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RICHLAND OPERATIONS OFFICE

RECORDS PRODUCED BY PACIFIC NORTHWEST NATIONAL LABORATORY

SELECTED EXAMPLES OF REACTOR SAFETY RESEARCH

30 pp.

INTRODUCTION:

RICHLAND OPERATIONS OFFICE

RECORDS PRODUCED BY PACIFIC NORTHWEST NATIONAL LABORATORY

SELECTED EXAMPLES OF REACTOR SAFETY RESEARCH

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Office of Human Radiation Experiments

Deputy Assistant Secretary for Planning and Administration

Assistant Secretary for Environment, Safety and Health

February 1997

The Department of Energy and Its Heritage: The Department of Energy (DOE) is one of the most diverse agencies in the Federal government. It was created in 1977 from a score of organizational entities from a dozen departments and agencies. DOE encourages the development of energy technologies in several areas--solar, geothermal, fossil fuel, and nuclear. It develops technologies aimed at promoting conservation of energy resources. DOE is one of the largest Federal agency supporters of basic scientific research and manages a research complex that includes some of the nation's premier laboratories. DOE helps formulate national policies for energy use and development. Perhaps surprisingly to many, DOE also runs the nuclear weapons research, development, and production complex as well as associated dismantlement and clean up activities.

DOE's nuclear heritage comes from the World War II Manhattan Project which built the atomic bomb. The threads of DOE's involvement with nuclear issues and programs run through the following agencies: the Manhattan Engineer District (1942-1947), the Atomic Energy Commission (1947-1975), and the Energy Research and Development Administration (1975-1977). DOE not only took over functions, cultures, and traditions from these agencies, it also inherited records from them. Of these agencies, the longest lived and most controversial was the Atomic Energy Commission (AEC).

The Atomic Energy Commission: From its inception in 1947 until its abolition in 1975, the AEC carried out a Congressional mandate for a large federal role in atomic energy development.

The AEC maintained programs for nuclear weapons research, development, production, and testing; production of plutonium and weapons grade uranium; milling and refining of uranium ore; biomedical research into the effects of radiation and nuclear weapons; basic nuclear research in fields such as chemistry, physics, and metallurgy; development of nuclear reactors; promotion of a civilian nuclear power industry; and conduct of international Atoms-for-Peace activities. It was unique among federal agencies in combining responsibilities to both promote and regulate a technology.

In 1947 the AEC assumed control of research and production facilities created by the Manhattan Engineer District (MED) during World War II. The facilities were scattered from coast to coast, with the primary ones being located in Oak Ridge, Tennessee; Hanford, Washington; and Los Alamos, New Mexico. At Oak Ridge the Manhattan Project established facilities for the production of bomb grade uranium. It also had intended to build nuclear reactors for plutonium production there as well. When research showed that production reactors would generate far more heat and radioactivity than scientists had previously believed, the Manhattan Project located plutonium production facilities near Hanford, Washington. During the war the E. I. DuPont de Nemours Company built and operated Hanford plutonium production facilities for the Manhattan Engineer District.

To operate its facilities, the MED had used contractors while retaining government ownership of plants, laboratories, and buildings. The AEC continued this system of government-owned, contractor-operated (GOCO) facilities. At Hanford, DuPont pulled out as the operating contractor after the end of the war. In 1946 General Electric acquired the managing and operating contract and assumed responsibility for producing plutonium.

Pacific Northwest National Laboratory: Shortly after the MED began building plutonium production facilities at Hanford, it formed a research laboratory to support production activities. The laboratory, eventually called the Hanford Laboratories, launched programs to study radiation damage to reactor materials, to investigate fuel processing techniques, to develop processes for the removal of useful fission products from reactor wastes, and to study the biological and environmental effects of production reactor operation. Because the MED intended to place huge production reactors on the Columbia River, there was special interest in studying reactor environmental impact and effects on aquatic life, particularly since the Columbia provided drinking water and food for millions of people in the Pacific Northwest.

To investigate the biological and environmental effects of production reactors, for example, the Hanford Laboratories launched several programs. One examined the effect of the reactors on river fish and aquatic biology and another the effects on the environment of radioisotopes released routinely during reactor operation. This effort focused on the effects of iodine, tritium, radioactive particles, and plutonium on the environment and man. The Hanford Laboratories also initiated programs to study the absorption of radioisotopes through the human gastrointestinal tract and methods of treating radiation injury. Until the middle 1960s the Hanford Laboratories focused on nuclear technology and the environmental and health effects of radiation.

By this time, the AEC had met all Department of Defense requirements for nuclear weapons production and had created a huge arsenal of nuclear weapons. Accordingly, President Lyndon B. Johnson decided to reduce nuclear materials production and presented it as a disarmament measure in his 1964 State of the Union address. As a result, over the next seven years, the AEC shut down all but one of the Hanford production reactors. Because the Hanford area was a one industry town, the AEC also took steps to keep the area economically viable by aiming to bring new industry and contractors into the area. It grouped these efforts into its Hanford diversification program. In 1964 General Electric decided to withdraw from Hanford and the AEC committed to use multiple contractors at the site.

In the first major move of its Hanford diversification program, the AEC selected Battelle Memorial Institute of Columbus, Ohio to take over operation of the Hanford Laboratories, which were now renamed the Pacific Northwest Laboratory (PNL). At its inception PNL had a staff of about 1,800 and a budget of approximately $20 million.

Under Battelle management the laboratory began to grow. From a single gray barracks in downtown Richland in 1965, PNL, in ten years, had grown to include new buildings and equipment valued at $50 million. For example, in 1967 PNL began operation of a 120 square mile Arid Lands Ecology Reserve for the AEC. It established a Marine Research Laboratory on Washington's Olympic Peninsula and a research center near the University of Washington's Seattle campus. It built a Richland Research Complex which included a Research Operations Building, a Physical Sciences Laboratory, a 300 seat auditorium, a Mathematics Building, an Engineering Development Laboratory, and a Life Sciences Laboratory. In 1967 an observatory with the largest optical telescope in the Northwest was established near Richland.

The AEC, meanwhile, had decided to build the Fast Flux Test Facility (FFTF) at Richland as part of its Hanford diversification efforts. The FFTF was an advanced nuclear reactor which would be used to test fuels and materials which could be used in advanced nuclear breeder reactors. PNL was given the job of designing the FFTF and selecting engineering and construction firms to build it.

