NEPA Source Guide for the Hanford Site

NEPA Services

Westinghouse Hanford Company

Date Published

October 1994

Prepared for the U.S. Department of Energy
Assistant Secretary for Environment, Safety and Health

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Hanford Company**

P.O. Box 1970

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Hanford Operations and Engineering Contractor for the
U.S. Department of Energy under Contract DE-AC06-87RL10930

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National Technical Information Service
5285 Port Royal Road
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Printed in the United States of America

DISCLM-1.CHP (1-91)

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RELEASE AUTHORIZATION

**Document
Number:**

WHC-SP-0903, REV.1

**Document
Title:**

NEPA Source Guide for the Hanford Site

Release Date:

October 24, 1994

**This document was reviewed following the
procedures described in WHC-CM-3-4 and is:**

APPROVED FOR PUBLIC RELEASE

WHC Information Release Administration Specialist:

Angela Laughery For
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10/24/94

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ACKNOWLEDGMENT

The *National Environmental Policy Act Source Guide for the Hanford Site* was produced through the cooperative efforts of Westinghouse Hanford Company and Pacific Northwest Laboratory NEPA staff. This co-authorship has not only saved individual contractor staff time, which represents a cost savings to the U.S. Department of Energy, but has also resulted in a complete and more consistent document for use at the Hanford Site. Those responsible for this document's publication wish to thank all individuals who helped in its preparation.

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LIST OF TERMS

AEC	U.S. Atomic Energy Commission
ALARA	as low as reasonably achievable
BWIP	Basalt Waste Isolation Project
CEQ	Council on Environmental Quality
CERCLA	<i>Comprehensive Environmental Response, Compensation, and Liability Act of 1980</i>
D&D	decontamination and decommissioning
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
DST	double-shell tank
EA	Environmental Assessment
Ecology	Washington State Department of Ecology
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EMSL	Environmental and Molecular Sciences Laboratory
ERDA	U.S. Energy Research and Development Administration
FFTF	Fast Flux Test Facility
FMEF	Fuels and Materials Examination Facility
FONSI	finding of no significant impact
FY	fiscal year
FR	<i>Federal Register</i>
HEPA	high-efficiency particulate air (filter)
HFNS	High-Flux Neutron Source (Facility)
HLW	high-level waste
HPFL	High-Performance Fuel Laboratory
HQ	U.S. Department of Energy, Headquarters
HWVP	Hanford Waste Vitrification Plant
LFL	lower flammability limit
LLW	low-level waste
LMFBR	liquid metal fast breeder reactor
MASF	Maintenance and Storage Facility
mrem	millirem
MWt	megawatt thermal
NEPA	<i>National Environmental Policy Act of 1969</i>
NRC	U.S. Nuclear Regulatory Commission
NSTF	Near-Surface Test Facility
NWPA	<i>Nuclear Waste Policy Act of 1982</i>
PFM	Process Facility Modification
PFP	Plutonium Finishing Plant
PNL	Pacific Northwest Laboratory
PUREX	Plutonium-Uranium Extraction (Facility)
R&D	research and development
RCRA	<i>Resource Conservation and Recovery Act of 1976</i>
rem	roentgen equivalent man
RMW	radioactive mixed waste
ROD	Record of Decision
SST	single-shell tank
TCT	thermocouple tree

LIST OF TERMS (cont.)

TRU	transuranic (waste)
UO ₃	Uranium-Trioxide (Plant)
USQ	unreviewed safety question
WASH	Washington, D.C. (AEC)
WHC	Westinghouse Hanford Company
WIPP	Waste Isolation Pilot Plant

1.0 USER'S GUIDE

1.1 PURPOSE

This Source Guide will assist those working with the *National Environmental Policy Act of 1969* (NEPA) to become more familiar with the Environmental Assessments (EA) and Environmental Impact Statements (EIS) that apply to specific activities and facilities at the Hanford Site. This document should help answer questions concerning NEPA coverage, history, processes, and the status of many of the buildings and units on and related to the Hanford Site.

This document summarizes relevant EAs and EISs by briefly outlining the proposed action of each and the decision made by the U.S. Department of Energy (DOE) or its predecessor agencies, the U.S. Atomic Energy Commission (AEC), and the U.S. Energy Research and Development Administration (ERDA), concerning the proposed action and current status of the buildings and units discussed in the proposed action. If a decision was officially stated by the DOE, as in a finding of no significant impact (FONSI) or a Record of Decision (ROD), and was located, a summary is provided in the text. Not all federal decisions, such as FONSIs and RODs, can be found in the *Federal Register* (FR). For example, although significant large-action FONSIs can be found in the FR, some low-interest FONSIs may have been published elsewhere (i.e., local newspapers).

The EA and EIS summaries are arranged in numerical order. To assist in locating a particular EA or EIS, the upper right corner of each page lists the number of the summary or summaries discussed on that page. Any draft EA or EIS is followed by a "D." The EAs with nonstandard numbering schemes are located in Chapter 3.

1.2 APPENDIX A

Appendix A presents additional information by providing a copy of the Table of Contents for each EA and EIS summarized in the report. These copies outline what is contained in each EA and EIS.

1.3 PERSONAL COMPUTER ACCESS TO INFORMATION

An electronic copy of the NEPA Source Guide is available in WordPerfect¹ format. Appendix A is not included in that copy. This WordPerfect file can be obtained by contacting the Westinghouse Hanford Company's (WHC) NEPA Services Organization. The WordPerfect file can be copied onto a user's hard drive for easy computer access.

¹WordPerfect is a trademark of WordPerfect Corporation.

1.4 LIBRARIES

The Hanford Technical Library, located in the 300 Area of the Hanford Site, has Hanford Site EISs on file in the documents room. The WHC and the Pacific Northwest Laboratory (PNL) maintain libraries of all NEPA documentation found in this guide. The WHC's NEPA Services Organization or the PNL's NEPA Compliance Staff can assist in locating specific documents or maintained files of lower-tiered NEPA documents such as Categorical Exclusions and Memorandum to Files.

1.5 HISTORY OF NATIONAL ENVIRONMENTAL POLICY ACT DOCUMENTATION AT THE HANFORD SITE

The AEC was the first agency to prepare EISs and EAs at the Hanford Site. Originally, the EISs were called Environmental Statements and EAs were known as Environmental Impact Assessments (EIA). When the AEC was reorganized and replaced by the ERDA, the EISs and EAs became ERDA documents. Similarly, when the ERDA became part of the DOE, the EISs and EAs became DOE documents. Before 1978, the EA and EIS process did not culminate in FONSI or RODs. In 1978, the Council on Environmental Quality (CEQ) published NEPA regulations requiring FONSI and RODs for these documents. The DOE formally adopted these regulations in July 1979.

A comprehensive list of all the EISs and EAs published as AEC, ERDA, and DOE documents is available from the DOE Office of NEPA Oversight in Washington, D.C., phone (202) 896-0125. A complete listing for each document includes the DOE number, title, relevant dates, DOE facility, states, and comments.

The documents identified as draft have not been finalized or were cancelled. Draft documents do not have an official status; therefore, they can only be referenced as predecisional.

1.6 NUCLEAR WASTE POLICY ACT OF 1982

The *Nuclear Waste Policy Act of 1982* (NWPA) specifies the process for selecting a repository site and gives this responsibility to the DOE. Congress approved geologic disposal by declaring that one of the key purposes of the act is "to establish a schedule for the siting, construction, and operation of repositories that will provide reasonable assurance that the public and the environment will be adequately protected from the hazards posed by high-level waste (HLW) and other such spent nuclear fuel as may be disposed of in a repository." All documents associated with the NWPA and the Hanford Site can be found in Chapter 3. Some specific NWPA activities are exempt from the requirements for the NEPA.

2.0 ENVIRONMENTAL ASSESSMENTS - HANFORD SITE

2.1 NUMERICAL LISTING

- DOE/EA-0021** *Environmental Assessment: Decommissioning and Decontamination Activity, Hanford Building Disposal Demonstration Project, REDOX Plutonium Concentration (233-S) Building, Hanford Reservation, Richland, Benton County, Washington, March 1978.*
- A FONSI was not required because the EA was written before the CEQ's final regulations were issued.
- DOE/EA-0030(D)** *Draft Environmental Assessment: Operation of N Reactor and Fuels Fabrication Facilities, Hanford Reservation, Richland, Washington, July 1978.*
- An EA was never finalized.
- DOE/EA-0044** *Environmental Assessment: Support Services Building, Hanford Reservation, Richland, Washington, July 1978.*
- A FONSI was not required because the EA was written before the CEQ's final regulations were issued.
- DOE/EA-0048** *Environmental Assessment: National Waste Terminal Storage Program, Near-Surface Test Facility, Hanford Reservation, Richland, Washington, June 1978.*
- A FONSI was not required because the EA was written before the CEQ's final regulations were issued.
- DOE/EA-0052** *Environmental Assessment: National Waste Terminal Storage Program, Near-Surface Test Facility, Hanford Reservation, Richland, Washington, December 1978.*
- A FONSI was not required because the EA was written before the CEQ's final regulations were issued.
- DOE/EA-0102** *Environmental Assessment: Steam Generator Tube Integrity Program, Surry Steam Generator Project, Hanford Site, Richland, Washington, March 1980.*
- The FONSI was issued March 27, 1980, and was published in the FR April 2, 1980 (45 FR 21676).
- DOE/EA-0111** *Environmental Assessment: Maintenance and Storage Facility, Hanford Site, Richland, Washington, May 1980.*
- A FONSI is not available; this EA was completed before the CEQ's final regulations were issued.

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- DOE/EA-0116** *Environmental Assessment: Fuels and Materials Examination Facility, Hanford Site, Richland, Washington, July 1980.*
- The FONSI was issued July 14, 1980.
- DOE/EA-0120** *Environmental Assessment: F Area Decommissioning Program, Hanford Site, Richland, Washington, October 1980.*
- The FONSI was published in the FR August 22, 1980 (45 FR 56125).
- DOE/EA-0188** *Environmental Assessment: Basalt Waste Isolation Project, Exploratory Shaft Construction, Hanford Site, Richland, Benton County, Washington, September 1982.*
- The FONSI was published in the FR September 16, 1982 (47 FR 40820).
- DOE/EA-0258(D)** *Draft Environmental Assessment: Breeder Reprocessing Engineering Test (BRET) Facility, Hanford Site, Richland, Washington.*
- An EA was never finalized.
- DOE/EA-0259** *Environmental Assessment: Decommissioning of Strontium Semiworks Facility, Hanford Site, Richland, Washington, May 1985.*
- The FONSI was issued May 15, 1985.
- DOE/EA-0312** *Environmental Assessment: Grouting and Near-Surface Disposal of Low-Level Radioactive Phosphate/Sulfate Wastes from N Reactor Operation, Hanford Site, Richland, Washington, December 1986.*
- The FONSI was issued November 21, 1986.
- DOE/EA-0318** *Environmental Assessment: SP-100 Ground Engineering System Test Site, Hanford Site, Richland, Washington, December 1988.*
- The FONSI was issued in the FR December 15, 1988 (53 FR 50444). The FONSI was reissued September 27, 1989, and included public comments (54 FR 39564).
- DOE/EA-0358(D)** *Draft Environmental Assessment: Handling and Transportation of Isotopic Heat Sources Prepared at the Hanford Site, Richland, Washington.*
- The EA is at the U.S. Department of Energy, Headquarters (HQ) and is currently waiting for an identification of a delivery date from Germany for approval.

- DOE/EA-0370(D)** *Draft Environmental Assessment: Fast Flux Test Facility Power Addition, Hanford Site, Richland, Washington.*
- The EA was abandoned when the future of the Fast Flux Test Facility (FFTF) was in question by the HQ.
- DOE/EA-0383** *Environmental Assessment: Hanford Environmental Compliance Project, Hanford Site, Richland, Washington, November 1991.*
- The FONSI was issued March 11, 1992.
- DOE/EA-0411(D)** *Draft Environmental Assessment: Fuel Assembly Area, Hanford Site, Richland, Washington.*
- The EA was abandoned when the future of the FFTF was in question by the HQ.
- DOE/EA-0429** *Environmental Assessment: Environmental and Molecular Sciences Laboratory at the Hanford Site, Richland, Washington, May 1990.*
- The FONSI was issued September 17, 1992.
- DOE/EA-0479** *Environmental Assessment: Collecting Crust Samples from Level Detectors in Tank 101-SY at the Hanford Site, Richland, Washington, November 1990.*
- The FONSI was issued November 16, 1990.
- DOE/EA-0495** *Environmental Assessment: Preparation for Crust Sampling of Tank 241-SY-101, Hanford Site, Richland, Washington, February 1991.*
- The FONSI was issued February 15, 1991.
- DOE/EA-0511** *Environmental Assessment: Characterization of Tank 241-SY-101, Hanford Site, Richland, Washington, May 1991.*
- The FONSI was issued May 10, 1991.
- DOE/EA-0533** *Environmental Assessment: Vapor Space Sampling of Ferrocyanide Tanks, Hanford Site, Richland, Washington, July 1991.*
- The FONSI was issued August 2, 1991.
- DOE/EA-0535** *Environmental Assessment: 105-KE and 105-KW Basins Fuel Encapsulation and Repackaging, 100-K Area, Hanford Site, Richland, Washington, June 1992.*
- The FONSI was issued June 23, 1992.

- DOE/EA-0538** *Environmental Assessment: Storage of Fast Flux Test Facility Unirradiated Fuel in the Plutonium Finishing Plant Complex, Hanford Site, Richland, Washington, January 1992.*
- The FONSI was issued January 9, 1992.
- DOE/EA-0581** *Environmental Assessment: Upgrading of the Ventilation System at the 241-SY Tank Farm, Hanford Site, Richland, Washington, December 1991.*
- The FONSI was issued December 20, 1991.
- DOE/EA-0596** *Environmental Assessment: Intrusive Sampling and Testing of Ferrocyanide Tanks, Hanford Site, Richland, Washington, January 1992.*
- The FONSI was issued February 11, 1992.
- DOE/EA-0618** *Environmental Assessment: Integrated Voice/Data Telecommunications System, Hanford Site, Richland, Washington, April 1992.*
- The FONSI was issued April 21, 1992.
- DOE/EA-0696** *Environmental Assessment: Construction of Temporary Mobile Office Complex, 200 West Area, Hanford Site, Richland, Washington, June 1992.*
- The FONSI was issued June 12, 1992.
- DOE/EA-0787** *Environmental Assessment: Shipment of Low Enriched Uranium Billets to the United Kingdom from the Hanford Site, Richland, Washington, August 1992.*
- The FONSI was issued August 27, 1992.
- DOE/EA-0802** *Environmental Assessment: Tank 241-SY-101 Equipment Installation and Operation to Enhance Tank Safety, Hanford Site, Richland, Washington, August 1992.*
- The FONSI was issued August 13, 1992.
- DOE/EA-0803** *Environmental Assessment: Proposed Pump Mixing Operations to Mitigate Episodic Gas Releases in Tank 241-SY-101, Hanford Site, Richland, Washington, September 1992.*
- The FONSI was issued September 18, 1992.
- DOE/EA-0809** *Environmental Assessment: Thermocouple Tree System Installation and Operation in Non-Leaking Ferrocyanide Tanks, Hanford Site, Richland, Washington, September 1992.*
- The FONSI was issued September 18, 1992.

DOE/EA-0881

Environmental Assessment: Tank 241-C-103 Organic Vapor and Liquid Characterization and Supporting Activities, Hanford Site, Richland, Washington, August 1993.

The FONSI was issued August 10, 1993.

DOE/EA-0904

Environmental Assessment: Access Road From State Route 240 to the 200 West Area, Hanford Site, Richland, Washington, February 1994.

The FONSI was issued March 10, 1994.

DOE/EA-0915

Environmental Assessment: Waste Tank Safety Program, Hanford Site, Richland, Washington, February 1994.

The FONSI was issued February 25, 1994.

DOE/EA-0942

Environmental Assessment: Return of Isotope Capsules to the Waste Encapsulation and Storage Facility, Hanford Site, Richland, Washington, May 1994.

The FONSI was issued May 11, 1994.

DOE/EA-0959

Environmental Assessment: Resiting, Construction and Operation of the Environmental and Molecular Sciences Laboratory at the Hanford Site, Richland, Washington, July 1994.

The FONSI was issued July 7, 1994.

2.2 SUMMARIES

DOE/EA-0021

Environmental Assessment: Decommissioning and Decontamination Activity, Hanford Building Disposal Demonstration Project, REDOX Plutonium Concentration (233-S) Building, Hanford Site, Richland, Benton County, Washington, March 1978.

Background:

This EA proposed to decontaminate, dismantle, and decommission a retired nuclear process facility. The Reduction Oxidation Plant Plutonium Concentration Building (233-S) in the 200 West Area was selected as the first demonstration project under the DOE program for disposition of retired contaminated facilities at the Hanford Site.

