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Vol. 5, No. 3

Regulatory and Technical Reports

Compilation for
Third Quarter 1980
July - September

U.S. Nuclear Regulatory Commission

Office of Administration

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Third Quarter 1980
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Date Published: January 1981

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Division of Technical Information and Document Control
Office of Administration
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

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Preface

This compilation lists formal regulatory and technical reports issued from July through September 1980 by the U.S. Nuclear Regulatory Commission (NRC) staff and by NRC contractors. The compilation is divided into two major sections. The first major section consists of a sequential listing of all NRC reports in report-number order. The first portion of this sequential section lists staff reports, and the second portion lists contractor reports. Each report citation in the sequential section contains full bibliographic information, including:

NRC report number
Report title
Month and year of issuance
Contractor (if appropriate)
Contractor report number (if appropriate)
NRC originating or sponsoring office
Availability (where report can be obtained)
Abstract

The second major section of this compilation consists of a key-word index to report titles. Each key word is cross-referenced to the report or reports in the sequential listing that contains that word.

The third major section contains an alphabetically arranged listing of contractor report numbers cross-referenced to their corresponding NRC report numbers.

How to Read Citations

1 NUREG-0678

2 The Effects of Temperature, Moisture, Concentration, Pressure, and Mass Transfer on the Adsorption of Krypton and Xenon on Activted Carbon.

3 → August 1980.

4 → ACRS

5 → GPO

NTIS ← 6

7 This report is a critical review of the published literature on the adsorption of radioactive krypton and xenon on activated charcoal. The report includes a tabulation and evaluation of the adsorption coefficients for these two gases as related to temperature, pressure, moisture, mass transfer effects, and the nature of the carrier gas. Wherever possible, the resulting data have been used to develop simple correlations for quantitatively evaulating the effects of these parameters on noble gas adsorption. Important conclusions of the study include the observations that (a) individual charcoals have a wide range of adsorption coefficients and therefore the performance of a given bed is heavily dependent on the quality of the charcoal it contains; (b) because of the detrimental effects of mass transfer on noble gas adsorption, consideration should be given to including this factor in developing technical specifications for adsorption beds; and (c) additional research is needed on the determination of the interrelationship of moisture and temperature and their effects on adsorption bed performance.

1 NRC report number

2 Title

3 Month and year issued

4 Originating office

5 GPO/NRC Availability

6 National Technical Information Service availability

7 Abstract

The key to abbreviations for NRC Offices appears at the end of this preface.

<u>Contractor Report</u>

1 NUREG/CR-0508

2 Security Communication Systems for Nuclear Fixed-Site Facilities.

3 → July 1980.

4 → Y-12 Plant, Oak Ridge

5 → Y/DW-128

6 → OSD

7 → GPO

NTIS ← 8

This report presents a basic discussion of communication tecnniques and factors
relevant to designing communication systems for nuclear fixed-site facility
security systems. The reader is provided communication fundamentals, design
considerations, and specification techniques. Copious references and an annotated
9 bibliography are provided for individuals who desire to delve deeper than the
limits and areas of study of this report. Ease of reading and use of this
report are enhanced by relegating detailed communication design treatise to
the Appendices. Sample procurement specifications are provided throughout
the report for various communication system components and are distinguished
from the regular text by using a smaller type.

1 NRC report number

2 Title

3 Month and year issued

4 Contractor

(5) Contractor report number

(6) NRC sponsoring office

(7) GPO/NRC availability

(8) National Technical Information Service availability

(9) Abstract

Availability of NRC Publications

Copies of NRC staff and contractor reports may be purchased either from the NRC-GPO Sales Office or from the National Technical Information Service, Springfield, Virginia 22161. To purchase documents from the NRC-GPO Sales Office, send a check or money order, payable to the Superintendent of Documents, to the following address:

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You may charge any purchase to your GPO Deposit Account, Master charge card, or VISA charge card by calling the NRC-GPO Sales Office on (301) 492-9530. Non-U.S. customers must make payment in advance either by International Postal Money Order, payable to the Superintendent of Documents, or by draft on a United States or Canadian bank, payable to the Superintendent of Documents.

NRC Report Codes

The NUREG designation, NUREG-XXXX, indicates that the document is a formal NRC staff-generated report. Contractor-prepared formal NRC reports carry the report code NUREG/CR-XXXX. This type of identification replaces contractor-established, codes such as ORNL/NUREG/TM-XXX and TREE-NUREG-XXXX, as well as various other numbers that could not be correlated with NRC sponsorship of the work being reported.

In addition to the NUREG and NUREG/CR codes, NUREG/CP is used for NRC-sponsored conference proceedings.

All these report codes are controlled and assigned by the NRC Division of Technical Information and Document Control.

Abbreviations for NRC Offices

ACRS - Advisory Committee for Reactor Safeguards

ADM - Office of Administration

ELD - Office of the Executive Legal Director

IE - Office of Inspection and Enforcement

IP - Office of International Programs

MPA - Office of Management and Program Analysis

NMSS - Office of Nuclear Material Safety and Safeguards

NRR - Office of Nuclear Reactor Regulation

CON - Office of the Controller

PE - Office of Policy Evaluation

RES - Office of Nuclear Regulatory Research

SD - Office of Standards Development

SP - Office of State Programs

1

Sequential List of Staff-Generated Reports Designated NUREG

Report No.	Bibliographic Data
NUREG-0011, Supp. 2	Safety Evaluation Report Related to Operation of Sequoyah Nuclear Plant, Units 1 and 2, Docket Nos. 50-327 and 50-328. Tennessee Valley Authority, Supp. No. 2. August 1980. ONRR GPO. NTIS. Supplement No. 2 to the Safety Evaluation Report of Tennessee Valley Authority's application for licenses to operate its Sequoyah Nuclear Plant Units 1 and 2, located in Hamilton County, Tennessee, has been prepared by the Office of Nuclear Reactor Regulation of the U.S. Nuclear Regulatory Commission. This supplement reports the status of certain items that had not been completely resolved at the time of publication of the Safety Evaluation Report, and defines the requirements that must be met for full-power operation.
NUREG-0011, Supp. 3	Safety Evaluation Report Related to Operation of Sequoyah Nuclear Plant, Units 1 and 2, Docket Nos. 50-327/328. Tennessee Valley Authority, Supp. 3. September 1980. ONRR GPO. NTIS. Supplement No. 3 to the Safety Evaluation Report of Tennessee Valley Authority's application for licenses to operate its Sequoyah Nuclear Plant Units 1 and 2, located in Hamilton County, Tennessee, has been prepared by the Office of Nuclear Reactor Regulation of the U.S. Nuclear Regulatory Commission. This supplement provides further information on the hydrogen control measures for Unit 1.
NUREG-0053, Supp. 11	Safety Evaluation Report Related to the Operation of North Anna Power Station, Unit 2, Virginia Electric and Power Company, Docket No. 50-339. Supplement No. 11. August 1980. ONRR GPO. NTIS. On June 4, 1976 the Nuclear Regulatory Commission issued its Safety Evaluation regarding the application for licenses to operate the North Anna Power Station Units 1 and 2. The application was filed by Virginia Electric and Power Company. Supplement No. 1 to the Safety Evaluation Report was issued on June 30, 1976; Supplement No. 2 was issued on August 2 1976; Supplement No. 3 was issued on September 15, 1976; Supplement No. 4 was issued on December 8, 1976; Supplement No. 5 was issued on December 29, 1976; Supplement No. 6 was issued on February 2, 1977; Supplement No. 7 was issued on August 18, 1977; Supplement No. 8 was issued on December 14, 1977; Supplement No. 9 was issued on March 31, 1978, and Supplement No. 10 was issued on April 10, 1980. Supplements 1 through 9 documented the resolution of several outstanding items. Supplement No. 10 addresses the requirements for fuel loading and conducting low-power testing of North Anna Unit 2. This supplement, No. 11, addresses the requirements which must be completed prior to the issuance of a full-power operating license for Unit 2.
NUREG-0053, Supp. 12	Safety Evaluation Report Related to the Operation of North Anna Power Station, Unit 2, Docket No. 50-339. Supplement No. 12. August 1980. ONRR GPO. NTIS. On June 4, 1976 the Nuclear Regulatory Commission issued its Safety Evaluation regarding the application for licenses to operate the North Anna Power Station Units 1 and 2. The application was filed by Virginia Electric and Power Company. Supplement No. 1 to the Safety Evaluation Report was issued on June 30, 1976; Supplement No. 2 was issued on August 2 1976; Supplement No. 3 was issued on September 15, 1976; Supplement No. 4 was issued on December 8, 1976; Supplement No. 5 was issued on December 29, 1976; Supplement No. 6 was issued on February 2, 1977; Supplement No. 7 was issued on August 18, 1977; Supplement No. 8 was issued on December 14, 1977; Supplement No. 9 was issued on March 31, 1978, and Supplement No. 10 was issued on April 10, 1980. Supplements 1 through 9 documented the resolution of several outstanding items. Supplement No. 10 addresses the requirements for fuel loading and conducting low-power testing of North Anna Unit 2. Supplement No. 11 addresses the requirements which must be completed prior to the issuance of a full-power operating license for Unit 2. This Supplement, No. 12, addresses emergency preparedness.

Report No.	Bibliographic Data
NUREG-0090, Vol 3, No. 1	Report to Congress on Abnormal Occurrences, January-March 1980. September 1980. OMPA GPO. NTIS. Section 208 of the Energy Reorganization Act of 1974 identifies an abnormal occurrence as an unscheduled incident or event which the Nuclear Regulatory Commission determines to be significant from the standpoint of public health or safety and requires a quarterly report of such events to be made to Congress. This report, the twentieth in the series, covers the period January 1 to March 31, 1980. During the period, there were two abnormal occurrences at the nuclear power plants licensed to operate: one involved exposures to beta radiation in excess of regulatory limits and the second (a generic concern) involved a transient initiated by partial loss of power. There was one abnormal occurrence at the fuel cycle facilities (other than nuclear power plants); the incident involved a loss of confinement system which resulted in inhalation of plutonium by an employee. There was one abnormal occurrence at other licensee facilities; the incident involved overexposure to individuals in unrestricted areas. There were no abnormal occurrences reported by the Agreement States. This report also contains information updating previously reported abnormal occurrences.
NUREG-0117, Supp. 4	Safety Evaluation Report Related to the Operation of Joseph M. Farley Nuclear Plant, Unit 2. Docket No. 50-364, Alabama Power Company. Supplement 4 to NUREG-75/034. September 1980. ONRR GPO. NTIS. Supplement No. 4 to the Safety Evaluation Report of Alabama Power Company's application for licenses to operate its Joseph M. Farley Nuclear Plant Units 1 and 2, located in Houston County, Alabama, has been prepared by the Office of Nuclear Reactor Regulation of the U.S. Nuclear Regulatory Commission. This Supplement provides the NRC staff's evaluation of Alabama Power Company's FSAR Amendment Nos. 67 through 74 for the Farley Nuclear Plant, and its response to other safety issues, including the TMI-2 Action Plan, that have arisen since Supplement No. 3 was issued in June 1977. The staff concluded that the Farley Nuclear Plant Unit 2 may be issued a license for fuel loading and low-power testing.
NUREG-0134, Add. 2	Final Environmental Statement Related to the Operation of North Anna Power Station, Unit 1 and 2, Docket No. 50-338 and 50-339. Virginia Electric and Power Company. August 1980. ONRR GPO. NTIS. A Final Environmental Statement for the North Anna Power Station Units 1 and 2, proposed for operation by Virginia Electric and Power Company, has been prepared by the Office of Nuclear Reactor Regulation of the U.S. Nuclear Regulatory Commission. Addendum 2 to the Final Environmental Statement clarifies or amplifies information with regard to the Table S-3 and does not affect the cost-benefit conclusion already made in the Final Environmental Statement and Addendum.
NUREG-0304, Vol. 4	Regulatory and Technical Reports Compilation for 1979. July 1980. OADM GPO. NTIS. This report contains a compilation of all NRC Regulatory and Technical reports published under the NUREG series during 1979.
NUREG-0313, Rev. 1	Technical Report on Material Selection and Processing Guidelines for BWR Coolant Pressure Boundary Piping. July 1980. ONRR GPO. NTIS. This report updates and supersedes the NRC technical positions established in NUREG-0313, "Technical Report on Material Selection and Processing Guidelines for BWR Coolant Pressure Boundary Piping," published in July 1977. This report sets forth the NRC staff's revised acceptable methods to reduce the intergranular stress corrosion cracking susceptibility of BWR ASME Code Class 1, 2, & 3 pressure boundary piping and safe ends. For plants that cannot fully comply with the material selection, testing, and processing guidelines of this document, varying degrees of augmented inservice inspection and leak detection requirements are presented.

Report No.	Bibliographic Data
NUREG-0386, Supp. 2	United States Nuclear Regulatory Commission Staff Practice & Procedure Digest. Supplement 2 to Digest No. 2. September 1980. OELD GPO. NTIS. This second supplement to the second edition of the NRC Staff Practice and Procedure Digest contains a digest of a number of Commission, Atomic Safety and Licensing Appeal Board and Atomic Safety and Licensing Board decisions issued during the period from 10/1/78 to 12/31/78 interpreting the NRC's Rules of Practice in 10 CFR Part 2. The supplement also includes, to a very limited degree, material from adjudicatory decisions and regulation changes after December 31, 1978. The supplement, which is intended to be used as a "pocket-part" supplement to the Digest itself, includes a number of new subsections and topics not covered in the Digest. The new subsections are noted in the index for the supplement. The Practice and Procedure Digest and the supplements thereto were prepared by attorneys in the NRC's Office of the Executive Legal Director as an internal research tool. Because of the Digest's usefulness to these attorneys, it was decided that it might also prove useful to members of the public. Accordingly, the decision was made to publish the Digest and subsequent editions thereof and supplements thereto periodically.
NUREG-0436, Rev 1, Supp 1	Plan for Reevaluation of NRC Policy on Decommissioning of Nuclear Facilities. December 1978 to July 1980. August 1980. OSD GPO. NTIS. This report supplements and updates the information presented in NUREG-0436, Rev. 1, of the same title and dated December 1978. Supplement 1 defines new terminology for the decommissioning alternatives. It updates the status and schedules for developing the information base, the draft generic environmental impact statement, and the rulemaking. In addition, schedules for regulatory guides to support the rules are presented.
NUREG-0452, Rev 3	Standard Technical Specifications for Westinghouse Pressurized Water Reactors, Revision 3. September 1980. ONRR GPO. NTIS. The Standard Technical Specifications for Westinghouse Pressurized Water Reactors (W-STS) is a generic document prepared by the USNRC for use in the licensing process of current Westinghouse pressurized water reactors. The W-STS sets forth the limits, operating conditions and other requirements applicable to nuclear reactor facility operation as set forth in Section 50.36 of 10 CFR Part 50 for the protection of the health and safety of the public. This document is revised periodically to reflect current licensing requirements.
NUREG-0487, Supp 1	MARK II Containment Lead Plant Program Load Evaluation and Acceptance Criteria - Generic Technical Activities A8 and A39. September 1980. ONRR GPO. NTIS. The staff issued a report, NUREG-0487, in October 1978 that provided acceptance criteria for the suppression pool dynamic loads associated with safety relief valve discharges and loss-of-coolant accidents for the lead MARK II plants. This report is a supplement to NUREG-0487. Issuance of this supplement concludes the MARK II Lead Plant Program except for the condensation oscillation and the chugging load specifications. It contains an evaluation of the proposed alternatives to the lead plant acceptance criteria and an update of the ongoing MARK II Long Term Program. This evaluation was conducted as a part of the NRC's Generic Technical Activities A-8 and A-39.
NUREG-0525, Rev 2	Safeguards Summary Event List (SSEL). September 1980. ONMSS GPO. NTIS. The Safeguards Summary Event List (SSEL) provides data on nine categories of Safeguards-related events involving NRC licensed material or licensees. It is deliberately broad in scope for two main reasons. First, the list is designed to serve as a reference document. It is as complete and accurate as possible. If additional

information is obtained on an event, it will be incorporated into future revisions of the list. Second, the list is intended to provide as broad a perspective of the nature of licensee-related events as possible.

NUREG-0535

Review and Assessment of Package Requirements (Yellowcake) and Emergency Response to Transportation Accidents.
July 1980.
ONMSS GPO. NTIS.

Following the accidental spill of yellowcake in Colorado in September 1977, a U.S. Nuclear Regulatory Commission/U.S. Department of Transportation study group met to consider topics on yellowcake packaging and response to transportation accidents involving any radioactive material. The group concluded that in an accident the state and local government agencies are responsible for controlling the scene, that carriers are responsible for notifying authorities and isolating and cleaning up any spilled radioactive material, and that shippers are responsible for informing others of hazards of the cargo. The group recommended that these parties prepare plans for carrying out these responsibilities. The group also recommended transportation data-gathering programs but, based on cost effectiveness arguments, did not recommend additional package requirements for yellowcake shipments.

NUREG-0559

A Comparative Analysis of LWR Fuel Designs.
July 1980.
ONRR GPO. NTIS.

The computer code GAPCON-THERMAL-2 was used to generate thermal performance predictions for the spectrum of commercial light-water-reactor fuel designs at four different steady-state power levels. The input parameters for the code were obtained from design data that are nonproprietary and are tabulated in this report. Calculated values of maximum fuel temperature, average fuel temperature, stored energy, gap conductance, fission gas release and rod internal pressure are plotted as a function of burnup. Radial fuel pellet temperatures are also plotted at one burnup level.

NUREG-0612

Control of Heavy Loads at Nuclear Power Plants Resolution of Generic Technical Activity A-36.
July 1980.
ONRR GPO. NTIS.

This report summarizes work performed by the NRC staff in the resolution of Generic Technical Activity A-36, "Control of Heavy Loads Near Spent Fuel." Generic Technical Activity A-36 is one of the generic technical subjects designated as "unresolved safety issues" pursuant to Section 210 of the Energy Reorganization Act of 1974. The report describes the technical studies and evaluations performed by the NRC staff, the staff's guidelines based on these studies, and the staff's plans for implementation of its technical guidelines.

NUREG-0653

Report on Nuclear Industry Quality Assurance Procedures for Safety Analysis Computer Code Development and Use.
August 1980.
ONRR GPO. NTIS.

As a result of a request from Commissioner V. Gilinsky to investigate in detail the causes of an error discovered in a vendor Emergency Core Cooling System (ECCS) computer code in March 1978, the staff undertook an extensive investigation of vendor quality control practices as applied to safety analysis computer code development and use. This investigation included conducting inspections of code development and use practices of the four major light-water-reactor nuclear steam supply system vendors and a major reload fuel supplier. The conclusion reached by the staff as a result of the investigation is that vendor practices for code development and use are basically sound. A number of areas were identified, however, where improvements to existing vendor procedures should be made. In addition, the investigation also addressed the quality assurance (QA) review and inspection process for computer codes and identified areas for improvement.

Report No.	Bibliographic Data
NUREG-0658, Rev 1	Technical Specifications, Sequoyah Nuclear Plant, Unit No. 1, Docket No. 50-327, Appendix "A" to License No. DPR-77. September 1980. ONRR GPO. NTIS. The Sequoyah Unit 1 Technical Specifications were prepared by the U.S. Nuclear Regulatory Commission. The Sequoyah Unit 1 Technical Specifications set forth the limits, operating conditions and other requirements applicable to a nuclear reactor facility as set forth in Section 50.36 of 10 CFR Part 50 for the protection of the health and safety of the public.
NUREG-0660, Vol 1	NRC Action Plan Developed as a Result of the TMI-2 Accident, Revision 1, Vol 1. July 1980. OEDO GPO. NTIS. The Action Plan provides a comprehensive and integrated plan for all actions judged necessary by the Nuclear Regulatory Commission to correct or improve the regulation and operation of nuclear facilities based on the experience from the accident at the Three Mile Island Unit 2 nuclear facility and the official studies and investigations of the accident. The major portion of Revision 1 is a revised version of Chapter V, which delineates the intentions of the Commission. In recognition of interrelationships that call for correlated planning and action, the items in the chapter have been grouped into seven subject areas.
NUREG-0660, Vol 2	NRC Action Plan Development as a Result of the TMI-2 Accident, Revision 1, Vol. 2. July 1980. OEDO GPO. NTIS. The Action Plan provides a comprehensive and integrated plan for all actions judged necessary by the Nuclear Regulatory Commission to correct or improve the regulation and operation of nuclear facilities based on the experience from the accident at the Three Mile Island Unit 2 nuclear facility and the official studies and investigations of the accident. The major portion of Revision 1 is a revised version of Chapter V, which delineates the intentions of the Commission. In recognition of interrelationships that call for correlated planning and action, the items in the chapter have been grouped into seven subject areas.
NUREG-0661	MARK I Containment Long Term Program Safety Evaluation Report, Resolution of Generic Technical Activity A-7. February 1977 to December 1979. July 1980. ONRR GPO. NTIS. During testing for an advanced Boiling Water Reactor (BWR) containment system design (MARK III), suppression pool hydrodynamic loads were identified which had not been considered in the original design of the MARK I containment system. To address this issue, a MARK I Owners Group was formed and the assessment was divided into a short-term and long-term program. The results of the NRC staff's review of the MARK I Containment Short-Term Program are described in NUREG-0408. This report describes the results of the NRC staff's review of the generic MARK I Containment Long-Term Program (LTP). The LTP was conducted to provide a generic basis to define suppression pool hydrodynamic loads and the related structural acceptance criteria, such that a comprehensive reassessment of each MARK I containment system would be performed. A series of experimental and analytical programs were conducted by the MARK I Owners Group to provide the necessary bases for the generic load definition and structural assessment techniques. The generic methods proposed by the MARK I Owners Group, as modified by the NRC staff's requirements, will be used to perform plant-unique analyses, which will identify the plant modifications, if any, that will be needed to restore the originally intended margin of safety in the MARK I containment designs.
NUREG-0664, Rev 1	North Anna Power Station Unit 2 Technical Specifications Appendix "A" to License No. NPF-7. August 1980. ONRR GPO. NTIS. The North Anna Unit 2 Technical Specifications, which were prepared by the U.S. Nuclear Regulatory Commission, set forth the limits, operating conditions and other requirements applicable to nuclear reactor facility operation as set forth in 10 CFR 50.36 for the protection of the health and safety of the public.

Report No.	Bibliographic Data
NUREG-0675, Supp 10	Safety Evaluation Report Related to Operation of Diablo Canyon Nuclear Power Station, Units 1 and 2, Pacific Gas and Electric Company, Docket Nos. 50-275 and 50-323, Supplement No. 10. August 1980. ONRR GPO. NTIS. Supplement No. 10 to the Safety Evaluation Report for Pacific Gas and Electric Company's application for licenses to operate the Diablo Canyon Nuclear Power Station (Docket Nos. 50-275 and 50-323) located in San Luis Obispo County, California, has been prepared by the Office of Nuclear Reactor Regulation of the Nuclear Regulatory Commission. The purpose of this Supplement is to discuss TMI-2-related requirements that must be met prior to fuel load of the Diablo Canyon facilities.
NUREG-0678	The Effects of Temperature, Moisture, Concentration, Pressure and Mass Transfer on the Adsorption of Krypton and Xenon on Activated Carbon. August 1980. ACRS GPO. NTIS. This report is a critical review of the published literature on the adsorption of radioactive krypton and xenon on activated charcoal. The report includes a tabulation and evaluation of the adsorption coefficients for these two gases as related to temperature, pressure, moisture, mass transfer effects, and the nature of the carrier gas. Whenever possible, the resulting data have been used to develop simple correlations for quantitatively evaluating the effects of these parameters on noble gas adsorption. Important conclusions of the study include the observations that (a) individual charcoals have a wide range of adsorption coefficients and therefore the performance of a given bed is heavily dependent on the quality of the charcoal it contains; (b) because of the detrimental effects of mass transfer on noble gas adsorption, consideration should be given to including this factor in developing technical specifications for adsorption beds; and (c) additional research is needed on the determination of the interrelationship of moisture and temperature and their effects on adsorption bed performance.
NUREG-0679	Pipe Cracking Experience in Light-Water Reactors, 1967 through 1979. August 1980. ONRR GPO. NTIS. Commercial light-water reactors have experienced pipe cracking since 1965. This report summarizes pipe cracking experience in light-water reactors as reported in Licensee Event Reports from 1967 through 1979, other licensee and vendor reports, and Office of Inspection and Enforcement Bulletins. Pipe cracks which were environmentally induced, such as stress corrosion cracking of metal sensitized by welding and heat treatment, were most prevalent. Feedwater pipes experienced fatigue cracking from thermal stress and many small lines developed leaks as a result of fatigue caused by vibration. Cracking incidents are separated into generic categories and listed by reactor type, pipe size, and systems affected.
NUREG-0684	Summary of Public Comments and NRC Staff Analysis Relating to Rulemaking on Emergency Planning for Nuclear Power Plants. September 1980. OSD GPO. NTIS. This NUREG provides a summary and discussions of public comments received during the expedited rulemaking to upgrade emergency preparedness around nuclear power reactor sites. The final rule was published in the Federal Register (45 FR 55402) on August 19, 1980. The information in NUREG-0684 was excerpted in the main from internal paper SECY-80-275 (June 3, 1980) which forwarded the final rule to the Commission for consideration. This document, along with NUREG-0628, NUREG/CP-0011, and the materials cited in the Final Rules, should be considered a compendium of the major issues raised in this proceeding and acted upon by the Commission.
NUREG-0685	Environmental Assessment for Effective Changes to 10 CFR Part 50 and Appendix E to 10 CFR Part 50; Emergency Planning Requirements for Nuclear Power Plants. August 1980. OSD GPO. NTIS. The staff of the U.S. Nuclear Regulatory Commission has prepared an Environmental Assessment for changes to the regulations governing emergency planning requirements. Based on this assessment, the Director, Office of Standards Development, determined

that an Environmental Impact Statement would not be prepared for the rule changes and directed that a "Negative Declaration; Finding of No Significant Impact" be prepared and published in the Federal Register. The Environmental Assessment is presented and the Federal Register Notice is attached as Appendix B. (Included in Appendix B is an analysis of comments received on an earlier draft version of this Assessment (45 FR 3913, January 21, 1980).) The effective rule changes are included as Appendix C for completeness.

NUREG-0686

Final Environmental Statement Related to Primary Cooling System Chemical Decontamination at Dresden Nuclear Power Station, Unit No. 1. Docket No. 50-010.
October 1980.
ONRR GPO. NTIS.

The staff has considered the environmental impact and economic costs of the proposed primary cooling system chemical decontamination at Dresden Nuclear Power Station Unit 1 located in Grundy County, Illinois. This statement focuses on the occupational radiation exposure associated with the proposed Unit 1 decontamination program, on alternatives to chemical decontamination, and on the environmental impact of the disposal of the solid radioactive waste generated by this decontamination. The staff has concluded that the proposed decontamination will not significantly affect the quality of the human environment. Furthermore, any impacts from the decontamination program are outweighed by its benefits.

NUREG-0691

Investigation and Evaluation of Cracking Incidents in Piping in Pressurized Water Reactors.
September 1980.
GPO. NTIS.

This report summarizes an investigation of known cracking incidents in pressurized-water-reactor plants. Several instances of cracking in feedwater piping in 1979, together with reported cases of stress corrosion cracking at Three Mile Island Unit 1, led to the establishment of the third Pipe Crack Study Group. Major differences between the scope of the third PCSG and the previous two are: (1) the emphasis given to systems safety implications of cracking and (2) the consideration given all cracking mechanisms known to affect PWR piping, including the failure of small lines in secondary safety systems. The present PCSG reviewed existing information on cracking of PWR pipe systems, either contained in written records or collected from meetings in the United States, and made recommendations in response to the PCSG charter questions and to other major items that may be considered to either reduce the potential for cracking or to improve licensing bases.

NUREG-0692

Final Environmental Statement Related to Steam Generator Repair at Surry Power Station, Unit No. 1. Virginia Electric and Power Cmpany, Docket No. 50-280.
July 1980.
ONRR GPO. NTIS.

A Final Environmental Statement for the Surry Power Station Unit 1 Steam Generator Repair Program has been prepared by the Office of Nuclear Reactor Regulation. This Statement considers the environmental impacts and economic costs of the proposed steam generator repair at Surry Power Station Unit 1. The Statement focuses on the occupational radiation exposure associated with the proposed Unit 1 repair program and on alternatives to reduce this exposure. It concludes that the proposed repair will not significantly affect the quality of the human environment. Furthermore, any impacts from the repair program are outweighed by its benefits. Also included are comments of Federal, State and local governmental agencies and certain nongovernmental organizations and individuals.

NUREG-0696

Functional Criteria for Emergency Response Facilities.
July 1980.
ONRR GPO. NTIS.

There are four facilities related to the function of mitigating nuclear reactor abnormal situations: (1) The Safety Parameter Display System (SPDS), (2) the onsite Technical Support Center (TSC), (3) the Emergency Operations Facility (EOF), and (4) the Nuclear Data Link (NDL) providing information to the NRC Operations Center. This report delineates the functional criteria for these facilities in sufficient detail and scope for licensee and other emergency preparedness planners to design an integrated emergency resource capability for inclusion in emergency plans. More detailed acceptance criteria are being developed separately and will be issued in the future.

Report No.	Bibliographic Data
NUREG-0698	NRC Plans for Cleanup Operations at Three Mile Island Unit 2. July 1980. ONRR GPO. NTIS. The objective of this NRC master plan is to define the functional role of the NRC in cleanup operations at Three Mile Island Unit 2 to assure that agency regulatory responsibilities and objectives will be fulfilled. The plan outlines NRC functions in TMI-2 cleanup operations in the following areas: (1) the functional structure of NRC in its coordination with other government agencies, the public, and the licensee, (2) the functional roles of these organizations in cleanup operations, (3) the NRC review and decision-making procedure for the licensee's proposed cleanup operation, (4) the NRC/licensee schedule of major actions, and (5) NRC's functional role in overseeing implementation of approved licensee activities.
NUREG-0699	Comments on the NRC Safety Research Program Budget for Fiscal Year 1982. July 1980. ACRS GPO. NTIS. Recommendations of the Advisory Committee on Reactor Safeguards are presented to the Commissioners for their consideration for FY82 budget for the NRC safety research program.
NUREG-0702	Final Environmental Statement Related to the Operation of Gas Hills Uranium Project, Docket No. 40-299, Union Carbide Corporation. August 1980. ONMSS GPO. NTIS. A Final Environmental Statement for Union Carbide Corporation related to the renewal of Source Material License SUA-648 for the Gas Hills Uranium Project located in Natrona County, Wyoming (Docket No. 40-299) has been prepared by the Office of Nuclear Material Safety and Safeguards. This statement provides (1) a summary of environmental impacts and adverse effects of the proposed action and (2) a consideration of principal alternatives. Also included are comments of governmental agencies and other organizations on the Draft Environmental Statement for this project, and staff responses to these comments. The NRC has concluded that, after weighing the environmental, economic, technical, and other benefits of the Gas Hills Uranium Project against environmental and other costs and considering available alternatives, the action called for is renewal of the source material license, subject to stipulated conditions.
NUREG-0703	Potential Threat to Licensed Nuclear Activities from Insiders (Insider Study). July 1980. ONMSS GPO. NTIS. The Insider Study was undertaken by NRC staff at the request of the Commission. Its objectives were to: (1) determine the characteristics of potential insider adversaries to licensed nuclear activities; (2) examine security system vulnerabilities to insider adversaries; and (3) assess the effectiveness of techniques used to detect or prevent insider malevolence. The study analyzes insider characteristics as revealed in incidents of theft or sabotage that occurred in the nuclear industry, analogous industries, government agencies, and the military. Adversary characteristics are grouped into four categories: position-related, behavioral, resource and operational. It also analyzes (1) the five security vulnerabilities that most frequently accounted for the success of the insider crimes in the data base; (2) the 11 means by which insider crimes were most often detected; and (3) four major and six lesser methods aimed at preventing insider malevolence. In addition to case history information, the study contains data derived from non-NRC studies and from interviews with over 100 security experts in industry, government (federal and state) and law enforcement.
NUREG-0706, Vol 1	Final Generic Environmental Impact Statement on Uranium Milling Project M-25: Volume I - Summary and Text. September 1980. ONMSS GPO. NTIS. The Final Generic Environmental Impact Statement (GEIS) on Uranium Milling focuses primarily upon the matter of mill tailings disposal. It evaluates both the costs and benefits of alternative tailings disposal modes and draws conclusions about criteria which should be incorporated into regulations. Both institutional and technical controls are evaluated. Health impacts considered were both short- and long-term. Restatement and resolution of all public comments received on the draft (GEIS) are presented. There are three volumes: Volume I is the main text and Volumes II and III are supporting appendices.

Report No.	Bibliographic Data

NUREG-0706, Vol 2

Final Generic Environmental Impact Statement on Uranium Milling Project M-25: Volume II - Appendices A-F.
September 1980.
ONMSS GPO. NTIS.

The Final Generic Environmental Impact Statement (GEIS) on Uranium Milling focuses primarily upon the matter of mill tailings disposal. It evaluates both the costs and benefits of alternative tailings disposal modes and draws conclusions about criteria which should be incorporated into regulations. Both institutional and technical controls are evaluated. Health impacts considered were both short- and long-term. Restatement and resolution of all public comments received on the draft (GEIS) are presented. There are three volumes: Volume I is the main text and Volumes II and III are supporting appendices.

NUREG-0706, Vol 3

Final Generic Environmental Impact Statement on Uranium Milling Project M-25: Volume III - Appendices G-V.
September 1980.
ONMSS GPO. NTIS.

The Final Generic Environmental Impact Statement (GEIS) on Uranium Milling focuses primarily upon the matter of mill tailings disposal. It evaluates both the costs and benefits of alternative tailings disposal modes and draws conclusions about criteria which should be incorporated into regulations. Both institutional and technical controls are evaluated. Health impacts considered were both short- and long-term. Restatement and resolution of all public comments received on the draft (GEIS) are presented. There are three volumes: Volume I is the main text and Volumes II and III are supporting appendices.

NUREG-0715

Task Force Report on Interim Operation of Indian Point.
August 1980.
ORES GPO. NTIS.

On May 30, 1980 the Commission issued an order establishing a four-pronged approach for resolving the issues raised by the Union of Concerned Scientists' petition regarding the Indian Point nuclear facilities. Among other things a Task Force on Interim Operation was established to address the question of whether Indian Point Units 2 and 3 should or should not be allowed to operate during the pendency of a planned adjudication. Specifically, the Task Force report deals with two major issues. The first issue relates to accident risk as a function of population density and distribution around the plant. New York City is less than 50 miles to the south of the Indian Point site. The Task Force compared Indian Point risks (e.g., health impacts and property damage) with those of other reactor sites and designs, distinguishing between the effects of population densities and of design and other factors. Secondly, the Task Force examined the economic, social and other "nonsafety" effects of shutting down or reducing the power levels of either or both reactors. In particular, the Task Force compared projected peak demands for energy with projected available capacity to determine if reducing power levels at Indian Point would affect system reliability in the summer of 1980.

NUREG-0721

Acceptance Criteria for the Physical Protection Upgrade Rule Requirements for Fixed Sites.
September 1980.
ONMSS GPO. NTIS.

This document has been developed as a tool to assist in providing consistent evaluation of upgraded physical security plans submitted in response to the Physical Protection Upgrade Rule, effective March 25, 1980. It presents a means for assuring licensee compliance with every regulatory requirement of particular significance to the protection of the public health and safety. Acceptance criteria are included to determine the extent to which each licensee meets the regulatory requirements. The format parallels Regulatory Guide 5.52, "Standard Format and Content of a Licensee Physical Protection Plan for Strategic Special Nuclear Material at Fixed Sites (Other than Nuclear Power Plants)."

Report No.	Bibliographic Data

NUREG-0722

The Effects of Natural Phenomena on the Exxon Nuclear Company Mixed Oxide Fabrication Plant at Richland, Washington.
September 1980.
ONMSS GPO. NTIS.

An Analysis of the Effects of Natural Phenomena on the Exxon Nuclear Company Mixed Oxide Fabrication Plant at Richland, Washington has been prepared by the Office of Nuclear Material Safety and Safeguards. The analysis is in support of the Special Nuclear Materials License held by the subject company. It addresses the probable effects of damage to the Exxon Nuclear Company Mixed Oxide Fabrication Plant by severe weather and earthquake and expresses the consequence of damage as dose to several human receptors. The doses that result from facility damage are multiplied by the occurrence rate for the initiating event yielding the yearly risk.

NUREG-0727, Add.

Final Environmental Statement Related to the Operation of the Joseph M. Farley Nuclear Plant, Units 1 and 2, Docket Nos. 50-348 and 50-364.
September 1980.
ONRR GPO. NTIS.

This addendum to the Final Environmental Statement addresses the environmental dose commitments and health effects from fuel cycle releases, fuel cycle socioeconomic impacts, and possible cumulative impacts pending further treatment by rulemaking.

NUREG-0728

Report to Congress: NRC Incident Response Plan.
September 1980.
OIE GPO. NTIS.

The Nuclear Regulatory Commission (NRC) regulates civilian nuclear activities to protect the public health and safety and to preserve environmental quality. An Incident Response Plan has been developed which assigns responsibilities for responding to any potentially threatening incident involving NRC licensed activities and for assuring that the NRC will fulfill its statutory mission.

NUREG-0729

Report to Congress on NRC Emergency Communications.
September 1980.
OIE GPO. NTIS.

The accident at Three Mile Island highlighted the need for improved communications among the NRC and other organizations which respond to such emergencies. This report summarizes the communications problems identified by several major review groups after the accident, the status of corrective actions, and NRC plans to improve communications still further.

NUREG-0730

Report to Congress on the Acquisition of Reactor Data for the NRC Operations Center.
September 1980.
OIE GPO. NTIS.

This report considers alternative methods for transmission of data from operating nuclear reactors to the NRC Operations Center in order for NRC to carry out its responsibilities in a nuclear emergency. The report considers the spectrum of roles NRC will play, discusses the various alternatives and describes in detail one data link concept which could meet the NRC data requirements. In addition, the report considers the data link in relation to other required emergency facilities and presents an implementation plan and schedule for an automatic system, if a decision is made to proceed.

NUREG-0732

Answers to Frequently Asked Questions about Cleanup Activities at Three Mile Island, Unit 2.
September 1980.
ONRR GPO. NTIS.

This document presents answers to frequently asked questions about plans for cleanup and decontamination activities at Three Mile Island Unit 2. Answers to the questions asked are based on information in the NRC "Draft Programmatic Environmental Impact Statement Related to Decontamination and Disposal of Radioactive Wastes Resulting from March 28, 1979 Accident, Three Mile Island Nuclear Station, Unit 2," NUREG-0683.

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Sequential List of NRC Contractor-Generated Reports Designated NUREG/CR

Report No.	Bibliographic Data

NUREG/CR-0055, Vol 2

Verification of Subsurface Conditions at Selected "Rock" Accelerograph Stations in California.
September 1980.
Shannon & Wilson; Agbabian Assoc.
ORES GPO. NTIS.

Second in a series of reports to investigate the subsurface soil conditions at accelerograph stations which have been categorized by other researchers as "rock" sites. Contained in this volume are our findings of the site conditions at 29 accelerograph stations in California. Subsurface conditions at the sites were investigated with a geologic reconnaissance and a review of available boring data. At three sites, where boring data was not available, a test hole was drilled to better define the depth to rock. Of the 29 "rock" sites that were investigated, less than half could be verified as being founded on or within about 20 feet of rock. This would imply that over half of the stations are really soil sites.

NUREG/CR-0055, V. 2 App

Verification of Subsurface Conditions at Selected "Rock" Accelerograph Stations in California.
September 1980.
Shannon & Wilson; Agbabian Assoc.
ORES GPO. NTIS.

Appendix to the second in a series of reports to investigate the subsurface soil conditions at accelerograph stations which have been categorized by other researchers as "rock" sites in California. Appendix to Volume 2 contains the accelerograms which have been recorded at the sites investigated. Subsurface conditions at the sites were investigated with a geologic reconnaissance and a review of available boring data. At three sites, where boring data was not available, a test hole was drilled to better define the depth to rock. Of the 29 "rock" sites that were investigated, less than half could be verified as being founded on or within about 20 feet of rock. This would imply that over half of the stations are really soil sites.

NUREG/CR-0055, Vol 3

Verification of Subsurface Conditions at Selected "Rock" Accelerograph Stations in California.
September 1980.
Shannon & Wilson and Agbabian Assoc.
ORES GPO. NTIS.

This report is the third in a series presenting geotechnical information for accelerograph stations in California that have been classified as "rock" sites by one or more investigators. This volume discusses the findings at five locations which are in the vicinity of nine accelerograph stations. Although each of these stations was originally discussed in one of the earlier reports in this series, the available information on the subsurface conditions at each site was insufficient for determining the dynamic properties of the subsurface soils or the depth to rock. Consequently, this study was performed to supplement these previous reports with more detailed subsurface information based on deep borings, downhole geophysical measurements and laboratory tests.

NUREG/CR-0200

SCALE: A Modular Core System for Performing Standardized Computer Analyses for Licensing Evaluation. SCALE System Criticality Safety Analysis Modules CSAS1 and CSAS2.
August 1980.
Oak Ridge National Lab
ORNL/NUREG/CSD-2, Vol 1
ORES GPO. NTIS.

Under contract with the Nuclear Regulatory Commission, the Computer Sciences Division at Oak Ridge National Laboratory has developed the SCALE system for performing Standardized Computer Analyses for Licensing Evaluation of nuclear systems. The SCALE system includes a number of selected data libraries as well as various calculational modules for performing criticality, shielding and heat transfer analyses. This document describes the CSAS1 and CSAS2 control modules which shield the group-averaged cross-section data for the given situation and perform a one-dimensional discrete ordinates or multidimensional Monte Carlo calculation to obtain the effective neutron multiplication factor (k-eff) for the configuration described by the user.

Report No.	Bibliographic Data
NUREG/CR-0453, Rev 1	SIMMER-II: A Computer Program for LMFBR Disrupted Core Analysis. July 1980. Los Alamos Scientific Lab LA-7515-M, Rev ORES GPO. NTIS. Physical models, numerical methods, and program description are presented for SIMMER-II, a computer program to predict the neutronic and fluid-dynamic behavior of an LMFBR during a hypothetical core-disruptive accident. Either the time-dependent multigroup neutron diffusion or neutron transport equation is solved by the quasistatic method to predict reactor neutronic behavior during the accident. Cross sections depend on temperature and background cross sections. The structure, liquid, and vapor fields are modeled to predict the fluid-dynamic behavior of the reactor. Each field consists of density components to follow the material motion and energy components to predict the material temperatures. For typical accident calculations, the materials are fertile fuel, fissile fuel, stainless steel, sodium, control material, and fission gas. Heat, mass, and momentum transfer are calculated among the three fields and their components.
NUREG/CR-0508	Security Communication Systems for Nuclear Fixed-Site Facilities. July 1980. Y-12 Plant, Oak Ridge Y/DW-128 OSD GPO. NTIS. This report presents a basic discussion of communication techniques and factors relevant to designing communication systems for nuclear fixed site facility security systems. The reader is provided communication fundamentals, design considerations, and specification techniques. Copious references and an annotated bibliography are provided for individuals who desire to delve deeper than the limits and areas of study of this report. Ease of reading and use of this report are enhanced by relegating detailed communication design treatise to the Appendices. Sample procurement specifications are provided throughout the report for various communication system components and are distinguished from the regular text by using a smaller type.
NUREG/CR-0603	A Risk Assessment of a Pressurized Water Reactor for Class 3-8 Accidents. September 1980. Brookhaven National Lab BNL-NUREG-50950 ORES GPO. NTIS. An assessment has been made of the impact on societal risk of Class 3-8 accident sequences as defined by Appendix D to 10 CFR 50. The present analysis concentrates on a pressurized water reactor and utilizes realistic assumptions when practical. Conclusions are drawn as to the relative importance of the analyzed accidents and their impact on the development of a complete societal risk curve.
NUREG/CR-0720	LWR Pressure Vessel Irradiation Surveillance Dosimetry Quarterly Progress Report, October-December 1978. July 1980. Hanford Engineering Develop. Lab HEDL-TME-79-18 ORES GPO. NTIS. This report describes progress made in the Light Water Reactor Pressure Vessel Irradiation Surveillance Dosimetry Program during October-December 1978. The primary objective of the 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. 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."

