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Compilation for
First Quarter 1990
January - March

U.S. Nuclear Regulatory Commission

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PREFACE

This compilation consists of bibliographic data and abstracts for the formal regulatory and technical reports issued by the U.S. Nuclear Regulatory Commission (NRC) Staff and its contractors. It is NRC's intention to publish this compilation quarterly and to cumulate it annually. Your comments will be appreciated. Please send them to:

Division of Publications Services
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Washington, D.C. 20555

The main citations and abstracts in this compilation are listed in NUREG number order: NUREG-XXXX, NUREG/CP-XXXX, NUREG/CR-XXXX, and NUREG/IA-XXXX. These precede the following indexes:

Secondary Report Number Index
Personal Author Index
Subject Index
NRC Originating Organization Index (Staff Reports)
NRC Originating Organization Index (International Agreements)
NRC Contract Sponsor Index (Contractor Reports)
Contractor Index
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Licensed Facility Index

A detailed explanation of the entries precedes each index.

The bibliographic elements of the main citations are the following:

Staff Report

NUREG-0808: MARK II CONTAINMENT PROGRAM EVALUATION AND ACCEPTANCE CRITERIA. ANDERSON, C.J. Division of Safety Technology. August 1981. 90 pp. 8109140048. 09570:200.

Where the entries are (1) report number, (2) report title, (3) report author, (4) organizational unit of author, (5) date report was published, (6) number of pages in the report, (7) the NRC Document Control System accession number, (8) the microfiche address (for internal NRC use).

Conference Report

NUREG/CP-0017: EXECUTIVE SEMINAR ON THE FUTURE ROLE OF RISK ASSESSMENT AND RELIABILITY ENGINEERING IN NUCLEAR REGULATION. JANERP, J.S. Argonne National Laboratory. May 1981. 141 pp. 8105280299. ANL-81-3. 08632:070.

Where the entries are (1) report number, (2) report title, (3) report author, (4) organization that compiled the proceedings, (5) date report was published, (6) number of pages in the report, (7) the NRC Document Control System accession number, (8) the report number of the originating organization, (9) the microfiche address (for NRC internal use).

Contractor Report

NUREG/CR-1556: STUDY OF ALTERNATE DECAY HEAT REMOVAL CONCEPTS FOR LIGHT WATER REACTORS-CURRENT SYSTEMS AND PROPOSED OPTIONS. BERRY, D.L.; BENNETT, P.R. Sandia Laboratories. May 1981. 100 pp. 8107010449. SAND80-0929. 08912:242.

Where the entries are (1) report number, (2) report title, (3) report authors, (4) organizational unit of authors or publisher, (5) date report was published, (6) number of pages in the report, (7) the NRC Document Control System accession number, (8) the report number of the originating organization (if given), and (9) the microfiche address (for NRC internal use).

International Agreement Report

NUREG/IA-0001: ASSESSMENT OF TRAC-PD2 USING SUPER CANNON AND HDR EXPERIMENTAL DATA. NEUMANN, U. Kraftwerk Union. August 1986. 223 pp. 8608270424. 37659:138.

Where the entries are (1) report number, (2) report title, (3) report author, (4) organizational unit of author, (5) date report was published, (6) number of pages in the report, (7) the NRC Document Control System accession number, (8) the report number of the originating organization (if given), and (9) the microfiche address (for NRC internal use).

The following abbreviations are used to identify the document status of a report:

ADD	- addendum
APP	- appendix
DRFT	- draft
ERR	- errata
N	- number
R	- revision
S	- supplement
V	- volume

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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 and NUREG/IA is used for international agreement reports.

All these report codes are controlled and assigned by the staff of the Publishing and Translations Section of the NRC Division of Publications Services.

Main Citations and Abstracts

The report listings in this compilation are arranged by report number, where NUREG-XXXX is an NRC staff-originated report, NUREG/CP-XXXX is an NRC-sponsored conference report, NUREG/CR-XXXX is an NRC contractor-prepared report, and NUREG/IA-XXXX is an international agreement report. The bibliographic information (see Preface for details) is followed by a brief abstract of this report.

NUREG-0020 V13 N11: LICENSED OPERATING REACTORS STATUS SUMMARY REPORT. Data As Of October 30, 1989. (Gray Book I) LOVELACE, W.H. Division of Computer & Telecommunications Services (Post 890205). January 1990. 543pp. 9002120335. 52579:130.

THE OPERATING UNITS STATUS REPORT - LICENSED OPERATING REACTORS provides data on the operation of nuclear units as timely and accurately as possible. This information is collected by the Office of Information Resources Management from the Headquarters staff of NRC's Office of Enforcement (OE), from NRC's Regional Offices, and from utilities. The three sections of the report are: monthly highlights and statistics for commercial operating units, and errata from previously reported data; a compilation of detailed information on each unit, provided by NRC's Regional Offices, OE Headquarters and the utilities; and an appendix for miscellaneous information such as spent fuel storage capability, reactor-years of experience and non-power reactors in the U.S. It is hoped the report is helpful to all agencies and individuals interested in maintaining an awareness of the U.S. energy situation as a whole.

NUREG-0020 V13 N12: LICENSED OPERATING REACTORS STATUS SUMMARY REPORT. Data As Of November 30, 1989. (Gray Book I) LOVELACE, W.H. Division of Computer & Telecommunications Services (Post 890205). January 1990. 558pp. 9003070140. 52809:125.

See NUREG-0020, V13, N11 abstract.

NUREG-0020 V14 N01: LICENSED OPERATING REACTORS STATUS SUMMARY REPORT. Data As Of December 31, 1989. (Gray Book I) LOVELACE, W.H. Division of Computer & Telecommunications Services (Post 890205). February 1990. 550pp. 9003130117. 52885:090.

See NUREG-0020, V13, N11 abstract.

NUREG-0040 V13 N04: LICENSEE CONTRACTOR AND VENDOR INSPECTION STATUS REPORT. Quarterly Report, October-December 1989. (White Book) * Division of Reactor Inspection & Safeguards (Post 870411). January 1990. 91pp. 9003070134. 52808:208.

This periodical covers the results of inspections performed by the NRC's Vendor Inspection Branch that have been distributed to the inspected organizations during the period from October 1989 through December 1989.

NUREG-0090 V12 N03: REPORT TO CONGRESS ON ABNORMAL OCCURRENCES. July-September 1989. * Office for Analysis & Evaluation of Operational Data, Director. January 1990. 34pp. 9003070121. 52814:186.

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 and safety and requires a Quarterly report of such events to be made to Congress. This report covers the period July 1 through September 30, 1989. For this reporting period, there were five abnormal occurrences. One abnormal occurrence took place at a licensed nuclear power plant and involved significant deficiencies associated with the containment recirculation sump at the Trojan facility.

The other four abnormal occurrences took place under other NRC-issued licenses: the first involved a medical diagnostic misadministration; the second involved a medical therapy misadministration; the third involved a radiation overexposure of a radiographer; and the fourth involved a significant breakdown and careless disregard of the radiation safety program at three of a licensee's manufacturing facilities. The Agreement States reported no abnormal occurrences during the reporting period. The report also contains information that updates some previously reported abnormal occurrences.

NUREG-0304 V14 N04: REGULATORY AND TECHNICAL REPORTS (ABSTRACT INDEX JOURNAL). Annual Compilation For 1989. * Division of Freedom of Information & Publications Services (Post 890205). March 1990. 153pp. 9004030145. 53228:250.

This journal includes all formal reports in the NUREG series prepared by the NRC staff and contractors; proceedings of conferences and workshops; as well as international agreement reports. The entries in this compilation are indexed for access by title and abstract, secondary report number, personal author, subject, NRC organization for staff and international agreements, contractor, international organization, and licensed facility.

NUREG-0386 D05 R05: UNITED STATES NUCLEAR REGULATORY COMMISSION STAFF PRACTICE AND PROCEDURE DIGEST. Commission, Appeal Board And Licensing Board Decisions. July 1972 - September 1989. * Office of the General Counsel (Post 860701). March 1990. 600pp. 9004110232. 53351:319.

This Revision number 5 of the fifth edition of the NRC 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, July 1, 1972 to September 30, 1989, interpreting the NRC's Rules of Practice in 10 CFR Part 2.

NUREG-0540 V11 N10: TITLE LIST OF DOCUMENTS MADE PUBLICLY AVAILABLE. October 1-31, 1989. * Division of Freedom of Information & Publications Services (Post 890205). January 1990. 326pp. 9002120142. 52581:253.

This document is a monthly publication containing descriptions of information received and generated by the U.S. Nuclear Regulatory Commission (NRC). This information includes (1) docketed material associated with civilian nuclear power plants and other uses of radioactive materials, and (2) nondocketed material received and generated by NRC pertinent to its role as a regulatory agency. The following indexes are included: Personal Author, Corporate Source, Report Number, and Cross Reference to Principal Documents.

NUREG-0540 V11 N11: TITLE LIST OF DOCUMENTS MADE PUBLICLY AVAILABLE. NOVEMBER 1-30, 1989. * Division of Freedom of Information & Publications Services (Post 890205). March 1990. 336pp. 9004090177. 53309:236.

See NUREG-0540, V11, N10 abstract.

2 Main Citations and Abstracts

NUREG-0750 C102: INDEXES TO NUCLEAR REGULATORY COMMISSION ISSUANCES. January 1, 1980 Through December 31, 1985. * Division of Freedom of Information & Publications Services (Post 890205). November 1989. 1095pp. 9003160045. 52958:212.

Digests and indexes for issuances of the Commission, the Atomic Safety and Licensing Appeal Panel, the Atomic Safety and Licensing Board Panel, the Administrative Law Judges, the Directors' Decisions, and the Denials of Petitions for Rulemaking are presented.

NUREG-0750 V30 101: INDEXES TO NUCLEAR REGULATORY COMMISSION ISSUANCES. July-September 1989. * Division of Freedom of Information & Publications Services (Post 890205). February 1990. 50pp. 9004100439. 53350:238.
See NUREG-0750, C102 abstract.

NUREG-0750 V30 N01: NUCLEAR REGULATORY COMMISSION ISSUANCES FOR JULY 1989. Pages 1-84. * Division of Freedom of Information & Publications Services (Post 890205). January 1990. 89pp. 9004030109. 53229:208.

Legal issuances of the Commission, the Atomic Safety and Licensing Appeal Panel, the Atomic Safety and Licensing Board Panel, the Administrative Law Judges, and NRC Program Offices are presented.

NUREG-0750 V30 N02: NUCLEAR REGULATORY COMMISSION ISSUANCES FOR AUGUST 1989. Pages 85-165. * Division of Freedom of Information & Publications Services (Post 890205). January 1990. 85pp. 9004030047. 53230:007.
See NUREG-0750, V30, N01 abstract.

NUREG-0750 V30 N03: NUCLEAR REGULATORY COMMISSION ISSUANCES FOR SEPTEMBER 1989. Pages 167-229. * Division of Freedom of Information & Publications Services (Post 890205). January 1990. 94pp. 9004030101. 53229:299.
See NUREG-0750, V30, N01 abstract.

NUREG-0750 V30 N04: NUCLEAR REGULATORY COMMISSION ISSUANCES FOR OCTOBER 1989. Pages 231-323. * Division of Freedom of Information & Publications Services (Post 890205). January 1990. 97pp. 9004030044. 53230:096.
See NUREG-0750, V30, N01 abstract.

NUREG-0750 V30 N05: NUCLEAR REGULATORY COMMISSION ISSUANCES FOR NOVEMBER 1989. Pages 325-708. * Division of Freedom of Information & Publications Services (Post 890205). March 1990. 389pp. 9004100444. 53350:286.
See NUREG-0750, V30, N01 abstract.

NUREG-0797 S22: SAFETY EVALUATION REPORT RELATED TO THE OPERATION OF COMANCHE PEAK STEAM ELECTRIC STATION, UNITS 1 AND 2. Docket Nos. 50-445 And 50-446. (Texas Utilities Electric Company, et al.) * Comanche Peak Project Division. January 1990. 369pp. 9003070163. 52814:220.

Supplement 22 to the Safety Evaluation Report related to the operation of the Comanche Peak Steam Electric Station, Units 1 and 2 (NUREG-0797), has been prepared by the Office of Nuclear Reactor Regulation of the U.S. Nuclear Regulatory Commission. The facility is located in Somervell County, Texas, approximately 40 miles southwest of Fort Worth, Texas. This supplement reports the status of certain issues that had not been resolved at the time of publication of the Safety Evaluation Report and Supplements 1, 2, 3, 4, 6, 12, and 21 to that report. This supplement also includes the evaluations for licensing items resolved since Supplement 21 was issued. Supplement 5 has been cancelled. Supplements 7 through 11 were limited to the staff evaluation of allegations investigated by the NRC Technical Review Team. Supplement 13 presented the staff's evaluation of the Comanche Peak Response Team (CPRT) Program Plan, which was formulated by the applicant to resolve various construction and design issues raised by sources external to the applicant. Supplements 14 through 20 presented the staff's evaluation of the applicant's Corrective Action Program and CPRT activities. Items identified in Supplements 7, 8, 9, 10,

11, 13, 14, and 15 through 20 are not included in this supplement, except to the extent that they affect the applicant's Final Safety Analysis Report.

NUREG-0797 S23: SAFETY EVALUATION REPORT RELATED TO THE OPERATION OF COMANCHE PEAK STEAM ELECTRIC STATION, UNITS 1 AND 2. Docket Nos. 50-445 And 50-446. (Texas Utilities Electric Company, et al.) * Comanche Peak Project Division. February 1990. 102pp. 9003070170. 52808:299.

Supplement 23 to the Safety Evaluation Report related to the operation of the Comanche Peak Steam Electric Station, Units 1 and 2 (NUREG-0797), has been prepared by the Office of Nuclear Reactor Regulation of the U.S. Nuclear Regulatory Commission. The facility is located in Somervell County, Texas, approximately 40 miles southwest of Fort Worth, Texas. This supplement reports the status of certain issues that had not been resolved at the time of publication of the Safety Evaluation Report and Supplements 1, 2, 3, 4, 6, 12, 21, and 22 to that report. This supplement also includes the evaluations for licensing items resolved since Supplement 22 was issued. Supplement 5 has been cancelled. Supplements 7 through 11 were limited to the staff evaluation of allegations investigated by the NRC Technical Review Team. Supplement 13 presented the staff's evaluation of the Comanche Peak Response Team (CPRT) Program Plan, which was formulated by the applicant to resolve various construction and design issues raised by sources external to the applicant. Supplements 14 through 20 presented the staff's evaluation of the applicant's Corrective Action Program and CPRT activities. Items identified in Supplements 7, 8, 9, 10, 11, 13, and 15 through 20 are not included in this supplement, except to the extent that they affect the applicant's Final Safety Analysis Report.

NUREG-0837 VJ9 N04: NRC TLD DIRECT RADIATION MONITORING NETWORK. Progress Report. October-December 1989. STRUCKMEYER, R.; MCNAMARA, N. Region 1, Ofc of the Director. March 1990. 300pp. 9004100322. 53343:076.

This report provides the status and results of the NRC Thermoluminescent Dosimeter (TLD) Direct Radiation Monitoring Network. It presents the radiation levels measured in the vicinity of NRC licensed facility sites throughout the country for the fourth quarter of 1989.

NUREG-0896 S09: SAFETY EVALUATION REPORT RELATED TO THE OPERATION OF SEABROOK STATION, UNITS 1 AND 2. Docket Nos. STN-50-443 And STN-50-444. (Public Service Company Of New Hampshire) * Division of Reactor Projects - I/II (Post 870411). March 1990. 182pp. 9004030159. 53229:042.

This report is Supplement No. 9 to the Safety Evaluation Report (SER) (NUREG-0896, March 1983) for the application filed by the Public Service Company of New Hampshire, et al., for licenses to operate Seabrook Station, Units 1 and 2 (Docket Nos. STN 50-443 and STN 50-444). It has been prepared by the Office of Nuclear Reactor Regulation of the U.S. Nuclear Regulatory Commission and provides recent information on open items identified in the SER. The facility is located in Seabrook, New Hampshire. Subject to favorable resolution of the items discussed in this report, the staff concludes that the facility can be operated by the applicant without endangering the health and safety of the public.

NUREG-0936 V08 N04: NRC REGULATORY AGENDA. Quarterly Report, October-December 1989. * Division of Freedom of Information & Publications Services (Post 890205). January 1990. 134pp. 9003070131. 52808:074.

The NRC Regulatory Agenda is a compilation of all rules on which the NRC has proposed or is considering action and all petitions for rulemaking which have been received by the Commission and are pending disposition by the Commission. The Regulatory Agenda is updated and issued each quarter.

NUREG-1100 V06: BUDGET ESTIMATES. Fiscal Year 1991. * Division of Budget & Analysis (Post 890205). January 1990. 208pp. 9002120328. 52610:231.

This report contains the fiscal year budget justifications to Congress. The budget provides estimates for salaries and expenses and for the Office of the Inspector General for fiscal year 1991.

NUREG-1214 R05: HISTORICAL DATA SUMMARY OF THE SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE. ALLENSPACH, F.; NEASE, R. Division of Licensee Performance & Quality Evaluation (Post 870411). February 1990. 114pp. 9003070137. 52807:320.

The Historical Data Summary of the Systematic Assessment of Licensee Performance (SALP) is produced periodically by the U.S. Nuclear Regulatory Commission. This summary provides the results of the assessment for each facility by NRC region and is further divided into the following sections: Section 1 presents the most recent SALP report ratings for facilities in operation and under construction. These ratings are grouped by Region showing rating based on the revised Manual Chapter 0516 functional areas, then the pre-revised Manual Chapter 0516 functional areas and then for reactors under construction. Section 2 presents a chronological listing of all SALP report ratings for each operating facility. These ratings are also grouped by Region showing ratings based on the revised Manual Chapter 0516 functional areas and then the pre-revised Manual Chapter functional areas. Section 3 presents a chronological listing of all SALP report ratings for each facility under construction. For historical purposes, past construction ratings for facilities that recently have been licensed also are listed in Section 3.

NUREG-1232 V04: SAFETY EVALUATION REPORT ON TENNESSEE VALLEY AUTHORITY: WATTS BAR NUCLEAR PERFORMANCE PLAN. AULUCK, R. TVA Projects Division. January 1990. 84pp. 9003070159. 52809:041.

This safety evaluation report on the information submitted by the Tennessee Valley Authority in its Nuclear Performance Plan for the Watts Bar Nuclear Plant and in supporting documents has been prepared by the U.S. Nuclear Regulatory Commission staff. The plan addresses the plant-specific corrective actions as part of the recovery program for licensing of Unit 1. The staff will be monitoring and inspecting the implementation of the programs. The plan does not address all licensing matters that will be required for fuel load and operation of Unit 1. Those remaining licensing matters have been addressed in previous safety evaluations or will be addressed in accordance with routine NRC licensing practices.

NUREG-1316: TECHNICAL FINDINGS AND REGULATORY ANALYSIS RELATED TO GENERIC ISSUE 70. Evaluation Of Power-Operated Relief Valve And Block Valve Reliability In PWR Nuclear Power Plants. KIRKWOOD, R. Division of Safety Issue Resolution (Post 880717). December 1989. 26pp. 9002120148. 52611:263.

This report summarizes work performed by the Nuclear Regulatory Commission staff to resolve Generic Issue 70, "Technical Findings and Regulatory Analysis Related to Generic Issue 70 - Power-Operated Relief Valve and Block Valve Reliability." The report evaluates the reliability of PORVs and block valves and their safety significance in PWR nuclear power plants. The report identifies those safety-related functions that may be performed by PORVs and describes ways in which PORVs and block valves may be improved. This report also presents the regulatory analysis for Generic Issue 70.

NUREG-1350 V02: NUCLEAR REGULATORY COMMISSION INFORMATION DIGEST. 1990 Edition. OLIVE, K.L. Division of Budget & Analysis (Post 890205). March 1990. 110pp. 9004090296. 53315:278.

The Nuclear Regulatory Commission Information Digest provides summary information regarding the U.S. Nuclear Regulatory Commission, its regulatory responsibilities, and areas li-

censed by the Commission. This is an annual publication for the general use of the NRC Staff and is available to the public. The digest is divided into two parts: the first presents an overview of the U.S. Nuclear Regulatory Commission and the second provides data on NRC commercial nuclear reactor licenses and commercial nuclear power reactors worldwide.

NUREG-1381: TECHNICAL SPECIFICATIONS, COMANCHE PEAK STEAM ELECTRIC STATION, UNIT 1. Docket No. 50-445, Appendix "A" To License No. NPF-28. * Comanche Peak Project Division. February 1990. 350pp. 9003120783. 52883:015.