The project would include decontamination and removal of all building equipment. The building surfaces and shell would be decontaminated to the point where demolition could proceed with minimal expense, with the option of leaving the structure standing and available for other use.

DOE/EA-0021
(cont.)

All equipment that could not be decontaminated to acceptable levels would be sealed and placed in a retrievable storage trench designated for transuranic (TRU)-contaminated waste. If the 233-S Building was dismantled, contaminated rubble also would be stored in this trench.

FONSI:

The FONSI was not required because the EA was written before the CEQ's final regulations were issued.

Current Status:

The proposed action in the EA was never completed. The 233-S Building was never decontaminated or dismantled. The ventilation system in the 233-S Building has been maintained to keep the contamination level below regulatory standards.

Soon after the EA was drafted, the DOE determined that the EA would not be finalized. It has since been determined that the decontamination and decommissioning (D&D) of the 233-S Building and the 232-Z Waste Incineration Facility would be addressed in a combined EA.

For more information concerning the current status of this facility, contact M. C. Hughes at 373-1184.

DOE/EA-0030(D)

Draft Environmental Assessment: Operation of N Reactor and Fuels Fabrication Facilities, Hanford Reservation, Richland, Washington, July 1978.

The EA was never finalized.

DOE/EA-0044

Environmental Assessment: Support Services Building, Hanford Reservation, Richland, Washington, July 1978.

Background:

This EA proposed construction of a permanent building, the Support Services Building (designated the 4713-B Building), to provide central maintenance shops for nonradioactive equipment; offices; and other administrative support facilities, conference rooms, and a lunchroom. The building would be located in the 400 Area of the Hanford Site. The building was scheduled to be completed by the first quarter of fiscal year (FY) 1982. Anticipated design life for the building was to be 20 years.

FONSI:

A FONSI was not required because the EA was written before the CEQ's final regulations were issued.

Current Status:

The facility was constructed and is operating under the mission stated in the EA.

For more information concerning the current status of this facility, contact P. C. Miller at 376-0441.

DOE/EA-0048

Environmental Assessment: National Waste Terminal Storage Program, Near-Surface Test Facility, Hanford Reservation, Richland, Washington, June 1978.

Background:

This EA proposed drilling five boreholes on the Hanford Site to collect data on in situ rock formations. The project was part of the National Waste Storage Program to find potentially suitable nuclear waste repositories. The five boreholes were to be drilled to obtain subsurface geologic and hydrologic information. The holes would range from 1,160 to 1,525 meters (3,805 to 5,002 feet) deep.

Three drilling sites were selected. Site 1 would contain boreholes ARH-DC-4 and ARH-DC-5, approximately 2.4 kilometers (1.5 miles) west of the 200 West Area. Site 2 would contain borehole ARH-DC-6, approximately 8 kilometers (5.0 miles) east of Gable Mountain near the old Hanford townsite. Boreholes ARH-DC-7 and ARH-DC-8 will be in Site 3 just southeast of the Wye Barricade.

Two different types of boreholes were proposed. Stratigraphic boreholes (ARH-DC-4, ARH-DC-6, and ARH-DC-8) were primarily intended to provide core samples of the various subsurface geologic formations. Hydrologic boreholes (ARH-DC-5 and ARH-DC-7) were primarily intended to provide information on subsurface aquifers.

Special Notice:

An EA on exploratory borehole ARH-DC-2 was prepared by the ERDA and assigned the ERDA document control number EIA/WPR/77-3. In addition, the ERDA Assistant Administrator for Environment and Safety determined that an EA was not necessary for exploratory borehole ARH-DC-3, based on the proximity of the borehole to ARH-DC-2 and the EA on borehole ARH-DC-2.

FONSI:

A FONSI was not required because the EA was written before the CEQ's final regulations were issued.

Current Status:

Borehole ARH-DC-4 was plugged August 5, 1988; the reclamation was completed August 19, 1988. Borehole ARH-DC-5 was plugged July 12, 1988; the reclamation was completed August 1, 1988.

Borehole ARH-DC-6, originally scheduled for abandonment, was reconfigured following a review and concurrence of the recommended change by the Washington State Department of Ecology (Ecology) and was transferred to the PNL. This borehole was retained to support future onsite studies.

Borehole ARH-DC-7 was plugged September 15, 1988; the reclamation was completed September 29, 1988. Borehole ARH-DC-8 was plugged September 22, 1988; the reclamation was completed September 30, 1988.

DOE/EA-0052

Environmental Assessment: National Waste Terminal Storage Program, Near-Surface Test Facility, Hanford Reservation, Richland, Washington, December 1978.

Background:

This EA proposed building a Near-Surface Test Facility (NSTF) to support the Basalt Waste Isolation Project (BWIP). The facility would provide the capability for insitu testing of basalt on the Hanford Site to produce data necessary to determine if the basalt was suitable as a commercial radioactive waste repository. The EA proposed mining a portion of the selected underground basalt flow in Gable Mountain, conducting electrical (non-nuclear) heater tests and commercial spent fuel tests for a period of 3 years each, and decommissioning the test facility.

The data obtained from the electrical heater tests and the spent fuel tests would provide information to assist in determining if basalt was suitable as a radioactive waste repository.

The facility would contain approximately 1,000 meters (3,280 feet) of underground workings, including three access tunnels, two test rooms, an instrumentation room, and a computer room. Phase I of the tests was to develop the electrical heater test portion of the facility and was scheduled for completion by late 1979. Work on Phase II, the spent fuel test portion, was scheduled for completion by late 1980.

The construction site for the test facility would be near the site of exploratory borehole ARH-DC-11. An open cut, approximately 15 meters (49 feet) deep and 15 meters (49 feet) wide, would be made for each of the three portals of the facility to allow access to the Pomona basalt flow. The horizontal access tunnels at the west end of the facility would serve as entrances to the two test areas. The east access tunnel would be used for ventilation purposes and as an emergency exit. Isolation from the environment would be maintained by keeping the Phase II test area at a negative pressure and installing exclusion doors at both ends of the test area.

Following the completion of the 3-year electrical heater and spent fuel tests, decommissioning would begin. The canistered spent fuel would be removed from the NSTF and shipped back to the Engine Maintenance and Disassembly Facility at the Nevada Test Site. Test decommissioning would include removal of test hardware, wiring, and the protective coverings on the test holes. Facility decommissioning would include removal of facility fittings, backfilling the entrance and exit portals with previously mined rock, and restoring the site.

DOE/EA-0052
(cont.)

The NSTF would complement efforts to characterize the geologic and hydrologic properties of basalt formations on the Hanford Site. There were five boreholes planned for FY 1978 that obtained information from basalt formations as deep as 465 meters (1,525 feet) underground. The five boreholes (ARH-DC-4, ARH-DC-5, ARH-DC-6, ARH-DC-7, and ARH-DC-8) were designed to provide geologic and hydrologic information and could not be used to obtain information on in situ thermal properties of the basalt formations they penetrated. The NSTF exploratory boreholes ARH-DC-10 and ARH-DC-11 on Gable Mountain would provide specific information about the basalt flows in Gable Mountain.

FONSI:

A FONSI was not required because the EA was written before the CEQ's final regulations were issued.

Current Status:

The NSTF was constructed and under operation, but all activities at the NSTF were terminated with cancellation of the BWIP. All facility equipment has been removed. Borehole ARH-DC-11 and the NSTF were backfilled with crushed material, and concrete bulkheads were installed.

The exploratory borehole (ARH-DC-10), which was drilled in 1978, was not backfilled. Construction of the NSTF Trailer Village in 1979 resulted in the removal of the collar casing from borehole ARH-DC-10, and alteration of the borehole site. During the summer of 1988, an excavation attempt to locate the borehole was unsuccessful. A hydrologic evaluation of the subsurface groundwater flow in the vicinity of borehole ARH-DC-10 revealed a natural commingling of the unconfined and confined aquifers in the Gable Gap area. As a result of this naturally occurring erosional window, the impact of leaving borehole ARH-DC-10 open was minimal. This evidence was presented to Ecology for evaluation, resulting in a waiver issued on July 21, 1989, which stated that borehole ARH-DC-10 could be abandoned in its present condition.

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DOE/EA-0102

Environmental Assessment: Steam Generator Tube Integrity Program, Surry Steam Generator Project, Hanford Site, Richland, Washington, March 1980.

Background:

This EA proposed constructing and operating a 150-square meter (1,614-foot) facility, now known as the 377 Building in the 300 Area, to house and conduct extensive investigation of a degraded, out-of-service steam generator from a commercial nuclear power plant. This testing program was intended to provide the U.S. Nuclear Regulatory Commission (NRC) with information regarding the integrity and degradation of the pressurized water reactor primary system.

FONSI:

A FONSI was issued March 27, 1980, and published in the FR April 2, 1980 (45 FR 21676).

The following actions were included in the FONSI:

- The transportation of a defective steam generator by oceangoing barge from the Virginia Electric Power Company Surry Nuclear Power Station in Virginia to the DOE Hanford Site.
- The construction of a temporary storage facility for the generator and a steam generator examination facility.
- The performance of various research operations on the steam generator to determine why it failed in service.

Current Status:

The 377 Building has been decontaminated and, as of August 1980, is vacant.

For more information, contact P. J. Crane at 373-3331.

DOE/EA-0111

Environmental Assessment: Maintenance and Storage Facility, Hanford Site, Richland, Washington, May 1980.

Background:

This EA proposed to build the Maintenance and Storage Facility (MASF), now known as the 437 Building, as a multipurpose service center to support the specialized maintenance needs of the 400 Area facilities at the Hanford Site. The MASF provided sodium removal from, and storage of, nonfuel components for the FFTF and provided decontamination, repair, and storage of the FFTF maintenance support equipment and operational support equipment.

The MASF is a concrete and steel structure located in the 400 Area. Approximately 2,080 square meters (22,380 feet) of storage, repair, and process space are serviced by a 60-ton overhead crane with a hook height of 9 meters

DOE/EA-0111
(cont.)

(29.5 feet). An additional 780 square meters (8,393 feet) house process equipment, a liquid waste loadout facility, and personnel support facilities.

The facility was designed for a 25-year operating cycle. The number of personnel working in the facility ranges from 17 (normal complement) to a maximum of 45 personnel during periods of major maintenance and refueling of the FFTF.

Waste from the MASF includes radioactive liquids from sodium removal and cleaning, radioactive and nonradioactive solid waste, process and sanitary wastewater, and exhaust air. Process and sanitary water are treated and released to the 400 Area ponds. The radioactive liquids and the radioactive and nonradioactive solid waste are handled as described in the EIS (Chapter 5, ERDA-1538). No operations involving nuclear fuel or TRU were planned for the MASF.

The project's proposed cost was approximately \$16.7 million and construction started in FY 1982.

FONSI:

A FONSI is not available; this EA was completed before the CEQ's final regulations were issued in 1980.

Current Status:

The MASF was built as described in the proposed action and is operational.

For information concerning the current status of this facility, contact M. T. Jansky at 376-3854.

DOE/EA-0116

Environmental Assessment: Fuels and Materials Examination Facility, Hanford Site, Richland, Washington, July 1980.

Background:

This EA proposed providing the Fuels and Materials Examination Facility (FMEF) with fuel development, fuel fabrication, and irradiated fuel and materials examination capabilities in support of the FFTF and other reactors in the liquid metal fast breeder reactor (LMFBR) program. The FMEF (or 427 Building) would have had approximately 15,793 square meters (169,932 feet) of floor space and was to be located in the 400 Area of the Hanford Site.

The FMEF was to contain laboratory space and facilities to support the development of radioactive fuel fabrication processes, equipment, and handling systems. Laboratory space also was to be provided for fabrication of the FFTF and the LMFBR fuel experiments, and to accommodate the radioactive analytical functions that supported fuel fabrication activities. Post-irradiation examination activities would have been carried out mainly in a centrally located shielding cell complex. This cell complex was to have capabilities for both nondestructive and destructive examination, as well as equipment for

DOE/EA-0116
(cont.)

disassembly and reassembly of fuel and other reactor core component assemblies. A ground-level entry wing would have provided offices, a lunchroom, a changeroom, and other support facilities to the operation staff and security personnel.

FONSI:

The FONSI was issued July 14, 1980.

The following actions were included in the FONSI:

- The proposed facility had fuel development, fabrication, and examination capabilities in support of the FFTF and other reactors in the LMFBF program, and would have been equipped to receive special nuclear material in powder form; prepare feedstock; analyze fuels and fuel materials; fabricate test fuel pins; and develop fuel manufacturing processes, equipment, and handling systems to meet established safeguards, security, and environmental criteria.
- The proposed facility was equipped to receive; clean; nondestructively examine; and disassemble irradiated fuels, materials, and core components from the FFTF and other LMFBFs. The proposed facility also was to be equipped to receive nondestructively and destructively examined individual fuels, blanket and absorber pins, and reassembled selected fuel assemblies or other materials for additional irradiation after nondestructive examination.
- The proposed facility was designed to contain all radioactivity in the event of a design-basis tornado or design-basis earthquake.
- All exhaust gases were to be filtered before being released. Exhaust gases from cells and gloveboxes would have passed through a series of three high-efficiency particulate air (HEPA) filters, while exhaust gases from areas containing irradiated fuel material would have passed through HEPA filters and activated charcoal filters. The estimated maximum dose rate at the 400 Area boundary from releases during normal operations of the facility would have been approximately 2.9×10^{-8} millirem (mrem) per hour to the whole body, which would have been negligible when compared to natural background radiation levels of about 0.01 mrem per hour.
- The environmental effects of disposal of all radioactive and nonradioactive waste would have been negligible and would not have affected the conclusions reached in ERDA-1538 (see Chapter 5).

DOE/EA-0116
(cont.)

Current Status: Construction of the FMEF has been completed. However, proposed activities in the facility have not been performed.

DOE/EA-0120 *Environmental Assessment: F Area Decommissioning Program, Hanford Site, Richland, Washington, October 1980.*

Background: The DOE proposed to decommission the 100-F Reactor Area at the Hanford Site. The 100-F Reactor decommissioning program was a full-scale D&D demonstration project to remove or stabilize all radioactive materials in the 100-F Area.

FONSI: The FONSI was published in the FR August 22, 1980 (45 FR 56125).

The following actions were included in the FONSI:

- Complete decontamination and dismantling of the 105 Building (the retired F Reactor building), the 115 and 117 Buildings (ancillary buildings near the reactor), the 107-F Retention Basin and 116-F2 Liquid Waste Trench, and the 100-F and 141-C Buildings (biology buildings). In addition, six radioactive solid waste burial grounds and seven contaminated liquid waste disposal facilities (cribs and trenches) in the 100-F Area were isolated in place or, in a few cases, exhumed for removal to more suitable burial grounds.
- All contaminated material resulting from the decommissioning activity was transported within the controlled area of the Hanford Site by truck or rail to approved disposal facilities in the 200 Area. Approximately 454,248 liters (120,012 gallons) of contaminated liquid were shipped to the 200 West Area by 75,708-liter (20,000-gallon) railway tank cars for evaporation to a solid state and subsequent in-tank storage.

Contaminated waste (approximately 2,830 cubic meters [100,000 cubic feet] each year during each of the 4 years of decommissioning) was transported to the 200 Areas.

Current Status: As of May 1993, the entire 100-F Area was D&D except for the 105 Building (reactor), the 107-F Retention Basin, and the 108 Building (biology laboratory). The decommissioning of the 105 Building will be covered by the EIS for decommissioning of eight surplus production reactors at the

DOE/EA-0120
(cont.)

Hanford Site [DOE/EIS-0119(F), Chapter 6]. The 108 Building is scheduled to be decommissioned in 1993. The schedule for decommissioning the 107-F Retention Basin has not been decided.

For more information concerning the current status of this project, contact P. W. Griffin at 373-3916 or D. G. Kachele at 372-0032.

DOE/EA-0188

Environmental Assessment: Basalt Waste Isolation Project, Exploratory Shaft Construction, Hanford Site, Richland, Benton County, Washington, September 1982.

Background:

The BWIP was to be used by the National Waste Terminal Storage Program organization to conduct studies to assess the feasibility of safe geologic disposal of commercial nuclear HLW in basalt formations.

The DOE proposed detailed site studies to be conducted on the Hanford Site through the construction of an exploratory shaft. This EA described the environmental effects expected to result from construction of this shaft. Other activities would have been to characterize the site, such as seismic surveys and underground testing at the base of the shaft, but were determined not to have potential for significant environmental impacts; and, therefore, were not covered in this EA.

The proposed site for the exploratory shaft was located within the area identified for the potential repository, an approximately 47-square-kilometer (18-square-mile) portion about 1.6 kilometers (1 mile) west of the 200 West Area.

