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NUREG/CR-1229
ORNL/NUREG/NSIC-169

Bibliography of Reports on Research Sponsored by the NRC Office of Nuclear Regulatory Research January–June 1979

J. R. Buchanan

Prepared for the U.S. Nuclear Regulatory Commission
Office of Nuclear Regulatory Research
Under Interagency Agreements DOE 40-551-75 and 40-552-75

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ORNL/ NSIC	Title	Price*
53	Radiography Incidents and Overexposures, R. L. Scott and R. B. Gallaher, Dec. 1972	$10.50
55 Vol.I	Design Data and Safety Features of Commercial Nuclear Power Plants, Vol. I, Docket No. 50-3 through 50-295, F. A. Heddleson, Dec. 1973	$15.00
55 Vol.II	Design Data and Safety Features of Commercial Nuclear Power Plants, Vol. II, Docket No. 50-296 through 50-395, F. A. Heddleson, Jan. 1972	$15.00
55 Vol.III	Design Data and Safety Features of Commercial Nuclear Power Plants, Vol. III, Docket No. 50-397 through 50-449, F. A. Heddleson, Apr. 1974	$15.00
55 Vol.IV	Design Data and Safety Features of Commercial Nuclear Power Plants, Vol. IV, Docket No. 50-452 through 50-503, F. A. Heddleson, June 1975	$15.00
	See ORNL/NSIC-96 for Vol. V and ORNL/NUREG/NSIC-136 for Vol. VI.	
74	Calculation of Doses Due to Accidentally Released Plutonium from an LMFBR, B. R. Fish, G. W. Keilholtz, W. S. Snyder, and S. D. Swisher, Nov. 1972	$15.00
82	Chemical and Physical Properties of Methyl Iodide and Its Occurrence Under Reactor Accident Conditions — A Summary and Annotated Bibliography, L. F. Parsly, Dec. 1971	$12.50
91	Safety-Related Occurrences in Nuclear Facilities as Reported in 1970, R. L. Scott, Dec. 1971	$10.50
96	Design Data and Safety Features of Commercial Nuclear Power Plants (Fifth Volume of ORNL/NSIC-55), F. A. Heddleson, June 1976	$15.00
97	Indexed Bibliography of Thermal Effects Literature-2, J. G. Morgan and C. C. Coutant, May 1972	$10.50
100	Nuclear Power and Radiation in Perspective, Selections from *Nuclear Safety*, J. R. Buchanan, Mar. 1974	$15.00
101	Indexed Bibliography on Environmental Monitoring for Radioactivity, B. L. Houser, May 1972	$10.50
102	Compilation of National and International Nuclear Standards (Excluding U.S. Activities) 8th Ed., 1972, J. P. Blakely, June 1972	$10.50
103	Abnormal Reactor Operating Experiences, 1969—1971, R. L. Scott and R. B. Gallaher, May 1972	$ 9.00
105	Indexed Bibliography on Nuclear Facility Siting, H. B. Piper, June 1972	$10.50
106	Safety-Related Occurrences in Nuclear Facilities as Reported in 1971, R. L. Scott and R. B. Gallaher, Sept. 1972	$12.50
107	Index to *Nuclear Safety*, A Technical Progress Review by Chronology, Permuted Title, and Author, Vol. 1, No. 1 through Vol. 13, No. 6, J. Paul Blakely and Ann Klein, May 1973	$ 9.00
109	Safety-Related Occurrences in Nuclear Facilities as Reported in 1972, R. L. Scott and R. B. Gallaher, Dec. 1973	$15.00
110	Indexed Bibliography of Thermal Effects Literature-3, J. G. Morgan, July 1973	$12.50
111	Reactor Protection Systems: Philosophies and Instrumentation, Reviews from *Nuclear Safety*, E. W. Hagen, July 1973	$15.00
112	Compilation of Nuclear Standards, 9th Edition, 1972, Part I: United States Activities, J. P. Blakely, Oct. 1973	$12.50
113	A Selected Bibliography on Emergency Core Cooling Systems (ECCS) for Light-Water-Cooled Power Reactors (LWRs), Wm. B. Cottrell, Jan. 1974	$12.50
114	Annotated Bibliography of Safety-Related Occurrences in Nuclear Power Plants as Reported in 1973, R. L. Scott and R. B. Gallaher, Nov. 1974	$15.00
117	Protection of Nuclear Power Plants Against External Disasters, Wm. B. Cottrell, May 1975	$15.00
119	A Selected Bibliography on Pressure Vessels for Light-Water-Cooled Power Reactors (LWRs), Fred A. Heddleson, Jan. 1975	$15.00
120	Annotated Bibliography of Hydrogen Considerations in Light-Water Power Reactors, G. W. Keilholtz, Feb. 1976	$10.00
121	Reactor Operating Experiences, 1972—1974, U.S. Nuclear Regulatory Commission, Dec. 1975	$ 8.00

(Continued on Inside Back Cover)

NUREG/CR-1229
ORNL/NUREG/NSIC-169
Dist. Category AE

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Engineering Technology Division

BIBLIOGRAPHY OF REPORTS ON RESEARCH SPONSORED BY THE NRC OFFICE OF NUCLEAR REGULATORY RESEARCH JANUARY–JUNE 1979

J. R. Buchanan
Nuclear Safety Information Center

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FOREWORD

The Nuclear Safety Information Center (NSIC), which was established in March 1963 at Oak Ridge National Laboratory, is principally supported by the U.S. Nuclear Regulatory Commission's Office of Nuclear Regulatory Research. Support is also provided by the Division of Reactor Research and Technology of the Department of Energy. NSIC is a focal point for the collection, storage, evaluation, and dissemination of safety information to aid those concerned with the analysis, design, and operation of nuclear facilities. Although the most widely known product of NSIC is the technical progress review *Nuclear Safety*, the Center prepares reports and bibliographies as listed on the inside covers of this document. The Center has also developed a system of keywords to index the information which it catalogs. The title, author, installation, abstract, and keywords for each document reviewed are recorded at the central computing facility in Oak Ridge. The references are cataloged according to the following categories:

1. General Safety Criteria
2. Siting of Nuclear Facilities
3. Transportation and Handling of Radioactive Materials
4. Aerospace Safety (inactive ∿1970)
5. Heat Transfer and Thermal Hydraulics
6. Reactor Transients, Kinetics, and Stability
7. Fission Product Release, Transport, and Removal
8. Sources of Energy Release under Accident Conditions
9. Nuclear Instrumentation, Control, and Safety Systems
10. Electrical Power Systems
11. Containment of Nuclear Facilities
12. Plant Safety Features — Reactor
13. Plant Safety Features — Nonreactor
14. Radionuclide Release, Disposal, Treatment, and Management (inactive September 1973)
15. Environmental Surveys, Monitoring, and Radiation Dose Measurements (inactive September 1973)
16. Meteorological Considerations

17. Operational Safety and Experience
18. Design, Construction and Licensing
19. Internal Exposure Effects on Humans Due to Radioactivity in the Environment (inactive September 1973)
20. Effects of Thermal Modifications on Ecological Systems (inactive September 1973)
21. Radiation Effects on Ecological Systems (inactive September 1973)
22. Safeguards of Nuclear Materials

Computer programs have been developed that enable NSIC to (1) operate a program of selective dissemination of information (SDI) to individuals according to their particular profile of interest, (2) make retrospective searches of the stored references, and (3) produce topical indexed bibliographies. In addition, the Center Staff is available for consultation, and the document literature at NSIC offices is available for examination. NSIC reports (i.e., those with the ORNL/NSIC and ORNL/NUREG/NSIC numbers) may be purchased from the National Technical Information Service (see inside front cover). All of the above services are free to NRC and DOE personnel as well as their direct contractors. They are available to all others at a nominal cost as determined by the DOE Cost Recovery Policy. Persons interested in any of the services offered by NSIC should address inquiries to:

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Oak Ridge, Tennessee 37830

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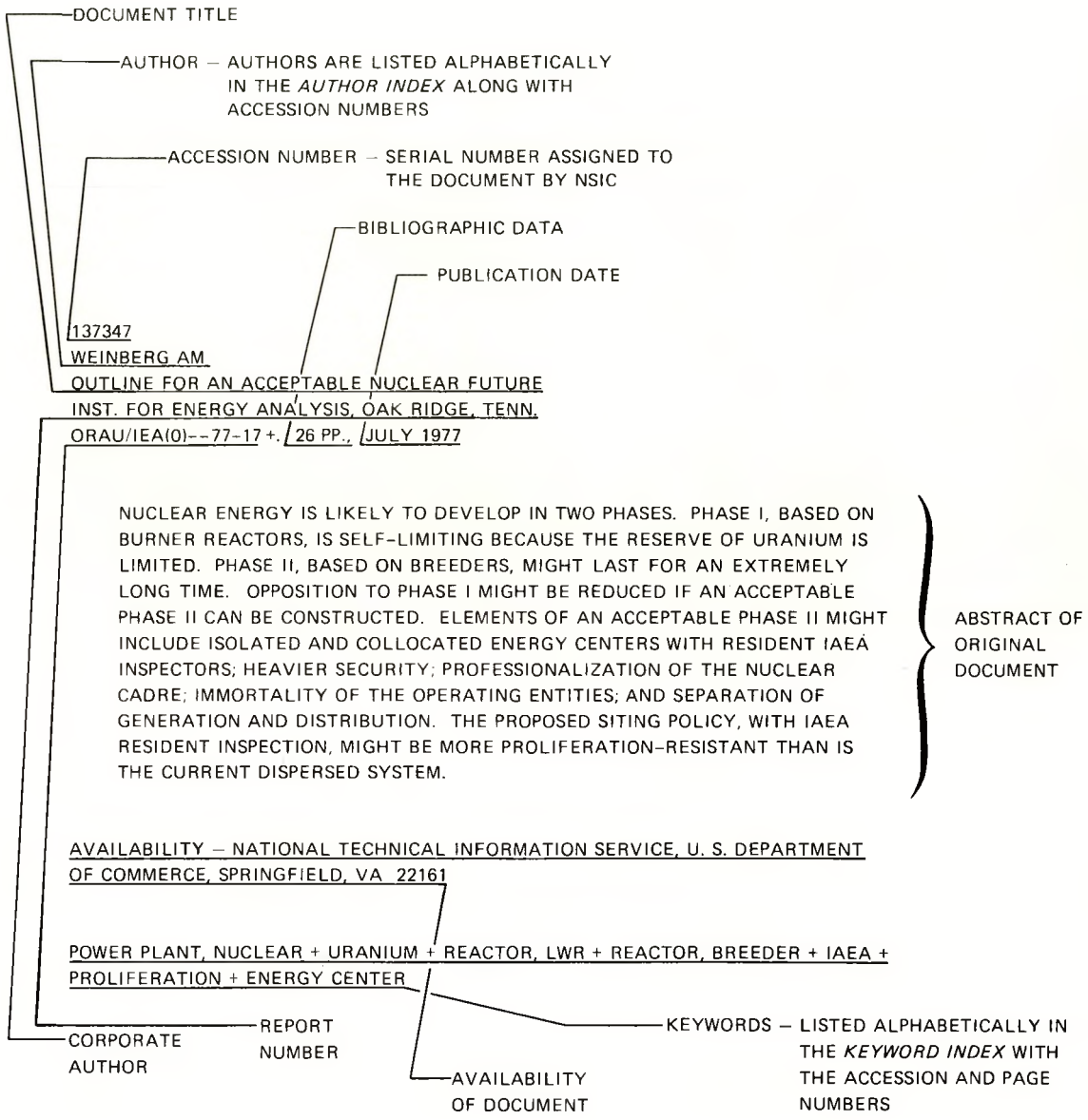
METHOD OF INDEXING DOCUMENTS



PREVIOUS REPORTS IN THIS SERIES

Period Covered	Report Numbers	Date
November 1975—June 1976	ORNL/NUREG/NSIC-130	October 1976
July—December 1976	ORNL/NUREG/NSIC-135	March 1977
January—June 1977	ORNL/NUREG/NSIC-143	October 1977
July—December 1977	ORNL/NUREG/NSIC-145 (NUREG/CR-0185)	April 1978
January—June 1978	ORNL/NUREG/NSIC-155 (NUREG/CR-0411)	November 1978
July—December 1978	ORNL/NUREG/NSIC-158 (NUREG/CR-0691)	May 1979

BIBLIOGRAPHY OF REPORTS ON RESEARCH SPONSORED BY THE NRC OFFICE OF NUCLEAR REGULATORY RESEARCH JANUARY–JUNE 1979

J. R. Buchanan
Nuclear Safety Information Center

ABSTRACT

A bibliography of 241 reports distributed by contractors of the NRC Office of Nuclear Regulatory Research during the period January through June 1979 is presented along with abstracts from the Nuclear Safety Information Center computer file. The bibliography has been sorted into the subject categories used by NRC to organize the research program. Within the subject categories, the reports are arranged first by contractor organization and then chronologically. A brief description of the NRC research program precedes the bibliography.

INTRODUCTION

The Energy Reorganization Act of 1974 provided for an Office of Nuclear Regulatory Research within the Nuclear Regulatory Commission (NRC) to perform research, characterized as "confirmatory assessment," relating specifically to regulatory decisions for the safe and environmentally compatible operation of nuclear facilities and materials as well as their protection. In implementing these research responsibilities, NRC continued the two primary programs of reactor safety research already being carried out by the former U.S. Atomic Energy Commission — light-water reactor safety research and advanced reactor safety research — and initiated the planning and coordination needed to accomplish regulatory environmental, fuel cycle, and safeguards research programs.

The goal of the Reactor Safety Research Program is to develop an independent basis and means to reliably and credibly analyze the course of events in hypothetical nuclear reactor accidents and to estimate the consequences of such accidents. Sufficient safety data exist to permit establishment of conservative requirements and safety margins for licensing nuclear power plants. NRC reactor safety research is directed toward refining and reducing the allowable uncertainties in the data, in order

to better define and quantify the conservative design and safety margins that must be used because of these uncertainties.

This bibliography of 241 NRC safety research reports distributed during the period January through June 1979 has been sorted into the various categories of research being performed by NRC. A brief description of these categories is given below, followed by the bibliography.

WATER REACTOR SAFETY RESEARCH

Water reactor safety research is directed toward providing a capability for independent confirmatory assessment of the safety of the current generation of nuclear plants under postulated accident conditions. The research data and analytic methods applied to the assessment of hypothetical nuclear plant accidents will result in a greater measure of confidence that the margins of safety identified in the licensing review are well defined and quantified. The program is divided into four subject categories: systems engineering, fuel behavior, analysis development, and metallurgy and materials.

Basic (R1, formerly NRC-1)

This category is included since it is used for the distribution of reports that pertain to all the water reactor safety research categories. However, no research per se is sponsored under this heading, although certain general-interest reports are distributed under this category.

Systems Engineering (R2, formerly NRC-2)

Safety research in systems engineering is addressed primarily to the study of postulated loss-of-coolant accidents (LOCAs) in reactors and the effectiveness of emergency core-cooling systems (ECCSs). Reports distributed under this category cover such research topics as the hydrodynamics of two-phase flow during the postulated LOCA, blowdown heat transfer, emergency core cooling (including alternate ECCSs), and integral LOCA/ECCS tests.

Fuel Behavior (R3, formerly NRC-3)

Fuel behavior research includes basic studies on the constituents of the fuel rod (fuel, gap, and cladding), studies on integral fuel rods, and definitions of fuel failure limits and consequences. Reports issued under this category include studies on cladding properties, gap conductance, fuel-stored energy, decay heat, fuel pellet properties, steady-state and transient fuel rod performance, fission-product release, fuel meltdown phenomena, and fuel behavior computer codes.

Analysis Development (R4, formerly NRC-4)

Analytical development research includes improvement of existing reactor safety computer codes and development of codes for advanced reactor systems and for reactor components. Reports distributed under this category include information on intermediate and advanced system computer codes for studying the response of a nuclear power plant to postulated accidents and information on component code development in which the various single components of a reactor are modelled in greater detail. Reports on containment, hydroelastic, and fuel codes are also distributed under this category.

Metallurgy and Materials (R5, formerly NRC-5)

The objective of confirmatory safety research in reactor metallurgy and materials is to confirm the safe design of reactor vessels and piping and to establish ways to reduce the failure probabilities, if required. Reports in this category include those dealing with fracture mechanics, welding, irradiation embrittlement, stress corrosion cracking, crack growth and arrest, and nondestructive examination techniques.

GENERAL REACTOR SAFETY RESEARCH

Safety research on the siting of nuclear power plants is under way.

Site Safety Research (R6, formerly NRC-6)

The site safety research program provides information to assist in the confirmation that nuclear power plant sites (including alternate

sites) and the associated engineering design methodology have been properly characterized with regard to the effects of earthquakes, tornadoes, floods, and other natural phenomena. Reports in this category include information on severe regional environmental phenomena; understanding of seismic, hydrologic, and meteorologic events; methodology for geotechnical, hydrological, and meteorological site evaluations; assessment of engineering design methods and practices; and evaluation of alternate siting concepts.

ADVANCED REACTOR SAFETY RESEARCH

Experimental and analytical safety research programs were initiated in 1974 on advanced reactors — liquid-metal-cooled (LMFBR) and gas-cooled (GCFBR) fast breeder reactors and high-temperature gas-cooled reactors (HTGR).

Fast Reactors (R7, formerly NRC-7)

The fast reactor program, which principally covers LMFBRs, gives strong consideration to the methods and data needed to assess the safety of fast reactors under a range of postulated accidents, from the anticipated loss of flow with scram to the hypothetical case of a core-disruptive accident such as might occur following a loss of flow without scram, including the challenge to the containment of postaccident environmental conditions.

The radiological source used in LMFBR site assessment is based on the potential leakage of coagglomerated aerosols of sodium oxide and uranium-plutonium oxide from the containment. Consequently, there is an experimental program to verify the source and mode of transport of aerosols generated in postulated LMFBR accidents.

Gas-Cooled Reactors (R8, formerly NRC-8)

In the case of the HTGR, the range of accidents includes the sudden depressurization (analogous to a pipe break in a light-water reactor) of the primary system, steam ingress from leaks in the steam generator, loss

of forced circulation, and combinations of these events. Because of the unique structure of HTGRs, attention is also devoted to seismic response.

Studies of fission-product chemistry and graphite oxidation in laboratory loops are under way. These studies will lead to increased accuracy in the assessment of fission-product transport in HTGRs and of safety margins associated with vital structures such as the core support posts.

Those components and processes in the GCFBR which are similar to the HTGR (i.e., ex-core phenomena) are included in this category.

OTHER RESEARCH

Other important areas of research are generally relevant to any type of reactor system and to various parts of the nuclear fuel cycle.

Health Safety Research (RH, formerly NRC-9)

This category includes information on (1) studies on the technical aspects of NRC health policies and programs; (2) development of improved methods and procedures for licensing review, inspection, and enforcement; and (3) studies leading to improved regulations and guides to ensure implementation of effective health policies at licensed facilities.

Environmental Research (RE, formerly NRC-10)

This category includes information on (1) studies on the technical aspects of NRC environmental policies and programs; (2) development of improved methods and procedures for licensing review, inspection, and enforcement; and (3) studies leading to improved regulations and guides to ensure effective environmental implementation at licensed facilities.

Transportation Safety Research (RT, formerly NRC-12)

This category includes information on (1) general transportation operations and studies, (2) analyses which define the transportation environments, (3) tests to confirm the capabilities of shipping containers and their response to both normal and abnormal transport environments, (4) evaluations of the effectiveness of emergency planning and response to transport accidents, (5) studies which estimate and

evaluate the risks involved with radioactive material shipments, and (6) evaluations which compare the degree of safety achieved by alternate transport methods and procedures.

Safeguards Research (RS, formerly NRC-13)

This category includes information on methods and data, as well as devices and techniques, which support the NRC functional capabilities in safeguards rule-making, licensing, and inspection. In particular, there is information on (1) the effectiveness of evaluation methods which aid in the assessment of physical protection and material control subsystems at fixed sites and in transport; (2) analysis of safeguards information requirements; (3) physical protection equipment and its evaluation; (4) topics of broad safeguards interest relevant to future directions, including estimation of consequences of malevolent nuclear acts, safeguards vulnerability to white-collar crime, and impacts of performance-oriented regulations, among others.

Effluent and Radiation Field Source Terms in Operating Reactors (RR)

This category includes information on all testing in operating nuclear power plants to determine (1) the radioisotope content of liquid and gaseous streams within the plant and the performance of plant equipment for evaluation of analysis methods used for determining nuclear plant effluents; and (2) source terms and radiation fields associated with plant components and the cubicles within which they are contained for evaluation of current analysis approaches.

Criticality (RC)

This category includes information on all analyses and testing related to nuclear criticality. These include (1) experiments and analyses related to storage and shipment of reactor fuels, both as-built fuel and spent fuel; (2) experiments and analyses related to all aspects of the fuel cycle, such as fuel fabrication and reprocessing plants; (3) development of computer programs for analysis of nuclear criticality and comparison of results of these codes with experimental data; and

(4) development of cross-section data useful to nuclear criticality analyses.

Waste Management (RW)

This category covers research related to waste treatment systems performance, waste product characteristics, including packaging and the development and verification of radionuclide transport models associated with waste disposal activities.

Charcoal Research (RQ)

Research is being performed to determine the effects of atmospheric pollutants on the adsorption capabilities of activated charcoal. These charcoals are used in nuclear plants to adsorb fission products in the gaseous state. Reports in this category provide results from experimental projects studying charcoal degradation.

Fire Protection Research (RP)

This category covers information on fire protection research applicable to nuclear power plants. Specifically included are fire tests for cable trays, cable coatings, barriers, fire stops, extinguishing systems, smoke- and fire-detection systems, and the evaluation of fire protection standards and regulatory guides. Analytical studies in these areas are also included.

Qualification Evaluation Program (RV)

Reports in this category include information on the performance qualifications of safety-related electrical equipment required to function during design-basis accidents.

ORGANIZATION OF BIBLIOGRAPHY

The bibliography which follows contains all reports distributed from January through June 1979 by NRC contractors that are sponsored in the program described above. Reports that were published earlier but distributed during this period are also included. The bibliography is organized by the category regime used for NRC report distribution. If a document falls into more than one category because of its subject matter, the complete abstract is included in each applicable category. Within each subject category, the reports are listed alphabetically by contractor name and then chronologically under each contractor. The bibliography is sorted into the following categories:

1. R1 — Water Reactor Safety Research, Basic
2. R2 — Water Reactor Safety Research, Systems Engineering
3. R3 — Water Reactor Safety Research, Fuel Behavior
4. R4 — Water Reactor Safety Research, Analysis Development
5. R5 — Water Reactor Safety Research, Metallurgy and Materials
6. R6 — General Reactor Safety Research, Site Safety Research
7. R7 — Advanced Reactor Safety Research, Fast Reactors
8. R8 — Advanced Reactor Safety Research, Gas-Cooled Reactors
9. RH — Health Safety Research
10. RE — Environmental Research
11. RT — Transportation Safety Research
12. RS — Safeguards Research
13. RR — Effluent and Radiation Field Source Terms in Operating Reactors
14. RC — Criticality
15. RW — Waste Management
16. RQ — Charcoal Research
17. RP — Fire Protection Research
18. RV — Qualification Evaluation Program

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576–600	16.50
601–up	[c]

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[b] These prices are subject to change by NTIS.

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The National Technical Information Service
U.S. Department of Commerce
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BIBLIOGRAPHY

1. R1 - WATER REACTOR SAFETY RESEARCH, BASIC

147766
OLMES J + WOLF L
A MODULAR APPROACH TO FAULT TREE ANALYSIS
MASS. INST. OF TECHNOLOGY, CAMBRIDGE
NUREG/CR-0670 +. 330 PPS, 22 TABS, 67 FIGS, FEB. 1979

AN ANALYTICAL METHOD TO DESCRIBE FAULT TREE DIAGRAMS IN TERMS OF THEIR MODULAR COMPOSITION IS DEVELOPED. FAULT TREE STRUCTURES ARE CHARACTERIZED BY RECURSIVELY RELATING THE TOP TREE EVENT TO ALL ITS BASIC COMPONENT INPUTS THROUGH A SET OF EQUATIONS DEFINING EACH OF THE MODULES FOR THE FAULT TREE. IT IS SHOWN THAT SUCH A MODULAR DESCRIPTION IS AN EXTREMELY VALUABLE TOOL FOR MAKING A QUANTITATIVE ANALYSIS OF FAULT TREES. (EWH)

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*FAULT TREE ANALYSIS + ANALYTICAL TECHNIQUE + MATHEMATICAL TREATMENT + COMPUTER PROGRAM + PROBABILITY + NRC-GM

146853
QUEENER DS + COTTRELL WB
BIBLIOGRAPHY OF MICROFICHED FOREIGN REPORTS DISTRIBUTED UNDER THE NRC REACTOR SAFETY RESEARCH FOREIGN TECHNICAL EXCHANGE PROGRAM, 1975-1977
OAK RIDGE NATIONAL LAB., TENN.
NUREG/CR-0487 + ORNL/NUREG/NSIC-154 +. 66 PPS, 1 TAB, JAN. 1979

A BIBLIOGRAPHY AND INDEXES ARE PRESENTED FOR DOCUMENTS WHICH WERE OBTAINED FROM 1975 THROUGH 1977 FROM FRANCE, THE FEDERAL REPUBLIC OF GERMANY, AND JAPAN UNDER THE NRC REACTOR SAFETY RESEARCH EXCHANGE AGREEMENT AND SUBSEQUENTLY MICROFICHED AND DISTRIBUTED. THE THREE INDEXES INCLUDED IN THIS REPORT ARE KEYWORD, AUTHOR, AND PERMUTED-TITLE INDEXES. MICROFICHE COPIES OF 184 REPORTS ARE INVOLVED, INCLUDING 33 FRENCH, 101 GERMAN, AND 50 JAPANESE REPORTS.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

BIBLIOGRAPHY + REACTOR, LWR + JAPAN + GERMANY + FRANCE + UNITED STATES + UNITED KINGDOM + AGENCY, NRC + NRC-1

147170
HAGEN EW
COMMON-MODE/COMMON-CAUSE FAILURES: A REVIEW AND A BIBLIOGRAPHY
OAK RIDGE NATIONAL LAB., TENN.
NUREG/CR-0566 + ORNL/NUREG/NSIC-148 +. 151 PPS, 7 TABS, MAY 1979

REVIEWS AND SUMMARIZES THE CM/CC FAILURE PHENOMENON AND PRESENTS A BIBLIOGRAPHY OF THE LITERATURE. INITIAL PHILOSOPHICAL CONSIDERATIONS ARE PRESENTED, AND INTERPRETATIONS OF VARIOUS DEFINITIONS ARE EXAMINED. CLASSES OF CM/CC FAILURES ARE COMPILED, AND THE DEFENSES AGAINST SUCH FAILURES AND THEIR WEAKNESSES ARE SURVEYED. SOME REGULATORY CONSIDERATIONS AND OPERATING EXPERIENCES ARE TOUCHED UPON BRIEFLY. FINALLY, CURRENT TRENDS IN ANALYTICAL TREATMENTS AND RELIABILITY ANALYSIS METHODOLOGY FOR THIS PHENOMENON ARE PRESENTED. (EWH)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*FAILURE, COMMON MODE + REVIEW + BIBLIOGRAPHY + DATA COLLECTION + OPERATING EXPERIENCE + FAILURE, COMPONENT + FAILURE, EQUIPMENT + RELIABILITY, SYSTEM + NRC-AE

147790
HEDDLESON FA
ANALYTICAL TECHNIQUES FOR STRESS ANALYSIS OF THE NUCLEAR STEAM SUPPLY SYSTEM A BIBLIOGRAPHY
OAK RIDGE NATIONAL LAB., TENN.
NUREG/CR-0664 + ORNL/NUREG/NSIC-157 +. 217 PPS, MAY 1979

THIS REPORT CONTAINS 586 ABSTRACTS FROM THE NUCLEAR SAFETY INFORMATION CENTER (NSIC) COMPUTER FILE DATED 1975 THROUGH 1978 COVERING ANALYTICAL TECHNIQUES USED FOR STRESS ANALYSIS OF THE NUCLEAR STEAM SUPPLY SYSTEM OF NUCLEAR POWER PLANTS - INCLUDING THE DETERMINATION OF DESIGN LOAD OF STRUCTURES, SYSTEMS, AND COMPONENTS. THE ABSTRACTS ARE LISTED IN REVERSE CHRONOLOGICAL ORDER, WITH ALL ABSTRACTS RELATING TO LICENSING MATERIALS IN A SEPARATE GROUP. KEYWORD, AUTHOR, AND PERMUTED-TITLE INDEXES ARE INCLUDED FOR THE CONVENIENCE OF THE USER. (FAH)

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STRESS ANALYSIS + ANALYTICAL MODEL + NSIC + BIBLIOGRAPHY + NRC-AE + ANALYTICAL TECHNIQUE

147912
QUEENER DS
REPORTS DISTRIBUTED UNDER THE NRC REACTOR SAFETY RESEARCH FOREIGN TECHNICAL EXCHANGE PROGRAM VOL. VI (JULY-DECEMBER 1978)
OAK RIDGE NATIONAL LAB., TENN.
NUREG/CR-0692 + ORNL/NUREG/NSIC-159 +. 80 PPS, 1 TAB, MAY 1979

LISTS OF DOCUMENTS EXCHANGED DURING THE SECOND HALF OF 1978 UNDER AGREEMENTS BETWEEN THE U.S. NUCLEAR REGULATORY COMMISSION'S OFFICE OF NUCLEAR REGULATORY RESEARCH AND THE GOVERNMENTS OF FRANCE, FEDERAL REPUBLIC OF GERMANY, JAPAN, AND THE UNITED KINGDOM ARE PRESENTED. THESE AGREEMENTS COVER SAFETY RESEARCH ON HIGH-TEMPERATURE GAS-COOLED REACTORS, LIGHT-WATER REACTORS,

147912 *CONTINUED*
AND FAST REACTORS. DURING THIS PERIOD, THE NRC RECEIVED 46 REPORTS FROM FRANCE, 72 FROM THE FEDERAL REPUBLIC OF GERMANY, 43 FROM JAPAN, AND 93 FROM THE UNITED KINGDOM. IN RETURN, THE NRC SENT 177 U.S. LIGHT-WATER REACTOR SAFETY RESEARCH REPORTS TO EACH OF THESE FOUR COUNTRIES, 26 FAST REACTOR SAFETY RESEARCH REPORTS TO ALL EXCEPT FRANCE, AND 7 HTGR RESEARCH REPORTS TO JAPAN.

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*BIBLIOGRAPHY + REACTOR, LWR + REACTOR, FAST + REACTOR, LMFBR + REACTOR, HTGR + JAPAN + GERMANY + FRANCE + UNITED STATES + UNITED KINGDOM + *AGENCY, NRC + NRC-1

147913
CARLSON DD
A METHODOLOGY FOR VALUE/IMPACT ASSESSMENT OF NUCLEAR REGULATORY RESEARCH PROGRAMS
SANDIA LABS., ALBUQUERQUE, N.M.
NUREG/CR-0359 + SAND78-1707 +. 75 PPS, 24 TABS, 7 FIGS, DEC. 1978

AS AN AID IN ALLOCATING RESOURCES FOR RESEARCH WITHIN THE NRC, IT IS DESIRABLE TO HAVE AN ESTABLISHED METHOD FOR COMPARING RESEARCH PROGRAMS ON A VALUE/IMPACT BASIS. THE OBJECTIVES OF THE STUDY WERE (1) TO FORMULATE A SYSTEMATIC METHODOLOGY AND SUPPORTING DATA FOR CONDUCTING A VALUE/IMPACT ASSESSMENT OF NRC RESEARCH PROGRAMS, AND (2) TO ILLUSTRATE USAGE OF THE METHODOLOGY THROUGH APPLICATION TO SELECTED RESEARCH PROGRAMS. THE INTENT OF THE METHODOLOGY IS TO COMPARE THE TECHNICAL MERITS OF THE RESEARCH PROGRAMS. IT DOES NOT ADDRESS SOCIAL OR POLITICAL ASPECTS OF THE REGULATORY PROCESS. THUS, IT ADDRESSES ONLY ONE DIMENSION OF THE COMPLEX PROBLEM OF RESEARCH EVALUATION. (FAH)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

COMPARISON + AGENCY, NRC + ECONOMICS + DATA COLLECTION + NRC-1

2. R2 - WATER REACTOR SAFETY RESEARCH, SYSTEMS ENGINEERING

147496
LIGHT-WATER REACTOR SAFETY RESEARCH PROGRAM: QUARTERLY PROGRESS REPORT JULY-SEPTEMBER 1978
ARGONNE NATIONAL LAB., ILL.
NUREG/CR-0547 + ANL-78-107 +. 47 PPS. FIGS. REFS. JAN. 1979

THIS PROGRESS REPORT SUMMARIZES THE ARGONNE NATIONAL LABORATORY WORK PERFORMED DURING JULY, AUGUST, AND SEPTEMBER 1978 ON WATER-REACTOR-SAFETY PROBLEMS. THE FOLLOWING RESEARCH AND DEVELOPMENT AREAS ARE COVERED: (1) LOSS-OF-COOLANT ACCIDENT RESEARCH: HEAT TRANSFER AND FLUID DYNAMICS; (2) TRANSIENT FUEL RESPONSE AND FISSION-PRODUCT RELEASE PROGRAM; AND (3) MECHANICAL PROPERTIES OF ZIRCALOY CONTAINING OXYGEN.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*REACTOR, LWR + *ANL + ACCIDENT, LOSS OF COOLANT + HEAT TRANSFER ANALYSIS + THERMAL HYDRAULIC ANALYSIS + FUEL, NUCLEAR + REACTOR TRANSIENT + FISSION PRODUCT RELEASE + PROPERTY, MECHANICAL + ZIRCALOY + NRC-2 + NRC-3 + NRC-4

148265
LIGHT-WATER-REACTOR SAFETY RESEARCH PROGRAM'S QUARTERLY PROGRESS REPORT OCTOBER-DECEMBER 1978
ARGONNE NATIONAL LAB., ILL.
NUREG/CR-0828 + ANL-79-18 +. 40 PPS. FIGS. 15 REFS. APRIL 1979

THIS PROGRESS REPORT SUMMARIZES THE ARGONNE NATIONAL LABORATORY WORK PERFORMED DURING OCTOBER, NOVEMBER, AND DECEMBER 1978 ON WATER-REACTOR-SAFETY PROBLEMS. THE FOLLOWING RESEARCH AND DEVELOPMENT AREAS ARE COVERED: (1) LOSS-OF-COOLANT ACCIDENT RESEARCH: HEAT TRANSFER AND FLUID DYNAMICS; (2) TRANSIENT FUEL RESPONSE AND FISSION-PRODUCT RELEASE PROGRAM; AND (3) MECHANICAL PROPERTIES OF ZIRCALOY CONTAINING OXYGEN

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*REACTOR, LWR + ANL + *SAFETY ANALYSIS + ACCIDENT, LOSS OF COOLANT + HEAT TRANSFER ANALYSIS + HYDRAULIC ANALYSIS + FISSION PRODUCT RELEASE + ZIRCALOY + OXYGEN + PROPERTY, MECHANICAL + NRC-2 + NRC-3 + NRC-4

149135
COLLIER RP + FLANIGAN LJ + BISHOP TA
STATUS REPORT ON ECC PENETRATION SCALING RESEARCH
BATTELLE COLUMBUS LABS., OHIO
NUREG/CR-0651 + BMI-2019 +. 67 PPS. 3 TABS. 26 FIGS. 53 REFS. FEB. 1979

THIS REPORT INCLUDES A SUMMARY OF RESULTS OF ECC PENETRATION RESEARCH CARRIED OUT AS PART OF THE STEAM-WATER MIXING PROGRAM AT BATTELLE COLUMBUS LABORATORIES. IT ALSO INCLUDES A DISCUSSION OF SCALING OF SMALL SCALE ECC PENETRATION AND CONDENSATION RESULTS TO LARGE FACILITIES. THE SUMMARY INCLUDES A DISCUSSION OF ECC PENETRATION TEST RESULTS, AND THE CORRELATION DEVELOPED FROM THOSE DATA, DISCUSSION OF HOT WALL EFFECTS, DISCUSSION OF COLD LEG STEAM EFFECTS, AND A DISCUSSION OF TRANSIENT STEAM FLOW EFFECTS.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

REACTOR, PWR + ACCIDENT, LOSS OF COOLANT + EMERGENCY COOLING SYSTEM + FLOW, TWO PHASE + STEAM + WATER + HYDRODYNAMIC ANALYSIS + NRC-2

149136
BOLLIER RP + LIU JS + SEGEV A
STEAM-WATER MIXING AND SYSTEM HYDRODYNAMICS PROGRAM TASK 4, QUARTERLY PROGRESS REPORT OCTOBER 1978 THRU DECEMBER 1978
BATTELLE COLUMBUS LABS, OHIO
NUREG/CR-0845 + BMI-2028 +. 40 PPS. 2 TABS. 11 FIGS. 21 REFS. MAY 1979

THIS QUARTER ANALYSIS INCLUDED A CONTINUING REVIEW OF THE EFFECTS OF DISTORTION OF ANNULUS LENGTH ON SCALING, AND FURTHER DEVELOPMENT OF THE CONDENSATION/VAPORIZATION MODEL. THIS MODEL DESCRIBES THE ONE-DIMENSIONAL FLOW OF A LIQUID FILM DRAINING DOWN A HEATED WALL IN THE PRESENCE OF COUNTERCURRENT VAPOR FLOW. THEORETICAL PREDICTIONS WERE COMPARED WITH DATA OBTAINED IN 1/15- AND 2/15-SCALE MODELS, WITH REASONABLY GOOD AGREEMENT.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

REACTOR, PWR + ACCIDENT, LOSS OF COOLANT + HYDRODYNAMIC ANALYSIS + FLOW, TWO PHASE + STEAM + WATER + MASS TRANSFER + NRC-2

148883
COLLIER RP + BISHOP TA + FLANIGAN LJ
STEAM-WATER MIXING AND SYSTEM HYDRODYNAMICS PROGRAM, TASK 4 - QUARTERLY PROGRESS REPORT JANUARY-MARCH 1979
BATTELLE COLUMBUS LABS., OHIO
NUREG/CR-0897 + BMI-2029 +. 55 PPS, 15 FIGS. 12 REFS, JUNE 1979

DURING THIS QUARTER ANALYSIS INCLUDED DETAILED ANALYTIC DEVELOPMENT OF I SCALING FOR ANNULAR GEOMETRIES, CONTINUED DEVELOPMENT OF THE CONDENSATION AND VAPORIZATION MODEL, CONTINUED DEVELOPMENT OF THE DISCONTINUOUS DELIVERY MODEL, AND COMPLETION OF A STUDY OF RESULTS FROM TESTS WITH DISTORTED ANNULUS LENGTHS. EXPERIMENTAL WORK THIS QUARTER INCLUDED FLOODING TESTS IN A

148883 *CONTINUED*
SIMPLE TUBE MODEL AND CONDENSATION AND VAPORIZATION TESTS IN A HEATED FLAT PLATE MODEL. DESIGN AND FABRICATION OF TWO NEW INSTRUMENTATION SYSTEMS CONTINUED DURING THE QUARTER. DATA FROM PREVIOUS FLOODING TESTS AT 1/15- AND 2/14-SCALE WERE REORGANIZAED IN A CONSISTENT FORMAT TO FACILITATE ACCESS FOR MODEL DEVELOPMENT.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

FLOW, TWO PHASE + FLOW THEORY AND EXPERIMENTS + STEAM + WATER + ANALYTICAL MODEL + NRC-2 + FLOW, ANNULAR

149281
ABUAF N + JONES OC + ZIMMER GA
RADIO FREQUENCY (R-F) PROBE FOR BUBBLE SIZE AND VELOCITY MEASUREMENTS
BROOKHAVEN NATIONAL LAB., UPTON, N.Y.
NUREG/CR-0769 + BNL-NUREG-50997 +. 12 PPS, 8 FIGS, 10 REFS, MARCH 1979

A RADIO FREQUENCY (R-F) PROBE THAT CAN PROVIDE LOCAL VOID FRACTION AND INTERFACE VELOCITY MEASUREMENTS IN A GAS-LIQUID TWO-PHASE FLOW WAS DEVELOPED. THE PROBE RESPONSE TO BUBBLE PASSAGE WAS INVESTIGATED WITH SINGLE BUBBLE CONTROLLED EXPERIMENTS. BY CHOOSING A SENSITIVE PROBE TIP LENGTH OF 2.75 - 3 MM, THE R-F PROBE OUTPUT PROVIDED ENOUGH INFORMATION TO DETERMINE THE BUBBLE LENGTH AND VELOCITY. (EWH)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

VOID FRACTION + MEASUREMENT + *EQUIPMENT DEVELOPMENT + FLOW, TWO PHASE + NRC-2 + *INSTRUMENT, FLOW

148386
CROWLEY CJ + ROTHE PH
ANALYSIS OF SUPERHEATED WALL EFFECTS DURING REFILL AT SMALL SCALE
CREARE INC., HANOVER, N.H.
NUREG/CR-0599 + CREARE TN-287 +. 155 PPS, 103 FIGS, 45 REFS, APRIL 1979

A SEMI-EMPIRICAL ANALYSIS IS PRESENTED TO CALCULATE THE TIMING AND RATE OF DELIVERY OF EMERGENCY CORE COOLANT (ECC) TO THE LOWER PLENUM OF A PRESSURIZED WATER REACTOR. EMPHASIS IS GIVEN TO THE PHYSICAL PROCESS OF ECC BYPASS BY UPWARD FLOWING STEAM IN THE REACTOR DOWNCOMER AND THE AMPLIFICATION OF THIS EFFECT BY STEAM PRODUCED AT THE SUPERHEATED VESSEL WALLS. THE ANALYSIS IS SUCCESSFULLY COMPARED WITH OVER 350 TESTS AT 1/15 SCALE.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

REACTOR, PWR + ACCIDENT, LOSS OF COOLANT + MODEL TESTING + ACCIDENT MODEL + HEAT TRANSFER + THERMAL ANALYSIS + NRC-2 + SUPERHEAT

149917
CROWLEY CJ + ROTHE PH + CARY CN
FIRST QUARTER FY79 PROGRESS REPORT ON REFILL EFFECTS PROGRAM QUARTERLY PROGRESS REPORT OCTOBER 1, 1978-DECEMBER 31, 1978
CREARE INC., HANOVER, N.H.
NUREG/CR-0719 + CREARE TN-292 +. 9 FIGS, 8 REFS, MAY 1979

IN THE PERIOD PRIMARY ANALYTICAL EFFORTS INCLUDED SYNTHESIS OF THE EFFECTS OF SUPERHEATED WALLS INTO THE REFILL ANALYSIS, MODIFICATIONS TO THE REFILL MODEL USING RELAP TO PREDICT FLASHING TRANSIENTS, CONDENSATION-INDUCED TRANSIENTS AND FLOW TOPOGRAPHY. EXPERIMENTAL WORK INCLUDED LOWER PLENUM VOIDING STUDIES AT TWO VESSEL SIZES TO INVESTIGATE SCALING AND ALSO COUNTERCURRENT FLOW EXPERIMENTS WITH TWO ECC FLOW RATES (AT ELEVATED PRESSURE) IN SUPPORT OF THE RESEARCH INFORMATION LETTER. FACILITY UPGRADES INVOLVED REVISED INSTRUMENTATION IN THE 1/15-SCALE MODEL IN PREPARATION FOR ADDITIONAL FLASHING TRANSIENT EXPERIMENTS AND IMPROVEMENTS TO THE DESIGN OF THE PROBE INSTRUMENTS FOR FLOW TOPOGRAPHY.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

REACTOR, PWR + ACCIDENT, LOSS OF COOLANT + MODEL TESTING + COMPUTER PROGRAM + *CORE REFLOODING + TRANSIENT + FLOW DISTRIBUTION + *MODEL + NRC-2 + CONDENSATION

149400
CROWLEY CJ + ROTHE PH
SECOND QUARTER FY79 PROGRESS REPORT ON REFILL EFFECTS PROGRAM QUARTERLY PROGRESS REPORT JANUARY 1, 1979-MARCH 31, 1979
CREARE INC., HANOVER, N.H.
NUREG/CR-0886 + CREARE TN-295 +. 22 PPS, 10 FIGS, 12 REFS, JUNE 1979

THE GENERAL CONTEXT OF THIS WORK IS A POSTULATED LOSS-OF-COOLANT ACCIDENT (LOCA) IN A PRESSURIZED WATER REACTOR (PWR). ALTHOUGH MANY OF THE BASIC PROCESSES BEING STUDIED MAY ALSO APPLY TO BOILING WATER REACTORS (BWRS). THE PROGRAM IS A CONTINUING EFFORT TO DEVELOP ANALYTICAL AND EMPIRICAL TOOLS WHICH WILL CONTRIBUTE TO BEST-ESTIMATE ANALYTICAL AND EMPIRICAL TOOLS WHICH WILL CONTRIBUTE TO BEST-ESTIMATE AND LICENSING PREDICTIONS OF LOWER PLENUM FILLING DURING POSTULATED LOCAS IN PWRS AND TO ASSIST IN THE DESIGN AND SPECIFICATION OF LARGER SCALE PLENUM FILLING TESTS AND THE PREDICTIONS OF THOSE TEST RESULTS. PARTICULAR RESULTS OF FLASHING TRANSIENT EXPERIMENTS AND THE CALCULATION OF TEST RESULTS USING RELAP4/MOD5 ARE DISCUSSED. FUTURE PLANS FOR EACH OF THE PROGRAM TOPICS ARE ALSO OUTLINED.

149400 *CONTINUED*
AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

REACTOR, PWR + ACCIDENT, LOSS OF COOLANT + CORE REFLOODING + THERMAL HYDRAULIC ANALYSIS + SAFETY ANALYSIS + MODEL TESTING + NRC-2

148918
RICHTER HJ + WALLIS GB + SPEERS MS
EFFECT OF SCALE ON TWO-PHASE COUNTERCURRENT FLOW FLOODING, FINAL REPORT JULY 1977-JUNE 1978
DARTMOUTH COLLEGE, HANOVER, N.H.
NUREG/CR-0312 +, 39 PPS, 19 FIGS, JUNE 1979

AIR-WATER COUNTERCURRENT FLOW EXPERIMENTS HAVE BEEN PERFORMED IN VERTICAL TUBES OF DIFFERENT SIZES AND IN ANNULI WITH DIFFERENT GAP SIZES. THE GAS VELOCITY SUFFICIENT TO PRODUCE ZERO PENETRATION OF LIQUID IN LARGE TUBES (6" AND MORE) AND ANNULI SEEMS TO BE THE SAME. FOR 2" DIAMETER TUBES THE FLOODING BEHAVIOR CAN BE REPRESENTED BY THE WALLIS CORRELATION. IN LARGE TUBES AND ANNULI IT WAS ASSUMED THAT ALL LIQUID PENETRATED IN THE FORM OF A FILM ALONG THE WALLS. A FORCE BALANCE ON THIS LIQUID FILM LEADS TO A CORRELATION, WHICH PREDICTS THE FLOODING BEHAVIOR IN MOST CASES SATISFACTORILY.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

FLOW, TWO PHASE + AIR + WATER + FLOW THEORY AND EXPERIMENTS + FLOW, ANNULAR + HYDRAULIC EXPERIMENT + ANALYTICAL MODEL + NRC-2

148915
RICHTER HJ
EFFECT OF SCALE ON TWO-PHASE COUNTERCURRENT FLOW FLOODING IN ANNULI, FINAL REPORT APRIL 1978-MARCH 1979
DARTMOUTH COLLEGE, HANOVER, N.H.
NUREG/CR-0822 +, 31 PPS, 15 FIGS, 5 REFS, 1979

AIR-WATER FLOODING EXPERIMENTS WERE PERFORMED IN AN ANNULUS APPROXIMATELY 2/15TH THE SIZE OF A NUCLEAR REACTOR. THE NECESSARY GAS VELOCITY TO PREVENT ANY DOWNWARD WATER PENETRATION WAS FOUND TO BE A FUNCTION OF THE WAY THE WATER WAS INTRODUCED INTO THE ANNULUS. IF WATER WAS ALLOWED TO ENTER ONLY ON ONE SIDE INSTEAD OF AROUND THE TOTAL CIRCUMFERENCE, THE GAS VELOCITY FOR ZERO PENETRATION HAD TO BE INCREASED. THE FLOODING CHARACTERISTIC CAN BE DESCRIBED WITH A WALLIS CORRELATION WHERE THE COEFFICIENTS ARE FUNCTIONS OF THE METHOD OF WATER INJECTION INTO THE ANNULUS.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

FLOW, TWO PHASE + FLOW, ANNULAR + FLOW THEORY AND EXPERIMENTS + AIR + WATER + ANALYTICAL MODEL + NRC-2

149134
RICHTER HJ + WALLIS GB
ECC BYPASS SCALING
DARTMOUTH COLLEGE, HANOVER, N.H.
NUREG/CR-0850 +, 35 PPS, 13 FIGS, 15 REFS, JUNE 1979

THIS REPORT REPRESENTS AN ATTEMPT TO EVALUATE THE "STATE OF THE ART" ON ECC (EMERGENCY CORE COOLING) BYPASS FOR NUCLEAR REACTORS. THE WORK PERFORMED AT DARTMOUTH WILL BE SUMMARIZED AND COMPARISON WITH EXPERIMENTAL RESULTS OF OTHER INVESTIGATORS WILL BE EVALUATED. SINCE DARTMOUTH'S EFFORT IN THE PAST HAS BEEN PRIMARILY WITH AIR-WATER COUNTER-CURRENT FLOW SITUATIONS, THEY WILL RESTRICT THEIR CONSIDERATIONS ALMOST EXCLUSIVELY TO THIS PARTICULAR TWO-COMPONENT TWO-PHASE SYSTEM. THE MAIN EMPHASIS WILL BE ON THE LIMITATION OF COUNTERCURRENT FLOW - SO-CALLED FLOODING. IN PARTICULAR, FLOODING BEHAVIOR AND THE POINT OF ZERO WATER PENETRATIONS AS WELL AS THEIR DEPENDENCY ON THE SIZE (SCALE) OF THE APPARATUS WILL BE DISCUSSED IN DETAIL.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

REACTOR, PWR + ACCIDENT, LOSS OF COOLANT + EMERGENCY COOLING + EMERGENCY COOLING SYSTEM + FLOW, TWO PHASE + AIR + STEAM + WATER + NRC-2

148405
JORDAN RP
BWR EMERGENCY CORE COOLING ELEVENTH QUARTERLY PROGRESS REPORT, JULY 1-SEPTEMBER30, 1978
GENERAL ELECTRIC CO., SAN JOSE, CALIF.
GEAP-NUREG-21304-11 +, 15 PPS, 5 REFS, OCT. 1978

A MAJOR REQUIREMENT IN THE DESIGN OF POWER REACTOR SYSTEMS IS THE LIMITATION OF FUEL CLADDING TEMPERATURE BELOW SPECIFIED LEVELS UNDER BOTH NORMAL AND ACCIDENT CONDITIONS. TO MEET THIS REQUIREMENT IT IS NECESSARY TO BE ABLE TO PREDICT SYSTEM PERFORMANCE DURING A LOCA. SCALED SYSTEM TEST PROGRAMS ARE USED TO DEVELOP BASIC SYSTEM INFORMATION. TASKS OF THE BWR BLOWDOWN/EMERGENCY CORE COOLING PROGRAM ARE DESCRIBED TOGETHER WITH OBJECTIVES AND PROGRESS DURING THE THIRD QUARTER OF 1978.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

BLOWDOWN + EMERGENCY COOLING SYSTEM + EMERGENCY COOLING + ACCIDENT, LOSS OF COOLANT + GENERAL ELECTRIC + FAILURE, CLADDING + ENGINEERED SAFETY FEATURE + NRC-2

149919
FINDLAY JA
BWR BLOWDOWN EMERGENCY CORE COOLING TWELFTH QUARTERLY PROGRESS REPORT OCTOBER 1-DECEMBER 31, 1978
GENERAL ELECTRIC CO., SAN JOSE, CALIF.
GEAP-NUREG-21304-12 +. 16 PPS, 3 FIGS, 5 REFS, JAN. 1979

THE 64-ROD BLOWDOWN HEAT TRANSFER TEST TOPICAL REPORT WAS COMPLETED. VERIFIED DATA PACKAGES FOR PEAK AND AVERAGE POWER BUNDLE TESTS WERE COMPLETED. A PRELIMINARY ANALYSIS OF THE COMPARISON BETWEEN TESTS CONDUCTED WITH AND WITHOUT ECC INJECTION WAS COMPLETED. NO EXPERIMENTS WERE RUN DURING THIS QUARTER. THE TLTA WAS DISASSEMBLED AND THE HEATER BUNDLE REMOVED. REASSEMBLY HAS BEEN DEFERRED PENDING PMG APPROVAL. SIMULATION OF THE TLTA LOOP USING THE TRAC CODE WAS BEGUN.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*REACTOR, BWR + *BLOWDOWN + HEAT TRANSFER + COMPUTER PROGRAM + EMERGENCY COOLING SYSTEM + *OUT OF PILE EXPERIMENT + NRC-2

147186
DUKLER AE + SMITH, L
TWO PHASE INTERACTIONS IN COUNTER-CURRENT FLOW: STUDIES OF THE FLOODING MECHANISM, ANNUAL REPORT NOVEMBER 1975-OCTOBER 1977
UNIV. OF HOUSTON, TEXAS
NUREG/CR-0617 +. 103 PPS, FIGS, REFS, JAN. 1979

THE INTERACTION BETWEEN A FALLING LIQUID FILM AND A GAS STREAM FLOWING COUNTER-CURRENT TO IT HAS BEEN THE SUBJECT OF NUMEROUS INVESTIGATIONS IN MANY DIFFERENT FIELDS. THE PRIMARY OBSTACLE TO AN UNDERSTANDING OF THIS INTERACTION HAS BEEN THE PRESENCE OF WAVES ON THE FALLING LIQUID FILM. THESE WAVES APPEAR TO ACCOUNT FOR SOME, IF NOT ALL OF THE CONDITIONS OBSERVED AT THE TRANSITION TO FLOODING IN WHICH PART OF THE LIQUID FILM BEGINS TO MOVE UPWARD.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

FLOW, TWO PHASE + FILM, LIQUID + FLOOD + FLOODING COEFFICIENT + TESTING + INSTRUMENT, TESTING + FLOW THEORY AND EXPERIMENTS + EXPERIMENT + NRC-2

148733
ESPARZA V + SACKETT KE + STANGER K
EXPERIMENTAL DATA REPORT FOR SEMISCALE MOD-3 INTEGRAL BLOWDOWN AND REFLOOD HEAT TRANSFER TEST S-07-06 (BASELINE TEST SERIES)
IDAHO NATIONAL ENGINEERING LAB., IDAHO FALLS
NUREG/CR-0467 + TREE-1226 +. 263 PPS, 10 TABS, 406 FIGS, JAN. 1979

RECORDED TEST DATA ARE PRESENTED FOR TEST S-07-6 OF THE SEMISCALE MOD-3 BASELINE TEST SERIES. THIS TEST IS ONE OF SEVERAL SEMISCALE MOD-3 EXPERIMENTS CONDUCTED TO INVESTIGATE THE THERMAL AND HYDRAULIC PHENOMENA ACCOMPANYING A HYPOTHESIZED LOSS-OF-COOLANT ACCIDENT IN A PRESSURIZED WATER REACTOR (PWR) SYSTEM. TEST S-07-6 WAS CONDUCTED FROM INITIAL CONDITIONS OF 15.21 MPA AND 559 K TO INVESTIGATE THE RESPONSE OF THE SEMISCALE MOD-3 SYSTEM TO A BLOWDOWN TRANSIENT FOLLOWING A SIMULATED DOUBLE-ENDED OFFSET SHEAR OF THE BROKEN LOOP COLD LEG PIPING.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

REACTOR, PWR + ACCIDENT, LOSS OF COOLANT + BLOWDOWN + THERMAL HYDRAULIC ANALYSIS + DATA COLLECTION + TEMPERATURE + PRESSURE TRANSIENT + SAFETY ANALYSIS + NRC-2

149829
WILLS EL + YBARRONDO LJ
QUARTERLY TECHNICAL PROGRESS REPORT ON WATER REACTOR SAFETY PROGRAMS SPONSORED BY THE NUCLEAR REGULATORY COMMISSION'S DIVISION OF REACTOR SAFETY RESEARCH OCTOBER-DECEMBER 1978
IDAHO NATIONAL ENGINEERING LAB., IDAHO FALLS
NUREG/CR-0512 + TREE-1298 +. 75 PPS, FIGS, REFS, JAN. 1979

THE FIRST SMALL-BREAK EXPERIMENT WAS SUCCESSFULLY PERFORMED IN THE SEMISCALE MOD-3 TEST SYSTEM. AND UNUSUAL FLUID MASS DEPLETION THAT OCCURRED IN THE MOD-3 SYSTEM DOWNCOMER DURING EARLIER TESTING WAS INVESTIGATED. THE LOFT EXPERIMENTAL PROGRAM SUCCESSFULLY COMPLETED THE FIRST NUCLEAR LOSS-OF-COOLANT EXPERIMENT IN THE LOFT FACILITY; RESULTS SHOW THAT MEASURED FUEL ROD CLADDING TEMPERATURES (789 K MAXIMUM) WERE MUCH LOWER THAN HAD BEEN CALCULATED. THE THERMAL FUELS BEHAVIOR PROGRAM COMPLETED TWO REACTIVITY INITIATED ACCIDENT TESTS IN THE POWER BURST FACILITY AND PREPARATION FOR FURTHER TESTING (INCLUDING A NEW TEST SERIES, ON OPERATIONAL TRANSIENTS).

