DEPARTMENT OF ENERGY

Record of Decision for the Programmatic Environmental Impact Statement for Accomplishing Expanded Civilian Nuclear Energy Research and Development and Isotope Production Missions in the United States, Including the Role of the Fast Flux Test Facility

AGENCY: Department of Energy (the Department).

ACTION: Record of Decision (ROD).

SUMMARY: Under the authority of the Atomic Energy Act of 1954, the Department's missions include: (1) Producing isotopes for research and applications in medicine and industry; (2) meeting nuclear material needs of other Federal agencies; and (3) conducting research and development activities for civilian use of nuclear power. The Department has evaluated potential enhancements to its nuclear infrastructure that would allow it to meet these responsibilities over approximately the next three to four decades. As part of this evaluation, the Department prepared the Programmatic Environmental Impact Statement for Accomplishing Expanded Civilian Nuclear Energy Research and Development and Isotope Production Missions in the United States, Including the Role of the Fast Flux Test Facility (Nuclear Infrastructure or NI PEIS) pursuant to the National Environmental Policy Act (NEPA). The NI PEIS evaluates environmental impacts that could result from implementation of alternatives and options that were considered for enhancement of the Department's nuclear infrastructure. The Final NI PEIS (DOE/EIS–0310) was issued on December 15, 2000 (65 FR 78484).

After considering the environmental impacts, costs, public comments, nonproliferation issues, and programmatic factors, the Department has decided to implement the Preferred Alternative identified in Section 2.8 of the Final NI PEIS (Alternative 2, Option 7). Domestic production of plutonium-238 will be reestablished to support U.S. space exploration. For this purpose, the Advanced Test Reactor (ATR) in Idaho and the High Flux Isotope Reactor (HFIR) at the Oak Ridge National Laboratory (ORNL) in Tennessee will be used to irradiate neptunium-237 targets. Plutonium-238 production will not interfere with existing primary missions at ATR and HFIR. The Radiochemical Engineering Development Center (REDC) at ORNL will be used for fabricating targets and isolating plutonium-238 from the irradiated targets.

The Department expects its current nuclear infrastructure to satisfy short-term requirements for isotopes needed in medicine, industry, and research, and nuclear energy research for civilian applications. If significantly larger amounts of isotopes are required in the future, others would need to respond to these requirements. To explore a potential option to address some future research infrastructure needs, DOE intends to work over the next two years to establish a conceptual design for an Advanced Accelerator Applications (AAA) facility, which could be modified to produce some proton-enriched isotopes. The new accelerator(s) (Alternative 3) and new research reactor (Alternative 4) described in the NI PEIS will not be constructed. The Fast Flux Test Facility (FFTF) in Washington will be permanently deactivated. If DOE proposes specific enhancements of existing facilities or deployment of the AAA facility, further NEPA review would be conducted.

ADDRESSES: The Final NI PEIS, including the NI PEIS Summary, and this ROD are available on the Department's National Environmental Policy Act (NEPA) website at *http://tis.eh.doe.gov/nepa/docs/docs.htm.* The ROD is also available at web address *http://www.nuclear.gov.* Requests for copies of the NI PEIS, the NI PEIS Summary, or this ROD should be mailed to Colette E. Brown, Document Manager, Office of Space and Defense Power Systems (NE–50), Office of Nuclear Energy, Science and Technology, U.S. Department of Energy, 19901 Germantown Road, Germantown, MD 20874, Attention: NI PEIS. Requests may also be electronically mailed to Internet address *colette.brown@hq.doe.gov* or faxed to Ms. Brown at 301–903–1510.

FOR FURTHER INFORMATION CONTACT: For information on the nuclear infrastructure missions, alternatives, or environmental impacts, contact Colette E. Brown at the addresses given in the previous paragraph. For general information on the Department's NEPA process, please contact Carol Borgstrom, Director, Office of NEPA Policy and Compliance (EH–42), U.S. Department of Energy, 1000 Independence Avenue, SW., Washington, DC 20585; call 202–586–4600; or leave a message at the toll-free telephone number, 800–472–2756.

SUPPLEMENTARY INFORMATION:

I. Background

On October 5, 1998, the Department published a Notice of Intent (63 FR 53398) to prepare an environmental impact statement concerning the production of plutonium-238 in support of U.S. space missions. Following the public scoping process, which was extended until January 4, 1999, the Department began preparation of the Environmental Impact Statement for the Proposed Production of Plutonium-238 for Use in Advanced Radioisotope Power Systems for Future Space Missions (Plutonium-238 Production EIS). Restarting FFTF was dismissed as a reasonable alternative for that proposed EIS because it would not be cost effective to restart the reactor for the sole purpose of producing plutonium-238.

On August 18, 1999, the Department announced that it would prepare the NI PEIS—a programmatic NEPA document that would evaluate the environmental impacts that could result from enhancement of the Department's nuclear infrastructure. Restart of FFTF was included as a reasonable alternative in the NI PEIS for several missions, including the production of plutonium-238. Preparation of the Plutonium-238 Production EIS was terminated as a separate NEPA review and its scope was incorporated in the NI PEIS.

Purpose and Need for Agency Action

The Department's obligations under the Atomic Energy Act of 1954 require it to operate and maintain nuclear facilities such as reactors, accelerators, and various nuclear support facilities. The shutdown of aging facilities coupled with projected increases in demand for nuclear services and products necessitated an assessment of the Department's nuclear infrastructure needs.

Over the past 50 years, the use of isotopes in medicine and industry has increased markedly. Currently, over 12 million nuclear medical procedures are performed each year in the United States. Expert medical panels have projected significant increases in the use of nuclear diagnostic, therapeutic, and research medicines during the early decades of the twenty-first century. As discussed in the NI PEIS, Chapter 1, Section 1.2.1, an Expert Panel convened by the Department in 1998 concluded that the growth in demand for diagnostic and therapeutic isotopes would likely exceed seven percent per year over the next 20 years. The Panel also concluded that the cost and availability of medical isotopes would constrain progress in various areas of medical research. The Expert Panel's findings were adopted by the Nuclear Energy Research Advisory Committee (NERAC), which further concluded that the current domestic nuclear infrastructure is not adequate to ensure a continued supply of medical isotopes in the face of projected increases in demand. Approximately one-half of the Department's current isotope production capability is being used. Projections of increased demands for medical isotopes indicate that the Department's production capability will be fully utilized within a decade or less in the absence of enhancements to the existing nuclear infrastructure.

