DOE Programmatic Spent Nuclear Fuel Management and INEL Environmental Restoration and Waste Management Programs Final Environmental Impact Statement VOLUME III

VOLUME III Part A

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Spent Nuclear Fuel Management
and
Idaho National Engineering Laboratory
Environmental Restoration and
Waste Management Programs
Final Environmental Impact Statement
Volume 3
Part A
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ABSTRACT: This document analyzes at a programmatic level the potential environmental consequences over the next 40 years of alternatives related to the transportation, receipt, processing, and storage of spent nuclear fuel under the responsibility of the U.S. Department of Energy. It also analyzes the site-specific consequences of the Idaho National Engineering Laboratory sitewide actions anticipated over the next 10 years for waste and spent nuclear fuel management and environmental restoration. For programmatic spent nuclear fuel management, this document analyzes alternatives of no action, decentralization, regionalization, centralization and the use of the plans that existed in 1992/1993 for the management of these materials. For the Idaho National Engineering Laboratory, this document analyzes alternatives of no action, ten-year plan, and minimum and maximum treatment, storage, and disposal of U.S. Department of Energy wastes.

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SEE PART B FOR CHAPTERS 6 THROUGH 9 AND APPENDICES A THROUGH C.

#INTRODUCTION

DOE added Volume 3, Response to Public Comments, to the Department of Energy Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Environmental Impact Statement (EIS) to fully address and respond to public comments on the Draft EIS. In addition, DOE considered public comments, along with other factors such as programmatic need, technical feasibility, and cost, in arriving at DOE's preferred alternatives. During the public comment period for the Draft EIS, more than 1,430 individuals, agencies, and organizations provided comments. This volume represents a broad spectrum of private citizens; businesses; local, state, and Federal officials; Native American Tribes; and public interest groups. Comments were received from all affected DOE and shipyard communities.
Volume 3 summarizes the comments on the EIS that DOE received during the public comment period, and provides responses to those comments. In addition, this volume includes discussions of how public comments influenced the identification of the preferred alternatives, the extent to which public comments led to changes to the EIS, and a description of how to find specific comment summaries and responses in this volume.

Responses to comments consist of two parts. The first summarizes the comment(s), and the second responds to the comment(s). Frequently, identical or similar comments were provided by more than one commentor; in such cases, DOE grouped the comments and prepared a single response for each group. Summarization of comments was also appropriate because of the large number of comments received.

In compliance with the provisions of the National Environmental Policy Act (NEPA) and Council on Environmental Quality (CEQ) regulations, public comments on the Draft EIS were assessed and considered both individually and collectively by DOE and the Navy. Some comments led to EIS modifications or explanations of why comments did not warrant further response. Most comments not requiring an EIS change resulted in a response to correct readers' misinterpretations, to explain or communicate government policy, to clarify the scope of the EIS, to explain the relationship of this EIS to other related NEPA documentation, to refer commentors to information in the EIS, to answer technical questions, or to further explain technical issues.

The Record of Decision will include the decisions made by the Secretary of Energy, who will consider public comments on the Draft EIS.

How DOE Considered Public Comments in the NEPA Process

As required in the CEQ regulations [40 CFR 1502.14(e)], the Final EIS identifies DOE's preferred alternatives. The preferred alternatives were identified based on consideration of environmental impacts, regulatory compliance, DOE and spent nuclear fuel (SNF) programmatic missions, Idaho National Engineering Laboratory (INEL) environmental restoration and waste management programs, public issues and concerns, national security and defense, cost, and DOE policy. Public input considered in DOE's identification of preferred alternatives included concerns, desires, and opinions regarding the activities addressed in the EIS, and expectations of DOE in making the decisions on complex-wide programmatic SNF management and SNF management, environmental restoration, and waste management programs at INEL.

Public input contributed to the development of performance factors, defined as desirable attributes or characteristics that measure the relative acceptability of alternatives, which were used to identify candidate preferred alternatives. The candidate preferred alternatives then were evaluated against technical and nontechnical sensitivities, including public perception of environmental impacts, indicated stakeholder preferences, implementation flexibility, regulatory risk, SNF processing potential, environmental justice, potential resistance to implementation, and fairness.

DOE's preferred alternative for SNF management reflects DOE and public consensus that SNF should be actively managed in preparation for ultimate disposition. DOE's preferred alternative for SNF management, environmental restoration, and waste management at INEL reflects DOE's goal and the public's desire to have those activities meet DOE's obligations under agreements negotiated or anticipated with the U.S. Environmental Protection Agency and the State of Idaho. The EIS, including its preferred alternatives, will be considered by the Secretary of Energy, along with other factors, to arrive at a decision to be documented in a formal Record of Decision.

Changes to the EIS Resulting From Public Comments

A major purpose of NEPA is to promote efforts that will prevent or eliminate damage to the environment by ensuring informed decisionmaking on major Federal actions significantly affecting the quality of the human environment. Consideration of public comments on the Draft EIS helps ensure that the EIS is an adequate decisionmaking tool; accordingly, this EIS has been enhanced, as appropriate, in response to public comments. However, commentors raise specific issues and concerns, none of the comments identify new reasonable alternatives requiring assessment or result in a significant change in the analysis of potential environmental consequences.

Based on review of public comments, coupled with consultations held with commenting agencies, as well as state and tribal governments, the main EIS enhancements include the following.

Seismic and water resource discussions and analyses were reviewed, clarified, and enhanced for all alternative sites, and current data and analyses were added to Volumes 1 and 2, as appropriate. A discussion of potential accidents caused by a common initiator was added. The option of stabilizing some of DOE's SNF (specifically from N-Reactor) by processing it at available facilities overseas was added, thus enhancing processing options discussed in the EIS. DOE added to the EIS an analysis of barge transportation with respect to the option of shipping N-Reactor fuel to a point for overseas processing, as well as to support the potential transport of Brookhaven National Laboratory SNF to another site, as appropriate. In addition, DOE added an analysis of shipboard fires, primarily in response to comments related to receiving SNF containing uranium from foreign research reactors.

In Volume 2, DOE revised the air quality analysis to upgrade the information on existing baseline conditions. The analysis compared impacts of each alternative with Prevention of Significant Deterioration increment limits. Additionally, the Waste Experimental Reduction Facility project summary was enhanced and clarified. The EIS also was revised to reflect current projections of employment, including the projected downsizing of the INEL work force due to contractor consolidation.

In response to public comments, a brief summary of a separate cost evaluation of the various alternatives was added to the EIS, although the cost evaluation was performed independently of this EIS for additional purposes. The discussion about the options regarding management of Fort St. Vrain SNF currently stored in Colorado was expanded. As committed to in the Draft EIS, the evaluation and discussion of environmental justice was expanded in Volumes 1 and 2; this analysis is based on interim DOE guidance in the absence of DOE or interagency policy in this regard, and reflects limited public comments received about environmental justice. Consultation with commenting Native American Tribes is reflected in the environmental justice analysis, as well as in various sections of the EIS, as appropriate.

Other enhancements include a clarification that potential shipment of SNF containing uranium of U.S. origin from foreign research reactors consists of a bounding estimate of 22 metric tons of heavy metal. In addition, as a result of public comments, DOE enhanced Volume 1 to include a description that clarifies the relationship between other SNF-related DOE NEPA reviews and this EIS. In the same regard, the relationship between this EIS and the Spent Fuel Vulnerability Assessment Action Plans was clarified in the EIS. With regard to Naval SNF, enhancements to Appendix D (Naval Spent Nuclear Fuel Management) include providing additional information in the following areas: importance of Naval SNF examination, impacts of not refueling or defueling nuclear-powered vessels, the reasons why storage and processing Naval SNF in foreign facilities were not evaluated in detail, environmental justice considerations, the transition period required to implement Naval SNF alternatives, potential accident scenarios at Naval shipyards, and uncertainties in calculating potential environmental impacts.

Editorial changes were made to the EIS to correct errors, none of which was considered substantive, and to clarify discussions deemed by some commentors to be misleading.

How to Use Volume 3 to Locate Responses

Volume 3 is organized into topical sections, which are listed in the Table of Contents.

Volume 3 also contains three appendices to help readers locate specific comment summaries and responses. Appendix A is an alphabetical list of commentors' last names, organizations or agencies, showing for each the associated comment document number and response section number(s). For some entries, the word "Anonymous" or "Indeterminate" appears in the left column. Anonymous entries include comment documents with no names or organizations appearing anywhere in the document, or commentors at public hearings who wished to remain anonymous. "Indeterminate" reflects a name that was illegible due to the commentor's penmanship or poor quality of the comment document, or unidentifiable due to a poor recording from the toll-free telephone line.

Appendix B is a sequential numerical list of comment document numbers showing associated commentors and response section numbers. The comment document number is useful for cross-referencing. Complete (unsummarized) comment documents can be found in the reading rooms and information locations listed at the end of the Summary and in Volumes 1 and 2.

Appendix C is a correlation of response section numbers to comment document numbers.

A comment document can be a mailed letter, facsimile, oral or written testimony, exhibits or questions from a public hearing, or an comment given over the toll-free telephone line. Comment documents can, and often do, contain multiple individual comments, and each corresponding response might fall under a different response section.

To find a response to comment(s):

1. Turn to Appendix A and find your name (or organization or agency, if you stated that you represented one of these), and note the response section number(s) assigned to that comment document.

2. Turn to the Table of Contents under the heading Comment Summaries and Responses, where response section numbers are listed in numerical order, to find the page on which the response section number(s) that apply to your comment(s) appear.

3. Turn to the appropriate page(s) to find a response to a summary of your comment.

Use the same process to find another person's or organization's comments.

If your comment document contains more than one comment, repeat steps 2 and 3 for each comment because each response could fall under a different response section.

How to Find Reference Documents

Technical references and other supporting documentation cited in Volume 3 are available in the reading rooms and information locations listed at the end of the Summary and in Volumes 1 and 2. Readers can find the document of interest on the alphabetical list provided in the reading rooms and information locations.

ACRONYMS

ALARA	as low as reasonability achievable
CDC	Centers For Disease Control and Prevention
CEDE	committed effective dose equivalent
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CWA	Clean Water Act
D&D	decontamination and decommissioning
DCGs	Derived Concentrations Guidelines
DOE-HQ	U.S. Department of Energy, Headquarters
DOE PEIS	U.S. Department of Energy Programmatic Environmental Impact Statement
DOT	U.S. Department of Transportation
EA	environmental assessment
EBR	Experimental Breeder Reactor
EDE	effective dose equivalent
EPA	U.S. Environmental Protection Agency
ER&WM	environmental restoration and waste management
ESRP	Eastern Snake River Plain
FEMA	Federal Emergency Management Agency
FFA/CO	Federal Facility Agreement and Consent Order
FONSI	finding of no significant impact
FRR	foreign research reactor
FRR EIS	EIS: Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreigh Research Reactor Spent Nuclear Fuel
HEPA	high efficiency particular air (filter)

HHS	U.S. Department of Health and Human Services
ICPP	Idaho Chemical Processing Plant
INEL	Idaho National Engineering Laboratory
MCLs	maximum contaminant levels
MTHM	metric tons of heavy metal
NEPA	National Environment Policy Act
NRC	U.S. Nuclear Regulatory commission
NTS	Nevada Test Site
NWPA	Nuclear Waste Policy Act
ORR	Oak Ridge Reservation
OSHA	Occupational Safety and Health Administration
PSD	prevention of signification deterioration
RCRA	Resource Conservation and Recovery Act
ROD	Record of Decision
RWMC	Radioactive Waste Management Complex
SDWA	Safe Drinking Water Act
SNF	spent nuclear fuel
SRS	Savannah River Site
TEDE	total effective dose equivalent
TRU	transuranic
UBC	Uniform Building Code
USGS	U.S. Geological Survey
VOCs	volatile organic compounds
WERF	Waste Experimental Reduction Facility
WINCO	Westinghouse Idaho Nuclear Company, Inc.
WIPP	Waste Isolation Pilot Plant

1. PREFERENCE FOR ALTERNATIVES

1.1 Specific Preferences

1.1.1 SNF Management

01.01.01 (002) SNF Management

COMMENT

Commentors prefer alternatives that do not result in foreign spent nuclear fuel being transported through or managed at a specific location, and cite potential catastrophic impacts from releases of radioactive material due to accidents.

RESPONSE

A decision regarding the policy to accept spent nuclear fuel (SNF) from foreign research reactors is being reached through a process based on a separate EIS entitled Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel (Draft) (FRR EIS). However, the domestic transportation and management of such SNF, if it is returned to the United States, is included in this EIS to ensure that all potential impacts of SNF transportation are evaluated. See the response to comment 05.12.07.01 (001) regarding the potential for release of radioactive materials during postulated accidents.

1.1.1.1 Action Alternatives

01.01.01.01 (001) Action Alternatives

COMMENT

The commentor objects to the Port of Oakland being proposed as an entry and/or transfer point for foreign research reactor spent nuclear fuel.

RESPONSE

The Port of Oakland is considered in the EIS as a potential point of entry for foreign research reactor (FRR) SNF. However, the issue of selecting ports of entry for shipments of FRR SNF is not within the scope of this EIS. That issue is being analyzed in the FRR EIS. DOE will not make a final decision on the acceptance of FRR SNF until the FRR EIS and this EIS are completed.

01.01.01.01 (002) Action Alternatives

COMMENT

The commentor supports the Regionalization by fuel type alternative.
RESPONSE
Volume 1, section 3.1 identifies the preferred alternative for programmatic SNF management and the
actions DOE would take to the extent required by this alternative. Research and development activities
would be included. See also the response to comment 04.04 (008).

01.01.01.01 (004) Action Alternatives

COMMENT

Commentors oppose the No Action alternative for one or more of the following reasons:
High-level waste management under this alternative is unacceptable.
Resources would be wasted.
It is irresponsible and should be redefined as the choice that just meets existing commitments.
It is unsafe.
SNF would be difficult to manage.
Some university research reactors would be forced to shut down without prompt removal of unneeded nuclear fuel.
Not permitting shipment of SNF from university reactors will prevent decommissioning of reactors and force universities to incur significant expenses that could not be offset by revenues.
K-basin wastes at the Hanford Site are not stabilized.
The increased risk is considered unacceptable.
RESPONSE
Volume 1, section 3.1 of the EIS describes DOE's preferred alternative for SNF management; Volume 2,
section 3.4 describes the preferred alternative for SNF management, environmental restoration, and waste
management at the Idaho National Engineering Laboratory (INEL). See the responses to comments 04.04
(008) and 04.04 (011).

01.01.01.01 (005) Action Alternatives

COMMENT

Commentors oppose the Decentralization alternative or the Centralization alternative.
RESPONSE
Volume 1, section 3.1 describes the preferred alternative for SNF management. See the response to
comment 04.04 (008).

01.01.01.01 (008) Action Alternatives

COMMENT

The commentor supports the No Action alternative and opposes the Centralization alternative.
RESPONSE
Volume 1, section 3.1 identifies the preferred alternative for programmatic SNF management and the
actions that would be undertaken by DOE to the extent required by this alternative. Research and
development activities would be included. See also the response to comment 04.04 (008).

01.01.01.01 (010) Action Alternatives

COMMENT

The commentor objects to bringing additional spent nuclear fuel to the Oak Ridge Reservation, where rainfall and percolation rates are perceived to be too high, and suggests a drier, western location instead.

RESPONSE

Analyses performed for this EIS and summarized in Volume 1, Chapter 5 and Appendix F, Part Three, section 5.8 indicate that the environmental consequences of the five SNF management alternatives would be small at any of the sites, including the Oak Ridge Reservation. Therefore, bringing additional SNF to this site is not likely to add to environmental or health hazards that may already exist.

01.01.01.01 (013) Action Alternatives

COMMENT

The commentor supports the No Action alternative, with the opinion that all other alternatives merely "move the problem around," placing it "out of sight, out of mind."

RESPONSE

Volume 1, section 1.1 of the EIS has a comprehensive discussion of the options available for managing SNF, including storage, stabilization, transportation, and preparation for final disposition. Specific technologies to accomplish these options are discussed in Volume 1, Appendix J. These options are incorporated to varying extends in all of the alternatives, as described in Volume 1, Chapters 3 and 5. The alternatives have definite purposes for relocating SNF, such as storing similar fuel types within a single secure facility. In this way, the alternatives attempt to balance transportation concerns with other worthy considerations, including nonproliferation, worker safety, and cost effectiveness. Methods for final disposition, such as burial, are outside the scope of this EIS.

01.01.01.01 (015) Action Alternatives

COMMENT

Commentors state that transportation risks and the need to avoid such risks prior to final movement of spent nuclear fuel to a permanent storage site must be considered. Commentors also express a preference for a Decentralization alternative with no transportation, and/or allude to a "shell game" whereby unnecessary movements of spent nuclear fuel are being made.

RESPONSE

Transportation risks were analyzed for all the alternatives and no significant impacts were identified. DOE evaluated the alternatives not only from the standpoint of environmental impacts, but from the perspective of deciding on an appropriate programmatic strategy for managing DOE SNF until decisions are made regarding its ultimate disposition. Such decisions are anticipated within the next 40 years. This programmatic strategy must not only address currently identified vulnerabilities in the management of SNF, but ensure safe, environmentally sound, and cost-effective SNF management in the future. The role of transportation, and its costs and impacts, is a factor in making these decisions and a tool in implementing programmatic decisions. There have not been, nor will there be, unnecessary movements of SNF.

01.01.01.01 (019) Action Alternatives

COMMENT

The commentor expresses a preference for the No Action alternative because DOE will be forced to evaluate the necessity for generating radioactive waste and minimize the waste streams to the lowest extent possible.
RESPONSE
In general, DOE has adopted a policy emphasizing waste minimization and avoidance, as discussed in Volume 2, Chapters 1 and 2 of the EIS. Most new radioactive waste will be created during unavoidable cleanup activities and decommissioning of contaminated facilities that no longer serve essential national missions. However, DOE does not officially consider SNF a waste material. Continuing or eliminating all sources of SNF is, therefore, not part of DOE's waste minimization objectives and is outside the scope of this EIS.

01.01.01.01 (022) Action Alternatives

COMMENT

The commentor prefers an alternative that manages spent nuclear fuel at its current location or at the site of generation without polluting the environment, and states that if spent nuclear fuel must be transported for safety reasons, transportation should be minimized.
RESPONSE
Several alternatives in this EIS evaluate leaving all or most SNF where it is now stored or generated. In addition, other EIS alternatives were evaluated to consider providing and maintaining DOE's flexibility to safely, efficiently, and responsibly manage SNF until final disposition decisions can be made. General technologies for managing SNF are discussed in Volume 1, section 1.1.3 and Appendix J of the EIS. Volume 1, Figure 3-7 compares estimated shipments among all of the alternatives. The wide range of shipment numbers reflects DOE's desire to consider all realistic transportation possibilities and the related stakeholder concerns. See also the response to comment 04.04 (008).

01.01.01.01 (026) Action Alternatives

COMMENT

The commentor states that radioactive wastes should remain at their current locations pending development of final solutions, and states that a nationwide EIS on a broad-based, solution-oriented waste policy needs to be prepared.
RESPONSE
DOE is preparing the Waste Management Programmatic Environmental Impact Statement, and public comments will be solicited on the waste policies to be addressed in that document.

01.01.01.01 (029) Action Alternatives

COMMENT

Commentors favor the Decentralization alternative, a modified Decentralization alternative, or a hybrid
including the Decentralization alternative because decentralization of spent nuclear fuel management
requires generators to assume responsibility for their spent nuclear fuel and requires minimal
transportation. Recommended modifications include Decentralization with limited exam for Navy fuel at
the Idaho National Engineering Laboratory. Storage preferences include dry cask storage and canning of
spent nuclear fuel over processing.
RESPONSE
Volume 1, section 3.1 describes DOE's preferred alternative for SNF management; Volume 2, section 3.4
describes the preferred alternative for SNF management, environmental restoration, and waste management
at INEL. See the responses to comments 04.04 (008) and 04.04 (011).

01.01.01.01 (033) Action Alternatives

COMMENT

The commentor supports centralization or regionalization of existing nuclear fuel inventories.
RESPONSE
Volume 1, section 3.1 identifies the preferred alternative for programmatic SNF management and the
actions that DOE would take to the extent required by this alternative. Research and development
activities would be included.

II COMMENT

The commentor prefers the Regionalization by fuel type alternative for handling Naval, research reactor,
and some foreign research reactor spent nuclear fuel at Idaho National Engineering Laboratory, with the
remainder going to the Savannah River Site and, for the INEL-specific recommendations, supports a mix of
the Ten-Year Plan and Maximum Treatment, Storage, and Disposal alternatives that would be compatible
with Regionalization by fuel type and the Navy's preferred alternative. In addition, the commentor suggests
that reprocessing these materials at the Idaho Chemical Processing Plant be considered as an alternative in
the EIS, and the debate on reprocessing should not be because of politics.
RESPONSE
Volume 1, Chapter 3, and Volume 2, Chapter 3 show the actions DOE would take to the extent required
by this alternative. Activities related to SNF management, including processing and research and
development, are covered. See also the response to comment 06.05 (001).

II COMMENT

The commentor opposes the Centralization alternative because it would require extensive shipment to
interim storage sites and to ultimate disposal sites.
RESPONSE
The commentor is correct in anticipating the need for further SNF shipments after a decision is made
regarding ultimate disposition of DOE SNF in a permanent repository. However, assessment of the impacts
of these shipments is outside the scope of this EIS. The scope of Volume 1 of this EIS is limited to storage
and related transportation of DOE SNF until 2035. It may take that long to make and implement a
decision on ultimate disposition of DOE SNF. Because space in a permanent repository may not be
available for 40 years, DOE evaluated EIS a range of reasonable alternatives to safely manage DOE SNF in

the interim.

II COMMENT

The commentor recommends that the three existing primarily spent nuclear fuel DOE locations for interim
storage be maintained in the preferred alternative.
RESPONSE
The preferred alternative for programmatic SNF management is discussed in Volume 1, section 3.1.

II COMMENT

The commentor prefers the programmatic No Action alternative because the existing DOE spent nuclear
fuel storage sites have vulnerabilities, as delineated in the Spent Fuel Working Group Report.
RESPONSE
The need to correct existing SNF storage vulnerabilities was a factor in determining the preferred
alternative for programmatic SNF management, as described in Volume 1, section 3.1.

II COMMENT

The commentor supports the 1992/1993 Planning Basis alternative because of the urgency for resolving the
Hanford K-basin problems, and because the alternative is less costly, less risky, and involves less transport
than most other alternatives.
RESPONSE
The factors mentioned are covered in the preferred alternative for programmatic SNF management, which is
described in Volume 1, Chapter 3.

II COMMENT

The commentor asserts that it is environmentally more attractive to manage spent nuclear fuel at the point
of origin.
RESPONSE
Volume 1, section 3.1, and Volume 2, section 3.4 describe the preferred alternatives for SNF management.
The impacts of all of the alternatives are given in Volume 1, Chapter 5 and Appendix K. The analyses
show that, for all of the alternatives analyzed in this EIS, the impacts would be small.

II COMMENT

The commentor notes that there is only a small difference between the analyses for the Decentralization
and the 1992/1993 Planning Basis alternatives.
RESPONSE
The commentor is correct. Actions taken under the Decentralization alternative would be similar to those
that would occur under the 1992/1993 Planning Basis alternative.
DOE believes that the range of alternatives analyzed in the EIS is inclusive and in accordance with the
philosophy of considering a full range of reasonable alternatives, as required by the provisions of the
National Environmental Policy Act (NEPA) and Council on Environmental Quality (CEQ) regulations.

II COMMENT

The commentor opposes the Regionalization and Centralization alternatives based on the generation of

high-level and transuranic wastes due to spent nuclear fuel stabilization activities conducted under these
alternatives.
RESPONSE
Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of
all the alternatives considered in this EIS. The analyses show that the impacts of all alternatives would be
small. Volume 1, section 3.1 describes DOE's preferred alternative for programmatic SNF management;
Volume 2, section 3.4 describes the preferred alternative for SNF management, environmental restoration,
and waste management at INEL. See also the response to
comment 01.01.01.01 (022)

II 1.1.1.2 Siting Alternatives

II COMMENT

The commentor states that it is inappropriate to store spent nuclear fuel at the Oak Ridge Reservation
because of that area's high rainfall.
RESPONSE
Rainfall, like all other environmental parameters, such as high winds and seismic activity, is one of the
factors in the design of SNF storage facilities for a given site. Rainfall is explicitly considered in the
analysis of the potential dispersal of radioactive materials, be it by air, surface water, or groundwater. Such
analyses are used to design SNF storage facilities to prevent the dispersal of radioactive materials by any
means. Thus, DOE considers that the amount of rainfall, in and of itself, is not a sufficient reason to
eliminate a site from consideration as a reasonable alternative for managing SNF.

II COMMENT

The commentor opposes spent nuclear fuel storage at the Idaho National Engineering Laboratory because
of wind patterns.
RESPONSE
DOE's policy is to operate its facilities in compliance with all applicable Federal and state air quality
standards and DOE Orders, and to protect human health and the environment. To determine compliance,
DOE must take winds into account.
Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of
all the alternatives considered in this EIS. The analyses of public exposure to airborne radioactive
materials show that impacts would be small for all alternatives considered.

II COMMENT

The commentor expresses the opinion that the Hanford Site is unsuitable for storing foreign research
reactor spent nuclear fuel due to current conditions in the K-basins and the potential impacts of proposed
additional activities on those basins if the foreign research reactor spent nuclear fuel is
accepted for storage.
RESPONSE
Volume 1, Appendix A, section 2.3 discusses the SNF management program at the Hanford Site, and
includes a description of near-term activities to correct problems at existing facilities.
Volume 1, Appendix
A, section 3.1 discusses facilities and options for SNF management to be analyzed under each of the
proposed alternatives. Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the
environmental impacts of all the alternatives considered in this EIS. The analyses show that the
impacts of

all alternatives would be small.

II COMMENT

The commentor states that DOE should consider several regional facilities that accept, in an equitable manner for disposal, spent nuclear fuel, weapons, and waste generated in their regions and not use just the Nevada Test Site for such disposal.

RESPONSE

In response to public comments raised during the scoping process, DOE identified two additional alternative sites: the Oak Ridge Reservation in Tennessee and the Nevada Test Site. The selection process is summarized in the May 9, 1994, amendment to the Implementation Plan for the Department of Energy Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs EIS. It is treated in detail in the Alternative Site Selection Decision Process Report.

The documents identified above state that the Nevada Test Site is not a preferred site for spent nuclear fuel (SNF) management because of the State of Nevada's current role as the host site for the Yucca Mountain Site Characterization Project. See also the response to comment 04.04 (008) on DOE's preferred alternative.

The ultimate disposition of DOE SNF, waste, and weapons is outside the scope of this EIS and is likely to be decided by Congress.

II COMMENT

The commentor does not want commercial spent nuclear fuel ending up at Bremerton.

RESPONSE

The EIS does not consider management of commercial SNF. Neither DOE nor the Navy is considering this action.

II COMMENT

Commentors prefer alternatives that do not result in additional nuclear waste or spent nuclear fuel being managed in various locations (the Idaho National Engineering Laboratory, the Nevada Test Site, the Savannah River Site, the Hanford Site, and the Puget Sound Naval Shipyard). In addition, commentors express opinions, including:

- That they have enough waste and/or problems at the site
- That it is irrational to add more nuclear waste to what is there
- That past practices, safety, transportation, and/or mission conflict with proposed actions for the site
- That temporary storage may become permanent
- That permanent disposal/disposition is needed
- That better sites that present less risk are available
- That low population density, lack of government action, profit motivation, isolation, and/or lack of visibility is a poor justification
- That there is a risk to water resources, fragile ecosystems, or the environment
- That increased spent nuclear fuel management activity will be detrimental to diversification of the site mission and local economy
- That spent nuclear fuel should be managed at its current site
- That Pit 9 Project waste should not be reburied at the Idaho National Engineering Laboratory

RESPONSE

Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. The analyses show that the impacts of all alternatives would be small. Volume 1, section 3.1 and Volume 2, section 3.4 describe the preferred alternatives for programmatic SNF management and SNF management, environmental restoration, and waste management at the INEL respectively. See the response to comment 07.02.01 (003) for information regarding the Pit 9

Project. See the responses to comments 04.04 (008) and 04.04 (011) for DOE's preferred alternatives.

II COMMENT

Commentors express a preference for alternatives that do not result in additional nuclear waste or spent nuclear fuel being managed in South Carolina. In addition, commentors express one or more of the following opinions:

That they have enough waste and/or problems at the site
That such material be stored in areas of low population density rather than areas of high population density
That past practices, safety, transportation, and/or mission conflict with proposed actions for the site
That temporary storage may become permanent
That permanent disposal/disposition is needed
That better sites that present less risk are available
That low population density, lack of government action, profit motivation, isolation, and/or lack of visibility is a poor justification
That there is a risk to water resources, fragile ecosystems, or environment
That increased spent nuclear fuel management activity will be detrimental to diversification of the site mission and local economy
That spent nuclear fuel should be managed at its current site or where it is being generated/received

RESPONSE

Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. The analyses show that the impacts of all alternatives would be small.

Volume 1, section 3.1, and Volume 2, section 3.4 describe the preferred alternatives for spent nuclear fuel management. See the responses to comments 04.04 (008) and 04.04 (011).

II COMMENT

The commentor states that 40 years of temporary storage of spent nuclear fuel at the Idaho National Engineering Laboratory is hardly temporary. In addition, the commentor states that it is in the nation's best interest to create storage solutions for existing wastes, and that additional waste should not be sent to Idaho.

RESPONSE

Volume 1 of this EIS considers alternative approaches to safely, efficiently, and responsibly manage existing and projected quantities of SNF until 2035. This amount of time may be required to make and implement a decision on the ultimate disposition of SNF. This EIS provides the environmental information to support decisions that will facilitate a transition from DOE's current practices and ultimate disposition of SNF. The Navy and DOE intend to make the transition from fuel management under the alternatives considered in this EIS to ultimate disposition as quickly as practicable.

For more information on interim storage, see the response to comment 06.06 (003).

II COMMENT

Commentors express a preference for alternatives that do not result in additional nuclear waste or spent nuclear fuel being managed in Tennessee. In addition, commentors express one or more of the following opinions:

That they have enough waste and/or problems at the site
That thousands of shipments of spent nuclear fuel to the Oak Ridge Reservation for the Regionalization alternative are not justified given that 98 percent of the spent nuclear fuel inventory now is stored at the Hanford Site, the Idaho National Engineering Laboratory, and

the Savannah River Site
That the Centralization alternative for the Oak Ridge Reservation makes no sense given the large number of shipments required that pose risks to persons in urban and suburban populations
That such material be stored in areas of low population density rather than areas of high population density
That past practices, safety, transportation, and/or mission conflict with proposed actions for the site
That temporary storage may become permanent
That permanent disposal/disposition is needed
That better sites that present a lower risk are available
That low population density, lack of government action, profit motivation, isolation, and/or lack of visibility is a poor justification
That there is a risk to water resources, fragile ecosystems, or environment
That increased spent nuclear fuel management activity will be detrimental to diversification of the site mission and local economy
That spent nuclear fuel should be managed at its current site or where it is being generated/received

RESPONSE

Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. The analyses show that the impacts of all alternatives would be small. Volume 1, section 3.1, and Volume 2, section 3.4 describe the preferred alternatives for spent nuclear fuel management. See also the responses to comments 04.04 (008) and 04.04 (011).

II COMMENT

The commentor states that the Idaho National Engineering Laboratory is not a suitable site to receive and store additional spent nuclear fuel, citing seismic risk, groundwater hydrology, location relative to sources and likely repositories, and present site facility problems.

RESPONSE

Volume 1, Appendix D, and Volume 2, Chapter 5 discuss the impacts of SNF and waste management on INEL. These impacts would be small under all the alternatives considered in this EIS.

II COMMENT

The commentor expresses a preference for alternatives that do not result in additional nuclear waste being managed at the site. The commentor objects to waste being "reburied" in Idaho.

RESPONSE

The commentor's objection to Pit 9 activities at the Radioactive Waste Management Complex (RWMC) at INEL is noted. Although Volume 2 of this EIS bounds all environmental restoration activities at INEL during the period 1995 through 2005, specific decisions regarding Pit 9 are governed by the Comprehensive Environmental Response, Compensation, and Liability Act, which has associated public involvement processes through which to obtain public input.

II COMMENT

The commentor expresses a general preference for siting spent nuclear fuel management activities at the Oak Ridge Reservation. The commentor further notes that the capability exists at the Oak Ridge Reservation to manage spent nuclear fuel and that the jobs would be welcome.

RESPONSE

The commentor's preference and opinion are noted.

II COMMENT

The commentor prefers alternatives that do not result in foreign spent nuclear fuel being transported
through or managed at the Hanford Site.

RESPONSE

Potential acceptance of FRR SNF is being analyzed in a separate EIS entitled Proposed Nuclear Weapons
Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel (Draft) (FRR EIS).
DOE will not make a decision on the acceptance of FRR SNF until both this EIS and the FRR EIS are
completed.

II COMMENT

The commentor prefers alternatives that do not result in additional nuclear waste being managed at the
Idaho National Engineering Laboratory in Idaho and suggests that existing waste at the site be removed as
soon as possible.

RESPONSE

General solutions for managing SNF are discussed in Volume 1, section 1.1.3 and Appendix J of the EIS.
Therein it is noted that technologies for final disposition of SNF cannot be specified in advance of
repository acceptance requirements. These requirements are several years from completion and approval,
but a combination of the technologies described in Volume 1, Appendix J may satisfy the eventual
acceptance criteria. Furthermore, consideration is given by the alternatives analyzed in the EIS to
providing or maintaining processing flexibility that may prove necessary to meeting the acceptance
requirements. Consequently, although the ultimate disposition of SNF is a high priority for DOE, the
details of disposition activities have not been finalized and are beyond the scope of this EIS. See also the
responses to comments 04.04 (008) and 04.04 (011).

II COMMENT

The commentor opposes Idaho becoming a nuclear waste dump and states the Idaho National Engineering
Laboratory is not the place for a repository. The commentor adds that this is not the proposal being made
in the Draft EIS.

RESPONSE

DOE agrees that the possibility of Idaho becoming a nuclear waste "dump" or the INEL becoming a
repository is not the proposed action under consideration in this EIS.
On October 22, 1990, DOE published a Notice of Intent in the Federal Register announcing its

intent to prepare a programmatic EIS (DOE PEIS) addressing environmental restoration and waste management (ER&WM) (including SNF management) activities across the entire DOE complex. DOE then invited the public to submit written comments on the scope of the Department of Energy Programmatic Environmental Restoration and Waste Management EIS, which is now titled the Waste Management Programmatic EIS, held 23 scoping meetings in Idaho and across the country, and prepared a draft Implementation Plan for the DOE PEIS reflecting the comments provided. DOE held additional public meetings on the draft Implementation Plan and recorded public comments given at these meetings. The intent of the DOE PEIS was to support complex-wide decisions regarding management of ER&WM programs, including management of SNF.

On October 5, 1992, DOE published a Notice of Intent in the Federal Register announcing its intent to prepare an EIS addressing environmental restoration and waste management and SNF activities at INEL. DOE held five scoping meetings in Idaho to solicit comments on the proposed scope and recorded public comments provided at those meetings. The purpose of this INEL EIS, which tiered from the DOE PEIS in accordance with NEPA regulations, was to support site-specific decisions on INEL ER&WM programs, including SNF management at INEL.

On June 28, 1993, as an outgrowth of civil lawsuits involving DOE, the Public Service Company of Colorado (owner of the Fort St. Vrain Nuclear Generating Station) and the State of Idaho, the U.S. District Court for the District of Idaho ordered DOE to include in its EIS considerations of major Federal actions involving transporting, receiving, processing, and storing SNF. Accordingly, the scope of the INEL ER&WM EIS was expanded to include a programmatic EIS for SNF management. All of these actions, along with extensive public comments on each, defined the scope of the EIS. DOE's overall approach and companion EIS evaluations satisfy the procedural requirements of NEPA and should provide adequate consideration of the important impacts.

Volume 1, section 1.2 of the EIS describes actions related to this EIS. Volume 1 of this EIS addresses the environmental impacts of the plans for managing DOE SNF. Volume 1, Appendix B defines the scope and impact of this management program in Idaho. Volume 2 of this EIS was coordinated with and is consistent with both the Waste Management Programmatic EIS and Volume 1 of this EIS for SNF management, because the alternatives evaluated relate to site-specific INEL activities. The Waste Management Programmatic EIS is expected to summarize and consider the impacts of the alternatives evaluated in the EIS regarding SNF and waste management as part of its analysis of cumulative environmental impacts.

DOE considers the evaluation of cumulative impacts in Volume 1, Chapter 5 and site-specific Appendices A through F of this EIS to adequately encompass all reasonably foreseeable actions or activities at any of the 10 sites evaluated for the management of SNF between 1995 and 2035. The cumulative impacts of proposed environmental restoration and waste management at INEL between 1995 and 2005 are addressed in Volume 2, Chapter 5, including the management of SNF at INEL. The integration of programmatic management of SNF into this EIS allows reviewers and decisionmakers to evaluate the environmental impacts of programmatic management alternatives as they relate to the site-specific INEL management of SNF under each alternative being considered.

Pertinent environmental assessments and other EISs were reviewed and considered in the preparation of this EIS, as appropriate, to ensure consistency of information and evaluation of cumulative impacts.

II COMMENT

The commentor states that the Idaho National Engineering Laboratory does not have adequate infrastructure to support any but the No Action alternative.

RESPONSE

The EIS demonstrates that INEL would be able to support SNF management under any of the alternatives.

Under some alternatives, additional construction is needed. Volume 1, Appendix B, section 2.3

discusses
the SNF management program at INEL. Volume 2, Appendix C discusses the projects and facilities required to successfully implement this program. This detailed information is summarized in Volume 1,
Chapters 1 and 2. Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. The analyses show that the impacts of
all alternatives would be small.

II COMMENT

The commentor opposes transporting nuclear waste to the Idaho National Engineering Laboratory and supports storing waste at production sites.

RESPONSE

Volume 1, section 3.1, and Volume 2, section 3.4 identify the preferred alternatives for SNF management
and discuss the actions DOE would take to the extent required by these alternatives. Research and
development activities would be included.

II COMMENT

The commentor suggests that the use of the language "not a preferred site" when referring to the Nevada
Test Site implies that the Oak Ridge Reservation is by definition a "preferred site," when it is not.

RESPONSE

DOE believes this language is appropriate, because it accurately characterizes the inclusion of the Nevada
Test Site (NTS) for the purpose of analyzing a site that lacks SNF infrastructure and experience. As can be
seen in the EIS, the NTS "nonpreferred" status still allows for full consideration of alternatives at all
alternative sites. See also the response to comment 04.04 (008) on DOE's preferred alternative for
programmatic SNF management, and the responses to comments 04.03.01 (028 and 032).

II COMMENT

The commentor opposes any form of the Regionalization or Centralization alternatives at the Oak Ridge
Reservation.

RESPONSE

Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of
all the alternatives considered in this EIS. The analyses show that the impacts of all alternatives would be
small. Volume 1, section 3.1 describes DOE's preferred alternative for programmatic SNF management;
Volume 2, section 3.4 describes the preferred alternative for SNF management, environmental restoration,
and waste management at INEL.

II 1.1.2 INEL ER&WM Programs

II COMMENT

Commentors favor a hybrid of the Volume 2 Ten-Year Plan and Maximum Treatment, Storage, and Disposal alternatives.

RESPONSE

The DOE preferred alternative for SNF management, environmental restoration, and waste management programs at INEL is identified in Volume 2, section 3.4. The preferred alternative is a modification or hybrid of the alternatives described in the Draft EIS. See the response to comment 04.04 (011).

II COMMENT

The commentor expresses a preference for the Ten-Year Plan alternative with some stipulations, including opposition to the incineration process and more options for low-, high-, and mixed-level wastes besides incineration. The commentor further states that a separate EIS should be developed for any additional incinerators at the Idaho National Engineering Laboratory and assumes an EIS has been done for current incinerators.