Report No.	Bibliographic Data
NUREG/CR-0723	Calculations of the Skyshine Gamma-Ray Dose Rates from Independent Spent Fuel Storage Installations (ISFSI) Under Worst Case Accident Conditions. September 1980. Oak Ridge National Lab ORNL/NUREG/TM-316 ONMSS GPO. NTIS. Calculations of the skyshine gamma-ray dose rates from three spent fuel storage pools under worst case accident conditions have been made using the discrete ordinates code DOT-IV and the Monte Carlo code MORSE and have been compared to those of two previous methods. The DNA 37N-21G group cross section library was utilized in the calculations, together with the Claiborne-Trubey gamma-ray dose factors taken from the library. Plots of all results are presented. It was found that the dose was a strong function of the iron thickness over the spent fuel assemblies, the initial angular distribution of the emitted radiation, and the photon source near the top of the assemblies.
NUREG/CR-0742	Review and Integration of Existing Literature Concerning Potential Social Impacts of Transportation of Radioactive Materials in Urban Areas. July 1980. Rice Univ; Univ of Texas; Sandia Natl. Lab SAND78-7017 OSD GPO. NTIS. The symbolic interactionist/collective behavior approach within sociology is applied to the transport of radioactive materials through urban environs, indicating that social impacts of such transport would extend far beyond objectively measurable radiological impacts of normal (incident free) transport, accidents during transport (with or without radiation release) or diversion by terrorists. This approach is used to delineate the major cultural frames of reference that interested publics and special groups might use in interpreting events surrounding radioactive material transport, and to specify probable social impacts of seven scenarios. These impacts include: (1) uncertainty, fear and mistrust, (2) processes, (3) initial agency responses, (4) subsequent collective behavior responses, and (5) a wide range of more general impacts on U.S. culture and special structure.
NUREG/CR-0744	Identification and Assessment of the Social Impacts of Transportation of Radioactive Materials in Urban Environments. July 1980. Battelle Human Affairs; Sandia National Lab SAND79-7032, B-HARC-411-049 OSD GPO. NTIS. This study provides an assessment of the range of social impacts that have occurred or may result from the transportation of radioactive materials through urban environments. These impacts are identified by retrospectively examining representative cases and reviewing selections from the theoretical and the technical literatures on social impacts. The likelihood of social impacts occurring in the future is assessed on the basis of observed impacts to date. The study analyzes five categories of social impacts (psychological, sociological, political, legal, and organizational) resulting from four causative transportation events (incident free, vehicular accidents, human errors and deviations from accepted quality assurance practices, and malevolent acts). The methods of analysis include evaluations of public opinion surveys, selected literature reviews, analysis of selected case studies, interviews with knowledgeable officials and citizens, legal analyses, review of relevant informed professional judgement. This study concludes that political and legal impacts have been more substantial than psychological and sociological impacts, and for a given magnitude of physical consequences, radioactive materials transportation has greater social impacts than hazardous materials transportation generally. Malevolent acts, among the four causative event categories, appear to hold the greatest potential for severe social impacts.
NUREG/CR-0761	Extended Analysis of Data from the 1/5-Scale MARK I Boiling Water Reactor Pressure Suppression Experiment. July 1980. Lawrence Livermore Lab UCRL-52707 ORES GPO. NTIS. An extensive analysis of data from the 1/5-scale MARK I BWR Pressure Suppression Experiment (PSE) air transient tests has been completed. Primary focus was placed on

computing a best estimate of the hydrodynamic vertical load function (HVLF) and determining the associated peak forces and their standard error. These results were then applied to develop the sensitivity of the HVLF to various major parameters (for example, drywell pressurization rate), to evaluate the impulse of the HVLF, and to analytically model the response vertical load function (RVLF). In addition, a complete evaluation of the enthalpy flux distribution in the vent system was provided for each test. Finally, pool swell dynamics were quantified for a subset of the test series and correlated to the observed ringheader strut loads.

NUREG/CR-0893

Acute Toxicity and Bioaccumulation of Chloroform to Four Species of Freshwater Fish.
August 1980.
Battelle Pacific Northwest Lab
PNL-3046
ORES GPO. NTIS.

Acute toxicity of chloroform to four species of freshwater fish was studied in flow-through 96-hr toxicity tests. Chloroform is toxic to fish in the tens of parts per million, a concentration well above that which would be expected to be produced under normal power plant chlorination conditions. Investigations of acute toxicity of chloroform and the bioaccumulation of chlorinated compounds in tissues of fish revealed differences in tolerance levels and tissue accumulations. Mean 96-hr LC_{50}s for chloroform were 18 ppm for rainbow trout and bluegill, 51 ppm for largemouth bass and 75 ppm for channel catfish. Mortalities of bluegill and largemouth bass occurred during the first 4 hr of exposure while rainbow trout and channel catfish showed initial tolerance and mortalities occurred during the latter half of the 96-hr exposure. Rainbow trout had the highest level of chloroform tissue accumulation (7 mg/g tissue) and catfish the second highest (4 mg/g tissue) followed by bluegill and largemouth bass which each accumulated about 3 mg/g tissue. Accumulation of chloroform was less than one order of magnitude above water concentrations for all species.

NUREG/CR-0961

Qualification Test Results on 1550°C and 2200°C 1/16-Inch O.D. Fuel Centerline Thermocouples for the LOFT Program.
September 1980.
Hanford Engineering Develop. Lab
HEDL-TME-79-50
ORES GPO. NTIS.

The technology and commercial vendors have been developed for fabrication of thermocouples to measure fuel centerline temperatures to 2200°C in the LOFT reactor. Two model A and one model B qualification thermocouples satisfied all test requirements during life tests at 2200°C and 1550°C. The emf output drifted less than 2% during 400-hour tests at the maximum test temperatures of 2200°C and 1550°C. Measurement performance remained unimpaired after 145°C/s transient survival tests. The thermocouples did not meet the time response requirement of one second. Time responses of 4½ seconds at 1550°C and 2½ seconds at 2200°C were measured. However, this result was not considered too negative to preclude useful temperature measurement of fuel centerline temperatures in the LOFT reactor. The first qualification thermocouples satisfied all other test requirements.

NUREG/CR-0985, Vol 3

Geotechnical and Strong Motion Earthquake Data from U.S. Accelerograph Stations.
September 1980.
Shannon & Wilson; Agbabian Assoc.
ORES GPO. NTIS.

This is the third in a series of reports to investigate the subsurface soil conditions at selected accelerograph stations. Contained in this volume are the findings of site conditions at six accelerograph stations in the western U.S. These stations are located at Gilroy, California; Logan, Utah; Bozeman, Montana; Tacoma, Washington; and two sites in Helena, Montana. Subsurface conditions at the first four sites were investigated by means of deep borings, field geophysical testing, and laboratory testing of soil samples retrieved from the borings. Investigation of the Helena sites consisted of only a geologic reconnaissance since both accelerograph stations are founded on rock.

Report No.	Bibliographic Data
NUREG/CR-0985, Vol 4	Geotechnical and Strong Motion Earthquake Data from U.S. Accelerograph Stations. September 1980. Shannon & Wilson; Agbabian Assoc. ORES GPO. NTIS. This is the fourth in a series of reports presenting geotechnical and seismic data for selected accelerograph stations. This volume discusses the findings at five stations, one each in the cities of Anchorage, Alaska; Seattle, Washington; Olympia, Washington; and two in Portland, Oregon. This report contains information for each site describing the station building and instrumentation, geology and seismology of the area, and site conditions. Deep borings, downhole geophysical measurements, and laboratory tests were conducted at each station, except Olympia, to evaluate the subsurface conditions. Since subsurface data was already available for Olympia, field and laboratory testing was not conducted for this study.
NUREG/CR-0985, Vol 5	Geotechnical and Strong Motion Earthquake Data from U.S. Accelerograph Stations. September 1980. Shannon & Wilson and Agbabian Assoc. ORES GPO. NTIS. This is the fifth in a series of reports presenting geotechnical and seismic data for selected accelerograph stations. This volume discusses the findings at five stations, one each in the following locations: Fairbanks, Alaska; Petrolia, California; Hollister, California; Los Angeles, California; and New Madrid, Missouri. This report contains information for each site describing the station building and instrumentation, geology and seismology of the area, and site conditions. Deep borings, downhole geophysical measurements, and laboratory tests were conducted at each station to evaluate the subsurface conditions.
NUREG/CR-1009	Reactor Safety Research Programs. Quarterly Report - July-September 1979. July 1980. Battelle Pacific Northwest Lab PNL-3040-3 ORES GPO. NTIS. This document summarizes the work performed by Pacific Northwest Laboratory from July through September 1979 for the Division of Reactor Safety Research within the Nuclear Regulatory Commission. Each program is considered separately and is discussed according to major tasks or topics, depending on the nature of the project.
NUREG/CR-1038	Dynamic, Inelastic Buckling Analysis of Mark I Torus Support Columns. August 1980. Lawrence Livermore Lab URCL-52723 ONMSS GPO. NTIS. Columns that support the MARK I BWR containment tori are subjected to short-duration dynamic loads during some accident conditions. To accurately predict the actual response under these conditions, an analysis must incorporate the dynamic behavior of the columns. Two different analysis methods were used in an effort to solve this dynamic, inelastic buckling problem. Neither method adequately solved the problem. The finite element approach gave unstable results for short-duration dynamic load pulses. The finite difference approach did not incorporate the plasticity effects needed to accurately predict column response. Results that were obtained, however, indicated that little additional load capacity could be realized for the combinations of dynamic and static loads, and for the column configurations considered. The results presented in this report indicate that design modifications will be required either to reduce the magnitude of the dynamic load or to increase the strength of the torus support columns.
NUREG/CR-1045	Acute Effects of Inhalation Exposure to Uranium Hexafluoride and Patterns of Deposition. UF_6/UO_2F_2 Studies in Experimental Animals. August 1980. University of Rochester ORES GPO. NTIS. This interim report describes the animal research completed on UO_2F_2 and HF toxicity following inhalation, intratracheal instillation and intravenous injection during the first year of a continuing study. The principal impetus to the study was a needed

evaluation of exposure or intake parameters with respect to urinary excretion levels and renal retention values for uranium inasmuch as these interrelationships are critical to the currently advocated bioassay procedures for uranium workers. Results to date support the relation between absorbed dose and urinary elimination rate pronosed by the ICRP for +6U compounds, indicate pulmonary retention of UO_2F_2 is extremely short (half-time hours), and suggest the threshold absorbed dose for producing renal injury is of the order of 10 mg kg^{-1} body weight. In dogs and rats, glucosuria seems to be a more sensitive indicator of renal dysfunction than albuminuria or plasma urea nitrogen levels. Possible synergism between UO_2F_2 and HF is under study but present results are equivocal. Retention functions for kidney and bone await further experiments in both species.

NUREG/CR-1048

Technical Safeguards Issues for Alternative Fuel Cycles.
September 1980.
Brookhaven National Lab
BNL-NUREG-51182
ONMSS GPO. NTIS.

This study involved a preliminary analysis and assessment of the safeguardability of 21 alternative fuel cycles proposed under the Nonproliferation Alternative Systems Assessment Program (NASAP) of the Department of Energy for technical safeguards issues and problems that might affect regulation or licensing. The approach adopted was to identify generic features, common to two or more fuel cycles, and assess these independently of the fuel cycle in which they are involved. Then the individual fuel cycles were reviewed in order to identify additional unique features -- i.e., those associated with a single fuel cycle only.

NUREG/CR-1071

Critical Experiments with Interstitially-Moderated Arrays of Low-Enriched Uranium Oxide. Topical Report on Reference Critical Experiments.
September 1980.
Rockwell Internat. Rocky Flats Plant
RFP-3008
ORES GPO. NTIS.

The critical separation between two tables supporting arrays and cans containing low-enriched uranium oxide has been measured for twenty-one (21) reflected configurations having interstitial layers of moderating material between cans. The critical separation varied between 0.23 and 1.84 cm. The uranium oxide (U_3O_8) is enriched to 4.46% U-235, compacted to a density of 4.7 g/cm3, and adjusted to an H/U atomic ratio of 0.77 by the addition of water. Each can weighs 16 kg and is a 15.3 cm cube. Interstitial plastic moderator 1.0, 1.3, or 2.5 cm thick separates cans of the three-dimensional array. Some experiments include thin sheets of neutron absorbing materials, such as mild steel or polyvinyl chloride, surrounding each can. Arrays are closely reflected by thick cuboidal shells of plastic or concrete. The parameter varied to achieve criticality is the number of cans in the array. The smallest number of cans (40) occurs with 2.5-cm-thick moderator, no absorber, and concrete reflector. The largest (100) occurs for several combinations of absorber and moderator in both reflectors. For otherwise similar configurations, concrete is the better reflector in all cases.

NUREG/CR-1109

Measurement of Radon Diffusion from Uranium Mill Tailing Piles.
March 1980.
Battelle Pacific Northwest Lab
PNL-3187
ORES GPO. NTIS.

The concentrations of Ra-226 and Rn-222 (Pb-214) were measured as a function of depth within a uranium mill tailings pile by in-situ gamma-ray spectrometry. Radon diffusion and exhalation rates were determined from the concentration gradients by employing an integral solution of the diffusion equation that accommodates a nonuniform depth distribution of the parent radium. Radon diffusion coefficients of 0.0002 and 0.0017 cm2/sec, and exhalation rates of 60 and 275 atoms/cm2/sec were determined for two locations with differing soil moisture content.

Report No.	Bibliographic Data

NUREG/CR-1113

Licensability of CANDU-Type Reactors in the United States. A Preliminary Assessment of the R and D Requirements.
August 1980.
University of California
UCLA-ENG-7853
ONRR GPO. NTIS.

An assessment is provided of the R&D required to establish the licensability of a CANDU-type reactor in the U.S. It is shown that the bulk of the R&D effort shoul! establish the integrity of the pressure tubes and the effects of the pressure tub failure on the remainder of the system. Three possible R&D program options are defined and discussed; it is concluded that one of these options is likely to require less R&D than the other two. The principle underlying this option is that the pressure tubes would be shown to have a moderately low probability of sudden, gross failure and that the effects of a single failure would not lead to unacceptable consequences. In other areas where R&D work would be necessary, more of the problems would be similar to those encountered in LWRs; however, two novel problems are identified, viz: (a) investigation of the effectiveness of the moderator as an alternative emergency cooling system and (b) the effect of the difference in reactor configuration (horizontal heat source) on natural circulation. Overall, it is concluded that a relatively small amount of additional R&D should be sufficient to support a license application to build a CANDU-type reactor in the U.S.

NUREG/CR-1119

Piping Inelastic Fracture Mechanics Analysis.
July 1980.
Naval Research Lab
NRL Memo Rpt 4259
ONRR GPO. NTIS.

This report summarizes the results and conclusions of Tasks 1 and 2 of the study on "Piping Inelastic Fracture Mechanics Analysis." In these tasks, available experimental data and the analytical methods for predicting rupture of LWR piping are assembled and assessed. The analytical techniques investigated can be catalogued into three major groups: structural response, semiempirical methods, and the J-controlled growth approach. A leak-before-break condition is also investigated.

NUREG/CR-1120, Vol 3

Seismic Safety Margins Research Program (Phase I). Progress Report No. 7.
August 1980.
Lawrence Livermore National Lab
ORES GPO. NTIS.

This document is a progress report on the Seismic Safety Margins Research Program (SSMRP) covering the period April 1, 1980 through June 30, 1980. The report gives a general description of the program, together with financial summaries and individual project details. Each project is summarized to show accomplishments, schedules, milestones and completion dates, budget and expenditures, and any concerns that may affect the project.

NUREG/CR-1166

COPS Model Estimates of LLEA Availability Near Selected Reactor Sites.
July 1980.
Sandia Lab, Livermore
ORES GPO. NTIS.

The COPS computer model has been used to estimate local law enforcement agency (LLEA) officer availability in the neighborhood of selected nuclear reactor sites. The results of these analyses are presented both in graphic and tabular form in this report.

NUREG/CR-1184

Evaluation of Simulator Adequacy for the Radiation Qualification of Safety Related Equipment.
July 1980.
Sandia Lab, Albuquerque
SAND79-1787
ORES GPO. NTIS.

Radiation qualification will be addressed in this report in order to evaluate the adequacy of radiation simulators typically used in qualification test simulations. Where possible, discussion of combined environment effects will be made. "Adequacy" need not be based on one-to-one correspondence of the actual radiation signature with

a simulator signature, although that would be sufficient to assure adequacy. Instead, adequacy is to be judged on the basis of equivalence of equipment "damage" as a result of the exposure; under that definition of adequacy, the radiation signatures may not be identical but the damage (and damage mechanisms) must be quite similar.

NUREG/CR-1185

COMPARE-MOD 1 Code, Addendum 1.
August 1980.
Los Alamos Scientific Lab
LA-7199-MS, Add 1
ONRR GPO. NTIS.

The COMPARE-MOD 1 code has been extended to incorporate an accounting for loss coefficient detail, calculation of forces and moments, and plotting of calculated results. The loss codfficient detail feature includes a complete breakdown of the loss coefficient components, which facilitates checking the input, the calculation of the friction component, and the summation of the components to provide the total loss coefficient. The force-moment capability is based on a general orthogonal cartesian coordinate system that allows pressure-bearing surfaces of arbitrary orientation and location. Plotting is based on the DISSPLA system and features the convenient plotting of key parameters such as pressures, forces and moments, and plotting of any code variable by means of special plotting procedures.

NUREG/CR-1192

Material Accounting as Required by the United States Nuclear Regulatory Commission: Capabilities and Vulnerabilities.
September 1980.
Lawrence Livermore National Lab
UCRL-52734
ORES GPO. NTIS.

The Lawrence Livermore National Laboratory has undertaken to assist the U.S. Nuclear Regulatory Commission in upgrading its material accounting (MA) regulations. As part of this effort, this report evaluates and critiques the current status of material accounting as required by Parts 70.51 through 70.59 of the Code of Federal Regulations. Through the development and assessment of a generic, minimal MA system, the capabilities of the MA system have been delineated, and the vulnerabilities of the MA system to deliberately induced system failures (i.e., tampering) have been determined.

NUREG/CR-1195

Measurement of XE-133, C-14 and Tritium in Air and I-131 in Vegetation and Milk Around the Quad Cities Nuclear Power Station.
July 1980.
Exxon Nuclear; Idaho National Engineering Lab
ENICO-1023
ORES GPO. NTIS.

The objective of this program was to evaluate the air-grass-cow-milk model for predicting the I-131 dose from normal operations at an actual LWR. The Quad Cities Nuclear Station was selected as the candidate site and measurements were made for a three-month period. The station gaseous effluent release rate was determined for I-131, Xe-133, Kr-85, C-14, and H-3. The chemical species of the released iodine and the oxidization state of the released C-14 and H-3 were determined. In the environment, measurements were made of the I-131 concentration in air at five sites. At two of these sites, determinations were made of the I-131 concentration in vegetation, milk, and precipitation and the Xe-133, C-14, and H-3 concentrations in air.

NUREG/CR-1198, Vol 1

Design Guidance and Evaluation Methodology for Fixed Site Physical Protection Systems, Volume 1.
July 1980.
Sandia National Lab, Albuquerque
SAND79-2378/1
ONMSS GPO. NTIS.

Design guidance products and a system performance evaluation methodology have been developed to aid the Nuclear Regulatory Commission in the implementation of new regulations designed to upgrade the physical protection of nuclear fuel cycle facilities. The evaluation methodology which incorporates the design guidance products, provides a means of arriving at an overall measure of performance for each capability required in the regulations. To arrive at this measure of performance, first the scores associated with responses to a series of equipment and procedure questionnaires are aggregated. The aggregation of scores then proceeds through successive levels of a hierarchical structure developed for each capability.

Report No.	Bibliographic Data

NUREG/CR-1198, Vol 2

Design Guidance and Evaluation Methodology for Fixed Site Physical Protection Systems, Volume 2.
July 1980.
Sandia National Lab, Albuquerque
SAND79-2378/2
ONMSS GPO. NTIS.

Design guidance products and a system performance evaluation methodology have been developed to aid the Nuclear Regulatory Commission in the implementation of new regulations designed to upgrade the physical protection of nuclear fuel cycle facilities. The evaluation methodology which incorporates the design guidance products, provides a means of arriving at an overall measure of performance for each capability required in the regulations. To arrive at this measure of performance, first the scores associated with responses to a series of equipment and procedure questionnaires are aggregated. The aggregation of scores then proceeds through successive levels of a hierarchical structure developed for each capability.

NUREG/CR-1262

Risk Methodology for Geologic Disposal of Radioactive Waste: A Distribution-Free Approach to Inducing Rank Correlation Among Input Variables for Simulation Studies.
July 1980.
Sandia Lab, Albuquerque
SAND80-0157
ORES GPO. NTIS.

A method for inducing a desired rank correlation matrix on a multivariate input random variable is introduced in this paper. This method is simple to use, is distribution-free, preserves the exact form of the marginal distributions on the input variables, and may be used with any type of sampling scheme for which correlation of input variables is a meaningful concept. A small simulation study provides an estimate of the bias and variability involved in the method. Input variables used in a model for study of geologic disposal of radioactive waste provide an example of the usefulness of this procedure.

NUREG/CR-1277

Shock Environments for Large Shipping Containers During Rail Coupling Operations.
August 1980.
Sandia National Lab, Albuquerque
SAND79-2168
ORES GPO. NTIS

Sandia National Laboratories participated in a study to define the shock environments to which large, fissile material shipping containers may be exposed during rail-coupling operations. Tests were conducted using impact velocities up to 17.98 km/h (11.17 mph). The cargo on the rail cars consisted of a 36-tonne (40-ton) cask mounted on a skid or a 64-tonne (70-ton) cask. The rail cars were equipped with either standard draft gear, hydraulic end-of-car draft gear, or a sliding center sill cushion underframe. The maximum peak acceleration and its pulse duration were determined for the longitudinal, transverse, and vertical axes of the two casks.

NUREG/CR-1282

Statistical Analysis of Steam Generator Inspection Plans and Eddy Current Testing.
August 1980.
Sandia National Lab, Albuquerque
SAND79-2300
ONRR GPO. NTIS.

Methods are given for choosing steam generator inspection plans which have specified statistical properties. The methods include adjustments for the possible effect of eddy current testing measurement error. Available measurement error data are analyzed and statistical methods are given for analyzing the results of in-service inspection of steam generators. To evaluate candidate inspection plans, a computer simulation is proposed and illustrated. Additionally, an exponential/double exponential probability model for the distributions of degradation and measurement error is developed and used in a parametric study of some statistical properties of inspection plans.

Report No.	Bibliographic Data

NUREG/CR-1289

Evaluation of Isotope Migration-Land Burial Water Chemistry at Commercially Operated Low Level Radioactive Waste Disposal Sites.
July 1980.
Brookhaven National Lab
BNL-NUREG-51143
ORES GPO. NTIS.

In cooperation with the U.S. Geological Survey, a field and laboratory program was initiated to study the existing commercial low-level radioactive waste disposal sites. This investigation will provide source term data for radionuclides and other solutes in trench waters at the sites and will describe the physical, chemical, and biological properties of the geochemical system that control the movement of radionuclides. This study was also initiated to provide experimental research support to the U.S. Nuclear Regulatory Commission for development of criteria for the selection and licensing of solid low-level radioactive waste disposal sites. The disposal sites sampled to date are located at West Valley, New York; Maxey Flats, Kentucky; Barnwell, South Carolina; and Sheffield, Illinois. Procedures for the collection, preparation and analysis (particularly under anaerobic conditions) of trench waters were developed, when necessary, to supplement standard procedures. Inorganic, organic, and radiochemical constituents in trench waters are measured and their relevance to movement of radionuclides is being evaluated.

NUREG/CR-1295

The ORNL State-Level Electricity Demand Forecasting Model.
July 1980.
Oak Ridge National Lab
ORNL/NUREG-63
ORES GPO. NTIS.

This report presents further results of validating Version I of the ORNL-SLED Model, an investigation of structural changes in electricity demand, an update of the Version I model as Version II, the electricity cost forecasting model, and the forecasts of electricity demand and prices by sector and by state for 1977-2000. A new set of the assumptions of exogenous variables was developed and used to forecast electricity demand and prices. The forecast rates of growth in total electricity demand vary considerably from state to state: Arizona has the highest rate (8.2%) and Massachusetts and Illinois have the lowest rate (2.9%) for the 1976-90 period. For the United States as a whole, the forecast annual growth rates of total electricity demand are 4.5%, 4.1% and 5.5% for the base, high-price, and low-price cases, respectively, for the same period.

NUREG/CR-1298

Growth and Histological Effects to Protothaca Staminea (Littleneck Clam) of Long-Term Exposure to Chlorinated Sea Water.
August 1980.
Battelle Pacific Northwest Lab
PNL-3158
ORES GPO. NTIS.

There has been considerable concern about the potential for long-term effects to marine organisms from chlorinated seawater. As part of a larger study to investigate the effects of materials resulting from seawater chlorination on marine organisms, groups of littleneck clams, Protothaca staminea, were exposed to seawater that had been chlorinated. Two experiments were conducted. In one test, groups of littleneck clams were exposed to dilutions of chlorinated seawater that had average chlorine produced oxidant (CPO) concentrations of 16 mg/P or less. In the second test, groups of clams were exposed to chlorinated seawater-unchlorinated seawater mixtures that had target CPO concentrations of 0, 6, 12, 25, 50 and 100 mg/P. In the first experiment, length measurements were made on all clams at approximately one-month intervals for three months. In the second test, length, weight, depth, width and edge etching were used to measure growth, and subsamples were harvested and measured at one-month intervals. In addition, clams were preserved for histological examination.

NUREG/CR-1302

Study of Plutonium Oxide Powder Emissions from Simulated Shipping Container Leaks.
August 1980.
Battelle Columbus Lab; Battelle Pacific Northwest Lab
PNL-3278
ORES GPO. NTIS.

To provide data to facilitate the predictions of PuO_2 emissions through leaks in PuO_2 shipping containers under accident conditions, a series of experiments was conducted using PuO_2 powder and an experimental system designed to simulate a shipping container

leak. Over two hundred experiments were completed. The experimental parameters investigated were the leak size/type, internal system pressure, agitation of the apparatus, leak orientation with respect to the powder location and the run time. No single parameter appeared to have any observable effect on the quantities of PuO_2 emitted. However, there was an apparent dependency on the interaction between the orifice area and the internal pressure. The dependency took the form of a function of $A\sqrt{P}$. Although this functional form was suggested by the data, the data were not sufficient to allow a more detailed function to be determined. The results of experiments in which the run time was variable produced the observation that changes in the run time did not result in changes in the quantities of PuO_2, emitted. This observation led to the conclusion that the majority of PuO_2 observed is emitted during the initial pressurization of the leak tube.

NUREG/CR-1308, Vol 2

Fixed Site Neutralization Model Programmer's Model.
September 1980.
Sandia Lab, Albuquerque
SAND79-2242
ORES GPO. NTIS.

The Fixed Site Neutralization Model (FSNM) is a stochastic, time-stepped simulation of an engagement process whereby an adversary force attempts to steal or sabotage sensitive (e.g., nuclear) materials being guarded by a security force on a fixed site and a response force that is offsite. It is anticipated that the FSNM will assist regulatory bodies of the U.S. Government in evaluating fixed site physical protection systems at various installations in a variety of scenarios. In resolution, the model has representations of individual activities, plans, perceptions, psychological profiles, skills, and equipment. The forces simulated may involve as many as 50 individuals. For purposes of efficiency, most data input to the Fixed Site Neutralization Model are in binary form. Both preprocessors and the FSNM itself are written in FORTRAN.

NUREG/CR-1333

Flow Topography Instrumentation and Analysis System.
August 1980.
Creare, Hanover, NH
TN-314
ORES GPO. NTIS.

An instrumentation system has been developed and used to record, display and analyze two-phase flow topographies. This report describes the devices designed; the computer analysis techniques used to derive two-phase flow distributions, velocities, and interfaces; and the application and demonstration of these techniques during experiments in a model reactor vessel. These techniques have broad instrumentation applicability.

NUREG/CR-1334

Validation of a Monte Carlo Code for Radiation Streaming Analyses.
September 1980.
Mathematical Applications Group, Elmsford, NY
MR-7068
ORES GPO. NTIS.

Calculations have been performed with the SAM-CE computer code to demonstrate that an off-the-shelf Monte Carlo radiation transport code can, with affordable computer running times, adequately predict dose levels, due to streaming, in the vicinity of an operating nuclear power plant. The configuration of the Millstone-2 plant was simulated and neutron and secondary gamma ray cases were calculated on the operating floor, and elsewhere both with and without a water tank shield at the top of the cavity. Agreement between calculations and actual measurements was excellent; usually considerably better than a factor of two.

NUREG/CR-1340

State-of-the-Art Study Concerning Near-Field Earthquake Ground Motion.
August 1980.
Systems, Science and Software, La Jolla, CA
SSS-R-80-4217
ORES GPO. NTIS.

This report presents a status summary of a continuing investigation into the applicability of theoretical earthquake source modeling to the definition of design ground motion environments for nuclear power plants located in the near-field of potentially active faults. A wide variety of proposed near-field ground motion prediction procedures are described and evaluated. It is concluded that existing empirical procedures for

predicting near-field ground motion characteristics are not adequately constrained by the available strong motion data, leading to order of magnitude uncertainty in the prediction of some parameters. On the other hand, the review of the proposed theoretical source descriptions has identified a number of model parameters and assumptions which are also not well constrained either by data or theory and which may affect the near-field ground motion estimates predicted by these models. Preliminary parametric study results are presented, for example, which demonstrate that different, commonly employed assumptions concerning the initiation and stopping of earthquake faulting can have a significant effect on the computed near-field ground motion characteristics.

NUREG/CR-1347

Thermocouple Signal Sensitivity to the Sheath Thickness of Thermal-Hydraulic Test Facility Indirectly Heated Electric Fuel Pin Simulators.
September 1980.
Oak Ridge National Lab
ORNL/NUREG-62
ORES GPO. NTIS.

Analysis of data in large loss-of-coolant accident experimental facilities often requires extensive use of signals recorded from thermocouples embedded in indirectly heated electric fuel pin simulators (EFPS). These signals, converted to temperature, are used in the numerical determination of EFPS experimental conditions, including transient surface temperature, transient surface heat flux, and transient internal radial temperature distribution. Important points that arise in using the recorded thermocouple signals as a basis for subsequent analysis include (1) the effect of the distance that the thermocouple bead is located from the EFPS surface on the ability of the thermocouple to resolve rapidly changing boundary phenomena and (2) the extent that this depth influences the time response associated with the thermocouple. Several numerically solved EFPS transients (where boundary conditions were specified, and surface temperature, surface heat flux, and internal radial temperature histories were subsequently calculated) are presented in an effort to establish these two relationships and to form a foundation for recommending designs which will minimize the adverse effects of these relationships by specifying optimal thermocouple radial positions in future EFPSs.

NUREG/CR-1349

Reactor Safety Research Programs. Quarterly Report, October-December 1979.
August 1980.
Battelle Pacific Northwest Lab
PNL-3040-4
ORES GPO. NTIS.

This document summarizes the work performed by Pacific Northwest Laboratory from October 1 through December 31, 1979, for the Division of Reactor Safety Research within the Nuclear Regulatory Commission. Evaluation of nondestructive examination (NDE) techniques and instrumentation are reported; areas of investigation include demonstrating the feasibility of determining structural graphite strength, evaluating the feasibility of detecting and analyzing flaw growth in reactor pressure boundary systems, examining NDE reliability and probabilistic fracture mechanics, and assessing the remaining integrity of pressurized water reactor steam generator tubes where service-induced degradation has been indicated. Test assemblies and analytical support are being provided for experimental programs at other facilities. These programs include the loss-of-coolant accident simulation tests at the NRU reactor, Chalk River, Canada; the fuel rod deformation and post-accident coolability tests for the ESSOR Test Reactor Program, Ispra, Italy; the blowdown and reflood tests in the test facility at Cadarache, France; the instrumented fuel assembly irradiation program at Halden, Norway; and the experimental programs at the Power Burst Facility, Idaho National Engineering Laboratory. These programs will provide data for computer modeling of reactor system and fuel performance during various abnormal operating conditions.

NUREG/CR-1355

CONAN: An LMFBR Containment Response Computer Code.
July 1980.
Brookhaven National Lab
BNL-NUREG-51151
ONRR GPO. NTIS.

A description is given for the mathematical models used in the CONAN containment analysis code. The code was designed to study the particular phenomena which are important and limiting in the response of an LMFBR containment system to a hypothetical core melt-through accident. Results obtained using the CONAN code are compared to the exact solution for an adiabatic system and to results obtained from the CACECO

containment code. The conclusion drawn from results obtained with CONAN is that the processes of evaporation and condensation, which are not treated mechanistically in the CACECO code, do have a significant effect on the transient and tend to strongly limit the severity of the accident in terms of containment pressurization.

NUREG/CR-1356

High Cycle Fatigue Behavior of Incoloy 800H in a Simulated High-Temperature Gas-Cooled Reactor Helium Environment.
July 1980.
Brookhaven National Lab
BNL-NUREG-51156
ORES GPO. NTIS.

The current study was an attempt to evaluate the high cycle fatigue strength of Incoloy 800H in a High-Temperature Gas-Cooled Reactor helium environment containing significant quantities of moisture. As-heat-treated and thermally-aged materials were tested to determine the effects of long-term corrosion in the helium test gas. Results from in-helium tests were compared to those from a standard air environment.

NUREG/CR-1357

Heat Removal Characteristics of Volume Heated Boiling Pools with Inclined Boundaries.
July 1980.
Brookhaven National Lab
BNL-NUREG-51157
ORES GPO. NTIS.

The heat transfer characteristics of volume-heated boiling pools are of importance in the safety analysis of hypothetical core disruptive accidents (HCDA) in liquid metal fast breeder reactors (LMFBRs). In general, these pools would be composed of molten fuel and steel and would generate heat as a result of fission product decay. The fluid dynamic characteristics, as well as the containability of such boiling systems, would depend intimately on the heat loads applied to the surrounding boundaries. In addition, the thermodynamic and hydrodynamic states of the boiling mixture might determine the initial or boundary conditions for separate but related phenomena, such as nuclear recriticality, structural integrity, flow and freezing of multiphase fluids, etc. This report presents new experimental data for local boundary heat transfer coefficients and average void fraction in volume-boiling pools and compares these results to previous experimental data and to existing empirical models.

NUREG/CR-1358

Vegetational Cover in Monitoring and Stabilization of Shallow Land Burial Sites.
August 1980.
University of California
UCLA 12-1235
ORES GPO. NTIS.

The year FY79 was a transition year between start up of work at the low-level waste burial site at Maxey Flats, Kentucky and completion of previous work involving laboratory studies with radionuclides. All of our studies are designed to solve problems or verify situations that exist in the field. The thrust at Maxey Flats by this group involves soil moisture and radionuclide movement at that burial site in a humid region. Vegetation cover is being manipulated, rooting depth is being studied, water penetration and flow are being measured, radionuclide uptake by plants and concentration in components of soil moisture are being measured. Goals are to determine how water is penetrating trenches and how to minimize such penetration. Laboratory studies involve fission and transuranic radionuclides with a future focus placed primarily upon field problems related to low-level waste burial problems and soils. Some past studies being completed involved transuranic elements and a cross section of USA soils. Different sized containers have been involved in the studies so that results can be extrapolated to field conditions. Analytical work is almost completed and the data are being synthesized. Some preliminary organization of the data is included in this annual report. Concentration ratios, plant part discrimination ratios and radionuclide ratios are included in the initial evaluation. The laboratory phase of this study is to be completed in the next fiscal year.

Report No.	Bibliographic Data

NUREG/CR-1364

Uncertainty Analysis for a PWR Loss-of-Coolant Accident: II. Alternative Core Damage Estimators.
August 1980.
Sandia National Lab, Albuquerque
SAND80-0629
ORES GPO. NTIS.

In reinvestigating the data base used to analyze the statistical behavior of peak clad temperature (PCT), we have defined several new core damage indices or estimators, and have introduced and evaluated the concepts of local and global core damage. Methods of enhancing the importance of thermal-hydraulic variables compared to fuel variables have also been successfully tested. This trade-off is accomplished by an increase in the number of calculations required to create a data base.

NUREG/CR-1375

User's Manual for USINT: A Program for Calculating Heat and Mass Transfer in Concrete Subjected to High Heat Fluxes.
August 1980.
Sandia National Lab, Albuquerque
SAND79-1694
ORES GPO. NTIS.

This report is a user's manual for the intelligent application of PROGRAM USINT which is for calculation of heat and mass transfer in concrete subjected to high heating rates. The describing differential equations for energy, mass transfer of water and CO_2 are provided along with appropriate boundary and initial conditions. The concrete is considered to contain two basic regions: wet and dry. In the wet region, steam, CO_2 and liquid water may co-exist but in the dry region there is no liquid water. There is also the possibility of a third region in which there is only liquid water and no gases. Decomposition of the concrete is treated by utilizing first order chemical kinetic equations; three reactions are assumed that treat evaporable water, chemically bound water and CO_2. A modified Clausius-Clapeyron equation is used as the equation of state in the wet region.

NUREG/CR-1377

Risk Methodology for Geologic Disposal of Radioactive Waste: Transport Model Sensitivity Analysis.
August 1980.
Sandia National Lab, Albuquerque
SAND80-0644
ORES GPO. NTIS.

In this report, a sensitivity analysis methodology is demonstrated for geosphere transport. The sensitivity analysis uses two transport simulators. One simulator is the general, multi-dimensional numerical model SWIFT. The other is the simplified network flow model NWFT, which contains a one-dimensional radionuclide transport simulator. Statistical techniques used in the sensitivity analysis include Latin hypercube sampling and stepwise regression on ranks. The demonstration problems are based on a reference site geology and hydrology which, although hypothetical, contains properties of real sites. Three different waste release scenarios are examined.

NUREG/CR-1380, Vol 1, ES

Assessment of Current Onsite Inspection Techniques for Light Water Reactor Fuel Systems - Volume 1 - Executive Summary.
July 1980.
Battelle Pacific Northwest Lab
PNL-3325
ONRR GPO. NTIS.

Onsite inspection techniques currently used on fuel systems at domestic commercial light-water reactors were assessed. Those techniques are visual, gamma scanning, sipping, mensural, eddy current, and ultrasonic inspections. The assessment involved a literature survey, meetings with all five reactor fuel suppliers, and visits to three reactor sites.

Report No.	Bibliographic Data

NUREG/CR-1394

Diffusion Near Buildings as Determined from Atmospheric Tracer Experiments.
September 1980.
NOAA, Air Resources Lab
NOAA Tech Memo ERL ARL-84
ORES GPO. NTIS.

Data from the innermost arcs and roof top samplers of the Rancho Seco and EOCR field studies were used to examine diffusion close to a building. The minimum length plume paths were determined from each release location to each sampler position at these two test sites. Measured concentrations, normalized by source strength (C/Q), were plotted versus plume path length and an envelope containing 95% of the measured values of C/Q was determined. The curves from the two sites were similar in shape and implied three zones of diffusion. Comparisons were also made with current NRC methods for predicting maximum expected concentrations close to a building. The NRC model overestimated concentrations in all but one case. The model was generally within an order of magnitude at EOCR, and within two orders of magnitude at Rancho Seco.

NUREG/CR-1396

Prompt Burst Energetics Experiments: Fresh Uranium Carbide/Sodium Series.
July 1980.
Sandia National Lab, Albuquerque
SAND80-0820
ORES GPO. NTIS.

The current program in Prompt Burst Energetics (PBE) at Sandia Laboratories involves an in-pile experimental and complementary analytical investigation of the energetics of fuel-clad-coolant systems subjected to energy deposition conditions associated with super-prompt critical excursions. In particular, the emphasis to date has been on autoclave tests of single intact fuel pins in the presence of stagnant sodium irradiated in the experiment cavity of the Annular Core Pulse Reactor (ACPR) and on the supportive analysis of those tests. This report describes the experiment performed in the Annular Core Pulse Reactor.

NUREG/CR-1400

Quarterly Technical Progress Report on Water Reactor Safety Programs Sponsored by the Nuclear Regulatory Commission's Division of Reactor Safety Research - April-June 1980.
August 1980.
EG&G Idaho
EGG-2048
ORES GPO. NTIS.

EG&G Idaho, Inc., performs water reactor safety research at the Idaho National Engineering Laboratory under the sponsorship of the U.S. Nuclear Regulatory Commission's (NRC) Division of Reactor Safety Research. The current water reactor research activities are accomplished in the Semiscale Program, the Loss-of-Fluid Test (LOFT) Experimental Program, the Thermal Fuels Behavior Program, the Code Development and Analysis Program, the Code Assessment and Applications Program, and the 2D/3D Program.

NUREG/CR-1402

Advanced Reactor Safety Research Division Quarterly Progress Report.
October 1-December 31, 1979.
September 1980.
Brookhaven National Lab
BNL-NUREG-51177
ORES GPO. NTIS.

This quarterly report describes current activities and technical progress during October-December 1979 in the Advanced Reactor Safety Research Program. The projects reported this quarter are LMFBR Safety Evaluation, SSC Code Development, LMFBR Safety Experiments, and Fast Reactor Safety Code Validation.

Report No.	Bibliographic Data
NUREG/CR-1403	Water Reactor Safety Research Division Quarterly Progress Report. October-December 1979. July 1980. Brookhaven National Lab BNL-NUREG-51178 ORES GPO. NTIS.
	The Water Reactor Safety Research Programs Quarterly Report describes current activities and technical progress in the programs at Brookhaven National Laboratory sponsored by the USNRC Division of Reactor Safety Research. The projects reported each quarter are the following: LWR Thermal Hydraulic Development, Advanced Code Evaluation, TRAC Code Assessment, and Stress Corrosion Cracking of PWR Steam Generator Tubing.
NUREG/CR-1404	Transient Analysis of Coolant Flow and Heat Transfer in LMFBR Piping Systems. September 1980. Brookhaven National Lab BNL-NUREG-51179 ORES GPO. NTIS.
	A one-dimensional model for transient analysis of coolant flow and heat transfer in LMFBR piping systems is presented, in which energy equations are formulated for the coolant and pipe wall using the nodal heat balance approach. An implicit integration scheme is applied to the coolant equation with explicit wall heat flux, allowing the solution to march in the flow direction. Uncertainties in Nusselt number correlations are shown to have the greatest impact on overall heat transfer coefficients at low flow conditions. For coolant dynamics, each pipe run between components in treated as a lumped control volume. For the transient cases studied: (a) the predicted response using the coolant-wall model is in excellent agreement with a more detailed model that includes insulation heat losses, while the transport delay and coolant mixing models appear to be inadequate. (b) The degree of axial nodalization required for a converged solution is indeed bounded. (c) Timestep control is found to be most efficiently achieved using the characteristic time approach. (d) The predicted flow decay is found to be only marginally affected by the Reynolds number dependence of friction factor in the pipings and IHX.
NUREG/CR-1405	The NACOM Code for Analysif of Postulated Sodium Spray Fires in LMFBRs. September 1980. Brookhaven National Lab BNL-NUREG-51180 ORES GPO. NTIS.
	An analysis of potential sodium spills and fires in liquid metal fast breeder reactors has been made to assess the maximum equipment cell loading conditions. A computer code called NACOM (sodium combustion) has been developed at Brookhaven National Laboratory (BNL) to analyze sodium spray fires. This report contains a detailed description of physical models used in this code as well as programming aspects. The single droplet combustion model and the model describing the droplet's motion are verified. Comparisons between NACOM predictions and SPRAY-3A predictions of the Atomics International (AI) LTV Jet Tests are made.
NUREG/CR-1408	Instrumented Impact Properties of Zircaloy-Oxygen and Zircaloy-Hydrogen Alloys. July 1980. Argonne National Lab ANL-80-14 ORES GPO. NTIS.
	This report summarizes results of instrumented impact tests on subsize Charpy specimens of Zircaloy-oxygen and Zircaloy-hydrogen alloys. These results can be used with other property data to determine the response of reactor fuel assemblies to mechanical loads during the latter stages of hypothetical LOCA transients and seismic conditions. Mathematical analyses are used to evaluate the dynamic response of reactor fuel assemblies subjected to LOCA and seismic loads. Failure boundaries have been established for thermal shock as well as for impact and compressive loads at low temperatures.

Report No.	Bibliographic Data

NUREG/CR-1410

Report of the Zion/Indian Point Study: Volume 1.
August 1980.
Sandia National Lab, Albuquerque
SAND80-0617/1
ORES GPO. NTIS.