FONSI:

The FONSI was published in the FR September 16, 1982 (47 FR 40820).

The following actions were included in the FONSI:

- Construct an exploratory shaft.
- Gather information about the site to aid in evaluating the suitability of the site for use as a nuclear waste repository.

Current Status:

The BWIP project was terminated in 1987. The BWIP exploratory shaft was filled with concrete and the surface area around the shaft was replanted with vegetation. No other work has occurred at the site.

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DOE/EA-0258(D) *Draft Environmental Assessment: Breeder Reprocessing Engineering Test (BRET) Facility, Hanford Site, Richland, Washington.*

The EA was never finalized.

DOE/EA-0259 *Environmental Assessment: Decommissioning of Strontium Semiworks Facility, Hanford Site, Richland, Washington, May 1985.*

Background: This EA proposed that the Strontium Semiworks Complex be decommissioned to significantly reduce both the potential radiological hazard and the costs of continuing surveillance and maintenance. The Strontium Semiworks Complex is located in the 200 East Area of the Hanford Site. This facility was last used for processing radioactive materials in 1967. From 1967 to 1985, the facilities were maintained in a safe storage mode that required routine surveillance and maintenance.

The Strontium Semiworks Complex includes 11 structures. The main structure is the 201-C Process Building, which is made up of three concrete cells in which radionuclides were processed and two other concrete cells for storage and loadout of the product. Attached to the 201-C Process Building were sample and pipe galleries, a maintenance shop, and treatment facilities for process water and air. Other structures in the complex included a solvent handling building, a ventilation system, and underground storage tanks. The proposed decommissioning method for the 201-C Process Building called for demolition of the service galleries and B-Cell to an abovegrade 3-meter (10-foot) elevation. The remaining service galleries and cells would then be filled with concrete and the site covered with an earthen barrier. Alternatives for the remaining 10 structures were limited to the choice of "no-action" or various degrees of D&D.

FONSI: The FONSI was issued May 15, 1985.

The following actions were included in the FONSI:

- Decontaminate three of the buildings and return them to beneficial use.
- Dismantle and demolish the aboveground ancillary structures and entomb the belowground structures with concrete.
- Demolish the main process building to less than or equal to 3 meters (10 feet) above grade and fill with concrete and rubble.

DOE/EA-0259
(cont.)

- Cover all entombed facilities with an engineered earthen barrier equivalent to 5 meters (15 feet) of clean soil and stabilize with vegetation.

Current Status:

As of May 1993, the decommissioning of the Strontium Semiworks Facility was partially completed, with the remainder of the cleanup included in later *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA) remediation activities.

For more information concerning the current status of this facility, contact O. R. Rasmussen at 373-4147.

DOE/EA-0312

Environmental Assessment: Grouting and Near-Surface Disposal of Low-Level Radioactive Phosphate/Sulfate Wastes from N Reactor Operation, Hanford Site, Richland, Washington, December 1986.

Background:

This EA proposed that liquid radioactive phosphate and sulfate low-level waste (LLW) generated from N Reactor operations be disposed in near-surface concrete vaults using cementitious grout. The waste disposal operations would be performed in the 200 East Area of the Hanford Site.

The proposed action was to solidify this waste by mixing them with cementitious dry materials (cement, flyash, and clays) to form a grout slurry. The grout slurry would be pumped to vaults located at a near-surface disposal site in the 200 East Area. After the grout solidified, the vaults would be covered with approximately 5 meters (15 feet) of soil. The alternative to solidification was continued storage in double-shell tanks (DST).

Analyses of the potential operational and long-term effects of the grout disposal indicated that radionuclide dose rates and chemical releases would be below regulatory limits with no significant adverse health or environmental impacts.

FONSI:

The FONSI was issued November 21, 1986.

The following actions were included in the FONSI:

- The two types of liquid radioactive LLW generated during N Reactor operations would be solidified by mixing the waste with cementitious dry materials (cement, flyash, and clays) to form a grout slurry.
- The grout slurry would be pumped into covered vaults located at a near-surface disposal site in the 200 East Area of the Hanford Site, where it would solidify.
- After the grout slurry solidified, the vaults would be covered with 5 meters (15 feet) of soil.
- The vault disposal would be designed to meet all *Resource Conservation and Recovery Act of 1976 (RCRA)* requirements.

DOE/EA-0312
(cont.)

- The proposed action to dispose of phosphate and sulfate waste could result in some minor releases of radionuclides to the atmosphere. The total body dose to a maximally exposed offsite individual for routine operations was estimated to be 3×10^{-12} mrem for a 1-year dose and 1×10^{-10} mrem for a 50-year dose.

Current Status: The Grout Treatment Facility and the phosphate-sulfate waste vault were constructed. The proposed action is being completed in accordance with the FONSI.

For more information concerning the Grout Treatment Facility, contact B. F. Archer at 376-4779.

DOE/EA-0318

Environmental Assessment: SP-100 Ground Engineering System Test Site, Hanford Site, Richland, Washington, December 1988.

Background:

This EA proposed modifying an existing reactor containment building (decommissioned Plutonium Recycle Test Reactor in the 309 Building) to provide ground-test capability for the prototype SP-100 Reactor. The 309 Building is located in the 300 Area on the Hanford Site.

The DOE, the National Aeronautics and Space Administration, and the U.S. Department of Defense entered into an agreement to jointly develop and fund space nuclear reactor power systems. The goal was to develop safe, compact, lightweight, and durable space reactor power systems to provide electrical power in the range of tens to hundreds of kilowatts. These space reactor power systems would make possible a broad class of emerging military and civil space missions in the early to mid-1990's and beyond. The DOE has primary responsibility for developing and ground-testing the nuclear subsystem. As part of this program, it was proposed that the SP-100 test reactor (maximum rating of 2.5 megawatt thermal [MWt]) be tested in the existing 309 Building. A ground test of a prototype was necessary to demonstrate the readiness of this major subsystem before proceeding with the flight system development and demonstration.

Following the test, it was anticipated that the reactor and associated hardware would be disposed of as LLW on the Hanford Site and that the enriched fuel material would be reprocessed and reused. Any TRU waste generated from

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reprocessing would be stored on the Hanford Site and ultimately sent to the Waste Isolation Pilot Plant (WIPP) in New Mexico. An alternative to reprocessing would be to dispose of the spent fuel at a DOE geologic repository constructed in accordance with the NHPA. Test facility systems external to the reactor and associated hardware would be put in a safe condition pending future use or ultimate decommissioning. Alternatives for D&D were still under review when the FONSI was written.

FONSI:

Based on the analyses in the EA, the DOE issued a proposed FONSI on December 15, 1988 (53 FR 50444), and distributed the EA and proposed FONSI for a 30-day public review period. The review period was later extended to 45 days. The DOE reviewed the comments and concluded that no new information was made available that would change the determination that the proposed action did not constitute a major federal action significantly affecting the quality of the human environment within the meaning of the NEPA. The FONSI was reissued September 27, 1989, and provided a 30-day public comment period (54 FR 39564).

The following actions were included in the FONSI:

- Following the test, it was anticipated that the reactor and associated hardware would be disposed of as LLW on the Hanford Site and that the enriched fuel material would be reprocessed and reused.
- Any TRU waste generated from reprocessing would be stored on the Hanford Site and sent to the WIPP in New Mexico when it becomes fully authorized as a disposal facility.
- Alternatives for D&D of the 309 Building were still under review.
- The projected annual airborne release of argon-41 was 3.7 curies, and the projected release of tritium was 0.047 curies.
- The maximum whole body dose to the nearest resident from these releases was projected to be 0.00045 mrem. The 50-year whole body dose commitment for the population within 80 kilometers was projected to be 0.0027 person-roentgen equivalent man (rem). The maximum offsite individual whole body dose was significantly smaller than the regulatory limit of 25 mrem per year whole body dose and the annual dose from background radiation of 100 mrem.

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No employee was expected to receive a dose greater than 1 rem per year in everyday work areas or during maintenance.

- Reactor heat (up to 2.5 MWt) was to be dissipated to the atmosphere using forced-air dump heat exchangers. In addition, air conditioning would remove heat from support areas.
- The SP-100 Ground Engineering System test activities would have generated hazardous, radioactive, and mixed waste. The estimated annual radioactive solid waste volume would have been less than 28 cubic meters (990 cubic feet), or 7 percent of the total radioactive solid waste presently generated in the 300 Area.
- Minimal radioactive liquid waste would have been generated (less than 1,136 liters [300 gallons] each year), solidified, and disposed as solid radioactive LLW (included in the 28 cubic meters [990 cubic feet] discussed previously). No liquid waste was to be disposed in the soil. Radioactive LLW and mixed solid waste would have been buried in the Hanford Site 200 Areas Burial Ground. The projected amounts of radioactive LLW and mixed solid waste would have been less than 1 percent of the total volume presently handled by the 200 Areas Burial Ground.
- The 309 Building would have been modified to contain liquid metals and to minimize the effects of any liquid metal leakage.
- Commonly used hazardous materials, such as ethylene glycol, could be selected as the cooling medium in air conditioning systems.
- When the FONSI was written, a specific mission was not identified for the SP-100 nuclear reactor power system. Therefore, specific flight system design requirements and mission parameters were not available. When a specific mission using an SP-100 nuclear power system would have been proposed, the potential environmental impacts of that mission would require appropriate NEPA documentation by either National Aeronautics and Space Administration or the U.S. Department of Defense as part of the flight approval process.

DOE/EA-0318
(cont.)

Current Status: As of May 1993, work at the SP-100 Ground Engineering System Test Site has been delayed by lack of funding. These delays have not altered the mission of the 309 Building, and the facility is still covered by the existing EA.

For more information concerning the current status of this facility, contact B. C. Cornwell at 376-3837.

DOE/EA-0358(D) *Draft Environmental Assessment: Handling and Transportation of Isotopic Heat Sources Prepared at the Hanford Site, Richland, Washington.*

The EA is at HQ for review and is currently waiting for identification of a delivery date from Germany for approval.

DOE/EA-0370(D) *Draft Environmental Assessment: Fast Flux Test Facility Power Addition, Hanford Site, Richland, Washington.*

The EA was abandoned when HQ questioned the future of the FFTF.

DOE/EA-0383 *Environmental Assessment: Hanford Environmental Compliance Project, Hanford Site, Richland, Washington, November 1991.*

Background: This EA covered 14 subprojects that are activities in the Hanford Environmental Compliance Program. The 14 subprojects covered 4 major types of activities: groundwater monitoring; sample analysis capability; modifications to existing facilities to reduce environmental impacts; and waste and effluent treatment, storage, and disposal.

FONSI: A FONSI was issued March 11, 1992.

The following actions were included in the FONSI:

- The subprojects scheduled for FYs 1989 and 1990 included Groundwater Monitoring Wells (W-017H), the B Plant Process Condensate Treatment Facility (W-007H), Waste Management Facilities Cathodic Protection (W-020H), the 300/400 Area Wastewater Facilities (V-791H), the Radioactive Mixed Waste (RMW) Storage Facility (W-016H), the Plutonium Finishing Plant (PFP) Liquid Low-Level Waste System Modification (B-680H), the PFP Liquid Effluent Treatment Facility (C-031H), B Plant Environmental Compliance Upgrades (W-010H), and the Waste Sampling and Characterization Facility (W-011H).

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- The subprojects scheduled for FY 1991 included B Plant Radiological and Containment Upgrades (W-024H), Environmental Hot Cell Expansion (W-041H), and the 242-A Evaporator/Plutonium-Uranium Extraction (PUREX) Process Treatment Facility (C-018H).
- The subprojects scheduled for FY 1992 included the 300 Area Treated Effluent Disposal Facility (L-045H) and the 200 Areas Treated Effluent Disposal Facility (W-049H).

Current Status: As of May 1993, activities had begun on the projects.

For more information concerning the projects, contact G. B. Becker at 372-3413.

DOE/EA-0411(D)

Draft Environmental Assessment: Fuel Assembly Area, Hanford Site, Richland, Washington.

The EA was abandoned when HQ questioned the future of the FFTF.

DOE/EA-0429

Environmental Assessment: Environmental and Molecular Sciences Laboratory at the Hanford Site, Richland, Washington, May 1990.

Background:

This EA proposed building a laboratory that would house basic and applied resource components of the Environmental Science Research Center and the Molecular Science Research Center. The Environmental and Molecular Sciences Laboratory (EMSL) would provide, in a single location, the office and laboratory facilities necessary to: (1) conduct applied research directed toward environmental compliance and environmental remediation programs carried out by the DOE at the Hanford Site and at other DOE sites, and (2) conduct basic research at the molecular level in support of these and other DOE-sponsored applied-research programs.

The proposed EMSL would respond to a need for both basic and applied research required by the Research Development Demonstration Testing and Evaluation Program, and also would facilitate application of research to the Hanford Site, where as much as one-half of the DOE's hazardous and radioactive waste is stored or buried.

FONSI:

The FONSI was issued September 17, 1992.

The following actions were included in the FONSI:

- The proposed laboratory is to be located at the south end of the Hanford Site 300 Area on a 8.093-hectare (20-acre) site near the Washington State University Tri-Cities campus.
- The EMSL would have approximately 18,580 square meters (200,000 square feet) of floor space and would contain laboratories, offices, model and machine shops, a graphics shop, conference rooms, a library, a kitchen, a lunchroom, and a lecture hall. Site development would require construction of utility extensions, driveways, parking lots, and landscaped areas.
- The building and site would be arranged to permit integration of laboratory and support activities with those of existing PNL facilities and other 300 Area facilities.

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(cont.)

- The EMSL staff would consist of approximately 200 scientists, technicians, and support personnel. An additional 60 visiting scientists are expected to be working at the facility at any given time.
- If necessary, ear protection devices would be used in accordance with the DOE contractor safety requirements during construction of the proposed facility.
- If necessary, work areas would be sprayed with water to reduce fugitive dust emissions produced during construction activities.

Current Status: As of August 1993, the EMSL project is scheduled to break ground in the fall of 1993.

For more information, contact E. B. Moore, Jr., at 372-4213.

DOE/EA-0479

Environmental Assessment: Collecting Crust Samples from Level Detectors in Tank SY-101 at the Hanford Site, Richland, Washington, November 1990.

Background:

This EA proposed characterizing waste in Tank 241-SY-101. Characterization would have included removal of three level detectors and analyzing the waste encrusted on the detectors. Tank 241-SY-101 is located on land dedicated to DOE nuclear production and waste management. The EA stated that no terrestrial, aquatic, or air quality impacts would result from the crust sampling and analysis. The EA also stated that no routine or potential accidental impacts of the proposed action would have had a significant impact on the quality of the human environment.

FONSI:

The FONSI was issued November 16, 1990.

The following actions were included in the FONSI:

- Tank 241-SY-101 primary ventilation system was to be operational during sensor retrieval to prevent buildup of hydrogen in the tank dome space and to keep airborne radioactive emissions well below the DOE and contractor guidelines.
- Procedures and administrative controls were to be in place before detector retrieval and replacement, so that radiation exposure to onsite personnel was kept below the DOE orders and contractor guidelines (5 and 3 rem per year, respectively). These administrative controls would ensure adherence to the philosophy of maintaining exposures as low as reasonably achievable (ALARA).

DOE/EA-0479
(cont.)

- Radioactive material, radioactively contaminated equipment (including the retrieved detectors after removal of crust materials), and RMW were to be packaged and stored or disposed at the Hanford Site. None of this waste was expected to contribute significantly to the volume of waste generated annually at the Hanford Site.

Current Status: As of August 1993, evaluation and monitoring of the hydrogen buildup in Tank 241-SY-101 was still underway.

For more information, contact S. R. Tifft at 376-7479.

DOE/EA-0495

Environmental Assessment: Preparation for Crust Sampling of Tank 241-SY-101, Hanford Site, Richland, Washington, February 1991.

Background:

This EA proposed activities that support the anticipated core sampling of Tank 241-SY-101. These activities included obtaining surface crust samples and installing dome space sampling and monitoring equipment (plus supporting electronics). Installation or replacement of monitoring equipment and sampling of tank contents were normally a routine activity. However, given the concerns with hydrogen accumulation in Tank 241-SY-101 and the potential for secondary crust reactions, a safety assessment and this EA were prepared to ensure that the proposed action was conducted in a safe and environmentally sound fashion.

FONSI:

The FONSI was issued February 15, 1991.

The following actions were included in the FONSI:

- An existing filtered ventilation system was to maintain negative pressure in the tank at all times to ensure that no radiological releases occurred.
- The crust samples were appropriately packaged and transported to Hanford Site laboratories.
- The samples were to be analyzed using approved procedures and analytical methods to determine exotherms, heat of reaction, and total organic carbon content. Thermogravimetric analysis (moisture content and water of hydration), analysis of anions (i.e., nitrate and nitrite), cations (i.e., sodium and aluminum), and other characteristics (i.e., specific gravity and other chemical species) were to be performed.