RESPONSE

Treatment options, including options other than incineration, for low-level, high-level, and mixed radioactive and hazardous wastes are evaluated in the EIS and are described in Volume 2, section 3.1.2. More detail on specific treatment technologies is provided in Volume 2, Appendix C. Although specific treatment technologies have not been selected for many of the waste streams, combinations of these technologies may be required for effective treatment of some waste streams. Site treatment plans being developed for waste streams will be reviewed and approved by the State of Idaho. Combinations of treatment technologies, or hybrids, are considered bounded by the analyses in this EIS. Low-level waste has been treated at INEL through incineration at the Waste Experimental Reduction Facility (WERF). As described in Volume 2, section 2.2.7, operation of WERF was suspended in 1991 to upgrade the facility. During the shutdown, the Environmental Assessment, Idaho National Engineering Laboratory Low-Level and Mixed Waste Processing was prepared, which resulted in a finding of no significant impact (FONSI). DOE is currently undertaking supplemental volume reduction activities at WERF with off-site incineration commercial facilities. This EIS includes environmental impacts due to operation of WERF, including the incineration activity. Decisions on resumption of incineration of low-level waste and mixed waste at INEL will be addressed in the Record of Decision (ROD) for this EIS, which will supersede the previous NEPA documentation. Any new specific projects involving incineration will undergo NEPA review, and the need for any additional NEPA documentation, including an EIS, will be determined. Incineration of high-level waste is not currently under consideration as a treatment option.

II COMMENT

The commentor states that the continued receipt of transuranic waste on a case-by-case basis under the Decentralization alternative is not "no action."

RESPONSE

The purpose of the No Action alternative is to provide a baseline against which the action alternatives can
be measured. The baseline range of existing ongoing activities for a site such as INEL includes many kinds
of actions. Termination of a certain set of these activities would be more of a "stop action" alternative,
which would complicate defining the baseline.

II COMMENT

The commentor objects to waste being reburied at the Idaho National Engineering Laboratory, the Pit 9
Project. The commentor expresses a preference for alternatives that do not result in additional nuclear
waste or spent nuclear fuel being managed at the Idaho National Engineering Laboratory.

RESPONSE

Volume 1, section 3.1 identifies the preferred alternative for programmatic SNF management and the
actions that would be undertaken by DOE to the extent required by this alternative. Research and
development activities would be included.
Specific cleanup decisions, such as the one made for the Pit 9 interim action cleanup, are made under the
Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) based on the INEL
Federal Facility Act/Consent Order (FFA/CO) between DOE, the Environmental Protection Agency (EPA)
Region X, and the State of Idaho and are not within the scope of this EIS. The objective of cleanup
decisions under CERCLA and the FFA/CO, such as for Pit 9, is to reduce the potential for exposure to
contamination to ensure that human health and the environment are adequately protected. This is done by
establishing cleanup objectives and standards specifically to ensure adequate protection and compliance
with applicable environmental standards and guidance. Approximately half of the soil and other material
in Pit 9 is estimated to contain less than 10 nanocuries per gram of transuranic elements; after initial
excavation, this material would be returned to the pit following assay commensurate with current disposal
practices for low-level radioactive wastes at the RWMC, as regulated by DOE Order 5820.2A, Radioactive
Waste Management. The remaining half would be removed and treated, both to reduce transuranic
concentrations to less than 10 nanocuries per gram and to satisfy risk-based cleanup criteria established in
the ROD. Following treatment, this soil and other materials meeting the criteria will be returned to Pit 9 as
low-level radioactive waste. The treated concentrate will be in a stable vitrified form.
Although an in-depth analysis of risk was not performed for the aboveground storage alternative, it was not preferred
because the waste would be stored in an untreated and potentially unstable form for an undetermined
period of time until an appropriate treatment method could be found.
To minimize airborne releases, projects involving radioactive particulates at INEL would be conducted
within a double-confinement structure. Conservative assumptions normally are used to estimate releases to
the atmosphere, such as modeling only two filters in series when at least three are planned for actual
operations. See also the response to comment 01.01.01.02 (006).

II COMMENTS

The commentor supports the Volume 2 Minimum Treatment, Storage, and Disposal alternative and its
development, and supports technology resulting in less, rather than more, waste being generated.

RESPONSE

Volume 1, section 3.1 and Volume 2, section 3.4 describe the preferred alternatives for spent nuclear fuel
management. See the response to comments 04.04 (008) and 04.04 (011).

II COMMENT

Commentors support the Volume 2, Maximum Treatment, Storage, and Disposal alternative.

RESPONSE

Volume 2, section 3.4, describes the preferred alternative for INEL environmental restoration and waste
management activities, including SNF management. See also the response to comment 04.04 (011).

II 1.1.3 Others

II COMMENT

Commentors support finding a safe area in which to store spent nuclear fuel.

RESPONSE

DOE agrees with the comment.

II 1.2 General Preferences

II COMMENT

Commentors favor the options that would require the least amount of transportation, and oppose transportation of radioactive material, and a particular option.

RESPONSE

DOE complies with U.S. Department of Transportation regulations for transporting radioactive material.
These regulations are designed to protect workers and the public by minimizing the risks associated with
transporting radioactive material.
In addition, the EIS evaluates a range of reasonable alternatives, from no action, which involves limited
transport of radioactive materials, to centralization, which involves extensive transport of radioactive
material. The analysis in the EIS shows that the potential risks from transportation would be small for all
the alternatives. Nevertheless, the public comment to minimize transportation is one of the factors
considered in the DOE decision-making process that will lead to a ROD. Public opposition to alternatives
that would involve more, versus less, transportation is also a factor that has been considered in the
decision-making process.
A discussion of SNF highway and rail transportation impacts and potential accident impacts is in

Volume
1, Chapter 5 and Appendices A through F. DOE follows the U.S. Department of Transportation requirements for off-site transportation of SNF, including the use of licensed shipping containers that meet
U.S. Department of Transportation and Nuclear Regulatory Commission performance requirements. As a
result, the potential for exposing the public to radiation hazards is extremely low. DOE further minimizes
accident risks by following training and route-selection guidelines and uses other procedural controls for
hazardous and radioactive shipments. In the unlikely event of an accident, emergency response measures
will be taken by DOE and local governmental authorities. As described in the EIS Summary under Public
and Worker Health Effects, the overall risk from transportation would be small.

II II COMMENT

The commentor favors upgrading existing temporary storage facilities and expediting ultimate disposition
over developing a centralized, temporary storage site.

RESPONSE

Volume 1, section 3.1 summarizes the alternatives for managing SNF. These alternatives range from a large
number of sites to a single centralized site. NTS, which is close to the Yucca Mountain site, is included in
the evaluation. Yucca Mountain is being studied as the potential site for the first geologic repository. If
the site is found suitable, acceptance of commercial SNF is expected to begin in 2010. DOE high-level
waste acceptance is planned for 2015; the date for acceptance of DOE SNF at the repository has not been
finalized.

II COMMENT

The commentor opposes sending N-Reactor spent nuclear fuel or other weapons-grade spent nuclear fuel
to Britain for reprocessing.

RESPONSE

A discussion of potential foreign reprocessing of N-Reactor SNF is in Volume 1, Appendix A, Attachment
B.

II COMMENT

Commentors find it "frightening" and "absurd" that DOE, the Department of Defense, and the Navy have
been unable to come up with a feasible and workable alternative.

RESPONSE

DOE believes it has evaluated a full range of reasonable alternatives. Volume 1, section 3.1 describes the
preferred alternative for programmatic SNF management. See also the response to comment 04.04 (008).
The programmatic action that DOE ultimately selects is not necessarily limited to one of the alternatives.
For example, the ROD could incorporate actions from one or more of the five alternatives

analyzed.
Moreover, the programmatic decisions will not identify all site-specific SNF management options. If
appropriate, the decisions or implementation would be made after additional site-specific NEPA evaluation.

II II COMMENT

The commentor prefers that spent nuclear fuel be managed at the nearest good site and not spread out.

RESPONSE

The EIS evaluates 10 sites as reasonable alternatives for some level of SNF management activities. The
analysis in the EIS considers a number of factors, including risk to the public from both operations and
reasonably foreseeable accident conditions. Discussions on public health and safety can be found in the
Occupational and Public Health and Safety sections in Volume 1 and its site-specific Appendices A
through F, and in Volume 2, section 5.12. The EIS concludes that there would be no significant risks to
the public or the environment due to SNF management activities at any of the 10 sites considered.

II COMMENT

The commentor prefers alternatives that manage spent nuclear fuel at its current site or where it is ,
generated or received, which will help keep pressure on waste reduction and disposal activities.

RESPONSE

See the response to comment 04.04 (008).

II COMMENT

The commentor states that this EIS addresses nothing new in establishing a viable waste policy and that
moving nuclear wastes around only delays the problem to the next generation.

RESPONSE

DOE is committed not only to developing Federal geologic repositories for permanently isolating SNF, but
to providing safe interim storage pending availability of permanent disposal facilities. SNF transportation is
necessary to varying degrees under the alternatives DOE is analyzing for providing safe interim storage and
management of SNF. The alternatives have definite purposes for relocating SNF, such as storing similar
fuel types within a single secure facility. Thus, the alternatives attempt to balance transportation concerns
with other worthy considerations, including nonproliferation, worker safety, and cost effectiveness.
The potential impacts of storing radioactive materials associated with SNF are discussed in Volume 1,
Chapter 5 of the EIS. Environmental consequences of programmatic SNF management are presented for
all alternatives in Volume 1, section 5.1, and mitigation measures are discussed in Volume 1, section 5.7.
DOE has a program for safely managing and storing SNF and other radioactive materials at each of the sites
considered in the EIS. DOE's policy is to design, construct, and operate its facilities to

provide a level of
safety and safety assurance that meets applicable Federal, state, and local requirements and regulations and
DOE Orders. DOE will manage SNF in a manner that ensures protection of the environment and the health and safety of the public and site employees.

II COMMENT

The commentor supports alternatives that commit DOE to accept spent nuclear fuel from university reactors, specifically the Decentralization, Regionalization, and Centralization alternatives, and requests
annual shipments.

RESPONSE

Volume 1, section 3.1 describes the preferred alternative for programmatic SNF management; Volume 2,
section 3.4 describes the preferred alternative for SNF management, environmental restoration, and waste
management at INEL. See the responses to comments 04.04 (008) and 04.04 (011).

II COMMENT

The commentor states that under the No Action alternative, universities will have to store spent nuclear
fuel without the infrastructure of an operating reactor.

RESPONSE

Volume 1, section 3.1 identifies the preferred alternative for programmatic SNF management and the
actions that would be undertaken by DOE to the extent required by this alternative. Research and development activities would be included.

II COMMENT

The commentor objects to the No Action alternative because of the increased potential for radiation
exposures and the reduction of safety margins related to degrading spent nuclear fuel. The commentor also
notes that there are indirect impacts associated with no research on appropriate technologies for stabilization under the No Action alternative.

RESPONSE

DOE formed a No Action alternative that would provide for minimum safe management of SNF and serve
as a basis for comparison so that bounding impacts could be obtained through analysis of the other
alternatives. This analysis is consistent with CEQ regulations and guidance for the No Action alternative.

II II COMMENT

Commentors express the opinion that spent nuclear fuel storage at a particular site is unacceptable because
there is already too much present.

RESPONSE

Potential sites were based in part on land ownership and whether current or former SNF management activities were conducted. These sites then were evaluated by using statutory and regulatory restrictions, environmental factors, socioeconomic and transportation issues, and implementation considerations. The sites discussed in the EIS are possible alternative sites for siting SNF storage facilities. Sites that will be used for SNF or waste storage are to be identified in the ROD. The NEPA process requires that a full range of reasonable alternatives, including alternative sites, be considered and evaluated in the EIS. See the response to comment 03.07 (003).

II COMMENT

The commentor is skeptical of DOE's assertions that it can store spent nuclear fuel with negligible environmental impacts and that its entire inventory can be stored on a site only tens of acres in size.

RESPONSE

The Alternative Site Selection Process Report reasonably assumes that "for the scope of interim storage of newly generated spent nuclear fuel (SNF), the minimum site size is on the order of tens of acres" based on the current interim storage of Naval, test reactor, and Fort St. Vrain SNF. However, it states that "for the scope of interim storage of currently stored and newly generated SNF, under the Regionalization and Centralization alternatives, the minimum site size is on the order of hundreds of acres, based on monitored retrievable storage siting requirements for commercial SNF. The minimum site size would be in the thousands of acres if large-scale stabilization activities were undertaken in addition to interim storage, based on the nature and complexity of the processes involved and associated infrastructure required.

II COMMENT

The commentor strongly opposes considering the Nevada Test Site as a potential site for spent nuclear fuel management, stating that the Western Shoshone National Council must approve such activities under the 1863 Treaty of Ruby Valley.

RESPONSE

The issue of Western Shoshone claims of ownership of a large portion of Nevada, including the Federally owned and administered lands comprising the NTS and the potential repository site at Yucca Mountain, has been a matter of contention and extensive litigation for many years. In that litigation, the U.S. Supreme Court held that the Western Shoshone had received "payment" in 1979 for the lands the Tribe still claimed, thus extinguishing any rights or title the Tribe may have had at that point in time. United States vs. Dann, 470 U.S. 39, 105 S. Ct. 1058 (1985). In January 1989, the Ninth Circuit of the U.S. Court of Appeals, citing the Supreme Court decision, emphatically reiterated that Western Shoshone title to these lands had been extinguished, and further ruled that the extinguishment took place in 1872. United States vs. Dann, 873 F. 2d 1189 (9th Cir. 1989). In October 1989, the Supreme Court declined to hear the case on appeal, thus leaving to stand as law the Ninth Circuit opinion concerning the extinguishment of Western Shoshone Tribal rights. In view of these legal precedents, DOE disagrees with the continued assertion of Western Shoshone ownership of NTS or the potential Yucca Mountain repository site.

II COMMENT

The commentor prefers alternatives that do not result in additional nuclear waste being managed at the Oak Ridge Reservation in Tennessee, and specifically references spent nuclear fuel coming from the State of Washington.

RESPONSE

See the response to comment 04.04 (008).

II COMMENT

Commentors express the opinion that spent nuclear fuel should be stored in areas of low population density to minimize potential health risks.

RESPONSE

One purpose of this EIS is to evaluate a number of alternatives to aid decisionmakers in selecting the interim storage site(s). The sites have been evaluated based on a number of factors, including potential risks to the public. As stated in the EIS, the Atomic Energy Act of 1954 authorizes DOE to establish standards to protect health or minimize dangers to life or property. Radiation protection standards are based on controlling radioactive releases to levels as low as reasonably achievable in recognition of the potential health risk from radiation exposure.
Analyses in the Health and Safety sections of both volumes of the EIS evaluate potential impacts to the off-site public from radiological and nonradiological hazards. These analyses used population data, including proximity to the sites considered. For all alternatives, impacts would be small.

II COMMENT

The commentor states that production of "nuclear waste" must stop and is opposed to receiving any more in the great Northwest so that the port cities and the Snake and Columbia Rivers are not jeopardized. The commentor prefers alternatives that do not result in additional nuclear waste being managed. The commentor also generally questions the need to risk water resources, fragile ecosystems, the environment, etc.

RESPONSE

This EIS addresses management of DOE SNF pending ultimate disposition. Most SNF to be managed over the next 40 years exists today, and ceasing activities that generate SNF would not significantly alter the actions considered in this document. Specific environmental consequences of SNF management are presented for all alternatives in Volume 1, section 5.1. Most of DOE's SNF was generated in DOE production and experimental reactors that have ceased to operate. Additional information on

pollution
prevention practices is in Volume 2, section 2.2.7.

II COMMENT

Commentors express the opinion that spent nuclear fuel management activities should not be located in
areas of high population density.

RESPONSE

Although SNF management activities can safely coincide with high-population or otherwise sensitive areas,
it is prudent to strive to avoid such areas where feasible in siting new activities or missions that could
present some risk to the public, however slight. However, public perceptions of risk from DOE and/or
Navy activities tend to significantly exceed the actual risks. Some individuals oppose one or more of the
alternatives identified by DOE and the Navy for transporting, receiving, processing, and storing spent
nuclear fuel. Nevertheless, some alternative must be selected, because DOE has a considerable amount
SNF. To select an alternative, the Navy is cooperating with DOE in this comprehensive EIS on SNF
management, including Naval SNF. This EIS evaluates alternatives for managing SNF pending ultimate
disposition. The December 22, 1993, Court Order requires the EIS to be completed and issued by April
30, 1995, and a ROD to be issued by June 1, 1995.

II COMMENT

The commentor prefers alternatives that do not result in additional nuclear waste being managed at the site
in their state. The commentor questions how DOE originally chose the Idaho National Engineering
Laboratory, the Hanford Reservation, and the Savannah River Site for its activities 40 years ago. The
commentor further points out that the National Environmental Policy Act process did not exist then. The
commentor states that no scientific process was used years ago in choosing Idaho National Engineering
Laboratory for waste storage, and the EIS fails to analyze different storage types or the need for, and
impact of, processing.

RESPONSE

The commentor is correct that the National Environmental Policy Act of 1969 did not exist when DOE's
predecessors began activities at the three sites mentioned by the commentor. The basis for decisions by the
Federal Government to select these locations for siting various activities is beyond the scope of this EIS.
The commentor is referred to the public information officer at each of these and other sites of interest for
historical information pertaining to the sites.
Volume 1, section 1.1.3 and Appendix J discuss wet and dry storage. Within alternatives, estimated
impacts of the particular storage type were included as input to modeling used to determine the
alternative's impact; therefore, the consequences related to a particular storage type are included. DOE
believes that assuming a potential need for processing is justified because it represents a bounding
condition for potential impacts from SNF management, and because some processing may be required to
prepare some SNF for interim storage. The repository criteria, while not specifically defined, can be
expected to contain certain criteria that, for some fuels, can be met only by some form of processing.

Processing and reprocessing are addressed as an option under the Volume 2 Maximum Treatment, Storage, and Disposal alternative at INEL. Refer to Project Summary SNF6 in Volume 2, Appendix C. Additionally, information on historic emissions from reprocessing was used as input for the emissions modeling because it considered bounding for any potential future processing, including processing using existing or new facilities or processes. The models are considered bounding because DOE will design facilities and control operations to ensure that emissions are within the regulatory limits and that historic emissions are not exceeded. In 1992, DOE instituted a policy that phased out reprocessing for weapons production. That policy remains in effect.

II COMMENT

The commentor opposes a nuclear repository in Idaho.

RESPONSE

Volume 1, section 3 describes the alternatives for managing SNF considered in this programmatic EIS. None of the alternatives considered in this EIS would create a nuclear waste dump or repository in Idaho or at any of the other sites considered during the period of this EIS.

II COMMENT

One commentor cites a quotation that states it is unrealistic to dump fuel into Savannah River Site facilities that were never designed to store nuclear waste. Another commentor expresses the opinion that storing spent nuclear fuel at the Savannah River Site is an inappropriate mission for that site.

RESPONSE

Volume 1, Appendix C, sections 2.3 and 2.5 describe the SNF management program at the Savannah River Site (SRS) and identify facilities that could be used to manage SNF under the alternatives considered in this programmatic EIS. Analyses of the alternatives and facilities in this EIS show that the impacts for all of the alternatives considered would be small.

II COMMENT

The commentor expresses the opinion that DOE is continuing to bring SNF into the state for storage and should consider other areas for storing spent nuclear fuel, instead of further affecting this area.

RESPONSE

Several DOE sites do manage a significant percentage of DOE SNF and waste. This is due to each site's established capability to safely manage such materials (for example, safeguards and security, a skilled work force, facilities, and historic mission) and associated support infrastructure (for example, waste management, emergency response, and stakeholder involvement programs). Decisions about where to site and conduct such programs also are influenced by a system of checks and balances designed to be

beyond
DOE's control, such as Congressional funding allocations, state and local permitting requirements, and
potential judicial scrutiny.
Additionally, NEPA provides opportunities to involve the public in and promote informed decisionmaking
regarding major Federal decisions. Accordingly, this EIS objectively evaluates 10 sites as reasonable siting
alternatives for some level of SNF management. The EIS analyses include environmental considerations,
socioeconomic impacts, and potential risks to the public from both operations and reasonably foreseeable
accidents for a number of options for managing SNF. The EIS concludes that there would be no significant
risks to the public or to the environment due to SNF management activities at any of the 10 sites considered.
Public comments were considered in the preparation of this EIS, upon which a decision will be based.
Although the EIS provides decisionmakers with an informed basis for making a decision from the perspective of environmental impacts and public comments, decisions also will be based on such considerations as cost, programmatic needs of DOE and the Navy, and implementability. DOE intends to
develop and implement a national SNF management strategy that best serves the nation's overall needs.
See also the response to comment 04.04 (008).

II COMMENT

Commentors express fear about Idaho or Tennessee becoming a dumping ground for nuclear waste.

RESPONSE

The above concern is not appropriate for consideration in the NEPA process. The U.S. Supreme Court
held, in Metropolitan Edison v. People Against Nuclear Energy, 103 S. Ct. 1556 (1983), that psychological effects caused by risk are not within the scope of the NEPA process. Therefore, analyses of
moral, emotional, and psychological (including fear, dread, mental anguish, hatred, etc.) issues are not
included in the EIS. However, public perceptions of risk from DOE and/or Navy activities tend to significantly exceed the actual risks.

II COMMENT

The commentor expresses an opinion about delays in determining the manner of ultimate disposition and
takes a position against long-term storage of spent nuclear fuel at the Puget Sound Naval Shipyard, favoring
the Hanford Site or the Idaho National Engineering Laboratory.

RESPONSE

Volume 1, section 3.1 identifies the preferred alternative for programmatic SNF management and the
actions that DOE would take to the extent required by this alternative. Research and development activities would be included.

II II COMMENT

Commentors state that converting high-level liquid waste to more stable calcine, followed by preparation
for final disposal, must be an integral part of any alternative selected for managing high-level liquid waste.

RESPONSE

Volume 2, section 3.1 discusses DOE's plans for handling high-level waste at INEL. Volume 2, Appendix
C identifies specific projects for managing high-level waste and calcine. All alternatives for managing
liquid high-level waste include activities to convert it to calcine.

II COMMENT

The commentor prefers a nonnuclear role for Idaho National Engineering Laboratory.

RESPONSE

A change in the current mission of INEL is not considered as an alternative because this EIS will not
decide the future mission of INEL. The purposes of this EIS are to determine the manner in which DOE
and the Navy will manage SNF during the next 40 years pending ultimate disposition, and to assess the
environmental impacts to INEL from environmental restoration and waste management activities. The EIS
was prepared consistent with those purposes.

II COMMENT

The commentor supports cleaning up the Idaho National Engineering Laboratory and opposes expansion of
waste disposal.

RESPONSE

The purposes of this EIS are to determine the manner in which DOE and the Navy will manage SNF
during the next 40 years pending ultimate disposition, and to assess the environmental impacts to INEL
from environmental restoration and waste management activities. The EIS was prepared consistent with
those purposes.

II COMMENT

The commentor proposes a number of actions for waste management and environmental restoration at the
Idaho National Engineering Laboratory.

RESPONSE

Some of the actions suggested by the commentor fall within the various alternatives currently evaluated in
Volume 2 of the EIS, and constitute a hybrid alternative covered by the existing analysis of the
environmental impacts. Other suggested actions are outside the scope of the proposed action in this EIS,
either because they are outside the subject or are the proposed action or are outside the 10-year period
(1995 to 2005) for the INEL site-specific portion covered in Volume 2 of the EIS. See also the response
to comment 07.02.01 (003).

II COMMENT

The commentor opposes the construction of the Mixed/Low Level Waste Disposal Facility above Idaho's sole-source aquifer in a floodplain.

RESPONSE

This project is a part of the Ten-Year Plan and Maximum Treatment, Storage, and Disposal alternatives. The INEL accident assessment summarized in Volume 2, section 4.15 considers flooding and other natural phenomena as potential initiators of facility accidents. Some potential accident initiators were selected for detailed analysis because they were comparatively likely, and some initiators were selected for detailed analysis because of their potentially large consequences. The consequence of a seismic failure of the high-level waste tanks was selected for detailed analysis over a flooding scenario because the large radioactive inventory in the high-level waste tanks has a greater potential for consequences to water resources than a flood. The analyses showed that the risks to the aquifer and all other risks would be small. The Mixed/Low Level Waste Disposal Facility would be designed, constructed, and operated in accordance with all applicable regulations. DOE recently constructed new flood and erosion control features at the RWMC. This new construction will reduce the possibility of flooding at the RWMC, as well as minimize any impacts that could occur should the area receive a large volume of water later from runoff or snow melt.

II II COMMENT

Commentors suggest that nuclear waste be managed on one of the Marshall Islands.

RESPONSE

The NEPA process requires that a full range of reasonable alternatives, including alternative sites, be considered and evaluated in an EIS. Potential sites were selected based in part on land ownership and whether current or former SNF management activities were conducted. The potential sites then were evaluated by using statutory and regulatory restrictions, environmental factors, socioeconomic and transportation issues, and implementation considerations. The Marshall Islands were not considered a reasonable siting alternative and, therefore, were not included in this EIS.

II COMMENT

Commentors favor managing spent nuclear fuel at a specific DOE site or sites.

RESPONSE

Volume 1, section 3.1 of the EIS describes DOE's preferred alternative for programmatic SNF management; Volume 2, section 3.4 describes the preferred alternative for SNF management, environmental restoration, and waste management at INEL. See the responses to comments 04.04 (008) and 04.04 (011).

II COMMENT

The commentor states that a reasonable alternative is to leave Fort St. Vrain fuel in Colorado.

RESPONSE

The EIS does analyze alternatives that leave Fort St. Vrain fuel in Colorado. Volume 1, section 3.1 of the
EIS describes DOE's preferred alternative for programmatic SNF management; Volume 2, section 3.4
describes the preferred alternative for SNF management, environmental restoration, and waste management
at INEL. See the responses to comments 04.04 (008) and 04.04 (011).

II 1.3 Miscellaneous

II COMMENT

The commentor states that DOE is emphasizing transportation of spent nuclear fuel without considering the
goals and consequences of doing so. The commentor respectfully asks what DOE will do with the
additional inventory at the Idaho National Engineering Laboratory. The commentor states that the EIS
does not adequately address correction of problems at existing sites and at receiving locations.

RESPONSE

DOE is committed not only to developing Federal geologic repositories for permanent isolation of SNF but
to providing safe interim storage pending availability of permanent disposal facilities. Transporting SNF is
necessary to varying degrees under the alternatives DOE is analyzing for providing safe SNF interim storage
and management. The alternatives have definite purposes for relocating SNF such as storing similar fuel
types within a single secure facility. Thus, the alternatives attempt to balance transportation concerns with
other worthy considerations, including nonproliferation, worker safety, and cost effectiveness. DOE
recognizes that some alternatives increase the inventory at some locations, but believes that such
consolidation may improve SNF management. The environmental impacts of such management alternatives
are the subject of this EIS.
The potential impacts of storing radioactive materials associated with SNF are discussed in Volume 1,
Chapter 5 of the EIS. The environmental consequences of managing SNF are presented for all alternatives
in Volume 1, section 5.1, and mitigation measures are discussed in Volume 1, section 5.7. DOE has a
program to safely manage and store SNF and other radioactive materials at each of the sites considered in
the EIS. DOE's policy is to design, construct, and operate its facilities in a way that provides a level of
safety and safety assurance that complies with applicable Federal, state, and local requirements and
regulations and DOE Orders. DOE will manage SNF to ensure protection of the environment and the
health and safety of the public and site employees. See also the response to comment 01.01.01.01 (022).

II COMMENT

The commentor states that the Waste Experimental Reduction Facility and the Process Experimental Pilot
Plant operated without an EIS to incinerate waste and were in violation of the Resource Conservation and
Recovery Act.

RESPONSE

Environmental assessments were prepared for both WERF and the Process Experimental Pilot Plant. The Process Experimental Pilot Plant operated only in a trial burn mode, and DOE discontinued the project. Volume 2 of this EIS analyzes the cumulative impacts of operating the WERF incinerator for treatment of mixed low-level waste. Incineration is a best demonstrated available technology for many of the hazardous wastes that could be treated at WERF. Mixed low-level waste has been incinerated at WERF only for trial burns. WERF is an interim-status facility under RCRA. The permit status of WERF is discussed in Volume 2, Chapter 7.

2. NEPA-RELATED COMMENTS

02 (001) NEPA-Related Comments

COMMENT

Commentors state that decisions have already been made; that the [EIS] process is an attempt to openly and officially make the Idaho National Engineering Laboratory a de facto atomic dump; and that the EIS was designed to support this previously arrived-at official decision.

RESPONSE

Council on Environmental Quality (CEQ) regulations at 40 CFR 1506.1(a) state that until an agency issues a Record of Decision, no action shall be taken that would either have an adverse impact on the environment, or limit the choice of reasonable alternatives.
No final decisions within the scope of this EIS have been made or will be made until a Record of Decision (ROD) for the EIS is issued.

2.1 EIS Presentation and Distribution

02.01 (002) EIS Presentation and Distribution

COMMENT

Commentors express opinions about the writing and organization of the EIS Summary, stating that the summary is confusing, seems to obscure rather than clarify information, and contains internal contradictions. Commentors recommend a different format for the Summary.

RESPONSE

The EIS follows the format specified by CEQ regulations at 40 CFR 1502.10. The Summary highlights the most significant aspects of the EIS and is written and organized in a manner and format consistent with the EIS for the purpose of providing a relatively brief overview.
Because summaries must be short, they cannot provide all supporting information. Volume 1, Chapter 3 and Volume 2, Chapter 3 provide substantially more information on the alternatives. For example, the more extensive description of the alternatives explains why all high-level waste cannot be transferred to the Idaho National Engineering Laboratory (INEL).
The statements identified as contradictory by the commentors are that the document does not support choices of technologies for ultimate disposition of spent nuclear fuel (SNF) but will support the transition

between current management practices and ultimate disposition. These statements are not contradictory. As pointed out in Volume 1, Chapter 1, technologies and facilities will depend to some extent on waste acceptance criteria for the ultimate disposition site. Thus, the final technologies cannot be determined until some uncertainties are resolved.

02.01 (003) EIS Presentation and Distribution

COMMENT

Commentors state that the Spent Fuel Working Group Report is not referenced in the EIS and ask how the report was taken into account in the EIS.

RESPONSE

The Spent Fuel Working Group Report on Inventory and Storage of the Department's Spent Nuclear Fuel and other Reactor Irradiated Nuclear Materials and Their Environmental, Safety and Health Vulnerabilities and its corresponding action plans are referenced in Volume 1, Chapter 9 and Volume 2, Chapter 9. The report, also called the spent nuclear fuel vulnerability assessment, and its relationship to this EIS are discussed in Volume 1, Chapter 1 and Volume 2 section 2.2.5.
Volumes 1 and 2, Chapter 3 have been modified to describe how the information in the spent nuclear fuel vulnerability assessment was used in the preferred alternative decision process.

02.01 (004) EIS Presentation and Distribution

COMMENT

The commentor suggests that a statement regarding fuel for Naval and DOE reactors should be changed to "highly" enriched uranium.

RESPONSE

The statement in Volume 1, section 3.2.1 has been revised to read "... the fuel for Naval and some DOE reactors utilizes highly enriched uranium..."

02.01 (005) EIS Presentation and Distribution

COMMENT

The commentor states that Volume 1, Table 1-4 should list the EIS on a Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Spent Nuclear Fuel.

RESPONSE

Volume 1, Table 1-4 does list that EIS. It is the fourth entry under the DOE Headquarters classification.

02.01 (006) EIS Presentation and Distribution

COMMENT

The commentor requests that the EIS use suitable names instead of letters to designate alternatives, which would make it easier to read and understand the comparisons of alternatives.

RESPONSE

DOE uses names in addition to letters when appropriate to describe or discuss alternatives, particularly in the Summary and main volumes of the document. Regarding readability, appendices provide more detailed data to support the main volumes and contain more detailed technical information. The comparisons of alternatives are also provided in Volume 1 and the Summary. The Summary provides graphics for easy comparison of alternatives.

02.01 (007) EIS Presentation and Distribution

COMMENT

The commentor states that the EIS inappropriately uses cubic meters instead of metric tons of heavy metal as a measure of spent nuclear fuel and requests a conversion table between metric tons of heavy metal and cubic meters.

RESPONSE

The commentor is incorrect that cubic meters is the measurement scale the EIS uses for SNF. To be consistent with Nuclear Regulatory Commission and commercial-sector conventions, the EIS presents all measurements of SNF in terms of metric tons of heavy metal.

02.01 (008) EIS Presentation and Distribution

COMMENT

The commentor asks that the EIS include a clear explanation of the weightings applied to various impacts to make a conclusion.

RESPONSE

The EIS identifies all impacts, as required by the National Environmental Policy Act (NEPA). The decisionmakers must consider the environmental impacts in making their final decision. Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. The analyses show that the impacts of all alternatives would be small. While there are differences in the impacts among the alternatives, these differences by themselves are not sufficient to distinguish between the alternatives. Therefore, the final decision will include consideration of other relevant factors, including economic and technical considerations and agency statutory mission. The ROD will identify and discuss all such factors, which will be balanced by DOE in making its decision, and will state how those considerations entered into its decision.

02.01 (009) EIS Presentation and Distribution

COMMENT

The commentor states that the EIS does not address specific scientific questions; therefore, the commentor cannot really comment.

RESPONSE

The EIS addresses environmental and scientific issues that are relevant to the proposed actions or alternatives. DOE believes that it has provided accurate scientific analyses and has fulfilled its obligations and responsibilities in accordance with NEPA.

02.01 (010) EIS Presentation and Distribution

COMMENT

The commentor states that the Department of Transportation and the Nuclear Regulatory Commission transportation regulations are not discussed.

RESPONSE

The commentor is referred to Volume 1, section 7.2.4 for a discussion of hazardous and radioactive materials transportation regulations. This section discusses both Department of Transportation (DOT) and Nuclear Regulatory Commission (NRC) regulations. In Volume 2, DOT and NRC transportation regulations are discussed in section 7.2.5. Volume 1, Appendix I contains additional information about transportation regulations.

02.01 (011) EIS Presentation and Distribution

COMMENT

The commentor states that the notification dates for Oak Ridge Reservation and Nevada Test Site

inclusion
in the EIS should be added to the EIS, if those dates differ from the dates the two sites were added to the
spent nuclear fuel management EIS.

RESPONSE

The Oak Ridge Reservation and the Nevada Test Site were added to the Implementation Plan for the Department of Energy Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory EIS on May 9, 1994. This information is provided in Volume 1, section 1.3.1.

02.01 (012) EIS Presentation and Distribution

COMMENT

The commentor asks that a glossary be included in the EIS.

RESPONSE

In Volume 1, the glossary is in Appendix H, and in Volume 2, the glossary is in Appendix E.

02.01 (013) EIS Presentation and Distribution

COMMENT

The commentor is unclear what the term "rolled up" means.

RESPONSE

The term describes the process of taking data or text from one or more areas of the EIS and combining the
information into a summary section.

02.01 (014) EIS Presentation and Distribution

COMMENT

The commentor states that different formats for tables, figures, and charts and different computer codes
were used for each site, which makes comparing the alternatives difficult.

RESPONSE

The site-specific appendices to Volume 1 were prepared by contributors at the individual DOE sites.
Calculational methods were defined by a set of technical guidelines that provided common guidance to all

site contributors. Volume 1, Chapter 5 compares the alternatives by using figures and tables that
summarize all the data for each alternative. These charts use the same format and units. Thus, the
commentor should be able to compare one alternative with another by comparing the respective summary
pages.

02.01 (015) EIS Presentation and Distribution

COMMENT

The commentor states that the EIS numbering system used is confusing and suggests a sequential
numbering system that distinguishes between volumes.

RESPONSE

The EIS is divided into two separate volumes, one dealing a with programmatic proposed action (Volume
1), and one dealing with a INEL site-specific proposed action (Volume 2). Each page is labeled with either
Volume 1 or Volume 2 and, if appropriate, an appendix designation. The front of each volume contains a
reader's guide that describes the organization of this complex document. Additionally, DOE prepared a
user's guide as a road map for reviewing the documents.

02.01 (016) EIS Presentation and Distribution

COMMENT

The commentor states that the results of the Waste Management Programmatic EIS and the
Reconfiguration EIS have not been included in this EIS, thereby precluding accurate characterization of
environmental impacts.

RESPONSE

Volume 2, section 2.1.3 discusses DOE EISs that are related to this EIS; the two identified by the
commentor are included in the discussion. Writers and analysts coordinated with those developing the
other EISs to ensure consistency. This EIS bounds the potential impacts of nationwide SNF management
and SNF management, environmental restoration, and waste management programs at INEL. DOE
considered the environmental impacts of past, present, and reasonably foreseeable future activities in the
EIS's cumulative impact analysis.

II 02.01 (017) EIS Presentation and Distribution

COMMENT

The commentor notes that the Idaho National Engineering Laboratory has an entire volume, which

seems
to give it special status, and that a better balance should be achieved.

RESPONSE

This EIS is comprised of two separate evaluations: one programmatic and one site-specific. Volume 1 covers the proposed action for DOE complex-wide programmatic SNF management. Volume 2 is site-specific and covers INEL environmental restoration and waste management programs (including a
proposed action involving site-specific spent nuclear fuel management). Although additional decisions are
pending at INEL, as reflected in Volume 2, this does not give INEL special status.

II 02.01 (018) EIS Presentation and Distribution

COMMENT

The commentor states that in Volume 1, Appendix C, there are detailed inventory tables of anticipated
chemicals, but none for radionuclides, and that the radionuclide inventories should be provided.

RESPONSE

The necessary information concerning radionuclides related to SNF management is available in Appendix
C, Tables 4-9, 5-7, and 5-9. DOE reviewed the tables in Appendix C, and decided that no format change
was warranted. The information comes from annual environmental monitoring reports and technical
reports. The information should remain consistent with previously published reports.

II 02.01 (019) EIS Presentation and Distribution

COMMENT

The commentor requests a full accounting of all the spent nuclear fuel in America that must be stored. The
commentor also requests a graphic showing a football field of fuel.

RESPONSE

As noted in Volume 1, management of commercial SNF is outside the scope of this EIS, so that category
of fuel is not tabulated. A full inventory of DOE SNF is in Volume 1, section 1.1 (Tables 1-1 and 1-2).
DOE believes that it is more appropriate in the EIS to show the locations of SNF and the amounts stored at
each site, rather than to display the total amount graphically, as was done in a fact sheet distributed to the
general public.

II 02.01 (020) EIS Presentation and Distribution

COMMENT

The commentor states that a paragraph in Appendix F describing the Y-12 Plant mission is confusing and that a replacement should be found.

RESPONSE

Additional discussion of the Y-12 Plant mission is provided in Volume 1, Appendix F, Part Three, throughout Chapter 2.

II 02.01 (021) EIS Presentation and Distribution

COMMENT

The commentor states that the EIS could be improved by providing additional specific information, including comparative cost analyses, tribal and treaty issues, site hydrology, and strategic land-use planning.

RESPONSE

NEPA does not require the preparation of a comparative cost analysis. However, for long-term planning purposes, some of which are beyond the scope of this EIS, DOE prepared a cost evaluation report, which is summarized in Volume 1, Chapter 3.
Tribal and treaty issues, site hydrology, and strategic land-use planning are all important and are addressed in Volume 2, sections 4.4.2, 4.8, and 4.2.1, respectively. Potential impacts from proposed and alternative actions can be found in sections 5.4, 5.8, and 5.2, respectively.
Assumptions for future land uses at INEL will be made to determine the appropriate level of cleanup under the Federal Facility Agreement/Consent Order (FFA/CO), and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process. In August 1994, the DOE Idaho Operations Office issued for public comment the Idaho National Engineering Laboratory Long-Term Land Use Future Scenarios (Draft). This document set forth various land-use scenarios that could be assumed for short-term and long-term activities at INEL. Public comments on the document were received and are currently being reviewed and incorporated as appropriate. A final Long-Term Land Use Future Scenarios document will be issued by DOE after the INEL Site-Specific Advisory Board reviews the document and submits comments. The Board expects to provide comments in the spring of 1995.

II 02.01 (022) EIS Presentation and Distribution

COMMENT

The commentor states that the EIS should present the effectiveness of mitigation measures, clarify the distinction between alternatives in terms of groundwater impacts, and describe monitoring plans, including staffing requirements, to ensure measures will be carried out.

RESPONSE

DOE revised the EIS to better describe the types of measures that could be implemented to possibly minimize any impacts from proposed actions, although under all of the alternatives considered the environmental impacts would be small. The proposed measures and a qualitative discussion of their effectiveness in protecting water resources are described in Volume 2, section 5.19.5. These measures apply to all alternatives. The potential impacts of each proposed alternative on groundwater resources are quantified in Volume 2, section 5.8 and Appendix F-2. Groundwater monitoring and the limitations on monitoring data are described in Volume 2, Appendix F, section 2.2.2. If necessary, a mitigation action plan will be prepared that will address issues raised by the comment.

