES 17 (OCTOBER 19, 1967), DOCKET NO. 50-163

(LETTER, OCTOBER 2) THE INCIDENT OCCURRED WHILE MAKING REACTIVITY-EXCESS MEASUREMENTS PRIOR TO \$4.60 PULSING. THE TRANSIENT ROD WAS WORTH \$2.50, BUT THE OTHER 3 WERE WORTH \$6.00, LEAVING \$1.20 SHUTDOWN MARGIN. LUBRICANT WAS SPRAYED ONTO THE TEFLON SLIDE. DROP TIMES WERE THE SAME AS BEFORE. IT IS BELIEVED THAT DIRT AND DUST GOT INTO THE OPEN SYSTEM, SO A COVER WILL NOW BE PROVIDED.

*CONTROL ROD, SHIM SAFETY + *FAILURE, SCRAM MECHANISM + INCIDENT, ACTUAL, EQUIPMENT + REACTOR, PULSED + REACTOR, RESEARCH + SHUTDOWN MARGIN + TRIGA (TRAINING REACTOR, ISOTOPES, G. A.)

9-18538

CONTROL OF XENON INSTABILITIES IN LARGE PWRS. QUARTERLY PROGRESS REPORT FOR THE PERIOD ENDING MARCH 31, 1967

WESTINGHOUSE ELECTRIC CORP., PITTSBURGH, PA.

WCAP-3680-3 + EURAEC-1830 +. 73 PAGES, FIGURES, TABLES, APRIL 1967

THIS PROGRESS REPORT IS ONE OF A SERIES 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) WUXE-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, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

INSTABILITY + REACTOR, PRESSURIZED WATER + XENON

9-18565 ALSO IN CATEGORIES 15 AND 18

ENGINEERING MATERIALS LIST (SUPL. SHEETS)

DIVISION OF TECHNICAL INFORMATION, AEC

TID-4100 (SUPL. 40) +. 50 PAGES, SEPTEMBER 1967

INCLUDES LITR INSTRUMENTAL MODIFICATION FOR UPDATING, AS WELL AS TRANSISTORIZED IONCHAMBER SURVEY METER AND REM-RESPONDING PORTABLE FAST-NEUTRON SURVEY METER.

AVAILABILITY - DIVISION OF TECHNICAL INFORMATION, OAK RIDGE, TENN.

*CONTROL SYSTEM + *MONITOR, RADIATION, PERSONNEL + ENGINEERING DRAWING LIST + LITR (LOW INTENSITY TEST REACTOR) + MODIFICATION, SYSTEM OR EQUIPMENT

9-18567

PRICE LW

ELECTRONICS IN NUCLEAR MEASUREMENTS--PART I. RADIATION DETECTORS

UNIVERSITY OF CAMBRIDGE, ENGLAND

6 PAGES, 9 FIGURES, 5 TABLES, REFERENCES, LAB. PRACT. 15, PAGES 1379-84 (DECEMBER 1966)

CONSIDERS RADIATION DETECTORS AND THE BASIC CIRCUITS USED FOR DETERMINING THE RADIOACTIVITY OF A SAMPLE. THE METHODS FALL INTO TWO GROUPS - THOSE IN WHICH THE HEIGHT OF THE DETECTOR OUTPUT ELECTRICAL PULSE IS PROPORTIONAL TO THE ENERGY OF THE INITIATING PARTICLE, AND THOSE IN WHICH THE OUTPUT PULSE IS ALMOST INDEPENDENT OF THE PARTICLE ENERGY.

INSTRUMENTATION, GENERAL + INSTRUMENTATION, RADIATION MONITORING + MONITOR, RADIATION, GENERAL

9-18569

MONTA K

TIME OPTIMAL DIGITAL COMPUTER CONTROL OF NUCLEAR REACTOR. III. EXPERIMENT

NIPPON ATOMIC INDUSTRY GROUP CO., LTD., KAWASAKI, JAPAN

12 PAGES, 16 FIGURES, 4 REFERENCES, J. NUCL. SCIENCE AND TECHNOLOGY (TOKYO) 4(2) PAGES 51-62 (FEBRUARY 1967)

TIME-OPTIMAL CONTROL WAS APPLIED TO A DIGITAL COMPUTER CONTROL SYSTEM GOVERNING A RESEARCH REACTOR (TOSHIBA TRAINING REACTOR). A PROGRAM WAS DEVELOPED FOR THE CONTROL COMPUTER, WITH WHICH ACTUAL EXPERIMENTS WERE PERFORMED. THE RESULTS DEMONSTRATED THE APPLICABILITY OF THE VARIOUS MODERN CONTROL THEORIES FOR DESIGNING SUCH SYSTEMS. DISCUSSION IS FIRST PRESENTED ON

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-18569 *CONTINUED*

SOME CONSIDERATIONS REQUIRED IN REALIZING THE RESULTS ENVISAGED ON THE BASIS OF A SIMPLIFIED MODEL OF THE SYSTEM. IN VIEW OF THE USE OF REACTIVITY AS VARIABLE REPRESENTING THE STATE OF REACTOR SYSTEM, A METHOD HAS BEEN DEVELOPED THAT PERMITS SIMPLE AND ACCURATE ON-LINE CALCULATION OF THE REACTIVITY FROM CHANGES IN REACTOR POWER. THE CONTROL IS DETERMINED IN THE WHOLE PHASE PLANE (NEUTRON DENSITY VS REACTIVITY), AND IS PROGRAMMED WITH THE USE OF APPROPRIATE SIMPLIFICATIONS AND APPROXIMATIONS. EXPERIMENTS WERE FIRST PERFORMED ON A SIMULATED SYSTEM OF THE REACTOR AND THEN ON THE ACTUAL REACTOR SYSTEM. THE RESULTS DESCRIBED COVER EXPERIMENTS ON STEADY STATE PERFORMANCE AS WELL AS TRANSIENT PERFORMANCE WITH THE REACTOR POWER VARIED IN RANGES EXTENDING TO 2 DECADES.

COMPUTER, DIGITAL + CONTROL, COMPUTER + JAPAN + REACTOR CONTROL + REACTOR, POOL TYPE

9-18570

MONTA, K

TIME OPTIMAL DIGITAL COMPUTER CONTROL OF NUCLEAR REACTOR, II. DISCRETE TIME SYSTEM
NIPPON ATOMIC INDUSTRY GROUP CO., KAWASAKI, JAPAN

23 PAGES, 5 FIGURES, 9 REFERENCES, J. NUCL. SCIENCE AND TECHNOLOGY (TOKYO) 3(10) PAGES 418-39 (OCTOBER 1966)

A SAMPLED-DATA TIME-OPTIMAL CONTROL OF NUCLEAR REACTORS HAS BEEN DEVELOPED USING DISCRETE VERSIONS OF THE MAXIMUM PRINCIPLE. THE REACTOR MODEL USED IS A SECOND ORDER NONLINEAR SYSTEM DERIVED BY ONE GROUP DELAYED NEUTRON AND PROMPT JUMP APPROXIMATIONS. THE CONTROL VARIABLE OF THE SYSTEM IS THE RATE OF CHANGE OF REACTIVITY, AND FOR REASONS OF SAFETY IN REACTOR OPERATION, THIS, AS WELL AS THE REACTIVITY, IS RESTRICTED. IN ADDITION, THE REACTOR POWER OVERSHOOT AND UNDERSHOOT ARE ALSO RESTRICTED TO DEVISE A PRACTICAL CONTROL. THE DISCRETE VERSION OF THE MAXIMUM PRINCIPLE HAS BEEN EXTENDED TO DEAL WITH RESTRICTED STATE SPACE PROBLEM, AND WITH THE USE OF THIS EXTENSION, A TIME OPTIMAL CONTROL FOR NUCLEAR REACTORS WITH PULSE WIDTH MODULATED CONTROL INPUT HAS BEEN DERIVED. THE OPTIMAL CONTROL LAW IS MODIFIED IN THE REGION AROUND THE TERMINAL STATE, TO OBTAIN SMOOTH CONTROL, AND THE STABILITY OF THIS MODIFIED CONTROL IS VERIFIED BY THE SECOND METHOD OF LIAPUNOV. THE RESULTS ARE DIRECTLY APPLICABLE TO DIGITAL COMPUTER CONTROL SYSTEMS FOR NUCLEAR REACTORS.

COMPUTER, DIGITAL + CONTROL, COMPUTER + JAPAN + REACTOR CONTROL + REACTOR, POOL TYPE + THEORETICAL INVESTIGATION

9-18571

MIYAZAKI K

OPTIMIZATION OF REACTOR CONTROL SYSTEMS BY WIENERS THEORY
OSAKA UNIVERSITY

7 PAGES, 7 FIGURES, 2 TABLES, 2 REFERENCES, J. OF NUCLEAR SCIENCE AND TECHNOLOGY (TOKYO) 4(3) PAGES 107-114 (MARCH 1967)

WIENERS THEORY OF LEAST-SQUARES OPTIMIZATION WITH QUADRATIC CONSTRAINT HAS BEEN APPLIED TO REACTOR-CONTROL-SYSTEM DESIGN. STOCHASTIC AND DETERMINISTIC CASES ARE TREATED HERE, TAKING WHITE DISTURBANCE OF REACTIVITY AND STEP REFERENCE INPUT AS EXAMPLES. THE MEAN SQUARE AND INTEGRAL SQUARE ERRORS HAVE BEEN MINIMIZED SUBJECT TO THE CONSTRAINT ON THE REACTIVITY RATE CONTROLLED EXTERNALLY FOR WHITE NOISE AND STEP INPUT RESPECTIVELY. THE REACTOR TRANSFER FUNCTION IS BASED ON LINEAR APPROXIMATION FOR SINGLE-GROUP DELAYED NEUTRONS WITH NO FEEDBACK OF REACTIVITY. NUMERICAL CALCULATIONS HAVE BEEN PERFORMED FOR EFFECTIVE NEUTRON LIFETIMES IN THE RANGE FROM 0.001 TO 0.00001 SEC, AND THE RESULTING OPTIMIZED CONTROLLERS ARE PHYSICALLY REALIZABLE. ANALYTICAL RESULTS WITH AN ANALOG COMPUTER INDICATE--IN THE CASE OF 1-STAR--THAT THE TRANSIENT RESPONSES OF THE OPTIMIZED CONTROL SYSTEMS ARE EXCELLENT FOR STEP INPUTS AND THAT A CONSIDERABLE REDUCTION IN THE OUTPUT FLUCTUATION IS OBTAINABLE FOR WHITE NOISE, GRANTED A LARGE PEAK OF REACTIVITY RATE WITH A SMALL VALUE OF REACTIVITY.

ANALYTICAL MODEL + REACTOR CONTROL + REACTOR, BOILING WATER + THEORETICAL INVESTIGATION + TRANSFER FUNCTION

9-18572

NAKAMURA S + TSUCHIYA T + WAJIMA JT

A SIMPLE METHOD FOR CONTROL ROD WORTH EVALUATION WITH DIFFUSION CODES
HITACHI LTD

4 PAGES, 5 FIGURES, 3 TABLES, 6 REFERENCES, J. NUCLEAR SCIENCE AND TECHNOLOGY (TOKYO) 4(4) PAGES 159-163 (APRIL 1967)

TO PRESENT A SIMPLE METHOD FOR CALCULATING THE WORTH OF CONTROL RODS IN MULTIREGION REACTOR CORES, THE WELL-MODEL APPROXIMATION IS APPLIED TO THE FINITE-DIFFERENCE DIFFUSION CODE. THE RESULTS OF CALCULATION ARE COMPARED WITH EXPERIMENTAL RESULTS OBTAINED ON THE OZENJI CRITICAL FACILITY, AND ALSO WITH CALCULATIONS USING TRANSPORT EQUIVALENT CONSTANTS. WITH ITS SIMPLICITY THE METHOD PROPOSED IS ACCURATE ENOUGH TO SUFFICE AMPLY FOR MOST CASES WHERE ONLY THE REACTIVITY IS THE END RESULT SOUGHT ALTHOUGH THE APPLICATION OF THIS METHOD IS LIMITED TO CONTROL RODS INSERTED IN THE CORE REGION, AND GIVES NO INFORMATION ABOUT THE DETAILED NEUTRON FLUX DISTRIBUTION AROUND THE CONTROL ROD.

CONTROL ROD + CONTROL ROD WORTH

9-18574

ARTAMKIN VN + VASENKOVA GV + OTROSHCHENKO IV + FEDORENKO RP

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-18574 *CONTINUED*

OPTIMUM POLICY FOR REACTOR SHUT-DOWN

7 PAGES, 2 FIGURES, JOURNAL OF NUCLEAR ENERGY. PARTS A/R 19 (8) PAGES 645-651 (AUGUST 1965)

DISCUSSES THE OPTIMUM CONTROL POLICY FOR SHUTTING DOWN A REACTOR WHICH, BY CAREFULLY CONTROLLING THE REACTOR POWER OVER A SPECIFIED PERIOD OF TIME (SEVERAL HOURS), WILL MINIMIZE THE PEAK POISONING. THE PROBLEM OF FINDING THE OPTIMUM CONTROL IS SOLVED BY A METHOD DEvised BY FEDORENKO BY WHICH NUMERICAL SOLUTIONS CAN BE OBTAINED FOR NONLINEAR CONTROL PROBLEMS. THE METHOD CONSISTS OF A PROCESS OF ITERATION WHEREBY A CERTAIN INITIAL (NOT OPTIMUM) CONTROL IS SYSTEMATICALLY VARIED WITH THE AIM OF REDUCING THE VALUE OF THE FUNCTIONAL. THIS PROCEDURE LEADS QUITE RAPIDLY TO A CONTROL WHICH IS SUFFICIENTLY CLOSE TO THE OPTIMUM. AN ANALYSIS OF A NUMBER OF NUMERICAL SOLUTIONS ALLOWS SOME PLAUSIBLE ASSUMPTIONS TO BE MADE ABOUT THE SIMPLE STRUCTURE OF THE EXACT SOLUTION TO THE PROBLEM.

REACTOR POWER + REACTOR, THERMAL + SHUTDOWN MECHANISM, SELF + THEORETICAL INVESTIGATION + XENON

9-18585 ALSO IN CATEGORIES 12 AND 17

SILVESTER AG

NUCLEAR REACTOR WITH EMERGENCY COOLANT CROSS FLOW

CANADIAN PATENT 739,059 + U.S. PATENT 443,726 +. 7 FIGURES, JULY 19, 1966

THIS INVENTION RELATES TO NUCLEAR REACTORS WHEREIN THE COOLANT IS ARRANGED TO FLOW ACROSS AS WELL AS ALONG THE FUEL RODS TO EQUALIZE THE INTERNAL PRESSURE AS WELL AS THE TEMPERATURE DISTRIBUTION WITHIN THE CORE. THE SYSTEM COMPRISES A PLURALITY OF FUEL RODS CONTAINED WITHIN SHROUD, SAID RODS ARRANGED TO HAVE ZONES, BEGINNING PROXIMATE THE BOTTOM PORTION OF THE ROD, WITH A FISSILE FUEL ZONE, A MODERATOR AND CROSS FLOW ZONE IMMEDIATELY ABOVE FISSILE FUEL ZONE, A TOP EXIT ZONE IMMEDIATELY ABOVE MODERATOR AND CROSS-FLOW ZONE WITH A TOP-SHIELD ZONE DEFINED BY THE TOP PORTION OF THE FUEL RODS IMMEDIATELY ABOVE TOP EXIT ZONE.

AVAILABILITY - CANADIAN PATENT OFFICE, OTTAWA, CANADA

*DESIGN CRITERIA + *FLOW, CROSS + *REACTOR COOLANT + COOLING, SHUTDOWN + DESIGN STUDY + FUEL ELEMENT + INSTRUMENTATION, COOLANT QUALITY + PRESSURE, INTERNAL

9-18591

ANDERSSON AJ

A REACTIVITY METER USING PASSIVE NETWORKS FOR DELAYED-NEUTRON GROUPS

INSTITUTT FOR ATOMENERGI, HALDEN, NORWAY

10 PAGES, 10 FIGURES, 3 TABLES, 14 REFERENCES, NUCLEAR APPLICATIONS 3(3), PAGES 147-156 (MARCH 67)

AN INSTRUMENT FOR MEASURING THE NET REACTIVITY INPUT TO A REACTOR SYSTEM WAS DESIGNED AND USED AT THE HALDEN BOILING WATER REACTOR, NORWAY, AND AT THE AGESTA POWER REACTOR R3, SWEDEN. THE DESIGN IS BASED UPON EXTENSIVE USE OF PASSIVE NETWORKS. MANY NUCLEAR SCIENTISTS DO NOT KNOW THE REACTIVITY COMPUTER AND ITS POSSIBILITIES VERY WELL. THIS PAPER GIVES THE THEORY FOR THE CIRCUITS, THE CIRCUIT DIAGRAM, IMPORTANT COMPONENT DATA, AND SOME TEST RESULTS FOR A SIMPLE, COMPARATIVELY CHEAP, AND EASY-TO-BUILD REACTIVITY METER. THE INSTRUMENT WAS CAREFULLY TESTED. TEST RESULTS ARE PRESENTED AS GAIN AND PHASE CURVES FOR REACTIVITY TO POWER TRANSFER FUNCTIONS, AND ARE COMPARED WITH THE THEORETICAL ONES. THE AGREEMENT IS QUITE SATISFACTORY. THE OPERATIONAL EXPERIENCE IS GOOD.

AGESTA (SWEDISH 65 MWTH REACTOR) + DELAYED NEUTRON + INSTRUMENTATION, NUCLEAR + MEASUREMENT, REACTIVITY + REACTOR, BOILING WATER + REACTOR, HEAVY WATER + REACTOR, PRESSURIZED WATER

9-18592

SHERRARD R

HIGH SPEED SCANNING SYSTEM TEMPERATURE MONITOR

DOUGLAS UNITED NUCLEAR, INC., RICHLAND, WASHINGTON

DUN-SA-32 + CONF-670319 +. 20 PAGES, FROM CONFERENCE ON INSTRUMENT SOCIETY OF AMERICA, RICHLAND, WASHINGTON, 1967

THE HIGH-SPEED SCANNING SYSTEM WAS DEVELOPED TO PROVIDE LESS COSTLY AND MUCH MORE RELIABLE SYSTEMS FOR MONITORING THE THOUSANDS OF CHANNELS OF INFORMATION INVOLVED IN OPERATING A REACTOR. THE RECENT INCORPORATION OF THE FIRST HIGH-SPEED SCANNING SYSTEM IN THE SAFETY CIRCUIT OF THE KW REACTOR SIGNALLED THE COMPLETION OF A MAJOR STATE-OF-THE-ART SCANNER DEVELOPMENT PROGRAM. A SYSTEM TYPE OR TECHNIQUE IS NOW AVAILABLE THAT PROMISES TO RENDER OBSOLETE MANY TYPES OF SYSTEMS USED FOR REACTOR-SAFETY MONITORING OR INFORMATION PRESENTATION WHEN THOUSANDS OF DATA CHANNELS MUST BE ACCOMMODATED. THE SCANNER SYSTEM THAT HAS EVOLVED IS A DUAL SYSTEM CONTAINING BOTH A HIGH- AND A LOW-SPEED SCANNING SYSTEM. THE HIGH-SPEED PORTION EXAMINES EACH OF 3200 TEMPERATURES IN 200 MICROSECONDS AND COVERS THE ENTIRE PROCESS IN 0.744 SECONDS. THE LOW-SPEED SYSTEM IS USED FOR AUTOMATIC LOGGING OF TEMPERATURES IN REACTOR FORMAT ON A PREPRINTED FORM AT A SPEED OF 4.5 TEMPERATURES PER SECOND AND FOR TRAVERSE AND TREND RECORDING OF ALL TEMPERATURES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.70 COPY, \$0.65 MICROFICHE

DATA PROCESSING + INSTRUMENTATION, TEMPERATURE + MEASUREMENT, TEMPERATURE

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-18593

TAURIT R

CONTROL AND INSTRUMENTATION OF THE GUNDREMMINGEN NUCLEAR POWER PLANT
ALLGEMEINE ELEKTRIZITAETSGESELLSCHAFT, FRANKFURT AM MAIN
5 PAGES, ATOM UND STROM 12, PAGE 116-20 (SEPT.-OCT. 1966), IN GERMAN

THE CONTROL PRINCIPLE OF THE POWER PLANT IS OUTLINED. THE SCHEME OF THE CONTROL-ROD DRIVE IS GIVEN, AND THE REACTOR CONTROL PRINCIPLES ARE REPORTED. THE INSTRUMENTATION FOR NEUTRON FLUX MONITORING, LOGARITHMIC AND LINEAR MEASUREMENT CHANNELS, AND CORE MEASUREMENTS IS ILLUSTRATED. THE CONVENTIONAL REACTOR INSTRUMENTATION IS OUTLINED. THE RADIATION MONITORING DEVICES USED ARE DESCRIBED.

CONTROL ROD DRIVE + INSTRUMENTATION, IN CORE + INSTRUMENTATION, LINEAR + INSTRUMENTATION, LOGARITHMIC + INSTRUMENTATION, NUCLEAR + INSTRUMENTATION, RADIATION MONITORING + REACTOR CONTROL

9-18594

ALSO IN CATEGORY 4

SMITH RC + CROSBY JR + ELLIOTT EA + GALLETTY RD

RADIATOR CONDENSER DESIGN MANUAL

ATOMICS INTERNATIONAL, CANOGA PARK, CALIF.

NAA-SR-MEMO-12139 +. 173 PAGES, NOVEMBER 1, 1966

THIS REPORT INCLUDES A STATE-OF-THE-ART APPROACH TO DESIGNING RADIATOR-CONDENSERS FOR MERCURY RANKINE SYSTEMS. THE DESIGN, ANALYTICAL, AND FABRICATION TECHNIQUES USED AT ATOMICS INTERNATIONAL IN THE DEVELOPMENT OF THREE TYPES OF RADIATOR CONDENSERS FOR USE ON THE SNAP-II MERCURY RANKINE PROGRAM ARE PRESENTED. THE SUCCESSFUL TESTING OF EACH TYPE INDICATES THE APPROPRIATENESS OF THE TECHNIQUES PRESENTED. THE USE OF THE MANUAL FOR FUTURE RADIATOR DESIGNS SHOULD AID IN ACHIEVING AN OPTIMUM DESIGN WITH A MINIMUM EXPENDITURE OF EFFORT IN THE DEVELOPMENT PHASE OF FUTURE PROGRAMS.

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

EQUIPMENT DESIGN + EXPERIMENT, GENERAL + HEAT TRANSFER, RADIANT + MERCURY + REACTOR, SPACE + SNAP 2 (SYSTEMS FOR NUCLEAR AUXILIARY POWER)

9-18596

KOVANITS P + RYGL Y

DIGITAL FOLLOW-UP SYSTEM FOR NUCLEAR ENGINEERING

ANL-TRANS-469 +. 10 PAGES, FROM AT. ENERG 21, PAGES 116-20 (AUGUST 1966)

DESCRIBES A DIGITAL DEVICE FOR MEASURING THE RELATIVE DEVIATION OF THE PULSE COUNTING RATE FROM THE GIVEN VALUE. SUCH A DEVICE CAN BE USED FOR CONSTRUCTING DIGITAL FOLLOWUP SYSTEMS WHICH OPERATE WITH PULSE DETECTORS, E.G., FOR THE MEASUREMENT AND AUTOMATIC CONTROL OF THE REACTOR POWER AND PERIOD.

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

CONTROLLER + INSTRUMENTATION, PERIOD + INSTRUMENTATION, PULSE

9-18597

SOKOLOVA NM

SOLUTION OF THE PROBLEM OF THE ANALYTICAL CONSTRUCTION OF AN OPTIMUM CONTROL FOR A NUCLEAR POWER PLANT
ANL-TRANS-470 +. 7 PAGES, FROM VESTI AKAD. NAVIK SSR. SER FIZ-TEKH. NAVIK NO. 3, PAGES 21-8 (1965).

THEORETICAL DISCUSSION FOR THE OPTIMUM CONTROL OF A NUCLEAR POWER PLANT CONSISTING OF A REACTOR, A REGENERATOR, A COOLER, AND A TURBOCOMPRESSOR. SERIES EXPRESSIONS ARE USED FOR THE CONSTITUENTS, AND DIMENSIONLESS VARIABLES ARE INTRODUCED TO DESCRIBE THE STATE OF THE SYSTEM.

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

CONTROL SYSTEM + CONTROL, GENERAL + REACTOR CONTROL + THEORETICAL INVESTIGATION

9-18598

ALSO IN CATEGORY 10

LA COUR CHRISTENSEN P

REGULATION OF A PHWR POWER STATION

ATOMENERGIKOMMISSIONEN RISCOE, DENMARK

RISO-M-241 +. 20 PAGES, 5 FIGURES, MAY 1965

SURVEYS THE POSSIBILITIES FOR AUTOMATIC CONTROL FOR A PHWR POWER STATION. THE AIM FOR THE CONTROL SYSTEM IS TO ENABLE THE POWER STATION TO DELIVER STEAM AT CONSTANT TEMPERATURE AND PRESSURE WITH THE SMALLEST TEMPERATURE VARIATIONS IN THE REACTOR AT LOAD VARIATIONS. A SIMPLIFIED DYNAMIC MODEL FOR A PHWR POWER STATION WAS DEVELOPED AND USED FOR INVESTIGATION OF

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-18598 *CONTINUED*

DIFFERENT METHODS OF CONTROL. THE MOST PROMISING METHOD SEEMS TO BE A COMBINED CONTROL OF STEAM PRESSURE AND COOLANT OUTLET TEMPERATURE FROM THE REACTOR, AND A REGULATION OF THE COOLANT FLOW IN ACCORDANCE WITH THE GENERATED ELECTRICAL POWER.

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

ANALYTICAL MODEL + INSTRUMENTATION, CONTROL + INSTRUMENTATION, PROCESS + REACTOR, HEAVY WATER

9-18599

KAPUSTSIK A + PERELYGIN VP + SVIDERSKII VI + TRET YAKOVA SP
USE OF MICA AND QUARTZ GLASS FOR NUCLEAR FISSION DETECTION AT HIGH TEMPERATURE
JOINT INST. FOR NUCLEAR RESEARCH, DUBNA
ANL-TRANS-389 + JINR-P-2705 +. 6 PAGES, 1966

THE USE OF MICA AND QUARTZ GLASS IS DESCRIBED FOR THE DETECTION OF RARE ACTS OF NUCLEAR FISSION AT 350-400 C. THE EFFICIENCIES OF DETECTION OF FISSION FRAGMENTS ARE MEASURED DEPENDING ON THE AIR-LAYER THICKNESS BETWEEN THE SAMPLE AND THE DETECTORS.

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

INSTRUMENTATION, TEMPERATURE + MEASUREMENT, TEMPERATURE

9-18619

TAKAHASHI J
CONTROL ROD DRIVE
JAPANESE PATENT 1966-3598 +. 3 PAGES, MARCH 2, 1966, PATENT (FOREIGN)

THE CONTROL-ROD DRIVE IS MADE SIMPLY. SHIM AND FINE-ADJUSTMENT OF A SINGLE CONTROL ROD AND EASE IN FABRICATION AND CONSTRUCTION AND HIGH RELIABILITY ARE SIMPLIFIED. THE LONG, THREADED ROD FOR MOVING A CONTROL ROD FOR BOTH THE SHIM AND FINE-ADJUSTMENT CONTROLS ENGAGES WITH THE TWO LONG NUTS FOR THE SHIM AND FINE-ADJUSTMENT RESPECTIVELY. THESE TWO NUTS ARE LOCATED UP AND DOWN ALONG THE THREADED ROD. FOR THE SHIM CONTROL, THE UPPER NUT MOVES TOGETHER WITH THE THREADED ROD. FOR FINE-ADJUSTMENT, THE LOWER NUT MOVES WITH THE THREADED ROD. FOR THE LATTER, PROVISION IS MADE FOR CONTROLLING THE LENGTH OF THE UP OR DOWN MOVEMENT. THE SHIM AND THE FINE-ADJUSTMENT ROD MOVEMENT ARE ACHIEVED BY THE RESPECTIVE MECHANISMS, INCLUDING A WORM-WHEEL, A WORM, AN ELECTRIC MOTOR, ETC.

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

CONTROL ROD DRIVE + CONTROL ROD, SHIM SAFETY + JAPAN + PATENT

9-18622

ANTAL EF + BRONS CD + QUINLAN FB
DEVICE FOR MONITORING SHUT-DOWN NUCLEAR REACTORS
U. S. PATENT 3-276-969 +. 4 PAGES, 3 FIGURES, OCTOBER 4, 1966, PATENT (U.S.)

THIS INVENTION RELATES TO A DEVICE FOR MONITORING SHUT-DOWN NUCLEAR REACTORS AND VERIFYING DORMANCY. THE PATENT RELATES TO A TAMPERPROOF SAFING WIRE OR BAND.

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

INSPECTION AND COMPLIANCE + INSTRUMENTATION, SHUTDOWN REACTIVITY + MONITORING SYSTEM, RADIATION + PATENT + UNITED STATES

9-18623

METHOD OF CONTROLLING A NUCLEAR REACTOR
CANADIAN PATENT 738-067 + U. S. PATENT 421-134 +. 7 PAGES, 4 FIGURES, JULY 5, 1966

THIS INVENTION RELATES TO A NUCLEAR REACTOR COMPRISING A PLURALITY OF SPACED ELONGATED FUEL ASSEMBLIES AND MEANS FOR VARYING THE ANGLE OF INCLINATION OF CERTAIN FUEL ASSEMBLIES WITH RESPECT TO OTHER FUEL ASSEMBLIES TO CONTROL THE REACTOR.

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

CANADA + FUEL ELEMENT + FUEL ELEMENT CLUSTER + PATENT + REACTOR CONTROL

9-18661

ALSO IN CATEGORY 17
IMPROPER UTILIZATION OF A BF-3 SENSOR FOR LINEAR POWER MEASUREMENT
UNITED STATES ATOMIC ENERGY COMMISSION, WASHINGTON, D. C., DIVISION OF OPERATIONAL SAFETY
2 PAGES, REACTOR OPERATING EXPERIENCES 57-10, OCTOBER 2, 1967

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-18661 *CONTINUED*

BF3 PROPORTIONAL COUNTERS, INSTALLED AS LINEAR POWER DETECTORS, WERE DISCOVERED DURING A STARTUP TO 200 WATTS WHEN THE LOG-N CHANNELS READ 100 W BUT THE LINEAR RECORDERS READ 50 W. REACTOR WAS SHUT DOWN. DETECTOR CURRENTS, PLOTTED POWER UP TO 15 WATTS, REVEALED THAT THE LINEAR POWER CHANNELS WERE NONLINEAR. THE DETECTORS HAD BEEN OBTAINED FROM ANOTHER CRITICAL FACILITY WITH ASSURANCE THAT THEY WERE IONIZATION CHAMBERS (OTHER FACILITY HAD ONLY OPERATED IN THE MILLIWATT RANGE, SO NONLINEAR EFFECT WAS NONEXISTENT).

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

*FAILURE, ADMINISTRATIVE CONTROL + *INSTRUMENTATION, POWER RANGE + *INSTRUMENTATION, STARTUP + CRITICAL ASSEMBLY FACILITY + INSTRUMENTATION, ABNORMAL INDICATION + OPERATING EXPERIENCE + TEST, PREOPERATIONAL

9-18677 ALSO IN CATEGORY 17
MONTHLY OPERATIONS REPORT NO. 17, JULY, 1967
PHILADELPHIA ELECTRIC COMPANY

19 PAGES, PEACH BOTTOM POWER STATION MONTHLY REPORT 17, JULY 1967, DOCKET NO. 50-171

SAFETY-SYSTEM ACTIONS INCLUDE A SCRAM RESULTING FROM A FALSE RATE-OF-CHANGE SIGNAL WHILE A SECOND CHANNEL WAS BEING TESTED. A SETBACK AND FIRST-STAGE BACKFLOW OPERATION OCCURRED WHEN AN OPERATOR ACCIDENTALLY TRIPPED ON MG SET, RESULTING IN LOSS OF HELIUM COMPRESSOR. WATER LEAKAGE DURING A STORM CAUSED AN ELECTRICAL FAULT RESULTING IN REACTOR SHUTDOWN TO REDUCE STEAM PRESSURE BECAUSE ELECTROMATIC RELIEF VALVES FAILED CLOSED DUE TO SHORTING OF THE WIRING.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON

*OPERATING EXPERIENCE + ELECTRIC POWER, NORMAL + FAILURE, GENERAL + INCIDENT, ACTUAL, HUMAN ERROR + OPERATIONS REPORT, GENERAL + PEACH BOTTOM 1 + PLANT PROTECTIVE SYSTEM + REACTOR, GAS COOLED + SCRAM, SPURIOUS + VALVE

9-18710
MEASUREMENT OF THE POWER DISTRIBUTION IN THE GARIGLIANO BOILING WATER REACTOR BY A NEW METHOD OF GAMMA SCANNING OF THE FUEL ELEMENTS. SPECIAL REPORT NO. 1
ENTE NAZIONALE PER L-ENERGIA ELETTRICA, ROME, ITALY
EURAE-1613 +. 101 PAGES, FIGURES, MARCH 1966

DESCRIBES IN DETAIL THE ANALYSIS OF SOME EXPERIMENTAL DATA, COMPARISON BETWEEN CALCULATED AND MEASURED POWER DISTRIBUTION, AND ANALYSIS OF ERRORS OF MEASUREMENT. A DESCRIPTION IS ALSO GIVEN OF THE COUNTING EQUIPMENT. THE APPENDICES CONTAIN THE COMPLETE SET OF EXPERIMENTAL DATA AND THE GRAPHS OF THE STANDARDIZED AXIAL POWER DISTRIBUTION FOR THE GARIGLIANO NUCLEAR POWER PLANT.

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

FUEL ELEMENT + GAMMA + INSTRUMENTATION, RADIATION MONITORING + MEASUREMENT, REACTIVITY + REACTOR, BOILING WATER + REACTOR, POWER

9-18711
ADNAMS DJ + SALT KJ + WINTLE CA
A MULTI-CHANNEL, FAST SCANNING RECORDER
ATOMIC ENERGY ESTABLISHMENT, WINFRITH, ENGLAND
AEEW-R-486 +. 20 PAGES, FIGURES, MAY 1966

DESCRIBES THE DESIGN OF A FAST SCANNING INSTRUMENT THAT MEASURES THE OUTPUTS FROM 216 THERMOCOUPLES EVERY 5 SECONDS, RECORDS THEM INDIVIDUALLY ON A CHART, AND PROVIDES ALARM FACILITIES.

AVAILABILITY - BRITISH INFORMATION SERVICE, 845 THIRD AVENUE, NEW YORK, N. Y. 10022, \$1.10 COPY

INSTRUMENTATION, TEMPERATURE + MEASUREMENT, TEMPERATURE

9-18712
UBERSCHLAG J + CHAPELOT A + LELAIT R + ABDOU R + JEANNOT A + LADET J
THE CONTROL OF THE FAST BREEDER RAPSODIE
CENTRE D ETUDES NUCLEAIRES DE CADARACHE, FRANCE
EURFNR-102F + EUR-2145.F + CEA-FRI-51 +. 28 PAGES, 1964

GIVES A BRIEF INTRODUCTION ON THE INTEREST AND SOME FEATURES OF FAST BREEDER REACTORS. SOME CONSIDERATIONS ARE OUTLINED, SUCH AS ORGANIZATION OF THE CONTROLS AND OPERATION OF THE PLANT DATA-LOGGING EQUIPMENT. SOME RELATIVELY WELL-DEFINED CONTROL CIRCUITS ARE DESCRIBED.

AVAILABILITY - JOHN CRERAR LIBRARY, 35 WEST 33RD. ST., CHICAGO, ILLINOIS 60616, \$2.60 COPY, \$1.04 MICROFICHE

DATA PROCESSING + FRANCE + INSTRUMENTATION, CONTROL + INSTRUMENTATION, GENERAL + REACTOR CONTROL + REACTOR, BREEDER

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-18713 ALSO IN CATEGORY 6
FRISCH W + SCHOENFELD E
CALCULATION PROGRAM FOR THE DYNAMICS AND STABILITY OF A FAST POWER REACTOR
KERNFORSCHUNGSZENTRUM, KARLSRUHE, WEST GERMANY. INSTITUT FUER REAKTORENTWICKLUNG
EURFNR-206F + KFK-465 +. 97 PAGES, REFERENCES, JUNE 1966

THE PROGRAMS WERE DEVELOPED FOR THE DYNAMICS INVESTIGATION AND THE STABILITY CALCULATIONS OF
SODIUM-COOLED FAST POWER REACTORS. ANALOG PROGRAMS ARE FOR DYNAMICAL INVESTIGATIONS OF THE
CORE AND THE ENTIRE PRIMARY COOLING SYSTEM. FOR STABILITY INVESTIGATIONS, TWO FORTRAN
PROGRAMS ARE AVAILABLE.

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

ANALOG SIMULATION + ANALYTICAL MODEL + COMPUTER PROGRAM + REACTOR, FAST + REACTOR, MOLTEN SALT

9-18715
SCHULTZ MA + BLUESTEIN I + SHAW VG
SHUTDOWN REACTIVITY METER FOR MEASURING THE SUBCRITICAL REACTIVITY IN A NUCLEAR REACTOR
U. S. PATENT 3-296-440 +. 8 PAGES, 11 FIGURES, 2 TABLES, JANUARY 3, 1967, PATENT (U.S.)

THIS PATENT RELATES TO A METER FOR AUTOMATICALLY AND CONTINUOUSLY MEASURING THE SUBCRITICAL
REACTIVITY OF A SHUTDOWN NUCLEAR FISSION REACTOR. THE METER ANALYZES THE NOISE GENERATED IN
THE REACTOR CORE ARISING FROM THE FLUCTUATIONS IN NEUTRON DENSITY. THE RATIO OF ENERGY
CENTERED AT A HIGH FREQUENCY TO THAT AT A LOW FREQUENCY BECOMES A DIRECT MEASURE OF THIS
REACTIVITY.

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

INSTRUMENTATION, IN CORE + INSTRUMENTATION, SHUTDOWN REACTIVITY + INSTRUMENTATION, SURVEILLANCE +
MEASUREMENT, REACTIVITY + NEUTRON + NOISE + PATENT + UNITED STATES

9-18716
JERMAN RB + SANTORO PF + VANKESSEL HF
IN-CORE SAMPLING AND SPRAY DEVICE FOR NUCLEAR REACTORS
U. S. PATENT 3-300-388 +. 4 PAGES, 6 FIGURES, JANUARY 24, 1967, PATENT (U. S.)

THIS PATENT RELATES TO A PROBE FOR DETECTING FAILURE OF A FUEL-ELEMENT ASSEMBLY COMPOSED OF A
PLURALITY OF CLOSELY SPACED JACKETED FUEL ELEMENTS OVER AND BETWEEN WHICH WATER IS FLOWED.
THE PROBE IS LOCATED AT THE EXIT END OF THE ASSEMBLY AND COMPRISES A PLURALITY OF TUBES
EXTENDING RADIALLY OUTWARD FROM A COLLECTING LINE LOCATED ON THE AXIS OF THE ASSEMBLY. EACH
TUBE IS CLOSED AT ITS OUTER END AND HAS A PLURALITY OF OPENINGS, SPACED ALONG ITS LENGTH
THROUGH WHICH OPENINGS A MIXTURE OF STEAM, WATER, AND GASEOUS FISSION PRODUCTS FROM THE
FUEL-ELEMENT ASSEMBLY ENTERS THE TUBE AND PASSES THERETHROUGH TO THE COLLECTING LINE AND
THENCE TO PROCESSING APPARATUSES.

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

FAILURE, FUEL ELEMENT + INSTRUMENTATION, DETECTION FAILED FUEL ELEMENT + INSTRUMENTATION, IN CORE +
PATENT + REACTOR, BOILING WATER + UNITED STATES

9-18717
MANOLL RE
QUICK OPENING LATCH AND ANTI-VIBRATION LOCK FOR NUCLEAR REACTOR SAFETY ROD
U. S. PATENT 3-261-760 +. 4 PAGES, 13 FIGURES, JULY 19, 1966, PATENT (U.S.)

THE INVENTION CONCERNS A QUICK-OPENING LATCH AND ANTI-VIBRATION LOCK FOR USE IN ATTACHING
NEUTRON POISON MATERIAL TO A SAFETY ROD IN A REACTOR. THE PRINCIPAL OBJECTIVES ARE (1) TO
PROVIDE FOR THE QUICK REMOVAL AND REPLACEMENT OF POISON SECTIONS ON A REACTOR SAFETY ROD, (2)
TO PROVIDE AN ANTIVIBRATION LOCK FOR USE IN ATTACHING POISON SECTIONS TO THE SAFETY RODS, (3)
TO PROVIDE A COMBINATION QUICK-OPENING LATCH AND ANTIVIBRATION LOCK.

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

ATR (ADVANCED TEST REACTOR - NRTS) + CONTROL ROD + CONTROL ROD SCRAM MECHANISM + PATENT + REACTOR, TEST +
UNITED STATES + VIBRATION

9-18718 ALSO IN CATEGORY 6
HETRICK D + SCHMIDT L + THEODORE R
EXAMPLE OF TWO-REGION REACTOR STABILITY WITH DELAYED NEUTRONS
ARIZONA UNIV., TUCSON. DEPT. OF NUCLEAR ENGINEERING
TID-23844 +. 25 PAGES, 1966

THE LINEARIZED POINT-REACTOR MODEL IN THE PROMPT-JUMP APPROXIMATION IS USED WITH A SIMPLE

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-18718 *CONTINUED*

TWO-REGION LUMPED-PARAMETER MODEL FOR HEAT TRANSFER TO ANALYZE REACTOR STABILITY. THE EFFECT OF NEGLECTING DELAYED NEUTRONS IS DISCUSSED, AND AN EXAMPLE IS PRESENTED WHICH SHOWS THAT DELAYED NEUTRONS CAN IMPAIR STABILITY UNDER CERTAIN CONDITIONS. RESULTS ARE PRESENTED AS STABILITY REGIONS IN A PARAMETER SPACE OF THE TWO REACTIVITY COEFFICIENTS AND AS POWER-TEMPERATURE PHASE-PLANE PLOTS OBTAINED WITH AN ANALOGUE COMPUTER. A WIDE RANGE OF STABILITY IS DEMONSTRATED FOR COMBINATIONS OF PROMPT-POSITIVE AND DELAYED-NEGATIVE REACTIVITY FEEDBACK.

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

ANALYTICAL MODEL + COMPUTER, ANALOG + DELAYED NEUTRON + REACTIVITY COEFFICIENT + THEORETICAL INVESTIGATION

9-18719 ALSO IN CATEGORIES 14 AND 7

WESLEY EJ + NYBERG RA
COMPARISON OF CESIUM IODIDE AND SODIUM IODIDE FOR UNDERWATER RADIATION DETECTION SYSTEMS
NAVAL RADIOLOGICAL DEFENSE LAB., SAN FRANCISCO, CALIFORNIA
AD-633752 + USNRDL-TR-1012 +. 16 PAGES, APRIL 21, 1966

COMPARES NAI AND CSI SCINTILLATION DETECTORS FOR APPLICATION TO AN ULTRASENSITIVE UNDERWATER DETECTION SYSTEM. A SERIES OF MEASUREMENTS ARE REPORTED ON THE RESPONSE OF EACH CRYSTAL TO THE GAMMA RAYS FROM K-40 DISTRIBUTED IN WATER, THE ATTENUATION OF THE INTEGRATED COUNT RATE BY ALUMINUM AND STEEL ABSORBERS SURROUNDING THE DETECTOR AND THE BACKGROUND COUNT RATE FROM CONTAMINANTS ON THE CRYSTAL-PHOTOTUBE ASSEMBLY AND PRESSURE HOUSINGS. IT IS CONCLUDED THAT, FOR DEEP-SUBMERGENCE WORK WITH DETECTORS OF EQUIVALENT SIZE, A CSI SYSTEM IS THE MOST SENSITIVE AND, WHEN COMPARED IN TERMS OF A SPECIFIC DETECTION CAPABILITY, THE LEAST EXPENSIVE. TO COMPLETE THE EVALUATION, THE ASSUMPTION THAT CSI CAN BE OPERATED TO ALL DEPTHS WITHOUT A PRESSURE VESSEL MUST BE CONFIRMED.

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

GAMMA + INSTRUMENTATION, RADIATION MONITORING + OCEAN AND SEA

9-18730 ALSO IN CATEGORY 18

THREE MILE ISLAND INSTRUMENTATION, CONTROL, AND ROD DRIVES.
METROPOLITAN EDISON COMPANY
40 PAGES, FIGURES, PAGE 3-84 TO 3-90 OF CHAPTER 3, VOLUME 1, AND PAGE 7-1 TO 7-34 OF CHAPTER 7, VOLUME II OF METROPOLITAN EDISON COMPANY THREE MILE ISLAND NUCLEAR STATION UNIT 1, PRELIMINARY SAFETY ANALYSIS REPORT, SEPTEMBER 1967, DOCKET 50-289.

IN-CORE INSTRUMENTATION CONSISTS OF 52 ASSEMBLIES, EACH WITH 7 SELF-POWERED FLUX DETECTORS, 1 BACKGROUND DETECTOR, AN INLET AND OUTLET TEMPERATURE DETECTOR, AND A CALIBRATION TUBE. THE REACTOR SAFETY SYSTEM IS FOUR CHANNEL (1/4) GENERAL COINCIDENCE. THE USUAL ROD-DRIVE MOTORS AND SCRAM-RELEASE MECHANISMS ARE INCORPORATED INTO A ROTATING-DISK ACTUATOR (GEAR-TOOTHED WOBBLE PLATE, ROTATED BY SWITCHING FIELDS IN 10 MAGNETS). SCRAM IS ACCOMPLISHED BY REMOVAL OF 480-V POWER TO ROTATORS. FOUR SCRAM CIRCUIT BREAKERS ARE ARRANGED WITH EACH PAIR IN SERIES TO A SEPARATE SUPPLY, SO EACH BREAKER CAN BE TESTED WITHOUT DROPPING A ROD. 69 CONTROL-ROD ASSEMBLIES, EACH ACTUALLY 16 STAINLESS-STEEL TUBES FILLED WITH CO-IN-AG.

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

*CONTROL ROD DRIVE + *INSTRUMENTATION, COINCIDENT + *INSTRUMENTATION, IN CORE + CONTROL ROD + REACTOR SAFETY SYSTEM + SAFETY ANALYSIS REPORT, PRELIMINARY + SELF POWERED FLUX DETECTOR + THREE MILE ISLAND (PWR)

9-18734 ALSO IN CATEGORY 17

BARCHUK IF + ILIPETS DT
FUEL ELEMENTS LEAK CONTROL METHOD AT WWR M REACTOR OF THE PHYSICS INSTITUTE OF THE UKRAINIAN ACADEMY OF SCIENCES
2 PAGES, 1 FIGURE, ATOMNAYA ENERGIYA 21(6) PAGES 514-15 (DECEMBER 1966)

A NEW METHOD OF LEAK DETECTION AND MEASUREMENT (TO REPLACE METHOD OF V.I. POLIKARPOV ET AL., WHICH IS RELATIVELY INSENSITIVE) IS PROPOSED. IT INVOLVES VOIDING THE ELEMENT OF WATER, CONCENTRATING LEAKING FISSION GASES IN IONIZATION CHAMBER, WHERE THE LEAK RATE IS DETERMINED BY CHAMBER CURRENT. AN UNDERWATER VACUUM CHAMBER NEAR THE CORE HOUSES THE APPARATUS. GASES PASS THROUGH A FILTER TO ELIMINATE MOISTURE AND AEROSOLS, WHICH ARE COUNTED SEPARATELY. TEST TAKES ABOUT 1 HR. IN USE SINCE 1962.

*INSTRUMENTATION, DETECTION FAILED FUEL ELEMENT + *TEST, LEAK RATE + AEROSOL + FAILURE, FUEL ELEMENT + FISSION GAS RELEASE + MEASUREMENT, GENERAL + REACTOR, RESEARCH + UNION OF SOVIET SOCIALIST REPUBLICS

9-18739

KRAMER W
NEW NUCLEAR REACTORS FEATURE IN-CORE INSTRUMENTATION
3 PAGES, CONTROL ENGINEERING 14(6) PAGES 115-17 (JUNE 1967)

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-18739 *CONTINUED*

PRESENTS A LOOK AT THE TYPE OF IN-CORE INSTRUMENTATION AND KEY CONTROL SYSTEMS FOR THE TWO NEW INDIAN POINT NUCLEAR POWER GENERATORS (CONSOLIDATED EDISON CO.).

IN CORE MEASUREMENT + INDIAN POINT 2 + INDIAN POINT 3 + INSTRUMENTATION, IN CORE + REACTOR, PRESSURIZED WATER

9-18740

SCHULTZ MA + MATTY T + KENNEY E
WIDE RANGE DIGITAL NUCLEAR INSTRUMENTATION CHANNEL - PHASE I STUDY
MILLETRON, INC., PITTSBURGH, PA.
NYO-3738-7 +. 97 PAGES, MAY 30, 1967

PRESENTS THE RESULTS OF THE PHASE-I STUDY PROGRAM UNDERTAKEN IN CONJUNCTION WITH THE ULTIMATE DESIGN, CONSTRUCTION, AND EVALUATION OF A WIDE-RANGE, DIGITAL, REACTOR-MEASUREMENT CHANNEL. THE VARIOUS SUBSYSTEM OPTIONS INVOLVING MAJOR COMPONENTS AND COMPUTATIONAL APPROACHES WERE EVALUATED AND DECISIONS MADE AS TO THE CONCEPTS TO CARRY OVER INTO THE DESIGN AND HARDWARE STAGE. PART OF THIS REPORT IS CONCERNED WITH A THEORETICAL EVALUATION OF THE LIMITATIONS OF THE INPUT-PULSE INFORMATION AND A STATISTICAL ANALYSIS OF THE OPTIMIZATION OF REACTOR LEVEL AND PERIOD COMPUTATION.

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

INSTRUMENTATION, GENERAL + INSTRUMENTATION, RATE OF CHANGE + INSTRUMENTATION, WIDE RANGE

9-18741

ALSO IN CATEGORY 6

CASALI F + CASINI G + CENERINI R + CORDANI G + RUSTICHELLI F + STURM B + ZAPPELLINI G
CHARACTERISTICS AND DESIGN OF A FACILITY FOR K-INF MEASUREMENTS ON D2O LATTICES IN THE RB-1 REACTOR
COMITATO NAZIONALE PER L'ENERGIA NUCLEARE, BOLOGNA + CENTRO DI CALCOLO
EUR-3484.E +. 32 PAGES, JUNE 1967

IN THE FRAME OF THE COOPERATION BETWEEN EURATOM AND CNEN, A D2O FACILITY WAS INSTALLED IN THE RB-1 PILE OF BOLOGNA. THIS WILL PERMIT THE EXECUTION OF K-INF MEASUREMENTS, ACCORDING TO THE PCIR TECHNIQUE, ON HEAVY-WATER LATTICES. THE EXPERIMENTAL PROGRAM WILL DEAL FIRST WITH THE MEASUREMENTS ON ORGEL-TYPE FUEL ELEMENTS (NATURAL URANIUM CLUSTERS) AND IT WILL CONTINUE WITH THE ANALYSIS OF LATTICES IN THE FRAMEWORK OF THE CIRENE PROJECT. THE K-INF EXPERIMENTS WILL BE COMPLETED BY A SERIES OF DETAILED PARAMETER MEASUREMENTS SUCH AS INITIAL CONVERSION RATIO, FAST FISSION RATIO, ETC., BY THE ACTIVATION TECHNIQUE.

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

BUCKLING + EXPERIMENT, GENERAL + FUEL ELEMENT + FUEL ELEMENT BOWING + HEAVY WATER + ITALY + REACTOR, RESEARCH + URANIUM, NATURAL

9-18743

HOFHINE PA
A WIDE RANGE TIME-TO PULSE HEIGHT CONVERTER USING A TRANSISTOR IN THE AVALANCHE SWITCHING MODE
PHILLIPS PETROLEUM COMPANY
IDO-17225 +. 26 PAGES, 15 FIGURES, 8 REFERENCES, MAY 1967

DESCRIBES A SOLID-STATE TIME-TO-PULSE-HEIGHT CONVERTER WHOSE OUTPUT PULSE HEIGHT IS PROPORTIONAL TO THE TIME BETWEEN THE INPUT PULSE AND A REFERENCE PULSE. THE INSTRUMENT UTILIZES THE SWEEP VOLTAGE FROM AN OSCILLOSCOPE TO CONTROL THE OUTPUT-PULSE AMPLITUDE. THIS PROVIDES A WIDE RANGE OF VALUES FOR THE MAXIMUM OR FULL-SCALE TIME INPUT. A DEVIATION FROM LINEARITY OF LESS THAN PLUS OR MINUS 1/4 PERCENT OF THE MAXIMUM OUTPUT HAS BEEN ACHIEVED. THE UNIT INCORPORATES A DIODE SAMPLING GATE, DRIVEN BY AN AVALANCHE TRANSISTOR, TO ACHIEVE A SAMPLING TIME OF LESS THAN A NANOSECOND.

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

GAMMA + INSTRUMENTATION, NUCLEAR + INSTRUMENTATION, PULSE + INSTRUMENTATION, RATE OF CHANGE + INSTRUMENTATION, WIDE RANGE

9-18766

ALSO IN CATEGORY 6

LONG JK + HESS AL + MCVEAN RL + PERSTANI PJ + ULRICH AJ + BAIRD QL + BENNETT RA + ENGSTROM SL
FFTF CRITICAL EXPERIMENTS-CONTROL-ROD STUDIES ON ZPR-3
ARGONNE NATIONAL LAB., ARGONNE, ILL. + PACIFIC NORTHWEST LABORATORY
CONF-670-602 +. 12 PAGES, FIGURES, 1 TABLE, ABSTRACT IN ANS TRANSACTIONS 10(1), PAGE 269 AND 270, (JUNE 1967), PAPER PRESENTED AT THE 1967 ANNUAL MEETING OF THE AMERICAN NUCLEAR SOCIETY, SAN DIEGO, CALIFORNIA, JUNE 11-15, 1967

CONTROL-ROD EXPERIMENTS WERE PERFORMED IN ZPR-3 ASSEMBLY 48 WITH TWO 100-DEGREE SECTORS OF THE BLANKET REPLACED BY A NICKEL/STAINLESS-STEEL/SODIUM COMPOSITION TO SIMULATE THE FFTF REFLECTOR ENVIRONMENT. THE CONTROL RODS CONTAINED BORON CARBIDE UNIFORMLY DISTRIBUTED ALONG A 54-INCH LENGTH, AND EITHER DISTRIBUTED OVER THE CROSS SECTION OF A ZPR-3 TUBE OR BUNCHED AT ITS CENTER. BESIDES CENTRAL IN-CORE MEASUREMENTS, INTERACTIONS OF CLUSTERS OF IDENTICAL RODS

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-18766 *CONTINUED*

WERE COMPARED WITH THE SUM OF THE SEPARATE RODS. WORTH DISTRIBUTIONS AXIALLY AND RADially WERE MEASURED.

CONTROL ROD INTERACTION + CONTROL ROD WORTH + CRITICAL ASSEMBLY FACILITY + FFTF (TR) + REACTOR, FAST + REACTOR, TEST + TEST, PHYSICS + ZPR 3 (ANL ZERO POWER REACTOR)

9-18768 ALSO IN CATEGORY 6

PROTSIK R

EPITHERMAL CAPTURE AND FISSION DISTRIBUTION IN A FUEL ROD. THE COMPUTER CODE REAX GENERAL ELECTRIC CO., SAN JOSE, CALIFORNIA. ADVANCED PRODUCTS OPERATION GEAP-4973 +. 67 PAGE, REFERENCES, APRIL 1966

THE REAX CODE WAS WRITTEN TO PROVIDE A MEANS OF ANALYZING THE EFFECTIVENESS OF THERMAL FLUX FILTERS IN REDUCING THE POWER DEPRESSION IN A HIGHLY ENRICHED FUEL PIN. AN EXTENSION OF THE COMPUTER CODE DOPIE, REAX CALCULATES, AS A FUNCTION OF RADIUS AND ENERGY, THE EPITHERMAL CAPTURE AND FISSION EVENTS AND CROSS SECTIONS IN A HOMOGENEOUS, UNIFORM-TEMPERATURE FUEL ROD IMMERSSED IN A HOMOGENEOUS MEDIUM. RADIAL POWER DISTRIBUTIONS CALCULATED FOR BOTH FILTERED AND UNFILTERED, URANIUM AND MIXED-OXIDE FUEL PINS, TO BE TEST IRRADIATED IN TREAT, ARE PRESENTED.

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

COMPUTER PROGRAM + FLUX DISTRIBUTION + FUEL ELEMENT + REACTOR, BREEDER + REACTOR, FAST + REACTOR, MOLTEN SALT + SEFOR (SOUTHWEST EXP. FAST OXIDE REACTOR)

9-18770

PERSSON R

THE INTERACTION BETWEEN CONTROL RODS AS ESTIMATED BY SECOND-ORDER ONE-GROUP PERTURBATION THEORY AKTIEBOLAGET ATOMENERGI, STOCKHOLM, SWEDEN AE-250 +. 45 PAGES, FIGURES, TABLES, REFERENCES, OCTOBER 1966

THE INTERACTION EFFECT BETWEEN CONTROL RODS IS AN IMPORTANT PROBLEM FOR THE REACTIVITY CONTROL OF A REACTOR. THE APPROACH OF SECOND-ORDER ONE-GROUP PERTURBATION THEORY WAS SHOWN TO BE ATTRACTIVE DUE TO ITS SIMPLICITY. FORMULAS ARE DERIVED FOR THE FULLY INSERTED CONTROL RODS IN A BARE REACTOR. THE THEORETICAL EXPRESSIONS WERE CORRELATED WITH THE RESULTS OF SEVERAL EXPERIMENTS IN RO, ZEBRA, AND THE AGEFTA REACTOR, AS WELL AS WITH MORE INTRICATE CALCULATIONS. THE APPROXIMATE FORMULAS GAVE QUITE GOOD AGREEMENT WITH EXACT VALUES, BUT, IN THE CASE OF ABOUT 8 OR MORE RODS, HIGHER-ORDER EFFECTS ARE LIKELY TO BE IMPORTANT.

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

AGEFTA (SWEDISH 65 MWTH REACTOR) + CONTROL ROD INTERACTION + CONTROL ROD WORTH + EXPERIMENT, GENERAL + PERTURBATION METHOD + REACTIVITY EFFECT + REACTOR, HEAVY WATER + REACTOR, PRESSURIZED WATER + SWEDEN

9-18771 ALSO IN CATEGORY 6

SCHWALM D

DETERMINING THE REGION OF ASYMPTOTIC STABILITY OF A COUPLED REACTOR WITH LINEAR POWER FEEDBACK EUROPEAN ATOMIC ENERGY COMMUNITY, ISPRA, ITALY. JOINT NUCLEAR RESEARCH CENTER EUR-3465.E + CONF-670107-8 +. 36 PAGES, APRIL 1967, FROM AMERICAN NUCLEAR SOCIETY, COUPLED REACTOR KINETICS CONFERENCE, COLLEGE STATION, TEX.

THE REGION OF STABILITY IN STATE SPACE WAS STUDIED FOR A TWO-CORE SYSTEM BY MEANS OF LIAPUNOV'S DIRECT METHOD. WHERE THERE IS POWER FEEDBACK, THE DYNAMICAL EQUATIONS ARE NONLINEAR. FOR THE LINEARIZED SYSTEM, LIAPUNOV FUNCTIONS ARE CONSTRUCTED BY THREE TECHNIQUES AND APPLIED TO THE NONLINEAR SYSTEM. THUS THE REGION OF STABILITY IN STATE SPACE CAN EASILY BE ESTIMATED IN THE TWO-DIMENSIONAL CASE. THE EFFECT OF DELAYED NEUTRONS ON THE STABILITY BEHAVIOUR WAS ALSO STUDIED. THIS LED TO A PROBLEM OF AT LEAST THREE DIMENSIONS. FOR THE CASE OF CONSTANT POWER, FEEDBACK TRANSFER FUNCTIONS, IT WAS SHOWN IN SPECIAL NUMERICAL EXAMPLES THAT THE REGIONS OF STABILITY IN PARAMETER AND STATE SPACE REMAIN UNCHANGED FOR VANISHING DISTURBANCES OF THE INITIAL CONDITIONS OF THE PRECURSORS.

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

DELAYED NEUTRON + LIAPUNOV'S FUNCTION + REACTOR CONTROL + THEORETICAL INVESTIGATION + TRANSFER FUNCTION

9-18772

BENOIT R + DE BLUST E + ISABELLA L + MANDL V + MELANDRONE G
ELECTRONIC INSTRUMENTS FOR RADIATION DETECTORS AND CONTROL SYSTEM
EUROPEAN ATOMIC ENERGY COMMUNITY, EURATOM
EUR-3063E + UC-37-3 +. 34 PAGES, REFERENCES, 1966

THE AIM OF THIS PAPER IS TO BRIEFLY DESCRIBE THE ELECTRONIC INSTRUMENTS DEVELOPED IN THE NUCLEAR CHEMISTRY LABORATORY DURING THE LAST YEARS. THEY ARE SUBDIVIDED INTO THE FOLLOWING GROUPS - (1) LOW-NOISE AMPLIFIERS FOR SEMICONDUCTOR DETECTORS AND GRIDDED IONIZATION

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-18772 *CONTINUED*

CHAMBERS. (2) FAST ELECTRONICS FOR TIME MEASUREMENTS WITH PHOTOMULTIPLIERS AND SEMICONDUCTOR DETECTORS. (3) POWER SUPPLIES AND CONTROL SYSTEMS FOR THE CONSTRUCTION OF LITHIUM-DRIFTED SEMICONDUCTOR DETECTORS. (4) AUTOMATIC CONTROL FOR ACTIVATION ANALYSIS AND RADIOCHEMICAL SEPARATIONS.

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

INSTRUMENTATION, AMPLIFIER + INSTRUMENTATION, CONTROL + INSTRUMENTATION, NUCLEAR + INSTRUMENTATION, PULSE + INSTRUMENTATION, RADIATION MONITORING

9-18773

EHRINGER H + MONGINI-TAMAGNINI C + PONTI C
THERMOCOUPLE COMPOSITION CHANGES DUE TO NEUTRON IRRADIATION
EUROPEAN ATOMIC ENERGY COMMUNITY, ISPRA, ITALY. EUROPEAN SCIENTIFIC DATA PROCESSING CENTER. EUROPEAN ATOMIC ENERGY COMMUNITY, ISPRA, ITALY. JOINT NUCLEAR RESEARCH CENTER
EUR-3156.E +. 42 PAGES, 1966

MAINLY DESCRIBES THE METHODS EMPLOYED TO CALCULATE THERMOCOUPLE-COMPOSITION CHANGES DUE TO NEUTRON IRRADIATION IN THERMAL REACTORS. FOR EACH OF THE CONSIDERED ELEMENTS (PT, RH, MO, FE, RU, PD, NI), A REACTION CHAIN WAS CONSTRUCTED, AND THE CORRESPONDING SET OF DIFFERENTIAL EQUATIONS WAS SOLVED BY A FORTRAN PROGRAM ON AN IBM 7090 COMPUTER. SOME INTERESTING RESULTS CONCERNING THE RELIABILITY OF THE CONSIDERED THERMOCOUPLES ARE DISCUSSED.

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

FAILURE, INSTRUMENT + INSTRUMENTATION, ABNORMAL INDICATION + INSTRUMENTATION, TEMPERATURE + MEASUREMENT, TEMPERATURE

9-18775

MORIN R
THE USE OF A DIGITAL COMPUTER FOR STARTING AND OPERATING THE EDF 3 NUCLEAR POWER STATION
6 PAGES, ENERGIE NUCLEAIRE 8(5), PAGE 310, (JULY-AUGUST 1966)

THE COMPLEXITY OF THE ATOMIC PLANT EDF-3 LED TO THE USE OF DIGITAL COMPUTERS WHICH HAVE TO COLLECT CENTRALLY ALL THE IMPORTANT DATA ON THE OPERATING CONDITIONS OF THE PLANT. THE MAIN COMPUTER HAS TO FULFILL THE FOLLOWING DUTIES - (1) PROCESSING OF 2500 MEASUREMENTS, SOME VALUES BEING RECORDED BY CHOICE, OTHERS WHEN EXCEEDING GIVEN LIMITS. (2) PROCESSING OF 3000 SIGNALS REGARDING THE WORKING CONDITIONS OF THE PLANT. (3) HIGH-SPEED RECORDING OF ABOUT A HUNDRED MEASURED VALUES AND SIGNALS AFTER A DISTURBANCE. (4) LEAKAGE CONTROL OF THE CANNING. (5) CONTROL OF STARTING AND SHUT-DOWN OPERATIONS. (6) SOME CONTROLS AND ADAPTATIONS OF PRESCRIBED VALUES. IN CASE OF FAILURE OF THE MAIN COMPUTER, ITS MOST IMPORTANT FUNCTIONS ARE TAKEN OVER AUTOMATICALLY BY AN AUXILIARY COMPUTER. DETAILED INVESTIGATIONS WERE MADE REGARDING THE DATA REDUCTION BY THE COMPUTER, WITH A VIEW TO SIMPLIFYING AS FAR AS POSSIBLE THE INTERPRETATIONS TO BE PERFORMED BY THE OPERATING STAFF.

COMPUTER PROGRAM + COMPUTER, DIGITAL + CONTROL, COMPUTER + DATA PROCESSING

9-18776

WEAVER LE + SHULTZ DG + MELSA JL + SECKER PA + NORDAL DM + SLIVINSKY CR
RESEARCH IN AND APPLICATION OF MODERN AUTOMATIC CONTROL THEORY TO NUCLEAR ROCKET DYNAMICS AND CONTROL.
VOLUME I. SEMI-ANNUAL STATUS REPORT
ARIZONA UNIV., TUCSON, ENGINEERING RESEARCH LAB.
NASA-CR-70862 + N-66-19882 THRU + N66-19885 +. 316 PAGES, FIGURES, TABLE, REFERENCES, FEBRUARY 1966

THIS REPORT IS DIVIDED INTO THREE SEPARATE SECTIONS, PORTIONS OF WHICH WERE SUBMITTED AS A DOCTORAL THESIS. IN SECTION 1 (OPTIMAL FEEDBACK CONTROL OF NUCLEAR REACTOR SYSTEMS), OPTIMAL CONTROL THEORY IS APPLIED TO DERIVE ANALYTICAL EXPRESSIONS FOR COMPENSATING REACTIVITY CONTROL WHICH MINIMIZES AN INTEGRAL QUADRATIC PERFORMANCE INDEX CONTAINING SYSTEM ERRORS AND CONTROL MOTIONS. VARIOUS LINEAR AND NONLINEAR REACTOR MODELS ARE ANALYZED. ANALOG COMPUTER STUDIES SHOW THE EFFECT OF QUASI-OPTIMAL FEEDBACK CONTROL IN MINIMIZING SYSTEM ERRORS CAUSED BY INTERNAL DISTURBANCES. IN SECTION 2 (MODELING WITH LIAPUNOV FUNCTION), THE SECOND METHOD OF LIAPUNOV IS USED TO ANALYZE THE BEHAVIOR OF HIGH-ORDER CONTROL SYSTEMS. THE THIRD SECTION (LINEAR SYSTEM DESIGN USING STATE VARIABLE FEEDBACK), DEALS WITH THE PROBLEMS OF THE DESIGN OF OPTIMAL FEEDBACK SYSTEMS FOR LINEAR SYSTEM SUBJECT TO QUADRATIC INTEGRAL PERFORMANCE CRITERION.

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

CONTROLLER + REACTOR CONTROL + REACTOR KINETICS + THEORETICAL INVESTIGATION

9-18777

MELSA JL + MURRAY HS
STATE-VARIABLE FEEDBACK CONTROL OF COUPLED NUCLEAR SYSTEMS
LOS ALAMOS SCIENTIFIC LAB., N. MEX. + ARIZONA UNIVERSITY, TUCSON

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-18777 *CONTINUED*
LA-DC-8352 + CONF-670107-5 +. 21 PAGES, 2 REFERENCES, 1967

PRESENTS A NEW APPROACH TO THE DESIGN OF FEEDBACK CONTROLLERS FOR LINEAR SYSTEMS. THE SIGNIFICANT FEATURE IS THAT IT PROVIDES A LINK BETWEEN MODERN STATE-VARIABLE CONTROL-SYSTEM REPRESENTATION AND WELL-KNOWN DESIGN TECHNIQUES, PARTICULARLY THE POOL-LOCUS TECHNIQUE.

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

ANALYTICAL TECHNIQUE, GENERAL + CONTROLLER + REACTOR CONTROL + THEORETICAL INVESTIGATION + TRANSFER FUNCTION

9-18808 ALSO IN CATEGORIES 14 AND 16
DANEK WL + DARGIS AA
PARTICLE VELOCIMETER FOR USE CLOSE-IN TO UNDERGROUND EXPLOSIONS. FORMAL REPORT, PHASE 4
ENGINEERING PHYSICS CO., ROCKVILLE, MD.
AD-631496 + DASA-1431-2 +. 93 PAGES, TABLES, DECEMBER 31, 1965

THIS REPORT IS ONE OF A SERIES OF SUCH REPORTS CONCERNED WITH THE DEVELOPMENT OF A PARTICLE VELOCIMETER FOR USE CLOSE TO UNDERGROUND EXPLOSIONS. PHASE I CONSISTED OF A STUDY OF SEVERAL CONCEPTS. PHASE II CONSISTED IN DETERMINING THE BASIC MECHANICAL STRUCTURE OF THE GAGE. PHASE III CONSISTED IN DESIGNING FIELD EXPERIMENTS AND FABRICATION OF THE SUPPORT INSTRUMENTATION, PHASE IV CONSISTED IN DESIGNING A POWER SUPPLY TO PROVIDE THE HIGH CURRENTS REQUIRED AND INCORPORATING THE POWER SUPPLY INTO THE GAGE BODY.

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

CIVIL DEFENSE + EXPLOSION + INSTRUMENTATION, SURVEILLANCE

9-18921
WILDE N + BOLAND TJ + ANDERSON SD
INSTRUMENT DEVELOPMENT BRANCH. ANNUAL REPORT. 1966
PHILLIPS PETROLEUM CO.
IDO-17234 +. 99 PAGES, 87 FIGURES, 5 TABLES, 41 REFERENCES, JULY 1967

THIS REPORT IS ONE OF A SERIES CONCERNED WITH DESCRIBING SIGNIFICANT DEVELOPMENT ACTIVITIES IN INSTRUMENTATION AT THE NATIONAL REACTOR TESTING STATION.

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

CONTROL, COMPUTER + DATA PROCESSING + INSTRUMENTATION, GENERAL + INSTRUMENTATION, IN CORE + INSTRUMENTATION, NUCLEAR + INSTRUMENTATION, RADIATION MONITORING + INSTRUMENTATION, SURVEILLANCE + INSTRUMENTATION, TEMPERATURE + SIMULATION + TEST, INSTRUMENT RESPONSE

9-18926 ALSO IN CATEGORY 17
FORD NUCLEAR REACTOR PROPOSED CHANGE - CONTROL ROD TEST SCHEDULE
UNIVERSITY OF MICHIGAN
2 PAGES, OCTOBER 3, 1967, DOCKET NO. 50-2

REQUEST FOR INSPECTION OF BORON-S.S. SHIM-SAFETY RODS ON A SEMIANNUAL BASIS (RATHER THAN SEMIANNUAL OR EVERY 50 MW-DAYS). REACTOR IS PRESENTLY LIMITED TO A 28-DAY CYCLE (25 DAYS AT 2MW AND 3 DAYS OF SHUTDOWN). CITES PAST EXPERIENCE WITH THE RODS AND TEST TO BE PERFORMED BEFORE EACH CYCLE (ROD-WORTH CALIBRATION, MAGNETIC-RELEASE-TIME MEASUREMENT, AND ROD-FLIGHT TIME). CHANGE WOULD ALLOW USE OF A PLANNED 35-DAY CYCLE (3 DAYS OF SHUTDOWN).

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

*CONTROL ROD BURNUP + *TEST INTERVAL + BORON + CONTROL ROD, SHIM SAFETY + EXAMINATION + REACTOR, POOL TYPE + REACTOR, RESEARCH + TECHNICAL SPECIFICATIONS

9-18963 ALSO IN CATEGORY 6
DAHLBERG RC + MANGAN D
LINEAR ANALYSIS OF XENON INSTABILITY IN HIGH-TEMPERATURE GAS-COOLED REACTORS
GENERAL DYNAMICS CORP., SAN DIEGO, CALIF. GENERAL ATOMIC DIVISION
GAMD-7213 +. 26 PAGES, REFERENCES, JULY 29, 1966

THE PROBLEM OF SPATIAL XENON STABILITY IN THE HTGR WAS EXAMINED, USING A METHOD DEVELOPED BY J. C. STEWARD. THE SPECIFIC POWER AT WHICH THE HTGR BECOMES UNSTABLE (IN A CLASSICAL SENSE) WITH RESPECT TO XENON OSCILLATIONS WAS COMPUTED AS A FUNCTION OF THE THERMAL GROUP INFINITE MULTIPLICATION CONSTANT, THE HARDNESS OF THE THERMAL SPECTRUM, REACTOR SIZE, AND THE DEGREE OF FLUX FLATTENING. IT WAS FOUND THAT - (1) AN UNSTABLE SITUATION PROBABLY EXISTS IN THE 1000-MW(1) HTGRS OF GREATEST INTEREST, NAMELY, THE HIGH-POWER-DENSITY DESIGNS. (2) THE COLORADO REACTOR APPEARS STABLE AGAINST XENON INSTABILITIES. HOWEVER, IF FLUX FLATTENING IN THE RADIAL DIRECTION IS ACHIEVED, THE STABILITY MARGIN MAY NOT BE LARGE. (3) THE STABILIZING EFFECT OF THE TEMPERATURE COEFFICIENT CAN BE SIGNIFICANT FOR COEFFICIENTS WHICH ARE AS

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-18963 *CONTINUED*

NEGATIVE AS ABOUT $-4 \times 10^{(-5\text{TH})/\text{DEG C}}$ IN THE OPERATING RANGE.

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

REACTOR CONTROL + REACTOR, HIGH TEMP. GAS + XENON + XENON OSCILLATION

9-18964

SPURGIN AJ + CARSTAIRS RL
OVERALL STATION CONTROL AT HUNTERSTON. A.
WESTINGHOUSE ELECTRIC CORP., BETTIS ATOMIC POWER LAB. + ATOMIC POWER CONSTRUCTIONS, LTD.
8 PAGES, 10 FIGURES, PROC. INST. ELEC. ENGRS. 114(5), PAGE 671 THRU 678, (MAY 1967)

IN THE PAPER THE DEVELOPMENT OF THE REPRESENTATION OF THE OVERALL PLANT-CONTROL SYSTEM OF THE HUNTERSTON NUCLEAR GENERATING STATION IS OUTLINED. EXAMPLES ARE GIVEN OF TRANSIENTS PREDICTED ANALYTICALLY AND OBTAINED IN PRACTICE. THE TEST RESULTS SHOW THAT THE SYSTEM WORKS SATISFACTORILY AND SUGGEST THAT AN ANALYTICAL APPROACH OF THE COMPLEXITY OUTLINED ENABLES THE BEHAVIOUR OF THE PLANT AND CONTROL SYSTEM TO BE PREDICTED ADEQUATELY FROM THE PRACTICAL POINT OF VIEW.

OPERATING EXPERIENCE + REACTOR CONTROL + REACTOR, POWER + SIMULATION + SYSTEM DESCRIPTION + UNITED KINGDOM

9-18966

OGAWA Y + KAH I + OZAWA Y
TIME OPTIMUM CONTROL FOR REACTORS WITH TWO KINDS OF INTERNAL FEEDBACK
HOKKAIDO UNIV., SAPPORO
11 PAGES, 8 FIGURES, 6 REFERENCES, J. NUCL. SCI. TECH. (TOKYO) 3, PAGE 455 THRU 464, (NOVEMBER 1966)

A CONTROL TO BRING THE STATE OF A REACTOR SYSTEM TO EQUILIBRIUM STATE IN TIME-OPTIMUM MANNER IS DISCUSSED. NONLINEAR INTEGRAL EQUATIONS CONTAINING THE EFFECTS OF TWO KINDS OF INTERNAL FEEDBACK AND DELAYED NEUTRONS AND ALSO THE EFFECT OF EXTERNAL CONTROL ARE ADOPTED FOR THE DYNAMIC EQUATIONS OF THE SYSTEM. THESE EQUATIONS ARE REDUCED TO QUASILINEAR (PARAMETRIC) DIFFERENTIAL EQUATIONS, ON WHICH THE EXTERNAL CONTROL APPLIES IN THE FORM OF A COMBINATION OF THE CONTROL REACTIVITY, ITS RATE OF CHANGE AND ITS ACCELERATION. PONTRYAGIN'S MAXIMUM PRINCIPLE IS APPLIED TO A QUASILINEAR SYSTEM, AND SEVERAL MODES OF OPTIMUM CONTROL PATTERNS - NODAL, FOCAL, SADDLE, AND MIXED - ARE OBTAINED ACCORDING TO THE NUCLEAR AND THERMAL PROPERTIES, THE THERMAL OUTPUT OF THE REACTOR, AND MAGNITUDE OF THE CONTROL. OPTIMUM CONTROL IS OBTAINED IN THE FORM OF PIECEWISE CONSTANT CONTROL REFERRED TO A NEW CONTROL PARAMETER WHICH CONSISTS OF A LINEAR COMBINATION OF THE CONTROL REACTIVITY, ITS RATE OF CHANGE AND ITS ACCELERATION.

REACTOR CONTROL + REACTOR DYNAMICS + THEORETICAL INVESTIGATION

9-18967

PLEYBER G
MONITOR FOR THERMAL (NEUTRON) FLUX OF GASEOUS CIRCUITS
COMMISSARIAT A L-ENERGIE ATOMIQUE, GRENOBLE, FRANCE. CENTRE D-ETUDES NUCLEAIRES
CONF-651154-5 +. 9 PAGES, NOVEMBER 3, 1965. IN FRENCH, PRESENTED AT SYMPOSIUM ON FLUX MEASUREMENTS USED IN CONNECTION WITH IRRADIATION EQUIPMENT IN RESEARCH AND MATERIAL TEST REACTORS, GRENOBLE, FRANCE

DESCRIBES AN APPARATUS FOR CONTINUOUSLY MEASURING THE THERMAL NEUTRON FLUX BY GAS CIRCULATION. ONLY RELATIVE MEASUREMENTS ARE CONSIDERED, AND THE SENSITIVITY OF THE DEVICE IS GIVEN BY ASSOCIATION WITH MEASUREMENT BY CLASSIC ACTIVATION. THE PRECISION OF THESE MEASUREMENTS IS 2%. TWO EXAMPLES FOR THE CORRESPONDING APPLICATION TO EXPERIMENTAL LOOPS IRRADIATED IN THE SWIMMING-POOL REACTORS MELUSINE AND SILOE ARE CITED.

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

FRANCE + INSTRUMENTATION, NUCLEAR + REACTOR, GAS COOLED + REACTOR, POOL TYPE + THERMAL NEUTRON

9-18968

BIANCHI G + LUPOLI P + MURETTI S
BEHAVIOUR OF IRRADIATED THERMOCOUPLES. EXPERIMENTAL INVESTIGATIONS
COMITATO NAZIONALE PER L-ENERGIA NUCLEARE, ROME, ITALY
RT-ING-(66)-14 +. 23 PAGES, TABLES, 1966

THE KNOWLEDGE OF THE BEHAVIOUR OF THERMOCOUPLES UNDER IRRADIATION IS VERY IMPORTANT FOR TEMPERATURE MEASUREMENT AND CONTROL IN EXPERIMENTS PERFORMED IN NUCLEAR REACTORS BECAUSE THERMOCOUPLES ARE THE MAJOR AND ALMOST EXCLUSIVE MEANS OF MEASURING TEMPERATURE IN IN-PILE EXPERIMENTS. THERMOCOUPLE IRRADIATION WAS PERFORMED BY MEANS OF RIGS AT THE ISPRA 1 REACTOR AND LASTED FOR ABOUT NINE MONTHS, WITH A TOTAL INTEGRATED FLUX OF ABOUT $4 \times 10^{(20\text{TH})}$. THE MAXIMUM TEMPERATURE REACHED WAS 650 C.

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

CATEGORY 9.
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-18968 *CONTINUED*
INSTRUMENTATION, TEMPERATURE + IRRADIATION TESTING + ITALY + TEST, INSTRUMENT RESPONSE +
THERMAL CONSIDERATION

9-18969
MOHLER RR
LETS APPLY OPTIMAL CONTROL THEORY AND NONLINEAR ANALYSIS
UNIVERSITY OF NEW MEXICO
5 PAGES, 49 REFERENCES, POWER REACTOR TECHNOLOGY 9(4), PAGE 169 THRU 173, (FALL 1966)

DEALS WITH RESULTS OF OPTIMAL CONTROL AND NONLINEAR ANALYSIS AND THEIR IMPLICATIONS.
CONSTRUCTIVELY CRITICIZES CERTAIN AREAS, AND INDICATES SOME OF THE PITFALLS INTO WHICH
RESEARCHERS HAVE STUMBLLED. SOME OF THE EASIER REACTOR-CONTROL PROBLEMS ARE DISCUSSED. 49
REFERENCES.

REACTOR CONTROL + THEORETICAL INVESTIGATION

9-18970 ALSO IN CATEGORY 15
KAPIL AL + BASCHIERE RJ
SHELTER ATMOSPHERE MONITORING INSTRUMENTS. FINAL REPORT
GENERAL AMERICAN TRANSPORTATION CORP., NILES, ILL., GENERAL AMERICAN RESEARCH DIVISION
AD-642416 + GARD-1277 +. 73 PAGES, REFERENCES, JANUARY 1966

REVIEWED THE ENVIRONMENTAL FACTORS WITHIN FALLOUT SHELTERS TO IDENTIFY THOSE FACTORS THAT CAN
REACH DANGEROUS LEVELS DURING OCCUPANCY AND HENCE MUST BE CONTROLLED TO PROTECT THE LIVES OF
THE SHELTEREES. A SURVEY WAS THEN MADE TO LOCATE COMMERCIAL INSTRUMENTS FOR MONITORING THESE
FACTORS. AS A CONSEQUENCE OF THIS SURVEY, EFFORT WAS DIRECTED TOWARDS DEVELOPING INEXPENSIVE
INSTRUMENTS THAT COULD INDICATE THE EFFECTIVE TEMPERATURE AND MEASURE THE CONCENTRATIONS OF
THE VARIOUS GASES IN THE SHELTER.

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

CIVIL DEFENSE + ENVIRONMENTAL CONDITION + INSTRUMENTATION, AIR SAMPLING + INSTRUMENTATION, TEMPERATURE +
MONITORING PROGRAM, ENVIRONMENTAL

9-18971
LLOYD RD + MAYS CW + ATHERTON DR
KNOTHOLE, A NEW SIDE-WELL GAMMA RAY DETECTOR
RADIOBIOLOGY DIVISION, ANATOMY DEPT., UNIVERSITY OF UTAH, SALT LAKE CITY, UTAH
5 PAGES, 7 FIGURES, 2 TABLES, 4 REFERENCES, NUCL. INSTR. AND METHODS 40(1), PAGE 109 THRU 113, (1967)

DESIGNED A DETECTOR THAT COULD BE USED IN THE ACCURATE GAMMA-RAY ASSAY OF LOW-ACTIVITY SAMPLES
IN REASONABLE COUNTING INTERVALS. IT HAS HIGH COUNTING EFFICIENCY, GOOD RESOLUTION, IS
RELATIVELY INSENSITIVE TO THE POSITION OF THE ACTIVITY WITHIN THE SAMPLE CONTAINER, AND HAS A
LOW BACKGROUND COUNTING RATE.

GAMMA + INSTRUMENTATION, RADIATION MONITORING + MONITOR, RADIATION, GENERAL

9-18972
GOLDSTEIN R
THE EFFECT OF ACTIVE FAILURES ON RELIABILITY
LITTON INDUSTRIES
4 PAGES, 9 FIGURES, THE ELECTRONIC ENGINEER 25(10), PAGE 51 THRU 53, (OCT. 1966)

ACTIVE FAILURES CAN CREATE OPERATIONAL PROBLEMS SO SERIOUS THAT IT IS SAFER NOT TO OPERATE
EQUIPMENT RATHER THAN TO RISK THE CONSEQUENCES OF A MAXIMUM OUTPUT FAILURE.

REDUNDANCE + RELIABILITY ANALYSIS

9-18974
AGERON P + CHAFFARD JP
USE OF A TIME-OF-FLIGHT SPECTROMETER TYPE S.E.P.P. FOR THE STUDY OF THE SPECTRA OF THE NEUTRONS COMING
FROM THE SPECIAL MODERATORS OF THE SILOETTE REACTOR
COMMISSARIAT A L-ENERGIE ATOMIQUE, GRENOBLE, FRANCE. CENTRE D-ETUDES NUCLEAIRES
NP-16581 +. 16 PAGES, 1966, IN FRENCH

A DEVICE PLACED IN THE SILOETTE REACTOR WILL MAKE IT POSSIBLE TO EMIT A HORIZONTAL BEAM OF
NEUTRONS FROM DIFFERENT TYPES OF MODERATORS (FOR EXAMPLE, HEAVY WATER AT ROOM TEMPERATURE,
LIQUID H₂, GRAPHITE, OR RGO AT HIGH TEMPERATURE). THE DIFFERENT THERMAL NEUTRON SPECTRA
OBTAINED CAN BE STUDIED BY MEANS OF THE SEPP SPECTROMETER, USED EITHER AT ITS MAXIMUM SPEED
OR AT A LOWER ONE. THIS FIRST STUDY ATTEMPTS TO PREDICT THE NUMBER OF NEUTRONS DETECTED PER
SECOND AND PER CHANNEL. IT WILL BE OF THE ORDER OF SEVERAL NEUTRONS PER SECOND FOR THE
EQUILENGTH CHANNELS OF THE BURST.

CATEGORY 9
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-18974 *CONTINUED*

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

FRANCE + INSTRUMENTATION, NUCLEAR + MODERATOR COEFFICIENT + REACTOR, RESEARCH + SPECTROMETRY, NEUTRON +
THERMAL NEUTRON

9-18978 ALSO IN CATEGORY 17

SAXTON AMENDMENT 2 TO CHANGE REQUEST 25. REVISED PAGES TO TECHNICAL SPECIFICATIONS
SAXTON NUCLEAR EXPERIMENTAL CORPORATION, SAXTON, PA.
7 PAGES, 3 FIGURES, OCTOBER 10, 1967, DOCKET NO. 50-146

INFORMATION COVERS - (1) ADDING A PERMISSIVE SWITCH TO ALLOW OVERRIDE OF CERTAIN TRIPS AT LESS
THAN 23.5 MWT, (2) MODIFICATION TO VARIABLE-FREQUENCY MOTOR-GENERATOR-SET EXCITER POWER TO
INCREASE COOLANT-PUMP COASTDOWN, (3) SAFETY-INJECTION-SYSTEM FLOW-TOTALIZER CONTACT REMOVED.
AUTOMATIC STOPPING OF PUMPS REMOVED TO SATISFY SINGLE-FAILURE CRITERIA. CHANGE-REQUEST 25 IS
FOR A POWER UPGRATING TO 35 MW.

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

*EMERGENCY POWER, ELECTRIC + *REACTOR SAFETY SYSTEM + *SHUTDOWN SYSTEM, SECONDARY +
EMERGENCY POWER, ELECTRIC + REACTOR, PRESSURIZED WATER + SAXTON + SINGLE FAILURE CRITERION +
TECHNICAL SPECIFICATIONS

9-18982 ALSO IN CATEGORY 18

PEACH BOTTOM 1 CHANGE 4 - TESTING FREQUENCY OF INSTRUMENTATION
AEC, DIVISION OF REACTOR LICENSING, WASHINGTON, D. C.
3 PAGES, OCTOBER 4, 1967, DOCKET NO. 50-171

DRL GRANTS PERMISSION TO CHANGE THE TESTING FREQUENCY OF THE REACTOR-SAFETY-SYSTEM
INSTRUMENTATION FROM WEEKLY TO MONTHLY, BASED ON PAST GOOD EXPERIENCE. DRL DOES NOT FEEL
THAT SEMIANNUAL TESTING IS JUSTIFIED ON BASIS OF EXPERIENCE TO DATE.

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

*TECHNICAL SPECIFICATIONS + *TEST INTERVAL + INSTRUMENTATION, NUCLEAR + INSTRUMENTATION, PROTECTIVE +
INSTRUMENTATION, TESTING + PEACH BOTTOM 1 + REACTOR SAFETY SYSTEM + REACTOR, GAS COOLED +
REACTOR, GRAPHITE MODERATED + SAFETY EVALUATION + TEST, SYSTEM OPERABILITY

CATEGORY 10
ELECTRICAL POWER SYSTEMS

10-17513 ALSO IN CATEGORIES 9 AND 17
BIG ROCK POINT ASSERTS MANUAL/AUTO OPERATION OF TURBINE BYPASS VALVE IS NOT IN TECH. SPECS.
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 PAGES, JUNE 23, 1967, DOCKET NO. 50-155, BIG ROCK POINT NUCLEAR REACTOR

AFTER NOVEMBER 1966, THE MAIN STEAM BYPASS VALVE WAS OPERATED MANUALLY ABOVE 50 MW(E), AS EXPERIENCE INDICATES THAT THE BYPASS VALVE WILL PROBABLY NOT PREVENT A SCRAM AT LOAD REJECTIONS ABOVE 50 MW, PENDING FURTHER TESTS AND ADJUSTMENTS. A THOROUGH TEST PROGRAM IS UNDESIRABLE DUE TO THE EFFECT OF THERMAL TRANSIENTS ON THE FUEL FAILURES THAT HAVE BEEN EXPERIENCED ON THE STAINLESS STEEL AND R AND D FUELS. A BACKUP STATION POWER SUPPLY (A 46-KV LINE) AND AN ISOLATION VALVE (JUST BEFORE THE BYPASS VALVE) ARE TO BE INSTALLED DURING THE NEXT REFUELING, BECAUSE OF THE AUGUST 8, 1966, OCCURRENCE.

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

*CONTROLLER + *EMERGENCY POWER, ELECTRIC + *VALVE + BIG ROCK POINT + CONTAINMENT PENETRATION, CLOSURE OF + ELECTRIC POWER, NORMAL + FAILURE, FUEL ELEMENT + INSPECTION AND COMPLIANCE + REACTOR, BOILING WATER + TECHNICAL SPECIFICATIONS

10-17647 ALSO IN CATEGORY 17
PATHFINDER PROPOSED CHANGE 43. USE OF STATIC INVERTER IN PLACE OF EXISTING MOTOR-GENERATOR SET
NORTHERN STATES POWER COMPANY, MINNEAPOLIS, MINNESOTA
3 PAGES, AUGUST 10, 1967, DOCKET NO. 50-120. AMENDMENT NO. 43 TO TECHNICAL SPECIFICATIONS ON PATHFINDER REACTOR

PATHFINDER CONTENDS THAT THE STATIC INVERTER WOULD PERFORM THE SAME FUNCTION WITH IMPROVED RELIABILITY AND FREQUENCY STABILITY.

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

*ELECTRIC POWER, VITAL + PATHFINDER + REACTOR, BOILING WATER + REACTOR, INTERNAL SUPERHEAT + RELIABILITY, COMPONENT + TECHNICAL SPECIFICATIONS

10-17648 ALSO IN CATEGORY 17
AEC ASKS PLUM BROOK FOR ADDITIONAL INFORMATION ON PROPOSED CHANGE 31
AEC, DIVISION OF REACTOR LICENSING
2 PAGES, APRIL 10, 1967, DOCKET NO. 50-30. NASA PLUM BROOK REACTOR

CHANGE 31 PROPOSES REPLACEMENT OF FOUR SMALL EMERGENCY-POWER DIESEL GENERATORS WITH 2 LARGER ONES. QUESTIONS - (1) PROVIDE A REVISED DETAILED SCHEMATIC OF THE ELECTRICAL DISTRIBUTION SYSTEM, (2A) LIST VITAL LOADS, (2B) DISCUSS PREOPERATIONAL TESTING OF THE NEW GENERATORS, (2C) HOW WILL SINGLE FAILURE CRITERION BE MET IF ONE UNIT IS INOPERABLE, (2D) DISCUSS SURVEILLANCE PROGRAM FOR ADEQUATE FUEL SUPPLY, OPERABILITY OF BOTH UNITS, AND PERIODIC GENERATOR STARTUP.

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

*ELECTRIC POWER, AUXILIARY + *ELECTRIC POWER, VITAL + *GENERATOR, DIESEL + EMERGENCY COOLING CONSIDERATIONS + PLUM BROOK + REACTOR, TEST + SINGLE FAILURE CRITERION + SURVEILLANCE PROGRAM + TECHNICAL SPECIFICATIONS

10-17649 ALSO IN CATEGORY 17
ADDITION INFORMATION IN RESPONSE TO AEC QUESTIONS ON PLUM BROOK PROPOSED CHANGE 31
AEC, DIVISION OF REACTOR LICENSING + NASA. LEWIS RESEARCH CENTER
5 PAGES, AUGUST 7, 1967, DOCKET NO. 50-30

PLUM BROOK, IN REPLY TO AEC QUESTIONS OF JULY 19, 1967, ANSWERS (1) EXPERIMENTS ARE DESIGNED AND ANALYZED SO THAT IF ALL ELECTRICAL POWER WERE LOST THERE WOULD BE NO RELEASE OF RADIOACTIVITY TO THE PRIMARY COOLANT, (2) GIVES PREOPERATIONAL TEST PROGRAM FOR PROPOSED DIESEL GENERATORS, (3) CONTENDS THAT GUARANTEED POWER SYSTEM WILL SATISFY SINGLE-FAILURE CRITERIA IF ONE GENERATOR IS SHUT DOWN FOR MAINTENANCE, (4) DIESEL GENERATOR ISOLATION SYSTEM AND GUARANTEED POWER SYSTEM WILL BE CHECKED EVERY 6 MONTHS. EMERGENCY COOLING VALVES, EVERY 3 MONTHS.

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

*ELECTRIC POWER, VITAL + *GENERATOR, DIESEL + ELECTRIC POWER, AUXILIARY + EMERGENCY COOLING CONSIDERATIONS + PLUM BROOK + REACTOR, TEST + SINGLE FAILURE CRITERION + TECHNICAL SPECIFICATIONS

10-17672 ALSO IN CATEGORY 17
SWENSON LD + BIRNEY KR
DOLTL - A COMPUTER CODE TO CALCULATE TEMPERATURE DRIFT FOR STATICALLY CONTROLLED SNAP ICA TYPE REACTORS
ATOMICS INTERNATIONAL, CANOGA PARK, CALIF.

CATEGORY 10
ELECTRICAL POWER SYSTEMS

10-17672 *CONTINUED*
NAA-SR-MEMO-11977 +. 15 PAGES, APRIL 11, 1966

PRESENTS THE ANALYTICAL MODEL USED IN THE DOLT COMPUTER CODE TO CALCULATE THE TEMPERATURE DRIFT FOR NSAP-10A REACTORS. THE MODEL ALLOWS AN ACTIVE CONTROL PERIOD OF SPECIFIED LENGTH FOLLOWED BY STATIC (HANDS-OFF) CONTROL FOR THE REMAINDER OF THE OPERATING PERIOD. THE MODEL TREATS THE FOLLOWING MECHANISM OF REACTIVITY CHANGE AS A FUNCTION OF POWER AND/OR TEMPERATURE - (1) SM-149 PREPOISON BURNOUT AND SM-149 BUILDUP, (2) HYDROGEN LEAKAGE FROM THE FUEL ELEMENTS, (3) HYDROGEN REDISTRIBUTION WITHIN THE FUEL ELEMENTS, (4) FISSION-PRODUCT ACCUMULATION (OTHER THAN XE-135 AND SM-149) AND U-235 DEPLETION, AND (5) CHANGES IN EQUILIBRIUM XE-135 WORTH.

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

COMPUTER PROGRAM + ELECTRIC POWER, NORMAL + ISOTOPIC GENERATOR + MEASUREMENT, TEMPERATURE + REACTOR POWER + SNAP 10A (SYSTEMS FOR NUCLEAR AUXILIARY POWER)

10-17873 ALSO IN CATEGORIES 11 AND 17
BARKLEY HB
JCAE HEARING ON POWER REACTOR REGULATION - H. B. BARKLEY
LEWIS RESEARCH CENTER
3 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(38) PAGES 53-56 (SEPTEMBER 18, 1967)

IN ADDITION TO LETTER OF AUGUST 8, ASSERTING THAT REGULATORY PROGRAM HAS NOT CONTRIBUTED TO SAFETY AT PLUM BROOK IN 4 YEARS BUT HAS USED TIME UNPRODUCTIVELY, TWO POINTS WERE MADE. (1) TECHNICAL SPECIFICATIONS CHANGES TAKE TOO LONG AND TOO MUCH EFFORT (TECHNICAL SPECIFICATIONS REQUESTED MARCH 16, 1967 TO REPLACE 4 DIESEL GENERATORS WITH 2 NEW, LARGER ONES. DRL QUESTIONED IN DETAIL OUR ENTIRE ELECTRICAL SYSTEM AND ITS SURVEILLANCE. SUGGESTIONS INCLUDE NEW PEOPLE TRAVEL TO SITE, BETTER COMMUNICATION WITH COMPLIANCE.) (2) PROGRAM DOES NOT ENCOURAGE NEW IDEAS IN REACTOR SAFETY (PERMISSION TO REPLACE CONTINUOUSLY MONITORED ELECTRICAL PENETRATIONS WITH HERMETIC SEALS TOOK 8.5 MONTHS AND MUCH DISCUSSION FOR THIS IMPROVED METHOD).

*EMERGENCY POWER, ELECTRIC + *MODIFICATION, SYSTEM OR EQUIPMENT + CONGRESSIONAL ACTIVITY + CONTAINMENT LEAKAGE CONTROL + CONTAINMENT PENETRATION, ELECTRICAL + GENERATOR, DIESEL + OPERATING EXPERIENCE + PLUM BROOK + REGULATION, AEC

10-17893 ALSO IN CATEGORY 9
HOLLADAY RL
THE FUNCTIONS AND PERFORMANCE OF THE CONSUMERS BIG ROCK POINT PROCESS COMPUTER SYSTEM
GENERAL ELECTRIC CO., SAN JOSE, CALIFORNIA. ATOMIC POWER EQUIPMENT DEPT.
GEAP-5297 +. 108 PAGES, FIGURES, REFERENCES, OCTOBER 1966

DESCRIBES THE ON-LINE COMPUTER SYSTEM DEVELOPED FOR AND INSTALLED IN THE CONSUMERS POWER COMPANY, BIG ROCK POINT NUCLEAR POWER PLANT IN CHARLEVOIX, MICHIGAN. IT WILL SCAN REACTOR AND PLANT SENSORS PERIODICALLY, EXECUTE REACTOR-CORE AND PLANT-PERFORMANCE CALCULATIONS, LOG THE RESULTS. IN ADDITION, ALL MEASUREMENTS AND CERTAIN CALCULATED PARAMETERS ARE COMPARED WITH PREDEFINED LIMITS, AND ALARMS ARE ACTIVATED IF A LIMIT IS EXCEEDED. THIS REPORT DISCUSSES THE DEVELOPMENT AND PERFORMANCE OF THE PROGRAM SYSTEM, DESCRIBES THE HARDWARE AND SOFTWARE, AND GIVES A DETAILED DESCRIPTION OF THE THERMAL-HYDRAULIC FUNCTIONS DEVELOPED FOR THE SYSTEM.

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

BIG ROCK POINT + COMPUTER CONTROL + COMPUTER PROGRAM + DATA PROCESSING + ELECTRIC POWER, GENERAL + INSTRUMENTATION, ABNORMAL INDICATION + REACTOR, BOILING WATER

10-17899
RUBEL P
EMERGENCY HEAT REMOVAL AND RELIABILITY OF AUXILIARY POWER SYSTEMS IN BOILING-WATER REACTORS
OAK RIDGE NATIONAL LAB., TENN.
9 PAGES, 2 FIGURES, 1 TABLE, 9 REFERENCES, NUCLEAR SAFETY 8(2), PAGE 139 THRU 147, (DECEMBER 1966)

PRACTICAL RELIABILITY ASPECTS OF EMERGENCY HEAT-REMOVAL SYSTEMS IN FIVE BWR POWER PLANTS ARE REVIEWED. RELIABILITY CRITERIA FOR THE SUPPORTING EMERGENCY POWER SUPPLIES ARE DEVELOPED INFORMALLY THROUGH CONSIDERATION OF VITAL-FUNCTION PERFORMANCE REQUIREMENTS UNDER ACCIDENT CONDITIONS POSTULATED IN SAFEGUARDS REPORTS. COUNTERPART FEATURES ARE COMPARED AMONG THE PLANTS. THE DEMANDS IMPOSED ON THE POWER SUPPLIES HAVE NOT CHANGED FUNDAMENTALLY DURING RECENT YEARS, ALTHOUGH NEW EMERGENCY HEAT-REMOVAL SYSTEMS HAVE BEEN ADDED. THERE HAS BEEN INCREASED EMPHASIS ON PROMPT OPERATION OF SOME EMERGENCY SYSTEMS ACCOMPANYING THE HIGHER REACTOR-POWER RATINGS AND CORE-POWER DENSITIES.

BROWNS FERRY + DRESDEN 1 + DRESDEN 2 + DRESDEN 3 + EMERGENCY COOLING CONSIDERATIONS + EMERGENCY POWER, ELECTRIC + OYSTER CREEK + QUAD CITIES 1 AND 2 + REACTOR, BOILING WATER + REACTOR, POWER + RELIABILITY, SYSTEM

CATEGORY 10
ELECTRICAL POWER SYSTEMS

10-18173 ALSO IN CATEGORY 9

MOINEREAU M

SYSTEMS OF DATA PROCESSING EMPLOYED FOR MONITORING AND OPERATING NUCLEAR POWER STATIONS
4 PAGES, 3 FIGURES, TECH. MOD. 57, PAGE 403 THRU 406, (AUGUST-SEPT. 1965), IN FRENCH

EXAMPLES OF DATA-PROCESSING-SYSTEMS APPLICATIONS IN EXPERIMENTAL NUCLEAR REACTORS ARE PRESENTED, AND COMPUTER APPLICATIONS IN NUCLEAR POWER STATIONS ARE DISCUSSED. FUNCTIONS PROVIDED BY THESE SYSTEMS INCLUDE SURVEILLANCE OF ANALOG MEASUREMENTS OR ALL-OR-NOTHING CHANNELS (FAILURE OR STATE CONTACTS) AND PROCESSING OF BURST-SLUG DETECTION. STANDARD SYSTEMS OF DATA PROCESSING FOR MONITORING AND AUTOMATING NUCLEAR POWER STATIONS ARE DESCRIBED.

DATA PROCESSING + ELECTRIC POWER, NORMAL + INSTRUMENTATION, DETECTION FAILED FUEL ELEMENT + INSTRUMENTATION, SURVEILLANCE

10-18598 ALSO IN CATEGORY 9

LA COUR CHRISTENSEN P

REGULATION OF A PHWR POWER STATION

ATOMENERGIKOMMISSIONEN RISCOE, DENMARK

RISO-M-241 +. 20 PAGES, 5 FIGURES, MAY 1965

SURVEYS THE POSSIBILITIES FOR AUTOMATIC CONTROL FOR A PHWR POWER STATION. THE AIM FOR THE CONTROL SYSTEM IS TO ENABLE THE POWER STATION TO DELIVER STEAM AT CONSTANT TEMPERATURE AND PRESSURE WITH THE SMALLEST TEMPERATURE VARIATIONS IN THE REACTOR AT LOAD VARIATIONS. A SIMPLIFIED DYNAMIC MODEL FOR A PHWR POWER STATION WAS DEVELOPED AND USED FOR INVESTIGATION OF DIFFERENT METHODS OF CONTROL. THE MOST PROMISING METHOD SEEMS TO BE A COMBINED CONTROL OF STEAM PRESSURE AND COOLANT OUTLET TEMPERATURE FROM THE REACTOR, AND A REGULATION OF THE COOLANT FLOW IN ACCORDANCE WITH THE GENERATED ELECTRICAL POWER.

AVAILABILITY + MICROCARD EDITIONS, INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISC. 54669

ANALYTICAL MODEL + INSTRUMENTATION, CONTROL + INSTRUMENTATION, PROCESS + REACTOR, HEAVY WATER

10-18760

SYSTEMS RELIABILITY

2 PAGES, ELECTRICAL TIMES 150(22), PAGE 850 AND 860, (DECEMBER 1, 1966)

EMPHASISING THE NEED FOR A MUCH CLEARER UNDERSTANDING OF THE TASK AND THE CONDITIONS FOR OBTAINING SYSTEMS RELIABILITY, W. L. MCLACHLAN, OF EUROCONTROL EXPERIMENTAL CENTRE, WENT ON TO STRESS THE IMPORTANCE OF THE OPERATORS FACILITIES AND THE ENGINEERING CONSTRUCTION OF EQUIPMENT TO ENABLE RAPID FAULT LOCATION AND CONTROL OF THE SYSTEM TO ENSURE MAXIMUM AVAILABILITY DESPITE ELECTRONIC FAILURES. HE WAS SPEAKING AT THE OPENING OF A DAY COLLOQUIUM HELD AT THE IEE LAST WEEK ON CONCEPTS OF SYSTEMS RELIABILITY IN ENGINEERING.

ELECTRIC POWER, GENERAL + INTEGRITY + RELIABILITY, COMPONENT

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-14620 ALSO IN CATEGORIES 12 AND 18
IMPROVEMENTS TO CONTAINMENT ISOLATION VALVE SEAL WATER SECTION
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC., INDIAN POINT NUCLEAR GENERATING UNIT NO. 2
5 PAGES, 2 FIGURES, FOURTH SUPPLEMENT TO PRELIMINARY SAFETY ANALYSIS REPORT, JULY 1966, DOCKET NO. 50-247

DESCRIBES MODIFIED ISOLATION-VALVE SEAL-WATER SYSTEM WITHOUT INDICATING MODIFICATIONS.
PRINCIPLE NOT CHANGED. SEAL WATER (AT PRESSURE HIGHER THAN CONTAINMENT PRESSURE) IS INJECTED
INTO VALVE BONNET SO OUTLEAKAGE IS ELIMINATED PAST THE FIRST DISK OF THE DOUBLE-DISK
ISOLATION VALVE. FOR THE 50 PENETRATIONS, A 200-GAL WATER TANK PRESSURIZED BY NITROGEN
BOTTLES IS PROVIDED.

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

*CONTAINMENT LEAKAGE CONTROL + *CONTAINMENT PENETRATION, PIPE + *SYSTEM DESCRIPTION + INDIAN POINT 2 +
MODIFICATION, SYSTEM OR EQUIPMENT + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY +
VALVE

11-16488 ALSO IN CATEGORY 17
LEWIS WB
DIFFUSION PHENOMENA IN SLABS OF FINITE THICKNESS.
PHILLIPS PETROLEUM COMPANY, IDAHO FALLS, IDAHO 83401
4 PAGES, 6 FIGURES, 3 REFERENCES, NUCLEAR APPLICATIONS 3(4), PAGES 222-225 (APRIL 1967)

A MATHEMATICAL MODEL WAS DEVELOPED WHICH QUALITATIVELY DESCRIBES CONTAMINATION OF A PAINT FILM
OF ARBITRARY THICKNESS BY DIFFUSION OF RADIOACTIVE CONTAMINATION AFTER EXPERIMENTS
ESTABLISHED THAT VOLUME CONTAMINATION WAS LARGE COMPARED WITH REMOVABLE SURFACE
CONTAMINATION. MUCH OF THE CONTAMINATION TRANSPORTED TO A CONTAINMENT VESSELS INTERIOR
COATING WILL BE TRAPPED AND CAN BE DISPOSED OF BY REMOVING THE COATING. CURVES ARE PRESENTED
TO MAKE THE MODEL USEFUL FOR THE EXPERIMENTAL DETERMINATION OF THE DIFFUSION COEFFICIENT.

*COATING, SURFACE + *CONTAMINATION + *MATHEMATICAL TREATMENT + CONTAINMENT, GENERAL +
INCIDENT, ACTUAL, RECOVERY FROM

11-16496 ALSO IN CATEGORY 18
SURRY 1 AND 2 - AMENDMENT 1
VIRGINIA ELECTRIC AND POWER COMPANY, RICHMOND, VIRGINIA
56 PAGES, 17 FIGURES, DOCKET NO. 50-280/281, JUNE 21, 1967

DRAWINGS AND ENTIRE TEXT SUBSTITUTIONS ARE MADE FOR CONTAINMENT-STRUCTURE DESIGN (SECT.
5.2.2), GENERATOR-DESIGN BASES AND SYSTEM INTERCONNECTIONS (SECT. 8.2 AND 8.3), COMPONENT
COOLING SYSTEM (SECT. 9.4), CONTROL-ROOM SHIELDING AND VENTILATION (SECT. 11.3.2.1 AND .5),
ORGANIZATION AND PERSONNEL (SECT. 12), AND HYPOTHETICAL INCIDENT (SECT. 14.5.1). CHANGES
APPEAR TO BE TRIVIAL EDITING CHANGES, AND SMALL DIMENSIONAL CHANGES EXCEPT (1) NEW SECTION
8.3 ON INTERCONNECTIONS TO POWER GRID, (2) ADDED NEUTRON SHIELD TANK COOLER SUBSTITUTES FOR
SHIELDING CONCRETE COOLING COILS, (3) THE CONTAINMENT WALL IS NOW 12 IN. THICKER, REDUCING
SITE-BOUNDARY DIRECT-RADIATION DOSE FROM 46 MILLIREMS/1.3 REMS (FOR 2-HOUR/30-DAY DOSE) TO
39/0.19, (4) CONTROL-ROOM SHIELDING/VENTILATION AUGMENTED TO REDUCE DOSE FROM AN OVERHEAD
PLUME.

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

*CONTAINMENT, GENERAL + *SAFETY ANALYSIS REPORT, GENERAL + AUXILIARY COOLING + CONTROL PANEL/ROOM +
DOSE CALCULATION, EXTERNAL + REACTOR, PRESSURIZED WATER + SHIELDING + SURRY 1 AND 2

11-16927 ALSO IN CATEGORIES 3 AND 13
HAHS CA
THE DESIGN AND OPERATION OF THE TRANSFER CASE AND RELATED EQUIPMENT IN THE TRANSURANIUM PROCESSING PLANT
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.
ORNL-TM-1815 +. 40 PAGES, 20 FIGURES, MAY 1967

A TRANSFER CASE WAS DESIGNED TO HANDLE HIGHLY RADIOACTIVE CARGO WITHIN THE LIMITED-ACCESS AREA
OF THE TRANSURANIUM PROCESSING PLANT AT THE OAK RIDGE NATIONAL LABORATORY. THE CASE AND ITS
RELATED EQUIPMENT WERE DEVELOPED TO MAKE ALPHA-CONFINED TRANSFERS OF EQUIPMENT AND MATERIAL
AT NINE CELL CUBICLES IN THE CELL BANK, THE DECONTAMINATION GLOVE BOX, AND THE SOLID WASTE
DISPOSAL STATION. PERHAPS THE MOST UNUSUAL FEATURE OF THIS TRANSFER SYSTEM IS THE
INTERCHANGEABILITY OF THE LARGE DOOR IN THE BOTTOM OF THE TRANSFER CASE WITH THE MATING DOORS
AT THE 11 TRANSFER STATIONS WHILE USING THE SAME METHOD OF SEALING FOR ALL DOORS. THE DESIGN
PROBLEMS ASSOCIATED WITH THE TRANSFER CASE AND ITS RELATED EQUIPMENT, THE FINAL DESIGN, AND
THE METHODS OF OPERATION DEVISED FOR THIS TRANSFER SYSTEM ARE DESCRIBED.

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

ALPHA EMITTER + CONTAINMENT DESIGN + CONTAMINATION + EQUIPMENT DESIGN + FUEL HANDLING MACHINE +
TRANSURANIUM PROGRAM

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-16965 ALSO IN CATEGORY 18
MEL NIKOV NP
ENGINEERING DESIGN AND STRUCTURAL ANALYSIS OF NUCLEAR REACTORS
USSR. GOSUDARSTVENNYI KOMITET PO I SPOL ZOVANI YU ATOMNOI ENERGII
AEC-TR-6640 + IPST-CAT.-1667 +. 591 PAGES, FIGURES, TABLES, REFERENCES, 1963

IN THIS BOOK AN ATTEMPT IS MADE TO DISCUSS PROBLEMS PERTAINING TO THE STRUCTURAL DESIGN OF NUCLEAR REACTORS, TO REVIEW THE EVALUATION OF THEIR DESIGN, TO NOTE BASIC PROBLEMS LIKELY TO BE POSED BY FUTURE DEVELOPMENT, TO ANALYZE THE BASIC FACTORS THAT LED TO THE EVOLUTION OF VARIOUS SHAPES, AND TO ESTABLISH MATHEMATICAL RULES OF PROCEDURE. THE AUTHOR ALSO ATTEMPTS TO ANALYZE CALCULATION METHODS FOR TREATING METAL REACTOR VESSELS AND THEIR COMPONENT PARTS. THIS BOOK DISCUSSES THEORETICAL CONSIDERATIONS RELEVANT TO THE SHAPES OF REACTORS, AND THE DESIGN OF STEEL REACTOR STRUCTURES. THE THEORETICAL BACKGROUND AND PHYSICS OF REACTORS ARE NOT DISCUSSED, EXCEPT WHERE THEY ARE PERTINENT TO THE CHOICE OF PARAMETERS FOR THE CRITICAL SIZE OF THE CORE, AND TO THE FUEL ELEMENTS. TECHNICAL AND ECONOMIC ASPECTS OF THE SHAPES EVOLVED ARE REVIEWED.

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

*PRESSURE VESSEL + *STRESS ANALYSIS + BRITTLE FRACTURE + CONTAINMENT STRUCTURE + DESIGN CRITERIA + REACTOR, FAST + REACTOR, GAS COOLED + REACTOR, HEAVY WATER + REACTOR, WATER + STEEL + WELDING

11-16966
SORENSEN HC + FISTEDIS SH
HYDRODYNAMICS OF A NEW CONCEPT OF PRIMARY CONTAINMENT BY ENERGY ABSORPTION
ARGONNE NATIONAL LAB., ILL.
ANL-7214 +. 141 PAGES, 32 FIGURES, 15 TABLES, 23 REFERENCES, DECEMBER 1966

TO DETERMINE THE EFFECT THAT THE DESTRUCTIVE COMPONENT OF A NUCLEAR ACCIDENT PRODUCES ON A PRIMARY CONTAINMENT STRUCTURE, A FLUID-DYNAMICAL ANALYSIS WAS MADE FOR AN IDEALIZED REACTOR SYSTEM HAVING SPHERICAL SYMMETRY. THIS PRIMARY CONTAINMENT STRUCTURE REFLECTS A NEW CONCEPT DEVELOPED AT ARGONNE NATIONAL LABORATORY. IT CONSISTS IN THE UTILIZATION OF THE CONCRETE BIOLOGICAL SHIELD AS AN ENERGY-ABSORBING DEVICE. FOR THIS PURPOSE, UNBONDED, UNSTRESSED, HIGH-STRENGTH STEEL STRANDS ARE EMBEDDED IN THE BIOLOGICAL SHIELD. THE NEW CONTAINMENT CONCEPT IS BASED ON THE ENERGY-ABSORBING CAPACITY OF THE STRANDS.

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

*COMPUTER PROGRAM + *CONCRETE + *CONTAINMENT STRUCTURE + *CONTAINMENT, SHOCK GENERATION AND PROTECTION + *SHIELDING + ANALYTICAL MODEL + SHOCK ABSORBER + SHOCK WAVE

11-16967 ALSO IN CATEGORY 5
KLEPPER OH + BELL CG
UNDERWATER CAISSON CONTAINMENT OF LARGE POWER REACTORS
OAK RIDGE NATIONAL LAB., OAK RIDGE, TENN.
ORNL-4073 +. 260 PAGES, FIGURES, TABLES, REFERENCES, JUNE 1967

THE PURPOSE OF THIS STUDY WAS TO INVESTIGATE THE FEASIBILITY AND POTENTIAL ADVANTAGES OF CONTAINING LARGE NUCLEAR POWER REACTORS IN UNDERWATER CAISSONS. THE REFERENCE DESIGN DESCRIBED CONSISTS OF A 715-MW(E) BOILING-WATER REACTOR HOUSED IN A CONCRETE CAISSON LOCATED ONE-HALF MILE OFFSHORE. THE TURBINE-GENERATOR IS LOCATED ON A TEN-ACRE ARTIFICIAL ISLAND, WHICH SURROUNDS THE CAISSON. SEAWATER IS USED FOR CONTAINMENT COOLING AND TO REDUCE THE OUTLEAKAGE OF FISSION PRODUCTS IN THE EVENT OF A LOSS-OF-COOLANT ACCIDENT. IT IS ESTIMATED THAT THE ACTIVITY RELEASE RATES TO THE ENVIRONMENT WOULD BE SEVERAL ORDERS OF MAGNITUDE SMALLER THAN FOR THE CORRESPONDING ABOVE-GROUND CONTAINMENT SYSTEM. SIGNIFICANT CONTAMINATION OF THE SEA APPEARS UNLIKELY. FOR AN UNPROTECTED OCEAN SITE, ISLAND CAISSON CONTAINMENT INCREASES PLANT CAPITAL COSTS BY ABOUT \$7,000,000. IT IS SUGGESTED THAT THIS NEW CONTAINMENT APPROACH BE CONSIDERED FOR POWER REACTORS NEAR METROPOLITAN AREAS THAT REQUIRE AUGMENTED REACTOR SAFETY AND THAT ARE ADJACENT TO A SUITABLE LAKE, RIVER, OR OCEAN.

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

*DESIGN CRITERIA + *ECONOMICS + *EMERGENCY COOLING CONSIDERATIONS + *SITING, OFF SHORE + ACCIDENT ANALYSIS + CONTAINMENT PENETRATION, GENERAL + CONTAINMENT, PRESSURE SUPPRESSION + EARTHQUAKE ENGINEERING

11-17020 ALSO IN CATEGORIES 12 AND 14
BOND GW + DYER GH
MATERIALS APPLICATIONS FOR NUCLEAR POWER PLANT FROM THE VIEWPOINT OF AN ENGINEER-CONSTRUCTOR
BECHTEL CORP., SAN FRANCISCO
CONF-660319-3 +. 27 PAGES, 6 FIGURES, 4 TABLES, 9 REFERENCES, AMERICAN SOCIETY FOR METALS SESSIONS, WESTEC CONFERENCE, LOS ANGELES, MARCH 7-11, 1966

A GENERAL PAPER DESCRIBING THE CURRENT PRACTICE IN THE DESIGN OF SEVERAL REACTOR SYSTEMS,

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-17020 *CONTINUED*
PRINCIPALLY CONTAINMENT, WASTE DISPOSAL, REFUELING, AND SHIELDING.

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

*CONTAINMENT, GENERAL + CODES AND STANDARDS + ECONOMICS + MATERIAL + REFUELING + SHIELDING + WASTE DISPOSAL, GENERAL

11-17021
MAYNOR HW + BUSCH CC
AN INSTRUMENTED HYDRAULIC SYSTEM FOR THE INTERPRODUCTION OF CRACKS TO AND BURST TESTING OF HIGH-STRENGTH STEEL PRESSURE VESSELS
AUBURN UNIVERSITY, AUBURN, ALA.
AD-636 963 +. 23 PAGES, 5 FIGURES, 1 TABLE, 7 REFERENCES, JUNE 29, 1966

A HYDRAULIC SYSTEM WAS BUILT FOR INTRODUCING SURFACE OR PART-THROUGH-THE-THICKNESS CRACKS TO THIN-WALL (0.065-IN.) SCALE-MODEL PRESSURE VESSELS. THE HOOP STRESSES RESULTING FROM INTERNAL PRESSURE, IN THE RANGE 4000 TO 5000 PSI, WILL BE APPLIED AS PRESSURE PULSES AT FREQUENCIES UP TO 160 CPM FOR THE NUMBER OF CYCLES REQUIRED TO GROW CRACKS OF PREDETERMINED LENGTHS. THE SYSTEM CONSISTS ESSENTIALLY OF A MOTOR-DRIVEN HYDRAULIC PUMP, VALVES, FITTINGS, TUBING, AND APPROPRIATE INSTRUMENTS. A COMPONENT OF THE SYSTEM, MANUALLY OPERATED HYDRAULIC PUMP, WILL AFFORD BURST PRESSURES UP TO 30,000 PSI TO TEST VESSELS CONTAINING INDUCED CRACKS. SEVERAL VESSELS WERE MADE FROM 18' NICKEL (250 GRADE) MARAGING STEEL.

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

*FRACTURE TOUGHNESS + *TEST, PRESSURE VESSEL + INSTRUMENTATION, TESTING + MOCKUP + PRESSURE VESSEL + STEEL + STRESS RUPTURE + TESTING

11-17051
DORNER H + GUHL H
PRESTRESSED CONCRETE REACTOR PRESSURE VESSELS FOR 170 ATM INTERNAL PRESSURE
ORNL-TR-1568 +. 26 PAGES, AND FROM TECH. UEBERWACH 7 PAGES 10-16 (1966)

THE OVERALL PROBLEM OF A PRESTRESSED CONCRETE PRESSURE VESSEL IS EVALUATED FROM THE POINT OF VIEW OF THE STEEL PRESSURE VESSEL MANUFACTURER. WHEN VIEWED FROM THIS ANGLE, IT IS NOTED FIRST THAT A STEEL PRESSURE-VESSEL WALL CAN SIMULTANEOUSLY ABSORB STRESSES IN SEVERAL DIRECTIONS (MULTIAXIAL STATE OF STRESS), WHILE EACH DIRECTION OF STRESS IN THE CASE OF PRESTRESSED CONCRETE MUST BE SEPARATELY ABSORBED BY TENSIONING STEEL (ONLY A MONOAXIAL STATE OF STRESS IS POSSIBLE). BECAUSE OF THE POORER MATERIAL UTILIZATION, THIS APPEARS TO BE A DISADVANTAGE FOR PRESTRESSED CONCRETE, BUT ON CLOSER INSPECTION IT IS FOUND TO BE A CONSIDERABLE ADVANTAGE. IN CONTRAST, THE FACT THAT CONCRETE CANNOT BE EXPOSED TO TEMPERATURE LOADS HIGHER THAN 50 TO 80 C IS A TRUE DISADVANTAGE DEMANDING AN INTERNAL INSULATION WITH COOLING. THE CONTINUED DEVELOPMENT OF NUCLEAR ENERGY PLANTS INTO LARGER AND MORE ECONOMICAL POWER UNITS, HOWEVER, OFFERS SUFFICIENT OPPORTUNITY TO EQUALIZE THIS DISADVANTAGE IN COMPARISON TO STEEL PRESSURE VESSELS.

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

*CONCRETE, PRESTRESSED + *PRESSURE VESSEL + STEEL + STRESS + THERMAL INSULATION

11-17052
CRÉSPI MA
LEAK TESTS ON THE CONTAINMENT OF THE JEN-1 EXPERIMENTAL REACTOR
NP-TR-1496 +. 11 PAGES, 1960, TRANSLATED FROM ENERGIA NUCLEAR (MADRID) 4(16) PAGES 61-69 (1960)

THE LEAK-TIGHTNESS OF THE REACTOR CONTAINMENT STRUCTURE MUST BE SUCH THAT AIR LEAKS FROM THE CONTAINER IN A 24-HR PERIOD SHOULD NOT EXCEED 5' OF ITS VOLUME. THE LEAKAGE RATE WILL BE INFLUENCED BY EXTERNAL TEMPERATURE, EXTERNAL PRESSURE, AND FORCE AND DIRECTION OF THE WIND HITTING THE CONTAINER WALLS. TO ESTABLISH A STANDARD OF LEAK-TIGHTNESS, TEMPERATURES AND PRESSURES AROUND THE REACTOR LOCATION, TOGETHER WITH THE FREQUENCY OF DISTRIBUTION OF WIND FORCE AND DIRECTION, ARE BEING COLLECTED AND STUDIED.

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

*CONTAINMENT ANALYSIS + *CONTAINMENT LEAKAGE CONTROL + *CONTAINMENT STRUCTURE + SPAIN

11-17053
KUHN F
TESTING OF CONFINED RADIOACTIVE MATERIALS FOR LEAKAGE
NORDRHEIN - WESTPHALIA STATE MATERIALS TESTING STATION, DORTMUND
ORNL-TR-1590 +. 6 PAGES, 4 REFERENCES, TRANSLATED FROM ATOMPRAXIS 7 PAGES 16-17 (1961)

PRESENTS LEAK-DETECTION POLICY FOR SOURCE CONTAINMENT.

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-17053 *CONTINUED*

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

*CONTAINMENT, SOURCE + *TEST, LEAK LOCATION + CESIUM + COBALT + IODINE + RADIUM + STRONTIUM + THALLIUM

11-17054

NELSON CT + GREENFIELD MA + KOONTZ RL

ERRORS IN MEASUREMENTS OF BUILDING LEAKAGE DUE TO TRANSIENT TEMPERATURE EFFECTS

ATOMICS INTERNATIONAL, CANOGA PARK, CALIFORNIA

7 PAGES, 4 FIGURES, 7 REFERENCES, NUCLEAR ENGINEERING AND DESIGN 5(2) PAGES 207-213 (MARCH 1967)

THIS REPORT ANALYSES SOURCES OF ERRORS IN DETERMINING LEAKAGE RATES OF A CONTAINMENT STRUCTURE WHEN A REFERENCE-VESSEL METHOD IS USED. THE MOST SERIOUS ERRORS DO NOT ARISE FROM LACK OF PRECISION IN MEASURING ABSOLUTE TEMPERATURES AND PRESSURES. RATHER, THE LARGEST ERRORS ARE DUE TO A COMBINATION OF A TEMPERATURE LAG BETWEEN REFERENCE VESSEL AND CONTAINMENT STRUCTURE, AND FROM TEMPERATURE FLUCTUATIONS DURING THE TESTING PERIOD.

*CONTAINMENT REFERENCE MEASURING SYSTEM + *CONTAINMENT STRUCTURE + ERROR ANALYSIS + PRESSURE, INTERNAL + TEMPERATURE GRADIENT + TEST, LEAK RATE

11-17055

ALSO IN CATEGORY 17

RINGSTAD B + SKINSTAD A

PERFORMANCE OF INSULATION FOR PRE-STRESSED CONCRETE PRESSURE VESSELS FOR BOILING HEAVY WATER REACTORS

AKTIFORLAGET ATOMENERGI, STOCKHOLM, SWEDEN

6 PAGES, 6 FIGURES, 6 REFERENCES, NUCLEAR ENGINEERING AND DESIGN 5(2) PAGES 177-182 (MARCH 1967)

THE INSULATION SELECTED FOR THE SWEDISH DEVELOPMENT OF PRESTRESSED CONCRETE PRESSURE VESSELS FOR BOILING HEAVY-WATER REACTORS IS OF THE METAL-FOIL STAGNANT-GAS-SPACE TYPE, USING A WATER LOCK FOR SELF-EQUILIBRATING THE PRESSURES BETWEEN THE STEAM AND GAS SPACES. THE ARTICLE DISCUSSES DESIGN AND OPERATIONAL BEHAVIOR OF THE INSULATION SYSTEM, WITH PARTICULAR CONSIDERATION TO ACCIDENT CONDITIONS. A TESTING PROGRAM TO ASCERTAIN THE PERFORMANCE OF THE INSULATION UNDER VARIOUS NORMAL AND ACCIDENT CONDITIONS IS OUTLINED, AND TEST EQUIPMENT AND MEASURING TECHNIQUE ARE DESCRIBED. PRELIMINARY RESULTS OF THE MEASUREMENTS ARE REPORTED AND COMPARED WITH OTHER REACTOR-VESSEL INSULATION TESTS.

*CONCRETE, PRESTRESSED + *PRESSURE VESSEL + *THERMAL INSULATION + HEAT TRANSFER, CONDUCTION + HEAT TRANSFER, CONVECTION + REACTOR, BOILING WATER + REACTOR, HEAVY WATER + SWEDEN

11-17056

GALL WR

DESIGN TRENDS IN SYSTEMS FOR CONTAINMENT

OAK RIDGE NATIONAL LABORATORY

4 PAGES, 21 REFERENCES, NUCLEAR SAFETY 8(2) PAGES 245-248 (SPRING 1967)

THE RECENT TREND TOWARD NUCLEAR POWER PLANTS WITH GREATER CAPACITIES HAS LED TO RENEWED CONCERN OVER THE POSSIBILITY OF FAILURE OF THE PRIMARY REACTOR VESSEL. THIS CONCERN IS REFLECTED IN ACRS REVIEWS OF DESIGNS FOR SOME OF THESE LARGER REACTORS. TRENDS IN THE DESIGN AND CONSTRUCTION OF CONTAINMENT INCLUDE THE USE OF REINFORCED AND PRESTRESSED CONCRETE. THE POSSIBLE USE OF PRESTRESSED CONCRETE FOR PRIMARY REACTOR VESSELS WITHOUT SECONDARY CONTAINMENT IS ALSO BEING CONSIDERED. RECENT PUBLICATIONS INCLUDE A COMPILATION OF CURRENT REACTOR-CONTAINMENT TECHNOLOGY, A SECTION OF THE ASME BOILER AND PRESSURE VESSEL CODE DEVOTED TO NUCLEAR VESSELS, AND AN AMERICAN STANDARD RELATIVE TO STEEL CONTAINMENT SHELLS.

*CONTAINMENT, GENERAL + AEC CONSTRUCTION PERMIT CRITERIA + CONCRETE + CONCRETE, PRESTRESSED + CONTAINMENT DESIGN + PRESSURE VESSEL

11-17057

AMESZ J

CONVERSION OF LEAK FLOW-RATES FOR VARIOUS FLUIDS AND DIFFERENT PRESSURE CONDITIONS

EUROPEAN ATOMIC ENERGY COMMUNITY, ISPRA, ITALY

EUR-2982.F +. 30 PAGES, 1966

THIS REPORT CONTAINS IN A CONCISE FORM THE DEVELOPMENT OF RULES FOR CONVERSION OF GAS AND LIQUID LEAKAGES. IN MANY CASES, FOR REASONS OF CONVENIENCE, LEAKTIGHTNESS OF COMPONENTS IS TESTED BY MEANS OF A GAS, ALTHOUGH THEY ACTUALLY OPERATE WITH A LIQUID. AS LEAK MECHANISMS OF A LIQUID AND A GAS ARE OFTEN DIFFERENT, CONVERSION REQUIRES THE APPLICATION OF APPROPRIATE CORRELATIONS. BASED ON THEORETICAL CONSIDERATIONS, SUCH CORRELATIONS ARE DERIVED AND PRESENTED.

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

*TEST, LEAK LOCATION + *TEST, LEAK RATE + CONTAINMENT ABSOLUTE MEASURING SYSTEM + EXTRAPOLATION FACTOR + HELIUM

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-17059

GRACIE PS

STRENGTH OF METALS UNDER RAPID LOADING. A SURVEY IN RELATION TO T
ATOMIC ENERGY RESEARCH ESTABLISHMENT, HARWELL, ENGLAND
AERE-M-1471 +. 17 PAGES, 1 FIGURE, REFERENCES, SEPTEMBER 1965

THE PRESENT INTEREST IN RESPONSE OF METALS TO DYNAMIC LOADING ARISE DUE TO THE NEED TO DESIGN A TUBULAR ZIRCONIUM ALLOY
LOOP CONTAINMENT VESSEL FOR USE IN-PILE WHICH WILL SAFELY CONTAIN (THOUGH NOT NECESSARILY WITHOUT
PRESSURE VESSEL) A CONCEIVABLE BUT UNLIKELY HYDROGEN/AIR EXPLOSION. ZIRCONIUM-20 ALLOY
SUFFERING DAMAGE) APPEARS LIKELY TO OFFER AT LEAST A 40% EXTRA STRENGTH IN EXPLOSIVE PRESSURIZING SO FAR AS
TRANSIENTS IN PRESSURE SHORTER THAN ABOUT 1 MILLISEC ARE CONCERNED, AND PROBABLY SOME
ADVANTAGE FOR CONSIDERABLY LONGER TRANSIENTS.

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

*CONTAINMENT VESSEL LOADING + *EXPLOSION + *ZIRCALOY + AIR + DIDO (UK) + HYDROGEN + PRESSURE VESSEL +
REACTOR, HEAVY WATER

11-17060

SUBATMOSPHERIC CONTAINMENT

STONE AND WEBSTER ENGINEERING CORPORATION

CONF-670 602 +. 12 PAGES, 3 FIGURES, AMERICAN NUCLEAR SOCIETY, 1967 ANNUAL MEETING, SAN DIEGO, CALIF.,
JUNE 11-15, 1967. ANS TRANSACTIONS 10(1) PAGES 329-330

A REACTOR CONTAINMENT CONCEPT IS PROPOSED IN WHICH THE REACTOR SYSTEM IS CONTAINED IN A DRY
CONTAINER WHICH NORMALLY IS MAINTAINED AT SUBATMOSPHERIC PRESSURE. FOLLOWING A
LOSS-OF-COOLANT INCIDENT, THE CONTAINMENT PRESSURE IS RETURNED TO SUBATMOSPHERIC BY THE USE
OF REDUNDANT SPRAY COOLING SYSTEMS.

*CONTAINMENT SPRAY + *CONTAINMENT, HIGH PRESSURE + CONTAINMENT DESIGN +
CONTAINMENT RESEARCH AND DEVELOPMENT

11-17061

ALSO IN CATEGORIES 17 AND 18

NORRIS EB + PICKETT AG + WYLIE RD

PROPOSED CHANGES IN THE TECHNICAL SPECIFICATIONS FOR THE ELK RIVER REACTOR SYSTEM

SOUTHWEST RESEARCH INSTITUTE, SAN ANTONIO, TEXAS

SWRI-1228P4-29 +. 50 PAGES, FIGURES, REFERENCES, FEBRUARY 10, 1967

THE TECHNICAL SPECIFICATIONS FOR THE ELK RIVER REACTOR PROJECT CONTAIN A NUMBER OF PROVISIONS
RELATED TO THE INTEGRITY OF THE PRESSURE VESSEL. THESE PROVISIONS WERE REVIEWED IN THE LIGHT
OF INFORMATION DEVELOPED TO DATE ON THE MATERIALS, FABRICATING PROCESSES, AND INSPECTION OF
THE VESSEL. THIS REPORT IS SET UP IN THE FORM OF PROPOSED CHANGES IN THE TECHNICAL
SPECIFICATIONS AND THE JUSTIFICATION FOR THESE CHANGES. DATA ARE PRESENTED TO SUPPORT THE
REMOVAL OF THE 250-CYCLE AND FIVE-YEAR LIMITATION WHICH PRESENTLY EXISTS FOR THE PRESSURE
VESSEL. A SUMMARY IS PRESENTED OF THE AVAILABLE INFORMATION TO DATE ON THE
REACTOR-MATERIAL-SURVEILLANCE PROGRAM. THE DETECTION OF EXTENSIVE STRESS-CORROSION CRACKING
IN THE CLADDING AT THE VESSEL FLANGE LED TO AN ANALYSIS OF THE PROBABILITY OF PROPAGATION OF
THESE DEFECTS AT THIS LOCATION IN ADDITION TO THOSE IN THE STRENGTH WELDS. IT IS SUGGESTED
THAT A PROGRAM BE INITIATED TO CONTINUE STUDIES OF THE POSSIBILITY OF REMOVING THE REACTOR
INTERALS SO THAT, AT SOME TIME IN THE HISTORY OF THE PLANT, A THOROUGH INSPECTION OF THE
PRESSURE VESSEL CAN BE MADE. IN THE MEANTIME, INSPECTIONS NOW BEING MADE BY CONVENTIONAL
MEANS, THAT IS, VISUAL, DYE PENETRANT, AND ULTRASONIC, WHERE APPLICABLE, SHOULD BE CONTINUED.

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

*ELK RIVER + *PRESSURE VESSEL + *SURVEILLANCE PROGRAM + *TECHNICAL SPECIFICATIONS + CLAD + FLAW + STEEL +
STRESS CORROSION + STRUCTURAL INTEGRITY + TEST, NONDESTRUCTIVE + WELDS

11-17062

FRAGOMEN AT

SHOP FABRICATION AND QUALITY CONTROL TECHNIQUES FOR MASSIVE NUCLEAR VESSELS

BADCOCK AND WILCOX

19 PAGES, 6 FIGURES, 3 TABLES, PRESENTED TO THE AMERICAN POWER CONFERENCE, CHICAGO, ILL., APRIL 25-27, 1967

TO ENSURE REACTOR VESSEL SAFETY, THE HIGHEST POSSIBLE QUALITY ATTAINMENT MUST BE APPLIED IN
NINE DISTINCT AREAS - DESIGN, MATERIAL SELECTION, MANUFACTURING ENGINEERING, PRODUCTION
CONTROL, PLANT FACILITIES, TOOLING, SHIPPING AND TRAFFIC CONTROL, WORK FORCE, QUALITY
CONTROL. THIS PAPER DISCUSSES THESE NINE INESCAPABLE FACTORS NECESSARY TO THE SUCCESSFUL
FABRICATION AND QUALITY CONTROL OF NUCLEAR VESSELS.

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

*CONTAINMENT CONSTRUCTION + *DESIGN CRITERIA + *PRESSURE VESSEL + *STEEL + MATERIAL + QUALITY CONTROL

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-17063

VALENTIN A

EXPERIMENTAL STUDY OF THIN SQUARE SLABS, EMBEDDED ON ALL FOUR SIDES (PRESSURE VESSEL FLOORS).
COMMISSARIAT A L ENERGIE ATOMIQUE, FONTENAY-AUX-ROSES, FRANCE
CEA-R-318 +. 61 PAGES, 21 FIGURES, MARCH 1967 (IN FRENCH)

THIS WORK WAS DESIGNED TO TEST EXPERIMENTALLY THE MECHANICAL STRENGTH OF LARGE THIN PLATES
MADE OF NONMAGNETIC STAINLESS STEEL AND SUBJECTED TO TRANSVERSE FORCES. THE PLATES ARE
INTENDED TO BE USED AS THE FLOORING OF PRESSURE VESSELS.

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

*PRESSURE VESSEL + *SLAB + *STRUCTURAL INTEGRITY + DEFORMATION + STEEL

11-17128

ALSO IN CATEGORY 17

LARSON HJ + DARMOHRAJ GF

SCRAM REDUCTION AT THE GENERAL ELECTRIC TEST REACTOR

GENERAL ELECTRIC CO., IRRADIATION PROCESSING OPERATION, PLEASANTON, CALIFORNIA

CONF-670-713 +. 10 PAGES, 4 FIGURES, ABSTRACT IN ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 3, (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

THE SCRAM RATE HAS BEEN REDUCED FROM 123/YEAR (1964) TO 50 (HALF YEAR, 1967). BOTH EQUIPMENT-
AND MANAGERIAL-ORIENTED APPROACHES ARE NECESSARY. (EQUIPMENT) IN DEC. 1965, A NEW SAFETY
SYSTEM AND LOG-N AMPLIFIER WAS INSTALLED BECAUSE THE NO-LONGER-MANUFACTURED ITEM WAS
CONTINUALLY BEING REBUILT. THE FLOW SCRAM WAS MADE 2/3 AND CHANGED FROM
RELUCTANCE-GRIDGE/MERCURY-RELAY TO PRESSURE SWITCH FOLLOWING LOSS-OF-FLOW CALCULATION.
UNNEEDED SCRAMS WERE REMOVED FROM INSTRUMENTS. (MANAGERIAL) A RELIABILITY ENGINEER STUDIED
SYSTEMS. ALTHOUGH THE CONTAINMENT AIRLOCK DOORS HAD ZERO FAILURE IN 130,000 ENTRIES OVER 8
YEARS, HE FOUND THAT IN 9 OUT OF 10 TRIES, BOTH DOORS WOULD OPEN TOGETHER IF ACTUATED NEARLY
SIMULTANEOUSLY. AN ELECTRICAL INTERLOCK WAS INSTALLED TO PARALLEL THE MECHANICAL INTERLOCK.
EACH SCRAM IS INVESTIGATED, PROCEDURES ARE PERIODICALLY REVIEWED, AND OPERATORS TESTED.

*OPERATING EXPERIENCE + *RELIABILITY ANALYSIS + *SCRAM, SPURIOUS + CONTAINMENT AIR LOCK +
FAILURE, DESIGN ERROR + GETR (GENERAL ELECTRIC TEST REACTOR) + INSTRUMENTATION, GENERAL +
OPERATIONS REPUKI, ANALYSIS + REACTOR SAFETY SYSTEM + REACTOR, TEST

11-17193

ALSO IN CATEGORIES 7 AND 5

COTTRELL WB

ORNL NUCLEAR SAFETY RESEARCH AND DEVELOPMENT PROGRAM BIMONTHLY REPORT FOR MAY - JUNE 1967

OAK RIDGE NATIONAL LAB., TENN.

ORNL-TM-1913 +. 79 PAGES, 7 FIGURES, 11 TABLES, JULY 10, 1967

INCLUDED IS WORK ON VARIOUS CHEMICAL REACTIONS, AS WELL AS RELEASE, CHARACTERIZATION, AND
TRANSPORT OF FISSION PRODUCTS IN CONTAINMENT SYSTEMS UNDER VARIOUS ACCIDENT CONDITIONS AND ON
PROBLEMS ASSOCIATED WITH REMOVING THESE FISSION PRODUCTS FROM GAS STREAMS. ALTHOUGH MOST OF
THE WORK CONTINUES TO BE IN GENERAL SUPPORT OF WATER POWER REACTOR TECHNOLOGY, INCLUDING SOME
IN DIRECT SUPPORT OF THE LOFT AND CSE PROGRAMS, SEVERAL PROJECTS ARE CONDUCTED IN SUPPORT OF
THE HIGH-TEMPERATURE GAS-COOLED REACTOR (HTGR) PROGRAM, INCLUDING BOTH IN-PILE AND OUT-PILE
STUDIES OF THE REACTION RATES AND FISSION PRODUCT RELEASE AND TRANSPORT PHENOMENA. OTHER
MAJOR PROJECTS INCLUDE FUEL TRANSPORT SAFETY INVESTIGATIONS, A SERIES OF DISCUSSION PAPERS ON
VARIOUS ASPECTS OF WATER REACTOR TECHNOLOGY, ANTISEISMIC DESIGN OF NUCLEAR FACILITIES, AND
STUDIES OF PRESSURE VESSEL TECHNOLOGY. EXPERIMENTAL WORK ON PRESSURE VESSEL TECHNOLOGY
INCLUDES INVESTIGATIONS OF THE ATTACHMENT OF NOZZLES TO SHELLS AND THE IMPLEMENTATION OF THIS
JOINT AEC-PURC PROGRAM ON HEAVY SECTION STEEL TECHNOLOGY AND NUCLEAR PIPING PUMPS AND VALVES.
SEVERAL PROJECTS DEAL WITH DEVELOPMENT OF ENGINEERING SAFEGUARDS AND THE ESTABLISHMENT OF
RELEVANT CODES AND STANDARDS, WHILE ANOTHER TASK (CHUKUS) DEALS WITH ESTABLISHMENT OF
COMPUTER PROGRAMS FOR EVALUATING REACTOR DESIGN DATA. RECENT ACTIVITIES OF THE NSIC AND THE
NUCLEAR SAFETY JOURNAL ARE ALSO DISCUSSED.

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

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

11-17324

ALSO IN CATEGORY 7

RAINEY RH

CRITERIA FOR NOBLE-GAS REMOVAL USING PERMSELECTIVE MEMBRANES

OAK RIDGE NATIONAL LAB., TENN.

ORNL-TM-1822 +. 7 PAGES, 2 FIGURES, 4 REFERENCES, APRIL 3, 1967

CRITERIA WERE DEFINED FOR EXPERIMENTS DESIGNED TO DEVELOP A PROCESS FOR REMOVING NOBLE GASES
FROM A REACTOR CONTAINMENT SHELL UNDER ACCIDENT CONDITIONS. THE EFFECT OF THESE CRITERIA ON
THE PRECESSING RATE OF THE GAS IN THE CONTAINMENT SHELL WAS CALCULATED. WHEN THE

CATEGORY: 11
CONTAINMENT OF NUCLEAR FACILITIES

11-17324 *CONTINUED*

CHARACTERISTICS OF THE PERMSELECTIVE MEMBRANES (SILICONE RUBBER) TO BE USED IN THIS PROGRAM HAVE BEEN DETERMINED, THE PROCESSING RATES WILL BE USED TO ESTABLISH EQUIPMENT SIZE, AND PROCESSING COSTS. THE TOTAL COST WILL THEN BE COMPARED WITH THE COST OF THE DOWNTIME OF THE REACTOR.

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

*CONTAINMENT, GENERAL + *FILTER, MEMBRANE + *FISSION PRODUCT RETENTION + *NOBLE GAS + DESIGN CRITERIA + DESIGN STUDY + ECONOMICS + KRYPTON + REACTOR, WATER + XENON

11-17437 ALSO IN CATEGORIES 12 AND 5

VINCK WF + MAURER H

SOME EXAMPLES OF THE X RELATIONSHIP BETWEEN CONTAINMENT AND OTHER ENGINEERED SAFEGUARD REQUIREMENTS
ACCIDENT ANALYSIS AND SITE CONDITIONS

EURATOM

EUR/C/1474/67.E +. 30 PAGES, 2 TABLES, 24 REFERENCES, PAPER PRESENTED AT THE IAEA SYMPOSIUM ON
CONTAINMENT AND SITING, VIENNA 3-7, APRIL 1967

THE PAPER REFERS PRIMARILY TO POWER REACTORS FOR WHICH EURATOM HAS BEEN INVOLVED IN SAFETY REVIEWS PERFORMED IN CLOSE COOPERATION WITH TECHNICAL ADVISORY ORGANIZATIONS CONCERNED IN THE NATIONAL LICENSING PROCEDURES. A COMPARATIVE SURVEY IS PRESENTED OF A NUMBER OF CONTAINMENT CONCEPTS AND OTHER SAFEGUARDS TO PROTECT AGAINST OR TO LIMIT THE CONSEQUENCES OF POSTULATED MAJOR ACCIDENTS. MAGNITUDES OF EXCLUSION AREAS AND POPULATION DENSITIES ARE ALSO PRESENTED. THE RESPECTIVE MERITS AND REQUIREMENTS OF ENGINEERED SAFEGUARDS AND EMERGENCY EQUIPMENT ARE DISCUSSED AS RELATED TO CONTAINMENT PROVISIONS.

*CONTAINMENT STRUCTURE + *ENGINEERED SAFETY FEATURE + ACCIDENT ANALYSIS + CONTAINMENT CONSTRUCTION + CONTAINMENT SPRAY + CONTAINMENT, MULTIPLE + CORE REFLOODING SYSTEM + CORE SPRAY + FRANCE + GERMANY + ITALY + N S SAVANNAH + NETHERLANDS + REACTOR, BOILING WATER + REACTOR, POWER + REACTOR, PRESSURIZED WATER

11-17603

ZOLDNERS NG + MALHOTRA VM + WILSON HS

HIGH-TEMPERATURE BEHAVIOR OF ALUMINOUS CEMENT CONCRETES CONTAINING DIFFERENT AGGREGATES

CANADA, MINES AND TECHNICAL SURVEYS DEPT., MINES BRANCH, OTTAWA

R-109 +. 52 PAGES, 15 FIGURES, 15 TABLES, 29 REFERENCES, JULY 1963

CHANGES IN PHYSICAL PROPERTIES OF ABOUT 400 CONCRETE TEST SPECIMENS, MADE WITH ALUMINOUS CEMENT AND EXPANDED SHALE, ANORTHOSITE, ILMENITE, AND PHONOLITE AGGREGATES, WERE STUDIED AFTER EXPOSURE TO TEMPERATURES RANGING FROM 100 TO 1100 C. THE ALUMINOUS-CEMENT CONCRETE LOSES ITS STRENGTH RAPIDLY IN THE RANGE OF TEMPERATURES INVESTIGATED. EXPANDED-SHALE-AGGREGATE CONCRETE SHOWED THE GREATEST STABILITY, RETAINING ABOUT 20 PERCENT OF ITS ORIGINAL COMPRESSIVE STRENGTH AFTER FIRING AT 1000 C, WHEREAS CONCRETE MADE WITH PHONOLITE AGGREGATE WAS THE LEAST HEAT-RESISTANT OF THE FOUR TYPES INVESTIGATED. THE FIRED CONCRETE SPECIMENS WERE TESTED FOR STRENGTH AND EXAMINED PETROGRAPHICALLY. PROBABLE CAUSES OF REDUCTION IN STRENGTH DUE TO EXPOSURE TO ELEVATED TEMPERATURES ARE DISCUSSED BRIEFLY.

AVAILABILITY - QUEENS PRINTER, OTTAWA, CANADA, \$1.00 COPY

*CONCRETE + *PROPERTY, PHYSICAL + *THERMAL CONSIDERATION + TEST, BENCH

11-17604

BOGGIO G

THIRD QUARTERLY REPORT, JANUARY - MARCH 1966. PRESTRESSED CONCRETE PRESSURE VESSELS FOR BOILING WATER
REACTORS

G. E., ADVANCED PRODUCTS OPERATION, SAN JOSE, CALIFORNIA

GEAP-5151 + EURAEC-1636 +. 63 PAGES, 32 FIGURES, 6 TABLES, APRIL 1966

THE PURPOSE OF THIS PROGRAM IS THE ADAPTATION OF THE BWR SYSTEM TO SERVICE WITH A PRESTRESSED-CONCRETE PRESSURE VESSEL. PRELIMINARY STUDIES MADE BY GE INDICATED A NUMBER OF POTENTIAL COST AND SAFETY ADVANTAGES WHICH MIGHT RESULT FROM THE COMBINATION OF THE BWR AND PRESTRESSED-CONCRETE TECHNOLOGIES. THESE INCENTIVES ARISE PRIMARILY FROM THE REDUCED COST PER UNIT VOLUME OF SPACE WITHIN THE VESSEL. THIS MAKES IT FEASIBLE TO INSTALL WITHIN THE VESSEL ALL THE COMPONENTS OF THE PRIMARY COOLANT SYSTEM AND THUS ELIMINATES ALL EXTERIOR COOLANT CIRCULATION LOOPS, PUMPS, AND VALVES. THE OBJECTIVE OF THE PROGRAM IS TO IDENTIFY AND EVALUATE THESE INCENTIVES IN GREATER DETAIL. THE PROGRAM IS DIVIDED INTO TWO PHASES. THE FIRST PHASE, NOW PARTIALLY COMPLETE, CONSISTS OF AN INITIAL CONCEPTUAL DESIGN STUDY OF BOTH NATURAL- AND FORCED-CIRCULATION BWR SYSTEMS WITH BOTH SPHERICAL AND CYLINDRICAL CONCRETE VESSEL SHAPES. THE EFFECT OF A CHANGE IN DESIGN SYSTEM PRESSURE 25 PERCENT ABOVE AND BELOW THE NORMAL VALUE OF 1000 PSI WAS CONSIDERED. FROM THESE RESULTS, ONE COMBINATION WAS SELECTED TO SERVE AS THE BASIS OF A REFERENCE DESIGN FOR A 1000-MWE SYSTEM.

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

*CONCRETE, PRESTRESSED + *CONTAINMENT ANALYSIS + *CONTAINMENT, PRESSURE SUPPRESSION + *REACTOR, BOILING WATER + CYLINDER + PRESSURE VESSEL + SPHERE + THERMAL INSULATION + THERMAL MECHANICAL EFFECT

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES,

11-17605
DROUILLARD TF
ULTRASONIC INSPECTION OF CRITICAL COMPONENTS AND WELDMENTS FOR PRESSURE AND NUCLEAR VESSELS
ILLINOIS INST. OF TECH., CHICAGO
17 PAGES, 18 FIGURES, 2 TABLES, MATERIALS EVALUATION 24, PAGES 299 THRU 308, (JUNE 1966)

IN MAKING PRESSURE VESSELS AND BOTH NUCLEAR AND CONVENTIONAL STEAM-GENERATING EQUIPMENT, QUALITY ASSURANCE DEMANDS A WELL-INTEGRATED SYSTEM OF NONDESTRUCTIVE TESTING. THE PRINCIPAL METHODS USED BY THE BABCOCK AND WILCOX CO. INCLUDE ULTRASONIC, RADIOGRAPHIC, MAGNETIC PARTICLE, AND LIQUID-PENETRANT INSPECTIONS. THIS PAPER DEALS ESSENTIALLY WITH ULTRASONIC TESTING. BECAUSE OF THE COMPLEXITY OF THE INSPECTION PROGRAM USED, NO ONE METHOD CAN BE DISCUSSED INDEPENDENTLY OF THE OTHER. THEREFORE, THE RELATIVE MERITS OF EACH METHOD ARE DISCUSSED.

*PIPING + *PRESSURE VESSEL + *TEST, NONDESTRUCTIVE + *WELDS + FLAW + INDIAN POINT 1 + N S SAVANNAH + REACTOR, MARITIME + REACTOR, PRESSURIZED WATER + STEEL

11-17607
CHAUDESAIGUES J
PROBLEMS OF CIVIL ENGINEERING RAISED THROUGH THE CONSTRUCTION OF REACTOR EL 4 AT BRENNILIS
ENTERPRISES CAMPENON-BERNARD, FRANCE
24 PAGES, 37 FIGURES, ANN. INST. TECH. BAITMENT TRAV. PUBLICS 213, PAGES 1113 THRU 1136, (SEPTEMBER 1965)

PROBLEMS WITH REACTOR UNIT STRUCTURES ERECTED AT BRENNILIS, AND IN PARTICULAR ITS PRESTRESSED CONCRETE PRESSURE VESSEL, ARE EXAMINED. THE DIFFICULTIES INCLUDED THOSE ASSOCIATED WITH THE SIZE OF THE PRESSURE VESSEL (A 49.0-M-HIGH, 46.0-M-INTERNAL-DIA CYLINDER, CLOSED AT THE BOTTOM BY A FLAT FLOOR AND AT THE TOP BY A 35.0-M-RADIUS SPHERICAL DOME). THREE-DIMENSIONAL PRESTRESSING OF THE PRESSURE VESSEL SOLVED THE PROBLEMS OF CHAMBER STRENGTH.

*CONCRETE, PRESTRESSED + *CONTAINMENT CONSTRUCTION + *PRESSURE VESSEL + CYLINDER + FRANCE

11-17609
ICE CONDENSER REACTOR CONTAINMENT SYSTEM
1 PAGE, 2 FIGURES, NUCLEAR NEWS 10191, PAGE 19, (SEPTEMBER 1967)

AMERICAN ELECTRIC POWER SERVICE CORPORATION ANNOUNCED THAT IT PLANS TO ADOPT THE ICE CONDENSER REACTOR CONTAINMENT SYSTEM DEVELOPED BY WESTINGHOUSE FOR ITS PROPOSED BRIDGMAN NUCLEAR POWER STATION. IN ESSENCE, THE ICE CONDENSER IS MERELY A COLD-STORAGE COMPARTMENT SURROUNDING THE STEAM-SUPPLY SYSTEM. THE ICE-CONDENSER UNIT IS INSTALLED ALONG THE INNER WALL OF THE REACTOR CONTAINMENT BUILDING, WHICH IS OF CONVENTIONAL REINFORCED CONCRETE. THE ICE IS KEPT FROZEN BY STANDARD REFRIGERATION EQUIPMENT, THE ONLY OPERATIONAL COMPONENT OF THE SYSTEM. INSULATED ACCESS PANELS, WHICH NORMALLY SEPARATE THE ICE FROM THE REACTOR COMPARTMENT, WILL SPRING OPEN ON A SLIGHT PRESSURE RISE TO PROVIDE A PATH TO THE ICE FOR ANY STEAM THAT MIGHT BE ACCIDENTALLY RELEASED. THE ICE IS EXPECTED TO ABSORB ANY STEAM RELEASED IN THE CONTAINMENT, ALONG WITH THE RESULTING INCREASE IN PRESSURE AND HEAT.

*CONTAINMENT, ICE CONDENSER + CONCRETE + CONTAINMENT, HIGH PRESSURE

11-17610 ALSO IN CATEGORY 5
GALLAGHER EV
STUDIES OF REACTOR CONTAINMENT. PROGRESS REPORT FOR APRIL - MAY, 1967
ILLINOIS INSTITUTE OF TECHNOLOGY, IIT RESEARCH INSTITUTE
IITRI-578P21-29 + IITRI-T6042-29 +. 28 PAGES, 19 FIGURES, 2 REFERENCES, MAY 1967

DURING THIS REPORT PERIOD, THE PRIMARY EFFORT EXPENDED ON THE PROJECT AGREEMENT CONSISTED OF THE FOLLOWING FOUR AREAS OF ACTIVITY - (1) ANALYSIS OF DATA OBTAINED FROM EXPERIMENTS IN A WATER SHOCK TUBE USING A 6-FT-LONG DRIVER SECTION. (2) MODIFICATION OF THE 6-FT-LONG SECTION TO YIELD A 12-FT LENGTH. (3) ANALYTICAL CALCULATIONS OF BLOWDOWN OF ONE-DIMENSIONAL COMPRESSED LIQUID WATER UNDER VARIOUS INITIAL CONDITIONS. (4) DOCUMENTATION AND DESCRIPTION OF THE DATA-PROCESSING PROCEDURES USED FOR THIS PROGRAM.

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

*BLOWDOWN + *COMPUTER PROGRAM + *CONTAINMENT RESEARCH AND DEVELOPMENT + *FLOW DISTRIBUTION + *FLOW ORIFICE OR RESTRICTION + CONDENSATION + INSTRUMENTATION, TEMPERATURE + PRESSURE, INTERNAL + STEAM + WATER, GENERAL

11-17611 ALSO IN CATEGORY 5
GALLAGHER EV
STUDIES OF REACTOR CONTAINMENT. PROGRESS REPORT FOR JUNE - JULY 1967
ILLINOIS INSTITUTE OF TECHNOLOGY, IIT RESEARCH INSTITUTE
IITRI-578P21-30 +. 10 PAGES, 9 FIGURES, JULY 1967

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-17611 *CONTINUED*

DURING THE REPORT PERIOD, THE WORK DEALT WITH TWO MAIN AREAS OF ACTIVITY. (1) ANALYSIS AND SUMMARY OF PRESSURES IN THE AIR-FILLED DRIVER SECTION OF THE WATER SHOCK TUBE, AND (2) PERFORMANCE OF EXPERIMENTS USING THE 12-FT-LONG DRIVER SECTION. THE DATA ANALYZED FOR THE AIR PRESSURES CONSISTS ESSENTIALLY OF THOSE CASES WITH A 6-FT-LONG DRIVER SECTION, SINCE THE EXPERIMENTS WITH THE 12-FT-LONG SECTION HAVE BEEN BEGUN VERY RECENTLY, AND ONLY INITIAL RESULTS ARE AVAILABLE. PRESSURE BUILDUP IN THE CONTAINMENT VESSEL AFTER RAPID DECOMPRESSION OF WATER-COOLED POWER REACTORS WAS GIVEN ONLY LIMITED EMPHASIS IN PREFERENCE TO THE STUDY OF TRANSIENT DECOMPRESSION OF THE WATER IN THE DRIVER SECTION.

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

*BLOWDOWN + *COMPUTER PROGRAM + *CONTAINMENT RESEARCH AND DEVELOPMENT + *FLOW DISTRIBUTION + *FLOW ORIFICE OR RESTRICTION + *CONDENSATION + INSTRUMENTATION, TEMPERATURE + PRESSURE, INTERNAL + STEAM + WATER, GENERAL

11-17612

RINKES H

BURSTING RODS FOR PRESSURE VESSELS

FABENFABRIKEN BAYER AG

5 PAGES, 6 FIGURES, CHEM.-ING.-TECH. 39(1), PAGES 35 THRU 39, (JANUARY 13, 1967)

THE BURSTING RODS FOR PROTECTING VESSELS AGAINST SUDDEN EXCESSIVE SURGE OF INTERNAL PRESSURES, E.G., EXPLOSIONS, MUST RESPOND AT ONCE TO PRESSURES EXCEEDING THE MAXIMUM PERMISSIBLE LIMIT. EQUATIONS WERE DERIVED FOR COMPUTING THE DESIGN OF THESE SAFETY DEVICES AND A NOMOGRAM COMPILED FROM THEM. THE PERMISSIBLE LIMITS OF ERROR FOR THE ACTUATING PRESSURE OF THE DEVICE WERE ESTIMATED.

*PRESSURE RELIEF + *PRESSURE VESSEL + ERROR ANALYSIS + PRESSURE, INTERNAL

11-17613

PORSE L

REACTOR PRESSURE VESSELS. DESIGN-FABRICATION-TESTING

5 PAGES, 4 FIGURES, 1 TABLE, 2 REFERENCES, NUCLEAR ENGINEERING 12(133), PAGE 444-448, (JUNE 1967)

THIS ARTICLE DEALS WITH THE DESIGN, FABRICATION, AND TEST ASPECTS OF PRESSURE VESSELS DESIGNATED AS ASME CLASS A VESSELS AND INTENDED FOR WESTINGHOUSE-DESIGNED PWR-TYPE PLANTS. WITH THE ADVANCEMENT OF MATERIALS TECHNOLOGY, AND PARTICULARLY WITH THE INTRODUCTION OF NEW TECHNIQUES, THERE IS A NEED TO REVIEW THE ADEQUACY OF EXISTING APPROACHES AND TO SUPPLEMENT CODES AND STANDARDS WITH NEW AND BETTER INFORMATION UNTIL THESE STANDARDS CAN BE REVISED AND REISSUED.

*PRESSURE VESSEL + CODES AND STANDARDS + CONTAINMENT CONSTRUCTION + CONTAINMENT DESIGN + REACTOR, PRESSURIZED WATER + TEST, PRESSURE VESSEL

11-17643

ALSO IN CATEGORY 17

SOULIER L

THE CIVIL ENGINEERING FOR NATURAL URANIUM-GRAPHITE-CARBON DIOXIDE GAS-TYPE NUCLEAR POWER STATIONS

ELECTRICITE DE FRANCE, FRANCE

6 PAGES, 11 FIGURES, CONSTRUCTION (PARIS), 20, PAGES 345 THRU 350, (OCTOBER 1965), IN FRENCH

DISCUSSES CIVIL ENGINEERING ASPECTS OF THESE REACTORS, THE LARGE SIZE OF THE STRUCTURES, ACCURACY REQUIRED, AND USE OF NEW MATERIALS. STRUCTURES SUCH AS THE PRESSURE VESSELS FOR E.O.F. 3 AND 4 ARE EXAMINED AS TO FOUNDATIONS, FRAME COMPONENTS, ACCEPTANCE OF THE STRUCTURES, BUILDING TOLERANCES, THE USE OF CONCRETE AS HEAT-PROOFING MATERIAL AND AS A RADIATION AND TEMPERATURE SHIELD. SPEED AND QUALITY REQUIRED ARE DISCUSSED.

*CONCRETE, PRESTRESSED + *CONTAINMENT CONSTRUCTION + *PRESSURE VESSEL + FRANCE + REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED + SHIELDING

11-17658

ALSO IN CATEGORY 17

BARKELY HB

PLUM BROOK ELECTRICAL PENETRATION LEAK RATE TEST REPORT TO AEC

LEWIS RESEARCH CENTER, SANDUSKY, OHIO. NASA

1 PAGE, JULY 25, 1967, DOCKET NO. 5C-30, NASA PLUM BROOK REACTOR

REPORT OF LEAK-RATE-TEST RESULTS FOR THE HERMETICALLY SEALED ELECTRICAL PENETRATIONS OF THE CONTAINMENT VESSEL AT ABOUT 5 PSI, USING PRESSURE-DECAY TECHNIQUES. AVERAGE LEAK RATE OF 17 ASSEMBLIES, LESS THAN 0.005 CU. FT/DAY. MAXIMUM RATE, LESS THAN 0.01 CU. FT/DAY.

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

*CONTAINMENT PENETRATION, ELECTRICAL + *TEST, LEAK RATE + PLUM BROOK + REACTOR, TEST

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-17800 ALSO IN CATEGORY 17
ELK RIVER CHANGE 9B. REVISION OF LEAK RATE REQUIREMENTS
AEC, DIVISION OF REACTOR LICENSING
9 PAGES, FEBRUARY 23, 1967, DOCKET NO. 115-1

DRL ALLOWS ELK RIVER AN INCREASE IN MAXIMUM CONTAINMENT LEAK RATE FROM 0.10¹/DAY TO 0.20¹/DAY AT 21 PSIG. ELK RIVER HAD ASKED FOR 0.45. TESTING WOULD BE BASED ON A 3-YR CYCLE IF TEST SHOWS A SATISFACTORY LEAK RATE BUT WOULD REVERT TO A 1, 2, AND 3 YR CYCLE OTHERWISE. OPERATION AFTER TESTS WILL NOT BE ALLOWED UNLESS LEAKAGE RATE IS LESS THAN 0.16¹. INTEGRATED LEAK RATE TEST WILL BE AT 21 AND 11 PSIG FOR THE FIRST TEST, AND 11 THEREAFTER, WITHOUT ANY PRELIMINARY LEAK-DETECTION SURVEYS OR LEAK REPAIRS BEFORE OR DURING THE TEST.

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

*CONTAINMENT, HIGH PRESSURE + *TEST, LEAK RATE + ELK RIVER + REACTOR, BOILING WATER + SAFETY EVALUATION + TECHNICAL SPECIFICATIONS + TEST INTERVAL

11-17810
MUELLER DW
PRESTRESSED CONCRETE CONTAINMENT VESSEL
U. S. PATENT 3-301-041 +. 6 PAGES, JANUARY 31, 1967

THIS INVENTION RELATES TO A PRESTRESSED SPHERICAL CONCRETE VESSEL USEFUL TO CONTAIN EXPLOSIONS AND TO SERVE AS A NUCLEAR REACTOR CONTAINMENT VESSEL. THERE IS PROVIDED AN INNER SPHERICAL METAL SHELL, AN OUTER, LARGER IN DIAMETER, METAL SHELL MADE UP OF SEGMENTS BOLTED TOGETHER AND AN INTERMEDIATE MASSIVE SPHERICAL LAYER OF CONCRETE. THE EDGES OF THE SEGMENTS OF THE OUTER STEEL SHELL ARE DRAWN TOGETHER TO EXERT TENSILE STRESSES IN THE SHELL AND COMPRESSIVE STRESSES IN THE CONCRETE.

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

*CONCRETE, PRESTRESSED + *PRESSURE VESSEL + CONTAINMENT LINER + EXPLOSION + SHELL + SPHERE + STEEL

11-17811 ALSO IN CATEGORY 5 AND 8
FULS GM
ACT-I. A DIGITAL PROGRAM FOR THE ANALYSIS OF THE CONTAINMENT TRANSIENT DURING A LOSS OF COOLANT ACCIDENT IN LWB
BETTIS ATOMIC POWER LAB., PITTSBURGH, PA.
WAPD-TM-693 +. 28 PAGES, FIGURES, REFERENCES, MAY 1967

THIS REPORT DESCRIBES ACT-I, A DIGITAL COMPUTER PROGRAM FOR PREDICTING THE CONTAINMENT TRANSIENT RESULTING FROM THE INJECTION OF HIGH-ENTHALPY LIQUID AND HEAT DURING A LOSS-OF-COOLANT ACCIDENT IN A PWR. THIS PROGRAM PERFORMS A FINITE-DIFFERENCE INTEGRATION OVER THE TIME OF THE TRANSIENT, ACCOUNTING FOR HEAT AND MASS ADDITIONS FROM INPUT TABLES FOR HEAT TRANSFER TO VARIOUS HEAT SINKS, INCLUDING SIMULATED SAFEGUARDS, AND FOR LEAKAGE FROM THE CONTAINER TO THE ATMOSPHERE.

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

*COMPUTER PROGRAM + *CONTAINMENT ANALYSIS + *HEAT SINK + ACCIDENT, LOSS OF COOLANT + COMPUTER, DIGITAL + CONTAINMENT DESIGN + METAL WATER REACTION + PRESSURE, INTERNAL + REACTOR, PRESSURIZED WATER + ZIRCONIUM

11-17812
AKIYA M + KONUMA S + OMORI K
THE EXPERIMENTAL STUDY ON THE PERFORMANCE OF PRESSURE SUPPRESSION CONTAINMENT SYSTEM
ISHIKAWAJIMA HARIMA HEAVY INDUSTRIES CO., LTD.
8 PAGES, RISLEY TRANS. 965, FROM ISHIKAWAJIMA HARIMA ENG. REV. 24 PAGES 369-76 (JULY 1965)

TESTS WERE MADE FOR VERIFYING THE PROPERTIES OF A PRESSURE-SUPPRESSION CONTAINER AND DEGREE OF RELIABILITY (PARTICULARLY STABILITY IN PERFORMANCE) IN ITS FUNCTION. THE FOLLOWING CONCLUSIONS CAN BE DRAWN FROM THESE TESTS - (1) ACCORDING TO THE RESULTS OF VARIOUS MEASUREMENTS AND OBSERVATIONS DURING COOLANT LOSS, THE CONDENSATION OF STEAM INSIDE THE SUPPRESSION CHAMBER IS PERFECT, THEREFORE AN EFFECT OF THE CONTAINER SYSTEM ON THE SUPPRESSION OF PRESSURE IS ADEQUATE. (2) AN EFFECT OF STEAM IN THE DRY WELL ON STEAM CONDENSATION IS NEGLIGIBLE. (3) EXCEPT WHERE THE AMOUNT OF WATER RETAINED IN THE SUPPRESSION CHAMBER IS VERY SMALL, PRESSURES IN VARIOUS PARTS ARE SUBJECT TO THE GREATEST EFFECT OF RUPTURE AREA OF THE PRIMARY SYSTEM. (4) ALTHOUGH BEING THREE TIMES AS MUCH AS THOSE IN A MAXIMUM CREDIBLE ACCIDENT, MAXIMUM PRESSURES IN ALL PARTS ARE BELOW DESIGN PRESSURES OF AN ACTUAL PLANT. (5) THE USE OF THE PRESENT TEST SCALE PRESENTED NO PROBLEM IN SAFETY OF OPERATION OF A CONTAINER SYSTEM.

*CONTAINMENT ANALYSIS + *CONTAINMENT RESEARCH AND DEVELOPMENT + *CONTAINMENT, PRESSURE SUPPRESSION + *MOCKUP + COMPARISON, THEORY AND EXPERIENCE + CONDENSATION + FISSION PRODUCT RETENTION + PRESSURE DROP + STEAM

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-17813

TIETZE A

INCREASED PROTECTION OF THE ENVIRONMENT OF NUCLEAR PLANTS BY DOUBLE CONTAINMENTS

TECHNISCHE UEBERWACHUNGS-VEREINE, COLOGNE

5 PAGES, 3 FIGURES, 3 TABLES, 6 REFERENCES, KERntechnik 8, PAGES 387 THRU 391, (SEPTEMBER 1966), IN GERMAN

THE ENVIRONMENT OF A NUCLEAR PLANT IS PROTECTED TO A HIGHER DEGREE WITH DOUBLE CONTAINMENT. THIS IS DUE TO SEVERAL EFFECTS OF THE GAP BETWEEN THE TWO CONTAINERS ON THE RADIOACTIVE GASES ESCAPING FROM THE INNER ENCLOSURE. THREE DOUBLE CONTAINMENTS WITH DIFFERENT PROPERTIES ARE COMPARED, AND THEIR EFFECTS ARE DISCUSSED. THE RESULTS SHOW THAT AN INCREASE IN SAFETY IS ACHIEVED ONLY BY A PROPERLY DESIGNED DOUBLE CONTAINER.

*CONTAINMENT ANALYSIS + *CONTAINMENT, MULTIPLE

11-17814

RIPLING EJ + CROSLY PB

FRACTURE TOUGHNESS OF REACTOR PRESSURE VESSEL STEELS. DEVELOPMENT OF TEST PROCEDURES. PERIOD

COVERED--FEBRUARY 7 - APRIL 30, 1967

MATERIALS RESEARCH LAB., INC., RICHTON PARK, ILL.

COO-1477-8 +. 14 PAGES, MAY 31, 1967

SINCE ONLY A LIMITED NUMBER OF TESTS AND ONLY A MODEST RANGE OF SPECIMEN THICKNESSES HAVE BEEN TESTED TO DATE, CONCLUSIONS DRAWN FROM THESE DATA MUST BE CONSIDERED TENTATIVE. NEVERTHELESS IF ONE WERE TO ASSUME THAT THE TWO-INCH-THICK SPECIMENS YIELDED VALID TOUGHNESS VALUES AT ROOM TEMPERATURE, AND THAT THE ONE-IN-THICK SPECIMENS GAVE VALID PLANE STRAIN RESULTS AT 0 F, IT MUST BE CONCLUDED THAT LOADING RATE EXERTS ONLY A MODEST INFLUENCE ON TOUGHNESS OVER THE RANGE STUDIED. ON THE OTHER HAND, RAPID LOADING RATES DO APPEAR TO PROMOTE PLANE STRAIN FRACTURING, AT LEAST IN THIS MILD STEEL. AGAIN, IT MUST BE TENTATIVELY CONCLUDED THAT THE MEASURING CAPACITY OF FRACTURE-TOUGHNESS SPECIMENS COULD BE INCREASED BY THE USE OF VERY HIGH LOADING RATES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.70 COPY, \$0.65 MICROFICHE

*FRACTURE TOUGHNESS + *IRRADIATION TESTING + *PRESSURE VESSEL + *STEEL + TEST, PRESSURE VESSEL + THICKNESS

11-17873

ALSO IN CATEGORIES 10 AND 17

BARKLEY HB

JCAE HEARING ON POWER REACTOR REGULATION - H. B. BARKLEY

LEWIS RESEARCH CENTER

3 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(38) PAGES 53-56 (SEPTEMBER 18, 1967)

IN ADDITION TO LETTER OF AUGUST 8, ASSERTING THAT REGULATORY PROGRAM HAS NOT CONTRIBUTED TO SAFETY AT PLUM BROOK IN 4 YEARS BUT HAS USED TIME UNPRODUCTIVELY, TWO POINTS WERE MADE. (1) TECHNICAL SPECIFICATIONS CHANGES TAKE TOO LONG AND TOO MUCH EFFORT (TECHNICAL SPECIFICATIONS REQUESTED MARCH 16, 1967 TO REPLACE 4 DIESEL GENERATORS WITH 2 NEW, LARGER ONES. DRL QUESTIONED IN DETAIL OUR ENTIRE ELECTRICAL SYSTEM AND ITS SURVEILLANCE. SUGGESTIONS INCLUDE NEW PEOPLE TRAVEL TO SITE, BETTER COMMUNICATION WITH COMPLIANCE.) (2) PROGRAM DOES NOT ENCOURAGE NEW IDEAS IN REACTOR SAFETY. (PERMISSION TO REPLACE CONTINUOUSLY MONITORED ELECTRICAL PENETRATIONS WITH HERMETIC SEALS TOOK 8.5 MONTHS AND MUCH DISCUSSION FOR THIS IMPROVED METHOD).

*EMERGENCY POWER, ELECTRIC + *MODIFICATION, SYSTEM OR EQUIPMENT + CONGRESSIONAL ACTIVITY + CONTAINMENT LEAKAGE CONTROL + CONTAINMENT PENETRATION, ELECTRICAL + GENERATOR, DIESEL + OPERATING EXPERIENCE + PLUM BROOK + REGULATION, AEC

11-17970

ALSO IN CATEGORY 17

GETR CHANGE 6. LEAK RATE TEST PRESSURE INCREASE

GENERAL ATOMIC, DIVISION OF GENERAL DYNAMICS CORPORATION, SAN DIEGO, CALIFORNIA

2 PAGES, APRIL 19, 1967, DOCKET NO. 50-7C

DRL ALLOWS AN INCREASE IN TEST PRESSURE FROM 2.5 PSIG TO THE ACCIDENT PRESSURE OF 4.4. THIS WILL ELIMINATE NEED TO EXTRAPOLATE RATE TO ACCIDENT CONDITIONS AND WILL GIVE A BETTER INDICATION OF THE CONDITION OF THE FACILITY. TEST IS TO BE PERFORMED BEFORE ANY LEAK REPAIRS.

*CONTAINMENT, GENERAL + *TEST, LEAK RATE + EXTRAPOLATION FACTOR + GETR (GENERAL ELECTRIC TEST REACTOR) + PRESSURE, INTERNAL + REACTOR, TEST + TECHNICAL SPECIFICATIONS

11-17999

ALSO IN CATEGORIES 5 AND 17

PROPOSAL CONCERNING BONUS EMERGENCY CORE COOLING ANALYSIS

PUERTO RICO WATER RESOURCES AUTHORITY

13 PAGES, AUGUST 11, 1967, DOCKET NO. 115-4

AEC PUERTO RICO OFFICE TRANSMITS, TO DRL, CE PROPOSAL TO CONDUCT STUDY, ALONG WITH BONUS

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-17999 *CONTINUED*

ASSESSMENT OF THE PROPOSAL. (GE) SCOPE OF WORK IS TO COVER ACCIDENTS DUE TO EXTERNAL PIPE BREAKAGE. G.E. COMPUTER CODES WILL BE USED TO DETERMINE FUEL TEMPERATURE, CONTAINMENT VESSEL PRESSURE, CORE INTEGRITY, AND METAL-WATER REACTION DURING BLOWDOWN. EFFECT OF CORE MELTDOWN WILL BE STUDIED AND REQUIREMENTS TO PREVENT MELTDOWN STUDIED.

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

*BLOWDOWN + *CORE MELTDOWN + *EMERGENCY COOLING CONSIDERATIONS + *HEAT TRANSFER ANALYSIS + *PRESSURE, INTERNAL + ACCIDENT, LOSS OF COOLANT + BONUS (BOILING NUCLEAR SUPERHEAT PROJECT) + COMPUTER PROGRAM + CONTAINMENT, LOW PRESSURE + REACTOR, BOILING WATER + REACTOR, INTERNAL SUPERHEAT

11-18018 ALSO IN CATEGORY 9

IRVINE WH

DEVELOPMENTS IN THE PERIODIC INSPECTION OF REACTOR PRIMARY CIRCUIT PRESSURE COMPONENTS OF NUCLEAR REACTORS UKAEA, AUTHORITY HEALTH AND SAFETY BRANCH, SAFEGUARDS DIVISION AHSB(S)-R-115 +. 14 PAGES, 5 FIGURES, 8 REFERENCES, 1966

TECHNIQUES FOR PERIODIC INSPECTION OF THE REACTOR VESSEL SHELL ARE BRIEFLY DESCRIBED. THESE ARE - OPERATIONAL STRAIN MEASUREMENT, INDIRECT VIEWING AND MATERIAL MONITORING. METHODS OF ESTABLISHING REACTOR PRESSURE COMPONENT INTEGRITY BASED ON FRACTURE MECHANICS ARE BEING DEVELOPED. THIS APPROACH AND ITS IMPLICATIONS ARE DISCUSSED.

FAILURE, PRESSURE VESSEL + INSTRUMENTATION, PRESSURE + PRESSURE VESSEL + SHELL + SURVEILLANCE PROGRAM

11-18022

FICHTER WB

STRESSES AT THE TIP OF A LONGITUDINAL CRACK IN A PLATE STRIP NASA, LANGLEY RESEARCH CENTER, LANGLEY STATION, HAMPTON, VA. NASA-TR-R-265 +. 55 PAGES, 17 FIGURES, 9 REFERENCES, AUGUST 1967

THE STRESS FIELD NEAR THE TIP OF A CENTRAL LONGITUDINAL CRACK IN A PLATE STRIP WAS INVESTIGATED. SEVERAL PLANE PROBLEMS INVOLVING OPENING AND IN-PLANE SHEARING OF THE CRACK, AND ONE BENDING PROBLEM ARE ANALYZED. STRESS-INTENSITY FACTORS ARE OBTAINED AS A FUNCTION OF THE RATIO OF STRIP WIDTH TO CRACK LENGTH. IN ADDITION, FOR SEVERAL PROBLEMS, SOME PLOTS OF THE STRESSES ON THE LONGITUDINAL EDGES ARE PRESENTED TO ILLUSTRATE SOME ADDITIONAL EFFECTS OF THE PROXIMITY OF THE CRACK TO THE BOUNDARY. FINITE STRIP WIDTH IS SHOWN TO EXERT A STRONG INFLUENCE ON STRESS-INTENSITY FACTORS IN CERTAIN RANGES OF THE HEIGHT-TO-CRACK-LENGTH RATIO. THE ANALYSIS SEEMS TO BE FOR PLANE STRESS CONDITIONS, ALTHOUGH PLANE STRAIN IS STATED.

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

*BRITTLE FRACTURE + *ELASTICITY + *MATHEMATICAL STUDY + *STRESS ANALYSIS + FAILURE, PRESSURE VESSEL + FLAW + FRACTURE TOUGHNESS + PRESSURE VESSEL + STRESS

11-18023

BETT KE + BURNS DJ

SAFETY AND THE DESIGN OF HIGH PRESSURE PLANT IMPERIAL COLLEGE OF SCIENCE AND TECHNOLOGY, LONDON 12 PAGES, 16 FIGURES, 59 REFERENCES, CHEMISTRY AND INDUSTRY, (21) PAGE 859 THRU 870, (MAY 27, 1967)

A REVIEW PAPER SUMMARIZING THE DESIGN PROBLEMS RELATED TO THICK-WALLED-STEEL PRESSURE VESSELS. YIELDING, FATIGUE, AND BRITTLE FRACTURE ARE DESCRIBED. BOTH THE TRANSITION-TEMPERATURE AND THE FRACTURE-MECHANICS APPROACH TO DESIGNING AGAINST BRITTLE FRACTURE ARE DISCUSSED.

*CONTAINMENT, HIGH PRESSURE + *PRESSURE, INTERNAL + BRITTLE FRACTURE + BURST PRESSURE + CONTAINMENT DESIGN + CYLINDER + DEFORMATION + FAILURE, PRESSURE VESSEL + FLAW + FRACTURE TOUGHNESS + PLASTICITY + PRESSURE VESSEL + STEEL + STRESS

11-18024

ARMSTRONG RW

STRESS-GRAIN SIZE ANALYSIS OF THE BRITTLE FRACTURE TRANSITION OF STEEL BROWN UNIVERSITY, ENGINEERING DIVISION, PROVIDENCE, R. I. ARPA-E-38 +. 15 PAGES, 8 FIGURES, 1 TABLE, 21 REFERENCES, FEBRUARY 1967

THE TEMPERATURE INTERVAL IN WHICH STEEL MAY SHOW A FAIRLY ABRUPT CHANGE FROM DUCTILE TO BRITTLE BEHAVIOR WAS QUANTITATIVELY SPECIFIED IN TERMS OF THE (HALL-PETCH) STRESS-GRAIN SIZE PARAMETERS ALREADY REPORTED IN THE LITERATURE FROM TESTS AT VARIOUS TEMPERATURES AND STRAIN RATES. THE TRANSITION IN BEHAVIOR DEPENDS IN AN IMPORTANT WAY ON EACH ONE OF THE STRESS COMPONENTS NORMALLY COMBINED IN A SINGLE YIELD-STRESS OR FRACTURE-STRESS MEASUREMENT.

*BRITTLE FRACTURE + EMBRITTLEMENT + FAILURE, PRESSURE VESSEL + FLAW + FRACTURE TOUGHNESS + IMPACT PROPERTY + NOT DATA (NIL DUCTILITY TRANSITION) + PLASTICITY + PRESSURE VESSEL + STEEL + STRESS + TENSILE PROPERTY

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-18025

SHEELY WF

CORRELATION OF RADIATION DAMAGE TO STEEL WITH NEUTRON SPECTRUM

DIVISION OF RESEARCH, U. S. ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.

11 PAGES, 9 FIGURES, 2 TABLES, NUCLEAR SCIENCE AND ENGINEERING 29(2), PAGE 165 THRU 175, (AUGUST 1967)

EXPRESSIONS WERE DEVELOPED FOR THE RATE OF PRODUCTION OF ATOMIC DISPLACEMENTS IN IRON BY NEUTRON SPECTRA FOUND IN REACTORS. AN EVALUATION OF CALCULATED ATOMIC DISPLACEMENT DENSITY AS A MEASURE OF RADIATION DAMAGE TO STEEL WAS MADE BY DETERMINING IF THIS APPROACH COULD RATIONALIZE THE DIFFERENCES IN DAMAGE RATE PRODUCED BY DIFFERENT REACTOR SPECTRA. IT WAS FOUND THAT AVAILABLE DATA ON RADIATION-INDUCED PROPERTY CHANGES COULD BE SATISFACTORILY NORMALIZED TO A COMMON BASIS BY EXPRESSING EXPOSURE AS DISPLACEMENT DENSITY.

*BRITTLE FRACTURE + *EMBRITTEMENT + *NDT DATA (NIL DUCTILITY TRANSITION) + FRACTURE TOUGHNESS + IRRADIATION TESTING + PRESSURE VESSEL + STEEL

11-18026

VEEDER J

THERMO-ELASTIC EXPANSION OF FINITE CYLINDERS

ATOMIC ENERGY OF CANADA LIMITED, CHALK RIVER, ONTARIO

AECL-2660 +. 17 PAGES, 1 FIGURE, 4 TABLES, 13 REFERENCES, JANUARY 1967

THE THERMAL EXPANSION OF FINITE CYLINDERS IS CALCULATED BY A NUMERICAL METHOD USING A SUITABLY CHOSEN POWER POLYNOMIAL WHOSE COEFFICIENTS ARE FOUND BY A RIGOROUS APPLICATION OF THE BOUNDARY CONDITIONS AND MINIMIZING THE TOTAL STRAIN ENERGY. CALCULATIONS WERE DONE FOR SEVERAL LENGTH-TO-DIAMETER RATIOS, AND IT WAS FOUND THAT IN EVERY CASE (A) THE GREATEST RADIAL EXPANSION OCCURS AT THE ENDS OF THE CYLINDER AND (B) THE RADIAL AND TANGENTIAL STRESSES ARE EVERYWHERE TENSILE ON THE END-FACES. ITS RELEVANCE TO CIRCUMFERENTIAL RIDGING ON THE CLADDING OF FUEL ELEMENTS IS DISCUSSED BRIEFLY.

AVAILABILITY - ATOMIC ENERGY OF CANADA, LTD., CHALK RIVER, ONTARIO, CANADA, \$0.50 COPY

*CYLINDER + *DEFORMATION + *ELASTICITY + *HIGH TEMPERATURE + *STRESS + *STRESS ANALYSIS + CERAMICS + CLAD + COMPARISON, THEORY AND EXPERIENCE + COMPUTER PROGRAM

11-18090

ANDERSON WJ + FERRY PB

HEAVY WATER ORGANIC COOLED REACTOR. THE EFFECT OF SOME FABRICATION VARIABLES ON THE MECHANICAL PROPERTIES OF SINTERED ALUMINUM POWDER (SAP) SHAPES

ATOMICS INTERNATIONAL, CANOGA PARK, CALIFORNIA + COMBUSTION ENGINEERING, INC., WINDSOR, CONN. NUCLEAR DIVISION

AI-CE-36 +. 44 PAGES, 9 FIGURES, 5 TABLES, AUGUST 15, 1967

DESCRIBES ROD-TENSILE, TUBING-TENSILE, AND TUBE-BURST TESTS ON SPECIMENS OF SAP ALLOYS. FOR USE AS CLAD IN HWOCR. TUBE-BURST TESTS SHOW THAT PRESENCE OF LOGITUDINAL FINS DOES NOT AFFECT SHORT-TERM TENSILE STRENGTH.

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

*FAILURE, CLADDING + *PRESSURE, INTERNAL + *TESTING + ALUMINUM + FUEL ELEMENT + REACTOR, HEAVY WATER + REACTOR, ORGANIC COOLED

11-18137

STUDY OF A PRESTRESSED CONCRETE VESSEL FOR A BOILING-WATER REACTOR OF 1000 MWE. FINAL REPORT

SOCIETE D-ETUDES ET D-EQUIPMENTS D-ENTREPRISES, PARIS, FRANCE

EURAC-1789 + EUR-3331 +. 262 PAGES, FIGURES, TABLES, SEPTEMBER 1966

PRELIMINARY STUDIES, MADE BY GENERAL ELECTRIC, INDICATED THAT THE PRESTRESSED-CONCRETE SOLUTION WAS DECIDEDLY INTERESTING FOR REACTORS WITH AN ELECTRIC POWER RATING OF 1000 MW OR MORE. A PRELIMINARY CONSIDERATION SHOWED THAT IT WAS NECESSARY (1) TO REVISE THE DESIGN OF THE PRESTRESSED-CONCRETE VESSEL FOR A HIGHER PRESSURE THAN THAT WHICH WAS USED IN THE GRAPHITE-GAS FAMILIES, (2) TO REVISE THE DESIGN OF THE REACTOR FOR ADAPTING IT TO THE VESSEL, (3) TO INVESTIGATE THE PROBLEM CONCERNING THE THERMAL INSULATION OF THE VESSEL. AT PRESENT, THERE IS NO KIND OF THERMAL INSULATION WHICH IS USED IN THE REQUIRED CONDITIONS - INSULATION IN A PRESSURIZED MIXTURE OF STEAM AND WATER.

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

*CONCRETE, PRESTRESSED + *REACTOR, BOILING WATER + CONTAINMENT LINER + CONTAINMENT RESEARCH AND DEVELOPMENT + CONTAINMENT, PRESSURE SUPPRESSION + MODEL TESTING + PRESSURE VESSEL + STRESS ANALYSIS + THERMAL INSULATION

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-18140 ALSO IN CATEGORIES 15 AND 17
INDIAN POINT CHANGE 30. PERSONNEL ENTRANCE INTO CONTAINMENT DURING FULL POWER OPERATION
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC., NEW YORK
4 PAGES, AUGUST 28, 1967, DOCKET NO. 50-3, INDIAN POINT I

DRL ALLOWS TRAINED PEOPLE TO ENTER CONTAINMENT DURING FULL-POWER OPERATION TO COLLECT DATA ON THE PRESENCE OF LOW-LEVEL FISSION-PRODUCT ACTIVITY (PARTICULARLY IODINE). NO MORE THAN 20 SEPARATE ENTRIES MAY BE MADE IN GROUPS OF 6. CHANGE 10 HAD ALLOWED ENTRANCE FOR A SIMILAR PURPOSE IN JUNE 65, AND SAME PRECAUTIONS WILL BE FOLLOWED. OPERATOR CLAIMS AIR-LOCK CAN BE REACHED WITHIN 50 SEC FROM ANY PORTION OF THE CONTAINMENT.

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

*CONTAINMENT, GENERAL + *FISSION PRODUCT RELEASE, GENERAL + *SURVEY, RADIATION, GENERAL + INDIAN POINT 1 + REACTOR, PRESSURIZED WATER + SAFETY EVALUATION + TECHNICAL SPECIFICATIONS

11-18193 ALSO IN CATEGORY 7
HOLM DM + MOORE BM
DETECTION OF PLUTONIUM PENETRATIONS THROUGH CONTAINERS AT HIGH TEMPERATURE
LOS ALAMOS SCIENTIFIC LABORATORY, N. MEX.
LA-3654 +. 16 PAGES, 7 FIGURES, 4 REFERENCES, DECEMBER 1966

A DETECTION SYSTEM WAS BUILT FOR MONITORING PLUTONIUM PENETRATION THROUGH TANTALUM CAPSULES BY COUNTING ALPHA PARTICLES WITH SILICON SURFACE-BARRIER DETECTORS. SMALL AMOUNTS OF PLUTONIUM (0.1 MICROGRAM) CAN BE DETECTED ON THE SURFACE OF THE TEST CAPSULE WHILE IT IS AT 1160 C IN A HIGH VACUUM. THE DETECTORS ARE KEPT COOL BY PLACING THEM IN WATER-COOLED HEAD ASSEMBLIES AND SHIELDING THEM FROM THERMAL RADIATION BY SIX THIN NICKEL FOILS. ALPHA PARTICLES FROM PLUTONIUM LOSE ABOUT 1.5 MEV OF THEIR ENERGY IN TRAVERSING THE FOILS. A TOTAL RUNNING TIME OF 18,548 HR WAS LOGGED ON TWO SYSTEMS, DURING WHICH TIME 116 CAPSULES WERE TESTED. NO OPERATOR WAS REQUIRED BECAUSE THE EXPERIMENT WAS AUTOMATICALLY SHUT DOWN WHEN THE LEAK REACHED A PREDETERMINED VALUE.

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

*ANALYTICAL TECHNIQUE, CALIBRATION + *FAILURE, CLADDING + *PLUTONIUM + ACCIDENT, MONITOR + ALPHA EMITTER + INSTRUMENTATION, ABNORMAL INDICATION + REACTOR, FAST

11-18209 ALSO IN CATEGORIES 5 AND 12
HARTY H + BATCH JM + PEDERSEN LT + WHEELER RG + FOX JC
ENGINEERING DEVELOPMENT DEPARTMENT QUARTERLY REPORT, APRIL-JUNE 1966
BATTELLE-NORTHWEST, RICHLAND, WASHINGTON
BNWL-367 +. 76 PAGES, 18 FIGURES, 2 TABLES, APRIL 1967

PROGRESS REPORT COVERING SUCH TOPICS AS THE FAST FLUX TEST FACILITY, HEAT TRANSFER STUDIES, CROSS-FLOW MIXING BETWEEN PARALLEL FLOW, BOILING-STABILITY STUDIES, IRRADIATION DAMAGE TO REACTOR METALS, UPSTREAM BOILING BURNOUT, THE CSE, IODINE FORMS IN STEAM CONDENSATE, AND DECONTAMINATION OF COATINGS.

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

AEROSOL PROPERTIES + BURNOUT HEAT FLUX + CONTAINMENT RESEARCH AND DEVELOPMENT + CSE (CONTAINMENT SYSTEMS EXPERIMENT) + HEAT TRANSFER EXPERIMENT + HEAT TRANSFER, BOILING + IODINE + PLUTONIUM + REACTOR, LIQUID METAL COOLED + SAMPLING + STEAM

11-18246 ALSO IN CATEGORY 7
VIVIAN JE + BRIAN PL + KRUKONIS VJ
GAS ABSORPTION IN PACKED COLUMNS - LIQUID PHASE RESISTANCE IN THE LOADING REGION
MASSACHUSETTS INSTITUTE OF TECHNOLOGY, CAMBRIDGE, MASS.
2 PAGES, 3 FIGURES, A.I.C.H.E.-J 13(1), PAGES 174-175 (JANUARY 1967)

DATA ON LIQUID-PHASE-CONTROLLED GAS ABSORPTION IN THE LOADING REGIME ARE PRESENTED. CARBON DIOXIDE WAS DESORBED FROM WATER BY USING A 6-IN.-DIAM TOWER AND 1/2-AND 3/4-IN. CERAMIC RINGS. BELOW THE LOADING POINT, H-SUB-L INCREASES APPROXIMATELY AS THE 0.25 POWER OF THE LIQUID RATE AND IS INDEPENDENT OF GAS RATE. IN THE LOADING REGIME, HOWEVER, IT WAS FOUND THAT AT HIGH GAS RATES H-SUB-L INCREASES LESS RAPIDLY AND MAY EVEN DECREASE WITH INCREASE IN LIQUID RATE, AND THAT AT LOW GAS RATES H-SUB-L INCREASES MORE RAPIDLY WITH AN INCREASE IN LIQUID RATE. AT INTERMEDIATE GAS RATES, THE EFFECT OF LIQUID RATE ON H-SUB-L IS INTERMEDIATE. THESE EFFECTS ARE EXPLAINED ON THE BASIS OF THE INTERACTION OF THE GAS AND LIQUID FLOW RATES AND THE EFFECT OF THIS INTERACTION ON K-SUB-L AND A. THE RESULTS SUGGEST THAT IN SOME CASES TOWER CAPACITY MAY BE INCREASED WITHOUT INCREASING H-SUB-L.

*ADSORPTION + *CARBON DIOXIDE + *CHEMISORPTION + AIR CLEANING + CONTAINMENT DESIGN + NOBLE GAS

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-18288 ALSO IN CATEGORY 7
WATSON GM + PEREZ RB + FONTANA MH
EFFECTS OF CONTAINMENT SYSTEM SIZE ON FISSION-PRODUCT BEHAVIOR
UNIVERSITY OF FLORIDA + OAK RIDGE NATIONAL LABORATORY
CONF-670602 +. 2 PAGES, ANS TRANS. 10(1), PAGES 339-340, 1967 ANNUAL MEETING, AMERICAN NUCLEAR SOCIETY,
SAN DIEGO, CALIF., JUNE 11-15, 1967

SIMPLE MATHEMATICAL MODELS TO AID IN THE DETERMINATION OF EFFECTS OF CONTAINMENT SIZE ON
PLATE-OUT BEHAVIOR OF IODINE WERE POSTULATED. TWO GENERAL CLASSES OF SYSTEMS WERE
CONSIDERED, DEPENDING ON ABSENCE OR PRESENCE OF STEAM. A MODEL FOR PREDICTING THE
MASS-TRANSFER COEFFICIENTS USING FILM THEORY AND BOUNDARY LAYER ANALYSIS WAS DEVELOPED FOR
THE DRY CASES BASED ON ROUGH APPROXIMATIONS CONCERNING THE FLOW VELOCITY STRUCTURE WITHIN THE
CONTAINMENT SHELL, THESE FLOWS BEING INDUCED BY NATURAL CONVECTION.

*ANALYTICAL MODEL + *CONTAINMENT DESIGN + *CONTAINMENT RESEARCH AND DEVELOPMENT + *IODINE +
*MATHEMATICAL STUDY + *DIFFUSION + FISSION PRODUCT TRANSPORT + MASS TRANSFER + ORGANIC IODIDE + STEAM +
SURFACE TO VOLUME RATIO

11-18339 ALSO IN CATEGORY 17
HUMBOLDT BAY ADDENDUM A TO PROPOSED CHANGE 21. LEAK RATE TESTING
PACIFIC GAS AND ELECTRIC COMPANY, SAN FRANCISCO, CALIF.
6 PAGES, MARCH 16, 1967, DOCKET NO. 50-133

COMPLETELY REWRITTEN CHANGES IN INTEGRATED-LEAKAGE-RATE-LIMIT SPECIFICATIONS FOR DRYWELL AND
SUPPRESSION CHAMBER, INTEGRATED LEAK-RATE TESTING AND PENETRATION-CLOSURE TESTING.

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

*CONTAINMENT, PRESSURE SUPPRESSION + *TEST, LEAK RATE + HUMBOLDT BAY + PRESSURE RELIEF +
REACTOR, BOILING WATER + TECHNICAL SPECIFICATIONS + TEST INTERVAL

11-18340 ALSO IN CATEGORY 17
HUMBOLDT BAY CHANGE 22. DEFERMENT OF INTEGRATED LEAK RATE TEST
DIVISION OF REACTOR LICENSING, WASHINGTON, D.C.
1 PAGE, MARCH 17, 1967, DOCKET NO. 50-133

DRL ALLOWS DEFERMENT OF INTEGRATED LEAK-RATE TESTING OF SUPPRESSION CHAMBER AND DRYWELL (DUE
MARCH 23, 1967) FOR 120 DAYS (UNTIL JULY 20, 1967). PROPOSED CHANGE 21 (DEALING WITH
LEAK-RATE-TEST SCHEDULES) IS UNDER REVIEW.

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

*CONTAINMENT, PRESSURE SUPPRESSION + *TEST INTERVAL + HUMBOLDT BAY + REACTOR, BOILING WATER +
TECHNICAL SPECIFICATIONS + TEST, LEAK RATE

11-18391 ALSO IN CATEGORY 17
HADDAM NECK PROPOSED CHANGE INCREASING STEAM-LINE ISOLATION-VALVE CLOSURE TIME
CONNECTICUT YANKEE ATOMIC POWER CO., ENGRG. OFFICE, BOSTON, MASS.
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(41), PAGE 23, (OCTOBER 9, 1967), DOCKET NO. 50-213

(LTR. OCT. 3) TEMPORARY CHANGE IN CLOSURE TIME FROM 1 SEC TO 10 SEC IS REQUESTED. (QUOTE) -
IT WAS THOUGHT OPTIMISTICALLY THAT WITH STEAM FLOW THESE VALVES WOULD MEET THE 1-SEC CLOSURE
TIME. (INITIALLY TESTED WITH NO FLOW, CLOSURE TIME WAS 6 SEC). THIS OPTIMISM HAS BEEN
PROVED UNJUSTIFIED BY RECENT TESTS ON THE VALVES WITH SUBSTANTIAL STEAM FLOW. (UNQUOTE)
CLOSURE TIMES AVERAGED 2.8 SEC, VARYING FROM 1.3 TO 4.6 SEC. IT IS IMPOSSIBLE TO DUPLICATE
CONDITIONS FOLLOWING A STEAM-LINE BREAK. THIS WOULD REDUCE CLOSURE TIME, BUT THERE IS NO
MEANS TO ESTABLISH THIS EFFECT QUANTITATIVELY.

*ACCIDENT, STEAM LINE RUPTURE + *CONTAINMENT PENETRATION, CLOSURE OF + *RESPONSE TIME +
*TEST, SYSTEM OPERABILITY + HADDAM NECK + REACTOR, BOILING WATER + TECHNICAL SPECIFICATIONS + VALVE

11-18440 ALSO IN CATEGORY 17
IDAHO STATE U. SUPPLIES ADDITIONAL INFORMATION ON AGN-201 UNDER CONSTRUCTION
IDAHO STATE UNIVERSITY, POCATELLO, IDAHO
5 PAGES, SEPTEMBER 22, 1967, DOCKET NO. 50-284

ISU CONSIDERS THAT CORE-TANK RUPTURE DUE TO RADIOLYTIC GAS FROM THE MODERATOR IS NOT A
CREDIBLE ACCIDENT. THEY DISCUSS 3 MODIFICATIONS TO THE BUILDING VENTILATION SYSTEM TO
PREVENT SPREAD OF ANY SUCH GAS THROUGH THE ENTIRE BUILDING. ALSO INCLUDES PERSONNEL
INFORMATION.

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

*MODERATOR + *MODIFICATION, SYSTEM OR EQUIPMENT + *RADIOLYTIC GAS + *VENTILATION SYSTEM +

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-18442 *CONTINUED*

AGN (TRAINING REACTOR, AEROJET-GEN. NUCLEONICS) + AIRBORNE RELEASE + RADIATION DAMAGE + REACTOR, TRAINING + STAFFING, TRAINING, QUALIFICATION + VENTILATION SYSTEM

11-18442 ALSO IN CATEGORIES 8 AND 17

AEC ALLOWS HUMBOLDT BAY TO LOAD FINAL QUARTER OF TYPE II FUEL ASSEMBLIES

AEC, DIVISION OF REACTOR LICENSING, WASHINGTON, D. C.

1 PAGE, SEPTEMBER 28, 1967, DUCKET NO. 90-133, PACIFIC GAS AND ELECTRIC CO.

PRINCIPAL CONSIDERATION CONCERNING NEW ZIRC-CLAD CORE IS CONTAINMENT-SYSTEM ABILITY TO WITHSTAND THE PRESSURE THAT MIGHT BE GENERATED FROM A METAL-WATER REACTION FOLLOWING LOSS OF COOLANT. DRL AGREES THAT SUFFICIENT MARGIN EXISTS FOR REASONABLE ASSURANCE AGAINST CONTAINMENT RUPTURE, BASED ON MAY 17 AND AUG. 23 LETTERS.

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

*ACCIDENT, LOSS OF COOLANT + *CLAD + *FUEL ELEMENT + *METAL WATER REACTION + CONTAINMENT INTEGRITY + HUMBOLDT BAY + PRESSURE, INTERNAL + REACTOR, BOILING WATER + ZIRCALOY

11-18633

VFRSTRAFFE P + IFHMANN D + LAFITTE R

CONTAINMENT FOR HEAVY-WATER GAS-COOLED REACTORS

BONNARD AND GARDEL, LAUSANNE, SWITZERLAND

SM-89/1 + CONF-670-402 +. 36 PAGES, 13 FIGURES, 7 TABLES, 11 REFERENCES, APRIL 1967

THE SAFETY PRINCIPLES APPLICABLE TO HEAVY-WATER GAS-COOLED REACTORS ARE OUTLINED, WITH A VIEW TO ESTABLISHING CONTAINMENT SPECIFICATIONS ADAPTED TO THE SITES AVAILABLE IN SWITZERLAND FOR THE CONSTRUCTION OF NUCLEAR PLANTS. THE FOLLOWING TYPES OF SHELL WERE STUDIED - PRESTRESSED CONCRETE, PRESTRESSED CONCRETE WITH STEEL DOME, PRESTRESSED CONCRETE WITH INNER, LEAKPROOF STEEL LINING, STEEL WITH CONCRETE SIDE SHIELD TO PROTECT AGAINST RADIATION, AND DOUBLE SHELL. THE AUTHORS ASSESS THE LEAKPROOFING PROPERTIES OF EACH TYPE OF SHELL AND ESTABLISH BUILDING COSTS FOR EACH OF THEM ON THE BASIS OF PRECISE PLANS, WITH THE COLLABORATION OF VARIOUS SPECIALIZED FIRMS.