The Technical Specifications for Comanche Peak Steam Electric Station, Unit 1 were prepared by the U.S. Nuclear Regulatory Commission. They set forth the limits, operating conditions, and other requirements applicable to a nuclear reactor facility, as set forth in Section 50.36 of Title 10 of the Code of Federal Regulations Part 50, for the protection of the health and safety of the public.

NUREG-1385: TECHNICAL SPECIFICATIONS FOR SEABROOK STATION, UNIT 1. Appendix "A" To License No. NPF-86. * Division of Reactor Projects - I/II (Post 870411). March 1990. 400pp. 9004090200. 53307:001.

The Seabrook Station, Unit 1 Technical Specifications were prepared by the U.S. Nuclear Regulatory Commission to 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-1392: LEAKAGE OF AN IRRADIATOR SOURCE - THE JUNE 1988 GEORGIA RSI INCIDENT. * Office of Governmental & Public Affairs (Post 870413). SETSER, J.L. Georgia, State of. February 1990. 45pp. 9003190259. 53005:245.

On June 6, 1988, operators of a pool irradiator in Decatur, Georgia were prevented by a safety system from raising sources from the pool. Radiation levels of 60 millirem per hour at the surface of the pool water were found, indicative of a leak of one or more of the 252 Cs-137 source capsules used at the irradiator. Because of the concerns which arose out of this incident, the State of Georgia and the Conference of Radiation Control Program Directors, Inc. decided it should be reviewed in depth. Georgia Governor, The Honorable Joe Frank Harris, created an Incident Evaluation Task Force and charged it with collecting information on the incident, maintaining communications with the DOE Investigative Board and preparing a written report of lessons learned. Since the incident and responses to it are still ongoing, a final report of the task force is expected at a later date. A summary of the Task Force's First Interim Report has been prepared for persons needing an overview of the incident and lessons learned to date. The Conference established an Incident Review Team which agreed to assume the responsibility from the Georgia task force to discuss the role of the States in regulating irradiators. Its Interim Report provides a summary of Agreement States' views and recommendations on some of the issues raised by the incident.

NUREG-1395 DRAFT: INDUSTRY PERCEPTIONS OF THE IMPACT OF THE U.S. NUCLEAR REGULATORY COMMISSION ON NUCLEAR POWER PLANT ACTIVITIES. Draft Report. DAVIS, A.B.; PEDERSON, C.D. Region 3, Ofc of the Director. March 1990. 186pp. 9004090218. 53313:190.

Teams of senior managers from the NRC surveyed licensee staff members representing 13 nuclear power utilities from across the country to obtain their candid views of the effectiveness and impact of NRC regulatory activities. Licensee comments addressed the full scope of NRC activities and the impact of agency actions on licensee resources, staff performance, planning and scheduling, and organizational effectiveness. The principal themes of the survey respondents' comments are that (1) licensees acquiesce to NRC requests to avoid poor ratings on NRC Systematic Assessment of Licensee

4 Main Citations and Abstracts

Performance (SALP) reports and the consequent financial and public perception problems that result, even if the requests require the expenditure of significant resources on matters of marginal safety significance, and (2) NRC so dominates licensee resources through its existing and changing formal and informal requirements that licensees believe that their plants, though not unsafe, would have better reliability, and may even achieve a higher degree of safety, if licensees were freer to manage their own resources. This draft report does not attempt to defend any NRC position; endorse or refute licensee perceptions; or explain any action taken by NRC in fulfilling its responsibilities to protect the health and safety of the public. Senior NRC managers have made a preliminary evaluation of the information in this report and have made recommendations to address licensee concerns in some areas. The final evaluation and recommendations will be published at a later date as the final NUREG.

NUREG/CP-0105 V01: PROCEEDINGS OF THE SEVENTEENTH WATER REACTOR SAFETY INFORMATION MEETING. WEISS,A.J. Brookhaven National Laboratory. March 1990. 506pp. 9004030082. 53228:322.

This three-volume report contains 84 papers out of the 111 that were presented at the Seventeenth Water Reactor Safety Information Meeting held at the Holiday Inn Crowne Plaza, Rockville, Maryland, during the week of October 23-25, 1989. The papers are printed in the order of their presentation in each session and describe progress and results of programs in nuclear safety research conducted in this country and abroad. Foreign participation in the meeting included ten different papers presented by researchers from France, Germany, Japan, Norway and the United Kingdom. The titles of the papers and the names of the authors have been updated and may differ from those that appeared in the final program of the meeting.

NUREG/CP-0105 V02: PROCEEDINGS OF THE SEVENTEENTH WATER REACTOR SAFETY INFORMATION MEETING. WEISS,A.J. Brookhaven National Laboratory. March 1990. 525pp. 9004090184. 53310:211.

See NUREG/CP-0105,V01 abstract.

NUREG/CP-0105 V03: PROCEEDINGS OF THE SEVENTEENTH WATER REACTOR SAFETY INFORMATION MEETING. WEISS,A.J. Brookhaven National Laboratory. March 1990. 550pp. 9004090193. 53308:060.

See NUREG/CP-0105,V01 abstract.

NUREG/CP-0109: PROCEEDINGS OF THE SEMINAR ON LEAK-BEFORE-BREAK.Further Developments In Regulatory Policies And Supporting Research. WILKOWSKI,G.M. Battelle Memorial Institute, Columbus Laboratories. CHAO,K.-S. Taiwan Power Co. February 1990. 554pp. 9003190303. 53043:231.

The fourth in a series of International Leak-Before-Break (LBB) Seminars supported in part by the U.S. Nuclear Regulatory Commission was held at the National Central Library in Taipei, Taiwan on May 11 and 12, 1989. The seminar updated the international policies and supporting research on LBB. Attendees included representatives from regulatory agencies, electric utility representatives, nuclear power plant fabricators, research organizations, and academic institutions. Regulatory policy was the subject of presentations by Mr. G. Ariotto (U.S. NRC, U.S.A.), Dr. B. Jarman (AECB, Canada), Dr. P. Milella (ENEA-DISP, Italy), Dr. C. Faigy (EDF/Septen, France), and Dr. K. Takumi (NUPEC, Japan). A paper by Mr. K. Wichman and Mr. S. Lee of the U.S. NRC Office of Nuclear Reactor Regulation is included as background material to these proceedings; it discusses the history and status of LBB applications in U.S. nuclear power plants. In addition, several papers on the supporting research programs described regulatory policy or industry standards for flaw evaluations, e.g., the ASME Section XI code procedures. Supporting research programs were reviewed on the first and second day by several participants from Taiwan, U.S., Japan, Canada, Italy, and France.

NUREG/CP-0110: PROCEEDINGS OF THE INTERNATIONAL WORKSHOP ON NEW DEVELOPMENTS IN OCCUPATIONAL DOSE CONTROL AND ALARA IMPLEMENTATION AT NUCLEAR POWER PLANTS AND SIMILAR FACILITIES. BAUM,J.W.; DIONNE,B.J.; KHAN,T.A. Brookhaven National Laboratory. February 1990. 600pp. 9004090237. BNL-NUREG-52226. 53312:016.

This report contains summaries of papers and discussions presented at the International Workshop on New Developments in Occupational Dose Control and ALARA Implementation at Nuclear Power Plants and Similar Facilities held at Brookhaven National Laboratory, Upton, New York, September 16-21, 1989. The purpose of this workshop was to bring together scientists, engineers, regulators, and administrators who are involved with occupational dose control at nuclear facilities to exchange information on recent developments from their countries. The eleven countries represented included: Canada, Finland, France, Germany, Italy, Japan, Luxembourg, Sweden, Switzerland, the United Kingdom, and the United States of America. This workshop was sponsored jointly by the U.S. Nuclear Regulatory Commission and the U.S. Department of Energy, in cooperation with the Organization for Economic Cooperation and Development, Nuclear Energy Agency.

NUREG/CR-2000 V08N12: LICENSEE EVENT REPORT (LER) COMPILATION.For Month Of December 1989. * Oak Ridge National Laboratory. January 1990. 70pp. 9002120184. ORNL/NSIC-200. 52611:131.

This monthly report contains Licensee Event Report (LER) operational information that was processed into the LER data file of the Nuclear Safety Information Center (NSIC) during the one month period identified on the cover of the document. The LERs, from which this information is derived, are submitted to the Nuclear Regulatory Commission (NRC) by nuclear power plant licensees in accordance with federal regulations. Procedures for LER reporting for revisions to those events occurring prior to 1984 are described in NRC Regulatory Guide 1.16 and NUREG-0161, "Instructions for Preparation of Data Entry Sheets for Licensee Event Reports." For those events occurring on and after January 1, 1984, LERs are being submitted in accordance with the revised rule contained in Title 10 Part 50.73 of the Code of Federal Regulations (10 CFR 50.73 - Licensee Event Report System) which was published in the Federal Register (Vol. 48, No. 144) on July 26, 1983. NUREG-1022, "Licensee Event Report System - Description of Systems and Guidelines for Reporting," provides supporting guidance and information on the revised LER rule. The LER summaries in this report are arranged alphabetically by facility name and then chronologically by event date for each facility. Component, system, keyword, and component vendor indexes follow the summaries. Vendors are those identified by the utility when the LER form is initiated; the keywords for the component, system, and general keyword indexes are assigned by the computer using correlation tables from the Sequence Coding and Search System.

NUREG/CR-2000 V09 N1: LICENSEE EVENT REPORT (LER) COMPILATION.For Month Of January 1990. * Oak Ridge National Laboratory. February 1990. 109pp. 9004090292. ORNL/NSIC-200. 53315:166.

See NUREG/CR-2000,V08,N12 abstract.

NUREG/CR-2000 V09 N2: LICENSEE EVENT REPORT (LER) COMPILATION.For Month Of February 1990. * Oak Ridge National Laboratory. March 1990. 120pp. 9004090225. ORNL/NSIC-200. 53314:122.

See NUREG/CR-2000,V08,N12 abstract.

NUREG/CR-2331 V09 N3: SAFETY RESEARCH PROGRAMS SPONSORED BY OFFICE OF NUCLEAR REGULATORY RESEARCH.Progress Report,July-September 1989. WEISS,A.J. Brookhaven National Laboratory. February 1990. 104pp. 9003070194. BNL-NUREG-51454. 52812:282.

This progress report describes current activities and technical progress in the programs at Brookhaven National Laboratory sponsored by the Division of Regulatory Applications, Division of Engineering, Division of Safety Issue Resolution, and Division of Systems Research of the U.S. Nuclear Regulatory Commission, Office of Nuclear Regulatory Research following the reorganization in July 1988. The previous reports have covered the period October 1, 1976 through June 30, 1989.

NUREG/CR-3145 V08: GEOPHYSICAL INVESTIGATIONS OF THE WESTERN OHIO-INDIANA REGION. Annual Report, October 1988 - September 1989. YOUNG, C.J.; LAY, T.; JACOBSON, J. Michigan, Univ. of, Ann Arbor, MI. February 1990. 62pp. 9003070254. 52802:257.

Earthquake activity in the Western Ohio-Indiana region has been monitored with a precision seismograph network consisting of nine stations located in west-central Ohio and four stations located in Indiana. Three local earthquakes have been recorded during this report period, with magnitudes ranging from 0.7 to 2.2. This may represent a return to a more normal local level of seismicity after an anomalously low level in the 2 years following the occurrence of the $m(b) = 4.5$ earthquake, in St. Marys, Ohio on July 12, 1986. If the quiescent period reflected a release of most of the accumulated crustal strain by the St. Marys event, then the increased level of seismicity may mark the beginning of a new phase of strain accumulation. Four regional events were also well recorded by the array stations during this year. All of these events occurred in regions with well-established histories of seismicity. Their magnitudes range from 3.1 to 4.4.

NUREG/CR-3668: MINET CODE DOCUMENTATION. VAN TUYLE, G.J.; NEPSEE, T.C.; GUPPY, J.G. Brookhaven National Laboratory. December 1989. 321pp. 9002120129. BNL-NUREG-51742. 52582:219.

The MINET computer code, developed for the transient analysis of fluid flow and heat transfer, is documented in this four-part reference. In Part 1, the MINET models, which are based on a momentum integral network method, are described. The various aspects of utilizing the MINET code are discussed in Part 2, The User's Manual. The third part is a code description, detailing the basic code structure and the various subroutines and functions that make up MINET. In Part 4, example input decks, as well as recent validation studies and applications of MINET are summarized.

NUREG/CR-4214 R01 P1: HEALTH EFFECTS MODELS FOR NUCLEAR POWER PLANT ACCIDENT CONSEQUENCE ANALYSIS. Low LET Radiation. Part I: Introduction, Integration And Summary. EVANS, J.S. Harvard School of Public Health, Boston, MA. * Sandia National Laboratories. January 1990. 133pp. 9002120313. SAND85-7185. 52597:294.

This report provides dose-response models intended to be used in estimating the radiological health effects of nuclear power plant accidents. Models of early and continuing effects, cancers and thyroid nodules, and genetic effects are provided. Two-parameter Weibull hazard functions are recommended for estimating the risks of early and continuing health effects. Three potentially lethal early effects--the hematopoietic, pulmonary and gastrointestinal syndromes--are considered. In addition, models are provided for assessing the risks of several non-lethal early and continuing effects--including prodromal vomiting and diarrhea, hypothyroidism and radiation thyroiditis, skin burns, reproductive effects, and spontaneous abortions. Linear and linear-quadratic models are recommended for estimating cancer risks. Parameters are given for analyzing the risks of seven types of cancer in adults--leukemia, bone, lung, breast, gastrointestinal, thyroid and "other". The category "other" cancers, is intended to reflect the combined risks of multiple myeloma, lymphoma, and cancers of the bladder, kidney, brain, ovary, uterus and cervix. Models of childhood cancers due to "in utero" exposure are also provided. For most cancers, both incidence and mortality are addressed. The models of cancer

risk are derived largely from information summarized in BEIR III--with some adjustment to reflect more recent studies. The effect of the revised dosimetry in Hiroshima and Nagasaki has not been considered. Linear and linear-quadratic models are also recommended for assessing genetic risks. Five classes of genetic disease--dominant, x-linked, aneuploidy, unbalanced translocations and multifactorial diseases--are considered. In addition, the impact of radiation-induced genetic damage on the incidence of peri-implantation embryo losses is discussed. The uncertainty in modeling radiological health risks is addressed by providing central, upper, and lower estimates of all model parameters. Data are provided which should enable analysts to consider the timing and severity of each type of health risk.

NUREG/CR-4469 V08: NONDESTRUCTIVE EXAMINATION (NDE) RELIABILITY FOR INSERVICE INSPECTION OF LIGHT WATER REACTORS. Semiannual Report, October 1987 - March 1988. DOCTOR, S.R.; DEFFENBAUGH, J.; GOOD, M.S.; et al. Battelle Memorial Institute, Pacific Northwest Laboratory. October 1989. 67pp. 9002120167. PNL-5711. 52603:122.

The Evaluation and Improvement of NDE Reliability for Inservice Inspection of Light Water Reactors (NDE Reliability) Program at the Pacific Northwest Laboratory was established by the Nuclear Regulatory Commission to determine the reliability of current inservice inspection (ISI) techniques and to develop recommendations that will ensure a suitably high inspection reliability. The objectives of this program include determining the reliability of ISI performed on the primary systems of commercial light-water reactors (LWRs); using probabilistic fracture mechanics analysis to determine the impact of NDE unreliability on system safety; and evaluating reliability improvements that can be achieved with improved and advanced technology. A final objective is to formulate recommended revisions to ASME Code and Regulatory requirements, based on material properties, service conditions, and NDE capabilities and uncertainties. The program scope is limited to ISI of the primary systems including the piping, vessel, and other inspected components. This is a progress report covering the programmatic work from October 1987 through March 1988.

NUREG/CR-4469 V09: NONDESTRUCTIVE EXAMINATION (NDE) RELIABILITY FOR INSERVICE INSPECTION OF LIGHT WATER REACTORS. Semiannual Report, April-September 1988. DOCTOR, S.R.; DEFFENBAUGH, J.; GOOD, M.S.; et al. Battelle Memorial Institute, Pacific Northwest Laboratory. November 1989. 115pp. 9002120206. PNL-5711. 52597:100.

Evaluation and Improvement of NDE Reliability for Inservice Inspection of Light Water Reactors (NDE Reliability) Program at the Pacific Northwest Laboratory was established by the Nuclear Regulatory Commission to determine the reliability of current inservice inspection (ISI) techniques and to develop recommendations that will ensure a suitably high inspection reliability. The objectives of this program include determining the reliability of ISI performed on the primary systems of commercial light-water reactors (LWRs); using probabilistic fracture mechanics analysis to determine the impact of NDE unreliability on system safety; and evaluating reliability improvements that can be achieved with improved and advanced technology. A final objective is to formulate recommended revisions to ASME Code and Regulatory requirements, based on material properties, service conditions, and NDE uncertainties. The program scope is limited to ISI of the primary systems including the piping, vessel, and other inspected components. This is a progress report covering the programmatic work from April 1988 through September 1988.

NUREG/CR-4550 V01 R1: ANALYSIS OF CORE DAMAGE FREQUENCY: INTERNAL EVENTS METHODOLOGY. ERICSON, D.M. ERC Environmental & Energy Services, Inc. WHEELER, T.A.; SYPE, T.T.; et al. Sandia National Laboratories. January 1990. 482pp. 9002120309. SAND86-2084. 52576:007.

6 Main Citations and Abstracts

NUREG-1150 examines the risk to the public from a selected group of nuclear power plants. This report describes the methodology that evolved as the internal event core damage frequencies for four plants were generated in support of NUREG-1150. The objective is to perform an analysis that closely approximates a state-of-the-art Level I Probabilistic Risk Assessment (PRA). Therefore, in principle, it is similar to those used in previous PRAs. However, this methodology, based upon previous studies and using analysts experienced in these techniques, allows the analysis to be focused upon selected areas. With this approach only the most important systems and failure modes are emphasized and modeled in detail, and the data and human reliability analyses are simplified. An analysis employing this methodology (exclusive of external reviews) can be completed in nine to twelve months using two or three full-time experienced systems analysts and part-time personnel in other areas, such as data analysis and human reliability analysis. This is significantly faster and less expensive than previous analyses, but even so, most of the insights that are obtained by the more expensive studies are still provided.

NUREG/CR-4554 V06: SCANS (SHIPPING CASK ANALYSIS SYSTEM) A MICROCOMPUTER BASED ANALYSIS SYSTEM FOR SHIPPING CASK DESIGN REVIEW. Volume 6 - Theory Manual Buckling Of Circular Cylindrical Shells. LO, T.; MOK, G.C.; CHINN, D.J. Lawrence Livermore National Laboratory. February 1990. 76pp. 9004030139. UCID-20674. 53228:173.

A computer system called SCANS (Shipping Cask Analysis System) is being developed for the staff of the U.S. Nuclear Regulatory Commission to perform confirmatory licensing review analyses. SCANS can handle problems associated with impact, heat transfer, thermal stress, internal or external pressure loads, and lead slump. A new capability implemented in SCANS is buckling analysis of the steel shells of a spent fuel shipping cask during a postulated impact with an unyielding surface. Three sets of buckling analysis formulas are included: (1) Code Case N-284 of the ASME Boiler and Pressure Vessel Code, (2) American Petroleum Institute Bulletin 2U an upgrade of N-284 that includes test results available after N-284 was written in 1979, (3) formulas frequently used by the piping and pressure vessel industry and formulas recommended by the Structural Stability Research Council. To be compatible with the ASME Code, the first set is recommended for use in shipping cask evaluation and this set is implemented in SCANS. The second and third sets are recommended references for SCANS users.

NUREG/CR-4554 V07: SCANS (SHIPPING CASK ANALYSIS SYSTEM) A MICROCOMPUTER BASED ANALYSIS SYSTEM FOR SHIPPING CASK DESIGN REVIEW. Volume 7: Theory Manual Puncture Of Shipping Casks. LO, T. Lawrence Livermore National Laboratory. February 1990. 65pp. 9004030060. UCID-20674. 53226:100.