II 02.01 (023) EIS Presentation and Distribution

COMMENT

The commentor states that the word "negligible" does not accurately describe the environmental impacts discussed in the EIS.

RESPONSE

Based on the best information available, this EIS concludes that environmental impacts would be small under all the alternatives. Analyses in this EIS were prepared and reviewed by technical experts in each discipline. Analyses and conclusions are supported by studies, reports and literature, for which references are provided. DOE revised the EIS to eliminate the use of the word "negligible."

II 02.01 (024) EIS Presentation and Distribution

COMMENT

Commentors request that detailed discussions of the various sites' Federal Facility Agreements and Consent Orders and the effects of the EIS alternatives on the agreements and orders be provided in the EIS.

RESPONSE

DOE's policy is to comply with all applicable Federal and state laws and regulations, Presidential Executive Orders, and DOE Orders, as stated in Volume 1, section 2.2. This policy also applies to Federal Facility Agreements and Consent Orders. The No Action alternative in this EIS, which provides a baseline for comparing of the environmental impacts of the other alternatives, would not meet all regulatory requirements. DOE considered regulatory compliance, and compliance with existing agreements and consent orders in its process to identify the preferred alternatives. Detailed discussions of site-specific regulatory frameworks, sufficient to aid the EIS decision-making process, are provided in Volume 1, Appendices A through F, sections 2.2.

II 02.01 (025) EIS Presentation and Distribution

COMMENT

The commentor states that the spent nuclear fuel EIS does not explicitly indicate how stakeholder concerns or values are accounted for as alternatives are compared. The commentor suggests that numerical information condensed in tables and charts would be more helpful if immediately preceded by an explicit discussion of the values underlying the comparisons.

RESPONSE

Public concerns, among other considerations, are important to the decision-making process for this EIS.
Volume 1, section 1.4 and Volume 2, section 2.1 both describe how public involvement was used and will continue to be used in making these decisions.
Tables and charts are included to make this document more informative. Where necessary, the tables and charts are discussed to provide additional information.

II 02.01 (026) EIS Presentation and Distribution

COMMENT

Commentors express the opinion that the EIS is too long, too bulky, and too hard to read or understand.
They consider length and wordiness to detract from the document's message or to make it difficult for people to comment meaningfully. Some commentors suggest that the EIS cost too much to prepare.

RESPONSE

While the EIS contains a large amount of technical information, an effort was made to prepare a document that the public could easily read and understand.
The EIS was prepared in a layered fashion with respect to the technical depth of the information. The Summary is intended to summarize the information, in a concise format that would be generally understandable by nontechnical persons. The first three chapters of each volume present expanded information with more technical detail, but are still in summary form. The remaining chapters in each volume summarize the technical information needed to support a decision. The appendices are technically detailed and provide sufficient information for a thorough technical review.
The size and cost of preparing this EIS were caused by a number of factors. The EIS covers a broad range of proposed actions and alternatives. Volume 1 considers reasonable programmatic DOE complex-wide alternative approaches to safely, efficiently, and responsibly manage existing and projected quantities of SNF until 2035, as well as the No Action alternative. Volume 2 addresses reasonable alternative approaches for managing DOE's environmental restoration, waste management, and SNF management activities over the next 10 years at INEL, as well as the No Action alternative. To adequately address all the environmental factors potentially impacting the wide range of related decisions necessarily results in a large document.

II 02.01 (027) EIS Presentation and Distribution

COMMENT

The commentor states that the Draft EIS fails to identify a proposed action and to provide a detailed
analysis of the environmental impacts of that action.

RESPONSE

The proposed action for Volume 1 of this EIS is the safe management of SNF pending final disposition.
The proposed action for Volume 2 of this EIS is to develop appropriate facilities and technologies for
waste and SNF management at INEL and to effectively manage wastes resulting from environmental restoration, SNF management, and other activities at INEL.
In response to public comments, Volume 1, Chapter 2 and Volume 2, Chapter 1 were revised to more clearly identify the proposed action.

II 02.01 (028) EIS Presentation and Distribution

COMMENT

The commentor recommends a different format for the EIS, including supplementing it with additional
information.

RESPONSE

The EIS follows the format established by CEQ at 40 CFR 1502.10 which state that an EIS must describe
the purpose and need for agency actions; alternatives, including no action; the affected environment; and
the environmental consequences associated with the proposed action and alternatives. Volumes 1 and 2 of
this EIS meet these requirements. In each volume, Chapter 2 describes the purpose and need for the
proposed action; Chapter 3 describes the alternatives being considered; Chapter 4 describes the affected
environment; and Chapter 5 describes the environmental consequences.
In response to comments from the public, the EIS was modified to provide information important to the
decisionmaker or to make necessary editorial changes.

II 02.01 (029) EIS Presentation and Distribution

COMMENT

The commentor states that the EIS Summary does not explain why the scope of the EIS was expanded.

RESPONSE

The commentor is correct. However, an explanation of the evolution of the EIS is in Volume 2, section 2.1.4.

II 02.01 (030) EIS Presentation and Distribution

COMMENT

The commentor states that, with respect to spent nuclear fuel management, the EIS provides only a cursory, disjointed presentation that undermines the rational, informed decision-making process envisioned by the National Environmental Policy Act.

RESPONSE

NEPA, 42 USC Section 4321 et seq., and CEQ regulations at 40 CFR Part 1500 et seq. require that an EIS describe the purpose and need for agency action; alternatives, including no action; the affected environment; and environmental consequences associated with the proposed action and alternatives. Volumes 1 and 2 of this EIS meet these requirements. In each volume, Chapter 2 describes the purpose and need for the proposed action; Chapter 3 describes the alternatives being considered; Chapter 4 describes the affected environment; and Chapter 5 describes the environmental consequences.
CEQ regulations at 40 CFR 1500.1(b) state that environmental information presented to the public in NEPA documents must concentrate on the issues that are truly significant to the action in question, rather than amassing needless detail. To achieve this, 40 CFR 1502.21 states that the agency shall incorporate materials into an EIS by reference when the effect will be to cut down on the bulk of the document. One mechanism for incorporation by reference is discussed in the regulation on "tiering" at 40 CFR 1520.20, which encourages agencies to eliminate repetitive discussion of the same issues and to focus on the actual issues ready for discussion at each level of environmental review.
In consideration of the volume of information presented in the Draft EIS, DOE extended the public comment period to 90 days, which is twice that required under NEPA, and conducted 33 public hearings at 20 locations across the nation, 8 of which were held in Idaho. In addition, DOE accepted public comments in writing, via hearing exhibit, and via a toll-free telephone line well published throughout the comment period. DOE is confident that it has considered all public comments received on the Draft EIS, responded in Volume 3, Response to Public Comments, and issued a Final EIS that incorporates all meaningful comments, as appropriate.

II 02.01 (031) EIS Presentation and Distribution

COMMENT

The commentor suggests that DOE include a "reference guide" in the EIS, including descriptions of all past accidents as well as complete historical monitoring records, to depict the totality of the Idaho National Engineering Laboratory's past and current impact on the environment.

RESPONSE

Documents relating to past accidents and reports of monitoring at INEL and in neighboring communities
are available to the public by request and in reading rooms. In many cases they are listed as references in
this EIS.
Because the purpose of this EIS is to examine the environmental impacts of various proposed future
activities, a baseline of present-day activities and their impacts was established for comparison among and
between alternatives. Documentation used to arrive at the baseline is listed as reference material.

II 02.01 (032) EIS Presentation and Distribution

COMMENT

The commentor suggests the EIS requires wider distribution.

RESPONSE

The Draft and Final EISs were distributed to more than 100 libraries and DOE reading rooms and Navy
information locations. All members of the public who commented on the Implementation Plan and Draft
EIS were contacted to ask if they wanted a copy of the Final EIS.

II 02.01 (033) EIS Presentation and Distribution

COMMENT

The commentor indicates that Attachments A through F were not included in Volume 1, Appendix D to
the EIS, thus precluding proper review.

RESPONSE

Attachments A through F were included in Appendix D, Part B of the Draft EIS. Appendix D consists of
two volumes (Part A and Part B) due to its length. Part B was sent on request, and was available in the
public reading rooms and information locations.

II 2.2 Segmentation

II COMMENT

The commentor states that the spent nuclear fuel EIS does not consider connected actions, as defined in 40
CFR 1508.25(a), with regard to this and other construction projects slated to begin at the Oak Ridge
Reservation in calendar year 1994-1995.

RESPONSE

The actions mentioned by the commentor do not qualify as "connected actions," as defined in 40 CFR 1508.25(a), because they are not connected to the programmatic decision on SNF and they were scheduled to proceed before the time period addressed in the EIS. The projects mentioned are, however, potential cumulative actions. Foreseeable construction projects were considered in the assessment of cumulative impacts for the Oak Ridge Reservation (ORR) in Appendix F, Part Three, section 5.16. Discussion of cumulative impacts in this EIS is sufficient to satisfy the requirements at 40 CFR 1508.25. For example, specific references to construction projects slated to begin at ORR in 1994-1995 are considered to be in the baseline characterization. Reasonably foreseeable future construction projects were identified to qualitatively assess potential programmatic cumulative environmental consequences. Specific reference to and quantification of individual construction projects would be analyzed in a site-specific EIS if ORR is considered as a candidate site for SNF management.

II COMMENT

The commentor states that DOE has segmented the environmental evaluations of several major activities, including receipt of foreign research reactor fuel, in a manner that will cause significant environmental impacts to not be evident. The commentor notes that the National Environmental Policy Act regulations state that "connected actions" and cumulative actions must be analyzed, and that similar actions should be addressed in one EIS when it is the best way to adequately address the impacts.

RESPONSE

This EIS is designed to provide information for a decision or decisions on where to manage all of DOE's existing and reasonably foreseeable SNF inventory. As such, the programmatic document is substantially independent of the proposal analyzed in the EIS entitled Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel (Draft) (FRR EIS). DOE can decide on a contingency basis where to manage its SNF inventory without deciding whether and how to manage foreign research reactor fuel. However, while a decision on whether and how to manage foreign research reactor fuel containing uranium of United States origin has not been and will not be made until the completion of the FRR EIS, the potential impacts of the proposal are included in this programmatic document to ensure that the potential impacts of implementing the proposed policy are considered in any programmatic SNF management decision.

The purpose of the FRR EIS is to analyze the impacts of a proposed United States policy to accept foreign research reactor (FRR) SNF containing uranium of United States origin. Analyzing the proposed policy in a separate EIS allows members of the public to focus their attention on the threshold question of whether to accept FRR SNF as part of the DOE inventory. Analyzing the policy imperatives underlying the proposed policy as part of this programmatic EIS would add significantly to the length of the programmatic document, which is already very lengthy and complex. The SNF analyzed in the FRR EIS is less than 1 percent of the SNF covered in this EIS. If under the FRR EIS the decision is made to accept all FRR SNF containing uranium of United States origin, the effect would not be significant to decisions made under the this EIS.

The DOE Waste Management Programmatic Environmental Impact Statement will evaluate the proposed action of formulating and implementing waste management alternatives. The principal focus of

that EIS is
to evaluate potential configurations for waste management capabilities. Although DOE had proposed to
consider the storage of SNF in the Waste Management Programmatic Environmental Impact Statement, on June 28, 1993, the United States District Court for the District of Idaho ordered DOE to prepare a
comprehensive, site-wide EIS on the environmental effects of all major Federal actions involving SNF at INEL. The scope of the EIS Court Order included evaluating alternatives of transporting, receiving, processing, and storing SNF at sites other than INEL. In view of the breadth of the Court Order,
DOE proposed on September 3, 1993, to expand the scope of the Idaho National Engineering Laboratory
Environmental Restoration and Waste Management Environmental Impact Statement to include analysis of SNF management that was being prepared for the Waste Management Programmatic Environmental Impact Statement.

II COMMENT

Commentors question how this EIS fits in with and is connected to the other DOE site-specific EISs being
prepared.

RESPONSE

DOE is or will be preparing a number of programmatic and site-specific EISs. The linkage between these
programmatic and site-specific EISs is discussed in Volume 1, section 1.2 and Volume 2, section 2.1.3 of
this EIS. Other DOE EISs being prepared, including the DOE Waste Management Programmatic EIS, use
this EIS as a basis for assessing cumulative impacts.

II COMMENT

The commentor opposes Idaho becoming a nuclear waste dump and states that the Idaho National Engineering Laboratory is not the place for a repository. The commentor adds that this is not the proposal
made in the Draft EIS.

RESPONSE

DOE agrees that the possibility of Idaho becoming a nuclear waste "dump" or INEL becoming a repository
is not the proposed action being considered in this EIS. See the response to
comment 01.01.01.02 (025).

II 2.3 Scope

II COMMENT

Commentors want cost evaluation to be part of this EIS.

RESPONSE

DOE prepared a spent nuclear fuel cost evaluation report for long-term planning purposes, some of which
are beyond the scope of this EIS. Volume 1, section 3.3 summarizes the costs for implementing actions
under each alternative considered in this EIS.

II COMMENT

Several commentors suggest that spent nuclear fuel from the Navy program and from foreign research
reactors needs to be addressed in separate EISs.

RESPONSE

As DOE is responsible for managing SNF from research and Naval reactors, it is appropriate to evaluate
potential environmental impacts in this programmatic EIS. DOE is preparing a separate EIS entitled
Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent
Nuclear Fuel (Draft). See also the response to comment 02.02 (002).

II COMMENT

Commentors are of the opinion that the EIS is not comprehensive enough.

RESPONSE

NEPA, 42 USC Section 4321 et seq., and CEQ regulations at 40 CFR Part 1500 et seq. require that an EIS
describe the purpose and need for the proposed action; alternatives, including no action; the affected
environment; and the environmental consequences associated with the proposed action and alternatives.
Volumes 1 and 2 of this EIS meet these requirements. In each volume, Chapter 2 describes the purpose
and need for the proposed action; Chapter 3 describes the alternatives being considered; Chapter 4
describes the affected environment; and Chapter 5 describes the environmental consequences.
Input on the scope of the EIS was solicited from the public during the scoping periods held for the Waste
Management Programmatic EIS and the Idaho National Engineering Laboratory Environmental
Restoration and Waste Management EIS. Input was also solicited from the public during a 90-day public
comment period, which allowed commentors to send written comments, give oral comments and send
facsimile comments over a toll-free telephone line, or attend one or more of the 33 public hearings held in
20 locations around the United States.
All supporting documents referenced in this EIS are on file and are available to the public.

II COMMENT

The commentor states that discussions of spent nuclear fuel should not have the confounding effect of
being combined with discussions of environmental restoration and waste management at the Idaho National
Engineering Laboratory.

RESPONSE

As discussed in Volume 2, section 2.1, DOE did not originally intend to include the decision regarding
continued receipt of SNF in its Idaho National Engineering Laboratory Environmental Restoration and
Waste Management EIS. However, on June 28, 1993, as an outgrowth of civil lawsuits involving DOE, the
State of Idaho, and other parties, the U.S. District Court for the District of Idaho ordered DOE to prepare
an EIS that examines alternatives to transporting, receiving, processing and storing SNF at INEL. See

Andrus vs. Public Service Co., 824 F. Supp. 1483 (D. Idaho 1993). Because of the quantities and types of fuel currently at INEL, a thorough analysis of these activities required assessing similar activities throughout the DOE complex. Thus, DOE decided to expand its site-specific EIS for INEL to incorporate the programmatic decision regarding the management of SNF within the DOE complex, previously part of DOE's Waste Management Programmatic EIS. The expanded document is this EIS.

II COMMENT

The commentor cites a DOE statement that cost and public opinion will be two key factors helping DOE make its spent nuclear fuel management decisions, and states that a programmatic EIS "is not a particularly good vehicle for analyzing or developing these determinants."

RESPONSE

The analysis in the EIS show that, for all environmental factors considered, the impacts of all alternatives would be small. CEQ regulations allow an agency to make decisions based not only on environmental factors, but also on technical or practical considerations and agency mission, as well as public comments. This is true whether the EIS is a programmatic study, or is more specific to a local site. DOE prepared a spent nuclear fuel cost evaluation report for long-term planning purposes, some of which are beyond the scope of this EIS. Volume 1, section 3.3 summarizes the cost of implementing actions under each alternative.

II COMMENT

The commentor states that the EIS fails to be conducted within the context of DOE's reconfiguration programmatic EIS, Environmental Restoration and Waste Management Programmatic EIS, and implementation plan for compliance with the Federal Facilities Compliance Act.

RESPONSE

The relationship between this EIS and other DOE NEPA documents is addressed in Volume 1, section 1.2 of this EIS, which was updated and enhanced to better describe the interrelationships among these NEPA documents. DOE is coordinating the preparation of the Waste Management Programmatic Environmental Impact Statement with the development of individual site treatment plans under the Federal Facilities Compliance Act.

II COMMENT

The commentor states that the failure to deal with generation of spent nuclear fuel as creation of a waste that is not being safely stored, temporarily or permanently, is not adequate under the National Environmental Policy Act, because the planning component is left out of the EIS.

RESPONSE

This EIS considers management of DOE SNF pending ultimate disposition. Most SNF to be managed over the next 40 years exists today, and ceasing activities that generate SNF would not significantly alter the actions considered in this document. The EIS and analyses determined that the environmental consequences of interim storage of SNF would be small.

II COMMENT

The commentor states that DOE has targeted Idaho National Engineering Laboratory as its complex for storing spent nuclear fuel because only it has been analyzed in detail, and that no decision on spent nuclear fuel can be made until each potential site has completed a site-specific National Environmental Policy Act review.

RESPONSE

To ensure that DOE took a thorough look at alternatives for managing SNF at sites other than INEL, Volume 1 of this EIS assesses, at a programmatic level, the environmental impacts of conducting SNF management activities at five DOE sites and at five Naval sites for Navy SNF. The analyses, as summarized in Volume 1, Chapter 5, indicate that conducting SNF management activities at any of the candidate sites would result in small environmental impacts over 40 years. The level and depth of these analyses are sufficient to provide the necessary information to allow an informed programmatic decision, in conjunction with other decision factors such as mission impact, cost, and schedule. Volume 2 provides a detailed site-specific analysis for all existing and potential waste management activities at INEL, including SNF management. Volume 1, section 3.1 describes the preferred alternative for programmatic management of SNF.

II COMMENT

The commentor raises issues about the impact of storing long half-life materials and of potential accidents on quality of life.

RESPONSE

Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. The analyses show that the impacts of all alternatives would be small. See also the response to comment 01.02.01.02 (017).
Volume 1, Chapter 4 addresses discrete resource categories that incorporate aspects of quality-of-life issues, such as air and water quality, noise, socioeconomic, and transportation. To the extent that quality of life is related to environmental impacts, these concerns are discussed in the EIS.

II COMMENT

The commentor states that because waste processing is not considered in this EIS, it seems irrational to discuss waste management and spent nuclear fuel management within the same document, which is also true for the environmental restoration of past activities.

RESPONSE

CEQ requires that the cumulative impacts of all connected and related activities be assessed in an EIS. To segregate environmental restoration from other waste management activities would preclude this required analysis. Volume 1 analyzes the programmatic management of SNF nationwide, whereas Volume 2 analyzes site-wide environmental and restoration, waste management (including waste treatment), and SNF management programs at INEL for the next 10 years. Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5, summarize the environmental impacts of all the alternatives considered in this EIS. The analyses show that the environmental impacts of all alternatives considered would be small.

II COMMENT

The commentor expresses the opinion that the scope of the EIS, with regard to the spent nuclear fuel processing project [Volume 2, Appendix C, section SNF6], fails to fully bound impacts to Idaho National Engineering Laboratory waste management operations and the environment because DOE does not estimate the amount of high-level liquid waste generated by the project.

RESPONSE

The volume of high-level liquid waste cited by the commentor from the Idaho National Engineering Laboratory Conceptual Site Treatment Plan results from operations (such as cleanout) other than fuel processing at the Idaho Chemical Processing Plant. The waste generated from such operations is included in the estimates of high-level liquid waste at INEL under the various alternatives (see Volume 2, section 3.1, Figure 3.1-11).
As the commentor states, the EIS does not provide throughput characterization of the Waste Immobilization Facility. Rather, the EIS presents the Waste Immobilization Facility project summary as a bounding analysis of the potential range of technologies that have been identified for treatment of liquid and calcine high-level waste. The specific technology to be further developed is scheduled to be selected in conjunction with the ROD for this EIS. Following further development and analysis of the technologies, a facility-specific NEPA review would be required for facility construction. That facility-specific document would provide more precise information on throughput and emissions characterizations.

II COMMENT

The commentor states that the EIS scope is so broad that it fails to focus on Idaho's concern in the lawsuit and on the intent of the Court Order; i.e., whether the Idaho National Engineering Laboratory is a suitable site for continued receipt of Navy and Fort St. Vrain spent nuclear fuel.

RESPONSE

Because of the wide-ranging types and significant quantity of SNF managed by DOE at INEL, DOE determined that the court-ordered examination of alternatives for SNF at INEL requires the review of capabilities across the entire DOE complex. Therefore, on September 3, 1993, DOE issued a Notice of Opportunity in the Federal Register announcing its intent to expand the scope of the ongoing INEL EIS to include a DOE complex-wide review of the alternatives for managing SNF, including Naval SNF. The notice also announced the public's opportunity to comment on the expanded scope. Public comments received in response to the Notice of Opportunity, as well as public comments provided in the original scoping processes for both the SNF and INEL EIS and on the DOE Environmental Restoration and Waste Management Programmatic EIS, were considered in developing the Implementation Plan for this EIS.
The EIS supports two sets of decisions: Volume 1, programmatic actions for SNF management during a 40-year planning horizon; and Volume 2, specific decisions about SNF management and

environmental restoration, waste management activities at INEL. This structure satisfies the requirements of the Court Order.

II COMMENT

The commentor states that both foreign research reactor and commercial spent nuclear fuel should be included in the scope of this EIS.

RESPONSE

Foreign research reactor spent nuclear fuel (FRR SNF) is included in the analyses in this EIS to ensure that the potential environmental impacts of implementing the proposed policy regarding FRR that would be based on the EIS entitled Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel (Draft) (FRR EIS) are considered in any programmatic SNF management decision. A discussion of the relationship between this EIS and the FRR EIS is in Volume 1, section 1.2.4. See also the response to comment 02.02 (002).
Regarding commercial SNF, DOE manages only a small quantity of special-case commercial SNF, which is addressed in this EIS. It is inappropriate to consider commercial SNF, in general, in this EIS because this material is not managed by DOE. Under the Nuclear Waste Policy Act, as amended, DOE is responsible for managing the program for development of geologic repositories for permanent disposal of SNF and high-level radioactive waste. A separate EIS is required under Nuclear Waste Policy Act, as amended, to accompany the recommendation of a repository site to the President.

II COMMENT

The commentor states that the EIS has no discussion of how DOE will manage environmental restoration, waste management, and spent nuclear fuel beyond 10 years.

RESPONSE

The EIS supports two sets of decisions: Volume 1, programmatic actions for SNF management during a 40-year planning horizon; and Volume 2, specific decisions for environmental restoration, waste management, and spent nuclear fuel management activities at INEL. Volume 2 evaluates only the projects that are reasonably foreseeable and may fall within a 10-year period. DOE expects that over the course of the next 40 years, additional projects for managing waste and spent nuclear fuel will be necessary. The need for appropriate NEPA reviews will be evaluated as the projects are defined. Both volumes of this EIS will be evaluated and updated when new projects are planned or as additional information becomes available.

II COMMENT

The commentor states that the EIS should evaluate all of DOE's special materials, such as reactor control rods, in a similar manner to spent nuclear fuel.

RESPONSE

Managing wastes, such as radioactive or contaminated components from SNF management activities, is
considered in Volume 1 and its site-specific Appendices A through F. Volume 1, Chapter 5 and Appendix
K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this
EIS. The analyses show that the environmental impacts of all alternatives considered would be small.
For example, the ends of the fuel modules removed from Naval SNF modules at the Expanded Core
Facility in Idaho are structural materials that support and direct the flow of cooling water during operation.
This structural material is removed by cutting through portions of the fuel modules that contain no fuel.
The material removed from the ends of the fuel modules does not contain any fuel or fission products from
fuel, and therefore, cannot be considered SNF. They do not contain transuranic elements of fission
products; thus, they cannot be considered high-level waste or transuranic waste. The amounts of
radioactivity in the end boxes cause them to be classified as low-level waste or transuranic waste.
Consequently the material removed from the ends of the modules at the Expended Core Facility is
categorized as low-level waste due to the amount of radioactivity present in it. The disposal of this
structural material at the Radioactive Waste Management Complex at INEL is accomplished in accordance
with all applicable regulations.
Management of DOE radioactive materials and waste such as those cited by the commentor is covered
under the Waste Management Programmatic EIS, that is currently being developed.

II COMMENT

The commentor states that a permanent repository for spent nuclear fuel is not likely to exist in 40 years
and recommends that the maximum storage interval and the time span covered by the EIS be extended to
60 to 80 years.

RESPONSE

This EIS considers management of DOE SNF pending ultimate disposition. DOE believes that decisions on
ultimate disposition will be made and implemented within 40 years; however, DOE is committed to safely
managing DOE SNF for whatever time interval is necessary. DOE will review this EIS periodically and
update it as appropriate during this period.

II COMMENT

The commentor references the problems identified in the Spent Fuel Working Group Report and states that
DOE has an obligation to address non-Navy spent nuclear fuel types and associated environmental impacts.
The results should be considered in the EIS and the Record of Decision.

RESPONSE

This EIS deals with non-Navy fuel, such as production reactor fuel at the Hanford Site and the Savannah
River Site, and university research reactor fuel. In response to the report referred to by the commentor,
DOE issued action plans to correct vulnerabilities. The relationship of this EIS to the spent nuclear fuel
vulnerability assessment and its action plans is discussed in the appropriate site appendices of Volume 1.
Discussions for the Oak Ridge Reservation, the Savannah River Site, and the Hanford Site were expanded
in the Final EIS based on public comments.

II COMMENT

The commentor states that the focus of the EIS is on shipping, instead of the impacts of spent nuclear fuel on the environment.

RESPONSE

As stated in Volume 1, Chapter 2, the evaluations in Volume 1 focus on strategies for where to conduct SNF management activities. These activities may, of necessity, involve moving SNF from generation sites to management locations. Shipping is described in the Summary to highlight a major concern for the public and the decisionmakers. Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. The analyses show that the environmental impacts of all proposed alternatives would be small.

II COMMENT

Some commentors state that the EIS does not provide details for foreign research reactor spent nuclear fuel and some request additional detail be included in Volume 1, Appendix E.

RESPONSE

This EIS provides information for a decision or decisions on where to manage all of DOE's existing and reasonably foreseeable SNF inventory. Therefore, this programmatic document is substantially independent from the proposal analyzed in the EIS entitled Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel (Draft) (FRR EIS). DOE can decide on a contingency basis where to manage its SNF inventory without deciding whether to accept foreign research reactor (FRR) SNF. However, while a decision on acceptance of FRR SNF containing uranium of United States origin has not and will not be made until the completion of the FRR EIS, the potential impacts of the proposal are included in this programmatic document to ensure that the potential impacts of implementing the proposed policy are considered in any programmatic SNF management decision.
The purpose of the FRR EIS is to analyze the various alternatives and impacts of a proposed policy of the United States to manage FRR SNF containing uranium of United States origin. Analyzing the proposed policy in a separate EIS allows members of the public to focus on the specific question of how FRR SNF should be managed, including the alternative of transporting it to the United States for management by DOE.
Volume 1, section 1.2 and Appendix E were expanded to provide additional information on the potential FRR inventory; however, much of the characterization detail requested is in the FRR EIS.

II COMMENT

Commentors express the opinion that all current and planned non-Idaho National Engineering Laboratory activities on which the Idaho National Engineering Laboratory depends, i.e., Waste Isolation Pilot Plant, Yucca Mountain, and high-level waste repositories, have to be fully characterized.

RESPONSE

DOE believes the EIS is complete and accurately reflects the potential environmental impacts of a reasonable range of alternatives. Sufficient information is included (e.g., methods used, source terms, etc.) to allow an independent review of results.
The purpose of this EIS is to evaluate alternatives for managing DOE SNF pending ultimate disposition.
DOE believes the analyses in this EIS are adequate to support a decision on this subject.

II COMMENT

The commentor indicates the need for public education to offset negative media coverage and antinuclear activists, and that spent nuclear fuel and nuclear wastes are a reality that must be faced without fear.

RESPONSE

It is DOE's policy to promote public and stakeholder awareness of its proposed activities, including the purpose and need for the proposed actions and potential environmental impacts. DOE is actively engaged in public outreach programs and related activities above and beyond public involvement processes associated with NEPA to increase awareness of its activities and related issues. See also the response to comment 03.03 (008).

II II COMMENT

The commentor states that preparing the EIS in a hurry does not allow time to do careful work, examine all the sources or do site-specific work, which results in a product that is not useful as a decision-making tool and that lacks public confidence.

RESPONSE

DOE believes the EIS is complete and accurately reflects the potential environmental impacts of a reasonable range of alternatives. DOE had adequate time to fully evaluate the alternatives. The history and development of this EIS is in Volume 1, section 1.3.
This EIS was prepared using existing information that is available to the public and referenced in the EIS.
This information and the methodologies used to analyze environmental impacts in the EIS have been thoroughly reviewed, and commented on by numerous well-informed citizens, state and Federal agencies, local and Tribal officials, and public interest organizations. A great effort was made on this project to collect comments from the public nationwide and to use these comments to prepare this EIS, as appropriate.

II COMMENT

The commentor states that during the scoping hearings for this EIS, a number of technical questions were asked that the EIS does not answer. The commentor also raises questions about complete reliance on high-efficiency particulate air filters for preventing emissions of radioactive particulates.

RESPONSE

A total of 970 comments raising 4,321 issues were received during four comment periods in the public scoping phase of this EIS. Of these, 464 were technical issues. Because the primary purpose of scoping is to identify the issues to be addressed in the EIS, DOE did not intend, nor would it have been appropriate, to respond to each technical question raised. The comments in each issue category were summarized and responses were prepared for each category, to explain how the concerns would be addressed in the EIS. In the air quality category, for example, the following topics discussed in the Implementation Plan address concerns raised by the commentor: airborne pollution and contamination; effectiveness of high-efficiency particulate air filters; and impacts and dispersion of airborne pollution and contamination. A specific commitment was made in the Implementation Plan to consider "filter efficiency, stack emissions, emission control systems, and other air pollution contamination and monitoring equipment." These commitments were kept in Volume 1, section 5.2.5 and in Volume 2, section 5.7. For DOE to respond further to specific technical issues, the commentor would have had to identify what, if any, deficiencies remain.

To minimize airborne releases, projects involving radioactive particulates at INEL would take place within a double-confinement structure. Conservative assumptions normally are used to estimate releases to the atmosphere, such as modeling only two filters in series when at least three are planned for actual operations. Also, although high-efficiency particulate air (HEPA) filters have established particulate removal efficiencies of 99.97 percent (down to diameters of 0.3 micrometers), a conservative efficiency factor of only 99 percent typically is used for operational safety and accident analyses. These filters are capable of removing particles as small as 0.001 micrometers from an airstream, but the manufacturer performs the rating calibration at 0.3 micrometers using a standard aerosol-generating device. The filters are tested annually and inspected daily to ensure that their efficiency is maintained. Safety analyses for forthcoming INEL facility operations will not presume perfect HEPA filter operation. Additional precautions will be taken to minimize airborne releases. The pressure differential across each filter is measured continuously to detect formation of any holes or insecure filter installation. Filter temperature will be measured to promptly detect a filter fire. Finally, radiation sensors will be installed downstream of the filters to continuously monitor atmospheric releases. Detection of radioactive particulates above the natural background levels would result in a prompt shutdown of facility operations.
See also the response to comment 05.11.03 (009).

II COMMENT

The commentor states that only two sites out of an extensive list were added during the scoping process.

RESPONSE

Volume 1, section 1.3.1 summarizes the considerations of the suitability of the sites selected. Additional details on these considerations are provided in Alternative Site Selection Decision Process Report, which is provided as a reference in this EIS. This reference describes selection of agency preferences among a large number of possible alternative sites based on relevant factors, including economic and technical considerations and agency statutory missions.

II COMMENT

The commentor expresses the opinion that the scoping for Oak Ridge Reservation was not adequate.

RESPONSE

On October 22, 1990, DOE published a Notice of Intent in the Federal Register announcing its intent to prepare a programmatic EIS addressing environmental restoration and waste management, including SNF management activities across the entire DOE complex. DOE invited the public to submit written comments on the scope of that EIS and held 23 scoping meetings across the country, including one at Oak Ridge, Tennessee, on December 11, 1990. Two-hundred thirty-seven comments were received at the Oak Ridge meeting. DOE issued a draft Implementation Plan in January 1992, reflecting the comments provided. DOE held six regional public workshops on the draft Implementation Plan and recorded public comments given at these workshops. The Implementation Plan for the SNF and Idaho National Engineering Laboratory EIS, issued in October, 1993, addressed the comments received from scoping meetings and regional workshops. DOE conducted four public scoping periods during the evolution of this EIS. In response to public comments raised during the scoping process, DOE initiated a process for identifying possible additional alternative sites. The result of the selection process was the inclusion and evaluation of two additional sites, including Oak Ridge Reservation. The process of including Oak Ridge Reservation as an additional, reasonable alternative site is summarized in the May 9, 1994, amendment to the EIS Implementation Plan. DOE believes it conscientiously and thoroughly fulfilled its responsibilities to use available avenues for public awareness and for solicitation of public input during all stages of the EIS process and that it has fulfilled its obligations and responsibilities in accordance with NEPA.

II 2.4 Adequacy of the DRAFT EIS

II COMMENT

Commentors state that the process followed for the preparation of the EIS does not meet the requirements of the National Environmental Policy Act and Council on Environmental Quality regulations. Therefore, the EIS is flawed and inadequate, and the process should be terminated.

RESPONSE

NEPA, 42 USC Section 4321 et seq., and CEQ regulations at 40 CFR Part 1500 et seq. require that an EIS describe the purpose and need for the proposed action; list alternatives, including no action; and describe the affected environment and the environmental consequences associated with the proposed action and alternatives. Volumes 1 and 2 of this EIS meet these requirements. In each volume, Chapter 2 describes the purpose and need for the proposed action; Chapter 3 describes the alternatives being considered; Chapter 4 describes the affected environment; and Chapter 5 describes the environmental consequences.
Input was solicited from the public during a 90-day public comment period on the Draft EIS, which allowed commentors to send written comments, give oral comments and facsimile comments over a toll-free telephone line, or attend one or more of the 33 public hearings held in 20 locations around the United States.
All supporting documents referenced in the EIS are on file and are available to the public. The EIS has

also considered issues of concern raised during public meetings and hearings.

II COMMENT

Commentors state that the EIS contains inaccurate and outdated data; that available studies and information were not included; that statistical evaluations may not have been properly performed; and that the only documents declassified and used were those that supported the outcome that DOE favors.

RESPONSE

The analyses in this EIS were performed using unclassified information contained in references cited in the EIS, which are available in public reading rooms and information locations around the country. To permit an independent reviewer to corroborate the results, the EIS contains a full description of the methodologies, assumptions, and data used. While classified information relevant to some aspects of the EIS exists, it is consistent with the unclassified information used for the analyses and does not alter the results.

II COMMENT

The commentor suggests that none of the options offered with regard to spent nuclear fuel fulfill National Environmental Policy Act requirements.

RESPONSE

CEQ regulations at 1502.14(a) state that agencies shall "Rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives, which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated." DOE believes it has evaluated a reasonable range of alternatives. Alternatives eliminated from detailed study and the reasons for they were eliminated are discussed in Volumes 1 and 2, section 3.2.

II COMMENT

The commentor expresses the opinion that the EIS fails to assess an inclusive range of alternatives and dismisses some of the alternatives without a rigorous exploration, as required by Council on Environmental Quality regulations.

RESPONSE

DOE believes the range of alternatives analyzed in this EIS is inclusive and in accordance with the philosophy of considering a range of reasonable alternatives as required by the provisions of NEPA and CEQ regulations. Alternatives range from the No Action alternative to an alternative calling for consolidating of all SNF at a single site. Alternatives dismissed are discussed in Volume 1, section 3.2 and Volume 2, section 3.2. DOE believes the discussion of the basis for dismissing other possible alternatives is adequate.

II COMMENT

Commentors state that the Nevada Test Site and the Oak Ridge Reservation were not evaluated to the same extent as the other sites, question why the Savannah River Site documentation was developed in Idaho, and suggest that the EIS effort stop until preparers get more training on how to manage spent nuclear fuel.

RESPONSE

In response to public comments raised during the scoping process, DOE undertook a process for identifying possible additional alternative sites. [See also the response to comment 04.03.01 (002).] As a result of the selection process, the Nevada Test Site (NTS) and the Oak Ridge Reservation (ORR) were selected, and the analyses for these two sites are given in Volume 1, Appendix F. Volume 1, Appendix C, which evaluates the impacts for the Savannah River Site (SRS) was written in South Carolina. Each site appendix was reviewed and approved by DOE site managers. DOE believes the depth of analysis is appropriate for a programmatic EIS and is commensurate with the analyses of the other alternative sites in Volume 1. DOE considers the expertise and training of the preparers to be adequate, and they are listed in Volumes 1 and 2, Chapter 6.

II COMMENT

The commentor states that the EIS inadequately compares alternative sites.

RESPONSE

DOE believes that it has adequately compared the alternative sites. Volumes 1 and 2, Chapter 5 examine the potential environmental consequences of the proposed alternatives at each site. These chapters explain what evaluations were conducted and their results. The potential consequences of the proposed alternatives are then summarized and compared in section 3.3 of each volume. Supporting appendices and reference material provide increasing levels of detail on the scientific investigations. DOE prepared this EIS to (1) provide a programmatic look forward for the next 40 years for SNF management, and (2) provide site-specific NEPA evaluations for reasonably foreseeable SNF management, environmental restoration, and waste management activities at INEL. Other site-specific NEPA reviews may be completed as additional specific proposals emerge. Those reviews can tier from this EIS.

II COMMENT

The commentor states that the EIS does not focus on solving the problems; there are only two technology development projects and no environmental restoration projects, and the EIS does not cover research and development activities to render spent nuclear fuel to an environmentally benign form.

RESPONSE

Numerous technologies are already available for managing radioactive materials, and others are being actively developed for this purpose. Technological options for managing SNF are described in Volume 1, section 1.1.3 and Appendix J.

As stated in Volume 2, section 2.1.2, potential impacts at INEL for environmental restoration activities are addressed at the site-wide level. In those instances where project-specific impacts of activities cannot be specifically quantified at this time, conservative "bounding" estimates of their environmental impacts were made. Project-specific impacts of these activities at INEL may be quantified and evaluated in the future, as appropriate, as part of the CERCLA process. Volume 2, Appendix C describes environmental restoration and waste management projects planned or currently being implemented at INEL.
Technology development activities are often done at a bench-scale level, and DOE has determined that these activities, individually or cumulatively, do not have the potential to have a significant effect on the human environment. Environmental restoration/waste management technology development is a major program that is managed through the DOE-Headquarters (HQ) Office of Technology Development (EM-50). Integrated demonstrations and integrated programs are conducted to develop new technologies.
Industry and academic partners are used to find solutions to environmental challenges. Technologies related to SNF management are evolving as the final form of the SNF is defined. See also the response to comment 07.02.01 (001).

II COMMENT

The commentor states that it is unacceptable to leave all technical decisions to future EISs, and that the analysis should be adequate to support a Record of Decision.

RESPONSE

The purpose of this EIS is to consider management of DOE SNF pending ultimate disposition. DOE believes the analyses in this EIS are adequate to support a decision on this subject.
General solutions for managing SNF are discussed in Volume 1, section 1.1.3 and Appendix J.
Technologies for final disposition of SNF cannot be selected in advance of repository acceptance requirements. These requirements are several years from completion and approval, but a combination of the technologies described in Appendix J may satisfy the eventual acceptance criteria. Furthermore, consideration is given by the alternatives analyzed in the EIS to providing or maintaining processing flexibility that may prove necessary to meeting the acceptance requirements. The implementation of safe interim storage and transition to ultimate disposition, coupled with the ability to meet disposal criteria (waste forms) represents the solution that DOE seeks to define with this EIS. Consequently, although the ultimate disposition of SNF is a high priority for DOE, the details of disposition activities have not been finalized and are beyond the scope of this EIS.
Other major NEPA reviews related to Volume 1 of this EIS as of March 1995 are shown in Volume 1, Table 1-4.