DOE/EA-0495
(cont.)

- The small quantities of waste generated from these analyses were to be properly packaged and stored or disposed in existing facilities on the Hanford Site.
- To maintain airborne radioactive emissions well below the DOE and contractor guidelines, the Tank 241-SY-101 primary ventilation system was to be operational during crust sampling and the installation and operation of the dome space gas sampling system.
- A backup exhaust system was to be available to provide containment if the primary ventilation system was lost.
- Appropriate administrative controls and monitoring procedures were to be in place before crust sampling and installation and operation of the dome space gas sampling system started. During laboratory analyses, these guidelines would keep hazardous chemical and radiation exposure to onsite personnel below the DOE orders and contractor guidelines (5 and 3 rem per year, respectively).
- Small quantities of hazardous materials (i.e., solvents and cleaning agents) generated were to be managed and disposed in accordance with applicable federal and state regulations.
- Radioactive material, radioactively contaminated equipment, and RMW were to be appropriately packaged and stored or disposed in existing facilities on the Hanford Site.
- Assuming no respiratory protection, the operator doses were expected to be no more than 45 mrem.

Current Status: As of August 1993, evaluation and monitoring of the hydrogen buildup in Tank 241-SY-101 is still underway.

For more information, contact S. R. Tifft at 376-7479.

DOE/EA-0511

*Environmental Assessment: Characterization of
Tank 241-SY-101, Hanford Site, Richland, Washington,
May 1991.*

Background:

This EA proposed activities to support the characterization of Tank 241-SY-101, which is located in the 200 West Area of the Hanford Site. Activities were proposed to occur only during the sampling "windows" shortly after a tank venting (i.e., a major release of hydrogen to the dome space; when remaining hydrogen levels in the waste were the lowest). The proposed activities were the first five activities listed under the FONSI information.

Proposed actions would take place during the venting of "Window C," which was expected to occur in May 1991. Similar activities (i.e., auger sampling of the crust core drilling) were proposed to be conducted during future sampling windows to obtain additional information. Depending on the initial sample results and conditions in the riser locations, DOE proposed that such sampling activities be conducted up to six times. For each proposed future sampling activity, DOE would reconsider whether the risks of those activities were covered by existing safety and NEPA documentation. If not, an additional NEPA review would be conducted, as appropriate.

Installation or replacement of monitoring equipment, and sampling of tank contents would normally be a routine activity. However, given the unreviewed safety issue of hydrogen accumulation in Tank 241-SY-101, this EA was prepared to also ensure that the proposed action would be conducted in a safe and environmentally sound fashion.

FONSI:

The FONSI was issued May 10, 1991.

The following actions were included in the FONSI. The first five activities were the EA-proposed actions.

- Install two remote television cameras in the dome space of Tank 241-SY-101.
- Complete penetrometer testing. As many as five penetrometer tests provided mechanical property data on the crust.
- Obtain as many as five samples of the crust using an auger sampler.
- Operate a microwave radar level gauge to provide additional monitoring of the tank crust surface level.

DOE/EA-0511
(cont.)

- Obtain a full-depth sample of tank contents from the crust to the bottom of the tank using a core drill in the "push mode" (i.e., no rotational motion would be applied to the drill). This core sample would provide the first waste material sample from beneath the crust. This waste would be analyzed and the data used to determine the validity of synthetic studies and current modeling of hydrogen generation.
- Waste samples were to be appropriately packaged and transported to Hanford Site laboratories. The samples were to be analyzed using approved procedures and analytical methods. Waste generated from analyses were to be properly packaged and stored or disposed in existing facilities on the Hanford Site.
- The primary ventilation system was to be operated during waste sampling and the installation and operation of the dome space gas sampling system to maintain radioactive emissions well below the DOE and contractor limits. A backup exhaust system was to be available to provide containment should the primary ventilation system be lost.
- Appropriate procedures and administrative controls would be in place to keep radiation exposure to workers below the DOE orders and contractor limits (5 and 3 rem per year, respectively) in keeping with the ALARA policy.
- Radiation and hazardous chemical levels at the waste site, and exposure of workers directly involved, would continuously monitored during the proposed actions.
- Small quantities of generated hazardous materials generated would be managed and disposed in accordance with applicable federal and state regulations.
- Radioactive material, radioactively contaminated equipment, and RMW were appropriately packaged and stored or disposed in existing facilities on the Hanford Site.
- The potential consequences of this operation were considered small. Nevertheless, operating conditions were designed to further lessen the doses or likelihood of an accidental occurrence. Those operating conditions included factors such as continuous operation of the primary ventilation system, availability of the backup ventilation system, electrically bonding the riser cover and all equipment in and around the riser to the tank, and the use of spark-resistant tools.

DOE/EA-0511
(cont.)

Current Status: As of August 1993, evaluation and monitoring of the hydrogen buildup in Tank 241-SY-101 was underway.

For more information, contact S. R. Tifft at 376-7479.

DOE/EA-0533

Environmental Assessment: Vapor Space Sampling of Ferrocyanide Tanks, Hanford Site, Richland, Washington, July 1991.

Background:

This EA proposed sampling the vapor space of 24 Hanford Site waste single-shell tanks (SST) that contain ferrocyanide-nitrate compounds to determine whether they contained flammable or toxic gases. The DOE needed to take action to help define the required controls to prevent or mitigate the potential for an accident during future, more intrusive sampling and monitoring of these tanks. Given the unreviewed safety questions (USQ) associated with the consequences of a potential ferrocyanide-nitrate reaction, a safety assessment and an EA were prepared to ensure that the proposed action was conducted in a safe and environmentally sound manner.

Standard operating procedures for sampling HLW tanks were revised to reflect the potential presence of flammable and toxic gases. The proposed action was conducted using nonsparking materials, spark-resistant tools, a portable containment shelter, and plastic ground cover. The proposed activities involved Hanford Site ferrocyanide-containing tanks located on land dedicated to DOE waste management.

FONSI:

The FONSI was issued August 2, 1991.

Based on the findings, the DOE proposed to sample the vapor space of the 24 Hanford Site SSTs containing ferrocyanide compounds for flammable and toxic gases. This sampling would help define the controls to prevent or mitigate potential accidents during future, more intrusive sampling activities.

The sampling was to be performed in two parts. The first part would involve gas flammability and toxic vapor tests using, respectively, an industry-standard, intrinsically safe gas flammability meter and gas detector (Draeger¹) tubes. The second part would involve cryogenic sampling using a cold trap followed by chemical analyses of the condensed gases in the analytical laboratory. It

¹Draeger is a trademark of Drägerwerk Aktiengesellschaft.

DOE/EA-0533
(cont.)

was anticipated that both types of sampling would be done sequentially on the same day. Appropriate respiratory protection was to be used by personnel during these activities, as required by standard operating procedures. Analyses obtained provided data on the presence of any flammable or toxic gases.

Current Status: As of August 1993, testing and sampling continue.

For more information, contact S. R. Tifft at 376-7479.

DOE/EA-0535

Environmental Assessment: 105-KE and 105-KW Basins Fuel Encapsulation and Repackaging, 100-K Area, Hanford Site, Richland, Washington, June 1992.

Background:

This EA proposed to provide containment of fuel assemblies with damaged cladding that exposed the metallic uranium to basin cooling water. This containment would be accomplished by encapsulating the fuel assemblies in stainless steel containers. The proposed action would also allow for a full range of options for final fuel disposition.

FONSI:

The FONSI was issued June 23, 1992.

The proposed action was divided into two phases that were included in the FONSI:

- Phase I would consist of activities required to support the encapsulation and repackaging work.
- Phase II would consist of encapsulating the fuel currently stored in the 105-KE Basin, repackaging the fuel stored in the 105-KW Basin, and preparing and disposing of all empty canisters.

Current Status: All of the necessary permits are in place; however, work is on hold until facility problems are resolved.

For more information, contact L. M. Gonzalez at 373-3541.

DOE/EA-0538

Environmental Assessment: Storage of Fast Flux Test Facility Unirradiated Fuel in the Plutonium Finishing Plant Complex, Hanford Site, Richland, Washington, January 1992.

Background:

This EA proposed relocating unirradiated fuel, stored for the FFTF, from the 308 Building to Room 192A at the PFP. This relocation reduced security costs and improved the safety of the fuel during a seismic event. The EA analyzed the impact of the radiation exposure on workers during loading, transportation, and storage.

DOE/EA-0538
(cont.)

FONSI:

A FONSI was issued January 9, 1992.

The following actions were included in the FONSI:

- Remove unirradiated FFTF fuel from the 308 Building and store it inside its shipping containers in Room 192A, 234-5Z Building.
- Modify Room 192A to accommodate placement and routine retrieval of the fuel.
- If actual radiological measurements indicated additional shielding was needed after the fuel was in place, new shielding partitions would be installed.
- A gantry crane was to be assembled in Room 192A to assist in placing the shipping containers.
- Existing criticality detectors, security monitoring devices, and 120-volt electrical service were to be relocated to accommodate placement of the shipping containers.
- Temporary 440-volt electrical service was to be installed, if necessary, to operate the crane.
- All construction activities would occur within the 234-5Z Building.
- The fuel stored in the 308 Building was to be composed of fuel pins and fuel assemblies. Fuel pins were to be placed in shipping containers for shipment from the 308 Building to the 234-5Z Building. The fuel assemblies would be placed in radial reflector shipping containers.
- Both container types would be loaded onto trucks and transported approximately 43.5 kilometers (27 miles) to the 234-5Z Building. Appropriate precautions would be taken to maintain the security of the fuel during transport.

Current Status: The fuel was relocated and the security area was removed by May 15, 1992.

For more information, contact S. E. Knaus at 376-6734.

DOE/EA-0581

Environmental Assessment: Upgrading of the Ventilation System at the 241-SY Tank Farm, Hanford Site, Richland, Washington, December 1991.

Background:

The EA proposed upgrading the ventilation system at the 241-SY Tank Farm in the 200 West Area of the Hanford Site. Upgrades were necessary to provide safe ventilation to the 241-SY Tank Farm, which had a history of flammable gas buildup within the tanks (SY-101, SY-102, and SY-103).

FONSI:

The FONSI was issued December 20, 1991.

The following actions were included in the FONSI:

- Immediate ventilation systems were to be upgraded. Upgrades included such activities as installing a "tee" section to the ventilation duct, installing a portable exhaust fan at the "tee" to provide a backup fan, and replacing the existing backup fan with a HEPA-filtered intake unit.
- Proposed future upgrade actions could include installing spark-resistant fans, installing permanent HEPA-filtered intake, and installing a 241-SY Tank Farm backup power supply.

Current Status:

As of August 1993, the preliminary work was completed. Those activities that were proposed as future upgrades were being performed.

For more information, contact S. R. Tifft at 376-7479.

DOE/EA-0596

Environmental Assessment: Intrusive Sampling and Testing of Ferrocyanide Tanks, Hanford Site, Richland, Washington, January 1992.

Background:

The EA was prepared to provide for intrusive sampling, testing, and analysis to support the characterization of 24 SSTs that have been identified as having the potential for explosive mixtures of ferrocyanide and nitrate-nitrite.

The sampling would provide an understanding of the ferrocyanide-nitrate waste and its potentially reactive behavior, so that the tanks could be maintained in a safe condition with minimal risk of explosion. Strategies that could be developed and selected to implement safe interim stabilization and safe ultimate disposal options were to be identified. A further objective of the sampling was to obtain data to assess the hazards associated with planned future rotary, full-depth drilling of a core sample in ferrocyanide tanks containing salt cake.

DOE/EA-0596
(cont.)

FONSI:

The FONSI was issued February 11, 1992. The FONSI discussed the intrusive sampling and testing of the salt cake in 13 of the 24 tanks and sampling of the sludge in the remaining 11 tanks. Equipment to be used by this project would include an auger, a sludge weight, and push-mode core samplers. Testing of the salt cake would use a penetrometer that would provide mechanical property data.

Current Status:

As of August 1993, sampling was underway as required.

For more information, contact S. R. Tifft at 376-7479.

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DOE/EA-0618

Environmental Assessment: Integrated Voice/Data Telecommunications System, Hanford Site, Richland, Washington, April 1992.

Background:

This EA proposed installing a new telecommunication system on the Hanford Site. The updated system would replace the existing telecommunication system and would integrate voice and data capabilities into a single digital network. This new system also would be more efficient and represent a cost savings for the DOE.

FONSI:

The FONSI was issued April 21, 1992.

The following actions were included in the FONSI:

- Construction of buildings to be used for switching stations. These buildings would be constructed in the 300, 100-N, 200 East, 200 West, and 400 Areas on the Hanford Site, and the 700 and 3000 Areas within the City of Richland.
- New communication cables (principal fiber optic cables) would be installed underground between the switching stations both onsite and offsite.
- Normal upkeep of the buildings, including repair and replacement of telecommunication lines, maintenance of buildings and utilities, and custodial services.

Current Status:

As of August 1993, the installation of the telecommunication system on the Hanford Site was nearing completion.

For more information, contact B. F. Archer at 376-4779.

DOE/EA-0696

Environmental Assessment: Construction of Temporary Mobile Office Complex, 200 West Area, Hanford Site, Richland, Washington, June 1992.

Background:

The EA proposed construction and operation of a temporary mobile office and changeroom complex near the 272-WA Building in the 200 West Area of the Hanford Site. The temporary mobile office complex would consist of two 16-module office units, each consisting of approximately 1,362 square meters (14,800 square feet) of space and a separate 4-module change unit of about 340 square meters (3,700 square feet) containing change areas for personnel. The mobile office complex would accommodate 180 office personnel and would provide showers and changing areas for up to 50 operating personnel.

DOE/EA-0696
(cont.)

Alternatives: The alternatives in this EA were as follows.

- The no-action alternative was to not build the temporary mobile office complex.
- Five alternative sites were considered as possible locations for the temporary mobile office complex. Potential environmental impacts would have been essentially the same for all sites considered, and no alternative site had a higher overall rating than the site in the proposed action; therefore, the five alternative sites were dismissed from further consideration in the EA.

FONSI: A FONSI was issued June 12, 1992.

The following actions were included in the FONSI:

- Perform the work described in the proposed action.
- The work would be performed in a previously disturbed area.
- If deemed necessary, because of noise from construction work, ear protection devices would be used in accordance with the DOE contractor safety requirements.
- If deemed necessary, because of increased dust from construction, work areas would be sprayed with water to further reduce fugitive dust emissions.
- No operation at the mobile office complex would involve radioactive or hazardous materials.
- The sanitary sewer system would consist of a conventional septic tank and drain field with the effluent discharged to the soil. The sanitary waste system would be designed and constructed to operate in conformance with current Washington State and Benton-Franklin County regulations.
- An archeological study completed in the 200 West Area in 1990 revealed that the historic White Bluffs Road passes within several hundred feet of the proposed mobile office complex site (Chatters and Cadoret 1990). A buffer zone, which measured 18.3 meters (60 feet) in width, has been established on either side of the historic road, with no construction permitted.

DOE/EA-0696
(cont.)

- An archaeological zone 100 meters (328 feet) wide was established on either side of the historic road. The proposed action does not fall within this archaeological zone. However, a cultural resources review would be completed before the start of construction if concerns about potential impacts to the archaeological zone arise as a result of the proposed action. Any requirements stipulated by the cultural resources review would be met.

Current Status:

The construction of the temporary mobile office complex has been completed and the complex is occupied.

For more information, contact B. F. Archer at 376-4779.

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DOE/EA-0787

Environmental Assessment: Shipment of Low Enriched Uranium Billets to the United Kingdom from the Hanford Site, Richland, Washington, August 1992.

Background:

This EA proposed shipping approximately 2,500 low-enriched uranium billets to the United Kingdom. These billets were fabricated for the manufacture of fuel by the Hanford Site N Reactor, but are now surplus because defense reactor operations have been discontinued at the Hanford Site. The EA specifically analyzed the loading and transportation of these billets, which would be divided into four shipments.

FONSI:

The FONSI was issued August 27, 1992.

The FONSI included the following actions:

- The billets were to be loaded into closed-type International Standards Organization containers.
- The containers, with the billets enclosed, would be transported by truck to the Port of Seattle, approximately 344 kilometers (215 miles).
- After delivery to the port, the containers would be loaded aboard an oceangoing cargo vessel and transported to the United Kingdom.

Current Status:

In February 1993, the last of the four shipments reached the United Kingdom.

For more information, contact L. M. Gonzalez at 373-3541.

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DOE/EA-0802

Environmental Assessment: Tank 241-SY-101 Equipment Installation and Operation to Enhance Tank Safety, Hanford Site, Richland, Washington, August 1992.