This report contains detailed results of a study for the identification of reactor core-melt accident mitigation measures at the Zion and Indian Point plants. Mitigation strategies have been identified that show promise of providing large reduction in consequences for specific accident sequences. However, without an overall risk analysis, it is not clear to what extent a given mitigation scheme reduces overall risk. The study evaluated filtered-vented containment systems, steam explosions, hydrogen burning, hydrogen control measures, melt/concrete and melt/MgO interactions, and meltdown phenomenology.

NUREG/CR-1411, Vol 1

Report of the Zion/Indian Point Study.
September 1980.
Los Alamos Scientific Lab
LA-8306-MS
ORES GPO. NTIS.

This report presents analyses performed at the Los Alamos Scientific Laboratory in support of the U.S. Nuclear Regulatory Commission Zion/Indian Point Project. The analyses were performed in cooperation with Sandia Laboratories-Albuquerque. Three areas of work are discussed: (1) Steam explosion energetics; (2) Fluid slug-vessel head impact; and (3) Structural dynamics.

NUREG/CR-1411, Vol 2

Report of the Zion/Indian Point Study.
July 1980.
Los Alamos Scientific Lab
LA-8306-MS
ORES GPO. NTIS.

This report presents analyses performed at the Los Alamos Scientific Laboratory (LASL) in support of the U.S. Nuclear Regulatory Commission (NRC) Zion/Indian Point Project (Z/IP). The analyses were performed in cooperation with Sandia Laboratories-Albuquerque. Three areeas of work are discussed: (1) Steam expression energetics; (2) Fluid slug-vessel impact; and (3) Structural dynamics. Sandia analyses and the overal study summary and conclusions are provided in two companion Sandia reports, NUREG/CR-1409 (SAND80-0617) and NUREG/CR-1410 (SAND80-0617/1).

NUREG/CR-1420

Health Status and Body Radioactivity of Former Thorium Workers.
September 1980.
Argonne National Lab
ANL-80-37
ORES GPO. NTIS.

This is a progress report of a study of the health effects of industrial exposure to thorium. The objectives of the study are: (1) to assess possible health effects of employment in the thorium milling industry by comparison of mortality and morbidity characteristics of former thorium workers with those of suitable general populations; (2) to examine disease outcomes by estimated exposure levels of thorium and thoron daughter products for possible radiation-related effects; and (3) to determine the body distribution of inhaled thorium (and daughters) and rare earths in humans by radioactivity measurements in vivo and by analysis of autopsy samples. The principal endpoints for investigation are respiratory diseases and cancers of lung, liver, bone, and bone marrow.

NUREG/CR-1428

Solubility Classification of Airborne Uranium Products from LWR-Fuel Plants.
August 1980.
Battelle Pacific Northwest Lab
PNL-3411
OSD GPO. NTIS.

Airborne dust samples were obtained from various locations within plants manufacturing fuel elements for light-water reactors, and the dissolution rates of uranium from these samples into simulated lung fluid at 37°C were measured. These measurements were used to classify the solubilities of the samples in terms of the lung clearance model proposed by the International Commission on Radiological Protection. Similar

evaluations were performed for samples of pure uranium compounds expected as components in plant dust. The variation in solubility classifications of dust encountered along the fuel production lines is described and correlated with the process chemistry and the solubility classifications of the pure uranium compounds.

NUREG/CR-1438

Steam Line Dynamics.
September 1980.
Brookhaven National Lab
BNL-NUREG-51186
ORES GPO. NTIS.

A computer program has been developed for the prediction of transients in the main steam supply lines of power plants. The program is specifically suited for acoustic transients, induced by sudden value actions. The program has been assessed as a stand-alone program by comparing computer results with both analytical and experimental results. The agreement is good. The program is designed to serve as part of a systems analysis code and has been implemented in the I.. version of RAMONA-III, a boiling water reactor systems code.

NUREG/CR-1445

Preparation of Working Reference Materials: Calcined Waste Recovery Products Containing Uranium or Plutonium.
September 1980.
Los Alamos Scientific Lab
LA-8348
OSD GPO. NTIS.

Procedures are presented for preparing calcined waste recovery products that have assigned values of uranium and plutonium contents and isotopic distributions. These working reference materials are used to calibrate and maintain measurement control surveillance of chemical methods for analyzing plant process materials. Statistical treatments are discussed that provide a measure of the reliability of working reference materials in applications to nuclear material accountability and safeguards.

NUREG/CR-1448

Physical Protection of Nuclear Facilities. Quarterly Progress Report, January-March 1980.
August 1980.
Sandia National Lab, Albuquerque
SAND80-1006
ORES GPO. NTIS.

This report presents evaluation methodology efforts concerned primarily with the Safeguards Automated Facility Evaluation (SAFE) methodology and the Brief Adversary Threat Loss Estimator (BATLE) model. In support of a study on design concepts for sabotage protection, the SAFE methodology was applied to the Standardized Nuclear Unit Power Plant System (SNUPPS) facility. Alternative SNUPPS facility designs were also analyzed using SAFE. The activities this quarter were principally related to facility characterization or evaluation methodology tasks. Facility characterization activities concentrated on the vital area analyses of operating reactor facilities. In addition, existing computer codes for rank ordering of vital areas were extended by the addition of subroutines to allow calculations of approximations to the importance measures. Several new approximation methods applicable to the vital area ranking techniques were also examined.

NUREG/CR-1450

Multirod Burst Test Program Progress Report for July-December 1979.
September 1980.
Oak Ridge National Lab
ORNL/NUREG/TM-392
ORES GPO. NTIS.

A series of scoping tests designed to explore the effect of shroud heating on zircaloy cladding deformation was conducted in the single-rod test facility, which was recently modified to permit independent heating of the shroud under specified conditions. To facilitate comparison of the test results, the series included tests under specified conditions used previously. Significantly greater deformation was observed in heated shroud tests than would be expected from unheated shroud tests. Fabrication of fuel pin simulators for the B-5 (8 x 8) bundle test continued with N 90% of the required number being completed. Five fuel pin simulators, identical to the simulators used in the Japanese Atomic Energy Research Institute multirod bundle burst tests, were delivered by the Japanese manufacturer. The surface temperature distribution of the

simulators was characterized for several heating rates by infrared scanning and was compared to similar characterizations of Oak Ridge National Laboratory simulators. Plans are under way for conducting burst tests on the Japanese simulators in the single-rod test facility.

NUREG/CR-1457

Regional Relationships Among Earthquake Magnitude Scales.
September 1980.
Lawrence Livermore National Lab
UCRL-52745
ORES GPO. NTIS.

The seismic body-wave magnitude m_b of an earthquake is strongly affected by regional variations in the Q structure, composition, and physical state within the earth. Therefore, because of differences in attenuation of P-waves between the western and eastern United States, a problem arises when comparing m_b's for the two regions. A regional m_b magnitude bias exists which, depending on where the earthquake occurs and where the P-waves are recorded, can lead to magnitude errors as large as one-third unit. There is also a significant difference between m_b and M_L values for earthquakes in the western United States. An empirical link between the m_b of an eastern U.S. earthquake and the M_L of an equivalent western earthquake is given by $M_L = 0.57 + 0.92 (m_b)_{East}$. This result is important when comparing ground motion between the two regions and for choosing a set of real western U.S. earthquake records to represent eastern earthquakes.

NUREG/CR-1466

Predicting Life Expectancy and Simulating Age of Complex Equipment Using Accelerated Aging Techniques.
July 1980.
Sandia Lab, Albuquerque
SAND79-1561
ORES GPO. NTIS.

This document outlines some of the types of experiments which can be used to improve reliability, simulate age, and predict life expectancy of complex equipment. Brief discussion is given of failure mode tests and compatibility tests, which often are useful qualitative aging information. A detailed discussion is presented on accelerated aging methods, emphasizing an approach based on kinetic rate expression. It is concluded that, when properly conceived and carried out, accelerated aging studies of materials and simple components offer the best opportunity for making quantitative age simulations and lifetime predictions of equipment.

NUREG/CR-1471

An Assessment of LWR Fuel-Failure Propagation Potential: Literature Survey.
August 1980.
Los Alamos Scientific Lab
LA-UR-80-45-15
ONRR GPO. NTIS.

In this report a preliminary investigation is made to identify the consequences of small-scale, off-normal, localized events that induce single or few-element fuel rod failure on the potential to cause adverse effects or failure propagation to adjacent fuel rods, for commercial light-water-reactor (LWR) design. Since previous assessments of the potential for fule-failure propagation have centered primarily on liquid metal fast breeder reactor (LMFBR) designs, a review of such work is presented for the purpose of identifying generic concerns that might also be applicable to LWR systems. LWR fuel-failure behavior under both normal and mild off-normal conditions are also reviewed and phenomena identified that could be of concern in fuel-failure propagation. The preliminary results of this review indicate that either rapid fission gas release (from the plenum region of a failed fuel element) or release of molten or finely-fragmented solid fuel (from the core region of a failed fuel element) to the coolant stream, inducing subchannel coolant expulsion and attendant vapor or gas blanketing and undercooling of adjacent intact fuel rods, appear to be the most probable initiating mechanisms by which fuel-failure propagation could occur.

Report No.	Bibliographic Data
NUREG/CR-1472	Structural Integrity of Water Reactor Pressure Boundary Components. Quarterly Progress Report, January-March 1980. August 1980. Naval Research Lab NRL Memo Rpt 4254 ORES GPO. NTIS. This report describes progress in a continuing program to characterize material properties performance with respect to structural integrity of light-water-reactor pressure boundary components. Progress under fracture mechanics describes J-R curve trends from a low shelf A302-B steel and includes a comparison of R curves by the multispecimen and single specimen compliance procedures. Fatigue crack growth rates are being determined for a variety of pressure vessel and piping steels in simulated nuclear coolant environments. Static load cracking in this environment has been observed in bolt-loaded specimens taken from weld heat-affected zones. Work in radiation sensitivity and postirradiation properties recovery has defined tensile property changes under cyclic annealing and reirradiation treatment. Recent progress is described in radiation studies involving reactor vessel steels in a coordinated IAEA program. Also reported are notch ductility tests of reference steels of the NRC light water reactor, pressure vessel irradiation dosimetry program.
NUREG/CR-1474	An Algorithm to Estimate Field Concentrations Under Nonsteady Meteorological Conditions from Wind Tunnel Experiments. September 1980. Colorado State University ORES GPO. NTIS. Highest concentrations at ground level are often produced from surface sources with stable atmospheric conditions and near calm winds. This report describes a weighted data methodology developed to predict surface concentrations from stationary wind-tunnel measurements and actual meteorological wind fields. Field measurements made downwind of the Rancho Seco Nuclear Power Station in 1975 have been compared against a set of wind-tunnel measurements around a 1:500 scale model of the same facilities. The weighted data algorithm was realistic in predicting centerline concentration values as well as the horizontal spread of the plume.
NUREG/CR-1475	Wind-Tunnel Measurements of Dispersion and Turbulence in the Wakes of Nuclear Reactor Plants. September 1980. Colorado State University ORES GPO. NTIS. Between 1975 and 1979 via contracts between the NRC and Colorado State University, a sequence of laboratory experiments have been performed to evaluate the influence of nuclear reactor building complexes on dispersion of effluents released into their wakes. This study involved research directed toward quantifying the wake-dispersion interaction as well as a validation exercise to compare laboratory and field measurements about specific sites. This report presents the program objectives and summarizes the results of two model/field building dispersion experiments; a comparison of perturbation model predictions to model measurements of velocity deficit, turbulence excess, and temperature or concentration perturbations; an examination of the efficacy of a new algorithm used to predict full-scale concentrations downwind of buildings in nonstationary wind fields from wind tunnel measurements; preliminary measurements of close-in dispersion near obstacles; and behavior of a stratification wind tunnel designed to study coastal atmospheric boundary layer behavior.
NUREG/CR-1477	Heavy-Section Steel Techno. , Program Quarterly Progress Report for January-March 1980. July 1980. Oak Ridge National Lab ORNL/NUREG/TM-393 ORES GPO. NTIS. Comprises studies related to all areas of the technology of materials fabricated into thick-section primary-coolant containment systems of light-water-cooled nuclear power reactors. The investigation focuses on the behavior and structural integrity of steel pressure vessels containing cracklike flaws. Current work is organized into five tasks: (1) program administration and procurement, (2) fracture mechanics analyses and investigations, (3) investigations of irradiated materials, (4) thermal shock investigations, and (5) pressure vessel investigations.

Report No.	Bibliographic Data

NUREG/CR-1480

Summary of Thermal Hydraulic Calculations for a Pressurized Water Reactor.
July 1980.
Los Alamos Scientific Lab
LA-8361-MS
ONRR GPO. NTIS.

The results of two transients involving the loss of a steam generator in a single-pass, steam generator, pressurized-water reactor have been analyzed using a state-of-the-art, thermal-hydraulic computer code. Computed results include the formation of a steam bubble in the core while the pressurizer is solid. Calculations show that continued injection of high-pressure water would have stopped the scenario. These are similar to the happenings at Three Mile Island.

NUREG/CR-1481

Financing Strategies for Nuclear Power Plant Decommissioning.
July 1980.
Temple, Barker & Sloan, Lexington, MA
OSD GPO. NTIS.

The report analyzes several alternatives for financing the decommissioning of nuclear power plants from the point of view of assurance, cost, equity, and other criteria. Sensitivity analyses are performed on several important variables, and possible impacts on representative companies' rates are discussed and illustrated.

NUREG/CR-1482

Nuclear Power Plant Simulators: Their Use in Operator Training and Requalification.
August 1980.
Oak Ridge National Lab
ORNL/NUREG/TM-395
ORES GPO. NTIS.

The report presents the results of a study performed for the Nuclear Regulatory Commission to evaluate the capabilities and use of nuclear power plants simulators either built or being built by the U.S. nuclear power industry; to determine the adequacy of existing standards for simulator design and for the training of power plant operators on simulators; and to assess the issues about simulator training programs raised by the March 28, 1979 accident at Three Mile Island Unit 2. It is the conclusion of this study that both ANSI/ANS standards should be expanded, strengthened, and endorsed by the NRC; that simulator training should be required; and that a well-defined regulatory structure for simulators and simulator training programs should be developed. The most obvious deficiency in the present standards is the absence of a methodology and data base to comprehensively and objectively assess the relative importance of specific malfunctions and thereby define the most important exercises to be included in a training program. This deficiency was considered to be sufficiently serious that the present study was expanded to include the development of a preliminary methodology and to illustrate its application.

NUREG/CR-1484

Dynamic Analysis to Establish Normal Shock and Vibration of Radioactive Material Shipping Packages - Quarterly Progress Report October 1-December 31, 1979.
August 1980.
Hanford Engineering Develop. Lab
HEDL-TME-80-24
ORES GPO. NTIS.

A computer program MARCS (Modal Analysis of a Rail Car-Cask System) was written to perform a modal analysis on the systems represented by the CARDT and CARDS (Cask-Rail Car Dynamic Simulator) models. Parameters generated by MARCS will be used to generate frequency response spectra. A preliminary evaluation of the performance of CARDS was made by comparing calculated results with response variables measured during Test 3 of the series of tests conducted at the Savannah River Laboratories, Aiken, SC.

NUREG/CR-1485, Vol 1, No. 1

Safeguards Material Control and Accounting Program: Quarterly Report, October-December 1979.
September 1980.
Lawrence Livermore National Lab
UCRL-52715-80-1
ORES GPO. NTIS.

Activity for the quarter October-December 1979 in the Material Control Safeguards Evaluation Program, conducted for the U.S. Nuclear Reguatory Commission (NRC) at Lawrence Livermore National Laboratory, is summarized. Progress was made in developing

the automated safeguards assessment tool called the Structured Assessment Approach (SAA) Program, giving particular attention to enhanced collusion analysis. Work has continued on the development of the Aggregated Systems Model (ASM) in support of the NRC development of MC&A upgrade regulations, and we include value-impact analyses of alternative safeguard rules, a first-cut safeguards cost model, and a study of the impacts of MC&A regulations on licensees. The report concludes with a description of more work in support of the MC&A upgrade rule development, which is our evaluation and critique of the current NRC material accounting regulations, an attempt to identify inherent vulnerabilities.

NUREG/CR-1486

Seasonal Vibration of 10-Square Mile Probable Maximum Precipitation Estimates, United States East of the 105th Meridian (Hydrometeorological Report No. 53).
July 1980.
National Weather Service, NOAA
OSD GPO. NTIS.

Estimates of the probable maximum precipitation (i.e., the theoretically greatest depth of precipitation for a given duration that is physically possible over a particular drainage basin at a certain time of year) are given in this study for durations from 6 to 72 hours for each month of the year for 10 mi2 areas. The results are in a generalized form; that is, on maps allowing use for planning and design of any present or proposed structure for the United States east of the 105th meridian. While smaller sized areas have greater values, especially for the warm season, they are not defined in the study. For the winter season, values for smaller areas are not appreciably different from the 10 mi2 estimates in this study. The probable maximum precipitation estimates show a smooth variation with duration, season, and location.

NUREG/CR-1487

Vital Area Analysis Using SETS.
August 1980.
Sandia National Lab, Albuquerque
SAND80-1095
ORES GPO. NTIS.

This report describes the use of the Set Equation Transformation System (SETS) for vital area analysis. Several concepts are introduced which enable the analyst to construct more efficient SETS user programs to perform vital area analysis. The advantages of performing the transformation of variables without first determining the minimal cut sets of the fault tree are discussed. A "bottom-up" approach to solving a fault tree is presented. The techniques described for vital area analysis are also suitable and efficient for many kinds of common cause analyses.

NUREG/CR-1488

An Ultrasonic Thermometry System for Measuring Very High Temperatures in Reactor Safety Experiments.
July 1980.
Sandia Lab, Albuquerque
SAND79-0621
ORES GPO. NTIS.

Ultrasonic thermometry has many potential applications in reactor safety experiments, where extremely high temperatures and lack of visual access may preclude the use of conventional diagnostics. This report details ultrasonic thermometry requirements for one such experiment, the molten fuel pool experiment. Sensors, transducers, and signal processing electronics are described in detail. Axial heat transfer in the sensors is modelled and found acceptably small. Measurement errors, calculations of their effect, and ways to minimize them are given. A rotating sensor concept is discussed which holds promise of alleviating sticking problems at high temperature. Applications of ultrasonic thermometry to three in-core experiments are described.

NUREG/CR-1489

Best Estimate Method vs Evaluation Method: A Comparison of Two Techniques in Evaluating Seismic Analysis and Design.
July 1980.
Lawrence Livermore National Lab
UCRL-52746
ORES GPO. NTIS.

The concept of how two techniques, Best Estimate Method and Evaluation Method, may be applied to the traditional seismic analysis and design of a nuclear power plant is introduced. Only the four links of the seismic analysis and design methodology chain

(SMC)--seismic input, soil-structure interaction, major structural response, and subsystem response--are considered. The objective is to evaluate the compounding of conservatisms in the seismic analysis and design of nuclear power plants, to provide guidance for judgments in the SMC, and to concentrate the evaluation on that part of the seismic analysis and design which is familiar to the engineering community. An example applies the effects of three-dimensional excitations on a model of a nuclear power plant structure. The example demonstrates how conservatisms accrue by coupling two links in the SMC and comparing those results to the effects of one link alone. The utility of employing the Best Estimate Method vs. the Evaluation Method is also demonstrated.

NUREG/CR-1492

Qualification Testing Evaluation Program Light-Water Reactor Safety Research Quarterly Report, July-September 1979.
September 1980.
Sandia National Lab, Albuquerque
SAND80-1117
ORES GPO. NTIS.

The July-September 1979 quarter can be characterized as a period of formal reporting and continuing effort in the Qualification Testing Evaluation (QTE) Program. Under Task 1, the principal effort was devoted to the preparation for continuation of verification tests of the qualification of Browns Ferry Unit 3 connector assemblies. Radiation and thermal-aging experiments were completed last quarter; checkout of the superheat test capability was continued in preparation for the accident-simulation test phase. Under Task 3, effort was directed towards the effects of the sorption characteristics of a material with respect to quantitatively accelerating the degradation. When experiments are properly run and analyzed, Arrhenius behavior is often found. The balance of the quarterly effort centered on continuation of ongoing projects.

NUREG/CR-1501

Monoclinal Structure and Shallow Faulting of the Reelfoot Scarp as Estimated from Drill Holes with Variable Spacings.
July 1980.
Vanderbilt University
ORES GPO. NTIS.

The Reelfoot scarp is an east-facing slope on the Mississippi River alluvial plain. It descends eastward about 20 feet across a distance of about 600 feet. The scarp is mainly a monocline. However, a small fault occurs at the foot of the slope, along which there was about 3 feet of graben collapse which subsequently (maybe soon after 1812) filled in which soil washed down the adjacent monoclinal slope. The monoclinal structure was clearly shown by six drill holes spaced about 100 feet apart. A fault was indicated by these same holes, but a fault was not demonstrated by drilling until holes were drilled closer together than 10 feet.

NUREG/CR-1504

A User's Guide to EPIC, a Computer Program to Calculate the Motion of Fuel and Coolant Subsequent to Pin Failure in a LMFBR.
July 1980.
Argonne National Lab
ANL-80-47
ORES GPO. NTIS.

The computer code EPIC models fuel and coolant motion which results from internal fuel pin pressure (from fission gas or fuel vapor) and possibly from the generation of a sodium vapor pressure in the coolant channel subsequent to pin failure in a liquid-metal fast breeder reactor. The EPIC model is restricted to conditions whereby fuel pin geometry is generally preserved and is not intended to treat the total disruption of the pin structure. The modeling includes the ejection of molten fuel from the pin into a coolant channel with any amount of voiding through a clad breach which may be of any length or which may extend with time. One-dimensional Eulerian hydrodynamics is used to treat the motion of fuel and fission gas inside a molten fuel cavity in the fuel pin coolant channel. Motion of fuel in the coolant channel is tracked with a type of particle-in-cell technique. EPIC is a FORTRAN-IV program requiring 400K bytes of storage on the IBM 370/195 computer.

Report No.	Bibliographic Data

NUREG/CR-1505

Advanced Reactor Safety Research Division Quarterly Progress Report, January 1-March 31, 1980.
September 1980.
Brookhaven National Lab
BNL-NUREG-51217
ORES GPO. NTIS.

This quarterly report describes current activities and technical progress during January-March 1980 in the Advanced Reactor Safety Research Program. The projects reported are HTGR Safety Evaluation, SSC Code Development, LMFBR Safety Experiments, and Fast Reactor Safety Code Validation.

NUREG/CR-1509

Light Water Reactor Safety Research Program Quarterly Report, January-March 1980.
September 1980.
Sandia National Lab, Albuquerque
SAND80-1304/1 of 4
ORES GPO. NTIS.

The Molten Fuel Concrete Interactions (MFCI) study is comprised of experimental and analytical investigations of the chemical and physical phenomena associated with interactions between molten core materials and concrete. Such interactions are possible during hypothetical fuel-melt accidents in light water reactors (LWRs) when molten fuel and steel from the reactor core penetrate the pressure vessel and cascade onto the concrete substructure. The purpose of the MFCI study is to develop an understanding of these interactions suitable for risk assessment. Emphasis is placed on identifying and investigating the dominant interaction phenomena occurring between prototypic materials in order to evaluate: (1) The generation rate and nature of evolved noncondensable gases; (2) The effects of gas generation on fission products release; and (3) The mechanism, rate, and directional nature of concrete erosion by the melt.

NUREG/CR-1513

Evaluation of Isotope Migration-Land Burial Water Chemistry at Commercially Operated Low-Level Radioactive Waste Disposal Sites. Quarterly Progress Report, January-March 1980.
July 1980.
Brookhaven National Lab
BNL-NUREG-51219
ORES GPO. NTIS.

This report presents results for tritium analyses for soil cores taken at West Valley, NY, and Barnwell, SC. Tritium movement at West Valley appears to be diffusion controlled. The Barnwell core data suggests that coring has intersected a water flow path below the trench. An apparatus has been designed for flow through column K_d determinations and is described. Gel filtration experiments using spiked trench water from West Valley have been continued using a longer column than used in previous work. Increased resolution of DOC components has been observed.

NUREG/CR-1514

Properties of Radioactive Wastes and Waste Containers. Quarterly Progress Report, January-March 1980.
July 1980.
Brookhaven National Lab
BNL-NUREG-51220
ORES GPO. NTIS.

This report presents first quarter 1980 progress in research on properties of radioactive wastes and waste containers at Brookhaven National Laboratory. Solidification experiments were performed with organic ion-exchange resins using Portland Type II cement to investigate waste to binder ratios which results in monolithic waste forms. Experiments were conducted to establish appropriate waste/binder ratios within which simulated boric acid reactor waste may be incorporated into Portland Type KKK cement, to produce acceptable waste forms. A "two-part" urea-formaldehyde process was used to solidify four simulated LWR waste streams, viz., ion-exchange bead resins, diatomaceous earth, sodium sulfate, and boric acid wastes.

Report No.	Bibliographic Data
NUREG/CR-1516	Nuclear Reactor Safety Quarterly Progress Report, October 1-December 31, 1979. August 1980. Los Alamos Scientific Lab LA-8299-PR ORES GPO. NTIS. This quarterly report summarizes technical progress from a continuing nuclear reactor safety research program. The reporting period is from October 1 to December 31, 1979. This research effort concentrates on providing an accurate and detailed understanding of the response of nuclear reactor systems to a broad range of postulated accident conditions. The report is mainly organized according to reactor type. Major sections deal with light-water reactors (LWRs), liquid metal fast breeder reactors (LMFBRs), high-temperature gas-cooled reactors (HTGRs), and gas-cooled fast reactors (GCFRs).
NUREG/CR-1518	Assessment of Core Penetration of a PWR Reactor Vessel and Particulate Debris Coolability in TMLB, S2D, and ABG Accidents. August 1980. Sandia National Lab, Albuquerque SAND80-0701 ORES GPO. NTIS. A brief analysis of events surrounding a PWR reactor vessel failure following a core meltdown was performed. The purpose of the analysis was to assess the impact of such events on a containment building filtered vent. Specific accidents considered included a loss of AC power and auxiliary feedwater (TMLB'), a small-break LOCA with ECCS faliure (S2D) and large-break LOCA with failure of the containment heat removal system (ABG). The MARCH computer code analysis of these accidents (Indian Point 3 and Zion reactors) was used as a basis of comparison. The major findings are (1) location and size of vessel rupture in the TMLB' accident could significantly affect the pressure history in containment and the subsequent loading on the filtered vent; (2) high internal reactor pressure (from rapid debris slumping into the lower head water) could cause steam generator tube failure and thus failure of secondary containment; (3) significant containment building pressure rise could occur from molten debris dropping into the reactor cavity if there is adequate water in the cavity for complete quenching; and (4) the coolability of total-core in-vessel or ex-vessel particle beds by natural circulation (assuming an adequate coolant supply) can neither be assured nor excluded at this time. Suggested research to resolve uncertainties in the above items is discussed.
NUREG/CR-1520	Experiment Data Report for LOFT Anticipated Transient Experiment L6-5. July 1980. EG&G Idaho EGG-2045 ORES GPO. NTIS. This report presents experimental data from the first anticipated transient experiment (Experiment L6-5) conducted in the Loss-of-Fluid Test (LOFT) facility. The data are uninterpreted but readily usable for the nuclear community in advance of detailed analysis and interpretation. Experiment L6-5 was a loss of secondary feedwater anticipated transient performed on May 29, 1980, and was part of the LOFT Experimental Program conducted by EG&G Idaho, Inc., for the U.S. Nuclear Regulatory Commission. This experiment is part of the LOFT Non-LOCE Test Series L6 which was designed to provide data for investigating the thermal-hydraulic response of the LOFT reactor system for transient initiation to plant restabilization after reactor scram.
NUREG/CR-1521	High-Temperature Gas-Cooled Reactor Safety Studies for the Division of Reactor Safety Research Quarterly Progress Report, January 1-March 31, 1980. September 1980. Oak Ridge National Lab ORNL/NUREG/TM-397 ORES GPO. NTIS. Work continued on development of the ORTAP, ORECA, and BLAST codes; verification studies were continued on the ORECA, CORTAP, and BLAST codes. An improved steam turbine plant model (ORTURB) for use in ORTAP was developed and checked. Predictions from BLAST, CORTAP, and ORECA were compared with various transient test data from the Fort St. Vrain reactor.

Report No.	Bibliographic Data

NUREG/CR-1526, Vol 1

Physics of Reactor Safety. Quarterly Report for January-March 1980.
July 1980.
Argonne National Lab
ANL-80-54, Vol 1
ORES GPO. NTIS.

This quarterly progress report summarizes work done during the months of January-March 1980 in Argonne National Laboratory's Applied Physics and Components Technology Divisions for the Division of Reactor Safety Research. The work in the Applied Physics Division includes reports on reactor safety modeling and assessment by members of the Reactor Safety Appraisals Section. Work on reactor core thermal-hydraulics is performed in ANL's Components Technology Division, emphasizing 3-dimensional code development for LMFBR accidents under natural convection conditions. An executive summary is provided including a statement of the findings and recommendations of the report.

NUREG/CR-1527

Enhancement of the Nuclear Materials Management and Safeguards System.
August 1980.
Boeing Computer Services, Vienna, VA
ONMSS GPO. NTIS.

The Nuclear Regulatory Commission (NRC) awarded a competitive contract to Boeing Computer Services Company to implement specific recommendations developed under the Enhancement of the Nuclear Materials Management and Safeguards System (ENRAS) Contact, NRC-02-78-083, and to perform analysis in other specified areas of safeguards concern. The results of the activities of this contract were the production of program specifications for enhancements to the Nuclear Materials Management and Safeguards System (NMMSS) in the areas of inventory difference and authorized possession limit data; the production of acceptance test procedures for testing the implemented capability; an analysis of the NMMSS Safeguards Monitor (SM-1) report and recommendations for its improvement; the production of program specifications for enhancements to the NMMSS SM-1 report based on selected recommendations; an analysis of NMMSS shipper-receiver difference data processing; and the production of a safeguards user's manual containing NMMSS reports related to analysis performed under this contract. This activity is part of NRC's effort to continuously enhance their nuclear materials accounting system.

NUREG/CR-1528

Safeguards User's Manual for Nuclear Materials Management and Safeguards System.
August 1980.
Boeing Computer Services, Vienna, VA
ONMSS GPO. NTIS.

The computerized system used by NRC to receive, store, analyze, and report information on the nuclear material possessed by each licensee is called the Nuclear Material Management and Safeguards System (NMMSS). It is located at the DOE computer facility, Oak Ridge, Tennessee. In September 1978, a contract (NRC-02-78-083) was awarded to determine and document inventory difference (ID) inconsistencies between NMMSS and the Safeguards Status Reporting System (SSRS) maintained by the Office of Inspection and Enforcement (I&E). This work resulted in an extensive analysis of NMMSS. This report documents the results of this study in the form of a User's Manual that would be useful to Safeguards Analysis. Twenty NMMSS reports were identified that contain licensee data related to inventory differences, authorized possession limits, and shipper-receiver differences. Each NMMSS report is described with a general description, processing to produce the report, and a sample report page with the data elements identified. Also included is a summary of the data input to NMMSS, its processing, and a description of the files and records in the NMMSS data base.

NUREG/CR-1529

Two-Phase Flow Measurements with Advanced Instrumented Spool Pieces.
September 1980.
Oak Ridge National Lab
ORNL/NUREG-72
ORES GPO. NTIS.

A series of two-phase, air-water and steam-water tests performed with instrumented piping spool pieces is described. The behavior of the three-beam densitometer, turbine meter, and drag flowmeter is discussed in terms of two-phase models. Results from application of some two-phase mass flow models to the recorded spool piece data are shown. Results of the study are used to make recommendations regarding spool piece design, instrument selection, and data reduction methods to obtain more accurate measurements of two-phase flow parameters.

Report No.	Bibliographic Data

NUREG/CR-1536

PRESBC: Pressure Boundary Conditions for the K-FIX Code.
August 1980.
Los Alamos Scientific Lab
LA-NUREG-6623, Supp 3
ORES GPO. NTIS.

Recommended pressure boundary condition modifications are described for the computer code K-FIX, which has been published in the report LA-NUREG-6623 and released to the National Energy Software Center in April 1977.

NUREG/CR-1537

Gap Conductance Test Series Fuel Characterization Data Report.
September 1980.
EG&G Idaho
EGG-2046
ORES GPO. NTIS.

The physical, chemical, mechanical, and metallurgical properties of the UO_2 fuel used in the Power Burst Facility Gap Conductance Test Series are presented. These data were obtained from nondestructive and destructive examinations of representative fuel pellets performed by EG&G Idaho, Inc., and by Battelle Pacific Northwest Laboratories. These data characterize the initial fuel condition, and are necessary to understand and evaluate fuel rod behavior during irradiation testing in the Gap Conductance Test Series.

NUREG/CR-1538

PBF/LOFT Lead Rod Test Series Test Results Report.
July 1980.
EG&G Idaho
EGG-2047
ORES GPO. NTIS.

Results of the Power Burst Facility/Loss-of-Fluid Test (PBF/LOFT) Lead Rod sequential blowdown test series conducted in the PBF are presented. The tests were performed to evaluate the extent of mechanical deformation that would be expected to occur to low pressure (0.1 MPa) light-water-reactor design fuel rods when subjected to a series of large, double-ended cold leg break loss-of-coolant accident (LOCA) tests, and to determine whether subjecting these deformed fuel rods to subsequent testing would result in rod failure. The extent of mechanical deformation (buckling, collapse, or waisting of the cladding) was evaluated by comparison of cladding temperature and pressure measurements with out-of-pile experiment data, by comparison of steady-state fuel centerline temperature response, and by posttest visual examinations and cladding diametral measurements.

NUREG/CR-1539

A Methodology and a Preliminary Data Base for Examining the Health Risks of Electricity Generation from Uranium and Coal Fuels.
September 1980.
Oak Ridge National Lab; Science Applications, La Jolla, CA
ORNL/Sub-7615/1
ORES GPO. NTIS.

An analytical model was developed to assess and examine the health effects associated with the production of electricity from uranium coal fuels. The model is based on a systematic methodology that is both simple and easy to check, and provides details about the various components of health risk. A preliminary set of data that is needed to calculate the health risks was gathered, normalized to the model facilities, and presented in a concise manner. Additional data will become available as a result of other evaluations of both fuel cycles, and they should be included in the data base.

NUREG/CR-1547

Criticality Experiments with Subcritical Clusters of 2.35 Wt% and 4.31 Wt% U-235 Enriched UO_2 Rods in Water at a Water-to-Fuel Volume Ratio of 1.6.
July 1980.
Battelle Pacific Northwest Lab
PNL-3314
ORES GPO. NTIS.

The results from the fourth in a series of criticality experiments are presented in this paper. This fourth set of experiments involves clusters of either 2.35 wt% or 4.31 wt% U-235 enriched UO_2 fuel rods immersed in water as in previous experiments but a neutron moderation approximating that found typically in boiling-water-reactor and

pressurized-water-reactor type fuel assemblies. (Previous experiments were performed near optimum neutron moderation.) The critical separation between multiple subcritical fuel assemblies, both with and without fixed neutron poisons, was determined.

NUREG/CR-1548

The NDT-COMP9 Microcomputer.
September 1980.
Oak Ridge National Lab
ORNL/NUREG/TM-390
ORES GPO. NTIS.

An 8080-based microcomputer system, the NDT-COMP9, has been designed for instrumentation control and data analysis in eddy-current tests. The NDT-COMP9 represents a significantly more powerful computer system than the NDT-COMP8 microcomputer from which it was developed. The NDT-COMP9 system is contained on a 240- by 120-mm (9.5- by 4.8-in.) circuit board and will ft in a four-wide Nuclear Instrumentation Module (NIM) bin with 26-pin edge connectors. In addition to the 8080-compatible central processing unit (CPU), an arithmetic processing unit (APU) is available to provide up to 32-bit fixed- or floating-point, basic or transcendental math functions. The 16K of read only memory (ROM) and random access memory (RAM), one serial input-output (I/O) port (RS-232-C at a maximum speed of 9600 baud), and 72 parallel I/O ports are available. The baud rate is under software control. A system monitor and math package are available for use with the microcomputer.

NUREG/CR-1549

Estimates of Uranium Content and Radon Flux for Uranium Mine Dumps Based on Borehold Radioactivity Logs.
July 1980.
Kilborn/NUS, Denver, CO
ONMSS GPO. NTIS.

In exploratory drilling to locate uranium deposits, borehole logs of gamma radiation from aturally radioactive elements are utilized to indicate the presence of uranium and the concentrations in which it is found at various depths. This report describes a method of utilizing borehole log data to estimate uranium concentrations in the rock surrounding or overlying uranium deposits and to predict radon releases from waste rock brought to the ground surface in mining operations. The method can be used to predict radon releases before mining operations are started so that potential environmental impacts can be evaluated. The estimates of uranium concentration are generally within 20 percent of true values after correcting for concentrations of naturally radioactive thorium and potassium in the normal range; variations in emanation coefficients and diffusion rates for radon can introduce errors in radon flux estimates, but the estimates should be the correct order of magnitude in most mining regions.

NUREG/CR-1552

Development and Verification of Fire Tests for Cable Systems and System Components.
September 1980.
Underwriters Lab
UL-USNC 75 Q
ORES GPO. NTIS.

Experiments were conducted to study the effects of a forced ventilation on the results of the IEEE 383 flame test for tray cables. Three sets of experiments were conducted on three types of cables. The first set was a control in which cable samples were tested in a free-convection environment within an 8 x 8 x 8 ft (2.44 x 2.44 x 2.44 m) enclosure. In the second set, the cable samples were tested within an enclosure with a 1500 CFM (708 l/s) forced ventilation. In the third set, the cable samples were tested within an enclosure with the ventilation rate of either 1200 CFM (566 l/s) or 1800 CFM (849 l/s). The results showed that the rate of flame propagation and the maximum cable damage were not affected when the enclosure and forced ventilation were used. It is recommended that the test method be revised to specify the use of an enclosure and forced ventilation.

NUREG/CR-1554

On the Motions of Particles in Turbulent Flows.
July 1980.
State University of NY, Stony Brook
ORES GPO. NTIS.

The present paper describes theoretical and experimental studies of the behavior of turbulant particle dispersion flows. In particular, dispersions of low particle concentration are considered in a turbulent pipe flow and the particle deposition at the wall is studied. The theoretical treatment is basd on an analysis of the particles'

with safe-shutdown-earthquake (SSE) mechanical loadings and employing conventional stress analysis and fracture-mechanics techniques.

NUREG/CR-1569

Seismicity and Tectonic Relationships for Upper Great Lakes Precambrian Shield Province.
July 1980.
Minnesota Geological Survey
ORES GPO. NTIS.

This is a final report comprising a three-year study of the seismicity of Minnesota including the procurement and installation of a six-station seismograph system. This system was deployed in a microearthquake monitoring array. An earth model was developed based on signals from mine blasts and regular earthquake bulletins were published. Descriptions of the model, methodologies, and three significant earthquakes are given.

NUREG/CR-1575

Hydrogen-Mixing in a Closed Containment Compartment Based on a One-Dimensional Model with Convective Effects.
September 1980.
Los Alamos Scientific Lab
LA-8429-MS
ONRR GPO. NTIS.

A transient, 1-dimensional finite difference model was developed for determining the hydrogen concentration variation with position in a closed containment compartment caused by radiolysis following a LOCA. The model includes mixing due to molecular and eddy diffusion and natural convection. For representative compartments, the maximum hydrogen concentration difference between the bottom and top of the compartment never exceeds 0.25 volume percent when all 3 mixing mechanisms are considered for a range of parameters.

NUREG/CR-1579

Considerations on Nuclear Data Link Implementation in Relation to the Technical Support Center, Emergency Operations Center and Safety Parameter Display System.
September 1980.
Sandia National Lab, Albuquerque
SAND80-1618
ORES GPO. NTIS.

Upon the occurrence of a significant event at a nuclear plant, both the Nuclear Regulatory Commission and the licensee must carry out certain roles to mitigate possible consequences. To accomplish their respective roles effectively, both require timely data from the plant instrumentation systems. The relationship of the NRC-oriented Nuclear Data Link to the individual licensee-oriented Technical Support Centers, Emergency Operations Facilities, and Safety Paramter Display Systems has been examined with regard to implementation of data acquisition, communication, and display requirements. The possible use of a common data acquisition processor for all four systems is discussed, along with technical considerations important in the implementation of such an approach. A common data acquisition system is not recommended but could be successfully implemented if tight control is exercised. Some of the anticipated difficulties in developing standardized data displays are outlined. Duplication at the NRC Operations Center of those displays available at the reactor sites will be extremely difficult unless industry-wide standardization of displays is implemented.

NUREG/CR-1581, Vol 1

Evaluation of Mathematical Models for Characterizing Plume Behavior from Cooling Towers: Vol. 1--Dispersion from Single and Multiple Source Natural Draft Cooling Towers.
September 1980.
Argonne National Lab
ORES GPO. NTIS.

Fifteen mathematical models for visible plume prediction from natural draft cooling towers are evaluated theoretically and tested with 39 sets of single-tower visible plume field data from three sites. Seven of these models with the capability of treating plumes from multiple towers are further tested with 26 sets of multiple tower data from two sites. The visible plume outlines provided by these data give information on the trajectory of the plume as well as dilution. The model/data comparisons prepared in this study revealed systematic behaviors in the predictions of most models which were able to be traced back to model assumptions. A wide range of predictions was found to occur among the models. No one model performed consistently well for all data sets. Theoretical analysis of the model formulations revealed

frequency response to the surrouding eddy motion. A scheme is developed to determine the location of the joining boundary between two distinguishable regions of the particle transport; a turbulent diffusion-controlled region and a region in which the particle motion is controlled by the mean velocity field of the fluid as in laminar flows. The paper also gives first results of experimental investigations carried out in an upward turbulent air flow in a vertical pipe-test-rig. Measurements were carried out for various sizes and it is shown that the results qualitatively support the theoretical findings.

NUREG/CR-1557

Steam-Water Mixing and System Hydrodynamics Program - Task 4 - Quarterly Progress Report, April 1-June 30, 1979.
July 1980.
Battelle Columbus Lab
BMI-2038
ORES GPO. NTIS.

During this quarter, analysis included additional development of the I* scaling parameter for tubes, review of results from air-water tests in distorted geometries, and correlation of results from countercurrent flow condensation tests in a rectangular test section. Experimental work this quarter included completion of condensation tests and heat partitioning studies in the rectangular test section, and air-water and steam-water tests in the 2/15-scale model with shortened and extended annulus lengths. The instrumented break leg spool piece was received from INEL and installed in the 2/15-scale facility.

NUREG/CR-1563

Eddy-Current Inspection for Steam Generator Tubing Program. Annual Progress Report for Period Ending December 31, 1979.
August 1980.
Oak Ridge National Lab
ORNL/NUREG/TM-398
ORES GPO. NTIS.

This report presents the ORNL program to improve the eddy-current inspection capabilities for in-service inspection of steam generators presently undertaken for the Nuclear Regulatory Commission. Eddy-current methods provide the best in-service inspection of steam generator tubing, but present techniques can produce ambiguity because of the many independent variables that affect the signals. The current development program has used mathematical models and developed or modified computer programs to design optimum probes, instrumentation, and techniques for multifrequency, multiproperty examinations. Interactive calculations and experimental measurements have been made with the use of modular eddy-current instrumentation and a minicomputer. More testing is needed for all the different combinations of cases and different types of defects.

NUREG/CR-1564

Comparison of CONTEMPT-LT Containment Code Calculations with Marviken, LOFT, and Battelle-Frankfurt Blowdown Tests.
July 1980.
Los Alamos Scientific Lab
LA-8423-MS
ONRR GPO. NTIS.

This study compared the CONTEMPT-LT/026 containment analysis code calculations with large-scale test results. LASL reviewed 7 large-scale experimental test programs and selected 5 of the 16 Marviken tests for pressure-suppression containment analysis comparisons and 1 LOFT test as a secondary investigation. In addition, 1 Marviken test was used to investigate the effects of 18 code parameter variations. A single Battelle-Frankfurt test was used for a dry containment comparison.

NUREG/CR-1568

LWR Fuel Rod Post-Subcooled Blowdown Scoping Analysis.
August 1980.
EG&G Idaho
ONRR GPO. NTIS.