II COMMENT

Commentors state that the EIS does not focus on solving the problem of spent nuclear fuel management or that the best solution to the problem needs to be determined.

RESPONSE

Volume 1, section 3.1 describes DOE's preferred alternative for programmatic SNF management; Volume 2, section 3.4 describes DOE's preferred alternative for SNF management, environmental restoration, and waste management at INEL. See also the responses to comments 04.04 (008) and 04.04 (011).
The programmatic action that DOE ultimately selects is not necessarily limited to one of the

alternatives.
For example, a hybrid alternative could be developed that would incorporate actions from one or more of the five alternatives analyzed. Moreover, the programmatic decisions will not identify all site-specific SNF management options. If appropriate, specific proposals will be subjected to additional site-specific NEPA evaluation.
Ultimate disposition of SNF managed by DOE is a high priority. For planning purposes, DOE determined that the SNF managed by DOE that is not otherwise dispositioned (e.g., chemically separated, with the high-level waste being converted into a vitrified glass for repository disposal) is authorized for disposal in the first repository. This authorization is subject to the physical and statutory limits of the first repository, DOE SNF meeting repository acceptance criteria, and payment of fees. As part of its SNF management program, DOE would (1) stabilize the SNF as needed to ensure safe interim storage, (2) characterize the existing SNF inventory to assess compliance with the first repository's acceptance criteria, and (3) determine what processing, if any, is required to meet the criteria. Decisions regarding the actual disposition of DOE SNF would follow appropriate review under NEPA and be subject to licensing by NRC. This path forward would be implemented so as to minimize impacts on the first repository schedule.

II COMMENT

The commentor states that the EIS does not discuss the release of radioactivity and what is going on at the Idaho National Engineering Laboratory.

RESPONSE

Volume 2, Chapter 4 describes the existing environment at INEL, including the release of radioactivity.
Volume 2, Chapter 2 discusses the current activities, facilities, and missions at INEL.

II COMMENT

The commentor states that the focus and depth of analysis contained in the EIS are not adequate to make decisions.

RESPONSE

This EIS considers management of DOE SNF pending ultimate disposition. DOE believes the analyses in this EIS are adequate to support a decision on this subject.
NEPA, 42 USC Section 4321 et seq., and CEQ regulations at 40 CFR Part 1500 et seq. require that an EIS describe the purpose and need for the proposed action; alternatives, including no action; the affected environment; and environmental consequences associated with the proposed action and alternatives.
Volumes 1 and 2 of this EIS meet these requirements. In each volume, Chapter 2 describes the purpose and need for the proposed action; Chapter 3 describes the alternatives being considered; Chapter 4 describes the affected environment; and Chapter 5 describes the environmental consequences.
Input was solicited from the public during a 90-day public comment period, which allowed commentors to send written comments, give oral comments and facsimile comments over a toll-free telephone line, or attend one or more of the 33 public hearings held in 20 locations around the United States.
All supporting documents referenced in the EIS are on file and are available to the public. The EIS also considers issues of concern raised during public meetings and hearings.

II COMMENT

The commentor is of the opinion that, despite the size of the EIS, the document is inadequate.

RESPONSE

This EIS considers management of DOE SNF pending ultimate disposition. DOE believes the analyses in
this EIS are adequate to support a decision on this subject.
NEPA, 42 USC Section 4321 et seq., and CEQ regulations at 40 CFR Part 1500 et seq. require that an EIS
describe the purpose and need for the proposed action; alternatives, including no action; the affected
environment; and the environmental consequences associated with the proposed action and alternatives.
Volumes 1 and 2 of this EIS meet these requirements. In each volume, Chapter 2 describes the purpose
and need for the proposed action; Chapter 3 describes the alternatives being considered; Chapter 4
describes the affected environment; and Chapter 5 describes the environmental consequences.
Input was solicited from the public during a 90-day public comment period for the Draft EIS, which
allowed commentors to send written comments, give oral comments and facsimile comments over a
toll-free telephone line, or attend one or more of the 33 public hearings held in 20 locations around the United
States.
All supporting documents referenced in the EIS are on file and are available to the public. The EIS also
considers issues of concern raised during public meetings and hearings.

II COMMENT

The commentor states that the EIS is not adequate.

RESPONSE

This EIS considers management of DOE SNF pending ultimate disposition. DOE believes the analyses in
this EIS are adequate to support a decision on this subject.
NEPA, 42 USC Section 4321 et seq., and CEQ regulations at 40 CFR Part 1500 et seq. require that an EIS
describe the purpose and need for the proposed action; alternatives, including no action; the affected
environment; and the environmental consequences associated with the proposed action and alternatives.
Volumes 1 and 2 of this EIS meet these requirements. In each volume, Chapter 2 describes the purpose
and need for the proposed action; Chapter 3 describes the alternatives being considered; Chapter 4
describes the affected environment; and Chapter 5 describes the environmental consequences.
Input was solicited from the public during a 90-day public comment period for the Draft EIS, which
allowed commentors to send written comments, give oral comments and facsimile comments over a
toll-free telephone line, or attend one or more of the 33 public hearings held in 20 locations around the United
States.
All supporting documents referenced in the EIS are on file and are available to the public. The EIS also
considers issues of concern raised during public meetings and hearings.

II COMMENT

The commentor states that the information provided is insufficient to evaluate the private-sector waste
stream initiatives. The commentor refers to the statement in Volume 2, section TRU 1-2, which states that

the analysis in the EIS would cover all private-sector waste treatment initiatives.

RESPONSE

The analysis in this EIS is not intended to cover all private-sector waste treatment initiatives. That statement was deleted from the EIS.

II COMMENT

The commentor states that land use, air and water quality, and geologic and ecological resources were not adequately considered in the EIS.

RESPONSE

Volume 1, Chapters 4 and 5, and Volume 2, Chapters 4 and 5, as well as the site-specific and project specific appendices, consider environmental impacts, including those mentioned by the commentor. Volume 1, Chapter 5 discusses impacts in a number of scientific disciplines. Section 5.2 briefly mentions several disciplines which, although important, are not likely to affect the decision process because of similar impacts for all alternatives. This approach is deemed sufficient for a programmatic NEPA decision. Volume 1, Appendix F provides specific information on the disciplines questioned by the commentor. The analyses show that under all of the disciplines analyzed, for all of the alternative actions considered, the environmental impacts of the proposed actions would be small.

II COMMENT

The commentor observes that the EIS states that "the level of analysis in this EIS is insufficient to allow selection of a particular option." The commentor also asks how the selection will be made and what other information will be considered.

RESPONSE

This EIS considers management of DOE SNF pending ultimate disposition. DOE believes the analyses in this EIS are adequate to support a decision on this subject. Some site-specific actions to implement programmatic decisions may require additional site-specific NEPA documentation. In addition to public comments, DOE will consider environmental impacts, which would be small for all of the alternatives analyzed, as well as technical and practical considerations, economic factors, and agency missions and cost.

II COMMENT

The commentor states that the EIS is very expensive and has failed to address its primary goal of evaluating environmental impacts of the proposed actions.

RESPONSE

DOE believes that environmental impacts have been analyzed for all alternatives considered in this EIS, and would be small. NEPA, 42 USC Section 4321 et seq., and CEQ regulations at 40 CFR Section 1500 et seq. require that an EIS describe the purpose and need for the proposed action; alternatives, including no action; the affected environment; and the environmental consequences associated with the proposed action and alternatives. Volumes 1 and 2 of this EIS meet these requirements. In each volume, Chapter 2 describes the purpose and need for the proposed action; Chapter 3 describes the alternatives being considered; Chapter 4 describes the affected environment; and Chapter 5 describes the environmental consequences.
Input was solicited from the public during a 90-day public comment period, which allowed commentors to send written comments, give oral comments and facsimile comments over a toll-free telephone line, or attend one or more of the 33 public hearings held in 20 locations around the United States.
All supporting documents referenced in the EIS are on file and are available to the public. The EIS also considers issues of concern raised during public meetings and hearings.

II COMMENT

The commentor states that the comparisons of alternatives is inadequate and cost is not discussed.

RESPONSE

NEPA, 42 USC Section 4321 et seq., and CEQ regulations at 40 CFR Section 1500 et seq. require that an EIS describe the purpose and need for the proposed action; alternatives, including no action; the affected environment; and the environmental consequences associated with the proposed action and alternatives.
Volumes 1 and 2 of this EIS meet these requirements. In each volume, Chapter 2 describes the purpose and need for the proposed action; Chapter 3 describes the alternatives being considered; Chapter 4 describes the affected environment; and Chapter 5 describes the environmental consequences.
Input was solicited from the public during a 90-day public comment period on the Draft EIS, which allowed commentors to send written comments, give oral comments and facsimile comments over a toll-free telephone line, or attend one or more of the 33 public hearings held in 20 locations around the United States.
All supporting documents referenced in the EIS are on file and are available to the public. The EIS also considers issues of concern raised during public meetings and hearings.
DOE prepared a spent nuclear fuel cost evaluation report for long-term planning purposes, some of which are beyond the scope of this EIS. Volume 1, section 3.3 summarizes the costs for implementing actions under each alternative.

II COMMENT

The commentor states that the EIS is flawed because it ignores many of the fundamental issues regarding the storage of spent nuclear fuel at the Idaho National Engineering Laboratory.

RESPONSE

This EIS considers management of DOE SNF pending ultimate disposition. DOE believes the analyses in this EIS are adequate to support a decision on this subject.
NEPA, 42 USC Section 4321 et seq., and CEQ regulations at 40 CFR Section 1500 et seq. require that an

EIS describe the purpose and need for the proposed action; alternatives, including no action; the affected
environment; and the environmental consequences associated with the proposed action and alternatives.
Volumes 1 and 2 of this EIS meet these requirements. In each volume, Chapter 2 describes the purpose and need for the proposed action; Chapter 3 describes the alternatives being considered; Chapter 4
describes the affected environment; and Chapter 5 describes the environmental consequences.
Input was solicited from the public during a 90-day public comment period, which allowed commentors to
send written comments, give oral comments and facsimile comments over a toll-free telephone line, or
attend one or more of the 33 public hearings held in 20 locations around the United States.
All supporting documents referenced in the EIS are on file and are available to the public. The EIS also
considers issues of concern raised during public meetings and hearings.

II COMMENT

The commentor states that the focus and depth of analysis is not adequate to make a decision for restoring
the environment at the Idaho National Engineering Laboratory. The commentor also states that the document focuses on shipping spent nuclear fuel without comprehensively treating alternatives for environmental restoration and waste management at the Idaho National Engineering Laboratory.

RESPONSE

Volume 2 concentrates on the alternatives affecting INEL. Chapter 3 explains the alternatives, and the
chapter is subdivided to emphasize what the alternatives are for both environmental restoration and waste
management. The impacts of these alternatives are discussed in Chapter 5 and summarized in section 3.3.
DOE believes it has prepared a document with the appropriate focus and depth of analysis. The content of
the document follows recommendations for EISs in CEQ regulations implementing NEPA. The document also factors in topics of concern raised during public scoping meetings. The analyses and data in the EIS
and the supporting conclusions have been prepared and reviewed by qualified professionals. The EIS
presents and compares, for the decisionmakers, the environmental consequences that could result from
implementing the various alternatives. The site-specific details of environmental restoration will be
handled, and the public informed, through processes under CERCLA and the FFA/CO for INEL.

II COMMENT

The commentor states that a more complete analysis of the impacts of past releases is required. This
includes assessing the adequacy of each facility's "emission system" generating the waste stream.

RESPONSE

The adequacy of each existing facility's emission system is not assessed in this EIS, but rather the impacts
of emissions are considered in the analysis of environmental impacts. Volume 1, Chapter 5 and Appendix
K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this
EIS. The analyses show that the impacts of all alternatives would be small.

II COMMENT

The commentor states that the EIS fails to address any spent nuclear fuel management activity beyond transportation.

RESPONSE

The EIS evaluates potential environmental impacts of transporting, receiving, processing, and storing DOE SNF. SNF risks to site workers and the general public from site operations, transportation, and facility accidents are discussed in Volume 1, section 5.1 for all alternatives analyzed. Estimated risk values are graphically contrasted among these alternatives in Volume 1, section 3.3. Cumulative impacts to the work force from all of these sources are provided in Volume 1, section 5.3. On-site transportation impacts are described in Volume 1, site-specific Appendices A through F. Shipping casks and off-site transportation impacts are described in Volume 1, Appendices D and I.

II COMMENT

The commentor states that an EIS should be properly prepared rather than hurried after a 2-year delay.

RESPONSE

DOE believes this EIS is complete and accurately reflects the potential environmental impacts of a reasonable range of alternatives. DOE had adequate time to fully evaluate the alternatives. The history and development of this EIS is in Volume 1, section 1.3.
This EIS was prepared using existing information that is available to the public and referenced in the EIS.
This information and the methodologies used to analyze environmental impacts in the EIS have been thoroughly reviewed, and commented on by numerous well-informed citizens, state and Federal agencies, local and Tribal officials, and public interest organizations. A great effort was made on this project to collect comments from the public nationwide and to use these comments in the EIS, as appropriate.

II COMMENT

The commentor states that DOE failed to consider truly decentralized management of spent nuclear fuel at sites closest to its point of origin despite the identification of numerous suitable Federally owned sites across the country, thus decreasing transportation cost and radiological risk. The commentor is of the opinion that the EIS fails to fully evaluate a No Action alternative and cites some cost and transportation benefits of this alternative.

RESPONSE

Based on consideration of the Alternative Site Selection Decision Process Report, the Secretary of Energy added the Nevada Test Site (NTS) and the Oak Ridge Reservation (ORR) to the eight sites being considered for SNF management. Department of Defense sites are not considered reasonable due to potential conflicts in missions as per consultation with the Department of Defense.
NEPA requires the alternatives analysis in an EIS to "include the alternative of no action." There are two distinct interpretations of no action that must be considered, depending on the nature of the proposal being evaluated. The first situation might involve an action such as SNF management where ongoing programs initiated under existing legislation and regulations will continue, even as new plans are

developed. In these cases "no action" is "no change" from current management direction or level of management intensity. To construct an alternative that is based on no management at all would be a useless exercise. Therefore, the No Action alternative may be thought of in terms of continuing with the present course of action until that action is changed. Consequently, projected impacts of alternative management schemes would be compared in the EIS to impacts projected for the existing plans. In this case, alternatives would include management plans of both greater and lesser intensity, especially greater and lesser levels of SNF management activities.

The second interpretation of no action is illustrated in instances involving Federal decisions on proposals for projects. No action in such cases would mean the proposed activity would not take place, and the resulting environmental effects from no action would be compared with the effects of permitting the proposed activity or an alternative activity to go forward.

Where a choice of no action by the agency would result in predictable actions by others, this consequence of the No Action alternative should be included in the analysis. For example, if denial of permission to ship fuel to a facility would lead to construction of additional on-site storage and increased on-site inventories, the EIS should analyze this consequence of the No Action alternative. Thus, the No Action alternative essentially conforms to decentralized management that the commentor feels should be analyzed in the EIS. As stated in the EIS, DOE may not be able to ensure full compliance with environmental laws and regulations under the No Action alternative due to the state of a number of these management facilities, as described in the Spent Fuel Working Group Report on Inventory and Storage of the Department's Spent Nuclear Fuel and Other Reactor Irradiated Nuclear Materials and their Environmental, Safety, and Health Vulnerabilities (the spent nuclear fuel vulnerability assessment).

No change to the EIS is necessary to analyze the equivalent of the commentor's opinion as to what is a "truly decentralized" alternative.

The EIS fully analyzes the No Action alternative, per the provisions of NEPA and CEQ regulations. Transportation and costs are addressed comparably under all alternatives evaluated in the EIS, and will be considered by decisionmakers along with environmental impacts and all other pertinent factors, including public comments, to arrive at a ROD.

Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in the EIS, including decentralization and no action. The analyses show that the impacts of all alternatives would be small. While there are differences in the impacts among alternatives, these differences by themselves are not sufficient to clearly identify one alternative as environmentally preferable.

II COMMENT

The commentor states that the EIS evaluation of the Idaho National Engineering Laboratory is inadequate because specific analyses of the impacts of proposed actions are deferred, even though the EIS was to define, disclose, and evaluate the environmental effects of sitewide activities over the next decade and beyond.

RESPONSE

DOE prepared this EIS and evaluated the proposed actions in accordance with NEPA. The content of the document follows recommendations for the content of EISs in CEQ and DOE regulations implementing NEPA, including factoring in topics of concern raised during the public scoping meetings. The analyses and data in the EIS and the supporting conclusions have been extensively reviewed. The EIS addresses the potential environmental consequences of implementing alternative actions for the programmatic management of SNF and INEL sitewide environmental restoration and waste management programs. The

EIS does not address environmental issues or concerns that are not relevant to the proposed action or
alternatives. DOE believes that it has fulfilled its obligations and responsibilities in accordance with
NEPA.

II COMMENT

The commentor states that the EIS is flawed because it does not include all Idaho National Engineering
Laboratory operations, including reactor operations such as the Integral Fast Reactor.

RESPONSE

Volume 2, Chapter 1 explains that DOE needs to make site-specific decisions that would accomplish three
major goals: support research and development missions at INEL; comply with legal requirements
governing SNF, waste management, and environmental restoration; and treat, store and dispose of waste,
manage SNF, and conduct environmental restoration activities at INEL in an environmentally sound
manner. Reactor operations are beyond the scope of this EIS. However, impacts of waste streams and
SNF from reactors at INEL are assessed in Volume 2, Chapter 5.

II COMMENT

The commentor indicates that one and one-half pages of Volume 1, Appendix I-7 on the subject of
selecting ports of entry for foreign shipments is inadequate. The commentor also states that this EIS does
not study or document the addition of new ports of entry for foreign shipments.

RESPONSE

The issue of selecting ports of entry for foreign shipments is not within the scope of this EIS. The
commentor's concern is directed to the issue of FRR SNF of United States origin, which is being analyzed
in a separate EIS. DOE will not make a final decision on the acceptance of that fuel until the EIS for the
Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent
Nuclear Fuel (Draft) and this EIS are completed. Potential port sites of concern are addressed in this EIS
to bound the analysis of transportation within the United States should a decision be made to return such
material to this country for management.

II COMMENT

Commentors state that the document is general and suggest changes to the Summary to summarize how big
the impacts are of transportation, cost, schedule, safety and health, waste, etc., and an evaluation of the
advantages and disadvantages of all the alternatives.

RESPONSE

The Environmental Consequences section of the Summary presents, in summary form, the impacts,
including shipments, public and worker health effects, employment, generation of radioactive waste, and
impact on agency missions and cost. NEPA allows other information such as cost to be evaluated by the
decisionmaker. DOE prepared a cost evaluation of proposed alternatives that is available in public reading

rooms. This cost evaluation is summarized in Volume 1, section 3.3.

II COMMENT

The commentor states that the EIS violates the National Environmental Policy Act in that insufficient information is provided on projects or facilities that are in preliminary planning stages, specifically the Idaho Waste Processing Facility.

RESPONSE

A stand-alone Idaho Waste Processing Facility located near the Radioactive Waste Management Complex is postulated for planning purposes and analysis of environmental impacts. The project description in Volume 2, Appendix C is used for analysis of potential consequences, as discussed in Volume 2, Chapter 5. Even though construction of the Idaho Waste Processing Facility is beyond the time period analyzed in Volume 2, proposed projects are included in the EIS to give readers as comprehensive a range of forthcoming projects as is currently possible. These projects or facilities may require additional analysis under NEPA. At such time, additional information on secondary waste generation will be available. The NEPA status of all environmental restoration and waste management projects contemplated for INEL is discussed in the EIS Summary and in Volume 2, Table 3.1-1.

II COMMENT

The commentor is of the opinion that the EIS provides an inadequate review of future spent nuclear fuel management, both programmatically and at the Idaho National Engineering Laboratory.

RESPONSE

This EIS considers the management of DOE SNF pending ultimate disposition. DOE believes the analyses in this EIS are adequate to support a decision on this subject.
The problems at existing storage facilities are identified in the Spent Fuel Working Group Report on Inventory and Storage of the Department's Spent Nuclear Fuel and Other Reactor Irradiated Nuclear Materials and their Environmental, Safety, and Health Vulnerabilities. This report, commonly called the spent nuclear fuel vulnerability assessment, and associated action plans to resolve identified vulnerabilities, are acknowledged in Volume 1, section 1.1.2 and Appendix J-2. Additional site-specific information is in Volume 1, Appendices A through F. Environmental consequences of SNF management are presented for all alternatives in Volume 1, section 5.1, and mitigation measures are discussed in section 5.7. For all alternatives analyzed, DOE is committed to complying with applicable Federal, state, and local regulations and DOE Orders to ensure protection of the environment and the health and safety of the public and site employees.
Decisions as to the ultimate disposition of SNF and high-level nuclear wastes have not been made, and are outside the scope of this EIS. However, ultimate disposition of SNF managed by DOE is a high priority.
For planning purposes, DOE determined that the SNF managed by DOE that is not otherwise dispositioned (e.g., chemically separated, with the high-level waste being converted into a vitrified glass for repository disposal) is authorized for disposal in the first repository. This authorization is subject to the physical and statutory limits of the first repository, DOE SNF meeting repository acceptance criteria, and payment of fees. As part of its SNF management program, DOE would (1) stabilize the SNF as needed to

ensure safe interim storage, (2) characterize the existing SNF inventory to assess compliance with the first repository's acceptance criteria, and (3) determine what processing, if any, is required to meet the criteria.
Decisions regarding the actual disposition of DOE SNF would follow appropriate review under NEPA and be subject to licensing by NRC. This path forward would be implemented so as to minimize impacts on the first repository schedule.
General solutions proposed for managing nuclear waste are discussed in Volume 2, Chapters 1 and 2, respectively. More specific descriptions of how SNF and specific wastes would be managed under the alternative actions are in Volume 2, section 3.1.
DOE believes that the range of alternatives analyzed in this EIS is reasonable and in accordance with the requirements of NEPA and CEQ regulations. Analysis and discussion of all alternatives that can be postulated is an impossibly large task and is not required by existing regulations. Volume 1 provides the public and the decisionmakers with a programmatic view of the proposed action and a reasonable range of alternatives. The proposed action is to develop a path forward for the safe and effective management of DOE SNF. The alternatives are discussed at a level appropriate for a programmatic EIS. Once an alternative has been selected, actions within the selected alternative may require additional documentation at the site-specific level to satisfy NEPA requirements. Volume 2 is a site-specific assessment of SNF management, environmental restoration, and waste management alternatives at INEL, which includes project-specific analyses for implementing these programs. Therefore, the alternatives discussed in Volume 2 are more specific than those in Volume 1.

II COMMENT

The commentor asserts that the EIS is deficient because it contains no analysis of the environmental impacts, including cumulative impacts from the future management of spent nuclear fuel once it arrives at Idaho National Engineering Laboratory.

RESPONSE

DOE believes the EIS is complete and accurately reflects the potential environmental impacts of a reasonable range of alternatives.
The site-specific impacts, including cumulative impacts, of managing SNF at INEL are discussed in Volume 2, Chapter 5 and Appendix F. Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. Volume 2, Appendix B is specific to SNF management at INEL. The analyses show that the environmental impacts of all proposed alternatives would be small.

II COMMENT

The commentor states that the EIS does not provide documentation on exposure, dose, and risk models sufficient to support the results presented.

RESPONSE

The level of supporting documentation provided for various impact assessment models and methods reflects the tiered structure of the EIS. Every effort was made in the preparation of this EIS to make it readable and understandable by members of the public. The EIS was prepared in a layered fashion with respect to the depth of technical information. The summary is intended to present the information in a manner that would be generally understandable by nontechnical persons. The appendices are technically detailed and provide sufficient information for a thorough technical review by specialists. The appendices also contain references that provide more information on the methods and the technical analyses. This reference material is available in reading rooms and information locations, which are listed in the EIS, for anyone who wishes further technical detail. Volume 2, Appendix F provides detailed information on methodologies, key data, and assumptions used and additional information necessary to substantiate the content and conclusions provided in Volume 2, Chapter 5. Volume 2, Appendix F includes the exposure/dose and risk models and attendant assumptions.

The environmental impact analyses, including risk analysis, are designed to produce a reasonable projection of the upper bound of potential environmental consequences. This requires appropriately conservative assumptions and analytical approaches. In this context "conservative" means that an assumption or analysis would tend to overpredict, rather than underpredict, any adverse impacts. However, overly conservative analyses do not provide a useful basis for comparing alternatives. Each alternative has been analyzed using identical methods and levels of conservatism so that the relative impacts of alternatives can be accurately assessed.

The nature of the input data for each analysis is slightly different. Socioeconomic analyses are based on projected budgets, for example, where as air resources analyses are based on estimated releases of pollutants. The analytical models are also fundamentally different for similar reasons. For all analyses where conservative assumptions were required, generally accepted engineering and scientific approaches were used to ensure that these assumptions are not outside the range of uncertainty usually associated with the data.

Detailed uncertainty analyses can sometimes be useful in evaluating environmental impacts. They are particularly valuable when projected impacts are large and it is important to know how reliable the projections are. However, quantitative estimates of uncertainty in impacts for hypothetical future activities are difficult to determine. When appropriately conservative estimates of impacts are shown to be small, the exact degree of uncertainty diminishes in importance. The estimated impacts in the EIS are small enough that detailed quantitative uncertainty analyses are not appropriate to meet the objectives of an EIS.

II COMMENT

The commentor contends that the EIS is cumbersome as a result of the dual purpose and inadequate in the examination of issues pertaining to proposed Oak Ridge Reservation sites.

RESPONSE

The EIS Summary and Volume 1, Chapter 1 clearly state the options being evaluated by DOE. Both state that DOE is evaluating programmatic (DOE complex-wide) approaches to managing DOE SNF and site-specific approaches for SNF management, environmental restoration, and waste management activities at INEL.

In response to public comments raised during the scoping process, DOE undertook a process for identifying additional alternative sites. As a result, NTS and ORR were selected for analysis as alternative sites. DOE believes that the depth of analysis for ORR and NTS is appropriate for a programmatic EIS and is commensurate with the analyses of the other alternative sites in Volume 1.

II COMMENT

The commentor questions the adequacy of the technical analysis and the associated quantification of the
environmental impacts of the various alternatives.

RESPONSE

The environmental impact analyses are designed to produce a reasonable projection of the upper bound of
potential environmental consequences. This requires the use of appropriately conservative assumptions
and analytical approaches. In this context "conservative" means that an assumption or analysis would tend
to overestimate, rather than underestimate, any adverse impacts. However, unnecessarily conservative
analyses may make it more difficult to compare alternatives. Therefore, where available, the environmental
impact analyses are based on realistic, site-specific information. Each alternative was analyzed using
consistent methodology and levels of conservatism so that the relative impacts of alternatives could be
accurately assessed and compared.
The analyses of the impacts of operations and reasonably foreseeable accident conditions are based on
calculations that require two elements: 1) input data, and 2) a model or analytical method for projecting
potential impacts. The nature of the input data for each analysis is slightly different. Socioeconomic
analyses are based on projected budgets, for example, while air resources analyses are based on estimated
releases of pollutants. The analytical models are also fundamentally different for similar reasons. For all
analyses where conservative assumptions were required, generally accepted engineering and scientific
approaches were used to ensure that these assumptions are not outside the range of uncertainty usually
associated with the data.
Detailed uncertainty analyses can sometimes be useful in evaluating environmental impacts. They are
particularly valuable when projected impacts are large and it is important to know how reliable the
projections are. However, quantitative estimates of uncertainty in impacts for hypothetical future activities
are difficult to determine. When appropriately conservative estimates of impacts are shown to
be small, the exact degree of uncertainty diminishes in importance. The estimated impacts in the EIS are
small enough that detailed quantitative uncertainty analyses are not appropriate to meet the objectives of
an EIS.

II COMMENT

Commentor express the opinion that the Draft EIS requires substantive revision to meet the requirements of
the National Environmental Policy Act and the Court Order. Commentor consider the document a hurried
compilation of existing data that will jeopardize the decision-making process for the Idaho National
Engineering Laboratory-specific actions if not revised. Commentors further indicate that the EIS
compromises adherence to Federal and state laws, although it dismisses alternatives that would violate
DOE Orders or contractual agreements.

RESPONSE

In accordance with the requirements of NEPA (42 USC Section 4321 et seq.), this EIS was issued as a
draft for public and agency review on June 30, 1994. Great effort was required to produce and make
available an adequate Draft EIS for public review on or before June 30, 1994, to meet the deadline agreed
to between the State of Idaho, DOE, and the Navy, and adopted by the Court. Though difficult to achieve,

the integration of significant resources with a disciplined project management approach ensured success
without sacrificing quality. Because of the volume of information presented in the Draft EIS, DOE
extended the public comment period to 90 days, which is twice that required under NEPA, and conducted
33 public hearings at 20 locations across the nation, 8 of which were held in Idaho. In addition, DOE
accepted public comments in writing, via hearing exhibits, and via a toll-free telephone line well published
throughout the comment period. DOE is confident that it has considered all public comments received on
the Draft EIS, responded to the comments, and issued a Final EIS that incorporates all meaningful
comments, as appropriate.
This EIS was prepared using existing information that is available to the public and referenced in the EIS.
This information and the methodologies used to analyze environmental impacts in the EIS have been
thoroughly reviewed and commented on by numerous well-informed citizens, state and Federal agencies,
local and Tribal officials, and public interest organizations. A great effort was made on this project to
collect comments from the public nationwide and to use these comments in the EIS, as appropriate.
See also the responses to comments 04.04 (008) and 04.04 (011), as well as Volume 1, section 3.1, and
Volume 2, section 3.4 for DOE's preferred alternatives. DOE and the Navy consulted with the U.S.
Environmental Protection Agency (EPA) to fully understand
and be responsive to EPA comments on the Draft EIS, and to ensure that areas of insufficient information
were clarified and/or enhanced in the Final EIS. In addition, DOE contacted other states and agencies
providing comments on the draft to fully understand and consider their comments, with the exception of
the State of Idaho, which declined DOE's requests to schedule a meeting.
The U.S. Department of the Interior (DOI) submitted comments on the Draft EIS several months after the
close of the extended comment period. DOE is responding to DOI's concerns in separate correspondence.
While commentors raised a number of specific issues and concerns on the Draft EIS, none of the issues or
concerns identified new reasonable alternatives requiring assessment or resulted in a significant change in
the analysis of the potential environmental consequences. DOE believes that it has fulfilled its obligations
commensurate with the requirements of NEPA for the preparation of an EIS.

II COMMENT

The commentor states that the EIS does not constitute an adequate, comprehensive, sitewide EIS for the
Idaho National Engineering Laboratory.

RESPONSE

Volume 2, Chapters 1 and 5 discuss current and planned activities and cumulative impacts of activities at
INEL. Environmental restoration and waste management activities and impacts, as discussed in Volume 2,
cover a 10-year period. SNF management activities at INEL, as discussed in Volume 1, Appendix B
Chapters 2 and 5, cover a 40-year period. These time periods are appropriate for analyzing near-term
actions required for safe conduct of these activities. Some of the alternatives analyzed in Volumes 1 and 2
assume that waste and SNF remain at INEL.
The scope of the EIS is in accordance with the needs of DOE and the requirements of the Court Order.
The EIS was reviewed during an extended public comment period. While a number of specific issues and
concerns were raised on the EIS, none of the issues or concerns identified new reasonable alternatives
requiring assessment or resulted in a significant change in the analysis of or the potential environmental
consequences of the alternatives considered. DOE believes that it has fulfilled its obligations
commensurate with the requirements of the National Environmental Policy Act for the preparation of EIS.
See also response to comment 03.04.01 (007).

II COMMENT

The commentor states that the EIS discusses alternatives at the Idaho National Engineering Laboratory contingent on national spent nuclear fuel and waste management decisions. The commentor further states that this disjointed approach led to an undue influence toward Idaho National Engineering Laboratory spent nuclear fuel management, and that comments on the Implementation Plan did not result in a change in this approach.

RESPONSE

CEQ regulations regarding the preparation of NEPA documents require that when major actions are similar to other reasonably foreseeable agency actions, the environmental consequences must be evaluated in one EIS. DOE's analysis of proposed SNF activities at INEL complies with NEPA and the implementing regulations.
Accordingly, this EIS integrates national programmatic SNF management alternatives with alternatives for INEL sitewide environmental restoration and waste management alternatives, including management of SNF. The SNF management connection between the Volume 1 programmatic evaluation and the Volume 2 INEL alternatives for the management of SNF is Appendix B to Volume 1, which addresses SNF management alternatives as they would impact INEL. Recognizing the complexity and size of the EIS, DOE prepared an easy to read, volume-specific Summary to the EIS. DOE also made available a User's Guide, which leads the reviewers to EIS sections of particular interest.
Volume 1, Appendix B, Chapter 5 considers the impacts on INEL environment of the implementation of various DOE complex-wide SNF management alternatives. Volume 1, Appendix B, Chapter 2 describes INEL's SNF facility, the regulatory framework for SNF management at INEL, and the INEL SNF management program. Chapter 3 describes the DOE complex-wide SNF management alternatives as INEL proposes to implement them, including potential environmental consequences for each alternative.
Chapter 4 describes the potentially affected environment, and Chapter 5 considers the environmental consequences. Transportation impacts are considered in sections 4.11, 5.11 and 5.20.3; impacts from receiving, processing and storing SNF at INEL are included in Chapters 4 and 5. Similar levels of analysis were performed for other sites being considered for SNF management, including the Savannah River Site, the Hanford Site, the Oak Ridge Reservation, and the Nevada Test Site.

II COMMENT

The commentor states that the EIS does not properly define the proposed action, but that DOE presents a "kaleidoscope" of potential spent nuclear fuel storage and waste management facilities at the Idaho National Engineering Laboratory. The commentor is also of the opinion that the programmatic scope of the EIS does not provide the site-specific details required by the Court, thereby violating the Court Order.

RESPONSE

Volume 2, Chapter 1 describes the proposed action (see the response to comment 02.04 (047). This involves making a number of decisions within the range of reasonable alternatives analyzed in the EIS.
DOE did not have a preferred alternative at the time of the Draft EIS, and has considered public comments along with other factors such as program needs, in defining its preferred alternative in the Final EIS. See the response to comment 04.04 (011) for information on DOE's preferred alternative for INEL

environmental restoration and waste management programs for 1995 to 2005. See also the response to comment 04.02 (001).
The Court Order addresses five types of SNF: Fort St. Vrain fuel, Navy SNF, university and research reactor fuel, fuel from other DOE facilities, and fuel from foreign research reactors. All of these types of SNF are discussed relative to the proposed management alternatives and the related waste management activities associated with these fuels. These discussions can be found in a number of places in the EIS including Volume 1, Chapters 4 and 5; Volume 1, Appendix B (INEL specific), Chapter 3, section 4.14; and Volume 2, section 2.2.7. DOE factored the INEL site-specific SNF impacts of Volume 1, Appendix B into the environmental restoration and waste management program alternative actions evaluated in Volume 2. DOE is confident that the analysis of the proposed action and alternatives for SNF management, environmental restoration, and waste management at INEL is in full compliance with both the requirements and intent of NEPA and the Court Order. See also the response to comment 04.02 (001).

II COMMENT

The commentor states that the Draft EIS fails to identify the proposed action for environmental restoration and waste management at the Idaho National Engineering Laboratory, and proposed environmental restoration activities are limited to decontamination and decommissioning projects. The commentor adds that only 2 of the 47 proposed activities are related to technology development, and none is for environmental restoration.

RESPONSE

The proposed action for environmental restoration and waste management programs at INEL over the 10-year period 1995 to 2005 is discussed in Volume 2, Chapter 1. The proposed action is to develop appropriate facilities and technologies to manage waste and SNFs expected during the 10-year period; to more fully integrate all environmental restoration and waste management activities at INEL to achieve cost and operational efficiencies; and to minimize environmental impacts from environmental and waste management activities. In response to public comments, this proposed action will be achieved through five key decisions listed at the end of Volume 2, Chapter 1, including emphasis on waste minimization activities. The EIS has been revised to more clearly identify that portion of Volume 1, Chapter 2 that constitutes the proposed action.
The environmental restoration program at INEL is specifically discussed in Volume 2, sections 2.2.6 and 3.1.2. Volume 2, Appendix C addresses environmental restoration activities that have been initiated through agreement with the State of Idaho and EPA. Volume 2, Table 3.1-3 lists the general environmental restoration projects that would be completed under each alternative. Details regarding many of these projects are not available at this time. However, summaries of some projects are included in Volume 2, Appendix C.
The evaluation in Volume 2 of this EIS bounds environmental impacts from environmental restoration (or cleanup) activities at INEL. For purposes of this EIS, environmental restoration activities are addressed to the extent that they generate wastes which must be managed by DOE waste management programs. However, specific decisions related to cleanup at INEL are generally addressed under an enforceable agreement executed by DOE, EPA Region X, and the State of Idaho on December 9, 1991. This agreement, distinct from the EIS, is the FFA/CO. The FFA/CO establishes a comprehensive process that integrates the remediation requirements of CERCLA, and the corrective action requirements of RCRA and the State of Idaho's Hazardous Waste Management Act. Cleanup activities are conducted under the process and schedule established in the FFA/CO. RODs under the FFA/CO process are signed

by all three agencies and represent a joint determination that protectiveness will be achieved through implementation of the selected remedy.
Environmental restoration efforts at INEL have progressed substantially since the FFA/CO was signed. As of November 1994, 10 of the 25 scheduled RODs have been successfully negotiated and signed by DOE, EPA, and the State of Idaho. These RODs resulted in the implementation and/or completion of several interim and final actions designed to reduce or eliminate hazards to human health and the environment. To date, all enforceable milestones set in accordance with the FFA/CO have been met, either on or ahead of schedule. Additional work will continue over the next several years, as detailed in the EIS and the FFA/CO Action Plan. For instance, the draft ROD for the Waste Area Group 10 Comprehensive Snake River Plain Aquifer Remedial Investigation feasibility Study, scheduled for May 2001, will announce decisions regarding the cleanup of the Snake River Plain aquifer. This EIS cannot anticipate the detail of those decisions. Therefore, analyses performed in support of this EIS must address the nature of the anticipated cleanup in general terms.

II COMMENT

The commentor states that DOE still does not understand its national responsibilities to protect health and safety and should consider all impacts of its proposed actions. The commentor is of the opinion that the Draft EIS has the same failings as DOE's environmental assessment, which was ruled inadequate by the Court. The commentor considers the presentation of information in the EIS to be cursory, and disjointed so as to undermine rational decisionmaking. The commentor considers the treatment of 12 current Idaho National Engineering Laboratory projects to be "superficial."

RESPONSE

DOE takes its national obligation to make informed decisions that protect the health and safety of workers, the public, and the environment seriously. This is evidenced by the coupling of the analysis of programmatic SNF management alternatives with the corresponding INEL site-specific SNF fuel management alternatives for implementation.
CEQ regulations at 40 CFR 1500.1(b) state that an EIS must concentrate on the issues that are truly significant to the action in question, instead of amassing needless detail. 40 CFR 1502.21 requires that the agency incorporate materials into an EIS by reference when the effect will be to reduce the bulk of the document. One specific mechanism for incorporation by reference is discussed in the regulation on "tiering" at 40 CFR 1502.20, which encourages agencies to eliminate repetitive discussion of the same issues and to focus on the actual issues ready for a decision at each level of environmental review.
The 12 project descriptions referred to by the commentor are interim actions at INEL being undertaken pursuant to 40 CFR 1506.1(c). The cumulative impacts of these interim actions are included within the No Action alternative in Volume 2 to provide a baseline from which the impacts of the proposed action could be assessed. In addition, although the proposed projects are summarized in Volume 2, Appendix C, the impacts of each of the proposed actions are fully assessed in the main volume (Volume 2, Chapter 5) of the INEL-specific portion of the EIS, to the extent that such proposed actions are ready for a decision.
See also the responses to comments 02.04 (043) and 02.04 (045).