Under current regulatory requirements, a shipping cask should be designed for a series of hypothetical accident conditions. These test conditions include a 40-inch free drop of the cask onto a 6-inch diameter puncture pin. In this study, existing puncture test data was examined. Simple formulas based on test data were proposed for puncture evaluation of shipping casks. Dynamic and static nonlinear finite element analyses were performed to correlate analyses with the existing test data. In this analytical approach, three puncture failure prediction methods were proposed and their applicability was evaluated. The analytical approach provides an alternative to testing. Both laminated and solid wall shipping casks were analysed. In the study of laminated casks, the effects of the inner shell on the puncture of the outer shell were examined, as were the effects of material strength of the puncture pin. The study of geometric scaling of casks indicated that the normalized incipient puncture energy is insensitive to variations in the scale factors. This conclusion indicates that the proposed analytical approach of combining finite element analysis and failure prediction methods is consistent with the similarity principles in tests, except when

local vibration is excited during the puncture process. Further study of this local vibration is needed.

NUREG/CR-4659 V03: SEISMIC FRAGILITY OF NUCLEAR POWER PLANT COMPONENTS (PHASE II). Switchgear, I&C Panels (NSSS) And Relays. BANDYOPADHYAY; HOFMAYER, C.H.; KASSIR, M.K.; et al. Brookhaven National Laboratory. February 1990. 73pp. 9004030128. BNL-NUREG-52007. 53228:101.

As part of the Component Fragility Program which was initiated in FY 1985, three additional equipment classes have been evaluated. This report contains the fragility results and discussions on these equipment classes which are switchgear, I&C panels and relays. Both low and medium voltage switchgear assemblies have been considered and a separate fragility estimate for each type is provided. Test data on cabinets from the nuclear instrumentation/neutron monitoring system, plant/process protection system, solid state protective system and engineered safeguards test system comprise the BNL data base for I&C panels (NSSS). Fragility levels have been determined for various failure modes of switchgear and I&C panels, and the deterministic results are presented in terms of test response spectra. In addition, the test data have been evaluated for estimating the respective probabilistic fragility levels which are expressed in terms of a median value, an uncertainty coefficient, a randomness coefficient and an HCLPF value. Due to a wide variation of relay design and the fragility level, a generic fragility level cannot be established for relays.

NUREG/CR-4661: CLOSEOUT OF IE BULLETIN 85-03: MOTOR-OPERATED VALVE COMMON MODE FAILURES DURING PLANT TRANSIENTS DUE TO IMPROPER SWITCH SETTINGS. FOLEY, W.J.; DEAN, R.S.; STEINBRECHER, H.; et al. PARAMETER, Inc. February 1990. 150pp. 9003120769. PARAMETER IE158. 52882:267.

Documentation is provided in this report for the closeout of IE Bulletin 85-03. The purpose of the bulletin was to request licensees to develop and implement programs to ensure that the switch settings on certain safety-related, motor-operated valves are selected, set, and maintained so as to ensure reliable valve operation when valves are subjected to maximum differential pressures expected during normal operation and the design basis events. The report includes documentation and status of the review of Action Item e of the bulletin completed up to the issuance of Generic Letter 89-10 on June 28, 1989. Licensee actions for Action Item e were completed satisfactorily for 102 (86%) of the 119 facilities for which actions were required. Satisfactory completion of the remaining 17 facilities is ensured by the generic letter. In the report conclusions, the inter-relationship of the generic letter and the bulletin is presented. Background information is supplied in the Introduction and Appendix A.

NUREG/CR-4668: DAMAGED FUEL EXPERIMENT DF-1. Results And Analyses. GASSER, R.D.; FRYER, C.P.; GAUNTT, R.O.; et al. Sandia National Laboratories. January 1990. 269pp. 9003120772. SAND86-1030. 52884:009.

A series of in-pile experiments addressing LWR severe fuel damage phenomena has been conducted in the Annular Core Research Reactor (ACRR) at Sandia National Laboratories. The ACRR Debris Formation and Relocation (DF) experiments are quasi-separate effects tests that provide a data base for the development and verification of models for LWR severe core damage accidents. The first experiment in this series, DF-1, was performed on March 15, 1984, and the results are presented in this report. The DF-1 experiment examined the effects of low initial clad oxidation conditions on fuel damage and relocation processes. The DF-1 test assembly consisted of a nine-rod square-matrix bundle that employed PWR-type fuel rods with a 0.5-m fissile length. The fuel rods were composed of 10% enriched UO₂ pellets within a zircaloy-4 cladding. Steam flowed through the test bundle at flow rates varying between 0.5 and 3

g/s, and the ACRR maintained a peak power level of 1.5 MW during the high temperature oxidation phase of the test inducing about ~8.5 kW fission power and about ~20 kW peak oxidation power in the assembly. Visual observation showed early clad relocation and partial blockage formation at the grid spacer location accompanied by production of a dense aerosol. Posttest cross sections show liquefaction losses of fuel in excess of 10 volume percent, as well as large fractional losses of cladding material from the upper two-thirds of the bundle. The quantity of hydrogen measured during the test was consistent with the observed magnitude of cladding oxidation. Oxidation driven heating rates of 25 K/s and peak temperatures in excess of 2525 K were observed. The analyses, interpretation, and application of these results to severe fuel damage accidents are discussed.

NUREG/CR-4671: THE DF-4 FUEL DAMAGE EXPERIMENT IN ACRR WITH A BWR CONTROL BLADE AND CHANNEL BOX. GAUNTT, R.O.; GASSER, R.D. Sandia National Laboratories. OTT, L.J. Oak Ridge National Laboratory. November 1989. 397pp. 9003070275. SAND86-1443. 52B06:283.

The DF-4 test was an experimental investigation into the melt progression behavior of boiling water reactor (BWR) core components under high temperature severe core damage conditions. In this study 14 zircaloy clad UO₂(2) fuel rods, and representations of the zircaloy fuel canister and stainless steel/B(4)C control blade were assembled into a 0.5 m long test bundle. The test bundle was fission heated in a flowing steam environment, using the Annular Core Research Reactor at Sandia Laboratories, simulating the environmental conditions of an uncovered BWR core experiencing high temperature damage as a result of residual fission product decay heating. The experimental results provide information on the thermal response of the test bundle components, the rapid exothermic oxidation of the zircaloy fuel cladding and canister, the production of hydrogen from metal-steam oxidation, and the failure behavior of the progressively melting bundle components. This information is provided in the form of thermocouple data, steam and hydrogen flow rate data, test bundle fission power data and visual observation of the damage progression. In addition to BWR background information, this document contains a description of the experimental hardware with details on how the experiment was instrumented and diagnosed, a description of the test progression, and a presentation of the on-line measurements. Also in this report are the results of a thermal analysis of the fueled test section of the experiment demonstrating an overall consistency in the measurable quantities from the test. A discussion of the results is provided.

NUREG/CR-4674 V09: PRECURSORS TO POTENTIAL SEVERE CORE DAMAGE ACCIDENTS: 1988 A STATUS REPORT. Main Report And Appendix A. MINARICK, J.W.; CLETCHER, J.W.; BLAKE, A.A. Oak Ridge National Laboratory. February 1990. 169pp. 9003070234. ORNL/NOAC-232. 52B10:323.

Thirty-two operational events with conditional probabilities of core damage of 1.0×10^{-6} or higher occurring at commercial light-water reactors during 1988 are considered to be precursors to potential severe core damage. These are described along with associated significance estimates, categorization, and subsequent analyses. This study is a continuation of earlier work, which evaluated the 1969-1981 and 1984-1987 events. The report discusses (1) the general rationale for this study, (2) the selection and documentation of events as precursors, (3) the estimation and use of conditional probabilities of subsequent severe core damage to rank precursor events, and (4) the plant models used in the evaluation process.

NUREG/CR-4674 V10: PRECURSORS TO POTENTIAL SEVERE CORE DAMAGE ACCIDENTS: 1988 A STATUS REPORT. Appendixes B And C. MINARICK, J.W.; CLETCHER, J.W.; BLAKE, A.A. Oak Ridge National Laboratory. February 1990. 473pp. 9003070184. ORNL/NOAC-232. 52B13:073.

See NUREG/CR-4674, V09 abstract.

NUREG/CR-4691 V02: MELCOR ACCIDENT CONSEQUENCE CODE SYSTEM (MACCS). Volume 2: Model Description. JOW, H.; SPRUNG, J.L.; ROLLSTIN, J.A.; et al. Sandia National Laboratories. February 1990. 183pp. 9003190289. SAND86-1562. 53005:059.

This report describes the MACCS computer code. The purpose of this code is to simulate the impact of severe accidents at nuclear power plants on the surrounding environment. MACCS has been developed for the U.S. Nuclear Regulatory Commission to replace the previous CRAC2 code and it incorporates many improvements in modeling flexibility in comparison to CRAC2. The principal phenomena considered in MACCS are atmospheric transport, mitigation actions based on dose projection, dose accumulation by a number of pathways including food and water ingestion, early and latent health effects, and economic costs. The MACCS code can be used for a variety of applications. These include (1) probabilistic risk assessment (PRA) of nuclear power plants and other nuclear facilities, (2) sensitivity studies to gain a better understanding of the parameters important to PRA, and (3) cost-benefit analysis. This report is composed of three volumes. Volume I, the User's Guide, describes the input data requirements of the MACCS code and provides directions for its use as illustrated by three sample problems. Volume II, the Model Description, describes the underlying models that are implemented in the code, and Volume III, the Programmer's Reference Manual, describes the code's structure and database management.

NUREG/CR-4691 V03: MELCOR ACCIDENT CONSEQUENCE CODE SYSTEM (MACCS). Volume 3: Programmer's Reference Manual. ROLLSTIN, J.A.; CHANIN, D.I.; JOW, H. Sandia National Laboratories. February 1990. 338pp. 9003190293. SAND86-1562. 53042:250.

See NUREG/CR-4691, V02 abstract.

NUREG/CR-4704 V03: RELATIVE BIOLOGICAL EFFECTIVENESS (RBE) OF FISSION NEUTRONS AND GAMMA RAYS AT OCCUPATIONAL EXPOSURE LEVELS. Studies On The Gross And Microscopic Pathology Observed At Death Of Mice Exposed To 60 Equal Once-Weekly Doses Of Fission.... GRAHN, D.; THOMSON, J.F.; CARNES, B.A. Argonne National Laboratory. January 1990. 111pp. 9004090170. ANL-86-33. 53314:010.

Dose-response analyses of the pathologic consequences of exposure to 60 equal once-weekly doses of fission neutrons or 60Co gamma rays were used to generate relative biological effectiveness (RBE) values for the major causes of death or for tumor occurrences. Cumulative probabilities of death or occurrence were generated for 15 categories of neoplastic disease in the interval 800-999 days since first exposure for each dose, sex, and radiation quality. Depending upon the pathologic endpoint, RBE values varied from about 10 to 50. Variation in RBE values was not random or nonsystematic. RBE values were lower for tumors involving the connective tissues (about 10 to 15) than for the epithelial tissue tumors (about 20 to 50). Females did have significantly higher risk coefficients for many endpoints. The results suggest that the RBE value of 20 for life shortening from all causes of death is a weighted average of the RBE values representing the individual neoplastic diseases (approximately 90% of the excess risk of mortality induced by radiation at low doses). These results in conjunction with the results of large-scale studies funded by the Department of Energy and using the same facilities, support the conclusion that the quality factor (Q) for fission neutrons should be raised from the present value of 10 to a value of 20.

NUREG/CR-4731 V02: RESIDUAL LIFE ASSESSMENT OF MAJOR LIGHT WATER REACTOR COMPONENTS - OVERVIEW. SHAH, V.N.; MACDONALD, P.E.; AMAR, A.S.; et al. EG&G Idaho, Inc. (subs. of EG&G, Inc.). November 1989. 467pp. 9002120329. EGG-2469. 52578:023.

8 Main Citations and Abstracts

This report presents an assessment of the aging (time-dependent degradation) of selected major light water reactor components and structures. The stressors, possible degradation sites and mechanisms, potential failure modes, and current in-service inspection requirements are discussed for eleven major light water reactor components: reactor coolant pumps, pressurized water reactor (PWR) pressurizers, PWR pressurizer surge and spray lines, PWR reactor coolant system charging and safety injection nozzles, PWR feedwater lines, PWR control rod drive mechanisms and reactor internals, boiling water reactor (BWR) containments, BWR feedwater and main steam lines, BWR control rod drive mechanisms and reactor internals, electrical cables and connections, and emergency diesel generators. Unresolved technical issues related to understanding and managing the aging of these major components are identified.

NUREG/CR-4744 V03 N1: LONG-TERM EMBRITTLEMENT OF CAST DUPLEX STAINLESS STEELS IN LWR SYSTEMS. Semiannual Report, October 1987 - March 1988. CHOPRA, O.K.; CHUNG, H.M. Argonne National Laboratory. February 1990. 58pp. 9003070245. ANL-89/22. 52802:198.

The progress report summarizes work performed by Argonne National Laboratory on long-term embrittlement of cast duplex stainless steels in LWR systems during the six months from October 1987 to March 1988. A mechanistic understanding of the activation energy of aging is described on the basis of the results of microstructural characterization of various heats of Grades CF-3, CF-8, and CF-8M stainless steel that were used in aging studies at different laboratories. The kinetics of the spinodal decomposition of ferrite (i.e., the primary mechanism of aging embrittlement) appear to be strongly influenced by a synergistic effect of G-phase nucleation and growth. When the activation energies (ranging from 18 to 50 kcal/mole) were plotted as a function of the volume fraction of G phase produced during accelerated aging, a good correlation was obtained regardless of variations in grade, bulk chemical composition, and fabrication process. Spinodal-like decomposition of austenite in heats containing a relatively high level of Ni has also been investigated. Charpy-impact data for thermally aged cast stainless steel were analyzed to determine the kinetics and extent of embrittlement. The ferrite morphology had a strong effect on the extent of embrittlement, whereas the material composition influenced the kinetics of embrittlement. Results obtained from the present study of mechanical properties, and data of other investigators were analyzed to develop the procedure and correlations for predicting the kinetics and extent of embrittlement, under reactor operating conditions, from the material parameters.

NUREG/CR-4882: QUALIFICATION PROCESS FOR ULTRASONIC TESTING IN NUCLEAR INSERVICE INSPECTION APPLICATIONS. SPANNER, J.C.; DOCTOR, S.R.; TAYLOR, T.T.; et al. Battelle Memorial Institute, Pacific Northwest Laboratory. March 1990. 150pp. 9004100344. PNL-6179. 53350:090.

The report documents one of the tasks conducted under a Pacific Northwest Laboratory (PNL) program entitled Evaluation and Improvement of NDE Reliability for Inservice Inspection of Light Water Reactors (NDE Reliability Program). The objective of this task was to develop recommended requirements and processes for qualifying the UT/ISI systems (personnel, equipment, and procedures) for inservice inspection of nuclear power plant components. This report describes an overall qualification process intended to achieve statistically designed performance validations, as well as include the prerequisite training and other qualification recommendations. The document also contains recommendations for the test specimens, environment, and other conditions under which the qualification processes should be conducted. In general, the recommendations described in this document are more stringent than the current industry requirements; however, there are exceptions. The major areas where specific enhancements are recommended include more stringent criteria for Level III qualifications, explicit recommendations for requalification, greater emphasis on periodic (annual) training, and recommendations for coordinating and administering

the qualification processes on a national (rather than local employer) basis.

NUREG/CR-5169: MOBILIZATION AND TRANSPORT OF URANIUM AT URANIUM MILL TAILINGS DISPOSAL SITES. Application Of A Chemical Transport Model. ERIKSON, R.L.; HOSTETLER, C.J.; KEMNER, M.L. Battelle Memorial Institute, Pacific Northwest Laboratory. January 1990. 115pp. 9002120263. PNL-7154. 52596:210.

The geochemical processes of aqueous specification, precipitation, dissolution, and adsorption influence the transport of uranium at uranium mill tailings disposal sites. Traditional transport models involve the use of a single parameter, the retardation factor, to simulate the effects of these geochemical processes. Single parameter models are most applicable to field situations exhibiting no changes in major element chemistry along the flow path. Because of the changes in major element chemistry that occur when acidic leachate contacts a neutralizing soil, a single parameter transport model cannot accurately capture the details of uranium migration at a number of disposal sites. We have used a chemical transport model to qualitatively describe the effects of geochemical mechanisms on uranium transport. The result is a generalized conceptual model that can reproduce the features observed at a number of uranium mill tailings disposal sites.

NUREG/CR-5229 V02: TMI-2 EPICOR-II RESIN/LINER INVESTIGATION: LOW-LEVEL WASTE DATA BASE DEVELOPMENT PROGRAM FOR FISCAL YEAR 1989. Annual Report. MCCONNELL, J.W.; ROGERS, R.D. EG&G Idaho, Inc. (subs. of EG&G, Inc.). DAVIS, E.C.; et al. Oak Ridge National Laboratory. February 1990. 52pp. 9003120764. EGG-2577. 52882:124.

The EPICOR-II Resin/Liner Investigation: Low-Level Waste Data Base Development Program, funded by the U.S. Nuclear Regulatory Commission (NRC), is studying the degradation effects in EPICOR-II organic ion exchange resins caused by radiation; examining the adequacy of test procedures recommended in the Branch Technical Position on Waste Forms to meet the requirements of 10 CFR 61 using solidified EPICOR-II resin; obtaining performance information on solidified EPICOR-II ion exchange resins in a disposal environment; and determining the condition of EPICOR-II liners. This report summarizes accomplishments of Fiscal Year 1989.

NUREG/CR-5256: COMPONENTS OF AN OVERALL PERFORMANCE ASSESSMENT METHODOLOGY. DAVIS, P.A.; PRICE, L.L.; WAHI, K.K.; et al. Sandia National Laboratories. February 1990. 101pp. 9003190287. SAND88-3020. 53012:285.

Both the U.S. Environmental Protection Agency (EPA) and the U.S. Nuclear Regulatory Commission (NRC) have promulgated regulations regarding the performance of geologic repositories for the disposal of high-level nuclear waste. Specifically, the EPA has promulgated three quantitative, postclosure requirements that apply to the entire disposal system, while the NRC's three quantitative, postclosure requirements apply only to particular subsystems of the repository. To assess compliance with all six of these quantitative requirements, the phenomena that can affect the performance of the repository, the processes by which these phenomena are produced, and the parameters associated with these processes will have to be identified and quantified. In addition, the analyses performed to assess compliance will have to be conducted in accordance with a performance assessment methodology to ensure that all regulatory criteria are addressed. A performance assessment methodology proposed by Sandia National Laboratories is composed of scenario development and screening, consequence analysis, uncertainty analysis, and sensitivity analysis. This methodology can be used to assess compliance with the EPA's and NRC's requirements.

NUREG/CR-5273 V04: SCDAP/RELAP5/MOD2 CODE MANUAL, VOLUME 4: MATPRO - A LIBRARY OF MATERIALS PROPERTIES FOR LIGHT-WATER-REACTOR ACCIDENT ANALYSIS. BUCCAFURNI, A.; CARLSON, E.R.; CHAMBERS, R.; et al. EG&G Idaho, Inc. (subs. of EG&G, Inc.). February 1990. 1,000pp. 9003190269. EGG-2555. 53002:040.

This report describes the materials properties correlations and computer subcodes (MATPRO) developed for use with various light water reactor (LWR) accident analysis computer programs. Formulation of the materials properties are generally semiempirical in nature. The materials properties subcodes contained in this document are for uranium, uranium dioxide, mixed uranium-plutonium dioxide fuel, zircaloy cladding, zirconium dioxide, stainless steel, stainless steel oxide, silver-indium-cadmium alloy, boron carbide, Inconel 718, zirconium-uranium-oxygen melts, and fill gas mixtures.

NUREG/CR-5286: CLOSEOUT OF IE BULLETIN 79-17: PIPE CRACKS IN STAGNANT BORATED WATER SYSTEMS AT PWR PLANTS. FOLEY, W.J.; DEAN, R.S.; HENNICK, A. PARAMETER, Inc. February 1990. 35pp. 9004090172. PARAMETER IE177. 53314:237.

Documentation is provided in this report for the closeout of IE Bulletin 79-17 and its revision on the safety-related subject of pipe cracks in stagnant borated water systems at operating plants with pressurized water reactors (PWRs). Closeout is based on the implementation and verification of actions required by the bulletin. Evaluation of utility responses and NRC/Region inspection reports indicates that the bulletin is closed for all of the 41 operating PWRs to which it was issued for action. It is concluded that the concerns of the bulletin have been resolved. Background information is supplied in the Introduction and Appendix A.

NUREG/CR-5289: CLOSEOUT OF IE BULLETIN 79-23: POTENTIAL FAILURE OF EMERGENCY DIESEL GENERATOR FIELD EXCITER TRANSFORMER. FOLEY, W.J.; DEAN, R.S.; HENNICK, A. PARAMETER, Inc. March 1990. 27pp. 9004090279. PARAMETER IE180. 53330:298.