Thermal transients which occur during the post-subcooled blowdown regime of a postulated loss-of-coolant accident (LOCA) can cause significant changes in light water reactor (LWR) fuel rod material properties and geometry. The effects of these structural changes must be assessed to insure that a coolable geometry of the fuel system is maintained. An overall assessment of the fuel rod structural integrity has been made by considering the degraded structural properties of the fuel rod in conjunction

Report No.	Bibliographic Data
	that models which correctly predict the plume trajectory due to the entrainment mechanism alone will overpredict dilution. The more successful models employ an additional mechanism to provide additional bending without additional mixing. The correctness of any of the additional bending mechanisms remains to be determined. The model/data discrepancies are partly due to model errors and partly due to data measurement errors. The accuracy of the data makes it unlikely for a model to predict better than a factor of 1½-2 in most, perhaps 90%, of all data cases.
NUREG/CR-1581, Vol 2	Evaluation of Mathematical Models for Characterizing Plume Behavior from Cooling Towers: Vol.2--Salt Drift Deposition from Natural Draft Cooling Towers. September 1980. Argonne National Lab ORES GPO. NTIS. Twelve mathematical models for salt drift deposition from natural draft cooling towers are evaluated in terms of performance with prototype data and validity of theoretical assumptions. Model predictions are compared with field data acquired at the Chalk Point Power Plant during 1975, 1976, and 1977. Large, often several orders of magnitude differences among model predictions existed for runs with the 1975-1977 data. Since the field data are limited, extrapolation of the model's performance to significantly different types of environmental conditions and farther from the tower than 1 km should be done with caution. Each model reviewed was shown to have limitations in two categories. There were asumptions that were either not correct physically or not state-of-the-art. Secondly, there were assumptions whose correctness is presently unknown. Sensitivity and comparative studies were also conducted and are described.
NUREG/CR-1581, Vol 3	Evaluation of Mathematical Models for Characterizing Plume Behavior from Cooling Towers: Vol. 3--Plume Rise from Mechanical Draft Cooling Towers. September 1980. University of Illinois ORES GPO. NTIS. Various methods commonly used to predict the length and height of the visible plume produced by an array of mechanical-draft cooling towers are evaluated by comparing predictions with observational data from the Benning Road Power Station and from a small array of towers at the Purdue University Power Plant. Four different approaches--empirical, integral, cloud-physics, and finite-difference--are examined. Statistical estimates of predictive capability are given. Problems inherent in the application of these approaches are discussed. Observations concerning areas of weakness and thus areas of potential improvement are made.
NUREG/CR-1582, Vol 2	Seismic Hazard Analysis. A Methodology for the Eastern United States. August 1980. Lawrence Livermore Lab ONRR GPO. NTIS. This report presents a probabilistic approach for estimating the seismic hazard in the Central and Eastern United States. The probabilistic model (Uniform Hazard Methodology) systematically incorporates the subjective opinion of several experts in the evaluation of seismic hazard. Subjective input, assumptions, and associated hazard are kept separate for each expert so as to allow review and preserve diversity of opinion The report is organized into five sections: Introduction, Methodology Comparison, Subjective Input, Uniform Hazard Methodology (UHM), and Uniform Hazard Spectrum. Section 2, Methodology Comparisn, briefly describes the present approach and compares it with other available procedures. The remainder of the report focuses on the UHM. Specifically, Section 3 describes the elicitation of subjective input; Section 4 gives details of various mathematical models (earthquake source geometry, magnitude distribution, attenuation relationship) and how these models are combined to calculate seismic hazard. The last section, Uniform Hazard Spectrum, highlights the main features of typical results. Specific results and sensitivity analyses are not presented in this report.

Report No.	Bibliographic Data
NUREG/CR-1582, Vol 3	Seismic Hazard Analysis. Solicitation of Expert Opinion. August 1980. Lawrence Livermore Lab ONRR GPO. NTIS. This report presents a detailed tabulation of ten experts' answers to a questionnaire on seismicity and ground motion characteristics of the Central and Eastern United States. The goal in eliciting such information was to obtain a subjective representation of parameters that affect seismic hazard in order to supplement the very limited historical data that are available in these regions. Not only was the "most probable value" sought in each case, but also, whenever possible, the entire probability distribution to be used in a probabilistic hazard analysis. The questionnaire was divided into five sections: Source Zone Configuration, Maximum Earthquakes, Earthquake Occurrence, Ground Motion Models, and Overall Level of Confidence. The last section was designed to develop a synthesis of opinion, if need be. The questionnaire was designed to contain redundancy to provide cross-checking and establish consistency in the results.
NUREG/CR-1583	Radon Release and Dispersion from an Open Pit Uranium Mine. July 1980. Argonne National Lab ANL/ES-97 ORES GPO. NTIS. Radon-222 flux from representative sections of the United Nuclear St. Anthony open-pit mine complex was measured. In January 1979, permission was obtained from United Nuclear Corporation to install equipment for these measurements at the St. Anthony Mine in the Grants, New Mexico, mineral belt. This report describes measurements and details of the studies performed from March through September 1979. Results of the following tasks undertaken in this study are presented: (a) Measurement of radon flux from the ground, (b) Measurement of working level and airborne radon concentrations, (c) Measurement of meteorological parameters, (d) Development of a theoretical model to describe the release of radon from open pit mines.
NUREG/CR-1584	Psychological Stress for Alternatives of Decontamination of TMI-2 Reactor Building Atmosphere. August 1980. Human Design Group, Olney, MD ONRR GPO. NTIS. The purpose of this report is to consider the nature and level of psychological stress that may be associated with each of several alternatives for decontamination. The report briefly reviews some of the literature on stress, response to major disaster or life stressors, provides opinion on each decontamination alternative, and considers possible mitigative actions to reduce psychological stress. The report concludes that any procedure that is adapted for the decontamination of the reactor building atmosphere will result in some psychological stress. The stress, however, should abate as contamination is reduced and uncertainty is diminished. The advantages of the purge alternative are the rapid completion of the decontamination and the consequent elimination of future uncontrolled release. Severe stress effects are less likely if the duration of stressor exposure is reduced, if the feeling of public control is increased, and if the degree of perceived safety is increased. The long delays, continued uncertainty, and possibility of uncontrolled release that characterize the other alternatives may offset the perception that they are safer. In addition, chronic stress could be a consequence of long delays and continued uncertainty.
NUREG/CR-1585	Modeling Tornado Dynamics. September 1980. Aeronautical Research Assoc, Princeton ARAP Rpt 421 ORES GPO. NTIS. This report details the results of a research program aimed at providing NRC with a definitive theoretical model of the tornado, low-level flowfield. It includes a critical review of existing theoretical models and detailed accounting of an axisymmetric numerical model based on turbulent transport theory. Model verification tests show reasonable comparsions with laboratory and limited field results. An extensive model sensitivity analysis shows the flowfield is most dependent on the ambient vertical vorticity and horizontal convergence occurring in the parent thunderstorm. It is also quite sensitive to surface roughness. Dominant features of

the model results are the low altitude at which the maximum windspeed occurs and the large magnitude of velocity fluctuations which occur close to the surface. When available dual doppler observations are used to impose boundary conditions on a model domain with a 1-Km radius and 1-Km height, estimates of the maximum windspeed suggest that speeds in excess of 125 m/sec should be exceedingly rare. An analytic fit to the complex model results is provided so that the model wind distribution can be used in further engineering design studies. Five previously published papers reporting partial results of the research program are included as appendices.

NUREG/CR-1586

Respirator Studies for the Nuclear Regulatory Commission, Evaluation and Performance of Escape-Type Self-Contained Breathing Apparatus, October 1, 1978-September 30, 1979.
September 1980.
Los Alamos Scientific Lab
LA-8432-MS
ORES GPO. NTIS.

The performance of escape-type breathing apparatus was evaluated for weight, comfort, ease of use, and protection factor (calculated from facepiece leakage). All of the devices tested provided a self-contained air supply of 5-to 15-min duration. Five of them have the provision to connect an air line but allow the use of the self-contained supply for safe egress. The air supply was stored in cylinders, tubing, or disposable containers. Respiratory inlet coverings were half masks, full facepieces, hoods, and mouthpieces. An estimate is given for the ease of quick donning. Recommendations for conditions for use of the equipment are given.

NUREG/CR-1590

Evaluation Methodology for Fixed-Site Physical Protection Systems.
September 1980.
Sandia National Lab, Albuquerque
SAND80-0505
ONMSS GPO. NTIS.

A system performance evaluation methodology has been developed to aid the Nuclear Regulatory Commission (NRC) in the implementation of new regulations designed to upgrade the physical protection of nuclear fuel cycle facilities. The evaluation methodology, called Safeguards Upgrade Rule Evaluation (SURE), provides a means of explicitly incorporating measures for highly important and often difficult to quantify performance factors, e.g., installation, maintenance, training and proficiency levels, compatibility of components in subsystems, etc. This is achieved by aggregating resposes to component and system questionnaires through several successive levels of a functional hierarchy developed for each primary performance capability specified in the regulations, 10 CFR 73.45. An overall measure of performance for each capability is the result of this aggregation process. This paper provides a description of SURE.

NUREG/CR-1592

Compressible Analysis of Inlet Plenum Pressure Rise due to Sodium Boiling in Fuel Subassemblies During Pump Coast-Down of an LMFBR.
August 1980.
Argonne National Lab
ANL-80-48
ORES GPO. NTIS.

The effect of sodium compressibility and steel elasticity on the rise in inlet plenum pressure occurring during boiling in a loss-of-flow accident in an LMFBR has been investigated using the PTA-2 code. These effects do not seem large enough to require consideration in accident analysis. The pressure rise is less for pool than for loop designs.

NUREG/CR-1593

Performance Testing of Personnel Dosimetry Services: Alternatives and Recommendations for a Personnel Dosimetry Testing Program.
August 1980.
University of Michigan
OSD GPO. NTIS.

The Nuclear Regulatory Commission (NRC) is considering an amendment to 10 CFR Part 20 that would require their licensees to use only processors of personnel dosimetry devices (e.g., film badges and thermoluminescent dosimeters) that have been certified. Although this action would have a direct effect only on those processors that service NRC licensees, it would most likely lead indirectly to a nationally recognized certification program for all dosimetry processors. The objectives of this Report are to

consider a variety of alternatives that would influence a certification program, to consider the advantages and disadvantages, values and impacts, of each alternative, and to make a recommendation for each alternative. Among the considerations discussed are: (1) Is a certification program necessary? (2) What standard should be used for a testing prgoram? (3) What type of organization should test dosimetry processors? (4) How often should a processor be retested? (5) What appeals procedures should be available to a processor? (6) What are realistic estimates of the costs of a testing program?

NUREG/CR-1601

Critical Experiments, Measurements, and Analyses to Establish a Crack Arrest Methodology for Nuclear Pressure Vessel Steels.
July 1980.
Battelle Columbus Lab
BMI-2055
ORES GPO. NTIS.

Analyses have been performed on ORNL Thermal-Shock Experiment TSE-5 using a modified plastic dynamic finite-difference-solution procedure. These used two different postulated dynamic-fracture-toughness relations. In both cases, the dynamic analysis predicted that crack arrest would occur well beyond the point suggested by a quasistatic analysis. Crack-initiation studies on the steel used in TSE-5 revealed a large degree of scatter in K_{Ic}. A statistical method was used to estimate lower-bound toughness based on the three-parameter Weibull distribution. Preliminary fractographic examination indicates that the fracture origin can be located and that this technique may be used to elucidate the source of the scatter.

NUREG/CR-1602

Strength and Stiffness of Tensioned Reinforced Concrete Panels Subjected to Membrane Shear, Two-Way Reinforcing.
July 1980.
Cornell University
ORES GPO. NTIS.

This report presents results of an experimental program to investigate seismic shear transfer in a cracked reinforced concrete containment vessel without diagonal reinforcement. The test specimen was designed and constructed to represent the stress conditions in the wall of a pressurized containment subjected to tangential shear stresses such as those induced by an earthquake. Four monotonic and twelve reversing shear load tests were done on 4 ft square by 6 in. thick flat specimens reinforced with steel bars in two orthogonal directions. Test parameters included the level of biaxial tension applied to the bars (from 0 to $0.9f_y$) and the loading history. Results are given for strength, stiffness, development of cracking, and degradation effects produced by cyclic shear. Engineering models for predicting strength and stiffness are given, along with preliminary design implications. A comprehensive review of pertinent literature is also included.

NUREG/CR-1606

An Evaluation of Condensation-Induced Water Hammer in Preheat Steam Generators.
September 1980.
Brookhaven National Lab
BNL-NUREG-51248
ONRR GPO. NTIS.

At the request of the Division of Systems Safety of USNRC, BNL evaluated the potential of condensation-induced water hammer in preheat-type steam generators. Westinghouse 1/8-scale water hammer tests and data analysis were reviewed. BNL has concluded that water hammers occurred in the feedwater line during many of the 1/8-scale tests and were probably caused by steam bubble entrapment and collapse in the partially filled feedwater line. The Westinghouse scaling laws were also independently reviewed. The present state-of-the-art on the condensation heat transfer and the mechanism of vapor cavity formation precludes us from deriving any credible scaling criteria. However, under certain operating conditions the condensation-induced void collapse could be an oscillatory process. This may partially explain the apparent randomness of the water hammer phenomenon seen in most experimental studies. The full-scale preheat-type steam generators of both the Westinghouse and the Combustion Engineering design have been reviewed from the viewpoint of condensation-induced water hammer. It is recommended that each plant should be reviewed separately to identify the worst situation(s) for the condensation-induced water hammer, and the appropriate verification test(s) should be performed in plants. In addition, basic research should be sponsored in order to enhance our understanding in this area.

Report No.	Bibliographic Data

NUREG/CR-1607

Drop-Size Estimates for a Loss-of-Coolant Accident.
August 1980.
Los Alamos Scientific Lab
LA-8449-MS
ONRR GPO. NTIS.

Drop sizes ranging between 16 and 76 μm are estimated for loss-of-coolant-accident (LOCA) conditions. A break-size diameter of 0.3 m (1 ft.) and liquid temperature of 590 K (600°F) are assumed. The best estimate is that the drop size will be less than 16 μm due to the combined effects of heterogeneous and homogeneous nucleation and of aerodynamic atomization. The calculations are based on an extrapolation of available lowtemperature fragmentation data to typical LOCA conditions. The extrapolation is suported by a semiempirical fragmentation model that is consistent with low-temperature measurements reported in the literature. If drops are formed by some unknown process upstream of the break, the largest drop that can escape fragmentation when passing through the break opening is estimated to be 46 μm.

NUREG/CR-1608

Scenario Development and Evaluation Related to the Risk Assessment of High Level Radioactive Waste Repositories.
August 1980.
GGS, Urbana, IL
CGS/NR85F060
ORES GPO. NTIS.

This study examines the consequences of disruptive features within a geologic repository system intended for the isolation of high-level nuclear waste. The presence of fault zones having high hydraulic conductivity does not change significantly the confinement capabilities of a reference repository system (RRS) in bedded salt. Fault zones of low hydraulic conductivity can reduce or enhance the confinement capabilities, depending upon conductivity magnitude and location of the depository in the system. The analysis indicates that with accurate characterization and proper understanding, an RRS with a fault zone might be utilized to provide confinement characteristics superior to those of the unfaulted system. The presence of fractures distributed uniformly throughout a typical granite mass could result in unacceptable confinement capability for a repository system in granite. Preliminary results emphasize the need to evaluate critically the assumptions involved in modeling groundwater flow in fractured media and to accurately characterize the repository system.

NUREG/CR-1609

A Deterministic-Probabilistic Model for Contaminant Transport.
August 1980.
CGS, Urbana, IL
CGS/NR85U060
ORES GPO. NTIS.

This manual describes a deterministic-probabilistic contaminant transport (DPCT) computer model designed to simulate mass transfer by ground-water movement in a vertical section of the earth's crust. The model can account for convection, dispersion, radioactive decay, and cation exchange for a single component. A velocity is calculated from the convective transport of the ground water for each reference particle in the modeled region; dispersion is accounted for in the particle motion by adding a random component to the deterministic motion. The model is sufficiently general to enable the user to specify virtually any type of water table or geologic configuration, and a variety of boundary conditions. A major emphasis in the model development has been placed on making the model simple to use, and information provided in the User Manual will permit changes to the computer code to be made relatively easily for those that might be required for specific applications.

NUREG/CR-1610, Vol 1, No. 1

Inspection Methods for Physical Protection Project: Quarterly Report, March-May 1980.
September 1980.
Lawrence Livermore National Lab
UCID-18123-80-1
ORES GPO. NTIS.

This is the fifth quarterly report to the U.S. Nuclear Regulatory Commission (NRC) on the progress at Lawrence Livermore National Laboratory (LLNL) in the Inspection Methods for Physical Protection (IMPP) project. Besides reporting on trips for field tests and data acquisition, the feasibility studies for field evaluation of procedures, and the progress of the E-field intrusion detector training film, the report details the production status of the 23 procedures in the draft module 81100 replacement series already delivered to NRC and the status of 28 procedures now being written for

transportation of irradiated fuel and for possession and use of formula quantities of strategic special nuclear materials (SSNM).

NUREG/CR-1620

Survey of Current State Radiological Emergency Response Capabilities for Transportation Related Incidents.
September 1980.
Indiana University
OSD GPO. NTIS.

This volume is the final report of a project to survey current state radiological emergency response capabilities for transportation-related incidents. The survey was performed to provide the NRC with information useful in the development of guidelines for state organizations and planning for emergency response. The report includes the results of a mail and telephone survey of state emergency response officials; information gleamed from radiological emergency response plans and related official document; and some general conclusions and recommendations drawn in part from interviews conducted and site visits to selected states.

NUREG/CR-1621

A Characterization of Faults in the Appalachian Foldbelt.
September 1980.
Florida State University
OSD GPO. NTIS.

The characterization is a synthesis of available data on geologic faults in the Appalachian foldbelt regarding their description, generic implications, rate of movement, and potential as geologic-seismic hazards. It is intended to assist applicants and reviewers in evaluating faults at sites for nuclear facilities. Appalachian faults were found to fall into 13 groups which can be defined on either their temporal, generic, or descriptive properties. They are as follows: Group 1, Faults with demonstrable Cenozoic movement; Group 2, Wildflysch type thrust sheets; Group 3, Bedding plane thrusts - dęcollements; Group 4, Pre- to synmetamorphic thrusts in medium- to high-grade terranes; Group 5, Post metamorphic thrusts in medium- to high-grade terranes; Group 6, Thrusts rooted in low crystalline basement; Group 7, High angle reverse faults; Group 8, Strike slip faults; Group 9, Normal (block) faults; Group 10, Compound faults; Group 11, Structural lineaments; Group 12, Faults associated with local centers; and Group 13, Faults related to geomorphic phenomena. Unhealed faults (groups 1, 6, 8, 9, and 12) must be considered candidates for reactivation. Healed brittle or ductile faults (groups 4, 5, and 10) are not places of mechanical discontinuity and are unlikely candidates for reactivation. The remaining groups (2, 3, 7, 11, and 13) should be individually assessed as to their potential for reactivation.

NUREG/CR-1624

Load Combination Program. Progress Report No. 5.
September 1980.
Lawrence Livermore National Lab
UCID-18674
ORES GPO. NTIS.

This document is a progress report on the Load Combination Program (LCP) covering the period April 1, 1980 through June 30, 1980. The report gives a general description of the program by project and tasks, together with financial summaries, technical reports generated, and meeting attendance. Two appendixes which discuss technical subjects are also included.

NUREG/CR-1625

Steam-Water Mixing and System Hydrodynamics Program - Task 4 - Quarterly Progress Report, July 1-September 30, 1979.
August 1980.
Battelle Columbus Lab
ORES GPO. NTIS.

During this quarter we analyzed results from high bypass air-water tests and from low subcooling steam-water tests in the 2/15-scale model, continued development of a mechanistic model for ECC penetration, and analyzed results from steam-water tests in the simple tube facility. The experimental efforts during this quarter were directed to completion of the installation of the annulus void measurement system and the instrumented spool piece for the break leg, and subsequent checkout and acquisition of initial data.

Report No.	Bibliographic Data

NUREG/CR-1629

In-Plant Source Term Measurements at Turkey Point Station - Units 3 and 4.
September 1980.
EG&G Idaho; Allied Chemical Corp
ORES GPO. NTIS.

This report presents data obtained at Turkey Point Units #3 and #4 as a part of the inplant source term measurement program in operating light water reactors (LWRs). The primary objective of this program is to provide the Nuclear Regulatory Commission (NRC) with operational data that can be used in evaluation of plant designs for liquid and gaseous waste treatment systems. Data presented were obtained at the Turkey Point Power Station operated by Florida Power and Light. This plant is the third in a planned series of six operating LWRs to be studied. Data from all plants will be combined and interpreted to provide a data base for radioisotope inventory in plant systems, radioactive waste treatment system performance, and source terms for both liquid and gaseous systems. One of the primary objectives in performing measurements at Turkey Point was to study primary-to-secondary leaks if they occurred and to determine partition factors in steam generators. The opportunity to study primary-to-secondary leaks occurred twice during the inplant measurement period. Results of these studies together with measurements performed on the liquid and gaseous systems at Turkey Point are presented.

NUREG/CR-1631

Lateral Loads on Vent Pipe in Steam Chugging.
August 1980.
University of California, LA
ORES GPO. NTIS.

The quasisteady injection of steam into a pool of subcooled water was investigated. The resulting phenomenon was studied with emphasis on structural loading on the steam downcomer. From experimental data at a single steam mass flux it was found that pressure pulsations in the pool were temperature dependent. At low pool temperatures pressure pulsations were found to have high magnitudes and occur at low frequencies. At higher pool temperatures smaller, high frequency pressure pulses were observed. Three types of pressure pulsations were observed to occur within the pool. Pressure pulsations from (1) bubble growth and bubble shape changes, (2) bubble collapse, and (3) water slug movement within the downcomer were observed and recorded. Loadings on the steam downcomer were seen to be influenced only by bubble collapse and the magnitudes were independent of pool temperature.

NUREG/CR-1632

Hydrodynamics of a Vapor Jet in Subcooled Liquid.
September 1980.
University of California, LA
ORES GPO. NTIS.

The report addresses the two-phase flow of a steam jet, injected vertically downward from a submerged pipe into a stagnant pool of subcooled water. Direct contact heat and mass exchange rates and hydrodynamic pressure pulsations are investigated. The emphasis of the present work pertains to dynamics of the subsonic (unchoked) regime of the exit steam injection rate. Experimental results indicate a large influence by the pool subcooling and jet diameter on the frequency and amplitude measurements of steam jet pulsations. In contrast, the exit steam velocity has a minor effect on the jet pulsation characteristics. A numerical model for steam jet pulsations is proposed, based on the experimental observation. Reasonable agreement between numerical and experimental results has been achieved.

NUREG/CR-1634

Film Entrainment and Drop Deposition for Two-Phase Flow.
August 1980.
Los Alamos Scientific Lab
LA-8475-MS
ONRR GPO. NTIS.

A model for estimating the rate of film mass entrainment for drop-annular flow, based on film disturbance wave stability, was developed. The model was verified by application to tests involving deposition and entrainment. To account for the deposition, a recent particle mass diffusion correlation was used. Application of the entrainment and deposition models confirmed that a flow passage length (L/D) of about 100 or more is required to achieve near equilibrium, for a zero initial entrainment flow. The assumption of an initially fully entrained flow remaining approximately so, as used in nuclear power plant subcompartment analysis, is shown to be appropriate.

Report No.	Bibliographic Data

NUREG/CR-1635

Nuclear Plant Reliability Data System 1979 Annual Reports of Cumulative System and Component Reliability.
September 1980.
Southwest Research Institute
OMPA GPO. NTIS.

This NPRDS document includes two annual reports: (1) Annual Report of Cumulative System Reliability (A02), (2) Annual Report of Cumulative Component Reliability (A03). Both annual reports provide generic reliability information on systems and components for the cumulative period from July 1974 through December 1979.

NUREG/CR-1637

Canadian Seismic Agreement.
September 1980.
Canadian Commercial Corp, Ottawa
ORES GPO. NTIS.

This is the second annual progress report under terms of Contract No. NRC-04-79-180. This report gives the details of the developments during the first year of this agreement and plans for the expansion of the Eastern Canadian Telemetered Network during the coming year. This includes a detailed description of the entire seismograph system, i.e., sensors, A/D conversion, modes of telemetry, etc. Also included are the descriptions of the present and proposed station deployment.

NUREG/CR-1638

Evaluation of In-Situ Soil Damping Characteristics.
September 1980.
Shannon & Wilson; Agbabian Assoc.
ORES GPO. NTIS.

This study consists of a development of procedures for estimating strain-dependent damping ratios from in-situ impulse test data. Two types of methods, both based on phase differences between stress and strain, have been developed. The first, termed loop methods, is based on estimation of the shape of the hysteresis loop, once the secant shear modulus is obtained from the in-situ impulse test. The second, termed equilibrium methods, utilizes dynamic equilibrium equations to estimate shear stress which, when considering its phase relationship with shear strain, can be used to estimate the damping ratio. Careful assessments of the accuracy and applicability of the methods, using finite element calculations, laboratory tests, and field tests, shows that the third degree loop method is most promising for future applications. However, only limited cyclic shear and torsional shear laboratory test data were available at this time to carry out the assessments, and more such data is needed to carry out assessments for a wide range of soil types and strain levels.

NUREG/CR-1639

Site-Dependent Effects at Strong-Motion Accelerograph Stations.
September 1980.
Shannon & Wilson; Agbabian Assoc
ORES GPO. NTIS.

This study consists of an assessment of a six-step procedure that comprises site-dependent and site-independent methods for developing seismic input criteria at sites of nuclear plants and other major structures. The assessment was based on an application of the procedure at three accelerograph sites in California; Ferndale, El Centro, and Taft, where strong earthquake motions have been recorded and where subsurface soil properties have been measured by the SW-AA joint venture. At each of these sites, reference earthquake events were identified which correspond to magnitudes and distances identical to those for which strong ground motions had been recorded. The various site-dependent and site-independent techniques were then used to predict ground motions corresponding to these events. Comparisons between the recorded and predicted earthquake motions served as a basis for assessing the adequacy of the procedure. These comparisons showed that the six-step procedure provided reasonable estimates of the recorded motions, although no single site-dependent or site-independent method comprised by the procedure was superior in all cases.

NUREG/CR-1641

Statistical Analysis of Earthquake Ground Motion Parameters.
September 1980.
Shannon & Wilson; Agbabian Assoc
ORES GPO. NTIS.

Several earthquake ground response parameters that define the strength, duration, and frequency content of the motions are investigated using regression analyses techniques;

Report No. Bibliographic Data

these techniques incorporate statistical significance testing to establish the terms in the regression equations. The parameters investigated are the peak acceleration, velocity, and displacement; Arias intensity; spectrum intensity; bracketed duration; Trifunac-Brady duration; and response spectral amplitudes. The study provides insight into how these parameters are affected by magnitude, epicentral distance, local site conditions, direction of motion (i.e., whether horizontal or vertical), and earthquake event type. The results are presented in a form so as to facilitate their use in the development of seismic input criteria for nuclear plants and other major structures. They are also compared with results from prior investigations that have been used in the past in the criteria development for such major facilities.

NUREG/CR-1643

Geotechnical Data from Accelerograph Stations Investigated during the Period 1975-1979. Summary Report.
September 1980.
Shannon & Wilson; Agbabian Assoc
ORES GPO. NTIS.

This report summarizes geotechnical data that was obtained in the investigation of 83 accelerograph stations located in the United States. These stations were studied during the period from 1975 to 1979 and the detailed findings are contained in nine data reports. Summary logs indicating subsurface soil conditions and material properties have been prepared for each of the accelerograph stations. A classification system was devised for grouping the stations as either rock sites, stiff soil sites, or deep soil sites. Using this classification system, simple ground motion plots have been prepared which qualitatively indicate the dependency of earthquake motions on local site conditions. This classification system may be used in more elaborate and quantitative studies of the influence of local site conditions upon earthquake ground response. On a practical engineering level, the site classification system and the results of the individual site investigations may be used in selecting earthquake records to establish seismic design criteria. Further research of the subsurface conditions at additional accelerograph stations is needed to increase the data base of earthquake records and recording stations.

NUREG/CR-1648

A Probabilistic Evaluation of Earthquake Detection and Location Capability for Illinois, Indiana, Kentucky, Ohio, and West Virginia.
September 1980.
University of Michigan
ORES GPO. NTIS.

Probabilistic estimations of earthquake detection and location capabilities for the states of Illinois, Indiana, Kentucky, Ohio, and West Virginia are presented in this document. The algorithm used in these epicentrality and minimum-magnitude estimations is a version of the program NETWORTH by Wirth, Blandford, and Husted (DARPA Order No. 2551, 1978) which was modified for local array evaluation at the University of Michigan Seismological Observation. Estimations of earthquake detection capability for the years 1970 and 1980 are presented in four regional minimum m_b magnitude contour maps. Regional 90% confidence error ellipsoids are included for m_b magnitude events from 2.0 through 5.0 at 0.5 m_b unit increments. The close agreement between these predicted epicentral 90% confidence estimates and the calculated error ellipses associated with actual earthquakes within the studied region suggest that these error determinations can be used to estimate the reliability of epicenter location.

NUREG/CR-1649

Geophysical Investigation of the Anna, Ohio Earthquake Zone.
September 1980.
University of Michigan
ORES GPO. NTIS.

This report discusses the progress and achievements accomplished under NRC Contract No. NRC-04-76-192 during fiscal year 1980. The Anna, Ohio seismic array, converted to solar recharge power systems, has been in continuous operation. No local earthquakes above m_b 1.5 have occurred. Near regional earthquakes from 1977 through 1980 supplemented with quarry blast recordings have been used to determine the regional travel time curves. Theoretical estimates of earthquake detection and location capabilities for m_b 2.5, 2.0, and 1.5 earthquakes in the Anna, Ohio region are included to demonstrate the coverage effectiveness of the network. Teleseismic P-wave residuals as a function of azimuth are included to demonstrate the lower crustal velocity variation for the region. Finally, an exhaustive catalog of water and gas well data is included from which a regional depth to bedrock map has been produced.

Report No.	Bibliographic Data
NUREG/CR-1656	Utility Management and Technical Resources. September 1980. Teknekron Research, McLean, VA ONRR GPO. NTIS. NRR contracted with Teknekron Research, Inc. to analyze and evaluate utility management and technical resources for dealing with events like that at Three Mile Island Unit 2. Teknekron (1) analyzed licensee submittals in response to an NRC request to identify managment and technical short-term and long-term resources for reacting to TMI-2 type accidents, (2) developed acceptance criteria that specify minimum management and technical (onsite and offsite) resources, and (3) evaluated the adequacy of licensee management and technical resources (onsite and offsite). The general conclusion is that those resources described in licensee submittals may be capable of dealing with TMI-2 type accidents.
NUREG/CR-1657	Steam-Water Mixing and System Hydrodynamics Program - Task 4. Quarterly Progress Report, October-December 1979. August 1980. Battelle Columbus Lab BMI-2062 ORES GPO. NTIS. During this quarter, analysis included development of a new correlation for air-water data in terms of the K* scaling parameter, and implementation of this correlation into the mechanistic model for ECC penetration. Experimental work this quarter included studies of annulus and break leg flow with neutral and equilibrium walls, hot wall tests in the rectangular test section, and development of a data reduction program for the void distribution measurement (VDM) system.
NUREG/CR-1660	Compilation, Assessment and Expansion of the Strong Earthquake Ground Motion Data Base. September 1980. Lawrence Livermore Lab UCRL-15227 ORES GPO. NTIS. A catalog has been prepared which contains information for: (1) world-wide, ground-motion accelerograms, (2) the accelerograph sites where these records were obtained, and (3) the seismological parameters of the causative earthquakes. The catalog is limited to data for those accelerograms which have been digitized and published. In addition, the quality and completeness of these data are assessed. This catalog is unique because it is the only publication which contains comprehensive information on the recording conditions of all known digitized accelerograms. However, information for many accelerograms is missing. Although some literature may have been overlooked, most of the missing data has not been published. Nevertheless, the catalog provides a convenient reference and useful tool for earthquake engineering research and applications.
NUREG/CR-1661	Variability of Dynamic Characteristics of Nuclear Power Plant Structures. September 1980. Lawrence Livermore National Lab UCRL-15267 ORES GPO. NTIS. This report presents the results of an investigation of the sources of random variability of the dynamic response of nuclear power plant structures. Sources affecting both the response frequencies and dynamic amplification of structures are identified. Numerical values developed for the Zion auxiliary building are presented for sources of inherent randomness. Several sources of uncertainty resulting from lack of knowledge of material properties or approximations in analytical modelling are discussed but are not in general quantified. The dispersion in both the structure dynamic characteristics and the input to equipment as defined by the in-structure response spectra is addressed. The evaluation of the dynamic response variability is limited to elastic response levels.

Report No. | Bibliographic Data

NUREG/CR-1668

Advanced Mobile Multi-Processor Gamma-Ray Acquisition and Analysis System.
September 1980.
EG&G Idaho
ORES GPO. NTIS.

The report describes a new Gamma-Ray Acquisition and Analysis system which has been developed for the In-Plant Source Term Measurement Program. A new computer was added to the system described previously in Reference 5, "Procedures, Source Term Measurement Program," NUREG-0384. One computer is now used to acquire the data and the other (new computer) is used to analyze the resulting data. The throughput of the system has been dramatically improved. Data analysis times have been reduced by about a factor of 10. Moreover, the analysis procedure is much more complex and provides results which can be directly reported with minimal operator interpretation. The information contained in this report supersedes the description of the analysis package given in Appendix B of the procedures manual (NUREG-0384).

NUREG/CR-1670, Vol 1

The Use of Process Monitoring Data for Nuclear Material Accounting: Volume 1. Summary Report.
August 1980.
Battelle Pacific Northwest Lab
PNL-3396
ONMSS GPO. NTIS.

A study was conducted for the Nuclear Regulatory Commission as part of a continuing program to estimate the effectiveness of using existing production control, process control, and quality control data to enhance strategic special nuclear material (SSNM) control and accounting of nuclear fuel manufacturing licensees. Two licensed SSNM fuel fabrication facilities with internal scrap recovery processes were examined. The loss detection sensitivity, timeliness, and localization capabilities of these techiques were evaluated for single and multiple (trickle) losses of material undergoing processing. The impact of records manipulation, mass and isotopic substitution, and collusion between insiders on these methods for detecting diversion were also studied. Volume 1 is an unclassified, nonproprietary summary. Volume 2 contains details on the mixed oxide fabrication process studied; its availability is restricted because it contains proprietary information. Volume 3 has details on an HEU fabrication process; it contains classified and proprietary information and so its availability is also limited.

NUREG/CR-1671

Transportation of Radioactive Material in Kentucky.
September 1980.
Bureau of Health Services, Frankfurt, KY
OSP GPO. NTIS.

Shipments of radioactive materials into, within, or through Kentucky were surveyed to determine the types of materials, pattern of transportation and magnitude of activity, the extent of compliance with shipping regulations, and the radiation exposure to persons handling the materials. The transported radioactive materials were categorized as (1) local delivery service, (2) air carrier, (3) nuclear pharmacy, (4) highway carriers, (5) nuclear fuel cycle. The shipments with the most numerous packages were radiopharmaceuticals. The shipments indicating the greatest volume or amount were those associated with the nuclear fuel cycle. The transportation workers whose radiation exposures were measured did not receive excessive doses from radioactive materials, but practices for reducing the radiation doses can be instituted and are discussed in the report.

NUREG/CR-1676, Vol 1

Using Advanced Process Monitoring to Improve Material Control.
September 1980.
NUSAC, McLean, VA
NUSAC-556
ONMSS GPO. NTIS.

The MC&A Task Force Report (NUREG-0450) included the long-term recommendation that the NRC give the highest priority to development and demonstration of process monitoring techniques for timely detection of material losses. NUREG/CR-1676 and 1687 are the final reports of two contractors selected to competitively perform the concept definition phase of a project responsive to that recommendation. In this phase each contractor independently formulated and estimated the costs and effectiveness of alternative data generating systems for validating the presence of HEU fuel material undergoing processing. Existing production control, quality control, and process control data were supplemented and relationships between cost and level of safeguards

performance obtained. Volumes 1 are unclassified, nonproprietary reports. Classified or proprietary details are in Volumes 2.

NUREG/CR-1677, Vol 1

Piping Benchmark Problems. Dynamic Analysis Uniform Support Motion Response Spectrum Method.
August 1980.
Brookhaven National Lab
BNL-NUREG-51267
ONRR GPO. NTIS.

A set of benchmark problems and solutions have been developed for verifying the adequacy of computer programs used for dynamic analysis and design of nuclear piping systems by the Response Spectrum Method. The problems range from simple to complex configurations which are assumed to experience linear elastic behavior. The dynamic loading is represented by uniform support motion, assumed to be induced by seismic excitation in three spatial directions. The solutions consist of frequencies, participation factors, nodal displacement components, and internal force and moment components. Solutions to associated anchor point motion static problems are not included.

NUREG/CR-1683

Characterization of Existing Surface Conditions at Sheffield Low-Level Waste Disposal Facility.
August 1980.
Harding-Lawson Assoc, Oak Brook, IL
HLA-9906-001-14
ONMSS GPO. NTIS.

This report presents results of the investigation to characterize the existing surface conditions at the Sheffield Low-Level Waste Disposal Facility, Sheffield, Illinois. The investigation is based on visual observations made in the field and detailed topographic surveying. The following information is presented: (1) Analyses of individual trench caps describing surface conditions and the ability of trench caps to minimize erosion and water infiltration into trenches; (2) A detailed survey of erosion at the site and a detailed description of the vegetation; and (3) A topographic survey. Numerous photographs are provided to document observations. Possible remedial actions, conclusion, and recommendations for improving surface conditions are presented. Field observations of the Sheffield site presented in this report were made July 1980.

NUREG/CR-1730

Data Summaries of Licensee Event Reports of Primary Containment Penetrations at U.S. Commercial Nuclear Power Plants from January 1, 1972 to December 31, 1978.
September 1980.
EG&G Idaho
EGG-EA-5188
ORES GPO. NTIS.

This report describes the results of an analysis of nuclear plant primary containment penetration failures. The data used for this analysis were the Licensee Event Reports (LERs). The LERs are written reports filed with the NRC whenever certain failures or incidents occur concerning nuclear plant safety systems. The primary containment penetration failures or incidents contained in the LERs were evaluated and categorized as to type of failure or problem and were used to calculate summary primary containment penetrating failure rate statistics. The report includes a variety of different statistics calculated to highlight or show important failure modes or other failure information. In addition to the quantitative failure rate information, there is also considerable qualitative information tabulated to allow the user to make additional primary containment penetration failure rate calculations or inferences.