At the same time PNL was diversifying its research programs. The laboratory expanded its efforts into additional biomedical, nonnuclear energy, environmental, national security, and human affairs research. In 1969 PNL was chosen by the National Aeronautics and Space Administration to analyze lunar samples collected by the Apollo program and in 1972 PNL received lunar samples from the Apollo 15 and 17 space missions for research. In 1972 the laboratory won a prestigious award for developing a porous substance that could develop a "living union" between bone and prosthetic devices by bone ingrowth.

By 1975 PNL's work force totaled about 1142 and its annual operating budget was a little over $25 million. By this time the AEC had been replaced by the Energy Research and Development Administration (ERDA). Within two years ERDA had been replaced by the Department of Energy (DOE). PNL became first an ERDA facility in 1975 and then a DOE facility in 1977.

PNL continued its role as an expanding and diversifying facility under DOE. When Mount St. Helens erupted in 1980, PNL began collecting and analyzing ash samples to determine potential environmental and health consequences. The laboratory fabricated special bundles of reactor fuel rods to help to determine what happens to nuclear fuel rods during a reactor loss of coolant accident. PNL helped DOE to establish the first Atmospheric Radiation Measurement site to obtain data related to global environmental change. It prepared a unique booklet explaining potential radiation hazards to help the people of Enewetak Atoll to understand health risks of returning to their native islands, the site of many earlier open-air United States nuclear weapons tests. PNL used its own Grumman Gulfstream I aircraft to collect air samples of fallout from the 1986 Chernobyl nuclear reactor accident. The laboratory developed a process for encapsulating highly radioactive nuclear waste in vitrified glass and demonstrated the process on a pilot-plant scale employing spent fuel from a commercial power reactor. PNL also performed lead laboratory roles for DOE on the Aquifer Thermal Energy Storage Program, wind energy, nuclear waste materials characterization, and nuclear waste management.

By 1992 PNL employed more than 3,500 people, had an annual budget of over $500 million, and supported energy, environmental, health, educational, and national security missions. It focused on scientific research and the rapid development and deployment of technology, with an emphasis on resolving environmental issues, such as waste remediation, and global environmental change. When appropriate, PNL also performed work for other federal agencies, such as the Department of Defense, the Nuclear Regulatory Commission, and the Environmental Protection Agency. In 1995 it was designated Pacific Northwest National Laboratory (PNNL).

Inactive Records Produced by Pacific Northwest National Laboratory: PNNL has custody of inactive records created by its own organizations and by General Electric. Like the Richland Operations Office, PNNL generally controls inactive records on the box level. PNNL, however, usually retains information about the collections of which records boxes are a part. The attached Records Input/Data Transfer forms are inventories of the folders which appear in records boxes. PNNL uses them as one means of controlling its inactive records. The forms also list the organization which retired the records and indicate the larger collections of which boxes are a part.

Originally some of PNNL's inactive records about site activities were classified. The Richland Operations Office has now declassified many of these older documents in response to litigation and other needs. It has placed many of these documents in its public reading room; thus, much of the contents of the boxes listed on the attached Records Input/Data Transfer forms may be available in the Richland public reading room. As soon as the documents are available, they are linked to the Hanford Home Page at http://www.hanford.gov/doe/reading.htm.

Inactive Records Produced by Pacific Northwest National Laboratory--Selected Examples of Reactor Safety Research: The attached Records Transfer/Data Input forms list collections which demonstrate research aimed at helping to insure the safety of commercial nuclear power plants. Much of the work was performed for the Nuclear Regulatory Commission. Nuclear

power plant safety is one of the more important areas of laboratory research. The attached forms contain listings for three collections, boxes 129228-33, boxes 132484-91, and boxes 124935-50. The last collection is comprised of the files of Laurin R. Dodd and contain analyses of the Chernobyl nuclear reactor accident.

The box inventories may not reflect the present condition of these records.

Arranging for Access to Inactive Records Produced by Pacific Northwest National Laboratory--Selected Examples of Reactor Safety Research: Access to unclassified portions of these materials can be arranged under provisions of the Freedom of Information Act (FOIA). An FOIA request may be submitted, or additional information about the records obtained, by contacting the Richland Operations Office FOIA officer at:

Freedom of Information Act Officer, A7-75
U.S. Department of Energy
P.O. Box 550
Richland, WA 99352
Phone: 509-376-6216.

Some of the records on the attached box inventories may have previously been made available at the DOE reading room in Richland. These records may be reviewed and duplicated at the reading room. There is a fee for duplication. The reading room can be reached at:

DOE Public Reading Room
100 Sprout Road
Richland, WA 99352
Phone: 509-376-8583
E-mail: Reading_Room@pnl.gov

RICHLAND OPERATIONS OFFICE

RECORDS PRODUCED BY PACIFIC NORTHWEST NATIONAL LABORATORY

SELECTED EXAMPLES OF REACTOR SAFETY RESEARCH

BOX INVENTORIES

(Jackie D 4/28)

1. Company and Code	2. Department and Code	3. Custodian/Phone	4. Location of Records (Area-Bldg-Rm)	5. Date	6. Page of
Pacific Northwest Laboratory	Nuclear Systems & Concepts	RR Weber/372-4109	EESB/1355	04/06/94	1 6

7. Retiring Unit and Code	8. Manager/Phone	9. Org. Code	10. MSIN	11. May records be destroyed as scheduled without further concurrence?
Operations, Safety, & Regulatory Analysis	BF Gore/372-4121	D7T53	K8-37	[ ] Yes [X] No

12. Box No.	13. Description of Record Instruction: Type general description in capital letters and follow with detail description of contents. Also, please highlight or underline key words.	14. Classification (C,S,U)	15. Inclusive Dates From	15. Inclusive Dates To	16. Cubic Feet	17. Disposal Authority	18. Retention Period
129228 ✓ 2106	Project: 10209 Project Manager: BF Gore Title: "Palo Verde Startup Augmented Inspection Coverage" Client: Nuclear Regulatory Commission Scope: Assist NRC Region V in providing round the clock inspection coverage during startup of Palo Verde and other reactors. Project Management Plan/Monthly Reports/189 Proposal/External Correspondence/RIDS/Impact Level Approvals/Technical Analysis Records and Results	U	5/85	5/88	1.00	NI-434.89.81b	20 years
(same)	Project: 11949 Project Manager: BF Gore Title: "Region 1 Probabilistic Risk Assessment Applications Program for Inspection of Nuclear Power Plants" Client: Nuclear Regualtory Commission Scope: Develop plant specific Probabilistic Risk Assessment-based inspection guides. Project Management Plan/Monthly Reports/189 Proposal/External Correspondence/RIDS/Impact Level Approvals/Technical Analysis Records and Results	U	9/86	4/90		"	"