Documentation is provided in this report for the closeout of IE Bulletin 79-23 regarding the potential failure of emergency diesel generator field exciter transformers. Closeout is based upon the implementation and verification of three actions required by the bulletin. Evaluation of utility responses and NRC/Region inspection reports indicates that the bulletin is closed for all of the 119 nuclear power facilities with an operating license or a construction permit at the time the bulletin was issued, September 12, 1979. Deviations from bulletin testing requirements, along with licensee justifications, are listed. It is concluded that the problem of concern was not generic, since only two plants, Nine Mile Point 1 and Turkey Point, required modifications to correct connections which could cause high circulating currents. The problem at Turkey Point is described in the bulletin (see page A-1). Background information is supplied in the Introduction and Appendix A.

NUREG/CR-5298: CLOSEOUT OF IE BULLETIN 85-01: STEAM BINDING OF AUXILIARY FEEDWATER PUMPS. FOLEY, W.J.; DEAN, R.S.; HENNICK, A. PARAMETER, Inc. January 1990. 37pp. 9003070241. PARAMETER IE189. 52803:268.

Documentation is provided in this report for the closeout of IE Bulletin 85-01 regarding steam binding of auxiliary feedwater pumps for certain pressurized water reactors (PWRs) in nuclear power facilities. Individual facility closeouts are based on the implementation and verification of the three actions required by the bulletin. Evaluation of utility responses and NRC/Region inspection reports indicates that the bulletin is closed for 44 (92%) of the 48 facilities to which it was issued for action. Followup items are proposed for the use of NRC regional inspectors in ensuring satisfactory completion of required actions for the four facilities with open bulletin status. Conclusions are summarized in accordance with Generic Letter 88-03, which announced the NRC Staff's resolution of Generic Issue 93 on the

subject of this bulletin. Background information is supplied in the Introduction and Appendix A.

NUREG/CR-5302: CLOSEOUT OF IE BULLETIN 80-10: CONTAMINATION OF NONRADIOACTIVE SYSTEM AND RESULTING POTENTIAL FOR UNMONITORED, UNCONTROLLED RELEASE OF RADIOACTIVITY TO ENVIRONMENT. FOLEY, W.J.; DEAN, R.S.; HENNICK, A. PARAMETER, Inc. February 1990. 30pp. 9003120758. PARAMETER IE193. 52882:237.

Documentation is provided in this report for the closeout of IE Bulletin 80-10 regarding contamination of nonradioactive systems resulting in the potential for unmonitored, uncontrolled release of radioactivity to the environment. Closeout is based on the documentation and verification of four actions required by the bulletin for holders of an operating license for a nuclear power facility at the time the bulletin was issued (05-06-80). The bulletin was issued for information to holders of a construction permit for a nuclear power facility. Evaluation of utility responses and NRC/Region inspection reports in accordance with the close-out criterion indicates that the bulletin is closed for 65 (98%) of the 66 nuclear power facilities to which it was issued for action. A follow-up item is proposed for the facility with open status, for the use of NRC regional inspectors in ensuring successful completion of required actions. When the bulletin is closed as anticipated for the facility which requires follow-up (see page C-1), the concerns of the bulletin will have been resolved completely. Background information is supplied in the Introduction and Appendix A.

NUREG/CR-5307: CLOSEOUT OF IE BULLETIN 80-02: INADEQUATE QUALITY ASSURANCE FOR NUCLEAR SUPPLIED EQUIPMENT. FOLEY, W.J.; DEAN, R.S.; HENNICK, A. PARAMETER, Inc. December 1989. 15pp. 9002120237. PARAMETER IE198. 52611:204.

Documentation is provided in this report for the closeout of IE Bulletin 80-02. The subject is inadequate quality assurance for nuclear equipment supplied by the Marvin Engineering Company. The equipment of concern is supplied either directly or through other suppliers for use in General Electric boiling water reactors (BWRs). Closeout is based on the implementation and verification of three (3) required actions. Evaluation of utility responses and NRC/Region inspection reports indicates that the bulletin is closed for all of the 38 BWR facilities to which it was issued for action. It is concluded that the safety concerns reflected in the IE Bulletin 80-02 were adequately resolved by the actions taken by licensees and verified by NRC inspectors. Background information is presented in the Introduction and Appendix A.

NUREG/CR-5316: MELT PROGRESSION, OXIDATION, AND NATURAL CONVECTION IN A SEVERELY DAMAGED REACTOR CORE. DOSANJH, S.S. Sandia National Laboratories. February 1990. 93pp. 9003070229. SAND88-3476. 53361:156.

In the revised Severe Accident Research Program plan, the U.S. Nuclear Regulatory Commission places a great emphasis on code documentation. This present report, which describes work that was conducted over a period of several years in the MELPROG code development project, is intended to support this goal. Of interest here is the late phase of core melt progression. A model that treats some of the important physical processes that can occur during this phase of the accident is described herein. A number of straightforward examples are given to illustrate the utility of the model and to identify the dominant physical processes.

NUREG/CR-5368: REACTIVITY ACCIDENTS. A Reassessment of The Design-Basis Events. DIAMOND, D.J.; HSU, C.J.; FITZPATRICK, R. Brookhaven National Laboratory. January 1990. 135pp. 9002120269. BNL-NUREG-52198. 52596:325.

This report documents a study of light water reactor event sequences which have been investigated for their potential to result in reactivity accidents with severe consequences. The study is an outgrowth of the concern which arose after the acci-

dent at Chernobyl and was recommended by the report of the U.S. Nuclear Regulatory Commission (NRC) on the implications of that accident (NUREG-1251). The work was done for the NRC to reconfirm or bring into question previous judgments on reactivity events which must be analyzed for licensing. Event sequences were defined and then a probabilistic assessment was completed to estimate the frequency of the reactivity event and/or a deterministic calculation was completed to estimate the consequences to the fuel. Using the results of this analysis done by others, and a set of screening criteria developed within this study, judgments were made for each sequence as to its importance, and recommendations were made as to whether the NRC ought to be considering the important sequences as part of the design basis or for further, more detailed, investigation.

NUREG/CR-5376: QUALITY ASSURANCE AND VERIFICATION OF THE MACCS CODE, Version 1.5. DOBBE, C.A., MARWILL, E.S.; CARLSON, E.R.; et al. EG&G Idaho, Inc. (subs. of EG&G, Inc.). February 1990. 61pp. 9003120744. EGG-2566. 52882:176.

An independent quality assurance (QA) and verification of Version 1.5 of the MELCOR Accident Consequence Code System (MACCS) was performed. The QA and verification involved examination of the code and associated documentation for consistent and correct implementation of the models in an error-free FORTRAN computer code. The QA and verification was not intended to determine either the adequacy or appropriateness of the models that are used in MACCS 1.5. The reviews uncovered errors which were fixed by the SNL MACCS code development staff prior to the release of MACCS 1.5. Some difficulties related to documentation improvement and code restructuring are also presented. The QA and verification process concluded that Version 1.5 of the MACCS code, within the scope and limitations of the models implemented in the code, is essentially error free and ready for widespread use.

NUREG/CR-5381: ECONOMIC RISK OF CONTAMINATION CLEANUP COSTS RESULTING FROM LARGE NONREACTOR NUCLEAR MATERIAL LICENSEE OPERATIONS. PHILBIN, J.S. Sandia National Laboratories. SALOIO, J.H. ERC Environmental & Energy Services, Inc. ROLLSTIN, J. Gram, Inc. March 1990. 177pp. 9004100430. SAND89-1302. 53344:114.

Several potential incident scenarios involving the accidental release of radioactive material at five reference, nonreactor nuclear material licensees are analyzed in this report. The economic risk (\$/licensee/yr) of decontamination is evaluated for each reference licensee. Although most releases and cleanup costs are minor, some less frequent incidents may result in very high cleanup costs that dominate the economic risk of decontamination of a particular licensee. The economic risk for the 5 plants ranged from a low of \$14,000 per licensee per year to a high of \$104,000 per licensee per year. This report is the second of two reports by Sandia National Laboratories on the economic risk of nonreactor nuclear material licensee operations. This report provides technical basis for a proposed financial responsibility rulemaking for nonreactor nuclear material licensees.

NUREG/CR-5386: BASIS FOR SNUBBER AGING RESEARCH: NUCLEAR PLANT AGING RESEARCH PROGRAM. BROWN, D.P. Lake Engineering, Inc. PALMER, G.R. Wylie Laboratories. WERRY, E.V.; et al. Battelle Memorial Institute, Pacific Northwest Laboratory. January 1990. 119pp. 9002120341. PNL-6911. 52601:008. This report describes a research plan to address the safety concerns of aging in snubbers used on piping and equipment in commercial nuclear power plants. The work is to be performed under Phase II of the Snubber Aging Study of

the Nuclear Plant Aging Research Program of the U.S. Nuclear Regulatory Commission with the Pacific Northwest Laboratory (PNL) as the prime contractor. Research conducted by PNL under Phase I provided an initial assessment of snubber operating experience and was primarily based on a review of licensee event reports. The work proposed is an extension of Phase I and includes research at nuclear power plants and in test laboratories. Included is technical background on the design and use of snubbers in commercial nuclear power applications; the primary failure modes of both hydraulic and mechanical snubbers are discussed. The anticipated safety, technical, and regulatory benefits of the work, along with concerns of the NRC and the utilities, are also described.

NUREG/CR-5395 V02: MULTILoop INTEGRAL SYSTEM TEST (MIST): FINAL REPORT. Test Group 30, Mapping Tests. GEISSLER, G.O. Babcock & Wilcox Co. December 1989. 1,058pp. 9003070265. EPRI/NP-6480. 52803:305.

The Multiloop Integral System Test (MIST) is part of a multi-phase program started in 1983 to address small-break loss-of-coolant accidents (SBLOCAs) specific to Babcock and Wilcox designed plants. MIST is sponsored by the U.S. Nuclear Regulatory Commission, the Babcock & Wilcox Owners Group, the Electric Power Research Institute, and Babcock and Wilcox. The unique features of the Babcock and Wilcox design, specifically the hot leg U-bends and steam generators, prevented the use of existing integral system data or existing integral facilities to address the thermal-hydraulic SBLOCA questions. MIST and two other supporting facilities were specifically designed and constructed for this program, and an existing facility--the Once Through Integral System (OTIS)--was also used. Data from MIST and the other facilities will be used to benchmark the adequacy of system codes, such as RELAP5 and TRAC, for predicting abnormal plant transients. The MIST program is reported in 11 volumes. The program is summarized in Volume 1; Volumes 2 through 8 describes groups of tests by test type; Volume 9 presents inter-group comparisons; Volume 10 provides comparisons between the calculations of RELAP5/MOD2 and MIST observations, and Volume 11 presents the later Phase 4 tests. This Volume 2 pertains to MIST mapping tests performed to traverse the early post-SBLOCA events slowly. The tests investigated the effect of test-to-test variations in boundary system controls, and only the primary fluid mass varied during a specific test in this test group.

NUREG/CR-5395 V10: MULTILoop INTEGRAL SYSTEM TEST (MIST): FINAL REPORT. RELAP5/MOD2 MIST Analysis Comparisons. KLINGENFUS, J.A.; PARECE, M.V. Babcock & Wilcox Co. December 1989. 300pp. 9002120143. EPRI/NP-6480. 52580:313.

The Multiloop Integral System Test (MIST) is part of a multi-phase program started in 1983 to address small-break loss-of-coolant accidents (SBLOCAs) specific to Babcock and Wilcox designed plants. MIST is sponsored by the U.S. Nuclear Regulatory Commission, the Babcock & Wilcox Owners Group, the Electric Power Research Institute, and Babcock and Wilcox. The unique features of the Babcock and Wilcox design, specifically the hot leg U-bends and steam generators, prevented the use of existing integral system data or existing integral facilities to address the thermal-hydraulic SBLOCA questions. MIST and two other supporting facilities were specifically designed and constructed for this program, and an existing facility--the Once Through Integral System (OTIS)--was also used. Data from MIST and the other facilities will be used to benchmark the adequacy of system codes, such as RELAP5 and TRAC, for predicting abnormal plant transients. The MIST program is reported in 11 volumes. The program is summarized in Volume 1; Volumes 2 through 8 describes groups of tests by test type; Volume 9 presents inter-group comparisons; Volume 10 provides comparisons between the calculations of RELAP5/MOD2 and MIST observations, and Volume 11 presents the later Phase 4 tests. The comparisons of RELAP5/MOD2 against the

MIST data and conclusions reached are the subject of this volume.

NUREG/CR-5398: TECHNICAL BASIS FOR REVIEW OF HIGH-LEVEL WASTE REPOSITORY MODELING. PRICE, L.L.; WAHI, K.K.; GALLEGOS, D.P.; et al. Sandia National Laboratories. March 1990. 43pp. 9004100413. SAND89-1557. 53344:042.

Both the U.S. Environmental Protection Agency (EPA) and the U.S. Nuclear Regulatory Commission (NRC) have promulgated regulations regarding the performance of geologic repositories for the disposal of high-level nuclear waste. One of the responsibilities of the U.S. Department of Energy (DOE) is to demonstrate compliance with the appropriate regulations. The DOE will most likely use extensive numerical modeling to show compliance with the various quantitative requirements. These analyses will then be evaluated by the NRC. There are different levels of evaluation: peer review, conservative estimates, use of existing models/codes, and development of models/codes by the NRC. The intensity of the review will vary from analysis to analysis, depending on the importance of the analysis, the acceptability of the conceptual model behind the analysis and the solution technique used, and the potential for increasing confidence in the system description, should the NRC decide to develop its own models/codes. An appropriate level of review can be determined by applying these four criteria in a specific manner.

NUREG/CR-5404 V01: AUXILIARY FEEDWATER SYSTEM AGING STUDY. CASADA, D.A. Oak Ridge National Laboratory. March 1990. 183pp. 9004090260. ORNL-6566. 53314:311.

This report documents the results of a study of the Auxiliary Feedwater (AFW) System that has been conducted for the U.S. Nuclear Regulatory Commission's Nuclear Plant Aging Research Program. The study reviews historical failure data available from the Nuclear Plant Reliability Data System, Licensee Event Report Sequence Coding and Search System, and Nuclear Power Experience data bases. The failure histories of AFW System components are considered from the perspectives of how the failures were detected and the significance of the failure. Results of a detailed review of operating and monitoring practices at a plant owned by a cooperating utility are presented. General system configurations and pertinent data are provided for Westinghouse and Babcock and Wilcox units.

NUREG/CR-5405: ANALYSIS OF SHELL-RUPTURE FAILURE DUE TO HYPOTHETICAL ELEVATED-TEMPERATURE PRESSURIZATION OF THE SEQUOYAH UNIT 1 STEEL CONTAINMENT BUILDING. MILLER, J.D. Sandia National Laboratories. February 1990. 100pp. 9003070222. SAND89-1650. 52811:132.

Sandia National Laboratories, as part of the Containment Integrity Programs under the sponsorship of the Nuclear Regulatory Commission (NRC), has developed analytical techniques for predicting the performance of light water reactor steel containment buildings subject to loads beyond the design basis. The analytical techniques are based on experience with large-scale steel containment model tests that provided important insights and experimental validation of the analytical methods. As a means of demonstrating these analytical techniques, the NRC asked Sandia to conduct a structural evaluation of an actual steel containment building. The objective of the analysis was to determine the actual pressure capacity and the mode, location, and size of failure, where a functional definition of failure is used. The purpose of this report is to document the calculations performed to determine the pressure limits for the shell-rupture mode of failure. General failure of the containment shell is predicted by application of a failure criterion to the results from finite element structural analyses. The failure criterion relates the calculated values of strain in the containment plates, due to internal-pressurization loading, to the ultimate strain limit of the steel. Included in the failure criterion are adjustments for factors inherent in finite element analysis, such as level of detail and element size of finite element model and variations in material

property data. Separate finite element models were used to evaluate the overall free-field behavior of the structure and the localized behavior at a specific penetration location. Three scenarios of static internal pressurization, based on gases building up slowly within the containment shell during a severe accident, were evaluated. The scenarios included pressure loading with temperatures uniformly increasing in the finite element model in correspondence to the properties of pressurized saturated steam, pressure loading with non-uniformly increasing temperatures, and pressure loading without a corresponding temperature increase, which was done for comparison with earlier published analyses. It is concluded that thermal effects do not change the overall response of the structure or the general shell failure mode, compared to the response due to pressurization at ambient temperature. The reduction in the predicted internal-pressure capacity of the containment building at temperature corresponds to the reduction in the ultimate strength of the A516 Grade 60 steel due to the temperature increase.

NUREG/CR-5419: AGING ASSESSMENT OF INSTRUMENT AIR SYSTEMS IN NUCLEAR POWER PLANTS. VILLARAN, M.; FULLWOOD, R.; SUBUDHI, M. Brookhaven National Laboratory. January 1990. 139pp. 9003070250. BNL-NUREG-52212. 52803:129.

NRC Generic Issue 43, "Contamination of Instrument Air Lines", has been unresolved since 1980. The potential seriousness of this issue was reinforced in a 1987 study by the Office for Analysis and Evaluation of Operational Data. Aging of components within compressed air systems, leading to degraded function of the system, is the subject of this study. This work was performed under the auspices of the NRC's Office of Nuclear Regulatory Research as part of the Nuclear Plant Aging Research (NPAR) Program. The objective of this study was to identify all the aging modes and their causes, which should be mitigated to achieve a reliable operation of all safety-related equipment. Also included is an interim review of typical maintenance activities for air systems in the nuclear power industry. The Phase 2 effort of this study will make recommendations for developing an effective maintenance program industry-wide to counter the effects of aging. The analysis of operating experience data revealed that aging degradation occurs in the compressed air system, and becomes a factor as the system ages. Normal wear of the system and contamination of the air dominate the problems of system failure. Existing maintenance programs within the industry lack uniformity, and quality assurance is not rigorous because the system is classified as non-safety.

NUREG/CR-5421: LAPUR USER'S GUIDE. OTADUY, P.J.; MARCH-LEUBA, J. Oak Ridge National Laboratory. January 1990. 77pp. 9003070237. ORNL-TM/11285. 52801:001.

LAPUR, a computer program in FORTRAN-IV, is a mathematical description of the core of a boiling water reactor. Its two linked modules, LAPURX and LAPURW, respectively solve the steady state governing equations for the coolant and fuel and the dynamic equations for the coolant, fuel, and neutron field in the frequency domain. General implementation descriptions are followed by a detailed description of input and output parameters of LAPURX and LAPURW. Sample inputs are included and stability benchmarks are noted.

NUREG/CR-5424: ELICITING AND ANALYZING EXPERT JUDGEMENT. A Practical Guide. MEYER, M.A.; BOOKER, J.M. Los Alamos National Laboratory. January 1990. 424pp. 9002120292. LA-11667-MS. 52574:303.

In this book we describe how to elicit and analyze expert judgment. Expert judgment is defined here to include both the experts' answers to technical questions and their mental processes in reaching an answer. It refers specifically to data that are obtained in a deliberate, structured manner that makes use of the body of research on human cognition and communication. Our aim is to provide a guide for lay persons in expert judgment. These persons may be from physical and engineering

12 Main Citations and Abstracts

sciences, mathematics and statistics, business, or the military. We provide background on the uses of expert judgment and on the processes by which humans solve problems, including those that lead to bias. Detailed guidance is offered on how to elicit expert judgment ranging from selecting the questions to be posed of the experts to selecting and motivating the experts to setting up for and conducting the elicitation. Analysis procedures are introduced and guidance is given on how to understand the data base structure, detect bias and correlation, form models, and aggregate the expert judgments.

NUREG/CR-5435: ENVIRONMENTAL EFFECTS ON CORROSION IN THE TUFF REPOSITORY. BEAVERS, J.A.; THOMPSON, N.G. Cortest Columbus, Inc. February 1990. 149pp. 9003190298. 53012:133.

Cortest Columbus is investigating the long-term performance of container materials used for high-level waste packages as part of the information needed by the Nuclear Regulatory Commission to assess the Department of Energy's application to construct a geologic repository for high-level radioactive waste. The scope of work consists of employing short-term techniques, such as electrochemical and slow strain rate mechanical test techniques, to examine a wide range of possible failure modes. Long-term tests are being used to verify and further examine specific failure modes identified as important by the short-term studies. This report summarizes the results of a literature survey performed under Task 1 of the program. The survey focuses on the influence of environmental variables on the corrosion behavior of candidate container materials for the Tuff repository. Environmental variables considered included: radiation, thermal and microbial effects.