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

REACTOR, LWR + *EXPERIMENT + THERMAL HYDRAULIC ANALYSIS + *LOFT (S-RR) + ACCIDENT, LOSS OF COOLANT + FUEL, NUCLEAR + THERMAL PROPERTY + FUEL ROD + CONTAINMENT INTEGRITY + COMPUTER PROGRAM + NRC-2 + NRC-3 + NRC-4

147785
MCCORMICK-BARGER M
EXPERIMENT DATA REPORT FOR LOFT POWER ASCENSION TEST L2-2
IDAHO NATIONAL ENGINEERING LAB., IDAHO FALLS
NUREG/CR-0492 + TREE-1322 +. 265 PPS, 8 TABS, 291 FIGS, FEB. 1979

147785 *CONTINUED*
TEST L2-2 WAS THE FIRST TEST IN THE POWER ASCENSION TEST SERIES OF NUCLEAR FULL DOUBLE-ENDED COLD LEG BREAK TESTS CONDUCTED BY THE LOSS-OF-FLUID TEST PROGRAM. THE SPECIFIC OBJECTIVES OF TEST L2-2 WERE TO DETERMINE FUEL ROD-TO-COOLANT HEAT TRANSFER IN THE POSTCRITICAL HEAT FLUX REGIME AND TO DETERMINE WHETHER ANY CLADDING PERFORATION OCCURS. THE EXPERIMENT WAS SUCCESSFUL IN ACCOMPLISHING THESE OBJECTIVES. RECORDED DATA FOR TEST L2-2 ARE PRESENTED.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

ACCIDENT, LOSS OF FLOW + DATA COLLECTION + ACCIDENT, LOSS OF COOLANT + BLOWDOWN + TEMPERATURE + PRESSURE TRANSIENT + HEAT TRANSFER + NRC-2

146875
DEMMIE PN + HOFMANN KR
MULTIDIMENSIONAL ANALYSIS OF FLUID FLOW IN THE LOFT COLD LEG BLOWDOWN PIPE DURING A LOSS-OF-COOLANT EXPERIMENT
IDAHO NATIONAL ENGINEERING LAB., IDAHO FALLS
NUREG/CR-0645 + TREE-1323 +. 77 PPS, 6 TABS, 108 FIGS, 9 REFS, MARCH 1979

THE PURPOSE OF THIS ANALYSIS WAS TO EVALUATE THE CAPABILITY OF K-FIX/MOD1 TO CALCULATE THEORETICAL FLUID QUANTITY DISTRIBUTIONS IN THE BLOWDOWN PIPE DURING A LOSS OF COOLANT EXPERIMENT (LOCE) FOR POSSIBLE APPLICATION TO THE ANALYSIS OF LOFT EXPERIMENTAL DATA, THE DETERMINATION OF MASS FLOW, OR THE DEVELOPMENT OF DATA REDUCTION MODELS. A RECTANGULAR SECTION OF A PORTION OF THE LOFT BLOWDOWN PIPE CONTAINING MEASUREMENT STATION BL-1 WAS MODELED USING TIME-DEPENDENT BOUNDARY CONDITIONS. FLUID QUANTITIES WERE CALCULATED DURING A SIMULATION OF THE FIRST 26 SEC OF LOFT LOCE L1-4. SENSITIVITY STUDIES WERE ALSO MADE.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

ACCIDENT, LOSS OF COOLANT + BLOWDOWN + COMPUTER PROGRAM + LOFT (S-RR) + HYDRAULIC EXPERIMENT + SENSITIVITY ANALYSIS + VOID COEFFICIENT + NRC-2

146934
DEMMIE PN + HOFMANN K
THE COMPUTER PROGRAM K-FIX/MOD1: A MODIFICATION OF THE COMPUTER PROGRAM K-FIX FOR APPLICATIONS TO FLUID FLOW SIMULATION IN LOFT SYSTEM PIPING
IDAHO NATIONAL ENGINEERING LAB., IDAHO FALLS
NUREG/CR-0646 + TREE-1324 +. 83 PPS, 4 FIGS, 14 REFS, MARCH 1979

K-FIX/MOD1 WAS DEVELOPED AS A MULTIDIMENSIONAL ANALYTIC TOOL BASED ON A TWO-FLUID MODEL FOR APPLICATIONS TO FLUID FLOW SIMULATION IN LOSS-OF-FLUID TEST (LOFT) SYSTEM PIPING. THE FIELD EQUATIONS THAT CONSTITUTE THE TWO-FLUID MODEL BASES FOR K-FIX/MOD1 AS WELL AS THE CONSTITUTIVE RELATIONS REQUIRED TO CLOSE THIS SYSTEM OF EQUATIONS ARE PRESENTED AND DISCUSSED. THE FINITE DIFFERENCE EQUATIONS THAT APPROXIMATE THESE EQUATIONS AND THEIR SOLUTION PROCEDURE ARE GIVEN. THE GLOBAL STRUCTURE OF K-FIX/MOD1 THAT IMPLEMENTS THIS SOLUTION PROCEDURE IS DISCUSSED. FINALLY, THE INPUT DATA FOR K-FIX/MOD1 AND ITS PREPROCESSOR PROGRAM PREP/MOD1 ARE GIVEN.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*COMPUTER PROGRAM + FLOW THEORY AND EXPERIMENTS + SIMULATION + PIPES AND PIPE FITTINGS + FLOW, TWO PHASE + NRC-2

147998
FINCKE JR + DEASON VA
THE MEASUREMENT OF PHASE VELOCITIES IN MIST FLOWS USING STAGNATION PROBES
IDAHO NATIONAL ENGINEERING LAB., IDAHO FALLS
NUREG/CR-0648 + TREE-1350 +. 30 PPS, 20 FIGS, 14 REFS, MARCH 1979

ADDRESSES THE PROBLEM OF A PRACTICAL TECHNIQUE TO MEASURE THE SEPARATE MASS FLOW RATES OF GAS AND LIQUID IN CONCURRENT FLOW. ONLY FLOWS CONTAINING A SIGNIFICANT PORTION OF THE LIQUID ENTRAINED AS DROPLETS ARE CONSIDERED. THE DESIRED END RESULT IS AN INSTRUMENT AND MEASUREMENT TECHNIQUE WHICH MAY BE USED IN TRANSIENT AS WELL AS STEADY STATE TWO-PHASE MIST FLOWS. THE TECHNIQUE SHOULD FULLY CHARACTERIZE THE FLOW, THAT IS, DEFINE THE DENSITY PROFILE AND THE VELOCITY PROFILE OF EACH PHASE. EXPERIMENTAL WORK WAS CONDUCTED IN TWO-COMPONENT AIR-WATER FLOWS. THE RANGE OF FLOW REGIME COVERED IS ANNULAR MIST, DISPERSED MIST, AND STRATIFIED MIST. THE RESULTS PRESENTED ARE A STRONG FUNCTION OF MIXER GEOMETRY AND SHOULD NOT BE GENERALIZED TO OTHER GEOMETRIES.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*MEASUREMENT + *FLOW, TWO PHASE + GAS + LIQUID + ANALYTICAL MODEL + EXPERIMENT + HYDRAULIC ANALYSIS + *FLOW, MIST + NRC-2

147046
YBARRONDO LJ + CLAFLIN DJ + WILLS EL
QUARTERLY TECHNICAL PROGRESS REPORT ON WATER REACTOR SAFETY PROGRAMS SPONSORED BY THE NUCLEAR REGULATORY COMMISSION'S DIVISION OF REACTOR SAFETY RESEARCH JANUARY-MARCH 1979
IDAHO NATIONAL ENGINEERING LAB., IDAHO FALLS
NUREG/CR-0739 + TREE-1299 +. 66 PPS, 4 TABS, 32 FIGS, 29 REFS, APRIL 1979

TWO BASELINE TESTS WERE SUCCESSFULLY PERFORMED IN THE SEMISCALE MOD-3 TEST SYSTEM, AND UNUSUAL DOWNCOMER HYDRAULIC BEHAVIOR THAT OCCURRED IN THE MOD-3 SYSTEM DOWNCOMER DURING EARLIER TESTING

147046 *CONTINUED*
WAS ANALYZED. THE LOFT EXPERIMENTAL PROGRAM PERFORMED ANALYSIS OF THE FIRST NUCLEAR LOSS-OF-COOLANT EXPERIMENT IN THE LOFT FACILITY IN WHICH MEASURED FUEL ROD CLADDING TEMPERATURES (789 K MAXIMUM) WERE MUCH LOWER THAN HAD BEEN CALCULATED. THE THERMAL FUELS BEHAVIOR PROGRAM COMPLETED TWO LOFT LEAD ROD TESTS IN THE POWER BURST FACILITY, AND AN ANALYSIS OF AXIAL GAS FLOW MEASUREMENTS IN FUEL RODS WAS ALSO COMPLETED TO DETERMINE THE EXTENT OF EARLY FUEL RELOCATION AND CRACKING.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*REACTOR, LWR + EXPERIMENT + *THERMAL HYDRAULIC ANALYSIS + *LOFT (S-RR) + ACCIDENT, LOSS OF COOLANT + FUEL, NUCLEAR + THERMAL PROPERTY + FUEL ROD + CONTAINMENT INTEGRITY + NRC-2 + NRC-3 + NRC-4

148932
TASAKA K
NUCLEAR DATA LIBRARY OF FISSION PRODUCTS FOR DECAY POWER CALCULATION
IDAHO NATIONAL ENGINEERING LAB., IDAHO FALLS
NUREG/CR-0705 + TREE-1325 +. 182 PPS, 19 TABS, 29 FIGS, MAY 1979

THE NUCLEAR DATA LIBRARY OF FISSION PRODUCTS HAS BEEN REVISED TO IMPROVE THE ACCURACY OF SUMMATION CALCULATIONS OF FISSION-PRODUCT DECAY POWER AND TO USE THE RESULTS FOR BEST-ESTIMATE ANALYSES OF A HYPOTHESIZED LOCA. THE 1974 DATA LIBRARY HAS BEEN REVISED TO INCLUDE THE NEWLY OBTAINED DECAY DATA IN NUCLEAR DATA SHEETS THROUGH 1977. THE CORRELATIONS FOR ESTIMATING UNKNOWN NUCLEAR DATA OF SHORT-LIVED NUCLIDES WERE REVISED ON THE BASIS OF NEW EXPERIMENTAL DECAY DATA. DECAY POWERS OF FISSION PRODUCTS ARE CALCULATED BY THE CODE D CHAIN.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

DATA COLLECTION + ACCIDENT, LOSS OF COOLANT + NRC-2 + DECAY HEAT + FISSION PRODUCT RELEASE + REACTOR POWER + RADIONUCLIDE + COMPUTER PROGRAM

149003
LIAO C-K + PRASSINOS FG
AN INVESTIGATION OF THE TWO-PHASE FLOW REGIMES IN THE LOSS-OF-FLUID TEST (LOFT) PIPING DURING LOSS-OF-COOLANT EXPERIMENTS (LOCES)
IDAHO NATIONAL ENGINEERING LAB., IDAHO FALLS
NUREG/CR-0606 + TREE-1244 +. 77 PPS, 47 FIGS, 20 REFS, JUNE 1979

THE TWO-PHASE FLOW REGIMES IN THE LOFT PIPING WERE DETERMINED FROM DENSITY PROFILE CALCULATIONS USING DATA OBTAINED FROM THE FIVE THREE-BEAM GAMMA DENSITOMETERS EMPLOYED IN LOFT. THE LOFT FLOW REGIME DATA WERE COMPARED WITH TWO-PHASE FLOW TRANSITION THEORY DATA AND FLOW REGIME DATA FROM SEMISCALE MOD-1 FACILITY. THE REPORT PROVIDES DATA FOR CODE ASSESSMENT AND DEVELOPMENT AND TO IMPROVE PIPING HEAT TRANSFER AND MASS FLOW CALCULATIONS. (FAH)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

LOFT (S-RR) + FLOW, TWO PHASE + PIPES AND PIPE FITTINGS + ACCIDENT, LOSS OF COOLANT + NRC-2

148941
SACKETT KE + GILLINS RL + PACK DR
EXPERIMENT DATA REPORT FOR SEMISCALE MOD-3 LOWER PLENUM INJECTION TEST S-07-8 (BASELINE TEST SERIES)
IDAHO NATIONAL ENGINEERING LAB., IDAHO FALLS
NUREG/CR-0814 + TREE-1228 +. 231 PPS, 8 TABS, 361 FIGS, JUNE 1979

RECORDED TEST DATA ARE PRESENTED FOR TEST S-07-8 OF THE SEMISCALE MOD-3 BASELINE TEST SERIES. THIS TEST IS ONE OF SEVERAL SEMISCALE MOD-3 EXPERIMENTS CONDUCTED TO INVESTIGATE THE THERMAL AND HYDRAULIC PHENOMENA ACCOMPANYING A HYPOTHESIZED LOSS-OF-COOLANT ACCIDENT IN A PRESSURIZED WATER REACTOR (PWR) SYSTEM. TEST S-07-8 WAS CONDUCTED FROM INITIAL CONDITIONS OF 15.7 MPA AND 556 K TO INVESTIGATE THE RESPONSE OF THE SEMISCALE MOD-3 SYSTEM TO A BLOWDOWN TRANSIENT FOLLOWING A SIMULATED DOUBLE-ENDED OFFSET SHEAR OF THE BROKEN LOOP COLD LEG PIPING. THE SPECIFIC OBJECTIVE OF THIS TEST WAS TO PROVIDE REFERENCE DATA TO EVALUATE INTEGRAL BLOWDOWN AND REFLOOD BEHAVIOR DURING A COLD LEG BREAK WITH EMERGENCY CORE COOLANT (ECC) INJECTION INTO THE VESSEL LOWER PLENUM OF THE MOD-3 SYSTEM. THE PURPOSE OF THIS REPORT IS TO MAKE AVAILABLE THE UNINTERPRETED DATA FROM TEST S-07-8 FOR FUTURE DATA ANALYSIS.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

REACTOR, PWR + ACCIDENT, LOSS OF COOLANT + BLOWDOWN + THERMAL HYDRAULIC ANALYSIS + DATA COLLECTION + TEMPERATURE + PRESSURE TRANSIENT + SAFETY ANALYSIS + NRC-2

148944
MIYASAKI DH + SACKETT KE + PACK DR
EXPERIMENT DATA REPORT FOR SEMISCALE MOD-3 LOWER PLENUM INJECTION TEST S-07-9 (BASELINE TEST SERIES)
IDAHO NATIONAL ENGINEERING LAB., IDAHO FALLS
NUREG/CR-0815 + TREE-1229 +. 231 PPS, 8 TABS, 361 FIGS, JUNE 1979

RECORDED TEST DATA ARE PRESENTED FOR TEST S-07-9 OF THE SEMISCALE MOD-3 BASELINE TEST SERIES. THIS TEST IS ONE OF SEVERAL SEMISCALE MOD-3 EXPERIMENTS CONDUCTED TO INVESTIGATE THE THERMAL AND HYDRAULIC PHENOMENA ACCOMPANYING A HYPOTHESIZED LOSS-OF-COOLANT ACCIDENT IN A PRESSURIZED WATER REACTOR (PWR) SYSTEM. TEST S-07-9 WAS CONDUCTED FROM INITIAL CONDITIONS OF 16.10 MPA AND 559 K

148944 *CONTINUED*
TO INVESTIGATE THE RESPONSE OF THE SEMISCALE MOD-3 SYSTEM TO A BLOWDOWN TRANSIENT FOLLOWING A SIMULATED DOUBLE-ENDED OFFSET SHEAR OF THE BROKEN LOOP COLD LEG PIPING.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

REACTOR, PWR + ACCIDENT, LOSS OF COOLANT + BLOWDOWN + THERMAL HYDRAULIC ANALYSIS + DATA COLLECTION + TEMPERATURE + PRESSURE TRANSIENT + SAFETY ANALYSIS + NRC-2

147792
HOCHREITER LE + MASSIE HW + CONWAY CE
PWR FLECHT SEASET UNBLOCKED BUNDLE, FORCED AND GRAVITY REFLOOD TASK: TASK PLAN REPORT
U.S. NUCLEAR REGULATORY COMMISSION + ELECTRIC POWER RESEARCH INST., PALO ALTO, CLAIF. + WESTINGHOUSE ELECTRIC CORP., PITTSBURGH, PA.
NRC/EPRI/WESTINGHOUSE REPORT 3 +. APPROX. 400 PPS, FIGS, MARCH 1978

AS PART OF THE WESTINGHOUSE NRC/EPRI FULL-LENGTH EMERGENCY CORE HEAT TRANSFER FOR THE SEPARATE EFFECTS AND SYSTEMS EFFECTS TESTS (FLECHT-SEASET) REFLOOD HEAT TRANSFER AND HYDRAULIC PROGRAM, A SERIES OF FORCED FLOW AND GRAVITY FEED BUNDLE REFLOODING TESTS WILL BE CONDUCTED ON A HEATER ROD BUNDLE WHOSE DIMENSIONS ARE TYPICAL OF CURRENT PWR FUEL ROD ARRAYS. THE PURPOSE OF THESE TESTS IS TO PROVIDE A REFLOODING DATA BASE WHICH CAN BE USED TO HELP DEVELOP OR VERIFY REFLOOD PREDICTIVE METHODS, TO SERVE AS A COMPARISON TO THE EXISTING FLECHT REFLOOD DATA ON PREVIOUS FUEL ROD ARRAY SIZES. THIS DOCUMENT DESCRIBES THE DATA REQUIREMENTS, INSTRUMENTATION PLAN, FACILITY DESCRIPTION, TEST MATRIX AND CURRENT IDEAS ON DATA REDUCTION AND ANALYSIS FOR UNBLOCKED BUNDLE, FORCED AND GRAVITY REFLOOD TASK, IN THE FLECHT-SEASET PROGRAM.

AVAILABILITY - NRC, DIVISION OF TECHNICAL INFORMATION & DOCUMENT CONTROL, WASHINGTON, D.C. 20555

DATA COLLECTION + HEAT TRANSFER + FLOW BLOCKAGE + COMPUTER PROGRAM + CORE REFLOODING + NRC-2 + INSTRUMENT, OPERATING REACTIVITY

144342
ROBERTS MJ + HORTON JL + HERSKOVITZ MB
MEASUREMENT OF THE ELECTROMAGNETIC ENVIRONMENT AT PRIMARKREISLAUF
OAK RIDGE NATIONAL LAB., TENN.
NUREG/CR-0529 + ORNL/NUREG/TM-286 +. 15 PPS, 14 FIGS, DEC. 1978

ELECTRIC AND MAGNETIC FIELD STRENGTHS WERE MEASURED AT SEVERAL LOCATIONS INSIDE AND NEAR THE PRIMARKREISLAUF EXPERIMENTAL FACILITY IN ERLANGEN, FRG, TO DETERMINE THEIR EFFECTS ON THE PERFORMANCE OF ELECTRICAL PROBES TO BE INSTALLED THERE TO MEASURE TWO-PHASE FLOW. THESE MEASUREMENTS WERE MADE BECAUSE THE ELECTRICAL POWER SUPPLY USED AT PKL USES PHASE-FIRED SILICON CONTROLLED RECTIFIERS TO CONTROL POWER.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

PERFORMANCE + INSTRUMENT, COMPONENT + INSTRUMENT, FLOW + *EQUIPMENT DEVELOPMENT + *MEASUREMENT, NOISE + *ELECTRICAL CONDUCTION + GERMANY + ORNL + FLOW, TWO PHASE + MEASUREMENT + NOISE + NRC-2

143135
ADDENDUM 1 PROJECT DESCRIPTION: ORNL PWR BLOWDOWN HEAT TRANSFER SEPARATE-EFFECTS PROGRAM - THERMAL HYDRAULIC TEST FACILITY (THTF)
OAK RIDGE NATIONAL LAB., TENN.
NUREG/CR-0104 + ORNL/NUREG-218/A1 +. 24 PPS, 4 TABS, 25 FIGS, JAN. 1979

THIS ADDENDUM TO ORNL/NUREG/TM-218 DESCRIBES THE CHANGES THAT HAVE BEEN MADE IN THE THERMAL-HYDRAULIC TEST FACILITY (THTF) AFTER ONE YEAR OF OPERATION (JANUARY 1978). SECTION A DESCRIBES THE ACTUAL MODIFICATIONS TO THE THTF, AND SECTION B INCLUDES DISCUSSIONS OF SEVERAL ITEMS PERTINENT TO THE THTF OPERATING EXPERIENCE. FOR THE READER'S CONVENIENCE, MODIFICATIONS TO THE THTF ARE DISCUSSED IN SECTION A UNDER HEADINGS THAT REFER TO THE APPROPRIATE PART OF THE ORIGINAL REPORT. ONLY CHANGES THAT ARE CONSIDERED TO BE SIGNIFICANT HAVE BEEN INCLUDED. (CED)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

REACTOR, PWR + BLOWDOWN + THERMAL HYDRAULIC ANALYSIS + INSTRUMENT, PRESSURE + INSTRUMENT CALIBRATION + INSTRUMENT, FLOW + PUMPS + SEAL + OPERATING EXPERIENCE + NRC-2

143782
TURNAGE KG + JALLOUK PA
ADVANCED TWO-PHASE INSTRUMENTATION PROGRAM QUARTERLY PROGRESS REPORT FOR APRIL-JUNE 1978
OAK RIDGE NATIONAL LAB., TENN.
NUREG/CR-0501 + ORNL/NUREG/TM-279 +. 39 PPS, FIGS, REFS, JAN. 1979

TESTING OF ADVANCED SPOOL PIECE I IS IN PROGRESS. TWO-PHASE AIR-WATER TESTS HAVE BEEN PERFORMED WITH SEVERAL EXPERIMENTAL DRAG TARGETS. RESULTS IN THIS REPORT ARE FROM ONE OF THE EXPERIMENTS PERFORMED WITH THE SPOOL PIECE ORIENTED HORIZONTALLY AND WITH THE DRAG FLOWMETER TRANSDUCER FITTINGS ON TOP OF THE PIPE. IN AN EFFORT TO BETTER UNDERSTAND THE CAPABILITIES OF CURRENT SPOOL PIECE INSTRUMENTATION, SEVERAL TWO-PHASE MODELS HAVE BEEN USED TO ANALYZE THE DATA. (EWH)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

143782 *CONTINUED*
MEASUREMENT + *FLOW, TWO PHASE + *EQUIPMENT DEVELOPMENT + INSTRUMENT, FLOW + TESTING + TEST, INSTRUMENT RESPONSE + NRC-2

148400
OTT LJ + HEDRICK RA
ORTCAL - A CODE FOR THTF HEATER ROD THERMOCOUPLE CALIBRATION
OAK RIDGE NATIONAL LAB., TENN.
NUREG/CR-0342 + ORNL/NUREG-51 +. 217 PPS, 25 TABS, 81 FIGS, FEB. 1979

THIS REPORT DEVELOPS AND PRESENTS AN EXPERIMENTAL THERMOCOUPLE CALIBRATION PROCEDURE AND A FOUR-PART CALIBRATION PROGRAM, ORTCAL (ORNL THERMOCOUPLE CALIBRATION), WHICH SUPPLIES HEATER ROD PERFORMANCE INFORMATION TO THE INVERSE HEAT CONDUCTION CODE ORINC. CASE STUDIES ARE PRESENTED TO ILLUSTRATE THE EFFECT OF NONCALIBRATION OF FUEL PIN SIMULATORS ON THE INVERSE CALCULATIONS.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*THERMOCOUPLE + *INSTRUMENT, TEMPERATURE + *CALIBRATION + THERMAL PROPERTY + THERMAL EXPERIMENT + HEATERS + COMPUTER PROGRAM + NRC-2

144583
WHITE JD + BOHANAN RE + CLARK DL
QUARTERLY PROGRESS REPORT ON BLOWDOWN HEAT TRANSFER SEPARATE EFFECTS PROGRAM FOR OCTOBER-DECEMBER 1978
OAK RIDGE NATIONAL LAB., TENN.
NUREG/CR-0611 + ORNL/NUREG/TM-294 +. 31 PPS, FIGS. MARCH 1979

A SPECIAL TEST WAS RUN WITH THE THERMAL-HYDRAULIC TEST FACILITY (THTF) TO PROVIDE DATA FOR IDAHO NATIONAL ENGINEERING LABORATORY (INEL) TO USE IN THE ASSESSMENT OF THE PREDICTIVE OF THE COMPUTER CODE RELAP. THIS TEST WAS A 45-ROD (3.7-MW) TEST INITIATED FROM A TEST SECTION INLET TEMPERATURE OF 550 K (530 F), A VOLUMETRIC FLOW OF 0.027 M CU/SEC (435 GPM), AND A TEST SECTION OUTLET PRESSURE OF 15.45 MN/M SQ (2240 PSIG). THE BUNDLE POWER WAS REDUCED IN A PREDETERMINED PROGRAMMED MANNER DURING THE EXPERIMENT. DURING THE TEST, ALL SYSTEMS PERFORMED SATISFACTORILY. (CED)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

REACTOR, PWR + ACCIDENT, LOSS OF COOLANT + SAFETY ANALYSIS + BLOWDOWN + FLOW, TWO PHASE + INSTRUMENT, FLOW + ERROR ANALYSIS + NRC-2

147165
MULLINS CB + HYMAN CR + CRADDICK WG
PWR BLOWDOWN HEAT TRANSFER SEPARATE-EFFECTS PROGRAM DATA EVALUATION REPORT - THTF TEST SERIES II
OAK RIDGE NATIONAL LAB., TENN.
NUREG/CR-0539 + ORNL/NUREG-53 +. 189 PPS, FIGS, REFS, APRIL 1979

THERMAL-HYDRAULIC PHENOMENA ARE ANALYZED FOR TEST SERIES II CONDUCTED AT THE THERMAL-HYDRAULIC TEST FACILITY (THTF). A DISCUSSION OF THE EFFECTS OF TEST SECTION OUTLET FLUID SUBCOOLING, BUNDLE POWER, AND INACTIVE RODS ON THERMAL-HYDRAULIC BEHAVIOR IN THE THTF IS PRESENTED. A MECHANISM THAT MAY BE RESPONSIBLE FOR DEPARTURE FROM NUCLEATE BOILING (DNB) IN THE BUNDLE OF THE THTF IS PRESENTED. HEATER ROD SURFACE TEMPERATURES ARE FOUND TO BE SENSITIVE TO RELATIVELY SMALL VARIATIONS IN FLOW.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

REACTOR, PWR + REACTOR, SAFETY RESEARCH + NUCLEATE BOILING + THERMAL HYDRAULIC ANALYSIS + TEMPERATURE + MEASUREMENT, TEMPERATURE + NRC-2 + ACCIDENT, LOSS OF COOLANT

147531
OTT LJ + CHILDS KW
SURFACE HEAT FLUX PERTURBATIONS IN BDHT FUEL PIN SIMULATORS
OAK RIDGE NATIONAL LAB., TENN.
NUREG/CR-0610 + ORNL/NUREG-54 +. 109 PPS, FIGS, REFS, APRIL 1979

THIS REPORT QUANTIFIES THE PERTURBATION OF THE SURFACE HEAT FLUX AND SURFACE TEMPERATURE IN BLOWDOWN HEAT TRANSFER (BDHT) BUNDLE 1 FUEL PIN SIMULATORS DUE TO THE PRESENCE OF THE THERMOCOUPLE AND GROOVE, GAPS, HEATER ECCENTRICITY, AND POWER ZONE BREAKS. STEADY-STATE AND TRANSIENT-CASE STUDIES ARE PRESENTED TO ILLUSTRATE THE AXIMUTHAL AND AXIAL VARIATIONS IN THE SURFACE CONDITIONS. RECOMMENDATIONS ARE MADE FOR IMPROVEMENTS IN HEATER DESIGNS AND FOR THE DEVELOPMENT OF COMPUTER CODES TO ANALYZE THE RESPONSES OF THE HEATER THERMOCOUPLES.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

HEAT TRANSFER EXPERIMENT + FUEL ROD + HEATERS + TEMPERATURE + TEMPERATURE GRADIENT + NRC-2 + HEAT TRANSFER ANALYSIS

148910
BASS BR
INCAP: A FINITE ELEMENT PROGRAM FOR ONE-DIMENSIONAL NONLINEAR INVERSE HEAT CONDUCTION ANALYSIS
OAK RIDGE NATIONAL LAB., TENN.

148910 *CONTINUED*
NUREG/CR-0832 + ORNL/NUREG/CSD/TM-8 +. 91 PPS, 23 FIGS, 30 REFS, APRIL 1979

THE CALCULATION OF THE SURFACE TEMPERATURE AND SURFACE HEAT FLUX FROM A MEASURED TEMPERATURE HISTORY AT AN INTERIOR POINT OF A BODY IS IDENTIFIED IN THE LITERATURE AS THE INVERSE HEAT CONDUCTION PROBLEM. THIS REPORT PRESENTS APPARENTLY THE FIRST APPLICATION OF AN INVERSE SOLUTION TECHNIQUE THAT UTILIZES A FINITE ELEMENT HEAT CONDUCTION MODEL AND BECK'S NONLINEAR ESTIMATION PROCEDURE. THE TECHNIQUE IS APPLICABLE TO THE ONE-DIMENSIONAL NONLINEAR MODEL WITH TEMPERATURE-DEPENDENT THERMOPHYSICAL PROPERTIES. A DIGITAL COMPUTER PROGRAM INCAP (INVERSE HEAT CONDUCTION ANALYSIS PROGRAM) IS DEVELOPED FROM THE FORMULATION AND IS USED IN A COMPARATIVE STUDY WITH THE FINITE DIFFERENCE INVERSE CODE ORINC.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

COMPUTER PROGRAM + HEAT TRANSFER, CONDUCTION + HEAT TRANSFER ANALYSIS + TEMPERATURE + COMPARISON + THERMAL TRANSIENT + NRC-2

147857
TURNAGE KG + DAVIS CE + THOMAS DG
ADVANCED TWO-PHASE FLOW INSTRUMENTATION PROGRAM QUARTERLY PROGRESS REPORT FOR JULY-SEPTEMBER 1978
OAK RIDGE NATIONAL LAB., TENN.
NUREG/CR-0686 + ORNL/NUREG-TM-309 +. 61 PPS, FIGS, REFS, MAY 1979

A SERIES OF TWO-PHASE AIR-WATER TESTS WITH ADVANCED SPOOL PIECE I IN HORIZONTAL FLOW IS DESCRIBED. NINE DRAG BODY DESIGNS WERE TESTED TO EVALUATE THEIR SUITABILITY FOR TWO-PHASE MOMENTUM FLUX MEASUREMENTS BY COMPARING DRAG FLOWMETER OUTPUT WITH THREE INDEPENDENTLY CALCULATED QUANTITIES. PRELIMINARY ANALYSIS INDICATES THAT, IN TERMS OF DRAG FLOWMETER AGREEMENT WITH OTHER ESTIMATES OF THE TWO-PHASE MOMENTUM FLUX, THE BLADE-TYPE TARGETS AND TWO PERFORATED PLATE DESIGNS PERFORMED BETTER THAN THE OTHER TYPES. ANALYSIS OF DATA FROM THE DENSITOMETER, TURBINE METER, AND PRESSURE-DIFFERENCE CELL IN THE SPOOL PIECE IS ALSO PRESENTED.

FLOW, TWO PHASE + INSTRUMENT, DENSITY + INSTRUMENT, FLOW + INSTRUMENT, PRESSURE + INSTRUMENT, TESTING + INSTRUMENTS, MISC. + AIR + WATER

147052
TURNAGE KG + DAVIS CE + THOMAS DG
ADVANCED TWO-PHASE FLOW INSTRUMENTATION PROGRAM QUARTERLY PROGRESS REPORT FOR OCTOBER-DECEMBER 1978 CADVANCED TWO-PHASE FLOW INSTRUMENTATION PROGRAM QUARTERLY PROGRESS REPORT FOR OCTOBER-DECEMBER 1978
OAK RIDGE NATIONAL LAB., TENN.
NUREG/CR-0710 + ORNL/NUREG/TM-313 +. 29 PPS, FIGS, 10 REFS, MAY 1979

A SERIES OF TWO-PHASE, AIR-WATER TESTS WITH ADVANCED SPOOL PIECE I IN VERTICAL DOWNFLOW IS DESCRIBED. THE BEHAVIOR OF THE THREE-BEAM DENSITOMETER, TURBINE METER, AND DRAG FLOW METER IS DISCUSSED IN TERMS OF TWO-PHASE MODELS. APPLICATION OF SOME TWO-PHASE MASS FLOW MODELS TO THE RECORDED SPOOL PIECE DATA IS MADE, AND PRELIMINARY RESULTS ARE SHOWN. PREPARATION FOR TESTING IN THE OAK RIDGE NATIONAL LABORATORY AIR-WATER TEST FACILITY OF THE THREE CONDUCTIVITY PROBES RECEIVED FROM ATOMIC ENERGY OF CANADA LIMITED IS DISCUSSED. (EWH)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*EQUIPMENT DEVELOPMENT + *INSTRUMENT, FLOW + FLOW, TWO PHASE + NRC-2

147769
CHAPMAN RH + HOBSON DO + CROWLEY JL
BUNDLE B-1 TEST DATA MULTIROD BURST TEST PROGRAM. INTERIM REPORT
OAK RIDGE NATIONAL LAB., TENN.
ORNL/NUREG/TM-322 +. 141 PPS, 37 TABS, 138 FIGS, 10 REFS, JUNE 1979

A COMPILATION OF B-1 TEST DATA IS PRESENTED. THESE DATA WERE OBTAINED DURING THE TEST AND FROM PRETEST AND POSTTEST EXAMINATION OF THE TEST ARRAY. THEY ARE PRESENTED IN CONSIDERABLE DETAIL WITH MINIMUM INTERPRETATION, WHICH WILL BE THE SUBJECT OF A FUTURE REPORT.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

FUEL ELEMENTS + SIMULATION + TESTING + FUEL ROD + FAILURE + EXAMINATION + NRC-2

145565
SCHELL SL + GAY RR + LAHEY RT
TWO-PHASE FLOW PHENOMENA IN NUCLEAR REACTOR TECHNOLOGY
RENSSELAER POLYTECHNIC INST., TROY, N.Y.
NUREG/CR-0677 +. 84 PPS, 10 TABS, 23 FIGS, 25 REFS, FEB. 1979

THE DENSITY OF A FLOWING TWO-PHASE MIXTURE CAN BE DETERMINED BY USING A SIDE-SCATTER GAMMA RAY SYSTEM WHICH MEASURES THE AMOUNT OF COMPTON SCATTERING IN A GIVEN DIRECTION FROM A GIVEN SCATTERING VOLUME. THE TECHNIQUE MAY BE APPLIED TO ANY CROSS SECTION OF THE FLOW, WITH THE RESTRICTION THAT THE FLOW IS FULLY DEVELOPED IN THE AXIAL DIRECTION. THE DENSITY, AND THEREFORE VOID FRACTION, AT ANY LOCATION IN THE CROSS SECTION MAY BE DIRECTLY RELATED TO CALIBRATION VALUES OF DENSITY AND COUNT RATES AT THE SAME LOCATION BY KNOWING THE COUNT RATE INCIDENT UPON THE SYSTEM DETECTOR(S). MEASUREMENTS HAVE BEEN MADE USING AN AIR/WATER SYSTEM.

145565 *CONTINUED*
FLOW, TWO PHASE + INSTRUMENT, DENSITY + GAMMA + VOID FRACTION + MATHEMATICAL TREATMENT + NRC-2

145565
SCHELL SL + GAY RR + LAHEY RT
TWO-PHASE FLOW PHENOMENA IN NUCLEAR REACTOR TECHNOLOGY
RENSSELAER POLYTECHNIC INST., TROY, N.Y.
NUREG/CR-0677 +, 84 PPS, 10 TABS, 23 FIGS, 25 REFS, FEB. 1979

THE DENSITY OF A FLOWING TWO-PHASE MIXTURE CAN BE DETERMINED BY USING A SIDE-SCATTER GAMMA RAY SYSTEM WHICH MEASURES THE AMOUNT OF COMPTON SCATTERING IN A GIVEN DIRECTION FROM A GIVEN SCATTERING VOLUME. THE TECHNIQUE MAY BE APPLIED TO ANY CROSS SECTION OF THE FLOW, WITH THE RESTRICTION THAT THE FLOW IS FULLY DEVELOPED IN THE AXIAL DIRECTION. THE DENSITY, AND THEREFORE VOID FRACTION, AT ANY LOCATION IN THE CROSS SECTION MAY BE DIRECTLY RELATED TO CALIBRATION VALUES OF DENSITY AND COUNT RATES AT THE SAME LOCATION BY KNOWING THE COUNT RATE INCIDENT UPON THE SYSTEM DETECTOR(S). MEASUREMENTS HAVE BEEN MADE USING AN AIR/WATER SYSTEM.

FLOW, TWO PHASE + INSTRUMENT, DENSITY + GAMMA + VOID FRACTION + MATHEMATICAL TREATMENT + NRC-2

145803
LAHEY RT
TWO-PHASE FLOW PHENOMENA IN NUCLEAR REACTOR TECHNOLOGY QUARTERLY PROGRESS REPORT, NO. 10 SEPTEMBER - NOVEMBER 1978
RENSSELAER POLYTECHNIC INST., TROY, N.Y.
NUREG/CR-0702 +, 91 PPS, FIGS, REFS, MARCH 1979

THE BASIC PURPOSE OF THIS PROGRAM IS TO DEVELOP A MORE THOROUGH UNDERSTANDING OF THE TWO-PHASE FLOW PHENOMENA ASSOCIATED WITH CERTAIN HYPOTHETICAL NUCLEAR REACTOR ACCIDENTS. THE PROGRAM IS DIVIDED INTO THREE MAJOR TASKS. TASK I IS CONCERNED WITH THE DEVELOPMENT OF NOVEL, TWO-PHASE FLOW INSTRUMENTATION WITH WHICH SOME BASIC TWO-PHASE FLOW PARAMETERS CAN BE MEASURED. THIS INSTRUMENTATION IS INTENDED FOR HIGH PRESSURE STEAM-WATER APPLICATION AS WELL AS LABORATORY USE. TASK II IS CONCERNED WITH THE DETAILED FLUID MECHANICS OF TWO-PHASE FLOW. SPECIFICALLY, AN INDEPTH UNDERSTANDING OF TWO-PHASE FLOW MULTIDIMENSIONAL VOID DISTRIBUTION MECHANISMS AND PHASE SEPARATION EFFECTS WILL BE DEVELOPED. TASK III IS INTENDED TO ADDRESS A CURRENT SAFETY QUESTION CONCERNING THE PERFORMANCE OF THE BWR EMERGENCY CORE COOLING (ECC) SYSTEM. PARTICULAR EMPHASIS WILL BE PLACED ON PARALLEL CHANNEL EFFECTS (PCE) DURING ECCS OPERATION.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

REACTOR, BWR + ACCIDENT, LOSS OF COOLANT + EMERGENCY COOLING SYSTEM + FLOW, TWO PHASE + VOID FRACTION + INSTRUMENT, OPTICAL + INSTRUMENT, DENSITY + NRC-2

149405
JUTMACHER ES + NESMITH BJ + BRUKIEWA JB
STUDY OF SAFETY RELIEF VALVE OPERATION UNDER ATWS CONDITIONS
ROCKWELL INTERNATIONAL, CANOGA PARK, CALIF.
NUREG/CR-0687 + ETEC-TDR-78-19 +, 88 PPS, 18 FIGS, 25 REFS, MARCH 1979

DURING CERTAIN ANTICIPATED TRANSIENTS WITHOUT SCRAM (ATWS) EVENTS POSTULATED FOR PRESSURIZED-WATER NUCLEAR REACTORS, THE PLANT SAFETY RELIEF VALVES (DESIGNED FOR OPERATION WITH STEAM) ARE FORCED TO RELIEVE SATURATED OR SUBCOOLED WATER AT PRESSURES RANGING TO OVER 3000 PSIA. SINCE THE FLOW CAPACITY RATING OF THESE VALVES IS BASED UPON TESTS CONDUCTED WITH STEAM ONLY, IT BECAME NECESSARY TO OBTAIN REALISTIC (BUT CONSERVATIVELY LOW) ESTIMATES FOR SAFETY RELIEF FLOW CAPACITY FOR SATURATED AND SUBCOOLED WATER UNDER ATWS CONDITIONS.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

REACTOR, PWR + ACCIDENT, LOSS OF COOLANT + ACCIDENT, ATWS + VALVES + CONTAINMENT, PRESSURE RELIEF + PRESSURE RELIEF + CONTAINMENT, HIGH PRESSURE + WATER + NRC-2 + NRC-4

3. R3 - WATER REACTOR SAFETY RESEARCH, FUEL BEHAVIOR

147496
LIGHT-WATER REACTOR SAFETY RESEARCH PROGRAM: QUARTERLY PROGRESS REPORT JULY-SEPTEMBER 1978
ARGONNE NATIONAL LAB., ILL.
NUREG/CR-0547 + ANL-78-107 +. 47 PPS, FIGS, REFS, JAN. 1979

THIS PROGRESS REPORT SUMMARIZES THE ARGONNE NATIONAL LABORATORY WORK PERFORMED DURING JULY, AUGUST, AND SEPTEMBER 1978 ON WATER-REACTOR-SAFETY PROBLEMS. THE FOLLOWING RESEARCH AND DEVELOPMENT AREAS ARE COVERED: (1) LOSS-OF-COOLANT ACCIDENT RESEARCH: HEAT TRANSFER AND FLUID DYNAMICS; (2) TRANSIENT FUEL RESPONSE AND FISSION-PRODUCT RELEASE PROGRAM; AND (3) MECHANICAL PROPERTIES OF ZIRCALOY CONTAINING OXYGEN.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*REACTOR, LWR + *ANL + ACCIDENT, LOSS OF COOLANT + HEAT TRANSFER ANALYSIS + THERMAL HYDRAULIC ANALYSIS + FUEL, NUCLEAR + REACTOR TRANSIENT + FISSION PRODUCT RELEASE + PROPERTY, MECHANICAL + ZIRCALOY + NRC-2 + NRC-3 + NRC-4

147538
HENRY RE
TEST PLAN: LARGE SCALE MOLTEN SALT-WATER VAPOR EXPLOSION STUDIES TO BE CONDUCTED AT ISPRA, ITALY
ARGONNE NATIONAL LAB., ILL.
NUREG/CR-0728 + ANL-79-20 +. 27 PPS, 5 TABS, 7 FIGS, 18 REFS, FEB. 1978

THE POTENTIAL FOR LARGE SCALE VAPOR EXPLOSIONS HAS BEEN DEMONSTRATED EXPERIMENTALLY TO BE A STRONG FUNCTION OF THE AMBIENT PRESSURE, AND TWO THEORETICAL MODELS HAVE BEEN PROPOSED FOR THIS PRESSURE DEPENDENCY. THESE ANALYTICAL APPROACHES ARE REVIEWED AND PREDICTIONS FOR EACH ARE GIVEN FOR A SYSTEM IN WHICH WATER IS THE VOLATILE LIQUID.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

VAPOR EXCHANGE + VAPOR PRESSURE + EXPLOSION + PRESSURE TRANSIENT + ANALYTICAL TECHNIQUE + ANALYTICAL MODEL + EXPERIMENT + NRC-3

148265
LIGHT-WATER-REACTOR SAFETY RESEARCH PROGRAM'S QUARTERLY PROGRESS REPORT OCTOBER-DECEMBER 1978
ARGONNE NATIONAL LAB., ILL.
NUREG/CR-0828 + ANL-79-18 +. 40 PPS, FIGS, 15 REFS, APRIL 1979

THIS PROGRESS REPORT SUMMARIZES THE ARGONNE NATIONAL LABORATORY WORK PERFORMED DURING OCTOBER, NOVEMBER, AND DECEMBER 1978 ON WATER-REACTOR-SAFETY PROBLEMS. THE FOLLOWING RESEARCH AND DEVELOPMENT AREAS ARE COVERED: (1) LOSS-OF-COOLANT ACCIDENT RESEARCH: HEAT TRANSFER AND FLUID DYNAMICS; (2) TRANSIENT FUEL RESPONSE AND FISSION-PRODUCT RELEASE PROGRAM; AND (3) MECHANICAL PROPERTIES OF ZIRCALOY CONTAINING OXYGEN

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*REACTOR, LWR + ANL + *SAFETY ANALYSIS + ACCIDENT, LOSS OF COOLANT + HEAT TRANSFER ANALYSIS + HYDRAULIC ANALYSIS + FISSION PRODUCT RELEASE + ZIRCALOY + OXYGEN + PROPERTY, MECHANICAL + NRC-2 + NRC-3 + NRC-4

148522
DOMANUS HM + CHEN MJ + SHA WT
PRETEST PREDICTION OF THE W-1 SLSF EXPERIMENT USING THE COMMIX-1A COMPUTER CODE
ARGONNE NATIONAL LAB., ILL.
NUREG/CR-0816 + ANL-CT-79-33 +. 92 PPS, 4 TABS, 79 FIGS, 5 REFS, MAY 1979

THE NUMERICAL SIMULATION OF A 19-ROD LMFBR FUEL ASSEMBLY UNDERGOING A LOSS OF PIPING INTEGRITY (LOPI) TRANSIENT HAS BEEN CARRIED OUT USING THE COMMIX-1A COMPUTER CODE. COMMIX-1A IS A THREE-DIMENSIONAL, TRANSIENT, SINGLE-PHASE, THERMAL-HYDRAULIC COMPUTER CODE. THE RESULTS ARE COMPILED TO FORM A PRE-TEST PREDICTION OF THE W-1 IN-PILE EXPERIMENT WHICH WILL BEGIN IN THE NEAR FUTURE. SINCE COMMIX-1A PERFORMS SINGLE-PHASE ANALYSES, THE SIMULATION IS TERMINATED WHEN BOILING FIRST OCCURS IN THE FUEL ASSEMBLY.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

COMPUTER PROGRAM + REACTOR, LMFBR + PRESSURE TRANSIENT + THERMAL HYDRAULIC ANALYSIS + FLOW + FAILURE, PIPE + FUEL ELEMENTS + THERMAL TRANSIENT + NRC-3

144959
GIESEKE JA + BAYBUTT P + JUNG RG + JORDAN H
FISSION PRODUCT TRANSPORT ANALYSIS QUARTERLY PROGRESS REPORT JANUARY 1 - MARCH 31, 1978
BATTELLE COLUMBUS LABS., OHIO
NUREG/CR-0697 + BMI-2022 +. 11 PPS, 1 TAB, 1 FIG, 5 REFS, MARCH 1979

REPORT IS CONCERNED PRIMARILY WITH CONTINUING EFFORTS TO DEVELOP THE TRAP-MELT CODE BY ADDITION OF SPECIFIC MECHANISMS DESCRIBING PARTICLE TRANSPORT AND DEPOSITION, AND WITH CONTINUATION OF THE PREPARATION OF THERMAL-HYDRAULIC DATA FOR USE WITH THE CODE. PARTICLE DEPOSITION MECHANISMS ADDED TO THE TRAP-MELT CODE INCLUDE DEPOSITION BY THERMOPHORESIS AND BY DIFFUSION AND INERTIA FROM LAMINAR AND TURBULENT STEAM FLOWS. EFFORTS CONCERNED WITH DESCRIBING THERMAL-HYDRAULIC CONDITIONS HAVE LED TO SPECIFICATION OF DATA FOR A SPECIFIC ASSUMED ACCIDENT SEQUENCE, AB WITH A

144959 *CONTINUED*
COLD-LEG BREAK, THAT WILL BE USED AS THE REFERENCE CASE DURING COMPLETION OF THE CODE DEVELOPMENT EFFORTS.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

COMPUTER PROGRAM + DEPOSITION + THERMOPHORESIS + PARTICLE SIZE + NRC-3 + NRC-4 + *FISSION PRODUCT TRANSPORT

144991
GIESEKE JA + BAYBUTT P + JORDAN H + JUNG RG
FISSION PRODUCT TRANSPORT ANALYSIS QUARTERLY PROGRESS REPORT APRIL 1 - JUNE 30, 1978
BATTELLE COLUMBUS LABS., OHIO
NUREG/CR-0698 + BMI-2023 +. 10 PPS, 3 TABS, 3 REFS, MARCH 1979

REPORT DISCUSSES EFFORTS CONCERNED PRIMARILY WITH CONTINUED DEVELOPMENT OF THE TRAP-MELT COMPUTER CODE, SPECIFICATION OF CONDITIONS AND CODE INPUT FOR MELTDOWN ACCIDENTS, AND INITIATION OF EFFORTS TO PROVIDE FUNCTIONAL DESIGN SPECIFICATIONS FOR A FISSION PRODUCT TRANSPORT TEST FACILITY. THE CODE DEVELOPMENT EFFORTS WERE CONCERNED PRIMARILY WITH INCORPORATING THE MECHANISMS INTO THE TRAP-MELT CODE THAT ALLOW FOR PARTICLE GROWTH BY AGGLOMERATION, AND ADDING EXPRESSIONS TO GIVE STEAM VISCOSITY AND DENSITY UP TO HIGH TEMPERATURES AND PRESSURES. TO PROVIDE A SET OF CONDITIONS FOR USE IN DEVELOPING THE CODE, THE NEEDED INPUT FOR A RADIONUCLIDE SOURCE TERM WAS SPECIFIED BY COMBINING BEST ESTIMATE CORE RELEASE FRACTIONS WITH CALCULATED INVENTORIES.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

FISSION PRODUCT TRANSPORT + COMPUTER PROGRAM + AGGLOMERATE + DEPOSITION + FUEL MELTDOWN + PARTICLE SIZE + RADIONUCLIDE + NRC-3 + NRC-4

146473
HANN CR + BRADLEY ER + CUNNINGHAM ME
DATA REPORT FOR THE NRC/PNL HALDEN ASSEMBLY IFA-432
BATTELLE PACIFIC NORTHWEST LABS., RICHLAND, WASH.
NUREG/CR-0560 + PNL-2673 +. 160 PPS, 7 TABS, 246 FIGS, 22 REFS, AUG. 1978

PRESENTS THE IN-REACTOR DATA COLLECTED FROM THE NRC/PNL HALDEN ASEMBLY IFA-432 AS A PART OF THE PROGRAM ENTITLED "EXPERIMENTAL VERIFICATION OF STEADY STATE FUEL CODES," SPONSORED BY THE FUEL BEHAVIOR RESEARCH BRANCH OF THE USNRC. THE PURPOSE OF THIS PROGRAM IS TO REDUCE THE UNCERTAINTIES OF CALCULATING THE THERMAL STORED ENERGY IN AN OPERATING NUCLEAR FUEL ROD. (EWH)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

BEHAVIOR + *FUEL ROD + COMPUTER PROGRAM + DATA COLLECTION + *THERMAL ANALYSIS + COMPARISON, THEORY AND EXPERIENCE + NRC-3

147070
LANNING DD + BARNES BO + WILLIFORD RE
MANIFESTATIONS OF NONLINEARITY IN FUEL CENTER THERMOCOUPLE STEADY-STATE AND TRANSIENT DATA: IMPLICATIONS FOR DATA ANALYSIS
BATTELLE PACIFIC NORTHWEST LABS., RICHLAND, WASH.
NUREG/CR-0220 + PNL-2692 +. 110 PPS, 11 TABS, 57 FIGS, JAN. 1979

TWO NEW CONCEPTS ARE DISCUSSED ALONG WITH THEIR APPLICATION TO IN-REACTOR DATA FROM IFA-432, A HEAVILY INSTRUMENTED SIX-ROD HALDEN REACTOR TEST ASSEMBLY SPONSORED BY THE NUCLEAR REGULATORY COMMISSION. (1) IT IS MORE USEFUL TO PLOT RESISTANCE VERSUS POWER THAN SIMPLY TO PLOT TEMPERATURE VERSUS POWER. THE RESISTANCE IS DEFINED AS THE RELATIVE CENTERLINE TEMPERATURE (ABOVE COOLANT) DIVIDED BY THE LOCAL POWER. (2) THE RESPONSE OF THE CENTERLINE TEMPERATURE TO A LINEAR POWER DECREASE IS CORRELATED TO THE ROD'S CURRENT RESISTANCE-VS-POWER BEHAVIOR. THUS, THE RESISTANCE-VS-POWER MEASUREMENT CAN BE VERIFIED BY PERFORMING A LINEAR POWER DECREASE AND BY PLOTTING THE TEMPERATURE RESPONSE.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

FUEL ROD + DYNAMICS, NONLINEAR + THERMAL ANALYSIS + TEMPERATURE + *DATA PROCESSING + THERMOCOUPLE + THERMAL TRANSIENT + STEADY STATE + TRANSIENT + THERMAL CONDUCTIVITY + NRC-3

145833
HOOPER JL
REACTOR SAFETY RESEARCH PROGRAMS QUARTERLY REPORT JULY 1-SEPTEMBER 30, 1978
BATTELLE PACIFIC NORTHWEST LABS., RICHLAND, WASH.
NUREG/CR-0546 + PNL-2653-3 +. 126 PPS, TABS, FIGS, FEB. 1979

THIS DOCUMENT SUMMARIZES THE WORK PERFORMED BY PACIFIC NORTHWEST LABORATORY FROM JULY THROUGH SEPTEMBER 1978, FOR THE DIVISION OF REACTOR SAFETY RESEARCH WITHIN THE NUCLEAR REGULATORY COMMISSION. THE FOLLOWING AREAS ARE REPORTED ON: ULTIMATE HEAT SINK PERFORMANCE MEASUREMENTS; GRAPHITE NONDESTRUCTIVE TESTING; INTEGRATION OF NONDESTRUCTIVE EXAMINATION RELIABILITY AND FRACTURE MECHANICS; ACOUSTIC EMISSION - FLAW RELATIONSHIP FOR IN-SERVICE MONITORING OF NUCLEAR PRESSURE VESSELS; EXPERIMENTAL VERIFICATION OF STEADY STATE CODES: EX-REACTOR DETERMINATION OF THERMAL GAP AND CONTACT CONDUCTANCE; EXPERIMENTAL VERIFICATION OF STEADY STATE CODES: IRRADIATION RESULTS; FUEL SUBASSEMBLY PROCUREMENT AND IRRADIATION TEST PROGRAM; EXPERIMENTAL VERIFICATION OF STEADY STATE CODES: CODE DEVELOPMENT; US-NRC PHEBUS REPRESENTATIVE; STEAM

145833 *CONTINUED*
GENERATOR TUBE INTEGRITY; AND CORE THERMAL MODE DEVELOPMENT.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

GRAPHITE + TEST, NONDESTRUCTIVE + ACOUSTICS + FLAW + PRESSURE VESSELS + THERMAL HYDRAULIC ANALYSIS + IRRADIATION TESTING + FUEL ELEMENTS + STEAM GENERATOR + TUBING + STRUCTURAL INTEGRITY + CORE + THERMAL ANALYSIS + NRC-1 + NRC-3 + NRC-4 + NRC-5

147858
HOOPER JL
REACTOR SAFETY RESEARCH PROGRAMS QUARTERLY REPORT OCTOBER 1-DECEMBER 31, 1978
BATTELE PACIFIC NORTHWEST LABS., RICHLAND, WASH.
NUREG/CR-0681 + PNL-2653-4 +. 115 PPS. FIGS. REFS. MARCH 1979

SUMMARIZES THE WORK PERFORMED BY PACIFIC NORTHWEST LABORATORY FROM OCTOBER THROUGH DECEMBER 1978. FOR THE DIVISION OF REACTOR SAFETY RESEARCH WITHIN THE NUCLEAR REGULATORY COMMISSION. THE FOLLOWING PROGRAMS ARE REPORTED ON: EXPERIMENTAL VERIFICATION OF STEADY STATE CODES: IRRADIATION RESULTS; EXPERIMENTAL VERIFICATION OF STEADY STATE CODES: EX-REACTOR DETERMINATION OF THERMAL GAP AND CONTACT CONDUCTANCE; EXPERIMENTAL VERIFICATION OF STEADY STATE CODES: CODE DEVELOPMENT; CORE THERMAL MODEL DEVELOPMENT; FUEL SUBASSEMBLY PROCUREMENT AND IRRADIATION TEST PROGRAM STEAM GENERATOR TUBE INTEGRITY; ACOUSTIC EMISSION-FLAW RELATIONSHIP FOR IN-SERVICE MONITORING OF NUCLEAR PRESSURE VESSELS; AND INTEGRATION OF NONDESTRUCTIVE EXAMINATION RELIABILITY AND FRACTURE MECHANICS.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*REACTOR, LWR + *HEAT SINK + PERFORMANCE + COMPUTER PROGRAM + COMPARISON, THEORY AND EXPERIENCE + THERMAL HYDRAULIC ANALYSIS + FUEL ELEMENTS + IRRADIATION TESTING + STEAM GENERATOR + TUBING + STRUCTURAL INTEGRITY + PRESSURE VESSELS + ACOUSTICS + MONITOR + NRC-1 + NRC-3 + NRC-4 + NRC-5

149399
GARNIER JE + BEGER S
EX-REACTOR DETERMINATION OF THERMAL GAP AND CONTACT CONDUCTANCE BETWEEN URANIUM DIOXIDE: ZIRCOLOY-4 INTERFACES STAGE I: LOW GAS PRESSURE
BATTELLE PACIFIC NORTHWEST LABS., RICHLAND, WASH.
NUREG/CR-0330 + PNL-2696 +. 200 PPS. 30 TABS. 75 FIGS. 65 REFS. APRIL 1979