Keyword Index to Reports

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Keyword Listing A	Report Title	Report No.
ABG Accidents	Assessment of Core Penetration of a PWR Reactor Vessel and Particulate Debris Coolability in TMLB, S2D, and ABG Accidents.	NUREG/CR-1518
Abnormal Occurrences	Report to Congress on Abnormal Occurrences, January-March 1980.	NUREG-0090, Vol 3, No. 1
Accelerated	Predicting Life Expectancy and Simulating Age of Complex Equipment Using Accelerated Aging Techniques.	NUREG/CR-1466
Accelerograph	Verification of Subsurface Conditions at Selected "Rock" Accelerograph Stations in California.	NUREG/CR-0055, V. 2 App
Accelerograph	Verification of Subsurface Conditions at Selected "Rock" Accelerograph Stations in California.	NUREG/CR-0055, Vol 2
Accelerograph	Verification of Subsurface Conditions at Selected "Rock" Accelerograph Stations in California.	NUREG/CR-0055, Vol 3
Accelerograph	Geotechnical and Strong Motion Earthquake Data from U.S. Accelerograph Stations.	NUREG/CR-0985, Vol 3
Accelerograph	Geotechnical and Strong Motion Earthquake Data from U.S. Accelerograph Stations.	NUREG/CR-0985, Vol 4
Accelerograph	Geotechnical and Strong Motion Earthquake Data from U.S. Accelerograph Stations.	NUREG/CR-0985, Vol 5
Accelerograph Stations	Site-Dependent Effects at Strong-Motion Accelerograph Stations.	NUREG/CR-1639
Accelerograph Stations	Geotechnical Data from Accelerograph Stations Investigated during the Period 1975-1979. Summary Report.	NUREG/CR-1643
Acceptance Criteria	MARK II Containment Lead Plant Program Load Evaluation and Acceptance Criteria - Generic Technical Activities A8 and A39.	NUREG-0487, Supp 1
Acceptance Criteria	Acceptance Criteria for the Physical Protection Upgrade Rule Requirements for Fixed Sites.	NUREG-0721
Accident	NRC Action Plan Developed as a Result of the TMI-2 Accident, Revision 1, Vol 1.	NUREG-0660, Vol 1

Keyword Listing A	Report Title	Report No.
Accident	NRC Action Plan Developed as a Result of the TMI-2 Accident, Revision 1, Vol. 2.	NUREG-0660, Vol 2
Accident	Calculations of the Skyshine Gamma-Ray Dose Rates from Independent Spent Fuel Storage Installations (ISFSI) Under Worst Case Accident Conditions.	NUREG/CR-0723
Accident	Uncertainty Analysis for a PWR Loss-of-Coolant Accident: II. Alternative Core Damage Estimators.	NUREG/CR-1364
Accident	Drop-Size Estimates for a Loss-of-Coolant Accident.	NUREG/CR-1607
Accidents	Review and Assessment of Package Requirements (Yellowcake) and Emergency Response to Transportation Accidents.	NUREG-05[illegible]
Accidents	A Risk Assessment of a Pressurized Water Reactor for Class 3-8 Accidents.	NUREG/CR-0603
Accounting	Material Accounting as Required by the United States Nuclear Regulatory Commission: Capabilities and Vulnerabilities.	NUREG/CR-1192
Accounting	The Use of Process Monitoring Data for Nuclear Material Accounting: Volume 1. Summary Report.	NUREG/CR-1670, Vol 1
Accounting Program	Safeguards Material Control and Accounting Program: Quarterly Report, October-December 1979.	NUREG/CR-1485, Vol 1, No. 1
Acquisition	Report to Congress on the Acquisition of Reactor Data for the NRC Operations Center.	NUREG-0730
Acquisition System	Advanced Mobile Multi-Processor Gamma-Ray Acquisition and Analysis System.	NUREG/CR-1668
Action Plan	NRC Action Plan Developed as a Result of the TMI-2 Accident, Revision 1, Vol 1.	NUREG-0660, Vol 1
Action Plan	NRC Action Plan Development as a Result of the TMI-2 Accident, Revision 1, Vol. 2.	NUREG-0660, Vol 2
Activated Carbon	The Effects of Temperature, Moisture, Concentration, Pressure and Mass Transfer on the Adsorption of Krypton and Xenon on Activated Carbon.	NUREG-0678

Keyword Listing A	Report Title	Report No.
Activities	Potential Threat to Licensed Nuclear Activities from Insiders (Insider Study).	NUREG-0703
Acute Effects	Acute Effects of Inhalation Exposure to Uranium Hexafluoride and Patterns of Deposition. UF_6/UO_2F_2 Studies in Experimental Animals.	NUREG/CR-1045
Acute Toxicity	Acute Toxicity and Bioaccumulati Chloroform to Four Species of Freshwater Fish.	NUREG/CR-0893
Adequacy	Evaluation of Simulator Adequacy for the Radiation Qualification of Safety Related Equipment.	NUREG/CR-1184
Adsorption	The Effects of Temperature, Moisture, Concentration, Pressure and Mass Transfer on the Adsorption of Krypton and Xenon on Activated Carbon.	NUREG-0678
Advanced	Two-Phase Flow Measurements with Advanced Instrumented Spool Pieces.	NUREG/CR-1529
Advanced	Using Advanced Process Monitoring to Improve Material Control.	NUREG/CR-1676, Vol 1
Advanced Mobile	Advanced Mobile Multi-Processor Gamma-Ray Acquisition and Analysis System.	NUREG/CR-1668
Advanced Reactor	Advanced Reactor Safety Research Division Quarterly Progress Report. October 1-December 31, 1979.	NUREG/CR-1402
Advanced Reactor	Advanced Reactor Safety Research Division Quarterly Progress Report, January 1-March 31, 1980.	NUREG/CR-1505
Aging Techniques	Predicting Life Expectancy and Simulating Age of Complex Equipment Using Accelerated Aging Techniques.	NUREG/CR-1466
Agreement	Canadian Seismic Agreement.	NUREG/CR-1637
Air	Measurement of XE-133, C-14 and Tritium in Air and I-131 in Vegetation and Milk Around the Quad Cities Nuclear Power Station.	NUREG/CR-1195
Airborne	Solubility Classification of Airborne Uranium Products from LWR-Fuel Plants.	NUREG/CR-1428

Keyword Listing A	Report Title	Report No.
Alabama Power Co.	Safety Evaluation Report Related to the Operation of Joseph M. Farley Nuclear Plant, Unit 2. Docket No. 50-364, Alabama Power Company. Supplement 4 to NUREG-75/034.	NUREG-0117, Supp. 4
Algorithm	An Algorithm to Estimate Field Concentrations Under Nonsteady Meteorological Conditions from Wind Tunnel Experiments.	NUREG/CR-1474
Alternative	Uncertainty Analysis for a PWR Loss-of-Coolant Accident: II. Alternative Core Damage Estimators.	NUREG/CR-1364
Alternative Fuel	Technical Safeguards Issues for Alternative Fuel Cycles.	NUREG/CR-1648
Alternatives	Psychological Stress for Alternatives of Decontamination of TMI-2 Reactor Building Atmosphere.	NUREG/CR-1584
Alternatives	Performance Testing of Personnel Dosimetry Services: Alternatives and Recommendations for a Personnel Dosimetry Testing Program.	NUREG/CR-1593
Analyses	Critical Experiments, Measurements, and Analyses to Establish a Crack Arrest Methodology for Nuclear Pressure Vessel Steels.	NUREG/CR-1601
Analysis	A Comparative Analysis of LWR Fuel Designs.	NUREG-0559
Analysis	Extended Analysis of Data from the 1/5-Scale MARK I Boiling Water Reactor Pressure Suppression Experiment.	NUREG/CR-0761
Analysis	Dynamic, Inelastic Buckling Analysis of MARK I Torus Support Columns.	NUREG/CR-1038
Analysis	Pip[illegible] Inelastic Fracture Mechanics Analysis.	NUREG/CR-1119
Analysis	Vital Area Analysis Using SETS.	NUREG/CR-1487
Analysis Models	SCALE: A Modular Core System for Performing Standardized Computer Analyses for Licensing Evaluation. SCALE System Criticality Safety Analysis Modules CSAS1 and CSAS2.	NUREG/CR-0200
Analysis System	Flow Topography Instrumentation and Analysis System.	NUREG/CR-1333

Keyword Listing A	Report Title	Report No.
Analysis System	Advanced Mobile Multi-Processor Gamma-Ray Acquisition and Analysis System.	NUREG/CR-1668
Animals	Acute Effects of Inhalation Exposure to Uranium Hexafluoride and Patterns of Deposition. UF_6/UO_2F_2 Studies in Experimental Animals.	NUREG/CR-1045
Anna, OH	Geophysical Investigation of the Anna, Ohio Earthquake Zone.	NUREG/CR-1649
Annual Reports	Nuclear Plant Reliability Data System 1979 Annual Reports of Cumulative System and Component Reliability.	NUREG/CR-1635
Answers	Answers to Frequently Asked Questions about Cleanup Activities at Three Mile Island, Unit 2.	NUREG-0732
Anticipated	Experiment Data Report for LOFT Anticipated Transient Experiment L6-5.	NUREG/CR-1520
Appalachian	A Characterization of Faults in the Appalachian Foldbelt.	NUREG/CR-1621
Appendix A	Technical Specifications, Sequoyah Nuclear Plant, Unit No. 1, Docket No. 50-3?7, Appendix "A" to License No. DPR-77.	NUREG-0658, Rev 1
Appendix A	North Anna Power Station Unit 2 Technical Specifications Appendix "A" to License No. NPF-7.	NUREG-0664, Rev 1
Appendix E	Environmental Assessment for Effective Changes to 10 CFR Part 50 and Appendix E to 10 CFR Part 50; Emergency Planning Requirements for Nuclear Power Plants.	NUREG-0685
Area Analysis	Vital Area Analysis Using SETS.	NUREG/CR-1487
Arrays	Critical Experiments with Interstitially-Moderated Arrays of Low-Enriched Uranium Oxide. Topical Report on Reference Critical Experiments.	NUREG/CR-1071
Assessment	Review and Assessment of Package Requirements (Yellowcake) and Emergency Response to Transportation Accidents.	NUREG-0535
Assessment	Environmental Assessment for Effective Changes to 10 CFR Part 50 and Appendix E to 10 CFR Part 50; Emergency Planning Requirements for Nuclear Power Plants.	NUREG-0685

Keyword Listing A	Report Title	Report No.
Assessment	A Risk Assessment of a Pressurized Water Reactor for Class 3-8 Accidents.	NUREG/CR-0603
Assessment	Identification and Assessment of the Social Impacts of Transportation of Radioactive Materials in Urban Environments.	NUREG/CR-0744
Assessment	Licensability of CANDU-Type Reactors in the United States. A Preliminary Assessment of the R and D Requirements.	NUREG/CR-1113
Assessment	Assessment of Current Onsite Inspection Techniques for Light Water Reactor Fuel Systems - Volume 1 - Executive Summary.	NUREG/CR-1380, Vol 1, ES
Assessment	An Assessment of LWR Fuel-Failure Propagation Potential: Literature Survey.	NUREG/CR-1471
Assessment	Assessment of Core Penetration of a PWR Reactor Vessel and Particulate Debris Coolability in TMLB, S2D, and ABG Accidents.	NUREG/CR-1518
Assessment	Compilation, Assessment and Expansion of the Strong Earthquake Ground Motion Data Base.	NUREG/CR-1660
Atmosphere	Psychological Stress for Alternatives of Decontamination of TMI-2 Reactor Building Atmosphere.	NUREG/CR-1584
Atmospheric	Diffusion Near Buildings as Determined from Atmospheric Tracer Experiments.	NUREG/CR-1394
Availability	COPS Model Estimates of LLEA Availability Near Selected Reactor Sites.	NUREG/CR-1166

Keyword Listing B	Report Title	Report No.
Battelle-Frankfurt	Comparison of CONTEMPT-LT Containment Code Calculations with Marviken, LOFT, and Battelle-Frankfurt Blowdown Tests.	NUREG/CR-1564
Behavior	Evaluation of Mathematical Models for Characterizing Plume Behavior from Cooling Towers: Vol. 1--Dispersion from Single and Multiple Source Natural Draft Cooling Towers.	NUREG/CR-1581, Vol 1
Behavior	Evaluation of Mathematical Models for Characterizing Plume Behavior from Cooling Towers: Vol.2--Salt Drift Deposition from Natural Draft Cooling Towers.	NUREG/CR-1581, Vol 2
Behavior	Evaluation of Mathematical Models for Characterizing Plume Behavior from Cooling Towers: Vol. 3--Plume Rise from Mechanical Draft Cooling Towers.	NUREG/CR-1581, Vol 3
Benchmark Problems	Piping Benchmark Problems. Dynamic Analysis Uniform Support Motion Response Spectrum Method.	NUREG/CR-1677, Vol 1
Best Estimate	Best Estimate Method vs Evaluation Method: A Comparison of Two Techniques in Evaluating Seismic Analysis and Design.	NUREG/CR-1489
Bioaccumulation	Acute Toxicity and Bioaccumulation of Chloroform to Four Species of Freshwater Fish.	NUREG/CR-0893
Blowdown	LWR Fuel Rod Post-Subcooled Blowdown Scoping Analysis.	NUREG/CR-1568
Blowdown Tests	Comparison of CONTEMPT-LT Containment Code Calculations with Marviken, LOFT, and Battelle-Frankfurt Blowdown Tests.	NUREG/CR-1564
Body Radioactivity	Health Status and Body Radioactivity of Former Thorium Workers.	NUREG/CR-1420
Boiling Pools	Heat Removal Characteristics of Volume Heated Boiling Pools with Inclined Boundaries.	NUREG/CR-1357
Borehold	Estimates of Uranium Content and Radon Flux for Uranium Mine Dumps Based on Borehold Radioactivity Logs.	NUREG/CR-1549
Boundaries	Heat Removal Characteristics of Volume Heated Boiling Pools with Inclined Boundaries.	NUREG/CR-1357
Boundary	Technical Report on Material Selection and Processing Guidelines for BWR Coolant Pressure Boundary Piping.	NUREG-0313, Rev. 1

Keyword Listing B	Report Title	Report No.
Boundary	PRESBC: Pressure Boundary Conditions for the K-FIX Code.	NUREG/CR-1536
Boundary Components	Structural Integrity of Water Reactor Pressure Boundary Components. Quarterly Progress Report, January-March 1980.	NUREG/CR-1472
Breathing Apparatus	Respirator Studies for the Nuclear Regulatory Commission, Evaluation and Performance of Escape-Type Self-Contained Breathing Apparatus, October 1, 1978-September 30, 1979.	NUREG/CR-1586
Buckling Analysis	Dynamic, Inelastic Buckling Analysis of MARK I Torus Support Columns.	NUREG/CR-1038
Budget	Comments on the NRC Safety Research Program Budget for Fiscal Year 1982.	NUREG-0699
Buildings	Diffusion Near Buildings as Determined from Atmospheric Tracer Experiments.	NUREG/CR-1394
Burial	Evaluation of Isotope Migration-Land Burial Water Chemistry at Commercially Operated Low-Level Radioactive Waste Disposal Sites. Quarterly Progress Report, January-March 1980.	NUREG/CR-1513
Burial Sites	Vegetational Cover in Monitoring and Stabilization of Shallow Land Burial Sites.	NUREG/CR-135[illegible]
Burst	Prompt Burst Energetics Experiments: Fresh Uranium Carbide/Sodium Series.	NUREG/CR-1396
Burst Test	Multirod Burst Test Program Progress Report for July-December 1979.	NUREG/CR-1450
BWR	Technical Report on Material Selection and Processing Guidelines for BWR Coolant Pressure Boundary Piping.	NUREG-0313, Rev. 1
BWR	Extended Analysis of Data from the 1/5-Scale MARK I Boiling Water Reactor Pressure Suppression Experiment.	NUREG/CR-0761

Keyword Listing C	Report Title	Report No.
Cable Systems	Development and Verification of Fire Tests for Cable Systems and System Components.	NUREG/CR-1552
Calcined Waste	Preparation of Working Reference Materials: Calcined Waste Recovery Products Containing Uranium or Plutonium.	NUREG/CR-1445
Calculate	A User's Guide to EPIC, a Computer Program to Calculate the Motion of Fuel and Coolant Subsequent to Pin Failure in a LMFBR.	NUREG/CR-1504
Calculating Heat	User's Manual for USINT: A Program for Calculating Heat and Mass Transfer in Concrete Subjected to High Heat Fluxes.	NUREG/CR-1375
Calculations	Calculations of the Skyshine Gamma-Ray Dose Rates from Independent Spent Fuel Storage Installations (ISFSI) Under Worst Case Accident Conditions.	NUREG/CR-0723
Calculations	Summary of Thermal Hydraulic Calculations for a Pressurized Water Reactor.	NUREG/CR-1480
Calculations	Comparison of CONTEMPT-LT Containment Code Calculations with Marviken, LOFT, and Battelle-Frankfurt Blowdown Tests.	NUREG/CR-1564
California	Verification of Subsurface Conditions at Selected "Rock" Accelerograph Stations in California.	NUREG/CR-0055, V. 2 App
California	Verification of Subsurface Conditions at Selected "Rock" Accelerograph Stations in California.	NUREG/CR-0055, Vol 2
California	Verification of Subsurface Conditions at Selected "Rock" Accelerograph Stations in California.	NUREG/CR-0055, Vol 3
Canadian	Canadian Seismic Agreement.	NUREG/CR-1637
CANDU-Type	Licensability of CANDU-Type Reactors in the United States. A Preliminary Assessment of the R and D Requirements.	NUREG/CR-1113
Capabilities	Material Accounting as Required by the United States Nuclear Regulatory Commission: Capabilities and Vulnerabilities.	NUREG/CR-1192
Capabilities	Survey of Current State Radiological Emergency Response Capabilities for Transportation Related Incidents.	NUREG/CR-1620

Keyword Listing C	Report Title	Report No.
Carbide/Sodium	Prompt Burst Energetics Experiments: Fresh Uranium Carbide/Sodium Series.	NUREG/CR-1396
Carbon-14	Measurement of XE-133, C-14 and Tritium in Air and I-131 in Vegetation and Milk Around the Quad Cities Nuclear Power Station.	NUREG/CR-1195
Changes	Environmental Assessment for Effective Changes to 10 CFR Part 50 and Appendix E to 10 CFR Part 50; Emergency Planning Requirements for Nuclear Power Plants.	NUREG-0685
Characteristics	Heat Removal Characteristics of Volume Heated Boiling Pools with Inclined Boundaries.	NUREG/CR-1357
Characteristics	Evaluation of In-Situ Soil Damping Characteristics.	NUREG/CR-1638
Characteristics	Variability of Dynamic Characteristics of Nuclear Power Plant Structures.	NUREG/CR-1661
Characterization	Gap Conductance Test Series Fuel Characterization Data Report.	NUREG/CR-1537
Characterization	A Characterization of Faults in the Appalachian Foldbelt.	NUREG/CR-1621
Characterization	Characterization of Existing Surface Conditions at Sheffield Low-Level Waste Disposal Facility.	NUREG/CR-1683
Characterizing	Evaluation of Mathematical Models for Characterizing Plume Behavior from Cooling Towers: Vol. 1--Dispersion from Single and Multiple Source Natural Draft Cooling Towers.	NUREG/CR-1581, Vol 1
Characterizing	Evaluation of Mathematical Models for Characterizing Plume Behavior from Cooling Towers: Vol.2--Salt Drift Deposition from Natural Draft Cooling Towers.	NUREG/CR-1581, Vol 2
Characterizing	Evaluation of Mathematical Models for Characterizing Plume Behavior from Cooling Towers: Vol. 3--Plume Rise from Mechanical Draft Cooling Towers.	NUREG/CR-1581, Vol 3
Chemical	Final Environmental Statement Related to Primary Cooling System Chemical Decontamination at Dresden Nuclear Power Station, Unit No. 1. Docket No. 50-010.	NUREG-0686
Chlorinated	Growth and Histological Effects to Protothaca Staminea (Littleneck Clam) of Long-Term Exposure to Chlorinated Sea Water.	NUREG/CR-1298

Keyword Listing C	Report Title	Report No.
Chloroform	Acute Toxicity and Bioaccumulation of Chloroform to Four Species of Freshwater Fish.	NUREG/CR-0393
Chugging	Lateral Loads on Vent Pipe in Steam Chugging.	NUREG/CR-1631
Class 3-8	A Risk Assessment of a Pressurized Water Reactor for Class 3-8 Accidents.	NUREG/CR-0603
Classificaton	Solubility Classification of Airborne Uranium Products from LWR-Fuel Plants.	NUREG/CR-1428
Cleanup	NRC Plans for Cleanup Operations at Three Mile Island Unit 2.	NUREG-0698
Cleanup Activities	Answers to Frequently Asked Questions about Cleanup Activities at Three Mile Island, Unit 2.	NUREG-0732
Closed Containment	Hydrogen-Mixing in a Closed Containment Compartment Based on a One-Dimensional Model with Convective Effects.	NUREG/CR-1575
Clusters	Criticality Experiments with Subcritical Clusters of 2.35 Wt% and 4.31 Wt% U-235 Enriched UO_2 Rods in Water at a Water-to-Fuel Volume Ratio of 1.6.	NUREG/CR-1547
Coal	A Methodology and a Preliminary Data Base for Examining the Health Risks of Electricity Generation from Uranium and Coal Fuels.	NUREG/CR-1539
Coast-Down	Compressible Analysis of Inlet Plenum Pressure Rise due to Sodium Boiling in Fuel Subassemblies during Pump Coast-Down of an LMFBR.	NUREG/CR-1592
Code System	SCALE: A Modular Core System for Performing Standardized Computer Analyses for Licensing Evaluation. SCALE System Criticality Safety Analysis Modules CSAS1 and CSAS2.	NUREG/CR-0200
Combination Program	Load Combination Program. Progress Report No. 5.	NUREG/CR-1624
Comments	Comments on the NRC Safety Research Program Budget for Fiscal Year 1982.	NUREG-0699
Commercial Power Plants	Data Summaries of Licensee Event Reports of Primary Containment Penetrations at U.S. Commercial Nuclear Power Plants from January 1, 1972 to December 31, 1978.	NUREG/CR-1730

Keyword Listing C	Report Title	Report No.
Commercially Operated	Evaluation of Isotope Migration-Land Burial Water Chemistry at Commercially Operated Low Level Radioactive Waste Disposal Sites.	NUREG/CR-1289
Commercially Operated	Evaluation of Isotope Migration-Land Burial Water Chemistry at Commercially Operated Low-Level Radioactive Waste Disposal Sites. Quarterly Progress Report, January-March 1980.	NUREG/CR-1513
Communication	Security Communication Systems for Nuclear Fixed-Site Facilities.	NUREG/CR-0508
Communications	Report to Congress on NRC Emergency Communications.	NUREG-0729
Comparative Analysis	A Comparative Analysis of LWR Fuel Designs.	NUREG-0559
COMPARE-MOD 1	COMPARE-MOD 1 Code, Addendum 1.	NUREG/CR-1185
Comparement	Hydrogen Mixing in a Closed Containment Compartment Based on a One-Dimensional Model with Convective Effects.	NUREG/CR-1575
Comparison	Best Estimate Method vs Evaluation Method: A Comparison of Two Techniques in Evaluating Seismic Analysis and Design.	NUREG/CR-1489
Comparison	Comparison of CONTEMPT-LT Containment Code Calculations with Marviken, LOFT, and Battelle-Frankfurt Blowdown Tests.	NUREG/CR-1564
Compilation	Regulatory and Technical Reports Compilation for 1979.	NUREG-0304, Vol. 4
Compilation	Compilation, Assessment and Expansion of the Strong Earthquake Ground Motion Data Base.	NUREG/CR-1660
Complex	Predicting Life Expectancy and Simulating Age of Complex Equipment Using Accelerated Aging Techniques.	NUREG/CR-1466
Component Reliability	Nuclear Plant Reliability Data System 1979 Annual Reports of Cumulative System and Component Reliability.	NUREG/CR-1635
Components	Structural Integrity of Water Reactor Pressure Boundary Components. Quarterly Progress Report, January-March 1980.	NUREG/CR-1472

Keyword Listing C	Report Title	Report No.
Compressible Analysis	Compressible Analysis of Inlet Plenum Pressure Rise due to Sodium Boiling in Fuel Subassemblies during Pump Coast-Down of an LMFBR.	NUREG/CR-1592
Computer Analyses	SCALE: A Modular Code System for Performing Standardized Computer Analyses for Licensing Evaluation. SCALE System Criticality Safety Analysis Modules CSAS1 and CSAS2.	NUREG/CR-0200
Computer Code	Report on Nuclear Industry Quality Assurance Procedures for Safety Analysis Computer Code Development and Use.	NUREG-0653
Computer Code	CONAN: An LMFBR Containment Response Computer Code.	NUREG/CR-1355
Computer Program	SIMMER-II: A Computer Program for LMFBR Disrupted Core Analysis.	NUREG/CR-0453, Rev 1
Computer Program	A User's Guide to EPIC, a Computer Program to Calculate the Motion of Fuel and Coolant Subsequent to Pin Failure in a LMFBR.	NUREG/CR-1504
CONAN	CONAN: An LMFBR Containment Response Computer Code.	NUREG/CR-1355
Concentration	The Effects of Temperature, Moisture, Concentration, Pressure and Mass Transfer on the Adsorption of Krypton and Xenon on Activated Carbon.	NUREG-0678
Concrete	User's Manual for USINT: A Program for Calculating Heat and Mass Transfer in Concrete Subject to High Heat Fluxes.	NUREG/CR-1375
Concrete Panels	Strength and Stiffness of Tensioned Reinforced Concrete Panels Subjected to Membrane Shear, Two-Way Reinforcing.	NUREG/CR-1602
Condensation-Induced	An Evaluation of Condensation-Induced Water Hammer in Preheat Steam Generators.	NUREG/CR-1606
Conditions	Verification of Subsurface Conditions at Selected "Rock" Accelerograph Stations in California.	NUREG/CR-0055, V. 2 App
Conditions	Verification of Sursurface Conditions at Selected "Rock" Accelerographs Stations in California.	NUREG/CR-0055, Vol 2
Conditions	Verification of Subsurface Conditions at Selected "Rock" Accelerograph Stations in California.	NUREG/CR-0055, Vol. 3

Keyword Listing C	Report Title	Report No.
Conditions	Calculations of the Skyshine Gamma-Ray Dose Rates from Independent Spent Fuel Storage Installations (ISFSI) Under Worst Case Accident Conditions.	NUREG/CR-0723
Conditions	An Algorithm to Estimate Field Concentrations Unde Nonsteady Meteorological Conditions from Wind Tunn l Experiments.	NUREG/CR-1474
Conditions	PRESBC: Pressure Boundary Conditions for the K-FIX Code.	NUREG/CR-1536
Conductance	Gap Conductance Test Series Fuel Characterization Data Report.	NUREG/CR-1537
Congress	Report to Congress on Abnormal Occu rences, January-March 1980.	NUREG-0090, Vol 3, No. 1
Congress	Report to Congress: NRC Incident Response Plan.	NUREG-0728
Congress	Report to Congress on NRC Emergency Communications.	NUREG-0729
Congress	Report to Congress on the Acquisition of Reactor Data for the NRC Operations Center.	NUREG-0730
Considerations	Considerations on Nuclear Data Link Implementation in Relation to the Technical Support Center, Emergency Operations Center and Safety Parameter Display System.	NUREG/CR-1579
Container	Study of Plutonium Oxide Powder Emissions from Simulated Shipping Container Leaks.	NUREG/CR-1302
Containers	Shock Environments for Large Shipping Containers During Rail Coupling Operations.	NUREG/CR-1277
Containers	Properties of Radioactive Wastes and Waste Containers. Quarterly Progress Report, January-March 1980.	NUREG/CR-1514
Containment	MARK II Containment Lead Plant Program Load Evaluation and Acceptance Criteria - Generic Technical Activities A8 and A39.	NUREG-0487, Supp 1
Containment	MARK I Containment Long Term Program Safety Evaluation Report, Resolution of Generic Technical Activity A-7. February 1977 to December 1979.	NUREG-0661

Keyword Listing C	Report Title	Report No.
Containment	CONAN: An LMFBR Containment Response Computer Code.	NUREG/CR-1355
Containment	Comparison of CONTEMPT-LT Containment Code Calculations with Marviken, LOFT, and Battelle-Frankfurt Blowdown Tests.	NUREG/CR-1564
Containment	Hydrogen Mixing in a Closed Containment Compartment Based on a One-Dimensional Model with Convective Effects.	NUREG/CR-1575
Containment	Data Summaries of Licensee Event Reports of Primary Containment Penetrations at U.S. Commercial Nuclear Power Plants from January 1, 1972 to December 31, 1978.	NUREG/CR-1730
Contaminant	A Deterministic-Probabilistic Model for Contaminant Transport.	NUREG/CR-1609
CONTEMPT-LT	Comparison of CONTEMPT-LT Containment Code Calculations with Marviken, LOFT, and Battelle-Frankfurt Blowdown Tests.	NUREG/CR-1564
Control	Control of Heavy Loads at Nuclear Power Plants Resolution of Generic Technical Activity A-36.	NUREG-0612
Control	Using Advanced Process Monitoring to Improve Material Control.	NUREG/CR-1676, Vol 1
Convective Effects	Hydrogen Mixing in a Closed Containment Compartment Based on a One-Dimensional Model with Convective Effects.	NUREG/CR-1575
Coolability	Assessment of Core Penetration of a PWR Reactor Vessel and Particulate Debris Coolability in TMLB, S2D, and ABG Accidents.	NUREG/CR-1518
Coolant	Technical Report on Material Selection and Processing Guidelines for BWR Coolant Pressure Boundary Piping.	NUREG-0313, Rev. 1
Coolant	A User's Guide to EPIC, a Computer Program to Calculate the Motion of Fuel and Coolant Subsequent to Pin Failure in a LMFBR.	NUREG/CR-1504
Coolant Flow	Transient Analysis of Coolant Flow and Heat Transfer in LMFBR Piping Systems.	NUREG/CR-1404
Cooling System	Final Environmental Statement Related to Primary Cooling System Chemical Decontamination at Dresden Nuclear Power Station, Unit No. 1. Docket No. 50-010.	NUREG-0686

Keyword Listing C	Report Title	Report No.
Cooling Towers	Evaluation of Mathematical Models for Characterizing Plume Behavior from Cooling Towers: Vol. 1--Dispersion from Single and Multiple Source Natural Draft Cooling Towers.	NUREG/CR-1581, Vol 1
Cooling Towers	Evaluation of Mathematical Models for Characterizing Plume Behavior from Cooling Towers: Vol. 2--Salt Drift Deposition from Natural Draft Cooling Towers.	NUREG/CR-1581, Vol 2
Cooling Towers	Evaluation of Mathematical Models for Characterizing Plume Behavior from Cooling Towers: Vol. 3--Plume Rise from Mechanical Draft Cooling Towers.	NUREG/CR-1581, Vol 3
COPS	COPS Model Estimates of LLEA Availability Near Selected Reactor Sites.	NUREG/CR-1166
Core Analysis	SIMMER-II: A Computer Program for LMFBR Disrupted Core Analysis.	NUREG/CR-0453, Rev 1
Core Damage	Uncertainty Analysis for a PWR Loss-of-Coolant Accident: II. Alternative Core Damage Estimators.	NUREG/CR-1364
Core Penetration	Assessment of Core Penetration of a PWR Reactor Vessel and Particulate Debris Coolability in TMLB, S2D, and ABG Accidents.	NUREG/CR-1518
Correlation	Risk Methodology for Geologic Disposal of Radioactive Waste: A Distribution-Free Approach to Inducing Rank Correlation Among Input Variables for Simulation Studies.	NUREG/CR-1262
Coupling Operations	Shock Environments for Large Shipping Containers During Rail Coupling Operations.	NUREG/CR-1277
Crack Arrest	Critical Experiments, Measurements, and Analyses to Establish a Crack Arrest Methodology for Nuclear Pressure Vessel Steels.	NUREG/CR-1601
Cracking Experience	Pipe Cracking Experience in Light-Water Reactors, 1967 through 1979.	NUREG-0679
Cracking Incidents	Investigation and Evaluation of Cracking Incidents in Piping in Pressurized Water Reactors.	NUREG-0691
Criteria	Functional Criteria for Emergency Response Facilities.	NUREG-0696
Criteria	Acceptance Criteria for the Physical Protection Upgrade Rule Requirements for Fixed Sites.	NUREG-0721

Keyword Listing C	Report Title	Report No.
Critical Experiments	Critical Experiments with Interstitially-Moderated Arrays of Low-Enriched Uranium Oxide. Topical Report on Reference Critical Experiments.	NUREG/CR-1071
Critical Experiments	Critical Experiments, Measurements, and Analyses to Establish a Crack Arrest Methodology for Nuclear Pressure Vessel Steels.	NUREG/CR-1601
Criticality	SCALE: A Modular Code System for Performing Standardized Computer Analyses for Licensing Evaluation. SCALE System Criticality Safety Analysis Modules CSAS1 and CSAS2.	NUREG/CR-0200
Criticality Experiments	Criticality Experiments with Subcritical Clusters of 2.35 Wt% and 4.31 Wt% U-235 Enriched UO_2 Rods in Water at a Water-to-Fuel Volume Ratio of 1.6.	NUREG/CR-1547
CSAS1	SCALE: A Modular Code System for Performing Standardized Computer Analyses for Licensing Evaluation. SCALE System Criticality Safety Analysis Modules CSAS1 and CSAS2.	NUREG/CR-0200
CSAS2	SCALE: A Modular Code System for Performing Standardized Computer Analyses for Licensing Evaluation. SCALE System Criticality Safety Analysis Modules CSAS1 and CSAS2.	NUREG/CR-0200
Cumulative System	Nuclear Plant Reliability Data System 1979 Annual Reports of Cumulative System and Component Reliability.	NUREG/CR-1635
Current	Assessment of Current Onsite Inspection Techniques for Light Water Reactor Fuel Systems - Volume 1 - Executive Summary.	NUREG/CR-1380, Vol 1, ES
Current State	Survey of Current State Radiological Emergency Response Capabilities for Transportation Related Incidents.	NUREG/CR-1620
Cycle Fatigue	High Cycle Fatigue Behavior of Incoloy 800H in a Simulated High-Temperature Gas-Cooled Reactor Helium Environment.	NUREG/CR-1356

Keyword Listing D	Report Title	Report No.
Damping	Evaluation of In-Situ Soil Damping Characteristics.	NUREG/CR-1638
Data	Extended Analysis of Data from the 1/5-Scale MARK I Boiling Water Reactor Pressure Suppression Experiment.	NUREG/CR-0761
Data Base	Compilation, Assessment and Expansion of the Strong Earthquake Ground Motion Data Base.	NUREG/CR-1660
Data Link	Considerations on Nuclear Data Link Implementation in Relation to the Technical Support Center, Emergency Operations Center and Safety Parameter Display System.	NUREG/CR-1579
Data Report	Experiment Data Report for LOFT Anticipated Transient Experiment L6-5.	NUREG/CR-1520
Data Report	Gap Conductance Test Series Fuel Characterization Data Report.	NUREG/CR-1537
Data Summaries	Data Summaries of Licensee Event Reports of Primary Containment Penetrations at U.S. Commercial Nuclear Power Plants from January 1, 1972 to December 31, 1978.	NUREG/CR-1730
Data System	Nuclear Plant Reliability Data System 1979 Annual Reports of Cumulative System and Component Reliability.	NUREG/CR-1635
Debris	Assessment of Core Penetration of a PWR Reactor Vessel and Particulate Debris Coolability in TMLB, S2D, and ABG Accidents.	NUREG/CR-1518
Decommissioning	Plan for Reevaluation of NRC Policy on Decommissioning of Nuclear Facilities. December 1978 to July 1980.	NUREG-0436, Rev 1, Supp 1
Decommissioning	Financing Strategies for Nuclear Power Plant Decommissioning.	NUREG/CR-1481
Decontamination	Final Environmental Statement Related to Primary Cooling System Chemical Decontamination at Dresden Nuclear Power Station, Unit No. 1. Docket No. 50-010.	NUREG-0686
Decontamination	Psychological Stress for Alternatives of Decontamination of TMI-2 Reactor Building Atmosphere.	NUREG/CR-1584
Deposition	Acute Effects of Inhalation Exposure to Uranium Hexafluoride and Patterns of Deposition. UF_6/UO_2F_2 Studies in Experimental Animals.	NUREG/CR-1045

Keyword Listing D	Report Title	Report No.
Deposition	Evaluation of Mathematical Models for Characterizing Plume Behavior from Cooling Towers: Vol.2--Salt Drift Deposition from Natural Draft Cooling Towers.	NUREG/CR-1581, Vol 2
Design Guidance	Design Guidance and Evaluation Methodology for Fixed Site Physical Protection Systems, Volume 1.	NUREG/CR-1198, Vol 1
Design Guidance	Design Guidance and Evaluation Methodology for Fixed Site Physical Protection Systems, Volume 2.	NUREG/CR-1198, Vol 2
Designs	A Comparative Analysis of LWR Fuel Designs.	NUREG-0559
Detection	A Probabilistic Evaluation of Earthquake Detection and Location Capability for Illinois, Indiana, Kentucky, Ohio, and West Virginia.	NUREG/CR-1648
Determined	Diffusion Near Buildings as Determined from Atmospheric Tracer Experiments.	NUREG/CR-1394
Deterministic	A Deterministic-Probabilistic Mouel for Contaminant Transport.	NUREG/CR-1609
Development	Report on Nuclear Industry Quality Assurance Procedures for Safety Analysis Computer Code Development and Use.	NUREG-0653
Development	Development and Verification of Fire Tests for Cable Systems and System Components.	NUREG/CR-1552
Development	Scenario Development and Evaluation Related to the Risk Assessment of High Level Radioactive Waste Repositories.	NUREG/CR-1608
Diablo Canyon	Safety Evaluation Report Related to Operation of Diablo Canyon Nuclear Power Station, Units 1 and 2, Pacific Gas and Electric Company, Docket Nos. 50-275 and 50-323, Supplement No. 10.	NUREG-0675, Supp 10
Diffusion	Measurement of Radon Diffusion from Uranium Mill Tailing Piles.	NUREG/CR-1109
Diffusion	Diffusion Near Buildings as Determined from Atmospheric Tracer Experiments.	NUREG/CR-1394
Dispersion	Wind-Tunnel Measurements of Dispersion and Turbulence in the Wakes of Nuclear Reactor Plants.	NUREG/CR-1475

Keyword Listing D	Report Title	Report No.
Dispersion	Evaluation of Mathematical Models for Characterizing Plume Behavior from Cooling Towers: Vol. 1--Dispersion from Single and Multiple Source Natural Draft Cooling Towers.	NUREG/CR-1581, Vol 1
Dispersion	Radon Release and Dispersion from an Open Pit Uranium Mine.	NUREG/CR-1583
Display System	Considerations on Nuclear Data Link Implementation in Relation to the Technical Support Center, Emergency Operations Center and Safety Parameter Display System.	NUREG/CR-1579
Disposal	Risk Methodology for Geologic Disposal of Radioactive Waste: A Distribution-Free Approach to Inducing Rank Correlation Among Input Variables for Simulation Studies.	NUREG/CR-1262
Disposal	Risk Methodology for Geologic Disposal of Radioactive Waste: Transport Model Sensitivity Analysis.	NUREG/CR-1377
Disposal Facility	Characterization of Existing Surface Conditions at Sheffield Low-Level Waste Disposal Facility.	NUREG/CR-1683
Disposal Sites	Evaluation of Isotope Migration-Land Burial Water Chemistry at Commercially Operated Low Level Radioactive Waste Disposal Sites.	NUREG/CR-1289
Disposal Sites	Evaluation of Isotope Migration-Land Burial Water Chemistry at Commercially Operated Low-Level Radioactive Waste Disposal Sites. Quarterly Progress Report, January-March 1980.	NUREG/CR-1513
Disrupted Core	SIMMER-II: A Computer Program for LMFBR Disrupted Core Analysis.	NUREG/CR-0453, Rev 1
Distribution-Free	Risk Methodology for Geologic Disposal of Radioactive Waste: A Distribution-Free Approach to Inducing Rank Correlation Among Input Variables for Simulation Studies.	NUREG/CR-1262
Dose Rates	Calculations of the Skyshine Gamma-Ray Dose Rates from Independent Spent Fuel Storage Installations (ISFSI) Under Worst Case Accident Conditions.	NUREG/CR-0723
Dosimetry	LWR Pressure Vessel Irradiation Surveillance Dosimetry Quarterly Progress Report, October-December 1978.	NUREG/CR-0720
Dosimetry Testing	Performance Testing of Personnel Dosimetry Services: Alternatives and Recommendations for a Personnel Dosimetry Testing Program.	NUREG/CR-1593
Dresden	Final Environmental Statement Related to Primary Cooling System Chemical Decontamination at Dresden Nuclear Power Station, Unit No. 1. Docket No. 50-010.	NUREG-0686

Keyword Listing D	Report Title	Report No.
Drill Holes	Monoclinal Structure and Shallow Faulting of the Reelfoot Scarp as Estimated from Drill Holes with Variable Spacings.	NUREG/CR-1501
Drop Deposition	Film Entrainment and Drop Deposition for Two-Phase Flow.	NUREG/CR-1634
Drop-Size	Drop-Size Estimates for a Loss-of-Coolant Accident.	NUREG/CR-1607
Dynamic	Dynamic, Inelastic Buckling Analysis of MARK I Torus Support Columns.	NUREG/CR-1038
Dynamic Analysis	Dynamic Analysis to Establish Normal Shock and Vibration of Radioactive Material Shipping Packages - Quarterly Progress Report October 1-December 31, 1979.	NUREG/CR-1484
Dynamic Analysis	Piping Benchmark Problems. Dynamic Analysis Uniform Support Motion Response Spectrum Method.	NUREG/CR-1677, Vol 1
Dynamic Characteristics	Variability of Dynamic Characteristics of Nuclear Power Plant Structures.	NUREG/CR-1661
Dynamics	Modeling Tornado Dynamics.	NUREG/CR-1585

Keyword Listing E	Report Title	Report No.
Earthquake	State-of-the-Art Study Concerning Near-Field Earthquake Ground Motion.	NUREG/CR-1340
Earthquake	Regional Relationships Among Earthquake Magnitude Scales.	NUREG/CR-1457
Earthquake	Statistical Analysis of Earthquake Ground Motion Parameters.	NUREG/CR-1641
Earthquake	Compilation, Assessment and Expansion of the Strong Earthquake Ground Motion Data Base.	NUREG/CR-1660
Earthquake Data	Geotechnical and Strong Motion Earthquake Data from U.S. Accelerograph Stations.	NUREG/CR-0985, Vol 3
Earthquake Data	Geotechnical and Strong Motion Earthquake Data from U.S. Accelerograph Stations.	NUREG/CR-0985, Vol 4
Earthquake Data	Geotechnical and Strong Motion Earthquake Data from U.S. Accelerograph Stations.	NUREG/CR-0985, Vol 5
Earthquake Detection	A Probabilistic Evaluation of Earthquake Detection and Location Capability for Illinois, Indiana, Kentucky, Ohio, and West Virginia.	NUREG/CR-1648
Earthquake Zone	Geophysical Investigation of the Anna, Ohio Earthquake Zone.	NUREG/CR-1649
East	Seasonal Variation of 10-Square Mile Probable Maximum Precipitation Estimates, United States East of the 105th Meridian (Hydrometeorological Report No. 53).	NUREG/CR-1486
Eastern U.S.	Seismic Hazard Analysis. A Methodology for the Eastern United States.	NUREG/CR-1582, Vol 2
Eddy Current	Statistical Analysis of Steam Generator Inspection Plans and Eddy Current Testing.	NUREG/CR-1282
Eddy-Current	Eddy-Current Inspection for Steam Generator Tubing Program. Annual Progress Report for Period Ending December 31, 1979.	NUREG/CR-1563
Effective Changes	Environmental Assessment for Effective Changes to 10 CFR Part 50 and Appendix E to 10 CFR Part 50; Emergency Planning Requirements for Nuclear Power Plants.	NUREG-0685

Keyword Listing E	Report Title	Report No.
Effects	The Effects of Temperature, Moisture, Concentration, Pressure and Mass Transfer on the Adsorption of Krypton and Xenon on Activated Carbon.	NUREG-0678
Effects	The Effects of Natural Phenomena on the Exxon Nuclear Company Mixed Oxide Fabrication Plant at Richland, Washington.	NUREG-0722
Effects	Site-Dependent Effects at Strong-Motion Accelerograph Stations.	NUREG/CR-1639
Electric Fuel	Thermocouple Signal Sensitivity to the Sheath Thickness of Thermal-Hydraulic Test Facility Indirectly Heated Electric Fuel Pin Simulators.	NUREG/CR-1347
Electricity Demand	The ORNL State-Level Electricity Demand Forecasting Model.	NUREG/CR-1295
Electricity Generation	A Methodology and a Preliminary Data Base for Examining the Health Risks of Electricity Generation from Uranium and Coal Fuels.	NUREG/CR-1539
Emergency	Considerations on Nuclear Data Link Implementation in Relation to the Technical Support Center, Emergency Operations Center and Safety Parameter Display System.	NUREG/CR-1579
Emergency Communications	Report to Congress on NRC Emergency Communications.	NUREG-0729
Emergency Planning	Summary of Public Comments and NRC Staff Analysis Relating to Rulemaking on Emergency Planning for Nuclear Power Plants.	NUREG-0684
Emergency Planning	Environmental Assessment for Effective Changes to 10 CFR Part 50 and Appendix E to 10 CFR Part 50; Emergency Planning Requirements for Nuclear Power Plants.	NUREG-0685
Emergency Response	Review and Assessment of Package Requirements (Yellowcake) and Emergency Response to Transportation Accidents.	NUREG-0535
Emergency Response	Functional Criteria for Emergency Response Facilities.	NUREG-0696
Emergency Response	Survey of Current State Radiological Emergency Response Capabilities for Transportation Related Incidents.	NUREG/CR-1620
Emissions	Study of Plutonium Oxide Powder Emissions from Simulated Shipping Container Leaks.	NUREG/CR-1302

Keyword Listing E	Report Title	Report No.
Energetics Experiments	Prompt Burst Energetics Experiments: Fresh Uranium Carbide/Sodium Series.	NUREG/CR-1396
Enhancement	Enhancement of the Nuclear Materials Management and Safeguards System.	NUREG/CR-1527
Enriched UO_2	Criticality Experiments with Subcritical Clusters of 2.35 Wt% and 4.31 Wt% U-235 Enriched UO_2 Rods in Water at a Water-to-Fuel Volume Ratio of 1.6.	NUREG/CR-1547
Enriched Uranium	Critical Experiments with Interstitially-Moderated Arrays of Low-Enriched Uranium Oxide. Topical Report on Reference Critical Experiments.	NUREG/CR-1071
Entrainment	Film Entrainment and Drop Deposition for Two-Phase Flow.	NUREG/CR-1634
Environmental Assessment	Environmental Assessment for Effective Changes to 10 CFR Part 50 and Appendix E to 10 CFR Part 50; Emergency Planning Requirements for Nuclear Power Plants.	NUREG-0685
Environmental Impact	Final Generic Environmental Impact Statement on Uranium Milling Project M-25: Volume I - Summary and Text.	NUREG-0706, Vol 1
Environmental Impact	Final Generic Environmental Impact Statement on Uranium Milling Project M-25: Volume II - Appendices A-F.	NUREG-0706, Vol 2
Environmental Impact	Final Generic Environmental Impact Statement on Uranium Milling Project M-25: Volume III - Appendices G-V.	NUREG-0706, Vol 3
Environmental Statement	Final Environmental Statement Related to the Operation of North Anna Power Station, Unit 1 and 2, Docket No. 50-338 and 50-339. Virginia Electric and Power Company.	NUREG-0134, Add. 2
Environmental Statement	Final Environmental Statement Related to Primary Cooling System Chemical Decontamination at Dresden Nuclear Power Station, Unit No. 1. Docket No. 50-010.	NUREG-0686
Environmental Statement	Final Environmental Statement Related to Steam Generator Repair at Surry Power Station, Unit No. 1. Virginia Electric and Power Cmpany, Docket No. 50-280.	NUREG-0692
Environmental Statement	Final Environmental Statement Related to the Operation of Gas Hills Uranium Project, Docket No. 40-299, Union Carbide Corporation.	NUREG-0702
Environmental Statement	Final Environmental Statement Related to the Operation of the Joseph M. Farley Nuclear Plant, Units 1 and 2, Docket Nos. 50-348 and 50-364.	NUREG-0727, Add.