The Department and its predecessor agencies have supplied plutonium-238 for U.S. space programs for more than three decades. The National Aeronautics and Space Administration (NASA) uses plutonium-238 as a source of electric power and heat for deep space missions. Nuclear reactors and chemical processing facilities at the Department's Savannah River Site (SRS) historically produced plutonium-238 for the Nation's space programs. However, all nuclear reactors at SRS have been shut down. Chemical processing facilities in F-Canyon and H-Canyon at SRS are scheduled for shutdown following completion of their current mission to prepare Cold War legacy nuclear materials and some spent nuclear fuel for disposition. In 1992, the Department signed a five-year contract to purchase up to 10 kilograms (22 pounds) of plutonium-238 per year from Russia—not to exceed 40 kilograms (88 pounds) total. In 1997, a five-year contract extension was negotiated. The extension will expire in 2002. Thus far, approximately 9 kilograms (20 pounds) of plutonium-238 have been purchased from Russia under this contract. Plutonium-238 is purchased from Russia on an as-needed basis because it is costly to remove the decay products that result from an extended period of storage. As discussed in detail in Section 1.2.2 of the NI PEIS, updated mission guidance from NASA indicates that the U.S. inventory of plutonium-238 reserved for U.S. space missions is likely to be depleted by 2005. The Department must decide how to continue to meet NASA's need for plutonium-238 beyond that point.

In November 1997, the President's Committee of Advisors on Science and Technology reported that restoring a viable nuclear energy option is important to the Nation's ability to meet its expanding energy requirements (See NI PEIS, Chapter 1, Section 1.2.3). The Committee recommended that the Department reinvigorate its nuclear energy research and development activities to address potential barriers to the expanded use of nuclear power. In response to this recommendation, the Nuclear Energy Research Initiative was started in fiscal year 1999, and the Nuclear Energy Plant Optimization Program was started in fiscal year 2000. The Nuclear Energy Research Initiative sponsors research and development focused on the removal of barriers to the expanded use of nuclear power. Nuclear Energy Plant Optimization is a cost-shared program with private industry that sponsors research and development intended to ensure that current nuclear plants can continue to provide electric power up to and beyond their initial 40-year license period. In June 2000, the NERAC Subcommittee on Long-Term Planning for Nuclear Energy Research developed guidelines for research and development in the areas of materials research, nuclear fuel research, and advanced reactor development. One of the Department's objectives is to provide and maintain a nuclear infrastructure that supports civilian nuclear energy research and development.

In summary, the Department's activities regarding medical isotope supplies, support of U.S. space missions, and research and development in the area of civilian nuclear technology will require an appropriate nuclear infrastructure. In reaching its decision concerning a nuclear infrastructure appropriate for the next 35 years, the Department assigned equal priority to all of these responsibilities.

NEPA Process

On September 15, 1999, the Department published a Notice of Intent in the **Federal Register** (64 FR 50064) to prepare the NI PEIS. The 45-day scoping period for the NI PEIS ended on October 31, 1999. Scoping meetings were held in locations central to potentially affected areas (Oak Ridge, Tennessee; Idaho Falls, Idaho; and Richland, Washington), as well as areas in which the alternatives would have little or no environmental impact, but in which there was public interest (Hood River, Oregon; Portland, Oregon; Seattle, Washington; and Washington, D.C.).

The Department received approximately 7,000 scoping comments. As a result of comments received during the scoping period, a new alternative (Permanently Deactivate FFTF with No New Missions) was added to the alternatives evaluated in the NI PEIS, the Fluorinel Dissolution Process Facility (FDPF) in Idaho was added as a processing facility for the processing of plutonium-238, and a commercial light water reactor at a generic site was added as a candidate irradiation facility for the production of plutonium-238. Other comments included requests for inclusion of information about cleanup and environmental contamination at Hanford, nonproliferation issues including the proposed import of German SNR–300 fuel, transition of FFTF stewardship after it is deactivated, the restart of FFTF and associated budget constraints, and the Tri Party Agreement at Hanford. This information was included in the Draft NI PEIS and/or the separate *NI Nonproliferation Impact Assessment* report.

Availability of the Draft NI PEIS was announced in the **Federal Register** on July 28, 2000 (65 FR 46443). The public comment period extended through September 18, 2000. Seven public hearings were held during late August and early September 2000 at the same locations as the scoping meetings. Pursuant to the Council on Environmental Quality regulations (40 CFR 1505.1(e)), agencies are encouraged to make ancillary decision documents available to the public before a decision is made. The associated cost report and nonproliferation report were made available to the public on August 24, 2000, and September 8, 2000, respectively. The Department mailed these documents to approximately 730 interested parties, and the reports were made available immediately upon release on the Office of Nuclear Energy, Science and Technology website (http://www.nuclear.gov) and in public reading rooms.

Over 6,000 comments were received during the comment period for the Draft NI PEIS. While a wide variety of comments was received, the dominant concerns focused on the: (1) Purpose and need for enhancements to the Department's nuclear infrastructure; (2) impact of certain alternatives on the cleanup efforts at candidate sites and compliance with the existing cleanup agreements; (3) management and disposition of nuclear waste and spent nuclear fuel resulting from implementation of the alternatives; (4) costs and cost benefits of the alternatives; (5) potential effects on nuclear weapons nonproliferation; (6) fairness and effectiveness of the public involvement and decision process; (7) impacts on human health and water quality; (8) safety of reactor operations; (9) use of plutonium-238 in space applications; and (10) restart or deactivation of the Fast Flux Text Facility (FFTF). Comments were considered by the Department and responses were included in Volume 3 of the Final NI PEIS. The NI PEIS was revised in response to comments wherever appropriate. The Notice of Availability for the Final NI PEIS was published in the **Federal Register** on December 15, 2000 (65 FR 78484).

II. Facility and Site Options

Candidate Irradiation Facilities

Three nuclear reactors were included in the environmental evaluation as candidate irradiation facilities: ATR at Idaho National Engineering and Environmental Laboratory (INEEL); HFIR at ORNL; and FFTF at the Hanford Site. Environmental impacts were also estimated for a generic CLWR, one or two new accelerators at an unspecified Departmental site, and a new research reactor at an unspecified Departmental site.

ATR is a light-water-cooled and -moderated nuclear reactor with a design thermal power of 250 megawatts. Special features of ATR include high neutron flux levels and the ability to vary power to fit different experiment needs in different test positions. ATR operates with highly enriched uranium fuel (uranium fuel containing more than 20 percent uranium-235). The primary mission at ATR is to support naval reactor research and development. The Department proposes to use ATR for isotope production and civilian nuclear energy research missions on a noninterference basis. The Department estimates that ATR alone could produce up to 5 kilograms (11 pounds) of plutonium-238 per year and could be used in combination with any one of the candidate processing facilities for plutonium-238 production.