RECORDS TRANSFER/ DATA INPUT	19. Transfer Requested By (Signature)	20. Records Management Approval	21. Data Entry	22. Received by RHA	23. Date Received
	Jackie Dennis for BF Gore 5/18/94	6/1/94 RM Dawson	S-8 [ ] S-10 [ ] S-9 [ ] S-11 [ ]	P Morrison	6-27-94

54-3000-626 (02/93) GEF220

Northwest Laboratory	Nuclear Systems & Concepts	KR Weber/ 372-4109	EESB/1355	04/06/94	6. Page 1 of 1

7. Retiring Unit and Code	8. Manager/Phone	9. Org. Code	10. MSIN	11. May records be destroyed as scheduled without further concurrence?
Operations, Safety, & Regulatory Analysis	BF Gore/372-4121	D7T53	K8-37	[ ] Yes [X] No

12. Box No.	13. Description of Record Instruction: Type general description in capital letters and follow with detail description of contents. Also, please highlight or underline key words.	14. Classification (C,S,U)	15. Inclusive Dates From	15. Inclusive Dates To	16. Cubic Feet	17. Disposal Authority	18. Retention Period
129229 2107	Project: 15630 Project Manager: BF Gore Title: "DOE Probabilistic Risk Assessment Basics Course" Client: Department of Energy Scope: Develop and present a DOE PRA basics course for Project Managers. Reports/Proposal/External Correspondence/RIDS/Impact Level Approvals/Technical Analysis Records and Results	U	1/89	6/91	1.00	N1-434.89.81b	20 years

RECORDS TRANSFER/ DATA INPUT	19. Transfer Requested By (Signature)	20. Records Management Approval	21. Data Entry	22. Received by RHA	23. Date Received
	Jackie Dennis for BF Gore 5/18/94	RM Dunn 6/7/94	S-8 [ ] S-10 [ ] S-9 [ ] S-11 [ ]	P Morrison	6-27-94

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Northwest Laboratory	Nuclear Systems & Concepts	KR Weber/ 372-4109	EESB/1355	04/06/94	6. Page of

7. Retiring Unit and Code	8. Manager/Phone	9. Org. Code	10. MSIN	11. May records be destroyed as scheduled without further concurrence?
Operations, Safety, & Regulatory Analysis	BF Gore/372-4121	D7T53	K8-37	[ ] Yes [X] No

12. Box No.	13. Description of Record Instruction: Type general description in capital letters and follow with detail description of contents. Also, please highlight or underline key words.	14. Classification (C,S,U)	15. Inclusive Dates From	15. Inclusive Dates To	16. Cubic Feet	17. Disposal Authority	18. Retention Period
129230 i/ 2107	Project: 11663 Project Manager: BF Gore Title: "Probabilistic Risk Assessment Applications Program for Team Inspections in Region V" Client: Nuclear Regulatory Commission Scope: Develop Risk-based inspection guidance for Rancho Seco power plant based on PRA analyses for Oconee and ANO-1 plants and study of plant simularities and differences. Project Management Plan/Monthly Reports/189 Proposal/External Correspondence/RIDS/Impact Level Approvals/Technical Analysis Records and Results	U	4/86	5/88	1.00	NI-434.89.81b	20 years
(same)	Project: 10244 Project Manager: BF Gore Title: "Three Mile Island Restart Augmented Inspection Coverage" Client: Nuclear Regulatory Commission Scope: Assist NRC Region I in providing round-the-clock inspection and assessment of TMI-1 operating crew performance during initial stages of restart following Commission authorization Monthly Reports/189 Proposal/External Correspondence/RIDS/Impact Level Approvals/Technical Analysis Records and Results	U	4/85	7/87			
						"	"

RECORDS TRANSFER/ DATA INPUT	19. Transfer Requested By (Signature)	20. Records Management Approval	21. Data Entry	22. Received by RHA	23. Date Received
	Jackie Davis for BF Gore 5/18/94	6/7/94 RM Dunn	S-8 [ ] S-10 [ ] S-9 [ ] S-11 [ ]	P Morrison	6-27-94

Pacific Northwest Laboratory	Nuclear Systems & Concepts	KR Weber/ 372-4109	EESB/1355	04/06/94	6. Page of

7. Retiring Unit and Code	8. Manager/Phone	9. Org. Code	10. MSIN	11. May records be destroyed as scheduled without further concurrence?
Operations, Safety, & Regulatory Analysis	BF Gore/372-4121	D7T53	K8-37	[] Yes [X] No

12. Box No.	13. Description of Record Instruction: Type general description in capital letters and follow with detail description of contents. Also, please highlight or underline key words.	14. Classification (C,S,U)	15. Inclusive Dates From	15. Inclusive Dates To	16. Cubic Feet	17. Disposal Authority	18. Retention Period
129231 2107	Project: 14153 Project Manager: BF Gore Title: "Nuclear Regulatory Commission Probabilistic Risk Analysis Applications Program for Inspection" Client: Nuclear Regulatory Commission Scope: Develop plant-specific Probabilistic Risk Analysis-based inspection guides and generic Probabilistic Risk Analysis insights. Project Management Plan/Monthly Reports/189 Proposal/External Correspondence/RIDS/Impact Level Approvals/Technical Analysis Records and Results	U	10/86	3/93	1.00	NI-434.89.81b	20 years

RECORDS TRANSFER/ DATA INPUT	19. Transfer Requested By (Signature)	20. Records Management Approval	21. Data Entry	22. Received by RHA	23. Date Received
	Jackie Pearce BF Gore for 5/18/94	6/7/94 RM Dunn	S-8 [ ] S-10 [ ] S-9 [ ] S-11 [ ]	P Morrison	6-27-94

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Pacific Northwest Laboratory	Nuclear Systems & Concepts	KR Weber/ 372-4109	EESB/1355	04/06/94	6. Page of