II COMMENT

The commentor states that the EIS is inadequate because it fails to completely address the specific proposal that was the subject of the lawsuit: the shipment and storage of spent nuclear fuel from the Fort St. Vrain reactor. The commentor suggests several reasons why the project summary on the Fort St. Vrain fuel is inadequate, including the fact that it fails to address specifics related to transportation, such as whether safe and certified shipping casks exist and analysis of rail versus truck transport by specific fuel type and location.

RESPONSE

The EIS has a summary description of the shipment and storage of the SNF from Fort St. Vrain. This summary is in Volume 2, Appendix C, section C-4.1.5. For instance, this summary specifies that Fort St. Vrain SNF would be shipped in the TN-FSV cask designed by GA Technologies and certified by the Nuclear Regulatory Commission for truck transport (certificate of Compliance No. 9253, Rev. 0), with each cask holding six SNF blocks.
Volume 2, Appendix C, section C-4.1.5 summarizes information found elsewhere in the EIS on the impacts of shipping and storing Fort St. Vrain fuel. All of the environmental impacts of SNF shipment and storage are described in Volume 1, Chapter 5 and Appendix B. Fort St. Vrain fuel is just one of several types of SNF analyzed in the EIS under the various programmatic alternatives. For example, Volume 1, Appendices D and I present transportation impacts under all alternatives evaluated for SNF management, including methodologies and route-specific data. With respect to Fort St. Vrain SNF, a licensed rail cask is not currently available, although one is being designed by Pacific Nuclear Corporation. The incident-free and accident risk transportation analyses are presented for specific fuel types and pairs of originating and final destination sites.
The EIS presents a complete and comprehensive description of the impacts associated with SNF management, including the fuel from the Fort St. Vrain reactor. See also the response to comment 02.04 (046).

II COMMENT

The commentor states that the EIS is inadequate in its analysis of the impacts of long-term management of spent nuclear fuel because it fails to analyze where and how the fuel will be stored, how processing and reprocessing might occur, impacts of waste management activities, and what steps and technologies will be taken to prepare the fuel for ultimate disposition.

RESPONSE

The EIS analyzes the impacts of SNF management until 2035, by which time DOE expects to make and implement decisions regarding the ultimate disposition of SNF. Evaluating the potential environmental consequences of SNF management over the full 40-year interim period is anticipated to conservatively estimate any impacts that are reasonably foreseeable, including impacts from processing. Thus, the affected environments and environmental impacts that are reasonably foreseeable during this 40-year period are studied in detail in the EIS for a range of reasonable action and siting alternatives for SNF management.
This information is in Volume 1, Chapters 4 and 5 and each of the site-specific Appendices A through F.
Appendix J describes storage, processing, and steps and technologies available to either stabilize the SNF for storage and/or prepare it for ultimate disposition. The discussion in the EIS conservatively estimates all

of the impacts, yet it remains flexible on the discussion of technologies due to the evolving waste
acceptance criteria for potential geologic disposal, as well as development of potential new technologies
not yet available. Decisions on ultimate disposition of SNF are beyond the scope of this EIS. See also the
response to comment 05.09 (03).

II COMMENT

The commentor states that the EIS is inadequate because it fails to fully analyze the environmental impacts
of waste disposal and waste treatment technologies at the Idaho National Engineering Laboratory.

RESPONSE

The EIS considers waste treatment impacts, either onsite or offsite, under a range of reasonable alternatives
in Volume 2. These alternatives range from no action to maximum treatment, storage, and disposal
activities. Under the Maximum Treatment, Storage and Disposal alternative, activities are analyzed as the
upper limit of the reasonably foreseeable environmental impacts, including development and
implementation of necessary technologies. Volume 2, section 3.1 describes these activities; each waste
stream is analyzed in detail, which includes a description of maximum treatment for high-level waste
(Table 3.1-5), transuranic waste (Table 3.1-6), low-level waste (Table 3.1-7), mixed low-level waste
(Table 3.1-8), and hazardous waste (Table 3.1-9). For reasonably foreseeable technologies and facilities,
environmental impacts are presented in Volume 2, section 3.3, and consequences of maximum treatment,
storage and disposal are analyzed in Volume 2, Chapter 5. These impacts then are summarized in Volume
2, sections 5.1 through 5.20. The analysis in the EIS is adequate for evaluating waste disposal and waste
treatment impacts, and considers a range of alternatives with respect to sitewide
waste stream management activities. Additional NEPA reviews for those projects that become ready for a
decision may be conducted as necessary as the waste treatment technologies are further developed. See
also the response to comment 07.02.02 (001).

II COMMENT

The commentor states that the EIS is inadequate because it fails to provide sufficient data to support its
conclusions, including risk models and assumptions that must be available for public scrutiny, as well as
information on waste management projects. The commentor indicates local information should be used,
such as transportation statistics from Idaho, with regard to potential impacts. The commentor indicates that
DOE is obligated to ensure that the scientific basis and uncertainty of its environmental analysis is
available.

RESPONSE

The EIS complies with CEQ regulations at 40 CFR 1502.24, which require that DOE ensure the
professional and scientific integrity of the discussions and analyses in the document. Wherever scientific
and other sources were relied on for conclusions made in the EIS, references are cited. Reference lists
appear at the end of each chapter and each appendix. All references cited in the EIS are available for
public review in information locations and DOE reading rooms throughout the United States, as listed in
the Summary. For example, transportation accident risks and the underlying models and

assumptions are
described in Volume 1, Appendix I. The reference list for these discussions is found in Appendix I-10.
Similarly, the methodology and models used to calculate impacts from facility accidents are in identified
Volumes 1 and 2, Chapter 5 with appropriate references. See the response to comment 07.04 (006) with
respect to information on waste management projects.
Regarding impacts from transportation, Volume 1, Appendices D and I present transportation impacts for
all alternatives evaluated for SNF management, including methodologies, route-specific data, etc. The
analyses for both incident-free transportation and accident risk transportation are presented for an entire
generic route, which includes types of routes that may exist in Idaho for those shipments that may travel
through, originate, or terminate in Idaho. These evaluations include state-specific accident rates. To find
the consequences of a transportation accident in a suburban area such as Pocatello, Idaho, for example, the
reviewer would look up the consequences calculated for a suburban area.
In response to public comments, DOE has provided a discussion on uncertainty and conservatism in Volumes 1 and 2, section 5.1.

II COMMENT

The commentor states that the EIS is inadequate because it does not incorporate impacts that might arise
after 2035 if a permanent geologic repository does not become available as planned. The commentor cites
cumulative impacts of waste management activities as another example of cursory analysis; that is, being
defined only in waste volumes rather than in terms of past, present, and reasonably foreseeable storage and
disposal actions and repository proposals.

RESPONSE

This EIS considers management of DOE SNF pending ultimate disposition. DOE believes that decisions on
ultimate disposition will be made and implemented within 40 years; however, DOE is committed to safely
managing SNF for the necessary time interval. DOE will review this EIS periodically and update it as
appropriate during this period.
Regarding cumulative waste management impacts in the EIS, past actions are factored into the baseline.
For instance, impacts to the aquifer due to past activities are reflected in results of current monitoring and
modeling. Current waste inventories reflect the accumulation of waste from past activities. Volume 2,
section 5.15 presents cumulative impacts by waste stream under each of the alternatives, including
transportation, over the reasonably foreseeable period of the proposed action. As with the programmatic
portion of the EIS, the INEL sitewide environmental restoration and waste management portion of the EIS
is subject to review and updating at least every 5 years. In that time period, DOE determines
whether to prepare a new programmatic or sitewide EIS or to supplement the existing EIS, as appropriate.
See also the responses to comments 05.09 (006) and 05.09 (011).

II COMMENT

The commentor expresses the opinion that the Draft EIS fails to meet the requirements of the Court Order
and the National Environmental Policy Act because alternatives are assessed programmatically rather than
site-specifically in the EIS. As examples, the commentor specifically references DOE's "summary
dismissal" of leaving Fort St. Vrain fuel at the existing Fort St. Vrain facility, and failure to assess storing
Fort St. Vrain fuel at a new facility at the Idaho National Engineering Laboratory.

RESPONSE

The EIS includes an alternative of leaving fuel at Fort St. Vrain, Colorado. The identification of alternatives when considering proposed actions is subject to the rule of reason. Although an agency must consider a reasonable range of alternatives, what constitutes a reasonable range depends on the nature of the proposed action and the facts in each case. The rule of reason is important because without it, an infinite variety of alternatives might be considered possible. As the courts have said, "so long as there are unexplored and undiscussed alternatives that inventive minds might suggest, without the rule of reason, it would be technically impossible to prepare a literally correct EIS" [Fayetteville Area Chamber of Commerce vs. Volpe, 515 F.2d 1021 (4th Cir. 1975)]. As an example, this EIS addresses transportation by truck or by rail, or not transporting at all, which constitutes a reasonable range of alternatives by the rule of reason. This EIS addresses a reasonable range of alternatives in both Volumes 1 and Volume 2, and such alternatives have been adequately integrated to address a reasonable range of SNF activities at INEL.
Regarding the commentor's examples, the option of leaving Fort St. Vrain SNF at the existing Fort St. Vrain storage facility was considered under the No Action alternative. The statement in the EIS that leaving the fuel at the facility would violate the existing contract did not lessen such analysis; rather, it was a statement to advise the public of the consequences of such an alternative. DOE modified the project summary in this EIS to provide more information on the Fort St. Vrain fuel. With respect to the alternative of storing Fort St. Vrain fuel at a new facility at INEL, this is considered within the scope of the Dry Fuel Storage Facility Project Summary. See Volume 2, Appendix C, SNF-4.

II COMMENT

Commentors state that the EIS was prepared without significant consultation with the Shoshone-Bannock Tribes.

RESPONSE

DOE and the Navy consulted regularly with the Shoshone-Bannock Tribes, both with regard to this EIS and in other contexts. Specifically with respect to this EIS, DOE and the Navy reviewed the Shoshone-Bannock Tribes' comments, and to fully understand, evaluate, and consider these comments, there have been consultations between Tribal officials and appropriate INEL and Navy officials. In addition to addressing specific comments on the EIS, these ongoing consultations are designed to promote a mutual understanding of INEL-related issues important to the Tribes, both within and beyond the scope of this EIS. To date, these consultations have resulted in an increased awareness of Tribal values as they relate to nature, ties to the land, religious beliefs, and other areas of special interest to the Tribes. See also the response to comment 03.07 (008).

II COMMENT

The commentor states that regardless of which port of entry is considered, there are inadequacies in the environmental review which need to be addressed.

RESPONSE

DOE believes the analytical approaches and technical information used in the EIS to be accurate and scientifically valid. The document was prepared using all appropriate and publicly available information.
DOE placed much technical detail in the appendices and references. The references cited for Volumes 1 and 2 include current information on the existing environment and applicable environmental consequences for all sites evaluated. These original studies are referenced in Chapter 9 of both volumes and are available in public reading rooms for review.
DOE made every effort to verify and check all data and statistics. All information derived from statistical evaluations in the EIS was subjected to technical and interdisciplinary reviews to reduce the possibility of error.
DOE did not omit critical information, and believes that the public review process ensures access to information by critics as well as proponents.

II COMMENT

The commentor states that the EIS neither describes ongoing activities nor analyzes their impacts in association with past and future activities, and is therefore not comprehensive.

RESPONSE

Volume 2, Chapter 4 describes the existing environment at INEL. Volume 2, Chapter 2 discusses the current activities, facilities, and missions at INEL. Site-specific impacts, including cumulative impacts, are presented in Volume 2, Chapter 5 and Appendix F. Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize all of the alternatives considered in this EIS. The analysis show that the environmental impacts of all proposed alternatives would be small.

II COMMENT

The commentor states that the EIS process is flawed because the focus is flawed, the alternatives are flawed, and the review of environmental consequences is inadequate.

RESPONSE

For each of the alternatives considered, environmental impacts were analyzed and presented to allow comparisons between the alternatives. DOE believes the technical analyses provided in this EIS, its appendices, and references accurately and adequately scope potential environmental impacts due to the proposed action.

II COMMENT

The commentor asserts that the facility-specific environmental impacts of spent nuclear fuel management activities must be performed prior to selecting a location for that activity.

RESPONSE

Specific information is not available on facilities that have not been fully designed and constructed. Such data are also not available for future activities, such as decontamination projects that have not occurred and treatment of waste streams, the treatment plans for which have not been finalized. Generic projects are included in the EIS to present readers with as comprehensive a range of forthcoming projects as is currently possible. These projects or facilities may require additional analysis under NEPA. By analyzing generic projects at the various alternative sites, DOE can reasonably compare the impacts of these activities at a programmatic level.

II COMMENT

Commentors state that the EIS treatment is too broad, and details about specific facilities or actions are too sketchy to serve as adequate National Environmental Policy Act documentation. One commentor asks what information other than public comments will be considered in EIS decisionmaking. Other commentors indicate that the EIS is not specific enough for adequate assessment of facilities, safety, and impacts to the environment. One commentor states that the EIS does not discuss processing.

RESPONSE

This EIS was prepared as a programmatic document dealing with the nationwide management of SNF in Volume 1, and sitewide environmental restoration and waste management and SNF management programs at INEL in Volume 2.
Because of the wide-ranging types and quantity of DOE SNF, DOE determined it prudent to examine alternatives for SNF management across the entire DOE complex; thus, a programmatic EIS. This determination was based, in part, on avoiding possible "improper segmentation," as discussed in NEPA implementing regulations at 40 CFR 1508.25 (a). Each proposed action contemplated in this EIS is analyzed using the most current environmental analyses and other relevant information, as necessary, to assess all impacts, including cumulative impacts. Decisions for this EIS will be based on the environmental analyses, public comments, the Spent Nuclear Fuel Management Cost Evaluation Report (Draft), and any other information deemed necessary by decisionmakers, including technical and practical considerations.
Volume 2, Appendix C discusses 49 potential projects to implement INEL SNF management and environmental restoration programs. Volume 2, Appendix F, and Volume 1, Appendices B and J discuss impacts from processing SNF at INEL.
Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. The analyses show that the environmental impacts of all proposed alternatives would be small.

II COMMENT

The commentor states that the EIS inadequately addresses alternatives by dismissing criteria such as aquifer locations and seismicity as "Issues Not Discussed in Detail."

RESPONSE

The commentor refers to Volume 1, section 5.2, which is a high-level summation of the site-specific analyses in the associated appendices. The section presents environmental consequences of the alternatives, focusing on the disciplines that may differentiate among sites, have the potential for a more significant impact, or are of general interest to the public. The disciplines not discussed in

detail in
Volume 1 are considered to be issues that are small and do not distinguish among alternatives.
Nevertheless, these issues are discussed in detail in the appendices and reference documents.
See also the
responses to comments 02.04 (014) and 02.04 (021) regarding the adequacy of analysis in the EIS.

II COMMENT

The commentor states that the EIS is inadequate and unsatisfactory because it ignores past accidents and
existing deficiencies at the Savannah River Site.

RESPONSE

Environmental impacts associated with past accidents or releases and existing deficiencies at the Savannah
River Site are not within the scope of this EIS except to provide baseline data for the analysis of possible
cumulative impacts. However, DOE acknowledges that environmental releases have occurred as a result of
past activities. DOE's Environmental Management Program is responsible for appropriately addressing past
releases in accordance with applicable regulations and standards.

II 2.5 Record of Decision

II COMMENT

The commentor states that the burial of radioactive waste, including Navy waste, and the use of radioactive
waste percolation ponds must be suspended until the Record of Decision for this EIS is issued.

RESPONSE

The EIS process established by NEPA is directed at appropriately considering the environmental
consequences of proposals for new activities or for alterations of existing activities or facilities. Although
current operations may have a bearing on the environmental impacts of proposed new actions, NEPA does
not require that current operations be shut down until decisions on proposed new actions are reached and
published in a ROD.
At present, only low-level radioactive wastes are being buried (disposed of below ground) at INEL. These
low-level wastes must satisfy waste acceptance criteria specific to the Radioactive Waste Management
Complex. In addition, the burial of low-level radioactive wastes is an ongoing activity.
Liquid effluent discharges from INEL site activities are monitored for the presence of radioactive chemical
constituents and determined suitable for release pursuant to applicable Federal and state regulations.
As discussed in Volume 2, section 5.8, radiological discharges are no longer made to infiltration ponds.
Past discharges of radioactivity did not result in exceedance of EPA Primary Drinking Water Standards
offsite. Also, owing to radioactive decay, the low concentrations of such radionuclides in the aquifer from
past discharges continue to diminish with time.

II 2.6 Out-of-Scope Issues

II COMMENT

A number of commentors provided input at public hearings, in writing, via exhibits, and/or via the toll-free telephone line that were not related to either the programmatic management of DOE spent nuclear fuel or environmental restoration and waste management activities at the Idaho National Engineering Laboratory, or issues considered in this EIS. Some of the comments dealt with such topics as:

Siting of a bombing range in Idaho or elsewhere
Movement of "nuclear specialist" trucks to a facility in Hartsville, Tennessee
An unspecified General Electric contract related to uses of nuclear power
George Orwell's novel "1984" as it relates to safety and ethics
Right to Work law impacts on trade unions
United States arms exports to foreign countries
Rights to peace and worldwide peace
Maintaining a strong industrial base in Hawaii
Operations of specific commercial nuclear waste facilities
The 1948 Declaration of Human Rights

RESPONSE

It is beyond the scope of this EIS to address issues that are not related to either the programmatic management of DOE SNF or environmental restoration and waste management activities at INEL, including those listed above.

II COMMENT

The commentor states that the EIS fails to review alternatives and environmental consequences on the production side of the spent nuclear fuel issue, such as the continued use of nuclear ships, thereby violating the National Environmental Policy Act .

RESPONSE

This EIS considers management of DOE SNF pending ultimate disposition. DOE believes the analyses in this EIS are adequate to support a decision on this subject.

II COMMENT

The commentor objects to "spent fuel" not being called "high-level nuclear waste" in a fact sheet provided at scoping hearings for the EIS entitled Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Reactor Spent Nuclear Fuel.

RESPONSE

Congress established the definitions of various categories of radioactive material in the Nuclear Waste Policy Act of 1982, as amended. Section 2 of the Act defines SNF as fuel that has been withdrawn from a nuclear reactor following irradiation, the constituent elements of which have not been separated by reprocessing. The definitions in the Act place SNF in its own category and distinguish it from high-level and low-level waste.

II COMMENT

The commentor asks DOE to delegate authority to some competent people who can come up with a way to deal with nuclear waste in a safe, reliable manner.

RESPONSE

DOE is committed to comply with all applicable Federal and state laws and regulations, DOE Orders, and interagency agreements governing SNF and radioactive and hazardous wastes and is responsible for safely managing these materials. The delegation of authority or appointment of independent commissions is beyond the scope of this EIS.

II COMMENT

The commentor asks how or whether the full range of impacts was considered when DOE originally chose the Idaho National Engineering Laboratory, the Hanford Site, and the Savannah River Site for its activities 40 years ago. The commentor points out that the National Environmental Policy Act process did not exist then.

RESPONSE

The National Environmental Policy Act of 1969 did not exist when activities were initiated by DOE's predecessors at the three sites mentioned. The basis for previous and remote-in-time decisions by the Federal Government to select these locations for siting existing activities is beyond the scope of this EIS.

II COMMENT

The commentor expresses the opinion that the costs of commercial nuclear power plant operations go beyond financial to include the environmental risks posed by reactor operations and potential accidents. The commentor cites as examples the accidents at Chernobyl and Three Mile Island.

RESPONSE

This EIS is limited in scope to DOE SNF. Neither operation and environmental risks nor costs of commercial nuclear power plants are evaluated in the EIS.

II COMMENT

The commentor contends that cladding on nuclear fuel rods used in U.S. nuclear power plants is failing and that the Nuclear Regulatory Commission has done little to prevent potentially flawed fuel rod casings from being used in the United States and abroad.

RESPONSE

This EIS is limited in scope to DOE SNF. The condition of fuels in use in nuclear power plants and research reactors is not evaluated in the EIS.

II COMMENT

The commentor suggests that a cost evaluation report of nuclear ships be performed and that nuclear waste cleanup be included in the EIS cost evaluation.

RESPONSE

Decisions on whether to operate nuclear-powered Naval vessels and the number of such vessels are made by Congress and the President and are beyond the scope of this EIS. DOE prepared a cost evaluation report that describes costs associated with the alternatives for SNF management. A summary of the cost evaluation report is in Volume 1, section 3.3.6. See also the responses to comments 08.03.01 (001) and 08.04 (002).

II COMMENT

The commentor requests that the EIS include an inventory of hazardous and radioactive materials used, generated, and leaked to the environment over the years at the Idaho National Engineering Laboratory.

RESPONSE

A total inventory of INEL hazardous and radioactive materials used or generated, and details about environmental releases are not within the scope of this EIS, except as they may relate to the discussion of the existing site conditions, cumulative impacts, and current or proposed waste management activities. For example, Volume 2, section 4.8 includes a discussion of existing water-quality conditions in the Snake River Plain aquifer. Cleanup of contamination from past releases is addressed at INEL under the FFA/CO.

II COMMENT

The commentor indicates that DOE budgets lack life-cycle costs such as those that would be required in Federal domestic budgets under proposed House Bill HR3870.

RESPONSE

The sources, appropriations, and accounting for fiscal and other resources to support the activities of the Federal Government are determined by Congress and are beyond the scope of this EIS.

II COMMENT

The commentor provides a fact sheet that addresses topics and issues that are only related to the EIS entitled Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel.

RESPONSE

While this EIS includes potential future management of foreign research reactor spent nuclear fuel in
cumulative impact analyses, the topic of DOE policy for managing this fuel is outside the scope of this EIS.

II COMMENT

The commentor raises issues related to the Centers for Disease Control and Prevention dose reconstruction
study currently under way at the Idaho National Engineering Laboratory.

RESPONSE

Issues related to the Centers for Disease Control and Prevention (CDC) dose reconstruction study are
beyond the scope of this EIS. However, DOE and the Navy are cooperating with the CDC in its conduct of
the study.

II COMMENT

The commentor is of the opinion that DOE made a political decision to characterize only the Yucca Mountain Site for geologic disposal, rather than all three original sites.

RESPONSE

The decision to characterize only the Yucca Mountain site was made by Congress as part of amending the
Nuclear Waste Policy Act, and is beyond the scope of this EIS.

II COMMENT

The commentor contends that some facilities have been closed due to noncompliance with environmental
regulations.

RESPONSE

The facility closures mentioned by the commentor resulted from a change in DOE's mission and program
needs relative to these sites, not environmental noncompliance. Facility closures are beyond the scope of
this EIS. See also the response to comment 03.08 (011).

II COMMENT

The commentor raises the issue that the EIS does not address the potential impacts of ocean transport of
foreign research reactor spent nuclear fuel to the United States.

RESPONSE

The ocean-going portion of FRR SNF shipments and a detailed evaluation of port activities are not addressed in this EIS. Alternatives for managing FRR SNF, including shipping across the global commons, are being analyzed in a separate EIS entitled Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor SNF (Draft). This EIS addresses domestic transportation and management of FRR SNF if it is returned to the United States. DOE will not make a final decision on the policy regarding FRR SNF until that EIS and this EIS are both completed.

II COMMENT

The commentor expresses the opinion that the benefits derived from nuclear technology do not justify the waste and "destruction," and that nuclear reactors and weapons have not improved our image or our lives.

RESPONSE

The net benefit of nuclear technology, reactors, and weapons is not within the scope of this EIS. This EIS does, however, address alternatives for safely managing DOE SNF over the next 40 years.

II COMMENT

The commentor states that this EIS does not address commercial spent nuclear fuel, and that this will lead to less than optimum decisions and no national policy.

RESPONSE

FRR SNF is included in the EIS in the event that DOE decides to accept such fuel after completion of the EIS entitled Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor SNF (Draft) (FRR EIS). A discussion of the relationship between this EIS and the FRR EIS is provided in Volume 1, section 1.2.4. See also the response to comment 02.02 (002).
Regarding commercial SNF, DOE manages only a very limited quantity of special case commercial SNF, which is addressed in this EIS. It is inappropriate to consider commercial SNF, in general, in this EIS because this material is not managed by DOE. Under the Nuclear Waste Policy Act, as amended, DOE is responsible for managing the program for development of geologic repositories for permanent disposal of SNF and high-level radioactive waste. A separate EIS is required under this Act to accompany the repository site recommendation to the President.

II COMMENT

The commentor requests that best fuel cladding and fuel design be added to the EIS.

RESPONSE

Although the details of the design and fabrication of fuel elements and assemblies, as well as the requirements for specific cladding materials, are outside the scope of this EIS, the type of fuel cladding is a consideration in the management of SNF. A discussion of the various types of fuel claddings and management issues associated with them is in Volume 1, Appendix J.

II COMMENT

The commentor recommends that DOE prepare an overall programmatic EIS to evaluate the issues associated with all EISs evaluating radioactive waste, weapons dismantlement, and the cumulative effects of all this transportation.

RESPONSE

Evaluating all nuclear waste issues at a programmatic level is beyond the scope of this EIS. However, DOE currently has a range of NEPA reviews planned or under way. Volume 1, section 1.2 was revised to more fully explain the interrelationships of these reviews. Further, in the transportation cumulative impact analysis in this EIS, DOE considered the impacts of past, present, and reasonably foreseeable actions, including other DOE and non-DOE radiological shipments.

II COMMENT

The commentor is of the opinion that radioactive wastes should remain under guard at their current locations, and that the U.S. should assist Russia with waste management.

RESPONSE

The disposition of special nuclear material, such as plutonium, and assistance to Russia are outside the scope of this EIS.

II COMMENT

The commentor raises issues about activities and/or mishaps unrelated to the proposed actions of this EIS.

RESPONSE

Although these issues are out of the scope, it is a matter of DOE policy to monitor such activities/events and implement precautions as necessary to preclude like occurrences in the DOE's programs.

II COMMENT

The commentor favors keeping foreign spent nuclear fuel out of the United States.

RESPONSE

Alternatives related to the DOE policy on management of SNF of United States origin from foreign research reactors are being analyzed in a separate EIS and are outside the scope of this EIS. This EIS does analyze the impacts of transporting and managing FRR SNF (less than 1 percent of all the SNF addressed in this EIS) if there is a decision to accept such fuel. This effectively bounds the analysis for reasonably foreseeable management of the SNF under consideration. DOE will not make a final decision on the policy regarding FRR SNF until the EIS entitled Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel and this EIS are completed.02.06 (035)

Out-of-Scope Issues

COMMENT

The commentor recommends zero discharge of persistent toxic chemicals and radionuclides as apparently
recommended by an international joint convention in a report on Great Lakes water quality.

RESPONSE

DOE waste management policies and practices embrace numerous laws and regulations governing hazardous and radioactive wastes. A comprehensive list of these requirements is provided in Volume 2,
Chapter 7; associated environmental permits are also discussed there. Current management practices for
radioactive waste are described in Volume 2, section 2.2.7 (which is specific to INEL but also generally
applies to wastes at other DOE sites). DOE is committed to comply with all applicable Federal, state, and
local regulations and DOE Orders. All radioactive materials will be managed to protect the environment
and the health and safety of the public and site employees. As discussed in Volume 1, section 5.2, the
proposed alternatives would have minor impacts on water resources, but the differences in impacts do not
distinguish among the alternatives. DOE also has
adopted a policy emphasizing waste minimization and avoidance, as discussed in Volume 2, Chapters 1
and 2. Most new radioactive waste will be created during cleanup activities and decommissioning of
contaminated facilities that no longer serve essential national missions.

II COMMENT

The commentor provides suggestions for additional options for transporting and storing low-level and high-level wastes.

RESPONSE

DOE complex-wide decisions on handling low-level and high-level wastes are being addressed the Waste
Management Programmatic EIS and are outside the scope of this EIS.

II COMMENT

A commentor asks DOE to support legislation before Congress that would stop the export of fissionable
materials. The commentor states that we in this country could bring back fuels from these research reactors
as a final shipment as part of decommissioning all the research reactors. A commentor asked whether the
U.S. plans to continue sending fuel to foreign countries, and whether the spent nuclear fuel would be taken
back.

RESPONSE

Proposals regarding the exportation of fissile materials, reactor fuels, or other nuclear materials are beyond
the scope of this EIS. Alternatives for managing FRR SNF are being analyzed in a separate EIS entitled
Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel (Draft).

II COMMENT

The commentor states that low-level radioactivity disposal sites for nongovernment waste must be established and suggests that DOE headquarters has not done enough to expedite transfer of the Ward
Valley site to the State of California, which shows lack of concern.

RESPONSE

The establishment of low-level waste disposal sites for nongovernment waste is not within the scope of this
EIS.

II COMMENT

The commentor states that DOE does not give the No Action alternative the detailed consideration it
deserves concerning receipt of foreign research reactor fuel.

RESPONSE

Volume 1 analyzes the transportation impacts for a reasonable range of alternatives for management of
DOE SNF in the continental United States, including the No Action alternative. Decisions regarding the
policy on management of FRR SNF are is beyond the scope of this EIS. A DOE EIS in preparation,
Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent
Nuclear Fuel, (Draft) analyzes the potential for return of FRR SNF to the continental United
States.

II 2.7 Hearings

II COMMENT

Commentors state that DOE did not adequately seek public involvement in the process. Examples given
include inadequate availability and comment time for the EIS and too few and insufficient notifications for
meetings.

RESPONSE

In accordance with CEQ regulations, a Notice of Opportunity to comment on the preparation of an EIS on
DOE Programmatic SNF Management and Environmental Restoration and Waste Management at INEL
was published in the Federal Register on September 3, 1993. Numerous individuals and organizations sent
letters, either asking questions or raising issues related to the EIS. Each of these letters was answered by
DOE, with information provided as requested.
An Implementation Plan was prepared and released to the public on October 29, 1993; the amended final
version was available on May 9, 1994. DOE published a Notice of Availability in the Federal Register on
June 24, 1994, to announce the availability of the Draft EIS. The Draft EIS was offered upon request, was
available at 64 public libraries and information locations, was delivered to all who requested it, and was
sent to all state and Federal agencies, organizations, and individuals who were believed likely

to be
interested in the subject. Public comments were solicited and written comments were received from June
through September 1994, well in excess of the NEPA requirement. Thirty-three public hearings were held
in 20 locations throughout the country, including 4 locations in Idaho, and comments were received at
these hearings, through the mail, and through a toll-free telephone line, which accepted comments both
orally and by facsimile. Notices of the dates, times, and locations of the public hearings were published in
the Federal Register on June 24, 1994. In addition, advertisements were placed in local newspapers prior
to the meetings. Numerous additional information briefings were also provided to organizations and
individuals. In a special effort to involve communities not previously involved, DOE placed advertisements for the hearings in alternative newspapers, in Spanish-language newspapers and on Spanish-language radio programs, and also had available Spanish-language translators for the meetings in Idaho.
DOE conscientiously and thoroughly fulfilled its responsibilities to use available avenues for public
awareness and for solicitation of public input during all stages of the EIS. Nevertheless, DOE continues to
seek ways to improve public involvement and will use the comments in developing improved public involvement for future EISs.

II COMMENT

Commentors requested public hearings in Seattle as a potentially affected site.

RESPONSE

Public hearings were held in Seattle and Bremerton, Washington, on July 26, 1994.

II COMMENT

Several commentors described difficulties with registering to make formal comments at the Twin Falls
public meeting, and suggest that DOE manipulated the system to limit the number of public comments.

RESPONSE

Standard practice for operating the toll-free telephone lines was to close them at noon the day before a
meeting. Prior to the Twin Falls meeting, however, a power outage caused the telephone lines to close the
day before the meeting and backup systems failed to bring them back on line. When those maintaining the
lines discovered the problem, they decided to keep the lines open until 5:00 p.m., notifying DOE's outreach
office and several major stakeholder offices in the Twin Falls area of this time extension. Apparently,
several people tried to register during the afternoon and were frustrated when another power outage
temporarily disrupted service. This disruption was brief.
Public hearings around the country were scheduled to fall within the 90-day comment period. Four locations in Idaho were used for public hearings. This allowed some people to attend the hearings and
provide written or oral comments later in the comment period, either using the toll-free telephone line or
by mailing comments. Using this approach, all persons who wanted to comment were given an opportunity
to do so, even if they did not do so at public hearings.

II COMMENT

The Town of Hilton Head, South Carolina, notes and congratulates DOE on the large effort and expense employed by DOE on its "most thorough" public involvement program.

RESPONSE

The comment is noted.

II COMMENT

The commentor questions whether the number of meetings and "plethora" of written information being presented to the public at DOE sites could be consolidated.

RESPONSE

DOE attempts to coordinate and consolidate information presented and meetings scheduled with the public, at both the national and individual site levels. DOE recognizes the need for a balance between underinvolving and overburdening its stakeholders in soliciting input from the public on important decisions, and must balance that against its legal obligations under the NEPA and other environmental statutes.

II COMMENT

Commentors state that the process of adding the Oak Ridge Reservation as a potential spent nuclear fuel management location was flawed.

RESPONSE

On October 22, 1990, DOE published a Notice of Intent in the Federal Register announcing its intent to prepare an EIS addressing environmental restoration and waste management, including spent nuclear fuel management activities, across the entire DOE complex. DOE invited the public to submit written comments on the scope of the EIS, and held 23 scoping meetings across the country, including one at Oak Ridge, Tennessee, on December 11, 1990. Two hundred and thirty-seven comments were received at the Oak Ridge meeting. DOE issued a Draft Implementation Plan in January 1992, reflecting the comments provided. DOE held six regional public workshops on the Draft Implementation Plan and recorded public comments given at these workshops. The Implementation Plan for this EIS, issued in October 1993, addressed the comments received from scoping meetings and regional workshops. DOE conducted four public scoping periods during the evolution of the EIS. In response to public comments raised during the scoping process, DOE undertook a process for identifying possible additional alternative sites. The selection process included and evaluated two additional sites, including the Oak Ridge Reservation. The selection process is summarized in the May 9, 1994, amendment to the EIS Implementation Plan for the Department of Energy Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs. DOE believes it conscientiously and thoroughly fulfilled its responsibilities to use available avenues for public awareness and for solicitation of public input during all stages of the EIS process, and that it has fulfilled its obligations and responsibilities in accordance with the NEPA.

II COMMENT

The commentor states that insufficient notification was given for the public to become involved in the activities associated with the EIS.

RESPONSE

DOE has an active stakeholder involvement process, which strives to include representatives of all members of the public.
In accordance with CEQ regulations, a Notice of Opportunity was published in the Federal Register on September 3, 1993, to comment on preparation of an EIS on DOE programmatic SNF management and SNF management, environmental restoration, waste management at INEL. DOE received numerous letters from individuals and organizations, either asking questions or raising issues related to the EIS. Each of these letters was answered by DOE, with information provided as requested. An Implementation Plan was prepared and released to the public on October 29, 1993; the final version was available on May 4, 1994.
A Notice of Availability was published in the Federal Register on June 24, 1994, to announce the availability of the Draft EIS. The Draft EIS was offered on request and was available at 64 public libraries and information locations. The Draft EIS was delivered to all who requested it, and was sent to all state and Federal agencies, organizations, and individuals who were believed likely to be interested in the subject. Public comments were solicited and written comments were received from June through September, 1994, well in excess of the NEPA requirement. Thirty-three public hearings were held in 20 locations throughout the country, including 4 locations in Idaho, and comments were received at these hearings, through the mail, and through a toll-free telephone line, which accepted comments both orally and by facsimile. Notice of the dates, times, and locations of the public hearings were published in the Federal Register on June 24, 1994. In addition, advertisements were placed in local newspapers prior to the meetings. Numerous additional information briefings were provided to organizations and individuals.
In a special effort to involve communities not previously involved, DOE advertised the hearings in alternative newspapers, in Spanish-language newspapers; and on Spanish-language radio shows, and also had available Spanish-language translators for the meetings in Idaho. DOE conscientiously and thoroughly fulfilled its responsibilities to use available avenues for public awareness and for solicitation of public input during all stages of the EIS process. Nevertheless, DOE continues to seek ways to improve the public involvement process and will use the comments in developing improved public involvement plans for future EISs.

II COMMENT

A number of commentors state that the public meetings, particularly in Seattle, were held during a weekday when most people were at work, and that the meetings were over controlled and too limited in time.

RESPONSE

DOE held 33 separate meetings in 20 different locations during the 90-day comment period. By logistical necessity, some meetings were in the afternoon some were in the evening. The length of the question and answer sessions varied depending on the level of interest by the local meeting attendees. While some sessions were rather long, provisions were in place, and frequently announced during the course of the meetings, to take oral comments from any interested citizen at any time the meetings were in session. With this arrangement for oral comment, plus the opportunity to provide comments over a toll-free telephone line and mail in comments, DOE believes all persons who wished to comment were accommodated during the public comment period.

II COMMENT

The commentor, who lives in Georgia, wishes to work with DOE in a positive way that is more effective than the public meetings.

RESPONSE

The commentor is referred to the Office External Affairs at (803) 725-2889 at the Savannah River Site.

II COMMENT

The commentor hopes that DOE will remember the comments made by elected officials at the Augusta, Georgia, public hearing.

RESPONSE

All written and oral comments received during the public comment process, regardless of origin, were carefully reviewed and considered by DOE in its preparation of the EIS and in its decisionmaking process for identification of a preferred alternative for SNF management.

II 2.8 Miscellaneous

II COMMENT

Commentors note the opinions of or opinions regarding others, the media, various elected officials, or various articles not of DOE or Navy authorship.

RESPONSE

It is inappropriate for DOE to address comments regarding the opinions of non-DOE or non-Navy officials or articles not of DOE or Navy authorship.

II COMMENT

Commentors state that some comments were not considered, some comments were ignored, and other comments were given more weight than others in the analysis. Other commentors note that the public wants direct input into the decisionmaking process and hope that DOE addresses all of the comments.

RESPONSE

All written and oral comments received during the public comment process, regardless of origin, were carefully reviewed and considered by DOE in its preparation of the EIS and in its decisionmaking process for identification of a preferred alternative for SNF management.

II COMMENT

The commentor is of the opinion that additional EISs should be prepared for every point-to-point shipment of nuclear waste because of the uniqueness of potential environmental consequences for each shipment.

RESPONSE

Volume 1, Appendices D and I analyze in detail the environmental consequences of off-site transportation and cover the impacts of any particular shipment or combination of shipments for any of the alternatives.
Therefore, separate EISs for individual shipments covered by the proposed action of this EIS are considered unnecessary. Ongoing activities that are an integral part of the proposed action are included in the overall action, as allowed by NEPA. The cumulative risks predicted from all transportation modes during the 10-year period for shipments of radioactive wastes and the 40-year period for shipments of SNF are analyzed in Volumes 1 and 2, Chapter 5, respectively. Under all proposed alternatives, the risks would be small.

II COMMENT

The commentor requests that a separate written comment period be provided after the preferred alternative is selected.

RESPONSE

Under NEPA and its implementing regulations and guidelines, it is permissible to defer the identification of a preferred alternative to the Final EIS. DOE elected to do this after it had an opportunity to consider all public input as a part of its process for identifying a preferred alternative. An additional public comment period would be very time consuming and is not permitted under DOE's very rigorous schedule that arose from an agreement between DOE, the Navy, and the State of Idaho. In addition, NEPA does not require any additional public comment period when a Final EIS is released, unless new alternatives have been proposed that were not previously considered in the Draft EIS. DOE's preferred alternatives are within the range of the alternatives addressed in the Draft EIS. Nevertheless, the ROD will not be issued until after a 30-day waiting period following the issuance of the Final EIS. 02.08 (007) Miscellaneous

COMMENT

The commentor states that the Navy's identification of a preferred alternative for the management of spent nuclear fuel will have more influence on DOE's decision than will public input.

RESPONSE

DOE considered all pertinent information in identifying a preferred alternative.

II COMMENT

The commentor suggests that the EIS is based on the assumption that spent fuel must be moved, which
then drives the rest of the discussion as to where DOE would like to put its spent fuel.

RESPONSE

Two of the five alternatives described in Volume 1, Chapter 3 -- the No Action alternative and the
Decentralization alternative -- are based on minimizing the movement of SNF, consistent with the need for
safe storage and the existence of adequate storage capacity.

II COMMENT

A number of commentors requested that they be placed or kept on the mailing list for subsequent documents to the EIS.

RESPONSE

DOE placed these names on the mailing list.

II COMMENT

The commentor suggests that making cost data available after the close of the comment period on the EIS
(particularly with regard to the comparison of alternatives) is likely to diminish both the utility of the
public comments and the public's confidence in the Record of Decision.