HFIR is a light-water-cooled and -moderated reactor operated at a thermal power level of 85 megawatts. It is used for both isotope production and neutron research. Originally designed to operate at a full power level of 100 megawatts-thermal, it currently operates at a maximum authorized power level of 85 megawatts-thermal to extend the useful life of the reactor. The reactor operates with highly enriched uranium fuel. The primary mission at HFIR is neutron research for the Department's Office of Science. Civilian nuclear energy research and additional isotope production will be undertaken on a noninterference basis. To complement plutonium-238 production at ATR, HFIR could produce up to 2 kilograms (4.4 pounds) per year.

FFTF is a 400-megawatts-thermal, sodium-cooled nuclear test reactor. It was operated from April 1982 to December 1993. FFTF was used primarily to evaluate reactor fuels and different fuel assembly materials during its 10 years of operation. It also supported test programs for industry, nuclear energy (domestic and international), medical isotope applications and research, space nuclear power, and fusion research programs. FFTF was placed in standby condition in 1993 because of a lack of economically viable missions. Reactor fuel has been removed. The Main Heat Transport System is being operated at approximately 200 °C (400 °F) to keep sodium coolant in the reactor liquefied and circulating. Restarting FFTF would require mechanical equipment upgrades and replacement of outdated control and computer systems. FFTF initially would have operated with mixed-oxide (uranium-plutonium) fuel, followed by operation with uranium fuel. Had FFTF been selected as an irradiation facility, production of medical isotopes and civilian nuclear technology research would have been the primary missions at FFTF.

A CLWR was evaluated as an irradiation facility for plutonium-238 production. No specific light water reactor was selected. Thus, typical characteristics of CLWRs were assumed for the environmental analysis. A typical pressurized water reactor core consists of 170 to 200 fuel assemblies arranged in the reactor vessel in an approximately cylindrical pattern. Most pressurized water reactors operating in the United States are licensed to operate at thermal power levels of 2,500 to 3,500 megawatts for net station electric outputs of 800 to 1,200 megawatts-electric. The primary mission of a CLWR is the production of electric power. Plutonium-238 production would have been conducted on a noninterference basis. Had a CLWR been selected for production of plutonium-238, site specific NEPA reviews would have been conducted prior to selection of a CLWR.

The Department considered construction of one or two accelerators at an unspecified DOE site as candidate irradiation facilities. Environmental impacts that could have resulted from construction and operation of the accelerator(s) used preconceptual designs for low- and high-energy accelerators. The low-energy accelerator was designed to support medical and industrial isotope production as well as civilian nuclear energy research. The high-energy accelerator was designed to support plutonium-238 production and civilian nuclear energy research. The preconceptual designs are described in the NI PEIS. Had either or both accelerator(s) been selected for implementation, site-specific NEPA reviews would have been conducted prior to site selection and production of isotopes and civilian nuclear energy research would have been the primary missions at those facilities.

The Department also considered construction of a new research reactor at an unspecified DOE site as a candidate irradiation facility. A preconceptual design was developed for a new research reactor that would: (1) Produce medical and industrial isotopes, (2) produce up to 5 kilograms (11 pounds) of plutonium-238 per year, and (3) support civilian nuclear energy research and development. The new research reactor would have been fueled by low-enriched uranium (uranium fuel containing less than 20 percent uranium-235). This preconceptual design included the basic elements of the research reactor facility sufficient for the environmental analysis. Had a new research reactor been selected for implementation, site-specific NEPA reviews would have been conducted prior to site selection. Production of isotopes and civilian nuclear energy research would have been the primary missions at the new research reactor.

Candidate Target Fabrication and Postirradiation Processing Facilities

Processing facilities at three Departmental sites were included in the environmental evaluation as candidate target fabrication and postirradiation processing facilities: REDC at ORNL; FDPF at INEEL; the Fuels and Materials Examination Facility (FMEF) at Hanford; and the Radiochemical Processing Laboratory (RPL)/ Development Fabrication Test Laboratory (Building 306–E), also at Hanford. Environmental impacts were also estimated for a new generic support facility at an unspecified DOE site.

REDC at ORNL is a companion facility to HFIR. REDC's two buildings house shielded hot cells and analytical laboratories. These hot cells and laboratories are used in the fabrication of fuel rods and targets for irradiation and to process irradiated rods and targets for the separation and purification of transuranic elements, process development, and product purification and packaging. Several alternatives and options (including the Preferred Alternative) included the use of ORNL's REDC Building 7930 for storage of neptunium-237 and fabrication and postirradiation processing of neptunium-237 targets.

The REDC hot cell facilities to be used under the Preferred Alternative have not yet been used for any mission. Activities required for target fabrication will take place in shielded glove boxes. Mechanical operations involved in the final target fabrication present lesser hazards that may permit them to be carried out in open boxes. Cell E will contain processing equipment to purify the separated plutonium-238 product, prepare the plutonium oxide, and transfer the oxide into shipping containers. Cell E will also contain vertical storage wells for dry storage of neptunium and other actinides. Cell D activities will include receipt of irradiated targets, as well as target dissolution, chemical separation of neptunium and plutonium from fission products, and partitioning and purification of neptunium. Cell D also contains process equipment to remove transuranic elements from the aqueous waste streams and vitrifying waste.

FDPF is in the Idaho Nuclear Technology and Engineering Center (INTEC), which is located northeast of the Central Facilities Area at INEEL and approximately 3.2 kilometers (2 miles) southeast of ATR. FDPF was a candidate fabrication and postirradiation processing facility in several options under Alternatives 1 through 4. FDPF has no current mission. Historically, INTEC reprocessed spent nuclear fuel from U.S. Government reactors to recover reusable highly enriched uranium. After the Department announced in April 1992 that it would no longer reprocess spent fuel, reprocessing operations at INTEC ended.

Two buildings at INTEC were candidate storage and processing sites for plutonium-238 production: Building CPP–651, the Unirradiated Fuel Storage Facility, and Building CPP–666, FDPF. Under this alternative, chemical separation would occur in the FDPF cell using small centrifugal contactors installed for that purpose. Neptunium-237 would have been stored in FDPF or Building CPP–651, which is located within 100 meters (328 feet) of FDPF. There are 100 in-ground, concrete-shielded storage well positions in this vault. Each storage well contains a rack that can be modified to house containers for neptunium-237.

Hanford's FMEF was a candidate facility for storage of neptunium-237, fabrication of neptunium-237 targets, and processing of irradiated neptunium-237 targets for several options under Alternatives 1 through 4. FMEF could have supported medical and industrial production mission and civilian nuclear energy research and development mission activities at the Hanford Site under Alternative 1. FMEF is west of FFTF in the 400 Area of Hanford. It was built during the late 1970s and early 1980s as a major addition to the breeder reactor technology development program at Hanford. Although it has never been used, the facility was constructed to perform fuel fabrication and development and postirradiation examination of breeder reactor fuels.