7. Retiring Unit and Code	8. Manager/Phone	9. Org. Code	10. MSIN	11. May records be destroyed as scheduled without further concurrence?
Operations, Safety, & Regulatory Analysis	BF Gore/372-4121	D7T53	K8-37	[ ] Yes [X] No

12. Box No.	13. Description of Record Instruction: Type general description in capital letters and follow with detail description of contents. Also, please highlight or underline key words.	14. Classification (C,S,U)	15. Inclusive Dates From	15. Inclusive Dates To	16. Cubic Feet	17. Disposal Authority	18. Retention Period
129232 / 2107	Project: 02938 Project Manager: BF Gore Title: "Additional Low Temperature Overpressure Protection" Client: Nuclear Regulatory Commission Scope: Develop a value/impact analysis of alternative regulatory positions to address protection against overpressure events at low temperatures for reactor vessels. Project Management Plan/Monthly Reports/189 Proposal/External Correspondence/RIDS/Impact Level Approvals/Technical Analysis Records and Results	U	7/86	6/92	1.00	N1-434.89.81b C-19.03.BR	20 years
129233 / 2109	Project: 02938 (con't) Project Manager: BF Gore Title: "Additional Low Temperature Overpressure Protection" Client: Nuclear Regulatory Commission Scope: Develop a value/impact analysis of alternative regulatory positions to address protection against overpressure events at low temperatures for reactor vessels. Project Management Plan/Monthly Reports/189 Proposal/External Correspondence/RIDS/Impact Level Approvals/Technical Analysis Records and Results	U	7/86	6/92	1.00	N1-434.89.81b C-19.03.BA	20 years

RECORDS TRANSFER/ DATA INPUT	19. Transfer Requested By (Signature)	20. Records Management Approval	21. Data Entry	22. Received by RHA	23. Date Received
	Jackie Dennis for BF Gore 5/18/94	RM Dunn 6/1/94	S-8 [ ] S-10 [ ] S-9 [ ] S-11 [ ]	P Morrison	6-27-94

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Pacific Northwest Laboratory	Nuclear Systems & Concepts	RR Weber/ 372-4109	EESB/1355	04/06/94	6. Page of

7. Retiring Unit and Code	8. Manager/Phone	9. Org. Code	10. MSIN	11. May records be destroyed as scheduled without further concurrence?
Operations, Safety, & Regulatory Analysis	BF Gore/372-4121	D7T53	K8-37	[ ] Yes [X] No

12. Box No.	13. Description of Record Instruction: Type general description in capital letters and follow with detail description of contents. Also, please highlight or underline key words.	14. Classification (C,S,U)	15. Inclusive Dates From	15. Inclusive Dates To	16. Cubic Feet	17. Disposal Authority	18. Retention Period
129233 (con't)	Project: 15023 Project Manager: BF Gore Title: "Review Safety Evaluation Report For Modular High Temperature Gas Cooled Reactor" Client: Nuclear Regulatory Commission Scopt: Review the draft Safety Evaluation Report for Modular HTGRs. Provide a list of questions and comments to Nuclear Regulatory Commission. 189 Proposal/External Correspondence/Technical Analysis Records and Results	U	8/88	11/90	1.00	N1-434.89.81b C 19.03.BR	20 years

RECORDS TRANSFER/ DATA INPUT	19. Transfer Requested By (Signature)	20. Records Management Approval	21. Data Entry	22. Received by RHA	23. Date Received
	Jackie Dorn for BF Gore 5/18/94	6/7/94 RM Dunn	S-8 [ ] S-10 [ ] S-9 [ ] S-11 [ ]	P M Jamison	6-27-94

54-3000-626 (02/93) GEF220

1. Company and Code	2. Department and Code	3. Custodian/Phone	4. Location of Records (Area Bldg Rm)	5. Date	6. Page
Pacific Northwest Laboratory	Risk and Safety Analysis	BF Gore/372-4121	3000/EESB/1354	10/17/94	1 of 2

7. Retiring Unit and Code	8. Manager/Phone	9. Org. Code	10. MSIN	11. May records be destroyed as scheduled without further concurrence?
	BF Gore/372-4121	D7T12	K8-37	[ ] Yes [X] No

12. Box No.	13. Description of Record	14. Classification (C/S/U)	15. Inclusive Dates From	15. Inclusive Dates To	16. Cubic Feet	17. Disposal Authority	18. Retention Period
132484 2597	Project Name: NRC Risk Based Inspection Guides for Pressure Water Reactors (PWR) Systems Project Number: 16485 Client: Nuclear Regulatory Commission Scope: Develop risk based inspection guides for specific PWR safety systems. Complete set of Auxiliary Feedwater System Risk-Based Inspection Guides A: Monthly Reports with financial input Prep and Risk B: 189 Proposal C: Record Correspondence C5.1: Reports plus drafts for plants	U	10/90	10/92	1.00	N1-434-89-8.1b C-19-03.BR	20 years
132485	Reactor Inspection Guides (RIGS) for each plant	U	9/90	4/94	1.00	N1-434-89-8.1b	20 years
132486 2597	Published reports plus drafts for each plant: DC Cook Nuclear Power Plant Salem Nuclear Power Plant Virgil C. Summer Nuclear Power Plant Maine Yankee Nuclear Power Plant						
132487 2598	ANO-2 Nuclear Power Plant Lt. Lucie Unit 1 Nuclear Power Generation Station Beaver Valley Nuclear Power Plant Prairie Island Units 1 and 2 Nuclear Power Plants	U	10/90	10/92	1.00	N1-434-89-8.1b	20 years
132488 2598	McGuire Nuclear Power Plant Kewaunee Nuclear Power Station Turkey Point Nuclear Power Plant North Anna Nuclear Power Plant Three Mile Island Nuclear Station Unit 1 Palisades Nuclear Plant The Point Beach Nuclear Power Plant	U	9/92	4/94	1.00	N1-434-89-8.1b	20 years

K27059

RECORDS TRANSFER/ DATA INPUT	19. Transfer Requested By (Signature)	20. Records Management Approval	21. Data Entry	22. Received by RHA	23. Date Received
	BF Gore BF Gore	Rose M Dunn 11/16/94	S-8 [ ] S-10 [ ] S-9 [ ] S-11 [ ]	P Mendoza	1-13-95

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K27059 (2 box)