Keyword Listing E	Report Title	Report No.
Environments	Shock Environments for Large Shipping Containers During Rail Coupling Operations.	NUREG/CR-1277
EPIC	A User's Guide to EPIC, a Computer Program to Calculate the Motion of Fuel and Coolant Subsequent to Pin Failure in a LMFBR.	NUREG/CR-1504
Equipment	Evaluation of Simulator Adequacy for the Radiation Qualification of Safety Related Equipment.	NUREG/CR-1184
Equipment	Predicting Life Expectancy and Simulating Age of Complex Equipment Using Accelerated Aging Techniques.	NUREG/CR-1466
Escape-Type	Respirator Studies for the Nuclear Regulatory Commission, Evaluation and Performance of Escape-Type Self-Contained Breathing Apparatus, October 1, 1978-September 30, 1979.	NUREG/CR-1586
Establish	Dynamic Analysis to Establish Normal Shock and Vibration of Radioactive Material Shipping Packages - Quarterly Progress Report October 1-December 31, 1979.	NUREG/CR-1484
Estimate	An Algorithm to Estimate Field Concentrations Under Nonsteady Meteorological Conditions from Wind Tunnel Experiments.	NUREG/CR-1474
Estimate	Monoclinal Structure and Shallow Faulting of the Reelfoot Scarp as Estimated from Drill Holes with Variable Spacings.	NUREG/CR-1501
Estimates	COPS Model Estimates of LLEA Availability Near Selected Reactor Sites.	NUREG/CR-1166
Estimates	Seasonal Vibration of 10-Square Mile Probable Maximum Precipitation Estimates, United States East of the 105th Meridian (Hydrometeorological Report No. 53).	NUREG/CR-1486
Estimates	Estimates of Uranium Content and Radon Flux for Uranium Mine Dumps Based on Borehold Radioactivity Logs.	NUREG/CR-1549
Estimates	Drop-Size Estimates for a Loss-of-Coolant Accident.	NUREG/CR-1607
Estimators	Uncertainty Analysis for a PWR Loss-of-Coolant Accident: II. Alternative Core Damage Estimators.	NUREG/CR-1364
Evaluation	Investigation and Evaluation of Cracking Incidents in Piping in Pressurized Water Reactors.	NUREG-0691

Keyword Listing E	Report Title	Report No.
Evaluation	Evaluation of Simulator Adequacy for the Radiation Qualification of Safety Related Equipment.	NUREG/CR-1184
Evaluation	Evaluation of Isotope Migration-Land Burial Water Chemistry at Commercially Operated Low Level Radioactive Waste Disposal Sites.	NUREG/CR-1289
Evaluation	Evaluation of Isotope Migration-Land Burial Water Chemistry at Commercially Operated Low-Level Radioactive Waste Disposal Sites. Quarterly Progress Report, January-March 1980.	NUREG/CR-1513
Evaluation	Evaluation of Mathematical Models for Characterizing Plume Behavior from Cooling Towers: Vol. 1--Dispersion from Single and Multiple Source Natural Draft Cooling Towers.	NUREG/CR-1581, Vol 1
Evaluation	Evaluation of Mathematical Models for Characterizing Plume Behavior from Cooling Towers: Vol.2--Salt Drift Deposition from Natural Draft Cooling Towers	NUREG/CR-1581, Vol 2
Evaluation	Evaluation of Mathematical Models for Characterizing Plume Behavior from Cooling Towers: Vol. 3--Plume Rise from Mechanical Draft Cooling Towers.	NUREG/CR-1581, Vol 3
Evaluation	Respirator Studies for the Nuclear Regulatory Commission, Evaluation and Performance of Escape-Type Self-Contained Breathing Apparatus, October 1, 1978-September 30, 1979.	NUREG/CR-1586
Evaluation	Evaluation Methodology for Fixed-Site Physical Protection Systems.	NUREG/CR-1590
Evaluation	An Evaluation of Condensation-Induced Water Hammer in Preheat Steam Generators.	NUREG/CR-1606
Evaluation	Scenario Development and Evaluation Related to the Risk Assessment of High Level Radioactive Waste Repositories.	NUREG/CR-1608
Evaluation	Evaluation of In-Situ Soil Damping Characteristics.	NUREG/CR-1638
Evaluation Method	Best Estimate Method vs Evaluation Method: A Comparison of Two Techniques in Evaluating Seismic Analysis and Design.	NUREG/CR-1489
Evaluation Methodology	Design Guidance and Evaluation Methodology for Fixed Site Physical Protection Systems, Volume 1.	NUREG/CR-1198, Vol 1
Evaluation Methodology	Design Guidance and Evaluation Methodology for Fixed Site Physical Protection Systems, Volume 2.	NUREG/CR-1198, Vol 2

Keyword Listing E	Report Title	Report No.
Evaluation Program	Qualification Testing Evaluation Program Light-Water Reactor Safety Research Quarterly Report, July-September 1979.	NUREG/CR-1492
Evaluation Report	Safety Evaluation Report Related to Operation of Sequoyah Nuclear Plant, Units 1 and 2, Docket Nos. 50-327 and 50-328. Tennessee Valley Authority, Supp. No. 2.	NUREG-0011, Supp. 2
Evaluation Report	Safety Evaluation Report Related to Operation of Sequoyah Nuclear Plant, Units 1 and 2, Docket Nos. 50-327/328. Tennessee Valley Authority, Supp. 3.	NUREG-0011, Supp. 3
Evaluation Report	Safety Evaluation Report Related to the Operation of North Anna Power Station, Unit 2, Virginia Electric and Power Company, Docket No. 50-339. Supplement No. 11.	NUREG-0053, Supp. 11
Evaluation Report	Safety Evaluation Report Related to the Operation of North Anna Power Station, Unit 2, Docket No. 50-339. Supplement No. 12.	NUREG-0053, Supp. 12
Evaluation Report	Safety Evaluation Report Related to the Operation of Joseph M. Farley Nuclear Plant, Unit 2. Docket No. 50-364, Alabama Power Company. Supplement 4 to NUREG-75/034.	NUREG-0117, Supp. 4
Evaluation Report	Safety Evaluation Report Related to Operation of Diablo Canyon Nuclear Power Station, Units 1 and 2, Pacific Gas and Electric Company, Docket Nos. 50-275 and 50-323, Supplement No. 10.	NUREG-0675, Supp 10
Event List	Safeguards Summary Event List (SSEL).	NUREG-0525, Rev 2
Examining	A Methodology and a Preliminary Data Base for Examining the Health Risks of Electricity Generation from Uranium and Coal Fuels.	NUREG/CR-1539
Existing	Review and Integration of Existing Literature Concerning Potential Social Impacts of Transportation of Radioactive Materials in Urban Areas.	NUREG/CR-0742
Existing	Characterization of Existing Surface Conditions at Sheffield Low-Level Waste Disposal Facility.	NUREG/CR-1683
Expansion	Compilation, Assessment and Expansion of the Strong Earthquake Ground Motion Data Base.	NUREG/CR-1660
Experiment	Extended Analysis of Data from the 1/5-Scale MARK I Boiling Water Reactor Pressure Suppression Experiment.	NUREG/CR-0761
Experiment L6-5	Experiment Data Report for LOFT Anticipated Transient Experiment L6-5.	NUREG/CR-1520

Keyword Listing E	Report Title	Report No.
Experimental Animals	Acute Effects of Inhalation Exposure to Uranium Hexafluoride and Patterns of Deposition. $UF_6/UO_2 F_2$ Studies in Experimental Animals.	NUREG/CR-1045
Experiments	Critical Experiments with Interstitia'ly-Moderated Arrays of Low-Enriched Uranium Oxide. Topical Report on Reference Critical Experiments.	NUREG/CR-1071
Experiments	Diffusion Near Buildings as Determined from Atmospheric Tracer Experiments.	NUREG/CR-1394
Experiments	Criticality Experiments with Subcritical Clusters of 2.35 Wt% and 4.31 Wt% U-235 Enriched UO_2 Rods in Water at a Water-to-Fuel Volume Ratio of 1.6.	NUREG/CR-1547
Expert Opinion	Seismic Hazard Analysis. Solicitation of Expert Opinion.	NUREG/CR-1582, Vol 3
Exposure	Acute Effects of Inhalation Exposure to Uranium Hexafluoride and Patterns of Deposition. $UF_6/UO_2 F_2$ Studies in Experimental Animals.	NUREG/CR-1045
Exposure	Growth and Histological Effects to Protothaca Staminea (Littleneck Clam) of Long-Term Exposure to Chlorinated Sea Water.	NUREG/CR-1298
Extended Analysis	Extended Analysis of Data from the 1/5-Scale MARK I Boiling Water Reactor Pressure Suppression Experiment.	NUREG/CR-0761
Exxon Nuclear Co.	The Effects of Natural Phenomena on the Exxon Nuclear Company Mixed Oxide Fabrication Plant at Richland, Washington.	NUREG-0722

Keyword Listing F	Report Title	Report No.
Fabrication Plant	The Effects of Natural Phenomena on the Exxon Nuclear Company Mixed Oxide Fabrication Plant at Richland, Washington.	NUREG-0722
Facilities	Functional Criteria for Emergency Response Facilities.	NUREG-0696
Failure	An Assessment of LWR Fuel-Failure Propagation Potential: Literature Survey.	NUREG/CR-1471
Failure	A User's Guide to EPIC, a Computer Program to Calculate the Motion of Fuel and Coolant Subsequent to Pin Failure in a LMFBR.	NUREG/CR-1504
Farley, Joseph M.	Safety Evaluation Report Related to the Operation of Joseph M. Farley Nuclear Plant, Unit 2. Docket No. 50-364, Alabama Power Company. Supplement 4 to NUREG-75/034.	NUREG-0117, Supp. 4
Farley, Joseph M.	Final Environmental Statement Related to the Operation of the Joseph M. Farley Nuclear Plant, Units 1 and 2, Docket Nos. 50-348 and 50-364.	NUREG-0727, Add.
Fatigue Behavior	High Cycle Fatigue Behavior of Incoloy 800H in a Simulated High-Temperature Gas-Cooled Reactor Helium Environment.	NUREG/CR-1356
Faulting	Monoclinal Structure and Shallow Faulting of the Reelfoot Scarp as Estimated from Drill Holes with Variable Spacings.	NUREG/CR-1501
Faults	A Characterization of Faults in the Appalachian Foldbelt.	NUREG/CR-1621
Field Concentration	An Algorithm to Estimate Field Concentrations Under Nonsteady Meteorological Conditions from Wind Tunnel Experiments.	NUREG/CR-1474
Film Entrainment	Film Entrainment and Drop Deposition for Two-Phase Flow.	NUREG/CR-1634
Financing	Financing Strategies for Nuclear Power Plant Decommissioning.	NUREG/CR-1481
Fire Tests	Development and Verification of Fire Tests for Cable Systems and System Components.	NUREG/CR-1552
Fires	The NACOM Code for Analysif of Postulated Sodium Spray Fires in LMFBRs.	NUREG/CR-1405

Keyword Listing F	Report Title	Report No.
Fiscal Year 1982	Comments on the NRC Safety Research Program Budget for Fiscal Year 1982.	NUREG-0699
Fish	Acute Toxicity and Bioaccumulation of Chloroform to Four Species of Freshwater Fish.	NUREG/CR-0893
Fixed Site	Design Guidance and Evaluation Methodology for Fixed Site Physical Protection Systems, Volume 1.	NUREG/CR-1198, Vol 1
Fixed Site	Design Guidance and Evaluation Methodology for Fixed Site Physical Protection Systems, Volume 2.	NUREG/CR-1198, Vol 2
Fixed Site	Fixed Site Neutralization Model Programmer's Model.	NUREG/CR-1308, Vol 2
Fixed Sites	Acceptance Criteria for the Physical Protection Upgrade Rule Requirements for Fixed Sites.	NUREG-0721
Fixed-Site	Security Communication Systems for Nuclear Fixed-Site Facilities.	NUREG/CR-0508
Fixed-Site	Evaluation Methodology for Fixed-Site Physical Protection Systems.	NUREG/CR-1590
Flow	Film Entrainment and Drop Deposition for Two-Phase Flow.	NUREG/CR-1634
Flow Measurements	Two-Phase Flow Measurements with Advanced Instrumented Spool Pieces.	NUREG/CR-1529
Flow Topography	Flow Topography Instrumentation and Analysis System.	NUREG/CR-1333
Flows	On the Motions of Particles in Turbulent Flows.	NUREG/CR-1554
Foldbelt	A Characterization of Faults in the Appalachian Foldbelt.	NUREG/CR-1621
Forecasting Model	The ORNL State-Level Electricity Demand Forecasting Model.	NUREG/CR-1295

Keyword Listing F	Report Title	Report No.
Fracture	Piping Inelastic Fracture Mechanics Analysis.	NUREG/CR-1119
Frequently Asked	Answers to Frequently Asked Questions about Cleanup Activities at Three Mile Island, Unit 2.	NUREG-0732
Freshwater Fish	Acute Toxicity and Bioaccumulation of Chloroform to Four Species of Freshwater Fish.	NUREG/CR-0893
Fuel	A User's Guide to EPIC, a Computer Program to Calculate the Motion of Fuel and Coolant Subsequent to Pin Failure in a LMFBR.	NUREG/CR-1504
Fuel	Gap Conductance Test Series Fuel Characterization Data Report.	NUREG/CR-1537
Fuel	LWR Fuel Rod Post-Subcooled Blowdown Scoping Analysis.	NUREG/CR-1568
Fuel	Compressible Analysis of Inlet Plenum Pressure Rise due to Sodium Boiling in Fuel Subassemblies during Pump Coast-Down of an LMFBR.	NUREG/CR-1592
Fuel Centerline	Qualification Test Results on 1550°C and 2200°C 1/16-Inch O.D. Fuel Centerline Thermocouples for the LOFT Program.	NUREG/CR-0961
Fuel Cycles	Technical Safeguards Issues for Alternative Fuel Cycles.	NUREG/CR-1048
Fuel Designs	A Comparative Analysis of LWR Fuel Designs.	NUREG-0559
Fuel Pin	Thermocouple Signal Sensitivity to the Sheath Thickness of Thermal-Hydraulic Test Facility Indirectly Heated Electric Fuel Pin Simulators.	NUREG/CR-1347
Fuel Plants	Solubility Classification of Airborne Uranium Products from LWR-Fuel Plants.	NUREG/CR-1428
Fuel Systems	Assessment of Current Onsite Inspection Techniques for Light Water Reactor Fuel Systems - Volume 1 - Executive Summary.	NUREG/CR-1380, Vol 1, ES
Fuel-Failure	An Assessment of LWR Fuel-Failure Propagation Potential: Literature Survey.	NUREG/CR-1471

Keyword Li'ting F	Report Title	Report No.
Fuels	A Methodology and a Preliminary Data Base for Examining the Health Risks of Electricity Generation from Uranium and Coal F els.	NUREG/CR-1539
Functional Criteria	Functional Criteria for Emergency Response Facilities.	NUREG-0696

Keyword Listing G	Report Title	Report No.
Gamma-Ray	Calculations of the Skyshine Gamma-Ray Dose Rates from Independent Spent Fuel Storage Installations (ISFSI) Under Worst Case Accident Conditions.	NUREG/CR-0723
Gamma-Ray	Advanced Mobile Multi-Processor Gamma-Ray Acquisition and Analysis System.	NUREG/CR-1668
Gap	Gap Conductance Test Series Fuel Characterization Data Report.	NUREG/CR-1537
Gas Hills	Final Environmental Statement Related to the Operation of Gas Hills Uranium Project, Docket No. 40-299, Union Carbide Corporation.	NUREG-0702
Gas-Cooled	High Cycle Fatigue Behavior of Incoloy 800H in a Simulated High-Temperature Gas-Cooled Reactor Helium Environment.	NUREG/CR-1356
Gas-Cooled	High-Temperature Gas-Cooled Reactor Safety Studies for the Division of Reactor Safety Research Quarterly Progress Report, January 1-March 31, 1980.	NUREG/CR-1521
Generator	Statistical Analysis of Steam Generator Inspection Plans and Eddy Current Testing.	NUREG/CR-1282
Generator	Eddy-Current Inspection for Steam Generator Tubing Program. Annual Progress Report for Period Ending December 31, 1979.	NUREG/CR-1563
Generator	An Evaluation of Condensation-Induced Water Hammer in Preheat Steam Generators.	NUREG/CR-1606
Generator Repair	Final Environmental Statement Related to Steam Generator Repair at Surry Power Station, Unit No. 1. Virginia Electric and Power Cmpany, Docket No. 50-280.	NURG-0692
Generic	MARK II Containment Lead Plant Program Load Evaluation and Acceptance Criteria - Generic Technical Activities A8 and A39.	NUREG-0487, Supp 1
Generic	Control of Heavy Loads at Nuclear Power Plants Resolution of Generic Technical Activity A-36.	NUREG-0612
Generic	MARK I Containment Long Term Program Safety Evaluation Report, Resolution of Generic Technical Activity A-7. February 1977 to December 1979.	NUREG-0661
Generic	Fin l Generic Environmental Impact Statement on Uranium Milling Project [illegible] Volume I - Summary and Text.	NUREG-0706, Vol 1

Keyword Listing G	Report Title	Report No.
Generic	Final Generic Environmental Impact Statement on Uranium Milling Project M-25: Volume II - Appendices A-F.	NUREG-0706, Vol 2
Generic	Final Generic Environmental Impact Statement on Uranium Milling Project M-25: Volume III - Appendices G-V.	NUREG-0706, Vol 3
Geologic	Risk Methodology for Geologic Disposal of Radioactive Waste: Transport Model Sensitivity Analysis.	NUREG/CR-1377
Geologic Disposal	Risk Methodology for Geologic Disposal of Radioactive Waste: A Distribution-Free Approach to Inducing Rank Correlation Among Input Variables for Simulation Studies.	NUREG/CR-1262
Geophysical Investigation	Geophysical Investigation of the Anna, Ohio Earthquake Zone.	NUREG/CR-1649
Geotechnical	Geotechnical and Strong Motion Earthquake Data from U.S. Accelerograph Stations.	NUREG/CR-0985, Vol 3
Geotechnical	Geotechnical and Strong Motion Earthquake Data from U.S. Accelerograph Stations.	NUREG/CR-0985, Vol 4
Geotechnical	Geotechnical and Strong Motion Earthquake Data from U.S. Accelerograph Stations.	NUREG/CR-0985, Vol 5
Geotechnical Data	Geotechnical Data from Accelerograph Stations Investigated during the Period 1975-1979. Summary Report.	NUREG/CR-1643
Great Lakes	Seismicity and Tectonic Relationships for Upper Great Lakes Precambrian Shield Province.	NUREG/CR-1569
Grotwh	Growth and Histological Effects to Protothaca Staminea (Littleneck Clam) of Long-Term Exposure to Chlorinated Sea Water.	NUREG/CR-1298
Ground Motion	State-of-the-Art Study Concerning Near-Field Earthquake Ground Motion.	NUREG/CR-1340
Ground Motion	Statistical Analysis of Earthquake Ground Motion Parameters.	NUREG/CR-1641
Ground Motion	Compilation, Assessment and Expansion of the Strong Earthquake Ground Motion Data Base.	NUREG/CR-1660

Keyword Listing G	Report Title	Report No.
Guide	A User's Guide to EPIC, a Computer Program to Calculate the Motion of Fuel and Coolant Subsequent to Pin Failure in a LMFBR.	NUREG/CR-1504
Guidelines	Technical Report on Material Selection and Processing Guidelines for BWR Coolant Pressure Boundary Piping.	NUREG-0313, Rev. 1

Keyword Listing H	Report Title	Report No.
Hazard Analysis	Seismic Hazard Analysis. A Methodology for the Eastern United States.	NUREG/CR-1582, Vol 2
Hazard Analysis	Seismic Hazard Analysis. Solicitation of Expert Opinion.	NUREG/CR-1582, Vol 3
Health Risks	A Methodology and a Preliminary Data Base for Examining the Health Risks of Electricity Generation from Uranium and Coal Fuels.	NUREG/CR-1539
Health Status	Health Status and Body Radioactivity of Former Thorium Workers.	NUREG/CR-1420
Heat Fluxes	User's Manual for USINT: A Program for Calculating Heat and Mass Transfer in Concrete Subjected to High Heat Fluxes.	NUREG/CR-1375
Heat Removal	Heat Removal Characteristics of Volume Heated Boiling Pools with Inclined Boundaries.	NUREG/CR-1357
Heat Transfer	Transient Analysis of Coolant Flow and Heat Transfer in LMFBR Piping Systems.	NUREG/CR-1404
Heavy Loads	Control of Heavy Loads at Nuclear Power Plants Resolution of Generic Technical Activity A-36.	NUREG-0612
Heavy-Section	Heavy-Section Steel Technology Program Quarterly Progress Report for January-March 1980.	NUREG/CR-1477
Helium Environment	High Cycle Fatigue Behavior of Incoloy 800H in a Simulated High-Temperature Gas-Cooled Reactor Helium Environment.	NUREG/CR-1356
Hexafluoride	Acute Effects of Inhalation Exposure to Uranium Hexafluoride and Patterns of Deposition. UF_6/UO_2F_2 Studies in Experimental Animals.	NUREG/CR-1045
High Cycle	High Cycle Fatigue Behavior of Incoloy 800H in a Simulated High-Temperature Gas-Cooled Reactor Helium Environment.	NUREG/CR-1356
High Level	Scenario Development and Evaluation Related to the Risk Assessment of High Level Radioactive Waste Repositories.	NUREG/CR-1608
High Temperature	An Ultrasonic Thermometry System for Measuring Very High Temperatures in Reactor Safety Experiments.	NUREG/CR-1488

Keyword Listing H	Report Title	Report No.
High-Temperature	High Cycle Fatigue Behavior of Incoloy 800H in a Simulated High-Temperature Gas-Cooled Reactor Helium Environment.	NUREG/CR-1256
High-Temperature	High-Temperature Gas-Cooled Reactor Safety Studies for the Division of Reactor Safety Research Quarterly Progress Report, January 1-March 31, 1980.	NUREG/CR-1521
Histological Effects	Growth and Histological Effects to Protothaca Staminea (Littleneck Clam) of Long-Term Exposure to Chlorinated Sea Water.	NUREG/CR-1298
Holes	Monoclinal Structure and Shallow Faulting of the Reelfoot Scarp as Estimated from Drill Holes with Variable Spacings.	NUREG/CR-1501
Hydraulic	Summary of Thermal Hydraulic Calculations for a Pressurized Water Reactor.	NUREG/CR-1480
Hydrodynamics	Hydrodynamics of a Vapor Jet in Subcooled Liquid.	NUREG/CR-1632
Hydrodynamics Program	Steam-Water Mixing and System Hydrodynamics Program - Task 4 - Quarterly Progress Report, April 1-June 30, 1979.	NUREG/CR-1557
Hydrodynamics Program	Steam-Water Mixing and System Hydrodynamics Program - Task 4 - Quarterly Progress Report, July 1-September 30, 1979.	NUREG/CR-1625
Hydrodynamics Program	Steam-Water Mixing and System Hydrodynamics Program - Task 4. Quarterly Progress Report, October-December 1979.	NUREG/CR-1657
Hydrogen Alloys	Instrumented Impact Properties of Zircaloy-Oxygen and Zircaloy-Hydrogen Alloys.	NUREG/CR-1408
Hydrogen Mixing	Hydrogen-Mixing in a Closed Containment Compartment Based on a One-Dimensional Model with Convective Effects.	NUREG/CR-1575
Hydrometeorological Rpt 53	Seasonal Vibration of 10-Square Mile Probable Maximum Precipitation Estimates, United States East of the 105th Meridian (Hydrometeorological Report No. 53).	NUREG/CR-1486

Keyword Listing I	Report Title	Report No.
Identification	Identification and Assessment of the Social Impacts of Transportation of Radioactive Materials in Urban Environments.	NUREG/CR-0766
Illinois	A Probabilistic Evaluation of Earthquake Detection and Location Capability for Illinois, Indiana, Kentucky, Ohio, and West Virginia.	NUREG/CR-1648
Impact Properties	Instrumented Impact Properties of Zircaloy-Oxygen and Zircaloy-Hydrogen Alloys.	NUREG/CR-1408
Impact Statement	Final Generic Environmental Impact Statement on Uranium Milling Project M-25: Volume I - Summary and Text.	NUREG-0706, Vol 1
Impact Statement	Final Generic Environmental Impact Statement on Uranium Milling Project M-25: Volume II - Appendices A-F.	NUREG-0706, Vol 2
Impact Statement	Final Generic Environmental Impact Statement on Uranium Milling Project M-25: Volume III - Appendices G-V.	NUREG-0706, Vol 3
Implementation	Considerations on Nuclear Data Link Implementation in Relation to the Technical Support Center, Emergency Operations Center and Safety Parameter Display System.	NUREG/CR-1579
Improve	Using Advanced Process Monitoring to Improve Material Control.	NUREG/CR-1676, Vol 1
In-Plant	In-Plant Source Term Measurements at Turkey Point Station - Units 3 and 4.	NUREG/CR-1629
In-Situ	Evaluation of In-Situ Soil Damping Characteristics.	NUREG/CR-1638
Incident Response	Report to Congress: NRC Incident Response Plan.	NUREG-0728
Incidents	Survey of Current State Radiological Emergency Response Capabilities for Transportation Related Incidents.	NUREG/CR-1620
Inclined Boundaries	Heat Removal Characteristics of Volume Heated Boiling Pools with Inclined Boundaries.	NUREG/CR-1357
Incoloy 800H	High Cycle Fatigue Behavior of Incoloy 800H in a Simulated High-Temperature Gas-Cooled Reactor Helium Environment.	NUREG/CR-1356

Keyword Listing I	Report Title	Report No.
Independent	Calculations of the Skyshine Gamma-Ray Dose Rates from Independent Spent Fuel Storage Installations (ISFSI) Under Worst Case Accident Conditions.	NUREG/CR-0723
Indian Point	Task Force Report on Interim Operation of Indian Point.	NUREG-0715
Indian Point	Report of the Zion/Indian Point Study: Volume 1.	NUREG/CR-1410
Indian Point	Report of the Zion/Indian Point Study.	NUREG/CR-1411, Vol 1
Indian Point	Report of the Zion/Indian Point Study.	NUREG/CR-1411, Vol 2
Indiana	A Probabilistic Evaluation of Earthquake Detection and Location Capability for Illinois, Indiana, Kentucky, Ohio, and West Virginia.	NUREG/CR-1648
Inducing Rank	Risk Methodology for Geologic Disposal of Radioactive Waste: A Distribution-Free Approach to Inducing Rank Correlation Among Input Variables for Simulation Studies.	NUREG/CR-1262
Industry	Report on Nuclear Industry Quality Assurance Procedures for Safety Analysis Computer Code Development and Use.	NUREG-0653
Inelastic	Dynamic, Inelastic Buckling Analysis of MARK I Torus Support Columns.	NUREG/CR-1038
Inelastic	Piping Inelastic Fracture Mechanics Analysis.	NUREG/CR-1119
Inhalation Exposure	Acute Effects of Inhalation Exposure to Uranium Hexafluoride and Patterns of Deposition. UF_6/UO_2F_2 Studies in Experimental Animals.	NUREG/CR-1045
Inlet Plenum	Compressible Analysis of Inlet Plenum Pressure Rise due to Sodium Boiling in Fuel Subassemblies during Pump Coast-Down of an LMFBR.	NUREG/CR-1592
Input Variables	Risk Methodology for Geologic Disposal of Radioactive Waste: A Distribution-Free Approach to Inducing Rank Correlation Among Input Variables for Simulation Studies.	NUREG/CR-1262
Insiders	Potential Threat to Licensed Nuclear Activities from Insiders (Insider Study).	NUREG-0703

Keyword Listing I	Report Title	Report No.
Inspection	Statistical Analysis of Steam Generator Inspection Plans and Eddy Current Testing.	NUREG/CR-1282
Inspection	Assessment of Current Onsite Inspection Techniques for Light Water Reactor Fuel Systems - Volume 1 - Executive Summary.	NUREG/CR-1380, Vol 1, ES
Inspection	Eddy-Current Inspection for Steam Generator Tubing Program. Annual Progress Report for Period Ending December 31, 1979.	NUREG/CR-1563
Inspection Methods	Inspection Methods for Physical Protection Project: Quarterly Report, March-May 1980.	NUREG/CR-1610, Vol 1, No. 1
Installations	Calculations of the Skyshine Gamma-Ray Dose Rates from Independent Spent Fuel Storage Installations (ISFSI) Under Worst Case Accident Conditions.	NUREG/CR-0723
Instrumentation	Flow Topography Instrumentation and Analysis System.	NUREG/CR-1333
Instrumented	Instrumented Impact Properties of Zircaloy-Oxygen and Zircaloy-Hydrogen Alloys.	NUREG/CR-1408
Instrumented	Two-Phase Flow Measurements with Advanced Instrumented Spool Pieces.	NUREG/CR-1529
Integration	Review and Integration of Existing Literature Concerning Potential Social Impacts of Transportation of Radioactive Materials in Urban Areas.	NUREG/CR-0742
Integrity	Structural Integrity of Water Reactor Pressure Boundary Components. Quarterly Progress Report, January-March 1980.	NUREG/CR-1472
Interim Operation	Task Force Report on Interim Operation of Indian Point.	NUREG-0715
Interstitial	Critical Experiments with Interstitially-Moderated Arrays of Low-Enriched Uranium Oxide. Topical Report on Reference Critical Experiments.	NUREG/CR-1071
Investigated	Geotechnical Data from Accelerograph Stations Investigated during the Period 1975-1979. Summary Report.	NUREG/CR-1643
Investigation	Investigation and Evaluation of Cracking Incidents in Piping in Pressurized Water Reactors.	NUREG-0691

Keyword Listing I	Report Title	Report No.
Iodine-131	Measurement of XE-133, C-14 and Tritium in Air and I-131 in Vegetation and Milk Around the Quad Cities Nuclear Power Station.	NUREG/CR-1195
Irradiation	LWR Pressure Vessel Irradiation Surveillance Dosimetry Quarterly Progress Report, October-December 1978.	NUREG/CR-0720
ISFSI	Calculations of the Skyshine Gamma-Ray Dose Rates from Independent Spent Fuel Storage Installations (ISFSI) Under Worst Case Accident Conditions.	NUREG/CR-0723
Isotope	Evaluation of Isotope Migration-Land Burial Water Chemistry at Commercially Operated Low Level Radioactive Waste Disposal Sites.	NUREG/CR-1289
Isotope	Evaluation of Isotope Migration-Land Burial Water Chemistry at Commercially Operated Low-Level Radioactive Waste Disposal Sites. Quarterly Progress Report, January-March 1980.	NUREG/CR-1513

Keyword Listing J	Report Title	Report No.
Joseph M. Farley	Safety Evaluation Report Related to the Operation of Joseph M. Farley Nuclear Plant, Unit 2. Docket No. 50-364, Alabama Power Company. Supplement 4 to NUREG-75/034.	NUREG-0117, Supp. 4
Joseph M. Farley	Final Environmental Statement Related to the Operation of the Joseph M. Farley Nuclear Plant, Units 1 and 2, Docket Nos. 50-348 and 50-364.	NUREG-0727, Add.

Keyword Listing K	Report Title	Report No.
K-FIX Code	PRESBC: Pressure Boundary Conditions for the K-FIX Code.	NUREG/CR-1536
Kentucky	A Probabilistic Evaluation of Earthquake Detection and Location Capability for Illinois, Indiana, Kentucky, Ohio, and West Virginia.	NUREG/CR-1648
Kentucky	Transportation of Radioactive Material in Kentucky.	NUREG/CR-1671
Krypton	The Effects of Temperature, Moisture, Concentration, Pressure and Mass Transfer on the Adsorption of Krypton and Xenon on Activated Carbon.	NUREG-0678

Keyword Listing L	Report Title	Report No.
Land Burial	Evaluation of Isotope Migration-Land Burial Water Chemistry at Commercially Operated Low Level Radioactive Waste Disposal Sites.	NUREG/CR-1289
Land Burial	Vegetational Cover in Monitoring and Stabilization of Shallow Land Burial Sites.	NUREG/CR-1358
Land Burial	Evaluation of Isotope Migration-Land Burial Water Chemistry at Commercially Operated Low-Level Radioactive Waste Disposal Sites.	NUREG/CR-1513
Lateral Loads	Lateral Loads on Vent Pipe in Steam Chugging.	NUREG/CR-1631
LCP	Load Combination Program. Progress Report No. 5.	NUREG/CR-1624
Lead	PBF/LOFT Lead Rod Test Series Test Results Report.	NUREG/CR-1538
Lead Plant	MARK II Containment Lead Plant Program Load Evaluation and Acceptance Criteria - Generic Technical Activities A8 and A39.	NUREG-0487, Supp 1
Leaks	Study of Plutonium Oxide Powder Emissions from Simulated Shipping Container Leaks.	NUREG/CR-1302
LER	Data Summaries of Licensee Event Reports of Primary Containment Penetrations at U.S. Commercial Nuclear Power Plants from January 1, 1972 to December 31, 1978.	NUREG/CR-1730
Licensability	Licensability of CANDU-Type Reactors in the United States. A Preliminary Assessment of the R and D Requirements.	NUREG/CR-1113
License DPR 77	Technical Specifications, Sequoyah Nuclear Plant, Unit No. 1, Docket No. 50-327, Appendix "A" to License No. DPR-77.	NUREG-0658, Rev 1
License NPF-7	North Anna Power Station Unit 2 Technical Specifications Appendix "A" to License No. NPF-7.	NUREG-0664, Rev 1
Licensed	Potential Threat to Licensed Nuclear Activities from Insiders (Insider Study).	NUREG-0703
Licensee Events	Data Summaries of Licensee Event Reports of Primary Containment Penetrations at U.S. Commercial Nuclear Power Plants from January 1, 1972 to December 31, 1978.	NUREG/CR-1730

Keyword Listing L	Report Title	Report No.
Licensing Evaluation	SCALE: A Modular Core System for Performing Standardized Computer Analyses for Licensing Evaluation. SCALE System Criticality Safety Analysis Modul.s CSAS1 and CSAS2.	NUREG/CR-0200
Life Expectancy	Predicting Life Expectancy and Simulating Age of Complex Equipment Using Accelerated Aging Techniques.	NUREG/CR-1466
Line Dynamics	Steam Line Dynamics.	NUREG/CR-1438
Liquid	Hydrodynamics of a Vapor Jet in Subcooled Liquid.	NUREG/CR-1632
Literature	Review and Integration of Existing Literature Concerning Potential Social Impacts of Transportation of Radioactive Materials in Urban Areas.	NUREG/CR-0742
Literature Survey	An Assessment of LWR Fuel-Failure Propagation Potential: Literature Survey.	NUREG/CR-1471
Littleneck Clam	Growth and Histological Effects to Protothaca Staminea (Littleneck Clam) of Long-Term Exposure to Chlorinated Sea Water.	NUREG/CR-1298
LLEA	COPS Model Estimates of LLEA Availability Near Selected Reactor Sites.	NUREG/CR-1166
LMFBR	SIMMER-II: A Computer Program for LMFBR Disrupted Core Analysis.	NUREG/CR-0453, Rev 1
LMFBR	CONAN: An LMFBR Containment Response Computer Code.	NUREG/CR-1355
LMFBR	Transient Analysis of Coolant Flow and Heat Transfer in LMFBR Piping Systems.	NUREG/CR-1404
LMFBR	The NACOM Code for Analysif of Postulated Sodium Spray Fires in LMFBRs.	NUREG/CR-1405
LMFBR	A User's Guide to EPIC, a Computer Program to Calculate the Motion of Fuel and Coolant Subsequent to Pin Failure in a LMFBR.	NUREG/CR-1504
LMFBR	Compressible Analysis of Inlet Plenum Pressure Rise due to Sodium Boiling in Fuel Subassemblies during Pump Coast-Down of an LMFBR.	NUREG/CR-1592

Keyword Listing L	Report Title	Report No.
Load	Load Combination Program. Progress Report No. 5.	NUREG/CR-1624
Load Evaluation	MARK II Containment Lead Plant Program Load Evaluation and Acceptance Criteria - Generic Technical Activities A8 and A39.	NUREG-0487, Supp 1
Loads	Control of Heavy Loads at Nuclear Power Plants Resolution of Generic Technical Activity A-36.	NUREG-0612
Loads	Lateral Loads on Vent Pipe in Steam Chugging.	NUREG/CR-1631
LOCA	Uncertainty Analysis for a PWR Loss-of-Coolant Accident: II. Alternative Core Damage Estimators.	NUREG/CR-1364
LOCA	Drop-Size Estimates for a Loss-of-Coolant Accident.	NUREG/CR-1607
Location Capability	A Probabilistic Evaluation of Earthquake Detection and Location Capability for Illinois, Indiana, Kentucky, Ohio, and West Virginia.	NUREG/CR-1648
LOFT	Experiment Data Report for LOFT Anticipated Transient Experiment L6-5.	NUREG/CR-1520
LOFT	PBF/LOFT Lead Rod Test Series Test Results Report.	NUREG/CR-1538
LOFT	Comparison of CONTEMPT-LT Containment Code Calculations with Marviken, LOFT, and Battelle-Frankfurt Blowdown Tests.	NUREG/CR-1564
LOFT Program	Qualification Test Results on 1550°C and 2200°C 1/16-Inch O.D. Fuel Centerline Thermocouples for the LOFT Program.	NUREG/CR-0961
Long Term Program	MARK I Containment Long Term Program Safety Evaluation Report, Resolution of Generic Technical Activity A-7. February 1977 to December 1979.	NUREG-0661
Long-Term	Growth and Histological Effects to Protothaca Staminea (Littleneck Clam) of Long-Term Exposure to Chlorinated Sea Water.	NUREG/CR-1298
Loss-of-Coolant	Uncertainty Analysis for a PWR Loss-of-Coolant Accident: II. Alternative Core Damage Estimators.	NUREG/CR-1364

Keyword Listing L	Report Title	Report No.
Loss-of-Coolant	Drop-Size Estimates for a Loss-of-Coolant Accident.	NUREG/CR-1607
Low-Enriched	Critical Experiments with Interstitially-Moderated Arrays of Low-Enriched Uranium Oxide. Topical Report on Reference Critical Experiments.	NUREG/CR-1071
Low-Level	Evaluation of Isotope Migration-Land Burial Water Chemistry at Commercially Operated Low-Level Radioactive Waste Disposal Sites.	NUREG/CR-1289
Low-Level	Evaluation of Isotope Migration-Land Burial Water Chemistry at Commercially Operated Low-Level Radioactive Waste Disposal Sites. Quarterly Progress Report, January-March 1980.	NUREG/CR-1513
Low-Level	Characterization of Existing Surface Conditions at Sheffield Low-Level Waste Disposal Facility.	NUREG/CR-1683
LWR	A Comparative Analysis of LWR Fuel Designs.	NUREG-0559
LWR	Pipe Cracking Experience in Light-Water Reactors, 1967 through 1979.	NUREG-0679
LWR	LWR Pressure Vessel Irradiation Surveillance Dosimetry Quarterly Progress Report, October-December 1978.	NUREG/CR-0720
LWR	Assessment of Current Onsite Inspection Techniques for Light Water Reactor Fuel Systems - Volume 1 - Executive Summary.	NUREG/CR-1380, Vol 1, ES
LWR	Solubility Classification of Airborne Uranium Products from LWR-Fuel Plants.	NUREG/CR-1428
LWR	An Assessment of LWR Fuel-Failure Propagation Potential: Literature Survey.	NUREG/CR-1471
LWR	Qualification Testing Evaluation Program Light-Water Reactor Safety Research Quarterly Report July-September 1979.	NUREG/CR-1492
LWR	Light Water Reactor Safety Research Program Quarterly Report, January-March 1980.	NUREG/CR-1509
LWR	LWR Fuel Rod Post-Subcooled Blowdown Scoping Analysis.	NUREG/CR-1568

Keyword Listing M	Report Title	Report No.
Magnitude Scales	Regional Relationships Among Earthquake Magnitude Scales.	NUREG/CR-1457
Management	Enhancement of the Nuclear Materials Management and Safeguards System.	NUREG/CR-1527
Management	Safeguards User's Manual for Nuclear Materials Management and Safeguards System.	NUREG/CR-1528
Management	Utility Management and Technical Resources.	NUREG/CR-1656
Manual	Fixed Site Neutralization Model Programmer's Model.	NUREG/CR-1308, Vol 2
Manual	User's Manual for USINT: A Program for Calculating Heat and Mass Transfer in Concrete Subject to High Heat Fluxes.	NUREG/CR-1375
Manual	Safeguards User's Manual for Nuclear Materials Management and Safeguards System.	NUREG/CR-1528
MARK I	MARK I Containment Long Term Program Safety Evaluation Report, Resolution of Generic Technical Activity A-7. February 1977 to December 1979.	NUREG-0661
MARK I	Extended Analysis of Data from the 1/5-Scale MARK I Boiling Water Reactor Pressure Suppression Experiment.	NUREG/CR-0761
MARK I	Dynamic, Inelastic Buckling Analysis of MARK I Torus Support Columns.	NUREG/CR-1038
MARK II	MARK II Containment Lead Plant Program Load Evaluation and Acceptance Criteria - Generic Technical Activities A8 and A39.	NUREG-0487, Supp 1
Marviken	Comparison of CONTEMPT-LT Containment Code Calculations with Marviken, LOFT, and Battelle-Frankfurt Blowdown Tests.	NUREG/CR-1564
Mass Transfer	The Effects of Temperature, Moisture, Concentration, Pressure and Mass Transfer on the Adsorption of Krypton and Xenon on Activated Carbon.	NUREG-0678
Mass Transfer	User's Manual for USINT: A Program for Calculating Heat and Mass Transfer in Concrete Subjected to High Heat Fluxes.	NUREG/CR-1375

Keyword Listing M	Report Title	Report No.
Material Accounting	Material Accounting as Required by the United States Nuclear Regulatory Commission: Capabilities and Vulnerabilities.	NUREG/CR-1192
Material Accounting	The Use of Process Monitoring Data for Nuclear Material Accounting: Volume 1. Summary Report.	NUREG/CR-1670, Vol 1
Material Control	Safeguards Material Control and Accounting Program: Quarterly Report, October-December 1979.	NUREG/CR-1485, Vol 1, No. 1
Material Control	Using Advanced Process Monitoring to Improve Material Control.	NUREG/CR-1676, Vol 1
Material Selection	Technical Report on Material Selection and Processing Guidelines for BWR Coolant Pressure Boundary Piping.	NUREG-0313, Rev. 1
Materials Management	Enhancement of the Nuclear Materials Management and Safeguards System.	NUREG/CR-1527
Materials Management	Safeguards User's Manual for Nuclear Materials Management and Safeguards System.	NUREG/CR-1528
Mathematical Model	Evaluation of Mathematical Models for Characterizing Plume Behavior from Cooling Towers: Vol. 3--Plume Rise from Mechanical Draft Cooling Towers.	NUREG/CR-1581, Vol 3
Mathematical Models	Evaluation of Mathematical Models for Characterizing Plume Behavior from Cooling Towers: Vol. 1--Dispersion from Single and Multiple Source Natural Draft Cooling Towers.	NUREG/CR-1581, Vol 1
Mathematical Models	Evaluation of Mathematical Models for Characterizing Plume Behavior from Cooling Towers: Vol.2--Salt Drift Deposition from Natural Draft Cooling Towers.	NUREG/CR-1581, Vol 2
Measurement	Measurement of Radon Diffusion from Uranium Mill Tailing Piles.	NUREG/CR-1109
Measurement	Measurement of XE-133, C-14 and Tritium in Air and I-131 in Vegetation and Milk Around the Quad Cities Nuclear Power Station.	NUREG/CR-1195
Measurements	Wind-Tunnel Measurements of Dispersion and Turbulence in the Wakes of Nuclear Reactor Plants.	NUREG/CR-1475
Measurements	Two-Phase Flow Measurements with Advanced Instrumented Spool Pieces.	NUREG/CR-1529

Keyword Listing M	Report Title	Report No.
Measurements	Critical Experiments, Measurements, and Analyses to Establish a Crack Arrest Methodology for Nuclear Pressure Vessel Steels.	NUREG/CR-1601
Measurements	In-Plant Source Term Measurements at Turkey Point Station - Units 3 and 4.	NUREG/CR-1629
Measuring	An Ultrasonic Thermometry System for Measuring Very High Temperatures in Reactor Safety Experiments.	NUREG/CR-1488
Mechanical Draft	Evaluation of Mathematical Models for Characterizing Plume Behavior from Cooling Towers: Vol. 3--Plume Rise from Mechanical Draft Cooling Towers.	NUREG/CR-1581, Vol 3
Mechanics	Piping Inelastic Fracture Mechanics Analysis.	NUREG/CR-1119
Membrane Shear	Strength and Stiffness of Tensioned Reinforced Concrete Panels Subjected to Membrane Shear, Two-Way Reinforcing.	NUREG/CR-1602
Meridian	Seasonal Variation of 10-Square Mile Probable Maximum Precipitation Estimates, United States East of the 105th Meridian (Hydrometeorological Report No. 53).	NUREG/CR-1486
Meteorological	An Algorithm to Estimate Field Concentrations Under Nonsteady Meteorological Conditions from Wind Tunnel Experiments.	NUREG/CR-1474
Methodology	Design Guidance and Evaluation Methodology for Fixed Site Physical Protection Systems, Volume 1.	NUREG/CR-1198, Vol 1
Methodology	Design Guidance and Evaluation Methodology for Fixed Site Physical Protection Systems, Volume 2.	NUREG/CR-1198, Vol 2
Methodology	Risk Methodology for Geologic Disposal of Radioactive Waste: A Distribution-Free Approach to Inducing Rank Correlation Among Input Variables for Simulation Studies.	NUREG/CR-1262
Methodology	A Methodology and a Preliminary Data Base for Examining the Health Risks of Electricity Generation from Uranium and Coal Fuels.	NUREG/CR-1539
Methodology	Seismic Hazard Analysis. A Methodology for the Eastern United States.	NUREG/CR-1582, Vol 2
Methodology	Evaluation Methodology for Fixed-Site Physical Protection Systems.	NUREG/CR-1590