FMEF is currently being maintained in mission-ready condition. In 1998, to reduce the cost of maintaining the facility, many systems were shut down and most hazardous materials were removed from the building. FMEF is uncontaminated because no nuclear materials have been introduced. Some critical systems remain in operation, e.g., the fire detection and protection systems. To avoid freezing of the fire protection water systems, limited heating and ventilation remains operational. Electric power and lighting remain available, and the freight elevator remains in service to support routine facility inspection and maintenance. The use of FMEF for neptunium-237 target material storage, target fabrication, and post-irradiation processing would have required construction of a new 76-meter (250-foot) stack.

Two Hanford 300 Area facilities were considered for support of medical and industrial isotope target fabrication and post-irradiation processing: RPL and Building 306–E. RPL/306–E were candidate facilities to support medical and industrial isotope production and civilian nuclear energy research and development activities. RPL would have been the primary site for fabricating the radioactive targets (i.e., targets containing radium-226 or recycled materials from previous irradiations).

Total space within RPL is 13,350 square meters (143,700 square feet), of which 4,140 square meters (44,500 square feet) are occupied by general chemistry laboratories. A recent space utilization survey of RPL indicated that 646 square meters (6,950 square feet), representing 15.6 percent of the laboratory area, are presently unoccupied. All of the occupied and nearly all of the unoccupied laboratories are functional and equipped with standard utilities. Of the 79 functional fume hoods and 23 shielded glove boxes, 50 fume hoods and 15 glove boxes are available for additional work.

Building 306–E was constructed in 1956 as part of the nuclear material production program at Hanford. It was used to develop the co-extrusion process for N-Reactor fuel. Major upgrades and renovations were completed in the late 1960s and early 1970s to support the civilian reactor development program. These activities would not have impacted current missions at the facilities.

A new generic support facility would have had the mission of preparing medical and industrial isotope targets for irradiation, processing exposed targets, and housing the materials research and development activities in association with Alternatives 3 and 4. Siting of the generic support facility for medical and industrial isotope production would have required that the facility be located in the same general vicinity (within 0.2 to 20 kilometers [0.07 to 12.4 miles]) as the new irradiation facility (accelerator or reactor). Collocation with the irradiation facility would have been needed to process irradiated target materials promptly after removal from the reactor/accelerator and to minimize transportation time. Although the facility could have been located within the irradiation facility security protection area, the lack of a defense mission and the lack of a fissile material presence in the generic support facility indicate that a high level of physical protection would not have been warranted.

III. Alternatives and Options

The Department evaluated potential environmental impacts that could result from implementation of alternatives and options that support isotope production and civilian nuclear energy research. A No Action Alternative and five programmatic alternatives were assessed. Table 1 summarizes the facilities associated with each alternative option.

No Action Alternative

Under the No Action Alternative (maintain status quo), FFTF would have been maintained in standby status for 35 years. Ongoing operations at existing facilities would have continued. The Department would not establish a domestic plutonium-238 production capability, but would have continued to purchase Russian plutonium-238 to meet the long-term needs of future U.S. space missions. For the purposes of the environmental analysis, it was assumed that the purchase of plutonium-238 from Russia would continue as needed to support U.S. space missions. The environmental analysis included transportation impacts that could result from the purchase of up to 175 kilograms (385.8 pounds) of plutonium-238 from Russia. Any purchase of plutonium-238 beyond that currently available in the United States through the existing contract would require additional NEPA review. The Department's medical and industrial isotope production and civilian nuclear energy research and development activities would have continued at the current operating levels. A consequence of a No Action decision would have been the need to determine the future of the neptunium-237 stored at SRS. Therefore, the impacts of possible future transportation and storage of neptunium-237 were evaluated as part of the No Action Alternative.

BILLING CODE 6450–01–P

Table 1 Nuclear Infrastructure Alternatives and Options

	Option Number	Irradiation Facility	Plutonium-238 Production Mission: Storage Facility	Plutonium-238 Production Mission: Target Fabrication and Processing Facility	Medical and Industrial Isotopes Production and Nuclear Research and Development Mission: Storage Facility	Medical and Industrial Isotopes Production and Nuclear Research and Development Mission: Target Fabrication and Processing Facility
No Action Alternative	1	–	–	–	–	–
	2	–	REDC	–	–	–
	3	–	CPP–651	–	–	–
	4	–	FMEF	–	–	–
Alternative 1: Restart FFTF	1	FFTF[a]	REDC	REDC	RPL/306–E	RPL/306–E
	2	FFTF[a]	FDPF/CPP–651	FDPF	RPL/306–E	RPL/306–E
	3	FFTF[a]	FMEF	FMEF	FMEF	FMEF
	4	FFTF[b]	REDC	REDC	RPL/306–E	RPL/306–E
	5	FFTF[b]	FDPF/CPP–651	FDPF	RPL/306–E	RPL/306–E
	6	FFTF[b]	FMEF	FMEF	FMEF	FMEF
Alternative 2: Use Only Existing Operational Facilities	1	ATR	REDC	REDC	–	–
	2	ATR	FDPF/CPP–651	FDPF	–	–
	3	ATR	FMEF	FMEF	–	–
	4	CLWR	REDC	REDC	–	–
	5	CLWR	FDPF/CPP–651	FDPF	–	–
	6	CLWR	FMEF	FMEF	–	–
	7	HFIR and ATR	REDC	REDC	–	–
	8	HFIR and ATR	FDPF/CPP–651	FDPF	–	–
	9	HFIR and ATR	FMEF	FMEF	–	–
Alternative 3: Construct New Accelerator(s)	1	New	REDC	REDC	New[c]	New[c]
	2	New	FDPF/CPP–651	FDPF	New[c]	New[c]
	3	New	FMEF	FMEF	New[c]	New[c]
Alternative 4: Construct New Research Reactor	1	New	REDC	REDC	New[c]	New[c]
	2	New	FDPF/CPP–651	FDPF	New[c]	New[c]
	3	New	FMEF	FMEF	New[c]	New[c]
Alternative 5: Permanently Deactivate FFTF (with No New Missions)	–	–	–	–	–	–

a. Hanford FFTF would have operated with mixed oxide fuel for 21 years and highly enriched uranium fuel for 14 years.

b. Hanford FFTF would have operated with mixed oxide fuel for 6 years and highly enriched fuel for 29 years.

c. The new facility would not have been required if a site had been selected with available support capability and infrastructure.