7. Retiring Unit and Code	8. Manager/Phone	9. Org. Code		concurrence?
	BF Gore/372-4121	D7T12	K8-37	[ ] Yes [X] No

			15. Inclusive Dates				
132489 / 2601	Seabrook JM Farley Nuclear Power Plant Davis-Besse Nuclear Power Plant Watts Bar Nuclear Plant HB Robinson Nuclear Power Plant Catawba Nuclear Power Plant South Texas Project Nuclear Power Plant	U	9/92	4/94	1.00	N1-434-89-8.1b	20 years
132490 / 2601	Byron and Braidwood Nuclear Power Plant Diablo Canyon Unit 1 Nuclear Power Plant Callaway Nuclear Power Station Waterford 3 Nuclear Power Plant Ginna Nuclear Power Plant San Onofre Unit 2 Nuclear Power Plant	U	9/92	4/94	1.00	N1-434-89-8.1b	20 years
132491 / 2602	Fort Calhoun Nuclear Power Plant Palo Verde Nuclear Power Plant Comanche Peak Nuclear Power Plant	U	9/92	4/94	1.00	N1-434-89-8.1b	20 years

RECORDS TRANSFER/ DATA INPUT	19. Transfer Requested By (Signature)	20. Records Management Approval	21. Data Entry	22. Received by RHA	23. Date Received
	BF Gore BF Gore	R M Dunn 11/16/94	S-8 [ ] S-10 [ ] S-9 [ ] S-11 [ ]	P Morrison	1-13-95

54-3000-626 (02/93) GEF220

12. Box No	13. Description of Record	ficatio(C/U)	16. Cubic	17. Authority/Disposal	18. Retention

1. Company and Code	2. Department and Code	3. Custodian/Phone	4. Location of Records (Area-Bldg-Rm)	5. Date	6. Page
Pacific Northwest Laboratory	International Reactor Safety/D9T05	Dodd, LR/2-4423	3000/ESB/33	6/10/96	1 of 7

7. Retiring Unit and Code	8. Manager/Phone	9. Org. Code	10. MSIN	11. May records be destroyed as scheduled without further concurrence?
022135	Dodd LR/2-4423	D9T05	K7-74	[ ] Yes [X] No

12. Box No.	13. Description of Record	14. Classification (C/S/U)	15. Inclusive Dates From	15. Inclusive Dates To	16. Cubic Feet	17. Disposal Authority	18. Retention Period
	Project Name: International Reactor Safety Support Program Project Manager: Laurin R. Dodd Project Number: 22415 Client: U.S. Department of Energy Scope: This project provides technical and administrative support to the U.S. Department of Energy (Office of Nuclear Energy) for the International Reactor Safety Program (formerly the Lisbon Initiative).						
124935	Advanced Reactors ALTHAEA AMPX ANISN ANPO Basalt (Rockwell) BRT Conversion Factor Criticality Safety CANDU Chernobyl Files: Anal of Chernobly ACC Articles/News	U	1968	1986	1.0	N1-434-89-8.1a1	Permanent

RECORDS TRANSFER/ DATA INPUT	19. Transfer Requested By (Signature)	20. Records Management Approval	21. Data Entry	22. Received by RHA	23. Date Received
	KYM Schanke for LR Dodd	KYM Schanke 6/24/96	S-8 [ ] S-10 [ ] S-9 [ ] S-11 [ ]	P Morrison	7-22-96

1. Company and Code	2. Department and Code	3. Custodian/Phone	4. Location of Records (Area-Bldg-Rm)	5. Date	6. Page
Pacific Northwest Laboratory	International Reactor Safety/D9T05	Dodd, LR/2-4423	3000/ESB/33	6/10/96	2 of 7

7. Retiring Unit and Code	8. Manager/Phone	9. Org. Code	10. MSIN	11. May records be destroyed as scheduled without further concurrence?
022135	Dodd LR/2-4423	D9T05	K7-74	[ ] Yes [X] No

12. Box No.	13. Description of Record	14. Classification (C/S/U)	15. Inclusive Dates From	15. Inclusive Dates To	16. Cubic Feet	17. Disposal Authority	18. Retention Period
124936	Impact of the Chernobyl Accident on Russian Nuclear Reactor Plant Safety-Design and Operation Numerical Parameters Relevant to the Chernobyl Reactor Accident-Factual Report Fire Chief Interview The Chernobyl Bibliographic Search System-Installation and User's Guide Liningrad Localization System Maintaining the Nuclear Option after Chernobyl-Nuclear Development Analysis from JAERI Chronlogy Control Correspondance/Notes Critical Review of Plant Chernobyl Nuclear Accident-One Year Later Report of DOE Team Analyses of Chernobyl 4 Atomic Energy Station Accident Sequence Advanced Draft of above Item Photos of Chernobyl--21-8"x 10"(Black and White) Additional Notes on USSR Discussion Time Magazine-Chernobyl Meltdown Nuclear Development and Proliferation - USSR report on Chernobyl, 2 Volumes USSR Report Political & Sociological Affairs/Aftermath of Chernobyl NPP Report of DOE's Team Analyses of Chernobyl 4 Atomic Energy Station Modeling and Simulation of Chernobyl 4 Reactor Under Severe Accident Chernobyl Nuclear Accident Chernobyl Accident RBMK Reactor Design and Safety Features	U	1986	1992	1.0	N1-434-89-8.1a1	Permanent

RECORDS TRANSFER/ DATA INPUT	19. Transfer Requested By (Signature)	20. Records Management Approval	21. Data Entry	22. Received by RHA	23. Date Received
	K M Schanke for LR Dodd	K M Schanke 6/24/96	S-8 [ ] S-10 [ ] S-9 [ ] S-11 [ ]	P Morrison	7-22-96

1. Company and Code	2. Department and Code	3. Custodian/Phone	4. Location of Records (Area-Bldg-Rm)	5. Date	6. Page
Pacific Northwest Laboratory	International Reactor Safety/D9T05	Dodd, LR/2-4423	3000/ESB/33	6/10/96	3 of 7

7. Retiring Unit and Code	8. Manager/Phone	9. Org. Code	10. MSIN	11. May records be destroyed as scheduled without further concurrence?
022135	Dodd LR/2-4423	D9T05	K7-74	[ ] Yes [X] No