RESPONSE

DOE recognizes that several commentors requested estimated implementation costs for the various alternatives in this EIS. Volume 1, section 3.3 was added to this EIS to address this concern. The cost
data for this section was extracted from the SNF Management Cost Evaluation Report (Draft), which is
not limited to this EIS, but contains information pertinent to other management decisions. The cost
evaluation report is available to the public in the EIS reading rooms. The Assumptions and Methodology
Document for Spent Nuclear Fuel Cost Evaluation, which was the starting point for developing the cost
evaluation report, was released for public review and comments were received.

II COMMENT

One commentor asked to meet face to face with DOE officials. When the meeting did not take place, the
individual was offended by the DOE "rudeness" and expressed deep concern over DOE's handling of the

situation and the apparent lack of concern of DOE officials for the general public.

RESPONSE

DOE regrets that its treatment of this individual was perceived as offensive and rude, given that DOE's intention was to be as responsive as possible. DOE replied with two letters to this individual that explained the details surrounding the situation and expressed regret over the perception that had developed.
All comments, written and oral, received during the public comment period have been carefully reviewed and considered by DOE in its preparation of the EIS and responded to if they were within the scope of the EIS.

II COMMENT

The commentor states that all public testimony at Idaho hearings on the reconfiguration EIS and the waste management EIS must be included in the current EIS comments.

RESPONSE

Neither NEPA nor its implementing regulations and guidelines require the inclusion of all public comments in one programmatic EIS from other, even related, programmatic EISs or related activities. Because this EIS considers SNF management, and two other EISs cited by the commentor do not, waiting for, and including those other comments would not only result in a delay that would violate the Court Order, but would take those comments out of context and be confusing.

II COMMENT

The commentor states that the failure to identify DOE's proposed action and the alternatives for environmental restoration and waste management at the Idaho National Engineering Laboratory is a fundamental flaw under the National Environmental Policy Act.

RESPONSE

The proposed action is stated in the Volume 1, Chapter 2 and Volume 2, Chapter 1 and are shown in Volume 1, sections 1 and 2 and Volume 2, section 2. Environmental restoration activities will take place under the Federal Facility Agreement and Consent Order for INEL. This document is available to the public.
See also the response to comment 04.02 (001).

II COMMENT

The commentor states that the decision on processing sodium waste might get lost in the spent nuclear fuel issues and not receive adequate public review.

RESPONSE

DOE has already conducted four public scoping periods. Comments from scoping meetings were summarized in DOE's Implementation Plan for this EIS, published October 29, 1993. DOE considered all comments submitted on the Implementation Plan during development of the EIS. DOE solicited comments, of which this is one, from the public on the EIS. DOE has used these comments in the development of the Final EIS. The issues raised by the commentor as issues that might not get adequate public review are described in several places within the EIS. Sodium-bearing waste is discussed in several locations throughout this EIS: (1) Volume 2, section 3.1.3.1 describes the alternatives for managing high-level waste; (2) Table 3.1-5 summarizes the alternatives and illustrates the proposed treatment and disposal of sodium-bearing wastes; and (3) the technology selection for treatment of sodium-bearing and calcine wastes is discussed in Volume 2, Appendix C under "Projects Related to High Level Waste: Waste Immobilization Facility." Reference materials, including extensive technical studies, have been available at the reading rooms and information locations identified in the EIS. While this EIS will be the basis for selecting a technology to be further developed for processing sodium waste and a technology for processing calcine, facilities for implementing the technologies will require additional NEPA documentation as these facilities become more firmly developed. Both the future NEPA actions and the permitting activities allow additional opportunity for public comment. DOE follows NEPA guidelines for public participation and believes that there is sufficient opportunity for the public to comment on issues.

II COMMENT

The commentor challenges DOE to seriously consider the comments and revise the document.

RESPONSE

DOE considered all comments submitted through public hearings or by telephone, facsimile, or mail. DOE examined and responded to each comment, and revised the EIS, as appropriate in response to comments.

II COMMENT

The commentor requests a copy of the responses to comments submitted by the Shoshone-Bannock Tribes and expresses support for their comments.

RESPONSE

Responses to all public comments on the Draft EIS are provided in this Volume of the Final EIS.

II COMMENT

The commentor states that the public is being misled by the National Environmental Policy Act process, in that "things" are going through the private sector unbeknownst to the public.

RESPONSE

This EIS presents the environmental impacts of several reasonable alternatives available for managing of DOE SNF. Implementation of some specific aspects of SNF management may be privatized, such as potential research and development activities; however, there are no discussions under way that in any way prejudice a decision on SNF management or that would be of any interest to the public in commenting on this EIS.

II COMMENT

Commentors suggest that the cost of preparing this EIS was too high.

RESPONSE

Preparation of this EIS is required by the provisions of NEPA. The entire NEPA process, while sometimes costly, is expected to benefit the public because it provides information and the opportunity to be part of DOE's decision-making process. The NEPA process benefits the public and the government by providing the basis for making informed decisions, while minimizing the impact of Federal actions on the environment.

II COMMENT

The commentor asserts that DOE failed to consult with the Shoshone-Bannock Tribes' department responsible for air quality during preparation of the EIS, and that DOE must do so prior to completion of the EIS.

RESPONSE

DOE and the Navy consulted on this subject and others with the Tribes during preparation of the Draft and Final EIS. DOE consulted further with the Tribes as part of the process of addressing public comments on the Draft EIS. Discussions included air quality concerns.

II COMMENT

The commentor expresses the opinion that DOE halted reprocessing of highly enriched spent nuclear fuel without proper National Environmental Policy Act documentation.

RESPONSE

Historically, DOE produced large numbers of nuclear weapons using material from reprocessed SNF. DOE also used highly enriched uranium recovered from SNF to make new fuel. However, due to a substantial reduction in the need for these recovered materials, DOE, in a memorandum dated April 28, 1992, Phaseout of Reprocessing, decided to phase out reprocessing of highly enriched uranium at INEL and SRS. This decision was based on the reduced need for products, and did not require NEPA evaluation. A decision to discontinue an activity because of lack of need did not, by itself, trigger NEPA, because there was no new proposed action. Although a NEPA review was not needed to stop the old mission, a NEPA review would be needed to use the reprocessing facilities for a new purpose (i.e., using recovered uranium for nuclear power production, as suggested by the commentor). DOE has not proposed such a new mission.

II COMMENT

The commentor expresses the opinion that the EIS Summary is biased toward the Idaho National

Engineering Laboratory, at the expense of other options.

RESPONSE

DOE manages wide-ranging types and a significant quantity of SNF at INEL. Therefore, DOE decided to discuss SNF management across the DOE complex in the same EIS as INEL activities for SNF and waste management and for environmental restoration. The second half of the Summary addresses Volume 2 and is, therefore, devoted to INEL. In the first half, the three DOE sites that have conducted extensive SNF management activities (INEL, Hanford, and the SRS) plus two additional sites (the ORR and NTS) are evaluated on a common basis. This evaluation is appropriate for a programmatic EIS.
The DOE Operations Office at each of the candidate site participated in preparing a site-specific appendix for the site. The evaluation of SNF alternatives reflects the policy and viewpoint of DOE.

II COMMENT

The commentor asks for an explanation of the scientific notation used (e.g., 1.3E-06).

RESPONSE

The notation is computer-based and is a simplified method of writing out the full mathematical notation of a number taken to the appropriate decimal places. In the example above, the actual number is 0.0000013 or 1.3 x 10 to the minus sixth power (1.3 divided by 1 million). Similarly, 0.13 is 1.3E-01, and 0.013 is 1.3E-02, etc. A brief description of scientific notation was added to the Glossary of both Volumes 1 and 2.

II COMMENT

The commentor states that the term "possible unavoidable" adverse impacts, as used in Volume 1, Appendix E, Chapter 6 for the No Action alternative, is a contradiction. The commentor also states that research reactor shutdowns and the resulting losses of jobs are avoidable if sites are required to consider on-site storage of spent nuclear fuel.

RESPONSE

An editorial change was made to the EIS to clarify and change "possible unavoidable" to impacts "that may be unavoidable." Under the No Action alternative, which is a required baseline under the NEPA, additional actions are not considered. For DOE reactors (Volume 1, Appendix E, section 6.1) the Decentralization alternative is the same as the No Action alternative, so such sites would require on-site storage. For non-DOE NRC-licensed domestic research reactors, DOE has title to the SNF and is responsible for interim storage and ultimate disposition of the fuel (Volume 1, Appendix E, section 2.1.2).
Except for one minor commercial contributor, facilities with limited existing storage capacity are at universities or government installations (Volume 1, Appendix E, Table 2.1-2).

II COMMENT

The commentor states that DOE failed to recognize the special relationship between Indian tribes and the Federal Government during the development of the EIS.

RESPONSE

A number of laws pertain to the treatment of Native American concerns. In particular, the National
Historic Preservation Act of 1966 provides for the development of a programmatic agreement among the
Federal agencies to comply with the law for large projects. DOE acknowledges in Volumes 1 and 2,
Chapter 5 that potential impacts to cultural resources of value to Native Americans, such as sacred or
hunting and gathering areas, will be determined in consultation with the affected Native American groups.
This is commonly ensured through Memoranda of Agreement involving the groups concerned and other
responsible agencies, such as State Historic Preservation Offices. A number of these agreements are being
developed or are in place, as described in Volumes 1 and 2, Chapter 5.
Details on the existing resources and the potential impacts associated with the alternatives are in Volume 1,
Appendices A through F for specific sites. Although the major DOE sites have not been surveyed
completely, the locations for the construction of proposed new facilities have generally been evaluated for
their cultural importance. No known cultural resources would be affected by construction under any of
the alternatives. Potential impacts were assessed by identifying project activities that could affect known or
expected resources at each potential site. Because some projects are not yet fully defined, potential
impacts cannot be completely characterized. However, for any alternative, DOE would complete detailed
preconstruction surveys and would consult with the State Historic Preservation Officer and Native
American groups before any undertaking to determine appropriate measures to minimize impacts.
DOE has pursued additional consultation with the affected Native American groups relative to this EIS,
and will continue consultations as appropriate.

II COMMENT

The commentor notes that the arrows indicating uranium and zircaloy are reversed in the figure on
page 5 of the EIS Summary.

RESPONSE

The figure was corrected.

II COMMENT

The commentor suggests that Native American concerns are being ignored, and DOE needs to address the
concerns of the Shoshone-Bannock Tribes in a separate section because the Shoshone-Bannock Tribes are
a sovereign nation with treaty rights to unoccupied lands adjacent to the Idaho National Engineering
Laboratory.

RESPONSE

The Fort Bridger Treaty of 1869 is an agreement between the Eastern Band Shoshone and Bannock
Tribes, and the United States. It was signed in 1868 in Utah, and ratified and proclaimed in 1869. Both
the United States and the Tribes pledged their honor to keep and maintain a peace. The treaty established
fixed boundaries to land that would be considered "set apart for the absolute and undisturbed use and
occupation of the Shoshone Indians herein named, and for such other friendly tribes or individual Indians,
as from time to time they may be willing...to admit amongst them..." It is undisputed that at

one time in the distant past, the Shoshone Indian Tribe was a nomadic nation that roamed over a range of more than 80 million acres that included portions of Wyoming, Colorado, Utah, Idaho, and Nevada. This aboriginal land area may have included land upon which INEL sits, but by signing the Fort Bridger Treaty of 1869, the Tribes relinquished rights to all but that area specifically designated in the treaty. As specifically stated in the treaty: "...the territory described in this article for the use of said Indians, and henceforth they will and do hereby relinquish all title, claims, or rights in and to any portion of the territory of the United States, except such as is embraced within the limits aforesaid." This was affirmed by the United States Supreme Court in the case Northwestern Bands of Shoshone Indians v. United States, 324 U.S. 333 (1945).
INEL site does not lie within any of the land boundaries established by the Fort Bridger Treaty of 1869.
Furthermore, the entire INEL site is occupied by DOE, and therefore the provision of the Treaty that allows the Shoshone-Bannock Tribes the right to hunt on the unoccupied lands of the U.S. does not apply to any land upon which INEL sits.
DOE currently manages INEL in a way that does not conflict with any of the provisions of the Fort Bridger Treaty of 1869. To the extent that the Tribes' concerns involve consideration of environmental justice, these concerns are addressed in Volume I, Appendix L and Volume 2, section 5.20.

II COMMENT

The commentor states that the EIS will be deficient unless DOE carries through with its responsibilities to consult with the Shoshone-Bannock Tribes as it plans future actions, particularly with respect to those actions that could have impacts on the Idaho National Engineering Laboratory, surrounding lands, and the Fort Hall Reservation.

RESPONSE

DOE recognizes the value of consulting with other agencies and with the Tribes when appropriate to understand and address any concerns raised by the agencies or Tribes. DOE recognizes that other agencies and the Tribes possess special expertise in areas related to activities analyzed in this EIS. With respect to the Shoshone-Bannock Tribes, DOE has established a program of meaningful consultation with the Tribes to support future DOE actions and to gain the benefit of special expertise. Meetings are held as necessary with managers or technical experts of both entities to assure that the Tribes' concerns and expertise are used to evaluate proposed activities. DOE continues to work with the Tribes to resolve any associated concerns.

II COMMENT

The commentor corrects a reference (typographical error) and requests that another document be referenced.

RESPONSE

The typographical error was corrected. The contract number now reads "AT(04-3)-633." The additional reference is a subtier reference to the Environmental Assessment for the Retrieval and Restorage of Transuranic Storage Area Waste, which is referenced in the EIS.

II COMMENT

The commentor asserts that sanity and ethics have been left out of this EIS.

RESPONSE

The provisions of NEPA and CEQ regulations require that an EIS consider the effects of the proposed actions on the human environment. This includes an analysis of economic and social effects. Volumes 1 and 2, Chapter 5 both discuss these impacts. In addition, Volume 1, Appendix L, devoted to environmental justice concerns, addresses questions of impacts to the human environment. Public comments were seriously considered in writing the EIS.

II COMMENT

The commentor states that the Waste Management Programmatic EIS should be available and considered in conjunction with this EIS, and suggests that DOE is sequestering this information.

RESPONSE

Litigation resulted in a very rigorous schedule that required DOE to develop and release this EIS before the Waste Management Programmatic EIS is completed. Writers and analysts worked with those developing the Waste Management Programmatic EIS to achieve consistency to the extent possible.

II COMMENT

The commentor states the EIS was unnecessary because implementation of any alternative would require additional, site-specific EISs. The commentor suggests that a less expensive and simpler cost analysis of alternatives would have been preferable to this EIS.

RESPONSE

NEPA, 42 USC Section 4321 et seq. and the CEQ regulations at 40 CFR 1500 et seq. established standards that DOE followed to prepare a programmatic EIS to identify and evaluate the environmental impacts of the proposed action and reasonable alternatives for SNF management across the entire DOE complex. These regulations require that an EIS describe the purpose and need for the proposed action; alternatives, including no action; the affected environment; and the environmental consequences associated with the proposed action and alternatives. Volumes 1 and 2 of this EIS meet these requirements. In each volume, Chapter 2 describes the purpose and need for the proposed action; Chapter 3 describes the alternatives being considered; Chapter 4 describes the affected environment; and Chapter 5 describes the environmental consequences.

Input was solicited from the public during a 90-day public comment period, which allowed commentors to send written comments, give oral comments and send facsimile comments over a toll-free telephone line, or attend one or more of the 33 public hearings held in 20 locations around the United States. With regard to analyzing the costs of the alternatives, DOE prepared a cost report, which is available to the public and decisionmakers.

All supporting documents referenced in the EIS are on file and are available to the public. The

EIS also considers issues of concern raised during public meetings and hearings.

II COMMENT

The commentor states that there was a push to publish this EIS before the cost information was available, and that cost information should be available for the public to review.

RESPONSE

At the time the Draft EIS was published, a cost evaluation had been initiated. In August 1994, DOE issued a report, Assumptions and Methodology Document for the Spent Nuclear Fuel Management Cost Evaluation, and requested a 45-day public comment period. Comments were received and incorporated into the cost evaluation report. A summary of the cost report has been added to the EIS in Volume 1, section 3.3.6.

II COMMENT

The commentor states that it is difficult to determine impacts of specific actions regarding spent nuclear fuel, particularly those related to shipping Fort St. Vrain fuel.

RESPONSE

This EIS considers management of DOE SNF pending ultimate disposition. DOE believes the analyses in this EIS are adequate to support a decision on this subject. The outline for the document follows guidelines established by the CEQ under NEPA. Because the thrust of a programmatic EIS is different from a site-specific EIS, the information on specific actions does appear in different areas of the document.
To adequately summarize the existing environment for all the separate sites included in the EIS without expanding an already large and complex document means descriptions of specific facilities and actions (such as Fort St. Vrain) must be condensed. The EIS is also tiered, with increasing levels of technical detail provided in appendices and supporting references.
A user's guide was provided with the EIS to help readers determine impacts under the various alternatives.
See also the response to comment 02.04 (046).

II COMMENT

The commentor states that the EIS is broadly written and that more detailed documentation under the National Environmental Policy Act will be required as the national spent nuclear fuel program is refined.

RESPONSE

DOE acknowledges that additional NEPA reviews may be required to implement decisions based on this EIS.

II COMMENT

The commentor suggests that the activities proposed for the Idaho National Engineering Laboratory are the sort of major Federal actions that require a programmatic EIS.

RESPONSE

SNF management activities that could involve INEL are part of the programmatic analysis in Volume 1. Waste management and environmental restoration projects specific to INEL are described in Volume 2. Cumulative impacts are discussed in Volume 2, section 5.5. Activities analyzed in Volume 2 are not such broad, policy-related decisions that they require programmatic documentation to assist in long-range agency planning.

II COMMENT

The commentor cites a court finding of DOE's reluctance to perform full National Environmental Policy Act analysis in the preparation of an environmental assessment regarding the shipment of Fort St. Vrain nuclear materials to the Idaho National Engineering Laboratory. The commentor additionally questions the independence of DOE's consultant in its finding of no significant impacts because the consultant was directed by DOE to prepare the finding of no significant impact prior to completion of the Environmental Assessment.

RESPONSE

This EIS addresses this and other issues identified by the Court.

II COMMENT

The commentor supports the DOE activities and the hearing process at various locations, supports operations at the Hanford Site, and states the hope that the Idaho National Engineering Laboratory will continue to operate, because its benefit to Idaho, this nation, and the world is invaluable.

RESPONSE

The comments are noted.

II COMMENT

The commentor states that DOE and the Department of Defense have a negotiated position with regard to the standards, measures, mission, and funding for which they are responsible.

RESPONSE

The priorities for activities and programs of the Federal Government are determined by Congress and the President, who are the elected representatives of the people. Future funding to support the SNF management program will be established by Congress as part of the annual DOE budget process.

II COMMENT

The commentor indicates that whatever it takes in a nonviolent and direct way to "stop the insanity" will be done, as evidenced in the past.

RESPONSE

The comment is noted.

II COMMENT

The commentor questions the value of preparing an EIS at considerable cost, versus applying the cost to research and development of alternative energy sources.

RESPONSE

The proposed actions related to research and development of alternative energy sources is outside the scope of this EIS.

II COMMENT

The commentor wants more information about the relationships between Volumes 1, 2, and the Idaho National Engineering Laboratory land use plan.

RESPONSE

The Summary, page 39, describes the relationship between Volumes 1 and 2. Volume 2, Table 2.1-1, explains the relationship between this EIS and other applicable National Environmental Policy Act documents. Volume 2, section 5.2 discusses the impacts to and consequences of land uses at INEL. Although there is no single document that describes all of these relationships, Volume 2, section 5.2 was coordinated with and reviewed by those writing INEL Long-Term Land-Use Future Scenarios (Draft).

II COMMENT

The commentor indicates that the EIS gives a big picture of DOE spent nuclear fuel management operations.

RESPONSE

This EIS is intended to address the national management of DOE SNF.

II COMMENT

The commentor expresses the desire that there be interaction with modeling efforts of the Waste Management Programmatic EIS.

RESPONSE

Writers and analysts of this EIS worked with those developing the Waste Management Programmatic EIS to achieve consistency wherever possible.

II COMMENT

The commentor suggests that radioactivity source terms and other input parameters for all sites be pooled in a separate appendix.

RESPONSE

The purpose of Volume 1 of this EIS is to compare potential environmental impacts for each alternative across the various sites addressed in the volume. The EIS is tiered with respect to the technical depth of information. The Summary is intended to present the information in a manner that would be generally understandable to nontechnical persons. For this reason, the results of each impact analysis are pooled and in the summary to Volume 1. The appendices are organized to present more technically detailed information on each site. All of the information requested by the commentor is available in these site appendices or in the references provided therein. Providing additional appendices to summarize detailed technical information on each area of analysis would be duplicative and not in keeping with the purpose and structure of the EIS.

II COMMENT

The commentor suggests that DOE could reduce the cost of involving the public in the decision-making process by consolidating meetings and informational materials on several different issues or proposed actions.

RESPONSE

DOE encourages time and cost efficiency by combining meetings of like or related topics whenever possible. However, actions may arise under different environmental laws, and each action has its own set of decisions for public consideration and is own timetable driven by many factors, so that it is frequently not possible to group them together.
NEPA requires public involvement in the process as an essential element in ensuring informed decisionmaking and provides for public involvement at two stages: initial scoping and commenting on the Draft EIS.
When several Federal actions at one site are in progress simultaneously, it is sometimes possible for DOE to combine meetings or to share informational materials to reduce costs. DOE does make resource materials available to all sites to assist in planning more cost effectively for public involvement activities.

II COMMENT

The commentor states that the Final EIS must address the actions required to implement Defense Nuclear Facility Safety Board Recommendation 94-1.

RESPONSE

The Defense Nuclear Facilities Safety Board (DNFSB) issued Recommendation 94-1 on May 26, 1994.
DOE accepted this on August 31, 1994, and submitted its Implementation Plan on February 28, 1995.
DOE has broadened the original scope of the response to Recommendation 94-1 to include not only the
nuclear weapons materials in the manufacturing pipeline, but also bulk liquids and solids containing fissile
materials and other radioactive substances from such sources as spent fuel storage pools, reactor basins,
reprocessing canyons, processing lines, and various facilities that require modifications to establish safe
interim storage conditions.

II COMMENT

The commentor states that the EIS contains extraneous information that goes beyond what is required by
the National Environmental Policy Act.
The EIS focuses on alternatives for programmatic SNF management and SNF management, environmental
restoration, and waste management at INEL. Although voluminous, DOE believes the EIS presents the
public and decisionmakers with the necessary and sufficient information to comment and make informed
decisions.

3. POLICY

3.1 Mission

03.01 (001) Mission

COMMENT

Commentors express various opinions related to the costs of DOE programs, funding of such programs, and better uses of the same funding resources and time for the benefit of society as a whole. Commentors question the nation's ability to afford cleanup of DOE mismanagement. Commentors allude to DOE's inability to keep track of money, or the Federal Government's inability to keep track of unrelated programs, some of which the commentors characterize as secret. One commentor indicates that management of spent nuclear fuel should be a routine task not requiring significant resources.

RESPONSE

DOE recognizes the significant cost of environmental restoration, waste management, and spent nuclear fuel (SNF) management activities, none of which is considered by DOE to be routine or insignificant tasks. Whereas a significant portion of these costs is the result of past management practices that have proven to be unsound, the need for cleanup and the necessary fiscal resources required have been identified. The sources of necessary funds for DOE program elements, the level of appropriation to support such activities, and the associated priorities are essentially determined by Congress and the President through processes that are outside the scope of this EIS. DOE is held accountable for the expenditure of appropriated funds, and undergoes regular oversight by the Office of Management and Budget and the General Accounting Office. This EIS addresses the environmental impacts, and the needs and purpose for national management of DOE SNF, and environmental restoration and waste management activities at the Idaho National Engineering Laboratory (INEL) only. The estimated costs of the programmatic management of SNF under each alternative have been made available to decisionmakers and the public in the Spent Nuclear Fuel Management Cost Evaluation Report (Draft), which was prepared independently of this EIS. This report is available in the reading rooms and information locations listed in the EIS.

03.01 (002) Mission

COMMENT

The commentor asks DOE how it can help Americans achieve a higher quality of life through research and new technology development and what kind of legacy do we want to leave succeeding generations of

Americans. The commentor expresses the opinion that it is necessary to support the constructive use of technology to improve the quality of human life.

RESPONSE

Although the general topic of technology development is not within the scope of this EIS, DOE emphasizes ongoing programs for technology development and transfer of these technologies developed at its sites to the private sector for constructive and safe use. Over the period of interim SNF management, technology development will likely occur.

03.01 (003) Mission

COMMENT

The commentor questions whether DOE and INEL are undergoing an identity crisis as to their collective missions and asks if INEL's mission can be refocused to continue contributing value to the American people. In addition, the commentor asks how this fits with the issues in the EIS.

RESPONSE

Volume 2, section 2.2.3 states that the current mission of INEL is to develop, demonstrate, and deploy advanced engineering technology and systems to improve national competitiveness and security, to make the production and use of energy more efficient, and to improve the quality of life and the environment.
Specific activities at INEL have shifted over time to meet changing national needs. These shifts have included changing from the application of nuclear power to commercial uses, SNF reprocessing and waste storage, to the current emphasis on science and technology related to advancing and improving remediation and waste management at INEL and applying the knowledge gained at INEL to other national needs.
The purpose of this EIS is to determine the manner in which DOE will manage its SNF for up to 40 years pending ultimate disposition.

03.01 (004) Mission

COMMENT

The commentor expresses the opinion that there is more effort to build up the Idaho National Engineering Laboratory and add new technology than there is to fulfill promises of cleanup and restoration.

RESPONSE

The environmental restoration program at INEL is specifically discussed in Volume 2, sections 2.2.6 and 7.2.5. DOE, the Environmental Protection Agency (EPA) Region X, and the State of Idaho signed an agreement, the INEL Federal Facility Agreement/Consent Order (FFA/CO), on December 4, 1991, for cleanup activities at INEL. The INEL FFA/CO established the procedural framework and schedule

for
developing, prioritizing, implementing, and monitoring appropriate response actions in accordance with the
Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the Resource
Conservation and Recovery Act (RCRA), and the Idaho Hazardous Waste Management Act.
The current INEL mission is to develop, demonstrate, and deploy advanced engineering technology and
systems to improve national competitiveness and security, to make the production and use of energy more
efficient, and to improve the quality of life and the environment. Areas of primary emphasis at INEL
include waste management and minimization, environmental engineering and restoration, energy efficiency,
renewable energy, national security and defense, nuclear technologies, and advanced technology and
methods. The Environmental Restoration and Waste Management Program is a top priority at INEL.

03.01 (005) Mission

COMMENT

The commentor states that DOE has a hidden agenda, which is to build new nuclear weapons production
facilities under the guise of waste processing.

RESPONSE

The purpose of this EIS is to provide a basis for making decisions on options for programmatic approaches
for SNF management and site-specific approaches regarding the future direction of environmental
restoration and waste management and SNF programs at INEL. The EIS was prepared consistent with this
purpose, and DOE has no hidden agenda associated with the management of SNF.

03.01 (008) Mission

COMMENT

The commentor expresses the opinions that the Idaho National Engineering Laboratory mission statement
is not credible, and that the Idaho National Engineering Laboratory mission is for defense-related, rather
than peaceful, uses of nuclear energy.

RESPONSE

As discussed in Volume 2, section 2.2.3, the current INEL mission is to develop, demonstrate, and deploy
advanced engineering technology and systems to improve national competitiveness and security, to make
the production and use of energy more efficient, and to improve the quality of life and the environment.
Specific activities at INEL have shifted over time to meet changing national needs. These shifts have
included changing from the application of nuclear power to commercial uses, to SNF reprocessing and
waste storage, to the current emphasis on science and technology related to advancing and improving
remediation and waste management at INEL and applying the knowledge gained at INEL to other national
needs. DOE does not agree that this is talking about war energy.

The public's trust in DOE has eroded, and it will take great effort and some amount of time to regain that
trust. DOE is addressing many of the problems associated with its loss of public trust. The Secretary of
Energy publicly affirmed that current DOE policy and practice emphasizes safety and environmental
considerations above other program goals. DOE is formally committed to protecting the safety and health
of its workers, the public, and the environment. DOE is working as quickly as possible to rectify and
eliminate adverse environmental impacts from past programs. The commentor should also be aware that a
DOE complex-wide Environmental Management Site-Specific Advisory Board has been chartered under
the Federal Advisory Committee Act. The Environmental Management Site-Specific Advisory Board
consists of independent citizens tasked with advising DOE on local and national policy issues. In addition,
aggressive public outreach and stakeholder initiatives are being implemented to keep the public well
informed of DOE activities.

II 03.01 (009) Mission

COMMENT

The commentor expresses the opinion that the Department of Defense should manage nuclear work and the
DOE should manage the "Energy War." The commentor states that references to Navy nuclear waste are
classified and should be removed from the EIS.

RESPONSE

The information contained in this EIS is not classified. The missions of the Department of Defense and
DOE are defined by Congress and the President.

II 03.01 (014) Mission

COMMENT

The commentor states that DOE should take advantage of the scientific and engineering expertise at the
Idaho National Engineering Laboratory to generate technological breakthroughs in waste management and
cleanup.

RESPONSE

Volume 2, section 2.2.3 states that the current INEL mission is to develop, demonstrate, and deploy
advanced engineering technology and systems to improve national competitiveness and security, to make
the production and use of energy more efficient, and to improve the quality of life and the environment.
Areas of primary emphasis at INEL include waste management and minimization, environmental
engineering and restoration, energy efficiency, renewable energy, national security and defense, nuclear
technologies, and advanced technology and methods. The Environmental Restoration and Waste
Management Program is a top priority at INEL.

II 3.2 Authority and Responsibility

II COMMENT

The commentor asserts that the Navy and DOE are playing a bureaucratic game of not being responsible.
The commentor further states that while DOE carries out the policies of Congress, it is time to establish a comprehensive national policy that avoids interagency indecision and confusion.

RESPONSE

DOE is responsible for managing U.S. Government-owned SNF. The Naval Nuclear Propulsion Program is a joint Navy and DOE program responsible by law for all matters pertaining to Naval nuclear propulsion; therefore, Naval SNF is also DOE's responsibility. DOE, as directed by Congress in the Nuclear Waste Policy Act of 1982, as amended, is committed to developing Federal geologic repositories for permanent isolation of these materials. Pending availability of such disposal options, DOE must provide safe and environmentally sound storage and management of these materials.

II COMMENT

The commentor refers to the sale of surplus reprocessing equipment to a scrap-metal dealer.

RESPONSE

This administrative issue is beyond the scope of this EIS. As a result of the event to which the commentor refers, DOE is evaluating its surplus material policies.

II COMMENT

The commentor discusses the issue of the cooperative effort between DOE and the Navy on preparing this EIS and identifies the need for DOE to take the lead.

RESPONSE

DOE is the lead agency and has the lead role for preparing this EIS. The Navy participated as a cooperating agency for several reasons. First, under the Council on Environmental Quality (CEQ) regulations (40 CFR 1501.6) Cooperating Agencies, the CEQ emphasizes the need for agency cooperation in the National Environmental Policy Act (NEPA) process. Thus, any other Federal agency that has special expertise with respect to any environmental issue, if requested by the lead agency, may be a cooperating agency.
The Navy has gained extensive expertise during nearly 40 years of Naval SNF operations. This expertise is valuable in assessing the impacts of the proposed alternatives. In addition, there is a special relationship between DOE and the Navy, because the Naval Nuclear Propulsion Program is a joint Navy and DOE program responsible by law for the nuclear propulsion plants aboard nuclear-powered warships, as well as for the Naval reactor fuel at INEL.

II 3.3 Credibility

II COMMENT

A number of commentors express a general lack of trust in DOE based on its record of past mistakes, such as at the Waste Experimental Reduction Facility. They recommend that DOE and the Navy take action to establish public trust, and recommend that the EIS be more specific about what will happen and when under each alternative.

RESPONSE

In response to the lack of trust expressed by the public, the Secretary of Energy places great emphasis on openness and public involvement. The Secretary's July 29, 1994, Guidance on Implementation of the Department's Public Participation Policy states, "The business of the Department must be open to the full view of those whom it serves, consistent with applicable laws, regulations, and contracts. This policy marks a clear break with past practice by challenging the Department and its contractors to perform to a new standard of openness and service. The Department will incorporate public input into its decisions where appropriate and feasible and will provide feedback to the public on its reasoning." Public involvement for this EIS included numerous public scoping meetings and public hearings in 20 locations.
DOE is increasing the number of forums for information exchange in addition to opportunities for public involvement required by NEPA and other laws. Many DOE sites, including INEL, have established citizens advisory boards to review and provide advice on DOE policies and proposals.
DOE accepts responsibility for solving the problems associated with management of waste and spent nuclear fuel. Lessons learned from past waste management practices and the knowledge gained from research and development programs are incorporated into new management programs.
In many cases, it is not possible to be specific about what will happen and when. Volume 1 of the EIS is intended to provide the public and decisionmakers with a programmatic, rather than project-specific, view of the proposed actions and alternatives. Alternatives in Volume 1 will be implemented over a period of 20 years, depending on the alternative chosen. Volume 2 is a site-specific assessment of SNF management, environmental restoration, and waste management alternatives at INEL. In general, alternatives in Volume 2 will be implemented over 10 years. More detail about these specific projects is in the project summaries in Volume 2, Appendix C.
Volume 1, section 5.1.1 summarizes the impacts from waste management activities associated with the action alternatives, and the site-specific details are discussed in Volume 1, Appendices A through F. Waste Experimental Reduction Facility operations were suspended in February 1991 to upgrade safety documentation, operating procedures, and management systems. These upgrades were mandated when DOE adopted a new Order for operation of nonreactor facilities, DOE Order 5480.23, Nuclear Safety Analysis Reports. These upgrades have been completed. This facility must pass a DOE operational readiness evaluation before operations will be resumed. Operational readiness evaluations are reviewed by entities such as the State of Idaho and the Defense Nuclear Facility Safety Board. Incineration of combustible radioactive materials would take place under the Ten-Year Plan and Maximum Treatment, Storage, and Disposal alternatives, but not the No Action and Minimum Treatment, Storage, and Disposal alternatives. Stack emissions under the Ten-Year Plan and the Maximum Treatment, Storage, and Disposal alternatives would be monitored continuously by radiation sensors to avoid total reliance on high-efficiency particulate air filters.

II COMMENT

The commentor states that DOE should have foreseen the problems with management of nuclear waste long ago, before there were any problems.

RESPONSE

The Secretary of Energy has publicly affirmed that current DOE policy and practice emphasizes safety and environmental considerations above other program goals. DOE is formally committed to protecting the safety and health of its workers, the public, and the environment. Furthermore, DOE intends to design, construct, and operate facilities in a safe manner, relying on lessons learned from the last 40 years of SNF management. DOE is working as quickly as possible to rectify and eliminate adverse environmental impacts from past programs.
Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. The analyses show that the impacts of all alternatives would be small.

II COMMENT

Commentors express a lack of trust in DOE based on past lies, misinformation, secrecy, lack of reliable documentation and recordkeeping, the conduct of nuclear experiments on humans, dishonesty, and a lack of ethics and regard for human health and the environment. Although the openness of the Secretary of Energy is appreciated, one commentor states that today will someday be the past as well. A commentor also expresses the opinion that DOE has not been responsive to public concerns and has usurped the rights of the people.

RESPONSE

DOE is addressing many of the problems associated with public confidence in its operations. The following are a few examples of DOE's corrective actions. The Secretary of Energy has publicly affirmed that current DOE policy and practice emphasizes safety and environmental considerations above other program goals. DOE is committed to protecting the safety and health of its workers, the public, and the environment. DOE is working to rectify and eliminate adverse environmental impacts as a result of past practices. A DOE Environmental Management Advisory Board has been chartered under the Federal Advisory Committee Act. The Environmental Management Advisory Board consists of citizens tasked with advising DOE on local and national policy issues. In addition, aggressive public outreach and stakeholder initiatives are being implemented to keep the public well informed of DOE activities.
Decisions regarding the programmatic management of DOE's SNF over the next 40 years in the United States will be made by the Secretary of Energy based largely on the analysis in this EIS. An integral part of this process is the presentation of the EIS to the public to solicit comments on its contents. DOE has engaged in a substantial effort to obtain information from the public, including 33 public meetings at 20 locations and an extended comment period. All persons and organizations had an open opportunity to request information from DOE and to provide comments during both the scoping process and public comment period. The comments received by DOE were given serious consideration where they were pertinent to the EIS or the related actions under consideration. Public comments were considered along with programmatic factors in arriving at DOE's preferred alternative. DOE is evolving toward greater openness, as demonstrated by the recent releases of information regarding past programs and practices.
See also the response to comment 08.03.01 (005).

II COMMENT

The commentor expresses the opinion that DOE has a disregard for human health and safety, as do the Russians.

RESPONSE

No significant environmental impacts have been identified for any of the alternatives identified in the EIS for managing SNF. Additionally, the Secretary of Energy has publicly affirmed that current DOE policy and practice emphasizes safety and environmental considerations above other program goals. DOE is formally committed to protecting the safety and health of its workers, the public, and the environment. DOE is working to remediate and eliminate adverse environmental impacts from past programs. Concerns over alleged mishaps in Russia are beyond the scope of this EIS.

II COMMENT

The commentor is apprehensive about spent nuclear fuel storage at the Hanford Site because of past DOE practices.

RESPONSE

Impact analyses associated with managing SNF show that effects on human health or the environment would be small for all of the alternatives considered. The potential impacts due to operations or hypothetical accident conditions for management of SNF present little risk for all of the alternatives considered.

II 3.4 Legal/Regulatory

II COMMENT

The commentor requests inclusion of the Washington Model Toxics Control Act in the Volume 1, Appendix A, section 2.2.1 list of significant Federal and state laws.

RESPONSE

The Washington Model Toxics Control Act applies to the Hanford Site mainly as a source of applicable or relevant and appropriate requirements under CERCLA. The Washington Model Toxics Act has been added to the list in Volume 1, Appendix A, section 2.2.1.

II COMMENT

The commentor asks to have the current radiation safety standards included in the EIS.

RESPONSE

DOE Orders 5480.11 and 5400.5, Radiation Protection for Occupational Workers and Radiation Protection of the Public and the Environment, which cover radiation protection of occupational workers and radiation protection of the public and the environment, respectively, provide the standards and requirements for DOE operations. These Orders are listed in Volumes 1 and 2, section 7.2.

II COMMENT

The commentor suggests that compliance with the Federal Facilities Agreement/Consent Order should not be linked with the continued acceptance of spent nuclear fuel.

RESPONSE

There is no link between compliance with the INEL FFA/CO and the receipt of additional SNF. The No Action alternative, required under NEPA, provides a baseline, minimal activity level for comparison with other alternatives. This baseline does not consider the need to comply with regulations. The No Action alternative analyzed in Volume 2 assumes that the conditions required to remain in compliance with the INEL FFA/CO will not be met because those conditions constitute more than the minimal activity allowed under the alternative. Likewise, SNF will not be received under this alternative because receiving additional SNF would be above the minimal activity allowed by the alternative. The two activities, therefore, are consequences of the alternative, and one is not conditional on the other.

II COMMENT

The commentor suggests that the EIS does not adequately address applicability of the Resource Conservation and Recovery Act to management of spent nuclear fuel, and that the commentor will review this issue closely when the Final EIS is published.

RESPONSE

DOE discusses RCRA in Volume 1, section 7.1 and Volume 2, section 7.2. In addition, the issue of applicability of RCRA to some DOE SNF is discussed in Volume 1, section 7.2.5. DOE is aware of its responsibilities under RCRA for conducting its waste management activities. Historically, DOE chemically reprocessed SNF to recover valuable products and fissionable materials. The SNF was considered a feed material for this recovery process and was not considered a waste under RCRA. Some of the materials resulting from reprocessing are considered hazardous wastes under RCRA and are managed as such. However, because of world events, DOE is phasing out reprocessing for the recovery of SNF. Therefore, there is some uncertainty with regard to the regulatory status of some of DOE's SNF relative to RCRA. DOE has initiated discussions with EPA on potential applicability of RCRA to SNF.

II COMMENT

The commentor requests that reference to the Tri-Party Agreement milestones be added to Volume 1, Appendix A.

RESPONSE

The Tri-Party Agreement is discussed in Volume 1, Appendix A, section 2.2 as well as other appropriate sections. Adding it as a reference would not provide any further clarification or aid the decision-making process, as compliance with the Tri-Party Agreement is independent of the alternative selected. Additional information has been provided in Volume 1, Appendix A reflecting the fourth amendment (January 1994) of the Tri-Party Agreement. Applicable SNF milestones are provided in Volume 1, Appendix A, section 3.1.1, Table 3.3.