Key: ATR, Advanced Test Reactor at INEEL; CLWR, commercial light water reactor; CPP–651, INEEL Building CPP–651 Storage Vault; FDPF, Fluorinel Dissolution Process Facility at INEEL; FFTF, Fast Flux Test Facility at Hanford; FMEF, Fuels and Materials Examination Facility at Hanford; HFIR, High Flux Isotope Reactor at ORNL; REDC, Radiochemical Engineering Development Center at ORNL; RPL/306–E, Radiochemical Processing Laboratory at Hanford, Building 306–E.

BILLING CODE 6450–01–C

Four options were analyzed under the No Action Alternative. If the Department had decided not to reestablish domestic production of plutonium-238, the inventory of neptunium-237 would have had no programmatic value and Option 1 would have been selected. Under this option, neptunium-237 would have been stabilized in solution form at SRS. Had the Department decided to maintain the neptunium-237 inventory for future plutonium-238 production, the neptunium-237 oxide inventory would have been transported from SRS to one of three candidate sites for up to 35 years of storage for possible future use: Option 2, REDC at ORNL; Option 3, Building CPP–651 at INEEL; or Option 4, FMEF at Hanford. The Department's nuclear infrastructure would not have been expanded under the No Action Alternative.

Alternative 1—Restart FFTF

Under Alternative 1, FFTF at Hanford would have been restarted and operated at a nominal 100 megawatts for 35 years. Production of isotopes and research in civilian nuclear energy would have been the primary missions at FFTF. Targets for medical and industrial isotope production would have been fabricated at one or more facilities at Hanford, irradiated at FFTF, and then returned to the fabrication facility for postirradiation processing. From there, the isotope products would have been sent to commercial pharmaceutical or industrial distributors.

Under this alternative, neptunium-237 would have been transported from SRS to one of the three fabrication/postirradiation processing facilities shown in Table 1: ORNL (Options 1 and 4), INEEL (Options 2 and 5), or Hanford (Options 3 and 6), where targets would have been fabricated as needed to support U.S. space missions. Following irradiation at FFTF, the irradiated targets would have been returned to the fabrication facility for postirradiation extraction of plutonium-238. Plutonium-238 then would have been transported to Los Alamos National Laboratory (LANL) in New Mexico for use in heat and electric power sources.

Under Alternative 1, raw materials, nonirradiated targets, irradiated targets, and processed materials would have been transported between the locations selected for raw target material acquisition, material storage, target fabrication, target irradiation, and postirradiation processing, as well as the final destination for the medical and industrial isotopes and the plutonium-238 product or various research and development test sites. The six options under this alternative are associated with the type of nuclear fuel which was to be used for FFTF operations and the specific facilities which were to be used for target fabrication and processing. The first three options (Options 1 through 3) would have involved operating FFTF with mixed oxide fuel for the first 21 years and uranium fuel for the remaining 14 years. Options 4 through 6 would have involved operating FFTF with mixed oxide fuel for the first 6 years and uranium fuel for the remaining 29 years. Environmental impacts that will result from deactivation of FFTF at the end of its operating life are addressed under Alternative 5.

Alternative 2—Use Only Existing Operational Facilities

Under Alternative 2, the Department will use existing operating reactors to produce plutonium-238 for future space missions. The production of medical and industrial isotopes and support for civilian nuclear energy research and development will continue at approximately current levels without expansion of the Department's nuclear infrastructure.

Environmental impacts were estimated for three irradiation facilities: ATR (only) at INEEL (Options 1 through 3), a generic CLWR (Options 4 through 6), and ATR/HFIR at ORNL (Options 7 through 9). ATR, HFIR, and the CLWR would continue their current primary missions under all options of Alternative 2. Production of plutonium-238 will be conducted as a secondary mission on a noninterference basis. Under Alternative 2, Alternative 5 would also be selected and FFTF would be permanently deactivated.

Neptunium-237 will be processed and transported from SRS to the fabrication facility, where it will be stored until fabrication. The NI PEIS evaluates environmental impacts that could result from target fabrication/postirradiation processing at one of three facilities at ORNL (the preferred facility), INEEL, or Hanford (see Table 1). The targets will be irradiated at ATR and HFIR. Environmental impacts that could result from using a CLWR for irradiation services are also included in the NI PEIS. After irradiation, neptunium-237 targets will be transported back to the fabricating facility for postirradiation processing.

Under Alternative 2, nonirradiated targets, irradiated targets, and processed materials will be transported between the locations selected for storage, target fabrication, target irradiation, and postirradiation processing. In addition, the plutonium-238 product will be transported to LANL.

If DOE proposes specific enhancements of existing facilities in order to implement Alternative 2, further NEPA review would be conducted.

Alternative 3—Construct New Accelerator(s)

Under Alternative 3, one or two new accelerators would have been used for target irradiation. The new accelerator(s) would have been constructed at an existing DOE site(s). Production of isotopes including plutonium-238, and civilian nuclear energy research would have been the primary missions at the new accelerators.

Neptunium-237 would have been transported from SRS to the fabrication facility, where it would have been stored until fabrication. Targets for plutonium-238 production would have been fabricated in one of the three alternative facilities at ORNL (Option 1), INEEL (Option 2), or Hanford (Option 3). The targets would have been irradiated in a new high-energy accelerator and then transported back to the target fabrication facility for postirradiation processing.

Target materials for medical and industrial isotope production would have been stored on site until fabricated into targets in a new support facility located at the same site as the low-energy accelerator. The targets would have been irradiated in the low-energy accelerator and returned to the new support facility for postirradiation processing. Because Alternative 3 was evaluated at a generic site, site selection was not evaluated as part of the NI PEIS and no credit was taken for any support infrastructure existing at the generic site. It was assumed that a new support facility would be required to support operation of the low-energy accelerator and its missions and the high-energy accelerator civilian nuclear energy research and development missions if both accelerators were located on the same site. While this approach bounds the environmental impact assessment for the implementation of Alternative 3, it overstates the impacts because the NI PEIS integrates the impacts associated with constructing new support facilities and infrastructure that may already be available at the existing site. Had Alternative 3 been selected for implementation, site-specific NEPA reviews would have been conducted prior to site selection.

Under Alternative 3, nonirradiated targets, irradiated targets, and processed materials would have been transported between the locations selected for storage, target fabrication, target irradiation, postirradiation processing, and the final destination of the plutonium-238. The environmental evaluation of Alternative 3 also included environmental effects resulting from decontamination and decommissioning of the accelerator(s) and the processing facility when the missions are over, as well as deactivation of FFTF at Hanford.

Alternative 4—Construct New Research Reactor

Under Alternative 4, a new research reactor would have been used for target irradiation. The new research reactor would have been constructed at an existing site. Production of isotopes including plutonium-238, and civilian nuclear energy research would have been the primary missions at the new research reactor.