NUREG/CR-5450: HIGH-TEMPERATURE CRACK-ARREST TESTS USING 152-MM-THICK SEN WIDE PLATES OF LOW-UPPER-SHELF BASE MATERIAL: TESTS WP-2.2 AND WP-2.6. NAUS, D.J.; KEENEY-WALKER; BASS, B.R.; et al. Oak Ridge National Laboratory. February 1990. 143pp. 9003070238. ORNL/TM-11352. 52802:055.

Two 152-mm-thick wide-plate crack-arrest tests (WP-2 series) are discussed in this report. Each test used a $1 \times 1 \times 0.15$ m thick single-edge-notch specimen ($a/w = 0.2$), fabricated from a low-upper-shelf base material, that was subjected to a linear thermal gradient along the plane of crack propagation. The tests were conducted at the National Institute of Standards and Technology and were designed to provide fracture-toughness measurements at temperatures approaching or above the onset of the Charpy upper-shelf regime in a rising toughness region and with an increasing driving force. Results obtained from these tests have produced crack-arrest toughness values well above the limit recognized by the current ASME guidelines ($220 \text{ MPa} \cdot \sqrt{\text{m}}$) with arrests occurring at 44 to 102 degrees C above the material DW(NDT) (60 degrees C). The fracture data support (1) the use of fracture mechanics concepts to analyze cleavage run-arrest events, (2) the treatment of cleavage run-arrest and ductile fracture modes as separate events, and (3) the fact that cleavage arrest occurs above the ASME limit.

NUREG/CR-5472: A RISK-BASED REVIEW OF INSTRUMENT AIR SYSTEMS AT NUCLEAR POWER PLANTS. DEMOSS, G.; LOFGREN, E.; ROTHLEDER, B.; et al. Science Applications International Corp. (formerly Science Applications, Inc.). January 1990. 165pp. 9003070261. BNL-NUREG-52220. 52802:324.

The broad objective of this analysis was to provide risk-based information to help focus regulatory actions related to Instrument Air (IA) systems at operating nuclear power plants. We first created an extensive data base of summarized and characterized IA-related events that gave a qualitative indication of the nature and severity of these events. Additionally, this data base was used to calculate the frequencies of certain events, which were used in the risk analysis. The risk analysis consisted of reviewing published PRAs and NRC Accident Sequence Precursor reports for IA-initiated accident sequences, IA interactions with frontline systems, and IA-related risk significant events. Sensitiv-

ity calculations were performed when possible. Generically, IA was found to contribute less to total risk than many safety systems; however, specific design weaknesses in safety systems, non-safety systems, and the IA system were found to be significant in risk.

NUREG/CR-5474: ASSESSMENT OF CANDIDATE ACCIDENT MANAGEMENT STRATEGIES. LUCKAS, W.J.; VANDENKIEBOOM; LEHNER, J.R. Brookhaven National Laboratory. March 1990. 46pp. 9004100337. BNL-NUREG-52221. 53343:029.

A set of selected candidate accident management strategies, whose purpose is to prevent or mitigate in-vessel core damage, were developed from various NRC and industry reports. These strategies have been grouped in this report by the challenges they are intended to meet, and assessed to provide information which may be useful to individual licensees for consideration when they perform their individual Plant Examinations. Each assessment focused on describing and explaining the strategy, considering its relationship to existing requirements and practices as well as identifying possible associated adverse effects.

NUREG/CR-5476: POSTTEST ANALYSIS OF A 1:6-SCALE REINFORCED CONCRETE REACTOR CONTAINMENT BUILDING. WEATHERBY, J.R. Sandia National Laboratories. February 1990. 96pp. 9004030052. SAND89-2603. 53226:001.

In an experiment conducted at Sandia National Laboratories, a 1:6-scale model of a reinforced concrete light water reactor containment building was pressurized with nitrogen gas to more than three times its design pressure. The pressurization produced one large tear and several smaller tears in the steel liner plate that functioned as the primary pneumatic seal for the structure. This report describes posttest finite element analyses of the 1:6-scale model test and compares pretest predictions of the structural response to the experimental results. Strains and displacements calculated in axisymmetric finite element analyses of the 1:6-scale model are compared to strains and displacements measured in the experiment. Detailed analyses of the liner plate are also described in the report. The results from these analyses indicate that the primary mechanisms that initiated the tear can be captured in a two-dimensional finite element model. Furthermore, the analyses show that studs which were used to anchor the liner to the concrete wall, played an important role in initiating the liner tear.

NUREG/CR-5477: AN EVALUATION OF THE RELIABILITY AND USEFULNESS OF EXTERNAL-INITIATOR PRA METHODOLOGIES. BUDNITZ, R.J.; LAMBERT, H.E. Future Resources Associates, Inc. January 1990. 111pp. 9002120348. 52577:129.

This report, prepared to assist policy-level decision-makers, evaluates the extent to which each category of external-initiators PRA methodology produces reliable and useful results and insights, at its current state-of-the-art level. This report addresses this need in the following five categories of external initiators: (1) earthquakes; (2) internal fires; (3) external floods; (4) extreme winds; and (5) transportation accidents. Each initiator is examined separately. The thrust is to identify and describe the principal aspects of the current state-of-the-art PRA methodology, what aspects are less robust and therefore provide less reliable insights, and why.

NUREG/CR-5478: IMPROVED EDDY-CURRENT INSPECTION FOR STEAM GENERATOR TUBING. Progress Report For January 1985 To December 1987. DODD, C.V.; DEEDS, W.E.; MCCLUNG, R.W. Oak Ridge National Laboratory. January 1990. 36pp. 9002120284. ORNL/TM-11389. 52597:255.

A major limitation of eddy-current inspection of steam generator tubing is that small flaw signals can be masked by the effects of benign variables, such as tube supports. To identify the critical flaw properties accurately and reliably in the presence of signals caused by these other property variations, we must have enough information to distinguish the flaw signals from the extraneous ones. Therefore, we developed instrumentation to measure both the amplitude and the phase of the eddy-current

signal at several different frequencies, as well as computer equipment to process the data quickly and reliably. This need to detect small flaws in the presence of perturbing property variations has also required the development of more sensitive and more complicated probes, such as pancake and reflection probes. These smaller coils can detect much smaller flaws and are less sensitive to artifacts outside the tube, such as tube supports, magnetite, or copper. By being pressed against the tube wall, they also avoid liftoff effects. To increase the inspection speed an array of these small coils has been constructed and tested. Finally, new and more complicated tube standards were constructed to include the range of property variations.

NUREG/CR-5479: CURRENT APPLICATIONS OF VIBRATION MONITORING AND NEUTRON NOISE ANALYSIS. Detection And Analysis Of Structural Degradation Of Reactor Vessel Internals From Operational Aging. DAMIANO, B.; KRYTER, R.C. Oak Ridge National Laboratory. February 1990. 43pp. 9004090190. ORNL/TM-11398. 53314:270.

This report, which was prepared under the Nuclear Plant Aging Research Program sponsored by the United States Nuclear Regulatory Commission, discusses the application of vibration monitoring and neutron noise analysis for monitoring light water reactor (LWR) vessel internals. The report begins by describing the effects of loss of structural integrity on internals vibration and how sensible parameters can be used to detect and track the progress of degradation. This is followed by a description and comparison of vibration monitoring and neutron noise analysis, two methods for monitoring the mechanical integrity of reactor vessel internal components. The major section of the report describes the status of reactor vessel internals condition monitoring programs in the United States, Federal Republic of Germany, and France, three countries having substantial commitments to nuclear power. The last section presents guidelines for U.S. utilities wishing to establish reactor internals condition monitoring programs.

NUREG/CR-5482: LABORATORY ANALYSIS OF FLUID FLOW AND SOLUTE TRANSPORT THROUGH A VARIABLY SATURATED FRACTURE EMBEDDED IN POROUS TUFF. CHUANG, Y.; HALDEMAN, W.R.; RASMUSSEN, T.C.; et al. Arizona, Univ. of, Tucson, AZ. February 1990. 332pp. 9003070258. 52801:083.

Laboratory techniques are developed that allow concurrent measurement of unsaturated matrix hydraulic conductivity and fracture transmissivity of fractured rock blocks. Two Apache Leap tuff blocks with natural fractures were removed from near Superior, Arizona, shaped into rectangular prisms, and instrumented in the laboratory. Porous ceramic plates provided solution to block tops at regulated pressures. Infiltration tests were performed on both test blocks. Steady flow testing of the saturated first block provided estimates of matrix hydraulic conductivity and fracture transmissivity. Fifteen centimeters of suction applied to the second block top showed that fracture flow was minimal and matrix hydraulic conductivity was an order of magnitude less than the first block saturated matrix conductivity. Coated-wire ion-selective electrodes monitored aqueous chloride breakthrough concentrations. Minute samples of tracer solution were collected with filter paper. The techniques worked well for studying transport behavior at near-saturated flow conditions and also appear to be promising for unsaturated conditions. Breakthrough curves in the fracture and matrix, and a concentration map of chloride concentrations within the fracture, suggest preferential flow paths in the fracture and substantial diffusion into the matrix. Average travel velocity, dispersion coefficient and longitudinal dispersivity in the fracture are obtained.

NUREG/CR-5484: PH SENSORS BASED ON IRIIDIUM OXIDE. TARLOV, M.J.; KREIDER, K.G.; SEMANCIK, S.; et al. National Institute of Standards & Technology (formerly National Bureau of Standards). March 1990. 21pp. 9004100360. 53344:092.

Results are presented on the pH-potential response of d.c. magnetron reactively sputtered iridium oxide films. The films ex-

hibit a nearly Nernstian response to pH, no hysteresis effects, and minimal response to ionic interferences. Sensitivity to certain redox species is observed, however. In addition, methods are discussed for preparing model iridium oxide sensor surfaces for ultrahigh vacuum surface analytical studies. Stoichiometric IrO₂-like surfaces are shown to be relatively inert to gas phase water. However, hydroxylation of IrO₂-like surfaces can be induced by rf water plasma treatment.

NUREG/CR-5491: SHIPPINGPORT STATION AGING EVALUATION. ALLEN, R.P.; JOHNSON, A.B. Battelle Memorial Institute, Pacific Northwest Laboratory. January 1990. 143pp. 9002120344. PNL-7191. 52577:240.

The Shippingport Atomic Power Station, the first U.S. large-scale, central-station nuclear plant, now in the final stages of decommissioning, has been a major source of naturally aged equipment for the Nuclear Plant Aging Research (NPAR) and other U.S. Nuclear Regulatory Commission (NRC) programs. The evaluation of naturally aged components is an integral part of the NPAR program strategy. Because naturally aged components and materials experience the actual service-related external stressors, corrosion and wear, testing procedures, and maintenance practices, their evaluation is valuable in verifying degradation models, validating aging projections based on the extrapolation of accelerated test data, and detecting unexpected aging mechanisms (surprises) that could significantly impact component or system safety performance. As part of the Shippingport Station aging evaluation work, more than 200 items, ranging in size from small instruments and materials samples to one of the main coolant pumps, have been removed and shipped to designated NRC contractors. Although detailed evaluations of the components and material from the Shippingport Station are just beginning, the preliminary results from the studies conducted to date are indicative of the value of the aging information that ultimately may be obtained.

NUREG/CR-5492: INVESTIGATIONS OF IRRADIATION-ANNEAL-REIRRADIATION (IAR) PROPERTIES TRENDS OF RPV WELDS. Phase 2. Final Report. HAWTHORNE, J.R.; HISER, A.L. Materials Engineering Associates, Inc. January 1990. 302pp. 9002120277. MEA-2088. 52574:001.

Notch ductility, fracture toughness and tensile property trends of two high copper content, submerged arc welds with 288 degrees C irradiation (I), 399 degrees C postirradiation annealing (IA) and 288 degrees C reirradiation (IAR) were investigated. Primary objectives included the determination of weld metal reembrittlement rate with fluence following an anneal and the influence of first cycle fluence level (high or low) on reembrittlement susceptibility. The welds were commercially made using a single lot of filler wire and two welding fluxes (Linde 80 and Linde 0091). A relatively-rapid reembrittlement of both weld types was observed with initial reirradiation; however, the reembrittlement rate decreased markedly after a reirradiation fluence of about $\sim 0.3 \times 10^{19}$ n/cm², E greater than 1 Mev. In turn, the benefit of IA procedures toward reducing total properties change with fluence was retained. The reembrittlement trend was independent of first cycle fluence level for the range investigated. Residual embrittlement after 399 degrees C - 168 hour annealing, indexed by 41-J temperature, appears independent of the pre-anneal condition (I or IAR); however, wide variability among welds in percent recovery is indicated. Trends in IAR behavior from Charpy-V specimen tests were found to be reinforced by tensile specimen and fracture toughness (0.5T-CT specimen) test findings.

NUREG/CR-5493: INFLUENCE OF FLUENCE RATE ON RADIATION-INDUCED MECHANICAL PROPERTY CHANGES IN REACTOR PRESSURE VESSEL STEELS. Final Report On Exploratory Experiments. HAWTHORNE, J.R.; HISER, A.L. Materials Engineering Associates, Inc. March 1990. 300pp. 9004100351. MEA-2376. 53344:299.

This report describes a set of experiments undertaken using a 2 MW test reactor, the UBR, to qualify the significance of fluence rate to the extent of embrittlement produced in reactor pressure vessel steels at their service temperature. The test materials included two reference plates (A 302-B, A 533-B steel) and two submerged arc weld deposits (Linde 80, Linde 0091 welding fluxes). Charpy-V (C(v)), tension and 0.5T-CT compact specimens were employed for notch ductility, strength and fracture toughness (J-R curve) determinations, respectively. Target fluence rates were 8×10^{10} , 6×10^{11} and 9×10^{12} n/cm²-s(-1). Specimen fluences ranged from 0.5 to 3.8×10^{19} n/cm², E greater than 1 MeV. The data describe a fluence-rate effect which may extend to power reactor surveillance as well as test reactor facilities now in use. The dependence of embrittlement sensitivity on fluence rate appears to differ for plate and weld deposit materials. Relatively good agreement in fluence-rate effects definition was observed among the three test methods.

NUREG/CR-5506: PRELIMINARY STRUCTURAL EVALUATION OF TROJAN RCL SUBJECT TO POSTULATED RPV SUPPORT FAILURE. L.U.S.C. Lawrence Livermore National Laboratory. January 1990. 35pp. 9002120234. UCID-21831. 52611:224.

This report describes a preliminary structural evaluation made to determine whether the reactor coolant loop (RCL) piping of the Trojan nuclear power plant is capable of transferring the loads normally carried by the reactor pressure vessel (RPV) supports to other component supports in the RCL system if the RPV supports should fail, say from radiation damage. For the evaluation, we use the computer model of the RCL system of Unit 1 of the Zion nuclear power plant because it is readily available; the RCL systems of these two plants closely resemble each other. As a bounding case in the evaluation we postulate that all four RPV supports have failed. Two load combinations are evaluated: (1) the combination of dead weight, operating pressure, and the safe-shutdown earthquake, and (2) the combination of dead weight, operating pressure, and a loss-of-coolant accident. Both load combinations are classified as Level D Service Limits in accordance with the ASME Boiler and Pressure Vessel Code. Static and dynamic linear elastic analyses are conducted to comply with rules specified by Subsection NB in conjunction with Appendix F, Division 1, Section III of the ASME Code. Results of this preliminary evaluation indicate that ASME Code Appendix F requirements are satisfied by each of the load combinations considered in the analysis, leading to the conclusion that the Trojan RCL piping is capable of transferring the RPV support loads to the steam generator and reactor coolant pump supports.

NUREG/CR-5511: IRRADIATION EFFECTS ON STRENGTH AND TOUGHNESS OF THREE-WIRE SERIES-ARC STAINLESS STEEL WELD OVERLAY CLADDING. HAGGAG, F.M.; CORWIN, W.R.; NANSTAD, R.K. Oak Ridge National Laboratory. February 1990. 155pp. 9003190328. ORNL/TM-11439. 53044:223.

The potential for stainless steel cladding to improve the fracture behavior of an operating nuclear reactor pressure vessel, particularly during certain overcooling transients, may depend greatly on the properties of the irradiated cladding. Therefore, three-wire stainless steel cladding irradiated at temperatures and to fluences relevant to power reactor operation was examined. Postirradiation tensile testing results show that, from -125 to 288 degrees C, the yield strength increased by 8 to 30%, ductility increased insignificantly, with almost no change in ultimate tensile strength. All cladding exhibited ductile-to-brittle transition behavior during Charpy impact testing, because of the dominance of delta ferrite failures at low temperatures. On the upper shelf, energy was reduced 15 and 20%, and lateral expansion 43 and 41%, owing to irradiation exposure of 2 and 5×10^{19} neutrons/cm² (greater than 1 MeV), respectively. In addition, radiation damage resulted in 13 and 28 degrees C shifts of the Charpy impact transition temperature for the low and high fluences, respectively. Irradiation exposure of 12.5 -

mm-thick compact specimens (0.5TCS), to a fluence of 2.41×10^{19} neutrons/cm² (greater than 1 MeV), resulted in decreases in the initiation fracture toughness, J(Ic), and the tearing modulus.

NUREG/CR-5512 DRF FC: RESIDUAL RADIOACTIVE CONTAMINATION FROM DECOMMISSIONING. Technical Basis For Translating Contamination Levels To Annual Dose. Draft Report For Comment. KENNEDY, W.E.; PELOQUIN, R.A. Battelle Memorial Institute, Pacific Northwest Laboratory. January 1990. 317pp. 9003070227. PNL-7212. 52811:232.

This document describes the generic modeling of the total effective dose equivalent (TEDE) to an individual in a population from a unit concentration of residual radioactive contamination. Radioactive contamination inside buildings and soil contamination are considered. Unit concentration TEDE factors by radionuclide, exposure pathway, and exposure scenario are calculated. Reference radiation exposure scenarios are used to derive unit concentration TEDE factors for about 200 individual radionuclides and parent-daughter mixtures. For buildings, these unit concentration factors list the annual TEDE for volume and surface contamination situations. For soil, annual TEDE factors are presented for unit concentrations of radionuclides in soil during residential use of contaminated land and the TEDE per unit total inventory for potential use of drinking water from a ground-water source. Because of the generic treatment of potentially complex ground-water systems, the annual TEDE factors for drinking water for a given inventory may only indicate when additional site data or modeling sophistication are warranted. Descriptions are provided of the models, exposure pathways, exposure scenarios, parameter values, and assumptions used. An analysis of the potential annual TEDE resulting from reference mixtures of residual radionuclides is provided to demonstrate application of the TEDE factors.

NUREG/CR-5516: CAUSES OF FAILING THE DRAFT ANSI STANDARD N13.30 RADIOBIOASSAY PERFORMANCE CRITERION FOR MINIMUM DETECTABLE AMOUNT. MACLELLAN, J.A. Battelle Memorial Institute, Pacific Northwest Laboratory. February 1990. 43pp. 9003070190. PNL-7217. 52813:026.

The test methods used for PNL bioassay performance tests were evaluated by comparing the MDA based on performance tests results with the MDA calculated by PNL using the bioassay laboratory's own quality control (QC) data. Two in vitro laboratories and two in vivo laboratories were studied and a correlation between the performance test MDA estimates and QC data was demonstrated. However, it was often necessary to examine the QC data to identify important characteristics of the blank distribution that affect the MDA calculation. Since the MDA equation must be based on the specific analysis and calculational methods of the procedure evaluated. Even when the correct MDA equation is applied, the MDA calculated will have a relatively large confidence interval when only a few replicates are used to estimate the standard deviation. For this reason, a relatively precise estimate of the MDA is generally only available when Poisson statistics may be applied. It was concluded that performance testing alone cannot provide all the information necessary to make an accurate estimate of the measurement process MDA. Review of the laboratory's QC data and the entire measurement procedure will be necessary. Specific recommendations for changes to draft ANSI N13.30 "Performance Criteria for Radiobioassay" are given.

NUREG/CR-5527: RISK SENSITIVITY TO HUMAN ERROR IN THE LASALLE PRA. WONG, S.; HIGGINS, J.; O'HARA, J.; et al. Brookhaven National Laboratory. March 1990. 152pp. 9004030071. BNL-NUREG-52228. 53226:169.

A sensitivity evaluation was conducted to assess the impact of human errors on the internal event risk parameters in the LaSalle plant. The results provide the variation in the risk parameters, namely, core melt frequency and accident sequence fre-

quencies, due to hypothetical changes in human error probabilities. Also provided are insights derived from the results, which highlight important areas for concentration of risk limitation efforts associated with human performance.