Background:

The DOE is responsible for the management and storage of HLW accumulated as a result of processing defense reactor irradiated fuels for plutonium recovery at the Hanford Site. Tank 241-SY-101 has been found to release quantities of hydrogen gas at concentrations above the lower flammability limits (LFL).

This EA proposed installing and operating various instruments and equipment designed to mitigate the potential for an accident during continued waste storage in Tank 241-SY-101. This EA also allows for the accumulation of additional data on the chemical and physical properties of the waste in this tank.

The proposed action would include installing and operating the following:

- A multifunctional instrument tree to provide temperature and gas data
- A standard hydrogen monitoring system
- A fourier transform infrared spectrometer and a gas chromatograph to analyze gas constituents
- A velocity, density, and temperature tree to measure pressure as it relates to density and temperature
- A permanent inlet filter.

The EA also would allow for the installation of a plug gauge, removal of existing air lances, and various preparatory activities.

FONSI:

The FONSI was issued August 13, 1992. The FONSI included the following actions:

- Removal of four existing air lances
- Installation and operation of permanent inlet filters for the 241-SY Tank Farm
- Installation and operation in Tank 241-SY-101 of a multifunctional instrument tree, standard hydrogen monitoring system, a fourier transform infrared system, gas chromatographs, velocity-density-temperature probes, and a riser plug gauge

DOE/EA-0802
(cont.)

- The construction and installation of concrete pads to support the instrumentation and underground conduit for the power and instrumentation lines.

Current Status: As of August 1993, the proposed activities were underway.

For more information, contact S. R. Tifft at 376-7479.

DOE/EA-0803

Environmental Assessment: Proposed Pump Mixing Operations to Mitigate Episodic Gas Releases in Tank 241-SY-101, Hanford Site, Richland, Washington, September 1992.

Background:

The DOE proposes to take this action for defining controls required to mitigate the potential for an accident during continued waste storage in Tank 241-SY-101. The intent of installing and operating a mixer pump is to test the possibility of mixing the waste that causes trapped gas (hydrogen) bubbles to be released on a continuous basis. Theoretically, releasing gas in this manner would eliminate the episodic gas releases, which periodically cause the gas weight percent to exceed the 25 percent LFL for the tank.

This proposed action consists of the following activities:

- Remove a slurry distributor from a 106.68-centimeter (42-inch) riser in the tank
- Install, operate, and remove a mixer pump.

FONSI:

The FONSI was prepared by the Los Alamos National Laboratory and submitted by them to HQ. The FONSI allowed for the removal of the slurry distributor from Tank 241-SY-101 and the installation, operation, and removal of a submersible mixer pump.

Current Status:

As of August 1993, the pump has been fabricated and installed. Several preliminary runs of the pump have been conducted on schedule and indicate that mixing the waste appears to prevent the accumulation of hydrogen gas in excessive concentrations.

For more information, contact S. R. Tifft at 376-7479.

DOE/EA-0809

Environmental Assessment: Thermocouple Tree System Installation and Operation in Non-Leaking Ferrocyanide Tanks, Hanford Site, Richland, Washington, September 1992.

Background:

The DOE records indicate that 24 HLW storage SSTs at the Hanford Site may each contain enough ferrocyanide, if heated sufficiently, to initiate a self-sustaining chemical reaction with the substantial quantity of nitrate-nitrite salts and/or saturated nitrate-nitrite solutions that exist in these tanks. A safety concern associated with the

DOE/EA-0809
(cont.)

current in-tank temperature data focuses on the potential for localized areas in the waste to develop above-average temperatures (hot spots) as a result of radioactive decay. This could lead to a thermal runaway reaction or an explosion and release of radioactive material from the tanks. Although the proposed action to install one thermocouple tree (TCT) system in each of the 11 nonleaking ferrocyanide SSTs at the Hanford Site would be inadequate to ensure that all hot spots have been located; the additional temperature data provided would substantially improve the DOE's understanding of the ferrocyanide tanks.

The proposed action is to install and operate 1 TCT system in each of the 11 nonleaking SSTs containing ferrocyanide compounds at the Hanford Site.

FONSI:

The FONSI was issued September 18, 1992.

The FONSI included the following actions:

- Gas sampling of each tank's vapor space would be conducted to ensure that no flammable gases greater than 20 percent of the respective LFLs were present. If flammable gas above these levels were detected, the

TCT systems would not be installed in the tanks until additional evaluations were performed to ensure that flammable gas concentrations were at safe levels.

- The TCT systems would be lowered through a riser in each of the 11 tanks by a hydraulic crane, and up to 5,678 liters (1,500 gallons) of water per tank would be used to jet the TCT systems through the salt cake layer.
- The TCT systems would remain in the tanks indefinitely until future DOE decisions on tank waste remediation are made.
- Signals generated from individual thermocouple elements on the TCT systems would be transmitted by existing or newly installed cables, and the temperature data would be monitored manually or with existing or newly installed data acquisition systems at other Hanford Site locations.

Current Status: As of May 1993, six of the TCT systems had been installed.

For more information, contact G. T. Dukelow at 373-4479.

DOE/EA-0881

Environmental Assessment: Tank 241-C-103 Organic Vapor and Liquid Characterization and Supporting Activities, Hanford Site, Richland, Washington, August 1993.

Background:

Because of the potential for ignition of the vapors from the floating organic layer in Tank 241-C-106, the DOE has declared the tank a USQ. Operations at this tank were curtailed because of this USQ, which must be resolved before normal waste storage operations and routine surveillance can continue. This EA analyzed the characterization of the vapor space and the organic and aqueous waste layers. This characterization is needed to determine if a flammable condition within the tank is credible.

FONSI:

The FONSI was issued August 10, 1993.

The FONSI called for sampling the vapor space and organic layer in the tank and measuring the thickness of the organic layer. The FONSI also addressed actions to support the sampling task and to ensure safe operating conditions in the tank, including: routine tank vapor space surveillance activities; instrument calibration; preventive maintenance; installation and removal of small-scale components; breather filter testing; installation and removal of equipment for above ground facilities; installation and operation of a portable exhauster; small volume waste additions to the tank; and other activities that would not alter vapor space flammability.

Current Status:

The liquid sampling of the organic layer was completed December 15, 1993. Vapor sampling was performed up to the issuance of a flammability report (which was called for by the *Hanford Federal Facility Agreement and Consent Order* [Tri-Party Agreement] [Ecology et al. 1992]) in June 1994. Routine surveillance of the tank is scheduled to continue.

For more information, contact S. R. Tifft at 376-7479.

DOE/EA-0904

Environmental Assessment: Access Road From State Route 240 to the 200 West Area, Hanford Site, Richland, Washington, February 1994.

Background:

The DOE has determined that dangerous traffic conditions exist with the main highway that connects the city of Richland and the 200 Areas. Traffic studies indicate that there is a high probability of a fatal accident occurring in the next several years. A temporary solution to this problem would be to construct an access road that would connect State Route 240 to the 200 West Area. This would reduce the vehicular traffic on the main highway to acceptable levels until future, permanent solutions are proposed and implemented.

FONSI:

The FONSI was issued March 10, 1994.

The FONSI called for the construction of a 3.5-kilometer (2.2-mile) two-lane road connecting State Route 240 to the 200 West Area. This project would include acceleration and deceleration lanes on State Route 240, a truck turnaround and guardhouse on the new road, and modifications to the security fencing in the area. Habitat enhancement activities, which would likely include revegetation of shrub-steppe habitat at other disturbed locations of the Hanford Site, would be adopted to offset the removal of this habitat.

Current Status:

Construction activities are expected to start in June 1994 and be completed in 3 months.

For more information, contact M. B. Strobe at 376-9767.

DOE/EA-0915

Environmental Assessment: Waste Tank Safety Program, Hanford Site, Richland, Washington, February 1994.

Background:

The DOE proposes to actively resolve safety issues associated with the underground storage tanks at the Hanford Site. Specific safety issues associated with these tanks include (1) flammable gas generation and episodic release; (2) ferrocyanide-containing waste; (3) a floating organic solvent layer in Tank 241-C-103; (4) nuclear criticality; (5) toxic vapors; (6) infrastructure upgrades; and (7) interim stabilization of SSTs. Further, knowledge of the waste tank contents is incomplete and additional characterization is called for in the Tri-Party Agreement (Ecology et al. 1992).

DOE/EA-0915
(cont.)

FONSI:

The FONSI was issued February 25, 1994, and included the following actions:

- To address safety concerns with the flammable gas generation tanks, the proposed action would install, operate, and remove in-tank monitoring equipment. Other actions needed include waste characterization and ventilation system monitoring and minor modifications.
- The same general activities described for the flammable gas generation tanks also apply to the ferrocyanide-containing tanks. Closure of the ferrocyanide USQ has been accomplished by the DOE.
- Closure of the criticality USQ has been accomplished by the DOE.
- To resolve the safety question with the floating organic solvent layer in Tank 241-C-103, the proposed action would allow for organic characterization and its subsequent removal.
- The proposed action would include sampling and characterization of vapors from suspect tanks. Ventilation system enhancements and minor modifications to mitigate noxious vapors and toxic vapor emissions also would be allowed.
- Infrastructure upgrades could include modernization of facilities, improvements in plant instrumentation and data collection systems, and minor modifications to ventilation systems, as required.
- Interim stabilization addresses removal of the pumpable liquid in 43 SSTs to minimize the impact from potential future tank leaks.

Current Status:

The FONSI was recently approved. Various activities (e.g., camera and liquid-level monitor installation) have been initiated.

For more information, contact M. T. Jansky at 376-3854.

DOE\EA-0942

Environmental Assessment: Return of Isotope Capsules to the Waste Encapsulation and Storage Facility, Hanford Site, Richland, Washington, April 1994.

Background:

The DOE has shipped radioactive isotope capsules, containing cesium-137 and strontium-90, to other DOE-controlled sites, as well as commercial facilities. Because of uncertainty regarding the failure of one capsule in a commercial facility (Decator, Georgia), the DOE determined that it needs to return leased capsules from the IOTECH, Incorporated (Northglenn, Colorado); Pacific Northwest Laboratory (Richland, Washington); and Applied Radiant Energy Company (Lynchburg, Virginia), to the Waste Encapsulation and Storage Facility (WESF) at the Hanford Site.

FONSI:

The FONSI was issued May 25, 1994.

The FONSI called for remote physical testing of the capsules at their present site to ensure capsule integrity and appropriate handling. The capsules then would be packaged according to DOE and NRC guidelines, secured to truck trailers, and transported (according to DOE and U.S. Department of Transportation [DOT] procedures) to the WESF.

Current Status:

Cesium capsule shipments have been initiated. All capsules are expected to be returned to the WESF by October 1995.

For more information, contact M. T. Jansky at 376-3854.

DOE\EA-0959

Environmental Assessment: Resiting, Construction and Operation of the Environmental and Molecular Sciences Laboratory at the Hanford Site, Richland, Washington, July 1994.

Background:

The DOE has determined that additional laboratory services are needed at the Hanford Site to provide, at one location, the combined office and laboratory facilities necessary to conduct research directed toward environmental restoration programs carried out by DOE at the Hanford Site and other DOE sites. In response, this EA analyzed the construction and operation of the EMSL to be located north of the city of Richland. An EA was originally written and approved in September 1992 to construct the laboratory on a site closer to the Columbia River. However, because of the presence of Native American artifacts and human remains, this later EA was prepared to cover the resiting of the laboratory to its new location.

DOE/EA-0959
(cont.)

FONSI: The FONSI was issued July 7, 1994.

The FONSI called for the construction and operation of a 200,000-square foot facility, which would house laboratories, offices, research support shops, a lecture hall, conference rooms, a library, and other miscellaneous functions. The FONSI also allowed for infrastructure upgrades in the area to support the operation of the laboratory.

Current Status: As of July 1994, construction of the laboratory was underway.

For more information, contact E. B. Moore, Jr.,
at 372-4213.

3.0 MISCELLANEOUS ENVIRONMENTAL ASSESSMENTS-HANFORD SITE

3.1 NUMERICAL LISTING

DOE/EA-0210(D) *Draft Environmental Assessment: Characterization of the Hanford Site Pursuant to the Nuclear Waste Policy Act of 1982, Richland, Washington, February 1983.*

This is a NWA document. This EA was revised and became DOE/RW-0017(D).

DOE/RW-0017(D) *Draft Environmental Assessment: Reference Repository Location, Hanford Site, Washington, December 1984.*

This is a NWA document; therefore, a FONSI was not required.

EIA/WPR/77-3 *Environmental Impact Assessment: Coring Well, Hanford Reservation, Richland, Washington, March 1977.*

A FONSI was not required because the EIA was written before the CEQ's final regulations were issued.

RHO-BWI-CD-19-REV *Environmental Assessment: Constructing a Near-Surface Test Facility, Richland, Washington, February 1978.*

Refer to DOE/EA-0052 (Section 2.1) for information concerning this project.

3.2 SUMMARIES

DOE/EA-0210(D) *Draft Environmental Assessment: Characterization of the Hanford Site Pursuant to the Nuclear Waste Policy Act of 1982, Richland, Washington, February 1983.*

This is a NWPA document. This EA was revised and became DOE/RW-0017(D).

DOE/RW-0017(D) *Draft Environmental Assessment: Reference Repository Location, Hanford Site, Washington, December 1984. This is a NWPA document.*

Background: In February 1983, the DOE identified a reference repository location at the Hanford Site in Washington State as one of nine potentially acceptable sites for a mined geologic repository for spent nuclear fuel and radioactive HLW. The reference repository lies within the Pasco Basin, a 4,850-square-kilometer (1,872-square-mile) topographic depression in the Columbia Plateau and, more specifically, in the central part of the Cold Creek syncline.

On the basis of the evaluations reported in this EA, the DOE found that the Hanford Site qualified under the guidelines for potential site locations. The DOE also found that the Hanford Site was suitable for site characterization because the evidence did not indicate the site would not be able to meet the guidelines. The DOE nominated the Hanford Site as one of five sites suitable for characterization.

The EA is a three-volume set.

FONSI: A FONSI was not required under the NWPA.

Current Status: The BWIP was terminated in 1987.

EIA/WPR/77-3 *Environmental Impact Assessment: Coring Well, Hanford Reservation, Richland, Washington, March 1977.*

Background: This EIA proposed to drill a core well (ARH-DC-2) to test the geologic and hydrologic properties of the basalt rocks underlying the Hanford Site. The data were needed to support the National Waste Terminal Storage Program.

The proposed core well was to be located approximately 18 meters (59 feet) southwest of the existing deep drill hole ARH-DC-1, 183 meters (600 feet) north of the 200 East Area boundary fence, about 10.6 kilometers (6.6 miles) from the nearest active reactor site, and about 10 kilometers

(6.2 miles) from the nearest section of the Columbia River. The core well was to have been approximately 1,006 meters (3,300 feet) deep and 10 centimeters (4 inches) in diameter.

Special Notice: The ERDA Assistant Administrator for Environment and Safety determined that an EA was unnecessary for exploratory borehole ARH-DC-3, based on the close proximity of the hole to core well ARH-DC-2 (analyzed in this EIA).

FONSI: A FONSI was not required because the EIA was written before the CEQ's final regulations were issued.

Current Status: The EIA was never finalized because borehole construction was terminated.

RHO-BWI-CD-19-REV *Environmental Assessment: Constructing a Near-Surface Test Facility, Richland, Washington, February 1978.*

Background: Refer to DOE/EA-0052 (Section 2.1) for information concerning this project.

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4.0 WASHINGTON, D.C. (WASH*) DOCUMENTS-HANFORD SITE**

4.1 NUMERICAL LISTING

- WASH-1510 Environmental Statement: *Fast Flux Test Facility, United States Atomic Energy Commission, Richland, Washington, May 1972.*
- WASH-1520 Environmental Statement: *Contaminated Soil Removal Facility, Richland, Washington, April 1972.*
- WASH-1521 Environmental Statement: *Radioactive Waste Evaporator and Auxiliaries, Richland, Washington, April 1972.*

*The WASH documents were issued by the AEC.

**All WASH documents predated the CEQ's regulation on the need for RODs.

4.2 SUMMARIES

WASH-1510

Environmental Statement: *Fast Flux Test Facility, United States Atomic Energy Commission, Richland, Washington, May 1972.*

Background:

The FFTF is a nuclear reactor complex designed for irradiation testing of fuels and materials to be used in future sodium-cooled fast breeder power reactors. This Research and Development (R&D) facility is in the AEC's LMFBF program. The design and construction of the FFTF were authorized in 1966 and 1967, respectively. Site preparation was initiated during the summer of 1970 and construction began in November 1971. The reactor was scheduled to begin operation in 1975.

The heart of the complex is a 400-MWt nuclear reactor fueled with a mixture of plutonium-uranium dioxide. It provided a fast neutron flux irradiation environment similar to that of a LMFBF. Radioactive waste materials were generated at the FFTF site as a result of operation and maintenance of the reactor and reactor systems. These liquid, solid, and gaseous wastes were produced through fission in the fuel and activation of reactor structural materials, primary sodium coolant, and the reactor cover gas. The plutonium in the fuel was also a source of radioactivity.