Keyword Listing M	Report Title	Report No.
Microcomputer	The NDT-COMP9 Microcomputer.	NUREG/CR-1548
Migration	Evaluation of Isotope Migration-Land Burial Water Chemistry at Commercially Operated Low Level Radioactive Waste Disposal Sites.	NUREG/CR-1289
Migration	Evaluation of Isotope Migration-Land Burial Water Chemistry at Commercially Operated Low-Level Radioactive Waste Disposal Sites. Quarterly Progress Report, January-March 1980.	NUREG/CR-1513
Milk	Measurement of Xe-133, C-14 and Tritium in Air and I-131 in Vegetation and Milk Around the Quad Cities Nuclear Power Station.	NUREG/CR-1195
Mill	Measurement of Radon Diffusion from Uranium Mill Tailing Piles.	NUREG/CR-1109
Mine Dumps	Estimates of Uranium Content and Radon Flux for Uranium Mine Dumps Based on Borehold Radioactivity Logs.	NUREG/CR-1549
Mixed Oxide	The Effects of Natural Phenomena on the Exxon Nuclear Company Mixed Oxide Fabrication Plant at Richland, Washington.	NUREG-0722
Mixing	Steam-Water Mixing and System Hydrodynamics Program - Task 4 - Quarterly Progress Report, July 1-September 30, 1979.	NUREG/CR-1625
Mixing	Steam-Water Mixing and System Hydrodynamics Program - Task 4. Quarterly Progress Report, October-December 1979.	NUREG/CR-1657
MOD 1 Code	COMPARE-MOD 1 Code, Addendum 1.	NUREG/CR-1185
Model Estimates	COPS Model Estimates of LLEA Availability Near Selected Reactor Sites.	NUREG/CR-1166
Modeling	Modeling Tornado Dynamics.	NUREG/CR-1585
Moderated Arrays	Critical Experiments with Interstitially-Moderated Arrays of Low-Enriched Uranium Oxide. Topical Report on Reference Critical Experiments.	NUREG/CR-1071
Moisture	The Effects of Temperature, Moisture, Concentration, Pressure and Mass Transfer on the Adsorption of Krypton and Xenon on Activated Carbon.	NUREG-0678

Keyword Listing M	Report Title	Report No.
Monitoring	Vegetational Cover in Monitoring and Stabilization of Shallow Land Burial Sites.	NUREG/CR-1358
Monitoring	Using Advanced Process Monitoring to Improve Material Control.	NUREG/CR-1676, Vol 1
Monitoring Data	The Use of Process Monitoring Data for Nuclear Material Accounting: Volume 1. Summary Report.	NUREG/CR-1670, Vol 1
Monoclinal Structure	Monoclinal Structure and Shallow Faulting of the Reelfoot Scarp as Estimated from Drill Holes with Variable Spacings.	NUREG/CR-1501
Monte Carlo	Validation of a Monte Carlo Code for Radiation Streaming Analyses.	NUREG/CR-1334
Motion	Geotechnical and Strong Motion Earthquake Data from U.S. Accelerograph Stations.	NUREG/CR-0985, Vol 3
Motion	Geotechnical and Strong Motion Earthquake Data from U.S. Accelerograph Stations.	NUREG/CR-0985, Vol 4
Motion	Geotechnical and Strong Motion Earthquake Data from U.S. Accelerograph Stations.	NUREG/CR-0985, Vol 5
Motion	State-of-the-Art Study Concerning Near-Field Earthquake Ground Motion.	NUREG/CR-1340
Motion	A User's Guide to EPIC, a Computer Program to Calculate the Motion of Fuel and Coolant Subsequent to Pin Failure in a LMFBR.	NUREG/CR-1504
Motion	Statistical Analysis of Earthquake Ground Motion Parameters.	NUREG/CR-1641
Motion Data	Compilation, Assessment and Expansion of the Strong Earthquake Ground Motion Data Base.	NUREG/CR-1660
Motion Response	Piping Benchmark Problems. Dynamic Analysis Uniform Support Motion Response Spectrum Method.	NUREG/CR-1677, Vol 1
Motions	On the Motions of Particles in Turbulent Flows.	NUREG/CR-1554

Keyword Listing M	Report Title	Report No.
Multi-Processor	Advanced Mobile Multi-Processor Gamma-Ray Acquisition and Analysis System.	NUREG/CR-1668
Multirod	Multirod Burst Test Program Progress Report for July-December 1979.	NUREG/CR-1450

Keyword Listing N	Report Title	Report No.
NACOM Code	The NACOM Code for Analysif of Postulated Sodium Spray Fires in LMFBRs.	NUREG/CR-1405
Natural Draft	Evaluation of Mathematical Models for Characterizing Plume Behavior from Cooling Towers: Vol. 1--Dispersion from Single and Multiple Source Natural Draft Cooling Towers.	NUREG/CR-1581, Vol 1
Natural Draft	Evaluation of Mathematical Models for Characterizing Plume Behavior from Cooling Towers: Vol.2--Salt Drift Deposition from Natural Draft Cooling Towers.	NUREG/CR-1581, Vol 2
Natural Phenomena	The Effects of Natural Phenomena on the Exxon Nuclear Company Mixed Oxide Fabrication Plant at Richland, Washington.	NUREG-0722
NDT-COMP9	The NDT-COMP9 Microcomputer.	NUREG/CR-1548
Near-Field	State-of-the-Art Study Concerning Near-Field Earthquake Ground Motion.	NUREG/CR-1340
Neutralization Model	Fixed Site Neutralization Model Programmer's Model	NUREG/CR-1308, Vol 2
Nonsteady	An Algorithm to Estimate Field Concentrations Under Nonsteady Meteorological Conditions from Wind Tunnel Experiments.	NUREG/CR-1474
Normal Shock	Dynamic Analysis to Establish Normal Shock and Vibration of Radioactive Material Shipping Packages - Quarterly Progress Report October 1-December 31, 1979.	NUREG/CR-1484
North Anna	Safety Evaluation Report Related to the Operation of North Anna Power Station, Unit 2, Virginia Electric and Power Company, Docket No. 50-339. Supplement No. 11.	NUREG-0053, Supp. 11
North Anna	Safety Evaluation Report Related to the Operation of North Anna Power Station, Unit 2, Docket No. 50-339. Supplement No. 12.	NUREG-0053, Supp. 12
North Anna	Final Environmental Statement Related to the Operation of North Anna Power Station, Unit 1 and 2, Docket No. 50-338 and 50-339. Virginia Electric and Power Company.	NUREG-0134, Add. 2
North Anna	North Anna Power Station Unit 2 Technical Specifications Appendix "A" to License No. NPF-7.	NUREG-0664, Rev 1
NRC	United States Nuclear Regulatory Commission Staff Practice & Procedure Digest. Supplement 2 to Digest No. 2.	NUREG-0386, Supp. 2

Keyword Listing N	Report Title	Report No.
NRC	NRC Action Plan Developed as a Result of the TMI-2 Accident, Revision 1, Vol 1.	NUREG-0660, Vol 1
NRC	NRC Action Plan Development as a Result of the TMI-2 Accident, Revision 1, Vol. 2.	NUREG-0660, Vol 2
NRC	Summary of Public Comments and NRC Staff Analysis Relating to Rulemaking on Emergency Planning for Nuclear Power Plants.	NUREG-0684
NRC	Comments on the NRC Safety Research Program Budget for Fiscal Year 1982.	NUREG-0699
NRC	Report to Congress: NRC Incident Response Plan.	NUREG-0728
NRC	Report to Congress on NRC Emergency Communications.	NUREG-0729
NRC	Report to Congress on the Acquisition of Reactor Data for the NRC Operations Center.	NUREG-0730
NRC	Material Accounting as Required by the United States Nuclear Regulatory Commission: Capabilities and Vulnerabilities.	NUREG/CR-1192
NRC	Quarterly Technical Progress Report on Water Reactor Safety Programs Sponsored by the Nuclear Regulatory Commission's Division of Reactor Safety Research - April-June 1980.	NUREG/CR-1400
NRC	Respirator Studies for the Nuclear Regulatory Commission, Evaluation and Performance of Escape-Type Self-Contained Breathing Apparatus, October 1, 1978-September 30, 1979.	NUREG/CR-1586
NRC Plans	NRC Plans for Cleanup Operations at Three Mile Island Unit 2.	NUREG-0698
NRC Policy	Plan for Reevaluation of NRC Policy on Decommissioning of Nuclear Facilities. December 1978 to July 1980.	NUREG-0436, Rev 1, Supp 1
Nuclear Activities	Potential Threat to Licensed Nuclear Activities from Insiders (Insider Study).	NUREG-0703
Nuclear Data	Considerations on Nuclear Data Link Implementation in Relation to the Technical Support Center, Emergency Operations Center and Safety Parameter Display System.	NUREG/CR-1579

Keyword Listing N	Report Title	Report No.
Nuclear Facilities	Plan for Reevaluation of NRC Policy on Decommissioning of Nuclear Facilities. December 1978 to July 1980.	NUREG-0436, Rev 1, Supp 1
Nuclear Facilities	Physical Protection of Nuclear Facilities. Quarterly Progress Report, January-March 1980.	NUREG/CR-1448
Nuclear Industry	Report on Nuclear Industry Quality Assurance Procedures for Safety Analysis Computer Code Development and Use.	NUREG-0653
Nuclear Material	The Use of Process Monitoring Data for Nuclear Material Accounting: Volume 1. Summary Report.	NUREG/CR-1670, Vol 1
Nuclear Materials	Enhancement of the Nuclear Materials Management and Safeguards System.	NUREG/CR-1527
Nuclear Materials	Safeguards User's Manual for Nuclear Materials Management and Safeguards System.	NUREG/CR-1528

Keyword Listing O	Report Title	Report No.
Occurrences	Report to Congress on Abnormal Occurrences, January-March 1980.	NUREG-0090, Vol 3, No. 1
Ohio	A Probabilistic Evaluation of Earthquake Detection and Location Capability for Illinois, Indiana, Kentucky, Ohio, and West Virginia.	NUREG/CR-1648
Ohio Earthquake	Geophysical Investigation of the Anna, Ohio Earthquake Zone.	NUREG/CR-1649
One-Dimensional	Hydrogen-Mixing in a Closed Containment Compartment Based on a One-Dimensional Model with Convective Effects.	NUREG/CR-1575
Onsite Inspection	Assessment of Current On ite Inspection Techniques for Light Water Reactor Fuel Systems - Volume 1 - Executive Summary.	NUREG/CR-1380, Vol 1, ES
Open Pit	Radon Release and Dispersion from an Open Pit Uranium Mine.	NUREG/CR-1583
Operation	Safety Evaluation Report Related to Operation of Sequoyah Nuclear Plant, Units 1 and 2, Docket Nos. 50-327 and 50-328. Tennessee Valley Authority, Supp. No. 2.	NUREG-0011, Supp. 2
Operation	Safety Evaluation Report Related to Operation of Sequoyah Nuclear Plant, Units 1 and 2, Docket Nos. 50-327/328. Tennessee Valley Authority, Supp. 3.	NUREG-0011, Supp. 3
Operation	Safety Evaluation Report Related to the Operation of North Anna Power Station, Unit 2, Virginia Electric and Power Company, Docket No. 50-339. Supplement No. 11.	NUREG-0053, Supp. 11
Operation	Safety Evaluation Report Related to the Operation of North Anna Power Station, Unit 2, Docket No. 50-339. Supplement No. 12.	NUREG-0053, Supp. 12
Operation	Safety Evaluation Report Related to the Operation of Joseph M. Farley Nuclear Plant, Unit 2. Docket No. 50-364, Alabama Power Company. Supplement 4 to NUREG-75/034.	NUREG-0117, Supp. 4
Operation	Safety Evaluation Report Related to Operation of Diablo Canyon Nuclear Power Station, Units 1 and 2, Pacific Gas and Electric Company, Docket Nos. 50-275 and 50-323, Supplement No. 10.	NUREG-0675, Supp 10
Operation	Final Environmental Statement Related to the Operation of Gas Hills Uranium Project, Docket No. 40-299, Union Carbide Corporation.	NUREG-0702
Operation	Task Force Report on Interim Operation of Indian Point.	NUREG-0715

Keyword Listing O	Report Title	Report No.
Operation	Final Environmental Statement Related to the Operation of the Joseph M. Farley Nuclear Plant, Units 1 and 2, Docket Nos. 50-348 and 50-364.	NUREG-0727, Add.
Operat:ons	NRC Plans for Cleanup Operations at Three Mile Island Unit 2.	NUREG-0698
Operations Center	Report to Congress on the Acquisition of Reactor Data for the NRC Operations Center.	NUREG-0730
Operations Center	Considerations on Nuclear Data Link Implementation in Relation to the Technical Support Center, Emergency Operations Center and Safety Parameter Display System.	NUREG/CR-1579
Operator Training	Nuclear Power Plant Simulators: Their Use in Operator Training and Requalification.	NUREG/CR-1482
Opoeration	Final Environmental Statement Related to the Operation of North Anna Power Station, Unit 1 and 2, Docket No. 50-338 and 50-339. Virginia Electric and Power Company.	NUREG-0134, Add. 2
ORNL	The ORNL State-Level Electricity Demand Forecasting Model.	NUREG/CR-1295
Oxide	The Effects of Natural Phenomena on the Exxon Nuclear Company Mixed Oxide Fabrication Plant at Richland, Washington.	NUREG-0722
Oxide	Study of Plutonium Oxide Powder Emissions from Simulated Shipping Container Leaks.	NUREG/CR-1302
Oxygen Alloys	Instrumented Impact Properties of Zircaloy-Oxygen and Zircaloy-Hydrogen Alloys.	NUREG/CR-1408

Keyword Listing P	Report Title	Report No.
Pacific Gas & Elect. Co.	Safety Evaluation Report Related to Operation of Diablo Canyon Nuclear Power Station, Units 1 and 2, Pacific Gas and Electric Company, Docket Nos. 50-275 and 50-323, Supplement No. 10.	NUREG-0675, Supp 10
Package	Review and Assessment of Package Requirements (Yellowcake) and Emergency Response to Transportation Accidents.	NUREG-0535
Packages	Dynamic Analysis to Establish Normal Shock and Vibration of Radioactive Material Shipping Packages - Quarterly Progress Report October 1-December 31, 1979.	NUREG/CR-1484
Parameters	Statistical Analysis of Earthquake Ground Motion Parameters.	NUREG/CR-1641
Particles	On the Motions of Particles in Turbulent Flows.	NUREG/CR-1554
Patterns	Acute Effects of Inhalation Exposure to Uranium Hexafluoride and Patterns of Deposition. UF_6/UO_2F_2 Studies in Experimental Animals.	NUREG/CR-1045
PBE	Prompt Burst Energetics Experiments: Fresh Uranium Carbide/Sodium Series.	NUREG/CR-1396
PBF/LOFT	PBF/LOFT Lead Rod Test Series Test Results Report.	NUREG/CR-1538
Penetrations	Data Summaries of Licensee Event Reports of Primary Containment Penetrations at U.S. Commercial Nuclear Power Plants from January 1, 1972 to December 31, 1978.	NUREG/CR-1730
Performance	Respirator Studies for the Nuclear Regulatory Commission, Evaluation and Performance of Escape-Type Self-Contained Breathing Apparatus, October 1, 1978-September 30, 1979.	NUREG/CR-1586
Performance Testing	Performance Testing of Personnel Dosimetry Services: Alternatives and Recommendations for a Personnel Dosimetry Testing Program.	NUREG/CR-1593
Performing	SCALE: A Modular Core System for Performing Standardized Computer Analyses for Licensing Evaluation. SCALE System Criticality Safety Analysis Modules CSAS1 and CSAS2.	NUREG/CR-0200
Personnel Dosimetry	Performance Testing of Personnel Dosimetry Services: Alternatives and Recommendations for a Personnel Dosimetry Testing Program.	NUREG/CR-1593
Phenomena	The Effects of Natural Phenomena on the Exxon Nuclear Company Mixed Oxide Fabrication Plant at Richland, Washington.	NUREG-0722

Keyword Listing P	Report Title	Report No.
Physical	Evaluation Methodology for Fixed-Site Physical Protection Systems.	NUREG/CR-1590
Physical Protection	Acceptance Criteria for the Physical Protection Upgrade Rule Requirements for Fixed Sites.	NUREG-0721
Physical Protection	Design Guidance and Evaluation Methodology for Fixed Site Physical Protection Systems, Volume 1.	NUREG/CR-1198, Vol 1
Physical Protection	Design Guidance and Evaluation Methodology for Fixed Site Physical Protection Systems, Volume 2.	NUREG/CR-1198, Vol 2
Physical Protection	Physical Protection of Nuclear Facilities. Quarterly Progress Report, January-March 1980.	NUREG/CR-1448
Physical Protection	Inspection Methods for Physical Protection Project: Quarterly Report, March-May 1980.	NUREG/CR-1610, Vol 1, No. 1
Physics	Physics of Reactor Safety. Quarterly Report for January-March 1980.	NUREG/CR-1526, Vol 1
Piles	Measurement of Radon Diffusion from Uranium Mill Tailing Piles.	NUREG/CR-1109
Pin Failure	A User's Guide to EPIC, a Computer Program to Calculate the Motion of Fuel and Coolant Subsequent to Pin Failure in a LMFBR.	NUREG/CR-1504
Pin Simulators	Thermocouple Signal Sensitivity to the Sheath Thickness of Thermal-Hydraulic Test Facility Indirectly Heated Electric Fuel Pin Simulators.	NUREG/CR-1347
Pipe	Lateral Loads on Vent Pipe in Steam Chugging.	NUREG/CR-1631
Pipe Cracking	Pipe Cracking Experience in Light-Water Reactors, 1967 through 1979.	NUREG-0679
Piping	Technical Report on Material Selection and Processing Guidelines for BWR Coolant Pressure Boundary Piping.	NUREG-0313, Rev. 1
Piping	Investigation and Evaluation of Cracking Incidents in Piping in Pressurized Water Reactors.	NUREG-0691

Keyword Listing P	Report Title	Report No.
Piping	Piping Inelastic Fracture Mechanics Analysis.	NUREG/CR-1119
Piping	Piping Benchmark Problems. Dynamic Analysis Uniform Support Motion Response Spectrum Method.	NUREG/CR-1677, Vol 1
Piping Systems	Transient Analysis of Coolant Flow and Heat Transfer in LMFBR Piping Systems.	NUREG/CR-1404
Plant Reliability	Nuclear Plant Reliability Data System 1979 Annual Reports of Cumulative System and Component Reliability.	NUREG/CR-1635
Plant Structures	Variability of Dynamic Characteristics of Nuclear Power Plant Structures.	NUREG/CR-1661
Plume Behavior	Evaluation of Mathematical Models for Characterizing Plume Behavior from Cooling Towers: Vol. 1--Dispersion from Single and Multiple Source Natural Draft Cooling Towers.	NUREG/CR-1581, Vol 1
Plume Behavior	Evaluation of Mathematical Models for Characterizing Plume Behavior from Cooling Towers: Vol.2--Salt Drift Deposition from Natural Draft Cooling Towers.	NUREG/CR-1581, Vol 2
Plume Rise	Evaluation of Mathematical Models for Characterizing Plume Behavior from Cooling Towers: Vol. 3--Plume Rise from Mechanical Draft Cooling Towers.	NUREG/CR-1581, Vol 3
Plutonium	Preparation of Working Reference Materials: Calcined Waste Recovery Products Containing Uranium or Plutonium.	NUREG/CR-1445
Plutonium Oxide	Study of Plutonium Oxide Powder Emissions from Simulated Shipping Container Leaks.	NUREG/CR-1302
Policy	Plan for Reevaluation of NRC Policy on Decommissioning of Nuclear Facilities. December 1978 to July 1980.	NUREG-0436, Rev 1, Supp 1
Pools	Heat Removal Characteristics of Volume Heated Boiling Pools with Inclined Boundaries.	NUREG/CR-1357
Post-Subcooled	LWR Fuel Rod Post-Subcooled Blowdown Scoping Analysis.	NUREG/CR-1568
Potential	Review and Integration of Existing Literature Concerning Potential Social Impacts of Transportation of Radioactive Materials in Urban Areas.	NUREG/CR-0742

Keyword Listing P	Report Title	Report No.
Potential	An Assessment of LWR Fuel-Failure Propagation Potential: Literature Survey.	NUREG/CR-1471
Potential Threat	Potential Threat to Licensed Nuclear Activities from Insiders (Insider Study).	NUREG-0703
Powder Emissions	Study of Plutonium Oxide Powder Emissions from Simulated Shipping Container Leaks.	NUREG/CR-1302
Power Plant	Financing Strategies for Nuclear Power Plant Decommissioning.	NUREG/CR-1481
Power Plant	Nuclear Power Plant Simulators: Their Use in Operator Training and Requalification.	NUREG/CR-1482
Power Plant	Variability of Dynamic Characteristics of Nuclear Power Plant Structures.	NUREG/CR-1661
Power Plants	Control of Heavy Loads at Nuclear Power Plants Resolution of Generic Technical Activity A-36.	NUREG-0612
Power Plants	Summary of Public Comments and NRC Staff Analysis Relating to Rulemaking on Emergency Planning for Nuclear Power Plants.	NUREG-0684
Power Plants	Environmental Assessment for Effective Changes to 10 CFR Part 50 and Appendix E to 10 CFR Part 50; Emergency Planning Requirements for Nuclear Power Plants.	NUREG-0685
Power Station	Measurement of XE-133, C-14 and Tritium in Air and I-131 in Vegetation and Milk Around the Quad Cities Nuclear Power Station.	NUREG/CR-1195
Precambrian	Seismicity and Tectonic Relationships for Upper Great Lakes Precambrian Shield Province.	NUREG/CR-1569
Precipitation	Seasonal Variation of 10-Square Mile Probable Maximum Precipitation Estimates, United States East of the 105th Meridian (Hydrometeorological Report No. 53).	NUREG/CR-1486
Predicting	Predicting Life Expectancy and Simulating Age of Complex Equipment Using Accelerated Aging Techniques.	NUREG/CR-1466
Preheat	An Evaluation of Condensation-Induced Water Hammer in Preheat Steam Generators.	NUREG/CR-1606

Keyword Listing P	Report Title	Report No.
Preliminary	Licensability of CANDU-Type Reactors in the United States. A Prelir / Assessment of the R and D Requirements.	NUREG/CR-1113
Preliminary Data	A Methodology and a Preliminary Data Base for Examining the Health Risks of Electricity Generation from Uranium and Coal Fuels.	NUREG/CR-1539
Preparation	Preparation of Working Reference Materials: Calcined Waste Recovery Products Containing Uranium or Plutonium.	NUREG/CR-1445
PRESBC	PRESBC: Pressure Boundary Conditions for the K-FIX Code.	NUREG/CR-1536
Pressure	Technical Report on Material Selection and Processing Guidelines for BWR Coolant Pressure Boundary Piping.	NUREG-0313, Rev. 1
Pressure	The Effects of Temperature, Moisture, Concentration, Pressure and Mass Transfer on the Adsorption of Krypton and Xenon on Activated Carbon.	NUREG-0678
Pressure	Extended Analysis of Data from the 1/5-Scale MARK I Boiling Water Reactor Pressure Suppression Experiment.	NUREG/CR-0761
Pressure	PRESBC: Pressure Boundary Conditions for the K-FIX Code.	NUREG/CR-1536
Pressure Boundary	Structural Integrity of Water Reactor Pressure Boundary Components. Quarterly Progress Report, January-March 1980.	NUREG/CR-1472
Pressure Rise	Compressible Analysis of Inlet Plenum Pressure Rise due to Sodium Boiling in Fuel Subassemblies during Pump Coast-Down of an LMFBR.	NUREG/CR-1592
Pressure Vessel	LWR Pressure Vessel Irradiation Surveillance Dosimetry Quarterly Progress Report, October-December 1978.	NUREG/CR-0720
Pressure Vessel	Critical Experiments, Measurements, and Analyses to Establish a Crack Arrest Methodology for Nuclear Pressure Vessel Steels.	NUREG/CR-1601
Primary Cooling	Final Environmental Statement Related to Primary Cooling System Chemical Decontamination at Dresden Nuclear Power Station, Unit No. 1. Docket No. 50-010.	NUREG-0686
Probabilistic Evaluation	A Probabilistic Evaluation of Earthquake Detection and Location Capability for Illinois, Indiana, Kentucky, Ohio, and West Virginia.	NUREG/CR-1648

Keyword Listing P	Report Title	Report No.
Probabilistic Model	A Deterministic-Probabilistic Model for Contaminant Transport.	NUREG/CR-1609
Procedure Digest	United States Nuclear Regulatory Commission Staff Practice & Procedure Digest. Supplement 2 to Digest No. 2.	NUREG-0386, Supp. 2
Process Monitoring	The Use of Process Monitoring Data for Nuclear Material Accounting: Volume 1. Summary Report.	NUREG/CR-1670, Vol 1
Process Monitoring	Using Advanced Process Monitoring to Improve Material Control.	NUREG/CR-1676, Vol 1
Processing	Technical Report on Material Selection and Processing Guidelines for BWR Coolant Pressure Boundary Piping.	NUREG-0313, Rev. 1
Processor	Advanced Mobile Multi-Processor Gamma-Ray Acquisition and Analysis System.	NUREG/CR-1668
Programmer's Manual	Fixed Site Neutralization Model Programmer's Model.	NUREG/CR-1308, Vol 2
Project M-25	Final Generic Environmental Impact Statement on Uranium Milling Project M-25: Volume I - Summary and Text.	NUREG-0706, Vol 1
Project M-25	Final Generic Environmental Impact Statement on Uranium Milling Project M-25: Volume II - Appendices A-F.	NUREG-0706, Vol 2
Project M-25	Final Generic Environmental Impact Statement on Uranium Milling Project M-25: Volume III - Appendices G-V.	NUREG-0706, Vol 3
Prompt Burst	Prompt Burst Energetics Experiments: Fresh Uranium Carbide/Sodium Series.	NUREG/CR-1396
Propagation	An Assessment of LWR Fuel-Failure Propagation Potential: Literature Survey.	NUREG/CR-1471
Properties	Properties of Radioactive Wastes and Waste Containers. Quarterly Progress Report, January-March 1980.	NUREG/CR-1514
Protection	Physical Protection of Nuclear Facilities. Quarterly Progress Report, January-March 1980.	NUREG/CR-1448

Keyword Listing P	Report Title	Report No.
Protection Project	Inspection Methods for Physical Protection Project: Quarterly Report, March-May 1980.	NUREG/CR-1610, Vol 1, No. 1
Protection Systems	Design Guidance for Evaluation Methodology for Fixed Site Physical Protection Systems, Volume 1.	NUREG/CR-1193, Vol 1
Protection Systems	Design Guidance and Evaluation Methodology for Fixed Site Physical Protection Systems, Volume 2.	NUREG/CR-1198, Vol 2
Protection Systems	Evaluation Methodology for Fixed-Site Physical Protection Systems.	NUREG/CR-1590
Protection Upgrade	Acceptance Criteria for the Physical Protection Upgrade Rule Requirements for Fixed Sites.	NUREG-0721
Protothaca Staminea	Growth and Histological Effects to Protothaca Staminea (Littleneck Clam) of Long-Term Exposure to Chlorinated Sea Water.	NUREG/CR-1298
Psychological Stress	Psychological Stress for Alternatives of Decontamination of TMI-2 Reactor Building Atmosphere.	NUREG/CR-1584
Public Comments	Summary of Public Comments and NRC Staff Analysis Relating to Rulemaking on Emergency Planning for Nuclear Power Plants.	NUREG-0684
Pump	Compressible Analysis of Inlet Plenum Pressure Rise due to Sodium Boiling in Fuel Subassemblies during Pump Coast-Down of an LMFBR.	NUREG/CR-1592
PWR	Standard Technical Specifications for Westinghouse Pressurized Water Reactors, Revision 3.	NUREG-0452, Rev 3
PWR	Investigation and Evaluation of Cracking Incidents in Piping in Pressurized Water Reactors.	NUREG-0691
PWR	A Risk Assessment of a Pressurized Water Reactor for Class 3-8 Accidents.	NUREG/CR-0603
PWR	Uncertainty Analysis for a PWR Loss-of-Coolant Accident: II. Alternative Core Damage Estimators.	NUREG/CR-1364
PWR	Summary of Thermal Hydraulic Calculations for a Pressurized Water Reactor.	NUREG/CR-1480

Keyword Listing P	Report Title	Report No.
PWR	Assessment of Core Penetration of a PWR Reactor Vessel and Particulate Debris Coolability in TMLB, S2D, and ABG Accidents.	NUREG/CR-1518

Keyword Listing Q	Report Title	Report No.
QTE	Qualification Testing Evaluation Program Light-Water Reactor Safety Research Quarterly Report, July-September 1979.	NUREG/CR-1492
Quad Cities	Measurement of XE-133, C-14 and Tritium in Air and I-131 in Vegetation and Milk Around the Quad Cities Nuclear Power Station.	NUREG/CR-1195
Qualification	Evaluation of Simulator Adequacy for the Radiation Qualification of Safety Related Equipment.	NUREG/CR-1184
Qualification	Qualification Testing Evaluation Program Light-Water Reactor Safety Research Quarterly Report, July-September 1979.	NUREG/CR-1492
Qualification Test	Qualification Test Results on 1550°C and 2200°C 1/16-Inch O.D. Fuel Centerline Thermocouples for the LOFT Program.	NUREG/CR-0961
Quality Assurance	Report on Nuclear Industry Quality Assurance Procedures for Safety Analysis Computer Code Development and Use.	NUREG-0653
Questions	Answers to Frequently Asked Questions about Cleanup Activities at Three Mile Island, Unit 2.	NUREG-0732

Keyword Listing R	Report Title	Report No.
R and D	Licensability of CANDU-Type Reactors in the United States. A Preliminary Assessment of the R and D Requirements.	NUREG/CR-1113
Radiation	Evaluation of Simulator Adequacy for the Radiation Qualification of Safety Related Equipment.	NUREG/CR-1184
Radiation	Validation of a Monte Carlo Code for Radiation Streaming Analyses.	NUREG/CR-1334
Radioactive Material	Dynamic Analysis to Establish Normal Shock and Vibration of Radioactive Material Shipping Packages - Quarterly Progress Report October 1-December 31, 1979.	NUREG/CR-1484
Radioactive Material	Transportation of Radioactive Material in Kentucky.	NUREG/CR-1671
Radioactive Materials	Review and Integration of Existing Literature Concerning Potential Social Impacts of Transportation of Radioactive Materials in Urban Areas.	NUREG/CR-0742
Radioactive Materials	Identification and Assessment of the Social Impacts of Transportation of Radioactive Materials in Urban Environments.	NUREG/CR-0744
Radioactive Waste	Risk Methodology for Geologic Disposal of Radioactive Waste: A Distribution-Free Approach to Inducing Rank Correlation Among Input Variables for Simulation Studies.	NUREG/CR-1262
Radioactive Waste	Evaluation of Isotope Migration-Land Burial Water Chemistry at Commercially Operated Low Level Radioactive Waste Disposal Sites.	NUREG/CR-1289
Radioactive Waste	Risk Methodology for Geologic Disposal of Radioactive Waste: Transport Model Sensitivity Analysis.	NUREG/CR-1377
Radioactive Waste	Evaluation of Isotope Migration-Land Burial Water Chemistry at Commercially Operated Low-Level Radioactive Waste Disposal Sites. Quarterly Progress Report, January-March 1980.	NUREG/CR-1513
Radioactive Waste	Scenario Development and Evaluation Related to the Risk Assessment of High Level Radioactive Waste Repositories.	NUREG/CR-1608
Radioactive Wastes	Properties of Radioactive Wastes and Waste Containers. Quarterly Progress Report, January-March 1980.	NUREG/CR-1514
Radioactivity	Health Status and Body Radioactivity of Former Thorium Workers.	NUREG/CR-1420

Keyword Listing R	Report Title	Report No.
Radioactivity Logs	Estimates of Uranium Content and Radon Flux for Uranium Mine Dumps Based on Borehold Radioactivity Logs.	NUREG/CR-1549
Radiological Emergency	Survey of Current State Radiological Emergency Response Capabilities for Transportation Related Incidents.	NUREG/CR-1620
Radon	Radon Release and Dispersion from an Open Pit Uranium Mine.	NUREG/CR-1583
Radon Diffusion	Measurements of Radon Diffusion from Uranium Mill Tailing Piles.	NUREG/CR-1109
Radon Flux	Estimates of Uranium Content and Radon Flux for Uranium Mine Dumps Based on Borehold Radioactivity Logs.	NUREG/CR-1549
Rail	Shock Environments for Large Shipping Containers During Rail Coupling Operations.	NUREG/CR-1277
Reactor Building	Psychological Stress for Alternatives of Decontamination of TMI-2 Reactor Building Atmosphere.	NUREG/CR-1584
Reactor Data	Report to Congress on the Acquisition of Reactor Data for the NRC Operations Center.	NUREG-0730
Reactor Plants	Wind-Tunnel Measurements of Dispersion and Turbulence in the Wakes of Nuclear Reactor Plants.	NUREG/CR-1475
Reactor Pressure	Structural Integrity of Water Reactor Pressure Boundary Components. Quarterly Progress Report, January-March 1980.	NUREG/CR-1472
Reactor Safety	Nuclear Reactor Safety Quarterly Progress Report, October 1-December 31, 1979.	NUREG/CE-1516
Reactor Safety	Reactor Safety Research Programs. Quarterly Report - July-September 1979.	NUREG/CR-1009
Reactor Safety	Reactor Safety Research Programs. Quarterly Report, October-December 1979.	NUREG/CR-1349
Reactor Safety	Quarterly Technical Progress Report on Water Reactor Safety Programs Sponsored by the Nuclear Regulatory Commission's Division of Reactor Safety Research - April-June 1980.	NUREG/CR-1400

Keyword Listing R	Report Title	Report No.
Reactor Safety	Advanced Reactor Safety Research Division Quarterly Progress Report. October 1-December 31, 1979.	NUREG/CR-1402
Reactor Safety	Water Reactor Safety Research Division Quarterly Progress Report. October-December 1979.	NUREG/CR-1403
Reactor Safety	An Ultrasonic Thermometry System for Measuring Very High Temperatures in Reactor Safety Experiments.	NUREG/CR-1488
Reactor Safety	Qualification Testing Evaluation Program Light-Water Reactor Safety Research Quarterly Report, July-September 1979.	NUREG/CR-1492
Reactor Safety	Advanced Reactor Safety Research Division Quarterly Progress Report, January 1-March 31, 1980.	NUREG/CR-1505
Reactor Safety	Light Water Reactor Safety Research Program Quarterly Report, January-March 1980.	NUREG/CR-1509
Reactor Safety	High-Temperature Gas-Cooled Reactor Safety Studies for the Division of Reactor Safety Research Quarterly Progress Report, January 1-March 31, 1980.	NUREG/CR-1521
Reactor Safety	Physics of Reactor Safety. Quarterly Report for January-March 1980.	NUREG/CR-1526, Vol 1
Reactor Sites	COPS Model Estimates of LLEA Availability Near Selected Reactor Sites.	NUREG/CR-1166
Reactor Vessel	Assessment of Core Penetration of a PWR Reactor Vessel and Particulate Debris Coolability in TMLB, S2D, and ABG Accidents.	NUREG/CR-1518
Reactors	Licensability of CANDU-Type Reactors in the United States. A Preliminary Assessment of the R and D Requirements.	NUREG/CR-1113
Recommendations	Performance Testing of Personnel Dosimetry Services: Alternatives and Recommendations for a Personnel Dosimetry Testing Program.	NUREG/CR-1593
Recovery Products	Preparation of Working Reference Materials: Calcined Waste Recovery Products Containing Uranium or Plutonium.	NUREG/CR-1445
Reelfoot Scarp	Monoclinal Structure and Shallow Faulting of the Reelfoot Scarp as Estimated from Drill Holes with Variable Spacings.	NUREG/CR-1501

Keyword Listing R	Report Title	Report No.
Reevaluation	Plan for Reevaluation of NRC Policy on Decommissioning of Nuclear Facilities. December 1978 to July 1980.	NUREG-0436, Rev 1, Supp 1
Reference Materials	Preparation of Working Reference Materials: Calcined Waste Recovery Products Containing Uranium or Plutonium.	NUREG/CR-1445
Regional	Regional Relationships Among Earthquake Magnitude Scales.	NUREG/CR-1457
Regulatory Reports	Regulatory and Technical Reports Compilation for 1979.	NUREG-0304, Vol. 4
Reinforced Concrete	Strength and Stiffness of Tensioned Reinforced Concrete Panels Subjected to Membrane Shear, Two-Way Reinforcing.	NUREG/CR-1602
Relation	Considerations on Nuclear Data Link Implementation in Relation to the Technical Support Center, Emergency Operations Center and Safety Parameter Display System.	NUREG/CR-1579
Relationships	Regional Relationships Among Earthquake Magnitude Scales.	NUREG/CR-1457
Relationships	Seismicity and Tectonic Relationships for Upper Great Lakes Precambrian Shield Province.	NUREG/CR-1569
Release	Radon Release and Dispersion from an Open Pit Uranium Mine.	NUREG/CR-1583
Reliability	Nuclear Plant Reliability Data System 1979 Annual Reports of Cumulative System and Component Reliability.	NUREG/CR-1635
Repair	Final Environmental Statement Related to Steam Generator Repair at Surry Power Station, Unit No. 1. Virginia Electric and Power Cmpany, Docket No. 50-280.	NURG-0692
Repositories	Scenario Development and Evaluation Related to the Risk Assessment of High Level Radioactive Waste Repositories.	NUREG/CR-1608
Requalification	Nuclear Power Plant Simulators: Their Use in Operator Training and Requalification.	NUREG/CR-1482
Required	Material Accounting as Required by the United States Nuclear Regulatory Commission: Capabilities and Vulnerabilities.	NUREG/CR-1192

Keyword Listing R	Report Title	Report No.
Requirements	Review and Assessment of Package Requirements (Yellowcake) and Emergency Response to Transportation Accidents.	NUREG-0535
Requirements	Environmental Assessment for Effective Changes to 10 CFR Part 50 and Appendix E to 10 CFR Part 50; Emergency Planning Requirements for Nuclear Power Plants.	NUREG-0685
Requirements	Acceptance Criteria for the Physical Protection Upgrade Rule Requirements for Fixed Sites.	NUREG-0721
Requirements	Licensability of CANDU-Type Reactors in the United States. A Preliminary Assessment of the R and D Requirements.	NUREG/CR-1113
Research Program	Seismic Safety Margins Research Program (Phase I). Progress Report No. 7.	NUREG/CR-1120, Vol 3
Research Programs	Comments on the NRC Safety Research Program Budget for Fiscal Year 1982.	NUREG-0699
Research Programs	Reactor Safety Research Programs. Quarterly Report - July-September 1979.	NUREG/CR-1009
Research Programs	Reactor Safety Research Programs. Quarterly Report, October-December 1979.	NUREG/CR-1349
Resolution	Control of Heavy Loads at Nuclear Power Plants Resolution of Generic Technical Activity A-36.	NUREG-0612
Resolution	MARK I Containment Long Term Program Safety Evaluation Report, Resolution of Generic Technical Activity A-7. February 1977 to December 1979.	NUREG-0661
Resources	Utility Management and Technical Resources.	NUREG/CR-1656
Respirator Studies	Respirator Studies for the Nuclear Regulatory Commission, Evaluation and Performance of Escape-Type Self-Contained Breathing Apparatus, October 1, 1978-September 30, 1979.	NUREG/CR-1586
Response	Functional Criteria for Emergency Response Facilities.	NUREG-0696
Response	CONAN: An LMFBR Containment Response Computer Code.	NUREG/CR-1355

Keyword Listing R	Report Title	Report No.
Response	Piping Benchmark Problems. Dynamic Analysis Uniform Support Motion Response Spectrum Method.	NUREG/CR-1677, Vol 1
Response Plan	Report to Congress: NRC Incident Response Plan.	NUREG-0728
Result	NRC Action Plan Developed as a Result of the TMI-2 Accident, Revision 1, Vol 1.	NUREG-0660, Vol 1
Result	NRC Action Plan Development as a Result of the TMI-2 Accident, Revision 1, Vol. 2.	NUREG-0660, Vol 2
Rev ew	Review and Assessment of Package Requirements (Yellowcake) and Emergency Response to Transportation Accidents.	NUREG-0535
Review	Review and Integration of Existing Literature Concerning Potential Social Impacts of Transportation of Radioactive Materials in Urban Areas.	NUREG/CR-0742
Richland, WA	The Effects of Natural Phenomena on the Exxon Nuclear Company Mixed Oxide Fabrication Plant at Richland, Washington.	NUREG-0722
Risk Assessment	A Risk Assessment of a Pressurized Water Reactor for Class 3-8 Accidents.	NUREG/CR-0603
Risk Assessment	Scenario Development and Evaluation Related to the Risk Assessment of High Level Radioactive Waste Repositories.	NUREG/CR-1608
Risk Methodology	Risk Methodology for Geologic Disposal of Radioactive Waste: A Distribution-Free Approach to Inducing Rank Correlation Among Input Variables for Simulation Studies.	NUREG/CR-1262
Risk Methodology	Risk Methodology for Geologic Disposal of Radioactive Waste: Transport Model Sensitivity Analysis.	NUREG/CR-1377
Risks	A Methodology and a Preliminary Data Base for Examining the Health Risks of Electricity Generation from Uranium and Coal Fuels.	NUREG/CR-1539
Rock Accelerograph	Verification of Subsurface Conditions at Selected "Rock" Accelerograph Stations in California.	NUREG/CR-0055, V. 2 App
Rock Accelerograph	Verification of Subsurface Conditions at Selected "Rock" Accelerograph Stations in California.	NUREG/CR-0055, Vol 2

Keyword Listing R	Report Title	Report No.
Rock Accelerograph	Verification of Subsurface Conditions at Selected "Rock" Accelerograph Stations in California.	NUREG/CR-0055, Vol 3
Rod	LWR Fuel Rod Post-Subcooled Blowdown Scoping Analysis.	NUREG/CR-1568
Rod Test	PBF/LOFT Lead Rod Test Series Test Results Report.	NUREG/CR-1538
Rods	Criticality Experiments with Subcritical Clusters of 2.35 Wt% and 4.31 Wt% U-235 Enriched UO_2 Rods in Water at a Water-to-Fuel Volume Ratio of 1.6.	NUREG/CR-1547
Rulemaking	Summary of Public Comments and NRC Staff Analysis Relating to Rulemaking on Emergency Planning for Nuclear Power Plants.	NUREG-0684

Keyword Listing	Report Title	Report No.
Safeguards	Safeguards Summary Event List (SSEL).	NUREG-0525, Rev 2
Safeguards	Technical Safeguards Issues for Alternative Fuel Cycles.	NUREG/CR-1048
Safeguards	Safeguards Material Control and Accounting Program: Quarterly Report, October-December 1979.	NUREG/CR-1485, Vol 1, No. 1
Safeguards	Safeguards User's Manual for Nuclear Materials Management and Safeguards System.	NUREG/CR-1528
Safeguards System	Enhancement of the Nuclear Materials Management and Safeguards System.	NUREG/CR-1527
Safeguards System	Safeguards User's Manual for Nuclear Materials Management and Safeguards System.	NUREG/CR-1528
Safety Analysis	Report on Nuclear Industry Quality Assurance Procedures for Safety Analysis Computer Code Development and Use.	NUREG-0653
Safety Analysis	SCALE: A Modular Code System for Performing Standardized Computer Analyses for Licensing Evaluation. SCALE System Criticality Safety Analysis Modules CSAS1 and CSAS2.	NUREG/CR-0200
Safety Evaluation	Safety Evaluation Report Related to Operation of Sequoyah Nuclear Plant, Units 1 and 2, Docket Nos. 50-327 and 50-328. Tennessee Valley Authority, Supp. No. 2.	NUREG-0011, Supp. 2
Safety Evaluation	Safety Evaluation Report Related to Operation of Sequoyah Nuclear Plant, Units 1 and 2, Docket Nos. 50-327/328. Tennessee Valley Authority, Supp. 3.	NUREG-0011, Supp. 3
Safety Evaluation	Safety Evaluation Report Related to the Operation of North Anna Power Station, Unit 2, Virginia Electric and Power Company, Docket No. 50-339. Supplement No. 11.	NUREG-0053, Supp. 11
Safety Evaluation	Safety Evaluation Report Related to the Operation of North Anna Power Station, Unit 2, Docket No. 50-339. Supplement No. 12.	NUREG-0053, Supp. 12
Safety Evaluation	Safety Evaluation Report Related to the Operation of Joseph M. Farley Nuclear Plant, Unit 2. Docket No. 50-364, Alabama Power Company. Supplement 4 to NUREG-75/034.	NUREG-0117, Supp. 4
Safety Evaluation	MARK I Containment Long Term Program Safety Evaluation Report, Resolution of Generic Technical Activity A-7. February 1977 to December 1979.	NUREG-0661