A STUDY OF THERMAL GAP AND CONTACT CONDUCTANCE BETWEEN DEPLETED URANIUM DIOXIDE (UO3) AND ZIRCALOY-4 (ZR4) HAS BEEN MADE UTILIZING TWO MEASUREMENT APPARATUSES DEVELOPED AS PART OF THIS PROGRAM. THE MODIFIED PULSE DESIGN (MPD) APPARATUS IS A TRANSIENT TECHNQIUE EMPLOYING A HEAT PULSE (LASER) AND A SIGNAL DETECTOR TO MONITOR THE THERMAL ENERGY TRANSMITTED THROUGH A UO3/ZR4 SAMPLE PAIR WHICH ARE EITHER PHYSICALLY SEPARATED OR IN CONTACT. DESCRIPTION OF THE MPD AND MLD APPARATUS, DATA ACQUISITION, REDUCTION AND ERROR ANALYSIS IS PRESENTED ALONG WITH INFORMATION ON SPECIMEN PREPARATION, THERMAL PROPERTY AND SURFACE CHARACTERIZATION. A TECHNIQUE USING AN OPTICAL HEIGHT GAUGE TO DETERMINE THE AVERAGE MEAN-PLANE OF SEPARATION BETWEEN THE SIMPLE PAIRS IS ALSO PRESENTED.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U.S. DEPARTMENT OF COMMERCE, SPRINGIFLED, VA. 22161

REACTOR + FUEL ROD + HEAT CONDUCTANCE, FUEL TO CLAD + HEAT TRANSFER + HEAT TRANSFER ANALYSIS + THERMAL ANALYSIS + THERMAL CONDUCTIVITY + NRC-3

150002
CUNNINGHAM ME + WILLIFORD RE + HANN CR
EFFECTS OF FILL GAS COMPOSITION AND PELLET ECCENTRICITY: COMPARISON BETWEEN INSTRUMENTED FUEL ASSEMBLIES IFA-431 AND IFA-432
BATTELLE PACIFIC NORTHWEST LABS., RICHLAND, WASH.
NUREG/CR-0331 + PNL-2729 +. 45 PPS. 7 TABS. 24 FIGS. 15 REFS. APRIL 1979

DESIGNED TWO 6-ROD, INSTRUMENTED TEST ASSEMBLIES TO PROVIDE WELL-CHARACTERIZED DATA FOR VERIFYING FUEL MODELING COMPUTER CODES. THE XENON-FILLED RODS WERE COMPARED TO RODS BACKFILLED WITH HELIUM. AS EXPECTED, THE XENON RODS HAD HIGHER FUEL TEMPERATURES THAN THE HELIUM-FILLED RODS IN THE ASSEMBLIES, ALTHOUGH NOT AS HIGH AS WAS INITIALLY PREDICTED. IT IS CONCLUDED THAT THE REDUCED TEMPERATURES (RELATIVE TO THE PREDICTED TEMPERATURES) WERE THE RESULT OF A GREATER DECREASE IN FUEL - CLADDING GAP SIZE THAN IS PREDICTED TO OCCUR FROM THERMAL EXPANSION ALONE. THE RATIO OF THE GAP CONDUCTANCES FOR A XENON ROD AND A HELIUM ROD WITH EQUAL OPERATING THERMAL RADIAL GAPS, IS EQUAL TO THE RATIO OF THE GAS THERMAL CONDUCTIVITIES FOR THE TWO RODS. THIS IS IN AGREEMENT WITH THE IDEAL MODEL OF GAP CONDUCTANCE.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*FUEL ROD + REACTOR, LWR + FUEL, NUCLEAR + OXIDE + COMPUTER PROGRAM + CLADDING + *FUEL DENSIFICATION + XENON + EXPERIMENT + EXPERIMENT + NRC-3 + HEAT CONDUCTANCE, FUEL TO CLAD

149913
HOOPER JL
REACTOR SAFETY RESEARCH PROGRAMS QUARTERLY REPORT JANUARY 1-MARCH 31, 1979
BATTELLE PACIFIC NORTHWEST LAB., RICHLAND, WASH.
NUREG/CR-0855 + PNL-3040-1 +. 167 PPS. 41 FIGS. REFS. MAY 1979

149913 *CONTINUED*
SUBJECTS REPORTED ON ARE: (1) ULTIMATE HEAT SINK PERFORMANCE MEASUREMENTS, (2) STEAM GENERATOR TUBE INTEGRITY, (3) GRAPHITE NONDESTRUCTIVE TEST, (4) ACOUSTIC EMISSION, (5) EXPERIMENTAL VERIFICATION OF STEADY STATE CODES: IRRADIATION RESULTS, (6) EXPERIMENTAL VERIFICATION OF STEADY STATE CODES: EX-REACTOR, (7) DETERMINATION OF THERMAL GAP AND CONTACT CONDUCTANCE, (8) EXPERIMENTAL VERIFICATION OF STEADY STATE CODES: CODE DEVELOPMENT, (9) FUEL SUBASSEMBLY PROCUREMENT AND IRRADIATION TEST PROGRAM, (10) LOCA SIMULATION IN NRU, AND (11) CORE THERMAL MODEL DEVELOPMENT.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

ACOUSTICS + HEAT SINK + STEAM GENERATOR + TUBING + IRRADIATION TESTING + COMPUTER PROGRAM + GRAPHITE + COOLING POND + ACCIDENT, LOSS OF COOLANT + REACTOR, PWR + NRC-3 + NRC-4 + NRC-5 + TEST, NONDESTRUCTIVE + HEAT CONDUCTANCE, FUEL TO CLAD

147552
POSTMA AK + TAM PS
A COMPARATIVE EVALUATION OF CONTAINMENT SPRAY ADDITIVES - DETRIMENTAL IMPACTS OF AN INADVERTENT SPRAY ACTUATION
BENTON CITY TECHNOLOGY, WASHINGTON
NUREG/CR-0650 +. 34 PPS, 8 TABS, 2 FIGS, 24 REFS, APRIL 1979

PRESENTS THE RESULTS OF AN ENGINEERING ANALYSIS OF DETRIMENTAL HEALTH AND ECONOMIC IMPACTS OF INADVERTENT OPERATION OF A CONTAINMENT SPRAY SYSTEM. INJECTION SPRAY SOLUTIONS OF PLAIN WATER, BORIC ACID, BORIC ACID WITH HYDRAZINE, BORIC ACID AND SODIUM BORATE WITH SODIUM THIOSULFATE WERE CONSIDERED IN THE PRESENT STUDY. IT WAS CONCLUDED THAT NONE OF THE SOLUTIONS WOULD REPRESENT AN ACUTE TOXICITY PROBLEM TO PEOPLE IN THE CONTAINMENT VESSEL AT THE TIME OF AN UNWANTED SPRAY SYSTEM TRIP. ALSO, CORROSION OF SAFETY-RELATED EQUIPMENT WAS FOUND TO BE NEGLIGIBLE. THE MAJOR EFFECT OF SPRAY ADDITIVE TYPE IN AN INADVERTENT SPRAY OPERATION APPEARS TO BE THE LEVEL OF EFFORT REQUIRED TO RECOVER FROM THE INCIDENT.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*COMPARISON + *CONTAINMENT SPRAY + SAFETY ANALYSIS + CHEMICAL TOXICITY + POISON, SOLUBLE + SODIUM + HYDROXIDE + THIOSULFATE + INHALATION + CORROSION + CONTAMINATION + NRC-3

148441
CHAN AIY + MEYERS SC + BEUTLER PS
MATERIAL COMPATIBILITY TESTS FOR LOFT NUCLEAR REACTOR FUEL CENTERLINE THERMOCOUPLES
HANFORD ENGINEERING DEVELOPMENT LAB., RICHLAND, WASH.
NUREG/CR-0643 + HEDL-TME 78-75 +. 60 PPS, 8 TABS, 30 FIGS, 9 REFS, MARCH 1979

HIGH-TEMPERATURE (2200 C) COMPATIBILITY TESTS WERE CONDUCTED TO SELECT PROPER MATERIALS FOR COMMERCIAL FABRICATION OF FUEL CENTERLINE THERMOCOUPLES FOR LOSS OF FLUID TEST REACTOR USE. MATERIALS INVESTIGATED INCLUDE THE FOLLOWING: (A) BERYLLIA (BEO), THROIA (THO2) AND HAFNIA (HFO2) INSULATORS; (B) MOLYBDENUM 48% RHENIUM (MO48RE), TUNGSTEN 22% RHENIUM (W22RE), RHENIUM (RE), AND RHENIUM/TUNGSTEN-AUGMENTED (RE/W-AUGMENTED) SHEATHS; (C) TUNGSTEN 3% RHENIUM VERSUS TUNGSTEN 25% RHENIUM (W3RE/W25RE) AND TUNGSTEN 5% RHENIUM VERSUS TUNGSTEN 26% RHENIUM (W5RE/W26RE) THERMOELEMENT WIRES. (FAH)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

LOFT (S-RR) + FUEL, NUCLEAR + THERMOCOUPLE + HIGH TEMPERATURE + TESTING + NRC-3

149829
WILLS EL + YBARRONDO LJ
QUARTERLY TECHNICAL PROGRESS REPORT ON WATER REACTOR SAFETY PROGRAMS SPONSORED BY THE NUCLEAR REGULATORY COMMISSION'S DIVISION OF REACTOR SAFETY RESEARCH OCTOBER-DECEMBER 1978
IDAHO NATIONAL ENGINEERING LAB., IDAHO FALLS
NUREG/CR-0512 + TREE-1298 +. 75 PPS, FIGS, REFS, JAN. 1979

THE FIRST SMALL-BREAK EXPERIMENT WAS SUCCESSFULLY PERFORMED IN THE SEMISCALE MOD-3 TEST SYSTEM, AND UNUSUAL FLUID MASS DEPLETION THAT OCCURRED IN THE MOD-3 SYSTEM DOWNCOMER DURING EARLIER TESTING WAS INVESTIGATED. THE LOFT EXPERIMENTAL PROGRAM SUCCESSFULLY COMPLETED THE FIRST NUCLEAR LOSS-OF-COOLANT EXPERIMENT IN THE LOFT FACILITY; RESULTS SHOW THAT MEASURED FUEL ROD CLADDING TEMPERATURES (789 K MAXIMUM) WERE MUCH LOWER THAN HAD BEEN CALCULATED. THE THERMAL FUELS BEHAVIOR PROGRAM COMPLETED TWO REACTIVITY INITIATED ACCIDENT TESTS IN THE POWER BURST FACILITY AND PREPARATION FOR FURTHER TESTING (INCLUDING A NEW TEST SERIES, ON OPERATIONAL TRANSIENTS).

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

REACTOR, LWR + *EXPERIMENT + THERMAL HYDRAULIC ANALYSIS + *LOFT (S-RR) + ACCIDENT, LOSS OF COOLANT + FUEL, NUCLEAR + THERMAL PROPERTY + FUEL ROD + CONTAINMENT INTEGRITY + COMPUTER PROGRAM + NRC-2 + NRC-3 + NRC-4

147816
CROUCHER DW
BEHAVIOR OF DEFECTIVE PWR FUEL RODS DURING POWER RAMP AND FILM BOILING OPERATION
IDAHO NATIONAL ENGINEERING LAB., IDAHO FALLS
NUREG/CR-0283 + TREE-1267 +. 27 PPS, 15 FIGS, 15 REFS, FEB. 1979

147816 *CONTINUED*
FUEL RODS CONTAINING DEFECTS OCCASIONALLY FOUND IN COMMERCIAL REACTOR FUEL RODS WERE TESTED. THE CLADDING DEFECTS INCLUDED A HYDRIDE RUPTURE, A PINHOLE-TYPE DEFECT, AND AN AXIAL CRACK. OPERATION OF HYDRIDED FUEL ROD DURING POWER RAMP INCREASED SIZE OF THE DEFECT AND DEGRADED THERMAL PERFORMANCE. OPERATION OF DEFECTIVE RODS, INCLUDING THE HYDRIDED ROD, FOR A SHORT TIME IN FILM BOILING DID NOT SERIOUSLY AGGRAVATE THE CONDITIN OF THE RODS BEYOND THAT EXPERIENCED BY INTACT RODS. SOME ADDITIONAL EMBRITTLEMENT OF CLADDING IN DEFECTIVE RODS WAS OBSERVED. WHILE FUEL WASHOUT DID OCCUR IN SOME TESTS, NO MOLTEN FUEL-COOLANT OR MOLTEN FUEL-CLADDING REACTIONS WERE OBSERVED.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

FUEL CLAD INTERACTION + FAILURE, CLADDING + FILM BOILING + DNB + MOLTEN FUEL + THERMAL TRANSIENT + COOLANT LEVEL TRANSIENT + ACCIDENT, TRANSIENT OVERPOWER + NRC-3 + FAILURE, FUEL ELEMENT

145362
HAGRMAN DL + REYMANN GA
MATPRO - VERSION 11 A HANDBOOK OF MATERIALS PROPERTIES FOR USE IN THE ANALYSIS OF LIGHT WATER REACTOR FUEL ROD BEHAVIOR
IDAHO NATIONAL ENGINEERING LAB., IDAHO FALLS
NUREG/CR-0497 + TREE-1280 +. 515 PPS, TABS, FIGS, FEB. 1979

THIS HANDBOOK DESCRIBES THE MATERIALS PROPERITES CORRELATIONS AND COMPUTER SUBCODES (MATPRO-VERSION 11) DEVELOPED FOR USE WITH VARIOUS LWR FUEL ROD BEHAVIOR ANALYTICAL PROGRAMS AT THE IDAHO NATIONAL ENGINEERING LABORATORY. FORMULATIONS OF FUEL ROD MATERIAL PROPERTIES, WHICH ARE GENERALLY SEMIEMPIRICAL IN NATURE, ARE PRESENTED FOR URANIUM DIOXIDE AND MIXED URANIUM-PLUTONIUM DIOXIDE FUEL, ZIRCALOY CLADDING, AND FILL GAS MIXTURES.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*FUEL ROD + *CLADDING + PROPERTY, PHYSICAL + PROPERTY, MECHANICAL + THERMAL PROPERTY + CREEP + DENSIFICATION + FUEL DENSIFICATION + FUEL SWELLING + THERMAL MECHANICAL EFFECT + URANIUM DIOXIDE + PLUTONIUM + FISSION GAS RELEASE + COMPUTER PROGRAM + ZIRCALOY + NRC-3

147815
ZIMMERMANN CL + WHITE CE + THORNTON DE
EXPERIMENT DATA REPORT FOR TEST RIA-ST (REACTIVITY INITIATED ACCIDENT TEST SERIES)
IDAHO NATIONAL ENGINEERING LAB., IDAHO FALLS
NUREG/CR-0473 + TREE-1235 +. 116 PPS, 6 TAES, 160 FIGS, REFS, MARCH 1979

RECORDED TEST DATA ARE PRESENTED FOR THE REACTIVITY INITIATED ACCIDENT (RIA) SCOPING TEST. THIS TEST, CONDUCTED AT THE POWER BURST FACILITY, HAD THE FOLLOWING OBJECTIVES: (1) DETERMINE APPLICABILITY OF USING SELF-POWERED NEUTRON DETECTORS CALIBRATED BY LOW POWER STEADY STATE CALORIMETRIC MEASUREMENTS TO MEASURE FUEL ROD ENERGY DEPOSITIONS DURING A POWER BURST; (2) DETERMINE ENERGY DEPOSITION FAILURE THRESHOLD FOR UNIRRADIATED FUEL RODS AT BOILING WATER REACTOR HOT-STARTUP COOLANT CONDITIONS; (3) DETERMINE SENSITIVITY OF THE TEST INSTRUMENTATION TO HIGH RADIATION EXPOSURE DURING A POWER BURST; AND (4) DETERMINE MAGNITUDE OF POTENTIAL PRESSURE PULSES RESULTING FROM ROD FAILURE. UNINTERPRETED DATA IS PRESENTED WITHOUT DETAILED ANALYSIS.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

FAILURE, FUEL ELEMENT + ACCIDENT, TRANSIENT OVERPOWER + THERMAL TRANSIENT + SELF POWERED FLUX DETECTOR + REACTOR, PULSED + FAILURE, INSTRUMENT + NRC-3

147056
COOK TF
AN EVALUATION OF FUEL ROD BEHAVIOR DURING TEST LOC-11
IDAHO NATIONAL ENGINEERING LAB., IDAHO FALLS
NUREG/CR-0590 + TREE-1328 +. 105 PPS, 27 TABS, 31 FIGS, MARCH 1979

PRESENTS THE POSTIRRADIATION ANALYSIS OF THE BEHAVIOR OF FOUR PRESSURIZED WATER REACTOR FUEL RODS WHICH WERE SUBJECTED TO LOSS-OF-COOLANT (LOC) CONDITIONS. MAJOR OBJECTIVES OF THIS TEST WERE TO EVALUATE CLADDING DEFORMATION DURING A LOC TRANSIENT. A DISCUSSION OF FUEL ROD BEHAVIOR DURING TEST LOC-11 IS PRESENTED. THE OVERALL POSTTEST CONDITION OF THE FUEL RODS IS EVALUATED. PEAK CLADDING TEMPERATURES AND TEMPERATURE GRADIENTS ARE ESTIMATED, AND CLADDING DEFORMATION, BOTH BALLOONING AND COLLAPSE, IS ANALYZED. A COMPANION REPORT HAS BEEN PREPARED WHICH FOCUSES ON AN ANALYSIS AND EVALUATION OF THE TEST LOC-11 SYSTEM AND INTEGRAL ROD BEHAVIOR. (FAH)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

REACTOR, PWR + FUEL ROD + IRRADIATION TESTING + CLADDING + DEFORMATION + NRC-3 + EXAMINATION

147057
YACKLE TR + CRONENBERG AW
AN ASSESSMENT OF INTEGRANULAR FRACTURE WITHIN UNRESTRUCTURED UO2 FUEL DUE TO FILM BOILING OPERATION
IDAHO NATIONAL ENGINEERING LAB., IDAHO FALLS
NUREG/CR-0595 + TREE-1330 +. 93 PPS, 10 TABS, 31 FIGS, REFS, MARCH 1979

THIS REPORT EXAMINES THE EXPERIMENTAL CONDITIONS LEADING TO POWDERING AND PRESENTS CALCULATIONS DEMONSTRATING THAT GRAIN BOUNDARY SEPARATION (INTEGRANULAR FRACTURE) CAN BE EXPLAINED BY THE

147057 *CONTINUED*
COMBINATION OF A SEVERE LOSS OF GRAIN BOUNDARY STRENGTH AT THE ELEVATED TEMPERATURES EXPERIENCED UNDER FILM BOILING CONDITIONS, AND THE HIGH TENSILE STRESSES INDUCED BY REQUENCHING FROM SUCH FILM BOILING CONDITIONS, THUS RESULTING IN A DESINTERING OF UNRESTRUCTURED FUEL TO A POWDERY FORM. (FAH)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

URANIUM + FILM BOILING + FUEL, NUCLEAR + MICROSTRUCTURE + HIGH TEMPERATURE + NRC-3

147907
SEIFFERT SL + HOBBINS RR
OXIDATION AND EMBRITTLEMENT OF ZIRCALOY-4 CLADDING FROM HIGH TEMPERATURE FILM BOILING-OPERATION
IDAHO NATIONAL ENGINEERING LAB., IDAHO FALLS
NUREG/CR-0517 + TREE-1327 +, 76 PPS, 41 FIGS, 63 REFS, APRIL 1979

CLADDING EMBRITTLEMENT RESULTING FROM THE HIGH TEMPERATURE OXIDIZING REACTIONS WITH THE COOLANT AND THE FUEL IS EVALUATED AND COMPARED WITH FAILURE CRITERIA. THE IN-PILE DATA ARE CORRELATED WITH ROOM TEMPERATURE EMBRITTLEMENT CRITERIA BASED ON THE FRACTION OF REMAINING BETA PHASE, THE TOTAL EXTENT OF OXIDATION, AND THE MEAN OXYGEN CONCENTRATION NEAR SATURATION IN THE BETA PHASE. RESULTS OF THIS STUDY SHOW THAT THE IN-PILE DATA ARE MOST CONSISTENT WITH CRITERIA BASED ON THE MEAN OXYGEN CONTENT IN THE BETA PHASE, WHICH SUGGESTS THAT TIME AND TEMPERATURE CRITICALLY AFFECT THE ULTIMATE CLADDING OXYGEN DISTRIBUTION AND THE EXTENT OF CLADDING EMBRITTLEMENT. (FAH)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

ZIRCALOY + CLADDING + OXIDATION + EMBRITTLEMENT + HIGH TEMPERATURE + FILM BOILING + NRC-3

149402
LARSON JR + SEPOLD LK + SPORE JW
PBF - LOCA TEST SERIES TEST LOC-11 TEST RESULTS REPORT
IDAHO NATIONAL ENGINEERING LAB., IDAHO FALLS
NUREG/CR-0618 + TREE-1329 +, 58 PPS, 35 FIGS, 20 REFS, APRIL 1979

THIS REPORT PRESENTS THE RESULTS OF LOSS-OF-COOLANT (LOC) TEST LOC-11. THE PRIMARY OBJECTIVE OF THE TEST WAS TO EVALUATE THE BEHAVIOR OF PRESSURIZED WATER REACTOR (PWR) FUEL UNDER LOCA CONDITIONS SIMILAR TO THOSE POSTULATED DURING A SIMULATED DOUBLE-ENDED COLD LEG BREAK IN A PWR. TEST LOC-11 CONSISTED OF FOUR, SEPARATELY SHROUDED, FRESH FUEL RODS OF PWR DESIGN, WITH INITIAL PLENUM PRESSURE AS A VARIABLE. POSTTEST RESULTS INDICATED SLIGHT CLADDING CIRCUMFERENTIAL SWELLING OF THE PRESSURIZED RODS AND SLIGHT COLLAPSE OF THE RELATIVELY UNPRESSURIZED RODS. THE RESULTS ARE COMPARED WITH THE POSTTEST ANALYSES TO AID IN UNDERSTANDING THE COOLANT THERMAL-HYDRAULIC BEHAVIOR AND FUEL ROD BEHAVIOR.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

REACTOR, PWR + ACCIDENT, LOSS OF COOLANT + REACTOR TEST FACILITY + BLOWDOWN + THERMAL HYDRAULIC ANALYSIS + FUEL ROD + COOLING + EMERGENCY COOLING SYSTEM + NRC-3

149001
MEHNER AS + VINJAMURI K
FUEL ROD BEHAVIOR DURING TEST PCM-2
IDAHO NATIONAL ENGINEERING LAB., IDAHO FALLS
NUREG/CR-0647 + TREE-1332 +, 53 PPS, 8 TABS, 27 FIGS, 12 REFS, APRIL 1979

FOUR UNIRRADIATED PWR TYPE FUEL RODS WERE SUBJECTED TO EIGHT DEPARTURE FROM NUCLEATE BOILING (DNB) CYCLES TO PROVIDE DATA ON THE THERMAL HYDRAULIC CONDITIONS WHICH AFFECT THE ONSET OF DNB AND TERMINATION OF FILM BOILING. DURING THE LAST DNB CYCLE, FILM BOILING CONDITIONS WERE CONTINUED FOR UP TO 117 SECONDS TO PROVIDE DATA ON THE EFFECTS OF SUSTAINED FILM BOILING OPERATION ON FUEL ROD THERMAL AND MECHANICAL BEHAVIOR. CONCLUSIONS WERE REACHED ON FACTORS WHICH AFFECT THE ONSET OF DNB AND TERMINATION OF FILM BOILING, THE EFFECTS OF SUSTAINED FILM BOILING ON FUEL ROD BEHAVIOR, AND THE RESULTANT DAMAGE TO THE ROD. (FAH)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

FUEL ROD + REACTOR, PWR + NUCLEATE BOILING + TESTING + DEFORMATION + DAMAGE + NRC-3

147046
YBARRONDO LJ + CLAFLIN DJ + WILLS EL
QUARTERLY TECHNICAL PROGRESS REPORT ON WATER REACTOR SAFETY PROGRAMS SPONSORED BY THE NUCLEAR REGULATORY COMMISSION'S DIVISION OF REACTOR SAFETY RESEARCH JANUARY-MARCH 1979
IDAHO NATIONAL ENGINEERING LAB., IDAHO FALLS
NUREG/CR-0739 + TREE-1299 +, 66 PPS, 4 TABS, 32 FIGS, 29 REFS, APRIL 1979

TWO BASELINE TESTS WERE SUCCESSFULLY PERFORMED IN THE SEMISCALE MOD-3 TEST SYSTEM, AND UNUSUAL DOWNCOMER HYDRAULIC BEHAVIOR THAT OCCURRED IN THE MOD-3 SYSTEM DOWNCOMER DURING EARLIER TESTING WAS ANALYZED. THE LOFT EXPERIMENTAL PROGRAM PERFORMED ANALYSIS OF THE FIRST NUCLEAR LOSS-OF-COOLANT EXPERIMENT IN THE LOFT FACILITY IN WHICH MEASURED FUEL ROD CLADDING TEMPERATURES (789 K MAXIMUM) WERE MUCH LOWER THAN HAD BEEN CALCULATED. THE THERMAL FUELS BEHAVIOR PROGRAM COMPLETED TWO LOFT LEAD ROD TESTS IN THE POWER BURST FACILITY, AND AN ANALYSIS OF AXIAL GAS FLOW MEASUREMENTS IN FUEL RODS WAS ALSO COMPLETED TO DETERMINE THE EXTENT OF EARLY FUEL RELOCATION AND

147046 *CONTINUED*
CRACKING.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*REACTOR, LWR + EXPERIMENT + *THERMAL HYDRAULIC ANALYSIS + *LOFT (S-RR) + ACCIDENT, LOSS OF COOLANT + FUEL, NUCLEAR + THERMAL PROPERTY + FUEL ROD + CONTAINMENT INTEGRITY + NRC-2 + NRC-3 + NRC-4

149401
EL-GENK MS
AN ASSESSMENT OF FUEL MELTING, RADIAL EXTRUSION, AND CLADDING THERMAL FAILURE DURING A POWER-COOLING-MISMATCH EVENT IN LIGHT WATER REACTORS
IDAHO NATIONAL ENGINEERING LAB., IDAHO FALLS
NUREG/CR-0500 + TREE-1270 +. 60 PPS, 27 FIGS, 48 REFS, MAY 1979

AN ANALYTICAL MODEL IS DEVELOPED TO STUDY THE TRANSIENT FREEZING OF A SUPERHEATED LIQUID PENETRATING AN INITIALLY EMPTY CRACK, MAINTAINED AT A CONSTANT, SUBFREEZING TEMPERATURE. THE ANALYSIS IS PRESENTED IN A DIMENSIONLESS FORM, DEMONSTRATING THE EFFECT OF THE GOVERNING PARAMETERS; NAMELY, THE DRIVING PRESSURE, CRACK SHAPE, CRACK LENGTH, LIQUID FLOW CONDITIONS, THERMOPHYSICAL PROPERTIES, AND THE TEMPERATURE OF THE LIQUID AND THE CRACK WALLS. THE CALCULATIONAL RESULTS ARE APPLIED TO THE RADIAL EXTRUSION OF MOLTEN URANIUM OXIDE FUEL, OBSERVED IN SOME IN-PILE TESTS IN WHICH PCM CONDITIONS WERE SIMULATED. CONDITIONS FOR POTENTIAL MELTING OF THE ZIRCALOY CLADDING UPON BEING CONTACTED BY THE EXTRUDED MOLTEN FUEL ARE INVESTIGATED ANALYTICALLY. THE ANALYTICAL PREDICTIONS ARE CONSISTENT WITH THE EXPERIMENTAL RESULTS FROM PCM IN-PILE TESTS.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

REACTOR, LWR + FUEL ROD + ZIRCALOY + CLADDING + HEAT CONDUCTANCE, FUEL TO CLAD + FAILURE, CLADDING + FUEL MELTDOWN + THERMAL ANALYSIS + FUEL CLAD INTERACTION + NRC-3

148934
BUCKLAND RJ + WHITE CE + ABBOTT DG
EXPERIMENT DATA REPORT FOR TEST RIA 1-1
IDAHO NATIONAL ENGINEERING LAE., IDAHO FALLS
NUREG/CR-0516 + TREE-1236 +. 86 PPS, 6 TABS, 83 FIGS, MAY 1979

RECORDED TEST DATA ARE PRESENTED FOR TEST RIA 1-1 OF THE THERMAL FUELS BEHAVIOR PROGRAM REACTIVITY INITIATED ACCIDENT TEST SERIES I. TEST CONDUCTED AT POWER BURST FACILITY. TEST DESIGNED TO CHARACTERIZE THE RESPONSE OF UNIRRADIATED AND PREIRRADIATED FUEL RODS DURING AN RIA EVENT CONDUCTED CONDITIONS AND TO EVALUATE TEST INSTRUMENTATION RESPONSE DURING A POWER BURST. DATA ARE ANALYZED ONLY FOR CONSISTENCY AND ARE CATEGORIZED AS QUALIFIED, RESTRAINED, TREND, OR FAILED DATA. POWER BURST DATA ARE PRESENTED IN MAIN BODY OF REPORT; POWER CALIBRATION AND PRECONDITIONING DATA ARE INCLUDED ON ATTACHED MICROFICHE.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

ACCIDENT, REACTIVITY + REACTOR, BWR + REACTOR STARTUP + TEST, INSTRUMENT RESPONSE + FUEL ROD + DATA COLLECTION + NRC-3 + POWER BURST FACILITY (PBF)

149686
KERWIN DK + NOVICK AH + OLSEN CS
POWER-COOLING MISMATCH TEST SERIES FUEL ROD MATERIAL PROPERTIES DATA REPORT
IDAHO NATIONAL ENGINEERING LAB., IDAHO FALLS
NUREG/CR-0609 + TREE-1331 +. 75 PPS, 24 TABS, 41 FIGS, 4 REFS, MAY 1979

THE PHYSICAL, CHEMICAL, MECHANICAL, AND METALLURGICAL PROPERTIES OF THE POWER-COOLING-MISMATCH (PCM) TEST SERIES FUEL ROD COMPONENTS ARE PRESENTED. THESE DATA WERE OBTAINED FROM EXAMINATIONS AND TESTS OF REPRESENTATIVE UNIRRADIATED FUEL ROD MATERIALS, AND ARE NECESSARY TO UNDERSTAND AND EVALUATE BOTH FUEL ROD BEHAVIOR DURING IRRADIATION TESTING IN THE PCM TEST SERIES, AND THE POSTTEST CONDITIONS OF THE VARIOUS FUEL ROD MATERIALS.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

METALLURGY + *FUEL ROD + CLADDING + SINTERING + *IRRADIATION TESTING + FUEL SWELLING + NRC-3

148997
COOK BA
FUEL ROD MATERIAL BEHAVIOR DURING TEST PCM-1
IDAHO NATIONAL ENGINEERING LAB., IDAHO FALLS
NUREG/CR-0757 + TREE-1333 +. 57 PPS, 16 TABS, 41 FIGS, 22 REFS, JUNE 1979

OBJECTIVE WAS TO EVALUATE THE BEHAVIOR OF A SINGLE PWR TYPE FUEL ROD SUBJECTED TO FILM BOILING AT HIGH POWER FOLLOWING ROD FAILURE. THE FAILURE MECHANISMS AND SUBSEQUENT BREAKUP OF THE FUEL AND CLADDING ARE DISCUSSED. THE FUEL ROD CLADDING TEMPERATURE PROFILE IS DETERMINED BY METALLOGRAPHIC EXAMINATION OF CLADDING MICROSTRUCTURES AND CALCULATIONS BASED ON KINETIC CORRELATIONS OF THE CLADDING EXTERNAL SURFACE REACTION LAYERS WITH THE DURATION OF FILM BOILING. CLADDING-COOLANT AND CLADDING-FUEL INTERACTIONS ARE INVESTIGATED BY METALLOGRAPHIC AND MICROPROBE EXAMINATION AND CHEMICAL ANALYSIS OF THE CLADDING. FUEL RESTRUCTURING AND CHEMICAL CHANGES ARE ALSO ADDRESSED. (FAH)

148997 *CONTINUED*
AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

FUEL ROD + REACTOR, PWR + FILM BOILING + FAILURE, CLADDING + FUEL CLAD INTERACTION + NRC-3

148935
ZIMMERMAN CL + WHITE CE + EVANS RP
EXPERIMENT DATA REPORT FOR TEST RIA 1-2
IDAHO NATIONAL ENGINEERING LAB., IDAHO FALLS
NUREG/CR-0765 + TREE-1271 +. 81 PPS, 6 TABS, 92 FIGS, 2 REFS, JUNE 1979

SECOND REPORT IN REACTIVITY INITIATED ACCIDENT TEST SERIES TEST CONDUCTED AT PBF. TEST OBJECTIVES WERE: (1) CHARACTERIZE THE RESPONSE OF PREIRRADIATED FUEL RODS DURING AN RIA EVENT CONDUCTED AT BOILING WATER REACTOR HOT-STARTUP CONDITIONS AND (2) EVALUATE THE EFFECT OF ROD INTERNAL PRESSURE ON PREIRRADIATED FUEL ROD RESPONSE DURING RIA EVENT. DATA ARE ONLY ANALYZED FOR QUALITY AND VALIDITY. THE POWER BURST DATA ARE PRESENTED IN THE MAIN BODY OF THE REPORT WHILE DATA FROM THE POWER CALIBRATION AND PRECONDITIONING PHASE ARE INCLUDED ON ATTACHED MICROFICHE.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

ACCIDENT, REACTIVITY + REACTOR, BWR + REACTOR STARTUP + PRESSURE, INTERNAL + FUEL ROD + DATA COLLECTION + NRC-3 + POWER BURST FACILITY (PBF)

148911
HIRT CW + ROMERO NC + TORREY MD
SOLA-DF: A SOLUTION ALGORITHM FOR NONEQUILIBRIUM TWO-PHASE FLOW
LOS ALAMOS SCIENTIFIC LAB., N.M.
NUREG/CR-0690 + LA-7725-MS +. 87 PPS, 4 TABS, 5 FIGS, 15 REFS, JUNE 1979

A NUMERICAL SOLUTION ALGORITHM, SOLA-DF, IS PRESENTED FOR THE SOLUTION OF GAS-LIQUID MIXTURE DYNAMICS IN TWO SPACE DIMENSIONS AND TIME. THE TWO-PHASE SYSTEM IS DESCRIBED BY A SET OF MIXTURE EQUATIONS PLUS A RELATION DESCRIBING THE RELATIVE FLOW OF ONE PHASE WITH RESPECT TO THE OTHER. IN ADDITION, THE ALGORITHM CONTAINS MODELS TO REPRESENT THE INTERPHASE EXCHANGE RATES OF MASS, MOMENTUM, AND ENERGY FOR WATER-STEAM MIXTURES.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

COMPUTER PROGRAM + *FLOW, TWO PHASE + *EQUILIBRIUM + THERMODYNAMICS + EQUATION OF STATE + NRC-3

147991
VAN HOUTEN R
FUEL ROD FAILURE AS A CONSEQUENCE OF DEPARTURE FROM NUCLEATE BOILING OR DRYOUT
U.S. NUCLEAR REGULATORY COMMISSION
NUREG-0562 +. 34 PPS, 3 TABS, 5 FIGS, 29 REFS, JUNE 1979

COMPARES PWR AND BWR REACTOR TEST DATA ON THE BRITTLE FAILURE OF ZIRCALOY FUEL ROD CLADDING WITH OUT-OF-PILE TEST DATA. THE REACTOR TEST FUEL RODS WERE EXPOSED TO POWER-COOLING MISMATCH (PCM) AND TO CONSEQUENT DEPARTURE FROM NUCLEATE BOILING (DNB) OR TO DRYOUT AND CONSEQUENT CLAD OVER-TEMPERATURE, UNDER PWR AND BWR TEST CONDITIONS, RESPECTIVELY. THE REACTOR TEST DATA SHOW THAT CLADDING INTEGRITY IS GENERALLY MAINTAINED DESPITE EXPOSURE TO VERY SEVERE ACCIDENT ENVIRONMENTS. THE CLADDING TIME-AT-TEMPERATURE BOUNDARIES BETWEEN THE FAILURE AND NON-FAILURE DATA FROM THE REACTOR TESTS AND FROM THE OUT-OF-PILE TESTS ARE IN VERY GOOD AGREEMENT. (CED)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

REACTOR, PWR + REACTOR, BWR + BRITTLE FRACTURE + FUEL ROD + FAILURE, CLADDING + OUT OF PILE EXPERIMENT + HEAT FLUX, DRYOUT + NUCLEATE BOILING + NRC-3

146861
MALINAUSKAS AP
QUARTERLY PROGRESS REPORT ON FISSION PRODUCT BEHAVIOR IN LWRS FOR THE PERIOD OCTOBER - DECEMBER 1978
OAK RIDGE NATIONAL LAB., TENN.
NUREG/CR-0682 + ORNL/NUREG/TM-308 +. 15 PPS, 4 TABS, 4 FIGS, 7 REFS, APRIL 1979

TWO ADDITIONAL TESTS WITH HIGH-BURNUP H.B. ROBINSON REACTOR FUEL HAVE BEEN COMPLETED AS PART OF THE HIGH TEMPERATURE TEST SERIES. THE RELEASES OBTAINED FOR 85KR, 134CS, AND 129I IN THESE TESTS CAN BE SUMMARIZED AS FOLLOWS: THESE VALUES, WHICH ARE SIGNIFICANTLY LARGER THAN THOSE OBTAINED IN PREVIOUSLY CONDUCTED TESTS AT TEMPERATURES UP TO 1300C, SUGGEST THAT SOME MECHANISM OTHER THAN NORMAL DIFFUSION FROM EITHER THE GAP OR THE UO2 MATRIX GOVERNS THE RELEASE BEHAVIOR.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

ACCIDENT, HYPOTHETICAL + IRRADIATION TESTING + HIGH TEMPERATURE + FISSION PRODUCT RELEASE + FUEL BURNUP + REACTOR, BWR + KRYPTON + CESIUM + IODINE + NRC-3 + REACTOR, PWR

147856
CHAPMAN RH
MULTIROD BURST TEST PROGRAM PROGRESS REPORT FOR JULY-DECEMBER 1978
OAK RIDGE NATIONAL LAB., TENN.

147856 *CONTINUED*
NUREG/CR-0655 + ORNL/NUREG/TM-297 +. 171 PPS. FIGS. REFS. JUNE 1979

THE TECHNOLOGY FOR FABRICATING FUEL SIMULATORS, BASED ON THE USE OF BORON NITRIDE (BN) PREFORMS, WAS DEMONSTRATED BY THE PRODUCTION OF 92 ACCEPTABLE SIMULATORS FOR FUTURE TEST NEEDS. TWO SINGLE-ROD TESTS WERE CONDUCTED, USING PROTOTYPE FUEL SIMULATORS PRODUCED IN THIS DEVELOPMENT EFFORT, TO DEMONSTRATE SATISFACTORY PERFORMANCE. RESULTS ARE ALSO REPORTED OF FURTHER ANALYSES PERFORMED TO CHARACTERIZE THE B-1 TEMPERATURE DISTRIBUTION AND TO ASSESS THE IMPORTANCE OF THE EFFECT OF SHROUD TEMPERATURE ON BUNDLE DEFORMATION. THE RESULTS INDICATE A RELATIVELY MINOR EFFECT ON LOCALIZED DEFORMATION. POSTTEST EXAMINATION AND ANALYSIS OF THE B-2 TEST DATA WERE COMPLETED, AND THE RESULTS ARE REPORTED AND COMPARED WITH B-1 RESULTS. THE RESULTS ARE IN VERY GOOD AGREEMENT.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

FUEL ROD + FUEL ELEMENT BOWING + DEFORMATION + BURST PRESSURE + TEMPERATURE + STRESS STRAIN DATA + NRC-3

148418
HOBSON DO
PRELIMINARY ANALYSIS OF SURFACE DISPLACEMENT RESULTS IN THE CREEPDOWN IRRADIATION EXPERIMENT HOBBIE-1
OAK RIDGE NATIONAL LAB., TENN.
NUREG/CR-0810 + ORNL/NUREG/TM-310 +. 25 PPS, 25 FIGS, 6 REFS, JUNE 1979

THIS REPORT PRESENTS THE RESULTS OF THE EDDY-CURRENT SURFACE DISPLACEMENT MEASUREMENTS OF ZIRCALOY CLADDING OBTAINED DURING THE HOBBIE-1 IRRADIATION EXPERIMENT IN THE HFT AT ECN-PETTEN, THE NETHERLANDS. RAW CREEPDOWN DATA FROM THE TEST WERE CORRECTED THROUGH THE USE OF REFERENCE COILS INCORPORATED IN THE EDDY-CURRENT COIL BLOCK IN THE EXPERIMENT CAPSULE. THE CORRECTED DISPLACEMENT RESULTS ARE COMPARED WITH OUT-OF-REACTOR RESULTS OBTAINED UNDER NOMINALLY IDENTICAL CONDITIONS OF PRESSURE AND TEMPERATURE. EXPERIMENT HOBBIE-1 WAS RUN AT 371C AND 13.1 MPA SPECIMEN EXTERNAL PRESSURE FOR A TOTAL TIME OF APPROXIMATELY 950 H.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*CREEP BEHAVIOR + FUEL ROD + *CLADDING + ZIRCALOY + MEASUREMENT + IN CORE MEASUREMENT + NETHERLANDS + IRRADIATION TESTING + DISPLACEMENT + PRESSURE, EXTERNAL + NRC-3

147859
LIGHT WATER REACTOR SAFETY RESEARCH PROGRAM QUARTERLY REPORT APRIL-JUNE 1978
SANDIA LABS., ALBUQUERQUE, N.M.
NUREG/CR-0422 + SAND 78-1901 (VOL. 8) +. 112 PPS, TABS, FIGS, JAN. 1979

THE FOLLOWING PROGRAMS ARE REPORTED ON: MOLTEN CORE/CONCRETE INTERACTIONS STUDY; STEAM EXPLOSION PHENOMENA; STATISTICAL ANALYSIS AND METHODS FOR STUDYING THE PEAK CLAD TEMPERATURE AS CALCULATED BY RELAP 4 FOR A LOSS-OF-COOLANT ACCIDENT; AND THE UPPER HEAD INJECTION RELAP MODEL DEVELOPMENT.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*CORE MELTDOWN + CONCRETE + STEAM + EXPLOSION + STATISTICAL ANALYSIS + FUEL ROD + CLADDING + TEMPERATURE + ACCIDENT, LOSS OF COOLANT + ACCIDENT ANALYSIS + ANALYTICAL MODEL + SAFETY INJECTION + CONTAINMENT, ICE CONDENSER + NRC-3 + *REACTOR, LWR

147504
BUXTON LD
MOLTEN-CORE/WATER CONTACT ANALYSIS FOR FUEL MELT ACCIDENTS
SANDIA LABS., ALBUQUERQUE, N.M.
NUREG/CR-0391 + SAND 77-1842 +. 26 PPS, 6 FIGS, 6 REFS, FEB. 1979

COMPUTATIONAL ANALYSES OF THE BOILOFF OF WATER FROM THE REACTOR VESSEL HAVE BEEN PERFORMED USING THE BOIL CODE FOR SEVERAL DIFFERENT HYPOTHETICAL FUEL MELT ACCIDENT CONDITIONS. THESE ANALYSES SUGGEST THAT IN A BOILOFF ACCIDENT THE WATER IN THE LOWER HEAD OF THE REACTOR VESSEL WILL NOT BOIL AWAY APPRECIABLY UNTIL 20% OR MORE OF THE CORE MATERIAL IS MOLTEN, REGARDLESS OF THE PARTICULAR ACCIDENT CONDITIONS. CONSEQUENTLY, THE PROBABILITY OF OCCURRENCE OF AN EFFICIENT, IN-VESSEL STEAM EXPLOSION WILL NOT BE SIGNIFICANTLY REDUCED SIMPLY BECAUSE OF THE ABSENCE OF SUFFICIENT QUANTITIES OF WATER.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*CORE MELTDOWN + FUEL MELTDOWN + ACCIDENT, HYPOTHETICAL + REACTOR, LWR + EXPLOSION + STEAM + METAL WATER REACTION + ACCIDENT, PROBABILITY OF + NRC-3

147468
BENJAMIN AS + MCCLOSKEY DJ + POWERS DA
SPENT FUEL HEATUP FOLLOWING LOSS OF WATER DURING STORAGE
SANDIA LABS., ALBUQUERQUE, N.M.
NUREG/CR-0649 + SAND 77-1371 +. 170 PPS, 9 TABS, 27 FIGS, 3 REFS, MARCH 1979

COMPUTATIONS BASED UPON A NEW COMPUTER CODE CALLED SFUEL HAVE BEEN PERFORMED TO ASSESS THE EFFECT OF DECAY TIME, FUEL ELEMENT DESIGN, STORAGE RACK DESIGN, PACKING DENSITY, ROOM VENTILATION, DRAINAGE LEVEL, AND OTHER VARIABLES ON THE HEATUP CHARACTERISTICS OF THE SPENT FUEL AND TO PREDICT THE CONDITIONS UNDER WHICH CLAD FAILURE WILL OCCUR. POSSIBLE STORAGE POOL DESIGN

147468 *CONTINUED*
MODIFICATIONS AND/OR ONSITE EMERGENCY ACTION HAVE ALSO BEEN CONSIDERED. IT HAS BEEN FOUND THAT THE LIKELIHOOD OF CLAD FAILURE DUE TO RUPTURE OR MELTING FOLLOWING A COMPLETE DRAINAGE IS EXTREMELY DEPENDENT ON THE STORAGE CONFIGURATION AND THE SPENT FUEL DECAY PERIOD.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*SPENT FUEL + DECAY HEAT + FAILURE, CLADDING + FUEL ELEMENTS + FUEL STORAGE + *SPENT FUEL POOL + ACCIDENT, HYPOTHETICAL + ACCIDENT, LOSS OF COOLANT + NRC-3

148263
LIGHT WATER REACTOR SAFETY RESEARCH PROGRAM QUARTERLY REPORT JULY-SEPTEMBER 1978
SANDIA LAB., ALBUQUERQUE, N.M.
NUREG/CR-0661 + SAND 79-0359 +. 115 PPS, 17 TABS, 81 FIGS, APRIL 1979

THE MOLTEN CORE/CONCRETE INTERACTIONS PROVIDES QUALITATIVE, EXTENSIVE EXPLORATION OF THE PHENOMENA ASSOCIATED WITH CONTACT BETWEEN MOLTEN-CORE MATERIALS AND CONCRETE. EXPERIMENTAL ELEMENTS OF THIS STUDY ARE DIVIDED INTO 4 CATEGORIES: A. DEPOSITION OF CORIUM-TYPE MELTS ONTO CONCRETE. B. KINETICS AND STOICHIOMETRY OF THE THERMAL DECOMPOSITION OF CONCRETE. C. RESPONSE OF CONCRETE TO HIGH HEAT FLUXES AT ONE SURFACE. D. SIMULATION EXPERIMENTS WHICH EXPLORE PHENOMENA AT THE INTERFACE BETWEEN A MELT AND A DECOMPOSING SOLID. EXPERIMENTAL RESULTS ARE BEING INCORPORATED IN A COMPUTER MODEL AND A SCALING ANALYSIS. THEY WILL ESTABLISH SCALING PARAMETERS FOR THE SYSTEM AND IDENTIFY KEY ELEMENTS OF THE MELT/CONCRETE INTERACTION.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*CORE MELTDOWN + *CONCRETE + DECOMPOSITION + EXPERIMENT + STEAM + EXPLOSION + REACTOR, LWR + ACCIDENT, LOSS OF COOLANT + NRC-3 + THERMAL MECHANICAL EFFECT

4. R4 - WATER REACTOR SAFETY RESEARCH, ANALYSIS DEVELOPMENT

147496
LIGHT-WATER REACTOR SAFETY RESEARCH PROGRAM: QUARTERLY PROGRESS REPORT JULY-SEPTEMBER 1978
ARGONNE NATIONAL LAB., ILL.
NUREG/CR-0547 + ANL-78-107 +. 47 PPS. FIGS. REFS. JAN. 1979

THIS PROGRESS REPORT SUMMARIZES THE ARGONNE NATIONAL LABORATORY WORK PERFORMED DURING JULY, AUGUST, AND SEPTEMBER 1978 ON WATER-REACTOR-SAFETY PROBLEMS. THE FOLLOWING RESEARCH AND DEVELOPMENT AREAS ARE COVERED: (1) LOSS-OF-COOLANT ACCIDENT RESEARCH: HEAT TRANSFER AND FLUID DYNAMICS; (2) TRANSIENT FUEL RESPONSE AND FISSION-PRODUCT RELEASE PROGRAM; AND (3) MECHANICAL PROPERTIES OF ZIRCALOY CONTAINING OXYGEN.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*REACTOR, LWR + *ANL + ACCIDENT, LOSS OF COOLANT + HEAT TRANSFER ANALYSIS + THERMAL HYDRAULIC ANALYSIS + FUEL, NUCLEAR + REACTOR TRANSIENT + FISSION PRODUCT RELEASE + PROPERTY, MECHANICAL + ZIRCALOY + NRC-2 + NRC-3 + NRC-4

148265
LIGHT-WATER-REACTOR SAFETY RESEARCH PROGRAM'S QUARTERLY PROGRESS REPORT OCTOBER-DECEMBER 1978
ARGONNE NATIONAL LAB., ILL.
NUREG/CR-0828 + ANL-79-18 +. 40 PPS. FIGS. 15 REFS. APRIL 1979

THIS PROGRESS REPORT SUMMARIZES THE ARGONNE NATIONAL LABORATORY WORK PERFORMED DURING OCTOBER, NOVEMBER, AND DECEMBER 1978 ON WATER-REACTOR-SAFETY PROBLEMS. THE FOLLOWING RESEARCH AND DEVELOPMENT AREAS ARE COVERED: (1) LOSS-OF-COOLANT ACCIDENT RESEARCH: HEAT TRANSFER AND FLUID DYNAMICS; (2) TRANSIENT FUEL RESPONSE AND FISSION-PRODUCT RELEASE PROGRAM; AND (3) MECHANICAL PROPERTIES OF ZIRCALOY CONTAINING OXYGEN

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*REACTOR, LWR + ANL + *SAFETY ANALYSIS + ACCIDENT, LOSS OF COOLANT + HEAT TRANSFER ANALYSIS + HYDRAULIC ANALYSIS + FISSION PRODUCT RELEASE + ZIRCALOY + OXYGEN + PROPERTY, MECHANICAL + NRC-2 + NRC-3 + NRC-4

144959
GIESEKE JA + BAYBUTT P + JUNG RG + JORDAN H
FISSION PRODUCT TRANSPORT ANALYSIS QUARTERLY PROGRESS REPORT JANUARY 1 - MARCH 31, 1978
BATTELLE COLUMBUS LABS., OHIO
NUREG/CR-0697 + BMI-2022 +. 11 PPS. 1 TAB. 1 FIG. 5 REFS. MARCH 1979

REPORT IS CONCERNED PRIMARILY WITH CONTINUING EFFORTS TO DEVELOP THE TRAP-MELT CODE BY ADDITION OF SPECIFIC MECHANISMS DESCRIBING PARTICLE TRANSPORT AND DEPOSITION, AND WITH CONTINUATION OF THE PREPARATION OF THERMAL-HYDRAULIC DATA FOR USE WITH THE CODE. PARTICLE DEPOSITION MECHANISMS ADDED TO THE TRAP-MELT CODE INCLUDE DEPOSITION BY THERMOPHORESIS AND BY DIFFUSION AND INERTIA FROM LAMINAR AND TURBULENT STEAM FLOWS. EFFORTS CONCERNED WITH DESCRIBING THERMAL-HYDRAULIC CONDITIONS HAVE LED TO SPECIFICATION OF DATA FOR A SPECIFIC ASSUMED ACCIDENT SEQUENCE, AB WITH A COLD-LEG BREAK, THAT WILL BE USED AS THE REFERENCE CASE DURING COMPLETION OF THE CODE DEVELOPMENT EFFORTS.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

COMPUTER PROGRAM + DEPOSITION + THERMOPHORESIS + PARTICLE SIZE + NRC-3 + NRC-4 + *FISSION PRODUCT TRANSPORT

144991
GIESEKE JA + BAYBUTT P + JORDAN H + JUNG RG
FISSION PRODUCT TRANSPORT ANALYSIS QUARTERLY PROGRESS REPORT APRIL 1 - JUNE 30, 1978
BATTELLE COLUMBUS LABS., OHIO
NUREG/CR-0698 + BMI-2023 +. 10 PPS. 3 TABS. 3 REFS. MARCH 1979

REPORT DISCUSSES EFFORTS CONCERNED PRIMARILY WITH CONTINUED DEVELOPMENT OF THE TRAP-MELT COMPUTER CODE, SPECIFICATION OF CONDITIONS AND CODE INPUT FOR MELTDOWN ACCIDENTS, AND INITIATION OF EFFORTS TO PROVIDE FUNCTIONAL DESIGN SPECIFICATIONS FOR A FISSION PRODUCT TRANSPORT TEST FACILITY. THE CODE DEVELOPMENT EFFORTS WERE CONCERNED PRIMARILY WITH INCORPORATING THE MECHANISMS INTO THE TRAP-MELT CODE THAT ALLOW FOR PARTICLE GROWTH BY AGGLOMERATION, AND ADDING EXPRESSIONS TO GIVE STEAM VISCOSITY AND DENSITY UP TO HIGH TEMPERATURES AND PRESSURES. TO PROVIDE A SET OF CONDITIONS FOR USE IN DEVELOPING THE CODE, THE NEEDED INPUT FOR A RADIONUCLIDE SOURCE TERM WAS SPECIFIED BY COMBINING BEST ESTIMATE CORE RELEASE FRACTIONS WITH CALCULATED INVENTORIES.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

FISSION PRODUCT TRANSPORT + COMPUTER PROGRAM + AGGLOMERATE + DEPOSITION + FUEL MELTDOWN + PARTICLE SIZE + RADIONUCLIDE + NRC-3 + NRC-4

145833
HOOPER JL
REACTOR SAFETY RESEARCH PROGRAMS QUARTERLY REPORT JULY 1-SEPTEMBER 30, 1978
BATTELLE PACIFIC NORTHWEST LABS., RICHLAND, WASH.
NUREG/CR-0546 + PNL-2653-3 +. 126 PPS. TABS. FIGS. FEB. 1979

THIS DOCUMENT SUMMARIZES THE WORK PERFORMED BY PACIFIC NORTHWEST LABORATORY FROM JULY THROUGH

145833 *CONTINUED*
SEPTEMBER 1978. FOR THE DIVISION OF REACTOR SAFETY RESEARCH WITHIN THE NUCLEAR REGULATORY COMMISSION. THE FOLLOWING AREAS ARE REPORTED ON: ULTIMATE HEAT SINK PERFORMANCE MEASUREMENTS; GRAPHITE NONDESTRUCTIVE TESTING; INTEGRATION OF NONDESTRUCTIVE EXAMINATION RELIABILITY AND FRACTURE MECHANICS; ACOUSTIC EMISSION - FLAW RELATIONSHIP FOR IN-SERVICE MONITORING OF NUCLEAR PRESSURE VESSELS; EXPERIMENTAL VERIFICATION OF STEADY STATE CODES: EX-REACTOR DETERMINATION OF THERMAL GAP AND CONTACT CONDUCTANCE; EXPERIMENTAL VERIFICATION OF STEADY STATE CODES: IRRADIATION RESULTS; FUEL SUBASSEMBLY PROCUREMENT AND IRRADIATION TEST PROGRAM; EXPERIMENTAL VERIFICATION OF STEADY STATE CODES: CODE DEVELOPMENT; US-NRC PHEBUS REPRESENTATIVE; STEAM GENERATOR TUBE INTEGRITY; AND CORE THERMAL MODE DEVELOPMENT.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

GRAPHITE + TEST, NONDESTRUCTIVE + ACOUSTICS + FLAW + PRESSURE VESSELS + THERMAL HYDRAULIC ANALYSIS + IRRADIATION TESTING + FUEL ELEMENTS + STEAM GENERATOR + TUBING + STRUCTURAL INTEGRITY + CORE + THERMAL ANALYSIS + NRC-1 + NRC-3 + NRC-4 + NRC-5

147858
HOOPER JL
REACTOR SAFETY RESEARCH PROGRAMS QUARTERLY REPORT OCTOBER 1-DECEMBER 31, 1978
BATTELE PACIFIC NORTHWEST LABS., RICHLAND, WASH.
NUREG/CR-0681 + PNL-2853-4 +. 115 PPS. FIGS, REFS. MARCH 1979

SUMMARIZES THE WORK PERFORMED BY PACIFIC NORTHWEST LABORATORY FROM OCTOBER THROUGH DECEMBER 1978, FOR THE DIVISION OF REACTOR SAFETY RESEARCH WITHIN THE NUCLEAR REGULATORY COMMISSION. THE FOLLOWING PROGRAMS ARE REPORTED ON: EXPERIMENTAL VERIFICATION OF STEADY STATE CODES: IRRADIATION RESULTS; EXPERIMENTAL VERIFICATION OF STEADY STATE CODES: EX-REACTOR DETERMINATION OF THERMAL GAP AND CONTACT CONDUCTANCE; EXPERIMENTAL VERIFICATION OF STEADY STATE CODES: CODE DEVELOPMENT; CORE THERMAL MODEL DEVELOPMENT; FUEL SUBASSEMBLY PROCUREMENT AND IRRADIATION TEST PROGRAM STEAM GENERATOR TUBE INTEGRITY; ACOUSTIC EMISSION-FLAW RELATIONSHIP FOR IN-SERVICE MONITORING OF NUCLEAR PRESSURE VESSELS; AND INTEGRATION OF NONDESTRUCTIVE EXAMINATION RELIABILITY AND FRACTURE MECHANICS.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*REACTOR, LWR + *HEAT SINK + PERFORMANCE + COMPUTER PROGRAM + COMPARISON, THEORY AND EXPERIENCE + THERMAL HYDRAULIC ANALYSIS + FUEL ELEMENTS + IRRADIATION TESTING + STEAM GENERATOR + TUBING + STRUCTURAL INTEGRITY + PRESSURE VESSELS + ACOUSTICS + MONITOR + NRC-1 + NRC-3 + NRC-4 + NRC-5