The FFTF design guidelines emphasized use of existing technology. The facility was designed to operate reliably, safely, and with minimal environmental effects. The design effort had been and continues to be supported by a strong R&D program with emphasis on testing. Safety features of the FFTF included: (1) duplicate and independent plant monitoring systems that sensed any abnormalities and shut down the plant, (2) a low-pressure coolant system, (3) a guard vessel surrounding the reactor vessel, and (4) a separate plant containment structure.

The FFTF emitted vapor to the air. The FFTF was designed so that there was no planned, continuous, or intermittent releases of radioactive effluents to the environment, other than radioactive gas leaks that might have occurred through seals, by diffusion through structural materials, or during accident conditions.

Radioactive wastes were collected and shipped to a remote processing and storage site within the Hanford Site complex, or to another location approved by the AEC. Shipment of radioactive material within the Hanford Site was in accordance with the AEC onsite procedures and

regulations. Any offsite shipments of radioactive material from the plant were in compliance with regulations established by the AEC and the DOT.

The Hanford Site was selected because of proximity to project and design resources; availability of qualified management and technical personnel; availability of improved communications and travel facilities; extensive experience in the development of plutonium fuels; and experience in the design, construction, and operation of large power reactors such as the Hanford Site N Reactor.

Alternatives:

- FFTF (the preferred alternative)--The existing fast flux reactors, Experimental Breeder Reactor No. II and Fermi, were not designed originally as fuel and material test facilities. These reactors could provide an interim measure of fast flux tests, but were inadequate to accomplish the in-depth testing needed for LMFBR demonstration and commercial plants. Both Experimental Breeder Reactor No. II and Fermi had limitations as to neutron flux spectrum, sodium coolant conditions typical of the future LMFBRs, testing capability required for highly instrumented and controlled fast flux environment tests, and adequate test space. As a result of the series of thermal neutron flux and fast neutron flux test facility studies, the AEC decided in 1965 that construction of a FFTF must be undertaken if the national objectives of the LMFBR R&D program were to be achieved.
- Thermal Flux Test Facilities--Fast breeder reactor fuels and materials required a test environment of high-temperature flowing sodium, a fast neutron flux environment, and high sodium temperature differentials to adequately duplicate the behavior of LMFBR fuels. None of the existing thermal flux reactors could be altered to provide a large enough fast flux and a proper environment for use in the LMFBR fuels and materials test program.

Current Status:

The FFTF was built in 1969-1978 and achieved full power in 1980. As of August 1993, the facility was in a "hot" standby status awaiting further direction from DOE. Operations began in 1982. The FFTF developed advanced nuclear fuels and materials for liquid metal reactors. It was used to test technologies essential to space power, fusion energy, medical and commercial isotope production, and eventually to eliminate nuclear HLW. Canada, Japan, and several European nations used the reactor to support development of their domestic advanced energy systems.

WASH-1520

Environmental Statement: *Contaminated Soil Removal Facility, Richland, Washington*, April 1972.

Background:

This WASH document proposed to remove plutonium-contaminated soil from the floor of an existing enclosed trench (Z-9 in the 200 West Area) used between July 1955 and June 1962 for subsurface disposal of plutonium-contaminated liquids. Liquid waste from the PFP had been discharged to enclosed trenches since startup of the facility in 1950. Most of the plutonium in the liquid waste was retained by the soil and held within a few vertical feet of the point of release. Because of the quantity of plutonium contained in the soil, special precautions and emergency plans were required that were not required for other enclosed trenches.

In this EIS, the DOE proposed to construct facilities at the Z-9 trench to permit excavation of contaminated soil, add equipment to the existing PFP for recovering plutonium from the contaminated soil, and construct an underground storage vault for interim storage of contaminated soil.

Removal of the plutonium-contaminated soil would eliminate the need for special precautions and the necessary emergency plans to ensure the safe storage of plutonium. Because of the quantity of plutonium contained in the soil of the Z-9 trench, a nuclear chain reaction was considered. Even though the probability of this occurrence was thought to be remote, it was determined that the removal of the contaminated soil would eliminate any possibility of such an event.

It was estimated that ± 100 kilograms (2,205 pounds) of plutonium were contained in the 51-cubic-meter (66.71-cubic-yard) volume of contaminated soil to be removed from the Z-9 trench. It was believed that more than three-fourths of the plutonium in the soil (worth approximately \$3 million) could be economically recovered in the nearby PFP. The proposed operation also permitted extensive evaluation of soil-dissolution and plutonium-extraction techniques. Residues from the extraction operations and contaminated soil with insufficient plutonium to permit economical extraction would be packaged in plastic bags, placed in steel drums, and stored in a new underground storage vault. Because the contaminated soil would be packaged in steel drums, the soil could be moved to another location.

The proposed operation also would permit the extensive evaluation of techniques for removing and measuring contamination in soil. Appropriate adjustments could be made in the excavation plans as the soil was removed and the plutonium measurements were made.

The Hanford Site is interspersed with chemical separation facilities, underground pipelines and tanks, and supporting facilities in the 200 West Area. The above-ground structures of the Contaminated Soil Removal Facility would be removed after the soil removal operations were complete. These operations took place from 1974 to 1976. The facilities would be designed to avoid release of any contaminated soil during soil recovery and storage.

Alternatives:

Alternatives to the proposed Contaminated Soil Removal Facility are as follows:

- The preferred action alternative would involve changes in the scope of the recovery concepts (i.e., hand excavation versus remote mechanical removal and vault storage of the contaminated soil without leaching).
- The no-action alternative would involve continued retention of the plutonium in the enclosed trench.

Current Status:

After assessing the benefits to be obtained from removing plutonium-contaminated soil from the Z-9 trench, and after considering the range of alternatives and their environmental impact, the AEC concluded that the proposed action should be undertaken. The Contaminated Soil Removal Facility is now decommissioned and waste has not been placed in the Z-9 trench since June 1962.

WASH-1521

Environmental Statement: *Radioactive Waste Evaporator and Auxiliaries, Richland, Washington, April 1972.*

Background:

This WASH document proposed that the radioactive waste generated by operations at the Hanford Site could be safely stored and processed according to an established Waste Management Program. The AEC was converting highly radioactive liquid waste stored in buried, steel-lined, concrete tanks into solid, retrievable saltcake. The three waste evaporators used in the program had limited evaporative capacity and a limited heat removal capability in the waste tanks. This restricted the rate and efficiency of converting the liquid waste to saltcake. The storage tank volume close to the existing evaporator facilities was not sufficient to contain all of the resulting saltcake.

The Environmental Statement asserted that the operation of the radioactive waste evaporator and auxiliaries would alleviate the previously mentioned problems. The radioactive waste evaporator would be an evaporator-crystallizer unit that would process twice as much liquid

waste as the existing three evaporators combined. The new unit would be located near underground storage tanks suitable for storing additional waste for solidification.

The auxiliaries would consist of pipelines and equipment modifications to allow the use of existing tanks for saltcake storage. The auxiliary tanks also would allow existing tanks to be used for neutralizing the excess alkalinity in concentrated liquid waste, and as concentrated waste coolers. The neutralization facility was necessary to solidify the fraction of the liquid waste that could not be converted to a saltcake by evaporation alone. The cooling facility would increase the evaporation rate for liquid waste by 10 to 20 percent.

The radioactive waste evaporator-crystallizer would operate at full capacity for about 3 years or until the backlog of liquid radioactive wastes at the Hanford Site had been reduced to saltcake. It would be operated either at reduced rates or intermittently to process the remaining wastes (i.e., those requiring an aging period of 3 to 5 years before they could be solidified). At the end of its useful life, the radioactive waste evaporator-crystallizer was to be decommissioned.

Effluents from the radioactive waste evaporator-crystallizer would include process and steam condensates, cooling water, human wastes, contaminated solid waste, and ventilation air. Those effluents, which would contain radionuclides, would be treated to reduce their radionuclide concentration to ALARA levels before being discharged to an enclosed trench. The total yearly discharges contained in the condensates were estimated to be less than 0.2 curie of cesium-137, 0.01 curie of strontium-90, 0.07 curie of ruthenium-106, and 0.01 gram of plutonium-239. These releases would be in concentrations below applicable federal guidelines, and there would be no measurable effect at or near the Columbia River.

Alternatives:

The alternatives included the following:

- The preferred alternative was to build the radioactive waste evaporator-crystallizer facility.
- The continued use of the existing evaporators, which would have a combined capacity of less than one-half of the radioactive waste evaporator-crystallizer system and would require approximately 5 years more to complete the in-tank solidification of the waste being stored at the Hanford Site.

- The use of other dewatering concepts, including atmospheric evaporation of water, calcination of waste, sorption of water by chemicals, and air drying.

Current Status: In 1980, the 242-S Evaporator was shut down and placed in standby condition three. Standby condition three means that no future use of the facility as an evaporator is foreseen. As of August 1993, part of the facility is used as a monitoring station for tank farms in the 200 West Area.

For more information, contact G. J. Rust at 373-5568.

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5.0 U.S. ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION (ERDA) DOCUMENTS-HANFORD SITE*

5.1 NUMERICAL LISTING

- ERDA-1538 *Final Environmental Impact Statement: Waste Management Operations, Hanford Reservation, Richland, Washington, December 1975.*
- ERDA-1550 *Final Environmental Impact Statement: High-Performance Fuel Laboratory, Hanford Reservation, Richland, Washington, September 1977.*
- ERDA-1556D *Draft Environmental Impact Statement: High-Flux Neutron Source Facility, Hanford Reservation, Richland, Washington, July 1977.*

The finalized EIS was DOE/EIS-0017.

5.2 SUMMARIES

- ERDA-1538 *Final Environmental Impact Statement: Waste Management Operations, Hanford Reservation, Richland, Washington, December 1975.*

Background: Since 1944, when the first Hanford Site facilities began producing plutonium for the Manhattan Project, radioactive waste has been generated. Consequently, there has been a continuous and evolving program for waste management.

This document was written for the Waste Management Operations Program at the Hanford Site. The draft statement was issued as WASH-1538. This statement reassessed the environmental impacts associated with continuing the Hanford Site Waste Management Operations Program to provide information for use in planning and decision making to ensure that further waste management practices would be conducted to minimize adverse environmental consequences. The foreword of this document provided an introductory summary of (1) the policies, plans, and standards applicable to the Hanford Site Waste Management Operations Program, (2) the Waste Management Operations Program, and (3) the programs and activities at the Hanford Site that were not covered in this EIS.

*All ERDA documents predated the CEQ's regulation on the need for RODs.

The quantities of materials released to the environment from Hanford Site operations were anticipated to decline as a result of (1) modifications of old and construction of new facilities, and (2) curtailment of production activities.

Waste generated by production, R&D, and other programs and activities at the Hanford Site were covered in this document. This document did not cover the alternatives and/or costs and benefits with respect to the production of special nuclear materials or the operation of R&D programs. The operation of N Reactor and the PUREX Chemical Processing Plant were beyond the scope of this document.

Because the Waste Management Operations Program at the Hanford Site is an ongoing program, many of the long-term and short-term options for the control, handling, and disposal of radioactive waste were in various stages of R&D. Although the status of these R&D efforts was discussed in the statement, some of these R&D programs required their own Environmental Statements at a later time.

Alternatives:

Ultimate-disposal R&D would be periodically reevaluated so that an appropriate impact statement relating to ultimate disposal could be prepared as soon as sufficient information was available.

Alternatives to HLW treatment were as follows:

- The preferred alternative was to continue the present program, which was solidifying the liquid waste to a saltcake form, and constructing additional DSTs to contain the liquids during interim periods.
- Shutdown of N Reactor in 1978, 1983, or 1990, which would lead to ending the generation and processing of most new radioactive waste.
- Shutdown of PUREX in 1978, 1983, or 1990. Two options were presented: first, shut down after processing all N Reactor fuel currently on hand; and second, shut down now with the existing inventory of irradiated N Reactor fuel either shipped offsite for processing or stored onsite without processing.
- Discontinue solidifying saltcake with the goal of converting the liquid HLW to a better solid form for interim storage, or holding the remaining liquid waste until an ultimate disposal method was developed and implemented. Implicit in these options was the need to construct new DSTs.

ERDA-1550

Final Environmental Impact Statement: High-Performance Fuel Laboratory, Hanford Reservation, Richland, Washington, September 1977.

Background:

The High-Performance Fuel Laboratory (HPFL) was to provide pilot-scale tests for safe, fast breeder reactor fuel manufacturing. The experience of designing, constructing, and operating the HPFL would have been used in future commitments to commercial fuel fabrication plants.

During normal HPFL operations, it was anticipated that extremely small quantities of noxious substances might be released into the atmosphere in spite of the multiple filtration features of the ventilation system. Releases of nonradioactive noxious substances into the atmosphere would have been within acceptable limits and were not expected to cause any health effects. The calculated doses to the population resulting from radioactive releases were to be negligible.

Benefits from the fuel fabrication development program and the HPFL would have been as follows:

- To society--Improved safeguards, reduced personnel exposure, releases in accordance with ALARA, and minimum generation of waste.
- To technology--Development and evaluation of improved fuel fabrication processes and equipment, simplification of current fuel fabrication and assembly processes, demonstration of online, timely inventory control and accountability, and demonstration of online product inspection.
- To industry--Demonstration of fabrication methods; generation of data to determine capital investment requirements; creation of a pilot line for process and equipment evolution; demonstration of process; demonstration of the use and handling of light-water, reactor-derived, recycle plutonium; demonstration of industrial-scale equipment and processes; and participation in program planning.

Alternatives:

The alternatives for the project were as follows.

- The preferred alternative was to build the HPFL in the 400 Area of the Hanford Site.
- Alternative technologies could have been examined (e.g., the mixed oxide dry powder fuel fabrication technique).

- Alternative designs identified and considered during the first phases of the HPFL exhibited higher costs and greater difficulties of program operation than the proposed facility.
- Potential use through modification of existing facilities at the Hanford Site was considered in the initial design effort.
- Each of the other alternative sites for the HPFL had its own particular set of characteristics that rendered it more or less desirable.
- The no-action alternative of not constructing the HPFL would have placed the burden of advanced LMFBR fuel development on private industry.

Current Status: For programmatic reasons, certain features of this proposed action were blended into the Process Facility Modifications (PFM) Project (DOE/EIS-0115D) when it was built. The HPFL was never built.

ERDA-1556D

Draft Environmental Impact Statement: High-Flux Neutron Source Facility, Hanford Reservation, Richland, Washington, July 1977.

Current Status: This draft was finalized as DOE/EIS-0017, and no action resulted.

6.0 ENVIRONMENTAL IMPACT STATEMENTS-HANFORD SITE

6.1 NUMERICAL LISTING

DOE/EIS-0017 *Final Environmental Impact Statement: Fusion Materials Irradiation Testing Facility, Hanford Reservation, Richland, Washington, April 1978.*

DOE/EIS-0046 *Final Environmental Impact Statement: Management of Commercially Generated Radioactive Waste, October 1980.*

The ROD was issued in the FR May 14, 1981 (46 FR 26677).

DOE/EIS-0063 *Final Environmental Impact Statement: Waste Management Operations, Double-Shell Tanks for Defense High-Level Radioactive Waste Storage, Hanford Site, Richland, Washington, April 1980.*

This EIS was written as a supplement to ERDA-1538. The ROD was the first issued for the Hanford Site and was in the FR July 9, 1980 (45 FR 46155).

DOE/EIS-0080 *Final Environmental Impact Statement: Decommissioning of the Shippingport Atomic Power Station, May 1982.*

The EIS was written for the Shippingport Atomic Power Station in Beaver County, Pennsylvania. The decommissioning was managed by the RL and Hanford Site contractors. The ROD was published in the FR August 19, 1982 (47 FR 36276).

DOE/EIS-0089 *Addendum to Environmental Impact Statement: Operation of PUREX and Uranium Oxide Plant Facilities, Hanford Site, Richland, Washington, February 1983.*

Considered by DOE to be final when used in conjunction with DOE/EIS-0089D. The ROD was issued in the FR May 16, 1983 (48 FR 21993).

DOE/EIS-0113 *Final Environmental Impact Statement: Disposal of Hanford Defense High-Level Transuranic and Tank Wastes, Hanford Site, Richland, Washington, December 1987.*

The ROD was issued in the FR April 14, 1988 (53 FR 12449).

DOE/EIS-0115D

Draft Environmental Impact Statement: Process Facility Modifications Project, Hanford Site, Richland, Washington, April 1986.

The project was canceled and no ROD was issued.

DOE/EIS-0119F

Final Environmental Impact Statement: Decommissioning of Eight Surplus Production Reactors at the Hanford Site, Richland, Washington, September 1993.