Neptunium-237 would have been transported from SRS to the fabrication facilities where it would have been stored until fabrication. As shown in Table 1, targets for plutonium-238 production would have been fabricated at one of the three facilities at ORNL (Option 1), INEEL (Option 2), or Hanford (Option 3). The targets would have been irradiated in the new research reactor and transported back to the target fabrication facilities for postirradiation processing.

Targets for medical and industrial isotope production would have been fabricated in a new support facility located at the same site as the new research reactor. Target materials would have been stored on site until fabrication. The targets would have been irradiated in the new research reactor and returned to the new support facility for postirradiation processing.

Because Alternative 4 was evaluated at a generic DOE site, site selection was not evaluated as part of the NI PEIS and no credit was taken for any existing support infrastructure at the site. It was assumed that a new support facility would be required to support the new research reactor. While this approach bounds the environmental impact assessment for the implementation of Alternative 4, it overstates the impacts because the NI PEIS integrates the impacts associated with constructing new support facilities and infrastructure that may already be available at the existing site. If selected, this alternative would require site-specific NEPA reviews to be completed prior to site selection.

Under Alternative 4, nonirradiated targets, irradiated targets, and processed materials would have been transported between the locations selected for storage, target fabrication, target irradiation, postirradiation processing, and the final destination of the plutonium-238. The environmental evaluation of Alternative 4 also included environmental effects resulting from decontamination and decommissioning the research reactor and the processing facility when the missions are over, as well as deactivation of FFTF at Hanford.

Alternative 5—Permanently Deactivate FFTF with No New Missions

Under Alternative 5, the Department would have permanently deactivated FFTF, with no new missions. Medical and industrial isotope production and civilian nuclear energy research and development missions at existing facilities would have continued at current levels. The Department's nuclear facilities infrastructure would not have been enhanced.

IV. Preferred Alternative

The Council on Environmental Quality (CEQ) regulations require an agency to identify its preferred alternative(s) in the final environmental impact statement (40 CFR 1502.14(e)). The preferred alternative is the alternative that the agency believes would fulfill its statutory mission, giving consideration to environmental, economic, technical, and other factors. Consequently, to identify a preferred alternative, the Department developed information on potential environmental impacts, costs, policy issues, and technical and schedule risks for the alternatives described in the NI PEIS. The NI PEIS provides information on environmental impacts. Cost, nonproliferation policy, and various technical reports have also been prepared and are available for public review in the Department's reading rooms.

The Department's Preferred Alternative, as identified in the Final NI PEIS, was to apply its existing infrastructure to pursue missions outlined in the NI PEIS. Under this approach, the Department would consider opportunities to enhance its existing facilities to maximize the agency's ability to address future mission needs.

Under the Preferred Alternative, the Department would reestablish domestic production of plutonium-238, as needed, to support U.S. space explorations. As discussed in NI PEIS, Chapter 1, Section 1.2.2, reestablishing a domestic plutonium-238 production capability would ensure that the United States has a long-term, reliable supply of this material. ATR in Idaho and HFIR in Tennessee would be used, as appropriate, to irradiate targets for this purpose without interfering with either reactor's primary mission. The Preferred Alternative includes fabricating and processing targets for the production of plutonium-238 at REDC at ORNL.

The Preferred Alternative also addressed the future of FFTF. While the Department recognizes that this facility has unique capabilities, the Preferred Alternative noted the absence of commitments from other agencies, the private sector or other governments that would clearly justify restarting the facility, and accordingly proposed to permanently deactivate FFTF.

In the absence of commitments that would justify the restart of FFTF or the construction of new facilities as proposed under Alternatives 3 and 4, the Department anticipates that its current infrastructure will serve the needs of the research and isotope communities for the next 5–10 years. In particular, DOE will consider opportunities to enhance its effort to provide medical and research isotopes. If significantly larger amounts of isotopes are required in the future, the Department would rely on the private sector to fulfill these needs.

As a potential option for the longer-term future, the Department proposes to work over the next 2 years to establish a conceptual design for an Advanced Accelerator Applications (AAA) facility. Such a facility, which would be used to evaluate spent fuel transmutation, conduct various nuclear research missions, and ensure a viable backup technology for the production of tritium for national security purposes, was proposed and initial work funded in the fiscal year 2001 Energy and Water Appropriation Act. If the Department proposes specific enhancements of existing facilities or development of the AAA facility, further NEPA review would be conducted.

V. Alternatives Considered But Dismissed

In developing a range of reasonable alternatives, the Department examined the capabilities and available capacities of more than 40 candidate irradiation facilities and 30 processing facilities at existing and planned nuclear research facilities (accelerators, reactors, and processing hot cells) that could potentially be used to support one or all of the isotope production and research missions.

Irradiation capabilities of existing government, university, and commercial irradiation facilities were evaluated to determine whether they could adequately support the nuclear infrastructure missions. Some of the irradiation facilities were dismissed from further evaluation because they lacked technical capability or available capacity. Reasons for dismissal included lack of availability, lack of steady-state neutrons, or insufficient power levels to support steady-state neutron production. Facilities were similarly dismissed if existing capacity was fully dedicated to existing missions, or if use of existing capacity to support the NI PEIS alternatives would impact existing missions.

Numerous existing U.S. processing hot cell facilities possess the capabilities and capacity to support the nuclear infrastructure. Given this general availability, and to minimize transportation costs, only existing processing facilities that are collocated at candidate irradiation facility sites (i.e., ORNL, INEEL, and Hanford) were evaluated in the NI PEIS. Although multiple processing facilities exist at each of these sites, only the most suitable facilities in terms of capability, capacity, and availability were given further consideration.

VI. Summary of Environmental Impacts

The environmental impact analysis in the NI PEIS addressed resource areas pertinent to the sites considered. Impacts were assessed for land resources, noise, air quality, water resources, geology and soils, ecological resources, cultural and paleontological resources, socioeconomics, environmental justice, and waste management. Radiological and nonradiological impacts to workers and the public that could result from construction, normal operations, and accidents were addressed. Environmental impacts of current, proposed, and reasonably foreseeable activities at candidate sites were included in cumulative impacts.

The only resource area that could be significantly impacted by the implementation of any of the alternatives is water use associated with the construction of new facilities. Because no specific site was selected under Alternatives 3 and 4, potential impacts from construction could not be fully evaluated. In the absence of new construction, implementation of the alternatives would not significantly affect water use.

The largest effect on air quality would also occur during construction activities. Under operating conditions, for all alternatives and options, air quality impacts would have been small in comparison with the most stringent standards.