12. Box No.	13. Description of Record	14. Classification (C/S/U)	15. Inclusive Dates From	15. Inclusive Dates To	16. Cubic Feet	17. Disposal Authority	18. Retention Period
124937	DCODE Defense/Civilian Mix DOT Estimates of Reprocessing and MOX Fabrication Costs Eschbach Economics Energy Security Exploratory Research EGGNIT Exterminator-2 Foreign Reactor Safety Reports Soviet Transient PNL Chernobyl Analysis PNL Reactor Activities Power Reactor Specifications RBMK Ramona 3B Calculations Reports Worldwide Safety Regulations Safety Reviews Selected Panel CSR Foreign Reactor Safety/Slides Report of Foreign Travel	U	1969	1992	1.0	N1-434-89-8.1a1	Permanent

RECORDS TRANSFER/ DATA INPUT	19. Transfer Requested By (Signature)	20. Records Management Approval	21. Data Entry	22. Received by RHA	23. Date Received
	KM Schanke for LR Dodd	KM Schanke 6/24/96	S-8 [ ] S-10 [ ] S-9 [ ] S-11 [ ]	P Mossier 7-22-96	

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1. Company and Code	2. Department and Code	3. Custodian/Phone	4. Location of Records (Area-Bldg-Rm)	5. Date	6. Page
Pacific Northwest Laboratory	International Reactor Safety/D9T05	Dodd, LR/2-4423	3000/ESB/33	6/10/96	4 of 7

7. Retiring Unit and Code	8. Manager/Phone	9. Org. Code	10. MSIN	11. May records be destroyed as scheduled without further concurrence?
022135	Dodd LR/2-4423	D9T05	K7-74	[ ] Yes [X] No

12. Box No.	13. Description of Record	14. Classification (C/S/U)	15. Inclusive Dates From	15. Inclusive Dates To	16. Cubic Feet	17. Disposal Authority	18. Retention Period
124938	Soviets Reply to Inaccurate Cooling Modes SS Translation U.S. Team Interim Status Vertical Section of a Control Rod Vienna Proceedings Chernobyl--Where Do We Go From Here? GeoSafe GAMTEC GMR Research GRANIT HRG Isaiah Project: Proposals Technical Legislation Economics Fuel Cycle Strategy	U	1964	1993	1.0	N1-434-89-8.1a1	Permanent
124939	Isaiah Project Continued: Publications Presentations Contacts Articles Miscellaneous files (END ISAIAH RECORDS) Key Tech. Intel. Signals Krypton LEOPARD Letter Request/LRD Life Cycle Costs-Bloomster Liquid Metal Reactor	U	1992	1993	1.0	N1-434-89-8.1a1	Permanent

RECORDS TRANSFER/ DATA INPUT	19. Transfer Requested By (Signature)	20. Records Management Approval	21. Data Entry	22. Received by RHA	23. Date Received
	KM Schanke for LR Dodd	KM Schanke 6/24/96	S-8 [ ] S-10 [ ] S-9 [ ] S-11 [ ]	[signature]	7-22-96

1. Company and Code	2. Department and Code	3. Custodian/Phone	4. Location of Records (Area-Bldg-Rm)	5. Date	6. Page
Pacific Northwest Laboratory	International Reactor Safety/D9T05	Dodd, LR/2-4423	3000/ESB/33	6/10/96	5 of 7

7. Retiring Unit and Code	8. Manager/Phone	9. Org. Code	10. MSIN	11. May records be destroyed as scheduled without further concurrence?
022135	Dodd LR/2-4423	D9T05	K7-74	[ ] Yes [X] No

12. Box No.	13. Description of Record	14. Classification (C/S/U)	15. Inclusive Dates From	15. Inclusive Dates To	16. Cubic Feet	17. Disposal Authority	18. Retention Period
124940	MHTGR/NPR MAFDA Morning Light Modeling MORSE NAP N Reactor Neutronics- Materials FLHT Tests CSFM Criticality & Shielding Analysis Decay Heat Generation Rates of BWR SF Assemblies HLW Shielding NP- NP 237 RBMK/VVER Foreign Evaluation Off Budget Waste Management Program	U	1970	1990	1.0	N1-434-89-8.1a1	Permanent
124941	Pu-238 POPOPY & POPLIB PDQ QAD Reactor Physics R & D Strategies-Commercial Reactor Reprocessing Economics/Administration BNFP/MOX Analysis- Figures Analysis Report Distribution	U	1963	1991	1.0	N1-434-89-8.1a1	Permanent

RECORDS TRANSFER/ DATA INPUT	19. Transfer Requested By (Signature)	20. Records Management Approval	21. Data Entry	22. Received by RHA	23. Date Received
	KM Schanke for LR Dodd	KM Schanke 6/24/96	S-8 [ ] S-10 [ ] S-9 [ ] S-11 [ ]	P Morrison	7-22-96

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1. Con., and Code	2. Department and Code	3. Cus /Phone	4. Location of Records (Area-Bldg-Rm)	5. Date	Page
Pacific Northwest Laboratory	International Reactor Safety/D9T05	Dodd, LR/2-4423	3000/ESB/33	6/10/96	6 of 7

7. Retiring Unit and Code	8. Manager/Phone	9. Org. Code	10. MSIN	11. May records be destroyed as scheduled without further concurrence?
022135	Dodd LR/2-4423	D9T05	K7-74	[ ] Yes [X] No

12. Box No.	13. Description of Record	14. Classification (C/S/U)	15. Inclusive Dates From	15. Inclusive Dates To	16. Cubic Feet	17. Disposal Authority	18. Retention Period
124942	Reprocessing Strategy- Proposal Rubenstein Sanco Storm Israel Soviet Literature- Cross Sections Reactor Dynamics Reactor Physics Reprocessing Shielding SRP Site Selection Criteria Book Tritium Production TWOTRAN TEMPEST Uranium Consumption Uranium Enrichment World Data Base-Background/World Reactors WNP-1 ZDB	U	1960	1988	1.0	N1-434-89-8.1a1	Permanent
124943	Proposals Legal Issues Economics Recriticality Strategies Technical Letters NPR Option WNP-1 Reactor Safety NPR EIS Questions	U	1984	1991	1.0	N1-434-89-8.1a1	Permanent

RECORDS TRANSFER/ DATA INPUT	19. Transfer Requested By (Signature)	20. Records Management Approval	21. Data Entry	22. Received by RHA	23. Date Received
	KM Schanke for LR Dodd	KM Schanke 6/24/96	S-8 [ ] S-10 [ ] S-9 [ ] S-11 [ ]	7-22-96	