The ROD was issued in the FR September 16, 1993 (58 FR 48509).

6.2 SUMMARIES

DOE/EIS-0017

Final Environmental Impact Statement: Fusion Materials Irradiation Testing Facility, Hanford Reservation, Richland, Washington, April 1978.

Background:

This EIS originated as the draft document ERDA-1556D. This EIS proposed to construct and operate an irradiation test facility, the Deuterium-Lithium High-Flux Neutron Source (HFNS) Facility in the 300 Area of the Hanford Site. This project would have consisted of a test building and an accelerator building with an interconnecting transport tunnel for the deuteron beam.

Test specimens would have been fabricated into irradiation assemblies in existing Hanford Engineering Development Laboratory facilities, and irradiated test specimens transferred to existing Hanford Engineering Development Laboratory facilities for examination.

Alternatives:

The alternatives discussed in the EIS included the following.

- The preferred alternative was to construct and operate an irradiation test facility, the HFNS, in the 300 Area of the Hanford Site.
- Alternative designs that were investigated included engineering design features and procedural safeguards to minimize environmental hazards during and after conceivable natural occurrences and accidents, as well as during normal operation.
- Alternative facility locations were examined to determine whether any other sites were preferable to the Hanford Site's 300 Area. A preferable site would have been one that offers the potential for reducing of environmental impact from facility construction and

operation. Alternatives included different DOE national laboratories and other locations within the Hanford Site.

- Modification of existing facilities was considered to provide the physical plant equivalent to the Accelerator Building and/or the Test Building. This would have reduced the commitment of resources, thus further reducing the small impact of siting the new building, and possibly reducing the cost of the project. Existing facilities in the 300 Area were surveyed for suitability and availability. The 309 Building was identified as a potential candidate to serve as the HFNS Test Building.

ROD: The ROD was never issued.

Current Status: The Fusion Materials Irradiation Testing Facility Project was canceled.

DOE/EIS-0046 *Final Environmental Impact Statement: Management of Commercially Generated Radioactive Waste*, October 1980.

Background: This EIS proposed a programmatic strategy that emphasized development of conventionally mined waste repositories deep in the earth's geologic formation as a means of disposing of commercially generated HLW and TRU wastes. Because of the programmatic nature of this document and the preliminary nature of certain design elements assumed in assessing the environmental consequences of the various alternatives, this study was based on generic rather than specific systems.

The main objective of waste disposal was to provide reasonable assurance that these wastes, in biologically significant concentrations, would be permanently isolated from the human environment. To provide input to the decision on a planning strategy for disposing of these radioactive wastes, this EIS presented an analysis of environmental impacts that could occur if various technologies for management and disposal of such wastes were to be developed and implemented.

The DOE had the responsibility to develop technologies for management and disposal of commercially generated TRU HLWs. The HLW was defined as either the aqueous solution from the first-cycle solvent extraction where spent fuel was reprocessed for recycling of uranium and plutonium or the spent fuel itself if that fuel was to be disposed of properly. The HLW also was intensely radioactive. Other wastes were generated during reprocessing that, although larger in volume than HLWs, were less intensely

radioactive. Wastes that contained more than a specified amount of radionuclides of atomic number greater than that of uranium were called TRU wastes. Special attention was given to TRU wastes because they contained alpha particle-emitting nuclides that were of particular concern as a result of their long half-lives and tenacious retention if incorporated in the body. Other waste forms that included neither HLW or TRU wastes were called LLWs.

Alternatives:

The alternatives discussed in the EIS included the following:

- Preferred alternative--The R&D program for waste management would emphasize the use of mined repositories in geologic formations (in the continental United States) capable of accepting radioactive wastes from either the once-through or reprocessing cycles, while continuing to examine subseabed and very-deep-hole disposal as potential backup technologies. This action would be carried forward to identify specific locations for the construction of mined repositories. The proposed action did not preclude further study for other disposal techniques.
- Alternative action--Candidate technologies for parallel development strategy would have been:
 - Rock-melt waste disposal
 - Island-based geologic disposal
 - Ice-sheet disposal
 - Well-injection disposal
 - Transmutation concept
 - Space disposal
 - Placement in the sediment beneath the deep ocean (subseabed)
 - Disposal in very deep holes.
- No-action alternative--Existing spent fuel would be left indefinitely where it was currently stored. Any additional spent fuel discharged from future operation of commercial nuclear power plants would likewise be stored indefinitely in water-basin facilities, either at the reactors or at independent sites.

ROD:

The ROD was issued in the FR May 14, 1981 (46 FR 26677).

The ROD called for the DOE to select a strategy for the disposal of commercially generated radioactive wastes and the supporting program of R&D. Actions of the ROD included the following:

- Adopt a strategy to develop mined geologic repositories for disposal of commercially generated HLW and TRU radioactive wastes, while continuing to examine subseabed and very-deep-hole disposal as potential backup technologies.
- Conduct an R&D program to develop repositories and the necessary technology to ensure the safe long-term containment and isolation of these wastes.

Alternatives considered were (1) mined repositories, (2) parallel technology development, and (3) the no-action alternative. The decision to proceed with a programmatic strategy favoring the disposal of commercially generated radioactive wastes in mined geologic repositories was based on the DOE's commitment to the early and successful solution of the nation's nuclear waste disposal problem. This would maintain the viability of nuclear energy as a future energy source for the United States. This decision also saved money by focusing federal funds on the further development of the most advanced disposal technique.

Current Status: The draft version of this document was used on the Hanford Site in the 1970's and 1980's for the preparation of EAs. At that time, it was known as the Generic/General Hanford Environmental Impact Statement. The document is no longer used for that purpose.

DOE/EIS-0063 *Final Environmental Impact Statement: Waste Management Operations, Double-Shell Tanks for Defense High-Level Radioactive Waste Storage, Hanford Site, Richland, Washington, April 1980.*

Background: This EIS proposed to complete the construction and operation of 13 tanks for radioactive liquid HLW storage on an interim basis until long-term or final disposal of the wastes could be achieved. This EIS was written as a supplement to ERDA-1538. The scope of the EIS included the examination of design alternatives for the tanks under construction. The new facilities under construction consisted of 13 3.8 million-liter (1,300,854-gallon) high-activity waste tanks and their auxiliaries. All 13 tanks were being built in the 200 East Area of the Hanford Site. Impacts of the various design alternatives considered in this EIS were assessed on the basis of the effects of the designs on tank durability, ease of waste retrieval from such tanks, choices (and timing of such choices) for a long-term radioactive waste storage and final disposal technology, as well as the environment in general.

This EIS did not address the environmental consequences of using the tanks for long-term storage; the plan called for

using the tanks only on an interim basis. The design life of the new tank system was considered sufficient to contain the wastes pending implementation of long-term disposal.

Alternatives:

The alternatives discussed in the EIS were as follows:

- The preferred alternative was to complete construction and use the 13 new DSTs for interim storage of liquid HLW at the Hanford Site. Construction of the tanks was completed and tank use was scheduled to begin in May 1980, after operational testing of all mechanical components and control instruments.
- Use thicker and more chemically resistant steel plates.
- Use an impressed current cathodic protection system to guard the tanks against stress corrosion cracking.
- Use better waste retrieval equipment and enlarged tank openings to facilitate waste removal from tanks at some future date.
- Compare the use of cooling coils to the use of air cooling now provided in the design and construction of the 13 tanks at the Hanford Site.
- The no-action alternative stated that the 13 tanks need not have been constructed and that existing storage tanks would be used as part of the continued present action. The No-Action alternative was discussed and shown to be unacceptable.

ROD:

The ROD was published in the FR July 9, 1980 (45 FR 46155).

The ROD called for construction of the 13 DSTs so they could be used to store defense radioactive HLW at the Hanford Site.

Actions under the ROD included the following:

- The DOE action covered construction and operation of the 13 tanks. The DSTs would be designed to safely contain liquid radioactive wastes for an interim period.
- The new DSTs would employ significant design and safety improvements over the 140 SSTs.

Current Status:

The DSTs were constructed and are currently used in operations.

DOE/EIS-0080

Final Environmental Impact Statement: Decommissioning of the Shippingport Atomic Power Station, May 1982.

Background:

The DOE proposed to decommission the Shippingport Atomic Power Station near the Ohio River in Shippingport, Pennsylvania. The Shippingport Atomic Power Station was constructed during the mid-1950's as a joint project of the federal government and the Duquesne Light Company to develop and demonstrate pressurized water reactor technology and to generate electricity. The station consisted of a pressurized water reactor, a turbine generator, and associated facilities. The reactor and steam-generation portions of the station were owned by the DOE. The electricity-generating portion of the station was owned by the Duquesne Light Company.

The station achieved criticality in December 1957 and had been operated by the Duquesne Light Company under supervision of the DOE Division of Naval Reactors since that time. The station had produced over 6.6 billion kilowatt-hours of electricity. Operation of the station resulted in 37 man-rem of occupational exposure in 1979.

The preferred alternative was to dismantle and remove all fluids, piping, equipment, components, structures, and wastes (having radioactivity levels greater than those permitted for unrestricted use) to a waste disposal area. The Hanford Site and Savannah River Site were chosen as possible disposal areas.

Alternatives:

The alternatives discussed in this EIS were as follows:

- The preferred alternative was the immediate dismantling of the Shippingport Atomic Power Station. This included the removal from the site, shortly after shutdown, of all fluids, piping, equipment, components, structures, and wastes having radioactivity levels greater than those permitted for unrestricted use. Immediate dismantling resulted in a lower cost than any other decommissioning alternative.
- The safe storage alternative involved dismantling the facility after a storage period of several decades, during which radioactive isotopes would be allowed to decay. During preparation for safe storage, radioactive materials outside the safe storage boundaries would be removed. Security, surveillance, maintenance, and radioactive monitoring would be continued during the safe storage period. Safe storage followed by deferred dismantling would have resulted in higher costs than immediate dismantling and prohibited unrestricted use of the facility and site until deferred dismantling was completed.

- The entombment alternative involved complete isolation of the radioactivity in the station from the environment by means of massive concrete and steel barriers until the radioactivity had decayed to innocuous levels. The pressure vessel cladding and internals might have been removed before entombment or might have been left within the entombed structure, depending on the inventory of radioactivity. Maintenance, surveillance, and occasional monitoring would have been required for this alternative.
- The first no-action alternative involved continuing operation of the station to produce electricity. Because the DOE had no continued use for the station, further operation would have required the utility to purchase the station from the federal government and obtain an operation license from the NRC. Because the station was over 20 years old, it was likely that extensive analyses and modifications would have been necessary to meet current NRC requirements.
- The second no-action alternative involved defueling and closing the station, and continuing some monitoring, surveillance, and maintenance of important plant systems. Closing the station while continuing maintenance, monitoring, and surveillance would have left the station intact and permit some decaying of cobalt-60. This would have delayed the decision as to the station's eventual disposition.
- The third no-action alternative involved defueling and closing the station, and doing nothing further. This was not an acceptable alternative because the public would have had direct access to radioactive water, equipment, and other material, as well as to high-dose-rate areas in the station. A substantial effort would have been required to ensure that the radioactivity remaining in the station after defueling constituted no hazard to the public.

ROD:

The ROD was published in the FR August 19, 1982 (47 FR 36276).

The DOE decided to decommission the Shippingport Atomic Power Station. The station would be decommissioned by dismantling immediately following end-of-life testing and defueling of the reactor.

Actions under the ROD included the following.

- Contract No. E(36-1)-292 covered the working relationship between the DOE and the Duquesne Light Company for construction and operation of the

Shippingport Atomic Power Station. This contract required that the DOE, on expiration or termination of the contract, "make the nuclear portion of the plant safe from a radiation standpoint."

- All practicable means to avoid or minimize environmental harm from the selected alternatives would be adopted. Plans were developed to keep all radiation exposures ALARA. For example, one-piece removal of the pressure vessel was studied as a way to reduce both occupational radiation dose and cost.
- Workers would wear dosimeters that would need to be checked frequently to ensure compliance with occupational radiation dose guidelines.
- The existing onsite and offsite radiation monitoring program or an equivalent program would be in operation during decommissioning.
- No liquids would be released to the Ohio River unless they met applicable federal and state standards and permit conditions.
- Radioactive wastes would be transported according to DOT regulations and would be buried at a DOE disposal site in accordance with criteria established by DOE Order 5480.1A (DOE-RL 1988).
- The volume of radioactive waste from immediate dismantling would have virtually no impact on available DOE disposal space.
- Occupational safety and health practices would be in operation according to the directives of DOE Order 5480.1A (DOE-RL 1988) and applicable state and federal laws.

Current Status: The Shippingport Atomic Power Station in Beaver County, Pennsylvania has been D&D and the waste was disposed of at the Hanford Site. This activity was managed by the RL and Hanford Site contractors.

DOE/EIS-0089 *Addendum to Environmental Impact Statement: Operation of PUREX and Uranium Oxide Plant Facilities, Hanford Site, Richland, Washington, February 1983.*

Background: This EIS analyzed the environmental effects of the DOE proposal to resume operation of the PUREX and Uranium Oxide (UO₃) chemical processing facilities, which are located on the Hanford Site near Richland, Washington. The draft (DOE/EIS-0089D) and the Addendum (DOE/EIS-0089) make up the

Final EIS for the PUREX plant. The PUREX and UO_3 facilities were used to process irradiated fuels and separate plutonium, uranium, and neptunium for use in the DOE's defense and R&D program. The PUREX and UO_3 facilities were used from 1956 to 1972 to process the irradiated fuels produced by up to nine production reactors located on the Hanford Site.

After the PUREX and UO_3 facilities processed the inventory of irradiated fuels available in 1972, their continued operation to process fuel produced from the only reactor continuing in operation at the Hanford Site was no longer economical. Plans were made to operate the facilities on a batch basis when sufficient quantities of irradiated fuel were available for processing and plutonium was required for defense program and R&D purposes. Therefore, the PUREX and UO_3 facilities have been maintained in standby condition since 1972. During this standby period, modifications have been made to the facilities to mitigate the environmental impact of their operation and to maintain their operational viability. It was determined that processing of the irradiated fuels was required to meet the nation's defense and R&D needs.

The PUREX and UO_3 facilities consisted of chemical processing facilities used from 1956 to 1972. Modifications identified in ERDA-1538 have been incorporated into the facilities since 1975.

These improvements mitigated the environmental impacts and improved safety aspects by (1) reducing process condensate discharge, (2) improving plant protection measures, and (3) recovering krypton gas.

The radionuclides in the process condensates discharged to the ground through cribs were reduced to less than 50 percent of the 1972 values. Similarly, plutonium contained in liquid effluents discharged to cribs was reduced from about 4 curies per year to an estimated 0.4 curies per year. The radionuclides contained in the ammonia scrubber wastes were concentrated by distillation and stored in underground DSTs.

The risk of theft or sabotage was reduced by enhanced safeguards for special nuclear materials and improved facility protection measures.

An additional modification considered, but not included in the proposed action, was recovering krypton-85 gas from fuel dissolved offgases before discharge to the environment through the 61-meter (0.0379-cubic-yard) stack. The estimated capital cost would be \$20 million for collection equipment, plus about \$150 million for storage facilities.

Alternatives:

The alternatives discussed in the EIS included the following:

- The preferred action was the resumption of operation of the Hanford Site PUREX and UO_3 facilities to process irradiated N Reactor equivalent fuel.
- Construction of a new fuel processing facility on the Hanford Site.
- Processing fuel offsite; however, this would have increased the risk of releases during fuel transport and handling.
- No action would have postponed the decision; however, there would be some potential for release during fuel storage.

ROD:

The ROD was published in the FR May 16, 1983 (48 FR 21993).

The DOE decided to resume operation of the PUREX and UO_3 chemical processing facilities at the Hanford Site.

Actions under the ROD included the following:

- All releases to the air and groundwater, and all population and occupational exposures from operation of the PUREX and UO_3 facilities would be below levels established under the DOE standards and guidelines.
- All practicable means to further mitigate environmental impact and safety concerns were to be adopted. In this regard, modifications that were or are being made to the facilities would include the following:
 - Gaseous effluent control improvements
 - Liquid effluent control improvements
 - Upgraded PUREX ventilation system
 - Additional security and safeguards procedures and systems for protection of special nuclear materials
 - A new criticality alarm system to improve nuclear criticality accident detection and permit more effective mitigative steps
 - Upgraded ventilation systems at the UO_3 facility product load-out station

- Upgraded fire protection systems at both the PUREX and UO_2 facilities
- New transfer lines to underground storage tanks
- Seismic protection upgrades
- Plutonium oxide production system within the PUREX building.
- The DOE continued to monitor the site with environmental measurement and surveillance programs. An expanded radiological surveillance program initiated in 1979 continued.