AVAILABILITY - NATIONAL AGENCY FOR INTERNATIONAL PUBLICATIONS, INC., 317 EAST 34TH STREET, NEW YORK, N.Y., 10016

*CONTAINMENT, GENERAL + *SWITZERLAND + CONCRETE, PRESTRESSED + CONTAINMENT ANALYSIS + CONTAINMENT LEAKAGE CONTROL + CONTAINMENT, HIGH PRESSURE + CONTAINMENT, MULTIPLE

11-18634 ALSO IN CATEGORY 8

GAST K + SCHIKARSKI W

CONTAINMENT OF A LARGE SODIUM-COOLED FAST BREEDER REACTOR

KERNFORSCHUNGSZENTRUM, KARLSRUHE, FEDERAL REPUBLIC OF GERMANY

SM-89/7 + CONF-670-402 +. 15 PAGES, 7 FIGURES, 1 TABLE, 5 REFERENCES, APRIL 1967

FOLLOWING THE CONCEPTUAL DESIGN STUDY FOR A 1000-MW SODIUM-COOLED FAST BREEDER REACTOR, THE CONCEPTUAL DESIGN OF A 300-MW PROTOTYPE REACTOR IS CURRENTLY UNDER WAY AT KARLSRUHE RESEARCH CENTRE. FOR THE PROTOTYPE REACTOR, A RATHER CONSERVATIVE SAFETY ASSESSMENT WAS CHOSEN TO COMPENSATE FOR INCOMPLETE KNOWLEDGE OF DETAILED NUCLEAR AND THERMODYNAMIC BEHAVIOR IN A LARGE ACCIDENT. DOUBLE CONTAINMENT WILL THEREFORE BE PROVIDED, THE INNER CONTAINMENT BEING DESIGNED FOR THE POTENTIAL CONSEQUENCES OF A NUCLEAR EXCURSION WITH DESTRUCTIVE ENERGY RELEASE, AND FOR PREVENTION OF LARGE SODIUM FIRES. THE OUTER CONTAINMENT WILL SERVE AS A FINAL BARRIER FOR FISSION PRODUCTS AND OTHER RADIOACTIVE AEROSOLS. THE CONTAINMENT CONCEPT IS AIMED AT INDEPENDENCE IN SITE SELECTION.

AVAILABILITY - NATIONAL AGENCY FOR INTERNATIONAL PUBLICATIONS, INC., 317 EAST 34TH STREET, NEW YORK, NEW YORK. 10016

*CONTAINMENT ANALYSIS + *REACTOR, FAST + ACCIDENT, MAXIMUM CREDIBLE (MCA) + CONTAINMENT, MULTIPLE + DESIGN STUDY + ENERGY SOURCE + GERMANY + REACTOR, LIQUID METAL COOLED

11-18635

BOEDEGE R

LEAKAGE RATE TESTING OF CONTAINMENT VESSELS BY THE REFERENCE METHOD

KERNKRAFTWERK LINGEN GMBH, DORTMUND, FEDERAL REPUBLIC OF GERMANY

SM-89/10 + CONF-670-402 +. 18 PAGES, 7 FIGURES, 6 REFERENCES, APRIL 1967

THE MISCELLANEOUS METHODS WHICH UP TO NOW HAVE BEEN USED IN LEAKAGE RATE TESTING ARE BRIEFLY DESCRIBED AND GROSSLY COMPARED. AMONG THE TRANSIENT METHODS, THE REFERENCE METHOD APPEARS TO BE THE ONE WITH THE BEST ACCURACY AT COMPARABLE EFFORTS AND EXPENSES. UNFORTUNATELY, ALL MEASUREMENTS OF THIS KIND REPORTED IN GERMAN LITERATURE WERE TERMINATED MORE OR LESS WITHOUT ANY USEFUL RESULTS. THE REASON APPEARS TO LIE WITH THE TECHNIQUES. THE REFERENCE METHOD MAY ESSENTIALLY BE IMPROVED BY (1) ESTABLISHING THE PRESSURE DIFFERENCES MORE ACCURATELY, AND (2) BY INCLUDING THE ENTIRE SYSTEM IN THE CONTAINMENT VESSEL. IF, FURTHERMORE, THE WATER CONTENT OF THE CONTAINMENT AIR IS MEASURED WITH GREATER ACCURACY THAN IS DONE HERE, LEAKAGE RATES OF THE ORDER OF 0.01/DAY MAY EASILY BE MEASURED.

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-18635 *CONTINUED*

AVAILABILITY - NATIONAL AGENCY FOR INTERNATIONAL PUBLICATIONS, INC., 317 EAST 34TH STREET, NEW YORK, N.Y.
10016

*CONTAINMENT REFERENCE MEASURING SYSTEM + *TEST, LEAK RATE + CONTAINMENT, GENERAL + GERMANY + HUMIDITY

11-18636

JUSTIN F + SCHULHOF P

METHODS OF CONTAINMENT ADOPTED FOR THE EL-4 REACTOR AND PROJECTED HEAVY-WATER, GAS-COOLED PLANTS

CENTRE D-ETUDES NUCLEAIRES DE SACLAY, FRANCE

SM-89/18 + CONF-670-402 +. 13 PAGES, 3 FIGURES, APRIL 1967

AFTER A BRIEF DESCRIPTION OF THE PLANT, THE PAPER EXPLAINS THE PRINCIPLES ADOPTED FOR PREVENTING THE RELEASE OF WASTE GAS FROM THE EL-4 REACTOR AND REFERS TO SOME OF THE DIFFICULTIES ASSOCIATED WITH THIS TYPE OF CONTAINMENT. FROM THE ECONOMIC STANDPOINT, THE AUTHORS PRESENT THE RESULTS OF A COMPARATIVE CIVIL ENGINEERING STUDY OF PRESTRESSED CONCRETE AND STEEL SHELLS FOR A PROJECTED 60-MW(E) POWER STATION, GIVING VARIOUS VALUES FOR ACCIDENTAL PRESSURES. THEY DEMONSTRATE THE INFLUENCE OF THE STRESS VALUES ADOPTED.

AVAILABILITY - NATIONAL AGENCY FOR INTERNATIONAL PUBLICATIONS, INC., 317 EAST 34TH STREET, NEW YORK, N.Y.
10016

*CONCRETE, PRESTRESSED + *ECONOMIC STUDY + *STEEL + CONTAINMENT, HIGH PRESSURE + FRANCE + REACTOR, GAS COOLED + STRESS ANALYSIS

11-18638

WOLFF PH

TO CONTAIN, OR NOT TO CONTAIN

NUCLEAR DESIGN AND CONSTRUCTION LIMITED, WHETSTONE, LEICESTER, UK

SM-89/33 + CONF-670-402 +. 14 PAGES, 1 TABLE, 1 REFERENCE, APRIL 1967

THE REACTOR SYSTEM OFFERING LEAST POTENTIAL HAZARD IS CLEARLY ONE WHICH BY VIRTUE OF ITS INHERENT DESIGN IS INCAPABLE OF ALLOWING THE RELEASE OF RADIOACTIVE MATERIAL FROM WITHIN THE SYSTEM DURING NORMAL OPERATION OR UNDER ANY CREDIBLE FAULT CONDITIONS. HENCE NO SECONDARY SYSTEM OF CONTAINMENT IS REQUIRED. THIS CONCLUSION HAS BEEN REACHED FOR THE GAS-COOLED CIVIL NUCLEAR POWER STATIONS SO FAR CONSTRUCTED IN THE UNITED KINGDOM (7200 MW(E) SO FAR COMPLETED OR UNDER CONSTRUCTION). THE APPROACH REQUIRES THE BEHAVIOUR OF THE REACTOR SYSTEM TO BE KNOWN UNDER ALL CONDITIONS AND THE EXTENT TO WHICH THIS IS POSSIBLE IS ILLUSTRATED BY DISCUSSION OF THE DESIGN SOLUTIONS ADOPTED TO PREVENT THE ESCAPE OF RADIOACTIVE MATERIAL FROM THE ADVANCED GAS-COOLED REACTORS AT PRESENT UNDER CONSTRUCTION FOR THE SECOND PHASE OF THE BRITISH NUCLEAR POWER PROGRAMME AND FOR THE STEAM-GENERATING HEAVY-WATER MODERATED REACTOR, SODIUM-COOLED FAST REACTOR AND HIGH-TEMPERATURE GAS-COOLED REACTOR PROTOTYPES AND POWER DESIGNS UNDER DEVELOPMENT IN THE UNITED KINGDOM. SOME REFERENCE IS ALSO MADE TO THE DESIGN PROBLEMS IN OTHER SYSTEMS.

AVAILABILITY - NATIONAL AGENCY FOR INTERNATIONAL PUBLICATIONS, INC., 317 EAST 34TH STREET, NEW YORK, N.Y.
10016

*CONTAINMENT ANALYSIS + *CONTAINMENT, GENERAL + *REACTOR, GAS COOLED + *UNITED KINGDOM + ACCIDENT ANALYSIS + REACTOR, HEAVY WATER + REACTOR, LIQUID METAL COOLED

11-18639

YELLOWLEES JM + ROBSON K + SPRUCE TW + TATTERSALL JO

THE DESIGN OF THE HINKLEY POINT B ACR PRESSURE VESSEL TO AVOID CONTAINMENT

THE NUCLEAR POWER GROUP LTD., KNUTSFORD, UK

SM-89/35 + CONF-670-402 +. 18 PAGES, 8 FIGURES, 1 TABLE, 9 REFERENCES, APRIL 1967

THE CONCRETE PRESSURE VESSEL SURROUNDING AN ACR HAS PENETRATIONS THROUGH ITS WALLS FOR THE GAS CIRCULATORS, STEAM AND FEED PIPES, CONTROL RODS AND REFUELLING SYSTEM, AND FOR VARIOUS REACTOR SERVICES. RETENTION OF THE HIGH-PRESSURE-GAS COOLANT WITHIN THE PRESSURE VESSEL DEPENDS ON THE CONTINUING INTEGRITY OF THESE PENETRATIONS. THE PAPER DESCRIBES IN DETAIL THE LARGE PENETRATIONS IN THE VESSEL WALLS OF AN ACR OF THE HINKLEY POINT B TYPE AND DISCUSSES THE CRITERIA GOVERNING THEIR DESIGN, CONSTRUCTION, AND OPERATION. ARGUMENTS ARE PRESENTED WHICH LEAD TO THE CONCLUSION THAT THE PENETRATIONS, WHEN APPROPRIATELY DESIGNED AND CONSTRUCTED, CAN HAVE SUFFICIENT INTEGRITY FOR AN ACR TO BE SITED IN A DENSELY POPULATED AREA.

AVAILABILITY - NATIONAL AGENCY FOR INTERNATIONAL PUBLICATIONS, INC., 317 EAST 34TH STREET, NEW YORK, N.Y.
10016

*CONCRETE, PRESTRESSED + *CONTAINMENT ANALYSIS + *CONTAINMENT PENETRATION, PIPE + *DESIGN CRITERIA + *PRESSURE VESSEL + REACTOR, GAS COOLED + UNITED KINGDOM

11-18641

VAN DER LUGT G + KUYPERS J + RUITER JP

LEAKAGE RATE TESTS OF THE COMPARTMENTS OF THE KEMA SUSPENSION TEST REACTOR. COMPARISON OF VARIOUS METHODS (PRESSURE CHANGE AND OXYGEN IN-LEAKAGE CONTROL)

N.V. KEMA, ARNHEM, NETHERLANDS

SM-89/44 + CONF-670-402 +. 14 PAGES, 5 FIGURES, 5 TABLES, 4 REFERENCES, APRIL 1967

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-18641 *CONTINUED*

FOUR STEEL-LINED COMPARTMENTS WITH A TOTAL VOLUME OF 350 CU. METERS ARE CONSTRUCTED INSIDE THE KSTR BIOLOGICAL SHIELD FOR THE CONTAINMENT OF THE REACTOR SYSTEMS. THE LEAKAGE RATES OF EACH COMPARTMENT WERE MEASURED AT AN ABSOLUTE PRESSURE OF 2.8 KG/SQ. CM AND AT THE DESIGN PRESSURE (0.7 TO 3.1 KG/SQ. CM ABOVE ATMOSPHERIC PRESSURE, DEPENDING ON THE COMPARTMENT). ALL TESTS, AT THE DESIGN PRESSURE AS WELL AS AT SUBATMOSPHERIC PRESSURE, WERE CARRIED OUT WITH THE PRESSURE CHANGE METHODS (ABSOLUTE METHOD AND REFERENCE VESSEL METHOD). THE MEASUREMENTS BELOW ATMOSPHERIC PRESSURE WERE ALSO CONDUCTED WITH THE OXYGEN IN-LEAKAGE METHOD. THE LATTER METHOD IS BASED ON THE MEASUREMENT OF THE AMOUNT OF OXYGEN LEAKING INTO A COMPARTMENT WHICH IS NEARLY FREE OF OXYGEN. THE RESULTS OF THE OXYGEN METHOD ARE COMPARED WITH THOSE OF THE PRESSURE-CHANGE MEASUREMENTS.

AVAILABILITY - NATIONAL AGENCY FOR INTERNATIONAL PUBLICATIONS, INC., 317 EAST 34TH STREET, NEW YORK, N.Y. 10016

*CONTAINMENT ABSOLUTE MEASURING SYSTEM + *CONTAINMENT REFERENCE MEASURING SYSTEM + *PRESSURE, INTERNAL + COMPARISON, THEORY AND EXPERIENCE + CONTAINMENT, HIGH PRESSURE + OXYGEN + TEST, LEAK RATE

11-18962 ALSO IN CATEGORY 18

PRAIRIE ISLAND NUCLEAR GENERATING PLANT FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, VOLUME I
NORTHERN STATES POWER COMPANY, MINNEAPOLIS, MINNESOTA
345 PAGES, TABLES, FIGURES, SEPTEMBER 20, 1967, DOCKET NUMBERS 50-282 AND 50-306

TWO PWRs (EACH 1650-MWT/560-MWE LICENSE POWER, BUT 1721-MWT/583-MWE DESIGN POWER, ZIRCALOY-CLAD UO₂) LOCATED ON PRAIRIE ISLAND, BY THE MISSISSIPPI, NEAR RED WING, MINN. SITE IS ABOUT 5 FT ABOVE 1965 HIGH WATER LEVEL. SYSTEM IS DESIGNED TO ACCEPT 10' STEP AND 5'/MIN RAMP POWER CHANGES BETWEEN 15' AND 100' FULL POWER. 3-REGION CORE HAS SPRING-CLIP GRID STRUCTURE, 33 FULL-LENGTH RODS PLUS 4 PART-LENGTH RODS (WCAP-7072). CYLINDRICAL STEEL SHELL CONTAINMENT (WITH EXTERNAL EMERGENCY SPRAY) HAS A CONCRETE SHIELD BUILDING SURROUNDING. CONCEPT IS SIMILAR TO THAT FOR INDIAN POINT 1. 6 ENGINEERED SAFEGUARDS CLAIMED. SOME SHARED EQUIPMENT (EXTERNAL SPRAY PUMPS, ETC.). INITIAL POSITIVE MODERATOR COEFFICIENT (SIMILAR TO HADDAM NECK). SECTION 1 GIVES DESIGN CRITERIA KEYED TO AEC CRITERIA, AND A COMPARISON WITH GINNA AND POINT BEACH.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20542

*CONTAINMENT SPRAY + *EMERGENCY COOLING CONSIDERATIONS + *SITING, GENERAL +
AEC CONSTRUCTION PERMIT CRITERIA + CONTAINMENT, HIGH PRESSURE + CONTROL ROD PROGRAM +
MODERATOR COEFFICIENT + PRAIRIE ISLAND 1 AND 2 (PWR) + REACTOR, PRESSURIZED WATER +
SAFETY ANALYSIS REPORT, PRELIMINARY + XENON OSCILLATION

11-19089 ALSO IN CATEGORIES 5 AND 7

WARKENTIN JK
DIRECT RADIATION LEVELS DURING LOFT OPERATION AND FOLLOWING THE LOSS-OF-COOLANT TEST
PHILLIPS PETROLEUM CO., ATOMIC ENERGY DIVISION, IDAHO OPERATIONS OFFICE
ID0-17238 +. 55 PAGES, 25 FIGURES, 6 TABLES, 20 REFERENCES, AUGUST 1967

PRESENTS THE RESULTS OF VARIOUS ANALYSES TO DETERMINE THE DIRECT RADIATION LEVELS EXPECTED IN ASSOCIATION WITH LOFT REACTOR OPERATION AND THE LOSS-OF-COOLANT EXPERIMENT. THE REACTOR PACKAGE AND CONTAINMENT BUILDING ARE BRIEFLY DESCRIBED WITH REGARD TO THE ASPECTS PERTINENT TO THE ANALYSIS. CALCULATED GAMMA DOSE RATES ARE PRESENTED (A) AS A FUNCTION OF DISTANCE INSIDE AND OUTSIDE THE CONTAINMENT BUILDING DURING FULL-POWER OPERATION, (B) AS A FUNCTION OF DISTANCE INSIDE THE CONTAINMENT BUILDING FOR DECAY TIMES RANGING FROM ONE THOUSAND TO ONE MILLION SECONDS FOLLOWING NORMAL SHUTDOWN AFTER 400 HOURS OF OPERATION, AND (C) FOR VARIOUS LOCATIONS INSIDE THE CONTAINMENT BUILDING AND AS A FUNCTION OF DISTANCE OUTSIDE THE BUILDING FOR DECAY TIMES RANGING FROM ONE THOUSAND TO ONE MILLION SECONDS FOLLOWING THE LOSS-OF-COOLANT TEST. INTEGRATED GAMMA DOSES ARE GIVEN FOR VARIOUS LOCATIONS INSIDE THE BUILDING AND AS A FUNCTION OF DISTANCE OUTSIDE THE BUILDING FOR VARIOUS PERIODS OF REACTOR OPERATION, AND FOR DECAY PERIODS OF ONE DAY AND FIVE DAYS FOLLOWING THE LOSS-OF-COOLANT TEST. CALCULATIONAL TECHNIQUES ARE PRESENTED IN THE APPENDIX.

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

ACCIDENT ANALYSIS + ACCIDENT, LOSS OF COOLANT + LOFT (LOSS OF FLUID TEST) + RADIATION DAMAGE +
RADIATION EFFECT + RADIATION MODEL + REACTOR, SAFETY RESEARCH

11-19090 ALSO IN CATEGORY 5

EIBER RJ + MAXEY WA + DUFFY AR + ATTERBURY TJ
INVESTIGATION OF THE INITIATION AND EXTENT OF DUCTILE PIPE RUPTURE. PROGRESS REPORT FOR JANUARY-JUNE, 1967
BATTELLE MEMORIAL INSTITUTE, COLUMBUS, OHIO
BMI-1813 +. 24 PAGES, 24 FIGURES, 5 TABLES, 2 REFERENCES, SEPTEMBER 1, 1967

THE PROBLEM UNDER INVESTIGATION CONCERNS THE STUDY OF THE RUPTURE CHARACTERISTICS OF DEFECTS IN REACTOR COOLANT PIPING UNDER BOILING-WATER (BW) AND PRESSURIZED-WATER (PW) CONDITIONS. THE TWO ASPECTS OF THE PROBLEM UNDER STUDY IN PHASE I OF THIS PROGRAM ARE (1) THE DETERMINATION OF THE FLAW SIZE REQUIRED TO INITIATE A FRACTURE IN PLAIN-CARBON-STEEL AND STAINLESS-STEEL REACTOR PIPING AND (2) THE DEFINITION OF CONDITIONS REQUIRED TO PRODUCE UNSTABLE PROPAGATING FRACTURES UNDER BW AND PW CONDITIONS. THE INFLUENCE OF IMPORTANT FACTORS SUCH AS PIPE DIAMETER, WALL THICKNESS, AND TEMPERATURE IS ALSO BEING INVESTIGATED. FULL-SCALE EXPERIMENTS ARE BEING CONDUCTED ON 24-IN.-DIAM., 1.50-IN. NOMINAL-WALL-THICKNESS

CATEGORY 11
CONTAINMENT OF NUCLEAR FACILITIES

11-19090 *CONTINUED*

PIPE CONTAINING ARTIFICIAL DEFECTS ENTIRELY THROUGH THE WALL, AND SURFACE DEFECTS. THE FOUR TESTS CONDUCTED UNDER PW CONDITIONS EXHIBITED RELATIVELY SHORT DUCTILE FRACTURES, EXTENDING FROM THE TIPS OF THE CRACK. THE LONGEST FRACTURE EXTENSION TO DATE UNDER PW CONDITIONS HAS BEEN 18.4 IN., INCLUDING THE EXTENSION ON BOTH ENDS OF THE CRACK. THE PW CONDITIONS COVERED HAVE BEEN 75 TO 130 F SUBCOOLING OR OVERPRESSURES (ABOVE SATURATION PRESSURE) OF 1000 TO 1940 PSI. THESE OVERPRESSURES TRANSLATE INTO CIRCUMFERENTIAL STRESS LEVELS OF 5,910 TO 12,000 PSI.

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

BRITTLE FRACTURE + PIPING

11-19677

ALSO IN CATEGORY 17

BEHNKE WB

DRL CONCLUDE DRESDEN 1 MAY BE OPERATED FOLLOWING PRIMARY SYSTEM TESTS

DIVISION OF REACTOR LICENSING

2 PAGES, ATOMIC ENERGY CLEARINGHOUSE 13(46) PAGES 15-16 (NOVEMBER 13, 1967)

(LETTER, NOVEMBER 3) AFTER NOV. 1 MEETING WITH CE, GE, B AND W, AND BMI PERSONNEL, DRL LISTS 5 PREREQUISITS FOR RESUMING OPERATION. (1) HYDRO TEST ENTIRE PRIMARY COOLANT SYSTEM AT 1205 PSI. (2) TWO KNOWN FLAWS IN D RECIRC.-LOOP PIPING SHALL BE REMOVED (UNDER ASME CODE METHODS), OR LOOP ISOLATED. (3) CONTINUE PRESENT INTENSIFIED PROGRAM OF PRIMARY-SYSTEM SURVEILLANCE AND LEAK DETECTION. (4) CONTINUE PRESENT PROGRAM FOR PERIODIC NONDESTRUCTIVE TESTING OF PRIMARY PIPING SYSTEM. (5) SUBMIT A COMPLETE WRITTEN REPORT WITHIN 30 DAYS OF METALLURGICAL AND ULTRASONIC INSPECTIONS.

*FLAW + *MAIN COOLING SYSTEM + *SURVEILLANCE PROGRAM + DRESDEN 1 + FAILURE, PIPE + REACTOR, BOILING WATER + TEST, LEAK RATE + TEST, NONDESTRUCTIVE + TEST, PROOF

CATEGORY 12
PLANT SAFETY FEATURES

12-14620 ALSO IN CATEGORIES 11 AND 18
IMPROVEMENTS TO CONTAINMENT ISOLATION VALVE SEAL WATER SECTION
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC., INDIAN POINT NUCLEAR GENERATING UNIT NO. 2
5 PAGES, 2 FIGURES, FOURTH SUPPLEMENT TO PRELIMINARY SAFETY ANALYSIS REPORT, JULY 1966, DOCKET NO. 50-247

DESCRIBES MODIFIED ISOLATION-VALVE SEAL-WATER SYSTEM WITHOUT INDICATING MODIFICATIONS.
PRINCIPLE NOT CHANGED. SEAL WATER (AT PRESSURE HIGHER THAN CONTAINMENT PRESSURE) IS INJECTED
INTO VALVE BONNET SO OUTLEAKAGE IS ELIMINATED PAST THE FIRST DISK OF THE DOUBLE-DISK
ISOLATION VALVE. FOR THE 50 PENETRATIONS, A 200-GAL WATER TANK PRESSURIZED BY NITROGEN
BOTTLES IS PROVIDED.

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

*CONTAINMENT LEAKAGE CONTROL + *CONTAINMENT PENETRATION, PIPE + *SYSTEM DESCRIPTION + INDIAN POINT 2 +
MODIFICATION, SYSTEM OR EQUIPMENT + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY +
VALVE

12-14621 ALSO IN CATEGORY 18
CHANGE TO THE SAFETY INJECTION SYSTEM
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC., INDIAN POINT NUCLEAR GENERATING UNIT NO. 2
8 PAGES, 1 FIGURE, 2 TABLES, FOURTH SUPPLEMENT TO PRELIMINARY SAFETY ANALYSIS REPORT, JULY 1966, DOCKET
NO. 50-247

BRIEF DESCRIPTION OF REDUNDANT LOW-HEAD SYSTEMS (2 RESIDUAL-HEAT-REMOVAL PUMPS, AND 2 LOW-HEAD
INJECTION PUMPS), EACH TAKING FROM REFUELING STORAGE-WATER TANK. ONE SYSTEM IS INSIDE
CONTAINMENT, THE OTHER OUTSIDE. ELECTRICAL POWER IS FROM DIESEL OR OUTSIDE POWER.

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

*CORE REFLOUDDING SYSTEM + *MODIFICATION, SYSTEM OR EQUIPMENT + INDIAN POINT 2 +
REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY + SYSTEM DESCRIPTION

12-16470 ALSO IN CATEGORY 17
DREWRY HS + STRONG WG
EVALUATING OPERATING RESULTS OF PLANT AUTOMATION
ALLIS-CHALMERS MANUFACTURING CO., MILWAUKEE, WISCONSIN + GULF STATES UTILITIES CO., BEAUMONT, TEXAS
7 PAGES, 5 FIGURES, 4 REFERENCES, PROCEEDINGS OF THE AMERICAN POWER CONFERENCE, TWENTY-SEVENTH ANNUAL
MEETING, VOLUME XXVII, CHICAGO, ILLINOIS, APRIL 27, 28, 29, 1965, PAGES 1104-1110

RELIABILITY AND PERFORMANCE EXPERIENCE IS SUMMARIZED FOR ONE YEAR OF OPERATION OF TWO
POWER-GENERATION UNITS OF THE RIVERSIDE STATION (A FOSSIL-FUELED PLANT) AFTER CONVERSION TO
DIGITAL CONTROL. THE COMPUTER SUPERVISES STARTUP AND SHUTDOWN, MONITORS PLANT OPERATIONS,
AND EXECUTES PLANT-PERFORMANCE CALCULATIONS.

COMPUTER, DIGITAL + CONTROL SYSTEM + ELECTRIC POWER, GENERAL + INSTRUMENTATION, GENERAL +
OPERATING EXPERIENCE

12-16480 ALSO IN CATEGORIES 5 AND 10
TRAUBE K
ANORDNUNG VON KÜHLWASSERUMWALZPUMPEN INNERHALF DES DRUCK GEFASSTES VON SIEDEWASSERREAKTOREN
FACHBEREICH KERNENERGIEANLAGEN, ALLGEMEINE ELEKTRIZITÄTS-GESELLSCHAFT (AEG), FRANKFURT
16 PAGES, 6 FIGURES, 1 TABLE, NUCLEAR ENGINEERING AND DESIGN 5(2) PAGES 161-176 (MARCH 1967) IN GERMAN

ACG PROPOSES NEW VERSION OF RWR. WITH COOLANT-CIRCULATION PUMPS INSTALLED IN REACTOR VESSEL,
THUS ABOLISHING EXTERNAL RECIRCULATION LOOPS AND ALLOWING A STILL MORE COMPACT CONTAINMENT
DESIGN. (SECTION 1) - REVIEWS DEVELOPMENT OF COOLANT-CIRCULATION SYSTEMS AND DESCRIBES
PRESENT JET PUMPS.

*PUMP, JET + *REACTOR DESCRIPTION + GERMANY + PRESSURE VESSEL + REACTOR, BOILING WATER

12-16924 ALSO IN CATEGORY 7
LUBY CS
INFLUENCE OF IRRADIATION TEMPERATURE ON THE RADIATION STABILITY OF COATED PARTICLE FUEL
GENERAL ATOMIC DIVISION OF GENERAL DYNAMICS, SAN DIEGO, CALIF.
GA-7226 +. 24 PAGES, 14 FIGURES, 1 TABLE, 6 REFERENCES, DECEMBER 1, 1966, ANS TRANS 9(2) PAGE 422 (1966)

THE TESTS AND IRRADIATION CAPSULES WERE DESIGNED SO THAT THE IRRADIATION PARAMETERS COULD BE
MEASURED AND CLOSELY CONTROLLED. THE COATED PARTICLES USED IN THE STUDIES CONSISTED OF
TWO-LAYER (BISO) AND THREE-LAYER (TRIPLEX) PYROLYTIC-CARBON COATINGS ON THORIUM AND/OR
URANIUM CARBIDE OR OXIDE FUEL PARTICLES. IT IS CONCLUDED THAT THE TEMPERATURE OF IRRADIATION
IS ONE OF THE MOST IMPORTANT PARAMETERS INFLUENCING COATED-PARTICLE FUEL STABILITY UNDER
IRRADIATION. THIS IS BELIEVED TO BE DUE TO THE INCREASE IN FISSION-GAS PRESSURE ACTING ON
THE COATING. THICKER COATINGS ARE REQUIRED FOR HIGH-TEMPERATURE OPERATION. THE STUDIES ALSO
DEMONSTRATED THAT COATED PARTICLES WITH TWO- AND THREE-LAYER PYROLYTIC-CARBON COATINGS AND

CATEGORY 12
PLANT SAFETY FEATURES

12-16924 *CONTINUED*

ADEQUATE FUEL CONTENTS HAVE GOOD STABILITY WELL BEYOND THE TEMPERATURES ANTICIPATED IN AN HTGR.

*CARBIDE + *CARBON + *COATED PARTICLE + *FAST NEUTRON + *HIGH TEMPERATURE + *INTEGRITY + *PYROLYTIC +
*RADIATION DAMAGE + *REACTOR, HIGH TEMP. GAS + *THORIUM + *URANIUM + FISSION PRODUCT RETENTION

12-17018 ALSO IN CATEGORY 8
BOISSON H + CHAPPELLIER A + DEBIAR A + SAVORIN J
STUDY OF PLUTONIUM FIRE EXTINCTION IN GLOVE BOXES
CENTRE D ETUDES NUCLEAIRES, SACLAY, FRANCE
CEA-R-2931 +. 16 PAGES, 4 FIGURES, DECEMBER 1965 (IN FRENCH)

THE REPORT CONCERNS ATTEMPTS TO EXTINGUISH FIRES IN URANIUM - CHOSEN AS A BASIS FOR COMPARISON - AND IN PLUTONIUM, THESE BEING CONTAINED IN GLOVE BOXES. THE EXTINGUISHING POWDERS TEC AND MG-10 WERE TRIED AND COMPARED. THE METAL WAS DEALT WITH RESPECTIVELY IN THE FORM OF BILLETS, COMPACT CHIPS, AND THIN SHAVINGS. IN EACH CASE, FIRE CONTROL WAS WITHOUT DIFFICULTY. ONE MUST ALLOW A CERTAIN TIME FOR COOLING. THE POWDER MG-10 SHOWED VERY GOOD RESULTS. MOREOVER, THE TRIALS PROVED THAT DENSELY PACKED SHAVINGS ARE A VERY REAL SECURITY FACTOR. THE INTERIOR LAYOUT OF THE GLOVE BOXES OUGHT TO BE SUCH AS TO RENDER EXTINCTION AS EASY AS POSSIBLE.

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

*FIRE + *GLOVE BOX + *METAL + EXPERIMENT, GENERAL + PLUTONIUM + URANIUM

12-17020 ALSO IN CATEGORIES 11 AND 14
BOND GW + DYER GH
MATERIALS APPLICATIONS FOR NUCLEAR POWER PLANT FROM THE VIEWPOINT OF AN ENGINEER-CONSTRUCTOR
BECHTEL CORP., SAN FRANCISCO
CONF-660319-3 +. 27 PAGES, 6 FIGURES, 4 TABLES, 9 REFERENCES, AMERICAN SOCIETY FOR METALS SESSIONS,
WESTEC CONFERENCE, LOS ANGELES, MARCH 7-11, 1966

A GENERAL PAPER DESCRIBING THE CURRENT PRACTICE IN THE DESIGN OF SEVERAL REACTOR SYSTEMS, PRINCIPALLY CONTAINMENT, WASTE DISPOSAL, REFUELING, AND SHIELDING.

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

*CONTAINMENT, GENERAL + CODES AND STANDARDS + ECONOMICS + MATERIAL + REFUELING + SHIELDING +
WASTE DISPOSAL, GENERAL

12-17350 ALSO IN CATEGORY 17
BLUMBERG R
MAINTENANCE DEVELOPMENT FOR MOLTEN-SALT BREEDER REACTORS
OAK RIDGE NATIONAL LAB., TENN.
ORNL-TM-1859 +. 18 PAGES, 1 FIGURE, 1 TABLE, 6 REFERENCES, JUNE 30, 1967

DESCRIBES A PROGRAM FOR DEVELOPING METHODS AND EQUIPMENT FOR MAINTAINING THE RADIOACTIVE EQUIPMENT OF A MOLTEN-SALT BREEDER REACTOR. THE PRIME POLICY IS TO REMOVE THE COMPONENT, REPLACE IT WITH A NEW OR REPAIRED UNIT, AND REPAIR THE FAULTY COMPONENT IN SPECIALLY EQUIPPED FACILITIES OR DISCARDED. EMPHASIS WILL BE PLACED ON RAPID REPLACEMENT TO REDUCE THE SHUTDOWN TIME OF THE SYSTEM. THE FEASIBILITY OF REMOTELY WELDING JOINTS IN THE FUEL, BLANKET, AND COOLANT LINES AND VESSELS MUST BE ESTABLISHED BEFORE THE REACTOR DESIGN CAN BE COMPLETED. A COST ESTIMATE FOR THE MAINTENANCE DEVELOPMENT PROGRAM IS GIVEN.

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

*MAINTENANCE AND REPAIR + *REMOTE MANIPULATING AND VIEWING + *WELDING + ECONOMICS + FAILURE, EQUIPMENT +
FAILURE, GENERAL + REACTOR, BREEDER + REACTOR, CIRCULATING FUEL + REACTOR, MOLTEN SALT

12-17353 ALSO IN CATEGORY 13
MILES FW
PLUTONIUM-RELATED SAFETY ASPECTS IN DESIGNING THE FLUIDIZED-BED VOLATILITY PILOT PLANT
OAK RIDGE NATIONAL LAB., TENN.
ORNL-TM-1593 +. 31 PAGES, 3 FIGURES, 8 TABLES, 25 REFERENCES, NOVEMBER, 1966

THE PURPOSE OF THIS STUDY WAS TO PROVIDE NEEDED DESIGN CRITERIA FOR EQUIPMENT TO ENSURE SAFETY IN HANDLING PLUTONIUM IN THE FLUIDIZED-BED VOLATILITY PILOT PLANT (FBVPP). THIS PILOT PLANT WILL RECOVER URANIUM AND PLUTONIUM FROM UO₂ POWER REACTOR FUELS. THE QUANTITY OF PLUTONIUM TO BE HANDLED PER RUN WILL VARY FROM ABOUT 200 TO 1250 G, WHILE THE IN-PLANT INVENTORY MAY REACH A LIMIT OF 10 KG. TO ACCOMPLISH THIS PURPOSE, LITERATURE FROM A NUMBER OF AEC INSTALLATIONS WAS REVIEWED. THE CHARACTERISTICS OF PLUTONIUM PERTINENT TO THE FBVPP ARE TABULATED. PROBLEM AREAS THAT REQUIRE MORE DETAILED STUDIES ARE - (1) NEUTRON AND GAMMA SHIELDING OF THE PUF₄ PRODUCT, (2) REMOVAL OF ACCIDENTALLY RELEASED PUF₆ FROM VENTILATION AIR STREAMS, AND (3) METHODS OF AVOIDING CRITICALITY DURING THE VARIOUS STAGES OF OPERATION.

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

CATEGORY 12
PLANT SAFETY FEATURES

12-17353 *CONTINUED*

STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*DESIGN CRITERIA + *DESIGN STUDY + *EQUIPMENT DESIGN + *FLUIDIZED BED + *FLUORIDE VOLATILITY PROCESSES + *PLUTONIUM + *RADIOCHEMICAL PLANT SAFETY + *RADIOCHEMICAL PROCESSING + CONTAINMENT, GENERAL + CRITICALITY SAFETY + ORNL (OAK RIDGE NATIONAL LABORATORY) + SHIELDING

12-17370

ALSO IN CATEGORY 17

WEATHERSBY WE + LAMBERT FJ + DUNN EE + GOOGIN JM
EVALUATION OF SEAT MATERIALS FOR PRESSURIZER STEAM RELIEF VALVE
UNION CARBIDE CORP., OAK RIDGE, TENN. Y-12 PLANT
Y-EF-22 +. 100 PAGES, 43 FIGURES, TABLES, NOVEMBER 1, 1966

EXCESSIVE LEAK RATES IN VALVES ON THE STEAM PRESSURIZER AT PM-3A PROMPTED THE STUDY OF SEAT MATERIALS. NONE OF THE MATERIALS TESTED MET THE REQUIREMENTS FOR LEAKTIGHTNESS FOR REPEATED VALVE RELIEVING. STELLITE AND TUNGSTEN CARBIDE SEATING SURFACES WERE LEAKTIGHT UNTIL THE VALVE WAS RELIEVED. THE TESTS INDICATED THAT A CERMET OF ALUMINUM OXIDE WITH PLATINUM AS A BINDER IS WORTHY OF TESTING.

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

*MATERIAL + *PRESSURE RELIEF + *PRESSURIZER + *VALVE + FAILURE, EQUIPMENT +
PM 3A (PORTABLE MEDIUM NUCLEAR POWER PLANT) + REACTOR, MILITARY + REACTOR, PRESSURIZED WATER + SEAL + STEAM + TEST, LEAK RATE + TEST, PROOF

12-17437

ALSO IN CATEGORIES 11 AND 5

VINCK WF + MAURER H
SOME EXAMPLES OF THE X RELATIONSHIP BETWEEN CONTAINMENT AND OTHER ENGINEERED SAFEGUARD REQUIREMENTS
ACCIDENT ANALYSIS AND SITE CONDITIONS
EURATOM
EUR/C/1474/67.E +. 30 PAGES, 2 TABLES, 24 REFERENCES, PAPER PRESENTED AT THE IAEA SYMPOSIUM ON
CONTAINMENT AND SITING, VIENNA 3-7, APRIL 1967

THE PAPER REFERS PRIMARILY TO POWER REACTORS FOR WHICH EURATOM HAS BEEN INVOLVED IN SAFETY REVIEWS PERFORMED IN CLOSE COOPERATION WITH TECHNICAL ADVISORY ORGANIZATIONS CONCERNED IN THE NATIONAL LICENSING PROCEDURES. A COMPARATIVE SURVEY IS PRESENTED OF A NUMBER OF CONTAINMENT CONCEPTS AND OTHER SAFEGUARDS TO PROTECT AGAINST OR TO LIMIT THE CONSEQUENCES OF POSTULATED MAJOR ACCIDENTS. MAGNITUDES OF EXCLUSION AREAS AND POPULATION DENSITIES ARE ALSO PRESENTED. THE RESPECTIVE MERITS AND REQUIREMENTS OF ENGINEERED SAFEGUARDS AND EMERGENCY EQUIPMENT ARE DISCUSSED AS RELATED TO CONTAINMENT PROVISIONS.

*CONTAINMENT STRUCTURE + *ENGINEERED SAFETY FEATURE + ACCIDENT ANALYSIS + CONTAINMENT CONSTRUCTION + CONTAINMENT SPRAY + CONTAINMENT, MULTIPLE + CORE REFLOODING SYSTEM + CORE SPRAY + FRANCE + GERMANY + ITALY + N S SAVANNAH + NETHERLANDS + REACTOR, BOILING WATER + REACTOR, POWER + REACTOR, PRESSURIZED WATER

12-17440

ALSO IN CATEGORY 18

PROPOSED GENERAL DESIGN CRITERIA FOR NUCLEAR POWER PLANT CONSTRUCTION PERMITS
6 PAGES, FEDERAL REGISTER 32(132) PAGES 10213-218 (JULY 11, 1967)

PROPOSED APPENDIX A TO 10 CFR 50 ISSUED FOR COMMENT ON JULY 11, 1967. SEVENTY CRITERIA AFFECT OVERALL PLANT REQUIREMENTS (5), PROTECTION BY MULTIPLE FISSION-PRODUCT BARRIERS (5), NUCLEAR AND RADIATION CONTROLS (8), RELIABILITY AND TESTABILITY OF PROTECTION SYSTEMS (8), REACTIVITY CONTROL (6), REACTOR-COOLANT-PRESSURE BOUNDARY (4), ENGINEERED SAFETY FEATURES (7 GENERAL, 5 EMERGENCY CORE COOLING, 9 CONTAINMENT, 4 CONTAINMENT-PRESSURE-REDUCING SYSTEMS, 4 AIR CLEANUP SYSTEMS), FUEL AND WASTE STORAGE SYSTEMS 4, AND PLANT EFFLUENTS 1.

*AEC CONSTRUCTION PERMIT CRITERIA + CONSTRUCTION PERMIT PROCESS + REGULATION, AEC

12-17471

ALSO IN CATEGORY 5

FUJIE H
RECENT STUDIES IN NUCLEAR POWER PLANT SAFETY. III SAFETY EVALUATION OF POST INCIDENT DEVICES OF LIGHT WATER POWER REACTOR
HITACHI RESEARCH LAB., JAPAN
5 PAGES, 6 FIGURES, NIPPON GENSHIYOKU GAK. 8, PAGES 609-13 (NOVEMBER 1966) IN JAPANESE

EXPERIMENTS WERE PERFORMED ON THE COOLING EFFICIENCY OF SPRAY, THE FLOW RATE OF SATURATED WATER FROM A PRESSURE VESSEL, THE HEAT TRANSFER OF A CONTAINER-WALL SURFACE, AND THE COOLING EFFICIENCY OF CONTAINER SPRAY. MEASUREMENTS OF THE TEMPERATURE CHANGES CAUSED ON HEATED RODS (MODEL FUEL ASSEMBLY) BY SPRAY COOLING CONTRIBUTED TO THE FORMULA OF A PROPOSED THEORY TO EXPLAIN THE TEMPERATURE CHANGES. THE RELATIONSHIPS EXISTING BETWEEN DRYOUT, HEAT OUTPUT AND SPRAY FLOW RATE FOR STATIONARY CORE SPRAY COOLING WERE OBTAINED. THE FLOW RATE OF SATURATED WATER FROM A MODEL PRESSURE VESSEL WAS MEASURED AND COMPARED WITH MOODY'S THEORETICAL RESULTS. THE RELATION BETWEEN COOLING EFFICIENCY OF CONTAINER SPRAY AND INNER-PRESSURE OF THE CONTAINER WAS OBTAINED FROM EXPERIMENTS WITH A MODEL CONTAINER.

*HEAT TRANSFER EXPERIMENT + *MOCKUP + ACCIDENT, LOSS OF COOLANT + BLOWDOWN + CONTAINMENT SPRAY + CORE SPRAY + HEAT FLUX, DRYOUT + JAPAN

CATEGORY 12
PLANT SAFETY FEATURES

12-17559 ALSO IN CATEGORIES 14 AND 1
UKAEA LIST OF PUBLICATIONS AVAILABLE TO THE PUBLIC. CUMULATION NO. 11, JANUARY-DECEMBER 1966
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, HARWELL
NP-16666 +. 129 PAGES, JANUARY 1967

THE ELEVENTH ANNUAL CUMULATION (JANUARY TO DECEMBER 1966) OF UKAEA PUBLICATIONS AVAILABLE TO THE PUBLIC IS LISTED IN 24 CATEGORIES, INCLUDING HEALTH AND SAFETY, GEOLOGY AND MINERALOGY, WASTE DISPOSAL, REACTOR PHYSICS, AND INSTRUMENTATION.

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

*BIBLIOGRAPHY + *UNITED KINGDOM + DOSE + *GEOLOGICAL CONSIDERATION, GENERAL + INSTRUMENTATION, GENERAL + METEOROLOGY + TRANSPORTATION AND HANDLING + WASTE DISPOSAL, GENERAL

12-17566 ALSO IN CATEGORY 14
AYRES JA
DECONTAMINATION OF NUCLEAR REACTOR SYSTEMS
HW-SA-3687 +. 2 PAGES, 1 FIGURE, HEATING, PIPING AND AIR CONDITIONING 37(6), PAGE 105 AND 106, (JUNE 1965)

THE PRIMARY COOLING SYSTEM OF A WATER-COOLED REACTOR MAY BECOME CONTAMINATED BY LEAKAGE OF FISSION PRODUCTS FROM THE FUEL ELEMENTS OR BY ACTIVATION OF CORROSION PRODUCTS. A PROCESS IS RECOMMENDED FOR CHEMICAL CLEANING BY USING A MIXTURE OF 3% POTASSIUM PERMANGANATE IN 18% POTASSIUM HYDROXIDE AT 105 C FOR 3 HOURS, FOLLOWED BY 10% SULFAMIC ACID AT 70 C FOR 3 HOURS.

*DECONTAMINATION + BATTELLE NORTHWEST + MAIN COOLING SYSTEM + REACTOR, WATER

12-17584 ALSO IN CATEGORIES 8 AND 13
BARGHUSEN JJ + JONKE AA
SAFETY CONSIDERATIONS IN THE PROCESSING OF PLUTONIUM AND RADIOACTIVE MATERIALS
ARGONNE NATIONAL LABORATORY
3 PAGES, 1 FIGURE, 1 TABLE, 6 REFERENCES, POWER REACTOR TECHNOLOGY AND REACTOR FUEL PROCESSING 10(2), PAGES 170 THRU 172, (SPRING 1967)

RESULTS OF STUDIES OF ANION-EXCHANGE-RESIN (NITRATE FORM) TO DETERMINE IGNITION TEMPERATURES ARE REPORTED. DATA ARE PRESENTED FOR BOTH LOADED AND UNLOADED SYSTEMS, USING VARIOUS OPERATING CONDITIONS FOR DIFFERENT METHODS OF PREPARING THE BEDS. SAFE STORAGE METHODS FOR ANION-EXCHANGE RESINS ARE RECOMMENDED.

*IGNITION + *ION EXCHANGE + *PLUTONIUM + *RADIOCHEMICAL PROCESSING + FIRE + RESIN

12-18083 ALSO IN CATEGORY 14
WADACHI Y + KAWANO Y
PRACTICE OF RADIOACTIVE DECONTAMINATION
JAPAN ATOMIC ENERGY RESEARCH INST., TOKYO
4 PAGES, FIGURES, NIPPON GENSHIYOKU GA. 8, PAGE 490 THRU 493, (SEPTEMBER 1966), IN JAPANESE

AS ACTUAL EXAMPLES OF MEASURES TAKEN UNDER DUAL CONTAMINATION, A DESCRIPTION IS GIVEN IN THIS PAPER OF THE DECONTAMINATION WORK UNDERTAKEN IN THE RADIOISOTOPE STORAGE FACILITIES IN OCTOBER 1965, WHICH INVOLVED CONTAMINATION BY RABR2 IN AQUEOUS SOLUTION, AND GASEOUS CONTAMINATION BY RN AND ITS DAUGHTER NUCLIDES.

*DECONTAMINATION + ACCIDENT, GENERAL + BROMINE + RADIATION SAFETY AND CONTROL + RADIUM + RADON

12-18138 ALSO IN CATEGORIES 9 AND 17
INDIAN POINT PROPOSED CHANGE IN BORON INJECTION SYSTEM TEST INTERVAL
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC., NEW YORK
2 PAGES, JULY 10, 1967, DOCKET NO. 50-3, INDIAN POINT I

REQUESTS INCREASE IN TEST INTERVAL FROM MONTHLY TO SEMIANNUALLY ON THE BASIS OF OPERATING EXPERIENCE AND THE INHERENT RELIABILITY OF THE BORON SYSTEM. NEAR END OF CORE LIFE, THE INCREASED BORON CONCENTRATION DUE TO TESTING HAS AN ADVERSE EFFECT ON REACTOR OPERATIONS, AS SEVERAL HUNDRED PPM OF BORON ARE ADDED TO THE COOLANT.

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

*OPERATING EXPERIENCE + *SHUTDOWN SYSTEM, SECONDARY + *TEST INTERVAL + *TEST, SYSTEM OPERABILITY + BORON + INDIAN POINT I + POISON, SOLUBLE + REACTOR, PRESSURIZED WATER + TECHNICAL SPECIFICATIONS

12-18192 ALSO IN CATEGORIES 7 AND 13
WALLACE RM

CATEGORY 12
PLANT SAFETY FEATURES

12-18192 *CONTINUED*
METHOD FOR DECONTAMINATING NUCLEAR FUELS
CANADIAN PATENT 747-368 +. 13 PAGES, 5 TABLES, AUGUST 9, 1966, PATENT (FOREIGN)

THIS INVENTION RELATES TO A METHOD FOR IMPROVING THE DECONTAMINATION OF NEUTRON-IRRADIATED NUCLEAR FUELS FROM THEIR FISSION PRODUCTS IN AQUEOUS SOLUTIONS BY ADDING BARBITURIC ACID TO THE AQUEOUS SOLUTION AND DIGESTING SAME AT ELEVATED TEMPERATURE BEFORE SOLVENT EXTRACTION OR ION EXCHANGE. IMPROVED DECONTAMINATION OF URANIUM AND PLUTONIUM FROM RUTHENIUM BY SOLVENT EXTRACTION FROM AN AQUEOUS ACID SOLUTION IS EFFECTED BY ADDING BARBITURIC ACID TO THE AQUEOUS SOLUTION AND DIGESTING BEFORE EXTRACTION.

AVAILABILITY - DEPARTMENT OF COMMERCE, WASHINGTON, D.C., 30 CENTS PER PAGE

*DECONTAMINATION + *FISSION PRODUCT, SEPARATION FROM WASTE + *FUEL HANDLING + *FUEL REPROCESSING + PLUTONIUM + REACTOR, FAST + RUTHENIUM + URANIUM

12-18209 ALSO IN CATEGORIES 5 AND 11
HARTY H + BATCH JM + PEDERSEN LT + WHEELER RG + FOX JC
ENGINEERING DEVELOPMENT DEPARTMENT QUARTERLY REPORT, APRIL-JUNE 1966
BATTELLE-NORTHWEST, RICHLAND, WASHINGTON
BNWL-367 +. 76 PAGES, 18 FIGURES, 2 TABLES, APRIL 1967

PROGRESS REPORT COVERING SUCH TOPICS AS THE FAST FLUX TEST FACILITY, HEAT TRANSFER STUDIES, CROSS-FLOW MIXING BETWEEN PARALLEL FLOW, BOILING-STABILITY STUDIES, IRRADIATION DAMAGE TO REACTOR METALS, UPSTREAM BOILING BURNOUT, THE CSE, IODINE FORMS IN STEAM CONDENSATE, AND DECONTAMINATION OF COATINGS.

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

AEROSOL PROPERTIES + BURNOUT HEAT FLUX + CONTAINMENT RESEARCH AND DEVELOPMENT + CSE (CONTAINMENT SYSTEMS EXPERIMENT) + HEAT TRANSFER EXPERIMENT + HEAT TRANSFER, BOILING + IODINE + PLUTONIUM + REACTOR, LIQUID METAL COOLED + SAMPLING + STEAM

12-18228 ALSO IN CATEGORY 7
BEATTIE JR
TESTING OF REACTOR FILTER SYSTEMS IN THE UKAEA
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, HEALTH AND SAFETY BRANCH, RISLEY, WARRINGTON, UK
SM-89737 + CONF-673492 +. 8 PAGES, 1 TABLE, 10 REFERENCES, PRESENTED AT INTERNATIONAL ATOMIC ENERGY AGENCY SYMPOSIUM ON THE CONTAINMENT AND SITING OF NUCLEAR POWER PLANTS, VIENNA, APRIL 3-7, 1967

THE METHODS CURRENTLY IN USE OR UNDER DEVELOPMENT FOR TESTING FILTER AND ABSORBER SYSTEMS INSTALLED ON REACTORS IN THE UKAEA ARE DISCUSSED, AND SOME TYPICAL RESULTS FOR OPERATIONAL FILTER AND ABSORBER SYSTEMS ARE PRESENTED.

AVAILABILITY - INTERNATIONAL ATOMIC ENERGY AGENCY (NEW YORK OR GENEVA)

*CHARCOAL ADSORBER + *FILTER EFFICIENCY + *FILTER SAFETY EVALUATION + *FILTER TEST REQUIREMENT + *TESTING + AEROSOL + AIR CLEANING + CHARCOAL + CONTAINMENT RESEARCH AND DEVELOPMENT + FILTER INSPECTION

12-18330 ALSO IN CATEGORY 18
OYSTER CREEK PROPOSED AMENDMENT 4, AVAILABILITY OF STANDBY COOLING SYSTEMS (APPENDIX L)
JERSEY CENTRAL POWER AND LIGHT COMPANY, MORRISTOWN, N. J.
32 PAGES, 5 FIGURES, 2 TABLES, FEBRUARY 28, 1967, DOCKET NO. 50-219

TRANSMITS APPENDIX L, WHICH GIVES FAILURE MODES FOR THE COMPONENTS OF THE STANDBY COOLING SYSTEM. SUBSYSTEMS WITH THEORETICAL AVAILABILITY, CORE SPRAY SYSTEM (1.99990), AUTOMATIC DEPRESSURIZATION SYSTEM (1.999968), CONTAINMENT SPRAY SYSTEM, (1.9999697). INCLUDES FAULT-TREE ANALYSIS OF OFF-SITE POWER AVAILABILITY (1.99999).

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

*CONTAINMENT SPRAY + *CORE SPRAY + *EMERGENCY COOLING CONSIDERATIONS + *EMERGENCY POWER, ELECTRIC + *FAULT TREE ANALYSIS + *RELIABILITY ANALYSIS + OYSTER CREEK + REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, GENERAL

12-18582 ALSO IN CATEGORY 7
WHITFIELD WJ
LAMINAR FLOW AIR HOOD APPARATUS
PATENT 3,273,323 +. 10 PAGES, 7 FIGURES, REFERENCES, DECEMBER 24, 1963

THIS PATENT RELATES TO A LAMINAR-FLOW AIR-HOOD APPARATUS WHICH MAY BE USED FOR ISOLATING WORKERS FROM TOXIC SUBSTANCES BEING WORKED ON. THE AIR HOOD INCLUDES SUBMICRON FILTERS FOR REMOVING UNDESIRABLE PARTICLES SUCH AS RADIOACTIVE MATERIALS, FLUIDS, OR OTHER CONTAMINANTS FROM THE AIR LAMINARLY FLOWING THROUGH THE WORKING CHAMBER OF THE HOOD. THE APPARATUS INCLUDES SEPARATE BLOWER SYSTEMS FOR DRAWING AIR INTO AND FOR EXHAUSTING AIR OUT OF THE DEVICE, AND ADJUSTMENTS MAY BE MADE TO PROVIDE A BALANCED AIR FLOW CONDITION OR AIR INFLOW OR OUTFLOW CONDITIONS.

CATEGORY 12
PLANT SAFETY FEATURES

12-18582 *CONTINUED*

AVAILABILITY - U.S. PATENT OFFICE, DEPT. OF COMMERCE, WASHINGTON, D.C., \$0.25 COPY

*AIR CLEANING + *FILTER + *FLOW, LAMINAR + *RADIOACTIVITY, RELEASE + *VENTILATION SYSTEM +
CHEMICAL TOXICITY + PARTICLE, RADIOACTIVE + PARTICULATE

12-18583 ALSO IN CATEGORY 7

FRENCH JE, ET AL

DELAY BED SYSTEM FOR PURIFICATION OF NUCLEAR FUEL ELEMENT PURGE STREAM

U.S. PATENT 3,278,386 +. 8 PAGES, 4 TABLES, REFERENCES, AUGUST 14, 1964

THIS PATENT RELATES TO A SYSTEM FOR MAINTAINING THE RELATIVE PURITY OF THE COOLANT STREAM OF A HIGH-TEMPERATURE GAS-COOLED REACTOR. A PURGE STREAM WHICH HAS FLOWED THROUGH A FUEL ELEMENT IS DIRECTED THROUGH A DELAY BED COMPRISING A SERIES OF ADSORBENT PORTIONS AND HEAT EXCHANGERS. EACH ADSORBENT PORTION IS PRECEDED BY A HEAT EXCHANGER OF SUFFICIENT CAPACITY TO COOL THE FISSION PRODUCT-LADEN GASEOUS STREAM TO LESS THAN 200 F PRIOR TO ENTRY INTO THE ADSORBENT PORTION, AND THE ADSORBENT PORTION CONTAINS A PERMEABLE SUBSTANCE OF HIGH XENON-ADSORBENT CAPACITY, THE QUANTITY BEING SUCH THAT THE HEAT PRODUCED BY DECAY OF RADIOACTIVE ISOTOPES DELAYED BY CONTINUED ADSORPTION AND DESORPTION ON THE SUBSTANCE DOES NOT RAISE THE TEMPERATURE OF THE STREAM BEYOND 450 F. THE TOTAL NUMBER OF ADSORPTION PORTIONS IS SUFFICIENT TO DELAY THE MAJOR PORTION OF XE-137 A SUFFICIENT TIME TO DECAY TO PLATEOUT DAUGHTERS CS-137 AND BA-137M.

AVAILABILITY - U.S. PATENT OFFICE, DEPT. OF COMMERCE, WASHINGTON, D.C., \$0.25 COPY

*ADSORPTION + *DECAY HEAT + *NOBLE GAS + HEAT EXCHANGER + HEAT TRANSFER + XENON

12-18584 ALSO IN CATEGORY 7

HATCH LP, ET AL

PARTICLE FILTER

U.S. PATENT 3,252,271 +. 6 PAGES, REFERENCES, APRIL 3, 1964

PATENT RELATES TO A FLUIDIZED-BED REACTOR HAVING A MEMBRANE-COVERED SECOND GAS OUTLET MEANS LOCATED AT A POINT BETWEEN THE CONVENTIONAL GAS INLET AND OUTLET MEANS CAPABLE OF FORMING A STATIC BED OF A PORTION OF THE FLUIDIZED PARTICLES TO PREVENT FINES FROM ESCAPING FROM THE REACTOR.

AVAILABILITY - U.S. PATENT OFFICE, DEPT. OF COMMERCE, WASHINGTON, D.C., \$0.25 COPY

*FILTER + *FLUIDIZED BED + *PARTICULATE + FILTER, MEMBRANE + HEAT TRANSFER + MASS TRANSFER

12-18585 ALSO IN CATEGORIES 9 AND 17

SILVESTER AG

NUCLEAR REACTOR WITH EMERGENCY COOLANT CROSS FLOW

CANADIAN PATENT 739,059 + U.S. PATENT 443,726 +. 7 FIGURES, JULY 19, 1966

THIS INVENTION RELATES TO NUCLEAR REACTORS WHEREIN THE COOLANT IS ARRANGED TO FLOW ACROSS AS WELL AS ALONG THE FUEL RODS TO EQUALIZE THE INTERNAL PRESSURE AS WELL AS THE TEMPERATURE DISTRIBUTION WITHIN THE CORE. THE SYSTEM COMPRISES A PLURALITY OF FUEL RODS CONTAINED WITHIN SHROUD, SAID RODS ARRANGED TO HAVE ZONES, BEGINNING PROXIMATE THE BOTTOM PORTION OF THE ROD, WITH A FISSION FUEL ZONE, A MODERATOR AND CROSS FLOW ZONE IMMEDIATELY ABOVE FISSION FUEL ZONE, A TOP EXIT ZONE IMMEDIATELY ABOVE MODERATOR AND CROSS-FLOW ZONE WITH A TOP-SHIELD ZONE DEFINED BY THE TOP PORTION OF THE FUEL RODS IMMEDIATELY ABOVE TOP EXIT ZONE.

AVAILABILITY - CANADIAN PATENT OFFICE, OTTAWA, CANADA

*DESIGN CRITERIA + *FLOW, CROSS + *REACTOR COOLANT + COOLING, SHUTDOWN + DESIGN STUDY + FUEL ELEMENT +
INSTRUMENTATION, COOLANT QUALITY + PRESSURE, INTERNAL

12-18586 ALSO IN CATEGORY 7

KEILHOLTZ GW

AIR-CLEANING SYSTEMS AS ENGINEERED SAFEGUARDS IN NUCLEAR REACTOR CONTAINMENT

OAK RIDGE NATIONAL LABORATORY

11 PAGES, 39 REFERENCES, NUCLEAR SAFETY 8(4), PAGES 360-370 (SUMMER 1967)

THE FUNCTIONS OF AIR-CLEANING SYSTEMS DURING NORMAL REACTOR OPERATIONS AND AS ENGINEERED SAFEGUARDS ARE REVIEWED, WITH SPECIAL REFERENCE TO THE RETENTION OF AIRBORNE RADIOACTIVITY BY HIGH-EFFICIENCY PARTICULATE AIR (HEPA) FILTERS AND CHARCOAL ADSORBERS UNDER POSSIBLE ACCIDENT CONDITIONS. THE COMBINATION OF AN HEPA FILTER FOR PARTICLES AND AN IMPREGNATED CHARCOAL BED FOR GASES SEEMS TO BE GENERALLY ACCEPTED AS THE BEST AVAILABLE TRAPPING SYSTEM FOR FISSION PRODUCTS (E.G., IODINE) RELEASED FROM IRRADIATED FUELS. THE DIETHYL PHTHALATE TESTS ARE SATISFACTORY FOR IN-PLACE TESTING OF THE PARTICULATE RETENTION EFFICIENCY OF HEPA FILTERS. THE COMPLETE FILTER UNIT SHOULD ALSO BE TESTED FOR HEAT RESISTANCE AND MECHANICAL STRENGTH.

*AIR CLEANING + *CHARCOAL ADSORBER + *ENGINEERED SAFETY FEATURE + *FILTER EFFICIENCY +
*FISSION PRODUCT, IODINE + *TEST, FILTER SYSTEM + FILTER + FILTER CHARACTERISTICS + FILTER INSPECTION +
FILTER INSTALLATION + FILTER TEST REQUIREMENT + IODINE + TESTING + VENTILATION SYSTEM

CATEGORY 12
PLANT SAFETY FEATURES

12-18952 ALSO IN CATEGORY 18

JOHNSON FG + POULTER DR

THE STEAM GENERATING HEAVY WATER REACTOR--ITS DESIGN AND SAFETY CHARACTERISTICS

UNITED KINGDOM ATOMIC ENERGY AUTHORITY, RISLEY

SM-89/38 + CONF-670 402 +. 27 PAGES, 7 FIGURES, 2 TABLES, 11 REFERENCES, INTERNATIONAL ATOMIC ENERGY AGENCY SYMPOSIUM, VIENNA, APRIL 1967

DESCRIBES THE PRINCIPAL FEATURES OF THE SGHWR, A 100-MWE PRESSURE-TUBE REACTOR, HEAVY-WATER MODERATED, UO₂ FUELED (ZIRCALOY CLADDING), AND LIGHT-WATER COOLED. THE EMERGENCY COOLING SYSTEM INJECTS COLD WATER INTO THE FUEL-ELEMENT CLUSTER AT SEVERAL LEVELS THROUGH RINGS OF SMALL HOLES LOCATED IN THE HOLLOW CENTER TIE ROD OR SPARGE PIPE OF THE CLUSTER BECAUSE TESTS SHOWED THAT WATER SPRAYED FROM ABOVE WAS BLOWN OUT WITH THE STEAM AND WAS INEFFECTIVE. CONTAINMENT IS BY PRESSURE SUPPRESSION, A CONCRETE SHELL, AND AIR CIRCULATION AND FILTERING SYSTEM. DISCUSSES HEAT TRANSFER, PRESSURE-TUBE-MATERIAL SELECTION, AND REACTOR CONTROL AND INSTRUMENTATION. BRIEFLY REVIEWS THE INSPECTION AND TESTING PROGRAMS, THE SAFETY ANALYSIS, AND FUTURE DESIGNS OF SIMILAR SYSTEMS.

AVAILABILITY - NATIONAL AGENCY FOR INTERNATIONAL PUBLICATIONS, INC., 317 EAST 34TH ST., NEW YORK, N.Y. 10016

*CORE SPRAY + *REACTOR DESCRIPTION + CONTAINMENT DESIGN + CONTAINMENT, PRESSURE SUPPRESSION + DESIGN CRITERIA + EMERGENCY COOLING CONSIDERATIONS + HEAT TRANSFER + INSTRUMENTATION, CONTROL + REACTOR, HEAVY WATER + REACTOR, INTERNAL SUPERHEAT + REACTOR, PRESSURE TUBE + SYSTEM DESCRIPTION + TEST, BENCH + TESTING + UNITED KINGDOM

12-18961 ALSO IN CATEGORY 18

PRAIRIE ISLAND NUCLEAR GENERATING PLANT FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, VOLUME II

NORTHERN STATES POWER COMPANY, MINNEAPOLIS, MINNESOTA

300 PAGES, FIGURES, TABLES, SEPTEMBER 20, 1967, DOCKET NO. 50-282/306

DESCRIBES 6 ENGINEERED SAFEGUARDS. NO SHARED SYSTEM ALLOWS A FAILURE IN ONE REACTOR TO AFFECT THE OTHER. ACCIDENTS ANALYSED INCLUDE STEAM-GENERATOR-TUBE RUPTURE (40 TUBE FAILURES ARE NECESSARY TO CAUSE CLAD FAILURE, RESULTING IN OFF-SITE DOSE OF 25 REMS). STEAM-LINE RUPTURE (SLIGHT CLAD RUPTURE, THYROID DOSE AT 600 METERS, 2 HR, IS 26 REMS). LOSS-OF-COOLANT ACCIDENT RESULTS IN A 140-MREM 30-DAY DOSE AT MINIMUM LOW-POPULATION ZONE RADIUS, AND 120 MREMS AT 600 METERS, EXCLUSION BOUNDARY. EFFECT OF LEAK RATE AND SPRAY EFFICIENCY ON DOSE ARE GIVEN.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20437

*ACCIDENT ANALYSIS + *ACCIDENT, LOSS OF COOLANT + AIRBORNE RELEASE + CONTAINMENT SPRAY + DOSE + ENGINEERED SAFETY FEATURE + FAILURE, CLADDING + PRAIRIE ISLAND 1 AND 2 (PWR) + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

CATEGORY 13
RADIOCHEMICAL PLANT SAFETY

13-16927 ALSO IN CATEGORIES 3 AND 11

HAHS CA

THE DESIGN AND OPERATION OF THE TRANSFER CASE AND RELATED EQUIPMENT IN THE TRANSURANIUM PROCESSING PLANT
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.
ORNL-TM-1815 +. 40 PAGES, 20 FIGURES, MAY 1967

A TRANSFER CASE WAS DESIGNED TO HANDLE HIGHLY RADIOACTIVE CARGO WITHIN THE LIMITED-ACCESS AREA OF THE TRANSURANIUM PROCESSING PLANT AT THE OAK RIDGE NATIONAL LABORATORY. THE CASE AND ITS RELATED EQUIPMENT WERE DEVELOPED TO MAKE ALPHA-CONFINED TRANSFERS OF EQUIPMENT AND MATERIAL AT NINE CELL CUBICLES IN THE CELL BANK, THE DECONTAMINATION GLOVE BOX, AND THE SOLID WASTE DISPOSAL STATION. PERHAPS THE MOST UNUSUAL FEATURE OF THIS TRANSFER SYSTEM IS THE INTERCHANGEABILITY OF THE LARGE DOOR IN THE BOTTOM OF THE TRANSFER CASE WITH THE MATING DOORS AT THE 11 TRANSFER STATIONS WHILE USING THE SAME METHOD OF SEALING FOR ALL DOORS. THE DESIGN PROBLEMS ASSOCIATED WITH THE TRANSFER CASE AND ITS RELATED EQUIPMENT, THE FINAL DESIGN, AND THE METHODS OF OPERATION DEvised FOR THIS TRANSFER SYSTEM ARE DESCRIBED.

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

ALPHA EMITTER + CONTAINMENT DESIGN + CONTAMINATION + EQUIPMENT DESIGN + FUEL HANDLING MACHINE + TRANSURANIUM PROGRAM

13-16930

AMENDMENT NO. 1 TO MFRP PLANT (MIDWEST FUEL RECOVERY PLANT) DESIGN ANALYSIS REPORT

GENERAL ELECTRIC COMPANY, SANTA CLARA, CALIF.

200 PAGES, FIGURES, TABLES, REFERENCES, APRIL 1967, DOCKET NO. 50-268

REPORT SUPPORTS GENERAL ELECTRIC COMPANY APPLICATION FOR A CONSTRUCTION PERMIT AND AEC LICENSE FOR THE MIDWEST FUEL RECOVERY PLANT (MFRP). PLANT USES THE GENERAL ELECTRIC AQUAFUOR PROCESS FOR THE SEPARATION AND PURIFICATION OF URANIUM AND PLUTONIUM PRODUCT MATERIALS FROM SPENT UO₂ REACTOR FUEL ELEMENTS CLAD WITH STAINLESS STEEL OR ZIRCONIUM ALLOYS. AQUAFUOR USES THE FOLLOWING UNIT OPERATIONS - MECHANICAL DISASSEMBLY, CHEMICAL LEACHING, SOLVENT EXTRACTION, ION EXCHANGE, AND FLUID-BED FLUORINATION. REPORT COVERS ALL PHASES OF HAZARDS INVOLVING NUCLEAR CRITICALITY, RADIOACTIVE CONTAMINATION, CHEMICAL, AND MECHANICAL OPERATIONS THAT ARE REQUIRED FOR OPERATION OF THE RADIOCHEMICAL PROCESSING PLANT.

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

*RADIOCHEMICAL PLANT SAFETY + *RADIOCHEMICAL PROCESSING + *SAFETY ANALYSIS REPORT, GENERAL +
*WASTE DISPOSAL, GENERAL + CONTAINMENT, FUEL REPROCESSING + CRITICALITY SAFETY +
MFRP (MIDWEST FUEL RECOVERY PLANT) + PLUTONIUM + URANIUM DIOXIDE + WASTE DISPOSAL, ATMOSPHERIC

13-17327

ALSO IN CATEGORIES 7 AND 14

MISHIMA J

PLUTONIUM RELEASE STUDIES I. RELEASE FROM THE IGNITED METAL

BATTELLE-NORTHWEST, RICHLAND, WASHINGTON. PACIFIC NORTHWEST LAB.

BNWL-205 +. 26 PAGES, FIGURES, TABLES, REFERENCES, DECEMBER 13, 1965

SIX PLUTONIUM RODS, 1/4-INCH IN DIAMETER AND 3/4-INCHES LONG, WERE IGNITED IN DRY AIR AT TEMPERATURES RANGING FROM 410 TO 450 C. AIR DRAWN OVER THE SPECIMENS AT VELOCITIES RANGING FROM 3.3 TO 50 CM/SEC WAS EXAMINED FOR PARTICULATE PLUTONIUM OXIDE. PLUTONIUM OXIDE ENTRAINED RANGED FROM 3 X 10 TO THE MINUS 6TH TO 5 X 10 TO THE MINUS 5TH %. THE ENTIRE OXIDE PRODUCED WAS SUBSEQUENTLY SIZED BY ELUTRIATION-SIEVING. THE QUANTITY OF PARTICULATE MATERIAL LESS THAN 15 MICRONS DEPENDS ON THE MECHANICAL WORK USED IN SIZING THE PARTICLES. INCREASING PARTICLE SIZE IS FOUND WITH INCREASING OXIDATION TEMPERATURES. THE AMOUNT AND RATE OF RELEASE UNDER ANY STATED CONDITIONS DEPENDS ON FRIABILITY AND THE FORCES TO WHICH THE OXIDE MASS IS SUBJECTED. RESULTS OF THIS STUDY WERE COMPARED WITH OTHER DATA RELATING TO PARTICLE SIZE AND FRACTIONAL RELEASE FROM IGNITED PLUTONIUM. REASONABLE AGREEMENT WAS NOTED.

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

*AIRBORNE RELEASE + *IGNITION + *PLUTONIUM + OXIDATION + PARTICLE SIZE + PARTICLE SIZE DISTRIBUTION + PLUTONIUM OXIDE + THERMAL CONSIDERATION

13-17330

ALSO IN CATEGORY 7

SMITH SR + WEST DL

DETERMINATION OF VOLATILE COMPOUNDS OF FISSION-PRODUCT IODINE

SAVANNAH RIVER LABORATORY, E.I. DUPONT DE NEMOURS AND CO., AIKEN, SOUTH CAROLINA

3 PAGES, 1 FIGURE, 3 TABLES, 6 REFERENCES, NUCLEAR APPLICATIONS 3(1), PAGES 43 THRU 45, (JANUARY, 1967)

ORGANIC IODIDES, PRESUMABLY DERIVED FROM INTERACTION BETWEEN FISSION-PRODUCT IODINE AND PROCESS SOLVENT, WERE DETECTED AND IDENTIFIED BY GAS CHROMATOGRAPHY IN THE EXHAUST AIR FROM THE PUREX PROCESS AT THE SAVANNAH RIVER PLANT. THREE OF TEN PEAKS OBTAINED WERE TENTATIVELY IDENTIFIED AS ALKYL IODIDES BY THE BEHAVIOR OF THE DETECTED COMPOUNDS AND THE RELATIVE RESPONSE OF AN ELECTRON ABSORPTION DETECTOR VS A FLAME IONIZATION DETECTOR.

CATEGORY 13
RADIOCHEMICAL PLANT SAFETY

13-17330 *CONTINUED*

*AIRBORNE RELEASE + *ANALYTICAL TECHNIQUE, GAS + *FUEL REPROCESSING + *ORGANIC IODIDE + CHROMATOGRAPHY +
RADIOCHEMICAL PROCESSING + SAVANNAH RIVER PLANT

13-17353 ALSO IN CATEGORY 12
MILES FW

PLUTONIUM-RELATED SAFETY ASPECTS IN DESIGNING THE FLUIDIZED-BED VOLATILITY PILOT PLANT
OAK RIDGE NATIONAL LAB., TENN.
ORNL-TM-1593 +. 31 PAGES, 3 FIGURES, 8 TABLES, 25 REFERENCES, NOVEMBER, 1966

THE PURPOSE OF THIS STUDY WAS TO PROVIDE NEEDED DESIGN CRITERIA FOR EQUIPMENT TO ENSURE SAFETY IN HANDLING PLUTONIUM IN THE FLUIDIZED-BED VOLATILITY PILOT PLANT (FBVPP). THIS PILOT PLANT WILL RECOVER URANIUM AND PLUTONIUM FROM UO₂ POWER REACTOR FUELS. THE QUANTITY OF PLUTONIUM TO BE HANDLED PER RUN WILL VARY FROM ABOUT 200 TO 1250 G, WHILE THE IN-PLANT INVENTORY MAY REACH A LIMIT OF 10 KG. TO ACCOMPLISH THIS PURPOSE, LITERATURE FROM A NUMBER OF AEC INSTALLATIONS WAS REVIEWED. THE CHARACTERISTICS OF PLUTONIUM PERTINENT TO THE FBVPP ARE TABULATED. PROBLEM AREAS THAT REQUIRE MORE DETAILED STUDIES ARE - (1) NEUTRON AND GAMMA SHIELDING OF THE PUF₄ PRODUCT, (2) REMOVAL OF ACCIDENTALLY RELEASED PUF₆ FROM VENTILATION AIR STREAMS, AND (3) METHODS OF AVOIDING CRITICALITY DURING THE VARIOUS STAGES OF OPERATION.

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

*DESIGN CRITERIA + *DESIGN STUDY + *EQUIPMENT DESIGN + *FLUIDIZED BED + *FLUORIDE VOLATILITY PROCESSES +
*PLUTONIUM + *RADIOCHEMICAL PLANT SAFETY + *RADIOCHEMICAL PROCESSING + CONTAINMENT, GENERAL +
CRITICALITY SAFETY + ORNL (OAK RIDGE NATIONAL LABORATORY) + SHIELDING

13-17374 ALSO IN CATEGORIES 7 AND 17
UNITED NUCLEAR FILTER RUPTURE RELEASE ESTIMATED AT LESS THAN 1 GRAM U235
UNITED NUCLEAR CORPORATION, NEW HAVEN, CONN.
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(34), PAGES 33 AND 34, (AUGUST 21, 1967)

(TWX, JULY 25) WOOD RIVER JUNCTION FUELS RECOVERY PLANT SHUT DOWN OXYGEN-BURNING SYSTEM 8 (IN SNM 777) BECAUSE A RUPTURED EXHAUST FILTER WAS SUSPECTED TO HAVE RELEASED U-235, ESTIMATED AT LESS THAN 1 GRAM. INVESTIGATION UNDERWAY.

*AIRBORNE RELEASE + *FILTER, DAMAGED + *URANIUM + FUEL REPROCESSING + INCIDENT, ACTUAL, GENERAL

13-17584 ALSO IN CATEGORIES 8 AND 12
BARGHUSEN JJ + JONKE AA
SAFETY CONSIDERATIONS IN THE PROCESSING OF PLUTONIUM AND RADIOACTIVE MATERIALS
ARGONNE NATIONAL LABORATORY
3 PAGES, 1 FIGURE, 1 TABLE, 6 REFERENCES, POWER REACTOR TECHNOLOGY AND REACTOR FUEL PROCESSING 10(2),
PAGES 170 THRU 172, (SPRING 1967)

RESULTS OF STUDIES OF ANION-EXCHANGE-RESIN (NITRATE FORM) TO DETERMINE IGNITION TEMPERATURES ARE REPORTED. DATA ARE PRESENTED FOR BOTH LOADED AND UNLOADED SYSTEMS, USING VARIOUS OPERATING CONDITIONS FOR DIFFERENT METHODS OF PREPARING THE BEDS. SAFE STORAGE METHODS FOR ANION-EXCHANGE RESINS ARE RECOMMENDED.

*IGNITION + *ION EXCHANGE + *PLUTONIUM + *RADIOCHEMICAL PROCESSING + FIRE + RESIN

13-17954 ALSO IN CATEGORY 3
WILFERT GL
SPENT REACTOR FUEL. REPROCESSING REQUIREMENT, ISOTOPE CONTENT, AND TRANSPORTATION
BATTELLE-NORTHWEST, RICHLAND, WASHINGTON. PACIFIC NORTHWEST LAB.
BNWL-389 +. 63 PAGES, 8 FIGURES, 14 TABLES, REFERENCES, FEBRUARY 1967

THIS REPORT ESTIMATES THE ANNUAL RATE OF SPENT FUEL THROUGHPUT FOR EACH OF FOUR SECTORS OF THE UNITED STATES AND IN ADDITION CALCULATES THE ASSOCIATED ISOTOPE PRODUCTION FOR THE YEARS 1959 THROUGH 1990. ALSO PROJECTED IS THE ANNUAL SPENT-FUEL THROUGHPUT RATE FOR THE REST OF THE FREE WORLD DURING 1971, 1976, AND 1991. METHODS OF TRANSPORTING THE SPENT FUEL AND THE COSTS OF SHIPPING ARE ANALYZED. FINALLY, THE IMPACT OF SECTOR THROUGHPUT AND TRANSPORTATION TO HANFORD IS REVIEWED IN CONNECTION WITH PRESENT COMMERCIAL REPROCESSING CAPABILITIES.

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

*ECONOMICS + *RADIOCHEMICAL PROCESSING + FUEL HANDLING + HANFORD SITE + TRANSPORTATION AND HANDLING

13-18192 ALSO IN CATEGORIES 12 AND 7
WALLACE RM
METHOD FOR DECONTAMINATING NUCLEAR FUELS
CANADIAN PATENT 740-368 +. 13 PAGES, 5 TABLES, AUGUST 9, 1966, PATENT (FOREIGN)

CATEGORY 13
RADIOCHEMICAL PLANT SAFETY

13-18192 *CONTINUED*

THIS INVENTION RELATES TO A METHOD FOR IMPROVING THE DECONTAMINATION OF NEUTRON-IRRADIATED NUCLEAR FUELS FROM THEIR FISSION PRODUCTS IN AQUEOUS SOLUTIONS BY ADDING BARBITURIC ACID TO THE AQUEOUS SOLUTION AND DIGESTING SAME AT ELEVATED TEMPERATURE BEFORE SOLVENT EXTRACTION OR ION EXCHANGE. IMPROVED DECONTAMINATION OF URANIUM AND PLUTONIUM FROM RUTHENIUM BY SOLVENT EXTRACTION FROM AN AQUEOUS ACID SOLUTION IS EFFECTED BY ADDING BARBITURIC ACID TO THE AQUEOUS SOLUTION AND DIGESTING BEFORE EXTRACTION.

AVAILABILITY - DEPARTMENT OF COMMERCE, WASHINGTON, D.C., 30 CENTS PER PAGE

*DECONTAMINATION + *FISSION PRODUCT, SEPARATION FROM WASTE + *FUEL HANDLING + *FUEL REPROCESSING + PLUTONIUM + REACTOR, FAST + RUTHENIUM +, URANIUM

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-16947

BARTON GB

SOLIDIFICATION OF HIGH LEVEL WASTES. PART VI. MIXED PHOSPHATE, BORATE, SILICATE MELTS FOR FIXATION OF PUREX TYPE WASTES.

BATTELLE-NORTHWEST, RICHLAND, WASHINGTON. PACIFIC NORTHWEST LABORATORY
BNWL-373 +. 45 PAGES, 20 FIGURES, 7 TABLES, JANUARY 1967

BORATES AND SILICATES ARE COMPATIBLE WITH PHOSPHATES IN GLASSES OVER A CERTAIN RANGE. BORATES REDUCE THE MELTING TEMPERATURE AND VISCOSITY OF BOTH SILICATE AND PHOSPHATE GLASSES OR MELTS. A STUDY IS DESCRIBED WHICH WAS MADE TO DETERMINE THE EFFECTS OF SUBSTITUTING VARIOUS FRACTIONS OF BORATE, SILICATE, AND MIXTURES OF THEM, FOR PHOSPHATE, WITH A FIXED WASTE COMPOSITION OF THE PUREX TYPE. ONLY AT THE 40 ATOM PERCENT WASTE LEVEL WAS THERE DEFINITE INDICATION OF IMPROVEMENT OF PROPERTIES OF THE PHOSPHATE SOLID BY ADDING BORATES AND SILICATES. AT OTHER LEVELS, THERE WAS GENERAL DETERIORATION. THE USE OF A STATISTICALLY DESIGNED PATTERN OF MIXTURES PERMITTED CALCULATION OF CONTOUR SURFACE MAPS OF THE PROPERTIES TESTED.

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

*WASTE DISPOSAL, SOLID + *WASTE TREATMENT, FIXATION + GLASS + PROPERTY, PHYSICAL + STATISTICAL ANALYSIS + WASTE TREATMENT, LIQUID

14-16949

ALSO IN CATEGORY 15

PARSONS PJ

SYMPOSIUM ON WASTE DISPOSAL INTO SURFACE WATERS

LONDON UNIVERSITY, ENGLAND

9 PAGES, 1 TABLE, NUCLEAR SAFETY 8(3), PAGES 249-257 (SPRING 1967)

THE SYMPOSIUM WAS CONCERNED WITH THE BEHAVIOR OF RADIOACTIVE WASTES RELEASED INTO SURFACE WATERS. THE FIRST SESSION COVERED THE PHYSICAL AND BIOLOGICAL TRANSPORT OF RADIONUCLIDES THROUGH SUCH MECHANISMS AS DILUTION, SEDIMENTATION, AND CURRENT MOVEMENTS OR BY UPTAKE BY BIOLOGICAL ORGANISMS. IT COVERED ALSO THE BEHAVIOR OF RADIONUCLIDES IN SURFACE AND DEEP LAYERS OF WATER. THE SECOND SESSION WAS DEVOTED TO THE WAYS IN WHICH RADIONUCLIDES, RELEASED AS WASTE, MAY CAUSE A RADIATION DOSE TO MAN. THIS MAY BE THROUGH MOVEMENT INTO THE FOOD CHAIN, BY INTRODUCTION INTO SUCH CHAINS BY IRRIGATION, OR BY EXTERNAL RADIATION. THE EVALUATION OF THESE MAIN ROUTES OF EXPOSURE WAS ACCOMPANIED BY A DESCRIPTION OF ENVIRONMENTAL INVESTIGATIONS PRECEDING RELEASE. THE THIRD AND FINAL SESSION DEALT WITH THE POSSIBLE EFFECTS WASTES MAY HAVE ON THE RESOURCES OF THE SEAS THROUGH SOMATIC EFFECTS ON ORGANISMS OR GENETIC EFFECTS ON POPULATIONS OF SUCH ORGANISMS.

*SURFACE WATER, DISPOSAL MEDIA + *WASTE DISPOSAL, RIVER + AQUATIC ORGANISMS + AUSTRIA + BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + BIOTA + CESIUM + CHROMIUM + COBALT + CONCENTRATION, AREA + DIETARY HABIT + DIFFUSION + DILUTION + DISPERSION + EFFLUENT + ESTUARY + FALLOUT + FISSION PRODUCT TRANSPORT + GROSS BETA + MANGANESE + PARTICLE SIZE + PARTICULATE + PHOSPHORUS + POPULATION EXPOSURE + RADIOACTIVITY, RELEASE + RIVER, CLINCH + RIVER, COLUMBIA + RIVER, RHONE + RUTHENIUM + SAMPLING + SORPTION + STRONTIUM + SURFACE WATER, GENERAL + SURFACE WATER, NUCLIDE OCCURRENCE + SURFACE WATER, SEDIMENT + SURFACE WATER, SUSPENDED MATERIAL + SURFACE WATER, TRACER + WASTE DISPOSAL, OCEAN + ZINC

14-16950

ALSO IN CATEGORY 15

CROZAZ G + LANGWAY CC + PICCIOTTO E

ARTIFICIAL RADIOACTIVITY REFERENCE HORIZONS IN GREENLAND FIRN

ARMY COLD REGIONS RESEARCH AND ENGINEERING LAB., HANOVER, N. H.

AD-644597 + RR-208 +. 15 PAGES, 3 FIGURES, AUGUST 1966

TOTAL BETA MEASUREMENTS WERE MADE ON MELT-WATER SAMPLES FROM A STRATIGRAPHICALLY DATED FIRN CORE PROFILE FROM THE INLAND GREENLAND ICE SHEET. A MARKED INCREASE IN RADIOACTIVITY IS FOUND IN THE 1953 FIRN LAYER WHICH CORRESPONDS TO THE FIRST IMPORTANT FALLOUT FROM NUCLEAR TEST BOMBS. THE PRE-1953 NATURAL BETA ACTIVITY IS 5 DPM/KG. THE INFUX OF ARTIFICIAL DEBRIS FROM THE IVY TESTS IN 1953 IS NOTED BY A SHARP RISE IN BETA ACTIVITY TO 10 DPM/KG. TOTAL SR-90 DEPOSIT TO JUNE 1964 IS 9.3 PLUS OR MINUS 1.5 MILLICURIES SQ. KM (24 PLUS OR MINUS 4 MC/MI SQ. MILE). AVERAGE PB-210 ACTIVITY AT TIME OF DEPOSIT IS 3.9 PLUS OR MINUS 0.4 DPM/KG.

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

*FALLOUT + ALASKA + ATMOSPHERIC DIFFUSION + GROSS BETA + HYDROLOGICAL CONSIDERATION, GENERAL + INSTRUMENTATION, METEOROLOGICAL + INSTRUMENTATION, NUCLEAR + NUCLEAR DETONATION + NUCLEAR EXPLOSION DEBRIS + RADIOACTIVITY, RELEASE + STRONTIUM

14-16951

AUSSET R + CANTEL J

PROBLEMS OF SEA DISPOSAL OF WASTE SOLUTIONS FROM THE CENTER AT LA HAGUE

ATOMIC ENERGY COMMISSION, FRANCE

ORNL-TR-1479 +. 13 PAGES, FIGURES, TRANSLATED BY R. G. MANSFIELD (GAK RIDGE NATIONAL LAB., TENN), FROM A PAPER PRESENTED AT THE SYMPOSIUM FOR THE DISPOSAL OF RADIOACTIVE WASTES INTO SEA, OCEANS, AND SURFACE

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-16951 *CONTINUED*
WATERS, VIENNA, MAY 16-20, 1966

THE ESTABLISHMENT IN WESTERN FRANCE OF A LARGE CHEMICAL PLANT FOR REPROCESSING FUEL IRRADIATED IN NATURAL URANIUM REACTORS LED TO THE NEED TO STUDY THE POSSIBILITIES OF DISCHARGING INTO THE SEA LOW-ACTIVITY RESIDUAL WATER RESULTING FROM DECONTAMINATION OF EFFLUENT. AN AREA SUITABLE FOR THIS PURPOSE WAS POINTE DE LA HAGUE. BASED ON THE ESTIMATES OF THE CENTRES. REQUIREMENTS, SCALE MODELS WERE USED TO DETERMINE A FAVORABLE LOCATION AND A SUITABLE TIMETABLE FOR CARRYING OUT DISPOSAL. THE DISCHARGE OF DYE YIELDED DATA ON THE DISPERSAL RATE AND THREW LIGHT ON THE DEGREE OF ACCUMULATION IN THE SEA THAT WOULD RESULT FROM REPEATED DISPOSALS.

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

*FRANCE + *WASTE DISPOSAL, LIQUID + *WASTE DISPOSAL, OCEAN + DESIGN CRITERIA + DISPERSION + FUEL REPROCESSING + HYDROLOGICAL CONSIDERATION, RATE OF MOVEMENT + OCEAN AND SEA + PIPING + SITING, GENERAL + TRACER, GENERAL + WASTE DISPOSAL, ECONOMICS

14-16968 ALSO IN CATEGORY 4
SIKOV MR + MAHLUM DD + MAHONY TD + SULLIVAN MF
PARTICLE SIZE AND ANIMAL AGE AS FACTORS IN EVALUATING HAZARDS FROM INGESTED RADIONUCLIDES
BATTLE-NORTHWEST, RICHLAND, WASH.
BNWL-SA-1144 + CONF-660917-8 +. 20 PAGES, 1966. FROM GASTROINTESTINAL RADIATION INJURY SYMPOSIUM, RICHLAND, WASH.

RADIONUCLIDES AS POWER SOURCES IN SPACE AND NUCLEAR REACTORS ARE BEING DEVELOPED AS PROPULSION SYSTEMS FOR SPACE VEHICLES. IF SUCH A DEVICE SHOULD RETURN TO EARTH WITHOUT COMPLETE BURNUP, THE INGESTION OF INSOLUBLE RADIOACTIVE PARTICLES COULD OCCUR, IN WHICH CASE THE GASTROINTESTINAL TRACT WOULD BE THE CRITICAL ORGAN FOR HAZARD EVALUATION. LITTLE IS KNOWN ABOUT THE BEHAVIOR OF AND PATHOLOGY PRODUCED BY INGESTED NONABSORBED RADIOACTIVE PARTICLES IN THE GI TRACT. THIS REPORT INCLUDES RESULTS FROM SEVERAL STUDIES EMPLOYING SIMULATED REACTOR FUEL PARTICLES AND OTHER RADIOACTIVE PARTICLES OF VARIOUS SIZES AS WELL AS RESULTS FROM STUDIES ON THE EFFECT OF AGE ON PASSAGE TIME OF A POORLY ABSORBED SOLUBLE RADIONUCLIDE.

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

*AEROSPACE SAFETY + *INGESTION + *PARTICLE SIZE + RADIONUCLIDE, INDUCED

14-16969 ALSO IN CATEGORY 4
BURRELL MO + WRIGHT JJ + WATTS JW
PRELIMINARY REPORT ON ENERGETIC SPACE RADIATION AND DOSE RATE ANALYSIS
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALA., MARSHALL SPACEFLIGHT CENTER
N-67-14461 + NASA-TM-X-53531 +. 43 PAGES, REFERENCES, OCTOBER 31, 1966

THE PURPOSE OF THIS STUDY IS TO PRESENT A COMPENDIUM OF THE ENVIRONMENTAL DATA ON TRAPPED AND UNTRAPPED RADIATION AND THE CALCULATED TISSUE DOSE RATES RECEIVED FROM THESE RADIATIONS AND THEIR SECONDARIES BEHIND VARIOUS SHIELD THICKNESSES. ENERGETIC RADIATION, AS USED HERE, REFERS TO PARTICLES WITH ENERGIES GREATER THAN ABOUT 500 KEV. THE RESULTS SHOULD BE OF PRACTICAL VALUE FOR PRELIMINARY ANALYSIS OF THE RADIATION HAZARD TO MAN DURING SPACE FLIGHT.

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

*AEROSPACE SAFETY + *DOSE CALCULATION, INTERNAL + COSMIC RADIATION + DOSE

14-16974
RAD MN + MENON KK
RADIOACTIVE RUTHENIUM AND MANGANESE ISOTOPES IN THE ATMOSPHERE
UNIVERSITY OF ARKANSAS, FAYETTEVILLE, ARKANSAS
2 PAGES, 1 FIGURE, NATURE 213(5071) PAGES 26-27 (JANUARY 1967)

THE MOVEMENT OF AIR MASSES BETWEEN THE STRATOSPHERE AND THE TROPOSPHERE CAN BE TRACED BY STUDYING THE CONCENTRATION AND RATIOS OF RADIOACTIVE RUTHENIUM AND MANGANESE INJECTED INTO THE ATMOSPHERE BY NUCLEAR BURSTS ON THE GROUND AND IN THE AIR.

*ATMOSPHERIC CIRCULATION, GLOBAL + *FALLOUT + MANGANESE + METEOROLOGY + NUCLEAR EXPLOSION DEBRIS + RUTHENIUM + STRATOSPHERE + TROPOSPHERE

14-17009 ALSO IN CATEGORY 15
MADSHUS, K
CS-137 IN PEOPLE AND FOOD IN NORWAY, 1963-1966
NORSK RADIUMHOSPITAL, OSLO + NORSK HYDROS INSTITUTE FOR CANCER RESEARCH, OSLO + STATENS RADIOLOGISK-FYSISKE LABORATORIUM, OSLO, NORWAY
TID-23484 +. 6 PAGES, FEBRUARY 9, 1967

DATA ON CS-137 LEVELS IN NORWAY COLLECTED DURING THE PERIOD 1963 TO 1966 ARE REPORTED.

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-17009 *CONTINUED*

SPECIAL ATTENTION WAS DEVOTED TO MEASUREMENTS OF PEOPLE AND FOOD FROM DISTRICTS IN WESTERN NORWAY, WHERE THE AVERAGE ANNUAL RAINFALL IS 3500 MM/YR. MEASUREMENTS OF MILK SAMPLES TAKEN FROM THE WHOLE OF NORWAY AS WELL AS MEASUREMENTS OF SELECTED GROUPS OF NORWEGIANS WERE CARRIED OUT REGULARLY DURING THE SAME PERIOD. SYSTEMATIC INVESTIGATIONS OF FOODSTUFFS WERE PERFORMED IN 1964 AND 1965.

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

*BIOLOGICAL CONCENTRATION, ANIMAL + *BIOLOGICAL CONCENTRATION, MAN + *PRECIPITATION + BIOLOGICAL CONCENTRATION, AGRICULTURAL PRODUCE + BIOLOGICAL CONCENTRATION, FOOD + BIOLOGICAL CONCENTRATION, MILK + CESIUM + DEPOSITION + DIETARY HABIT + FALLOUT + MONITOR, RADIATION, AIR + MONITOR, RADIATION, ENVIRONMENTAL + MONITOR, RADIATION, PERSONNEL + MONITOR, RADIATION, SAMPLING + NORWAY + NUCLEAR DETONATION + SPECTROMETRY, GAMMA + WASHOUT

14-17011 ALSO IN CATEGORY 15
ENVIRONMENTAL RADIOACTIVITY AT ARGONNE NATIONAL LABORATORY, JANUARY-JUNE 1965
ARGONNE NATIONAL LAB., ILL.
TID-22171 + 26 PAGES, JUNE 1965

INFORMATION ON THE LEVEL OF RADIOACTIVITY IN THE ENVIRONMENT AND ON THE AMOUNTS OF RADIOACTIVE MATERIALS ADDED TO THE ENVIRONMENT AS A RESULT OF ARGONNE OPERATIONS IS PRESENTED. THE RADIOACTIVITY OF THE ENVIRONMENT IS DETERMINED ON A CONTINUING BASIS BY MEASURING THE RADIOACTIVITY IN NATURALLY OCCURRING MATERIALS COLLECTED BOTH ON AND OFF THE ARGONNE SITE. THE CONCENTRATIONS OF RADIOACTIVE SUBSTANCES ADDED TO THE ENVIRONMENT DURING THE YEAR BY ARGONNE WERE CONSIDERABLY LESS THAN THE MPCs AND DID NOT CONSTITUTE A HEALTH HAZARD.

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

*FALLOUT + *SURVEY, RADIATION, ENVIRONMENTAL + ALPHA EMITTER + ANL (ARGONNE NATIONAL LABORATORY) + BETA EMITTER + BIOLOGICAL CONCENTRATION, MILK + CESIUM + DILUTION + ENVIRONMENTAL CONDITION + FILTER + GROSS ALPHA + GROSS BETA + IODINE + MAXIMUM PERMISSIBLE CONCENTRATION (MPC) + MONITOR, RADIATION, ENVIRONMENTAL + NUCLEAR EXPLOSION DEBRIS + SAMPLING + STRONTIUM + SURFACE WATER, NUCLIDE OCCURRENCE + URANIUM + URANIUM + WASTE DISPOSAL, LIQUID

14-17012 ALSO IN CATEGORY 15
FISH SR + CLARK TC + BOYETT RH + WILKIE WH + THOMPSON JL
ENVIRONMENTAL STUDIES. RADIOLOGICAL SIGNIFICANCE OF NUCLEAR ROCKET DEBRIS
OAK RIDGE NATIONAL LAB., OAK RIDGE, TENN.
ORNL-14-1696 +. 63 PAGES, FIGURES, TABLES, 28 REFERENCES, DECEMBER 1966

RADIOLOGICAL SAFETY STUDIES BEING CONDUCTED FOR THE SPACE NUCLEAR PROPULSION OFFICE, FLIGHT SAFETY BRANCH, ARE SUMMARIZED FOR THE PERIOD, JULY 1, 1965, TO JUNE 30, 1966. AN ASSESSMENT WAS MADE OF THE SIGNIFICANCE OF RADIOACTIVE DEBRIS THAT MAY ENTER THE BIOSPHERE FOLLOWING ACCIDENTAL DESTRUCTION OF A NUCLEAR PROPULSION SYSTEM. THE PRODUCTION AND DOSIMETRY OF MICRON-SIZE PARTICLES CONTAINING INDIVIDUAL RADIONUCLIDES OR A SPECTRUM OF FISSION PRODUCTS WERE STUDIED. DEPOSITION AND ADHESION OF RADIOACTIVE DEBRIS ON THE SKIN WERE STUDIED. THE DEGREE OF INITIAL RETENTION ON THE ARM OF PARTICLES FALLING VERTICALLY IN A UNIFORM FALLOUT WAS DETERMINED. A WIDE VARIATION WAS NOTED BETWEEN INDIVIDUALS IN THE AVERAGE LENGTH OF TIME THESE PARTICLES REMAINED ON THE ARM UNDER IDENTICAL ENVIRONMENTAL CONDITIONS.

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

*NUCLEAR ROCKET + *RADIOLOGY + ADHESION + DECONTAMINATION + DEPOSITION + DOSE CALCULATION, EXTERNAL + DOSE CALCULATION, INTERNAL + DOSE MEASUREMENT, EXTERNAL + DOSE MEASUREMENT, INTERNAL + DOSIMETRY, GENERAL + ENVIRONMENTAL CONDITION + FALLOUT + NUCLEAR DETONATION + PARTICULATE + PERSONNEL EXPOSURE, RADIATION + SOURCE, RADIATION

14-17020 ALSO IN CATEGORIES 11 AND 12
BOND GW + DYER GH
MATERIALS APPLICATIONS FOR NUCLEAR POWER PLANT FROM THE VIEWPOINT OF AN ENGINEER-CONSTRUCTOR
BECHTEL CORP., SAN FRANCISCO
CONF-650319-3 +. 27 PAGES, 6 FIGURES, 4 TABLES, 9 REFERENCES, AMERICAN SOCIETY FOR METALS SESSIONS, WESTEC CONFERENCE, LOS ANGELES, MARCH 7-11, 1966

A GENERAL PAPER DESCRIBING THE CURRENT PRACTICE IN THE DESIGN OF SEVERAL REACTOR SYSTEMS, PRINCIPALLY CONTAINMENT, WASTE DISPOSAL, REFUELING, AND SHIELDING.

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

*CONTAINMENT, GENERAL + CODES AND STANDARDS + ECONOMICS + MATERIAL + REFUELING + SHIELDING + WASTE DISPOSAL, GENERAL

14-17046

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-17046 *CONTINUED*

LEVI H + LINDEMANN J + NIELSEN A
SR-90 IN HUMAN BONE, DENMARK, 1962-1964
COPENHAGEN UNIVERSITY, DENMARK
NP-16544 +. 5 PAGES, FIGURES, TABLES

DATA ARE GIVEN ON SR-90 CONTENT IN BONES OF FETUSES 1 TO 30 DAYS OLD AND CHILDREN 1 MONTH TO 10 YEARS OLD. THE RESULTS SHOW THAT SR-90 CONTENT OF BONE OF CHILDREN UNDER 10 YEARS OF AGE HAS INCREASED STEADILY DURING THE PERIOD OF JUNE 1962 TO JUNE 1964. BETWEEN JUNE 61 AND JUNE 62, S.U. VALUES OF FETUSES SCATTERED ABOUT A MEAN OF 0.4. BETWEEN JUNE 62 AND 63, S.U. VALUES HAD RISEN TO BETWEEN 1.0 AND 1.5, AND IN THE CORRESPONDING PERIOD 1963 TO 1964, THE VALUES APPROACHED AN AVERAGE OF 3. IT APPEARS THAT THE SCATTER OF THE VALUES OF OLDER CHILDREN IS MUCH LARGER THAN THAT OF FETUSES OR INFANTS, AS OBSERVED EARLIER.

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

*BIOLOGICAL CONCENTRATION, MAN + *STRONTIUM + DENMARK + STATISTICAL ANALYSIS

14-17047

STEVENSON JD + HAVERS JA
ENTRANCEWAYS AND EXITS FOR BLAST-RESISTANT FULLY-BURIED PERSONNEL SHELTERS. FINAL REPORT.
IIT RESEARCH INST., CHICAGO, ILL.
AD-636048 +. 335 PAGES, TABLES, SEPTEMBER 1965

THE WORK REPORTED IN THIS STUDY IS A CONTINUATION OF THE TOTAL SHELTER DESIGN OPTIMIZATION SERIES CURRENTLY IN PROGRESS. THESE STUDIES HAVE DEVELOPED THE DESIGN REQUIREMENTS AND IDENTIFIED IN-PLACE COSTS FOR SINGLE-PURPOSE, FULLY BURIED PERSONNEL SHELTERS OF 100-, 500-, AND 1000-MAN CAPACITIES. THE SCOPE OF THE EARLIER STUDIES WAS EXTENDED BY INVESTIGATING THE DESIGN REQUIREMENTS AND STRUCTURAL COSTS FOR SHELTER ENTRANCEWAYS.

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

*CIVIL DEFENSE + *DESIGN CRITERIA + *DESIGN STUDY + ECONOMIC STUDY + NUCLEAR DETONATION + PERSONNEL EXPOSURE, RADIATION + STRUCTURAL INTEGRITY + SUPPORT STRUCTURE

14-17048

HOLCOMB WF + PAIGE DM + STEVENSON CE + GRAHAM ED
HIGH LEVEL RADIOACTIVE SOLID WASTE BURIAL OPERATIONS FOR THE EBR-II FUEL CYCLE FACILITY
ARGONNE NATIONAL LAB., IDAHO DIVISION, IDAHO FALLS, IDAHO
7 PAGES, 5 FIGURES, 11 REFERENCES, NUCL. ENG. AND DESIGN, 5(2), PAGE 221-227, (MARCH 1967)

THE FUEL-CYCLE FACILITY OF THE EBR-II COMPLEX GENERATES HIGH-LEVEL NONCOMBUSTIBLE RADIOACTIVE SOLID WASTE FROM THE REPROCESSING AND REFABRICATING OF REACTOR FUEL. THE BURIAL FACILITY PERMITS LONG-TERM BURIAL WITH RETRIEVAL, AS OPPOSED TO PERMANENT BURIAL OF HIGH-LEVEL SOLID WASTES. THE SITE UTILIZES POST-HOLE BURIAL WITH HIGH INTEGRITY STEEL LINERS. A LIFT-LOADING, BOTTOM-DUMPING WASTE-HANDLING COFFIN AND A LOWBOY TRAILER WERE BUILT. FOUR SIZES OF WASTE CONTAINERS ARE USED, WITH ALL OPERATIONS BEING DONE BY REMOTE CONTROL. THE FIRST HUNDRED BURIALS CONTAINED AN ESTIMATED 6600 KG OF WASTE MATERIAL, WITH AN ESTIMATED 1.6 MILLION CURIES OF ACTIVITY AND RADIATION LEVELS AS HIGH AS 900,000 R/HR.

*WASTE DISPOSAL, SOLID + *WASTE HANDLING + EBR 1 AND 2 (EXPERIMENTAL BREEDER REACTORS) + FUEL REPROCESSING + GEOLOGICAL CONSIDERATION, GENERAL + GROUND WATER, GENERAL + HYDROLOGICAL CONSIDERATION, GENERAL + IODINE + MONITOR, RADIATION, GENERAL + NRTS (NATIONAL REACTOR TEST STATION) + REACTOR, BREEDER + REACTOR, FAST + REACTOR, LIQUID METAL COOLED + SURVEILLANCE PROGRAM + TRANSPORTATION AND HANDLING + URANIUM + WASTE MANAGEMENT + WASTE SOURCE AND TYPE + WASTE STORAGE

14-17049

GUIDE TO THE SAFE HANDLING OF RADIOISOTOPES IN HYDROLOGY
INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA, AUSTRIA
STI-PUB-131 + SAFETY SERIES NO. 20 +. 40 PAGES, 3 TABLES, 38 REFERENCES, NOVEMBER 1966

HEALTH AND SAFETY ASPECTS INVOLVED IN THE USE OF RADIOISOTOPES IN HYDROLOGY ARE PRESENTED. PUBLIC SAFETY AND WORK SAFETY ARE THE BASES OF THE RECOMMENDATIONS SUGGESTED AND ARE APPLICABLE TO LARGE-SCALE INVESTIGATIONS OF A COMPLEX NATURE OR TO SMALL-SCALE INVESTIGATIONS. DATA ARE ALSO PRESENTED ON THE APPLICATIONS OF RADIOISOTOPES IN HYDROLOGICAL INVESTIGATION, SUCH AS GROUND-WATER TRACING, RIVER-FLOW MEASUREMENTS, SEEPAGE FROM DAMS, AND SEDIMENT-MOVEMENT STUDIES. A BIBLIOGRAPHY CONTAINING 54 REFERENCES IS INCLUDED.

AVAILABILITY - INTERNATIONAL ATOMIC ENERGY AGENCY (NEW YORK OR GENEVA), \$1.00 COPY

*HYDROLOGICAL CONSIDERATION, GENERAL + *TRANSPORTATION AND HANDLING + BIOLOGICAL CONCENTRATION, MAN + DECONTAMINATION + EMERGENCY PROCEDURE + HAZARDOUS ANALYSIS + MAXIMUM PERMISSIBLE CONCENTRATION (MPC) + MONITOR, RADIATION, GENERAL + MONITOR, RADIATION, PERSONNEL + MONITOR, RADIATION, SAMPLING + RADIONUCLIDE, INDUCED + SAFETY ANALYSTS + SAFETY STUDY + SAMPLING + SURVEILLANCE PROGRAM + TRACER, GENERAL

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-17050
RADIOACTIVITY SURVEY DATA IN JAPAN. NUMBERS 11 AND 12
NATIONAL INST. OF RADIOLOGICAL SCIENCES, CHIBA (JAPAN)
NP-16552 +. 14 PAGES, TABLES, MAY-AUGUST 1966

PRESENTS DATA ON GROSS BETA ACTIVITY AND RADIOACTIVITY OF IODINE IN RAIN AND DRY FALLOUT FROM
THE THIRD CHINESE NUCLEAR TEST.

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

*FALLOUT + *IODINE + *SURVEY, RADIATION, ENVIRONMENTAL + AIR + BIOLOGICAL CONCENTRATION, MILK +
GROSS BETA + JAPAN + METEOROLOGY + NUCLEAR DETONATION + NUCLEAR EXPLOSION DEBRIS + PARTICULATE + RAINOUT

14-17058
MARIYAMA M
RADIATION CONTROL IN ENTERPRISES. THE CASE OF THE TOKAI REFINERY OF ATOMIC FUEL CORP.
JAPAN ATOMIC ENERGY RESEARCH INSTITUTE
NSJ-TR-66 +. 27 PAGES, ALSO NUCLEAR ENGINEERING (TOKYO), 11(3)- 65-74, 79 (MARCH 1965)

ACTIVITIES RELATED TO PERSONNEL PROTECTION AT THE TOKAI REFINERY OF ATOMIC FUEL CORP. ARE
DISCUSSED. DESIGN OF THE AREA USED FOR PROCESSING URANIUM AND CONTROL MEASURES FOR THE AREA
ARE DESCRIBED. A PROGRAM FOR ENVIRONS MONITORING IS PRESENTED.

AVAILABILITY - JOHN CRERAR LIBRARY, 35 WEST 33RD ST., CHICAGO, ILL., \$2.60 COPY, \$1.01 MICROFICHE

*RADIATION SAFETY AND CONTROL + *URANIUM + DOSE MEASUREMENT, EXTERNAL + DOSE MEASUREMENT, INTERNAL +
FILTER, ABSOLUTE + FUEL REPROCESSING + INSTRUMENTATION, NUCLEAR + JAPAN +
MONITOR, RADIATION, ENVIRONMENTAL + MONITOR, RADIATION, PERSONNEL + RESEARCH AND DEVELOPMENT PROGRAM +
SAFETY STUDY + STATISTICAL ANALYSIS + SURFACE CONTAMINATION + WASTE TREATMENT, SOLID

14-17283 ALSO IN CATEGORY 15
MERK I
FALLOUT IN RAIN, DUST AND SOIL AND ITS ABSORPTION IN PLANTS
EIDGENOESSISCHES INSTITUT FUER REAKTORFORSCHUNG, WUERENLINGEN, SWITZERLAND
EIR-103 +. 95 PAGES, FIGURES, TABLES, JANUARY 1967

THE AMOUNT OF RADIOACTIVITY IN PLANTS WAS COMPARED WITH THE RADIOACTIVITY OF FALLOUT SAMPLES.
THOSE PLANTS WHICH HAVE SIGNIFICANCE FOR HUMAN NUTRITION WERE ESPECIALLY CONSIDERED. THE
SR/CA, CA/K, SR/K, CR/CS, AND SR/TOTAL-GAMMA RATIOS WERE DIFFERENTIATED FOR ALL PLANT PARTS,
AND THE ROOT-PLANT DISCRIMINATION FACTORS WERE DETERMINED. FROM A GREAT NUMBER OF PLANTS
GROWN UNDER CLINICAL CONDITIONS AND SOME GROWN UNDER NORMAL AGRICULTURAL CONDITIONS, IT WAS
SHOWN THAT THERE WAS A GOOD PARALLEL IN THE CONTENT OF INDIVIDUAL ISOTOPES AND ELEMENTS.

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

*BIOLOGICAL CONCENTRATION, VEGETATION + *FALLOUT + AGRICULTURAL CONSIDERATION +
ANALYTICAL TECHNIQUE, GENERAL + BIOLOGICAL CONCENTRATION, FOOD + CALCIUM + RAINOUT +
SOIL, NUCLIDE OCCURRENCE + STRONTIUM

14-17285 ALSO IN CATEGORY 15
ROMNEY EM + RHODS WA
NEUTRON ACTIVATION PRODUCTS FROM PROJECT SEDAN IN PLANTS AND SOILS
UNIVERSITY OF CALIFORNIA, LOS ANGELES
4 PAGES, 1 FIGURE, 6 TABLES, SOIL SCIENCE SOCIETY OF AMERICAN PROC., VOL 30, PAGES 770 TO 773 (NOV-DEC
1966)

NEUTRON ACTIVATION PRODUCTS OF W, SC, AND SB WERE AMONG THOSE RADIONUCLIDES CONCENTRATED
THROUGH ROOTS OF PLANTS GROWN ON EJECTA FROM THE SEDAN THERMONUCLEAR CRATERING DETONATION.
REACTOR-PRODUCED ISOTOPES WERE USED IN CORROBORATIVE EXPERIMENTS TO INVESTIGATE, IN GREATER
DETAIL, THEIR BEHAVIOR IN PLANTS AND SOILS. RADIOTANTALUM WAS ALSO INCLUDED AS A MATTER OF
ACADEMIC INTEREST. PLANTS CONCENTRATED MORE SC-46, SB-124, AND W-185 IN LEAVES THAN IN
STEMS, WHEREAS TA-182 WAS CONCENTRATED MORE IN STEMS. PLANT UPTAKE OF SC-46, SB-124, AND
W-185 WAS INFLUENCED BY DIFFERENT TYPES OF SOIL. SCANDIUM-46 AND TA-182 WERE NEARLY IMMOBILE
IN COLUMNS OF SOIL LEACHED WITH 76 CM OF WATER, WHILE SB-124 AND W-185 MOVED READILY IN
NEUTRAL AND ALKALINE SOIL BUT NOT IN ACID SOIL. THEIR BEHAVIOR WAS INFLUENCED BY THE KIND OF
CLAY MINERAL PRESENT, THE SODIUM AND POTASSIUM CONTENT, AND THE PH.

*ACTIVATION PRODUCT + *NUCLEAR DETONATION + BIOLOGICAL CONCENTRATION, VEGETATION +
NUCLEAR EXPLOSION DEBRIS + PLOWSHARE PROGRAM + SOIL, NUCLIDE OCCURRENCE + SOIL, PROPERTY +
SOIL, RADIONUCLIDE MOVEMENT THROUGH

14-17288 ALSO IN CATEGORY 15
LOVERIDGE BA + GORDON MS

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-17288 *CONTINUED*
THE DETERMINATION OF RADIO-IODINE IN HARWELL EFFLUENT
ATOMIC ENERGY RESEARCH ESTABLISHMENT, HARWELL, ENGLAND
AERE-R-5406 +. 14 PAGES, 5 TABLES, 12 REFERENCES, MARCH 1967

IODINE CARRIER WAS ADDED TO THE EFFLUENT AND EXTRACTED TOGETHER WITH THE RADIOIODINE INTO ORGANIC SOLVENTS AFTER OXIDATION AND REDUCTION TO ENSURE COMPLETE RADIOCHEMICAL EXCHANGE. THE RADIOIODINE WAS COUNTED IN A LIQUID SCINTILLATION COINCIDENCE COUNTER, AND THE RECOVERY OF THE CARRIER MEASURED BY PHOTOMETRY. DECONTAMINATION FROM OTHER RADIONUCLIDES, INCLUDING RADIOBROMINE, EXCEEDED 100,000.

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

*WASTE DISPOSAL, LIQUID + ANALYTICAL TECHNIQUE, LIQUID + COUNTER + IODINE + WATER, DRINKING

14-17289
ELLIOT MN + AUTY DB
THE DURABILITY OF FINGAL GLASS. PART I. DISCUSSION OF METHOD AND EFFECT OF LEACHING CONDITIONS
ATOMIC ENERGY RESEARCH ESTABLISHMENT, HARWELL, ENGLAND
AERE-R-5151 +. 51 PAGES, 26 FIGURES, 9 TABLES, 14 REFERENCES, MARCH 1967

DESCRIBES A NEW LEACHING TECHNIQUE FOR MEASURING THE VERY LOW LEACH RATES OF ELEMENTS SUCH AS STRONTIUM AND CESIUM FROM GLASSES. THE BASIS OF THE TECHNIQUE IS TO LEACH GRAINS OF GLASS CONTAINING GAMMA EMITTERS OF INTEREST AND TO DETERMINE AUTOMATICALLY THE ACTIVITY IN THE LEACH SOLUTION BY GAMMA-SPECTROMETRY. AFTER A TEST TO CHECK THE REPRODUCIBILITY AND PRECISION OF THE METHOD, THE SIMULTANEOUS RATES OF REMOVAL OF CESIUM, STRONTIUM, CERIUM, AND TERBIUM FROM TWO BOROSILICATE AND ONE PHOSPHATE GLASS WERE MEASURED, USING SEA WATER AND DISTILLED WATER AT TEMPERATURES BETWEEN 30 AND 60 C. THE EFFECT ON DURABILITY OF THE RATE OF COOLING OF A GLASS AFTER ITS PREPARATION WAS ALSO EXAMINED.

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

*WASTE TREATMENT, FIXATION + CESIUM + STRONTIUM + WASTE DISPOSAL, GENERAL

14-17327 ALSO IN CATEGORIES 7 AND 13
MISHIMA J
PLUTONIUM RELEASE STUDIES I. RELEASE FROM THE IGNITED METAL
BATTELLE-NORTHWEST, RICHLAND, WASHINGTON. PACIFIC NORTHWEST LAB.
BNWL-205 +. 26 PAGES, FIGURES, TABLES, REFERENCES, DECEMBER 13, 1965

SIX PLUTONIUM RODS, 1/4-INCH IN DIAMETER AND 3/4-INCHES LONG, WERE IGNITED IN DRY AIR AT TEMPERATURES RANGING FROM 410 TO 650 C. AIR DRAWN OVER THE SPECIMENS AT VELOCITIES RANGING FROM 3.3 TO 50 CM/SEC WAS EXAMINED FOR PARTICULATE PLUTONIUM OXIDE. PLUTONIUM OXIDE ENTRAINED RANGED FROM 3 X 10 TO THE MINUS 6TH TO 5 X 10 TO THE MINUS 5TH %. THE ENTIRE OXIDE PRODUCED WAS SUBSEQUENTLY SIZED BY ELUTRIATION-SIEVING. THE QUANTITY OF PARTICULATE MATERIAL LESS THAN 15 MICRONS DEPENDED ON THE MECHANICAL WORK USED IN SIZING THE PARTICLES. INCREASING PARTICLE SIZE IS FOUND WITH INCREASING OXIDATION TEMPERATURES. THE AMOUNT AND RATE OF RELEASE UNDER ANY STATED CONDITIONS DEPENDS ON FRIABILITY AND THE FORCES TO WHICH THE OXIDE MASS IS SUBJECTED. RESULTS OF THIS STUDY WERE COMPARED WITH OTHER DATA RELATING TO PARTICLE SIZE AND FRACTIONAL RELEASE FROM IGNITED PLUTONIUM. REASONABLE AGREEMENT WAS NOTED.

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

*AIRBORNE RELEASE + *IGNITION + *PLUTONIUM + OXIDATION + PARTICLE SIZE + PARTICLE SIZE DISTRIBUTION + PLUTONIUM OXIDE + THERMAL CONSIDERATION

14-17424 ALSO IN CATEGORY 15
DAHL AH + SCHIAGER KJ + REECE RJ + JACOE PW
RADON PROGENY INHALATION STUDY AS APPLICABLE TO URANIUM MINING OPERATION. ANNUAL REPORT NO. 2, 1966
COLORADO STATE UNIV., FORT COLLINS. DEPT. OF RADIOLOGY AND RADIATION BIOLOGY + COLORADO STATE DEPT. OF PUBLIC HEALTH, DENVER. DIVISION OF OCCUPATIONAL AND RADIOLOGICAL HEALTH
C90-1590-3 +. 112 PAGES, FIGURES, TABLES, REFERENCES, FEBRUARY 28, 1967

THE WORK WAS CONDUCTED IN A MINE 7 MILES NORTH OF GOLDEN, COLORADO, WITH OBJECTIVES AS FOLLOWS - TO INVESTIGATE THE GENERAL RELATIONSHIPS OF THE PHYSICAL CHARACTERISTICS OF MINE AEROSOLS AND EXPOSURE CONDITIONS TO THE DEPOSITION, RETENTION, AND TRANSLOCATION OF THE RADIOACTIVE MATERIALS IN HUMANS, TO INVESTIGATE THE RELATIONSHIPS OF VARIOUS EXPOSURE SURVEILLANCE METHODS TO THE ACTUAL EXPOSURE HAZARDS FROM RADON AND ITS PROGENY, AND TO INVESTIGATE THE EFFECTIVENESS OF VARIOUS METHODS FOR CONTROLLING EXPOSURES TO RADON AND ITS PROGENY IN MINE ATMOSPHERES. FACTORS SUCH AS BAROMETRIC PRESSURE CHANGES AND BLASTING OPERATIONS WHICH INFLUENCE THE RADIOACTIVITY CONCENTRATION IN THE MINE AIR ARE DISCUSSED. STUDIES WERE MADE ON DEPOSITION AND RETENTION OF SHORT-LIVED DAUGHTERS IN THE RESPIRATORY SYSTEM. RESULTS ARE PRESENTED IN THE FORM OF TABLES AND GRAPHS. A BIOASSAY STUDY WAS CONDUCTED TO DETERMINE WHETHER A CORRELATION EXISTED BETWEEN THE INTEGRATED EXPOSURE OF URANIUM MINERS TO THE MINE ATMOSPHERE AND ONE OR MORE OF THE LONG-LIVED DAUGHTERS.

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

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-17424 *CONTINUED*

AEROSOL, RADIOACTIVE + BIOLOGICAL CONCENTRATION, MAN + INHALATION + MINING + MONITORING SYSTEM, RADIATION + RADON + SURVEILLANCE PROGRAM + URANIUM, NATURAL

14-17425 ALSO IN CATEGORY 15

KAMATH PR + BHAT IS + KHAN AA + GANGULY AK

PREOPERATIONAL SEARCH FOR BASELINE RADIOACTIVITY, CRITICAL FOOD, AND POPULATION GROUP AT THE TARAPUR ATOMIC POWER STATION SITE

ATOMIC ENERGY ESTABLISHMENT, TROMBAY, INDIA

AEET-263 +. 34 PAGES, TABLES, 1966

A PREOPERATIONAL ENVIRONMENTAL SURVEY WAS MADE AT THE SITE OF THE TARAPUR ATOMIC POWER PROJECT. PROGRAMS WERE DEvised FOR MONITORING LAND, LAND PRODUCE, SEA WATER, SEAFOOD, DRINKING-WATER SUPPLIES, AND AIR IN AN AREA FROM 0 TO 32 KM OF THE SITE. A SURVEY OF 100 FAMILIES IN THE AREA WAS DESIGNED TO OBTAIN AN ESTIMATE OF DAILY PER-CAPITA FOOD CONSUMPTION AMONG A VARIETY OF PROFESSIONAL TYPES. DIETARY SURVEYS SHOWED THAT SR-90 AND CS-137 CONTAMINATION IN THE TARAPUR DIET IS ATTRIBUTABLE TO CEREALS AND PULSES (PREDOMINATELY RICE). IT WAS CONCLUDED THAT ACTIVATION PRODUCTS WERE LIKELY TO ENTER THE FOOD CHAIN VIA SEAFOOD HARVESTED OFFSHORE. STRONTIUM-90 TO CALCIUM RATIOS IN VARIOUS DIETARY COMPONENTS WERE COMPARED WITH THOSE IN NEW YORK CITY.

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

*MONITOR, RADIATION, BACKGROUND + *SURVEY, RADIATION, GENERAL + CESIUM + DIETARY HABIT + DOSE MEASUREMENT, INTERNAL + FALLOUT + INDIA + METEOROLOGY + MONITOR, RADIATION, ENVIRONMENTAL + MONITOR, RADIATION, GENERAL + POPULATION EXPOSURE + REACTOR, POWER + SAMPLING + STRONTIUM

14-17426

RADIOACTIVITY SURVEY DATA IN JAPAN. NUMBERS 9 AND 10. NOVEMBER 1965-FEBRUARY 1966

NATIONAL INSTITUTE OF RADIOLOGICAL SCIENCES, CHIBA, JAPAN

NP-16551 +. 19 PAGES, FIGURES, TABLES

PRESENTS DATA ON MONTHLY AND CUMULATIVE DEPOSITS OF SR-90 AND CS-137 AT VARIOUS LOCATIONS IN JAPAN. ADDITIONAL DATA ON SR-90, CS-137, CE-144, ZR-95, NB-95, AND RU-106 IN AIRBORNE DUST. OBSERVATIONS ON THE MONTHLY VARIATION IN SR-90 AND CS-137 CONTENT IN MILK WERE CONDUCTED AT THE NATIONAL INSTITUTE OF ANIMAL INDUSTRY. TABLES SHOWING CONTENTS OF THESE ISOTOPES IN MILK FROM AUGUST 1965 TO FEBRUARY 1966 ARE PRESENTED. SURFACE SOIL SAMPLES TO DETERMINE TOTAL DEPOSITION OF FALLOUT ANALYZED. TABLES SHOW SR-90, CS-137, AND CE-144 CONTENT OF SOIL FROM APRIL 1964 TO DECEMBER 1965.

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

*FALLOUT + *METEOROLOGY + BIOLOGICAL CONCENTRATION, MILK + CERIUM + CESIUM + DIETARY HABIT + JAPAN + MONITOR, RADIATION, ENVIRONMENTAL + NIOBIUM + RUTHENIUM + STRONTIUM + ZIRCONIUM

14-17428

PLATT AM

FIXATION OF RADIOACTIVE RESIDUES. RESEARCH AND DEVELOPMENT ACTIVITIES QUARTERLY PROGRESS REPORT, JULY-SEPTEMBER 1966

BATTELLE-NORTHWEST, RICHLAND, WASHINGTON. PACIFIC NORTHWEST LABORATORY

BNWL-365 +. 53 PAGES, 12 FIGURES, 7 TABLES, MARCH 1967

PROGRESS IS REPORTED ON RESEARCH AND DEVELOPMENT ACTIVITIES IN THE FIELD OF RADIOACTIVE WASTES. STUDIES ON THE ADDITION OF ZINC PHOSPHATES TO REDUCE THE TENDENCY FOR RARE EARTH PHOSPHATES TO SEPARATE FROM MELTS. REDUCING ATMOSPHERES RATHER THAN AIR REDUCED OR ELIMINATED SEPARATE MELT PHASES IN BOROPHOSPHATE AND SILICATE MELTS. TESTING OF THE CONTINUOUS PHOSPHATE GLASS EQUIPMENT WAS CONTINUED BY COMPLETING A DESIGN VERIFICATION TEST RUN.

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

*CALCINATION + *WASTE TREATMENT, FIXATION + CERIUM + CESIUM + RESEARCH AND DEVELOPMENT PROGRAM + RUTHENIUM + STRONTIUM + THERMAL CONSIDERATION + WASTE MANAGEMENT + WASTE TRANSPORTATION + WASTE TREATMENT, SOLID

14-17432 ALSO IN CATEGORY 15

THE MANAGEMENT OF RADIOISOTOPE WASTES PRODUCED BY RADIOISOTOPE USERS. TECHNICAL ADDENDUM. SAFETY SERIES NO. 19

INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA, AUSTRIA

STI-PUB-119 +. 86 PAGES, 23 FIGURES, 12 TABLES, 32 REFERENCES, 1966

PRESENTS PROCESSES AND PROCEDURES IN THE HANDLING OF RELATIVELY SMALL QUANTITIES OF WASTE ARISING FROM THE USE OF RADIOISOTOPES IN LABORATORIES, HOSPITALS, AND INDUSTRY. TOPICS DISCUSSED ARE - TYPES OF WASTE ASSOCIATED WITH A NUMBER OF RADIOISOTOPES, WASTE-COLLECTION CONTAINERS AND SYSTEMS, DIRECT DISPOSAL OF RADIOACTIVES WASTES TO SEWERS, LIQUID-WASTE

CATEGORY 14
RADIOISOTOPE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-17432 *CONTINUED*

TREATMENT SUITABLE FOR USERS OF RADIOISOTOPES, SOLID-WASTE TREATMENT AND DISPOSAL BY INDIVIDUAL USERS OF RADIOISOTOPES, AND AIRBORNE-WASTE MANAGEMENT.

AVAILABILITY - INTERNATIONAL ATOMIC ENERGY AGENCY (NEW YORK OR GENEVA), \$2.00 COPY

*RADIOISOTOPE + *WASTE MANAGEMENT + ALUMINUM + COMPACTION + EVAPORATION + FILTER THEORY, INTERCEPTION + INCINERATION + ION EXCHANGE + PHOSPHATE + STRONTIUM + WASTE DISPOSAL, ATMOSPHERIC + WASTE TRANSPORTATION + WASTE TREATMENT, LIQUID + WASTE TREATMENT, SOLID

14-17482 ALSO IN CATEGORY 15
VOSS MD
SURVEY OF ENVIRONMENTAL RADIOACTIVITY
AMES LAB., IOWA
IS-1523 +. 46 PAGES, JANUARY 1967

ENVIRONMENTAL MONITORING PROGRAM OF THE AMES LAB. OF THE USAEC FOR THE AMES LAB. RESEARCH REACTOR (ALRR) ARE DISCUSSED. THE ENVIRONMENTAL PROGRAM CONSISTS OF GROSS ALPHA AND BETA DETERMINATIONS OF AIR, SOIL, VEGETATION, RIVER WATER, ALRR OUTFALL, BOTTOM SEDIMENT, PRECIPITATION, WELL WATER, AND POND SAMPLES. THE DATA INDICATE THAT THE ALRR HAS NOT CONTRIBUTED A SIGNIFICANT AMOUNT OF RADIOACTIVITY TO THE ENVIRONMENT IN THE AMES AREA AND THAT RADIOACTIVITY LEVELS RECORDED FOR ENVIRONMENTAL SAMPLES REPRESENT BACKGROUND CONDITIONS FROM ATMOSPHERIC FALLOUT AND NATURALLY OCCURRING RADIOACTIVITY.

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

*MONITOR, RADIATION, ENVIRONMENTAL + ALRR (AMES LABORATORY RESEARCH REACTOR) + BIOLOGICAL CONCENTRATION, VEGETATION + FALLOUT + GROSS ALPHA + GROSS BETA + MONITOR, RADIATION, AIR + MONITOR, RADIATION, BACKGROUND + MONITOR, RADIATION, SAMPLING + PRECIPITATION + SOIL, NUCLIDE OCCURRENCE + SURFACE WATER, GENERAL + SURFACE WATER, SEDIMENT

14-17511 ALSO IN CATEGORY 17
MIT GRANTED EXEMPTION FROM 10CFR 20 PROVISIONS RELATING TO DISCHARGE OF TRITIUM TO SEWER
AEC, DIVISION OF REACTOR LICENSING
2 PAGES, MARCH 8, 1967, DOCKET NO. 50-20, MIT RESEARCH REACTOR

A LEAKY HEAT EXCHANGER CONTAMINATED THE SECONDARY COOLING SYSTEM WITH ABOUT 12 CURIES OF TRITIUM. PERMISSION WAS GRANTED TO DISCHARGE THIS CONTAMINATED WATER (20,000 GAL) INTO A SANITARY SEWER AT A CONTROLLED FLOW RATE TO ENSURE DILUTION IN THE SEWER BELOW MPC.

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

*TRITIUM + *WASTE DISPOSAL, RIVER + DILUTION + MAXIMUM PERMISSIBLE CONCENTRATION (MPC) + RADIATION SAFETY AND CONTROL + REACTOR, HEAVY WATER + REACTOR, RESEARCH + WASTE DISPOSAL, LIQUID

14-17520
ULTIMATE WASTE DISPOSAL
BROOKHAVEN NATIONAL LABORATORY
BNL-50,023 +. 4 PAGES, FIGURES, PAGES 45-48 OF BROOKHAVEN NATIONAL LAB. ANNUAL REPORT, DECEMBER 31, 1966

REPORTS PROGRESS ON A PROCESS FOR CONVERTING HIGHLY RADIOACTIVE WASTES TO PHOSPHATE GLASS. PILOT-PLANT OPERATIONS INDICATE THAT A CRITICAL FACTOR IS CONTROL OF CONDITIONS IN THE EVAPORATOR. PHOSPHORIC ACID IS MIXED WITH THE WASTE. THE SOLUTION IS THEN REDUCED IN VOLUME BY EVAPORATION OF WATER AND NITRIC ACID AND CONVERTED TO GLASS BY HEATING TO 1200 C IN A PLATINUM CRUCIBLE.

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

*WASTE DISPOSAL, SOLID + *WASTE TREATMENT, FIXATION + BNL (BROOKHAVEN NATIONAL LABORATORY) + GLASS + RESEARCH AND DEVELOPMENT PROGRAM + WASTE MANAGEMENT

14-17523 ALSO IN CATEGORY 17
TERMINATION - UNIVERSITY OF CALIFORNIA'S BERKELEY AGN-201 LICENSE
AEC, DIVISION OF REACTOR LICENSING
3 PAGES, AUGUST 23, 1966, DOCKET NO. 50-84, UNIVERSITY OF CALIFORNIA

REACTOR WAS MOVED TO UNIVERSITY OF NEW MEXICO. FUEL IS STORED AT AEROJET-GENERAL NUCLEONICS. SHIELDING WATER WAS DISCHARGED THROUGH FLOOR DRAIN AND DILUTED IN THE SEWER. NO DETECTABLE CONTAMINATION REMAINS.

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

*REACTOR DECOMMISSIONING EXPERIENCE + AGN (TRAINING REACTOR, AEROJET-GEN. NUCLEONICS) + DILUTION + REACTOR, TRAINING + SAFETY EVALUATION + TECHNICAL SPECIFICATIONS + WASTE DISPOSAL, LIQUID

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-17550

BLANCO RE + BLOMEKE JO + ROBERTS JT
SOLVING THE WASTE DISPOSAL PROBLEM
OAK RIDGE NATIONAL LAB., TENN.

5 PAGES, 2 TABLES, 18 REFERENCES, NUCLEONICS 25(2), PAGE 58 THRU 61 AND PAGE 68, (FEBRUARY 1967)

BY THE YEAR 2000, U.S. NUCLEAR POWER PLANTS WILL HAVE ACCUMULATED OVER 5000 TONS OF FISSION PRODUCTS. SOLIDIFICATION OF LIQUID WASTE FROM FUEL REPROCESSING FOLLOWED BY STORAGE IN SALT MINES REPRESENTS A SAFE AND ECONOMICAL METHOD OF DISPOSAL. COST OF SOLIDIFICATION, SHIPPING 1000 MILES, AND ULTIMATE DISPOSAL IN SALT IS ESTIMATED AT LESS THAN 1¢ OF THE TOTAL COST OF 3 MILLS/KW HR NUCLEAR POWER. OTHER ADVANTAGES OF THE PROPOSED METHOD INCLUDE LOW MOBILITY OF THE SOLID WASTE, LOW SURVEILLANCE REQUIREMENTS, LOW SOLUBILITY, AND SAFER HEAT REMOVAL.

*WASTE MANAGEMENT + *WASTE TREATMENT, FIXATION + FLUORIDE VOLATILITY PROCESSES + ORNL (OAK RIDGE NATIONAL LABORATORY) + TRITIUM + WASTE DISPOSAL, ECONOMICS + WASTE DISPOSAL, GAS + WASTE DISPOSAL, SALT + WASTE DISPOSAL, SOLID + WASTE TRANSPORTATION + WASTE TREATMENT, ECONOMICS

14-17559

ALSO IN CATEGORIES 12 AND 1
UKAEA LIST OF PUBLICATIONS AVAILABLE TO THE PUBLIC. CUMULATION NO. 11, JANUARY-DECEMBER 1966.
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, HARWELL
NP-16666 +. 129 PAGES, JANUARY 1967

THE ELEVENTH ANNUAL CUMULATION (JANUARY TO DECEMBER 1966) OF UKAEA PUBLICATIONS AVAILABLE TO THE PUBLIC IS LISTED IN 24 CATEGORIES, INCLUDING HEALTH AND SAFETY, GEOLOGY AND MINERALOGY, WASTE DISPOSAL, REACTOR PHYSICS, AND INSTRUMENTATION.

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

*BIBLIOGRAPHY + *UNITED KINGDOM + DOSE + GEOLOGICAL CONSIDERATION, GENERAL + INSTRUMENTATION, GENERAL + METEOROLOGY + TRANSPORTATION AND HANDLING + WASTE DISPOSAL, GENERAL

14-17566

ALSO IN CATEGORY 12

AYRES JA

DECONTAMINATION OF NUCLEAR REACTOR SYSTEMS

HW-SA-3687 +. 2 PAGES, 1 FIGURE, HEATING, PIPING AND AIR CONDITIONING 37(6), PAGE 105 AND 106, (JUNE 1965)

THE PRIMARY COOLING SYSTEM OF A WATER-COOLED REACTOR MAY BECOME CONTAMINATED BY LEAKAGE OF FISSION PRODUCTS FROM THE FUEL ELEMENTS OR BY ACTIVATION OF CORROSION PRODUCTS. A PROCESS IS RECOMMENDED FOR CHEMICAL CLEANING BY USING A MIXTURE OF 3% POTASSIUM PERMANGANATE IN 18% POTASSIUM HYPOXIDE AT 105 C FOR 3 HOURS, FOLLOWED BY 10% SULFAMIC ACID AT 70 C FOR 3 HOURS.

*DECONTAMINATION + BATTELLE NORTHWEST + MAIN COOLING SYSTEM + REACTOR, WATER

14-17688

ALSO IN CATEGORY 15

QUARTERLY SUMMARY REPORT, DECEMBER 1, 1966-MARCH 1, 1967. APPENDIX TO HEALTH AND SAFETY LABORATORY
FALLOUT PROGRAM

AEC, NEW YORK OPERATIONS OFFICE, HEALTH AND SAFETY LAB

HASL-181, APPENDIX +. 208 PAGES, FIGURES, TABLES, APRIL 1, 1967

GIVES DATA FOR SR-90 AND SR-89 DEPOSITION AT SITES THROUGHOUT THE WORLD, FOR 17 ISOTOPES AT 11 POINTS IN THE UNITED STATES, AND FOR RADIOSTRONTIUM AT 4 LOCATIONS IN THE ATLANTIC OCEAN. ALSO, RADIOSTRONTIUM IS REPORTED FOR MILK AND TAPWATER IN NEW YORK CITY, AND FOR POWDERED MILK AT PERRY, NEW YORK.

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

*FALLOUT + BIOLOGICAL CONCENTRATION, GENERAL + BIOLOGICAL CONCENTRATION, MILK + OCEAN AND SEA + STRONTIUM

14-17689

TECHNOLOGY OF RADIOACTIVE WASTE MANAGEMENT AVOIDING ENVIRONMENTAL DISPOSAL
INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA

STI/DOC/10/27 +. 147 PAGES, 89 FIGURES, 11 TABLES, IAEA TECHNICAL REPORTS SERIES NO. 27, MARCH 1964

PRESENT PRACTICE FOR DISPOSING OF RADIOACTIVE WASTES INVOLVES THE RELEASE OF SAFE AMOUNTS OF RADIOACTIVE MATERIALS TO THE ENVIRONMENT IN SAFE PLACES. WITH THE EXPANSION OF NUCLEAR ACTIVITIES, IT MAY BE NECESSARY TO REDUCE DISCHARGE OF RADIOACTIVE MATERIALS TO THE ENVIRONMENT. THE OBJECTIVE OF THIS PANEL WAS TO RELATE PRESENT PRACTICE TO TOTAL CONTAINMENT AND TO EVALUATE PRESENT RESEARCH AND DEVELOPMENT WITH REGARD TO TOTAL CONTAINMENT. THE TREATMENT AND CONTAINMENT OF HIGHLY RADIOACTIVE GASEOUS WASTES WERE NOT CONSIDERED.

AVAILABILITY - INTERNATIONAL ATOMIC ENERGY AGENCY

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-17689 *CONTINUED*

*WASTE MANAGEMENT + IAEA (INTERNATIONAL ATOMIC ENERGY AGENCY) + ION EXCHANGE + MINERAL EXCHANGE + WASTE DISPOSAL, GENERAL + WASTE DISPOSAL, LIQUID + WASTE DISPOSAL, SOLID + WASTE TREATMENT, LIQUID

14-17690

FINEMAN P.

WASTE DISPOSAL. SECTION IV

ARGONNE NATIONAL LABORATORY, IDAHO FALLS, IDAHO

7 PAGES, 36 REFERENCES, REACTOR FUEL PROCESSING 9(3), PAGES 170 THRU 176, (SUMMER 1966)

THIS ARTICLE REVIEWS CURRENT WORK ON WASTE DISPOSAL. INCLUDES TREATMENT OF INTERMEDIATE-LEVEL WASTES BY ION EXCHANGE ELECTRODIALYSIS, AND INCORPORATION IN ASPHALT. UNDER CONVERSION OF HIGH-LEVEL WASTE TO SOLIDS, THE ECONOMICS OF TANK STORAGE COMPARED CONVERSION TO SOLIDS, FLUIDIZED-BED CALCINATION, AND CONVERSION TO GLASSES. PLANS FOR THE RECOVERY OF MEGACURIE AMOUNTS OF SELECTED FISSION PRODUCTS FROM REDOX-AND PUREX-PLANT WASTE ARE DESCRIBED.

*WASTE DISPOSAL, GENERAL + *WASTE TREATMENT, GENERAL + BATTELLE NORTHWEST + CALCINATION + FISSION PRODUCT, SEPARATION FROM WASTE + IDAHO FALLS + ORNL (OAK RIDGE NATIONAL LABORATORY) + WASTE DISPOSAL, ECONOMICS + WASTE MANAGEMENT + WASTE STORAGE + WASTE TREATMENT, FIXATION

14-17693

FINEMAN P.

WASTE DISPOSAL. SECTION IV

ARGONNE NATIONAL LABORATORY, IDAHO FALLS, IDAHO

12 PAGES, 5 FIGURES, 49 REFERENCES, REACTOR FUEL PROCESSING 9(4), PAGES 225 THRU 236, (FALL 1966)

THE FOLLOWING SUBJECTS ARE COVERED IN THIS PROGRESS REVIEW - TREATMENT OF LOW-AND INTERMEDIATE-LEVEL WASTES BY ION EXCHANGE, ELECTRODEIONIZATION, ELECTRODIALYSIS, AND BY INCORPORATION IN ASPHALT. CONVERSION OF HIGH-LEVEL-WASTES TO SOLIDS BY VITRIFICATION, CALCINATION, AND INCORPORATION IN GLASS. FINAL DISPOSAL METHODS - IN-TANK SOLIDIFICATION AND STORAGE IN SALT MINES. FISSION-PRODUCT RECOVERY BY ION EXCHANGE, AND OTHER PHASES SUCH AS SOLAR EVAPORATION AND INCINERATION.

*WASTE DISPOSAL, GENERAL + *WASTE TREATMENT, GENERAL + BATTELLE NORTHWEST + BNL (BROOKHAVEN NATIONAL LABORATORY) + CALCINATION + CHALK RIVER + ENEA (EUROPEAN NUCLEAR ENERGY AGENCY) + FISSION PRODUCT, SEPARATION FROM WASTE + FRANCE + GREECE + IDAHO FALLS + ION EXCHANGE + ORNL (OAK RIDGE NATIONAL LABORATORY) + WASTE DISPOSAL, SALT + WASTE DISPOSAL, SOLID + WASTE TREATMENT, FIXATION

14-17815

ATMOSPHERIC RADIOCHEMISTRY. ANNUAL PROGRESS REPORT

ARKANSAS UNIVERSITY, FAYETTEVILLE

ORO-2529-6 +. 73 PAGES, 6 REFERENCES, DECEMBER 31, 1966

DEVELOPMENTS ARE REPORTED ON STUDIES OF TIME INTERVAL BETWEEN NUCLEAR DETONATION AND FORMATION OF SINGLE FALLOUT PARTICLES, COSMIC-RAY-PRODUCED MG-28 IN RAIN, GLOBAL CIRCULATION OF NUCLEAR DEBRIS FROM MAY 14, 1965, NUCLEAR EXPLOSION, AND RADIOACTIVE SR, CE, AND MN IN THE ATMOSPHERE. IT APPEARS 30 TO 40 SEC ELAPSED BETWEEN TIME OF NUCLEAR DETONATION AND BEGINNING OF FORMATION OF PARTICLES. EXISTENCE OF COSMIC-RAY-PRODUCED MG-28 WAS ESTABLISHED RADIOCHEMICALLY. IN APRIL 1963, HIGHEST CONCENTRATIONS OF SR-90 AND CE-144 WERE AT 16.7 KM ALTITUDE, 64-70 DEG NORTH LATITUDE, AND OF MN-54 AT 10.6 KM ALTITUDE AND 65 DEG LATITUDE.

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

*FALLOUT + CERIUM + MAGNESIUM + MANGANESE + NUCLEAR EXPLOSION DEBRIS + RAINOUT + STRONTIUM

14-17816

STUDY OF RAINOUT OF RADIOACTIVITY IN ILLINOIS

ILLINOIS STATE WATER SURVEY

COO-1199-10 +. 44 PAGES, FIGURES, REFERENCES, DECEMBER 1966

DURING THE SUMMER OF 1965, NETWORK WATER SAMPLING FOR RADIOACTIVITY WAS CONTINUED. ALSO, SURFACE-AIR SAMPLING PLUS AIRBORNE WATER AND AIR SAMPLING WERE CARRIED OUT. AN AIRBORNE SAMPLING SYSTEM TO SECURE ATMOSPHERIC WATER VAPOR FOR TRITIUM ANALYSIS WAS DEVELOPED AND USED. DATA INDICATED THAT PRECIPITATION IS VERY EFFECTIVE IN SCRUBBING THE ATMOSPHERE UNDER SOURCE CONDITIONS BUT MAY BE LESS SO IN OTHERS. TRITIUM DATA WERE NOT YET AVAILABLE.

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

*RAINOUT + AIRCRAFT + ATMOSPHERIC POLLUTION + FALLOUT + METEOROLOGY + SAMPLING + TRITIUM + WATER VAPOR

14-17864

ALSO IN CATEGORY 17

ANNUAL REPORT OF OPERATIONS AND MODIFICATION OF U OF VIRGINIA REACTOR FOR PERIOD ENDING 31 JANUARY 1967

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-17864 *CONTINUED*
UNIVERSITY OF VIRGINIA, CHARLOTTESVILLE
UVAR-17 +. 62 PAGES, 10 FIGURES, 18 REFERENCES, PAGE 20 THRU 81 OF SAFETY ANALYSIS REPORT IN SUPPORT OF AMENDMENT TO LICENSE R-66 FOR TWO MEGAWATT OPERATION OF THE UNIVERSITY OF VIRGINIA REACTOR, JANUARY 31, 1967, DOCKET NO. 50-62

SEVEN MODIFICATIONS LISTED INCLUDING (1A) GRADUATE STUDENT IRRADIATING INDIUM IN RABBIT SYSTEM WITHDREW SAMPLE, CAUSING BRIDGE MONITOR TO SCRAM REACTOR. PORTABLE SURVEY METER WENT OFF-SCALE AND ACTIVITY WAS NOTED ON AIR MONITOR. STUDENT RECEIVED 20-MR DOSE. (2A) REGULATING ROD FAILED DUE TO FAILED BEARING. (2C) COOLANT OUTLET HEADER JAMMED AND NEW LIFTING MECHANISM (AIR FLOTATION) WAS INSTALLED. (3) DURING COMPLIANCE INSPECTION, IT WAS FOUND THAT UNCONTROLLED RELEASE OF RADIOACTIVE WASTE INTO A CREEK WAS BEING ALLOWED, DUE TO AN OPEN VALVE FROM HOLDING POOL. PERIODIC TESTS OF ACTIVITY IN HOLDING POOL HAD SHOWN CONCENTRATION TO BE BELOW MPC FOR CONTROLLED RELEASE.

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

*PERSONNEL EXPOSURE, RADIATION + *RADIOACTIVITY, RELEASE + ADMINISTRATIVE CONTROLS AND PRACTICES + EMERGENCY COOLING CONSIDERATIONS + FAILURE, EQUIPMENT + OPERATIONS SUMMARY FOR AEC + REACTOR, POOL TYPE + REACTOR, RESEARCH

14-17866 ALSO IN CATEGORIES 18 AND 17
HAZARD ANALYSIS FOR OPERATION OF THE UNIVERSITY OF VIRGINIA REACTOR AT TWO MEGAWATTS
UNIVERSITY OF VIRGINIA, CHARLOTTESVILLE
UVAR-17 +. 116 PAGES, 22 FIGURES, 20 TABLES, 20 REFERENCES, EXHIBIT A OF SAFETY ANALYSIS REPORT IN SUPPORT OF AMENDMENT TO LICENSE R-66 FOR TWO MEGAWATT OPERATION OF THE UNIVERSITY OF VIRGINIA REACTOR, AUGUST 1964, DOCKET NO. 50-62

AFTER PRELIMINARY TREATMENT OF SITE, VENTILATION, ETC., THE AUTHOR EXAMINES HEAT TRANSFER IN CORE, IN PARTICULAR THE MAXIMUM POWER WITH A GIVEN FLOW RATE AT WHICH REACTOR CAN BE OPERATED WITHOUT LOCALIZED BOILING. HE CONCLUDES THAT TO OPERATE AT 2 MW, COOLANT FLOW RATE MUST BE AT LEAST 1050 GAL/MIN. HE EXAMINES HAZARDS DURING NORMAL OPERATION (ARGON-41 PRODUCTION IN EXPERIMENTAL FACILITIES AT 2 MW IS INSUFFICIENT TO CAUSE EXCESS CONCENTRATION OUTSIDE THE BUILDING) AND MAXIMUM CREDIBLE ACCIDENT. COMPLETE CORE MELTDOWN RELEASES, TID-14844 F.P. FRACTIONS, RESULTING IN EXCLUSION-BOUNDARY DOSES LESS THAN 220 REMS.

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

*HAZARDS ANALYSIS + *HEAT TRANSFER ANALYSIS + *POWER UPGRATING + ACCIDENT, MAXIMUM CREDIBLE (MCA) + ARGON + REACTOR, POOL TYPE + REACTOR, RESEARCH + SAFETY ANALYSIS REPORT, GENERAL + SOURCE, CONTINUOUS

14-17878
FOKIN AV + KUZICHEVA VS + FOMIN YK
PECULIARITIES AND PROSPECTS OF THE REPROCESSING OF LIQUID RADIOACTIVE WASTES USING OIL FLOTATION
1 PAGE, ATOMNAYA ENERGIYA 20(1), PAGE 65, (DECEMBER 1966)

A FLOTATION PROCESS WAS DEVELOPED FOR SEPARATING A SOLID PHASE CONTAINING RADIOACTIVE ISOTOPES FROM AQUEOUS PULPS (FERRIC HYDROXIDE, NICKEL FERROCYANIDE, AND OTHER COMPOUNDS). THE ISOTOPES ENTRAPPED PASS INTO THE OIL PHASE WITH A HIGH DEGREE OF DECONTAMINATION (AS HIGH AS 90-99% IN ONE STAGE). AFTER DISTILLING THE OIL, THE SOLID MAY BE INCORPORATED WITH ORGANIC BINDERS SUCH AS BITUMEN OR SYNTHETIC RESINS. IN SOME CASES ORGANIC MONOMERS MAY BE USED BOTH AS THE OIL AND AS THE BASIS FOR A SOLID PLASTIC.

*WASTE TREATMENT, FIXATION + UNION OF SOVIET SOCIALIST REPUBLICS + WASTE DISPOSAL, TERRESTRIAL + WASTE TREATMENT, SOLID

14-17879
PUSHKAREV VV + ZOLOTAVIN VL + LYUBIMOV AS
CLARIFICATION AND PURIFICATION OF LOW ACTIVITY SEWAGE BY FLOTATION OF SEMIHYDRATED DOLOMITE
1 PAGE, ATOMNAYA ENERGIYA 20(1), PAGE 64, (JANUARY 1966)

CLARIFICATION AND PURIFICATION OF SEWAGE CONTAINING LOW LEVELS OF RADIOACTIVITY MAY BE ACCOMPLISHED BY FLOTATION OF ADDED SEMIHYDRATED DOLOMITE (MAGNOMASS), FOLLOWED BY PURGING OF THE FLOTATED SOLUTION WITH AIR. PRELIMINARY EXPERIMENTS INDICATE THAT ADDITION OF 700-800 MG/LITER OF MAGNOMASS (GRAIN SIZE ABOUT 0.063 MM), FOAMING AGENT (SULFATE SOAP) 0.3-0.4G/L AND 20-30 MG/L OF SODIUM OLEATE AS A CORRECTOR GIVES THE OPTIMUM CONDITIONS FOR CLARIFYING AND PURIFYING. STRONTIUM IS EXTRACTED 80% AND RUTHENIUM 30%, BUT CESIUM IS UNAFFECTED. PURPOSE OF THE TREATMENT IS PREPARATION OF A FEED FOR FURTHER TREATMENT OF THE SEWAGE BY ION EXCHANGE, DISTILLATION, OR OTHER METHODS.

*WASTE TREATMENT, LIQUID + UNION OF SOVIET SOCIALIST REPUBLICS + WATER TREATMENT

14-17881
SCHUMCHIK MJ + SCHMOKE MA + EGERLAND WD + SCHULMAN EL
SCATTERED RADIATION (SKYSHINE) CONTRIBUTION TO AN OPEN BASEMENT LOCATED IN A SIMULATED FALLOUT FIELD.
FINAL REPORT
ARMY NUCLEAR DEFENSE LAB., EDGEWOOD ARSENAL, MD.
AD-643538 + NDL-TR-68 +. 78 PAGES, FIGURES, TABLES, REFERENCES, DECEMBER 1966

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-17891. *CONTINUED*

A SOURCE-CIRCULATION SYSTEM (CO-60) WAS USED TO SIMULATE A UNIFORMLY CONTAMINATED RESIDUAL GAMMA RADIATION AREA OUT TO A RADIUS OF 600 FT. EXPOSURE-RATE MEASUREMENTS WERE MADE IN THE FREE FIELD AND AT VARIOUS LOCATIONS WITHIN THE STRUCTURE AS A FUNCTION OF HEIGHT ABOVE THE BASEMENT FLOOR. THE RESULTS ARE COMPARED WITH THE THEORETICAL RESULTS PUBLISHED IN NATIONAL BUREAU OF STANDARDS MONOGRAPH 42.

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

*FALLOUT + COBALT + DOSE + DOSE MEASUREMENT, EXTERNAL + GAMMA EMITTER

14-17882 ALSO IN CATEGORY 15

BIRD PM
CANADA'S RADIOACTIVE FALLOUT STUDY PROGRAM
DEPARTMENT OF NATIONAL HEALTH AND WELFARE, CANADA
5 PAGES, 1 FIGURE, 5 TABLES, 3 REFERENCES, JOURNAL OF THE CANADIAN ASSOCIATION OF RADIOLOGISTS 15, (JUNE 1964)

PRESENT OBJECTIVE OF THIS PROGRAM IS TO DETERMINE THE RADIATION DOSE ASSOCIATED WITH FALLOUT NOW AND IN THE PREDICTABLE FUTURE, WITH THE ULTIMATE OBJECTIVE OF DETERMINING THE INCIDENCE OF DISEASE ASSOCIATED WITH FALLOUT. THE PROGRAMS FOR DOSE ESTIMATES AND FOR FALLOUT STUDY ARE PRESENTED. SUMMARIZED RESULTS ARE SHOWN IN GRAPHS.

*FALLOUT + BIOMEDICAL + CANADA + SURVEY, RADIATION, ENVIRONMENTAL

14-17883

BRYAN FA
FINAL REPORT. RADIOLOGICAL RECOVERY REQUIREMENTS, STRUCTURES, AND OPERATIONS RESEARCH. INTRODUCTION AND SUMMARY (APRIL 1, 1966 - DECEMBER 31, 1966)
RESEARCH TRIANGLE INSTITUTE, OPERATIONS RESEARCH AND ECONOMICS DIV., RESEARCH TRIANGLE PARK, NORTH CAROLINA
RIT-OU-266 +. 10 PAGES, 3 REFERENCES, MAY 1967.

THE PRIMARY OBJECTIVES OF THIS STUDY WERE - (1) TO DEVELOP PROCEDURES FOR ESTIMATING THE EFFECTS OF LIMITED STRIPS OF CONTAMINATION FOR THE OPTIMUM DIRECTION OF DECONTAMINATION OPERATIONS, AND (2) TO DEVELOP A PROCEDURE FOR OBTAINING ESTIMATES OF THE PROTECTION FACTOR AVAILABLE IN DAMAGED STRUCTURES BY MEANS OF A MULTIPLICATIVE FUNCTION. A COMPUTER PROGRAM, CONSTRIPT III, WAS DEVELOPED FOR CALCULATING DOSE RATES THROUGH VERTICAL BARRIERS FROM LIMITED HORIZONTAL STRIPS OF CONTAMINATION. A SIMPLE MULTIPLICATIVE FACTOR WAS DEVELOPED FOR ESTIMATING THE PROTECTION FACTOR AVAILABLE IN DAMAGED STRUCTURES.

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

*DECONTAMINATION + *SHIELDING + CIVIL DEFENSE + FALLOUT

14-17884 ALSO IN CATEGORY 15

PACIFIC NORTHWEST LABORATORY MONTHLY ACTIVITIES REPORT, NOVEMBER 1966, ON AEC DIVISION OF BIOLOGY AND MEDICINE PROGRAMS
BATTELLE-NORTHWEST, RICHLAND, WASHINGTON. PACIFIC NORTHWEST LAB.
BNWL-360 (REV.) +. 18 PAGES, DECEMBER 1966

PRESENTS BRIEF SUMMARIES OF WORK IN PROGRESS IN RADIATION BIOLOGY, THE CONTENT OF CS-137 IN FOREST-FLOOR SAMPLES OF LEAF LITTER, COLUMBIA RIVER ECOLOGY, FALLOUT TRANSPORT, GEOLOGIC MAPPING OF THE COLUMBIA RIVER BASALT PLATEAU, WHOLE-BODY COUNTING OF NEUTRON-ACTIVATED CADAVERS, THE COMPUTER ANALYSIS OF DATA FROM FILM DOSIMETERS, AND DEVELOPMENT OF RADIATION DOSIMETERS FOR FIELD USE.

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

*RADIATION EFFECT + BATTELLE NORTHWEST + COMPUTER PROGRAM + DOSIMETRY, GENERAL + DOSIMETRY, PHOTOGRAPHIC + ECOLOGICAL CONSIDERATION + FALLOUT + RADIOBIOLOGY

14-17885 ALSO IN CATEGORY 17

ENVIRONMENTAL RADIOACTIVITY AT THE SHIPPINGPORT ATOMIC POWER STATION FOR THE SECOND HALF OF 1965 AND CALENDAR YEAR 1965
BETTIS ATOMIC POWER LABORATORY, WEST MIFFLIN, PA.
PNRO-SMD-137 +. 8 PAGES, 7 TABLES, 1965

DURING THE SECOND HALF OF 1965, MEASUREMENTS OF RADIOACTIVITY IN THE OHIO RIVER, IN THE ATMOSPHERE, AND THE FALLOUT IN THE VICINITY OF THE SHIPPINGPORT ATOMIC POWER STATION WERE CONTINUED. THE RADIOACTIVE MATERIAL RELEASED BY THE POWER STATION INTO THE AIR AND INTO THE OHIO RIVER DID NOT RESULT IN A SIGNIFICANT CHANGE IN THE NATURALLY OCCURRING RADIOACTIVITY IN THE ENVIRONMENT. ENVIRONMENTAL MONITORING DATA FOR CALENDAR 1965 ARE SUMMARIZED.

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

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-17885 *CONTINUED*

FALLOUT + MONITORING PROGRAM, ENVIRONMENTAL + OPERATING EXPERIENCE + REACTOR, PRESSURIZED WATER + SHIPPINGPORT

14-17888

ALSO IN CATEGORY 15

ROSER FX + KEGEL GH + HAINBERGER L + CULLEN TL + DREW RT
A STUDY OF ARTIFICIAL AND NATURAL RADIOACTIVE CONTAMINATION IN BRAZIL
PONTIFÍCIA UNIVERSIDADE CATÓLICA, RIO DE JANEIRO, INSTITUTO DE FÍSICA
TID-20955 +. 84 PAGES, FIGURES, AUGUST 1, 1964

PRELIMINARY DATA ARE REPORTED FROM STUDIES OF TWO REGIONS OF HIGH NATURAL RADIOACTIVITY IN BRAZIL. ABOUT 20,000 PEOPLE ARE EXPOSED TO HIGH CONCENTRATIONS OF U OR TH IN MONAZITE SAND, AND 5000 ARE EXPOSED TO RADIATION LEVELS FROM 0.03 TO 1.0 MR/HR IN THE TOWNS OF GUARAPARI AND MEAÍPE. THE TOWNS OF MORRO DE FERRO AND ARAXÁ IN MINAS GERAIS STATE ARE IN AN AREA OF RADIOACTIVE VOLCANIC EXTRUSIONS. RADIOCHEMICAL ANALYSIS WERE MADE OF DRINKING WATER, SOIL, SELECTED BIOLOGICAL SAMPLES, AND MEASUREMENTS WERE MADE OF POPULATION EXPOSURE.

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

BRAZIL + FALLOUT + SURVEY, RADIATION, ENVIRONMENTAL + THORIUM + URANIUM + URANIUM, NATURAL

14-17889

SURVEY OF ENVIRONMENTAL RADIOACTIVITY, JULY 1966-DECEMBER 1966
MINNESOTA DEPT. OF HEALTH, MINNEAPOLIS + RURAL COOPERATIVE POWER ASSOCIATION, ELK RIVER, MINN.
C00-651-41 +. 38 PAGES, FEBRUARY 1967

GROSS BETA RADIOACTIVITY WAS DETERMINED IN AIRBORNE PARTICLES, IN SURFACE WATER, AND IN PRECIPITATION. RESULTS ARE TABULATED WITH PREVIOUS VALUES TAKEN BETWEEN 1961 AND 1966 SO THAT THE INFLUENCE OF ATMOSPHERIC WEAPONS TESTING WOULD BE APPARENT. DETERMINATIONS OF CS-137, I-131, AND SR-90 IN MILK ARE ALSO TABULATED.

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

*MONITORING PROGRAM, ENVIRONMENTAL + ELK RIVER + FALLOUT + REACTOR, BOILING WATER

14-17892

HARDY EP + RIVERA J
QUARTERLY SUMMARY REPORT DECEMBER 1, 1966-MARCH 1, 1967. HEALTH AND SAFETY LABORATORY FALLOUT PROGRAM
AEC, NEW YORK OPERATIONS OFFICE, HEALTH AND SAFETY LABORATORY
HASL-191 +. 205 PAGES, 6 FIGURES, 8 TABLES, 13 REFERENCES, APRIL 1, 1967

PRESENTS CURRENT DATA FROM THE HASL FALLOUT PROGRAM, ISOTOPES, INC. THE NATIONAL RADIATION LABORATORY IN NEW ZEALAND, THE DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH IN NEW ZEALAND, ARGONNE NATIONAL LABORATORY, AND THE U. S. DEPT. OF AGRICULTURE. RADIONUCLIDE LEVELS IN FALLOUT, MILK, OTHER DIET COMPONENTS, AND TAPWATER ARE GIVEN. INTERPRETIVE REPORTS AND NOTES COVER STRATOSPHERIC TRENDS AND INVENTORY OF SNAP-94 DEBRIS, SR-90, CE-144, AND PB-210 IN THE UPPER STRATOSPHERE, SR-90 DEPOSITION IN THE ATLANTIC OCEAN, EFFECT OF SALT SPRAY ON SR-90 DEPOSITION, AND SR-90 DOSE TO BONE OF N.Y.C. RESIDENTS. A BIBLIOGRAPHY OF RECENT PUBLICATIONS RELATED TO RADIONUCLIDE STUDIES IS PRESENTED.

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

*FALLOUT + ANL (ARGONNE NATIONAL LABORATORY) + BIOLOGICAL CONCENTRATION, MILK + CERIUM + DEPOSITION + DOSE CALCULATION, INTERNAL + FISSION PRODUCT, AIRBORNE + NEW ZEALAND + PLUTONIUM + SNAP 9 (SYSTEMS FOR NUCLEAR AUXILIARY POWER) + STRONTIUM

14-17900

BEARD SJ + GODFREY WL
WASTE DISPOSAL INTO THE GROUND AT HANFORD
ISOCEM INC., RICHLAND, WASHINGTON
ISO-SA-31 + CONF-670512-1 +. 19 PAGES, REFERENCES, 1962, PRESENTED AT JOINT IAEA/EAEA SYMPOSIUM ON THE DISPOSAL OF RADIOACTIVE WASTES INTO THE GROUND, VIENNA, AUSTRIA

LARGE VOLUMES OF LIQUID WASTE ARE ECONOMICALLY DISPOSED OF VIA ARTIFICIAL SWAMPS WHEN ACTIVITY LEVELS ARE FAVORABLE. AS THE ACTIVITY LEVELS INCREASE OR THE COMPATIBILITY OF WASTE WITH SOIL DECREASES, OTHER DISPOSAL METHODS SUCH AS CRIBS OR TRENCHES ARE USED, WITH A CORRESPONDING INCREASE IN DISPOSAL COSTS. TYPICAL DISPOSAL COSTS ARE \$1.40, \$700, AND \$7400 PER MILLION LITERS FOR SWAMP, CRIB, AND TRENCH DISPOSAL, RESPECTIVELY. SOLID WASTES ARE DISPOSED ON IN SEVERAL WAYS, DEPENDING ON THEIR SIZE, WEIGHT, AND ACTIVITY LEVEL. COSTS VARY FROM \$15 TO \$3000 PER CUBIC METER, DEPENDING ON THE DIFFICULTY IN PERFORMING THE BURIAL. IN NO CASE HAVE SOLIDS BURIALS AFFECTED THE GROUND WATER.

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

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-17900 *CONTINUED*

*WASTE DISPOSAL, GENERAL + ISOHEM, INC. + WASTE DISPOSAL, ECONOMICS + WASTE DISPOSAL, LIQUID + WASTE DISPOSAL, SOLID + WASTE DISPOSAL, TERRESTRIAL

14-17901

NORMENT, HG + SCHWENKE TW + KOHLBERG I
DEVELOPMENT OF AN IMPROVED LAND-SURFACE FALLOUT MODEL. PART I. INTRODUCTION AND SUMMARY. FINAL TECHNICAL REPORT, MARCH 31, 1965-JANUARY 31, 1967
TECHNICAL OPERATIONS INC., BURLINGTON, MASS.
AD-643534 + TO-8-66-80 + ECOM-91309 +. 45 PAGES, REFERENCES, DECEMBER 1966

A DESIGN FOR THE OVERALL DEPARTMENT OF DEFENSE LAND FALLOUT PREDICTION SYSTEM (DELFC) HAS BEEN COMPLETED AND SUCCESSFULLY TESTED BY OPERATION ON THE IBM-7094 COMPUTER. PARTS OF THE SYSTEM INCLUDE THE INITIAL-CONDITIONS MODULE, THE TRANSPORT MODULE, AND THE OUTPUT-PROCESSOR MODULE. AN EXTENSIVE EFFORT WAS DEVOTED TO DEVELOPMENT OF A CLOUD-RISE MODEL APPROPRIATE FOR USE WITH THE DELFC SYSTEM. THE MODEL DEVELOPED AT THE NAVAL RADIOLOGICAL DEFENSE LABORATORY, HOWEVER, IS TO BE USED IN THE INITIAL VERSION OF THE SYSTEM. THIS PORTION OF THE REPORT PRESENTS AN INTRODUCTION AND SUMMARY OF THE OVERALL DELFC SYSTEM DEVELOPMENT.

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

*FALLOUT + COMPUTER PROGRAM + COMPUTER, DIGITAL + FISSION PRODUCT TRANSPORT

14-17902

POPOV NI
EVALUATION OF THE TOTAL QUANTITY OF SR-90 IN THE WORLD OCEAN
GOSUDARSTVENNYI KOMITET PO ISPOL ZOVANIYU ATOMNOI ENERGII SSSR
AEC-TR-6798, PAPER 2 +. 10 PAGES, MAY 1966

SR-90 RESERVES WERE ESTIMATED FOR ALL OCEANS FROM DATA COLLECTED IN THE ATLANTIC, PACIFIC, AND INDIAN OCEANS. THE OCEANS ARE ASSUMED TO BE THE MAIN RESERVOIR OF SR-90 BECAUSE OF THE RELATIVELY LARGE PART OF THE EARTH OCCUPIED BY THEM AND BECAUSE A LARGE NUMBER OF NUCLEAR EXPLOSIONS HAVE TAKEN PLACE IN THE ATMOSPHERE ABOVE THE OCEAN AND UNDER THE SURFACE. THE SR-90 CONTENT OF THE INVESTIGATED OCEAN AREA AMOUNTED TO 10,000 CURIES.

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

*STRONTIUM + FALLOUT + OCEAN AND SEA + UNION OF SOVIET SOCIALIST REPUBLICS

14-17903

POPOV NI + LOPATIN SA
BASIC FEATURES OF THE GLOBAL SR-90 DISTRIBUTION ON THE SURFACE OF THE WORLD OCEANS
GOSUDARSTVENNYI KOMITET PO ISPOL ZOVANIYU ATOMNOI ENERGII SSSR
AEC-TR-6798, PAPER 1 +. 20 PAGES, MAY 1966

SURFACE EFFECTS ARE DISCUSSED AS AFFECTING SPOTTY SR-90 DISTRIBUTION IN THE OCEANS AND SEAS. DATA FOR 1954 TO 1961 ARE USED TO ILLUSTRATE THE SPREADING MECHANISMS OF FALLOUT.

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

*FALLOUT + OCEAN AND SEA + STRONTIUM + UNION OF SOVIET SOCIALIST REPUBLICS

14-17904

ALSO IN CATEGORY 16
KAROL IL + KRASNOPEVISEV YV + VILENSKII VD + MALAKHOV SG
COMPARATIVE ANALYSIS OF NUCLEAR EXPLOSION PRODUCT GLOBAL FALLOUTS ON CONTINENTS AND OCEANS
GOSUDARSTVENNYI KOMITET PO ISPOL ZOVANIYU ATOMNOI ENERGII SSSR
AEC-TR-6798 +. FIGURES, TABLES, REFERENCES, TRANSLATED FOR NEW YORK OPERATIONS OFFICE, HEALTH AND SAFETY LAB., MAY 1966

THIS PAPER ANALYZES QUALITATIVELY AND QUANTITATIVELY THE CONDITIONS OF RADIOACTIVE AEROSOL GLOBAL FALLOUTS OF NUCLEAR EXPLOSION PRODUCTS AND COMPARES THEIR INTENSITY ABOVE OCEANS AND CONTINENTS AT DIFFERENT LATITUDES. THE PERIOD FROM SEPTEMBER 1959 TO AUGUST 1961 WAS ANALYZED. RESEARCH SHIPS WERE USED TO SECURE SAMPLES IN OCEAN AREAS, AND DATA FROM THE LITERATURE FOR FALLOUT OVER LAND AND FOR CONTENT OF SOILS. SR-90 CONTENT OF THE ATLANTIC OCEAN IS STATED TO BE AT LEAST DOUBLE THAT OF CONTINENTAL SOIL. THIS IS BELIEVED TO BE DUE TO COMPLETE RETENTION OF FALLOUT ON WATER.

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

*FALLOUT + AEROSOL + OCEAN AND SEA + STRONTIUM + UNION OF SOVIET SOCIALIST REPUBLICS

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-17905
OSBURN WS
RADIOECOLOGY OF THE COLORADO FRONT RANGE. TERMINAL REPORT
COLORADO STATE UNIVERSITY, FORT COLLINS. DEPT. OF RADIOLOGY AND RADIATION BIOLOGY
COO-1445-5 +. 60 PAGES, FIGURES, 1967

BIRDS WERE COLLECTED FROM THE BOULDER, COLORADO, WATERSHED DURING AUGUST AND SEPTEMBER. FOUR KINDS OF SAMPLES WERE PREPARED BY SKINNING, EVISCERATING, AND SEPARATING THE CROP AND PREFECES. SAMPLES WERE ASHED AND COUNTED. THE VARIATION IN GROSS BETA ACTIVITY BETWEEN SPECIES AND BETWEEN BODY PARTS OF THE SAME SPECIES ARE DISCUSSED.

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

*FALLOUT + BIOTA + ECOLOGICAL CONSIDERATION

14-17906
DATA FROM RADIATION PROTECTION PROGRAMS. SR-89, SR-90, AND CS-137 IN CANADIAN TAP WATER SUPPLIES, CANADIAN FALLOUT DATA FOR MAY 1966
DEPARTMENT OF NATIONAL HEALTH AND WELFARE, OTTAWA, ONTARIO. RADIATION PROTECTION DIVISION
NP-16371 +. 42 PAGES, FIGURES, TABLES, 12 REFERENCES, JUNE 1966

A STUDY WAS MADE OF STRONTIUM AND CESIUM IN THE TAP WATER OF 13 CANADIAN CITIES. LEVELS IN ALL CASES WERE WELL BELOW THE MPC RECOMMENDED BY ICRP. THE VARIATION IN CONTAMINATION LEVEL BETWEEN RIVERS, LAKES, AND WELLS IS DISCUSSED. FALLOUT DURING MAY 1966 INCREASED SLIGHTLY FROM THE PREVIOUS MONTH. VERY SMALL AMOUNTS OF FRESH FISSION PRODUCTS FROM MAY 9, 1966, CHINESE TEST WERE FOUND.

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

*FALLOUT + CANADA + MONITORING PROGRAM, ENVIRONMENTAL + WATER, DRINKING

14-17907 ALCO IN CATEGORY 15
MOLINARI G + ROMAGNOLI G
RADIOACTIVE CONTAMINATION OF FALLOUT IN FOODS. III. CONTAMINATION FROM SR-90 AND CS-137 IN FOODS SAMPLED IN THE CITY OF NOVARA
CENTRO PER LA RIVELAZIONE DELLA CONTAMINAZIONE RADIOATTIVA, PAVIA, ITALY
7 PAGES, 1 FIGURE, 6 TABLES, 4 REFERENCES, RIV. ITAL. IG., 25, PAGE 3 THRU 9, (JANUARY-APRIL 1965), IN ITALIAN

THE SR-90 AND CS-137 CONCENTRATIONS WERE DETERMINED IN 42 SAMPLES OF FOODS OBTAINED FROM RETAIL MARKETS OF NOVARA. THE MAXIMUM SR-90 LEVEL IN MILK WAS 47.2 PC/L. THE HIGHEST VALUES WERE OBSERVED IN SOME CHEESE AND WHEAT SAMPLES. EIGHT SAMPLES OF BREAD AND FRUSTA WERE ALSO EXAMINED. AVERAGE CONCENTRATION OF INGESTED SR-90 PER PERSON PER YEAR WAS CALCULATED FOR THE VARIOUS FOODS.

*BIOLOGICAL CONCENTRATION, FOOD + CESIUM + FALLOUT + ITALY + STRONTIUM

14-17908
NAIDU JR + DOSHI GR + SHRINGARPURE SG
STUDIES IN EXPOSURE OF ANADARA GRANOSA TO THE SECONDARY COOLANT (SEA-WATER) OF A NUCLEAR REACTOR ATOMIC ENERGY ESTABLISHMENT, TROMBAY, INDIA
2 PAGES, 2 FIGURES, 1 TABLE, 1 REFERENCE, CURRENT SCIENCE (INDIA), PAGE 93 AND 94, (FEBRUARY 20, 1967)

SEA WATER, USED AS THE SECONDARY COOLANT OF THE CIRUS REACTOR, CONTAINS AN APPRECIABLE AMOUNT OF CS-137 AT ITS OUTFLOW POINT. MANY ANADARA GRANOSA, A MARINE BIVALVE COMMONLY FOUND IN THE REGION, WERE EXPOSED TO THE EFFLUENT, AND RESULTING CONCENTRATION OF CS-137 BY THE MOLLUSKS WAS STUDIED WITH TIME. A HIGH UPTAKE OCCURRED DURING FIRST 24 HR, WITH A SLOWER RATE FOR THE NEXT 8 DAYS, RESULTED IN A CONCENTRATION FACTOR OF 85 BY THE TENTH DAY. THE PRESENCE OF CS-137 INDICATES THE PROBABILITY OF A FUEL ELEMENT FAILURE AND HEAT EXCHANGER LEAK.

*BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + CESIUM + ECOLOGICAL CONSIDERATION + FAILURE, TUBING + HEAT EXCHANGER + OCEAN AND SEA + REACTOR COOLANT

14-17955
THOMAS WA
CYCLING OF CA-45 BY DOGWOOD TREES
OAK RIDGE NATIONAL LAB., TENN.
ORNL-P-3067 + CONF-670503-11 +. 14 PAGES, FIGURES, 1966, PRESENTED AT 2ND NATIONAL SYMPOSIUM ON RADIOECOLOGY, ANN ARBOR, MICHIGAN

TWELVE FLOWERING DOGWOOD (CORNUS FLORIDA L.) TREES WERE STEM-INOCULATED WITH CA-45 IN EARLY MAY AND STUDIED UNTIL LEAF ABSCISSION SIX MONTHS LATER. AT THE END OF THE EXPERIMENT ONLY

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-17955 *CONTINUED*

27' PLUS OR MINUS 3 OF INOCULUM WAS IN WOODY TISSUES. LOSSES (AS PERCENTAGE OF INOCULUM) WERE BY LEAF FALL (.64'), FOLIAR LEACHING (.6'), STEMFLOW (MUCH LESS THAN 1'), AND INSECT DAMAGE (.3'). RAPID TURNOVER OF INOCULATED CALCIUM (73' PLUS OR MINUS 3) BY THESE TREES WITHIN A SINGLE GROWING SEASON IS FURTHER EVIDENCE THAT THIS SPECIES MAY BE A NUTRITIONALLY BENEFICIAL COMPONENT OF FOREST COMMUNITIES.

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

*CALCIUM + *ECOLOGICAL CONSIDERATION + AGRICULTURAL CONSIDERATION + BETA EMITTER + BIOLOGICAL CONCENTRATION, VEGETATION + MEASUREMENT, GENERAL + MONITORING SYSTEM, RADIATION + RADIONUCLIDE, INDUCED + SOIL + TRACER, RADIOACTIVE

14-17956

REICHEL DE + CROSSLEY DA

TROPHIC LEVEL CONCENTRATIONS OF CS-137, SODIUM, AND POTASSIUM IN FOREST ARTHROPODS

OAK RIDGE NATIONAL LAB., TENN.

ORNL-P-3065 + CONF-670503-10 +. 21 PAGES, 1967, PRESENTED AT 2ND NATIONAL SYMPOSIUM ON RADIOECOLOGY, ANN ARBOR, MICHIGAN

IN A FOREST ECOSYSTEM EXPERIMENTALLY TAGGED WITH CS-137, THE TROPHIC DYNAMIC ASPECTS OF ARTHROPOD FOOD CHAINS ARE BEING INVESTIGATED USING RADIOTRACER TECHNIQUES. CESIUM-137 CONCENTRATIONS IN ORGANISMS IN ISOTOPIC EQUILIBRIUM WITH FOOD HAVE SHOWN PROGRESSIVE REDUCTION DURING DISPERSION THROUGH FOOD CHAINS, ALTHOUGH THE FRACTIONAL TRANSFER BETWEEN FOOD AND CONSUMER INCREASED WITH EACH SUCCESSIVE TROPHIC LEVEL. THE DISTRIBUTION OF OTHER ALKALI METALS IN ARTHROPOD FOOD CHAINS VARIED FROM THAT OF CESIUM. CHANGING ELEMENTAL COMPOSITION OF LITTER DURING DECAY, NUTRIENT AVAILABILITY AND ASSIMILATION EFFICIENCY BY ARTHROPODS, AND BIOLOGICAL HALF-LIVES OF EACH ELEMENT WERE FACTORS AFFECTING ABSOLUTE CONCENTRATIONS AND RATIOS IN TROPHIC LEVEL.

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

*ECOLOGICAL CONSIDERATION + *RADIONUCLIDE, INDUCED + CESIUM + DIETARY HABIT + POTASSIUM + SODIUM + TRACER, RADIOACTIVE

14-17957

ALSO IN CATEGORY 15

DATA FROM RADIATION PROTECTION PROGRAMS. VOLUME 4, NUMBER 9

DEPARTMENT OF NATIONAL HEALTH AND WELFARE, OTTAWA, ONTARIO. RADIATION PROTECTION DIVISION

NP-16383 +. 37 PAGES, SEPTEMBER 1966

DATA ARE PRESENTED ON CS-137 IN THE CANADIAN NORTH FOR THE FIRST HALF OF 1966 AND ON FALLOUT AND REACTOR ENVIRONMENT MONITORING FOR AUGUST 1966. ACTIVITY MEASUREMENTS IN TAP WATER MADE FOR JANUARY TO JULY 1966 ARE INCLUDED. AVERAGE CS-137 CONCENTRATIONS IN MEAT SAMPLES DURING THE FIRST HALF OF 1966 WERE CLOSE TO VALUES OBTAINED DURING THE FIRST HALF OF 1965 BUT ABOUT HALF OF THE VALUE OBTAINED DURING THE SAME PERIOD OF 1964. BODY BURDENS OF CS-137 IN MAN WERE GREATER FOR WOMEN THAN FOR MEN IN ALL DIET CLASSES, SHOWED A PEAKING EFFECT FOR PERSONS WITH A WEIGHT OF 141 TO 156 LBS, AND DID NOT VARY MARKEDLY WITH AGE.

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

*DOSE MEASUREMENT, INTERNAL + *FALLOUT + CANADA + CESIUM + MONITORING PROGRAM, ENVIRONMENTAL + RADIOACTIVITY, RELEASE + REACTOR POWER

14-17982

ALSO IN CATEGORY 17

GE TRIGA MARK F PROPOSED CHANGE EXPERIMENTAL LIMITATIONS

GENERAL ATOMIC, DIVISION OF GENERAL DYNAMICS CORPORATION, SAN DIEGO, CALIFORNIA

10 PAGES, 3 FIGURES, 1 TABLE, MAY 4, 1967, DOCKET NO. 50-163

G.A. PROPOSED (1) MODIFICATION OF LIMITS ON FUEL-SAMPLE IRRADIATION USING THE IN-CORE FURNACE AND (2) A LIMIT ON OTHER FUELED EXPERIMENTS OF A MAXIMUM IODINE INVENTORY OF 700 CURIES (ARRIVED AT BY ASSUMING TOTAL ESCAPE TO THE REACTOR ROOM, AND SETTING A LIMIT ON THE DOSE RATE AT THE EXCLUSION BOUNDARY (2-HR EXPOSURE) AND LOW POPULATION BOUNDARY (INFINITE EXPOSURE) NOT TO EXCEED QUARTERLY DOSE TO WHOLE BODY AND THYROID RECOMMENDED BY THE ICRP). NO LIMIT IS PLACED ON STRONTIUM-90, AS THEY CONTEND THAT DUE TO ITS PHYSICAL PROPERTIES, THERE WOULD BE NO RELEASE.

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

*HAZARDS ANALYSIS + IODINE + IRRADIATION FACILITY + REACTOR, RESEARCH + STRONTIUM + TECHNICAL SPECIFICATIONS + TRIGA (TRAINING REACTOR, ISOTOPES, G.A.)

14-18009

BIRD PM

CESIUM-137 IN NORTHERN CANADA

RADIATION PROTECTION DIVISION, DEPT. OF NATIONAL HEALTH AND WELFARE, CANADA

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-18009 *CONTINUED*
RPD-39 +. 35 PAGES, 12 FIGURES, 5 TABLES, 6 REFERENCES, MAY 1965

LAPLANDERS AND ESKIMOS, WHOSE DIET CONTAINS LARGE QUANTITIES OF REINDEER AND CARIBOU MEAT, HAVE HIGHER BODY BURDENS OF CS-137 THAN OTHER RESIDENTS OF THE SAME AREA. REINDEER AND CARIBOU MEAT FROM THESE LOCALITIES CONTAIN, ON THE AVERAGE, 280 TIMES MORE CS-137 THAN BEEF. THIS IS ATTRIBUTED TO HIGH CESIUM CONTENT OF THE LICHENS AND SEDGE ON WHICH THE ANIMALS FEED. A CONTINUING STUDY OF CANADIAN ESKIMOS AND ANIMALS SHOWS INCREASING CESIUM CONTENT OF THE POPULATION. HOWEVER, THE MAXIMUM BODY BURDENS (1.30 MICROCURIES) HAVE NOT EXCEEDED THE MAXIMUM PERMISSIBLE BODY BURDEN (3 MICROCURIES) RECOMMENDED BY THE ICRP.

AVAILABILITY - DEPARTMENT OF NATIONAL HEALTH AND WELFARE, OTTAWA, CANADA

*FALLOUT + BIOLOGICAL CONCENTRATION, ANIMAL + BIOLOGICAL CONCENTRATION, FOOD + BIOLOGICAL CONCENTRATION, MAN + BIOLOGICAL CONCENTRATION, VEGETATION + CANADA + CESIUM

14-18010 ALSO IN CATEGORY 15
BOOTH AH
SAFETY OF RADIOISOTOPES IN INDUSTRY
RADIATION PROTECTION DIVISION, DEPT. OF NATIONAL HEALTH AND WELFARE, CANADA
RPD-42 +. 11 PAGES, 4 FIGURES, MAY 1965

ACCIDENTS IN THE USE OF RADIOISOTOPES ARE EXTREMELY RARE. THE REASONS FOR THIS ARE (1) THE HIGH DEGREE OF PUBLIC INTEREST IN RADIATION AND AWARENESS OF THE HAZARD, (2) THE SAFETY FEATURES INCORPORATED BY MANUFACTURERS IN THE DESIGN OF RADIOISOTOPE DEVICES, (3) THE COMPREHENSIVE AND EFFECTIVE REGULATORY CONTROLS ESTABLISHED BY GOVERNMENT AGENCIES, AND (4) THE BACKUP SERVICES PROVIDED BY HEALTH DEPARTMENTS. THE SAFETY RECORD OF RADIOISOTOPE USERS INDICATES WHAT CAN BE DONE TO MINIMIZE ACCIDENTS WHEN THE ABOVE FOUR FACTORS COMBINE EFFECTIVELY.

AVAILABILITY - DEPARTMENT OF NATIONAL HEALTH AND WELFARE, OTTAWA, CANADA

*RADIATION SAFETY AND CONTROL + CANADA + RADIATION, PUBLIC EDUCATION/ACCEPTANCE

14-18011
WELSH WJ
QUALITY CONTROL STUDIES ON THE DETERMINATION OF IODINE-131 IN MILK
RADIATION PROTECTION DIVISION, DEPT. OF NATIONAL HEALTH AND WELFARE, CANADA
RPD-48 +. 7 PAGES, 1 TABLE, 2 REFERENCES, MAY 1966

A COMPARISON OF THE ROUTINE PROCEDURE FOR DETERMINING IODINE (OXIDATION REDUCTION REACTIONS IN ACID SOLUTION WITH A CONTROL PROCEDURE USING INITIAL OXIDATION IN ALKALINE SOLUTION) SHOWED RESULTS OF THE TWO PROCEDURES AND THE KNOWN VALUES OF THE SPIKES TO AGREE WITHIN LESS THAN 2%. IN ANOTHER TEST, A STANDARDIZED MILK SAMPLE, CONTAINING I-131, WAS ANALYZED BY GAMMA-RAY SPECTROSCOPY AND BY THE ROUTINE RADIOCHEMICAL PROCEDURE. BOTH THE GAMMA-RAY AND RADIOCHEMICAL ANALYSIS VALUES ARE ACCEPTABLE.

AVAILABILITY - DEPARTMENT OF NATIONAL HEALTH AND WELFARE, OTTAWA, CANADA

*IODINE + *RADIOCHEMICAL ANALYSIS + ANALYTICAL TECHNIQUE, CALIBRATION + ANALYTICAL TECHNIQUE, FOOD + ANALYTICAL TECHNIQUE, MILK + CANADA

14-18012
KHANOKAR RN + RIRD PM
INDIVIDUAL DAILY MILK CONSUMPTION IN CANADA SECOND MILK CONSUMPTION SURVEY
RADIATION PROTECTION DIVISION, DEPT. OF NATIONAL HEALTH AND WELFARE, CANADA
RPD-50 +. 28 PAGES, 12 TABLES, 3 REFERENCES, JUNE 1966

MILK CONTRIBUTES MORE FALLOUT TO THE DIET THAN ANY OTHER FOOD. ASSESSMENT OF PUBLIC HEALTH SIGNIFICANCE OF RADIOACTIVE CONTAMINATION OF MILK REQUIRES A BREAKDOWN OF MILK CONSUMPTION BY THE POPULATION. A STATISTICAL SUMMARY OF THE RESULTS OF SUCH A SURVEY IS GIVEN.

AVAILABILITY - DEPARTMENT OF NATIONAL HEALTH AND WELFARE, OTTAWA, CANADA

*FALLOUT + BIOLOGICAL CONCENTRATION, MILK + CANADA + DIETARY HABIT

14-18037 ALSO IN CATEGORY 15
CARTER MW + HARVEY HD
OFF-SITE RADIOLOGICAL SAFETY PROGRAM FOR PROJECT DRIBBLE
SOUTHEASTERN RADIOLOGICAL HEALTH LAB., MONTGOMERY, ALA.
TID-22975 +. 28 PAGES, JUNE 1, 1966

EMPHASIS IS PLACED ON THE TYPES OF ENVIRONMENTAL INFORMATION AND DATA GATHERED PRIOR TO THE ACTIVE TEST PERIOD, THE ESTABLISHMENT AND MAINTENANCE OF APPROPRIATE PUBLIC RELATIONS IN A RELATIVELY POPULOUS AREA, AND THE PROCEDURES UTILIZED IN THE TEMPORARY EVACUATION OF SEVERAL HUNDREDS OF PEOPLE WHO ARE RESIDENTS OF THE AREA CONTIGUOUS TO THE TEST SITE. DATA OBTAINED FROM THE VARIOUS MONITORING PROJECTS CONDUCTED DURING THE ACTIVE TEST PERIOD AND RESULTS OF ANALYSES OF ENVIRONMENTAL SAMPLES COLLECTED AFTER THE SALMON EVENT ARE DISCUSSED.

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-18037 *CONTINUED*

*MONITOR, RADIATION, ENVIRONMENTAL + *SALMON EVENT + *SURVEY, RADIATION, USPHS + NUCLEAR DETONATION + RADIATION SAFETY AND CONTROL + SAMPLING + SURVEY, RADIATION, ENVIRONMENTAL

14-18041 ALSO IN CATEGORY 15

ENDERS JW

SOLID RADIOACTIVE WASTE DISPOSAL AT THE LOS ALAMOS SCIENTIFIC LABORATORY

LOS ALAMOS SCIENTIFIC LAB., N. MEX.

LA-DC-8347 + CONF-670512-5 +. 52 PAGES, FIGURES, 1965, PRESENTED AT JOINT EAEA/ENEA SYMPOSIUM ON THE DISPOSAL OF RADIOACTIVE WASTES INTO THE GROUND, VIENNA, AUSTRIA

DESCRIBES METHODS USED AT THE LOS ALAMOS SCIENTIFIC LABORATORY FOR THE DISPOSAL OF SOLID RADIOACTIVE WASTE. COLLECTION, TRANSPORTATION, AND BURIAL OF WASTE, RADIOLOGICAL SAFETY OF THE DISPOSAL OPERATIONS, AND COST SURVEYS COVERING A TEN-YEAR PERIOD ARE GIVEN.

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

*LASL (LOS ALAMOS SCIENTIFIC LABORATORY) + *WASTE DISPOSAL, SOLID + GEOLOGICAL CONSIDERATION, GENERAL + HYDROLOGICAL CONSIDERATION, GENERAL + WASTE DISPOSAL, TERRESTRIAL + WASTE TRANSPORTATION

14-18043

TUTHILL EJ + WETH GG + EMMA LC + STRICKLAND G + HATCH LP

PHOSPHATE GLASS PROCESS FOR DISPOSAL OF HIGH LEVEL RADIOACTIVE WASTES

BROOKHAVEN NATIONAL LAB., UPTON, N. Y.

8 PAGES, 9 FIGURES, 5 TABLES, 6 REFERENCES, I AND EC PROCESS DESIGN AND DEVELOPMENT 6(3), PAGE 314 THRU 321, (JULY 1967)

SELECTION OF THE PHOSPHATE SYSTEM WAS BASED ON THE SIMPLICITY ASSOCIATED WITH HANDLING THE MAIN PROCESS STREAM AS A LIQUID AND ON THE HIGHLY UNLEACHABLE CHARACTER OF THE GLASS PRODUCT. IN THIS PROCESS, A FEED SOLUTION, PREPARED BY THE ADDITION OF PHOSPHORIC ACID TO RAW WASTE, IS REDUCED IN VOLUME BY THE EVAPORATION OF WATER AND NITRIC ACID. THEN, UPON HEATING TO 1200 C IN A PLATINUM CRUCIBLE, THE REMAINING VOLATILES ARE DRIVEN OFF AND THE CONCENTRATE IS CONVERTED TO MOLTEN GLASS.

*WASTE TREATMENT, FIXATION + TEST, BENCH + WASTE DISPOSAL, LIQUID + WASTE DISPOSAL, SOLID + WASTE STORAGE + WASTE TREATMENT, EQUIPMENT

14-18048

PETER G

137-CS LOSSES DURING INCINERATION OF FOODSTUFFS

2 PAGES, 4 FIGURES, 1 REFERENCE, ATOMPRAXIS 13(4/5), PAGE 192 AND 193, (APRIL-MAY 1967)

THE TEMPERATURE IN FOODSTUFFS (MILK POWDER, FLOUR, VEGETABLES AND FRUITS) DURING INCINERATION USING PORCELAIN AND STEEL DISHES WAS MEASURED. STEEL DISHES ARE MORE SUITABLE FOR INCINERATION OF FOODSTUFFS THAN PORCELAIN DISHES. THEIR ADVANTAGES ARE (1) BETTER HEAT CONDUCTIVITY, (2) NO INFLAMMABILITY BECAUSE THE TEMPERATURE IN THE SAMPLES INCREASES SLOWLY, (3) THE TEMPERATURE IN THE SAMPLE IS NEVER HIGHER THAN THE TEMPERATURE OF THE MUFFLE FURNACE (400 C), (4) CS-137 LOSSES ARE NOT EXPECTED.

*CESIUM + *INCINERATION + ANALYTICAL TECHNIQUE, FOOD

14-18051

WLODEK S

RADIOACTIVITY OF THE PLANTS OF THE TRIBUTARIES OF THE ISERE RIVER IN 1964-1965

COMMISSARIAT A L ENERGIE ATOMIQUE, GRENOBLE, FRANCE. CENTRE D-ETUDES NUCLEAIRES

NP-16593 +. 29 PAGES, AUGUST 1965

THE RADIOACTIVITY CONTAMINATION LEVELS OF 16 SPECIES OF PLANTS OF THE ISERE RIVER WERE STUDIED DURING THE SUMMER AND AUTUMN OF 1964 AND THE SPRING OF 1965. CONCLUSIONS WERE MADE ON THE DIFFERENCES OF BEHAVIOR OF VARIOUS PLANT SPECIES WITH RESPECT TO THE ACCUMULATION OF RADIOACTIVE SUBSTANCE, THE SEASONAL DIFFERENCES OF THE ACCUMULATION, AND THE CONTRIBUTION OF CE-144, RU-106, CS-137, AND MN-54 IN THE CONTAMINATION OF PLANTS.

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

*BIOLOGICAL CONCENTRATION, VEGETATION + *ECOLOGICAL CONSIDERATION + CERIUM + CESIUM + FALLOUT + FRANCE + MANGANESE + RIVER, GENERAL + RUTHENIUM + SURFACE WATER, NUCLIDE OCCURRENCE

14-18065

ALSO IN CATEGORY 15

DEFENSE AGAINST RADIOACTIVE FALLOUT ON THE FARM

U.S. DEPARTMENT OF AGRICULTURE

U.S. DEPT. OF AGRICULTURE FARMERS BULLETIN 2107 +. 16 PAGES, FIGURES, 1965

GENERAL INFORMATION IS PROVIDED ON THE EFFECTS OF THERMONUCLEAR EXPLOSIONS, ESPECIALLY OF

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-18065 *CONTINUED*

FALLOUT RADIATION, AND ON WAYS OF PROTECTING LAND, LIVESTOCK, AND CROPS FROM FALLOUT, AND EMERGENCY MEASURES TO BE TAKEN BEFORE, DURING, AND AFTER AN ATTACK.

AVAILABILITY - U.S. GOVERNMENT PRINTING OFFICE, WASHINGTON, D.C. 20402, \$0.10 COPY

*AGRICULTURAL CONSIDERATION + *FALLOUT + NUCLEAR ATTACK + NUCLEAR EXPLOSION DEBRIS + RADIATION EFFECT

14-18068

VOGT KJ

DISPERSION OF RADIOACTIVE WASTE AIR IN THE ATMOSPHERE AND THE RESULTING ENVIRONMENTAL CONTAMINATION

KERNFORSCHUNGSANLAGE, JUELICH, GERMANY

6 PAGES, 6 FIGURES, 1 TABLE, 16 REFERENCES, KERntechnik 8, PAGES 453-9 (OCTOBER 1966)

THE DISPERSION OF RELEASED ACTIVITIES IN THE ATMOSPHERE IS DISCUSSED ON THE BASIS OF THE THEORY OF TURBULENT DIFFUSION. FORMULAS ARE GIVEN FOR THE ACTIVITY DISTRIBUTION IN THE ATMOSPHERE, THE DECREASE OF THE CLOUD ACTIVITY BY RADIOACTIVE DECAY AND BY WASHOUT AND FALLOUT EFFECTS, THE DEPOSITION ON THE GROUND AND THE WASHOUT AND FALLOUT EFFECTS, THE DEPOSITION ON THE GROUND AND THE GAMMA-DOSE FROM THE CLOUD. THE EQUATIONS ARE SOLVED NUMERICALLY, USING THE METEOROLOGICAL PARAMETERS RECOMMENDED BY PASQUILL. THE RESULTS ARE PRESENTED AS GRAPHS AND NOMOGRAMS. THE EFFECTIVE STACK HEIGHT RESULTING FROM PLUME RISE BY THE EFFLUENT VELOCITY AND THE HEAT EMISSION, AND THE INFLUENCE OF ADDITIONAL TURBULENCE GENERATED BY BUILDINGS AND FORESTS AND OF THE DOWN-DRAFT AND DOWNWASH EFFECTS, ARE DISCUSSED.

*ATMOSPHERIC DIFFUSION + *WASTE DISPOSAL, GAS + AIR + DEPOSITION + DOSE + FALLOUT + METEOROLOGY + RAINOUT + STACK

14-18069

PROKHOROV VM + FRID AS

RELATION BETWEEN THE ADSORPTION AND DIFFUSION RATE OF MICROQUANTITIES OF STRONTIUM IN THE SOIL

2 PAGES, 3 REFERENCES, RADIOKHIMIYA 8, PAGE 695 AND 696, (1966), IN RUSSIAN

THE DISTRIBUTION FACTOR FOR SR-90 IN HUMID SOILS IS A FUNCTION OF CONCENTRATION OF SOIL SOLUTIONS. WITH AN INCREASE OF CA FROM 0.004 TO 0.58 N, THE COEFFICIENT OF DISTRIBUTION IS REDUCED 68 TIMES. THE RELATION OF THE SR-90 DIFFUSION FACTOR TO THE DISTRIBUTION COEFFICIENT FOR THE INVESTIGATED SOIL ON THE LOGARITHMIC SCALE IS LINEAR.

*SOIL, NUCLIDE OCCURRENCE + SOIL, PROPERTY + SOIL, RADIONUCLIDE MOVEMENT THROUGH + STRONTIUM

14-18070

ALSO IN CATEGORY 15

EVALUATION OF THE MAIN EXPOSURE ROUTES TO MAN RESULTING FROM THE DISPOSAL OF RADIOACTIVE WASTES INTO THE SEAS, OCEANS AND SURFACE WATERS.

INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA, AUSTRIA

STI-PUB-126 + CONF-660507 +. 297 PAGES, 69 FIGURES, 70 TABLES, 292 REFERENCES, SEPTEMBER 1966, DISPOSAL OF RADIOACTIVE WASTES INTO SEAS, OCEANS AND SURFACE WATERS. PROCEEDINGS SERIES. PROCEEDINGS OF A SYMPOSIUM HELD IN VIENNA, AUSTRIA, MAY 16-20, 1966

THE SYMPOSIUM WAS CONCERNED WITH THE PHYSICAL, CHEMICAL, AND BIOLOGICAL BEHAVIOR OF RADIOACTIVE WASTES DISCHARGED INTO THE SURFACE WATERS, AND THEIR EFFECTS ON MAN. EVEN THOUGH A SESSION OF THE MEETING SHOWED SOME MINOR DETRIMENTAL EFFECTS TO AQUATIC BODIES FROM WASTE DISPOSAL TO THE SURFACE WATERS, MUCH DATA WAS GIVEN TO MINIMIZE THE TRANSFER OF RADIOACTIVITY THROUGH SEGMENTS OF THE FOOD WEB LEADING TO MAN. HOWEVER, THE CONCERN OF HAZARD TO MAN STILL REMAINS PARAMOUNT. MUCH MORE RESEARCH IS NEEDED.

AVAILABILITY - INTERNATIONAL ATOMIC ENERGY AGENCY (NEW YORK OR GENEVA), \$18.50 COPY

*ADSORPTION + *BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + *CESIUM + *STRONTIUM + CERIUM + CHROMIUM + ECOLOGICAL CONSIDERATION + FALLOUT + IAEA (INTERNATIONAL ATOMIC ENERGY AGENCY) + MONITOR, RADIATION, LIQUID + MONITORING PROGRAM, ENVIRONMENTAL + PHOSPHORUS + WASTE DISPOSAL, OCEAN + WASTE DISPOSAL, RIVER + WASTE TREATMENT, FIXATION + WASTE TREATMENT, LIQUID + YTTRIUM + ZINC

14-18071

ALSO IN CATEGORY 15

PHYSICAL AND BIOLOGICAL TRANSPORT OF RADIONUCLIDES RESULTING FROM THE DISPOSAL OF RADIOACTIVE WASTES INTO THE SEAS, OCEANS, AND SURFACE WATERS

INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA, AUSTRIA

STI-PUB-126 + CONF-660507 +. 494 PAGES, 199 FIGURES, 82 TABLES, 365 REFERENCES, SEPTEMBER 1966, DISPOSAL OF RADIOACTIVE WASTES INTO SEAS, OCEANS AND SURFACE WATERS. PROCEEDINGS SERIES. PROCEEDINGS OF A SYMPOSIUM HELD IN VIENNA, AUSTRIA, MAY 16-20, 1966

THE SYMPOSIUM HELD IN VIENNA, AUSTRIA DURING MAY 1966 WAS REPRESENTED BY 161 SCIENTISTS FROM 25 COUNTRIES AND FIVE INTERNATIONAL ORGANIZATIONS. 56 PAPERS WERE PRESENTED. MANY SUBJECTS RELATIVE TO THE CAPTIONED SUBJECT WERE DISCUSSED AND MUCH VALUABLE INFORMATION WAS GIVEN CONCERNING A WIDE RANGE OF REGIONS AND CIRCUMSTANCES INVOLVING RADIOACTIVE WASTE DISPOSAL. ONE IMPORTANT CONCLUSION FROM THE MEETING WAS THAT MUCH RESEARCH REMAINS TO BE DONE TO ENSURE THE SAFETY AND WELL BEING OF MAN IN THE ENVIRONS OF THE SEAS, OCEAN, AND SURFACE WATERS.

AVAILABILITY - INTERNATIONAL ATOMIC ENERGY AGENCY (NEW YORK OR GENEVA), \$18.50 COPY

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-18071 *CONTINUED*

*DILUTION + *DISPERSION + *TRANSPORT PROPERTY + *WASTE DISPOSAL, OCEAN + *WASTE DISPOSAL, RIVER + BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + BIOTA + ENVIRONMENTAL CONDITION + FALLOUT + FLOW DISTRIBUTION + IAEA (INTERNATIONAL ATOMIC ENERGY AGENCY) + ION EXCHANGE + RESIN + SEDIMENT + SURFACE WATER, TRACER + WATER POLLUTION

14-18072 ALSO IN CATEGORY 15

POSSIBLE EFFECTS OF THE DISPOSAL OF RADIOACTIVE WASTES ON THE RESOURCES OF THE SEAS, OCEANS, AND SURFACE WATERS

INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA, AUSTRIA

STI-PUB-126 + CONF-660507 +. 85 PAGES, 22 FIGURES, 22 TABLES, 93 REFERENCES, SEPTEMBER 1966, DISPOSAL OF RADIOACTIVE WASTES INTO SEAS, OCEANS AND SURFACE WATERS. PROCEEDINGS SERIES. PROCEEDINGS OF THE SYMPOSIUM HELD IN VIENNA, AUSTRIA, MAY 16-20, 1966

THE PRESENTATIONS AND DISCUSSIONS OF THE 56 PAPERS AT THE SYMPOSIUM COVERED A WIDE VARIETY OF SUBJECTS WITHIN THE SCOPE OF EFFECTS OF RADIATION ON THE ENVIRONS OF THE SEAS, OCEANS, AND SURFACE WATERS. RESEARCH WAS DIRECTED TOWARD MORTALITY RATES, MUTATIONS, ADSORPTIONS, UPTAKE, RELEASE, BREEDING, INCUBATION AND HATCHING, AND ALL THESE WITH RESPECT TO A WIDE VARIETY OF CIRCUMSTANCES, REGIONS, AND AQUATIC CONDITIONS. CONCLUSION - THERE ARE DETRIMENTAL EFFECTS OF DISPOSAL AS TREATED HEREIN, BUT OF A RELATIVELY SMALL AMOUNT, YET SUFFICIENT TO JUSTIFY CONTINUED RESEARCH.