149913
HOOPER JL
REACTOR SAFETY RESEARCH PROGRAMS QUARTERLY REPORT JANUARY 1-MARCH 31, 1979
BATTELLE PACIFIC NORTHWEST LAB., RICHLAND, WASH.
NUREG/CR-0855 + PNL-3040-1 +. 167 PPS. 41 FIGS, REFS, MAY 1979

SUBJECTS REPORTED ON ARE: (1) ULTIMATE HEAT SINK PERFORMANCE MEASUREMENTS, (2) STEAM GENERATOR TUBE INTEGRITY, (3) GRAPHITE NONDESTRUCTIVE TEST, (4) ACOUSTIC EMISSION, (5) EXPERIMENTAL VERIFICATION OF STEADY STATE CODES: IRRADIATION RESULTS, (6) EXPERIMENTAL VERIFICATION OF STEADY STATE CODES: EX-REACTOR, (7) DETERMINATION OF THERMAL GAP AND CONTACT CONDUCTANCE, (8) EXPERIMENTAL VERIFICATION OF STEADY STATE CODES: CODE DEVELOPMENT, (9) FUEL SUBASSEMBLY PROCUREMENT AND IRRADIATION TEST PROGRAM, (10) LOCA SIMULATION IN NRU, AND (11) CORE THERMAL MODEL DEVELOPMENT.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

ACOUSTICS + HEAT SINK + STEAM GENERATOR + TUBING + IRRADIATION TESTING + COMPUTER PROGRAM + GRAPHITE + COOLING POND + ACCIDENT, LOSS OF COOLANT + REACTOR, PWR + NRC-3 + NRC-4 + NRC-5 + TEST, NONDESTRUCTIVE + HEAT CONDUCTANCE, FUEL TO CLAD

148840
SAHA P
A REVIEW OF TWO-PHASE STEAM-WATER CRITICAL FLOW MODELS WITH EMPHASIS ON THERMALNONEQUILIBRIUM
BROOKHAVEN NATIONAL LAB., UPTON, N.Y.
NUREG/CR-0417 + BNL-NUREG-50907 +. 59 PPS, 1 TAB, 6 FIGS, 51 REFS, SEPT. 1978

A REVIEW OF THE TWO-PHASE CRITICAL FLOW MODELS HAS BEEN PRESENTED WITH PARTICULAR ATTENTION TO THE LIGHT WATER REACTOR (LWR) SAFETY APPLICATION. PERTINENT EXPERIMENTAL RESULTS HAVE ALSO BEEN REVIEWED. FROM SMALL SCALE TESTS, IT HAS BEEN FOUND THAT THE CRITICAL FLOW RATE INCREASES RAPIDLY AS THE PIPE LENGTH IS SHORTENED TO ZERO. THIS IS PARTICULARLY TRUE IF THE UPSTREAM FLUID CONDITION IS NEAR SATURATION OR SUBCOOLED, AS IS THE CASE DURING THE EARLY STAGES OF A HYPOTHETICAL LOCA IN A LWR SYSTEM.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

REACTOR, LWR + FLOW, TWO PHASE + STEAM + FLOW, CRITICAL + ANALYTICAL MODEL + MODEL TESTING + NRC-4 + SAFETY ANALYSIS

147114
ROMANO AJ
REACTOR SAFETY RESEARCH PROGRAMS QUARTERLY PROGRESS REPORT JULY 1-SEPTEMBER 30, 1978

147114 *CONTINUED*
BROOKHAVEN NATIONAL LAB., UPTON, N.Y.
NUREG/CR-0513 + BNL-NUREG-50931 +. 215 PPS, TABS, FIGS, NOV. 1978

THE REACTOR SAFETY RESEARCH PROGRAMS QUARTERLY PROGRESS REPORT DESCRIBES CURRENT ACTIVITIES AND TECHNICAL PROGRESS IN THE PROGRAMS AT BROOKHAVEN NATIONAL LABORATORY SPONSORED BY THE USNRC REACTOR SAFETY RESEARCH DIVISION. THE PROJECTS REPORTED EACH QUARTER ARE THE FOLLOWING: GAS REACTOR SAFETY EVALUATION, THOR CODE DEVELOPMENT, CODE REVIEW, SSC CODE DEVELOPMENT, LMFBR AND LWR SAFETY EXPERIMENTS, FAST REACTOR SAFETY CODE VALIDATION, STRESS CORROSION CRACKING PWR STEAM GENERATOR TUBING, AND TECHNICAL COORDINATION OF STRUCTURAL INTEGRITY.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*SAFETY ANALYSIS + *REACTOR, HTGR + COMPUTER PROGRAM + *REACTOR, LMFBR + *REACTOR, LWR + REACTOR, FAST + EXPERIMENT + STRESS CORROSION + STEAM GENERATOR + TUBING + REACTOR, PWR + STRUCTURAL INTEGRITY + NRC-4 + NRC-7 + NRC-8

149841
ROMANO AJ
REACTOR SAFETY RESEARCH PROGRAMS QUARTERLY PROGRESS REPORT OCTOBER 1-DECEMBER 31, 1978
BROOKHAVEN NATIONAL LAB., UPTON, N.Y.
NUREG/CR-0688 + BNL-NUREG-50978 +. 197 PPS, TABS, FIGS, REFS, FEB. 1979

THIS REPORT IS THE NINTH OF A SERIES OF QUARTERLY REPORTS. THE PROJECTS REPORTED ARE THE FOLLOWING: GAS REACTOR SAFETY EVALUATION, THOR CODE DEVELOPMENT, CODE REVIEW, SSC CODE DEVELOPMENT, LMFBR AND LWR SAFETY EXPERIMENTS, FAST REACTOR SAFETY CODE VALIDATION, AND STRESS CORROSION CRACKING PWR STEAM GENERATOR TUBING.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

REACTOR, HTGR + REACTOR, LMFBR + REACTOR, PWR + COMPUTER PROGRAM + SAFETY ANALYSIS + GRAPHITE + TESTING + STRUCTURAL INTEGRITY + SODIUM + POOL BOILING + STEAM GENERATOR + TUBING + STRESS CORROSION + CRACK + NRC-4 + NRC-7 + NRC-8

149912
ROMAN AJ + DIAMOND DJ + JONES OC
WATER REACTOR SAFETY RESEARCH DIVISION QUARTERLY PROGRESS REPORT JANUARY 1-MARCH 31, 1979
BROOKHAVEN NATIONAL LAB., UPTON, N.Y.
NUREG/CR-0821 + BNL-NUREG-51015 +. 48 PPS, 2 TABS, 4 FIGS, REFS, MAY 1979

THE PROJECTS REPORTED ARE THE FOLLOWING: LWR THERMAL HYDRAULIC DEVELOPMENT, RAMONA CODE EVALUATION, TRAC CODE ASSESSMENT, AND STRESS CORROSION CRACKING OF PWR STEAM GENERATOR TUBING.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*REACTOR, LWR + THERMAL HYDRAULIC ANALYSIS + COMPUTER PROGRAM + PEACH BOTTOM 2 (BWR) + MODEL + TRANSIENT + STEAM GENERATOR + STRESS CORROSION + CRACK + TUBING + NRC-4 + NRC-5

147167
DUKLER AE + CHOPRA A + MOALIM D + SEMIAT R
TWO-PHASE INTERACTIONS IN COUNTERCURRENT FLOW ANNUAL REPORT NOVEMBER 1977-OCTOBER 1978
UNIV. OF HOUSTON, TEXAS
NUREG/CR-0669 +. 112 PPS, 27 FIGS, REFS, FEB. 1979

THIS IS AN ANNUAL PROGRESS REPORT WHICH DISCUSSES 3 AREAS OF RESEARCH. IT COVERS AN ANALYSIS OF FILM FLOWING MECHANISMS DURING THE FLOODING PROCESS. THE MOTION AND SIZE OF DROPS DURING UPWARD ANNULAR FLOW IS DISCUSSED, AND THE EXPERIMENTAL RESULTS OF INTERFACIAL STRUCTURE AND MOMENTUM INTERACTIONS FOR UPWARD FILM FLOW IS GIVEN.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

FLOW, TWO PHASE + FILM + FILM, LIQUID + STEAM + FLOW, ANNULAR + DROPLET + FLOW THEORY AND EXPERIMENTS + NRC-4 + FLOOD + EXPERIMENT

149829
WILLS EL + YBARRONDO LJ
QUARTERLY TECHNICAL PROGRESS REPORT ON WATER REACTOR SAFETY PROGRAMS SPONSORED BY THE NUCLEAR REGULATORY COMMISSION'S DIVISION OF REACTOR SAFETY RESEARCH OCTOBER-DECEMBER 1978
IDAHO NATIONAL ENGINEERING LAB., IDAHO FALLS
NUREG/CR-0512 + TREE-1298 +. 75 PPS, FIGS, REFS, JAN. 1979

THE FIRST SMALL-BREAK EXPERIMENT WAS SUCCESSFULLY PERFORMED IN THE SEMISCALE MOD-3 TEST SYSTEM, AND UNUSUAL FLUID MASS DEPLETION THAT OCCURRED IN THE MOD-3 SYSTEM DOWNCOMER DURING EARLIER TESTING WAS INVESTIGATED. THE LOFT EXPERIMENTAL PROGRAM SUCCESSFULLY COMPLETED THE FIRST NUCLEAR LOSS-OF-COOLANT EXPERIMENT IN THE LOFT FACILITY; RESULTS SHOW THAT MEASURED FUEL ROD CLADDING TEMPERATURES (789 K MAXIMUM) WERE MUCH LOWER THAN HAD BEEN CALCULATED. THE THERMAL FUELS BEHAVIOR PROGRAM COMPLETED TWO REACTIVITY INITIATED ACCIDENT TESTS IN THE POWER BURST FACILITY AND PREPARATION FOR FURTHER TESTING (INCLUDING A NEW TEST SERIES, ON OPERATIONAL TRANSIENTS).

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

149829 *CONTINUED*
REACTOR, LWR + *EXPERIMENT + THERMAL HYDRAULIC ANALYSIS + *LOFT (S-RR) + ACCIDENT, LOSS OF COOLANT + FUEL, NUCLEAR + THERMAL PROPERTY + FUEL ROD + CONTAINMENT INTEGRITY + COMPUTER PROGRAM + NRC-2 + NRC-3 + NRC-4

146818
BANKERT SF
NRC/RSR DATA BANK PROGRAM DESCRIPTION
IDAHO NATIONAL ENGINEERING LAB., IDAHO FALLS
NUREG/CR-0544 +. 192 PPS, TABS, FIGS, JAN. 1979

THE UNITED STATES NUCLEAR REGULATORY COMMISSION (NRC) HAS ESTABLISHED THE NRC/REACTOR SAFETY RESEARCH (RSR) DATA BANK PROGRAM TO COLLECT, STORE, AND MAKE AVAILABLE DATA FROM THE MANY DOMESTIC AND FOREIGN WATER REACTOR SAFETY RESEARCH PROGRAMS. LOCAL DIRECTION OF THE PROGRAM IS PROVIDED BY EG-G IDAHO, INC., AT IDAHO NATIONAL ENGINEERING LABORATORY. THE NRC/RSR DATA BANK PROGRAM PROVIDES A CENTRAL COMPUTER STORAGE MECHANISM AND ACCESS SOFTWARE FOR DATA TO BE USED BY CODE DEVELOPMENT AND ASSESSMENT GROUPS IN MEETING THE CODE AND CORRELATION NEEDS OF THE NUCLEAR INDUSTRY.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*DATA COLLECTION + REACTOR, LWR + AGENCY, NRC + COMPUTER PROGRAM + INFORMATION RETRIEVAL + DATA PROCESSING + NRC-4

146885
HARGROVES DW + METCALFE LJ
CONTEMPT-LT/028-A COMPUTER PROGRAM FOR PREDICTING CONTAINMENT PRESSURE-TEMPERATURE RESPONSE TO A LOSS-OF-COOLANT ACCIDENT
IDAHO NATIONAL ENGINEERING LAB., IDAHO FALLS
NUREG/CR-0255 + TREE-1279 +. 244 PPS, FIGS, REFS, MARCH 1979

THIS CODE DESCRIBES THE LONG-TERM BEHAVIOR OF WATER-COOLED NUCLEAR REACTOR CONTAINMENT SYSTEMS SUBJECTED TO POSTULATED LOCA CONDITIONS. IT CALCULATES THE TIME VARIATION OF COMPARTMENT PRESSURES, TEMPERATURES, MASS AND ENERGY INVENTORIES, HEAT STRUCTURE TEMPERATURE DISTRIBUTIONS AND ENERGY EXCHANGE WITH ADJACENT COMPARTMENTS. THE PROGRAM IS CAPABLE OF DESCRIBING THE EFFECTS OF LEAKAGE ON CONTAINMENT RESPONSE. MODELS ARE PROVIDED TO DESCRIBE FAN COOLER AND COOLING SPRAY ENGINEERED SAFETY SYSTEMS.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

COMPUTER PROGRAM + CONTAINMENT + CONTAINMENT ATMOSPHERE + THERMAL TRANSIENT + COMPARTMENT + PRESSURE TRANSIENT + ACCIDENT, LOSS OF COOLANT + LEAK RATE + CONTAINMENT SPRAY + ENGINEERED SAFETY FEATURE + REACTOR, LWR + CONTAINMENT, PRESSURE SUPPRESSION + NRC-4

147046
YBARRONDO LJ + CLAFLIN DJ + WILLS EL
QUARTERLY TECHNICAL PROGRESS REPORT ON WATER REACTOR SAFETY PROGRAMS SPONSORED BY THE NUCLEAR REGULATORY COMMISSION'S DIVISION OF REACTOR SAFETY RESEARCH JANUARY-MARCH 1979
IDAHO NATIONAL ENGINEERING LAB., IDAHO FALLS
NUREG/CR-0739 + TREE-1299 +. 66 PPS, 4 TABS, 32 FIGS, 29 REFS, APRIL 1979

TWO BASELINE TESTS WERE SUCCESSFULLY PERFORMED IN THE SEMISCALE MOD-3 TEST SYSTEM, AND UNUSUAL DOWNCOMER HYDRAULIC BEHAVIOR THAT OCCURRED IN THE MOD-3 SYSTEM DOWNCOMER DURING EARLIER TESTING WAS ANALYZED. THE LOFT EXPERIMENTAL PROGRAM PERFORMED ANALYSIS OF THE FIRST NUCLEAR LOSS-OF-COOLANT EXPERIMENT IN THE LOFT FACILITY IN WHICH MEASURED FUEL ROD CLADDING TEMPERATURES (789 K MAXIMUM) WERE MUCH LOWER THAN HAD BEEN CALCULATED. THE THERMAL FUELS BEHAVIOR PROGRAM COMPLETED TWO LOFT LEAD ROD TESTS IN THE POWER BURST FACILITY, AND AN ANALYSIS OF AXIAL GAS FLOW MEASUREMENTS IN FUEL RODS WAS ALSO COMPLETED TO DETERMINE THE EXTENT OF EARLY FUEL RELOCATION AND CRACKING.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*REACTOR, LWR + EXPERIMENT + *THERMAL HYDRAULIC ANALYSIS + *LOFT (S-RR) + ACCIDENT, LOSS OF COOLANT + FUEL, NUCLEAR + THERMAL PROPERTY + FUEL ROD + CONTAINMENT INTEGRITY + NRC-2 + NRC-3 + NRC-4

147067
COLEMAN DR + LAATS ET + SCOFIELD NR
FRAP-S3: A COMPUTER CODE FOR STEADY STATE ANALYSIS OF OXIDE FUEL RODS - MODEL ASSESSMENT REPORT
IDAHO NATIONAL ENGINEERING LAB., IDAHO FALLS
NUREG/CR-0786 + TREE-1352 +. 84 PPS, 7 TABS, 68 FIGS, 59 REFS, APRIL 1979

THE PREDICTIVE CAPABILITIES OF THE STEADY STATE FUEL ROD ANALYSIS PROGRAM, FRAP-S3, ARE INDEPENDENTLY EVALUATED. THE FUEL BEHAVIOR PREDICTED BY THE FRAP-S3 CODE IS COMPARED WITH BOTH EXPERIMENTAL DATA FOR TEST RODS AND RESULTS OF THE FRAP-S2 CODE FOR COMMERCIAL RODS. THE CODE IS COMPARED WITH A LARGE AMOUNT OF EXPERIMENTAL DATA IN ORDER TO QUANTITATIVELY ASSESS THE ACCURACY OF ROD TEMPERATURE, PRESSURE, DEFORMATION, AND CORROSION MODELS. THE COMPARISONS BETWEEN FRAP-S3 AND FRAP-S2 RESULTS ARE USED TO IDENTIFY THE EFFECTS OF MODEL CHANGES BETWEEN CODE VERSIONS. THE STATISTICAL DISTRIBUTION OF FRAP-S3 RESULTS IS ALSO ESTABLISHED USING RESPONSE SURFACE METHODOLOGY.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

147067 *CONTINUED*
COMPUTER PROGRAM + *FUEL ROD + REACTOR, BWR + REACTOR, PWR + FUEL SWELLING + FUEL BURNUP + DEFORMATION + CORROSION + HEAT CONDUCTANCE, FUEL TO CLAD + OXIDE + *STEADY STATE + NRC-4

149138
PECK SO + BOHN MP + DEARIEN JA
FRAP-T5 - A COMPUTER CODE FOR THE TRANSIENT ANALYSIS OF OXIDE FUEL RODS
IDAHO NATIONAL ENGINEERING LAB., IDAHO FALLS
NUREG/CR-0840 + TREE-1281 +. 345 PPS, 19 TABS, 52 FIGS, REFS, JUNE 1979

THE FUEL ROD ANALYSIS PROGRAM - TRANSIENT (FRAP-T5) IS A FORTRAN IV COMPUTER CODE THAT CALCULATES THE TRANSIENT RESPONSE OF LIGHT WATER REACTOR FUEL RODS DURING HYPOTHESIZED ACCIDENTS SUCH AS A LOSS-OF-COOLANT ACCIDENT OR A POWER-COOLING MISMATCH. THE CODE CALCULATES THE TEMPERATURE, PRESSURE, DEFORMATION, AND FAILURE HISTORIES OF A FUEL ROD AS FUNCTIONS OF TIME-DEPENDENT FUEL ROD POWER AND COOLANT BOUNDARY CONDITIONS. THE CODE INCLUDES A USER'S OPTION THAT AUTOMATICALLY PROVIDES A DETAILED UNCERTAINTY ANALYSIS OF CODE CALCULATED RESPONSE PARAMETERS. FRAPT-T5 IS PROGRAMMED ON THE CDC 7600 COMPUTER AND IS STRUCTURED TO ENABLE DIRECT LINKAGE TO A THERMAL-HYDRAULIC CODE FOR TRANSIENT ANALYSIS.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*COMPUTER PROGRAM + *FUEL ROD + *TRANSIENT + TEMPERATURE + PRESSURE TRANSIENT + THERMAL TRANSIENT + DEFORMATION + HEAT TRANSFER ANALYSIS + FUEL CLAD INTERACTION + FAILURE, CLADDING + REACTOR, LWR + OXIDE + NRC-4

148050
MCMASTER WH + NORRIS DM + GOUDREAU GL
COUPLED FLUID-STRUCTURE METHOD FOR PRESSURE SUPPRESSION ANALYSIS
LAWRENCE LIVERMORE LAB., CALIF.
NUREG/CR-0607 + UCRL-52620 +. 85 PPS, 6 TABS, 40 FIGS, 24 REFS, MAY 1979

DISCUSSES AN EFFECTIVE METHOD OF FLUID-STRUCTURE COUPLING FOR APPLICATION IN BLOWDOWN SUPPRESSION ANALYSIS IN BOILING-WATER REACTORS. A COMPUTER PROGRAM COUPLES AN INCOMPRESSIBLE, EULERIAN FLUID ALGORITHM WITH A FINITE ELEMENT SHELL ALGORITHM. THE FLUID ALGORITHM PROVIDES A TRIAL VELOCITY FIELD USING THE NAVIER-STOKES EQUATIONS THAT, AT EACH TIME STEP, IS CORRECTED ITERATIVELY TO SATISFY THE INCOMPRESSIBILITY CONDITION AND FLUID-STRUCTURE INTERFACE COMPATIBILITY. THE CODE IS VERIFIED BY COMPARING CALCULATIONS OF CLASSICAL PROBLEMS AND EXPERIMENTS. COMPUTER SIMULATIONS OF AIR BLOWDOWN AND STEAM CHUGGING IN POOL-SUPPRESSION GEOMETRIES ARE ALSO PRESENTED.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

REACTOR, BWR + ACCIDENT, LOSS OF COOLANT + CONTAINMENT, PRESSURE SUPPRESSION + NUMERICAL METHOD + MATHEMATICAL TREATMENT + COMPUTER PROGRAM + NRC-4 + PRESSURE, INTERNAL

145746
JACKSON JF + STEVENSON MG
NUCLEAR REACTOR SAFETY QUARTERLY PROGRESS REPORT APRIL 1 - JUNE 30, 1978
LOS ALAMOS SCIENTIFIC LAB., N.M.
NUREG/CR-0385 + LA-7481-PR +. 183 PPS, 23 TABS, 116 FIGS, 63 REFS, OCT. 1978

SEVERAL IMPROVEMENTS WERE MADE TO THE TRAC LWR SAFETY CODE DURING THE PAST QUARTER. THESE INCLUDED A FULLY IMPLICIT HYDRODYNAMICS OPTION FOR THE TEE MODULE AND A ONE-DIMENSIONAL, TWO-FLUID HYDRODYNAMICS PACKAGE. THE SIMMER-II CODE WAS USED IN SEVERAL LMFBR CORE DISRUPTIVE ACCIDENT ANALYSIS (CDA) AND VERIFICATION STUDIES. IN HTGR SAFETY RESEARCH, THE BASE FISSION PRODUCT DIFFUSION AND DECAY CODE WAS COMPLETED, AND CODE RESULTS WERE COMPARED TO ANALYTIC TEST PROBLEMS WITH GOOD AGREEMENT.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*COMPUTER PROGRAM + HYDRODYNAMIC ANALYSIS + REACTOR, LWR + REACTOR, LMFBR + ACCIDENT, CORE DISRUPTIVE + REACTOR, HTGR + FISSION PRODUCT TRANSPORT + CONTAINMENT ANALYSIS + ACCIDENT, LOSS OF COOLANT + *SAFETY ANALYSIS + NRC-4 + NRC-5 + NRC-7 + NRC-8

148409
JACKSON JF + STEVENSON MG
NUCLEAR REACTOR SAFETY QUARTERLY PROGRESS REPORT JULY 1-SEPTEMBER 30, 1978
LOS ALAMOS SCIENTIFIC LAB., N.M.
NUREG/CR-0522 + LA-7567-PR +. 136 PPS, 20 TABS, 106 FIGS, 49 REFS, DEC. 1978

SUMMARIZES PROGRESS AT LOS ALAMOS ON NUCLEAR REACTOR SAFETY RESEARCH AIMED AT PROVIDING UNDERSTANDING OF THE RESPONSE OF NUCLEAR REACTOR SYSTEMS UNDER ACCIDENT CONDITIONS. DEVELOPMENT OF THE TRAC LWR SAFETY CODE CONTINUED DURING THE LAST QUARTER, WITH THE FINAL PROGRAM STRUCTURE CHANGES BEING COMPLETED FOR THE TRAC-P1A VERSION. LMFBR SAFETY STUDIES INCLUDED COMPLETION OF A SIMMER-II SENSITIVITY STUDY OF A VOIDED CORE POSTDISASSEMBLY EXPANSION PROBLEM. STRUCTURAL INVESTIGATIONS IN THE HTGR SAFETY RESEARCH AREA INCLUDED COMPLETION OF SINGLE IMPACT TESTS OF GRAPHITE AND PLASTIC MODEL BLOCKS. IN THE GCFR CORE DISRUPTIVE TEST PROGRAM, POSTMORTEM EXAMINATIONS OF THE FLS-1 37-PIN DISRUPTIVE TEST WERE CONDUCTED.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

148409 *CONTINUED*
*SAFETY ANALYSIS + *ACCIDENT ANALYSIS + REACTOR, LWR + COMPUTER PROGRAM + HYDRODYNAMIC ANALYSIS + REACTOR, LMFBR + ACCIDENT, CORE DISRUPTIVE + REACTOR, HTGR + STRUCTURAL ANALYSIS, DYNAMIC + REACTOR, GCFR + FUEL ELEMENTS + NRC-4 + NRC-7 + NRC-8

148494
RIVARD WC + TORREY MD
K-FIX: A COMPUTER PROGRAM FOR TRANSIENT, TWO-DIMENSIONAL, TWO FLUID FLOW THREED: AN EXTENSION OF THE K-FIX CODE FOR THREE-DIMENSIONAL CALCULATIONS
LOS ALAMOS SCIENTIFIC LAB., N.M.
NUREG/CR-0863 + LA-NUREG-6623 (SUPPL. 2) +. 137 PPS, 5 TABS, 5 FIGS, JAN. 1979

THE TRANSIENT, TWO-DIMENSIONAL, TWO-FLUID CODE K-FIX HAS BEEN EXTENDED TO PERFORM THREE-DIMENSIONAL CALCULATIONS. THIS CAPABILITY IS ACHIEVED BY ADDING FIVE MODIFICATION SETS OF FORTRAN STATEMENTS TO THE BASIC TWO-DIMENSIONAL CODE. THE MODIFICATIONS ARE LISTED AND DESCRIBED, AND A COMPLETE LISTING OF THE THREE-DIMENSIONAL CODE IS PROVIDED. RESULTS OF AN EXAMPLE PROBLEM ARE PROVIDED FOR VERIFICATION.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

COMPUTER PROGRAM + FLOW + TRANSIENT + FLOW, TWO PHASE + NRC-4

148506
COLEMAN DR + LAATS ET
FRAP-T3: A COMPUTER CODE FOR TRANSIENT ANALYSIS OF OXIDE FUEL RODS - MODEL ASSESSMENT REPORT
IDAHO NATIONAL ENGINEERING LAB., IDAHO FALLS
NUREG/CR-0555 + TREE-1320 +. 76 PPS, 2 TABS, 53 FIGS, 61 REFS, FEB. 1979

THE PREDICTIVE CAPABILITIES OF THE FUEL ROD ANALYSIS PROGRAM-TRANSIENT (FRAP-T) HAVE BEEN INDEPENDENTLY EVALUATED. CALCULATIONS OBTAINED FROM THE THIRD VERSION OF FRAP-T WERE COMPARED WITH EXPERIMENTAL DATA AND WITH ANALYTICAL RESULTS OF THE STEADY STATE MODEL, FRAP-S2. RESULTS OF CODE-DATA COMPARISONS ARE DISCUSSED FOR BOTH IN-PILE FUEL ROD EXPERIMENTS AND OUT-OF-PILE BURST EXPERIMENTS TO DETERMINE MODEL ACCURACY. RESULTS OF CODE COMPARISONS ARE DISCUSSED FOR FULL SIZED POWER REACTOR RODS TO DETERMINE WHETHER INITIAL CONDITIONS IN FRAP-T3 ARE CONSISTENT WITH FRAP-S2 CALCULATIONS AT DIFFERENT BURNUPS.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

COMPUTER PROGRAM + THERMAL TRANSIENT + TRANSIENT + FUEL ROD + IN PILE EXPERIMENT + OUT OF PILE EXPERIMENT + HEAT CONDUCTANCE, FUEL TO CLAD + PRESSURE TRANSIENT + OXIDE + NRC-4

147988
DALY BJ
DOWN COMER FLOW CALCULATIONS, FEBRUARY 1979
LOS ALAMOS SCIENTIFIC LAB., N.M.
NUREG/CR-0704 + LA-7732-SR +. 12 PPS, 2 TABS, 9 FIGS, 5 REFS, MARCH 1979

NUMERICAL CALCULATIONS HAVE BEEN PERFORMED USING THE K-TIF CODE TO COMPARE WITH SELECTED SMALL-SCALE EXPERIMENTS EXAMINING PHENOMENA RELATING TO A HYPOTHETICAL LOSS OF COOLANT ACCIDENT IN A PRESSURIZED WATER REACTOR. THE NUMERICAL MEASUREMENT OF THE TIME DELAY FOR THE ONSET OF REFILL OF THE REACTOR LOWER PLENUM IS IN GENERALLY GOOD AGREEMENT WITH THE EXPERIMENTS FOR A WIDE VARIETY OF FLOW AND THERMAL CONDITIONS, BUT THE RATE OF LOWER-PLENUM REFILL IS NOT PREDICTED ACCURATELY IN ALL CASES. THE POSSIBLE REASONS FOR THIS DISAGREEMENT ARE DISCUSSED.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

REACTOR, PWR + ACCIDENT, LOSS OF COOLANT + PLENUM + HYDRAULIC EXPERIMENT + COMPUTER PROGRAM + NRC-4

149269
JACKSON JF + STEVENSON MG
NUCLEAR REACTOR SAFETY QUARTERLY PROGRESS REPORT OCTOBER 1-DECEMBER 31, 1978
LOS ALAMOS SCIENTIFIC LAB., N.M.
NUREG/CR-0762 + LA-7769-PR +. 216 PPS, 17 TABS, 112 FIGS, 80 REFS, MAY 1979

THE LWR SAFETY COMPUTER CODE, TRAC-P1A, WAS COMPLETED DURING THIS QUARTER. CONSIDERABLE PROGRESS WAS ALSO MADE TOWARD THE COMPLETION OF THE SET OF EXPERIMENTAL ASSESSMENT CALCULATIONS THAT IS TO ACCOMPANY THE PUBLIC RELEASE OF THE CODE. A NUMERICAL STUDY OF SCALE EFFECTS ON ECC BYPASS WAS PERFORMED WITH THE K-TIF CODE. SIMMER LMFBR DISRUPTED CORE ANALYSIS CODE DEVELOPMENT AND APPLICATIONS WORK REPORTED IN THIS QUARTER INCLUDES IMPROVEMENTS IN THE ANALYTIC EQUATION-OF-STATE AND IN THE PRESSURE AND COMPONENT DENSITY SOLUTION ITERATION TECHNIQUE. IN THE HTGR SAFETY RESEARCH WORK, THE LAST IN A SERIES OF ONE-DIMENSIONAL CORE BLOCK SYSTEM MODEL SEISMIC RESPONSE TESTS WAS COMPLETED.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

LASL + SAFETY ANALYSIS + REACTOR, LWR + COMPUTER PROGRAM + EMERGENCY COOLING + REACTOR, LMFBR + ACCIDENT, CORE DISRUPTIVE + ANALYTICAL TECHNIQUE + REACTOR, HTGR + SEISMIC DESIGN + NRC-4 + NRC-7 + NRC-8

149471

149471 *CONTINUED*
HIRT CW + RIVARD WC + TORREY MD
SOLA-LOOP: A NONEQUILIBRIUM DRIFT-FLUX CODE FOR TWO-PHASE FLOW IN NETWORKS
LOS ALAMOS SCIENTIFIC LAB., N.M.
NUREG/CR-0626 + LA-7659 +. 88 PPS. 5 TABS. 4 FIGS. 11 REFS. JUNE 1979

THE FLOW DYNAMICS IS GOVERNED BY A SET OF NONLINEAR CONSERVATION LAWS BASED ON A GENERALIZED DRIFT-FLUX MODEL FOR TWO-PHASE MIXTURES. THE EQUATIONS ARE SOLVED BY A PARTIALLY IMPLICIT METHOD THAT CAN USE DIFFERENT TIME STEPS IN DIFFERENT COMPARISONS. IN ADDITION TO BEING SIMPLE AND MODULAR, THE CODE CAN USE ALMOST ANY SET OF CONSTITUTIVE RELATIONS, PROPERTY TABLES, OR OTHER SPECIAL PURPOSE FEATURES REQUIRED FOR DIFFERENT APPLICATIONS.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

COMPUTER PROGRAM + FLOW, TWO PHASE + EQUILIBRIUM + FAILURE, PIPE + TRANSIENT + NRC-4

148419
PRYOR RJ
COMPUTATIONAL METHODS IN THERMAL REACTOR SAFETY
LOS ALAMOS SCIENTIFIC LAB., N.M.
NUREG/CR-0851 + LA-7656-MS +. 18 PPS. 3 FIGS. 20 REFS. JUNE 1979

A DISCUSSION OF THE WRAP SYSTEM AND THE TRAC THERMAL REACTOR SAFETY COMPUTER CODE IS GIVEN. EMPHASIS IS PLACED ON NUMERICAL METHODS USED TO SOLVE THE ONE- AND THREE-DIMENSIONAL FLUID FLOW EQUATIONS IN TRAC AND THE FUEL ROD CONDUCTION EQUATIONS DURING REFLOOD. AN ATWS NEUTRONICS MODEL IS ALSO DISCUSSED.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

COMPUTER PROGRAM + ACCIDENT, LOSS OF COOLANT + SAFETY ANALYSIS + REACTOR, THERMAL + BLOWDOWN + NUMERICAL METHOD + EMERGENCY COOLING + CORE REFLOODING + NRC-4

149676
JACKSON JF + STEVENSON MG
NUCLEAR REACTOR SAFETY QUARTERLY PROGRESS REPORT JANUARY 1-MARCH 31, 1979
LOS ALAMOS SCIENTIFIC LAB., N.M.
NUREG/CR-0868 + LA-7667-PR +. 171 PPS. 29 TABS. 107 FIGS. 57 REFS. JUNE 1979

AN IMPORTANT MILESTONE WAS REACHED THIS QUARTER WITH THE RELEASE OF THE TRAC-L1A LWR SAFETY ANALYSIS CODE TO THE NATIONAL ENERGY SOFTWARE CENTER. THE SIMMER LMFBR DISRUPTED CORE ANALYSIS CODE WAS USED FOR THE FIRST TIME TO EXAMINE THE POSTDISASSEMBLY EJECTION OF PRIMARY SYSTEM MATERIALS INTO THE REACTOR CONTAINMENT BUILDING. IN HTGR SAFETY WORK, SEISMIC TESTS ON A TWO-DIMENSIONAL PLASTIC CORE BLOCK MODEL WERE PERFORMED. PREPARATION CONTINUED FOR A SECOND 37-ROD FULL-LENGTH SUBGROUP (FLS) EXPERIMENT SIMULATING LOSS-OF-COOLING IN A GCFR SUBASSEMBLY. IN THE AREA OF REACTOR CONTAINMENT EVALUATION, THE COMPARE CODE WAS FURTHER EVALUATED.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*LASL + *REACTOR, LWR + SAFETY ANALYSIS + COMPUTER PROGRAM + REACTOR, LMFBR + ACCIDENT, CORE DISRUPTIVE + REACTOR, HTGR + SEISMIC DESIGN + REACTOR, GCFR + ACCIDENT, LOSS OF COOLANT + EXPERIMENT + CONTAINMENT ANALYSIS + NRC-7 + NRC-8 + NRC-4

149405
JUTMACHER ES + NESMITH BJ + BRUKIEWA JB
STUDY OF SAFETY RELIEF VALVE OPERATION UNDER ATWS CONDITIONS
ROCKWELL INTERNATIONAL, CANOGA PARK, CALIF.
NUREG/CR-0687 + ETEC-TDR-78-19 +. 88 PPS. 18 FIGS. 25 REFS. MARCH 1979

DURING CERTAIN ANTICIPATED TRANSIENTS WITHOUT SCRAM (ATWS) EVENTS POSTULATED FOR PRESSURIZED-WATER NUCLEAR REACTORS, THE PLANT SAFETY RELIEF VALVES (DESIGNED FOR OPERATION WITH STEAM) ARE FORCED TO RELIEVE SATURATED OR SUBCOOLED WATER AT PRESSURES RANGING TO OVER 3000 PSIA. SINCE THE FLOW CAPACITY RATING OF THESE VALVES IS BASED UPON TESTS CONDUCTED WITH STEAM ONLY, IT BECAME NECESSARY TO OBTAIN REALISTIC (BUT CONSERVATIVELY LOW) ESTIMATES FOR SAFETY RELIEF FLOW CAPACITY FOR SATURATED AND SUBCOOLED WATER UNDER ATWS CONDITIONS.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

REACTOR, PWR + ACCIDENT, LOSS OF COOLANT + ACCIDENT, ATWS + VALVES + CONTAINMENT, PRESSURE RELIEF + PRESSURE RELIEF + CONTAINMENT, HIGH PRESSURE + WATER + NRC-2 + NRC-4

147164
SHARP DA
THE BWR STEADY-STATE CAPABILITY OF THE WRAP-EM SYSTEM
SAVANNAH RIVER LAB., AIKEN, S.C.
NUREG/CR-0712 + DPST-NUREG-78-1 +. 75 PPS. FIGS. REFS. APRIL 1979

DESCRIBES THE COMPUTATIONAL PROCEDURE USED IN THE WRAP-EM SYSTEM TO DETERMINE STEADY STATE OPERATING CONDITIONS OF A BOILING WATER REACTOR. WRAP-EM IS A MODULAR COMPUTATIONAL SYSTEM DEVELOPED AT THE SAVANNAH RIVER LABORATORY IN SUPPORT OF THE NUCLEAR REGULATORY COMMISSION PROGRAM OF LIGHT WATER REACTOR SAFETY ANALYSIS. WRAP-EM IS CAPABLE OF PERFORMING, AUTOMATICALLY,

147164 *CONTINUED*
THE FULL SCOPE OF CALCULATIONS REQUIRED TO AUDIT EVALUATION MODEL ANALYSES OF A LOSS-OF-COOLANT ACCIDENT. THIS STEADY STATE COMPUTATIONAL PROCEDURE CAN BE USED TO COMPUTE THE EQUILIBRIUM STATE OF A BWR SYSTEM CORRESPONDING TO A PARTICULAR SYSTEM NODALIZATION. WITH THIS PROCEDURE, BWR TRANSIENT CALCULATIONS CAN BE PERFORMED WITHOUT EXTENSIVE MANUAL CALCULATIONS OF THE INITIAL CONDITIONS.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

COMPUTER PROGRAM + REACTOR, BWR + ACCIDENT, LOSS OF COOLANT + *STEADY STATE + EQUILIBRIUM + TRANSIENT + AGENCY, NRC + NRC-4

147162
BUCKNER MR + BECKMEYER RR + GREGORY MV
THE BWR LOSS-OF-COOLANT ACCIDENT ANALYSIS CAPACITY OF THE WRAP-EM SYSTEM
SAVANNAH RIVER LAB., AIKEN, S.C.
NUREG/CR-0713 + DPST-NUREG-78-2 +. 44 PPS, 5 TABS, 22 FIGS, 15 REFS, APRIL 1979

THE MODULAR COMPUTATIONAL SYSTEM KNOWN AS THE WATER REACTOR ANALYSIS PACKAGE (WRAP) HAS BEEN EXTENDED TO PROVIDE THE COMPUTATIONAL TOOLS REQUIRED TO PERFORM A COMPLETE ANALYSIS OF LOCAS IN BWRS. THE NEW SYSTEM IS KNOWN AS THE WRAP-EM (EVALUATION MODEL) SYSTEM AND WILL BE USED BY NRC IN INTERPRETING AND EVALUATING REACTOR VENDOR EM METHODS AND COMPUTED RESULTS. THE SYSTEM FOR BWR-EM ANALYSIS IS COMPRISED OF SEVERAL COMPUTER CODES WHICH HAVE BEEN DEVELOPED TO ANALYZE A PARTICULAR PHASE OF LOCA. THE BWR-EM SYSTEM IS OPERATIONAL AND IS CURRENTLY BEING EVALUATED TO DETERMINE THE ADEQUACY AND CONSISTENCY OF THE PHYSICAL MODELS EMPLOYED FOR EM ANALYSIS. A SIMILAR EFFORT TO DEVELOP A PWR-EM SYSTEM IS ALSO IN PROGRESS.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*COMPUTER PROGRAM + REACTOR, BWR + ACCIDENT, LOSS OF COOLANT + THERMAL HYDRAULIC ANALYSIS + AGENCY, NRC + NRC-4

147163
WINN WG + REED RL + GREGORY MV
USERS GUIDE FOR THE BWR LOCA ANALYSIS CAPABILITY OF THE WRAP-EM SYSTEM
SAVANNAH RIVER LAB., AIKEN, S.C.
NUREG/CR-0714 + DPST-NUREG-78-3 +. 208 PPS, FIGS, REFS, APRIL 1979

THE INPUT SPECIFICATIONS FOR THE BWR ANALYSIS CAPABILITY OF THE WRAP-EM SYSTEM ARE PRESENTED IN THIS DOCUMENT ALONG WITH THE JOSHUA INPUT TEMPLATES. THIS DOCUMENT ALONG WITH THE WRAP USER'S GUIDE PROVIDES A STEP-BY-STEP PROCEDURE FOR SETTING UP A BWR DATA BASE FOR THE WRAP-EM SYSTEM.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

COMPUTER PROGRAM + REACTOR, BWR + ACCIDENT, LOSS OF COOLANT + NRC-4

5. R5 - WATER REACTOR SAFETY RESEARCH, METALLURGY AND MATERIALS

146840
BROWN BF + FOLEY TR + O'DELL CS
AN EXPLORATORY STUDY OF INHIBITION OF INTERGRANULAR STRESS CORROSION CRACKING IN SENSITIZED TYPE 304 STAINLESS STEEL
THE AMERICAN UNIV., WASHINGTON, D.C.
NUREG/CR-0754 +, 141 PPS, TABS, FIGS, APRIL 1979

THE POSSIBILITY OF PREVENTING SCC BY THE ADDITION OF INHIBITORS STABLE UP TO BWR TEMPERATURES IS INVESTIGATED IN THE PRESENT STUDY AS AN EXPLORATORY STUDY. IN THE PRESENT STUDY THE ACCELERATION WAS PROVIDED BY HIGH CHLORIDE CONCENTRATION AND SLIGHT ACIDIFICATION OF A SOLUTION MAINTAINED AT 100C. THE EFFECTIVENESS OF CANDIDATE INHIBITORS IS REPORTED AS BAR CHARTS EACH OF WHICH COLLECTS DATA FOR A GIVEN TYPE OF INHIBITOR. THE CADMIUM ION HAS A HIGH NEUTRON CAPTURE CROSS SECTION WHICH LIMITS ITS UTILIZATION IN A BWR ENVIRONMENT. NEVERTHELESS IT APPEARS THAT CDSO(4) IN PRINCIPLE SOLVES THE IGSCC PROBLEM, AS INDICATED BY DATA TO DATE. (FAH)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

STRESS CORROSION + CRACK + STEEL, STAINLESS + REACTOR, BWR + CADMIUM + NRC-5

149004
MOORE SE + RODABAUGH EC
STRESS INDICES AND FLEXIBILITY FACTORS FOR NOZZLES IN PRESSURE VESSELS AND PIPING
BATTELLE COLUMBUS LABS., OHIO (PREPARED FOR OAK RIDGE NATIONAL LAB.)
NUREG/CR-0778 + ORNL/SUB-2913/10 +, 78 PPS, 16 TABS, 12 FIGS, 31 REFS, JUNE 1979

MAXIMUM STRESS INTENSITIES AND FLEXIBILITY FACTORS FOR ISOLATED NOZZLES IN CYLINDRICAL PORTIONS OF VESSELS AND IN STRAIGHT PIPE ARE EVALUATED. THE MAJOR SOURCE OF NEW DATA IN THIS REPORT WAS GENERATED AT ORNL USING THE CORTES-SA COMPUTER PROGRAM. THE NEW DATA, ALONG WITH OTHER AVAILABLE TEST AND/OR CALCULATED DATA, ARE USED TO DEVELOP CORRELATION EQUATIONS FOR USE IN THE CODE. RECOMMENDATIONS FOR CODE CHANGES ARE INCLUDED. (FAH)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

NOZZLE + PIPES AND PIPE FITTINGS + STRESS + PRESSURE VESSELS + COMPUTER PROGRAM + CODES AND STANDARDS + NRC-5

147060
EIBER RJ + RODABAUGH EC + MAYFIELD ME
COLD LEG INTEGRITY EVALUATION - PHASE K, FINAL REPORT, JULY 1978-SEPTEMBER 1978
BATTELLE COLUMBUS LABS., OHIO
NUREG/CR-0584 +, 75 PPS, TABS, FIGS, 46 REFS, JAN. 1979

THIS REPORT DETAILS THE PROCEDURE AND RESULTS OF THE FIRST PHASE OF THE TWO-PHASE PROGRAM UNDERTAKEN BY BATTELLE COLUMBUS LABORATORIES TO EVALUATE THE NEED TO POSTULATE A LARGE BREAK IN THE COLD LEG PIPING SYSTEM OF A PRESSURIZED WATER REACTOR (PWR) POWER PLANT. PHASE I WAS DEVOTED TO COLLECTING DATA AND INFORMATION NECESSARY FOR THE ANALYSIS TO BE CONDUCTED IN PHASE II. ALTHOUGH THE GENERAL OBJECTIVES OF THIS PHASE HAVE BEEN MET, THE EFFORT WILL BE CARRIED OVER INTO PHASE II SO THAT ALL PERTINENT INFORMATION WILL BE AVAILABLE FOR PHASE II. (FAH)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

PIPES AND PIPE FITTINGS + STRUCTURAL INTEGRITY + STRESS + DESIGN + TECHNICAL SPECIFICATIONS + CODES AND STANDARDS + ARKANSAS NUCLEAR 1 (PWR) + ST. LUCIE 1 (PWR) + INDIAN POINT 3 (PWR) + NRC-5

148440
HAHN GT + MARKWORTH AJ + POPELAR C
CRITICAL EXPERIMENTS, MEASUREMENTS AND ANALYSES TO ESTABLISH A CRACK ARREST METHODOLOGY FOR NUCLEAR PRESSURE VESSEL STEELS QUARTERLY REPORT APRIL-JUNE 1978
BATTELLE COLUMBUS LABS., OHIO
NUREG/CR-0652 + BMI-2018 +, 87 PPS, TABS, FIGS, FEB. 1979

RESULTS OF A PROGRAM SEEKING (1) DYNAMIC ANALYSES OF CRACK ARREST IN THERMALLY STRESSED NUCLEAR PRESSURE VESSELS, (2) STANDARDIZATION OF A LABORATORY TEST METHOD FOR MEASURING THE CRACK ARREST TOUGHNESS AND (3) A CRACK ARREST TOUGHNESS DATA BASE FOR UNIRRADIATED AND IRRADIATED NUCLEAR STEELS AND WELDMENTS ARE DESCRIBED. (FAH)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

CRACK + TESTING + ANALYTICAL TECHNIQUE + STEEL + WELDS + NRC-5

147862
HAHN GT + GEHLEN PC + MARSCHALL CW + HOAGLAND RG
CRITICAL EXPERIMENTS, MEASUREMENTS AND ANALYSES TO ESTABLISH A CRACK ARREST METHODOLOGY FOR NUCLEAR PRESSURE VESSEL STEELS, SEVENTEENTH QUARTERLY REPORT, OCTOBER 1978-DECEMBER 1978
BATTELLE COLUMBUS LABS., OHIO
NUREG/CR-0824 + BMI-2026 +, 78 PPS, FIGS, MAY 1979

THE PROGRAM CONSISTS OF ANALYTICAL AND EXPERIMENTAL STUDIES AND IS DESIGNED TO DEVELOP A CRACK ARREST METHODOLOGY FOR HEAVY-WALLED PRESSURE VESSELS AND NUCLEAR GRADES OF STEEL. THE EXPERIMENTAL STUDIES OF THE PAST TWO YEARS WERE DIRECTED TOWARD A CRACK ARREST TESTING PRACTICE.

147862 *CONTINUED*
THIS WORK LED TO A WELL-DEFINED PRACTICE WHICH WAS THE SUBJECT OF A 30-LABORATORY COOPERATIVE TESTING PROGRAM ORGANIZED BY ASTM. THE CURRENT THRUST OF THE EXPERIMENTAL WORK IS THE APPLICATION OF THE TESTING PRACTICE TO OBTAIN A CRACK ARREST DATA BASE ON IRRADIATED HIGH COPPER WELDMENTS. (FAH)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

CRACK + HSST + PRESSURE VESSELS + TESTING + ANALYTICAL TECHNIQUE + IRRADIATION TESTING + WELDS + NRC-5

147787
HAHN GT + GEHLEN PC + LEREIM J + HOAGLAND RG
CRITICAL EXPERIMENTS, MEASUREMENTS, AND ANALYSES TO ESTABLISH A CRACK ARREST METHODOLOGY FOR NUCLEAR PRESSURE VESSEL STEELS, 4TH ANNUAL REPORT OCTOBER 1977-OCTOBER 1978
BATTELLE-COLUMBUS LABS., OHIO
NUREG/CR-0825 + BMI-2025 +. 227 PPS, TABS, FIGS, MAY 1979

RESULTS OF A PROGRAM SEEKING (1) DYNAMIC ANALYSES OF CRACK ARREST IN THERMALLY STRESSED NUCLEAR PRESSURE VESSELS, (2) STANDARDIZATION OF A LABORATORY TEST METHOD FOR MEASURING THE CRACK ARREST TOUGHNESS, AND (3) A CRACK ARREST TOUGHNESS DATA BASE FOR UNIRRADIATED AND IRRADIATED NUCLEAR STEELS AND WELDMENTS ARE DESCRIBED. THE DYNAMIC FINITE DIFFERENCE ANALYSIS OF A RADIAL, PART-THROUGH CRACK IN A THICK-WALLED CYLINDER IS REFINED AND APPLIED TO THE ORNL EXPERIMENT TSE-4. THE INFLUENCES OF THE MESH SIZE AND ASPECT RATIO ON THE STATIC STRESS INTENSITY VALUES ARE EXAMINED AND THE RESULTS COMPARED WITH FINITE ELEMENT CALCULATION. DYNAMIC CALCULATIONS OF THE RUN-ARREST EVENT CORRESPONDING WITH TSE-4 CONDITIONS ARE DESCRIBED. (FAH)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

POWER PLANT, NUCLEAR + PRESSURE VESSELS + CRACK + ANALYTICAL TECHNIQUE + TESTING + NRC-5

145833
HOOPER JL
REACTOR SAFETY RESEARCH PROGRAMS QUARTERLY REPORT JULY 1-SEPTEMBER 30, 1978
BATTELLE PACIFIC NORTHWEST LABS., RICHLAND, WASH.
NUREG/CR-0546 + PNL-2653-3 +. 126 PPS, TABS, FIGS, FEB. 1979

THIS DOCUMENT SUMMARIZES THE WORK PERFORMED BY PACIFIC NORTHWEST LABORATORY FROM JULY THROUGH SEPTEMBER 1978, FOR THE DIVISION OF REACTOR SAFETY RESEARCH WITHIN THE NUCLEAR REGULATORY COMMISSION. THE FOLLOWING AREAS ARE REPORTED ON: ULTIMATE HEAT SINK PERFORMANCE MEASUREMENTS; GRAPHITE NONDESTRUCTIVE TESTING; INTEGRATION OF NONDESTRUCTIVE EXAMINATION RELIABILITY AND FRACTURE MECHANICS; ACOUSTIC EMISSION - FLAW RELATIONSHIP FOR IN-SERVICE MONITORING OF NUCLEAR PRESSURE VESSELS; EXPERIMENTAL VERIFICATION OF STEADY STATE CODES: EX-REACTOR DETERMINATION OF THERMAL GAP AND CONTACT CONDUCTANCE; EXPERIMENTAL VERIFICATION OF STEADY STATE CODES: IRRADIATION RESULTS; FUEL SUBASSEMBLY PROCUREMENT AND IRRADIATION TEST PROGRAM; EXPERIMENTAL VERIFICATION OF STEADY STATE CODES: CODE DEVELOPMENT; US-NRC PHEBUS REPRESENTATIVE; STEAM GENERATOR TUBE INTEGRITY; AND CORE THERMAL MODE DEVELOPMENT.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

GRAPHITE + TEST, NONDESTRUCTIVE + ACOUSTICS + FLAW + PRESSURE VESSELS + THERMAL HYDRAULIC ANALYSIS + IRRADIATION TESTING + FUEL ELEMENTS + STEAM GENERATOR + TUBING + STRUCTURAL INTEGRITY + CORE + THERMAL ANALYSIS + NRC-1 + NRC-3 + NRC-4 + NRC-5

147858
HOOPER JL
REACTOR SAFETY RESEARCH PROGRAMS QUARTERLY REPORT OCTOBER 1-DECEMBER 31, 1978
BATTELE PACIFIC NORTHWEST LABS., RICHLAND, WASH.
NUREG/CR-0681 + PNL-2653-4 +. 115 PPS, FIGS, REFS, MARCH 1979

SUMMARIZES THE WORK PERFORMED BY PACIFIC NORTHWEST LABORATORY FROM OCTOBER THROUGH DECEMBER 1978, FOR THE DIVISION OF REACTOR SAFETY RESEARCH WITHIN THE NUCLEAR REGULATORY COMMISSION. THE FOLLOWING PROGRAMS ARE REPORTED ON: EXPERIMENTAL VERIFICATION OF STEADY STATE CODES: IRRADIATION RESULTS; EXPERIMENTAL VERIFICATION OF STEADY STATE CODES: EX-REACTOR DETERMINATION OF THERMAL GAP AND CONTACT CONDUCTANCE; EXPERIMENTAL VERIFICATION OF STEADY STATE CODES: CODE DEVELOPMENT; CORE THERMAL MODEL DEVELOPMENT; FUEL SUBASSEMBLY PROCUREMENT AND IRRADIATION TEST PROGRAM STEAM GENERATOR TUBE INTEGRITY; ACOUSTIC EMISSION-FLAW RELATIONSHIP FOR IN-SERVICE MONITORING OF NUCLEAR PRESSURE VESSELS; AND INTEGRATION OF NONDESTRUCTIVE EXAMINATION RELIABILITY AND FRACTURE MECHANICS.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*REACTOR, LWR + *HEAT SINK + PERFORMANCE + COMPUTER PROGRAM + COMPARISON, THEORY AND EXPERIENCE + THERMAL HYDRAULIC ANALYSIS + FUEL ELEMENTS + IRRADIATION TESTING + STEAM GENERATOR + TUBING + STRUCTURAL INTEGRITY + PRESSURE VESSELS + ACOUSTICS + MONITOR + NRC-1 + NRC-3 + NRC-4 + NRC-5

148423
HUTTON PH + KURTZ RJ + SCHWENK EB
ESTIMATE OF FEASIBILITY TO DEVELOP ACOUSTIC EMISSION-FLAW RELATIONSHIPS FOR INSERVICE MONITORING OF NUCLEAR PRESSURE VESSELS
BATTELLE PACIFIC NORTHWEST LABS., RICHLAND, WASH.