Current Status: In 1990, the DOE determined that the PUREX facility could no longer operate under DOE/EIS-0089. A new EIS must be approved before restarting the PUREX facility. The UO_2 facility appears to still be covered under DOE/EIS-0089.

DOE/EIS-0113 *Final Environmental Impact Statement: Disposal of Hanford Defense High-Level Transuranic and Tank Wastes, Hanford Site, Richland, Washington, December 1987.*

Background: This EIS examined the potential impacts calculated for the final disposal of existing high-level TRU and tank wastes stored at the Hanford Site since 1943 and future wastes. Wastes excluded from the scope of this EIS were LLW and waste associated with the D&D of existing surplus or retired Hanford Site facilities. However, included were those wastes from D&D of future facilities such as the Hanford Waste Vitrification Plant (HWVP) that might be built and operated in direct support of disposal actions addressed in the EIS. While existing and future wastes lend themselves to the same type of treatment afforded commercial nuclear wastes, the older tanks, cribs, and burial sites contain a variety of wastes in forms that could require specialized treatment and recovery.

For purposes of analysis, the wastes under the scope of this EIS were divided into six classes; four of these consisted of waste stored or future waste to be placed in interim storage pending disposal and two classes were waste previously disposed of as LLW. Because of their TRU content, these two were reexamined to determine whether any additional protection was justified.

Existing tank wastes, the first waste class, was subdivided further into SSTs and DSTs as a result of the physical and chemical differences in tank contents. The SSTs contain mostly solid waste not readily retrievable. The DSTs

contain liquids and suspended solids that are readily retrievable by pumping and sluicing.

Future tank wastes, the second waste class, included wastes generated from PUREX operations after October 1983. These wastes were stored in DSTs as liquids and suspended solids that are readily retrievable by pumping and sluicing.

Strontium and cesium capsules, the third waste class, were stored in water basins until disposal. After their useful life, the capsules would be returned for disposal. These wastes would be double-encapsulated in stainless steel or alloy.

Retrievably stored and newly generated TRU waste, the fourth waste class, contained solid TRU waste produced since 1970 and packaged, labeled, and stored pending final disposal.

The TRU-contaminated soil sites, the fifth waste class, were sites that contained specific contaminated soil from disposal of liquid waste in cribs, ditches, trenches, settling tanks, French drains, and reverse wells (also known as injection wells). Although previously disposed of, these wastes were reexamined to determine whether additional environmental protection was warranted.

Lastly, pre-1970 buried suspect TRU-contaminated solid wastes, the sixth waste class, contained general trash and failed equipment buried in trenches before 1970. Although previously disposed of, these wastes also were reexamined to determine whether additional protection was warranted.

Most of the impacts identified would be because of a loss of active institutional control in the year 2150, which was assumed for all alternatives. These impacts were not representative of continued waste practices.

This EIS was both a programmatic EIS, which was intended to support broad decisions about the disposal strategies for the Hanford Site waste addressed in this EIS, and an implementation EIS intended to provide project-specific environmental input for decisions on certain disposal activities and facilities.

The EIS was prepared before Washington State was granted authority pursuant to the RCRA for mixed waste. The appropriate application of the RCRA and CERCLA to the waste classes in the EIS have not been addressed.

Subsequent to the issuance of the ROD in 1988, the *Hanford Federal Facility Agreement and Consent Order* (Ecology et al. 1992) was signed by the EPA, Ecology, and DOE to

implement many of the actions discussed in the ROD, and thus to ensure compliance with the RCRA and CERCLA requirements.

Other laws, standards, and regulations were applicable primarily during operational phases. Operational experience suggests that compliance with these other laws and regulations would not be affected significantly, regardless of the alternatives selected.

Alternatives:

The three disposal or enhanced-protection alternatives initially selected for detailed analysis are the following:

- **Geologic Disposal**--Most (98 percent by activity) of the waste within the scope of this EIS would be retrieved (to the extent practicable) and processed, with some packaged and transported for disposal in either an onsite or offsite geologic repository. The remainder would be disposed of onsite and isolated with a protective barrier and marker system.
- **In-Place Stabilization and Disposal**--The DST waste would be retrieved and grouted in near-surface vaults. The TRU and SST wastes would be stabilized in their existing locations to the extent practicable and covered with a protective barrier and marker system. Encapsulated strontium and cesium would be retrieved from water basins, placed in an additional package, placed in a drywell storage facility, and isolated from the environment by a protective barrier and marker system.
- **Reference Alternative (combination disposal)**--Elements of the geologic disposal and in-place stabilization and disposal alternatives would be employed to provide a balanced disposal or enhanced-protection approach that would give reasonable expectation that this alternative will limit risks to populations over the long term, without incurring near-term risk because of disturbing wastes that are currently stable and difficult to retrieve. Readily retrievable waste would be processed for geologic disposal. Other waste would be disposed of in place. All wastes disposed of near the surface would be isolated from the environment by a protective barrier and marker system.

A no-action alternative, continued storage of the wastes, also was considered in detail. This alternative was not considered by the DOE to be a viable long-term option based on current waste management policies, particularly in view of the large accumulated costs associated with maintaining the wastes in a storage mode for many centuries. The no-action alternative was analyzed in accordance with the

CEQ regulations. In the short term (i.e., for periods less than 100 years), the no-action alternative could be considered as a "delay major action" alternative, after which time disposal alternatives could be considered. If the DOE were to choose the no-action alternative, waste would remain as disposed of or continue to be stored indefinitely using existing storage practices with planned improvements to comply with the RCRA and CERCLA requirements, as applicable. Active administrative control would be provided. Federal ownership and presence on the Hanford Site was planned in perpetuity (but for comparative analyses, loss of active institutional control was assumed to occur in the year 2150). It must be emphasized that this scenario was defined simply for comparing alternatives. Present disposal practices with active administrative control will not result in the impacts calculated for this scenario.

The preferred alternative was developed following agency and public review of the draft EIS and consists of a combination of the reference alternative for some classes of waste and a deferred decision for other classes of waste. Under this alternative, readily retrievable waste (DST waste, strontium and cesium capsules, and retrievably stored and newly generated TRU waste) would be processed for geologic and grout disposal, and other waste would be left in place until results of ongoing or planned development and evaluation are obtained.

ROD:

The ROD was issued in the FR April 14, 1988 (53 FR 12449). It was decided to implement the "preferred alternative" as discussed in DOE/EIS-0113. Actions under the ROD were as follows:

- To proceed with the disposal activities for the following defense wastes at the Hanford Site:
 - DST wastes
 - Retrievably stored and newly generated TRU waste
 - The only pre-1970 buried suspect TRU-contaminated solid waste site outside the 200 Area Plateau
 - Strontium and cesium encapsulated wastes.
- To process existing and future wastes from the storage DSTs at the Hanford Site for final disposal, the DOE would design, construct, and operate the HWVP, complete the necessary pretreatment modifications and operate the pretreatment facility (planned to be the Hanford B-Plant), and use the Hanford Site Transportable Grout Facility.

- The radioactive HLW fraction would be processed into a borosilicate glass waste form and stored at the HWVP until a geologic fraction would be solidified as a cement-based grout and disposed of at the Hanford Site in near-surface, concrete-lined vaults.
- Existing and future DST waste would be characterized for hazardous chemical constituents, as well as other chemical constituents that could affect glass or grout formulation, before processing.
- The Waste Receiving and Processing Facility would be designed, constructed, and operated at the Hanford Site to sort, process, and repackage retrievably stored and newly generated TRU-contaminated solid waste for shipment to the WIPP located approximately 41.84 kilometers (26 miles) from Carlsbad, New Mexico. The only pre-1970 buried suspect TRU-contaminated solid waste site outside the central plateau would be removed to the 200 Area Plateau for disposal as solid TRU waste.
- Encapsulated cesium and strontium wastes would continue to be stored safely until a geologic repository was ready to receive this waste for disposal. Before shipment to a geologic repository, these wastes would be packaged in accordance with repository waste acceptance specifications.
- For the remainder of the waste classes covered in the Hanford Defense Waste-EIS (DOE 1987) (SST wastes, TRU-contaminated soil sites, and pre-1970 buried TRU-contaminated solid waste within the 200 Area Plateau), the DOE had decided to conduct additional development and evaluation before making decisions on final disposal. This development and evaluation would focus on methods to retrieve and process these wastes for disposal, as well as methods for stabilizing and isolating the wastes stored near-surface. Results from this work would be publicly available. Before decisions on final disposal of these wastes, the alternatives would be analyzed in subsequent environmental documentation, including a supplement to the Hanford Defense Waste-EIS (DOE 1987) for decisions on disposal of the SST wastes.
- There was one exception to waiting for the final disposal of SST wastes, TRU-contaminated soil sites, and pre-1970 buried suspect soil sites. The exception was that to consolidate the waste, the DOE would proceed with exhuming and processing the only pre-1970 buried TRU-contaminated solid waste site (the 618-11 site) located outside the 200 Area Plateau.

- For the pre-1970 buried TRU-contaminated solid waste and TRU-contaminated soil sites (except for the 618-11 site) the present remedial action program would continue.

Current Status:

The HWVP was considered the cornerstone of the Hanford Site cleanup. It has since been determined that LLW will not be grouted as originally proposed, but vitrified similarly to what is proposed for HLW. The low-activity vitrification plant is scheduled to be operational in 2005 while the HWVP is now scheduled to be operational in 2009.

The HWVP would be used to convert radioactive HLW from the Hanford Site's DSTs into glass logs for permanent offsite disposal. There are 28 DSTs containing some 87 liters (23 million gallons) of liquid radioactive waste. Much of the waste in DSTs would be treated first. This pretreatment process might have required the construction of a new facility to separate out the radioactive LLW. The LLW would be vitrified and disposed of onsite.

A NEPA determination on the applicability of a Supplement Analysis for proposed construction of the HWVP (DOE/EIS-0113, FS/SA3) has been requested by RL. As of August 1993, the request is at DOE-HQ.

A NEPA determination on the applicability of a Supplement Analysis in measuring the environmental effects of the Waste Receiving and Processing Facility Module 2 has been requested. As of August 1993, the request is at DOE-HQ.

DOE/EIS-0115D

Draft Environmental Impact Statement: Process Facility Modifications Project, Hanford Site, Richland, Washington, April 1986.

Background:

This EIS proposed to construct and operate a segmentation and dissolution facility as a front-end modification to the PUREX facility at the Hanford Site. The PFMs would permit the recovery of plutonium from the irradiated FFTF fuel for use in DOE programs. The FFTF fuel would have been prepared in the PFM for subsequent processing in the PUREX facility. A corollary purpose was to provide an improved method of preparing irradiated fuel from the DOE's N Reactor (N-fuel) for processing in the PUREX facility.

The proposed action also would have eliminated the current method of chemically decladding irradiated N-fuel, thereby reducing the volume of radioactive liquid waste and the potential environmental impacts of waste management at the Hanford Site. The PFM would not have been a stand-alone facility that produced a final end product; its function would have been to segment the fuel elements into short pieces from which the fuel could then be dissolved. The

dissolved fuel solution would have been transferred to the PUREX Facility for separation and purification of the plutonium, uranium, and desired byproducts.

The proposed PFM capabilities would have included cask handling, fuel storage, fuel segmentation and dissolution, and handling of offgas and solid waste. Construction would have started in 1986. The PFM would have been operational in 1993. The EIS included discussion of the PFM facility and processes; quantities, composition, and disposition of process wastes; the relationship of the PFM to the PUREX and UO_2 facility operations and other facilities; and analysis of projected environmental impacts.

Alternatives:

The alternatives discussed in this EIS were as follows:

- The preferred alternative was to construct and operate the PFM as a front-end modification to the PUREX facility.
- To construct and operate a smaller scale segmentation and dissolution facility adjacent to the Hanford Site PUREX facility to process the FFTF fuel. During normal operations, the smaller scale PFM would have released gaseous and particulate emissions and solid wastes. Radioactive liquid wastes would have been routed to the PUREX facility for treatment before disposal.
- To transport and process the FFTF fuel at the DOE Savannah River Plant by providing modifications at the Savannah River Plant to process the FFTF fuel. Although the quantities of radionuclides released would have been similar to the Hanford Site and Savannah River Plant, the integrated 70-year whole-body dose to an offsite individual of the population would have been higher at the Savannah River Plant than at the Hanford Site. This higher dose would have occurred because the Savannah River Plant population was larger and closer to the site and the pathways for radionuclides in liquid effluents to reach the population were more direct.
- To modify existing structures at the Hanford Site to process the FFTF fuel only. Processing, whether performed at the FMEF or at the PUREX facility as modified by the PFM, would have required the same essential unit operations, and the environmental consequences would have been similar, except for higher radiation doses resulting from closer proximity of the population to the site.

- The no-action alternative would not have resulted in significantly different environmental effects from the proposed action or the alternatives, except that it lacked the benefits of reduced HLW and cladding removal waste.

Each of the alternatives to the proposed action would have continued to process N-fuel in the existing Hanford Site PUREX facility, using the then-current operating chemical decladding process. The DOE's preferred alternative was the proposed action. Only this action would have reduced the radioactive liquid waste volumes requiring storage in underground DSTs, while also recovering the plutonium from the FFTF fuel needed to satisfy national defense and R&D purposes.

Current Status: This draft will not be finalized. This project has been canceled.

DOE/EIS-0119F *Final Environmental Impact Statement: Decommissioning of Eight Surplus Production Reactors at the Hanford Site, Richland, Washington, December 1992.*

Background: This EIS provided environmental information to assist the DOE in the selection of a decommissioning alternative for the eight surplus production reactors at the Hanford Site. Nine water-cooled, graphite-moderated plutonium production reactors were constructed along the Columbia River at the Hanford Site between 1943 and 1963. Eight of these reactors (B, C, D, DR, F, H, KE, and KW) were retired from service and were available for decommissioning.

In 1980, the DOE issued an EA of the F-Area Decommissioning Program, which addressed dismantling the F Reactor and disposal of radioactive materials in burial grounds in the 200 Areas of the Hanford Site. Four alternatives were considered at that time: layaway, protective storage, entombment, and dismantling. Based on the EA, a FONSI for the dismantling alternative was published in the FR August 22, 1980 (45 FR 56125).

The DOE then noted that it would be more appropriate to consider and implement a consolidated decommissioning program for all eight of the surplus production reactors at the Hanford Site, and decided to examine all reasonable decommissioning alternatives. Accordingly, on May 16, 1985, the DOE published a "Notice of Intent to Prepare an Environmental Impact Statement on Decommissioning the Eight Shutdown Production Reactors Located at the Hanford Site Near Richland, Washington" in the 50 FR 20489. The scope of the draft EIS included only the disposition of the eight reactors, fuel storage basins, and the buildings housing

these systems. To comply with the NEPA requirement for early preparation of environmental documentation, this draft EIS had been prepared before final engineering plans for decommissioning the reactors were available. As with any major action, it was expected that once a decommissioning alternative was selected, detailed engineering design would be carried out that could improve on the conceptual engineering plans presented. However, the engineering design would result in environmental impacts not significantly greater than those described here.

Alternatives:

The alternatives discussed in this EIS were as follows.

- The preferred alternative was to demolish the reactor buildings and transport the reactor blocks in one piece by tractor-transport across the Hanford Site along a predetermined route to an onsite LLW burial area.
- The reactors would be temporarily stored in secure status for 75 years, after which the reactor buildings would be demolished and the reactor blocks transported in one piece by tractor-transport across the Hanford Site along a predetermined route to an onsite LLW burial area.
- The reactors would be temporarily stored in a safe, secure status for 75 years, after which they would be fully dismantled and any remaining radioactive waste would be transported to a LLW burial area on the Hanford Site.
- The reactors would remain at their present locations, contamination would be contained, major voids would be filled, potential pathways would be sealed, and an engineered mound of building rubble, earth, and gravel would be constructed over the decommissioned reactor to provide a long-term protective barrier against human intrusion, water infiltration, and water and wind erosion.
- The no-action alternative was that the reactors be left in place and the present maintenance and surveillance programs continue.
- Close the facilities and do nothing further. This alternative was neither responsible or acceptable and was not considered further.

Current Status:

The ROD was issued in 58 FR 48509 (September 1993). The DOE decided in favor of the preferred alternative; the reactor blocks for Hanford's eight defunct plutonium reactors will be kept at their present sites until their radiation level lowers through natural decay and then buried. The DOE hopes to begin moving the reactor blocks without dismantling to the burial site on Hanford's Central Plateau in approximately 75 years. Hanford's B Reactor has since been included in the National Register of Historic Places and will likely remain in place and intact.

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WHC-SP-0903
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APPENDIX A4

**ERDA (ENERGY RESEARCH AND DEVELOPMENT) ADMINISTRATION
DOCUMENTS - HANFORD SITE**

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DOCUMENTS - HANFORD SITE

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