AVAILABILITY - INTERNATIONAL ATOMIC ENERGY AGENCY (NEW YORK OR GENEVA), \$18.50 COPY

BIOLOGICAL CONCENTRATION, ALGAE + BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + BIOTA + COBALT + CONTAMINATION + DOSE MEASUREMENT, EXTERNAL + DOSE MEASUREMENT, INTERNAL + FALLOUT + IAEA (INTERNATIONAL ATOMIC ENERGY AGENCY) + IODINE + RADIATION EFFECT + SEDIMENT + STRONTIUM + X-RAY + ZINC

14-18076 ALSO IN CATEGORIES 15 AND 16

BAKACS-POLGAR E + KURCZ-CSIKY I

ON THE DETERMINATION OF FISSION PRODUCTS DEPOSITED ON THE GROUND

STATE INSTITUTE OF HYGIENE, BUDAPEST, HUNGARY

2 PAGES, 3 FIGURES, 9 REFERENCES, ATOMPRAXIS 13(7), PAGE 301 AND 302, (JULY 1967)

THE AUTHORS DETERMINED THE MONTHLY AVERAGE OF TOTAL BETA-ACTIVITY AND RADIOACTIVE STRONTIUM DEPOSITED ON THE GROUND AND ON PLANTS, PARTLY BY DETERMINING THE AIR POLLUTION, PARTLY BY INVESTIGATING THE TOTAL FALLOUT. THE TOTAL BETA ACTIVITY DUE MAINLY TO SHORT-LIVED ISOTOPES DECREASED CONSIDERABLY AFTER THE ATOMIC-TPUCE AGREEMENT. THE DECREASE IN SR-90 IN 1964 WAS LESS PRONOUNCED. THE CHINESE ATOMIC BOMBS, EXPLODED IN OCTOBER 1964 AND MAY 1965, CAUSED FALLOUT ALTHOUGH ONLY SLIGHT.

*FALLOUT + *SURVEY, RADIATION, ENVIRONMENTAL + GROSS BETA + GROSS GAMMA + RAINOUT + SAMPLING + STRONTIUM

14-18077

VAN DEN HOEK J + BINNERTS WT

THE INFLUENCE OF LIMING OF GRASS ON THE SECRETION OF SR-90 IN COWS MILK

INSTITUTE OF ATOMIC SCIENCES IN AGRICULTURE AND THE LABORATORY OF ANIMAL PHYSIOLOGY OF THE AGRICULTURAL

UNIVERSITY WAGENINGEN, THE NETHERLANDS

4 PAGES, 1 FIGURE, 3 TABLES, 17 REFERENCES, ATOMPRAXIS 13(7), PAGE 307 THRU 310, (JULY 1967)

THE EFFECT OF SUPPLEMENTARY CALCIUM, APPLIED TO PASTURE, ON SR-90 SECRETION IN MILK WAS STUDIED UNDER NORMAL MANAGEMENT CONDITIONS. TWO MIXTURES WERE USED AND ADMINISTERED AS CaCO₃. THE AVERAGE REDUCTION ON SR-90 IN MILK WAS 33%, THE EFFECT BECAME NOTICEABLE WITHIN 24 HOURS, MAXIMAL REDUCTION WAS ATTAINED IN 4 DAYS. NO EFFECTS WERE OBSERVED FROM DIFFERENT CLIMATIC CONDITIONS OR FROM TWO COMPOUNDS WITH DIFFERENT CA CONTENT. SIMPLICITY OF APPLICATION AND EFFECTS OBSERVED MAKE THIS METHOD INTERESTING IN CASE OF A CONTAMINATION EVENT.

*BIOLOGICAL CONCENTRATION, MILK + *FALLOUT + AGRICULTURAL CONSIDERATION + BIOLOGICAL CONCENTRATION, VEGETATION + CALCIUM + DECONTAMINATION + ECOLOGICAL CONSIDERATION + STRONTIUM

14-18079 ALSO IN CATEGORY 15

HAUBERMANN W + SCHREIBER H

INVESTIGATIONS ABOUT THE SR-90 CONTENTS IN SOILS

AUS DEM INSTITUT FÜR PHYSIK UND METEOROLOGIE DER LANDWIRTSCHAFTLICHEN HOCHSCHULE STUTTGART-HOHNHEIM

4 PAGES, 5 FIGURES, 1 TABLE, 8 REFERENCES, ATOMPRAXIS 13(7), PAGE 303 THRU 306, (JULY 1967)

THE RESULTS OF MORE THAN 200 DETERMINATIONS OF THE SR-90-CONTENTS IN SOILS DURING 1960 TO 1964 DOWN TO 20 CM ARE GIVEN. THE ANNUAL AMOUNT OF PRECIPITATION ON THE DIFFERENT COLLECTION PLACES ACROSS THE BLACK FOREST RANGES FROM 780 TO 2200 MM. THE VARIATIONS IN TIME OF THE SR-90 ACTIVITY AND THE DISTRIBUTION IN DEPTH ARE DISCUSSED.

*FALLOUT + *SOIL, NUCLIDE OCCURRENCE + GERMANY + RAINOUT + SOIL, RADIONUCLIDE MOVEMENT THROUGH + STRONTIUM + SURVEY, RADIATION, ENVIRONMENTAL

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-18080
OVERSTREET R
FIXATION OF RADIOACTIVE CONTAMINATION IN SOIL
U.S. PATENT 3-277-607 +. 4 PAGES, 1 TABLE, OCTOBER 11, 1966

THIS PATENT RELATES TO A PROCESS FOR IMMOBILIZING RADIOACTIVE CONTAMINATION DEPOSITED ON SOIL WHEREBY CROPS MIGHT BE SAFELY GROWN ON FARMLAND WHICH HAS BEEN SUBJECTED TO RADIOACTIVE FALLOUT. THE CONTAMINATED SURFACE LAYER OF SOIL IS COATED WITH A SILICONE COMPOUND WHICH RENDERS THE RADIOACTIVE SUBSTANCES INERT TO CHEMICAL AND BIOLOGICAL PROCESSES OF THE SOIL. THE IMMOBILIZED RADIOACTIVE SOIL IS THEN PLOWED SLIGHTLY DEEPER THAN NORMAL AND ALLOWED TO DECAY. ALTHOUGH THE DECAY PERIOD MAY BE MANY YEARS, THE SOIL CAN BE REUSED IMMEDIATELY FOR AGRICULTURE, AS THE CONSTITUENTS OF THE COATED SOIL PARTICLES ARE NOT TAKEN UP BY PLANTS GROWING THEREIN.

AVAILABILITY - THE U.S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D.C. (25 CENTS PER COPY)

*FALLOUT + *SOIL, PROPERTY + AGRICULTURAL CONSIDERATION + ECOLOGICAL CONSIDERATION + PATENT + SOIL, NUCLIDE OCCURRENCE + SOIL, RADIONUCLIDE MOVEMENT THROUGH

14-18081
KASER JD
RADIOACTIVE WASTE DISPOSAL USING COLEMANITE
U.S. PATENT 3-272-756 +. 2 PAGES, 1 TABLE, SEPTEMBER 13, 1966

THIS PATENT RELATES TO A PROCESS IN WHICH A SOLUTION OF RADIOACTIVE FISSION PRODUCTS IN NITRIC ACID IS MIXED WITH FINELY DIVIDED COLEMANITE ($2\text{CaO} \cdot 3\text{B}_2\text{O}_3 \cdot 5\text{H}_2\text{O}$) AND THE SLURRY IS SUBJECTED TO SPRAY CALCINATION. THE COLEMANITE ACTS AS A FLUX, GIVING A PRODUCT WHICH DOES NOT STICK TO THE WALLS OF THE CALCINER AND WHICH CAN BE MELTED AND CAST AT A TEMPERATURE BELOW 1000°C TO FORM A RELATIVELY INSOLUBLE GLASSY SOLID WHICH DOES NOT DISINTEGRATE IN WATER.

AVAILABILITY - THE U.S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D.C., 25 CENTS PER COPY

*CALCINATION + *WASTE TREATMENT, FIXATION + *WASTE TREATMENT, LIQUID + PATENT + WASTE DISPOSAL, LIQUID + WASTE DISPOSAL, SOLID

14-18083 ALSO IN CATEGORY 12
WADACHI Y + KAWANU Y
PRACTICE OF RADIOACTIVE DECONTAMINATION
JAPAN ATOMIC ENERGY RESEARCH INST., TOKYO
4 PAGES, FIGURES, NIPPON GENSHIYOKU GA. 8, PAGE 490 THRU 493, (SEPTEMBER 1966), IN JAPANESE

AS ACTUAL EXAMPLES OF MEASURES TAKEN UNDER DUAL CONTAMINATION, A DESCRIPTION IS GIVEN IN THIS PAPER OF THE DECONTAMINATION WORK UNDERTAKEN IN THE RADIOISOTOPE STORAGE FACILITIES IN OCTOBER 1965, WHICH INVOLVED CONTAMINATION BY RbBr_2 IN AQUEOUS SOLUTION, AND GASEOUS CONTAMINATION BY RN AND ITS DAUGHTER NUCLIDES.

*DECONTAMINATION + ACCIDENT, GENERAL + BROMINE + RADIATION SAFETY AND CONTROL + RADIUM + RADON

14-18135 ALSO IN CATEGORY 15
RADIOACTIVITY IN THE SEAS
7 PAGES, 6 FIGURES, IAEA BULLETIN 8(3), PAGE 17 THRU 23, (SEPTEMBER 1966)

A LONG-TERM STUDY BY THE IAEA LABORATORY (MONACO) TO DEVELOP KNOWLEDGE OF THE PHYSICAL AND BIOLOGICAL NATURE AND EFFECT OF RELEASE OF RADIOACTIVE WASTES TO THE OCEAN. DETAILED STUDIES ARE BEING MADE OF SEA CHEMISTRY, MOVEMENTS AT VARIOUS DEPTHS, EFFECT OF TIDES, WIND, AND CURRENTS, THE HABITS AND ENVIRONMENTAL RESPONSE OF ITS INHABITANTS, AND OTHER FACTORS RELATED TO OCEANOGRAPHY.

*OCEAN AND SEA + *WASTE DISPOSAL, LIQUID + BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + IAEA (INTERNATIONAL ATOMIC ENERGY AGENCY) + MONTE CARLO + RESEARCH AND DEVELOPMENT PROGRAM

14-18136 ALSO IN CATEGORY 15
DISPOSAL OF RADIOACTIVE WASTE IN WATER
3 PAGES, IAEA BULLETIN 8(3), PAGE 6 THRU 8, (SEPTEMBER 1966)

PAPERS FROM SYMPOSIUM HELD IN VIENNA DURING MAY 1966 DEALT WITH PHYSICAL AND BIOLOGICAL TRANSPORT OF RADIONUCLIDES RESULTING FROM DISPOSAL OF RADIOACTIVE WASTE TO SURFACE WATERS. POSSIBLE EFFECTS ON RESOURCES OF SEAS, OCEANS, AND SURFACE WATERS, AND THE EVALUATION OF THE MAIN ROUTES OF EXPOSURE TO MAN. DATA GIVEN SUPPORTED THE FACT THAT VERY LITTLE HARM IS BEING CAUSED TO THE WATERS AND THEIR ENVIRONS AT PRESENT, BUT SOME EXPRESSED CONCERN FOR FUTURE HAZARDS. WITH THE CONTINUED SUPPORT OF THE VARIOUS GOVERNMENTS AS IN THE PAST, RESEARCH WILL CONTINUE IN THE FIELD OF WASTE DISPOSAL AND WITH A RESPECTABLE PRIORITY.

*BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + *IAEA (INTERNATIONAL ATOMIC ENERGY AGENCY) +

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-18136 *CONTINUED*
*WASTE DISPOSAL, LIQUID + AUSTRIA + ENVIRONMENTAL CONDITION + RADIOBIOLOGY + RADIONUCLIDE, INDUCED + RESEARCH AND DEVELOPMENT PROGRAM + WASTE DISPOSAL, OCEAN + WASTE DISPOSAL, RIVER

14-18176
ACTIVITY CONCENTRATION IN WASTE WATERS OF THE CITIES OF BONN AND COLOGNE
3 PAGES, ATOMWIRTSCHAFT 10(10), PAGE 322 THRU 325, (JULY-AUGUST 1965), IN GERMAN

THE RELATIVELY EXTENSIVE USE OF OPEN RADIOACTIVE SUBSTANCES IN UNIVERSITY INSTITUTES AND CLINICS IN THE CITIES STUDIED BY THE TUV LETS THE RESULTS APPEAR GENERALLY REPRESENTATIVE FOR LARGE CITIES WITH SIMILAR CONDITIONS. THE MEASUREMENT RESULTS SHOWED THAT THE ACTIVITY CONCENTRATIONS TO BE CONSIDERED PERMISSIBLE ACCORDING TO THE 1.55VO IN GENERAL WERE NOT REACHED BY FAR. IN PART, THE TECHNICAL SAFETY REQUIREMENTS ARE SO NOTICEABLE THAT THEY MAKE THE USE OF RADIOACTIVE SUBSTANCES FINANCIALLY SENSITIVE. THE CONSEQUENCES OF THE PRESENT MEASUREMENTS SHOULD GIVE RISE TO A RELAXING OF THE REQUIREMENTS.

*MONITORING PROGRAM, ENVIRONMENTAL + RADIOACTIVITY, RELEASE + RADIOISOTOPE

14-18180 ALSO IN CATEGORY 15
DATA SECTION, ENVIRONMENTAL SURVEILLANCE SECTION
STATE OF CALIFORNIA, DEPARTMENT OF PUBLIC HEALTH, BUREAU OF RADIOLOGICAL HEALTH, BERKELEY, CALIFORNIA
22 PAGES, 2 FIGURES, 7 TABLES, RADIOLOGICAL HEALTH NEWS 4(3), PAGE 17 THRU 31 (JULY 1965)

IN CALIFORNIA, RADIOACTIVITY IS MONITORED AT REPRESENTATIVE LOCATIONS TO DETERMINE THE LEVEL IN AIR, PRECIPITATION, FALLOUT, DOMESTIC WATER, SEWAGE, MILK, AND FOOD. DATA IN THIS REPORT COVER THE PERIOD JANUARY-MARCH 1965 (AIR, PRECIPITATION, MILK), JULY-SEPTEMBER 1964 (FALLOUT), DECEMBER 1964-MARCH 1965 (DOMESTIC WATER, SEWAGE), AND NOV.-DEC. 1964 (FOOD).

*MONITORING PROGRAM, ENVIRONMENTAL + FALLOUT

14-18181
INTERNATIONAL ATOMIC ENERGY AGENCY BULLETIN 9(1)
43 PAGES, FEBRUARY 1967

SHORT ARTICLES ARE GIVEN ON IAEA PROGRAMS IN SAFEGUARDS CONTROLS, USE OF ISOTOPES IN INDUSTRY, HEAT TRANSFER IN FAST REACTOR COPEs, POWER REACTOR DEVELOPMENTS, AND OTHERS.

*RADIOISOTOPE + HEAT TRANSFER + IAEA (INTERNATIONAL ATOMIC ENERGY AGENCY)

14-18184
CROSSLEY DA.
COMPARATIVE MOVEMENT OF RU-106, CO-60, AND CS-137 IN ARTHROPOD FOOD CHAINS
OAK RIDGE NATIONAL LAB., TENN.
ORNL-P-3081 + CONF-570503-14 +. 24 PAGES, 1967, PRESENTED AT 2ND SYMPOSIUM ON RADIOECOLOGY, ANN ARBOR, MICHIGAN

NEW DATA FROM A WASTE-DISPOSAL SITE (WHITE OAK LAKE BED) PERMIT COMPARISON OF DISTRIBUTION OF RU-106 AND CO-60 WITH THAT OF CS-137 ALONG A TERRESTRIAL FOOD CHAIN (SOIL, HERBACEOUS VEGETATION, HERBIVOROUS ARTHROPODS, AND PREDACEOUS ARTHROPODS). RU-106 HAS A GREATER FOOD CHAIN MOBILITY THAN CS-137 AND CO-60, WITH AN INCREASE IN CONCENTRATION OF RU-106 HERBIVORE-TO-PREDATOR TRANSFERS.

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

*BIOLOGICAL CONCENTRATION, GENERAL + BIOLOGICAL CONCENTRATION, ANIMAL + BIOLOGICAL CONCENTRATION, VEGETATION + CESIUM + COBALT + ECOLOGICAL CONSIDERATION + ENVIRONMENTAL CONDITION + RUTHENIUM

14-18230 ALSO IN CATEGORY 15
NATIONAL CENTER FOR RADIOLOGICAL TRAINING COURSES 1967-1968
U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE, WASHINGTON, D. C.
16 PAGES, PUBLIC HEALTH SERVICE PUBLICATION NO. 1633, BULLETIN OF COURSES, JANUARY 1967 TO JULY 1968

COURSES IN VARIOUS PHASES OF RADIOLOGICAL HEALTH ARE DESCRIBED AND LISTED CHRONOLOGICALLY.

AVAILABILITY - U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE, PUBLIC HEALTH SERVICE, WASHINGTON, D. C.

RADIATION, PUBLIC EDUCATION/ACCEPTANCE + RADIOLOGICAL ASSISTANCE

14-18231 ALSO IN CATEGORY 15
NEUMAN WF + ROTHSTEIN A

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-18231 *CONTINUED*
ANNUAL REPORT. UNIVERSITY OF ROCHESTER, ATOMIC ENERGY PROJECT. BRIEF DESCRIPTION OF RESEARCH PUBLISHED
OR ACCEPTED FOR PUBLICATION DURING 1966
UNIVERSITY OF ROCHESTER, ROCHESTER, NEW YORK
UR-49-748 +. 239 PAGES, FIGURES, TABLES, APRIL 1, 1967

PUBLICATIONS ARE LISTED, WITH ABSTRACTS. SUBJECTS INCLUDE A BROAD SPECTRUM OF WORK IN
RADIOBIOLOGY, BIOPHYSICS, TOXICITY OF RADIOELEMENTS, MOLECULAR- AND CELLULAR-LEVEL STUDIES,
RADIOLOGICAL AND HEALTH PHYSICS, CHEMICAL-TOXICITY CANCER RESEARCH, AND OTHER STUDIES.

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

*RADIOBIOLOGY + CHEMICAL TOXICITY

14-18232
ADAMS JA + LOWDER WM
THE NATURAL RADIATION ENVIRONMENT
RICE UNIVERSITY
1069 PAGES, FIGURES, TABLES, THE UNIVERSITY OF CHICAGO PRESS, 1964, PROCEEDINGS OF THE FIRST INTERNATIONAL
SYMPOSIUM ON THE NATURAL RADIATION ENVIRONMENT

THE PAPERS ARE DIVIDED INTO TWO GROUPS - ENVIRONMENTAL RADIATION SOURCES AND ENVIRONMENTAL
RADIATION MEASUREMENTS. PART I COVERS THE OCCURRENCE OF U, K, TH, RA, RN, PB-210,
ATMOSPHERIC RADIOACTIVITY, ALPHA RADIOACTIVITY, AND COSMIC RADIATION. PART II COVERS
INSTRUMENTATION AND METHODS, TOGETHER WITH THE RESULTS OF STUDIES IN VARIOUS AREAS OF THE
WORLD.

AVAILABILITY - UNIVERSITY OF CHICAGO PRESS, CHICAGO, ILL., \$15.00

*ENVIRONMENTAL CONDITION + COSMIC RADIATION + INSTRUMENTATION, AIR SAMPLING + LEAD +
MONITORING PROGRAM, ENVIRONMENTAL + POTASSIUM + RADIUM + RADON + THORIUM + URANIUM

14-18233
RADIOISOTOPES AND RADIATION IN DAIRY SCIENCE AND TECHNOLOGY. PROCEEDINGS SERIES
INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA
STI-PUR-135 + CONF-660711 +. 268 PAGES, FIGURES, TABLES, REFERENCES, NOVEMBER 1966, PROCEEDINGS OF A
SEMINAR HELD IN VIENNA, 12-15 JULY 1966

PAPERS IN THIS COMPILATION INCLUDE - REMOVAL OF RADIONUCLIDES FROM MILK, MEASUREMENT OF
RADIOISOTOPES IN MILK, CONTAMINATION OF MILK WITH RADIOISOTOPES, AND REDUCTION OF CS-137
FALLOUT THROUGH REVISED FEEDING PRACTICES.

AVAILABILITY - INTERNATIONAL ATOMIC ENERGY AGENCY, NEW YORK OR GENEVA, \$6.00 COPY

*RADIOISOTOPE + ANALYTICAL TECHNIQUE, MILK + BIOLOGICAL CONCENTRATION, MILK + FALLOUT +
IAEA (INTERNATIONAL ATOMIC ENERGY AGENCY)

14-18234
AJNAP AK + PEINAR UL
RADIOACTIVITY OF UTILITY GAS FROM SHALE
TT-66-51022/1 + IPST-CAT-1535-1537 +. 3 PAGES, HYGIENE AND SANITATION 30(1-3), PAGES 104-106 (JAN.-MAR.
1965) TRANSLATED FROM GIGIENA I SANITARIYA

PREVIOUS STUDIES REPORTED RADIOACTIVITY IN THE COMBUSTION PRODUCTS OF UTILITY GAS MANUFACTURED
FROM BITUMINOUS SHALE. THIS INVESTIGATION SHOWED A SPECIFIC ACTIVITY OF 2.2×10 TO THE
MINUS 8TH CURIE/KG ALPHA AND 1.5×10 TO THE MINUS 8TH CURIE/KG BETA. SAMPLING OF THE GAS
PRODUCED FROM THIS SHALE WAS CARRIED OUT AT THE POINT OF DELIVERY TO THE PIPELINE.
RADIOACTIVITY IN THE GAS WAS FOUND TO BE 1/10 TO 1/100 OF THE RADIOACTIVITY IN THE AIR.

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

*ATMOSPHERIC POLLUTION + ALPHA EMITTER + BETA EMITTER + RADON + THORIUM +
UNION OF SOVIET SOCIALIST REPUBLICS + URANIUM

14-18235 ALSO IN CATEGORY 15
KIRICHENKO VN
DISTRIBUTION OF INHALED SHORT-LIVED DAUGHTER PRODUCTS OF RADON IN THE RESPIRATORY TRACT
TT-66-51022/1 + IPST-CAT-1535-1537 +. 4 PAGES, 2 TABLES, HYGIENE AND SANITATION 30(1-3), PAGES 301-304
(JAN.-MAR. 1965) TRANSLATED FROM GIGIENA I SANITARIYA

CALCULATIONS WERE MADE FOR DISTRIBUTION AND DOSE FROM DAUGHTER PRODUCTS OF RADON IN AIR,
ASSUMING RADON CONCENTRATION OF 10 TO THE MINUS 11TH CI/LITER AND DEGREE OF EQUILIBRIUM OF
THE DAUGHTER PRODUCTS 50%. THE ABSORBED DOSE IN THE MAIN BRONCHI IS 35 TIMES AS GREAT AS THE
AVERAGE FOR ALL RESPIRATORY ORGANS AND EXCEEDS THE MAXIMUM PERMISSIBLE LEVEL OF IRRADIATION
OF THE INTERNAL ORGANS.

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-18235 *CONTINUED*

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

*DOSE CALCULATION, INTERNAL + DOSE + RADON + UNION OF SOVIET SOCIALIST REPUBLICS

14-18236

POMYTKIN VF + VOROBEEV AM + BOKOVA GB + FOPMICHEVA VI

A CHROMATOGRAPHIC METHOD FOR DETERMINING URANIUM AND PLUTONIUM IN THE AIR

TT-66-51022/1 + IPST-CAT.-1535-1537 +. 3 PAGES, HYGIENE AND SANITATION 30(1-3), PAGES 394-396 (JAN.-MAR. 1965) TRANSLATED FROM GIGIENA I SANITARIYA

AEROSOLS OF U AND PU MAY BE PRESENT SIMULTANEOUSLY IN AIR. SINCE THE MPCs OF THESE ELEMENTS DIFFER, IT IS NECESSARY TO KNOW THE CONCENTRATION OF EACH. TRIVALENT PLUTONIUM AND HEXAVALENT URANIUM MAY BE SEPARATED FROM A HYDROCHLORIC ACID SOLUTION BY SORPTION ON AN ANIONITE. AEROSOL SAMPLES FILTERED FROM THE AIR ARE DISSOLVED THROUGH AQUA REGIA TO HYDROCHLORIC ACID SOLUTION AND THE VALENCE ADJUSTED. THE URANIUM IS SELECTIVELY ADSORBED, THE PLUTONIUM PASSING THROUGH. THE URANIUM IS THEN ELUTED. QUANTITY OF EACH COMPONENT MAY BE DETERMINED BY ALPHA SCINTILLATION COUNTING. ERROR DOES NOT EXCEED 20% IN SAMPLES CONTAINING 10 TO THE MINUS 11TH TO 5 X 10 TO THE MINUS 12TH CURIE IN TOTAL SAMPLE.

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

ANALYTICAL TECHNIQUE, AIR + PLUTONIUM + UNION OF SOVIET SOCIALIST REPUBLICS + URANIUM

14-18237

GUSAROV II

ORGANIZATION AND EQUIPMENT OF A LARGE RADON LABORATORY

TT-66-51022/1 + IPST-CAT.-1535-1537 +. 7 PAGES, 3 FIGURES, 1 TABLE, HYGIENE AND SANITATION 30(1-3), PAGES 422-428 (JAN.-MAR. 1965) TRANSLATED FROM GIGIENA I SANITARIYA

LARGE RADON LABORATORIES ARE BEING ESTABLISHED IN LARGE CITIES SUCH AS MOSCOW AND LENINGRAD. THE LABS SHOULD SATISFY THE REQUIREMENTS FOR THE TYPE OF OPERATION AND PROVIDE FOR THE SAFETY OF THE WORKERS. A DESIGN WAS DEVELOPED FOR A LARGE RADON LABORATORY WHICH SATISFIES THE TECHNOLOGICAL AND SAFETY REQUIREMENTS.

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

*SAFETY STUDY + RADON + UNION OF SOVIET SOCIALIST REPUBLICS

14-18253

ALSO IN CATEGORY 15

CONTINUING DATA ON FALLOUT AND ENVIRONMENTAL MEASUREMENTS

U.S. DEPT. OF HEALTH, EDUCATION, AND WELFARE

52 PAGES, FIGURES, TABLES, REFERENCES, RADIOLOGICAL HEALTH DATA AND REPORTS 8(3) PAGES 139-190 (MARCH 1967)

TABULATED DATA AND DISCUSSIONS ARE GIVEN ON MILK AND FOOD SURVEILLANCE, WATER, AIR AND DEPOSITION, STRONTIUM-90 IN HUMAN BONE, AND ENVIRONMENTAL LEVELS AT CERTAIN AEC SITES.

*FALLOUT + MONITORING PROGRAM, ENVIRONMENTAL + STRONTIUM

14-18254

ALSO IN CATEGORY 15

HOLADAY DA

RADIATION HAZARDS IN URANIUM MINES

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

4 PAGES, 3 TABLES, 8 REFERENCES, RADIOLOGICAL HEALTH DATA AND REPORTS 8(3), PAGES 135-138 (MARCH 1967)

A REVIEW OF HEALTH STUDIES OF U.S. URANIUM MINERS IS PRESENTED. THE PRIMARY RADIATION HAZARD IN URANIUM MINES IS ALPHA RADIATION, WHICH IS DELIVERED TO THE LUNGS BY RADON-222 AND ITS SHORT-LIVED DAUGHTERS. THE APPEARANCE OF LUNG CANCER AMONG URANIUM MINERS WAS STUDIED AND WAS FOUND EXCESSIVE. THE CELL-TYPE DISTRIBUTION OF THESE CANCERS OF URANIUM MINERS IS DIFFERENT FROM THAT OF THE GENERAL POPULATION. CALCULATION OF RADIATION DOSAGE TO THE LUNGS OF MINERS IS DIFFICULT. GENERAL-DILUTION VENTILATION IS THE PRIMARY METHOD OF CONTROLLING THE RADIATION HAZARD, BUT IT HAS LIMITATIONS. RADIATION EXPOSURE OF URANIUM MINERS HAS GRADUALLY BEEN REDUCED.

*MINING + PERSONNEL EXPOSURE, RADIATION + RADON + URANIUM + URANIUM, NATURAL

14-18255

ALSO IN CATEGORY 15

CONTINUING DATA ON FALLOUT AND ENVIRONMENTAL MEASUREMENTS

U.S. DEPT. OF HEALTH, EDUCATION, AND WELFARE

50 PAGES, FIGURES, TABLES, REFERENCES, RADIOLOGICAL HEALTH DATA AND REPORTS 8(4) PAGES 195-244 (APRIL 1967)

TABULATED DATA AND DISCUSSIONS ARE GIVEN ON MILK AND FOOD SURVEILLANCE, WATER, AIR AND

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-18255 *CONTINUED*
DEPOSITION, IODINE IN BOVINE THYROID, AND ENVIRONMENTAL LEVELS AT CERTAIN AEC SITES.

*FALLOUT + BIOLOGICAL CONCENTRATION, GENEPAL + IODINE + MONITORING PROGRAM, ENVIRONMENTAL

14-18256 ALSO IN CATEGORY 15

KAUFFMAN PE + MAGNO PJ

PLUTONIUM-239 IN TOTAL DIET AND MILK

U.S. DEPT. OF HEALTH, EDUCATION, AND WELFARE

4 PAGES, 1 FIGURE, 3 TABLES, 8 REFERENCES, RADIOLOGICAL HEALTH DATA AND REPORTS 8(4) PAGES 191-194 (APRIL 1967)

THE NATIONAL CENTER FOR RADIOLOGICAL HEALTH INITIATED A PROGRAM IN JULY 1965 TO DETERMINE THE LEVEL OF PLUTONIUM-239 IN THE TOTAL DIET AND MILK. THE DIET SAMPLES WERE OBTAINED FROM THE INSTITUTIONAL TOTAL DIET SAMPLING NETWORK OF THE PUBLIC HEALTH SERVICE, AND THE MILK SAMPLES WERE OBTAINED FROM THE PHS PASTEURIZED MILK NETWORK. USING A GASTRO-INTESTINAL ABSORPTION FACTOR OF 3×10 TO THE MINUS 5TH, AS SUGGESTED BY THE INTERNATIONAL COMMISSION ON RADIOLOGICAL PROTECTION, THE AVERAGE AMOUNT OF PLUTONIUM-239 REACHING THE BLOOD STREAM FROM THE DIET IS ESTIMATED TO BE 2×10 TO THE MINUS 4TH FEMTOCURIES PER DAY.

*FALLOUT + BIOLOGICAL CONCENTRATION, FOOD + DOSE MEASUREMENT, INTERNAL + PLUTONIUM

14-18257 ALSO IN CATEGORY 15

CONTINUING DATA ON FALLOUT--ENVIRONMENTAL MEASUREMENTS

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

46 PAGES, FIGURES, TABLES, REFERENCES, RADIOLOGICAL HEALTH DATA AND REPORTS 7(12) PAGES 697-742 (DECEMBER 1966)

TABULATED DATA AND DISCUSSION ARE PRESENTED (MILK AND FOOD SURVEILLANCE, WATER, AIR AND DEPOSITION, STRONTIUM-90 IN HUMAN BONE AND VERTEBRAE, ENVIRONMENTAL LEVELS AT CERTAIN AEC SITES).

*FALLOUT + MONITORING PROGRAM, ENVIRONMENTAL + STRONTIUM

14-18258 ALSO IN CATEGORY 15

CHANDLER RP + SNAVELY DR

SUMMARY OF CESIUM-137 AND STRONTIUM-90 CONCENTRATIONS REPORTED IN CERTAIN ALASKAN POPULATIONS AND FOODSTUFFS 1961-1966

U.S. PUBLIC HEALTH SERVICE

15 PAGES, 8 FIGURES, 0 TABLES, 36 REFERENCES, RADIOLOGICAL HEALTH DATA AND REPORTS 7(12) PAGES 675-689 (DECEMBER 1966)

PUBLISHED DATA ON CESIUM-137 AND STRONTIUM-90 CONCENTRATIONS IN CERTAIN ALASKAN POPULATIONS AND FOODSTUFFS, ALONG WITH FOOD CONSUMPTION DATA, ARE REVIEWED AND SUMMARIZED. WHERE POSSIBLE, CONCENTRATIONS IN THE DIET AND THOSE FOUND IN PEOPLE ARE COMPARED TO FRC GUIDELINES. THE SEASONAL AND YEARLY TRENDS OF CESIUM-137 AND STRONTIUM-90 CONCENTRATIONS IN THE DIET OF ALASKAN POPULATIONS AND IN PEOPLE ARE DISCUSSED.

*FALLOUT + ALASKA + CESIUM + DIETARY HABIT + STRONTIUM

14-18259 ALSO IN CATEGORY 15

FITZPATRICK DE + RUSSELL JL + BRISCOE OG + CALVERT CR

CESIUM-137 BODY BURDENS IN ALASKAN MEN, SPRING 1966

U.S. PUBLIC HEALTH SERVICE

6 PAGES, 2 FIGURES, 3 TABLES, 14 REFERENCES, RADIOLOGICAL HEALTH DATA AND REPORT 7(12) PAGES 691-696 (DECEMBER 1966)

THE CESIUM-137 BODY BURDENS OF CARIBOU-EATING ALASKAN MEN CONTINUE TO BE ELEVATED, ALTHOUGH IN GENERAL THE AVERAGE BODY BURDENS ARE DECREASING, COMPARED WITH THOSE OBSERVED IN 1965. ELEVATED CESIUM-137 BODY BURDENS ARE WELL CORRELATED WITH CARIBOU (REINDEER) CONSUMPTION, AND NON-CARIBOU EATERS EXHIBIT CESIUM-137 BODY BURDENS SIMILAR TO RESIDENTS IN THE COTERMINOUS UNITED STATES. DURING THE 1966 STUDY, THE CESIUM-137 BODY BURDEN OF 418 ALASKAN MEN WAS OBTAINED. THE BODY BURDENS OBSERVED RANGED FROM 2,400 TO LESS THAN 40 NCI AND INDICATED A WIDE RANGE OF VALUES DEPENDING ON LOCATION.

*FALLOUT + ALASKA + BIOLOGICAL CONCENTRATION, MAN + CESIUM + MONITORING PROGRAM, ENVIRONMENTAL

14-18260 ALSO IN CATEGORY 15

CONTINUING DATA ON FALLOUT - ENVIRONMENTAL MEASUREMENTS

U.S. PUBLIC HEALTH SERVICE

49 PAGES, FIGURES, TABLES, REFERENCES, RADIOLOGICAL HEALTH DATA AND REPORTS 8(5), PAGES 251-299 (MAY 1967)

TABULATED DATA AND DISCUSSIONS ARE PRESENTED FOR MILK SURVEILLANCE (NATIONAL AND INTERNATIONAL), FOOD AND DIET SURVEILLANCE, WATER, AIR AND DEPOSITION, RADIONUCLIDES IN ALASKAN CARIBOU AND REINDEER, ENVIRONMENTAL LEVELS AT CERTAIN AEC LOCATIONS, RADIOLOGICAL

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-18260 *CONTINUED*
MONITORING OF NATIVE TEXAS OYSTERS, AND STRONTIUM, CESIUM, AND POLONIUM IN HUMAN TISSUES.

*FALLOUT + MONITORING PROGRAM, ENVIRONMENTAL + USAEC (U.S. ATOMIC ENERGY COMMISSION)

14-18262 ALSO IN CATEGORY 15
CONTINUING DATA ON FALLOUT--ENVIRONMENTAL MEASUREMENTS
U.S. PUBLIC HEALTH SERVICE
57 PAGES, FIGURES, TABLES, REFERENCES, RADIOLOGICAL HEALTH DATA AND REPORTS 8(2) PAGES 79-135 (FEBRUARY 1967)

TABULATED DATA AND DISCUSSION ARE PRESENTED FOR MILK SURVEILLANCE (U.S. AND INTERNATIONAL), FOOD AND DIET SURVEILLANCE, WATER, AIR, AND DEPOSITION, STRONTIUM-90 IN HUMAN BONE, AND ENVIRONMENTAL RADIOACTIVITY AT CERTAIN AEC LOCATIONS. VARIOUS PERIODS DURING 1966 ARE COVERED.

*FALLOUT + MONITORING PROGRAM, ENVIRONMENTAL + USAEC (U.S. ATOMIC ENERGY COMMISSION)

14-18263 ALSO IN CATEGORY 15
RADIONUCLIDE LEVELS IN MILK, TOTAL DIET, AND HUMAN BONE COMPARED TO FEDERAL RADIATION COUNCIL ESTIMATES, 1965, AND 1966 ESTIMATES
U.S. PUBLIC HEALTH SERVICE, NATIONAL CENTER FOR RADIOLOGICAL HEALTH
7 PAGES, 5 FIGURES, 3 TABLES, 21 REFERENCES, RADIOLOGICAL HEALTH DATA AND REPORTS 8(2) PAGES 65-72 (FEBRUARY 1967)

ESTIMATES OF THE LEVELS OF FALLOUT RADIONUCLIDES IN ENVIRONMENTAL MEDIA AND IN HUMAN BONE EXPECTED FROM 1963 THROUGH 1965 WERE MADE BY THE FEDERAL RADIATION COUNCIL. THE 1965 OBSERVED VALUES WERE COMPARED WITH THE FRC PREDICTIONS, AND 1966 LEVELS WERE ESTIMATED USING THE APPROACH PROPOSED BY THE FEDERAL RADIATION COUNCIL. THE OBSERVED RADIONUCLIDE LEVELS WERE IN AGREEMENT WITH THE PREDICTION MADE BY THE FEDERAL RADIATION COUNCIL. THE OBSERVED LEVELS AND THE PREDICTED LEVELS OF RADIOACTIVITY IN FOOD OVER THE NEXT SEVERAL YEARS ARE TOO SMALL TO JUSTIFY PROTECTIVE ACTION TO LIMIT THE DIETARY INTAKE OF RADIONUCLIDES.

*FALLOUT + BIOLOGICAL CONCENTRATION, FOOD + CESIUM + DOSE + IODINE + STRONTIUM

14-18264 ALSO IN CATEGORY 15
GRUNDY RD
STRONTIUM-90 DIETARY INTAKE ESTIMATES BASED ON FRACTIONAL INTAKES DUE TO MILK
NATIONAL CENTER FOR RADIOLOGICAL HEALTH, ROCKVILLE, MD.
5 PAGES, 4 TABLES, 9 REFERENCES, RADIOLOGICAL HEALTH DATA AND REPORTS 8(2) PAGES 73-77 (FEBRUARY 1967)

STRONTIUM-90 DIETARY INTAKE ESTIMATES WERE MADE FOR THE INSTITUTIONAL TOTAL DIET SAMPLING NETWORK BASED UPON PASTEURIZED MILK NETWORK CONCENTRATIONS. APPROACHES BASED UPON MILK-TO-TOTAL-DIET RATIOS OF STRONTIUM-90 AND STRONTIUM UNITS WERE CONSIDERED. THE APPROACH BASED UPON STRONTIUM UNITS YIELDED THE BEST ESTIMATES OF ITDSN MONTHLY AVERAGE AND MAXIMUM STRONTIUM-90 INTAKES ON A NETWORK BASIS FOR THE POPULATION GROUPS INVOLVED.

*FALLOUT + BIOLOGICAL CONCENTRATION, MILK + DIETARY HABIT + STRONTIUM

14-18265 ALSO IN CATEGORY 15
CONTINUING DATA ON FALLOUT--ENVIRONMENTAL MEASUREMENTS
U.S. PUBLIC HEALTH SERVICE
60 PAGES, FIGURES, TABLES, REFERENCES, RADIOLOGICAL HEALTH DATA AND REPORTS 8(1) PAGES 5-64 (JANUARY 1967)

TABULATED DATA AND DISCUSSION ARE PRESENTED FOR MILK SURVEILLANCE (U.S. AND INTERNATIONAL), FOOD AND DIET SURVEILLANCE, WATER, AIR, AND DEPOSITION, IODINE IN BOVINE THYROIDS, AND ENVIRONMENTAL RADIOACTIVITY AT CERTAIN AEC LOCATIONS. DIFFERENT PERIODS DURING 1966 ARE COVERED.

*FALLOUT + MONITORING PROGRAM, ENVIRONMENTAL

14-18266 ALSO IN CATEGORY 15
OAKLEY DT
A SUMMARY OF EXPOSURES TO THE OFFSITE POPULATION AS A RESULT OF NUCLEAR REACTOR TESTS CONDUCTED AT THE NUCLEAR ROCKET DEVELOPMENT STATION DURING 1965
U.S. PUBLIC HEALTH SERVICE, NATIONAL CENTER FOR RADIOLOGICAL HEALTH
4 PAGES, 1 FIGURE, 5 TABLES, 6 REFERENCES, RADIOLOGICAL HEALTH DATA AND REPORTS 8(1) PAGES 1-4 (JANUARY 1967)

A SUMMARY OF WHOLE-BODY AND THYROID EXPOSURES RESULTING FROM FIVE NUCLEAR-REACTOR EXPERIMENTS CONDUCTED AT THE NUCLEAR ROCKET DEVELOPMENT STATION DURING 1965 IS PRESENTED. THE EXPOSURES WERE COMPARED WITH PROTECTION STANDARDS, AND IT WAS SHOWN THAT THE EXPOSURES WERE SMALL, COMPARED WITH THE STANDARDS.

*NUCLEAR ROCKET + DOSE + KIWI TNT (TRANSIENT NUCLEAR TEST) + RADIOACTIVITY, RELEASE

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-18267 ALSO IN CATEGORY 16

HUZITA A

EFFECT OF RADIOACTIVE FALLOUT UPON THE ELECTRICAL CONDUCTIVITY OF THE LOWER ATMOSPHERE
RADIATION CENTRE OF OSAKA PREFECTURE, SAKAI
10 PAGES, 5 FIGURES, 4 TABLES, 18 REFERENCES, J. GEOMAGNET. GEOLEC. 18, PAGE 363 THRU 372, (1966)

THE RADIOACTIVE FALLOUT FROM THE RUSSIAN TESTS ON OCTOBER 30, 1961, CAUSED A TEMPORARY INCREASE IN ATMOSPHERIC CONDUCTIVITY UP TO TWICE THE NORMAL VALUE AT KYOTO UNIVERSITY. THE INCREASE WAS CAUSED MAINLY BY RADIATIONS FROM THE DRY FALLOUT ACCUMULATED ON THE GROUND SURFACE. RADIATIONS FROM THE AIRBORNE NUCLEAR DERRIS WERE CONSIDERED TO HAVE CONTRIBUTED LITTLE TO THE INCREASE IN CONDUCTIVITY.

AIRBURST + ATMOSPHERIC ELECTRICITY + DEPOSITION + FALLOUT + JAPAN

14-18272 ALSO IN CATEGORY 16

HICKS BB

NUCLEATION AND THE WET REMOVAL OF FALLOUT

AUSTRALIA. COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANIZATION

6 PAGES, 2 FIGURES, 1 TABLE, 13 REFERENCES, JOURNAL OF APPLIED METEOROLOGY 5(2), PAGE 169 THRU 174, (APRIL 1966)

THE THEORY OF CONDENSATION NUCLEATION APPLIED TO RADIOACTIVE FALLOUT CONSTITUENTS SHOWS THAT MOST TROPOSPHERIC FALLOUT PARTICLES ARE EFFICIENT NUCLEI IN THE PRODUCTION OF WARM RAIN. AS A RESULT IT IS FOUND THAT THE CONCENTRATION OF FALLOUT IN PRECIPITATION IS A MAXIMUM SOON AFTER THE ONSET OF RAIN. THIS IS SUPPORTED BY MEASUREMENTS MADE DURING MANY INDIVIDUAL STORMS OVER AN EXTENSIVE PERIOD. THE INFLUENCE ON FALLOUT CONCENTRATION OF VARIATIONS IN RAINFALL RATE THROUGH A STORM IS FOUND TO BE COMPLICATED BY THE OPPOSING EFFECTS OF THE LIQUID WATER CONTENT OF THE CLOUD AND THE GENERATION OF DOWNDRAFTS WITHIN IT.

CONCENTRATION, AREA + DEPOSITION + FALLOUT + RAINOUT

14-18306 ALSO IN CATEGORY 16

REPORT OF PREOPERATIONAL REVIEW ME-1A (STURGIS) FLOATING NUCLEAR POWER PLANT

DEPARTMENT OF THE ARMY, SAFETY OFFICE, WASHINGTON, D.C.

24 PAGES, 11 REFERENCES, FEBRUARY 19, 1967, PREPARED BY ARMY REACTOR SYSTEMS HEALTH AND SAFETY REVIEW COMMITTEE

REPORT ON OPERATION AT BELVOIR SITE. A DECISION WAS REACHED SO LEAK-RATE TESTS WILL BE DONE AT A MAXIMUM PRESSURE OF 50 PSIG. LEAK-RATE MEASURED (AT 50 PSIG) AS 0.28 VOL. LIMIT, C.61. MODIFICATIONS ARE TO BE MADE TO PREVENT ROD EJECTION UPON THIMBLE RUPTURE. WASTE-DISPOSAL SYSTEM REVIEWED IN DETAIL.

AVAILABILITY - SAFETY OFFICE, OFFICE OF THE CHIEF OF ENGINEERS, DEPARTMENT OF THE ARMY, WASHINGTON, D.C. 20315

*MODIFICATION, SYSTEM OR EQUIPMENT + *TEST, LEAK RATE + *WASTE DISPOSAL, GENERAL + ACCIDENT, CONTROL ROD EJECTION + MH 1A (MOBILE HIGH POWER PLANT 1A) + PRESSURE, INTERNAL + REACTOR, MILITARY + REACTOR, PRESSURIZED WATER + SAFETY REVIEW (OPERATIONS, EXPERIMENTS)

14-18372 ALSO IN CATEGORY 19

BLUM JM

RADIOACTIVE CONTAMINATION OF GASEOUS MEDIA

ORNL-TR-1485 +. 8 PAGES, 1 TABLE, 48 REFERENCES, TRANS. FROM ENERGIE NUCLEAIRE 8(2), PAGES 141-153 (1966)

REVIEWS PUBLICATIONS CONCERNED WITH RADIOACTIVE CONTAMINATION OF GASES. BIBLIOGRAPHY INCLUDES OTHER BIBLIOGRAPHIES AND SYMPOSIA IN WHICH PERTINENT PAPERS ARE PRESENTED.

*CONTAMINATION + ATMOSPHERIC POLLUTION + BIBLIOGRAPHY + DOSE CALCULATION, INTERNAL + DOSE MEASUREMENT, INTERNAL + EFFLUENT + RADIOACTIVITY, RELEASE

14-18403

MILK SAMPLING TABULATION

DEPARTMENT OF HEALTH, EDUCATION AND WELFARE, WASHINGTON, D.C.

PRESS RELEASE HEW-225 +. 9 PAGES, TABLES, MARCH 22, 1967

GIVES CONCENTRATIONS OF I-131 IN MILK DURING NOV. AND DEC. 1966 AND OF SR-90 AND SO FOR OCT. AND NOV. 1966. SAMPLES ARE FROM THE NATIONAL PASTEURIZED MILK NETWORK, WHICH INCLUDES SAMPLES FROM EVERY STATE. THE TABULATIONS WERE ACCOMPANIED BY AN EXPLANATION OF THE RELATIONSHIPS OF REPORTED RADIOACTIVITY LEVELS TO THE RADIATION PROTECTION GUIDES AND PROTECTIVE ACTION GUIDES OF THE FEDERAL RADIATION COUNCIL.

AVAILABILITY - DEPARTMENT OF HEALTH, EDUCATION AND WELFARE, WASHINGTON, D. C.

*FALLOUT + IODINE + MONITORING PROGRAM, ENVIRONMENTAL + STRONTIUM + UNITED STATES

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-18406

JOHNSTON JE
HEALTH PHYSICS AND MEDICAL DIVISION RESEARCH PROGRESS REPORT, JANUARY-DECEMBER 1965. AEROSOLS
ATOMIC ENERGY RESEARCH ESTABLISHMENT, HARWELL, ENGLAND
AERE-PR-HPM-9 +. 36 PAGES, PAGE 1 THRU 6, JUNE 1966

REPORTS PROGRESS ON INVESTIGATIONS ON THE TRANSPORT OF AEROSOLS TO LAND SURFACES AND TRACER
STUDIES ON THE DEPOSITION OF POLYSTYRENE INHALED PARTICLES IN THE HUMAN RESPIRATORY TRACT.
DATA REPORTED INCLUDE (IN PART) - VELOCITY OF DEPOSITION OF I-131 ON GRASSLAND, WIND-TUNNEL
AND FIELD EXPERIMENTS ON THE TRANSPORT OF SMALL PARTICLES TO NATURAL SURFACES, MEASUREMENTS
OF THE LIQUID/VAPOR PARTITION OF I-131 IN LIQUID NA, MEASUREMENTS OF THE AIR/WATER PARTITION
COEFFICIENT OF I-131, AND OTHERS.

AVAILABILITY - BRITISH INFORMATION SERVICE, 845 THIRD AVENUE, NEW YORK, NEW YORK 10022, \$1.40 COPY

*AEROSOL + AEROSOL, RADIOACTIVE + FALLOUT + HARWELL (UK)

14-18407 ALSO IN CATEGORY 15

JOHNSTON JE
HEALTH PHYSICS AND MEDICAL DIVISION RESEARCH PROGRESS REPORT, JANUARY-DECEMBER 1965. OPERATIONS GROUP
ATOMIC ENERGY RESEARCH ESTABLISHMENT, HARWELL, ENGLAND
AERE-PR-HPM-9 +. 36 PAGES, PAGE 26 THRU 31, JUNE 1966

WORK REPORTED INCLUDES AEROSOL INHALATION STUDIES USING METHYL IODIDE TRACER (I-132) FOR
IODINE METABOLISM, EFFECTIVENESS OF SMEARS FOR MEASURING TRITIUM SURFACE CONTAMINATION,
PERCUTANEOUS UPTAKE OF TRITIUM FROM METAL SURFACES, AND DETERMINATION OF VARIOUS
RADIOISOTOPES IN BODY MATERIALS.

AVAILABILITY - BRITISH INFORMATION SERVICE, 845 THIRD AVENUE, NEW YORK, NEW YORK 10022, \$1.40 COPY

*RADIOCHEMICAL ANALYSIS + ANALYTICAL TECHNIQUE, GENERAL + ANALYTICAL TECHNIQUE, URINE + HARWELL (UK)

14-18408

BARANOV VI + KHITROV LM
RADIOACTIVE CONTAMINATION OF THE SEA
INSTITUT ATOMNOI ENERGII, AKADEMIYA NAUK SSSR
AEC-TR-6641 + IPST-CAT.-1666 +. 203 PAGES, FIGURES, TABLES, REFERENCES, TRANSLATION OF RADIOAKTIVNAYA
ZAGRYAZNENOST MOREI I OKEANOV, IZDATELSTVO NAUKA, MOSCOW 1964

TWENTY-FIVE CHAPTERS ON VARIOUS ASPECTS OF RADIOACTIVE CONTAMINATION OF THE SEA WERE
TRANSLATED. SEPARATE ABSTRACTS WERE PREPARED FOR 23 CHAPTERS ON - GENERAL PROBLEMS, NATURAL
RADIOACTIVITY OF THE SEAS AND OCEANS, ATMOSPHERIC FALLOUT OVER THE SEA, RADIOHYDROCHEMISTRY,
BIOLOGY, PHYSICAL METHODS OF RADIOACTIVITY STUDIES, AND METHODOLOGY. TWO CHAPTERS ON
BIOLOGICAL INDICATION ON WEAK RADIOACTIVE CONTAMINATION OF SEA WATER AND TURBULENT DIFFUSION
OF CONSERVATIVE AND NONCONSERVATIVE ADMIXTURES WERE NOT INCLUDED IN NSA.

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

*OCEAN AND SEA + ENVIRONMENTAL CONDITION + FALLOUT + RADIOBIOLOGY + UNION OF SOVIET SOCIALIST REPUBLICS

14-18409

FEDOROV KN
FOREIGN INVESTIGATIONS OF RADIOACTIVITY IN THE OCEAN IN CONNECTION WITH THE PROBLEM OF RADIOACTIVE WASTE
DISPOSAL
INSTITUTE OF OCEANOLOGY OF THE ACADEMY OF SCIENCES OF THE USSR
AEC-TR-6641 + IPST-CAT.-1666 +. 6 PAGES, 11 REFERENCES, PAGE 1 THRU 6 OF RADIOACTIVE CONTAMINATION OF THE
SEA, 1964

SUMMARIZES THE 1957 REPORT BY THE NATIONAL RESEARCH COUNCIL OF THE USA ON THE EFFECTS OF
ATOMIC RADIATION ON OCEANOGRAPHY AND FISHERIES.

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

*OCEAN AND SEA + ENVIRONMENTAL CONDITION + TESTING + UNION OF SOVIET SOCIALIST REPUBLICS +
WASTE DISPOSAL, OCEAN

14-18410

BARANOV VI
NATURAL RADIOACTIVITY OF OCEANS
INSTITUTE OF GEOCHEMISTRY AND ANALYTICAL CHEMISTRY IM. V.I. VERNADSKII, ACADEMY OF SCIENCES OF THE USSR
AEC-TR-6641 + IPST-CAT.-1666 +. 3 PAGES, 2 TABLES, 3 REFERENCES, PAGE 7 THRU 9 OF RADIOACTIVE
CONTAMINATION OF THE SEA, 1964

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-18410 *CONTINUED*

CONTENTS OF NATURALLY OCCURRING RADIOISOTOPES AND FISSION PRODUCTS FROM FALLOUT IN OCEANS ARE DISCUSSED. DATA SHOW THAT MOST OF THE NATURAL RADIOACTIVITY OF SEA WATER IS DUE TO K-40. URANIUM-238 CONTRIBUTES THE LARGEST PART OF THE ALPHA ACTIVITY. IN BOTTOM SEDIMENTS, RATIOS OF RADIOISOTOPES DIFFER MARKEDLY FROM THOSE IN THE SEA WATER, AND THE PREDOMINATING RADIOISOTOPES ARE TH-226 AND RA.

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

*OCEAN AND SEA + ENVIRONMENTAL CONDITION + RADIOISOTOPE + RADIUM + THORIUM +
UNION OF SOVIET SOCIALIST REPUBLICS + URANIUM

14-18411

LAZAREV KF + LEGIN VR

NATURAL RADIOACTIVITY OF THE WATERS AND SEDIMENTS IN THE BLACK SEA AND THE SEA OF AZOV

RADIUM INSTITUTE IM. V. G. KHLOPIN

AEC-TR-6641 + IPST-CAT.-1666 +. 4 PAGES, 10 REFERENCES, PAGE 10 THRU 13 OF RADIOACTIVE CONTAMINATION OF THE SEA, 1964

RADIOACTIVITY WAS MEASURED IN WATER AND BOTTOM SEDIMENTS FROM THE BLACK SEA AND THE SEA OF AZOV DURING 1958 AND 1959. URANIUM CONCENTRATIONS VARIED FROM 1.5 TO 2.8 X 10 TO THE MINUS 6TH G/L, WITH NO APPARENT REGULARITY OF VARIATION IN EITHER HORIZONTAL OR VERTICAL TRAVERSES. THE CONSTANCY OF THE U CONCENTRATION IN BOTH SEAS WAS SHOWN TO BE RELATED TO THE PRESENCE OF THE CARBONATE COMPLEX OF URANIUM. ALTHOUGH THE URANIUM CONTENTS IN THE WATERS OF BOTH SEAS WERE SIMILAR, THE CONCENTRATIONS IN THE UPPER PORTION OF THE BOTTOM SEDIMENTS WERE DIFFERENT, A DIFFERENCE EXPLAINED BY VARIATION OF HYDROCHEMICAL CONDITIONS. THORIUM-232, TH-226, AND RA WERE ALSO DETERMINED.

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

ENVIRONMENTAL CONDITION + OCEAN AND SEA + RADIOISOTOPE + UNION OF SOVIET SOCIALIST REPUBLICS

14-18412

LAVRENCHIK VN + SOFIEV GN + SHUSKO VM

COMPOSITION AND CONCENTRATION OF THE RADIOACTIVE CONTAMINATION IN THE AIR OVER THE INDIAN AND PACIFIC OCEANS IN 1959-1960, ACCORDING TO DATA OBTAINED BY THE VITYAZ EXPEDITION

INSTITUT ATOMNOI ENERGI, AKADEMIYA NAUK SSSR

AEC-TR-6641 + IPST-CAT.-1666 +. 9 PAGES, 5 FIGURES, 1 TABLE, 6 REFERENCES, PAGE 14 THRU 22 OF RADIOACTIVE CONTAMINATION OF THE SEA, 1964

GEOGRAPHICAL DISTRIBUTION OF NUCLEAR TEST PRODUCTS IN THE WESTERN PART OF THE PACIFIC OCEAN AND THE NORTHERN AND CENTRAL PARTS OF THE INDIAN OCEAN WAS FOUND TO BE RELATED TO THE RATES OF THE DESCENT OF THE AIR MASSES WHICH ARE REFLECTED IN THE VARIATIONS OF ATMOSPHERIC PRESSURES. AN INCREASE IN ATMOSPHERIC PRESSURE USUALLY RESULTS IN AN INCREASE IN THE CONCENTRATION OF CONTAMINATION. THE CONCENTRATION IN THE STRATOSPHERE IS GREATER THAN THAT IN THE TROPOSPHERE, AND DESCENDING AIR MASSES AT SEA LEVEL FACILITATE INCREASES IN CONCENTRATION OF CONTAMINATION. IN THE REGIONS INVESTIGATED, AVERAGE FALLOUT IN THE NORTHERN HEMISPHERE WAS DOUBLE THAT IN THE SOUTHERN.

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

*FALLOUT + ATMOSPHERIC POLLUTION + CONTAMINATION + STRATOSPHERE + TROPOSPHERE +
UNION OF SOVIET SOCIALIST REPUBLICS

14-18413

BELYAEV LI + GEDEONOV LI + SHVEDOV VP + YUZEFORICH AA

RADIOACTIVITY OF THE AIR IN THE CRIMEAN COAST REGION OF THE BLACK SEA IN 1959 - 1960

MARINE HYDROPHYSICAL INSTITUTE, RADIUM INSTITUTE IM. V. G. KHLOPIN

AEC-TR-6641 + IPST-CAT.-1666 +. 10 PAGES, 8 FIGURES, 3 TABLES, 8 REFERENCES, PAGE 43 THRU 52 OF RADIOACTIVE CONTAMINATION OF THE SEA, 1964

THE CONCENTRATION OF RADIOACTIVE SUBSTANCES IN THE AIR WAS DETERMINED AND THE DENSITY OF RADIOACTIVE FALLOUT MEASURED ON THE CRIMEAN COAST OF THE BLACK SEA. PURIFICATION OF THE TROPOSPHERE IS RAPID OWING TO FALLOUT ON LAND SURFACES. INTRODUCTION OF RADIOACTIVITY INTO THE TROPOSPHERE IN THE WESTERN PART OF THE SAHARA IS FOLLOWED BY AN INTENSIVE DEPOSITION OF THIS RADIOACTIVITY IN THE BLACK SEA ZONE AND THE ENTIRE MEDITERRANEAN REGION DUE TO THE PREDOMINANT AIR CURRENTS.

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

*FALLOUT + ATMOSPHERIC POLLUTION + ENVIRONMENTAL CONDITION + TESTING + UNION OF SOVIET SOCIALIST REPUBLICS

14-18414

SEREDA GA

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-18414 *CONTINUED*

ARTIFICIAL RADIOACTIVITY OF THE OCEANS
INSTITUTE OF APPLIED GEOPHYSICSAEC-TR-6641 + IPST-CAT.-1666 +. 6 PAGES, 2 TABLES, 15 REFERENCES, PAGE 53 THRU 58 OF RADIOACTIVE
CONTAMINATION OF THE SEA, 1964

THE LARGEST SOURCE OF CONTAMINATION OF THE OCEANS BY ARTIFICIAL RADIOACTIVITY IS FROM NUCLEAR WEAPONS TESTING. OF ALL THE RADIOISOTOPES FROM NUCLEAR EXPLOSIONS, ONLY AR-90 AND CS-137 HAVE REMAINED IN CONSIDERABLE QUANTITIES IN THE DISSOLVED STATE. VERTICAL EXCHANGE OF WATER BELOW THE LAYER OF TEMPERATURE DISCONTINUITY CAUSES MIGRATION OF SR-90 AND CS-137 TO DEPTHS OF 1000 M OVER A PERIOD OF 3 TO 4 YR. QUANTITIES OF SR-90 AND CS-137 THROUGHOUT THE OCEAN ARE SEVERAL TIMES GREATER THAN THE CORRESPONDING QUANTITIES FOR DRY LAND. THE AMOUNTS OF CESIUM AND STRONTIUM IN THE OCEANS CANNOT BE ESTIMATED FROM RADIOACTIVITY DETERMINATIONS IN SOILS.

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

*OCEAN AND SEA + CESIUM + FALLOUT + RADIOISOTOPE + STRONTIUM + TESTING +
UNION OF SOVIET SOCIALIST REPUBLICS

14-18415

POLIKARPOV GG

CERTAIN BIOLOGICAL ASPECTS OF RADIOACTIVE CONTAMINATION OF THE SEA AND OCEANS

SEVASTOPOL BIOLOGICAL STATION IM. A. D. KOVALEVSKII, ACADEMY OF SCIENCES OF THE UKR. SSR

AEC-TR-6641 + IPST-CAT.-1666 +. 27 PAGES, 6 FIGURES, 9 TABLES, 73 REFERENCES, PAGE 78 THRU 104 OF
RADIOACTIVE CONTAMINATION OF THE SEA, 1964

METHODS FOR EXPRESSING THE RADIOISOTOPE CONCENTRATING ABILITY OF MARINE HYDROBIONTS AND DEPENDENCY OF SUCH EXPRESSIONS ON Y-91, CE-144, CO-60, ZN-65, AND RU-106 WERE DETERMINED. ACCUMULATION COEFFICIENTS SHOWED THAT YTTRIUM AND CERIUM WERE GENERALLY DISTINGUISHED BY THE LARGEST ACCUMULATION COEFFICIENTS, GERMANIUM AND PHOSPHORUS, AVERAGE, STRONTIUM AND CESIUM, SMALL, AND SULFUR THE LEAST. FATE OF ACCUMULATED RADIONUCLIDES AFTER DEATH OF THE ORGANISM, TRANSFER OF RADIOISOTOPES THROUGH SEAFOOD TO MAN, AND EFFECTS OF RADIOISOTOPE EMISSIONS ON PHYSIOLOGY OF HYDROBIONTS ARE DISCUSSED.

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

*BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + *OCEAN AND SEA + BIOLOGICAL CONCENTRATION, FOOD + BIOTA +
RADIOBIOLOGY + UNION OF SOVIET SOCIALIST REPUBLICS

14-18416

MOISEEV PA + KARDASHEV AV

RADIOACTIVITY OF CERTAIN MARINE LIFE OF THE FAR EASTERN SEAS IN 1958 FOLLOWING NUCLEAR WEAPONS TESTING BY
THE USA IN THE CENTRAL PART OF THE PACIFIC OCEAN

ALL-UNION SCIENTIFIC RESEARCH INSTITUTE OF MARINE FISHERY AND OCEANOGRAPHY

AEC-TR-6641 + IPST-CAT.-1666 +. 10 PAGES, 7 FIGURES, 2 TABLES, 23 REFERENCES, PAGE 105 THRU 114 OF
RADIOACTIVE CONTAMINATION OF THE SEA, 1964

SURVEYS WERE MADE IN 1958 OF THE RADIOACTIVE CONTAMINATION OF MARINE ORGANISMS. RESULTS SHOW (1) PLANKTON, THE BASIC FOOD FOR FISH, AND LAMINARIA FROM THE FAR EAST WERE CONTAMINATED AS A RESULT OF NUCLEAR WEAPONS TESTS IN 1958, (2) THE MAGNITUDE OF RADIOACTIVE CONTAMINATION DEPENDS ON THE SITES OF HABITATION, (3) WATER MASSES CARRY RADIOACTIVITY FOR GREAT DISTANCES.

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

*BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + *OCEAN AND SEA + BIOLOGICAL CONCENTRATION, ALGAE +
BIOLOGICAL CONCENTRATION, ANIMAL + RADIOISOTOPE + UNION OF SOVIET SOCIALIST REPUBLICS

14-18417

VENDE GV + PARCHEVSKII VE

RADIOACTIVE CONTAMINATION OF ORGANISMS OF THE BLACK SEA, RESULTS AND PROCEDURE FOR DETERMINING
STRONTIUM-90 IN THE CYSTOSEIRA

SEVASTOPOL BIOLOGICAL STATION IM. A. D. KOVALEVSKII, ACADEMY OF SCIENCES OF THE UKR. SSR

AEC-TR-6641 + IPST-CAT.-1666 +. 7 PAGES, 4 FIGURES, 2 TABLES, 11 REFERENCES, PAGE 121 THRU 127 OF
RADIOACTIVE CONTAMINATION OF THE SEA, 1964

THE SR-90 CONTENT IN MARINE ORGANISMS UNDER NATURAL CONDITIONS WAS STUDIED BY EXTRACTIVE CHEMISTRY AND SCINTILLATION RADIOMETRY. DATA ON THE CONCENTRATION OF RADIOSTRONTIUM IN CYSTOSEIRA BARBATA ASH (2.55 X 10 TO THE MINUS 13TH CI/G) AGREES WITH DATA PUBLISHED ON THE CONTENT OF SR-90 IN SARGASSUM ENERVE. AMONG THE VARIOUS MARINE ORGANISMS STUDIED THE GREATEST AMOUNT (1 X 10 TO THE MINUS 14TH CI/G) OF RADIOSTRONTIUM WAS DETECTED IN THE HYDROCORAL STYLASTER SP.

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

*ANALYTICAL TECHNIQUE, GENERAL + *BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS +
BIOLOGICAL CONCENTRATION, ALGAE + BIOLOGICAL CONCENTRATION, ANIMAL + RADIOCHEMICAL ANALYSIS + STRONTIUM +

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-18417 *CONTINUED*
UNION OF SOVIET SOCIALIST REPUBLICS

14-18418
KHITROV LM + KOKLYAROV KA
APPLICATION OF DEEP-WATER GAMMA-RADIOMETER FOR RADIOACTIVITY MEASUREMENTS IN THE OCEAN
INSTITUTE OF GEOCHEMISTRY AND ANALYTICAL CHEMISTRY IM. V. I. VERNADSKII OF THE ACADEMY OF SCIENCES OF THE
USSR
AEC-TR-6641 + IPST-CAT.-1666 +. 12 PAGES, 5 FIGURES, 6 REFERENCES, PAGE 145 THRU 156 OF RADIOACTIVE
CONTAMINATION OF THE SEA, 1964

AN AUTOMATIC GAMMA RADIOMETER WAS DESIGNED FOR RADIOACTIVITY MEASUREMENT AT MAXIMUM DEPTHS IN
THE OCEAN. USING THE RADIOMETER (SENSITIVITY, THRESHOLD OF 2×10^{-12} TO THE MINUS 10TH CI),
RADIOACTIVITY LEVELS EXCEEDING BACKGROUND BY A FACTOR OF MORE THAN 2 OR 3 WERE NOT DETECTED
IN THE CENTRAL AND NORTHERN PARTS OF THE INDIAN OCEAN DURING 1960.

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

*OCEAN AND SEA + FALLOUT + GAMMA + INSTRUMENTATION, RADIATION MONITORING + RADIOISOTOPE +
UNION OF SOVIET SOCIALIST REPUBLICS

14-18419
SAMOKHIN GV + FEDOROV AF
GAMMA-BACKGROUND OF THE SEA
POLAR SCIENTIFIC RESEARCH AND PLANNING INSTITUTE OF SEA FISHERIES AND OCEANOGRAPHY IM. N.M. KNIPOVICH
AEC-TR-6641 + IPST-CAT.-1666 +. 4 PAGES, 7 REFERENCES, PAGE 157 THRU 160 OF RADIOACTIVE CONTAMINATION OF
THE SEA, 1964

THE INTENSITY OF GAMMA RADIATION IN THE REGIONS OF THE NORTHERN FISHING BASIN WAS EXAMINED.
THE LOWEST GAMMA BACKGROUND WAS FOUND IN THE OPEN SEA. IN THE NEAR SHORE REGIONS, A CONSTANT
BACKGROUND WAS FOUND EXCEPT DURING SPRING. THE INTENSITY IN THE REGIONS DIRECTLY ADJACENT TO
THE COASTAL ZONE DEPENDS ON THE NATURE OF THE REGION. AN INCREASE IN GAMMA BACKGROUND WAS
OBSERVED DURING PRECIPITATION. BACKGROUND DIMINISHED WITH DEPTH DUE TO WATER SCREENING OF
THE COSMIC COMPONENT. THERE WAS AN INCREASE IN INTENSITY IN WATER ADJACENT TO THE BOTTOM DUE
TO THE RADIATION OF THE SEA FLOOR.

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

*OCEAN AND SEA + GAMMA + INSTRUMENTATION, RADIATION MONITORING + UNION OF SOVIET SOCIALIST REPUBLICS

14-18483 ALSO IN CATEGORY 15
PROGRAM - TWELTH ANNUAL MEETING OF THE HEALTH PHYSICS SOCIETY
20 PAGES, JUNE 1967

TITLES AND ABSTRACTS ARE PRESENTED FOR 67 PAPERS GIVEN AT THE MEETING. SUBJECTS INCLUDED
SITING OF NUCLEAR POWER PLANTS, HEALTH PHYSICS INSTRUMENTATION, OPERATIONAL HEALTH PHYSICS,
RADIONUCLIDE INHALATION, RADIOBIOLOGY, GAMMA SPECTROMETRY, RADIONUCLIDE METABOLISM, RADIATION
DOSIMETRY, RADIOCHEMICAL ANALYSIS, RADIATION PHYSICS, BIOASSAY, STANDARDS AND REGULATIONS,
ENVIRONMENTAL RELEASES.

BIOMEDICAL + INSTRUMENTATION, RADIATION MONITORING + RADIATION PROTECTION, ORGANIZATION + RADIOBIOLOGY

14-18508 ALSO IN CATEGORIES 1 AND 17
LOGAN JE
US FISH AND WILDLIFE REPORT ON OYSTER CREEK, SEPTEMBER 22, 1967
JERSEY CENTRAL POWER AND LIGHT COMPANY, MORRISTOWN, NEW JERSEY
4 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(42) PAGES 19-21 (OCTOBER 19, 1967), DOCKET NO. 50-219

(LETTER, OCTOBER 10) RECOMMENDATIONS SIMILAR TO THOSE RECENTLY MADE AT OTHER REACTORS
(POSTOPERATIONAL RADIOLOGICAL SURVEY, ECOLOGICAL SURVEYS, LIMIT RADIOACTIVE DISCHARGE BELOW
FISH-HARM LEVEL, ETC.). REFERS TO THERMAL BARRIERS IN OYSTER CREEK (SIX), HARM TO SHELLFISH
AS THEY PUMP WATER FASTER AT HIGH TEMPERATURE AND QUALITY DETERIORATES, AND PROMOTION OF
ALGAE.

*THERMAL POLLUTION + BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + HEAT SINK + OYSTER CREEK +
REACTOR, BOILING WATER

14-18542 ALSO IN CATEGORY 15
MILLER CF + LEE H + SARTOR JD
INTRODUCTION TO RADIOLOGICAL DEFENSE PLANNING
STANFORD RESEARCH INSTITUTE, MENLO PARK, CALIFORNIA
59 PAGES, 36 FIGURES, 2 REFERENCES, MAY 1965

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-18542 *CONTINUED*

THE PLANNING OF RADIOLOGICAL DEFENSE (RADEF) COUNTERMEASURES, FOR DEVELOPING EITHER REQUIREMENTS FOR THE DESIGN OF RADEF SYSTEMS OR OPERATIONAL REQUIREMENTS AND LIMITATIONS, IS BASED ON THE AVAILABILITY OF BASIC RADIOLOGICAL DATA AND ON TECHNIQUES FOR APPLYING THE DATA TO RADEF PROBLEMS AND SITUATIONS. THE BASIC RADIOLOGICAL DATA AND MAJOR PARAMETERS INVOLVED IN RADEF PLANNING ARE GIVEN, AND THE USE OF THE VARIOUS FACTORS LISTED ABOVE IN THE SOLUTION OF RADEF PROBLEMS IS DESCRIBED.

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

*CIVIL DEFENSE + DOSE CALCULATION, EXTERNAL + FALLOUT

14-18543 ALSO IN CATEGORY 15

EGOROV IM + LAZAREV AF + PEROV NL + TIMOFEEV AA + ZHERNOV VS
HANDBOOK OF RECORDING INSTRUMENTS FOR IONIZING RADIATION
UNIVERSITAT GOTTINGEN

AEC-TR-6709 + IPST-CAT.-1800 +. 468 PAGES, FIGURES, TABLES, REFERENCES, TRANSLATION OF APPARATURA DLYA REGISTRATSII ISSLEDOVANIYA IONIZIRUYUSHCHIKH IZLUCHENII, ATOMIZDAT, MOSCOW, 1965.

THE HANDBOOK DESCRIBES MASS-PRODUCED AND EXPERIMENTAL SOVIET EQUIPMENT DEVICES, INSTALLATIONS, PHOTOMULTIPLIERS, SCINTILLATORS, GEIGER-MUELLER COUNTERS, AND IONIZATION CHAMBERS. IT CONTAINS CHARACTERISTICS OF DEVICES USED FOR PERSONNEL DOSIMETRY, DOSE AND DOSE-RATE MEASUREMENTS, MONITORING THE RADIOACTIVE CONTAMINATION OF WORK SURFACES AND WATER, AEROSOL INSTRUMENTS, SINGLE-CHANNEL AND MULTICHANNEL ANALYZERS.

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

*INSTRUMENTATION, GENERAL + *MONITOR, RADIATION, GENERAL + DOSIMETRY, GENERAL + INSTRUMENTATION, AIR SAMPLING + INSTRUMENTATION, RADIATION MONITORING + INSTRUMENTATION, RECORDER + MONITOR, RADIATION, SURFACE + UNION OF SOVIET SOCIALIST REPUBLICS

14-18544

REHAK W

RADIOCHEMICAL DETERMINATION OF CS-137 IN WATER, FALLOUT, FILTER-MATERIALS, PLANTS AND FOOD STUFFS
STAATLICHE ZENTRALE FUR STRAHLENSCHUTZ, GERMANY

SZS 1 (1967) +. 17 PAGES, 2 FIGURES, 1 TABLE, 14 REFERENCES, ABSTRACT IN PUBLIC HEALTH ENGINEERING ABSTRACTS 47(9), PAGE 301, (SEPTEMBER 1967)

DESCRIBES A METHOD FOR DETERMINING CS-137 IN WATER, FALLOUT, AND BIOLOGICAL MATERIALS. THE ESSENTIAL STAGES OF THE METHOD ARE ION EXCHANGE ON AMMONIUM MOLYBDOPHOSPHATE AND PRECIPITATION OF THE CESIUM AS CHLOROPLATINATE. THE SEPARATION OF SR-90 FROM THE SAME SAMPLE IS POSSIBLE.

*RADIOCHEMICAL ANALYSIS + CESIUM + FALLOUT + GERMANY + WATER, GENERAL

14-18545

RAYNOR GS

ISOKINETIC SAMPLING APPARATUS

U. S. PATENT 3-261-199 +. 4 PAGES, 2 FIGURES, JULY 19, 1966

THE PROBLEM OF ISOKINETIC SAMPLING OF AIR IS COMPOUNDED BY THE FACT THAT THE AIR VELOCITY (WIND) IS CONSTANTLY CHANGING IN DIRECTION AND MAGNITUDE. THIS INVENTION MAKES IT POSSIBLE TO SAMPLE ATMOSPHERIC AIR AND SIMILAR GASEOUS ENVIRONMENTS WITHOUT DISTURBING THE LINES OF FLOW SO AS TO OBTAIN A TRUER AND MORE REPRESENTATIVE SAMPLE. THE INVENTION CONSISTS IN PROVIDING A NOVEL SYSTEM INCORPORATING A FLOW VALVE OF UNIQUE CONSTRUCTION, THE USE WHICH REGULATES THE FLOW INTO A SAMPLING TUBE IN A PRECISE MANNER TO OBTAIN AN EXACT MATCH OF THE INLET VELOCITY TO THAT OF THE VELOCITY OF THE AIR BEING SAMPLED.

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

*SAMPLING + ANALYTICAL TECHNIQUE, AIR + ANALYTICAL TECHNIQUE, GAS + INSTRUMENTATION, AIR SAMPLING

14-18547 ALSO IN CATEGORY 15

DOWNES WL + WILSON HB + SYLVESTER GE + LEACH LJ + MAYNARD EA.
EXCRETION OF URANIUM BY RATS FOLLOWING INHALATION OF URANIUM DIOXIDE
UNIVERSITY OF ROCHESTER, SCHOOL OF MEDICINE AND DENTISTRY

9 PAGES, 2 FIGURES, 5 TABLES, 11 REFERENCES, HEALTH PHYSICS 13(5), PAGES 445-453 (MAY 1967)

RATS WERE EXPOSED TO AN AEROSOL OF UO₂ (5 MGU/M TO THE 3RD) FOR PERIODS OF 17-140 DAYS. TWENTY-FOUR HOURS AFTER TERMINATION OF EXPOSURE, THE RESPIRATORY TRACT CONCENTRATIONS VARIED FROM 45 TO 410 MICROGRAMS U/G DEPENDING ON THE EXPOSURE TIME. BIOLOGICAL HALF-TIMES FOR RESPIRATORY TRACT RETENTION, BASED ON A SINGLE EXPONENTIAL EXPRESSION WERE 141, 169, 239, AND 289 DAYS FOR EXPOSURE TIMES OF 17, 20, 58, AND 140 DAYS, RESPECTIVELY. A FIT OF THE RETENTION DATA TO A POWER FUNCTION WAS ALSO OBTAINED BY COMPUTER ANALYSIS. SIGNIFICANT AMOUNTS OF URANIUM WERE EXCRETED IN THE URINE AND FECES ONLY DURING THE FIRST MONTH AFTER EXPOSURE.

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-18547 *CONTINUED*
*BIOLOGICAL CONCENTRATION, ANIMAL + AEROSOL + AIR + URANIUM + URANIUM DIOXIDE

14-18549
GARNER RJ + MORLEY F
AGRICULTURAL IMPLICATIONS OF A RELEASE OF FISSION PRODUCTS FROM A CRITICALITY INCIDENT
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, HARWELL
11 PAGES, 6 TABLES, 10 REFERENCES, HEALTH PHYSICS 13(5), PAGES 465-475 (MAY 1967)

THE CONSEQUENCES HAVE BEEN ASSESSED, IN RELATION TO HUMAN CONSUMERS OF AGRICULTURAL PRODUCTS, OF A RELEASE OF FISSION PRODUCTS FROM CRITICALITY EXCURSIONS OF MAGNITUDE 3 TIMES 10 TO THE 18-20 FISSIONS IN METAL AND LIQUID SYSTEMS. IT IS CONCLUDED THAT EXPOSURE OF CHILDREN THROUGH INGESTION OF CONTAMINATED MILK IS UNLIKELY TO BE A SERIOUS PROBLEM WITH EXCURSIONS OF MAGNITUDE LESS THAN 10 TO THE 20TH FISSIONS UNLESS A SUBSTANTIAL FRACTION OF THE FISSION PRODUCT INVENTORY IS RELEASED TO THE ENVIRONMENT. HENCE, OTHER AGRICULTURAL PRODUCTS ARE LIKELY TO BE OF LITTLE SIGNIFICANCE. FOR AN EXCURSION OF 10 TO THE 20TH FISSIONS IN A METAL SYSTEM, ASSUMING VAPORIZATION AND COMPLETE RELEASE OF FISSION PRODUCTS, IT MIGHT BE NECESSARY TO BAN THE CONSUMPTION OF MILK WITHIN A RADIUS OF 10 KM OF THE RELEASE IF THE EMERGENCY-ACTION REFERENCE LEVEL CURRENTLY ACCEPTED IN THE U.K. OF 25 RADS TO THE THYROID GLAND IS NOT TO BE EXCEEDED.

*ACCIDENT, CRITICALITY + *AGRICULTURAL CONSIDERATION + BIOLOGICAL CONCENTRATION, AGRICULTURAL PRODUCE + BIOLOGICAL CONCENTRATION, MILK + DOSE CALCULATION, INTERNAL + HARWELL (UK)

14-18550 ALSO IN CATEGORY 15
PRESTON A + JEFFERIES DF
THE ASSESSMENT OF THE PRINCIPAL PUBLIC RADIATION EXPOSURE FROM, AND THE RESULTING CONTROL OF, DISCHARGES OF AQUEOUS RADIOACTIVE WASTE FROM THE UNITED KINGDOM ATOMIC ENERGY AUTHORITY FACTORY AT WINDSCALE, CUMBERLAND
RADIOBIOLOGICAL LABORATORY, LOWESTOFT, SUFFOLK, ENGLAND
9 PAGES, 4 FIGURES, 5 TABLES, 13 REFERENCES, HEALTH PHYSICS 13(5), PAGES 477-485 (MAY 1967)

THE DISCHARGE OF AQUEOUS RADIOACTIVE EFFLUENT TO THE SEA FROM THE UNITED KINGDOM ATOMIC ENERGY AUTHORITY'S WINDSCALE FACTORY IS LIMITED BY THE CONTAMINATION OF PORPHYRA SEAWEED USED FOR THE MANUFACTURE OF THE FOODSTUFF LAVERBREAD IN SOUTH WALES. DATA GATHERED FOR THE ESTIMATION OF THE RADIATION DOSE RECEIVED BY CONSUMERS OF THIS FOOD, AND ESTIMATES OF THE ANNUAL DOSE TO THE GASTRO-INTESTINAL TRACT OF ADULTS EATING AT THE HIGHEST OBSERVED RATE, ARE PRESENTED FOR THE YEARS SINCE 1959. IN PARTICULAR, THE PRODUCTION, DISTRIBUTION, AND CONSUMPTION OF LAVERBREAD ARE DISCUSSED IN RELATION TO THEIR EFFECT ON THE INTERPRETATION OF RADIOASSAY RESULTS FROM THE SEAWEED COLLECTED IN THE VICINITY OF THE WINDSCALE DISCHARGE POINT.

*DIETARY HABIT + *DOSE CALCULATION, INTERNAL + BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + CERIUM + NIOBIUM + RUTHENIUM + STRONTIUM + UNITED KINGDOM + WASTE DISPOSAL, OCEAN + ZIRCONIUM

14-18551 ALSO IN CATEGORY 15
ALONSO A
GENERALIZATION OF HOLLANDS METHOD TO ASSESS GAMMA-DOSES FROM RADIOACTIVE CLOUDS
JUNTA DE ENERGIA NUCLEAR, MADRID, SPAIN
8 PAGES, 4 FIGURES, 12 REFERENCES, HEALTH PHYSICS 13(5), PAGES 487-94 (MAY 1967)

A METHOD TO ASSESS WHOLE-BODY GAMMA DOSES FROM RADIOACTIVE CLOUDS IS PRESENTED. THE CALCULATIONS ARE CARRIED OUT BY MEANS OF SIMPLE NOMOGRAMS WHICH YIELD A GEOMETRY CORRECTION FACTOR TO BE APPLIED TO THE INFINITE-CLOUD MODEL. THE PROCEDURE IS BASED ON A GENERALIZATION OF HOLLANDS SOLUTION TO INCLUDE NONISOTROPIC GAUSSIAN CLOUDS. THIS METHOD IS CAPABLE OF RENDERING ACCURATE VALUES WITHOUT USING ELABORATE DIGITAL CODES, AND IT IS USEFUL FOR A RAPID EVALUATION OF WHOLE-BODY GAMMA DOSES FROM CLOUDS OF REACTOR DEBRIS.

*DOSE CALCULATION, EXTERNAL + GAMMA + MATHEMATICAL TREATMENT + SPAIN

14-18553 ALSO IN CATEGORY 15
WATT DE
DOSE-EQUIVALENT RATE FROM COSMIC RAY NEUTRONS
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, CHAPELCROSS
7 PAGES, 2 FIGURES, 2 TABLES, 25 REFERENCES, HEALTH PHYSICS 13(5), PAGES 501-07 (MAY 1967)

ON THE BASIS OF PUBLISHED DATA FROM COSMIC RAY STUDIES, THE DOSE-EQUIVALENT RATE DUE TO NATURALLY OCCURRING NEUTRON RADIATION IS CALCULATED TO BE 11.8 PLUS OR MINUS 1.0 MREM/YR FOR A SMALL PIECE OF TISSUE IN AIR AT SEA-LEVEL AND AT A LOCATION WITH GEOGRAPHICAL COORDINATES 55 DEG 2 MIN N, 3 DEG 21 MIN W. EXPERIMENTAL MEASUREMENTS, USING THE SPHERICAL-MODERATOR TECHNIQUE, CONFIRM THE CALCULATED VALUE FOR THE NATURAL DOSE-EQUIVALENT RATE.

*DOSE CALCULATION, EXTERNAL + *DOSE MEASUREMENT, EXTERNAL + COSMIC RADIATION + NEUTRON + UNITED KINGDOM

14-18555 ALSO IN CATEGORY 15
A METHOD FOR THE ESTIMATION OF RESPIRATORY DEPOSITION OF AIRBORNE MATERIALS

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-18555 *CONTINUED*

U.S. PUBLIC HEALTH SERVICE + HARVARD UNIVERSITY

5 PAGES, 1 FIGURE, 3 TABLES, 6 REFERENCES, HEALTH PHYSICS 12(5), PAGES 513-17 (MAY 1967)

THE RELATION BETWEEN THE CONCENTRATION OF AN AIRBORNE MATERIAL AND ITS RESPIRATORY-TRACT DEPOSITION IS ESSENTIAL FOR EVALUATING ITS THREAT TO HEALTH. A SOLUTION TO THIS PROBLEM WAS ATTEMPTED, USING TWO MATHEMATICAL MODELS TIED TOGETHER BY LINEAR-PROGRAMMING TECHNIQUES. THE APPROACH YIELDED REASONABLE RESULTS FOR SELECTED AIRBORNE RADIONUCLIDES, CONSISTENT WITH CURRENT RESPIRATORY-DEPOSITION MODELS.

*ENVIRONMENTAL CONDITION + AEROSOL, RADIOACTIVE + FALLOUT + RADIOISOTOPE

14-18561

TECHNIQUES FOR CONTROLLING AIR POLLUTION FROM THE OPERATION OF NUCLEAR FACILITIES. REPORT OF A PANEL HELD IN VIENNA, 4-8 NOVEMBER 1963. SAFETY SERIES NO. 17.

INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA

STI-PUB-121 +. 124 PAGES, FIGURES, TABLES, REFERENCES, MARCH 1966

REQUIREMENTS FOR THE DESIGN OF VENTILATION AND AIR CLEANING SYSTEMS IN NUCLEAR FACILITIES, INCLUDING RESEARCH AND POWER REACTORS AND RADIOISOTOPE AND RESEARCH LABORATORIES, ARE REVIEWED. THE CONTROL AND MONITORING OF VENTILATION AND AIR-CLEANING SYSTEMS AND FACTORS AFFECTING THE DILUTION OF CONTAMINATED AIR DISCHARGED INTO THE ATMOSPHERE ARE DISCUSSED. TECHNICAL DATA ON AIR CLEANING DEVICES ARE APPENDED.

AVAILABILITY - INTERNATIONAL ATOMIC ENERGY AGENCY, NATIONAL AGENCY FOR INTERNATIONAL PUBLICATIONS, INC., 317 EAST 34TH STREET, N.Y., N.Y. 10016

*AIR CLEANING + *AIRBORNE RELEASE + *ATMOSPHERIC POLLUTION + IAEA (INTERNATIONAL ATOMIC ENERGY AGENCY) + RADIOISOTOPE + REACTOR, POWER + REACTOR, RESEARCH

14-18562

BRUNGS WA

DISTRIBUTION OF COBALT 60, ZINC 65, STRONTIUM 85, AND CESIUM 137 IN A FRESHWATER POND

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

PHS-PUB-999-RH-24 +. 52 PAGES, 6 FIGURES, 32 TABLES, 37 REFERENCES, MARCH 1967

DATA WERE OBTAINED ON THE PHYSICAL, CHEMICAL, AND ECOLOGICAL DISTRIBUTION OF FOUR RADIONUCLIDES ADDED TO A SMALL POND. THE CONDITIONS WERE COMPARABLE TO THOSE IN AN ACCIDENTAL RELEASE OF RADIONUCLIDES TO AN IMPOUNDMENT. COBALT-60, ZINC-65, STRONTIUM-85, AND CESIUM-137 WERE ADDED TO A 30,000-GALLON POND, WITH A SAND SUBSTRATE, AND CONTAINING EXPERIMENTAL BIOTA. THE POND WAS LINED WITH A SINGLE 8-MIL SHEET OF BLACK POLYETHYLENE. SAMPLING FROM THE POND CONTINUED FOR 80 DAYS. THE QUANTITIES OF RADIONUCLIDES WERE DETERMINED WITH A GAMMA-SCINTILLATION SPECTROMETER. SUPPLEMENTAL CHEMICAL AND BIOLOGICAL INFORMATION ON THE ARTIFICIAL POND AND AN ADJACENT CONTROL POND PROVIDED A MEASURE OF THE DIFFERENCES BETWEEN THESE TWO ENVIRONMENTS. RESULTS OF THE EXPERIMENT WERE EVALUATED WITH REGARD TO PLANS FOR FUTURE WORK.

AVAILABILITY - U.S. DEPT. OF HEALTH, EDUCATION, AND WELFARE, PUBLIC HEALTH SERVICE, NATIONAL CENTER FOR RADIOLOGICAL HEALTH, ROCKVILLE, MARYLAND 20852

*BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + BIOTA + CESIUM + COBALT + STRONTIUM + WATER, GENERAL + ZINC

14-18563

ALSO IN CATEGORY 15

SCHULTE HF

THE CONTRIBUTION OF INDUSTRIAL HYGIENE TO THE PROTECTION OF THE RADIATION WORKER

LOS ALAMOS SCIENTIFIC LAB., NEW MEXICO

LA-DC-7582 + CONF-66C910-1 +. 5 PAGES, FOR PRESENTATION AT INTERNATIONAL CONGRESS ON OCCUPATIONAL HEALTH, VIENNA, AUSTRIA

DESCRIBES THE RELATION OF INDUSTRIAL HYGIENE TO RADIATION SAFETY. THE PARALLEL NATURE OF THE WORK OF THE TWO DISCIPLINES ARE EMPHASIZED.

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

*RADIATION SAFETY AND CONTROL + LASL (LOS ALAMOS SCIENTIFIC LABORATORY) + RADIATION PROTECTION, ORGANIZATION

14-18564

SANDERS M

INNOVATIONS IN AIR MONITORING TECHNIQUES FOR LARGE-SCALE PROGRAMS

UNION CARBIDE CORP., Y-12 PLANT, OAK RIDGE, TENN.

Y-KB-78 + CONF-670704-1 + SM/95-45 +. 24 PAGES, 11 FIGURES, MAY 4, 1967, FROM IAEA SYMPOSIUM ON INSTRUMENTS AND TECHNIQUES FOR THE ASSESSMENT OF AIRBORNE RADIOACTIVITY IN NUCLEAR OPERATIONS, VIENNA, AUSTRIA.

AIR MONITORING PLAYS A VITAL ROLE IN CONNECTION WITH THE LARGE PRODUCTION OPERATIONS INVOLVING URANIUM AT THE Y-12 PLANT. NEW DEVELOPMENTS AND MODIFICATIONS OF CONVENTIONAL AIR-MONITORING

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-18564 *CONTINUED*

TECHNIQUES WERE INCORPORATED INTO A LARGE-SCALE SAMPLING PROGRAM. AN APERTURE CARD EQUIPPED WITH A FILTER MEDIUM (WHATMAN 41) IS USED TO COLLECT AN AIR SAMPLE WHICH IS COUNTED AUTOMATICALLY. THE RESULTS ARE SUMMARIZED BY COMPUTER AT AN ANNUAL SAVING OF \$14,000 OVER MANUAL METHODS WITH IMPROVED DEPENDABILITY. SIMILAR TECHNIQUES ARE USEFUL FOR ALLIED PROBLEMS.

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

*MONITOR, RADIATION, AIR + COMPUTER PROGRAM + MONITOR, RADIATION, ENVIRONMENTAL + URANIUM

14-18627 ALSO IN CATEGORY 16

VIECELLI J

EXPLOSION OF A 500 MEGATON BOMB AT THE SURFACE OF THE EARTH. A NUMERICAL CALCULATION OF ATMOSPHERIC EFFECTS

CALIFORNIA UNIV., LIVERMORE. LAWRENCE RADIATION LAB.

UCID-15048 +. 13 PAGES, DECEMBER 1966

PRESENTS THE RESULTS FROM A NUMERICAL CALCULATION OF THE ATMOSPHERIC HYDRODYNAMIC EFFECTS OF A 500-MEGATON SURFACE EXPLOSION.

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

*METEOROLOGY + *NUCLEAR DETONATION + *SHOCK WAVE + COMPUTER PROGRAM + FALLOUT + NUCLEAR EXPLOSION DEBRIS

14-18631 ALSO IN CATEGORY 16

ENGELMANN RJ + PERKINS RW + HAGEN DI + HALLER WA

WASHOUT COEFFICIENTS FOR SELECTED GASES AND PARTICULATES

BATTELLE-NORTHWEST, RICHLAND, WASHINGTON. PACIFIC NORTHWEST LAB.

BNWL-SA-657 + CONF-660648-1 +. 30 PAGES, APRIL 15, 1966, PRESENTED AT 59TH ANNUAL MEETING OF THE AIR POLLUTION CONTROL ASSOCIATION, SAN FRANCISCO, CALIFORNIA

PRECIPITATION SCAVENGING IS THE PRIMARY CLEANSING MECHANISM FOR AIRBORNE GASES AND FINE PARTICLES. ADVANCES IN RADIOCHEMICAL TECHNIQUES ALLOW THE MEASUREMENT OF SUCH WASHOUT COEFFICIENTS DURING NATURAL RAIN AND SNOW. WASHOUT COEFFICIENTS (FRACTION WASHED OUT PER UNIT TIME) ARE PRESENTED FOR SEVERAL GASES AS A FUNCTION OF PRECIPITATION RATE. DEVIATIONS FROM THEORETICAL PREDICTIONS ARE DISCUSSED.

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

*WASHOUT + COALESCENCE + DEPOSITION + METEOROLOGY + PRECIPITATION

14-18705 ALSO IN CATEGORY 16

SHERWOOD RD

PROJECT STRAP. FINAL REPORT

ISOTOPES, INC., WESTWOOD, N. J.

NYO-3615-1 +. 75 PAGES, TABLES, JANUARY 30, 1967

IMPACTION PROBE SAMPLES COLLECTED IN THE LOWER STRATOSPHERE DURING NOVEMBER 1965, MARCH AND APRIL 1966, WERE EXAMINED. THE ACTIVITY COLLECTED ON THE PROBES WAS GENERALLY LESS THAN 15% OF THAT FOUND ON SIMULTANEOUSLY EXPOSED FILTERS. THE RESULTS SUGGEST THAT A SPECTRUM OF PARTICLES HAD BEEN SAMPLED AND THAT FURTHER EFFORT USING IMPROVED COLLECTION FILMS, SHORTER EXPOSURES, AND BETTER ANALYSIS IS REQUIRED TO DETERMINE INDIVIDUAL PARTICLE COMPOSITION AND RADIOACTIVE CONTENT.

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

*INSTRUMENTATION, AIR SAMPLING + *PARTICLE SIZE DISTRIBUTION + *SAMPLING, HIGH ALTITUDE + ATMOSPHERIC DIFFUSION + STRATOSPHERE

14-18707 ALSO IN CATEGORY 16

HALL SJ + RENNEKE BC + MCINTYRE JR + SAUCIER WJ

SEVERE CONVECTIVE STORMS AND THE STRATOSPHERIC SCAVENGING OF RADIOACTIVE PARTICLES. FINAL REPORT OKLAHOMA UNIV. RESEARCH INST., NORMAN. ATMOSPHERIC RESEARCH LAB.

ORO-3083-4 + ARL-1402-4 +. 202 PAGES, DECEMBER 1966

DISCUSSES INDIVIDUAL AREAS OF RESEARCH ON THE ROLE OF SEVERE CONVECTIVE STORMS AND THE STRATOSPHERIC SCAVENGING OF RADIOACTIVE PARTICLES. (1) RADIOACTIVITY IN RAINFALL FROM CONVECTIVE STORMS. (2) ISENTROPIC TRAJECTORIES OF AIR IN THUNDERSTORM ENVIRONMENTS. (3) PATTERNS OF CERTAIN KINEMATIC PROPERTIES OF SQUALL LINES RELATED TO THEIR RADAR ECHOES. (4) RADIOACTIVE FALLOUT FROM STORMS PEACHING INTO THE STRATOSPHERE. (5) RELATIONSHIPS OF DIVERGENCE AND VORTICITY TO BETA CONCENTRATION AND RAINFALL RATES.

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

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-18707 *CONTINUED*

STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*RAINOUT + *WASHOUT + AEROSOL, RADIOACTIVE + DEPOSITION + METEOROLOGY + PRECIPITATION + STRATOSPHERE

14-18719 ALSO IN CATEGORIES 9 AND 7

WESLEY EJ + NYBERG RA

COMPARISON OF CESIUM IODIDE AND SODIUM IODIDE FOR UNDERWATER RADIATION DETECTION SYSTEMS

NAVAL RADIOLOGICAL DEFENSE LAB., SAN FRANCISCO, CALIFORNIA

AD-633752 + USNRDL-TR-1012 +. 16 PAGES, APRIL 21, 1966

COMPARES NAI AND CSI SCINTILLATION DETECTORS FOR APPLICATION TO AN ULTRASENSITIVE UNDERWATER DETECTION SYSTEM. A SERIES OF MEASUREMENTS ARE REPORTED ON THE RESPONSE OF EACH CRYSTAL TO THE GAMMA RAYS FROM K-40 DISTRIBUTED IN WATER, THE ATTENUATION OF THE INTEGRATED COUNT RATE BY ALUMINUM AND STEEL ABSORBERS SURROUNDING THE DETECTOR AND THE BACKGROUND COUNT RATE FROM CONTAMINANTS ON THE CRYSTAL-PHOTOTUBE ASSEMBLY AND PRESSURE HOUSINGS. IT IS CONCLUDED THAT, FOR DEEP-SUBMERGENCE WORK WITH DETECTORS OF EQUIVALENT SIZE, A CSI SYSTEM IS THE MOST SENSITIVE AND, WHEN COMPARED IN TERMS OF A SPECIFIC DETECTION CAPABILITY, THE LEAST EXPENSIVE. TO COMPLETE THE EVALUATION, THE ASSUMPTION THAT CSI CAN BE OPERATED TO ALL DEPTHS WITHOUT A PRESSURE VESSEL MUST BE CONFIRMED.

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

GAMMA + INSTRUMENTATION, RADIATION MONITORING + OCEAN AND SEA

14-18781 ALSO IN CATEGORY 16

HAGE KD + BROWN PS + ARNASON G + LAZORICK S + LEVITZ M

A COMPUTER PROGRAM FOR THE FALL AND DISPERSION OF PARTICLES IN THE ATMOSPHERE

TRAVELERS RESEARCH CENTER, INC., HARTFORD, CONN.

SC-CR-67-2530 +. 214 PAGES, FIGURES, REFERENCES, APRIL 1967

A COMPUTER PROGRAM IS FORMULATED FOR CALCULATING AIR CONCENTRATIONS AND GROUND DEPOSITS OF SOLID PARTICLES OF VARIOUS DENSITIES AND INTERMEDIATE DIAMETERS (ABOUT 3 TO 300 MICRONS, DENSITY 1.0) RELEASED FROM INSTANTANEOUS POINT OR LINE SOURCES AT ALTITUDES UP TO 90 KM. THE PROGRAM WAS DEVELOPED FOR USE IN AEROSPACE NUCLEAR SAFETY HAZARDS ANALYSES. COMPLETE PROGRAM SPECIFICATIONS, DESCRIPTIONS, AND OPERATING INSTRUCTIONS ARE GIVEN ALONG WITH SOME OPERATING GUIDELINES AND AIDS. EXAMPLES OF INPUT AND OUTPUT ARE DISCUSSED AND ILLUSTRATED.

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

*COMPUTER PROGRAM + *DISPERSION + AEROSPACE SAFETY + ATMOSPHERIC DIFFUSION + PARTICLE SIZE + PARTICLE SIZE DISTRIBUTION

14-18808 ALSO IN CATEGORIES 9 AND 16

DANEK WL + DARGIS AA

PARTICLE VELOCIMETER FOR USE CLOSE-IN TO UNDERGROUND EXPLOSIONS. FORMAL REPORT, PHASE 4

ENGINEERING PHYSICS CO., ROCKVILLE, MD.

AD-631496 + DASA-1431-2 +. 93 PAGES, TABLES, DECEMBER 31, 1965

THIS REPORT IS ONE OF A SERIES OF SUCH REPORTS CONCERNED WITH THE DEVELOPMENT OF A PARTICLE VELOCIMETER FOR USE CLOSE TO UNDERGROUND EXPLOSIONS. PHASE I CONSISTED OF A STUDY OF SEVERAL CONCEPTS. PHASE II CONSISTED IN DETERMINING THE BASIC MECHANICAL STRUCTURE OF THE GAGE. PHASE III CONSISTED IN DESIGNING FIELD EXPERIMENTS AND FABRICATION OF THE SUPPORT INSTRUMENTATION, PHASE IV CONSISTED IN DESIGNING A POWER SUPPLY TO PROVIDE THE HIGH CURRENTS REQUIRED AND INCORPORATING THE POWER SUPPLY INTO THE GAGE BODY.

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

CIVIL DEFENSE + EXPLOSION + INSTRUMENTATION, SURVEILLANCE

14-18833

FLETCHER W

SR-90 IN THE AUSTRALIAN ENVIRONMENT DURING 1965

UNITED KINGDOM ATOMIC ENERGY AUTHORITY, CAPENHURST, ENGLAND

7 PAGES, 2 FIGURES, 8 TABLES, 10 REFERENCES, AUSTRAL. J. SCI. 29, PAGE 319 THRU 325, (MARCH 1967)

RESULTS OF AN AUSTRALIA-WIDE SURVEY MADE DURING 1965 AND EARLY 1966 DIRECTED AT MONITORING STRONTIUM-90 IN FALLOUT THROUGH THE FOOD CHAINS TO HUMAN BONE TISSUE ARE REPORTED. THE MEAN ANNUAL DEPOSITION OF SR-90 REMAINED IN THE REGION OF 1 MILLICURIE/SQ. KM. STRONTIUM-90 INCREASED IN 1963 AND 1964 BUT DECREASED DURING 1965 TO THE 1963 LEVEL. THE MEAN RATIO SR-90/CA IN TOTAL DIET FOR 1965 IS TABULATED AND COMPARED WITH RESULTS OF SURVEYS FROM 1957 TO 1964. MILK IS RESPONSIBLE FOR 70% OF THE SR-90 INTAKE. THE RATIO SR-90/CA IN BONE TISSUE INCREASED IN 1964 AND 1965. SURVEY DATA INDICATE THAT FALLOUT FROM PAST NUCLEAR TESTS CONTRIBUTES NO SIGNIFICANT HAZARD TO THE HEALTH OF THE AUSTRALIAN POPULATION NOW OR IN THE FUTURE.

CATEGORY 14
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-18833 *CONTINUED*

*STRONTIUM + BIOLOGICAL CONCENTRATION, MAN + FALLOUT + MONITORING PROGRAM, ENVIRONMENTAL + PRECIPITATION + RAINOUT + SAMPLING

14-18845

BOVARD P + GRAUBY A

APPARATUS FOR RADIOACTIVE DECONTAMINATION OF WATER

COMMISSARIAT A L ENERGIE ATOMIQUE, PARIS, SEINE, FRANCE

CANADIAN PATENT 744,352 +. 12 PAGES, 3 FIGURES, OCTOBER 11, 1966

FILTRATION, USING THE PROPERTIES OF CERTAIN POROUS MEDIA FOR REMOVING THE RADIOACTIVE ELEMENTS AND ELECTROLYSIS TO ISOLATE SUBSTANCES NOT RETAINED BY FILTRATION, ARE THE METHODS USED IN THIS SEPARATION. THE DEVICE IS PORTABLE (IN THE FORM OF A COLUMN) AND HANDLES ABOUT ONE LITER PER HOUR FOR A MINIMUM OF TEN DAYS BEFORE CLEANING OR RENEWAL OF THE FILTERS IS NEEDED. CLAYS, RESINS, OR ACTIVATED CARBON CONSTITUTE THE POROUS MATERIALS. A BACTERIAL FILTER MAY BE ADDED IF REQUIRED.

AVAILABILITY - U.S. PATENT OFFICE, DEPT. OF COMMERCE, WASHINGTON, D. C., \$.30 PER PAGE

*DECONTAMINATION + *FILTER + *PATENT + CANADA + CHARCOAL ADSORBER + ELECTROSTATIC CHARGE + ION EXCHANGE + PRECIPITATION + RADIATION SAFETY AND CONTROL + RESIN

14-18849

ALSO IN CATEGORY 15

YAMAGATA N

BLOOD CONCENTRATIONS OF CS-137 IN PEOPLE IN THE FAR EAST AND THE PACIFIC REGION

INSTITUTE OF PUBLIC HEALTH, TOKYO

2 PAGES, 3 TABLES, 7 REFERENCES, NATURE 213, PAGES 1152-3 (MARCH 18, 1967)

A METHOD OF BLOOD ANALYSIS IS PROPOSED AS A SUBSTITUTE FOR WHOLE-BODY COUNTING IN COUNTRIES WHERE EXPENSIVE COUNTERS ARE NOT GENERALLY AVAILABLE. A MINIMUM OF ABOUT 100 ML OF BLOOD IS REQUIRED FOR DETERMINATION OF CS-137. FOR ESTIMATING TOTAL BODY BURDEN, THE FACTOR RELATING THIS TO BLOOD CONCENTRATION MUST BE KNOWN. THIS WAS FOUND TO AVERAGE 5.99. DATA OBTAINED SINCE NOVEMBER 1965 ARE TABULATED. FOOD HABITS ARE PROBABLY A CAUSE FOR DISCREPANCIES BETWEEN RESULTS OBTAINED FOR INHABITANTS OF VARIOUS PARTS OF THE WORLD. HIGH CONSUMPTION OF SEAFOOD MAY REDUCE THE BODY CONCENTRATIONS OF CS-137. IT IS CONCLUDED THAT BLOOD ANALYSIS APPEARS TO BE A USEFUL MEANS BY WHICH WORLDWIDE INFORMATION ON CS-137 CONCENTRATIONS IN THE GENERAL PUBLIC CAN BE OBTAINED.

*BIOLOGICAL CONCENTRATION, MAN + *CESIUM + *COUNTER + COUNTER, WHOLE BODY + DIETARY HABIT + GROSS BETA + RADIOCHEMICAL ANALYSIS

14-18862

SMITH DR

COMPARISON OF THE THEORETICAL OCEAN DIFFUSION MODELS

NAVAL RADIOLOGICAL DEFENSE LABORATORY, SAN FRANCISCO

USNRDL-TR-67-50 +. 27 PAGES, 2 TABLES, REFERENCES, MAY 15, 1967

SINCE SEVERAL DIFFUSION EQUATIONS EXIST FOR DESCRIBING HORIZONTAL DIFFUSION FROM A POINT-SOURCE RELEASE OF MATERIAL IN THE OCEAN, A COMPARISON OF THESE EQUATIONS WAS MADE TO DETERMINE THE ONE WHICH WOULD GIVE THE MOST CONSERVATIVE ANSWERS FOR EVALUATING RADIOLOGICAL HAZARDS. THIS COMPARISON CAN BE MADE IN TERMS OF THE MAXIMUM SPATIAL AND TEMPORAL COORDINATES OF A GIVEN CONCENTRATION. IN SO DOING, IT IS FOUND THAT THESE COORDINATES CAN BE EXPRESSED IN TERMS OF THE RATIO OF THE INITIAL CONCENTRATION TO THE GIVEN CONCENTRATION RAISED TO SOME POWER. EQUATIONS WERE DERIVED FOR THE CASE OF A CONTINUOUS RELEASE, AND A SIMILAR ANALYSIS WAS MADE FOR THE EQUILIBRIUM SITUATION.

AVAILABILITY - DEFENSE DOCUMENTATION CENTER, CAMERON STATION, ALEXANDRIA, VA.

*EQUATION, GENERAL + *FISSION PRODUCT RELEASE, GENERAL + *HAZARDS ANALYSIS + *OCEAN AND SEA + FALLOUT + MATHEMATICAL STUDY + MODEL TESTING + NUCLEAR DETONATION + RADIATION SAFETY AND CONTROL

14-18932

ALSO IN CATEGORY 18

ADDENDUM TO SAFETY EVALUATION OF VERMONT YANKEE COOLING TOWERS

AEC, DIVISION OF REACTOR LICENSING, WASHINGTON, D. C.

6 PAGES, OCTOBER 16, 1967, DOCKET NO. 50-271

TOWERS (TO REDUCE WATER TEMPERATURE TO ACCEPTABLE LIMITS FOR DISCHARGE TO CONNECTICUT RIVER) WILL BE USED ABOUT 50% OF THE TIME (WHEN RIVER FLOW IS LOW). ASSUMING (1) RADIOACTIVE WASTE RELEASE AT MAXIMUM PERMISSIBLE LIMITS (10(5TH) TIMES EXPECTED LEVELS), (2) FLOW CONDITIONS SUCH THAT DISCHARGE WATER FLOWS TO INTAKE WITHOUT DILUTION, (3) VAPOR IN TOWER CONTAINED THE SAME AMOUNT OF RADIOISOTOPES AS THE WATER, AND (4) WATER LOST IN A TOWER WAS 2.2', THE RESULTING RELEASE, WOULD BE 0.1 TO 0.7 MPC. DRL STAFF PREVIOUS CONCLUSION AS TO SAFETY ARE NOT ALTERED.

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

*SOURCE, CONTINUOUS + *WASTE DISPOSAL, RIVER + AIRBORNE RELEASE + DILUTION + EVAPORATION + HEAT SINK + REACTOR, BOILING WATER + SAFETY EVALUATION + VERMONT YANKEE

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-13660

BUNCH OF

CONTROLLED ENVIRONMENTAL RADIOIODINE TESTS. PROGRESS REPORT NO. 2

HEALTH AND SAFETY DIVISION, USAEC, IDAHO FALLS, IDAHO

IDC-12053 +. 39 PAGES, 17 TABLES, 10 FIGURES, 34 REFERENCES, AUGUST 1966

THE CONTROLLED ENVIRONMENTAL RADIOIODINE TEST (CERT) PROGRAM CONSISTS OF A SERIES OF FIELD RELEASES OF VARIOUS TYPES OF RADIOIODINE OVER DIFFERENT VEGETATION AND UNDER VARIOUS METEOROLOGICAL CONDITIONS WITH TWO MAJOR OBJECTIVES - (A) TO OBTAIN DATA ON THE HAZARD OF IODINE AND (B) TO OBTAIN DATA ON THE QUANTITATIVE MOVEMENT OF IODINE THROUGH THE AIR-VEGETATION-COW-MILK-HUMAN CHAIN. THE SERIES WAS BEGUN IN THE SPRING OF 1963. THIS REPORT CONTAINS THE RESULTS OF THE SIXTH AND SEVENTH TESTS IN THE SERIES. DEPOSITION AND RETENTION OF VARIOUS FORMS OF RADIOIODINE ON VEGETATION WERE MEASURED IN AN ENVIRONMENTAL CHAMBER. DEPOSITION OF CH₃I IS AT LEAST A FACTOR OF 100 LESS THAN IODINE VAPOR UNDER SIMILAR CONDITIONS AND THE DOSE POTENTIAL IS AT LEAST A FACTOR OF 400 LESS. THE METABOLIC BEHAVIOR OF CH₃I IN HUMANS APPEARS SIMILAR TO OTHER CHEMICAL FORMS OF IODINE. THE SEVENTH TEST WAS DESIGNED TO PROVIDE INFORMATION ON THE MOVEMENT OF RADIOIODINE UNDER TYPICAL LATE-FALL OR EARLY-WINTER CONDITIONS. THE DOSE POTENTIAL WAS A FACTOR OF 2.7 GREATER THAN THE 150 OBSERVED IN CERT-2. HIGH-VOLUME AIR SAMPLERS WERE DEVELOPED TO CHARACTERIZE THE FORMS OF IODINE. A RELATION BETWEEN DEPOSITION VELOCITY AND AREAL VEGETATION DENSITY WAS DETERMINED AND A MODEL DERIVED TO ASSESS LEVELS OF RADIOIODINE IN MILK AND IN THE THYROID. IT IS ESTIMATED THAT THE PROBABLE INGESTION DOSE TO CHILDREN DURING TYPICAL ADVERSE WEATHER IS ABOUT 400 TIMES THAT FOR THE STANDARD-MAN INHALATION DOSE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$2.00 CY, \$0.50 MN

*IODINE + BIOLOGICAL CONCENTRATION, MILK + BIOLOGICAL CONCENTRATION, VEGETATION + DEPOSITION + DOSE CALCULATION, INTERNAL + FISSION GAS RELEASE + INHALATION + METEOROLOGY + SAMPLING

15-16760

ALSO IN CATEGORY 17

CALLEY HW + KEMMET LH

RADIOLOGICAL CONTROL. SHIPPINGPORT PWR CORE 1, CORE 2 REPLACEMENT AND THE PWR CORE 2 MODIFICATION PROGRAM WESTINGHOUSE ELECTRIC CORP., BETTIS ATOMIC POWER LAB., PITTSBURGH

WAPD-298 +. 45 PAGES, 7 FIGURES, 11 TABLES, 8 REFERENCES, MARCH 1967

THE 7-MONTHS PROGRAM (BEGUN IN FEBRUARY 1964) INCLUDED REPLACEMENT OF STEAM GENERATORS AND PUMPS. MANY OUTSIDE-CONTRACTOR PERSONNEL WERE USED, SO AN ELABORATE CONTROL PROGRAM RESULTED. ONLY 2 PEOPLE RECEIVED MORE THAN 3 REMS, ONE DUE TO ERROR IN TOTALING PREVIOUS EXPOSURE, ONE DUE TO RADIATION INCIDENT AT AN ANGLE TO BADGE. SPECIAL EXHAUST SYSTEMS WERE USED FOR EACH CHAMBER. CONTRACTOR PERSONNEL WERE MONITORED BY DLCS. OTHER SPECIAL METHODS ARE DESCRIBED.

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

*MODIFICATION, SYSTEM OR EQUIPMENT + *RADIATION SAFETY AND CONTROL + *REFUELING + REACTOR, PRESSURIZED WATER + SHIPPINGPORT

15-16761

ALSO IN CATEGORY 17

INCIDENTS DURING 1964 SHIPPINGPORT MODIFICATION

WESTINGHOUSE ELECTRIC CORP., BETTIS ATOMIC POWER LAB., PITTSBURGH

WAPD-298 +. 2 PAGES, PAGE 21 AND 43 OF RADIOLOGICAL CONTROL. SHIPPINGPORT PWR CORE 1, CORE 2 REPLACEMENT AND THE PWR CORE 2 MODIFICATION PROGRAM, MARCH, 1967

(PAGE 21) - SEVERAL INCIDENTS INVOLVED UNNECESSARY RADIATION EXPOSURE TO RADIOGRAPHERS WORKING ON PIPE WELDING. IN EACH INSTANCE, THE INCIDENT WAS THE DIRECT RESULT OF CARELESSNESS OR NEGLIGENCE BY THE RADIOGRAPHER OR FAILURE TO FOLLOW THE OPERATING PROCEDURES. (PAGE 43) - A PIPEFITTER REMOVED A PLUG AND GROUND THE HOLE. A 12-IN. BLUE FLAME FLASHED OUT. THE FITTER CONTINUED WORK AND AT SHIFT CHANGE WAS CONTAMINATED (4 MREM/HR). PROCEDURE NOW REQUIRES USE OF A PIPE CUTTER, EXPLOSIMETER, AND NITROGEN PURGE.

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

*MAINTENANCE AND REPAIR + *PERSONNEL EXPOSURE, RADIATION + *RADIATION SAFETY AND CONTROL + *RADIOGRAPHY + FAILURE, OPERATOR ERROR + REACTOR, PRESSURIZED WATER + SHIPPINGPORT + WELDING

15-16931

BULLETIN OF THE MEDICAL DEPARTMENT, BROOKHAVEN NATIONAL LABORATORY

BROOKHAVEN NATIONAL LABORATORY, ASSOCIATED UNIVERSITIES, INC., NEW YORK

BNL-10722 +. 77 PAGES, AUGUST 1, 1966

ACTIVITIES OF THE MEDICAL DEPT. OF BROOKHAVEN NATIONAL LABORATORY ARE SUMMARIZED. RADIATION EFFECTS STUDIES ARE AIMED TOWARD ELUCIDATING RADIOBIOLOGICAL ANALYSES OF HEMATOLOGIC STEM CELLS, BLOOD, AND LYMPH, RADIONUCLIDE KINETICS AND MEASUREMENT IN MAN, ANTIBODY RESPONSE TO VARIOUS CHALLENGES, PATHOGENESIS OF CATARACTS AND SKIN LESIONS, AND DOSIMETRY OF PI MESONS.

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-16931 *CONTINUED*

AND MIXED FIELDS. STRUCTURAL AND FUNCTIONAL INVESTIGATIONS OF PROTEINS, HORMONES, AND ENZYMES INCLUDED STUDIES OF SYNTHESIS, REACTION MECHANISMS, AND BIOENERGETICS. FINE STRUCTURE, FUNCTION AND PREPARATION WERE ANALYZED IN THE NUCLEIC ACIDS. METABOLIC STUDIES USING TRACERS ARE DESCRIBED, AND KINETICS OF CELLULAR PROLIFERATION ARE DESCRIBED. MEDICAL STUDIES OF PERSONS ACCIDENTALLY EXPOSED IN THE MARSHALL ISLANDS INCIDENT, COMPUTER APPLICATIONS IN MEDICAL RESEARCH, AND NEW METHODS FOR DIAGNOSIS USING RADIOGRAPHY OR ISOTOPIC DIAGNOSIS ARE ALSO FEATURED IN THE PROGRAM.

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

*BIOMEDICAL + *RADIATION EFFECT + COMPUTER PROGRAM + DOSIMETRY, GENERAL + FALLOUT + PERSONNEL EXPOSURE, RADIATION + TRACER, RADIOACTIVE

15-16932

ROMAN J + WOLSKA M + WYSOPOLSKI J + URBANOWICZ Z
THERMOLUMINESCENT DOSIMETER WITH MEMORY EFFECT
CENTRAINE LABORATORIUM OCHRONY RADIOLOGICZNEJ, WARSAW, POLAND
CLOR-56/D + CONF-660948-1 +. 10 PAGES, FROM 2ND HEALTH PHYSICS SYMPOSIUM, PECS, HUNGARY, 1966

A LITHIUM FLUORIDE THERMOLUMINESCENT PHOSPHOR WITH TWO WELL-SEPARATED GLOW MAXIMA WAS DEVELOPED. THE THERMOLUMINESCENT PROPERTIES OF THE PHOSPHOR AND THE DOSIMETER OPERATING CHARACTERISTICS ARE GIVEN. THE DOSIMETER SHOWS MEMORY EFFECT BASED ON A MULTIPLE-PEAK TECHNIQUE PERMITTING ACCURACY RE-READING OF THE ACCUMULATED DOSE WITHOUT LOSS OF INFORMATION.

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

*DOSIMETRY, THERMOLUMINESCENCE + *INSTRUMENTATION, RADIATION MONITORING + DOSE

15-16933

ALSO IN CATEGORY 16

ARNSTEN ME
SENSITIVITY OF MORTALITY ESTIMATES TO UNCERTAINTIES IN SOME NUCLEAR DAMAGE PARAMETERS
RAND CORP., SANTA MONICA, CALIF.
RM-4707-TAB(P.2) +. 143 PAGES, FIGURES, NOVEMBER 1966

THE GRAPHS OF THIS MEMORANDUM EXHIBIT THE MORTALITIES IN HYPOTHETICAL NUCLEAR ATTACKS ON THE UNITED STATES AS ONE VARIES THE ESTIMATES OF THE LETHALITY OF PROMPT EFFECTS AND OF RADIATION (BOTH ACUTE AND PROTRACTED EXPOSURE) AND OF SUCH PARAMETERS AS THE FISSION FRACTION, THE GAMMA ACTIVITY LEVEL, ACTIVITY-PARTICLE-SIZE DISTRIBUTIONS, WINDS, AND CIVIL DEFENSE POSTURE. THUS ONE CAN EXPLORE THE SENSITIVITY OF ATTACK OUTCOMES TO UNCERTAINTIES IN A NUMBER OF IMPORTANT PARAMETERS.

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

*CIVIL DEFENSE + *FALLOUT + *NUCLEAR EXPLOSION DEBRIS + DOSE + METEOROLOGY + NUCLEAR DETONATION + PARTICLE SIZE + PARTICULATE + RADIATION DAMAGE + RADIATION EFFECT

15-16934

LAROR HYGIENE AND OCCUPATIONAL DISEASES, VOL. 10, NO. 5, 1966
JPRS-36843 + TT-66-33273 +. 104 PAGES, FIGURES, TABLES, REFERENCES, TRANSLATION OF GIG. TRUD. PROF. ZABOLEV., 10(5), PAGE 1-64 (1966)

CALC CONSISTS OF INSOLUBLE, FINELY DIVIDED RADIUM SULFATE IN COMBINATION WITH BARIUM SULFATE AND ZINC SULFIDE. AFTER CLEANING THE HANDS WITH XYLENE AND INDUSTRIAL SOAP, THE RESIDUAL CONTAMINATION IS 60%. THE MOST EFFECTIVE AGENTS WERE FOUND TO BE THOSE WHICH CONTAINED ADSORBENTS AND SURFACE-ACTIVE SUBSTANCES, SUCH AS KAOLIN PASTE. SOAPS WITH CATIONIC, SURFACE-ACTIVE ADDITIVES, SUCH AS BENZYLDIMETHYLOCTADECYL-AMMONIUM IODIDE, BROMIDE AND CHLORIDE, ARE COMPARATIVELY EFFECTIVE.

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

*DECONTAMINATION + RADIATION SAFETY AND CONTROL

15-16944

BROWN B
LONG-TERM RADIATION DAMAGE. EVALUATION OF LIFE-SPAN STUDIES
RAND CORP., SANTA MONICA, CALIFORNIA
RM-5083-TAB +. 70 PAGES, REFERENCES, DECEMBER 1966

PRESENTS AN EXPLORATORY REVIEW, FROM THE VIEWPOINT OF A STATISTICIAN, OF PART OF THE LITERATURE ON RADIATION LIFE-SHORTENING. IT EVALUATES INTERPRETATIONS OF THE OBSERVED DATA AND SUMMARIZES WHAT SEEMS PERTINENT IN REGARD TO LIFE-SHORTENING. SOME OF THE METHODS SUGGESTED FOR ESTIMATING IT IN MAN FROM DATA ON EXPERIMENTAL ANIMALS ARE DISCUSSED. A DESCRIPTION IS GIVEN OF SOME OF THE MODELS USED TO STUDY RADIATION INJURY AND RECOVERY. THERE IS A DISCUSSION OF THE DIFFERING POINTS OF VIEW IN THE GENERAL THEORIES OF THE AGING

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-16944 *CONTINUED*
PROCESS.

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

*RADIATION DAMAGE + *STATISTICAL ANALYSIS + DATA PROCESSING + DOSE + RADIATION EFFECT + RADIOBIOLOGY + X-RAY

15-16945
KATZ YH
NUCLEAR WAR AND SOIL EROSION. SOME PROBLEMS AND PROSPECTS
RAND CORP., SANTA MONICA, CALIFORNIA
RM-5203-TAB +. 93 PAGES, REFERENCES, DECEMBER 1966

AN EXPLORATORY SURVEY IS REPORTED ON THE IMPLICATIONS OF THERMONUCLEAR WAR ON THE PROBLEM OF SOIL EROSION IN A POSTATTACK ENVIRONMENT. THE CURRENT PROBLEM OF SOIL EROSION IS REVIEWED. FOR THE POSTATTACK PERIOD THE MOST SERIOUS PROBLEM WOULD BE DAMAGE TO THE GROUND COVER BY THE ATTACK, SUBSEQUENT FIRES AND RADIATION DAMAGE, AND THE DIMINISHMENT OF EFFORTS TO COMBAT EROSION BECAUSE OF LAND DESERTION, OR WHERE INSUFFICIENT EFFORT CAN BE MOBILIZED TO CARRY THROUGH MAJOR EROSION-COMBATTING PROJECTS.

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

*CIVIL DEFENSE + *EROSION + BIOLOGICAL CONCENTRATION, GENERAL + DAMAGE + ECOLOGICAL CONSIDERATION + ENVIRONMENTAL CONDITION + FALLOUT + FIRE + NUCLEAR DETONATION + PARTICLE, RADIOACTIVE + SOIL + SOIL, PROPERTY + TOPOGRAPHY + WATER, GENERAL

15-16946
MANUAL ON ENVIRONMENTAL MONITORING IN NORMAL OPERATION. SAFETY SERIES NO. 16
INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA (AUSTRIA)
STI-PUB-98 + IAEA-SS-16 +. 70 PAGES, 27 FIGURES, 5 TABLES, MARCH 1966

THE OBJECTIVES, PLANNING, PROCEDURES, AND PROGRAMS FOR ENVIRONMENTAL MONITORING IN THE VICINITY OF ESTABLISHMENTS THAT DISCHARGE RADIOACTIVE MATERIALS TO THE ENVIRONMENT DURING NORMAL OPERATION ARE DISCUSSED. MANPOWER AND EQUIPMENT ARE ALSO CONSIDERED. SEPARATE ABSTRACTS WERE PREPARED FOR FIVE ARTICLES THAT ARE APPENDED, GIVING EXAMPLES OF ROUTINE ENVIRONMENTAL MONITORING PROGRAMS CURRENTLY IN USE IN DIFFERENT COUNTRIES. FOR MORE ON THE SUBJECT, SEE ABSTRACTS 23405-23409, NUCLEAR SCIENCE ABSTRACTS, VOLUME 20, NO. 13, PAGE 2864.

AVAILABILITY - INTERNATIONAL ATOMIC ENERGY AGENCY (NEW YORK OR GENEVA) \$1.50

*SURVEY, RADIATION, ENVIRONMENTAL + CZECHOSLOVAKIA + EQUIPMENT, GENERAL + FRANCE + ITALY + MONITOR, RADIATION, AIR + MONITOR, RADIATION, ENVIRONMENTAL + MONITOR, RADIATION, GAS + MONITOR, RADIATION, LIQUID + MONITOR, RADIATION, SOLID + MONITORING PROGRAM, ENVIRONMENTAL + MONITORING SYSTEM, RADIATION + PROCEDURES AND MANUALS + REACTOR POWER + RIVER, GENERAL + STATE PROGRAM + SURVEY, GENERAL + UNITED KINGDOM + UNITED STATES + URANIUM + WASTE DISPOSAL, LIQUID + WASTE DISPOSAL, OCEAN + WASTE DISPOSAL, RIVER + WASTE DISPOSAL, SOLID + WASTE DISPOSAL, TERRESTRIAL

15-16948
SETTER LR + ANDREW R + COLEMAN R + FRIEND A + MARKARIAN C + STORY A
ROUTINE SURVEILLANCE OF RADIOACTIVITY AROUND NUCLEAR FACILITIES. INTERLABORATORY TECHNICAL ADVISORY COMMITTEE REPORT NO. 1
PUBLIC HEALTH SERVICE, WASHINGTON, D. C. DIVISION OF RADIOLOGICAL HEALTH
NP-16616 +. 28 PAGES, TABLES, REFERENCES, DECEMBER 1966

THIS REPORT IS A CONCISE, COMPREHENSIVE, AND PRACTICAL GUIDE FOR PLANNING, OPERATING, AND EVALUATING THE EFFECTIVENESS OF A PROGRAM FOR ROUTINE SURVEILLANCE OF RADIOACTIVITY AROUND NUCLEAR FACILITIES. INCLUDED ARE REFERENCES TO REGULATIONS AND GUIDES FOR EVALUATING RELEASES FROM SUCH FACILITIES, AND COMMENTARY ON THE NATURE AND TYPES OF WASTES TO BE ANTICIPATED, THEIR FATE WHEN RELEASED TO THE ENVIRONMENT, AND RECOMMENDED PROCEDURES FOR SAMPLING THE AIR, WATER, MILK, FOOD, BIOTA, SOIL, AND PEOPLE FOR RESULTING CONTAMINATION.

AVAILABILITY - U.S. GOVERNMENT PRINTING OFFICE, WASHINGTON, D.C. 20402, \$0.75 COPY

*FALLOUT + *SURVEILLANCE PROGRAM + *SURVEY, RADIATION, ENVIRONMENTAL + ALPHA EMITTER + ANALYTICAL TECHNIQUE, WATER + BETA EMITTER + BIOLOGICAL CONCENTRATION, MAN + BIOTA + CODES AND STANDARDS + EFFLUENT + FEDERAL RADIATION COUNCIL + FILTER + GAMMA EMITTER + INSTRUMENTATION, RADIATION MONITORING + MAXIMUM PERMISSIBLE CONCENTRATION (MPC) + MEASUREMENT, GENERAL + MONITOR, RADIATION, SAMPLING + PARTICULATE + PERSONNEL EXPOSURE, RADIATION + POPULATION EXPOSURE + PRECIPITATION + RADIATION SAFETY AND CONTROL + RADIOACTIVITY, RELEASE + RADIOLOGY + REACTOR, GENERAL + SAMPLING + SOIL + SURVEY, RADIATION, EMERGENCY + WASTE DISPOSAL, GENERAL + WASTE DISPOSAL, TERRESTRIAL + WASTE SOURCE AND TYPE

15-16949 ALSO IN CATEGORY 14
PARSONS PJ
SYMPOSIUM ON WASTE DISPOSAL INTO SURFACE WATERS

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-16949 *CONTINUED*
LONDON UNIVERSITY, ENGLAND
9 PAGES, 1 TABLE, NUCLEAR SAFETY 8(3), PAGES 249-257 (SPRING 1967)

THE SYMPOSIUM WAS CONCERNED WITH THE BEHAVIOR OF RADIOACTIVE WASTES RELEASED INTO SURFACE WATERS. THE FIRST SESSION COVERED THE PHYSICAL AND BIOLOGICAL TRANSPORT OF RADIONUCLIDES THROUGH SUCH MECHANISMS AS DILUTION, SEDIMENTATION, AND CURRENT MOVEMENTS OR BY UPTAKE BY BIOLOGICAL ORGANISMS. IT COVERED ALSO THE BEHAVIOR OF RADIONUCLIDES IN SURFACE AND DEEP LAYERS OF WATER. THE SECOND SESSION WAS DEVOTED TO THE WAYS IN WHICH RADIONUCLIDES, RELEASED AS WASTE, MAY CAUSE A RADIATION DOSE TO MAN. THIS MAY BE THROUGH MOVEMENT INTO THE FOOD CHAIN, BY INTRODUCTION INTO SUCH CHAINS BY IRRIGATION, OR BY EXTERNAL RADIATION. THE EVALUATION OF THESE MAIN ROUTES OF EXPOSURE WAS ACCOMPANIED BY A DESCRIPTION OF ENVIRONMENTAL INVESTIGATIONS PRECEDING RELEASE. THE THIRD AND FINAL SESSION DEALT WITH THE POSSIBLE EFFECTS WASTES MAY HAVE ON THE RESOURCES OF THE SEAS THROUGH SOMATIC EFFECTS ON ORGANISMS OR GENETIC EFFECTS ON POPULATIONS OF SUCH ORGANISMS.

*SURFACE WATER, DISPOSAL MEDIA + *WASTE DISPOSAL, RIVER + AQUATIC ORGANISMS + AUSTRIA + BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + BIOTA + CESIUM + CHROMIUM + COBALT + CONCENTRATION, AREA + DIETARY HABIT + DIFFUSION + DILUTION + DISPERSION + EFFLUENT + ESTUARY + FALLOUT + FISSION PRODUCT TRANSPORT + GROSS BETA + MANGANESE + PARTICLE SIZE + PARTICULATE + PHOSPHORUS + POPULATION EXPOSURE + RADIOACTIVITY, RELEASE + RIVER, CLINCH + RIVER, COLUMBIA + RIVER, RHONE + RUTHENIUM + SAMPLING + SORPTION + STRONTIUM + SURFACE WATER, GENERAL + SURFACE WATER, NUCLIDE OCCURRENCE + SURFACE WATER, SEDIMENT + SURFACE WATER, SUSPENDED MATERIAL + SURFACE WATER, TRACER + WASTE DISPOSAL, OCEAN + ZINC

15-16950 ALSO IN CATEGORY 14
CROZAZ G + LANGWAY CC + PICCIOTTO F
ARTIFICIAL RADIOACTIVITY REFERENCE HORIZONS IN GREENLAND FIRN
ARMY COLD REGIONS RESEARCH AND ENGINEERING LAB., HANOVER, N. H.
AD-644597 + RR-202 +. 15 PAGES, 3 FIGURES, AUGUST 1966

TOTAL BETA MEASUREMENTS WERE MADE ON MELT-WATER SAMPLES FROM A STRATIGRAPHICALLY DATED FIRN CORE PROFILE FROM THE INLAND GREENLAND ICE SHEET. A MARKED INCREASE IN RADIOACTIVITY IS FOUND IN THE 1953 FIRN LAYER WHICH CORRESPONDS TO THE FIRST IMPORTANT FALLOUT FROM NUCLEAR TEST BOMBS. THE PRE-1953 NATURAL BETA ACTIVITY IS 5 DPM/KG. THE INFLUX OF ARTIFICIAL DEBRIS FROM THE IVY TESTS IN 1953 IS NOTED BY A SHARP RISE IN BETA ACTIVITY TO 10 DPM/KG. TOTAL SK-90 DEPOSIT TO JUNE 1964 IS 9.3 PLUS OR MINUS 1.5 MILLICURIES SQ. KM (24 PLUS OR MINUS 4 MC/MI SQ. MILE). AVERAGE PB-210 ACTIVITY AT TIME OF DEPOSIT IS 3.9 PLUS OR MINUS 0.4 DPM/KG.

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

*FALLOUT + ALASKA + ATMOSPHERIC DIFFUSION + GROSS BETA + HYDROLOGICAL CONSIDERATION, GENERAL + INSTRUMENTATION, METEOROLOGICAL + INSTRUMENTATION, NUCLEAR + NUCLEAR DETONATION + NUCLEAR EXPLOSION DEBRIS + RADIOACTIVITY, RELEASE + STRONTIUM

15-16952
ENVIRONMENTAL MONITORING IN EMERGENCY SITUATIONS. A MANUAL BASED ON THE WORK OF A PANEL OF EXPERTS
INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA, 1966
IAEA-SAFETY SERIES-18 + STI/PUB/118 +. 122 PAGES, 18 FIGURES, 19 TABLES, 36 REFERENCES, JUNE 1966

THE PURPOSE OF THIS MANUAL IS TO PROVIDE ADVICE AND TECHNICAL GUIDANCE ON MONITORING IN CONNECTION WITH EMERGENCY SITUATIONS RESULTING FROM RADIATION ACCIDENTS INVOLVING THE UNCONTROLLED RELEASE OF RADIOACTIVE SUBSTANCES TO THE NATURAL ENVIRONMENT. THE MANUAL PROVIDES GUIDANCE ON THE IMPORTANT FACTORS WHICH SHOULD BE CONSIDERED IN FORMULATING SPECIFIC EMERGENCY MONITORING PLANS AND INCLUDES EXAMPLES OF PROCEDURES THAT MAY BE USED.

AVAILABILITY - INTERNATIONAL ATOMIC ENERGY AGENCY (NEW YORK OR GENEVA) \$3.00 COPY

*MONITOR, RADIATION, ENVIRONMENTAL + ACCIDENT ANALYSIS + ACCIDENT, CONSEQUENCES + ACCIDENT, CRITICALITY + ACCIDENT, GENERAL + AIRBORNE RELEASE + ALPHA EMITTER + BETA EMITTER + BIOLOGICAL CONCENTRATION, FOOD + BIOLOGICAL CONCENTRATION, GENERAL + BIOLOGICAL CONCENTRATION, MAN + BIOLOGICAL CONCENTRATION, MILK + CONTAMINATION + DISPERSION + DOSE + DOSIMETRY, GENERAL + EMERGENCY PROCEDURE + EQUIPMENT, GENERAL + GAMMA + HAZARDS ANALYSIS + MONITOR, RADIATION, AIR + MONITOR, RADIATION, EMERGENCY + POPULATION EXPOSURE + RADIATION SAFETY AND CONTROL + RELEASE RATE + SAMPLING + SURVEILLANCE PROGRAM + SURVEY, GENERAL + SURVEY, RADIATION, EMERGENCY + SURVEY, RADIATION, ENVIRONMENTAL + SURVEY, RADIATION, ENVIRONMENTAL + SURVEY, RADIATION, GENERAL

15-16954
MCCASLIN JB + PATTERSON HW + SMITH AR + STEPHENS LD
SOME RECENT DEVELOPMENTS IN TECHNIQUE FOR MONITORING HIGH-ENERGY ACCELERATOR RADIATION
LAWRENCE RADIATION LAB., UNIVERSITY OF CALIFORNIA, BERKELEY
UCRL-16769 + CONF-660920-5 +. 21 PAGES, AUGUST 1966, FOR PRECEEDINGS OF FIRST INTERNATIONAL CONGRESS OF INTERNATIONAL RADIATION PROTECTION ASSOCIATION, ROME, ITALY, SEPTEMBER 5-10, 1966

THREE RECENT DEVELOPMENTS IN TECHNIQUES FOR MONITORING PARTICULATE RADIATION ABOVE 20 MEV USE NUCLEAR EMULSION, ELEMENTAL MERCURY, AND BE-7 PRODUCTION IN LIGHT ELEMENTS. BELOW 20 MEV, THE USE OF MODERATED FOILS OF IN, AU, AND CO HAS BEEN EXTENDED TO INCLUDE TA.

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

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-16954 *CONTINUED*

*ACCELERATOR + *INSTRUMENTATION, RADIATION MONITORING + *PERSONNEL EXPOSURE, RADIATION + MONITOR, RADIATION, PERSONNEL + NEUTRON + RADIATION SAFETY AND CONTROL

15-16955

BUCHHAVE P

TRANSISTORIZED DOSIMETER READER. TEST MODEL
FORSVARETS FORSKNINGSRAD, COPENHAGEN, DENMARK
NP-16705 +. 29 PAGES, APRIL 1966, (IN DANISH)

A FULLY TRANSISTORIZED READING INSTRUMENT FOR IONIZATION-CHAMBER PERSONAL DOSIMETERS WAS CONSTRUCTED. THE INSTRUMENT HAS A REGGEDIZED MOVING-COIL INSTRUMENT FOR DOSE READING. A FIELD-EFFECT TRANSISTOR (FET) IS THE ACTIVE ELEMENT OF THE ELECTROMETER INPUT. THE MAIN PURPOSE OF CONSTRUCTING THIS INSTRUMENT WAS TO PROPOSE APPLICABLE CIRCUITS FOR A FIELD INSTRUMENT. THE READER CONSTRUCTION WAS AN INTEGRATING PART OF A DEVELOPMENT PROJECT ON LOW-COST DOSIMETERS WITH TIME CONSTANTS OF MORE THAN 100 YEARS.

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

*INSTRUMENTATION, RADIATION MONITORING + DOSE + DOSIMETRY, GENERAL + MONITOR, RADIATION, PERSONNEL

15-16956

HANZEL SD + COTMAN K + GABROVSEK Z + KRISTAN J

RADIATION MONITORING AND PROTECTION SYSTEM FOR THE REACTOR TRIGA MARK II AT THE NUCLEAR INSTITUTE J. STEFAN, LJUBLJANA
NUKLEARNI INSTITUT JOZEF STEFAN, LJUBLJANA (YUGOSLAVIA)
NIJS-R-494 +. 11 PAGES, DECEMBER 1966

THE REQUIREMENTS ON THE INTEGRATED INSTRUMENTATION SYSTEM FOR RADIATION MONITORING ARE DESCRIBED. SPECIAL ATTENTION IS PUT ON THE DETECTION AND THE CONTROL OF RADIATION HAZARDS. A GENERAL TREATMENT OF THE PROBLEMS AND EQUIPMENT INVOLVED IN PROCESS, EFFLUENT, AREA, AND PERSONNEL MONITORING IS GIVEN. THE TYPES OF RADIATION ENCOUNTERED IN THE ENVIRONMENT OF NUCLEAR REACTOR ARE DISCUSSED. A REVIEW OF RADIATION MONITORING EQUIPMENT USED IN THE PLANT AND THEIR SENSITIVITY AND RELIABILITY WITH REGARD TO ACCEPTED STANDARDS FOR PERSONNEL AND GENERAL PUBLIC PROTECTION IS GIVEN. A BRIEF SUMMARY OF THE RADIATION MONITORING SYSTEMS USED IN THE PLANT IS ALSO INCLUDED.

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

*INSTRUMENTATION, RADIATION MONITORING + MONITOR, RADIATION, PERSONNEL + RADIATION SAFETY AND CONTROL + REACTOR, GENERAL

15-16958

MUSIALOWICZ T + WYSOPOLSKI J

FILM-BADGES FILTER COMBINATIONS FOR MEASUREMENT OF X AND GAMMA RADIATION ABOVE 75 KEV
CENTRALNE LABORATORIUM OCHPONY RADIOLGICZNEJ, WARSAW (POLAND)
CLOR-51/D +. 18 PAGES, 1966, IN POLISH

THE RESULTS OF INVESTIGATIONS OF FILTERS FOR REDUCING THE ENERGY-DEPENDENCE OF THE FOTON-FILMS IN DOSIMETRY OF ELECTROMAGNETIC RADIATION OF VARIOUS ENERGIES. THE FILM RESPONSE WAS INVESTIGATED BY USING NORMALLY FILTERED X-RAY SPECTRA (NORMAL RADIATION), 50-200 KV, AND GAMMA EMITTERS I-131, CS-137, PA-226 AND CO-60. THE BEST LINEARITY IN ENERGY RANGE 75 KEV TO 1.25 MEV WAS OBTAINED BY USING THE FILTER OF 0.3 MM PB + 0.6 MM SN (IN ADJACENT TO FILM). FOR THIS FILTER, THE RELATIVE RESPONSE OF FOTON ROENTGEN-SUPER FILM TO RA-226 RADIATION AT ZERO ANGLE OF INCIDENCE IN MENTIONED ENERGY RANGE WAS BETWEEN 1-1.1.

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

*DOSIMETRY, PHOTOGRAPHIC + DOSIMETRY, GENERAL + FILTER + GAMMA + INSTRUMENTATION, RADIATION MONITORING + X-RAY

15-16959

MADSHUS K + STROEMME, A + KRISTIAN K

SEASONAL VARIATIONS IN THE 137CS CONCENTRATIONS IN COWS MILK, 1963-1966
NORSK HYDROS INSTITUTE FOR CANCER RESEARCH, OSLO + NORSK RADIUMHOSPITAL, OSLO + STATENS
RADIOLOGISK-FYSISKE LABORATORIUM, OSLO (NORWAY)
NYO-3364-27 +. 10 PAGES, 3 FIGURES, 3 TABLES

SEASONAL VARIATIONS IN THE CS-137 CONTAMINATION IN MILK WERE STUDIED DURING THE PERIOD 1963 AND 1966. VARIABLES IDENTIFIED IN CONTAMINATION LEVELS WERE THE RATE OF INTAKE, GRAZING CONDITIONS, USE OF SUPPLEMENTARY FODDER, AND RATE OF FALLOUT. MILK SAMPLES FROM 30 NORWEGIAN DAIRIES WERE ANALYZED. MINIMUM CS-137 CONCENTRATIONS WERE OBSERVED DURING FEBRUARY, MARCH, AND APRIL, INCREASING SUDDENLY IN MAY AND CONTINUING TO INCREASE UNTIL AUGUST, WHEN A SHARP PEAK WAS REACHED. FOOD WAS THE CHIEF SOURCE OF CS-137 IN MILK. CONCENTRATIONS IN DRINKING WATER WERE NEGLIGIBLE AND WERE VERY SMALL IN SUPPLEMENTARY FODDER. RESULTS CONFIRM THE

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-16959 *CONTINUED*

BELIEF THAT CS-137 CONCENTRATIONS IN MILK ARE DECLINING.

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

*BIOLOGICAL CONCENTRATION, MILK + *FALLOUT + BIOLOGICAL CONCENTRATION, ANIMAL + BIOLOGICAL CONCENTRATION, VEGETATION + CESIUM + NORWAY + SAMPLING + SURFACE WATER, NUCLIDE OCCURRENCE + SURVEY, RADIATION, ENVIRONMENTAL

15-16960

BARBER DE

STANDARDS OF PERFORMANCE FOR FILM BADGE SERVICES

UNIVERSITY OF MICHIGAN, NATIONAL SANITATION FOUNDATION

PHS-PU4L. 999-RH-20 +. 47 PAGES, 7 FIGURES, 4 TABLES, 12 REFERENCES, SEPTEMBER 1966

STANDARDS OF PERFORMANCE FOR FILM-BADGE SERVICES ARE OF GENERAL CONCERN TO FILM-BADGE SERVICES, USERS OF THESE SERVICES, AND REGULATORY AGENCIES. A QUALITY-CONTROL PROGRAM SELF-IMPOSED BY FILM-BADGE SERVICES, BUT INVOLVING ALL THESE GROUPS, IS DESCRIBED. FILM-BADGE-PERFORMANCE EVALUATION PROCEDURES HAVE BEEN DEvised TO GENERATE DATA SUFFICIENTLY BROAD IN SCOPE TO SERVE AS THE BASIS FOR CONTROL LIMITS. THE PROCEDURES AND CONTROL LIMITS WILL BE APPLIED IN PERIODIC EXAMINATIONS OF FILM-BADGE SERVICES. IRRADIATION PROCEDURES, DOSIMETRY, AND A MEASURE OF FILM-BADGE ACCURACY APPROPRIATE TO PRACTICAL USE ARE DISCUSSED. NEARLY 2000 FILM BADGES WERE IRRADIATED WITH VARIOUS TYPES AND ENERGIES OF RADIATION. ADMINISTRATIVE PROCEDURES FOR PERIODICALLY EVALUATING FILM-BADGE SERVICE PERFORMANCE AND FOR RECOGNIZING ACCEPTABLE PERFORMANCE ARE ALSO DESCRIBED.

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

*CODES AND STANDARDS + *DOSIMETRY, PHOTOGRAPHIC + DOSIMETRY, GENERAL + FILM, GENERAL + QUALITY CONTROL + RADIATION PROTECTION, ORGANIZATION + RADIATION SAFETY AND CONTROL

15-16961

CRESTA M + LACOURLY G

DETERMINATION OF THE DIETS IN ELEVEN REGIONS OF THE EUROPEAN COMMUNITY WITH A VIEW TO STUDYING THE

RADIOACTIVE CONTAMINATION LEVEL. METHODS USED. RESULTS OF FAMILY ENQUIRIES

COMMISSARIAT A L-ENERGIE ATOMIQUE, FONTENAY-AUX-ROSES (FRANCE). CENTRE D-ETUDES NUCLEAIRES

CEA-R-2979 + EUR-2768.F +. 296 PAGES, FIGURES, TABLES, NOVEMBER 1966, IN FRENCH

GIVES RESULTS OBTAINED FROM FOOD SURVEYS MADE DURING 1963-1965, INVOLVING 9000 FAMILIES LIVING IN 11 REGIONS SPREAD OUT OVER THE SIX EUROPEAN COMMUNITY COUNTRIES. A PARTIAL ANALYSIS OF THE RESULTS OBTAINED COVERS A REDUCED SAMPLE OF 3725 FAMILIES. IT MAKES IT POSSIBLE TO FIX THE COMPOSITION OF THE MEAN INDIVIDUAL, MONTHLY, AND ANNUAL FOOD CONSUMPTIONS FOR EACH OF THE 11 REGIONS. DETAILS OF THE ORGANIZATION OF THE SURVEY, OF THE DATA PROCESSING METHODS AND OF THE METHOD OF PRESENTING THE RESULTS ARE GIVEN IN THE FIRST PART OF THE REPORT. THE SECOND PART PRESENTS, IN NUMERICAL-TABLE FORM, THE CONSUMPTION OF VARIOUS FOODSTUFFS AND THE FEEDING PRINCIPLES FOR EACH REGION COVERED BY THE SURVEY. TABLES SUMMARIZING THE DATA MAKE IT POSSIBLE TO COMPARE THE MEAN INDIVIDUAL CONSUMPTIONS IN THE VARIOUS REGIONS STUDIED.

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

*BIOLOGICAL CONCENTRATION, FOOD + *BIOLOGICAL CONCENTRATION, MAN + FALLOUT + SAMPLING + SURVEY, RADIATION, ENVIRONMENTAL

15-16962

ARNSTEN ME

SENSITIVITY OF MORTALITY ESTIMATES TO UNCERTAINTIES IN SOME NUCLEAR DAMAGE PARAMETERS

RAND CORP., SANTA MONICA, CALIFORNIA

RM-4795-TAB(P. 1) +. 126 PAGES, FIGURES, TABLES, REFERENCES, NOVEMBER 1966

ESTIMATES OF THE LETHALITY OF NUCLEAR RADIATION AND PROMPT EFFECTS ARE REVIEWED TO INDICATE THE RANGES OVER WHICH THE ESTIMATES ARE SCATTERED. IN ADDITION, ESTIMATES OF THE QUANTITY AND DISTRIBUTION OF RADIOACTIVITY ARE DISCUSSED BRIEFLY. THESE RANGES OF ESTIMATES ARE THEN TRANSLATED INTO RANGES OF OUTCOMES OF HYPOTHETICAL NUCLEAR ATTACKS ON THE UNITED STATES.

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

*NUCLEAR ATTACK + CIVIL DEFENSE + *FALLOUT + NUCLEAR DETONATION + NUCLEAR EXPLOSION DEBRIS + RADIATION EFFECT

15-16964

JOHNSON TL + ATTIX FH

PILOT COMPARISON OF TWO THERMOLUMINESCENT DOSIMETRY SYSTEMS WITH FILM BADGES IN ROUTINE PERSONNEL MONITORING

NAVAL RESEARCH LAB., WASHINGTON, D. C.

NP-16507 +. 34 PAGES, 9 FIGURES, 5 TABLES, 5 REFERENCES, JANUARY 3, 1967

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-16964 *CONTINUED*

AN INTERCOMPARISON WAS MADE OF THE PERFORMANCE OF TWO THERMOLUMINESCENT DOSIMETRY (TLD) SYSTEMS AND CONVENTIONAL FILM BADGES IN A ROUTINE GAMMA-RAY PERSONNEL-MONITORING OPERATION. QUARTZ-FIBER POCKET DOSIMETERS WERE WORN IN SOME CASES ALSO BUT WERE READ OUT MORE FREQUENTLY THAN THE MONTHLY INTERVAL USED FOR THE OTHER SYSTEMS.

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

*DOSIMETRY, THERMOLUMINESCENCE + *MONITOR, RADIATION, PERSONNEL + DOSIMETRY, GENERAL + INSTRUMENTATION, RADIATION MONITORING

15-16972

HALLAN JB

STUDY TO DETERMINE REQUIREMENTS FOR PUBLIC HEALTH FACILITIES IN A POST-THERMONUCLEAR ATTACK ENVIRONMENT.

FINAL REPORT

RESEARCH TRIANGLE INST., DURHAM, N. C.

AD-643204 +. 95 PAGES, NOVEMBER 1966

THIS STUDY DETERMINES REQUIREMENTS FOR ADEQUATE PUBLIC-HEALTH FACILITIES AND OPERATIONS (WATER, SEWAGE, AND SOLID WASTE) IN A POSTTHERMONUCLEAR-ATTACK ENVIRONMENT. FOUR CITIES WERE SURVEYED TO EVALUATE SOLID WASTE DISPOSAL TECHNIQUES AND TO DETERMINE SIMPLE TYPES OF EQUIPMENT AVAILABLE FOR EMERGENCY TREATMENT OF WATER AND SEWAGE. A QUESTIONNAIRE WAS SUBSEQUENTLY DEVELOPED TO ASCERTAIN THE KNOWLEDGE LEVEL AND PREPAREDNESS OF SOLID-WASTE-TREATMENT PEOPLE TO COPE WITH DISASTER CONDITIONS. THIS QUESTIONNAIRE AND A SIMILAR ONE DEALING WITH WATER- AND SEWAGE-TREATMENT OPERATIONS (DEVELOPED UNDER A PREVIOUS CONTRACT) WERE THEN ADMINISTERED TO THE FOUR CITIES. FINDINGS FROM BOTH QUESTIONNAIRES ARE SUMMARIZED AND EVALUATED.

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

*CIVIL DEFENSE + *NUCLEAR ATTACK + NUCLEAR DETONATION

15-16973

GALVAO JP + RIBEIRO DA FONSECA AJ + GODINHO MM + TEIXEIRA MR + DE BARROS MG

ENVIRONMENTAL RADIOACTIVITY MEASUREMENTS ON L.F.E.N. (1960-1965)

JUNTA DE ENERGIA NUCLEAR, SCAVEM, PORTUGAL. LABORATORIO DE FISICA E ENGENHARIA NUCLEARES

LFEN-50 +. 95 PAGES, 71 FIGURES, TABLES, 20 REFERENCES, 1966

THE METHODS USED FOR ENVIRONMENTAL RADIOACTIVITY MEASUREMENTS AT LABORATORIO DE FISICA E ENGENHARIA NUCLEARES ARE DESCRIBED AND DISCUSSED AND THE RESULTS OBTAINED FROM 1960 TO 1965 ARE PRESENTED.

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

*FALLOUT + *SURVEY, RADIATION, ENVIRONMENTAL + AIR + ANALYTICAL TECHNIQUE, MILK + BIOLOGICAL CONCENTRATION, FOOD + BIOLOGICAL CONCENTRATION, MILK + BIOLOGICAL CONCENTRATION, VEGETATION + DOSE + GAMMA + IODINE + METEOROLOGY + MONITOR, RADIATION, AIR + PORTUGAL + RAINOUT + SAMPLING + STRONTIUM + WATER, DRINKING

15-16975

FREJAVILLE G

ATMOSPHERIC TRITIUM. MEASUREMENT AND APPLICATION

CENTRE D ETUDES NUCLEAIRES DE SACLAY, FRANCE

CEA-BIB-76 +. 26 PAGES, FIGURES, TABLES, FEB. 1967 (IN FRENCH)

THE POSSIBLE ORIGINS OF ATMOSPHERIC TRITIUM ARE REVIEWED AND DISCUSSED. DESCRIBES ENRICHMENT (ELECTROLYSIS AND THERMAL DIFFUSION) AND COUNTING (GAS COUNTERS AND LIQUID SCINTILLATION COUNTERS) PROCESSES WHICH CAN BE USED FOR DETERMINING ATMOSPHERIC TRITIUM CONCENTRATIONS. EXAMPLES ILLUSTRATES THE USE OF ATMOSPHERIC TRITIUM FOR RESOLVING A CERTAIN NUMBER OF HYDROLOGICAL AND GLACIOLOGICAL PROBLEMS.

AVAILABILITY - SERVICE DE DOCUMENTATION DU C.E.A., CENTRE D ETUDES NUCLEAIRES DE SACLAY, B.P. NO. 2, GIF-SUR-YVETTE, FRANCE

*TRITIUM + ANALYTICAL TECHNIQUE, GENERAL + COUNTER + HYDROLOGICAL CONSIDERATION, GENERAL + INSTRUMENTATION, RADIATION MONITORING + METEOROLOGY

15-16976

ESSIG TH + SOLDAT JK

EVALUATION OF RADIOLOGICAL CONDITIONS IN THE VICINITY OF HANFORD, JANUARY-JUNE 1966

BATTELLE-NORTHWEST, RICHLAND, WASHINGTON

BNWL-391 +. 27 PAGES, 20 FIGURES, 2 TABLES, 9 REFERENCES, MARCH 1967

SURVEILLANCE OF THE HANFORD ENVIRONS DURING THE FIRST HALF OF 1966 SHOWED THAT THE CONCENTRATIONS OF RADIOACTIVE MATERIALS IN THE ENVIRONS WERE WELL WITHIN THE APPROPRIATE LIMITS AND THAT RADIOACTIVE WASTES WERE UNDER SOUND AND CONTINUOUS CONTROL.

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-16976 *CONTINUED*

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

*SURVEY, RADIATION, ENVIRONMENTAL + AIR + BATTELLE NORTHWEST + BIOLOGICAL CONCENTRATION, ANIMAL + BIOLOGICAL CONCENTRATION, FOOD + BIOLOGICAL CONCENTRATION, MAN + BIOLOGICAL CONCENTRATION, MILK + DOSE + HANFORD SITE + IODINE + PARTICULATE + PHOSPHORUS + RIVER, COLUMBIA + SURFACE WATER, NUCLIDE OCCURRENCE + WASTE DISPOSAL, GENERAL + ZINC

15-16977

TISLJAR M

STUDY OF THE PROPERTIES OF GAMMA-RADIATION IN AIR

OESTERREICHISCHE STUDIENGESSELLSCHAFT FUER ATOMENERGIE GMBH, AUSTRIA

ORNL-TR-1543 +. 8 PAGES, FIGURES, 1967, TRANSLATED FOR OAK RIDGE NATIONAL LAB., TENN., FROM ACTA PHYS. AUSTR., 21 PAGES 198-203(1966).

FOR CIVIL DEFENSE, IT IS NECESSARY TO KNOW THE INFLUENCE OF DISTANT INTENSE GAMMA SOURCES SUCH AS THOSE DEVELOPING AFTER NUCLEAR EXPLOSIONS, FOR EXAMPLE. SINCE SUCH CASES INVOLVE DISTANCES WHICH ARE A MULTIPLE OF THE MEAN FREE PATHLENGTHS OF GAMMA RADIATION OF 0.5-0.7 MEV, SCATTERING EFFECTS IN THE ATMOSPHERE PLAY A VERY IMPORTANT ROLE. THIS INFLUENCE WAS CONSIDERED FOR TWO LIMITING CASES - (1) FOR A POINT GAMMA SOURCE WITH AN ENERGY OF 550 KEV. IN THE INFINITELY HOMOGENEOUS MEDIUM OF THE ATMOSPHERE, THE BUILDUP FACTOR AT A DISTANCE OF ABOUT 1.4 KM -- CORRESPONDING TO 15 MEAN FREE PATHLENGTHS -- AMOUNTS TO 155. (2) FOR A SEMIINFINITE MEDIUM OF THE ATMOSPHERE, FILLED HOMOGENEOUSLY WITH A SPECIFIC ACTIVITY, A FACTOR OF 1.7 WAS CALCULATED FOR THE INFLUENCE OF SCATTERING.

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

*CIVIL DEFENSE + AIR + COUNTER + DOSE + FALLOUT + GAMMA + NUCLEAR EXPLOSION DEBRIS

15-16978

ANDERSON HF + SHEEHAN WE

ENVIRONMENTAL MONITORING REPORT. JULY-DECEMBER 1966 AND 1966 SUMMARY

MOUND LAB., MIAMISBURG, OHIO

MLM-1391 +. 23 PAGES, 7 TABLES, FEBRUARY 10, 1967

THE CONCENTRATION OF RADIOACTIVE MATERIALS DETECTED IN THE ENVIRONMENT SURROUNDING MOUND LABORATORY, MIAMISBURG, OHIO, IS PRESENTED FOR THE SECOND HALF OF 1966, AND A SUMMARY IS PRESENTED FOR THE YEAR. THE CONCENTRATION OF RADIONUCLIDES FROM MOUND LAB. IN THE GREAT MIAMI RIVER AND IN THE ENVIRONMENTAL AIR WAS WITHIN THE STANDARDS SPECIFIED BY THE AEC.

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

*SURVEY, RADIATION, ENVIRONMENTAL + AIR + MONITOR, RADIATION, AIR + MOUND LABORATORY + PLUTONIUM + POLONIUM + SAMPLING + STACK + SURFACE WATER, NUCLIDE OCCURRENCE + TRITIUM

15-16979

RADIOASSAY PROCEDURES FOR ENVIRONMENTAL SAMPLES

NATIONAL CENTER FOR RADIOLOGICAL HEALTH

PHS-PUBL. 999-RH-27 +. 445 PAGES, FIGURES, TABLES, REFERENCES, JANUARY 1967

THIS IS A MANUAL OF METHODS USED IN LABORATORIES OF THE PUBLIC HEALTH SERVICE'S NATIONAL CENTER FOR RADIOLOGICAL HEALTH OF THE BUREAU OF DISEASE PREVENTION AND ENVIRONMENTAL CONTROL FOR THE DETERMINATION AND INTERPRETATION OF THE RADIONUCLIDE CONTENT OF SAMPLES COLLECTED FOR ENVIRONMENTAL SURVEILLANCE.

AVAILABILITY - PUBLIC INQUIRIES BRANCH, PUBLIC HEALTH SERVICE, U.S. DEPT. OF HEALTH, EDUCATION, AND WELFARE, WASHINGTON, D. C. 20201, FREE

*ANALYTICAL TECHNIQUE, AIR + *ANALYTICAL TECHNIQUE, FOOD + *ANALYTICAL TECHNIQUE, GENERAL + *ANALYTICAL TECHNIQUE, MILK + *ANALYTICAL TECHNIQUE, WATER + *INSTRUMENTATION, RADIATION MONITORING + *PROCEDURES AND MANUALS + ALPHA EMITTER + BETA EMITTER + CALCIUM + COUNTER + GAMMA EMITTER + ION EXCHANGE + POTASSIUM + STRONTIUM

15-16980

CARUSO E

IDENTIFICATION OF ACC IN THE ALPHA RADIOACTIVITY IN THE AIR

ISTITUTO DI FISICA DELL'UNIVERSITA DI MILANO AND LABORATORI CISE, SEGRATE, ITALY

2 PAGES, 2 FIGURES, ENERGIA NUCLEARE 13(9) PAGES 491-492 (SEPT. 1966)

ANALYSING THE SHORT-LIVED ALPHA RADIOACTIVITY OF THE AIR OF SEGRATE (MILANO), THE AUTHOR SUCCEEDED IN IDENTIFYING THE PRESENCE OF ACC AND IN MEASURING ITS CONCENTRATION.

*INSTRUMENTATION, RADIATION MONITORING + *MONITOR, RADIATION, AIR + ACTINIUM + ACTINON + AIR + ALPHA EMITTER

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-16997

SCHAEFFER HJ + SULLIVAN JJ

RADIATION MONITORING WITH NUCLEAR EMULSIONS ON MISSION GEMINI IV AND V

U.S. NAVAL AEROSPACE MEDICAL INSTITUTE, PENSACOLA, FLORIDA

5 PAGES, 5 FIGURES, 1 TABLE, 10 REFERENCES, AEROSPACE MEDICINE 38(1) PAGES 1-5 (JAN. 1967)

ON GEMINI-TYPE MISSIONS, THE BULK OF THE RADIATION EXPOSURE OF THE ASTRONAUTS IS DUE TO TRAPPED PROTONS PICKED UP IN THE SOUTH ATLANTIC ANOMALY. TRACK AND GRAIN-COUNT EVALUATION OF NUCLEAR EMULSION CARRIED BY THE ASTRONAUTS WITHIN THEIR SPACE SUITS AND HELMETS SHOWS THAT THIS SPECTRUM IS A CONTINUUM FROM ZERO TO ABOUT 400-MEV KINETIC ENERGY WITH A BROAD MAXIMUM. SINCE A LARGE PART OF THE FLUX IS OF LOW PENETRATING POWER, THE RADIATION LEVEL WITHIN THE CAPSULE SENSITIVELY DEPENDS ON LOCAL SHIELD GEOMETRY SHOWING DOSE RATE VARIATIONS OF 20% AT OPPOSITE CORNERS OF THE SAME FILM SHEET. A SIMILARLY STRONG VARIATION MUST BE ASSUMED TO EXIST FOR THE DEPTH DOSE WITHIN THE ASTRONAUTS BODIES, WITH DOSE DROPPING STEEPLY TO VALUES LOWER THAN THE AFOREMENTIONED SURFACE-DOSE LEVELS FOUND IN THE EMULSIONS.

*PERSONNEL EXPOSURE, RADIATION + *SPACECRAFT + DOSE + DOSE MEASUREMENT, EXTERNAL + DOSIMETRY, GENERAL

15-17009

ALSO IN CATEGORY 14

MADSHUS, K.

CS-137 IN PEOPLE AND FOOD IN NORWAY, 1963-1966

NORSK RADIUMHOSPITAL, OSLO + NORSK HYDROS INSTITUTE FOR CANCER RESEARCH, OSLO + STATENS

RADIOLOGISK-FYSISKE LABORATORIUM, OSLO, NORWAY

TID-23484 +. 6 PAGES, FEBRUARY 9, 1967

DATA ON CS-137 LEVELS IN NORWAY COLLECTED DURING THE PERIOD 1963 TO 1966 ARE REPORTED. SPECIAL ATTENTION WAS DEVOTED TO MEASUREMENTS OF PEOPLE AND FOOD FROM DISTRICTS IN WESTERN NORWAY, WHERE THE AVERAGE ANNUAL RAINFALL IS 3500 MM/YR. MEASUREMENTS OF MILK SAMPLES TAKEN FROM THE WHOLE OF NORWAY AS WELL AS MEASUREMENTS OF SELECTED GROUPS OF NORWEGIANS WERE CARRIED OUT REGULARLY DURING THE SAME PERIOD. SYSTEMATIC INVESTIGATIONS OF FOODSTUFFS WERE PERFORMED IN 1964 AND 1965.

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

*BIOLOGICAL CONCENTRATION, ANIMAL + *BIOLOGICAL CONCENTRATION, MAN + *PRECIPITATION + BIOLOGICAL CONCENTRATION, AGRICULTURAL PRODUCE + BIOLOGICAL CONCENTRATION, FOOD + BIOLOGICAL CONCENTRATION, MILK + CESIUM + DEPOSITION + DIETARY HABIT + FALLOUT + MONITOR, RADIATION, AIR + MONITOR, RADIATION, ENVIRONMENTAL + MONITOR, RADIATION, PERSONNEL + MONITOR, RADIATION, SAMPLING + NORWAY + NUCLEAR DETONATION + SPECTROMETRY, GAMMA + WASHOUT

15-17010

VAN AS D

ENVIRONMENTAL RADIOACTIVITY AT THE NATIONAL NUCLEAR RESEARCH CENTRE, PELINDABA REPORT FOR THE YEAR 1965

ATOMIC ENERGY BOARD, PELINDABA, PRETORIA, SOUTH AFRICA

PEL-123 +. 61 PAGES, FIGURES, TABLES, OCTOBER 1966

RESULTS OF ENVIRONMENTAL MONITORING AT THE SAFARI-I SITE (PELINDABA, SOUTH AFRICA) DURING 1965 ARE SUMMARIZED. THE BACKGROUND RADIOACTIVITY WAS DETERMINED OVER 18 MONTHS. NO INCREASE IN ACTIVITY WAS DETECTED.

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

*FALLOUT + *MONITOR, RADIATION, GENERAL + *STATISTICAL ANALYSIS + *SURVEY, RADIATION, ENVIRONMENTAL + AIR + AQUATIC ORGANISMS + BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + BIOLOGICAL CONCENTRATION, FOOD + BIOLOGICAL CONCENTRATION, MILK + BIOLOGICAL CONCENTRATION, VEGETATION + BIOTA + GROSS ALPHA + GROSS BETA + GROSS GAMMA + MONITOR, RADIATION, AIR + NUCLEAR INCIDENT DOSIMETER + REACTOR, GENERAL + SOIL + SOIL, NUCLIDE OCCURRENCE + SOUTH AFRICA + SURFACE WATER, NUCLIDE OCCURRENCE

15-17011

ALSO IN CATEGORY 14

ENVIRONMENTAL RADIOACTIVITY AT ARGONNE NATIONAL LABORATORY, JANUARY-JUNE 1965

ARGONNE NATIONAL LAB., ILL.

TID-22171 + 26 PAGES, JUNE 1965

INFORMATION ON THE LEVEL OF RADIOACTIVITY IN THE ENVIRONMENT AND ON THE AMOUNTS OF RADIOACTIVE MATERIALS ADDED TO THE ENVIRONMENT AS A RESULT OF ARGONNE OPERATIONS IS PRESENTED. THE RADIOACTIVITY OF THE ENVIRONMENT IS DETERMINED ON A CONTINUING BASIS BY MEASURING THE RADIOACTIVITY IN NATURALLY OCCURRING MATERIALS COLLECTED BOTH ON AND OFF THE ARGONNE SITE. THE CONCENTRATIONS OF RADIOACTIVE SUBSTANCES ADDED TO THE ENVIRONMENT DURING THE YEAR BY ARGONNE WERE CONSIDERABLY LESS THAN THE MPCs AND DID NOT CONSTITUTE A HEALTH HAZARD.

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

*FALLOUT + *SURVEY, RADIATION, ENVIRONMENTAL + ALPHA EMITTER + ANL (ARGONNE NATIONAL LABORATORY) + BETA EMITTER + BIOLOGICAL CONCENTRATION, MILK + CESIUM + DILUTION + ENVIRONMENTAL CONDITION + FILTER + GROSS ALPHA + GROSS BETA + IODINE + MAXIMUM PERMISSIBLE CONCENTRATION (MPC) +

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-17011 *CONTINUED*
MONITOR, RADIATION, ENVIRONMENTAL + NUCLEAR EXPLOSION DEBRIS + SAMPLING + STRONTIUM +
SURFACE WATER, NUCLIDE OCCURRENCE + URANIUM + URANIUM + WASTE DISPOSAL, LIQUID

15-17012 ALSO IN CATEGORY 14
FISH BR + CLARK TG + BOYETT RH + WILKIE WH + THOMPSON JL
ENVIRONMENTAL STUDIES. RADIOLOGICAL SIGNIFICANCE OF NUCLEAR ROCKET DEBRIS
OAK RIDGE NATIONAL LAB., OAK RIDGE, TENN.
ORNL-TM-1686 +. 63 PAGES, FIGURES, TABLES, 28 REFERENCES, DECEMBER 1966

RADIOLOGICAL SAFETY STUDIES BEING CONDUCTED FOR THE SPACE NUCLEAR PROPULSION OFFICE, FLIGHT SAFETY BRANCH, ARE SUMMARIZED FOR THE PERIOD, JULY 1, 1965, TO JUNE 30, 1966. AN ASSESSMENT WAS MADE OF THE SIGNIFICANCE OF RADIOACTIVE DEBRIS THAT MAY ENTER THE BIOSPHERE FOLLOWING ACCIDENTAL DESTRUCTION OF A NUCLEAR PROPULSION SYSTEM. THE PRODUCTION AND DOSIMETRY OF MICRON-SIZE PARTICLES CONTAINING INDIVIDUAL RADIONUCLIDES OR A SPECTRUM OF FISSION PRODUCTS WERE STUDIED. DEPOSITION AND ADHESION OF RADIOACTIVE DEBRIS ON THE SKIN WERE STUDIED. THE DEGREE OF INITIAL RETENTION ON THE ARM OF PARTICLES FALLING VERTICALLY IN A UNIFORM FALLOUT WAS DETERMINED. A WIDE VARIATION WAS NOTED BETWEEN INDIVIDUALS IN THE AVERAGE LENGTH OF TIME THESE PARTICLES REMAINED ON THE ARM UNDER IDENTICAL ENVIRONMENTAL CONDITIONS.

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

*NUCLEAR ROCKET + *RADIOLOGY + ADHESION + DECONTAMINATION + DEPOSITION + DOSE CALCULATION, EXTERNAL + DOSE CALCULATION, INTERNAL + DOSE MEASUREMENT, EXTERNAL + DOSE MEASUREMENT, INTERNAL + DOSIMETRY, GENERAL + ENVIRONMENTAL CONDITION + FALLOUT + NUCLEAR DETONATION + PARTICULATE + PERSONNEL EXPOSURE, RADIATION + SOURCE, RADIATION

15-17030
BIRD PM
RADIATION PROTECTION IN CANADA. PART I
DEPARTMENT OF NATIONAL HEALTH AND WELFARE, CANADA
7 PAGES, 1 FIGURE, 1 TABLE, 25 REFERENCES, CANADIAN MEDICAL ASSOCIATION JOURNAL 90, PAGES 1024-1030, (APRIL 25, 1964)

THE CURRENT STATUS OF RADIATION PROTECTION IN CANADA IS SUMMARIZED IN THE PRESENT PAPER, THE FIRST OF A THREE-PART SERIES. PARTICULAR EMPHASIS IS PLACED ON THE ROLE OF THE RADIATION PROTECTION DIVISION OF THE DEPARTMENT OF NATIONAL HEALTH AND WELFARE. SOMATIC AND HEREDITARY EFFECTS OF RADIATION EXPOSURE ARE BRIEFLY DISCUSSED AS A BASIS FOR UNDERSTANDING THE RADIATION PROTECTION STANDARDS WHICH HAVE BEEN DEVELOPED AT NATIONAL AND INTERNATIONAL LEVELS.

*RADIATION PROTECTION, ORGANIZATION + BIOMEDICAL + CANADA + CODES AND STANDARDS +
FEDERAL RADIATION COUNCIL + ICRP (INT. COMM. ON RADIOLOGICAL PROTECTION) +
NCRP (NATIONAL COMMITTEE RADIATION PROTECTION) + RADIATION EFFECT + RADIATION SAFETY AND CONTROL

15-17031
BIRD PM
RADIATION PROTECTION IN CANADA. PART II. THE ROLE OF THE RADIATION PROTECTION DIVISION IN SAFEGUARDING THE HEALTH OF RADIATION WORKERS
DEPARTMENT OF NATIONAL HEALTH AND WELFARE, CANADA
6 PAGES, 4 FIGURES, 2 TABLES, 2 REFERENCES, CANADIAN MEDICAL ASSOCIATION JOURNAL 90, PAGES 1075-1080, (MAY 2, 1964)

THE CURRENT STATUS OF RADIATION PROTECTION IN CANADA IS DISCUSSED IN THE SECOND OF A THREE-PART SERIES, AND PARTICULAR EMPHASIS IS PLACED ON THE ROLE OF THE RADIATION PROTECTION DIVISION OF THE DEPARTMENT OF NATIONAL HEALTH AND WELFARE. ADMINISTRATIVE AND OPERATIONAL CONTROL PROCEDURES HAVE BEEN DEVELOPED, INVOLVING PRIOR APPROVAL OF HEALTH SAFEGUARDS IN THE USERS FACILITIES AND TECHNIQUES, AND SYSTEMATIC MONITORING AND INSPECTION.

*RADIATION PROTECTION, ORGANIZATION + *RADIATION SAFETY AND CONTROL + ACCELERATOR + CANADA + CODES AND STANDARDS + MONITOR, RADIATION, PERSONNEL + PERSONNEL EXPOSURE, RADIATION + RADIOISOTOPE + REACTOR, GENERAL + X-RAY

15-17032
BIRD PM
RADIATION PROTECTION IN CANADA. PART III. THE ROLE OF THE RADIATION PROTECTION DIVISION IN SAFEGUARDING THE HEALTH OF THE PUBLIC
DEPARTMENT OF NATIONAL HEALTH AND WELFARE, CANADA
7 PAGES, 1 FIGURE, 3 TABLES, 8 REFERENCES, CANADIAN MEDICAL ASSOCIATION JOURNAL 90, PAGES 1114-1120, (MAY 9, 1964)

THE STATUS OF RADIATION PROTECTION IN CANADA IS DISCUSSED IN THE LAST OF A THREE-PART SERIES. PARTICULAR EMPHASIS IS PLACED ON THE ROLE OF THE RADIATION PROTECTION DIVISION OF THE DEPARTMENT OF NATIONAL HEALTH AND WELFARE. A RADIOACTIVE-FALLOUT STUDY PROGRAM WAS ESTABLISHED, INVOLVING THE SYSTEMATIC COLLECTION OF AIR AND PRECIPITATION SAMPLES FROM 24 LOCATIONS, SOIL SAMPLES FROM 23, FRESH-MILK SAMPLES FROM 16, WHEAT SAMPLES FROM NINE AREAS, AND HUMAN-BONE SPECIMENS FROM HOSPITALS THROUGHOUT CANADA. A WHOLE-BODY-COUNTING FACILITY AND A SPECIAL STUDY OF FALLOUT IN NORTHERN AREAS WAS INITIATED.

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-17032 *CONTINUED*

*RADIATION PROTECTION, ORGANIZATION + *SURVEY, RADIATION, ENVIRONMENTAL + BIOLOGICAL CONCENTRATION, ANIMAL + BIOLOGICAL CONCENTRATION, FOOD + BIOLOGICAL CONCENTRATION, MAN + BIOLOGICAL CONCENTRATION, MILK + BIOLOGICAL CONCENTRATION, VEGETATION + BIOMEDICAL + COUNTER, WHOLE BODY + DOSE + FALLOUT + PERSONNEL EXPOSURE, RADIATION + RAINOUT + SAMPLING + SOIL, NUCLIDE OCCURRENCE + STRONTIUM + X-RAY.

15-17125 ALSO IN CATEGORIES 7 AND 17

DRAPER WE

EFFLUENT AND FILTER MONITOR SYSTEM.

GENERAL DYNAMICS, FORT WORTH DIVISION

CONF-670-713 + FZK-336 +. 36 PAGES, 7 FIGURES, 2 TABLES, 13 REFERENCES, ABSTRACT IN ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 1, (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

THE 10,000-CFM GTR TEST-CELL VENTILATION AIR IS PASSED THROUGH HIGH-EFFICIENCY AND CHARCOAL FILTERS (INSTALLED SEPT. 1966) AND EXHAUSTED UP A STACK. INITIAL CHARCOAL INSTALLED-TESTS WITH R12 WERE UNSATISFACTORY BECAUSE OF ALMOST INSTANTANEOUS BREAKTHROUGH AT 50 FT/MIN. BANANA OIL WAS USED. QUARTERLY TESTS ARE MADE WITH ELEMENTAL IODINE IN THE LAB ON A CHARCOAL SAMPLE. THE BANANA-OIL TEST IS USED EACH TIME THE FILTER IS DISTURBED. THE MONITORING SYSTEM ALARMS WHEN EITHER I-131 OR AR-41 REACHES A STACK CONCENTRATION (ALSO THE MINIMUM DETECTABLE) EQUIVALENT TO 1 MPC OFF-SITE. SAMPLE AIR PASSES THROUGH CHARCOAL TRAP (WITH BETA-GAMMA COINCIDENCE FOR I-131) TO A HOLDUP VOLUME (WITH TWO SOLID-STATE DETECTORS FOR AR-41).

*ARGON + *FISSION PRODUCT, IODINE + *MONITOR, RADIATION, STACK + *SYSTEM DESCRIPTION + REACTOR, AEC OWNED + REACTOR, TEST

15-17135 ALSO IN CATEGORY 17

DE WITT RB + BIGGS RR

MAINTENANCE EXPERIENCE. REACTOR RECIRCULATING PUMPS

CONSUMERS POWER COMPANY, CHARLEVOIX, MICHIGAN

CONF-670-713 +. 10 PAGES, 4 FIGURES, ABSTRACT IN ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 9, (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

ORIGINAL SHAFT ROTATING-SEALS WERE STELLITE, REPLACED AFTER 6000 HR WITH SAPPHIRE OR TUNGSTEN CARBIDE AFTER AN ELECTROLYTIC CELL WAS FOUND WHEN PUMPS WERE IDLE. AFTER 16,000 HR, THE TUNGSTEN CARBIDE SEALS FAILED ON STARTUP AFTER REFUELING. PLANT MAINTENANCE MEN HAD THEIR 3-R/QTR LIMIT, SO OTHERS WERE CALLED IN. CARBIDE SEAL HAD BROKEN, SCORING THE SHAFT, SO WHOLE IMPELLER WAS REMOVED. DECONTAMINATION REDUCED FROM 20 R/HR TO 9 R/HR, AND IMPELLER PLACED IN SHIELDED WATER TANK. THREE GROUPS OF MEN WERE USED, EACH TAKING ABOUT 2.5 R. DURING CONSTRUCTION, PLANT LAYOUT SHOULD BE EXAMINED TO REDUCE NEEDLESS EXPOSURE. DURING MAINTENANCE, MODIFICATION AND RECORDS SHOULD REDUCE FUTURE RADIATION. MANPOWER WITH SKILLS AND LOW EXPOSURE MUST BE AVAILABLE FROM OUTSIDE PLANT.

*MAINTENANCE AND REPAIR + *PUMP + *RADIATION SAFETY AND CONTROL + BIG ROCK POINT + OPERATING EXPERIENCE + REACTOR, BOILING WATER

15-17136 ALSO IN CATEGORY 17

COLLINS JH

PREPARATIONS FOR REPLACING THE NRU REACTOR VESSEL

ATOMIC ENERGY OF CANADA LTD, CHALK RIVER

CONF-670-713 +. 2 PAGES, ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 9 AND 10, (JULY 1967), CONFERENCE ON REACTOR OPERATING EXPERIENCE, REACTOR OPERATIONS DIVISION OF THE AMERICAN NUCLEAR SOCIETY, ATLANTIC CITY, JULY 23-26, 1967

A NEW ALUMINUM SIDE-WALL SECTION WILL BE PLACED BETWEEN SS TOP AND BOTTOM HEADERS. REMOTE-VIEWING TOOLING, TRAINING MOCKUP, SHIELDED ACCESSSES ARE ALL TO BE USED AS WELL AS THE USUAL DETAILED PROCEDURES AND PERT SCHEDULING. CONTACT RADIATION FIELDS ARE ESTIMATED AT 20,000 R/HR.

*MAINTENANCE AND REPAIR + *PRESSURE VESSEL + *PROCEDURES AND MANUALS + CANADA + NRU (CHALK RIVER NATURAL URANIUM REACTOR) + RADIATION SAFETY AND CONTROL + REACTOR, HEAVY WATER + REACTOR, TEST + REMOTE MANIPULATING AND VIEWING

15-17283 ALSO IN CATEGORY 14

MERK I

FALLOUT IN RAIN, DUST AND SOIL AND ITS ABSORPTION IN PLANTS

EIDGENOESSISCHES INSTITUT FUER REAKTORFORSCHUNG, WUERENLINGEN, SWITZERLAND

EIR-103 +. 95 PAGES, FIGURES, TABLES, JANUARY 1967

THE AMOUNT OF RADIOACTIVITY IN PLANTS WAS COMPARED WITH THE RADIOACTIVITY OF FALLOUT SAMPLES. THOSE PLANTS WHICH HAVE SIGNIFICANCE FOR HUMAN NUTRITION WERE ESPECIALLY CONSIDERED. THE SR/CA, CA/K, SR/K, CR/CS, AND SR/TOTAL-GAMMA RATIOS WERE DIFFERENTIATED FOR ALL PLANT PARTS, AND THE ROOT-PLANT DISCRIMINATION FACTORS WERE DETERMINED. FROM A GREAT NUMBER OF PLANTS GROWN UNDER CLINICAL CONDITIONS AND SOME GROWN UNDER NORMAL AGRICULTURAL CONDITIONS, IT WAS SHOWN THAT THERE WAS A GOOD PARALLEL IN THE CONTENT OF INDIVIDUAL ISOTOPES AND ELEMENTS.

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-17283 *CONTINUED*
AVAILABILITY - MICROCARD EDITIONS, INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN 54669

*BIOLOGICAL CONCENTRATION, VEGETATION + *FALLOUT + AGRICULTURAL CONSIDERATION +
ANALYTICAL TECHNIQUE, GENERAL + BIOLOGICAL CONCENTRATION, FOOD + CALCIUM + RAINOUT +
SOIL, NUCLIDE OCCURRENCE + STRONTIUM

15-17284
VOHRA KG + RANGARAJAN C + GOPALAKRISHMAN, SS + SADASIVAN S + CHITALE PV
MEASUREMENTS ON AIRBORNE AND SURFACE FALLOUT RADIOACTIVITY IN INDIA FROM NUCLEAR WEAPON TESTS (RESULTS UP
TO JUNE 1965)
ATOMIC ENERGY ESTABLISHMENT, TROMBAY, INDIA
AEET-247 +. 144 PAGES, 7 TABLES, 1966

DATA COMPILATIONS ARE PRESENTED FROM FALLOUT-MONITORING STATIONS IN INDIA. THESE INCLUDE THE
DAILY AND MONTHLY AIRBORNE FALLOUT BETA ACTIVITY, THE DAILY AND MONTHLY SURFACE FALLOUT BETA
ACTIVITY IN RAINFALL, THE CONCENTRATIONS OF RADIONUCLIDES IN GROUND-LEVEL AIR, AND THE
MONTHLY DEPOSITION OF RADIONUCLIDES.

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

*FALLOUT + *SURVEY, RADIATION, ENVIRONMENTAL + AIR + GROSS BETA + INDIA + MONITOR, RADIATION, AIR + RAINOUT

15-17285 ALSO IN CATEGORY 14
ROMNEY EM + RHOADS WA
NEUTRON ACTIVATION PRODUCTS FROM PROJECT SEDAN IN PLANTS AND SOILS
UNIVERSITY OF CALIFORNIA, LOS ANGELES
4 PAGES, 1 FIGURE, 6 TABLES, SOIL SCIENCE SOCIETY OF AMERICAN PROC., VOL 30, PAGES 770 TO 773 (NOV-DEC
1966)

NEUTRON ACTIVATION PRODUCTS OF W, SC, AND SB WERE AMONG THOSE RADIONUCLIDES CONCENTRATED
THROUGH ROOTS OF PLANTS GROWN ON EJECTA FROM THE SEDAN THERMONUCLEAR CRATERING DETONATION.
REACTOR-PRODUCED ISOTOPES WERE USED IN CORROBORATIVE EXPERIMENTS TO INVESTIGATE, IN GREATER
DETAIL, THEIR BEHAVIOR IN PLANTS AND SOILS. RADIOTANTALUM WAS ALSO INCLUDED AS A MATTER OF
ACADEMIC INTEREST. PLANTS CONCENTRATED MORE SC-46, SB-124, AND W-185 IN LEAVES THAN IN
STEMS, WHEREAS TA-182 WAS CONCENTRATED MORE IN STEMS. PLANT UPTAKE OF SC-46, SB-124, AND
W-185 WAS INFLUENCED BY DIFFERENT TYPES OF SOIL. SCANDIUM-46 AND TA-182 WERE NEARLY IMMOBILE
IN COLUMNS OF SOIL LEACHED WITH 76 CM OF WATER, WHILE SB-124 AND W-186 MOVED READILY IN
NEUTRAL AND ALKALINE SOIL BUT NOT IN ACID SOIL. THEIR BEHAVIOR WAS INFLUENCED BY THE KIND OF
CLAY MINERAL PRESENT, THE SODIUM AND POTASSIUM CONTENT, AND THE PH.

*ACTIVATION PRODUCT + *NUCLEAR DETONATION + BIOLOGICAL CONCENTRATION, VEGETATION +
NUCLEAR EXPLOSION DEBRIS + PLOWSHARE PROGRAM + SOIL, NUCLIDE OCCURRENCE + SOIL, PROPERTY +
SOIL, RADIONUCLIDE MOVEMENT THROUGH

15-17287
LINDEKEN CL + LAKIN RW
IMPROVEMENTS IN THE SOLID-STATE PLUTONIUM-ALPHA AIR MONITOR
LAWRENCE RADIATION LAB., LIVERMORE
UCRL-50228 +. 11 PAGES, 6 FIGURES, APRIL 19, 1967

DESCRIBES FULLY TRANSISTORIZED PLUTONIUM-ALPHA AIR MONITOR BASED ON THE USE OF A
SURFACE-BARRIER DETECTOR AND A SINGLE-CHANNEL PULSE-HEIGHT ANALYZER. THE MONITOR IS DESIGNED
FOR USE IN BUILDINGS HAVING A CENTRAL SAMPLING SYSTEM. IT DEPENDS ON THIS SYSTEM OR ON AN
EXTERNAL AIR PUMP FOR ITS AIR FLOW. WHEN THE MONITOR IS OPERATED AT 2 CFM, THE DETECTION
SENSITIVITY FOR THE PU-239 IS 4 MPC-HR. THIS INSTRUMENT IS LESS EXPENSIVE, MORE SENSITIVE,
AND MORE COMPACT THAN A PREVIOUS MODEL.

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

*INSTRUMENTATION, RADIATION MONITORING + *MONITOR, RADIATION, AIR + AIR + ALPHA EMITTER + PLUTONIUM

15-17288 ALSO IN CATEGORY 14
LOVERIDGE BA + GORDON MS
THE DETERMINATION OF RADIO-IODINE IN HARWELL EFFLUENT
ATOMIC ENERGY RESEARCH ESTABLISHMENT, HARWELL, ENGLAND
AERE-R-5406 +. 14 PAGES, 5 TABLES, 12 REFERENCES, MARCH 1967

IODINE CARRIER WAS ADDED TO THE EFFLUENT AND EXTRACTED TOGETHER WITH THE RADIOIODINE INTO
ORGANIC SOLVENTS AFTER OXIDATION AND REDUCTION TO ENSURE COMPLETE RADIOCHEMICAL EXCHANGE.
THE RADIOIODINE WAS COUNTED IN A LIQUID SCINTILLATION COINCIDENCE COUNTER, AND THE RECOVERY
OF THE CARRIER MEASURED BY PHOTOMETRY. DECONTAMINATION FROM OTHER RADIONUCLIDES, INCLUDING
RADIOBROMINE, EXCEEDED 100,000.

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

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-17288 *CONTINUED*

*WASTE DISPOSAL, LIQUID + ANALYTICAL TECHNIQUE, LIQUID + COUNTER + IODINE + WATER, DRINKING

15-17290

ULBERG JC + KOCHENDORFER DB

MODELS FOR ESTIMATING BETA DOSE TO TISSUE FROM PARTICLE DEBRIS IN AEROSPACE NUCLEAR APPLICATIONS
NAVAL RADIOLOGICAL DEFENSE LAB., SAN FRANCISCO, CALIF.

USNRDL-TR-1107 +. 83 PAGES, 2 FIGURES, 20 TABLES, 16 REFERENCES, DECEMBER 12, 1966

THIS REPORT DESCRIBES THREE BETA-DOSE MODELS DEVELOPED TO CALCULATE BETA-DOSE IN TISSUE FROM RADIOACTIVE FRAGMENTS CREATED BY THE DESTRUCTION AND CONSEQUENT RE-ENTRY OF A NUCLEAR-POWERED AEROSPACE VEHICLE INTO THE ATMOSPHERE. A COMPARISON OF THE DOSE RATES IN TISSUE FROM THE THREE MODELS FOR TYPICAL REACTOR RUNNING CONDITIONS, ALONG WITH EXPECTED BETA DOSES FROM PARTICLES CREATED BY A HYPOTHETICAL NUCLEAR-ENGINE DESTRUCTION, ARE INCLUDED.

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

*FALLOUT + *REACTOR, SPACE + *SPACECRAFT + AEROSPACE SAFETY + BETA EMITTER + DOSE + MATHEMATICAL TREATMENT + PARTICULATE

15-17291

GLOEBEL B + MUTH H + OBERHAUSEN E

INTAKE AND EXCRETION OF NATURAL RADIONUCLIDES PB-210 AND PO-210 BY HUMANS

BORIS - RAJEWSKY INSTITUTE, HAMBURG, GERMANY

ANL-TRANS-458 +. 12 PAGES, TRANS. FROM STRAHLENTHERAPIE 131, PAGES 218-26 (1966)

PRESENT INVESTIGATIONS WERE DONE TO OBTAIN A SURVEY OF PB-210 AND PO-210 INTAKE WITH FOOD AND DRINKING WATER AND OF THE EXCRETION OF BOTH THESE RADIONUCLIDES IN HUMANS. WITH THE INSTRUMENTS USED, SPECIFIC ACTIVITIES OF PB-210 AND PO-210 AS LOW AS 2×10 TO THE 16TH CI/G OF SUBSTANCE CAN BE DETERMINED. THE RESULTS SHOW THAT A NORMAL PERSON TAKES IN, ON THE AVERAGE, 4 TO 5 PCI OF PB-210 AND PO-210 PER DAY IN THE DIET. THE EXCRETION HAS THE SAME ORDER OF MAGNITUDE. GREAT DAILY VARIATIONS WERE OBSERVED FOR INTAKE AND EXCRETION. IT COULD BE SHOWN THAT GRASSY PLANTS TAKE UP BOTH NUCLIDES FROM THE SOIL AND BY DIRECT ABSORPTION FROM THE PRECIPITATION OF PLANTS ABOVE THE SOIL.

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

*BIOLOGICAL CONCENTRATION, MAN + BIOLOGICAL CONCENTRATION, FOOD + BIOLOGICAL CONCENTRATION, VEGETATION + DOSE + LEAD + POLONIUM + WATER, DRINKING

15-17332

ALSO IN CATEGORY 1

O-TOOLE TJ

STUDIES IN WORKMENS COMPENSATION AND RADIATION INJURY. VOLUME II. THE INCIDENCE, NATURE AND ADJUDICATION OF WORKMENS COMPENSATION CLAIMS INVOLVING RADIATION EXPOSURE AND DELAYED INJURY

GEORGETOWN UNIVERSITY LAW CENTER, WASHINGTON, D.C.

97 PAGES, TABLES, 1965

THIS STUDY EXPLORES THE SCOPE AND THE NATURE OF INJURIES TO EMPLOYEES FROM IONIZING RADIATION, ESPECIALLY DELAYED INJURY APPEARING SOME TIME AFTER THE EXPOSURE. THE PURPOSE WAS TO PROVIDE A FACTUAL BACKGROUND AGAINST WHICH JUDGMENTS CAN BE MADE CONCERNING (1) THE MAGNITUDE OF THE PROBLEM OF DELAYED INJURY, AND (2) WHETHER PRESENT LAWS PERMIT A JUST AND EQUITABLE ADJUDICATION OF RADIATION-COMPENSATION CLAIMS. 109 CASES IN SIX STATES, ONTARIO, AND THE U.S. BUREAU OF EMPLOYEES COMPENSATION ARE INCLUDED, TOGETHER WITH OUTLINES OF THE COMPENSATION CLAIMS, INCLUDING DISPOSITION. 15.8% WERE GRANTED COMPENSATION, 56.8% WERE DENIED, AND 27.7% WERE OTHERWISE DISPOSED OF.

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

*LAW + *PERSONNEL EXPOSURE, RADIATION + *RADIATION INJURY, TREATMENT OF + REVIEW

15-17333

DOUSSET M + LEGRAND J

THEORETICAL STUDY OF THE DOSE DELIVERED TO A TISSUE SUPERFICIALLY CONTAMINATED BY AN ALPHA EMITTER
SC-T-67-0913 +. 14 PAGES, FIGURES, TRANSLATED BY MARCEL I. WEINREICH, SANDIA CORP., ALBUQUERQUE, N. MEX., FROM HEALTH PHYSICS 11, PAGES 171-8, (1965)

THE VARIATION WITH DEPTH OF THE ABSORBED DOSE RATE IN A TISSUE SUPERFICIALLY CONTAMINATED WITH AN ALPHA EMITTER WAS STUDIED. THE CALCULATION TAKES INTO ACCOUNT NOT ONLY THE DECREASE OF THE PARTICLE FLUX DENSITY WITH THE DISTANCE FROM THE CONTAMINATED SURFACE BUT ALSO THE VARIATIONS OF THE LINEAR ENERGY TRANSFER AS A FUNCTION OF THE DISTANCE COVERED BY THE PARTICLES. THE RESULTS ARE SHOWN BY CURVES FOR ALPHA EMITTERS OF 4, 5, 6, AND 7 MEV.

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

*ALPHA EMITTER + *DOSE CALCULATION, EXTERNAL + DOSE + DOSIMETRY, GENERAL

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-17334

MALYKHIN VM + SHAMOV VP

CALCULATION OF INTEGRAL BURDEN IN BONE TISSUE DUE TO INCORPORATE RADIUM-226

NRC-TT-1280 +. 15 PAGES, TRANSLATED BY H. R. HAYES, NATIONAL RESEARCH COUNCIL OF CANADA, OTTAWA, ONT.,
FROM PAGES 253-65 OF THE PROCEEDINGS OF A SYMPOSIUM ON ASSESSMENT OF RADIOACTIVITY IN MAN, VOLUME II,
HEIDELBERG, MAY 1964

DEALS WITH A CALCULATIONAL METHOD OF DETERMINING BODY BURDEN DUE TO RADIUM-226. THE ACTIVITY
OF THE EXCRETA AND THE TIME OF CONTACT WITH RADIUM CONSTITUTE THE STARTING DATA. THE RESULTS
OF THE PAPER CAN THUS BE USED BY A WIDE CIRCLE OF RADIOLOGISTS NOT POSSESSING SPECIAL
APPARATUS FOR DETERMINING RADIUM BURDEN BY EXHALED RADON OR BY MEASUREMENT OF THE
GAMMA-ACTIVITY OF ITS DAUGHTER PRODUCTS WITH THE AID OF LARGE COUNTERS.

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

*DOSE CALCULATION, INTERNAL + BIOLOGICAL CONCENTRATION, MAN + DOSE + DOSIMETRY, GENERAL + RADIUM

15-17335

KNIGHT GB + ADAIR B

ANALYSIS OF EXTERNAL RADIATION EXPOSURES IN 1966

ATOMIC ENERGY OF CANADA LIMITED, CHALK RIVER, ONTARIO

AECL-2678 +. 14 PAGES, 9 FIGURES, 2 TABLES, FEBRUARY, 1967

AN ANALYSIS OF OCCUPATIONAL RADIATION EXPOSURES RECEIVED BY WORKERS AT AECL SITES IN 1966 WAS
CARRIED OUT BY MACHINE ACCOUNTING METHODS. RESULTS ARE PRESENTED IN TABLES AND GRAPHS.

AVAILABILITY - ATOMIC ENERGY OF CANADA, LTD., CHALK RIVER, ONTARIO, CANADA, \$0.50 COPY

*PERSONNEL EXPOSURE, RADIATION + CANADA + DOSE + DOSE CALCULATION, EXTERNAL + DOSE CALCULATION, INTERNAL +
TRITIUM

15-17348

RUSSFII JA + KNOWLES DJ

DESCRIPTION OF FACILITY RADIATION AND CONTAMINATION ALARM SYSTEMS INSTALLED IN THE CHEMICAL TECHNOLOGY

ALPHA LABORATORY, BUILDING 3508

OAK RIDGE NATIONAL LAB., TENN.

ORNL-TM-1767 +. 21 PAGES, 7 FIGURES, 3 TABLES, MARCH 10, 1967

RADIATION AND CONTAMINATION ALARM SYSTEMS WERE INSTALLED TO CONTINUOUSLY AND AUTOMATICALLY
MONITOR NEUTRON RADIATION (BY THREE NEUTRON RATE-BURST DETECTORS) AND AIR CONTAMINATION (BY
FIVE CONSTANT ALPHA AIR MONITORS) IN THE ENTIRE FACILITY. THESE INSTRUMENTS AND OTHER
COMPONENTS IN THE NETWORK PROVIDE HEALTH-PHYSICS-MONITORING INFORMATION, SOUND LOCAL ALARMS
WHEN ABNORMAL CONDITIONS OCCUR, AND INDICATE THE ABNORMAL CONDITIONS ON A CENTRAL PANEL
BOARD. THE BUILDING EVACUATION SYSTEM OPERATES AUTOMATICALLY WHEN TWO OR MORE CONSTANT ALPHA
AIR MONITORS DETECT A HIGH LEVEL OF AIR CONTAMINATION OR WHEN TWO OR MORE NEUTRON MONITORS
DETECT A NEUTRON BURST OR A HIGH RATE LEVEL.

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

*INSTRUMENTATION, RADIATION MONITORING + *MONITOR, RADIATION, AIR + *MONITOR, RADIATION, GENERAL +
ALPHA EMITTER + NEUTRON + RADIATION SAFETY AND CONTROL

15-17372

ALSO IN CATEGORY 17

NORTH AMERICA INSPECTION SERVICES CITED FOR RADIOGRAPHY OVEREXPOSURE

NORTH AMERICAN INSPECTION SERVICES, INC.

3 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(34), PAGES 31 THRU 33, (AUGUST 21, 1967)

NAIS WAS CITED JUNE 28 UNDER LICENSE 29-8122-1 FOR A FEBRUARY 14 EXPOSURE IN ALASKA. (1)
EMPLOYEE FAILED TO CONDUCT A SURVEY AFTER EACH EXPOSURE, AND WHEN THE DEVICE MALFUNCTIONED,
RECEIVED 11 REMS. (2,3) DID NOT PROCESS FILM BADGE OR EVALUATE EXPOSURE WHEN THE DOSIMETER
WAS FOUND TO BE OFF SCALE. (4,5,6) EMERGENCY PROCEDURES WERE NOT FOLLOWED, AND AEC WAS NOT
NOTIFIED. (7-11) RECORDS WERE NOT KEPT, SITE AND DEVICES WERE NOT POSTED. (REPLY JULY 11.)
(2-3) FIELD ESTIMATE OF DOSE WAS IN THE REGION OF 1 R, AND REPLACEMENT BADGE WAS NOT
AVAILABLE. (4-5) EMPLOYEE DISCONNECTED PIPELINE CONTROL CABLE, REPORTED TO SUPERVISOR WHO
FOUND SOURCE IN THE SAFE POSITION. (6) TWO BRANCHES ASSUMED OTHER HAD REPORTED INCIDENT.

*INSPECTION AND COMPLIANCE + *PERSONNEL EXPOSURE, RADIATION + *RADIOGRAPHY + FAILURE, EQUIPMENT +
FAILURE, OPERATOR ERROR + INCIDENT, ACTUAL, GENERAL

15-17423

SNYDER WS

HEALTH PHYSICS ASPECTS OF SUPERSONIC TRANSPORT

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-17423 *CONTINUED*
OAK RIDGE NATIONAL LAB., TENN.
CRNL-P-2597 + CONF-660920-12 +. 18 PAGES, FIGURES, REFERENCES, 1966

THE ICRP TASK GROUP ESTIMATED, CONSERVATIVELY, THAT THE AVERAGE DOSE RATE OF GALACTIC AND SOLAR RADIATION ON A POLAR ROUTE AND AT 60,000 TO 80,000 FEET COULD BE AS MUCH AS 3 MREM/HR. FOR THE GREAT BULK OF TRAVELERS, WHO MAKE ONLY A FEW FLIGHTS A YEAR, THIS WAS CONSIDERED TO BE WELL WITHIN THE LIMITS ON EXPOSURE OF INDIVIDUALS TO COSMIC RADIATION, AS RECOMMENDED BY THE ICRP, AND WAS NOT CONSIDERED TO POSE A PROBLEM. FOR A COURIER OR CREW, WHO CONTINUALLY MAKES SUCH TRIPS, IT WAS CONSIDERED TO BE ANOTHER MATTER, AND CONSIDERATION WAS GIVEN TO THE FACT THAT THESE PEOPLE SHOULD BE CLASSED AS RADIATION WORKERS.

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

*AEROSPACE SAFETY + *COSMIC RADIATION + ICRP (INT. COMM. ON RADIOLOGICAL PROTECTION) + MAXIMUM PERMISSIBLE DOSE (MPD) + METEOROLOGY + MONITOR, RADIATION, AIR + MONITOR, RADIATION, PERSONNEL + RADIATION, DAMAGE

15-17424 ALSO IN CATEGORY 14
DAHL AH + SCHIAGER KJ + REECE RJ + JACOE PW
RADON PROGENY INHALATION STUDY AS APPLICABLE TO URANIUM MINING OPERATION. ANNUAL REPORT NO. 2, 1966
COLORADO STATE UNIV., FORT COLLINS. DEPT. OF RADIOLOGY AND RADIATION BIOLOGY + COLORADO STATE DEPT. OF PUBLIC HEALTH, DENVER. DIVISION OF OCCUPATIONAL AND RADIOLOGICAL HEALTH
COO-1500-3 +. 112 PAGES, FIGURES, TABLES, REFERENCES, FEBRUARY 28, 1967

THE WORK WAS CONDUCTED IN A MINE 7 MILES NORTH OF GOLDEN, COLORADO, WITH OBJECTIVES AS FOLLOWS - TO INVESTIGATE THE GENERAL RELATIONSHIPS OF THE PHYSICAL CHARACTERISTICS OF MINE AEROSOLS AND EXPOSURE CONDITIONS TO THE DEPOSITION, RETENTION, AND TRANSLOCATION OF THE RADIOACTIVE MATERIALS IN HUMANS, TO INVESTIGATE THE RELATIONSHIPS OF VARIOUS EXPOSURE SURVEILLANCE METHODS TO THE ACTUAL EXPOSURE HAZARDS FROM RADON AND ITS PROGENY, AND TO INVESTIGATE THE EFFECTIVENESS OF VARIOUS METHODS FOR CONTROLLING EXPOSURES TO RADON AND ITS PROGENY IN MINE ATMOSPHERES. FACTORS SUCH AS BAROMETRIC PRESSURE CHANGES AND BLASTING OPERATIONS WHICH INFLUENCE THE RADIOACTIVE CONCENTRATION IN THE MINE AIR ARE DISCUSSED. STUDIES WERE MADE ON DEPOSITION AND RETENTION OF SHORT-LIVED DAUGHTERS IN THE RESPIRATORY SYSTEM. RESULTS ARE PRESENTED IN THE FORM OF TABLES AND GRAPHS. A BIOASSAY STUDY WAS CONDUCTED TO DETERMINE WHETHER A CORRELATION EXISTED BETWEEN THE INTEGRATED EXPOSURE OF URANIUM MINERS TO THE MINE ATMOSPHERE AND ONE OR MORE OF THE LONG-LIVED DAUGHTERS.