II COMMENT

The commentor states that in the case of the Hanford Site, the No Action alternative should state "DOE would not be able to fulfill agreements with states or other Federal agencies" rather than "DOE might not... "

RESPONSE

Volume 1, Chapter 3 has been changed to respond to this comment.

II COMMENT

The commentor expresses the opinion that importing the foreign fuel through U.S. ports of entry, most of which are large cities, violates the National Defense Authorization Act. The commentor states that this act envisions the selection of a port of entry to minimize the risk to the human population.

RESPONSE

Management of foreign research reactor (FRR) SNF is addressed in Volume 1 for consideration in assessments of cumulative SNF management impacts. However, whether the United States decides to accept this SNF and which ports would be used are matters being addressed in a separate EIS entitled Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel (Draft) (FRR EIS), as announced in Volume 58 of the Federal Register, pages 54336 through 54340. The FRR EIS may select the ports of entry in accordance with all laws and regulations, including the National Defense Authorization Act, as appropriate. Alternatives for DOE's policy on FRR SNF management are being analyzed in the FRR EIS, including alternatives regarding transportation from the ports of entry.

II COMMENT

Commentors ask which laws and regulations DOE must observe to operate interim spent nuclear fuel storage facilities. Commentors specifically question whether Nuclear Regulatory Commission regulations will apply to the centralized storage facility. Additionally, commentors suggest that the EIS mention that certain DOE Orders are being codified, and that they are applicable.

RESPONSE

The Federal and state laws that DOE believes are potentially applicable to the various proposed activities are identified in Volume 1, section 7.2 and Volume 2, section 7.2. Former DOE Orders that have been codified into regulations are included. More detailed discussions of relevant state and Federal

regulations
are provided in Volume 1, Appendices A through F.
DOE believes that, although Nuclear Regulatory Commission (NRC) regulations do not at this time apply
to storage facilities for noncommercial fuel, such standards should be considered in DOE's interim storage
planning to ensure that any needed treatment for interim storage is compatible with ultimate disposition.

II COMMENT

The commentor wants to know why DOE is exempt from state taxes.

RESPONSE

DOE, like all Federal Government agencies, is exempt from state taxes because of sovereign immunity
granted to the Federal Government by the U.S. Constitution. Although DOE is exempt from state taxes,
sales and use taxes are paid on all construction materials, supplies, and associated equipment used by
contractors.

II COMMENT

Commentors state that DOE should not be self regulated; rather, there should be independent oversight of
DOE, Navy, and Nuclear Regulatory Commission activities pursuant to Executive Order No. 12344, Naval
Nuclear Propulsion Program, with the Occupational Safety and Health Administration and Environmental
Protection Agency empowered to penalize or shut down DOE operations that violate public health
standards. Additionally, commentors ask that medical information be declassified.

RESPONSE

The Atomic Energy Act gives DOE the authority to regulate SNF, but like other Federal agencies, DOE is
subject to regulation by EPA and state agencies that have been granted primacy by EPA. By granting
primacy, a Federal agency allows a state agency to enforce state regulations that cover the same area of
responsibility as the Federal regulations. The state agency must, in general, demonstrate to the Federal
agency that its regulations are at least as restrictive as the Federal regulations and that it has the resources
to manage its enforcement program. DOE facilities, therefore, face the same penalties for noncompliance
with EPA and equivalent state agency regulations as any private facilities, including the potential for fines
and facility shutdowns. DOE sites have Site-Specific Advisory Boards consisting of independent citizens
who advise DOE on local and national policy issues and provide recommendations on proposed site-
specific activities. Additionally, DOE is overseen by the Defense Nuclear Facilities Safety Board, as
prescribed by Section 318 of the Atomic Energy Act.
Executive Order 12344, Naval Nuclear Propulsion Program, enacted as Public Law 98-525, prescribes
the authority and responsibility of the Naval Nuclear Propulsion Program, including all environmental and
occupational safety and health aspects of the program. Such activities are also subject to independent
regulatory review as discussed above for DOE.
Although the activities cited by the commentor are exempt from the standards promulgated by the
Occupational Safety and Health Act (OSHA), DOE maintains an occupational safety and health program,
which the Secretary of Labor has deemed to be comparable to the OSHA program. This program is
implemented through a series of DOE Orders and applies to both DOE and contractor operations.
DOE is assessing the potential impacts to the interim SNF management program of NRC jurisdiction over

the geologic repository being developed by the Office of Civilian Radioactive Waste Management and the potential impacts of future NRC oversight of its activities, as discussed in Volume 1, section 3.3.7. Additionally, in late 1994, DOE formed a task force to evaluate whether DOE operations should come under the jurisdiction of NRC or OSHA. The evaluation is still in progress. To the extent that disclosure of medical records does not violate the privacy of individuals, DOE intends to continue its review and disclosure of medical records. The President has launched an initiative to discover, declassify, and make available to the public information relating to human radiation experiments. DOE is participating fully in this initiative.

II COMMENT

Commentors question the adequacy of the Nuclear Regulatory Commission and the Environmental Protection Agency regulatory standards and state that these agencies may not be any more trustworthy than DOE.

RESPONSE

Federal agencies, including NRC, EPA, and DOE, have public processes by which they propose and approve regulations, pursuant to the Administration Procedures Act. These processes present the technical and other justifications for proposed regulations and allow the public, including other agencies, an opportunity to comment and to provide evidence to support or refute the agency's justifications.

II COMMENT

The commentor indicates that DOE Orders can change, thereby changing requirements, etc., for the EIS (e.g., dose restrictions).

RESPONSE

Volume 1, section 7.2 and Volume 2, section 7.2 of the EIS discuss the major Federal statutes that impose environmental protection and compliance requirements on DOE. These sections include a discussion of DOE Orders related to environmental, health, and safety protection. Through the authority of the Atomic Energy Act, DOE is responsible for establishing a comprehensive health, safety, and environmental protection program for its facilities. The regulatory mechanisms through which DOE manages its facilities are the promulgation of regulations and the issuance of DOE Orders. DOE Orders generally set forth policies and the programs and internal responsibilities for implementing those policies. DOE Orders are subject to change as situations, requirements, conditions, and statutes change. DOE Orders are not changed without a thorough evaluation of the issues and impacts associated with the Order.

II COMMENT

The commentor opposes DOE committing to meet Nuclear Regulatory Commission requirements for interim storage options or the Department of Transportation requirements for interim storage facilities or other activities. In addition, for spent nuclear fuel transportation, the commentor states DOE should not attempt to impose transportation requirements above and beyond those required by the Department of Transportation or the Nuclear Regulatory Commission.

RESPONSE

In Volume 1, section 3.3.7, DOE discusses the possibility of having interim storage facility designs reviewed for compliance with NRC licensing standards, even though DOE is not regulated by NRC. Also, DOE considers Department of Transportation regulations, even in instances where they do not strictly apply. In these cases, as with all regulations, DOE looks to other agencies for guidance in areas where the other agencies have expertise or experience. DOE believes that this results in reduced costs and impacts for conducting an activity. At times, however, the unique characteristics of DOE activities require different requirements than provided by external regulations and guidance to ensure that the same level of performance and safety is achieved.

II COMMENT

Commentors state that DOE must identify in the EIS, and obey, all state and Federal laws and regulations. Specifically, the laws and regulations of the States of New York and Washington, the City of Seattle, and those associated with the West Valley Demonstration Project should be identified.

RESPONSE

DOE is committed to operating its SNF management program in compliance with all applicable laws, regulations, Executive Orders, DOE Orders, and permits and compliance agreements with regulatory agencies. This commitment is independent of the regulations and laws identified in the EIS. Volumes 1 and 2, section 7.2 identify the laws and regulations that are appropriate and applicable to the activities proposed in this EIS. The DOE regulations that implement NEPA require consultation with other agencies, when appropriate, to incorporate any relevant requirements.
The alternative selected will be implemented within existing laws and DOE's legal obligation under its November 1986 agreement with the New York State Energy Research and Development Authority (NYSERDA), Agreement Between NYSERDA and DOE on the U.S. Department of Energy Spent Nuclear Fuel Located at the Western New York Nuclear Service Center. Negotiations are currently under way between DOE and NYSERDA, per section 8(c) of their November 1986 agreement, regarding extension of the date for removal of the SNF from West Valley. A decision regarding removal of the SNF from West Valley depends on the Record of Decision (ROD) for this EIS.
See also the response to comment 02.01 (024).

II COMMENT

The commentor states that the fear of liability has so haunted the U.S. nuclear weapons establishment that contractors and the Atomic Energy Commission demanded and got complete immunity from liability, even for gross negligence or violation of contract.

RESPONSE

The commentor confuses immunity with indemnity. The Price Anderson Act provides for indemnification by DOE for liabilities that may arise from a nuclear incident as a result of activities undertaken by DOE's contractors. This means that if a nuclear incident were to occur, such as a release of radioactive materials from a facility, and damages were incurred as a result of the incident, DOE would indemnify its contractors from liability. In other words, DOE would take responsibility for ensuring that such damages were appropriately compensated under the liability scheme of the Price Anderson Act. In addition, the Price Anderson Act Amendments of 1988 subject indemnified contractors to civil and criminal sanctions if they violate any applicable nuclear safety requirements at any facility under the contractor's control.

II COMMENT

Commentors express the opinion that DOE's past performance in the areas of management and oversight calls into question DOE's claims of regulatory compliance, management oversight, and cost effectiveness. Commentors note that these are the responsibility of DOE, not its contractors.

RESPONSE

It is DOE policy to operate its facilities in compliance with regulatory requirements. DOE faces essentially the same penalties as private industry for violations. DOE has programs for management oversight and is subject to oversight by the Defense Nuclear Facilities Safety Board, which is an independent Federal oversight organization, EPA, and state requirements. DOE operations contractors are required to comply with DOE Orders, and contractor performance is monitored by DOE. The major DOE Orders pertaining to the construction and operation of SNF management facilities within the DOE complex are listed in Volume 1, Table 7-1 of the EIS.

II COMMENT

The commentor asks for an assessment of proposed regulations on the use and expansion of the Idaho National Engineering Laboratory Radioactive Waste Management Complex. The commentor specifically mentions the Resource Conservation and Recovery Act Reauthorization. The commentor further alleges that DOE has mismanaged Idaho National Engineering Laboratory radioactive wastes, because current practices do not comply with Resource Conservation and Recovery Act Subtitle D or C requirements.

RESPONSE

DOE has not evaluated potential environmental impacts based on proposed statutory modifications to RCRA. However, when reauthorization is complete, DOE will review and evaluate the consequences of the statutory changes on current operations. DOE is currently disposing of low-level radioactive wastes at the INEL Radioactive Waste Management Complex in accordance with DOE Orders and other applicable requirements. These low-level wastes do not fall within the definition of RCRA solid or hazardous waste, and thus are not subject to regulation under RCRA. All wastes are disposed of in a manner that ensures protection of human health and the environment.

II COMMENT

The commentor refers to pending legislation to give local communities greater authority in regulating and inspecting nuclear waste shipments.

RESPONSE

This is a matter appropriately addressed by Congress.

II COMMENT

The commentor notes that in the Volume 1, Chapter 7 discussion of the Safe Drinking Water Act, there is a
correct citation for the beta dose limit, but that corresponding citations for gamma emissions and alpha-emitting radionuclide concentrations are lacking and should be added. Additionally, the commentor notes
that Chapter 7 discusses the current U.S. Environmental Protection Agency regulations, while in Chapter
4, the text compares levels with proposed regulations. The commentor suggests that the EIS acknowledge
the discussion of two different sets of regulations.

RESPONSE

DOE made appropriate changes to Volume 1, Chapter 7 to explain the two regulations and add references
to limits for gamma- and alpha-emitting radionuclides, as suggested. Proposed rules regulating radioactive
materials' maximum contaminant levels were published July 18, 1991. To date, those proposed EPA rules
have not become final. For this analysis, however, the more conservative proposed standards were used.

II II COMMENT

The commentor questions the motives of DOE and the Navy, suggesting that without a lawsuit by the people of Idaho, these agencies would have acted without public input on the EIS.

RESPONSE

DOE was in the process of preparing a site-wide EIS on the environmental restoration and waste management (ER&WM) programs at INEL and a programmatic EIS on ER&WM, including SNF, prior to the lawsuit. As a result of the lawsuit, the EIS that analyzed SNF activities was redirected.

II COMMENT

Commentors state that the court decision Public Service Co. of Colorado v. Andrus, 825 F. Supp. 1483
(D. Idaho 1993) involving the shipment of spent nuclear fuel from the Fort St. Vain Nuclear Generating
Station in Colorado to the Idaho National Engineering Laboratory was right and good for the people of
Idaho. Further, commentors state that the EIS does not address everything that DOE was directed by the
Court Order to address.

RESPONSE

DOE believes this EIS is complete and accurately reflects the potential environmental impacts of a
reasonable range of alternatives.

II COMMENT

The commentor states that the EIS does not assess the effects of shipping and storing nuclear waste at the Idaho National Engineering Laboratory, as ordered in 1993.

RESPONSE

Volume 2, Chapter 5 assesses the environmental consequences of the various alternatives, which are described in Volume 2, Chapter 3. These alternatives cover a spectrum of the shipping and storing options for SNF management at INEL.

II COMMENT

The commentor cites a court finding of NEPA violations by DOE and "that DOE has not met its burden of showing that there is no reasonable expectation that National Environmental Policy Act (NEPA) violations will not reoccur . . ."

RESPONSE

As a result of the Court's finding and other programmatic issues, DOE prepared this EIS, which examines the environmental impacts of receiving, transporting, storing, and managing SNF. DOE believes that this EIS meets the requirements of NEPA and the Court Order.

II COMMENT

The commentor does not consider the EIS as meeting the intent of the Court Order or the National Environmental Policy Act for the preparation of a comprehensive site-wide EIS addressing transporting, receiving, processing, and storing spent nuclear fuel at the Idaho National Engineering Laboratory.

RESPONSE

DOE has met the requirements of the Court Order in Volume 2 of the EIS, which includes the management of SNF at INEL under all alternatives considered, and in Volume 1, which addresses programmatic management of SNF. To comply with the part of the Court Order evaluating the management of SNF at a site other than INEL, DOE coupled the reviews in the EIS. Thereby DOE integrated evaluation of the overall SNF management picture with the site-specific considerations for INEL.

DOE believes that this EIS meets the requirements of NEPA and the Court Order.

II 3.5 Government Policy

II COMMENT

Some commentors question the wisdom and ethics of storing nuclear wastes and spent nuclear fuel over aquifers, near inhabited areas, near seismically active areas, and near environmentally sensitive areas where there are risks to natural resources and the public.

RESPONSE

Volume 1, Chapters 3 and 5 and site-specific Appendices A through F, and Volume 2, Chapters 3 and 5 and Appendix F discuss risks to the public, workers, and the environment over a range of large to small accidents. Volumes 1 and 2, Chapter 5, state that the potential environmental impacts of all alternatives would be small.
Relative to the potential impacts on the Snake River Plain aquifer, a maximum reasonably foreseeable accident associated with the high-level waste tanks was performed for the EIS, as reported in Volume 2, section 5.1.4. A more detailed description of the assessment is given in Accident Assessments for Idaho National Engineering Laboratory Facilities. The analysis assumed a seismic event of sufficient magnitude to cause one or more tanks to fail and 300,000 gallons of high-level waste to be released to the soils beneath the tank farm. Modeling of migration of contaminants into the aquifer showed that even without any mitigation measures, the maximum concentration of radionuclides at the nearest site boundary would be within the requirements of safe drinking water standards.

II COMMENT

The commentor urges DOE to manage spent nuclear fuel responsibly.

RESPONSE

The EIS will allow DOE to carefully weigh public comments, environmental impacts, and risk of human health effects in making decisions regarding safe and responsible management of SNF.
See also the response to comment 03.08 (010).

II COMMENT

The commentor expresses the opinion that the funds being spent on transporting the waste would be better spent on alternative energy sources and detoxification of waste. The commentor also favors leaving waste where it can be seen, rather than burying it.

RESPONSE

The cost of transporting waste and SNF is a relatively small portion of the management cost. DOE prepared a report that estimates the cost of each alternative, including its associated transportation. See also the response to comment 03.01 (001).
The priorities for funding activities and programs of the Federal Government are determined by Congress and the President. A discussion of Federal spending priorities is beyond the scope of this EIS. Future funding to support interim management of SNF covered in this EIS will be established by Congress and the President as part of the annual DOE budget process.

II COMMENT

The commentor asks if DOE has a plan to take spent nuclear fuel from reactors in the Peachbottom cask to the Atascadero (Mescalero) Apache Indian Tribe per its proposal to store it on their reservation.

RESPONSE

DOE has no such plans. The Mescalero Apaches previously indicated an interest in the possibility of storing nuclear waste on their reservation. Such agreements regarding storage of commercial SNF are beyond the scope of this EIS.

II COMMENT

The commentor advocates a strong environmental restoration program at all DOE sites.

RESPONSE

Environmental restoration and waste management activities at DOE sites other than INEL are not within the scope of this EIS. However, DOE is addressing necessary environmental management activities at all of its sites.
See also the response to comment 03.08 (010).

II COMMENT

Several commentors focus on the economic viability and environmental impacts of various energy-producing technologies, including expressing both support for and opposition to nuclear power generation or technology development. Most of those opposed to nuclear power ask DOE to modify policies favoring nuclear power over alternative, renewable energy sources and energy conservation. Energy alternatives specifically suggested for more research and development include solar, wind, hydroelectric, grid hookups with the Russians, and fossil fuels.

RESPONSE

Comments on DOE's energy-related policies, conservation of energy, and the preference for development of one energy technology over another are outside the scope of this EIS. None of these issues will be affected by decisions made based on this EIS.

II COMMENT

Commentors express general opposition to or question the ethics of continued generation of spent nuclear fuel, operation of existing or new nuclear reactors, modernization of the defense complex, production of nuclear weapons, and further nuclear technology development for defense purposes. Some commentors specifically oppose use of highly enriched uranium in DOE reactors, reprocessing to recycle fissile materials, and transportation of nuclear materials. Others encourage phasing out nuclear reactors and nuclear-powered ships, and ceasing nuclear waste generation. One commentor states that the United States should set the example with the end of the Cold War. Other commentors express a preference for specific reactor technologies or projects such as the Integral Fast Reactor in Idaho or the Multipurpose Reactor in South Carolina, citing a number of benefits.

RESPONSE

Policies regarding the operation of nuclear reactors, nuclear-powered ships, the cessation of nuclear waste generation, production of nuclear weapons and defense technology development, and the need to generate and manage additional SNF in the future are established by Congress and the President. However, decisions regarding the alternatives to manage such SNF are within the scope of and are analyzed in this EIS.
Most of the SNF addressed in this EIS has already been generated and is currently being managed by DOE.
Although vulnerabilities exist, DOE is managing SNF with safety as the primary focus. DOE has announced a decision to phase out reprocessing SNF for the purpose of recovering fissionable materials.
Transportation of nuclear materials is necessary for DOE to carry out its various missions, and is analyzed in this EIS with respect to the proposed alternatives for managing of DOE SNF. Policies related to the use of highly enriched uranium in DOE reactors are beyond the scope of this EIS. Preference for specific reactor technologies and opinions about the benefits of such technologies have been noted, but selection and implementation of such technologies are outside the scope of this EIS.

II COMMENT

Commentors state that a more rational waste policy needs to be formulated in which materials are categorized according to their actual long-term hazards, waste generation is minimized, disposal costs are paid up front, and shallow burial is banned. One commentor states that the United States should develop a comprehensive nuclear waste policy with full public debate.

RESPONSE

Decisions regarding the programmatic management of DOE SNF over the next 40 years in the United States will be made by the Secretary of Energy based largely on the analysis in this EIS. An integral part of this process is the presentation of the EIS to the public to solicit comments on its contents. This EIS represents a national effort to address the problems associated with DOE SNF (see Volume 1).
Volume 2 addresses alternative approaches for managing DOE ER&WM and SNF activities at INEL. This EIS does not evaluate DOE complex-wide programmatic alternatives or policies for environmental restoration and waste management. Those issues are being evaluated in a separate EIS, which is currently being prepared by DOE.
DOE currently classifies and manages SNF and wastes with consideration of the long-term hazards associated with these materials. A discussion of the waste types managed by DOE is in Volume 2, section 2.2.7. Shallow land burial of low-level wastes is a common practice throughout the nuclear industry and is DOE policy for those wastes that meet strict site-specific waste acceptance criteria. The issue of shallow land burial is being addressed in the DOE Waste Management Programmatic EIS. Public comments on that document will be solicited by DOE, including comments on policies and costs related to the disposal of various waste forms. Likewise, disposal costs of high-level wastes and SNF are outside the scope of this EIS.

II COMMENT

The commentor questions continued nuclear energy development or production, except for medical uses.

RESPONSE

This EIS pertains to programmatic SNF management and INEL SNF management and ER&WM programs. Policies regarding nuclear energy development or production are beyond the scope of this EIS.

II COMMENT

The commentor expresses a general objection to generating spent nuclear fuel, to further use of highly enriched uranium in DOE reactors, to reprocessing, and/or to transportation of nuclear materials.

RESPONSE

Most of the SNF addressed in this EIS has already been generated and is currently being managed by DOE.
Policies regarding the need to generate and manage additional SNF in the future are beyond the scope of this EIS; however, decisions regarding the alternative to managing such SNF are within the scope of and are analyzed in this EIS.
Although vulnerabilities exist, DOE is managing SNF with safety as the primary focus. DOE announced a decision in 1992 to phase out reprocessing of SNF for the purpose of recovering fissile materials.
Transporting nuclear materials is necessary for DOE to carry out its various missions, and is analyzed in the EIS with respect to the proposed alternatives for managing DOE SNF. Policies related to the use of highly enriched uranium in DOE reactors are beyond the scope of this EIS.

II COMMENT

The commentor expresses the need for a new vision for the United States, in that its 200-year history does not sensibly allow management of long-lived radioactive materials.

RESPONSE

Most of the SNF addressed in this EIS has already been generated and is currently being managed by DOE.

II COMMENT

The commentor suggests that it should be left to the scientists to decide on the most feasible, practical and beneficial methods for successfully disposing of radioactive wastes. In addition, the commentor suggests a three-part program to accomplish this, which would include reduction of the need for storage, even for the byproduct and disposal of wastes in areas least detrimental to life.

RESPONSE

DOE has a program for safely managing and storing all radioactive materials at each of the sites considered in the EIS, which includes research, development, and demonstration activities. General solutions for managing SNF, including waste reduction, recycling, and storage, are discussed in Volume 1, section 1.1.3 and Appendix J. Current management practices for radioactive wastes are described in Volume 2, section 2.2.7. Although Volume 2 is specific to INEL, it is also generally applicable to wastes at other DOE sites. Disposal options for DOE complex-wide wastes are outside the scope of this EIS, but are being addressed in the DOE Waste Management Programmatic EIS.

II COMMENT

Commentors note that spent nuclear fuel continues to be generated and that generation should stop, that greater efforts should be made to solve the problems with existing storage facilities and the problem of ultimate disposition of spent nuclear fuel, and that the spent fuel should be left where it is generated.

RESPONSE

Eliminating all current and future generation of DOE SNF would not significantly diminish the handling, storage, and final disposition challenges facing DOE. Inventories of DOE SNF are addressed in Volume 1, section 1.1 of the EIS. Approximately 86 percent of the current inventory originated in DOE weapons-production reactors that have ceased to operate. Another 8 percent was generated in DOE experimental reactors, most of which have been shut down. According to Volume 1, Table 1-1, additional SNF to be generated over the next 40 years (until 2035) will amount to only a 3-percent increase in the current inventory. Eliminating sources of DOE SNF altogether would require halting nuclear Navy operations and nuclear research at universities, which is not within the control of DOE and is outside the scope of this EIS.

Problems at existing storage facilities have been identified in the Spent Fuel Working Group Report on Inventory and Storage of the Department's Spent Nuclear Fuel and Other Irradiated Nuclear Materials and Their Environmental, Safety and Health Vulnerabilities. This report, called the spent nuclear fuel vulnerability assessment, and associated action plans to resolve identified vulnerabilities are acknowledged in Volume 1, section 1.1.2 and Appendix J-2. Additional site-specific information is in Volume 1, Appendices A through F. Environmental consequences of SNF management are presented for all alternatives in Volume 1, section 5.1, and mitigation measures are discussed in section 5.7. For all alternatives analyzed, DOE is committed to complying with applicable Federal, state, and local regulations and DOE Orders to ensure protection of the environment and the health and safety of the public and site employees.

General technologies and practices for managing SNF are discussed in Volume 1, section 1.1.3 and Appendix J. Technologies for final disposition of SNF cannot be specified in advance of repository acceptance requirements. These requirements are several years from completion and approval, but a combination of the technologies described in Volume 1, Appendix J may satisfy the eventual acceptance criteria. Furthermore, consideration is given by the alternatives analyzed in the EIS to providing or maintaining processing flexibility that may be necessary to meet the acceptance requirements. Consequently, although the ultimate disposition of SNF is a high priority for DOE, the details of disposition activities have not been finalized and are beyond the scope of this EIS.

Several alternatives in this EIS evaluate leaving all or most of the SNF at locations where it is now stored or generated. In addition, other EIS alternatives were evaluated to give consideration to providing and maintaining DOE's flexibility to safely, efficiently, and responsibly manage SNF until final disposition decisions are made.

II COMMENT

The commentor states that this EIS and its alternatives represent a delay rather than a solution.

RESPONSE

Volume 1, Chapter 2 discusses the purpose and need for DOE action. This action includes complex-wide strategic decisions on managing SNF for the next 40 years. These discussions include where to conduct these activities; determining appropriate capabilities, facilities, and locations for SNF management; and developing activities to support the SNF management program.

II COMMENT

The commentor states that solutions do not exist to solve the problem of the spent nuclear fuel that DOE has already generated, citing the failure of Yucca Mountain and the Waste Isolation Pilot Plant, or the waste or special nuclear material from weapons.

RESPONSE

General technologies and practices for managing SNF are discussed in Volume 1, section 1.1.3 and Appendix J of the EIS. Technologies for final disposition of SNF cannot be specified in advance of repository acceptance requirements. These requirements are several years from completion and approval, but a combination of the technologies described in Volume 1, Appendix J may satisfy the eventual acceptance criteria. Furthermore, consideration is given by the alternatives analyzed in this EIS to providing or maintaining processing flexibility that may prove necessary to meet the acceptance requirements. Although ultimate disposition of SNF is a high priority for DOE, the details of disposition activities, including Yucca Mountain for SNF and high-level waste and the Waste Isolation Pilot Plant for transuranic waste, have not been finalized and are beyond the scope of this EIS. Processing is addressed as an option in the EIS under the Volume 2, Maximum Treatment, Storage, and Disposal alternative for INEL. Managing waste generated from dismantling weapons and disposing of weapons material are the subjects of other DOE EISs.

II COMMENT

The commentor states that the statement in Volume 1, Appendix A, "The DOE intends to maintain active institutional control of the site in perpetuity," conflicts with other DOE commitments to turn over large portions of the Hanford Site to other entities for non-DOE uses.

RESPONSE

DOE intends to maintain institutional control of certain portions of the Hanford site for a long time; however, some portions of the Hanford Site may be released from DOE institutional control as further land-use planning activities mature.

II COMMENT

The commentor questions why DOE is building more permanent storage facilities for waste that was supposed to go to the Waste Isolation Pilot Plant, and questions whether Idaho is going to become a permanent dump.

RESPONSE

Although the ultimate disposition of SNF, high-level waste, and transuranic waste is a high priority for
DOE, the details of final disposition of these wastes have not been finalized and are outside the scope of
this EIS. DOE is committed not only to developing Federal geologic repositories for permanent isolation
of SNF and transuranic waste, but to providing safe interim storage pending availability of permanent
disposal facilities. No permanent storage facilities in Idaho are proposed for these wastes.

II II II II COMMENT

The commentor expresses the opinion that nuclear power generation should be emphasized and that plutonium and uranium should not be discarded.

RESPONSE

This EIS pertains to programmatic SNF management and INEL ER&WM programs. Policies regarding emphasis on nuclear power production are not within the scope of this EIS. Regarding maintaining SNF as
a resource, such decisions are beyond the scope of this EIS, which evaluates only interim management until
decisions on ultimate disposition are made. Decisions regarding the disposition of weapons-usable fissile
materials are being addressed in the forthcoming Programmatic EIS for Storage and Disposition of Weapons-Usable Fissile Material.

II II COMMENT

The commentor indicates that all sources of energy have associated problems, which can be overcome
through research.

RESPONSE

No response is required.

II II COMMENT

The commentor is of the opinion that DOE should work toward an international ban on reprocessing.

RESPONSE

DOE announced a decision in 1992 to phase out reprocessing of SNF for the purpose of recovering fissionable materials for use in weapons production. Establishing a U.S. policy to encourage an international ban on reprocessing is beyond the scope of this EIS.

II COMMENT

The commentor states that the United States should maintain reprocessing capability for spent nuclear fuel.
The commentor indicates that centralizing spent nuclear fuel management activities at the Hanford Site
would allow the U.S. to establish global reprocessing capability to support the Pacific Rim.

RESPONSE

In April of 1992, The Secretary of Energy directed INEL and the Savannah River Site (SRS) to phase out defense-related chemical separations activities due to a reduction in the demand for new material for nuclear weapons. DOE no longer produces strategic isotopes, and at INEL, the phaseout activities have been completed. Phaseout activities at SRS continue. DOE has committed to prohibit the use of materials separated or stabilized during the phaseout, shutdown, and cleanout of weapons complex facilities for nuclear explosives purposes. Use of DOE chemical separations facilities for nondefense-related activities, such as stabilizing SNF, is a reasonable option, the impacts of which are evaluated in the EIS as part of the various alternatives.

II COMMENT

Commentors state that nuclear waste materials should be considered for potential recovery of valuable substances, such as separating certain radioactive isotopes for use as potential future fuel or other uses.

RESPONSE

As acknowledged in Volume 1, section 1.1.3, DOE is considering several specialized technologies for separating radioactive elements from SNF and radioactive wastes, including recovery of materials that may be used to fuel nuclear reactors. For example, Volume 1, Appendix J discusses processing SNF to remove fissile material.

II COMMENT

The commentor urges DOE to not select an alternative for SNF management that would in essence throw away all of the technological gains, including reprocessing, that have been made in the nuclear industry over the last 50 years. The commentor believes that abandonment of reprocessing will not allow the United States to solve the problems that continue to accumulate and that the United States cannot hope for the future to provide a "magic" solution to the problems of SNF management. The commentor questions why reprocessing is on hold if processing is being considered in the EIS.

RESPONSE

Processing and reprocessing are defined in the Glossary (Appendix H) for Volume 1 of the EIS. Processing means "applying a chemical or physical process designed to alter the characteristics of the SNF (SNF) matrix." Reprocessing is defined as "processing of reactor-irradiated nuclear material (primarily SNF) to recover fissile and fertile material, in order to recycle such materials primarily for defense programs." Thus, reprocessing is only one type of processing. As discussed in Volume 1, Chapter 1, DOE made a policy decision in 1992 that reprocessing of SNF for weapons production would be phased out. This policy is still in effect. Since that time, all of DOE's reprocessing facilities either have ceased to operate or are phasing out operations.
Volume 1, Chapter 1 also indicates that several forms of SNF processing may still be required to stabilize certain types of SNF for safe storage. In addition, there are many different types of fuel with

widely differing characteristics that may require treatment for safe storage and final disposition. At this time, repository acceptance criteria for receipt of SNF and high-level waste for final disposition have not been defined; therefore, the types of fuels that may require treatment cannot be determined. Many of the treatments being studied do not separate fissile materials, although some do. Because repository acceptance criteria are not defined, it is not currently possible to determine whether fissile material will have to be separated from some fuels to meet disposal criteria. Consideration of processing and use of existing reprocessing facilities are evaluated in this EIS, because these facilities could be used for short-term management of some fuels that were not designed for extended underwater storage, but which are currently being stored underwater. Specific technologies for managing SNF are described in Volume 1, Appendix J.

II COMMENT

The commentor states that essentially all DOE spent nuclear fuel could be reprocessed by now if DOE had not ceased reprocessing, and asks why reprocessing was stopped.

RESPONSE

As discussed in Volume 1, Chapter 1, all of DOE's reprocessing facilities either have ceased to operate or are phasing out operations because continued recycling of plutonium and uranium for weapons production has been discontinued as a matter of national policy. This policy results from the collapse of the Soviet Union and consequent reduced need for strategic nuclear weapons and the fissile materials needed for their fabrication. DOE recognizes that processing may be an effective tool for managing SNF; thus, processing is included as an option in several of the alternatives.

II COMMENT

The commentor considers it strange that with the end of the Cold War, the decision to recycle spent nuclear fuel has been supplanted by storage for the next billion years.

RESPONSE

In April 1992, The Secretary of Energy directed INEL and SRS to phase out defense-related chemical separations activities due to a reduction in the demand for new material for nuclear weapons. DOE no longer produces strategic isotopes, and at INEL, the phaseout activities have been completed. Phaseout activities at SRS continue. DOE has committed to prohibit the use of materials separated or stabilized during the phaseout, shutdown, and cleanout of weapons complex facilities for nuclear explosives purposes. Use of DOE chemical separations facilities for nondefense-related activities, such as stabilizing SNF, is a reasonable option, the impacts of which are evaluated in the EIS as part of the various alternatives.

II COMMENT

The commentor encourages consideration of "the recycling approach alternative."

RESPONSE

In the past, DOE reprocessed SNF. Reprocessing is defined as "processing of reactor-irradiated nuclear material (primarily SNF) to recover fissile and fertile material, in order to recycle such materials primarily for defense programs." As discussed in Volume 1, Chapter 1, all of DOE's reprocessing facilities either have ceased to operate or are rapidly phasing out of operations, because continued recycling of plutonium and uranium for weapons production is no longer a national priority. Specific technologies for managing SNF are described in detail in Volume 1, Appendix J of the EIS.

II COMMENT

The commentor recommends using the Integral Fast Reactor to recycle spent nuclear fuel.

RESPONSE

The Integral Fast Reactor program was discontinued and is not addressed in this EIS. A waste management project, Electrometallurgical Processing Demonstration, which, if successful, could prepare stainless-clad metallic spent fuel for disposal, is discussed in Volume 2, section 3.1 and in Volume 2, Appendix C.

II 3.6 Foreign Research Reactor Fuel Return Policy

II COMMENT

The commentor states the need for a global commons analysis for foreign research reactor spent nuclear fuel.

RESPONSE

Global commons analysis refers to analyzing potential environmental consequences of transporting, for United States receipt, FRR SNF over the oceans outside the jurisdiction of any nation. This EIS considers only the transportation of FRR SNF from U.S. ports of entry to DOE facilities so that all cumulative impacts of the alternatives considered are included. In compliance with Executive Order 12114, Environmental Effects Abroad of Major Federal Actions, the EIS entitled Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel (Draft) considers the environmental impacts of transporting FRR SNF over the global commons.

II 3.7 Equity and Environmental Justice

II COMMENT

The commentor expresses the opinion that secondary impacts from accidents, such as agricultural land withdrawal, interdiction of agricultural products, and economic impacts, would fall disproportionately on the Shoshone-Bannock Tribes.

RESPONSE

Volume 1, Chapter 5 and Appendices B and D, and Volume 2, Chapters 3 and 5 and Appendix F discuss risks to the public, workers, and the environment due to facility accidents at INEL. The EIS shows that impacts to the public, as well as the Shoshone-Bannock Tribes, from accidents would be small for all of the alternatives considered.
The overall review indicated that the potential impacts calculated for each discipline under each of the proposed alternatives present no significant risk to the surrounding population. As described in Volume 1, Appendix L, the impacts also do not constitute a disproportionately high and adverse impact on any particular segment of the population, minorities or low-income communities included, and thus do not present an environmental justice concern.
DOE consulted with the Tribes on this issue. The impacts on human health or the environment from facility or transportation accidents associated with managing SNF at INEL would be small under any of the alternatives considered. For example, it is unlikely that a single additional fatal cancer would occur as a result of SNF activities under any alternative. Because the potential impacts due to the risk of either a transportation or a facility accident for any of the alternatives considered would be small, no adverse effects from accidents associated with managing SNF would be expected for any particular segment of the population, minorities and low-income groups included.

II COMMENT

The commentor expresses the opinion that if centralization is the preferred alternative, the affected community should be given extra care, guarantees, and mitigation and compensation measures.

RESPONSE

The sources, appropriations, and accounting for fiscal and other resources to support the activities of the Federal Government are determined by Congress and are beyond the scope of this EIS.
As discussed in Volume 1, Chapter 3, safely managing SNF requires that many factors be analyzed, including site security, presence of skilled workers, safety, and the affected environment. Analyses of impacts for a number of potential storage locations are included in the EIS. These impacts would be small for all alternatives. As part of the public comment process, public input regarding the eventual location of SNF management activities was sought. DOE considered this public input when identifying the preferred alternative. The preferred alternative and other factors will be considered in the ROD for the proposed action.
See also the response to comment 05.09 (015).

II COMMENT

Commentors express the opinion that a specific state or site hosts a large share of the government's nuclear waste/spent nuclear fuel, which raises the question of equity. Other commentors indicate that their site has done its fair share or has enough involvement and should not be asked to do more, or be the nation's "dumping ground." In addition, the opinion was offered that all atomic wastes from the armed services should be spread around other states or divided equally.

RESPONSE

Several DOE sites do manage a significant percentage of DOE SNF and waste. This is due to each site's established capability to safely manage such materials (for example safeguards and security, a skilled work force, facilities, and historic mission) and associated support infrastructure (for example, waste management, emergency response, and stakeholder involvement programs). Decisions about where to site and conduct such programs are also influenced by a system of checks and balances designed to be beyond the control of the DOE, such as Congressional funding allocations, state and local permitting requirements, and potential judicial scrutiny.
Additionally, NEPA provides opportunities to involve the public in and promote informed decisionmaking regarding major Federal decisions. Accordingly, this EIS objectively evaluates 10 sites as reasonable siting alternatives for some level of SNF management activity. The analyses in the EIS include environmental considerations, socioeconomic impacts, and the potential risks to the public from both operations and reasonably foreseeable accidents for a number of options for managing SNF. The EIS concludes that there would be no significant risks to the public or the environment due to SNF management activities at any of the 10 sites considered.
See also the response to comment 03.07 (004).

II COMMENT

Many commentors state that sites that are politically weak, relatively unpopulated, economically depressed, and/or publicly inactive are being taken advantage of or targeted as waste management sites or dumps due to their inability to object effectively.

RESPONSE

This EIS objectively evaluates 10 sites as reasonable siting alternatives for some level of SNF management activity, without regard to political factors. The analysis includes environmental considerations, socioeconomic impacts, and potential risks to the public from both operations and reasonably foreseeable accidents for a number of options for managing SNF. The EIS concludes that there would be no significant risks to the public or the environment due to SNF management activities at any of the 10 sites considered.
DOE considered public comments in the preparation of this EIS, upon which a decision will be based.
Although the EIS provides a basis for making decisions from the perspective of environmental impacts and public comments, decisions also will be based on such considerations as cost, programmatic needs of DOE and the Navy, and implementability. In addition, implementation of decisions are subject to Congressional funding and regulatory oversight processes. DOE intends to develop and implement a national SNF management strategy that serves the overall needs of the nation.
See also the response to comment 03.07 (003).

II COMMENT

The commentor states that decisions regarding remediation, waste management, and storage activities must provide for the protection of the Shoshone-Bannock Tribes' cultural and natural resources.

RESPONSE

The environmental restoration actions that would occur under the alternatives considered in this EIS would be subject to the provisions of CERCLA, which provides for ecological risk assessment and identification of injury or potential injury to natural resources resulting from past releases of hazardous substances. The alternatives in this EIS include projects for protecting the vadose zone and cleaning groundwater, and cleaning up and/or retrieving buried wastes. The environmental impact analyses are designed to produce a reasonable projection of the upper bound for potential environmental consequences. Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. The analyses show that the impacts of all alternatives would be small.