148423 *CONTINUED*
NUREG/CR-0800 + PNL-2977 +. 38 PPS. 4 TABS. 22 FIGS. 10 REFS. APRIL 1979

THE WORK PRESENTED IN THIS REPORT IS PART OF AN ONGOING PROGRAM AT PACIFIC NORTHWEST LABORATORY TO DETERMINE THE FEASIBILITY OF CONTINUOUS INSERVICE MONITORING OF NUCLEAR PRESSURE VESSELS. USING ACOUSTIC EMISSION TO DETECT AND EVALUATE GROWING FLAWS. THE MAJOR PROGRAM OBJECTIVES ARE TO: DEVELOP CRITERIA TO DISTINGUISH FLAW GROWTH AE FROM NONSIGNIFICANT ACOUSTIC SIGNALS. DEVELOP AN AE/FLAW GROWTH MODEL AS A BASIS FOR RELATING INSERVICE AE TO FLAW SIGNIFICANCE. DEMONSTRATE APPLICATION OF PROGRAM RESULTS THROUGH BOTH OFF-REACTOR AND ON-REACTOR TESTING. (EWH)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE. U. S. DEPARTMENT OF COMMERCE. SPRINGFIELD. VA. 22161

*EQUIPMENT DEVELOPMENT + *ACOUSTICS + INSERVICE INSPECTION + PRESSURE VESSELS + NRC-5

149913
HOOPER JL
REACTOR SAFETY RESEARCH PROGRAMS QUARTERLY REPORT JANUARY 1-MARCH 31. 1979
BATTELLE PACIFIC NORTHWEST LAB.. RICHLAND. WASH.
NUREG/CR-0855 + PNL-3040-1 +. 167 PPS. 41 FIGS. REFS. MAY 1979

SUBJECTS REPORTED ON ARE: (1) ULTIMATE HEAT SINK PERFORMANCE MEASUREMENTS. (2) STEAM GENERATOR TUBE INTEGRITY. (3) GRAPHITE NONDESTRUCTIVE TEST. (4) ACOUSTIC EMISSION. (5) EXPERIMENTAL VERIFICATION OF STEADY STATE CODES: IRRADIATION RESULTS. (6) EXPERIMENTAL VERIFICATION OF STEADY STATE CODES: EX-REACTOR. (7) DETERMINATION OF THERMAL GAP AND CONTACT CONDUCTANCE. (8) EXPERIMENTAL VERIFICATION OF STEADY STATE CODES: CODE DEVELOPMENT. (9) FUEL SUBASSEMBLY PROCUREMENT AND IRRADIATION TEST PROGRAM. (10) LOCA SIMULATION IN NRU. AND (11) CORE THERMAL MODEL DEVELOPMENT.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE. U. S. DEPARTMENT OF COMMERCE. SPRINGFIELD. VA. 22161

ACOUSTICS + HEAT SINK + STEAM GENERATOR + TUBING + IRRADIATION TESTING + COMPUTER PROGRAM + GRAPHITE + COOLING POND + ACCIDENT. LOSS OF COOLANT + REACTOR. PWR + NRC-3 + NRC-4 + NRC-5 + TEST. NONDESTRUCTIVE + HEAT CONDUCTANCE. FUEL TO CLAD

145773
POLLOCK DA + WADIN JK
APPLICATION OF ACOUSTIC EMISSION AS AN ON-LINE MONITORING SYSTEM FOR NUCLEAR REACTORS; FINAL PROGRESS REPORT JAN. 1. 1976 - SEPT. 30. 1976
DUNEGAN/ENDEVOCO. JUAN CAPISTRANO. CALIF.
NUREG/CR-0605 +. 61 PPS. 6 TABS. 22 FIGS. 6 REFS. JAN. 1979

UNDER PHASE A OF THIS PROGRAM. LIMITED MONITORING OF THE COLD HYDROTEST OF THE CALVERT CLIFFS II REACTOR PRESSURE VESSEL WAS CARRIED OUT AND AVAILABLE ACCESS FOR PERMANENT-MONITORING TRANSDUCERS WAS EVALUATED IN DETAIL. UNDER PHASE AA. IMPROVED MOUNTING TECHNIQUES WERE DEVELOPED AND AN AREA-OF-INTEREST INSPECTION SYSTEM WAS CONSTRUCTED. EVALUATED AND INSTALLED ON A BY-PASS LINE NOZZLE AT DRESDEN STATION. UNDER PHASE B. AN IN-DEPTH ANALYSIS OF AE SOURCE MECHANISMS. IN RELATION TO REACTOR OPERATING CONDITIONS. IS PRESENTED. ALSO UNDER PHASE B. EXPERIMENTS ON WAVE PROPAGATION ARE DESCRIBED. (EWH)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE. U. S. DEPARTMENT OF COMMERCE. SPRINGFIELD. VA. 22161

*ACOUSTICS + MONITOR + *SURVEILLANCE PROGRAM + PRESSURE VESSELS + INSTRUMENT. COMPONENT + INSTALLATION + CALVERT CLIFFS 2 (PWR) + DRESDEN 1 (BWR) + DRESDEN 2 (BWR) + DRESDEN 3 (BWR) + NRC-5

145403
PRINE DW + MATHIESON TA
INSPECTION OF NUCLEAR REACTOR WELDING BY ACOUSTIC EMISSION. PROGRESS REPORT NOVEMBER 1977-NOVEMBER 1978
GARD INC.. NILES. ILL.
NUREG/CR-0703 +. 64 PPS. 7 TABS. 25 FIGS. 2 REFS. MARCH 1979

THIS REPORT COVERS WORK IN THE FIRST PHASE OF A TWO PHASE PROGRAM AIMED AT EXTENDING THE CAPABILITY OF IN-PROCESS ACOUSTIC EMISSION MONITORING OF NUCLEAR FABRICATION WELDS FROM FLAW DETECTION AND LOCATION TO FLAW CHARACTERIZATION IN TERMS OF TYPE AND SIZE. DURING THIS FIRST PHASE. PREVIOUSLY ACQUIRED AE DATA FROM LABORATORY AND SHOP NUCLEAR FABRICATION WELDS WERE ANALYZED AND COMPUTER SUBROUTINES WERE DEVELOPED THAT WOULD AUTOMATICALLY DETERMINE FLAW TYPE AND SIZE. AFTER OPTIMIZATION ON THIS LARGE BANK OF RECORDED AE DATA THE BEST MODELS WERE TESTED ON BOTH LIVE LABORATORY WELDING AND ACTUAL SHOP WELDS. (EWH)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE. U. S. DEPARTMENT OF COMMERCE. SPRINGFIELD. VA. 22161

INSPECTION + WELDS + *WELDING + *ACOUSTICS + *EQUIPMENT DEVELOPMENT + TEST. NONDESTRUCTIVE + INSERVICE INSPECTION + NRC-5

145151
CLARKE WL
REACTOR PRIMARY COOLANT SYSTEM PIPE RUPTURE STUDY METHOD FOR DETECTION OF SENSITIZATION IN STAINLESS STEEL PROGRESS REPORT NO. 45 JULY-SEPTEMBER 1978
GENERAL ELECTRIC CO.. SAN JOSE. CALIF.
NUREG/CR-0541 + GEAP-10207-45 +. 20 PPS. 5 TABS. 15 FIGS. 3 REFS. JAN. 1979

145151 *CONTINUED*
A PROGRAM IS IN PROGRESS TO DEVELOP A QUANTITATIVE METHOD (ELECTROCHEMICAL POTENTIOKINETIC REACTIVATION (EPR)) FOR NONDESTRUCTIVELY MEASURING THE DEGREE OF SENSITIZATION IN TYPE-304 AND -304L STAINLESS STEELS. THE TECHNIQUE HAS BEEN EXTENDED TO CHARACTERIZE WELD HEAT-AFFECTED ZONES AND TO CORRELATE DEGREE OF SENSITIZATION WITH INTERGRANULAR STRESS CORROSION CRACKING RESISTANCE. CURRENT STUDIES ARE DIRECTED TOWARD ESTABLISHING PROCEDURES FOR, AND QUALIFYING, A TECHNIQUE TO OBTAIN EPR MEASUREMENTS IN-SITU ON REACTOR COMPONENTS IN THE FIELD. (FAH)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

WELDS + STEEL, STAINLESS + STRESS CORROSION + CRACK + TEST, NONDESTRUCTIVE + NRC-5

145152
HALE DA + YUEN JL + GERBER TL
FATIGUE GROWTH IN PIPING AND RPV STEELS IN SIMULATED BWR WATER ENVIRONMENT
GENERAL ELECTRIC CO., SAN JOSE, CALIF.
NUREG/CR-0390 + GEAP-24098 +. 80 PPS, 5 TABS, 42 FIGS, REFS, MARCH 1979

SUMMARIZES RESULTS OF AN EXPERIMENTAL TESTING PROGRAM TO ESTABLISHING THE FATIGUE CRACK GROWTH BEHAVIOR OF SEVERAL COMMERCIAL PRESSURE VESSEL AND PIPING STEELS TYPICALLY USED IN LIGHT WATER REACTORS. TESTING WAS DONE IN A SIMULATED BOILING WATER REACTOR PRIMARY WATER ENVIRONMENT (1230 PSIG, 550 F DEMINERALIZED WATER). RESULTS SHOW THAT CRACK GROWTH RATES ARE INCREASED IN THIS BWR WATER ENVIRONMENT BY DECREASING THE FREQUENCY OF CYCLIC LOADING OR INCREASING THE MEAN LOAD PRESENT DURING THE LOAD CYCLE. HOWEVER, IN THE CASE OF THE PRESSURE VESSEL ALLOY STEEL, THESE EFFECTS ARE MODERATED BY TRANSVERSE SECONDARY MICROCRACKING, WHICH IS A MANIFESTATION OF A CRACK TIP CHEMISTRY INTERACTION FOR THIS ENVIRONMENT/MATERIAL PAIR. (FAH)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

FATIGUE + REACTOR, BWR + WATER + CRACK + GROWTH/DEVELOPMENT + STEEL + STEEL, STAINLESS + PRESSURE VESSELS + PIPES AND PIPE FITTINGS + NRC-5 + ENVIRONMENT

147791
GUTHRIE GL + MCELROY WN + LIPPINCOTT EP
LWR PRESSURE VESSEL IRRADIATION SURVEILLANCE DOSIMETRY JULY-SEPTEMBER 1978
HANFORD ENGINEERING DEVELOPMENT LAB., RICHLAND, WASH.
NUREG/CR-0551 + HEDL-TME 78-8 +. APPROX. 215 PPS, FIGS, DEC. 1978

THE PRIMARY OBJECTIVE IS TO PREPARE AN UPDATED AND IMPROVED SET OF DOSIMETRY, DAMAGE CORRELATION, AND ASSOCIATED REACTOR ANALYSIS ASTM STANDARDS FOR LWR-PV IRRADIATION SURVEILLANCE PROGRAMS. SUPPORTING THIS OBJECTIVE ARE A SERIES OF ANALYTICAL AND EXPERIMENTAL VALIDATION AND CALIBRATION STUDIES IN "STANDARD, REFERENCE, AND CONTROLLED ENVIRONMENT BENCHMARK FIELDS," REACTOR "TEST REGIONS," AND OPERATING POWER REACTOR "SURVEILLANCE POSITIONS." THIS REPORT DESCRIBES PROGRESS MADE IN THE LIGHT WATER REACTOR PRESSURE VESSEL IRRADIATION SURVEILLANCE DOSIMETRY PROGRAM DURING THE REPORTING PERIOD. (FAH)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

REACTOR, LWR + PRESSURE VESSELS + IRRADIATION TESTING + DOSIMETRY + CODES AND STANDARDS + SURVEILLANCE PROGRAM + NRC-5

143811
GUTHRIE GL + LIPPINCOTT EP + GOLD R
LWR PRESSURE VESSEL IRRADIATION SURVEILLANCE DOSIMETRY QUARTERLY PROGRESS REPORT JANUARY-MARCH 1978
HANFORD ENGINEERING DEVELOPMENT LAB., RICHLAND, WASH.
NUREG/CR-0285 + HEDL-TME 76-8 +. APPROX. 100 PPS, FIGS, JAN. 1979

THE GOAL OF THIS ACTIVITY IS TO VALIDATE AND CALIBRATE DOSIMETRY AND DAMAGE ANALYSIS TECHNIQUES, AS WELL AS TO GUIDE REQUIRED NEUTRON FIELD CALCULATIONS THAT ARE USED TO CORRELATE CHANGES IN MATERIAL PROPERTIES WITH THE CHARACTERISTICS OF THE NEUTRON RADIATION FIELD. THE RESULTS OF THE MEASUREMENT AND CALCULATIONAL STRATEGIES OUTLINED HERE WILL BE MADE AVAILABLE FOR USE BY THE NUCLEAR INDUSTRY AS ASTM STANDARDS. FEDERAL REGULATION 10CFR50 ALREADY CALLS FOR ADHERENCE TO SEVERAL ASTM STANDARDS WHICH REQUIRE INCORPORATION OF FLUX MONITORS AND POST-IRRADIATION EVALUATION IN LWR-PV IRRADIATION SURVEILLANCE. (FAH)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

REACTOR, LWR + PRESSURE VESSELS + IRRADIATION TESTING + SURVEILLANCE PROGRAM + CODES AND STANDARDS + NRC-5

148425
GUTHRIE GL + GOLD R + MCELROY WN
LWR PRESSURE VESSEL IRRADIATION SURVEILLANCE DOSIMETRY QUARTERLY PROGRESS REPORT-APRIL-JUNE 1978
HANFORD ENGINEERING DEVELOPMENT LAB., RICHLAND, WASH.
NUREG/CR-0550 + HEDL TME 78-7 +. 75 PPS, TABS, FIGS, JUNE 1979

THE PRIMARY OBJECTIVE OF THE MULTI-LABORATORY PROGRAM IS TO PREPARE AN UPDATED AND IMPROVED SET OF DOSIMETRY, DAMAGE CORRELATION, AND ASSOCIATED REACTOR ANALYSIS ASTM STANDARDS FOR LWR-PV IRRADIATION SURVEILLANCE PROGRAMS. DESCRIBES PROGRESS MADE IN THE LIGHT WATER REACTOR PRESSURE VESSEL IRRADIATION SURVEILLANCE DOSIMETRY PROGRAM DURING THE REPORTING PERIOD. (FAH)

148425 *CONTINUED*
AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

REACTOR, LWR + IRRADIATION TESTING + SURVEILLANCE PROGRAM + DOSIMETRY + PRESSURE VESSELS + NRC-5

148438
MASRI S + SEIDE P + WEINGARTEN V
BUCKLING CRITERIA AND APPLICATION OF CRITERIA TO DESIGN OF STEEL CONTAINMENT SHELL, FINAL REPORT JANUARY 1978-MARCH 1979
INTERNATIONAL STRUCTURAL ENGINEERS, GLENDALE, CALIF.
NUREG/CR-0793 +. 97 PPS, 8 TABS, 39 FIGS, MAY 1979

SUMMARIZES THE CURRENT STATE OF THE ART USED FOR BUCKLING ANALYSIS AND FOR THE DESIGN OF NUCLEAR POWER PLANT STEEL CONTAINMENT SHELLS. RECOMMENDATIONS ARE MADE FOR ADOPTING A NEW BUCKLING DESIGN CRITERION THAT IS CONSERVATIVE AND USES THE MOST UP-TO-DATE ANALYTICAL METHODS AVAILABLE IN THE LITERATURE. (FAH)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

BUCKLING + DESIGN CRITERIA + POWER PLANT, NUCLEAR + STEEL + CONTAINMENT + STEEL LINER + NRC-5

145292
FREDERICK JR + DIXON M + PAPWORTH D + ELZINGA M
IMPROVED ULTRASONIC NONDESTRUCTIVE TESTING OF PRESSURE VESSELS, OCTOBER 1, 1977-SEPTEMBER 30, 1978
UNIV. OF MICHIGAN, ANN ARBOR
NUREG/CR-0582 +. 160 PPS, FIGS, REFS, JAN. 1979

PROGRESS IN THE DEVELOPMENT OF A SYNTHETIC APERTURE FOCUSING TECHNIQUE FOR ULTRASONIC PULSE-ECHO FLAW EVALUATION IS DESCRIBED. THE PROGRESS INCLUDES IMPROVEMENT IN DISPLAY TECHNIQUES, INITIAL RESULTS OF A SPOTLIGHT-MODE SCANNING TECHNIQUE, IMPROVEMENT IN DECONVOLUTION, AN ASSESSMENT OF THE ABILITY TO IDENTIFY FLAW TYPES, AND AN ASSESSMENT OF THE POTENTIAL FOR REAL-TIME SYNTHETIC APERTURE PROCESSING OF ULTRASONIC DATA. (FAH)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

ULTRASONICS + TEST, NONDESTRUCTIVE + PRESSURE VESSELS + FLAW + NRC-5

149838
HAWTHORNE JR
SURVEY OF POSTIRRADIATION HEAT TREATMENT AS A MEANS TO MITIGATE RADIATION EMBRITTLEMENT OF REACTOR VESSEL STEELS
NAVAL RESEARCH LAB., WASHINGTON, D.C.
NUREG/CR-0486 + NRL-REPORT-8287 +. 29 PPS, 4 TABS, 22 FIGS, 17 REFS, FEB. 14, 1979

TWELVE FACTORS ARE IDENTIFIED AS HAVING POTENTIAL FOR AFFECTING THE POSTIRRADIATION HEAT TREATMENT RESPONSE OF LOW-ALLOY PRESSURE VESSEL STEELS. A TENTATIVE QUALIFICATION OF SIX FACTORS AS SIGNIFICANT CONTRIBUTING VARIABLES IS MADE ON THE BASIS OF EXPERIMENTAL COMPARISONS. OF THESE, HEAT-TREATMENT TEMPERATURE WAS OBSERVED TO EXERT THE LARGEST INFLUENCE ON THE EMBRITTLEMENT RELIEF BY ANNEALING. THE EVIDENCE INDICATES THAT A 399 C HEAT TREATMENT, BUT NOT A 343 C HEAT TREATMENT, IS A PRACTICAL AND EFFECTIVE METHOD FOR REDUCING AND CONTROLLING RADIATION EMBRITTLEMENT IN REACTOR VESSELS.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*STEEL + RADIATION EFFECT + EMBRITTLEMENT + IMPACT PROPERTY + *HEAT TREATMENT + DUCTILITY + WELDS + NRC-5 + PRESSURE VESSELS

149685
HAWTHORNE JR
SIGNIFICANCE OF COPPER, PHOSPHOROUS, AND SULFUR CONTENT TO RADIATION SENSITIVITY AND POSTIRRADIATION HEAT TREATMENT OF A302-B STEEL
NAVAL RESEARCH LAB., WASHINGTON, D.C.
NUREG/CR-0327 + NRL-REPORT-8264 +. 20 PPS, 4 TABS, 12 FIGS, 6 REFS, APRIL 12, 1979

THE EFFECTS OF THREE LEVELS OF COPPER CONTENT AND PHOSPHORUS CONTENT AND TWO LEVELS OF SULFUR CONTENT ON RADIATION SENSITIVITY AND POSTIRRADIATION HEAT TREATMENT RESPONSE WERE EXPLORED FOR A REACTOR PRESSURE VESSEL STEEL, TYPE A302-B. THE CONTRIBUTIONS OF INDIVIDUAL ELEMENTS WERE ASSESSED FROM CHARPY-V (CSUB V) NOTCH DUCTILITY CHANGES WITH 288C (550F) IRRADIATION AND WITH A 343C (650F)-168 H POSTIRRADIATION HEAT TREATMENT. LIMITED STUDIES OF PROPERTIES BY POSTIRRADIATION 399C (750F) HEAT TREATMENT WERE ALSO MADE.

AVAILABILITY - NRC PUBLIC DOCUMENT ROOM, 1717 H STREET, WASHINGTON, D. C. 20555 (08 CENTS/PAGE -- MINIMUM CHARGE $2.00)

*STEEL + PRESSURE VESSELS + EMBRITTLEMENT + FRACTURE TOUGHNESS + *IRRADIATION TESTING + *HEAT TREATMENT + TEST, DESTRUCTIVE + NRC-5

145164
WHITMAN GD + BRYAN RH

145164 *CONTINUED*
HEAVY-SECTION STEEL TECHNOLOGY PROGRAM QUARTERLY PROGRESS REPORT FOR JULY-SEPTEMBER 1978
OAK RIDGE NATIONAL LAB., TENN.
NUREG/CR-0476 + ORNL/NUREG/TM-275 +. 93 PPS. FIGS. 13 REFS. JAN. 1979

FRACTURE MECHANICS ANALYSES WERE MADE TO CHARACTERIZE THE BEHAVIOR OF K(SUB I) FOR A DEEPLY CRACKED CYLINDER UNDER THERMAL LOAD. A PHOTOELASTIC TECHNIQUE FOR MEASURING K(SUB I) FOR THROUGH-THE-WALL FLAWS WAS DEVELOPED. SEVERAL RAMP- AND HOLD-TIME FATIGUE TESTS WERE COMPLETED. PREPARATIONS FOR TESTING WELDMENT SPECIMENS FROM THE SECOND IRRADIATION ARE CONTINUING, AND TEMPERATURE AND FLUENCE DATA FROM THE THIRD IRRADIATION WERE ANALYZED. INTERMEDIATE VESSEL V-8 WAS TESTED TO STUDY THE EFFECT ON FLAW BEHAVIOR OF RESIDUAL STRESS NEAR A REPAIR WELD. FEASIBILITY STUDIES LED TO THE CONCLUSION THAT A LIQUID NITROGEN TEST FACILITY (LNTF) COULD PROVIDE THE BEST MEANS FOR STUDYING CRACK ARREST AND WARM PRESTRESSING. (FAH)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

HSST + FRACTURE TOUGHNESS + CRACK + PHOTOELASTICITY + WELDS + PRESSURE VESSELS + FLAW + TESTING + NRC-5

149830
FOSTER BE + MCCLUNG RW + DAVIS EV
PENETRAMETER SENSITIVITY AND CRACK DETECTABILITY AFTER DEGRADATION OF THE RADIOGRAPHIC PROCEDURE
OAK RIDGE NATIONAL LAB., TENN.
NUREG/CR-0593 + ORNL/NUREG/TM-273 +. 17 PPS. 7 TABS. 6 FIGS. MARCH 1979

RADIOGRAPHIC STUDIES (USING ISOTOPES AND X RAYS) ON PENETRAMETER AND CRACK SENSITIVITIES WERE CONDUCTED ON STEEL SPECIMENS WITH THICKNESSES OF 19, 25, AND 32 MM (3/4, 1, AND 1 1/4 IN.) TO DETERMINE THE SIGNIFICANCE OF THIS LOSS (IF ANY) OF RADIOGRAPHIC SENSITIVITY AND FLAW DETECTABILITY. THESE SPECIMENS CONTAINED CRACKS WITH DEPTHS RANGING FROM 1.5 TO 5 MM. GOOD PENETRAMETER SENSITIVITY OF LESS THAN 2% (EXCEEDING THE RELAXED CODE REQUIREMENTS) COULD BE MAINTAINED, EVEN AFTER THE SEVERE DEGRADATION OF THE RADIOGRAPHIC TECHNIQUE. THE DATA SHOW NO APPARENT TECHNICAL JUSTIFICATION FOR RELAXATION OF PENETRAMETER REQUIREMENTS.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*CRACK + *SENSITIVITY ANALYSIS + TESTING + *STEEL + CODES AND STANDARDS + RADIOGRAPHY + NRC-5

148447
WHITMAN GD + BRYAN RH
HEAVY-SECTION STEEL TECHNOLOGY PROGRAM QUARTERLY PROGRESS REPORT FOR OCTOBER-DECEMBER 1978
OAK RIDGE NATIONAL LAB., TENN.
NUREG/CR-0656 + ORNL/NUREG/TM-298 +. 65 PPS. TABS. FIGS. REFS. APRIL 1979

THE HEAVY-SECTION STEEL TECHNOLOGY (HSST) PROGRAM, WHICH IS SPONSORED BY THE NUCLEAR REGULATORY COMMISSION (NRC), IS AN ENGINEERING RESEARCH ACTIVITY DEVOTED TO EXTENDING AND DEVELOPING THE TECHNOLOGY FOR ASSESSING THE MARGIN OF SAFETY AGAINST FRACTURE OF THE THICK-WALLED STEEL PRESSURE VESSELS USED IN LIGHT-WATER-COOLED NUCLEAR POWER REACTORS. THE PROGRAM IS BEING CARRIED OUT IN CLOSE COOPERATION WITH THE NUCLEAR POWER INDUSTRY. THIS REPORT COVERS HSST WORK PERFORMED IN OCTOBER THROUGH DECEMBER 1978. EXCEPT FOR SUBCONTRACTOR CONTRIBUTIONS WHICH MANY COVER THE THREE-MONTH PERIOD ENDING IN NOVEMBER. (FAH)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

HSST + PRESSURE VESSELS + NOZZLE + CRACK + ANALYTICAL TECHNIQUE + FRACTURE TOUGHNESS + NRC-5

149411
WEED RA + TSO FKW
STRESS ANALYSIS OF CYLINDRICAL PRESSURE VESSELS WITH CLOSELY SPACED NOZZLES BY THE FINITE-ELEMENT METHOD 3. VESSELS WITH THREE NOZZLES UNDER INTERNAL PRESSURE AND EXTERNAL LOADINGS
OAK RIDGE NATIONAL LAB., TENN.
NUREG/CR-0507 + ORNL/NUREG-18/V3 +. 51 PPS. FIGS. REFS. MAY 1979

A COMPLETE DESCRIPTION OF A FINITE-ELEMENT COMPUTER PROGRAM, A MULT-NOZZLE, IS PRESENTED IN FOUR VOLUMES. VOLUME 1 DISCUSSES THE THEORETICAL BASIS OF THE TWO MODULES OF THE PROGRAM AND VALIDATES ITS APPLICATION FOR TWO-NOZZLE VESSELS LOADED WITH INTERNAL PRESSURE. VOLUME 2 DEMONSTRATES THE PROGRAM'S ABILITY TO ANALYZE ONE- AND TWO-NOZZLE VESSELS WITH EXTERNAL LOADS. THIS VOLUME DISCUSSES THE ANALYSIS OF THREE-NOZZLE VESSELS, AND VOLUME 4 GIVES INPUT INSTRUCTIONS AND OPERATING PROCEDURES FOR THE PROGRAM. (FAH)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

COMPUTER PROGRAM + STRESS ANALYSIS + NOZZLE + CYLINDER + PRESSURE VESSELS + NRC-5

149910
DODD CV + SCOTT GW + DEEDS WE
EDDY-CURRENT INSPECTION FOR STEAM GENERATOR TUBING PROGRAM ANNUAL PROGRESS REPORT FOR PERIOD ENDING DECEMBER 31, 1978
OAK RIDGE NATIONAL LAB., TENN.
NUREG/CR-0764 + ORNL/NUREG/TM-311 +. 25 PPS. 5 TABS. 11 FIGS. MAY 1979

EDDY-CURRENT METHODS PROVIDE THE BEST IN-SERVICE INSPECTION OF STEAM GENERATOR TUBING, BUT PRESENT

149910 *CONTINUED*
TECHNIQUES CAN PRODUCE AMBIGUITY BECAUSE OF THE MANY INDEPENDENT VARIABLES THAT AFFECT THE SIGNALS. THE CURRENT DEVELOPMENT PROGRAM USES EXISTING MATHEMATICAL MODELS AND DEVELOP OR MODIFY COMPUTER PROGRAMS TO DESIGN OPTIMUM PROBES, INSTRUMENTATION, AND TECHNIQUES FOR MULTIFREQUENCY, MULTIPROPERTY EXAMINATIONS. TO DATE, RESULTS SHOW THAT EDDY-CURRENT INSPECTION DOES WORK AND CAN MAKE FAR BETTER MEASUREMENTS THAN ARE POSSIBLE WITH EXISTING COMMERCIAL INSTRUMENTS.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

REACTOR, LWR + *STEAM GENERATOR + *INSERVICE INSPECTION + TUBING + TEST, NONDESTRUCTIVE + NRC-5

149491
CHEVERTON RD + ISKANDER SK
APPLICATION OF STATIC AND DYNAMIC CRACK ARREST THEORY TO THERMAL SHOCK EXPERIMENT TSE-4
OAK RIDGE NATIONAL LAB., TENN.
NUREG/CR-0767 + ORNL/NUREG-57 +. 23 PPS, 4 TABS, 9 FIGS, 17 REFS, JUNE 1979

DATE OF EVENT - 040879. POWER LEVEL - 037%. CAUSE - BINDING OF SEAL MECHANISM. WITH PLANT AT REDUCED POWER, SURVEILLANCE TESTING OF TURBINE GOVERNOR & STOP VALVES WAS PERFORMED. ONE OF THE STOP VALVES FAILED TO CLOSE COMPLETELY. A VENDOR-RECOMMENDED PULLER MECHANISM, USED FOR SEATING SHAFT SEALS TO MIN. STEAM LEAKAGE WHEN VALVE IS OPEN, HAD PREVIOUSLY BEEN INSTALLED. UPON CLOSURE, THIS STOP VALVE OPERATOR SHAFT ROTATES 90 DEGREES IN DIRECTION TENDING TO TIGHTEN PULLER WHICH COULD INTERFERE WITH VALVE OPERATION. TO PREVENT REOCCURRENCE OF FAILURE PULLER MECHANISM WILL BE REMOVED FOLLOWING USE.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

CRACK + TESTING + FLAW + COMPUTER PROGRAM + HSST + NRC-RF + ANALYTICAL TECHNIQUE

149834
SMITH CW + PETERS WH + HARDRATH WT
STRESS INTENSITY DISTRIBUTIONS IN NOZZLE CORNER CRACKS OF COMPLEX GEOMETRY
VA. POLYTECHNIC INST. & STATE UNIV., BLACKSBURG
NUREG/CR-0640 + ORNL/SUB/7015-2 +. 33 PPS, 17 FIGS, 25 REFS, JAN. 1979

A SERIES (14 MODELS, 28 NOZZLES) OF FROZEN STRESS PHOTOELASTIC EXPERIMENTS WERE CONDUCTED ON SCALE MODELS OF BOILING WATER REACTOR VESSELS EACH CONTAINING TWO DIAMETRICALLY OPPOSITE CRACKED NOZZLES. FLAW SHAPES AND STRESS INTENSITY FACTOR (SIF) DISTRIBUTIONS WERE OBTAINED AND AVERAGE VALUES OF THE LATTER WERE COMPARED WITH ANALYTICAL RESULTS. RESULTS SUGGEST THAT: I) FLAW GROWTH IS NON-SELF-SIMILAR AND SIF DISTRIBUTIONS ARE SENSITIVE TO FLAW SHAPES. II) WHEN LOADED BY SHEAR MODES, FLAWS REORIENT THEMSELVES OFTEN FORMING NON-PLANAR CRACKS SO AS TO ELIMINATE THE SHEAR MODE.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*STEEL + CRACK + FRACTURE TOUGHNESS + *NOZZLE + *PHOTOELASTICITY + STRESS ANALYSIS + FLAW + NRC-5 + PRESSURE VESSELS

6. R6 - GENERAL REACTOR SAFETY RESEARCH. SITE SAFETY RESEARCH

149836
TYLER DA + BORNS HW + LADD J
CRUSTAL SUBSIDENCE IN EASTERN MAINE
BOSTON COLLEGE, WASTON, MASS.
NUREG/CR-0887 +. 14 PPS, 2 FIGS, JUNE 1979

COMPARISON OF VERTICAL LEVELING DATA FROM THE U.S. CCAST AND GEODETIC SURVEY 1942 AND 1966 SURVEYS OF THE LINE FROM BANGOR TO CALAIS, MAINE, COUPLED WITH GEOLOGICAL AND HISTORICAL DATA, INDICATES THAT THE COASTAL ZONE IS WARPING DOWNWARD TOWARDS THE EAST. BETWEEN 1942 AND 1966 THE RELAIIVE SUBSIDENCE WAS UP TO 175 MM. THIS IS A MINIMUM FIGURE. (FAH)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

UNITED STATES + GEOLOGY + MEASUREMENT + NRC-6 + NRC-RA

148882
WILSON FW
A STUDY OF THE REGIONAL TECTONICS AND SEISMICITY OF EASTERN KANSAS - SUMMARY OF PROJECT ACTIVITIES AND RESULTS TO THE END OF THE SECOND YEAR, OR SEPTEMBER 30, 1979
UNIV. OF KANSAS, LAWRENCE
NUREG/CR-0666 +. 70 PPS, 2 TABS, 28 FIGS, MARCH 1979

THE KANSAS GEOLOGICAL SURVEY, IN COOPERATION WITH THE STATE GEOLOGICAL SURVEYS OF OKLAHOMA, NEBRASKA, AND IOWA, IS MAKING A FIVE-YEAR STUDY OF THE REGIONAL TECTONICS AND SEISMICITY OF THE NEMAHA UPLIFT, AN AREA OF MODERATE HISTORICAL SEISMICITY, AND RELATED GEOLOGIC STRUCTURES IN ORDER TO BETTER UNDERSTAND THE SOURCES AND MECHANISMS OF THE SEISMIC ACTIVITY IN THE CENTRAL MIDCONTINENT. THE STUDIES ARE INTENDED TO PROVIDE A MORE RATIONAL EVALUATION OF EARTHQUAKE RISK AS IT APPLIES TO THE DESIGN OF NUCLEAR FACILITIES. THIS REPORT SUMMARIZES THE PROGRESS OF ALL RESEARCH DONE IN KANSAS DURING THE FIRST TWO YEARS OF THE PROJECT AND DETAILS THE RESULTS AND PRELIMINARY CONCLUSIONS. (FAH)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

EARTHQUAKE + SEISMOLOGY + GEOLOGY + UNITED STATES + EARTHQUAKE RECORDS + FAULT + NRC-R6A

147479
ANDRAE RW + MARTIN RA + GREGORY WS
ANALYSIS OF NUCLEAR FACILITIES FOR TORNADO-INDUCED FLOW AND REENTRAINMENT
LOS ALAMOS SCIENTIFIC LAB., N.M.
NUREG/CR-0521 + LA-7571-MS +. 36 PPS, FIGS, 15 REFS, JAN. 1979

FOUR STEPS ARE USED IN THE ANALYSIS: (1) A COMPUTER CODE MODELS THE OVERALL VENTILATION PATHWAYS AND PREDICTS TORNADO-INDUCED FLOWS AND PRESSURES. (2) A SECOND COMPUTER CODE MODELS INDIVIDUAL ROOMS OR CELLS AND PREDICTS VELOCITIES WITHIN THE ROOM INDUCED BY THE FLOWS FROM STEP 1. (3) THESE VELOCITIES ARE THEN USED TO PREDICT REENTRAINMENT AND SUSPENSION OF PARTICULATE MATERIAL. (4) THE POSSIBILITY OF RELEASE IS PREDICTED FROM THE FLOW PATTERNS CALCULATED IN (1). FOR ILLUSTRATIVE PURPOSES ONLY, THE HEAD-END VENTILATION SYSTEM OF THE NUCLEAR FUEL SERVICES, WEST VALLEY, N.Y. PLANT WAS ANALYZED USING THESE STEPS.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*DESTRUCTIVE WIND + COMPUTER PROGRAM + RESUSPENSION + COMPARTMENT + VENTILATION SYSTEM + PRESSURE TRANSIENT + PRESSURE DROP + PRESSURE PULSE + FLOW + NRC-1 + NRC-6 + NFS

144592
CHINNERY MA
INVESTIGATIONS OF THE SEISMOLOGICAL INPUT TO THE SAFETY DESIGN OF NUCLEAR POWER REACTORS IN NEW ENGLAND
MASS. INST. OF TECHNOLOGY, LEXINGTON
NUREG/CR-0563 +. 72 PPS, 2 TABS, 21 FIGS, REFS, JAN. 1979

DETAILED STUDIES OF AVAILABLE SCIENTIFIC LITERATURE CONCERNING THE ESTIMATION OF MAXIMUM POSSIBLE EARTHQUAKES SHOWS THAT ALL AVAILABLE METHODS ARE EMPIRICAL AND LACK A SOUND PHYSICAL BASIS. EVIDENCE THAT EVEN THE EMPIRICAL METHODS ARE VALID IS VERY WEAK, PRIMARILY BECAUSE OF THE SHORT LENGTH OF THE EARTHQUAKE RECORD IN MOST AREAS. AN ATTEMPT TO USE GLOBAL EARTHQUAKE CATALOGS TO EXAMINE THE REGIONAL VARIATIONS OF MAXIMUM POSSIBLE EARTHQUAKES IS UNSUCCESSFUL. A PROGRAM REPORT ON A STUDY OF NEW ENGLAND CRUST AND UPPER MANTLE STRUCTURE IS INCLUDED. (FAH)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

EARTHQUAKE RECORDS + STATISTICAL ANALYSIS + SEISMOLOGY + GEOLOGY + UNITED STATES + NRC-RA

149839
BURCHETT RR + MARONEY DG
REGIONAL TECTONICS AND SEISMICITY OF EASTERN NEBRASKA, ANNUAL REPORT JUNE 1977-MAY 1978
UNIV. OF NEBRASKA, LINCOLN
NUREG/CR-0876 +. 163 PPS, 30 FIGS, JUNE 1979

THE PRIMARY PURPOSES OF THIS INVESTIGATION WERE TO ACQUIRE, BY DRILLING TEST HOLES, SUBSURFACE DATA NEEDED TO CORRELATE BURIED STRATA WITH STRATA THAT CROP OUT AND TO GAIN A BETTER

149839 *CONTINUED*
UNDERSTANDING OF BURIED STRUCTURAL FEATURES IN SOUTHEASTERN NEBRASKA. THE INFORMATION PERTAINS TO THE GEOLOGY, STRUCTURE, TECTONICS, AND SEISMICITY OF EASTERN NEBRASKA WITH EMPHASIS ON THE VICINITY OF THE HUMBOLDT FAULT ZONE IN WESTERN RICHARDSON AND EASTERN PAWNEE COUNTIES. DISCUSSIONS OF THE RESULTS OF THESE STUDIES CONSTITUTE THE REMAINDER OF THIS REPORT. (FAH)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

TECTONICS + SEISMOLOGY + GEOLOGY + FAULT + UNITED STATES + NRC-6 + NRC-RA

149833
GERAGHTY EP + ISACHSEN YW
ANALYSIS OF FAULTS IN THE DELAWARE AQUEDUCT TUNNEL, SOUTHEASTERN NEW YORK, FINAL REPORT JULY 1977-JUNE 1978
UNIV. OF THE STATE OF N.Y.
NUREG/CR-0882 +. 29 PPS, 15 FIGS, JUNE 1979

COMPILATION AND ANALYSIS OF ALL DATA PERTAINING TO FAULTING AND FRACTURING IN THE DELAWARE AQUEDUCT YIELDED THE FOLLOWING RESULTS: (1) IN THE MANHATTAN PRONG STRUCTURAL PROVINCE, A POOR CORRELATION EXISTS BETWEEN THE 258 FAULTS, CRUSH ZONES, AND SHEAR ZONES MAPPED IN THE TUNNEL AND SURFACE GEOLOGY. (2) HUDSON HIGHLANDS - THE ORIENTATION OF FAULTS BOUNDING THE HUDSON HIGHLANDS BASEMENT BLOCK SUGGESTS VERTICAL UPLIFT AS A REASONABLE MECHANISM FOR EMPLACEMENT OF THE HIGHLANDS BLOCK. (3) VALLEY AND RIDGE STRUCTURAL PROVINCE - A GOOD CORRELATION EXISTS BETWEEN FAULTS MAPPED IN THE AQUEDUCT TUNNEL AND FAULTS MAPPED ALONG THE TRACE OF THE AQUEDUCT. (4) CATSKILL MOUNTAINS PORTION OF THE ALLEGHENY PLATEAU STRUCTURAL PROVINCE - A POOR CORRELATION EXISTS BETWEEN FAULTS AND CRUSH ZONES MAPPED IN THE TUNNEL AND SURFACE GEOLOGY. (5) OF SIX, PRONOUNCED, LINEAR AEROMAGNETIC GRADIENTS ONLY ONE IS EXPRESSED BY FAULTING (REVERSE) IN THE TUNNEL. (FAH)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

NEW YORK + FAULT + STRUCTURE + FAULT + GEOLOGY + NRC-6 + NRC-RA

149826
ISACHSEN YW + GERAGHTY EP
GROUND INVESTIGATIONS OF PROJECTED TRACES OF FOCAL MECHANISMS FOR EARTHQUAKES AT BLUE MOUNTAIN LAKE, RAQUETTE LAKE, AND CHAZY LAKE, ADIRONDACK UPLIFT, NEW YORK FINAL REPORT JULY 1977-JUNE 1978
UNIV. OF STATE OF N.Y.
NUREG/CR-0888 +. 33 PPS, 19 FIGS, REFS, JUNE 1979

THE SURFACE PROJECTIONS OF THREE FOCAL MECHANISMS IN THE PROTEROZOIC METAMORPHIC COMPLEX OF THE ADIRONDACK MOUNTAINS OF NORTHERN NEW YORK STATE WERE MAPPED TO SEARCH FOR EVIDENCE OF FAULTING. IN AN INITIAL STUDY AT BLUE MOUNTAIN LAKE CONDUCTED DURING A SEISMIC EPISODE, SEVEN MICRO-EARTHQUAKES WERE HEARD BUT NO GROUND MANIFESTATION FOUND. FRACTURE MAPPING ALONG THE SHORELINE OF RAQUETTE LAKE PROVIDES INDIRECT EVIDENCE FOR THE EXISTENCE OF A HIGH-ANGLE FAULT ALONG THE NNW TOPOGRAPHIC LINEAMENT WHICH DEFINES THE LONG AXIS OF THE LAKE. BASED ON ABRUPT FOLIATION REORIENTATION AND OTHER INDIRECT EVIDENCE, IT IS SUGGESTED THE CHAZY LAKE DISCONTINUITY MAY BE A SHEAR ZONE OR DUCTILE FAULT WITH LEFT-LATERAL DISPLACEMENT OF 10-12 KM. (FAH)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

EARTHQUAKE + SEISMOLOGY + NEW YORK + GEOLOGY + FAULT + NRC-6 + NRC-RA

149827
GERAGHTY EP + WRIGHT SF + ISACHSEN YW
DIKES OF RAND HILL, NORTHEAST ADIRONDACKS, AS PALEOSTRAIN INDICATORS, FINAL REPORT JULY 1977-JUNE 1978
UNIV. OF THE STATE OF N.Y.
NUREG/CR-0889 +. 14 PPS, 7 FIGS, REFS, JUNE 1979

IGNEOUS DIKES MAY BE LOOKED UPON AS PALEOSTRAIN INDICATORS, AND HENCE AS AIDS IN RECONSTRUCTING THE STRAIN HISTORY (AND IDEALLY, THE STRESS HISTORY) OF A REGION. THE OLIVINE DIABASE DIKES, AND ONE DIABASE DIKE, HAVE K/AR AGES WHICH RANGE FROM UPPERMOST PROTEROZOIC TO MIDDLE CAMBRIAN. THEIR TRENDS ARE BETWEEN N 60 DEG E AND N 770 DEG E, SUGGESTING THAT THE GREATEST EXTENSIONAL STRAIN IN THE AREA AT THAT TIME WAS NNW-SSE. IN SIMILAR MANNER, A SECOND DATED DIABASE DIKE SUGGESTS THAT THE GREATEST EXTENSIONAL STRAIN IN THE LOWER DEVONIAN WAS NNE-SSW. A DATED TRACHYTE DIKE SUGGESTS THAT THE AXIS OF MAXIMUM EXTENSIONAL STRAIN BY MIDDLE DEVONIAN TIME WAS NS. (FAH)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

NEW YORK + GEOLOGY + TOPOGRAPHY + ROCK MECHANICS + NRC-6 + NRC-RA

149828
GERAGHTY EP + ISACHSEN YW
INVESTIGATION OF SELECTED LINEAR FEATURES IN THE NORTHERN ADIRONDACK MOUNTAINS, NEW YORK, FINAL REPORT JULY 1977-JUNE 1978
UNIV. OF THE STATE OF N.Y.
NUREG/CR-890 +. 17 PPS, 9 FIGS, REFS, JUNE 1979

FIVE PROMINENT (13 TO 35 KM LONG), SUB-PARALLEL, ENE-TRENDING LINEAR FEATURES LOCATED ALONG THE NORTHERN FLANK OF THE ADIRONDACK UPLIFT WERE INVESTIGATED AS TO NATURE AND ORIGIN BY SELECTIVE

149828 *CONTINUED*
DETAILED MAPPING. THESE FEATURES HAD BEEN FIRST OBSERVED ON LANDSAT IMAGES. OUTCROP MAPPING AT 1:24,000 OF THE PROTEROZOIC (HELIKIAN), GRANULITE-FACIES ROCKS INVOLVED, REVEALED ONLY EIGHT CRITICAL LOCATIONS WHERE BEDROCK IS EXPOSED ALONG OR NEAR (WITHIN 75 M) THE FIVE LINEAR FEATURES. ONE LINEAR FEATURE (ABOUT 14 KM LONG) IS CONSIDERED TO BE ENTIRELY FAULT CONTROLLED. THREE LINEAR FEATURES APPEAR TO BE THE RESULT OF SELECTIVE EROSION ALONG ONE OR A COMBINATION OF THE FOLLOWING FEATURES: LAYERING OR FOLIATION OF BEDROCK, FRACTURES AND JOINTS, LESS RESISTENT ROCK UNITS.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

NEW YORK + FAULT + EROSION + GEOLOGY + NRC-6 + NRC-RA

148881
LUZA KV + LAWSON JE
SEISMICITY AND TECTONIC RELATIONSHIPS OF THE NEMAHA UPLIFT IN OKLAHOMA, PART II
UNIV. OF OKLAHOMA, NORMAN
NUREG/CR-0875 +. 81 PPS, 8 TABS, 12 FIGS, JUNE 1979

THE GEOLOGIC STUDIES CONCENTRATED ON (1) COMPLETION OF STRUCTURE-CONTOUR MAPS ON THE TOP OF THE VIOLA FORMATION, THE BASE OF THE PENNSYLVANIAN, AND THE TOP OF THE OSWEGO FORMATION, AND (2) A DETAILED STRUCTURE-HISTORY STUDY OF THE NEMAHA UPLIFT IN THE OKLAHOMA CITY AREA. THE CONTOUR-MAPPING PHASE OF THIS PROGRAM IS COMPLETE. A DETAILED STUDY OF THE TECTONICS OF THE OKLAHOMA CITY UPLIFT WAS COMPLETED WITH THE CONSTRUCTION OF FOUR SUBSURFACE CROSS SECTIONS AS WELL AS SEVERAL ISOPACHOUS MAPS IN ORDER TO RECONSTRUCT THE STRUCTURAL HISTORY FOR THIS AREA. THE SEISMOLOGIC STUDIES CAN BE GROUPED INTO TWO BASIC CATEGORIES: (1) SEISMOGRAPH-STATION INSTALLATION, MAINTENANCE, AND OPERATION, AND (2) DATA PROCESSING. (FAH)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

EARTHQUAKE + SEISMOLOGY + GEOLOGY + UNITED STATES + EARTHQUAKE RECORDS + NRC-R6A + FAULT

148725
KEENEY RL + FORD CK + ROBINSON JA
AN EVALUATION AND COMPARISON OF NUCLEAR POWER PLANT SITING METHODOLOGIES
SANDIA LABS., ALBUQUERQUE, N.M.
NUREG/CR-0407 + SAND78-1284 +. 231 PPS, TABS, FIGS, REFS, MARCH 1979

METHODOLOGIES FOR SELECTION OF NUCLEAR POWER PLANT SITES OBTAINED FROM RECENT LICENSING DOCKETS WERE FOUND TO FIT INTO SIX MAJOR CATEGORIES. BY MEANS OF DECISION ANALYSIS TECHNIQUES, SPECIFIC EXAMPLES FROM EACH METHODOLOGY WERE EVALUATED AGAINST A LIST OF 18 ATTRIBUTES FOR AN "IDEAL" METHODOLOGY. RESULTS SHOWED A DISTINCT PREFERENCE AMONG THE METHODOLOGIES WHICH WAS INDEPENDENT OF DIFFERENCES IN PREFERENCE STRUCTURE AMONG THREE INDIVIDUALS. SITE SELECTION METHODOLOGIES WERE APPLIED TO AREAS IN UTAH AND ILLINOIS TO DETERMINE WHETHER THE DIFFERENT METHODOLOGIES WOULD SELECT THE SAME CANDIDATE PLANT SITES OR NOT. RESULTS WERE GENERALLY CONSISTENT, BUT SOME POTENTIAL SITES WERE ELIMINATED PREMATURELY BY SELECTION TECHNIQUES WHICH INCLUDE EXCLUSION PRINCIPLES RATHER THAN RELATIVE WEIGHTING TECHNIQUES. (FAH)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

SITING + POWER PLANT, NUCLEAR + ANALYTICAL TECHNIQUE + SEISMOLOGY + ENVIRONMENT + POPULATION DISTRIBUTION + TRANSPORTATION AND HANDLING + PLANNING, LAND + POWER TRANSMISSION + SOIL PROPERTY + COOLING + NRC-RA

148417
METHODS FOR PREDICTION OF STRONG EARTHQUAKE GROUND MOTION
UNIV. OF SOUTHERN CALIF., LOS ANGELES
NUREG/CR-689 +. 560 PPS, TABS, FIGS, MAY 1979

REPORT SUMMARIZES THE WORK ON CHARACTERIZATION OF A STRONG EARTHQUAKE GROUND MOTION FOR USE IN SEISMIC RISK STUDIES, DEVELOPMENT IN STANDARDS AND REGULATORY GUIDES, RE-EVALUATION OF EXISTING SITES, AND FOR THE DEVELOPMENT OF SITE SPECIFIC CRITERIA FOR EARTHQUAKE RESISTANT DESIGN. DETAILED THEORETICAL ANALYSES, DATA HANDLING METHODS, COMPUTER PROGRAMS AND OTHER PERTINENT BACKGROUND ARE PRESENTED IN APPENDICES MENTIONED THROUGHOUT THE TEXT AND ATTACHED TO THE END OF THIS REPORT.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

EARTHQUAKE + GROUND MOTION + FORECAST + RISK + ANALYTICAL MODEL + SITING + GEOLOGY + NRC-RA + NRC-6

149832
RACINE D
A SEISMICITY STUDY OF THE PACIFIC NORTHWEST REGION OF THE UNITED STATES, NOVEMBER 1961 - AUGUST 1965
TELEDYNE GEOTECH., ALEXANDRIA, VA
NUREG/CR-0926 + AL-75-1 +. 55 PPS, 17 TABS, 7 FIGS, REFS, JULY 1979

DURING THE STUDY, 326 EPICENTERS (SDL EVENTS) WERE LOCATED BY VISUAL ANALYSIS OF FILM RECORDS OF SHORT-PERIOD SEISMIC DATA. MAGNITUDES FOR THESE EVENTS RANGED FROM 1.5 TO 4.2. PLOTS OF THE 326 EVENTS GENERALLY SHOWS THE SAME GEOGRAPHIC DISTRIBUTION AS THE PLOT OF THE NEIS EVENTS, EXCEPT IN OREGON WHERE MOST OF THE SDL EVENTS WERE LOCATED IN THE HISTORICALLY QUIET SE QUADRANT OF THE STATE. CONSIDERABLY MORE EVENTS WERE LOCATED IN WASHINGTON AND OREGON THAN APPEARED ON THE NEIS

149832 *CONTINUED*
PLOT. SUGGESTING THAT THE AREA OF INTEREST IS FAR MORE ACTIVE THAN TRADITIONALLY THOUGHT. (FAH)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

SEISMOLOGY + UNITED STATES + OREGON + SEISMOLOGY + NRC-6 + NRC-RA + EARTHQUAKE EPICENTER

149835
STEARNS RG
RECENT VERTICAL MOVEMENT OF THE LAND SURFACE IN THE LAKE COUNTY UPLIFT AND REELFOOT LAKE BASIN AREAS, TENNESSEE, MISSOURI AND KENTUCKY
VANDERBILT UNIV., NASHVILLE, TENN.
NUREG/CR-0874 +, 37 PPS, 12 FIGS, JUNE 1979

TIPTONVILLE DOME, AN ESTABLISHED TECTONIC UPLIFT, IS ONE IN A 20 MILE SERIES OF EN ECHELON TOPOGRAPHIC HIGHS, MOST OR ALL OF WHICH ARE UPLIFTS. THESE FEATURES ARE TOO HIGH TO HAVE BEEN FLOODED DURING THE LARGEST HISTORIC FLOODS. FROM LEWIS PRAIRIE, AT NEW MADRID IN MISSOURI, FIVE SUCH TOPOGRAPHICALLY HIGH AREAS EXTEND SOUTHWARD ACROSS THE MISSISSIPPI RIVER TO RIDGELY, TENNESSEE. ALTHOUGH SEPARATED NOW DUE TO MODERN RIVER EROSION, THEY WERE NEARLY CONTINUOUS IN 1811. CONTOUR TRENDS REVEAL A SQUARISH TOPOGRAPHIC BULGE WEST OF THE "FLOOD ISLANDS." THE WESTERN CORNER OF WHICH IS NEAR PORTAGEVILLE, MISSOURI. IT MAY HAVE BEEN UPLIFTED WITH, BUT LESS THAN, THE "FLOOD ISLANDS." (FAH)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

TECTONICS + TENNESSEE + RIVER, MISSISSIPPI + TOPOGRAPHY + EROSION + NRC-6 + NRC-RA

7. R7 - ADVANCED REACTOR SAFETY RESEARCH, FAST REACTORS

146960
SHA WT + DOMANUS HM + SCHMITT RC
COMMIX-1: A THREE-DIMENSIONAL TRANSIENT SINGLE-PHASE COMPONENT COMPUTER PROGRAM FOR THERMAL-HYDRAULIC ANALYSIS
ARGONNE NATIONAL LAB., ILL.
NUREG/CR-0785 + ANL-77-96 +. 120 PPS, 13 FIGS, 15 REFS, SEPT. 1978

A SET OF GOVERNING EQUATIONS FOR THE CONSERVATION OF MASS, MOMENTUM, AND ENERGY IS SOLVED AS A BOUNDARY-VALUE PROBLEM IN SPACE AND AS AN INITIAL-VALUE PROBLEM IN TIME. THE MODEL CAN TREAT BOTH CONTINUUM (E.G., REACTOR PLENUM) AND QUASI-CONTINUUM (E.G., ROD BUNDLES OR FUEL ASSEMBLY) SODIUM SYSTEMS. VOLUME POROSITY, SURFACE PERMEABILITY, AND DISTRIBUTED RESISTANCE ARE USED IN THE QUASI-CONTINUUM APPROACH, WHICH ALLEVIATES TWO INHERENT DEFICIENCIES ASSOCIATED WITH CONVENTIONAL SUBCHANNEL ANALYSIS; ONE IS THE APPROXIMATION USED IN THE FORMULATION OF TRANSVERSE MOMENTUM EQUATIONS, THE OTHER IS ITS INABILITY OF HANDLING REVERSE FLOW OR RECIRCULATORY FLOW. A UNIQUE FEATURE OF THE SOLUTION TECHNIQUE IN THE COMMIX-1 COMPUTER PROGRAM IS THE INCLUSION OF THE LOCAL MASS-RESIDUE EFFECT IN THE ENERGY AND MOMENTUM EQUATIONS. AS A RESULT OF THIS INCLUSION, BOTH THE CONVERGENCE RATE AND ACCURACY ARE GREATLY IMPROVED FOR THE RANGE OF PROBLEMS INVESTIGATED.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*THERMAL HYDRAULIC ANALYSIS + ANALYTICAL TECHNIQUE + REACTOR, LMFBR + FUEL ELEMENTS + COMPUTER PROGRAM + *TRANSIENT + FLOW + NRC-7

145061
ABRAMSON PB + SIENICKI JJ
NUMERICAL THERMAL MIXING IN EULERIAN CALCULATIONS OF COUPLED THERMO/HYDRODYNAMIC MOTIONS
ARGONNE NATIONAL LAB., ILL.
NUREG/CR-0594 + ANL-78-101 +. 56 PPS, 7 TABS, 15 FIGS, 19 REFS, NOV. 1978

THE ANALYSIS SHOWS THAT THE PURELY EULERIAN CALCULATIONS OF THERMAL/HYDRODYNAMIC PHENOMENA INVOLVING STRONG SPECIFIC ENERGY GRADIENTS ARE NUMERICALLY INADEQUATE IF ONE IS INTERESTED IN THE POTENTIAL WORK THAT SUCH A SYSTEM MAY DO. WHILE SUCH NUMERICAL SYSTEMS MAY CONVERGE TO THE PROPER CONTINUUM SOLUTION AS GRID SIZE IS DECREASED, THIS CONVERGENCE IS VERY SLOW AND IT THEREFORE APPEARS THAT THE ONLY PRACTICAL SOLUTION TO THE PROPER TRACKING OF THE SYSTEM'S POTENTIAL TO DO WORK IS THROUGH THE INTRODUCTION OF SOME LAGRANGIAN CHARACTER IN THE CALCULATIONS.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

ANALYTICAL TECHNIQUE + ACCIDENT ANALYSIS + ACCIDENT, CORE DISRUPTIVE + ACCIDENT, HYPOTHETICAL + COMPARISON + NRC-7 + THERMAL HYDRAULIC ANALYSIS

147821
PHYSICS OF REACTOR SAFETY QUARTERLY REPORT JULY-SEPTEMBER 1978
ARGONNE NATIONAL LAB., ILL.
NUREG/CR-0653 + ANL-78-106 +. 76 PPS, 40 FIGS, 19 REFS, NOV. 1978

THIS QUARTERLY PROGRESS REPORT SUMMARIZES WORK DONE IN ARGONNE NATIONAL LABORATORY'S APPLIED PHYSICS DIVISION AND COMPONENTS TECHNOLOGY DIVISION FOR THE DIVISION OF REACTOR SAFETY RESEARCH OF THE U.S. NUCLEAR REGULATORY COMMISSION DURING THE MONTHS OF JULY-SEPTEMBER 1978. THE WORK IN THE APPLIED PHYSICS DIVISION INCLUDES REPORTS ON REACTOR SAFETY PROGRAMBY MEMBERS OF THE REACTOR SAFETY APPRAISALS GROUP, MONTE CARLO ANALYSIS OF SAFETY-RELATED CRITICAL ASSEMBLY EXPERIMENTS BY MEMBERS OF THE THEORETICAL FAST REACTOR PHYSICS GROUP, AND PLANNING OF SAFETY-RELATED (ZPR) PLANNING AND EXPERIMENTS GROUP. WORK ON REACTOR CORE THERMAL-HYDRAULIC CODE DEVELOPMENT PERFORMED IN THE COMPONENTS TECHNOLOGY DIVISION IS ALSO INCLUDED IN THIS REPORT.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

HEAT TRANSFER ANALYSIS + HEAT TRANSFER, TWO PHASE + FLOW, TWO PHASE + THERMAL HYDRAULIC ANALYSIS + SUBCHANNEL ANALYSIS + FLOW, CROSS + FLOW, MIXING + ACCIDENT, LOSS OF FLOW + ACCIDENT, LOSS OF COOLANT + FAILURE, FUEL ELEMENT + COMPUTER PROGRAM + FUEL MELTDOWN + REACTIVITY EFFECT + ACCIDENT, REACTIVITY + MEASUREMENT, REACTIVITY + NRC-7

147551
SHA WT + THOMPSON JF
ROD-BUNDLE THERMAL-HYDRAULIC ANALYSIS USING BOUNDARY - FITTED COORDINATE SYSTEM
ARGONNE NATIONAL LAB., ILL.
NUREG/CR-0001 + ANL-78-1 +. 45 PPS, 12 FIGS, 16 REFS, JAN. 1979

DISCUSSES A FORMULATION UNDER DEVELOPMENT FOR A THREE-DIMENSIONAL, TIME-DEPENDENT, COMPRESSIBLE SINGLE-PHASE ROD-BUNDLE THERMAL-HYDRAULIC ANALYSIS USING BOUNDARY FITTED COORDINATE SYSTEMS. THE GOVERNING EQUATIONS OF CONSERVATION OF MASS, MOMENTUM, AND ENERGY ARE TREATED AS A BOUNDARY-VALUE PROBLEM IN SPACE AND AN INITIAL-VALUE PROBLEM IN TIME. THE NUMERICAL SOLUTIONS CAN BE IN EITHER IMPLICIT OR EXPLICIT FORM, EACH WITH A CHOICE OF CENTRAL OR UPWIND CONVECTIVE DERIVATIVES.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