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

AEROSOL, RADIOACTIVE + BIOLOGICAL CONCENTRATION, MAN + INHALATION + MINING + MONITORING SYSTEM, RADIATION + RADON + SURVEILLANCE PROGRAM + URANIUM, NATURAL

15-17425 ALSO IN CATEGORY 14
KAMATH PR + BHAT IS + KHAN AA + GANGULY AK
PREOPERATIONAL SEARCH FOR BASELINE RADIOACTIVITY, CRITICAL FOOD, AND POPULATION GROUP AT THE TARAPUR ATOMIC POWER STATION SITE
ATOMIC ENERGY ESTABLISHMENT, TROMBAY, INDIA
AEET-268 +. 34 PAGES, TABLES, 1966

A PREOPERATIONAL ENVIRONMENTAL SURVEY WAS MADE AT THE SITE OF THE TARAPUR ATOMIC POWER PROJECT. PROGRAMS WERE DEVISED FOR MONITORING LAND, LAND PRODUCE, SEA WATER, SEAFOOD, DRINKING-WATER SUPPLIES, AND AIR IN AN AREA FROM 0 TO 32 KM OF THE SITE. A SURVEY OF 100 FAMILIES IN THE AREA WAS DESIGNED TO OBTAIN AN ESTIMATE OF DAILY PER-CAPITA FOOD CONSUMPTION AMONG A VARIETY OF PROFESSIONAL TYPES. DIETARY SURVEYS SHOWED THAT SR-90 AND CS-137 CONTAMINATION IN THE TARAPUR DIET IS ATTRIBUTABLE TO CEREALS AND PULSES (PREDOMINATELY RICE). IT WAS CONCLUDED THAT ACTIVATION PRODUCTS WERE LIKELY TO ENTER THE FOOD CHAIN VIA SEAFOOD HARVESTED OFFSHORE. STRONTIUM-90 TO CALCIUM RATIOS IN VARIOUS DIETARY COMPONENTS WERE COMPARED WITH THOSE IN NEW YORK CITY.

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

*MONITOR, RADIATION, BACKGROUND + *SURVEY, RADIATION, GENERAL + CESIUM + DIETARY HABIT + DOSE MEASUREMENT, INTERNAL + FALLCUT + INDIA + METEOROLOGY + MONITOR, RADIATION, ENVIRONMENTAL + MONITOR, RADIATION, GENERAL + POPULATION EXPOSURE + REACTOR, POWER + SAMPLING + STRONTIUM

15-17427
ANNUAL REPORT, JULY 1, 1965-JUNE 30, 1966
ATOMIC BOMB CASUALTY COMMISSION, HIROSHIMA, JAPAN
ABCC-65-66 +. 233 PAGES, TABLES, JUNE 30, 1966, IN JAPANESE AND ENGLISH

REPORTS ACTIVITIES OF THE ABCC IN RELATION TO FORMAL AGREEMENTS, TO THE JAPANESE ADVISORY COUNCIL, COMMUNITY RELATIONS, ADMINISTRATION, AND TECHNICAL AND RESEARCH ASPECTS. SO FAR, NO NEW DISORDERS HAVE BEEN RECOGNIZED AS HAVING BEEN INDUCED BY EXPOSURE. THE EFFECTS OF RADIATION ON ATOMIC BOMB SURVIVORS IN JAPAN WERE EVALUATED BY COMPARING GROUPS THAT DIFFERED ONLY IN RESPECT TO THE RADIATION DOSE RECEIVED. THE CORE OF THE POPULATION STUDIED CONSISTED OF SURVIVORS WITH DOCUMENTED ACUTE RADIATION SYMPTOMS. OTHER GROUPS MATCHED BY AGE AND SEX TO THE CORE GROUP DIFFERED IN THAT THEY HAD NO ACUTE SYMPTOMS. PROGRESS IS REPORTED ON

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-17427 *CONTINUED*

STUDIES PERFORMED WITH THESE GROUPS IN THE AREAS OF MORBIDITY, MORTALITY, SPECIFIC DISEASES AND DISORDERS, CYTOGENETICS, GROWTH AND DEVELOPMENT, EPIDEMIOLOGY, AND DOSIMETRY.

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

BIOLOGICAL CONCENTRATION, MAN + DOSIMETRY, GENERAL + JAPAN + POPULATION EXPOSURE + RADIATION DAMAGE + RADIATION EFFECT + RADIATION INJURY, TREATMENT OF + RADIOBIOLOGY + RESEARCH CONTRACT + STATISTICAL ANALYSIS + X-RAY

15-17429

MADSHUS K + STROEMME A

LEVELS OF CS-137 IN NORWEGIAN LAMB AND SHEEP, 1964-1965

NORSK HYDROS INST. FOR CANCER RESEARCH, OSLO + NORSK RADIUM HOSPITAL, OSLO
NTO-3364-18 +. 9 PAGES, TABLES, FEBRUARY 9, 1967

SAMPLES OF FRESH MEAT FROM 5- TO 6-MONTH-OLD LAMBS AND ADULT SHEEP WERE COLLECTED FROM SLAUGHTERHOUSES. THE MEAT WAS CUT AND DRIED AT 100 C FOR SEVERAL HOURS AFTER THE ADDITION OF DISTILLED WATER AND Na₂CO₃. THIS MIXTURE WAS GROUND AND MEASURED BY GAMMA SPECTROSCOPY. RESULTS TABULATED. IN GENERAL, THERE IS A HIGH CONCENTRATION OF CESIUM-137 IN THE MEAT.

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

*BIOLOGICAL CONCENTRATION, ANIMAL + *CESIUM + *NORWAY + BIOLOGICAL CONCENTRATION, FOOD + BIOLOGICAL CONCENTRATION, MAN + BIOLOGICAL CONCENTRATION, MILK + DIETARY HABIT + DOSE MEASUREMENT, INTERNAL + STATISTICAL CORRELATION + SURVEY, RADIATION, ENVIRONMENTAL

15-17430

KOZLOV VF

PHOTOGRAPHIC DOSIMETRY OF IONIZING RADIATIONS

AEC-TR-6712 + IPST-CAT.-1808 +. 132 PAGES, TRANSLATION OF FOTOGRAFICHESKAYA DOZIMET RIYA IONIZIRUYUSHCHIKH IZLUCHEENII, ATOMIZDAT, MOSCOW, 1964

PHOTOGRAPHIC DOSIMETRY OF IONIZING RADIATIONS IS PLAGUED BY SOME FUNDAMENTAL DEFICIENCIES. STATIONARY EXPOSURES ARE FAIRLY ACCURATE, BUT, IN PRACTICE, THE RESULTS OBTAINED FROM FILM BADGES WORN BY THE MONITORED PERSONNEL ARE MUCH POORER. MEASUREMENTS OF GAMMA-RAY DOSES IN THE 30-100 MR RANGE BY THE FILM-BADGE TECHNIQUE ARE GENERALLY IN ERROR BY AS MUCH AS A FACTOR OF TWO IN EITHER DIRECTION. THE ERRORS MOREOVER BUILD UP DUE TO INTERMITTENCY, AND THE FILMS SHOULD THEREFORE BE WORN CONTINUOUSLY FOR A FAIRLY LONG TIME. ALTHOUGH THE ENERGY DEPENDENCE OF THE FILM IS SUBSTANTIALLY SUPPRESSED BY SUITABLE FILTERS, IN SOME CASES THE PERSONNEL ARE EXPOSED TO RADIATIONS WHOSE ENERGY LIES OUTSIDE THE COMPENSATED REGION. THE RESULTS ARE THEN IN ERROR BY MORE THAN A FACTOR OF TWO.

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

*DOSIMETRY, PHOTOGRAPHIC + DOSE MEASUREMENT, EXTERNAL + FAST NEUTRON + FILTER + FILTER SAFETY EVALUATION + GROSS BETA + GROSS GAMMA + MONITOR, RADIATION, GENERAL PRACTICE + MONITOR, RADIATION, PERSONNEL + PERSONNEL EXPOSURE, RADIATION + PERSONNEL PROTECTIVE DEVICE + THERMAL NEUTRON + X-RAY

15-17431

DOSIMETRY TECHNOLOGY STUDIES, 1965

BATTELLE-NORTHWEST, RICHMOND, WASHINGTON. PACIFIC NORTHWEST LABORATORY

BNWL-339 +. 35 PAGES, 22 FIGURES, 7 TABLES, NOVEMBER 1966

VARIOUS ASPECTS OF THE RESEARCH PROGRAM AT BATTELLE-NORTHWEST DURING 1965 ON RADIATION DOSIMETRY ARE DISCUSSED. TOPICS INCLUDE THERMOLUMINESCENT DOSIMETERS AND READERS, SOLID-STATE PARTICLE DETECTORS AND DOSIMETERS, ACTIVATION-TYPE PERSONNEL NEUTRON DOSIMETERS, PORTABLE FILM DENSITOMETERS, GAMMA-RADIATION EXPOSURE-RATE MEASUREMENTS, SMALL-CHAMBER EXPOSURE-RATE INSTRUMENTS, CRITICALITY-INCIDENT ALARMS, PLUTONIUM-DOSIMETRY STUDIES, AND MONITORING THE DOSE RATE TO THE GASTROINTESTINAL TRACT.

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

*DOSIMETRY, GENERAL + BATTELLE NORTHWEST + CRITICALITY SAFETY + DOSE MEASUREMENT, INTERNAL + DOSIMETRY, THERMOLUMINESCENCE + GROSS ALPHA + GROSS GAMMA + NEUTRON + PLUTONIUM + RESEARCH AND DEVELOPMENT PROGRAM + X-RAY

15-17432

ALSO IN CATEGORY 14

THE MANAGEMENT OF RADIOISOTOPE WASTES PRODUCED BY RADIOISOTOPE USERS. TECHNICAL ADDENDUM. SAFETY SERIES NO. 19

INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA, AUSTRIA

STI-PUB-119 +. 86 PAGES, 23 FIGURES, 12 TABLES, 32 REFERENCES, 1966

PRESENTS PROCESSES AND PROCEDURES IN THE HANDLING OF RELATIVELY SMALL QUANTITIES OF WASTE

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-17432 *CONTINUED*

ARISING FROM THE USE OF RADIOISOTOPES IN LABORATORIES, HOSPITALS, AND INDUSTRY. TOPICS DISCUSSED ARE - TYPES OF WASTE ASSOCIATED WITH A NUMBER OF RADIOISOTOPES, WASTE-COLLECTION CONTAINERS AND SYSTEMS, DIRECT DISPOSAL OF RADIOACTIVE WASTES TO SEWERS, LIQUID-WASTE TREATMENT SUITABLE FOR USERS OF RADIOISOTOPES, SOLID-WASTE TREATMENT AND DISPOSAL BY INDIVIDUAL USERS OF RADIOISOTOPES, AND AIRBORNE-WASTE MANAGEMENT.

AVAILABILITY - INTERNATIONAL ATOMIC ENERGY AGENCY (NEW YORK OR GENEVA), \$2.00 COPY

*RADIOISOTOPE + *WASTE MANAGEMENT + ALUMINUM + COMPACTION + EVAPORATION + FILTER THEORY, INTERCEPTION + INCINERATION + ION EXCHANGE + PHOSPHATE + STRONTIUM + WASTE DISPOSAL, ATMOSPHERIC + WASTE TRANSPORTATION + WASTE TREATMENT, LIQUID + WASTE TREATMENT, SOLID

15-17445 ALSO IN CATEGORY 17

BIRD PM

RADIATION ACCIDENTS - CAUSE AND EFFECT

DEPARTMENT OF NATIONAL HEALTH AND WELFARE, OTTAWA, ONTARIO

6 PAGES, 6 TABLES, 2 REFERENCES, CANADIAN JOURNAL OF PUBLIC HEALTH PAGES 7-12 (JAN. 1967)

A STUDY OF CANADIAN NONGOVERNMENTAL FILM-MONITORING RECORDS FOR 3 YEARS (58-60) WAS MADE OF ALL FILM DOSES ABOVE 600 MR. SEALED SOURCES ACCOUNTED FOR 107, AND UNSEALED SOURCES FOR THE OTHER 9. THE RECORDS WERE STUDIED, AND ABOUT 1/3 TO 1/5TH JUDGED UNAVOIDABLE. RADIOGRAPHY (42) AND X-RAYS (33) CONTRIBUTED THE BULK OF THE INCIDENTS, WITH ABOUT 6,282,887 R ANNUAL DOSE ACCUMULATED IN 417,351 FILM BADGES IN THOSE THREE YEARS. ARTICLE DISCUSSES METHOD OF DETECTION, INTERNAL AND EXTERNAL EXPOSURES, AND SPECIAL MEDICAL SUPERVISION.

*INCIDENT, ACTUAL, GENERAL + *PERSONNEL EXPOSURE, RADIATION + CANADA + RADIOGRAPHY + X-RAY

15-17478

GUSKOVA AK + DENISOVA EA + MOISELTSEV PI + KORLYAKOVA EA

CONDITIONS OF WORK AND THE STATE OF HEALTH IN PERSONS OPERATING ON REACTORS

6 PAGES, 2 TABLES, MED. RADIOLOG. 11(8) PAGES 37-42 (AUG. 1966) IN RUSSIAN

RESULTS OF HYGIENE STUDIES AND CLINICAL OBSERVATION ON WORKERS AT NEW TYPES OF RESEARCH REACTORS (2-5 YEARS ON 288 WORKERS AND 224 CONTROLS). IONIZING RADIATION DOES NOT CAUSE UNFAVORABLE SHIFTS IN HEALTH. PRINCIPLES OF ORGANIZATION OF OBSERVATION OF PERSONS OPERATING REACTORS, ELABORATED AND USED PRACTICALLY, MAY BE USED ELSEWHERE.

*PERSONNEL EXPOSURE, RADIATION + RADIATION EFFECT + RADIATION SAFETY AND CONTROL + REACTOR, RESEARCH + UNION OF SOVIET SOCIALIST REPUBLICS

15-17482

ALSO IN CATEGORY 14

VOSS MD

SURVEY OF ENVIRONMENTAL RADIOACTIVITY

AMES LAB., IOWA

IS-1523 +. 46 PAGES, JANUARY 1967

ENVIRONMENTAL MONITORING PROGRAM OF THE AMES LAB. OF THE USAEC FOR THE AMES LAB. RESEARCH REACTOR (ALRR) ARE DISCUSSED. THE ENVIRONMENTAL PROGRAM CONSISTS OF GROSS ALPHA AND BETA DETERMINATIONS OF AIR, SOIL, VEGETATION, RIVER WATER, ALRR OUTFALL, BOTTOM SEDIMENT, PRECIPITATION, WELL WATER, AND POND SAMPLES. THE DATA INDICATE THAT THE ALRR HAS NOT CONTRIBUTED A SIGNIFICANT AMOUNT OF RADIOACTIVITY TO THE ENVIRONMENT IN THE AMES AREA AND THAT RADIOACTIVITY LEVELS RECORDED FOR ENVIRONMENTAL SAMPLES REPRESENT BACKGROUND CONDITIONS FROM ATMOSPHERIC FALLOUT AND NATURALLY OCCURRING RADIOACTIVITY.

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

*MONITOR, RADIATION, ENVIRONMENTAL + ALRR (AMES LABORATORY RESEARCH REACTOR) + BIOLOGICAL CONCENTRATION, VEGETATION + FALLOUT + GROSS ALPHA + GROSS BETA + MONITOR, RADIATION, AIR + MONITOR, RADIATION, BACKGROUND + MONITOR, RADIATION, SAMPLING + PRECIPITATION + SOIL, NUCLIDE OCCURRENCE + SURFACE WATER, GENERAL + SURFACE WATER, SEDIMENT

15-17485

EXPERIMENTAL FAST NEUTRON DOSIMETRY AND LD 50/30 STUDIES IN MICE. FINAL REPORT

TEXAS NUCLEAR CORP., AUSTIN

AD-639758 +. 53 PAGES, AUGUST 31, 1966

THE REPORT CONCERNS EXPERIMENTAL 14-MEV NEUTRON DOSIMETRY USING MICE AS NEUTRON-SCATTERING SAMPLES AND AN LD 50/30 STUDY OF MICE USING 14-MEV NEUTRONS AND 2-MEV X RAYS. THE IRRADIATIONS FOR THE LD 50/30 STUDY WERE MADE BY USING COMPUTED NEUTRON-FLUX-TO-DOSE VALUES. THE EXPERIMENTAL NEUTRON DOSIMETRY STUDY IS DESCRIBED, NOT ONLY FOR MICE BUT FOR THREE TISSUE-EQUIVALENT TYPE MATERIALS (POLYETHYLENE, NYLON, AND SHONKA PLASTIC).

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

*DOSIMETRY, GENERAL + *NEUTRON INTERACTION + AEROSPACE SAFETY + BIOLOGICAL CONCENTRATION, ANIMAL +

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-17485 *CONTINUED*

DOSE CALCULATION, INTERNAL + DOSE MEASUREMENT, EXTERNAL + RADIOBIOLOGY + X-RAY

15-17486

ASSAY OF SR-90 IN HUMAN BONE IN THE UNITED KINGDOM. RESULTS FOR 1965, PART II. MONITORING REPORT NO. 13. MEDICAL RESEARCH COUNCIL, LONDON
NP-16410+. 18 PAGES, 10 TABLES, 7 REFERENCES, AUGUST 1966

ASSAYS OF SR-90 IN SAMPLES OF BONE FROM SUBJECTS WHO DIED IN THE SECOND HALF OF 1965 ARE PRESENTED. THE CONTENT OF SR-90 IN THE BONES OF THE NEWBORN WAS LESS IN 1965 THAN IN 1964. IN ADOLESCENTS, WHERE THE RATE OF BONE TURNOVER IS REDUCED, IT TAKES SEVERAL YEARS FOR THE BONE TO EQUILIBRATE WITH DIET. THE SLIGHT RISE IN SR-90 CONTENT IN ADOLESCENT BONE IN THE IKAEA SERIES IS THEREFORE MUCH AS PREDICTED. THIS ALSO APPLIES TO ADULT BONE.

AVAILABILITY - HER MAJESTY'S STATIONERY OFFICE, LONDON

*DIETARY HABIT + *STRONTIUM + *FALLOUT + RAINOUT + UNITED KINGDOM

15-17487

ALSO IN CATEGORY 16

SALO A
SR-90 AND CS-137 IN PRECIPITATION IN FINLAND
INST. OF RADIATION PHYSICS, HELSINKI
1 PAGE, 1 FIGURE, NATURE 212, PAGE 61 (OCTOBER 1, 1966)

PRECIPITATION HAS BEEN COLLECTED MONTHLY AT 17 STATIONS IN FINLAND SINCE 1961. UNTIL THE END OF 1963 THE RAIN-WATER SAMPLES WERE COLLECTED WITH STAINLESS-STEEL FUNNELS WHICH WERE DRAINED INTO ION-EXCHANGE COLUMNS.

CESIUM + FALLOUT + PRECIPITATION + RAINOUT + STRONTIUM

15-17489

ALSO IN CATEGORY 16

BAUGH JO + YOSHIKAWA K + KURODA PK
SINGLE FALLOUT PARTICLES AND ZIRCONIUM-95 FROM THE CHINESE NUCLEAR EXPLOSION OF 9 MAY 1966
UNIVERSITY OF ARKANSAS, FAYETTEVILLE
3 PAGES, 1 FIGURE, 1 TABLE, 11 REFERENCES, SCIENCE 155, PAGES 1405-07 (MARCH 1967)

DAILY FLUCTUATIONS OF THE NUMBER OF SINGLE FALLOUT PARTICLES AND ACTIVITY OF ZR-95 IN THE GROUND-LEVEL AIR WERE MEASURED AT FAYETTEVILLE, ARK., FOR ABOUT 3 MONTHS AFTER THE CHINESE NUCLEAR EXPLOSION OF 9 MAY 1966. WE FOUND CYCLIC PATTERN OF VARIATIONS FOR BOTH ZR-95 AND FALLOUT PARTICLES. THIS INDICATED THAT THEY HAD BEEN AIRBORNE FOR A LONG TIME AND HAD TRAVELED FAR. APPARENTLY, SOME OF THE PARTICLES HAD CIRCLED THE WORLD MORE THAN ONCE.

ATMOSPHERIC DIFFUSION, GLOBAL + FALLOUT + RAINOUT + ZIRCONIUM

15-17490

ALSO IN CATEGORY 16

THEIN M + KURODA PK
GLOBAL CIRCULATION OF RADIOCERIUM ISOTOPES FROM THE MAY 14, 1965 NUCLEAR EXPLOSION
ARKANSAS UNIVERSITY, FAYETTEVILLE
ORD-2529+. 7 PAGES JOURNAL GEO. PHYS. RES. 72, PAGES 1673-80 (NOVEMBER 15, 1966)

THE CONCENTRATIONS OF CE-141 AND CE-144 IN RAIN WERE MEASURED AT FAYETTEVILLE, ARK., DURING THE PERIOD NOVEMBER 1964 TO DECEMBER 1965. THE CE-141/CE-144 DATA INDICATE THAT THE RADIOCERIUM ISOTOPES PRODUCED BY THE MAY 14, 1965, CHINESE NUCLEAR TEST EXPLOSION TRAVELED EASTWARD AND CIRCLED THE WORLD AT LEAST TWICE. THE MEAN TROPOSPHERIC RESIDENCE HALF-TIME OF THE CERIUM ISOTOPES WAS CALCULATED TO BE ABOUT 40 DAYS. MEASUREMENTS OF VARIATIONS OF THE RATIOS CE-144/SR-90, CE-141/SR-89, AND CE-141/BA-140 IN RAIN YIELDED EXPERIMENTAL EVIDENCE FOR ATMOSPHERIC FRACTIONATION OF NUCLEAR DEBRIS.

ATMOSPHERIC DIFFUSION, GLOBAL + CESIUM + ISOTOPIC FRACTIONATION + RAINOUT + STRONTIUM

15-17527

ALSO IN CATEGORY 17

KANSAS UNIVERSITY PROPOSED AMENDMENT -- CHANGE IN PERSONNEL DOSIMETRY
UNIVERSITY OF KANSAS
3 PAGES, JULY 6, 1967, DOCKET NO. 50-148

PROPOSED CHANGE FROM COMMERCIAL FILM-BADGE SERVICE TO LIF DOSIMETERS (READ AT KU 3 TIMES A YEAR) FOR BETA-GAMMA MONITORING. POCKET CHAMBERS WOULD BE USED ADDITIONALLY IN AREAS OF POSSIBLY HIGH RADIATION. REPORTS FOR 1961-66 HIGHEST YEARLY INDIVIDUAL EXPOSURE (396 MR) AND AVERAGE MAXIMUM YEARLY DOSE (220 MR).

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

*DOSIMETRY, THERMOLUMINESCENCE + OPERATING EXPERIENCE + REACTOR, POOL TYPE + REACTOR, RESEARCH + TECHNICAL SPECIFICATIONS

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-17594
ROMAN J + SAWICKA B
BETA DOSE RATE MEASUREMENT WITH SILICON COUNTER
CENTRALNE LABORATORIUM OCHRONY RADIOLÓGICZNEJ, WARSAW (POLAND)
GLOR-57/D +. 11 PAGES, 1966

STUDIED USE OF SILICON SURFACE-BARRIER DETECTOR AS AN EXTRAPOLATION PARALLEL-PLATE IONIZATION CHAMBER IN MEASURING BETA DOSE RATE. THE DETECTOR RESPONSE WAS COMPARED WITH THE SURFACE ABSORBED DOSE RATE IN TISSUE, MEASURED WITH AN EXTRAPOLATION AIR-IONIZATION CHAMBER. IT HAS BEEN FOUND THAT THE CORRELATION IS SUFFICIENTLY GOOD AND THAT THE EXTRAPOLATION SILICON COUNTER IS SUITABLE FOR USE UNDER LABORATORY AND FIELD CONDITIONS. THE BETA DOSE-RATE RANGE FROM A FEW MILLIRADS TO FEW HUNDRED RADS CAN BE COVERED.

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

*DOSIMETRY, GENERAL + *INSTRUMENTATION, RADIATION MONITORING + BETA EMITTER + COUNTER + DOSE + DOSE MEASUREMENT, EXTERNAL + SILICON

15-17642 ALSO IN CATEGORY 9
RUSSELL JA + KNOWLES DJ
DESCRIPTION OF FACILITY CONTAMINATION ALARM SYSTEM INSTALLED IN THE PHYSICAL EXAMINATION HOT CELLS, BUILDING 3025
OAK RIDGE NATIONAL LAB., TENN.
ORNL-TM-1870+. 19 PAGES, 7 FIGURES, 2 TABLES, MAY 18, 1967

THREE BETA-GAMMA AIR MONITORS CONTINUOUSLY AND AUTOMATICALLY MONITOR AIR CONTAMINATION. THE SYSTEM ALSO SOUNDS LOCAL ALARMS AND INDICATES ABNORMAL CONDITIONS TO THE OPERATING AREA. OPERATORS ARE FIRST WARNED WHEN A MONITOR REACHES A PRESET CAUTION LEVEL. A SECOND WARNING IS GIVEN WHEN THE HIGH-LEVEL SETPOINT IS REACHED. THE BUILDING EVACUATION SYSTEM OPERATES AUTOMATICALLY WHEN TWO OR MORE AIR MONITORS DETECT A HIGH LEVEL OF AIR CONTAMINATION.

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

*HOT CELL + *MONITORING SYSTEM, RADIATION + MONITOR, RADIATION, AIR + ORNL (OAK RIDGE NATIONAL LABORATORY)

15-17688 ALSO IN CATEGORY 14
QUARTERLY SUMMARY REPORT, DECEMBER 1, 1966-MARCH 1, 1967. APPENDIX TO HEALTH AND SAFETY LABORATORY FALLOUT PROGRAM
AEC, NEW YORK OPERATIONS OFFICE, HEALTH AND SAFETY LAB
HASL-181, APPENDIX +. 208 PAGES, FIGURES, TABLES, APRIL 1, 1967

GIVES DATA FOR SR-90 AND SR-89 DEPOSITION AT SITES THROUGHOUT THE WORLD, FOR 17 ISOTOPES AT 11 POINTS IN THE UNITED STATES, AND FOR RADIOSTRONTIUM AT 4 LOCATIONS IN THE ATLANTIC OCEAN. ALSO, RADIOSTRONTIUM IS REPORTED FOR MILK AND TAPWATER IN NEW YORK CITY, AND FOR POWDERED MILK AT PERRY, NEW YORK.

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

*FALLOUT + BIOLOGICAL CONCENTRATION, GENERAL + BIOLOGICAL CONCENTRATION, MILK + OCEAN AND SEA + STRONTIUM

15-17867 ALSO IN CATEGORY 17
UNIVERSITY OF VIRGINIA HAZARDS REPORT EXHIBIT B. A STUDY OF THE SHIELD OF THE UNIVERSITY OF VIRGINIA NUCLEAR RESEARCH REACTOR
OAK RIDGE NATIONAL LAB., TENN.
ORNL-TM-662 +. 21 PAGES, 9 FIGURES, 2 TABLES, NOVEMBER 25, 1963, DOCKET NO. 50-62

DETAILED MEASUREMENTS WERE MADE OF NEUTRON AND GAMMA DOSES NEAR THE BIOLOGICAL SHIELD AND AT THE SURFACE OF THE POOL, WITH THE ORNL MOBILE RADIATION MEASUREMENT LAB. DOSE RATES WERE GENERALLY LOW, ALTHOUGH SOME STREAMING AROUND ACCESS FACILITY CLOSURES WAS OBSERVED. OTHER DATA INCLUDED MEASUREMENTS OF DOSE RATES AT VARIOUS POINTS IN THE VICINITY OF THE HEAT EXCHANGER (A CONTROLLED-ACCESS AREA).

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

*SHIELDING + REACTOR, POOL TYPE + REACTOR, RESEARCH + SURVEY, RADIATION, GENERAL

15-17880
SCHULTE JH
THE PROBLEM OF RADIOACTIVE CONTAMINATION OF THE SKIN
SUBMARINE AND RADIATION MEDICINE DIVISION, BUREAU OF MEDICINE AND SURGERY, DEPARTMENT OF THE NAVY, WASHINGTON, D. C.

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-17880 *CONTINUED*

6 PAGES, 2 FIGURES, 8 REFERENCES, ARCH. ENVIRON. HEALTH 13(1), PAGE 96 THRU 101, (JULY 1966)

DETAILED DESCRIPTION OF THE STRUCTURE AND FUNCTION OF THE SKIN IS FOLLOWED BY SUGGESTED PROCEDURES FOR REMOVING RADIOACTIVE CONTAMINATION.

*DECONTAMINATION + CONTAMINATION

15-17882

ALSO IN CATEGORY 14

BIRD PM

CANADA'S RADIOACTIVE FALLOUT STUDY PROGRAM

DEPARTMENT OF NATIONAL HEALTH AND WELFARE, CANADA

5 PAGES, 1 FIGURE, 5 TABLES, 3 REFERENCES, JOURNAL OF THE CANADIAN ASSOCIATION OF RADIOLOGISTS 15, (JUNE 1964)

PRESENT OBJECTIVE OF THIS PROGRAM IS TO DETERMINE THE RADIATION DOSE ASSOCIATED WITH FALLOUT NOW AND IN THE PREDICTABLE FUTURE, WITH THE ULTIMATE OBJECTIVE OF DETERMINING THE INCIDENCE OF DISEASE ASSOCIATED WITH FALLOUT. THE PROGRAMS FOR DOSE ESTIMATES AND FOR FALLOUT STUDY ARE PRESENTED. SUMMARIZED RESULTS ARE SHOWN IN GRAPHS.

*FALLOUT + BIOMEDICAL + CANADA + SURVEY, RADIATION, ENVIRONMENTAL

15-17884

ALSO IN CATEGORY 14

PACIFIC NORTHWEST LABORATORY MONTHLY ACTIVITIES REPORT, NOVEMBER 1966, ON AEC DIVISION OF BIOLOGY AND MEDICINE PROGRAMS

BATTELLE-NORTHWEST, RICHLAND, WASHINGTON. PACIFIC NORTHWEST LAB.
BNWL-360(REV.) +. 18 PAGES, DECEMBER 1966

PRESENTS BRIEF SUMMARIES OF WORK IN PROGRESS IN RADIATION BIOLOGY, THE CONTENT OF CS-137 IN FOREST-FLOOR SAMPLES OF LEAF LITTER, COLUMBIA RIVER ECOLOGY, FALLOUT TRANSPORT, GEOLOGIC MAPPING OF THE COLUMBIA RIVER BASALT PLATEAU, WHOLE-BODY COUNTING OF NEUTRON-ACTIVATED CADAVERS, THE COMPUTER ANALYSIS OF DATA FROM FILM DOSIMETERS, AND DEVELOPMENT OF RADIATION DOSIMETERS FOR FIELD USE.

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

*RADIATION EFFECT + BATTELLE NORTHWEST + COMPUTER PROGRAM + DOSIMETRY, GENERAL + DOSIMETRY, PHOTOGRAPHIC + ECOLOGICAL CONSIDERATION + FALLOUT + RADIOBIOLOGY

15-17887

DEAGAZIO AW

DOSE CALCULATION MODELS FOR RE-ENTERING NUCLEAR ROCKET DEBRIS

NUCLEAR UTILITY SERVICES, INC., WASHINGTON, D. C.

NUS-229 +. 47 PAGES, 12 FIGURES, 4 TABLES, 15 REFERENCES, MAY 12, 1965

THE EXTERNAL DOSE FUNCTIONS AND EXTERNAL AND INTERNAL DOSE PROBABILITY FUNCTIONS ARE DERIVED. EXTERNAL WHOLE-BODY GAMMA AND BETA DOSE RELATIONS ARE DERIVED FOR RECEPTORS WHO ARE NOT FIXED IN A GIVEN LOCATION FOR THE ENTIRE EXPOSURE PERIOD. THE PROBABILITY OF RECEIVING A GIVEN EXTERNAL DOSE, THE NUMBER OF PEOPLE RECEIVING AT LEAST A GIVEN DOSE, AND THE OVERALL POPULATION DOSE ARE ALSO DERIVED FOR EXTERNAL GAMMA RADIATION EXPOSURES. INTERNAL-DOSE PROBABILITY FUNCTIONS ARE DERIVED FOR INGESTION AND INHALATION.

AVAILABILITY - NUCLEAR UTILITY SERVICES, INC., WASHINGTON, D. C.

*NUCLEAR ROCKET + DOSE CALCULATION, EXTERNAL + DOSE CALCULATION, INTERNAL + HAZARDS ANALYSIS

15-17888

ALSO IN CATEGORY 14

ROSER FX + KEGEL GH + HAINBERGER L + CULLEN TL + DREW RT

A STUDY OF ARTIFICIAL AND NATURAL RADIOACTIVE CONTAMINATION IN BRAZIL

PONTIFICIA UNIVERSIDADE CATOLICA, RIO DE JANEIRO. INSTITUTO DE FISICA

TID-20955 +. 84 PAGES, FIGURES, AUGUST 1, 1964

PRELIMINARY DATA ARE REPORTED FROM STUDIES OF TWO REGIONS OF HIGH NATURAL RADIOACTIVITY IN BRAZIL. ABOUT 20,000 PEOPLE ARE EXPOSED TO HIGH CONCENTRATIONS OF U OR TH IN MONAZITE SAND, AND 5000 ARE EXPOSED TO RADIATION LEVELS FROM 0.03 TO 1.0 MR/HR IN THE TOWNS OF GUARAPARI AND MEAIBE. THE TOWNS OF MORRO DE FERRO AND ARAXA IN MINOS GERAIS STATE ARE IN AN AREA OF RADIOACTIVE VOLCANIC EXTRUSIONS. RADIOCHEMICAL ANALYSIS WERE MADE OF DRINKING WATER, SOIL, SELECTED BIOLOGICAL SAMPLES, AND MEASUREMENTS WERE MADE OF POPULATION EXPOSURE.

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

BRAZIL + FALLOUT + SURVEY, RADIATION, ENVIRONMENTAL + THORIUM + URANIUM + URANIUM, NATURAL

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-17890
KENNEY GN + CAMERON JR + VOUGHT C
A SIMPLE TLD READER UTILIZING A CONVENTIONAL SCALER
WISCONSIN UNIV., MADISON. DEPT. OF RADIOLOGY
COO-1105-108 +. 3 PAGES, FIGURES, REFERENCES, JULY 15, 1965

DESCRIBES A SIMPLE THERMOLUMINESCENCE-TYPE DOSIMETER WHICH CONNECTS TO A CONVENTIONAL SCALER. THE SYSTEM CONSISTS OF A SAMPLE HEATER, A PHOTOMULTIPLIER TUBE (PMT), A SIMPLE ANALOG-DIGITAL (A-D) CIRCUIT FOR THE PMT ANODE CIRCUIT, AND A SCALER TO TOTAL THE DIGITAL OUTPUT, GIVING A MEASURE OF THE TOTAL THERMOLUMINESCENCE. THE READER IS DESIGNED TO CONNECT TO A CONVENTIONAL SCALER WHICH SUPPLIES THE POSITIVE HIGH VOLTAGE FOR THE PMT AND COUNTS THE PULSES PRODUCED BY THE A-D CIRCUIT.

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

DOSIMETRY, GENERAL + DOSIMETRY, THERMOLUMINESCENCE

15-17891
SUNTHARALINGAM N + ZIMMERMAN DW + KENNEY GN
THERMOLUMINESCENT READING INSTRUMENT FOR MILLIROENTGEN EXPOSURE LEVELS
WISCONSIN UNIV., MADISON
COO-1105-106 +. 7 PAGES, FIGURES, REFERENCES, JULY 15, 1965

DESCRIBES AN INSTRUMENT TO MEASURE THERMOLUMINESCENCE FROM SINGLE CRYSTALS OF LIF EXPOSED TO LOW LEVELS OF RADIATION TO (BELOW 10 MR). IMPROVED SENSITIVITY WAS ACHIEVED BY MODIFICATIONS TO REDUCE PHOTOMULTIPLIER-TUBE DARK CURRENT, BLACK-BODY RADIATION FROM HEATED SAMPLE, NONRADIATION-INDUCED THERMOLUMINESCENCE.

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

*DOSIMETRY, THERMOLUMINESCENCE + DOSIMETRY, GENERAL

15-17907 ALSO IN CATEGORY 14
MOLINARI G + ROMAGNOLI G
RADIOACTIVE CONTAMINATION OF FALLOUT IN FOODS. III. CONTAMINATION FROM SR-90 AND CS-137 IN FOODS SAMPLED IN THE CITY OF NOVARA
CENTRO PER LA RIVELAZIONE DELLA CONTAMINAZIONE RADIOATTIVA, PAVIA, ITALY
7 PAGES, 1 FIGURE, 6 TABLES, 4 REFERENCES, RIV. ITAL. IG., 25, PAGE 3 THRU 9, (JANUARY-APRIL 1965), IN ITALIAN

THE SR-90 AND CS-137 CONCENTRATIONS WERE DETERMINED IN 42 SAMPLES OF FOODS OBTAINED FROM RETAIL MARKETS OF NOVARA. THE MAXIMUM SR-90 LEVEL IN MILK WAS 47.2 PC/L. THE HIGHEST VALUES WERE OBSERVED IN SOME CHEESE AND WHEAT SAMPLES. EIGHT SAMPLES OF BREAD AND FRUSTA WERE ALSO EXAMINED. AVERAGE CONCENTRATION OF INGESTED SR-90 PER PERSON PER YEAR WAS CALCULATED FOR THE VARIOUS FOODS.

*BIOLOGICAL CONCENTRATION, FOOD + CESIUM + FALLOUT + ITALY + STRONTIUM

15-17957 ALSO IN CATEGORY 14
DATA FROM RADIATION PROTECTION PROGRAMS. VOLUME 4, NUMBER 9
DEPARTMENT OF NATIONAL HEALTH AND WELFARE, OTTAWA, ONTARIO. RADIATION PROTECTION DIVISION
NP-16383 +. 37 PAGES, SEPTEMBER 1966

DATA ARE PRESENTED ON CS-137 IN THE CANADIAN NORTH FOR THE FIRST HALF OF 1966 AND ON FALLOUT AND REACTOR ENVIRONMENT MONITORING FOR AUGUST 1966. ACTIVITY MEASUREMENTS IN TAP WATER MADE FOR JANUARY TO JULY 1966 ARE INCLUDED. AVERAGE CS-137 CONCENTRATIONS IN MEAT SAMPLES DURING THE FIRST HALF OF 1966 WERE CLOSE TO VALUES OBTAINED DURING THE FIRST HALF OF 1965 BUT ABOUT HALF OF THE VALUE OBTAINED DURING THE SAME PERIOD OF 1964. BODY BURDENS OF CS-137 IN MAN WERE GREATER FOR WOMEN THAN FOR MEN IN ALL DIET CLASSES, SHOWED A PEAKING EFFECT FOR PERSONS WITH A WEIGHT OF 141 TO 156 LBS, AND DID NOT VARY MARKEDLY WITH AGE.

AVAILABILITY - MICROCARD EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM, WISCONSIN, 54689

*DOSE MEASUREMENT, INTERNAL + *FALLOUT + CANADA + CESIUM + MONITORING PROGRAM, ENVIRONMENTAL + RADIOACTIVITY, RELEASE + REACTOR POWER

15-17973 ALSO IN CATEGORIES 9 AND 17
BIG ROCK POINT PROPOSED USE OF ION CHAMBERS INSTEAD OF SCINTILLATION DETECTORS FOR OFF-GAS MONITORING
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
4 PAGES, SEPTEMBER 6, 1966, DOCKET NO. 50-155

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-17973 *CONTINUED*

CHANGE IN THE AIR-EJECTOR OFF-GAS MONITORING SYSTEM WOULD INCREASE RELIABILITY OF SYSTEM AND ENSURE TECH. SPECS. ARE MET AS TO RANGE TO BE MONITORED (0.0001 TO 10 CURIES/SEC). FORMERLY THIS RANGE COULD NOT BE MET. CONDENSATION IN SAMPLE VOLUME ALSO CAUSED ERRATIC OPERATION. SYSTEM HAS BEEN OPERATING 11 MONTHS WITH EXCELLENT RELIABILITY AND SENSITIVITY, AND HAS BEEN USED AT VBWR AND HUMBOLDT BAY.

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

*CHAMBER, ION + *MODIFICATION, SYSTEM OR EQUIPMENT + *REACTOR OFFGAS + BIG ROCK POINT + INSTRUMENTATION, AIR SAMPLING + MONITOR, RADIATION, AIR + OPERATING EXPERIENCE + REACTOR, BOILING WATER + TECHNICAL SPECIFICATIONS

15-17991 ALSO IN CATEGORY 18
GE THERMAL CRITICAL ASSEMBLY PROPOSED CHANGE 7. CONTROL ROOM RADIATION LEVELS
GENERAL ELECTRIC, SANTA CLARA, CALIFORNIA
11 PAGES, JULY 22, 1966, DOCKET NO. 57-24

GE REQUESTS DELETION OF 10-MR/HR LIMIT ON CONTROL-ROOM RADIATION LEVEL, CONTENDING THAT THIS IS AN UNWARRANTED RESTRICTION SINCE THE PERSONNEL MONITORING AND EXPOSURE LIMITATIONS OF 10 CFR 20 ARE OBSERVED. CONTROL-ROOM AREAS OTHER THAN THOSE OCCUPIED BY OPERATORS MAY EXCEED 10-MR/HR LIMIT. CHANGE WOULD ALSO CORRECT TYPOGRAPHICAL ERRORS.

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

*CONTROL PANEL/ROOM + *PERSONNEL EXPOSURE, RADIATION + CRITICAL ASSEMBLY FACILITY + TECHNICAL SPECIFICATIONS

15-18010 ALSO IN CATEGORY 14
BOOTH AH
SAFETY OF RADIOISOTOPES IN INDUSTRY
RADIATION PROTECTION DIVISION, DEPT. OF NATIONAL HEALTH AND WELFARE, CANADA
RPD-42 +. 11 PAGES, 4 FIGURES, MAY 1965

ACCIDENTS IN THE USE OF RADIOISOTOPES ARE EXTREMELY RARE. THE REASONS FOR THIS ARE (1) THE HIGH DEGREE OF PUBLIC INTEREST IN RADIATION AND AWARENESS OF THE HAZARD, (2) THE SAFETY FEATURES INCORPORATED BY MANUFACTURERS IN THE DESIGN OF RADIOISOTOPE DEVICES, (3) THE COMPREHENSIVE AND EFFECTIVE REGULATORY CONTROLS ESTABLISHED BY GOVERNMENT AGENCIES, AND (4) THE BACKUP SERVICES PROVIDED BY HEALTH DEPARTMENTS. THE SAFETY RECORD OF RADIOISOTOPE USERS INDICATES WHAT CAN BE DONE TO MINIMIZE ACCIDENTS WHEN THE ABOVE FOUR FACTORS COMBINE EFFECTIVELY.

AVAILABILITY - DEPARTMENT OF NATIONAL HEALTH AND WELFARE, OTTAWA, CANADA

*RADIATION SAFETY AND CONTROL + CANADA + RADIATION, PUBLIC EDUCATION/ACCEPTANCE

15-18013
MAR PG + MOHINDRA VK
STRONTIUM-89, 90 AND CESIUM-137 IN CANADIAN MILK POWDER
RADIATION PROTECTION DIVISION, DEPT. OF NATIONAL HEALTH AND WELFARE, CANADA
RPD-51 +. 13 PAGES, 19 FIGURES, 5 TABLES, 9 REFERENCES, OCTOBER 1966

REPORTS DETERMINATIONS OF THE SR-90 AND CS-137 CONTENT OF CANADIAN POWDERED MILK SAMPLES FROM 1957 TO 1962. THE SR-90 RESULTS WERE PUBLISHED SERIALY IN THE DIVISIONS REPORTS, BUT MOST OF THE CESIUM RESULTS BECAME AVAILABLE LATER AND WERE NOT PUBLISHED. IN 1963 THE MEASUREMENT OF RADIONUCLIDES IN MILK POWDER WAS REPLACED BY THE ANALYSIS OF LIQUID WHOLE MILK. HOWEVER, IT HAS BEEN THOUGHT DESIRABLE TO BRING TOGETHER ALL THE DATA OBTAINED ON POWDERED MILK IN A CONVENIENT FORM AS A SOURCE DOCUMENT. THIS REPORT PRESENTS ALL THE ANALYTIC RESULTS IN TABULAR AND GRAPHIC FORM.

AVAILABILITY - DEPARTMENT OF NATIONAL HEALTH AND WELFARE, OTTAWA, CANADA

*BIOLOGICAL CONCENTRATION, MILK + *FALLOUT + *SURVEY, RADIATION, ENVIRONMENTAL + ANALYTICAL TECHNIQUE, MILK + CANADA + CESIUM + POTASSIUM + SAMPLING + STRONTIUM

15-18037 ALSO IN CATEGORY 14
CARTER MW + HARVEY HD
OFF-SITE RADIOLOGICAL SAFETY PROGRAM FOR PROJECT DRIBBLE
SOUTHEASTERN RADIOLOGICAL HEALTH LAB., MONTGOMERY, ALA.
TID-22975 +. 28 PAGES, JUNE 1, 1966

EMPHASIS IS PLACED ON THE TYPES OF ENVIRONMENTAL INFORMATION AND DATA GATHERED PRIOR TO THE ACTIVE TEST PERIOD, THE ESTABLISHMENT AND MAINTENANCE OF APPROPRIATE PUBLIC RELATIONS IN A RELATIVELY POPULOUS AREA, AND THE PROCEDURES UTILIZED IN THE TEMPORARY EVACUATION OF SEVERAL HUNDREDS OF PEOPLE WHO ARE RESIDENTS OF THE AREA CONTIGUOUS TO THE TEST SITE. DATA OBTAINED FROM THE VARIOUS MONITORING PROJECTS CONDUCTED DURING THE ACTIVE TEST PERIOD AND RESULTS OF ANALYSES OF ENVIRONMENTAL SAMPLES COLLECTED AFTER THE SALMON EVENT ARE DISCUSSED.

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-18037 *CONTINUED*

*MONITOR, RADIATION, ENVIRONMENTAL + *SALMON EVENT + *SURVEY, RADIATION, USPHS + NUCLEAR DETONATION + RADIATION SAFETY AND CONTROL + SAMPLING + SURVEY, RADIATION, ENVIRONMENTAL

15-18038

DAVIS PS + PIPER NR

THE DETERMINATION OF SR-90 IN ENVIRONMENTAL MATERIALS

AUSTRALIAN ATOMIC ENERGY COMMISSION RESEARCH ESTABLISHMENT, LUCAS HEIGHTS

AAEC/TM-377 +. 16 PAGES, 2 FIGURES, 1 TABLE, REFERENCES, FEBRUARY 1967

A METHOD FOR DETERMINING SR-90 IN ENVIRONMENTAL MATERIALS IS DESCRIBED. IT CONSISTS OF THE ION-EXCHANGE SEPARATION OF STRONTIUM FROM CALCIUM AT AN ELEVATED TEMPERATURE BY CAREFUL CONTROL OF PH AND THE MOLAR RATIO OF CA:EDTA, FOLLOWED BY SCAVENGING. ACTIVITY OF THE SR-90 IS DETERMINED BY COUNTING THE Y-90 DAUGHTER. RECOVERY OF STRONTIUM IS DETERMINED WITH SR-85 TRACER. TYPICAL RECOVERY OF STRONTIUM IS 70-90 PER CENT. PROCEDURES ARE GIVEN FOR ANALYSIS OF MILK, VEGETATION, MEAT AND FISH, RAINWATER, AND OYSTER SHELL AND REFERENCE IS MADE TO ANALYSIS OF OYSTER FLESH, SOIL AND EFFLUENT.

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

*ANALYTICAL TECHNIQUE, GENERAL + *STRONTIUM + ANALYTICAL TECHNIQUE, FOOD + ANALYTICAL TECHNIQUE, LIQUID + ANALYTICAL TECHNIQUE, MILK + ANALYTICAL TECHNIQUE, SOLID + ANALYTICAL TECHNIQUE, VEGETATION + ANALYTICAL TECHNIQUE, WATER + FALLOUT + ION EXCHANGE

15-18039

BRAUN RG + FARRER DN + ZAPPINI W + CROOK GH

PERFORMANCE OF RHESUS MONKEYS DURING CONTINUOUS LOW-LEVEL GAMMA RADIATION. AN EXPLORATORY STUDY AEROMEDICAL RESEARCH LAB. (6571 ST), HOLLOMAN AFB, N. MEXICO

AD-641331 + ARL-TR-66-18 +. 29 PAGES, FIGURES, TABLES, REFERENCES, OCTOBER 1966

SIX RHESUS MONKEYS WERE TRAINED TO PERFORM FOUR OPERANT TASKS. BASELINE PERFORMANCE WAS OBTAINED IN THE LABORATORY DURING A 3-DAY SIMULATED EXPOSURE SITUATION. THE EXPOSURE PHASE INVOLVED A 10 DAY PREEXPOSURE BASELINE, 10 DAYS OF CONTINUOUS EXPOSURE TO 2 R PER HOUR GAMMA RADIATION, AND A 10-DAY POSTEXPOSURE FOLLOWUP ASSESSMENT OF PERFORMANCE. A 30-DAY FOLLOWUP WAS ALSO CONDUCTED 60 DAYS AFTER THE EXPOSURE PHASE. NO PERFORMANCE DIMINUTIONS WERE DISCOVERED ON THE AVERSIVELY MOTIVATED TASKS, BUT A PERFORMANCE DIMINUTION IN THE FOOD-REWARDED FIXED-RATIO TASK OCCURRED DURING THE RADIATION EXPOSURE. ALL THE ANIMALS RECOVERED SHORTLY AFTER THE EXPOSURE AND STILL APPEARED NORMAL 8 MONTHS LATER.

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

*RADIATION EFFECT + DOSE + ECOLOGICAL CONSIDERATION + RADIATION SAFETY AND CONTROL

15-18041

ALSO IN CATEGORY 14

ENDERS JW

SOLID RADIOACTIVE WASTE DISPOSAL AT THE LOS ALAMOS SCIENTIFIC LABORATORY

LOS ALAMOS SCIENTIFIC LAB., N. MEX.

LA-DC-8347 + CONF-670512-5 +. 52 PAGES, FIGURES, 1965, PRESENTED AT JOINT EAEA/ENEA SYMPOSIUM ON THE DISPOSAL OF RADIOACTIVE WASTES INTO THE GROUND, VIENNA, AUSTRIA

DESCRIBES METHODS USED AT THE LOS ALAMOS SCIENTIFIC LABORATORY FOR THE DISPOSAL OF SOLID RADIOACTIVE WASTE. COLLECTION, TRANSPORTATION, AND BURIAL OF WASTE, RADIOLOGICAL SAFETY OF THE DISPOSAL OPERATIONS, AND COST SURVEYS COVERING A TEN-YEAR PERIOD ARE GIVEN.

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

*LASL (LOS ALAMOS SCIENTIFIC LABORATORY) + *WASTE DISPOSAL, SOLID + GEOLOGICAL CONSIDERATION, GENERAL + HYDROLOGICAL CONSIDERATION, GENERAL + WASTE DISPOSAL, TERRESTRIAL + WASTE TRANSPORTATION

15-18042

TAMURA T

DISPOSAL OF RADIOACTIVE WASTES BY HYDRAULIC FRACTURING

OAK RIDGE NATIONAL LAB., HEALTH PHYSICS DIVISION, TENN.

9 PAGES, 3 FIGURES, 7 TABLES, 10 REFERENCES, NUCLEAR ENGINEERING AND DESIGN 5(4), PAGE 477 THRU 485, (JULY 1967)

THE SHALE FRACTURING PROGRAM IS CONCERNED WITH DEVELOPING A METHOD FOR THE SAFE AND ECONOMICAL DISPOSAL OF LARGE BATCHES OF RADIOACTIVE LIQUID WASTES BY MIXING THE WASTE WITH CEMENT AND OTHER ADDITIVES, AND INJECTING THE SLURRY INTO BEDDED SHALE AT DEPTHS OF ABOUT 1000 FT. MIXES SUITABLE FOR USE WITH ORNL'S INTERMEDIATE-LEVEL LIQUID WASTE WERE DEVELOPED. THE SLURRIES REMAIN PUMPABLE FOR THE TIME (HRS) REQUIRED TO COMPLETE AN INJECTION, AND, ONCE IN PLACE IN THE DISPOSAL FORMATION, SET INTO A SOLID MATRIX THAT FIXES THE PRINCIPAL RADIONUCLIDES. THESE MIXES HAVE A CEMENT BASE, WITH CLAYS ADDED TO ENHANCE THE FIXATION OF RADIOCESIUM AND A POZZOLAN CEMENT SYSTEM TO RETAIN THE RADIOSTRONTIUM.

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-18042 *CONTINUED*

*WASTE DISPOSAL, HYDRAULIC FRACTURING + GEOLOGICAL CONSIDERATION, GENERAL +
ORNL (OAK RIDGE NATIONAL LABORATORY) + WASTE DISPOSAL, LIQUID + WASTE DISPOSAL, TERRESTRIAL

15-18044

SURVEY OF SR-90, SR-89, AND CS-137 IN RAW MILK IN THE NETHERLANDS. SUMMARY OF RESULTS IN THE PERIOD 1959 TO 1962.

RIJKS INSTITUUT VOOR DE VOLKSGEZONDHEID, UTRECHT, NETHERLANDS

RA-5 +. 12 PAGES, JULY 1965, IN DUTCH

RESULTS OF THE MEASUREMENTS OF THE SR-90, SR-89, AND CS-137 CONTENT OF RAW, LIQUID MILK IN THE PERIODS 1959/1960 AND 1961/1962 ARE TABULATED. SAMPLING IN THE FORMER PERIOD WAS CARRIED OUT AT DAIRIES IN THE ENVIRONMENT OF UTRECHT. IN THE LATTER PERIOD, MILK WAS SAMPLED AT 10 DAIRIES DISTRIBUTED ALL OVER THE COUNTRY. RESULTS NOT DISCUSSED.

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

*BIOLOGICAL CONCENTRATION, MILK + *FALLOUT + *SURVEY, RADIATION, ENVIRONMENTAL + CESIUM + NETHERLANDS + SAMPLING + STRONTIUM

15-18045

MOONEN W + STRACKEE L

A SIMPLE METHOD FOR DETERMINING THE RADIOACTIVE CONTAMINATION OF MILK AFTER A REACTOR ACCIDENT
RIJKS INSTITUUT VOOR DE VOLKSGEZONDHEID, UTRECHT, NETHERLANDS

RA-8 +. 14 PAGES, DECEMBER 1961, IN DUTCH.

THE MEASUREMENT IS MADE BY DIPPING A BETA-GAMMA PROBE OF A RADIATION MONITOR (TYPE FRIESEKE AND HOEPFNER FH 40 T) IN A STANDARD 30-LITRE MILK CONTAINER. THE CONTAMINATION OF THE MILK IS CALCULATED WITH AID OF AN EXPERIMENTALLY DETERMINED CONVERSION FACTOR. THE METHOD IS SENSITIVE ENOUGH TO INDICATE A SPECIFIC ACTIVITY OF 0.05 MICROCURIE I-131 PER LITRE.

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

*ANALYTICAL TECHNIQUE, MILK + *IODINE + ACCIDENT, GENERAL + FALLOUT +
INSTRUMENTATION, RADIATION MONITORING + NETHERLANDS

15-18047

PSZONA A + ZIELCZYNSKI M + ZARNOWIECKI K

METHODS OF SIMULTANEOUS MEASUREMENT OF DOSE EQUIVALENT /DE/ AND QUALITY FACTOR /QF/ OF MIXED RADIATION
INSTITUTE OF NUCLEAR RESEARCH, WARSAW, POLAND

INR-777/XIX/D + CONF-66092C-16 +. 16 PAGES, FROM 1ST INTERNATIONAL CONGRESS OF THE INTERNATIONAL
RADIATION PROTECTION ASSOCIATION, ROME, ITALY

DOSE EQUIVALENT (IE) AND QUALITY FACTOR (QF) OF ANY RADIATION OR RADIATION MIXTURE CAN BE DETERMINED BY MEANS OF TWO DETECTORS. THE SENSITIVITY OF ONE DETECTOR IS LINEAR AGAINST QF AND WITHOUT QF DEPENDENCE OF THE SECOND. SCINTILLATION IE AND QF MEASUREMENTS METHODS ARE ALSO REPORTED.

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

*DOSIMETRY, GENERAL + *INSTRUMENTATION, RADIATION MONITORING + DOSE

15-18049

ZOLLER WW

THE INCREASED SENSITIVITY OF CHICK EMBRYOS TO RADIATION AFTER INJECTION OF INK OR CHARCOAL
3 PAGES, 1 TABLE, 8 REFERENCES, ATOMPRAXIS 13(4/5), PAGE 193 THRU 195, (APRIL/MAY 1967)

A COMBINATION OF X-IRRADIATION OF THE EXTRAEMBRYONIC BLOOD WITH INJECTION OF INK OR CHARCOAL LED TO DEATH IN CHICK EMBRYOS, WHEREAS THE SAME IRRADIATION WITHOUT INJECTION WAS NOT LETHAL. THIS CAN BE EXPLAINED AS AN INHIBITION OF A DEFENCE MECHANISM WITH WHICH THE EMBRYO IS NORMALLY ABLE TO NEUTRALIZE RADIOTOXINS IN THE BLOOD.

*BIOMEDICAL + *RADIATION EFFECT + ECOLOGICAL CONSIDERATION + RADIATION DAMAGE

15-18050

JASTAK J + MUSIALOWICZ T + WYSOPOLSKI J

PERSONNEL FILM MONITORING IN POLAND IN THE YEARS 1963-1965

CENTRALNE LABORATORIUM OCHRONY RADIOLOGICZNEJ, WARSAW, POLAND

CLOR-58/D +. 25 PAGES, 1966. IN POLISH

THE METHOD AND RESULTS OF A SYSTEMATIC PERSONNEL FILM MONITORING CARRIED OUT BY THE CENTRAL LABORATORY FOR RADIOLOGICAL PROTECTION IN THE PERIOD 1963 TO 1965, IN LABORATORIES AND ESTABLISHMENTS USING RADIOACTIVE ISOTOPES ARE DESCRIBED. THE NUMBER OF MONITORED PERSONS WITH DOSES EXCEEDING THE QUARTERLY PERMISSIBLE DOSE DECREASED IN COMPARISON WITH THE PREVIOUS YEARS. THE RESULTS FROM THE YEARS 1963 AND 1964 WERE COMPARED WITH SIMILAR ONE IN THE GERMAN

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-18050 *CONTINUED*
DEMOCRATIC REPUBLIC.

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

*MONITOR, RADIATION, PERSONNEL + *PERSONNEL EXPOSURE, RADIATION + *POLAND + DOSE +
DOSE MEASUREMENT, EXTERNAL + DOSIMETRY, GENERAL

15-18052
SITZLACK G

ACTUAL PROBLEMS OF RADIATION PROTECTION. RADIOPROTECTIVE MEDICINE AS SCIENTIFIC PRINCIPLES OF MEDICAL
AFFAIRS IN RADIATION PROTECTION.
STAATLICHE ZENTRALE FUER STRAHLENSCHUTZ, BERLIN
SZS-13/66 +. 22 PAGES, DECEMBER 1966

RADIATION PROTECTION REPRESENTS A COMPLEX FIELD COVERING MEDICAL-BIOLOGICAL,
PHYSICAL-TECHNICAL, AND RADIOCHEMICAL PROBLEMS. ALL MEASURES OF RADIATION PROTECTION ARE
BASED ON THE RADIOBIOLOGICAL-MEDICAL INTERPRETATION OF THE ENTIRE RADIATION SITUATION THAT
CAN BE RECORDED BY MEASUREMENTS. THE PROBLEMS OF RESEARCH AND CONTROL CONNECTED THEREWITH
ARE SUMMARILY STATED, EXPLAINING THE TASKS OF THE INSTITUTION RESPONSIBLE FOR RADIATION
PROTECTION IN THE GERMAN DEMOCRATIC REPUBLIC.

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

*RADIATION PROTECTION, ORGANIZATION + *RADIATION SAFETY AND CONTROL + BIOMEDICAL + GERMANY

15-18053

RAJU MR
MINIATURE SILICON DIODE AS A RADIATION DOSIMETER
LAWRENCE RADIATION LAB., UNIVERSITY OF CALIFORNIA
UCRL-16507 +. 15 PAGES, NOVEMBER 1965

THE USE OF COMMERCIAL MINIATURE SILICON DIODES AS DOSIMETERS, WITH PARTICULAR REFERENCE TO
THEIR APPLICATION TO BIOMEDICAL FACILITIES AT CYCLOTRONS, IS DISCUSSED. THEY ARE SIMPLE AND
CONVENIENT, AND THEIR SMALL SIZE MAKES THEM IDEAL TO USE AS BEAM-PROFILE DETECTORS OR TO
MEASURE DEPTH-DOSE DISTRIBUTION OF SMALL COLLIMATED BEAMS.

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

*DOSIMETRY, GENERAL + *INSTRUMENTATION, RADIATION MONITORING + BIOMEDICAL + DOSE

15-18058

NELSON IC
THEORETICAL EXCRETION OF PLUTONIUM IN URINE BASED ON THE NEW ICRP LUNG MODEL
BATTELLE-NORTHWEST, RICHLAND, WASHINGTON
BNWL-SA-1247 + CONF-670521-3 +. 29 PAGES, FROM SYMPOSIUM ON DIAGNOSIS AND TREATMENT OF DEPOSITED
RADIONUCLIDES, RICHLAND, WASHINGTON, MAY 9, 1967

THE NEW ICRP LUNG MODEL DESCRIBES THE DEPOSITION AND CLEARANCE OF VARIOUS RADIONUCLIDES AS A
FUNCTION OF PARTICLE-SIZE PARAMETERS. TAKING THE MATERIAL CLEARED FROM THE LUNG TO BLOOD AND
APPLYING THE METHODS OF LANGHAM AND HEALY, ESTIMATES OF THE SYSTEMIC AND LUNG BURDENS OF
PLUTONIUM ARE DEVELOPED FROM SEVERAL SITUATIONS. PRACTICAL APPLICATIONS OF THE MODEL TO
ACCIDENTAL INHALATION OF PLUTONIUM ARE CONSIDERED.

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

*BIOLOGICAL CONCENTRATION, MAN + *DOSE CALCULATION, INTERNAL + BIOMEDICAL +
ICRP (INT. COMM. ON RADIOLOGICAL PROTECTION) + INHALATION + MATHEMATICAL TREATMENT + MODEL TESTING +
PARTICLE SIZE + PLUTONIUM

15-18059

GORBARENKO NI
HEALTH STATUS EVALUATION OF PERSONS DEALING WITH RADIOACTIVE ISOTOPES IN SCIENTIFIC AND RESEARCH
INSTITUTIONS
8 PAGES, 2 FIGURES, TABLES, MEDITSINSKAYA RADIOLOGIYA 11(12), PAGES 25-32 (DECEMBER 1966) IN RUSSIAN

FOR OVER 10 YEARS, 893 WORKERS DEALING WITH AND EXPOSED TO RADIOISOTOPES WERE KEPT UNDER
OUTPATIENT OBSERVATION, AND 70 WERE EXAMINED UNDER HOSPITAL CONDITIONS. THE STATE OF HEALTH
IN PERSONS EXAMINED WAS SATISFACTORY. A CERTAIN QUICKENING OF REGULATORY REACTIONS, ALONG
WITH SHIFTS IN THE PERIPHERAL BLOOD (MODERATE LEUKOPENIA, LYMPHOCYTOSIS, RETICULOCYTOSIS) AND
INDIVIDUAL CASES OF THE CLINICAL SYNDROME TYPICAL OF CHRONIC RADIATION SICKNESS WERE
DISCLOSED IN PERSONS IN WHICH LOCAL AND SINGLE RADIATION DOSES SURPASSED THE MAXIMUM
PERMISSIBLE DOSE.

*BIOMEDICAL + MAXIMUM PERMISSIBLE DOSE (MPD) + PERSONNEL EXPOSURE, RADIATION + RADIATION EFFECT

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-18060
KVASOV VA + ASTRAKHAN BV
CALCULATION OF TOTAL ISODOSE CHARTS IN MULTIFIELD IRRADIATION ON AN ELECTRONIC COMPUTING MACHINE M-2
6 PAGES, 2 FIGURES, MEDITSINSKAYA RADIOLOGIYA 11(10), PAGES 14-19 (OCTOBER 1966) IN RUSSIAN

THE USE OF AN ELECTRONIC COMPUTING MACHINE (M-2) FOR THE AUTOMATION OF CALCULATIONS OF THE TOTAL ISODOSE CHARTS IN MULTIFIELD IRRADIATION IS DESCRIBED. THE MOST RATIONAL METHODS OF STORAGE AND TREATMENT OF DOSIMETRIC INFORMATION ARE DISCUSSED.

*DOSIMETRY, GENERAL + BIOMEDICAL + COMPUTER PROGRAM

15-18061
MALYKHIN VM + SHAMOV VP + REZNIK GS
PENETRATION OF FISSION PRODUCTS OF SHORT HALF-LIFE
4 PAGES, TABLES, MEDITSINSKAYA RADIOLOGIYA 11(8), PAGES 64-7 (AUGUST 1966)

PRESENTS A METHOD FOR CALCULATING THE PERMISSIBLE DOSES OF SHORT HALF-LIFE FISSION PRODUCTS ON THE BASIS OF A DIFFERENTIATED DETERMINATION OF THE DOSE TO THE THYROID, KIDNEYS, AND BONES (15 RADIOISOTOPES). THE RESULTS ARE GIVEN IN THE FORM OF TABLES OF THE INITIAL ACTIVITY OF THE DOSE ENSURING A LEVEL OF 1 REM AT DIFFERENT PERIODS AFTER INTRODUCTION.

*DOSE CALCULATION, EXTERNAL + *DOSE CALCULATION, INTERNAL + BIOMEDICAL + DOSE + DOSIMETRY, GENERAL

15-18062
KORENKOV IP + ROZANOVA NA + SLUTSKINA SI
DOSE LOADINGS OF THE MEDICAL PERSONNEL OF GYNECOLOGICAL DEPARTMENTS OF MOSCOW ONCOLOGICAL INSTITUTIONS
7 PAGES, TABLES, MEDITSINSKAYA RADIOLOGIYA 11(8), PAGES 45-52 (AUGUST 1966) IN RUSSIAN

STUDIES OF DOSE EXPOSURES IN THE MEDICAL PERSONNEL OF GYNECOLOGICAL DEPARTMENTS SHOWED THAT THEY DID NOT EXCEED THE PERMISSIBLE LEVELS. NURSES ARE SUBJECTED TO GREATER IRRADIATION--1.3-1.5 TIMES MORE THAN PHYSICIANS. THE DOSE EXPOSURES OF PHYSICIANS DURING THE USE OF PROTECTIVE EQUIPMENT MAINLY DEPEND ON THEIR QUALIFICATION AND DECREASE WITH PROLONGATION OF THE SERVICE RECORD.

*PERSONNEL EXPOSURE, RADIATION + BIOMEDICAL + DOSE + UNION OF SOVIET SOCIALIST REPUBLICS

15-18063
MAZOVKA NN
POSSIBILITIES FOR REDUCING OCCUPATIONAL RADIATION DOSES IN NON-STANDARD RADIOLOGICAL DEPARTMENTS
4 PAGES, 3 FIGURES, MEDITSINSKAYA RADIOLOGIYA 11(8), PAGES 42-45 (AUGUST 1966) IN RUSSIAN

THE IMPORTANCE OF AN INDIVIDUAL DOSIMETRIC AND MEDICAL CONTROL TO PROVIDE FOR A MORE APPROPRIATE ASSESSMENT OF THE RADIATION SITUATION IN NONSTANDARD RADIOLOGICAL DEPARTMENTS IS EMPHASIZED. IT IS SHOWN THAT INDIVIDUAL DOSIMETRY EFFECTED WITH THE AID OF DOSIMETERS DK-0.2, PRACTICED IN THE RADIOLOGICAL DEPARTMENT OF THE KALININ CANCER CENTER SINCE 1957-1958, MADE IT POSSIBLE TO CONTROL THE DEGREE OF OCCUPATIONAL IRRADIATION, HELPED TO BRING TO LIGHT WEAK POINTS IN THE PROTECTION SYSTEM AND TO ELIMINATE THEM BY CORRESPONDING INSTRUCTION OF THE STAFF AND THE USE OF A PROTECTION DEVICE.

*BIOMEDICAL + *DOSIMETRY, GENERAL + DOSE + INSTRUMENTATION, RADIATION MONITORING + PERSONNEL EXPOSURE, RADIATION + RADIATION SAFETY AND CONTROL

15-18064
LEVY OW
BRIEF SURVEY OF RADIATION EFFECTS APPLICABLE TO GEOLOGY PROBLEMS
BROOKHAVEN NATIONAL LABORATORY, UPTON, N.Y.
BNWL-10569 + CONF-660919-3 +. 23 PAGES, 1965, FROM CONFERENCE ON APPLICATIONS OF THERMOLUMINESCENCE TO GEOLOGICAL PROBLEMS, SPOLETO, ITALY

THE DAMAGING EFFECTS OF RADIATION ON SOLIDS IS BRIEFLY REVIEWED, WITH EMPHASIS ON THE CONCEPTS APPLICABLE TO GEOLOGICAL PROBLEMS. THE DIFFERENCE BETWEEN IONIZATION AND ATOM DISPLACEMENT PROCESSES IS STRESSED. TOPICS INCLUDED ARE - CREATION OF DEFECTS BY THE DIFFERENT NUCLEAR RADIATIONS, INTRINSIC DEFECTS, TRAPPING AND RECOMBINATION CENTERS, THERMAL UNTRAPPING AND RETRAPPING, AND SOME QUALITATIVE ASPECTS OF THE GROWTH OF RADIATION-INDUCED CENTERS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.70 COPY, \$0.65 MICROFICHE

*GEOLOGICAL CONSIDERATION, GENERAL + *RADIATION DAMAGE + RADIATION EFFECT

15-18065 ALSO IN CATEGORY 14

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-18065 *CONTINUED*
DEFENSE AGAINST RADIOACTIVE FALLOUT ON THE FARM
U.S. DEPARTMENT OF AGRICULTURE
U.S. DEPT. OF AGRICULTURE FARMERS BULLETIN 2107 +. 16 PAGES, FIGURES, 1965

GENERAL INFORMATION IS PROVIDED ON THE EFFECTS OF THERMONUCLEAR EXPLOSIONS, ESPECIALLY OF FALLOUT RADIATION, AND ON WAYS OF PROTECTING LAND, LIVESTOCK, AND CROPS FROM FALLOUT, AND EMERGENCY MEASURES TO BE TAKEN BEFORE, DURING, AND AFTER AN ATTACK.

AVAILABILITY - U.S. GOVERNMENT PRINTING OFFICE, WASHINGTON, D.C. 20402, \$0.10 COPY

*AGRICULTURAL CONSIDERATION + *FALLOUT + NUCLEAR ATTACK + NUCLEAR EXPLOSION DEBRIS + RADIATION EFFECT

15-18066
IRON-55 LEVELS IN FISH AND IN FISH-EATING POPULATIONS
3 PAGES, NUTRITION REVIEWS 25- 24-26 (JANUARY 1967)

ALTHOUGH SALMON AND TUNA CONTAINED MEASURABLE AMOUNTS OF IRON-55, ESKIMOS CONSUMING LARGE QUANTITIES OF THESE FISH HAD LESS THAN 2.5% OF THE MAXIMUM PERMISSIBLE BODY BURDEN.

*BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + *FALLOUT + BIOLOGICAL CONCENTRATION, MAN + IRON + SURFACE WATER, NUCLIDE OCCURRENCE

15-18067
MORCZEK A + ABRAHAM K + KOCH RD
RADIATION PROTECTION IN CEREBRAL DIAGNOSIS WITH I-131-LABELED HUMAN SERUM ALBUMIN
MEDIZINISCHE AKADEMIE, MAGDEBURG, GERMANY
5 PAGES, 2 FIGURES, RADIOL. DIAGN., 7, PAGE 301 THRU 305, (1966), IN GERMAN

EXPERIMENTAL INVESTIGATIONS CONCERNING THE PROBLEMS OF RADIATION PROTECTION IN CEREBRAL DIAGNOSIS WITH I-131-LABELED HUMAN SERUM ALBUMIN YIELDED THE FOLLOWING RESULTS. NO EXTRA PRECAUTIONS ARE NECESSARY IN KEEPING A PATIENT AFTER GAMMA-ENCEPHALOGRAPHY IN THE CLINIC. FOR THE PERSONNEL IN THE WARDS AND ROOMS WHERE THE INVESTIGATION IS CONDUCTED, NO SPECIAL RADIATION PROTECTION MEASURES ARE REQUIRED. THE CONTAMINATION RISK FROM A BRAIN OPERATION AFTER GAMMA-ENCEPHALOGRAPHY CAN BE IGNORED IF THE PERIOD BETWEEN THE INJECTION OF RISA (5 MICROCURIES/KG BODY WEIGHT) AND THE OPERATION IS LONGER THAN 9 DAYS. THE WHOLE-BODY DOSE RECEIVED BY THE PATIENT DURING GAMMA ENCEPHALOGRAPHY USUALLY DOES NOT EXCEED 800 MRADS.

*BIOMEDICAL + *PERSONNEL EXPOSURE, RADIATION + IODINE + RADIATION SAFETY AND CONTROL

15-18070 ALSO IN CATEGORY 14
EVALUATION OF THE MAIN EXPOSURE ROUTES TO MAN RESULTING FROM THE DISPOSAL OF RADIOACTIVE WASTES INTO THE SEAS, OCEANS AND SURFACE WATERS
INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA, AUSTRIA
STI-PUB-126 + CONF-660507 +. 297 PAGES, 69 FIGURES, 70 TABLES, 292 REFERENCES, SEPTEMBER 1966, DISPOSAL OF RADIOACTIVE WASTES INTO SEAS, OCEANS AND SURFACE WATERS. PROCEEDINGS SERIES. PROCEEDINGS OF A SYMPOSIUM HELD IN VIENNA, AUSTRIA, MAY 16-20, 1966

THE SYMPOSIUM WAS CONCERNED WITH THE PHYSICAL, CHEMICAL, AND BIOLOGICAL BEHAVIOR OF RADIOACTIVE WASTES DISCHARGED INTO THE SURFACE WATERS, AND THEIR EFFECTS ON MAN. EVEN THOUGH A SESSION OF THE MEETING SHOWED SOME MINOR DETRIMENTAL EFFECTS TO AQUATIC BODIES FROM WASTE DISPOSAL TO THE SURFACE WATERS, MUCH DATA WAS GIVEN TO MINIMIZE THE TRANSFER OF RADIOACTIVITY THROUGH SEGMENTS OF THE FOOD WEB LEADING TO MAN. HOWEVER, THE CONCERN OF HAZARD TO MAN STILL REMAINS PARAMOUNT. MUCH MORE RESEARCH IS NEEDED.

AVAILABILITY - INTERNATIONAL ATOMIC ENERGY AGENCY (NEW YORK OR GENEVA), \$18.50 COPY

*ADSORPTION + *BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + *CESIUM + *STRONTIUM + CERIUM + CHROMIUM + ECOLOGICAL CONSIDERATION + FALLOUT + IAEA (INTERNATIONAL ATOMIC ENERGY AGENCY) + MONITOR, RADIATION, LIQUID + MONITORING PROGRAM, ENVIRONMENTAL + PHOSPHORUS + WASTE DISPOSAL, OCEAN + WASTE DISPOSAL, RIVER + WASTE TREATMENT, FIXATION + WASTE TREATMENT, LIQUID + YTTRIUM + ZINC

15-18071 ALSO IN CATEGORY 14
PHYSICAL AND BIOLOGICAL TRANSPORT OF RADIONUCLIDES RESULTING FROM THE DISPOSAL OF RADIOACTIVE WASTES INTO THE SEAS, OCEANS, AND SURFACE WATERS
INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA, AUSTRIA
STI-PUB-126 + CONF-660507 +. 494 PAGES, 199 FIGURES, 82 TABLES, 365 REFERENCES, SEPTEMBER 1966, DISPOSAL OF RADIOACTIVE WASTES INTO SEAS, OCEANS AND SURFACE WATERS. PROCEEDINGS SERIES. PROCEEDINGS OF A SYMPOSIUM HELD IN VIENNA, AUSTRIA, MAY 16-20, 1966

THE SYMPOSIUM HELD IN VIENNA, AUSTRIA DURING MAY 1966 WAS REPRESENTED BY 161 SCIENTISTS FROM 25 COUNTRIES AND FIVE INTERNATIONAL ORGANIZATIONS. 56 PAPERS WERE PRESENTED. MANY SUBJECTS RELATIVE TO THE CAPTIONED SUBJECT WERE DISCUSSED AND MUCH VALUABLE INFORMATION WAS GIVEN CONCERNING A WIDE RANGE OF REGIONS AND CIRCUMSTANCES INVOLVING RADIOACTIVE WASTE DISPOSAL. ONE IMPORTANT CONCLUSION FROM THE MEETING WAS THAT MUCH RESEARCH REMAINS TO BE DONE TO ENSURE THE SAFETY AND WELL BEING OF MAN IN THE ENVIRONS OF THE SEAS, OCEAN, AND SURFACE WATERS.

AVAILABILITY - INTERNATIONAL ATOMIC ENERGY AGENCY (NEW YORK OR GENEVA), \$18.50 COPY

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-18071 *CONTINUED*

*DILUTION + *DISPERSION + *TRANSPORT PROPERTY + *WASTE DISPOSAL, OCEAN + *WASTE DISPOSAL, RIVER + BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + BIOTA + ENVIRONMENTAL CONDITION + FALLOUT + FLOW DISTRIBUTION + IAEA (INTERNATIONAL ATOMIC ENERGY AGENCY) + ION EXCHANGE + RESIN + SEDIMENT + SURFACE WATER, TRACER + WATER POLLUTION

15-18072 ALSO IN CATEGORY 14

POSSIBLE EFFECTS OF THE DISPOSAL OF RADIOACTIVE WASTES ON THE RESOURCES OF THE SEAS, OCEANS, AND SURFACE WATERS

INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA, AUSTRIA

STI-PUB-126 + CONF-660507 +. 85 PAGES, 22 FIGURES, 22 TABLES, 93 REFERENCES, SEPTEMBER 1966, DISPOSAL OF RADIOACTIVE WASTES INTO SEAS, OCEANS AND SURFACE WATERS. PROCEEDINGS SERIES. PROCEEDINGS OF THE SYMPOSIUM HELD IN VIENNA, AUSTRIA, MAY 16-20, 1966

THE PRESENTATIONS AND DISCUSSIONS OF THE 56 PAPERS AT THE SYMPOSIUM COVERED A WIDE VARIETY OF SUBJECTS WITHIN THE SCOPE OF EFFECTS OF RADIATION ON THE ENVIRONS OF THE SEAS, OCEANS, AND SURFACE WATERS. RESEARCH WAS DIRECTED TOWARD MORTALITY RATES, MUTATIONS, ADSORPTIONS, UPTAKE, RELEASE, BREEDING, INCUBATION AND HATCHING, AND ALL THESE WITH RESPECT TO A WIDE VARIETY OF CIRCUMSTANCES, REGIONS, AND AQUATIC CONDITIONS. CONCLUSION - THERE ARE DETRIMENTAL EFFECTS OF DISPOSAL AS TREATED HEREIN, BUT OF A RELATIVELY SMALL AMOUNT, YET SUFFICIENT TO JUSTIFY CONTINUED RESEARCH.

AVAILABILITY - INTERNATIONAL ATOMIC ENERGY AGENCY (NEW YORK OR GENEVA), \$16.50 COPY

BIOLOGICAL CONCENTRATION, ALGAE + BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + BIOTA + COBALT + CONTAMINATION + DOSE MEASUREMENT, EXTERNAL + DOSE MEASUREMENT, INTERNAL + FALLOUT + IAEA (INTERNATIONAL ATOMIC ENERGY AGENCY) + IODINE + RADIATION EFFECT + SEDIMENT + STRONTIUM + X-RAY + ZINC

15-18073

BERK H + LAURER G + SCHNEIDER R + BLOCK L + DREW R + COHEN N + EISENBUD M

RESIDUAL BODY BURDENS AND ELIMINATION RATES IN RADIUM DIAL PAINTERS

NEW YORK UNIV., N.Y. INST. OF ENVIRONMENTAL MEDICINE

NYO-3086-1 +. 21 PAGES, NOVEMBER 30, 1965, PART I FROM RADIOACTIVITY STUDIES, ANNUAL REPORT, DECEMBER 1, 1964 - NOVEMBER 30, 1965

THE DATA OBTAINED FROM SERIAL MEASUREMENTS YIELDS A HALF TIME OF APPROXIMATELY 16 PLUS OR MINUS 2 YEARS FOR RADIUM RETENTION IN MAN 30 TO 40 YEARS AFTER INGESTION. THERE IS EVIDENCE THAT IN SOME INDIVIDUALS, THE RADON OFFGASSING FACTOR MAY DIMINISH PROGRESSIVELY OVER A PERIOD OF YEARS. THIS INCREASES THE RETENTION OF RA C AND RESULTS IN AN APPARENT INCREASE IN RA-226 BODY BURDEN WHEN THE ESTIMATE IS MADE BY WHOLE-BODY COUNTING TECHNIQUES USING A CONSTANT OFFGASSING FACTOR.

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

*BIOLOGICAL CONCENTRATION, MAN + *RADIUM + BIOMEDICAL + DOSE CALCULATION, INTERNAL + DOSE MEASUREMENT, INTERNAL + ENVIRONMENTAL CONDITION

15-18074

PETROW HG

A COMPREHENSIVE SURVEY OF THE RA-226, RA-228, TH-228 AND PB-210 CONTENT OF THE TISSUES OF A RADIUM DIAL PAINTER

NEW YORK UNIV., N.Y. INST. OF ENVIRONMENTAL MEDICINE

NYO-3086-1 +. 27 PAGES, NOVEMBER 30, 1965, FROM PART II OF RADIOACTIVITY STUDIES, ANNUAL REPORT, DECEMBER 1, 1964 - NOVEMBER 30, 1965

THE RA-226, RA-228, AND TH-228 CONTENT IN THE BONES OF RADIUM DIAL PAINTERS WAS DETERMINED FOR A LARGE NUMBER OF SITES FROM ELEVEN DIFFERENT BONES. THE DATA SUPPORT A HYPOTHESIS THAT PB-210 AND RA-226 ARE ELIMINATED FROM BONE AT EQUAL, OR NEARLY EQUAL RATES, AND THAT DIFFERENCES IN THE RELATIVE PB-210 AND RA-226 CONCENTRATION FOR THE VARIOUS BONE SAMPLES ARE THE RESULT OF DIFFERENCES IN THE FRACTION OF RADON THAT DIFFUSES FROM THE BONE BEFORE IT DECAYS. THERE IS STRONG NEGATIVE CORRELATION BETWEEN THE RADIUM CONCENTRATION AT A GIVEN BONE SITE AND THE CONCENTRATION OF PB-210.

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

*BIOLOGICAL CONCENTRATION, MAN + *RADIUM + BIOMEDICAL + DOSE CALCULATION, INTERNAL + DOSE MEASUREMENT, INTERNAL + ENVIRONMENTAL CONDITION + LEAD + THORIUM

15-18075

MILLER CE + FINKEL AJ

A REEXAMINATION OF RETENTION PATTERNS IN PATIENTS WHO RECEIVED RADIUM BY MULTIPLE INJECTIONS 33 YEARS EARLIER

ARGONNE NATIONAL LAB., ILL.

ANL-7217 +. 147 PAGES, 24 FIGURES, 44 TABLES, 4 REFERENCES OF HEALTH DIVISION GAMMA-RAY SPECTROSCOPY GROUP ANNUAL REPORT, JULY 1964 TO JUNE 1965

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-18075 *CONTINUED*

RADIUM RETENTION DATA WERE ANALYZED FOR A SERIES OF EIGHT PATIENTS WHO RECEIVED KNOWN AMOUNTS OF RA-226 BY WEEKLY INTRAVENOUS INJECTION IN 1931 AND WHO HAVE BEEN MEASURED IN A WHOLE-BODY COUNTER IN RECENT YEARS. INDIVIDUAL POWER-FUNCTION PARAMETERS WERE COMPUTED FOR EACH PATIENT. ABOUT 2.5 PERCENT OF THE ADMINISTERED RADIUM DISAPPEARS FROM THE BODY IN ACCORDANCE WITH THIS SINGLE EXPONENTIAL TERM, 97.5 PERCENT HAVING BEEN ELIMINATED WITHIN THE FIRST YEAR. THE RELATIVE MERITS OF THE POWER FUNCTION AND THE SINGLE EXPONENTIAL FUNCTION FOR DESCRIBING RADIUM RETENTION PATTERNS ARE DISCUSSED IN LIGHT OF THE DATA AND THE ANALYSES.

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

*BIOLOGICAL CONCENTRATION, MAN + *RADIUM + BIOMEDICAL + CESIUM + DOSE + DOSE CALCULATION, INTERNAL + DOSE MEASUREMENT, INTERNAL + RADIOBIOLOGY + RADIONUCLIDE, INDUCED + STATISTICAL CORRELATION

15-18076 ALSO IN CATEGORIES 14 AND 16

BAKACS-POLGAR E + KURCZ-CSIKY I
ON THE DETERMINATION OF FISSION PRODUCTS DEPOSITED ON THE GROUND
STATE INSTITUTE OF HYGIENE, BUDAPEST, HUNGARY
2 PAGES, 3 FIGURES, 9 REFERENCES, ATOMPRAXIS 13(7), PAGE 301 AND 302, (JULY 1967)

THE AUTHORS DETERMINED THE MONTHLY AVERAGE OF TOTAL BETA-ACTIVITY AND RADIOACTIVE STRONTIUM DEPOSITED ON THE GROUND AND ON PLANTS, PARTLY BY DETERMINING THE AIR POLLUTION, PARTLY BY INVESTIGATING THE TOTAL FALLOUT. THE TOTAL BETA ACTIVITY DUE MAINLY TO SHORT-LIVED ISOTOPES DECREASED CONSIDERABLY AFTER THE ATOMIC-TRUCE AGREEMENT. THE DECREASE IN SR-90 IN 1964 WAS LESS PRONOUNCED. THE CHINESE ATOMIC BOMBS, EXPLODED IN OCTOBER 1964 AND MAY 1965, CAUSED FALLOUT ALTHOUGH ONLY SLIGHT.

*FALLOUT + *SURVEY, RADIATION, ENVIRONMENTAL + GROSS BETA + GROSS GAMMA + RAINOUT + SAMPLING + STRONTIUM

15-18078

PENSKO J
VARIATIONS OF THE GAMMA-RAY BACKGROUND DOSE RATES AND ATMOSPHERIC RADON CONCENTRATION IN WARSAW
CENTRAL LABORATORY FOR RADIOLOGICAL PROTECTION, WARSAW, POLAND
3 PAGES, 1 FIGURE, 1 TABLE, 8 REFERENCES, ATOMPRAXIS 13(7), PAGE 310 THRU 312, (JULY 1967)

SYSTEMATIC OBSERVATIONS OF GAMMA-RAY BACKGROUND WERE MADE IN WARSAW. THE TERRESTRIAL DOSE RATE IS GREATER IN SUMMER THAN IN WINTER. RAIN-SHOWERS BRING A TEMPORARY INCREASE IN GAMMA BACKGROUND RADIATION. THE CONTRIBUTION TO THIS RADIATION FROM DERIVATIVES OF RADON AND FROM FISSION PRODUCTS WAS ESTABLISHED.

*BIOLOGICAL CONCENTRATION, MILK + *FALLOUT + AGRICULTURAL CONSIDERATION + BIOLOGICAL CONCENTRATION, VEGETATION + CALCIUM + DECONTAMINATION + ECOLOGICAL CONSIDERATION + STRONTIUM

15-18079 ALSO IN CATEGORY 14

HAUBERMANN W + SCHREIBER H
INVESTIGATIONS ABOUT THE SR-90 CONTENTS IN SOILS
AUS DEM INSTITUT FUR PHYSIK UND METEOROLOGIE DER LANDWIRTSCHAFTLICHEN HOCHSCHULE STUTTGART-HOHNHEIM
4 PAGES, 5 FIGURES, 1 TABLE, 8 REFERENCES, ATOMPRAXIS 13(7), PAGE 303 THRU 306, (JULY 1967)

THE RESULTS OF MORE THAN 200 DETERMINATIONS OF THE SR-90-CONTENTS IN SOILS DURING 1960 TO 1964 DOWN TO 20 CM ARE GIVEN. THE ANNUAL AMOUNT OF PRECIPITATION ON THE DIFFERENT COLLECTION PLACES ACROSS THE BLACK FOREST RANGES FROM 780 TO 2200 MM. THE VARIATIONS IN TIME OF THE SR-90 ACTIVITY AND THE DISTRIBUTION IN DEPTH ARE DISCUSSED.

*FALLOUT + *SOIL, NUCLIDE OCCURRENCE + GERMANY + RAINOUT + SOIL, RADIONUCLIDE MOVEMENT THROUGH + STRONTIUM + SURVEY, RADIATION, ENVIRONMENTAL

15-18082

IMPROVED RADIATION DOSIMETER SYSTEM
LOS ALAMOS SCIENTIFIC LABORATORY
CANADIAN PATENT 739-065 +. 11 PAGES, 5 FIGURES, JULY 5, 1966

THIS INVENTION RELATES TO A DOSIMETER SYSTEM WHICH DETERMINES THE NEUTRON DOSAGE RECEIVED BY HUMANS FROM RADIATION INCIDENTS BASED UPON THE MEASUREMENT OF INDUCED BODY SODIUM ACTIVITY AND THE RELATION OF THE RATIO OF SAID ACTIVITY TO THE ACTIVITY OF A COPPER FOIL WORN ON OR ABOUT THE BODY.

AVAILABILITY - PHOTOCOPIES MAY BE OBTAINED FROM THE U.S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D.C. (30 CENTS PER PAGE)

*DOSIMETRY, GENERAL + DOSE + INSTRUMENTATION, RADIATION MONITORING + NEUTRON + PATENT

15-18084

BENARI W + SCHATZ M + BEN-DAVID G

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-18084 *CONTINUED*
AUTOMATIC DATA PROCESSING FOR A NATIONAL FILM DOSIMETRY SERVICE
ISRAEL ATOMIC ENERGY COMMISSION, HAKIRYA
IA-1095 +. 32 PAGES, FIGURES, TABLES, AUGUST 1966

AUTOMATIC DATA PROCESSING WAS APPLIED TO THE OPERATION OF THE SORFQ DOSIMETRY SERVICE. THE USE OF AN ELECTRONIC COMPUTER RESULTED IN CONSIDERABLE SAVING IN MANPOWER, A REDUCTION IN ERRORS, AND CONVENIENT STORAGE OF ALL THE RECORDED DOSAGE STATISTICS ON MAGNETIC TAPE.

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

*DOSIMETRY, GENERAL + COMPUTER PROGRAM + DOSIMETRY, PHOTOGRAPHIC + ISRAEL + PERSONNEL EXPOSURE, RADIATION + RADIATION SAFETY AND CONTROL

15-18085
ROSSBANDER W + HABERER G
DEVELOPMENT OF A FLAT IONIZATION CHAMBER FOR THE VA-J-15 VIBRATING CONDENSOR ELECTROMETER FOR BETA DOSE RATE MEASUREMENTS IN RADIATION PROTECTION
ZENTRALINSTITUT FUER KERNFORSCHUNG, ROSSENDORF BEI DRESDEN, EAST GERMANY
ZFK-DOS-5 +. 17 PAGES, JULY 1966, IN GERMAN

DESCRIBES THE DEVELOPMENT OF A FLAT IONIZATION CHAMBER TO THE PORTABLE VA-J-15 VIBRATING CONDENSOR ELECTROMETER. THE CHAMBER ALLOWS THE MEASUREMENT OF BETA DOSE RATES IN THE RANGE FROM 10 MRAD/HR TO 1000 MRAD/HR WITHIN AN ERROR OF ABOUT PLUS OR MINUS 40% FOR BETA RADIATIONS WITH MAXIMUM ENERGIES BETWEEN 0.2 AND 3.5 MEV, ANGLES OF RADIATION INCIDENT BETWEEN 0 AND ABOUT PLUS OR MINUS 60°, AND DISTANCES BETWEEN THE SOURCE AND THE CHAMBER OF ABOUT 10 CM.

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

*DOSIMETRY, GENERAL + *INSTRUMENTATION, RADIATION MONITORING + BETA EMITTER + DOSE

15-18086
GRAFFMAN S + JUNG B
RADIOACTIVITY OF HUMAN BLOOD AS A MEASURE OF INTEGRAL DOSE FROM HIGH ENERGY PROTONS. SCIENTIFIC REPORT NO. 4
UPPSALA UNIV., SWEDEN. GUSTAF WERNER INST. FOR NUCLEAR CHEMISTRY
AD-636648 +. 15 PAGES, FIGURES, TABLES, REFERENCES, DECEMBER 1964

THE C-11 RADIOACTIVITY OF BLOOD SAMPLES TAKEN FROM PATIENTS UNDERGOING TUMOUR THERAPY WITH HIGH-ENERGY PROTONS WAS MEASURED. RESULTS INDICATE THAT BLOOD RADIOACTIVITY MAY BE A GOOD MEASURE OF INTEGRAL RADIATION DOSE FROM HIGH-ENERGY PROTONS. FUTURE DEVELOPMENTS ARE DISCUSSED BRIEFLY.

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

*BIOMEDICAL + *DOSIMETRY, GENERAL + CARBON + DOSE + DOSE CALCULATION, INTERNAL

15-18088
MESSICK RR
AIR COOLING UNIT FOR PROTECTIVE CLOTHING AND THE LIKE
U.S. PATENT 3-291-126 +. DECEMBER 13, 1966

THIS PATENT RELATES TO A DEVICE FOR SUPPLYING COOL AIR TO PROTECTIVE CLOTHING SUCH AS BREATHING AIR FACE MASKS AND VENTILATED SUITS. THE DEVICE INCLUDES A VORTEX TUBE, THE INLET OF WHICH IS CONNECTED TO A SOURCE OF AIR UNDER PRESSURE AND THE COLD DISCHARGE END OF WHICH IS CONNECTED TO A CONDUIT LEADING TO THE FACE MASK OR DISTRIBUTION POINTS IN THE SUIT. MUFFLING MEANS TO DEADEN THE AIR NOISE PRODUCED BY THE VORTEX TUBE AND MEANS FOR SUPPORTING THE VORTEX TUBE AND MUFFLER ON THE BODY OF THE USER ARE ALSO PROVIDED. REGULATION OF THE TEMPERATURE OF THE COOL AIR DISCHARGED FROM THE VORTEX TUBE MAY BE ACCOMPLISHED BY A VALVE IN THE HOT DISCHARGE END OF THE TUBE.

AVAILABILITY - THE U.S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D.C. (25 CENTS PER COPY)

*PERSONNEL PROTECTIVE DEVICE + PATENT + RADIATION SAFETY AND CONTROL

15-18135 ALSO IN CATEGORY 14
RADIOACTIVITY IN THE SEAS
7 PAGES, 6 FIGURES, IAEA BULLETIN 8(3), PAGE 17 THRU 23, (SEPTEMBER 1966)

A LONG-TERM STUDY BY THE IAEA LABORATORY (MONACO) TO DEVELOP KNOWLEDGE OF THE PHYSICAL AND BIOLOGICAL NATURE AND EFFECT OF RELEASE OF RADIOACTIVE WASTES TO THE OCEAN. DETAILED STUDIES ARE BEING MADE OF SEA CHEMISTRY, MOVEMENTS AT VARIOUS DEPTHS, EFFECT OF TIDES, WIND, AND CURRENTS, THE HABITS AND ENVIRONMENTAL RESPONSE OF ITS INHABITANTS, AND OTHER FACTORS RELATED TO OCEANOGRAPHY.

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-18135 *CONTINUED*

*OCEAN AND SEA + *WASTE DISPOSAL, LIQUID + BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS +
IAEA (INTERNATIONAL ATOMIC ENERGY AGENCY) + MONTE CARLO + RESEARCH AND DEVELOPMENT PROGRAM

15-18136 ALSO IN CATEGORY 14
DISPOSAL OF RADIOACTIVE WASTE IN WATER

3 PAGES, IAEA BULLETIN 8(3), PAGE 6 THRU 8, (SEPTEMBER 1966)

PAPERS FROM SYMPOSIUM HELD IN VIENNA DURING MAY 1966 DEALT WITH PHYSICAL AND BIOLOGICAL
TRANSPORT OF RADIONUCLIDES RESULTING FROM DISPOSAL OF RADIOACTIVE WASTE TO SURFACE WATERS.
POSSIBLE EFFECTS ON RESOURCES OF SEAS, OCEANS, AND SURFACE WATERS, AND THE EVALUATION OF THE
MAIN ROUTES OF EXPOSURE TO MAN. DATA GIVEN SUPPORTED THE FACT THAT VERY LITTLE HARM IS BEING
CAUSED TO THE WATERS AND THEIR ENVIRONS AT PRESENT, BUT SOME EXPRESSED CONCERN FOR FUTURE
HAZARDS. WITH THE CONTINUED SUPPORT OF THE VARIOUS GOVERNMENTS AS IN THE PAST, RESEARCH WILL
CONTINUE IN THE FIELD OF WASTE DISPOSAL AND WITH A RESPECTABLE PRIORITY.

*BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + *IAEA (INTERNATIONAL ATOMIC ENERGY AGENCY) +
*WASTE DISPOSAL, LIQUID + AUSTRIA + ENVIRONMENTAL CONDITION + RADIOBIOLOGY + RADIONUCLIDE, INDUCED +
RESEARCH AND DEVELOPMENT PROGRAM + WASTE DISPOSAL, OCEAN + WASTE DISPOSAL, RIVER

15-18140 ALSO IN CATEGORIES 11 AND 17

INDIAN POINT CHANGE 30. PERSONNEL ENTRANCE INTO CONTAINMENT DURING FULL POWER OPERATION

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC., NEW YORK

4 PAGES, AUGUST 28, 1967, DOCKET NO. 50-3, INDIAN POINT I

ORL ALLOWS TRAINED PEOPLE TO ENTER CONTAINMENT DURING FULL-POWER OPERATION TO COLLECT DATA ON
THE PRESENCE OF LOW-LEVEL FISSION-PRODUCT ACTIVITY (PARTICULARLY IODINE). NO MORE THAN 20
SEPARATE ENTRIES MAY BE MADE IN GROUPS OF 6. CHANGE 10 HAD ALLOWED ENTRANCE FOR A SIMILAR
PURPOSE IN JUNE 65, AND SAME PRECAUTIONS WILL BE FOLLOWED. OPERATOR CLAIMS AIR-LOCK CAN BE
REACHED WITHIN 50 SEC FROM ANY PORTION OF THE CONTAINMENT.

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

*CONTAINMENT, GENERAL + *FISSION PRODUCT RELEASE, GENERAL + *SURVEY, RADIATION, GENERAL + INDIAN POINT 1 +
REACTOR, PRESSURIZED WATER + SAFETY EVALUATION + TECHNICAL SPECIFICATIONS

15-18170

SUTER F

PVC SUITS FOR PERSONAL PROTECTION AGAINST RADIOACTIVE CONTAMINATION

6 PAGES, 13 FIGURES, 2 TABLES, ATOMPRAXIS 13(4/5), PAGE 180 THRU 185, (APRIL/MAY 1967)

THE SUITS ARE USED BY OPERATORS WHO MUST BE PROTECTED AGAINST RADIOACTIVE CONTAMINATION. THE
PRESSURE SUITS WITH CLEAN AIR SUPPLY ARE ESPECIALLY WORN IN PRESENCE OF TRITIUM. THE
PHYSIOLOGICAL CONDITIONS EXISTING IN THE PRESSURIZED SUITS AND THEIR PERMEABILITY FOR TRITIUM
HAVE BEEN STUDIED.

*PERSONNEL PROTECTIVE DEVICE + *RADIATION SAFETY AND CONTROL + BIOMEDICAL + TRITIUM

15-18177

BOSCH J

AUTOMATION IN RADIATION MEASUREMENT TECHNOLOGY

5 PAGES, 6 FIGURES, 1 TABLE, 11 REFERENCES, ATOMWIRTSCHAFT 10(10), PAGE 516 THRU 520, (OCTOBER 1965), IN
GERMAN

THE PRESENT STATE OF THE TECHNIQUE ALLOWS AN ALMOST ARBITRARILY EXTENSIVE AUTOMATION IN THE
AREA OF RADIATION MEASUREMENT. THERE ARE NUMEROUS ELECTRONIC AND MECHANICAL INDIVIDUAL PARTS
AVAILABLE FOR THEM, SUCH AS AUTOMATIC SAMPLE CHANGERS, COMPONENTS FOR LOGICAL LINKAGES,
COMPUTERS OR COMPUTER MEMORIES, MULTICHANNEL IMPULSE-LEVEL ANALYZERS, DATA DISTRIBUTING
DEVICES AS WELL AS MECHANICAL AND ELECTRICAL COMPUTERS. AN AUTOMATIC RECOUPLING OF THE
MEASUREMENT RESULTS TO THE EXPERIMENT HAS ALREADY BEEN CARRIED OUT WITH NUCLEAR PHYSICAL
MEASUREMENTS, E.G. IN HIGH-ENERGY PHYSICS.

*INSTRUMENTATION, NUCLEAR + INSTRUMENTATION, RADIATION MONITORING

15-18180 ALSO IN CATEGORY 14

DATA SECTION, ENVIRONMENTAL SURVEILLANCE SECTION

STATE OF CALIFORNIA, DEPARTMENT OF PUBLIC HEALTH, BUREAU OF RADIOLOGICAL HEALTH, BERKELEY, CALIFORNIA

22 PAGES, 2 FIGURES, 7 TABLES, RADIOLOGICAL HEALTH NEWS 4(3), PAGE 10 THRU 31 (JULY 1965)

IN CALIFORNIA, RADIOACTIVITY IS MONITORED AT REPRESENTATIVE LOCATIONS TO DETERMINE THE LEVEL
IN AIR, PRECIPITATION, FALLOUT, DOMESTIC WATER, SEWAGE, MILK, AND FOOD. DATA IN THIS REPORT
COVER THE PERIOD JANUARY-MARCH 1965 (AIR, PRECIPITATION, MILK), JULY-SEPTEMBER 1964
(FALLOUT), DECEMBER 1964-MARCH 1965 (DOMESTIC WATER, SEWAGE), AND NOV.-DEC. 1964 (FOOD).

*MONITORING PROGRAM, ENVIRONMENTAL + FALLOUT

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-18218 ALSO IN CATEGORY 3
PAAS HJ

MAINTAINING PERSPECTIVE THROUGHOUT THE INVESTIGATION OF A LEAKING RADIOACTIVE GASEOUS TRANSCONTINENTAL SHIPMENT

USAEC, IDAHO OPERATIONS OFFICE, IDAHO FALLS, IDAHO

5 PAGES, 4 FIGURES, 1 TABLE, HEALTH PHYSICS 13(6) PAGES 543-547 (JUNE 1967)

DESCRIBES THE INVESTIGATION AND EVALUATION OF A RADIATION INCIDENT INVOLVING LEAKAGE FROM A TRANSCONTINENTAL SHIPMENT OF RADIOACTIVE METHYL IODIDE. ALSO SETS FORTH THE CONDITIONS AND ACTIONS REQUIRED TO MINIMIZE PUBLIC IMPACT ACROSS A 2400-MILE ROUTE INVOLVING EXPOSURES TO TRUCKERS, AIRLINE CREWS, PASSENGERS, AIR TERMINAL EMPLOYEES, AND LABORATORY EMPLOYEES AT TWO LOCATIONS. DEPOSITION OF THE ESCAPED RADIOIODINE WAS IDENTIFIED IN THE THYROIDS OF FIFTY-NINE PEOPLE INCLUDING FIVE WHO EXCEEDED RECOMMENDED GUIDE VALUES. OF ALL THOSE PERSONS WITH A KNOWN EXPOSURE POTENTIAL 75% WERE EXAMINED FOR THYROID DEPOSITION. COORDINATION OF MONITORING CAPABILITIES IN WIDELY SEPARATED GEOGRAPHIC AREAS, IDENTIFYING PERSONNEL, OBTAINING THYROID MEASUREMENTS, WORKING WITH PRESS AND TELEVISION OUTLETS, AND UTILIZING THE SERVICES OF WIDELY SCATTERED PROFESSIONAL DISCIPLINES WERE AMONG THE MANY OBSTACLES OVERCOME IN MAINTAINING THE RADIOLOGICAL INCIDENT IN PERSPECTIVE.

*ACCIDENT, RADIOISOTOPE + *RADIOLOGICAL ASSISTANCE + *TRANSPORTATION AND HANDLING + AEROSOL, RADIOACTIVE + BIOLOGICAL CONCENTRATION, MAN + DOSE MEASUREMENT, INTERNAL + IODINE + RADIATION SAFETY AND CONTROL + RADIOISOTOPE + SURVEILLANCE PROGRAM

15-18219
ISHIHARA T

ENVIRONMENTAL RADIOLOGICAL MONITORING SYSTEM AT NUCLEAR INSTALLATIONS

JAPAN ATOMIC ENERGY RESEARCH INSTITUTE, TOKAI-MURA, IBARAKI-KEN, JAPAN

10 PAGES, 5 FIGURES, 13 REFERENCES, HEALTH PHYSICS 13(6) PAGES 549-558 (JUNE 1967)

REPORTS THE THEORETICAL ANALYSIS, DESIGN AND EXAMPLE OF AN ENVIRONMENTAL MONITORING SYSTEM, USED WHEN THE RADIOACTIVE SUBSTANCES ARE RELEASED INTO THE ATMOSPHERE. THIS ENVIRONMENTAL MONITORING SYSTEM SHOULD BE ABLE TO DETECT SUDDEN LARGE RELEASES OF RADIOACTIVE MATERIALS SOON ENOUGH TO ENABLE APPROPRIATE STEPS TO BE TAKEN AND IT ALSO SHOULD ROUTINELY MEASURE THE ROUTINE LEVELS OF HAZARDOUS NUCLIDES. IT SHOULD DETECT THE LEVELS OF RADIATION AND RADIOACTIVITY BEFORE THE EXPOSURES OF THE POPULACE AROUND REACH SOME SPECIFIED LIMITS- THIS MEANS THE HIGHER THE DOSE RATE THE EARLIER THE DETECTION MUST BE DONE. THE RESULTS OF INVESTIGATIONS HAVE SHOWN THAT THIS MONITORING SYSTEM SHOULD FUNCTION IN THE FOLLOWING THREE ITEMS - (1) CENTRALIZED CONTINUOUS AUTOMATIC MONITORING, (2) REGULAR SURVEYS OF THE RADIATION LEVELS, AND (3) ENVIRONMENTAL SAMPLE ANALYSES, ESPECIALLY TO SERVE AS THE BIOLOGICAL INDICATORS.

*MEASUREMENT, GENERAL + *MONITOR, RADIATION, ENVIRONMENTAL + *MONITORING SYSTEM, RADIATION + BIOLOGICAL CONCENTRATION, MAN + DISPERSION + ENVIRONMENTAL CONDITION + JAPAN + MAXIMUM PERMISSIBLE DOSE (MPD) + METEOROLOGY + RADIATION DAMAGE

15-18220

DUGGAN MJ + GODFREY BE

SOME FACTORS CONTRIBUTING TO THE INTERNAL RADIATION HAZARD IN THE RADIUM LUMINIZING INDUSTRY
RADIOLOGICAL PROTECTION SERVICE, ENGLAND

11 PAGES, 2 TABLES, 9 REFERENCES, HEALTH PHYSICS 13(6) PAGES 613-623 (JUNE 1967)

DESCRIBES A STUDY OF WORKING METHODS AND CONDITIONS IN THE RADIUM LUMINIZING INDUSTRY, AND ASSOCIATED MEASUREMENTS OF THE RADIUM BODY CONTENTS OF THE WORKERS. THE RESULTS OBTAINED FROM 23 LUMINIZING ESTABLISHMENTS, PROVIDING 75 WORKERS FOR BODY RADIOACTIVITY MEASUREMENTS, ARE SUMMARIZED AND DISCUSSED. HIGH RADIUM BODY CONTENTS WERE FOUND IN SOME WORKERS FROM THE MOST HEAVILY CONTAMINATED ESTABLISHMENTS, AND VALUES OF SURFACE CONTAMINATION INDICATIVE OF UNSATISFACTORY WORKING CONDITIONS ARE DEDUCED.

*BIOLOGICAL CONCENTRATION, MAN + *RADIUM + CONTAMINATION + DOSE MEASUREMENT, EXTERNAL + DOSE MEASUREMENT, INTERNAL + GROSS ALPHA + GROSS BETA + INGESTION + INHALATION + UNITED KINGDOM

15-18221

BLANCHARD RL

CONCENTRATIONS OF PB-210 AND PO-210 IN HUMAN SOFT TISSUES

U.S. DEPT. OF HEALTH, EDUCATION, AND WELFARE, ROBERT A. TAFT SANITARY ENGINEERING CENTER
7 PAGES, 3 TABLES, 32 REFERENCES, HEALTH PHYSICS 13(6) PAGES 625-632 (JUNE 1967)

CONCENTRATIONS OF PB-210 AND PO-210 IN TISSUES FROM 20 INDIVIDUALS ARE REPORTED. THE TISSUES STUDIED WERE THE KIDNEY, LIVER, LUNG, PANCREAS, SPLEEN, GONADS, THYROID, HEART. THE TWO HIGHEST AVERAGE PO-210 CONCENTRATIONS WERE 14.5 AND 11.3 PCI/KG IN LIVER AND KIDNEY, RESPECTIVELY. AVERAGE CONCENTRATION IN GONADS, LUNG AND THYROID WAS ABOUT HALF AS GREAT, AND THE LEAST AMOUNTS OF PO-210 AND PB-210 WERE FOUND IN THE SPLEEN, PANCREAS AND HEART. HIGHER CONCENTRATIONS OF PO-210 WERE FOUND IN TISSUES OF CIGARETTE SMOKERS THAN NONSMOKERS. EXCEPT FOR THE LUNG, HOWEVER, THE DIFFERENCES WERE NOT SIGNIFICANT. THE PO-210/PB-210 ACTIVITY RATIO VARIED FROM LESS THAN 1 TO GREATER THAN 1 IN ALL TISSUE TYPES, EXCEPT FOR THE HEART FOR WHICH THERE WERE TOO FEW SAMPLES TO BE MEANINGFUL. THE AMOUNT OF PO-210 UNSUPPORTED BY ITS PB-210 PARENT WAS GREATEST IN THE KIDNEY. THE DOSE RATES DELIVERED BY THE PO-210 TO THE

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-18221 *CONTINUED*
VARIOUS TISSUES ARE DISCUSSED.

*BIOLOGICAL CONCENTRATION, MAN + *LEAD + *POLONIUM + BIOMEDICAL + DIETARY HABIT +
DOSE CALCULATION, INTERNAL + DOSE MEASUREMENT, INTERNAL + RADIATION EFFECT

15-18222
RAMSDEN D + PASSANT FH + PEABODY CO + SPEIGHT RG
RADIOIODINE UPTAKES IN THE THYROID STUDIES OF THE BLOCKING AND SUBSEQUENT RECOVERY OF THE GLAND FOLLOWING
THE ADMINISTRATION OF STABLE IODINE
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, WINFRITH, ENGLAND
14 PAGES, 10 FIGURES, 6 TABLES, 19 REFERENCES, HEALTH PHYSICS 13(6) PAGES 633-646 (JUNE 1967)

IN A SERIES OF EXPERIMENTS DURING 1964, SMALL AMOUNTS OF RADIOIODINE WERE GIVEN TO NINE
VOLUNTEERS AND THEIR THYROID UPTAKES AND URINARY EXCRETION PATTERNS STUDIED. THE EFFECTS OF
VARYING DOSES OF STABLE IODINE ON THESE PATTERNS WERE INVESTIGATED. MODELS OF THE THYROID
METABOLISM WERE SLIGHTLY AMPLIFIED TO GIVE SATISFACTORY EXPLANATIONS OF THE EXPERIMENTAL
RESULTS. THE MINIMUM AMOUNT OF STABLE IODINE NEEDED TO BLOCK THE THYROID UPTAKE COMPLETELY
WAS BACK TO NORMAL ABOUT 8 DAYS AFTER THE INTAKE. REPEATED DOSES OF STABLE IODINE MAY BE
GIVEN AT INTERVALS TO MAINTAIN EFFECTIVE BLOCKING OF THE GLAND. THE REQUIRED DOSES RANGE
FROM 35 MG EVERY 12 HR TO 250 MG EVERY 48 HR.

*DOSE + *IODINE + BIOLOGICAL CONCENTRATION, MAN + BIOMEDICAL + INGESTION + RADIOISOTOPE +
RADIONUCLIDE, INDUCED

15-18230 ALSO IN CATEGORY 14
NATIONAL CENTER FOR RADIOLOGICAL TRAINING COURSES 1967-1968
U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE, WASHINGTON, D. C.
16 PAGES, PUBLIC HEALTH SERVICE PUBLICATION NO. 1633, BULLETIN OF COURSES, JANUARY 1967 TO JULY 1968

COURSES IN VARIOUS PHASES OF RADIOLOGICAL HEALTH ARE DESCRIBED AND LISTED CHRONOLOGICALLY.

AVAILABILITY - U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE, PUBLIC HEALTH SERVICE, WASHINGTON, D. C.
RADIATION, PUBLIC EDUCATION/ACCEPTANCE + RADIOLOGICAL ASSISTANCE

15-18231 ALSO IN CATEGORY 14
NEUMAN WF + ROTHSTEIN A
ANNUAL REPORT. UNIVERSITY OF ROCHESTER, ATOMIC ENERGY PROJECT. BRIEF DESCRIPTION OF RESEARCH PUBLISHED
OR ACCEPTED FOR PUBLICATION DURING 1966
UNIVERSITY OF ROCHESTER, ROCHESTER, NEW YORK
UR-49-748 +. 239 PAGES, FIGURES, TABLES, APRIL 1, 1967

PUBLICATIONS ARE LISTED, WITH ABSTRACTS. SUBJECTS INCLUDE A BROAD SPECTRUM OF WORK IN
RADIOBIOLOGY, BIOPHYSICS, TOXICITY OF RADIOELEMENTS, MOLECULAR- AND CELLULAR-LEVEL STUDIES,
RADIOLOGICAL AND HEALTH PHYSICS, CHEMICAL-TOXICITY CANCER RESEARCH, AND OTHER STUDIES.

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

*RADIOBIOLOGY + CHEMICAL TOXICITY

15-18235 ALSO IN CATEGORY 14
KIRICHENKO VN
DISTRIBUTION OF INHALED SHORT-LIVED DAUGHTER PRODUCTS OF RADON IN THE RESPIRATORY TRACT
TT-66-51022/1 + IPST-CAT-1535-1537 +. 4 PAGES, 2 TABLES, HYGIENE AND SANITATION 30(1-3), PAGES 301-304
(JAN.-MAR. 1965) TRANSLATED FROM GIGIENA I SANITARIYA

CALCULATIONS WERE MADE FOR DISTRIBUTION AND DOSE FROM DAUGHTER PRODUCTS OF RADON IN AIR,
ASSUMING RADON CONCENTRATION OF 10 TO THE MINUS 11TH CI/LITER AND DEGREE OF EQUILIBRIUM OF
THE DAUGHTER PRODUCTS 50%. THE ABSORBED DOSE IN THE MAIN BRONCHI IS 35 TIMES AS GREAT AS THE
AVERAGE FOR ALL RESPIRATORY ORGANS AND EXCEEDS THE MAXIMUM PERMISSIBLE LEVEL OF IRRADIATION
OF THE INTERNAL ORGANS.

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

*DOSE CALCULATION, INTERNAL + DOSE + RADON + UNION OF SOVIET SOCIALIST REPUBLICS

15-18253 ALSO IN CATEGORY 14
CONTINUING DATA ON FALLOUT AND ENVIRONMENTAL MEASUREMENTS
U.S. DEPT. OF HEALTH, EDUCATION, AND WELFARE
52 PAGES, FIGURES, TABLES, REFERENCES, RADIOLOGICAL HEALTH DATA AND REPORTS 8(3) PAGES 139-190 (MARCH 1967)

TABULATED DATA AND DISCUSSIONS ARE GIVEN ON MILK AND FOOD SURVEILLANCE, WATER, AIR AND

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-18253 *CONTINUED*
DEPOSITION, STRONTIUM-90 IN HUMAN BONE, AND ENVIRONMENTAL LEVELS AT CERTAIN AEC SITES.

*FALLOUT + MONITORING PROGRAM, ENVIRONMENTAL + STRONTIUM

15-18254 ALSO IN CATEGORY 14

HOLADAY DA

RADIATION HAZARDS IN URANIUM MINES

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

4 PAGES, 3 TABLES, 8 REFERENCES, RADIOLOGICAL HEALTH DATA AND REPORTS 8(3), PAGES 135-138 (MARCH 1967)

A REVIEW OF HEALTH STUDIES OF U.S. URANIUM MINERS IS PRESENTED. THE PRIMARY RADIATION HAZARD IN URANIUM MINES IS ALPHA RADIATION, WHICH IS DELIVERED TO THE LUNGS BY RADON-222 AND ITS SHORT-LIVED DAUGHTERS. THE APPEARANCE OF LUNG CANCER AMONG URANIUM MINERS WAS STUDIED AND WAS FOUND EXCESSIVE. THE CELL-TYPE DISTRIBUTION OF THESE CANCERS OF URANIUM MINERS IS DIFFERENT FROM THAT OF THE GENERAL POPULATION. CALCULATION OF RADIATION DOSE TO THE LUNGS OF MINERS IS DIFFICULT. GENERAL-DILUTION VENTILATION IS THE PRIMARY METHOD OF CONTROLLING THE RADIATION HAZARD, BUT IT HAS LIMITATIONS. RADIATION EXPOSURE OF URANIUM MINERS HAS GRADUALLY BEEN REDUCED.

*MINING + PERSONNEL EXPOSURE, RADIATION + RADON + URANIUM + URANIUM, NATURAL

15-18255 ALSO IN CATEGORY 14

CONTINUING DATA ON FALLOUT AND ENVIRONMENTAL MEASUREMENTS

U.S. DEPT. OF HEALTH, EDUCATION, AND WELFARE

50 PAGES, FIGURES, TABLES, REFERENCES, RADIOLOGICAL HEALTH DATA AND REPORTS 8(4) PAGES 195-244 (APRIL 1967)

TABULATED DATA AND DISCUSSIONS ARE GIVEN ON MILK AND FOOD SURVEILLANCE, WATER, AIR AND DEPOSITION, IODINE IN BOVINE THYROID, AND ENVIRONMENTAL LEVELS AT CERTAIN AEC SITES.

*FALLOUT + BIOLOGICAL CONCENTRATION, GENERAL + IODINE + MONITORING PROGRAM, ENVIRONMENTAL

15-18256 ALSO IN CATEGORY 14

KAUFFMAN PE + MAGNO PJ

PLUTONIUM-239 IN TOTAL DIET AND MILK

U.S. DEPT. OF HEALTH, EDUCATION, AND WELFARE

4 PAGES, 1 FIGURE, 3 TABLES, 8 REFERENCES, RADIOLOGICAL HEALTH DATA AND REPORTS 8(4) PAGES 191-194 (APRIL 1967)

THE NATIONAL CENTER FOR RADIOLOGICAL HEALTH INITIATED A PROGRAM IN JULY 1965 TO DETERMINE THE LEVEL OF PLUTONIUM-239 IN THE TOTAL DIET AND MILK. THE DIET SAMPLES WERE OBTAINED FROM THE INSTITUTIONAL TOTAL DIET SAMPLING NETWORK OF THE PUBLIC HEALTH SERVICE, AND THE MILK SAMPLES WERE OBTAINED FROM THE PHS PASTEURIZED MILK NETWORK. USING A GASTRO-INTESTINAL ABSORPTION FACTOR OF 3×10^{-4} TO THE MINUS 5TH, AS SUGGESTED BY THE INTERNATIONAL COMMISSION ON RADIOLOGICAL PROTECTION, THE AVERAGE AMOUNT OF PLUTONIUM-239 REACHING THE BLOOD STREAM FROM THE DIET IS ESTIMATED TO BE 2×10^{-4} TO THE MINUS 4TH FEMTOCuries PER DAY.

*FALLOUT + BIOLOGICAL CONCENTRATION, FOOD + DOSE MEASUREMENT, INTERNAL + PLUTONIUM

15-18257 ALSO IN CATEGORY 14

CONTINUING DATA ON FALLOUT--ENVIRONMENTAL MEASUREMENTS

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

46 PAGES, FIGURES, TABLES, REFERENCES, RADIOLOGICAL HEALTH DATA AND REPORTS 7(12) PAGES 697-742 (DECEMBER 1966)

TABULATED DATA AND DISCUSSION ARE PRESENTED (MILK AND FOOD SURVEILLANCE, WATER, AIR AND DEPOSITION, STRONTIUM-90 IN HUMAN BONE AND VERTEBRAE, ENVIRONMENTAL LEVELS AT CERTAIN AEC SITES).

*FALLOUT + MONITORING PROGRAM, ENVIRONMENTAL + STRONTIUM

15-18258 ALSO IN CATEGORY 14

CHANDLER RP + SNAVELY DR

SUMMARY OF CESIUM-137 AND STRONTIUM-90 CONCENTRATIONS REPORTED IN CERTAIN ALASKAN POPULATIONS AND FOODSTUFFS 1961-1966

U.S. PUBLIC HEALTH SERVICE

15 PAGES, 8 FIGURES, 9 TABLES, 36 REFERENCES, RADIOLOGICAL HEALTH DATA AND REPORTS 7(12) PAGES 675-689 (DECEMBER 1966)

PUBLISHED DATA ON CESIUM-137 AND STRONTIUM-90 CONCENTRATIONS IN CERTAIN ALASKAN POPULATIONS AND FOODSTUFFS, ALONG WITH FOOD CONSUMPTION DATA, ARE REVIEWED AND SUMMARIZED. WHERE POSSIBLE, CONCENTRATIONS IN THE DIET AND THOSE FOUND IN PEOPLE ARE COMPARED TO FCC GUIDELINES. THE SEASONAL AND YEARLY TRENDS OF CESIUM-137 AND STRONTIUM-90 CONCENTRATIONS IN THE DIET OF ALASKAN POPULATIONS AND IN PEOPLE ARE DISCUSSED.

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-18258 *CONTINUED*
*FALLOUT + ALASKA + CESIUM + DIETARY HABIT + STRONTIUM

15-18259 ALSO IN CATEGORY 14
FITZPATRICK DE + RUSSELL JL + BRISCOE OG + CALVERT CR
CESIUM-137 BODY BURDENS IN ALASKAN MEN, SPRING 1966
U.S. PUBLIC HEALTH SERVICE
6 PAGES, 2 FIGURES, 3 TABLES, 14 REFERENCES, RADIOLOGICAL HEALTH DATA AND REPORT 7(12) PAGES 691-696
(DECEMBER 1966)

THE CESIUM-137 BODY BURDENS OF CARIBOU-EATING ALASKAN MEN CONTINUE TO BE ELEVATED, ALTHOUGH IN GENERAL THE AVERAGE BODY BURDENS ARE DECREASING, COMPARED WITH THOSE OBSERVED IN 1965. ELEVATED CESIUM-137 BODY BURDENS ARE WELL CORRELATED WITH CARIBOU (REINDEER) CONSUMPTION, AND NON-CARIBOU EATERS EXHIBIT CESIUM-137 BODY BURDENS SIMILAR TO RESIDENTS IN THE COTERMINOUS UNITED STATES. DURING THE 1966 STUDY, THE CESIUM-137 BODY BURDEN OF 418 ALASKAN MEN WAS OBTAINED. THE BODY BURDENS OBSERVED RANGED FROM 2,400 TO LESS THAN 40 NCI AND INDICATED A WIDE RANGE OF VALUES DEPENDING ON LOCATION.

*FALLOUT + ALASKA + BIOLOGICAL CONCENTRATION, MAN + CESIUM + MONITORING PROGRAM, ENVIRONMENTAL

15-18260 ALSO IN CATEGORY 14
CONTINUING DATA ON FALLOUT - ENVIRONMENTAL MEASUREMENTS
U.S. PUBLIC HEALTH SERVICE
49 PAGES, FIGURES, TABLES, REFERENCES, RADIOLOGICAL HEALTH DATA AND REPORTS 8(5), PAGES 251-299 (MAY 1967)

TABULATED DATA AND DISCUSSIONS ARE PRESENTED FOR MILK SURVEILLANCE (NATIONAL AND INTERNATIONAL), FOOD AND DIET SURVEILLANCE, WATER, AIR AND DEPOSITION, RADIONUCLIDES IN ALASKAN CARIBOU AND REINDEER, ENVIRONMENTAL LEVELS AT CERTAIN AEC LOCATIONS, RADIOLOGICAL MONITORING OF NATIVE TEXAS OYSTERS, AND STRONTIUM, CESIUM, AND POLONIUM IN HUMAN TISSUES.

*FALLOUT + MONITORING PROGRAM, ENVIRONMENTAL + USAEC (U.S. ATOMIC ENERGY COMMISSION)

15-18261
HOWLEY JR + ROBBINS C
RADIATION HAZARDS FROM X-RAY DIFFRACTION EQUIPMENT
NATIONAL INSTITUTES OF HEALTH, BETHESDA, MD.
5 PAGES, 4 FIGURES, 1 TABLE, 20 REFERENCES, RADIOLOGICAL HEALTH DATA AND REPORTS 8(5) PAGES 245-249 (MAY 1967)

IMPROPER OR CARELESS USE OF X-RAY DIFFRACTION EQUIPMENT CAN CAUSE SEVERE BURNS TO THE UPPER EXTREMITIES OF THE BODY OF THE OPERATOR. THESE BURNS ARE SLOW TO HEAL AND CAN LEAD TO CANCER. CATARACTS AND OTHER OPACITIES CAN BE PRODUCED IN THE EYE WITH A SINGLE EXPOSURE OF 200 ROENTGENS. THE USE OF INADEQUATE SURVEY EQUIPMENT CAN LEAD TO A GROSS UNDERESTIMATE OF THE HAZARD. SINCE SERIOUS INJURY FROM INTENSE PRIMARY BEAM RADIATION CAN OCCUR IN A MATTER OF SECONDS AND THE HAZARD FROM SCATTERED RADIATION IS ALSO SIGNIFICANT, THE USE OF FILM BADGE MONITORING ALONE CAN GIVE A FALSE SENSE OF PROTECTION. RECOMMENDATIONS ARE GIVEN.

*X-RAY + MONITOR, RADIATION, PERSONNEL + PERSONNEL EXPOSURE, RADIATION

15-18262 ALSO IN CATEGORY 14
CONTINUING DATA ON FALLOUT--ENVIRONMENTAL MEASUREMENTS
U.S. PUBLIC HEALTH SERVICE
57 PAGES, FIGURES, TABLES, REFERENCES, RADIOLOGICAL HEALTH DATA AND REPORTS 8(2) PAGES 79-135 (FEBRUARY 1967)

TABULATED DATA AND DISCUSSION ARE PRESENTED FOR MILK SURVEILLANCE (U.S. AND INTERNATIONAL), FOOD AND DIET SURVEILLANCE, WATER, AIR, AND DEPOSITION, STRONTIUM-90 IN HUMAN BONE, AND ENVIRONMENTAL RADIOACTIVITY AT CERTAIN AEC LOCATIONS. VARIOUS PERIODS DURING 1966 ARE COVERED.

*FALLOUT + MONITORING PROGRAM, ENVIRONMENTAL + USAEC (U.S. ATOMIC ENERGY COMMISSION)

15-18263 ALSO IN CATEGORY 14
RADIONUCLIDE LEVELS IN MILK, TOTAL DIET, AND HUMAN BONE COMPARED TO FEDERAL RADIATION COUNCIL ESTIMATES, 1965, AND 1966 ESTIMATES
U.S. PUBLIC HEALTH SERVICE, NATIONAL CENTER FOR RADIOLOGICAL HEALTH
7 PAGES, 5 FIGURES, 3 TABLES, 21 REFERENCES, RADIOLOGICAL HEALTH DATA AND REPORTS 8(2) PAGES 65-72 (FEBRUARY 1967)

ESTIMATES OF THE LEVELS OF FALLOUT RADIONUCLIDES IN ENVIRONMENTAL MEDIA AND IN HUMAN BONE EXPECTED FROM 1963 THROUGH 1965 WERE MADE BY THE FEDERAL RADIATION COUNCIL. THE 1965 OBSERVED VALUES WERE COMPARED WITH THE FRC PREDICTIONS, AND 1966 LEVELS WERE ESTIMATED USING THE APPROACH PROPOSED BY THE FEDERAL RADIATION COUNCIL. THE OBSERVED RADIONUCLIDE LEVELS WERE IN AGREEMENT WITH THE PREDICTION MADE BY THE FEDERAL RADIATION COUNCIL. THE OBSERVED LEVELS AND THE PREDICTED LEVELS OF RADIOACTIVITY IN FOOD OVER THE NEXT SEVERAL YEARS ARE TOO

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-18263 *CONTINUED*
SMALL TO JUSTIFY PROTECTIVE ACTION TO LIMIT THE DIETARY INTAKE OF RADIONUCLIDES.

*FALLOUT + BIOLOGICAL CONCENTRATION, FOOD + CESIUM + DOSE + IODINE + STRONTIUM

15-18264 ALSO IN CATEGORY 14
GRUNDY RD
STRONTIUM-90 DIETARY INTAKE ESTIMATES BASED ON FRACTIONAL INTAKES DUE TO MILK
NATIONAL CENTER FOR RADIOLOGICAL HEALTH, ROCKVILLE, MD.
5 PAGES, 4 TABLES, 9 REFERENCES, RADIOLOGICAL HEALTH DATA AND REPORTS 8(2) PAGES 73-77 (FEBRUARY 1967)

STRONTIUM-90 DIETARY INTAKE ESTIMATES WERE MADE FOR THE INSTITUTIONAL TOTAL DIET SAMPLING NETWORK BASED UPON PASTEURIZED MILK NETWORK CONCENTRATIONS. APPROACHES BASED UPON MILK-TO-TOTAL-DIET RATIOS OF STRONTIUM-90 AND STRONTIUM UNITS WERE CONSIDERED. THE APPROACH BASED UPON STRONTIUM UNITS YIELDED THE BEST ESTIMATES OF ITDSN MONTHLY AVERAGE AND MAXIMUM STRONTIUM-90 INTAKES ON A NETWORK BASIS FOR THE POPULATION GROUPS INVOLVED.

*FALLOUT + BIOLOGICAL CONCENTRATION, MILK + DIETARY HABIT + STRONTIUM

15-18265 ALSO IN CATEGORY 14
CONTINUING DATA ON FALLOUT--ENVIRONMENTAL MEASUREMENTS
U.S. PUBLIC HEALTH SERVICE
60 PAGES, FIGURES, TABLES, REFERENCES, RADIOLOGICAL HEALTH DATA AND REPORTS 8(1) PAGES 5-64 (JANUARY 1967)

TABULATED DATA AND DISCUSSION ARE PRESENTED FOR MILK SURVEILLANCE (U.S. AND INTERNATIONAL), FOOD AND DIET SURVEILLANCE, WATER, AIR, AND DEPOSITION, IODINE IN BOVINE THYROIDS, AND ENVIRONMENTAL RADIOACTIVITY AT CERTAIN AEC LOCATIONS. DIFFERENT PERIODS DURING 1966 ARE COVERED.

*FALLOUT + MONITORING PROGRAM, ENVIRONMENTAL

15-18266 ALSO IN CATEGORY 14
OAKLEY DT
A SUMMARY OF EXPOSURES TO THE OFFSITE POPULATION AS A RESULT OF NUCLEAR REACTOR TESTS CONDUCTED AT THE NUCLEAR ROCKET DEVELOPMENT STATION DURING 1965
U. S. PUBLIC HEALTH SERVICE, NATIONAL CENTER FOR RADIOLOGICAL HEALTH
4 PAGES, 1 FIGURE, 5 TABLES, 6 REFERENCES, RADIOLOGICAL HEALTH DATA AND REPORTS 8(1) PAGES 1-4 (JANUARY 1967)

A SUMMARY OF WHOLE-BODY AND THYROID EXPOSURES RESULTING FROM FIVE NUCLEAR-REACTOR EXPERIMENTS CONDUCTED AT THE NUCLEAR ROCKET DEVELOPMENT STATION DURING 1965 IS PRESENTED. THE EXPOSURES WERE COMPARED WITH PROTECTION STANDARDS, AND IT WAS SHOWN THAT THE EXPOSURES WERE SMALL, COMPARED WITH THE STANDARDS.

*NUCLEAR ROCKET + DOSE + KIWI TNT (TRANSIENT NUCLEAR TEST) + RADIOACTIVITY, RELEASE

15-18269 ALSO IN CATEGORY 16
PALLISTER ET + GREEN JH
RADIOCHEMICAL ANALYSES FOR CS-137, SR-90, AND CE-144 IN RAIN WATER IN SYDNEY
UNIVERSITY OF NEW SOUTH WALES, SYDNEY
2 PAGES, 6 TABLES, 4 REFERENCES, AUSTRAL. JOURNAL OF SCIENCE 29, PAGE 163 THRU 164, (DECEMBER 1966)

ANALYSES WERE MADE OF RAIN WATER IN THE SYDNEY AREA TO DETERMINE SR-90, CS-137, AND CE-144. RESULTS ARE PRESENTED MONTHLY FROM MAY 1964 THROUGH JUNE 1966. THE SR-90 CONTENT OF PACKED TEA WAS ALSO DETERMINED.

BIOLOGICAL CONCENTRATION, FOOD + CERIUM + CESIUM + RADIOCHEMICAL ANALYSIS + RAINCUT + STRONTIUM + SURVEY, RADIATION, ENVIRONMENTAL

15-18270 ALSO IN CATEGORY 16
PEARSON JE + MOSES H
ATMOSPHERIC RADON-222 CONCENTRATION VARIATION WITH HEIGHT AND TIME
ARGONNE NATIONAL LAB., ARGONNE, ILL.
7 PAGES, 11 FIGURES, 1 TABLE, 5 REFERENCES, JOURNAL OF APPLIED METEOROLOGY 5(2), PAGE 175 THRU 181, (APRIL 1966)

STUDIES OF CONCENTRATIONS OF RADON-222 IN THE ATMOSPHERE WERE MADE FROM THE GROUND TO 16 METERS ELEVATION FOR EIGHT PERIODS OF NEARLY 24 HOURS EACH FOR THE LATE SPRING AND SUMMER MONTHS. GRAPHS INDICATE THE GENERAL DIURNAL RADON CONCENTRATIONS. CONCENTRATIONS AT THE BREATHING LEVEL FOR HUMANS ARE GIVEN. INDICATES THAT RADON IS AN EXCELLENT TRACER MATERIAL FOR STUDYING THE VERTICAL DIFFUSION PROCESS IN THE ATMOSPHERE.

ATMOSPHERIC DIFFUSION + CONCENTRATION, MAXIMUM + INHALATION + MICROMETEOROLOGY + RADON

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-18271 ALSO IN CATEGORIES 16 AND 4
KREY PW
PLUTONIUM-238 FROM THE SNAP-9A BURNUP
UNITED STATES ATOMIC ENERGY COMMISSION, NEW YORK
CONF-670-692 +. 16 PAGES, FIGURES, 10 REFERENCES, ABSTRACT IN TRANSACTIONS 10(1), PAGE 7, PRESENTED AT
1967 ANNUAL MEETING OF THE AMERICAN NUCLEAR SOCIETY, SAN DIEGO, CALIFORNIA, JUNE 11-15, 1967

THE BEHAVIOR OF THE SNAP-9A DEBRIS PARTIALLY SUPPORTS MACHTAS PROPOSED SCHEMATIC
REPRESENTATION OF STRATOSPHERIC MERIDIONAL CIRCULATION. THE TREND IN CONCENTRATION SUGGESTS
A DOWNWARD FLUX BEGINNING IN THE SPRING OF EACH YEAR FOLLOWED BY AN APPARENT UPWARD FLUX IN
THE FALL. LARLEYS ESTIMATES AGREE WELL WITH THE MEASURED OR ANTICIPATED MAXIMUM
CONCENTRATIONS IN BOTH THE STRATOSPHERE AND TROPOSPHERE.

ATMOSPHERIC DIFFUSION, GLOBAL + FALLOUT + PLUTONIUM + STRATOSPHERE + TROPOSPHERE

15-18329
ELK RIVER REPORT ON STATUS OF ENVIRONMENTAL SURVEY PROGRAM
RURAL COOPERATIVE POWER ASSOCIATION, ELK RIVER, MINNESOTA
23 PAGES, 6 FIGURES, AUGUST 1, 1966, DOCKET NO. 115-1

OVERALL PROGRAM IS A JOINT EFFORT BETWEEN RCPA AND THE MINNESOTA DEPT. OF HEALTH, WITH RCPA
RESPONSIBLE FOR REACTOR MONITORING AND SOME ENVIRONMENTAL AIR, WATER, AND MILK SAMPLING.
(MINN. DEPT OF HEALTH HAS A STATE-WIDE SURVEY PROGRAM, WITH ADDITIONAL SAMPLING FROM THE ELK
RIVER AREA). DETAILS OF PROGRAM ARE GIVEN (FREQUENCY, METHODS, LOCATIONS, ETC.).

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

*MONITORING PROGRAM, ENVIRONMENTAL + ELK RIVER + REACTOR, BOILING WATER + SURVEY, RADIATION, ENVIRONMENTAL

15-18366 ALSO IN CATEGORY 9
HOLROYD RA + GOLLIHER KG + THIELE AW
A CHEMICAL METHOD TO DETERMINE THE FAST-NEUTRON FRACTION OF THE DOSE RATE IN A NUCLEAR REACTOR
ATOMICS INTERNATIONAL, CANOGA PARK, CALIF.
2 PAGES, 1 TABLE, 5 REFERENCES, ANS TRANS. 10(1), PAGES 54-55, 1967 ANNUAL MEETING ANS, SAN DIEGO, CALIF.,
JUNE 11-15, 1967

DESCRIBES A CHEMICAL METHOD FOR DETERMINING DOSE RATE AND FAST-NEUTRON FRACTION OF THE DOSE
RATE TO WHICH A MATERIAL IS EXPOSED. THE PRINCIPLE IS THE MEASUREMENT OF THE RADIOLYTIC
HYDROGEN YIELD FROM TWO SUBSTANCES - CYCLOHEXANE AND BENZENE.

CHEMICAL ANALYSIS + DOSE MEASUREMENT, EXTERNAL + FAST NEUTRON

15-18386 ALSO IN CATEGORY 17
JOHNS HOPKINS U TRITIUM ACCIDENT
JOHN HOPKINS UNIVERSITY, MCCOLLUM-PRATT INSTITUTE, BALTIMORE, MD.
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(40), PAGE 29 AND 30, (OCTOBER 2, 1967)

(LETTER, JUNE 16) AN INDIVIDUAL BROUGHT 5 SAMPLES OF 10 CURIES EACH OF TRITIUM DIRECTLY FROM
ARGONNE WITHOUT A LICENSE AND WITHOUT NOTIFYING PHYSICS DEPT. CHAIRMAN OR SAFETY OFFICER.
PROCEDURES THAT THE INDIVIDUAL SET UP FOR HANDLING AND IN CASE OF BREAKAGE WERE TOTALLY
INADEQUATE. TWO OTHER INDIVIDUALS RECEIVED 0.8 AND 0.2 REM, FOLLOWING A SPILL ON FEBRUARY
20. CENTRAL AIR CONDITIONING SPREAD TRITIATED WATER THROUGH THE BUILDING BEFORE IT WAS
TURNED OFF. CORRECTIONS - (A) BLDG. WAS SEARCHED FOR UNLICENSED SOURCES, WHICH WERE DISPOSED
OF. (B) STAFF MEMBERS NOTIFIED. (C) UNIVERSITY VP HAS DEMONSTRATED HE WILL TAKE A PERSONAL
INTEREST IN PROBLEMS ENCOUNTERED BY RADIATION SAFETY OFFICER, WHOSE STAFF IS EXPANDED.

*CONTAMINATION + *FAILURE, ADMINISTRATIVE CONTROL + *INCIDENT, ACTUAL, HUMAN ERROR + RADIOISOTOPE +
TRITIUM + VENTILATION SYSTEM

15-18397 ALSO IN CATEGORY 17
ABBOTT LAB REPORTS INCONSISTANT FILM BADGE RESULTS
ABBOTT LABORATORIES, NORTH CHICAGO
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(40), PAGE 27 AND 28, (OCT. 2, 1967)

(LETTER, AUGUST 4) AN EMPLOYEE RECEIVED A 3.029 REMS GAMMA DOSE IN THE SECOND QUARTER. A
SECOND FILM BADGE FROM ANOTHER COMPANY AGREED WITH BETA BUT ONLY INDICATED 0.7 REM GAMMA.
DOSIMETERS DID NOT CONFIRM HIGH READING. BETTER SHIELDING AND NEW GUIDELINES FOR REMOVING
WORKERS FROM EXPOSURE PRIOR TO THE 3 REMS ARE BEING STUDIED.

*MONITOR, RADIATION, PERSONNEL + *PERSONNEL EXPOSURE, RADIATION + FAILURE, INSTRUMENT + FILM, GENERAL

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-18388 ALSO IN CATEGORY 17
SOURCE REMOVAL DURING MAINTENANCE OF A RADIOGRAPHER DEVICE
CONAM INSPECTION, INC., TULSA, OKLA.
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(40), PAGE 28 AND 29, (OCT. 2, 1967)

(LETTER, JULY 31) ON JULY 12 A RADIOGRAPHER MAINTAINING A TO-MODEL-490 DEVICE REMOVED 3 SCREWS, DISLODGING SOURCE FROM SHIELD. HE MOVED IT SO IT RETURNED, BUT IT FELL BETWEEN SHIELD AND OUTER CASE. SURVEY METER WENT BACK TO ZERO. MAN WAS CALLED AWAY TO SIGN REPORTS AND RELEASED FROM JOB. NEXT DAY WHEN HE RETURNED TO OFFICE, THE AUTOMATIC GAMMA DETECTOR ALARMED. THE RADIOGRAPHER RECEIVED A 24.5-MR RANGF EXPOSURE. THE DRIVER OF THE OTHER TRUCK CARRYING THE DEVICE WAS ESTIMATED TO HAVE RECEIVED BETWEEN 15 AND 300 R. THE DRIVER QUIT AND HAS NOT COOPERATED IN BEING UNDER A PHYSICIANS OBSERVATION. CAMERAS WILL BE MODIFIED. PROCEDURES WILL NOT BE AMENDED AS THEY FEEL DRIVER WAS SOMEWHAT NEGLIGENT.

*FAILURE, OPERATOR ERROR + *INCIDENT, ACTUAL, HUMAN ERROR + *RADIOGRAPHY + MAINTFNANCE AND REPAIR + MONITOR, RADIATION, AREA + PERSONNEL EXPOSURE, RADIATION

15-18389 ALSO IN CATEGORY 17
MALLINCKRODT OVEREXPOSURE
MALLINCKRODT CHEMICAL WORKS, MALLINCKRODT/NUCLEAR DIV., LAMBERT FIELD, ST. LOUIS, MO.
3 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(40), PAGE 30 THRU 32, (OCT. 2, 1967)

ON JULY 25, MCW WAS CITED FOR ALLOWING AN EMPLOYEE TO RECEIVE 1.9 REMS IN A QUARTER WITHOUT FILLING OUT AEC FORM 4, AND NOT REPORTING IT, ALONG WITH OTHER ITEMS. REPLY DATED AUG. 16 INDICATED THAT THE EMPLOYEE RECORDS WERE AT ANOTHER MCW INSTALLATION, THAT WORKER WAS NOT REALLY OVEREXPOSED.

*PERSONNEL EXPOSURE, RADIATION + RADIOCHEMICAL PROCESSING + REGULATION, AEC

15-18390 ALSO IN CATEGORY 17
OVEREXPOSURE AT ST. FRANCIS HOSPITAL
ST. FRANCIS HOSPITAL, TULSA, OKLA.
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(40), PAGE 32, (OCTOBER 2, 1967)

(LETTER, AUG. 10) AN EXPOSURE OF 1.519 REMS WAS RECEIVED THE SECOND QUARTER OF 1967 BY A TECHNICIAN, WHEN HE FREQUENTLY HAD TO HOLD A PATIENT FOR THE FILM. HE HAS BEEN INSTRUCTED TO WEAR A LEAD APRON FOR ALL FUTURE USE OF PORTABLE RADIOGRAPHIC DEVICES.

*PERSONNEL EXPOSURE, RADIATION + *PERSONNEL PROTECTIVE DEVICE + *RADIOGRAPHY + RADIOLOGY

15-18392 ALSO IN CATEGORY 18
US DEPT. OF INTERIOR COMMENTS ON PEACH BOTTOM THERMAL POLLUTION
PHILADELPHIA ELECTRIC CO., PA.
4 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(41), PAGE 23 THRU 26, (OCTOBER 9, 1967), DOCKET NOS. 50-171, 277, AND 278

(LETTER, SEPT. 27, 1967). JULY 27 COMMENTS INDICATE PLANS TO RESTORE SHAD RUNS TO THE SUSQUEHANNA AND CONCERN ABOUT THE 18.5 F ADDED TEMP. TO 3"/DAY OF THE CONOWINGO RESERVOIR WATER, AFFECTING METABOLISM AND MAKING A THERMAL BARRIER AS WELL AS INTAKE STRUCTURES DESTROYING FISH. THEY RECOMMENDED (1, 2, 3) PREOPERATIONAL RADIOLOGICAL (FISH) SURVEYS, (4) MODIFY RADIOACTIVE RELEASES IF RADIOACTIVITY HARMFUL TO FISH EVEN IF ALLOWED BY 10 CFR 20, (5) CONTINUE SURVEYS UNTIL CONCLUSIVELY DEMONSTRATED THAT NO SIGNIFICANT ADVERSE CONDITION EXIST. REFERS TO A FLOW MODEL OF CONOWINGO BEING TESTED AT WORCESTER POLYTECH.

*HEAT SINK + *THERMAL POLLUTION + *WASTE DISPOSAL, RIVER + MODEL TESTING + MONITORING PROGRAM, ENVIRONMENTAL + PEACH BOTTOM 2 AND 3 + REACTOR, BOILING WATER

15-18393 ALSO IN CATEGORY 18
US DEPARTMENT OF INTERIOR COMMENTS ON SURRY THERMAL POLLUTION
VIRGINIA ELECTRIC + POWER CO., RICHMOND, VIRGINIA
3 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(41), PAGE 26 THRU 28, (OCTOBER 9, 1967), DOCKET NO. 50-260 AND 281

(LETTER 27 SEPT. 1967) SEPT. 8 RECOMMENDATIONS ARE SIMILAR TO THOSE OF JULY 27 FOR PEACH BOTTOM (MAKE PREOPERATIONAL SURVEYS AND LIMIT RADIOACTIVE DISCHARGE EVEN FARTHER BELOW 10 CFR 20 IF FISH OR WILDLIFE DAMAGED). HYDRAULIC MODEL OF JAMES RIVER SHOWED THE 4 F TEMP. INCREASE ISOTHERMAL TO BE MIDSTREAM AND 6 MILES UP/DOWNSTREAM, WITH NO ADVERSE EFFECT OF LARGER AQUATIC LIFE. HOWEVER, PLANKTON WOULD BE DESTROYED PASSING THRU THE CONDENSER COILS, AND LARGE FISH DRAWN IN.

*MODEL TESTING + *THERMAL POLLUTION + HEAT SINK + REACTOR, PRESSURIZED WATER + SURRY 1 AND 2 + WASTE DISPOSAL, RIVER

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-18404

JOHNSTON JE
HEALTH PHYSICS AND MEDICAL DIVISION RESEARCH PROGRESS REPORT, JANUARY-DECEMBER 1965. BODY RADIOACTIVITY MEASUREMENTS
ATOMIC ENERGY RESEARCH ESTABLISHMENT, HARWELL, ENGLAND
AERE-PR-HPM-9 +. 37 PAGES, PAGE 17 THRU 26, JUNE 1966

DESIGN MODIFICATIONS ARE REPORTED FOR WHOLE-BODY-COUNTING INSTRUMENTS EMPLOYING SCINTILLATION DETECTORS. MANY INDIVIDUAL STUDIES WERE MADE WITH THESE INSTRUMENTS. THE AVAILABILITY FROM BREAD OF IRON ADDED TO FLOUR WAS ASSESSED IN NORMAL AND ANEMIC INDIVIDUALS BY A DOUBLE-TRACER TECHNIQUE EMPLOYING FE-55, FE-59, TOGETHER WITH WHOLE-BODY COUNTING.

AVAILABILITY - BRITISH INFORMATION SERVICE, 845 THIRD AVENUE, NEW YORK, NEW YORK 10022, \$1.40 COPY

*DOSE MEASUREMENT, INTERNAL + HARWELL (UK) + MONITOR, RADIATION, PERSONNEL

15-18405

JOHNSTON JE
HEALTH PHYSICS AND MEDICAL DIVISION RESEARCH PROGRESS REPORT, JANUARY-DECEMBER 1965. RADIATION PHYSICS
ATOMIC ENERGY RESEARCH ESTABLISHMENT, HARWELL, ENGLAND
AERE-PR-HPM-9 +. 37 PAGES, PAGE 6 THRU 17, JUNE 1966

REPORTS PROGRESS IN PERSONNEL NEUTRON DOSIMETRY, LITHIUM FLUORIDE THERMOLUMINESCENT DETECTORS AS DOSIMETERS, AND A TISSUE-EQUIVALENT IONIZATION CHAMBER FOR COMBINED MEASUREMENT OF ABSORBED DOSE RATE AND QUALITY FACTOR. PERFORMANCE TESTS ARE REPORTED ON FULLY AUTOMATIC PERSONNEL DOSIMETERS, BETA DOSIMETERS, THERMOLUMINESCENT DOSIMETERS, AND PHOTOGRAPHIC-FILM DOSIMETERS. RADIOACTIVE BACKGROUND AND FALLOUT MEASUREMENTS ARE GIVEN. IN FALLOUT MEASUREMENTS, EMPHASIS IS ON THE CONTENT OF CS-137, SR-90, BE-7, PB-210, AND PO-210 IN RAIN WATER, AND BA-140, BE-7, PB-210, AND PO-210 IN AIR.

AVAILABILITY - BRITISH INFORMATION SERVICE, 845 THIRD AVENUE, NEW YORK, NEW YORK 10022, \$1.40 COPY

*ACTIVATION + *DOSIMETRY, GENERAL + *FALLOUT + ANALYTICAL TECHNIQUE, GENERAL + BETA EMITTER + DOSIMETRY, THERMOLUMINESCENCE + GAMMA + HARWELL (UK) + NEUTRON

15-18407

ALSO IN CATEGORY 14

JOHNSTON JE
HEALTH PHYSICS AND MEDICAL DIVISION RESEARCH PROGRESS REPORT, JANUARY-DECEMBER 1965. OPERATIONS GROUP
ATOMIC ENERGY RESEARCH ESTABLISHMENT, HARWELL, ENGLAND
AERE-PR-HPM-9 +. 36 PAGES, PAGE 26 THRU 31, JUNE 1966

WORK REPORTED INCLUDES AEROSOL INHALATION STUDIES USING METHYL IODIDE TRACER (I-132) FOR IODINE METABOLISM, EFFECTIVENESS OF SMEARS FOR MEASURING TRITIUM SURFACE CONTAMINATION, PERCUTANEOUS UPTAKE OF TRITIUM FROM METAL SURFACES, AND DETERMINATION OF VARIOUS RADIOISOTOPES IN BODY MATERIALS.

AVAILABILITY - BRITISH INFORMATION SERVICE, 845 THIRD AVENUE, NEW YORK, NEW YORK 10022, \$1.40 COPY

*RADIOCHEMICAL ANALYSIS + ANALYTICAL TECHNIQUE, GENERAL + ANALYTICAL TECHNIQUE, URINE + HARWELL (UK)

15-18451

KEVIN T
DERIVATIVES OF SOME FIVE-MEMBERED HETEROCYCLES AS POSSIBLE PROTECTIVE AGENTS AGAINST IONIZING RADIATIONS
LOUISVILLE UNIVERSITY, KENTUCKY
TID-22681 +. 122 PAGES, DECEMBER 1965

GIVES METHODS FOR THE SYNTHESIS OF S-TRIAZOLE DERIVATIVES, RING-FUSED S-TRIAZOLE DERIVATIVES, MESO-IONIC COMPOUNDS OF THE S-TRIAZOLE SERIES, AND 1,3,4-OXADIAZOLIUM SALTS. THE COMPOUNDS WERE THEN EVALUATED FOR USE IN PROTECTION OF MICE AGAINST RADIATION. IN GENERAL, MAXIMUM TOLERATED DOSES WERE GIVEN 15-20 MIN BEFORE EXPOSURE TO 900 R WHOLE-BODY X RADIATION. ALL EVALUATIONS WERE MADE ON A 30-DAY SURVIVAL BASIS. DATA ON 45 COMPOUNDS TABULATED.

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

RADIATION PROTECTION, CHEMICAL

15-18483

ALSO IN CATEGORY 14

PROGRAM - TWELTH ANNUAL MEETING OF THE HEALTH PHYSICS SOCIETY
20 PAGES, JUNE 1967

TITLES AND ABSTRACTS ARE PRESENTED FOR 67 PAPERS GIVEN AT THE MEETING. SUBJECTS INCLUDED SITING OF NUCLEAR POWER PLANTS, HEALTH PHYSICS INSTRUMENTATION, OPERATIONAL HEALTH PHYSICS, RADIONUCLIDE INHALATION, RADIOBIOLOGY, GAMMA SPECTROMETRY, RADIONUCLIDE METABOLISM, RADIATION

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-18483 *CONTINUED*

DOSIMETRY, RADIOCHEMICAL ANALYSIS, RADIATION PHYSICS, BIOASSAY, STANDARDS AND REGULATIONS, ENVIRONMENTAL RELEASES.

BIOMEDICAL + INSTRUMENTATION, RADIATION MONITORING + RADIATION PROTECTION, ORGANIZATION + RADIOBIOLOGY

15-18496 ALSO IN CATEGORY 16

BLEEKER W + DANSCAARD W + LABLANS WN

SOME REMARKS ON SIMULTANEOUS MEASUREMENTS OF PARTICULATE CONTAMINANTS INCLUDING RADIOACTIVITY AND ISOTOPIC COMPOSITION OF PRECIPITATION

ROYAL NETHERLANDS METEOROLOGICAL INSTITUTE, DE BILT, NETHERLANDS + PHYSICAL LABORATORY II, H. C. OERSTED INSTITUTE, COPENHAGEN, DENMARK

13 PAGES, 9 FIGURES, 16 REFERENCES, TELLUS 18, PAGE 773 THRU 785, (1966)

RESULTS OF SIMULTANEOUS MEASUREMENTS OF TRACE SUBSTANCES IN RAIN SAMPLED DURING THE PASSAGE OF PRECIPITATION SYSTEMS ARE DISCUSSED. THE PATTERN OF THE CONCENTRATIONS FOR PARTICULATE MATTER IS COMPARED WITH THAT FOR THE OXYGEN-18 AND DEUTERIUM ISOTOPES. THE VARIATIONS IN THE CONCENTRATION WERE INVESTIGATED FOR VARIOUS SYNOPTIC SITUATIONS.

CONCENTRATION, AREA + PARTICULATE + PRECIPITATION + RAINOUT + WASHOUT

15-18542 ALSO IN CATEGORY 14

MILLER CF + LEE H + SARTOR JO

INTRODUCTION TO RADIOLOGICAL DEFENSE PLANNING

STANFORD RESEARCH INSTITUTE, MENLO PARK, CALIFORNIA

59 PAGES, 36 FIGURES, 2 REFERENCES, MAY 1965

THE PLANNING OF RADIOLOGICAL DEFENSE (RADEF) COUNTERMEASURES, FOR DEVELOPING EITHER REQUIREMENTS FOR THE DESIGN OF RADEF SYSTEMS OR OPERATIONAL REQUIREMENTS AND LIMITATIONS, IS BASED ON THE AVAILABILITY OF BASIC RADIOLOGICAL DATA AND ON TECHNIQUES FOR APPLYING THE DATA TO RADEF PROBLEMS AND SITUATIONS. THE BASIC RADIOLOGICAL DATA AND MAJOR PARAMETERS INVOLVED IN RADEF PLANNING ARE GIVEN, AND THE USE OF THE VARIOUS FACTORS LISTED ABOVE IN THE SOLUTION OF RADEF PROBLEMS IS DESCRIBED.

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

*CIVIL DEFENSE + DOSE CALCULATION, EXTERNAL + FALLOUT

15-18543 ALSO IN CATEGORY 14

EGOROV IM + LAZAREV AF + PEROV NL + TIMOFFEV AA + ZHERNOV VS

HANDBOOK OF RECORDING INSTRUMENTS FOR IONIZING RADIATION

UNIVERSITAT GOTTINGEN

AEC-TR-6709 + IPST-CAT.-1800 +. 468 PAGES, FIGURES, TABLES, REFERENCES, TRANSLATION OF APPARATURA DLYA REGISTRATSII ISSLEDOVANIYA IONIZIRUYUSHCHIKH IZLUCHENII, ATOMIZDAT, MOSCOW, 1965.

THE HANDBOOK DESCRIBES MASS-PRODUCED AND EXPERIMENTAL SOVIET EQUIPMENT DEVICES, INSTALLATIONS, PHOTOMULTIPLIERS, SCINTILLATORS, GEIGER-MUELLER COUNTERS, AND IONIZATION CHAMBERS. IT CONTAINS CHARACTERISTICS OF DEVICES USED FOR PERSONNEL DOSIMETRY, DOSE AND DOSE-RATE MEASUREMENTS, MONITORING THE RADIOACTIVE CONTAMINATION OF WORK SURFACES AND WATER, AEROSOL INSTRUMENTS, SINGLE-CHANNEL AND MULTICHANNEL ANALYZERS.

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

*INSTRUMENTATION, GENERAL + *MONITOR, RADIATION, GENERAL + DOSIMETRY, GENERAL + INSTRUMENTATION, AIR SAMPLING + INSTRUMENTATION, RADIATION MONITORING + INSTRUMENTATION, RECORDER + MONITOR, RADIATION, SURFACE + UNION OF SOVIET SOCIALIST REPUBLICS

15-18546

HAQUE KM + COLLINSON AJ

RADIATION DOSE TO THE RESPIRATORY SYSTEM DUE TO RADON AND ITS DAUGHTER PRODUCTS

BOROUGH POLYTECHNIC, LONDON

13 PAGES, 4 FIGURES, 9 TABLES, 60 REFERENCES, HEALTH PHYSICS 13(5), PAGES 431-443 (MAY 1967)

ANNUAL RADIATION DOSES TO THE RESPIRATORY SYSTEM DUE TO RADON AND ITS DAUGHTER PRODUCTS WERE CALCULATED IN VARIOUS WORKING ENVIRONMENTS OF THE LONDON AREA. THE METHOD IS BASED ON AN ACCURATE CALCULATION OF THE ENERGY DISSIPATION OF ALPHA PARTICLES IN THE VULNERABLE TISSUE, 1 MICRON IN DIAMETER AND LOCATED AT VARIOUS DEPTHS, FROM THE DAUGHTER ACTIVITY DEPOSITED ON THE WALLS OF THE RESPIRATORY SYSTEM. THE EQUILIBRIUM DAUGHTER ACTIVITY WAS CALCULATED FROM THE DEPOSITION RATES AND THE MUCOUS MOVEMENT. THE ANNUAL RADIATION DOSE AT A DEPTH OF 30 MICRONS FROM THE TOP OF THE MUCOUS LAYER IN SEGMENTAL BRONCHI IS 13.8 RADS FOR THE HIGHEST RADON CONCENTRATION ENCOUNTERED. IT IS FELT THAT THE PRESENT MPC VALUE FOR RADON SHOULD BE REVISED DOWNWARD.

*DOSE CALCULATION, INTERNAL + ALPHA EMITTER + ENVIRONMENTAL CONDITION + RADON + UNITED KINGDOM

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-18547 ALSO IN CATEGORY 14
DOWNS WL + WILSON HB + SYLVESTER GE + LEACH LJ + MAYNARD EA
EXCRETION OF URANIUM BY RATS FOLLOWING INHALATION OF URANIUM DIOXIDE
UNIVERSITY OF ROCHESTER, SCHOOL OF MEDICINE AND DENTISTRY
9 PAGES, 2 FIGURES, 5 TABLES, 11 REFERENCES, HEALTH PHYSICS 13(5), PAGES 445-453 (MAY 1967)

RATS WERE EXPOSED TO AN AEROSOL OF UO₂ (5 MGU/M TO THE 3RD) FOR PERIODS OF 17-140 DAYS. TWENTY-FOUR HOURS AFTER TERMINATION OF EXPOSURE, THE RESPIRATORY TRACT CONCENTRATIONS VARIED FROM 45 TO 410 MICROGRAMS U/G DEPENDING ON THE EXPOSURE TIME. BIOLOGICAL HALF-TIMES FOR RESPIRATORY TRACT RETENTION, BASED ON A SINGLE EXPONENTIAL EXPRESSION WERE 141, 169, 239, AND 289 DAYS FOR EXPOSURE TIMES OF 17, 20, 58, AND 140 DAYS, RESPECTIVELY. A FIT OF THE RETENTION DATA TO A POWER FUNCTION WAS ALSO OBTAINED BY COMPUTER ANALYSIS. SIGNIFICANT AMOUNTS OF URANIUM WERE EXCRETED IN THE URINE AND FECES ONLY DURING THE FIRST MONTH AFTER EXPOSURE.

*BIOLOGICAL CONCENTRATION, ANIMAL + AEROSOL + AIR + URANIUM + URANIUM DIOXIDE

15-18550 ALSO IN CATEGORY 14
PRESTON A + JEFFERIES OF
THE ASSESSMENT OF THE PRINCIPAL PUBLIC RADIATION EXPOSURE FROM, AND THE RESULTING CONTROL OF, DISCHARGES OF AQUEOUS RADIOACTIVE WASTE FROM THE UNITED KINGDOM ATOMIC ENERGY AUTHORITY FACTORY AT WINDSCALE, CUMBERLAND
RADIOBIOLOGICAL LABORATORY, LOWESTOFT, SUFFOLK, ENGLAND
9 PAGES, 4 FIGURES, 5 TABLES, 13 REFERENCES, HEALTH PHYSICS 13(5), PAGES 477-485 (MAY 1967)

THE DISCHARGE OF AQUEOUS RADIOACTIVE EFFLUENT TO THE SEA FROM THE UNITED KINGDOM ATOMIC ENERGY AUTHORITY'S WINDSCALE FACTORY IS LIMITED BY THE CONTAMINATION OF PORPHYRA SEAWEED USED FOR THE MANUFACTURE OF THE FOODSTUFF LAVERBREAD IN SOUTH WALES. DATA GATHERED FOR THE ESTIMATION OF THE RADIATION DOSE RECEIVED BY CONSUMERS OF THIS FOOD, AND ESTIMATES OF THE ANNUAL DOSE TO THE GASTRO-INTESTINAL TRACT OF ADULTS EATING AT THE HIGHEST OBSERVED RATE, ARE PRESENTED FOR THE YEARS SINCE 1959. IN PARTICULAR, THE PRODUCTION, DISTRIBUTION, AND CONSUMPTION OF LAVERBREAD ARE DISCUSSED IN RELATION TO THEIR EFFECT ON THE INTERPRETATION OF RADIOASSAY RESULTS FROM THE SEAWEED COLLECTED IN THE VICINITY OF THE WINDSCALE DISCHARGE POINT.

*DIETARY HABIT + *DOSE CALCULATION, INTERNAL + BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + CERIUM + NIOBIUM + RUTHENIUM + STRONTIUM + UNITED KINGDOM + WASTE DISPOSAL, OCEAN + ZIRCONIUM

15-18551 ALSO IN CATEGORY 14
ALONSO A
GENERALIZATION OF HOLLANDS METHOD TO ASSESS GAMMA-DOSES FROM RADIOACTIVE CLOUDS
JUNTA DE ENERGIA NUCLEAR, MADRID, SPAIN
8 PAGES, 4 FIGURES, 12 REFERENCES, HEALTH PHYSICS 13(5), PAGES 487-94 (MAY 1967)

A METHOD TO ASSESS WHOLE-BODY GAMMA DOSES FROM RADIOACTIVE CLOUDS IS PRESENTED. THE CALCULATIONS ARE CARRIED OUT BY MEANS OF SIMPLE NOMOGRAMS WHICH YIELD A GEOMETRY CORRECTION FACTOR TO BE APPLIED TO THE INFINITE-CLOUD MODEL. THE PROCEDURE IS BASED ON A GENERALIZATION OF HOLLANDS SOLUTION TO INCLUDE NONISOTROPIC GAUSSIAN CLOUDS. THIS METHOD IS CAPABLE OF RENDERING ACCURATE VALUES WITHOUT USING ELABORATE DIGITAL CODES, AND IT IS USEFUL FOR A RAPID EVALUATION OF WHOLE-BODY GAMMA DOSES FROM CLOUDS OF REACTOR DEBRIS.

*DOSE CALCULATION, EXTERNAL + GAMMA + MATHEMATICAL TREATMENT + SPAIN

15-18552 ALSO IN CATEGORY 14
BENTON EV + COLLIVER MM
REGISTRATION OF HEAVY IONS DURING THE FLIGHT OF GEMINI VI
U.S. NAVAL RADIOLOGICAL DEFENSE LABORATORY, SAN FRANCISCO
6 PAGES, 5 FIGURES, 11 REFERENCES, HEALTH PHYSICS 13(5), PAGES 495-500 (MAY 1967)

SEVERAL SMALL DISKS OF CELLULOSE NITRATE PLASTIC WERE INCLUDED AS A PART OF A PASSIVE DOSIMETRY PACKAGE ABOARD THE GEMINI VI SPACECRAFT FOR RECORDING THE HEAVY COMPONENT OF THE SOLAR AND THE PRIMARY COSMIC RADIATION. AN AVERAGE OF 230 TRACKS/SQ. CM PER DAY WAS OBSERVED. OF THESE, ABOUT 70 TRACKS/SQ. CM WERE BACKGROUND ALPHA PARTICLE TRACKS PRODUCED BY NATURAL RADIOACTIVITY. ABOUT 159 TRACKS/SQ. CM-DAY WERE DUE TO STOPPING ALPHA PARTICLES OF SOLAR AND GALACTIC ORIGIN. A FEW HEAVY RECOIL ION TRACKS WERE ALSO OBSERVED. ABOUT ONE TRACK/SQ. CM-DAY WAS JUDGED TO BE DUE TO THE HEAVY PRIMARY COSMIC-RAY PARTICLES. RELATIVISTIC IRON NUCLEI APPARENTLY DO NOT PRODUCE TRACKS IN THIS SENSITIVITY OF CELLULOSE NITRATE. IT APPEARS THAT BY STACKING SHEETS OF CELLULOSE NITRATE INTO SANDWICH CONFIGURATIONS IT IS POSSIBLE TO HAVE A SIMPLE AND DIRECT MEANS OF MEASURING THE INTEGRATED FLUX AND ENERGY SPECTRA OF SOLAR ALPHA PARTICLES INSIDE THE MANNED SPACECRAFT.

*SPACECRAFT + ALPHA EMITTER + COSMIC RADIATION + DOSIMETRY, GENERAL

15-18553 ALSO IN CATEGORY 14
WATT DE

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-18553 *CONTINUED*
DOSE-EQUIVALENT RATE FROM COSMIC RAY NEUTRONS
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, CHAPEL CROSS
7 PAGES, 2 FIGURES, 2 TABLES, 25 REFERENCES, HEALTH PHYSICS 13(5), PAGES 501-07 (MAY 1967)

ON THE BASIS OF PUBLISHED DATA FROM COSMIC RAY STUDIES, THE DOSE-EQUIVALENT RATE DUE TO NATURALLY OCCURRING NEUTRON RADIATION IS CALCULATED TO BE 11.8 PLUS OR MINUS 1.0 MREM/YR FOR A SMALL PIECE OF TISSUE IN AIR AT SEA-LEVEL AND AT A LOCATION WITH GEOGRAPHICAL COORDINATES 55 DEG 2 MIN N, 3 DEG 21 MIN W. EXPERIMENTAL MEASUREMENTS, USING THE SPHERICAL-MODERATOR TECHNIQUE, CONFIRM THE CALCULATED VALUE FOR THE NATURAL DOSE-EQUIVALENT RATE.

*DOSE CALCULATION, EXTERNAL + *DOSE MEASUREMENT, EXTERNAL + COSMIC RADIATION + NEUTRON + UNITED KINGDOM

15-18554 ALSO IN CATEGORY 1
DUNNING GM
RESPONSIBILITY AND JUDGMENT - INTERPLAY IN HEALTH PHYSICS DECISIONS
ATOMIC ENERGY COMMISSION, WASHINGTON, D.C.
4 PAGES, 1 TABLE, 6 REFERENCES, HEALTH PHYSICS 13(5), PAGES 509-12 (MAY 1967)

NUCLEAR WEAPONS TESTING AND THE DEVELOPMENT OF RADIATION PROTECTION GUIDES FURNISH TWO EXAMPLES OF THE INTERPLAY OF RESPONSIBILITY AND JUDGEMENT IN HEALTH-PHYSICS DECISIONS. ONE GROUP OF PERSONS, THOSE LIVING NEAR THE NEVADA TEST SITE, HAS IN EFFECT BEEN CALLED ON TO ACCEPT SOMEWHAT MORE RADIATION EXPOSURE THAN THE AVERAGE. IN THE CASE OF RADIATION PROTECTION GUIDES IT IS NECESSARY TO BALANCE ANTICIPATED BENEFITS FROM USE OF ATOMIC ENERGY AGAINST THE POTENTIAL BIOLOGICAL RISKS AND TO BALANCE AVAILABLE PROTECTIVE ACTIONS TO REDUCE EXPOSURE AGAINST POTENTIALLY ADVERSE EFFECTS FROM SUCH ACTIONS.

*MAXIMUM PERMISSIBLE DOSE (MPD) + RADIATION PROTECTION, ORGANIZATION + RADIATION SAFETY AND CONTROL + USAEC (U.S. ATOMIC ENERGY COMMISSION)

15-18555 ALSO IN CATEGORY 14
A METHOD FOR THE ESTIMATION OF RESPIRATORY DEPOSITION OF AIRBORNE MATERIALS
U.S. PUBLIC HEALTH SERVICE + HARVARD UNIVERSITY
5 PAGES, 1 FIGURE, 3 TABLES, 6 REFERENCES, HEALTH PHYSICS 13(5), PAGES 513-17 (MAY 1967)

THE RELATION BETWEEN THE CONCENTRATION OF AN AIRBORNE MATERIAL AND ITS RESPIRATORY-TRACT DEPOSITION IS ESSENTIAL FOR EVALUATING ITS THREAT TO HEALTH. A SOLUTION TO THIS PROBLEM WAS ATTEMPTED, USING TWO MATHEMATICAL MODELS TIED TOGETHER BY LINEAR-PROGRAMMING TECHNIQUES. THE APPROACH YIELDED REASONABLE RESULTS FOR SELECTED AIRBORNE RADIONUCLIDES, CONSISTENT WITH CURRENT RESPIRATORY-DEPOSITION MODELS.

*ENVIRONMENTAL CONDITION + AEROSOL, RADIOACTIVE + FALLOUT + RADIOISOTOPE

15-18556
DE FRANCESCHI L
DOSE VS. DOSE RATE IN HAULING UNDERWATER RADIOACTIVE SOURCES (A PROBLEM OF HEALTH PHYSICS IN A SWIMMING POOL REACTOR)
CENTRO AUTOMOMO MILITARE ENERGIA NUCLEARE
3 PAGES, 3 FIGURES, HEALTH PHYSICS 13(5), PAGES 517-19 (MAY 1967)

CORRELATIONS ARE PRESENTED WHICH ENABLE THE HEALTH PHYSICIST TO DETERMINE ALLOWABLE WORKING TIMES WHEN DOSE RATE IS KNOWN.

*DOSE CALCULATION, EXTERNAL + DOSE + ITALY + REACTOR, WATER

15-18557
ABDULLAH SA + HOSSAIN A + HUSSAIN M + SIDDIQI AA
GAMMA DOSE RATES AROUND A VAN-DE-GRAAFF ACCELERATOR
ATOMIC ENERGY CENTRE, DACCA, EAST PAKISTAN
3 PAGES, 1 FIGURE, 2 REFERENCES, HEALTH PHYSICS 13(5), PAGES 519-21 (MAY 1967)

GAMMA RADIATION LEVELS WERE MEASURED WITHIN THE SHIELDED ROOM HOUSING A 3-MEV VAN DE GRAAFF ACCELERATOR. PROFILES ARE SHOWN AROUND THE MACHINE.

*ACCELERATOR + DOSE MEASUREMENT, EXTERNAL + GAMMA + PAKISTAN

15-18559
KEIL A + RAJEWSKY B
DETERMINATION OF DOSE RATES IN THE REGION OF NATURAL AMBIENT RADIATION WITH GAMMA-SPECTROMETRY
MAX-PLANCK-INSTITUT FÜR METALLFORSCHUNG, GERMANY
1 PAGE, ATOMPRAXIS 12(11) PAGE 579 (1966)

RECOMMENDATIONS BASED ON SCIENTIFIC PRINCIPLES AND LEGALLY VALID REGULATIONS ARE NECESSARY FOR THE PROTECTION OF THE POPULATION AND INDIVIDUALS AGAINST IONIZING RADIATION AND RADIOACTIVE CONTAMINATION. EPIDEMIOLOGICAL STUDIES WERE MADE ON THE RELATIONSHIP BETWEEN AMBIENT

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-18559 *CONTINUED*
RADIATION AND MORTALITY DUE TO CONGENITAL DEFORMITIES, AS WELL AS DUE TO CANCER AND LEUKEMIA.
MEASUREMENTS WERE MADE OF DOSE RATES IN INHABITED AREAS.

*DOSE CALCULATION, EXTERNAL + GERMANY + SPECTROMETRY, GAMMA

15-18563 ALSO IN CATEGORY 14
SCHULTE HF
THE CONTRIBUTION OF INDUSTRIAL HYGIENE TO THE PROTECTION OF THE RADIATION WORKER
LOS ALAMOS SCIENTIFIC LAB., NEW MEXICO
LA-DC-7582 + CONF-660910-1 +. 5 PAGES, FOR PRESENTATION AT INTERNATIONAL CONGRESS ON OCCUPATIONAL HEALTH,
VIENNA, AUSTRIA

DESCRIBES THE RELATION OF INDUSTRIAL HYGIENE TO RADIATION SAFETY. THE PARALLEL NATURE OF THE
WORK OF THE TWO DISCIPLINES ARE EMPHASISED.

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

*RADIATION SAFETY AND CONTROL + LASL (LOS ALAMOS SCIENTIFIC LABORATORY) +
RADIATION PROTECTION, ORGANIZATION

15-18565 ALSO IN CATEGORIES 9 AND 18
ENGINEERING MATERIALS LIST (SUPPL. SHEETS)
DIVISION OF TECHNICAL INFORMATION, AEC
TID-4100 (SUPPL. 40) +. 50 PAGES, SEPTEMBER 1967

INCLUDES LITR INSTRUMENTAL MODIFICATION FOR UPDATING, AS WELL AS TRANSISTORIZED IONCHAMBER
SURVEY METER AND REM-RESPONDING POPTABLE FAST-NEUTRON SURVEY METER.

AVAILABILITY - DIVISION OF TECHNICAL INFORMATION, OAK RIDGE, TENN.

*CONTROL SYSTEM + *MONITOR, RADIATION, PERSONNEL + ENGINEERING DRAWING LIST +
LITR (LOW INTENSITY TEST REACTOR) + MODIFICATION, SYSTEM OR EQUIPMENT

15-18749
FLEISCHMANN AW
TWO INCIDENTS INVOLVING EXPOSURE OF DENTISTS TO IONIZING RADIATION
NEW SOUTH WALES DEPT. OF PUBLIC HEALTH, SYDNEY
1 PAGE, AUSTRAL. DENTAL J., 10, PAGE 434, (DECEMBER 1965)

HIGH QUARTERLY FILM-BADGE READINGS GREATER THAN 3 REMS ON DENTISTS REVEALED - (CASE 1) WEIGHT
OF LEAD SHIELD AROUND TUBE AND SLOPED FLOOR REQUIRED DENTIST TO HOLD UNIT AGAINST PATIENTS
HEAD. (CASE 2) A FAULT HAD DEVELOPED IN THE TIMER, AND AFTER THE FIRST EXPOSURE STAYED ON.
ONLY THE OPERATORS HABIT OF TURNING THE UNIT OFF AT THE MAIN SWITCH SAVED NUMEROUS PERSONS
FROM EXCESSIVE DOSE.

*PERSONNEL EXPOSURE, RADIATION + *RADIOLOGY + AUSTRALIA + FAILURE, EQUIPMENT + FAILURE, OPERATOR ERROR +
INCIDENT, ACTUAL, NONREACTOR + X-RAY

15-18750 ALSO IN CATEGORY 17
LEPPARD LR
RADIOACTIVITY - ACCIDENT HAZARDS
ONTARIO DEPARTMENT OF HEALTH, TORONTO, ONTARIO
2 PAGES, CANADIAN JOURNAL OF PUBLIC HEALTH 57, PAGES 355-6 (AUGUST 1966)

ALTHOUGH PU-239 HAS A VERY LOW ALLOWABLE BODY BURDEN, RECENT ANIMAL-EXPERIMENT PROJECTION
SUGGESTS IF 1.5 LB OF CHEMICALLY INNOCUOUS PU-239 WERE EATEN, THE BEST PART OF A MONTH WOULD
PASS BEFORE DEATH. THREE INCIDENTS ARE CITED. (1) A RADIOGRAPHER SET UP BUT TOOK COVER FROM
RAIN. A PASSING CARPENTER MISTOOK THE SOURCE FOR A PLUMB BOB AND POCKETED IT. HE WAS UNDER
MEDICAL CARE FOR A YEAR. (2) A RADIOGRAPHER BACKSAWED THROUGH A SOURCE CONTAINER WHILE
TRYING TO FREE IT. (3) SOME CHILDREN BROKE INTO A FACTORY SHED CONTAINING SOME FORGOTTEN
RADIUM PAINT AND THREW THE GLASS BOTTLE AROUND, CONTAMINATING THEMSELVES AND THE NEIGHBORHOOD.

*RADIATION IN PERSPECTIVE + *RADIOGRAPHY + *RADIUM + COATING, SURFACE + FAILURE, OPERATOR ERROR +
INCIDENT, ACTUAL, NONREACTOR + PERSONNEL EXPOSURE, RADIATION + SOURCE, RADIATION

15-18840
NEWTON CE + LARSON HV + HEID KR + NELSON IC + FUQUA PA + NORWOOD WD + MARKS S + MAHONY TD
TISSUE ANALYSIS FOR PLUTONIUM AT AUTOPSY
BATTELLE-NORTHWEST, RICHLAND, WASH. PACIFIC NORTHWEST LAB. + HANFORD OCCUPATIONAL HEALTH FOUNDATION,
RICHLAND, WASH. + KADLEC METHODIST HOSPITAL, RICHLAND, WASHINGTON
BNWL-SA-1232 + CONF-670521-5 +. 18 PAGES, TABLES, 1966

WHEN RADIATION WORK INCLUDES LONG-TERM EXPOSURES TO PLUTONIUM AEROSOLS VARYING IN ACTIVITY,

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-18840 *CONTINUED*

PARTICLE SIZE, AND COMPOUND, A SATISFACTORY ASSESSMENT OF INTERNAL DEPOSITIONS MAY NOT BE OBTAINABLE ON AN INDIVIDUAL BASIS. ONE METHOD, WHICH CIRCUMVENTS MANY UNKNOWNNS AND WHICH CAN SERVE AS A GUIDE IN ESTIMATING THE EFFECTIVENESS OF DEPOSITION PREVENTION PRACTICES, IS THE DETERMINATION OF PLUTONIUM IN VARIOUS ORGAN TISSUE THROUGH A PROGRAM OF TISSUE SAMPLING AND ANALYSIS AT AUTOPSY. SUCH A PROGRAM WAS STARTED AT HANFORD IN 1949 TO OBTAIN SAMPLES FROM BOTH FORMER WORKERS AND LOCAL RESIDENTS. RESULTS ARE DISCUSSED.

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

*DOSE MEASUREMENT, INTERNAL + *PLUTONIUM + *RADIOCHEMICAL ANALYSIS + AEROSOL, BIOLOGICAL + BIOLOGICAL CONCENTRATION, MAN + BIOMEDICAL + INHALATION + RADIATION IN PERSPECTIVE

15-18841

HEID KR + HENLE RC + SELBY JM
PROMPT MITIGATORY ACTION AFTER ACCIDENTAL EXPOSURE TO RADIONUCLIDES
BATTELLE-NORTHWEST, RICHLAND, WASH. PACIFIC NORTHWEST LAB.
BNWL-SA-962 + CONF-670521-7 +. 11 PAGES, 1966, FROM SYMPOSIUM ON DIAGNOSIS AND TREATMENT OF DEPOSITED RADIONUCLIDES, RICHLAND, WASH.

A VARIETY OF MANUFACTURING AND RESEARCH-AND-DEVELOPMENT PROGRAMS INVOLVING SEVERAL ISOTOPES AND SEVERAL CHEMICAL FORMS OF PLUTONIUM IS CONDUCTED AT HANFORD INVOLVING ABOUT 20% OF THE 10,000 EMPLOYEES. ACCIDENTS ASSOCIATED WITH SUCH WORK REQUIRE PROMPT ANALYSIS AND ACTION BY TRAINED RADIATION-PROTECTION PERSONNEL TO ENSURE RAPID EVALUATION OF THE INTERNAL EXPOSURE POTENTIAL AND TO FACILITATE THERAPEUTIC TREATMENT TO MINIMIZE DEPOSITION WITHIN THE BODY. PROCEDURES FOR INITIAL SCREENING, REPORTING, AND EVALUATING OF THE SEVERITY OF THE ACCIDENT AND THE LIAISON ESTABLISHED BETWEEN MEDICAL, ATOMIC ENERGY COMMISSION, REGULATORY, AND RADIATION-PROTECTION PERSONNEL ARE BRIEFLY DISCUSSED. THE EFFECTIVENESS OF THESE PROCEDURES, BASED ON EXPERIENCE AT HANFORD, IS REVIEWED. MODES OF INTAKE WHICH REQUIRE ADDITIONAL STUDY TO DEVELOP IMPROVED CRITERIA FOR EARLY EVALUATION OF THE DEPOSITION ARE DISCUSSED.

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

*ACCIDENT ANALYSIS + *EMERGENCY PROCEDURE + INHALATION + MONITOR, RADIATION, PERSONNEL + MONITOR, RADIATION, SAMPLING + PERSONNEL EXPOSURE, RADIATION + PLUTONIUM + RESEARCH AND DEVELOPMENT PROGRAM

15-18843

HRANITZKY EB + SHALEK RJ
SKIN DOSES FROM GLASS AND BERYLLIUM WINDOW X-RAY TUBES IN MAMMOGRAPHY
UNIVERSITY OF TEXAS, HOUSTON
4 PAGES, 1 FIGURE, 4 TABLES, 5 REFERENCES, RADIOLOGY 88, PAGES 668-71 (APRIL 1967)

THE RADIATION DOSES DELIVERED TO THE SKIN DURING MAMMOGRAPHY MAY RANGE FROM LESS THAN 2 RADS TO ABOUT 23 RADS PER FILM EXPOSURE, DEPENDING UPON SEVERAL EXPOSURE FACTORS OF THE TECHNIC EMPLOYED. IN THIS STUDY OF THE EGAN TECHNIC (1), WHICH UTILIZES INDUSTRIAL TYPE M FILM, RADIATION DOSES TO THE SKIN WERE DETERMINED FOR BOTH GLASS- AND BERYLLIUM-WINDOW X-RAY TUBES. OF PARTICULAR INTEREST WAS THE EFFECT OF ADDED FILTRATION UPON THE RADIATION DOSE DELIVERED BY THE BERYLLIUM-WINDOW TUBE. EARLIER MEASUREMENTS OF DOSE FROM GLASS-WINDOW TUBES ARE PRESENTED FOR COMPARISON.

*BERYLLIUM + *DOSE + *MEASUREMENT, GENERAL + *X-RAY + FILTER, GLASS + RADIATION DAMAGE

15-18844

PRINGLE RW + ROULSTON KI + BROWNELL GM
RADIATION DETECTORS
CANADIAN PATENT 745,708 +. 46 PAGES, 4 FIGURES, NOVEMBER 1, 1966

DESCRIBES A PORTABLE METER ESPECIALLY DESIGNED FOR DETECTING RADIATION FROM MINERALS, LIQUIDS, AND GASES. SENSITIVITY OF 1 X 10⁻¹⁰ ROENTGENS PER SECOND MAKES IT USEFUL FOR AERIAL PROSPECTING. THE ENERGY AS WELL AS THE INTENSITY OF GAMMA RADIATION MAY BE MEASURED. OPERATION DEPENDS ON THE SCINTILLATION OF CERTAIN CRYSTALS (SUCH AS SODIUM IODIDE ACTIVATED WITH THALLIUM) WHEN BOMBARDED BY GAMMA RAYS. MEANS FOR LENGTHENING AND AMPLIFYING SMALL PULSES ARE DETAILED. IN ANOTHER EMBODIMENT, THE METER SERVES AS A NEUTRON SPECTROMETER. ELECTRONS CAN ALSO BE DETECTED.

AVAILABILITY - U.S. PATENT OFFICE, DEPT. OF COMMERCE, WASHINGTON, D. C. 30 CENTS PER PAGE

*BIOMEDICAL + *GROSS GAMMA + *PATENT + *RADIATION SAFETY AND CONTROL + *SPECTROMETRY, NEUTRON + CANADA + COUNTER + INSTRUMENTATION, RADIATION MONITORING

15-18846

THOMPSON JC + ALEXANDER RR + COMAR CL
DIETARY SR-90 REDUCTIONS THROUGH FOOD SUBSTITUTIONS IN THE FRUIT AND VEGETABLE CATEGORY
CORNELL UNIVERSITY, ITHACA, NEW YORK
8 PAGES, 8 TABLES, 13 REFERENCES, JOURNAL OF NUTRITION 91, PAGES 375-82 (MARCH 1967)

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-18846 *CONTINUED*

MANAGEMENT OF DIETARY PRACTICE TO MINIMIZE INTAKE OF SR-90 BY HUMANS REQUIRES KNOWLEDGE OF THE RELATIVE SR-90 AND CALCIUM CONTRIBUTIONS OF DIFFERENT FOODSTUFFS. AN ANALYSIS IS PRESENTED FOR FRUITS AND VEGETABLES, A CATEGORY GENERALLY NEGLECTED. THE EXTENT OF REDUCTION POSSIBLE DEPENDS ON THE NATURE OF THE DIET AND THE DEGREE OF CONSTRAINT IMPOSED. FOR EXAMPLE, THE MAXIMAL EFFECT FROM MODIFICATIONS IN PATTERNS OF CONSUMPTION AND ROUTINE PROCESSING OF FRUITS AND VEGETABLES OCCURS WITH A DIET OF MINIMAL DAIRY PRODUCTS AND AMOUNTS TO ABOUT A 40% REDUCTION IN SR-90/CA INTAKE. INFORMATION OF THIS TYPE CAN BE USED IN CONJUNCTION WITH OTHER PRACTICES DESIGNED TO REDUCE RADIONUCLIDE INTAKE.

*CALCIUM + *DIETARY HABIT + *STRONTIUM + BIOLOGICAL CONCENTRATION, FOOD + BIOLOGICAL CONCENTRATION, MAN + BIOLOGICAL CONCENTRATION, MILK

15-18847

HAYS MT + WEGNER LH

A MATHEMATICAL AND PHYSIOLOGICAL MODEL FOR EARLY DISTRIBUTION OF RADIOIODIDE IN MAN
UNIVERSITY OF CALIFORNIA, LOS ANGELES

10 PAGES, 4 FIGURES, 25 REFERENCES, J. APPL. PHYSIOL. 20, PAGES 1319-28 (NOVEMBER 1965)

THE MODEL DESCRIBED FOR THE EARLY DISTRIBUTION OF RADIOIODIDE IN MAN IS FORMALIZED AS A SET OF 8 SIMULTANEOUS DIFFERENTIAL EQUATIONS, EACH PREDICTING THE RATE OF CHANGE OF RADIOIODIDE IN A COMPARTMENT. THE EQUATIONS WERE FITTED BY NUMERICAL INTEGRATION ON A DIGITAL COMPUTER TO PLASMA CURVES FROM SESSIONS WITH AND WITHOUT ASPIRATION OF GASTRIC CONTENTS, CURVES OF THE ASPIRATED RADIOIODIDE, AND THYROIDAL AND RENAL PLASMA CLEARANCE RATES. IN THIS MODEL, PLASMA RADIOIODIDE IS DISTRIBUTED REVERSIBLY TO THE ERYTHROCYTES, INTERSTITIAL FLUID (SPACE E), AND A SLOWLY DIFFUSIBLE SPACE (SPACE C). DISTRIBUTION TO THE THYROID AND KIDNEY IS IRREVERSIBLE. RADIOIODIDE DISTRIBUTED TO THE SALIVARY GLANDS AND GASTRIC MUCOSA MUST PASS THROUGH A GASTROINTESTINAL CYCLE BEFORE EVENTUAL REABSORPTION FROM THE INTESTINE.

*BIOLOGICAL CONCENTRATION, MAN + *IODINE + *MODEL TESTING + BIOMEDICAL + COMPUTER, DIGITAL + DOSE + EQUATION, GENERAL + RADIONUCLIDE, INDUCED

15-18848

FERRIS BG

ENVIRONMENTAL HAZARDS - ELECTROMAGNETIC RADIATION
HARVARD SCHOOL OF PUBLIC HEALTH

5 PAGES, 1 FIGURE, 2 TABLES, THE NEW ENGLAND JOURNAL OF MEDICINE 275, PAGES 1100-5 (NOVEMBER 17, 1966)

BIOLOGICAL EFFECTS OF MICROWAVES, RADIO WAVES, INFRARED, UV, AND IONIZING RADIATIONS ARE REVIEWED AS A BASIS FOR A DISCUSSION OF HAZARDS OF THESE RADIATIONS. SELECTED EFFECTS OF UV ARE DESCRIBED. THE SHORTER UV WAVELENGTHS ARE IMPORTANT AS A HAZARD WHEN GERMICIDAL LAMPS ARE USED OR WHEN OTHER MAN-MADE SOURCES MAY BE OPERATING. THE UV IN SUNLIGHT OR FROM ARTIFICIAL SOURCES IS NOT ENTIRELY SAFE. AS WITH IONIZING RADIATION, BIOLOGIC MANIFESTATIONS DO NOT APPEAR UNTIL AFTER EXPOSURE. IF THE EXPOSURE IS SUFFICIENTLY GREAT, THERE MAY BE MARKED SYSTEMIC EFFECTS SUCH AS FEVER, NAUSEA, AND MALAISE. IN THE AREAS WITH GREATEST EXPOSURE, PREMALIGNANT OR MALIGNANT CHANGES ARE ALSO MOST LIKELY TO DEVELOP.

*BIOLOGICAL CONCENTRATION, MAN + *HAZARD, RELATIVE + *SURVEY, RADIATION, ENVIRONMENTAL + BIOMEDICAL + LASER + RADIATION EFFECT

15-18849

ALSO IN CATEGORY 14

YAMAGATA N

BLOOD CONCENTRATIONS OF CS-137 IN PEOPLE IN THE FAR EAST AND THE PACIFIC REGION
INSTITUTE OF PUBLIC HEALTH, TOKYO

2 PAGES, 3 TABLES, 7 REFERENCES, NATURE 213, PAGES 1152-3 (MARCH 18, 1967)

A METHOD OF BLOOD ANALYSIS IS PROPOSED AS A SUBSTITUTE FOR WHOLE-BODY COUNTING IN COUNTRIES WHERE EXPENSIVE COUNTERS ARE NOT GENERALLY AVAILABLE. A MINIMUM OF ABOUT 100 ML OF BLOOD IS REQUIRED FOR DETERMINATION OF CS-137. FOR ESTIMATING TOTAL BODY BURDEN, THE FACTOR RELATING THIS TO BLOOD CONCENTRATION MUST BE KNOWN. THIS WAS FOUND TO AVERAGE 5.99. DATA OBTAINED SINCE NOVEMBER 1965 ARE TABULATED. FOOD HABITS ARE PROBABLY A CAUSE FOR DISCREPANCIES BETWEEN RESULTS OBTAINED FOR INHABITANTS OF VARIOUS PARTS OF THE WORLD. HIGH CONSUMPTION OF SEAFOOD MAY REDUCE THE BODY CONCENTRATIONS OF CS-137. IT IS CONCLUDED THAT BLOOD ANALYSIS APPEARS TO BE A USEFUL MEANS BY WHICH WORLDWIDE INFORMATION ON CS-137 CONCENTRATIONS IN THE GENERAL PUBLIC CAN BE OBTAINED.

*BIOLOGICAL CONCENTRATION, MAN + *CESIUM + *COUNTER + COUNTER, WHOLE BODY + DIETARY HABIT + GROSS BETA + RADIOCHEMICAL ANALYSIS

15-18863

RICHEY EO

THRESHOLD DISTANCES FOR RETINAL BURNS FROM LOW-YIELD NUCLEAR DETONATIONS
SCHOOL OF AEROSPACE MEDICINE, BROOK AFB, TEXAS

AD-641188 + SAM-TR-66-49 +. 16 PAGES, 18 FIGURES, 11 REFERENCES, JULY 1966

A METHOD IS GIVEN FOR PREDICTING THE THRESHOLD DISTANCES AT WHICH MINIMAL RETINAL BURNS WILL BE PRODUCED BY NUCLEAR DETONATIONS. THIS METHOD RELATES CALCULATED RETINAL EXPOSURE TO EXPERIMENTALLY DETERMINED BURN-THRESHOLD DATA. PREDICTED THRESHOLD DISTANCES ARE DETERMINED

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-18863 *CONTINUED*

FOR THE HUMAN EYE EXPOSED TO SEA-LEVEL, AIR-BURST DETONATIONS FROM 0.01 TO 10 KT. YIELD. CALCULATIONS INDICATE THAT THE USE OF A FIXED FILTER WITH 2' TRANSMISSION WILL RESULT IN RETINAL EXPOSURES MORE THAN AN ORDER OF MAGNITUDE BELOW THE THRESHOLD EXPOSURE FOR THESE SMALL DAYLIGHT DETONATIONS. FOR NIGHTTIME CONDITIONS, THE RETINAL EXPOSURE IS A FACTOR OF ABOUT 2.5 BELOW THE THRESHOLD EXPOSURE.

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

*BIOLOGICAL CONCENTRATION, MAN + *NUCLEAR DETONATION + *THERMAL CONSIDERATION + EQUATION, GENERAL + EXTRAPOLATION FACTOR + HAZARDS ANALYSIS + MATHEMATICAL STUDY + SAFETY STUDY

15-18970

ALSO IN CATEGORY 9

KAPIL AL + BASCHIERE RJ
SHELTER ATMOSPHERE MONITORING INSTRUMENTS. FINAL REPORT
GENERAL AMERICAN TRANSPORTATION CORP., NILES, ILL., GENERAL AMERICAN RESEARCH DIVISION
AD-642416 + GARD-1277 +. 73 PAGES, REFERENCES, JANUARY 1966

REVIEWED THE ENVIRONMENTAL FACTORS WITHIN FALLOUT SHELTERS TO IDENTIFY THOSE FACTORS THAT CAN REACH DANGEROUS LEVELS DURING OCCUPANCY AND HENCE MUST BE CONTROLLED TO PROTECT THE LIVES OF THE SHELTEREES. A SURVEY WAS THEN MADE TO LOCATE COMMERCIAL INSTRUMENTS FOR MONITORING THESE FACTORS. AS A CONSEQUENCE OF THIS SURVEY, EFFORT WAS DIRECTED TOWARDS DEVELOPING INEXPENSIVE INSTRUMENTS THAT COULD INDICATE THE EFFECTIVE TEMPERATURE AND MEASURE THE CONCENTRATIONS OF THE VARIOUS GASES IN THE SHELTER.

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

CIVIL DEFENSE + ENVIRONMENTAL CONDITION + INSTRUMENTATION, AIR SAMPLING + INSTRUMENTATION, TEMPERATURE + MONITORING PROGRAM, ENVIRONMENTAL

15-18988

KERR GD + POSTON JW + ROBINSON FM
HEALTH PHYSICS AND SAFETY GUIDELINES FOR THE DOSAR FACILITY
OAK RIDGE NATIONAL LABORATORY
ORNL-TM-1981 +. 13 PAGES, 1 TABLE, 6 REFERENCES, SEPTEMBER 1967

THE HEALTH PHYSICS AND SAFETY POLICIES AT THE DOSAR FACILITY ARE TO CONDUCT ALL ACTIVITIES WITH THE LOWEST REASONABLE RISK OF PERSONAL INJURY OR PROPERTY LOSS AND TO PERFORM ALL WORK AND MAINTAIN THE WORKING ENVIRONMENT IN ACCORDANCE WITH LABORATORY HEALTH PHYSICS AND SAFETY REGULATIONS. STAFF MEMBERS AND VISITORS ARE REQUIRED TO FOLLOW THE GUIDELINES OF THIS REPORT. THEY ARE URGED ALSO TO GIVE DUE CONSIDERATION TO SAFETY AT ALL TIMES. THE FACILITY SUPERVISOR, REACTOR SUPERVISOR, ACCELERATOR SUPERVISOR, AND FACILITY HEALTH PHYSICIST ARE ALWAYS AVAILABLE FOR DISCUSSION OF THE MORE DETAILED PROBLEMS CONCERNING EXPERIMENTS, INCLUDING SAFETY ASPECTS.

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

*REACTOR SAFETY SYSTEM + INSTRUMENTATION, GENERAL + MONITOR, RADIATION, GENERAL + PERSONNEL EXPOSURE, RADIATION + SAFETY ANALYSIS + SURVEY, RADIATION, GENERAL + TRANSPORTATION AND HANDLING

15-19678

PART 50-204 SAFETY AND HEALTH STANDARD FOR FEDERAL SUPPLY CONTRACTS--RADIATION STANDARD FOR MINING
FEDERAL REGISTER VOLUME 32, NO. 219, NOVEMBER 10, 1967, AND ATOMIC ENERGY CLEARINGHOUSE 131461, PAGE 25-26
(NOVEMBER 13, 1967)

AMENDED REGULATION IS EFFECTIVE DECEMBER 14, 1967. PARAGRAPHS 50-204.321 (B,C,D) STATE THAT EXPOSURE TO RADON DAUGHTERS SHALL BE CONTROLLED SO NO EXPOSURE OF MORE THAN 1.8 WORKING-LEVEL MONTHS IN CONSECUTIVE 3 MONTHS, AND NOT MORE THAN 3.6 WLM IN ANY CONSECUTIVE 12 MONTHS. ALLOWS MINES UNTIL JANUARY 1, 1969, TO COMPLY. PROVIDES FOR RECORD KEEPING. ALLOWS NO RECORD KEEPING FOR ABOVE-GROUND PERSONNEL IF CONCENTRATIONS ARE LESS THAN 0.3 W-1.

*MINING + *RADON + *REGULATION, AEC + MAXIMUM PERMISSIBLE CONCENTRATION (MPC) + RADIATION SAFETY AND CONTROL + URANIUM

15-19766

CODE OF PRACTICE FOR THE PROTECTION OF PERSONS EXPOSED TO IONIZING RADIATIONS IN RESEARCH AND TEACHING
GREAT BRIT. MINISTRY OF LABOUR
NP-16199 +. 64 PAGES, 1957

THIS CODE OF PRACTICE IS MADE UP OF THREE SECTIONS. PART A GIVES THE PROTECTION RULES FOR X RAYS FOR DIAGNOSTIC PURPOSES AND X RAYS OR GAMMA-RAY-BEAM UNITS FOR THERAPEUTIC USE. PART B GIVES THE PROTECTION RULES APPLICABLE TO THE THERAPEUTIC, DIAGNOSTIC, OR TRACER USES OF RADIOACTIVE ISOTOPES, EITHER SEALED OR UNSEALED. THE SEALED SOURCES INCLUDE RADIUM, RADON, OR COBALT IN NEEDLES, TUBES, OR APPLICATORS, USED FOR PURPOSES OTHER THAN GAMMA-RAY-BEAM THERAPY. A SUPPLEMENT CONTAINS FUNDAMENTAL SCIENTIFIC INFORMATION TOGETHER WITH DETAILS OF

CATEGORY 15
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-19766 *CONTINUED*
USE IN DESIGNING DEPARTMENTS.

AVAILABILITY - HER MAJESTYS STATIONERY OFFICE, LONDON

*CODES AND STANDARDS + *RADIOLOGY + RADIATION INJURY, TREATMENT OF + RADIATION PROTECTION, ORGANIZATION +
RADIATION SAFETY AND CONTROL + RADIOISOTOPE + UNITED KINGDOM

CATEGORY 16
METEOROLOGICAL CONSIDERATIONS

16-16933 ALSO IN CATEGORY 15
ARNSTEN ME
SENSITIVITY OF MORTALITY ESTIMATES TO UNCERTAINTIES IN SOME NUCLEAR DAMAGE PARAMETERS
RAND CORP., SANTA MONICA, CALIF.
RM-4707-TAB(P.21) +. 143 PAGES, FIGURES, NOVEMBER 1966

THE GRAPHS OF THIS MEMORANDUM EXHIBIT THE MORTALITIES IN HYPOTHETICAL NUCLEAR ATTACKS ON THE UNITED STATES AS ONE VARIES THE ESTIMATES OF THE LETHALITY OF PROMPT EFFECTS AND OF RADIATION (BOTH ACUTE AND PROTRACTED EXPOSURE) AND OF SUCH PARAMETERS AS THE FISSION FRACTION, THE GAMMA ACTIVITY LEVEL, ACTIVITY-PARTICLE-SIZE DISTRIBUTIONS, WINDS, AND CIVIL DEFENSE POSTURE. THUS ONE CAN EXPLORE THE SENSITIVITY OF ATTACK OUTCOMES TO UNCERTAINTIES IN A NUMBER OF IMPORTANT PARAMETERS.

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

*CIVIL DEFENSE + *FALLOUT + *NUCLEAR EXPLOSION DEBRIS + DOSE + METEOROLOGY + NUCLEAR DETONATION + PARTICLE SIZE + PARTICULATE + RADIATION DAMAGE + RADIATION EFFECT

16-17487 ALSO IN CATEGORY 15
SALO A
SR-90 AND CS-137 IN PRECIPITATION IN FINLAND
INST. OF RADIATION PHYSICS, HELSINKI
1 PAGE, 1 FIGURE, NATURE 212, PAGE 61 (JULY 1966)

PRECIPITATION HAS BEEN COLLECTED MONTHLY AT 17 STATIONS IN FINLAND SINCE 1961. UNTIL THE END OF 1963 THE RAIN-WATER SAMPLES WERE COLLECTED WITH STAINLESS-STEEL FUNNELS WHICH WERE DRAINED INTO ION-EXCHANGE COLUMNS.

CESIUM + FALLOUT + PRECIPITATION + RAINOUT + STRONTIUM

16-17488
THE INVESTIGATION OF AIR POLLUTION - NATIONAL SURVEY SUMMARY, TABLE 1, FOR THE WINTER ENDED MARCH 1962
WARREN SPRING LABORATORY, GREAT BRITAIN
75 PAGES, 1 TABLE, MARCH 1962

THIS TABLE WAS ARRANGED BY COMPUTER FROM DAILY OBSERVATIONS OF SMOKE AND SULPHUR DIOXIDE MADE FOR UNITED KINGDOM NATIONAL SURVEY OF AIR POLLUTION, USING THE MOST RECENT FORMULA FOR CALCULATING SMOKE CONCENTRATIONS. IT IS IMPORTANT TO NOTE THAT ANY GIVEN POLLUTION MEASUREMENT CHARACTERIZES THE LOCALITY AROUND THAT SITE AND NOT THE WHOLE CITY OR TOWN, AND COMPARISONS SHOULD BE MADE BETWEEN SIMILAR TYPES OF SITES IN DIFFERENT TOWNS.