None of the alternatives would have had significant impact on regional economic areas or community services at Hanford, INEEL, and the Oak Ridge Reservation (ORR). Socioeconomic impacts at the generic sites could not be evaluated in detail because areas potentially affected under Alternatives 3 and 4 could vary widely in demographic and economic composition.

Maximum transportation impacts from normal operations for all alternatives and options were calculated to be 0.21 latent cancer fatalities for radiological risks and 0.008 fatalities for vehicle emissions. Maximum impacts from transportation accidents were calculated to be 0.53 latent cancer fatalities for radiological risks and 0.19 fatalities for vehicle collisions. All calculated risks were less than 1 fatality for the 35-year mission.

None of the alternatives at existing candidate sites would have had a significant effect on land use, visual resources, noise, water quality, geology and soils, ecology, cultural resources, and environmental justice. Implementation of the alternatives at one or more generic sites could potentially have resulted in significant impacts in one or more of these resource areas.

The maximum amount of waste generated by waste type under any alternative or option would have been 380 cubic meters of transuranic waste; 5,200 cubic meters of low-level waste; 430 cubic meters of mixed low-level waste; 3,300 cubic meters of hazardous waste; and 1.1×10^{-7} cubic meters of nonhazardous waste. The maximum amount of spent nuclear fuel produced would have been 16 metric tons (heavy metal). Hazardous waste generated under any of the alternatives or combination of alternatives could have been managed under the Department's existing waste management infrastructure. The environmental evaluation provided in the NI PEIS assumed that transuranic waste results from processing irradiated targets. The Department will consider whether the waste that results from processing irradiated neptunium-237 targets should be classified as high-level or transuranic waste. Regardless of the classification, the physical characteristics of the waste generated are the same and waste management activities will be the same.

The maximum calculated radiological risk to the public from normal facility operations for any alternative or option was 0.0039 latent cancer fatalities. The maximum radiological risk to the public from accidents was calculated at 0.54 latent cancer fatalities. The maximum cancer risk from hazardous chemicals under normal operations was calculated to be 2.6×10^{-7} and the maximum hazard index was estimated to be 0.0064. All risks were found to be small and no latent cancer fatalities would be expected to result from implementation of the alternatives at any candidate site.

VII. The Environmentally Preferable Alternative

Environmental impacts, including human health and safety, transportation, socioeconomics, and environmental justice, were estimated to be small for all of the alternatives and did not provide a reasonable basis for discriminating among alternatives. The No Action Alternative and Alternative 5 were found to have the least environmental impact, but neither of these alternatives would have satisfied the Department's missions. Depending on the selected site, new construction could involve previously undisturbed land with a potential direct loss of wetlands and impacts on cultural and paleontological resources, local employment and regional economic conditions, and air quality.

VIII. Other Considerations

Public Input

Approximately 3,500 communications, some with multiple comments, on the Draft NI PEIS were received via U.S. mail, e-mail, fax, and telephone. During the 52-day comment period, DOE held seven hearings to discuss the proposed action and to receive oral and written comments on the Draft NI PEIS. These hearings were held at Oak Ridge, Tennessee; Idaho Falls, Idaho; Hood River, Oregon; Portland, Oregon; Seattle, Washington; Richland, Washington; and Arlington, Virginia. These comments addressed a variety of topics and provided a wide range of views. The general focus of these communications was: (1) Support for deactivation of FFTF; (2) support for restarting FFTF; (3) concerns that a compelling case for the purpose and need was lacking; (4) concerns that restarting FFTF would hinder Hanford cleanup efforts and would be a violation of the Hanford Tri-Party Agreement; and (5) perceptions that production of plutonium-238 would violate U.S. nonproliferation policies. Volume 3 of the NI PEIS provides the Department's responses to these comments. Changes to the Draft NI PEIS that resulted from comments received from the public are discussed in Section 1.8 of the Final NI PEIS.

Costs

The costs of implementing each of the alternatives identified in the NI PEIS are analyzed in the Department's cost study, Cost Report for the Alternatives Presented in the Draft Programmatic Environmental Impact Statement for Accomplishing Expanded Civilian Nuclear Energy Research and Development and Isotope Production Missions in the United States, Including the Role of the Fast Flux Test Facility, dated August 2000. Table 2 presents the range of costs for each of the NI PEIS alternatives. The range of costs for a specific alternative reflects cost differences between options. The FFTF restart implementation costs were assessed with and without the cost for permanently deactivating FFTF.

Nonproliferation Impacts

The Department's Office of Arms Control and Nonproliferation completed an assessment of the nuclear weapons nonproliferation impacts for each of the alternatives. Results of this assessment are provided in a report dated September 2000, Nuclear Infrastructure Nonproliferation Impact Assessment for Accomplishing Expanded Civilian Nuclear Energy Research and Development and Isotope Production Missions in the United States, Including the Role of the Fast Flux Test Facility (DOE/NE–0119). This assessment showed that none of the alternatives was unacceptable from a nonproliferation point of view. Some of the alternatives and options exhibit a more favorable nonproliferation posture than others. The No Action Alternative and other alternative options that incorporate neptunium-237 and plutonium-238 processing at FDPF raised nonproliferation concerns related to supporting negotiation of a verifiable Fissile Material Cutoff Treaty (FMCT) and the potential for international monitoring. FDPF is currently excluded from international monitoring for reasons of national security. Since it is not known whether a Russian facility would be made available for international monitoring, as a result of past and ongoing national security programs at the facility, there is significant uncertainty as to whether international monitoring would be permitted in a Russian Pu-238 processing facility. In addition, the continued production of fresh and recycled neptunium in the Russian nuclear program raises a significant nonproliferation concern.

Table 2 Range of Costs for Implementing NI PEIS Alternative Options

Alternative	Implementation Cost ($ millions)	Annual Operating Cost ($ millions)
No Action	0 - 28	50 - 52
Alternative 1 - Restart FFTF	392 - 432 [a] 673 - 713 [b]	82 -91
Alternative 2 - Use Only Existing Operational Facilities	328 - 383 [b]	15-24
Alternative 3 - Construct New Accelerator(s)	1,490 - 1,530 [b]	77-86
Alternative 4 - Construct New Research Reactor	708 - 746 [b]	58 -67
Alternative 5 - Permanently Deactivate FFTF (with No New Missions)	281 [b]	0

[a] Does not include cost to permanently deactivate FFTF.
[b] Includes $281 million for permanently deactivating FFTF.

IX. Comments on the Final NI PEIS

The Department received comments from about 130 individuals and/or organizations after publication of the Final NI PEIS. Many of the commentors opposed the selection of the Preferred Alternative.