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1. Company and Code	2. Department and Code	3. Custodian	4. Location of Records (Area-Bldg-Rm)	5. Date	6.
Pacific Northwest Laboratory	International Reactor Safety/D9T05	Dodd, LR/2-4423	3000/ESB/33	6/10/96	7 of 7

7. Retiring Unit and Code	8. Manager/Phone	9. Org. Code	10. MSIN	11. May records be destroyed as scheduled without further concurrence?
022135	Dodd LR/2-4423	D9T05	K7-74	[ ] Yes [X] No

12. Box No.	13. Description of Record	14. Classification (C/S/U)	15. Inclusive Dates From	15. Inclusive Dates To	16. Cubic Feet	17. Disposal Authority	18. Retention Period
124944	LWNPR EIS LWNPR Safety Reports Congressional White Papers Miscellaneous Core Design Core Optimization	U	1987	1994	1.0	N1-434-89-8.1a1	Permanent
124945	Arkansas Power & Light Blueprints Arkansas Nuclear One Fusion Cross Sections & Reactivities Materials of Nuclear Engineering/Dept. of Army Clarification of TMI Action Plant Requirements Investigation into the March 28, 1979 Three Mile Island Accident Nuclear News	U	1973	1987	1.0	N1-434-89-8.1a1	Permanent
124946	Reference Documents: See Attached List	U	1967	1992	1.0	N1-434-89-8.1a1	Permanent
124947	Reference Documents: See Attached List	U	1958	1992	1.0	N1-434-89-8.1a1	Permanent
124948	Reference Documents: See Attached List	U	1957	1992	1.0	N1-434-89-8.1a1	Permanent
124949	Reference Documents: See Attached List	U	1958	1992	1.0	N1-434-89-8.1a1	Permanent
124950	Reference Documents: See Attached List	U	1967	1992	1.0	N1-434-89-8.1a1	Permanent

RECORDS TRANSFER/ DATA INPUT	19. Transfer Requested By (Signature)	20. Records Management Approval	21. Data Entry	22. Received by RHA	23. Date Received
	KM Schanke for LR Dodd	KM Schanke 6/24/96	S-8 [ ] S-10 [ ] S-9 [ ] S-11 [ ]	P Mersson	7-22-96

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BOX 11

Arkansas Power & Light Blueprints - 1986 - 1987

Arkansas Nuclear One - Units 1 & 2 - 1983

Fusion Cross Sections & Reactivities - 1974

Materials of Nuclear Engineering / Dept. of Army - 1973

Clarification of TMI Action Plant Requirements - 1980

Investigation into the March 28, 1979 Three Mile Island Accident - 1979

Nuclear News - June 1986

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N Reactor Letter to Sec. Herrington/DOE - 10/3/86
Soviet Union Economic Affiars - JPRS Report - 6/89
Nuclear Fuel Cycle Analysis - The RBMK Reactors - 2/84
Utilitizing the Reactor Installations at the Novovoronezh Atomic Electric Power Plant - 1973
ATOMENERGOEXPORT - glossy pictures
Moving to Defenses through the Defense-Protected Build-Down (DPB) - 7/86
Epilogue: Second Thoughts on the Defensive Transition- 6/86
An Evolving SDI -
USSR Report - Construction and Related Industries - 2/13/86
USSR Report - Military Affairs - 5/15/85
Glossary of Selected Russian Terminology - (very hard to read - not copied very well)
Automated Ctl of Nucl. Fuel Use in a Nucl. Power Station Containing the RBMK - 7/01/87
Joint Determination of Concentrations of 222Rn & 220Rn Decay Products in Air - 7/1/87
Physiocochemical Foundations of Bituminization of Liquid Radioactive Wastes ... NPP with RBMK Reactor and the Properties of the Compounds Formed - 7/1/87
Method of Pair Exchange of Fuel Assemblies and Its Use in Optimizing the Energy Distribution of Water-Cooled/Water-Moderated Reactors - 7/1/87
Fuel Burn Up Fraction in RBMK-1000 Reactor - 7/1/87
Soviets Reappraise RBMK Safety - 9/2/87
Press Reports 1986
Vugraphs - 1990 - 1991
Air Storage Peaking Power Plants - 5/73
Compilation of Actinide Neutron Nuclear Data - Stockhold 1979
Report on U.S. Program of Technical Assistance to Safeguards of the IAEA (POTAS) - 1981
Intl Conference on Underground Pumped Hydro and Compressed Air Energy Storage - 1982
Costs & Cost Algorithms for Dry Cooling Tower Systems - 9/76
Improvement of the Environmental & Economic Characteristics of Cooling Towers - 6/30/75
Monte Carlo Criticality Calculations for Thermal Reactors - 10/11/67
Conceptual Study of Remotely Operated Plant to Fabricate (Th,U-233)02 Pellet Fuels - 3/80
Conceptual Study of a Remotely Op. Plant to Fabricate (Th,U-233)02 Pellet Fuels - 4/80
ENFORM II: Calculational System for LWR Logistics & Effluent Analysis - 9/79
Reprocessing Requirements for the FBR Program & Fuel Cycle - 3/82
Alternative Processes for Plutonium Isotope Separation - 1/87
Eval. Operational Safety at B&W Plants - Vol 1 - Idaho National Eng Lab - 10/87
Report of the Nonproliferation Alternative Systems Assessment Program - 6/80
Feedwater Transient and Small Break Loss of Coolant Accident Analyses for the Bellefonte Nuclear Plant - Idaho National Eng Lab - 3/87
A Shielding Calculational System for Plutonium - 8/75