Keyword Listing S	Report Title	Report No.
Safety Evaluation	Safety Evaluation Report Related to Operation of Diablo Canyon Nuclear Power Station, Units 1 and 2, Pacific Gas and Electric Company, Docket Nos. 50-275 and 50-323, Supplement No. 10.	NUREG-0675, Supp 10
Safety Experiments	An Ultrasonic Thermometry System for Measuring Very High Temperatures in Reactor Safety Experiments.	NUREG/CR-1488
Safety Margins	Seismic Safety Margins Research Program (Phase I). Progress Report No. 7.	NUREG/CR-1120, Vol 3
Safety Parameter	Considerations on Nuclear Data Link Implementation in Relation to the Technical Support Center, Emergency Operations Center and Safety Parameter Display System.	NUREG/CR-1579
Safety Programs	Quarterly Technical Progress Report on Water Reactor Safety Programs Sponsored by the Nuclear Regulatory Commission's Division of Reactor Safety Research - April-June 1980.	NUREG/CR-1400
Safety Related	Evaluation of Simulator Adequacy for the Radiation Qualification of Safety Related Equipment.	NUREG/CR-1184
Safety Report	Physics of Reactor Safety. Quarterly Report for January-March 1980.	NUREG/CR-1526, Vol 1
Safety Research	Comments on the NRC Safety Research Program Budget for Fiscal Year 1982.	NUREG-0699
Safety Research	Reactor Safety Research Programs. Quarterly Report - July-September 1979.	NUREG/CR-1009
Safety Research	Reactor Safety Research Programs. Quarterly Report, October-December 1979.	NUREG/CR-1349
Safety Research	Advanced Reactor Safety Research Division Quarterly Progress Report. October 1-December 31, 1979.	NUREG/CR-1402
Safety Research	Water Reactor Safety Research Division Quarterly Progress Report. October-December 1979.	NUREG/CR-1403
Safety Research	Qualification Testing Evaluation Program Light-Water Reactor Safety Research Quarterly Report, July-September 1979.	NUREG/CR-1492
Safety Research	Advanced Reactor Safety Research Division Quarterly Progress Report, January 1-March 31, 1980.	NUREG/CR-1505

Keyword Listing S	Report Title	Report No.
Safety Research	Light Water Reactor Safety Research Program Quarterly Report, January-March 1980.	NUREG/CR-1509
Safety Research	Nuclear Reactor Safety Quarterly Progress Report, October 1-December 31, 1979.	NUREG/CR-1516
Safety Research	High-Temperature Gas-Cooled Reactor Safety Studies for the Division of Reactor Safety Research Quarterly Progress Report, January 1-March 31, 1980.	NUREG/CR-1521
Salt Drift	Evaluation of Mathematical Models for Characterizing Plume Behavior from Cooling Towers: Vol.2--Salt Drift Deposition from Natural Draft Cooling Towers.	NUREG/CR-1581, Vol 2
SCALE	SCALE: A Modular Core System for Performing Standardized Computer Analyses for Licensing Evaluation. SCALE System Criticality Safety Analysis Modules CSAS1 and CSAS2.	NUREG/CR-0200
Scarp	Monoclinal Structure and Shallow Faulting of the Reelfoot Scarp as Estimated from Drill Holes with Variable Spacings.	NUREG/CR-1501
Scoping Analysis	LWR Fuel Rod Post-Subcooled Blowdown Scoping Analysis.	NUREG/CR-1568
Sea Water	Growth and Histological Effects to Protothaca Staminea (Littleneck Clam) of Long-Term Exposure to Chlorinated Sea Water.	NUREG/CR-1298
Seasonal Variation	Seasonal Variation of 10-Square Mile Probable Maximum Precipitation Estimates, United States East of the 105th Meridian (Hydrometeorological Report No. 53).	NUREG/CR-1486
Security	Security Communication Systems for Nuclear Fixed-Site Facilities.	NUREG/CR-0508
Seismic	Seismic Safety Margins Research Program (Phase I). Progress Report No. 7.	NUREG/CR-1120, Vol 3
Seismic	Seismic Hazard Analysis. A Methodology for the Eastern United States.	NUREG/CR-1582, Vol 2
Seismic	Seismic Hazard Analysis. Solicitation of Expert Opinion.	NUREG/CR-1582, Vol 3
Seismic	Canadian Seismic Agreement.	NUREG/CR-1637

Keyword Listing S	Report Title	Report No.
Seismic Analysis	Best Estimate Method vs Evaluation Method: A Comparison of Two Techniques in Evaluating Seismic Analysis and Design.	NUREG/CR-1489
Seismic Design	Best Estimate Method vs Evaluation Method: A Comparison of Two Techniques in Evaluating Seismic Analysis and Design.	NUREG/CR-1489
Seismicity	Seismicity and Tectonic Relationships for Upper Great Lakes Precambrian Shield Province.	NUREG/CR-1569
Self-Contained	Respirator Studies for the Nuclear Regulatory Commission, Evaluation and Performance of Escape-Type Self-Contained Breathing Apparatus, October 1, 1978-September 30, 1979.	NUREG/CR-1586
Self-Contained	Respirator Studies for the Nuclear Regulatory Commission, Evaluation and Performance of Escape-Type Self-Contained Breathing Apparatus, October 1, 1978-September 30, 1979.	NUREG/CR-1586
Sensitivity	Thermocouple Signal Sensitivity to the Sheath Thickness of Thermal-Hydraulic Test Facility Indirectly Heated Electric Fuel Pin Simulators.	NUREG/CR-1347
Sensitivity Analysis	Risk Methodology for Geologic Disposal of Radioactive Waste: Transport Model Sensitivity Analysis.	NUREG/CR-1377
Sequoyah	Safety Evaluation Report Related to Operation of Sequoyah Nuclear Plant, Units 1 and 2, Docket Nos. 50-327 and 50-328. Tennessee Valley Authority, Supp. No. 2.	NUREG-0011, Supp. 2
Sequoyah	Safety Evaluation Report Related to Operation of Sequoyah Nuclear Plant, Units 1 and 2, Docket Nos. 50-327/328. Tennessee Valley Authority, Supp. 3.	NUREG-0011, Supp. 3
Sequoyah	Technical Specifications, Sequoyah Nuclear Plant, Unit No. 1, Docket No. 50-327, Appendix "A" to License No. DPR-77.	NUREG-0658, Rev 1
SETS	Vital Area Analysis Using SETS.	NUREG/CR-1487
Shallow	Vegetational Cover in Monitoring and Stabilization of Shallow Land Burial Sites.	NUREG/CR-1358
Shallow Faulting	Monoclinal Structure and Shallow Faulting of the Reelfoot Scarp as Estimated from Drill Holes with Variable Spacings.	NUREG/CR-1501
Sheath Thickness	Thermocouple Signal Sensitivity to the Sheath Thickness of Thermal-Hydraulic Test Facility Indirectly Heated Electric Fuel Pin Simulators.	NUREG/CR-1347

Keyword Listing S	Report Title	Report No.
Sheffield	Characterization of Existing Surface Conditions at Sheffield Low-Level Waste Disposal Facility.	NUREG/CR-1683
Shield Province	Seismicity and Tectonic Relationships for Upper Great Lakes Precambrian Shield Province.	NUREG/CR-1569
Shipping Container	Study of Plutonium Oxide Powder Emissions from Simulated Shipping Container Leaks.	NUREG/CR-1302
Shipping Containers	Shock Environments for Large Shipping Containers During Rail Coupling Operations.	NUREG/CR-1277
Shipping Packages	Dynamic Analysis to Establish Normal Shock and Vibration of Radioactive Material Shipping Packages - Quarterly Progress Report October 1-December 31, 1979.	NUREG/CR-1484
Shock	Shock Environments for Large Shipping Containers During Rail Coupling Operations.	NUREG/CR-1277
Shock	Dynamic Analysis to Establish Normal Shock and Vibration of Radioactive Material Shipping Packages - Quarterly Progress Report, October 1-December 31, 1979.	NUREG/CR-1484
Signal	Thermocouple Signal Sensitivity to the Sheath Thickness of Thermal-Hydraulic Test Facility Indirectly Heated Electric Fuel Pin Simulators.	NUREG/CR-1347
SIMMER-II	SIMMER-II: A Computer Program for LMFBR Disrupted Core Analysis.	NUREG/CR-0453, Rev 1
Simulating Age	Predicting Life Expectancy and Simulating Age of Complex Equipment Using Accelerated Aging Techniques.	NUREG/CR-1466
Simulation Studies	Risk Methodology for Geologic Disposal of Radioactive Waste: A Distribution-Free Approach to Inducing Rank Correlation Among Input Variables for Simulation Studies.	NUREG/CR-1262
Simulator	Evaluation of Simulator Adequacy for the Radiation Qualification of Safety Related Equipment.	NUREG/CR-1184
Simulators	Nuclear Power Plant Simulators: Their Use in Operator Training and Requalification.	NUREG/CR-1482
Single Source	Evaluation of Mathematical Models for Characterizing Plume Behavior from Cooling Towers: Vol. 1--Dispersion from Single and Multiple Source Natural Draft Cooling Towers.	NUREG/CR-1581, Vol 1

Keyword Listing S	Report Title	Report No.
Site	Design Guidance and Evaluation Methodology for Fixed Site Physical Protection Systems, Volume 1.	NUREG/CR-1198, Vol 1
Site	Fixed Site Neutralization Model Programmer's Model.	NUREG/CR-1308, Vol 2
Site-Dependent	Site-Dependent Effects at Strong-Motion Accelerograph Stations.	NUREG/CR-1639
Sites	Acceptance Criteria for the Physical Protection Upgrade Rule Requirements for Fixed Sites.	NUREG-0721
Sites	COPS Model Estimates of LLEA Availability Near Selected Reactor Sites.	NUREG/CR-1166
Sites	Design Guidance and Evaluation Methodology for Fixed Site Physical Protection Systems, Volume 2.	NUREG/CR-1198, Vol 2
Sites	Vegetational Cover in Monitoring and Stabilization of Shallow Land Burial Sites.	NUREG/CR-1358
Sites	Evaluation of Isotope Migration-Land Burial Water Chemistry at Commercially Operated Low-Level Radioactive Waste Disposal Sites. Quarterly Progress Report, January-March 1980.	NUREG/CR-1513
Skyshine	Calculations of the Skyshine Gamma-Ray Dose Rates from Independent Spent Fuel Storage Installations (ISFSI) Under Worst Case Accident Conditions.	NUREG/CR-0723
Social Impacts	Review and Integration of Existing Literature Concerning Potential Social Impacts of Transportation of Radioactive Materials in Urban Areas.	NUREG/CR-0742
Social Impacts	Identification and Assessment of the Social Impacts of Transportation of Radioactive Materials in Urban Environments.	NUREG/CR-0744
Sodium Boiling	Compressible Analysis of Inlet Plenum Pressure Rise due to Sodium Boiling in Fuel Subassemblies during Pump Coast-Down of an LMFBR.	NUREG/CR-1592
Sodium Series	Prompt Burst Energetics Experiments: Fresh Uranium Carbide/Sodium Series.	NUREG/CR-1396
Sodium Spray	The NACOM Code for Analysif of Postulated Sodium Spray Fires in LMFBRs.	NUREG/CR-1405

Keyword Listing S	Report Title	Report No.
Soil	Evaluation of In-Situ Soil Damping Characteristics.	NUREG/CR-1638
Solicitation	Seismic Hazard Analysis. Solicitation of Expert Opinion.	NUREG/CR-1582, Vol 3
Solubility	Solubility Classification of Airborne Uranium Products from LWR-Fuel Plants.	NUREG/CR-1428
Source Term	In-Plant Source Term Measurements at Turkey Point Station - Units 3 and 4.	NUREG/CR-1629
Spacings	Monoclinal Structure and Shallow Faulting of the Reelfoot Scarp ar Estimated from Drill Holes with Variable Spacings.	NUREG/CR-1501
Species	Acute Toxicity and Bioaccumulation of Chloroform to Four Species of Freshwater Fish.	NUREG/CR-0893
Specifications	Standard Technical Specifications for Westinghouse Pressurized Water Reactors, Revision 3.	NUREG-0452, Rev 3
Specifications	Technical Specifications, Sequoyah Nuclear Plant, Unit No. 1, Docket No. 50-327, Appendix "A" to License No. DPR-77.	NUREG-0658, Rev 1
Specifications	North Anna Power Station Unit 2 Technical Specifications Appendix "A" to License No. NPF-7.	NUREG-0664, Rev 1
Spectrum Method	Piping Benchmark Problems. Dynamic Analysis Uniform Support Motion Response Spectrum Method.	NUREG/CR-1677, Vol 1
Spent Fuel	Calculations of the Skyshine Gamma-Ray Dose Rates from Independent Spent Fuel Storage Installations (ISFSI) Under Worst Case Accident Conditions.	NUREG/CR-0723
Spool Pieces	Two-Phase Flow Measurements with Advanced Instrumented Spool Pieces.	NUREG/CR-1529
SSEL	Safeguards Summary Event List (SSEL).	NUREG-0525, Rev 2
SSMRP	Seismic Safety Margins Research Program (Phase I). Progress Report No. 7.	NUREG/CR-1120, Vol 3

Keyword Listing S	Report Title	Report No.
Stabilization	Vegetational Cover in Monitoring and Stabilization of Shallow Land Burial Sites.	NUREG/CR-1358
Staff Analysis	Summary of Public Comments and NRC Staff Analysis Relating to Rulemaking on Emergency Planning for Nuclear Power Plants.	NUREG-0684
Staff Practice	United States Nuclear Regulatory Commission Staff Practice & Procedure Digest. Supplement 2 to Digest No. 2.	NUREG-0386, Supp. 2
Standard Specifications	Standard Technical Specifications for Westinghouse Pressurized Water Reactors, Revision 3.	NUREG-0452, Rev 3
Standardized	SCALE: A Modular Code System for Performing Standardized Computer Analyses for Licensing Evaluation. SCALE System Criticality Safety Analysis Modules CSAS1 and CSAS2.	NUREG/CR-0200
State-Level	The ORNL State-Level Electricity Demand Forecasting Model.	NUREG/CR-1295
State-of-the-Art	State-of-the-Art Study Concerning Near-Field Earthquake Ground Motion.	NUREG/CR-1340
Statistical Analysis	Statistical Analysis of Steam Generator Inspection Plans and Eddy Current Testing.	NUREG/CR-1282
Statistical Analysis	Statistical Analysis of Earthquake Ground Motion Parameters.	NUREG/CR-1641
Steam Chugging	Lateral Loads on Vent Pipe in Steam Chugging.	NUREG/CR-1631
Steam Generator	Final Environmental Statement Related to Steam Generator Repair at Surry Power Station, Unit No. 1. Virginia Electric and Power Cmpany, Docket No. 50-280.	NUREG-0692
Steam Generator	Statistical Analysis of Steam Generator Inspection Plans and Eddy Current Testing.	NUREG/CR-1282
Steam Generator	Eddy-Current Inspection for Steam Generator Tubing Program. Annual Progress Report for Period Ending December 31, 1979.	NUREG/CR-1563
Steam Generators	An Evaluation of Condensation-Induced Water Hammer in Preheat Steam Generators.	NUREG/CR-1606

Keyword Listing S	Report Title	Report No.
Steam Line	Steam Line Dynamics.	NUREG/CR-1438
Steam-Water	Steam-Water Mixing and System Hydrodynamics Program - Task 4 - Quarterly Progress Report, April 1-June 30, 1979.	NUREG/CR-1557
Steam-Water	Steam-Water Mixing and System Hydrodynamics Program - Task 4 - Quarterly Progress Report, July 1-September 30, 1979.	NUREG/CR-1625
Steam-Water	Steam-Water Mixing and System Hydrodynamics Program - Task 4. Quarterly Progress Report, October-December 1979.	NUREG/CR-1657
Steel Technology	Heavy-Section Steel Technology Program Quarterly Progress Report for January-March 1980.	NUREG/CR-1477
Steels	Critical Experiments, Measurements, and Analyses to Establish a Crack Arrest Methodology for Nuclear Pressure Vessel Steels.	NUREG/CR-1601
Stiffness	Strength and Stiffness of Tensioned Reinforced Concrete Panels Subjected to Membrane Shear, Two-Way Reinforcing.	NUREG/CR-1602
Storage	Calculations of the Skyshine Gamma-Ray Dose Rates from Independent Spent Fuel Storage Installations (ISFSI) Under Worst Case Accident Conditions.	NUREG/CR-0723
Strategies	Financing Strategies for Nuclear Power Plant Decommissioning.	NUREG/CR-1481
Streaming Analysis	Validation of a Monte Carlo Code for Radiation Streaming Analyses.	NUREG/CR-1334
Strength	Strength and Stiffness of Tensioned Reinforced Concrete Panels Subjected to Membrane Shear, Two-Way Reinforcing.	NUREG/CR-1602
Strong Motion	Geotechnical and Strong Motion Earthquake Data from U.S. Accelerograph Stations.	NUREG/CR-0985, Vol 3
Strong Motion	Geotechnical and Strong Motion Earthquake Data from U.S. Accelerograph Stations.	NUREG/CR-0985, Vol 4
Strong Motion	Geotechnical and Strong Motion Earthquake Data from U.S. Accelerograph Stations.	NUREG/CR-0985, Vol 5

Keyword Listing S	Report Title	Report No.
Strong-Motion	Site-Dependent Effects at Strong-Motion Accelerograph Stations.	NUREG/CR-1639
Structural	Structural Integrity of Water Reactor Pressure Boundary Components. Quarterly Progress Report, January-March 1980.	NUREG/CR-1472
Structures	Variability of Dynamic Characteristics of Nuclear Power Plant Structures.	NUREG/CR-1661
Subassemblies	Compressible Analysis of Inlet Plenum Pressure Rise due to Sodium Boiling in Fue' Subassemblies during Pump Coast-Down of an LMFBR	NUREG/CR-1592
Subcooled	Hydrodynamics of a Vapor [illegible] in Subcooled Liquid.	NUREG/CR-1632
Subcritical Clusters	Criticality Experiments with Subcritical Clusters of 2.35 Wt% and 4.31 Wt% U-235 Enriched UO_2 Rods in Water at a Water-to-Fuel Volume Ratio of 1.6.	NUREG/CR-1547
Subsurface Conditions	Verification of Subsurface Conditions at Selected "Rock" Accelerograph Stations in California.	NUREG/CR-0055, V. 2 App
Subsurface Conditions	Verification of Subsurface Conditions at Selected "Rock" Accelerograph Stations in California.	NUREG/CR-0055, Vol 2
Subsurface Conditions	Verification of Subsurface Conditions at Selected "Rock" Accelerograph Stations in California.	NUREG/CR-0055, Vol 3
Summary Event	Safeguards Summary Event List (SSEL)/	NUREG-0525, Rev 2
Support Columns	Dynamic, Inelastic Buckling Analysis of MARK I Torus Support Columns.	NUREG/CR-1038
Suppression	Extended Analysis of Data from the 1/5-Scale MARK I Boiling Water Reactor Pressure Suppression Experiment.	NUREG/CR-0761
Surface Conditions	Characterization of Existing Surface Conditions at Sheffield Low-Level Waste Disposal Facility.	NUREG/CR-1683
Surry	Final Environmental Statement Related to Steam Generator Repair at Surry Power Station, Unit No. 1. Virginia Electric and Power Company, Docket No. 50-280.	NUREG-0692

Keyword Listing S	Report Title	Report No.
Surveillance	LWR Pressure Vessel Irradiation Surveillance Dosimetry Quarterly Progress Report, October-December 1978.	NUREG/CR-0720
System Components	Development and Verification of Fire Tests for Cable Systems and System Components.	NUREG/CR-1552
S2D Accident	Assessment of Core Penetration of a PWR Reactor Vessel and Particulate Debris Coolability in TMLB, S2D, and ABG Accidents.	NUREG/CR-1518

Keyword Listing T	Report Title	Report No.
Tailing Piles	Measurement of Radon Diffusion from Uranium Mill Tailing Piles.	NUREG/CR-1109
Task Force	Task Force Report on Interim Operation of Indian Point.	NUREG-0715
Task 4	Steam-Water Mixing and System Hydrodynamics Program - Task 4. Quarterly Progress Report, October-December 1979.	NUREG/CR-1657
Technical Activities	MARK II Containment Lead Plant Program Load Evaluation and Acceptance Criteria - Generic Technical Activities A8 and A39.	NUREG-0487, Supp 1
Technical Activity	Control of Heavy Loads at Nuclear Power Plants Resolution of Generic Technical Activity A-36.	NUREG-0612
Technical Activity	MARK I Containment Long Term Program Safety Evaluation Report, Resolution of Generic Technical Activity A-7. February 1977 to December 1979.	NUREG-0661
Technical Issues	Technical Safeguards Issues for Altern ve Fuel Cycles.	NUREG/CR-1048
Technical Progress	Quarterly Technical Progress Report on Water Reactor Safety Programs Sponsored by the Nuclear Regulatory Commission's Division of Reactor Safety Research - April-June 1980.	NUREG/CR-1400
Technical Reports	Regulatory and Technical Reports Compilation for 1979.	NUREG-0304, Vol. 4
Technical Resources	Utility Management and Technical Resources.	NUREG/CR-1656
Technical Specifications	Technical Specifications, Sequoyah Nuclear Plant, Unit No. 1, Docket No. 50-327, Appendix "A" to License No. DPR-77.	NUREG-0658, Rev 1
Technical Specifications	North Anna Power Station Unit 2 Technical Specifications Appendix "A" to License No. NPF-7.	NUREG-0664, Rev 1
Technical Specifications	Standard Technical Specifications for Westinghouse Pressurized Water Reactors, Revision 3.	NUREG-0452, Rev 3
Technical Support	Considerations on Nuclear Data Link Implementation in Relation to the Technical Support Center, Emergency Operations Center and Safety Parameter Display System.	NUREG/CR-1579

Keyword Listing T	Report Title	Report No.
Techniques	Best Estimate Method vs Evaluation Method: A Comparison of Two Techniques in Evaluating Seismic Analysis and Design.	NUREG/CR-1489
Tectonic	Seismicity and Tectonic Relationships for Upper Great Lakes Precambrian Shield Province.	NUREG/CR-1569
Temperature	The Effects of Temperature, Moisture, Concentration, Pressure and Mass Transfer on the Adsorption of Krypton and Xenon on Activated Carbon.	NUREG-0678
Temperatures	An Ultrasonic Thermometry System for Measuring Very High Temperatures in Reactor Safety Experiments.	NUREG/CR-1488
Tensioned	Strength and Stiffness of Tensioned Reinforced Concrete Panels Subjected to Membrane Shear, Two-Way Reinforcing.	NUREG/CR-1602
Test Facility	Thermocouple Signal Sensitivity to the Sheath Thickness of Thermal-Hydraulic Test Facility Indirectly Heated Electric Fuel Pin Simulators.	NUREG/CR-1347
Test Results	Qualification Test Results on 1550°C and 2200°C 1/16-Inch O.D. Fuel Centerline Thermocouples for the LOFT Program.	NUREG/CR-0961
Test Results	PBF/LOFT Lead Rod Test Series Test Results Report.	NUREG/CR-1538
Test Series	Gap Conductance Test Series Fuel Characterization Data Report.	NUREG/CR-1537
Testing	Statistical Analysis of Steam Generator Inspection Plans and Eddy Current Testing.	NUREG/CR-1282
Testing	Qualification Testing Evaluation Program Light-Water Reactor Safety Research Quarterly Report, July-September 1979.	NUREG/CR-1492
Testing	Performance Testing of Personnel Dosimetry Services: Alternatives and Recommendations for a Personnel Dosimetry Testing Program.	NUREG/CR-1593
Thermal	Summary of Thermal Hydraulic Calculations for a Pressurized Water Reactor.	NUREG/CR-1480
Thermal-Hydraulic	Thermocouple Signal Sensitivity to the Sheath Thickness of Thermal-Hydraulic Test Facility Indirectly Heated Electric Fuel Pin Simulators.	NUREG/CR-1347

Keyword Listing T	Report Title	Report No.
Thermocouple	Thermocouple Signal Sensitivity to the Sheath Thickness of Thermal-Hydraulic Test Facility Indirectly Heated Electric Fuel Pin Simulators.	NUREG/CR-1347
Thermocouples	Qualification Test Results on 1550°C and 2200°C 1/16-Inch O.D. Fuel Centerline Thermocouples for the LOFT Program.	NUREG/CR-0961
Thermometry System	An Ultrasonic Thermometry System for Measuring Very High Temperatures in Reactor Safety Experiments.	NUREG/CR-1488
Thorium	Health Status and Body Radioactivity of Former Thorium Workers.	NUREG/CR-1420
Threat	Potential Threat to Licensed Nuclear Activities from Insiders (Insider Study).	NUREG-0703
Three Mile Island	NRC Plans for Cleanup Operations at Three Mile Island Unit 2.	NUREG-0698
Three Mile Island	Answers to Frequently Asked Questions about Cleanup Activities at Three Mile Island, Unit 2.	NUREG-0732
TMI-2	NRC Action Plan Developed as a Result of the TMI-2 Accident, Revision 1, Vol 1.	NUREG-0660, Vol 1
TMI-2	NRC Action Plan Development as a Result of the TMI-2 Accident, Revision 1, Vol. 2.	NUREG-0660, Vol 2
TMI-2	NRC Plans for Cleanup Operations at Three Mile Island Unit 2.	NUREG-0698
TMI-2	Answers to Frequently Asked Questions about Cleanup Activities at Three Mile Island, Unit 2.	NUREG-0732
TMI-2	Psychological Stress for Alternatives of Decontamination of TMI-2 Reactor Building Atmosphere.	NUREG/CR-1584
TMLB Accident	Assessment of Core Penetration of a PWR Reactor Vessel and Particulate Debris Coolability in TMLB, S2D, and ABG Accidents.	NUREG/CR-1518
Topography	Flow Topography Instrumentation and Analysis System.	NUREG/CR-1333

Keyword Listing T	Report Title	Report No.
Tornado	Modeling Tornado Dynamics.	NUREG/CR-1585
Torus	Dynamic, Inelastic Buckling Analysis of MARK I Torus Support Columns.	NUREG/CR-1038
Toxicity	Acute Toxicity and Bioaccumulation of Chloroform to Four Species of Freshwater Fish.	NUREG/CR-0893
Tracer Experiments	Diffusion Near Buildings as Determined from Atmospheric Tracer Experiments.	NUREG/CR-1394
Training	Nuclear Power Plant Simulators: Their Use in Operator Training and Requalification.	NUREG/CR-1482
Transient	Experiment Data Report for LOFT Anticipated Transient Experiment L6-5.	NUREG/CR-1520
Transient Analysis	Transient Analysis of Coolant Flow and Heat Transfer in LMFBR Piping Systems.	NUREG/CR-1404
Transport	A Deterministic-Probabilistic Model for Contaminant Transport.	NUREG/CR-1609
Transport Model	Risk Methodology for Geologic Disposal of Radioactive Waste: Transport Model Sensitivity Analysis.	NUREG/CR-1377
Transportation	Review and Assessment of Package Requirements (Yellowcake) and Emergency Response to Transportation Accidents.	NUREG-0535
Transportation	Review and Integration of Existing Literature Concerning Potential Social Impacts of Transportation of Radioactive Materials in Urban Areas.	NUREG/CR-0742
Transportation	Identification and Assessment of the Social Impacts of Transportation of Radioactive Materials in Urban Environments.	NUREG/CR-0744
Transportation	Survey of Current State Radiological Emergency Response Capabilities for Transportation Related Incidents.	NUREG/CR-1620
Transportation	Transportation of Radioactive Material in Kentucky.	NUREG/CR-1671

Keyword Listing T	Report Title	Report No.
Tritium	Measurement of XE-133, C-14 and Tritium in Air and I-131 in Vegetation and Milk Around the Quad Cities Nuclear Power Station.	NUREG/CR-1195
Tubing Program	Eddy-Current Inspection for Steam Generator Tubing Program. Annual Progress Report for Period Ending December 31, 1979.	NUREG/CR-1563
Turbulence	Wind-Tunnel Measurements of Dispersion and Turbulence in the Wakes of Nuclear Reactor Plants.	NUREG/CR-1475
Turbulent	On the Motions of Particles in Turbulent Flows.	NUREG/CR-1554
Turkey Point	In-Plant Source Term Measurements at Turkey Point Station - Units 3 and 4.	NUREG/CR-1629
TVA	Safety Evaluation Report Related to Operation of Sequoyah Nuclear Plant, Units 1 and 2, Docket Nos. 50-327 and 50-328. Tennessee Valley Authority, Supp. No. 2.	NUREG-0011, Supp. 2
TVA	Safety Evaluation Report Related to Operation of Sequoyah Nuclear Plant, Units 1 and 2, Docket Nos. 50-327/328. Tennessee Valley Authority, Supp. 3.	NUREG-0011, Supp. 3
Two-Phase	Two-Phase Flow Measurements with Advanced Instrumented Spool Pieces.	NUREG/CR-1529
Two-Phase	Film Entrainment and Drop Deposition for Two-Phase Flow.	NUREG/CR-1634
Two-Way Reinforcing	Strength and Stiffness of Tensioned Reinforced Concrete Panels Subjected to Membrane Shear, Two-Way Reinforcing.	NUREG/CR-1602

Keyword Listing U	Report Title	Report No.
U.S.	Geotechnical and Strong Motion Earthquake Data from U.S. Accelerograph Stations.	NUREG/CR-0985, Vol 3
U.S.	Geotechnical and Strong Motion Earthquake Data from U.S. Accelerograph Stations.	NUREG/CR-0985, Vol 4
U.S.	Geotechnical and Strong Motion Earthquake Data from U.S. Accelerograph Stations.	NUREG/CR-0985, Vol 5
U.S.	Data Summaries of Licensee Event Reports of Primary Containment Penetrations at U.S. Commercial Nuclear Power Plants from January 1, 1972 to December 31, 1978.	NUREG/CR-1730
Ultrasonic	An Ultrasonic Thermometry System for Measuring Very High Temperatures in Reactor Safety Experiments.	NUREG/CR-1488
Uncertainty Analysis	Uncertainty Analysis for a PWR Loss-of-Coolant Accident: II. Alternative Core Damage Estimators.	NUREG/CR-1364
Uniform	Piping Benchmark Problems. Dynamic Analysis Uniform Support Motion Response Spectrum Method.	NUREG/CR-1677, Vol 1
Union Carbide Co.	Final Environmental Statement Related to the Operation of Gas Hills Uranium Project, Docket No. 40-299, Union Carbide Corporation.	NUREG-0702
United States	United States Nuclear Regulatory Commission Staff Practice & Procedure Digest. Supplement 2 to Digest No. 2.	NUREG-0386, Supp. 2
United States	Licensability of CANDU-Type Reactors in the United States. A Preliminary Assessment of the R and D Requirements.	NUREG/CR-1113
United States	Material Accounting as Required by the United States Nuclear Regulatory Commission: Capabilities and Vulnerabilities.	NUREG/CR-1192
United States	Seasonal Variation of 10-Square Mile Probable Maximum Precipitation Estimates, United States East of the 105th Meridian (Hydrometeorological Report No. 53).	NUREG/CR-1486
Upgrade	Acceptance Criteria for the Physical Protection Upgrade Rule Requirements for Fixed Sites.	NUREG-0721
Uranium	Preparation of Working Reference Materials: Calcined Waste Recovery Products Containing Uranium or Plutonium.	NUREG/CR-1445

Keyword Listing U	Report Title	Report No.
Uranium	A Methodology and a Preliminary Data Base for Examining the Health Risks of Electricity Generation from Uranium and Coal Fuels.	NUREG/CR-1539
Uranium Carbide	Prompt Burst Energetics Experiments: Fresh Uranium Carbide/Sodium Series.	NUREG/CR-1396
Uranium Content	Estimates of Uranium Content and Radon Flux for Uranium Mine Dumps Based on Borehold Radioactivity Logs.	NUREG/CR-1549
Uranium Hexafluoride	Acute Effects of Inhalation Exposure to Uranium Hexafluoride and Patterns of Deposition. UF_6/UO_2F_2 Studies in Experimental Animals.	NUREG/CR-1045
Uranium Mill	Measurement of Radon Diffusion from Uranium Mill Tailing Piles.	NUREG/CR-1109
Uranium Milling	Final Generic Environmental Impact Statement on Uranium Milling Project M-25: Volume I - Summary and Text.	NUREG-0706, Vol 1
Uranium Milling	Final Generic Environmental Impact Statement on Uranium Milling Project M-25: Volume II - Appendices A-F.	NUREG-0706, Vol 2
Uranium Milling	Final Generic Environmental Impact Statement on Uranium Milling Project M-25: Volume III - Appendices G-V.	NUREG-0706, Vol 3
Uranium Mine	Estimates of Uranium Content and Radon Flux for Uranium Mine Dumps Based on Borehold Radioactivity Logs.	NUREG/CR-1549
Uranium Mine	Radon Release and Dispersion from an Open Pit Uranium Mine.	NUREG/CR-1583
Uranium Oxide	Critical Experiments with Interstitially-Moderated Arrays of Low-Enriched Uranium Oxide. Topical Report on Reference Critical Experiments.	NUREG/CR-1071
Uranium Products	Solubility Classification of Airborne Uranium Products from LWR-Fuel Plants.	NUREG/CR-1428
Uranium Project	Final Environmental Statement Related to the Operation of Gas Hills Uranium Project, Docket No. 40-299, Union Carbide Corporation.	NUREG-0702
Uranium-235	Criticality Experiments with Subcritical Clusters of 2.35 Wt% and 4.31 Wt% U-235 Enriched UO_2 Rods in Water at a Water-to-Fuel Volume Ratio of 1.6.	NUREG/CR-1547

Keyword Listing U	Report Title	Report No.
Urban Areas	Review and Integration of Existing Literature Concerning Potential Social Impacts of Transportation of Radioactive Materials in Urban Areas.	NUREG/CR-0742
Urban Environments	Identification and Assessment of the Social Impacts of Transportation of Radioactive Materials in Urban Environments.	NUREG/CR-0744
Use	Report on Nuclear Industry Quality Assurance Procedures for Safety Analysis Computer Code Development and Use.	NUREG-0653
Use	Nuclear Power Plant Simulators: Their Use in Operator Training and Requalification.	NUREG/CR-1482
Use	The Use of Process Monitoring Data for Nuclear Material Accounting: Volume 1. Summary Report.	NUREG/CR-1670, Vol 1
User's Guide	A User's Guide to EPIC, a Computer Program to Calculate the Motion of Fuel and Coolant Subsequent to Pin Failure in a LMFBR.	NUREG/CR-1504
User's Manual	User's Manual for USINT: A Program for Calculating Heat and Mass Transfer in Concrete Subjected to High Heat Fluxes.	NUREG/CR-1375
User's Manual	Safeguards User's Manual for Nuclear Materials Management and Safeguards System.	NUREG/CR-1528
USINT	User's Manual for USINT: A Program for Calculating Heat and Mass Transfer in Concrete Subject to High Heat Fluxes.	NUREG/CR-1375
Utility Management	Utility Management and Technical Resources.	NUREG/CR-1656

Keyword Listing V	Report Title	Report No.
Validation	Validation of a Monte Carlo Code for Radiation Streaming Analyses.	NUREG/CR-1334
Vapor Jet	Hydrodynamics of a Vapor Jet in Subcooled Liquid.	NUREG/CR-1632
Variability	Variability of Dynamic Characteristics of Nuclear Power Plant Structures.	NUREG/CR-1661
Variation	Seasonal Variation of 10-Square Mile Probable Maximum Precipitation Estimates, United States East of the 105th Meridian (Hydrometeorological Report No. 53).	NUREG/CR-1486
Vegetation	Measurement of XE-133, C-14 and Tritium in Air and I-131 in Vegetation and Milk Around the Quad Cities Nuclear Power Station.	NUREG/CR-1195
Vegetational Cover	Vegetational Cover in Monitoring and Stabilization of Shallow Land Burial Sites.	NUREG/CR-1358
Vent Pipe	Lateral Loads on Vent Pipe in Steam Chugging.	NUREG/CR-1631
Verification	Verification of Subsurface Conditions at Selected "Rock" Accelerograph Stations in California.	NUREG/CR-0055, V. 2 App
Verification	Verification of Subsurface Conditions at Selected "Rock" Accelerograph Stations in California.	NUREG/CR-0055, Vol 2
Verification	Verification of Subsurface Conditions at Selected "Rock" Accelerograph Stations in California.	NUREG/CR-0055, Vol 3
Verification	Development and Verification of Fire Tests for Cable Systems and System Components.	NUREG/CR-1552
Vibration	Dynamic Analysis to Establish Normal Shock and Vibration of Radioactive Material Shipping Packages - Quarterly Progress Report October 1-December 31, 1979.	NUREG/CR-1484
Virginia Elec. & Power	Final Environmental Statement Related to Steam Generator Repair at Surry Power Station, Unit No. 1. Virginia Electric and Power Cmpany, Docket No. 50-280.	NURG-0692
Virginia Elect. & Power	Final Environmental Statement Related to the Operation of North Anna Power Station, Unit 1 and 2, Docket No. 50-338 and 50-339. Virginia Electric and Power Company.	NUREG-0134, Add. 2

Keyword Listing V	Report Title	Report No.
Virginia Electric & Power	Safety Evaluation Report Related to the Operation of North Anna Power Station, Unit 2, Virginia Electric and Power Company, Docket No. 50-339. Supplement No. 11.	NUREG-0053, Supp. 11
Vital Area	Vital Area Analysis Using SETS.	NUREG/CR-1487
Volume Heated	Heat Removal Characteristics of Volume Heated Boiling Pools with Inclined Boundaries.	NUREG/CR-1357
Vulnerabilities	Material Accounting as Required by the United States Nuclear Regulatory Commission: Capabilities and Vulnerabilities.	NUREG/CR-1192

Keyword Listing W	Report Title	Report No.
Wakes	Wind-Tunnel Measurements of Dispersion and Turbulence in the Wakes of Nuclear Reactor Plants.	NUREG/CR-1475
Washington	The Effects of Natural Phenomena on the Exxon Nuclear Company Mixed Oxide Fabrication Plant at Richland, Washington.	NUREG-0722
Waste	Risk Methodology for Geologic Disposal of Radioactive Waste: A Distribution-Free Approach to Inducing Rank Correlation Among Input Variables for Simulation Studies.	NUREG/CR-1262
Waste	Risk Methodology for Geologic Disposal of Radioactive Waste: Transport Model Sensitivity Analysis.	NUREG/CR-1377
Waste	Properties of Radioactive Wastes and Waste Containers. Quarterly Progress Report, January-March 1980.	NUREG/CR-1514
Waste Containers	Properties of Radioactive Wastes and Waste Containers. Quarterly Progress Report, January-March 1980.	NUREG/CR-1514
Waste Disposal	Characterization of Existing Surface Conditions at Sheffield Low-Level Waste Disposal Facility.	NUREG/CR-1683
Waste Recovery	Preparation of Working Reference Materials: Calcined Waste Recovery Products Containing Uranium or Plutonium.	NUREG/CR-1445
Water Chemistry	Evaluation of Isotope Migration-Land Burial Water Chemistry at Commercially Operated Low Level Radioactive Waste Disposal Sites.	NUREG/CR-1289
Water Chemistry	Evaluation of Isotope Migration-Land Burial Water Chemistry at Commercially Operated Low-Level Radioactive Waste Disposal Sites. Quarterly Progress Report, January-March 1980.	NUREG/CR-1513
Water Hammer	An Evaluation of Condensation-Induced Water Hammer in Preheat Steam Generators.	NUREG/CR-1606
Water Mixing	Steam-Water Mixing and System Hydrodynamics Program - Task 4 - Quarterly Progress Report, April 1-June 30, 1979.	NUREG/CR-1557
Water Reactor	Quarterly Technical Progress Report on Water Reactor Safety Programs Sponsored by the Nuclear Regulatory Commission's Division of Reactor Safety Research - April-June 1980.	NUREG/CR-1400
Water Reactor	Water Reactor Safety Research Division Quarterly Progress Report. October-December 1979.	NUREG/CR-1403

Keyword Listing W	Report Title	Report No.
Water Reactor	Structural Integrity of Water Reactor Pressure Boundary Components. Quarterly Progress Report, January-March 1980.	NUREG/CR-1472
Water-to-Fuel	Criticality Experiments with Subcritical Clusters of 2.35 Wt% and 4.31 Wt% U-235 Enriched UO_2 Rods in Water at a Water-to-Fuel Volume Ratio of 1.6.	NUREG/CR-1547
West Virginia	A Probabilistic Evaluation of Earthquake Detection and Location Capability for Illinois, Indiana, Kentucky, Ohio, and West Virginia.	NUREG/CR-1648
Westinghouse	Standard Technical Specifications for Westinghouse Pressurized Water Reactors, Revision 3.	NUREG-0452, Rev 3
Wind Tunnel	An Algorithm to Estimate Field Concentrations Under Nonsteady Meteorological Conditions from Wind Tunnel Experiments.	NUREG/CR-1474
Wind-Tunnel	Wind-Tunnel Measurements of Dispersion and Turbulence in the Wakes of Nuclear Reactor Plants.	NUREG/CR-1475
Workers	Health Status and Body Radioactivity of Former Thorium Workers.	NUREG/CR-1420
Worst Case	Calculations of the Skyshine Gamma-Ray Dose Rates from Independent Spent Fuel Storage Installations (ISFSI) Under Worst Case Accident Conditions.	NUREG/CR-0723

Keyword Listing X	Report Title	Report No.
Xenon	The Effects of Temperature, Moisture, Concentration, Pressure and Mass Transfer on the Adsorption of Krypton and Xenon on Activated Carbon.	NUREG-0678
Xenon-133	Measurement of XE-133, C-14 and Tritium in Air and I-131 in Vegetation and Milk Around the Quad Cities Nuclear Power Station.	NUREG/CR-1195

Keyword Listing Y	Report Title	Report No.
Yellowcake	Review and Assessment of Package Requirements (Yellowcake) and Emergency Response to Transportation Accidents.	NUREG-0535

Keyword Listing Z	Report Title	Report No.
Zion	Report of the Zion/Indian Point Study: Volume 1.	NUREG/CR-1410
Zion	Report of the Zion/Indian Point Study.	NUREG/CR-1411, Vol 1
Zion	Report of the Zion/Indian Point Study.	NUREG/CR-1411, Vol 2
Zircaloy-Hydrogen	Instrumented Impact Properties of Zircaloy-Oxygen and Zircaloy-Hydrogen Alloys.	NUREG/CR-1408
Zircaloy-Oxygen	Instrumented Impact Properties of Zircaloy-Oxygen and Zircaloy-Hydrogen Alloys.	NUREG/CR-1408

Numbered Keywords	Report Title	Report No.
10 CFR Pt 50	Environmental Assessment for Effective Changes to 10 CFR Part 50 and Appendix E to 10 CFR Part 50; Emergency Planning Requirements for Nuclear Power Plants.	NUREG-0685
105th Meridian	Seasonal Variation of 10-Square Mile Probable Maximum Precipitation Estimates, United States East of the 105th Meridian (Hydrometeorological Report No. 53).	NUREG/CR-1486
1975-1979	Geotechnical Data from Accelerograph Stations Investigated during the Period 1975-1979. Summary Report.	NUREG/CR-1643
1979	Regulatory and Technical Reports Compilation for 1979.	NUREG-0304, Vol. 4
1979	Nuclear Plant Reliability Data System 1979 Annual Reports of Cumulative System and Component Reliability.	NUREG/CR-1635
1982	Comments on the NRC Safety Research Program Budget for Fiscal Year 1982.	NUREG-0699

Cross-Reference from Contractor Report Numbers
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(This section contains an alpha-numerically arranged listing of contractor report numbers cross-referenced to their corresponding NRC report numbers.)

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