Approximately 50 comments have been received that support the restart of FFTF. These comments supported one or more missions, including the production of medical isotopes and plutonium-238; stated that deactivation of FFTF would take money away from Hanford's cleanup mission; stated that the talented resource pool of personnel at Hanford would be drained if FFTF were shut down; requested reconsideration of permanent shutdown; protested the Preferred Alternative in favor of FFTF restart; requested deferring the shutdown decision until the incoming administration could consider it; and stated that the selection of the Preferred Alternative was purely a political decision.

Several members of the Washington Congressional delegation wrote to the Secretary suggesting that the Department had not given industry a clear opportunity to propose use of the FFTF and advocated a formal solicitation process before action was taken to deactivate the reactor. Other comments that expressed opposition to, or concerns about FFTF activation included the following:

• Letters from national cancer patient organizations (National Association of Cancer Patients and the Children's Cancer Committee) appealing the decision to deactivate FFTF.

• A letter from the Japan Atomic Energy Commission stating Japanese concerns about the loss of FFTF.

• A letter from NASA stating its interest in DOE maintaining the capability to develop space reactor technology.

• A letter from DuPont stating its interest in FFTF operation to produce medical isotopes.

• A letter from a law firm to the Secretary on behalf of Benton County, Washington urging stating the Department to prepare a supplemental PEIS prior to issuance of the Record for Decision.

About 20 comments were received that supported the permanent deactivation of FFTF, stating that it was the right decision for economic, safety, and environmental reasons.

Other comments received on the Final NI PEIS include the following:

• One commentor stated that the Final NI PEIS was biased toward the accelerator alternative (as addressed in the Preferred Alternative).

• One commentor stated that the Department did not request the commitments that would justify restart of FFTF or construction of new facilities that were addressed in the Preferred Alternative.

• One commentor stated that the production of plutonium-238 was not consistent with United States and international policy concerning nonproliferation.

• Mr. Tom Clements of the Nuclear Control Institute reported that his letter of September 18, 2000 was not included in the NI PEIS Comment Response Document, Volume 3. The Department regrets this oversight and provided Mr. Clements written responses to his comments in a letter dated January 5, 2001. Both Mr. Clements' letter and the Department's response were considered in the preparation of this Record of Decision.

The Department considered these comments during the preparation of the Record of Decision. The Department believes that the NI PEIS is adequate for this decision and that no supplement is necessary. The Department recognizes that significant uncertainties remain regarding the future of research and isotope production activities that could justify operation of the FFTF. However, the Department believes that its current infrastructure will serve the needs of the research and isotope communities for the next 5 to 10 years and that opportunities to enhance its existing facilities are available. Although the Department did weigh comments received on the Final PEIS, it does not view these as being significantly different than those received on the Draft PEIS and therefore did not change its views as described in the Preferred Alternative in the Final PEIS.

X. Decision

The Department has decided to implement the Preferred Alternative identified in Section 2.8 of the Final NI PEIS (Alternative 2, Option 7) and if required, part of the No Action Alternative that includes purchasing plutonium-238 from Russia. While it is clear from the analysis in the NI PEIS that FFTF has unique capabilities and could accomplish many of the irradiation missions of the Department, it is also clear that the Department would need to make a long-term commitment to its operation. The Department has not received commitments to support these costs or mitigate the costs of building new facilities. Given that existing facilities can meet DOE's near-term needs for isotope production and research, the Department believes that it should invest its funds in enhancing its existing infrastructure and exploring the potential of a new Advanced Accelerator Applications facility as a long-term option to meet U.S. research needs. It is for these reasons that DOE has chosen to proceed with the Preferred Alternative.

Domestic production of plutonium-238 will be reestablished to support U.S. space exploration. The Advanced Test Reactor (ATR) in Idaho and the High Flux Isotope Reactor (HFIR) in Tennessee will be used to irradiate neptunium-237 targets for the production of plutonium-238. Plutonium-238 production can be accomplished without interfering with the existing primary missions at ATR and HFIR. The Radiochemical Engineering Development Center (REDC) in Tennessee will be used for fabricating targets and processing irradiated targets to recover plutonium-238. These existing operating facilities were selected because of the Department's confidence in the facilities' cost estimates, technical capabilities, and consistency with existing onsite target irradiation and processing activities. Three irradiation facilities were evaluated for Alternative 2. CWLR options were not selected because of uncertainties in the target design, development and fabrication. The design and fabrication technology of neptunium-237 targets for irradiation in ATR and HFIR is much more mature. While ATR alone could meet the plutonium-238 production requirements, the Department selected the HFIR and ATR irradiation option because it offers additional diversity and flexibility in meeting the production goals and reducing potential impacts on future HFIR and ATR missions. Three processing facilities were evaluated for Alternative 2. REDC was selected as the preferred processing facility because of the facility's experience base (30 years of target fabrication and processing experience); current technical staff knowledge base, experience, and testing in support of DOE-funded plutonium-238 production studies and analyses; and the Department's confidence in the facility modification requirements and operating cost estimates. If the Department's existing inventory of plutonium-238 is insufficient to meet near-term space mission requirements, then the Department will pursue purchasing plutonium-238 from Russia while reestablishing domestic production capabilities.

The Department anticipates that its current infrastructure will serve the needs of the research and isotope communities for the next 5 to 10 years. The Department will continue to evaluate the medical and research isotope needs and will propose appropriate actions to meet these needs, as necessary. If significantly larger amounts of isotopes are required in the future, others would need to respond to these requirements.

To explore a potential option to address some future research infrastructure needs, the Department intends to work over the next two years to establish a conceptual design for an Advanced Accelerator Applications (AAA) facility. Such a facility was proposed and initial work funded in the fiscal year 2001 Energy and Water Appropriations Act. This facility would be used to evaluate spent nuclear fuel transmutation, conduct various nuclear research missions, and ensure a viable backup technology for the production of tritium for national security purposes. If the Department proposes specific enhancements of existing facilities or deployment of an AAA facility, further NEPA review will be conducted.

XI. Mitigation

As discussed in the NI PEIS, implementation of any of the alternatives would have had small environmental impacts and no mitigation actions specific to the implementation of the alternatives were identified. The Department's policy is to maintain exposure of workers and the public to radiological and nonradiological emissions to levels that are as low as is reasonably achievable. The Department has adopted stringent controls for minimizing occupational and public exposure to radiological and nonradiological emissions. These measures will avoid, reduce, or eliminate adverse or potentially adverse impacts from activities undertaken as a result of this decision. In implementing this decision, the Department will use all practicable means to avoid or minimize environmental harm. In addition, the Department's policy is to minimize waste generation.

Issued in Washington, D.C., this 19th day of January 2001.

Bill Richardson,

Secretary of Energy.

[FR Doc. 01–2271 Filed 1–25–01; 8:45 am]

BILLING CODE 6450–01–P