THERMAL HYDRAULIC ANALYSIS + HEAT TRANSFER ANALYSIS + FUEL ROD + MATHEMATICAL TREATMENT + ANALYTICAL TECHNIQUE + NRC-7

148424
SHAH VL + MIACO CC + SHA WT
SOME NUMERICAL RESULTS WITH THE COMMIX-2 COMPUTER CODE
ARGONNE NATIONAL LAB., ILL.
NUREG/CR-0741 + ANL-CT-79-30 +. 40 PPS. FIGS. 5 REFS. MARCH 1979

THE COMPUTER CODE COMMIX-2 HAS BEEN DEVELOPED FOR ANALYZING AND DESIGNING THERMAL-HYDRAULIC ASPECTS OF NUCLEAR REACTOR COMPONENTS. THE CODE EMPLOYS A TWO-FLUID MODEL FOR SOLVING TRANSIENT, THREE-DIMENSIONAL TWO-PHASE (OR SINGLE PHASE) NONHOMOGENEOUS AND NONEQUILIBRIUM FLOW CONDITIONS. THIS REPORT PRESENTS NUMERICAL RESULTS OF FOUR PROBLEMS SELECTED TO DEMONSTRATE THE CAPABILITIES OF COMMIX-2: (1) TRANSIENT SINGLE-PHASE FLOW WITH THE HEAT SOURCE; (2) TWO-PHASE FLOW IN A VERTICAL TUBE, WHERE THE SURFACE HEAT FLUX IS SUFFICIENTLY HIGH THAT A SINGLE-PHASE LIQUID EMERGES AS A MIXTURE OF LIQUID AND VAPOR; (3) SEPARATION OF VAPOR AND LIQUID; AND (4) A HIGH-PRESSURE JET IMPINGING ON A VERTICAL PLATE.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

COMPUTER PROGRAM + FLOW, TWO PHASE + JET + REACTOR, LWR + ACCIDENT, TRANSIENT OVERPOWER + TRANSIENT + ACCIDENT, LOSS OF COOLANT + NRC-7

148921
PHYSICS OF REACTOR SAFETY, QUARTERLY REPORT OCTOBER-DECEMBER 1978
ARGONNE NATIONAL LAB., ILL.
NUREG/CR-0759 + ANL-79-19 +. 71 PPS, 6 TABS, 32 FIGS, 31 REFS, MARCH 1979

PROGRESS REPORT COVERING THE PERIOD OCTOBER-DECEMBER 1978 FOR ARGONNE NATIONAL LABORATORY'S APPLIED PHYSICS AND COMPONENTS TECHNOLOGY DIVISIONS. TOPICS INCLUDE REACTOR-SAFETY RESEARCH, MONTE CARLO ANALYSIS OF SAFETY-RELATED CRITICAL ASSEMBLY EXPERIMENTS, PLANNING OF SAFETY-RELATED CRITICAL EXPERIMENTS, AND REACTOR CORE THERMAL-HYDRAULICS.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

REACTOR, SAFETY RESEARCH + MONTE CARLO + THERMAL HYDRAULIC ANALYSIS + MODEL + REACTOR, LMFBR + CRITICAL ASSEMBLY

149928
PHYSICS OF REACTOR SAFETY QUARTERLY REPORT JANUARY-MARCH 1979
ARGONNE NATIONAL LAB., ILL.
NUREG/CR-0864 + ANL-79-37 +. 40 PPS, 15 TABS, 19 FIGS, 11 REFS, MAY 1979

REPORTS ON REACTOR-SAFETY RESEARCH AND TECHNICAL COORDINATION OF THE RSR SAFETY ANALYSIS PROGRAM. MONTE CARLO ANALYSIS OF SAFETY-RELATED CRITICAL ASSEMBLY EXPERIMENTS, AND PLANNING OF SAFETY-RELATED CRITICAL EXPERIMENTS. WORK ON REACTOR CORE THERMAL-HYDRAULICS WAS ALSO PERFORMED.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

HEAT TRANSFER ANALYSIS + HEAT TRANSFER, TWO PHASE + FLOW, TWO PHASE + THERMAL HYDRAULIC ANALYSIS + SUBCHANNEL ANALYSIS + FLOW, CROSS + FLOW, MIXING + ACCIDENT, LOSS OF FLOW + ACCIDENT, LOSS OF COOLANT + FAILURE, FUEL ELEMENT + COMPUTER PROGRAM + FUEL MELTDOWN + REACTIVITY EFFECT + ACCIDENT, REACTIVITY + MEASUREMENT, REACTIVITY + NRC-7

149673
SHAH VL + SHA WT + VANKA SP
A NUMERICAL PROCEDURE FOR CALCULATING STEADY/UNSTEADY, SINGLE-PHASE/TWO-PHASE THREE-DIMENSIONAL FLUID FLOW WITH HEAT TRANSFER
ARGONNE NATIONAL LAB., ILL.
NUREG/CR-0782 + ANL-CT-79-31 +. 79 PPS, TABS, FIGS, JUNE 1979

DESCRIBES A GENERAL NUMERICAL PROCEDURE FOR THE CALCULATION OF STEADY/UNSTEADY, SINGLE-PHASE/TWO-PHASE, THREE-DIMENSIONAL FLUID FLOW. THE PROCEDURE IS BASED ON THE CONTROL-VOLUME APPROACH, WHICH ENABLES THE DERIVATION OF PHYSICALLY MEANINGFUL FINITE-DIFFERENCE EQUATIONS. THE CONSERVATION EQUATIONS EMPLOYED ARE BASED ON A TWO-FLUID MODEL. THIS PERMITS THE ANALYSES OF NONHOMOGENEOUS AND NONEQUILIBRIUM FLOW CONDITIONS. IN ADDITION, SURFACE PERMEABILITIES AND VOLUME POROSITIES ARE INCLUDED IN THE FINITE-DIFFERENCE FORMULATIONS TO ACCOUNT FOR DISPERSED SOLID OBJECTS IN A FLOW DOMAIN. THE DERIVATION OF THE EQUATIONS AND THE REQUIRED ITERATION SCHEME ARE PRESENTED, AND FLOW CHARTS ARE PROVIDED FOR THE PLANNING AND DESIGN OF A COMPUTER PROGRAM.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

FLOW + ANALYTICAL MODEL + ANALYTICAL TECHNIQUE + NUMERICAL METHOD + COMPUTER PROGRAM + MATHEMATICAL TREATMENT + UNSTEADY STATE + NRC-7 + FLOW, TWO PHASE + HEAT TRANSFER, TWO PHASE + UNSTEADY STATE

149682
SOWERS GW
A COMPARISON OF PIPING MODELS FOR DIGITAL POWER PLANT SIMULATORS
UNIV. OF ARIZONA, TUCSON
NUREG/CR-0951 +. 38 PPS, 1 TAB, 11 FIGS, AUG. 1979

149682 *CONTINUED*
TWO PIPING MODELS INTENDED FOR USE IN A DIGITAL POWER PLANT SIMULATOR ARE COMPARED. ONE IS A FINITE DIFFERENCE APPROXIMATION TO THE PARTIAL DIFFERENTIAL EQUATION CALLED PIPE, AND THE OTHER IS A FUNCTION SUBROUTINE THAT ACTS AS A DELAY OPERATOR CALLED PDELAY. THE TWO MODELS ARE COMPARED WITH RESPECT TO ACCURACY AND EXECUTION TIME. IN ADDITION, THE STABILITY OF THE PIPE MODEL IS DETERMINED. (EWH)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

COMPARISON + *PIPES AND PIPE FITTINGS + *SIMULATION + ANALYTICAL MODEL + *CLINCH RIVER (LMFBR) + REACTOR, LMFBR + NRC-7

149843
GEISEKE JA + SCHMIDT EW + LEE KW
AEROSOL MEASUREMENTS AND MODELING FOR FAST REACTOR SAFETY QUARTERLY PROGRESS REPORT APRIL 1-JUNE 30, 1978
BATTELLE COLUMBUS LABS., OHIO
NUREG/CR-0587 + BMI-2015 +. 37 PPS, 2 TABS, 9 FIGS, 23 REFS, JAN. 1979

TECHNICAL PROGRESS DURING THE QUARTER WAS MADE IN AREAS OF COMPARISON OF THE HAARM-3 CODE WITH EXPERIMENTAL DATA, SENSITIVITY ANALYSIS OF THE CODE, REFERENCE CODE DEVELOPMENT, FUEL AEROSOL AGGLOMERATE CHARACTERISTICS MEASUREMENTS, AND EVALUATION OF FUEL AEROSOL RESUSPENSION. IN ADDITION, BATTELLE STAFF PARTICIPATED IN A MEETING AT OAK RIDGE NATIONAL LABORATORY ON THE 18TH AND 19TH OF APRIL ON THE CODE VERIFICATION PLAN.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*AEROSOL + AEROSOL PROPERTIES + COMPUTER PROGRAM + RESUSPENSION + REACTOR, FAST + CONCENTRATION + CONTAINMENT ATMOSPHERE + AGGLOMERATE + *MODEL + NRC-7

146817
GIESEKE JA + LEE KW + JORDAN H + REED LC
AEROSOL MEASUREMENTS AND MODELING FOR FAST REACTOR SAFETY ANNUAL REPORT FOR FY 1978
BATTELLE COLUMBUS LAES., OHIO
NUREG/CR-0676 + BMI-2021 +. 65 PPS, 6 TABS, 29 FIGS, FEB. 1979

TECHNICAL EFFORTS DURING THIS PERIOD ARE DIVIDED INTO SIX MAJOR AREAS: 1) COMPLETION OF THE "HETEROGENEOUS AEROSOL AGGLOMERATION REVISED MODEL-3" (HAARM-3) CODE; 2) COMPARISON OF THE HAARM-3 WITH EXPERIMENTAL DATA; 3) DEVELOPMENT OF THE AEROSOL REFERENCE CODE; 4) MEASUREMENT OF FUEL AEROSOL CHARACTERISTICS; 5) EVALUATION OF AEROSOL RESUSPENSION DATA; AND 6) DEVELOPMENT OF A COMPUTER CODE ACCOUNTING FOR MULTIPLE ZONE AEROSOL BEHAVIOR.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*AEROSOL + AEROSOL PROPERTIES + COMPUTER PROGRAM + RESUSPENSION + REACTOR, FAST + CONCENTRATION + CONTAINMENT ATMOSPHERE + NRC-7 + AGGLOMERATE

144960
JORDAN H + VAISHNAIR* B + GIESEKE JA
THE NUMERICAL METHOD OF THE AEROSOL BEHAVIOR REFERENCE CODE, CRAB
BATTELLE COLUMBUS LABS., OHIO
NUREG/CR-0620 + BMI-2016 +. 57 PPS, 13 FIGS, 13 REFS, MARCH 1979

THIS REPORT COVERS THE NUMERICAL METHOD EMPLOYED IN THE CRAB REFERENCE CODE TO SOLVE THE AEROSOL AGGLOMERATION PROBLEM FOR UNIFORM, ONE COMPONENT SYSTEMS. THE METHOD EVOLVED FROM A BACKWARD DIFFERENCE TIME INTEGRATION SCHEME FOR THE GOVERNING EQUATION, DISCRETIZED BY IMPOSING A VARIATIONAL CRITERION ON A POLYNOMIAL EXPANSION OF THE TIME DEPENDENT PARTICLE SIZE DISTRIBUTION DENSITY. TEST CALCULATIONS TO DATE INDICATE THAT THE NUMERICAL METHOD DESCRIBED IN THIS REPORT LEADS TO A STABLE SYSTEM OF DISCRETE DIFFERENTIAL EQUATIONS THAT CAN BE SOLVED BY AVAILABLE EQUATION SOLVERS. THE ACCURACY OF THE METHOD WAS DEMONSTRATED BY COMPARISON WITH ANALYTIC SOLUTIONS.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*AEROSOL + COMPUTER PROGRAM + ACCIDENT, HYPOTHETICAL + AEROSOL, RADIOACTIVE + AGGLOMERATE + PARTICLE SIZE DISTRIBUTION + FISSION PRODUCT RELEASE + RADIOACTIVITY RELEASE + ACCIDENT, CORE DISRUPTIVE + NRC-7

148493
JORDAN H + GIESEKE JA + SCHUMACHER PM
CRAB USERS MANUAL
BATTELLE COLUMBUS LABS., OHIO
NUREG/CR-0872 + BMI-2027 +. 26 PPS, 1 FIG, 7 REFS, JUNE 1979

AMONG THE COMPUTER CODES USED IN THE STUDY OF THE BEHAVIOR OF SODIUM SMOKE AEROSOLS ARE THE HAA SERIES OF CODES, THE HAARM SERIES AND THE PARDISEKE SERIES. A SECOND GENERATION CODE, CRAB, IS UNDER DEVELOPMENT AT BATTELLE. THIS CODE IS TO ACT AS A REFERENCE AGAINST WHICH MORE APPROXIMATE BUT PRACTICAL CODES COULD BE TESTED. FUTURE DEVELOPMENT OF CRAB WILL BE CONCERNED WITH THE REMOVAL, AS FAR AS POSSIBLE, OF THE RESTRICTIONS TO A HOMOGENEOUS SYSTEM AND TO AN AEROSOL COMPRISED OF A SINGLE DISPERSED COMPONENT.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

148493 *CONTINUED*
COMPUTER PROGRAM + AEROSOL + REACTOR, LMFBR + PARTICLE SIZE + SMOKE + NRC-7

146477
MEYER JE
SOME PHYSICAL AND NUMERICAL CONSIDERATIONS FOR THE SSC-S CODE
BROOKHAVEN NATIONAL LAB., UPTON, N.Y.
NUREG/CR-0451 + BNL-NUREG-50913 +, 59 PPS, 3 TABS, 13 FIGS, SEPT. 1978

THE SSC-S DIGITAL COMPUTER CODE IS BEING DEVELOPED TO SIMULATE LOW FLOW REMOVAL OF DECAY HEAT IN LIQUID METAL FAST BREEDER REACTOR (LMFBR) POWER PLANTS. THIS REPORT PROVIDES INFORMATION TO AID IN DEFINING PHYSICAL MODELS AND NUMERICAL METHODS FOR USE IN THE CODE.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

COMPUTER PROGRAM + DECAY HEAT + REACTOR, LMFBR + MODEL, PHYSICAL + CLINCH RIVER (LMFBR) + TRANSIENT + STRATIFICATION + NRC-7 + HEAT TRANSFER, NATURAL CONVECTION

146475
BARI RA + LUDEWIG H + PRATT WT + SUN YH
ACCIDENT PROGRESSION FOR A LOSS OF HEAT SINK WITH SCRAM IN A LMFBR
BROOKHAVEN NATIONAL LAB., UPTON, N.Y.
NUREG/CR-0427 + BNL-NUREG-50910 +, 67 PPS, 3 TABS, 19 FIGS, 19 REFS, OCT. 1978

A DESCRIPTION OF A SLOW CORE MELTDOWN IN A LIQUID METAL FAST BREEDER REACTOR IS PRESENTED FOR THE CONDITIONS OF LOSS-OF-HEAT-SINK FOLLOWING NEUTRONIC SHUTDOWN. SIMPLE MODELS ARE DEVELOPED FOR THE PREDICTION OF PHASE CHANGES AND/OR RELOCATION OF THE CORE MATERIALS INCLUDING FUEL, CLAD, DUCTS, CONTROL ROD ABSORBER MATERIAL (B_4C), AND PLENUM GASES. THE SEQUENCE OF EVENTS IS ACCOUNTED FOR AND THE ACCIDENT PROGRESSION IS DESCRIBED UP TO THE POINT OF RECRITICALITY. THE NEUTRONIC BEHAVIOR OF THE DISRUPTED CORE IS ANALYZED IN R-Z GEOMETRY WITH A STATIC TRANSPORT THEORY CODE (TWOTRAN). FOR MOST SCENARIOS ASSESSED, THE REACTOR IS EXPECTED TO BECOME RECRITICAL ALTHOUGH LARGE RAMP RATES ARE NOT ANTICIPATED.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

ACCIDENT, CORE DISRUPTIVE + CORE MELTDOWN + *HEAT SINK + REACTOR, LMFBR + COMPUTER PROGRAM + CLINCH RIVER (LMFBR) + NRC-7

145063
AGRAWAL AK + CARTER SF + GUPPY JG + WEAVER WL
USERS' MANUAL FOR THE SSC-L CODE
BROOKHAVEN NATIONAL LAB., UPTON, N.Y.
NUREG/CR-0452 (VOL. 1) + BNL-NUREG-50914 +, 322 PPS, 7 TABS, 13 FIGS, OCT. 1978

THIS CODE SIMULATES THERMOHYDRAULIC TRANSIENTS IN THE ENTIRE LIQUID METAL FAST BREEDER REACTOR (LMFBR) PLANT. PHYSICAL MODELS FOR VARIOUS PROCESSES THAT MAY BE ENCOUNTERED IN PREACCIDENT AND TRANSIENT CONDITIONS ARE DESCRIBED IN A SEPARATE REPORT. THIS REPORT PROVIDES FOR ALL INFORMATION RELATED TO THE USAGE OF THIS COMPUTER CODE TO THE POTENTIAL USERS. IT, TOGETHER WITH THE ABOVE MENTIONED REPORT (BNL-NUREG-50773), PROVIDES A COMPLETE DESCRIPTION OF MODELING DETAILS AND USAGE INSTRUCTIONS WITH THE EXCEPTION OF A GENERALIZED PLANT CONTROL AND PROTECTION SYSTEMS (PCS AND PPS).

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

COMPUTER PROGRAM + THERMAL HYDRAULIC ANALYSIS + TRANSIENT + REACTOR, LMFBR + PROCEDURES AND MANUALS + NRC-7

147114
ROMANO AJ
REACTOR SAFETY RESEARCH PROGRAMS QUARTERLY PROGRESS REPORT JULY 1-SEPTEMBER 30, 1978
BROOKHAVEN NATIONAL LAB., UPTON, N.Y.
NUREG/CR-0513 + BNL-NUREG-50931 +, 215 PPS, TABS, FIGS, NOV. 1978

THE REACTOR SAFETY RESEARCH PROGRAMS QUARTERLY PROGRESS REPORT DESCRIBES CURRENT ACTIVITIES AND TECHNICAL PROGRESS IN THE PROGRAMS AT BROOKHAVEN NATIONAL LABORATORY SPONSORED BY THE USNRC REACTOR SAFETY RESEARCH DIVISION. THE PROJECTS REPORTED EACH QUARTER ARE THE FOLLOWING: GAS REACTOR SAFETY EVALUATION, THOR CODE DEVELOPMENT, CODE REVIEW, SSC CODE DEVELOPMENT, LMFBR AND LWR SAFETY EXPERIMENTS, FAST REACTOR SAFETY CODE VALIDATION, STRESS CORROSION CRACKING PWR STEAM GENERATOR TUBING, AND TECHNICAL COORDINATION OF STRUCTURAL INTEGRITY.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*SAFETY ANALYSIS + *REACTOR, HTGR + COMPUTER PROGRAM + *REACTOR, LMFBR + *REACTOR, LWR + REACTOR, FAST + EXPERIMENT + STRESS CORROSION + STEAM GENERATOR + TUBING + REACTOR, PWR + STRUCTURAL INTEGRITY + NRC-4 + NRC-7 + NRC-8

149841
ROMANO AJ
REACTOR SAFETY RESEARCH PROGRAMS QUARTERLY PROGRESS REPORT OCTOBER 1-DECEMBER 31, 1978
BROOKHAVEN NATIONAL LAB., UPTON, N.Y.

149841 *CONTINUED*
NUREG/CR-0688 + BNL-NUREG-50978 +. 197 PPS. TABS. FIGS. REFS. FEB. 1979

THIS REPORT IS THE NINTH OF A SERIES OF QUARTERLY REPORTS. THE PROJECTS REPORTED ARE THE FOLLOWING: GAS REACTOR SAFETY EVALUATION, THOR CODE DEVELOPMENT, CODE REVIEW, SSC CODE DEVELOPMENT, LMFBR AND LWR SAFETY EXPERIMENTS, FAST REACTOR SAFETY CODE VALIDATION, AND STRESS CORROSION CRACKING PWR STEAM GENERATOR TUBING.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

REACTOR, HTGR + REACTOR, LMFBR + REACTOR, PWR + COMPUTER PROGRAM + SAFETY ANALYSIS + GRAPHITE + TESTING + STRUCTURAL INTEGRITY + SODIUM + POOL BOILING + STEAM GENERATOR + TUBING + STRESS CORROSION + CRACK + NRC-4 + NRC-7 + NRC-8

149840
ROMANO AJ
ADVANCED REACTOR SAFETY RESEARCH DIVISION QUARTERLY PROGRESS REPORT JANUARY 1-MARCH 31, 1979
BROOKHAVEN NATIONAL LAB., UPTON, N.Y.
NUREG/CR-0820 + BNL-NUREG-51014 +. 130 PPS. FIGS. REFS. MAY 1979

THIS REPORT IS THE FIRST OF A SERIES COVERING HTGR SAFETY EVALUATION, SSC CODE DEVELOPMENT, LMFBR SAFETY EXPERIMENTS, AND FAST REACTOR SAFETY CODE VALIDATION.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*REACTOR, HTGR + *REACTOR, LMFBR + COMPUTER PROGRAM + FISSION PRODUCT RELEASE + SAFETY ANALYSIS + GRAPHITE + TESTING + STRUCTURAL INTEGRITY + SODIUM + POOL BOILING + NRC-7 + NRC-8

149404
SHIR VK + TAGHAIR-TAFRESHI K
STUDY OF THERMAL AND HYDRODYNAMIC PROCESSES ASSOCIATED WITH MELTING OF HORIZONTAL SUBSTATE
UNIV. OF CALIF., LOS ANGELES
NUREG/CR-0839 +. 100 PPS. 6 TABS. 22 FIGS. 21 REFS. MAY 1979

THE MELTING OF A HORIZONTAL SLAB OF FROZEN OLIVE OIL PLACED BENEATH A POOL OF WARM WATER HAS BEEN STUDIED EXPERIMENTALLY. THE INTERFACIAL HEAT FLUX DATA ARE TAKEN IN QUASI-STATIC MODE BY NOTING THE TIME RATE CHANGE OF ENTHALPY OF THE POOL OF WATER. PREDICTIONS OF THE INTERFACE GROWTH BASED ON EQUILIBRIUM BETWEEN SURFACE TENSION AND BUOYANT FORCES HAVE BEEN MADE AND FOUND TO COMPARE WELL WITH THE DATA OBTAINED FROM THE MOVIES. THE HEAT TRANSFER COEFFICIENT DATA OBTAINED AT HIGHER POOL TEMPERATURES ARE ALSO PREDICTED WELL BY THE THEORETICAL MODEL.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

THERMAL HYDRAULIC ANALYSIS + THERMODYNAMICS + HEAT TRANSFER EXPERIMENT + THERMAL EXPERIMENT + HEAT TRANSFER + HEAT TRANSFER COEFFICIENT + NRC-7

145746
JACKSON JF + STEVENSON MG
NUCLEAR REACTOR SAFETY QUARTERLY PROGRESS REPORT APRIL 1 - JUNE 30, 1978
LOS ALAMOS SCIENTIFIC LAB., N.M.
NUREG/CR-0385 + LA-7481-PR +. 183 PPS. 23 TABS. 116 FIGS. 63 REFS. OCT. 1978

SEVERAL IMPROVEMENTS WERE MADE TO THE TRAC LWR SAFETY CODE DURING THE PAST QUARTER. THESE INCLUDED A FULLY IMPLICIT HYDRODYNAMICS OPTION FOR THE TEE MODULE AND A ONE-DIMENSIONAL, TWO-FLUID HYDRODYNAMICS PACKAGE. THE SIMMER-II CODE WAS USED IN SEVERAL LMFBR CORE DISRUPTIVE ACCIDENT ANALYSIS (CDA) AND VERIFICATION STUDIES. IN HTGR SAFETY RESEARCH, THE DASH FISSION PRODUCT DIFFUSION AND DECAY CODE WAS COMPLETED, AND CODE RESULTS WERE COMPARED TO ANALYTIC TEST PROBLEMS WITH GOOD AGREEMENT.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*COMPUTER PROGRAM + HYDRODYNAMIC ANALYSIS + REACTOR, LWR + REACTOR, LMFBR + ACCIDENT, CORE DISRUPTIVE + REACTOR, HTGR + FISSION PRODUCT TRANSPORT + CONTAINMENT ANALYSIS + ACCIDENT, LOSS OF COOLANT + *SAFETY ANALYSIS + NRC-4 + NRC-5 + NRC-7 + NRC-8

148409
JACKSON JF + STEVENSON MG
NUCLEAR REACTOR SAFETY QUARTERLY PROGRESS REPORT JULY 1-SEPTEMBER 30, 1978
LOS ALAMOS SCIENTIFIC LAB., N.M.
NUREG/CR-0522 + LA-7567-PR +. 136 PPS. 20 TABS. 106 FIGS. 49 REFS. DEC. 1978

SUMMARIZES PROGRESS AT LOS ALAMOS ON NUCLEAR REACTOR SAFETY RESEARCH AIMED AT PROVIDING UNDERSTANDING OF THE RESPONSE OF NUCLEAR REACTOR SYSTEMS UNDER ACCIDENT CONDITIONS. DEVELOPMENT OF THE TRAC LWR SAFETY CODE CONTINUED DURING THE LAST QUARTER, WITH THE FINAL PROGRAM STRUCTURE CHANGES BEING COMPLETED FOR THE TRAC-P1A VERSION. LMFBR SAFETY STUDIES INCLUDED COMPLETION OF A SIMMER-II SENSITIVITY STUDY OF A VOIDED CORE POSTDISASSEMBLY EXPANSION PROBLEM. STRUCTURAL INVESTIGATIONS IN THE HTGR SAFETY RESEARCH AREA INCLUDED COMPLETION OF SINGLE IMPACT TESTS OF GRAPHITE AND PLASTIC MODEL BLOCKS. IN THE GCFR CORE DISRUPTIVE TEST PROGRAM, POSTMORTEM EXAMINATIONS OF THE FLS-1 37-PIN DISRUPTIVE TEST WERE CONDUCTED.

148409 *CONTINUED*
AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*SAFETY ANALYSIS + *ACCIDENT ANALYSIS + REACTOR, LWR + COMPUTER PROGRAM + HYDRODYNAMIC ANALYSIS + REACTOR, LMFBR + ACCIDENT, CORE DISRUPTIVE + REACTOR, HTGR + STRUCTURAL ANALYSIS, DYNAMIC + REACTOR, GCFR + FUEL ELEMENTS + NRC-4 + NRC-7 + NRC-8

149269
JACKSON JF + STEVENSON MG
NUCLEAR REACTOR SAFETY QUARTERLY PROGRESS REPORT OCTOBER 1-DECEMBER 31, 1978
LOS ALAMOS SCIENTIFIC LAB., N.M.
NUREG/CR-0762 + LA-7769-PR +. 216 PPS, 17 TABS, 112 FIGS, 80 REFS, MAY 1979

THE LWR SAFETY COMPUTER CODE, TRAC-P1A, WAS COMPLETED DURING THIS QUARTER. CONSIDERABLE PROGRESS WAS ALSO MADE TOWARD THE COMPLETION OF THE SET OF EXPERIMENTAL ASSESSMENT CALCULATIONS THAT IS TO ACCOMPANY THE PUBLIC RELEASE OF THE CODE. A NUMERICAL STUDY OF SCALE EFFECTS ON ECC BYPASS WAS PERFORMED WITH THE K-TIF CODE. SIMMER LMFBR DISRUPTED CORE ANALYSIS CODE DEVELOPMENT AND APPLICATIONS WORK REPORTED IN THIS QUARTER INCLUDES IMPROVEMENTS IN THE ANALYTIC EQUATION-OF-STATE AND IN THE PRESSURE AND COMPONENT DENSITY SOLUTION ITERATION TECHNIQUE. IN THE HTGR SAFETY RESEARCH WORK, THE LAST IN A SERIES OF ONE-DIMENSIONAL CORE BLOCK SYSTEM MODEL SEISMIC RESPONSE TESTS WAS COMPLETED.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

LASL + SAFETY ANALYSIS + REACTOR, LWR + COMPUTER PROGRAM + EMERGENCY COOLING + REACTOR, LMFBR + ACCIDENT, CORE DISRUPTIVE + ANALYTICAL TECHNIQUE + REACTOR, HTGR + SEISMIC DESIGN + NRC-4 + NRC-7 + NRC-8

149676
JACKSON JF + STEVENSON MG
NUCLEAR REACTOR SAFETY QUARTERLY PROGRESS REPORT JANUARY 1-MARCH 31, 1979
LOS ALAMOS SCIENTIFIC LAB., N.M.
NUREG/CR-0868 + LA-7867-PR +. 171 PPS, 29 TABS, 107 FIGS, 57 REFS, JUNE 1979

AN IMPORTANT MILESTONE WAS REACHED THIS QUARTER WITH THE RELEASE OF THE TRAC-L1A LWR SAFETY ANALYSIS CODE TO THE NATIONAL ENERGY SOFTWARE CENTER. THE SIMMER LMFBR DISRUPTED CORE ANALYSIS CODE WAS USED FOR THE FIRST TIME TO EXAMINE THE POSTDISASSEMBLY EJECTION OF PRIMARY SYSTEM MATERIALS INTO THE REACTOR CONTAINMENT BUILDING. IN HTGR SAFETY WORK, SEISMIC TESTS ON A TWO-DIMENSIONAL PLASTIC CORE BLOCK MODEL WERE PERFORMED. PREPARATION CONTINUED FOR A SECOND 37-ROD FULL-LENGTH SUBGROUP (FLS) EXPERIMENT SIMULATING LOSS-OF-COOLING IN A GCFR SUBASSEMBLY. IN THE AREA OF REACTOR CONTAINMENT EVALUATION, THE COMPARE CODE WAS FURTHER EVALUATED.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*LASL + *REACTOR, LWR + SAFETY ANALYSIS + COMPUTER PROGRAM + REACTOR, LMFBR + ACCIDENT, CORE DISRUPTIVE + REACTOR, HTGR + SEISMIC DESIGN + REACTOR, GCFR + ACCIDENT, LOSS OF COOLANT + EXPERIMENT + CONTAINMENT ANALYSIS + NRC-7 + NRC-8 + NRC-4

146884
LOYALKA SK
ANALYSIS OF AEROSOL PARTICLES UNDERGOING GRAVITATIONAL AGGLOMERATION, ANNUAL PROGRESS REPORT OCTOBER 1, 1977 - SEPTEMBER 30, 1978
UNIV. OF MISSOURI, COLUMBIA
NUREG/CR-0780 +. 104 PPS, 6 TABS, 12 FIGS, APRIL 1979

THE NRC IS SPONSORING A WIDE RANGING PROGRAM AT SEVERAL INSTITUTIONS DIRECTED TOWARDS IMPROVING UNDERSTANDING OF AEROSOL BEHAVIOUR IN REACTOR CONTAINMENTS. THE WORK AT THE UNIVERSITY OF MISSOURI-COLUMBIA (UMC) CONCERNS CONSTRUCTION OF IMPROVED EXPRESSIONS FOR THE GRAVITATIONAL COLLISION EFFICIENCY OF AEROSOL PARTICLES. THIS WORK WAS STARTED IN DECEMBER 1976. THIS REPORT DESCRIBES THE PROGRESS OF THE UMC WORK DURING THE SECOND CONTRACT PERIOD (10-1-1977 TO 9-30-1978).

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

ACCIDENT + REGULATION + AEROSOL + ACCIDENT, CORE DISRUPTIVE + REACTOR, LMFBR + SODIUM + PLUTONIUM + NRC-7 + AGGLOMERATE

149911
JOHNSON EW + MILLER GC + ZONATELLI WA
1978 ANNUAL REPORT: AEROSOL CHARACTERIZATION FROM A SIMULATED HCDA
MOUND LAB., MIAMISBURG, OHIO
NUREG/CR-0740 + MLM-2597 +. 34 PPS, 4 TABS, 14 FIGS, 6 REFS, MARCH 1979

SIMULATED ENVIRONMENTAL CONDITIONS MODELLING THE HCDA ON A REDUCED SCALE HAVE PROVIDED THE FOLLOWING INFORMATION: AEROSOLS RESULTING FROM THE CONDENSATION OF GASEOUS CONSTITUENTS ARE GENERALLY SPHERICAL, SMALL IN DIAMETER (0.01 TO 0.25 MICROMETER), AND BRANCHED CHAIN-LIKE STRUCTURES. ELECTRON DIFFRACTION ANALYSES HAVE IDENTIFIED ACTINIDE DIOXIDES, THE CONSTITUENTS OF STAINLESS STEEL, AND VARIOUS SODIUM ACTINATES (URANATES AND ZIRCONATES). X-RAY ANALYSES WERE NOT SENSITIVE ENOUGH TO VERIFY PRESENCE OF SODIUM URANATES OR PLUTONATES.

NATIONAL TECHNICAL INFORAMTION SERVICE, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA 22161

149911 *CONTINUED*
REACTOR, LMFBR + AEROSOL + *AEROSOL PROPERTIES + PARTICLE SIZE + PROPERTY, CHEMICAL + PROPERTY, PHYSICAL + EXPERIMENT + NRC-7

147914
SHAW DT + WEGRZYN J
EXPERIMENTAL INVESTIGATION OF AEROSOL BEHAVIOR IN A POST-LMFBR ACCIDENT REACTOR CONTAINMENT ATMOSPHERE
STATE UNIV. OF N.Y. AT BUFFALO
NUREG/CR-0799 +. 45 PPS. 2 TABS. 10 FIGS. 5 REFS. APRIL 1979

THE GOALS OF THIS RESEARCH ARE: (1) TO SUPPLY TECHNICAL DATA THAT IS TO BE INCORPORATED INTO THE HAARM-3 CODE OF THE BATTELLE-COLUMBUS LABORATORIES, AND (2) TO STANDARDIZE THE EXPERIMENTAL PROCEDURES IN THE HANDLING AND MEASURING OF SODIUM-OXIDE AEROSOLS. DURING THE PAST YEAR THE FOLLOWING 4 TASKS HAVE BEEN COMPLETED: (1) THE GENERATION, HANDLING AND STUDY OF A DRY SODIUM AEROSOL, (2) THE COMPARISON AND EVALUATION OF TECHNIQUES FOR THE DETERMINATION OF THE VARIOUS SODIUM COMPOUNDS, (3) THE CALIBRATION OF THE IMPACTOR AND CENTRIFUGE FOR A POOL FIRE SODIUM AEROSOL, AND FINALLY (4) THE DETERMINATION OF THE SHAPE FACTOR AND EFFECTIVE DENSITY OF A SODIUM POOL FIRE AEROSOL.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*REACTOR, LMFBR + AEROSOL, RADIOACTIVE + *AEROSOL PROPERTIES + ACCIDENT ANALYSIS + DATA COLLECTION + MEASUREMENT + SODIUM + FIRE + *CONTAINMENT ATMOSPHERE + NRC-7

143956
KRESS TS + WRIGHT AL
LMFBR AEROSOL RELEASE AND TRANSPORT PROGRAM QUARTERLY PROGRESS REPORT FOR JULY - SEPTEMBER 1978
OAK RIDGE NATIONAL LAB., TENN.
NUREG/CR-0482 + ORNL/NUREG/TM-276 +. 37 PPS. 9 TABS. 15 FIGS. 8 REFS. JAN. 1979

THIS PROGRAM IS DESIGNED TO INVESTIGATE RADIONUCLIDE RELEASE AND TRANSPORT FROM LMFBRS FOR REACTOR EVENTS OF SEVERITY UP TO AND INCLUDING HYPOTHETICAL CORE-DISRUPTIVE ACCIDENTS (HCDAS). PROGRAM TOPICS DISCUSSED INCLUDE RECENT CAPACITOR DISCHARGE VAPORIZATION (CDV) TESTS IN THE FUEL AEROSOL SIMULANT TEST (FAST)/CONTAINMENT RESEARCH INSTALLATION (CRI-III) FACILITY, ANALYSIS OF DATA FROM SEVERAL NUCLEAR SAFETY PILOT PLANT (NSPP) MIXED-OXIDE AEROSOL TEST.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

ACCIDENT, HYPOTHETICAL + REACTOR, LMFBR + AEROSOL, RADIOACTIVE + FISSION PRODUCT RELEASE + FISSION PRODUCT TRANSPORT + RADIONUCLIDE TRANSFER + NRC-7

147529
TOBIAS ML
ANALYSIS OF THE HEAT AND MASS TRANSFER PROCESSES OF A URANIUM OXIDE BUBBLE IN SODIUM FOR THE FUEL AEROSOL SIMULANT TEST
OAK RIDGE NATIONAL LAB., TENN.
NUREG/CR-0678 + ORNL/NUREG/TM-307 +. 39 PPS. 9 TABS. FIGS. 17 REFS. MAY 1979

THE ANTICIPATED BEHAVIOR OF URANIUM OXIDE VAPOR BUBBLES PRODUCED BY THE CAPACITOR DISCHARGE VAPORIZATION (CDV) METHOD IN THE FUEL AEROSOL SIMULANT TEST (FAST) FACILITY IS DISCUSSED ON THE BASIS OF RELATIVELY SIMPLE PHYSICAL MODELS. RESULTS OF CALCULATIONS FOR THE RATE OF BUBBLE RISE AND FOR HEAT AND MASS TRANSFER RATES ARE PRESENTED. TRANSFER OF HEAT IN THE SURROUNDING SODIUM IS RAPID ENOUGH THAT SIMPLIFIED MODELS SHOULD BE ADEQUATE. NO IMPORTANT EFFECTS WERE NOTED IN CONNECTION WITH BUBBLE DEPTH, INITIAL QUANTITY OF UO(2), OR INITIAL SUPERHEAT.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

HEAT TRANSFER ANALYSIS + AEROSOL + AEROSOL PROPERTIES + URANIUM OXIDE + SODIUM + TEMPERATURE + BUBBLE + HEAT TRANSFER, BOILING + HEAT TRANSFER, RADIANT + NRC-7

149681
ADVANCED REACTOR SAFETY RESEARCH QUARTERLY REPORT JANUARY-MARCH 1978
SANDIA LABS., ALBUQUERQUE, N.M.
NUREG/CR-0335 + SAND 78-1421 (VOL. 6) +. 194 PPS. 11 TABS. 72 FIGS. REFS. JAN. 1979

THIS IS A QUARTERLY REPORT OF THE ADVANCED REACTOR SAFETY RESEARCH PROGRAM. THE OVERALL OBJECTIVE OF THE PROGRAM IS THE PROVISION TO NRC OF A COMPREHENSIVE DATA BASE ESSENTIAL TO (1) DEFINING KEY SAFETY ISSUES, (2) UNDERSTANDING THE CONTROLLING ACCIDENT SEQUENCES, (3) VERIFYING THE COMPLEX COMPUTER MODELS USED IN ACCIDENT ANALYSIS AND LICENSING REVIEWS, AND (4) ASSURING THE PUBLIC THAT ADVANCED POWER REACTOR SYSTEMS WILL NOT BE LICENSED AND PLACED IN COMMERCIAL SERVICE IN THE UNITED STATES WITHOUT APPROPRIATE CONSIDERATION BEING GIVEN TO THEIR EFFECTS ON HEALTH AND SAFETY. SEVEN TASKS HAVE BEEN REPORTED IN THIS REPORT: ENERGETICS, FUEL DYNAMICS, CORE DEBRIS BEHAVIOR - INHERENT RETENTION, AEROSOL SOURCE NORMALIZATION, ELEVATED TEMPERATURE DESIGN ASSESSMENT, LMFBR ACCIDENT DELINEATION, AND TEST AND FACILITY TECHNOLOGY.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

REACTOR, SAFETY RESEARCH + REACTOR, LMFBR + ACCIDENT, LOSS OF FLOW + FUEL SWELLING + ACCIDENT, CORE DISRUPTIVE + INSTRUMENT, TEMPERATURE + CONTAINMENT INTEGRITY + NRC-7

147485
BERGERON ED
THEORETICAL CONSIDERATIONS OF RATE EFFECTS IN UO2
SANDIA LABS., ALBUQUERQUE, N.M.
NUREG/CR-0549 + SAND 78-1745 +. 42 PPS, 12 FIGS, JAN. 1979

THE POSSIBILITY AND CONSEQUENCES OF OBSERVING A NON-EQUILIBRIUM HEAT CAPACITY ARE DISCUSSED. PARTICULAR EMPHASIS IS GIVEN TO UO2 BECAUSE OF SUPPORTING INDIRECT EXPERIMENTAL EVIDENCE. MICROSCOPIC CALCULATIONS ARE PRESENTED WHICH GIVE ESTIMATES FOR THE TIME OF RELAXATION TO EQUILIBRIUM FOR THE HIGH TEMPERATURE SOLID PHASE OF UO2 OF FROM 40 (MU)S TO 20 MS. IN ADDITION, A MICROSCOPIC PICTURE WHICH CAN BE EXTENDED TO THE LIQUID AND VAPOR PHASES IS PRESENTED. THE EFFECT OF SUCH NON-EQUILIBRIUM BEHAVIOR ON EXPERIMENTAL MEASUREMENTS IS MODELED FOR A NUMBER OF DIFFERENT SYSTEMS.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

MODEL TESTING + MODEL + PROPERTY, PHYSICAL + HEAT TRANSFER + HIGH TEMPERATURE + URANIUM + OXIDE + NRC-7

148399
ERDMAN CA + REYNOLDS AB + PILCH M
BUBBLE BEHAVIOR IN LMFBR CORE DISRUPTIVE ACCIDENTS, ANNUAL REPORT OCTOBER 1977-SEPTEMBER 1978
UNIV. OF VA., CHARLOTTESVILLE
NUREG/CR-0604 +. 117 PPS, FIGS, REFS, MARCH 1979

IN THIS REPORT, THREE MAJOR AREAS WERE INVESTIGATED: (1) PARTICLE PRODUCTION BY HYDRODYNAMIC FRAGMENTATION, (2) PARTICLE PRODUCTION BY HOMOGENEOUS NUCLEATION, AND (3) BUBBLE DYNAMICS AND HEAT TRANSFER. DEVELOPMENT OF A MONTE CARLO COMPUTER CODE FOR THE ANALYSIS OF PARTICLE-SIZE DISTRIBUTIONS FROM VAPOR-LIQUID HYDRODYNAMIC FRAGMENTATION WAS INITIATED. THE SOURCE OF HOMOGENEOUS NUCLEATION IN THE ORNL CDV TEST WAS POSTULATED TO BE EXPANSION BEHIND A SPHERICAL SHOCK WAVE AND MODELING OF THIS PHENOMENON WAS INITIATED.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

REACTOR, LMFBR + ACCIDENT, CORE DISRUPTIVE + HYDRODYNAMIC ANALYSIS + AEROSOL + TEMPERATURE + BUBBLE + NRC-7 + VAPOR PRESSURE + FLOW, TWO PHASE

8. R8 - ADVANCED REACTOR SAFETY RESEARCH, GAS-COOLED REACTORS

147114
ROMANO AJ
REACTOR SAFETY RESEARCH PROGRAMS QUARTERLY PROGRESS REPORT JULY 1-SEPTEMBER 30, 1978
BROOKHAVEN NATIONAL LAB., UPTON, N.Y.
NUREG/CR-0513 + BNL-NUREG-50931 +. 215 PPS, TABS, FIGS, NOV. 1978

THE REACTOR SAFETY RESEARCH PROGRAMS QUARTERLY PROGRESS REPORT DESCRIBES CURRENT ACTIVITIES AND TECHNICAL PROGRESS IN THE PROGRAMS AT BROOKHAVEN NATIONAL LABORATORY SPONSORED BY THE USNRC REACTOR SAFETY RESEARCH DIVISION. THE PROJECTS REPORTED EACH QUARTER ARE THE FOLLOWING: GAS REACTOR SAFETY EVALUATION, THOR CODE DEVELOPMENT, CODE REVIEW, SSC CODE DEVELOPMENT, LMFBR AND LWR SAFETY EXPERIMENTS, FAST REACTOR SAFETY CODE VALIDATION, STRESS CURROSION CRACKING PWR STEAM GENERATOR TUBING, AND TECHNICAL COORDINATION OF STRUCTURAL INTEGRITY.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*SAFETY ANALYSIS + *REACTOR, HTGR + COMPUTER PROGRAM + *REACTOR, LMFBR + *REACTOR, LWR + REACTOR, FAST + EXPERIMENT + STRESS CORROSION + STEAM GENERATOR + TUBING + REACTOR, PWR + STRUCTURAL INTEGRITY + NRC-4 + NRC-7 + NRC-8

149841
ROMANO AJ
REACTOR SAFETY RESEARCH PROGRAMS QUARTERLY PROGRESS REPORT OCTOBER 1-DECEMBER 31, 1978
BROOKHAVEN NATIONAL LAB., UPTON, N.Y.
NUREG/CR-0688 + BNL-NUREG-50978 +. 197 PPS, TABS, FIGS, REFS, FEB. 1979

THIS REPORT IS THE NINTH OF A SERIES OF QUARTERLY REPORTS. THE PROJECTS REPORTED ARE THE FOLLOWING: GAS REACTOR SAFETY EVALUATION, THOR CODE DEVELOPMENT, CODE REVIEW, SSC CODE DEVELOPMENT, LMFBR AND LWR SAFETY EXPERIMENTS, FAST REACTOR SAFETY CODE VALIDATION, AND STRESS CORROSION CRACKING PWR STEAM GENERATOR TUBING.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

REACTOR, HTGR + REACTOR, LMFBR + REACTOR, PWR + COMPUTER PROGRAM + SAFETY ANALYSIS + GRAPHITE + TESTING + STRUCTURAL INTEGRITY + SODIUM + POOL BOILING + STEAM GENERATOR + TUBING + STRESS CORROSION + CRACK + NRC-4 + NRC-7 + NRC-8

149840
ROMANO AJ
ADVANCED REACTOR SAFETY RESEARCH DIVISION QUARTERLY PROGRESS REPORT JANUARY 1-MARCH 31, 1979
BROOKHAVEN NATIONAL LAB., UPTON, N.Y.
NUREG/CR-0820 + BNL-NUREG-51014 +. 130 PPS, FIGS, REFS, MAY 1979

THIS REPORT IS THE FIRST OF A SERIES COVERING HTGR SAFETY EVALUATION, SSC CODE DEVELOPMENT, LMFBR SAFETY EXPERIMENTS, AND FAST REACTOR SAFETY CODE VALIDATION.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*REACTOR, HTGR + *REACTOR, LMFBR + COMPUTER PROGRAM + FISSION PRODUCT RELEASE + SAFETY ANALYSIS + GRAPHITE + TESTING + STRUCTURAL INTEGRITY + SODIUM + POOL BOILING + NRC-7 + NRC-8

145746
JACKSON JF + STEVENSON MG
NUCLEAR REACTOR SAFETY QUARTERLY PROGRESS REPORT APRIL 1 - JUNE 30, 1978
LOS ALAMOS SCIENTIFIC LAB., N.M.
NUREG/CR-0385 + LA-7481-PR +. 183 PPS, 23 TABS, 116 FIGS, 63 REFS, OCT. 1978

SEVERAL IMPROVEMENTS WERE MADE TO THE TRAC LWR SAFETY CODE DURING THE PAST QUARTER. THESE INCLUDED A FULLY IMPLICIT HYDRODYNAMICS OPTION FOR THE TEE MODULE AND A ONE-DIMENSIONAL, TWO-FLUID HYDRODYNAMICS PACKAGE. THE SIMMER-II CODE WAS USED IN SEVERAL LMFBR CORE DISRUPTIVE ACCIDENT ANALYSIS (CDA) AND VERIFICATION STUDIES. IN HTGR SAFETY RESEARCH, THE DASH FISSION PRODUCT DIFFUSION AND DECAY CODE WAS COMPLETED, AND CODE RESULTS WERE COMPARED TO ANALYTIC TEST PROBLEMS WITH GOOD AGREEMENT.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*COMPUTER PROGRAM + HYDRODYNAMIC ANALYSIS + REACTOR, LWR + REACTOR, LMFBR + ACCIDENT, CORE DISRUPTIVE + REACTOR, HTGR + FISSION PRODUCT TRANSPORT + CONTAINMENT ANALYSIS + ACCIDENT, LOSS OF COOLANT + *SAFETY ANALYSIS + NRC-4 + NRC-5 + NRC-7 + NRC-8

148409
JACKSON JF + STEVENSON MG
NUCLEAR REACTOR SAFETY QUARTERLY PROGRESS REPORT JULY 1-SEPTEMBER 30, 1978
LOS ALAMOS SCIENTIFIC LAB., N.M.
NUREG/CR-0522 + LA-7567-PR +. 136 PPS, 20 TABS, 106 FIGS, 49 REFS, DEC. 1978

SUMMARIZES PROGRESS AT LOS ALAMOS ON NUCLEAR REACTOR SAFETY RESEARCH AIMED AT PROVIDING UNDERSTANDING OF THE RESPONSE OF NUCLEAR REACTOR SYSTEMS UNDER ACCIDENT CONDITIONS. DEVELOPMENT OF THE TRAC LWR SAFETY CODE CONTINUED DURING THE LAST QUARTER, WITH THE FINAL PROGRAM STRUCTURE CHANGES BEING COMPLETED FOR THE TRAC-P1A VERSION. LMFBR SAFETY STUDIES INCLUDED COMPLETION OF A

148409 *CONTINUED*
SIMMER-II SENSITIVITY STUDY OF A VOIDED CORE POSTDISASSEMBLY EXPANSION PROBLEM. STRUCTURAL INVESTIGATIONS IN THE HTGR SAFETY RESEARCH AREA INCLUDED COMPLETION OF SINGLE IMPACT TESTS OF GRAPHITE AND PLASTIC MODEL BLOCKS. IN THE GCFR CORE DISRUPTIVE TEST PROGRAM, POSTMORTEM EXAMINATIONS OF THE FLS-1 37-PIN DISRUPTIVE TEST WERE CONDUCTED.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*SAFETY ANALYSIS + *ACCIDENT ANALYSIS + REACTOR, LWR + COMPUTER PROGRAM + HYDRODYNAMIC ANALYSIS + REACTOR, LMFBR + ACCIDENT, CORE DISRUPTIVE + REACTOR, HTGR + STRUCTURAL ANALYSIS, DYNAMIC + REACTOR, GCFR + FUEL ELEMENTS + NRC-4 + NRC-7 + NRC-8

148502
APPERSON CE + LEE CE + CARRUTHERS LM
DASH: A MULTICOMPONENT TIME DEPENDENT CONCENTRATION DIFFUSION WITH RADIOACTIVE DECAY PROGRAM
LOS ALAMOS SCIENTIFIC LAB., N.M.
NUREG/CR-0776 + LA-7793-MS +. 90 PPS, 11 TABS, 22 FIGS, 15 REFS, APRIL 1979

THE MULTICOMPONENT TIME-DEPENDENT DIFFUSION WITH RADIOACTIVE DECAY PROBLEM WHICH ARISES IN THE STUDY OF HIGH-TEMPERATURE GAS-COOLED REACTORS FISSION PRODUCT MIGRATION IS SOLVED IN ONE-DIMENSIONAL GEOMETRIES. THE SPATIAL MULTICOMPONENT DIFFUSION OPERATOR IS NUMERICALLY REPRESENTED BY A CONSERVATIVE FINITE DIFFERENCE APPROXIMATION. AN ANALYTIC TIME-DEPENDENT SOLUTION IS ACHIEVED USING A MATRIX OPERATOR METHOD. COMPARISONS OF THE ANALYTIC-NUMERICAL SOLUTION METHOD WITH A VARIETY OF ANALYTIC SOLUTIONS GIVE EXCELLENT AGREEMENT. THIS SOLUTION TECHNIQUE HAS BEEN INCORPORATED INTO AN ALGORITHM FOR USE IN A COMPUTER CODE, DASH. THE HOLDUP OF (EXP 90)SR BY GRAPHITE IS CALCULATED.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

COMPUTER PROGRAM + REACTOR, HTGR + FISSION PRODUCT TRANSPORT + DIFFUSION + CONCENTRATION + NRC-8

149269
JACKSON JF + STEVENSON MG
NUCLEAR REACTOR SAFETY QUARTERLY PROGRESS REPORT OCTOBER 1-DECEMBER 31, 1978
LOS ALAMOS SCIENTIFIC LAB., N.M.
NUREG/CR-0762 + LA-7769-PR +. 216 PPS, 17 TABS, 112 FIGS, 80 REFS, MAY 1979

THE LWR SAFETY COMPUTER CODE, TRAC-P1A, WAS COMPLETED DURING THIS QUARTER. CONSIDERABLE PROGRESS WAS ALSO MADE TOWARD THE COMPLETION OF THE SET OF EXPERIMENTAL ASSESSMENT CALCULATIONS THAT IS TO ACCOMPANY THE PUBLIC RELEASE OF THE CODE. A NUMERICAL STUDY OF SCALE EFFECTS ON ECC BYPASS WAS PERFORMED WITH THE K-TIF CODE. SIMMER LMFBR DISRUPTED CORE ANALYSIS CODE DEVELOPMENT AND APPLICATIONS WORK REPORTED IN THIS QUARTER INCLUDES IMPROVEMENTS IN THE ANALYTIC EQUATION-OF-STATE AND IN THE PRESSURE AND COMPONENT DENSITY SOLUTION ITERATION TECHNIQUE. IN THE HTGR SAFETY RESEARCH WORK, THE LAST IN A SERIES OF ONE-DIMENSIONAL CORE BLOCK SYSTEM MODEL SEISMIC RESPONSE TESTS WAS COMPLETED.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

LASL + SAFETY ANALYSIS + REACTOR, LWR + COMPUTER PROGRAM + EMERGENCY COOLING + REACTOR, LMFBR + ACCIDENT, CORE DISRUPTIVE + ANALYTICAL TECHNIQUE + REACTOR, HTGR + SEISMIC DESIGN + NRC-4 + NRC-7 + NRC-8

149676
JACKSON JF + STEVENSON MG
NUCLEAR REACTOR SAFETY QUARTERLY PROGRESS REPORT JANUARY 1-MARCH 31, 1979
LOS ALAMOS SCIENTIFIC LAB., N.M.
NUREG/CR-0868 + LA-7867-PR +. 171 PPS, 29 TABS, 107 FIGS, 57 REFS, JUNE 1979

AN IMPORTANT MILESTONE WAS REACHED THIS QUARTER WITH THE RELEASE OF THE TRAC-L1A LWR SAFETY ANALYSIS CODE TO THE NATIONAL ENERGY SOFTWARE CENTER. THE SIMMER LMFBR DISRUPTED CORE ANALYSIS CODE WAS USED FOR THE FIRST TIME TO EXAMINE THE POSTDISASSEMBLY EJECTION OF PRIMARY SYSTEM MATERIALS INTO THE REACTOR CONTAINMENT BUILDING. IN HTGR SAFETY WORK, SEISMIC TESTS ON A TWO-DIMENSIONAL PLASTIC CORE BLOCK MODEL WERE PERFORMED. PREPARATION CONTINUED FOR A SECOND 37-ROD FULL-LENGTH SUBGROUP (FLS) EXPERIMENT SIMULATING LOSS-OF-COOLING IN A GCFR SUBASSEMBLY. IN THE AREA OF REACTOR CONTAINMENT EVALUATION, THE COMPARE CODE WAS FURTHER EVALUATED.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*LASL + *REACTOR, LWR + SAFETY ANALYSIS + COMPUTER PROGRAM + REACTOR, LMFBR + ACCIDENT, CORE DISRUPTIVE + REACTOR, HTGR + SEISMIC DESIGN + REACTOR, GCFR + ACCIDENT, LOSS OF COOLANT + EXPERIMENT + CONTAINMENT ANALYSIS + NRC-7 + NRC-8 + NRC-4

149846
BALL SJ + CLEVELAND JC + CONKLIN JC
HIGH-TEMPERATURE GAS-COOLED REACTOR SAFETY STUDIES FOR THE DIVISION OF REACTOR SAFETY RESEARCH QUARTERLY PROGRESS REPORT, JULY 1-SEPTEMBER 30, 1978
OAK RIDGE NATIONAL LAB., TENN.
NUREG/CR-0592 + ORNL/NUREG/TM-293 +. 17 PPS, 9 TABS, 2 FIGS, 12 REFS, FEB. 1979

FURTHER ASSISTANCE WAS PROVIDED TO THE NRC IN CONFIRMING EMERGENCY CORE COOLING SYSTEM ANALYSES OF THE FORT ST. VRAIN (FSV) REACTOR IN SUPPORT OF A 100% POWER LICENSE APPLICATION. COMPARISONS OF

149846 *CONTINUED*
FSV DATA FROM A SCRAM TEST AT 50% POWER WITH ORECA CODE PREDICTIONS WERE ALSO MADE. OTHER WORK INCLUDED FURTHER DEVELOPMENT OF THE FSV SIMULATION CODES.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*REACTOR, HTGR + COMPUTER PROGRAM + FT. ST. VRAIN (HTGR) + REACTOR POWER + LICENSING PROCESS + OSCILLATION + THERMAL HYDRAULIC ANALYSIS + ACCIDENT ANALYSIS + NRC-8