AVAILABILITY - THE DIRECTOR, WARREN SPRING LABORATORY, STEVENAGE, HERTFORDSHIRE

ATMOSPHERIC CHEMISTRY + ATMOSPHERIC POLLUTION + SMOKE + SOURCE, AREA

16-17489 ALSO IN CATEGORY 15
BAUGH JO + YOSHIKAWA K + KURODA PK
SINGLE FALLOUT PARTICLES AND ZIRCONIUM-95 FROM THE CHINESE NUCLEAR EXPLOSION OF 9 MAY 1966
UNIVERSITY OF ARKANSAS, FAYETTEVILLE
3 PAGES, 1 FIGURE, 1 TABLE, 11 REFERENCES, SCIENCE 155, PAGES 1405-07 (MARCH 1967)

DAILY FLUCTUATIONS OF THE NUMBER OF SINGLE FALLOUT PARTICLES AND ACTIVITY OF ZR-95 IN THE GROUND-LEVEL AIR WERE MEASURED AT FAYETTEVILLE, ARK., FOR ABOUT 3 MONTHS AFTER THE CHINESE NUCLEAR EXPLOSION OF 9 MAY 1966. WE FOUND CYCLIC PATTERN OF VARIATIONS FOR BOTH ZP-95 AND FALLOUT PARTICLES. THIS INDICATED THAT THEY HAD BEEN AIRBORNE FOR A LONG TIME AND HAD TRAVELED FAR. APPARENTLY, SOME OF THE PARTICLES HAD CIRCLED THE WORLD MORE THAN ONCE.

ATMOSPHERIC DIFFUSION, GLOBAL + FALLOUT + RAINOUT + ZIRCONIUM

16-17490 ALSO IN CATEGORY 15
THEIN M + KURODA PK
GLOBAL CIRCULATION OF RADIOCEURIUM ISOTOPES FROM THE MAY 14, 1965 NUCLEAR EXPLOSION
ARKANSAS UNIVERSITY, FAYETTEVILLE
ORO-2529 +. 7 PAGES JOURNAL GEO. PHYS. RES. 72, PAGES 1673-80 (NOVEMBER 15, 1966)

THE CONCENTRATIONS OF CE-141 AND CE-144 IN RAIN WERE MEASURED AT FAYETTEVILLE, ARK., DURING THE PERIOD NOVEMBER 1964 TO DECEMBER 1965. THE CE-141/CE-144 DATA INDICATE THAT THE RADIOCEURIUM ISOTOPES PRODUCED BY THE MAY 14, 1965, CHINESE NUCLEAR TEST EXPLOSION TRAVELED EASTWARD AND CIRCLED THE WORLD AT LEAST TWICE. THE MEAN TROPOSPHERIC RESIDENCE HALF-TIME OF THE CERIUM ISOTOPES WAS CALCULATED TO BE ABOUT 40 DAYS. MEASUREMENTS OF VARIATIONS OF THE RATIOS CE-144/SR-90, CE-141/SR-89, AND CE-141/BA-140 IN RAIN YIELDED EXPERIMENTAL EVIDENCE FOR ATMOSPHERIC FRACTIONATION OF NUCLEAR DEBRIS.

CATEGORY 16
METEOROLOGICAL CONSIDERATIONS

16-17490 *CONTINUED*
ATMOSPHERIC DIFFUSION, GLOBAL + CESIUM + ISOTOPIC FRACTIONATION + RAINOUT + STRONTIUM

16-17655 ALSO IN CATEGORY 18
PRICE ML
SUPPLEMENT 1 TO WORCESTER POLY SAFEGUARDS ANALYSIS FOR OPERATING FROM 1 TO 10 KW
WORCESTER POLYTECHNIC INSTITUTE, WORCESTER, MASS.
2 PAGES, AUGUST 18, 1967, DOCKET NO. 50-134

DEALS WITH POSTULATED RELEASE OF 20 MICROCURIES OF AR-41 PER MINUTE TO THE EXHAUST DUCT.
MAXIMUM ACTIVITY AT STACK OUTLET IS 0.5 MICRO-MICRO C/ML. 1.5-FT STACK IS ON TOP OF
50-FT-HIGH BUILDING. CONTENDS AR-41 CONCENTRATION IS NEGLIGIBLE AT GROUND LEVEL.

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

*ATMOSPHERIC DIFFUSION + *SOURCE, CONTINUOUS + ARGON + BUILDING + POWER UPGRATING + REACTOR, POOL TYPE +
SAFETY ANALYSIS REPORT, GENERAL + TECHNICAL SPECIFICATIONS

16-17904 ALSO IN CATEGORY 14
KAROL IL + KRASNOPEVISEV YV + VILENSKII VD + MALAKHOV SG
COMPARATIVE ANALYSIS OF NUCLEAR EXPLOSION PRODUCT GLOBAL FALLOUTS ON CONTINENTS AND OCEANS
GOSUDARSTVENNYI KOMITET PO ISPOL ZOYANIYU ATOMNOI ENERGII SSSR
AEC-TR-6798 +. FIGURES, TABLES, REFERENCES, TRANSLATED FOR NEW YORK OPERATIONS OFFICE, HEALTH AND SAFETY
LAB., MAY 1966

THIS PAPER ANALYZES QUALITATIVELY AND QUANTITATIVELY THE CONDITIONS OF RADIOACTIVE AEROSOL
GLOBAL FALLOUTS OF NUCLEAR EXPLOSION PRODUCTS AND COMPARES THEIR INTENSITY ABOVE OCEANS AND
CONTINENTS AT DIFFERENT LATITUDES. THE PERIOD FROM SEPTEMBER 1959 TO AUGUST 1961 WAS
ANALYZED. RESEARCH SHIPS WERE USED TO SECURE SAMPLES IN OCEAN AREAS, AND DATA FROM THE
LITERATURE FOR FALLOUT OVER LAND AND FOR CONTENT OF SOILS. SR-90 CONTENT OF THE ATLANTIC
OCEAN IS STATED TO BE AT LEAST DOUBLE THAT OF CONTINENTAL SOIL. THIS IS BELIEVED TO BE DUE
TO COMPLETE RETENTION OF FALLOUT ON WATER.

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

*FALLOUT + AEROSOL + OCEAN AND SEA + STRONTIUM + UNION OF SOVIET SOCIALIST REPUBLICS

16-18076 ALSO IN CATEGORIES 14 AND 15
BAKACS-POLGAR E + KURCZ-CSIKY I
ON THE DETERMINATION OF FISSION PRODUCTS DEPOSITED ON THE GROUND
STATE INSTITUTE OF HYGIENE, BUDAPEST, HUNGARY
2 PAGES, 3 FIGURES, 9 REFERENCES, ATOMPRAXIS 13(7), PAGE 301 AND 302, (JULY 1967)

THE AUTHORS DETERMINED THE MONTHLY AVERAGE OF TOTAL BETA-ACTIVITY AND RADIOACTIVE STRONTIUM
DEPOSITED ON THE GROUND AND ON PLANTS, PARTLY BY DETERMINING THE AIR POLLUTION, PARTLY BY
INVESTIGATING THE TOTAL FALLOUT. THE TOTAL BETA ACTIVITY DUE MAINLY TO SHORT-LIVED ISOTOPES
DECREASED CONSIDERABLY AFTER THE ATOMIC-TRUCE AGREEMENT. THE DECREASE IN SR-90 IN 1964 WAS
LESS PRONOUNCED. THE CHINESE ATOMIC BOMBS, EXPLODED IN OCTOBER 1964 AND MAY 1965, CAUSED
FALLOUT ALTHOUGH ONLY SLIGHT.

*FALLOUT + *SURVEY, RADIATION, ENVIRONMENTAL + GROSS BETA + GROSS GAMMA + RAINOUT + SAMPLING + STRONTIUM

16-18198
LYNN DA + STEIGERWALD BJ + LUDWIG JH
THE NOVEMBER-DECEMBER 1962 AIR POLLUTION EPISODE IN THE EASTERN UNITED STATES
ROBERT A. TAFT SANITARY ENGINEERING CENTER
PHS-PUBL-999-AP-7 +. 22 PAGES, 14 FIGURES, 5 TABLES, 8 REFERENCES, SEPT. 1964

THIS REPORT DOCUMENTS THE SUBJECT EPISODE WITH RESPECT TO METEOROLOGY, AIR QUALITY, AND PUBLIC
REACTION. PARTICULATE AND GASEOUS AIR-QUALITY DATA ARE REPORTED AND DISCUSSED. METEOROLOGY
AND PUBLIC REACTION ARE DISCUSSED WITH REFERENCE TO THE PUBLIC HEALTH SERVICE PROGRAM OF AIR
POLLUTION POTENTIAL FORECASTS. EPIDEMIOLOGICAL ASPECTS NOT CONSIDERED.

AVAILABILITY - ROBERT A. TAFT SANITARY ENGINEERING CENTER, CINCINNATI, OHIO 45226

ATMOSPHERIC CHEMISTRY + ATMOSPHERIC POLLUTION

16-18201
CULKOWSKI WM
ESTIMATING THE EFFECT OF BUILDINGS ON PLUMES FROM SHORT STACKS
ATMOSPHERIC TURBULENCE AND DIFFUSION LABORATORY, ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION (ESSA)
3 PAGES, 1 FIGURE, 11 REFERENCES, NUCLEAR SAFETY 8(3), PAGE 257-259, (SPRING 1967)

THE BEHAVIOR OF PLUMES FROM SHORT STACKS NEAR BUILDINGS IS COMPLICATED BY THE SHAPE OF THE

CATEGORY 16
METEOROLOGICAL CONSIDERATIONS

16-18201 *CONTINUED*

BUILDING, SURROUNDING TERRAIN, AND GUSTINESS OF THE WIND. CONSEQUENTLY THE EFFECTIVE PLUME-SOURCE CONFIGURATION CAN VARY FROM THAT OF AN AREA SOURCE TO A POINT SOURCE (ELEVATED OR GROUND LEVEL) IN A MATTER OF SECONDS. THE CONSERVATIVE ASSUMPTION OF A GROUND-LEVEL POINT RELEASE AS AN UPPER LIMIT IS USEFUL IN ESTIMATING CONCENTRATIONS.

CONCENTRATION, CENTERLINE, MAXIMUM + GAUSSIAN PLUME FORMULA + PLUME BEHAVIOR, GENERAL + SOURCE, ELEVATED + STACK

16-18267 ALSO IN CATEGORY 14

HUZITA A

EFFECT OF RADIOACTIVE FALLOUT UPON THE ELECTRICAL CONDUCTIVITY OF THE LOWER ATMOSPHERE

RADIATION CENTRE OF OSAKA PREFECTURE, SAKAI

10 PAGES, 5 FIGURES, 4 TABLES, 18 REFERENCES, J. GEOMAGNET. GEOLEC. 18, PAGE 363 THRU 372, (1966)

THE RADIOACTIVE FALLOUT FROM THE RUSSIAN TESTS ON OCTOBER 30, 1961, CAUSED A TEMPORARY INCREASE IN ATMOSPHERIC CONDUCTIVITY UP TO TWICE THE NORMAL VALUE AT KYOTO UNIVERSITY. THE INCREASE WAS CAUSED MAINLY BY RADIATIONS FROM THE DRY FALLOUT ACCUMULATED ON THE GROUND SURFACE. RADIATIONS FROM THE AIRBORNE NUCLEAR DEBRIS WERE CONSIDERED TO HAVE CONTRIBUTED LITTLE TO THE INCREASE IN CONDUCTIVITY.

AIRBURST + ATMOSPHERIC ELECTRICITY + DEPOSITION + FALLOUT + JAPAN

16-18268

WOOD RC + OLSON RK + MCFARLAND AR

AIR EJECTOR FILTER SAMPLER. A BALLOON-BORNE COLLECTOR OF RADIOACTIVE STRATOSPHERIC DEBRIS

LITTON SYSTEMS, INC., MINNEAPOLIS

6 PAGES, 9 FIGURES, 1 TABLE, 4 REFERENCES, JOURNAL OF APPLIED METEOROLOGY 5, PAGE 866 THRU 871, (DECEMBER 1966)

AN AIR-EJECTOR FILTER SAMPLER WHICH CONSISTS OF A BALLOON-BORNE DEVICE DESIGNED TO COLLECT PARTICULATE MATTER FROM VERY LARGE VOLUMES (100,000 CU. FT.) OF STRATOSPHERIC AIR AT ALTITUDES BETWEEN 50,000 AND 130,000 FT. IS DESCRIBED. THIS EQUIPMENT UTILIZES AN EJECTOR PUMP TO PULL AIR THROUGH 2 SQ. FT. OF INSTITUTE OF PAPER CHEMISTRY NO. 1478 FILTER PAPER AT RATES ON THE ORDER OF 1000 CFM. USE OF THIS UNIT HAS PERMITTED AN EXTENSION OF THE USAEC OPERATIONAL SAMPLING PROGRAM TO HIGHER ALTITUDES THAN PREVIOUSLY ALLOWED BY BATTERY-POWERED ELECTRO-MECHANICAL SYSTEMS. PERFORMANCE OF THE SAMPLER DURING A SUCCESSFUL OPERATIONAL SERIES CONDUCTED IN 1965 BY THE U.S. AIR FORCE AT SAN ANGELO, TEXAS, AND EIELSON AFB, ALASKA, CONFIRMED PRE-PROGRAM ESTIMATES OF SYSTEM RELIABILITY.

FILTER EFFICIENCY + FILTER, PAPER + INSTRUMENTATION, METEOROLOGICAL + PARTICULATE + SAMPLING, HIGH ALTITUDE

16-18269 ALSO IN CATEGORY 15

PALLISTER ET + GREEN JH

RADIOCHEMICAL ANALYSES FOR CS-137, SR-90, AND CE-144 IN RAIN WATER IN SYDNEY

UNIVERSITY OF NEW SOUTH WALES, SYDNEY

2 PAGES, 6 TABLES, 4 REFERENCES, AUSTRAL. JOURNAL OF SCIENCE 29, PAGE 163 THRU 164, (DECEMBER 1966)

ANALYSES WERE MADE OF RAIN WATER IN THE SYDNEY AREA TO DETERMINE SR-90, CS-137, AND CE-144. RESULTS ARE PRESENTED MONTHLY FROM MAY 1964 THROUGH JUNE 1966. THE SR-90 CONTENT OF PACKED TEA WAS ALSO DETERMINED.

BIOLOGICAL CONCENTRATION, FOOD + CERIUM + CESIUM + RADIOCHEMICAL ANALYSIS + RAINOUT + STRONTIUM + SURVEY, RADIATION, ENVIRONMENTAL

16-18270 ALSO IN CATEGORY 15

PEARSON JE + MOSES H

ATMOSPHERIC RADON-222 CONCENTRATION VARIATION WITH HEIGHT AND TIME

ARGONNE NATIONAL LAB., ARGONNE, ILL.

7 PAGES, 11 FIGURES, 1 TABLE, 5 REFERENCES, JOURNAL OF APPLIED METEOROLOGY 5(2), PAGE 175 THRU 181, (APRIL 1966)

STUDIES OF CONCENTRATIONS OF RADON-222 IN THE ATMOSPHERE WERE MADE FROM THE GROUND TO 16 METERS ELEVATION FOR EIGHT PERIODS OF NEARLY 24 HOURS EACH FOR THE LATE SPRING AND SUMMER MONTHS. GRAPHS INDICATE THE GENERAL DIURNAL RADON CONCENTRATIONS. CONCENTRATIONS AT THE BREATHING LEVEL FOR HUMANS ARE GIVEN. INDICATES THAT RADON IS AN EXCELLENT TRACER MATERIAL FOR STUDYING THE VERTICAL DIFFUSION PROCESS IN THE ATMOSPHERE.

ATMOSPHERIC DIFFUSION + CONCENTRATION, MAXIMUM + INHALATION + MICROMETEOROLOGY + RADON

16-18271 ALSO IN CATEGORIES 15 AND 4

KREY PW

PLUTONIUM-238 FROM THE SNAP-9A BURNUP

UNITED STATES ATOMIC ENERGY COMMISSION, NEW YORK

CONF-670-602 +. 16 PAGES, FIGURES, 10 REFERENCES, ABSTRACT IN TRANSACTIONS 10(1), PAGE 7, PRESENTED AT

CATEGORY 16
METEOROLOGICAL CONSIDERATIONS

16-18271 *CONTINUED*

1967 ANNUAL MEETING OF THE AMERICAN NUCLEAR SOCIETY, SAN DIEGO, CALIFORNIA, JUNE 11-15, 1967

THE BEHAVIOR OF THE SNAP-9A DEBRIS PARTIALLY SUPPORTS MACHTAS PROPOSED SCHEMATIC REPRESENTATION OF STRATOSPHERIC MERIDIONAL CIRCULATION. THE TREND IN CONCENTRATION SUGGESTS A DOWNWARD FLUX BEGINNING IN THE SPRING OF EACH YEAR FOLLOWED BY AN APPARENT UPWARD FLUX IN THE FALL. LARLEYS ESTIMATES AGREE WELL WITH THE MEASURED OR ANTICIPATED MAXIMUM CONCENTRATIONS IN BOTH THE STRATOSPHERE AND TROPOSPHERE.

ATMOSPHERIC DIFFUSION, GLOBAL + FALLOUT + PLUTONIUM + STRATOSPHERE + TROPOSPHERE

16-18272 ALSO IN CATEGORY 14

HICKS 88

NUCLEATION AND THE WET REMOVAL OF FALLOUT

AUSTRALIA. COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANIZATION

6 PAGES, 2 FIGURES, 1 TABLE, 13 REFERENCES, JOURNAL OF APPLIED METEOROLOGY 5(2), PAGE 169 THRU 174, (APRIL 1966)

THE THEORY OF CONDENSATION NUCLEATION APPLIED TO RADIOACTIVE FALLOUT CONSTITUENTS SHOWS THAT MOST TROPOSPHERIC FALLOUT PARTICLES ARE EFFICIENT NUCLEI IN THE PRODUCTION OF WARM RAIN. AS A RESULT IT IS FOUND THAT THE CONCENTRATION OF FALLOUT IN PRECIPITATION IS A MAXIMUM SOON AFTER THE ONSET OF RAIN. THIS IS SUPPORTED BY MEASUREMENTS MADE DURING MANY INDIVIDUAL STORMS OVER AN EXTENSIVE PERIOD. THE INFLUENCE ON FALLOUT CONCENTRATION OF VARIATIONS IN RAINFALL RATE THROUGH A STORM IS FOUND TO BE COMPLICATED BY THE OPPOSING EFFECTS OF THE LIQUID WATER CONTENT OF THE CLOUD AND THE GENERATION OF DOWNDRAFTS WITHIN IT.

CONCENTRATION, AREA + DEPOSITION + FALLOUT + RAINOUT

16-18494

LEITH CE

NUMERICAL HYDRODYNAMICS OF THE ATMOSPHERE

LAWRENCE RADIATION LAB., UNIVERSITY OF CALIFORNIA, LIVERMORE

UCRL-14790-T +. 19 PAGES, 22 REFERENCES, MARCH 1966

PRESENTS A NUMERICAL MODEL TO EXTEND THE FORECASTING OF THE FLOW OF THE ATMOSPHERE FROM A FEW DAYS TO MONTHS. DESCRIBES SOME OF THE MATHEMATICAL AND PHYSICAL PROBLEMS THAT APOSE. RESULTS AND AREAS NEEDING FURTHER RESEARCH ARE GIVEN.

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

ATMOSPHERIC CIRCULATION, GLOBAL + COMPUTER PROGRAM, METEOROLOGICAL + MATHEMATICAL TREATMENT

16-18495

BAKULIN VN

THE INFLUENCE OF THE DIURNAL CHANGES OF THE TURBULENT DIFFUSION COEFFICIENT ON RN, THORON, ACTINON, AND THE DECAY PRODUCTS CONCENTRATIONS IN THE ATMOSPHERE

INSTITUT ATOMNOI ENERGII, AKADEMIYA NAUK SSSR

4 PAGES, 6 FIGURES, 6 REFERENCES, ATMOSPHERIC AND OCEANIC PHYSICS 3(2), PAGE 181 THRU 188, (FEBRUARY 1967), IN RUSSIAN

AN EXACT SOLUTION OF THE NONSTATIONARY EQUATION OF SPREADING IN THE ATMOSPHERE OF RN-222, RN-220, AND ITS DAUGHTER PRODUCTS IS OBTAINED IN AN INTEGRAL FORM. WITH THE HELP OF A COMPUTER THIS EQUATION CAN BE USED TO CALCULATE THE DIURNAL VARIATION OF THE AIR RADIOACTIVITY AT ANY ALTITUDE. THE EXHALATION OF RADON IS A GIVEN FUNCTION OF TIME AND THE COEFFICIENT OF TURBULENT DIFFUSION IS ALSO A FUNCTION OF TIME WHICH IS CONSTANT WITH HEIGHT. THE RESULTS OF SUCH CALCULATIONS ARE IN A GOOD AGREEMENT WITH EXPERIMENTS. A METHOD IS PROPOSED FOR DETERMINING THE RANGE OF DIURNAL VARIATIONS OF TURBULENT DIFFUSION COEFFICIENT IF THE CHANGES OF THE AIR RADIOACTIVITY ARE KNOWN

ATMOSPHERIC DIFFUSION + COMPUTER PROGRAM, METEOROLOGICAL + CONCENTRATION, AREA + DIFFUSION COEFFICIENT + TRACER, RADIOACTIVE + TURBULENCE, STATISTICS

16-18496

ALSO IN CATEGORY 15

BLEEKER W + DANSGAARD W + LABLANS WN

SOME REMARKS ON SIMULTANEOUS MEASUREMENTS OF PARTICULATE CONTAMINANTS INCLUDING RADIOACTIVITY AND ISOTOPIC

COMPOSITION OF PRECIPITATION

ROYAL NETHERLANDS METEOROLOGICAL INSTITUTE, DE BILT, NETHERLANDS + PHYSICAL LABORATORY II, H. C. GERSTED INSTITUTE, COPENHAGEN, DENMARK

13 PAGES, 9 FIGURES, 16 REFERENCES, TELLUS 18, PAGE 773 THRU 785, (1966)

RESULTS OF SIMULTANEOUS MEASUREMENTS OF TRACE SUBSTANCES IN RAIN SAMPLED DURING THE PASSAGE OF PRECIPITATION SYSTEMS ARE DISCUSSED. THE PATTERN OF THE CONCENTRATIONS FOR PARTICULATE MATTER IS COMPARED WITH THAT FOR THE OXYGEN-18 AND DEUTERIUM ISOTOPES. THE VARIATIONS IN THE CONCENTRATION WERE INVESTIGATED FOR VARIOUS SYNOPTIC SITUATIONS.

CONCENTRATION, AREA + PARTICULATE + PRECIPITATION + RAINOUT + WASHOUT

CATEGORY 16
METEOROLOGICAL CONSIDERATIONS

16-18497
THE INVESTIGATION OF AIR POLLUTION. NATIONAL SURVEY OF SMOKE AND SULPHUR DIOXIDE. MONTHLY SUMMARY JULY, 1966
GREAT BRITAIN, WARREN SPRING LABORATORY
19 PAGES, JULY 1966

SUMMARY OF THE JULY 1966 SMOKE AND SULFUR DIOXIDE OBSERVATIONS FROM SELECTED SITES IN BRITAIN.
GIVES THE AVERAGE, MAXIMUM, AND NUMBER OF DAYS EXCEEDING SPECIFIED CONCENTRATIONS. ALSO
GIVES THE SULFUR DIOXIDE TO SMOKE RATIO.

ATMOSPHERIC POLLUTION + CONCENTRATION, AREA + SMOKE + SULFUR

16-18498
THE INVESTIGATION OF AIR POLLUTION. NATIONAL SURVEY OF SMOKE AND SULFUR DIOXIDE. MONTHLY SUMMARY OF OBSERVATIONS FOR APRIL, 1966
GREAT BRITAIN, WARREN SPRING LABORATORY
18 PAGES, APRIL 1966

SUMMARY OF THE APRIL 1966 SMOKE AND SULFUR DIOXIDE OBSERVATIONS FROM SELECTED SITES IN BRITAIN. GIVES THE AVERAGE, MAXIMUM, AND NUMBER OF DAYS EXCEEDING SPECIFIED CONCENTRATIONS. ALSO GIVES THE SULFUR DIOXIDE TO SMOKE RATIO.

ATMOSPHERIC POLLUTION + CONCENTRATION, AREA + SMOKE + SULFUR

16-18499
THE INVESTIGATION OF AIR POLLUTION NATIONAL SURVEY OF SMOKE AND SULPHUR DIOXIDE. MONTHLY SUMMARY OF OBSERVATIONS FOR MAY, 1966
GREAT BRITAIN, WARREN SPRING LABORATORY
20 PAGES, MAY 1966

SUMMARY OF THE MAY 1966 SMOKE AND SULFUR DIOXIDE OBSERVATIONS FROM SELECTED SITES IN BRITAIN. GIVES THE AVERAGE, MAXIMUM, AND NUMBER OF DAYS EXCEEDING SPECIFIED CONCENTRATIONS. ALSO GIVES THE SULFUR DIOXIDE TO SMOKE RATIO.

ATMOSPHERIC POLLUTION + CONCENTRATION, AREA + SMOKE + SULFUR

16-18500
THE INVESTIGATION OF AIR POLLUTION. NATIONAL SURVEY OF SMOKE AND SULPHUR DIOXIDE MONTHLY SUMMARY SEPTEMBER, 1966
GREAT BRITAIN, WARREN SPRING LABORATORY
23 PAGES, SEPTEMBER 1966

SUMMARY OF THE SEPTEMBER 1966 SMOKE AND SULPHUR DIOXIDE OBSERVATIONS FROM SELECTED SITES IN BRITAIN. GIVES THE AVERAGE, MAXIMUM, AND NUMBER OF DAYS EXCEEDING SPECIFIED CONCENTRATIONS. ALSO GIVES THE SULPHUR DIOXIDE TO SMOKE RATIO.

ATMOSPHERIC POLLUTION + CONCENTRATION, AREA + SMOKE + SULFUR

16-18501
DIRECTORY OF SITES OF ALL INSTRUMENTS IN OPERATION DURING THE 2 YEARS ENDED MARCH, 1966. THE INVESTIGATION OF AIR POLLUTION
GREAT BRITAIN, WARREN SPRING LABORATORY
41 PAGES, MARCH 1966

DIRECTORY OF LOCATION OF ALL AIR-POLLUTION INSTRUMENTS IN OPERATION FROM APRIL 1964 TO MARCH 1966 IN BRITAIN. THE POPULATION, TYPE OF INSTRUMENTS, ADDRESS, AND CLASSIFICATION OF THE SURROUNDINGS OF EACH SITE IS GIVEN.

ATMOSPHERIC POLLUTION + CONCENTRATION, AREA + INSTRUMENTATION, AIR SAMPLING + SMOKE + SULFUR

16-18502
TORGESON WL + STERN SC
AN AIRCRAFT IMPACTOR FOR DETERMINING THE SIZE DISTRIBUTIONS OF TROPOSPHERIC AEROSOLS
APPLIED SCIENCE DIVISION, LITTON SYSTEMS, INC., ST. PAUL, MINN.
6 PAGES, 8 FIGURES, 2 REFERENCES, JOURNAL OF APPLIED METEOROLOGY 5(2), PAGE 205 THRU 210, (APRIL 1966)

DESCRIBES THE DESIGN AND DEVELOPMENT OF AN AIRCRAFT-BORNE ISOKINETIC SAMPLING DEVICE FOR COLLECTING TROPOSPHERIC AEROSOL PARTICLES. THE DEVICE INCORPORATES A TWO-STAGE IMPACTOR AND A BACK-UP FILTER FOR COLLECTION AND FRACTIONATION OF ATMOSPHERIC PARTICLES.

AEROSOL + FILTER + PARTICLE SIZE DISTRIBUTION + SAMPLING, HIGH ALTITUDE

CATEGORY 16
METEOROLOGICAL CONSIDERATIONS

16-18626
KRUGER P
RADIOCHEMICAL STUDY OF THE TRADE WIND INVERSION AT HAWAII. TECHNICAL REPORT NO. 74
STANFORD UNIV., CALIFORNIA. DEPT. OF CIVIL ENGINEERING
SU-326-P-16-2 +. 53 PAGES, FIGURES, REFERENCES, DECEMBER 1966

STUDY OF THE RADIOACTIVITY CONCENTRATIONS IN AIR AND PRECIPITATION SAMPLES ACROSS 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.

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

*RADIOCHEMICAL ANALYSIS + *RAINOUT + CONCENTRATION, AREA + PRECIPITATION + TRANSPORT THEORY + WIND PROFILE

16-18627 ALSO IN CATEGORY 14
VIECELLI J
EXPLOSION OF A 500 MEGATON BOMB AT THE SURFACE OF THE EARTH. A NUMERICAL CALCULATION OF ATMOSPHERIC
EFFECTS
CALIFORNIA UNIV., LIVERMORE. LAWRENCE RADIATION LAB.
UCID-15048 +. 13 PAGES, DECEMBER 1966

PRESENTS THE RESULTS FROM A NUMERICAL CALCULATION OF THE ATMOSPHERIC HYDRODYNAMIC EFFECTS OF A
500-MEGATON SURFACE EXPLOSION.

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

*METEOROLOGY + *NUCLEAR DETONATION + *SHOCK WAVE + COMPUTER PROGRAM + FALLOUT + NUCLEAR EXPLOSION DEBRIS

16-18628
SLAWSON PR
OBSERVATIONS ON PLUME RISE FROM A LARGE INDUSTRIAL STACK. RESEARCH REPORT NO. 1
WATERLOO UNIV., ONTARIO. DEPARTMENT OF MECHANICAL ENGINEERING
NYO-3685-7 +. 87 PAGES, FIGURES, MAY 1966

PHOTOGRAPHIC OBSERVATIONS WERE MADE ON THE RISE OF SMOKE PLUMES. WITHIN THE LIMITED ACCURACY
OF THE PHOTOGRAPHIC TECHNIQUE, THE OBSERVATIONS CONFIRMED THE THEORETICAL RESULT THAT THE
HEIGHT OF THE PLUME AXIS ABOVE THE SOURCE VARIES AS THE TWO-THIRDS POWER OF THE DISTANCE
DOWNWIND.

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

*BUOYANT RISE + *PLUME, SMOKE, PHOTOGRAPHY + ATMOSPHERIC STABILITY + PLUME BEHAVIOR, GENERAL +
SOURCE, ELEVATED

16-18629
WOGMAN NA + THOMAS CW + COOPER JA + ENGELMANN RJ + PERKINS RW
COSMIC RAY PRODUCED RADIONUCLIDES AS TRACERS OF ATMOSPHERIC PRECIPITATION PROCESSES
BATTELLE-NORTHWEST, RICHLAND, WASHINGTON. PACIFIC NORTHWEST LAB.
BNWL-SA-1146 + CONF-670310-1 +. 12 PAGES, FIGURES, MARCH 6, 1967, PRESENTED AT AMERICAN METEOROLOGY
SOCIETY MEETING, ANN ARBOR, MICHIGAN

COSMIC-RAY-PRODUCED RADIONUCLIDES WITH HALF-LIVES RANGING FROM 32 MIN TO 15 HR WERE USED IN
DEFINING PRECIPITATION MECHANISMS.

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

*RAINOUT + DEPOSITION + METEOROLOGY + PRECIPITATION

16-18630
SANTOMAURO L
REPORT ABOUT CLIMATOLOGY OF DIFFUSION AT ISPRA
BRERA ASTRONOMICAL OBSERVATORY, MILAN, ITALY. GEOPHYSICAL AND METEOROLOGICAL DEPARTMENT
EUR-3166.E +. 186 PAGES, 1966

PRESENTS THE CLIMATOLOGY AND ITS INFLUENCE ON THE REACTOR AT ISPRA.

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

CATEGORY 16
METEOROLOGICAL CONSIDERATIONS

16-18630 *CONTINUED*
*ATMOSPHERIC DIFFUSION, CLIMATOLOGY + SITE CLIMATOLOGY

16-18631 ALSO IN CATEGORY 14
ENGELMANN RJ + PERKINS RW + HAGEN DI + HALLER WA
WASHOUT COEFFICIENTS FOR SELECTED GASES AND PARTICULATES
BATTELLE-NORTHWEST, RICHLAND, WASHINGTON. PACIFIC NORTHWEST LAB.
BNWL-SA-657 + CONF-660648-1 +. 32 PAGES, APRIL 15, 1966, PRESENTED AT 59TH ANNUAL MEETING OF THE AIR
POLLUTION CONTROL ASSOCIATION, SAN FRANCISCO, CALIFORNIA

PRECIPITATION SCAVENGING IS THE PRIMARY CLEANSING MECHANISM FOR AIRBORNE GASES AND FINE
PARTICLES. ADVANCES IN RADIOCHEMICAL TECHNIQUES ALLOW THE MEASUREMENT OF SUCH WASHOUT
COEFFICIENTS DURING NATURAL RAIN AND SNOW. WASHOUT COEFFICIENTS (FRACTION WASHED OUT PER
UNIT TIME) ARE PRESENTED FOR SEVERAL GASES AS A FUNCTION OF PRECIPITATION RATE. DEVIATIONS
FROM THEORETICAL PREDICTIONS ARE DISCUSSED.

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

*WASHOUT + COALESCENCE + DEPOSITION + METEOROLOGY + PRECIPITATION

16-18704
REITER ER
LARGE SCALE ATMOSPHERIC TRANSPORT PROCESSES OF RADIOACTIVE DEBRIS. FINAL REPORT
COLORADO STATE UNIV., FORT COLLINS. DEPT. OF ATMOSPHERIC SCIENCE
COO-1340-8 +. 55 PAGES, OCTOBER 1966

DURING THE CONTRACT PERIOD FROM 1 DECEMBER 1963 TO 31 JANUARY 1967, TRANSPORT PROCESSES
CARRYING RADIOACTIVE DEBRIS FROM THE STRATOSPHERE TO THE TROPOSPHERE WERE INVESTIGATED BY
MEANS OF INDIVIDUAL CASE STUDIES, BY STATISTICAL TECHNIQUES CONSIDERING RELATIVELY LONG
PERIODS OF TIME, AND BY A STUDY OF THE BEHAVIOR OF THE STRATOSPHERIC POLAR NIGHT VORTEX
DURING A BREAKDOWN PERIOD. THIS REPORT CONTAINS A SUMMARY OF CONCLUSIONS WHICH THE
INVESTIGATORS ARRIVED AT AND PUBLISHED IN PREVIOUS REPORTS.

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

*ATMOSPHERIC DIFFUSION, GLOBAL + *SAMPLING, HIGH ALTITUDE + FALLOUT + STRATOSPHERE

16-10705 ALSO IN CATEGORY 14
SHERWOOD RD
PROJECT STRAP. FINAL REPORT
ISOTOPES, INC., WESTWOOD, N. J.
NYO-3615-1 +. 75 PAGES, TABLES, JANUARY 30, 1967

IMPACTION PROBE SAMPLES COLLECTED IN THE LOWER STRATOSPHERE DURING NOVEMBER 1965, MARCH AND
APRIL 1966, WERE EXAMINED. THE ACTIVITY COLLECTED ON THE PROBES WAS GENERALLY LESS THAN 15%
OF THAT FOUND ON SIMULTANEOUSLY EXPOSED FILTERS. THE RESULTS SUGGEST THAT A SPECTRUM OF
PARTICLES HAD BEEN SAMPLED AND THAT FURTHER EFFORT USING IMPROVED COLLECTION FILMS, SHORTER
EXPOSURES, AND BETTER ANALYSIS IS REQUIRED TO DETERMINE INDIVIDUAL PARTICLE COMPOSITION AND
RADIOACTIVE CONTENT.

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

*INSTRUMENTATION, AIR SAMPLING + *PARTICLE SIZE DISTRIBUTION + *SAMPLING, HIGH ALTITUDE +
ATMOSPHERIC DIFFUSION + STRATOSPHERE

16-18706
ROSENTHAL N + TAL A + SURKES M
1963 METEOROLOGICAL DATA FOR THE IRR-1 REACTOR SITE
ISRAEL ATOMIC ENERGY COMMISSION, YAVNE. SOREQ NUCLEAR RESEARCH CENTER
IA-1076 +. 11 PAGES, JANUARY 1966

PRESENTS METEOROLOGICAL DATA FOR 1963 FOR THE IRR-1 REACTOR SITE AT NAHAL SOREQ. THIS IS THE
THIRD IN A SERIES OF REPORTS.

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

*SITE CLIMATOLOGY + ATMOSPHERIC DIFFUSION, CLIMATOLOGY + INSTRUMENTATION, METEOROLOGICAL +
SAFETY ANALYSIS REPORT, METEOROLOGY

16-18707 ALSO IN CATEGORY 14
HALL SJ + RENNEKE BC + MCINTYRE JR + SAUCIER WJ

CATEGORY 16
METEOROLOGICAL CONSIDERATIONS

16-18707 *CONTINUED*

SEVERE CONVECTIVE STORMS AND THE STRATOSPHERIC SCAVENGING OF RADIOACTIVE PARTICLES. FINAL REPORT
OKLAHOMA UNIV. RESEARCH INST., NORMAN. ATMOSPHERIC RESEARCH LAB.
ORO-3083-4 + ARL-1402-4 +. 202 PAGES, DECEMBER 1966

DISCUSSES INDIVIDUAL AREAS OF RESEARCH ON THE ROLE OF SEVERE CONVECTIVE STORMS AND THE STRATOSPHERIC SCAVENGING OF RADIOACTIVE PARTICLES. (1) RADIOACTIVITY IN RAINFALL FROM CONVECTIVE STORMS. (2) ISENTROPIC TRAJECTORIES OF AIR IN THUNDERSTORM ENVIRONMENTS. (3) PATTERNS OF CERTAIN KINEMATIC PROPERTIES OF SQUALL LINES RELATED TO THEIR RADAR ECHOES. (4) RADIOACTIVE FALLOUT FROM STORMS REACHING INTO THE STRATOSPHERE. (5) RELATIONSHIPS OF DIVERGENCE AND VORTICITY TO BETA CONCENTRATION AND RAINFALL RATES.

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

*RAINOUT + *WASHOUT + AEROSOL, RADIOACTIVE + DEPOSITION + METEOROLOGY + PRECIPITATION + STRATOSPHERE

16-18709

MIYAKE M

A CONSTANT TEMPERATURE WIND COMPONENT METER DEVELOPMENT AND APPLICATION. FINAL REPORT
WASHINGTON UNIV., SEATTLE. DEPT. OF ATMOSPHERIC SCIENCES
TID-22278 +. 125 PAGES, FIGURES, JUNE 1965

A CONSTANT-TEMPERATURE-DIFFERENCE HOT-THERMOCOUPLE-WIRE ANEMOMETER WAS DEVELOPED. THIS MODE OF SENSING ELIMINATES THE NEED FOR CORRECTION OF THE EFFECT OF TEMPERATURE IN TOTAL WIND SENSING, AND THE EFFECT OF WIND IN ANGLE SENSING. THE MODEL INCORPORATES A FAST-RESPONSE TEMPERATURE-MEASUREMENT CIRCUIT. THUS THE INSTRUMENT IS CAPABLE OF DETERMINING THE FLUX OF HEAT AS WELL AS THAT OF MOMENTUM.

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

*INSTRUMENTATION, METEOROLOGICAL + *MICROMETEOROLOGY + WIND STATISTICS

16-18731

ALSO IN CATEGORIES 2 AND 18

THREE MILE ISLAND METEOROLOGY, GEOLOGY AND FOUNDATION CONSIDERATIONS

METROPOLITAN EDISON COMPANY

200 PAGES, TABLES, FIGURES, METROPOLITAN EDISON COMPANY THREE MILE ISLAND NUCLEAR STATION UNIT 1,
PRELIMINARY SAFETY ANALYSIS REPORT, VOLUME III, SEPTEMBER 1967, DOCKET 50-289

BULK OF MATERIAL CONSISTS OF SOIL-CLASSIFICATION SHEETS OBTAINED BY GILBERT ASSOCIATES TEST BORINGS ON THE ISLAND. SEISMIC SURVEY WAS BY WESTON GEOPHYSICAL. NO EVIDENCE OF FAULTING WAS FOUND, ALTHOUGH A HYPOTHETICAL FAULT WAS PROJECTED THROUGH THE ISLAND IN 1933, BASED ON 1929 LARGE-SCALE SURFACE MAPPING. METEOROLOGY CONSISTS OF A 1959-63 SUMMARY OF ATMOSPHERIC STABILITY AND WIND SPEED FOR OLMSTEAD AFB AND HARRISBURG-YORK AIRPORT. INCLUDED ARE FIELD REPORTS ON GEOLOGY, GROUND-WATER HYDROLOGY, SEISMOLOGY.

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

*FAULT + *FOUNDATION ENGINEERING + *HYDROLOGICAL CONSIDERATION, GENERAL + *WIND STATISTICS + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY + THREE MILE ISLAND (PWR)

16-18779

PERKINS RW + ENGELMANN RJ

TRACE ELEMENT AND TRACE RADIONUCLIDE COMPOSITION OF SNOW AND RAIN

BATTELLE-NORTHWEST, RICHLAND, WASHINGTON. PACIFIC NORTHWEST LAB.

BNWL-SA-650 + CONF-660416-1 +. 20 PAGES, FIGURES, TABLES, REFERENCES, APRIL 20, 1966

DESCRIBES THE MEASUREMENT TECHNIQUE, THE OBSERVED CONCENTRATIONS, AND THE ORIGINS OF SEVERAL TRACE MATERIALS THAT HAVE BEEN MEASURED IN RAIN AND SNOW. THE POSSIBLE USE OF THESE NATURAL MATERIALS, PLUS THE USE OF ARTIFICIAL TRACERS IN DESCRIBING ATMOSPHERIC PHENOMENA, ARE CONSIDERED.

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

*RAINOUT + *WASHOUT + AEROSOL + COSMIC RADIATION + FALLOUT + PRECIPITATION

16-18780

COTE O

CIRCULATION PROCESSES AND MIXING MECHANISMS IN THE UPPER ATMOSPHERE ABOVE 30 KM

GCA CORPORATION, BEDFORD, MASS.

GCA-TECHNICAL REPORT NO. 65-4-G + SC-DC-65-1312 +. 120 PAGES, MARCH 1965

THE FACTORS EFFECTING THE FALL SPEED AND RELATIVE DISPERSION OF SMALL PARTICLES, 1 TO 100 MICRONS IN DIAMETER AND 5 GM/CC DENSITY, ARE CONSIDERED. TERMINAL FALL SPEEDS, CORRECTED FOR SLIP FLOW, AND THE TOTAL GRAVITATIONAL SETTLING TIME FROM 70 TO 30 KM ARE COMPUTED, USING THE APDC MODEL ATMOSPHERE (1959). THE INFLUENCE OF PARTICLE SHAPE AND ORIENTATION OF

CATEGORY 16
METEOROLOGICAL CONSIDERATIONS

16-18780 *CONTINUED*
PHOTOPHORESIS, AND OF HYDRODYNAMICAL INTERACTION BETWEEN PARTICLES IN A CLOUD ON FALL SPEED,
ARE REVIEWED AND SHOWN TO BE SIGNIFICANT.

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

*DISPERSION + *PARTICLE SIZE DISTRIBUTION + *STRATOSPHERE + ATMOSPHERIC DIFFUSION + FALLOUT +
GAUSSIAN PLUME FORMULA

16-18781 ALSO IN CATEGORY 14
HAGE KD + BROWN PS + ARNASON G + LAZORICK S + LEVITZ M
A COMPUTER PROGRAM FOR THE FALL AND DISPERSION OF PARTICLES IN THE ATMOSPHERE
TRAVELERS RESEARCH CENTER, INC., HARTFORD, CONN.
SC-CR-67-2530 +. 214 PAGES, FIGURES, REFERENCES, APRIL 1967

A COMPUTER PROGRAM IS FORMULATED FOR CALCULATING AIR CONCENTRATIONS AND GROUND DEPOSITS OF
SOLID PARTICLES OF VARIOUS DENSITIES AND INTERMEDIATE DIAMETERS (ABOUT 3 TO 300 MICRONS,
DENSITY 10) RELEASED FROM INSTANTANEOUS POINT OR LINE SOURCES AT ALTITUDES UP TO 90 KM. THE
PROGRAM WAS DEVELOPED FOR USE IN AEROSPACE NUCLEAR SAFETY HAZARDS ANALYSES. COMPLETE PROGRAM
SPECIFICATIONS, DESCRIPTIONS, AND OPERATING INSTRUCTIONS ARE GIVEN ALONG WITH SOME OPERATING
GUIDELINES AND AIDS. EXAMPLES OF INPUT AND OUTPUT ARE DISCUSSED AND ILLUSTRATED.

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

*COMPUTER PROGRAM + *DISPERSION + AEROSPACE SAFETY + ATMOSPHERIC DIFFUSION + PARTICLE SIZE +
PARTICLE SIZE DISTRIBUTION

16-18804
VAN DER HOVEN I
ATMOSPHERIC TRANSPORT AND DIFFUSION AT COASTAL SITES
ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION
10 PAGES, 8 FIGURES, 1 TABLE, 36 REFERENCES, NUCLEAR SAFETY 8(5) PAGES 490-499 (SEPT. - OCT. 1967)

OVERLAND ATMOSPHERIC DIFFUSION IS THREE TIMES MORE RAPID THAN OVERWATER DIFFUSION, ON THE
AVERAGE, WHEN THE WATER IS COLDER THAN AIR TEMPERATURES OVER LAND. THE TRANSPORT DISTANCE
REQUIRED TO COMPLETE THE TRANSITION FROM OVERWATER TO OVERLAND DIFFUSION IS A FUNCTION OF
PLUME HEIGHT, WIND SPEED, AND VERTICAL TEMPERATURE PROFILE. DIFFUSION MODELS WERE DEVELOPED
TO ACCOUNT FOR THE DIFFUSION RATES WITHIN THIS TRANSITION ZONE. DAILY REVERSALS BETWEEN LAND
AND SEA BREEZES RESULT IN LOCAL VARIATIONS OF COASTLINE ATMOSPHERIC TRAJECTORIES.
LARGE-SCALE PRESSURE-GRADIENT EFFECTS RESULT IN STRAIGHT-LINE TRAJECTORIES.

ATMOSPHERIC DIFFUSION + ATMOSPHERIC STABILITY + PLUME BEHAVIOR, GENERAL + TURBULENCE, MECHANICAL +
WIND PROFILE

16-18805
HAMILTON PM
PAPER III - PLUME HEIGHT MEASUREMENTS AT NORTHFLEET AND TILBURY POWER STATIONS
CENTRAL ELECTRICITY RESEARCH LABORATORIES, SURREY, ENGLAND
9 PAGES, 6 FIGURES, 2 TABLES, 6 REFERENCES, ATMOS ENVIRON 1(4) PAGES 379-387 (JULY 1967)

PRESENTS SOME RECENT MEASUREMENTS OF PLUME RISE AND RELATES THEM TO THE METEOROLOGICAL
VARIABLES AND POWER-STATION OPERATING CONDITIONS. DATA ARE IN REASONABLE AGREEMENT WITH THE
LUCAS FORMULA FOR THE RISE OF HOT PLUMES FROM CHIMNEYS.

*HEIGHT OF RISE + ATMOSPHERIC DIFFUSION + ATMOSPHERIC STABILITY + BUOYANT RISE + PLUME BEHAVIOR, GENERAL +
SOURCE, ELEVATED

16-18806
MOORE DJ
PAPER II - METEOROLOGICAL MEASUREMENTS ON A 187 METRE TOWER
CENTRAL ELECTRICITY RESEARCH LABORATORIES, SURREY, ENGLAND
11 PAGES, 1 FIGURE, 9 TABLES, 5 REFERENCES, ATMOS ENVIRON 1(4) PAGES 367-77 (JULY 1967)

DESCRIBES MEASUREMENTS OF TEMPERATURE, HUMIDITY, TURBULENCE, WIND SPEED AND DIRECTION ON A
187-M HIGH TOWER. PARTICULAR ATTENTION IS PAID TO THE PRESENCE OF STABLE LAYERS AND THEIR
EFFECT ON THE TURBULENCE.

*ATMOSPHERIC DIFFUSION EXPERIMENT + *TURBULENCE, STATISTICS + MICROMETEOROLOGY + SITE CLIMATOLOGY +
WIND STATISTICS

16-18808 ALSO IN CATEGORIES 9 AND 14
DANEK WL + DARGIS AA
PARTICLE VELOCIMETER FOR USE CLOSE-IN TO UNDERGROUND EXPLOSIONS. FORMAL REPORT, PHASE 4

CATEGORY 16
METEOROLOGICAL CONSIDERATIONS

16-18808 *CONTINUED*
ENGINEERING PHYSICS CO., ROCKVILLE, MD.
AD-631496 + DASA-1431-2 +. 93 PAGES, TABLES, DECEMBER 31, 1965

THIS REPORT IS ONE OF A SERIES OF SUCH REPORTS CONCERNED WITH THE DEVELOPMENT OF A PARTICLE VELOCIMETER FOR USE CLOSE TO UNDERGROUND EXPLOSIONS. PHASE I CONSISTED OF A STUDY OF SEVERAL CONCEPTS. PHASE II CONSISTED IN DETERMINING THE BASIC MECHANICAL STRUCTURE OF THE GAGE. PHASE III CONSISTED IN DESIGNING FIELD EXPERIMENTS AND FABRICATION OF THE SUPPORT INSTRUMENTATION, PHASE IV CONSISTED IN DESIGNING A POWER SUPPLY TO PROVIDE THE HIGH CURRENTS REQUIRED AND INCORPORATING THE POWER SUPPLY INTO THE GAGE BODY.

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

CIVIL DEFENSE + EXPLOSION + INSTRUMENTATION, SURVEILLANCE

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-16056
DIETZ CR + DUNCAN DE + GARRETT AW + MILLS RM + SEYFRIT KV + SIMS WH + TOMBLISON MR + WEBSTER BH +
ZIEMANN DL
PIQUA NUCLEAR POWER FACILITY MONTHLY OPERATING REPORT NO. 48
AEC - CHICAGO OPERATIONS OFFICE
COO-652-38 +. 10 PAGES, APRIL 1967

CARBONACEOUS MATERIAL WHICH HAD DEPOSITED ON THE THERMOCOUPLE SUPPORT PLATE WAS REMOVED
AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CORE COMPONENTS, MISCELLANEOUS + *SURFACE FILM DEPOSIT + OPERATING EXPERIENCE +
OPERATIONS REPORT, GENERAL + PIQUA + REACTOR, ORGANIC COOLED + REACTOR, POWER

17-16429 ALSO IN CATEGORIES 9 AND 18
BIG ROCK POINT CHANGES TO MAIN STEAM BYPASS VALVE AND SECOND TRANSMISSION LINE
CONSUMERS POWER COMPANY, JACKSON, MICH.
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(27) PAGE 15(JULY 3, 1967), DOCKET 50-155

(LETTER JUNE 23.) FOLLOWING THE INCIDENT (ACC NO. 11038) OF AUGUST 8, 1966, THE MAIN STEAM
BYPASS VALVE WAS PLACED IN MANUAL ABOVE 50 MWE SINCE IT WOULD NOT PREVENT SCRAM OR A LINE
LOSS OF THIS CHANGE. EDITORIAL OMISSION KEPT THIS FACT OUT OF THE SEMIANNUAL REPORT. SINCE
SOME FAILURE INCIDENTS WILL ALWAYS BE PRESENT IN THIS SYSTEM, A DC-MOTOR-OPERATED ISOLATION
VALVE WILL BE ADDED AS A BACKUP VALVE. A 46-KV LINE WILL BE BROUGHT TO THE PLANT WITH
AUTOMATIC THROWOVER TO PROVIDE A SECOND SOURCE OF NORMAL STATION POWER. TESTING OF THE NEW
BYPASS-VALVE CONTROLS AT HIGH POWER IS DEFERRED TO MINIMIZE THE NUMBER OF THERMAL TRANSIENTS
TO THE FUEL, BECAUSE OF THEIR PAST FAILURES.

*MODIFICATION, SYSTEM OR EQUIPMENT + ACCIDENT, LOAD REJECTION + BIG ROCK POINT +
EMERGENCY POWER, ELECTRIC + FAILURE, EQUIPMENT + FAILURE, FUEL ELEMENT + MAIN COOLING SYSTEM +
REACTOR, BOILING WATER + TEST, PROOF + VALVE

17-16470 ALSO IN CATEGORY 12
DREWRY HS + STRONG WG
EVALUATING OPERATING RESULTS OF PLANT AUTOMATION
ALLIS-CHALMERS MANUFACTURING CO., MILWAUKEE, WISCONSIN + GULF STATES UTILITIES CO., BEAUMONT, TEXAS
7 PAGES, 5 FIGURES, 4 REFERENCES, PROCEEDINGS OF THE AMERICAN POWER CONFERENCE, TWENTY-SEVENTH ANNUAL
MEETING, VOLUME XXVII, CHICAGO, ILLINOIS, APRIL 27, 28, 29, 1965, PAGES 1174-1110

RELIABILITY AND PERFORMANCE EXPERIENCE IS SUMMARIZED FOR ONE YEAR OF OPERATION OF TWO
POWER-GENERATION UNITS OF THE RIVERSIDE STATION (A FOSSIL-FUELED PLANT) AFTER CONVERSION TO
DIGITAL CONTROL. THE COMPUTER SUPERVISES STARTUP AND SHUTDOWN, MONITORS PLANT OPERATIONS,
AND EXECUTES PLANT-PERFORMANCE CALCULATIONS.

COMPUTER, DIGITAL + CONTROL SYSTEM + ELECTRIC POWER, GENERAL + INSTRUMENTATION, GENERAL +
OPERATING EXPERIENCE

17-16475
MONTHLY OPERATING REPORT, AUGUST, 1965
CAROLINAS VIRGINIA NUCLEAR POWER ASSOCIATES, INC.
CVNA-243 +. 31 PAGES, AUGUST 1965

ONE IN A SERIES OF PROGRESS REPORTS. TOPICS INCLUDE GENERAL PLANT PERFORMANCE, PLANT
CHEMISTRY, PLANT MAINTENANCE, HEALTH AND SAFETY, STATUS OF RESEARCH AND DEVELOPMENT PROGRAMS.

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

*OPERATIONS REPORT, GENERAL + COOLANT CHEMISTRY + CVTP (CAROLINAS VIRGINIA TUBE REACTOR) +
MAINTENANCE AND REPAIR + RADIATION SAFETY AND CONTROL + REACTOR, HEAVY WATER + REACTOR, PRESSURE TUBE +
REACTOR, PRESSURIZED WATER

17-16476
MONTHLY OPERATING REPORT, MAY, 1965
CAROLINAS VIRGINIA NUCLEAR POWER ASSOCIATES, INC.
CVNA-236 +. 32 PAGES, MAY 1965

ONE IN A SERIES OF PROGRESS REPORTS. TOPICS INCLUDE GENERAL PLANT PERFORMANCE, PLANT
CHEMISTRY, PLANT MAINTENANCE, HEALTH AND SAFETY, STATUS OF RESEARCH AND DEVELOPMENT PROGRAMS.

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

*OPERATIONS REPORT, GENERAL + COOLANT CHEMISTRY + CVTR (CAROLINAS VIRGINIA TUBE REACTOR) +

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-16476 *CONTINUED*
MAINTENANCE AND REPAIR + RADIATION SAFETY AND CONTROL + REACTOR, HEAVY WATER + REACTOR, PRESSURE TUBE + REACTOR, PRESSURIZED WATER

17-16477 ALSO IN CATEGORY 18
MONTHLY OPERATING REPORT, APRIL, 1965
CAROLINAS VIRGINIA NUCLEAR POWER ASSOCIATES, INC.
CVNA-234 +. 30 PAGES, APRIL 1965

ONE IN A SERIES OF PROGRESS REPORTS. TOPICS INCLUDE GENERAL PLANT PERFORMANCE, PLANT CHEMISTRY, PLANT MAINTENANCE, HEALTH AND SAFETY, STATUS OF RESEARCH AND DEVELOPMENT PROGRAMS.

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

*OPERATIONS REPORT, GENERAL + COOLANT CHEMISTRY + CVTR (CAROLINAS VIRGINIA TUBE REACTOR) + MAINTENANCE AND REPAIR + RADIATION SAFETY AND CONTROL + REACTOR, HEAVY WATER + REACTOR, PRESSURE TUBE + REACTOR, PRESSURIZED WATER

17-16488 ALSO IN CATEGORY 11
LEWIS WB
DIFFUSION PHENOMENA IN SLABS OF FINITE THICKNESS.
PHILLIPS PETROLEUM COMPANY, IDAHO FALLS, IDAHO 83401
4 PAGES, 6 FIGURES, 3 REFERENCES, NUCLEAR APPLICATIONS 3(4), PAGES 222-225 (APRIL 1967)

A MATHEMATICAL MODEL WAS DEVELOPED WHICH QUALITATIVELY DESCRIBES CONTAMINATION OF A PAINT FILM OF ARBITRARY THICKNESS BY DIFFUSION OF RADIOACTIVE CONTAMINATION AFTER EXPERIMENTS ESTABLISHED THAT VOLUME CONTAMINATION WAS LARGE COMPARED WITH REMOVABLE SURFACE CONTAMINATION. MUCH OF THE CONTAMINATION TRANSPORTED TO A CONTAINMENT VESSELS INTERIOR COATING WILL BE TRAPPED AND CAN BE DISPOSED OF BY REMOVING THE COATING. CURVES ARE PRESENTED TO MAKE THE MODEL USEFUL FOR THE EXPERIMENTAL DETERMINATION OF THE DIFFUSION COEFFICIENT.

*COATING, SURFACE + *CONTAMINATION + *MATHEMATICAL TREATMENT + CONTAINMENT, GENERAL + INCIDENT, ACTUAL, RECOVERY FROM

17-16492 ALSO IN CATEGORIES 5 AND 18
INDIAN POINT 1 CHANGE 28 - COOLANT PH REACTIVITY EFFECT TESTS
CONSOLIDATED EDISON COMPANY, NEW YORK
2 PAGES, DOCKET NO. 50-3, JUNE 22, 1967

THE TECHNICAL-SPECIFICATION LIMIT RESTRICTING PH-INDUCED REACTIVITY CHANGES TO 0.5' DELTA K/K IS SUSPENDED FOR 1 MONTH FOR TESTS AS FOLLOWS - (1) AT DIFFERENT PH CONDITIONS, (A) MOVE CONTROL RODS IN 1/2-INCH INCREMENTS AT RANDOM TIME INTERVALS BETWEEN 15 AND 150 SEC. (B) CHANGE POWER LEVEL BETWEEN 40 AND 100%. (2) ADJUST PH FROM 5.6 TO 7 IN A FEW HOURS, AND FOLLOW REACTIVITY WITH CONTROL RODS. ONLY SIGNIFICANT DEPARTURE FROM ROUTINE IS A WEEKS PRIOR OPERATION AT PH 5.6 INSTEAD OF THE NORMAL 7.0. THE MAXIMUM PH REACTIVITY CHANGE IS EXPECTED TO BE 0.8' OVER A 24-HOUR INTERVAL.

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

*COOLANT CHEMISTRY + *REACTIVITY EFFECT, ANOMALOUS + *TECHNICAL SPECIFICATIONS + INDIAN POINT 1 + PH REACTIVITY EFFECT + REACTOR, PRESSURIZED WATER + SAFETY EVALUATION + TEST, PHYSICS

17-16582
CHANGE 3 - DRL AUTHORIZES UNIVERSITY OF FLORIDA TO INCREASE DIAMETER OF GRAPHITE ACCESS HOLE, AND RELOCATE PNEUMATIC TRANSFER SYSTEM.
UNIVERSITY OF FLORIDA, GAINESVILLE, FLORIDA
4 PAGES, OCTOBER 4, 1966, DOCKET 50-83

DRL APPROVES CHANGES TO UNIVERSITY OF FLORIDA TRAINING REACTOR, INCLUDING (1) ENLARGEMENT OF CENTRAL VERTICAL ACCESS HOLE IN GRAPHITE CENTER ISLAND FROM 1-3/4 TO 2 IN. IN DIAMETER, (2) RELOCATION OF TUBING FOR EXISTING PNEUMATIC TRANSFER SYSTEM AND INSTALLATION OF A SECOND SYSTEM AT SAME LOCATION. INCREASE IN DIAMETER WILL PERMIT IRRADIATION OF LARGER SAMPLES, BUT PRESENT RESTRICTIONS ON REACTIVITY WORTH OF SAMPLES WILL NOT ALLOW THIS TO BECOME SAFETY PROBLEM. RELOCATION OF RABBIT TUBE IN PNEUMATIC SYSTEM WILL ALLOW MINOR REPAIRS WITHOUT REQUIRING PARTIAL DISMANTLING OF REACTOR OR CAUSING ANYONE TO WORK IN HIGH-RADIATION AREAS.

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

*IN PILE EXPERIMENT + ARGONAUT (ARGONNE NUC ASSEMBLY, UNIV TRAINING) + REACTOR, FLUX TRAP + REACTOR, TRAINING + TECHNICAL SPECIFICATIONS

17-16760 ALSO IN CATEGORY 15
CALLEY HW + KEMMET LH
RADIOLOGICAL CONTROL. SHIPPINGPORT PWR CORE 1, CORE 2 REPLACEMENT AND THE PWR CORE 2 MODIFICATION PROGRAM

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-16760 *CONTINUED*
WESTINGHOUSE ELECTRIC CORP., BETTIS ATOMIC POWER LAB., PITTSBURGH
WAPD-298 +. 45 PAGES, 7 FIGURES, 11 TABLES, 8 REFERENCES, MARCH 1967

THE 7-MONTHS PROGRAM (BEGUN IN FEBRUARY 1964) INCLUDED REPLACEMENT OF STEAM GENERATORS AND PUMPS. MANY OUTSIDE-CONTRACTOR PERSONNEL WERE USED, SO AN ELABORATE CONTROL PROGRAM RESULTED. ONLY 2 PEOPLE RECEIVED MORE THAN 3 REMS, ONE DUE TO ERROR IN TOTALING PREVIOUS EXPOSURE, ONE DUE TO RADIATION INCIDENT AT AN ANGLE TO BADGE. SPECIAL EXHAUST SYSTEMS WERE USED FOR EACH CHAMBER. CONTRACTOR PERSONNEL WERE MONITORED BY DLCS. OTHER SPECIAL METHODS ARE DESCRIBED.

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

*MODIFICATION, SYSTEM OR EQUIPMENT + *RADIATION SAFETY AND CONTROL + *REFUELING + REACTOR, PRESSURIZED WATER + SHIPPINGPORT

17-16761 ALSO IN CATEGORY 15
INCIDENTS DURING 1964 SHIPPINGPORT MODIFICATION
WESTINGHOUSE ELECTRIC CORP., BETTIS ATOMIC POWER LAB., PITTSBURGH
WAPD-298 +. 2 PAGES, PAGE 21 AND 43 OF RADIOLOGICAL CONTROL. SHIPPINGPORT PWR CORE 1, CORE 2 REPLACEMENT AND THE PWR CORE 2 MODIFICATION PROGRAM, MARCH, 1967

(PAGE 21) - SEVERAL INCIDENTS INVOLVED UNNECESSARY RADIATION EXPOSURE TO RADIOGRAPHERS WORKING ON PIPE WELDING. IN EACH INSTANCE, THE INCIDENT WAS THE DIRECT RESULT OF CARELESSNESS OR NEGLIGENCE BY THE RADIOGRAPHER OR FAILURE TO FOLLOW THE OPERATING PROCEDURES. (PAGE 43) - A PIPEFITTER REMOVED A PLUG AND GROUND THE HOLE. A 12-IN. BLUE FLAME FLASHED OUT. THE FITTER CONTINUED WORK AND AT SHIFT CHANGE WAS CONTAMINATED (4 MREM/HR). PROCEDURE NOW REQUIRES USE OF A PIPE CUTTER, EXPLOSIMETER, AND NITROGEN PURGE.

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

*MAINTENANCE AND REPAIR + *PERSONNEL EXPOSURE, RADIATION + *RADIATION SAFETY AND CONTROL + *RADIOGRAPHY + FAILURE, OPERATOR ERROR + REACTOR, PRESSURIZED WATER + SHIPPINGPORT + WELDING

17-16768
POLYURETHANE INSULATION FIRE DUE TO IMPROPER INSTALLATION
PHILADELPHIA ELECTRIC COMPANY
17 PAGES, APRIL 1967, PEACH BOTTOM ATOMIC POWER STATION, MONTHLY OPERATIONS REPORT NO. 14, DOCKET NO. 50-171

THREE HOURS AFTER POLYURETHANE-INSULATION SPRAYING HAD CEASED, FIRE WAS DISCOVERED IN THE LOW-TEMPERATURE DELAY BEDS. DAMAGE WAS MINOR. SPONTANEOUS COMBUSTION RESULTED WHEN SUCCESSIVE LAYERS WERE APPLIED WITH INSUFFICIENT WAITING TIME FOR THE EXOTHERMIC CURING REACTION TO COOL OFF, RESULTING IN STRUCTURAL BREAKDOWN AND IGNITION.

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

*FAILURE, INSTALLATION ERROR + *FIRE + *INCIDENT, ACTUAL, HUMAN ERROR + *THERMAL INSULATION + PEACH BOTTOM 1 + REACTOR, GAS COOLED

17-16769
MONTHLY OPERATIONS REPORT NO. 1, PEACH BOTTOM ATOMIC POWER STATION
PHILADELPHIA ELECTRIC COMPANY
27 PAGES, MARCH 1966, DOCKET NO. 50-171

THE BEARING WAS REPLACED ON THE TELESCOPING SHAFT OF THE FUEL-TRANSFER MACHINE BECAUSE OF EXCESSIVE POWER REQUIREMENTS FOR EXTENSION. INSPECTION OF 2 CONTROL-ROD-DRIVE LINEAR ACTUATORS SHOWED A NUMBER OF FRACTURED BALLS IN THE BALL-NUT LEAD-SCREW ASSEMBLY. INSUFFICIENT LUBRICATION OF A HELIUM COMPRESSOR DURING LOW-PRESSURE OPERATION RESULTED IN FAILURE TO START BECAUSE OF SEIZURE. A SCRAM RESULTED FROM NOISE GENERATED WHEN A SAFETY-CHANNEL DRAWER WAS PUSHED IN TO ITS NORMAL POSITION AFTER MAINTENANCE. A SCRAM RESULTED WHEN A TECHNICIAN PERFORMING MAINTENANCE GROUNDED THE POWER SUPPLY TO A SAFETY CHANNEL. A SCRAM OCCURRED WHEN AN OPERATOR REACHING OVER THE CONSOLE FOR A LOG BOOK BUMPED THE MANUAL SCRAM BUTTON. A GUARD WAS INSTALLED TO PREVENT RECURRENCE.

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

*OPERATING EXPERIENCE + CONTROL ROD DRIVE + FAILURE, EQUIPMENT + FAILURE, OPERATOR ERROR + FAILURE, SCRAM MECHANISM + FUEL HANDLING MACHINE + LUBRICATION + MAINTENANCE AND REPAIR + OPERATIONS REPORT, GENERAL + PEACH BOTTOM 1 + REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED + SCRAM, REAL

17-16929
ELK RIVER REACTOR SYSTEM MONITORING DATA
RURAL COOPERATIVE POWER ASSOCIATION
COO-451-32 +. 61 PAGES, 14 FIGURES, SEPTEMBER 1966

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-16929 *CONTINUED*

BULK OF REPORT IS DATA ON WATERBORNE AND AIRBORNE ACTIVITY LEVELS IN PLANT LOCATION AND SYSTEMS. TRITIUM REACHES EQUILIBRIUM ABOUT 3 MONTHS AFTER A CYCLE STARTUP, BUT ONLY 1/10TH OF THAT EXPECTED. IODINE IN COOLANT IS RELATED TO CRUD BURSTS, INDICATING THAT CRUD IS A HOLDUP MECHANISM. REACTOR-OFFGAS SYSTEM (SCRUBBER, FILTER, ETC.) WAS TRIED OUT.

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

*MONITORING SYSTEM, RADIATION + *OPERATIONS REPORT, ANALYSIS + *SURVEILLANCE PROGRAM + ELK RIVER + REACTOR OFFGAS + REACTOR, BOILING WATER + TRITIUM

17-16989

POPE WC + CRESSWELL TJ

A NEW APPROACH TO SAFETY PROGRAMS MANAGEMENT

U. S. DEPARTMENT OF LABOR

6 PAGES, JOURNAL OF THE AMERICAN SOCIETY OF SAFETY ENGINEERS 10(8), PAGES 11-16 (MAY 1965)

SEVERAL PROBLEMS ARE DISCUSSED - (1) OBTAINING MANAGEMENT SUPPORT FOR SAFETY PROGRAMS, (2) CONCENTRATING IN THE SAFETY MANAGER ALL TRUE SAFETY FUNCTIONS (WORK INJURY, VEHICLE ACCIDENTS, FIRE AND OTHER PROPERTY-DAMAGE PREVENTION, PUBLIC SAFETY), (3) RELIEVING HIM OF FUNCTIONS OUTSIDE HIS SCOPE (EMPLOYEE HEALTH, FIRST-AID TRAINING, COMPENSATION CLAIMS), (4) WHAT SECTIONS OF THE MANAGEMENT MUST BE CANVASSED FOR SUPPORT OF THE SAFETY PROGRAM, AND (5) HOW TO OBTAIN THE SUPPORT OF OTHER MANAGEMENT SECTIONS BY SHOWING THE DIRECT INVOLVEMENT OF SAFETY IN THEIR FUNCTIONS.

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

17-17055

ALSO IN CATEGORY 11

RINGSTAD B + SKINSTAD A

PERFORMANCE OF INSULATION FOR PRE-STRESSED CONCRETE PRESSURE VESSELS FOR BOILING HEAVY WATER REACTORS

AKTIEBOLAGET ATOMENERGI, STOCKHOLM, SWEDEN

6 PAGES, 6 FIGURES, 6 REFERENCES, NUCLEAR ENGINEERING AND DESIGN 5(2) PAGES 177-182 (MARCH 1967)

THE INSULATION SELECTED FOR THE SWEDISH DEVELOPMENT OF PRESTRESSED CONCRETE PRESSURE VESSELS FOR BOILING HEAVY-WATER REACTORS IS OF THE METAL-FOIL STAGNANT-GAS-SPACE TYPE, USING A WATER LOCK FOR SELF-EQUILIBRATING THE PRESSURES BETWEEN THE STEAM AND GAS SPACES. THE ARTICLE DISCUSSES DESIGN AND OPERATIONAL BEHAVIOR OF THE INSULATION SYSTEM, WITH PARTICULAR CONSIDERATION TO ACCIDENT CONDITIONS. A TESTING PROGRAM TO ASCERTAIN THE PERFORMANCE OF THE INSULATION UNDER VARIOUS NORMAL AND ACCIDENT CONDITIONS IS OUTLINED, AND TEST EQUIPMENT AND MEASURING TECHNIQUE ARE DESCRIBED. PRELIMINARY RESULTS OF THE MEASUREMENTS ARE REPORTED AND COMPARED WITH OTHER REACTOR-VESSEL INSULATION TESTS.

*CONCRETE, PRESTRESSED + *PRESSURE VESSEL + *THERMAL INSULATION + HEAT TRANSFER, CONDUCTION + HEAT TRANSFER, CONVECTION + REACTOR, BOILING WATER + REACTOR, HEAVY WATER + SWEDEN

17-17061

ALSO IN CATEGORIES 11 AND 18

NORRIS EB + PICKETT AG + WYLIE RD

PROPOSED CHANGES IN THE TECHNICAL SPECIFICATIONS FOR THE ELK RIVER REACTOR SYSTEM

SOUTHWEST RESEARCH INSTITUTE, SAN ANTONIO, TEXAS

SWRI-1228P4-29 +. 50 PAGES, FIGURES, REFERENCES, FEBRUARY 10, 1967

THE TECHNICAL SPECIFICATIONS FOR THE ELK RIVER REACTOR PROJECT CONTAIN A NUMBER OF PROVISIONS RELATED TO THE INTEGRITY OF THE PRESSURE VESSEL. THESE PROVISIONS WERE REVIEWED IN THE LIGHT OF INFORMATION DEVELOPED TO DATE ON THE MATERIALS, FABRICATING PROCESSES, AND INSPECTION OF THE VESSEL. THIS REPORT IS SET UP IN THE FORM OF PROPOSED CHANGES IN THE TECHNICAL SPECIFICATIONS AND THE JUSTIFICATION FOR THESE CHANGES. DATA ARE PRESENTED TO SUPPORT THE REMOVAL OF THE 250-CYCLE AND FIVE-YEAR LIMITATION WHICH PRESENTLY EXISTS FOR THE PRESSURE VESSEL. A SUMMARY IS PRESENTED OF THE AVAILABLE INFORMATION TO DATE ON THE REACTOR-MATERIAL-SURVEILLANCE PROGRAM. THE DETECTION OF EXTENSIVE STRESS-CORROSION CRACKING IN THE CLADDING AT THE VESSEL FLANGE LED TO AN ANALYSIS OF THE PROBABILITY OF PROPAGATION OF THESE DEFECTS AT THIS LOCATION IN ADDITION TO THOSE IN THE STRENGTH WELDS. IT IS SUGGESTED THAT A PROGRAM BE INITIATED TO CONTINUE STUDIES OF THE POSSIBILITY OF REMOVING THE REACTOR INTERNALS SO THAT, AT SOME TIME IN THE HISTORY OF THE PLANT, A THOROUGH INSPECTION OF THE PRESSURE VESSEL CAN BE MADE. IN THE MEANTIME, INSPECTIONS NOW BEING MADE BY CONVENTIONAL MEANS, THAT IS, VISUAL, DYE PENETRANT, AND ULTRASONIC, WHERE APPLICABLE, SHOULD BE CONTINUED.

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

*ELK RIVER + *PRESSURE VESSEL + *SURVEILLANCE PROGRAM + *TECHNICAL SPECIFICATIONS + CLAD + FLAW + STEEL + STRESS CORROSION + STRUCTURAL INTEGRITY + TEST, NONDESTRUCTIVE + WELDS

17-17124

ALSO IN CATEGORY 7

MINER D + FLETCHER WD + KITZES AS + TAYLOR GR

A FACILITY FOR THE PERFORMANCE EVALUATION OF FULL SIZE CHARCOAL FILTERS IN REMOVING RADIO-IODINE

WESTINGHOUSE ELECTRIC CORPORATION, ATOMIC POWER DIVISION, PITTSBURGH, PA.

CONF-670-713 +. 22 PAGES, 13 FIGURES, ABSTRACT IN ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 1,

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17124 *CONTINUED*
(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

TRANSPORTABLE FACILITY TESTS IN A CLOSED LOOP UP TO 1000 CFM WITH SATURATED WATER VAPOR AT 320 F AND 100 PSIG. METHYL IODIDE TRACED WITH I-131 IS INJECTED WITH NITROGEN. METHYL IODIDE IS DETECTED WITH A GAS CHROMATOGRAPH AND AN ELECTRON-CAPTURE DETECTOR (MIN. SENSITIVITY, 3 MG/CU. METER). ACTIVITY IS DETECTED ON MOLECULAR-SIEVES AND CHARCOAL WITH A WELL-TYPE SCINTILLATION DETECTOR (MIN. SENSITIVITY, 5 TIMES 10 TO THE MINUS 5TH MICROCURIE/LITER).

*CHARCOAL + *FILTER + *SYSTEM DESCRIPTION + *TEST, FILTER + ORGANIC IODIDE + REACTOR, POWER

17-17125 ALSO IN CATEGORIES 7 AND 15

DRAPER WE

EFFLUENT AND FILTER MONITOR SYSTEM

GENERAL DYNAMICS, FORT WORTH DIVISION

CONF-670-713 + FZK-336 +. 36 PAGES, 7 FIGURES, 2 TABLES, 13 REFERENCES, ABSTRACT IN ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 1, (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

THE 10,000-CFM GTR. TEST-CELL VENTILATION AIR IS PASSED THROUGH HIGH-EFFICIENCY AND CHARCOAL FILTERS (INSTALLED SEPT. 1966) AND EXHAUSTED UP A STACK. INITIAL CHARCOAL INSTALLED-TESTS WITH R12 WERE UNSATISFACTORY BECAUSE OF ALMOST INSTANTANEOUS BREAKTHROUGH AT 50 FT/MIN. BANANA OIL WAS USED. QUARTERLY TESTS ARE MADE WITH ELEMENTAL IODINE IN THE LAB ON A CHARCOAL SAMPLE. THE BANANA-OIL TEST IS USED EACH TIME THE FILTER IS DISTURBED. THE MONITORING SYSTEM ALARMS WHEN EITHER I-131 OR AR-41 REACHES A STACK CONCENTRATION (ALSO THE MINIMUM DETECTABLE) EQUIVALENT TO 1 MPC OFF-SITE. SAMPLE AIR PASSES THROUGH CHARCOAL TRAP (WITH BETA-GAMMA COINCIDENCE FOR I-131) TO A HOLDUP VOLUME (WITH TWO SOLID-STATE DETECTORS FOR AR-41).

*ARGON + *FISSION PRODUCT, IODINE + *MONITOR, RADIATION, STACK + *SYSTEM DESCRIPTION + REACTOR, AEC OWNED + REACTOR, TEST

17-17126 ALSO IN CATEGORY 9

HERBST DA + KUNCL LG + TALBOY JH

A CHERENKOV COUNTER FOR DETECTING FISSION PRODUCTS IN REACTOR WATER

ARGONNE NATIONAL LAB., ARGONNE, ILLINOIS

CONF-670-713 +. 2 PAGES, 1 TABLE, 1 REFERENCE, ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 2 AND 3, (JULY 1967, CONFERENCE ON REACTOR OPERATING EXPERIENCE, REACTOR OPERATIONS DIVISION OF THE AMERICAN NUCLEAR SOCIETY, ATLANTIC CITY, JULY 23-26, 1967

A DETECTOR WAS INSTALLED IN THE JUGGERNAUT REACTOR, WITH CHERENKOV DETECTOR SET TO REFLECT LIGHT PULSES COMING FROM BETA ENERGIES LESS THAN 2.81 MEV. N-16 BETA IS REDUCED BY MONITORING WITH 65-SEC TIME DELAY AFTER LEAVING THE CORE. MINIMUM SENSITIVITY IS EQUIVALENT TO 5 TIMES 10 TO THE MINUS 3 MICROCURIE/CC, WHICH IS EQUIVALENT TO AN UNCLAD FUEL AREA OF 0.5 SQ. CM.

*INSTRUMENTATION, DETECTION FAILED FUEL ELEMENT + ANL (ARGONNE NATIONAL LABORATORY) + OPERATING EXPERIENCE + REACTOR, AEC OWNED + REACTOR, RESEARCH

17-17127 ALSO IN CATEGORY 5

RUST JH + MEEM JL + DAHLHEIMER J

SAFETY ANALYSIS OF POOL REACTORS

THE UNIVERSITY OF VIRGINIA, CHARLOTTESVILLE, VIRGINIA

CONF-670-713 +. 30 PAGES, 7 FIGURES, 18 REFERENCES, ABSTRACT IN ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 3, (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

THE EFFECTS OF POOL TEMPERATURE, HEAT-FLUX-DISTRIBUTION ASSUMPTIONS, FLOW RATE AND CHANNEL GEOMETRY WERE STUDIED TO OBTAIN AN ANALYTICAL PROCEDURE FOR PREDICTING BURNOUT, FLOW INSTABILITY AND INCIPIENT BOILING IN A PLATE-TYPE CORE BEFORE UPGRATING FROM 1 TO 2 MWTH. GAMBILL CORRELATION USED FOR SUBCOOLED BURNOUT, ROHSENOW AND BERGLES FOR INCIPIENT BOILING. ANALYSIS WAS CONSERVATIVE. CHECKED AGAINST ORR DATA. REPORT PRESENTS AND DISCUSSES EQUATIONS USED. SAFETY SYSTEM SETTINGS WERE CHOSEN TO MAINTAIN A BURNOUT RATIO OF 3.2. (FOR MORE DETAILS SEE CHAP. 5 OF UVAR-17, SAFETY ANALYSIS REPORT FOR POWER UPGRATING).

*HEAT TRANSFER ANALYSIS + *MATHEMATICAL STUDY + *POWER UPGRATING + BURNOUT HEAT FLUX + FLOW STABILITY + MATHEMATICAL TREATMENT + NUCLEATE BOILING + REACTOR, POOL TYPE + SAFETY ANALYSIS

17-17128 ALSO IN CATEGORY 11

LARSON HJ + DARMOHRAJ GF

SCRAM REDUCTION AT THE GENERAL ELECTRIC TEST REACTOR

GENERAL ELECTRIC CO., IRRADIATION PROCESSING OPERATION, PLEASANTON, CALIFORNIA

CONF-670-713 +. 10 PAGES, 4 FIGURES, ABSTRACT IN ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 3, (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

THE SCRAM RATE HAS BEEN REDUCED FROM 123/YEAR (1964) TO 50 (HALF YEAR, 1967). BOTH EQUIPMENT- AND MANAGERIAL-ORIENTED APPROACHES ARE NECESSARY. (EQUIPMENT) IN DEC. 1965, A NEW SAFETY

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17128 *CONTINUED*

SYSTEM AND LOG-N AMPLIFIER WAS INSTALLED BECAUSE THE NO-LONGER-MANUFACTURED ITEM WAS CONTINUALLY BEING REBUILT. THE FLOW SCRAM WAS MADE 2/3 AND CHANGED FROM RELUCTANCE-GRIDGE/MERCURY-RELAY TO PRESSURE SWITCH FOLLOWING LOSS-OF-FLOW CALCULATION. UNNEEDED SCRAMS WERE REMOVED FROM INSTRUMENTS. (MANAGERIAL) A RELIABILITY ENGINEER STUDIED SYSTEMS. ALTHOUGH THE CONTAINMENT AIRLOCK DOORS HAD ZERO FAILURE IN 100,000 ENTRIES OVER 8 YEARS, HE FOUND THAT IN 9 OUT OF 10 TRIES, BOTH DOORS WOULD OPEN TOGETHER IF ACTUATED NEARLY SIMULTANEOUSLY. AN ELECTRICAL INTERLOCK WAS INSTALLED TO PARALLEL THE MECHANICAL INTERLOCK. EACH SCRAM IS INVESTIGATED, PROCEDURES ARE PERIODICALLY REVIEWED, AND OPERATORS TESTED.

*OPERATING EXPERIENCE + *RELIABILITY ANALYSIS + *SCRAM, SPURIOUS + CONTAINMENT AIR LOCK + FAILURE, DESIGN ERROR + GETR (GENERAL ELECTRIC TEST REACTOR) + INSTRUMENTATION, GENERAL + OPERATIONS REPORT, ANALYSIS + REACTOR SAFETY SYSTEM + REACTOR, TEST

17-17129 ALSO IN CATEGORY 9

ZANOT JR

RELATING OPERATING EXPERIENCE, PREVENTIVE MAINTENANCE, AND RELIABILITY ANALYSES

GENERAL ELECTRIC ATOMIC POWER LABORATORY, VALLECITOS

CONF-670-713 +. 2 PAGES, ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 4 AND 5, (JULY 1967), CONFERENCE ON REACTOR OPERATING EXPERIENCE, REACTOR OPERATIONS DIVISION OF THE AMERICAN NUCLEAR SOCIETY, ATLANTIC CITY, JULY 23-26, 1967

RELIABILITY-ANALYSIS APPLICATION TO MAINTENANCE AND TO I AND C REDESIGN WAS BEGUN IN JUNE 1966 TO REDUCE THE SPURIOUS SCRAM RATE. ACCURATE COMPONENT-FAILURE HISTORY WAS BEGUN, AND MAINTENANCE REPROGRAMMED (E.G., FOR THE 2/3 LOW PRIMARY DELTA-P SYSTEM, THE FAILURE RATE OF THE DELTA-P MICROSWITCH GOVERNS THE SYSTEM FAILURE RATE, WHICH IS 1 IN 2000 YEARS. THUS, MAINTENANCE COULD BE REDUCED). AN 8-YEAR-OLD 1/1 RELAY-SCRAM SYSTEM WAS KEPT AS A BACKUP AFTER A NEW 2/3 SOLID-STATE CIRCUIT WAS INSTALLED. SUBSEQUENTLY IT WAS SHOWN VERY UNRELIABLE AND WAS REMOVED. SIMILARLY, THE REACTOR-OUTLET-TEMP. SCRAM WAS UNRELIABLE, AND A BACKUP TO THE 2/3 FLUX SCRAM.

*MAINTENANCE AND REPAIR + *OPERATING EXPERIENCE + *RELIABILITY ANALYSIS + GETR (GENERAL ELECTRIC TEST REACTOR) + INSTRUMENTATION, COINCIDENT + INSTRUMENTATION, FLOW + INSTRUMENTATION, RELAY + INSTRUMENTATION, TEMPERATURE + REACTOR SAFETY SYSTEM + REACTOR, TEST + SCRAM, SPURIOUS

17-17130 ALSO IN CATEGORY 9

BATES AE + EPLER EP + DAKES LC

OPERATING EXPERIENCE WITH THE HFIR PROTECTION SYSTEM

OAK RIDGE NATIONAL LAB., TENN.

CONF-670-713 +. 15 PAGES, 1 FIGURE, 1 TABLE, ABSTRACT IN ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 5, (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

HFIR HAS A 3-CHANNEL GENERAL-COINCIDENCE SYSTEM (ANY 2 QUANTITIES IN DIFFERENT CHANNELS EXCEEDING TRIP POINT CAUSE SCRAM). FEW PROBLEMS HAVE OCCURRED IN DAILY TEST OF CHANNEL (COMPLETE FROM SENSOR TO SCRAM MAGNET), AND THEY CAN BE PROMPTLY SOLVED. UNWANTED SCRAMS HAVE NOT OCCURRED. ONLY 3 SCRAMS HAVE OCCURRED IN THE YEAR OF FULL-POWER OPERATION. FIELD-EFFECT TRANSISTORS NEED SPECIAL TREATMENT IN THE FIELD, E.G., A GROUND TO FET SIGNAL LEAD WHILE REPLACING AMPLIFIER TO AVOID SHOCK DUE TO CABLE-VOLTAGE BUILDUP, DIODES ADDED TO PREVENT FET PUNCTURE ON NOISE SPIKE.

*OPERATING EXPERIENCE + *REACTOR SAFETY SYSTEM + FAILURE, COMPONENT + HFIR (HIGH FLUX ISOTOPE REACTOR) + INSTRUMENTATION, COINCIDENT + INSTRUMENTATION, TESTING + REACTOR, AEC OWNED + REACTOR, FLUX TRAP

17-17131 ALSO IN CATEGORY 6

WOODRUFF RW

EFFECT OF DISSOLVED HELIUM IN SRE

ATOMICS INTERNATIONAL, SAN DIEGO, CALIFORNIA

CONF-670-713 +. 2 PAGES, 4 REFERENCES, ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 5 AND 6, (JULY 1967), CONFERENCE ON REACTOR OPERATING EXPERIENCE, REACTOR OPERATIONS DIVISION OF THE AMERICAN NUCLEAR SOCIETY, ATLANTIC CITY, JULY 23-26, 1967

SOLUBILITY OF INERT COVER GASES (HE OR AR) WILL BE A DESIGN PROBLEM IN LIQUID-METAL-COOLED REACTORS. SRE TRANSIENTS (20 F AND 25' ON NEUTRON FLUX) OCCURRED ABOUT DAILY AND LASTED 1 SEC - THE CORE TRANSIENT TIME. COVER-GAS BUBBLES WERE THOUGHT TO ACCUMULATE AT A HEAT-EXCHANGER OUTLET UNTIL ENOUGH VOLUME CHOKED FLOW AND SWEPT OUT A LARGE BUBBLE. SMALL BUBBLES WERE NOT TRAPPED BUT PASSED CONTINUOUSLY THROUGH THE CORE, PROBABLY ACCOUNTING FOR THE NOISE-SPECTRUM DEVIATION FROM A WHITE SPECTRUM. BLEED LINES AT TRAPS, AND DE-ENTRAINMENT AT REACTOR INLETS SHOULD BE USED. ARGON WOULD HAVE SIGNIFICANTLY REDUCED THE VOLUME OF THE GAS TRANSPORTED.

*COOLANT QUALITY + *HELIUM + *REACTIVITY EFFECT, ANOMALOUS + NOISE + REACTOR, AEC OWNED + REACTOR, LIQUID METAL COOLED + SRE (SODIUM REACTOR EXPERIMENT)

17-17133

FELTZ DE + MASON PM + RANDALL JD

DESIGN, INSTALLATION, AND TESTING OF A STAINLESS STEEL LINER FOR A SWIMMING POOL REACTOR

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17133 *CONTINUED*

NUCLEAR SCIENCE CENTER, TEXAS ENGINEERING EXPERIMENT STATION, TEXAS A AND M UNIVERSITY, COLLEGE STATION, TEXAS

CONF-670-713 +. 7 PAGES, 2 FIGURES, 1 REFERENCE, NUCLEAR SCIENCE CENTER TECHNICAL REPORT NUMBER 21, ABSTRACT IN ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 8, (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

1000 GAL/DAY LEAKAGE FROM THE ORIGINAL EPOXY/ALUMINUM POOL LINING REQUIRED REPLACEMENT. A SURVEY SHOWED METAL LINING PREFERABLE TO CERAMIC TILE OR EPOXY. (ORIGINAL EPOXY WAS APPLIED TO WET CONCRETE, AND ALUMINUM HAD NO TESTING PROVISIONS FOR PENETRATIONS). BUILT-IN LEAKOFF SYSTEM WAS USED FOR FREON 22 TESTING OF PENETRATION WELDING, WHEN 1500 G/DAY LEAKAGE SHOWED THE VACUUM-BOX AND SOAP BUBBLE TECHNIQUE WAS INADEQUATE.

*MODIFICATION, SYSTEM OR EQUIPMENT + *STEEL LINER + FUEL STORAGE + MAINTENANCE AND REPAIR + REACTOR, POOL TYPE + TEST, LEAK RATE + TESTABILITY

17-17135 ALSO IN CATEGORY 15

DE WITT RB + BIGGS RR

MAINTENANCE EXPERIENCE, REACTOR RECIRCULATING PUMPS

CONSUMERS POWER COMPANY, CHARLEVOIX, MICHIGAN

CONF-670-713 +. 10 PAGES, 4 FIGURES, ABSTRACT IN ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 9, (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

ORIGINAL SHAFT ROTATING-SEALS WERE STELLITE, REPLACED AFTER 6000 HR WITH SAPPHIRE OR TUNGSTEN CARBIDE AFTER AN ELECTROLYTIC CELL WAS FOUND WHEN PUMPS WERE IDLE. AFTER 16,000 HR, THE TUNGSTEN CARBIDE SEALS FAILED ON STARTUP AFTER REFUELING. PLANT MAINTENANCE MEN HAD THEIR 3-RQTR LIMIT, SO OTHERS WERE CALLED IN. CARBIDE SEAL HAD BROKEN, SCORING THE SHAFT, SO WHOLE IMPELLER WAS REMOVED. DECONTAMINATION REDUCED FROM 20 R/HR TO 9 R/HR, AND IMPELLER PLACED IN SHIELDED WATER TANK. THREE GROUPS OF MEN WERE USED, EACH TAKING ABOUT 2.5 R. DURING CONSTRUCTION, PLANT LAYOUT SHOULD BE EXAMINED TO REDUCE NEEDLESS EXPOSURE. DURING MAINTENANCE, MODIFICATION AND RECORDS SHOULD REDUCE FUTURE RADIATION. MANPOWER WITH SKILLS AND LOW EXPOSURE MUST BE AVAILABLE FROM OUTSIDE PLANT.

*MAINTENANCE AND REPAIR + *PUMP + *RADIATION SAFETY AND CONTROL + BIG ROCK POINT + OPERATING EXPERIENCE + REACTOR, BOILING WATER

17-17136 ALSO IN CATEGORY 15

COLLINS JH

PREPARATIONS FOR REPLACING THE NRU REACTOR VESSEL

ATOMIC ENERGY OF CANADA LTD., CHALK RIVER

CONF-670-713 +. 2 PAGES, ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 9 AND 10, (JULY 1967), CONFERENCE ON REACTOR OPERATING EXPERIENCE, REACTOR OPERATIONS DIVISION OF THE AMERICAN NUCLEAR SOCIETY, ATLANTIC CITY, JULY 23-26, 1967

A NEW ALUMINUM SIDE-WALL SECTION WILL BE PLACED BETWEEN SS TOP AND BOTTOM HEADERS. REMOTE-VIEWING TOOLING, TRAINING MOCKUP, SHIELDED ACCESSSES ARE ALL TO BE USED AS WELL AS THE USUAL DETAILED PROCEDURES AND PERT SCHEDULING. CONTACT RADIATION FIELDS ARE ESTIMATED AT 20,000 R/HR.

*MAINTENANCE AND REPAIR + *PRESSURE VESSEL + *PROCEDURES AND MANUALS + CANADA + NRU (CHALK RIVER NATURAL URANIUM REACTOR) + RADIATION SAFETY AND CONTROL + REACTOR, HEAVY WATER + REACTOR, TEST + REMOTE MANIPULATING AND VIEWING

17-17137

DOMBRA AH

LOCATION OF HEAVY-WATER LEAKS IN CANADIAN POWER REACTORS

ATOMIC ENERGY OF CANADA LTD., CHALK RIVER

CONF-670-713 +. 2 PAGES, 1 FIGURE, 3 REFERENCES, ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 10 AND 11, (JULY 1967), CONFERENCE ON REACTOR OPERATING EXPERIENCE, REACTOR OPERATIONS DIVISION OF THE AMERICAN NUCLEAR SOCIETY, ATLANTIC CITY, JULY 23-26, 1967

BOLTED FLANGES AND VALVES ACCOUNT FOR 90% OF THE LEAKS AT NPD. TAPES AND PAINTS, STABLE UP TO 290 C FOR A YEAR, ARE USED. THE ACTIVE INGREDIENTS ARE YELLOW STRONTIUM CHROMATE AND SILVER SULPHATE, WHICH WATER TURNS TO SILVER CHROMATE. THEIR USE FOUND 5 OUT OF 500 FITTINGS WERE LEAKING.

*COATING, SURFACE + *TEST, LEAK LOCATION + CANADA + NPD 2 (NUCLEAR POWER DEMONSTRATION REACTOR 2) + REACTOR, HEAVY WATER + REACTOR, PRESSURIZED WATER

17-17139

HURT SS

EXPERIENCE WITH NEUTRON DAMAGE TO BERYLLIUM AND ALUMINUM LATTICE COMPONENTS AT THE ORR

OAK RIDGE NATIONAL LAB., TENN.

CONF-670-713 +. 22 PAGES, 10 FIGURES, 3 TABLES, 3 REFERENCES, ABSTRACT IN ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 11, (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

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17139 *CONTINUED*

THE SOLID ALUMINUM SECTIONS OF 2 SHIM RODS IN THE REFLECTOR REGION DID NOT PASS A FREEDOM TEST IN SEPT. 1966 DUE TO BOWING TOWARD THE FUEL REGION - SIMILAR TO THE PREVIOUS PROBLEM WITH BERYLLIUM. BOWING PROGRESSES AT ABOUT 0.015 IN./10,000 MWD. REFLECTOR BERYLLIUM DEFLECTION WAS AT 2/3 THAT RATE. PROGRAMMED MOVEMENT OF THE BERYLLIUM IS STRAIGHTENING THEM. A HOLLOW BERYLLIUM PIECE BOWS INWARD.

*ALUMINUM + *BERYLLIUM + *RADIATION DAMAGE + FAILURE, SCRAM MECHANISM + ORR (OAK RIDGE RESEARCH REACTOR) + REFLECTOR.

17-17140

ALEXANDER WK

HYDRIDING OF HANFORD PRODUCTION REACTOR ZIRCALOY PROCESS TUBES

DOUGLAS UNITED NUCLEAR INC., RICHLAND, WASHINGTON

CONF-670-713 + DUN-SA-34 +. 15 PAGES, 6 FIGURES, 3 REFERENCES, ABSTRACT IN ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 12, (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

ALUMINUM TUBES IN TWO REACTORS WERE REPLACED WITH ZIRC-2 IN 1963-64 FOR SUPERIOR CORROSION RESISTANCE. A 4-MIL HYDRIDE LAYER WAS DISCOVERED 2 YEARS LATER, ALTHOUGH IT FORMED WITHIN 60 DAYS BY GALVANIC COUPLING BETWEEN TUBE AND ALUMINUM-CLAD FUEL ELEMENTS. ALUMINUM/OXALIC-ACID ANODIZING, SEALED BY HALF-HOUR AUTOCLAVING AT 170 C, IS NOW USED TO INSULATE THE COUPLE. WHILE THE TUBES ARE NOW SIGNIFICANTLY MORE BRITTLE, THERE HAS NOT BEEN ANY LOSS IN ULTIMATE STRENGTH, AS SHOWN BY TUBE-BURST TESTS TO 4000 PSI.

*EMBRITTEMENT + *HYDRIDE + *ZIRCALOY + COATING, SURFACE + FUEL ELEMENT + HANFORD PRODUCTION REACTOR + REACTOR, AEC OWNED + REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED + REACTOR, PRESSURE TUBE + REACTOR, PRODUCTION

17-17141

ALSO IN CATEGORY 9

MARTIN RD

A LOW COST SHIM-SAFETY ROD FOR POOL TYPE REACTORS

PHOENIX MEMORIAL LABORATORY, THE UNIVERSITY OF MICHIGAN, ANN ARBOR, MICHIGAN

CONF-670-713 +. 18 PAGES, 7 FIGURES, 15 REFERENCES, ABSTRACT IN ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 13, (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

PLACED 0.997-IN. CD BETWEEN CONCENTRIC CYLINDERS OF 304SS TUBES AND USED 8 SUCH 0.5-IN.-OD CYLINDERS TO REPLACE THE CONVENTIONAL B4C POOL-REACTOR CONTROL ROD. THE REACTIVITY WORTH IS 0.99 THAT OF THE B4C, INSTEAD OF THE 0.82 GIVEN BY THE 1.5' SOLID B-SS ROD USED TO OVERCOME THE OBJECTIONABLE SWELLING OF THE B4C. IT TOOK \$150 IN MATERIALS AND 40 HR OF MACHINIST TIME. HYDRAULIC TESTS SHOW THE 10-LB ROD HAS NO VIBRATION, IS 5 LB LIGHTER THAN THE B-SS, AND 4 LB HEAVIER THAN THE B4C. LIFETIME IS ESTIMATED AS 3600 MWD. DEVELOPMENTAL PROGRAM DESCRIBED.

*CONTROL ROD BURNUP + CONTROL ROD FABRICATION + CONTROL ROD WORTH + CONTROL ROD, SHIM SAFETY + OPERATIONS REPORT, ANALYSIS + REACTOR, POOL TYPE + REACTOR, RESEARCH

17-17142

MCCORD RV

OPERATING EXPERIENCE WITH THE HFIR THROUGH JUNE, 1967

OAK RIDGE NATIONAL LAB., TENN.

CONF-670-713 +. 41 PAGES, 25 FIGURES, 2 TABLES, 5 REFERENCES, ABSTRACT IN ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 14, (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

THREE MAIN PROBLEMS HAVE BEEN - (1) EXCESSIVE WEAR OF CONTROL PLATE STELLITE-25 BEARINGS (FRETTING CORROSION, FROM HYDRAULIC VIBRATION). (2) GALLED STAINLESS STEEL CORE-COMPONENT FASTENERS DESPITE THE CARE (DISSIMILAR ALLOYS, INSERTS, ELECTROLYGED THREADS) TAKEN. SOLID LUBRICANTS AND BOLT TENSIONERS ARE NOW USED. DISSIMILAR ALLOYS WERE NOT ADVANTAGEOUS. (3) THE X8001 TARGET RODS CRACKED DUE TO FISSION-GAS-PRESSURE BUILDUP AND EMBRITTEMENT FROM AN UNKNOWN CAUSE. A HYDRAULIC TUBE WAS ADDED TO THE CENTRAL FLUX TRAP.

*ALUMINUM + *EMBRITTEMENT + *FAILURE, CLADDING + *FAILURE, SCRAM MECHANISM + *OPERATING EXPERIENCE + *PRESSURE, INTERNAL + CORE COMPONENTS, MISCELLANEOUS + FAILURE, COMPONENT + HFIR (HIGH FLUX ISOTOPE REACTOR) + REACTOR, AEC OWNED + REACTOR, FLUX TRAP

17-17143

SCOTT RL

HFIR COOLANT FLOW ANOMALIES

OAK RIDGE NATIONAL LAB., TENN.

CONF-670-713 +. 13 PAGES, 5 FIGURES, 1 TABLE, 9 REFERENCES, ABSTRACT IN ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 14, (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

WHEN ALUMINUM CORE COMPONENTS STORED IN THE POOL FORMED A LOOSE OXIDE THAT CEMENTED CLOSE-FITTING COMPONENTS, A SMOOTH BOEHMITE OXIDE WAS INDUCED ON FUEL ELEMENTS BY 3 DAYS EXPOSURE TO DEMIN. WATER AT 200 F. WHEN POWER OPERATION BEGAN, FLOW DECREASES AS GREAT AS

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17143 *CONTINUED*

9' WERE NOTED. BOTH WET- AND DRY-STORED PRETREATED FUEL WERE TRIED, WITH DRY-STORED SHOWING GREATEST DROP IN FLOW (ABOUT 9' AT 3 WEEKS) AFTER AN INITIAL INCREASE. EVENTUALLY, PRETREATMENT WAS DISCONTINUED WHEN NO ADVANTAGE FOUND.

*FLOW ORIFICE OR RESTRICTION + *FUEL ELEMENT + *SURFACE FILM DEPOSIT + COOLANT CHEMISTRY + HFIR (HIGH FLUX ISOTOPE REACTOR) + MAIN COOLING SYSTEM + OPERATING EXPERIENCE + REACTOR, AEC OWNED + REACTOR, FLUX TRAP

17-17144

STANFORD LE

POWER INCREASE OF THE OAK RIDGE NATIONAL LABORATORY BULK SHIELDING REACTOR

OAK RIDGE NATIONAL LAB., TENN.

CONF-670-713 +. 20 PAGES, 8 FIGURES, 3 REFERENCES, ABSTRACT IN ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 15, (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

AN INDUCED-FLOW SYSTEM, WITH FLEXIBLE PIPE, WAS INSTALLED TO KEEP THE ADVANTAGE OF POWER OPERATION IN MOST OF THE POOL. CONTAINMENT AND INSTRUMENTATION WAS UPGRADED, AND A NEW SECONDARY SYSTEM ADDED. ONCE AT FULL POWER, THE REACTOR IS OPERATED FROM THE ORP CONTROL ROOM, USING A MINIMUM OF REMOTE CONTROLS AND A TV CAMERA TO SCAN THE LOCAL INSTRUMENT READOUT. B4C RODS WERE OF CONCERN PREVIOUSLY, AT 2 MW SWELLED UNACCEPTABLY, AND WERE REPLACED WITH 9-SS. FISSION-GAS BUBBLES ARE A PROBLEM, PROBABLY BECAUSE OF THE AGED FUEL ELEMENTS.

*OPERATING EXPERIENCE + *POWER UPRATING + RSR (BULK SHIELDING REACTOR) + REACTOR, AEC OWNED + REACTOR, POOL TYPE + REACTOR, RESEARCH

17-17145

BETDELMAN JA + PIERCE AW + GOETSCH AH + BUNCE RW

A PROGRAMMED SAMPLE IRRADIATION SYSTEM

ARGONNE NATIONAL LABORATORY, ARGONNE, ILLINOIS

CONF-670-713 +. 1 PAGE, ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 16, (JULY 1967), CONFERENCE ON REACTOR OPERATING EXPERIENCE, REACTOR OPERATIONS DIVISION OF THE AMERICAN NUCLEAR SOCIETY, ATLANTIC CITY, JULY 23-26, 1967

JUGGERNAUT HAS USED THIS DEVICE A YEAR TO REDUCE MANPOWER AND RADIATION EXPOSURE. A SAMPLE IS PLACED IN ONE OF 16 SHIELD POSITIONS AND A PROGRAM CARD PLACED IN A READER. IN TURN, THE SAMPLES ARE PLACED IN ONE OF TWO VERTICAL ACCESS TUBES FOR THE SPECIFIED TIME, REMOVED AND RETURNED TO THE SHIELD. CERTAIN FAILURES WILL CAUSE AN ALARM.

*IRRADIATION FACILITY + ANL (ARGONNE NATIONAL LABORATORY) + REACTOR, RESEARCH + SYSTEM DESCRIPTION

17-17146

ALSO IN CATEGORY 5

BUONI FB

FUEL PLATE TEMPERATURE STUDIES AT THE AIR FORCE NUCLEAR ENGINEERING TEST FACILITY

AIR FORCE NUCLEAR ENGINEERING TEST FACILITY, AIR FORCE INSTITUTE OF TECHNOLOGY, WRIGHT-PATTERSON AIR FORCE BASE, OHIO

CONF-670-713 + AFIT-TR-67-9 +. 80 PAGES, 22 FIGURES, 12 TABLES, REFERENCES, ABSTRACT IN ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 16, (JULY 1967), PAPER PRESENTED AT THE CONFERENCE ON REACTOR OPERATING EXPERIENCE, REACTOR OPERATIONS DIVISION OF THE AMERICAN NUCLEAR SOCIETY, ATLANTIC CITY, JUNE 23-26, 1967

THERMOCOUPLES PLACED ON THE TWO END FUEL PLATES OF THE CENTER FUEL ELEMENT MONITORED TEMPERATURE DURING TESTS TO DEMONSTRATE CONSERVATISM OF CALCULATIONS. AN ERROR WAS FOUND WHICH HAD CAUSED THE 10-MW REACTOR TO BE OPERATED AT 9 MW. (TEST 1) - A MAX. TEMPERATURE OF 291 F WAS INDICATED, WITH STEADY-STATE NATURAL CONVECTION TO THE POOL. (TEST 2) - 10.6-MW OPERATION GAVE 163 F, VS 200 F CALCULATED. (TEST 3) - AT 9 MW, WITH FULL FLOW, UNBALANCING CONTROL RODS INCREASED TEMPERATURE ONLY 2 F. (TEST 4) - SCRAM ON LOSS OF FLOW, AFTER 1 AND 37 HR OF OPERATION, GAVE A QUICK INCREASE AND THEN A DECREASE UNTIL FLOW-REVERSAL BEGAN, AND THEN STABILIZATION AT TEMPERATURE BELOW OPERATING LEVEL AS NATURAL CONVECTION TO THE POOL BEGAN. PROMPT MAXIMA WERE SAME, BUT FLOW-REVERSAL TEMPS. WERE 11 F HIGHER (152 F) FOR LONG OPERATION. (TEST 5) - WITH THE NATURAL-CONVECTION VALVES CLOSED, THE PEAK FLOW-REVERSAL TEMPS. WERE 25 F HIGHER (166) THAN IF CIRCULATION TO POOL HAD BEEN ESTABLISHED. CONCLUSION - POWER IS LIMITED TO 15 MW BY LOSS OF FLOW, 20 BY LOSS OF POWER, AND 25 BY STEADY-STATE CONDITIONS.

*ACCIDENT, LOSS OF FLOW + *TEST, PROOF + *THERMAL ANALYSIS + AF-NETR (AIR FORCE NUC. ENGINEERING TEST REACTOR) + CLAD + COMPARISON, THEORY AND EXPERIENCE + FUEL ELEMENT + MEASUREMENT, TEMPERATURE + POWER UPRATING + REACTOR, RESEARCH

17-17148

BIXEL DA + BASHAM SJ + RAY JW

A CANTILEVERED GRID CORE SUPPORT TOWER AT THE BATTELLE RESEARCH REACTOR

BATTELLE MEMORIAL INSTITUTE, COLUMBUS LABORATORIES

CONF-670-713 +. 11 PAGES, 8 FIGURES, 2 REFERENCES, ABSTRACT IN ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 18, (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

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17148 *CONTINUED*

EARLY IN 1966 A CORE GRID PLATE CANTILEVERED FROM ALUMINUM BEAMS REPLACED THE OLD STRUCTURE, WHICH LIMITED ACCESS TO THE REACTOR FOR IN-POOL EXPERIMENTS (STRESS ANALYSIS DESCRIBED). THE LEAD SHIELD WAS CLAD WITH STAINLESS, GIVEN COOLING CHANNELS, AND HUNG FROM THE TOWER TO ELIMINATE REACTIVITY CHANGE (1.2%) IN MOVING FROM THE THERMAL COLUMN. THE FLAPPER VALVE WAS REVISED. OPERATION AT 2 MW SHOWS SHIELD COOLING TO BE CONSERVATIVE.

*CORE, PLATE TYPE + *MODIFICATION, SYSTEM OR EQUIPMENT + *SUPPORT STRUCTURE +
EMERGENCY COOLING CONSIDERATIONS + POWER UPGRATING + REACTOR, POOL TYPE + REACTOR, RESEARCH +
STRESS ANALYSIS

17-17149

ROSS DF + PANCOAST JT + PARK W
DESIGN, USE OF, AND OPERATING EXPERIENCE WITH RESEARCH REACTORS AT GENERAL DYNAMICS-FORT WORTH
GENERAL DYNAMICS CORP., CONVAIR
CONF-670-713 +. 2 PAGES, ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 19 AND 20, (JULY 1967),
CONFERENCE ON REACTOR OPERATING EXPERIENCE, REACTOR OPERATIONS DIVISION OF THE AMERICAN NUCLEAR SOCIETY,
ATLANTIC CITY, JULY 23-26, 1967

REVIEWS PROGRAM AT GTR (GROUND TEST REACTOR) AND ASTR (AEROSPACE SYSTEMS TEST REACTOR). GTR
POWER HAS BEEN UPGRATED 3 TIMES SINCE THE INITIAL (1953) 10 KW UNTIL IT IS 10 MW, AS IS ASTR.
LIQUID HYDROGEN HAS BEEN USED FOR LOW-TEMPERATURE IRRADIATION TESTING SINCE 1961. THE FIRST
THREE YEARS, THERE WERE SEVERAL FIRES. INTERACTION BETWEEN REACTOR MCA AND HYDROGEN-CELL MCA
HAS BEEN CONSIDERED.

*HYDROGEN + *IRRADIATION TESTING + FIRE + OPERATING EXPERIENCE + POWER UPGRATING + REACTOR, AEC OWNED +
REACTOR, TEST

17-17150

BROWN GN + CHRISTIANSON RC
KRB STARTUP
GENERAL ELECTRIC, SAN JOSE
CONF-670-713 +. 15 PAGES, 2 FIGURES, ABSTRACT IN ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 21,
(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

OF THE 196 DAYS IN THE STARTUP TESTING PROGRAM, ALMOST 81 WERE DELAYS BETWEEN PHASES DUE TO
LICENSING REQUIREMENTS. THREE NEW ITEMS IN THE TEST PROGRAM WERE - (1) CORE-COMPONENT
VIBRATION (NEGIGIBLY SMALL RANDOM STRESSES AND DISPLACEMENTS), (2) IN-VESSEL STEAM
SEPARATION (CARRYOVER MEASURED WITH SODIUM TRACER AT 0.01", CARRYUNDER 0.6" OR LESS), (3)
TRAVELING IN-CORE PROBES (A FLUX PROFILE TAKES AN HOUR AND GIVES BETTER ACCURACY THAN FLUX
WIRES). PROBLEMS DISCUSSED.

*CORE COMPONENTS, MISCELLANEOUS + *REACTOR STARTUP EXPERIENCE, INITIAL + GERMANY +
INSTRUMENTATION, IN CORE + MEASUREMENT, GENERAL + REACTOR STARTUP TESTING + REACTOR, BOILING WATER +
STEAM + VIBRATION

17-17151

BROWN CL
SOME OPERATING EXPERIENCE WITH A HIGH TEMPERATURE GAS COOLED REACTOR
GENERAL OPERATIONS AND TECHNOLOGY DIVISION, ATOMIC ENERGY ESTABLISHMENT, WINFRITH, DORCHESTER, DORSET
CONF-670-713 +. 21 PAGES, 9 FIGURES, ABSTRACT IN ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 21,
(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

DRAGON EXPERIENCE CONVINCINGLY DEMONSTRATED WORTH OF HELIUM COOLANT AND COATED-PARTICLE FUEL.
HEAT-EXCHANGER TUBE LEAKS (CORROSION PINHOLES) ARE PLUGGED WITH AN EXPANDING PLUG WITH A
SILVER COLLAR, USING SILICONE ELASTOMER SEALANT IN SOME CASES. HELIUM CAUSES MICRO-SWITCH
ARCING AND DIFFUSES INTO GLASS MERCURY SWITCHES, CAUSING A PRESSURE BUILDUP AND CRACKING. ON
LOSS OF POWER, TWO OF 6 DUCTS REVERSE FLOW, AND COMPLETE STAGNATION DOES NOT OCCUR.

*ACCIDENT, LOSS OF POWER + *FAILURE, TUBING + *OPERATING EXPERIENCE +
CIRCULATION, NATURAL (LOOPS AND REACTORS) + CORROSION + DRAGON (UK) + REACTOR, GAS COOLED +
REACTOR, HIGH TEMP. GAS + STEAM GENERATOR + UNITED KINGDOM

17-17152

EBERT DD
AN EXPERIMENTAL METHOD OF DETERMINING THE ABSOLUTE POWER LEVEL IN LOW POWER NUCLEAR REACTORS
GENERAL ELECTRIC COMPANY, KNOLLS ATOMIC POWER LABORATORY, SCHENECTADY, N. Y.
CONF-670-713 +. 8 PAGES, 1 FIGURE, 7 REFERENCES, ABSTRACT IN ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10,
PAGE 23, (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

A CRITICAL FACILITIES POWER LEVEL MAY BE OBTAINED FROM A CONVENTIONAL NEUTRON-FLUX
DISTRIBUTION, WITH A CONVERSION FACTOR OBTAINED BY IRRADIATION (IN THE ASSEMBLY, AND IN A
KNOWN FLUX) OF A U-ZIRCALOY FUEL SANDWICHED BETWEEN GOLD FOILS. ABSOLUTE THERMAL NEUTRON
FLUX ON THE U-ZIRCALOY SURFACE IS DETERMINED BY BETA-GAMMA COINCIDENCE COUNTING OF THE GOLD
(TO ELIMINATE DETECTOR EFFICIENCIES). THE CALCULATED FISSION RATE, CORRECTED BY A DECAY

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17152 *CONTINUED*
TIME, IS THEN DIVIR.

*MEASUREMENT, GENERAL + *REACTOR POWER + CRITICAL ASSEMBLY FACILITY + FLUX DISTRIBUTION

17-17153 ALSO IN CATEGORY 6
TALBOY JH + SAVIO RP + HERBST DA

SOME APPLICATIONS OF AN INVERSE KINETICS COMPUTER PROGRAM TO THE MEASUREMENT OF REACTIVITY
ARGONNE NATIONAL LABORATORY, ARGONNE, ILLINOIS
CONF-670-713 +. 2 PAGES, 1 REFERENCE, ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 23 AND 24, (JULY 1967), CONFERENCE ON REACTOR OPERATING EXPERIENCE, REACTOR OPERATIONS DIVISION OF THE AMERICAN NUCLEAR SOCIETY, ATLANTIC CITY, JULY 23-26, 1967

MEASUREMENTS INCLUDE - (CP-5) MEASUREMENT OF TEMPERATURE COEFFICIENT THAT TERMINATED A SLOW POWER INCREASE AGREED WITH STATIC MEASUREMENTS, AS DID THE WORTH OF THE TOP REFLECTOR DURING A MODERATOR DUMP. (JUGGERNAUT) SHAPE OF THE FINE-CONTROL-ROD-WORTH CURVE DEPENDS ON OTHER CONTROL-ROD POSITIONS. (JANUS) FUEL-TEMPERATURE COEFFICIENT WAS HALF THAT CALCULATED, DUE TO POSITIVE COEFFICIENT OF COOLANT WATER.

*INSTRUMENTATION, OPERATING REACTIVITY + *OPERATING EXPERIENCE + ANL (ARGONNE NATIONAL LABORATORY) + COMPARISON, THEORY AND EXPERIENCE + CONTROL ROD CALIBRATION + COOLANT COEFFICIENT + CP-5 (CHICAGO PILE NO. 5) + FUEL COEFFICIENT + JANUS (BIOLOGICAL IRRADIATION FACILITY) + MODERATOR COEFFICIENT + POWER COEFFICIENT + REFLECTOR

17-17154 ALSO IN CATEGORY 9

LONG H + SCHLICHT R + VAN HOWE K + WEIMAN A

USE OF AN ON-LINE REACTIVITY COMPUTER TO CALIBRATE CONTROL RODS AT POWER

GENERAL ATOMIC, DIVISION OF GENERAL DYNAMICS, SAN DIEGO, CALIFORNIA

CONF-670-713 + GA-8104 +. 14 PAGES, 6 FIGURES, ABSTRACT IN ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 24, (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

THE AVERAGE CURRENT FROM 4 POWER-RANGE ION CHAMBERS FEEDS THE COMPUTER, AND BOTH ROD POSITION AND INSTANTANEOUS REACTIVITY ARE FED TO A RECORDER. AT PEACH BOTTOM, TEMPERATURE FEEDBACK REACTIVITY IS 5-10% THAT OF MOVING THE ROD. A ROD CALIBRATION WAS MADE WHILE GOING FROM ZERO TO FULL POWER. AT ZERO POWER, GROUP 8 GAVE THE SAME AS THE DISTRIBUTED-POISON TECHNIQUE. GROUP 5 SHOWED A SHIFT OF WORTH TO THE BOTTOM OF THE CORE (COMPARED WITH THE DISTRIBUTED-POISON METHOD) BECAUSE IN GOING FROM 10 TO 65 MWTH THE CORE BOTTOM BECOMES SIGNIFICANTLY COOLER, CHANGING THE NEUTRON FLUX DISTRIBUTION.

*INSTRUMENTATION, OPERATING REACTIVITY + *OPERATING EXPERIENCE + CONTROL ROD CALIBRATION + FLUX DISTRIBUTION + PEACH BOTTOM 1 + REACTOR, GAS COOLED + TEMPERATURE REACTIVITY EFFECT

17-17155 ALSO IN CATEGORY 6

ALLIGOOD FM + WYKE TF + WILLOUGHBY W

AT POWER MEASUREMENTS OF TEMPERATURE COEFFICIENTS OF REACTIVITY

CAROLINAS VIRGINIA NUCLEAR POWER ASSOCIATES, INC., PARR, SOUTH CAROLINA + VIRGINIA ELECTRIC AND POWER COMPANY + DUKE POWER COMPANY

CONF-670-713 +. 14 PAGES, 9 FIGURES, 1 TABLE, 3 REFERENCES, ABSTRACT IN ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 24, (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

PRIMARY-COOLANT AND MODERATOR-TEMPERATURE COEFFICIENTS WERE MEASURED DURING STARTUP, RATHER THAN DURING SHUTDOWN, TO MINIMIZE TIME. THIS NEEDED GOOD XENON-REACTIVITY DATA TO MAKE NECESSARY CORRECTION. DURING THE SEVERAL HOURS OF PRIMARY-COOLANT HEATUP, AT 5% POWER, MODERATOR TEMPERATURE WAS HELD CONSTANT, AND COEFFICIENT DETERMINED FROM ROD MOTION. WITH REACTOR AT TEMPERATURE, MODERATOR TEMPERATURE WAS VARIED TO COMPENSATE FOR XENON CHANGES, AND COEFFICIENT INFERRED FROM XENON CALCULATIONS. WHILE THIS REACTIVITY-BALANCE METHOD IS LESS PRECISE, IT GIVES A SATISFACTORY MEASUREMENT WITHOUT ADDING SIGNIFICANTLY TO THE SHUTDOWN TIME.

*COOLANT COEFFICIENT + *MODERATOR COEFFICIENT + *REACTIVITY COEFFICIENT + *TEST, PHYSICS + CVTR (CAROLINAS VIRGINIA TUBE REACTOR) + MEASUREMENT, GENERAL + REACTOR, HEAVY WATER + REACTOR, PRESSURE TUBE + XENON

17-17156

BURDICK EE + FURKSTER RJ + MACKLEY AD

ENGINEERING TEST REACTOR FLUX STABILIZATION

IDAHO NUCLEAR CORPORATION

CONF-670-713 +. 2 PAGES, 1 FIGURE, 3 REFERENCES, ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 25 AND 26, (JULY 1967), CONFERENCE ON REACTOR OPERATING EXPERIENCE, REACTOR OPERATIONS DIVISION OF THE AMERICAN NUCLEAR SOCIETY, ATLANTIC CITY, JULY 23-26, 1967

(INTRACYCLE) OPERATION WITH 500 G U-235 AND 3.8 G BORON PER ELEMENT WILL MINIMIZE REACTIVITY CHANGES (AND THUS MINIMIZE CONTROL-ROD-INDUCED FLUX SHIFTS ON EXPERIMENTS) AND PROVIDE MORE XENON OVERRIDE. REDUCTION IN EXPERIMENT FLUXES WILL BE MINIMIZED BY REDUCING THE CORE SIZE. (INTER-CYCLE) USE OF POISON RODS, METAL-WATER RATIO CHANGES, AND CORE BORON DISTRIBUTIONS HAVE HELD THE INTERCYCLE MIDPLANE FLUX VARIATIONS TO LESS THAN PLUS OR MINUS 10%. THE SAME

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17156 *CONTINUED*
GOAL IS SET FOR INTRACYCLE.

*FLUX DISTRIBUTION + *REFUELING + ETR (ENGINEERING TEST REACTOR) + POISON, BURNABLE + REACTOR, AEC OWNED + REACTOR, TEST

17-17157
BROWN J + HOPKINS G + LANE R + MERRILL M + VAN HOWE K
PHYSICS PERFORMANCE OF THE PEACH BOTTOM HTGR
GENERAL ATOMIC, DIVISION OF GENERAL DYNAMICS, SAN DIEGO, CALIFORNIA
CONF-670-713 + GA-8117 +. 18 PAGES, 5 FIGURES, 4 TABLES, 12 REFERENCES, ABSTRACT IN ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 26, (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

MEASUREMENTS AGREE WELL WITH PREDICTIONS. NO RESONANCES SHOWN ON NEUTRON-NOISE SPECTRUM.
POWER COEFFICIENT IS SMALL, AND LOAD CHANGES FOLLOWED WITH LITTLE ROD MOTION.

*REACTOR STARTUP TESTING + NOISE ANALYSIS + PEACH BOTTOM 1 + POWER COEFFICIENT + REACTOR, GAS COOLED + REACTOR, HIGH TEMP. GAS

17-17163
KNAPP WJ
HELIUM CHEMISTRY EXPERIENCE AT PEACH BOTTOM
PHILADELPHIA ELECTRIC COMPANY, PEACH BOTTOM ATOMIC POWER STATION
CONF-670-713 +. 9 PAGES, 1 TABLE, ABSTRACT IN ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 21, (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

DESCRIBES CLEANUP SYSTEM. ONCE PLANT IS IN OPERATION, HELIUM STAYS CLEAN, BUT PLACING NEW SYSTEMS IN OPERATION OR OPENING A SYSTEM FOR MAINTENANCE ADMITS IMPURITIES. RETENTION FRACTIONS OF FISSION GAS ON THE DELAY BEDS HAS BEEN ENCOURAGING.

*COOLANT PURIFICATION SYSTEM + *HELIUM + *OPERATING EXPERIENCE + PEACH BOTTOM 1 + REACTOR, GAS COOLED

17-17167 ALSO IN CATEGORY 5
FRIEDLAND AJ
A STUDY OF THE PROBABILITY OF A FERMI SUBASSEMBLY HAVING OVERHEATED BECAUSE OF A MIGRATORY PLUG
ATOMIC POWER DEVELOPMENT ASSOCIATES, INC., DETROIT, MICHIGAN
CONF-670-713 +. 17 PAGES, 8 FIGURES, 1 TABLE, 5 REFERENCES, ABSTRACT IN ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 33, (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

REACTOR OPERATING HISTORY WAS USED TO ESTIMATE THE PROBABILITY DISTRIBUTION OF PLUG SIZE, AND THESE TO DETERMINE PROBABILITY OF OVERHEATING. THIS APPROACH COULD BE GENERALLY APPLIED. SMALL-DIAMETER PLUGS ARE UNLIKELY TO CAUSE MELTDOWN, WHILE LARGE PLUGS WOULD NOT HAVE GONE THROUGH 11 OPERATING PERIODS WITHOUT CAUSING A MELTDOWN. THE MOST PROBABLE PLUG DIAMETER IS 1.5 TIMES THE GRID-PLATE-HOLE DIAMETER AND GIVES A 0.045 PROBABILITY OF OVERHEATING. THE OVERALL PROBABILITY OF OVERHEATING WAS CALCULATED AS 15%.

*ACCIDENT, PROBABILITY OF + *FLOW BLOCKAGE + *FUEL MELTDOWN + *MATHEMATICAL TREATMENT + ANALYTICAL MODEL + COOLANT CHEMISTRY + FERMI + REACTOR, FAST + REACTOR, LIQUID METAL COOLED

17-17184
CASSELS L
EIGHT STEPS TO BETTER TRAINING
2 PAGES, NATIONS BUSINESS 49(3), PAGE 40 AND 41, (MARCH 1961). PUBLISHED BY THE CHAMBER OF COMMERCE OF THE UNITED STATES, WASHINGTON, D.C.

LISTS 8 NEW FINDINGS ON THE WAYS IN WHICH ADULTS LEARN. ADULTS (1) MUST WANT TO LEARN, (2) WILL LEARN ONLY THAT THEY FEEL A NEED TO LEARN, (3) LEARN BY DOING, (4) LEARNING CENTERS ON PROBLEMS WHICH MUST BE REALISTIC, (5) LEARNING IS AFFECTED BY EXPERIENCE, (6) LEARN BEST IN A INFORMAL ENVIRONMENT, (7) NEED A VARIETY OF METHODS OF TEACHING, (8) WANT GUIDANCE, NOT GRADES. STUDIES SHOW THAT ADULTS CAN LEARN EFFECTIVELY AT ALL AGES BUT LEARN IN THEIR OWN WAY, DIFFERENTLY FROM CHILDREN.

*STAFFING, TRAINING, QUALIFICATION

17-17185
VOLLMER HM
DEVELOPMENT OF TRAINING PROGRAMS FOR OPERATING AND MAINTENANCE PERSONNEL IN NUCLEAR POWER GENERATION SYSTEMS
STANFORD RESEARCH INSTITUTE, CALIFORNIA
SRIA-4 +. 71 PAGES, 11 FIGURES, 4 TABLES, FEBRUARY 1959

AEC STUDY RESULTED IN A SERIES OF LESSON PLANS FOR TEACHING NUCLEAR KNOWLEDGE TO VARIOUS

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17185 *CONTINUED*

CLASSES OF RADIATION WORKERS. MOSTLY, THE REPORT DISCUSSES VARIOUS CIRCA-1958 TRAINING PROGRAMS AND GENERALIZES FROM THEM, BUT PROVIDES MOSTLY LESSON PLANS FOR OPERATIONS, MAINTENANCE, AND OTHER PERSONNEL.

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

*STAFFING, TRAINING, QUALIFICATION + MAINTENANCE AND REPAIR + RADIATION SAFETY AND CONTROL

17-17298

PANCER GP + WAIDE CH
THE SETTLED BED FAST REACTOR IN-PILE CAPSULE
BROOKHAVEN NATIONAL LAB., UPTON, NEW YORK
BNL-998 +. 19 PAGES, 20 FIGURES; AUGUST 1966

THE IN-PILE CAPSULE DESIGN WITH A VARIABLE CONDUCTIVITY GAS-GAP TEMPERATURE-CONTROL SYSTEM WAS USED EXTENSIVELY AND SUCCESSFULLY IN THIS FUEL-IRRADIATION PROGRAM AT ETR AND BGRR. ACTUALLY, ONLY HALF THE ANTICIPATED CHANGE IN GAS-MIXTURE CONDUCTIVITY OVER THE TOTAL MIXTURE RANGE WAS REALIZED, AND EXPERIMENTS WITH TEST CAPSULES SHOULD BE MADE. THIS METHOD OF CONTROL IS NOW BEING USED IN MATERIALS-SURVEILLANCE PROGRAM FOR HFBR. IT IS SIMPLE AND CAN BE ADAPTED TO EITHER FUEL OR MATERIALS IRRADIATION AS LONG AS SOME INTERNAL HEAT GENERATION SUCH AS GAMMA OR FISSION HEATING IS PRESENT. WITH PROPER SELECTION OF GAP THICKNESS AND GAS MIXTURE, A WIDE RANGE OF OPERATING TEMPERATURES CAN BE ACHIEVED. REPORT DESCRIBES CAPSULE HARDWARE ONLY.

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

*IN PILE LOOP + *IRRADIATION TESTING + *SYSTEM DESCRIPTION + BNL (BROOKHAVEN NATIONAL LABORATORY) + COMPARISON, THEORY AND EXPERIENCE + HEAT CONDUCTANCE, FUEL TO CLAD + REACTOR, FAST

17-17302 ALSO IN CATEGORIES 5 AND 9

TRUSHIN JT + MILLER JK + PETRIE TW
PM-3A. SAFETY SYSTEM SET POINT ANALYSIS.
MARTIN COMPANY, BALTIMORE, MD.
MND-M3A-3146 +. 95 PAGES, JUNE 5, 1964

A PERFORMANCE ANALYSIS OF THE PRIMARY SYSTEM IS PRESENTED IN SUFFICIENT DETAIL AND FORMAT TO RE-EVALUATE THE REACTOR-SAFETY-SYSTEM SETPOINTS UNDER CHANGED CONDITIONS. STEADY-STATE OPERATING LIMITS WERE ESTABLISHED WITH NO BULK BOILING IN THE HOT CHANNEL, AND TRANSIENT ANALYSES WERE INITIATED FROM THE MOST SEVERE CONDITIONS PERMITTED BY THE RESULTS OF THE STEADY-STATE ANALYSIS. THE THERMAL LIMITATIONS IMPOSED ON THE TRANSIENT ANALYSIS WERE THAT THE DNB WILL NOT OCCUR, AND/OR THE EXIT QUALITY IN THE HOT CHANNEL WILL NOT EXCEED 15%. IN ALL CASES, THE STEADY-STATE RESTRICTION OF NO BULK BOILING PRECLUDED DNB DURING A TRANSIENT, AND THE THERMAL OPERATING LIMITS ARE DICTATED BY THE RESULTS OF THE STEADY STATE ANALYSIS. SCRAM INSTRUMENTATION ACCURACY IS SUMMARIZED, AND THE SETPOINTS ARE OBTAINED FROM THE THERMAL OPERATING LIMITS AND THE ACCURACY OF THE INSTRUMENTATION. A SAMPLE CALCULATION FOR THE DETERMINATION OF THE MAXIMUM-POWER-SCRAM SETPOINT IS PRESENTED.

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

*PERFORMANCE LIMIT + *SAFETY ANALYSIS + DNB (DEPARTURE FROM NUCLEATE BOILING) + INSTRUMENTATION, POWER RANGE + PM 3A (PORTABLE MEDIUM NUCLEAR POWER PLANT) + REACTOR, MILITARY + REACTOR, PRESSURIZED WATER

17-17337 ALSO IN CATEGORY 9

TEODOSIC V
FUEL LEAKAGE DETECTION IN WATER REACTORS. A REVIEW
DANISH ATOMIC ENERGY COMMISSION, RISØ. RESEARCH ESTABLISHMENT
RISO-M-496 + R-9-66 +. 33 PAGES, REFERENCES, DECEMBER, 1966

GENERAL REVIEW OF FAILED-ELEMENT DETECTION AND LOCATION SYSTEMS FOR WATER-COOLED REACTORS, WITH APPLICATION TO THE DK-400 PROJECT. SOME IMPORTANT PARAMETERS (RELEASE RATIO, SIGNAL TO BACKGROUND RATIO, DISCRIMINATION RATIO) ARE DISCUSSED AND EVALUATED. TYPES OF FAILURE ARE DISCUSSED, AND POSSIBLE MONITORING DEVICES (GROSS-GAMMA, DELAYED-NEUTRON, GASEOUS FISSION PRODUCT, IODINE, AND TRACER) ARE GIVEN. ASSERTS THAT NO OPERATING FEDERAL SYSTEM NOW EXISTS WHICH MEETS DK-400 CRITERION, BUT WHEN ONE IS BUILT A TRACER MONITORING SYSTEM COULD BE EMPLOYED. TRACER PARENTS (PROBABLY RARE EARTHS) WILL BE MIXED WITH FUEL AND CHECKS RUN TO DETECT TRACER DAUGHTERS IN COOLANT. INFLUENCE OF STATE OF REACTOR CORE ON IMPORTANT FEDERAL PARAMETERS IS DISCUSSED IN APPENDICES.

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

*DESIGN STUDY + *INSTRUMENTATION, DETECTION FAILED FUEL ELEMENT + *OPERATING EXPERIENCE + DENMARK + REACTOR, BOILING WATER + REACTOR, POWER + REACTOR, PRESSURIZED WATER

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17345

THIE JA

SELECTED ELK RIVER OPERATIONS EXPERIENCES

RURAL COOPERATIVE POWER ASSOCIATION, ELK RIVER, MINN.

TID-23302 + JAT-66-7 +. 15 PAGES OF ELK RIVER REACTOR SAFETY ANALYSES MONTHLY REPORT, JULY 1966, DOCKET NO. 115-1

TEMPERATURE COEFFICIENT AND ROD WORTH WERE MEASURED ON CORE-II STARTUP. ROD INSERTION VS STEAM FLOW GRAPHS WERE USED TO ENSURE COMPLIANCE WITH HEAT-FLUX LIMIT. NEUTRON AND FEEDWATER-FLOW NOISE DATA SHOWED NO OSCILLATION. EFFECTS OF CONTROL-ROD-BANK POSITION AND WATER-SHIELDING DENSITY ON POWER-RANGE INSTRUMENTATION NOTED, AND CORRECTION CHARTS MADE. FOLLOWING A FULL-POWER SCRAM, THE ION CHAMBER FOLLOWED DELAYED NEUTRONS FOR 5 MIN, THEN THE CORE GAMMAS. THE BF3 DETECTORS FOLLOWED AN 80-SEC DECAY FOR 16 MIN, THEN GAMMA-BERYLLIUM NEUTRONS.

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

*BURNOUT HEAT FLUX + *INSTRUMENTATION, ABNORMAL INDICATION + *NOISE + ELK RIVER + INSTRUMENTATION, STARTUP RANGE + OPERATIONS REPORT, ANALYSIS + REACTOR, BOILING WATER + SAFETY REVIEW (OPERATIONS, EXPERIMENTS)

17-17350

ALSO IN CATEGORY 12

BLUMBERG R

MAINTENANCE DEVELOPMENT FOR MOLTEN-SALT BREEDER REACTORS

OAK RIDGE NATIONAL LAB., TENN.

ORNL-TM-1959 +. 18 PAGES, 1 FIGURE, 1 TABLE, 6 REFERENCES, JUNE 30, 1967

DESCRIBES A PROGRAM FOR DEVELOPING METHODS AND EQUIPMENT FOR MAINTAINING THE RADIOACTIVE EQUIPMENT OF A MOLTEN-SALT BREEDER REACTOR. THE PRIME POLICY IS TO REMOVE THE COMPONENT, REPLACE IT WITH A NEW OR REPAIRED UNIT, AND REPAIR THE FAULTY COMPONENT IN SPECIALLY EQUIPPED FACILITIES OR DISCARDED. EMPHASIS WILL BE PLACED ON RAPID REPLACEMENT TO REDUCE THE SHUTDOWN TIME OF THE SYSTEM. THE FEASIBILITY OF REMOTELY WELDING JOINTS IN THE FUEL, BLANKET, AND COOLANT LINES AND VESSELS MUST BE ESTABLISHED BEFORE THE REACTOR DESIGN CAN BE COMPLETED. A COST ESTIMATE FOR THE MAINTENANCE DEVELOPMENT PROGRAM IS GIVEN.

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

*MAINTENANCE AND REPAIR + *REMOTE MANIPULATING AND VIEWING + *WELDING + ECONOMICS + FAILURE, EQUIPMENT + FAILURE, GENERAL + REACTOR, BREEDER + REACTOR, CIRCULATING FUEL + REACTOR, MOLTEN SALT

17-17356

PEACH BOTTOM ATOMIC POWER STATION - MONTHLY OPERATIONS REPORT NO. 7 FOR SEPTEMBER 1966

PHILADELPHIA ELECTRIC COMPANY, PHILADELPHIA

11 PAGES, SEPTEMBER, 1966, DOCKET NO. 50-171

ONE OF A SERIES OF PROGRESS REPORTS. TOPICS INCLUDE PLANT OPERATION, PLANT RADIOACTIVE EFFLUENTS, MAINTENANCE, CHANGES TO FACILITY, AND RESULT OF SIGNIFICANT TESTS.

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

MAINTENANCE AND REPAIR + MODIFICATION, SYSTEM OR EQUIPMENT + OPERATING EXPERIENCE + OPERATIONS REPORT, GENERAL + PEACH BOTTOM 1 + REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED + TEST, SYSTEM OPERABILITY + WASTE MANAGEMENT

17-17363

FIRE AT CHOOZ PWR

1 PAGE, NUCLEAR ENGINEERING 12(129) PAGE 77 (FEBRUARY 1967)

A MINOR FIRE AROUND THE TOP FLANGE OF THE VESSEL NECESSITATED A SHUTDOWN FOR CLEANING AND REPLACING DAMAGED CONTROL-ROD CABLES. THE FIRE STARTED IN THE WOOD/PLASTIC FAST-NEUTRON SHIELD OUTSIDE THE VESSEL. THE IGNITION TEMPERATURE, WHEN THE REACTOR WAS TAKEN TO 280 C, WAS A RESULT OF IMPERFECTIONS IN THE THERMAL-INSULATION LAYERS. NO SERIOUS EFFECT ON THE OPERATIONAL PROGRAM IS EXPECTED.

*FIRE + *NEUTRON + *SHIELDING + *THERMAL INSULATION + BELGIUM + FAILURE, FABRICATION ERROR + IGNITION + INCIDENT, ACTUAL, GENERAL + REACTOR, PRESSURIZED WATER

17-17364

ALSO IN CATEGORY 6

MACPHEE J + LUMB RF

THE TRANSIENT CHARACTERISTICS OF A NEW PULSE RESEARCH REACTOR

ATOMICS DIVISION, AMERICAN MACHINE AND FOUNDRY COMPANY, YORK, PA. + WESTERN NEW YORK NUCLEAR RESEARCH CENTER, INC., BUFFALO, N. Y.

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17364 *CONTINUED*
STI/PUB/104 (VOL. 2) + CONF-650504-B +. 14 PAGES, 6 FIGURES, 2 TABLES, 3 REFERENCES, PAGES 575 THRU 588
OF PULSED NEUTRON RESEARCH. VOL. II. PROCEEDINGS SERIES. PROCEEDINGS OF THE SYMPOSIUM HELD AT
KARLSRUHE, MAY 10-14, 1965

DETAILED PHYSICS PARAMETERS OF PULSTAR, A 5-MW STEADY-STATE REACTOR (10,000-MW PULSE WITH A
WIDTH, AT HALF HEIGHT, OF 10 MS). THE TRANSIENT CHARACTERISTICS DESCRIBED INCLUDE PERIOD VS
REACTIVITY, POWER VS REACTIVITY, ENERGY VS PERIOD, BURST-SHAPE PARAMETERS, AND FUEL AND
CLADDING TEMPERATURES. NEUTRON SPECTRUM AND FLUX DISTRIBUTION DATA IN THE EXPERIMENTAL
FACILITIES ARE INCLUDED.

AVAILABILITY - INTERNATIONAL ATOMIC ENERGY AGENCY (NEW YORK OR GENEVA), \$18.00 COPY

*REACTOR DESCRIPTION + *REACTOR TRANSIENT + FLUX DISTRIBUTION + NEUTRON + REACTIVITY EFFECT +
REACTOR, PULSED + TEMPERATURE TRANSIENT

17-17365
HUEWELLS GR
THE FIRST TEN YEARS OF OPERATION OF THE CALDER HALL REACTORS
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, WINDSCALE
6 PAGES, 4 FIGURES, ATOM 121 PAGES 253-258 (NOVEMBER 1966)

THE HEAT OUTPUT WAS INCREASED FROM 180 TO 265 MW(TH) IN TEN YEARS. PLANT AVAILABILITY WAS
IMPROVED BY REDUCING REFUELING TIME AND IMPROVED METHODS OF MAINTENANCE AND PLANT CONTROL.
MWH ELECTRICAL PER EMPLOYEE INCREASED FROM 500 IN 1959 TO 2800 IN 1966. A SERIES OF FAILURES
DURING EARLY OPERATION DUE TO FLASHOVER ON COMMUTATORS OF LARGE DC MACHINES WAS CORRECTED BY
SUITABLE CHOICE OF CARBON BRUSHES AND BY PAYING ATTENTION TO CLEANNESS OF COMMUTATOR
SURFACES. TELEVISION IS USED EXTENSIVELY TO REDUCE UNCERTAINTY OF REMOTE-CONTROL OPERATIONS.
IRRADIATION EXPERIENCE WITH FUEL ELEMENTS IS DISCUSSED. AND A MAXIMUM LIFE OF 6000 MWD/T IS
NOW EXPECTED.

*CALDER HALL (UK) + *OPERATING EXPERIENCE + ADMINISTRATIVE CONTROLS AND PRACTICES +
ELECTRIC POWER, GENERAL + FAILURE, EQUIPMENT + FUEL BURNUP + FUEL ELEMENT + MAINTENANCE AND REPAIR +
POWER UPGRATING + REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED + REACTOR, POWER +
REMOTE MANIPULATING AND VIEWING

17-17367
MCCORD RV + CORBETT BL
CONTROL-PLATE GUIDE BEARING FAILURES
OAK RIDGE NATIONAL LAB., TENN.
ORNL-TM-1895 +. 2 PAGES, PAGE 15 AND 16 OF HIGH FLUX ISOTOPE REACTOR QUARTERLY REPORT, JANUARY, FEBRUARY,
AND MARCH OF 1967

(PAGES 15 AND 16) TWO BEARING-SHAFT RETAINING PINS FROM THE OUTER CONTROL PLATES WERE FOUND IN
THE PRIMARY-WATER-SYSTEM STRAINER. INSPECTION OF THE BEARINGS REVEALED THAT ABRASIVE ACTION
ALLOWED THE RACES TO BE MOVED UP AND DOWN 12 MILS, COMPARED WITH 2 MILS INITIALLY. THE
UPPER-TRACK (FOR CONTROL-PLATE GUIDANCE) BEARINGS WERE WORN SLIGHTLY. HOWEVER, ONE OF THE
ROLLERS THAT POSITION THE TRACK HAD FALLEN OFF THE TRACK. MODIFICATIONS WERE STARTED TO
PERMIT REMOTE REPLACEMENT OF BEARINGS.

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

*FAILURE, SCRAM MECHANISM + CONTROL ROD + HFIR (HIGH FLUX ISOTOPE REACTOR) + OPERATING EXPERIENCE +
OPERATIONS REPORT, GENERAL + REACTOR, AEC OWNED + REACTOR, FLUX TRAP + REACTOR, RESEARCH + REACTOR, TEST

17-17368
MCCORD RV + CORBETT BL
DEPLETED FUEL ELEMENT SHIPPING CASK TEMPERATURE MEASUREMENTS
OAK RIDGE NATIONAL LAB., TENN.
ORNL-TM-1895 +. 2 PAGES, PAGE 16 AND 17 OF HIGH FLUX ISOTOPE REACTOR QUARTERLY REPORT, JANUARY, FEBRUARY,
AND MARCH OF 1967

(PAGES 16 AND 17) TEMPERATURE MEASUREMENTS ARE REPORTED FOR THE CASK DESIGNED FOR A 1500-MWDAY
ELEMENT AFTER DECAY OF 9 MONTHS, BUT LOADED WITH A 2200-MWDAY ELEMENT WITH DECAY OF 8 MONTHS.
THE FISSION-PRODUCT CONTENT OF THE ELEMENT WAS 1.2 MILLION Curies. THE MAXIMUM FUEL-PLATE
TEMPERATURE IN THE DRY CASK WAS 440 F. THE CASK SURFACE TEMPERATURE WAS 124 F.

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

*FUEL ELEMENT + *MEASUREMENT, TEMPERATURE + *SHIPPING CONTAINER + FUEL HANDLING + FUEL REPROCESSING +
HFIR (HIGH FLUX ISOTOPE REACTOR) + OPERATING EXPERIENCE + OPERATIONS REPORT, GENERAL +
REACTOR, AEC OWNED + REACTOR, FLUX TRAP + REACTOR, RESEARCH + REACTOR, TEST + TEST, PROOF +
TRANSPORTATION AND HANDLING

17-17369 ALSO IN CATEGORY 7
MCCORD RV + CORBETT BL

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17369 *CONTINUED*

TARGET ROD CLAD RUPTURE DETECTION
OAK RIDGE NATIONAL LAB., TENN.

ORNL-TM-1895 +. 7 PAGES, 1 FIGURE, 1 TABLE, PAGES 20-26 OF HIGH FLUX ISOTOPE REACTOR QUARTERLY REPORT, JANUARY, FEBRUARY, AND MARCH OF 1967

(PAGES 20-26) CLADDING FAILURES ON TRANSPLUTONIUM-ISOTOPE-PRODUCTION RODS WERE DISCOVERED AS A RESULT OF ROUTINE MANUAL SAMPLING OF THE PRIMARY WATER SYSTEM AND ANALYZING FOR ALPHA ACTIVITY. THE SYSTEM BETA-GAMMA MONITORS GAVE NO INDICATION. INDIVIDUAL RODS WERE TESTED BY PLACING THEM IN A CLOSED WATER LOOP CONTAINING A SMALL DEMINERALIZER. RESIN WAS CHANGED AFTER EACH RUN AND A GAMMA SPECTRUM ANALYSIS MADE. ALL RODS SUSPECTED OF LEAKING FISSION PRODUCTS WERE REMOVED FOR HOT-CELL INSPECTION. FOUR FAILURES WERE VERIFIED. THE PRIMARY ALPHA SOURCE IS CM-244 IN PARTICULATE FORM. REMOVAL OF THE CM BY DEMINERALIZERS IS NOT EFFECTIVE, AND FILTERS WITH 5-MICRON PORES WILL BE TRIED.

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

*FAILURE, CLADDING + *OPERATING EXPERIENCE + ALPHA EMITTER + ANALYTICAL TECHNIQUE, GENERAL + CURIUM + FISSION PRODUCT RELEASE, GENERAL + HFIR (HIGH FLUX ISOTOPE REACTOR) + MAIN COOLING SYSTEM + MEASUREMENT, GENERAL + OPERATIONS REPORT, GENERAL + REACTOR, AEC OWNED + REACTOR, FLUX TRAP + REACTOR, RESEARCH + REACTOR, TEST

17-17370 ALSO IN CATEGORY 12

WEATHERSBY WE + LAMBERT FJ + DUNN EE + GOOGIN JM
EVALUATION OF SEAT MATERIALS FOR PRESSURIZER STEAM RELIEF VALVE
UNION CARBIDE CORP., OAK RIDGE, TENN. Y-12 PLANT
Y-EF-22 +. 100 PAGES, 43 FIGURES, TABLES, NOVEMBER 1, 1966

EXCESSIVE LEAK RATES IN VALVES ON THE STEAM PRESSURIZER AT PM-3A PROMPTED THE STUDY OF SEAT MATERIALS. NONE OF THE MATERIALS TESTED MET THE REQUIREMENTS FOR LEAKTIGHTNESS FOR REPEATED VALVE RELIEVING. STELLITE AND TUNGSTEN CARBIDE SEATING SURFACES WERE LEAKTIGHT UNTIL THE VALVE WAS RELIEVED. THE TESTS INDICATED THAT A CERMET OF ALUMINUM OXIDE WITH PLATINUM AS A BINDER IS WORTHY OF TESTING.

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

*MATERIAL + *PRESSURE RELIEF + *PRESSURIZER + *VALVE + FAILURE, EQUIPMENT + PM 3A (PORTABLE MEDIUM NUCLEAR POWER PLANT) + REACTOR, MILITARY + REACTOR, PRESSURIZED WATER + SEAL + STEAM + TEST, LEAK RATE + TEST, PROOF

17-17372 ALSO IN CATEGORY 15

NORTH AMERICA INSPECTION SERVICES CITED FOR RADIOGRAPHY OVEREXPOSURE
NORTH AMERICAN INSPECTION SERVICES, INC.
3 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(34), PAGES 31 THRU 33, (AUGUST 21, 1967)

NAIS WAS CITED JUNE 28 UNDER LICENSE 29-8122-1 FOR A FEBRUARY 14 EXPOSURE IN ALASKA. (1) EMPLOYEE FAILED TO CONDUCT A SURVEY AFTER EACH EXPOSURE, AND WHEN THE DEVICE MALFUNCTIONED, RECEIVED 11 REMS. (2,3) DID NOT PROCESS FILM BADGE OR EVALUATE EXPOSURE WHEN THE DOSIMETER WAS FOUND TO BE OFF SCALE. (4,5,6) EMERGENCY PROCEDURES WERE NOT FOLLOWED, AND AEC WAS NOT NOTIFIED. (7-11) RECORDS WERE NOT KEPT, SITE AND DEVICES WERE NOT POSTED. (REPLY JULY 11.) (12-3) FIELD ESTIMATE OF DOSE WAS IN THE REGION OF 1 R, AND REPLACEMENT BADGE WAS NOT AVAILABLE. (4-5) EMPLOYEE DISCONNECTED PIPELINE CONTROL CABLE, REPORTED TO SUPERVISOR WHO FOUND SOURCE IN THE SAFE POSITION. (6) TWO BRANCHES ASSUMED OTHER HAD REPORTED INCIDENT.

*INSPECTION AND COMPLIANCE + *PERSONNEL EXPOSURE, RADIATION + *RADIOGRAPHY + FAILURE, EQUIPMENT + FAILURE, OPERATOR ERROR + INCIDENT, ACTUAL, GENERAL

17-17373 ALSO IN CATEGORY 3

PENNSYLVANIA STATE UNIVERSITY RECEIVES TRITIUM CONTAMINATED PACKAGE
PENNSYLVANIA STATE UNIVERSITY
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(34), PAGE 33, (AUGUST 21, 1967)

(TWX, JULY 11) LOUISIANA STATE UNIVERSITY SHIPPED A PACKAGE CONTAINING 1 CURIE OF TRITIUM AS 1 ML OF WATER. RECEIVED BY PENNSYLVANIA STATE UNIVERSITY ON JULY 10, 1967. THE PACKING MATERIAL WAS GROSSLY CONTAMINATED, AND THE LAST TUBE WITH STOPPER APPEARED TO BE EMPTY. FURTHER INVESTIGATION UNDERWAY.

*RADIOISOTOPE + *TRANSPORTATION AND HANDLING + INCIDENT, ACTUAL, GENERAL + SHIPPING CONTAINER + TRITIUM

17-17374 ALSO IN CATEGORIES 7 AND 13

UNITED NUCLEAR FILTER RUPTURE RELEASE ESTIMATED AT LESS THAN 1 GRAM U235
UNITED NUCLEAR CORPORATION, NEW HAVEN, CONN.
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(34), PAGES 33 AND 34, (AUGUST 21, 1967)

(TWX, JULY 25) WOOD RIVER JUNCTION FUELS RECOVERY PLANT SHUT DOWN OXYGEN-BURNING SYSTEM B (IN SNM 777) BECAUSE A RUPTURED EXHAUST FILTER WAS SUSPECTED TO HAVE RELEASED U-235, ESTIMATED AT

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17374 *CONTINUED*
LESS THAN 1 GRAM. INVESTIGATION UNDERWAY.

*AIRBORNE RELEASE + *FILTER, DAMAGED + *URANIUM + FUEL REPROCESSING + INCIDENT, ACTUAL, GENERAL

17-17375
WESTERN CORPORATION CITED FOR NON COMPLIANCE
THE WESTERN CO., FT. WORTH, TEXAS
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(34), PAGE 34 AND 35. (AUGUST 21, 1967)

COMPLIANCE CITATION (JULY 17) INCLUDES - (1,6) STORED MATERIAL CAUSED GREATER THAN 2 MREMS/HR IN UNRESTRICTED AREA, AND WAS IN A DIFFERENT PLANT. (2,3,5) SURVEYS WERE NOT ADEQUATE, AND RECORDS OF SURVEYS NOT MAINTAINED. AEC FORM 3 WAS NOT POSTED. (4,7) AM-BE SOURCES WERE NOT LEAK-TESTED, AND I-131 WAS RECEIVED IN GREATER THAN THE LICENSED AMOUNT. A GENERAL LACK OF CENTRALIZED CONTROL OF ISOTOPE PROCUREMENT WAS NOTED. (REPLY, JULY 27) (1,2,3,4) STORED MATERIAL IS REDISTRIBUTED, SURVEYS TAKEN ROUTINELY OR ON A MATERIAL TRANSFER. PREVIOUS SAFETY CHECKS WERE BY EMPLOYEE RELATIONS DEPT. AND WERE TOO GENERAL. THIS OFFICE HAS ASSUMED FULL RESPONSIBILITY AND WILL HAVE MONTHLY INSPECTIONS MADE BY TRAINED PEOPLE.

*INSPECTION AND COMPLIANCE + *RADIOISOTOPE + *STORAGE CONTAINER + AMERICIUM + FISSION PRODUCT, IODINE + SOURCE, NEUTRON + TEST, LEAK LOCATION

17-17387
GONCHAROV VV + BABULEVICH EN + SHAVROV PI
EXPERIENCE IN OPERATING A MATERIAL TESTING REACTOR AND CONDUCTING TESTS OF FUEL ELEMENTS AND VARIOUS MATERIALS
INSTITUT ATOMNOI ENERGII, GOSUDARSTVENNYI KOMITET PO ISPOL ZOVANIYU ATOMNOI ENERGII SSSR, MOSCOW
IAE-991 +. 44 PAGES, 1965

UNTRANSLATED ARTICLE IN RUSSIAN. TITLE SUGGESTS GENERAL CONTENTS.

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

*OPERATING EXPERIENCE + REACTOR, TEST + UNION OF SOVIET SOCIALIST REPUBLICS

17-17392
CAUTIOUS W
THE AVR HIGH-TEMPERATURE REACTOR
NP-TR-1363 +. 19 PAGES, TRANSLATED BY S. WOODHOUSE (ATOMIC ENERGY RESEARCH ESTABLISHMENT, HARWELL, BERKS, ENGLAND), FROM AT. STROM., 10(5), PAGE 33-8, (1964)

REVIEWS GENERAL STATE OF CONSTRUCTION IN THE REACTOR BUILDING AND AUXILIARIES. TEST PROGRAMS FOR BOILER TUBES AND DEFECT ZONES IN ECONOMIZER TUBES (PROBABLY DUE TO LENGTHY STORAGE IN A DAMP, SULFUROUS ATMOSPHERE) ARE DISCUSSED, AND THE DECISION TO REJECT THE ECONOMIZER AND BUILD A NEW STEAM GENERATOR IS EXPLAINED. PROPOSAL BY USAEC TO SUPPLY AVR WITH A FUEL CHANGE OF COATED-PARTICLE ELEMENTS (URANIUM CARBIDE SURROUNDED BY A LAYER OF PYROLYTIC CARBON FOR RETENTION OF FISSION PRODUCTS) FOR TESTING PURPOSES IS REPORTED.

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

*FAILURE, TUBING + *STEAM GENERATOR + GERMANY + REACTOR, PEBBLE BED

17-17444
QUARTERLY PROGRESS REPORT FOR THE PERIOD ENDING JANUARY 31, 1967 40-MW(E) PROTOTYPE HIGH-TEMPERATURE GAS-COOLED REACTOR. POSTCONSTRUCTION RESEARCH AND DEVELOPMENT PROGRAM
GENERAL ATOMIC, SAN DIEGO
GA-7830 +. 63 PAGES, 37 FIGURES, 1 TABLE, MARCH 15, 1967

ONE OF A SERIES OF PROGRESS REPORTS. PREPARATIONS FOR APPROACH-TO-POWER EXPERIMENTS ARE DISCUSSED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.70 COPY, \$0.65 MICROFICHE

*RESEARCH AND DEVELOPMENT PROGRAM + REACTOR, GAS COOLED + REACTOR, HIGH TEMP. GAS

17-17445 ALSO IN CATEGORY 15
BIRD PM
RADIATION ACCIDENTS - CAUSE AND EFFECT
DEPARTMENT OF NATIONAL HEALTH AND WELFARE, OTTAWA, ONTARIO
6 PAGES, 6 TABLES, 2 REFERENCES, CANADIAN JOURNAL OF PUBLIC HEALTH PAGES 7-12 (JAN. 1967)

A STUDY OF CANADIAN NONGOVERNMENTAL FILM-MONITORING RECORDS FOR 3 YEARS (58-60) WAS MADE OF

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17445 *CONTINUED*

ALL FILM DOSES ABOVE 600 MR. SEALED SOURCES ACCOUNTED FOR 127, AND UNSEALED SOURCES FOR THE OTHER 9. THE RECORDS WERE STUDIED, AND ABOUT 1/3 TO 1/5TH JUDGED UNAVOIDABLE. RADIOGRAPHY (42) AND X-RAYS (33) CONTRIBUTED THE BULK OF THE INCIDENTS, WITH ABOUT 6,292,897 R ANNUAL DOSE ACCUMULATED IN 417,351 FILM BADGES IN THOSE THREE YEARS. ARTICLE DISCUSSES METHOD OF DETECTION, INTERNAL AND EXTERNAL EXPOSURES, AND SPECIAL MEDICAL SUPERVISION.

*INCIDENT, ACTUAL, GENERAL + *PERSONNEL EXPOSURE, RADIATION + CANADA + RADIOGRAPHY + X-RAY

17-17450

HOWEY GR

NUCLEAR TRAINING AT ONTARIO HYDRO

NUCLEAR TRAINING CENTRE, ONTARIO

5 PAGES, 2 FIGURES, 4 TABLES, POWER ENGINEERING 71(5) PAGES 46 TO 50 (MAY 1967)

A NUCLEAR TRAINING CENTER WAS FORMED IN 1962 TO TRAIN OPERATORS, ENGINEERS, AND MAINTENANCE PERSONNEL AT THE NPD PLANT FOR CANADA AND OTHER COUNTRIES ON CANDU REACTORS. NEARLY 200 WERE IN TRAINING IN 1966. TRAINING INCLUDES ON-THE-JOB AND LABORATORY-CLASSROOM WORK, WITH A REACTOR SIMULATOR PLANNED. TO PROGRESS TO A CONTROL-ROOM OPERATOR TAKES 151 COURSES AND 330 NPD STATION FIELD-CHECKOUTS IN 4 YEARS.

*STAFFING, TRAINING, QUALIFICATION + CANADA + NPD 2 (NUCLEAR POWER DEMONSTRATION REACTOR 2) + REACTOR, HEAVY WATER + REACTOR, PRESSURE TUBE

17-17457

BROWN JR + HOPKINS GR + VAN HOWE KR

PHYSICS TESTS DURING THE INITIAL OPERATION OF THE PEACH BOTTOM HTGR

GENERAL ATOMIC, SAN DIEGO, CALIF.

GA-8025 + CONF-670602 +. 26 PAGES, 19 FIGURES, JUNE 5, 1967, ALSO ANS TRANS 10(1) PAGE 319, 1967 ANNUAL MEETING OF THE AMERICAN NUCLEAR SOCIETY, SAN DIEGO, CALIF., JUNE 11-15, 1967

TESTS PERFORMED INCLUDE (1) REACTIVITY STATUS OF CORE, USING AVERAGE CORE TEMPERATURE FROM BLOOST CODE AND MEASURED REACTIVITY CHANGE DUE TO TEMPERATURE AS A FUNCTION OF POWER AND HELIUM FLOW, (2) POWER COEFFICIENT OF REACTIVITY, MEASURED AT CONSTANT STEAM CONDITIONS USING CHANGE IN CRITICAL CONTROL-ROD POSITIONS, (3) TEMPERATURE COEFFICIENT OF REACTIVITY, USING CODES FEVER AND GAMBLE, (4) FREQUENCY RESPONSE OF NEUTRON NOISE, (5) CONTROL-ROD WORTH, USING AN ON-LINE GA R-20 REACTIVITY COMPUTER, (6) HEAT-TRANSFER FILM COEFFICIENT IN CORE, BY HOLDING CONSTANT ROD POSITIONS AND VARYING HELIUM FLOW RATE TO PRODUCE A POWER-LEVEL VARIATION WHICH CAN BE CORRELATED TO YIELD COEFFICIENT VALUES, (7) FUEL TEMPERATURES, USING BLOOST CODE.

*REACTOR STARTUP TESTING + *TEST, PHYSICS + PEACH BOTTOM 1 + REACTOR, GAS COOLED + REACTOR, HIGH TEMP. GAS

17-17459

SLATER E

OPERATING EXPERIENCE WITH THE WAGR FUELING MACHINE

UNITED KINGDOM ATOMIC ENERGY AUTHORITY, WINDSCALE

4 PAGES, FIGURES, 3 TABLES, NUCLEAR ENGINEERING 12(135) PAGES 600-603 (AUGUST 1967)

DESCRIBES DESIGN AND SUCCESSFUL OPERATION. FEATURES SINGLE-CHANNEL ACCESS WITH ON-LOAD FUELING AT FULL REACTOR PRESSURE. FISSION-PRODUCT HEAT-REMOVAL BY CO2 COOLANT FLOW. RATE OF LOADING IS TWO CHANNELS/DAY, COMPARED WITH NEEDED 5/WEEK FOR A TWIN 660-MW(E) AGR. OVERALL OPERATION TAKES ABOUT THREE HOURS, AND ONLY TWO PERIODS OF 15 MIN EACH REPRESENT DISTURBANCE TO REACTOR OPERATION. CUMULATIVE AVAILABILITY IS NOW ALMOST 90%. PERFORMANCE OF TELESCOPIC CONNECTORS, CHAIN CABLES, STRINGER VIEWING, NOSE UNIT, ETC., IS DISCUSSED.

*FUEL HANDLING MACHINE + *ON LINE REFUELING + *OPERATING EXPERIENCE + REACTOR, GAS COOLED + WINDSCALE AGR (UK)

17-17460

MACLAW DABEK JK

PAPERS ON ANNA REACTOR BY THE POLISH INSTITUTE OF NUCLEAR RESEARCH

INSTITUTE OF NUCLEAR RESEARCH, SWIERK

AEC-TR-6650 +. 92 PAGES, FIGURES, TABLES, REFERENCES, NUKLEONIKA 11(4), PAGES 213-304 (1966)

SIX PAPERS PRESENTED AT THE CONFERENCE ON REACTOR PHYSICS AND ENGINEERING, BUDAPEST, NOVEMBER 15-20, 1965, BASED ON DEVELOPMENT WORK AT THE ANNA ZERO-POWER REACTOR, A GRAPHITE-REFLECTED, H2O-MODERATED ASSEMBLY WITH ENRICHED FUEL.

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

*CRITICAL ASSEMBLY FACILITY + CRITICALITY EXPERIMENT + POLAND + PULSED NEUTRON TECHNIQUE + REACTOR STARTUP TESTING + REACTOR, RESEARCH

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17462

PEGASE, FRENCH POOL TYPE FUEL TEST REACTOR
1 PAGE, 1 FIGURE, NUCLEAR ENGINEERING 8(88), PAGE 325 (SEPTEMBER 1963)

DESCRIBES PEGASE, A 30-MW SWIMMING-POOL REACTOR TO BE USED FOR FULL-SCALE TESTING OF FUEL-ELEMENT BURNUP UNDER SIMULATED EDF (GRAPHITE MODERATED) OR EL 4 (HEAVY WATER) REACTOR CONDITIONS. EIGHT SELF-CONTAINED TEST LOOPS ARE AVAILABLE WHICH CAN BE MOVED TO A DEACTIVATION POOL AND THEN TO A HOT CELL FOR FUEL REMOVAL. PROGRAM - (1) LIFE TESTS FROM 3000 TO 5000 MDW/T, (2) CYCLING TESTS TO REPRODUCE AT ACCELERATED RATE SHUTDOWN AND STARTUP EFFECTS, (3) DESTRUCTION TESTS TO DEFINE SAFETY MARGIN OF ELEMENTS.

*IRRADIATION TESTING + *REACTOR DESCRIPTION + FRANCE + REACTOR, POOL TYPE + REACTOR, TEST

17-17463

ALSO IN CATEGORY 9

COOPER WM + EDWARDS J
OPERATIONAL AND TRAINING EXPERIENCE WITH THE JASON REACTOR
ROYAL NAVAL COLLEGE, GREENWICH, UK
4 PAGES, 3 REFERENCES, EURO NUCLEAR 3(4), PAGES 179-182 (APRIL 1966)

10-KW ARGONAUT DESIGN. MAINTENANCE TIME IS ABOUT 20% OF REACTOR TIME. FAULTS INCLUDE VALVE FAILURES AND AN UPWARD VARIATION OF THE LOGARITHMIC CHANNEL UPPER TRIP LEVEL. COURSES VARY FROM A TWO-WEEK INTRODUCTORY COURSE TO A ONE-YEAR ADVANCED COURSE ON POST-GRADUATE LEVEL. MAXIMUM OF FOUR STUDENTS WORK ON REACTOR AT A TIME, AND 340 HAVE BEEN TRAINED SINCE COMMISSIONING PERIOD. EXPERIMENTAL USES OF FOIL-COUNTING LABORATORY AND REACTOR OSCILLATOR (A ROTATING PLATE OF CADMIUM WHICH ALLOWS NEUTRON ABSORBER AREA TO BE VARIED) ARE DESCRIBED.

*OPERATING EXPERIENCE + FAILURE, INSTRUMENT + INSTRUMENTATION, POWER RANGE

17-17464

PETERSON RE + CUBITT RL
OPERATION OF THE PLUTONIUM-FUELED FAST REACTOR LAMPRE
LOS ALAMOS SCIENTIFIC LAB., NEW MEXICO
LA-DC-8398 + CONF-670413-2 +. 14 PAGES, FIGURES, FROM NATIONAL TOPICAL MEETING ON FAST REACTORS, SAN FRANCISCO, CALIFORNIA, 1967

ADEQUATE COOLANT PURITY WAS MAINTAINED BY HOT TRAPS SO THAT THE TANTALUM FUEL CONTAINER WOULD NOT BE CORRODED BY OXYGEN IN THE SODIUM. ATMOSPHERE NITROGEN WHICH DIFFUSED THROUGH PIPE WALLS WAS CONTROLLED BY FLUSHING. FISSION-PRODUCT RELEASE INTO THE LOOP HAD ONLY MINOR EFFECTS ON REACTOR OPERATIONS, FUEL HANDLING, ETC. MAJOR PART OF CORE STRUCTURE AND COOLANT LOOP WAS DISASSEMBLED AFTER EXPERIMENT, WITHOUT DIFFICULTY. PU CONTAMINATION LESS THAN EXPECTED, AND ALTHOUGH LARGER GAS PIPING ON VESSEL TOP CONTAINED DETECTABLE LEVELS OF PU, BAGGING TECHNIQUES WERE ADEQUATE.

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

*OPERATING EXPERIENCE + COOLANT CHEMISTRY + FUEL HANDLING + LAMPRE 1 (LASL MOLTEN PU REACTOR EXPERIMENT) + REACTOR DECOMMISSIONING EXPERIENCE + REACTOR, FAST

17-17466

SPECIFICATION FOR PM TYPE NUCLEAR REACTOR CORES (TYPE 4 DESIGN)
HITTMAN ASSOCIATES, INC., BALTIMORE, MD.
NYO-10741 +. 170 PAGES, DECEMBER 1966

OUTLINES (1) GENERAL SPECIFICATIONS, CONCERNING DEFINITIONS, REFERENCE STANDARDS, DRAWINGS, AND APPROVALS, (2) PRODUCT REQUIREMENTS, INCLUDING MATERIALS, TOLERANCES, CLEANNESS, IDENTIFICATION, AND STORAGE, (3) QUALITY-ASSURANCE REQUIREMENTS, (4) PACKAGING AND SHIPPING REGULATIONS, INCLUDING FINAL INSPECTION AND MARKING, AND (5) DOCUMENTATION TO BE SUBMITTED, INCLUDING DATA AND RECORDS, MONTHLY FAILURE NOTIFICATIONS, QUALIFICATIONS, AND SUMMARY REPORTS.

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

*FABRICATION + *FUEL ELEMENT + *QUALITY CONTROL + PM 1 (PORTABLE MEDIUM NUCLEAR POWER PLANT) + PM 2A (PORTABLE MEDIUM NUCLEAR POWER PLANT) + PM 3A (PORTABLE MEDIUM NUCLEAR POWER PLANT) + REACTOR, MILITARY + REACTOR, PRESSURIZED WATER

17-17467

TAKEDA A
TOKAI REACTOR COMMISSIONING TEST. I. REACTOR PHYSICS TESTS
JAPAN ATOMIC POWER CO., TOKYO
8 PAGES, FIGURES, TABLES, NIPPON GENSIRYOKU GAKKAISHI 8, PAGES 584-91 (NOVEMBER 1966), IN JAPANESE

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17467 *CONTINUED*

STRESS IS PUT ON THE DESCRIPTION OF THE METHODS OF ANALYSIS, AND MAIN RESULTS ARE GIVEN. EXPERIMENTS AND ANALYSIS WERE DONE WITH COLLABORATION OF THE BRITISH GENERAL ELECTRIC CO. AND THE JAPAN ATOMIC POWER CO. (UNTRANSLATED JAPANESE ARTICLE).

*REACTOR STARTUP TESTING + JAPAN + REACTOR, GAS COOLED

17-17468

MOSTERT P

THE 50-MW NUCLEAR POWER PLANT AT DODEWAARD
GEMEENSCHAPPELIJKE KERNENERGIECENTRALE NEDERLAND

10 PAGES, 4 FIGURES, 2 TABLES, NED. TIJDSCHR NATUUR. 32, PAGES 211-20 (JULY 1966) IN DUTCH

THE DODEWAARD POWER PLANT IS SUPPLIED BY A BOILING-WATER REACTOR WITH ZIRCALOY-CLAD UO₂ FUEL ELEMENTS. THE CHARACTERISTICS OF THE REACTOR, WITH EMPHASIS ON THE PRIMARY CIRCUITS, REACTOR CORE, REACTOR VESSEL, PRESSURE SYSTEM, AND INSTRUMENTATION ARE DESCRIBED. (UNTRANSLATED DUTCH ARTICLE)

*REACTOR DESCRIPTION + NETHERLANDS + REACTOR, BOILING WATER

17-17469

INOMATA T + YAMAZAKI R

TOKAI REACTOR COMMISSIONING TEST. II. THERMAL ASPECTS IN PARTICULAR MEASUREMENT OF CORE FLOW DISTRIBUTION
JAPAN ATOMIC POWER CO., TOKYO

4 PAGES, 1 FIGURE, NIPPON GENSIRYOKU GAK. 8 PAGES 591-4 (NOVEMBER 1966) IN JAPANESE

THE MOST IMPORTANT LIMITING FACTOR IS FUEL-ELEMENT-CAN SURFACE TEMPERATURE, WHICH IS RESTRICTED FROM CONSIDERATIONS OF SAFETY AS WELL AS FROM METALLURGICAL ASPECTS. A COMPUTER PROGRAM (QUICKTOM) WAS DEVELOPED WHICH UTILIZES ALL THE MEASURED DATA FROM THE REACTOR TO ASSESS FUEL-ELEMENT-CAN SURFACE TEMPERATURES AND OTHER VALUES. THE INDIVIDUAL CHANNEL MASS FLOW REQUIRED FOR CALCULATION HOWEVER MUST BE DETERMINED ON THE BASIS OF CHANNEL-CLEARWAY AND CHANNEL-AIR-FLOW TESTS DONE DURING COMMISSIONING. THE TESTS REVEALED CLOSE AGREEMENT OF THE CORE FLOW DISTRIBUTION WITH DESIGN, AND NO EFFECT OF GAS DUCT AND SUPPORT GRID ON CORE FLOW DISTRIBUTION WAS OBSERVED.

*FLOW DISTRIBUTION + *REACTOR STARTUP TESTING + CLAD + FUEL ELEMENT + JAPAN + MEASUREMENT, TEMPERATURE + REACTOR, GAS COOLED

17-17470

MIZUOCHI M

TOKAI REACTOR COMMISSIONING TEST. III. OTHER ZERO POWER TESTS
JAPAN ATOMIC POWER CO., TOKYO

4 PAGES, FIGURES, TABLES, NIPPON GENSIRYOKU GAK. 8, PAGES 594-7 (NOVEMBER 1966) IN JAPANESE

THE NUCLEAR AND THERMAL ASPECTS OF THE COMMISSIONING TESTS WERE REPORTED EARLIER. DESCRIBED ARE OTHER ZERO-POWER TESTS AS WELL AS ENGINEERING TESTS AND INSPECTIONS CARRIED OUT IN THE PERIOD BETWEEN FULL FUEL LOADING AND START OF POWER RAISING. THESE TESTS ARE TRIAL RUNS WITH CO₂, CALIBRATION OF BURST-CARTRIDGE-DETECTION GEAR, PRESSURE-VESSEL FAST-NEUTRON FLUX MEASUREMENT, AND FINAL INSPECTION. THE TESTS REQUIRED TWICE AS MANY DAYS AS ORIGINALLY EXPECTED BECAUSE SOME CONSTRUCTION WORK WAS STILL IN PROGRESS.

*REACTOR STARTUP TESTING + JAPAN + REACTOR, GAS COOLED

17-17474

ALSO IN CATEGORY 2

KNOBLING KH + WANGERIN W

CONSTRUCTION ENGINEERING VIEWPOINT IN THE PLANNING AND CONSTRUCTION OF THE GUNDREMMINGEN NUCLEAR POWER
PLANT

ALLGEMEINE ELEKTRIZITAETSGESELLSCHAFT, FRANKFURT AM MAIN

4 PAGES, 3 TABLES, AT. STROM. 12, PAGES 124-7 (SEPT. OCT. 1966) IN GERMAN

THE EFFECT OF THE CONSTRUCTION ENGINEERING ON THE SITE SELECTION, TERRAIN CHOICE, AND ARRANGEMENT OF THE PLANT IS INDICATED. SPECIAL PRECAUTIONS WITH RESPECT TO RADIATION PROTECTION IN THE CONSTRUCTION ARE DISCUSSED. (UNTRANSLATED GERMAN ARTICLE).

*OPERATING EXPERIENCE + GERMANY + REACTOR, BOILING WATER

17-17475

VON ZORKOCZY A + STAEBLER K

THE START-UP OF THE GUNDREMMINGEN NUCLEAR POWER PLANT
KERNKRAFTWERK RWE-BAYERWERK GMBH, GUNDREMMINGEN, GERMANY

6 PAGES, 2 FIGURES, 2 TABLES, AT. STROM. 12, PAGES 127-32 (SEPT. OCT. 1966) IN GERMAN

THE STARTUP PROCEDURE FOR THE GUNDREMMINGEN NUCLEAR POWER PLANT (INCLUDING THE PRESTARTUP TESTS, ZERO-POWER TESTS, POWER TESTS, AND TEST OPERATION) IS OUTLINED. (UNTRANSLATED GERMAN ARTICLE).

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17475 *CONTINUED*
*REACTOR STARTUP EXPERIENCE, INITIAL + GERMANY + REACTOR, BOILING WATER

17-17477
TSYKANOV AV + AVERYANOV PG + ZVEREV VA + KUSOVNIKOV AS + KORMUSHKIN YP + SAMSONOV BV + FRUNZE VV +
ZALETNYKH BA
EXPERIENCE IN OPERATING THE SM-2 EXPERIMENTAL REACTOR
6 PAGES, FIGURES, KERNERGIC 9, PAGES 310-15 (OCTOBER 1966) IN RUSSIAN

THE MAIN CHARACTERISTICS OF THE REACTOR DETERMINED DURING DESIGN WERE CORRECT, ALTHOUGH THE COMPENSATING POWER OF BOTH CONTROL AND SHIELDING SYSTEM AND THE CORE HEIGHT MUST BE INCREASED TO REALIZE THE BURNUP POSSIBLE FROM THE FUEL AND BECAUSE OF THE NECESSARY DURATION OF CONTINUOUS OPERATION. THE HIGH RESISTANCE TO RADIATION OF THE STRUCTURAL MATERIALS IS STATED. EXPERIENCE IS DISCUSSED CONCERNING THE OPERATION OF THE REACTOR USING SPECIAL FEATURES.

*OPERATING EXPERIENCE + FUEL BURNUP + RADIATION DAMAGE + REACTOR, RESEARCH +
UNION OF SOVIET SOCIALIST REPUBLICS

17-17479 ALSO IN CATEGORY 9
SMITH RR + DNF CB
CLADDING FAILURE SIMULATION TESTS IN EBR-II
ARGONNE NATIONAL LAB., ILL.
ANL-7067 +. 24 PAGES, 17 FIGURES, 1 TABLE, REFERENCES, DECEMBER 1966

TESTS, USING A SINGLE UNCLAD FUEL ROD, ON (1) CWD (CHANGED WIRE DETECTOR, BASED ON DETECTION OF FISSION GAS IN THE CORE COVER GAS), AND (2) FERD (FUEL ELEMENT RUPTURE DETECTOR), BASED ON DETECTION OF DELAYED-NEUTRON-EMITTING FISSION PRODUCTS IN PRIMARY COOLANT. COUNTING RATES WERE MEASURED WITH NORMAL CONDITIONS AND WITH A SINGLE UNCLAD MARK-1A FUEL PIN IN THE CORE. SIGNAL-TO-NOISE RATIOS ARE 12 FOR CWD AND 6.7 FOR FERD. FERD HAS A MUCH SHORTER TIME RESPONSE (20 SEC) BUT WILL NOT USUALLY RESPOND TO FAILURES IN THE FUEL-ROD GAS PLENUM. SINCE CWD IS SENSITIVE TO BOTH BOND-TYPE AND GAS-TYPE FAILURES, THE SYSTEMS COMPLEMENT.

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

*INSTRUMENTATION, DETECTION FAILED FUEL ELEMENT + *TEST, PROOF +
EPR 1 AND 2 (EXPERIMENTAL BREEDER REACTORS) + OPERATIONS REPORT, ANALYSIS + REACTOR, AEC OWNED +
REACTOR, LIQUID METAL COOLED

17-17484
KAY RE
CANU-BLW EXPERIMENTS IN ZED-2. PART II. BOOSTER ROD EXPERIMENTS
ATOMIC ENERGY OF CANADA LIMITED, CHALK RIVER
AECL-2689 +. 43 PAGES, FIGURES, 9 TABLES, 9 REFERENCES, MARCH 1967

EXPERIMENTS WERE MADE IN A SIMULATED CANU-BLW LATTICE IN ZED-2 TO DETERMINE THE PERTURBING EFFECT OF A MOCKUP BLW BOOSTER ROD ON THE SURROUNDING LATTICE, THE NEUTRON DENSITY DISTRIBUTION WITHIN THE BOOSTER, AND ITS REACTIVITY EFFECT. THE EXPERIMENTS WERE RUN WITH THE BOOSTER VERTICAL ALONG THE AXIS OF THE LATTICE, AND HORIZONTAL ACROSS A DIAMETER OF THE LATTICE NEAR THE POSITION OF MAXIMUM AXIAL FLUX. THE MAXIMUM OBSERVED NEUTRON-DENSITY PERTURBATION WAS ABOUT 55% ABOUT 20 CM FROM THE BOOSTER. REACTIVITY MEASUREMENTS IN TERMS OF CHANGES IN LATTICE CRITICAL HEIGHT WERE MADE RELATIVE TO A STANDARD ABSORBER. SIMPLIFIED PERTURBATION-THEORY CALCULATIONS WERE PERFORMED TO COMPARE WITH THE MEASURED RELATIVE REACTIVITY EFFECTS.

AVAILABILITY - ATOMIC ENERGY OF CANADA LIMITED, CHALK RIVER, ONTARIO, CANADA, \$1.50 COPY

*CRITICALITY EXPERIMENT + *POWER DISTRIBUTION + CANADA + CANU (CANADIAN NATURAL URANIUM REACTOR) +
REACTOR, BOILING WATER

17-17497 ALSO IN CATEGORY 6
ENGLAND TR + HARTFIELD GL + DEREMER RK
XENON SPATIAL STABILITY IN LARGE SEED-BLANKET REACTORS
WESTINGHOUSE ELEC. CORP., PITTSBURGH, PENNSYLVANIA. BETTIS ATOMIC POWER LAB
WAPD-TM-626 +. 177 PAGES, 48 FIGURES, 9 TABLES, 48 REFERENCES, APRIL 1967

GENERAL MODAL ANALYSIS WAS DEVELOPED UTILIZING CURRENT MULTIDIMENSIONAL-DIFFUSION COMPUTER PROGRAMS. VALIDITY OF ANALYTICAL METHODS IS DOCUMENTED BY (1) EXACT ONE-DIMENSIONAL STUDIES, (2) COMPARISONS WITH OBSERVED SHIPPINGPORT INSTABILITIES, (3) LSBR ANALOG STUDIES IN TWO AND THREE DIMENSIONS. EFFECT OF GEOMETRY, POWER DISTRIBUTION, FUEL TYPES AND COMPOSITIONS, TEMPERATURE FEEDBACK, HIGHER-ORDER TRANSPORT, AND REACTOR LIFETIME ON STABILITY ARE EXAMINED. BOTH DIGITAL AND ANALOG STUDIES SHOW MODERATOR AND DOPPLER COEFFICIENTS TO BE STRONG STABILIZING INFLUENCES. LSBR DESIGNS WILL BE STABLE TO XENON OSCILLATIONS BECAUSE OF DOPPLER COEFFICIENT AND YIELD ADVANTAGE INHERENT TO TH-232/U-233 FUEL CYCLE.

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

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17497 *CONTINUED*

*MATHEMATICAL TREATMENT + *XENON OSCILLATION + ANALYTICAL MODEL + COMPARISON, THEORY AND EXPERIENCE +
COMPUTER PROGRAM + REACTOR STABILITY + REACTOR, PRESSURIZED WATER + REACTOR, WATER + SHIPPINGPORT

17-17499

SLAUGHTER GM + FRANCO-FERREIRA EA + KIRSTOWSKY EC + KLINDT KK + LONG EL + TOLSON GM
FABRICATION OF REBUILT BONUS REACTOR SUPERHEATER FUEL ASSEMBLY
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE
ORNL-4072 +. 163 PAGES, FIGURES, TABLES, JUNE 1967

DESCRIBES RENOVATION OF SALVAGED PARTS, PROCUREMENT OF REPLACEMENT PARTS, FABRICATION OF NEW SET OF FUEL RODS, AND FINAL ASSEMBLY AFTER DISASSEMBLY OF UNIRRADIATED UNIT IN STUDYING CAUSE OF PREVIOUS FAILURE. PROCEDURES DEVELOPED FOR WELD AND BRAZE QUALIFICATION, PROCESS CONTROL, TESTING, AND INSPECTION ARE COVERED. ORIGINAL DESIGN MODIFIED TO EASE FABRICATION AND UPGRADE SERVICE, AND FINE GRAIN SIZE IN INCONEL 600 CLADDING TUBING AFTER BRAZING OF SPACERS WAS ENSURED. THIRTY-TWO FUEL RODS WERE INCORPORATED INTO FINAL ASSEMBLY, WITH FOUR REJECTIONS DUE TO WELD CRACKING.

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

*FABRICATION + *FUEL ELEMENT + *INCONEL + BONUS (BOILING NUCLEAR SUPERHEAT PROJECT) +
REACTOR, INTERNAL SUPERHEAT

17-17500

ALSO IN CATEGORY 18

ANAMALOUS SWELLING OF EBR-II MARK IA FUEL
ARGONNE NATIONAL LAB., ARGONNE, ILL.
ANL-7317 +. 5 PAGES, 1 TABLE, PAGES 8-12 FROM REACTOR DEVELOPMENT PROGRAM PROGRESS REPORT, MARCH 1967

WHILE EARLIER 48' ENRICHED FUEL SWELLED 6-7' AT 1.2 A/O FUEL BURNUP, THE IA 52' ENRICHED FUEL IS UNEXPECTEDLY SWELLING TWICE THAT AMOUNT, UNLESS THE FUEL CONTAINS REMELTED REJECT PINS AND PIN ENDS. VARIOUS MEASUREMENTS TAKEN, AND IRRADIATION STUDIES BEGUN IN NOV. 1966 ARE SUMMARIZED.

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

*EXPANSION + *FUEL BURNUP + *FUEL ELEMENT + EBR 1 AND 2 (EXPERIMENTAL BREEDER REACTORS) +
REACTOR, AEC OWNED + REACTOR, BREEDER + REACTOR, LIQUID METAL COOLED

17-17502

BOLSTAD JW + CUMMINGS GE + EAGAN JL + FINN HF
SAFETY ANALYSIS REPORT FOR THE LIVERMORE POOL TYPE REACTOR
UNIVERSITY OF CALIFORNIA, LIVERMORE, LAWRENCE RADIATION LAB
UCRL-50147 +. 88 PAGES, FIGURES, TABLES, NOVEMBER 20, 1966

PRESSURE RISE FROM ALUMINUM-WATER REACTION THAT COMPLETELY CONSUMES CORE WOULD NOT CAUSE RUPTURE, AND IF REACTION ENERGY CAUSED PENETRATION BY A PROJECTILE, ONLY 17' OF FISSION GASES WOULD ESCAPE. CONSEQUENCES OF MAJOR ACCIDENT OF UNKNOWN ORIGIN ARE EXAMINED, ASSUMING RELEASE OF 50' OF PARTICULATES, 50' OF IODINES, AND 100' OF RADIOGASES FROM THE STACK AT 0.25' PER DAY. WHOLE-BODY DOSE IS 160 MREM FOR 1 HR AT SITE BOUNDARY AND 510 MREM FOR 24 HR AT ONE MILE. PURPOSE OF REPORT IS TO REANALYZE HAZARDS FOR POWER UPGRATING FROM 2 MW TO 3. APPENDIX D CONTAINS RESULTS FROM 3-MW TESTS.

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

*POWER UPGRATING + *SAFETY ANALYSIS REPORT, GENERAL + LRL (LAWRENCE RADIATION LABORATORY) +
METAL WATER REACTION + REACTOR, AEC OWNED + REACTOR, RESEARCH

17-17503

ALSO IN CATEGORY 5

LPTR 3 MW TEST
UNIVERSITY OF CALIFORNIA, LIVERMORE, LAWRENCE RADIATION LAB
UCRL-50147 +. 5 PAGES, 2 FIGURES, 1 TABLE, PAGES 78-82 FROM SAFETY ANALYSIS REPORT FOR THE LIVERMORE POOL TYPE REACTOR, NOVEMBER 20, 1966

ALTHOUGH TEST WAS PLANNED FOR 4 MW, IT WAS LIMITED TO 3 BY 500 F LIMIT ON LEAD. SUBCOOLED BOILING AT LEAD HAD BEEN EXPECTED TO HOLD TEMPERATURE AT 400 F. SHIELDING CLOSE TO CORE. PREDICTED FUEL HOT-SPOT TEMPERATURE FOLLOWED A STRAIGHT LINE (ON LOG-LOG PAPER) WITH POWER. 208 F WAS MEASURED AT 3.05 MW, WITH 218 F PREDICTED.

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

*POWER UPGRATING + *TEST, PROOF + CLAD + FUEL ELEMENT + LEAD + LRL (LAWRENCE RADIATION LABORATORY) +
MEASUREMENT, TEMPERATURE + PERFORMANCE LIMIT + REACTOR, AEC OWNED + REACTOR, RESEARCH + SHIELDING

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17507

PULSTAR CHANGE 28. NITROGEN-16 HOLD-UP TESTS

DIVISION OF REACTOR LICENSING, AEC

3 PAGES, JANUARY 30, 1967, DOCKET NO. 50-57, WESTERN NEW YORK NUCLEAR RESEARCH CENTER

AEC ALLOWS WESTERN N.Y. RESEARCH CENTER TO OPERATE PULSTAR FOR 3 MONTHS AT HALF POWER (1 MW(T)) AND FLOW RATE (500 GPM) TO MEASURE N-16 HOLDUP IN THE COOLANT UNDER THESE CONDITIONS. SCRAM SETTINGS WILL BE SET TO PROTECT COPE IF POWER OR FLOW CHANGE SIGNIFICANTLY. ANALYSIS SHOWS A MARGIN TO DNB GREATER THAN A FACTOR OF 10.

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

*NITROGEN + *REACTOR POWER + DNB (DEPARTURE FROM NUCLEATE BOILING) + REACTOR, POOL TYPE + REACTOR, PULSED + SAFETY EVALUATION + TECHNICAL SPECIFICATIONS

17-17508

ALSO IN CATEGORY 9

CHANGE 3. MODIFICATIONS TO INSTRUMENT AND DUE TO HEAT EXCHANGER TUBE FAILURE

AEC, DIVISION OF REACTOR LICENSING

5 PAGES, APRIL 14, 1967, DOCKET NO. 50-193, RHODE ISLAND ATOMIC ENERGY COMMISSION

AEC ALLOWS U. OF RHODE ISLAND TO (1) INCREASE SECONDARY COOLANT ACTIVITY LIMIT TO THAT OF 10 CFR 20 PERTAINING TO IDENTIFIED ISOTOPES, (2) PERMIT REPLACEMENT OF AN ALUMINUM-TUBED HEAT EXCHANGER BY A LIKE ONE OF STAINLESS STEEL, (3) REPLACE SCINTILLATION-DETECTOR AREA GAMMA MONITORS BY MORE RELIABLE DETECTORS OF A DIFFERENT TYPE, (4) REMOVE REQUIREMENT FOR SCRAM IN EVENT OF LOSS OF VOLTAGE IN STARTUP AND PERIOD CHANNELS BECAUSE COMPENSATED CHAMBERS (USED FOR POWER AND LOG-N CHANNELS) ARE BEING REPLACED WITH A DIFFERENT DESIGN AND HAVE INDEPENDENT POWER SUPPLIES.

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

*HEAT EXCHANGER + *INSTRUMENTATION, INTERMEDIATE RANGE + *MODIFICATION, SYSTEM UK EQUIPMENT + *REACTOR COOLANT + *WASTE DISPOSAL, LIQUID + ACTIVITY BUILDUP + ELECTRIC POWER, VITAL + FAILURE, TUBING + REACTOR, POOL TYPE + REACTOR, RESEARCH + SAFETY EVALUATION + TECHNICAL SPECIFICATIONS

17-17509

CHANGE 1 - INSTALLATION OF PNEUMATIC TRANSFER SYSTEM IN A BEAMPORT AT UNIVERSITY OF WYOMING L-77

AEC, DIVISION OF REACTOR LICENSING

3 PAGES, MARCH 6, 1967, DOCKET NO. 50-122

AEC ALLOWS U. OF WYOMING TO INSTALL A PNEUMATIC TRANSFER SYSTEM IN A BEAM PORT OF THEIR L-77 REACTOR. SAMPLE AND CAPSULE REACTIVITY IS LIMITED TO 0.2%. MAXIMUM SAMPLE REACTIVITY WILL BE 10 MILLICURIES.

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

*BEAM HOLE + *RADIOISOTOPE + REACTOR, RESEARCH + SAFETY EVALUATION + TECHNICAL SPECIFICATIONS + WATER BOILER

17-17510

APPARENT INCREASE IN EXCESS REACTIVITY DURING CORE REASSEMBLY OF AGN 201

CATHOLIC UNIVERSITY OF AMERICA

5 PAGES, JUNE 12, 1967, DOCKET NO. 50-77, CATHOLIC UNIVERSITY OF AMERICA REACTOR

AN INCREASE IN EXCESS REACTIVITY OF ABOUT 0.20% WAS NOTED BETWEEN INITIAL ASSEMBLY (SUMMER, 1966) AND MARCH 1967, WHEN EXCESS REACTIVITY EXCEEDED LICENSE LIMITATION OF 0.25%. PROBABLE CAUSE WAS A MORE OPTIMUM PACKING OF CORE ELEMENTS DURING REASSEMBLY OF CORE. A REFLECTOR ELEMENT IN A BEAM TUBE WAS REMOVED, AND THE TUBE WAS SEALED, PRODUCING A 0.20% DECREASE IN EXCESS REACTIVITY.

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

*REACTIVITY EFFECT, ANOMALOUS + AGN (TRAINING REACTOR, AEROJET-GEN. NUCLEONICS) + MAINTENANCE AND REPAIR + REACTIVITY, EXCESS + REACTOR, TRAINING + TECHNICAL SPECIFICATIONS

17-17511

ALSO IN CATEGORY 14

MIT GRANTED EXEMPTION FROM 10CFR 20 PROVISIONS RELATING TO DISCHARGE OF TRITIUM TO SEWER

AEC, DIVISION OF REACTOR LICENSING

2 PAGES, MARCH 8, 1967, DOCKET NO. 50-20, MIT RESEARCH REACTOR

A LEAKY HEAT EXCHANGER CONTAMINATED THE SECONDARY COOLING SYSTEM WITH ABOUT 12 CURIES OF TRITIUM. PERMISSION WAS GRANTED TO DISCHARGE THIS CONTAMINATED WATER (20,000 GAL) INTO A SANITARY SEWER AT A CONTROLLED FLOW RATE TO ENSURE DILUTION IN THE SEWER BELOW MPC.

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

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17511 *CONTINUED*

*TRITIUM + *WASTE DISPOSAL, RIVER + DILUTION + MAXIMUM PERMISSIBLE CONCENTRATION (MPC) +
RADIATION SAFETY AND CONTROL + REACTOR, HEAVY WATER + REACTOR, RESEARCH + WASTE DISPOSAL, LIQUID

17-17512

AMENDMENT 2. PERMISSION TO USE AM-BE SOURCE AS ALTERNATIVE TO PRESENT PO-BE SOURCE
AEC, DIVISION OF REACTOR LICENSING + UNIVERSITY OF TEXAS
12 PAGES, FIGURES, TABLES, AUGUST 17, 1967, DOCKET NO. 50-192, UNIVERSITY OF TEXAS REACTOR

LICENSE AMENDED TO ALLOW EITHER OF THE TWO SOURCE TYPES TO PERMIT USE OF A SOURCE WITH LONG
HALF-LIFE. TEMPERATURE RISE IN SOURCE IS CALCULATED AS 0.16 C, USING CONDUCTIVITY OF UO2
INSTEAD OF AMO2. (ORIGINAL APPLICATION, DATED MAY 30, 1967, CONTAINS DATA FOR SOURCE AND ITS
HAZARDS).

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

*SOURCE, NEUTRON + AMERICIUM + REACTOR, RESEARCH + SAFETY EVALUATION + TECHNICAL SPECIFICATIONS +
TRIGA (TRAINING REACTOR, ISOTOPES, G.A.)

17-17513

ALSO IN CATEGORIES 9 AND 10
BIG ROCK POINT ASSERTS MANUAL/AUTO OPERATION OF TURBINE BYPASS VALVE IS NOT IN TECH. SPECS.
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
2 PAGES, JUNE 23, 1967, DOCKET NO. 50-155, BIG ROCK POINT NUCLEAR REACTOR

AFTER NOVEMBER 1966, THE MAIN STEAM BYPASS VALVE WAS OPERATED MANUALLY ABOVE 50 MW(E), AS
EXPERIENCE INDICATES THAT THE BYPASS VALVE WILL PROBABLY NOT PREVENT A SCRAM AT LOAD
REJECTIONS ABOVE 50 MW, PENDING FURTHER TESTS AND ADJUSTMENTS. A THOROUGH TEST PROGRAM IS
UNDESIRABLE DUE TO THE EFFECT OF THERMAL TRANSIENTS ON THE FUEL FAILURES THAT HAVE BEEN
EXPERIENCED ON THE STAINLESS STEEL AND R AND D FUELS. A BACKUP STATION POWER SUPPLY (A 46-KV
LINE) AND AN ISOLATION VALVE (JUST BEFORE THE BYPASS VALVE) ARE TO BE INSTALLED DURING THE
NEXT REFUELING, BECAUSE OF THE AUGUST 8, 1966, OCCURRENCE.

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

*CONTROLLER + *EMERGENCY POWER, ELECTRIC + *VALVE + BIG ROCK POINT + CONTAINMENT PENETRATION, CLOSURE OF +
ELECTRIC POWER, NORMAL + FAILURE, FUEL ELEMENT + INSPECTION AND COMPLIANCE + REACTOR, BOILING WATER +
TECHNICAL SPECIFICATIONS

17-17521

HFBR STARTUP
BROOKHAVEN NATIONAL LABORATORY
BNL-50,023 +. 4 PAGES, FIGURES, PAGES 19-22 OF BROOKHAVEN NATIONAL LABORATORY ANNUAL REPORT, DECEMBER 31,
1966

THE NEGATIVE REACTIVITY OF EQUILIBRIUM XENON WAS MUCH LARGER THAN CALCULATED BUT WAS OFFSET BY
FILLING CENTRAL IRRADIATION FACILITIES WITH HEAVY WATER. SAMARIUM REACTIVITY IS LOWER AFTER
SHUTDOWN THAN EQUILIBRIUM XENON, SO A PARTLY BURNED FUEL NEED NOT BE DISCARDED AFTER
ACCIDENTAL SHUTDOWN.

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

*REACTIVITY EFFECT + *REACTOR STARTUP EXPERIENCE, INITIAL + *SAMARIUM +
BNL (BROOKHAVEN NATIONAL LABORATORY) + HFBR (HIGH FLUX BEAM REACTOR) + REACTOR, AEC OWNED +
REACTOR, FLUX TRAP + REACTOR, HEAVY WATER + REACTOR, RESEARCH + XENON

17-17523

ALSO IN CATEGORY 14
TERMINATION - UNIVERSITY OF CALIFORNIA'S BERKELEY AGN-201 LICENSE
AEC, DIVISION OF REACTOR LICENSING
3 PAGES, AUGUST 23, 1966, DOCKET NO. 50-84, UNIVERSITY OF CALIFORNIA

REACTOR WAS MOVED TO UNIVERSITY OF NEW MEXICO. FUEL IS STORED AT AEROJET-GENERAL NUCLEONICS.
SHIELDING WATER WAS DISCHARGED THROUGH FLOOR DRAIN AND DILUTED IN THE SEWER. NO DETECTABLE
CONTAMINATION REMAINS.

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

*REACTOR DECOMMISSIONING EXPERIENCE + AGN (TRAINING REACTOR, AEROJET-GEN. NUCLEONICS) + DILUTION +
REACTOR, TRAINING + SAFETY EVALUATION + TECHNICAL SPECIFICATIONS + WASTE DISPOSAL, LIQUID

17-17524

AMENDMENT 6. TECHNICAL SPECIFICATIONS OF COLORADO STATE UNIVERSITY REACTOR AGN 201
AEC, DIVISION OF REACTOR LICENSING
17 PAGES, APRIL 6, 1967, DOCKET NO. 50-80, COLORADO STATE UNIVERSITY REACTOR

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17524 *CONTINUED*

HEADING TITLES INCLUDE CORE, CONTROL, AND INSTRUMENTATION, AND SURVEILLANCE.

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

*TECHNICAL SPECIFICATIONS + AGN (TRAINING REACTOR, AEROJET-GEN. NUCLEONICS) + REACTOR, TRAINING + SAFETY EVALUATION

17-17526

AMENDMENT 4. TECHNICAL SPECIFICATIONS FOR MISSOURI REACTOR. INCREASED POWER
AEC, DIVISION OF REACTOR LICENSING
13 PAGES, 1 TABLE, JANUARY 6, 1967, DOCKET NO. 50-123, UNIVERSITY OF MISSOURI

AEC ALLOWS (1) POWER UPGRATING FROM 10 KW TO 200 KW, (2) AN INCREASE FROM 3.5' TO 3.5' IN MAXIMUM EXCESS REACTIVITY FOR PERIODIC SHIM-ROD CALIBRATIONS, (3) OPERATORS OTHER THAN SENIOR OPERATORS MAY NOW OPERATE WITH EXCESS REACTIVITY LEVELS UP TO 1.5'. FULL TECHNICAL SPECIFICATIONS ARE INCLUDED.

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

*POWER UPGRATING + *REACTIVITY, EXCESS + *TECHNICAL SPECIFICATIONS + CONTROL ROD CALIBRATION + REACTOR, POOL TYPE + REACTOR, RESEARCH + SAFETY EVALUATION + STAFFING, TRAINING, QUALIFICATION

17-17527

ALSO IN CATEGORY 15

KANSAS UNIVERSITY PROPOSED AMENDMENT - CHANGE IN PERSONNEL DOSIMETRY
UNIVERSITY OF KANSAS
3 PAGES, JULY 6, 1967, DOCKET NO. 50-148

PROPOSED CHANGE FROM COMMERCIAL FILM-BADGE SERVICE TO LIF DOSIMETERS (READ AT KU 3 TIMES A YEAR) FOR BETA-GAMMA MONITORING. POCKET CHAMBERS WOULD BE USED ADDITIONALLY IN AREAS OF POSSIBLY HIGH RADIATION. REPORTS FOR 1961-66 HIGHEST YEARLY INDIVIDUAL EXPOSURE (396 MR) AND AVERAGE MAXIMUM YEARLY DOSE (220 MR).

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

*DOSIMETRY, THERMOLUMINESCENCE + OPERATING EXPERIENCE + REACTOR, POOL TYPE + REACTOR, RESEARCH + TECHNICAL SPECIFICATIONS

17-17528

AMENDMENT 6. INCREASE IN FUEL INVENTORY FOR U.S. NAVAL POSTGRADUATE SCHOOLS AGN-201
AEC, DIVISION OF REACTOR LICENSING
6 PAGES, AUGUST 12, 1966, DOCKET NO. 50-43, U.S. NAVAL POSTGRADUATE SCHOOL

AEC ALLOWS SCHOOL TO RECEIVE, POSSESS, AND USE FIVE ADDITIONAL GRAMS OF U-235, BRINGING TOTAL FUEL TO 675 GRAMS. THIS ALLOWS USE OF A FUEL SLUG CONTAINING 3.62 GRAMS OF U-235. REASON - INCREASE IN EXCESS REACTIVITY DUE TO DECOMPOSITION OF MODERATOR. CHECKS OF INTERNAL PRESSURES WILL BE MADE.

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

*REACTIVITY, EXCESS + CONTAINMENT INTEGRITY + PRESSURE, INTERNAL + REACTOR, TRAINING + SAFETY EVALUATION + TECHNICAL SPECIFICATIONS

17-17534

ALSO IN CATEGORIES 5 AND 6

INDUSTRIAL H.J.
VALVE CONSTRUCTION
ATOMIC ENERGY OF CANADA, LTD.
CANADIAN PATENT 744-598 +. 7 PAGES, 4 FIGURES, OCT. 18, 1966

A DUMP-VALVE MECHANISM IS DESCRIBED TO SHUT DOWN A NUCLEAR REACTION QUICKLY BY GRAVITY FLOW OF THE HEAVY-WATER MODERATOR WHICH NORMALLY SURROUNDS THE FUEL. IN THE OPERATING POSITION, THE VALVE GATE IN THE BOTTOM OF THE REACTOR IS HELD CLOSED AGAINST GRAVITY, AND THE HEAVY-WATER HEAD BY MAGNETIC ATTRACTION. A SUITABLE GASKET ARRANGEMENT USED THE WEIGHT OF THE HEAVY WATER TO FORM A SATISFACTORILY TIGHT CLOSURE. RAPID SHUTDOWN IS ACCOMPLISHED BY CUTTING OFF THE POWER TO MAGNETIC CLOSING DEVICE. FAILURE OF THE NORMAL CONTROL SYSTEM OR POWER SUPPLY CAUSES AUTOMATIC SHUTDOWN BY REMOVAL OF THE MAGNETIC FLUX. THE VALVE OPERATES IN A PIPE OF SUCH DIAMETER THAT FISSION CEASES IN A FEW SECONDS BECAUSE HEAVY WATER SOON FALLS TO A SUBCRITICAL LEVEL.

AVAILABILITY - DEPARTMENT OF COMMERCE, WASHINGTON, D.C., (30 CENTS PER PAGE)

BLOWDOWN + HEAVY WATER + REACTOR, HEAVY WATER + REFLECTOR + VALVE

17-17539

ALSO IN CATEGORY 6

CHANGE 2. JUSTIFICATION OF LESS-NEGATIVE CORE VOID COEFFICIENT OF UNIVERSITY OF MISSOURI (COLUMBIA)

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17539 *CONTINUED*

REACTOR
AEC, DIVISION OF REACTOR LICENSING
3 PAGES, MARCH 14, 1967, DOCKET NO. 50-186, UNIVERSITY OF MISSOURI

AEC ALLOWS A CHANGE IN AVERAGE CORE VOID COEFFICIENT FROM -2 TIMES 10 TO THE MINUS 3 TO -1.2 TIMES 10 TO THE MINUS 3 DELTA K/'. PREVIOUSLY (CHANGE 1), THE MODERATOR TEMPERATURE COEFFICIENT WAS FOUND TO BE LESS NEGATIVE. THE LESS-NEGATIVE VALVES, MEASURED IN INITIAL PHYSICS TESTS, REQUIRED THAT THE REACTOR BE SHUT DOWN UNTIL THE REACTIVITY-ACCIDENT ANALYSIS WAS REPEATED. CENTRAL-TEST-HOLE VOID COEFFICIENTS INDICATE THAT LESS REACTIVITY IS ADDED BY ACCIDENTAL VOIDING THAN WAS PREDICTED.