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The Development & Appl. of a Coupled Monte Carlo Neutron-Photon Transport Code - 7/72
A Review of the Theory & Application of Monte Carlo Methods - Seminar ORNL 4/80
Vectorized Monte Carlo Photon Transport - LNLL - 5/83
Implementation of DYMAC Sys. at New Los Alamos Plutonium Processing Facility - 8/82
Calculated Critical Parameters in Simple Geometries for Oxide & Nitrate Water Mixtures of U-233, U-235 and Pu-239 with Thorium - 11/79
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Columbia River Basin Fish & Wildlife Program - 1987
A Measurement of the Capture toFission Ratio for 239Pu - 11/69
Evaluation of Neutron Cross Sections for 244Cm, 246Cm, and 248Cm - 1/77
A Survey of Published Values of int he Fast Fission of U238 - 6/60
AEC Research and Development Report - 12/59
Actnide Newsletter - 3.81
U238 Cross Sections & Their Temperature Depdendence - 6/58
Low-Energy Neutron Resonance Parameters of 238U - 3/66
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Decay Constant for Spontaneous Fission of U238 - 9/63
Neutron Total & Absorption Cross Sections of 242Pu - 6/68
Evaluation and Compilation of Pu-239 Cross Section Data for the ENDF/B Files - 12/66
Examen Critique Des Valeurs De - (all in French)
Multilevel Analysis of the Pu-239 Cross Sections Below 40 eV - 7/67
Tabulation of the Total Neutron Cross Section of 232U - 1966-1967
Evaluation & Compilation of Neptunium-237 Cross Section Data for ENDF-B File - 5/69
Capture Cross Section of 238Pu from Persimmon. Tabulation of Values 8/72
238U Neutron Elastic-Scattering Cross Sections from 6.44-8.56 MeV - 6/73
New Total Neutron Cross Section Measurement of Uranium between 0.5 - 4.35 MeV - 5/70
Neutron Spectrum Measurements in Depleted Uranium Metal Block for Investigating Discrepant U238 Cross-Sections - 5/73
Quelques Remarques Sur L'Evaluation Des Sections Efficaces Neutronicques de 239Pu 5/73
The Total Neutron Cross Section of Boron 10 between 90 and 420 keV - 4/73
The n-d Breakup Reaction and the n-n Scattering Length - 2/73
Nuclear Data for High Energy Neutron Damage Sources - 4/78
Nuclear Data and Measurements Series - 4/78
238U Neutron Induced Fission Cross Sect. for Incident Neutron Energies between 5 eV and 3.5 MeV - 3/79
Evaluation of Uranium-235 Neutron Cross Section Data for Energies above 15 kev - 1/70
A Tabulation of the Fission Cross Section of 237Np from Physics 8 - 9/71
A Memo on a and the Inelastic Scattering Cross Section of 94Pu239 up to 250 KeV - 6/70
Calculation of Lattice Parameters & Criticality for Uniform Water Moderated Lattices - 9/63
Eval. of 239Pu Cross Sections in Resonance Region for ENDF/B Version III Data File 12/71
218 Group Neutron Cross Section Library in AMPX Master Interface Format for Criticality Safety Studies - 7/76
Sample Probl. for 218 Group Neutron Cross Section Library in AMPX Master Interface Format - 3/78
A Review of Measurements of the Fission Cross Ssection of U235 - 7/60
Preliminary Actinide Evaluation for ENDF/B-V - 3/77
Resolved Resonance Integrals at 0 degrees K for U235 - 10/62
Total Neutron Cross Sections of U-233 and U-235 from 0.02 to 0.08 ev - 11/59
Evaluated Nuclear Data for Hydrogen in the ENDF/B-II Format - 2/71
1H(n,n)1H Scattering Observables Required for High Precision Fast Neutron Measurements Multilevel ... Sections of 23Na and Ca below 1 MeV - 5/70
Report to the AEC Nuclear Cross Section Advisory Committee - 10/71
Cross Section for the Reaction 238U(n,y)239U in the Energy Range 0.12-7.6 MeV - 1/64
The Interaction of 0.15- to 1.0-MeV Neutrons with U-238, U-235, and Pu-239 - 4/57
Energy Spectra of Neutrons Inelastically Scattered by 238U - 1957

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The Calculation of the Cross Section for 238 U (n,y) 239U int he Energy Range 10 keV-3 MeV - 1965

Neutron Transmission Measurements and Resonance Parameters in Pu-240 - 1957

MTR Fast Chopper Total Cross Sections of Pu240 - 1957

An Evaluation & Compilation of the Fission and Capture Cross Sections of 239Pu in the Ranergy Range 25 kev - 15 Mev - 1970

Neutron Cross Sections for 239 Pu and 240 Pu in the Energy Range - 1 KeV to 14 MeV - 1968

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Measurements of Prompt v in Fast Neutron Fission of U238 Induced by Neutrons from 1.5 to 15 Mev - 1964

A Review of Measurements of the Fission Cross Section of U-235 - 1959

Lectures on Fast Reactors - 1978

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Preliminary Feasibility Study of an Advanced PWR Employing a Radial Blanket and Zircaloy Core Baffles and Formers - 1981

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Conversion of 238Pu and 252 Cf Production Chain Cross Section Data to ENDF/B-IV Format - 1975

The Fission Cross Section of U232 from 4eV to 400eV - 1963

Investigations of the Interactions of Neutrons with 238U Nuclei - 1980

Neutron Total and Scatterin Cross Sections of 6Li in the Few MeV Region 1980

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A 218 Group Neutron Cross Section Reference Library in the AMPX Master Interface Format for Criticality Safety Studies - 1978

238U Resonance Self Indication Capture Measurements and Analysis - 1979

Pu-240 Cross Sections and Their Temperature Dependence - 1961

Comparison of Safety Functions, Regulatory Requirements, and EPRI Requirements Document for the AP600 and SBWR Comemrcial Nuclear Power Reactors - 1991

Notebook - 1981
- Production Rates for Co-Product Configuration
- PCTR Benchmark
- Supercells
- Co-Product
- Super Co-Product
- Pu Only
- Burnup Comparisons
- Flog Supercell Tests & WIMS
- Control

Notebook (green) - 1975 Reactor Stastics

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Comparison of Safety Function s and Regulatory Requirements for the CNDAU 3 and PIUS Commercial Nuclear Power Reactors - 1991

SRP Model Development and Analyses - (your personal notes)

Panel Process for Source Selection - 1978

Fissionable Materials Storage Facilities in the Russian Federation - 1992

Transactions of Criticality Alarm Systems Workshop - 1988

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Articles on Nuclear Physics - 1968 through 1973

Criticality Notebook - 1975
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Workshop on Safety of Soviet-Designed Nuclear Power Plants - 11/92

Sandia Analysis of the Chernobyl Reactor Accident - 10/86

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Information on the Seismic Design and Analysis of Buildings and Structures of Nuclear Power Plants in the USSR & Communist-Block Countries - 1/87

Radioactive Waste Management in the Former USSR - Volume III June 1992

A Users Manual for RSA-CFS Version 1.0 the Reactor Systems Analysis Central File Storage - June 1989

Criticality Accidents - 1967-1980

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