147492
BALL SJ + CLEVELAND JC + CONKLIN JC
HIGH-TEMPERATURE GAS-COOLED REACTOR SAFETY STUDIES FOR THE DIVISION OF REACTOR SAFETY RESEARCH QUARTERLY PROGRESS REPORT, OCTOBER 1-DECEMBER 31, 1978
OAK RIDGE NATIONAL LAB., TENN.
NUREG/CR-0716 + ORNL/NUREG/TM-314 +. 17 PPS, 4 FIGS, 15 REFS, APRIL 1979

FURTHER DEVELOPMENT OF THE ORECA CODE WAS DONE BASED ON ANALYSES OF FORT ST. VRAIN (FSV) REACTOR TEST DATA. WORK ALSO CONTINUED ON UPGRADING ORTAP, BLAST, AND FLODIS CODES. PRELIMINARY REVERSE-FLOW PLUME EXPERIMENTS FOR INVESTIGATING THE FSV UPPER PLENUM COVER PLANT HEATING PHENOMENON WERE CONTINUED. FURTHER ASSISTANCE WAS GIVEN TO NRC ON FSV QUESTIONS RELATING TO THEIR 100% POWER LICENSE APPLICATION AND THE OSCILLATION PROBLEM.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*REACTOR, HTGR + COMPUTER PROGRAM + THERMAL HYDRAULIC ANALYSIS + FT. ST. VRAIN (HTGR) + REACTOR POWER + LICENSING PROCESS + OSCILLATION + NRC-8

9. RH - HEALTH SAFETY RESEARCH

147045
STENGE DL + SOLDAT JK + WATSON EC
A REVIEW OF METHODOLOGY FOR ACCIDENT CONSEQUENCE ASSESSMENT
BATTELLE PACIFIC NORTHWEST LABS., RICHLAND, WASH.
NUREG/CR-0545 + PNL-2633 +. 65 PPS. REFS. SEPT. 1978

THIS REPORT REVIEWS CURRENT METHODOLOGIES FOR REACTOR ACCIDENT CONSEQUENCE ANALYSIS AND DESCRIBES AREAS WHERE MODIFICATIONS ARE WARRANTED. METHODOLOGIES REVIEWED ARE: MODELS IN REGULATORY GUIDES 1.109, 1.111 AND 1.113 USED FOR EVALUATION OF COMPLIANCE WITH 10 CFR 50 APPENDIX I. MODELS IN REGULATORY GUIDES USED FOR EVALUATION OF CONSEQUENCES FROM ACCIDENTS OF CLASSES 3-8, MODELS FOR EVALUATION OF CLASS 9 ACCIDENTS PRESENTED IN THE REACTOR SAFETY STUDY, AND MODELS IN THE LIQUID PATHWAY GENERIC STUDY. THE REVIEW IS DESIGNED TO AID IN THE ULTIMATE GOAL OF SELECTION OF A COMPREHENSIVE SET OF MODELS TO EXTEND THE CLASS 9 METHODOLOGY OF THE REACTOR SAFETY STUDY TO THE ANALYSIS OF CLASSES 3-8 ACCIDENTS.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

SAFETY REVIEW + *ACCIDENT, CONSEQUENCES + *ANALYTICAL TECHNIQUE + ANALYTICAL MODEL + COMPUTER PROGRAM + *RADIOACTIVITY RELEASE + AIRBORNE RELEASE + POPULATION EXPOSURE + DOSE CALCULATION, EXTERNAL + DOSE CALCULATION, INTERNAL + EFFECT, SOMATIC + EFFECT, GENETIC + CRITICAL NUCLIDE PATHWAY + ECONOMICS + DECONTAMINATION + NRC-RH

145804
ENDRES GWR + SHIPLER DB
FINAL REPORT SEPTEMBER 1975 - SEPTEMBER 1978: RADIATION DOSE TO CONSTRUCTION WORKERS AT OPERATING NUCLEAR POWER PLANTS - VOLUME 1
BATTELLE PACIFIC NORTHWEST LABS., RICHLAND, WASH.
NUREG/CR-0426 (VOL. 1) + PNL-2773 (VOL. 1) +. 105 PPS, 18 TABS, 55 FIGS, DEC. 1978

THIS STUDY WAS DEVELOPED TO MEASURE AND EVALUATE RADIATION EXPOSURE AND EXPOSURE RATES RECEIVED BY CONSTRUCTION WORKERS AT VARIOUS REACTOR SITES WHERE ONE OR MORE REACTORS ARE OPERATING WHILE CONSTRUCTION IS PROCEEDING ON ONE OR MORE ADDITIONAL REACTORS. THIS STUDY PROVIDES A DATA BASE (1) FROM WHICH A REALISTIC ASSESSMENT OF RADIOLOGICAL IMPACT CAN BE MADE FOR THE CONSTRUCTION WORKERS OF PROPOSED MULTIUNIT NUCLEAR POWER PLANTS AND (2) TO HELP ARRIVE AT A DECISION AS TO WHETHER INCREASED CONTROL OF THE RADIATION EXPOSURE OF THESE WORKERS IS WARRANTED. FOUR NUCLEAR SITES WERE INCLUDED IN THIS STUDY AFTER APPROVAL OF THE OPERATING UTILITIES WAS RECEIVED.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*PERSONNEL EXPOSURE, RADIATION + *DATA COLLECTION + POWER PLANT, NUCLEAR + OPERATION + CONSTRUCTION + DOSE + MONITORING SYSTEM, RADIATION + *CONSTRUCTION PERSONNEL + NRC-RH

146967
ENDRES GWR + SHIPLER DB
FINAL REPORT SEPTEMBER 1975-SEPTEMBER 1978: RADIATION DOSE TO CONSTRUCTION WORKERS AT OPERATING NUCLEAR POWER PLANT SITES - VOL. 2, APPENDICES A-F
BATTELLE PACIFIC NORTHWEST LABS., RICHLAND, WASH.
NUREG/CR-0426(VOL.2) + PNL-2773(VOL.2) +. 197 PPS, FIGS, DEC. 1978

CONTAIN THE DOSIMETRY PROCEDURES AND DETAILS OF THE PERSONNEL AND ENVIRONMENTAL DOSIMETERS USED FOR THE RADIATION DOSE TO CONSTRUCTION WORKERS AT OPERATING NUCLEAR POWER PLANT SITES STUDY. A PRINTOUT OF THE COMPUTER CODES USED TO ANALYZE DOSIMETER DATA IS INCLUDED ALONG WITH ALL THE RAW DATA OBTAINED. APPENDICES C THROUGH F CONTAIN COMPUTER OUTPUT AND LOG-NORMAL PLOTS OF DOSIMETRY DATA FOR ENVIRONMENTAL LOCATION AND CONSTRUCTION WORKER GROUPS. (GTM)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

POWER PLANT, NUCLEAR + REACTOR, PWR + REACTOR, BWR + *PERSONNEL EXPOSURE, RADIATION + *CONSTRUCTION + *DATA COLLECTION + DATA PROCESSING + DOSE + DOSE CALCULATION, EXTERNAL + DOSE CALCULATION, INTERNAL + NRC-RH

147801
HELGESON GL
IN VIVO COUNTING AT SELECTED URANIUM MILLS, FINAL REPORT FEBRUARY 1977-SEPTEMBER 1977
HELGESON NUCLEAR SERVICES INC., PLEASANTON, CALIF.
NUREG/CR-0841 +. 77 PPS, 15 TABS, 28 FIGS, 19 REFS, MAY 1979

DURING THE PERIOD OF FEBRUARY THROUGH SEPTEMBER, 1977, HELGESON NUCLEAR SERVICES, INC. MEASURED WORKERS AT NINE URANIUM MILLS IN WYOMING, UTAH, AND NEW MEXICO FOR NATURAL URANIUM DEPOSITED IN THE LUNG AND RADIUM DEPOSITED IN THE SKELETON. NO WORKERS SHOWED THE MAXIMUM PERMISSIBLE BODY BURDEN, WHICH IS 26 MILLIGRAMS. URANIUM LUNG MEASUREMENTS CAN BE MADE SUCCESSFULLY AT MILL SITES. HOWEVER, THE MINIMUM DETECTABLE ACTIVITY WAS SIGNIFICANTLY POORER AT SOME LOCATIONS WHERE THE LUNG COUNTER WAS LOCATED NEAR TAILINGS PILES, ORE PILES, OR RESIDUALS OF THESE.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*URANIUM + *MILLING + *PERSONNEL EXPOSURE, RADIATION + INGESTION + LUNG + BODY BURDEN + DATA COLLECTION + MEASUREMENT + THORIUM + RADIUM + NRC-RH

145769

145769 *CONTINUED*
MEWHINNEY JA
RADIATION DOSE ESTIMATES AND HAZARD EVALUATIONS FOR INHALED AIRBORNE RADIONUCLIDES ANNUAL PROGRESS REPORT JULY 1, 1977-JUNE 30, 1978
LOVELACE BIOMEDICAL & ENVIRONMENTAL RESEARCH INST., ALBUQUERQUE, N.M.
NUREG/CR-0673 + LF-63 +. 79 PPS. TABS. FIGS. MARCH 1979

THE OBJECTIVE OF THIS REPORT IS TO CONDUCT CONFIRMATORY RESEARCH ON AEROSOL CHARACTERISTICS WHICH MAY MODIFY THE BIOLOGICAL FATE, PATTERNS OF RADIATION DOSE, AND PREDICTED HEALTH CONSEQUENCES OF AIRBORNE RADIOACTIVITY WHICH MAY BE RELEASED IN NORMAL OPERATIONS OR UNDER ACCIDENT CONDITIONS IN THE NUCLEAR FUEL CYCLE. THIS REPORT SUMMARIZES RESEARCH PROGRESS DURING THE PERIOD JULY 1, 1977 TO JUNE 30, 1978. DURING THIS PERIOD, ANOTHER TRIP WAS MADE TO THE BABCOCK AND WILCOX MIXED-OXIDE FUEL FABRICATION FACILITY FOR THE PURPOSE OF COLLECTING ADDITIONAL SAMPLES OF MATERIAL FOR STUDY. RESULTS OF THIS TRIP ARE DESCRIBED IN THIS REPORT. A SECOND PAPER DESCRIBES THE RESULTS OF SEVERAL LABORATORY CHARACTERIZATIONS OF MATERIALS COLLECTED AT THE BABCOCK AND WILCOX FACILITY AND THE HANFORD ENGINEERING DEVELOPMENT LABORATORY. INCLUDED ARE DATA ON THE ELEMENTAL AND ISOTOPIC COMPOSITION AND THE CRYSTALLINE PROPERTIES.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

DOSE + *HAZARDS ANALYSIS + *AIRBORNE RELEASE + *INHALATION + AEROSOL + AEROSOL PROPERTIES + AEROSOL, RADIOACTIVE + FUEL CYCLE + RISK + PERSONNEL EXPOSURE, RADIATION + NRC-RH

145868
HALL TM + DODD AM + HAIGHT RF
DETERMINING EFFECTIVENESS OF ALARA DESIGN AND OPERATIONAL FEATURES
UNITED NUCLEAR INDUSTRIES INC., RICHLAND, WASH.
NUREG/CR-0446 + UNI-TR-3 +. 515 PPS. TABS. FIGS. APRIL 1979

PRESENTS AND DEMONSTRATES A METHOD DEVELOPED BY UNITED NUCLEAR FOR DETERMINING WHETHER OCCUPATIONAL RADIATION EXPOSURES IN NUCLEAR POWER REACTORS ARE AS LOW AS IS REASONABLY ACHIEVABLE (ALARA). THE METHOD FOR ALARA ASSESSMENT CONSISTS OF THE FOLLOWING THREE COMPONENTS: (1) APPARENT REDUCTION POTENTIAL (ARP), A RANKING METHOD WHICH CAN BE USED TO SET PRIORITIES FOR EXPOSURE REDUCTION PROJECTS; (2) ACHIEVABILITY INDEX (AI), A COST/BENEFIT ANALYSIS METHOD WHICH CAN BE USED TO JUSTIFY EXPOSURE REDUCTION PROJECTS; AND (3) ASSESSMENT OF ALARA USING A DATA HANDLING COMPUTER CODE WHICH CAN BE USED TO CALCULATE ARP VALUES AND TO ORGANIZE DATA. DEMONSTRATES THE CAPABILITY OF APPLYING THE METHODOLOGY TO A SINGLE PLANT, INTRODUCES THE CONCEPT OF INTER-PLANT COMPARISONS, AND DISCUSSES IMPROVEMENT NEEDED IN THE SYSTEM FOR FULL IMPLEMENTATION. (GTM)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

DESIGN CRITERIA + *RADIATION SAFETY AND CONTROL + POWER PLANT, NUCLEAR + *PERSONNEL EXPOSURE, RADIATION + COST BENEFIT + DATA PROCESSING + REGULATION, NRC + *SAFETY EVALUATION + NRC-RH

10. **RE - ENVIRONMENTAL RESEARCH**

148002
LEWIS BAG
ASBESTOS IN COOLING-TOWER WATERS: FINAL REPORT
ARGONNE NATIONAL LAB., ILL.
NUREG/CR-0770 + ANL/ES-71 +. 91 PPS. 16 TABS. 23 FIGS. REFS. MARCH 1979

WATER DISCHARGES FROM COOLING TOWERS CONSTRUCTED WITH ASBESTOS FILL WERE FOUND TO CONTAIN CHRYSOTILE-ASBESTOS FIBERS AT CONCENTRATIONS RANGING FROM "NONE DETECTED" TO 10(8) FIBERS/LITER (MASS CONCENTRATIONS RANGED TO 37 MU(G)/LITER). THE MAJOR SOURCE OF THESE FIBERS, AT LEAST IN NONURBAN AREAS, APPEARS TO BE THE COMPONENTS OF THE TOWERS RATHER THAN THE AIR DRAWN THROUGH THE TOWERS OR THE MAKEUP WATER TAKEN INTO THE TOWERS FROM NATURAL SURFACE WATERS. SUGGESTED MECHANISMS FOR THE RELEASE OF CHRYSOTILE FIBERS FROM COOLING-TOWER FILL INCLUDE FREEZE-THAW CYCLES AND DISSOLUTION OF THE CEMENT DUE TO ACIDIC COMPONENTS OF THE CIRCULATING WATER. ASH- OR OTHER MATERIAL-SETTLING PONDS WERE FOUND TO REDUCE ASBESTOS-FIBER CONCENTRATIONS IN COOLING-TOWER EFFLUENT.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*COOLING TOWER + *FILTER, ASBESTOS + *EFFLUENT + CHEMICAL REACTION + AIRBORNE RELEASE + AIR + WATER + CODES AND STANDARDS + NRC-RE + ENVIRONMENTAL CONTROL MEASURE

148976
HOLTZMAN RB + URNEZIS PW + PADOVA A
CONTAMINATION OF THE HUMAN FOOD CHAIN BY URANIUM MILL TAILINGS PILES
ARGONNE NATIONAL LAB., ILL.
NUREG/CR-0758 + ANL/ES-69 +. 46 PPS. 19 TABS. 11 FIGS. 38 REFS. APRIL 1979

THIS STUDY WAS UNDERTAKEN TO OBTAIN DATA ON THE POSSIBLE CONTAMINATION OF THE HUMAN FOOD CHAIN BY RADIONUCLIDES IN TAILINGS PILES FROM URANIUM ORE PROCESSING MILLS. THESE DATA ARE TO BE USED FOR A GENERIC ENVIRONMENTAL IMPACT STATEMENT ON URANIUM MILLING OPERATIONS (UMCGES) SPONSORED BY THE U.S. NUCLEAR REGULATORY COMMISSION. THE NUCLIDES OF INTEREST ARE THE LONG-LIVED MEMBERS OF THE U238 DECAY SERIES, NAMEL U238, U234, TH230, RA226, PB210, AND PO210.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

CONTAMINATION + FOOD CHAIN + URANIUM + MILLING + WASTE, RADIOACTIVE + WASTE DISPOSAL + SAMPLING + EXPERIMENT + DOSE + DOSE CALCULATION, INTERNAL + DOSE CALCULATION, EXTERNAL + NRC-RE

145829
ECKER RM + ONISHI Y
ANNUAL PROGRESS REPORT OCTOBER 1977 TO SEPTEMBER 1978 SEDIMENT AND RADIONUCLIDE TRANSPORT IN RIVERS FIELD SAMPLING PROGRAM CATARAUGUS AND BUTTERMILK CREEKS, NEW YORK
BATTELLE PACIFIC NORTHWEST LAB., RICHLAND, WASH.
NUREG/CR-0576 + PNL-2551 +. 65 PPS. 22 TABS. DEC. 1978

THE EFFECT OF SEDIMENT ON THE TRANSPORT OF RADIONUCLIDES IN CATARAUGUS FIELD SAMPLING PROVIDED DATA ON SEDIMENT AND RADIONUCLIDE CHARACTERISTICS IN THE CREEKS TO VERIFY THE USE OF THE SEDIMENT AND RADIONUCLIDE TRANSPORT MODEL, SERATA, FOR NONTIDAL RIVERS. FOR PHASE 1 SAMPLING, 10 TRANSECTS WERE ESTABLISHED TO COLLECT DATA ON FLOW AND CHANNEL, WATER, SEDIMENT, AND RADIONUCLIDE CHARACTERISTICS.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*SEDIMENT + *RADIONUCLIDE + ADSORPTION + COMPUTER PROGRAM + STREAM + LAKE ERIE + RIVER + NFS + SAMPLING + MATERIAL + RADIOISOTOPE + TRANSPORT + NRC-RE + SURFACE WATER, SUSPENDED MATERIAL + SURVEY, ENVIRONMENT

146806
ANDERSON DR + BEAN RM + GIBSON CI
BIOCIDE BY-PRODUCTS IN AQUATIC ENVIRONMENTS ANNUAL REPORT COVERING PERIOD OCTOBER 1, 1977 THROUGH SEPTEMBER 30, 1978
BATTELLE PACIFIC NORTHWEST LABS., RICHLAND, WASH.
NUREG/CR-0504 + PNL-2606 +. 54 PPS. 17 TABS. 16 FIGS. JAN. 1979

MORE ELECTRICAL GENERATING PLANTS ARE BEING BUILT EACH YEAR TO MEET ADDITIONAL DEMANDS FOR ELECTRICITY. ASSUMING THE CONTINUED USE OF CHLORINE AS A BIOCIDE IN POWER PLANTS, THE VOLUME OF CHLORINATED EFFLUENTS ENTERING AQUATIC ENVIRONMENTS WILL INCREASE SIGNIFICANTLY. ASSOCIATED WITH THESE EFFLUENTS WILL BE CHLORINATED (HALOGENATED) ORGANIC BY-PRODUCTS. THIS PROGRAM IS DESIGNED TO FURTHER DEFINE AN INFORMATION BASE THAT CAN BE USED TO DEVELOP OR MODIFY POWER PLANT REGULATIONS CONCERNING CHLORINATION OR HALOGENATION BY-PRODUCTS.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

POWER PLANT, NUCLEAR + POWER PLANT, FOSSIL FUEL + *CHLORINE + *EFFLUENT + EFFECT + *ECOSYSTEM, AQUATIC + DATA COLLECTION + NRC-RE

147475
KALKWARF DR
SOLUBILITY CLASSIFICATION OF AIRBORNE PRODUCTS FROM URANIUM ORES AND TAILINGS PILES
BATTELLE PACIFIC NORTHWEST LABS., RICHLAND, WASH.

147475 *CONTINUED*
NUREG/CR-0530 + PNL-2670 +. 61 PPS, 11 TABS, 26 FIGS, 13 REFS, JAN. 1979

AIRBORNE PRODUCTS GENERATED AT URANIUM MILLS WERE ASSIGNED SOLUBILITY CLASSIFICATIONS FOR USE IN THE ICRP TASK GROUP LUNG MODEL. ASSIGNMENTS WERE BASED ON MEASUREMENTS OF THE DISSOLUTION HALF-TIMES EXHIBITED BY THEIR COMPONENT RADIONUCLIDES IN SIMULATED LUNG FLUID AT 37C. NO SIGNIFICANT DIFFERENCE WAS SEEN BETWEEN THE DISSOLUTION BEHAVIOR OF AIRBORNE SAMPLES AND SIEVED GROUND SAMPLES OF THE SAME PRODUCT, AND OTHER TYPES WERE UTILIZED IN MAKING THE ASSIGNMENTS.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

AIRBORNE RELEASE + AEROSOL + MINING + MILLING + RADIUM + RADON + URANIUM + NRC-RE

147494
ONISHI Y + ARNOLD EM + SERNE RJ
ANNUAL REPORT OCTOBER 1977 TO SEPTEMBER 1978, MATHEMATICAL SIMULATION OF SEDIMENT AND CONTAINMENT TRANSPORT IN SURFACE WATERS
BATTELLE PACIFIC NORTHWEST LABS., RICHLAND, WASH.
NUREG/CR-0658 + PNL-2902 +. 32 PPS, 1 FIG, 32 REFS, JAN. 1979

THE OBJECTIVE OF THIS STUDY FOR FY1978 WERE: 1. TO CONDUCT A CRITICAL REVIEW OF (A) RADIONUCLIDE TRANSPORT MODELS AS WELL AS SEDIMENT TRANSPORT AND REPRESENTATIVE WATER QUALITY MODELS IN RIVERS, ESTUARIES, OCEANS, LAKES AND RESERVOIRS, AND (B) ADSORPTION AND DESORPTION MECHANSIMS OF RADIONUCLIDES WITH SEDIMENTS IN SURFACE WATERS. 2. TO SYNTHESIZE A MATHEMATICAL MODEL CAPABLE OF PREDICTING SHORT- AND LONG-TERM TRANSPORT AND ACCUMULATION OF RADIONUCLIDES IN MARINE ENVIRONMENTS.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*MATHEMATICAL TREATMENT + ANALYTICAL MODEL + TRANSPORT + OCEAN AND SEA + RIVER + ESTUARY + LAKE + SEDIMENT + SURFACE WATER + *RADIONUCLIDE TRANSFER + ADSORPTION + DESORPTION + *SURFACE WATER, SEDIMENT + NRC-RE + ECOSYSTEM, MARINE

147597
JACKSON PO + PERKINS RW + ENDERLINE WI
RADON-222 EMISSIONS IN VENTILATION AIR EXHAUSTED FROM UNDERGROUND URANIUM MINES
BATTELLE PACIFIC NORTHWEST LABS., RICHLAND, WASH.
NUREG/CR-0627 + PNL-2888 +. 53 PPS, 6 TABS, 11 FIGS, MARCH 1979

THE 222RN CONCENTRATION IN EXHAUST AIR IS BEING MEASURED AT UNDERGROUND URANIUM MINES IN THE GRANTS, NEW MEXICO AREA. THE OBJECTIVES OF THE WORK ARE TO DETERMINE RELATIONSHIPS BETWEEN U3O8 PRODUCTION AND THE MINE CHARACTERISTICS AND PRACTICES RELATIVE TO 222RN EMISSION. CONCENTRATIONS IN THE VENT AIR FROM TWO MINES RANGED FROM 80 NANOCURIES/METER CUBED TO 3800 NANOCURIES/METER CUBED DURING A MONTH OF OBSERVATIONS. DIURNAL RADON EMISSION PATTERNS WERE SEEN FROM EACH MINE WHICH WERE INVERSELY RELATED TO BAROMETRIC PRESSURE. THE AVERAGE DIURNAL EMISSION PATTERNS ON WEEKENDS WHEN NO MINING OCCURRED WERE VERY SIMILAR TO THOSE ON WEEKDAYS DURING ACTIVE MINING, INDICATING THAT THE MINING ACTIVITIES HAD LITTLE SHORT-TERM EFFECT ON THOSE RADON EMISSIONS. THIS IS AN INTERIM REPORT GIVING MEASUREMENTS TO DATE.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

URANIUM + *MINING + UNDERGROUND + *RADON + RADIOACTIVITY RELEASE + DATA COLLECTION + AIRBORNE RELEASE + NRC-RE

147558
NIELSON KK + PERKINS RW + SCHWENDIMAN LC
PREDICTION OF THE NET RADON EMISSION FROM A MODEL OPEN PIT URANIUM MINE
BATTELLE PACIFIC NORTHWEST LABS., RICHLAND, WASH.
NUREG/CR-0628 + PNL-2889 +. 17 PPS, 4 TABS, 2 FIGS, 7 REFS, APRIL 1979

RADON EMISSION FROM A MODEL OPEN PIT URANIUM MINING OPERATION HAS BEEN ESTIMATED BY APPLYING RADON EXHALATION FLUXES MEASURED IN AN OPEN PIT URANIUM MINE TO THE VARIOUS AREAS OF THE MODEL MINE. THE MODEL MINE WAS DEFINED BY AVERAGING URANIUM CONCENTRATIONS AND PRODUCTION AND PROCEDURAL STATISTICS FOR EIGHT MAJOR OPEN PIT URANIUM MINES IN THE CASPER, WYOMING AREA. THE RESULTING EMISSION RATES WERE 740 CI/AFR DURING MINING OPERATIONS AND 33 CI/AFR/YR AFTER ABANDONMENT OF THE MINE.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*URANIUM + *MINING + RADIOACTIVITY RELEASE + *RADON + ANALYTICAL MODEL + DATA COLLECTION + PREDICTION + NRC-RE

148933
DISTENFELD C + KLEMISH J
AN AIR SAMPLING SYSTEM FOR EVALUATING THE THYROID DOSE COMMITMENT DUE TO FISSION PRODUCTS RELEASED FROM REACTOR CONTAINMENT
BROOKHAVEN NATIONAL LAB., UPTON, N.Y.
NUREG/CR-0314 + BNL-NUREG-50881 +. 79 PPS, TABS, FIGS, DEC. 1978

ACCIDENT RELEASES OF RADIOACTIVITY FROM FISSION REACTORS WILL CONSIST OF ACTIVE VAPORS AND AEROSOLS. COMPOSITION OF THE RELEASED PLUME OR CLOUD WILL DEPEND ON THE ENERGY OF RELEASE AND FISSION PRODUCT VOLATILITY. IN ACCIDENTS AT WINDSCALE AND SL-1, 131I WAS THE PREDOMINANT ISOTOPE

148933 *CONTINUED*
PRESENT IN BOTH THE INITIAL CLOUD AND LATER RELEASE. THUS AN AIR SAMPLING SYSTEM WAS DEVELOPED FOR EFFICIENT RADIOIODINE COLLECTION.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

DOSE + SAMPLING + FISSION PRODUCT RELEASE + CONTAINMENT + ACCIDENT ANALYSIS + AEROSOL + NRC-RE + THYROID + AIRBORNE RELEASE + FILTER, HEPA + ENVIRONMENT + PERSONNEL EXPOSURE, RADIATION

148177
KLEMISH J + DISTENFELD C
ENVIRONMENTAL RADIOIODINE MONITORING IN CONTROL EXPOSURE EXPECTED FROM CONTAINMENT RELEASE ACCIDENTS
BROOKHAVEN NATIONAL LAB., UPTON, N.Y.
NUREG/CR-0315 + BNL-NUREG-50882 +. 55 PPS, 9 TABS, 20 FIGS, DEC. 1978

CERTAIN ASPECTS OF INTERNAL EXPOSURE ARE CONSIDERED. THEY ARE FIELD ASSESSMENT OF THE EXPOSURE POTENTIAL OF MILK, AND PREDICTIONS OF HUMAN THYROID DOSE COMMITMENT BASED ON DIRECT MEASUREMENTS OF RADIOIODINE INCORPORATED WITHIN THE HUMAN THYROID. THE REPORT IS ORGANIZED IN THE ORDER OF THEIR INTRODUCTION ABOVE STARTING WITH INFERRED MILK RADIOIODINE CONTENT BASED ON MEASUREMENT OF RADIOIODINE IN THE COW THYROID. (EWH)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*ENVIRONMENT + *RADIATION EXPOSURE + PERSONNEL EXPOSURE, RADIATION + DOSE CALCULATION, INTERNAL + *ACCIDENT ANALYSIS + IODINE + THYROID + MILK + NRC-RE

145781
WALLACE A + ROMNEY EB + NISHITA H
BIOLOGICAL TRANSPORT OF RADIONUCLIDES AT LOW LEVEL WASTE STORAGE SITES ANNUAL REPORT OCTOBER 1, 1977 - SEPTEMBER 30, 1978
UNIV. OF CALIF., LOS ANGELES
NUREG/CR-0701 +. 124 PPS, TABS, FIGS, REFS, MARCH 1979

THE MAJOR OBJECTIVE OF THIS YEAR'S WORK UNDER NRC CONTRACT FIN. NO. B3027-6 HAS BEEN TO PROVIDE OR PREPARE TO PROVIDE BACKUP INFORMATION THAT CAN HELP MONITOR LOW-LEVEL WASTE STORAGE FACILITIES. TO ACCOMPLISH THIS MAJOR OBJECTIVE, 8 OBJECTIVES THAT WERE FORMULATED AND ACCOMPLISHED ARE DISCUSSED. LOW-LEVEL WASTE MANAGEMENT STUDIES, SITE VISIT TO MAXEY FLATS, AND THE UPTAKE OF VARIOUS RADIONUCLIDES BY PLANTS ARE DISCUSSED ALSO.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

LOW LEVEL WASTE DISPOSAL + *WASTE STORAGE + WASTE MANAGEMENT + *RADIONUCLIDE TRANSFER + RADIONUCLIDE UPTAKE + MONITORING PROGRAM, ENVIRONMENTAL + NRC-RE + NRC-RW

145770
DYER NC + BUNTING RL + CRONEY ST
GAMMA DOSE MEASUREMENTS AT ZION AND FORT CALHOUN STATIONS
IDAHO NATIONAL ENGINEERING LAB., IDAHO FALLS
NUREG/CR-0755 +. 136 PPS, TABS, FIGS, REFS, APRIL 1979

PRESENTS DATA OBTAINED FROM AN IN-PLANT DOSE-RATE MEASUREMENT STUDY CONDUCTED FOR THE NUCLEAR REGULATORY COMMISSION IN SUPPORT OF THE RADIOLOGICAL ASSESSMENTS BRANCH OF THE OFFICE OF NUCLEAR REACTOR REGULATION. THE OBJECTIVE OF THIS STUDY WAS TO PROVIDE EXPERIMENTAL DATA TO THE NRC FOR EVALUATION OF THE GAMMA RADIATION FIELDS IN PERSONNEL ACCESS AREAS WITHIN OPERATING LWR'S. AS PARTIAL FULFILLMENT OF THIS OBJECTIVE, DATA WERE OBTAINED AT TWO PWR'S ON IN-PLANT GAMMA RADIATION FIELDS IN AREAS SUCH AS INSIDE AND OUTSIDE EQUIPMENT CUBICLES AND SPENT FUEL POOL AREAS. ALSO, AIRBORNE RADIONUCLIDE CONCENTRATIONS WERE MEASURED IN AREAS WHERE PLANT PERSONNEL COULD BE WORKING DURING A REFUELING OUTAGE.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*GAMMA + *DOSE MEASUREMENT, EXTERNAL + DOSE MEASUREMENT, INTERNAL + *DATA COLLECTION + ZION 1 (PWR) + FT. CALHOUN 1 (PWR) + REACTOR, PWR + PERSONNEL EXPOSURE, RADIATION + NRC-RE

147561
HOAGLAND KE + CROCKET L
ANALYSIS OF POPULATIONS OF BORING AND FOULING ORGANISMS IN THE VICINITY OF THE OYSTER CREEK NUCLEAR GENERATING STATION
LEHIGH UNIV., WETLANDS INST., STONE HARBORN, N.J.
NUREG/CR-0812 +. 65 PPS, 26 FIGS, 9 REFS, JUNE 1979

THIS INVESTIGATION IS MONITORING THE LEVELS OF SHIPWORM INFESTATION IN AREAS ADJACENT TO THE OYSTER CREEK NUCLEAR GENERATING STATION, PARTICULARLY ITS WATER INTAKE AND DISCHARGE SYSTEMS. FURTHERMORE, SPECIES COMPOSITION AND BREEDING AND SETTLEMENT OF ALL BORING AND FOULING INVERTEBRATES THAT ASSOCIATE THEMSELVES WITH WOODEN TEST PANELS AT 18 STATIONS ARE BEING FOLLOWED. TEMPERATURE AND SALINITY ARE RECORDED, AND PANELS REMOVED AND ADDED ON A MONTHLY BASIS, EXCEPT AT 4 STATIONS WHERE TEMPERATURE AND SALINITY ARE RECORDED CONSTANTLY. MAJOR FINDINGS ARE REPORTED ON.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

147561 *CONTINUED*
*OYSTER CREEK (BWR) + REACTOR, BWR + *DATA COLLECTION + *ECOSYSTEM, AQUATIC + CONDENSER COOLING SYSTEM + INTAKE + DISCHARGE + TEMPERATURE + SALINITY + NRC-RE

149831
FICKIES RH + FAKUNDINY RH + MCSLEY ET
GEOTECHNICAL ANALYSIS OF SOIL SAMPLES FROM TEST TRENCH AT WESTERN NEW YORK NUCLEAR SERVICE CENTER WEST VALLEY, NEW YORK
N.Y. STATE GEOLOGICAL SURVEY
NUREG/CR-0644 + NYSGS/79-2401 +. 21 PPS, 4 TABS, FIGS, APRIL 1979

IN JULY 1977, A DEEP RESEARCH TRENCH WAS EXCAVATED AND SOIL SAMPLES COLLECTED. THE GLACIAL TILL HORIZONS SAMPLED ARE REPRESENTATIVE OF THE TILL SERVING AS A BURIAL MEDIUM AT THE NEARBY LOW-LEVEL RADIOACTIVE WASTE BURIAL GROUND. THESE LABORATORY ANALYSES AND FIELD OBSERVATIONS INDICATE THAT THE TILL EXPOSED IN THE RESEARCH TRENCH IS A GENERALLY DENSE MIXTURE OF SILT AND CLAY OF LOW TO MEDIUM PLASTICALLY. WITH MINOR AMOUNTS OF FINE TO COARSE SAND AND FINE GRAVEL. THE TILL HAS A GENERALLY LOW COEFFICIENT OF PERMEABILILITY IN THE RANGE OF 10(EXP -7) CM/SEC HORIZONTAL AND 10(EXP -8) CM/SEC VERTICAL. A NETWORK OF VERTICAL FRACTURES EXISTS IN THE UPPER 15 FEET OF "WEATHERED" TILL. THE MAXIMUM DEPTH TO WHICH THESE FRACTURES COULD POSSIBLY PENETRATE IS 50 FEET. (FAH)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

FUEL REPROCESSING + NEW YORK + WASTE DISPOSAL, TERRESTRIAL + SOIL PROPERTY + GEOLOGY + NRC-RE + NRC-RW

127988
HETRICK DM + PATTERSON MR + ERASLAN AH
SEDONE: A COMPUTER CODE FOR SIMULATING TIDAL-TRANSIENT, ONE-DIMENSIONAL HYDRODYNAMIC CONDITIONS AND THREE-LAYER, VARIABLE-SIZE SEDIMENT CONCENTRATIONS IN CONTROLLED RIVERS AND ESTUARIES
OAK RIDGE NATIONAL LAB., TENN.
NUREG/CR-0430 + ORNL/NUREG/TM-256 +. 295 PPS, 4 TABS, 5 FIGS, 4 REFS, FEB. 1979

THE CODE IS PARTICULARLY DESIGNED FOR APPLICATION TO SITE-SPECIFIC PROBLEMS THAT REQUIRE ACCURATE PREDICTIONS OF THE SEDIMENTATION PHENOMENA UNDER SEVERLY REVERSING FLOW CONDITIONS. INPUT DATA TO THE CODE INCLUDES MODIFIED GEOMETRY CONTOURS OF THE CHANNEL CROSS-SECTIONS WITH CORRECTIONS FOR THE EMBAYMENT AREAS, FLOW CONDITIONS AT THE CONTROLLED DAMS, TIDAL CONDITIONS AT THE OCEAN ENDS, RAINFALL CONDITIONS IN THE GEOGRAPHICAL REGION, STREAM FLOW, DRAINAGE FLOW AND GROUND-WATER-SEEPAGE FLOW CONDITIONS, AND THE PHYSICAL PROPERTIES OF THE SEDIMENT SIZE CLASSES THAT DETERMINE THE SETTLING AND RESUSPENSION EFFECTS WHICH CONTROL THE SEDIMENTATION.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

COMPUTER PROGRAM + TRANSIENT + HYDRODYNAMIC ANALYSIS + RIVER + ESTUARY + CONCENTRATION + SEDIMENT + RESUSPENSION + SIMULATION + NRC-RE

144992
MCLEAN RB + GRIFFITH JS + MCGEE MV
THREADFIN SHAD IMPINGEMENT: EFFECT OF COLD STRESS ON A RESERVOIR COMMUNITY
OAK RIDGE NATIONAL LAB., TENN.
NUREG/CR-0637 +. ORNL/NUREG/TM-231 +. 53 PPS, 4 TABS, 15 FIGS, FEB. 1979

BIOLOGICAL AND PHYSICAL PARAMETERS INFLUENCING IMPINGEMENT RATES OF THREADFIN SHAD DURING OCTOBER 1976-APRIL 1977 AT KINGSTON STEAM PLANT ON WATTS BAR RESERVOIR, TENNESSEE WERE IDENTIFIED AND SOME ECOLOGICAL CONSEQUENCES OF THAT IMPINGEMENT WERE ASSESSED. FIELD METHODS INCLUDED (1) INTENSIVE GILL NETTING, (2) TOTAL IMPINGEMENT COUNTS, AND (3) RECORDING OF RIVER TEMPERATURE, FLOW, AND TURBIDITY FROM NOVEMBER 1976 THROUGH APRIL 1977. LABORATORY STUDIES INCLUDED (1) STOMACH CONTENT ANALYSIS OF SAUGER, A THREADIN PREDATOR, (2) TEMPERATURE EFFECTS ON SAUGER DIGESTION RATES, AND (3) FOOD PREFERENCE OF CHANNEL CATFISH.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*ANIMAL, FISH + *MORTALITY + *CONDENSER COOLING SYSTEM + DATA COLLECTION + POWER PLANT, FOSSIL FUEL + TENNESSEE + NRC-RE

145062
BARNTHOUSE LW + DEANGELIS DL + CHRISTENSEN SW
AN EMPIRICAL MODEL OF IMPINGEMENT IMPACT
OAK RIDGE NATIONAL LAB., TENN.
NUREG/CR-0639 + ORNL/NUREG/TM-290 +. 20 PPS, 3 TABS, REFS, FEB. 1979

DESCRIBES A SIMPLE MODEL, DERIVED FROM RICKER'S (1975) THEORY OF FISHING DYNAMICS, THAT CAN BE USED TO ESTIMATE THE IMPACT OF IMPINGEMENT OF JUVENILE FISH BY POWER PLANTS ON YEAR-CLASS ABUNDANCE IN VULNERABLE SPECIES. THE ONLY DATA REQUIRED ARE ESTIMATES OF THE INITIAL NUMBER OF IMPINGEABLE JUVENILES, THE NUMBER IMPINGED AND THE RATE OF TOTAL MORTALITY DURING THE PERIOD OF VULNERABILITY. AN APPLICATION OF THE MODEL USING THE 1974 YEAR-CLASS OF THE HUDSON RIVER STRIPED BASS POPULATION IS PRESENTED.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

MODEL, BIOLOGICAL + *ANIMAL, FISH + POPULATION + MORTALITY + RIVER, HUDSON + SENSITIVITY ANALYSIS + FILTER,

145062 *CONTINUED*
SCREEN + NRC-RE

145834
HETRICK DM + FIELDS DE
HOTSED: A DISCRETE ELEMENT MODEL FOR SIMULATING HYDRODYNAMIC CONDITIONS AND ADSORBED AND DISSOLVED RADIOISOTOPE CONCENTRATIONS IN ESTUARIES
OAK RIDGE NATIONAL LAB., TENN.
NUREG/CR-0440 + ORNL/NUREG/TM-266 +. 252 PPS. 4 TABS. 12 FIGS. MARCH 1979

A PRELIMINARY ONE-DIMENSIONAL MODEL FOR SIMULATING HYDRODYNAMIC. THERMAL. AND DISSOLVED RADIONUCLIDE CONCENTRATIONS IN TIDAL ESTUARIES WAS MERGED WITH AN IMPROVED VERSION OF THE SEDTRN MODEL. A MULTI-SEDIMENT-SIZE CLASS MODEL OF BEDLOAD AND SUSPENDED SEDIMENT TRANSPORT. THE COMBINED PRELIMINARY MODEL IS CALLED HOTSED. DETAILS OF MODEL MODIFICATIONS. THE ADDITION OF PRINTER PLOT OUTPUT CAPABILITY. AND A DISCUSSION OF INPUT AND OUTPUT STRUCTURES ARE INCLUDED. THE HOTSED MODEL IS APPLIED TO THE HUDSON RIVER UNDER TIDAL-TRANSIENT CONDITIONS AND THE TRANSPORT "TAGGED" OR RADIOISOTOPE-BEARING SEDIMENT IS SIMULATED. THE CODE IS DESIGNED SPECIFICALLY FOR APPLICATIONS WITH DOMINANT TIDAL CYCLING.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE. U. S. DEPARTMENT OF COMMERCE. SPRINGFIELD. VA. 22161

COMPUTER PROGRAM + SIMULATION + ESTUARY + RIVER. HUDSON + CONCENTRATION + RADIONUCLIDE + RADIOISOTOPE + SEDIMENT + SURFACE WATER. SUSPENDED MATERIAL + CONCENTRATION + TRANSPORT + NRC-RE

146807
VAN WINKLE W + SUFFERN JS + CHRISTENSEN SW
INCORPORATION OF SUBLETHAL EFFECTS AND INDIRECT MORTALITY IN MODELING POPULATIN-LEVEL IMPACTS OF A STRESS. WITH AN EXAMPLE INVOLVING POWER-PLANT ENTRAINMENT AND STRIPED BASS
OAK RIDGE NATIONAL LAB., TENN.
NUREG/CR-0638 + ORNL/NUREG/TM-288 +. 24 PPS. 2 FIGS. APRIL 1979

THE PROBLEMS INVOLVED IN INCLUDING SUBLETHAL EFFECTS AND INDIRECT MORTAILTIY IN MODELING THE POPULATION-LEVEL IMPACTS OF A STRESS ARE DISCUSSED. INTERACTIONS OF STRESSED INDIVIDUALS AT ONE TROPHIC LEVEL WITH THOSE AT THE NEXT LOWER AND HIGHER TROPHIC LEVELS ARE CONSIDERED. PARTICULARLY WITH REFERENCE TO POWER PLANT ENTRAINMENT AS THE SOURCE OF STRESS. AN EQUATION IS DERIVED FOR THE CONDITIONAL MORTALITY RATE DUE TO A STRESS THAT INCORPORATES BOTH DIRECT AND INDIRECT MORTALITY. THE RELATIONSHIP BETWEEN SETTING STANDARDS AND MODELING POPULATION-LEVEL IMPACTS. AND THE USE OF APPLICATION FACTORS FOR EACH. ARE CONSIDERED.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE. U. S. DEPARTMENT OF COMMERCE. SPRINGFIELD. VA. 22161

ANIMAL. FISH + MORTALITY + EFFECT + THERMAL POLLUTION + ANALYTICAL MODEL + CODES AND STANDARDS + NRC-RE

147037
GAMBLE HB + DOWNING RH + SAUERLENDER OH
EFFECTS OF NUCLEAR POWER PLANTS ON COMMUNICTY GROWTH AND RESIDENTIAL PROPERTY VALVES. FINAL REPORT. SEPTEMBER 30. 1977 - NOVEMBER 15. 1978
PENN. STATE UNIV., UNIVERSITY PARK
NUREG/CR-0454 +. 85 PPS. 19 TABS. 17 FIGS. REFS. APRIL 1979

THIS STUDY TESTED THE HYPOTHESIS THAT NUCLEAR POWER PLANTS ADVERSELY AFFECT NEARBY COMMUNITY GROWTH AND RESIDENTIAL PROPERTY VALUES FROM 1960 TO 1976 FOR 64 MUNICIPALITIES AND MARKET SALES DATA FROM 1975 TO 1977 ON 540 SINGLE FAMILY DWELLINGS FORMED THE DATA BASE. WHICH WAS WITHIN 20 MILES OF 4 NUCLEAR POWER PLANTS IN THE NORTHEAST. ANALYSIS OF DATA SHOWED THAT THE AVERAGED ANNUAL GROWTH RATES WERE INVERSELY RELATED TO DISTANCES FROM THE PLANTS. AND THAT GROWTH RATES FOR THE YEARS FOLLOWING PLANT CONSTRUCTION WERE HIGHER THAN FOR THE YEARS BEFORE PLANT CONSTRUCTION. WITH THE LARGEST GROWTH RATE INCREASE OBSERVED IN THE MOST MUNICIPALITIES. (FAH)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE. U. S. DEPARTMENT OF COMMERCE. SPRINGFIELD. VA. 22161

PILGRIM 1 (BWR) + MILLSTONE 1 (BWR) + OYSTER CREEK (BWR) + GINNA (PWR) + ECONOMICS + GROWTH/DEVELOPMENT + POPULATION + SOCIO/PHILOSOPHICAL CONSIDERATION + NRC-RE

148519
LAMPLEY CM
THE SKYSHINE-II PROCEDURE: CALCULATION OF THE EFFECTS OF STRUCTURE DESIGN ON NEUTRON. PRIMARY GAMMA-RAY AND SECONDARY GAMMA-RAY DOSE RATES IN AIR
RADIATION RESEARCH ASSOCIATES INC., FORT WORTH. TEXAS
NUREG/CR-0781 + RRA-T7901 +. 150 PPS. 12 TABS. 26 FIGS. MAY 1979

SKYSHINE-II. AN UPDATED VERSION OF THE SKYSHINE MONTE CARLO PROCEDURE. PROVIDES A SUBSTANTIAL INCREASE IN VERSATILITY IN THAT THE PROGRAM POSSESSES THE ABILITY TO ADDRESS THREE TYPES OF POINT-ISOTROPIC RADIATION SOURCES: (1) PRIMARY GAMMA RAYS. (2) NEUTRONS. AND (3) SECONDARY GAMMA RAYS. IN ADDITION. THE EMITTED RADIATION MAY NOW BE CHARACTERIZED BY AN ENERGY EMISSION SPECTRUM DEFINED BY THE USER.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE. U. S. DEPARTMENT OF COMMERCE. SPRINGFIELD. VA. 22161

COMPUTER PROGRAM + GAMMA + NEUTRON + MONTE CARLO + SOURCE. POINT + SOURCE. NEUTRON + ENERGY SPECTRUM + NRC-RE + EFFECT. DOSE RATE

144999
GIBBONS JW + ALBERTS JJ + ADRIANO DC + MCLEOD KW
CRITICAL PATHWAYS OF RADIONUCLIDES TO MAN FROM AGRO-ECOSYSTEMS ANNUAL PROGRESS REPORT OCTOBER 1, 1977 - SEPTEMBER 30, 1978
SAVANNAH RIVER LAB., AIKEN, S.C.
NUREG/CR-0536 +. 9 PPS, 5 TABS, 1 FIG, DEC. 1978

THIS PROGRAM IS AIMED AT DETERMINING THE ENVIRONMENTAL BEHAVIOR OF RADIONUCLIDES RELEASED FROM AN OPERATING NUCLEAR FUEL REPROCESSING FACILITY - SAVANNAH RIVER. BASED ON THE RESULTS OF GREENHOUSE POT EXPERIMENTS EVALUATING ROOT UPTAKE OF TRANSURANIC ELEMENTS, THERE APPEARS TO BE LITTLE INCORPORATION OF THE RADIOISOTOPES INTO PLANT TISSUES, ESPECIALLY IN POTENTIALLY EDIBLE TISSUES. ALTHOUGH THERE ARE SLIGHT DIFFERENCES IN UPTAKE RATES WITH TREATED SOILS (LIMED OR LIMED PLUS CHELATE), THESE DIFFERENCES ARE NOT CONSISTENT WITH REGARD TO TREATMENT. PLUTONIUM CONCENTRATIONS IN THE PLANTS ARE ONLY OCCASSIONALLY DETECTABLE WHEN GROWN ON SOILS WITH AS MUCH AS 5 PICOCURIES/GRAM OF PU-238.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*CRITICAL NUCLIDE PATHWAY + *AGRICULTURE + *ECOSYSTEM + SOIL, RADIONUCLIDE MOVEMENT THROUGH + FUEL REPROCESSING + PLANT + SAVANNAH RIVER PLANT + NRC-RE

145806
CHAPMAN DG + LETTERNMAIER DP + SEYMOUR AH
ASSESSING THE IMPACT OF NUCLEAR-POWER PLANTS ON THE ENVIRONMENT, SECOND ANNUAL RESEARCH PROGRESS REPORT
UNIV. OF WASHINGTON, SEATTLE
NUREG/CR-0552 +. 177 PPS, FIGS, REFS, FEB. 1979

THIS DOCUMENT IS THE SECOND ANNUAL REPORT OF PROGRESS ON RESEARCH, INITIATED IN FY 1975, ON MEASURING THE IMPACT OF NUCLEAR-POWER PLANTS ON THE ENVIRONMENT. THE EFFECTS INCLUDE (1) MORTALITY TO FISH AND OTHER ORGANISMS RESULTING FROM IMPINGEMENT AND ENTRAINMENT IN THE COOLING SYSTEM, (2) CHANGES IN BEHAVIORAL AND PHYSIOLOGICAL CHARACTERISTICS OF AQUATIC ANIMALS BY HIGHER TEMPERATURES PRESENT IN THE DISCHARGE PLUME AND (3) TOXIC EFFECTS OF BIOCIDES, HEAVY METALS AND RADIONUCLIDES RELEASED IN THE AQUATIC OR ATMOSPHERIC ENVIRONMENT.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*POWER PLANT, NUCLEAR + *EFFECT + *ENVIRONMENT + ANIMAL, FISH + MORTALITY + DISCHARGE + PLUME BEHAVIOR + ECOSYSTEM, AQUATIC + CHEMICAL TOXICITY + NRC-RE

147482
HOAGLAND KE + CROCKET L
ANALYSIS OF POPULATIONS OF BORING AND FOULING ORGANISMS IN THE VICINITY OF THE OYSTER CREEK NUCLEAR GENERATING STATION - ANNUAL PROGRESS REPORT SEPTEMBER 1, 1977-AUGUST 31, 1978
WETLANDS INST., STONE HARBOR, N.J.
NUREG/CR-0634 +. 110 PPS, 29 TABS, 6 FIGS, MARCH 1979

THE GROWTH, DISTRIBUTION, AND SPECIES COMPOSITION OF MARINE BORERS (PRIMARILY SHIPWORMS) AND FOULING ORGANISMS HAVE BEEN STUDIED AT 20 STATIONS IN THE VICINITY OF THE OYSTER CREEK NUCLEAR GENERATING STATION, BARNEGAT BAY, NEW JERSEY, SINCE APRIL, 1976. THIS REPORT PRESENTS DATA COVERING THE EIGHTH QUARTER OF THE CONTRACT PERIOD TO STUDY THE RELATIONSHIP BETWEEN THE GENERATING STATION AND SEDENTARY MARINE ORGANISM, ESPECIALLY SHIPWORMS. A SHIPWORM OUTBREAK HAS AGAIN OCCURRED IN OYSTER CREEK. THE OVERWHELMINGLY DOMINANT SPECIES IS TEREDO BARTSCHI.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

REACTOR, BWR + *ECOSYSTEM, MARINE + DATA COLLECTION + CONDENSER COOLING SYSTEM + NRC-RE + *OYSTER CREEK (BWR)

11. RT - TRANSPORTATION SAFETY RESEARCH

148503
SHUTTER SL + NISHIMA J + BANDER TJ
MEASURED AND PREDICTED GAS FLOW RATES THROUGH ROUGH CAPILLARIES
BATTELLE PACIFIC NORTHWEST LABS., RICHLAND, WASH.
NUREG/CR-0745 + PNL-2623 +. 89 PPS. TABS. FIGS. JUNE 1979

TO HELP PREDICT THE FLOW OF AIRBORNE PARTICLES THROUGH MICROSCOPIC LEAKS IN PLUTONIUM DIOXIDE SHIPPING CONTAINERS DURING POSTULATED ACCIDENTS, A COMPARATIVE STUDY OF EXPERIMENTAL AND CALCULATED GAS FLOW RATES THROUGH ROUGH METAL MICROCAPILLARIES WAS CARRIED OUT. A COMPUTER MODEL, CODE CAPIL, WAS DEVELOPED TO PREDICT GAS FLOWS. THIS MODEL RIGOROUSLY INCLUDED ENTRANCE AND EXIT LOSSES AS WELL AS ADIABATIC GAS FLOW (INSULATED WALL), MAXIMUM HEAT TRANSFER FLOW (PERFECTLY CONDUCTING WALL) AND ISOTHERMAL FLOW AS OPTIONS IN STUDYING CAPILLARY PARAMETERS (UPSTREAM PRESSURE AND TEMPERATURE AND DOWNSTREAM PRESSURE).