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

*COMPARISON, THEORY AND EXPERIENCE + *REACTOR STARTUP TESTING + *VOID COEFFICIENT + ACCIDENT, REACTIVITY + REACTOR, FLUX TRAP + REACTOR, RESEARCH + SAFETY EVALUATION + TECHNICAL SPECIFICATIONS + TEMPERATURE COEFFICIENT + TEST, PHYSICS

17-17540

WISCONSIN AMENDMENT 2 - PERMISSION TO RECEIVE TRIGA FUEL
AEC, DIVISION OF REACTOR LICENSING
7 PAGES, SEPTEMBER 28, 1966, DOCKET NO. 50-156, UNIVERSITY OF WISCONSIN

PERMISSION WAS GRANTED TO POSSESS BUT NOT TO USE 3.75 KG OF U-235 IN STAINLESS CLAD TRIGA-TYPE FUEL ELEMENTS WHILE AWAITING PERMISSION TO REPLACE PLATE-TYPE ELEMENTS WITH FUEL ELEMENTS EACH CONTAINING 4 STANDARD TRIGA FUEL RODS.

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

*FUEL STORAGE + REACTOR, RESEARCH + SAFETY EVALUATION + TECHNICAL SPECIFICATIONS + TRIGA (TRAINING REACTOR, ISOTOPES, G.A.)

17-17563

KAZACHKOVSKII OD + LEIPUNSKII AI
ATOMIC POWER PLANT BN-350
GOSUDARSTVENNYI KOMITET PO ISPOL ZOVANIYU ATOMNOI ENERGII SSSR, OBNINSK
CEA-TR-R-1538 +. 46 PAGES, 1966

THE BN-340, A FAST REACTOR DESIGNED TO PRODUCE 15 MW(E) AND 1200 TONS/HR OF VAPOR FOR A DESALINATION PLANT, IS SCHEDULED FOR STARTUP FOR 1968-69. THE REACTOR IS FUELED WITH A CLAD MIXTURE OF UO₂ AND PU. THE FUNCTIONAL PARTS OF THE REACTOR (CORE, SHIELDS, REACTOR VESSEL, CONTROL AND SAFETY SYSTEM, ETC.) ARE DESCRIBED.

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

*REACTOR DESCRIPTION + PLUTONIUM DIOXIDE + REACTOR, DESALINATION + REACTOR, FAST + UNION OF SOVIET SOCIALIST REPUBLICS + URANIUM DIOXIDE

17-17585

BOYD RS
ELK RIVER CHANGE 10. ALARM SET POINT FOR THE IMMEDIATE BETA-GAMMA ACTIVITY MONITOR
DIVISION OF REACTOR LICENSING, WASHINGTON, D. C.
2 PAGES, JANUARY 30, 1967, DOCKET NO. 115-1

AEC ALLOWS INCREASE OF ALARM SETPOINT FROM 0.3 TO 60 NANOCURIES PER CC OF AIR. THE MPC IN RESTRICTED AREAS FOR THE RADIONUCLIDES DETECTED IN SURVEYS AT ELK RIVER IS 1000. PREVIOUS SETTING CAUSED TOO-FREQUENT ALARMS FROM 22-MIN HALF-LIFE ACTIVITY.

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

*MONITOR, RADIATION, AIR + ELK RIVER + FISSION GAS RELEASE + REACTOR, BOILING WATER + SAFETY EVALUATION + TECHNICAL SPECIFICATIONS

17-17586

SKOVHOLT DJ
AMENDMENT 5 REVISIONS OF POLICIES AND PROCEDURES OF KANSAS UNIVERSITY COMMITTEE ON RADIATION SOURCES
DIVISION OF REACTOR LICENSING, WASHINGTON, D. C.
4 PAGES, AUGUST 29, 1967, DOCKET NO. 50-148

CONSISTS OF MINOR CHANGES TO UPDATE AND IMPROVE THE FUNCTIONING OF THE COMMITTEE, AND INCLUDES LANGUAGE CHANGES TO REFLECT STATE REQUIREMENTS. REFERENCED ARE ORIGINAL APPLICATION FOR AMENDMENT (SEPTEMBER 28, 1966) WHICH CONVEYED A 36-PAGE DOCUMENT (KANSAS UNIVERSITY COMMITTEE ON RADIATION SOURCES, POLICIES AND PROCEDURES), AND SUPPLEMENT (MARCH 31, 1967).

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

*ADMINISTRATIVE CONTROLS AND PRACTICES + REACTOR, POOL TYPE + REACTOR, RESEARCH + SAFETY EVALUATION +

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17586 *CONTINUED*
SOURCE, RADIATION + TECHNICAL SPECIFICATIONS

17-17587
JORDAN ED
CATHOLIC UNIVERSITY ASKS FOR INCREASE IN EXCESS REACTIVITY LIMIT OF AGN-201
CATHOLIC UNIVERSITY OF AMERICA, WASHINGTON, D. C.
1 PAGE, AUGUST 28, 1967, DOCKET NO. 50-77

CATHOLIC UNIVERSITY ASKS FOR AN INCREASE IN THE CORE EXCESS REACTIVITY LIMIT (0.25' TO 0.45') AND A DECREASE IN MAXIMUM EXPERIMENT WORTH (0.4 TO 2'). SEASONAL CORE-TEMPERATURE CHANGES (19 TO 30 C), WITH A NEGATIVE TEMPERATURE COEFFICIENT OF 0.025' PER DEGREE C, MADE IT NECESSARY AT TIMES TO CHANGE THE REFLECTOR CONFIGURATION TO ACHIEVE CRITICALITY. CATHOLIC UNIVERSITY ALSO ASKS FOR DECREASE IN MINIMUM ALLOWABLE PERIOD (5 SEC TO 3 SEC).

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

*REACTIVITY, EXCESS + *TEMPERATURE COEFFICIENT + AGN (TRAINING REACTOR, AEROJET-GEN. NUCLEONICS) + OPERATING EXPERIENCE + REACTOR, TRAINING + REFLECTOR + TECHNICAL SPECIFICATIONS

17-17588
MURRIS PA
LICENSE AND TECHNICAL SPECIFICATIONS FOR UNIVERSITY OF NEW MEXICO AGN-201
DIVISION OF REACTOR LICENSING, WASHINGTON, D. C.
6 PAGES, SEPTEMBER 17, 1966, DOCKET NO. 50-252

TECH.-SPECS. HEADINGS INCLUDE CORE, CONTROL AND INSTRUMENTATION SYSTEM, AND SURVEILLANCE REQUIREMENTS. CORE IS LIMITED TO 0.25' DELTA K/K FOR OPERATION, PLUS 0.4' FOR EXPERIMENT. POWER LIMITED TO 0.1 WATT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON

*TECHNICAL SPECIFICATIONS + AGN (TRAINING REACTOR, AEROJET-GEN. NUCLEONICS) + REACTOR, TRAINING

17-17589
SKOVHOLT DJ
WORCESTER POLY CHANGE 1. STORAGE OF TWO ADDITIONAL FUEL ELEMENTS
DIVISION OF REACTOR LICENSING, WASHINGTON, D. C.
1 PAGE, MAY 19, 1967, DOCKET NO. 50-134

DRL ALLOWS POSSESSION OF TWO FUEL ELEMENTS OBTAINED FROM WASHINGTON STATE UNIVERSITY, AND STORAGE OF THIS OUTSIDE THE POOL, ALONG WITH 3 OTHERS.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON

*FUEL STORAGE + REACTOR, POOL TYPE + REACTOR, RESEARCH + SAFETY EVALUATION + TECHNICAL SPECIFICATIONS

17-17590 ALSO IN CATEGORY 9
SKOVHOLT DJ
BONUS CHANGE 3. ROD DRIVE MODIFICATION
DIVISION OF REACTOR LICENSING, WASHINGTON, D. C.
4 PAGES, MAY 26, 1967, DOCKET NO. 115-4

DRL ALLOWS BONUS TO MODIFY TWO CONTROL-ROD DRIVES TO OBTAIN DATA ON PERFORMANCE OF TWO MODIFIED DRIVES BEFORE MAKING THE MODIFICATION TO THE OTHER 15. MODIFICATIONS ARE (1) ADDITION OF CIRCULAR TORQUE SPRING TO DRIVE MOTOR TO INCREASE TORQUE-TO-FRICTION RATIO, (2) ADDITION OF A CENTRIFUGAL BRAKE TO LIMIT ROD-DROP VELOCITY, AND (3) ADDITION OF AN OIL RESERVOIR FOR THE SHOCK ABSORBER. ROD-DROP TIMES HAVE BEEN EXCESSIVE AT TIMES. SHOCK HAS DISTORTED THE RODS.

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

*MODIFICATION, SYSTEM OR EQUIPMENT + BONUS (BOILING NUCLEAR SUPERHEAT PROJECT) + CONTROL ROD DRIVE + FAILURE, SCRAM MECHANISM + REACTOR, INTERNAL SUPERHEAT + TECHNICAL SPECIFICATIONS

17-17591
LAVINE S
NASA-ZPR-II CHANGE 1. PULSED NEUTRON EXPERIMENTS AND TECHNICAL SPECIFICATIONS CHANGES
DIVISION OF REACTOR LICENSING, WASHINGTON
12 PAGES, JULY 22, 1966, DOCKET NO. 50-197

DRL ALLOWS NASA TO PERFORM PULSED-NEUTRON EXPERIMENTS AND TO MODIFY CERTAIN WORDING TO CONFORM WITH ZPR-I TECH. SPECS. DESCRIPTION OF PULSED-NEUTRON TECHNIQUES (EXTERNAL 14-MEV PULSED SOURCE) TO BE USED. REACTOR HAS LIQUID FUEL, AND WHEN PERIOD SCRAM IS BYPASSED TO PERMIT PULSING, AN INTERLOCK PREVENTS FUEL ADDITION. ORIGINAL APPLICATION CONTAINS EXPERIMENT

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17591 *CONTINUED*
DESCRIPTION.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON

*PULSED NEUTRON TECHNIQUE + CRITICAL ASSEMBLY FACILITY + REACTOR, RESEARCH + SAFETY EVALUATION +
TECHNICAL SPECIFICATIONS + WATER BOILER

17-17592

LEVINE S

PLUM BROOK CHANGE 20. INCREASE PERMITTED FUEL BURNUP AND INCREASE IRRADIATION LIMIT ON STORED FUEL
DIVISION OF REACTOR LICENSING, WASHINGTON, D. C.
3 PAGES, FEBRUARY 10, 1967, DOCKET NO. 50-30

DRL ALLOWS PLUM BROOK TO (1) INCREASE FUEL BURNUP LIMITATIONS FROM 75 TO 100 MWD/ELEMENT, AND
(2) STORE THEM, DELETING A CURIE LIMITATION. ALSO MINOR WORDING CHANGES ARE MADE. FUEL
ELEMENTS (MTR TYPE) OF SIMILAR DESIGN AND SPECIFICATIONS WERE IRRADIATED AT ORR FOR 113 MWD
WITHOUT VISIBLE DAMAGE.

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

*FUEL BURNUP + FUEL STORAGE + OPERATING EXPERIENCE + PLUM BROOK + REACTOR, TEST + SAFETY EVALUATION +
TECHNICAL SPECIFICATIONS

17-17593

ALSO IN CATEGORY 5

SKOVHOLT DJ

ELK RIVER CHANGE 12, CORE THERMAL LIMIT CHANGES

DIVISION OF REACTOR LICENSING, WASHINGTON, D. C.

2 PAGES, JUNE 13, 1967, DOCKET NO. 115-1

DRL ALLOWS ELK RIVER (1) STEADY-STATE CRITICAL HEAT FLUX RATIO (CHFR) BE SET AT 2.0, (2)
TRANSIENT CHFR BE 1.7, (3) LIMITING STEADY-STATE LINEAR HEAT RATE BE 15.0 KW/FT, AND (4) TO
REPLACE GRIFFITH CRITICAL-HEAT-FLUX CORRELATION WITH JANSSEN-LEVY CORRELATION (APED-3892),
WHICH IS MORE APPLICABLE TO REACTOR OPERATING CONDITIONS.

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

*DNB (DEPARTURE FROM NUCLEATE BOILING) + *HEAT TRANSFER CORRELATION + ELK RIVER + REACTOR, BOILING WATER +
SAFETY EVALUATION + TECHNICAL SPECIFICATIONS

17-17596

ALSO IN CATEGORY 1

ELK RIVER CHANGE 11. REMOVABLE FUEL STORAGE RACK AND MAXIMUM K-EFFECTIVE FOR STORAGE AREA

AEC, DIVISION OF REACTOR LICENSING

6 PAGES, MAY 5, 1967, DOCKET NO. 115-1

DRL ALLOWS (1) INSTALLATION OF A REMOVABLE FUEL-STORAGE RACK (ADDITIONAL STORAGE IS NEEDED FOR
THE COMPLETE UNLOADING OF THE CORE TO REPLACE THE BORON-SS CONTROL RODS WITH B4C RODS (AN
8-IN. WATER SEPARATION AND A BORAL LINER ARE USED), AND (2) A MAXIMUM OF 0.9 FOR K-EFFECTIVE
OF THE FUEL-STORAGE AREA (DETAILED COMPUTER ANALYSIS SHOWS 0.746).

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

*FUEL STORAGE + CONTROL ROD BURNUP + ELK RIVER + REACTOR, BOILING WATER + SAFETY EVALUATION +
TECHNICAL SPECIFICATIONS

17-17597

PATHFINDER CHANGE 12. STABILITY TESTS AND REACTOR COOLING RATE

AEC, DIVISION OF REACTOR LICENSING

6 PAGES, SEPTEMBER 27, 1966, DOCKET NO. 50-130

DRL ALLOWS (1) STABILITY EVALUATION BY NOISE ANALYSIS INSTEAD OF BY OSCILLATOR-ROD TECHNIQUE
(LOW POWER ANALYSIS SHOWS NO ANOMALY, AND THERE IS GOOD CORRELATION BETWEEN THE TECHNIQUES),
AND (2) REACTOR COOLDOWN RATES IN EXCESS OF 200 F/HR DURING POWER ESCALATION PROGRAM UP TO
FULL POWER (CHANGE 11 AUTHORIZED SUCH RATES UP TO 40' POWER). THESE CHANGES ALLOW CERTAIN
TESTS DURING THE STARTUP PROGRAM AND MINIMIZE DISTURBANCES TO THE REACTOR VESSEL AND CORE
WHICH RESULT FROM ROD-OSCILLATOR TESTS.

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

*COOLING, SHUTDOWN + *REACTOR STABILITY + EMERGENCY COOLING CONSIDERATIONS + NOISE ANALYSIS +
OSCILLATOR, REACTIVITY + PATHFINDER + PRESSURE VESSEL + REACTOR, BOILING WATER +
REACTOR, INTERNAL SUPERHEAT + SAFETY EVALUATION + TECHNICAL SPECIFICATIONS + TEST, PHYSICS

17-17598

AEROJET-GENERAL PROPOSED AMENDMENT FOR IRRADIATION OF AMMONIUM PERCHLORATE IN AGNIR

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17598 *CONTINUED*

AEROJET-GENERAL CORPORATION, SAN RAMON, CALIFORNIA
NEMO-1021 +. 37 PAGES, FIGURES, TABLES, REFERENCES, FEBRUARY 2, 1967, DOCKET NO. 50-228

REQUESTS TECH.-SPECS. CHANGE TO ALLOW IRRADIATION OF 20 GM OF AMMONIUM PERCHLORATE. TWO DOUBLY ENCAPSULATED 10-GM SAMPLES ARE TO BE IRRADIATED AT 250 KW FOR 40 TO 600 HR. AGN SAFETY REVIEW INCLUDED. SHOWS 3400-PSIA INTERNAL PRESSURE AT 180 C FROM RADIOISOTOPES, VS 4030 PSIA CAPSULE DESIGN PRESSURE.

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

*IRRADIATION TESTING + *PRESSURE, INTERNAL + RADIOLYTIC GAS + REACTOR, RESEARCH + SAFETY REVIEW (OPERATIONS, EXPERIMENTS) + TECHNICAL SPECIFICATIONS + TRIGA (TRAINING REACTOR, ISOTOPES, G.A.)

17-17599

PROPOSED WORCESTER POLY SAFEGUARDS REPORT REVISIONS SUPPORTING POWER UPGRATING
WORCESTER POLYTECHNIC INSTITUTE, WORCESTER, MASSACHUSETTS
10 PAGES, JULY 17, 1967, DOCKET NO. 50-134

POWER UPGRATING (FROM 1 KW TO 10) ANALYSIS INCLUDES (A) RADIATION LEVELS, (B) ARGON PRODUCTION IN THE THERMAL COLUMN AND BEAM HOLE, (C) HEAT RELEASE, (D) LOSS-OF-COOLANT ACCIDENT. ALSO REQUESTED USE OF SPARE FUEL ELEMENTS AND REMOVABLE RABBIT TUBE.

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

*POWER UPGRATING + REACTOR, POOL TYPE + REACTOR, RESEARCH + SAFETY ANALYSIS REPORT, GENERAL + TECHNICAL SPECIFICATIONS

17-17600

STANFORD CHANGE 2. TWO ADDITIONAL MTR TYPE FUEL ELEMENTS
AEC, DIVISION OF REACTOR LICENSING
3 PAGES, MAY 1, 1967, DOCKET NO. 50-141

AEC ALLOWS USE OF TWO ADDITIONAL UNIRRADIATED FUEL ELEMENTS, OBTAINED FROM WASHINGTON STATE UNIVERSITY, FOR EXPERIMENTAL PURPOSES. SIMILAR TO THE ELEMENTS IN USE AT STANFORD EXCEPT (1) THEY CONTAIN 119 GM OF U-235 INSTEAD OF 136 GM, AND (2) THERE ARE 18 FUEL PLATES INSTEAD OF 10. THE WATER-TO-METAL RATIOS ARE ABOUT EQUAL. THE NEW ELEMENTS HAVE IMPROVED HEAT-TRANSFER PROPERTIES.

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

*HEAT TRANSFER + FUEL ELEMENT + REACTOR, POOL TYPE + REACTOR, RESEARCH + SAFETY EVALUATION + TECHNICAL SPECIFICATIONS

17-17601

PATHFINDER CHANGE 13. BURNOUT RATIO, MINIMUM FLOW AND POWER FRACTION CHANGES
AEC, DIVISION OF REACTOR LICENSING
5 PAGES, MAY 26, 1967, DOCKET NO. 50-130

DRL (1) DELETES SEPARATE REQUIREMENTS ON MAXIMUM BOILER POWER FRACTION AND MINIMUM RECIRCULATION FLOW FOR A GIVEN REACTOR POWER, AND (2) SETS A MINIMUM ALLOWABLE BURNOUT RATIO. OPERATING EXPERIENCE SHOWS THAT THE BURNOUT RATIO IS HIGHER THAN EXPECTED, DESPITE THE LOWER RECIRCULATION FLOW, BECAUSE THE CONTROL-ROD POSITIONS YIELD A MORE FAVORABLE POWER DISTRIBUTION.

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

*BURNOUT HEAT FLUX + *FLOW, RECIRCULATION + *POWER DISTRIBUTION + COMPARISON, THEORY AND EXPERIENCE + CONTROL ROD PROGRAM + PATHFINDER + REACTOR, BOILING WATER + REACTOR, INTERNAL SUPERHEAT + SAFETY EVALUATION + TECHNICAL SPECIFICATIONS

17-17602

WASHINGTON STATE UNIVERSITY CHANGE 3. INSTALLATION OF COOLING SYSTEM IN ANTICIPATION OF POWER INCREASE AND CHANGE TO TRIGA ELEMENTS
AEC, DIVISION OF REACTOR LICENSING
3 PAGES, MARCH 8, 1967, DOCKET NO. 50-27

DRL ALLOWS USE OF A COOLING SYSTEM CONSISTING OF PRIMARY AND SECONDARY PUMPS, HEAT EXCHANGER, AND COOLING TOWER, IN ANTICIPATION OF INCREASE IN POWER FROM 100 KW(T) TO 1 MW(T) AND CONVERSION TO TRIGA FUEL ELEMENTS.

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

*MAIN COOLING SYSTEM + *POWER UPGRATING + HEAT EXCHANGER + MODIFICATION, SYSTEM OR EQUIPMENT + REACTOR, POOL TYPE + SAFETY EVALUATION + TECHNICAL SPECIFICATIONS + TRIGA (TRAINING REACTOR, ISOTOPES, G.A.)

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17641

SAXTON PROPOSED CHANGE 27. FUEL SUBASSEMBLY FOR OBSERVING EFFECTS OF PH CHANGES ON FUELS TEMPERATURE
SAXTON NUCLEAR EXPERIMENTAL CORPORATION
6 PAGES, 1 TABLE, AUGUST 3, 1967, DOCKET NO. 50-146

SAXTON ASKS PERMISSION TO USE A FUEL SUBASSEMBLY CONSISTING OF 6 STAINLESS-STEEL-CLAD UO₂ FUEL RODS (2 OF WHICH CONTAIN THERMOCOUPLES NEAR THE TOP), 2 CERMET RODS (UO₂-STAINLESS STEEL) CONTAINING THERMOCOUPLES, AND A STANDARD SAXTON FLUX THIMBLE. PURPOSE IS TO OBSERVE EFFECT OF PH CHANGES ON FUEL CENTER TEMPERATURE AND HEAT-TRANSFER PROPERTIES.

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

*COOLANT CHEMISTRY + *FUEL ELEMENT + *INSTRUMENTATION, TEMPERATURE + REACTIVITY EFFECT, ANOMALOUS + REACTOR, PRESSURIZED WATER + SAXTON + SURFACE FILM DEPOSIT + TECHNICAL SPECIFICATIONS

17-17643

ALSO IN CATEGORY 11

SOULIER L
THE CIVIL ENGINEERING FOR NATURAL URANIUM-GRAPHITE-CARBON DIOXIDE GAS-TYPE NUCLEAR POWER STATIONS
ELECTRICITE DE FRANCE, FRANCE
6 PAGES, 11 FIGURES, CONSTRUCTION (PARIS), 20, PAGES 345 THRU 350, (OCTOBER 1965), IN FRENCH

DISCUSSES CIVIL ENGINEERING ASPECTS OF THESE REACTORS, THE LARGE SIZE OF THE STRUCTURES, ACCURACY REQUIRED, AND USE OF NEW MATERIALS. STRUCTURES SUCH AS THE PRESSURE VESSELS FOR E.D.F. 3 AND 4 ARE EXAMINED AS TO FOUNDATIONS, FRAME COMPONENTS, ACCEPTANCE OF THE STRUCTURES, BUILDING TOLERANCES, THE USE OF CONCRETE AS HEAT-PROOFING MATERIAL AND AS A RADIATION AND TEMPERATURE SHIELD. SPEED AND QUALITY REQUIRED ARE DISCUSSED.

*CONCRETE, PRESTRESSED + *CONTAINMENT CONSTRUCTION + *PRESSURE VESSEL + FRANCE + REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED + SHIELDING

17-17644

SAXTON PROPOSED CHANGE 28. EXPERIMENTAL PYREX POISON ROD SUBASSEMBLY
SAXTON NUCLEAR EXPERIMENTAL CORPORATION
10 PAGES, 1 FIGURE, 4 TABLES, AUGUST 28, 1967, DOCKET NO. 50-146

SAXTON REQUESTS PERMISSION TO USE A FUEL SUBASSEMBLY CONSISTING OF 5 EMPTY FUEL PODS, 2 EXPERIMENTAL FUEL RODS CONTAINING THE VARIOUS CLADDINGS AND AMOUNTS OF UO₂ ALLOWED BY CHANGES 22 AND 24, AND 2 BURNABLE RODS OF DOUBLY CONTAINED PYREX. THE EMPTY RODS CAUSE FLUX PEAKING MORE QUICKLY, ALLOWING 6700 MWD OF EXPOSURE (50% BURNUP) IN A PERIPHERAL LOCATION. B-10 IS THE PRINCIPAL POISON.

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

*POISON, BURNABLE + FUEL ELEMENT + GLASS + REACTOR, PRESSURIZED WATER + SAXTON + TECHNICAL SPECIFICATIONS

17-17645

SAXTON CHANGE 23. EXPERIMENTAL ZIRCALOY CLADDING FUEL SUBASSEMBLY
AEC, DIVISION OF REACTOR LICENSING
4 PAGES, AUGUST 8, 1967, DOCKET NO. 50-146

DRL ALLOWS PERMISSION (APPLICATION DATED JUNE 22, 1966) TO USE A FUEL SUBASSEMBLY CONSISTING OF 5 STAINLESS-STEEL-CLAD FUEL RODS CONTAINING UO₂ PELLETS, 2 ZIRC-4-CLAD FUEL RODS (INTERNALLY PRESSURIZED TO OBTAIN 21,730-PSI CLAD STRESS), AND 2 ZIRC-4 TUBES CONTAINING 13 ZIRC-4 CAPSULES, EACH CONTAINING SPRING-CLIP FUEL-ROD SEPARATORS. THE FUEL PELLETS HAVE BEEN PREVIOUSLY IRRADIATED. PURPOSE IS TO TEST IN-PILE PERFORMANCE OF ZIRCONIUM ALLOYS.

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

*CLAD + *IRRADIATION TESTING + *STRESS RUPTURE + FUEL ELEMENT + PRESSURE, INTERNAL + REACTOR, PRESSURIZED WATER + SAFETY EVALUATION + SAXTON + TECHNICAL SPECIFICATIONS + ZIRCALOY

17-17646

ALSO IN CATEGORY 9

NASA-ZPR-I CHANGE 1. PULSED NEUTRON EXPERIMENTS, MODIFIED CONTROL CIRCUITS TO ALLOW
AEC, DIVISION OF REACTOR LICENSING
4 PAGES, FEBRUARY 10, 1967, DOCKET NO. 50-75, NASA ZERO POWER REACTOR I

DRL ALLOWS ZPR-1 TO PERFORM PULSED-NEUTRON EXPERIMENTS. MODIFICATIONS ARE NECESSARY IN MONITORING CIRCUITS, SYSTEMS, AND EQUIPMENT. EXPERIENCE WITH ZPR-2 SHOWED NO UNEXPECTED PROBLEMS WHILE PULSING. EXTERNAL 14-MEV SOURCE WITH REPETITION RATE UP TO 10 PULSES/SEC AND MAXIMUM STRENGTH OF 10 MILLION NEUTRONS/PULSE.

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

*CONTROL SYSTEM + *MODIFICATION, SYSTEM OR EQUIPMENT + *PULSED NEUTRON TECHNIQUE +

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17646 *CONTINUED*
CRITICAL ASSEMBLY FACILITY + SAFETY EVALUATION + TECHNICAL SPECIFICATIONS + WATER BOILER

17-17647 ALSO IN CATEGORY 10
PATHFINDER PROPOSED CHANGE 43. USE OF STATIC INVERTER IN PLACE OF EXISTING MOTOR-GENERATOR SET
NORTHERN STATES POWER COMPANY, MINNEAPOLIS, MINNESOTA
3 PAGES, AUGUST 10, 1967, DOCKET NO. 50-130. AMENDMENT NO. 43 TO TECHNICAL SPECIFICATIONS ON PATHFINDER REACTOR

PATHFINDER CONTENDS THAT THE STATIC INVERTER WOULD PERFORM THE SAME FUNCTION WITH IMPROVED RELIABILITY AND FREQUENCY STABILITY.

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

*ELECTRIC POWER, VITAL + PATHFINDER + REACTOR, BOILING WATER + REACTOR, INTERNAL SUPERHEAT + RELIABILITY, COMPONENT + TECHNICAL SPECIFICATIONS

17-17648 ALSO IN CATEGORY 10
AEC ASKS PLUM BROOK FOR ADDITIONAL INFORMATION ON PROPOSED CHANGE 31
AEC, DIVISION OF REACTOR LICENSING
2 PAGES, APRIL 10, 1967, DOCKET NO. 50-30. NASA PLUM BROOK REACTOR

CHANGE 31 PROPOSES REPLACEMENT OF FOUR SMALL EMERGENCY-POWER DIESEL GENERATORS WITH 2 LARGER ONES. QUESTIONS - (1) PROVIDE A REVISED DETAILED SCHEMATIC OF THE ELECTRICAL DISTRIBUTION SYSTEM, (2A) LIST VITAL LOADS, (2B) DISCUSS PREOPERATIONAL TESTING OF THE NEW GENERATORS, (2C) HOW WILL SINGLE FAILURE CRITERION BE MET IF ONE UNIT IS INOPERABLE, (2D) DISCUSS SURVEILLANCE PROGRAM FOR ADEQUATE FUEL SUPPLY, OPERABILITY OF BOTH UNITS, AND PERIODIC GENERATOR STARTUP.

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

*ELECTRIC POWER, AUXILIARY + *ELECTRIC POWER, VITAL + *GENERATOR, DIESEL + EMERGENCY COOLING CONSIDERATIONS + PLUM BROOK + REACTOR, TEST + SINGLE FAILURE CRITERION + SURVEILLANCE PROGRAM + TECHNICAL SPECIFICATIONS

17-17649 ALSO IN CATEGORY 10
ADDITION INFORMATION IN RESPONSE TO AEC QUESTIONS ON PLUM BROOK PROPOSED CHANGE 31
AEC, DIVISION OF REACTOR LICENSING + NASA. LEWIS RESEARCH CENTER
5 PAGES, AUGUST 7, 1967, DOCKET NO. 50-30

PLUM BROOK, IN REPLY TO AEC QUESTIONS OF JULY 19, 1967, ANSWERS (1) EXPERIMENTS ARE DESIGNED AND ANALYZED SO THAT IF ALL ELECTRICAL POWER WERE LOST THERE WOULD BE NO RELEASE OF RADIOACTIVITY TO THE PRIMARY COOLANT, (2) GIVES PREOPERATIONAL TEST PROGRAM FOR PROPOSED DIESEL GENERATORS, (3) CONTENDS THAT GUARANTEED POWER SYSTEM WILL SATISFY SINGLE-FAILURE CRITERIA IF ONE GENERATOR IS SHUT DOWN FOR MAINTENANCE, (4) DIESEL GENERATOR ISOLATION SYSTEM AND GUARANTEED POWER SYSTEM WILL BE CHECKED EVERY 6 MONTHS. EMERGENCY COOLING VALVES, EVERY 3 MONTHS.

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

*ELECTRIC POWER, VITAL + *GENERATOR, DIESEL + ELECTRIC POWER, AUXILIARY + EMERGENCY COOLING CONSIDERATIONS + PLUM BROOK + REACTOR, TEST + SINGLE FAILURE CRITERION + TECHNICAL SPECIFICATIONS

17-17650
AMENDMENT 17. CHANGE IN OWNERSHIP OF IRL RESEARCH REACTOR
AEC, DIVISION OF REACTOR LICENSING
8 PAGES, MAY 26, 1967, DOCKET NO. 50-17, INDUSTRIAL REACTOR LABORATORIES, INC.

AEC ALLOWS TRANSFER OF OWNERSHIP OF IRL TO RUTGERS AND TERMINATION OF OPERATING AGREEMENT WITH COLUMBIA U.

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

REACTOR, POOL TYPE + REACTOR, RESEARCH + TECHNICAL SPECIFICATIONS

17-17651
AEC ALLOWS DISMANTLING OF GE MIXED SPECTRUM CRITICAL ASSEMBLY (MSCA)
AEC, DIVISION OF REACTOR LICENSING + GENERAL ELECTRIC CO., NUCLEAR ENERGY DIVISION, SAN JOSE, CALIFORNIA
10 PAGES, MARCH 10, 1967, DOCKET NO. 50-203

AEC OKAYS GE PROPOSED PROCEDURES FOR DISMANTLING THE FACILITY, DECONTAMINATING THE SITE, AND DISPOSING OF THE COMPONENTS. FACILITY TO BE DISMANTLED BECAUSE CRITICALITY-EXPERIMENT PROGRAMS HAVE BEEN COMPLETED. MSCA WAS A LOW-POWER MOCKUP OF A REACTOR IN WHICH BOILING AND SUPERHEATING OF THE RESULTING STEAM OCCURRED. DESCRIPTION OF THE CORE IS CONTAINED IN

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17651 *CONTINUED*

SECTION 3.3 OF REPORT GEAP-4054. GE IS TO STORE THE FUEL.

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

*REACTOR DECOMMISSIONING EXPERIENCE + CRITICAL ASSEMBLY FACILITY + REACTOR, FAST + REACTOR, HALF FAST + REACTOR, THERMAL + SAFETY EVALUATION + TECHNICAL SPECIFICATIONS

17-17652

PROPOSED AMENDMENT 1. WORDING CHANGES FOR UNIVERSITY OF CALIFORNIA (BERKELEY) TRIGA
UNIVERSITY OF CALIFORNIA, BERKELEY
1 PAGE, JULY 28, 1967, DOCKET NO. 50-224

REQUESTS CHANGE TO ALLOW MODIFICATION OF REACTOR SYSTEMS AS THE REACTOR HAZARDS COMMITTEE
DEEMS SUITABLE BUT WHICH DO NOT INVOLVE AN UNREVIEWED SAFETY PROBLEM.

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

*ADMINISTRATIVE CONTROLS AND PRACTICES + *MODIFICATION, SYSTEM OR EQUIPMENT + REACTOR, PULSED + REACTOR, TRAINING + SAFETY REVIEW (OPERATIONS, EXPERIMENTS) + TECHNICAL SPECIFICATIONS + TRIGA (TRAINING REACTOR, ISOTOPES, G.A.)

17-17653

SAN ONOFRE PROVIDES ADDITIONAL INFORMATION TO THE AEC CONCERNING PROPOSED CHANGE 1
SOUTHERN CALIFORNIA EDISON COMPANY, LOS ANGELES, CALIFORNIA
1 PAGE, MAY 24, 1967, DOCKET NO. 50-206

SAN ONOFRE CURRENTLY COMPLETING ANALYSIS REGARDING COLD LOW-POWER PHYSICS TESTING BY
DEVELOPING LARGER-THAN-NORMAL TEMPERATURE DIFFERENCE (ABOUT 350 F) BETWEEN THE PRESSURIZER
AND REACTOR COOLANT SYSTEM. UPON COMPLETION OF ANALYSIS, SAN ONOFRE WILL ADVISE AEC OF
ACTION REQUESTED ON CHANGE 1.

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

*PRESSURIZER + *TEST, PHYSICS + REACTOR, PRESSURIZED WATER + SAN ONOFRE + TECHNICAL SPECIFICATIONS

17-17654

ALSO IN CATEGORY 9

SAN ONOFRE CHANGE 1. BYPASS OF PRESSURIZER HIGH LEVEL TRIP LOW POWERS
SOUTHERN CALIFORNIA EDISON COMPANY, LOS ANGELES, CALIFORNIA
5 PAGES, APRIL 19, 1967, DOCKET NO. 50-206

REQUESTS CHANGE TO ALLOW THE PRESSURIZER HIGH-LEVEL TRIP TO BE BYPASSED AT POWER LEVELS OF
LESS THAN 10% FULL POWER. THEY CONTEND THAT IF A SUSTAINED MISMATCH BETWEEN PRIMARY AND
SECONDARY SYSTEM OCCURRED (AN IMPROBABLE EVENT), THE RESULTING INSURGE WOULD BE WITHIN THE
CAPACITY OF A SINGLE SAFETY VALVE. PRESENT LIMITATIONS WOULD MAKE COLD CONTROL-ROD TESTS (AS
PRESENTLY PLANNED) DIFFICULT IF NOT IMPOSSIBLE.

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

*INSTRUMENTATION, LIQUID LEVEL DETECTION + *PRESSURIZER + *REACTOR SAFETY SYSTEM + PRESSURE RELIEF +
REACTOR STARTUP TESTING + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS + SAN ONOFRE +
TECHNICAL SPECIFICATIONS + VALVE

17-17656

ALSO IN CATEGORY 9

MORRIS PA
PEACH BOTTOM 1 CHANGE 3. REACTIVITY INSERTION RATES AND ROD MOVEMENT SPECIFICATIONS
AEC, DIVISION OF REACTOR LICENSING, WASHINGTON, D. C.
3 PAGES, MARCH 8, 1967, DOCKET NO. 50-171, PEACH BOTTOM 1

AEC ALLOWS (1) INCREASE IN PERMITTED REACTIVITY INSERTION RATES TO 2 TIMES 10 TO THE MINUS 4
DELTA RHO PER SECOND FOR INDIVIDUAL RODS, AND 2.5 TIMES THAT FOR A 3-ROD GROUP, AND (2)
DEVIATION FROM NORMAL ROD-MOVEMENT PATTERNS FOR PERIODIC TESTS WHEN BELOW 0.01% OF FULL POWER.

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

*CONTROL ROD PROGRAM + *CONTROL ROD WORTH + *RATE + PEACH BOTTOM 1 + REACTOR, GAS COOLED +
REACTOR, GRAPHITE MODERATED + REACTOR, HIGH TEMP. GAS + SAFETY EVALUATION + TECHNICAL SPECIFICATIONS

17-17657

SKOVHOLT DJ
SAXTON CHANGE 26. SPECIFICATIONS OF PRESSURE RELIEF VALVE SETTINGS IN THE SUPER CRITICAL LOOP
AEC, DIVISION OF REACTOR LICENSING, WASHINGTON, D. C.
3 PAGES, APRIL 18, 1967, DOCKET NO. 50-146

ORL ALLOWS SAXTON TO DECREASE PRESSURE-RELIEF-VALVE SETTING (TO CONFORM WITH THE ASME CODE) IN

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17657 *CONTINUED*

THE SUPERCRITICAL LOOP. VALVES INVOLVED PROVIDE OVERPRESSURE RELIEF TO THE SUPERCRITICAL LOOP AND RELIEF VALVES IN THE OUTLET LINE FROM THE PRESSURE TUBE AND IN THE DISCHARGE SIDE OF THE LOOP PUMP AND STANDBY PUMP.

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

*PRESSURE RELIEF + IN PILE LOOP + PUMP + REACTOR, PRESSURIZED WATER + SAFETY EVALUATION + SAXTON + TECHNICAL SPECIFICATIONS

17-17658 ALSO IN CATEGORY 11

BARKLEY HB

PLUM BROOK ELECTRICAL PENETRATION LEAK RATE TEST REPORT TO AEC

LEWIS RESEARCH CENTER, SANDUSKY, OHIO. NASA

1 PAGE, JULY 25, 1967, DOCKET NO. 50-30, NASA PLUM BROOK REACTOR

REPORT OF LEAK-RATE-TEST RESULTS FOR THE HERMETICALLY SEALED ELECTRICAL PENETRATIONS OF THE CONTAINMENT VESSEL AT ABOUT 5 PSI, USING PRESSURE-DECAY TECHNIQUES. AVERAGE LEAK RATE OF 17 ASSEMBLIES, LESS THAN 0.005 CU. FT/DAY. MAXIMUM RATE, LESS THAN 0.01 CU. FT/DAY.

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

*CONTAINMENT PENETRATION, ELECTRICAL + *TEST, LEAK RATE + PLUM BROOK + REACTOR, TEST

17-17659

MCELKINNEY J

ANNUAL REPORT OF OPERATIONS AND MODIFICATIONS OF U.S. NAVAL RESEARCH LAB REACTOR FOR PERIOD ENDING AUGUST 18, 1967

NAVAL RESEARCH LABORATORY, WASHINGTON, D. C.

2 PAGES, AUGUST 18, 1967, DOCKET NO. 50-4

MODIFICATIONS INCLUDE (1) ALL RELAYS IN EMERGENCY EVACUATION SYSTEM CHANGED TO OPERATE ON 24-V DC INSTEAD OF 115-V AC TO ALLOW MORE RELIABLE OPERATION, (2) IMPROVED ANNUNCIATORS INSTALLED IN CONSOLE, AND (3) ACCESS HOLE MADE IN THERMAL COLUMN.

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

*MODIFICATION, SYSTEM OR EQUIPMENT + IN PILE LOOP + OPERATIONS SUMMARY FOR AEC + REACTOR, POOL TYPE + REACTOR, RESEARCH

17-17660

SKOVHOLT DJ

LICENSE AND TECHNICAL SPECIFICATIONS FOR NEW YORK UNIVERSITY AGN-201M

AEC, DIVISION OF REACTOR LICENSING, WASHINGTON, D. C.

7 PAGES, 1 TABLE, APRIL 27, 1967, DOCKET NO. 50-216

HEADINGS OF TECHNICAL SPECIFICATIONS ARE (1) CORE, (2) CONTROL AND INSTRUMENTATION, (3) EXPERIMENTAL LIMITATIONS, (4) SURVEILLANCE REQUIREMENTS, AND (5) ADMINISTRATIVE REQUIREMENTS. MAXIMUM POWER IS 0.1 WATT. ALSO, NOTICE OF PROPOSED ISSUANCE OF FACILITY AND SAFETY EVALUATION IS DATED MARCH 28, 1967.

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

AGN (TRAINING REACTOR, AERJET-GEN. NUCLEONICS) + REACTOR, TRAINING + SAFETY EVALUATION + TECHNICAL SPECIFICATIONS

17-17661

QUAIFE MA + BROWN KW

PROPOSED TECHNICAL SPECIFICATIONS FOR OMAHA VETERANS ADMINISTRATION HOSPITAL TRIGA

VETERANS ADMINISTRATION HOSPITAL, OMAHA, NEBRASKA

12 PAGES, 2 TABLES, AUGUST 16, 1967, DOCKET NO. 50-131, TRIGA MARK I

HEADINGS INCLUDE TANK, CORE, CONTROL AND SAFETY SYSTEMS, AND RADIATION MONITORING. 18-KW REACTOR WILL NOT HAVE MORE THAN 0.7% REACTIVITY, PLUS ± 1 IN EXPERIMENTS.

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

*REACTIVITY, EXCESS + REACTOR, PULSED + REACTOR, TRAINING + TECHNICAL SPECIFICATIONS + TRIGA (TRAINING REACTOR, ISOTOPES, G.A.)

17-17662

PROPOSED TECHNICAL SPECIFICATIONS FOR NATIONAL BUREAU OF STANDARDS REACTOR

NATIONAL BUREAU OF STANDARDS

91 PAGES, AUGUST 3, 1967, DOCKET NO. 50-184, NATIONAL BUREAU OF STANDARDS REACTOR

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17662 *CONTINUED*

HEADINGS INCLUDE LIMITING CONDITIONS FOR OPERATION, SURVEILLANCE STANDARDS, DESIGN FEATURES, AND TECHNICAL-SPECIFICATIONS EXCEPTION (UP TO 10 KW). MAXIMUM POWER IS 10 MW. SPECIFICATIONS IN LATEST FORMAT (APPLICABILITY, OBJECTIVE, SPECIFICATION, BASIS).

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

NBS (NATIONAL BUREAU OF STANDARDS) + REACTOR, HEAVY WATER + REACTOR, RESEARCH + TECHNICAL SPECIFICATIONS

17-17671 ALSO IN CATEGORIES 4 AND 9

WINSON RW

UPSTART - DIGITAL COMPUTER CALL PROGRAM

ATOMICS INTERNATIONAL, CANOGA PARK, CALIF.

NAA-SR-MEMO-11894 +. 222 PAGES, JUNE 10, 1966

THE UPSTART DIGITAL PROGRAM WAS DEVELOPED TO EVALUATE THE TRANSIENT RESPONSE OF THE VARIOUS SNAP REACTOR SYSTEMS UNDER DEVELOPMENT AND STUDY AT ATOMICS INTERNATIONAL. THE CODE WAS DESIGNED TO MAINTAIN THE COMPUTATIONAL SPEED AND EASE OF USE OF A SPECIAL PURPOSE CODE AND YET HAVE THE FLEXIBILITY OF A GENERAL PURPOSE DIGITAL PROGRAM. THE CODE WAS DESIGNED TO EVALUATE THE TRANSIENT RESPONSE OF SNAP REACTOR SYSTEMS DURING STARTUP AND NORMAL OPERATION, AND TO EVALUATE SYSTEM-SAFETY CRITERIA. IT WAS FURTHER DESIRED TO USE THE CODE TO DESIGN AND EVALUATE VARIOUS REACTOR CONTROL SYSTEMS AND THE PERFORMANCE OF NEW SYSTEM CONCEPTS AND COMPONENTS.

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

COMPUTER PROGRAM + ISOTOPIC GENERATOR + REACTOR CONTROL + REACTOR STARTUP TESTING + REACTOR TRANSIENT + SNAP, GENERAL (SYSTEMS FOR NUCLEAR AUX. POWER)

17-17672 ALSO IN CATEGORY 10

SWENSON LD + BIRNEY KR

DOLT - A COMPUTER CODE TO CALCULATE TEMPERATURE DRIFT FOR STATICALLY CONTROLLED SNAP 10A TYPE REACTORS

ATOMICS INTERNATIONAL, CANOGA PARK, CALIF.

NAA-SR-MEMO-11977 +. 15 PAGES, APRIL 11, 1966

PRESENTS THE ANALYTICAL MODEL USED IN THE DOLT COMPUTER CODE TO CALCULATE THE TEMPERATURE DRIFT FOR SNAP-10A REACTORS. THE MODEL ALLOWS AN ACTIVE CONTROL PERIOD OF SPECIFIED LENGTH FOLLOWED BY STATIC (HANDS-OFF) CONTROL FOR THE REMAINDER OF THE OPERATING PERIOD. THE MODEL TREATS THE FOLLOWING MECHANISM OF REACTIVITY CHANGE AS A FUNCTION OF POWER AND/OR TEMPERATURE - (1) SM-149 PREPOISON BURNOUT AND SM-149 BUILDUP, (2) HYDROGEN LEAKAGE FROM THE FUEL ELEMENTS, (3) HYDROGEN REDISTRIBUTION WITHIN THE FUEL ELEMENTS, (4) FISSION-PRODUCT ACCUMULATION (OTHER THAN XE-135 AND SM-149) AND U-235 DEPLETION, AND (5) CHANGES IN EQUILIBRIUM XE-135 WORTH.

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

COMPUTER PROGRAM + ELECTRIC POWER, NORMAL + ISOTOPIC GENERATOR + MEASUREMENT, TEMPERATURE + REACTOR POWER + SNAP 10A (SYSTEMS FOR NUCLEAR AUXILIARY POWER)

17-17800 ALSO IN CATEGORY 11

ELK RIVER CHANGE 98. REVISION OF LEAK RATE REQUIREMENTS

AEC, DIVISION OF REACTOR LICENSING

9 PAGES, FEBRUARY 23, 1967, DOCKET NO. 115-1

DRL ALLOWS ELK RIVER AN INCREASE IN MAXIMUM CONTAINMENT LEAK RATE FROM 0.10'/DAY TO 0.20'/DAY AT 21 PSIG. ELK RIVER HAD ASKED FOR 0.45. TESTING WOULD BE BASED ON A 3-YR CYCLE IF TEST SHOWS A SATISFACTORY LEAK RATE BUT WOULD REVERT TO A 1, 2, AND 3 YR CYCLE OTHERWISE. OPERATION AFTER TESTS WILL NOT BE ALLOWED UNLESS LEAKAGE RATE IS LESS THAN 0.16'. INTEGRATED LEAK RATE TEST WILL BE AT 21 AND 11 PSIG FOR THE FIRST TEST, AND 11 THEREAFTER, WITHOUT ANY PRELIMINARY LEAK-DETECTION SURVEYS OR LEAK REPAIRS BEFORE OR DURING THE TEST.

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

*CONTAINMENT, HIGH PRESSURE + *TEST, LEAK RATE + ELK RIVER + REACTOR, BOILING WATER + SAFETY EVALUATION + TECHNICAL SPECIFICATIONS + TEST INTERVAL

17-17833 ALSO IN CATEGORY 9

BARKLEY HB

ANNUAL REPORT OF OPERATIONS AND MODIFICATION AT PLUMBROOK FOR PERIOD ENDING JUNE 30, 1967

LEWIS RESEARCH CENTER, SANDUSKY, OHIO

7 PAGES, 1 FIGURES, JULY 24, 1967, DOCKET NO. 50-30

MODIFICATIONS ARE - (A) REPAIR OF WORN TABS ON UPPER GRID PLATE, (B) REPLACEMENT OF ION CHAMBERS, AND (C) MODIFICATION OF DRAINAGE DITCHES. NEW GRID-PLATE TABS ARE STAINLESS STEEL, OLD WERE INTEGRALLY CAST WITH THE ALUMINUM GRID PLATE. ORIGINAL ION CHAMBERS WERE IN HORIZONTAL THIMBLES. THE NEW BORON-LINED CHAMBERS ARE MOUNTED VERTICALLY ON THE INNERMOST

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17833 *CONTINUED*

THERMAL SHIELD. THEY WERE RELOCATED TO PROVIDE A NEARLY CONSTANT SIGNAL AT A GIVEN POWER, TO ELIMINATE POSITIONING DEVICES, AND PROVIDE BETTER RADIATION-RESISTANT CABLES.

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

*INSTRUMENTATION, ABNORMAL INDICATION + *INSTRUMENTATION, POWER RANGE +
*MODIFICATION, SYSTEM OR EQUIPMENT + OPERATING EXPERIENCE + OPERATIONS SUMMARY FOR AEC + PLUM BROOK + REACTOR, TEST

17-17857 ALSO IN CATEGORY 9

USGS TRIGA AMENDMENT 2, APPENDIX C. FAILURE MODE ANALYSIS FOR TRIGA MARK III CONSOLE, SCRAM AND ROD CONTROL CIRCUITS

UNITED STATES DEPARTMENT OF THE INTERIOR, GEOLOGICAL SURVEY, WASHINGTON, D. C.

11 PAGES, 4 FIGURES, 1 TABLE, MAY 1967, DOCKET NO. 50-274

GA REPORT, EVALUATE POSSIBLE ROD CONTROL AND SCRAM CIRCUIT FAILURE. DESCRIBES IN A GENERAL MANNER THE CONTROL CIRCUITRY AND SCRAM LOGIC. THE ROD-DRIVE MOTOR IS NORMALLY PREVENTED FROM RUNNING BY HAVING THE SAME AC SIGNAL ON BOTH MOTOR WINDINGS, AND INDIVIDUAL PUSH-BUTTONS BREAK ONE OR THE OTHER CIRCUITS FOR ROD MOVEMENT. A FAILURE CAUSING A BREAK IN EITHER CIRCUIT WOULD CAUSE THE ROD TO MOVE IN OR OUT. THE ELEMENTS IN EACH CIRCUIT ARE PUSH BUTTONS, RELAY AND CONNECTOR CONTACTS, AND RESISTORS. SINCE ROD DRIVES AND CONTROLS ARE INDEPENDENT, A FAILURE CAN CAUSE MOVEMENT OF ONLY ONE ROD. SINCE ALL SCRAM CIRCUIT RELAYS ARE FAIL SAFE, AND THE 6 CHANNELS ARE INDEPENDENT, 6 INDIVIDUAL SIMULTANEOUS FAILURES ARE NEEDED TO DISABLE THE SCRAM CIRCUIT.

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

*CONTROL ROD DRIVE + *FAULT TREE ANALYSIS + FAILURE, COMPONENT + FAILURE, SCRAM MECHANISM + SAFE FAILURE CRITERION + SINGLE FAILURE CRITERION + TRIGA (TRAINING REACTOR, ISOTOPES, G.A.)

17-17858 ALSO IN CATEGORY 5

SAFETY ANALYSIS REPORT IN SUPPORT OF AMENDMENT TO LICENSE R-66 FOR TWO MEGAWATT OPERATION OF THE UNIVERSITY OF VIRGINIA REACTOR

UNIVERSITY OF VIRGINIA, SCHOOL OF ENGINEERING AND APPLIED SCIENCE, CHARLOTTESVILLE

UVAR-17 + ORNL-TM-662 +. 230 PAGES, 46 FIGURES, 22 TABLES, 38 REFERENCES, AUGUST 1967

REPORT COVERS (1) REQUEST FOR POWER INCREASE, (FROM 1 TO 2 MW, AND 100 TO 200 KW IN NATURAL CIRCULATION), (2) REACTOR SITE, (3) FACILITY CHANGES SINCE INITIAL STARTUP, (4) ADMINISTRATIVE PROCEDURES, (5) THERMAL-HYDRAULIC SAFETY ANALYSIS, (6) RADIATION HAZARDS, AND (7) TECH. SPECS. (EXHIBIT A IS 1964 THESIS, HAZARDS ANALYSIS OF 2-MW OPERATION, EXHIBIT B IS A STUDY OF THE SHIELD OF THE U OF VIRGINIA REACTOR, ORNL-TM-662). IN THE THERMAL-HYDRAULIC SAFETY ANALYSIS, THE AUTHOR CONTENDS THAT THESIS ASSUMPTIONS CONCERNING HEAT-TRANSFER CALCULATIONS ARE TOO CONSERVATIVE AND USES LATEST CORRELATIONS AND CALCULATIONS SHOWING OPERATION IS FEASIBLE AT 2 MW WITH PRESENT COOLANT FLOW RATE OF 900 GPM.

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

*HEAT TRANSFER CORRELATION + *POWER UPGRATING + MATHEMATICAL TREATMENT + REACTOR, POOL TYPE + REACTOR, RESEARCH + SAFETY ANALYSIS REPORT, GENERAL

17-17859

INITIAL REPORT ON OPERATIONS AND MODIFICATION OF U OF VIRGINIA REACTOR (JUNE 60 TO JANUARY 63)

UNIVERSITY OF VIRGINIA, SCHOOL OF ENGINEERING AND APPLIED SCIENCE, CHARLOTTESVILLE

UVAR-17 +. 3 PAGES, JANUARY 10, 1963, PAGE 9 THRU 11 OF SAFETY ANALYSIS REPORT IN SUPPORT OF AMENDMENT TO LICENSE R-66 FOR TWO MEGAWATT OPERATION OF THE UNIVERSITY OF VIRGINIA REACTOR, DOCKET NO. 50-62

SEVEN MODIFICATIONS LISTED, INCLUDE - (2) BAFFLES ADDED TO DISPERSE COOLANT FLOW ALONG THE POOL BOTTOM, INSTEAD OF UP A WALL, CAUSING 25 MR/HR (N-16) AT SURFACE, (3) INSTALLED BORON-STEEL RODS IN PLACE OF BORON CARBIDE RODS, JANUARY 61 (AMENDMENT 1), (4) PIPE FAILURE ALLOWED WATER TO BE PUMPED FROM POOL BEFORE DETECTED, A FLOW ADDED TO CUT OFF PUMP AT LOW WATER LEVEL, (5) 4 TUBES PLUGGED IN HEAT EXCHANGER (REPLACED JANUARY 63), (6) N-16 INDICATOR ADDED TO GIVE INDEPENDENT POWER-LEVEL READING, (7) AS A RESULT OF COMPLIANCE INSPECTION, ALARMS ARE TO BE INSTALLED ON DOORS TO HEAT-EXCHANGER ROOM AND DEMINERALIZER ROOM.

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

*FAILURE, PIPE + *HEAT EXCHANGER + *MAIN COOLING SYSTEM + *MODIFICATION, SYSTEM OR EQUIPMENT + CONTROL ROD + FAILURE, EQUIPMENT + INSTRUMENTATION, POWER RANGE + NITROGEN + OPERATIONS SUMMARY FOR AEC + REACTOR, POOL TYPE + REACTOR, RESEARCH

17-17860

PIPE RUPTURE CAUSES U OF VIRGINIA POOL TO BE PARTIALLY DRAINED

UNIVERSITY OF VIRGINIA, CHARLOTTESVILLE

UVAR-17 +. 1 PAGE, ITEM 4, PAGE 10 OF THE SAFETY ANALYSIS REPORT IN SUPPORT OF AMENDMENT TO LICENSE R-66 FOR TWO MEGAWATT OPERATION OF THE UNIVERSITY OF VIRGINIA REACTOR, JANUARY 10, 1965, DOCKET NO. 50-62

OUTLET PIPE FROM DEMINERALIZER PUMP BROKE, AND PUMP CONTINUED TO RUN FOR A FEW HOURS AT 10

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17860 *CONTINUED*

GAL/MIN UNTIL CUT OFF BY A GRADUATE STUDENT. IF ALLOWED TO RUN, IT COULD HAVE PUMPED THE POOL (80,000 GAL) LOW ENOUGH TO EXPOSE CORE. FLOAT VALVE WAS ADDED UNDER BRIDGE TO CUT OFF PUMP WHEN POOL LEVEL IS LOW.

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

*INCIDENT, ACTUAL, EQUIPMENT + ACCIDENT, LOSS OF COOLANT + COOLANT PURIFICATION SYSTEM + FAILURE, PIPE + MODIFICATION, SYSTEM OR EQUIPMENT + REACTOR, POOL TYPE + REACTOR, RESEARCH

17-17861

ANNUAL REPORT OF OPERATIONS AND MODIFICATION OF U OF VIRGINIA REACTOR FOR PERIOD ENDING 15, JANUARY 1964
UNIVERSITY OF VIRGINIA, CHARLOTTESVILLE
UVAR-17 +. 2 PAGES, PAGE 12 AND 13 OF SAFETY ANALYSIS REPORT IN SUPPORT OF AMENDMENT TO LICENSE R-66 FOR TWO MEGAWATT OPERATION OF THE UNIVERSITY OF VIRGINIA REACTOR, JANUARY 31, 1964, DOCKET NO. 50-62

SEVEN MODIFICATIONS LISTED, INCLUDING (1) INSTALLATION OF CONCRETE WALL TO SHIELD HEAT EXCHANGER, (4) FISSION PLATE FIRST USED (AMENDMENT 5), (5) VALVES AND ORIFICE PLATE ADDED TO SECONDARY SYSTEM FOR INSTRUMENTATION AND MAINTENANCE PURPOSES, SAMPLE PORT ADDED TO SECONDARY SYSTEM TO ALLOW EVALUATION OF CORROSION RATE, (6) PIPING FAILURE IN DEMINERALIZER ROOM (PLASTIC PIPE WAS REPLACED WITH ALUMINUM, AND PUMP IS ISOLATED BY FLEXIBLE CONVECTIONS), (7) DURING A COMPLIANCE INSPECTION, IT WAS FOUND THAT REACTOR WAS BEING OPERATED ABOVE 100 KW WITH IMPROPER COOLING.

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

*FAILURE, PIPE + *MAIN COOLING SYSTEM + CORROSION + HEAT EXCHANGER + INSPECTION AND COMPLIANCE + MODIFICATION, SYSTEM OR EQUIPMENT + OPERATIONS SUMMARY FOR AEC + REACTOR POWER + REACTOR, POOL TYPE + REACTOR, RESEARCH + SHIELDING

17-17862

ALSO IN CATEGORY 9

ANNUAL REPORT OF OPERATIONS AND MODIFICATION OF U OF VIRGINIA REACTOR FOR PERIOD ENDING 27, JANUARY 1965
UNIVERSITY OF VIRGINIA, CHARLOTTESVILLE
UVAR-17 +. 3 PAGES, PAGE 14 THRU 16 OF SAFETY ANALYSIS REPORT IN SUPPORT OF AMENDMENT TO LICENSE R-66 FOR TWO MEGAWATT OPERATION OF THE UNIVERSITY OF VIRGINIA REACTOR, JANUARY 27, 1965, DOCKET NO. 50-62

FIVE MODIFICATIONS LISTED INCLUDE INTERLOCK INSTALLED TO PREVENT OPERATION ABOVE 100 KW WITHOUT COOLANT HEADER RAISED INTO PROPER POSITION. REACTOR BRIDGE WAS MOVED ACCIDENTALLY WITH HEADER UP, DAMAGING GUIDE PINS. HEADER LIFTING DEVICE LATER STUCK IN VARIOUS POSITIONS AND UPON DISASSEMBLY OF CORE AND DRAINING OF POOL, A FROZEN BEARING WAS FOUND. NEW, HEAVIER PARTS WERE INSTALLED. RISK WAS FOUND IN THAT THE LIFTING MECHANISM MIGHT STICK IN UP POSITION, STOPPING HEADER FROM FALLING UPON LOSS OF FLOW. AN INTERLOCK WAS INSTALLED TO PROHIBIT OPERATION ABOVE 100 KW WITH LIFTING MECHANISM IN UP POSITION.

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

*FAILURE, OPERATOR ERROR + *HEAT TRANSFER, NATURAL CONVECTION + *MAIN COOLING SYSTEM + EMERGENCY COOLING CONSIDERATIONS + FAILURE, EQUIPMENT + INSTRUMENTATION, INTERLOCK + MODIFICATION, SYSTEM OR EQUIPMENT + OPERATIONS SUMMARY FOR AEC + REACTOR, POOL TYPE + REACTOR, RESEARCH

17-17863

ALSO IN CATEGORY 9

ANNUAL REPORT OF OPERATIONS AND MODIFICATION OF U OF VIRGINIA REACTOR FOR PERIOD ENDING 20 JANUARY, 1966
UNIVERSITY OF VIRGINIA, CHARLOTTESVILLE
UVAR-17 +. 3 PAGES, PAGE 17 THRU 19 OF SAFETY ANALYSIS REPORT IN SUPPORT OF AMENDMENT TO LICENSE R-66 FOR TWO MEGAWATT OPERATION OF THE UNIVERSITY OF VIRGINIA REACTOR, JANUARY 20, 1966, DOCKET NO. 50-62

FIVE MODIFICATIONS LISTED INCLUDING (2) A 125% FULL-POWER SCRAM CAUSED WHEN SERVO SYSTEM CONTINUED TO PULL ROD AFTER OPERATOR TURNED OFF THE LINEAR RECORDER (SLIDE WIRE GIVES SERVO ERROR, AND POWER WAS BELOW SETPOINT) TO CHANGE CHART PAPER. CHANGES MADE TO THROW REACTOR OFF SERVO WHEN RECORDER IS OFF. (2A) ON APRIL 4, REACTOR WAS OPERATED AT 200 KW, TWICE INDICATED POWER, DUE TO MOVEMENT OF THERMAL COLUMN AWAY FROM THE CORE. THE NEXT DAY, A STARTUP TO 7 MW CAUSED HIGH RADIATION LEVEL ALARM FROM DEMINERALIZER ROOM, AS POWER LEVEL WAS 2 MW. GAMMA COUNTER WAS MOUNTED ABOVE CORE TO GIVE ALARM AT 150% FULL POWER. (3) HIGH-RADIATION-LEVEL SCRAM TRACED TO EPOXY RESIN USED TO MOUNT THERMOCOUPLES. (4) REACTOR OPERATED 1/2 HR WITH POOL TEMPERATURE UP TO 98.4 F (95 F LICENSE MAXIMUM). (5) SOME EVIDENCE OF CONTROL-ROD FLAKING OBSERVED DURING ANNUAL INSPECTION.

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

*CONTROL ROD BURNUP + *INSTRUMENTATION, ABNORMAL INDICATION + CONTROL SYSTEM + FAILURE, OPERATOR ERROR + IRRADIATION FACILITY + MODIFICATION, SYSTEM OR EQUIPMENT + OPERATIONS SUMMARY FOR AEC + REACTOR POWER + REACTOR, POOL TYPE + REACTOR, RESEARCH + SCRAM, REAL

17-17864

ALSO IN CATEGORY 14

ANNUAL REPORT OF OPERATIONS AND MODIFICATION OF U OF VIRGINIA REACTOR FOR PERIOD ENDING 31 JANUARY 1967
UNIVERSITY OF VIRGINIA, CHARLOTTESVILLE
UVAR-17 +. 62 PAGES, 10 FIGURES, 18 REFERENCES, PAGE 20 THRU 81 OF SAFETY ANALYSIS REPORT IN SUPPORT OF AMENDMENT TO LICENSE R-66 FOR TWO MEGAWATT OPERATION OF THE UNIVERSITY OF VIRGINIA REACTOR, JANUARY 31,

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17864 *CONTINUED*
1967, DOCKET NO. 50-62

SEVEN MODIFICATIONS LISTED INCLUDING (1A) GRADUATE STUDENT IRRADIATING INDIUM IN RABBIT SYSTEM WITHDREW SAMPLE, CAUSING BRIDGE MONITOR TO SCRAM REACTOR. PORTABLE SURVEY METER WENT OFF-SCALE AND ACTIVITY WAS NOTED ON AIR MONITOR. STUDENT RECEIVED 20-MR DOSE. (2A) REGULATING ROD FAILED DUE TO FAILED BEARING. (2C) COOLANT OUTLET HEADER JAMMED AND NEW LIFTING MECHANISM (AIR FLOTATION) WAS INSTALLED. (3) DURING COMPLIANCE INSPECTION, IT WAS FOUND THAT UNCONTROLLED RELEASE OF RADIOACTIVE WASTE INTO A CREEK WAS BEING ALLOWED, DUE TO AN OPEN VALVE FROM HOLDING POOL. PERIODIC TESTS OF ACTIVITY IN HOLDING POOL HAD SHOWN CONCENTRATION TO BE BELOW MPC FOR CONTROLLED RELEASE.

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

*PERSONNEL EXPOSURE, RADIATION + *RADIOACTIVITY, RELEASE + ADMINISTRATIVE CONTROLS AND PRACTICES + EMERGENCY COOLING CONSIDERATIONS + FAILURE, EQUIPMENT + OPERATIONS SUMMARY FOR AEC + REACTOR, POOL TYPE + REACTOR, RESEARCH

17-17865

TECHNICAL SPECIFICATIONS FOR U OF VIRGINIA POOL REACTOR
UNIVERSITY OF VIRGINIA, CHARLOTTESVILLE

UVAR-17 +. 12 PAGES, 1 FIGURE, PAGE 82 THRU 93 OF SAFETY ANALYSIS REPORT IN SUPPORT OF AMENDMENT TO LICENSE R-66 FOR TWO MEGAWATT OPERATION OF THE UNIVERSITY OF VIRGINIA REACTOR, AUGUST 22, 1967, DOCKET NO. 50-62

POWER TO BE INCREASED FROM 1 MW TO 2. MAXIMUM POOL TEMPERATURE IS 110 F. NORMAL COOLANT FLOW, 900 GAL/MIN. MINIMUM FLOW RATE, 800 GAL/MIN. NORMAL POOL TEMPERATURE IS LESS THAN 105 F. CORE WILL BE COVERED BY AT LEAST 19 FT OF WATER, AND COOLANT FLOW IS DOWNWARD TO DECREASE SURFACE EFFECT ON N-16. 2' REACTIVITY ALLOWED FOR EXPERIMENTS. REACTOR MAY BE OPERATED WITH NATURAL-CONVECTION COOLING UP TO 200 KW OR THAT POWER LEVEL WHICH GIVES A READING OF 30 MR/HR ON THE BRIDGE MONITOR, WHICHEVER IS LESS. TECH.-SPEC. FORMAT USES CURRENT STYLE (BASES, OBJECTIVES).

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

*POWER UPGRATING + MAIN COOLING SYSTEM + REACTOR, POOL TYPE + REACTOR, RESEARCH + SHIELDING + TECHNICAL SPECIFICATIONS

17-17866

ALSO IN CATEGORIES 18 AND 14

HAZARDS ANALYSIS FOR OPERATION OF THE UNIVERSITY OF VIRGINIA REACTOR AT TWO MEGAWATTS
UNIVERSITY OF VIRGINIA, CHARLOTTESVILLE

UVAR-17 +. 116 PAGES, 22 FIGURES, 20 TABLES, 20 REFERENCES, EXHIBIT A OF SAFETY ANALYSIS REPORT IN SUPPORT OF AMENDMENT TO LICENSE R-66 FOR TWO MEGAWATT OPERATION OF THE UNIVERSITY OF VIRGINIA REACTOR, AUGUST 1964, DOCKET NO. 50-62

AFTER PRELIMINARY TREATMENT OF SITE, VENTILATION, ETC., THE AUTHOR EXAMINES HEAT TRANSFER IN CORE, IN PARTICULAR THE MAXIMUM POWER WITH A GIVEN FLOW RATE AT WHICH REACTOR CAN BE OPERATED WITHOUT LOCALIZED BOILING. HE CONCLUDES THAT TO OPERATE AT 2 MW, COOLANT FLOW RATE MUST BE AT LEAST 1050 GAL/MIN. HE EXAMINES HAZARDS DURING NORMAL OPERATION (ARGON-41 PRODUCTION IN EXPERIMENTAL FACILITIES AT 2 MW IS INSUFFICIENT TO CAUSE EXCESS CONCENTRATION OUTSIDE THE BUILDING) AND MAXIMUM CREDIBLE ACCIDENT. COMPLETE CORE MELTDOWN RELEASES, TID-14844 F.P. FRACTIONS, RESULTING IN EXCLUSION-BOUNDARY DOSES LESS THAN 200 REMS.

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

*HAZARDS ANALYSIS + *HEAT TRANSFER ANALYSIS + *POWER UPGRATING + ACCIDENT, MAXIMUM CREDIBLE (MCA) + ARGON + REACTOR, POOL TYPE + REACTOR, RESEARCH + SAFETY ANALYSIS REPORT, GENERAL + SOURCE, CONTINUOUS

17-17867

ALSO IN CATEGORY 15

UNIVERSITY OF VIRGINIA HAZARDS REPORT EXHIBIT B. A STUDY OF THE SHIELD OF THE UNIVERSITY OF VIRGINIA NUCLEAR RESEARCH REACTOR

OAK RIDGE NATIONAL LAB., TENN.

ORNL-TM-662 +. 21 PAGES, 9 FIGURES, 2 TABLES, NOVEMBER 25, 1963, DOCKET NO. 50-62

DETAILED MEASUREMENTS WERE MADE OF NEUTRON AND GAMMA DOSES NEAR THE BIOLOGICAL SHIELD AND AT THE SURFACE OF THE POOL, WITH THE ORNL MOBILE RADIATION MEASUREMENT LAB. DOSE RATES WERE GENERALLY LOW, ALTHOUGH SOME STREAMING AROUND ACCESS FACILITY CLOSURES WAS OBSERVED. OTHER DATA INCLUDED MEASUREMENTS OF DOSE RATES AT VARIOUS POINTS IN THE VICINITY OF THE HEAT EXCHANGER (A CONTROLLED-ACCESS AREA).

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

*SHIELDING + REACTOR, POOL TYPE + REACTOR, RESEARCH + SURVEY, RADIATION, GENERAL

17-17868

BROWN GN + CHRISTIANSON RC

KRB STARTUP

GENERAL ELECTRIC, SAN JOSE

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17868 *CONTINUED*

CONF-670-713 +. 3 PAGES, PAGE 10, 11, AND 12, ABSTRACT IN ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 21, (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

(1) LEAKING FEEDWATER VALVES SLOWLY PRESSURIZED AN ISOLATED STEAM GENERATOR OF THE DUAL-CYCLE REACTOR. CONTROL-ROOM ALARMS AND INDICATIONS WERE NOT NOTED. AFTER A SERIES OF SAFETY-VALVE RELIEF/RESET CYCLES, A 2-IN. WELD CONNECTION (ON THE SECONDARY SAFETY VALVE) OF QUESTIONABLE QUALITY FAILED, DISCHARGING 13 TONS OF WATER INTO CONTAINMENT. PROPORTIONAL-TYPE RELIEF VALVES WERE INSTALLED AND VALVE-MOUNTING SUPPORTS REDESIGNED. (2) HYDRAULICALLY OPERATED MAIN-STEAM ISOLATION VALVES NEEDED PLUG AND BRAKING HYDRAULIC CIRCUIT REDESIGN TO OBTAIN A RELIABLE 15-SEC CLOSING TIME AND TO ELIMINATE LEAKAGE THROUGH THE VALVE. (3) ON LOSS OF NORMAL POWER, THE BATTERY-INVERTER OVERLOADED, CUTTING POWER TO THE SEQUENCING PROGRAMMER. (4) ON TRIPPING THE MAIN BREAKER AT FULL POWER, STATION VOLTAGE INCREASED BY 12' AND FREQUENCY BY 4', CAUSING A REACTOR SCRAM ON HIGH FLUX DUE TO INCREASED CIRCULATION FLOW. THEN, FROM A VARIETY OF CAUSES INVOLVING THE SEQUENCING CIRCUITRY FOR STARTING THE BACKUP 6-KV MOTORS, ONE BUSES PUMPS WERE START/STOP CYCLED 36 TIMES, CAUSING ONE MAIN-FEEDWATER-PUMP BREAKER TO FAIL, SEVERELY DAMAGING ONE OTHER MOTOR AND 3 FW-BOOSTER PUMPS. AN AUTOMATIC RECIRC.-PUMP TRIP ON GENERATOR-BREAKER TRIP NOW ALLOWS LOAD TRIPS WITHOUT SCRAM.

*ACCIDENT, LOAD REJECTION + *CONTAINMENT PENETRATION, CLOSURE OF + *ELECTRIC POWER, VITAL + *FAILURE, COMPONENT + *REACTOR STARTUP EXPERIENCE, INITIAL + ACCIDENT, LOSS OF FLOW + FAILURE, OPERATOR ERROR + GERMANY + LEAK + LEAK + PUMP + REACTOR, BOILING WATER + RESPONSE TIME + SCRAM, REAL + STEAM GENERATOR + VALVE + WELDING

17-17869

ALSO IN CATEGORY 3

BARNETT EJ + CLARK L + GOSNELL JW + GWINN DA + KARAIAN E + THOMPSON TJ + BROWN SH
SPENT-FUEL LOADING PROCEDURE AT MITR
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

CONF-670-713 +. 21 PAGES, 5 FIGURES, 3 TABLES, ABSTRACT IN ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 18, (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

ELEMENTS COULD NOT BE LOADED DIRECTLY, AS STANDARD CASKS ARE TOO BIG FOR THE ACCESS HOLE TO THE STORAGE POOL. A WATER-FILLED TANK WAS INSTALLED FOR THE SHIPPING CASK TO SET IN, AND THE INTERNAL-TRANSFER CASK TRANSFERRED ELEMENTS TO IT. A CONE ENSURED THAT ANY DROPPED ELEMENT WOULD REMAIN ACCESSIBLE ABOVE THE CASK. BORAL PRESENCE IN THE 28-ELEMENT CASK WAS PROVED EASIER, USING BF3 DETECTORS AND A POLYETHYLENE INSERT BETWEEN SOURCE AND DETECTOR SO THAT BORAL DIVIDERS ABSORBED THERMAL NEUTRONS. USUAL SIMULATION TEST WITH WATER IS A FACTOR OF 10 LESS SENSITIVE BECAUSE OF FAST-NEUTRON MODERATION AT THE DETECTOR. REPORT DETAILS PREPARATIONS AND EXPERIENCE DURING END-BOX CUTTING AND INTERNAL TRANSFER. 1/M MEASUREMENTS MADE.

*FUEL HANDLING + *SHIPPING CONTAINER + CRITICALITY SAFETY + MEASUREMENT, SUBCRITICALITY + MITR (MASS. INST. OF TECH. REACTOR) + OPERATING EXPERIENCE + REACTOR, HEAVY WATER + REACTOR, RESEARCH

17-17870

KINNE GC + TICHLER PR

HEAT EXCHANGER TUBE VIBRATION AND REPAIR IN THE HIGH FLUX BEAM REACTOR
REACTOR DIVISION, BROOKHAVEN NATIONAL LAB., UPTON, L.I., NEW YORK

CONF-670-713 + BNL-11585 +. 9 PAGES, 2 FIGURES, ABSTRACT IN ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 8, (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

ESSENTIALLY IDENTICAL TO THE ATR EXCHANGERS, THE VIBRATION ABOVE HALF-RATED SECONDARY FLOW CAME FROM THE LONG, UNSUPPORTED U-BEND AREA BY VIBRATION PROBES AND PLASTIC WINDOWS. FOR 20' OF THE ORIGINAL COST, NEW PENETRATIONS WERE CUT TO CONVERT IT FROM A TWO-PASS SHELL TO TWO SINGLE-PASSES, RESTORING THE FLOW RATE BUT REDUCING THE WATER VELOCITY.

*FAILURE, TUBING + *HEAT EXCHANGER + *MAINTENANCE AND REPAIR + *VIBRATION + HFBR (HIGH FLUX BEAM REACTOR) + REACTOR, AEC OWNED + REACTOR, HEAVY WATER + REACTOR, RESEARCH

17-17871

GARRARD CW + RANDALL JD

A SURVEY OF POOL LININGS FOR SWIMMING POOL REACTORS
NUCLEAR SCIENCE CENTER, TEXAS ENGINEERING EXPERIMENT STATION, TEXAS A AND M UNIVERSITY, COLLEGE STATION, TEXAS

AFTER SEVERAL YEARS OF UNSUCCESSFUL CHEMICAL- AND PRESSURE-GROUTING OF THE ALUMINUM LINER, A SURVEY MADE OF 9 OTHER POOL REACTORS SHOWED METAL LINERS PREFERABLE TO CERAMIC TILE OR EPOXY. SURVEY REPLIES SHOWED WHICH EPOXY LININGS HAD BEEN SATISFACTORY AND INDICATED GOOD CONSTRUCTION/TESTING PRACTICES FOR THE VARIOUS LININGS.

*COATING, SURFACE + *FAILURE, GENERAL + *FUEL STORAGE + INCIDENT COMPILATION + LEAK RATE + REACTOR, POOL TYPE + REACTOR, RESEARCH + STEEL LINER

17-17872

LEWIS DS

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17872 *CONTINUED*

OPERATIONAL STAFFING AND TRAINING PROBLEMS FOR THE STARTUP OF N-REACTOR
GENERAL ELECTRIC, HANFORD ATOMIC PRODUCTS OPERATION

CONF-670-713 *. 2 PAGES, ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 10, PAGE 35 AND 36, (JULY 1967),
CONFERENCE ON REACTOR OPERATING EXPERIENCE, REACTOR OPERATIONS DIVISION OF THE AMERICAN NUCLEAR SOCIETY,
ATLANTIC CITY, JULY 23-26, 1967

(PAPER NOT GIVEN.) ABSTRACT INDICATE N-REACTOR IS DIFFERENT FROM OTHER HANFORD REACTORS, AND 3
YEARS OF UNION NEGOTIATIONS REQUIRED. SUGGESTS MANAGEMENT EDUCATE LABOR REPRESENTATIVE IN
ADVANCE TO PREPARE FOR CHANGE FROM LABOR TRADITION. MUCH PRIOR OPERATOR KNOWLEDGE HAD TO BE
UNLEARNED AND THOUGHT PROCESSES MODIFIED. MOST SHOWED A SURPRISING AMOUNT OF INITIATIVE AND
COMPETED FOR CERTIFICATION POSITIONS. THE CERTIFIED-OPERATOR GROUP, BY DEMONSTRATED
PERFORMANCE IN TAKING INSTANT INDEPENDENT ACTION DURING CHANGING PLANT CONDITIONS, IS SURELY
THE TOP OPERATING GROUP OF THE HANFORD COMPLEX.

*STAFFING, TRAINING, QUALIFICATION + HANFORD SITE + REACTOR, PRODUCTION

17-17873 ALSO IN CATEGORIES 11 AND 10

BARKLEY HB

JCAE HEARING ON POWER REACTOR REGULATION - H. B. BARKLEY

LEWIS RESEARCH CENTER

3 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(38) PAGES 53-56 (SEPTEMBER 18, 1967)

IN ADDITION TO LETTER OF AUGUST 8, ASSERTING THAT REGULATORY PROGRAM HAS NOT CONTRIBUTED TO
SAFETY AT PLUM BROOK IN 4 YEARS BUT HAS USED TIME UNPRODUCTIVELY, TWO POINTS WERE MADE. (1)
TECHNICAL SPECIFICATIONS CHANGES TAKE TOO LONG AND TOO MUCH EFFORT (TECHNICAL SPECIFICATIONS
REQUESTED MARCH 16, 1967 TO REPLACE 4 DIESEL GENERATORS WITH 2 NEW, LARGER ONES. DRL
QUESTIONED IN DETAIL OUR ENTIRE ELECTRICAL SYSTEM AND ITS SURVEILLANCE. SUGGESTIONS INCLUDE
NEW PEOPLE TRAVEL TO SITE, BETTER COMMUNICATION WITH COMPLIANCE.) (2) PROGRAM DOES NOT
ENCOURAGE NEW IDEAS IN REACTOR SAFETY (PERMISSION TO REPLACE CONTINUOUSLY MONITORED
ELECTRICAL PENETRATIONS WITH HERMETIC SEALS TOOK 8.5 MONTHS AND MUCH DISCUSSION FOR THIS
IMPROVED METHOD).

*EMERGENCY POWER, ELECTRIC + *MODIFICATION, SYSTEM OR EQUIPMENT + CONGRESSIONAL ACTIVITY +
CONTAINMENT LEAKAGE CONTROL + CONTAINMENT PENETRATION, ELECTRICAL + GENERATOR, DIESEL +
OPERATING EXPERIENCE + PLUM BROOK + REGULATION, AEC

17-17874 ALSO IN CATEGORIES 1 AND 2

BOGART L

JCAE HEARING ON POWER REACTOR REGULATION - LARRY BOGART STATEMENT

3 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(38) PAGES 36-38 (SEPTEMBER 18, 1967)

REFERS TO INDIAN POINT 2 AND VERMONT YANKEE PUBLIC HEARINGS AS AN EXAMPLE THAT ASL BOARDS ARE
UNRESPONSIVE TO PEOPLE MAKING LIMITED APPEARANCES, THAT THERE IS TOO LITTLE TIME AVAILABLE
(30 DAYS) TO HIRE EXPENSIVE LAWYERS AND EXPERTS. CITES A SUBSTANTIAL VOLUME OF RESPECTABLE
LITERATURE (PART 2, AEC AUTHORIZING LEGISLATION, 1968) THAT WE ARE NOT OUT OF THE
EXPERIMENTAL WOODS. REFERENCES TRUE (AUGUST 1967) WASTE-DISPOSAL ARTICLE AS MAKING IT LOOK
LIKE PROBLEM IS SOLVED, GIVING PUBLIC A FALSE SENSE OF SECURITY. VERMONT YANKEE RESIDENTS
(LOCATED ON A RIVER IN A BELT OF MODERATE-INTENSITY EARTHQUAKES IN A VALLEY WHERE FDG IS
COMMON AND 30-40' INVERSIONS) ARE ALARMED AND FEEL UNPROTECTED BECAUSE VY HAS SPENT MILLIONS
ON SITE WORK BEFORE RECEIVING CONSTRUCTION PERMIT.

*CONGRESSIONAL ACTIVITY + *REGULATION, AEC + CONSTRUCTION PERMIT PROCESS + EARTHQUAKE, GENERAL +
INDIAN POINT 2 + LAPSE RATE, STABLE + ON SITE WORK + RADIATION, PUBLIC EDUCATION/ACCEPTANCE +
VERMONT YANKEE

17-17875 ALSO IN CATEGORY 1

ACKERMAN AJ

JCAE HEARING ON POWER REACTOR REGULATION - A. J. ACKERMAN STATEMENT

2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(38) PAGES 32-33 (SEPTEMBER 18, 1967)

SELECTIONS FROM HIS STATEMENTS INCLUDE - (1) REGULATORY PROGRAM CANNOT BE EXPECTED TO ENSURE
PUBLIC HEALTH AND SAFETY. OPERATING EXPERIENCE IS SMALL, COMPARED WITH THE PERIL. UTILITY
REACTOR-OPERATIONS ARE UNDER CONSTANT SURVEILLANCE BY SCIENTISTS AND PHYSICISTS. MAJOR
FAILURES WILL PROVIDE MAJOR LESSONS AND GUIDES AS IN 60 YEARS OF STEAM-BOILER EXPERIENCE.
(3) AEC IS PROVIDING GUIDANCE ON REGULATORY REQUIREMENTS, NOT ENGINEERING CRITERIA. (5)
REPEAL OFFRICE-ANDERSON WOULD GIVE INCENTIVE FOR PUBLIC SAFETY. (6) ALL NUCLEAR PLANTS
SHOULD BE IN CAVERNS EXCAVATED IN SOLID ROCK, AS IN THE CASE OF MANY HYDROELECTRIC PROJECTS.
(8) NOT ENOUGH EXPERIENCED PEOPLE WILL BE AVAILABLE TO DESIGN, CONSTRUCT, AND OPERATE ALL
THESE PLANTS. (9) UTILITIES ENTERING THE NUCLEAR FIELD HAVE NOT FAMILIARIZED THEMSELVES WITH
SAFETY CONSIDERATIONS. (11) PUBLIC IS GIVEN INFORMATION ABOUT ATOMIC POWER GREATNESS BUT NOT
PUBLIC-SAFETY PROBLEMS.

*CONGRESSIONAL ACTIVITY + *REGULATION, AEC + OPERATING EXPERIENCE +
RADIATION, PUBLIC EDUCATION/ACCEPTANCE + STAFFING, TRAINING, QUALIFICATION

17-17885 ALSO IN CATEGORY 14

ENVIRONMENTAL RADIOACTIVITY AT THE SHIPPINGPORT ATOMIC POWER STATION FOR THE SECOND HALF OF 1965 AND

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17885 *CONTINUED*

CALENDAR YEAR 1965
BETTIS ATOMIC POWER LABORATORY, WEST MIFFLIN, PA.
PNRO-SMD-137 +. 8 PAGES, 7 TABLES, 1965

DURING THE SECOND HALF OF 1965, MEASUREMENTS OF RADIOACTIVITY IN THE OHIO RIVER, IN THE ATMOSPHERE, AND THE FALLOUT IN THE VICINITY OF THE SHIPPINGPORT ATOMIC POWER STATION WERE CONTINUED. THE RADIOACTIVE MATERIAL RELEASED BY THE POWER STATION INTO THE AIR AND INTO THE OHIO RIVER DID NOT RESULT IN A SIGNIFICANT CHANGE IN THE NATURALLY OCCURRING RADIOACTIVITY IN THE ENVIRONMENT. ENVIRONMENTAL MONITORING DATA FOR CALENDAR 1965 ARE SUMMARIZED.

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

FALLOUT + MONITORING PROGRAM, ENVIRONMENTAL + OPERATING EXPERIENCE + REACTOR, PRESSURIZED WATER + SHIPPINGPORT

17-17939

FUEL HANDLING HOIST RUNAWAY
U. S. ATOMIC ENERGY COMMISSION, DIVISION OF OPERATIONAL SAFETY, WASHINGTON, D. C.
ROE-67-9 +. 2 PAGES OF OPERATING EXPERIENCES, REACTOR SAFETY, AUGUST 18, 1967

A GRAPPLE HOIST RAN AWAY WHILE RECHANNELING NEW FUEL ELEMENTS, AS 2 ELECTRICAL GROUNDS SHORTED OUT THE RAISE CONTACT AND THE LIMIT SWITCH (TO PREVENT WITHDRAWING HOOK ABOVE THE 10-FT DEPTH). BY THE TIME POWER WAS DISCONNECTED, THE HOIST REACHED MAXIMUM UP-TRAVEL AND STALLED. FORTUNATELY, HOIST WAS NOT LOADED. MECHANICAL STOPS WERE ADDED TO PREVENT HOOK WITHDRAWAL ABOVE THE 5-FT DEPTH, AND ANOTHER LIMIT SWITCH ADDED TO STOP HOOK AT 6 FT.

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

*FUEL HANDLING MACHINE + *INCIDENT, ACTUAL, EQUIPMENT + FAILURE, SIMULTANEOUS + REACTOR, BOILING WATER

17-17940

ALSO IN CATEGORY 5
HEAT EXCHANGER PROBLEMS AT THE HIGH FLUX BEAM REACTOR
U. S. ATOMIC ENERGY COMMISSION, DIVISION OF OPERATIONAL SAFETY, WASHINGTON, D. C.
ROE-67-8 +. 2 PAGES OF OPERATING EXPERIENCES, REACTOR SAFETY, AUGUST 18, 1967

RATTLING WAS HEARD AT FLOWS ABOVE HALF RATED IN THESE HEAT EXCHANGES SIMILAR TO ATP AND MADE BY SAME MANUFACTURER. RATTLING OCCURRED AT LOWER AND LOWER FLOWS. ALTHOUGH TEMA STANDARD IS 60 INCH UNSUPPORTED LENGTH, THE U-BENDS WERE 134 IN, AND THE U-BENDS WERE STRIKING EACH OTHER. ADDITIONAL NOZZLES WERE MADE TO CHANGE FROM COUNTERCURRENT 2-PASS FLOW TO SINGLE-PASS FLOW, LEAVING THE U-BEND IN RELATIVELY MOTIONLESS WATER. PERFORMANCE WAS RESTORED WITHOUT RATTLES FOR LESS THAN \$50,000.

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

*HEAT EXCHANGER + *VIBRATION + CODES AND STANDARDS + FAILURE, DESIGN ERROR + FAILURE, TUBING + HFBR (HIGH FLUX BEAM REACTOR) + REACTOR, FLUX TRAP + REACTOR, RESEARCH + SUPPORT STRUCTURE

17-17941

DRL LETTER TO REACTOR FACILITY SUPERINTENDENT ON OPERATING EXPERIENCE NOTES
U. S. ATOMIC ENERGY COMMISSION, DIVISION OF OPERATIONAL SAFETY, WASHINGTON, D. C.
1 PAGE, AUGUST 18, 1967

(TRANSMITS ROE 67-8 AND -9) P. A. MORRIS NOTES DISTRIBUTION EXTENDED TO ALL LICENSED FACILITIES, INSTEAD OF JUST AEC-OWNED REACTORS. REPORTS ADDRESSED TO PLANT SUPT. (AS DIRECTLY RESPONSIBLE FOR OPERATION) AS WELL AS TO CORPORATE HEADQUARTERS. EXPERIENCES REPORTED WILL BE OF BENEFIT TO OPERATORS, NOT JUST ALL-INCLUSIVE INCIDENT REPORTING. EXPERIENCE HAS SHOWN THAT EVENTS AND MALFUNCTIONS ARE OFTEN REPEATED AT DIFFERENT FACILITIES, AND ONE OPERATORS SOLUTION MAY BE JUST WHAT ANOTHER IS LOOKING FOR.

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

*INCIDENT, ACTUAL, GENERAL + REACTOR, AEC OWNED + REACTOR, POWER

17-17946

DEVILLE A
PEGASE REACTOR
COMMISSARIAT A 1-ENERGIE ATOMIQUE, FRANCE
8 PAGES, 11 FIGURES, ENERG. NUCL. (PARIS), 9, PAGE 3 THRU 10, (JANUARY-FEBRUARY 1967), IN FRENCH

A DISCUSSION OF THE OPERATIONS OF THE PEGASE REACTOR AND DESCRIPTION OF EXPERIMENTAL FACILITIES AND TESTING PROGRAMS. THE REACTOR IS FOR FUEL TESTING, WITH 8 LOOPS INSTALLED IN THE POOL NEXT TO THE REACTOR VESSEL.

*IRRADIATION TESTING + FRANCE + REACTOR, POOL TYPE + REACTOR, TEST

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17953

HANSEN RH + HUNT PS

MAXIMUM CORE COOLING DURING START-UP OF THE PEACH BOTTOM REACTOR

GENERAL ATOMIC, SAN DIEGO, CALIFORNIA. JOHN JAY HOPKINS LAB. FOR PURE AND APPLIED SCIENCE
GAMD-6745 +. 8 PAGES, FIGURES, TABLES, OCTOBER 7, 1965

COMPUTER CALCULATIONS USED G.A. STEADY-STATE HEAT-BALANCE CODE TO CALCULATE HELIUM FLOW RATE VS POWER LEVEL FOR MAXIMUM COOLING FOR PHYSICS TESTINGS, MAXIMUM ALLOWABLE MOISTURE CONTENT (14%) AT TURBINE OUTLET BEING THE PRINCIPLE PARAMETER. DESIRE WAS TO RUN WITH COOLEST POSSIBLE CORE AT PART LOAD FOR PHYSICS TESTS. BYPASS TO CONDENSER ALLOWED FULL FLOW UP TO 30% POWER, THEN MOISTURE CONSIDERATIONS REQUIRE REDUCED HELIUM FLOW TO OBTAIN HIGHER STEAM TEMPERATURE, WITH FULL HELIUM FLOW ABOVE 52% POWER.

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

*REACTOR STARTUP TESTING + COMPUTER PROGRAM + HEAT TRANSFER + PEACH BOTTOM 1 + REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED

17-17961

MONTHLY OPERATING REPORT NO. 41

PIQUA NUCLEAR POWER FACILITY, OHIO

COO-652-31 +. 15 PAGES, SEPTEMBER 1966, DOCKET NO. 115-2

THIS IS A PROGRESS REPORT WHOSE USUAL CONTENT IS DIVIDED BETWEEN HIGHLIGHTS, PLANT PERFORMANCE DATA, ADMINISTRATION, TESTING AND ANALYSIS, HEALTH AND SAFETY, MAINTENANCE AND MODIFICATION.

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

*MAINTENANCE AND REPAIR + *RADIATION SAFETY AND CONTROL + *TESTING + OPERATIONS REPORT, GENERAL + PIQUA + REACTOR, ORGANIC COOLED

17-17966

GEORGIA TECH SUPPLIES ADDITIONAL INFORMATION ON TRANSPORTATION OF U OF AKRON AGN-201 FUEL ELEMENTS
GEORGIA INSTITUTE OF TECHNOLOGY, ATLANTA, GEORGIA

1 PAGE, JANUARY 26, 1967, DOCKET NO. 50-276

FUEL DISKS WILL BE LOADED IN TWO CONTAINERS (ON LOAN FROM AEROJET-GENERAL AND DESCRIBED IN THEIR LICENSE, R-10), WITH LESS THAN 500 GM OF U-235 PER CONTAINER. CONTROL-ROD SLUGS WILL BE IN OTHER SEALED CONTAINERS.

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

*REACTOR DECOMMISSIONING EXPERIENCE + *TRANSPORTATION AND HANDLING + AGN (TRAINING REACTOR, AEROJET-GEN. NUCLEONICS) + CONTROL ROD + FUEL ELEMENT + REACTOR, TRAINING

17-17967

GEORGIA TECH SUPPLIES ADDITIONAL INFORMATION ON DISMANTLING OF U OF AKRON AGN-201

GEORGIA INSTITUTE OF TECHNOLOGY, ATLANTA, GEORGIA

13 PAGES, 5 FIGURES, JUNE 14, 1967, DOCKET NO. 50-276

GEORGIA TECH NOTIFIES AEC OF FINAL AGREEMENT WITH U OF AKRON ON SALE OF REACTOR AND GIVES MORE DETAIL ON PROPOSED PROCEDURE FOR DISMANTLING, TRANSPORTING, AND STORING. BIOGRAPHICAL DATA ON MEN TO CONDUCT OPERATION IS INCLUDED.

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

*TRANSPORTATION AND HANDLING + AGN (TRAINING REACTOR, AEROJET-GEN. NUCLEONICS) + FUEL ELEMENT + REACTOR DECOMMISSIONING EXPERIENCE + REACTOR, TRAINING

17-17968

GEORGIA TECH SUPPLIES ADDITIONAL INFORMATION OF EXISTING RADIATION LEVEL OF AGN-201

GEORGIA INSTITUTE OF TECHNOLOGY, ATLANTA, GEORGIA

4 PAGES, 1 FIGURE, JUNE 28, 1967, DOCKET NO. 50-276

RADIATION SOURCES IN REACTOR TO BE MOVED FROM AKRON ARE PRINCIPALLY THE STARTUP SOURCE AND THE FUEL. CALCULATED ACTIVITY PRESENT IN THE CORE IS 4.2 MICROCURIES. GEORGIA TECH ALSO REQUEST WAIVER OF REQUIREMENT OF CRITICALITY ALARM IN STORAGE FACILITY ON THE GROUNDS THAT THE FUEL WILL BE STORED IN TWO BIRD CAGES MORE THAN A CITY BLOCK APART AND AWAY FROM REFLECTOR AND FUEL CONTROL RODS.

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

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17968 *CONTINUED*

*FUEL STORAGE + *REACTOR DECOMMISSIONING EXPERIENCE + AGN (TRAINING REACTOR, AEROJET-GEN. NUCLEONICS) +
CRITICALITY SAFETY + REACTOR, TRAINING

17-17969

U OF AKRON APPLIES FOR PERMISSION TO DISMANTLE AGN-201 FOR TRANSFER TO GEORGIA TECH
THE UNIVERSITY OF AKRON, AKRON, OHIO
1 PAGE, JULY 11, 1967, DOCKET NO. 50-64

REACTOR COMPONENTS AND FUEL TO BE DISMANTLED BY GEORGIA TECH. PERSONNEL UNDER SUPERVISION OF
AN AKRON SENIOR OPERATOR, AND TRANSPORTED TO GEORGIA TECH. (PREVIOUS SUBMISSIONS ON FEB. 9
AND JUNE 23, 1967.)

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

*REACTOR DECOMMISSIONING EXPERIENCE + AGN (TRAINING REACTOR, AEROJET-GEN. NUCLEONICS) + REACTOR, TRAINING +
TECHNICAL SPECIFICATIONS

17-17970

ALSO IN CATEGORY 11
GETR CHANGE 6. LEAK RATE TEST PRESSURE INCREASE
GENERAL ATOMIC, DIVISION OF GENERAL DYNAMICS CORPORATION, SAN DIEGO, CALIFORNIA
2 PAGES, APRIL 19, 1967, DOCKET NO. 50-70

DRL ALLOWS AN INCREASE IN TEST PRESSURE FROM 2.5 PSIG. TO THE ACCIDENT PRESSURE OF 4.4. THIS
WILL ELIMINATE NEED TO EXTRAPOLATE RATE TO ACCIDENT CONDITIONS AND WILL GIVE A BETTER
INDICATION OF THE CONDITION OF THE FACILITY. TEST IS TO BE PERFORMED BEFORE ANY LEAK REPAIRS.

*CONTAINMENT, GENERAL + *TEST, LEAK RATE + EXTRAPOLATION FACTOR + GETR (GENERAL ELECTRIC TEST REACTOR) +
PRESSURE, INTERNAL + REACTOR, TEST + TECHNICAL SPECIFICATIONS

17-17971

G.A. ASKS PERMISSION TO DISMANTLE TUNGSTEN NUCLEAR ROCKET CRITICAL ASSEMBLY AND BUILD NEW CRITICAL ASSEMBLY.
GENERAL ATOMIC, DIVISION OF GENERAL DYNAMICS CORPORATION, SAN DIEGO, CALIFORNIA
6 PAGES, MAY 16, 1967, DOCKET NO. 50-234

G.A. REQUESTS PERMISSION TO (1) CHANGE NAME OF TUNGSTEN NUCLEAR-ROCKET CRITICAL FACILITY TO
EXPERIMENTAL CRITICAL FACILITY, (2) DISMANTLE EXISTING EXPERIMENT, AND (3) OBTAIN A
CONSTRUCTION PERMIT FOR A NEW ASSEMBLY, AS DESCRIBED IN GA-7472. G.A. ALSO ASKS FOR DRL
COMMENTS ON SUGGESTED PROCEDURES FOR MAKING TECH. SPECS. FLEXIBLE.

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

*NUCLEAR ROCKET + *REACTOR DECOMMISSIONING EXPERIENCE + CONSTRUCTION PERMIT PROCESS +
CRITICAL ASSEMBLY FACILITY + TECHNICAL SPECIFICATIONS

17-17972

AMENDMENT 1. DISMANTLING OF G.A. TNR CRITICAL FACILITY AND COMMENTS ON PROCEDURE FOR NEW CRITICAL
EXPERIMENTS
AEC, DIVISION OF REACTOR LICENSING
9 PAGES, JULY 19, 1967, DOCKET NO. 50-234, TUNGSTEN NUCLEAR ROCKET CRITICAL FACILITY

DRL ALLOWS DISMANTLING OF TUNGSTEN NUCLEAR-ROCKET CRITICAL ASSEMBLY (SHUT DOWN OCT. 66). G.A.
PLANS TO BUILD NEW ASSEMBLY IN THIS CELL. COMPONENTS TO BE REMOVED ARE ASSEMBLY TANK AND
PIPING. DUMP TANK WILL BE DRAINED BUT LEFT IN PLACE.

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

*REACTOR DECOMMISSIONING EXPERIENCE + CRITICAL ASSEMBLY FACILITY + NUCLEAR ROCKET + SAFETY EVALUATION +
TECHNICAL SPECIFICATIONS

17-17973

ALSO IN CATEGORIES 9 AND 15
BIG ROCK POINT PROPOSED USE OF ION CHAMBERS INSTEAD OF SCINTILLATION DETECTORS FOR OFF-GAS MONITORING
CONSUMERS POWER COMPANY, JACKSON, MICHIGAN
4 PAGES, SEPTEMBER 6, 1966, DOCKET NO. 50-155

CHANGE IN THE AIR-EJECTOR OFF-GAS MONITORING SYSTEM WOULD INCREASE RELIABILITY OF SYSTEM AND
ENSURE TECH. SPECS. ARE MET AS TO RANGE TO BE MONITORED (0.0001 TO 10 CURIES/SEC). FORMERLY
THIS RANGE COULD NOT BE MET. CONDENSATION IN SAMPLE VOLUME ALSO CAUSED ERRATIC OPERATION.
SYSTEM HAS BEEN OPERATING 11 MONTHS WITH EXCELLENT RELIABILITY AND SENSITIVITY, AND HAS BEEN
USED AT V8WR AND HUMBOLDT BAY.

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

*CHAMBER, ION + *MODIFICATION, SYSTEM OR EQUIPMENT + *REACTOR OFFGAS + BIG ROCK POINT +
INSTRUMENTATION, AIR SAMPLING + MONITOR, RADIATION, AIR + OPERATING EXPERIENCE + REACTOR, BOILING WATER +

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17973 *CONTINUED*
TECHNICAL SPECIFICATIONS

17-17974 ALSO IN CATEGORY 5
BIG ROCK POINT FURNISHES ADDITIONAL INFORMATION ON CHANGE 10, - USE OF VIBRATORY-COMPACTED UO2
CONSUMERS POWER COMPANY
2 PAGES, SEPTEMBER 8, 1966, DOCKET NO. 50-155

BIG ROCK POINT CITES RESULTS OF TESTS ON POWDER AND PELLET FUELS, CONTENDING THAT POWDER FUELS ARE NOT MORE SUSCEPTIBLE TO RUPTURE. A STUDY WAS MADE OF VARIOUS REACTIVITY ACCIDENTS, USING DATA ON POWDER-FUEL HEAT-TRANSFER CHARACTERISTICS, SHOWING THAT SINGLE-ROD-DROP ACCIDENT DOES NOT LEAD TO FUEL DAMAGE.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON

*ACCIDENT ANALYSIS + *FUEL, POWDER TYPE + ACCIDENT; REACTIVITY + BIG ROCK POINT + REACTOR, BOILING WATER + REFUELING + STRESS

17-17975 ALSO IN CATEGORY 7
GEORGIA TECH APPLIES FOR LICENSE TO DISMANTLE, POSSESS, SHIP, AND STORE THE U OF AKRON AGN 201
GEORGIA INSTITUTE OF TECHNOLOGY, ENGINEERING EXPERIMENT STATION, ATLANTA, GEORGIA
2 PAGES, JANUARY 18, 1967, DOCKET NO. 50-276

GEORGIA TECH. APPLIES FOR LICENSE TO TAKE POSSESSION OF THE REACTOR, AND SUPPLIES PROPOSED PLAN BY WHICH GEORGIA TECH. WILL DISMANTLE REACTOR UNDER AKRON SUPERVISION, THEN MOVE THE PARTS TO GEORGIA TECH. FOR STORAGE.

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

*REACTOR DECOMMISSIONING EXPERIENCE + *TRANSPORTATION AND HANDLING +
AGN (TRAINING REACTOR, AEROJET-GEN. NUCLEONICS) + CONTROL ROD + FUEL ELEMENT + REACTOR, TRAINING

17-17978
DRL ALLOWS GEORGIA TECH AND U OF AKRON TO DISMANTLE LATER AGN-201
AEC, DIVISION OF REACTOR LICENSING
7 PAGES, JULY 28, 1967, DOCKET NO. 50-64 AND 50-276

GEORGIA TECH. PEOPLE, UNDER SUPERVISION OF U OF AKRON SENIOR OPERATOR, WILL DISMANTLE REACTOR. CONTROL RODS (MOVABLE FUEL ELEMENTS) WILL BE REMOVED AND ENCASED FIRST. THE REACTOR HAS BEEN OPERATED INFREQUENTLY AND AT LESS THAN 0.1 WATT.

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

*REACTOR DECOMMISSIONING EXPERIENCE + ACTIVITY BUILDUP + AGN (TRAINING REACTOR, AEROJET-GEN. NUCLEONICS) + FUEL HANDLING + REACTOR, TRAINING + SAFETY EVALUATION

17-17982 ALSO IN CATEGORY 14
GE TRIGA MARK F PROPOSED CHANGE EXPERIMENTAL LIMITATIONS
GENERAL ATOMIC, DIVISION OF GENERAL DYNAMICS CORPORATION, SAN DIEGO, CALIFORNIA
10 PAGES, 3 FIGURES, 1 TABLE, MAY 4, 1967, DOCKET NO. 50-163

G.A. PROPOSED (1) MODIFICATION OF LIMITS ON FUEL-SAMPLE IRRADIATION USING THE IN-CORE FURNACE AND (2) A LIMIT ON OTHER FUELED EXPERIMENTS OF A MAXIMUM IODINE INVENTORY OF 700 CURIES (ARRIVED AT BY ASSUMING TOTAL ESCAPE TO THE REACTOR ROOM, AND SETTING A LIMIT ON THE DOSE RATE AT THE EXCLUSION BOUNDARY (2-HR EXPOSURE) AND LOW POPULATION BOUNDARY (INFINITE EXPOSURE) NOT TO EXCEED QUARTERLY DOSE TO WHOLE BODY AND THYROID RECOMMENDED BY THE ICRP). NO LIMIT IS PLACED ON STRONTIUM-90, AS THEY CONTEND THAT DUE TO ITS PHYSICAL PROPERTIES, THERE WOULD BE NO RELEASE.

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

*HAZARDS ANALYSIS + IODINE + IRRADIATION FACILITY + REACTOR, RESEARCH + STRONTIUM + TECHNICAL SPECIFICATIONS + TRIGA (TRAINING REACTOR, ISOTOPE, G.A.)

17-17983
G.A. TRIGA MARK F CHANGE 8. EXPERIMENTAL LIMITATIONS ON HEATED FUEL SAMPLE IRRADIATION
AEC, DIVISION OF REACTOR LICENSING
3 PAGES, JULY 20, 1967, DOCKET NO. 50-163, GENERAL ATOMIC

DRL ALLOWS MODIFICATION OF LIMITATIONS PERTAINING TO FUEL-SAMPLE IRRADIATION USING AN IN-CORE ELECTRIC FURNACE. PREVIOUS LIMIT ON SIZE OF SAMPLE AND TOTAL INTEGRATED POWER ARE REPLACED BY LIMIT ON NUMBER OF FISSIONS THAT MAY TAKE PLACE IN THE SAMPLE (2 X 10 TO 16TH FOR PREVIOUSLY UNIRRADIATED SAMPLES, 2 X 10 TO 15TH FOR HIGH-BURNUP SAMPLES).

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

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17983 *CONTINUED*

*FUEL BURNUP + *TESTING + FUEL ELEMENT + IRRADIATION FACILITY + REACTOR, RESEARCH + SAFETY EVALUATION + TECHNICAL SPECIFICATIONS + TRIGA (TRAINING REACTOR, ISOTOPES, G.A.)

17-17984

G.A. TRIGA MARK F PROPOSED MODIFICATION OF CHANGE 2. ELIMINATION OF FUEL DAMAGE TEST
GENERAL ATOMIC, DIVISION OF GENERAL DYNAMICS CORPORATION, SAN DIEGO, CALIFORNIA
11 PAGES, 2 FIGURES, 1 TABLE, APRIL 20, 1966, DOCKET NO. 50-163

G.A. CONTENDS MEASUREMENT OF 6 SPECIAL HIGHLY LOADED TRIGA ELEMENTS IS NEARLY IMPOSSIBLE
BECAUSE OF EXTERNAL THERMOCOUPLES. PROPOSED THAT TESTS BE ELIMINATED. ANALYSIS OF ACCIDENT
INVOLVING RUPTURE OF WATERLOGGED FUEL ELEMENTS SHOWS NO EXCESSIVE DOSE RATE. DAMAGE TO OTHER
CORE ELEMENTS IS CONSIDERED.

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

*FAILURE, FUEL ELEMENT WATERLOGGING + FISSION GAS RELEASE + FUEL ELEMENT BOWING + HAZARDS ANALYSIS +
REACTOR, RESEARCH + SAFETY REVIEW (OPERATIONS, EXPERIMENTS) + TECHNICAL SPECIFICATIONS +
TRIGA (TRAINING REACTOR, ISOTOPES, G.A.)

17-17985

G.A. TRIGA MARK F CHANGE 2. SUPPLEMENT 1 - FUEL ELEMENT DAMAGE TESTS
AEC, DIVISION OF REACTOR LICENSING
3 PAGES, JULY 12, 1966, DOCKET NO. 50-163, GENERAL ATOMIC

CHANGE 2 ALLOWED G.A. TO IRRADIATE 6 HIGHLY LOADED TRIGA ELEMENTS. A REQUIREMENT WAS THAT
DIMENSIONAL CHECKS BE MADE WHEN FUEL TEMPERATURE EXCEEDED 700 C. DIFFICULT TO MAKE DUE TO
EXTERNAL THERMOCOUPLES. DRL ALLOWS IRRADIATION WITHOUT THESE TESTS ON THE BASIS OF A SAFETY
EVALUATION OF FISSION-GAS RELEASE FROM ALL 6 SIMULTANEOUSLY, USING RESULTS OF G.A. TESTS AS A
GUIDELINE.

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

*FAILURE, FUEL ELEMENT + FISSION GAS RELEASE + FUEL ELEMENT BOWING + REACTOR, RESEARCH +
SAFETY EVALUATION + TECHNICAL SPECIFICATIONS + TRIGA (TRAINING REACTOR, ISOTOPES, G.A.)

17-17986

LICENSE AND TECHNICAL SPECIFICATIONS FOR G.A. ACCELERATOR PULSED FAST CRITICAL ASSEMBLY
AEC, DIVISION OF REACTOR LICENSING
25 PAGES, MARCH 8, 1967, DOCKET NO. 50-253

REACTOR CORE IS A BARE SPHERICAL METAL ASSEMBLY, (7.2-IN. OD) OF 93%-ENRICHED U WITH 10-MIL
EXTERNAL PLATING OF CADMIUM, WITH PROVISION FOR SPECIAL CORES (DEPLETED U REPLACING PART OF
THE STANDARD FUEL). MAXIMUM STEADY-STATE POWER AND AVERAGE POWER DURING PULSING IS 1 KW FOR
STANDARD CORE, 100 W FOR SPECIAL CORES. MAXIMUM EXCESS REACTIVITY IS 0.86 DURING PULSING.
CONTROL IS BY TWO CONTROL RODS, A REACTIVITY ROD, 4 INDEPENDENTLY MOVABLE FUEL ELEMENTS, AND
A SAFETY BLOCK.

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

ACCELERATOR + REACTOR, FAST BURST + REACTOR, RESEARCH + SAFETY EVALUATION + TECHNICAL SPECIFICATIONS

17-17987

GE-THERMAL CRITICAL ASSEMBLY AMENDMENT 10. AUTHORIZATION OF PARTIAL DISMANTLING
AEC, DIVISION OF REACTOR LICENSING
15 PAGES, AUGUST 8, 1967, DOCKET NO. 50-24

DRL AUTHORIZES GE TO PARTIALLY DISMANTLE AND POSSESS BUT NOT TO OPERATE THE THERMAL CRITICAL
ASSEMBLY, STORING THE FUEL AND DECONTAMINATING THE EQUIPMENT.

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

*REACTOR DECOMMISSIONING EXPERIENCE + CRITICAL ASSEMBLY FACILITY + SAFETY EVALUATION +
TECHNICAL SPECIFICATIONS

17-17988

GE REQUESTS AUTHORITY TO DEACTIVATE THE THERMAL CRITICAL ASSEMBLY
GENERAL ELECTRIC COMPANY, SAN JOSE, CALIFORNIA
7 PAGES, MAY 10, 1967, DOCKET NO. 50-24

GE REQUESTS AUTHORITY TO POSSESS BUT NOT TO OPERATE THE THERMAL CRITICAL ASSEMBLY, WHICH WAS
HOUSED IN THE SAME AREA AS THE NOW-DISMANTLED MIXED-SPECTRUM CRITICAL ASSEMBLY. BOTH
CRITICAL ASSEMBLY PROGRAMS HAVE BEEN COMPLETED.

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

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17988 . *CONTINUED*

*REACTOR DECOMMISSIONING EXPERIENCE + CRITICAL ASSEMBLY FACILITY + TECHNICAL SPECIFICATIONS

17-17989

GE THERMAL CRITICAL ASSEMBLY CHANGE 8 CONTROL OF EXCESS REACTIVITY BY LIMITING AMOUNT OF MODERATOR
AEC, DIVISION OF REACTOR LICENSING
6 PAGES, OCTOBER 4, 1966, DOCKET NO. 50-24

DRL ALLOWS CONTROL AMOUNT OF EXCESS REACTIVITY BY CONTROLLING THE AMOUNT OF MODERATOR
AVAILABLE FOR INTRODUCTION INTO THE REACTOR TANK (BY LIMITING AMOUNT OF WATER IN DUMP TANK).
THIS WILL ALLOW EXPERIMENTS WITH CORES OF DIFFERENT SHAPES AND SIZES.

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

*REACTIVITY, EXCESS + CRITICAL ASSEMBLY FACILITY + MODERATOR + SAFETY EVALUATION + TECHNICAL SPECIFICATIONS

17-17990

GE-THERMAL CRITICAL ASSEMBLY PROPOSED CHANGE 8. CONTROL OF EXCESS REACTIVITY BY LIMITING AMOUNT OF
MODERATOR
GENERAL ELECTRIC, SAN JOSE, CALIFORNIA
10 PAGES, AUGUST 24, 1966, DOCKET NO. 50-24

GE REQUESTS PERMISSION TO CONTROL MODERATOR HEIGHT BY LIMITING THE AMOUNT OF WATER IN THE DUMP
TANK. NORMAL OPERATION IS WITH THE REACTOR TANK FULL OF WATER. DETAILED PROCEDURES ARE
DESCRIBED FOR DETERMINING AND CONTROLLING THE AMOUNT OF MODERATOR TO BE USED. INCIDENT DUE
TO DROPPING OF OBJECTS INTO POOL IS DISCOUNTED BECAUSE SIZE OF OPENING AT THE TOP PRECLUDES
OBJECTS OF SUFFICIENT SIZE TO CAUSE A SIGNIFICANT EVENT. CONTROL RODS AND FUEL CHANNELS DAMP
WAVE ACTION THAT MIGHT BE CAUSED BY SEISMIC SHOCK.

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

*REACTIVITY, EXCESS + CRITICAL ASSEMBLY FACILITY + MODERATOR + TECHNICAL SPECIFICATIONS

17-17992

EVSFR CHANGE 17. MODIFICATION OF REQUIREMENTS ON REACTIVITY EFFECT, CONTROL RODS, THERMAL CONDITIONS AND
CORE COMPOSITION
AEC, DIVISION OF REACTOR LICENSING
14 PAGES, 1 TABLE, SEPTEMBER 12, 1966, DOCKET NO. 50-183

DRL ALLOWS INCREASE IN (1) MAXIMUM SPECIFIC POWER (33 TO 50 W/GRAM), (2) NON-MARK II FUEL
BUNDLES ALLOWED (9 TO 11), (3) MAXIMUM CLAD TEMPERATURES (1550 TO 1800 F FOR NORMAL
ELEMENTS), (4) CHANGES IN CONTROL-ROD-MATERIAL SPECIFICATION FROM SS TO ZIRCALOY FOR INNER
BANK OF RODS TO PERMIT REDUCTION OF MAXIMUM CONTROL-ROD WORTH FROM \$3.5 TO \$1.6, (5) PERMITS
USE OF BWR FUEL IN CORE, (6) RESTRICTIONS ON EFFECTS OF MODERATOR TEMPERATURE CHANGES TO
PERMIT A MAXIMUM MODERATOR TEMPERATURE COEFFICIENT OF 3×10^{-4} TO THE MINUS $4 \Delta K/K/DEGREE$
F RATHER THAN TOTAL REACTIVITY EFFECT OF 5%, (7) IN NORMAL ROD MOVEMENT PATTERNS, AND (8)
DELETION OF MINIMUM WORTH OF THE 4 AUXILIARY SCRAM RODS. DETAILED SAFETY EVALUATION.

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

*CLAD + *CONTROL ROD PROGRAM + *CONTROL ROD WORTH + *FUEL ELEMENT + *MODERATOR COEFFICIENT +
*TEMPERATURE REACTIVITY EFFECT + REACTOR, INTERNAL SUPERHEAT + SAFETY EVALUATION +
TECHNICAL SPECIFICATIONS + VESR (VALLECITOS EXP. SUPERHEAT REACTOR-ESADA)

17-17993

ACRS REPORT ON EVESR PROPOSED CHANGE 17
AEC, DIVISION OF REACTOR LICENSING
2 PAGES, AUGUST 16, 1966, DOCKET NO. 50-183

PROPOSED CHANGE 17 CONSISTS PRINCIPALLY OF 4 CHANGES. (1) INCREASE IN MAX. ALLOWABLE SPECIFIC
POWER FROM 33 TO 50 W/GRAM OF UO₂. (2) INCREASE IN ALLOWABLE NONSTANDARD FUEL, CHANGED
CRITERIA REGARDING AMOUNT PERMITTED AND USE OF FUEL. (3) INCREASE IN MAX. ALLOWABLE CLAD
TEMPERATURES. (4) CHANGES IN CONTROL-ROD MATERIALS, WORTH, AND WITHDRAWAL PATTERN. THE
COMMITTEE CONCLUDED THAT ITEM (4) AND PROPOSED PIPING MODIFICATIONS DECREASE PROBABILITY OF
SEVERE REACTIVITY ACCIDENT AND THAT ITEMS (1), (2), (3), CAUSE NO UNDUE HAZARD (ALTHOUGH
CHANCE OF FUEL FAILURE IS INCREASED) BECAUSE OF EVESR EXPERIENCE WITH BOTH INTENTIONAL AND
UNINTENTIONAL FUEL FAILURES.

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

*CLAD + *CONTROL ROD WORTH + *FAILURE, FUEL ELEMENT + *FUEL ELEMENT +
ACRS (ADVISORY COMMITTEE ON REACTOR SAFEGUARDS) + CONTROL ROD PROGRAM + REACTOR, INTERNAL SUPERHEAT +
TECHNICAL SPECIFICATIONS + VESR (VALLECITOS EXP. SUPERHEAT REACTOR-ESADA)

17-17994

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-17994 *CONTINUED*
EVFSR CHANGE 16. LIMITS ON POSITIVE MODERATOR REACTIVITY EFFECT
AEC, DIVISION OF REACTOR LICENSING
12 PAGES, 1 TABLE, JULY 12, 1966, DOCKET NO. 50-183

DRL ALLOWS AN INCREASE IN MAXIMUM MODERATOR REACTIVITY EFFECT FROM 4% TO 5% DELTA K/K AND PROHIBITS OPERATION IF TEMPERATURE IS LOW ENOUGH SO THAT THE TEMPERATURE COEFFICIENT IS POSITIVE. THIS ALLOWS GE TO CONTINUE OPERATION WITH REDUCED CORE REACTIVITY DUE TO CORE BURNUP AND INSERTION OF EXPERIMENTAL FUEL.

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

*REACTIVITY EFFECT + FUEL BURNUP + MODERATOR COEFFICIENT + REACTOR, INTERNAL SUPERHEAT + TECHNICAL SPECIFICATIONS

17-17995
GE NUCLEAR TEST REACTOR CHANGE 5. CHANGES IN ADMINISTRATION, AND OPERATION AFTER ABNORMAL OCCURENCE
AEC, DIVISION OF REACTOR LICENSING
5 PAGES, MAY 10, 1967, DOCKET NO. 50-73

DRL ALLOWS CHANGES IN TECH. SPECS. TO REFLECT NEW ADMINISTRATIVE ORGANIZATION AND CHANGE OF SITE NAME TO VALLECITOS NUCLEAR CENTER, AND PERMITS OPERATION FOLLOWING (ANY FUTURE) ABNORMAL OCCURENCE, PROVIDED THAT REACTOR SAFETY IS NOT INVOLVED, TO DETERMINE EXTENT OF ABNORMALITY.

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

*ADMINISTRATIVE CONTROLS AND PRACTICES + GE-NTR (GE NUCLEAR TEST REACTOR) + INCIDENT, ACTUAL, GENERAL + REACTIVITY EFFECT, ANOMALOUS + REACTOR, WATER + TECHNICAL SPECIFICATIONS

17-17997
GE SUPPLIES REVISED PAGES TO SAFEGUARDS REPORT AND TECHNICAL SPECIFICATIONS FOR THE PLUTONIUM SUBCRITICAL PROGRAM
GENERAL ELECTRIC CO., SAN JOSE, CALIFORNIA
28 PAGES, 2 FIGURES, 2 TABLES, 1 REFERENCE, JANUARY 21, 1966, DOCKET NO. 50-73

G.E. PROPOSES MISCELLANEOUS CHANGES IN TECH. SPECS. AND HAZARDS REPORT OF NUCLEAR TEST REACTOR INCLUDING (1) INSTALLATION OF VESSEL EMERGENCY DRAIN SYSTEM IN ADDITION TO GRAVITY DRAIN SYSTEM, (2) INITIAL FUEL-LOADING PROCEDURE, (3) ALL KEY STRUCTURAL PARTS ARE DESIGNED TO WITHSTAND EARTHQUAKE LOADS OF 0.3 G HORIZONTALLY AND 0.15 G VERTICALLY, (4) ANALYSIS OF MCA SHOWS DOSE RATES TO BE ACCEPTABLE.

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

*ACCIDENT, MAXIMUM CREDIBLE (MCA) + *EARTHQUAKE ENGINEERING + *EMERGENCY SYSTEM + CRITICAL ASSEMBLY FACILITY + GE-NTR (GE NUCLEAR TEST REACTOR) + PLUTONIUM + SAFETY ANALYSIS REPORT, GENERAL + TECHNICAL SPECIFICATIONS

17-17999 ALSO IN CATEGORIES 11 AND 5
PROPOSAL CONCERNING BONUS EMERGENCY CORE COOLING ANALYSIS
PUERTO RICO WATER RESOURCES AUTHORITY
13 PAGES, AUGUST 11, 1967, DOCKET NO. 115-4

AEC PUERTO RICO OFFICE TRANSMITS, TO DRL, GE PROPOSAL TO CONDUCT STUDY, ALONG WITH BONUS ASSESSMENT OF THE PROPOSAL. (GE) SCOPE OF WORK IS TO COVER ACCIDENTS DUE TO EXTERNAL PIPE BREAKAGE. G.E. COMPUTER CODES WILL BE USED TO DETERMINE FUEL TEMPERATURE, CONTAINMENT VESSEL PRESSURE, CORE INTEGRITY, AND METAL-WATER REACTION DURING BLOWDOWN. EFFECT OF CORE MELTDOWN WILL BE STUDIED AND REQUIREMENTS TO PREVENT MELTDOWN STUDIED.

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

*BLOWDOWN + *CORE MELTDOWN + *EMERGENCY COOLING CONSIDERATIONS + *HEAT TRANSFER ANALYSIS + *PRESSURE, INTERNAL + ACCIDENT, LOSS OF COOLANT + BONUS (BOILING NUCLEAR SUPERHEAT PROJECT) + COMPUTER PROGRAM + CONTAINMENT, LOW PRESSURE + REACTOR, BOILING WATER + REACTOR, INTERNAL SUPERHEAT

17-18001
TERMINATION OF NORTH CAROLINA STATE COLLEGE FACILITY LICENSE
AEC, DIVISION OF REACTOR LICENSING
4 PAGES, SEPTEMBER 7, 1966, DOCKET NO. 50-8

DRL TERMINATED LICENSE FOR NCSCR-4, WHICH HAS BEEN PARTIALLY MOVED TO MISSISSIPPI STATE U.

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

*SAFETY EVALUATION + REACTOR DECOMMISSIONING EXPERIENCE + REACTOR, HOMOGENEOUS + REACTOR, TRAINING

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-18003
VBWR AMENDMENT 53 - AUTHORITY TO DISMANTLE
AEC, DIVISION OF REACTOR LICENSING
3 PAGES, JULY 25, 1966, DOCKET NO. 50-18, VALLECITOS BOILING WATER REACTOR

DRL ALLOWS GE TO PROCEED WITH DISMANTLING THE FACILITY, DEACTIVATED IN 1963 AND NOW PARTIALLY DISMANTLED.

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

*REACTOR DECOMMISSIONING EXPERIENCE + REACTOR, BOILING WATER + SAFETY EVALUATION + TECHNICAL SPECIFICATIONS + VBWR (VALLECITOS BOILING WATER REACTOR)

17-18015
SUNDERMAN IO + BAILEW GL + BUNTAIN RE + COOPER LJ + DIVIS AJ + MAUDERLY MC + SOHL LH + WILBUR RE
HALLAM NUCLEAR POWER FACILITY MONTHLY OPERATING REPORT NO. 46
CONSUMERS PUBLIC POWER DISTRICT, HALLAM, NEBR.
TID-23259 +. 12 PAGES, MAY 1966

REPORTS IN THIS PROGRESS SERIES USUALLY CONTAIN DATA ON (III) CORE PERFORMANCE, (IV) RESEARCH AND DEVELOPMENT PROGRAM, (V) CHEMISTRY, (VI) RADIATION PROTECTION, (VII) PLANT MAINTENANCE AND OUTAGE REPORTS.

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

*OPERATIONS SUMMARY FOR AEC + BIG ROCK POINT + COOLANT CHEMISTRY + MAINTENANCE AND REPAIR + RADIATION SAFETY AND CONTROL + REACTOR, BOILING WATER + RESEARCH AND DEVELOPMENT PROGRAM

17-18021
TAYLOR EG
CURRICULUM OUTLINE FOR PHASE I (WREC) OF THE WESTINGHOUSE REACTOR OPERATOR TRAINING PROGRAM
WESTINGHOUSE ELECTRIC CORPORATION, ATOMIC POWER DIVISION, REACTOR EVALUATION CENTER, MADISON, PA.
WCAP-2731 +. 31 PAGES, 2 FIGURES, 1 TABLE, MAY 1967

PHASE I IS GIVEN TO PROVIDE NUCLEAR POWER PLANT OPERATING PERSONNEL WITH TRAINING IN BASIC NUCLEAR AND REACTOR THEORY, SPECIALIZED TECHNICAL AND PRACTICAL KNOWLEDGE REQUIRED FOR REACTOR OPERATIONS, AND ACTUAL OPERATING EXPERIENCE WITH A REACTOR. THIS BASIC PROGRAM SUPPLIES THE TRAINEES WITH THE NECESSARY BACKGROUND TO ENABLE THEM TO OBTAIN MAXIMUM BENEFIT FROM THE REMAINDER OF THE PROGRAM WHICH PROVIDES ACTUAL POWER REACTOR OPERATING EXPERIENCE AND LEADS TO AN AEC OPERATOR LICENSE EXAMINATION AT THEIR OWN FACILITY. THIS MANUAL DESCRIBES IN DETAIL ONLY PHASE I, GIVING A COMPLETE COURSE DESCRIPTION, SCHEDULE, LESSON PLANS, AND REACTOR DEMONSTRATIONS.

AVAILABILITY - WESTINGHOUSE ATOMIC POWER DIVISION LIBRARY, BOX 355, PITTSBURGH, PA.

*STAFFING, TRAINING, QUALIFICATION + CRITICAL ASSEMBLY FACILITY + PROCEDURES AND MANUALS + REACTOR, PRESSURIZED WATER

17-18032
FERMI FLOW RESTRICTION FOUND
2 PAGES, NUCLEONICS WEEK 8(38), (SEPTEMBER 21, 1967)

A BORESCOPE INSERTED THRU THE GRID PLATE INTO THE DRAINED REACTOR VESSEL SHOWED A FLAT OBJECT (8 X 4 IN.) LYING ON THE MELTDOWN PLATE. IT WAS NOT RECOGNIZED AS A REACTOR COMPONENT AND POSSIBLY LEFT BY MISTAKE DURING CONSTRUCTION. THE OBJECT MUST BE COMPRESSED OR CUT UP TO PASS THRU THE 1.625-IN.-DIAM GRID HOLES, OR MUST BE TAKEN THROUGH A TORTUROUS 50-FT COOLANT INLET PATH. A FULL-SCALE MODEL IS BEING BUILT TO AID IN RETRIEVAL.

*FLOW BLOCKAGE + *FUEL MELTDOWN + *REMOTE MANIPULATING AND VIEWING + FAILURE, INSTALLATION ERROR + FERMI + INCIDENT, ACTUAL, GENERAL + REACTOR, LIQUID METAL COOLED

17-18040 ALSO IN CATEGORY 9
G.A. NOTIFIES DRL OF DIFFERENCE IN PREDICTED AND MEASURED WORTH OF SAFETY BLOCK
GENERAL ATOMIC, DIVISION OF GENERAL DYNAMICS CORPORATION, SAN DIEGO, CALIFORNIA
2 PAGES, JULY 17, 1967, DOCKET NO. 50-253

G.A. FOUND, BY CONTROL ROD COMPENSATION AND REACTIVITY-METER-CALIBRATION TESTS, THE WORTH OF THE CAM DRIVEN PORTION OF THE SAFETY BLOCK TO BE \$4.70 VS \$7.00 GIVEN IN THE TECH. SPECS. TECH.-SPEC.-CHANGE REQUEST WILL BE MADE AFTER FURTHER TESTS. \$7.00 FIGURE WAS BASED ON AN EXTRAPOLATION FROM LRL INFORMATION, WHICH CONCERNED A LONGER CAM TRAVEL, INDICATING A NONLINEAR RELATIONSHIP. TOTAL SCRAM AVAILABLE IN SAFETY BLOCK IS STILL \$21. CONTROL-ROD TOTAL REACTIVITY WAS MEASURED AT \$4.79, IN GOOD AGREEMENT WITH PREDICTION.

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-18040 *CONTINUED*
AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*COMPARISON, THEORY, AND EXPERIENCE + *EXTRAPOLATION FACTOR + *SHUTDOWN SYSTEM, SECONDARY +
CONTROL ROD WORTH + OPERATING EXPERIENCE + REACTIVITY, EXCESS + REACTOR, FAST BURST +
TECHNICAL SPECIFICATIONS

17-18057 ALSO IN CATEGORY 18
SKOVHOLT DJ
DRL ADVISES GENERAL ATOMIC ON PROPER FORM OF SAFETY ANALYSIS REPORTS FOR RESEARCH REACTORS
GENERAL DYNAMICS, GENERAL ATOMIC DIVISION
1 PAGE, LETTER, MARCH 9, 1967

DRL SUGGESTS THAT GENERAL ATOMIC NOTIFY ALL NEW TRIGA CUSTOMERS THAT ALL NEW RESEARCH-REACTOR
APPLICATIONS WILL BE EXPECTED TO CONFORM TO THE GUIDANCE PROVIDED BY A PROPOSED AMENDMENT TO
10CFR50 RELATING TO THE PROPER FORM FOR SAFETY ANALYSIS REPORTS AND TECHNICAL SPECIFICATIONS,
ENTITLED, GUIDE FOR THE ORGANIZATION AND CONTENTS OF SAFETY ANALYSIS REPORT.

*REGULATION, AEC + REACTOR, RESEARCH + SAFETY ANALYSIS REPORT, GENERAL + TECHNICAL SPECIFICATIONS

17-18134 ALSO IN CATEGORY 18
NUCLEAR REACTORS BUILT, BEING BUILT, OR PLANNED IN THE UNITED STATES AS OF JUNE 30, 1967
UNITED STATES ATOMIC ENERGY COMMISSION, DIVISION OF TECHNICAL INFORMATION, WASHINGTON, D.C.
TID-8200(16TH REV.) +. 29 PAGES, JUNE 30, 1967

SEMIANNUAL LIST INCLUDES REACTOR NAME, LOCATION, OWNER, TYPE, PRINCIPAL NUCLEAR CONTRACTOR,
POWER (ELECTRICAL AND THERMAL), AND STARTUP DATE OF 310 OPERABLE, 77 BEING BUILT, 63 PLANNED
AND 83 SHUTDOWN REACTORS.

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

CRITICAL ASSEMBLY FACILITY + REACTOR, GENERAL + REACTOR, MARITIME + REACTOR, MILITARY + REACTOR, POWER +
REACTOR, RESEARCH + REACTOR, SAFETY RESEARCH + REACTOR, TEST + REACTOR, TRAINING

17-18138 ALSO IN CATEGORIES 12 AND 9
INDIAN POINT PROPOSED CHANGE IN BORON INJECTION SYSTEM TEST INTERVAL
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC., NEW YORK
2 PAGES, JULY 10, 1967, DOCKET NO. 50-3, INDIAN POINT I

REQUESTS INCREASE IN TEST INTERVAL FROM MONTHLY TO SEMIANNUALLY ON THE BASIS OF OPERATING
EXPERIENCE AND THE INHERENT RELIABILITY OF THE BORON SYSTEM. NEAR END OF CORE LIFE, THE
INCREASED BORON CONCENTRATION DUE TO TESTING HAS AN ADVERSE EFFECT ON REACTOR OPERATIONS, AS
SEVERAL HUNDRED PPM OF BORON ARE ADDED TO THE COOLANT.

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

*OPERATING EXPERIENCE + *SHUTDOWN SYSTEM, SECONDARY + *TEST INTERVAL + *TEST, SYSTEM OPERABILITY + BORON +
INDIAN POINT I + POISON, SOLUBLE + REACTOR, PRESSURIZED WATER + TECHNICAL SPECIFICATIONS

17-18139
INDIAN POINT CHANGE 29. DELAY OF BORON INJECTION SYSTEM TEST
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC., NEW YORK
1 PAGE, JULY 28, 1967, DOCKET NO. 50-3, INDIAN POINT I

DRL ALLOWS DELAY OF 120 DAYS (AT THIS STAGE OF CORE LIFE, BORON SYSTEM IS NOT NEEDED TO
MAINTAIN SUBCRITICALITY WITH A COLD SYSTEM) WHILE THEY CONSIDER AN APPLICATION FOR A
SEMIANNUAL TEST INSTEAD OF THE PRESENT MONTHLY TESTS.

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

*SHUTDOWN SYSTEM, SECONDARY + *TEST INTERVAL + *TEST, SYSTEM OPERABILITY + INDIAN POINT I +
POISON, SOLUBLE + REACTOR, PRESSURIZED WATER + TECHNICAL SPECIFICATIONS

17-18140 ALSO IN CATEGORIES 11 AND 15
INDIAN POINT CHANGE 30. PERSONNEL ENTRANCE INTO CONTAINMENT DURING FULL POWER OPERATION
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC., NEW YORK
4 PAGES, AUGUST 28, 1967, DOCKET NO. 50-3, INDIAN POINT I

DRL ALLOWS TRAINED PEOPLE TO ENTER CONTAINMENT DURING FULL-POWER OPERATION TO COLLECT DATA ON
THE PRESENCE OF LOW-LEVEL FISSION-PRODUCT ACTIVITY (PARTICULARLY IODINE). NO MORE THAN 20
SEPARATE ENTRIES MAY BE MADE IN GROUPS OF 6. CHANGE 10 HAD ALLOWED ENTRANCE FOR A SIMILAR
PURPOSE IN JUNE 65, AND SAME PRECAUTIONS WILL BE FOLLOWED. OPERATOR CLAIMS AIR-LOCK CAN BE
REACHED WITHIN 50 SEC FROM ANY PORTION OF THE CONTAINMENT.

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-18140 *CONTINUED*

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

*CONTAINMENT, GENERAL + *FISSION PRODUCT RELEASE, GENERAL + *SURVEY, RADIATION, GENERAL + INDIAN POINT 1 + REACTOR, PRESSURIZED WATER + SAFETY EVALUATION + TECHNICAL SPECIFICATIONS

17-18141

NOTICE OF PROPOSED ISSUANCE OF CONSTRUCTION PERMIT FOR THE PROOF-TEST FACILITY
UNITED NUCLEAR CORPORATION RESEARCH AND ENGINEERING CENTER, ELMSFORD, NEW YORK
10 PAGES, JULY 17, 1967, DOCKET NO. 50-290

THE PROOF-TEST FACILITY (A ZERO-POWER CRITICAL ASSEMBLY) IS DESIGNED FOR PHYSICS TESTS ON FUEL FOR CENTRAL-STATION REACTORS AND IS LOCATED IN THE SAME ROOM AS THE PAWLING LATTICE-TEST RIG. THE ASSEMBLY WILL HAVE LARGE NEGATIVE DOPPLER, TEMPERATURE, AND VOID COEFFICIENTS. MAXIMUM EXCESS REACTIVITY IS 1.1%. CONTROLLED BY VARYING AMOUNT OF MODERATOR (WATER) ABOVE THE CORE. IN CASE ALL SAFETY SYSTEMS FAIL AND THE OPERATOR FILLED THE TANK COMPLETELY, THE EXCURSION WOULD BE TERMINATED BY THE TEMPERATURE RISE SINCE FILL TAKES MORE THAN 100 SEC.

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

*ACCIDENT, REACTIVITY + CRITICAL ASSEMBLY FACILITY + REACTIVITY, EXCESS + SAFETY EVALUATION + TEMPERATURE COEFFICIENT

17-18143

UCC-ND PROPOSED CHANGE 6. NUCLEAR SAFEGUARDS COMMITTEE MEETINGS
UNION CARBIDE CORPORATION, TUXEDO, NEW YORK
1 PAGE, AUGUST 16, 1966, DOCKET NO. 50-54

STERLING FOREST REQUESTS THAT COMMITTEE BE REQUIRED TO MEET EVERY 6 MONTHS INSTEAD OF EVERY 3.

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

*ADMINISTRATIVE CONTROLS AND PRACTICES + *SAFETY REVIEW (OPERATIONS, EXPERIMENTS) + TECHNICAL SPECIFICATIONS

17-18144

UCC-ND CHANGE 6. INCREASE IN SPECIAL NUCLEAR MATERIALS INVENTORY
DIVISION OF REACTOR LICENSING, WASHINGTON, D. C.
3 PAGES, APRIL 8, 1967, DOCKET NO. 50-54

DRL ALLOWS STERLING FOREST TO INCREASE THE AMOUNT OF SOURCE AND SPECIAL NUCLEAR MATERIAL ALLOWED IN THE CORE UNDER IRRADIATION FROM 100 GM (SOURCE) OR 50 GM (SPECIAL) TO 200 AND 50 SIMULTANEOUSLY. REACTIVITY-WORTH LIMITS OF EXPERIMENTS REMAIN AT 0.5% DELTA K/K (SINGLE EXPERIMENT) AND 2% DELTA K/K TOTAL.

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

IRRADIATION TESTING + REACTOR, POOL TYPE + REACTOR, RESEARCH + SAFETY EVALUATION + TECHNICAL SPECIFICATIONS

17-18145

CVTR CHANGE 10. DEFERMENT OF INTEGRAL CONTAINMENT LEAK RATE TEST
DIVISION OF REACTOR LICENSING, WASHINGTON, D. C.
1 PAGE, AUGUST 3, 1966, DOCKET NO. 50-144, CAROLINA VIRGINIA TEST REACTOR

DRL EXTENDS DATE FOR TEST FROM AUGUST 31, 1966, TO JAN 1, 1967, SO TEST CAN BE PERFORMED DURING A SCHEDULED SHUTDOWN. PERIODIC TESTS MADE ON CERTAIN CONTAINMENT PENETRATIONS SHOWED NO SIGNIFICANT INCREASE IN LEAKAGE.

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

*TEST INTERVAL + *TEST, LEAK RATE + CVTR (CAROLINAS VIRGINIA TUBE REACTOR) + REACTOR, PRESSURIZED WATER + TECHNICAL SPECIFICATIONS

17-18146

CVTR PROPOSED CHANGE 11. NORMAL OPERATING LEVEL OF D2O IN THE PRESSURIZER
CAROLINAS VIRGINIA NUCLEAR POWER ASSOCIATES, INC., PARR SOUTH CAROLINA
6 PAGES, SEPTEMBER 6, 1966, DOCKET NO. 50-144, CHANGE 11 TO APPENDIX A OF LICENSE

CVTR REQUESTS INCREASE IN PRESSURIZER COOLANT VOLUME FROM 40 TO 46 CU. FT TO GIVE A GREATER MARGIN OF SAFETY DURING SUDDEN SHRINKAGE OF COOLANT. THIS WILL CAUSE A SLIGHT INCREASE IN TIME FOR INITIATION OF EMERGENCY INJECTION TRIP BUT WOULD NOT AFFECT THE PRIMARY (SURGE-LINE DIFFERENTIAL PRESSURE) AND THE OTHER SECONDARY (LOW PRESSURIZER PRESSURE) SAFETY TRIPS. INCREASED CONTAINMENT ENERGY IS LESS THAN 0.1% IN A LOSS-OF-COOLANT ACCIDENT.

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

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-18146 *CONTINUED*

*EXPANSION + *PRESSURIZER + *REACTIVITY EFFECT + CVTR (CAROLINAS VIRGINIA TUBE REACTOR) + REACTOR, PRESSURIZED WATER + TECHNICAL SPECIFICATIONS

17-18147

CVTR PROPOSED CHANGE 12. ORGANIZATIONAL CHANGES

CAROLINAS VIRGINIA NUCLEAR POWER ASSOCIATES, INC., PARR, SOUTH CAROLINA

8 PAGES, OCTOBER 4, 1966, DOCKET NO. 50-144, PROPOSED CHANGE 12 TO APPENDIX A OF LICENSE

CVTR REQUESTS PERMISSION TO COMBINE INSTRUMENT-ELECTRICAL AND MECHANICAL MAINTENANCE SECTIONS WITH THE OPERATING SECTION TO FORM A PLANT OPERATIONS GROUP FOR MORE EFFICIENCY.

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

*STAFFING, TRAINING, QUALIFICATION + CVTR (CAROLINAS VIRGINIA TUBE REACTOR) + REACTOR, PRESSURIZED WATER + TECHNICAL SPECIFICATIONS

17-18148

ALSO IN CATEGORY 1

CVTR CHANGE 13. MODIFICATION OF SPENT FUEL BASIN FOR STORAGE OF FAILED ELEMENTS

DIVISION OF REACTOR LICENSING, AEC

4 PAGES, FEBRUARY 17, 1967, DOCKET NO. 50-144, CHANGE 13 TO TECHNICAL SPECIFICATIONS

DRL ALLOWS INCREASE FROM 4 TO 10 IN THE NUMBER OF FAILED FUEL ELEMENTS STORED IN THE SPENT-FUEL BASIN. PRESENT SHIELDING REQUIREMENTS AND MOVEMENT LIMITATIONS REMAIN UNCHANGED. CENTER-TO-CENTER DISTANCE INCREASED FROM 7 TO 10 INCHES.

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

*FAILURE, FUEL ELEMENT + *FUEL STORAGE + *MODIFICATION, SYSTEM OR EQUIPMENT + CVTR (CAROLINAS VIRGINIA TUBE REACTOR) + REACTOR, PRESSURIZED WATER + SAFETY EVALUATION + TECHNICAL SPECIFICATIONS

17-18149

CVTR PROPOSED CHANGE 13. MODIFICATION OF SPENT FUEL BASIN

CAROLINAS VIRGINIA NUCLEAR POWER ASSOCIATES, INC., PARR, SOUTH CAROLINA

9 PAGES, 1 FIGURE, FEBRUARY 13, 1967, DOCKET NO. 50-144, PROPOSED CHANGE 13 TO APPENDIX A OF LICENSE

CVTR REQUESTS PERMISSION TO INSTALL AN ADDITIONAL RACK IN BASIN TO ACCOMMODATE 6 ADDITIONAL CANNED FAILED FUEL ASSEMBLIES. SAFETY EVALUATION BY WESTINGHOUSE INCLUDED.

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

*FAILURE, FUEL ELEMENT + *FUEL STORAGE + *MODIFICATION, SYSTEM OR EQUIPMENT + CRITICALITY SAFETY + CVTR (CAROLINAS VIRGINIA TUBE REACTOR) + REACTOR, PRESSURIZED WATER + SAFETY REVIEW (OPERATIONS, EXPERIMENTS) + TECHNICAL SPECIFICATIONS

17-18150

DRL EXEMPTS CVTR FROM SOME 10CFR20 PROVISIONS RELATING TO ENTRY TO HIGH RADIATION AREAS

DIVISION OF REACTOR LICENSING, AEC

1 PAGE, MARCH 8, 1967, DOCKET NO. 50-144, CAROLINAS VIRGINIA TUBE REACTOR

DRL ALLOWS CVTR EXEMPTION ON THE CONDITION THAT- (1) NO ONE IS PERMITTED IN HIGH RADIATION AREA WITHOUT CONSENT OF SUPERVISOR IN CHARGE, AND (2) PERSONS ENTERING HIGH RADIATION AREA WILL CARRY PERSONNEL DOSE MONITORING DEVICES.

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

*RADIATION SAFETY AND CONTROL + CVTR (CAROLINAS VIRGINIA TUBE REACTOR) + MONITOR, RADIATION, PERSONNEL + REACTOR, HEAVY WATER + REACTOR, PRESSURIZED WATER

17-18151

CVTR PROPOSED CHANGE 14. REMOVAL AND STORAGE OF FUEL RODS FROM FUEL ELEMENTS

CAROLINA VIRGINIA NUCLEAR POWER ASSOCIATES, INC., PARR, SOUTH CAROLINA

9 PAGES, JULY 5, 1967, DOCKET NO. 50-144, CHANGE 14 TO APPENDIX A OF LICENSE

CVTR REQUEST PERMISSION TO REMOVE AND STORE FUEL RODS FROM UNUSED FUEL ELEMENTS BECAUSE FACILITY IS TO BE DISMANTLED. RODS WILL BE STORED IN THEIR SHIPPING CONTAINERS.

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

*FUEL STORAGE + CVTR (CAROLINAS VIRGINIA TUBE REACTOR) + REACTOR DECOMMISSIONING EXPERIENCE + REACTOR, PRESSURIZED WATER + TECHNICAL SPECIFICATIONS

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-18152 ALSO IN CATEGORY 1
CVTR CHANGE 14. REMOVAL AND STORAGE OF FUEL RODS FROM FUEL ELEMENTS
DIVISION OF REACTOR LICENSING, AEC
7 PAGES, JULY 19, 1967, DOCKET NO. 50-144, CAROLINAS VIRGINIA TUBE REACTOR

DRL ALLOWS CVTR TO DISASSEMBLE UNUSED FUEL ELEMENTS AND STORE THE RODS IN SHIPPING CONTAINERS.
PRECAUTION DURING DISASSEMBLY GIVEN.

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

*FUEL STORAGE + CVTR (CAROLINAS VIRGINIA TUBE REACTOR) + FUEL ELEMENT +
REACTOR DECOMMISSIONING EXPERIENCE + REACTOR, PRESSURIZED WATER + SAFETY EVALUATION +
TECHNICAL SPECIFICATIONS

17-18153
HUMBOLDT BAY CHANGE 23. DEFERMENT OF FUNCTIONAL SYSTEM-TESTS
DIVISION OF REACTOR LICENSING, AEC
2 PAGES, SEPTEMBER 20, 1966, DOCKET NO. 50-133.

DRL ALLOWS DEFERMENT OF 9 TESTS (INCLUDING CORE SPRAY SYSTEM, SAFETY VALVES, SCRAM, DRY WELL
AND ISOLATION VALVE CLOSURES, AND CONTAINMENT INSPECTION). REQUIRED BEFORE DEC. 1, 1966,
UNTIL SCHEDULED REFUELING OUTAGE (LATE NOVEMBER 1966), BUT NO LATER THAN DECEMBER 31, 1966.

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

*TEST INTERVAL + HUMBOLDT BAY + REACTOR, BOILING WATER + TECHNICAL SPECIFICATIONS +
TEST, SYSTEM OPERABILITY

17-18157 ALSO IN CATEGORY 9
UCC-ND PROPOSED CHANGE 5. HIGH FLUX REVERSE SET POINT INCREASE
UNION CARBIDE CORPORATION, TUXEDO, NEW YORK
6 PAGES, 1 FIGURE, AUGUST 17, 1966, DOCKET 50-54

UNION CARBIDE REQUESTS CHANGE IN HIGH-FLUX-REVERSE SET-POINT OF LOG-N FROM 115 TO 125% FULL
POWER. FULL POWER IS 5 MW. CHAMBER GIVES AN APPARENT 15% INCREASE IN POWER DUE TO XENON
GROWTH. ANALYSIS AT A FLOW RATE OF 2100 GPM (NORMAL FLOW IS 2200) SHOWS NO LOCALIZED BOILING
AT 125% FULL POWER. A TRIP ON THE CORE TEMPERATURE DIFFERENTIAL ACTUATES AN AUDIBLE AND
VISUAL ALARM WHEN DROP EXCEEDS 16 F, WHICH WOULD BE CAUSED BY EITHER 102% POWER OR 2155-GPM
COOLANT FLOW.

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

*INSTRUMENTATION, POWER RANGE + *INSTRUMENTATION, SWITCH + BURNOUT HEAT FLUX + HOT SPOT +
INSTRUMENTATION, ABNORMAL INDICATION + INSTRUMENTATION, TEMPERATURE + REACTOR, POOL TYPE +
REACTOR, RESEARCH + TECHNICAL SPECIFICATIONS + XENON

17-18159 ALSO IN CATEGORY 9
HADDAM NECK PROPOSED CHANGE 1. NO REDUCTION IN HIGH-STEAM-FLOW TRIP SETPOINT AT LOW POWER
CONNECTICUT YANKEE ATOMIC POWER COMPANY, ROSTON, MASS.
2 PAGES, JULY 31, 1967, DOCKET NO. 50-213, PROPOSED CHANGE TO TECHNICAL SPECIFICATION

HADDAM NECK REQUESTS ELIMINATION OF REQUIREMENT THAT HIGH-STEAM-FLOW TRIP BE LOWERED FROM 140%
NORMAL FULL POWER FLOW TO 65% AT POWER LEVELS BELOW 15% FULL POWER. THE TRIP PROVIDES
PROTECTION AGAINST LARGE STEAM-LINE RUPTURE. CALCULATIONS SHOW A MINIMUM 200% STEAM FLOW
EVEN AT ZERO POWER.

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

*INSTRUMENTATION, FLOW + ACCIDENT, STEAM LINE RUPTURE + HADDAM NECK + REACTOR, PRESSURIZED WATER +
TECHNICAL SPECIFICATIONS

17-18160 ALSO IN CATEGORY 9
HADDAM NECK CHANGE 2. BYPASSING OF THE CERTAIN TRIPS BELOW 10% FULL POWER
DIVISION OF REACTOR LICENSING, AEC
2 PAGES, AUGUST 28, 1967, DOCKET 50-213, CHANGE TO TECHNICAL SPECIFICATIONS

DRL ALLOWS BYPASSING OF THE VARIABLE LOW-PRESSURE AND LOW-COOLANT-FLOW TRIPS BELOW 10% FULL
POWER, AS ORIGINALLY INTENDED. VLP TRIP MAY BE BYPASSED BECAUSE ITS PROTECTION IS NOT NEEDED
BELOW 10% POWER. LOW-COOLANT-FLOW TRIP MAY BE BYPASSED BECAUSE NATURAL CIRCULATION COULD
COOL THE CORE IF NECESSARY BELOW 10% POWER.

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

*INSTRUMENTATION, FLOW + *INSTRUMENTATION, PRESSURE + EMERGENCY COOLING CONSIDERATIONS + HADDAM NECK +

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-18160 *CONTINUED*
REACTOR, PRESSURIZED WATER + TECHNICAL SPECIFICATIONS

17-18161
HADDAM NECK PROPOSED CHANGE 3. MAXIMUM ISOTHERMAL TEMPERATURE COEFFICIENT
CONNECTICUT YANKEE ATOMIC POWER COMPANY, BOSTON, MASS.
4 PAGES, JULY 31, 1967, DOCKET NO. 50-213, PROPOSED CHANGE TO TECHNICAL SPECIFICATIONS

HADDAM NECK REQUESTS THAT THE COEFFICIENT (MEASURED AT ZERO POWER) BE CORRECTED TO WHATEVER
FULL-POWER TEMPERATURE AND BORON CONCENTRATION EXIST INSTEAD OF TO THE SET CONDITIONS NOW
GIVEN (570 F, 2170 PPM BORON). MAXIMUM VALUE IS PLUS 0.000065/F. THEY CONTEND THAT FULL
POWER CONDITIONS MAY HAVE LOWER TEMPERATURE.

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

*TEMPERATURE COEFFICIENT + EXTRAPOLATION FACTOR + HADDAM NECK + POISON, SOLUBLE +
REACTOR, PRESSURIZED WATER + TECHNICAL SPECIFICATIONS

17-18165
INDIAN POINT 1, CHANGE 23. MODIFICATION OF LIMIT ON SECONDARY COOLANT CHEMISTRY
DIVISION OF REACTOR LICENSING, AEC
2 PAGES, JULY 12, 1966, DOCKET NO. 50-3

DRL REMOVES LIMIT OF 1200 PPM O DISSOLVED SOLID CONTENT, AND REPLACES WITH A 1 PPM CHLORIDE
LIMIT. BORIC ACID IS LEAKING FROM THE PRIMARY SYSTEM THROUGH LEAKS IN THE STEAM GENERATORS.
A WESTINGHOUSE REPORT (WCAP-2855) DETERMINED THE CORROSION RATE WITH 1500 PPM BORON IS ABOUT
.001 IN/YR.

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

*COOLANT CHEMISTRY + *CORROSION + *MAIN COOLING SYSTEM + CHLORINE + FAILURE, TUBING + INDIAN POINT 1 +
REACTOR, PRESSURIZED WATER + SAFETY EVALUATION + STEAM GENERATOR + TECHNICAL SPECIFICATIONS

17-18166
INDIAN POINT 1, CHANGE 24. REDUCTION IN PRIMARY PUMP CAPACITY AT FULL POWER
DIVISION OF REACTOR LICENSING, AEC
2 PAGES, JULY 27, 1966, DOCKET NO. 50-3

DRL ALLOWS DELETION FOR 45 DAYS OF COOLANT-FLOW-RATE LIMITS TO ALLOW INDIAN POINT TO MEASURE
FLOW RATE IN MODIFIED CORE B MORE ACCURATELY. INITIAL TEST SHOWED A FLOW OF 55 MILLION LB/HR
VS A TECHNICAL-SPECIFICATION MINIMUM OF 60.

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

*MAIN COOLING SYSTEM + *MEASUREMENT, GENERAL + FLOW ORIFICE OR RESTRICTION + FLOW, GENERAL +
INDIAN POINT 1 + MODIFICATION, SYSTEM OR EQUIPMENT + REACTOR, PRESSURIZED WATER + TECHNICAL SPECIFICATIONS

17-18167
INDIAN POINT PROPOSED CHANGE 24. CHANGE IN COOLANT FLOW RATE
CONSOLIDATED EDISON COMPANY OF NEW YORK, N.Y.
3 PAGES, JULY 14, 1966, DOCKET NO. 50-3, INDIAN POINT 1

PRELIMINARY HEAT BALANCES WITH CORE B IN OPERATION INDICATE A PRIMARY COOLANT FLOW OF 55
MILLION LB/HR (DESIGN VALUE IS 60). INDIAN POINT 1 REQUESTS THAT FLOW RATE LIMIT BE
ELIMINATED OR REDUCED TO 16,900 GPM PER PUMP.

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

INDIAN POINT 1 + REACTOR, PRESSURIZED WATER + TECHNICAL SPECIFICATIONS

17-18168 ALSO IN CATEGORY 9
INDIAN POINT REQUESTS MODIFICATION OF CHANGE 24 - COOLANT FLOW RATE
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
2 PAGES, AUGUST 29, 1966, DOCKET NO. 50-3, INDIAN POINT 1

CHANGE 24 (JULY 27, 1966) DELETED COOLANT-FLOW LIMIT FOR 45 DAYS TO ALLOW FLOW RATE TEST. ON
AUGUST 2, A LEAK IN BOILER 14 MADE TEST IMPOSSIBLE UNTIL FIXED. INDIAN POINT ASKS THAT
CHANGE 24 BE EFFECTIVE UNTIL NOVEMBER 14, 1966, OR FOR 45 DAYS WITH ALL PUMPS OPERATING,
WHICHEVER COMES FIRST. TESTS IN MAY INDICATED THAT THE TEMPERATURE-INSTRUMENT CALIBRATION
HAD SHIFTED, SO THE TEMPERATURE RISE AT POWER IS LESS THAN PREDICTED, THEREFORE COOLANT FLOW
IS PROBABLY MUCH HIGHER THAN THE 55 MILLION LB/HR RECENTLY CALCULATED (WHICH MADE CHANGE 24
NECESSARY).

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

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-18168 *CONTINUED*

*FAILURE, TUBING + *INSTRUMENTATION, ABNORMAL INDICATION + INDIAN POINT 1 + INSTRUMENTATION CALIBRATION + INSTRUMENTATION, TEMPERATURE + REACTOR, POWER + REACTOR, PRESSURIZED WATER + STEAM GENERATOR + TECHNICAL SPECIFICATIONS

17-18169

INDIAN POINT CHANGE 25. MODIFICATION OF CHANGE 24
DIVISION OF REACTOR LICENSING
2 PAGES, SEPTEMBER 16, 1966, DOCKET NO. 50-3, INDIAN POINT 1

CHANGE 24 ELIMINATED LIMIT ON COOLANT FLOW RATE FOR 45 DAYS SO THAT COOLANT-FLOW-RATE TEST COULD BE RUN. DUE TO BOILER LEAKS, THESE TESTS COULD NOT BE RUN. DRL ALLOWS CHANGE 24 TO BE EFFECTIVE UNTIL NOVEMBER 15, 1966, OR FOR 45 DAYS WITH 8 PUMPS OPERATING, WHICHEVER COMES FIRST.

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

*MEASUREMENT, GENERAL + FLOW, GENERAL + INDIAN POINT 1 + REACTOR, PRESSURIZED WATER + TECHNICAL SPECIFICATIONS

17-18197

ALSO IN CATEGORY 18
MONTHLY OPERATING REPORT, AUGUST 1966
CAROLINAS VIRGINIA NUCLEAR POWER ASSOCIATION, INC., HARR, S.C.
CVNA-263+. 33 PAGES, AUGUST 1966

ONE OF A SERIES OF PROGRESS REPORTS COVERING PERFORMANCE, PLANT CHEMISTRY, PLANT MAINTENANCE, HEALTH AND SAFETY, STATUS OF RESEARCH AND DEVELOPMENT PROGRAMS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA

*OPERATIONS REPORT, GENERAL + COOLANT CHEMISTRY + CVTR (CAROLINAS VIRGINIA TUBE REACTOR) + MAINTENANCE AND REPAIR + RADIATION SAFETY AND CONTROL + REACTOR, HEAVY WATER + REACTOR, PRESSURE TUBE + REACTOR, PRESSURIZED WATER

17-18250

ALSO IN CATEGORY 7
RICCS CO + HASSELL LD
RADIOACTIVE IODINE RELEASE FROM PM-3A CONTAINMENT VESSELS
MARTIN COMPANY, BALTIMORE, MD.
MND-M3A-3108IPT. 81+. 26 PAGES, REFERENCES, NOVEMBER 15, 1963

A CONSERVATIVE ANALYSIS OF THE IODINE RELEASE FROM THE PM-3A NUCLEAR POWER PLANT, BASED ON THE METHOD OF T19-14944 MODIFIED FOR LEAK RATES TO 5' PER DAY AND DIFFERENT METEOROLOGICAL CONDITIONS, ESTABLISHES THAT THE 72-HR INTEGRATED DOSE TO THE THYROID WOULD NOT EXCEED 243 RADS IN THE WORST CASE. IT IS CONCLUDED, THEREFORE, THAT UNDUE HAZARD TO PERSONNEL DOES NOT EXIST IN THE EVENT OF A MAXIMUM CREDIBLE ACCIDENT.

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

*FISSION PRODUCT, IODINE + *HAZARD, RELATIVE + *IODINE + *OPERATING EXPERIENCE + CONTAINMENT LEAKAGE CONTROL + FISSION PRODUCT RELEASE, GENERAL + HAZARDS ANALYSIS + PRESSURE VESSEL

17-18286

ALSO IN CATEGORY 7
KIRSLIS SS + BLANKENSHIP FF + GRIMES WR
FISSION-PRODUCT BEHAVIOR IN MOLTEN SALT REACTORS
OAK RIDGE NATIONAL LABORATORY
CONF-670602+. 2 PAGES, ANS TRANS. 10(1), PAGES 155-156, 1967 ANNUAL MEETING, AMERICAN NUCLEAR SOCIETY, SAN DIEGO, CALIFORNIA, JUNE 11-15, 1967

THE SUCCESSFUL POWER OPERATION OF THE MOLTEN SALT REACTOR EXPERIMENT (MSRE) AT ORNL FOR THE LAST YEAR PROVIDED THE OPPORTUNITY FOR STUDYING THE CHEMICAL BEHAVIOR OF FISSION PRODUCTS IN A MOLTEN-SALT FUEL UNDER REALISTIC OPERATING CONDITIONS. THOSE FISSION PRODUCTS WITH STABLE FLUORIDES DID NOT DEPOSIT ON THE METAL AND GRAPHITE. EVIDENCE WAS SEEN OF RARE-GAS PENETRATION INTO GRAPHITE, WITH DEEPER PENETRATION AND FLATTER CONCENTRATION GRADIENTS FOR THE DAUGHTERS OF LONG-LIVED RARE GASES.

*MOLTEN FUEL + *OPERATING EXPERIENCE + *REACTOR, MOLTEN SALT + ALLOY + COOLANT CHEMISTRY + FISSION PRODUCT TRANSPORT + GRAPHITE + LIQUID FUEL

17-19305

ALSO IN CATEGORY 6
BERTINI A + LA PAROLA GL + MONTJOIS P + PLEINEVAUX C
EXPERIMENTAL DETERMINATION OF CORE REACTIVITY BUILD-UP WITH IRRADIATION IN THE LATINA NUCLEAR POWER PLANT
ENTE NAZIONALE PER L'ENERGIA ELETTRICA + EURATOM
8 PAGES, 2 FIGURES, ENERGIA NUCLEARE 14(1) PAGES 10-17 (JANUARY 1967)

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-18305 *CONTINUED*

PLANNED EXPERIMENT PROGRAM FOR COMPARING THEORETICAL AND EXPERIMENTAL VALUES BY PERIODIC MEASUREMENTS OF TEMPERATURE COEFFICIENTS, ROD CALIBRATION, ABSORBER WORTH, ETC., ON LATINA AND ZERO-POWER REACTORS.

*FUEL BURNUP + *REACTIVITY, EXCESS + COMPARISON, THEORY AND EXPERIENCE + ITALY + REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED + RESEARCH AND DEVELOPMENT PROGRAM

17-18307

GETR CHANGE 7. FOUR TECHNICAL SPECIFICATIONS
AEC, DIVISION OF REACTOR LICENSING, WASHINGTON, D. C.
19 PAGES, 2 TABLES, SEPTEMBER 15, 1967, DOCKET NO. 50-70, GENERAL ELECTRIC TEST REACTOR

DRL ALLOWS THE FOLLOWING - (1) DELETION OF LIMIT ON CONTROL-ROD-BANK WORTH. INSERTION RATE AND SHUTDOWN MARGIN LIMITS ARE SUFFICIENT. (2) 15-MIN. WAIT AFTER GENERATOR FAILURE TO ALLOW RESTART GENERATOR BEFORE UNLOADING CORE. PREVIOUSLY, CORE WAS TO BE UNLOADED IMMEDIATELY. (3) REQUIREMENT THAT EXPERIMENT EXHAUST-HOLDUP SYSTEM BE OPERABLE AT 50 KW OR ABOVE. (4) DELETION OF REQUIREMENT THAT EXPERIMENT CAPSULE PRESSURE BE LESS THAN CORE OPERATING PRESSURE TO GUARD AGAINST COOLANT-CHANNEL VOIDING. ANALYSIS SHOWS THIS RESULTS IN A FUEL TEMPERATURE LESS THAN 378 F.

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

*CONTROL ROD WORTH + *FUEL HANDLING + *PRESSURE, INTERNAL + *REACTOR OFFGAS + GENERATOR, DIESEL + GETR (GENERAL ELECTRIC TEST REACTOR) + IRRADIATION FACILITY + REACTOR, TEST + SAFETY EVALUATION + TECHNICAL SPECIFICATIONS

17-18317

ALSO IN CATEGORY 9
INDIAN POINT 1 CHANGE 27. MINIMUM NUMBER OF POWER RANGE DETECTORS
AEC, DIVISION OF REACTOR LICENSING, WASHINGTON, D.C.
5 PAGES, MAY 15, 1967, DOCKET NO. 50-3

DRL AUTHORIZES OPERATION WITH A MINIMUM OF 6 DETECTORS FURNISHING OVER-POWER PROTECTION AT 110% FULL POWER. 18 DETECTORS AROUND THE CORE (IN 3 PLANES) ARE CONNECTED TO GIVE 9 (2 OUT OF 3) SIGNALS AND ONE CORE-MIDPLANE SIGNAL FOR FLUX-FLOW COMPARISON. SAFETY EVALUATION CONSIDERS AXIAL AND RADIAL POWER SHIFTS AND FLUX FLOW PROTECTION.

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

*INSTRUMENTATION, POWER RANGE + *POWER DISTRIBUTION + INDIAN POINT 1 + INSTRUMENTATION, COINCIDENT + REACTOR, PRESSURIZED WATER + SAFETY EVALUATION + TECHNICAL SPECIFICATIONS

17-18318

KAZI AH + BROOKS WL + CHERRY BH + BREIDENBACH B
AMENDMENT 2 TO PAWLING LATTICE TEST RIG (PLATR) HAZARDS SUMMARY REPORT (AMENDMENT 5 TO LICENSE R-49)
UNITED NUCLEAR CORPORATION, RESEARCH AND ENGINEERING CENTER, ELMSFORD, NEW YORK
NDE0-6244 +. 32 PAGES, 21 FIGURES, 4 TABLES, 24 REFERENCES, MAY 20, 1966, DOCKET NO. 50-101

AMENDMENT WOULD PERMIT MODIFICATIONS OF D2O-MODERATED ASSEMBLY TO PERMIT PARAMETER STUDIES OF H2O-MODERATED FUEL LATTICES. ANALYSIS SHOWS THAT FUEL CONFIGURATION IS INHERENTLY SAFER THAN PREVIOUS EXPERIMENTS DUE TO PROMPT NEGATIVE DOPPLER EFFECT IN LOW-ENRICHMENT UO2 RODS, AND RESULTS OF MCA WOULD INVOLVE SMALLER DOSES THAN PREVIOUSLY CALCULATED.

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

*DOPPLER EFFECT + ACCIDENT, MAXIMUM CREDIBLE (MCA) + CRITICAL ASSEMBLY FACILITY + HEAVY WATER + SAFETY ANALYSIS REPORT, GENERAL

17-18331

DRESDEN 1 PROPOSED CHANGE. SPECIAL FUEL ASSEMBLY SA-1 MODIFICATION
COMMONWEALTH EDISON COMPANY, CHICAGO, ILLINOIS
11 PAGES, 1 FIGURE, 1 TABLE, JANUARY 31, 1967, DOCKET NO. 50-10

REQUEST PERMISSION TO OPERATE SPECIAL ASSEMBLY SA-1 AFTER MODIFICATION OF THE FUEL-ROD CONFIGURATION (PERMANENT REMOVAL OF 10 RODS FROM THE ASSEMBLY). THE REMOVED RODS WILL UNDERGO DESTRUCTIVE TESTING. SA-1 WAS ORIGINALLY IRRADIATED IN VBWR (3 X 10 TO THE 20 FISSIONS/CC) EXAMINED ULTRASONICALLY AND VISUALLY, THEN OPERATED IN DRESDEN CYCLES 3 AND 4. PEAK BURNUP IS ABOUT 11.5 X 10 TO THE 20 FISSIONS/CC.

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

*FUEL BURNUP + *TEST, DESTRUCTIVE + DRESDEN 1 + REACTOR, BOILING WATER + TECHNICAL SPECIFICATIONS

17-18332

GA TRIGA MARK F SUPPLIES ADDITIONAL INFORMATION FOR PROPOSED CHANGE 2, ELIMINATION OF SWELLING MEASUREMENTS

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-18332 *CONTINUED*

GENERAL ATOMIC, DIVISION OF GENERAL DYNAMICS CORP., SAN DIEGO, CALIFORNIA
9 PAGES, 1 FIGURE, 2 TABLES, MAY 23, 1966, DOCKET NO. 50-163

IN RESPONSE TO AEC QUESTIONS, GA SUPPLIES THE FOLLOWING - (1) JUSTIFICATION OF 1.5×10^{-6} TO THE MINUS 5 FRACTIONAL RELEASE OF FISSION PRODUCTS (GA CITES CWN FURNACE EXPERIMENTS AND THEORETICAL CALCULATIONS), (2) FISSION-PRODUCT INVENTORY AND REACTOR-ROOM EXPOSURES (12.66 R-THYROID-POOL EMPTY), (3) OFF-SITE EXPOSURES FROM 6 FUEL ELEMENT FAILURES (0.157R WITH POOL EMPTY).

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

*FISSION PRODUCT RELEASE, GENERAL + ACCIDENT, LOSS OF COOLANT + DOSE CALCULATION, EXTERNAL + DOSE CALCULATION, INTERNAL + REACTOR, RESEARCH + TECHNICAL SPECIFICATIONS + TRIGA (TRAINING REACTOR, ISOTOPES, G.A.)

17-18339 ALSO IN CATEGORY 11
HUMBOLDT BAY ADDENDUM A TO PROPOSED CHANGE 21. LEAK RATE TESTING
PACIFIC GAS AND ELECTRIC COMPANY, SAN FRANCISCO, CALIF.
6 PAGES, MARCH 16, 1967, DOCKET NO. 50-133

COMPLETELY REWRITTEN CHANGES IN INTEGRATED-LEAKAGE-RATE-LIMIT SPECIFICATIONS FOR DRYWELL AND SUPPRESSION CHAMBER, INTEGRATED LEAK-RATE TESTING AND PENETRATION-CLOSURE TESTING.

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

*CONTAINMENT, PRESSURE SUPPRESSION + *TEST, LEAK RATE + HUMBOLDT BAY + PRESSURE RELIEF + REACTOR, BOILING WATER + TECHNICAL SPECIFICATIONS + TEST INTERVAL

17-18340 ALSO IN CATEGORY 11
HUMBOLDT BAY CHANGE 22. DEFERMENT OF INTEGRATED LEAK RATE TEST
DIVISION OF REACTOR LICENSING, WASHINGTON, D.C.
1 PAGE, MARCH 17, 1967, DOCKET NO. 50-133

DRL ALLOWS DEFERMENT OF INTEGRATED LEAK-RATE TESTING OF SUPPRESSION CHAMBER AND DRYWELL (DUE MARCH 23, 1967) FOR 120 DAYS (UNTIL JULY 20, 1967). PROPOSED CHANGE 21 (DEALING WITH LEAK-RATE-TEST SCHEDULES) IS UNDER REVIEW.

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

*CONTAINMENT, PRESSURE SUPPRESSION + *TEST INTERVAL + HUMBOLDT BAY + REACTOR, BOILING WATER + TECHNICAL SPECIFICATIONS + TEST, LEAK RATE

17-18341
MIRONE M + ET AL
EXPERIMENTAL ASSESSMENT OF CORE PERFORMANCE UNDER NORMAL OPERATING CONDITIONS AND VERIFICATION OF SAFETY MARGINS AT INCREASED OUTPUT IN THE GARIGLIANO BWR POWER STATION
ENTE NAZIONALE PER L'ENERGIA ELETTRICA + EURATOM
9 PAGES, 9 FIGURES, 2 TABLES, ENERGIA NUCLEARE 14(1) PAGES 1-9 (JANUARY 1967)

R AND D PROGRAM CONSISTS IN (1) COLLECTING DATA ON PLANT OPERATION, (2) PERFORMING TEST UNDER CONDITIONS OF INCREASED POWER DENSITY, (3) ROD-OSCILLATION (UP TO 10 CPS) TESTS, (4) FUEL-ELEMENT GAMMA SCANNING DURING SHUTDOWN (FOR LA-140).

*POWER UPGRADING + *RESEARCH AND DEVELOPMENT PROGRAM + ITALY + OSCILLATOR, REACTIVITY + REACTOR, BOILING WATER + ENNA (SOCIETA' ELETTRONUCLEARE NAZIONALE)

17-18342
POWER ESCALATION EXPERIMENTS FOR THE E. FERMI PRESSURIZED WATER REACTOR PLANT
ENTE NAZIONALE PER L'ENERGIA ELETTRICA, ITALY
6 PAGES, 5 FIGURES, 1 TABLE, ENERGIA NUCLEARE 14(1) PAGES 18-23 (1967)

COVERS ESCALATION FROM WARRANTED 615 TO FINAL-DESIGN 825 MWT, INCLUDING PROCEDURES INTRODUCED IN THE TECHNICAL APPROACH TO UPGRADING, DESCRIPTION AND CHARACTERISTICS OF THE AEROSOL IN-CORE INSTRUMENTATION, AND DISCUSSION OF ROLE OF COMPUTER.

*COMPUTER, DIGITAL + *INSTRUMENTATION, IN CORE + *POWER UPGRADING + ITALY + OPERATING EXPERIENCE + REACTOR, PRESSURIZED WATER

17-18395
CASE INSTITUTE OF TECHNOLOGY REPORTS REFRIGERATOR EXPLOSION ENDANGERING ISOTOPES
CASE INSTITUTE OF TECHNOLOGY, CLEVELAND, OHIO
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(40), PAGE 28, (OCTOBER 2, 1967)

(LETTER, JULY 31) 9 MICROCURIES OF CARBON-14 AND 2 MICROCURIES OF TRITIUM WERE IN A

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-18385 *CONTINUED*

REFRIGERATOR WHICH EXPLODED JULY 26, RESULTING IN EXTENSIVE DAMAGE TO LAB. THE ISOTOPES WERE IN A BOTTOM DRAWER, WERE DILUTED AND FLUSHED DOWN THE DRAIN.

*EXPLOSION + *RADIOISOTOPE + CARBON + INCIDENT, ACTUAL, GENERAL + STORAGE CONTAINER + TRITIUM

17-18386 ALSO IN CATEGORY 15

JOHNS HOPKINS U TRITIUM ACCIDENT

JOHN HOPKINS UNIVERSITY, MCCOLLUM-PRATT INSTITUTE, BALTIMORE, MD.

2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(40), PAGE 29 AND 30, (OCTOBER 2, 1967)

(LETTER, JUNE 16) AN INDIVIDUAL BROUGHT 5 SAMPLES OF 10 CURIES EACH OF TRITIUM DIRECTLY FROM ARGONNE WITHOUT A LICENSE AND WITHOUT NOTIFYING PHYSICS DEPT. CHAIRMAN OR SAFETY OFFICER. PROCEDURES THAT THE INDIVIDUAL SET UP FOR HANDLING AND IN CASE OF BREAKAGE WERE TOTALLY INADEQUATE. TWO OTHER INDIVIDUALS RECEIVED 0.8 AND 0.2 REM, FOLLOWING A SPILL ON FEBRUARY 20. CENTRAL AIR CONDITIONING SPREAD TRITIATED WATER THROUGH THE BUILDING BEFORE IT WAS TURNED OFF. CORRECTIONS - (A) BLDG. WAS SEARCHED FOR UNLICENSED SOURCES, WHICH WERE DISPOSED OF. (B) STAFF MEMBERS NOTIFIED. (C) UNIVERSITY VP HAS DEMONSTRATED HE WILL TAKE A PERSONAL INTEREST IN PROBLEMS ENCOUNTERED BY RADIATION SAFETY OFFICER, WHOSE STAFF IS EXPANDED.

*CONTAMINATION + *FAILURE, ADMINISTRATIVE CONTROL + *INCIDENT, ACTUAL, HUMAN ERROR + RADIOISOTOPE + TRITIUM + VENTILATION SYSTEM

17-18387 ALSO IN CATEGORY 15

ABBOTT LAB REPORTS INCONSISTANT FILM BADGE RESULTS

ABBOTT LABORATORIES, NORTH CHICAGO

2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(40), PAGE 27 AND 28, (OCT. 2, 1967)

(LETTER, AUGUST 4) AN EMPLOYEE RECEIVED A 3.029 REMS GAMMA DOSE IN THE SECOND QUARTER. A SECOND FILM BADGE FROM ANOTHER COMPANY AGREED WITH BETA BUT ONLY INDICATED 0.7 REM GAMMA. DOSIMETERS DID NOT CONFIRM HIGH READING. BETTER SHIELDING AND NEW GUIDELINES FOR REMOVING WORKERS FROM EXPOSURE PRIOR TO THE 3 REMS ARE BEING STUDIED.

*MONITOR, RADIATION, PERSONNEL + *PERSONNEL EXPOSURE, RADIATION + FAILURE, INSTRUMENT + FILM, GENERAL

17-18388 ALSO IN CATEGORY 15

SOURCE REMOVAL DURING MAINTENANCE OF A RADIOGRAPHER DEVICE

CONAM INSPECTION, INC., TULSA, OKLA.

2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(40), PAGE 28 AND 29, (OCT. 2, 1967)

(LETTER, JULY 31) ON JULY 12 A RADIOGRAPHER MAINTAINING A TO-MODEL-490 DEVICE REMOVED 3 SCREWS, DISLODGING SOURCE FROM SHIELD. HE MOVED IT SO IT RETURNED, BUT IT FELL BETWEEN SHIELD AND OUTER CASE. SURVEY METER WENT BACK TO ZERO. MAN WAS CALLED AWAY TO SIGN REPORTS AND RELEASED FROM JOB. NEXT DAY WHEN HE RETURNED TO OFFICE, THE AUTOMATIC GAMMA DETECTOR ALARMED. THE RADIOGRAPHER RECEIVED A 24.5-MR BADGE EXPOSURE. THE DRIVER OF THE OTHER TRUCK CARRYING THE DEVICE WAS ESTIMATED TO HAVE RECEIVED BETWEEN 15 AND 300 R. THE DRIVER QUIT AND HAS NOT COOPERATED IN BEING UNDER A PHYSICIAN'S OBSERVATION. CAMERAS WILL BE MODIFIED. PROCEDURES WILL NOT BE AMENDED AS THEY FEEL DRIVER WAS SOMEWHAT NEGLIGENT.

*FAILURE, OPERATOR ERROR + *INCIDENT, ACTUAL, HUMAN ERROR + *RADIOGRAPHY + MAINTENANCE AND REPAIR + MONITOR, RADIATION, AREA + PERSONNEL EXPOSURE, RADIATION

17-18389 ALSO IN CATEGORY 15

MALLINCKRODT OVEREXPOSURE

MALLINCKRODT CHEMICAL WORKS, MALLINCKRODT/NUCLEAR DIV., LAMBERT FIELD, ST. LOUIS, MO.

3 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(40), PAGE 30 THRU 32, (OCT. 2, 1967)

ON JULY 25, MCW WAS CITED FOR ALLOWING AN EMPLOYEE TO RECEIVE 1.9 REMS IN A QUARTER WITHOUT FILLING OUT AEC FORM 4, AND NOT REPORTING IT, ALONG WITH OTHER ITEMS. REPLY DATED AUG. 16 INDICATED THAT THE EMPLOYEE RECORDS WERE AT ANOTHER MCW INSTALLATION, THAT WORKER WAS NOT REALLY OVEREXPOSED.

*PERSONNEL EXPOSURE, RADIATION + *RADIOCHEMICAL PROCESSING + REGULATION, AEC

17-18390 ALSO IN CATEGORY 15

OVEREXPOSURE AT ST. FRANCIS HOSPITAL

ST. FRANCIS HOSPITAL, TULSA, OKLA.

1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(40), PAGE 32, (OCTOBER 2, 1967)

(LETTER, AUG. 10) AN EXPOSURE OF 1.519 REMS WAS RECEIVED THE SECOND QUARTER OF 1967 BY A TECHNICIAN, WHEN HE FREQUENTLY HAD TO HOLD A PATIENT FOR THE FILM. HE HAS BEEN INSTRUCTED TO WEAR A LEAD APRON FOR ALL FUTURE USE OF PORTABLE RADIOGRAPHIC DEVICES.

*PERSONNEL EXPOSURE, RADIATION + *PERSONNEL PROTECTIVE DEVICE + *RADIOGRAPHY + RADIOLOGY

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-18391 ALSO IN CATEGORY 11
HADDAM NECK PROPOSED CHANGE INCREASING STEAM-LINE ISOLATION-VALVE CLOSURE TIME
CONNECTICUT YANKEE ATOMIC POWER CO., ENGRG. OFFICE, BOSTON, MASS.
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(41), PAGE 23, (OCTOBER 9, 1967), DOCKET NO. 50-213

(LTR. OCT. 3) TEMPORARY CHANGE IN CLOSURE TIME FROM 1 SEC TO 10 SEC IS REQUESTED. (QUOTE) - IT WAS THOUGHT OPTIMISTICALLY THAT WITH STEAM FLOW THESE VALVES WOULD MEET THE 1-SEC CLOSURE TIME. (INITIALLY TESTED WITH NO FLOW, CLOSURE TIME WAS 6 SEC). THIS OPTIMISM HAS BEEN PROVED UNJUSTIFIED BY RECENT TESTS ON THE VALVES WITH SUBSTANTIAL STEAM FLOW. (UNQUOTE) CLOSURE TIMES AVERAGED 2.8 SEC, VARYING FROM 1.3 TO 4.6 SEC. IT IS IMPOSSIBLE TO DUPLICATE CONDITIONS FOLLOWING A STEAM-LINE BREAK. THIS WOULD REDUCE CLOSURE TIME, BUT THERE IS NO MEANS TO ESTABLISH THIS EFFECT QUANTITATIVELY.

*ACCIDENT, STEAM LINE RUPTURE + *CONTAINMENT PENETRATION, CLOSURE OF + *RESPONSE TIME +
*TEST, SYSTEM OPERABILITY + HADDAM NECK + REACTOR, BOILING WATER + TECHNICAL SPECIFICATIONS + VALVE

17-18434
INDIAN POINT CORE B SECOND CYCLE LICENSE SUBMITTAL (AND TECH SPEC CHANGES)
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC., NEW YORK
34 PAGES, 4 FIGURES, 3 TABLES, JULY 19, 1967, DOCKET NO. 50-3, INDIAN POINT I

ONE-THIRD OF CORE B (INITIAL ENRICHMENT 2.86 W/O U-235) IS TO BE REMOVED, THE REMAINING ELEMENTS RELOCATED, AND 40 FRESH ASSEMBLIES (4.08 W/O U-235 ENRICHMENT) WILL BE ADDED ON THE PERIPHERY. MOST RECENT DNB CORRELATION (W-3) WAS USED IN CORE CALCULATIONS (20 PAGES OF COMPARISON BETWEEN W-2 AND W-3, AND RESULTS OF W-3 ANALYSIS). TECH.-SPEC. CHANGES INCLUDE REMOVAL OF EXCESS REACTIVITY LIMIT, AND CHANGES NECESSARY FOR BETTER STARTUP TESTING.

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

*REACTIVITY, EXCESS + *REFUELING + DNB (DEPARTURE FROM NUCLEATE BOILING) + HEAT TRANSFER CORRELATION +
INDIAN POINT 1 + REACTOR STARTUP TESTING + REACTOR, PRESSURIZED WATER + TECHNICAL SPECIFICATIONS

17-18435 ALSO IN CATEGORY 9
FAILURE MODE ANALYSIS FOR THE COLUMBIA UNIV. TRIGA MARK II CONSOLE SCRAM AND ROD CONTROL CIRCUITS
COLUMBIA UNIVERSITY, NEW YORK
14 PAGES, 2 FIGURES, 1 TABLE, SEPTEMBER 28, 1967, DOCKET NO. 50-208

CONCLUDES NO COMMON TIEPOINT IN ROD-UP CIRCUITS, SO 3 FAILURES NEEDED TO RUN 3 RODS UP. SIMILARLY, SEVERAL RELAYS IN SCRAM CIRCUIT ARE INSTALLED SO A SINGLE POWER-CIRCUIT FAILURE CANNOT DISABLE AUTOMATIC SCRAMS. SIX SIMULTANEOUS INDEPENDENT FAILURES MUST OCCUR TO DISABLE BOTH AUTOMATIC AND MANUAL SCRAMS. NO CASE WAS FOUND WHERE A SHORT CIRCUIT COULD DEFEAT THE ENTIRE SCRAM CIRCUIT.

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

*CONTROL SYSTEM + *FAULT TREE ANALYSIS + *REACTOR SAFETY SYSTEM + FAILURE, SIMULTANEOUS. +
REACTOR, RESEARCH + SINGLE FAILURE CRITERION + TRIGA (TRAINING REACTOR, ISOTOPES, G.A.)

17-18436
GETR LOSS OF POOL WATER DURING MAINTENANCE
GENERAL ELECTRIC CO., SAN JOSE, CALIFORNIA
3 PAGES, SEPTEMBER 19, 1967, DOCKET NO. 50-70, GENERAL ELECTRIC TEST REACTOR

(LETTER, SEPT. 19) A TEMPORARY PLUG WAS INSTALLED TO PREVENT LEAKAGE OR MAINTENANCE OF A PIPE PENETRATING THE POOL WALL 5 FT BELOW THE REACTOR-VESSEL TOP. HOWEVER, A TRANSFER OF AN EXPERIMENT FROM POOL TO CANAL WAS BEGUN ON SCHEDULE, EVEN THOUGH THE PIPING JOB WAS NOT FINISHED. WATER LEVEL WAS RAISED 6 MORE FT TO ALLOW REMOVAL OF THE FIRST OF THREE POOL-CANAL GATES. THE TEMPORARY PLUG FAILED, AND CANAL WATER LEVEL DROPPED. RADIATION LEVELS REACHED 2 R/HR, BUT DOSES WERE NOT GREATER THAN 100 MR. INVESTIGATION DETERMINED DIRECT CAUSE (FAILURE OF TEMPORARY PLUG AT HIGHER HEAD THAN DESIGNED) AND BASIC CAUSE (INADEQUATE REVIEW OF WORK PROCEDURES).

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

*ACCIDENT, LOSS OF COOLANT + *FAILURE, ADMINISTRATIVE CONTROL + *FUEL STORAGE +
*INCIDENT, ACTUAL, HUMAN ERROR + *MAINTENANCE AND REPAIR + GETR (GENERAL ELECTRIC TEST REACTOR) +
REACTOR, RESEARCH + REACTOR, TEST

17-18437
INDIAN POINT UNIT 1 MODIFICATION - BULK NITROGEN STORAGE
CONSOLIDATED EDISON CO., NEW YORK
1 PAGE, SEPTEMBER 28, 1967, DOCKET NO. 50-2

INFORMS AEC OF 2 CHANGES. (1) INSTALLED BULK NITROGEN STORAGE TO REPLACE BOTTLE SUPPLY FOR

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-18437 *CONTINUED*

CONTROL-ROD-DRIVE-HOUSINGS PURGE GAS. (2) REPLACED OIL-LUBRICATED PISTON RINGS IN AIR COMPRESSOR WITH SELF-LUBRICATING TEFLON RINGS.

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

*CONTROL ROD DRIVE + *MODIFICATION, SYSTEM OR EQUIPMENT + AIR + INDIAN POINT 1 + LUBRICATION + NITROGEN + PUMP + REACTOR, PRESSURIZED WATER + STORAGE CONTAINER

17-18439

GA REQUESTS TO STORE APFA III CORE
GENERAL DYNAMICS, GENERAL ATOMIC DIVISION, SAN DIEGO, CALIFORNIA
3 PAGES, 1 FIGURE, SEPTEMBER 25, 1967, DOCKET NO. 50-253

CORE, A URANIUM SPHERE, IS TO BE STORED IN A PUTLER BUILDING IN BIRD-CAGE CONTAINERS ALONG WITH APFA-II CORE. DIAGRAM OF GA WASTE-YARD FACILITY.

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

*FUEL STORAGE + REACTOR, FAST BURST + STORAGE CONTAINER

17-18440

ALSO IN CATEGORY 11
IDAHO STATE U. SUPPLIES ADDITIONAL INFORMATION ON AGN-201 UNDER CONSTRUCTION
IDAHO STATE UNIVERSITY, POCA TELLO, IDAHO
5 PAGES, SEPTEMBER 22, 1967, DOCKET NO. 50-284

ISU CONSIDERS THAT CORE-TANK RUPTURE DUE TO RADIOLYTIC GAS FROM THE MODERATOR IS NOT A CREDIBLE ACCIDENT. THEY DISCUSS 3 MODIFICATIONS TO THE BUILDING VENTILATION SYSTEM TO PREVENT SPREAD OF ANY SUCH GAS THROUGH THE ENTIRE BUILDING. ALSO INCLUDES PERSONNEL INFORMATION.

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

*MODERATOR + *MODIFICATION, SYSTEM OR EQUIPMENT + *RADIOLYTIC GAS + *VENTILATION SYSTEM + AGN (TRAINING REACTOR, AEROJET-GEN. NUCLEONICS) + AIRBORNE RELEASE + RADIATION DAMAGE + REACTOR, TRAINING + STAFFING, TRAINING, QUALIFICATION + VENTILATION SYSTEM

17-18441

DRL GRANTS TERMINATION OF RICE U. AGN-201 LICENSE
AEC, DIVISION OF REACTOR LICENSING, WASHINGTON, D. C.
4 PAGES, SEPTEMBER 26, 1967, DOCKET NO. 50-114

NO SITE CONTAMINATION FOUND. RADIATION LEVELS AT SITE ARE BELOW PERMISSIBLE LIMITS.

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

*REACTOR DECOMMISSIONING EXPERIENCE + AGN (TRAINING REACTOR, AEROJET-GEN. NUCLEONICS) + REACTOR, TRAINING + SAFETY EVALUATION

17-18442

ALSO IN CATEGORIES 8 AND 11
AEC ALLOWS HUMBOLDT BAY TO LOAD FINAL QUARTER OF TYPE II FUEL ASSEMBLIES
AEC, DIVISION OF REACTOR LICENSING, WASHINGTON, D. C.
1 PAGE, SEPTEMBER 28, 1967, DOCKET NO. 50-133, PACIFIC GAS AND ELECTRIC CO.

PRINCIPAL CONSIDERATION CONCERNING NEW ZIRC-CLAD CORE IS CONTAINMENT-SYSTEM ABILITY TO WITHSTAND THE PRESSURE THAT MIGHT BE GENERATED FROM A METAL-WATER REACTION FOLLOWING LOSS OF COOLANT. DRL AGREES THAT SUFFICIENT MARGIN EXISTS FOR REASONABLE ASSURANCE AGAINST CONTAINMENT RUPTURE, BASED ON MAY 17 AND AUG. 23 LETTERS.

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

*ACCIDENT, LOSS OF COOLANT + *CLAD + *FUEL ELEMENT + *METAL WATER REACTION + CONTAINMENT INTEGRITY + HUMBOLDT BAY + PRESSURE, INTERNAL + REACTOR, BOILING WATER + ZIRCALOY

17-18443

GE-NTR AMENDMENT 7. INCREASE IN PLUTONIUM INVENTORY FOR EXPERIMENTAL PURPOSES
AEC, DIVISION OF REACTOR LICENSING, WASHINGTON, D. C.
11 PAGES, SEPTEMBER 27, 1967, DOCKET NO. 50-73, GE NUCLEAR TEST REACTOR

DRL ALLOWS INCREASE FROM 100 TO 500 GRAMS FOR USE IN RADIOGRAPHIC INSPECTION OF NEW AND USED PLUTONIUM-CONTAINING FUEL ELEMENTS, USING NEUTRONS FROM THE BEAM HOLE. FUEL WILL BE LOCATED IN EXPERIMENT ROOM ADJACENT TO REACTOR. CONDITIONS ARE - (1) PLUTONIUM MUST BE ENCAPSULATED OR CLAD, AND (2) ANY EXPERIMENTAL ARRAY MUST HAVE A K-EFF OF 0.75 OR LESS IF FLOODED.

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

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-18443 *CONTINUED*

*CRITICALITY SAFETY + *PLUTONIUM + *QUALITY CONTROL + *RADIOGRAPHY + BEAM HOLE + FUEL ELEMENT + GE-NTR (GE NUCLEAR TEST REACTOR) + REACTOR, RESEARCH + SAFETY EVALUATION + TECHNICAL SPECIFICATIONS

17-18445 ALSO IN CATEGORY 9

INDIAN POINT 1 PROPOSED CHANGE 29. INCREASE IN BORON INJECTION SYSTEM TEST INTERVAL
CONSOLIDATED EDISON CO., NEW YORK
2 PAGES, JULY 17, 1967, DOCKET NO. 50-3

REQUEST FOR A SEMIANNUAL TEST (INSTEAD OF MONTHLY) IS BASED ON CONFIDENCE IN OPERATING EXPERIENCE AND INHERENT RELIABILITY OF THE SYSTEM. PRESENT TESTING REQUIREMENTS CONTRIBUTE AN ADDITIONAL FEW PPM OF BORON, WHICH IS OF IMPORTANCE ESPECIALLY AT END OF LIFE.

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

*RELIABILITY, SYSTEM + *SHUTDOWN SYSTEM, SECONDARY + *TEST INTERVAL + INDIAN POINT 1 + OPERATING EXPERIENCE + POISON, SOLUBLE + REACTOR, PRESSURIZED WATER + TECHNICAL SPECIFICATIONS

17-18446

BIG ROCK POINT SUPPLIES ADDITIONAL INFORMATION ON CHANGE 12. NEW CRITICAL HEAT FLUX CORRELATION
CONSUMERS POWER CO., JACKSON, MICHIGAN
2 PAGES, FEBRUARY 1967, DOCKET NO. 50-155

USE OF NEW GE CORRELATION GIVES MCHFR HIGHER THAN PREVIOUS (1.12 TO 1.48 TIMES OLD VALUES DURING LIFE OF CORE). END-OF-LIFE MCHFR IS 2.11 (1.42 PREVIOUSLY), WHICH WOULD ALLOW OPERATION TO END OF CORE LIFE (MCHFR LIMIT IS 1.5) AND MORE FLEXIBILITY IN CORE ARRANGEMENT.

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

*BURNOUT HEAT FLUX + *HEAT TRANSFER CORRELATION + BIG ROCK POINT + REACTOR, BOILING WATER + REFUELING + TECHNICAL SPECIFICATIONS

17-18447 ALSO IN CATEGORY 5

BIG ROCK POINT CHANGE 12. NEW CRITICAL HEAT FLUX CORRELATION
AEC, DIVISION OF REACTOR LICENSING, WASHINGTON, D. C.
11 PAGES, 1 FIGURE, 2 TABLES, MAY 26, 1967, DOCKET NO. 50-155, CONSUMERS POWER CO.

ORL ALLOWS USE OF NEW GE CAF CORRELATION (APED 5286) TO DETERMINE LIMITING THERMAL CONDITIONS (RESULTING IN A OVERALL GAIN OF ABOUT 10 TO 50% IN CHF), WHICH PERMITS FULL POWER OPERATION UNTIL END OF FUEL CYCLE WITH A PEAK HEAT FLUX ONLY 5% MORE THAN AT MIDCYCLE. NEW CORRELATION IS BASED ON TEST MORE CLOSELY APPROXIMATING GE BEWS.

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

*BURNOUT HEAT FLUX + *HEAT TRANSFER CORRELATION + *REACTOR POWER + BIG ROCK POINT + REACTOR, BOILING WATER + SAFETY EVALUATION + TECHNICAL SPECIFICATIONS

17-18468

CATLING E + WALLACE FG
DEVELOPMENT OF TENSILE CREEP IRRADIATION EQUIPMENT
TRG-REPORT-1404 + CONF-660521 +. 13 PAGES, 5 FIGURES, 4 REFERENCES, DEC. 5, 1966, PAGES 53-57 FROM IN-PILE IRRADIATION EQUIPMENT AND TECHNIQUES. SYMPOSIUM AT HARWELL, MAY, 1966

DESCRIBES DESIGN AND DEVELOPMENT OF EQUIPMENT FOR TWO SERIES OF EXPERIMENTS FOR MEASUREMENT OF CREEP SPECIMEN EXPANSION IN-PILE. MATERIALS OF INTEREST WERE ZIRCONIUM AND CONTAINMENT-VESSEL METALS. GIVES HISTORICAL BACKGROUND ON SUCH EXPERIMENTS AND APPARATUS.

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

*CLAD + *CREEP + *IN PILE LOOP + CREEP BEHAVIOR + CREEP PROPERTY + IRRADIATION TESTING + REACTOR, RESEARCH + UNITED KINGDOM + ZIRCONIUM

17-18469

MIDDLEBROOK H + BRAMFITT AC
DEVELOPMENT WORK IN SUPPORT OF THE D.M.T.R. BOILING WATER LOOP
TRG-REPORT-1404 + CONF-660521 +. 7 PAGES, DECEMBER 5, 1966, PAGES 61-69, FROM IN-PILE IRRADIATION EQUIPMENT AND TECHNIQUES, SYMPOSIUM HELD AT HARWELL, MAY 1966

DISCUSSES CERTAIN ASPECTS (PRIMARILY REMOVAL OF RADIOYTIC GAS) OF SMALL-SCALE PILOT LOOP OPERATED AT DOUNREAY TO STUDY PROBLEMS ASSOCIATED WITH USE OF FERRITIC STEELS IN PLACE OF MORE EXPENSIVE STAINLESS STEEL (WATER CHEMISTRY AND CORROSION). LOOP CIRCULATES WATER AT 1,000 PSI, 280 C, THROUGH CORE. EMPHASIZES SAMPLING TECHNIQUES.

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

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-18469 *CONTINUED*
STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*CORROSION + *IN PILE LOOP + *STEEL + COOLANT CHEMISTRY + DOUNREAY (UK) + RADIOLYTIC GAS + REACTOR, TEST + RESEARCH AND DEVELOPMENT PROGRAM + SAMPLING + UNITED KINGDOM

17-18470 ALSO IN CATEGORY 9
CUTHBERTSON JD
OPERATING EXPERIENCE AND DEVELOPMENT ON WIGNER TYPE RIGS
TRG-REPORT-1404 + CONF-660521 +. 5 PAGES, 1 FIGURE, DEC. 5, 1966, PAGES 69-73 FROM IN-PILE IRRADIATION EQUIPMENT AND TECHNIQUES, SYMPOSIUM HELD AT HARWELL, MAY 1966

BRIEF DESCRIPTION OF THE RIG COMMONLY USED FOR IRRADIATING NONFISSILE MATERIALS (E.G., GRAPHITE) AND OUTLINE OF THE KIND OF OPERATION FAILURES EXPERIENCED. POSTIRRADIATION EXAMINATION OF FAILED RIGS IS REVIEWED, DESIGN WEAKNESSES ARE NOTED, AND SUBSEQUENT IMPROVEMENTS DESCRIBED HAVE INCREASED RIG LIFETIME FROM 1 MONTH TO 9 MONTHS, PRIMARILY THRU MAKING HEATER LEADS OF 80-20 NICHROME, ELIMINATING MOISTURE FROM ASBESTOS-RESIN SEALS, INCREASING ALUMINA FROM 50 TO 90% TO GIVE POWER INSULATOR FRACTURES, REDUCING THERMOCOUPLE FAILURE RATE FROM 5 TO 1% BY LOW-MOISTURE INSULATORS, AND PROVIDING MORE-EVEN GAS GAPS BY INCREASING THE NUMBER OF STANDOFF PINS AGAINST THE SPECIMEN.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.70 COPY, \$0.65 MICROFICHE

*IN PILE LOOP + *OPERATING EXPERIENCE + DIDO (UK) + FAILURE, COMPONENT + GRAPHITE + INSTRUMENTATION, TEMPERATURE + IRRADIATION TESTING + RADIATION DAMAGE + REACTOR, TEST

17-18507 ALSO IN CATEGORY 9
VER PLANCK DW
TRIGA STUCK ROD AT GENERAL ATOMIC, SEPTEMBER 8, 1967
GENERAL DYNAMICS, SAN DIEGO, CALIF.
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(42) PAGES 17 (OCTOBER 19, 1967), DOCKET NO. 50-163

(LETTER, OCTOBER 2) THE INCIDENT OCCURRED WHILE MAKING REACTIVITY-EXCESS MEASUREMENTS PRIOR TO \$4.60 PULSING. THE TRANSIENT ROD WAS WORTH \$2.50, BUT THE OTHER 3 WERE WORTH \$6.00, LEAVING \$1.20 SHUTDOWN MARGIN. LUBRICANT WAS SPRAYED ONTO THE TEFLON SLIDE. DROP TIMES WERE THE SAME AS BEFORE. IT IS BELIEVED THAT DIRT AND DUST GOT INTO THE OPEN SYSTEM, SO A COVER WILL NOW BE PROVIDED.

*CONTROL ROD, SHIM SAFETY + *FAILURE, SCRAM MECHANISM + INCIDENT, ACTUAL, EQUIPMENT + REACTOR, PULSED + REACTOR, RESEARCH + SHUTDOWN MARGIN + TRIGA (TRAINING REACTOR, ISOTOPES, G.A.)

17-18508 ALSO IN CATEGORIES 14 AND 1
LOGAN JE
US FISH AND WILDLIFE REPORT ON OYSTER CREEK, SEPTEMBER 22, 1967
JERSEY CENTRAL POWER AND LIGHT COMPANY, MORRISTOWN, NEW JERSEY
4 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(42) PAGES 18-21 (OCTOBER 19, 1967), DOCKET NO. 50-219

(LETTER, OCTOBER 10) RECOMMENDATIONS SIMILAR TO THOSE RECENTLY MADE AT OTHER REACTORS (POSTOPERATIONAL RADIOLOGICAL SURVEY, ECOLOGICAL SURVEYS, LIMIT RADIOACTIVE DISCHARGE BELOW FISH-HARM LEVEL, ETC.). REFERS TO THERMAL BARRIERS IN OYSTER CREEK (SIX), HARM TO SHELLFISH AS THEY PUMP WATER FASTER AT HIGH TEMPERATURE AND QUALITY DETERIORATES, AND PROMOTION OF ALGAE.

*THERMAL POLLUTION + BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + HEAT SINK + OYSTER CREEK + REACTOR, BOILING WATER

17-18585 ALSO IN CATEGORIES 9 AND 12
SILVESTER AG
NUCLEAR REACTOR WITH EMERGENCY COOLANT CROSS FLOW
CANADIAN PATENT 739,059 + U.S. PATENT 443,726 +. 7 FIGURES, JULY 19, 1966

THIS INVENTION RELATES TO NUCLEAR REACTORS WHEREIN THE COOLANT IS ARRANGED TO FLOW ACROSS AS WELL AS ALONG THE FUEL RODS TO EQUALIZE THE INTERNAL PRESSURE AS WELL AS THE TEMPERATURE DISTRIBUTION WITHIN THE CORE. THE SYSTEM COMPRISES A PLURALITY OF FUEL RODS CONTAINED WITHIN SHROUD, SAID RODS ARRANGED TO HAVE ZONES, BEGINNING PROXIMATE THE BOTTOM PORTION OF THE ROD, WITH A FISSILE FUEL ZONE, A MODERATOR AND CROSS FLOW ZONE IMMEDIATELY ABOVE FISSILE FUEL ZONE, A TOP EXIT ZONE IMMEDIATELY ABOVE MODERATOR AND CROSS-FLOW ZONE WITH A TOP-SHIELD ZONE DEFINED BY THE TOP PORTION OF THE FUEL RODS IMMEDIATELY ABOVE TOP EXIT ZONE.

AVAILABILITY - CANADIAN PATENT OFFICE, OTTAWA, CANADA

*DESIGN CRITERIA + *FLOW, CROSS + *REACTOR COOLANT + COOLING, SHUTDOWN + DESIGN STUDY + FUEL ELEMENT + INSTRUMENTATION, COOLANT QUALITY + PRESSURE, INTERNAL

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-18595
CROWN PL
SODIUM PUMP RELIABILITY DEMONSTRATION
ATOMICS INTERNATIONAL, CANOGA PARK
NAA-SR-MEMO-11485 +. 22 PAGES, REFERENCES, JULY 1, 1965

THE DESIGN, CONSTRUCTION, AND OPERATION OF LARGE SODIUM-COOLED REACTORS REQUIRE INCREASED RELIABILITY AND CONFIDENCE IN THE ABILITY OF SODIUM PUMPS TO INSTALL AND OPERATE WITHOUT EXCESSIVE DEVELOPMENT AND SHAKEDOWN TIME. EXPERIENCE AT HNPF INDICATES THAT THE DEVELOPMENT OF SUCH PUMPS IS STILL IN ITS EARLY STAGES. OPERATING HISTORY IS DISCUSSED, AND, CONTINUED OPERATION, AS A MEANS OF COMPLETING THE DEVELOPMENT CYCLE AND INCREASING RELIABILITY DEMONSTRATION, IS EVALUATED.

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

HALLAM + PUMP + REACTOR, GRAPHITE MODERATED + REACTOR, LIQUID METAL COOLED + RELIABILITY, COMPONENT + SODIUM

17-18642
LEWELLEN JW + LACY PS + RABY TM
PATHFINDER ATOMIC POWER PLANT. SHIELDING AND RADIATION SURVEY MEASUREMENTS (332)
ALLIS-CHALMERS MFG. CO., BETHESDA, MD. ATOMIC ENERGY DIVISION
ACNP-67520 +. 58 PAGES, 17 FIGURES, 13 TABLES, 2 REFERENCES, JUNE 1967

BETA-GAMMA AND FAST NEUTRON DOSE-RATE-MEASUREMENT MAPS ARE GIVEN, ALONG WITH GRAPHS TO SHOW VARIATION WITH POWER LEVEL. SURVEYS WERE MORE FOR OPERATIONS THAN FOR DETAILED CHECK OF SHIELDING. POOR EXTRAPOLATION FROM LOW TO HIGH POWER CONDITIONS MAY BE DUE TO STEAM-ENTRAINED CORROSION PRODUCTS OR N-16. EIGHTEEN-INCH-THICK CONCRETE AUXILIARY SHIELDING HAS BEEN SUPPLIED IN TURBINE AREA, REDUCING WALKWAY LEVELS FROM 20 TO 4 MR/HR.