NUREG/IA-0012: RELAP5/MOD2 CALCULATIONS OF OECD-LOFT TEST LP-SB-01. HALL, P.C.; BROWN, G. Central Electricity Generating Board. January 1990. 40pp. 9002120283. GD/PE-N/544. 52597:215.

To assist CEGB in assessing the capabilities and status of RELAP5/MOD2, the code has been used to simulate SBLOCA test LP-SB-01 carried out in the LOFT experimental reactor under the OECD LOFT programme. This test simulated a 1.0% hot leg break in a PWR, with early tripping of the primary coolant circulating pumps. This report compares the results of the RELAP5/MOD2 analysis with experimental measurements.

NUREG/IA-0013: RELAP5/MOD2 CALCULATIONS OF OECD-LOFT TEST LP-SB-03. HARWOOD, C.; BROWN, G. Central Electricity Generating Board. January 1990. 48pp. 9002120316. GD/PE-N/535. 52611:083.

This report compares the results of the RELAP5/MOD2 analysis with experimental measurements. A simulation of test LP-SB-03 was previously carried out at GDCD using the RELAP5/MOD1 code. RELAP5/MOD2 was developed from RELAP5/MOD1 and contains more sophisticated hydraulic models and constitutive relationships. Comparison of the RELAP5/MOD2 and MOD1 calculations show that RELAP5/MOD2 performs better than RELAP5/MOD1 in a number of key areas; notably mass errors are much reduced, there is improved numerical stability, and improved separator modelling and modelling of accumulator injection.

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NUREG/CR-5307: CLOSEOUT OF IE BULLETIN 80-02: INADEQUATE QUALITY ASSURANCE FOR NUCLEAR SUPPLIED EQUIPMENT.
- DEEDS, W.E.**
NUREG/CR-5478: IMPROVED EDDY-CURRENT INSPECTION FOR STEAM GENERATOR TUBING. Progress Report For January 1985 To December 1987.
- DEFFENBAUGH, J.**
NUREG/CR-4469 V08: NONDESTRUCTIVE EXAMINATION (NDE) RELIABILITY FOR INSERVICE INSPECTION OF LIGHT WATER REACTORS. Semiannual Report, October 1987 - March 1988.
NUREG/CR-4469 V09: NONDESTRUCTIVE EXAMINATION (NDE) RELIABILITY FOR INSERVICE INSPECTION OF LIGHT WATER REACTORS. Semiannual Report, April-September 1988.
- DEMOSS, G.**
NUREG/CR-5472: A RISK-BASED REVIEW OF INSTRUMENT AIR SYSTEMS AT NUCLEAR POWER PLANTS.
- DEWITT, R.**
NUREG/CR-5450: HIGH-TEMPERATURE CRACK-ARREST TESTS USING 152-MM-THICK SEN WIDE PLATES OF LOW-UPPER-SHELF BASE MATERIAL. TESTS WP-2.2 AND WP-2.6.
- DIAMOND, D.J.**
NUREG/CR-5368: REACTIVITY ACCIDENTS. A Reassessment Of The Design-Basis Events.
- DIONNE, B.J.**
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- DOBBS, C.A.**
NUREG/CR-5376: QUALITY ASSURANCE AND VERIFICATION OF THE MACCS CODE, Version 1.5.
- DOCTOR, S.R.**
NUREG/CR-4469 V08: NONDESTRUCTIVE EXAMINATION (NDE) RELIABILITY FOR INSERVICE INSPECTION OF LIGHT WATER REACTORS. Semiannual Report, October 1987 - March 1988.
NUREG/CR-4469 V09: NONDESTRUCTIVE EXAMINATION (NDE) RELIABILITY FOR INSERVICE INSPECTION OF LIGHT WATER REACTORS. Semiannual Report, April-September 1988.
NUREG/CR-4882: QUALIFICATION PROCESS FOR ULTRASONIC TESTING IN NUCLEAR INSERVICE INSPECTION APPLICATIONS.
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- DOSANJH, S.S.**
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- DRAHOS, F.R.**
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- DROUIN, M.T.**
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- ERICSON, D.M.**
NUREG/CR-4550 V01 R1: ANALYSIS OF CORE DAMAGE FREQUENCY: INTERNAL EVENTS METHODOLOGY.
- ERIKSON, R.L.**
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- EVANS, J.S.**
NUREG/CR-4214 R01 P1: HEALTH EFFECTS MODELS FOR NUCLEAR POWER PLANT ACCIDENT CONSEQUENCE ANALYSIS. Low LET Radiation. Part I: Introduction, Integration And Summary.
- FIELDS, R.J.**
NUREG/CR-5450: HIGH-TEMPERATURE CRACK-ARREST TESTS USING 152-MM-THICK SEN WIDE PLATES OF LOW-UPPER-SHELF BASE MATERIAL. TESTS WP-2.2 AND WP-2.6.
- FITZPATRICK, R.**
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- FOLEY, W.J.**
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- NUREG/CR-5289: CLOSEOUT OF IE BULLETIN 79-23: POTENTIAL FAILURE OF EMERGENCY DIESEL GENERATOR FIELD EXCITER TRANSFORMER.
- NUREG/CR-5298: CLOSEOUT OF IE BULLETIN 85-01: STEAM BINDING OF AUXILIARY FEEDWATER PUMPS.
- NUREG/CR-5302: CLOSEOUT OF IE BULLETIN 80-10: CONTAMINATION OF NONRADIOACTIVE SYSTEM AND RESULTING POTENTIAL FOR UNMONITORED, UNCONTROLLED RELEASE OF RADIOACTIVITY TO ENVIRONMENT.
- NUREG/CR-5307: CLOSEOUT OF IE BULLETIN 80-02: INADEQUATE QUALITY ASSURANCE FOR NUCLEAR SUPPLIED EQUIPMENT.
- FRYER, C.P.**
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- FULLWOOD, R.**
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- GALLEGOS, D.P.**
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NUREG/CR-5398: TECHNICAL BASIS FOR REVIEW OF HIGH-LEVEL WASTE REPOSITORY MODELING.
- GARDNER, J.B.**
NUREG/CR-4731 V02: RESIDUAL LIFE ASSESSMENT OF MAJOR LIGHT WATER REACTOR COMPONENTS - OVERVIEW.
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NUREG/CR-4731 V02: RESIDUAL LIFE ASSESSMENT OF MAJOR LIGHT WATER REACTOR COMPONENTS - OVERVIEW.
- GASSER, R.D.**
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- GAUNTT, R.O.**
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NUREG/CR-4671: THE DF-4 FUEL DAMAGE EXPERIMENT IN ACRS WITH A BWR CONTROL BLADE AND CHANNEL BOX.
- GEISSLER, G.O.**
NUREG/CR-5395 V02: MULTILoop INTEGRAL SYSTEM TEST (MIST): FINAL REPORT. Test Group 30. Mapping Tests.
- GOOD, M.S.**
NUREG/CR-4469 V08: NONDESTRUCTIVE EXAMINATION (NDE) RELIABILITY FOR INSERVICE INSPECTION OF LIGHT WATER REACTORS. Semiannual Report, October 1987 - March 1988.
NUREG/CR-4469 V09: NONDESTRUCTIVE EXAMINATION (NDE) RELIABILITY FOR INSERVICE INSPECTION OF LIGHT WATER REACTORS. Semiannual Report, April-September 1988.
- GOODRICH, M.T.**
NUREG/CR-5256: COMPONENTS OF AN OVERALL PERFORMANCE ASSESSMENT METHODOLOGY.
NUREG/CR-5398: TECHNICAL BASIS FOR REVIEW OF HIGH-LEVEL WASTE REPOSITORY MODELING.
- GRAHN, D.**
NUREG/CR-4704 V03: RELATIVE BIOLOGICAL EFFECTIVENESS (RBE) OF FISSION NEUTRONS AND GAMMA RAYS AT OCCUPATIONAL EXPOSURE LEVELS. Studies On The Gross And Microscopic Pathology Observed At Death Of Mice Exposed To 60 Equal Once-Weekly Doses Of Fission....
- GREEN, E.R.**
NUREG/CR-4469 V08: NONDESTRUCTIVE EXAMINATION (NDE) RELIABILITY FOR INSERVICE INSPECTION OF LIGHT WATER REACTORS. Semiannual Report, October 1987 - March 1988.
NUREG/CR-4469 V09: NONDESTRUCTIVE EXAMINATION (NDE) RELIABILITY FOR INSERVICE INSPECTION OF LIGHT WATER REACTORS. Semiannual Report, April-September 1988.
- GUPPY, J.G.**
NUREG/CR-3668: MINET CODE DOCUMENTATION.
- GUZOWSKI, R.V.**
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NUREG/CR-5511: IRRADIATION EFFECTS ON STRENGTH AND TOUGHNESS OF THREE-WIRE SERIES-ARC STAINLESS STEEL WELD OVERLAY CLADDING.
- HAGRMAN, D.L.**
NUREG/CR-5273 V04: SCDAP/RELAP5/MOD2 CODE MANUAL, VOLUME 4: MATPRO - A LIBRARY OF MATERIALS PROPERTIES FOR LIGHT-WATER-REACTOR ACCIDENT ANALYSIS.
- HALDEMAN, W.R.**
NUREG/CR-5482: LABORATORY ANALYSIS OF FLUID FLOW AND SOLUTE TRANSPORT THROUGH A VARIABLY SATURATED FRACTURE EMBEDDED IN POROUS TUFF.
- HALL, P.C.**
NUREG/IA-0012: RELAP5/MOD2 CALCULATIONS OF OECD-LOFT TEST LP-SB-01.
- HAMPTON, N.L.**
NUREG/CR-5273 V04: SCDAP/RELAP5/MOD2 CODE MANUAL, VOLUME 4: MATPRO - A LIBRARY OF MATERIALS PROPERTIES FOR LIGHT-WATER-REACTOR ACCIDENT ANALYSIS.
- HARPER, F.T.**
NUREG/CR-4550 V01 R1: ANALYSIS OF CORROSION DAMAGE FREQUENCY: INTERNAL EVENTS METHODOLOGY.
- HARWOOD, C.**
NUREG/IA-0013: RELAP5/MOD2 CALCULATIONS OF OECD-LOFT TEST LP-SB-03.
- HAWTHORNE, J.R.**
NUREG/CR-5492: INVESTIGATIONS OF IRRADIATION-ANNEAL-REIRRADIATION (IAR) PROPERTIES TRENDS OF RPV WELDS. Phase 2 Final Report.
NUREG/CR-5493: INFLUENCE OF FLUENCE RATE ON RADIATION-INDUCED MECHANICAL PROPERTY CHANGES IN REACTOR PRESSURE VESSEL STEELS. Final Report On Exploratory Experiments.
- HEADLER, F.G.**
NUREG/CR-4469 V08: NONDESTRUCTIVE EXAMINATION (NDE) RELIABILITY FOR INSERVICE INSPECTION OF LIGHT WATER REACTORS. Semiannual Report, October 1987 - March 1988.
NUREG/CR-4469 V09: NONDESTRUCTIVE EXAMINATION (NDE) RELIABILITY FOR INSERVICE INSPECTION OF LIGHT WATER REACTORS. Semiannual Report, April-September 1988.
- HENNICK, A.**
NUREG/CR-4661: CLOSEOUT OF IE BULLETIN 85-03: MOTOR-OPERATED VALVE COMMON MODE FAILURES DURING PLANT TRANSIENTS DUE TO IMPROPER SWITCH SETTINGS.
NUREG/CR-5286: CLOSEOUT OF IE BULLETIN 79-17: PIPE CRACKS IN STAGNANT BORATED WATER SYSTEMS AT PWR PLANTS.
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- HIGGINS, J.**
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- HISER, A.L.**
NUREG/CR-5492: INVESTIGATIONS OF IRRADIATION-ANNEAL-REIRRADIATION (IAR) PROPERTIES TRENDS OF RPV WELDS. Phase 2 Final Report.
NUREG/CR-5493: INFLUENCE OF FLUENCE RATE ON RADIATION-INDUCED MECHANICAL PROPERTY CHANGES IN REACTOR PRESSURE VESSEL STEELS. Final Report On Exploratory Experiments.
- HOFMAYER, C.H.**
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- HOHORST, J.K.**
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- HOSTETLER, C.J.**
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- JACOBSON, J.**
NUREG/CR-3145 V08: GEOPHYSICAL INVESTIGATIONS OF THE WESTERN OHIO-INDIANA REGION. Annual Report, October 1988 - September 1989.
- JASTROW, J.D.**
NUREG/CR-5229 V02: TMI-2 EPICOR-II RESIN/LINER INVESTIGATION: LOW-LEVEL WASTE DATA DEVELOPMENT PROGRAM FOR FISCAL YEAR 1989. Annual Report.
- JOHNSON, A.B.**
NUREG/CR-5491: SHIPPINGPORT STATION AGING EVALUATION.
- JOW, H.**
NUREG/CR-4691 V02: MELCOR ACCIDENT CONSEQUENCE CODE SYSTEM (MACCS) Volume 2: Model Description.
NUREG/CR-4691 V03: MELCOR ACCIDENT CONSEQUENCE CODE SYSTEM (MACCS) Volume 3: Programmer's Reference Manual.
- KASSIR, M.K.**
NUREG/CR-4659 V03: SEISMIC FRAGILITY OF NUCLEAR POWER PLANT COMPONENTS (PHASE II). Switchgear, I&C Panels (NSSS) And Relays.
- KEENEY-WALKER**
NUREG/CR-5450: HIGH-TEMPERATURE CRACK-ARREST TESTS USING 152-MM-THICK SEN WIDE PLATES OF LOW-UPPER-SHELF BASE MATERIAL. TESTS WP-2.2 AND WP-2.6.
- KEMNER, M.L.**
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- KIRKWOOD, B.J.**
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- KRYTER, R.C.**
NUREG/CR-5479: CURRENT APPLICATIONS OF VIBRATION MONITORING AND NEUTRON NOISE ANALYSIS. Detection And Analysis Of Structural Degradation Of Reactor Vessel Internals From Operational Aging.
- LAATS, E.T.**
NUREG/CR-5273 V04: SCDAP/RELAP5/MOD2 CODE MANUAL, VOLUME 4: MATPRO - A LIBRARY OF MATERIALS PROPERTIES FOR LIGHT-WATER-REACTOR ACCIDENT ANALYSIS.
- LAMBERT, H.E.**
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- LAY, T.**
NUREG/CR-3145 V08: GEOPHYSICAL INVESTIGATIONS OF THE WESTERN OHIO-INDIANA REGION. Annual Report, October 1988 - September 1989.
- LEHNER, J.R.**
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- LO, T.**
NUREG/CR-4554 V06: SCANS (SHIPPING CASK ANALYSIS SYSTEM): A MICROCOMPUTER BASED ANALYSIS SYSTEM FOR SHIPPING CASK DESIGN REVIEW. Volume 6: Theory Manual Buckling Of Circular Cylindrical Shells.
NUREG/CR-4554 V07: SCANS (SHIPPING CASK ANALYSIS SYSTEM): A MICROCOMPUTER BASED ANALYSIS SYSTEM FOR SHIPPING CASK DESIGN REVIEW. Volume 7: Theory Manual Puncture Of Shipping Casks.
- LOFGREN, E.**
NUREG/CR-5472: A RISK-BASED REVIEW OF INSTRUMENT AIR SYSTEMS AT NUCLEAR POWER PLANTS.
- LOVELACE, W.H.**
NUREG-0020 V13 N11: LICENSED OPERATING REACTORS STATUS SUMMARY REPORT. Data As Of October 30, 1989. (Gray Book I)
NUREG-0020 V13 N12: LICENSED OPERATING REACTORS STATUS SUMMARY REPORT. Data As Of November 30, 1989. (Gray Book I)
NUREG-0020 V14 N01: LICENSED OPERATING REACTORS STATUS SUMMARY REPORT. Data As Of December 31, 1989. (Gray Book I)
- LOW, S.R.**
NUREG/CR-5450: HIGH-TEMPERATURE CRACK-ARREST TESTS USING 152-MM-THICK SEN WIDE PLATES OF LOW-UPPER-SHELF BASE MATERIAL. TESTS WP-2.2 AND WP-2.6.
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- MARWIL, E.S.**
NUREG/CR-5376: QUALITY ASSURANCE AND VERIFICATION OF THE MACCS CODE, Version 1.5.
- MASON, R.E.**
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- MCCLUNG, R.W.**
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- MCCOMAS, M.L.**
NUREG/CR-5273 V04: SCDAP/RELAP5/MOD2 CODE MANUAL, VOLUME 4: MATPRO - A LIBRARY OF MATERIALS PROPERTIES FOR LIGHT-WATER-REACTOR ACCIDENT ANALYSIS.
- MCCONNELL, J.W.**
NUREG/CR-5229 V02: TMI-2 EPICOR-II RESIN/LINER INVESTIGATION: LOW-LEVEL WASTE DATA BASE DEVELOPMENT PROGRAM FOR FISCAL YEAR 1985 Annual Report.
- MCNAMARA, N.**
NUREG-0837 V09 N04: NRC TLD DIRECT RADIATION MONITORING NETWORK. Progress Report, October-December 1989.
- MCNEIL, K.A.**
NUREG/CR-5273 V04: SCDAP/RELAP5/MOD2 CODE MANUAL, VOLUME 4: MATPRO - A LIBRARY OF MATERIALS PROPERTIES FOR LIGHT-WATER-REACTOR ACCIDENT ANALYSIS.
- MEYER, L.C.**
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- MEYER, M.A.**
NUREG/CR-5424: ELICITING AND ANALYZING EXPERT JUDGEMENT. A Practical Guide.
- MILLER, J.D.**
NUREG/CR-5405: ANALYSIS OF SHELL-RUPTURE FAILURE DUE TO HYPOTHETICAL ELEVATED-TEMPERATURE PRESSURIZATION OF THE SEQUOYAH UNIT 1 STEEL CONTAINMENT BUILDING.
- MILLER, R.L.**
NUREG/CR-5273 V04: SCDAP/RELAP5/MOD2 CODE MANUAL, VOLUME 4: MATPRO - A LIBRARY OF MATERIALS PROPERTIES FOR LIGHT-WATER-REACTOR ACCIDENT ANALYSIS.
- MINARICK, J.W.**
NUREG/CR-4674 V09: PRECURSORS TO POTENTIAL SEVERE CORE DAMAGE ACCIDENTS: 1988 A STATUS REPORT Main Report And Appendix A.
NUREG/CR-4674 V10: PRECURSORS TO POTENTIAL SEVERE CORE DAMAGE ACCIDENTS: 1988 A STATUS REPORT. Appendixes B And C.
- MOK, G.C.**
NUREG/CR-4554 V06: SCANS (SHIPPING CASK ANALYSIS SYSTEM): A MICROCOMPUTER BASED ANALYSIS SYSTEM FOR SHIPPING CASK DESIGN REVIEW. Volume 6 - Theory Manual Buckling Of Circular Cylindrical Shells.
- MORGAN, M.A.**
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- NEASE, R.**
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- OLAQUE, N.E.**
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- OLIVE, K.L.**
NUREG-1350 V02: NUCLEAR REGULATORY COMMISSION INFORMATION DIGEST. 1990 Edition.
- OLSEN, C.S.**
NUREG/CR-5273 V04: SCDAP/RELAP5/MOD2 CODE MANUAL, VOLUME 4: MATPRO - A LIBRARY OF MATERIALS PROPERTIES FOR LIGHT-WATER-REACTOR ACCIDENT ANALYSIS.
- OTADUY, P.J.**
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- PARCE, M.V.**
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- PEDERSON, C.D.**
NUREG-1395 DRFT: INDUSTRY PERCEPTIONS OF THE IMPACT OF THE U.S. NUCLEAR REGULATORY COMMISSION ON NUCLEAR POWER PLANT ACTIVITIES. Draft Report.
- PELOQUIN, R.A.**
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- PEPPER, S.E.**
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- PHILBIN, J.S.**
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- PRICE, L.L.**
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- RITCHIE, L.T.**
NUREG/CR-4691 V02: MELCOR ACCIDENT CONSEQUENCE CODE SYSTEM (MACCS). Volume 2: Model Description.
- ROGERS, R.D.**
NUREG/CR-5229 V02: TMI-2 EPICOR-II RESIN/LINER INVESTIGATION: LOW-LEVEL WASTE DATA BASE DEVELOPMENT PROGRAM FOR FISCAL YEAR 1989. Annual Report.

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NUREG/CR-4731 V02: RESIDUAL LIFE ASSESSMENT OF MAJOR LIGHT WATER REACTOR COMPONENTS - OVERVIEW.