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

COMPUTER PROGRAM + FLOW + PLUTONIUM DIOXIDE + LEAK + LEAK RATE + SHIPPING CONTAINER + FLOW, KNUDSEN + FLOW THEORY AND EXPERIMENTS + NRC-RT

145585
DYNAMIC ANALYSIS TO ESTABLISH NORMAL SHOCK AND VIBRATION OF RADIOACTIVE MATERIAL SHIPPING PACKAGES QUARTERLY PROGRESS REPORT, JULY-SEPTEMBER 1978
HANFORD ENGINEERING DEVELOPMENT LAB., RICHLAND, WASH.
NUREG/CR-0589 + HEDL-TME-78-102 +. 37 PPS. 3 TABS. 12 FIGS. 4 REFS. MARCH 1979

QUARTERLY REPORT DESCRIBES DEVELOPMENT OF NEW CALCULATION SEQUENCE TO SIMULATE THE BEHAVIOR OF THE COUPLER SUBSYSTEM FOR THE CASK-RAIL CAR (HAMMER CAR) AND THE LEAD CAR IN THE GROUP IT IMPACTS (STRUCK CAR) DURING HUMPING OPERATIONS. THIS NEW COUPLER SUBMODAL SIMULATES THE HYSTERESIS-TYPE BEHAVIOR OF FRICTION DRAFT GEARS.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

IMPACT SHOCK + SHIPPING CONTAINER + VIBRATION + STRUCTURAL ANALYSIS, DYNAMIC + TRAIN + SYSTEM ANALYSIS + NRC-RT

148520
FIELDS SR + MECH SJ
DYNAMIC ANALYSIS TO ESTABLISH NORMAL SHOCK AND VIBRATION OF RADIOACTIVE MATERIAL SHIPPING PACKAGES, QUARTERLY PROGRESS REPORT, OCTOBER 1, 1978-DECEMBER 31, 1978
HANFORD ENGINEERING DEVELOPMENT LAB., RICHLAND, WASH.
NUREG/CR-0766 + HEDL-TME 79-3 +. 52 PPS. 3 TABS. 29 FIGS. JUNE 1979

THE FIFTH QUARTERLY REPORT DETAILS THE MODIFICATIONS MADE TO THE BASIC RADIOACTIVE MATERIAL SHIPPING CASK-RAIL CAR DYNAMIC SIMULATOR MODEL (CARDS). REPORT ALSO DETAILS RESULTS OF A SIMULATION RUN THAT WAS MADE TO TEST THE IMPROVED VERSION OF CARDS.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

SHIPPING CONTAINER + SHIPPING ANALYSIS + IMPACT SHOCK + VIBRATION ANALYSIS + STRUCTURAL ANALYSIS, DYNAMIC + NRC-RT

148049
RICE DW + HARRISON FL
COPPER SENSITIVITY OF THE NORTHERN ANCHOVY, ENGRAULIS MORDAX, DURING ITS EARLY LIFE HISTORY
LAWRENCE LIVERMORE LAB., CALIF.
NUREG/CR-0748 + UCRL-52499 +. 26 PPS. 5 TABS. 8 FIGS. REFS. JUNE 1979

THIS STUDY IS PART OF A LARGER RESEARCH PROJECT THAT HAS 3 PURPOSES: (1) TO STUDY THE BEHAVIOR OF POTENTIALLY TOXIC SUBSTANCES INTRODUCED INTO SURFACE WATERS FROM NUCLEAR POWER PLANTS, (2) TO DETERMINE THE MAGNITUDE OF THE IMPACT OF THESE SUBSTANCES ON REPRESENTATIVE ECONOMICALLY IMPORTANT AQUATIC SPECIES, AND (3) TO DEVELOP MODELS TO PREDICT THE BEHAVIOR AND IMPACT OF THESE DISCHARGED SUBSTANCES. THE INITIAL THRUST OF THE RESEARCH HAS BEEN DIRECTED TOWARD INVESTIGATING THE IMPACT OF COOLING SYSTEMS' CORROSION PRODUCTS, IN PARTICULAR COPPER. COPPER IS OF SPECIAL INTEREST BECAUSE OF ITS DOCUMENTED TOXICITY TO AQUATIC ORGANISMS.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*COPPER + *TOXICITY + *EFFLUENT + POWER PLANT, NUCLEAR + CONDENSER COOLING SYSTEM + COOLING TOWER + CORROSION + EFFECT + *AQUATIC ORGANISM + ECOSYSTEM, AQUATIC + NRC-RT

145866
SAGARTZ MJ
IMPACT TESTS ON INCLINED STAINLESS STEEL FINS
SANDIA LABS., ALBUQUERQUE, N.M.
NUREG/CR-0373 + SAND 78-0197 +. 19 PPS. 7 FIGS. 4 REFS. SEPT. 1978

STAINLESS STEEL FIN MODELS INCLUDED AT A 10-DEGREE ANGLE WITH RESPECT TO THE DIRECTION OF IMPACT WERE TESTED AT SANDIA LABORATORIES DROP TABLE TEST FACILITY. FORCE TRANSDUCER AND ACCELEROMETER DATA GAVE LOAD-TIME AND ACCELERATION-TIME DATA FROM WHICH THE PEAK IMPACT FORCE AND ABSORBED ENERGY WERE OBTAINED. RESULTS OF THE TESTS SHOWED THAT THE PEAK DYNAMIC LOAD ON A 10-DEGREE FIN

146866 *CONTINUED*
DUE TO A 13.4 M/S (44 F/S) IMPACT CAN BE MORE THAN THREE TIMES ITS STATIC LOAD CAPACITY AND THAT 10-DEGREE FINS DEFORM BY BUCKLING RATHER THAN BY BENDING OVER. THE ENERGY-ABSORBING CAPACITY OF 10-DEGREE FINS SHOWED SOME DECREASE BUT NO DRAMATIC DIFFERENCE WHEN COMPARED WITH SIMILAR FINS THAT WERE IMPACTED NORMALLY.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

NRC-RT + SHIPPING CONTAINER + IMPACT SHOCK + DESIGN CRITERIA + FIN + STEEL, STAINLESS + TEST, DROP

148488
RHYNE WR + RITZMAN RL + ALLGEIER JP
A SCOPING STUDY OF SPENT FUEL CASK TRANSPORTATION ACCIDENTS
SCIENCE APPLICATIONS INC., OAK RIDGE, TENN.
NUREG/CR-0811 + SAI-OR-79-140-04 +. 143 PPS, 38 TABS, 6 FIGS, JUNE 1979

A SCOPING STUDY OF SPENT FUEL CASK TRANSPORTATION ACCIDENTS WAS PERFORMED TO PROVIDE THE NRC WITH AN ASSESSMENT OF EXISTING INFORMATION AND TO RECOMMEND, ON A PRIORITY BASIS, THE ADDITIONAL INFORMATION THAT SHOULD BE OBTAINED TO ALLOW SPECIFICATION OF INCREASINGLY REALISTIC SOURCE TERMS. THE SCOPE WAS LIMITED TO THE ESCAPE OF RADIONUCLIDES FROM THE CASK TO THE ENVIRONMENT RESULTING FROM SEVERE ACCIDENTS. THE ACCIDENT ENVIRONMENT DEFINITION ASSOCIATED WITH A SEVERE ACCIDENT IS THE STARTING POINT AND WAS SELECTED NOT FOR ITS REALISM BUT TO ALLOW SENSITIVITY STUDIES ON THE REMAINING VARIABLES IN THE ACCIDENT SCENARIO. HOWEVER, GIVEN THIS ACCIDENT *DEFINITION, THE REMAINDER OF THE EVALUATION OF THE ACCIDENT SCENARIOS IS TO BE AS REALISTIC AS* POSSIBLE. INFORMATION WAS FOUND TO BE INADEQUATE TO MAKE CORRELATIONS BETWEEN ACCIDENT SEVERITY AND RADIONUCLIDE RELEASE. GENERALLY, CASK AND FUEL ROD THERMAL-HYDRAULIC DATA AND ANALYTICAL CAPABILITY WERE FOUND TO BE REASONABLY ADEQUATE; HOWEVER, DATA AND ANALYTICAL CAPABILITY FOR EVALUATING STRUCTURAL RESPONSE TO IMPACT ARE NOT. RADIONUCLIDE BEHAVIOR INFORMATION IS ADEQUATE FOR NOBLE GASES BUT GENERALLY INADEQUATE FOR MOST VOLATILE RADIONUCLIDES AND FOR FUEL PARTICULATES. A SERIES OF GAUGING CALCULATIONS WERE PERFORMED TO PERMIT PRIORITIZATION OF THE INFORMATION NEEDS, AND RESEARCH RECOMMENDATIONS WERE MADE IN EIGHT AREAS.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

TRANSPORTATION AND HANDLING + SHIPPING CONTAINER + ACCIDENT ANALYSIS + SHIPPING ANALYSIS + THERMAL HYDRAULIC ANALYSIS + IMPACT SHOCK + SPENT FUEL + NRC-RT

148505
PATTERSON GK + ROZSA RB
DYNSYL: A GENERAL-PURPOSE DYNAMIC SIMULATOR FOR CHEMICAL PROCESSES
LAWRENCE LIVERMORE LAB., CALIF.
NUREG/CR-0679 + UCRL-52561 +. 95 PPS. 13 FIGS. 15 REFS. SEPT. 5. 1978

THE DYNAMIC CHEMICAL PLANT SIMULATION PROGRAM DYNSYL WAS DESIGNED AND IMPLEMENTED TO EVALUATE MATERIAL CONTROL AND ACCOUNTING (MCA) METHODS IN PLANTS THAT HANDLE SPECIAL NUCLEAR MATERIAL. THE PROGRAM CAN BE USED TO GENERATE PROCESS DATA OR TO PROVIDE ESTIMATES OF PROCESS PERFORMANCE; IT SIMULATES BOTH STEADY-STATE AND DYNAMIC BEHAVIOR.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

COMPUTER PROGRAM + ACCOUNTABILITY + THEFT/DIVERSION + SPECIAL NUCLEAR MATERIAL + SIMULATION + NRC-RS

145830
CASTLETON RN + CANDY JV
DYNEST - A DYNAMIC ESTIMATOR CALCULATION PROGRAM
LAWRENCE LIVERMORE LAB., CALIF.
NUREG/CR-0531 + UCRL-52573 +. 114 PPS. TABS. FIGS. FEB. 1979

DYNEST IS A FIRST GENERATION PROGRAM WHICH CALCULATES STATE ESTIMATES OF A (NONLINEAR OR LINEAR) DYNAMIC SYSTEM FROM NOISY MEASUREMENT DATA. PLOTS AND DATA FILES CONTAINING THE ESTIMATES, TOGETHER WITH THEIR CORRESPONDING ERRORS, ARE GENERATED. THE CODE IS A COMPACT IMPLEMENTATION OF THREE SOPHISTICATED ON-LINE STATE ESTIMATION ALGORITHMS: THE EXTENDED KALMAN FILTER, THE ITERATED EXTENDED KALMAN FILTER, AND THE LINEARIZED KALMON FILTER. A FEATURE IS PROVIDED TO CALCULATE THE CRAMER-RAO BOUND FOR LINEAR AND LINEARIZED SYSTEMS.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

DATA PROCESSING + SPECIAL NUCLEAR MATERIAL + COMPUTER PROGRAM + NRC-RS

145594
BENNETT HA + SASSER DW
EASI PROGRAM IMPROVEMENTS FOR HP-67 AND TI-59 CALCULATORS
SANDIA LABS., ALBUQUERQUE, N.M.
NUREG/CR-0350 + SAND 78-0506 +. 59 PPS. 4 FIGS. 3 REFS. AUG. 1978

EASI (ESTIMATE OF ADVERSARY SEQUENCE INTERRUPTION) IS AN EFFECTIVE, SIMPLE METHOD WHICH HAS BEEN DEVELOPED FOR USE IN EVALUATING PHYSICAL SECURITY SYSTEMS. THE USEFULNESS OF THE METHOD IS ENHANCED BY THE FACT THAT IT CAN BE IMPLEMENTED ON A PROGRAMMABLE POCKET CALCULATOR. NEW EASI PROGRAMS FOR THE HEWLETT-PACKARD HP-67 AND THE TEXAS INSTRUMENTS TI-59 CALCULATORS ARE PROVIDED. THESE NEW PROGRAMS STORE THE INPUT DATA FOR SUBSEQUENT RECALL OR CHANGE. THUS, TO PERFORM SENSITIVITY ANALYSES, THE USER MAY SELECTIVELY CHANGE DIFFERENT PARAMETERS STORED IN THE CALCULATOR; IT IS NOT NECESSARY TO REENTER THE ORIGINAL INPUT DATA AS IN PREVIOUSLY DEVELOPED EASI PROGRAMS. THE NEW PROGRAMS ELIMINATE NOT ONLY THE INCONVENIENCE OF REPEATED DATA REENTRY, BUT ALSO THE POTENTIAL SOURCE OF ERROR INHERENT IN DATA ENTRY.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

SAFEGUARDS, NUCLEAR MATERIAL + PHYSICAL PROTECTION SYSTEM + SENSITIVITY ANALYSIS + THEFT/DIVERSION + NRC-RS

147117
CHAPMAN LD
PHYSICAL PROTECTION OF NUCLEAR FACILITIES QUARTERLY PROGRESS REPORT, JANUARY-MARCH 1978
SANDIA LABS., ALBUQUERQUE, N.M.
NUREG/CR-0234 + SAND78-1316 +. 37 PPS. 3 TABS. SEPT. 1978

THIS REPORT DESCRIBES THE STATUS OF THE PHYSICAL PROTECTION OF NUCLEAR FACILITIES PROGRAM AT SANDIA LABORATORIES. NEW ACTIVITIES INCLUDED THE DEVELOPMENT OF GENERIC SABOTAGE FAULT TREES FOR BOILING WATER REACTORS AND PARTICIPATION IN THREE DEPARTMENT OF ENERGY PHYSICAL PROTECTION SYSTEM WORKSHOPS. CONTINUING ACTIVITIES INCLUDED THE APPLICATION OF GENERIC SABOTAGE FAULT TREES TO SPECIFIC NUCLEAR FACILITIES, THE IMPROVEMENT OF THREE PATH-FINDING CODES, AND ADDITIONS TO SEVERAL PHYSICAL PROTECTION SYSTEM EVALUATION CODES.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

SAFEGUARDS, NUCLEAR MATERIAL + PHYSICAL PROTECTION SYSTEM + FAULT TREE ANALYSIS + SABOTAGE + REACTOR, EWR + NRC-RS

147116
RINNE RL
PHYSICAL PROTECTION OF NUCLEAR MATERIAL IN-TRANSIT - QUARTERLY REPORT (JANUARY-MARCH, 1978)
SANDIA LABS., ALBUQUERQUE, N.M.
NUREG/CR-0365 + SAND78-8243 +. 33 PPS. 6 FIGS. 48 REFS. SEPT. 1978

THIS REPORT DESCRIBES THE STATUS OF THE PHYSICAL PROTECTION OF NUCLEAR MATERIAL IN-TRANSIT PROGRAM AT SANDIA LABORATORIES. TWO SIMULATION MODELS HAVE BEEN USED TO EXAMINE THE EFFECTIVENESS OF A VARIETY OF CONVOY OPTIONS. THE SOURCE CODE SIMULATES THE PHYSICAL PROTECTION SYSTEM'S

147116 *CONTINUED*
PERFORMANCE FROM THE AMBUSH UNTIL THE GUARD FORCE IS ABLE TO RETURN FIRE. THE SABRES I CODE SIMULATES THE SUBSEQUENT BATTLE. THE USE OF DECEIT OR INSIDE KNOWLEDGE BY THE ATTACKING FORCE WAS NOT CONSIDERED.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

SAFEGUARDS, NUCLEAR MATERIAL + PHYSICAL PROTECTION SYSTEM + TRANSPORTATION AND HANDLING + MODEL, STOCHASTIC + SIMULATION + NRC-RS

145601
CHAPMAN LD
PHYSICAL PROTECTION OF NUCLEAR FACILITIES QUARTERLY PROGRESS REPORT, APRIL-JUNE 1978
SANDIA LABS., ALBUQUERQUE, N.M.
NUREG/CR-0360 + SAND78-1706 +. 38 PPS, DEC. 1978

THE ACTIVITIES PERFORMED IN THE THIRD QUARTER OF FISCAL YEAR 1978 AS PART OF THE SANDIA LABORATORIES PHYSICAL PROTECTION PROGRAM ARE DESCRIBED. THESE ACTIVITIES INCLUDE FACILITY CHARACTERIZATION FOR NUCLEAR POWER REACTORS, IMPROVEMENTS IN PATHFINDING ALGORITHMS, AND A STUDY OF COMBAT ENGAGEMENTS BETWEEN SMALL NUMBERS OF ADVERSARIES.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

SAFEGUARDS, NUCLEAR MATERIAL + PHYSICAL PROTECTION SYSTEM + NRC-RS

147486
CHAPMAN LD
PHYSICAL PROTECTION OF NUCLEAR MATERIAL IN TRANSIT QUARTERLY PROGRESS REPORT, APRIL-JUNE 1978
SANDIA LABS., ALBUQUERQUE, N.M.
NUREG/CR-0475 + SAND 78-2043 +. 42 PPS, 3 TABS, 12 FIGS, 5 REFS, DEC. 1978

ACTIVITIES AT SANDIA LABORATORIES RELATING TO THE NRC PROGRAM FOR THE PHYSICAL PROTECTION OF NUCLEAR MATERIALS IN TRANSIT ARE FOCUSED ON THE DEVELOPMENT AND REFINEMENT OF SEVERAL COMPUTER MODELS. THE MODELS ARE DESIGNED TO HELP EVALUATE THE IMPACT OF TRUCK CONVOY TACTICS, LOCAL POLICE FORCE DISTRIBUTION, AND DEFENDER WEAPONS AND TACTICS ON THE SAFEGUARDING OF IN-TRANSIT NUCLEAR MATERIAL. THIS PROGRESS REPORT DISCUSSES THE STATUS OF THESE MODELING EFFORTS AND THE CONTRACTUAL SUPPORT SANDIA IS RECEIVING AS PART OF THIS PROGRAM.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

SAFEGUARDS, NUCLEAR MATERIAL + TRANSPORTATION AND HANDLING + PHYSICAL PROTECTION SYSTEM + MODEL, STOCHASTIC + SIMULATION + NRC-RS

145606
CHAPMAN LD
PHYSICAL PROTECTION OF NUCLEAR FACILITIES QUARTERLY PROGRESS REPORT, JULY-SEPTEMBER 1978
SANDIA LABS., ALBUQUERQUE, N.M.
NUREG/CR-0624 + SAND79-0213 +. 23 PPS, JAN. 1979

THIS REPORT DESCRIBES THE PHYSICAL PROTECTION ACTIVITIES AT SANDIA LABORATORIES DURING THE FOURTH QUARTER OF FISCAL YEAR 1978. THESE ACTIVITIES INCLUDE VITAL AREA ANALYSIS FOR NUCLEAR REACTORS, ALGORITHM DEVELOPMENT FOR A NEW PATHFINDING COMPUTER CODE, COMPLETION OF CONTRACTOR-SUPPORTED WORK FOR A GENERIC COMPONENT DATA BASE, REFINEMENT OF TESTS RELATED TO HUMAN PARAMETERS MODELING, AND IMPROVEMENT TO AND DEMONSTRATION OF SEVERAL PHYSICAL PROTECTION SYSTEM EVALUATION COMPUTER CODES.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

SAFEGUARDS, NUCLEAR MATERIAL + PHYSICAL PROTECTION SYSTEM + COMPUTER PROGRAM + NRC-RS

145596
CHAPMAN LD
PHYSICAL PROTECTION OF NUCLEAR MATERIAL IN TRANSIT QUARTERLY PROGRESS REPORT, JULY-SEPTEMBER 1978
SANDIA LABS., ALBUQUERQUE, N.M.
NUREG/CR-0625 + SAND79-0214 +. 28 PPS, 19 FIGS, JAN. 1979

ACTIVITIES AT SANDIA LABORATORIES RELATED TO THE NUCLEAR REGULATORY COMMISSION'S PHYSICAL PROTECTION OF NUCLEAR MATERIAL IN TRANSIT PROGRAM ARE DESCRIBED. ONE OF THE ACTIVITIES WAS FURTHER WORK ON SOURCE, A COMPUTER PROGRAM DESIGNED TO ANALYZE CONVOY AND OTHER DEFENSIVE TACTICS AS THEY PERTAIN TO NUCLEAR MATERIAL SHIPMENTS. IN ADDITION, A COMPUTER CODE CALLED EARS HAS BEEN DEVELOPED TO SIMULATE THE COMMUNICATION SYSTEMS CONTROLLING SUCH SHIPMENTS.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

SAFEGUARDS, NUCLEAR MATERIAL + PHYSICAL PROTECTION SYSTEM + TRANSPORTATION AND HANDLING + SPECIAL NUCLEAR MATERIAL + SIMULATION + NRC-RS

145607
GRANT FH + MINER RJ + ENGI D

145607 *CONTINUED*
A NETWORK MODELING AND ANALYSIS TECHNIQUE FOR THE EVALUATION OF NUCLEAR SAFEGUARDS EFFECTIVENESS
SANDIA LABS., ALBUQUERQUE, N.M.
NUREG/CR-0616 + SAND78-0671 +. 24 PPS, 3 TABS, 6 FIGS, FEB. 1979

THE SAFEGUARDS NETWORK ANALYSIS PROCEDURE (SNAP) PROVIDES A CONVENIENT AND STANDARD ANALYSIS METHODOLOGY FOR THE EVALUATION OF SAFEGUARDS SYSTEM EFFECTIVENESS. THIS IS ACHIEVED THROUGH A STANDARD SET OF SYMBOLS WHICH CHARACTERIZE THE VARIOUS ELEMENTS OF SAFEGUARDS SYSTEMS AND AN ANALYSIS PROGRAM TO EXECUTE SIMULATION MODELS BUILT USING THE SNAP SYMBOLOGY. THE REPORTS PROVIDED BY THE SNAP SIMULATION PROGRAM ENABLE ANALYSTS TO EVALUATE EXISTING SITES AS WELL AS ALTERNATIVE DESIGN POSSIBILITIES. THIS PAPER DESCRIBES THE SNAP MODELING TECHNIQUE AND PROVIDES AN EXAMPLE ILLUSTRATING ITS USE.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

MODEL + SIMULATION + PHYSICAL PROTECTION SYSTEM + NRC-RS + SAFEGUARDS, NUCLEAR MATERIAL

149922
CHAPMAN LD
PHYSICAL PROTECTION OF NUCLEAR MATERIAL IN-TRANSIT QUARTERLY PROGRESS REPORT OCTOBER-DECEMBER 1978
SANDIA LABS., ALBUQUERQUE, N.M.
NUREG/CR-0674 + SAND-79-0535 +. 22 PPS, 3 TABS, 4 FIGS, FEB. 1979

WORK CONTINUED ON DEVELOPMENT OF THE EMERGENCY ASSISTANCE REQUEST SIMULATOR (EARS). THE ADDITION TO EARS OF A COMMERCIAL RADIOTELEPHONE CAPABILITY IS IN THE PRELIMINARY STAGE; ANALYTICAL WORK ON THE ADDITION OF A JAMMING CAPABILITY WAS COMPLETED. SEVERAL SIMULATIONS WERE RUN TO DEMONSTRATE THE CURRENT CAPABILITY OF EARS TO PROVIDE STATISTICAL DATA. THE APPLICABILITY OF THE SAFEGUARDS NETWORK ANALYSES PROCEDURE (SNAP) TO ANALYSIS OF SNM TRANSPORTATION SYSTEMS WAS DEMONSTRATED. ADDITIONAL CAPABILITIES WHICH WOULD ENHANCE THE GENERAL APPLICABILITY OF SNAP TO THE TRANSPORTATION PROBLEM WERE SUGGESTED TO THE NRC.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*SAFEGUARDS, NUCLEAR MATERIAL + SPECIAL NUCLEAR MATERIAL + TRANSPORTATION AND HANDLING + PHYSICAL PROTECTION SYSTEM + SECURITY + ANALYTICAL MODEL + SIMULATION + NRC-RS

148939
CHAPMAN LD
PHYSICAL PROTECTION OF NUCLEAR FACILITIES QUARTERLY PROGRESS REPORT, OCTOBER-DECEMBER 1978
SANDIA LABS., ALBUQUERQUE, N.M.
NUREG/CR-0695 + SAND79-0536 +. 27 PPS, 1 TAB, 4 FIGS, MARCH 1979

PHYSICAL PROTECTION ACTIVITIES AT SANDIA LABORATORIES THIS QUARTER INCLUDED PARTIAL COMPLETION OF THE STANDARDIZED NUCLEAR UNIT POWER PLANT SYSTEM FACILITY CHARACTERIZATION. WORK WAS INITIATED ON A COMPUTER-BASED FAULT TREE PROGRAM WHICH WILL REDUCE THE TIME AND MANPOWER REQUIRED TO TRANSLATE FACILITY AND OPERATIONAL INFORMATION INTO FAULT TREE LOGIC. A NEW COMPUTER CODE, ADPATH, WHICH TRACES BOTH THEFT AND SABOTAGE PATHS INTO A FACILITY HAS BEEN WRITTEN. WORK WAS STARTED ON AN UPDATED PROCESSOR FOR PART OF THE SAFEGUARDS ENGINEERING AND ANALYSIS DATA BASE. PREPARATIONS WERE MADE FOR A DEMONSTRATION OF THE SAFEGUARDS AUTOMATED FACILITY EVALUATION METHODOLOGY TO NUCLEAR REGULATORY STAFF MEMBERS.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

SAFEGUARDS, NUCLEAR MATERIAL + PHYSICAL PROTECTION SYSTEM + FAULT TREE ANALYSIS + COMPUTER PROGRAM + SABOTAGE + NRC-RS

150012
GRANT FH + CHAPMAN LD + ENGI D
SAFEGUARDS NETWORK ANALYSIS PROCEDURE (SNAP)
SANDIA LABS., ALBUQUERQUE, N.M.
NUREG/CR-0725 + SAND79-0617 +. 175 PPS, 7 TABS, 37 FIGS, REFS, MARCH 1979

A GENERAL OVERVIEW OF THE SAFEGUARDS NETWORK ANALYSIS PROCEDURE (SNAP) AND ITS SUBSYSTEMS IS PROVIDED AND THE MODELING PHILOSOPHY UNDERLYING ITS DEVELOPMENT IS DISCUSSED. THE SNAP SYMBOLOGY IS DESCRIBED IN DETAIL AND ITS USE ILLUSTRATED. PROCESSING PROCEDURES FOR SNAP DATA INPUT USED TO SIMULATE NUCLEAR SAFEGUARDS SYSTEMS AND STATISTICAL COLLECTION AND REPORTING METHODS USED TO EVALUATE SYSTEM PERFORMANCE ARE DELINEATED. FINALLY, AN EXAMPLE APPLICATION IS PRESENTED TO ILLUSTRATE THE USE OF SNAP.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*SAFEGUARDS, NUCLEAR MATERIAL + *MODEL + SABOTAGE + STATISTICAL ANALYSIS + NRC-RS

149926
CHAPMAN LD
PHYSICAL PROTECTION OF NUCLEAR MATERIAL IN-TRANSIT QUARTERLY PROGRESS REPORT JANUARY-MARCH 1979
SANDIA LABS., ALBUQUERQUE, N.M.
NUREG/CR-0738 + SAND-79-0651 +. 13 PPS, 1 TAB, APRIL 1979

THE MAJOR IN-HOUSE ACTIVITY RELATED TO THE PHYSICAL PROTECTION OF NUCLEAR MATERIAL IN-TRANSIT

149926 *CONTINUED*
PROGRAM FOCUSED ON FURTHER ENHANCEMENTS TO AND TESTING OF THE SABRES II CONFLICT MODEL. A MODEL OF THE EFFECTIVENESS OF SMALL ARMS WEAPONS WAS INCLUDED IN THE SABRES II MODEL, WHICH WAS THEN TESTED TO VERIFY THE CORRECTNESS OF THE CODING LOGIC. WORK CONTINUED ON THE DEVELOPMENT OF A STRUCTURE FOR EVALUATING COMPLIANCE WITH THE UPGRADE RULES.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*SAFEGUARDS, NUCLEAR MATERIAL + SPECIAL NUCLEAR MATERIAL + COMPUTER PROGRAM + PHYSICAL PROTECTION SYSTEM + SECURITY + ANALYTICAL MODEL + SIMULATION + NRC-RS

149925
CHAPMAN LD
PHYSICAL PROTECTION OF NUCLEAR FACILITIES QUARTERLY PROGRESS REPORT JANUARY-MARCH 1979
SANDIA LABS., ALBUQUERQUE, N.M.
NUREG/CR-0751 + SAND-79-0754 +. 34 PPS, 4 TABS, APRIL 1979

A NEW STANDARD VERSION OF THE SET EQUATION TRANSFORMATION SYSTEM (SETS) CODE HAS BEEN DEVELOPED AND INSTALLED ON THE CDC 7600 COMPUTER. THIS VERSION OF THE CODE AUTOMATICALLY PERFORMS A SIGNIFICANT PORTION OF THE VITAL AREA ANALYSIS AND ALSO ALLOWS THE USER TO ANALYZE AND MANIPULATE MUCH LARGER EQUATIONS THAN DID PREVIOUS VERSIONS OF SETS. TESTING OF THE ADVERSARY PATHS (ADPATH) CODE CONTINUED DURING THIS REPORTING PERIOD. OTHER IN-HOUSE ACTIVITIES INCLUDED (1) FURTHER DEVELOPMENT AND IMPLEMENTATION OF PROTOTYPE SCHEMA AND NEW MODULES FOR THE SAFEGUARDS ENGINEERING AND ANALYSIS DATA-BASE (SEAD), AND (2) DATA COLLECTION AND TESTING ON THE SANDIA MULTIPLE INTEGRATED LASER ENGAGEMENT SYSTEM (MILES).

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*SAFEGUARDS, NUCLEAR MATERIAL + SPECIAL NUCLEAR MATERIAL + COMPUTER PROGRAM + PHYSICAL PROTECTION SYSTEM + SECURITY + ANALYTICAL MODEL + SIMULATION + NRC-RS

13. RR - EFFLUENT AND RADIATION FIELD SOURCE TERMS IN OPERATING REACTORS

147601
DYER NC + KELLER JH + MOTES BG + CRONEY ST
IN-PLANT SOURCE TERM MEASUREMENTS AT ZION STATION
IDAHO NATIONAL ENGINEERING LAB., IDAHO FALLS
NUREG/CR-0715 +. 399 PPS. 135 TABS. 52 FIGS. FEB. 1979

PRESENTS DATA OBTAINED AT ZION STATION FOR AN IN-PLANT SOURCE TERM MEASUREMENT PROGRAM IN OPERATING PRESSURIZED WATER REACTORS (PWR'S). THE WORK WAS CONDUCTED FOR THE OFFICE OF NUCLEAR REGULATORY RESEARCH IN SUPPORT OF THE EFFLUENT TREATMENT SYSTEMS BRANCH OF THE OFFICE OF NUCLEAR REACTOR REGULATION. THE OBJECTIVE OF THIS PROGRAM IS TO PROVIDE OPERATIONAL DATA THAT CAN BE USED BY THE NRC IN THE GENERIC UPDATING OF THE CALCULATIONAL MODELS USED BY THE NRC STAFF IN THEIR EVALUATION OF RADIOACTIVE WASTE MANAGEMENT SYSTEMS FOR OPERATING PWR'S. A DATA BASE IS PROVIDED FOR RADIOISOTOPE INVENTORY IN PLANT SYSTEMS. RADIOACTIVE WASTE MANAGEMENT SYSTEM PERFORMANCE. AND SOURCE TERMS FOR BOTH LIQUID AND GASEOUS SYSTEMS.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE. U. S. DEPARTMENT OF COMMERCE. SPRINGFIELD. VA. 22161

ZION 1 (PWR) + ZION 2 (PWR) + REACTOR. PWR + *DATA COLLECTION + *SOURCE. RADIATION + RADIOISOTOPE + WASTE TREATMENT. GAS + WASTE TREATMENT. LIQUID + *WASTE MANAGEMENT + MEASUREMENT + RADIOACTIVITY RELEASE + NRC-RR

146855
MARKIND J + VAN TRAN T
A STUDY OF REVERSE OSMOSIS APPLICABILITY TO LIGHT WATER REACTOR RADWASTE PROCESSING
WALDEN DIVISION OF ABCOR INC., WILMINGTON, MASS.
NUREG/CR-0724 +. 142 PPS. 34 TABS. 39 FIGS. APRIL 1979

THE OBJECTIVES OF THIS STUDY WERE TO COLLECT AND EVALUATE DOCUMENTED PERFORMANCE DATA OF EXISTING REVERSE-OSMOSIS/ULTRAFILTRATION PROCESSES UTILIZED FOR TREATING LOW-LEVEL LIQUID RADIOACTIVE WASTES. ORIGINATING FROM LIGHT-WATER-REACTOR (LWR) NUCLEAR POWER PLANTS. RELEVANT INFORMATION WAS COLLECTED BY COMMUNICATION BOTH WRITTEN AND VERBAL WITH MEMBRANE EXPERTS KNOWN TO BE ACTIVE IN THE NUCLEAR INDUSTRY. AND BY CONDUCTING MANUAL AND COMPUTER SEARCHES. THE GENERATED INFORMATION WAS EVALUATED ON THE BASIS OF MEMBRANE PERFORMANCE CHARACTERISTICS RELEVANT TO NUCLEAR ENGINEERING SYSTEM ANALYSIS.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE. U. S. DEPARTMENT OF COMMERCE. SPRINGFIELD. VA. 22161

WASTE TREATMENT + FILTERS + FILTRATION + FILTER. MEMBRANE + REGULATION + REACTOR. PWR + REACTOR. BWR + WASTE. RADIOACTIVE + LOW LEVEL WASTE DISPOSAL + NRC-RR

14. RC — CRITICALITY

148924
CLAYTON ED + DURST BM + BIERMAN SR
CRITICALITY EXPERIMENTS WITH SUBCRITICAL CLUSTERS OF 2.35 WT% AND 4.29 WT% U-235 ENRICHED UO(2) RODS IN WATER WITH URANIUM OR LEAD REFLECTING WALLS
BATTELLE PACIFIC NORTHWEST LABS., RICHLAND, WASH.
NUREG/CR-0796 + PNL-2627 +. 31 PPS, 5 TABS, 14 FIGS, 10 REFS, APRIL 1979

A SERIES OF CRITICALITY EXPERIMENTS WITH TWO DIFFERENT WT% U-235 ENRICHED UO(2) RODS IN WATER PROVIDE WELL DEFINED BENCHMARK DATA. RESULTS SHOW THAT DEPLETED URANIUM AND LEAD REFLECTING WALLS SUBMERGED IN THE WATER REFLECTOR ARE BETTER NEUTRON REFLECTORS THAN WATER ALONE. RESULTS ARE DEPENDENT ON U-235 ENRICHMENT.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

CRITICALITY EXPERIMENT + URANIUM-235 + URANIUM + LEAD + REFLECTOR + REACTIVITY EFFECT + NRC-RC

147171
GOEBEL GR + OH I + ROTHE RE
REFERENCE CRITICAL EXPERIMENTS PROGRESS REPORT JULY 1, 1978 - SEPTEMBER 30, 1978
ROCKWELL INTERNATIONAL, ROCKY FLATS PLANT, GOLDEN, COLO.
NUREG/CR-0499 + RFP-2668 +. 56 PPS, 7 TABS, 15 FIGS, JAN. 1979

THIRTEEN CRITICAL ARRAY EXPERIMENTS WERE PERFORMED FOR THE LOW-ENRICHED, DAMP (H/U APPROXIMATELY 0.75), URANIUM OXIDE (U308) HAVING VARIOUS MODERATING MATERIALS INTERSPERSED BETWEEN CANS IN THE PLASTIC REFLECTOR. THE ELEMENTAL COMPOSITIONS OF FIVE NONFISSILE MATERIALS USED IN THE OXIDE EXPERIMENTS WERE DETERMINED BY LABORATORY ANALYSIS. A TEST WAS CONDUCTED ON FOUR OXIDE CANS TO ANALYZE THE OXIDE WEIGHT GAIN FOR THE PERIOD MAY 26 THROUGH SEPTEMBER 12, 1978; AND THE WEIGHT GAIN WAS FOUND TO BE ATTRIBUTABLE TO AN ABSORPTION OF OXYGEN FROM THE AIR.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

CRITICAL ASSEMBLY + EXPERIMENT + CRITICALITY EXPERIMENT + REGULATION + REGULATION, NRC + OXIDE + URANIUM + NRC-RC

146935
GOEGEL GR + ROTHE RE + PECORA D
REFERENCE CRITICAL EXPERIMENTS PROGRESS REPORT FOR PERIOD OCTOBER 1, 1978 THROUGH DECEMBER 31, 1978
ROCKWELL INTERNATIONAL, GOLDEN, COLO.
NUREG/CR-0642 + RFP-2888 +. 59 PPS, 7 TABS, 10 FIGS, 12 REFS, APRIL 1979

TWO CRITICAL EXPERIMENTS WERE REPEATED USING THE LOW-ENRICHED, DAMP (H/U APPROXIMATE 0.75) URANIUM OXIDE (U308) IN THE PLASTIC REFLECTOR. THEY WERE REPEATED TO DETERMINE THE COMBINED EFFECT OF PARAMETERS (OXIDE WEIGHT GAIN, CUBOID DIMENSIONS, ETC.) THAT MIGHT VARY. REPEAT EXPERIMENTAL RESULTS ARE IN GOOD AGREEMENT WITH THE ORIGINAL EXPERIMENTAL RESULTS. TWO NEW CRITICAL EXPERIMENTS WERE PERFORMED WITH PLASTIC INTERSPERSED BETWEEN CANS OF URANIUM OXIDE IN THE CONCRETE REFLECTOR.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

CRITICAL ASSEMBLY + EXPERIMENT + CRITICALITY EXPERIMENT + REGULATION + REGULATION, NRC + OXIDE + URANIUM + NRC-RC

147997
SCHWENDIMAN LC + THOMAS CW + PERKINS RW + HORST TW
A FIELD AND MODELING STUDY OF WINDBLOWN PARTICLES FROM URANIUM MILL TAILINGS PILE
BATTELLE PACIFIC NORTHWEST LABS., RICHLAND, WASH.
NUREG/CR-0629 + PNL-2890 +. 117 PPS, 13 TABS, 56 FIGS, REFS, APRIL 1979

THIS STUDY DEVELOPS AN UNDERSTANDING OF THE NATURE AND TRANSPORT OF SOLID PARTICLES FROM A URANIUM MILL TAILINGS PILE. THE INTENT IS TO DEVELOP AND VERIFY SUSPENSION AND TRANSPORT MODELS THAT MAY BE USEFUL WHEN APPLIED MORE GENERICALLY TO SIMILAR SPOIL PILES OF URANIUM EXTRACTION TAILINGS. A FIELD STUDY IS REPORTED, SHOWING THAT FOR A CARBONATE-LEACH-PROCESS MILL TAILINGS PILE IN THE GRANTS, NEW MEXICO REGION MUCH OF THE RESIDUAL RADIOACTIVE CONSTITUENTS IN THE TAILINGS IS FOUND ASSOCIATED WITH PARTICLES 7 X 10(-6) METERS IN DIAMETER AND SMALLER. THE SUSPENSION AND TRANSPORT OF PARTICLES WERE STUDIED USING AN ARRAY OF SAMPLING TOWERS AND WIND SPEED AND VELOCITY INSTRUMENTATION. (GTM)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*URANIUM + *MILLING + RADIONUCLIDE + TRANSPORT + ANALYTICAL MODEL + DATA COLLECTION + NRC-RW + *AIRBORNE RELEASE + COMPARISON, THEORY AND EXPERIENCE + ATMOSPHERIC DIFFUSION

148264
ZIMA GE
AN EVALUATION OF POTENTIAL CHEMICAL/MECHANICAL DEGRADATION PROCESS AFFECTING FUEL AND STRUCTURAL MATERIALS UNDER LONG TERM WATER STORAGE
BATTELLE PACIFIC NORTHWEST LABS., RICHLAND, WASH.
NUREG/CR-0668 + PNL-2379 +. 41 PPS, 12 TABS, 2 FIGS, 26 REFS, MAY 1979

A BRIEF REVIEW IS GIVEN OF THE POTENTIAL AS-RECEIVED AND POOL FACTORS WHICH COULD CONCEIVABLY AFFECT THE POOL STORAGE HISTORY OF SPENT LWR FUEL AND THE PRINCIPAL POOL STRUCTURAL MATERIALS. A REVIEW IS MADE OF SPENT FUEL LEACHING UNDER THE STORAGE POOL ENVIRONMENT. A SIMPLE LEACHING SIGNIFICANCE INDEX IS PROPOSED WHICH, IN ADDITION TO THE LEACHING CHARACTERISTICS OF SELECTED RADIONUCLIDES, IS ALSO SENSITIVE TO TWO IMPORTANT POOL CLEANUP SYSTEM PARAMETERS, NAMELY THE DECONTAMINATION FACTOR AND THE TURN-AROUND RATE. USING RECENT SPENT FUEL LEACHING DATA, INDICES ARE CALCULATED FOR SEVERAL RADIONUCIDES OF INTEREST.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

REVIEW + SPENT FUEL + *SPENT FUEL POOL + FUEL STORAGE + *STRUCTURAL INTEGRITY + *CHEMICAL REACTION + THERMAL MECHANICAL EFFECT + LEACHING + SURVEILLANCE PROGRAM + NRC-RW

148407
COLOMBO P + NEILSON RM
PROPERTIES OF RADIOACTIVE WASTE CONTAINERS, PROGRESS REPORT NO. 9 APRIL-JUNE 1978
BROOKHAVEN NATIONAL LAB., UPTON, N.Y.
NUREG/CR-0667 + BNL-NUREG-50966 +. 51 PPS, 11 FIGS, NOV. 1978

THE DIFFUSIONAL MASS TRANSPORT MODELS BEING USED FOR LEACH DATA ANALYSIS TO PREDICT LONG-TERM RELEASES FROM FULL SCALE WASTE PACKAGES ARE DESCRIBED. THESE INCLUDE BOTH SEMI-INFINITE AND FINITE MODELS. THE SEMI-INFINITE MODEL PROVIDES A SIMPLE SOLUTION TO THE DIFFUSION EQUATION BUT IS CONSERVATIVE IN NATURE AND TENDS TO OVERPREDICT THE PROJECTED RELEASES. A MODIFICATION TO THIS MODEL IS DESCRIBED TO TAKE INTO ACCOUNT INITIAL SHORT TERM EFFECTS. SAMPLE DEPLETION LIMITATIONS OF THE SEMI-INFINITE MODEL ARE CONSIDERED. THE FINITE MODEL IS MORE ACCURATE AND TAKES INTO ACCOUNT SAMPLE DEPLETION, HOWEVER, IT IS MORE COMPLICATED AND DIFFICULT TO APPLY. LEECHING DATA OBTAINED FOR BORIC ACID WASTE-BITUMEN WASTE FORMS IN DISTILLED WATER AND GROUNDWATER ARE PRESENTED.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*WASTE STORAGE + STORAGE CONTAINER + *LEACHING + ANALYTICAL MODEL + DIFFUSION + MASS TRANSFER + RADIOACTIVITY RELEASE + DATA COLLECTION + NRC-RW

149848
WEISS AJ + COLOMBO P
EVALUATION OF ISOTOPE MIGRATION - LAND BURIAL WATER CHEMISTRY AT COMMERCIALLY OPERATED LOW-LEVEL RADIOACTIVE WASTE DISPOSAL SITES PROGRESS REPORT NO. 9 APRIL-JUNE 1978
BROOKHAVEN NATIONAL LAB., UPTON, N.Y.
NUREG/CR-0707 + BNL-NUREG-50965 +. 29 PPS, 6 TABS, 17 FIGS, 7 REFS, FEB. 1979

DESCRIBES EQUIPMENT AND PROCEDURES DEVELOPED FOR MEASURING THE SORPTION DISTRIBUTION COEFFICIENT, K(D), OF SELECTED RADIONUCLIDES USING SITE SPECIFIC SOILS AND TRENCH WATERS FROM LOW-LEVEL RADIOACTIVE WASTE DISPOSAL SITES. BATCH EXPERIMENTS WERE CONDUCTED UNDER ANOXIC AND OXIC CONDITIONS WITH SOIL AND TRENCH WATER FROM THE WEST VALLEY, NEW YORK, DISPOSAL SITE. VARIATION IN K(D) AS A RESULT OF CHANGES IN PH, AERATION, AND WATER TO SOIL RATIO ARE REPORTED.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

WASTE DISPOSAL, TERRESTRIAL + *SOIL, RADIONUCLIDE MOVEMENT THROUGH + NFS + NRC-RW

145282

145282 *CONTINUED*
WALLACE A + ROMNEY EM + NISHITA H
PRELIMINARY ANALYSIS OF FIRST CROP OF PLANTS GROWN IN SEVEN SOILS UNIFORMLY CONTAMINATED WITH FOUR TRANSURANIC ELEMENTS SIMULTANEOUSLY - QUARTERLY PROGRESS REPORT
UNIV. OF CALIF., LOS ANGELES
NUREG/CR-0700 +. 13 PPS, 8 TABS, MARCH 1979

A FORAGE CROP AND A GRAIN CROP OF WHEAT WERE HARVESTED FROM A REPLICATED EXPERIMENT WITH ABOUT 200 KG SOIL PER CONTAINER IN WHICH SEVEN SOILS FROM DIFFERENT LOCATIONS THROUGHOUT THE U.S.A. WERE SPIKED WITH FOUR DIFFERENT TRANSURANIC ELEMENTS SIMULTANEOUSLY. CONCENTRATION RATIOS (C.R.) FOR THE RADIOACTIVE ELEMENTS IN PLANTS WERE OBTAINED AS A START TO CAREFUL EXAMINATION OF PARAMETERS INVOLVED IN THE USE OF THESE RATIOS IN MODELS. THE RELATIVE AVAILABILITY OF THE DIFFERENT RADIONUCLIDES DIFFERED CONSIDERABLY WITH SOIL. ONE ORDER OF MAGNITUDE DIFFERENCES WERE COMMON FOR ELEMENT PAIRS. IN GENERAL THE ORDER OF PLANT AVAILABILITY WAS NP > AM > CM > PU.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*STANDING CROP + SOIL + *TRANSURANIUM ELEMENT + CONTAMINATION + EFFECT + *TESTING + NRC-RW

145781
WALLACE A + ROMNEY EM + NISHITA H
BIOLOGICAL TRANSPORT OF RADIONUCLIDES AT LOW LEVEL WASTE STORAGE SITES ANNUAL REPORT OCTOBER 1, 1977 - SEPTEMBER 30, 1978
UNIV. OF CALIF., LOS ANGELES
NUREG/CR-0701 +. 124 PPS, TABS, FIGS, REFS, MARCH 1979

THE MAJOR OBJECTIVE OF THIS YEAR'S WORK UNDER NRC CONTRACT FIN. NO. B3027-6 HAS BEEN TO PROVIDE OR PREPARE TO PROVIDE BACKUP INFORMATION THAT CAN HELP MONITOR LOW-LEVEL WASTE STORAGE FACILITIES. TO ACCOMPLISH THIS MAJOR OBJECTIVE, 8 OBJECTIVES THAT WERE FORMULATED AND ACCOMPLISHED ARE DISCUSSED. LOW-LEVEL WASTE MANAGEMENT STUDIES, SITE VISIT TO MAXEY FLATS, AND THE UPTAKE OF VARIOUS RADIONUCLIDES BY PLANTS ARE DISCUSSED ALSO.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

LOW LEVEL WASTE DISPOSAL + *WASTE STORAGE + WASTE MANAGEMENT + *RADIONUCLIDE TRANSFER + RADIONUCLIDE UPTAKE + MONITORING PROGRAM, ENVIRONMENTAL + NRC-RE + NRC-RW

148001
POLZER WL + ESSINGTON EH + FOWLER EB
CHARACTERISTICS OF WASTES AND SOILS WHICH AFFECT TRANSPORT OF RADIONUCLIDES THROUGH THE SOIL AND THEIR RELATIONSHIP TO WASTE MANAGEMENT - ANNUAL REPORT FY78
LOS ALAMOS SCIENTIFIC LAB., N.M.
NUREG/CR-0842 + LA-UR-79-1025 +. 72 PPS, 31 TABS, FIGS, 9 REFS, MAY 1979

KNOWLEDGE OF THE RATE AND DEGREE OF MOVEMENT OF RADIOACTIVE NUCLIDES THROUGH SOIL AND GEOLOGIC MEDIA IS AN IMPORTANT ADJUNCT TO THE CONDUCT OF RADIOACTIVE WASTE MANAGEMENT. THE ENVIRONMENTAL SCIENCES GROUP OF THE LOS ALAMOS SCIENTIFIC LABORATORY IS STUDYING THE INTERACTIONS OF VARIOUS RADIOACTIVE WASTES WITH A WIDE VARIETY OF SOILS IN ORDER TO ESTABLISH A PREDICTIVE RANGE OF RADIONUCLIDE RETENTION VALUES TO BE USED BY THE NUCLEAR REGULATORY COMMISSION FOR THE EVALUATION OF WASTE HANDLING, STORAGE, AND BURIAL PRACTICES. THIS REPORT COVERS FIELD AND LABORATORY EFFORTS FOR THE PERIOD OCTOBER 1977 THROUGH SEPTEMBER 1978. (GTM)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*SOIL, RADIONUCLIDE MOVEMENT THROUGH + TRANSPORT + *WASTE MANAGEMENT + WASTE HANDLING + WASTE STORAGE + RETENTION + WASTE DISPOSAL + SOIL PROPERTY + NRC-RW

149831
FICKIES RH + FAKUNDINY RH + MOSLEY ET
GEOTECHNICAL ANALYSIS OF SOIL SAMPLES FROM TEST TRENCH AT WESTERN NEW YORK NUCLEAR SERVICE CENTER WEST VALLEY, NEW YORK
N.Y. STATE GEOLOGICAL SURVEY
NUREG/CR-0644 + NYSGS/79-2401 +. 21 PPS, 4 TABS, FIGS, APRIL 1979

IN JULY 1977, A DEEP RESEARCH TRENCH WAS EXCAVATED AND SOIL SAMPLES COLLECTED. THE GLACIAL TILL HORIZONS SAMPLED ARE REPRESENTATIVE OF THE TILL SERVING AS A BURIAL MEDIUM AT THE NEARBY LOW-LEVEL RADIOACTIVE WASTE BURIAL GROUND. THESE LABORATORY ANALYSES AND FIELD OBSERVATIONS INDICATE THAT THE TILL EXPOSED IN THE RESEARCH TRENCH IS A GENERALLY DENSE MIXTURE OF SILT AND CLAY OF LOW TO MEDIUM PLASTICALLY, WITH MINOR AMOUNTS OF FINE TO COARSE SAND AND FINE GRAVEL. THE TILL HAS A GENERALLY LOW COEFFICIENT OF PERMEABILILITY IN THE RANGE OF 10(EXP -7) CM/SEC HORIZONTAL AND 10(EXP -8) CM/SEC VERTICAL. A NETWORK OF VERTICAL FRACTURES EXISTS IN THE UPPER 15 FEET OF "WEATHERED" TILL. THE MAXIMUM DEPTH TO WHICH THESE FRACTURES COULD POSSIBLY PENETRATE IS 50 FEET. (FAH)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

FUEL REPROCESSING + NEW YORK + WASTE DISPOSAL, TERRESTRIAL + SOIL PROPERTY + GEOLOGY + NRC-RE + NRC-RW

16. **RQ - CHARCOAL RESEARCH**

148411
DEITZ VR
EFFECTS OF WEATHERING ON IMPREGNATED CHARCOAL PERFORMANCE
NAVAL RESEARCH LAB., WASHINGTON, D.C.
NUREG/CR-0771 + NRL-MEMO-REPORT-4006 +. 70 PPS. 19 TABS. 11 FIGS. 17 REFS. MAY 10. 1979

THE USEFUL LIFE OF GAS-PHASE ACTIVATED CARBON USED FOR NUCLEAR AIR AND GAS CLEANING IS IMPAIRED BY WEATHERING. I.E., EXPOSURE TO CONTAMINANTS IN THE AIR BEING PROCESSED. TESTS TO DETERMINE THE EFFECTS OF WEATHERING SHOWED A PROGRESSIVE DECREASE IN RADIOIODINE TRAPPING EFFICIENCY WITH CONTINUED EXPOSURE TO AIR CONTAINING KNOWN POLLUTANTS, AND THAT MOISTURE IN THE AIR ENHANCES DEGRADATION. AN ADVERSE SYNERGISTIC INFLUENCE OF MOISTURE ON POLLUTANTS IN THE AIR, PARTICULARLY HYDROCARBONS, WAS OBSERVED. FURTHER TESTS WILL BE MADE TO CHARACTERIZE POLLUTANT CONCENTRATIONS RELATIVE TO THEIR INFLUENCE ON METHYL IODIDE-131 PENETRATION DATA.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

AIR CLEANING + ADSORPTION + FILTERS + CHARCOAL ADSORBER + IODINE + REACTOR + ENGINEERED SAFETY FEATURE + NRC-RQ

17. RP - FIRE PROTECTION RESEARCH

145832
KLAMERUS LJ
A PRELIMINARY REPORT ON FIRE PROTECTION RESEARCH PROGRAM FIRE BARRIERS AND FIRE RETARDANT COATINGS TEST
SANDIA LABS., ALBUQUERQUE, N.M.
NUREG/CR-0381 + SAND 78-1456 +. 90 PPS. 10 TABS. 69 FIGS. 5 REFS. SEPT. 1978

AN EXPOSURE FIRE TEST AT SANDIA LABORATORIES SHOWED THAT THE REGULATORY GUIDE 1.75 SEPARATION GUIDELINES AND IEEE-383 FIRE RETARDANCY STANDARDS FOR SAFETY CABLES ARE NOT SUFFICIENT. IN THEMSELVES, TO PROTECT AGAINST SUCH FIRES. ADDITIONAL MEASURES HAVE BEEN REQUIRED BY NRC TO PROTECT ESSENTIAL SAFETY SYSTEMS AGAINST THE EFFECTS OF FIRES. TWO OF THESE MEASURES ARE FIRE BARRIERS OR FIRE-RETARDANT COATINGS ON CABLING. THIS REPORT DESCRIBES THE SECOND PHASE OF A SMALL SCALE AND FULL SCALE TESTING PROGRAM WHICH HAS BEEN UNDERTAKEN TO ASSESS THE ADEQUACY OF COATINGS. IN ADDITION, FULL SCALE TESTS ARE DESCRIBED USING EXPOSURE FIRES TO APPRAISE THE ADEQUACY OF SOME FIRE BARRIERS PLACED BETWEEN HORIZONTAL CABLE TRAYS.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*FIRE PROTECTION + TESTING + CABLES AND CONNECTORS + *COATING + NRC-RP

144642
KLAMERUS LJ
A PRELIMINARY REPORT ON FIRE PROTECTION RESEARCH PROGRAM FIRE BARRIERS AND SUPPRESSION (SEPTEMBER 15, 1978, TEST)
SANDIA LABS., ALBUQUERQUE, N.M.
NUREG/CR-0596 + SAND78-2238 +. 45 PPS. 14 TABS. 10 FIGS. DEC. 1978

A FULL-SCALE FIRE TEST WAS CONDUCTED AT UNDERWRITERS LABORATORIES INC. ON SEPTEMBER 15, 1978. THE TEST WAS TO DEMONSTRATE THE EFFECTIVENESS OF A CERAMIC FIBER BLANKET AND AUTOMATIC FIRE SUPPRESSION SYSTEM TO PROTECT CABLES IN A VERTICAL CABLE TRAY CONFIGURATION THAT IS CURRENTLY PERMITTED BY SEPARATION CRITERIA GUIDELINES. AN OPEN POOL FIRE FUELED BY LIQUID HYDROCARBON WAS USED. THIS WAS ONE OF A SERIES OF TESTS TO DEMONSTRATE THE RESPONSE OF VARIOUS CABLE ARRANGEMENTS AND FIRE PROTECTION FEATURES IN EXPOSURE FIRES. (GTM)

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

FIRE PROTECTION + CABLES AND CONNECTORS + TESTING + PROTECTION SYSTEM + SEPARATOR + NRC-RP

147803
BERRY DL
NUCLEAR POWER PLANT FIRE PROTECTION FIRE DETECTION (SUBSYSTEMS STUDY TASK 2)
SANDIA LABS., ALBUQUERQUE, N.M.
NUREG/CR-0488 + SAND78-1373 +. 60 PPS. 6 TABS. 8 FIGS. 20 REFS. MARCH 1979

EXAMINES THE ADEQUACY OF FIRE DETECTION IN THE CONTEXT OF NUCLEAR POWER PLANT SAFETY. TOPICS CONSIDERED ARE: (1) ESTABLISHING AREA DETECTION REQUIREMENTS, (2) SELECTING SPECIFIC DETECTOR TYPES, (3) LOCATING AND SPACING DETECTORS, AND (4) PERFORMING INSTALLATION TESTS AND MAINTENANCE. BASED ON A THOROUGH REVIEW OF FIRE DETECTION CODES AND STANDARDS AND FIRE DETECTION LITERATURE, THE REPORT CONCLUDES THAT CURRENT DESIGN AND REGULATORY GUIDELINES ALONE ARE INSUFFICIENT TO ENSURE SATISFACTORY FIRE DETECTION SYSTEM PERFORMANCE. TO ASSURE ADEQUATE FIRE DETECTION, THIS REPORT RECOMMENDS THE USE OF IN-PLACE TESTING OF DETECTORS UNDER CONDITIONS EXPECTED TO OCCUR NORMALLY IN AREAS BEING PROTECTED.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

*FIRE PROTECTION + POWER PLANT, NUCLEAR + FIRE + *MONITOR + *EQUIPMENT + DESIGN CRITERIA + CODES AND STANDARDS + NRC-RP

18. RV - QUALIFICATION EVALUATION PROGRAM

147047
BONZON LL + GILLEN KT + DUGAN DW
QUALIFICATION TESTING EVALUATION PROGRAM LIGHT WATER REACTOR SAFETY RESEARCH QUARTERLY REPORT JULY-SEPTEMBER 1978
SANDIA LABS., ALBUQUERQUE, N.M.
NUREG/CR-0696 + SAND 78-2254 +. 103 PPS, 4 TABS, 9 FIGS, 12 REFS, MARCH 1979

OBJECTIVES OF THE QTE PROGRAM ARE TO OBTAIN DATA NEEDED FOR CONFIRMATION OF THE SUITABILITY OF CURRENT STANDARDS AND REGULATORY GUIDES FOR CLASS 1E SAFETY-RELATED EQUIPMENT AND TO OBTAIN DATA THAT WILL PROVIDE AN IMPROVED TECHNICAL BASIS FOR MODIFICATIONS OF THESE STANDARDS AND GUIDES WERE APPROPRIATE. SPECIFIC MAJOR OBJECTIVES ARE: 1. TO PROVIDE ASSESSMENTS OF POST-LOCA QUALIFICATION TESTING METHODOLOGIES, INCLUDING A QUALITATIVE ASSESSMENT OF THE SYNERGISTIC EFFECTS RESULTING FROM THE COMBINED ENVIRONMENTAL TESTING OF REPRESENTATIVE CLASS 1E EQUIPMENT; 2. TO DETERMINE THE RADIATION ENVIRONMENT FROM THE NUCLEAR SOURCE TERM FOR A DESIGN BASIS LOCA AND TO EVALUATE THE ADEQUACY OF RADIATION SIMULATORS; AND 3. TO PROVIDE METHODS THAT CAN BE USED TO SIMULATE THE NATURAL AGING PROCESS OF REPRESENTATIVE CLASS 1E MATERIALS BY ACCELERATED AGING METHODS.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

REACTOR, LWR + QUALIFICATION + TESTING + CODES AND STANDARDS + ACCIDENT, LOSS OF COOLANT + RADIATION EFFECT + INSTRUMENT, NUCLEAR + EFFECT, AGE + NRC-RV

149837
BONZON LL + GILLEN KT + SALAZAR EA
QUALIFICATION TESTING EVALUATION PROGRAM LIGHT WATER REACTOR SAFETY RESEARCH QUARTERLY REPORT OCTOBER-DECEMBER 1978
SANDIA LABS., ALBUQUERQUE, N.M.
NUREG/CR-0813 + SAND79-0761 +. 133 PPS, TABS, FIGS, JUNE 1979

A MAJOR EFFORT OF THE QUARTER WAS AN EXTENDED VISIT TO ENGLISH, FRENCH, SWEDISH, AND FINNISH FACILITIES ENGAGED IN VARIOUS ASPECTS OF SAFETY-RELATED EQUIPMENT QUALIFICATION IN EUROPE; SEVERAL EXPERIMENTAL FACILITIES USED IN THIS QUALIFICATION EFFORT WERE TOURED. THE BALANCE OF THE QUARTERLY EFFORT CENTERED ON CONTINUATION OF THE ONGOING PROJECTS. WITHIN THE METHODOLOGIES TASK, THE TEST FACILITY UPGRADE AND THE COMMISSION-REQUESTED CONNECTOR TESTS RECEIVED PRIMARY EMPHASIS. WITHIN THE RADIATION SOURCE TASK, EFFORT CONTINUED ON THE DEVELOPMENT OF A BEST-ESTIMATE LOCA-RADIATION SIGNATURE. WITHIN THE ACCELERATED AGING TASK, THE PRIMARY EMPHASIS WAS ON FIRE-RETARDANT AGING, CONTINUED COMBINED ENVIRONMENTS TESTING OF ELECTRICAL CABLE MATERIALS, AND THE EVALUATION OF AMBIENT-AGED ELECTRICAL CABLE SAMPLES.

AVAILABILITY - NATIONAL TECHNICAL INFORMATION SERVICE, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VA. 22161

REACTOR, LWR + ACCIDENT, LOSS OF COOLANT + COMPONENTS + QUALIFICATION + RADIATION EFFECT + NRC-RV

KEYWORD INDEX

A COLLECTION OF KEYWORDS IS USED TO DENOTE THE MAIN SAFETY RELATED POINTS COVERED IN EACH ARTICLE. THE FOLLOWING INDEX IS AN ALPHABETICAL LISTING OF THE KEYWORDS GIVING REFERENCES TO EACH ARTICLE WHICH WAS KEYED TO IT.

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