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

*SHIELDING + *SURVEY, RADIATION, GENERAL + COMPARISON, THEORY AND EXPERIENCE + CRUD + GAMMA + NEUTRON + NITROGEN + PATHFINDER + REACTOR, BOILING WATER + REACTOR, INTERNAL SUPERHEAT

17-18661 ALSO IN CATEGORY 9
IMPROPER UTILIZATION OF A BF-3 SENSOR FOR LINEAR POWER MEASUREMENT
UNITED STATES ATOMIC ENERGY COMMISSION, WASHINGTON, D. C., DIVISION OF OPERATIONAL SAFETY
2 PAGES, REACTOR OPERATING EXPERIENCES 57-10, OCTOBER 2, 1967

BF3 PROPORTIONAL COUNTERS, INSTALLED AS LINEAR POWER DETECTORS, WERE DISCOVERED DURING A STARTUP TO 220 WATTS WHEN THE LOG-N CHANNELS READ 100 W BUT THE LINEAR RECORDERS READ 50 W. REACTOR WAS SHUT DOWN. DETECTOR CURRENTS, PLOTTED POWER UP TO 15 WATTS, REVEALED THAT THE LINEAR POWER CHANNELS WERE NONLINEAR. THE DETECTORS HAD BEEN OBTAINED FROM ANOTHER CRITICAL FACILITY WITH ASSURANCE THAT THEY WERE IONIZATION CHAMBERS (OTHER FACILITY HAD ONLY OPERATED IN THE MILLIWATT RANGE, SO NONLINEAR EFFECT WAS NONEXISTENT).

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

*FAILURE, ADMINISTRATIVE CONTROL + *INSTRUMENTATION, POWER RANGE + *INSTRUMENTATION, STARTUP + CRITICAL ASSEMBLY FACILITY + INSTRUMENTATION, ABNORMAL INDICATION + OPERATING EXPERIENCE + TEST, PREOPERATIONAL

17-18675
MONTHLY OPERATIONS REPORT NO. 16, JUNE 1967. PEACH BOTTOM ATOMIC POWER STATION
PHILADELPHIA ELECTRIC CO., PHILADELPHIA
15 PAGES, JUNE 1967, DOCKET NO. 50-171

THIS PROGRESS REPORT IS ONE OF A SERIES COVERING OPERATIONS, HEALTH PHYSICS, MAINTENANCE OF PLANT AND INSTRUMENTATION, CHANGES TO THE FACILITY, AND ADMINISTRATION.

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

*OPERATING EXPERIENCE + *OPERATIONS REPORT, GENERAL + ADMINISTRATIVE CONTROLS AND PRACTICES + INSTRUMENTATION, GENERAL + MAINTENANCE AND REPAIR + MODIFICATION, SYSTEM OR EQUIPMENT + PEACH BOTTOM 1 + RADIATION SAFETY AND CONTROL + REACTOR, GAS COOLED + REACTOR, POWER

17-18676
MONTHLY OPERATIONS REPORT NO. 18, AUGUST 1967. PEACH BOTTOM ATOMIC POWER STATION
PHILADELPHIA ELECTRIC CO., PHILADELPHIA
14 PAGES, 1 FIGURE, JUNE 1967, DOCKET NO. 50-171

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-18676 *CONTINUED*

THIS PROGRESS REPORT IS ONE OF A SERIES COVERING OPERATIONS, HEALTH PHYSICS, MAINTENANCE OF PLANT AND INSTRUMENTATION, CHANGES TO THE FACILITY, AND ADMINISTRATION.

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

*OPERATING EXPERIENCE + *OPERATIONS REPORT, GENERAL + ADMINISTRATIVE CONTROLS AND PRACTICES + INSTRUMENTATION, GENERAL + MAINTENANCE AND REPAIR + MODIFICATION, SYSTEM OR EQUIPMENT + PEACH BOTTOM 1 + RADIATION SAFETY AND CONTROL + REACTOR, GAS COOLED + REACTOR, POWER

17-18677 ALSO IN CATEGORY 9

MONTHLY OPERATIONS REPORT NO. 17, JULY, 1967

PHILADELPHIA ELECTRIC COMPANY

19 PAGES, PEACH BOTTOM POWER STATION MONTHLY REPORT 17, JULY 1967, DOCKET NO. 50-171

SAFETY-SYSTEM ACTIONS INCLUDE A SCRAM RESULTING FROM A FALSE RATE-OF-CHANGE SIGNAL WHILE A SECOND CHANNEL WAS BEING TESTED. A SETBACK AND FIRST-STAGE BACKFLOW OPERATION OCCURRED WHEN AN OPERATOR ACCIDENTALLY TRIPPED ON MG SET, RESULTING IN LOSS OF HELIUM COMPRESSOR. WATER LEAKAGE DURING A STORM CAUSED AN ELECTRICAL FAULT RESULTING IN REACTOR SHUTDOWN TO REDUCE STEAM PRESSURE BECAUSE ELECTROMATIC RELIEF VALVES FAILED CLOSED DUE TO SHORTING OF THE WIRING.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON

*OPERATING EXPERIENCE + ELECTRIC POWER, NORMAL + FAILURE, GENERAL + INCIDENT, ACTUAL, HUMAN ERROR + OPERATIONS REPORT, GENERAL + PEACH BOTTOM 1 + PLANT PROTECTIVE SYSTEM + REACTOR, GAS COOLED + SCRAM, SPURIOUS + VALVE

17-18733

HANLEN DF + HAMILTON GN + TAYLOR EG

REACTOR OPERATOR TRAINING MANUAL

WESTINGHOUSE ELECTRIC CORPORATION, ATOMIC POWER DIVISION, PITTSBURGH, PA.

WCAP-2713 +. 378 PAGES; 67 FIGURES, 14 TABLES, 31 REFERENCES, DEC. 1964

PRESENTLY BEING UPDATED. INTENDED FOR USE IN EARLY STAGES OF OPERATOR TRAINING, EXAMPLES SLANTED TO POWER REACTORS BUT USEFUL FOR ALL REACTORS. CHAPTERS - ATOMIC PHYSIC (23 P), NUCLEAR PHYSIC (29 P), REACTOR PHYSICS (46 P), NUCLEAR TECHNOLOGY (42 P), INSTRUMENTATION AND CONTROL (65 P), AND NUCLEAR SAFETY (35 P). APPENDICES CONTAIN 3 TYPICAL AEC EXAMINATIONS (OP., PWR) (SRQ, TEST REACTOR) (SRP, CRIT. FAC.), SAMPLE REACTOR-PHYSICS CALCULATIONS, AND A GLOSSARY OF TECHNICAL TERMS AND SLANG. DISCUSSION OF OPERATIONS AT GOOD PRACTICAL LEVEL.

AVAILABILITY - WESTINGHOUSE ELECTRIC CORPORATION, ATOMIC POWER DIVISION, P. O. BOX 355, PITTSBURGH, PA.

*STAFFING, TRAINING, QUALIFICATION + REACTOR, POOL TYPE + REACTOR, PRESSURIZED WATER

17-18734 ALSO IN CATEGORY 9

BARDCHUK IF + TIIPFTS DT

FUEL ELEMENTS LEAK CONTROL METHOD AT WWF-M REACTOR OF THE PHYSICS INSTITUTE OF THE UKRAINIAN ACADEMY OF SCIENCES

2 PAGES, 1 FIGURE, ATOMNAYA ENERGIYA 21(6) PAGES 514-15 (DECEMBER 1966)

A NEW METHOD OF LEAK DETECTION AND MEASUREMENT (TO REPLACE METHOD OF V.I. POLIKARPOV ET AL., WHICH IS RELATIVELY INSENSITIVE) IS PROPOSED. IT INVOLVES VOIDING THE ELEMENT OF WATER, CONCENTRATING LEAKING FISSION GASES IN IONIZATION CHAMBER, WHERE THE LEAK RATE IS DETERMINED BY CHAMBER CURRENT. AN UNDERWATER VACUUM CHAMBER NEAR THE CORE HOUSES THE APPARATUS. GASES PASS THROUGH A FILTER TO ELIMINATE MOISTURE AND AEROSOLS, WHICH ARE COUNTED SEPARATELY. TEST TAKES ABOUT 1 HR. IN USE SINCE 1962.

*INSTRUMENTATION, DETECTION FAILED FUEL ELEMENT + *TEST, LEAK RATE + AEROSOL + FAILURE, FUEL ELEMENT + FISSION GAS RELEASE + MEASUREMENT, GENERAL + REACTOR, RESEARCH + UNION OF SOVIET SOCIALIST REPUBLICS

17-18735

CAUTIUS W

THE EXPERIMENTAL ATOMIC POWER STATION OF THE ARBEITSGEMEINSCHAFT VERSUCHSREAKTOR (AVR) IN JUELICH. 6 PAGES, 6 FIGURES, 1 TABLE, BRENNSTOFF-WAERME-KRAFT, 19, PAGES 613-18 (DECEMBER 1966) IN GERMAN

INFORMATION ON CONSTRUCTION, DESIGN, AND OPERATION OF THE HIGH-TEMPERATURE REACTOR, EMPHASIZING ECONOMIC CONSIDERATIONS.

ECONOMICS + GERMANY + REACTOR DESCRIPTION + REACTOR, HIGH TEMP. GAS

17-18737 ALSO IN CATEGORY 5

SANDBERG RO

ANALYSIS OF CVTR THERMAL-HYDRAULIC PERFORMANCE AT 65-MW OPERATION

WESTINGHOUSE ELECTRIC CORP., PITTSBURGH, PA.

CVNA-286 +. 75 PAGES, FIGURES, TABLES, REFERENCES, JUNE 1967

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-18737 *CONTINUED*

ORIGINAL CORE (DESIGNED FOR 65 MWF WITH 42 PRESSURE TUBES) WAS DERATED TO 47.2 MWF WHEN THE NUMBER OF TUBES WAS REDUCED TO 36. ANALYSIS IS FOR 65 MW WITH ONLY 36 TUBES. OPERATING HISTORY AFTER THE POWER UPDATING TO 65 MW IS SUMMARIZED, INCLUDING FAILURE OF TWO FUEL ELEMENTS DURING THE SECOND CYCLE. FOUR SPECIAL HIGH-POWER-DENSITY FUEL ELEMENTS WERE USED. THREE OF THESE PLUS TWO REGULAR ELEMENTS FAILED.

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

*HYDRAULIC ANALYSIS + *POWER UPDATING + *THERMAL CONSIDERATION + CVTR (CAROLINAS VIRGINIA TUBE REACTOR) + FAILURE, FUEL ELEMENT + OPERATING EXPERIENCE + OPERATIONS REPORT, ANALYSIS + POWER DISTRIBUTION + REACTOR, HEAVY WATER + REACTOR, PRESSURE TUBE

17-18738 ALSO IN CATEGORY 7

SANDBERG RD

CVTR SECOND CYCLE FUEL FAILURES AT 65 MWF

WESTINGHOUSE ELECTRIC COMPANY, PITTSBURGH, PA.

CVNA-286 +. 1 PAGE, PAGE 2 OF ANALYSIS OF CVTR THERMAL-HYDRAULIC PERFORMANCE AT 65-MW OPERATION, JUNE 1967

TWO STANDARD AND 3 OUT OF 4 SPECIAL HIGH-POWER-DENSITY ELEMENTS FAILED AT 13.6 AND 21.2 KW/FT PEAK POWER DENSITIES RESPECTIVELY. THREE AND POSSIBLY FOUR OF THESE FAILURES OCCURRED DURING A SPECIAL PUSHED POWER TEST WITH CONTROL RODS BANKED. OTHER STANDARD ELEMENTS SURVIVED 14.2 KW/FT. FAILURE MECHANISM HAS NOT BEEN DETERMINED. DNB IS HIGHLY UNLIKELY DUE TO THERMAL-HYDRAULIC CONDITIONS. FLOW BEHAVIOR INDICATES CONSIDERABLE CRUD BUILDUP ON FUEL RODS.

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

*FAILURE, FUEL ELEMENT + *SURFACE FILM DEPOSIT + CVTR (CAROLINAS VIRGINIA TUBE REACTOR) + DNB (DEPARTURE FROM NUCLEATE BOILING). + FISSION PRODUCT RELEASE, GENERAL + OPERATING EXPERIENCE + POWER DISTRIBUTION + REACTOR, PRESSURE TUBE + REACTOR, PRESSURIZED WATER

17-18750 ALSO IN CATEGORY 15

LEPPARD LB

RADIOACTIVITY - ACCIDENT HAZARDS

ONTARIO DEPARTMENT OF HEALTH, TORONTO, ONTARIO

2 PAGES, CANADIAN JOURNAL OF PUBLIC HEALTH 57, PAGES 355-56 (AUGUST 1966)

ALTHOUGH PU-239 HAS A VERY LOW ALLOWABLE BODY BURDEN, RECENT ANIMAL-EXPERIMENT PROJECTION SUGGESTS IF 1.5 LB OF CHEMICALLY INNOCUOUS PU-239 WERE EATEN, THE BEST PART OF A MONTH WOULD PASS BEFORE DEATH. THREE INCIDENTS ARE CITED. (1) A RADIOGRAPHER SET UP BUT TOOK COVER FROM RAIN. A PASSING CARPENTER MISTOOK THE SOURCE FOR A PLUMB BOB AND POCKETED IT. HE WAS UNDER MEDICAL CARE FOR A YEAR. (2) A RADIOGRAPHER BACKSAWED THROUGH A SOURCE CONTAINER WHILE TRYING TO FREE IT. (3) SOME CHILDREN BROKE INTO A FACTORY SHED CONTAINING SOME FORGOTTEN RADIUM PAINT AND THREW THE GLASS BOTTLE AROUND, CONTAMINATING THEMSELVES AND THE NEIGHBORHOOD.

*RADIATION IN PERSPECTIVE + *RADIOGRAPHY + *RADIUM + COATING, SURFACE + FAILURE, OPERATOR ERROR + INCIDENT, ACTUAL, NONREACTOR + PERSONNEL EXPOSURE, RADIATION + SOURCE, RADIATION

17-18767

HADDAM NECK CHANGE 5 - MAXIMUM ISOTHERMAL TEMPERATURE COEFFICIENT SPECIFICATION

AEC, DIVISION OF REACTOR LICENSING, WASHINGTON, D. C.

6 PAGES, SEPTEMBER 15, 1967, DOCKET NO. 50-213, CONNECTICUT YANKEE

DPL ALLOWS TEMPERATURE COEFFICIENT (MEASURED AT ZERO POWER) TO BE CORRECTED TO CONDITIONS OF FULL-POWER TEMPERATURE AND BORON CONCENTRATION INSTEAD OF TO 570 F AND 2170 PPM. TEMPERATURE COEFFICIENT AT 2170 PPM BORON IS ABOVE LIMIT OF 0.65×10^{-4} DELTA K/K, SO BORON CONCENTRATION MUST BE LOWERED. NEW UPPER LIMIT ON COEFFICIENT IS 0.71×10^{-4} AT FULL POWER CONDITIONS. TWO SAFETY EVALUATIONS ARE PROVIDED, ONE FOR CHANGE AND ONE WHICH GIVES A NEW BASIS (3.16) FOR TECH. SPEC.

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

*POISON, SOLUBLE + *TEMPERATURE COEFFICIENT + EXTRAPOLATION FACTOR + HADDAM NECK + REACTOR, PRESSURIZED WATER + SAFETY EVALUATION + TECHNICAL SPECIFICATIONS

17-18922 ALSO IN CATEGORY 7

ACRS REPORT ON EVERR PROPOSED CHANGE 17 - CORE PARAMETER CHANGES

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

2 PAGES, 4 REFERENCES, AUGUST 16, 1967, DOCKET NO. 50-183

PRINCIPAL PROPOSED CHANGES ARE - (1) INCREASE IN MAX. SPECIFIC POWER (33 W/G TO 50), (2) INCREASE IN STANDARD BWR-TYPE FUEL, (3) INCREASE IN MAX. CLAD TEMPERATURES, (4) CONTROL-ROD-PROGRAM CHANGES (TO DECREASE PROBABILITY AND CONSEQUENCES OF A SEVERE REACTIVITY ACCIDENT). ITEMS 1, 2, AND 3 PERMIT MORE-ADVANCED FUEL ELEMENTS. EVERR EXPERIENCE WITH FUEL FAILURES IS CITED. PROBLEMS HAVE BEEN ENCOUNTERED WITH THE EFFICIENCY OF THE CHAPCOAL OFF-GAS FILTER UNDER SERVICE CONDITIONS, SO A VIGOROUS SURVEILLANCE PROGRAM RESULTED.

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-18922 *CONTINUED*

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

*CHARCOAL + *FILTER + ACCIDENT, REACTIVITY + ACRS (ADVISORY COMMITTEE ON REACTOR SAFEGUARDS) + FUEL ELEMENT + IRRADIATION TESTING + REACTOR OFFGAS + REACTOR, INTERNAL SUPERHEAT + SAFETY REVIEW (OPERATIONS, EXPERIMENTS) + TECHNICAL SPECIFICATIONS + VESR (VALLECITOS EXP. SUPERHEAT REACTOR-ESADA)

17-18925

DRL TERMINATES U OF AKRON AGN-201 LICENSE
AEC, DIVISION OF REACTOR LICENSING, WASHINGTON, D. C.
5 PAGES, OCTOBER 9, 1967, DOCKET NO. 50-64

REACTOR WAS TRANSFERRED TO GEORGIA TECH, AND A 4-IN. CONCRETE FLOOR WAS POURED OVER THE REACTOR PAD.

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

*AGN (TRAINING REACTOR, AEROJET-GEN. NUCLEONICS) + REACTOR DECOMMISSIONING EXPERIENCE + REACTOR, TRAINING + SAFETY EVALUATION

17-18926

ALSO IN CATEGORY 9

FORD NUCLEAR REACTOR PROPOSED CHANGE - CONTROL ROD TEST SCHEDULE
UNIVERSITY OF MICHIGAN
2 PAGES, OCTOBER 3, 1967, DOCKET NO. 50-2

REQUEST FOR INSPECTION OF BORON-S.S. SHIM-SAFETY RODS ON A SEMIANNUAL BASIS (RATHER THAN SEMIANNUAL OR EVERY 50 MW-DAYS). REACTOR IS PRESENTLY LIMITED TO A 28-DAY CYCLE (25 DAYS AT 2MW AND 3 DAYS OF SHUTDOWN). CITES PAST EXPERIENCE WITH THE RODS AND TEST TO BE PERFORMED BEFORE EACH CYCLE (ROD-WORTH CALIBRATION, MAGNET-RELEASE-TIME MEASUREMENT, AND ROD-FLIGHT TIME). CHANGE WOULD ALLOW USE OF A PLANNED 35-DAY CYCLE (3 DAYS OF SHUTDOWN).

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

*CONTROL ROD BURNUP + *TEST INTERVAL + BORON + CONTROL ROD, SHIM SAFETY + EXAMINATION + REACTOR, POOL TYPE + REACTOR, RESEARCH + TECHNICAL SPECIFICATIONS

17-18927

DRL ISSUES IDAHO STATE U. AGN 201 LICENSE AND TECH. SPECS.
AEC, DIVISION OF REACTOR LICENSING, WASHINGTON, D. C.
9 PAGES, 1 TABLE, OCTOBER 11, 1967, DOCKET NO. 50-284

100-MILLIWATT-REACTOR LOCATED AT POCATELLO, IDAHO. COLD-CLEAN EXCESS REACTIVITY IS 0.65%. CONTROL RODS MUST BE INSPECTED ANNUALLY, AND EXCESS REACTIVITY AND ROD WORTH MUST ALSO BE CHECKED ANNUALLY.

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

*TECHNICAL SPECIFICATIONS + AGN (TRAINING REACTOR, AEROJET-GEN. NUCLEONICS) + CONTROL ROD + EXAMINATION + REACTOR, TRAINING + TEST INTERVAL

17-18928

RHODE ISLAND NUCLEAR SCIENCE CENTER PROPOSED CHANGE - MODIFICATIONS FOR POWER UPGRATING TO 2 MW
RHODE ISLAND ATOMIC ENERGY COMMISSION
5 PAGES, OCTOBER 9, 1967, DOCKET NO. 50-193

CHANGES INCLUDE (1) SPECIFICATIONS FOR CHARCOAL FILTER, (2) CHANGES TO PERMIT ADDITIONAL COOLING TOWERS, (3) INSTRUMENTATION SETPOINT CHANGES, (4) LOW-WATER-LEVEL (2 IN. FROM NORMAL) SCRAM, (5) THERMAL-COLUMN THERMAL-SHIELD FLOW-SENSOR SCRAM, (6) REPLACEMENT OF LOG-N CHANNEL, (7) ANNUAL RATHER THAN SEMI-ANNUAL MEETINGS OF THE REACTOR SAFETY COMMITTEE, (8) CLEANUP-SYSTEM MODIFICATIONS TO INCREASE STACK FLOW, (9) QUARTERLY CONTROL-ROD TESTS.

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

*MODIFICATION, SYSTEM OR EQUIPMENT + *POWER UPGRATING + ADMINISTRATIVE CONTROLS AND PRACTICES + FILTER + HEAT SINK + INSTRUMENTATION, GENERAL + MAIN COOLING SYSTEM + REACTOR, POOL TYPE + REACTOR, RESEARCH + TECHNICAL SPECIFICATIONS

17-18929

NFS CHANGE 5 - POSSESSION OF A 33 CURIE CESIUM SOURCE
AEC, DIVISION OF REACTOR LICENSING, WASHINGTON, D. C.
2 PAGES, OCTOBER 16, 1967, DOCKET NO. 50-201

SEALED SOURCE IS TO BE USED FOR CALIBRATING SURVEY INSTRUMENTS.

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-18929 *CONTINUED*

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

*INSTRUMENTATION CALIBRATION + *SOURCE, RADIATION + CESIUM + MONITOR, RADIATION, GENERAL + NFS (NUCLEAR FUEL SERVICES) + TECHNICAL SPECIFICATIONS

17-18930

DRL RETURNS PROPOSED U OF MARYLAND BUILDING ADDITIONS TO SAFETY COMMITTEE
AEC, DIVISION OF REACTOR LICENSING, WASHINGTON, D. C.
1 PAGE, OCTOBER 9, 1967, DOCKET NO. 50-166

PROPOSED ADDITIONS (CHEMICAL ENGINEERING BUILDING AND THE GAMMA LABORATORY) SHOULD BE REVIEWED BY REACTOR SAFETY COMMITTEE TO DETERMINE IF AN UNREVIEWED SAFETY QUESTION IS INVOLVED. IF THE COMMITTEE DETERMINES THAT NO QUESTION IS INVOLVED, YOU MAY PROCEED WITHOUT AEC AUTHORIZATION.

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

ADMINISTRATIVE CONTROLS AND PRACTICES + MODIFICATION, SYSTEM OR EQUIPMENT + REACTOR, POOL TYPE + REACTOR, RESEARCH + SAFETY REVIEW (OPERATIONS, EXPERIMENTS)

17-18931

NUMEC REQUESTS TRANSFER OF PENN STATE LICENSE TO NUMEC
NUCLEAR MATERIALS AND EQUIPMENT CORPORATION
4 PAGES, OCTOBER 4, 1967, DOCKET NO. 50-174

NUMEC REQUESTS PERMISSION TO POSSESS BUT NOT OPERATE THE FACILITY (I.E., THE OLD FUEL ELEMENTS). FUEL ELEMENTS HAVE BEEN REMOVED FROM THE POOL. A BY-PRODUCT LICENSE 37-4456-8 WAS ISSUED FOR THE FACILITY.

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

*REACTOR DECOMMISSIONING EXPERIENCE + *SOURCE, RADIATION + *TEST, INSTRUMENT RESPONSE + REACTOR, POOL TYPE + REACTOR, RESEARCH + TRIGA (TRAINING REACTOR, ISOTOPES, G.A.)

17-18933

GETR REPORTS CONTROL ROD FAILURE TO COMPLETELY DROP
GENERAL ELECTRIC, PLEASANTON, CALIFORNIA
2 PAGES, AUGUST 1, 1967, DOCKET NO. 50-70

NUMBER 4 ROD STUCK AT 4 IN. ABOVE FULLY INSERTED POSITION DUE TO 4 BROKEN PIECES OF A SELF-LOCKING NUT AND A PIECE OF WELDING SLAG, ALL FOUND IN THE SHOCK SECTION. ROD WAS UNDAMAGED. CONTROL-ROD GUIDE-TUBE COVERS WERE IN PLACE. NUT CAME FROM HANDLING TOOL, SO A NEW LOCKING DEVICE WAS DESIGNED (ELIMINATING SELF-LOCKING NUT). NOW, NO PART IS SMALL ENOUGH TO PASS INTO A SMALL CREVICE OF THE CORE ASSEMBLY.

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

*FAILURE, SCRAM MECHANISM + *FUEL HANDLING MACHINE + CONTROL ROD SCRAM MECHANISM + GETR (GENERAL ELECTRIC TEST REACTOR) + MODIFICATION, SYSTEM OR EQUIPMENT + REACTOR, TEST

17-18934

HADDAM NECK CHANGE 4 - MAIN STEAM VALVE CLOSURE TIME
AEC, DIVISION OF REACTOR LICENSING, WASHINGTON, D. C.
4 PAGES, OCTOBER 13, 1967, DOCKET NO. 50-213

DRL ALLOWS INCREASE IN CLOSURE TIME TO 10 SEC (FROM 1 SEC) ONLY WHILE MODERATOR COEFFICIENT IS POSITIVE. PURPOSE OF VALVE IS TO LIMIT SECONDARY BLOWDOWN, THUS LIMITING POSITIVE REACTIVITY AND CONSERVING COOLANT. FOR AT LEAST 1800 FULL-POWER HOURS, MODERATOR COEFFICIENT IS POSITIVE. 10-SEC CLOSURE TIME WOULD RESULT IN A RELEASE OF FISSION PRODUCTS FROM A SECONDARY STEAM BREAK, CAUSING A DOSE OF 7.5 REM AT THE SITE BOUNDARY.

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

*ACCIDENT, STEAM LINE RUPTURE + *CONTAINMENT PENETRATION, CLOSURE OF + *MODERATOR COEFFICIENT + AIRBORNE RELEASE + DOSE + HADDAM NECK + MAIN COOLING SYSTEM + REACTOR, PRESSURIZED WATER + SAFETY EVALUATION + TECHNICAL SPECIFICATIONS + VALVE

17-18976

SAFEGUARDS REPORT FOR THE SAXTON REACTOR OPERATING AT 35 MWT
SAXTON NUCLEAR EXPERIMENTAL CORP.
44 PAGES, 15 FIGURES, 2 TABLES, 4 REFERENCES, DECEMBER 1966, DOCKET NO. 50-146

MAIN COOLANT PRESSURE WAS INCREASED FROM 2000 TO 2200 PSIA, ALLOWING HIGHER CLAD TEMPERATURE. ANTI-SIMMER DEVICES WERE ADDED TO THE PRESSURIZER SAFETY VALVES. 2 INDEPENDENT LOSS-OF-LOAD

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-18976 *CONTINUED*

TRIPS WERE INSTALLED. SECONDARY-STEAM-LINE RUPTURE CONSEQUENCES ARE UNCHANGED DUE TO DECREASED SECONDARY TEMPERATURE. LOSS OF FLOW RESULTS IN DNB RATIO OF 1.31. LOSS-OF-COOLANT CONSEQUENCES ARE DECREASED DUE TO LOWER SYSTEM TEMPERATURE (501 F VS 530). HYPOTHETICAL INSTANT BLOWDOWN (NOT CREDIBLE) RESULTING IN COMPLETE CORE MELTDOWN RESULTS IN 300-REM THYROID DOSE IN 2.HR AT 240 METERS FROM SITE. (APPENDIX) EXPERIENCE WITH HIGH-POWER FUEL RODS.

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

*ACCIDENT, HYPOTHETICAL + *POWER UPGRATING + ACCIDENT, LOSS OF COOLANT + ACCIDENT, LOSS OF FLOW + ACCIDENT, STEAM LINE RUPTURE + AIRBORNE RELEASE + DOSE + MODIFICATION, SYSTEM OR EQUIPMENT + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, GENERAL + SAXTON

17-18977 ALSO IN CATEGORY 18

WESTINGHOUSE EXPERIENCE WITH HIGH POWER LEVEL FUEL RODS
SAXTON NUCLEAR EXPERIMENTAL CORP.

19 PAGES, 7 TABLES, 9 REFERENCES, DECEMBER 1966, DOCKET NO. 50-146

GIVES DETAILS AND RESULTS OF EXPERIMENTS WITH ZIRC-CLAD FUEL RODS, INCLUDING (A) 6 CVTR CORE SAMPLES IRRADIATED IN WESTINGHOUSE TEST REACTOR (VARIOUS CLADDING DIAMETERS, CLADDING THICKNESSES, COLD DIAMETRICAL GAPS, AND FUEL ENRICHMENT), (B) 2 CVTR SAMPLES IN WTR (TO EVALUATE EFFECT OF COLD DIAMETRIC GAP ON EXPANSION, AND (C) SAXTON IN-PILE TEST ASSEMBLIES.

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

*CLAD + *FUEL ELEMENT + *IRRADIATION TESTING + *ZIRCALOY + EXAMINATION + FABRICATION + HEAT CONDUCTANCE, FUEL TO CLAD + OPERATING EXPERIENCE + REACTOR, PRESSURIZED WATER + RESEARCH AND DEVELOPMENT PROGRAM + SAFETY ANALYSIS REPORT, GENERAL + SAXTON

17-18978 ALSO IN CATEGORY 9

SAXTON AMENDMENT 2 TO CHANGE REQUEST 25. REVISED PAGES TO TECHNICAL SPECIFICATIONS
SAXTON NUCLEAR EXPERIMENTAL CORPORATION, SAXTON, PA.

7 PAGES, 3 FIGURES, OCTOBER 10, 1967, DOCKET NO. 50-146

INFORMATION COVERS - (1) ADDING A PERMISSIVE SWITCH TO ALLOW OVERRIDE OF CERTAIN TRIPS AT LESS THAN 23.5 MWT, (2) MODIFICATION TO VARIABLE-FREQUENCY MOTOR-GENERATOR-SET EXCITER POWER TO INCREASE COOLANT-PUMP COASTDOWN, (3) SAFETY-INJECTION-SYSTEM FLOW-TOTALIZER CONTACT REMOVED. AUTOMATIC STOPPING OF PUMPS REMOVED TO SATISFY SINGLE-FAILURE CRITERIA. CHANGE-REQUEST 25 IS FOR A POWER UPGRATING TO 35 MW.

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

*EMERGENCY POWER, ELECTRIC + *REACTOR SAFETY SYSTEM + *SHUTDOWN SYSTEM, SECONDARY + EMERGENCY POWER, ELECTRIC + REACTOR, PRESSURIZED WATER + SAXTON + SINGLE FAILURE CRITERION + TECHNICAL SPECIFICATIONS

17-18979

SAXTON CHANGE 29 - FUEL TEST ASSEMBLY XIX
AEC, DIVISION OF REACTOR LICENSING, WASHINGTON, D. C.
4 PAGES, OCTOBER 13, 1967, DOCKET NO. 50-146

DRL ALLOWS USE OF A 9-ROD SUBASSEMBLY WITH 4 REMOVABLE ZIRC-CLAD RODS CONTAINING PU02-U02 PELLETS (6.6' PU02). ONE OF THE 4 WILL BE PRESSURIZED WITH CO TO PRODUCE 1500 PSI INTERNAL PRESSURE. 2 OF THE 4 WILL BE PRESSURIZED WITH HELIUM TO 900 AND 1500 PSI. THE REMAINING 5 RODS WILL BE STANDARD S.S.-CLAD FUEL RODS. SAFETY EVALUATION PERFORMED AT 35 MW.

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

*FUEL ELEMENT + *PRESSURE, INTERNAL + CLAD + IRRADIATION TESTING + REACTOR, PRESSURIZED WATER + SAFETY EVALUATION + SAXTON + TECHNICAL SPECIFICATIONS + ZIRCALOY

17-18980

SAXTON CHANGE REPORT 14. SUPERCRITICAL TECHNOLOGY PROGRAM
SAXTON NUCLEAR EXPERIMENTAL CORPORATION, SAXTON, PA.
10 PAGES, 2 FIGURES, OCTOBER 10, 1967, DOCKET NO. 50-146

PROPOSED CHANGES TO SUPERCRITICAL LOOP TO IMPROVE OPERATIONAL RELIABILITY AND TO SIMPLIFY THE INSTRUMENTATION AND CONTROL SYSTEM INCLUDE RELOCATION OF HIGH-PRESSURE GAS COMPRESSOR TO C/A BUILDING, COOLANT LEAKAGE ROUTED THROUGH DEAERATOR, ADDITION OF A COOLANT-RESERVOIR REFILL TANK, PLUS OTHER PIPING AND EQUIPMENT MODIFICATIONS.

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

*MODIFICATION, SYSTEM OR EQUIPMENT + IN PILE LOOP + REACTOR, PRESSURIZED WATER + SAXTON + TECHNICAL SPECIFICATIONS

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-18981 ALSO IN CATEGORY 5
SAXTON SUPPLIES ADDITIONAL INFORMATION ON CHANGE REQUEST 27. PH EXPERIMENTS
SAXTON NUCLEAR EXPERIMENTAL CORPORATION, SAXTON, PA.
6 PAGES, 1 TABLE, SEPTEMBER 6, 1967, DOCKET NO. 50-146

ANSWERS TO 3 AEC QUESTIONS. (1, PH RANGE) - LICENSE LIMIT IS ON ALKALI CONCENTRATION (0.0 TO 3.2 X 10⁻⁴ MOLAL) WHICH AT 500 PPM BORON AND 530 F CORRESPONDS TO A PH RANGE OF 5.5 TO 7.5. (2, THERMAL LIMITS) - WAPD TESTS (DATA GIVEN) SHOW THAT DNB HEAT FLUX IS INCREASED DUE TO FUEL-ROD CRUD. OTHER STUDIES SHOW THAT WALL TEMPERATURE IS LOWER IN NUCLEATE BOILING, FOR A GIVEN HEAT FLUX, WITH CRUD. (3, REACTIVITY RATE DUE TO PH CHANGE) - COOLANT PH CAN BE INCREASED 2 UNITS IN HALF AN HOUR. FROM PREVIOUS EXPERIMENTS, THE MAXIMUM RATE IS 0.017 DELTA K/K/HR AND A MAXIMUM TOTAL CHANGE OF 0.2%.

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

*COOLANT CHEMISTRY + *IN CORE MEASUREMENT + *SURFACE FILM DEPOSIT + DNB (DEPARTURE FROM NUCLEATE BOILING) + POISON, SOLUBLE + REACTIVITY EFFECT, ANOMALOUS + REACTOR, PRESSURIZED WATER + SAXTON + TECHNICAL SPECIFICATIONS

17-18989 ALSO IN CATEGORY 5
OSBORNE MF + LONG EL + MORGAN JG
PUSI IRRADIATION EXAMINATION OF ORR LOOP 1 ADVANCED FUEL ELEMENTS
OAK RIDGE NATIONAL LABORATORY
ORNL-TM-862 +. 43 PAGES, 26 FIGURES, 2 TABLES, 5 REFERENCES

TESTED FIVE EXPERIMENTAL FUEL ELEMENTS, COMPOSED OF SINTERED UO₂ FUEL PELLETS IN SS CLADDING AND EQUIPPED WITH SPIRAL FINS TO INCREASE THE HEAT-TRANSFER AREA. CLAD TEMPERATURE WAS 1500 F, AND HEAT RATINGS WERE FROM 50,000 TO 65,000 BTU/HR-FT. PERFORMANCE WAS SATISFACTORY EXCEPT FOR TWO RUPTURED ELEMENTS, THESE CAUSED IN ONE CASE BY INSUFFICIENT COOLANT FLOW AND IN THE OTHER BY A DAMAGED AREA IN THE COOLING FINS. TWO OF THE UNFAILED ELEMENTS HAD FAULTY BRAZE JOINTS.

AVAILABILITY - M. F. OSBORNE, F. L. LONG, OR J. G. MORGAN, OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.

*EXAMINATION + *FAILURE, FUEL ELEMENT + *IRRADIATION TESTING + FAILURE, CLADDING + FIN + HEAT TRANSFER AUGMENTATION + IN PILE LOOP + ORR (OAK RIDGE RESEARCH REACTOR) + REACTOR, RESEARCH

17-19094 ALSO IN CATEGORIES 5 AND 6
MANDEL H
HEAVY WATER ORGANIC COOLED REACTOR. MELTING POINTS, TRANSITION ENERGIES, AND SPECIFIC HEATS OF POLYPHENYL REACTOR COOLANTS
ATOMICS INTERNATIONAL, CANOGA PARK, CALIFORNIA. COMBUSTION ENGINEERING, INC., WINDSOR, CONN. NUCLEAR DIVISION
AI-CE-58 +. 25 PAGES, 15 FIGURES, 2 TABLES, 8 REFERENCES, AUGUST 15, 1967

DIFFERENTIAL SCANNING CALORIMETRY WAS APPLIED TO STUDIES OF THE MELTING BEHAVIOR, TRANSITION ENERGIES, AND SPECIFIC HEAT OF POLYPHENYLS OF INTEREST TO ORGANIC-COOLANT TECHNOLOGY IN THE HEAVY-WATER ORGANIC-COOLED REACTOR PROGRAM. MELTING POINTS AND HEATS OF FUSION WERE DETERMINED FOR THE MAJOR CONSTITUENTS OF POLYPHENYL COOLANTS, NAMELY, BIPHENYL, ORTHO-, META-, AND PARATERPHENYL. THE MELTING CHARACTERISTICS OF TWO SYNTHETIC TERPHENYL BINARIES SIMILAR TO PROPOSED HWOCR COOLANTS (ORTHO-META ISOMER RATIOS OF 2.1 AND 1.2) WERE STUDIED WITH RESPECT TO THE EFFECT OF THE HIGH BOILER (HB) FRACTION, AND OF PARATERPHENYL ON THE MELTING TRANSITION RANGE. THE EFFECT OF HB ADDITION ON THE TWO BINARY MIXTURES IS BOTH TIME AND CONCENTRATION DEPENDENT IN THAT THE OBSERVED CRYSTALLINITY OF THE SAMPLES DECREASES WITH INCREASED HB ADDITION, AND INCREASES WITH TIME. THE ADDITION OF PARATERPHENYL INCREASES THEIR FINAL MELTING POINT. THE CALORIMETRIC CAPABILITIES WERE ALSO UTILIZED IN THE MEASUREMENT OF THE SPECIFIC HEATS OF SOLID BIPHENYL, ORTHO-, AND PARATERPHENYL.

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

ORGANIC COOLANT + PROPERTY, PHYSICAL + REACTOR, ORGANIC COOLED

17-19677 ALSO IN CATEGORY 11
BEHNKE W8
ORL CONCLUDE DRESDEN 1 MAY BE OPERATED FOLLOWING PRIMARY SYSTEM TESTS
DIVISION OF REACTOR LICENSING
2 PAGES, ATOMIC ENERGY CLEARINGHOUSE 13(46) PAGES 15-16 (NOVEMBER 13, 1967)

(LETTER, NOVEMBER 3) AFTER NOV. 1 MEETING WITH CE, GE, B AND W, AND BNL PERSONNEL, ORL LISTS 5 PREREQUISITS FOR RESUMING OPERATION. (1) HYDRO TEST ENTIRE PRIMARY COOLANT SYSTEM AT 1205 PSI. (2) TWO KNOWN FLAWS IN D RECIRC.-LOOP PIPING SHALL BE REMOVED (UNDER ASME CODE METHODS), OR LOOP ISOLATED. (3) CONTINUE PRESENT INTENSIFIED PROGRAM OF PRIMARY-SYSTEM SURVEILLANCE AND LEAK DETECTION. (4) CONTINUE PRESENT PROGRAM FOR PERIODIC NONDESTRUCTIVE TESTING OF PRIMARY PIPING SYSTEM. (5) SUBMIT A COMPLETE WRITTEN REPORT WITHIN 30 DAYS OF METALLURGICAL AND ULTRASONIC INSPECTIONS.

CATEGORY 17
OPERATIONAL SAFETY AND EXPERIENCE

17-19677 *CONTINUED*

*FLAW + *MAIN COOLING SYSTEM + *SURVEILLANCE PROGRAM + DRESDEN 1 + FAILURE, PIPE + REACTOR, BOILING WATER +
TEST, LEAK RATE + TEST, NONDESTRUCTIVE + TEST, PROOF

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-06683 ALSO IN CATEGORY 5
GCR-ORR LOOP 2 DESIGN
OAK RIDGE NATIONAL LABORATORY
ORNL-TM-1048 +. 117 PAGES, TABLES, FIGURES, 19 REFERENCES, JUNE 1965

THIS REPORT COVERS LOOP DESIGN, HEAT EXCHANGES, AUXILIARY SYSTEM DESIGN, CONTAINMENT CELL DESIGN, SHIELDING ANALYSIS, AND A SAFETY ANALYSIS (INCLUDING THE MCA).

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

*IN PILE LOOP + *SAFETY REVIEW (OPERATIONS, EXPERIMENTS) + ACCIDENT, LOSS OF COOLANT + ACCIDENT, MAXIMUM CREDIBLE (MCA) + CONTAINMENT, GENERAL + FUEL ELEMENT + HELIUM + IRRADIATION TESTING + MAINTENANCE, REMOTE + ORR (OAK RIDGE RESEARCH REACTOR) + REACTOR, HIGH TEMP. GAS + RESEARCH AND DEVELOPMENT PROGRAM

18-13484 ALSO IN CATEGORY 5
AEC LETTER ON EMERGENCY CORE COOLING SENT DECEMBER 8 TO CONSOLIDATED EDISON AND NORTHERN STATES POWER
CONSOLIDATED EDISON CO. OF NEW YORK, INC. + NORTHERN STATES POWER COMPANY
1 PAGES, DECEMBER 8, 1966, DOCKET NO. 50-3 AND 50-130, ATOMIC ENERGY CLEARING HOUSE 12(51), PAGE 7,
(DECEMBER 19, 1966)

ORL REQUESTS TWO ANALYSES IN ADDITION TO PRESENT CONSIDERATION OF THE NEED FOR EMERGENCY CORE COOLING. (1) LOSS-OF-COOLANT ANALYSES FOR VARIOUS PIPE SIZES TO DEFINE THE LIMITING CONDITIONS, HEAT SINKS, AND EFFECTS ON REACTOR VESSEL INTEGRITY. (2) ANALYSES TO DETERMINE SYSTEM PERFORMANCE REQUIREMENTS TO PREVENT CORE MELTDOWN.

*EMERGENCY COOLING CONSIDERATIONS + INDIAN POINT 1 + PATHFINDER + REACTOR, BOILING WATER + REACTOR, PRESSURIZED WATER

18-14620 ALSO IN CATEGORIES 11 AND 12
IMPROVEMENTS TO CONTAINMENT ISOLATION VALVE SEAL WATER SECTION
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC., INDIAN POINT NUCLEAR GENERATING UNIT NO. 2
5 PAGES, 2 FIGURES, FOURTH SUPPLEMENT TO PRELIMINARY SAFETY ANALYSIS REPORT, JULY 1966, DOCKET NO. 50-247

DESCRIBES MODIFIED ISOLATION-VALVE SEAL-WATER SYSTEM WITHOUT INDICATING MODIFICATIONS. PRINCIPLE NOT CHANGED. SEAL WATER (AT PRESSURE HIGHER THAN CONTAINMENT PRESSURE) IS INJECTED INTO VALVE BONNET SO OUTLEAKAGE IS ELIMINATED PAST THE FIRST DISK OF THE DOUBLE-DISK ISOLATION VALVE. FOR THE 50 PENETRATIONS, A 200-GAL WATER TANK PRESSURIZED BY NITROGEN BOTTLES IS PROVIDED.

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

*CONTAINMENT LEAKAGE CONTROL + *CONTAINMENT PENETRATION, PIPE + *SYSTEM DESCRIPTION + INDIAN POINT 2 + MODIFICATION, SYSTEM OR EQUIPMENT + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY + VALVE

18-14621 ALSO IN CATEGORY 12
CHANGE TO THE SAFETY INJECTION SYSTEM
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC., INDIAN POINT NUCLEAR GENERATING UNIT NO. 2
8 PAGES, 1 FIGURE, 2 TABLES, FOURTH SUPPLEMENT TO PRELIMINARY SAFETY ANALYSIS REPORT, JULY 1966, DOCKET NO. 50-247

BRIEF DESCRIPTION OF REDUNDANT LOW-HEAD SYSTEMS (2 RESIDUAL-HEAT-REMOVAL PUMPS, AND 2 LOW-HEAD INJECTION PUMPS), EACH TAKING FROM REFUELING STORAGE-WATER TANK. ONE SYSTEM IS INSIDE CONTAINMENT, THE OTHER OUTSIDE. ELECTRICAL POWER IS FROM DIESEL OR OUTSIDE POWER.

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

*CORE REFLOODING SYSTEM + *MODIFICATION, SYSTEM OR EQUIPMENT + INDIAN POINT 2 + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY + SYSTEM DESCRIPTION

18-16429 ALSO IN CATEGORIES 9 AND 17
BIG ROCK POINT CHANGES TO MAIN STEAM BYPASS VALVE AND SECOND TRANSMISSION LINE
CONSUMERS POWER COMPANY, JACKSON, MICH.
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(27) PAGE 15 (JULY 3, 1967), DOCKET 50-155

(LETTER JUNE 23.) FOLLOWING THE INCIDENT (ACC NO. 11038) OF AUGUST 9, 1966, THE MAIN STEAM BYPASS VALVE WAS PLACED IN MANUAL ABOVE 50 MWE SINCE IT WOULD NOT PREVENT SCRAM OR A LINE LOSS OF THIS CHANGE. EDITORIAL OMISSION KEPT THIS FACT OUT OF THE SEMIANNUAL REPORT. SINCE SOME FAILURE INCIDENCE WILL ALWAYS BE PRESENT IN THIS SYSTEM, A DC-MOTOR-OPERATED ISOLATION VALVE WILL BE ADDED AS A BACKUP VALVE. A 46-KV LINE WILL BE BROUGHT TO THE PLANT WITH AUTOMATIC THROWOVER TO PROVIDE A SECOND SOURCE OF NORMAL STATION POWER. TESTING OF THE NEW BYPASS-VALVE CONTROLS AT HIGH POWER IS DEFERRED TO MINIMIZE THE NUMBER OF THERMAL TRANSIENTS

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-16429 *CONTINUED*
TO THE FUEL, BECAUSE OF THEIR PAST FAILURES.

*MODIFICATION, SYSTEM OR EQUIPMENT + ACCIDENT, LOAD REJECTION + BIG ROCK POINT +
EMERGENCY POWER, ELECTRIC + FAILURE, EQUIPMENT + FAILURE, FUEL ELEMENT + MAIN COOLING SYSTEM +
REACTOR, BOILING WATER + TEST, PROOF + VALVE

18-16477 ALSO IN CATEGORY 17
MONTHLY OPERATING REPORT, APRIL, 1965
CAROLINAS VIRGINIA NUCLEAR POWER ASSOCIATES, INC.
CVNA-234 +. 30 PAGES, APRIL 1965

ONE IN A SERIES OF PROGRESS REPORTS. TOPICS INCLUDE GENERAL PLANT PERFORMANCE, PLANT
CHEMISTRY, PLANT MAINTENANCE, HEALTH AND SAFETY, STATUS OF RESEARCH AND DEVELOPMENT PROGRAMS.

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

*OPERATIONS REPORT, GENERAL + COOLANT CHEMISTRY + CVTR (CAROLINAS VIRGINIA TUBE REACTOR) +
MAINTENANCE AND REPAIR + RADIATION SAFETY AND CONTROL + REACTOR, HEAVY WATER + REACTOR, PRESSURE TUBE +
REACTOR, PRESSURIZED WATER

18-16480 ALSO IN CATEGORIES 5 AND 12
TRAUBE K
ANORDNUNG VON KÜHLWASSERUMWALZPUMPEN INNERHALF DES DRUCK GEFASSES VON SIEDEWASSERREAKTOREN
FACHBEREICH KERNENERGIEANLAGEN, ALLGEMEINE ELEKTRIZITÄTS-GESSELLSCHAFT (AEG), FRANKFURT
16 PAGES, 6 FIGURES, 1 TABLE, NUCLEAR ENGINEERING AND DESIGN 5(2) PAGES 161-176 (MARCH 1967) IN GERMAN

AEG PROPOSES NEW VERSION OF BWR, WITH COOLANT-CIRCULATION PUMPS INSTALLED IN REACTOR VESSEL;
THUS ABOLISHING EXTERNAL RECIRCULATION LOOPS AND ALLOWING A STILL MORE COMPACT CONTAINMENT
DESIGN. (SECTION 1) - REVIEWS DEVELOPMENT OF COOLANT-CIRCULATION SYSTEMS AND DESCRIBES
PRESENT JET PUMPS.

*PUMP, JET + *REACTOR DESCRIPTION + GERMANY + PRESSURE VESSEL + REACTOR, BOILING WATER

18-16492 ALSO IN CATEGORIES 5 AND 17
INDIAN POINT 1 CHANGE 28 - COOLANT PH REACTIVITY EFFECT TESTS
CONSOLIDATED EDISON COMPANY, NEW YORK
2 PAGES, DOCKET NO. 50-3, JUNE 22, 1967

THE TECHNICAL-SPECIFICATION LIMIT RESTRICTING PH-INDUCED REACTIVITY CHANGES TO 0.5% DELTA K/K
IS SUSPENDED FOR 1 MONTH FOR TESTS AS FOLLOWS - (1) AT DIFFERENT PH CONDITIONS, (A) MOVE
CONTROL RODS IN 1/2-INCH INCREMENTS AT RANDOM TIME INTERVALS BETWEEN 15 AND 150 SEC. (B)
CHANGE POWER LEVEL BETWEEN 40 AND 100%. (2) ADJUST PH FROM 5.6 TO 7 IN A FEW HOURS, AND
FOLLOW REACTIVITY WITH CONTROL RODS. ONLY SIGNIFICANT DEPARTURE FROM ROUTINE IS A WEEKS
PRIOR OPERATION AT PH 5.6 INSTEAD OF THE NORMAL 7.0. THE MAXIMUM PH REACTIVITY CHANGE IS
EXPECTED TO BE 0.8% OVER A 24-HOUR INTERVAL.

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

*COOLANT CHEMISTRY + *REACTIVITY EFFECT, ANOMALOUS + *TECHNICAL SPECIFICATIONS + INDIAN POINT 1 +
PH REACTIVITY EFFECT + REACTOR, PRESSURIZED WATER + SAFETY EVALUATION + TEST, PHYSICS

18-16493
IDAHO STATE UNIVERSITY AGN 201 CONSTRUCTION PERMIT
UNIVERSITY OF IDAHO, POCAHELLO, IDAHO
4 PAGES, DOCKET NO. 50-284, JUNE 27, 1967

MODEL 103 (PREVIOUSLY OPERATED AT SAN RAMON, CALIFORNIA, BY AGN AS DOCKET NO. 50-32) WILL BE
ASSEMBLED AT ISU THE SUMMER OF 1967 AND OPERATED UP TO 0.1 WATT. PACKAGE INCLUDES LICENSE,
SAFETY EVALUATION, AND TECHNICAL SPECIFICATIONS.

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

*CONSTRUCTION PERMIT PROCESS + AGN (TRAINING REACTOR, AEROJET-GEN. NUCLEONICS) + REACTOR, TRAINING +
SAFETY EVALUATION + TECHNICAL SPECIFICATIONS

18-16496 ALSO IN CATEGORY 11
SURRY 1 AND 2 - AMENDMENT 1
VIRGINIA ELECTRIC AND POWER COMPANY, RICHMOND, VIRGINIA
56 PAGES, 17 FIGURES, DOCKET NO. 50-280/281, JUNE 21, 1967

DRAWINGS AND ENTIRE TEXT SUBSTITUTIONS ARE MADE FOR CONTAINMENT-STRUCTURE DESIGN (SECT.
5.2.2), GENERATOR-DESIGN BASES AND SYSTEM INTERCONNECTIONS (SECT. 8.2 AND 8.3), COMPONENT
COOLING SYSTEM (SECT. 9.4), CONTROL-ROOM SHIELDING AND VENTILATION (SECT. 11.3.2.1 AND .5),

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-16496 *CONTINUED*

ORGANIZATION AND PERSONNEL (SECT. 12), AND HYPOTHETICAL INCIDENT (SECT. 14.5.1). CHANGES APPEAR TO BE TRIVIAL EDITING CHANGES, AND SMALL DIMENSIONAL CHANGES EXCEPT (1) NEW SECTION 8.3 ON INTERCONNECTIONS TO POWER GRID, (2) ADDED NEUTRON SHIELD TANK COOLER SUBSTITUTES FOR SHIELDING CONCRETE COOLING COILS, (3) THE CONTAINMENT WALL IS NOW 12 IN. THICKER, REDUCING SITE-BOUNDARY DIRECT-RADIATION DOSE FROM 46 MILLIREMS/1.3 REMS (FOR 2-HOUR/30-DAY DOSE) TO 39/0.19, (4) CONTROL-ROOM SHIELDING/VENTILATION AUGMENTED TO REDUCE DOSE FROM AN OVERHEAD PLUME.

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

*CONTAINMENT, GENERAL + *SAFETY ANALYSIS REPORT, GENERAL + AUXILIARY COOLING + CONTROL PANEL/ROOM + DOSE CALCULATION, EXTERNAL + REACTOR, PRESSURIZED WATER + SHIELDING + SURRY 1 AND 2

18-16762 ALSO IN CATEGORY 6

SMITH GG + BECK JW + GLICKSTEIN SS
ANNULAR SEED-BLANKET REACTOR CRITICAL EXPERIMENTS
WESTINGHOUSE ELECTRIC CORP., BETTIS ATOMIC POWER LAB., PITTSBURGH
WAPD-TM-621 +. 53 PAGES, 36 FIGURES, 11 TABLES, 10 REFERENCES, FEBRUARY, 1967

A SERIES OF 1-, 2-, AND 3-MODULE CORES WAS MOCKED UP, USING HIGHLY ENRICHED UO₂ SEEDS AND THORIA BLANKETS TO OBTAIN THE USUAL INFORMATION PLUS INTERMODULAR COUPLING. DESIGN MODEL AGREED WITH EXPERIMENTAL RESULTS EXCEPT FOR FLUX NEAR INTERFACE.

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

*CRITICALITY EXPERIMENT + COUPLED CORES + REACTOR, BREEDER + REACTOR, PRESSURIZED WATER

18-16925

HOOKS KR

A FEASIBILITY STUDY OF A HIGH TEMPERATURE LIQUID ALUMINUM COOLED FLUIDIZED BED NUCLEAR POWER REACTOR
AIR FORCE INSTITUTE OF TECHNOLOGY
AD-603 610 + GNE/PHYS/64-10 +. 46 PAGES, FIGURES, AUGUST 1964

PRESENTS A FEASIBILITY STUDY OF A HIGH-TEMPERATURE LIQUID-ALUMINUM-COOLED POWER REACTOR. THE CRITERIA OF A COOLANT OUTLET TEMPERATURE OF 2000 C AND A LOW-PRESSURE CORE LED TO THE CHOICE OF LIQUID ALUMINUM AS THE COOLANT. A COMPATABILITY STUDY DETERMINED THAT ONLY ALUMINUM MONONITRIDE IS INERT TO ALUMINUM AT 2000 C, AND MUST BE USED FOR CONSTRUCTING THE CORE. FUEL ELEMENTS OF URANIUM MONONITRIDE WERE CHOSEN ON THE BASIS OF PROBABLE COMPATIBILITY WITH THE ALUMINUM NITRIDE CLADDING. CONSIDERATION OF THE HEAT-TRANSFER EFFECTS LED TO THE CHOICE OF MICRON-SIZE COATED FUEL PARTICLES IN A CYLINDRICAL FLUIDIZED-BED CORE. RESULTS INDICATE A FAST CORE WITH A CRITICAL MASS ABOVE 10 KG AND THAT THE REACTOR MAY BE INHERENTLY STABLE BY CORRECT DESIGN OF THE CORE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*DESIGN STUDY + *REACTOR DESCRIPTION + ALUMINUM + COATED PARTICLE + METAL, LIQUID + REACTOR, LIQUID METAL COOLED + REACTOR, POWER

18-16965

ALSO IN CATEGORY 11

MEL NIKOV NP

ENGINEERING DESIGN AND STRUCTURAL ANALYSIS OF NUCLEAR REACTORS

USSR. GOSUDARSTVENNYI KOMITET PO I SPOL ZOVANI YU ATOMNOI ENERGI

AFR-TD-6640 + INST-CAT.-1687 +. 591 PAGES, FIGURES, TABLES, REFERENCES, 1963

IN THIS BOOK AN ATTEMPT IS MADE TO DISCUSS PROBLEMS PERTAINING TO THE STRUCTURAL DESIGN OF NUCLEAR REACTORS, TO REVIEW THE EVOLUTION OF THEIR DESIGN, TO NOTE BASIC PROBLEMS LIKELY TO BE POSED BY FUTURE DEVELOPMENT, TO ANALYZE THE BASIC FACTORS THAT LED TO THE EVOLUTION OF VARIOUS SHAPES, AND TO ESTABLISH MATHEMATICAL RULES OF PROCEDURE. THE AUTHOR ALSO ATTEMPTS TO ANALYZE CALCULATION METHODS FOR TREATING METAL REACTOR VESSELS AND THEIR COMPONENT PARTS. THIS BOOK DISCUSSES THEORETICAL CONSIDERATIONS RELEVANT TO THE SHAPES OF REACTORS, AND THE DESIGN OF STEEL REACTOR STRUCTURES. THE THEORETICAL BACKGROUND AND PHYSICS OF REACTORS ARE NOT DISCUSSED, EXCEPT WHERE THEY ARE PERTINENT TO THE CHOICE OF PARAMETERS FOR THE CRITICAL SIZE OF THE CORE, AND TO THE FUEL ELEMENTS. TECHNICAL AND ECONOMIC ASPECTS OF THE SHAPES EVOLVED ARE REVIEWED.

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

*PRESSURE VESSEL + *STRESS ANALYSIS + BRITTLE FRACTURE + CONTAINMENT STRUCTURE + DESIGN CRITERIA + REACTOR, FAST + REACTOR, GAS COOLED + REACTOR, HEAVY WATER + REACTOR, WATER + STEEL + WELDING

18-17061

ALSO IN CATEGORIES 11 AND 17

NORRIS EB + PICKETT AG + WYLIE RD

PROPOSED CHANGES IN THE TECHNICAL SPECIFICATIONS FOR THE ELK RIVER REACTOR SYSTEM
SOUTHWEST RESEARCH INSTITUTE, SAN ANTONIO, TEXAS

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-17061 *CONTINUED*
SWRI-1228P4-29 +. 50 PAGES, FIGURES, REFERENCES, FEBRUARY 10, 1967

THE TECHNICAL SPECIFICATIONS FOR THE ELK RIVER REACTOR PROJECT CONTAIN A NUMBER OF PROVISIONS RELATED TO THE INTEGRITY OF THE PRESSURE VESSEL. THESE PROVISIONS WERE REVIEWED IN THE LIGHT OF INFORMATION DEVELOPED TO DATE ON THE MATERIALS, FABRICATING PROCESSES, AND INSPECTION OF THE VESSEL. THIS REPORT IS SET UP IN THE FORM OF PROPOSED CHANGES IN THE TECHNICAL SPECIFICATIONS AND THE JUSTIFICATION FOR THESE CHANGES. DATA ARE PRESENTED TO SUPPORT THE REMOVAL OF THE 250-CYCLE AND FIVE-YEAR LIMITATION WHICH PRESENTLY EXISTS FOR THE PRESSURE VESSEL. A SUMMARY IS PRESENTED OF THE AVAILABLE INFORMATION TO DATE ON THE REACTOR-MATERIAL-SURVEILLANCE PROGRAM. THE DETECTION OF EXTENSIVE STRESS-CORROSION CRACKING IN THE CLADDING AT THE VESSEL FLANGE LED TO AN ANALYSIS OF THE PROBABILITY OF PROPAGATION OF THESE DEFECTS AT THIS LOCATION IN ADDITION TO THOSE IN THE STRENGTH WELDS. IT IS SUGGESTED THAT A PROGRAM BE INITIATED TO CONTINUE STUDIES OF THE POSSIBILITY OF REMOVING THE REACTOR INTERNALS SO THAT, AT SOME TIME IN THE HISTORY OF THE PLANT, A THOROUGH INSPECTION OF THE PRESSURE VESSEL CAN BE MADE. IN THE MEANTIME, INSPECTIONS NOW BEING MADE BY CONVENTIONAL MEANS, THAT IS, VISUAL, DYE PENETRANT, AND ULTRASONIC, WHERE APPLICABLE, SHOULD BE CONTINUED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*ELK RIVER + *PRESSURE VESSEL + *SURVEILLANCE PROGRAM + *TECHNICAL SPECIFICATIONS + CLAD + FLAW + STEEL + STRESS CORROSION + STRUCTURAL INTEGRITY + TEST, NONDESTRUCTIVE + WELDS

18-17292
MASON EA + TIMMINS TH + MORGAN DT + BLEY WN
EFFECT OF REACTOR IRRADIATION ON SANTOWAX WR - 1. RADIOLYSIS REACTION ORDER AND FAST NEUTRON EFFECT 2. RADIOPYROLYSIS
MASSACHUSETTS INSTITUTE OF TECHNOLOGY, CAMBRIDGE
MIT-334-70 +. 322 PAGES, REFERENCES, OCTOBER 1966

SANTOWAX WR WAS GAMMA-IRRADIATED AT MIT AT 300 AND 427 C UNDER STEADY-STATE AND TRANSIENT TERPHENYL CONCENTRATIONS. THREE LOW-TEMPERATURE (300 C) IRRADIATIONS WERE MADE AT DIFFERENT STEADY-STATE CONCENTRATION LEVELS TO DETERMINE APPARENT REACTION ORDER FOR RADIOLYSIS. THIS, WITH RECENT EURATOM STEADY-STATE IRRADIATIONS OF OM-2, INDICATED AN APPARENT REACTION ORDER OF RADIOLYSIS OF 1.7 WITH RESPECT TO TOTAL TERPHENYL CONCENTRATION. AT TEMPERATURES ABOVE 350 C, IRRADIATED COOLANT HAD HIGHER FIRST-ORDER THERMAL DECOMPOSITION (RADIOPYROLYSIS) RATE CONSTANTS THAN UNIRRADIATED COOLANT. PROCEDURES FOR ESTIMATING COOLANT MAKEUP RATES IN ORGANIC-COOLED REACTORS ARE DISCUSSED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*ORGANIC COOLANT + *RADIATION DAMAGE + *SURFACE FILM DEPOSIT + IN PILE EXPERIMENT + IN PILE LOOP

18-17293
ROBINSON RK
USA-MEXICO DESALTING PLANT STUDY - GRAPHITE-MODERATED REACTORS WITH OXIDE OR METALLIC FUEL
GENERAL ELECTRIC CO., RICHLAND, WASHINGTON. HANFORD ATOMIC PRODUCTION OPERATION
RI-GEN-925 +. 73 PAGES, REFERENCES, APRIL 15, 1966

TWO 5000-MW GRAPHITE-MODERATED REACTORS, EACH IN SEPARATE CONTAINMENT. 255 F STEAM IS DELIVERED AT THE BRINE HEATER TO PRODUCE 1 BG/DAY OF WATER. REACTOR IS BASED ON THE HANFORD N REACTOR, WITH VARIOUS MODIFICATIONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*REACTOR DESCRIPTION + ECONOMICS + HANFORD SITE + REACTOR, DESALINATION + REACTOR, GRAPHITE MODERATED

18-17294
HELFRICH F
PLAIN AND ANTIFRICTION BEARINGS FOR EXTREME REACTOR CONDITIONS
BROWN BOVERI/KRUPP REAKTORBAU G.M.B.H.
AEC-TR-6839 (PT.1) +. 10 PAGES, TRANSLATED FROM ATOMWIRTSCHAFT 9 PAGES 126-9 (1964)

TO SATISFY REQUIREMENTS FOR SAFETY AND ELIMINATION OF MAINTENANCE IN REACTOR OPERATION, EXPERIENCE IS NEEDED FOR BEARINGS, TOO, BUT IT CAN BE OBTAINED ONLY BY TESTING THE BEARINGS UNDER EXTREME REACTOR CONDITIONS. EXPERIMENTAL WORK IN JULICH FOR THE AVR HIGH-TEMPERATURE REACTOR AND COOPERATION WITH THE OECD DRAGON PROJECT IN GREAT BRITAIN FIRST ALLOWED BRC/KRUPP TO DEVELOP DESIGN CRITERIA FOR BEARINGS IN EXTREMELY DRY HELIUM ATMOSPHERE. ALL THE TESTS SHOWED THE GREAT IMPORTANCE OF MOLYBDENUM DISULFIDE IN REDUCING FRICTION AND WEAR.

AVAILABILITY - JOHN CRERAR LIBRARY, 35 WEST 33RD ST., CHICAGO, ILLINOIS 60616. \$1.10 COPY

*PUMP + REACTOR, GAS COOLED

18-17295

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-17295 *CONTINUED*

BENNETT RA + HOFMANN PL + LITTLE WW + MAAS LL
FAST FLUX TEST REACTOR - CRITICAL EXPERIMENTS PROGRAM
BATTELLE-NORTHWEST, RICHLAND

BNWL-SA-909 + CONF-661019-3 +. 29 PAGES, SEPTEMBER 22, 1966, FROM INTERNATIONAL CONFERENCE ON FAST CRITICAL EXPERIMENTS AND THEIR ANALYSIS

PRESENTS THE SCOPING AND PRELIMINARY PLANNING. IN ADDITION TO THE USUAL THINGS, THE PROGRAM IS DESIGNED TO (1) CHECK CONTROL-ROD WORTH IN THE REFLECTOR, WHERE FARET CALCULATED VALUES DIFFER FROM EXPERIMENTAL VALUES BY 10% TO 20%, (2) CONFIRM NUCLEAR- SAFETY FEATURES BY SIMULATING TEST-ELEMENT MELTDOWN AND BY DETERMINATION OF TEMPERATURE COEFFICIENTS, (3) GIVE INFORMATION FOR SHIELD AND INSTRUMENT DESIGN BY INCLUDING AS MUCH REFLECTOR AND STRUCTURAL MATERIAL AS POSSIBLE IN BOTH RADIAL AND AXIAL DIRECTIONS, AND USE OF SPECIAL SHIELDING IN OUTER REFLECTOR REGIONS TO ADJUST NEUTRON-GAMMA RATIO TO IMPROVE INSTRUMENT SYSTEM SENSITIVITY, (4) ASSIST IN DESIGN OF ZERO-POWER NUCLEAR-PROOF-TEST FACILITY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*CRITICALITY EXPERIMENT + *DESIGN STUDY + FFTF (TR) + REACTOR, FAST + REACTOR, TEST

18-17296

ASTLEY ER

THE CONCEPTUAL EVALUATION OF A FAST FLUX TEST FACILITY

BATTELLE-NORTHWEST, RICHLAND, WASH.

BNWL-SA-978 + CONF-670413-1 +. 54 PAGES, FROM NATIONAL TOPICAL MEETING ON FAST REACTORS SAN FRANCISCO, CALIF.

DESCRIBES EVALUATION AND FINAL SELECTION FROM A WIDE RANGE OF CONCEPTS FOR THE FFTF FOR FUELS AND MATERIALS TESTING IN SUPPORT OF THE LMFR. IN THE AREA OF CONCEPT-DEPENDENT FEATURES, SPECIAL ATTENTION WAS GIVEN TO FUEL-HANDLING METHODS, HEAT-REMOVAL SYSTEMS (POOL OR PIPED), VERTICALITY OF TEST LOOPS, CLOSED-LOOP DESIGN AND ACCESS, INTERACTION OF CONTAINMENT SYSTEMS WITH FUEL HANDLING PROCESS, AND INSTRUMENT CAPABILITY. CONCEPT-INDEPENDENT AREAS SUCH AS METALLURGICAL AND SODIUM CHEMISTRY REQUIREMENTS FOR FFTF WERE ALSO STUDIED. FINAL SELECTION WAS A DISPERSED-CORE REACTOR, WITH A PIPED HEAT-REMOVAL SYSTEM AND A HOT CELL, UTILIZING A SHIELDED FUEL-HANDLING MACHINE. CORE ARRANGEMENT WILL HAVE SPACE FOR 3 TO 5 VERTICAL, CLOSED, TEST LOOPS, AND INITIAL CORE VOLUME WILL BE ABOUT 800 TO 900 LITERS, WITH MIXED U AND PU OXIDE AS DRIVER FUEL.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*DESIGN STUDY + FFTF (TR) + REACTOR, FAST + REACTOR, TEST

18-17304

BAER R

LOW ENRICHED PM REPLACEMENT CORE. FINAL DESIGN REPORT

HITMAN ASSOCIATES, INC., BALTIMORE MD.

HIT-3583-43 (VOL. 2) +. 97 PAGES, DECEMBER 20, 1966

CONSISTS OF APPENDIXES CONTAINING DETAILED CIRCULATIONS, INCLUDING (1 AND 6) TEMPERATURE DISTRIBUTION AND STRESS ANALYSIS OF FUEL AND BURNABLE POISON ELEMENTS, GUIDE RAILS, CONTROL RODS, GRID PLATE, CORE SHROUD, AND ALIGNMENT STRUCTURE, (2) GAS-PRESSURE CALCULATIONS FOR VOLUMES ABOVE AND BELOW THE FUEL PELLETS, AND IN THE ANNULAR REGION SURROUNDING THE PELLETS, (3) BURNABLE POISON ELEMENT SELF-SHIELDING, (4) VARIATION OF TEMPERATURE COEFFICIENT OF REACTIVITY WITH LIFETIME, BY EXAMINING THE VARIATION WITH BURNUP OF INDIVIDUAL TERMS IN THE BASIC EQUATION FOR THE TEMPERATURE COEFFICIENTS, (5) PELLETT TEMPERATURE DISTRIBUTION MODEL, USING THE TAP-3 CODE TO CALCULATE RADIAL TEMPERATURE DISTRIBUTION, (6) ANALOG SIMULATION EQUATIONS AND CONSTANTS FOR LOSS-OF-FLOW AND COLD-STARTUP ACCIDENTS, AND LOAD TRANSIENTS.

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

*ANALOG SIMULATION + *STRESS ANALYSIS + ACCIDENT, COLD COOLANT + ACCIDENT, LOAD REJECTION + ACCIDENT, LOSS OF FLOW + CORE COMPONENTS, MISCELLANEOUS + DESIGN STUDY + FUEL BURNUP + FUEL ELEMENT + REACTOR, MILITARY + REACTOR, PRESSURIZED WATER + TEMPERATURE COEFFICIENT

18-17305

GAROVSEK Z

HAZARDS SUMMARY REPORT FOR THE TRIGA MARK II REACTOR AT THE NUCLEAR INSTITUTE JOZEF STEFAN IN LJUBLJANA

INSTITUTE JOZEF STEFAN, LJUBLJANA, YUGOSLAVIA.

NIJS-R-474 +. 69 PAGES, TABLES, JANUARY 1966

STANDARD ACCIDENTS CONSIDERED. MCA IS A DEFECT IN FUEL ELEMENT CLADDING WITH AN ACCIDENTAL INSERTION OF ALL EXCESS REACTIVITY (2.25% DELTA K/K). MOST FISSION-PRODUCT GASES DISPERSED FROM THE REACTOR POOL INTO THE REACTOR BUILDING AIR LEAK OUT IN 1 HR, GIVING A PERSON OUTSIDE IN 1 HR A MAXIMUM INTEGRATED DOSE (IF VENTILATION SYSTEM WAS OPERATING).

AVAILABILITY - MICROCARD EDITIONS, INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN 54669

*SAFETY ANALYSIS REPORT, GENERAL + REACTOR, PULSED + TRIGA (TRAINING REACTOR, ISOTOPES, G.A.) + YUGOSLAVIA

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-17338

VANDENBURGH DE
DESIGN FEATURES OF THE CONNECTICUT YANKEE ATOMIC POWER PLANT. PAPER NO. CP65-241
CONNECTICUT YANKEE ATOMIC POWER CO., BOSTON, MASS.
CONF-650105-9 +. 20 PAGES, FROM INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS, WINTER POWER MEETING,
NEW YORK

DESIGN IMPROVEMENTS OVER YANKEE INCLUDE IMPROVED CONTROL-ROD DESIGN, ALLOWING GREATER ACCESS
AND FLEXIBILITY, AND INCREASE IN NET THERMAL EFFICIENCY DUE TO REACTOR CONTROL INNOVATIONS
AND STEAM REHEATING IN TURBINE EXPANSION PATH.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*REACTOR DESCRIPTION + HADDAM NECK + REACTOR, PRESSURIZED WATER

18-17342

PUBLIC SERVICE COMPANY OF COLORADO PLANT. CONCEPTUAL DESIGN REPORT
GENERAL DYNAMICS CORP., SAN DIEGO, CALIFORNIA. GENERAL ATOMIC DIVISION
GA-6802 +. 87 PAGES, NOVEMBER 15, 1965

FEATURES INCLUDE - (1) FUEL-ELEMENT DESIGN WITH GRAPHITE FOR MODERATOR AND CLADDING, (2)
EXTREMELY HIGH BURNUP (ABOUT 85,000 MWD/TON) AND LONG REACTIVITY LIFETIME OF ITS U-233 CYCLE,
(3) HIGH CONVERSION RATIO. OUTSTANDING CHARACTERISTICS IS CONVERSION OF THORIUM TO U-233,
WHICH CAN BE FISSIONED IN SIGNIFICANT AMOUNTS, THUS DRAWING SUBSTANTIAL PORTION OF POWER FROM
INEXPENSIVE THORIUM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

FT. ST. VRAIN + REACTOR DESCRIPTION + REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED +
REACTOR, HIGH TEMP. GAS + THORIUM

18-17343

DIAGUILA AJ + DALLAS T + SALTSMAN JF + WENZLER CJ + MCGILL AA + SPRINGBORN RH
DESIGN OF GAS-COOLED TEST LOOP FOR NASA PLUM BROOK REACTOR FACILITY
NASA, LEWIS RESEARCH CENTER, CLEVELAND, OHIO
NASA-TM-X-1393 +. 119 PAGES, 52 FIGURES, 17 TABLES, 16 REFERENCES, JUNE, 1967

THE RECIRCULATING IN-PILE LOOP DESCRIBED FITS HT-1 OF PLUM BROOK. PERTINENT FEATURES ARE
HELIUM GAS AT 200 PSIA, 200 KW OF NUCLEAR HEAT, A BYPASS ALLOWS COOLANT GAS FLOW RATE OF 0.06
TO 0.24 LB/SEC, AND DOUBLE CONTAINMENT. HEAT TRANSFER AND GAS-FLOW DYNAMIC CHARACTERISTICS
OF FUEL ELEMENT CONFIGURATIONS CAN BE OBTAINED. APPENDIXES CONTAIN SHIELDING CALCULATIONS,
STRESS ANALYSES, PRESSURE-DROP CALCULATIONS, TEMPERATURE-CONTROLLER TESTS, AND INSTRUMENT
CALIBRATIONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*IN PILE LOOP + *REACTOR, GAS COOLED + *SYSTEM DESCRIPTION + PLUM BROOK + REACTOR, TEST

18-17355

MUFENCHOW HO
STATUS SUMMARY OF APDA SMALL LEAK SODIUM - WATER REACTION TEST PROGRAM
ATOMIC POWER DEVELOPMENT ASSOCIATES, INC., DETROIT
TID-20936 +. 11 PAGES, JUNE 30, 1964

ONE OF A SERIES OF PROGRESS REPORTS ON A PROGRAM WHOSE SCOPE IS (1) DESIGN AND OPERATION OF A
SMALL-LEAK SODIUM-WATER REACTION TEST LOOP, (2) CONDUCTION OF A SERIES OF 12 TESTS TO
DETERMINE EFFECT OF SMALL LEAKS ON TUBE WASTAGE, (3) ANALYSIS OF ALL TEST DATA. SPECIFIC
OBJECTIVES ARE (1) FIND MEANS OF ESTIMATING THE EXTENT OF TUBE WASTAGE, (2) DETERMINE
DOMINANT PARAMETERS FOR TUBE WASTAGE FOR DESIGN STUDIES. DESCRIPTION OF TEST-STAND SYSTEMS
IS GIVEN, AND ENGINEERING AND DESIGN STATUS OF THE SYSTEMS IS DISCUSSED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*FAILURE, TUBING + *STEAM GENERATOR + METAL WATER REACTION + REACTOR, LIQUID METAL COOLED +
RESEARCH AND DEVELOPMENT PROGRAM

18-17360

MORRIS PA
DRL DECLINES REVIEW OF PRAIRIE ISLAND UNTIL INCOMPLETE SECTIONS OF FD AND SAR ARE FINISHED
DIVISION OF REACTOR LICENSING, USAEC, WASHINGTON, D. C.

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-17360 *CONTINUED*
2 PAGES, MAY 13, 1967, DOCKET NO. 50-282

REVIEW OF PRAIRIE ISLAND MUST WAIT UNTIL OMITTED MAJOR SECTIONS OF THE FACILITY DESCRIPTION AND SAFETY-ANALYSIS REPORT ARE SUBMITTED. MANY ANALYSIS AND REVIEWS CONSIDERED IN PREVIOUS SIMILAR PLANTS ARE INCOMPLETE. INCOMPLETE SECTIONS INCLUDE (1) CONTAINMENT SYSTEM, (2) MAJOR ACCIDENT ANALYSIS, (3) SEISMIC-DESIGN CRITERIA, (4) METEOROLCGY AND DOSE CALCULATIONS.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONSTRUCTION PERMIT PROCESS + *SAFETY ANALYSIS REPORT, PRELIMINARY +
LICENSING STATUS OF NUCLEAR PROJECTS + PRAIRIE ISLAND

18-17389
NERO DEVELOPMENT PROGRAMME. REPORT COVERING THE PERIOD JANUARY 1963 TO JUNE 1964
REACTOR CENTRUM NEDERLAND, THE HAGUE, NETHERLANDS
EUR-2180.E +. 64 PAGES, FIGURES, TABLES, 1965

DESCRIBES EFFORT AT REACTOR CENTRUM NEDERLAND FOR EURATOM TO ESTABLISH DESIGN FOR A 61-MW PWR FOR MARINE PROPULSION SO THAT FEASIBILITY OF PROTOTYPE CONSTRUCTION MAY BE STUDIED. IN MARCH 1963 CRITICAL EXPERIMENT FACILITY ATTAINED CRITICALITY IN FIRST CORE, AND WORK BEGAN IN LATE 1963 ON INTERIM DESIGN NEREUS. CORE DEVELOPMENT, HEAT TRANSFER, AND SHIELDING EXPERIMENTS ARE DESCRIBED, ALONG WITH TESTS ON STEAM GENERATOR, CONTROL-ROD DRIVE, PRESSURIZER, AND WATER-QUALITY CONTROL.

AVAILABILITY - MICROCARD EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM, WISCONSIN 54669

*RESEARCH AND DEVELOPMENT PROGRAM + EURATOM + NETHERLANDS + REACTOR DESCRIPTION + REACTOR, MARITIME +
REACTOR, PRESSURIZED WATER

18-17395
CHALOT A + GINIER R + SAUVAGE M
FIRST EXPERIMENTAL RESULTS ON THE ENGINEERING MODEL OF RAPSDIE
COMMISSARIAT A L-ENERGIE ATOMIQUE, CADARACHE, FRANCE. CENTRE D-ETUDES NUCLEAIRES
EURFNR-49F + CEA-R-2557 +. 109 PAGES, FIGURES, JUNE, 1964

DESCRIBES EXPERIMENTS ON ENGINEERING MODEL AND ON SODIUM FACILITY IN HR-1 LABORATORY HALL, SUCH AS - (1) DIFFICULTIES ENCOUNTERED DURING ERECTION AND ASSEMBLY OF THE MODEL, INCLUDING PROBLEMS WITH NUCLEAR CLEANNESS, INTERVENTIONS INSIDE LEAKPROOF VESSEL AFTER ACCIDENTAL SODIUM ENTRY, MINOR DIFFICULTIES INVOLVING BASE PLATES AND ROTATING PLUGS, RESULTS OF FIRST EXPERIMENTS (LOADING OF SUBASSEMBLIES, PREHEATING, THERMAL SHOCKS, ETC), (2) TESTS ON TWO PHOTOTYPE CONTROL-ROD-DRIVE MECHANISMS AT THE SODIUM FACILITY, WHICH LED TO DESIGN OF DEFINITIVE DRIVE MECHANISM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*MOCKUP + *OPERATING EXPERIENCE + *OUT OF PILE LOOPS AND EXPERIMENTS + FRANCE +
REACTOR, LIQUID METAL COOLED

18-17396
SMIDT D + FRISCH W + GIORDANO P + HEUSENEP G + KESSLER G + KREWER KII + MERK W + MALMBERG I + SCHONFELD E
SAFETY AND COST ANALYSIS OF A 1000-MWF SODIUM COOLED FAST POWER REACTOR
KERNFORSCHUNGSZENTRUM, KARLSRUHE (WEST GERMANY). INSTITUT FUER NEUTRONENPHYSIK UND REAKTORTECHNIK
EURFNR-77F + KFK-398 +. 40 PAGES, OCTOBER, 1965

OUTLINES STUDY OF DYNAMIC BEHAVIOR USING ANALOG PROGRAMS OF THE CORE AND TOTAL PRIMARY CIRCUIT, AND A REVISED VERSION OF DIGITAL CODE FORT. MAXIMUM HYPOTHETICAL ACCIDENT IS FAST EXCURSION WITH EFFECTS OF A POSITIVE VOID COEFFICIENT, WITH (1) DISASSEMBLY OF THE CORE BY FASTEST POSSIBLE REACTIVITY INPUT RATE DUE TO VOIDING OF CORE CENTER OR MELTDOWN, AND (2) GATHERING OF MOLTEN CORE MATERIAL IN CONTAINMENT AFTER CORE DISASSEMBLY. IT IS CONCLUDED THAT (1) INFINITE RAMPS OF 10 DOLLARS/SEC CAN BE BALANCED BY A SPRING-DRIVEN SAFETY SYSTEM, (2) COOLANT BOILING IN A SINGLE SUBASSEMBLY MAY BE DANGEROUS WITH SODIUM SUPERHEAT, (3) POSITIVE VOID EFFECT IS IMPORTANT ONLY FOR MHA, (4) ADVANTAGES IN COST AND SAFETY FAVOR LOWER COOLANT FRACTIONS AND A NOT TOO COMPACT CARBIDE CORE. ADDITION OF MO TO FUEL OXIDE IS NOT SATISFACTORY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*ACCIDENT ANALYSIS + EURATOM + REACTOR, BREEDER + REACTOR, FAST + REACTOR, LIQUID METAL COOLED

18-17440 ALSO IN CATEGORY 12
PROPOSED GENERAL DESIGN CRITERIA FOR NUCLEAR POWER PLANT CONSTRUCTION PERMITS
6 PAGES, FEDERAL REGISTER 32(132) PAGES 17213-218 (JULY 11, 1967)

PROPOSED APPENDIX A TO 10 CFR 50 ISSUED FOR COMMENT ON JULY 11, 1967. SEVENTY CRITERIA AFFECT

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-17440 *CONTINUED*

OVERALL PLANT REQUIREMENTS (5), PROTECTION BY MULTIPLE FISSION-PRODUCT BARRIERS (5), NUCLEAR AND RADIATION CONTROLS (8), RELIABILITY AND TESTABILITY OF PROTECTION SYSTEMS (8), REACTIVITY CONTROL (6), REACTOR-COOLANT-PRESSURE BOUNDARY (4), ENGINEERED SAFETY FEATURES (7 GENERAL, 5 EMERGENCY CORE COOLING, 9 CONTAINMENT, 4 CONTAINMENT-PRESSURE-REDUCING SYSTEMS, 4 AIR CLEANUP SYSTEMS), FUEL AND WASTE STORAGE SYSTEMS 4, AND PLANT EFFLUENTS 1.

*AEC CONSTRUCTION PERMIT CRITERIA + CONSTRUCTION PERMIT PROCESS + REGULATION, AEC

18-17449

BOYD FC

REACTOR LICENSING IN CANADA

CANADIAN NUCLEAR ASSOCIATION, TORONTO, ONTARIO

66-CNA-316 +. 12 PAGES, 1966, PRESENTED TO THE CANADIAN NUCLEAR ASSOCIATION, 1 JUNE 1966

THE THREE STEPS ARE SITE APPROVAL, CONSTRUCTION PERMIT, AND OPERATING LICENSE. A PERMANENT REVIEW STAFF IS ON HAND. A SAFETY REPORT IS WRITTEN FOR THE CONSTRUCTION PERMIT. A NUCLEAR PLANT IS THOUGHT OF IN 3 DIVISIONS - ESSENTIAL PROCESS EQUIPMENT, PROTECTIVE DEVICES, AND CONTAINMENT PROVISIONS. SITE AND CONTAINMENT GUIDES WERE ADOPTED IN 1964, BASED ON (ROUTINE RELEASES) INDIVIDUAL AND 10,000 MAN-REMS PER YEAR POPULATION EXPOSURE. FOR ACCIDENTS, 25 REMS WHOLE BODY, 250 REMS THYROID, AND 1,000,000 MAN-REMS FOR THE POPULATION.

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

*CONSTRUCTION PERMIT PROCESS + *OPERATING LICENSE PROCESS + *SITING, REACTOR + CANADA + REACTOR, POWER

18-17461

IANNI PW

EVESR MARK III SUPERHEAT FUEL BUNDLE DESIGN

GENERAL ELECTRIC CO., SAN JOSE, CALIF.

GEAP-4793 +. 72 PAGES, JANUARY 1965

DESCRIBES MECHANICAL AND THERMAL-HYDRAULIC DESIGN OF THE BUNDLE, WHICH HAS 4 CLUSTERS OF 7 INCOLOY-CLAD FUEL RODS EACH. CORE PERFORMANCE WITH MARK-III FUEL IS DESCRIBED, AND EMERGENCY COOLING AND OTHER SAFEGUARDS DISCUSSED. LOSS-OF-COOLANT ACCIDENTS CONSIDERED ARE - (1) LEAKAGE IN INCOLOY-ZIRCALOY JOINT, (2) INSULATING STEAM-GAP LEAKAGE, (3) PIPING AND SYSTEM RUPTURES, AND (4) FLOW LEAKAGE DUE TO LOCAL GAP CLOSURE.

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

*CLAD + *DESIGN STUDY + *INCONEL + FUEL ELEMENT + IRRADIATION TESTING + REACTOR, INTERNAL SUPERHEAT + VESR (VALLECITOS EXP. SUPERHEAT REACTOR-ESADA)

18-17412

TRAUBE K + ENGEL H

BOILING WATER REACTORS IN THE GERMAN FEDERAL REPUBLIC

8 PAGES, 7 FIGURES, BULL. INFORM. ASS. BELGE. DEVELOP. PAC. ENERG. AT. 11(64) PAGES 29-36 (NOVEMBER 1966) IN FRENCH

FOUR BOILING-WATER REACTORS ARE BEING BUILT IN THE GERMAN FEDERAL REPUBLIC. THEIR PRINCIPAL CHARACTERISTICS ARE TABULATED, AND A REVIEW IS GIVEN OF THE EXPERIENCES ACQUIRED IN THEIR CONCEPTION AND CONSTRUCTION. (UNTRANSLATED GERMAN ARTICLE).

*REACTOR DESCRIPTION + GERMANY + REACTOR, BOILING WATER

18-17473

JAERSCHKY R

GUNDREMMINGEN NUCLEAR POWER PLANT

ALLGEMEINE ELEKTRIZITÄTSGESELLSCHAFT, FRANKFURT AM MAIN

4 PAGES, 4 FIGURES, 1 TABLE, AT. STROM. 12, PAGES 103-106 (SEPT. OCT. 1966)

THE CONSTRUCTION OF THE GUNDREMMINGEN NUCLEAR POWER PLANT IS OUTLINED. A CROSS SECTION OF THE INSTALLATION IS GIVEN AND THE PRINCIPAL CHARACTERISTICS ARE TABULATED. (UNTRANSLATED GERMAN ARTICLE).

*REACTOR DESCRIPTION + GERMANY + REACTOR, BOILING WATER

18-17476

JOHANNKNECHT N

SAFETY REQUIREMENTS FULFILLED IN THE STEAM GENERATOR FOR THE AVR NUCLEAR POWER STATION

VEREINIGTE KESSELWERKE AG, DUSSELDORF

3 PAGES, 3 FIGURES, KERntechnik 8, PAGES 402-4 (AUG. SEPT. 1966) IN GERMAN

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-17476 *CONTINUED*

GIVES SURVEY OF POINTS TO BE CONSIDERED WHEN DESIGNING AND CONSTRUCTING THE WALLS OF THE HEATING SURFACES WHICH ARE IN DIRECT CONTACT WITH THE REACTOR COOLING GAS. UNDER REFERENCE TO THE TERMINATED STEAM GENERATOR FOR THE AVR NUCLEAR POWER STATION. THE DEVELOPMENT AND CONSTRUCTION OF A NEW TYPE HEAT EXCHANGER ARE DESCRIBED AND FEATURES AND SAFETY PROVISIONS EXAMINED. THE PROBLEMS INVOLVED WITH WET LAYING-OFF ARE DISCUSSED. (UNTRANSLATED GERMAN ARTICLE).

*STEAM GENERATOR + DESIGN CRITERIA + GERMANY + REACTOR, GAS COOLED + REACTOR, PEBBLE BED

18-17498

ALSO IN CATEGORY 5

LEES EA

POWER REACTOR HIGH PERFORMANCE UO₂ PROJECT. PROGRESS REPORT NO. 2, NOVEMBER 1-DECEMBER 31, 1966
GENERAL ELECTRIC CO., PLEASANTON, CALIF.

GEAP-5431 + EURAEC-1824 +. 12 PAGES, FIGURES, FEBRUARY 1967

ONE OF A SERIES OF PROGRESS REPORTS ON THE JOINT AEC-EURATOM SIZ ZIRCALOY-2-CLAD UO₂ FUEL RODS AT BIG ROCK POINT TO AVERAGE EXPOSURE OF 15,000 MWD/K. TWO ASSEMBLIES WILL OPERATE WITH INCIPENT MELTING IN CENTRAL REGION OF UO₂ AT RATED POWER CONDITIONS, REPRESENTING A STEP IN ELIMINATING THE NO-CENTRAL-MELT DESIGN CRITERION NOW USED. THE OTHER FOUR WILL OPERATE WITH MODERATE CENTRAL MELTING AND REPRESENT A FURTHER STEP IN OPERATIONS WHERE HOTTEST FUEL RODS IN CORE ARE UNDERGOING MODERATE MELTING.

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

*CENTERLINE MELTING + *FUEL ELEMENT + *PERFORMANCE LIMIT + *RESEARCH AND DEVELOPMENT PROGRAM + *URANIUM DIOXIDE + EURATOM + USAEC (U.S. ATOMIC ENERGY COMMISSION) + ZIRCALOY

18-17500

ALSO IN CATEGORY 17

ANAMALOUS SWELLING OF EBR-II MARK IA FUEL

ARGONNE NATIONAL LAB., ARGONNE, ILL.

ANL-7317 +. 5 PAGES, 1 TABLE, PAGES 8-12 FROM REACTOR DEVELOPMENT PROGRAM PROGRESS REPORT, MARCH 1967

WHILE EARLIER 48' ENRICHED FUEL SWELLED 6-7' AT 1.2 A/O FUEL BURNUP, THE IA 52' ENRICHED FUEL IS UNEXPECTEDLY SWELLING TWICE THAT AMOUNT, UNLESS THE FUEL CONTAINS REMELTED REJECT PINS AND PIN ENDS. VARIOUS MEASUREMENTS TAKEN, AND IRRADIATION STUDIES BEGUN IN NOV. 1966 ARE SUMMARIZED.

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

*EXPANSION + *FUEL BURNUP + *FUEL ELEMENT + EBR 1 AND 2 (EXPERIMENTAL BREEDER REACTORS) + REACTOR, AEC OWNED + REACTOR, BREEDER + REACTOR, LIQUID METAL COOLED

18-17501

ALSO IN CATEGORY 6

STUDIES OF FUEL MIGRATION IN MIXED OXIDE SITUATION

ARGONNE NATIONAL LAB., ARGONNE, ILL.

ANL-7317 +. 3 PAGES, 2 FIGURES, PAGES 110-112 FROM REACTOR DEVELOPMENT PROGRAM PROGRESS REPORT, MARCH 1967

AN EXPERIMENTAL PROGRAM IS UNDERWAY TO STUDY REDISTRIBUTION OF PU IN (U,PU)O₂ FAST CERAMIC FUELS, SINCE REDISTRIBUTION MIGHT CAUSE MELTING OF PU-RICH AREAS AT LOWER TEMPERATURE. PRELIMINARY MEASUREMENTS WITH (CF,U)O₂ PELLETS SHOWED CERIUM MIGRATION TO THE HOT END WITH A 1310 C/CM GRADIENT AFTER 93 HR. THE THERMAL-GRADIENT FURNACE WAS MOVED TO A GLOVE BOX FOR USE WITH (U,PU)O₂ PELLETS (90' U).

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*FUEL SEGREGATION + *PLUTONIUM OXIDE + *TEMPERATURE GRADIENT + *URANIUM OXIDE + CERIUM + FUEL ELEMENT + REACTOR, FAST + SAFETY STUDY

18-17514

MILLER DR + ROBERTS JM + WORTHINGTON JT

600 MWE HIGH POWER DENSITY BWR CORE-CONCEPTUAL DESIGN. FINAL REPORT

GENERAL ELECTRIC, SAN JOSE, CALIF., ATOMIC POWER EQUIPMENT DEPT.

GEAP-4974 +. 61 PAGES, 28 FIGURES, 5 TABLES, 3 REFERENCES

PRESENTS THE SELECTION, ANALYSIS, AND DESIGN CRITERIA OF A 1915-MW(T) BWR CORE, USING BIG ROCK POINT HIGH-POWER-DENSITY DATA. THE CORE CONTAINS 360 FUEL BUNDLES, ACTIVE LENGTH 12 FT, WITH A 9 BY 9 FUEL-ROD ARRAY. THE CORE PRESSURE DROP WAS OF MAJOR CONCERN DUE TO LOADS IMPOSED ON THE FUEL-CHANNEL WALL. A NET FUEL-CYCLE ENERGY COST OF 1.71 MILLS PER KWH WAS CALCULATED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*DESIGN CRITERIA + *DESIGN STUDY + ECONOMICS + PERFORMANCE LIMIT + REACTOR, BOILING WATER + REACTOR, POWER

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-17517

GIBBONS JF + ANDERSON LE + KNAPP RW + GRUEBELICH FT + MORDAPSKI WJ
ADVANCED BONUS CORE DEVELOPMENT PROGRAM. FINAL REPORT
COMBUSTION ENGINEERING, INC., WINDSOR, CONN.
CEND-265 +. 278 PAGES, FIGURES, TABLES, 62 REFERENCES, FEBRUARY 28, 1966

PRESENTS A SUMMARY DESCRIPTION OF THE DESIGN AND DEVELOPMENT OF A COMBINATION
BOILING-SUPERHEATING FUEL ELEMENT WITH INCONEL-625 CLADDING TO BE USED IN BONUS. PERFORMANCE
THROUGH OUT-OF-PILE TESTING WAS VERIFIED, BUT THE IN-PILE TESTS AT VESR WERE NOT DONE BECAUSE
OF LACK OF FUNDS. THE ELEMENTS WITHSTOOD 2000 CYCLES OF STEAM TEMPERATURE FROM 500 TO 1200
F. FEASIBILITY OF MANUFACTURING THESE ELEMENTS WAS ESTABLISHED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*DESIGN STUDY + *FUEL ELEMENT + *RESEARCH AND DEVELOPMENT PROGRAM +
BONUS (BOILING NUCLEAR SUPERHEAT PROJECT) + FABRICATION + OUT OF PILE LOOPS AND EXPERIMENTS +
REACTOR, BOILING WATER + REACTOR; INTERNAL SUPERHEAT + SYSTEM DESCRIPTION + TEST, BENCH + TEST, PROOF

18-17518

SAVOLAINEN AW
GAS-COOLED REACTOR PROGRAM SEMIANNUAL PROGRESS REPORT FOR PERIOD ENDING MARCH 31, 1967
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.
ORNL-4133 +. 200 PAGES, FIGURES, TABLES, AUGUST 1967

ONE OF A SERIES OF PROGRESS REPORTS. TOPICS INCLUDE FUEL-ELEMENT DEVELOPMENT (IRRADIATION
TESTS OF COATED PARTICLES, GRAPHITE, AND PYROLYTIC CARBON), OXIDATION STUDIES (STEAM-GRAPHITE
REACTIONS), FISSION PRODUCT BEHAVIOR, DEVELOPMENT OF PRESTRESSED-CONCRETE PRESSURE VESSELS,
HEAT-TRANSFER STUDIES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*FUEL ELEMENT + *IRRADIATION TESTING + *RESEARCH AND DEVELOPMENT PROGRAM + CHEMICAL REACTION +
COATED PARTICLE + CONCRETE, PRESTRESSED + FISSION PRODUCT RELEASE, GENERAL + GRAPHITE + HEAT TRANSFER +
IN PILE LOOP + ORNL (OAK RIDGE NATIONAL LABORATORY) + OXIDATION + PRESSURE VESSEL + REACTOR, GAS COOLED +
REACTOR, HIGH TEMP. GAS + STEAM

18-17519

ANNUAL REPORT NUCLEAR ENGINEERING DEPARTMENT. DECEMBER 31, 1966
BROOKHAVEN NATIONAL LABORATORY
BNL-50,023 +. 173 PAGES, 59 FIGURES, 22 TABLES, MAY 1967

ONE OF A SERIES OF PROGRESS REPORTS. TOPICS INCLUDE SETTLED- AND ORDERED-BED FAST-REACTOR
CONCEPTS, REACTOR PHYSICS, NEUTRON CROSS SECTIONS, WASTE DISPOSAL, FISSION-PRODUCT RELEASE,
LIQUID METALS, RADIATION EFFECTS, DIRECT ENERGY CONVERSION, AND METALLURGY.

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

*BNL (BROOKHAVEN NATIONAL LABORATORY) + *RESEARCH AND DEVELOPMENT PROGRAM + CROSS SECTION + DESIGN STUDY +
DIRECT ENERGY CONVERSION DEVICES + FISSION PRODUCT RELEASE, GENERAL + METAL + METAL, LIQUID +
RADIATION EFFECT + REACTOR PHYSICS + REACTOR, FAST + WASTE DISPOSAL, GENERAL

18-17525

LICENSE AND TECHNICAL SPECIFICATIONS FOR MISSOURI RESEARCH (COLUMBIA) REACTOR
AEC, DIVISION OF REACTOR LICENSING
15 PAGES, 1 TABLE, OCTOBER 13, 1966, DOCKET NO. 50-186, UNIVERSITY OF MISSOURI

HEADINGS INCLUDE COOLING AND POOL SYSTEM, CORE, CONTROL AND SAFETY SYSTEM (INCLUDING A LISTING
OF SCRAM SETTINGS), AND AUXILIARY SYSTEMS. (PAGE 9) TWO TEMPORARY MODIFICATIONS WERE MADE
CONCERNING VENTILATION DURING INITIAL STARTUP. REACTOR ALLOWED TO OPERATE AT HALF POWER (5
MW).

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*TECHNICAL SPECIFICATIONS + REACTOR POWER + REACTOR, FLUX TRAP + SAFETY EVALUATION + VENTILATION SYSTEM

18-17655

ALSO IN CATEGORY 16

PRICE ML
SUPPLEMENT 1 TO WORCESTER POLY SAFEGUARDS ANALYSIS FOR OPERATING FROM 1 TO 10 KW
WORCESTER POLYTECHNIC INSTITUTE, WORCESTER, MASS.
2 PAGES, AUGUST 18, 1967, DOCKET NO. 50-134

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-17655 *CONTINUED*

DEALS WITH POSTULATED RELEASE OF 20 MICROCURIES OF AR-41 PER MINUTE TO THE EXHAUST DUCT. MAXIMUM ACTIVITY AT STACK OUTLET IS 0.5 MICRO-MICRO C/ML. 1.5-FT STACK IS ON TOP OF 50-FT-HIGH BUILDING. CONTENDS AR-41 CONCENTRATION IS NEGLIBLE AT GROUND LEVEL.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ATMOSPHERIC DIFFUSION + *SOURCE, CONTINUOUS + ARGON + BUILDING + POWER UPGRATING + REACTOR, POOL TYPE + SAFETY ANALYSIS REPORT, GENERAL + TECHNICAL SPECIFICATIONS

18-17850

LICENSE APPLICATION AND PROPOSED TECHNICAL SPECIFICATIONS FOR BYU L-77 REACTOR
BRIGHAM YOUNG UNIVERSITY, PROVO, UTAH
BYU-NUC-001 +. 17 PAGES, 1 FIGURE, 2 TABLES, JULY 22, 1966, DOCKET NO. 50-262

BYU APPLIES FOR A FACILITY LICENSE AND CONSTRUCTION PERMIT FOR A 10-W REACTOR. THE CORE IS HOUSED IN A PARTIALLY EVACUATED S.S. SPHERE SURROUNDED BY 3 LAYERS OF SHIELDING AND A WATER SHIELD. MAXIMUM EXCESS REACTIVITY IS 0.5%. A GAS RECOMBINER IN THE CORE RECOMBINES DECOMPOSED WATER FROM THE AQUEOUS FUEL SOLUTION (20% ENRICHED URANYL SULFATE, 30 LITERS OR LESS). CONTROL RODS ARE ALUMINUM-CLAD CADMIUM.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTROL ROD + *REACTIVITY, EXCESS + *RECOMBINER + *SHIELDING + CADMIUM + CONSTRUCTION PERMIT PROCESS + REACTOR, HOMOGENEOUS + REACTOR, TRAINING + TECHNICAL SPECIFICATIONS + WATER BOILER

18-17851

SAFETY ANALYSIS REPORT, BRIGHAM YOUNG UNIVERSITY
BRIGHAM YOUNG UNIVERSITY, PROVO, UTAH
26 PAGES, 5 FIGURES, JULY 1966, DOCKET NO. 50-262, L-77 LABORATORY REACTOR

THE 10-W SOLUTION REACTOR IS LOCATED AT PROVO, UTAH, IN A REGION OF MODERATE EARTHQUAKE ACTIVITY. NEAREST ACTIVE FAULT (WASATCH) LOCATED 1/2 MILE EAST OF THE REACTOR SITE. MAXIMUM RECORDED EARTHQUAKES WERE OF 5.7 MAGNITUDE (RICHTER SCALE). VENTILATION SYSTEM IS CAPABLE OF PRODUCING 4 AIR CHANGES/HOUR. MOST IMPORTANT POTENTIAL RADIATION HAZARD IS ESCAPE OF FUEL FROM CORE VESSEL.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*EARTHQUAKE + REACTOR, HOMOGENEOUS + REACTOR, TRAINING + SAFETY ANALYSIS REPORT, PRELIMINARY + SITING, REACTOR + WATER BOILER

18-17852

BYU AMENDMENT 2
BRIGHAM YOUNG UNIVERSITY, PROVO, UTAH
27 PAGES, FEBRUARY 24, 1967, DOCKET NO. 50-262

BYU SUPPLIES INFORMATION ON MANY SUBJECTS INCLUDING (1) AN AIR-PARTICULATE MONITOR AND A BETA-GAMMA DETECTOR ARE TO BE USED FOR AREA MONITORS, (2) BEAM CATCHERS ARE TO BE USED WHEN A BEAM HOLE IS OPEN. RE-EVALUATION OF 3 POSTULATED ACCIDENTS (FUEL RELEASE TO REACTOR ROOM, FISSION GAS RELEASE TO REACTOR ROOM, AND FISSION-GAS RELEASE TO ENVIRONS), USING FREE AIR VOLUME OF 17,000 CU. FT. PERSONNEL QUALIFICATION AND REQUIREMENTS ARE GIVEN, ALONG WITH EMERGENCY PROCEDURES. RESULTANT REVISIONS TO TECH. SPECS. AND SAR INDICATED. AI FUEL-LOADING PROCEDURE ENCLOSED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*HAZARDS ANALYSIS + *MONITOR, RADIATION, AIR + *SHIELDING + BEAM HOLE + EMERGENCY PROCEDURE + FISSION GAS RELEASE + REACTOR, HOMOGENEOUS + REACTOR, TRAINING + STAFFING, TRAINING, QUALIFICATION + TECHNICAL SPECIFICATIONS + WATER BOILER

18-17853

BYU AMENDMENT 2 ATTACHMENT - FUEL LOADING PROCEDURES FOR THE BRIGHAM YOUNG U. MODEL L-77 RESEARCH REACTOR
BRIGHAM YOUNG UNIVERSITY, PROVO, UTAH
TI-L77-13-001 +. 16 PAGES, 3 FIGURES, JANUARY 24, 1967, DOCKET NO. 50-262

OUTLINES THE SPECIAL-EQUIPMENT PROCEDURES, OPERATIONAL PROCEDURES, AND SAFETY REQUIREMENTS TO BE FOLLOWED DURING THE INITIAL LOADING OF THE SOLUTION REACTOR, AND FOR SUFFICIENT FUEL LOADING AFTER ANY SCHEDULED FUEL REMOVAL.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*FUEL HANDLING + FUEL STORAGE + PROCEDURES AND MANUALS + REACTOR, HOMOGENEOUS + REACTOR, TRAINING + WATER BOILER

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-17854

BYU COMMENT ON PHYSICAL TECH. SPEC.
BRIGHAM YOUNG UNIVERSITY, PROVO, UTAH
3 PAGES, JUNE 21, 1967, DOCKET NO. 50-262

BYU REQUESTS CHANGES IN AEC-REVISED TECH. SPECS. (1) TO SET MINIMUM FREE VOLUME AT 16,000 CU. FT, (2) REQUIRE CONTROL-ROD CALIBRATION NO OFTENER THAN EVERY 2 YR, AND (3) DELETE REQUIREMENT FOR VISUAL INSPECTION OF CONTROL RODS. ADDITIONAL INFORMATION ON BUILDING, (STEAM GENERATOR, BUILDING CONSTRUCTION) AND SENSITIVITY OF LINEAR MICROMICROAMMETER DISCUSSED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

CONTROL ROD CALIBRATION + INSTRUMENTATION, POWER RANGE + REACTOR, HOMOGENEOUS + REACTOR, TRAINING + TECHNICAL SPECIFICATIONS + WATER BOILER

18-17855

ALSO IN CATEGORY 9
REED COLLEGE SUPPLIES ADDITIONAL INFORMATION FOR LICENSE APPLICATION TRIGA III
REED COLLEGE, PORTLAND, OREGON
11 PAGES, 4 FIGURES, 1 TABLE, JULY 5, 1967, DOCKET NO. 50-288

REED COLLEGE SUBMITS COPIES OF A GENERAL ATOMICS REPORT ENTITLED FAILURE-MODE ANALYSIS FOR TRIGA MARK-III STEADY-STATE CONSOLE SCRAM AND ROD-CONTROL CIRCUITS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*FAILURE, SCRAM MECHANISM + *SINGLE FAILURE CRITERION + CONTROL ROD DRIVE + FAULT TREE ANALYSIS + TECHNICAL SPECIFICATIONS + TRIGA (TRAINING REACTOR, ISOTOPES, G.A.)

18-17866

ALSO IN CATEGORIES 14 AND 17
HAZARDS ANALYSIS FOR OPERATION OF THE UNIVERSITY OF VIRGINIA REACTOR AT TWO MEGAWATTS
UNIVERSITY OF VIRGINIA, CHARLOTTESVILLE
UVAR-17 +. 116 PAGES, 22 FIGURES, 20 TABLES, 20 REFERENCES, EXHIBIT A OF SAFETY ANALYSIS REPORT IN SUPPORT OF AMENDMENT TO LICENSE R-66 FOR TWO MEGAWATT OPERATION OF THE UNIVERSITY OF VIRGINIA REACTOR, AUGUST 1964, DOCKET NO. 50-62

AFTER PRELIMINARY TREATMENT OF SITE, VENTILATION, ETC., THE AUTHOR EXAMINES HEAT TRANSFER IN CORE, IN PARTICULAR THE MAXIMUM POWER WITH A GIVEN FLOW RATE AT WHICH REACTOR CAN BE OPERATED WITHOUT LOCALIZED BOILING. HE CONCLUDES THAT TO OPERATE AT 2 MW, COOLANT FLOW RATE MUST BE AT LEAST 1050 GAL/MIN. HE EXAMINES HAZARDS DURING NORMAL OPERATION (ARGON-41 PRODUCTION IN EXPERIMENTAL FACILITIES AT 2 MW IS INSUFFICIENT TO CAUSE EXCESS CONCENTRATION OUTSIDE THE BUILDING) AND MAXIMUM CREDIBLE ACCIDENT. COMPLETE CORE MELTDOWN RELEASES, TID-14844 F.P. FRACTIONS, RESULTING IN EXCLUSION-BOUNDARY DOSES LESS THAN 220 REMS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*HAZARDS ANALYSIS + *HEAT TRANSFER ANALYSIS + *POWER UPGRATING + ACCIDENT, MAXIMUM CREDIBLE (MCA) + ARGON + REACTOR, POOL TYPE + REACTOR, RESEARCH + SAFETY ANALYSIS REPORT, GENERAL + SOURCE, CONTINUOUS

18-17934

LINK LE + AYER JE + BUTLER DK + HUB KA + LOEWENSTEIN WB + MECHAM WJ + MEMEGHETTI D + THOMPSON DH + TRICE VG + WEILLS JT
1000-MW(E) METAL-FUELED FAST BREEDER REACTOR
ARGONNE NATIONAL LAB., ILL.
ANL-7001 +. 125 PAGES, 57 FIGURES, 78 TABLES, JUNE 1966

DESIGN STUDY CALCULATES A 6% DISCHARGE BURNUP LIMIT FOR A DEGRADED NEUTRON SPECTRUM WITH DOPPLER BROADENING AND A 1.5 BREEDING RATIO, USING METALLIC FUEL ELEMENTS WITH SUFFICIENT VOID VOLUME FOR EXPANSION OF FISSION GASES. THE FUEL-CYCLE RESULTS FOR A COMBINED PROCESSING-FABRICATION PLANT FOR 3 POWER PLANTS ARE - (1) AN ELECTRIC ENERGY COST SOMEWHAT UNDER 1 MILL/KWH, AND (2) A GEOMETRIC DOUBLING TIME FOR FISSION PLUTONIUM OF 7.6 YEARS. APPARENTLY BASED ON EBR-II PROGRAM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*DESIGN STUDY + ECONOMICS + FUEL BURNUP + FUEL REPROCESSING + REACTOR, BREEDER + REACTOR, FAST

18-17935

NASA CAVITY REACTOR CRITICAL EXPERIMENT. FINAL SAFETY ANALYSIS REPORT. ADDENDUM NO. 1. OPERATION WITH A UF6 CORE
GENERAL ELECTRIC CO., IDAHO FALLS, IDAHO. NUCLEAR MATERIALS AND PROPULSION OPERATION
GEMP-492(ADD.1) +. 26 PAGES, FIGURES, FEBRUARY 26, 1967

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-17935 *CONTINUED*

ADDENDUM COVERS HAZARDS ASSOCIATED WITH THE OPERATION WITH A UF6 CORE IN PLACE OF METAL-FOIL FUEL. RESULT OF AN ACCIDENTAL EXCURSION IS A 27 MW-SEC ENERGY RELEASE VS. 80 MW-SEC FOR FOIL-FUEL CORE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

CRITICAL ASSEMBLY FACILITY + NRTS (NATIONAL REACTOR TEST STATION) + NUCLEAR ROCKET + SAFETY ANALYSIS REPORT, GENERAL + URANIUM HEXAFLUORIDE

18-17936

NASA CAVITY REACTOR CRITICAL EXPERIMENT. FINAL SAFETY ANALYSIS REPORT
GENERAL ELECTRIC CO., IDAHO FALLS, IDAHO. NUCLEAR MATERIALS AND PROPULSION OPERATION
GEMP-402 +. 132 PAGES, TABLES, REFERENCES, JANUARY 12, 1966

THE REFLECTOR-MODERATED CORE WILL BE MOUNTED ON THE SPLIT-TABLE STRUCTURE PREVIOUSLY USED FOR THE HOTCE EXPERIMENT, USING INSTRUMENTATION AND CONTROL FROM THE 630A MARITIME REACTOR EXPERIMENT. POTENTIAL ACCIDENTS AND HAZARDS ARE ANALYZED AND ARE MORE PROBABLE AND CONSIDERABLY LESS SEVERE THAN THOSE OF OTHER EXPERIMENTS AT THE LPT FACILITY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE.

CRITICAL ASSEMBLY FACILITY + NRTS (NATIONAL REACTOR TEST STATION) + NUCLEAR ROCKET + SAFETY ANALYSIS REPORT, GENERAL + URANIUM HEXAFLUORIDE

18-17937

SIMS FL
TEST PROGRAM AND STANDARD REACTOR OPERATING AND MAINTENANCE PROCEDURES FOR THE PBF CRITICAL EXPERIMENT REACTOR AT THE LOW POWER TEST FACILITY
GENERAL ELECTRIC CO., IDAHO FALLS, IDAHO. NUCLEAR MATERIALS AND PROPULSION OPERATION
GEMP-522 +. 53 PAGES, 6 FIGURES, 5 TABLES, REFERENCES, JUNE 2, 1967

DESCRIBES THE EXPERIMENTS TO BE RUN, CONTROL SYSTEM AND NUCLEAR INSTRUMENTATION, AND GIVES THE CHECKOUT, OPERATING, AND MAINTENANCE PROCEDURES FOR THE POWER BURST FACILITY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*PROCEDURES AND MANUALS + MAINTENANCE AND REPAIR + NRTS (NATIONAL REACTOR TEST STATION) + PBF (POWER BURST FACILITY) + REACTOR, SAFETY RESEARCH

18-17948

SAFETY ANALYSIS REPORT FOR MICHIGAN STATE UNIVERSITY TRIGA MARK I REACTOR
MICHIGAN STATE UNIVERSITY, EAST LANSING, MICHIGAN
152 PAGES, 31 FIGURES, TABLES, JUNE 5, 1967, DOCKET NO. 50-294

REACTOR WAS 6 YEARS AT THE U OF ILLINOIS. RFAM HOLE IN REFLECTOR WILL BE PLUGGED. MAXIMUM POWER IS 250 KW (STEADY STATE), 250 MW (PULSING), WITH A MAXIMUM STEP INSERTION OF 1.5%. MAXIMUM EXCESS REACTIVITY IS 43%. LOSS-OF-COOLANT ACCIDENT ANALYSIS SHOWS THAT AFTER 1 DAY THE DIRECT RADIATION AT THE POOL EDGE TO BE 1400 R/HR AND INDIRECT RADIATION TO BE 1800 MR/HR, WITH MAXIMUM FUEL ELEMENT TEMPERATURE LESS THAN 150 C. (STANDARD TRIGA SAR), TECH. SPECS. AND MSU RADIATION SAFETY MANUAL INCLUDED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACCIDENT, LOSS OF COOLANT + RADIATION SAFETY AND CONTROL + REACTOR, RESEARCH + SAFETY ANALYSIS REPORT, GENERAL + TECHNICAL SPECIFICATIONS + TRIGA (TRAINING REACTOR, ISOTOPES, G.A.)

18-17976

DRL ISSUES PROVISIONAL CONSTRUCTION PERMIT FOR GEORGIA TECH AGN-201
AEC, DIVISION OF REACTOR LICENSING
5 PAGES, AUGUST 21, 1967, DOCKET NO. 50-276

REACTOR WILL BE OBTAINED FROM U. OF AKRON.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

CONSTRUCTION PERMIT PROCESS

18-17977

DRL NOTICE OF PROPOSED ISSUANCE OF PROVISIONAL CONSTRUCTION PERMIT FOR GEORGIA TECH AGN-201
AEC, DIVISION OF REACTOR LICENSING
10 PAGES, JULY 28, 1967, DOCKET NO. 50-276

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-17977 *CONTINUED*

SPECIAL PROVISION IS MADE FOR FUEL STORAGE. FUEL WILL BE STORED IN TWO AREAS MORE THAN A CITY BLOCK APART IN CRITICALITY-PREVENTIVE CONTAINERS. EACH HALF IS 350 GM AND IS LESS THAN ONE-HALF CRITICAL MASS. ONE AREA HAS A CRITICALITY MONITOR, AND AN EXEMPTION IS GRANTED SUCH THAT THE OTHER AREA NEED NOT HAVE A MONITOR.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*FUEL STORAGE + AGN (TRAINING REACTOR, AEROJET-GEN. NUCLEONICS) + CONSTRUCTION PERMIT PROCESS + CRITICALITY SAFETY + REACTOR, TRAINING + SAFETY EVALUATION

18-17979

THE REED COLLEGE REACTOR FACILITY (TRIGA MARK II) DESCRIPTION AND SAFETY ANALYSIS REPORT
REED COLLEGE, PORTLAND, OREGON
98 PAGES, 25 FIGURES, 7 TABLES, APRIL 15, 1967; DOCKET NO. 50-288

REACTOR, TO BE LOCATED IN PORTLAND, OREGON, HAS A MAXIMUM STEADY-STATE POWER OF 250 KW, WITH A MAXIMUM EXCESS REACTIVITY OF \$3. USUAL TRIGA HAZARDS ANALYSIS IS GIVEN. 160 EARTHQUAKES HAVE BEEN RECORDED IN AREA SINCE 1841, WITH THE 2 LARGEST REGISTERING VIII (MODIFIED MERCALLI SCALE). NO PROVISIONS ARE MADE FOR PULSED OPERATION. TECH. SPECS. INCLUDED. APPENDIX A IS AN ANALYSIS OF EARTHQUAKE HAZARD. APPENDIX B IS FISSION-PRODUCT RELEASE FROM ONE FAILED FUEL ELEMENT. APPENDIX C IS CALCULATION OF FUEL TEMPERATURE AND CLAD STRESS AFTER A COMPLETE LOSS OF POOL WATER WITH ONLY NATURAL CONVECTION AIR COOLING.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACCIDENT, LOSS OF COOLANT + *EARTHQUAKE + FISSION GAS RELEASE + REACTIVITY, EXCESS + REACTOR, RESEARCH + SAFETY ANALYSIS REPORT, GENERAL + TECHNICAL SPECIFICATIONS + TRIGA (TRAINING REACTOR, ISOTOPES, G.A.)

18-17991

ALSO IN CATEGORY 15
GE THERMAL CRITICAL ASSEMBLY PROPOSED CHANGE 7. CONTROL ROOM RADIATION LEVELS
GENERAL ELECTRIC, SANTA CLARA, CALIFORNIA
11 PAGES, JULY 22, 1966, DOCKET NO. 50-24

GE REQUESTS DELETION OF 10-MR/HR LIMIT ON CONTROL-ROOM RADIATION LEVEL, CONTENDING THAT THIS IS AN UNWARRANTED RESTRICTION SINCE THE PERSONNEL MONITORING AND EXPOSURE LIMITATIONS OF 10 CFR 20 ARE OBSERVED. CONTROL-ROOM AREAS OTHER THAN THOSE OCCUPIED BY OPERATORS MAY EXCEED 10-MR/HR LIMIT. CHANGE WOULD ALSO CORRECT TYPOGRAPHICAL ERRORS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTROL PANEL/ROOM + *PERSONNEL EXPOSURE, RADIATION + CRITICAL ASSEMBLY FACILITY + TECHNICAL SPECIFICATIONS

18-17996

GE-NHICI FAR. TEST REACTOR PROPOSED AMENDMENT 14. INCREASE IN POSSESSION LIMIT FOR PLUTONIUM
GENERAL ELECTRIC CO., SAN JOSE, CALIFORNIA
6 PAGES, JUNE 16, 1967, DOCKET NO. 50-73

GE REQUESTS INCREASE FOR USE IN EXPERIMENTAL DEVICES FROM 100 GM TO 500. ADDITIONAL WOULD PRIMARILY BE FUEL ELEMENTS TO BE TESTED BY NEUTRON RADIOGRAPHY. OBJECTS UP TO 48 IN. IN DIAMETER MAY BE RADIOGRAPHED BY THE NTR NEUTRON BEAM.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*BEAM HOLE + *PLUTONIUM + FUEL ELEMENT + GE-NTR (GE NUCLEAR TEST REACTOR) + RADIOGRAPHY + REACTOR, WATER + TECHNICAL SPECIFICATIONS

18-18002

NATIONAL BUREAU OF STANDARDS SUPPLIES ADDITIONAL INFORMATION
U. S. DEPARTMENT OF COMMERCE, NATIONAL BUREAU OF STANDARDS, WASHINGTON, D. C.
10 PAGES, 3 FIGURES, JULY 25, 1967, DOCKET NO. 50-184

INFORMATION SUPPLIED INCLUDES (1) RELIEF VALVE ADDED TO PRIMARY COOLANT SYSTEM. (2) VOID SHUTDOWN SYSTEM ELIMINATED DUE TO CONSEQUENCES OF POSSIBLE ACCIDENTAL OPERATION. (3) SAFETY SYSTEM REVISED TO PROVIDE TWO REDUNDANT SCRAM STRINGS. BASIC SYSTEM IS 1/2 AND MAY BE CONVERTED TO 2/2 DURING TESTING. (4) ALL VENTILATION EXHAUSTS WILL BE MONITORED DURING NORMAL AND CLOSURE CONDITIONS. DURING A CONFINEMENT CLOSURE TEST (30 TO DATE) A FAN FAILED TO STOP, ALTHOUGH ITS CLOSURE VALVE OPERATED (CIRCUIT-BREAKER-MANUFACTURER ERROR).

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*FAILURE, COMPONENT + *INSTRUMENTATION, REDUNDANT + *SHUTDOWN SYSTEM, SECONDARY + *VALVE + FAILURE, FABRICATION ERROR + MAIN COOLING SYSTEM + MODIFICATION, SYSTEM OR EQUIPMENT + NBS (NATIONAL BUREAU OF STANDARDS) + PRESSURE RELIEF + REACTOR, HEAVY WATER + REACTOR, RESEARCH + SAFETY ANALYSIS REPORT, GENERAL + VENTILATION SYSTEM

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-18057 ALSO IN CATEGORY 17

SKOVHOLT DJ

DRL ADVISES GENERAL ATOMIC ON PROPER FORM OF SAFETY ANALYSIS REPORTS FOR RESEARCH REACTORS
GENERAL DYNAMICS, GENERAL ATOMIC DIVISION
1 PAGE, LETTER, MARCH 9, 1967

DRL SUGGESTS THAT GENERAL ATOMIC NOTIFY ALL NEW TRIGA CUSTOMERS THAT ALL NEW RESEARCH-REACTOR APPLICATIONS WILL BE EXPECTED TO CONFORM TO THE GUIDANCE PROVIDED BY A PROPOSED AMENDMENT TO 10CFR50 RELATING TO THE PROPER FORM FOR SAFETY ANALYSIS REPORTS AND TECHNICAL SPECIFICATIONS, ENTITLED, GUIDE FOR THE ORGANIZATION AND CONTENTS OF SAFETY ANALYSIS REPORT.

*REGULATION, AEC + REACTOR, RESEARCH + SAFETY ANALYSIS REPORT, GENERAL + TECHNICAL SPECIFICATIONS

18-18089 ALSO IN CATEGORY 5

KERR WR

HEAVY WATER ORGANIC COOLED REACTOR. SCREENING TESTS OF HYDROGEN DIFFUSION BARRIERS FOR ZIRCONIUM ATOMICS INTERNATIONAL, CANOGA PARK, CALIFORNIA + COMBUSTION ENGINEERING, INC., WINDSOR, CONN. NUCLEAR DIVISION

AI-CE-27 +. 34 PAGES, 11 FIGURES, 3 TABLES, 6 REFERENCES, AUGUST 15, 1967

TESTS IN HYDROGEN AT 750 F WITH ZIRCONIUM ALLOY CLADDING FOR USE IN ORGANIC COOLANT SHOWED PLASMA-SPRAYED AL TO BE POROUS AND INEFFECTIVE. ZR OXIDE, ZR NITRIDE, AND DIFFUSED ALUMINUM COATINGS WERE EFFECTIVE BUT SUBJECT TO PROGRESSIVE, CATASTROPHIC FAILURE DUE TO BRITTLENESS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*CLAD + *COATING, SURFACE + *EMBRITTEMENT + *HYDRIDE + *ZIRCALOY + REACTOR, HEAVY WATER + REACTOR, ORGANIC COOLED + TESTING

18-18092

HEAVY WATER ORGANIC COOLED REACTOR. QUARTERLY TECHNICAL PROGRESS REPORT, OCTOBER-DECEMBER 1966 ATOMICS INTERNATIONAL, CANOGA PARK, CALIFORNIA. COMBUSTION ENGINEERING, INC., WINDSOR, CONN. NUCLEAR DIVISION

AI-CE-56 +. 55 PAGES, FIGURES, TABLES, AUGUST 15, 1967

TOPICS OF INTEREST ARE PUO2-UO2 FUEL EXPERIMENTS, UC FUEL EXPERIMENTS, XENON OSCILLATION, POWER-LEVEL CONTROL, FUEL TESTING (PG 165-217).

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*FUEL INTEGRITY + *IRRADIATION TESTING + *XENON OSCILLATION + PLUTONIUM DIOXIDE + REACTOR, HEAVY WATER + REACTOR, ORGANIC COOLED + RESEARCH AND DEVELOPMENT PROGRAM + URANIUM CARBIDE + URANIUM DIOXIDE

18-18093

HEAVY WATER ORGANIC COOLED REACTOR. QUARTERLY TECHNICAL PROGRESS REPORT, JULY-SEPTEMBER 1965 COMBUSTION ENGINEERING, INC., WINDSOR, CONN. NUCLEAR DIVISION + ATOMICS INTERNATIONAL, CANOGA PARK, CALIFORNIA

AI-CE-4 +. 404 PAGES, 141 FIGURES, 60 TABLES, 18 REFERENCES, AUGUST 15, 1967

TOPICS OF INTEREST ARE COOLANT-LEAK DETECTION, HYDRAULIC TESTS OF FUEL ELEMENTS, XENON OSCILLATION, SOLUBLE-POISON INJECTION SYSTEM, ON-POWER REFUELING (39 PAGES).

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*ON LINE REFUELING + REACTOR, HEAVY WATER + REACTOR, ORGANIC COOLED + RESEARCH AND DEVELOPMENT PROGRAM + TEST, LEAK LOCATION + XENON OSCILLATION

18-18133 ALSO IN CATEGORY 9

INTERIM SAFETY EVALUATION REPORT. ARMY PULSE RADIATION FACILITY REACTOR TRANSPORTER SAFETY OFFICE, OFFICE OF THE CHIEF OF ENGINEERS, DEPARTMENT OF THE ARMY, WASHINGTON, D.C. ARCHS-67-6 +. 12 PAGES, 4 FIGURES, APRIL 1967

AT-FACTORY INSPECTION REVEALS THAT CERTAIN CIRCUITS PROTECTING AGAINST PHYSICAL DAMAGE TO CORE DID NOT SATISFY THE SINGLE-FAILURE CRITERION. (1) A SINGLE ELECTRICAL OR MECHANICAL FAILURE COULD RESULT IN DROP OF CORE FROM ELEVATED POSITION. (2) A SINGLE ELECTRICAL FAILURE COULD CLOSE THE STORAGE-PIT DOOR ON CORE. (3) A SINGLE ELECTRIC FAILURE COULD DRIVE THE REACTOR AGAINST PIT WALL.

AVAILABILITY - SAFETY OFFICE, OFFICE OF THE CHIEF OF ENGINEERS, DEPARTMENT OF THE ARMY, WASHINGTON, D.C. 20315

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-18133 *CONTINUED*

*REMOTE MANIPULATING AND VIEWING + *SINGLE FAILURE CRITERION + CONTROL SYSTEM + FAILURE, COMPONENT + REACTOR, FAST BURST + REACTOR, MILITARY + REACTOR, RESEARCH + SAFETY EVALUATION + TEST, PREOPERATIONAL

18-18134 ALSO IN CATEGORY 17

NUCLEAR REACTORS BUILT, BEING BUILT, OR PLANNED IN THE UNITED STATES AS OF JUNE 30, 1967
UNITED STATES ATOMIC ENERGY COMMISSION, DIVISION OF TECHNICAL INFORMATION, WASHINGTON, D.C.
TID-8200(16TH REV.) +. 29 PAGES, JUNE 30, 1967

SEMIANNUAL LIST INCLUDES REACTOR NAME, LOCATION, OWNER, TYPE, PRINCIPAL NUCLEAR CONTRACTOR, POWER (ELECTRICAL AND THERMAL), AND STARTUP DATE OF 310 OPERABLE, 77 BEING BUILT, 63 PLANNED AND 83 SHUTDOWN REACTORS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

CRITICAL ASSEMBLY FACILITY + REACTOR, GENERAL + REACTOR, MARITIME + REACTOR, MILITARY + REACTOR, POWER + REACTOR, RESEARCH + REACTOR, SAFETY RESEARCH + REACTOR, TEST + REACTOR, TRAINING

18-18142

BROOKS W + KRUMBEIN AD
PROOF TEST FACILITY (PTF) SAFETY ANALYSIS REPORT
UNITED NUCLEAR CORPORATION, ELMSFORD, NEW YORK
UNC-5190 +. 97 PAGES, FIGURES, TABLES, APRIL 28, 1967, DOCKET NO. 50-290

PTF IS A LIGHT-WATER, ZERO-POWER CRITICAL ASSEMBLY FOR FINAL REACTIVITY TESTS OF MANUFACTURED FUEL ASSEMBLIES. MCA IS A RAMP INSERTION (\$0.01/SEC) FROM SWITCH FAILURE TO LIMIT WATER FILL AT CRITICALITY; AND ONE POWER-LEVEL-TRIP SCRAMS AT 60 W AFTER 55 SEC, GIVING AN ENERGY BURST OF 30 KW-SEC.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*FUEL ELEMENT + *QUALITY CONTROL + ACCIDENT; CRITICALITY + CRITICAL ASSEMBLY FACILITY + SAFETY ANALYSIS REPORT, GENERAL

18-18163

TURKEY POINT 3/4, SUPPLEMENT 12 - INCREASED SITE SIZE
FLORIDA POWER AND LIGHT COMPANY
8 PAGES, 1 FIGURE, JANUARY 23, 1967, DOCKET 50-250/251, SUPPLEMENT TO APPLICATION FOR LICENSES

ALSO INCLUDES VARIOUS COST DATA SUMMARIES. MAP AND DESCRIPTION PAGE SHOW RECENT PROPERTY ADDITIONS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*SAFETY ANALYSIS REPORT, PRELIMINARY + REACTOR, PRESSURIZED WATER + SITING, GENERAL + TURKEY POINT 3 AND 4

18-18164

FT. CALHOUN SUPPLEMENT 1. COMPARISON DESIGN PARAMETERS WITH OTHER PWRS.
OMAHA PUBLIC POWER DISTRICT
12 PAGES, FIGURES, TABLES, AUGUST 3, 1967, DOCKET NO. 50-285, AMENDMENT 1 TO APPLICATION FOR LICENSE

COMPARES FT. CALHOUN WITH SURRY, TURKEY POINT, OCONEE, PALISADES, AND GINNA, THE LATTER BEING THE MOST SIMILAR TO FT. CALHOUN. ALSO INCLUDED ARE 3 GRAPHS SHOWING RECOMMENDED RESPONSE SPECTRA FOR EARTHQUAKE DESIGN, CONSISTENT WITH HOUSNER (ABOVE 0.33 CPS) AND NEWMAN (BELOW 0.33 CPS).

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*RESPONSE SPECTRUM + FT. CALHOUN + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-18197

ALSO IN CATEGORY 17
MONTHLY OPERATING REPORT, AUGUST 1966
CAROLINAS VIRGINIA NUCLEAR POWER ASSOCIATION, INC., PARR, S.C.
CVNA-263 +. 33 PAGES, AUGUST 1966

ONE OF A SERIES OF PROGRESS REPORTS COVERING PERFORMANCE, PLANT CHEMISTRY, PLANT MAINTENANCE, HEALTH AND SAFETY, STATUS OF RESEARCH AND DEVELOPMENT PROGRAMS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA

*OPERATIONS REPORT, GENERAL + COOLANT CHEMISTRY + CVTR (CAROLINAS VIRGINIA TUBE REACTOR) + MAINTENANCE AND REPAIR + RADIATION SAFETY AND CONTROL + REACTOR, HEAVY WATER + REACTOR, PRESSURE TUBE + REACTOR, PRESSURIZED WATER

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-18304

BALL GL + NICHOLSON RB + KLINKMAN AE
PRELIMINARY HYPOTHETICAL ACCIDENT ANALYSIS FOR FAST TEST REACTOR, INTERIM REFERENCE DESIGN CORES
ATOMIC POWER DEVELOPMENT ASSOCIATES, INC., DETROIT
APDA-194 +. 65 PAGES, 8 FIGURES, 10 TABLES, SEPTEMBER 1, 1966

RESULTS FOR THE TWO CORES ANALYZED (600-LITER PUO2-SS CERMET AND 800-LITER MIXED-OXIDE CERAMIC CORE) ON THE BASIS OF REACTIVITY TRANSIENT DUE TO COLLAPSE TO ONE-HALF ORIGINAL VOLUME, GIVES
(1) GROSS HEAT CONTENT, 3.6 (2.6 IN FUEL VAPORIZED), 2.2×10 TO THE 9 CALORIES, (2)
AVAILABLE Destructive ENERGY - 1.6, 1.0.

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

*CERAMICS + *CORE MELTDOWN + *PLUTONIUM DIOXIDE + *URANIUM DIOXIDE + ACCIDENT ANALYSIS + ACCIDENT, REACTIVITY + FFTF (TR) + REACTOR, FAST + REACTOR, TEST

18-18306

ALSO IN CATEGORY 14

REPORT OF PREOPERATIONAL REVIEW ME-1A (STURGIS) FLOATING NUCLEAR POWER PLANT
DEPARTMENT OF THE ARMY, SAFETY OFFICE, WASHINGTON, D.C.
24 PAGES, 11 REFERENCES, FEBRUARY 19, 1967, PREPARED BY ARMY REACTOR SYSTEMS HEALTH AND SAFETY REVIEW COMMITTEE

REPORT ON OPERATION AT BELVOIR SITE. A DECISION WAS REACHED SO LEAK-RATE TESTS WILL BE DONE AT A MAXIMUM PRESSURE OF 50 PSIG. LEAK-RATE MEASURED (AT 50 PSIG) AS 0.28 VOL. (LIMIT, 0.6). MODIFICATIONS ARE TO BE MADE TO PREVENT ROD EJECTION UPON THIMBLE RUPTURE. WASTE-DISPOSAL SYSTEM REVIEWED IN DETAIL.

AVAILABILITY - SAFETY OFFICE, OFFICE OF THE CHIEF OF ENGINEERS, DEPARTMENT OF THE ARMY, WASHINGTON, D.C. 20315

*MODIFICATION, SYSTEM OR EQUIPMENT + *TEST, LEAK RATE + *WASTE DISPOSAL, GENERAL + ACCIDENT, CONTROL ROD EJECTION + MH 1A (MOBILE HIGH POWER PLANT 1A) + PRESSURE, INTERNAL + REACTOR, MILITARY + REACTOR, PRESSURIZED WATER + SAFETY REVIEW (OPERATIONS, EXPERIMENTS)

18-18308

BRIGHAM YOUNG U. LICENSE AND TECHNICAL SPECIFICATIONS ISSUED
AEC, DIVISION OF REACTOR LICENSING, WASHINGTON, D.C.
13 PAGES, 2 TABLES, SEPTEMBER 7, 1967, DOCKET NO. 50-262

REACTOR IS L-77, 10-WATT HOMOGENEOUS TYPE, WITH MAXIMUM EXCESS REACTIVITY OF 0.5%. TEMPERATURE COEFFICIENT IS NEGATIVE. CONTROL RODS ARE ALUMINUM-CLAD CADMIUM. CORE IS SPHERICAL AND SURROUNDED BY A SPHERICAL WATER SHIELD. FUEL IS AQUEOUS SOLUTION.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

*TECHNICAL SPECIFICATIONS + CONTROL ROD + REACTIVITY, EXCESS + REACTOR, HOMOGENEOUS + REACTOR, TRAINING + TEMPERATURE COEFFICIENT

18-18309

NOTICE OF PROPOSED ISSUANCE OF CONSTRUCTION PERMIT TO REED COLLEGE TRIGA MARK I
AEC, DIVISION OF REACTOR LICENSING, WASHINGTON, D.C.
10 PAGES, SEPTEMBER 13, 1967, DOCKET NO. 50-288

THE REACTOR IS A 250-KW THERMAL (STEADY STATE, PULSING NOT PLANNED). EXCESS REACTIVITY WILL BE ABOUT 2.25%. ALTHOUGH SITUATED IN A SEISMICALLY ACTIVE AREA, THERE ARE NO KNOWN FAULTS IN THE VICINITY. SAFETY ANALYSIS IS STANDARD TRIGA ANALYSIS. LOSS-OF-COOLANT ACCIDENT WAS DETERMINED NOT TO DAMAGE CORE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

*SAFETY EVALUATION + EARTHQUAKE + REACTOR, RESEARCH + TRIGA (TRAINING REACTOR, ISOTOPES, G.A.)

18-18312

VERMONT YANKEE AMENDMENT 7. REVISION OF ROD DROP ACCIDENT ANALYSIS AND EXHAUST MODIFICATION
VERMONT YANKEE NUCLEAR POWER CORPORATION, PUTLAND, VERMONT
2 PAGES, JUNE 2, 1967, DOCKET NO. 50-271

(1) MECHANICAL VACUUM PUMP (WHICH CONTAINS A POTENTIAL DIRECT PATH TO STACK THAT CANNOT BE ISOLATED) WILL NOT NORMALLY BE OPERATING ABOVE 100-PSIG STEAM PRESSURE (AS ASSUMED IN ORIGINAL REPORT). AIR EJECTORS (WHICH HAVE AUTOMATIC ISOLATION PROVISIONS) WOULD BE OPERATIVE INSTEAD. HOWEVER, VERMONT YANKEE IS INSTALLING AN ISOLATION VALVE AND TRIP ON THE MECHANICAL PUMP, ACTIVATED BY HIGH-STEAM-LINE ACTIVITY.

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-18312 *CONTINUED*
AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

*CONTAINMENT PENETRATION, CLOSURE OF + *MODIFICATION, SYSTEM OR EQUIPMENT +
FISSION PRODUCT RELEASE, GENERAL + PUMP + REACTOR OFFGAS + REACTOR, BOILING WATER +
SAFETY ANALYSIS REPORT, GENERAL + VERMONT YANKEE

18-18314
VERMONT YANKEE AMENDMENT 5. ADDITIONAL INFORMATION
VERMONT YANKEE NUCLEAR POWER CORPORATION, RUTLAND, VERMONT
24 PAGES, 9 FIGURES, 4 TABLES, MAY 19, 1967, DOCKET NO. 50-271

AT AEC REQUEST, VERMONT YANKEE FURNISHES INFORMATION ON (1) REDUNDANT EMERGENCY AC POWER, (2) DC BATTERY SYSTEM, (3) ALTERNATE SYSTEM FOR DECAY-HEAT REMOVAL UNDER CONSIDERATION IN EVENT WATER SUPPLY (VERNON POND) IS EMPTIED, (4) CONNECTICUT-RIVER FLOOD DATA, (5) INTAKE STRUCTURE DESIGN, (6) RAD. WASTE BUILDING DESIGN.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

*ELECTRIC POWER, NORMAL + *EMERGENCY COOLING CONSIDERATIONS + *EMERGENCY POWER, ELECTRIC +
REACTOR, BOILING WATER + SAFETY ANALYSIS REPORT, GENERAL + VERMONT YANKEE

18-18330 ALSO IN CATEGORY 12
OYSTER CREEK PROPOSED AMENDMENT 4. AVAILABILITY OF STANDBY COOLING SYSTEMS (APPENDIX L)
JERSEY CENTRAL POWER AND LIGHT COMPANY, MORRISTOWN, N. J.
32 PAGES, 5 FIGURES, 2 TABLES, FEBRUARY 28, 1967, DOCKET NO. 50-219

TRANSMITS APPENDIX L, WHICH GIVES FAILURE MODES FOR THE COMPONENTS OF THE STANDBY COOLING SYSTEM. SUBSYSTEMS WITH THEORETICAL AVAILABILITY. CORE SPRAY SYSTEM (.999999), AUTOMATIC DEPRESSURIZATION SYSTEM (0.999968), CONTAINMENT SPRAY SYSTEM, (.9999697). INCLUDES FAULT-TREE ANALYSIS OF OFF-SITE POWER AVAILABILITY (.99999).

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*CONTAINMENT SPRAY + *CORE SPRAY + *EMERGENCY COOLING CONSIDERATIONS + *EMERGENCY POWER, ELECTRIC +
*FAULT TREE ANALYSIS + *RELIABILITY ANALYSIS + OYSTER CREEK + REACTOR, BOILING WATER +
SAFETY ANALYSIS REPORT, GENERAL

18-18392 ALSO IN CATEGORY 15
US DEPT. OF INTERIOR COMMENTS ON PEACH BOTTOM THERMAL POLLUTION
PHILADELPHIA ELECTRIC CO., PA.
4 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(41), PAGE 23 THRU 26, (OCTOBER 9, 1967), DOCKET NGS. 50-171, 277, AND 278

(LETTER, SEPT. 27, 1967) JULY 27 COMMENTS INDICATE PLANS TO RESTORE SHAD RUNS TO THE SUSQUEHANNA AND CONCERN ABOUT THE 18.5 F ADDED TEMP. TO 3 1/2 DAY OF THE CONOWINGO RESERVOIR WATER, AFFECTING METABOLISM AND MAKING A THERMAL BARRIER AS WELL AS INTAKE STRUCTURES DESTROYING FISH. THEY RECOMMENDED (1, 2, 3) PREOPERATIONAL RADIOLOGICAL (FISH) SURVEYS, (4) MODIFY RADIOACTIVE RELEASES IF RADIOACTIVITY HARMFUL TO FISH EVEN IF ALLOWED BY 10 CFR 20, (5) CONTINUE SURVEYS UNTIL CONCLUSIVELY DEMONSTRATED THAT NO SIGNIFICANT ADVERSE CONDITION EXIST. REFERS TO A FLOW MODEL OF CONOWINGO BEING TESTED AT WORCESTER POLYTECH.

*HEAT SINK + *THERMAL POLLUTION + *WASTE DISPOSAL, RIVER + MODEL TESTING +
MONITORING PROGRAM, ENVIRONMENTAL + PEACH BOTTOM 2 AND 3 + REACTOR, BOILING WATER

18-18393 ALSO IN CATEGORY 15
US DEPARTMENT OF INTERIOR COMMENTS ON SURRY THERMAL POLLUTION
VIRGINIA ELECTRIC + POWER CO., RICHMOND, VIRGINIA
3 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(41), PAGE 26 THRU 28, (OCTOBER 9, 1967), DOCKET NO. 50-280 AND 281

(LETTER 27 SEPT. 1967) SEPT. 8 RECOMMENDATIONS ARE SIMILAR TO THOSE OF JULY 27 FOR PEACH BOTTOM (MAKE PREOPERATIONAL SURVEYS AND LIMIT RADIOACTIVE DISCHARGE EVEN FARTHER BELOW 10 CFR 20 IF FISH OR WILDLIFE DAMAGED). HYDRAULIC MODEL OF JAMES RIVER SHOWED THE 4 F TEMP. INCREASE ISOTHERMAL TO BE MIDSTREAM AND 6 MILES UP/DOWNSTREAM, WITH NO ADVERSE EFFECT OF LARGER AQUATIC LIFE. HOWEVER, PLANKTON WOULD BE DESTROYED PASSING THRU THE CONDENSER COILS, AND LARGE FISH DRAWN IN.

*MODEL TESTING + *THERMAL POLLUTION + HEAT SINK + REACTOR, PRESSURIZED WATER + SURRY 1 AND 2 +
WASTE DISPOSAL, RIVER

18-18444
ACRS REPORT ON BROWNS FERRY NUCLEAR POWER STATION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS, UNITED STATES ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.
11 PAGES, 10 REFERENCES, MARCH 14, 1967, DOCKET NO. 50-259/260, TENNESSEE VALLEY AUTHORITY

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-18444 *CONTINUED*

3293-MW(T) BWR HAS AN AVERAGE CORE-POWER DENSITY 40% HIGHER THAN QUAD CITIES (BY FLATTENING THE FLUX DISTRIBUTION AND INCREASING THE MAXIMUM LINEAR HEAT RATE OF THE FUEL BY 20%). ACRS IS CONCERNED WITH EMERGENCY CORE-COOLING SYSTEM (LARGER THAN QUAD CITIES BUT MORE ELEMENTS REACH HIGH TEMPERATURES IN A LOSS OF COOLANT), MELTDOWN DUE TO INLET BLOCKAGE, EXPERIMENTAL VERIFICATION OF LINEAR HEAT-RATE GENERATION NECESSARY FOR FUEL ELEMENT DAMAGE, ROD-BLOCK MONITOR-SYSTEM BYPASS, AND EMERGENCY POWER (DIESEL GENERATORS). MOST QUESTIONS STEM FROM THE HIGHER POWER LEVEL.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACCIDENT, LOSS OF COOLANT + *EMERGENCY COOLING CONSIDERATIONS +
ACRS (ADVISORY COMMITTEE ON REACTOR SAFEGUARDS) + BROWNS FERRY + EMERGENCY POWER, ELECTRIC +
FLOW BLOCKAGE + PERFORMANCE LIMIT + POWER DISTRIBUTION + REACTOR, BOILING WATER +
SAFETY REVIEW (OPERATIONS, EXPERIMENTS)

18-18448

ACRS REPORT ON LA CROSSE BOILING-WATER REACTOR (LACBWR)
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS, UNITED STATES ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.
5 PAGES, 32 REFERENCES, NOVEMBER 17, 1966, DOCKET NO. 115-5

RECOMMENDATIONS INCLUDE THE FOLLOWING - (1) ALTHOUGH PLANT IS DESIGNED FOR AUTOMATIC LOAD FOLLOWING, OPERATION SHOULD BE MANUAL UNTIL STAFF BECOMES EXPERIENCED. (2) PLACING OF APPROPRIATE LIMITS ON REACTIVITY AND FLUX ANOMALIES. (3) ITEMS CONCERNING LEAK DETECTION, TORNADOS, AND STACK INTEGRITY. (4) DEVELOPMENT WITHIN A YEAR AFTER STARTUP OF A PRIMARY-SYSTEM INSPECTION PROGRAM.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*REACTIVITY EFFECT, ANOMALOUS + ACRS (ADVISORY COMMITTEE ON REACTOR SAFEGUARDS) + LACROSSE +
REACTOR, BOILING WATER + SAFETY REVIEW (OPERATIONS, EXPERIMENTS) + STACK + TEST, LEAK LOCATION

18-18449

COHEN S + MOORE R + RUSSELL J + YOUNG J
THERMIONIC CRITICAL EXPERIMENT DESCRIPTION AND SAFETY ANALYSIS
GENERAL ATOMIC, DIVISION OF GENERAL DYNAMICS, SAN DIEGO, CALIFORNIA
GA-8091 +. 98 PAGES, 29 FIGURES, 17 TABLES, 21 REFERENCES, JULY 17, 1967

THE CORE (FOR TESTING DESIGN OF SPACE REACTORS) CONSISTS OF ASSEMBLIES COMPOSED OF ALTERNATE LAYERS OF THIN FUEL (93.2% ENRICHED U-235) AND NONFUEL FOILS, ON 3 BEDS (2 ARE MOVABLE). FAT-MAN-EFFECT CALCULATIONS FOR A SHUT-DOWN CORE GIVES A MAXIMUM K-EFF OF 0.93. MCA (INSERTION OF 2.6% ABOVE CRITICAL AND FAILURE OF ALL SCRAMS) RESULTS IN ENERGY RELEASE OF 14.4 MW-SEC AND MAXIMUM FUEL TEMPERATURE OF 445 C.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACCIDENT, CRITICALITY + *ACCIDENT, MAXIMUM CREDIBLE (MCA) + *DIRECT ENERGY CONVERSION DEVICES +
*FUEL ELEMENT + CRITICAL ASSEMBLY FACILITY + REACTOR, FAST + REACTOR, SPACE +
SAFETY ANALYSIS REPORT, GENERAL

18-18522

ALSO IN CATEGORY 6

SCHMIDT WH
CORE CALCULATIONS FOR SANDIA PULSE REACTOR II (SPR II)
SANDIA CORP., ALBUQUERQUE, N. MEX.
SC-RR-66-2643 +. 31 PAGES, 16 FIGURES, 5 TABLES, MAY 1967

A SUMMARY OF RESULTS AND CALCULATION METHODS, AS WELL AS JUSTIFICATION FOR CERTAIN DESIGN CRITERIA, IS PRESENTED FOR THE SANDIA PULSE REACTOR II (SPR II). TWO-DIMENSIONAL MULTIGROUP NEUTRON-TRANSPORT-THEORY CALCULATIONS WERE MADE WITH THE LASL BDK COMPUTER PROGRAM. THE RESULTS INCLUDE CORE SIZE, REACTIVITY WORTHS OF CORE COMPONENTS, AND TEMPERATURE AND NEUTRON FLUX PROFILES. SPR II IS A SUPER-GODIVA TYPE OF REACTOR, SIMILAR TO THE HEALTH PHYSICS RESEARCH REACTOR AT OAK RIDGE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

DESIGN CRITERIA + DESIGN STUDY + HPRR (HEALTH PHYSICS RESEARCH REACTOR) + REACTOR, FAST BURST +
REACTOR, FLUX TRAP + REACTOR, PULSED + REACTOR, RESEARCH

18-18565

ALSO IN CATEGORIES 9 AND 15

ENGINEERING MATERIALS LIST (SUPPL. SHEETS)
DIVISION OF TECHNICAL INFORMATION, AEC
TID-4100 (SUPPL. 40) +. 50 PAGES, SEPTEMBER 1967

INCLUDES LITR INSTRUMENTAL MODIFICATION FOR UPDATING, AS WELL AS TRANSISTORIZED IONCHAMBER SURVEY METER AND REM-RESPONDING PORTABLE FAST-NEUTRON SURVEY METER.

AVAILABILITY - DIVISION OF TECHNICAL INFORMATION, OAK RIDGE, TENN.

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-18565 *CONTINUED*

*CONTROL SYSTEM + *MONITOR, RADIATION, PERSONNEL + ENGINEERING DRAWING LIST +
LITR (LOW INTENSITY TEST REACTOR) + MODIFICATION, SYSTEM OR EQUIPMENT

18-18703 ALSO IN CATEGORY 19

APPLEBY ER
POWER REACTOR DESIGNS. AN ANNOTATED BIBLIOGRAPHY
BATTELLE-NORTHWEST, RICHLAND, WASHINGTON. PACIFIC NORTHWEST LABORATORY
BNWL-326 +. 703 PAGES, OCTOBER 1966

TITLE INDICATES CONTENT OF THIS REPORT, WHICH WAS PRODUCED BY A COMPUTER PRINTOUT. EACH
REACTOR HAS A PAGE OF PERTINENT DATA AND REFERENCES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.65 MICROFICHE

*BIBLIOGRAPHY + *REACTOR DESCRIPTION + REACTOR, POWER

18-18728

METROPOLITAN EDISON COMPANY THREE MILE ISLAND NUCLEAR STATION UNIT 1. PRELIMINARY SAFETY ANALYSIS REPORT,
VOLUME I
METROPOLITAN EDISON COMPANY
250 PAGES, FIGURES, TABLES, METROPOLITAN EDISON COMPANY THREE MILE ISLAND NUCLEAR STATION UNIT 1,
SEPTEMBER 1967, DOCKET 50-289

B+W 2452/845 MWE GROSS, WITH EVALUATION AT ULTIMATE POWER OF 2551/871. LOCATED 10 MILES SE OF
HARRISBURG, PA. OPERATION BY MAY 1971. REACTOR NEAR-DUPLICATE OF OCONEE, CYLINDRICAL
PRESTRESSED-CONCRETE REACTOR BUILDING HAS CARBON STEEL LINER. CORE REFLOODING INCLUDES
ACCUMULATIONS. CONTAINMENT SPRAY USES SODIUM THIOSULPHATE. VOL. 1 ANSWERS 27 AEC
CONSTRUCTION PERMIT CRITERIA, TABULATES COMPARISON WITH OCONEE, TURKEY POINT, AND INDIAN
POINT 2. DESCRIBES REACTOR CORE, COOLANT SYSTEM, CONTAINMENT, AND ENGINEERED SAFEGUARDS
(CORE REFLOODING, CONTAINMENT AIR COOLING, CONTAINMENT SPRAY). R AND D REQUIREMENTS ARE ON
ONCE-THRU STEAM-GENERATOR-LOAD FOLLOWING, CONTROL-ROD DRIVES, SELF-POWERED DETECTORS, AND
THERMAL/HYDRAULICS. STYLE OF REPORT LAYOUT EMPHASIZES DESIGN BASIS AND EVALUATION.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

ACCUMULATOR + AEC CONSTRUCTION PERMIT CRITERIA + CONTAINMENT SPRAY + ENGINEERED SAFETY FEATURE +
REACTOR, PRESSURIZED WATER + RESEARCH AND DEVELOPMENT PROGRAM + SAFETY ANALYSIS REPORT, PRELIMINARY +
THREE MILE ISLAND (PWR)

18-18729 ALSO IN CATEGORY 5

METROPOLITAN EDISON COMPANY THREE MILE ISLAND NUCLEAR STATION UNIT 1, PRELIMINARY SAFETY ANALYSIS REPORT,
VOLUME II
METROPOLITAN EDISON COMPANY
250 PAGES, FIGURES, TABLES, METROPOLITAN EDISON COMPANY THREE MILE ISLAND NUCLEAR STATION UNIT 1,
SEPTEMBER 1967, DOCKET 50-289

SECTIONS ON INSTRUMENTS AND CONTROLS, ELECTRICAL AND AUXILIARY SYSTEMS, WASTE DISPOSAL, TESTS
AND OPERATIONS, AND SAFETY ANALYSIS. WORST OFF-SITE DOSE IS ROD-EJECTION ACCIDENT (2.6 REMS
THYROID AT EXCLUSION DISTANCE, 30 DAYS). MAX. HYPOTHETICAL ACCIDENT (100' GAS, 50' IODINE,
1' SOLIDS FROM COMPLETE CORE MELTDOWN) GIVES 86-REM 2-HR THYROID DOSE AT EXCLUSION DISTANCE,
AND 72-REMS AT LOW-POPULATION-ZONE DISTANCE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*ACCIDENT, CONTROL ROD EJECTION + ACCIDENT ANALYSIS + ACCIDENT, HYPOTHETICAL + AIRBORNE RELEASE + DOSE +
REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY + THREE MILE ISLAND (PWR)

18-18730 ALSO IN CATEGORY 9

THREE MILE ISLAND INSTRUMENTATION, CONTROL, AND ROD DRIVES.
METROPOLITAN EDISON COMPANY
40 PAGES, FIGURES, PAGE 3-84 TO 3-90 OF CHAPTER 3, VOLUME 1, AND PAGE 7-1 TO 7-34 OF CHAPTER 7, VOLUME II
OF METROPOLITAN EDISON COMPANY THREE MILE ISLAND NUCLEAR STATION UNIT 1, PRELIMINARY SAFETY ANALYSIS
REPORT, SEPTEMBER 1967, DOCKET 50-289.

IN-CORE INSTRUMENTATION CONSISTS OF 52 ASSEMBLIES, EACH WITH 7 SELF-POWERED FLUX DETECTORS, 1
BACKGROUND DETECTOR, AN INLET AND OUTLET TEMPERATURE DETECTOR, AND A CALIBRATION TUBE. THE
REACTOR SAFETY SYSTEM IS FOUR CHANNEL (1/4) GENERAL COINCIDENCE. THE USUAL ROD-DRIVE MOTORS
AND SCRAM-RELEASE MECHANISMS ARE INCORPORATED INTO A ROTATING-DISK ACTUATOR (GEAR-TOOTHED
WOBBLE PLATE, ROTATED BY SWITCHING FIELDS IN 10 MAGNETS). SCRAM IS ACCOMPLISHED BY REMOVAL
OF 480-V POWER TO ROTATORS. FOUR SCRAM CIRCUIT BREAKERS ARE ARRANGED WITH EACH PAIR IN
SERIES TO A SEPARATE SUPPLY, SO EACH BREAKER CAN BE TESTED WITHOUT DROPPING A ROD. 69
CONTROL-ROD ASSEMBLIES, EACH ACTUALLY 16 STAINLESS-STEEL TUBES FILLED WITH CO-IN-AG.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*CONTROL ROD DRIVE + *INSTRUMENTATION, COINCIDENT + *INSTRUMENTATION, IN CORE + CONTROL ROD +

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-18730 *CONTINUED*
REACTOR SAFETY SYSTEM + SAFETY ANALYSIS REPORT, PRELIMINARY + SELF POWERED FLUX DETECTOR + THREE MILE ISLAND (PWR)

18-18731 ALSO IN CATEGORIES 2 AND 16
THREE MILE ISLAND METROLOGY, GEOLOGY AND FOUNDATION CONSIDERATIONS
METROPOLITAN EDISON COMPANY
200 PAGES, TABLES, FIGURES, METROPOLITAN EDISON COMPANY THREE MILE ISLAND NUCLEAR STATION UNIT 1, PRELIMINARY SAFETY ANALYSIS REPORT, VOLUME III, SEPTEMBER 1967, DOCKET 50-289

BULK OF MATERIAL CONSISTS OF SOIL-CLASSIFICATION SHEETS OBTAINED BY GILBERT ASSOCIATES TEST BORINGS ON THE ISLAND. SEISMIC SURVEY WAS BY WESTON GEOPHYSICAL. NO EVIDENCE OF FAULTING WAS FOUND, ALTHOUGH A HYPOTHETICAL FAULT WAS PROJECTED THROUGH THE ISLAND IN 1933, BASED ON A 1929 LARGE-SCALE SURFACE MAPPING. METEOROLOGY CONSISTS OF A 1959-63 SUMMARY OF ATMOSPHERIC STABILITY AND WIND SPEED FOR OLMSTEAD AFB AND HARRISBURG-YORK AIRPORT. INCLUDED ARE FIELD REPORTS ON GEOLOGY, GROUND-WATER HYDROLOGY, SEISMOLOGY.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*FAULT + *FOUNDATION ENGINEERING + *HYDROLOGICAL CONSIDERATION, GENERAL + *WIND STATISTICS + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY + THREE MILE ISLAND (PWR)

18-18736
GILBERT WS + KLOVERSTROM FA + RIENECKER F
REVISED SAFETY ANALYSIS REPORT FOR THE SUPER KUKLA PROMPT BURST REACTOR
LAWRENCE RADIATION LABORATORY, LIVERMORE, CALIF.
UCRL-7695 REV. 1 +. 41 PAGES, FIGURES, TABLES, APRIL 12, 1966

AN ALL-METAL REACTOR, LOCATED AT NEVADA TEST SITE. CORE IS AN ANNULAR SHELL (OPTIONAL END REFLECTORS, OUTER DIAMETER, 20 IN., INNER DIAMETER, 18 IN., HEIGHT, ABOUT 37 IN.). MADE UP OF RINGS OF 20 U-10 MO ALLOY. CONTROL IS BY 6 RODS. BURST GENERATION IS BY INSERTION OF 6 GAUGED FUEL RODS, AND SHUTDOWN IS DONE BY SEPARATING CORE INTO HALVES. BURSTS WILL GENERATE 4×10^{18} FISSIONS IN THE CORE AND A FLUX IN THE CENTRAL CAVITY OF 2×10^{15} . REPETITION RATE, LIMITED BY CORE COOLING TIME, IS ONE BURST/DAY. HILL SHIELDS CONTROL BUILDING 1/2 MILE FROM REACTOR. AN 8-IN. LEAD WALL WITH VIEWING WINDOW AND MANIPULATORS FURNISHES PROTECTION DURING CORE MODIFICATIONS. NORMAL EXCESS REACTIVITY IS LESS THAN 0.15 ABOVE PROMPT CRITICAL. DAMAGE SETS IN AT ABOUT 0.25 , AND MELTDOWN IS AT $0.50 - 0.75$.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

ACCIDENT, REACTIVITY + NEVADA TEST SITE + REACTOR DESCRIPTION + REACTOR, FAST BURST + SAFETY ANALYSIS REPORT, GENERAL + SHIELDING

18-18782 ALSO IN CATEGORY 1
MCELMAIN WH
JERSEY CENTRAL ASKS FOR SPEEDY CONSIDERATION TO AVOID BROWNOUT
JERSEY CENTRAL POWER AND LIGHT COMPANY, MORRISTOWN, N. J.
2 PAGES, OCTOBER 12, 1967, DOCKET NO. 50-219, ATOMIC ENERGY CLEARINGHOUSE, 13(43), PAGE 22-23, (OCTOBER 23, 1967)

(TWX TO DRL, OCT. 12, 1967) CURRENT SCHEDULE FOR FINAL DRL/ACRS REVIEW IS JAN. 1968. ANY DELAY IN FUEL LOADING PAST DEC. 15, 1967, THREATENS OUR ABILITY TO MEET LOAD DEMAND FOR THE SUMMER OF 1968. JC ASKS (1) FOR FINAL ACTION IN DECEMBER, OR (2) A LIMITED LICENSE FOR LOADING AND LOW-POWER OPERATION, OR (3) EARLY PUBLICATION OF INTENT TO ISSUE A FUEL-LOADING LICENSE. MORE THAN 19 MILLION DOLLARS HAS BEEN SPENT IN ACCELERATING CONSTRUCTION.

*OPERATING LICENSE PROCESS + *REGULATION, AEC + ECONOMICS + OYSTER CREEK + REACTOR, BOILING WATER

18-18932 ALSO IN CATEGORY 14
ADDENDUM TO SAFETY EVALUATION OF VERMONT YANKEE COOLING TOWERS
AEC, DIVISION OF REACTOR LICENSING, WASHINGTON, D. C.
6 PAGES, OCTOBER 16, 1967, DOCKET NO. 50-271

TOWERS (TO REDUCE WATER TEMPERATURE TO ACCEPTABLE LIMITS FOR DISCHARGE TO CONNECTICUT RIVER) WILL BE USED ABOUT 50% OF THE TIME (WHEN RIVER FLOW IS LOW). ASSUMING (1) RADIOACTIVE WASTE RELEASE AT MAXIMUM PERMISSIBLE LIMITS (10(5TH) TIMES EXPECTED LEVELS), (2) FLOW CONDITIONS SUCH THAT DISCHARGE WATER FLOWS TO INTAKE WITHOUT DILUTION, (3) VAPOR IN TOWER CONTAINED THE SAME AMOUNT OF RADIOISOTOPES AS THE WATER, AND (4) WATER LOST IN A TOWER WAS 2.2", THE RESULTING RELEASE, WOULD BE 0.1 TO 0.7 MPC. DRL STAFF PREVIOUS CONCLUSION AS TO SAFETY ARE NOT ALTERED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*SOURCE, CONTINUOUS + *WASTE DISPOSAL, RIVER + AIRBORNE RELEASE + DILUTION + EVAPORATION + HEAT SINK + REACTOR, BOILING WATER + SAFETY EVALUATION + VERMONT YANKEE

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-18935 ALSO IN CATEGORY 5
HADDAM NECK ANALYSIS OF RADIOACTIVE RELEASE DUE TO MAIN STEAM LINE RUPTURE
CONNECTICUT YANKEE ATOMIC POWER COMPANY, BOSTON, MASS.
2 PAGES, OCTOBER 9, 1967, DOCKET NO. 50-213

ANALYSIS OF RADIOACTIVE RELEASE WITH 10-SEC MAIN-STEAM-ISOLATION VALVES CLOSURE TIME, ASSUMING
1* DEFECTIVE FUEL AND BLOWDOWN AT 6000 LB/HR, RESULTS IN A TOTAL THYROID DOSE AT SITE
BOUNDARY OF LESS THAN 50 MREM. MODERATOR COEFFICIENT WILL BE POSITIVE FOR AT LEAST 2000 HR
AT 493 MWE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACCIDENT, STEAM LINE RUPTURE + *CONTAINMENT PENETRATION, CLOSURE OF + AIRBORNE RELEASE + DOSE +
HADDAM NECK + MAIN COOLING SYSTEM + MODERATOR COEFFICIENT + REACTOR, PRESSURIZED WATER +
TECHNICAL SPECIFICATIONS + VALVE

18-18952 ALSO IN CATEGORY 12
JOHNSON FG + POULTER DR
THE STEAM GENERATING HEAVY WATER REACTOR--ITS DESIGN AND SAFETY CHARACTERISTICS
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, RISLEY
SM-89/38 + CONF-670 402 +. 27 PAGES, 7 FIGURES, 2 TABLES, 11 REFERENCES, INTERNATIONAL ATOMIC ENERGY
AGENCY SYMPOSIUM, VIENNA, APRIL 1967

DESCRIBES THE PRINCIPAL FEATURES OF THE SGHWR, A 100-MWE PRESSURE-TUBE REACTOR, HEAVY-WATER
MODERATED, UO₂ FUELED (ZIRCALOY CLADDING), AND LIGHT-WATER COOLED. THE EMERGENCY COOLING
SYSTEM INJECTS COLD WATER INTO THE FUEL-ELEMENT CLUSTER AT SEVERAL LEVELS THROUGH RINGS OF
SMALL HOLES LOCATED IN THE HOLLOW CENTER TIE ROD OR SPARGE PIPE OF THE CLUSTER BECAUSE TESTS
SHOWED THAT WATER SPRAYED FROM ABOVE WAS BLOWN OUT WITH THE STEAM AND WAS INEFFECTIVE.
CONTAINMENT IS BY PRESSURE SUPPRESSION, A CONCRETE SHELL, AND AIR CIRCULATION AND FILTERING
SYSTEM. DISCUSSES HEAT TRANSFER, PRESSURE-TUBE-MATERIAL SELECTION, AND REACTOR CONTROL AND
INSTRUMENTATION. BRIEFLY REVIEWS THE INSPECTION AND TESTING PROGRAMS, THE SAFETY ANALYSIS,
AND FUTURE DESIGNS OF SIMILAR SYSTEMS.

AVAILABILITY - NATIONAL AGENCY FOR INTERNATIONAL PUBLICATIONS, INC., 317 EAST 34TH ST., NEW YORK, N.Y.
10016

*CORE SPRAY + *REACTOR DESCRIPTION + CONTAINMENT DESIGN + CONTAINMENT, PRESSURE SUPPRESSION +
DESIGN CRITERIA + EMERGENCY COOLING CONSIDERATIONS + HEAT TRANSFER + INSTRUMENTATION, CONTROL +
REACTOR, HEAVY WATER + REACTOR, INTERNAL SUPERHEAT + REACTOR, PRESSURE TUBE + SYSTEM DESCRIPTION +
TEST, BENCH + TESTING + UNITED KINGDOM

18-18959
NCSU PULSTAR SAFETY ANALYSIS REPORT. VOLUME I
NORTH CAROLINA STATE UNIVERSITY, RALEIGH, NORTH CAROLINA
300 PAGES, FIGURES, TABLES, JULY 1, 1967, DOCKET NO. 50-297

REACTOR LOCATED AT RALEIGH, N. C., IS QUITE SIMILAR TO WYNNRC PULSTAR EXCEPT THAT THE FUEL IS
4' ENRICHED (RATHER THAN 6'). SECTION 1.4 LISTS 11 DESIGN CRITERIA. STEADY-STATE POWER
LEVEL IS 1 MW, WITH 2200-MW PULSES FROM A 1.72' STEP CHANGE. COOLANT FLOW IS 500 GPM. MCA
IS LOSS OF POOL WATER DUE TO AN INLET OR OUTLET PIPING BREAK. CLADDING WOULD NOT FAIL
BECAUSE AIR CONVECTION IS SUFFICIENT TO REMOVE DECAY HEAT. RADIATION LEVEL AT TOP OF TANK
WOULD BE LESS THAN 100 MR/HR. STORAGE PIT IS BELOW POOL FLOOR AND WOULD NOT DRAIN.
FUEL-LOADING ACCIDENT IS NOT THE MOST SERIOUS BECAUSE OF LOW MAXIMUM WORTH OF A FUEL ELEMENT
(1.5'). A 2.5' STEP INPUT DOES NOT CAUSE CLAD DAMAGE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*ACCIDENT, LOSS OF COOLANT + *ACCIDENT, MAXIMUM CREDIBLE (MCA) + *EMERGENCY COOLING CONSIDERATIONS +
DESIGN CRITERIA + DOSE + PULSTAR + REACTOR, PULSED + REACTOR, RESEARCH + SAFETY ANALYSIS REPORT, GENERAL +
SCATTERING (SKYSHINE)

18-18960 ALSO IN CATEGORY 2
PRAIRIE ISLAND NUCLEAR GENERATING PLANT FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT. VOLUME III
NORTHERN STATES POWER COMPANY, MINNEAPOLIS, MINNESOTA
300 PAGES, TABLES, FIGURES, SEPTEMBER 20, 1967, DOCKET NO. 50-282/306

CONTAINS APPENDIXES A TO I, INCLUDING, (B) METEOROLOGICAL MODEL, (D) TURBINE RUNAWAY
CONSEQUENCES AND LIKELIHOOD, (E) RADIOLYTIC DECOMPOSITION OF SAFETY-INJECTION WATER, (F)
SHARED-EQUIPMENT EVALUATION, (G) RADIOACTIVE SOURCES FOR CONTAINMENT LEAKAGE, (H) REPORT OF
ENVIRONMENTAL STUDIES, GEOLOGY, HYDROLOGY, SEISMOLOGY, AND STRUCTURAL-DESIGN PROCEDURES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

FISSION PRODUCT RELEASE, GENERAL + METEOROLOGY + PRAIRIE ISLAND 1 AND 2 (PWR) + RADIOLYTIC GAS +
REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY + SITE CLIMATOLOGY + SITING, GENERAL +
SOURCE, CONTINUOUS.

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-18961 ALSO IN CATEGORY 12
PRAIRIE ISLAND NUCLEAR GENERATING PLANT FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, VOLUME II
NORTHERN STATES POWER COMPANY, MINNEAPOLIS, MINNESOTA
300 PAGES, FIGURES, TABLES, SEPTEMBER 20, 1967, DOCKET NO. 50-282/306

DESCRIBES 6 ENGINEERED SAFEGUARDS. NO SHARED SYSTEM ALLOWS A FAILURE IN ONE REACTOR TO AFFECT THE OTHER. ACCIDENTS ANALYSED INCLUDE STEAM-GENERATOR-TUBE RUPTURE (40 TUBE FAILURES ARE NECESSARY TO CAUSE CLAD FAILURE, RESULTING IN OFF-SITE DOSE OF 25 REMS). STEAM-LINE RUPTURE (SLIGHT CLAD RUPTURE, THYROID DOSE AT 600 METERS, 2 HR, IS 26 REMS). LOSS-OF-COOLANT ACCIDENT RESULTS IN A 140-MREM 30-DAY DOSE AT MINIMUM LOW-POPULATION ZONE RADIUS, AND 120 MREMS AT 600 METERS, EXCLUSION BOUNDARY. EFFECT OF LEAK RATE AND SPRAY EFFICIENCY ON DOSE ARE GIVEN.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*ACCIDENT ANALYSIS + *ACCIDENT, LOSS OF COOLANT + AIRBORNE RELEASE + CONTAINMENT SPRAY + DOSE + ENGINEERED SAFETY FEATURE + FAILURE, CLADDING + PRAIRIE ISLAND 1 AND 2 (PWR) + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-18962 ALSO IN CATEGORY 11
PRAIRIE ISLAND NUCLEAR GENERATING PLANT FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, VOLUME I
NORTHERN STATES POWER COMPANY, MINNEAPOLIS, MINNESOTA
345 PAGES, TABLES, FIGURES, SEPTEMBER 20, 1967, DOCKET NUMBERS 50-282 AND 50-306

TWO PWRs (EACH 1650-MWT/560-MWE LICENSE POWER, BUT 1721-MWT/583-MWE DESIGN POWER, ZIRCALOY-CLAD UO₂) LOCATED ON PRAIRIE ISLAND, BY THE MISSISSIPPI, NEAR RED WING, MINN. SITE IS ABOUT 5 FT ABOVE 1965 HIGH WATER LEVEL. SYSTEM IS DESIGNED TO ACCEPT 10' STEP AND 5'/MIN RAMP POWER CHANGES BETWEEN 15% AND 100% FULL POWER. 3-REGION CORE HAS SPRING-CLIP GRID STRUCTURE, 33 FULL-LENGTH RODS PLUS 4 PART-LENGTH RODS (WCAP-7072). CYLINDRICAL STEEL SHELL CONTAINMENT (WITH EXTERNAL EMERGENCY SPRAY) HAS A CONCRETE SHIELD BUILDING SURROUNDING. CONCEPT IS SIMILAR TO THAT FOR INDIAN POINT 1. 6 ENGINEERED SAFEGUARDS CLAIMED. SOME SHARED EQUIPMENT (EXTERNAL SPRAY PUMPS, ETC.). INITIAL POSITIVE MODERATOR COEFFICIENT (SIMILAR TO HADDAM NECK). SECTION 1 GIVES DESIGN CRITERIA KEYED TO AEC CRITERIA, AND A COMPARISON WITH GINNA AND POINT BEACH.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

*CONTAINMENT SPRAY + *EMERGENCY COOLING CONSIDERATIONS + *SITING, GENERAL + AEC CONSTRUCTION PERMIT CRITERIA + CONTAINMENT, HIGH PRESSURE + CONTROL ROD PROGRAM + MODERATOR COEFFICIENT + PRAIRIE ISLAND 1 AND 2 (PWR) + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY + XENON OSCILLATION

18-18975
ORNL NOTICE OF PROPOSED ISSUANCE OF USGS TRIGA CONSTRUCTION PERMIT
AEC, DIVISION OF REACTOR LICENSING, WASHINGTON, D. C.
10 PAGES, SEPTEMBER 20, 1967, DOCKET NO. 50-274

1-MW MARK 1, WITH PULSING CAPABILITY (16 MW-SEC ENERGY RELEASE) AND SQUARE-WAVE MODE TO 1 MW IS TO BE LOCATED AT DENVER FEDERAL CENTER. MAXIMUM PULSE IS FROM 2.1' INSERTION. FUEL ELEMENTS ARE MARK III.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*ACCIDENT, LOSS OF COOLANT + *ACCIDENT, REACTIVITY + REACTOR, PULSED + REACTOR, RESEARCH + SAFETY EVALUATION + SITING, GENERAL + TRIGA (TRAINING REACTOR, ISOTOPES, G.A.)

18-18977 ALSO IN CATEGORY 17
WESTINGHOUSE EXPERIENCE WITH HIGH POWER FUEL RODS
SAXTON NUCLEAR EXPERIMENTAL CORP.
19 PAGES, 7 TABLES, 9 REFERENCES, DECEMBER 1966, DOCKET NO. 50-146

GIVES DETAILS AND RESULTS OF EXPERIMENTS WITH ZIRC-CLAD FUEL RODS, INCLUDING (A) 6 CVTR CORE SAMPLES IRRADIATED IN WESTINGHOUSE TEST REACTOR (VARIOUS CLADDING DIAMETERS, CLADDING THICKNESSES, COLD DIAMETRICAL GAPS, AND FUEL ENRICHMENT), (B) 2 CVTR SAMPLES IN WTR (TO EVALUATE EFFECT OF COLD DIAMETRICAL GAP ON EXPANSION, AND (C) SAXTON IN-PILE TEST ASSEMBLIES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

*CLAD + *FUEL ELEMENT + *IRRADIATION TESTING + *ZIRCALOY + EXAMINATION + FABRICATION + HEAT CONDUCTANCE, FUEL TO CLAD + OPERATING EXPERIENCE + REACTOR, PRESSURIZED WATER + RESEARCH AND DEVELOPMENT PROGRAM + SAFETY ANALYSIS REPORT, GENERAL + SAXTON

18-18982 ALSO IN CATEGORY 9
PEACH BOTTOM 1 CHANGE 4 - TESTING FREQUENCY OF INSTRUMENTATION

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-18982 *CONTINUED*

AEC, DIVISION OF REACTOR LICENSING, WASHINGTON, D. C.
3 PAGES, OCTOBER 4, 1967, DOCKET NO. 50-171

DRL GRANTS PERMISSION TO CHANGE THE TESTING FREQUENCY OF THE REACTOR-SAFETY-SYSTEM INSTRUMENTATION FROM WEEKLY TO MONTHLY, BASED ON PAST GOOD EXPERIENCE. DRL DOES NOT FEEL THAT SEMIANNUAL TESTING IS JUSTIFIED ON BASIS OF EXPERIENCE TO DATE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*TECHNICAL SPECIFICATIONS + *TEST INTERVAL + INSTRUMENTATION, NUCLEAR + INSTRUMENTATION, PROTECTIVE + INSTRUMENTATION, TESTING + PEACH BOTTOM 1 + REACTOR SAFETY SYSTEM + REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED + SAFETY EVALUATION + TEST, SYSTEM OPERABILITY

18-18984

HAZARDS SUMMARY REPORT FOR A 1000 KW TRIGA MARK-I REACTOR AT THE USGS, DENVER, COLORADO
U.S. GEOLOGICAL SURVEY, DEPARTMENT OF THE INTERIOR
200 PAGES, FIGURES, TABLES, REFERENCES, DECEMBER 1966, DOCKET 50-274

MAXIMUM PULSE OF 2.1' PRODUCES 16 MW-SEC ENERGY RELEASE. HAS SQUARE-WAVE-MODE CAPABILITY. LOSS OF COOLANT DOES NOT RESULT IN FUEL FAILURE. AFTER 1 DAY, DIRECT DOSE AT THE POOL IS 1200 R/HR (SCATTERED, 0.3R/HR). IRRADIATION FACILITIES INCLUDE STRINGERS, ISOTOPE PRODUCTION FACILITY, PNEUMATIC TRANSFER SYSTEM, AND CENTRAL THIMBLE. ARGON CONCENTRATION FROM POOL WATER IS 3×10^{-9} TH MICROCURIE/CC.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

*ACCIDENT, LOSS OF COOLANT + DOSE + IRRADIATION TESTING + REACTOR, PULSED + REACTOR, RESEARCH + SAFETY ANALYSIS REPORT, GENERAL + TRIGA (TRAINING REACTOR, ISOTOPES, G.A.)

18-19191

RIBERGAL AV + SINITSYN VI + LESHCHINSKII NI
GAMMA IRRADIATION FACILITIES
GOSUDARSTVENNYI KOMITET PO ISPOL ZOVANIYU ATOMONOI ENEPGII
AEC-TR-6469 + IPST-CAT-NO-1247 +. 112 PAGES, FIGURES, TABLES, 1960

A FIRST ATTEMPT AT SYSTEMATIC EXPOSITION OF RADIATION-ENGINEERING PROBLEMS IN DESIGN OF FACILITIES FOR BIOLOGY, FOOD, AND PLASTICS IRRADIATION. CHAPTERS ON VARIOUS TYPES OF SOURCES, VARIOUS GAMMA-SOURCE INSTALLATIONS ACCORDING TO USAGE, DESIGN OF THE IRRADIATOR, GAMMA-FIELD AND SHIELDING CALCULATIONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

*GAMMA + *IRRADIATION FACILITY + *SYSTEM DESCRIPTION + DESIGN STUDY + SHIELDING + UNION OF SOVIET SOCIALIST REPUBLICS

18-19655

POINT BEACH II PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT. VOLUME II
WISCONSIN MICHIGAN POWER COMPANY + WISCONSIN ELECTRIC POWER CO.
300 PAGES, FIGURES, TABLES REFERENCES, AUGUST 3, 1967, DOCKET NO. 50-301

A WESTINGHOUSE (1396-MWT/480 MWE) PWR, IDENTICAL TO POINT BEACH I. BOTH REACTORS ARE LOCATED ON THE SHORE OF LAKE MICHIGAN, 30 MILES S.E. OF GREEN BAY. ESTIMATED MAXIMUM WAVE RUN-UP IS ABOUT 9 TO 10 FT, MAXIMUM SEICHE IS 2 FT. IF STORM SEWER FAILS TO HANDLE WATER SPILLING OVER BANK, THE TURBINE BUILDING CAN BE SAND-BAGGED. INCLUDED ARE DESCRIPTIONS OF CORE, COOLANT SYSTEM, AND CONTAINMENT SYSTEM. GREEN PAGES IN PSAR CONTAIN CHANGES (MARKED BY ASTERISKS) FROM POINT BEACH I PSAR. TABLE 1.3.1 LISTS SHARED EQUIPMENT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

*SEICHE + CONTAINMENT, HIGH PRESSURE + MAIN COOLING SYSTEM + POINT BEACH 1 AND 2 (PWR) + REACTOR DESCRIPTION + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY + SHARED COMPONENTS + SITING, REACTOR

18-19656

ALSO IN CATEGORY 5

POINT BEACH II PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT. VOLUME III
WISCONSIN MICHIGAN POWER COMPANY + WISCONSIN ELECTRIC POWER CO.
250 PAGES, FIGURES, TABLES, REFERENCES, AUGUST 3, 1967, DOCKET NO. 50-301

DESCRIBES FOUR ENGINEERED-SAFETY-FEATURE SYSTEMS. MCA IS A LOSS OF COOLANT, RESULTING IN AN OFF-SITE DOSE OF 0.27 REM IN 2 HR. LOSS-OF-COOLANT ACCIDENT ANALYSIS IS 37 PAGES LONG. (APPENDIX A) PRIMARY COOLANT ACTIVITY, (APPENDIX B) DISPERSION, (APPENDIX C) DOSE CALCULATION MODELS, (APPENDIX D) LIKELIHOOD AND CONSEQUENCES OF TURBINE RUNAWAY, (APPENDIX E) RADIOLYTIC DECOMPOSITION OF SAFETY-INJECTION WATER AND POSSIBLE EFFECTS ON CONTAINMENT TRANSIENTS, (APPENDIX F) EVALUATION OF SHARED COMPONENTS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

CATEGORY 18
SAFETY ANALYSIS AND DESIGN REPORTS

18-19656 *CONTINUED*

*ACCIDENT, LOSS OF COOLANT + *ENGINEERED SAFETY FEATURE + *SHARED COMPONENTS + AIRBORNE RELEASE + DOSE +
POINT BEACH 1 AND 2 (PWR) + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

CATEGORY 19
BIBLIOGRAPHIES

19-16928 ALSO IN CATEGORY 3
SHAPPART LE + BURNS RS
INDEXED BIBLIOGRAPHY ON TRANSPORTATION AND HANDLING OF RADIOACTIVE MATERIALS
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.
ORNL-NSIC-33 +. 147 PAGES, JUNE 1967

THIS REPORT CONTAINS ABSTRACTS OF ABOUT 700 DOCUMENTS AND ARTICLES DEALING WITH SHIPPING CONTAINERS, SHIPPING REGULATIONS, AND CRITICALITY SAFETY AS IT RELATES TO SHIPPING, TRANSPORTATION ACCIDENTS, AND OTHER ASPECTS OF SAFETY IN TRANSPORTATION. THE REPORT IS CROSS-INDEXED BY AUTHOR, KEY WORD, AND REPORT NUMBER.

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BIBLIOGRAPHY + TRANSPORTATION AND HANDLING

19-17329 ALSO IN CATEGORY 7
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PHILLIPS PETROLEUM CO., IDAHO FALLS, IDAHO. ATOMIC ENERGY DIVISION
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A LITERATURE SURVEY WAS MADE OF THE DATA ON FISSION-PRODUCT RELEASE, TRANSPORT, AND DEPOSITION. THIS REPORT PRESENTS A BIBLIOGRAPHY OF THE LITERATURE THAT APPEARS APPLICABLE TO THE DEVELOPMENT OF ANALYTICAL METHODS FOR CALCULATING FISSION-PRODUCT BEHAVIOR FOLLOWING A LOSS-OF-COOLANT ACCIDENT INVOLVING A WATER-COOLED UO₂-FUELED REACTOR.

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*BIBLIOGRAPHY + *DEPOSITION + *FISSION PRODUCT RELEASE, GENERAL + *FISSION PRODUCT TRANSPORT + ACCIDENT, LOSS OF COOLANT + REACTOR, WATER + URANIUM DIOXIDE

19-18372 ALSO IN CATEGORY 14
RLUM JM
RADIOACTIVE CONTAMINATION OF GASEOUS MEDIA
ORNL-TR-1485 +. 8 PAGES, 1 TABLE, 48 REFERENCES, TRANS. FROM ENERGIE NUCLEAIRE 8(2), PAGES 141-13 (1966)

REVIEWS PUBLICATIONS CONCERNED WITH RADIOACTIVE CONTAMINATION OF GASES. BIBLIOGRAPHY INCLUDES OTHER BIBLIOGRAPHIES AND SYMPOSIA IN WHICH PERTINENT PAPERS ARE PRESENTED.

*CONTAMINATION + ATMOSPHERIC POLLUTION + BIBLIOGRAPHY + DOSE CALCULATION, INTERNAL + DOSE MEASUREMENT, INTERNAL + EFFLUENT + RADIOACTIVITY, RELEASE

19-18703 ALSO IN CATEGORY 18
APPLEBY ER
POWER REACTOR DESIGNS. AN ANNOTATED BIBLIOGRAPHY
BATTELLE-NORTHWEST, RICHLAND, WASHINGTON. PACIFIC NORTHWEST LABORATORY
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TITLE INDICATES CONTENT OF THIS REPORT, WHICH WAS PRODUCED BY A COMPUTER PRINTOUT. EACH REACTOR HAS A PAGE OF PERTINENT DATA AND REFERENCES.

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*BIBLIOGRAPHY + *REACTOR DESCRIPTION + REACTOR, POWER

INFORMATION AT NSIC IS DIVIDED INTO 19 CATEGORIES. AN ITEM OF INFORMATION MAY BE ASSIGNED TO AS MANY AS THREE OF THESE. A COLLECTION OF KEYWORDS IS USED TO DENOTE THE MAIN SAFETY RELATED POINTS COVERED IN AN ARTICLE. THE FOLLOWING INDEX IS AN ALPHABETICAL LISTING OF KEYWORDS GIVING REFERENCES TO EACH ARTICLE TO WHICH THAT KEYWORD IS ASSIGNED. THE CATEGORY NUMBER IS GIVEN FIRST, FOLLOWED BY THE ACCESSION NUMBER. THE ACCESSION NUMBERS ARE USED TO LOCATE BIBLIOGRAPHIC ITEMS WITHIN A CATEGORY.