SIMONEN, F.A.

NUREG/CR-4469 V08: NONDESTRUCTIVE EXAMINATION (NDE) RELIABILITY FOR INSERVICE INSPECTION OF LIGHT WATER REACTORS. Semiannual Report, October 1987 - March 1988.
NUREG/CR-4469 V09: NONDESTRUCTIVE EXAMINATION (NDE) RELIABILITY FOR INSERVICE INSPECTION OF LIGHT WATER REACTORS. Semiannual Report, April-September 1988.

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NUREG/CR-4731 V02: RESIDUAL LIFE ASSESSMENT OF MAJOR LIGHT WATER REACTOR COMPONENTS - OVERVIEW.

SPANNER, J.C.

NUREG/CR-4469 V08: NONDESTRUCTIVE EXAMINATION (NDE) RELIABILITY FOR INSERVICE INSPECTION OF LIGHT WATER REACTORS. Semiannual Report, October 1987 - March 1988.
NUREG/CR-4469 V09: NONDESTRUCTIVE EXAMINATION (NDE) RELIABILITY FOR INSERVICE INSPECTION OF LIGHT WATER REACTORS. Semiannual Report, April-September 1988.
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STRUCKMEYER, R.

NUREG-0837 V09 N04: NRC TLD DIRECT RADIATION MONITORING NETWORK. Progress Report, October-December 1989.

SUBUDHI, M.

NUREG/CR-5413: AGING ASSESSMENT OF INSTRUMENT AIR SYSTEMS IN NUCLEAR POWER PLANTS.

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NUREG/CR-4550 V01 R1: ANALYSIS OF CORE DAMAGE FREQUENCY: INTERNAL EVENTS METHODOLOGY.

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NUREG/CR-4469 V08: NONDESTRUCTIVE EXAMINATION (NDE) RELIABILITY FOR INSERVICE INSPECTION OF LIGHT WATER REACTORS. Semiannual Report, October 1987 - March 1988.
NUREG/CR-4469 V09: NONDESTRUCTIVE EXAMINATION (NDE) RELIABILITY FOR INSERVICE INSPECTION OF LIGHT WATER REACTORS. Semiannual Report, April-September 1988.
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NUREG/CR-3668: MINET CODE DOCUMENTATION.

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NUREG/CP-0105 V02: PROCEEDINGS OF THE SEVENTEENTH WATER REACTOR SAFETY INFORMATION MEETING.
NUREG/CP-0105 V03: PROCEEDINGS OF THE SEVENTEENTH WATER REACTOR SAFETY INFORMATION MEETING.
NUREG/CR-2331 V09 N3: SAFETY RESEARCH PROGRAMS SPONSORED BY OFFICE OF NUCLEAR REGULATORY RESEARCH. Progress Report, July-September 1989.

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NUREG/CR-5386: BASIS FOR SNURBER AGING RESEARCH: NUCLEAR PLANT AGING RESEARCH PROGRAM.

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NUREG/CR-4550 V01 R1: ANALYSIS OF CORE DAMAGE FREQUENCY: INTERNAL EVENTS METHODOLOGY.

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NUREG/CR-5527: RISK SENSITIVITY TO HUMAN ERROR IN THE LA-SALLE PRA

YOUNG, C.J.

NUREG/CR-3145 V08: GEOPHYSICAL INVESTIGATIONS OF THE WESTERN OHIO-INDIANA REGION, Annual Report, October 1988 - September 1989.

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Abstract

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NUREG/CR-5273 V04: SCDAP/RELAP5/MOD2 CODE MANUAL, VOLUME 4: MATPRO - A LIBRARY OF MATERIALS PROPERTIES FOR LIGHT-WATER-REACTOR ACCIDENT ANALYSIS.

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NUREG/CR-5421: LAPUR USER'S GUIDE.

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NUREG/CR-4554 V07: SCANS (SHIPPING CASK ANALYSIS SYSTEM): A MICROCOMPUTER BASED ANALYSIS SYSTEM FOR SHIPPING CASK DESIGN REVIEW. Volume 7: Theory Manual Puncture Of Shipping Casks.

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NUREG/CR-5512 DRF FC: RESIDUAL RADIOACTIVE CONTAMINATION FROM DECOMMISSIONING. Technical Basis For Translating Contamination Levels To Annual Dose. Draft Report For Comment.

Design Basis Accident

NUREG/CR-5368: REACTIVITY ACCIDENTS. A Reassessment Of The Design-Basis Events.

Digest

NUREG-0386 D05 R05: UNITED STATES NUCLEAR REGULATORY COMMISSION STAFF PRACTICE AND PROCEDURE DIGEST. Commission, Appeal Board And Licensing Board Decisions. July 1972 - September 1989.

Earthquake

NUREG/CR-5477: AN EVALUATION OF THE RELIABILITY AND USEFULNESS OF EXTERNAL-INITIATOR PRA METHODOLOGIES.

Economic Risk

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Eddy-Current

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NUREG/CR-4744 V03 N1: LONG-TERM EMBRITTLEMENT OF CAST DUPLEX STAINLESS STEELS IN LWR SYSTEMS. Semiannual Report, October 1987 - March 1988.

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NUREG/CR-5424: ELICITING AND ANALYZING EXPERT JUDGEMENT. A Practical Guide.

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NUREG-1100 V06: BUDGET ESTIMATES. Fiscal Year 1991.

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NUREG/CR-5493: INFLUENCE OF FLUENCE RATE ON RADIATION-INDUCED MECHANICAL PROPERTY CHANGES IN REACTOR PRESSURE VESSEL STEELS. Final Report On Exploratory Experiments.

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NUREG/CR-5482: LABORATORY ANALYSIS OF FLUID FLOW AND SOLUTE TRANSPORT THROUGH A VARIABLY SATURATED FRACTURE EMBEDDED IN POROUS TUFF.

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NUREG/CR-5482: LABORATORY ANALYSIS OF FLUID FLOW AND SOLUTE TRANSPORT THROUGH A VARIABLY SATURATED FRACTURE EMBEDDED IN POROUS TUFF.

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NUREG/CR-4744 V03 N1: LONG-TERM EMBRITTLEMENT OF CAST DUPLEX STAINLESS STEELS IN LWR SYSTEMS. Semiannual Report, October 1987 - March 1988.

NUREG/CR-5492: INVESTIGATIONS OF IRRADIATION-ANNEAL-REIRRADIATION (IAR) PROPERTIES TRENDS OF RPV WELDS. Phase 2 Final Report.

NUREG/CR-5493: INFLUENCE OF FLUENCE RATE ON RADIATION-INDUCED MECHANICAL PROPERTY CHANGES IN REACTOR PRESSURE VESSEL STEELS. Final Report On Exploratory Experiments.

NUREG/CR-5511: IRRADIATION EFFECTS ON STRENGTH AND TOUGHNESS OF THREE-WIRE SERIES-ARC STAINLESS STEEL WELD OVERLAY CLADDING.

Fuel Damage

NUREG/CR-4568: DAMAGED FUEL EXPERIMENT DF-1. Results And Analyses.

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Geologic Repository

NUREG/CR-5256: COMPONENTS OF AN OVERALL PERFORMANCE ASSESSMENT METHODOLOGY.

NUREG/CR-5398: TECHNICAL BASIS FOR REVIEW OF HIGH-LEVEL WASTE REPOSITORY MODELING.

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Information Digest

NUREG-1350 V02: NUCLEAR REGULATORY COMMISSION INFORMATION DIGEST, 1990 Edition.

Inservice Inspection

NUREG/CR-4469 V08: NONDESTRUCTIVE EXAMINATION (NDE) RELIABILITY FOR INSERVICE INSPECTION OF LIGHT WATER REACTORS. Semiannual Report, October 1987 - March 1988.
NUREG/CR-4469 V09: NONDESTRUCTIVE EXAMINATION (NDE) RELIABILITY FOR INSERVICE INSPECTION OF LIGHT WATER REACTORS. Semiannual Report, April-September 1988.
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NUREG-0040 V13 N04: LICENSEE CONTRACTOR AND VENDOR INSPECTION STATUS REPORT. Quarterly Report, October-December 1989. (White Book)

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NUREG/CR-5421: LAPUR USER'S GUIDE.

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LWR

NUREG/CR-4469 V08: NONDESTRUCTIVE EXAMINATION (NDE) RELIABILITY FOR INSERVICE INSPECTION OF LIGHT WATER REACTORS. Semiannual Report, October 1987 - March 1988.
NUREG/CR-4469 V09: NONDESTRUCTIVE EXAMINATION (NDE) RELIABILITY FOR INSERVICE INSPECTION OF LIGHT WATER REACTORS. Semiannual Report, April-September 1988.
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Legal Issuances

NUREG-0750 V30 I01: INDEXES TO NUCLEAR REGULATORY COMMISSION ISSUANCES. July-September 1989.
NUREG-0750 V30 N01: NUCLEAR REGULATORY COMMISSION ISSUANCES FOR JULY 1989. Pages 1-84.
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NUREG-0750 V30 N05: NUCLEAR REGULATORY COMMISSION ISSUANCES FOR NOVEMBER 1989. Pages 325-708.

Licensed Operating Reactors

NUREG-0020 V13 N11: LICENSED OPERATING REACTORS STATUS SUMMARY REPORT. Data As Of October 30, 1989. (Gray Book I)
NUREG-0020 V13 N12: LICENSED OPERATING REACTORS STATUS SUMMARY REPORT. Data As Of November 30, 1989. (Gray Book I)
NUREG-0020 V14 N01: LICENSED OPERATING REACTORS STATUS SUMMARY REPORT. Data As Of December 31, 1989. (Gray Book I)

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Light Water Reactor

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NUREG/CR-4731 V02: RESIDUAL LIFE ASSESSMENT OF MAJOR LIGHT WATER REACTOR COMPONENTS - OVERVIEW.
NUREG/CR-4744 V03 N1: LONG-TERM EMBRITTLEMENT OF CAST DUPLEX STAINLESS STEELS IN LWR SYSTEMS. Semiannual Report, October 1987 - March 1988.
NUREG/CR-5273 V04: SCDAP/RELAP5/MOD2 CODE MANUAL, VOLUME 4. MATPRO - A LIBRARY OF MATERIALS PROPERTIES FOR LIGHT-WATER-REACTOR ACCIDENT ANALYSIS.
NUREG/CR-5405: ANALYSIS OF SHELL-RUPTURE FAILURE DUE TO HYPOTHETICAL ELEVATED-TEMPERATURE PRESSURIZATION OF THE SEQUOYAH UNIT 1 STEEL CONTAINMENT BUILDING.
NUREG/CR-5476: POSTTEST ANALYSIS OF A 1:6-SCALE REINFORCED CONCRETE REACTOR CONTAINMENT BUILDING.

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NUREG/CR-4691 V02: MELCOR ACCIDENT CONSEQUENCE CODE SYSTEM (MACCS). Volume 2: Model Description.
NUREG/CR-4691 V03: MELCOR ACCIDENT CONSEQUENCE CODE SYSTEM (MACCS). Volume 3: Programmer's Reference Manual.

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NUREG/CR-5376: QUALITY ASSURANCE AND VERIFICATION OF THE MACCS CODE, Version 1.5.

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NUREG/CR-4691 V02: MELCOR ACCIDENT CONSEQUENCE CODE SYSTEM (MACCS). Volume 2: Model Description.
NUREG/CR-4691 V03: MELCOR ACCIDENT CONSEQUENCE CODE SYSTEM (MACCS). Volume 3: Programmer's Reference Manual.

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NUREG/CR-5316: MELT PROGRESSION, OXIDATION, AND NATURAL CONVECTION IN A SEVERELY DAMAGED REACTOR CORE.

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NUREG/CR-3668: MINET CODE DOCUMENTATION.

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NUREG/CR-4671: THE DF-4 FUEL DAMAGE EXPERIMENT IN ACRF WITH A BWR CONTROL BLADE AND CHANNEL BOX.
NUREG/CR-5316: MELT PROGRESSION, OXIDATION, AND NATURAL CONVECTION IN A SEVERELY DAMAGED REACTOR CORE.

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NUREG/CR-5395 V10: MULTILoop INTEGRAL SYSTEM TEST (MIST): FINAL REPORT. RELAP5/MOD2 MIST Analysis Comparisons.

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NUREG/CR-4659 V03: SEISMIC FRAGILITY OF NUCLEAR POWER PLANT COMPONENTS (PHASE II). Switchgear, I&C Panels (NSSS) And Relays.

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NUREG/CR-4704 V03: RELATIVE BIOLOGICAL EFFECTIVENESS (RBE) OF FISSION NEUTRONS AND GAMMA RAYS AT OCCUPATIONAL EXPOSURE LEVELS. Studies On The Gross And Microscopic Pathology Observed At Death Of Mice Exposed To 60 Equal Once-Weekly Doses Of Fission....

Nondestructive Examination

NUREG/CR-4469 V08: NONDESTRUCTIVE EXAMINATION (NDE) RELIABILITY FOR INSERVICE INSPECTION OF LIGHT WATER REACTORS. Semiannual Report, October 1987 - March 1988.
NUREG/CR-4469 V09: NONDESTRUCTIVE EXAMINATION (NDE) RELIABILITY FOR INSERVICE INSPECTION OF LIGHT WATER REACTORS. Semiannual Report, April-September 1988.

Nuclear Plant Aging

NUREG/CR-5491: SHIPPINGPORT STATION AGING EVALUATION.

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NUREG/CR-5386: BASIS FOR SNUBBER AGING RESEARCH: NUCLEAR PLANT AGING RESEARCH PROGRAM.

Occupational Dose Control

NUREG/CR-0110: PROCEEDINGS OF THE INTERNATIONAL WORKSHOP ON NEW DEVELOPMENTS IN OCCUPATIONAL DOSE CONTROL AND ALARA IMPLEMENTATION AT NUCLEAR POWER PLANTS AND SIMILAR FACILITIES.

Operational Event

NUREG/CR-4674 V09: PRECURSORS TO POTENTIAL SEVERE CORE DAMAGE ACCIDENTS: 1988 A STATUS REPORT. Main Report And Appendix A.
NUREG/CR-4674 V10: PRECURSORS TO POTENTIAL SEVERE CORE DAMAGE ACCIDENTS: 1988 A STATUS REPORT. Appendixes B And C.

PRA

NUREG/CR-4550 V01 R1: ANALYSIS OF CORE DAMAGE FREQUENCY: INTERNAL EVENTS METHODOLOGY.
NUREG/CR-5477: AN EVALUATION OF THE RELIABILITY AND USEFULNESS OF EXTERNAL-INITIATOR PRA METHODOLOGIES.
NUREG/CR-5527: RISK SENSITIVITY TO HUMAN ERROR IN THE LA-SALLE PRA.

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NUREG-1316: TECHNICAL FINDINGS AND REGULATORY ANALYSIS RELATED TO GENERIC ISSUE 70. Evaluation Of Power-Operated Relief Valve And Block Valve Reliability In PWR Nuclear Power Plants.
NUREG/CR-5298: CLOSEOUT OF IE BULLETIN 85-01: STEAM BINDING OF AUXILIARY FEEDWATER PUMPS.
NUREG/IA-0012: RELAP5/MOD2 CALCULATIONS OF OECD-LOFT TEST LP-SB-01.

Performance Assessment

NUREG/CR-5256: COMPONENTS OF AN OVERALL PERFORMANCE ASSESSMENT METHODOLOGY.

Performance History

NUREG-1214 R05: HISTORICAL DATA SUMMARY OF THE SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE.

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NUREG-0936 V05 N04: NRC REGULATORY AGENDA. Quarterly Report, October-December 1989.

Plant Transient

NUREG/CR-4661: CLOSEOUT OF IE BULLETIN 85-03: MOTOR-OPERATED VALVE COMMON MODE FAILURES DURING PLANT TRANSIENTS DUE TO IMPROPER SWITCH SETTINGS.

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NUREG/CR-5482: LABORATORY ANALYSIS OF FLUID FLOW AND SOLUTE TRANSPORT THROUGH A VARIABLY SATURATED FRACTURE EMBEDDED IN POROUS TUFF.

Practice And Procedure Digest

NUREG-0386 D05 R05: UNITED STATES NUCLEAR REGULATORY COMMISSION STAFF PRACTICE AND PROCEDURE DIGEST. Commission, Appeal Board And Licensing Board Decisions. July 1972 - September 1989.

Pressure Vessel

NUREG/CR-5450: HIGH-TEMPERATURE CRACK-ARREST TESTS USING 152-MM-THICK SEN WIDE PLATES OF LOW-UPPER-SHELF BASE MATERIAL. TESTS WP-2.2 AND WP-2.6.

Pressurized Water Reactor

NUREG-1316: TECHNICAL FINDINGS AND REGULATORY ANALYSIS RELATED TO GENERIC ISSUE 70. Evaluation Of Power-Operated Relief Valve And Block Valve Reliability In PWR Nuclear Power Plants.
NUREG/CR-4668: DAMAGED FUEL EXPERIMENT DF-1. Results And Analyses.
NUREG/CR-5298: CLOSEOUT OF IE BULLETIN 85-01: STEAM BINDING OF AUXILIARY FEEDWATER PUMPS.
NUREG/IA-0012: RELAP5/MOD2 CALCULATIONS OF OECD-LOFT TEST LP-SB-01.

Probabilistic Risk Assessment

NUREG/CR-4550 V01 R1: ANALYSIS OF CORE DAMAGE FREQUENCY: INTERNAL EVENTS METHODOLOGY.

Quality Assurance

NUREG/CR-5376: QUALITY ASSURANCE AND VERIFICATION OF THE MACCS CODE, Version 1.5.

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NUREG/IA-0012: RELAP5/MOD2 CALCULATIONS OF OECD-LOFT TEST LP-SB-01.
NUREG/IA-0013: RELAP5/MOD2 CALCULATIONS OF OECD-LOFT TEST LP-SB-03.

Radiation

NUREG/CR-4214 R01 PI: HEALTH EFFECTS MODELS FOR NUCLEAR POWER PLANT ACCIDENT CONSEQUENCE ANALYSIS. Low LET Radiation Part I: Introduction, Integration And Summary.

Radiation Protection

NUREG/CP-0110: PROCEEDINGS OF THE INTERNATIONAL WORKSHOP ON NEW DEVELOPMENTS IN OCCUPATIONAL DOSE CONTROL AND ALARA IMPLEMENTATION AT NUCLEAR POWER PLANTS AND SIMILAR FACILITIES.

Radioactive Waste

NUREG/CR-5381: ECONOMIC RISK OF CONTAMINATION CLEANUP COSTS RESULTING FROM LARGE NONREACTOR NUCLEAR MATERIAL LICENSEE OPERATIONS.

Radioactivity

NUREG/CR-5302: CLOSEOUT OF IE BULLETIN 80-10: CONTAMINATION OF NONRADIOACTIVE SYSTEM AND RESULTING POTENTIAL FOR UNMONITORED, UNCONTROLLED RELEASE OF RADIOACTIVITY TO ENVIRONMENT.

Radiobiology

NUREG/CR-4704 V03: RELATIVE BIOLOGICAL EFFECTIVENESS (RBE) OF FISSION NEUTRONS AND GAMMA RAYS AT OCCUPATIONAL EXPOSURE LEVELS. Studies On The Gross And Microscopic Pathology Observed At Death Of Mice Exposed To 60 Equal Once-Weekly Doses Of Fission....

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NUREG/CP-0105 V01: PROCEEDINGS OF THE SEVENTEENTH WATER REACTOR SAFETY INFORMATION MEETING.
NUREG/CP-0105 V02: PROCEEDINGS OF THE SEVENTEENTH WATER REACTOR SAFETY INFORMATION MEETING.
NUREG/CP-0105 V03: PROCEEDINGS OF THE SEVENTEENTH WATER REACTOR SAFETY INFORMATION MEETING.
NUREG/CR-4691 V02: MELCOR ACCIDENT CONSEQUENCE CODE SYSTEM (MACCS) Volume 2: Model Description.
NUREG/CR-4691 V03: MELCOR ACCIDENT CONSEQUENCE CODE SYSTEM (MACCS) Volume 3: Programmer's Reference Manual.
NUREG/CR-5474: ASSESSMENT OF CANDIDATE ACCIDENT MANAGEMENT STRATEGIES.
NUREG/CR-5527: RISK SENSITIVITY TO HUMAN ERROR IN THE LA SALLE PRA.

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NUREG/CR-5476: POSTTEST ANALYSIS OF A 1:6-SCALE REINFORCED CONCRETE REACTOR CONTAINMENT BUILDING.