ACCELERATION				ACTIVATION ENERGY			
2-17625				4-13513	7-18513		
ACCELERATOR				ACTIVATION PRODUCT			
15-16954	15-17031	15-18557	17-17986	8-17357	14-17285	15-17285	
ACCIDENT ANALYSIS				ACTIVITY BUILDUP			
1-18210	2-18210	5-16490	5-16967	8-17357	9-17508	17-17508	17-17978
5-17257	5-17437	5-17974	5-18210	ADHESION			
5-18729	5-19089	6-16490	6-17257	14-17012	15-17012		
6-18203	6-18223	6-18276	7-17328	ADMINISTRATIVE CONTROLS AND PRACTICES			
7-18990	7-19089	8-16490	8-17361	9-17553	14-17864	17-17365	17-17586
9-18203	11-16967	11-17437	11-18638	17-17652	17-17854	17-17995	17-18143
11-19289	12-17437	12-18961	15-16952	17-18675	17-18676	17-18628	17-18930
15-18841	17-17974	18-17396	18-18304	ADSORPTION			
18-18729	18-18961			7-17684	7-18014	7-18215	7-18246
ACCIDENT MODEL				7-18579	7-18583	7-18590	11-18246
1-18210	2-18210	5-18210	8-17564	12-18583	14-18070	15-18070	
ACCIDENT, COLD COOLANT				AEC CONSTRUCTION PERMIT CRITERIA			
18-17304				11-17056	11-18962	12-17440	18-17440
ACCIDENT, CONSEQUENCES				18-18728	18-18962		
15-16952				AEROSOL			
ACCIDENT, CONTROL ROD EJECTION				7-16406	7-17311	7-17312	7-17319
5-18729	14-18306	18-18306	18-18729	7-17685	7-18213	7-18227	7-18228
ACCIDENT, CRITICALITY				7-18289	7-18290	7-18580	9-18734
1-17303	6-18276	9-17303	14-18549	12-18228	14-17904	14-18406	14-18547
15-16952	18-18142	18-18449		15-18547	16-17904	16-18502	16-18779
ACCIDENT, GENERAL				17-18734			
7-18188	7-18189	7-18190	7-18990	AEROSOL PRODUCTION			
8-18188	8-18189	8-18190	12-18083	7-18290			
14-18083	15-16952	15-18045	17-16989	AEROSOL PROPERTIES			
ACCIDENT, HYPOTHETICAL				5-18209	7-17347	7-18289	7-18290
3-16653	5-18729	17-18976	18-18729	11-18209	12-18209		
ACCIDENT, LOAD REJECTION				AEROSOL, BIOLOGICAL			
9-16429	17-16429	17-17868	18-16429	15-18840			
18-17304				AEROSOL, RADIOACTIVE			
ACCIDENT, LOSS OF COOLANT				3-18218	7-18290	14-17424	14-18406
3-16653	5-06683	5-16637	5-17442	14-18555	14-18707	15-17424	15-18218
5-17471	5-17529	5-17811	5-17999	15-18555	16-18707		
5-19089	5-19091	5-19656	6-17529	AEROSPACE SAFETY			
6-19091	7-17329	7-19089	8-16637	4-15968	4-16960	4-16970	4-16971
8-17361	8-17442	8-17811	8-18442	4-17344	4-17504	4-17505	4-17506
11-17811	11-17999	11-18442	11-19089	4-18472	4-18915	14-16568	14-16969
12-17471	12-18961	17-17860	17-17999	14-18781	15-17290	15-17423	15-17485
17-18332	17-18436	17-18442	17-18976	16-18781			
18-06683	18-17948	18-17979	18-18444	AF-METR (AIR FORCE NUC. ENGINEERING TEST CTTR.)			
18-18959	18-18961	18-18975	18-18984	5-17146	17-17146		
18-18956	19-17329			AFTERSHOCK			
ACCIDENT, LOSS OF FLOW				2-17624			
5-17146	17-17146	17-17868	17-18976	AGESTA (SWEDISH 65 MWTH REACTOR)			
18-17304				9-18591	9-18770		
ACCIDENT, LOSS OF POWER				AGM (TRAINING REACTOR, AEROJET-GEN. NUCLEONICS)			
17-17151				7-17975	11-19440	14-17523	17-17510
ACCIDENT, MAXIMUM CREDIBLE (MCA)				17-17523	17-17524	17-17587	17-17588
5-06683	5-16953	6-16953	6-18223	17-17660	17-17966	17-17967	17-17968
8-18634	11-18634	14-17866	17-17866	17-17669	17-17975	17-17578	17-18440
17-17997	17-18318	18-06683	18-17866	17-18441	17-18925	17-18927	18-16493
18-18449	18-18959			18-17977			
ACCIDENT, MONITOR				AGRICULTURAL CONSIDERATION			
7-18193	11-18193			14-17222	14-17655	14-18065	14-18077
ACCIDENT, PROBABILITY OF				14-18080	14-18549	15-17283	15-18065
1 10210	2 10210	5-17167	5-18210	15-18078			
17-17167				AIR			
ACCIDENT, RADIOISOTOPE				5-17451	6-17451	7-17325	8-17037
3-18218	15-18218			8-17362	8-17564	11-17059	14-17050
ACCIDENT, REACTIVITY				14-18068	14-18547	15-16973	15-16976
5-17257	5-17974	6-17257	6-17539	15-16977	15-16978	15-16980	15-17010
7-18922	17-17539	17-17974	17-18141	15-17284	15-17287	15-18547	17-18437
17-18922	18-18304	18-18736	18-18975	AIR CLEANING			
ACCIDENT, STEAM LINE RUPTURE				4-18472	7-16406	7-17312	7-17347
5-18935	9-18159	11-18391	17-18159	7-17685	7-18226	7-18227	7-18229
17-18391	17-18934	17-18976	18-18935	7-18229	7-18246	7-18509	7-18579
ACCUMULATOR				7-19582	7-18586	11-18246	12-18228
18-18728				12-18582	12-18586	14-18551	
ACRS (ADVISORY COMMITTEE ON REACTOR SAFEGUARDS)				AIRBORNE RELEASE			
7-18922	17-17993	17-18922	18-18444	5-18935	5-19656	7-17327	7-18209
18-18448				7-17330	7-18215	7-18509	
ACTINIUM				7-18586	11-18440	12-18961	13-17327
15-16980				13-17530	13-17374	14-17327	14-18561
ACTINON				14-18032	15-16952	17-17374	17-18440
15-16980				17-18934	17-18976	18-18729	18-18932
ACTIVATION				18-18935	18-18961	18-18656	
15-18405				AIRBURST			

14-18267	16-18267			ATMOSPHERIC DIFFUSION, GLOBAL			
AIRCRAFT				4-18271	15-17489	15-17490	15-18271
14-17816				16-17489	16-17490	16-18271	16-18704
ALASKA				ATMOSPHERIC ELECTRICITY			
14-16950	14-18258	14-18259	15-16950	14-18267	16-18267		
15-18258	15-18259			ATMOSPHERIC POLLUTION			
ALLOY				4-18472	7-18509	14-17816	14-18234
4-18285	4-18347	4-18351	7-17325	14-18372	14-18412	14-18413	14-18561
7-18190	7-18251	7-18286	7-18292	16-17488	16-18198	16-18497	16-18498
7-18347	8-17362	8-18190	17-18286	16-18499	16-18500	16-18501	19-18372
ALPHA EMITTER				ATMOSPHERIC STABILITY			
3-16927	4-18552	7-17369	7-18193	16-18628	16-18804	16-18805	
7-18580	7-18589	11-16927	11-18193	ATOMICS INTERNATIONAL			
13-16927	14-17011	14-18234	15-16948	8-18744			
15-16952	15-16979	15-16980	15-17011	ATR (ADVANCED TEST REACTOR - NRTS)			
15-17287	15-17333	15-17348	15-18546	9-18717			
15-18552	17-17369			AUSTRALIA			
ALPHA FACILITIES				15-18749			
7-19580				AUSTRIA			
ALRR (AMES LABORATORY RESEARCH REACTOR)				14-16949	14-18136	15-16949	15-18136
14-17482	15-17482			AUXILIARY COOLING			
ALUMINUM				11-16496	18-16496		
8-17361	11-18090	14-17432	15-17432	BARIUM			
17-17139	17-17142	18-16925		4-19238	7-17325	7-18238	
AMERICIUM				BATTELLE NORTHWEST			
17-17375	17-17512			8-17359	12-17566	14-17566	14-17690
ANALOG SIMULATION				14-17693	14-17884	15-16976	15-17431
6-18713	9-16942	9-18360	9-18713	15-17884			
18-17304				BEAM HOLE			
ANALYTICAL MODEL				17-17509	17-18443	18-17852	18-17996
4-18513	5-17167	5-17491	5-17670	BELGIUM			
6-17491	6-17497	6-17670	6-18280	1-17562	17-17363		
6-18282	6-18526	6-18713	6-18718	BERYLLIUM			
7-17323	7-17684	7-18288	7-18513	9-18362	15-18843	17-17139	
7-18994	9-18360	9-18571	9-18598	BETA EMITTER			
9-18713	9-18718	10-18598	11-16966	14-17011	14-17955	14-18234	15-16948
11-18288	17-17167	17-17497		15-16952	15-16979	15-17011	15-17290
ANALYTICAL TECHNIQUE, AIR				15-17594	15-18085	15-18405	
7-18217	14-18236	14-18545	15-16979	BETHE TAIT			
ANALYTICAL TECHNIQUE, CALIBRATION				5-16953	6-16953		
3-17964	7-18193	7-18214	7-18216	BIBLIOGRAPHY			
7-18349	7-18475	7-18518	7-18590	1-17559	3-16928	5-17354	6-17354
11-18193	14-18011			7-17329	9-17583	12-17559	14-17559
ANALYTICAL TECHNIQUE, FOOD				14-18372	18-18703	19-16928	19-17329
14-18011	14-18048	15-16979	15-18038	19-18372	19-18703		
ANALYTICAL TECHNIQUE, GAS				BIG ROCK POINT			
7-17330	13-17330	14-18545		5-17974	5-18447	9-16429	9-17513
ANALYTICAL TECHNIQUE, GENERAL				9-17893	9-17973	10-17513	10-17893
7-17325	7-17369	7-18241	7-18349	15-17135	15-17973	17-16429	17-17135
9-18777	14-17283	14-18407	14-18417	17-17513	17-17973	17-17974	17-18015
15-16975	15-16979	15-17283	15-18038	17-18446	17-18447	18-16429	
15-18405	15-18407	17-17369		BIOLOGICAL CONCENTRATION, AGRICULTURAL PRODUCE			
ANALYTICAL TECHNIQUE, LIQUID				14-17009	14-18549	15-17009	
14-17288	15-17288	15-18038		BIOLOGICAL CONCENTRATION, ALGAE			
ANALYTICAL TECHNIQUE, MILK				14-18072	14-18416	14-18417	15-18072
14-18011	14-18233	15-16973	15-16979	BIOLOGICAL CONCENTRATION, ANIMAL			
15-18013	15-18038	15-18045		14-17009	14-18009	14-18184	14-18416
ANALYTICAL TECHNIQUE, SOLID				14-18417	14-18547	15-16959	15-16976
7-17438	15-18038			15-17009	15-17032	15-17429	15-17485
ANALYTICAL TECHNIQUE, URINE				15-18547			
14-18407	15-18407			BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS			
ANALYTICAL TECHNIQUE, VEGETATION				1-18508	14-16949	14-17908	14-18070
15-18038				14-18071	14-18072	14-18135	14-18136
ANALYTICAL TECHNIQUE, WATER				14-18415	14-18416	14-18417	14-18508
15-16948	15-16979	15-18038		14-18550	14-18562	15-16949	15-17010
ANL (ARGONNE NATIONAL LABORATORY)				15-18066	15-18070	15-18071	15-10072
6-17153	8-17037	8-17361	8-17362	15-18135	15-18136	15-18550	17-18508
9-17126	14-17011	14-17892	15-17011	BIOLOGICAL CONCENTRATION, FOOD			
17-17126	17-17145	17-17153		14-17009	14-17283	14-17907	14-18009
ANTIMONY				14-18256	14-18263	14-18415	15-16952
9-18362				15-16961	15-16973	15-16976	15-17009
AQUATIC ORGANISMS				15-17010	15-17032	15-17283	15-17291
14-16949	15-16949	15-17010		15-17429	15-17907	15-18256	15-18263
ARGON				15-18269	15-18266	16-18269	
7-17125	14-17866	15-17125	16-17655	BIOLOGICAL CONCENTRATION, GENERAL			
17-17125	17-17866	18-17655	18-17866	14-17688	14-18184	14-18255	15-16945
ARGONAUT (ARGONNE NUC ASSEMBLY, UNIV TRAINING)				15-16952	15-17688	15-18255	
6-18527	17-16582			BIOLOGICAL CONCENTRATION, MAN			
ATMOSPHERIC CHEMISTRY				3-18218	14-17009	14-17046	14-17049
7-18215	16-17488	16-18198		14-17424	14-18009	14-18259	14-18833
ATMOSPHERIC CIRCULATION, GLOBAL				14-18849	15-16948	15-16952	15-16961
14-16974	16-18494			15-16976	15-17009	15-17032	15-17291
ATMOSPHERIC DIFFUSION				15-17334	15-17424	15-17427	15-17429
14-16950	14-18068	14-18705	14-18781	15-18058	15-18066	15-18073	15-18074
15-16950	15-18270	16-17655	16-18270	15-18075	15-18218	15-18219	15-18220
16-18495	16-18705	16-18780	16-18781	15-18221	15-18222	15-18259	15-18840
16-18804	16-18805	18-17655		15-18846	15-18847	15-18848	15-18849
ATMOSPHERIC DIFFUSION EXPERIMENT				15-18863			
16-18806				BIOLOGICAL CONCENTRATION, MILK			
ATMOSPHERIC DIFFUSION, CLIMATOLOGY				14-17009	14-17011	14-17050	14-17426
16-18630	16-18706			14-17688	14-17892	14-18012	14-18077

14-18233	14-18264	14-18549	15-13660	CARBIDE	4-18185	4-18513	7-16924	7-18185
15-16952	15-16959	15-16973	15-16976		7-18216	7-18513	12-16924	
15-17009	15-17010	15-17011	15-17032	CARBON	4-18351	7-16924	7-18350	12-16924
15-17429	15-17688	15-18013	15-18044		15-18086	17-18385		
15-18078	15-18264	15-18846		CARBON DIOXIDE	3-17965	7-18242	7-18246	7-18352
BIOLOGICAL CONCENTRATION, VEGETATION					11-18246			
14-17283	14-17285	14-17482	14-17955	CARBON MONOXIDE	7-18352			
14-18009	14-18051	14-18077	14-18184	CENTERLINE MELTING	5-17498	18-17498		
15-13660	15-16959	15-16973	15-17010	CERAMICS	4-18348	7-18348	11-18026	18-18304
15-17032	15-17283	15-17285	15-17291	CERUM	6-17501	7-17325	14-17426	14-17428
15-17482	15-18078				14-17815	14-17892	14-18051	14-18079
BIO MEDICAL					14-18550	15-18070	15-18269	15-18550
4-17504	4-17505	4-18915	14-17882	CESIUM	16-18269	18-17501		
14-18483	15-16931	15-17030	15-17032		4-18291	4-18987	7-18241	7-18291
15-17882	15-18049	15-18052	15-18053		7-19349	7-18987	11-17053	14-16949
15-18058	15-18059	15-18060	15-18061		14-17009	14-17011	14-17289	14-17425
15-18062	15-18063	15-18067	15-18073		14-17426	14-17428	14-17907	14-17908
15-18074	15-18075	15-18086	15-18170		14-17956	14-17957	14-18009	14-18048
15-18221	15-18222	15-18483	15-18840		14-18051	14-18070	14-18184	14-18258
15-18844	15-18847	15-18848			14-18259	14-18263	14-18414	14-18544
BIOTA					14-18562	14-18849	15-16949	15-16959
14-16949	14-17905	14-18071	14-18072		15-17009	15-17011	15-17425	15-17429
14-18415	14-18562	15-16948	15-16949		15-17487	15-17490	15-17997	15-17957
15-17010	15-18071	15-18072			15-18013	15-18044	15-18070	15-18075
BISMUTH					15-18258	15-18259	15-18263	15-18269
4-18285					15-18349	16-17487	16-17490	16-18269
BLOWDOWN					17-18929			
5-17301	5-17471	5-17491	5-17493	CHALK RIVER	14-17693			
5-17534	5-17558	5-17610	5-17611		14-17693			
5-17999	5-19091	6-17491	6-17493	CHAMBER, ION	9-17000	9-17004	9-17973	15-17973
6-17534	6-17558	6-19091	11-17610		17-17973			
11-17611	11-17999	12-17471	17-17534	CHARCOAL	7-16406	7-17124	7-17321	7-18226
17-17999					7-18228	7-18229	7-18579	7-18922
BNL (BROOKHAVEN NATIONAL LABORATORY)					12-18228	17-17124	17-18922	
6-17433	6-17522	14-17520	14-17693	CHARCOAL ADSORBER	7-18226	7-18228	7-18229	7-18579
17-17298	17-17521	18-17510			7-18586	12-18228	12-18586	14-18845
BONUS (BOILING NUCLEAR SUPERHEAT PROJECT)				CHEMICAL ANALYSIS	5-16491	6-16491	8-16491	9-18366
5-17999	9-17590	11-17999	17-17499		15-18366			
17-17590	17-17999	18-17517		CHEMICAL KINETICS	4-18238	5-17193	7-17193	7-17684
BORON					7-18188	7-18189	7-18190	7-18238
6-17087	9-17087	9-18033	9-18138		7-18251	7-18957	8-17564	8-18188
9-18362	9-18926	12-18138						

7-16924	7-18518	12-16924	18-16925	CONTAINMENT AIR LOCK			
18-17518				11-17128	17-17128		
COATING				CONTAINMENT ANALYSIS			
7-18518				5-17811	7-18518	8-17811	8-18634
COATING, SURFACE				11-17052	11-17604	11-17811	11-17812
5-18089	7-18014	7-18518	11-16488	11-17813	11-18633	11-18634	11-18638
15-18750	17-16488	17-17137	17-17140	11-18639			
17-17871	17-18750	18-18089		CONTAINMENT CONSTRUCTION			
COBALT				5-17437	11-17062	11-17437	11-17607
11-17053	14-16949	14-17881	14-18072	11-17613	11-17643	12-17437	17-17643
14-18184	14-18562	15-16949	15-18072	CONTAINMENT DESIGN			
CODES AND STANDARDS				3-16927	5-17811	7-18246	7-18288
1-17570	1-17571	5-17940	11-17020	8-17811	11-16927	11-17056	11-17060
11-17613	12-17020	14-17020	15-16948	11-17613	11-17811	11-18023	11-18246
15-16960	15-17030	15-17031	15-19766	11-18288	12-18952	13-16927	18-18952
17-16989	17-17940			CONTAINMENT FILTERING SYSTEM			
COMBUSTION				7-18225	7-18227	7-18518	
8-17037	8-17362	8-17564		CONTAINMENT INTEGRITY			
COMPACTION				8-18442	11-18442	17-17528	17-18442
14-17432	15-17432			CONTAINMENT LEAKAGE CONTROL			
COMPARISON, THEORY AND EXPERIENCE				7-18250	10-17873	11-14620	11-17052
1-18520	1-18761	1-18762	5-17146	11-17873	11-18633	12-14620	17-17873
5-17301	6-17153	6-17497	6-17539	17-18250	18-14620		
6-18281	6-18305	6-18520	6-18527	CONTAINMENT LINER			
6-18537	6-18761	6-18762	6-18765	11-17810	11-18137		
7-17311	7-17328	7-17347	8-17564	CONTAINMENT PENETRATION, CLOSURE OF			
9-18040	11-17812	11-18026	11-18641	5-18935	9-17513	10-17513	11-18391
17-17146	17-17153	17-17298	17-17497	17-17513	17-17868	17-18391	17-18934
17-17539	17-17601	17-18040	17-18305	18-18312	18-18935		
17-18642				CONTAINMENT PENETRATION, ELECTRICAL			
COMPUTER CONTROL				10-17973	11-17658	11-17873	17-17658
9-17893	10-17893			17-17873			
COMPUTER PROGRAM				CONTAINMENT PENETRATION, GENERAL			
4-17671	5-17349	5-17492	5-17532	5-16967	11-16967		
5-17610	5-17611	5-17811	5-17999	CONTAINMENT PENETRATION, PIPE			
5-19092	5-19096	6-17492	6-17497	11-14620	11-18639	12-14620	18-14620
6-17532	6-18203	6-18223	6-18278	CONTAINMENT REFERENCE MEASURING SYSTEM			
6-18521	6-18535	6-18713	6-18768	11-17054	11-18635	11-18641	
6-19092	6-19096	7-17323	7-18957	CONTAINMENT RESEARCH AND DEVELOPMENT			
7-18994	8-17361	8-17811	9-16942	5-17610	5-17611	5-18209	7-18228
9-17671	9-17893	9-17951	9-18203	7-18288	7-18290	11-17060	11-17610
9-18204	9-18206	9-18713	9-18768	11-17611	11-17812	11-18137	11-18209
9-18775	10-17672	10-17893	11-16966	11-18288	12-18209	12-18228	
11-17610	11-17611	11-17811	11-17999	CONTAINMENT SPRAY			
11-18026	14-17884	14-17901	14-18564	5-17437	5-17471	11-17060	11-17437
14-18627	14-18781	15-16931	15-17884	11-18962	12-17437	12-17471	12-18330
15-18060	15-18084	16-18627	16-18781	12-18961	18-18330	18-18728	18-18961
17-17497	17-17671	17-17672	17-17953	18-18962			
17-17999				CONTAINMENT STRUCTURE			
COMPUTER PROGRAM, METEOROLOGICAL				5-17437	11-16965	11-16966	11-17052
16-18494	16-18495			11-17054	11-17437	12-17437	18-16965
COMPUTER, ANALOG				CONTAINMENT VESSEL LOADING			
6-18718	9-17551	9-18029	9-18036	11-17059			
9-18206	9-18718			CONTAINMENT, FUEL REPROCESSING			
COMPUTER, DIGITAL				13-16930			
3-16653	5-17349	5-17532	5-17811	CONTAINMENT, GENERAL			
6-17015	6-17033	6-17034	6-17038	1-17567	5-06683	5-17193	7-17193
6-17039	6-17040	6-17245	6-17532	7-17324	11-16488	11-16496	11-17020
6-18203	6-18521	8-17811	9-18203	11-17056	11-17193	11-17324	11-17970
9-18371	9-18569	9-18570	9-18775	11-18140	11-18633	11-18635	11-18638
11-17811	12-16470	14-17901	15-18847	12-17020	12-17353	13-17353	14-17020
17-16470	17-18342			15-18140	17-16488	17-17970	17-18140
CONCENTRATION, AREA				18-06683	18-16496		
14-16949	14-18272	15-16949	15-18496	CONTAINMENT, HIGH PRESSURE			
16-18272	16-18495	16-18496	16-18497	11-17060	11-17609	11-17800	11-18023
16-18498	16-18499	16-18500	16-18501	11-18633	11-18636	11-18641	11-18962
16-18626				17-17800	18-18962	18-19655	
CONCENTRATION, CENTERLINE, MAXIMUM				CONTAINMENT, ICE CONDENSER			
16-18201				11-17609			
CONCENTRATION, MAXIMUM				CONTAINMENT, LOW PRESSURE			
15-18270	16-18270			5-17999	11-17999	17-17999	
CONCRETE				CONTAINMENT, MULTIPLE			
8-18958	11-16966	11-17056	11-17603	5-17437	6-17247	8-18634	11-17437
11-17609				11-17813	11-18633	11-18634	12-17437
CONCRETE, PRESTRESSED				CONTAINMENT, PRESSURE SUPPRESSION			
11-17051	11-17055	11-17056	11-17604	5-16967	11-16967	11-17604	11-17812
11-17607	11-17643	11-17810	11-18137	11-18137	11-18339	11-18340	12-18952
11-18633	11-18636	11-18639	17-17055	17-18339	17-18340	18-18952	
17-17643	18-17518			CONTAINMENT, SHOCK GENERATION AND PROTECTION			
CONDENSATION				11-16966			
4-17577	5-17577	5-17610	5-17611	CONTAINMENT, SOURCE			
6-17577	11-17610	11-17611	11-17812	11-17053			
CONGRESSIONAL ACTIVITY				CONTAMINATION			
1-17874	1-17875	2-17874	17-17873	3-16927	4-18472	11-16488	11-16927
11-17873	17-17873	17-17874	17-17875	13-16927	14-18072	14-18372	14-18412
CONSTRUCTION PERMIT PROCESS				15-16952	15-17880	15-18072	15-18220
1-17874	2-17874	12-17440	17-17874	15-18386	17-16488	17-18386	19-18372
17-17971	18-16493	18-17360	18-17440	CONTROL PANEL/ROOM			
18-17449	18-17850	18-17976	18-17977	11-16496	15-17991	18-16496	18-17991
CONTAINMENT ABSOLUTE MEASURING SYSTEM				CONTROL ROD			
11-17057	11-18641			6-16984	7-17975	9-16984	9-18030

9-18036	9-18572	9-18717	9-18730	8-18196	17-17151	17-17861	17-18165
17-17367	17-17859	17-17966	17-17975	17-18469			
17-18927	18-17850	18-18308	18-18730	COSMIC RADIATION			
CONTROL ROD BURNUP				4-16969	4-18552	4-18915	14-16969
1-17596	9-17141	9-17863	9-18926	14-18232	14-18553	15-17423	15-18552
17-17141	17-17596	17-17863	17-18926	15-18553	16-18779		
CONTROL ROD CALIBRATION				COUNTER			
6-17153	9-17007	9-17154	9-17551	9-17003	9-17554	14-17288	14-18849
17-17153	17-17154	17-17526	18-17854	15-16975	15-16977	15-16979	15-17288
CONTROL ROD DRIVE				15-17594	15-18844	15-18849	
9-17590	9-17855	9-17857	9-18593	COUNTER, WHOLE BODY			
9-18619	9-18730	17-16769	17-17590	14-18849	15-17032	15-18849	
17-17857	17-18437	18-17855	18-18730	COUPLED CORES			
CONTROL ROD FABRICATION				6-16762	6-16985	6-16986	6-16988
9-17141	9-18030	9-18033	17-17141	6-17045	6-17433	6-17441	6-17522
CONTROL ROD INTERACTION				18-16762			
6-18766	9-18766	9-18770		CP-5 (CHICAGO PILE NO. 5)			
CONTROL ROD PROGRAM				6-17153	17-17153		
5-16940	9-17656	11-18962	17-17601	CREEP			
17-17656	17-17992	17-17993	18-18962	17-18468			
CONTROL ROD SCRAM MECHANISM				CREEP BEHAVIOR			
6-18521	9-18717	17-18933		17-18468			
CONTROL ROD WORTH				CREEP PROPERTY			
6-17014	6-17016	6-17087	6-17246	17-18468			
6-18533	6-18765	6-18766	9-17007	CREST (COMMITTEE FOR REACTOR SAFETY TECHNOLOGY)			
9-17014	9-17016	9-17087	9-17141	5-17670	6-17670		
9-17656	9-18040	9-18572	9-18766	CRITICAL ASSEMBLY FACILITY			
9-18770	17-17141	17-17656	17-17992	1-17088	1-18761	1-18762	6-17008
17-17993	17-18040	17-18307		6-17038	6-17088	6-17565	6-16524
CONTROL ROD, SHIM SAFETY				6-18761	6-18762	6-18766	9-17646
9-17141	9-18507	9-18619	9-18926	9-18661	9-18766	15-17991	17-17152
17-17141	17-18507	17-18926		17-17460	17-17591	17-17646	17-17651
CONTROL SYSTEM				17-17971	17-17972	17-17987	17-17988
4-18027	6-16984	6-17132	9-16942	17-17989	17-17990	17-17997	17-18021
9-16984	9-17646	9-17863	9-18027	17-18134	17-18141	17-18318	17-18661
9-18035	9-18133	9-18435	9-18565	18-17935	18-17936	18-17991	18-18134
9-18597	12-16470	15-18565	17-16470	18-18142	18-18449		
17-17646	17-17863	17-18435	18-10133	CRITICALITY EXPERIMENT			
18-18565				1-18519	1-18520	1-18761	1-18762
CONTROL, COMPUTER				6-16762	6-16988	6-17246	6-18520
9-18371	9-18569	9-18570	9-18775	6-18533	6-18761	6-18762	6-18765
9-18921				17-17460	17-17484	18-16762	18-17295
CONTROL, GENERAL				CRITICALITY SAFETY			
6-17041	9-17041	9-18597		1-18519	3-17869	12-17353	13-16930
CONTROLLER				13-17353	15-17431	17-17869	17-17968
6-18274	9-17513	9-18596	9-18776	17-18149	17-18443	18-17977	
9-18777	12-17513	17-17513		CROSS SECTION			
CONVECTIVE BOILING				1-18520	6-19520	6-18531	18-17519
4-18194	5-18194			CRUD			
COOLANT CHEMISTRY				17-18642			
4-18185	4-18194	4-18196	4-18291	CRYOGENICS			
4-18348	5-16492	5-17167	5-18194	4-17535	4-18472	5-17535	5-17576
5-18981	7-18185	7-18191	7-18286	6-17535	6-17576	8-17576	
7-18291	7-18348	8-18196	17-16475	CSE (CONTAINMENT SYSTEMS EXPERIMENT)			
17-16476	17-16477	17-16492	17-17143	5-17193	5-18209	7-17193	7-17322
17-17167	17-17464	17-17641	17-18015	7-18290	11-17193	11-18209	12-18209
17-18165	17-18197	17-18286	17-18469	CURIUM			
17-18981	18-16477	18-16492	18-18197	7-17369	17-17369		
COOLANT COEFFICIENT				CVTR (CAROLINAS VIRGINIA TUBE REACTOR)			
6-17089	6-17153	6-17155	17-17153	1-18148	1-18152	5-18737	6-17155
17-17155				7-18738	17-16475	17-16476	17-16477
COOLANT PURIFICATION SYSTEM				17-17155	17-18145	17-18146	17-18147
17-17163	17-17860			17-18148	17-18149	17-18150	17-18151
COOLANT QUALITY				17-18152	17-18197	17-18737	17-18738
4-18196	5-17455	6-17131	8-18196	18-16477	18-18197		
17-17131				CYLINDER			
COOLING, SHUTDOWN				11-17604	11-17607	11-18023	11-18026
9-18585	12-18585	17-17597	17-18585	CZECHOSLOVAKIA			
COPPER				15-16946			
7-18014				DAMAGE			
CORE COMPONENTS, MISCELLANEOUS				5-18529	6-18529	8-18744	15-16945
5-17942	17-16056	17-17142	17-17150	DAMPING			
18-17304				2-17618	2-18755		
CORE MELTDOWN				DANGER COEFFICIENT			
5-17999	6-18276	11-17999	17-17999	6-16987	6-17038	6-17039	6-17040
18-18304				DATA PROCESSING			
CORE REFLOODING SYSTEM				9-17893	9-18173	9-18427	9-18592
5-17437	11-17437	12-14621	12-17437	9-18712	9-18775	9-18921	10-18993
18-14621				10-18173	15-16944		
CORE SPRAY				DECAY HEAT			
5-17437	5-17471	11-17437	12-17437	7-18583	12-18583		
12-17471	12-18330	12-18952	18-18330	DECONTAMINATION			
18-18952				7-18192	12-17566	12-18083	12-18192
CORE, CAPSULE DRIVER (CDC)				13-18192	14-17012	14-17049	14-17566
5-18529	6-18529			14-17883	14-18077	14-18083	14-18845
CORE, PLATE TYPE				15-16934	15-17012	15-17880	15-18078
5-17257	6-17257	17-17148		DEFORMATION			
CORROSION				11-17063	11-18023	11-18026	
4-18185	4-18196	4-18285	4-18344	DELAYED NEUTRON			
4-18347	4-18351	5-17442	7-18185	6-17070	6-18224	6-18528	6-18718
7-18344	7-18347	8-17357	8-17442	6-18771	9-17938	9-18591	9-18718

9-18771				18-18984	18-19656		
DENMARK				DOSE CALCULATION, EXTERNAL			
6-17035	9-17035	9-17337	14-17046	11-16496	14-17012	14-18542	14-18551
17-17337				14-18553	15-17012	15-17333	15-17335
DEPOSITION				15-17887	15-18061	15-18542	15-18551
7-17311	7-17329	7-18014	14-17009	15-18553	15-18556	15-18559	17-18332
14-17012	14-17892	14-18068	14-18267	18-16496			
14-18272	14-18631	14-18707	15-12660	DOSE CALCULATION, INTERNAL			
15-17009	15-17012	16-18267	16-18272	4-16969	14-16969	14-17012	14-17892
16-18629	16-18631	16-18707	19-17329	14-18235	14-18372	14-18549	14-18550
DESIGN CRITERIA				15-13667	15-17012	15-17334	15-17335
1-17567	1-17569	1-17595	5-16967	15-17485	15-17887	15-18058	15-18061
5-17300	6-18522	7-17324	7-17347	15-18073	15-18074	15-18075	15-18086
9-17569	9-18427	9-18585	11-16965	15-18221	15-18235	15-18546	15-18550
11-16967	11-17062	11-17324	11-18639	17-18332	19-18372		
12-17353	12-18585	12-18952	13-17353	DOSE MEASUREMENT, EXTERNAL			
14-16951	14-17047	17-18585	18-16965	4-17344	9-18366	14-17012	14-17058
18-17476	18-17514	18-18522	18-18952	14-17881	14-18072	14-18553	15-16997
18-18959				15-17012	15-17430	15-17485	15-17594
DESIGN STUDY				15-18050	15-18072	15-18220	15-18366
1-17303	6-18522	7-17324	8-18634	15-18553	15-18557		
9-16942	9-17303	9-17337	9-18585	DOSE MEASUREMENT, INTERNAL			
11-17324	11-18634	12-17353	12-18585	3-18218	14-17012	14-17058	14-17425
13-17353	14-17047	17-17337	17-18585	14-17957	14-18072	14-18256	14-18372
18-16925	18-17295	18-17296	18-17304	15-17012	15-17425	15-17429	15-17431
18-17461	18-17514	18-17517	18-17519	15-17957	15-18072	15-18073	15-18074
18-17934	18-18522	18-19191		15-18075	15-18218	15-18220	15-18221
DESTRUCTIVE TRANSIENT				15-18256	15-18404	15-18840	19-18372
5-16491	6-16491	6-18276	8-16491	DOSIMETRY, GENERAL			
DEUTERIUM				4-18552	14-17012	14-17884	14-18543
7-18350				15-16931	15-16952	15-16955	15-16958
DIDO (UK)				15-16960	15-16964	15-16997	15-17012
9-18470	11-17059	17-18470		15-17333	15-17334	15-17427	15-17431
DIETARY HABIT				15-17485	15-17594	15-17884	15-17890
14-16949	14-17009	14-17425	14-17426	15-17891	15-18047	15-18050	15-18053
14-17956	14-18012	14-18258	14-18264	15-18060	15-18061	15-18063	15-18082
14-18550	14-18849	15-16949	15-17009	15-18084	15-18085	15-18086	15-18405
15-17425	15-17429	15-17486	15-18221	15-18543	15-18552		
15-18258	15-18264	15-18550	15-18846	DOSIMETRY, PHOTOGRAPHIC			
15-18849				14-17884	15-16958	15-16960	15-17430
DIFFUSION				15-17884	15-18084		
4-18238	4-18354	4-18513	4-18954	DOSIMETRY, RADIOPHOTOLUMINESCENCE			
5-18954	7-17323	7-18187	7-18238	4-17344			
7-18241	7-18251	7-18288	7-18513	DOSIMETRY, THERMOLUMINESCENCE			
7-18514	7-18587	7-18954	7-18994	4-17344	15-16932	15-16964	15-17431
11-18288	14-16949	15-16949		15-17527	15-17890	15-17891	15-18405
DIFFUSION BOARD				17-17527			
7-16406				DOUNREAY (UK)			
DIFFUSION COEFFICIENT				9-17938	17-18469		
4-18238	7-17320	7-17323	7-18238	DRAGON (UK)			
7-18251	7-18514	16-18495		17-17151			
DILUTION				DRESDEN 1			
14-16949	14-17011	14-17511	14-17523	10-17899	11-19677	17-18331	17-19677
14-18071	14-18932	15-16949	15-17011	DRESDEN 2			
15-18071	17-17511	17-17523	18-18932	10-17899			
DIRECT ENERGY CONVERSION DEVICES				DRESDEN 3			
10-17517	18-18449			10-17899			
DISPERSION				DYNAMICS, NONLINEAR			
14-16949	14-16951	14-18071	14-18781	6-17071	6-17072	6-17331	
15-16949	15-16952	15-18071	15-18219	EARTH MATERIAL, DYNAMIC PROPERTY			
16-18780	16-18781			2-18517			
DISPLACEMENT, GENERAL				EARTH TREMOR, INDUCED			
2-17627	2-17629	2-17633		2-18755			
DNB (DEPARTURE FROM NUCLEATE BOILING)				EARTHQUAKE			
5-16382	5-17302	5-17447	5-17455	18-17851	18-17979	18-18379	
5-17555	5-17558	5-17580	5-17593	EARTHQUAKE ENGINEERING			
5-18981	6-16382	6-17447	6-17555	2-17618	2-17625	2-17635	2-18515
6-17558	6-17580	7-18738	9-17302	2-18516	2-18517	2-18540	2-18755
17-17302	17-17507	17-17593	17-18434	2-18796	5-16967	11-16967	17-17997
17-18738	17-18981			EARTHQUAKE EPICENTER			
DOPPLER COEFFICIENT				2-17614	2-17617	2-17619	2-17622
1-18536	5-16940	6-17084	6-17244	2-17626	2-17636		
6-17245	6-18281	6-18536		EARTHQUAKE PREDICTION			
DOPPLER EFFECT				2-17616	2-17620	2-17623	2-17634
1-17088	6-17086	6-17088	6-17565	2-17635	2-17636	2-17637	2-18760
6-18201	6-18531	17-18318		EARTHQUAKE RECORDS			
DOSE				2-17617	2-17620	2-17622	2-17626
1-17559	4-16969	4-18915	5-18729	2-17627	2-17628	2-17636	2-18516
5-18935	5-19656	12-17559	12-18961	2-18796			
14-16969	14-17559	14-17881	14-18068	EARTHQUAKE, GENERAL			
14-18235	14-18263	14-18266	15-16932	1-17874	2-17614	2-17615	2-17616
15-16933	15-16944	15-16952	15-16955	2-17617	2-17618	2-17619	2-17620
15-16973	15-16976	15-16977	15-16997	2-17622	2-17623	2-17624	2-17625
15-17032	15-17290	15-17291	15-17333	2-17626	2-17627	2-17628	2-17629
15-17334	15-17335	15-17594	15-18039	2-17633	2-17634	2-17635	2-17636
15-18047	15-18050	15-18053	15-18061	2-17637	2-17638	2-18515	2-18516
15-18062	15-18063	15-18075	15-18082	2-18517	2-18540	2-18755	2-18760
15-18085	15-18086	15-18222	15-18235	2-18796	17-17874		
15-18263	15-18266	15-18556	15-18843	EBR 1 AND 2 (EXPERIMENTAL BREEDER REACTORS)			
15-18847	16-16933	17-18934	17-18976	6-18195	7-18195	8-18195	9-17479
18-18729	18-18935	18-18959	18-18961	14-17048	17-17479	17-17500	18-17500

EBWR (EXPERIMENTAL BOILING WATER REACTOR)				15-19863			
6-17087	9-17087			EQUIPMENT DESIGN			
ECOLOGICAL CONSIDERATION				3-16927	4-18594	9-16943	9-17351
14-17884	14-17905	14-17908	14-17955	9-17352	9-18594	11-16927	12-17353
14-17956	14-18051	14-18070	14-18077	13-16927	13-17353		
14-18080	14-18184	15-16945	15-17884	EQUIPMENT, GENERAL			
15-18039	15-18049	15-18070	15-18078	9-18283	15-16946	15-16952	
ECONOMIC STUDY				EROSION			
1-17963	3-17963	11-18636	14-17047	15-16945			
ECONOMICS				ERROR ANALYSIS			
1-16759	1-18782	3-17954	5-16967	11-17354	11-17612		
7-17324	11-16967	11-17020	11-17324	ESTUARY			
12-17020	12-17350	13-17954	14-17020	14-16949	15-16949		
17-17350	17-18735	18-17293	18-17514	ETR (ENGINEERING TEST REACTOR)			
18-17934	18-18782			17-17156			
EFFLUENT				EURATOM			
14-16949	14-18372	15-16948	15-16949	5-16900	5-17388	5-17498	5-17533
19-18372				5-17670	6-16900	6-17533	6-17670
ELASTICITY				8-16900	18-17389	18-17396	18-17498
11-18022	11-18026			EUROPIUM			
ELECTRIC POWER, AUXILIARY				4-18291	7-18291		
10-17648	10-17649	17-17648	17-17649	EVAPORATION			
ELECTRIC POWER, GENERAL				7-18251	14-17432	14-18932	15-17432
9-17893	10-17893	10-18769	12-16470	18-18932			
17-16470	17-17365			EXAMINATION			
ELECTRIC POWER, NORMAL				5-18989	9-18926	17-18926	17-18927
9-17513	9-18173	9-18677	10-17513	17-18977	17-18989	18-18977	
10-17672	10-18173	17-17513	17-17672	EXCURSION, LARGE			
17-18677	18-18314			6-17033	6-18282	6-18526	9-18363
ELECTRIC POWER, VITAL				EXPANSION			
9-17508	10-17647	10-17648	10-17649	17-17500	17-18146	18-17500	
17-17508	17-17647	17-17648	17-17649	EXPERIMENT, GENERAL			
17-17868				4-18594	5-17257	6-17042	6-17043
ELECTRON MICROSCOPY				6-17074	6-17076	6-17084	6-17086
7-18353				6-17087	6-17257	6-18741	8-17018
ELECTROSTATIC CHARGE				8-18958	9-17043	9-17087	9-18207
7-18475	14-18845			9-18594	9-18741	9-18770	12-17018
ELECTROSTATIC PRECIPITATION				EXPULSION			
7-16406	7-18475	7-18509		7-18350	8-17564	9-18808	11-17055
ELK RIVER				11-17810	14-18808	16-18808	17-18385
1-17596	5-17593	11-17061	11-17800	EXTRAPOLATION FACTOR			
14-17889	15-18329	17-16929	17-17061	9-18040	11-17057	11-17970	15-18863
17-17345	17-17585	17-17593	17-17596	17-17970	17-18040	17-18161	17-18767
17-17800	18-17061			FABRICATION			
EMBRITTLEMENT				5-18091	17-17466	17-17499	17-18977
5-16953	5-18089	6-16953	11-18024	18-17517	18-18977		
11-18025	17-17140	17-17142	18-18089	FAILURE, ADMINISTRATIVE CONTROL			
EMERGENCY COOLING CONSIDERATIONS				9-18661	15-18386	17-18386	17-18436
5-13484	5-16967	5-17990	9-17862	17-18661			
9-18160	10-17648	10-17649	10-17899	FAILURE, CLADDING			
11-16967	11-17999	11-18962	12-18330	5-16637	5-17442	5-18989	6-18195
12-18952	14-17864	17-17148	17-17597	7-17369	7-18193	7-18195	8-16637
17-17648	17-17649	17-17862	17-17864	8-17442	8-18195	9-18420	11-18090
17-17999	17-18160	18-13484	18-18314	11-18193	12-18901	17-17142	17-17369
18-18220	18-18444	18-18052	18-18050	17-10000	10-10001		
18-18962				FAILURE, COMPONENT			
EMERGENCY POWER, ELECTRIC				9-17130	9-17857	9-18133	9-18470
9-16429	9-17513	9-18978	9-18978	17-17130	17-17142	17-17857	17-17868
10-17513	10-17873	10-17899	11-17873	17-18470	18-18002	18-18133	
12-18330	17-16429	17-17513	17-17873	FAILURE, DESIGN ERROR			
17-18978	17-18978	18-16429	18-18314	5-17940	11-17128	17-17128	17-17940
18-18330	18-18444			FAILURE, EQUIPMENT			
EMERGENCY PROCEDURE				9-16429	9-17862	12-17350	12-17370
1-17507	14-17049	15-16952	15-18841	14-17864	15-17372	15-18749	17-16429
18-17852				17-16769	17-17350	17-17355	17-17370
EMERGENCY SYSTEM				17-17372	17-17859	17-17862	17-17864
17-17997				18-16429			
ENEA (EUROPEAN NUCLEAR ENERGY AGENCY)				FAILURE, FABRICATION ERROR			
1-17567	14-17693			17-17363	18-18002		
ENERGY LEVEL				FAILURE, FATIGUE			
2-17614	2-17619	2-17622	2-17624	5-17579	6-17579		
2-17627				FAILURE, FUEL ELEMENT			
ENERGY SOURCE				1-18148	5-17579	5-18737	5-18989
8-18634	11-18634			6-17579	6-18195	7-18191	7-18195
ENGINEERED SAFETY FEATURE				7-18738	8-18195	9-16429	9-17513
1-17695	5-17437	5-19656	7-18586	9-18716	9-18734	10-17513	17-16429
11-17437	12-17437	12-18586	12-18961	17-17513	17-17985	17-17993	17-18148
18-18728	18-18961	18-19656		17-18149	17-18734	17-18737	17-18738
ENGINEERING DRAWING LIST				17-18989	18-16429		
9-18565	15-18565	18-18565		FAILURE, FUEL ELEMENT WATERLOGGING			
ENVIRONMENTAL CONDITION				5-10529	6-10529	17-17984	
9-18970	14-17011	14-17012	14-18071	FAILURE, GENERAL			
14-18136	14-18184	14-18232	14-18408	9-18677	12-17350	17-17350	17-17871
14-18409	14-18410	14-18411	14-18413	17-18677			
14-18555	15-16945	15-17011	15-17012	FAILURE, INSTALLATION ERROR			
15-18071	15-18073	15-18074	15-18136	17-16768	17-18032		
15-18219	15-18546	15-18555	15-18970	FAILURE, INSTRUMENT			
EQUATION OF STATE				9-17463	9-18773	15-18387	17-17463
6-18223				17-18387			
EQUATION, GENERAL				FAILURE, OPERATOR ERROR			
6-18277	6-18280	14-18862	15-18847	9-17862	9-17863	15-16761	15-17372

15-18388	15-18749	15-18750	17-16761	7-19580	7-18586	12-18228	12-18586
17-16769	17-17372	17-17862	17-17863	16-18268			
17-17868	17-18388	17-18750		FILTER IMPACTION			
FAILURE, PIPE				7-18289			
5-18091	11-19677	17-17859	17-17860	FILTER INSPECTION			
17-17861	17-19677			7-17685	7-18228	7-18586	12-18228
FAILURE, PRESSURE VESSEL				12-18586			
9-18018	11-18018	11-18022	11-18023	FILTER INSTALLATION			
11-18024				7-18586	12-18586		
FAILURE, SCRAM MECHANISM				FILTER SAFETY EVALUATION			
9-17590	9-17855	9-17857	9-18507	7-18228	12-18228	15-17430	
17-16769	17-17139	17-17142	17-17367	FILTER SPRAY			
17-17590	17-17857	17-18507	17-18933	7-18475	7-18588	7-18957	
18-17855				FILTER SYSTEM			
FAILURE, SIMULTANEOUS				7-17315			
9-18435	17-17939	17-18435		FILTER TEST REQUIREMENT			
FAILURE, TUBING				7-18228	7-18586	12-18228	12-18586
5-17940	8-18744	9-17508	9-18168	FILTER THEORY, IMPACTION			
14-17908	17-17151	17-17392	17-17508	7-17347			
17-17870	17-17940	17-18165	17-18168	FILTER THEORY, INTERCEPTION			
18-17355				7-17347	14-17432	15-17432	
FALLOUT				FILTER, ABSOLUTE			
4-18271	8-04716	14-16949	14-16950	7-17347	14-17058		
14-16974	14-17009	14-17011	14-17012	FILTER, CASCADE IMPACTOR			
14-17050	14-17283	14-17425	14-17426	7-18509			
14-17482	14-17688	14-17815	14-17816	FILTER, COMMERCIAL			
14-17881	14-17882	14-17883	14-17884	7-18509			
14-17885	14-17888	14-17889	14-17892	FILTER, CYCLONE			
14-17901	14-17902	14-17903	14-17904	7-18509			
14-17905	14-17906	14-17907	14-17957	FILTER, DAMAGED			
14-18009	14-18012	14-18051	14-18065	7-17374	13-17374	17-17374	
14-18068	14-18070	14-18071	14-18072	FILTER, ELECTROSTATIC			
14-18076	14-18077	14-18079	14-18080	7-17347			
14-18180	14-18233	14-18253	14-18255	FILTER, FIBER			
14-18256	14-18257	14-18258	14-18259	7-17312	7-17315	7-17347	
14-18260	14-18262	14-18263	14-18264	FILTER, GLASS			
14-18265	14-18267	14-18272	14-18403	7-17312	15-18843		
14-18406	14-18408	14-18412	14-18413	FILTER, HIGH EFFICIENCY			
14-18414	14-18418	14-18542	14-18544	7-17347	7-17685		
14-18555	14-18627	14-18833	14-18862	FILTER, LIQUID			
15-16931	15-16933	15-16945	15-16948	5-17576	6-17576	8-17576	
15-16949	15-16950	15-16959	15-16961	FILTER, MAY PACK			
15-16962	15-16973	15-16977	15-17009	7-17321			
15-17010	15-17011	15-17012	15-17032	FILTER, MEMBRANE			
15-17283	15-17284	15-17290	15-17425	7-17321	7-17324	7-18217	7-18584
15-17482	15-17486	15-17487	15-17489	11-17324	12-18584		
15-17688	15-17882	15-17884	15-17888	FILTER, PAPER			
15-17907	15-17957	15-18013	15-18038	7-17312	16-18268		
15-18044	15-18045	15-18065	15-18066	FILTER, ROUGHING			
15-18070	15-18071	15-18072	15-18076	7-17347	7-18509		
15-18078	15-18079	15-18180	15-18253	FILTER, TRAP			
15-18255	15-18256	15-18257	15-18258	7-16406	7-18229		
15-18259	15-18260	15-18262	15-18263	FIN			
15-18264	15-18265	15-18271	15-18405	FIRE	5-18989	17-18989	
15-18542	15-18555	16-16933	16-17487	4-18344	7-16406	7-18344	8-04716
16-17489	16-17904	16-18076	16-18267	8-17018	8-17584	12-17018	12-17584
16-18271	16-18272	16-18627	16-18704	13-17584	15-16945	17-16769	17-17149
16-18779	16-18780	17-17885		17-17363			
FAST NEUTRON				FISSION GAS RELEASE			
7-16924	9-18366	12-16924	15-17430	4-18185	5-16953	6-16953	7-17320
15-18366				7-17323	7-17328	7-18185	7-18216
FAULT				7-18346	7-19512	7-18514	7-18990
2-17624	2-17627	2-17629	2-17633	9-18734	15-13660	17-17585	17-17984
2-18731	16-18731	18-18731		17-17985	17-18734	18-17852	18-17979
FAULT TREE ANALYSIS				FISSION PRODUCT RELEASE, GENERAL			
9-17855	9-17857	9-18435	12-18330	2-18960	5-16953	5-17193	6-16953
17-17857	17-18435	18-17855	18-18330	7-17193	7-17322	7-17323	7-17325
FEDERAL RADIATION COUNCIL				7-17329	7-17369	7-18191	7-18250
1-17571	1-17695	15-16948	15-17030	7-18251	7-18287	7-18292	7-18510
FERMI				7-18514	7-18581	7-18587	7-18738
5-17167	6-17008	6-17132	6-18195	7-18990	11-17193	11-18140	14-18862
7-18195	8-18195	17-17167	17-18032	15-18140	17-17369	17-18140	17-18250
FFTF (TR)				17-18332	17-18738	18-17518	18-17519
6-18766	9-16943	9-18766	18-17295	18-18312	18-18960	19-17329	
18-17296	18-18304			FISSION PRODUCT RETENTION			
FILM BOILING				4-18238	4-18284	4-18291	5-16953
5-17640	6-17640			5-17193	6-16953	6-17247	7-16924
FILM, GENERAL				7-17193	7-17321	7-17324	7-18014
15-16960	15-18387	17-18387		7-18216	7-18225	7-18226	7-18227
FILTER				7-18229	7-18238	7-18284	7-18291
7-16406	7-17124	7-17312	7-17321	7-18518	11-17193	11-17324	11-17812
7-18217	7-18289	7-18509	7-18580	12-16924			
7-18582	7-18584	7-18586	7-18589	FISSION PRODUCT TRANSPORT			
7-18922	9-18430	12-18582	12-18584	4-18291	5-17193	7-17193	7-17322
12-18586	14-17011	14-18845	15-16948	7-17329	7-19014	7-18215	7-18216
15-16958	15-17011	15-17430	16-18502	7-18225	7-18226	7-18227	7-18229
17-17124	17-18922	17-18928		7-18241	7-18286	7-18287	7-18288
FILTER CHARACTERISTICS				7-18290	7-18291	7-18292	7-18349
7-18217	7-18586	12-18586		7-18510	7-18514	7-18518	7-18990
FILTER EFFICIENCY				11-17193	11-18288	14-16949	14-17901
7-17312	7-17321	7-17347	7-18228				

15-16949	17-18286	19-17329		17-17946	18-17395		
FISSION PRODUCT, AIRBORNE				FREQUENCY SPECTRA			
5-17193	7-17193	7-18990	11-17193	5-19095	6-18275	6-18532	6-19095
14-17892				9-16999	9-17300		
FISSION PRODUCT, IODINE				FRICITION, GAS			
7-17125	7-18215	7-18225	7-18226	5-17354	6-17354		
7-18227	7-18229	7-18250	7-18290	FT. CALHOUN			
7-18510	7-18511	7-18518	7-18586	18-19164			
7-18588	7-18957	12-18586	15-17125	FT. ST. VRAIN			
17-17125	17-17375	17-18250		18-17342			
FISSION PRODUCT, SEPARATION FROM WASTE				FUEL BURNUP			
7-18192	7-18990	12-18192	13-18192	3-17964	4-18185	4-18284	4-18348
14-17690	14-17693			6-17565	6-18305	7-17320	7-18185
FISSION PRODUCT, VOLATILE				7-18187	7-18284	7-18348	7-18587
5-16953	6-16953	7-18216	7-18287	17-17365	17-17477	17-17590	17-17592
FISSION RECOIL				17-17983	17-17994	17-18395	17-18331
7-18242	7-18353	7-18587		18-17304	18-17500	18-17934	
FLAW				FUEL COEFFICIENT			
9-17017	11-17061	11-17605	11-18022	6-17153	6-17246	17-17153	
11-18023	11-18024	11-19677	17-17061	FUEL ELEMENT			
17-19677	18-17061			1-17911	1-18152	3-16653	5-06683
FLOODING COEFFICIENT				5-17146	5-17300	5-17498	5-17503
5-16953	6-16953			5-17532	5-17580	5-17639	5-17942
FLOW BLOCKAGE				6-17501	6-17532	6-17590	6-17639
5-17167	17-17167	17-18032	18-18444	6-18741	6-18768	7-17323	7-17325
FLOW DISTRIBUTION				7-17975	7-18216	7-18922	8-18442
5-17610	5-17611	5-17942	11-17610	9-18585	9-18623	9-18710	9-18741
11-17611	14-18071	15-18071	17-17469	9-13768	11-19090	11-18442	12-18585
FLOW ORIFICE OR RESTRICTION				17-17140	17-17143	17-17146	17-17365
5-17610	5-17611	11-17610	11-17611	17-17368	17-17466	17-17469	17-17499
17-17143	17-18166			17-17500	17-17503	17-17600	17-17641
FLOW STABILITY				17-17644	17-17645	17-17966	17-17967
4-17535	5-17127	5-17532	5-17535	17-17975	17-17983	17-17992	17-17993
5-17582	5-19093	6-17532	6-17535	17-18152	17-18442	17-18443	17-18585
6-17582	6-19093	8-17582	17-17127	17-18922	17-18977	17-18979	18-06683
FLOW THEORY AND EXPERIMENTS				18-17304	18-17461	18-17498	18-17500
4-18954	5-16382	5-16636	5-17532	18-17501	18-17517	18-17518	18-17996
5-17574	5-17638	5-18054	5-19095	10-18142	18-18449	18-18977	
6-16382	6-16636	6-17532	6-17574	FUEL ELEMENT BOWING			
6-17638	6-19095	7-18954	9-17944	5-17579	6-17929	6-17579	6-18741
FLOW, ANNULAR				9-18741	17-17984	17-17985	
5-17670	6-17670			FUEL ELEMENT CLUSTER			
FLOW, CROSS				9-18023			
9-18585	12-18585	17-18585		FUEL HANDLING			
FLOW, GENERAL				3-17369	3-17954	3-17965	7-18192
17-18166	17-18169			7-18212	7-18287	12-18192	13-17954
FLOW, HIGH SPEED				13-18192	17-17368	17-17454	17-17869
4-17535	5-17535	6-17535		17-17978	17-18307	18-17853	
FLOW, LAMINAR				FUEL HANDLING MACHINE			
5-18953	5-18955	7-18582	12-18582	3-16927	11-16927	13-16927	17-16769
FLOW, PULSATING				17-17459	17-17939	17-18933	
5-17455	5-17556	6-17556		FUEL INTEGRITY			
FLOW, RECIRCULATION				4-18284	4-18348	5-16953	5-18525
17-17601				6-16953	6-19529	7-18187	7-18239
FLOW, TWO PHASE				7-18284	7-18348	7-18587	8-18239
5-16382	5-16900	5-17455	5-17491	18-18092			
5-17532	5-17556	5-17573	5-17580	FUEL MELTDOWN			
5-17638	5-17670	5-19093	6-16382	5-16637	5-16953	5-17167	5-17442
6-16900	6-17433	6-17491	6-17532	6-16953	6-17085	6-18195	7-17322
6-17556	6-17573	6-17580	6-17638	7-18195	7-18292	8-16637	8-17359
6-17670	6-19093	8-16900	9-17944	8-17361	8-17442	8-18195	17-17167
FLOW, VORTEX				17-18032			
4-18954	5-18954	7-18954		FUEL REPROCESSING			
FLUCTUATION				7-17330	7-17374	7-18192	7-18287
5-17452				12-18192	13-17230	13-17374	13-18192
FLUIDIZED BED				14-16951	14-17048	14-17658	17-17368
5-19095	6-19095	7-16406	7-18584	17-17374	18-17934		
12-17353	12-18584	13-17353		FUEL SEGREGATION			
FLUORINE VOLATILITY PROCESSES				4-19284	6-17244	6-17501	7-18284
12-17353	13-17353	14-17550		18-17501			
FLUX DISTRIBUTION				FUEL STORAGE			
6-17364	6-18274	6-18279	6-18768	1-17596	1-18148	1-18152	17-17133
9-17154	9-18768	17-17152	17-17154	17-17540	17-17580	17-17592	17-17596
17-17156	17-17364			17-17871	17-17968	17-18148	17-18149
FLUX TILT				17-18151	17-18152	17-18436	17-18439
6-18282				18-17853	18-17977		
FOAM				FUEL, POWDER TYPE			
7-16406	7-18581			5-17974	7-18212	17-17974	
FOUNDATION ENGINEERING				GAMMA			
2-17615	2-17618	2-18731	16-18731	7-18719	9-17000	9-17004	9-18710
18-18731				9-18719	9-18743	9-18971	14-18418
FRACTURE TOUGHNESS				14-18419	14-18551	14-18719	15-16952
11-17021	11-17814	11-18022	11-18023	15-16958	15-16973	15-16977	15-18405
11-18024	11-18025			15-18551	15-18557	17-18642	18-19191
FRANCE				GAMMA EMITTER			
1-17303	1-17572	5-17257	5-17437	14-17381	15-16948	15-16979	
5-17670	6-17257	6-17670	9-17303	GAUSSIAN PLUME FORMULA			
9-17950	9-18364	9-18712	9-18967	16-18201	16-18780		
9-18974	11-17437	11-17607	11-17643	GE-NTR (GE NUCLEAR TEST REACTOR)			
11-18636	12-17437	14-16951	14-17693	17-17995	17-17997	17-18443	18-17996
14-18751	15-16946	17-17462	17-17643	GENERATOR, DIESEL			

10-17648	10-17649	10-17873	11-17873	18-18932			
17-17648	17-17649	17-17873	17-18307	HEAT TRANSFER			
GEOLOGICAL CONSIDERATION, GENERAL				4-17535	4-17535	5-17349	5-17354
1-17559	2-17617	2-17628	2-17633	5-17447	5-17451	5-17492	5-17493
12-17559	14-17048	14-17559	14-18041	5-17495	5-17496	5-17533	5-17535
15-18041	15-18042	15-18064		5-17535	5-17555	5-17670	5-17670
GEOLOGICAL CONSIDERATION, GEOPHYSICAL				5-18953	5-18955	6-17354	6-17447
2-17616	2-17636	2-18760		6-17451	6-17492	6-17493	6-17496
GERMANY				6-17533	6-17535	6-17535	6-17555
2-17474	5-16480	5-16953	5-17437	6-17670	6-17670	6-18535	7-18583
5-17670	6-16953	6-17441	6-17670	7-18584	12-18583	12-18584	12-18952
8-18634	11-17437	11-18634	11-18635	14-18181	17-17600	17-17953	18-17518
12-16480	12-17437	14-18079	14-18544	18-18952			
15-18052	15-18079	15-18559	17-17150	HEAT TRANSFER ANALYSIS			
17-17392	17-17474	17-17475	17-17868	5-17127	5-17451	5-17452	5-17492
17-18735	18-16480	18-17472	18-17473	5-17496	5-17574	5-17576	5-17639
18-17476				5-17999	5-18953	5-18955	6-17451
GETR (GENERAL ELECTRIC TEST REACTOR)				6-17492	6-17496	6-17574	6-17576
9-17129	9-18368	11-17128	11-17970	6-17639	8-17037	8-17576	11-17999
17-17128	17-17129	17-17970	17-18307	14-17866	17-17127	17-17866	17-17999
17-18436	17-18933			18-17866			
GLASS				HEAT TRANSFER AUGMENTATION			
14-16947	14-17520	17-17644		4-17535	5-17535	5-18989	6-17535
GLOVE BOX				17-18989			
8-17018	12-17018			HEAT TRANSFER CORRELATION			
GOLD				5-17593	5-17858	5-18447	17-17593
6-17086				17-17858	17-18434	17-18446	17-18447
GRAPHITE				HEAT TRANSFER EXPERIMENT			
5-18186	7-18239	7-18286	7-18350	5-17388	5-17393	5-17451	5-17471
7-18352	7-18512	7-18514	7-18994	5-17495	5-17581	5-17640	5-18209
8-18186	8-18239	8-18958	9-18033	6-17451	6-17581	6-17640	11-18209
9-18470	17-18286	17-18470	18-17518	12-17471	12-18209		
GREECE				HEAT TRANSFER, BOILING			
14-17693				4-17577	5-16490	5-16899	5-16900
GROSS ALPHA				5-17493	5-17494	5-17496	5-17537
14-17011	14-17482	15-17010	15-17011	5-17556	5-17558	5-17573	5-17577
15-17431	15-17482	15-18220		5-17580	5-17581	5-17582	5-17640
GROSS BETA				5-17669	5-17670	5-18209	6-16490
14-16949	14-16950	14-17011	14-17050	6-16899	6-16900	6-17493	6-17494
14-17482	14-18076	14-18849	15-16949	6-17496	6-17537	6-17556	6-17558
15-16950	15-17010	15-17011	15-17284	6-17573	6-17577	6-17580	6-17581
15-17430	15-17482	15-18076	15-18220	6-17582	6-17640	6-17669	6-17670
15-18849	16-18076			8-16490	8-16900	8-17582	11-18209
GROSS GAMMA				12-18209			
14-18076	15-17010	15-17430	15-17431	HEAT TRANSFER, CONDENSATION			
15-18076	15-18844	16-18076		4-17577	5-17495	5-17574	5-17577
GROUND MOTION				5-17669	6-17574	6-17577	6-17669
2-17616				HEAT TRANSFER, CONDUCTION			
GROUND WATER, GENERAL				5-17639	5-19092	6-17639	6-19092
14-17048				11-17055	17-17055		
HADDAM NECK				HEAT TRANSFER, CONVECTION			
5-18935	9-18159	9-18160	11-18391	5-17354	5-17581	5-17640	6-17354
17-18159	17-18160	17-18161	17-18391	6-17581	6-17640	11-17055	17-17055
17-18767	17-18934	18-17338	18-18935	HEAT TRANSFER, GAS			
HALLAM				5-17354	6-17354		
17-18595				HEAT TRANSFER, NATURAL CONVECTION			
HANFORD PRODUCTION REACTOR				3-17965	5-17537	5-17576	6-17537
9-17553	9-18369	17-17140		6-17576	8-17576	9-17862	17-17862
HANFORD SITE				HEAT TRANSFER, RADIANT			
3-17954	13-17954	15-16976	17-17872	4-18594	9-18594		
18-17293				HEAVY WATER			
HARWELL (UK)				5-17534	5-17538	6-17089	6-17534
14-18406	14-18407	14-18549	15-18404	6-17538	6-18741	9-18741	17-17534
15-18405	15-18407			17-18318			
HAZARD, RELATIVE				HEIGHT OF RISE			
7-18250	15-18848	17-18250		16-18805			
HAZARDS ANALYSIS				HELIUM			
7-18250	14-17049	14-17866	14-17982	5-06683	5-17451	6-17131	6-17451
14-18862	15-16952	15-17887	15-18863	7-17325	9-18035	11-17057	17-17131
17-17866	17-17982	17-17984	17-18250	17-17163	18-06683		
18-17852	18-17866			HFBR (HIGH FLUX BEAM REACTOR)			
HEALTH PHYSICS TRAINING				5-17940	6-18132	9-18132	17-17521
8-04716				17-17870	17-17940		
HEAT CONDUCTANCE, FUEL TO CLAD				HFIR (HIGH FLUX ISOTOPE REACTOR)			
17-17298	17-18977	18-18977		7-17369	7-18208	9-17130	9-18208
HEAT EXCHANGER				17-17130	17-17142	17-17143	17-17367
5-17576	5-17940	6-17576	7-18583	17-17368	17-17369		
8-17576	8-18744	9-17508	12-18583	HIGH TEMPERATURE			
14-17908	17-17508	17-17602	17-17859	5-17349	7-16924	7-17325	7-18350
17-17861	17-17870	17-17940		9-18033	11-18026	12-16924	
HEAT FLUX, CRITICAL				HOT CELL			
5-17537	6-17537			9-17642	15-17642		
HEAT FLUX, DRYOUT				HOT SPOT			
5-16382	5-17471	5-17555	6-16382	9-18157	17-18157		
6-17555	12-17471			HPRR (HEALTH PHYSICS RESEARCH REACTOR)			
HEAT PIPE				1-17303	6-18522	9-17303	18-18522
5-17669	6-17669			HUMBOLDT BAY			
HEAT SINK				8-18442	9-17005	11-18339	11-18340
1-18508	5-17811	8-17811	11-17811	11-18442	17-18153	17-18339	17-18340
14-18508	14-18932	15-18392	15-18393	17-18442			
17-18508	17-18928	18-18392	18-18393	HUMIDITY			

11-18635				15-18220	15-18270	15-18840	15-18841
HYDRAULIC ANALYSIS				16-18270			
5-16490	5-16491	5-18737	6-16490	INSPECTION AND COMPLIANCE			
6-16491	6-17033	6-17331	6-17423	9-17513	9-17553	9-18622	10-17513
8-16490	8-16491	17-18737		15-17372	17-17372	17-17375	17-17513
HYDRAULIC EFFECT				17-17861			
6-18276				INSTABILITY			
HYDRIDE				9-19503	9-18538		
5-18089	17-17140	18-18089		INSTRUMENTATION CALIBRATION			
HYDRODYNAMIC ANALYSIS				9-18168	9-18364	17-18168	17-18929
4-17448	5-17448	5-17532	6-17448	INSTRUMENTATION, ABNORMAL INDICATION			
6-17532				7-18193	9-17233	9-17853	9-17893
HYDROGEN				9-18034	9-18157	9-18168	9-18661
4-17535	4-18954	5-17535	5-18954	9-18773	10-17893	11-18193	17-17345
6-17535	7-18350	7-18511	7-18954	17-17833	17-17863	17-18157	17-18168
8-17357	9-18370	11-17059	17-17149	17-18661			
HYDROLOGICAL CONSIDERATION, GENERAL				INSTRUMENTATION, AIR SAMPLING			
2-18731	14-16950	14-17048	14-17049	9-17973	9-18031	9-18970	14-18232
14-18041	15-16950	15-16975	15-18041	14-18543	14-18545	14-18705	15-17973
16-18731	18-18731			15-18543	15-18970	16-18531	16-18705
HYDROLOGICAL CONSIDERATION, RATE OF MOVEMENT				17-17973			
14-16951				INSTRUMENTATION, AMPLIFIER			
IAEA (INTERNATIONAL ATOMIC ENERGY AGENCY)				9-18430	9-18772		
14-17689	14-18070	14-18071	14-18072	INSTRUMENTATION, COINCIDENT			
14-18135	14-18136	14-18181	14-18233	1-17303	9-17129	9-17130	9-17303
14-18561	15-18070	15-18071	15-18072	9-18317	9-18364	9-18730	17-17129
15-18135	15-18136			17-17130	17-18317	18-18730	
ICRP (INT. COMM. ON RADIOLOGICAL PROTECTION)				INSTRUMENTATION, CONTROL			
15-17030	15-17423	15-18058		4-18027	4-18028	5-18027	9-18020
IDAHO FALLS				9-18029	9-18371	9-18427	9-18598
14-17690	14-17693			9-18712	9-18772	10-18598	12-18952
IGNITION				18-18952			
7-17327	7-18188	7-18189	7-18190	INSTRUMENTATION, COOLANT QUALITY			
8-17037	8-17362	8-17564	8-17584	9-18379	9-18585	12-18585	17-18585
8-18188	8-18189	8-18190	12-17584	INSTRUMENTATION, CURRENT			
13-17327	13-17584	14-17327	17-17363	9-18174			
IMPACT PROPERTY				INSTRUMENTATION, DETECTION FAILED FUEL ELEMENT			
5-17103	7-17193	11-17193	11-18024	7-18346	9-17126	9-17337	9-17479
IN CORE MEASUREMENT				9-17938	9-18173	9-18420	9-18716
5-18981	9-18204	9-18361	9-18367	9-18734	10-18173	17-17126	17-17337
9-18739	17-18981			17-17479	17-18734		
IN PILE EXPERIMENT				INSTRUMENTATION, EARTHQUAKE			
5-17193	7-17193	7-17322	7-18242	2-17614	2-17616	2-17619	2-17622
7-18292	7-18512	7-18990	9-18034	2-17623	2-17635	2-17636	2-18515
11-17193	17-16582	18-17292		2-18760			
IN PILE LOOP				INSTRUMENTATION, FLOW			
5-06683	5-18989	6-18279	7-18242	9-16943	9-17129	9-17944	9-18159
7-18346	9-18470	17-17298	17-17657	9-19160	9-18379	17-17129	17-18159
17-17659	17-18468	17-18469	17-18470	17-18160			
17-18980	17-18989	18-06683	18-17292	INSTRUMENTATION, FLUCTUATION			
18-17343	18-17518			5-18131			
INCIDENT COMPILATION				INSTRUMENTATION, FUEL SCANNING			
17-17871				7-18191	9-18369		
INCIDENT, ACTUAL, EQUIPMENT				INSTRUMENTATION, GENERAL			
9-18507	17-17860	17-17939	17-18507	1-17550	6-17441	7-18101	9-17017
INCIDENT, ACTUAL, GENERAL				9-17351	9-17950	9-18034	9-18427
3-17373	7-17374	13-17374	15-17372	9-18567	9-18712	9-18740	9-18921
15-17445	17-17363	17-17372	17-17373	11-17128	12-16470	12-17559	14-17559
17-17374	17-17445	17-17941	17-17995	14-18543	15-18543	15-18988	17-16470
17-18032	17-18385			17-17128	17-18675	17-18676	17-18928
INCIDENT, ACTUAL, HUMAN ERROR				INSTRUMENTATION, IN CORE			
9-18677	15-18386	15-18388	17-16768	4-18028	9-16943	9-18028	9-18029
17-18386	17-18398	17-18436	17-18677	9-18361	9-18367	9-18369	9-18379
INCIDENT, ACTUAL, NONREACTOR				9-18593	9-18715	9-18716	9-18730
15-18749	15-18750	17-18750		9-18739	9-18921	17-17150	17-18342
INCIDENT, ACTUAL, RECOVERY FROM				18-18730			
11-16488	17-16488			INSTRUMENTATION, INTERLOCK			
INCINERATION				9-17862	17-17862		
14-17432	14-18048	15-17432		INSTRUMENTATION, INTERMEDIATE RANGE			
INCINERATION				9-17508	17-17508		
17-17499	18-17461			INSTRUMENTATION, LINEAR			
INDIA				9-18593			
14-17425	15-17284	15-17425		INSTRUMENTATION, LIQUID LEVEL DETECTION			
INDIAN POINT 1				9-17654	17-17654		
5-13484	5-16492	9-18138	9-18168	INSTRUMENTATION, LOGARITHMIC			
9-19317	9-18445	11-17605	11-18140	9-18593			
12-18138	15-18140	17-16492	17-18138	INSTRUMENTATION, METEOROLOGICAL			
17-13139	17-18140	17-18165	17-18166	14-16950	15-16950	16-18258	16-18706
17-13167	17-18168	17-18169	17-18317	16-18709			
17-19434	17-18437	17-18445	18-13484	INSTRUMENTATION, NUCLEAR			
18-16492				9-17351	9-17352	9-17551	9-17554
INDIAN POINT 2				9-18019	9-18367	9-18591	9-18593
1-17874	2-17874	5-17942	9-18739	9-18743	9-18772	9-18921	9-18967
11-14620	12-14620	12-14621	17-17874	9-18974	9-18982	14-16950	14-17058
18-14620	18-14621			15-16950	15-18177	18-18982	
INDIAN POINT 3				INSTRUMENTATION, OPERATING REACTIVITY			
9-18739				6-17153	9-17154	9-17551	17-17153
INGESTION				17-17154			
4-16968	14-16968	15-18220	15-18222	INSTRUMENTATION, PERIOD			
INHALATION				9-18596			
14-17424	15-13660	15-17424	15-18058	INSTRUMENTATION, POWER RANGE			

5-17302	9-17302	9-17463	9-17833	5-06683	5-18989	6-18279	7-17320
9-18157	9-18317	9-18661	17-17302	7-18922	9-18470	9-18968	11-17814
17-17463	17-17833	17-17859	17-18157	11-18025	17-17149	17-17298	17-17462
17-18317	17-18661	18-17854		17-17598	17-17645	17-17946	17-18144
INSTRUMENTATION, PRESSURE				17-18468	17-18470	17-18922	17-18977
9-18018	9-18160	9-18368	11-18018	17-18979	17-18989	18-06683	18-17461
17-18160				18-17518	18-18092	18-18977	18-18984
INSTRUMENTATION, PROCESS				ISOICHEM, INC.			
9-17351	9-18427	9-18598	10-18598	14-17900			
INSTRUMENTATION, PROTECTIVE				ISOTOPIIC FRACTIONATION			
7-18208	9-17352	9-17560	9-18208	15-17490	16-17490		
9-18982	18-18982			ISOTOPIIC GENERATOR			
INSTRUMENTATION, PULSE				4-16971	4-17671	9-17671	10-17672
9-17952	9-18596	9-18743	9-18772	17-17671	17-17672		
INSTRUMENTATION, RADIATION MONITORING				ISRAEL			
1-17303	7-18346	7-18719	9-17303	15-18084			
9-17952	9-18019	9-18031	9-18567	ITALY			
9-18593	9-18710	9-18719	9-18772	5-17437	5-17670	6-17042	6-17670
9-18921	9-18971	14-18418	14-18419	6-18305	6-18741	9-18741	9-18968
14-18483	14-18543	14-18719	15-16932	11-17437	12-17437	14-17907	15-16946
15-16948	15-16954	15-16955	15-16956	15-17907	15-18556	17-16305	17-18341
15-16958	15-16964	15-16975	15-16979	17-18342			
15-16980	15-17287	15-17346	15-17594	JANUS (BIOLOGICAL IRRADIATION FACILITY)			
15-18045	15-18047	15-18053	15-18063	6-17153	17-17153		
15-18082	15-18085	15-18177	15-18483	JAPAN			
15-18543	15-18844			4-18344	5-17393	5-17471	6-17246
INSTRUMENTATION, RATE OF CHANGE				7-18344	9-18371	9-18569	9-18570
9-17554	9-18740	9-18743		9-18619	12-17471	14-17050	14-17058
INSTRUMENTATION, RECORDER				14-17426	14-18267	15-17427	15-18219
9-17952	14-18543	15-18543		16-18267	17-17467	17-17469	17-17470
INSTRUMENTATION, REDUNDANT				KAPL (KNOLLS ATOMIC POWER LABORATORY)			
9-18031	9-18365	18-18002		8-17564			
INSTRUMENTATION, RELAY				KEWB (KINETIC EXPERIMENT ON WATER BOILERS)			
9-17129	17-17129			5-16490	6-16490	8-16490	
INSTRUMENTATION, SHUTDOWN REACTIVITY				KIWI			
9-18131	9-18622	9-18715		4-18028	6-16985	9-18028	
INSTRUMENTATION, STARTUP				KIWI TNT (TRANSIENT NUCLEAR TEST)			
9-18661	17-18661			14-18266	15-18266		
INSTRUMENTATION, STARTUP RANGE				KRYPTON			
17-17345				7-16406	7-17324	7-17328	7-18216
INSTRUMENTATION, SURVEILLANCE				7-18512	11-17324		
9-17554	9-17952	9-18031	9-18173	LACROSSE			
9-18715	9-18808	9-18921	10-18173	18-18448			
14-18808	16-18808			LAMPRE I (LASL MOLTEN PU REACTOR EXPERIMENT)			
INSTRUMENTATION, SWITCH				17-17464			
9-18157	17-18157			LANTHANUM			
INSTRUMENTATION, TEMPERATURE				4-1823P	7-17325	7-18238	
4-18028	5-17610	5-17611	9-16943	LAPSE RATE, STABLE			
9-17129	9-18028	9-18157	9-18168	1-17874	2-17874	17-17874	
9-18361	9-18368	9-18470	9-18592	LASER			
9-18599	9-18711	9-18773	9-18921	15-18848			
9-13968	9-18970	11-17610	11-17611	LASER HEATING			
15-18970	17-17129	17-17641	17-18157	8-17361			
17-18168	17-18470			LASL (LOS ALAMOS SCIENTIFIC LABORATORY)			
INSTRUMENTATION, TESTING				14-18041	14-18563	15-18041	15-18563
9-17130	9-17352	9-18174	9-18982	LAW			
11-17021	17-17130	18-18982		1-17332	15-17332		
INSTRUMENTATION, WIDE RANGE				LEAD			
9-18740	9-18743			4-18285	5-17503	14-18232	15-17291
INSURANCE				15-18074	15-18221	17-17503	
1-17562	1-17694	1-17695	1-17912	LEAK			
1-18017				17-17868	17-17868		
INTEGRITY				LEAK RATE			
1-17911	7-16924	10-18769	12-16924	17-17871			
INTERACTION, FOUNDATION AND STRUCTURE				LIAPUNOV FUNCTION			
2-17615	2-17618			6-17331	6-18277	6-18771	9-18771
IODINE				LICENSING STATUS OF NUCLEAR PROJECTS			
3-18218	5-18209	7-16406	7-17321	18-17360			
7-18014	7-18215	7-18225	7-18226	LIQUID FUEL			
7-18227	7-18229	7-18250	7-18288	7-18286	17-18266		
7-18290	7-18510	7-18511	7-18518	LITHIUM			
7-18586	7-18588	7-18957	11-18209	4-18196	4-18285	8-18196	
11-18288	12-18209	12-18586	14-17011	LITR (LOW INTENSITY TEST REACTOR)			
14-17048	14-17050	14-17288	14-17982	9-18565	15-18565	18-18565	
14-18011	14-18072	14-18255	14-18263	LOFT (LOSS OF FLUID TEST)			
14-18403	15-13660	15-16973	15-16976	5-17192	5-19089	7-17193	7-17321
15-17011	15-17288	15-18045	15-18067	7-17322	7-19089	11-17193	11-19089
15-18072	15-18218	15-18222	15-18255	LRL (LAWRENCE RADIATION LABORATORY)			
15-18263	15-18847	17-17982	17-18250	5-17503	17-17502	17-17503	
ION EXCHANGE				LUBRICATION			
8-17584	12-17584	13-17584	14-17432	17-16769	17-18437		
14-17689	14-17693	14-18071	14-18845	MAGNESIUM			
15-16979	15-17432	15-18038	15-18071	14-17815			
IRIDIUM				MAIN COOLING SYSTEM			
11-17053				5-18091	5-18935	7-17369	9-16429
IRON				9-16942	9-17862	11-19677	12-17566
7-18014	15-18066			14-17566	17-16429	17-17143	17-17369
IRRADIATION FACILITY				17-17602	17-17859	17-17861	17-17862
9-17863	14-17982	17-17145	17-17863	17-17865	17-18165	17-18166	17-18928
17-17982	17-17983	17-18307	18-19191	17-18934	17-19677	18-16429	18-18002
IRRADIATION TESTING				18-18935	18-19655		

MAINTENANCE AND REPAIR				15-16933	15-16973	15-16975	15-17423
1-17595	9-17129	9-17352	12-17350	15-17425	15-18219	16-16933	16-18627
15-16761	15-17135	15-17136	15-18388	16-18629	16-18631	16-18797	18-18960
17-16475	17-16476	17-16477	17-16761	MFRP (MIDWEST FUEL RECOVERY PLANT)			
17-16769	17-17129	17-17133	17-17135	13-16930			
17-17136	17-17185	17-17350	17-17356	MH 1A (MOBILE HIGH POWER PLANT 1A)			
17-17365	17-17510	17-17870	17-17961	14-18306	18-19306		
17-18015	17-18197	17-18388	17-18436	MICROEARTHQUAKE			
17-18675	17-18676	18-16477	18-17937	2-17623	2-17628	2-17637	
18-18197				MICROMETEOROLOGY			
5-06683	18-06683			15-18270	16-18270	16-18709	16-18806
MANGANESE				MICROSEISMICITY			
14-16949	14-16974	14-17815	14-18051	2-17622			
15-16949				MINERAL EXCHANGE			
MASS TRANSFER				14-17689			
6-18535	7-17328	7-18288	7-18290	MINING			
7-19518	7-18584	7-18957	11-18288	14-17424	14-18254	15-17424	15-18254
12-18584				15-19678			
MATERIAL				MIST			
11-17020	11-17062	12-17020	12-17370	7-17315			
14-17020	17-17370			MITR (MASS. INST. OF TECH. REACTOR)			
MATHEMATICAL STUDY				3-17869	17-17869		
5-16940	5-17127	6-18203	6-18280	MOCKUP			
6-18528	7-18288	9-18203	11-18022	5-17471	6-17565	11-17021	11-17812
11-18288	14-18862	15-18863	17-17127	12-17471	18-17395		
MATHEMATICAL TREATMENT				MODEL TESTING			
5-17127	5-17167	5-17858	6-17497	5-17942	11-18137	14-18862	15-18358
6-18280	6-18282	6-18526	6-18535	15-18392	15-18393	15-18847	18-18392
6-18537	6-18763	11-16488	14-18551	10-18393			
15-17290	15-18058	15-18551	16-18494	MODEL, EARTHQUAKE RESISTANCE			
17-16488	17-17127	17-17167	17-17497	2-17624	2-17625	2-18515	
17-17858				MODERATOR			
MAXIMUM PERMISSIBLE CONCENTRATION (MPC)				7-18514	11-18440	17-17989	17-17990
14-17011	14-17049	14-17511	15-16948	17-18440			
15-17011	15-19678	17-17511	MODERATOR COEFFICIENT				
MAXIMUM PERMISSIBLE DOSE (MPD)				5-18935	6-17089	6-17153	6-17155
1-18554	15-17423	15-18039	15-18219	6-18765	9-18974	11-18962	17-17153
15-18554				17-17155	17-17992	17-17994	17-18934
MEASUREMENT, GENERAL				18-18935	18-18962		
6-17008	6-17089	6-17155	7-17369	MODIFICATION, SYSTEM OR EQUIPMENT			
9-17950	9-18734	14-17955	15-16948	1-18148	9-16429	9-17508	9-17590
15-18219	15-18843	17-17150	17-17152	9-17646	9-17833	9-17862	9-17863
17-17155	17-17369	17-18166	17-18169	9-17973	9-18565	10-17873	11-14620
17-18734				11-17873	11-18440	12-14620	12-14621
MEASUREMENT, NOISE				14-18306	15-16760	15-17973	15-18565
6-18132	6-18526	9-16998	9-16999	17-16429	17-16760	17-17133	17-17148
9-17000	9-17092	9-17003	9-17004	17-17356	17-17508	17-17590	17-17602
9-17017	9-18132	9-18430	17-17646				
MEASUREMENT, REACTIVITY				17-17652	17-17659	17-17833	17-17833
1-18761	1-18762	6-17008	6-17246	17-17859	17-17860	17-17861	17-17862
6-17565	6-18524	6-18533	6-18761	17-17863	17-17873	17-17973	17-18148
6-18762	9-17002	9-17003	9-17004	17-18149	17-18166	17-18437	17-18440
9-17005	9-17006	9-17007	9-17551	17-18675	17-18676	17-18928	17-18930
9-18591	9-18710	9-18715	17-18933				
MEASUREMENT, STRAIN GAGE				17-18976	17-18976	17-18980	18-14620
9-18283				18-14621	18-16429	18-18002	18-18306
MEASUREMENT, SUBCRITICALITY				10-18312	18-18565		
3-17869	9-17030	9-17002	9-17003	MOLTEN FUEL			
9-17004	9-17005	9-17006	9-17007	7-18286	7-18994	8-17359	8-17361
9-18131	17-17869			8-18958	17-18286		
MEASUREMENT, TEMPERATURE				MOLYBDENUM			
5-17146	5-17593	7-17320	9-16943	7-17325	8-17362		
9-18361	9-18592	9-18599	9-18711	MONITOR, RADIATION, AIR			
9-18773	10-17672	17-17146	17-17368	7-18589	9-17642	9-17973	9-18031
17-17469	17-17503	17-17672	14-17709				
MERCURY				15-16952	15-16973	15-16978	15-16980
4-18285	4-18594	9-18594	15-17009				
METAL				15-17348	15-17423	15-17482	15-17642
6-16988	7-18251	7-18511	8-17018	15-17973	17-17573	18-17852	
12-17018	18-17519			MONITOR, RADIATION, APEA			
METAL WATER REACTION				15-18388	17-18388		
5-17811	8-17359	8-17361	8-17811	MONITOR, RADIATION, BACKGROUND			
8-18442	8-18744	11-17811	11-18442	14-17425	14-17482	15-17425	15-17482
17-17502	17-18442	18-17355	MONITOR, RADIATION, EMERGENCY				
METAL, ALKALI				15-16952			
4-17577	4-18354	5-17537	5-17577	MONITOR, RADIATION, ENVIRONMENTAL			
6-17537	6-17577			9-18031	14-17009	14-17011	14-17058
METAL, LIQUID				14-17425	14-17426	14-17482	14-18037
4-17577	4-18194	4-18196	4-18238	14-18564	15-16946	15-16952	15-17009
4-18240	4-18285	4-18291	4-18347	15-17011	15-17425	15-17482	15-18037
4-18348	4-18354	5-17537	5-17556	15-18219			
5-17577	5-18194	6-17537	6-17556	MONITOR, RADIATION, GAS			
6-17577	7-16406	7-18238	7-18201	15-16946			
7-18347	7-18348	8-18196	8-18744	7-18191	9-18567	9-18971	14-17048
18-16925	18-17519			14-17049	14-17425	14-18543	15-17010
METEOROLOGY				15-17348	15-17425	15-18543	15-18988
1-17559	1-17695	2-17608	2-18960	17-18929			
12-17559	14-16974	14-17050	14-17425	MONITOR, RADIATION, GENERAL PRACTICE			
14-17426	14-17559	14-17816	14-18068	15-17430			
14-18627	14-18631	14-18707	15-13660	MONITOR, RADIATION, LIQUID			
				14-18070	15-16946	15-18070	
				MONITOR, RADIATION, PERSONNEL			

9-18565 14-17009 14-17049 14-17058
 15-16954 15-16955 15-16956 15-16964
 15-17009 15-17031 15-17423 15-17430
 15-18050 15-18261 15-18387 15-18404
 15-18565 15-18841 17-18150 17-18387
 18-18565
 MONITOR, RADIATION, SAMPLING
 7-18346 14-17009 14-17049 14-17492
 15-16948 15-17009 15-17482 15-18841
 MONITOR, RADIATION, SOLID
 15-16946
 MONITOR, RADIATION, STACK
 7-17125 15-17125 17-17125
 MONITOR, RADIATION, SURFACE
 14-18543 15-18543
 MONITORING PROGRAM, ENVIRONMENTAL
 9-18970 14-17885 14-17889 14-17906
 14-17957 14-18070 14-18176 14-18180
 14-18232 14-18253 14-18255 14-18257
 14-18259 14-18260 14-18262 14-18265
 14-18403 14-18833 15-16946 15-17957
 15-18070 15-18180 15-18253 15-18255
 15-18257 15-18259 15-18260 15-18262
 15-18265 15-18329 15-18392 15-18970
 17-17885 18-18392
 MONITORING SYSTEM, RADIATION
 9-17642 9-18031 9-18622 14-17424
 14-17955 15-16946 15-17424 15-17642
 15-18219 17-16929
 MONTE CARLO
 6-16988 6-17016 9-17016 14-18135
 15-18135
 MOUND LABORATORY
 15-16978
 MSRE (MOLTEN SALT REACTOR EXPERIMENT)
 7-18208 7-18514 7-18994 9-18030
 9-19208
 N S SAVANNAH
 3-16653 5-17437 11-17437 11-17605
 12-17437
 NAK (SODIUM POTASSIUM ALLOY)
 4-18196 8-18196
 NBS (NATIONAL BUREAU OF STANDARDS)
 17-17662 18-18002
 NCRP (NATIONAL COMMITTEE RADIATION PROTECTION)
 15-17030
 NDT DATA (NIT DUCTILITY TRANSITION)
 5-16953 6-16953 11-18024 11-18025
 NETHERLANDS
 5-17437 6-17247 11-17437 12-17437
 15-18044 15-18045 17-17468 18-17389
 NEUTRON
 6-17364 9-17554 9-18019 9-18715
 14-18553 15-16954 15-17348 15-17431
 15-18082 15-18405 15-18553 17-17363
 17-17364 17-18642
 NEUTRON INTERACTION
 15-17485
 NEVADA TEST SITE
 18-18736
 NEW ZEALAND
 14-17892
 NFS (NUCLEAR FUEL SERVICES)
 17-18929
 NICKEL
 4-18351 7-18014
 NIOBIUM
 14-17426 14-18550 15-18550
 NITROGEN
 4-18954 5-18954 7-18242 7-18954
 8-17357 8-17564 17-17507 17-17859
 17-18437 17-18642
 NOBLE GAS
 4-18513 7-16406 7-17324 7-17328
 7-18187 7-18246 7-18512 7-18513
 7-18579 7-18583 7-18587 7-18994
 11-17324 11-18246 12-18583
 NOISE
 6-17131 9-17583 9-18036 9-18430
 9-18715 17-17131 17-17345
 NOISE ANALYSIS
 6-17036 6-17042 6-17070 6-17076
 6-17079 6-17081 6-17441 6-18532
 9-16998 9-16999 9-17000 9-17002
 9-17003 9-17004 9-18131 17-17157
 17-17597
 NOISE CROSS CORRELATION
 9-17002 9-18131
 NORWAY
 6-17036 14-17009 15-16959 15-17009
 15-17429

NOZZLE
 5-17193 7-17193 11-17193
 NPD 2 (NUCLEAR POWER DEMONSTRATION REACTOR 2)
 17-17137 17-17450
 NRTS (NATIONAL REACTOR TEST STATION)
 14-17048 18-17935 18-17936 18-17937
 NRU (CHALK RIVER NATURAL URANIUM REACTOR)
 15-17136 17-17136
 NRX (CANADIAN NATURAL U-HEAVY WATER REACTOR)
 4-18028 9-18028
 NUCLEAR ATTACK
 14-18065 15-16962 15-16972 15-18065
 NUCLEAR DETONATION
 14-16950 14-17009 14-17012 14-17047
 14-17050 14-17285 14-18037 14-18627
 14-18862 15-16933 15-16945 15-16950
 15-16962 15-16972 15-17009 15-17012
 15-17285 15-18037 15-18863 16-16933
 16-18627
 NUCLEAR EXPLOSION DEBRIS
 14-16950 14-16974 14-17011 14-17050
 14-17285 14-17815 14-18065 14-18627
 15-16933 15-16950 15-16962 15-16977
 15-17011 15-17285 15-18665 16-16933
 16-18627
 NUCLEAR INCIDENT DOSIMETER
 15-17010
 NUCLEAR ROCKET
 14-17012 14-18266 15-17012 15-17887
 15-18266 17-17971 17-17972 18-17935
 18-17936
 NUCLEATE BOILING
 5-17127 5-17452 17-17127
 OBFR (ORDERED BED FAST REACTOR)
 5-16636 6-16636
 OCEAN AND SEA
 1-17963 3-17963 7-18719 9-18719
 14-16951 14-17688 14-17902 14-17903
 14-17904 14-17908 14-18135 14-18408
 14-18409 14-18410 14-18411 14-18414
 14-18415 14-18416 14-18418 14-18419
 14-18719 14-18862 15-17688 15-18135
 16-17904
 ON LINE REFUELING
 17-17459 18-18093
 ON SITE WORK
 1-17874 2-17874 17-17874
 OPERATING EXPERIENCE
 1-17875 2-17474 3-17869 5-17300
 5-18737 6-17153 7-17369 7-18208
 7-18250 7-18286 7-18738 9-17126
 9-17129 9-17130 9-17154 9-17337
 9-17463 9-17833 9-17973 9-18040
 9-18138 9-18208 9-18445 9-18470
 9-18661 9-18677 9-18964 10-17873
 11-17128 11-17873 12-16470 12-18138
 14-17885 15-17135 15-17527 15-17973
 17-16056 17-16470 17-16769 17-17126
 17-17128 17-17129 17-17130 17-17135
 17-17142 17-17143 17-17144 17-17149
 17-17151 17-17153 17-17154 17-17163
 17-17337 17-17356 17-17365 17-17367
 17-17368 17-17369 17-17387 17-17459
 17-17463 17-17464 17-17474 17-17477
 17-17527 17-17587 17-17592 17-17833
 17-17869 17-17873 17-17875 17-17885
 17-17973 17-18040 17-18138 17-18250
 17-18286 17-18342 17-18445 17-18470
 17-18661 17-18675 17-18676 17-18677
 17-18737 17-18738 17-18977 18-17395
 18-18977
 OPERATING LICENSE PROCESS
 1-18782 18-17449 18-18782
 OPERATION
 1-17567 1-17595
 OPERATIONS REPORT, ANALYSIS
 5-18737 9-17141 9-17479 11-17128
 17-16929 17-17128 17-17141 17-17345
 17-17479 17-18737
 OPERATIONS REPORT, GENERAL
 7-17369 9-18677 17-16056 17-16475
 17-16476 17-16477 17-16769 17-17356
 17-17367 17-17368 17-17369 17-17961
 17-18197 17-18675 17-18676 17-18677
 18-16477 18-18197
 OPERATIONS SUMMARY FOR AEC
 9-17833 9-17862 9-17863 14-17864
 17-17659 17-17833 17-17859 17-17861
 17-17862 17-17863 17-17864 17-18015
 ORGANIC COOLANT
 5-17493 5-19094 6-17089 6-17493

6-19094	17-19094	18-17292		15-17991	15-18050	15-18059	15-18062
ORGANIC IODIDE				15-18063	15-18067	15-18094	15-18254
7-17124	7-17321	7-17330	7-18014	15-18261	15-18387	15-18388	15-18389
7-18226	7-18229	7-18288	7-18511	15-18390	15-18749	15-18750	15-18841
7-18518	7-18957	11-18288	13-17330	15-18988	17-16761	17-17372	17-17445
17-17124				17-17364	17-18287	17-18388	17-18389
ORNL (OAK RIDGE NATIONAL LABORATORY)				17-18390	17-18750	18-17991	
7-17695	8-18958	9-17642	12-17353	PERSONNEL PROTECTIVE DEVICE			
13-17353	14-17550	14-17690	14-17693	15-17430	15-18088	15-18170	15-18390
15-17642	15-18042	18-17518		17-18390			
ORR (OAK RIDGE RESEARCH REACTOR)				PERTURBATION METHOD			
5-06683	5-18989	17-17139	17-18989	6-17515	6-18224	9-18770	
18-06683				PH REACTIVITY EFFECT			
OSCILLATION				5-16492	17-16492	18-16492	
4-17535	5-17535	6-17535		PHOSPHATE			
OSCILLATOR, REACTIVITY				14-17432	15-17432		
6-17035	6-18275	9-17035	17-17597	PHOSPHORUS			
17-18341				14-16949	14-18070	15-16949	15-16976
OUT OF PILE LOOPS AND EXPERIMENTS				15-18070			
5-17193	5-17321	5-17388	7-17193	PIPING			
7-18225	7-18227	7-18239	7-18290	5-19090	11-17605	11-15090	14-16951
7-18990	8-18239	9-19362	11-17193	PIQUA			
18-17395	18-17517			17-16056	17-17961		
OXIDATION				PLANT PROTECTIVE SYSTEM			
7-17327	7-17684	7-18188	7-18189	9-18677	17-18677		
7-18190	7-18239	7-18350	7-18352	PLASMA			
8-17037	8-17362	8-18188	8-18189	5-18955			
8-18190	8-18239	13-17327	14-17327	PLASTICITY			
18-17518				11-18023	11-18024		
OXIDE				PLOWSHARE PROGRAM			
7-17315	7-17325	7-18216	7-18511	14-17285	15-17285		
OXYGEN				PLUM BROOK			
6-17084	8-17037	8-17564	11-18641	9-17833	10-17648	10-17649	10-17873
OYSTER CREEK				11-17658	11-17873	17-17592	17-17648
1-18508	1-18782	10-17899	12-18330	17-17649	17-17658	17-17833	17-17873
14-18508	17-18508	18-18330	18-18782	18-17343			
OZONE				PLUME BEHAVIOR, GENERAL			
7-18242				16-18201	16-18628	16-18804	16-18805
PAKISTAN				PLUME, SMOKE, PHOTOGRAPHY			
15-18557				16-18628			
PARTICLE SIZE				PLUTO (UK)			
4-16968	7-16406	7-17312	7-17327	6-16984	9-16984		
7-17438	7-17685	7-18212	7-18214	PLUTONIUM			
7-18215	7-18217	7-18289	7-18475	3-17964	4-18185	4-18271	5-18209
13-17327	14-16949	14-16968	14-17327	6-17245	7-17327	7-18195	7-18192
14-18781	15-16933	15-16949	15-18058	7-18193	7-18241	7-18287	8-17018
16-16933	16-18781			8-17362	8-17584	11-18193	11-18209
PARTICLE SIZE DISTRIBUTION				12-17018	12-17353	12-17584	12-18192
7-17312	7-17327	7-17438	7-18213	12-18209	13-16930	13-17327	13-17353
7-18214	7-18217	7-18289	8-17359	13-17584	13-18192	14-17327	14-17892
13-17327	14-17327	14-18705	14-18781	14-18236	14-18256	15-16978	15-17287
16-18502	16-18705	16-18780	16-18781	15-17431	15-18058	15-18256	15-18271
PARTICLE, RADIOACTIVE				15-18840	15-18841	16-18271	17-17997
7-18580	7-18581	7-18582	7-18589	17-18443	18-17996		
17-18582	18-16945			PLUTONIUM DIOXIDE			
PARTICULATE				6-17087	6-18765	9-17087	17-17563
7-17315	7-17321	7-17685	7-18212	18-18092	18-18304		
7-18215	7-18217	7-18509	7-18580	PLUTONIUM OXIDE			
7-18581	7-18582	7-18584	7-18589	6-17501	7-17327	13-17327	14-17327
7-18957	12-18582	12-18584	14-16949	18-17501			
14-17012	14-17050	15-16933	15-16948	PM 1 (PORTABLE MEDIUM NUCLEAR POWER PLANT)			
15-16949	15-16976	15-17012	15-17290	17-17466			
15-18496	16-16933	16-18268	16-18496	PM 2A (PORTABLE MEDIUM NUCLEAR POWER PLANT)			
PATENT				9-17017	17-17466		
9-17554	9-18205	9-19619	9-18622	PM 3A (PORTABLE MEDIUM NUCLEAR POWER PLANT)			
9-18623	9-18715	9-18716	9-18717	5-17302	7-17302	12-17370	17-17302
14-18080	14-18081	14-18845	15-18082	17-17370	17-17466		
15-18088	15-18844			POINT BEACH 1 AND 2 (PWR)			
PATHFINDER				5-19456	18-19455	18-19656	
5-14484	17-17647	17-17597	17-17601	POISON, BURNABLE			
17-17647	17-18642	18-13484		17-17156	17-17644		
PBF (POWER BURST FACILITY)				POISON, SOLUBLE			
7-17322	18-17937			5-18981	9-18138	9-18445	12-18138
PEACH BOTTOM 1				17-18138	17-18139	17-18161	17-18445
6-17074	9-17006	9-17154	9-17656	17-18767	17-18981		
9-18207	9-18677	9-18982	17-16768	POLAND			
17-16769	17-17154	17-17157	17-17163	15-18050	17-17460		
17-17336	17-17457	17-17656	17-17953	POLONIUM			
17-18675	17-18676	17-18677	18-18982	15-16978	15-17291	15-18221	
PEACH BOTTOM 2 AND 3				POOL BOILING			
15-18392	18-18392			7-18225	7-18227		
PERFORMANCE LIMIT				POPULATION EXPOSURE			
5-17302	5-17498	5-17503	9-17302	14-16949	14-17425	15-16948	15-16949
17-17302	17-17503	18-17498	18-17514	15-16952	15-17425	15-17427	
18-18444				POROUS DIFFUSION			
PERSONNEL EXPOSURE, RADIATION				7-19514			
1-17332	1-17910	14-17012	14-17047	POROUS MEDIA			
14-17864	14-18254	15-16761	15-16931	7-18514			
15-16948	15-16954	15-16997	15-17012	PORTUGAL			
15-17031	15-17032	15-17332	15-17335	15-16973			
15-17372	15-17430	15-17445	15-17478	POTASSIUM			

4-18354	14-17956	14-18232	15-16979	QUAD CITIES 1 AND 2			
15-18013				1C-17899			
POWER COEFFICIENT				QUALITY CONTROL			
6-17089	6-17153	17-17153	17-17157	1-17911	11-17062	15-16960	17-17466
POWER DISTRIBUTION				17-18443	18-18142		
5-16940	5-18737	6-17014	6-18765	RADIATION DAMAGE			
7-18738	9-17014	9-18204	9-18317	1-17912	4-18185	4-18240	5-18186
17-17484	17-17601	17-18317	17-18737	5-19089	7-16924	7-18185	7-18353
17-18738	18-18444			7-18512	7-19089	8-18186	9-18470
POWER UPGRATING				11-18440	11-19089	12-16924	15-16933
5-17127	5-17146	5-17503	5-17858	15-16944	15-17423	15-17427	15-18049
5-18737	14-17866	16-17655	17-17127	15-18764	15-18219	15-18843	16-16933
17-17144	17-17146	17-17148	17-17149	17-17139	17-17477	17-18440	17-18470
17-17365	17-17502	17-17503	17-17526	18-17292			
17-17599	17-17602	17-17858	17-17865	RADIATION EFFECT			
17-17866	17-18341	17-18342	17-18737	1-17695	1-17910	4-18185	4-18194
17-18928	17-18976	18-17655	18-17866	4-18348	4-18915	5-18186	5-18194
PRAIRIE ISLAND				5-19089	7-18185	7-18348	7-18353
18-17360				7-18512	7-18587	7-19089	8-18186
PRAIRIE ISLAND 1 AND 2 (PWR)				9-18034	11-19089	14-17884	14-18065
2-18960	11-18962	12-18961	18-18960	14-18072	15-16931	15-16933	15-16944
18-18961	18-18962			15-16962	15-17030	15-17427	15-17478
PRECIPITATION				15-17884	15-18039	15-18049	15-18059
14-17009	14-17482	14-18631	14-18707	15-18064	15-18065	15-18072	15-18221
14-18833	14-18845	15-16948	15-17009	15-18848	16-16933	18-17519	
15-17482	15-17487	15-18496	16-17487	RADIATION IN PERSPECTIVE			
16-18496	16-18626	16-18629	16-18631	15-18750	15-18840	17-18750	
16-18707	16-18779			RADIATION INJURY, TREATMENT OF			
PRESSURE DROP				1-17332	15-17332	15-17427	15-19766
5-16636	5-17942	5-19095	6-16636	RADIATION MODEL			
6-19095	7-17347	11-17812		5-19089	7-19089	11-19089	
PRESSURE RELIEF				RADIATION PROTECTION, CHEMICAL			
9-17654	11-17612	11-18339	12-17370	15-18461			
17-17370	17-17654	17-17657	17-18339	RADIATION PROTECTION, ORGANIZATION			
18-18002				1-17571	1-18554	4-17505	14-18483
PRESSURE VESSEL				14-18563	15-16960	15-17030	15-17031
5-16480	5-17193	7-17193	7-18250	15-17032	15-18052	15-18483	15-18554
9-18018	11-16965	11-17021	11-17051	15-18563	15-19766		
11-17055	11-17056	11-17059	11-17061	RADIATION SAFETY AND CONTROL			
11-17062	11-17063	11-17193	11-17604	1-13351	1-17570	1-17695	1-18554
11-17605	11-17607	11-17612	11-17613	3-18218	12-18083	14-17058	14-17511
11-17643	11-17810	11-17814	11-18018	14-18010	14-18037	14-18083	14-18563
11-18022	11-18023	11-18024	11-18025	14-18845	14-18862	15-16760	15-16761
11-18137	11-18639	12-16480	15-17136	15-16934	15-16948	15-16952	15-16954
17-17055	17-17061	17-17136	17-17597	15-16956	15-16960	15-17030	15-17031
17-17643	17-18250	18-16480	18-16965	15-17135	15-17136	15-17348	15-17478
18-17061	18-17518			15-18010	15-18037	15-18039	15-18052
PRESSURE, INTERNAL				15-18063	15-18067	15-18084	15-18088
5-16491	5-17442	5-17610	5-17611	15-18170	15-18218	15-18554	15-18563
5-17811	5-17999	6-16491	8-16491	15-18844	15-19678	15-19766	17-16475
8-17442	8-17811	8-18442	9-18585	17-16476	17-16477	17-16760	17-16761
11-17254	11-17610	11-17611	11-17612	17-17135	17-17136	17-17185	17-17511
11-17811	11-17970	11-17999	11-18023	17-17961	17-18015	17-18150	17-18197
11-18090	11-18442	11-18641	12-18585	17-18675	17-18676	18-16477	18-17948
14-18306	17-17142	17-17528	17-17598	18-18197			
17-17645	17-17970	17-17999	17-18307	RADIATION, PUBLIC EDUCATION/ACCEPTANCE			
17-18442	17-18585	17-18979	18-18306	1-17570	1-17695	1-17874	1-17875
PRESSURIZER				2-17874	14-18010	14-18230	15-18010
7-18590	9-17654	12-17370	17-17370	15-18230	17-17874	17-17875	
17-17653	17-17654	17-18146		RADIOACTIVITY, RELEASE			
PROCEDURES AND MANUALS				7-18582	12-18582	14-16949	14-16950
15-16946	15-16979	15-17136	17-17136	14-17864	14-17957	14-18176	14-18266
17-18021	18-17853	18-17937		14-18372	15-16948	15-16949	15-16950
PROMPT NEUTRON LIFETIME				15-17957	15-18266	17-17864	19-18372
6-16988	6-17070	6-17433	6-18224	RADIOBIOLOGY			
6-18527				1-17912	4-18915	14-17884	14-18136
PROPERTY, PHYSICAL				14-18231	14-18408	14-18415	14-18483
4-18185	4-18240	4-18284	4-18351	15-16944	15-17427	15-17495	15-17884
5-17453	5-18186	5-19094	6-17453	15-18075	15-18136	15-18231	15-18483
6-19294	7-18185	7-18187	7-18251	RADIOCHEMICAL ANALYSIS			
7-18284	8-17453	8-18186	11-17603	14-18011	14-18407	14-18417	14-18544
14-16947	17-19094			14-18849	15-18269	15-18407	15-18840
PRTR (PLUTONIUM RECYCLE TEST REACTOR)				15-18849	16-18269	16-18626	
6-18765				RADIOCHEMICAL PLANT SAFETY			
PULSED NEUTRON TECHNIQUE				12-17353	13-16930	13-17353	
6-16988	6-17044	6-17073	6-17074	RADIOCHEMICAL PROCESSING			
6-17075	6-17083	6-18523	6-18524	1-17303	3-17954	7-17330	8-17584
9-17005	9-17006	9-17646	9-18207	9-17303	12-17353	12-17584	13-16930
17-17460	17-17591	17-17646		13-17330	13-17353	13-17584	13-17954
PULSTAR				15-18389	17-18389		
18-18959				RADIOGRAPHY			
PUMP				15-16761	15-17372	15-17445	15-18388
4-18285	15-17135	17-17135	17-17657	15-18390	15-18750	17-16761	17-17372
17-17868	17-18437	17-18595	18-17294	17-17445	17-18388	17-18390	17-18443
18-18312				17-18750	18-17996		
PUMP, JET				RADIOISOTOPE			
5-16480	12-16480	18-16480		3-17373	3-18218	9-18364	14-17432
PYROLYTIC				14-18176	14-18181	14-18233	14-18410
7-16924	12-16924			14-18411	14-18414	14-18416	14-18418
PYROPHORIC REACTION				14-18555	14-18561	15-17031	15-17432
8-17037				15-18216	15-18222	15-18386	15-18555

15-19766	17-17373	17-17375	17-17509	9-18363			
17-18385	17-18386			REACTOR KINETICS			
RADIOLOGICAL ASSISTANCE				6-16984	6-16986	6-16988	6-17015
3-18219	14-18230	15-18218	15-18230	6-17034	6-17082	6-18275	6-18280
RADIOLOGY				6-18282	6-18521	6-18523	6-18525
14-17012	15-16948	15-17012	15-18390	6-18526	6-18528	6-18535	9-16984
15-18749	15-19766	17-18390		9-17551	9-18776		
RADIOLYTIC GAS				REACTOR OFFGAS			
2-18960	8-17357	11-18440	17-17598	7-18581	7-18922	9-17973	15-17973
17-18440	17-18469	18-18960		17-16929	17-17973	17-18307	17-18922
RADIONUCLIDE, INDUCED				18-18312			
4-16968	14-16968	14-17049	14-17955	REACTOR PHYSICS			
14-17956	14-18136	15-18075	15-18136	1-18520	1-18761	1-18762	5-17529
15-18222	15-18847			5-17538	6-17529	6-17538	6-18520
RADIUM				6-18535	6-18761	6-18762	6-18763
11-17053	12-18083	14-18083	14-18232	18-17519			
14-18410	15-17334	15-18073	15-18074	REACTOR POWER			
15-18075	15-18220	15-18750	17-18750	5-18447	9-16998	9-17863	9-18574
RADON				10-17672	14-17957	15-16946	15-17957
7-18213	12-18083	14-17424	14-18083	17-17152	17-17507	17-17672	17-17861
14-18232	14-18234	14-18235	14-18237	17-17863	17-18447	18-17525	
14-18254	15-17424	15-18235	15-18254	REACTOR SAFETY SYSTEM			
15-18270	15-18546	15-19678	16-18270	1-17572	9-17129	9-17130	9-17654
RAINFALL				9-18435	9-18730	9-18970	9-18982
14-17050	14-17283	14-17815	14-17816	11-17128	15-18988	17-17128	17-17129
14-18068	14-18076	14-18079	14-18272	17-17130	17-17654	17-18435	17-18978
14-18707	14-18833	15-16973	15-17032	18-18730	18-18982		
15-17283	15-17284	15-17486	15-17487	REACTOR STABILITY			
15-17489	15-17490	15-18076	15-18079	1-18536	6-16489	6-16985	6-17071
15-18269	15-18496	16-17487	16-17489	6-17072	6-17079	6-17132	6-17247
16-17490	16-18076	16-18269	16-18272	6-17331	6-17497	6-17522	6-18132
16-18496	16-18626	16-18629	16-18707	6-18203	6-18275	6-18277	6-18528
16-18779				6-18536	9-18132	9-18203	9-18205
RARE EARTH				17-17497	17-17597		
9-18033				REACTOR STARTUP EXPERIENCE, INITIAL			
RATE				17-17150	17-17475	17-17521	17-17868
9-17656	17-17656			REACTOR STARTUP TESTING			
REACTIVITY COEFFICIENT				4-17671	6-17539	9-17654	9-17671
6-16987	6-17042	6-17155	6-18224	17-17150	17-17157	17-17457	17-17460
6-18531	6-18532	6-18718	6-18765	17-17467	17-17469	17-17470	17-17539
9-18718	17-17155			17-17554	17-17671	17-17953	17-18434
REACTIVITY EFFECT				REACTOR TEST FACILITY			
1-18520	1-18536	6-17039	6-17040	5-18529	6-18529		
6-17041	6-17042	6-17364	6-18274	REACTOR TRANSIENT			
6-18520	6-18536	9-17041	9-18370	4-17671	5-16490	5-16953	5-17257
9-18770	17-17364	17-17521	17-17994	5-17558	5-18529	6-16490	6-16953
17-18146				6-17033	6-17083	6-17257	6-17364
REACTIVITY EFFECT, ANOMALOUS				6-17558	6-18525	6-18529	6-18537
5-16492	5-18981	6-17131	17-16492	8-16490	9-17671	17-17364	17-17671
17-17131	17-17510	17-17641	17-17995	REACTOR, AEC OWNED			
17-18981	18-16492	18-18448		5-17503	6-17131	7-17125	7-17369
REACTIVITY, EXCESS				9-17126	9-17130	9-17479	15-17125
5-17538	6-17074	6-17538	6-18305	17-17125	17-17126	17-17130	17-17131
9-18040	17-17510	17-17526	17-17528	17-17140	17-17142	17-17143	17-17144
17-17587	17-17661	17-17089	17-17090	17-17149	17-17156	17-17367	17-17368
17-18040	17-18141	17-18305	17-18434	17-17369	17-17479	17-17500	17-17502
18-17850	18-17979	18-18308		17-17503	17-17521	17-17870	17-17941
REACTIVITY, NEGATIVE				18-17500			
6-17073	6-17074	6-18524		REACTOR, BOILING WATER			
REACTOR CONTROL				1-17596	1-18508	1-18782	2-17474
4-17671	6-17089	6-18274	6-18771	5-13484	5-16480	5-16900	5-17300
6-18963	7-18208	9-17671	9-18035	5-17388	5-17393	5-17437	5-17580
9-18036	9-18172	9-18205	9-18208	5-17581	5-17582	5-17593	5-17638
9-18360	9-18370	9-18371	9-18569	5-17640	5-17974	5-17999	5-18447
9-18570	9-18571	9-18593	9-18597	6-16489	6-16900	6-17087	6-17580
9-18623	9-18712	9-18771	9-18776	6-17581	6-17582	6-17638	6-17640
9-18777	9-18963	9-18964	9-18966	8-16900	8-17582	8-18442	9-16429
9-18969	17-17671			9-17005	9-17087	9-17337	9-17513
REACTOR COOLANT				9-17893	9-17938	9-17972	9-18571
4-18347	6-17522	7-18347	8-17357	9-18591	9-18710	9-18716	10-17513
9-17508	9-18585	12-18585	14-17908	10-17647	10-17893	10-17899	11-17055
17-17508	17-18585			11-17437	11-17604	11-17800	11-17999
REACTOR DECOMMISSIONING EXPERIENCE				11-18137	11-18339	11-18340	11-18391
1-18152	7-17975	14-17523	17-17464	11-18442	11-19677	12-16480	12-17437
17-17523	17-17651	17-17966	17-17967	12-18330	14-17889	14-18508	14-18932
17-17968	17-17969	17-17971	17-17972	15-17135	15-17973	15-18329	15-18392
17-17975	17-17978	17-17988		17-16429	17-16929	17-17055	17-17135
17-18001	17-18003	17-18151	17-18152	17-17150	17-17337	17-17345	17-17468
17-18441	17-18925	17-18931		17-17474	17-17475	17-17484	17-17513
REACTOR DESCRIPTION				17-17585	17-17593	17-17596	17-17597
5-16480	6-17364	12-16480	12-18952	17-17601	17-17647	17-17030	17-17868
17-17364	17-17462	17-17468	17-17563	17-17939	17-17973	17-17974	17-17999
17-18735	18-16480	18-16925	18-17293	17-18093	17-18015	17-18153	17-18331
18-17338	18-17342	18-17389	18-17472	17-18339	17-18340	17-18341	17-18391
18-17473	18-18793	18-18736	18-18952	17-18442	17-18446	17-18447	17-18508
18-19655	19-18703			17-18642	17-19677	18-13484	18-16429
REACTOR DYNAMICS				18-16480	18-17472	18-17473	18-17514
6-17244	6-18203	6-18223	6-18275	18-17517	19-18312	18-18314	18-18330
6-18532	6-18537	6-18763	9-18203	18-18392	18-18444	18-18448	18-18782
9-18966				18-18932			
REACTOR FUSE				REACTOR, BREEDER			

1-17088	4-18240	4-18348	5-16953	9-17590	10-17647	11-17999	12-18952
6-16762	6-16953	6-17008	6-17088	17-17499	17-17590	17-17597	17-17601
6-18195	6-18768	7-18195	7-18348	17-17647	17-17992	17-17993	17-17994
8-18195	9-16943	9-17351	9-17938	17-17999	17-18642	17-18922	18-17461
9-18712	9-18768	12-17350	14-17048	18-17517	18-18952		
17-17350	17-17500	18-16762	18-17396	REACTOR, LIQUID METAL COOLED			
18-17500	18-17934			4-17577	4-18240	4-18295	4-18291
REACTOR, CIRCULATING FUEL				5-17167	5-17576	5-17577	5-18209
7-18994	12-17350	17-17350		6-17008	6-17131	6-17132	6-17522
REACTOR, DESALINATION				6-17565	6-17576	6-17577	6-18195
17-17563	18-17293			7-18195	7-18291	8-17576	8-18195
REACTOR, FAST				8-18634	9-16943	9-17479	11-18209
1-17088	1-18536	1-18761	1-18762	11-18634	11-18638	12-18209	14-17048
4-18185	4-18194	4-18196	4-18240	17-17131	17-17167	17-17479	17-17500
4-18284	4-18291	4-18348	5-16636	17-18032	17-18595	18-16925	18-17355
5-17167	5-18194	6-16636	6-17008	18-17395	18-17396	18-17500	
6-17033	6-17038	6-17045	6-17085	REACTOR, MARITIME			
6-17088	6-17132	6-17433	6-17501	1-13351	1-17963	3-17963	11-17605
6-17565	6-18195	6-18223	6-18281	17-18134	18-17389	18-18134	
6-18527	6-18536	6-18713	6-18761	REACTOR, MILITARY			
6-18762	6-18766	6-18768	7-18185	5-17302	5-19091	6-19091	9-17302
6-18192	7-18193	7-18195	7-18284	9-18133	12-17370	14-16376	17-17302
7-19291	7-18348	8-18195	8-18196	17-17370	17-17466	17-18134	18-17304
8-18634	9-16943	9-17938	9-18713	18-18133	18-18134	18-18306	
9-18766	9-18768	11-16965	11-18193	REACTOR, MOLTEN SALT			
11-18634	12-18192	13-18192	14-17048	5-17576	6-17576	6-18713	6-18768
17-17167	17-17298	17-17464	17-17563	7-18208	7-18286	7-18514	7-18994
17-17651	18-16965	18-17295	18-17296	8-17576	9-17351	9-18030	9-18208
18-17396	18-17501	18-17519	18-17934	9-18713	9-18768	12-17350	17-17350
18-18304	18-18449			17-18286			
REACTOR, FAST BURST				REACTOR, ORGANIC COOLED			
6-18522	6-18526	9-18040	9-18133	5-18089	5-18091	5-19094	6-19094
9-18283	17-17986	17-18040	17-18439	11-18090	17-16056	17-17961	17-18094
18-18133	18-18522	18-18736		18-18089	18-18092	18-18093	
REACTOR, FLUX TRAP				REACTOR, PEBBLE BED			
5-17940	6-17539	6-18522	7-17369	5-16636	5-17454	6-16636	8-17454
9-17130	17-16582	17-17130	17-17142	17-17392	18-17476		
17-17143	17-17367	17-17368	17-17369	REACTOR, POOL TYPE			
17-17521	17-17539	17-17940	18-17525	5-17127	5-17858	6-18279	9-17141
18-18522				9-17508	9-17862	9-17863	9-18157
REACTOR, GAS COOLED				9-18569	9-18570	9-18926	9-18967
3-17965	6-17041	6-17074	6-18203	14-17864	14-17866	15-17527	15-17867
6-18305	6-18525	9-16942	9-17006	16-17655	17-17127	17-17133	17-17141
9-17041	9-17154	9-17656	9-18203	17-17144	17-17148	17-17462	17-17507
9-18207	9-18677	9-18967	9-18982	17-17508	17-17526	17-17527	17-17586
11-16965	11-17643	11-18636	11-18638	17-17589	17-17599	17-17600	17-17602
11-18639	17-16768	17-16769	17-17140	17-17650	17-17659	17-17858	17-17859
17-17151	17-17154	17-17157	17-17163	17-17860	17-17861	17-17862	17-17863
17-17356	17-17365	17-17444	17-17457	17-17864	17-17865	17-17866	17-17867
17-17459	17-17467	17-17469	17-17470	17-17871	17-17946	17-18144	17-18157
17-17643	17-17656	17-17953	17-18305	17-18733	17-18926	17-18928	17-18930
17-18675	17-18676	17-18677	18-16965	17-18931	18-17655	18-17866	
18-17294	18-17342	18-17343	18-17476	REACTOR, POWER			
18-17518	18-18982			1-16759	1-17569	1-17572	1-17595
REACTOR, GENERAL				1-17694	1-17695	5-16637	5-17437
15-16948	15-16956	15-17010	15-17031	5-17442	6-17565	7-17124	8-16637
17-18134	18-18134			8-17442	9-17337	9-18168	9-18710
REACTOR, GRAPHITE MODERATED				9-18964	10-17899	11-17437	12-17437
6-17041	6-17074	6-18305	9-17041	14-17425	14-18561	15-17425	17-16056
9-17656	9-18207	9-18982	11-17643	17-17124	17-17337	17-17365	17-17941
17-16769	17-17140	17-17356	17-17365	17-18134	17-18168	17-18675	17-18676
17-17643	17-17656	17-17953	17-18305	18-16925	18-17449	18-17514	18-18134
17-18595	18-17293	18-17342	18-18982	18-18703	19-18703		
REACTOR, HALF FAST				REACTOR, PRESSURE TUBE			
6-17441	17-17651			5-17529	5-17580	5-18091	5-18737
REACTOR, HEAVY WATER				6-17155	6-17529	6-17580	6-18765
3-17969	5-17529	5-17534	5-17538	7-18738	12-18952	17-16475	17-16476
5-18089	5-18091	5-18737	6-17155	17-16477	17-17140	17-17155	17-17450
6-17529	6-17534	6-17538	6-18765	17-18197	17-18737	17-18738	18-16477
9-18591	9-18598	9-18770	10-18598	18-18197	18-18952		
11-16965	11-17055	11-17059	11-18090	REACTOR, PRESSURIZED WATER			
11-18638	12-18952	14-17511	15-17136	1-18148	1-18152	2-18731	2-18960
17-16475	17-16476	17-16477	17-17055	5-13484	5-16492	5-16940	5-17193
17-17136	17-17137	17-17155	17-17450	5-17300	5-17302	5-17437	5-17811
17-17511	17-17521	17-17534	17-17662	5-17942	5-18729	5-18935	5-18981
17-17869	17-17870	17-18150	17-18197	5-19656	6-16762	6-17497	6-18537
17-18737	18-16477	18-16965	18-18002	7-17193	7-17321	7-18738	8-17811
18-18089	18-18092	18-18093	18-18197	9-17017	9-17302	9-17337	9-17654
18-18952				9-18138	9-18159	9-18160	9-18168
REACTOR, HIGH TEMP. GAS				9-18317	9-18445	9-18503	9-18538
5-06683	5-17193	6-18963	7-16924	9-18591	9-18739	9-18770	9-18978
7-17193	9-17656	9-18963	11-17193	11-14620	11-16496	11-17193	11-17437
12-16924	17-17151	17-17157	17-17444	11-17605	11-17613	11-17811	11-18140
17-17457	17-17656	17-18735	18-06683	11-18962	12-14620	12-14621	12-17370
18-17342	18-17518			12-17437	12-18138	12-18961	14-17885
REACTOR, HOMOGENEOUS				14-18306	15-16760	15-16761	15-18140
5-16490	6-16490	6-17246	8-16490	15-18393	16-18731	17-16475	17-16476
17-18001	18-17850	18-17851	18-17852	17-16477	17-16492	17-16760	17-16761
18-17853	18-17854	18-18308		17-17137	17-17302	17-17337	17-17363
REACTOR, INTERNAL SUPERHEAT				17-17370	17-17466	17-17497	17-17641
5-17300	5-17999	7-18922	9-17005	17-17644	17-17645	17-17653	17-17654

17-17657	17-17885	17-18021	17-18138	9-17950	9-18029	9-18035	11-16965
17-18139	17-18140	17-18145	17-18146	11-17324	12-17566	14-17566	15-18556
17-18147	17-18148	17-18149	17-18150	17-17497	17-17995	18-16965	18-17996
17-18151	17-18152	17-18159	17-18160	19-17329			
17-18161	17-18165	17-18166	17-18167	RECOMBINER			
17-18168	17-18169	17-18197	17-18317	18-17850			
17-18342	17-18434	17-18437	17-18445	REDUNDANCE			
17-18733	17-18738	17-18767	17-18934	4-17506	9-18972		
17-18976	17-18977	17-18978	17-18979	REFLECTOR			
17-18980	17-18981	18-13484	18-14620	5-17534	6-17044	6-17075	6-17153
18-14621	18-16477	18-16492	18-16496	6-17534	17-17139	17-17153	17-17534
18-16762	18-17304	18-17338	18-17389	17-17587			
18-18163	18-18164	18-18197	18-18306	REFRACTORY MATERIAL			
18-18393	18-18728	18-18729	18-18731	4-18344	7-18344		
18-18935	18-18960	18-18961	18-18962	REFUELING			
18-18977	18-19655	18-19656		5-17974	11-17020	12-17020	14-17020
REACTOR, PRODUCTION				15-16760	17-16760	17-17156	17-17974
9-18369	17-17140	17-17872		17-18434	17-18446		
REACTOR, PULSED				REGULATION, AEC			
6-17364	6-18522	7-18208	9-18208	1-17567	1-17694	1-17874	1-17875
9-18507	17-17364	17-17507	17-17652	1-17912	1-18782	2-17874	10-17873
17-17661	17-18507	18-17305	18-18522	11-17873	12-17440	15-18389	15-19678
18-18959	18-18975	18-18984		17-17873	17-17874	17-17875	17-18057
REACTOR, RESEARCH				17-18389	18-17440	18-18057	18-18782
1-17303	1-17694	3-17869	5-16490	REGULATION, GENERAL			
5-17146	5-17503	5-17858	5-17940	1-13351	1-17572	1-18017	3-17964
5-18089	6-16490	6-17539	6-18522	RELEASE RATE			
6-18741	7-17369	7-18208	8-16490	7-17328	15-16952		
9-17126	9-17141	9-17303	9-17509	RELIABILITY ANALYSIS			
9-17862	9-17863	9-18133	9-18157	4-17506	9-17129	9-17561	9-18365
9-18208	9-18371	9-18435	9-18507	9-18368	9-18972	11-17128	12-18330
9-18734	9-18741	9-18926	9-18974	17-17128	17-17129	18-18330	
14-17511	14-17864	14-17866	14-17982	RELIABILITY, COMPONENT			
14-18561	15-17478	15-17527	15-17867	10-17647	10-18769	17-17647	17-18595
17-17126	17-17141	17-17144	17-17145	RELIABILITY, SYSTEM			
17-17146	17-17148	17-17367	17-17368	9-17561	9-18445	10-17899	17-18445
17-17369	17-17460	17-17477	17-17502	REMOTE MANIPULATING AND VIEWING			
17-17503	17-17508	17-17509	17-17511	9-18133	12-17350	15-17136	17-17136
17-17512	17-17521	17-17526	17-17527	17-17350	17-17365	17-18032	18-18133
17-17539	17-17540	17-17586	17-17589	RESEARCH AND DEVELOPMENT PROGRAM			
17-17591	17-17598	17-17599	17-17600	1-16759	5-06683	5-17498	5-17533
17-17650	17-17659	17-17662	17-17858	6-17533	6-18305	7-17322	14-17058
17-17859	17-17860	17-17861	17-17862	14-17428	14-17520	14-18135	14-18136
17-17863	17-17864	17-17865	17-17866	15-17431	15-18135	15-18136	15-18841
17-17867	17-17869	17-17870	17-17871	17-17444	17-18015	17-18305	17-18341
17-17940	17-17982	17-17983	17-17984	17-18469	17-18977	18-06683	18-17355
17-17985	17-17986	17-18057	17-18134	18-17389	18-17498	18-17517	18-17518
17-18144	17-18157	17-18332	17-18435	18-17519	18-18092	18-18093	18-18728
17-18436	17-18443	17-18468	17-18507	18-18977			
17-18734	17-18926	17-18928	17-18930	RESEARCH CONTRACT			
17-18931	17-18989	18-17866	18-17948	15-17427			
18-17970	18-18002	18-18057	18-18133	RESIN			
18-18134	18-18209	18-18522	18-18959	8-17584	12-17584	13-17584	14-18071
18-18975	18-18994			14-18845	15-18071		
REACTOR, SAFETY RESEARCH				RESONANCE OVERLAP			
5-19089	7-19089	11-19089	17-18134	6-17086	6-17244	6-18531	
18-17937	18-18134			RESPONSE SPECTRUM			
REACTOR, SPACE				2-17618	2-17625	2-18516	2-18540
4-18028	4-18185	4-18196	4-18594	6-18275	18-18164		
7-18185	8-18196	9-18028	9-18594	RESPONSE TIME			
15-17200	18-18449			11-18391	17-17868	17-18391	
REACTOR, TEST				REVIEW			
1-17694	5-16491	5-16953	6-16491	1-17332	9-17351	15-17332	
6-16953	6-17083	6-18766	7-17125	RIVER, CLINCH			
7-17369	7-18208	8-16491	9-17129	14-16949	15-16949		
9-17833	9-18208	9-18368	9-18470	RIVER, COLUMBIA			
9-18717	9-18766	10-17648	10-17649	14-16949	15-16949	15-16976	
11-17128	11-17658	11-17970	15-17125	RIVER, GENERAL			
15-17136	17-17125	17-17128	17-17129	14-18051	15-16946		
17-17136	17-17149	17-17156	17-17367	RIVER, RHONE			
17-17368	17-17369	17-17387	17-17462	14-16949	15-16949		
17-17592	17-17649	17-17649	17-17658	ROCK MECHANICS			
17-17833	17-17946	17-17970	17-18134	2-17634			
17-18307	17-18436	17-18469	17-18470	ROSSI ALPHA			
17-18933	18-17295	18-17296	18-17343	1-18761	1-18762	6-16988	6-17036
18-18134	18-18304			6-17075	6-17246	6-17441	6-18527
REACTOR, THERMAL				6-18761	6-18762		
9-18574	17-17651			ROVER PROGRAM			
REACTOR, TRAINING				4-18028	9-18028		
6-18527	7-17975	11-18440	14-17523	RUTHENIUM			
17-16582	17-17510	17-17523	17-17524	4-18291	7-18192	7-18241	7-18291
17-17528	17-17587	17-17588	17-17652	12-18192	13-18192	14-16949	14-16974
17-17660	17-17661	17-17966	17-17967	14-17426	14-17428	14-18051	14-18184
17-17960	17-17969	17-17975	17-17978	14-18550	15-16949	15-18550	
17-18001	17-18134	17-18440	17-18441	SAFE FAILURE CRITERION			
17-18925	17-18927	18-16493	18-17850	9-17857	17-17857		
18-17851	17-18752	18-17853	18-17854	SAFETY ANALYSIS			
18-17977	18-18134	18-18308		1-17088	1-17569	1-17595	4-16970
REACTOR, WATER				5-17127	5-17302	6-17088	9-17302
5-17257	6-17443	6-17257	6-17497	9-17654	14-17049	15-18988	17-17127
7-17324	7-17328	7-17329	9-17043	17-17302	17-17654		

SAFETY ANALYSIS REPORT, GENERAL				14-18071	14-18072	15-18071	15-18072
5-17858	11-16496	12-18330	13-16930	SEFOR (SOUTHWEST EXP. FAST OXIDE REACTOR)	1-17088	6-17088	6-18768 9-18768
14-17866	16-17655	17-17502	17-17599	SEICHE	2-18796	18-19655	
17-17858	17-17866	17-17997	17-18057	SEISMIC ZONE	2-17617	2-17620	2-17623 2-17626
17-18318	17-18976	17-18977	18-16496		2-17628		
18-17305	18-17655	18-17866	18-17935	SEISMOLOGY	1-17695		
18-17936	18-17948	18-17979	18-18002	SEISMOLOGY, GENERAL	2-17614	2-17620	
18-18057	18-18142	18-18312	18-18314	SELF POWERED FLUX DETECTOR	9-18730	18-18730	
18-18330	18-18449	18-18736	18-18959	SELF SHIELDING	6-17086		
18-18977	18-18984			SENN (SOCIETA ELETTRONUCLEARE NAZIONALE)	17-18341		
SAFETY ANALYSIS REPORT, METEOROLOGY				SEPARATOR	5-17638	6-17638	7-18475
16-18706				SHARED COMPONENTS	5-19656	18-19655	18-19656
SAFETY ANALYSIS REPORT, PRELIMINARY				SHELL	9-18018	11-17810	11-18018
2-18731	2-18960	5-18729	5-19656	SHIELDING	5-17503	11-16496	11-16966 11-17020
9-18730	11-14620	11-18962	12-14620		11-17643	12-17020	12-17353 13-17353
12-14621	12-18961	16-18731	18-14620		14-17020	14-17883	15-17867 17-17363
18-14621	18-17360	18-17851	18-18163		17-17503	17-17643	17-17861 17-17865
18-18164	18-18728	18-18729	18-18730		17-17867	17-18642	18-16496 18-17850
18-18731	18-18960	18-18961	18-18962	SHIPPING CONTAINER	18-17852	18-18736	18-19191
18-19655	18-19656				3-16653	3-17373	3-17869 17-17368
SAFETY EVALUATION					17-17373	17-17869	
1-17595	1-17596	1-18148	1-18152	SHIPPINGPORT	6-17497	14-17885	15-16760 15-16761
4-16970	4-16971	5-16492	5-17593		17-16760	17-16761	17-17497 17-17885
5-18447	6-17539	9-17508	9-17646	SHOCK ABSORBER	11-16966		
9-17656	9-18133	9-18317	9-18982		4-17448	5-17448	6-17033 6-17448
11-17800	11-18140	14-17523	14-18932	SHOCK WAVE	11-16966	14-18627	16-18627
15-18140	17-16492	17-17507	17-17508	SHUTDOWN MARGIN	6-17073	6-17076	9-18507 17-18507
17-17509	17-17512	17-17523	17-17524		1-18536	6-18536	9-18363 9-18574
17-17526	17-17528	17-17539	17-17540	SHUTDOWN SYSTEM, SECONDARY	9-18040	9-18138	9-18445 9-18978
17-17585	17-17586	17-17589	17-17591		12-18138	17-18040	17-18138 17-18139
17-17592	17-17593	17-17596	17-17597	SILICON	17-18445	17-18978	18-18002
17-17600	17-17601	17-17602	17-17645		15-17594		
17-17646	17-17651	17-17656	17-17657	SILVER	7-17321		
17-17660	17-17800	17-17972	17-17978	SIMULATION	9-18172	9-18206	9-18921 9-18964
17-17983	17-17985	17-17986	17-17987		9-17855	9-17857	9-18133 9-18435
17-17989	17-17992	17-18001	17-18003	SINGLE FAILURE CRITERION	9-18978	10-17648	10-17649 17-17648
17-18140	17-18141	17-18144	17-18148		17-17649	17-17857	17-18435 17-18978
17-18152	17-18165	17-18307	17-18317	SITE CLIMATOLOGY	18-17855	18-18133	
17-18441	17-18443	17-18447	17-18767		2-18960	16-18630	16-18706 16-18806
17-18925	17-18934	17-18979	18-16492		18-18960		
18-16493	18-17525	18-17977	18-18133	SITE CRITERIA, EARTHQUAKE	2-17633		
18-18309	18-18932	18-18975	18-18982	SITING, GENERAL	1-17695	1-18210	2-17608 2-18210
SAFETY PRINCIPLES AND PHILOSOPHY					2-18960	5-18210	11-18962 14-16951
1-17569	2-17608	4-16970	4-17504	SITING, OFF SHORE	18-18163	18-18960	18-18962 18-18975
7-18990	9-17560	17-16989			5-16967	11-16967	
SAFETY REVIEW (OPERATIONS, EXPERIMENTS)				SITING, REACTOR	1-17567	1-18210	2-17608 2-18210
5-06683	7-18922	14-18306	17-17345		5-18210	18-17449	18-17851 18-19655
17-17598	17-17652	17-17984	17-18143	SLAB	11-17063		
17-18149	17-18922	17-18930	18-06683	SLURRY REACTOR	6-17247		
18-18306	18-18444	18-18448		SM 2 (STATIONARY MEDIUM POWER PLANT)	5-19091	6-19091	
SAFETY STUDY				SMOKE	16-17488	16-18497	16-18498 16-18499
1-17910	5-16637	6-17501	7-18990		16-18500	16-18501	
8-16637	14-17049	14-17058	14-18237	SNAP 10A (SYSTEMS FOR NUCLEAR AUXILIARY POWER)	4-18027	9-18027	10-17672 17-17672
15-18863	18-17501				4-18594	9-18594	
SALMON EVENT				SNAP 7 (SYSTEMS FOR NUCLEAR AUXILIARY POWER)	4-16971		
14-18037	15-18037			SNAP 9 (SYSTEMS FOR NUCLEAR AUXILIARY POWER)			
SAMARIUM							
17-17521							
SAMPLING							
4-18472	5-10209	7-18589	11-18209				
12-18209	14-16949	14-17011	14-17049				
14-17425	14-17816	14-18037	14-18076				
14-18545	14-18833	15-13660	15-16948				
15-16949	15-16952	15-16959	15-16961				
15-16973	15-16978	15-17011	15-17032				
15-17425	15-18013	15-18037	15-18044				
15-18076	16-18076	17-18469					
SAMPLING, HIGH ALTITUDE							
14-18705	16-18268	16-18502	16-18704				
16-18705							
SAN ONOFRE							
9-17654	17-17653	17-17654					
SAVANNAH RIVER PLANT							
7-17330	9-18029	13-17330					
SAXTON							
5-18981	9-18978	17-17641	17-17644				
17-17645	17-17657	17-18976	17-18977				
17-18978	17-18979	17-18980	17-18981				
18-18977							
SCATTERING (SKYSHINE)							
18-18959							
SCRAM, REAL							
9-17863	17-17669	17-17863	17-17868				
SCRAM, SPURIOUS							
9-17129	9-18677	11-17128	17-17128				
17-17129	17-18677						
SCRUBBER							
7-18509							
SEAL							
12-17370	17-17370						
SEDIMENT							

14-17892				7-18511	7-18588	8-17361	8-18239
SNAP, GENERAL (SYSTEMS FOR NUCLEAR AUX. POWER)				9-18362	11-17610	11-17611	11-17812
4-17671	9-17671	17-17671		11-18209	11-18288	12-17370	12-18209
SODIUM				17-17150	17-17370	18-17518	
4-18185	4-18194	4-18196	4-18240	STEAM GENERATOR			
4-18291	4-18344	4-18347	4-18348	5-17393	9-18168	17-17151	17-17392
4-18351	4-18354	5-18194	6-17522	17-17968	17-18165	17-18168	18-17355
6-18195	7-16406	7-18185	7-18195	18-17476			
7-18212	7-18291	7-18344	7-18347	STEEL			
7-18348	8-18195	8-18196	8-18744	4-18285	4-18344	4-18347	5-17193
9-16943	14-17956	17-18595		7-17193	7-18344	7-18347	11-16965
SODIUM COEFFICIENT				11-17021	11-17051	11-17061	11-17062
6-17008	6-17085	6-17245		11-17063	11-17193	11-17605	11-17810
SOIL				11-17814	11-18023	11-18024	11-18025
14-17955	15-16945	15-16948	15-17010	11-18636	17-17061	17-18469	18-16965
SOIL MECHANICS				18-17061			
2-17615	2-17618	2-18517		STEEL LINER			
SOIL, NUCLIDE OCCURRENCE				17-17133	17-17871		
14-17283	14-17285	14-17482	14-18069	STEEL, STAINLESS			
14-18079	14-18080	15-17010	15-17032	4-18285	4-18344	4-18347	5-16637
15-17283	15-17285	15-17482	15-18079	7-18014	7-18344	7-18347	8-16637
SOIL, PROPERTY				8-17361			
14-17285	14-18069	14-18080	15-16945	STORAGE CONTAINER			
15-17285				3-17965	17-17375	17-18385	17-18437
SOIL, RADIONUCLIDE MOVEMENT THROUGH				17-18439			
14-17285	14-18069	14-18079	14-18080	STRATOSPHERE			
15-17285	15-18079			4-18271	14-16974	14-18412	14-16705
SORPTION				14-18707	15-18271	16-18271	16-18704
7-17321	14-16949	15-16949		16-18705	16-18707	16-18780	
SOURCE MECHANISM				STRESS			
2-17624	2-17629	2-17634		5-17974	11-17051	11-18022	11-18023
SOURCE, AREA				11-18024	11-18026	17-17974	
16-17488				STRESS ANALYSIS			
SOURCE, CONTINUOUS				5-17454	5-17579	6-17579	8-17454
2-18960	14-17866	14-18932	16-17655	11-16965	11-18022	11-18026	11-18137
17-17866	18-17655	18-17866	18-18932	11-18636	17-17148	18-16965	18-17304
18-18960				STRESS CORROSION			
SOURCE, ELEVATED				11-17061	17-17061	18-17061	
16-18201	16-18628	16-18805		STRESS RUPTURE			
SOURCE, NEUTRON				11-17021	17-17645		
17-17375	17-17512			STRONTIUM			
SOURCE, RADIATION				4-18291	7-18291	11-17053	14-16949
9-18364	14-17012	15-17012	15-18750	14-16950	14-17011	14-17046	14-17283
17-17586	17-18750	17-18929	17-18931	14-17289	14-17425	14-17426	14-17428
SOUTH AFRICA				14-17432	14-17688	14-17815	14-17892
15-17010				14-17902	14-17903	14-17904	14-17907
SPACE DEPENDENT DYNAMICS				14-17982	14-18069	14-18070	14-18072
6-16489	6-16987	6-17033	6-17036	14-18076	14-18077	14-18079	14-18253
6-17085	6-17331	6-17441	6-18282	14-18257	14-18258	14-18263	14-18264
6-18523	6-18763			14-18403	14-18414	14-18417	14-18550
SPACECRAFT				14-18562	14-18833	15-16949	15-16950
4-17344	4-18472	4-18552	15-16997	15-16973	15-16979	15-17011	15-17032
15-17290	15-18552			15-17283	15-17425	15-17432	15-17486
SPAIN				15-17487	15-17490	15-17688	15-17977
11-17052	14-18551	15-18551		15-18013	15-18038	15-18044	15-18070
SPECTROMETRY, GAMMA				15-18072	15-18076	15-18078	15-18079
14-17009	15-17009	15-18559		15-18253	15-18257	15-18258	15-18263
SPECTROMETRY, NEUTRON				15-18264	15-18269	15-18550	15-18046
9-18974	15-18844			16-17487	16-17490	16-17904	16-18076
SPERT 1 (SPECIAL POWER EXCURSION REACTOR TEST)				16-18269	17-17982		
5-16491	6-16491	6-18276	8-16491	STRUCTURAL INTEGRITY			
SPERT 4 (SPECIAL POWER EXCURSION REACTOR TEST)				11-17061	11-17063	14-17047	17-17061
5-18529	6-18529			18-17061			
SPHERE				SUBCOOLING			
11-17604	11-17810			5-17555	6-17555		
SPRAY, GENERAL				SUBSIDENCE			
7-18225	7-18227	7-18475	7-18509	2-17623			
7-18510	7-18511	7-18588	7-18957	SULFUR			
SRE (SODIUM REACTOR EXPERIMENT)				16-18497	16-18498	16-10499	16-10500
6-17131	17-17131			16-18501			
STACK				SUPPORT STRUCTURE			
14-18068	15-16978	16-18201	18-18448	5-17940	14-17047	17-17148	17-17940
STAFFING, TRAINING, QUALIFICATION				SURFACE CONTAMINATION			
1-17875	8-04716	9-17951	11-18440	14-17052			
17-17184	17-17185	17-17450	17-17526	SURFACE FILM DEPOSIT			
17-17872	17-17875	17-18021	17-18147	5-18981	7-18738	17-16056	17-17143
17-18440	17-18733	18-17852		17-17641	17-18738	17-18981	18-17292
STATE PROGRAM				SURFACE TO VOLUME RATIO			
15-16946				7-18288	11-18288		
STATISTICAL ANALYSIS				SURFACE WATER, DISPOSAL MEDIA			
14-16947	14-17046	14-17058	15-16944	14-16949	15-16949		
15-17010	15-17427			SURFACE WATER, GENERAL			
STATISTICAL CORRELATION				14-16949	14-17482	15-16949	15-17482
15-17429	15-18075			SURFACE WATER, NUCLIDE OCCURRENCE			
STATISTICAL FLUCTUATION				14-16949	14-17011	14-18051	15-16949
6-18526	6-18532			15-16959	15-16976	15-16978	15-17010
STEAM				15-17011	15-18066		
5-16953	5-17610	5-17611	5-17638	SURFACE WATER, SEDIMENT			
5-18209	6-16953	6-17638	7-18014	14-16949	14-17482	15-16949	15-17482
7-18225	7-18227	7-18239	7-18288	SURFACE WATER, SUSPENDED MATERIAL			
7-19290	7-18292	7-18475	7-18510	14-16949	15-16949		

SURFACE WATER, TRACER				2-17623	2-17627	2-17629	2-17634
14-16949	14-18071	15-16949	15-18071	2-17637	2-18760		
SURFACE, GENERAL				TEMPERATURE COEFFICIENT			
7-18229				6-17043	6-17071	6-17072	6-17087
SURRY.1 AND 2				6-17089	6-17247	6-17433	6-17539
11-16496	15-18393	18-16496	18-18393	6-18533	6-18765	9-17043	9-17087
SURVEILLANCE PROGRAM				17-17539	17-17587	17-18141	17-18161
3-18218	9-17553	9-18018	10-17648	17-18767	18-17304	18-18308	
11-17061	11-18018	11-19677	14-17048	TEMPERATURE GRADIENT			
14-17049	14-17424	15-16948	15-16952	6-17501	7-18187	11-17054	18-17501
15-17424	15-18218	17-16929	17-17061	TEMPERATURE REACTIVITY EFFECT			
17-17648	17-19677	18-17061		6-17522	9-17154	17-17154	17-17992
SURVEY, GENERAL				TEMPERATURE TRANSIENT			
15-16946	15-16952			6-17364	17-17364		
SURVEY, RADIATION, EMERGENCY				TENSILE PROPERTY			
15-16948	15-16952			11-18024			
SURVEY, RADIATION, ENVIRONMENTAL				TEST INTERVAL			
14-17011	14-17050	14-17882	14-17888	9-18138	9-18445	9-18926	9-18982
14-18037	14-18076	14-18079	15-16946	11-17800	11-18339	11-18340	12-18138
15-16948	15-16952	15-16952	15-16959	17-17800	17-18138	17-18139	17-18145
15-16961	15-16973	15-16976	15-16978	17-18153	17-18339	17-18340	17-18445
15-17010	15-17011	15-17032	15-17284	17-18926	17-18927	18-18982	
15-17429	15-17882	15-17888	15-18013	TEST, BENCH			
15-18037	15-18044	15-18076	15-18079	11-17603	12-18952	14-18043	18-17517
15-18269	15-18329	15-18848	16-18076	18-18952			
16-18269				TEST, COMPONENT			
SURVEY, RADIATION, GENERAL				8-18744	9-18283		
11-18140	14-17425	15-16952	15-17425	TEST, CONTROL ROD DRIVE			
15-17867	15-18140	15-18988	17-17867	9-18283			
17-18140	17-18642			TEST, DESTRUCTIVE			
SURVEY, RADIATION, USPHS				6-18276	17-18331		
14-18037	15-18037			TEST, OOP FILTER			
SWEDEN				7-17685			
8-17357	9-18036	9-18770	11-17055	TEST, DROP			
17-17055				9-17007			
SWITZERLAND				TEST, FILTER			
11-18633				7-17124	7-17312	17-17124	
SYSTEM DESCRIPTION				TEST, FILTER SYSTEM			
7-17124	7-17125	9-18964	11-14620	7-17312	7-17685	7-18586	12-18586
12-14620	12-14621	12-18952	15-17125	TEST, INSTRUMENT RESPONSE			
17-17124	17-17125	17-17145	17-17298	9-16943	9-18174	9-18921	9-18968
18-14620	18-14621	18-17343	18-17517	17-18931			
18-18952	18-19191			TEST, LEAK LOCATION			
TECHNICAL SPECIFICATIONS				11-17053	11-17057	17-17137	17-17375
1-17596	1-18148	1-18152	5-16492	18-18093	18-18448		
5-17593	5-18447	5-18935	5-18981	TEST, LEAK RATE			
6-17539	7-18922	9-17508	9-17513	9-18734	11-17054	11-17057	11-17658
9-17590	9-17646	9-17654	9-17656	11-17800	11-17970	11-18339	11-18340
9-17855	9-17973	9-18040	9-18138	11-18635	11-18641	11-19677	12-17370
9-18157	9-18159	9-18160	9-18168	14-18306	17-17133	17-17370	17-17658
9-18317	9-18445	9-18926	9-18978	17-17800	17-17970	17-18145	17-18339
9-18982	10-17513	10-17647	10-17648	17-18340	17-18734	17-19677	18-18306
10-17649	11-17061	11-17800	11-17970	TEST, NONDESTRUCTIVE			
11-18140	11-18339	11-18340	11-18391	1-17911	9-17017	11-17061	11-17605
12-18138	14-17523	14-17982	15-17527	11-19677	17-17061	17-19677	18-17061
15-17973	15-17991	15-18140	16-17655	TEST, PHYSICS			
17-16492	17-16582	17-17061	17-17507	5-16492	6-17155	6-17539	6-18533
17-17508	17-17509	17-17510	17-17512	6-18765	6-18766	9-18766	17-16492
17-17513	17-17523	17-17524	17-17526	17-17155	17-17457	17-17539	17-17597
17-17527	17-17528	17-17539	17-17540	17-17653	18-16492		
17-17585	17-17586	17-17587	17-17588	TEST, PLANT RESPONSE			
17-17589	17-17590	17-17591	17-17592	6-18275	6-18537		
17-17593	17-17596	17-17597	17-17598	TEST, PREOPERATIONAL			
17-17599	17-17600	17-17601	17-17602	9-18133	9-18661	17-18661	18-18133
17-17641	17-17644	17-17645	17-17646	TEST, PRESSURE VESSEL			
17-17647	17-17648	17-17649	17-17650	9-17017	11-17021	11-17613	11-17814
17-17651	17-17652	17-17653	17-17654	TEST, PROOF			
17-17656	17-17657	17-17660	17-17661	5-17146	5-17503	9-16429	9-17479
17-17662	17-17800	17-17865	17-17969	11-19677	12-17370	17-16429	17-17146
17-17970	17-17971	17-17972	17-17973	17-17368	17-17370	17-17479	17-17503
17-17982	17-17983	17-17984	17-17985	17-19677	18-16429	18-17517	
17-17986	17-17987	17-17988	17-17989	TEST, SYSTEM OPERABILITY			
17-17990	17-17992	17-17993	17-17994	9-17352	9-18138	9-18283	9-18363
17-17995	17-17997	17-18003	17-18040	9-18982	11-18391	12-18138	17-17356
17-18057	17-18138	17-18139	17-18140	17-18138	17-18139	17-18153	17-18391
17-18143	17-18144	17-18145	17-18146	18-18982			
17-18147	17-18148	17-18149	17-18151	TESTABILITY			
17-18152	17-18153	17-18157	17-18159	17-17133			
17-18160	17-18161	17-18165	17-18166	TESTING			
17-18167	17-18168	17-18169	17-18307	4-18348	5-18089	5-18091	6-18195
17-18317	17-18331	17-18332	17-18339	7-18195	7-18228	7-18346	7-18348
17-18340	17-18391	17-18434	17-18443	7-18512	7-18579	7-18580	7-18586
17-18445	17-18446	17-18447	17-18767	8-18195	11-17021	11-18090	12-18228
17-18922	17-18926	17-18927	17-18928	12-18586	12-18952	14-18409	14-18413
17-18929	17-18934	17-18978	17-18979	14-18414	17-17961	17-17983	18-18089
17-18980	17-18981	18-16492	18-16493	18-18952			
18-17061	18-17525	18-17655	18-17850	THALLIUM			
18-17852	18-17854	18-17855	18-17948	11-17053			
18-17979	18-17991	18-17996	18-18057	THEORETICAL INVESTIGATION			
18-18308	18-18935	18-18982		6-17038	6-17039	6-17040	6-17042
TECTONICS				6-17043	6-17044	6-17045	6-17070

6-17071	6-17072	6-17073	6-17074	TRITIUM			
6-17075	6-17076	6-17079	6-17081	3-17373	14-17511	14-17550	14-17816
6-17082	6-17083	6-17084	6-17085	15-16075	15-16978	15-17335	15-18170
6-17086	6-17087	6-17089	6-17245	15-18386	17-16929	17-17373	17-17511
6-17246	6-17331	6-18718	6-18771	17-18385	17-18386		
7-17347	9-17043	9-17087	9-18035	TROPOSPHERE			
9-18172	9-18207	9-18360	9-18570	4-18271	14-16974	14-18412	15-18271
9-18571	9-18574	9-18597	9-18718	16-19271			
9-18771	9-18776	9-18777	9-18966	TSUNAMI			
9-18969				2-18796			
THERMAL ANALYSIS				TUNGSTEN			
3-16653	5-16490	5-17146	5-17452	6-17086	7-18353		
5-17454	6-16490	6-17331	8-16490	TURBINE BLADE, VIBRATION			
8-17361	8-17454	17-17146		5-19096	6-19096		
THERMAL CONSIDERATION				TURBULENCE, MECHANICAL			
5-18737	7-17327	7-18014	9-18968	16-18804			
11-17603	13-17327	14-17327	14-17428	TURBULENCE, STATISTICS			
15-18863	17-18737			16-18495	16-18806		
THERMAL EXPERIMENT				TURKEY POINT 3 AND 4			
8-17037				18-18163			
THERMAL INSULATION				UHTREX (ULTRA HIGH TEMP. REACTOR EXPERIMENT)			
11-17051	11-17055	11-17604	11-18137	6-18203	6-18525	9-18203	
17-16768	17-17055	17-17363		UNION OF SOVIET SOCIALIST REPUBLICS			
THERMAL MECHANICAL EFFECT				9-18734	14-17878	14-17879	14-17902
5-18091	6-17089	11-17604		14-17903	14-17904	14-18234	14-18235
THERMAL NEUTRON				14-18236	14-18237	14-18408	14-18409
6-16984	9-16984	9-18367	9-18967	14-18410	14-18411	14-18412	14-18413
9-18974	15-17430			14-18414	14-18415	14-18416	14-18417
THERMAL POLLUTION				14-18418	14-18419	14-18543	15-17478
1-18528	4-18472	14-18508	15-18392	15-18062	15-18235	15-18543	16-17904
15-18393	17-18508	18-18392	18-18393	17-17387	17-17477	17-17563	17-18734
THERMAL PROPERTY				18-19191			
4-17448	5-17349	5-17448	5-17453	UNITED KINGDOM			
5-18186	6-17448	6-17453	8-17453	1-17559	1-18017	3-17965	5-17670
8-18186				6-17670	9-18964	11-18638	11-18639
THERMODYNAMICS				12-17559	12-18952	14-17559	14-18550
4-17448	4-18285	4-18987	5-16382	14-18553	15-16946	15-17486	15-18220
5-17448	5-17453	6-16382	6-17448	15-18546	15-18550	15-18553	15-19766
6-17453	7-18242	7-18251	7-18987	17-17151	17-18468	17-18469	18-18952
8-17453				UNITED STATES			
THICKNESS				1-17571	9-18622	9-18715	9-18716
11-17814				9-18717	14-18403	15-16946	
THORIUM				URANIUM			
5-17084	6-17244	6-17245	6-17246	6-16988	7-16924	7-17325	7-17374
6-17247	7-16924	12-16924	14-17888	7-18182	7-18185	7-18190	7-18192
14-18232	14-18234	14-18410	15-17888	7-18511	8-17018	8-17037	8-17362
15-18074	18-17342			8-18188	8-18189	8-18190	9-18367
THREE MILE ISLAND (PWR)				12-16924	12-17018	12-18192	13-17374
2-18731	5-18729	9-18730	16-18731	13-18192	14-17011	14-17011	14-17048
18-18728	18-18729	18-18730	18-18731	14-17058	14-17888	14-18232	14-18234
TITANIUM				14-18236	14-18254	14-18410	14-18547
4-18513	7-17315	7-18513	8-17362	14-18564	15-16946	15-17011	15-17011
TOPOGRAPHY				15-17888	15-18254	15-18547	15-19678
15-16945				17-17374			
TRACER, GAS				URANIUM CARBIDE			
7-18352				4-18185	7-18185	7-18239	8-18239
TRACER, GENERAL				18-18092			
7-18349	14-16951	14-17049		URANIUM DIOXIDE			
TRACER, RADIOACTIVE				5-17498	6-18765	7-17320	7-17322
7-18349	7-18352	7-18511	7-18580	7-17329	7-18187	7-18241	7-18287
14-17955	14-17956	15-16931	16-18495	7-18292	7-18511	7-18512	8-17359
TRANSFER FUNCTION				8-17361	8-18958	13-16930	14-18547
5-17573	5-17582	5-19095	6-16489	15-18547	17-17563	18-17498	18-18092
6-17035	6-17045	6-17132	6-17573	18-18304	19-17329		
6-17582	6-18132	6-18275	6-18278	URANIUM HEXAFLUORIDE			
6-18532	6-18771	6-19095	8-17582	3-17964	10-17935	10-17936	
9-16999	9-17035	9-18132	9-18172	URANIUM OXIDE			
9-18360	9-18571	9-18771	9-18777	6-17043	6-17501	7-10107	9-17043
TRANSPORT PROPERTY				18-17501			
4-18987	7-18987	14-18071	15-18071	URANIUM-233			
TRANSPORT THEORY				6-17245	6-17247		
7-18514	16-18626			URANIUM, NATURAL			
TRANSPORTATION AND HANDLING				6-18741	9-18741	14-17424	14-17888
1-13351	1-17559	1-17963	3-16653	14-18254	15-17424	15-17888	15-18254
3-16928	3-17373	3-17954	3-17963	USAEC (U.S. ATOMIC ENERGY COMMISSION)			
3-18218	7-17975	12-17559	13-17954	1-17567	1-17695	1-17912	1-18554
14-17048	14-17049	14-17559	15-18218	5-17498	14-18260	14-18262	15-18260
15-18088	17-17368	17-17373	17-17966	15-18262	15-18554	18-17498	
17-17967	17-17975	19-16928		VALVE			
TRANSURANIUM PROGRAM				5-17534	5-18935	6-17534	9-16429
3-16927	11-16927	13-16927		9-17513	9-17654	9-18677	10-17513
TREAT (TRANSIENT TEST REACTOR FACILITY)				11-14620	11-18391	12-14620	12-17370
6-18195	7-18195	8-17361	8-18195	17-16429	17-17370	17-17513	17-17534
TRIGA (TRAINING REACTOR, ISOTOPES, G.A.)				17-17654	17-17868	17-18391	17-18677
9-17855	9-17857	9-18435	9-18507	17-18924	18-14620	18-16429	18-18002
14-17982	17-17512	17-17540	17-17598	18-18935			
17-17602	17-17652	17-17661	17-17857	VAPOR, VAPOR PRESSURE			
17-17982	17-17983	17-17984	17-17985	7-18251			
17-18332	17-18435	17-18507	17-18931	VBWR (VALLECITOS BOILING WATER REACTOR)			
18-17325	18-17855	18-17948	18-17979	17-19030			
18-18309	18-18975	18-18984		VENTILATION SYSTEM			

7-18582	7-18586	11-18440	11-18440	WASTE TREATMENT, FIXATION			
12-18582	12-18586	15-18386	17-18386	14-16947	14-17289	14-17428	14-17520
17-18440	17-18440	18-17525	18-18002	14-17550	14-17690	14-17693	14-17878
VERMONT YANKEE				14-18043	14-18070	14-18081	15-18070
1-17874	2-17874	14-18932	17-17874	WASTE TREATMENT, GENERAL			
18-18312	18-18314	18-18932		14-17690	14-17693		
VESR (VALLECITOS EXP. SUPERHEAT REACTOR-ESADA)				WASTE TREATMENT, LIQUID			
7-18922	9-17005	17-17992	17-17993	14-16947	14-17432	14-17689	14-17879
17-18922	18-17461			14-18070	14-18081	15-17432	15-18070
VIBRATION				WASTE TREATMENT, SOLID			
5-17940	5-17942	9-18717	17-17150	14-17058	14-17428	14-17432	14-17878
17-17870	17-17940			15-17432			
VIBRATION ANALYSIS				WATER BOILER			
2-17615	2-17625	2-18515	2-18516	9-17646	17-17509	17-17591	17-17646
2-18517	2-18540	2-18755	5-19096	18-17850	18-17851	18-17852	18-17853
6-19096				18-17854			
VOID COEFFICIENT				WATER POLLUTION			
5-17529	5-17670	6-17043	6-17085	14-18071	15-18071		
6-17089	6-17245	6-17529	6-17539	WATER TREATMENT			
6-17565	6-17670	6-18195	7-18195	7-18214	14-17879		
8-18195	9-17043	9-18362	17-17539	WATER VAPOR			
WASHOUT				7-18225	7-18475	7-18510	7-18511
14-17009	14-18631	14-18707	15-17009	7-18588	8-17564	14-17816	
15-18496	16-18496	16-18631	16-18707	WATER, DRINKING			
16-18779				14-17288	14-17906	15-16973	15-17288
WASTE DISPOSAL, ATMOSPHERIC				15-17291			
13-16930	14-17432	15-17432		WATER, GENERAL			
WASTE DISPOSAL, ECONOMICS				5-17610	5-17611	7-17328	8-17357
14-16951	14-17550	14-17690	14-17900	11-17610	11-17611	14-18544	14-18562
WASTE DISPOSAL, GAS				15-16945			
14-17550	14-18068			WELDING			
WASTE DISPOSAL, GENERAL				11-16965	12-17350	15-16761	17-16761
1-17559	1-17695	11-17020	12-17020	17-17350	17-17868	18-16965	
12-17559	13-16930	14-17020	14-17289	WELDS			
14-17559	14-17689	14-17690	14-17693	11-17061	11-17605	17-17061	18-17061
14-17900	14-18206	15-16948	15-16976	WIND PROFILE			
18-17519	18-18306			16-18626	16-18804		
WASTE DISPOSAL, HYDRAULIC FRACTURING				WIND STATISTICS			
15-18042				2-18731	16-18709	16-18731	16-18806
WASTE DISPOSAL, LIQUID				18-18731			
9-17508	14-16951	14-17011	14-17288	WINDSCALE AGR (UK)			
14-17511	14-17523	14-17689	14-17900	17-17459			
14-18043	14-18081	14-18135	14-18136	X-RAY			
15-16946	15-17011	15-17288	15-18042	14-18072	15-16944	15-16958	15-17031
15-18135	15-18136	17-17508	17-17511	15-17032	15-17427	15-17430	15-17431
17-17523				15-17445	15-17485	15-18072	15-18261
WASTE DISPOSAL, OCEAN				15-18749	15-18843	17-17445	
14-16949	14-16951	14-18070	14-18071	XENON			
14-18136	14-18409	14-18550	15-16946	4-18513	6-17155	6-18963	7-17320
15-16949	15-18070	15-18071	15-18136	7-17324	7-17328	7-18216	7-18512
15-18550				7-18513	7-18579	7-18583	9-18157
WASTE DISPOSAL, RIVER				9-18503	9-18538	9-18574	9-18963
14-16949	14-17511	14-18070	14-18071	11-17324	12-18583	17-17155	17-17521
14-18136	14-18932	15-16946	15-16949	17-18157			
15-18070	15-18071	15-18136	15-18392	XENON OSCILLATION			
15-18393	17-17511	18-18392	18-18393	5-16940	6-17071	6-17072	6-17497
18-18932				6-18963	9-18963	11-18962	17-17497
WASTE DISPOSAL, SALT				18-18092	18-18093	18-18962	
14-17550	14-17693			YTTRIUM			
WASTE DISPOSAL, SOLID				14-18070	15-18070		
14-16947	14-17048	14-17520	14-17550	YUGOSLAVIA			
14-17689	14-17693	14-17900	14-18041	18-17305			
14-18043	14-18081	15-16946	15-18041	ZINC			
WASTE DISPOSAL, TERRESTRIAL				14-16949	14-18070	14-18072	14-18562
14-17878	14-17900	14-18041	15-16946	15-16949	15-16976	15-18070	15-18072
15-16948	15-18041	15-18042		ZIRCALOY			
WASTE HANDLING				5-16637	5-17442	5-17498	5-18089
3-17964	14-17048			7-18014	8-16637	8-17361	8-17442
WASTE MANAGEMENT				8-18442	11-17059	11-18442	17-17140
14-17048	14-17428	14-17432	14-17520	17-17645	17-18442	17-18977	17-18979
14-17550	14-17689	14-17690	15-17432	18-17498	18-18089	18-18977	
17-17356				ZIRCONIUM			
WASTE SOURCE AND TYPE				4-18513	5-17811	7-18292	7-18513
14-17048	15-16948			8-17811	11-17811	14-17426	14-18550
WASTE STORAGE				15-17489	15-18550	16-17489	17-18468
14-17048	14-17690	14-18043		ZPR 3 (ANL ZERO POWER REACTOR)			
WASTE TRANSPORTATION				1-17088	6-17008	6-17038	6-17088
14-17428	14-17432	14-17550	14-18041	6-18766	9-18766		
15-17432	15-18041			ZPR 6 (ANL ZERO POWER REACTOR)			
WASTE TREATMENT, ECONOMICS				1-18762	6-18762		
14-17550				ZPR 9 (ANL ZERO POWER REACTOR)			
WASTE TREATMENT, EQUIPMENT				1-18761	6-18761		
14-18043							

ABBEY F	7-18227			9-18574				
ABDON R				ASTLEY ER				
9-18712				18-17296				
ABDULLAH SA				ASTRAKHAN BV				
15-18557				15-18060				
ABRAHAM K				ATHERTON DR				
15-18067				9-18971				
ACKER LW				ATTERSURY TJ				
4-17577	5-17577	6-17577		5-19090	11-19090			
ACKERMAN AJ				ATTIX FH				
1-17875	17-17875			15-16964				
ADAIR R				AUGUST C				
15-17335				6-18195	7-18195	8-18195		
ADAMS CH				AUNAP AK				
6-18282				14-18234				
ADAMS JA				AUSKERN A				
14-18232				4-18513	7-18513			
ADNAMS DJ				AUSSET R				
9-18711				14-16951				
AGERON P				AUTY DB				
9-18974				14-17289				
AIKENS A				AVERYANOX PG				
4-16971				17-17477				
AKCASH 47				AYEP JE				
6-17071				18-17934				
AKHTAR P				AYRES JA				
6-17071				12-17566	14-17566			
AKINO K				BABALA D				
2-18516				6-17036				
AKIYA M				BABULEVICH EN				
11-17812				17-17387				
ALBEE AL				BACHOFNER E				
2-17633				7-18225				
ALEXANDER RR				BACK LH				
15-18846				5-18953	5-18955			
ALEXANDER WK				BAER R				
17-17140				18-17304				
ALLARD EC				BAERS B				
5-16940				6-18526				
ALLEN CR				BAFFIGO V				
2-17627				7-17320				
ALLIGOOD FM				BAILEY WE				
6-17155	17-17155			4-18284	7-18284			
ALMENAS KK				BAIRD QL				
1-18761	6-18761			6-18533	6-18766	9-18766		
ALONSO A				BAKACS-POLGAR E	15-18076	16-18076		
14-18551	15-18551			14-18076				
ALUJEVIC A				BAKER L				
5-17639	6-17639			7-18188	7-18189	7-18190	8-17037	
AMESZ J				8-18188	8-18189	8-18190		
11-17057				BAKIII IN VN				
ANCARANI A				16-18495				
1-18762	6-18762			BALDWIN MV				
ANDERSON CA				6-17043	9-17043			
6-17045	6-18223			BALL GL				
ANDERSON HF				18-18304				
15-16978				BALLEW GL				
ANDERSON JL				17-18015				
9-17352	9-17560			BARANOV VI				
ANDERSON LE				14-18408	14-18410			
18-17517				BARBER DE				
ANDERSON SD				15-16960				
9-18921				BARCHUK IF				
ANDERSON WJ				9-18734	17-18734			
11-18090				BARGHUSEN JJ				
ANDERSSON AJ				8-17584	12-17584	13-17584		
9-18591				BARKELY HR				
ANDREW R				11-17658	17-17658			
15-16948				BARKLEY HR				
ANNO JN				9-17833	10-17873	11-17873	17-17833	
9-18034				17-17873				
ANSEL IN F								

BASHAM SJ				7-18241	
17-17148				BLAINE RA	
BASSO C				6-17085	6-18535
5-16382	6-16382			BLAKE VE	
BATCH JM				4-16970	
5-18209	5-19091	6-19091	11-18209	BLAKELY JP	
12-18209				7-18239	8-18239
BATES AE				BLALOCK TV	
9-17130	17-17130			9-18430	
BAUGH JO				BLANCHARD RL	
15-17489	16-17489			15-18221	
BEAR JL				BLANCO RE	
6-16987				14-17550	
BEARD SJ				BLANKENSHIP FF	
14-17900				7-18286	17-18286
BEATTIE JR				BLATZ H	
7-18228	12-18228			1-17570	
BECK JW				BLEEKER W	
6-16762	18-16762			15-19496	16-18496
BECKER KM				BLEY WN	
5-17496	6-17496			18-17292	
BECKER W				BLISS HE	
5-16636	6-16636			6-18524	
BEHNKE WB				BLOCK L	
11-19677	17-19677			15-18073	
BEIDELMAN JA				BLOMEKE JO	
17-17145				14-17550	
BELL CG				BLUESTEIN I	
5-16967	11-16967			9-18715	
BELIAEV LI				BLUM JM	
14-18413				14-18372	19-18372
BEN-DAVID G				BLUMBERG R	
15-18084				12-17350	17-17350
BENARI W				BOEDEGE R	
15-18084				11-18635	
BENNETT RA				BOGART L	
6-18766	9-18766	18-17295		1-17874	2-17674 17-17874
BENOIT P				BOGGIO G	
9-18364				11-17604	
BENOIT R				BOHL H	
9-18772				9-17951	
BENTON EV				BOHME R	
4-18552	15-18552			6-17565	
BERGLES AE				BOISSON H	
5-19093	6-19093			8-17018	12-17018
BERK H				BOKOVA GS	
15-18073				14-18236	
BERKMAN SC				BOLAND TJ	
2-18796				9-18921	
BERLAND RF				BOLSTAD JW	
6-18535				17-17502	
BERLIN B				BOND GW	
8-17357				11-17020	12-17020 14-17020
BERNSEN SA				BONILLA CF	
1-17569				9-18362	
BERRY DA				BONNET C	
7-18014	7-18518			5-17452	
BERRY WE				BOOS H	
7-18014	7-18518			1-17963	3-17963
BERTINI A				BOOTH AH	
6-18305	17-18305			14-18010	15-18010
BETT KE				BOSCH J	
11-18023				15-18177	
BHALLA CP				BOUNTON AR	
5-16940				6-18533	
BHAT IS				BOURGEOIS J	
14-17425	15-17425			1-17572	
BIANCHI G				BOURNE JG	
9-18968				5-19093	6-19093
BIBERGAL AV				BOVARD P	
18-19191				14-18845	
BIGGS RR				BOWKETT KM	
15-17135	17-17135			7-18353	
BILLARD F				BOYD FC	
7-18226				18-17449	
BILLINGHAM J				BOYD RS	
4-18915				17-17585	
BINGLE JD				BOYETT RH	
7-18188	7-18189	7-18190	8-17037	14-17012	15-17012
8-17361	8-18188	8-18189	8-18190	BRADY AG	
BINNERTS WT				2-18540	
14-18077				BRAMFITT AC	
BIRD PM				17-18469	
14-17882	14-18009	14-18012	15-17030	BRAUN RG	
15-17031	15-17032	15-17445	15-17882	15-18039	
17-17445				BREIDENBACH B	
BIRNEY KR				17-18318	
10-17672	17-17672			BRIAN PL	
BIXEL DA				7-18246	11-18246
17-17148				BRICKSTOCK A	
BLACKADDER WH				6-18521	

BRISCOE OG				7-18213	
14-18259	15-18259			CARROLL RM	
BRODSKY A				7-18587	
1-17910				CARSTAIRS RL	
BRODY TP				9-18964	
7-17684				CARTAN FO	
BROWS CD				7-17321	
9-18622				CARTER MW	
BROOKS HR				14-18037	15-18037
7-17323				CARUSO E	
BROOKS W				15-16980	
18-18142				CARVER MB	
BROOKS WL				5-17532	6-17532
17-18318				CASALI F	
BROWN B				6-18741	9-18741
15-16944				CASINI G	
BROWN CL				6-18741	9-18741
17-17151				CASSELLS L	
BROWN GN				17-17184	
17-17150	17-17868			CASTLEMAN AW	
BROWN J				7-17325	7-18511
17-17157				CATLING E	
BROWN JR				17-18468	
6-17074	9-17006	9-18207	17-17457	CAUTIUS W	
BROWN KW				17-17392	17-18735
17-17661				CENERINI R	
BROWN PS				6-18741	9-18741
14-18781	16-18781			CHADDERTON LT	
BRUWN SH				7-18257	
3-17869	17-17869			CHAFFARD JP	
BROWN WF				9-18974	
5-17495				CHALOT A	
BROWNELL GM				18-17395	
15-18844				CHANDLER RP	
BROWNING WE				14-18258	15-18258
7-17322				CHAPELOT A	
BRUHN G				9-18712	
6-17565				CHAPPELLIER A	
BRUNE JN				8-17019	12-17018
2-17627				CHARETON H	
BRUNGS WA				9-18206	
14-18562				CHARLESWORTH FR	
BRYAN FA				1-18017	
14-17883				CHAUDESAIGUES J	
BRYNSVOLD GV				11-17607	
9-18363				CHAZAL G	
BUCHHAVE P				9-16942	
15-16955				CHERRY BH	
BUCHHOLZ H				17-18218	
7-18289				CHEZEM CG	
BUHL AR				6-16985	
9-17003				CHIEN JP	
BUNCE RW				9-16999	
17-17145				CHILENSKAS AA	
BUNCH DF				7-18287	
15-13660				CHITALE PV	
BUNTAIR RE				15-17284	
17-18715				CHOPRA AK	
BUONI FB				2-17615	
5-17146	17-17146			CHRISTENSEN PS	
BURDICK EE				6-17035	9-17035
17-17156				CHRISTIANSON RC	
BURNS DJ				17-17150	17-17868
11-18023				CHUBB W	
BURNS RS				4-18185	7-18185
3-16928	19-16928			CLANCY BE	
BURRELL MD				6-17082	
4-16969	14-16969			CLARK L	
BURRINGE R				3-17869	17-17869
2-17624				CLARK ML	
BUSCH CC				7-18216	
11-17021				CLARK RM	
BUTLER DK				6-17043	9-17043
18-17934				CLARK TG	
BYRD JS				14-17012	15-17012
9-18174				CLAUDSON TT	
CADY KB				4-18240	
6-17973				CLAXTON KT	
CALLEY HW				4-18194	5-18194
15-16760	17-16760			CLEMEDSON CJ	
CALVERI CK				4-17504	
14-18259	15-18259			CLIFFORD JC	
CAMBE H				4-18291	7-18291
9-18206				CLOUD WK	
CAMERON JR				2-17635	
15-17890				COE HH	
CANTEL J				4-17577	5-17577
14-16951				COHEN N	6-17577
CARLSON F				15-18073	
8-17357				COHEN S	
CARNUTH W				18-18449	

COLEMAN LF				15-18338		
7-18290				DAVIS RE		
COLEMAN R				7-17311		
15-16948				DAVISGN HW		
COLLINS JH				9-18035		
15-17136	17-17136			DE BARROS MG		
COLLINSON AJ				15-16973		
15-18546				DE BLUST E		
COLLVER MM				9-18772		
4-18552	15-18552			DE FRANCESCHI L		
COLPITTS CW				15-18556		
5-17529	6-17529			DE WITT RB		
COMAR CL				15-17135	17-17135	
15-18846				DEAGAZIO AW		
COOK JL				15-17887		
6-18531				DEBIAR A		
COOK KL				8-17018	12-17018	
2-17617				DEBRIE G		
COOPER JA				1-17303	9-17303	
16-18629				DELCHAMBRE PH		
COOPER LJ				5-17257	6-17257	
17-18015				DEMARMELS P		
COOPER WM				9-17007		
9-17463	17-17463			DEMUTH HB		
CORBETT BL				6-18203	9-18203	
7-17369	17-17367	17-17368	17-17369	DENISOVA EA		
CORDANI G				15-17478		
6-18741	9-18741			DERBENEVA NN		
CORNELISSENS EC				4-17505		
7-18229				DEREMER RK		
CORNUDET A				6-17497	17-17497	
9-16942				DESNEIGES P		
COTE O				1-17303	9-17303	
16-18780				DEVELL L		
COTMAN K				7-18225		
15-16956				DEVILLE A		
COTTRELL WB				17-17946		
5-17193	7-17193	7-18990	11-17193	DEXTER AH		
CREEK KO				7-18191		
9-18369				DIAGUILA AJ		
CREMEANS GE				18-17343		
7-18014	7-18518			DICKERMAN CE		
CRESPI MA				6-18195	7-18195	8-18195
11-17052				DIERCKX R		
CRESSWELL TJ				9-17551		
17-16989				DIETZ CR		
CRESTA M				17-16056		
15-16961				DITTO SJ		
CROOK GH				9-17351		
15-18039				DIVIS AJ		
CROOK MJ				17-18015		
6-16984	9-16984			DOAN RL		
CROSBY JR				1-17567		
4-18594	9-18594			DOE CB		
CROSLEY PB				9-17479	17-17479	
11-17814				DOERNER RC		
CROSSLEY DA				1-18761	6-18761	
14-17956	14-18184			DOMBRA AH		
CROWN PL				17-17137		
17-18595				DORNER H		
CROZAZ G				11-17051		
14-16950	15-16950			DOSHI GR		
CUBITT RL				14-17908		
17-17464				DOUSSET M		
CULKOWSKI WM				15-17333		
16-18201				DOWNS WL		
CULLEN TL				14-18547	15-18547	
14-17888	15-17888			DRAPER WE		
CUMMINGS GE				7-17125	15-17125	17-17125
17-17502				DREW R		
CUTHBERTSON JD				15-18073		
9-18470	17-18470			DREW RT		
DAHL AH				14-17888	15-17888	
14-17424	15-17424			DREWRY HS		
DAHLBERG RC				12-16470	17-16470	
6-18963	9-18963			DRISCOLL MJ		
DAHLHEIMER J				6-18524		
5-17127	17-17127			DROUILLARD TF		
DALLAS T				11-17605		
18-17343				DUCE FA		
DANEK WL				7-17321		
9-18808	14-18808	16-18808		DUCKIN VE		
DANSGAARD W				4-17505		
15-18496	16-18496			DUERRE KH		
DARGIS AA				6-18203	9-18203	
9-18808	14-18808	16-18808		DUFFEY RB		
DARMOHRAV GF				6-18276		
11-17128	17-17128			DUFFY AR		
DAVIES AR				5-19090	11-19090	
6-18521				DUGGAN MJ		
DAVIS PS				15-18220		

DUNCAN DE					4-17577	5-17577	6-17577
17-16056					FERRIS BG		
DUNN EE					15-18848		
12-17370	17-17370				FERRY PB		
DUNNING GM					11-18090		
1-18554	15-18554				FICHTER WB		
DURAND-SMET R					11-18022		
6-17565					FIELD FR		
DYER GH					9-18029		
11-17020	12-17020	14-17020			FINEMAN P		
EAGAN JL					14-17690	14-17693	
17-17502					FINKEL AJ		
EBERT OD					15-18075		
17-17152					FINN HF		
ECKSTEIN HP					17-17502		
9-17583					FIRST MW		
EDELMANN M					7-16406		
6-17441					FISCHER DF		
EDWALL B					8-17362		
8-17357					FISH BR		
EDWARDS J					14-17012	15-17012	
9-17463	17-17463				FISTEDIS SH		
EGERLAND WU					11-16966		
14-17881					FITZPATRICK DE		
EGGERS B					14-18259	15-18259	
5-16953	6-16953				FLANAGAN CA		
EGOROV IM					6-17016	9-17016	
14-18543	15-18543				FLEISCHMANN AW		
EHRLINGER M					15-18749		
9-18773					FLETCHER W		
EIRER RJ					14-18833		
5-19090	11-19090				FLETCHER WD		
EISENBUD M					7-17124	17-17124	
15-18073					FLICKINGER RB		
ELLIOT MN					6-17043	9-17043	
14-17289					FOELL WK		
ELLIOTT EA					6-17565		
4-18594	9-18594				FOKIN AV		
ELMIGER RA					14-17878		
4-18028	9-18028				FOLSOM TR		
EMELYANOV IY					9-17952		
9-18033					FOMIN YK		
EMMA LC					14-17878		
14-18043					FONTANA MH		
ENDERS JW					7-18288	11-18288	
14-18041	15-18041				FORD WE		
ENGEL H					9-17000		
18-17472					FORMICHEVA VI		
ENGELMANN P					14-18236		
6-17565					FORRESTER RJ		
ENGELMANN RJ					17-17156		
14-18631	16-18629	16-18631	16-18779		FORSYTH RS		
ENGLAND TR					7-18241		
6-17497	17-17497				FOSTER KE		
ENGLEKIRK RF					7-18589		
2-17625					FOX JC		
ENGSTROM SL					5-18209	5-19091	6-19091 11-18209
6-18766	9-18766				12-18209		
EPLER EP					FRAGOMEN AT		
7-18208	9-17130	9-18208	17-17130		11-17062		
EPSTEIN B					FRANCO-FERREIRA EA		
2-17620					17-17499		
ESSIG TH					FREEDMAN HW		
15-16976					2-17619		
ET AL					FREJAVILLE G		
8-17361	17-18361				15-16975		
ETHERINGTON EW					FRENCH JE, ET AL		
9-17938					7-18583	12-18583	
EVANS RB					FRENCH RL		
7-18514					7-17323		
EVERNDEN JF					FRIO AS		
2-17614					14-18069		
EWING D					FRIEDLAND AJ		
4-18915					5-17167	17-17167	
FACKELMANN JM					FRIEND A		
4-18185	7-18185				15-16948		
FARMER FR					FRISCH W		
1-18210	2-18210	5-18210			6-18713	9-18713	18-17396
FARRER DN					FRUNZE VV		
15-18039					17-17477		
FEATES FS					FRYER DR		
7-18352					1-18017		
FEDORENKO RP					FUJIE H		
9-18574					5-17471	12-17471	
FEDUKOV AF					FUKUDA T		
14-18419					7-18512		
FEDOROV KN					FULS GM		
14-18409					5-17811	8-17811	11-17811
FELTZ DE					FUQUA PA		
17-17133					15-18840		
FENN DB					FURUKAWA K		

4-18344	7-18344			GRACIE PS			
GABROVSEK Z				11-17059			
15-16956	18-17305			GRAFFMAN S			
GALL WR				15-18086			
11-17056				GRAHAM ED			
GALLAGHER EV				14-17048			
5-17610	5-17611	11-17610	11-17611	GRASS G			
GALLETLY RD				5-17533	6-17533		
4-18594	9-18594			GRAUBY A			
GALVAO JP				14-18845			
15-16973				GREBENNIKOV KV			
GAMBILL WR				9-18033			
5-17354	6-17354			GREEBLER P			
GANGULY AK				1-18536	6-18536		
14-17425	15-17425			GREEN JH			
GARCIA R				15-18269	16-18269		
4-18285				GREEN RE			
GARELIS E				5-17529	6-17529		
6-17044	6-18523	9-17005		GREENFIELD MA			
GARLAND JA				11-17054			
7-18215				GRIFFIN RF			
GARNER RJ				1-17569			
14-18549				GRIGORYEV YG			
GARRARD CW				4-17505			
17-17871				GRIMES WR			
GARRETT AW				7-18286	17-18286		
17-16056				GROVER GM			
GAST K				5-17669	6-17669		
8-18634	11-18634			GRUEBELICH FT			
GEDEONOV LI				18-17517			
14-18413				GRUNDY RD			
GEMMELL W				14-18264	15-18264		
6-17244				GUHL H			
GENCO JM				11-17051			
7-18014	7-18518			GUILLEMARD B			
GEORGE CH				9-16942			
9-18370				GUSAROV II			
GEREVINE T				14-18237			
7-17320				GUSKOVA AK			
GIBBONS JF				15-17478			
18-17517				GWINN DA			
GIBBY RL				3-17869	17-17869		
8-17359				HABERER G			
GILBERT WS				15-18085			
18-18736				HABERMANN FWA			
GINIER R				6-17565			
18-17395				HAEFELE W			
GIORDANO P				5-16953	6-16953		
9-18360	18-17396			HAGE KD			
GLASS FM				14-19781	16-18781		
9-17554				HAGEN DI			
GLICKSTEIN SS				14-18631	16-18631		
6-16762	18-16762			HAGIWARA T			
GLOEBEL B				2-17623			
15-17291				HAHN OJ			
GODFREY BE				6-17089			
15-18220				HAHS CA			
GODFREY TG				3-16927	11-16927	13-16927	
5-17349				HAINBERGER L			
GODFREY WL				14-17888	15-17888		
14-17900				HAKUNO M			
GODINHO MM				2-18517			
15-16973				HALL HJ			
GOETSCH AH				7-18509			
17-17145				HALL RS			
GOLOSTEIN C				6-18276			
9-17553				HALL SJ			
GOLDSTEIN R				14-18707	16-18707		
9-18972				HALLAN JB			
GOLLIHER KG				15-16972			
9-18366	15-18366			HALLER WA			
GONCHAROV VV				7-18349	14-18631	16-18631	
17-17387				HAMILTON GN			
GOOD EG				17-18733			
7-17329	19-17329			HAMILTON PM			
GOODMAN L				16-18805			
8-18744				HAMMITT FG			
GOODYKOONTZ JH							

15-18546				18-16925			
HARDIE RW				HOPKINS G			
6-18224				17-17157			
HARDY EP				HOPKINS GR			
14-17892				17-17457			
HARDY J				HORNE RE			
6-17084				6-17098			
HARTFIELD GL				HOSSAIN A			
6-17497	17-17497			15-18557			
HARTY H				HOWELLS GR			
5-18209	5-19091	6-19091	11-18209	17-17365			
12-18209				HOWEY GR			
HARVEY HO				17-17450			
14-18037	15-18037			HOWLEY JR			
HASSELL LO				15-18261			
7-18250	17-18250			HRANITZKY EB			
HATCH LP				15-18843			
14-18043				HSU C			
HATCH LP, ET AL				6-18277			
7-18584	12-18584			HUB KA			
HATTORI S				18-17934			
7-18510				HUDSON DE			
HAUBERMANN W				2-18755			
14-18079	15-18079			HUNT PS			
HAVERS JA				17-17953			
14-17047				HURLIMANN T			
HAWKER PA				9-17007			
5-17454	8-17454			HURT SS			
HAYS MT				17-17139			
15-18847				HUSSAIN M			
HEALY JE				15-18557			
5-19095	6-19095			HUZITA A			
HEATH CA				14-18267	16-18267		
9-18035				HWANG RN			
HEID KR				6-18291			
15-18840	15-18841			IANNI PW			
HELFRIKH F				18-17461			
18-17294				IGUCHI Y			
HELM FH				4-18344	7-18344		
1-18762	6-18762			ILIPETS DT			
HELMICK HH				9-18734	17-18734		
6-16985				INOMATA T			
HENLE RC				17-17469			
15-18841				IRVINE WH			
HERBST DA				9-18018	11-18018		
6-17153	9-17126	17-17126	17-17153	ISABELLA L			
HERMANS ME				9-18772			
6-17247				ISAKOV PK			
HESBOL R				4-17506			
7-18225				ISHIHARA T			
HESS AL				15-18219			
6-18766	9-18766			IVINS RO			
HETRICK D				0-17361			
6-18718	9-18718			JACKSON CN			
HETRICK DL				4-18267			
6-18528				JACOE PW			
HEUSENER G				14-17424	15-17424		
18-17396				JACQUIN JC			
WICKS BB				9-16942			
14-18272	16-18272			JAERSCHKY R			
HIKIDO K				18-17473			
9-18363				JAKEMAN D			
HILLARY JJ				6-17041	9-17041		
7-18227				JANES HB			
HILLIARD RK				2-17616			
7-18290				JANNI JF			
HODGKISS WS				4-17344			
4-18472				JASIAK J			
HOFFMANN HW				15-10050			
4-18987	7-18987			JEANNOT A			
HOFFHINE PA				9-18712			
9-18743				JEFFERIES DF			
HOFFMANN PL				14-18550	15-18550		
18-17295				JENNISON W			
HOLADAY DA				7-18216			
14-18254	15-18254			JERMAN RB			
HOLCOMB WF				9-18716			
14-17048				JOHANNKNECHT N			
HOLLADAY JH				18-17476			
9-18031				JOHNSON DB			
HOLLADAY PL				1-17912			
9-17893	10-17893			JOHNSON FG			
HOLM DM				12-18952	18-18952		
7-18193	11-18193			JOHNSON TL			
HOLROYD RA				15-16964			
9-18366	15-18366			JOHNSTON JE			
HOMNITZ C				14-18406	14-18407	15-18404	15-18405
2-17620				15-18407			
HOOKE R				JONCICH MJ			
7-17684				7-18350			
HOOKS KR				JONES RF			

6-17087	9-17087			KEVIN T			
JONKE AA				15-18461			
8-17584	12-17584	13-17584		KHAN AA			
JORDAN ED				14-17425	15-17425		
17-17587				KHANDKAR RN			
JUDGE FD				14-18212			
6-16987				KHITROV LM			
JUNG B				14-18408	14-18418		
15-18086				KIER PH			
JUNOD F				6-17087	9-17087		
6-18279				KINNE GC			
JUSTIN F				17-17870			
11-18636				KINNEIR JH			
JUTZE GA				5-17447	6-17447		
7-18589				KIRBY GJ			
KAHI I				5-17447	6-17447		
9-18966				KIRICHENKO VN			
KAMATH PR				14-18235	15-18235		
14-17425	15-17425			KIRSLIS SS			
KAMEMOTO Y				7-18286	17-18286		
7-18512				KIRSTOWSKY EC			
KAPIL AL				17-17499			
9-18970	15-18970			KITZES AS			
KAPLAN I				7-17124	17-17124		
6-18524				KJAERHEIM G			
KAPLAN S				9-13361			
6-18763				KLEPPER OH			
KAPUSTSIK A				3-16653	5-16967	11-16967	
9-18599				KLICKMAN AE			
KARAIAN E				6-17132	18-18304		
3-17869	17-17869			KLINDT KK			
KARAM RA				17-17499			
1-18761	1-18762	6-18761	6-18762	KLOVERSTROM FA			
KARDASHEV AV				18-18736			
14-18416				KNAPP RW			
KAROL IL				18-17517			
14-17904	16-17904			KNAPP WG			
KASER JD				1-18761	6-18761		
14-18081				KNAPP WJ			
KATO K				17-17163			
2-18517				KNIGHT GB			
KATO WY				15-17235			
1-18762	6-18762			KNOBLING KH			
KATZ YH				2-17474	17-17474		
15-16945				KNOPOFF L			
KAUFFMAN PE				2-17624			
14-18256	15-18256			KNOWLES DJ			
KAWAGUCHI O				9-17642	9-18031	15-17348	15-17642
7-18588				KNOX AE			
KAWAKAMI F				9-16943			
2-18517				KO YC			
KAWANO Y				9-16999			
12-18083	14-18083			KOCH RD			
KAY RE				15-18067			
5-17529	6-17529	6-18274	17-17484	KOCHENDORFER DB			
KAZACHKOVSKII OD				15-17290			
17-17563				KOHLBERG I			
KAZI AH				14-17901			
17-18318				KOKLYAROV KA			
KEOL RJ				14-18418			
7-18994				KONUMA S			
KEGEL GH				11-17812			
14-17888	15-17888			KOONTZ RL			
KEIGHTLEY WD				11-17054			
2-18755				KORENKOV IP			
KEIL A				15-18062			
15-18559				KORLYAKOVA EA			
KEIL AA				15-17478			
8-04716				KORMUSHKIN YP			
KEILHOLTZ GW				17-17477			
7-18586	12-18586			KORNEEV MI			
KELLER JH				5-17556	6-17556		
7-17321				KOVALYEV EE			
KEMMET LH				4-17505			
15-16760	17-16760			KGVANITS P			
KENNEY F				9-18596			
9-18740				KOVARSKII AP			
KENNEY GN				7-18579			
15-17890	15-17891			KOZLOV VF			
KENNISON RG				15-17430			
5-19096	6-19096			KRAMER W			
KERLIN TW				9-18739			
6-18275				KRASNOPEVISEV YV			
KERR GD				14-17904	16-17904		
15-18988				KREWER KH			
KERR WR				18-17396			
5-18089	18-18089			KREY PW			
KERSTEN JA				4-18271	15-18271	16-18271	
6-17247				KRISTAN J			
KESSLER G				15-16956			
18-17396				KRISTIAN K			

15-16959				LEGIN VR			
KRUGER P				14-18411			
16-18626				LEGRAND J			
KRUKONIS VJ				15-17333			
7-18246	11-18246			LEHMANN D			
KRUMBEIN AD				11-18633			
18-18142				LEIPUNSKII AI			
KUDRYAVTSEV AP				17-17563			
5-17537	6-17537			LEITH CE			
KUHN F				16-18494			
11-17053				LEITNAKER JM			
KUJAL B				5-17349			
5-17538	6-17538			LELAIT R			
KUJAL J				9-18712			
5-17538	6-17538			LELLOUCHE GS			
KUNCL LG				6-17072			
9-17126	17-17126			LEMANSKA M			
KURCZ-CSIKY I				6-17038	6-17039	6-17040	
14-18076	15-18076	16-18076		LEONI G			
KURODA PK				6-18537			
15-17489	15-17490	16-17489	16-17490	LEPPARD LB			
KUSOVNIKOV AS				15-18750	17-18750		
17-17477				LERDY C			
KUYPERS J				9-16942			
11-18641				LESHCHINSKII NI			
KUZICHEVA VS				12-19191			
14-17878				LESLIE DC			
KVASOV VA				5-17491	6-17491		
13-18080				LEVALLET H			
LA COUR CHRISTENSEN P				9-18206			
9-10598	10-18598			LEVI H			
LA PAROLA GL				14-17046			
6-18305	17-18305			LEVINE S			
LABLANS WN				17-17592			
15-18496	16-18496			LEVITZ M			
LACEY PG				14-18781	16-18781		
6-17014	9-17014			LEVY PW			
LACOURLY G				15-18064			
15-16961				LEWELLEN JW			
LACY PS				17-18642			
17-18642				LEWIS DS			
LADET J				17-17872			
9-18712				LEWIS WB			
LAFITTE R				11-16488	17-16488		
11-18633				LINDEKEN CL			
LAGIER TF				15-17287			
5-18529	6-18529			LINDEMAN AJ			
LAKIN RW				6-17076			
15-17287				LINDEMANN J			
LAMBERT FJ				14-17046			
12-17370	17-17370			LINDHE S			
LANE R				8-17357			
17-17157				LINK LF			
LANGWAY CC				18-17934			
14-16950	15-16950			LITTLE WW			
LAPSLEY AC				6-18224	18-17295		
7-18191				LLOYD RD			
LARK PD				9-18971			
7-17438				LOEWENSTEIN WB			
LARRIMORE JA				18-17934			
6-17083				LOGAN JE			
LARSON HJ				1-18508	14-18508	17-18508	
11-17128	17-17128			LONG EL			
LARSON HV				5-18989	17-17499	17-18909	
15-18840				LONG H			
LAURER G				7-17154	17-17154		
15-18073				LONG JK			
LAVIE JM				6-18766	9-18766		
1-17303	9-17303			LOPATIN SA			
LAVINE S				14-17903			
17-17591				LORENZ RA			
LAVRENCHIK VN				7-10292			
14-18412				LOTT SK			
LAWSON D				7-18350			
3-17965				LOVERIDGE BA			
LAZAREV AF				14-17288	15-17288		
14-18543	15-18543			LOWDER WM			
LAZAREV KF				14-18232			
14-18411				LOWEN W			
LAZORICK S				9-18035			
14-18781	16-18781			LUBY CS			
LEACH LJ				7-16924	12-16924		
14-18547	15-18547			LUDWIG JH			
LEBEDINSKY AV				16-18198			
4-17505				LUMB RH			
LEE H				6-17364	17-17364		
14-18542	15-18542			LUNDGREN DA			
LEE T				7-17347			
7-18214				LUPOLI P			
LEES EA				9-18968			
5-17498	18-17498			LYNN DA			

16-18198				MATTHEWS RL			
LYUBIMOV AS				6-17015			
14-17879				MATTHIESEN RB			
MA PY				2-17625			
9-16999				MATTY T			
MAAS LL				9-18740			
18-17295				MATUMOTO T			
MACK E				2-17628			
5-17452				MAUDERLY MC			
MACKLEY AD				17-18015			
17-17156				MAURER H			
MACMILLAN DB				5-17437	11-17437	12-17437	
6-17034				MAXEY WA			
MACPHEE J				5-19090	11-19090		
6-17364	17-17364			MAYINGER F			
MADELAINE G				5-17455			
7-18580				MAYNARD EA			
MADSHUS K				14-18547	15-18547		
15-16959	15-17429			MAYNOR HW			
MADSHUS, K				11-17021			
14-17009	15-17009			MAYS CW			
MAEKAWA T				9-18971			
7-18588				MAZOVKA NN			
MAGEE PM				15-18063			
5-17451	6-17451			MCCASLIN JB			
MAGNO PJ				15-16954			
14-18256	15-18256			MCCLURE JA			
MAHLUM DD				5-17492	6-17492		
4-16968	14-16968			MCCORD RV			
MAHONY TD				7-17369	17-17142	17-17367	17-17368
4-16968	14-16968	15-18840		17-17369			
MAIN GW				MCCORMACK JD			
1-18762	6-18762			7-18290			
MAKRA S				MCELIGOT DM			
9-18019				5-17451	6-17451		
MAKRANCZY J				MCELKINNEY J			
7-18590				17-17659			
MALAKHOV SG				MCELWAIN WH			
14-17904	16-17904			1-18782	18-18782		
MALHOTRA VM				MCFARLAND AR			
11-17603				16-18268			
MALINAUSKAS AP				MCGILL AA			
7-18514				18-17343			
MALMBERG T				MCGILL IS			
18-17396				6-16984	9-16984		
MALYKHIN VM				MCGRATH EJ			
15-17334	15-18061			6-18532			
MANCUSO TF				MCGREEVY G			
1-17910				7-17312			
MANDEL H				MCINTYRE JR			
5-19094	6-19094	17-19094		14-18707	16-18707		
MANDL V				MCLEAN TL			
9-18772				9-17561			
MANGAN D				MCVEAN RL			
6-18963	9-18963			6-18766	9-18766		
MANOLL RE				MECHAM WJ			
9-18717				18-17934			
MAR PG				MEEM JL			
15-18013				5-17127	17-17127		
MARCHAL A				MEL NIKOV NP			
9-17551				11-16965	18-16965		
MARKARIAN C				MELANDRONE G			
15-16948				9-18772			
MARKELOV BA				MELSA JL			
4-17505				9-18776	9-18777		
MARKILLIE WR				MEMEGHETTI D			
9-18427				18-17934			
MARKS S				MENON KK			
15-18840				14-16974			
MARLOWE OJ				MERK I			
9-17951				14-17283	15-17283		
MARTIN RD				MERK W			
9-17141	17-17141			18-17396			
MARTIN WH				MERLE JP			
5-18186	8-18186			9-16942			
MARIYAMA M				MERRILL M			
14-17058				17-17157			
MASON EA				MESSICK RR			
18-17292				15-18088			
MASON PM				MEYER P			
17-17133				9-17005			
MASTERS CF				MIDDLEBROOK H			
6-17073				17-18469			
MATHEWS RL				MIHALCZO JT			
8-17564				6-16988			
MATHIS A				MILES FW			
9-18360				12-17353	13-17353		
MATTHEWS JB				MILLER CE			
7-18475				7-17322	15-18075		
MATTHEWS JD				MILLER CF			
6-18278				14-18542	15-18542		

MILLER DR				5-17540	6-17640	
18-17514				MUENCHOW HO		
MILLER JK				18-17355		
5-17302	9-17302	17-17302		MUNDY JN		
MILLOT JP				4-18354		
5-17257	6-17257			MUNKELWITZ HR		
MILLS RM				7-18511		
17-16056				MURLEY TE		
MINER D				6-17441	6-18527	
7-17124	17-17124			MURPHY LM		
MIRONE M				2-17536		
17-18341				MURRAY HS		
MISHIMA J				9-18777		
7-17327	13-17327	14-17327		MUSIALOWICZ T		
MIX PE				15-16958	15-18050	
9-18029				MUTH H		
MIYAKE M				15-17291		
16-19709				NAIDU JR		
MIYAZAKI K				14-17908		
9-18571				NAKAMURA S		
MIZUOCHI M				9-18572		
17-17470				NAZAROV AG		
MOHAI B				2-18515		
7-18590				NEAL LG		
MOHINDRA VK				6-16489		
15-18013				NEFEDOV YG		
MOHLER RR				4-17505		
9-18969				NEILL JS		
MOINGRAU M				5-17580	6-17580	
9-18173	10-18173			NELSON CT		
MOISEEV PA				11-17054		
14-18416				NELSON IC		
MOISELTSEV PI				15-19058	15-18840	
15-17478				NELSON RS		
MOLINARI G				7-18187		
14-17907	15-17907			NEPHEW EA		
MONAWECK JH				6-17074	9-17006	9-18207
6-18195	7-18195	8-18195		NETTLEY PT		
MONGINI-TAMAGNINI C				5-18186	8-18186	
9-18773				NEUMAN WF		
MONTA K				14-18231	15-18231	
9-18371	9-18569			NEUMANN F		
MONTA, K				2-17622		
9-18570				NEWTON CE		
MONTOIS P				15-18840		
6-18305	17-18305			NICHOLLS HR		
MOONEN HP				2-17634		
15-18045				NICHOLSON RB		
MOORE BM				18-18304		
7-18193	11-18193			NIELSEN A		
MOORE DJ				14-17046		
16-18806				NIELSEN JM		
MOORE JM				7-18349		
9-17952				NIELSEN NN		
MOORE P				7-18755		
18-18449				NIHEI I		
MOORE RL				4-18344	7-18344	
9-17351				NISHIZAWA Y		
MORCZEK A				7-18588		
15-18067				NORDAL DM		
MORDARSKI WJ				9-18776		
16-17517				NORDEN H		
MORETTI S				7-18353		
9-18968				NORMENT HG		
MORGAN DT				14-17901		
18-17292				NORRIS FR		
MORGAN JG				11-17061	17-17061	18-17061
5-18989	17-18989			NORWOOD WD		
MORGAN RP				15-18840		
5-17558	6-17558			NYHREG KA		
MORIN R				7-18719	9-18719	14-18719
5-17452	9-18775			O-TOOLE TJ		
MORLEY F				1-17332	15-17332	
14-18549				OAKES LC		
MORRIS PA				9-17130	17-17130	
9-17656	17-17588	17-17656	18-17360	OAKLEY DT		
MORRISON DL				14-18266	15-18266	
7-18014	7-18518			UBERHAUSEN E		
MOSES H				15-17291		
15-18270	16-18270			OCCHIPINTI ES		
MOSTERT P				9-18029		
17-17468				OGAWA Y		
MOTTA M				9-18066		
6-17033				OHMURA M		
MOTZ J				2-18516		
4-18347	7-18347			OKAMOTO S		
MUELLER A				2-18517		
5-16953	6-16953			OLIVER JE		
MUELLER DW				2-17637		
11-17810				OLSON RK		
MUELLER RE				16-18268		

OMORI K				9-18770	
11-17812				PETER G	
OMORI S				14-18048	
7-18512				PETERSON RE	
OSBORNE MF				17-17464	
5-18989	17-18989			PETERSON WD	
OSBURN WS				5-19092	6-19092
14-17905				PETRIE TW	
OSHIMA S				5-17302	9-17302 17-17302
7-18588				PETROW HG	
OTROSHCHENKO IV				15-18074	
9-18574				PETTUS WG	
OTT K				6-17343	9-17043
6-18281				PHILIS C	
OVECHKIN OM				9-18364	
5-17537	6-17537			PICCIOTTO E	
OVERHOLSER LG				14-16950	15-16950
7-18239	8-18239			PICKETT AG	
OVERSTREET R				11-17061	17-17061 18-17061
14-18080				PIERCE AW	
OZAWA Y				17-17145	
9-18966				PIPER NR	
PAAS HJ				15-18038	
3-18218	15-18218			PITTS TG	
PACILIO N				6-17043	9-17043
6-17042				PIVIKOTTO TJ	
PAIGE DM				4-18954	5-18954 7-18954
14-17048				PLANQUE M	
PALLISTER ET				1-17303	9-17303
15-18269	16-18269			PLATT AM	
PALMITER CC				14-17428	
1-17571				PLEINEVAUX C	
PALOWITCH BL				6-18305	17-18305
6-17084				PLEYBER G	
PANCER GP				9-18967	
17-17298				PLUMLEE KE	
PANCOAST JT				6-18533	
17-17149				POLIKARPOV GG	
PANKOV AM				14-18415	
7-18579				POMRANING GC	
PAPPS				6-17082	
7-18590				POMYTKIN VF	
PARCHEVSKII VE				14-18236	
14-18417				PONTI C	
PARK W				9-18773	
17-17149				POPE WC	
PARKER GW				17-16989	
7-18289	7-18292			POPOV NI	
PARNIANPOUR H				14-17902	14-17903
7-18580				POPOV VA	
PARRISH EC				4-17506	
7-17685				POPPER GF	
PARRY DL				9-16943	
9-17017				PORSE L	
PARSLY LF				11-17613	
7-18957				POSTMA AK	
PARSONS PJ				7-17328	
14-16949	15-16949			POSTON JW	
PASSANT FH				15-18988	
15-18222				POULTEK UK	
PASTERNAK AD				12-18952	18-18952
4-18238	7-18238			PRESKITT CA	
PATTERSON HW				6-17074	9-17006 9-18207
15-16954				PRESTON A	
PAZIAUD A				14-18550	15-18550
9-18206				PRICE LW	
PEABODY CO				9-18567	
15-18222				PRICE ML	
PEARSON JE				16-17655	18-17655
15-18270	16-18270			PRICE RB	
PEDERSEN LT				7-18518	
5-18209	5-19091 6-19091 11-18209			PRINGLE RW	
12-18209				15-18844	
PEINAR UL				PROKHOROV VM	
14-18234				14-18069	
PENNINGTON EM				PROTSIK R	
1-18520	6-18520			6-18768	9-18768
PENSKO J				PSZONA A	
15-18078				15-18047	
PERELYGIN VP				PUGANOV BN	
9-18599				5-17556	6-17556
PEREZ RB				PUSHKAREV VV	
7-18288	11-18288			14-17879	
PERKINS RW				QUAIFE MA	
7-18349	14-18631 16-18629 16-18631			17-17661	
16-18779				QUINLAN FB	
PEROV NL				9-18622	
14-18543	15-18543			RABY TM	
PERSIANI PJ				17-18642	
6-18766	9-18766			RAINEY RH	
PERSSON R				7-17324	11-17324

RAJEWSKY B					
15-18559				5-19093	6-19093
RAJU MR				ROSENBERG HS	
15-18053				7-18014	7-18518
RALPH R				ROSENTHAL N	
7-18353				16-18706	
RAMSDEN D				ROSENTHAL HB	
15-18222				9-18370	
RANDALL JD				ROSER FX	
17-17133	17-17871			14-17888	15-17888
RANGARAJAN C				ROSS DF	
15-17284				17-17149	
RAO MN				ROSSBANDER W	
14-16974				15-18085	
RAPIER AC				ROTHSTEIN A	
5-17579	6-17579			14-18231	15-18231
RASMUSSEN N				ROULSTON KI	
2-17626				15-18844	
RAY JW				ROUX DP	
17-17148				9-17003	9-17004
RAYNOR GS				ROW TH	
14-18545				8-18958	
REDMAN WC				ROZANCVA NA	
6-18533				15-18062	
REECE KJ				RUBEL V	
14-17424	15-17424			10-17899	
REHAK W				RUBY L	
14-18544				6-17076	
REICHLF DE				RUITER JP	
14-17956				11-18641	
REIST PC				RUSCH GK	
7-16406				1-18762	6-18762
REITER ER				RUSSELL J	
16-18704				18-18449	
REITER R				RUSSELL JA	
7-18213				9-17642	15-17348 15-17642
RENNEKE BC				RUSSELL JL	
14-18707	16-18707			14-18259	15-18259
REZNIK GS				RUUST JH	
15-18061				5-17127	17-17127
RHOADS WA				RUSTICHELLI F	
14-17285	15-17285			6-18741	9-18741
RIBEIRO DA FONSECA AJ				RUTHERFORD JL	
15-16973				7-18239	7-18514 8-18239
RICHEY ED				RYGL Y	
15-18863				9-18596	
RIENECKER F				RYZHOV NI	
18-18736				4-17505	
RIGGS CO				SACH RS	
7-18250	17-18250			7-18352	
RIKITAKE T				SADASIVAN S	
2-17623				15-17284	
RINGSTAD B				SAITO K	
11-17055	17-17055			6-17079	6-17081
RINKES H				SALU A	
11-17612				15-17487	16-17487
RIPLING EJ				SALOMON J	
11-17814				5-17452	
RIVERA J				SALT KJ	
14-17892				9-18711	
ROBBINS C				SALTSMAN JF	
15-18261				18-17343	
ROBBINS DE				SAMOKHIN GV	
4-18915				14-18419	
ROBERTS JM				SAMSONOV RV	
18-17514				17-17477	
ROBERTS JT				SANDBERG RO	
14-17550				5-18737	7-18738 17-18737 17-18738
ROBIN L				SANDERS BS	
9-16942				1-17910	
ROBIN TT				SANDERS M	
4-18987	7-18987			14-18564	
ROBINSON EM				SANTAROSSA G	
15-18988				6-18537	
ROBINSON LE				SANTOMAURO L	
6-18195	7-18195 8-18195			16-18630	
ROBINSON RK				SANTORO PF	
18-17293				9-18716	
ROBINSON WR				SARTOR JD	
6-18533				14-18542	15-18542
ROBSON K				SASTRE C	
11-18639				6-18132	9-16598 9-18132
ROMAGNOLI G				SAUCIER WJ	
14-17907	15-17907			14-18707	16-18707
ROMAN J				SAUVAGE M	
15-16932	15-17594			18-17395	
ROMNEY EM				SAVINO JM	
14-17285	15-17285			5-17576	6-17576 8-17576
RONQVIST N				SAVIO RP	
7-18241				6-17153	17-17153
ROOS JP				SAVOLAINEN AW	
				18-17518	

SHAMOV VP		
15-17334	15-18061	
SHAPPART LE		
3-16928	19-16928	
SHAVROV PI		
17-17387		
SHAW VG		
9-18715		
SHEEHAN WE		
15-16978		
SHEELY WF		
11-18025		
SHEKRILADZE IG		
5-17494	6-17494	
SHER R		
6-17075		
SHERRARD R		
9-18592		
SHERWOOD RD		
14-18705	16-18705	
SHISA K		
7-18512		
SHRINGARPURE SG		
14-17908		
SHUBKO VM		
14-18412		
SHULTZ OG		
9-18776		
SHVEDOV VP		
14-18413		
SIDDIQI AA		
15-18557		
SIEGEL R		
5-17576	6-17576	8-17576
SIKOV MR		
4-16968	14-16968	
SILVERMAN L		
7-17312	7-18581	
SILVESTER AG		
9-18585	12-18585	17-18585
SILVESTROV MM		
4-17506		
SIMON WA		
9-18204		
SIMS FL		
18-17937		
SIMS WH		
17-16056		
SINGH RS		
6-17245		
SINITSYN VI		
18-19191		
SITZLACK G		
15-18052		
SKINSTAD A		
11-17555	17-17055	
SKOVHOLT DJ		
5-17593	9-17590	17-17586
17-17590	17-17593	17-17657
17-18057	18-18057	
SLATER E		
17-17459		
SLAUGHTER GM		
17-17499		
SLAWSON PR		
16-18628		
SLIVINSKY CR		
9-18776		
SLUTSKINA SI		
15-18062		
SMIDT D		
18-17396		
SMIRENNY LN		
4-17505		
SMITH AK		
4-18027	9-18027	
SMITH AR		
15-16954		
SMITH OR		
14-18862		
SMITH FA		
4-19354		
SMITH GG		
6-16762	18-16762	
SMITH JL		
2-17633		
SMITH RB		
2-17617		
SMITH RC		
4-18594	9-18594	
SMITH RR		

SURBOTIN VI	5-17537	6-17537
SULLIVAN JJ	15-16997	
SULLIVAN MF	4-16968	14-16968
SUNDERMAN ID	17-18915	
SUNTHARALINGAM N	15-17891	
SUPAN EC	5-18091	
SURKES M	16-18706	
SUSSKIND H	5-16636	6-16636
SUTER F	15-18170	
SVIDERSKII VI	9-18599	
SWENSON LD	10-17672	17-17672
SYKES LR	2-17629	
SYLVESTER GE	14-18547	15-18547
SYMONS JM	2-18796	
SYMOKOWIAK FA	9-18370	
TABOADA A	9-18030	
TAJIMI H	2-18516	
TAKAHASHI J	9-18619	
TAKAHASHI Y	7-18512	
TAKAMATSU S	9-18371	
TAKEDA A	17-17467	
TAL A	16-18706	
TALBOY JH	6-17153	9-17126
TALLACKSON JR	9-17351	
TAMURA T	15-18042	
TAN S	6-18280	
TANG IN	7-17325	7-18511
TANIFUJI T	7-18512	
TATTEGRAIN A	9-17350	
TATTERSALL JO	11-18639	
TAURIT R	9-18593	
TAVEL MA	6-17082	
TAYLOR EG	17-18021	17-18733
TAYLOR GR	7-17124	17-17124
TEIXEIRA MR	15-16973	
TEODOSIC V	9-17337	17-17337
TESSIER JH	9-18205	
TEVERAUGH AD	8-17361	
THEIN M	15-17490	16-17490
THEODORE R	6-18718	9-18718
THIE JA	17-17345	
THISEL AW	9-18366	15-18366
THOMAS CW	16-18629	
THOMAS WA	14-17955	
THOMPSON OH	18-17934	
THOMPSON JC		

15-18846				18-17338			
THOMPSON JL				VANKESSEL HF			
14-17012	15-17012			9-18716			
THOMPSON MC				VASENKOVA GV			
2-17616				9-18574			
THOMPSON TJ				VDOVIC J			
3-17869	6-18524	17-17869		5-17639	6-17639		
THORLEY AW				VEEDER J			
4-18351				11-18726			
THURBER WC				VENDE GV			
4-18196	8-18196			14-18417			
THURSTON RS				VENERUS ER			
4-17535	5-17535	6-17535		6-16987			
TICHLER PR				VER PLANCK DW			
17-17870				9-18507	17-18507		
TIETZE A				VERSTRAETE P			
11-17813				11-18633			
TIMMINS TH				VIECELLI J			
18-17292				14-18627	16-18627		
TIMOFEEV AA				VIGIL JC			
14-18543	15-18543			6-18525			
TISLJAR M				VILENSKII VO			
15-16977				14-17904	16-17904		
TOLSON GM				VILES EJ			
9-18030	17-17499			7-16406			
TOMBLISON MR				VINCK WF			
17-16056				5-17437	11-17437	12-17437	
TOMODA C				VIVIAN JE			
6-17246				7-18246	11-18246		
TOPPEL BJ				VOGT KJ			
6-17087	9-17087			14-18068			
TORGESON WL				VOHRA KG			
16-18502				15-17284			
TRAUBE K				VOLLMER HM			
5-16480	12-16480	18-16480	18-17472	17-17185			
TRET YAKOVA SP				VOLLRADT T			
9-18599				5-17638	6-17638		
TRICE VG				VON ZORKOCZY A			
18-17934				17-17475			
TRINKO JR				VOROBIEV AM			
9-17003				14-18236			
TROFIMOV AM				VOSS MD			
7-18579				14-17482	15-17482		
TRUSHIN JT				VOUGHT C			
5-17302	9-17302	17-17302		15-17990			
TSUCHIYA T				VYSOTSKY VG			
9-18572				4-17505			
TSYKANOV AV				WACLAH DABEK JK			
17-17477				17-17460			
TUTHILL EJ				WADACHI Y			
14-18043				12-18083	14-18083		
TYZACK C				WAIDE CH			
4-18351				17-17298			
UBERSCHLAG J				WAJIMA JT			
9-18712				9-18572			
UCHIDA T				WALKER FE			
2-18516				4-17448	5-17448	6-17448	
UHRIG RE				WALLACE FG			
9-17002				17-18468			
ULBERG JC				WALLACE RM			
15-17290				7-18192	12-18192	13-18192	
ULRICH AJ				WANGERIN W			
6-18766	9-18766			2-17474	17-17474		
UNDERHILL HJ				WARD PL			
5-17534	6-17534	17-17534		2-17628			
UOTINEN VO				WARKENTIN JK			
6-18765				5-19089	7-19089	11-19089	
URBANOWICZ Z				WARSCHAUER KA			
15-16932				6-17247			
VALENTIN A				WATSON GM			
11-17063				7-18288	11-18288		
VAN AS D				WATT DE			
15-17010				14-18553	15-18553		
VAN DEN HOEK J				WATTS JW			
14-18077				4-16969	14-16969		
VAN DER HOVEN I				WEATHERSBY WE			
16-18804				12-17370	17-17370		
VAN DER LUGT G				WEAVER LE			
7-18229	11-18641			9-18172	9-18776		
VAN DER PLAS TH				WEBER CW			
7-18229				7-18214			
VAN HOWE K				WEBSTER BH			
9-17154	17-17154	17-17157		17-16056			
VAN HOWE KR				WEGNER LH			
6-17074	9-17006	9-18204	9-18207	15-18847			
17-17457				WEILLS JT			
VAN MAUWE A				18-17934			
9-17551				WEIMAN A			
VANASSE RE				9-17154	17-17154		
9-18172				WEIS E			
VANDENBURGH DE				5-17455			

WEITZ WE				WORTHINGTON JT			
9-17952				18-17514			
WELSH WJ				WRIGHT JJ			
14-18011				4-16969	14-16969		
WENT JJ				WRIGHT RW	5-16491	6-16491	8-16491
6-17247				WULLAERT RA	4-18185	7-18185	
WENTZ LB				WYKE TF	6-17155	17-17155	
5-16490	6-16490	8-16490		WYLIE RD	11-17761	17-17761	18-17761
WENZLER CJ				WYSOPOLSKI J	15-16932	15-16958	15-18050
18-17343				YAJIMA S	7-18512		
WESLEY EJ				YAMAGATA N	14-18849	15-18849	
7-18719	9-18719	14-18719		YAMAGISHI S	7-18512		
WEST DL				YAMAMOTO K	4-18344	7-18344	
7-17330	13-17330			YAMAZAKI R	17-17469		
WETH GG				YELLOWLEES JM	11-18639		
14-18043				YIFTAH S	6-17038	6-17039	6-17040
WHEELER RG				YODER RE	7-16406		
5-18209	5-19091	6-19091	11-18209	YOSHIKAWA K	15-17489	16-17489	
12-18209				YOUNG J	18-18449		
WHITBY KT				YUZEFORICH AA	14-18413		
7-17347				ZAKER TA	5-17301		
WHITE AB				ZALETNYKH BA	17-17477		
5-18953				ZAMAN SU	6-17132		
WHITFIELD WJ				ZANOT JR	9-17129	9-18368	17-17129
7-18582	12-18582			ZAPPELLINI G	6-18741	9-18741	
WHITTIER AC				ZAPPINI W	15-18039		
6-17089				ZARNOWIECKI K	15-18047		
WIEDERMANN AH				ZENKEVICH BA	5-17555	6-17555	
5-17301				ZERBEL D	4-18027	9-18027	
WILBUR RE				ZHERNOV VS	14-18543	15-18543	
17-18015				ZIELCZYNSKI M	15-18747		
WILDE N				ZIEMANN DL	17-16056		
9-18921				ZIMMERMAN DW	15-17891		
WILFERT GL				ZIVI SM	6-16489		
3-17954	13-17954			ZOLDNERS NG	11-17603		
WILKIE WH				ZOLLER WW	15-18049		
14-17012	15-17012			ZOLOTAVIN VL	14-17879		
WILLIAMS LD				ZVEREV VA	17-17477		
6-18765							
WILLIAMS MM							
6-17070							
WILLOUGHBY W							
6-17155	17-17155						
WILSON HB							
14-18547	15-18547						
WILSON HS							
11-17603							
WINKLER H							
9-17007							
WINSON RW							
4-17671	9-17671	17-17671					
WINTLE CA							
4-18711							
WINTZER D							
6-17565							
WITZIG WF							
1-17595							
WLODEK S							
14-18051							
WOGMAN NA							
16-18629							
WOLFE B							
1-17088	6-17088						
WOLFF PH							
11-18638							
WOLSKA M							
15-16932							
WOOD RC							
16-18268							
WOOD RW							
5-17581	6-17581						
WOODRUFF RW							
6-17131	17-17131						

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APPENDIX

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