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NUREG/CR-5316: MELT PROGRESSION, OXIDATION, AND NATURAL CONVECTION IN A SEVERELY DAMAGED REACTOR CORE.

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NUREG/CR-5493: INFLUENCE OF FLUENCE RATE ON RADIATION-INDUCED MECHANICAL PROPERTY CHANGES IN REACTOR PRESSURE VESSEL STEELS. Final Report On Exploratory Experiments.
NUREG/CR-5506: PRELIMINARY STRUCTURAL EVALUATION OF TROJAN RCL SUBJECT TO POSTULATED RPV SUPPORT FAILURE.

Reactor Protection System

NUREG/CR-5474: ASSESSMENT OF CANDIDATE ACCIDENT MANAGEMENT STRATEGIES.

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NUREG/CR-5368: REACTIVITY ACCIDENTS. A Reassessment Of The Design-Basis Events.
NUREG/CR-5472: A RISK-BASED REVIEW OF INSTRUMENT AIR SYSTEMS AT NUCLEAR POWER PLANTS.

Reactor Vessel

NUREG/CR-5479: CURRENT APPLICATIONS OF VIBRATION MONITORING AND NEUTRON NOISE ANALYSIS. Detection And Analysis Of Structural Degradation Of Reactor Vessel Internals From Operational Aging.

Regulatory Agenda

NUREG-0936 V08 N04: NRC REGULATORY AGENDA. Quarterly Report, October-December 1989.

Regulatory And Technical Report

NUREG-0304 V14 N04: REGULATORY AND TECHNICAL REPORTS (ABSTRACT INDEX JOURNAL). Annual Compilation For 1989.

Regulatory Impact

NUREG-1395 DRFT: INDUSTRY PERCEPTIONS OF THE IMPACT OF THE U.S. NUCLEAR REGULATORY COMMISSION ON NUCLEAR POWER PLANT ACTIVITIES. Draft Report.

Relay

NUREG/CR-4659 V03: SEISMIC FRAGILITY OF NUCLEAR POWER PLANT COMPONENTS (PHASE II). Switchgear, I&C Panels (NSSS) And Relays.

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NUREG-1316: TECHNICAL FINDINGS AND REGULATORY ANALYSIS RELATED TO GENERIC ISSUE 70. Evaluation Of Power-Operated Relief Valve And Block Valve Reliability In PWR Nuclear Power Plants.

Report To Congress

NUREG-0090 V12 N03: REPORT TO CONGRESS ON ABNORMAL OCCURRENCES. July-September 1989.

Residual Radioactive

NUREG/CR-5512 DRF FC: RESIDUAL RADIOACTIVE CONTAMINATION FROM DECOMMISSIONING. Technical Basis For Translating Contamination Levels To Annual Dose. Draft Report For Comment.

Risk Assessment

NUREG/CP-0105 V01: PROCEEDINGS OF THE SEVENTEENTH WATER REACTOR SAFETY INFORMATION MEETING.
NUREG/CP-0105 V02: PROCEEDINGS OF THE SEVENTEENTH WATER REACTOR SAFETY INFORMATION MEETING.
NUREG/CP-0105 V03: PROCEEDINGS OF THE SEVENTEENTH WATER REACTOR SAFETY INFORMATION MEETING.

Rules

NUREG-0936 V08 N04: NRC REGULATORY AGENDA. Quarterly Report, October-December 1989.

Rules Of Practice

NUREG-0386 D05 R05: UNITED STATES NUCLEAR REGULATORY COMMISSION STAFF PRACTICE AND PROCEDURE DIGEST. Commission, Appeal Board And Licensing Board Decisions. July 1972 - September 1989.

SCANS

NUREG/CR-4554 V06: SCANS (SHIPPING CASK ANALYSIS SYSTEM): A MICROCOMPUTER BASED ANALYSIS SYSTEM FOR SHIPPING CASK DESIGN REVIEW. Volume 6: Theory Manual Buckling Of Circular Cylindrical Shells.
NUREG/CR-4554 V07: SCANS (SHIPPING CASK ANALYSIS SYSTEM): A MICROCOMPUTER BASED ANALYSIS SYSTEM FOR SHIPPING CASK DESIGN REVIEW. Volume 7: Theory Manual Puncture Of Shipping Casks.

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NUREG/CR-5273 V04: SCDAP/RELAP5/MOD2 CODE MANUAL. VOLUME 4: MATPRO - A LIBRARY OF MATERIALS PROPERTIES FOR LIGHT-WATER-REACTOR ACCIDENT ANALYSIS.

Safety Evaluation Report

NUREG-0797 S22: SAFETY EVALUATION REPORT RELATED TO THE OPERATION OF COMANCHE PEAK STEAM ELECTRIC STATION, UNITS 1 AND 2. Docket Nos. 50-445 And 50-446. (Texas Utilities Electric Company, et al.)
NUREG-0797 S23: SAFETY EVALUATION REPORT RELATED TO THE OPERATION OF COMANCHE PEAK STEAM ELECTRIC STATION, UNITS 1 AND 2. Docket Nos. 50-445 And 50-446. (Texas Utilities Electric Company, et al.)
NUREG-0896 S09: SAFETY EVALUATION REPORT RELATED TO THE OPERATION OF SEABROOK STATION, UNITS 1 AND 2. Docket Nos. STN-50-443 And STN-50-444. (Public Service Company Of New Hampshire)
NUREG-1232 V04: SAFETY EVALUATION REPORT ON TENNESSEE VALLEY AUTHORITY: WATTS BAR NUCLEAR PERFORMANCE PLAN.

Safety Research Program

NUREG/CR-2331 V09 N03: SAFETY RESEARCH PROGRAMS SPONSORED BY OFFICE OF NUCLEAR REGULATORY RESEARCH. Progress Report, July-September 1989.

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NUREG/CR-3145 V06: GEOPHYSICAL INVESTIGATIONS OF THE WESTERN OHIO-INDIANA REGION. Annual Report, October 1988 - September 1989.

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NUREG/CR-5484: PH SENSORS BASED ON IRIIDIUM OXIDE.

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NUREG/CR-4671: THE DF-4 FUEL DAMAGE EXPERIMENT IN ACRF WITH A BWR CONTROL BLADE AND CHANNEL BOX.

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NUREG/CR-4554 V06: SCANS (SHIPPING CASK ANALYSIS SYSTEM): A MICROCOMPUTER BASED ANALYSIS SYSTEM FOR SHIPPING CASK DESIGN REVIEW. Volume 6 - Theory Manual Buckling Of Circular Cylindrical Shells.

NUREG/CR-4554 V07: SCANS (SHIPPING CASK ANALYSIS SYSTEM): A MICROCOMPUTER BASED ANALYSIS SYSTEM FOR SHIPPING CASK DESIGN REVIEW. Volume 7: Theory Manual Puncture Of Shipping Casks.

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NUREG/IA-0012: RELAP5/MOD2 CALCULATIONS OF OECD-LOFT TEST LP-SB-01.
NUREG/IA-0013: RELAP5/MOD2 CALCULATIONS OF OECD-LOFT TEST LP-SB-03.

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NUREG/CR-5386: BASIS FOR SNUBBER AGING RESEARCH: NUCLEAR PLANT AGING RESEARCH PROGRAM.

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NUREG/CR-4469 V09: NONDESTRUCTIVE EXAMINATION (NDE) RELIABILITY FOR INSERVICE INSPECTION OF LIGHT WATER REACTORS. Semiannual Report, April-September 1988.
NUREG/CR-4744 V03 N1: LONG-TERM EMBRITTLEMENT OF CAST DUPLEX STAINLESS STEELS IN LWR SYSTEMS. Semiannual Report, October 1987 - March 1988.

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NUREG/CR-5478: IMPROVED EDDY-CURRENT INSPECTION FOR STEAM GENERATOR TUBING. Progress Report For January 1985 To December 1987.

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NUREG/CR-5479: CURRENT APPLICATIONS OF VIBRATION MONITORING AND NEUTRON NOISE ANALYSIS. Detection And Analysis Of Structural Degradation Of Reactor Vessel Internals From Operational Aging.

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NUREG/CR-5506: PRELIMINARY STRUCTURAL EVALUATION OF TROJAN RCL SUBJECT TO POSTULATED RPV SUPPORT FAILURE.

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NUREG/CR-4659 V03: SEISMIC FRAGILITY OF NUCLEAR POWER PLANT COMPONENTS (PHASE II). Switchgear, I&C Panels (NSSS) And Relays.

Systematic Assessment Of Licensee Performance

NUREG-1214 R05: HISTORICAL DATA SUMMARY OF THE SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE.

TLD

NUREG-0837 V09 N04: NRC TLD DIRECT RADIATION MONITORING NETWORK. Progress Report. October-December 1989.

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NUREG/CR-5229 V02: TMI-2 EPICOR-II RESIN/LINER INVESTIGATION: LOW-LEVEL WASTE DATA BASE DEVELOPMENT PROGRAM FOR FISCAL YEAR 1989. Annual Report.

Tearing Resistance

NUREG/CR-5511: IRRADIATION EFFECTS ON STRENGTH AND TOUGHNESS OF THREE-WIRE SERIES-ARC STAINLESS STEEL WELD OVERLAY CLADDING.

Technical Specification

NUREG-1381: TECHNICAL SPECIFICATIONS, COMANCHE PEAK STEAM ELECTRIC STATION, UNIT 1. Docket No. 50-445, Appendix "A" To License No. NPF-28.

NUREG-1386: TECHNICAL SPECIFICATIONS FOR SEABROOK STATION, UNIT 1. Appendix "A" To License No. NPF-86.

Tectonics

NUREG/CR-3145 V06: GEOPHYSICAL INVESTIGATIONS OF THE WESTERN OHIO-INDIANA REGION. Annual Report, October 1988 - September 1989.

Thermoluminescent Dosimeter

NUREG-0837 V09 N04: NRC TLD DIRECT RADIATION MONITORING NETWORK. Progress Report. October-December 1989.

Title List

NUREG-0540 V11 N10: TITLE LIST OF DOCUMENTS MADE PUBLICLY AVAILABLE. October 1-31, 1989.

NUREG-0540 V11 N11: TITLE LIST OF DOCUMENTS MADE PUBLICLY AVAILABLE. NOVEMBER 1-30, 1989.

Transport

NUREG/CR-5169: MOBILIZATION AND TRANSPORT OF URANIUM AT URANIUM MILL TAILINGS DISPOSAL SITES. Application Of A Chemical Transport Model.

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NUREG/CR-5477: AN EVALUATION OF THE RELIABILITY AND USEFULNESS OF EXTERNAL-INITIATOR PRA METHODOLOGIES.

Tubing Inspection

NUREG/CR-5478: IMPROVED EDDY-CURRENT INSPECTION FOR STEAM GENERATOR TUBING. Progress Report For January 1985 To December 1987.

Tuff Repository

NUREG/CR-5435: ENVIRONMENTAL EFFECTS ON CORROSION IN THE TUFF REPOSITORY.

Ultrasonic Testing

NUREG/CR-4882: QUALIFICATION PROCESS FOR ULTRASONIC TESTING IN NUCLEAR INSERVICE INSPECTION APPLICATIONS.

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NUREG/CR-5169: MOBILIZATION AND TRANSPORT OF URANIUM AT URANIUM MILL TAILINGS DISPOSAL SITES. Application Of A Chemical Transport Model.

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NUREG/CR-5169: MOBILIZATION AND TRANSPORT OF URANIUM AT URANIUM MILL TAILINGS DISPOSAL SITES. Application Of A Chemical Transport Model.

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NUREG/CR-5479: CURRENT APPLICATIONS OF VIBRATION MONITORING AND NEUTRON NOISE ANALYSIS. Detection And Analysis Of Structural Degradation Of Reactor Vessel Internals From Operational Aging.

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NUREG/CR-5229 V02: TMI-2 EPICOR-II RESIN/LINER INVESTIGATION:
LOW-LEVEL WASTE DATA BASE DEVELOPMENT PROGRAM FOR
FISCAL YEAR 1989 Annual Report.

Water Reactor Safety

NUREG/CP-0105 V01: PROCEEDINGS OF THE SEVENTEENTH
WATER REACTOR SAFETY INFORMATION MEETING.

NUREG/CP-0105 V02: PROCEEDINGS OF THE SEVENTEENTH
WATER REACTOR SAFETY INFORMATION MEETING.
NUREG/CP-0105 V03: PROCEEDINGS OF THE SEVENTEENTH
WATER REACTOR SAFETY INFORMATION MEETING.

Weld

NUREG/CR-5482: INVESTIGATIONS OF IRRADIATION-ANNEAL-REIR-
RADIATION (IAR) PROPERTIES TRENDS OF RPV WELDS.Phase 2
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OFFICE OF EXECUTIVE DIRECTOR FOR OPERATIONS (EDO)

REGION 1, OFC OF THE DIRECTOR
NUREG-0837 V09 N04: NRC TLD DIRECT RADIATION MONITORING NETWORK Progress Report, October-December 1989.
REGION 3, OFC OF THE DIRECTOR
NUREG-1395 DRFT: INDUSTRY PERCEPTIONS OF THE IMPACT OF THE U.S. NUCLEAR REGULATORY COMMISSION ON NUCLEAR POWER PLANT ACTIVITIES. Draft Report.

EDO - OFFICE OF ADMINISTRATION (PRE 870413 & POST 890205)

DIVISION OF FREEDOM OF INFORMATION & PUBLICATIONS SERVICES (POST 890205)
NUREG-0304 V14 N04: REGULATORY AND TECHNICAL REPORTS (ABSTRACT INDEX JOURNAL). Annual Compilation For 1989.
NUREG-0540 V11 N10: TITLE LIST OF DOCUMENTS MADE PUBLICLY AVAILABLE, October 1-31, 1989.
NUREG-0540 V11 N11: TITLE LIST OF DOCUMENTS MADE PUBLICLY AVAILABLE, NOVEMBER 1-30, 1989.
NUREG-0750 C102: INDEXES TO NUCLEAR REGULATORY COMMISSION ISSUANCES, January 1, 1980 Through December 31, 1985.
NUREG-0750 V30 I01: INDEXES TO NUCLEAR REGULATORY COMMISSION ISSUANCES, July-September 1989.
NUREG-0750 V30 N01: NUCLEAR REGULATORY COMMISSION ISSUANCES FOR JULY 1989, Pages 1-84.
NUREG-0750 V30 N02: NUCLEAR REGULATORY COMMISSION ISSUANCES FOR AUGUST 1989, Pages 85-165.
NUREG-0750 V30 N03: NUCLEAR REGULATORY COMMISSION ISSUANCES FOR SEPTEMBER 1989, Pages 167-229.
NUREG-0750 V30 N04: NUCLEAR REGULATORY COMMISSION ISSUANCES FOR OCTOBER 1989, Pages 231-323.
NUREG-0750 V30 N05: NUCLEAR REGULATORY COMMISSION ISSUANCES FOR NOVEMBER 1989, Pages 325-708.
NUREG-0936 V08 N04: NRC REGULATORY AGENDA, Quarterly Report, October-December 1989.

EDO - OFFICE OF THE CONTROLLER (PRE 820418 & POST 890205)

DIVISION OF BUDGET & ANALYSIS (POST 890205)
NUREG-1100 V06: BUDGET ESTIMATES, Fiscal Year 1991.
NUREG-1350 V02: NUCLEAR REGULATORY COMMISSION INFORMATION DIGEST, 1990 Edition.

EDO - OFFICE FOR ANALYSIS & EVALUATION OF OPERATIONAL DATA

OFFICE FOR ANALYSIS & EVALUATION OF OPERATIONAL DATA, DIRECTOR
NUREG-0090 V12 N03: REPORT TO CONGRESS ON ABNORMAL OCCURRENCES, July-September 1989.

OFFICE OF GOVERNMENTAL & PUBLIC AFFAIRS (POST 870413)

OFFICE OF GOVERNMENTAL & PUBLIC AFFAIRS (POST 870413)
NUREG-1392: LEAKAGE OF AN IRRADIATOR SOURCE - THE JUNE 1988 GEORGIA RSI INCIDENT.

EDO - OFFICE OF INFORMATION RESOURCES MANAGEMENT & ARM (870413-890204)

DIVISION OF COMPUTER & TELECOMMUNICATIONS SERVICES (POST 890205)
NUREG-0020 V13 N11: LICENSED OPERATING REACTORS STATUS SUMMARY REPORT, Data As Of October 30, 1989, (Gray Book I)

NUREG-0020 V13 N12: LICENSED OPERATING REACTORS STATUS SUMMARY REPORT, Data As Of November 30, 1989, (Gray Book I)
NUREG-0020 V14 N01: LICENSED OPERATING REACTORS STATUS SUMMARY REPORT, Data As Of December 31, 1989, (Gray Book I)

U.S. NUCLEAR REGULATORY COMMISSION

OFFICE OF THE GENERAL COUNSEL (POST 860701)
NUREG-0386 D05 R05: UNITED STATES NUCLEAR REGULATORY COMMISSION STAFF PRACTICE AND PROCEDURE DIGEST, Commission, Appeal Board And Licensing Board Decisions, July 1972 - September 1989.

EDO - OFFICE OF NUCLEAR REGULATORY RESEARCH (POST 820405)

DIVISION OF ENGINEERING (POST 870413)
NUREG/CR-4882: QUALIFICATION PROCESS FOR ULTRASONIC TESTING IN NUCLEAR INSERVICE INSPECTION APPLICATIONS.
DIVISION OF SAFETY ISSUE RESOLUTION (POST 880717)
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NUREG-1386: TECHNICAL SPECIFICATIONS FOR SEABROOK STATION, UNIT 1, Appendix "A" To License No. NPF-86.
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NUREG-0797 S22: SAFETY EVALUATION REPORT RELATED TO THE OPERATION OF COMANCHE PEAK STEAM ELECTRIC STATION, UNITS 1 AND 2, Docket Nos. 50-445 And 50-446, (Texas Utilities Electric Company, et al.)
NUREG-0797 S23: SAFETY EVALUATION REPORT RELATED TO THE OPERATION OF COMANCHE PEAK STEAM ELECTRIC STATION, UNITS 1 AND 2, Docket Nos. 50-445 And 50-446, (Texas Utilities Electric Company, et al.)
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NUREG-0040 V13 N04: LICENSEE CONTRACTOR AND VENDOR INSPECTION STATUS REPORT, Quarterly Report, October-December 1989, (White Book)
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860720)
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NUREG/CR-4469 V08: NONDESTRUCTIVE EXAMINATION (NDE) RELIABILITY FOR INSERVICE INSPECTION OF LIGHT WATER REACTORS. Semiannual Report, October 1987 - March 1988.
NUREG/CR-4469 V09: NONDESTRUCTIVE EXAMINATION (NDE) RELIABILITY FOR INSERVICE INSPECTION OF LIGHT WATER REACTORS. Semiannual Report, April-September 1988.
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NUREG/CR-4554 V07: SCANS (SHIPPING CASK ANALYSIS SYSTEM) A MICROCOMPUTER BASED ANALYSIS SYSTEM FOR SHIPPING CASK DESIGN REVIEW. Volume 7: Theory Manual Puncture Of Shipping Casks.
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NUREG/CR-4731 V02: RESIDUAL LIFE ASSESSMENT OF MAJOR LIGHT WATER REACTOR COMPONENTS - OVERVIEW.
NUREG/CR-4744 V03 N1: LONG-TERM EMBRITTLEMENT OF CAST DUPLEX STAINLESS STEELS IN LWR SYSTEMS. Semiannual Report, October 1987 - March 1988.
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NUREG/CR-5386: BASIS FOR SNUBBER AGING RESEARCH: NUCLEAR PLANT AGING RESEARCH PROGRAM.

International Organization Index

This index lists, in alphabetical order, the countries and performing organizations that prepared the NUREG/IA reports listed in this compilation. Listed below each country and performing organization are the NUREG/IA numbers and titles of their reports. If further information is needed, refer to the main citation by the NUREG/IA number.

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CENTRAL ELECTRICITY GENERATING BOARD

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NUREG/IA-0013: RELAP5/MOD2 CALCULATIONS OF OECD-LOFT
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Licensed Facility Index

This index lists the facilities that were the subject of NRC staff or contractor reports. The facility names are arranged in alphabetical order. They are preceded by their Docket number and followed by the report number. If further information is needed, refer to the main citation by the NUREG number.

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			50-390	Watts Bar Nuclear Plant, Unit 1, Tennessee Valley Authority	NUREG-1232 V04

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(See instructions on the reverse)

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