II COMMENT

The commentor notes that the West Valley Demonstration Project is located on the Cattaraugus Creek upstream of the Cattaraugus Reservation of the Seneca Nation of Indians. The commentor suggests that this creates environmental justice concerns, and that DOE should pay particular attention to potential adverse environmental impacts. The commentor also states that the Reservation should be given full opportunity to participate in the National Environment Policy Act process.

RESPONSE

Volume 1, Appendix L addresses environmental justice concerns related to SNF management. Potential impacts to the Seneca Nation of Indians arising from SNF management activities associated with the West Valley Demonstration Project are considered to the extent that they are within the scope of this EIS. Consultation with the Seneca Nation of Indians on the Cattaraugus Reservation resulted in a request that the tribe be notified of impending shipments across their lands. DOE is considering this request.

II COMMENT

The commentor notes that the presidential memorandum accompanying Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, directs Federal agencies to analyze the environmental effects on minority communities and low-income communities when such analysis is required by the National Environmental Policy Act of 1969. The commentor is of the opinion that the EIS does not adequately address environmental justice.

RESPONSE

The Draft EIS committed to further analysis of environmental justice based on DOE's implementation strategy for Executive Order 12898, which was unavailable at the time. Though administration guidance was still evolving at the time of Final EIS preparation, the analysis of environmental justice has been expanded based on appropriate interim guidance. The EIS addresses environmental justice and associated directives in Volume 1, section 5.8 and Appendix L for programmatic SNF management; in Volume 2, section 5.20 for ER&WM activities at INEL; and in the EIS Summary.
See also the response to comment 03.07 (003).

II COMMENT

The commentor states that DOE must meet the requirements of Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, and fully consider the Shoshone-Bannock Tribes' comments on the EIS, the impacts of its proposed actions on the Tribes, the Fort Hall Reservation, and on other disadvantaged populations living in proximity to the Idaho National Engineering Laboratory. The commentor further indicates that the Tribes are not just another "minority population," but are governments that have a special relationship with the Federal Government and its agencies, and have certain authorities to regulate others, including the Federal Government.

RESPONSE

The EIS addresses environmental justice and associated directives in Volume 1, section 5.8 and Appendix L for programmatic SNF management; Volume 2, section 5.20 for INEL ER&WM programs; and the EIS Summary. Potential impacts to the Shoshone-Bannock Tribes and the Fort Hall Reservation arising from SNF management and waste management and environmental restoration program activities associated with INEL are considered to the extent that they are within the scope of the EIS, including transportation impacts. Impacts of all of the alternatives considered would be small. To fully understand and be responsive to the Tribes, DOE consults regularly with the Shoshone-Bannock Tribes regarding comments on and concerns about the potential siting of proposed activities at INEL. DOE recognizes the Shoshone-Bannock Tribes as a sovereign nation.

II 3.8 Miscellaneous

II COMMENT

The commentor forwards to the State of Oregon questions related to shipping foreign research reactor fuel through the Port of Portland, Oregon, including such matters as the associated risks and risk analyses, emergency plans and resources, and details of possible shipments.

RESPONSE

In a letter to the commentor (Nuclear Free Port Coalition) on July 20, 1994, the Oregon Department of Energy answered each of the questions raised. This letter states that while all transport of hazardous materials poses a risk, the chance of an accident occurring during movement of FRR SNF through the Port of Portland, which could harm those exposed to radioactive materials from such an accident or cause evacuation of people downwind of the accident site, is extremely small. The letter also states that state, Federal, and local emergency plans, supporting resources and trained responders, and notification procedures are available, rehearsed, and updated as needed. The Oregon Department of Energy letter identified applicable Federal, state, and local regulations governing such shipments and provided information on the properties of some of the materials involved and controls on exposure to radiation.
The letter stated that if the Oregon Department of Energy knew of changes to the shipping procedures that would substantially increase safety, it would ask DOE or other shippers to make those changes. The letter also stated that the Oregon Department of Energy has no evidence that changes to existing procedures would increase safety.
In summary, the Oregon Department of Energy specifically answered each of the commentor's

questions
and those answers are consistent with the discussions and analyses in this EIS. The EIS demonstrates that
the risks associated with transporting SNF would be small for all of the alternatives considered.

II COMMENT

A commentor suggests that the EIS be updated to reflect more current information on Fort St. Vain spent
nuclear fuel. Additionally, the commentor states that no licensed cask exists for the shipment of spent
nuclear fuel from Fort St. Vain.

RESPONSE

Volumes 1 and 2 contain the most current information DOE has on Fort St. Vain SNF. Volume 1 gives
specific information regarding the quantity of Fort St. Vain fuel currently stored at INEL and the quantity
that could be received in the future. The EIS provides an upper limit on the individual and cumulative
impacts.
The TN-FSV cask, U.S. Nuclear Regulatory Commission Certificate of Compliance No. 9253, Rev. 0, has
been approved by NRC for shipping SNF by truck from Fort St. Vrain. The Certificate of Compliance for
the TN-FSV cask does not expire until May 31, 1999, and the Public Service Company of Colorado is
registered as a user.

II COMMENT

The commentor encourages DOE support for a grant proposal (the Equal Partners Act) to study issues
associated with the storage of spent nuclear fuel in South Carolina.

RESPONSE

Support for specific grant proposals is outside the scope of this EIS; however, DOE is receptive to
unsolicited proposals related to managing SNF.

II COMMENT

The commentor points out that even with citizen's groups "going to bat" to stop waste shipments all over
the country, waste is still being shipped.

RESPONSE

DOE is mandated by Congress to perform certain activities, among them to manage its SNF in a safe and
secure manner. With this EIS, DOE is examining a range of management alternatives that include varying
amounts of transportation of SNF among sites for management.

II COMMENT

The commentor is opposed to the Idaho National Engineering Laboratory's perceived treatment under the
Nuclear Weapons Complex Reconfiguration Program, also known as Complex 21.

RESPONSE

The Nuclear Weapons Complex Reconfiguration Programmatic EIS, which has been split into two EISs, the Programmatic EIS for Tritium Supply and Recycling and the Stockpile Stewardship and Management Programmatic EIS, is discussed in Volume 1, section 1.2.2 of this EIS; however, general issues related to that program are beyond the scope of this EIS.

II COMMENT

Commentors express the need to inform the public of DOE activities and note the value of providing information on radiation, waste management, risk, and other related topics. Such information should not end with the siting of a facility or program or be in the self interest of anyone.

RESPONSE

DOE has engaged in substantial public information programs and stakeholder initiatives to provide information to the public. All major Federal actions invoking NEPA review are publicized, and public hearings are advertised throughout potentially affected communities. All persons and organizations have an opportunity to request information from DOE and to provide comments during the scoping process and public review periods. Activities include providing speakers on a variety of topics on request to a wide range of audiences, promoting student awareness of the sciences, numerous public information meetings and publications, and public information offices at all major DOE locations. DOE's policy is to fully and objectively inform the public of its activities and to involve the public in decisionmaking to the extent practicable.
See also the response to comment 03.03 (008).

II COMMENT

The commentor indicates that there should be objective international standards of accountability for the money being spent on weapons and their impacts on life.

RESPONSE

This EIS addresses interim management of DOE SNF until ultimate disposition. International standards of accountability and the fiscal efficiencies of cleanup activities are beyond the scope of this EIS. See also the response to comment 03.01 (001).

II COMMENT

The commentor makes statements regarding activities such as the 106C tank at the Hanford Site and litigation, performance assessment, and waste management activities at the Nevada Test Site.

RESPONSE

The activities in question are unrelated to the proposed actions, alternatives under consideration, or the decisions being facilitated through this EIS.

II COMMENT

Commentors express the opinion that DOE has not shown recent or historical concern for or interest in the public, future generations, workers, or the environment. Commentors mention both specific and general adverse impacts from past DOE programs and operations, and charge that DOE has demonstrated general abuse of responsibility.

RESPONSE

DOE is very much aware of public criticisms of its operations, both ongoing and historical. In this regard, the Secretary of Energy has publicly affirmed that current DOE policy and practice emphasize safety and environmental responsibility above all other program goals. DOE is formally committed to protecting the safety and health of its workers, the public, and the environment in consideration of current and future generations. DOE is also working to rectify and eliminate adverse environmental impacts from past programs, while ensuring that current activities are conducted without environmental insult.

II COMMENT

Commentors express the need for or urge DOE to consider independent review and recommendations as to the priorities, national policy, and/or scope of nuclear waste or spent nuclear fuel management or other DOE activities. Commentors mention the need for a comprehensive nuclear policy and local oversight of DOE activities, public debate, referendums, appointment of independent commissions or "Blue Ribbon" panels, or other "balanced" advisory groups including participation of citizens, experts, workers, and/or state and local officials. Such groups should be independent of DOE and/or the Navy. One commentor suggests that the supervision of radiation health research be conducted by a nonmilitary agency independent of the military and weapons production, and that oversight be conducted by qualified independent scientists and representatives of site workers and nearby communities.

RESPONSE

DOE has and continues to take advantage of independent assessment and oversight of various programs and operations. DOE is subject to independent regulations and oversight under numerous environmental regulations such as the Clean Air Act, the Clean Water Act, and CERCLA under the jurisdiction of EPA or the states, as appropriate. Policy regarding additional oversight is under review; however, such decisions are beyond the scope of this EIS. DOE often requests or cooperates with review of its operations by independent organizations such as the National Academy of Sciences, the Congressionally appointed Defense Nuclear Facilities Safety Board, the recently appointed Galvin Commission, etc. The Centers for Disease Control and Prevention is conducting radiological dose reconstruction studies related to past DOE releases.
The DOE complex-wide Environmental Management Advisory Board has been chartered under the Federal Advisory Committee Act. The Board consists of independent citizens from various backgrounds tasked with advising DOE on local and national policy issues. Local site-specific advisory boards are also being established. For instance, the INEL Site-Specific Advisory Board reviewed and commented on this EIS.
DOE recognizes the value of independent and interdisciplinary review of not only its NEPA

documentation, but its policies, priorities, and practices. In the case of this EIS, decisions will be made by
the Secretary of Energy and will include consideration of public and agency comments on the EIS.

II COMMENT

Commentors express opinions regarding whether the nonproliferation policy justifies the return of spent
nuclear fuel of United States origin from foreign research reactors. Most commentors express the opinion
that countries where such spent nuclear fuel currently exists do not pose a nonproliferation threat and can
safely store such material without undue risk. Other commentors express the opinion that these countries
pose a nonproliferation threat and support return of spent nuclear fuel of United States origin from foreign
research reactors.

RESPONSE

While nuclear nonproliferation policy is an issue affecting decisions regarding the management of SNF
either within the United States or abroad, that issue and the merits of various aspects of United States
nonproliferation policy are determined by the President and Congress. The nonproliferation policy is a
consideration in the EIS entitled Proposed Nuclear Weapons Nonproliferation Policy Concerning
Foreign Research Reactor Spent Nuclear Fuel (Draft), which analyzes the environmental impacts of
returning FRR SNF to the United States and after it has reached a U.S. port and been readied for shipment
to a DOE SNF storage location.
See also the response to comment 06.09 (013).

II COMMENT

Commentors express humorous or other opinions regarding institutions, officials, issues, and the like.

RESPONSE

Such comments do not provide substance conducive to a response. DOE recognizes that some commentors
disagree with the need for and the alternatives being considered to manage SNF.

II COMMENT

The commentor notes that cost factors are not addressed in the EIS, but will likely be important to the
decision process. The commentor also states that in combination with other factors, such as the Integral
Fast Reactor already being at the Idaho National Engineering Laboratory, the decision will be driven
toward keeping spent nuclear fuels at the Idaho National Engineering Laboratory and, possibly, toward
bringing more in, just based on cost considerations, suggesting that this is both an irretrievable commitment
of resources and "piecemealing" the EIS.

RESPONSE

DOE prepared and issued the Spent Nuclear Fuel Management Cost Evaluation Report (Draft). A
summary of the report is included in Volume 1, Chapter 3 of the EIS for the convenience of the
reader.

The cost evaluation report is intended to be only one of many factors considered in making near-term SNF management decisions.
The purpose of the cost evaluation report is to not only provide information to decisionmakers for this EIS, but also for other management decisions. The decision process for this EIS will involve consideration not only of environmental factors, but also of public comments, technical and practical considerations, and DOE's mission.

II COMMENT

The commentor states that the EIS conclusion that the alternative proposals for spent nuclear fuel management have small environmental effects is logical if it is assumed that there will be compliance with existing Federal laws and regulations.

RESPONSE

DOE is committed to comply with all applicable Federal and state laws and regulations. Further, it is DOE policy to implement legally applicable radiation protection standards and to consider and adopt, as appropriate, recommendations by authoritative organizations (e.g., the National Council on Radiation Protection and Measurement, the International Commission on Radiological Protection, the Nuclear Regulatory Commission). The No Action alternative in the EIS, which provides an environmental baseline for comparison of the impacts of the other alternatives, would not meet all regulatory requirements. DOE considered regulatory compliance in its identification of the preferred alternative.

II COMMENT

Commentors indicate that DOE must select, in its preferred alternative and in the EIS Record of Decision, an alternative that supports its contractual obligation to remove spent nuclear fuel from the West Valley Demonstration Project site.

RESPONSE

In developing its preferred alternative and the ROD, DOE has and will consider all contractual commitments, including those with the West Valley Demonstration Project. Negotiations are currently under way between DOE and the New York State Energy Research and Development Authority, per section 8(c) of their November 1986 Agreement, regarding extension of the date for removal of the SNF from West Valley. A decision regarding removal of the SNF from West Valley must await publication of the ROD for this EIS.
See the response to comment 04.04 (008) for management of spent nuclear fuel under DOE's preferred alternative.

II COMMENT

Commentors state that all DOE sites are contaminated, and cleanup is not progressing quickly enough.
Some commentors support continued research at Idaho National Engineering Laboratory and would like to see past issues resolved before additional wastes are brought in.

RESPONSE

DOE accepts the responsibility to operate its waste management activities in compliance with applicable requirements and continues to improve the procedures and technologies associated with waste management. Accordingly, lessons learned from past practices and knowledge gained from ongoing research and development programs are incorporated into future waste management programs. The purpose of this EIS is to further these objectives.
DOE's Environmental Restoration Program is responsible for responding to past releases to the environment. Specific decisions related to cleanup at INEL are generally addressed under an enforceable agreement executed by DOE, EPA Region X, and the State of Idaho on December 9, 1991, the FFA/CO. The FFA/CO establishes a comprehensive process to integrate the remediation requirements of CERCLA, and the corrective action requirements of RCRA and the State of Idaho's Hazardous Waste Management Act. Cleanup activities are conducted under the process and schedule established in the FFA/CO. RODs under the FFA/CO process are signed by all three agencies and represent a joint determination that protection of human health and the environment will be achieved through implementation of the selected remedy.
Environmental restoration efforts at INEL have progressed substantially since the FFA/CO was signed. As of March 1995, 10 of the 25 scheduled RODs have been successfully negotiated and signed by DOE, EPA, and the State of Idaho. These RODs have resulted in the implementation and/or completion of interim and final actions designed to reduce or eliminate hazards to human health and the environment. To date, all enforceable milestones set in accordance with the FFA/CO have been met, either on or ahead of schedule.
Additional work is scheduled over the next several years, as detailed in this EIS and the FFA/CO.
Other DOE sites are responsible for negotiating similar agreements with the appropriate regulatory agencies and managing environmental restoration activities in accordance with these agreements, as discussed in Volume 1, Appendices A through F.
Specific details of the overall DOE Environmental Restoration Program in general are not within the scope of this EIS. The INEL Environmental Restoration Program is discussed in Volume 2, sections 2.2.6 and 7.2.5.

II COMMENT

The commentor suggests adding "current" to clarify the DOE and Navy mission statements in the Summary.

RESPONSE

The Summary has been edited to clarify the missions of both DOE and the Navy.

II COMMENT

The commentor states that DOE spends too much money, whether for environmental evaluations, public meetings, or waste and spent fuel activities.

RESPONSE

Congress dictates the responsibilities for which DOE will be held accountable. That accountability includes proper justification of the planning budget and fiscal accountability. This EIS was prepared pursuant to NEPA. The entire NEPA process, while sometimes costly, is expected to benefit the

public
because it provides the opportunity to be part of DOE's decision-making process. The NEPA process also
benefits the public and the government by helping ensure cleaner and safer environments in and around
Federal facilities.

II COMMENT

The commentor indicates DOE has been motivated or influenced by the corporations or monetary interests
that manage the DOE sites, and requests that DOE not damage the environment.

RESPONSE

This EIS, while supported by significant work by outside consultants, was prepared by DOE. All analyses
by consultants were carefully reviewed by DOE. Contractors who participated in preparing this document
have no financial interest in decisions that will be made by the Secretary of Energy based on this EIS.
None of the management and operating contractors at the sites prepared the EIS, although they did provide
data that was used in the preparation of the document. For this EIS, public comments have played a
significant role in the decision process. The final decisions will be made using an objective approach, and
will include such factors as DOE mission, cost, and technical feasibility. DOE's final decision will not be
influenced by corporations.
Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of
all the alternatives considered in this EIS. The analyses show that the impacts of all alternatives would be
small.

II COMMENT

The commentor suggests that DOE change its radiation protection standards.

RESPONSE

It is beyond the scope of this EIS to establish radiation protection standards for DOE. Radiation protection
standards are established by the National Association of Science and the National Council on Radiation
Protection, considering the latest scientific information. These standards are also reviewed for consistency
with international standards set by the International Council on Radiation Protection.

II COMMENT

Commentors suggest that funding for cleanup at the Idaho National Engineering Laboratory is not sufficient.

RESPONSE

Funding issues are beyond the scope of this EIS.

II COMMENT

The commentor states that the public should have a say in what waste comes into Idaho before it arrives.

RESPONSE

NEPA and its implementing regulations require public participation prior to an agency making a decision on a major proposed action. For this EIS, DOE provided extensive public participation opportunities. In accordance with CEQ regulations, a Notice of Opportunity to comment on preparation of an EIS on DOE Programmatic Spent Nuclear Fuel Management and Environmental Restoration and Waste Management at the Idaho National Engineering Laboratory was published in the Federal Register on September 3, 1993. DOE received numerous letters from individuals and organizations, either asking questions or raising issues related to the EIS. Each of these letters was answered by DOE, with information provided as requested. An Implementation Plan was prepared and released to the public on October 29, 1993; the amended Implementation Plan was available on May 9, 1994. A Notice of Availability was published in the Federal Register on July 1, 1994, to announce the availability of the Draft EIS. The Draft EIS was offered on request and was available at 64 public libraries and information locations. The Draft EIS was delivered to all who requested it, and was sent to all state and Federal agencies, organizations, and individuals who were believed likely to be interested in the subject. Public comments were solicited and written comments were received from June through September 1994, well in excess of the NEPA requirement. Thirty-three public hearings were held in 20 locations throughout the country, including 4 locations in Idaho, and comments were received at these hearings, through the mail, and through a toll-free telephone line, which accepted comments both orally and by facsimile. Notices of the dates, times, and locations of the public hearings were published in the Federal Register on June 24, 1994. In addition, advertisements were placed in local newspapers prior to the meetings. Numerous additional information briefings were provided to organizations and individuals. In a special effort to involve communities not previously involved, DOE advertised the hearings in alternative newspapers; in Spanish-language newspapers and on Spanish-language radio programs; and also had available Spanish-language translators for the meetings in Idaho. DOE conscientiously and thoroughly fulfilled its responsibilities to use available avenues for public awareness and for solicitation of public input during the EIS process. DOE continues to seek ways to improve the public involvement process and will use the comments to improve public involvement plans for future EISs.

4. PROPOSED ACTION AND ALTERNATIVES

4.1 Purpose and Need

04.01 (001) Purpose and Need

COMMENT

Many commentors state that the EIS does not adequately describe the purpose and need for the proposed action. One commentor is of the opinion that the stated purpose failed to demonstrate the need for a programmatic EIS.

RESPONSE

The purpose and need for DOE actions are described adequately in Volume 1, Chapter 2 and Volume 2, Chapter 1. Volume 1, Chapter 2 describes the need for DOE to provide a management strategy for a wide range of types of spent nuclear fuel (SNF) in varying conditions. Volume 2, Chapter 1 describes the need for DOE to implement a waste management program at the Idaho National Engineering Laboratory (INEL) that complements its environmental restoration program as set forth in the Federal Facility Agreement and Consent Order (FFA/CO).

The decisions that must be made to establish an effective SNF program are (a) where to conduct SNF management activities, (b) the appropriate facilities, capabilities, and technologies for SNF management, and (c) the research and development activities to support the SNF management program.

The integration of programmatic management of SNF and the INEL environmental restoration and waste management programs into a single EIS was based on an analysis of the requirements of the Court with regard to SNF management activities at INEL. To fully evaluate all reasonable alternatives for SNF management activities at INEL, including Fort St. Vrain and Naval SNF, DOE considered it necessary to evaluate the national strategy for managing SNF. This allows the public and decisionmakers, the full perspective of reasonable alternatives. It also serves as a means to address nationwide vulnerabilities, as stated in Volume 1, Chapter 2. To meet the deadlines agreed to during litigation, it was necessary to withdraw programmatic SNF management from the Programmatic Environmental Restoration and Waste Management EIS (now the Waste Management Programmatic EIS) and include it in the INEL Environmental Restoration and Waste Management EIS.

See also the response to comment 05.09 (008).

04.01 (002) Purpose and Need

COMMENT

The commentor states that the EIS does not define the problem and motivation for getting the problem solved, except in terms of transportation.

RESPONSE

The problem varies with SNF type and waste type. The decision criteria used to compare the various alternatives and select the preferred alternatives was based in part on public comments, including the need to address specific problems and the public's desire to minimize transportation. The transportation analysis shows the maximum potential impacts among the proposed alternatives.

This information is used by the decisionmakers. Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS.

The analyses
show that the impacts of all alternatives would be small. While there would be differences in the impacts
among the alternatives, these differences by themselves are not sufficient to distinguish between alternatives.

4.01 (003) Purpose and Need

COMMENT
The commentor expresses the opinion that the EIS is really justifying continued operations of existing
facilities, and a real mission needs to be established.
RESPONSE
The EIS evaluates a full range of alternatives to safely and effectively manage present and reasonably
foreseeable quantities of SNF pending its permanent disposition. The purpose and need for the proposed
actions are in Volume 1, Chapter 2. DOE believes this EIS adequately describes the SNF mission.

04.01 (004) Purpose and Need

COMMENT
The commentor suggests that a range of possible solutions be developed.
RESPONSE
Volume 1 of this EIS is programmatic; that is, it evaluates a full range of reasonable alternatives for SNF
management activities on a nationwide basis. Volume 1, section 3.1 describes the preferred alternative for
SNF management; Volume 2, section 3.4 describes the preferred alternative for SNF management,
environmental restoration, and waste management at INEL.
Ultimate disposition of DOE SNF is a high priority. For planning purposes, DOE had determined that the
SNF managed by DOE that is not otherwise dispositioned (e.g., chemically separated, with the high-level
waste being converted into a vitrified glass for repository disposal) is authorized for disposal in the first
repository. This authorization is subject to the physical and statutory limits of the first repository,
DOE SNF meeting repository acceptance criteria, and payment of fees. As part of its SNF management
program, DOE would (1) stabilize the SNF as needed to ensure safe interim storage, (2) characterize the
existing SNF inventory to assess compliance with the first repository's acceptance criteria, and (3)
determine what processing, if any, is required to meet the criteria. Decisions regarding the actual
disposition of DOE SNF would follow appropriate review under NEPA and be subject to licensing by
NRC. This path forward would be implemented so as to minimize impacts on the first repository
schedule.

04.01 (005) Purpose and Need

COMMENT
Commentors state that DOE is wasting taxpayer dollars focusing on temporary storage rather than ultimate
disposition and question why preparing spent nuclear fuel for final disposition would take 40 years. In
addition, commentors express opinions that solutions are not evident for solving the problems associated
with spent nuclear fuel management.
RESPONSE
DOE and the independent Defense Nuclear Facility Safety Board have determined that imminent hazards
could arise within several years unless additional interim SNF storage capabilities are available. Yucca
Mountain is being studied as the potential site for the first geologic repository. If the site is found suitable,
acceptance of commercial SNF is expected to begin 2010. Although the date for acceptance of DOE
high-level waste is planned to be 2015, the date for acceptance of DOE SNF at the repository has not been
finalized. While DOE is committed to developing a Federal geologic repository for permanent isolation of

SNF and high-level wastes, technologies for final SNF disposition cannot be specified in advance of repository performance and associated acceptance criteria for SNF and high-level waste. DOE acknowledges these challenges by allowing up to 40 years for ultimate disposition to begin in a suitable repository.
The 40-year period is not needed to prepare SNF for final disposition, but is judged to be an upper limit on the time needed for a repository to be available. Pending availability of such disposal options, DOE is committed to provide safe and environmentally sound storage and management of SNF.
Although activities associated with licensing and opening the SNF and high-level waste repositories are outside the scope of this EIS, general solutions for safe interim management of SNF are included in this EIS. General solutions for managing SNF have been developed and are discussed in Volume 1, section 1.1 and Appendix J. Technologies that have been developed to enable SNF to be managed safely during the storage period are described in Volume 1, Appendix J. A combination of these technologies may satisfy many of the eventual repository acceptance criteria. In addition, consideration is given in the alternatives analyzed in the EIS for providing or maintaining processing flexibility that may be required to meet the repository acceptance criteria.

04.01 (008) Purpose and Need

COMMENT
The commentor states that the EIS needs to explain the actions needed, problems identified and solutions, and then identify locations.
RESPONSE
Volume 1, Chapter 2 describes the purpose and need for the proposed action. The alternatives, described in Chapter 3, provide potential solutions to these problems/needs. DOE considers environmental impacts, mission impacts, cost effectiveness, and public input in making its decision after a Final EIS is published.

04.01 (009) Purpose and Need

COMMENT
The commentor states that the EIS should not address the a nationwide inventory of spent nuclear fuel.
This unnecessary evaluation along with configuring this programmatic and INEL site-wide EIS leads one to believe that the INEL is designated as the national site for spent fuel management, thus business as usual.
RESPONSE
This EIS is a comprehensive national review of management options for a large inventory of DOE SNF in response to requests to do so by the State of Idaho. In 1991, the State of Idaho and DOE became involved in litigation over SNF. In a Court opinion dated May 2, 1992, DOE was advised to analyze shipments of fuel from the Fort St. Vrain reactor in a comprehensive EIS, which also analyzes and discusses all proposed shipments of nuclear waste to INEL from all sources. The State of Idaho then requested that the Court allow it the opportunity to amend its pleading, which the court allowed. In its amended counterclaim, the State of Idaho argued that DOE must analyze, in a comprehensive EIS, all actions involving receiving and storing SNF, and must study all reasonable alternatives to the receiving SNF at INEL. This argument by the State of Idaho helped shape the scope of the EIS. INEL is being considered with four other DOE sites for the management for DOE SNF under a number of reasonable action alternatives. Additionally, five sites are being considered for the management of Naval SNF fuel only. No decision have been made regarding any sites. See the response to comments 04.04 (008) and 04.04 (011).

4.2 Proposed Action

II COMMENT

The commentor states that the EIS is not adequate because it fails to clearly define the proposed action.

RESPONSE

DOE has revised Volume 1, Chapter 2 and Volume 2, Chapter 1 to more clearly state the proposed actions. Volume 1, Chapter 2 describes the background factors leading to the proposed action and sets forth the action proposed by DOE. DOE states that as a primary part of establishing an effective SNF management program, DOE must first analyze complex-wide strategic questions regarding SNF management. These questions include analyzing the most appropriate location(s) for SNF management; the methods for managing SNF; and the necessary research and development activities that would be integrated into the management program. This type of EIS is commonly known as a "programmatic" or "program" EIS, and is acceptable under the Council on Environmental Quality (CEQ) regulations at 40 CFR 1502.4(b). As emphasized in Volume 1, Chapter 2, once decisions are made regarding the appropriate locations(s) for SNF management, questions on site-specific and technical implementation of the SNF management program will be analyzed in subsequent tiered NEPA reviews, as appropriate. Volume 2, Chapter 1 of the EIS describes the purpose and need for agency action at INEL. DOE states in that section that as part of developing and implementing a program for SNF management, environmental restoration, and waste management at INEL, site-specific decisions must be made regarding research and development activities, compliance with legal requirements, and management of wastes, SNF, and environmental restoration projects, all in an environmentally sound manner. The proposed action in Volume 2 of the EIS is adequate under CEQ regulations. Volume 2 evaluates the INEL site-specific alternatives for managing SNF under all programmatic alternatives evaluated in Volume 1.

II 4.3 Alternatives Analyzed

II COMMENT

Many commentors state that the generation of spent nuclear fuel should be minimized or stopped until there is a long-term management plan in place, existing facilities and problems are corrected, or there is a means of ultimate disposition. Some commentors state that the No Action alternative would facilitate that process, while others state that the EIS is inadequate because it does not address the cradle-to-grave aspects of spent nuclear fuel.

RESPONSE

Eliminating all current and future generation of DOE SNF would not significantly diminish the handling, storage, and final disposition challenges facing DOE. Also, many products produced by the operating reactors would cease to exist, as stated in Volume 1, Appendix E, section 2.1.1. DOE SNF inventories are addressed in Volume 1, section 1.1 and for INEL in Volume 2, section 2.2.5. Approximately 86 percent of the current inventory originated in DOE weapons-production reactors that have ceased to operate. DOE experimental reactors, most of which have been shut down, generated another 8 percent. According to Volume 1, Table 1-1, the additional SNF, in metric tons of heavy metal (MTHM), to be generated over the next 40 years (until 2035) will amount to only a 3-percent increase in the current inventory. The operations that generate DOE and Navy SNF are carried out to implement programs and policies established by the President and Congress; therefore, cessation of these activities would require changes in these policies and programs. Such changes are outside the scope of this EIS.

Problems at existing storage facilities have been identified in the Spent Fuel Working Group Report on Inventory and Storage of the Department's Spent Nuclear Fuel and Other Reactor Irradiated Nuclear Materials and Their Environmental, Safety and Health Vulnerabilities. This report, called the spent nuclear fuel vulnerability assessment, and associated action plans to resolve identified vulnerabilities are acknowledged in Volume 1, section 1.1.2 and Appendix J-2, and Volume 2, section 2.2.5 for INEL. Additional site-specific information is in Volume 1, Appendices A through F. Environmental consequences of SNF management are presented for all alternatives in Volume 1, sections 5.1 and 5.2, and mitigation measures are discussed in section 5.7. For all alternatives analyzed, impacts would be small.
General solutions for managing SNF have been developed and are discussed in Volume 1, section 1.1.3 and Appendix J. Therein it is noted that technologies for final disposition of SNF cannot be specified in advance of repository acceptance criteria. These requirements are several years from completion and approval, but a combination of the technologies described in Appendix J may satisfy the eventual acceptance criteria. Furthermore, consideration is given by the alternatives analyzed in the EIS to providing or maintaining processing flexibility that may prove necessary to meet the acceptance criteria.
Consequently, although the ultimate disposition of SNF is a high priority for DOE, the details of disposition activities have not been finalized and are beyond the scope of this EIS.
Pending availability of such disposal options, DOE must provide for safe and environmentally sound storage and management of these materials. Several of the action alternatives being evaluated in this EIS also provide the flexibility to economically site facilities that may be necessary to process materials, high-level waste, or SNF to meet waste acceptance criteria that are evolving for the repositories. The implementation of safe interim storage, and the capability to meet necessary repository disposal criteria represent the solution that DOE seeks to define with this EIS.

II COMMENT

The commentor states that the United States is planning to receive foreign spent nuclear fuel for storage, but it should be kept outside the United States. The commentor also raises an issue about the lack of capacity to currently store such spent nuclear fuel.
RESPONSE
Alternatives related to the policy on managing SNF of United States origin from foreign research reactors (FRRs) are being analyzed in a separate EIS. However, this EIS does analyze the impacts of transporting and managing FRR SNF should a decision to accept such fuel be made. This effectively bounds the analysis for reasonably foreseeable management of the SNF under consideration. DOE will not make a final decision on the acceptance of that fuel until the EIS entitled Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel (Draft) and this EIS are completed. Depending on decisions made under this EIS, capacity at the Savannah River Site (SRS), INEL, or both may need to be enhanced to support on-site SNF management activities.

II COMMENT

The commentor suggests that foreign and domestic non-DOE shipments should not be included in the Decentralization alternative, and only the no-exam case for the Navy spent nuclear fuel should be included.
RESPONSE
The changes to the Decentralization alternative the commentor recommends essentially equate to the No Action alternative. The EIS evaluates environmental impacts of all alternatives, including the No Action alternative, and concludes that these impacts would be small.

II COMMENT

The commentor states that all alternatives present catastrophic risk to present and future populations and are enormously expensive.
RESPONSE
The estimated costs of the alternatives are summarized in Volume 1, section 3.3. For all of the alternatives considered in this EIS, the impacts presented in Volume 1, Appendix K would be small. See also the response to comment 05.12.07.01 (001) regarding risks due to postulated accidents and to comment 05.10.02 (007) regarding fears.

II COMMENT

Commentors express the opinion that the EIS fails to assess an inclusive range of alternatives and has not considered all options or sites, and that DOE and Navy minds are limited to out-of-date solutions.
RESPONSE
DOE believes that the range of alternatives analyzed in the EIS are inclusive and in accordance with the requirements of considering a reasonable range of alternatives under the NEPA and CEQ regulations.
Alternatives range from the No Action alternative to an alternative that would consolidate all SNF at a single site, the Centralization alternative. Alternatives dismissed are discussed in Volume 1, section 3.2 and Volume 2, section 3.2. DOE believes the discussions of the bases for dismissing other possible alternatives are adequate. Analysis and discussion of all alternatives that can be postulated is an impossibly large task and is not required by existing regulations. See also response to the comment 04.03.01 (001) regarding selection of alternative sites.

II COMMENT

The commentor states that the alternatives provided are too broad and the EIS should analyze different storage possibilities and technologies.
RESPONSE
The purpose of Volume 1 of the EIS is to provide the public and decisionmakers with a programmatic view of the proposed action and alternatives. The alternatives are discussed at a level appropriate for an EIS covering all DOE SNF at a large number of sites and aimed at reaching a decision on the best strategy for managing of DOE SNF. Once an alternative has been selected, each action within the selected alternative may require additional documentation at the site-specific level to satisfy the provisions of the NEPA.
Volume 2 is a site-specific assessment of SNF management, environmental restoration, and waste management alternatives at INEL. Therefore, the alternatives discussed in Volume 2 are more specific than those in Volume 1. However, some actions under Volume 2 alternatives may also require additional environmental documentation if they are part of the selected alternative.

II COMMENT

The commentor states that the environmental restoration and waste management alternatives contain components that are unreasonable, and none of them matches what DOE plans to do.
RESPONSE
The proposed action presents a complex, almost infinite, number of possible alternatives. In this circumstance, NEPA requires evaluation of a reasonable range of specific alternatives. DOE's alternatives cover the full spectrum of reasonable alternatives ranging from minimizing environmental restoration and waste management activities at INEL, to maximizing those activities at the site. A decision based on these alternatives will be contained in the Record of Decision (ROD).

II COMMENT

The commentor notes that the structure of the Decentralization alternative appears to dictate a result that
targets the Savannah River Site and the Idaho National Engineering Laboratory.
RESPONSE
It is true that if the Decentralization alternative is selected and implemented as the DOE management
strategy for SNF, SRS and INEL would receive most of the limited fuel transfers within the DOE complex.
These receipts are only a small fraction of those proposed under other action alternatives or the SNF
currently managed at these sites.

II COMMENT

The commentor suggests that the EIS include some solutions like on-site storage in dual-purpose dry casks.
RESPONSE
Dry-cask storage is included in the activities identified in the overview of technologies in Volume 1,
Appendix J. If a dual-purpose cask were licensed, it could be used for the SNF analyzed in this document.
In addition, DOE is preparing an EIS that considers use of a multi-purpose canister-based system for
managing certain types of SNF.

II COMMENT

The commentor considers interim centralization integral to a deep geologic repository and recommends a
number of processing and remediation actions be taken.
RESPONSE
The processing and remediation suggestions proposed by the commentor are beyond the scope of this EIS,
but will be addressed in the Waste Management Programmatic EIS or in site-specific NEPA documents.

II COMMENT

Commentors state that the EIS does not explore alternatives for storing spent nuclear fuel other than at the
Idaho National Engineering Laboratory.
RESPONSE
This EIS explores alternatives that would store SNF at locations other than INEL, as described in detail in
Volume 1, Chapter 3 and Appendix F, section 2.2. If INEL is not chosen as the western site, SNF could
be stored at the Hanford Site, the Savannah River Site, the Oak Ridge Reservation, and the Nevada Test
Site under the Centralization alternative and by the Regionalization by geography alternative. Under these
alternatives, all SNF currently stored at INEL would be moved to other sites. The No Action and
Decentralization alternatives would store the SNF close to the point of generation.

II COMMENT

The commentor states that in some respects, it is difficult to determine the difference between the
"decentralized" and "regionalized" approaches.
RESPONSE
The Decentralization alternative would maintain existing SNF at current locations and new SNF at or near
the site of generation. The Regionalization alternative involves transporting SNF from one DOE site to
another, with all of it stored at two or three DOE sites, based on fuel type or geography. These alternatives

do have some features in common, e.g., under some options of each alternative, university and Navy SNF would be transported to DOE sites.

II COMMENT

The commentor states that the EIS fails to identify alternative projects and analyze them because waste streams drive the EIS.

RESPONSE

The alternatives were identified in the EIS Implementation Plan for the Department of Energy Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory after a scoping process. Waste streams are identified individually in each alternative because of the unique handling, treatment, and storage needs; environmental regulations; and safety requirements associated with the activities included within the alternatives.

Volume 1, section 3.1 describes DOE's preferred alternative for programmatic SNF management; Volume 2, section 3.4 describes the preferred alternative for SNF management, and environmental restoration and waste management activities at INEL. See the responses to comments 04.04 (008) and 04.04 (011).

II COMMENT

The commentor asks why other nations are not considered in this EIS as spent nuclear fuel storage alternatives.

RESPONSE

The United States nuclear weapons nonproliferation policy is summarized in the White House Fact Sheet on Nonproliferation and Export Control Policy, September 27, 1993. Under its nuclear nonproliferation policy, the United States seeks to reduce or eliminate, where possible, the accumulation of stockpiles of highly enriched uranium or plutonium. Based on these considerations, this alternative was eliminated from detailed analysis (see Volume 1, section 3.2 and Volume 1, Appendix D, section 3.6). In addition, the design and operating characteristics of the fuel for Naval reactors and certain portions of other SNF are classified. As such, foreign access is prohibited without going through a complex process prescribed in the Atomic Energy Act involving a government agreement approved by the President and reviewed by Congress. Such access is not allowed under existing agreements and strict Nuclear Regulatory Commission (NRC) licensing requirements.

II COMMENT

The commentor notes that the alternatives evaluated in the EIS do not reflect DOE's spent fuel strategic plan.

RESPONSE

DOE issued the DOE-Owned Spent Nuclear Fuel Strategic Plan on December 30, 1994. The strategic plan is consistent with the alternatives in the EIS. The strategic plan needs to be reevaluated to ensure it reflects the strategic management options selected in the EIS ROD.

II COMMENT

The commentor states that adding a "transition time" to the No Action alternative changes the intent of the alternative.

RESPONSE

The transition period required relates to the time needed to implement a specific alternative should it be selected. For any of the alternatives, time is needed for safe, orderly transition of SNF activities. For

example, the transition time needed for the No Action alternative is described in Volume 1, Appendix D,
section 3.8. As described therein, the transition would make use of existing facilities and transportation
methods described under the alternatives considered. The risks associated with all of the alternatives
considered for management of Naval SNF, summarized in Volume 1, Appendix D, Chapter 3, would be
small, so the risks associated with the transition period would be just as small.
The EIS has been revised to reflect the transition period of 3 to 20 years, with the exception of the
1992/1993 Planning Basis alternative, which has no transition period.

II COMMENT

Commentors state that the alternatives or the range of alternatives are inadequate.
RESPONSE
Volume 1, section 3.1 describes DOE's preferred alternative for programmatic SNF management; Volume
2, section 3.4 describes the preferred alternative for SNF management, environmental restoration and waste
management activities at INEL. See the responses to comments 04.04 (008)
and 04.04 (011).
The programmatic action that DOE ultimately selects is not necessarily limited to one of the alternatives
presented. For example, a hybrid alternative could be developed that would incorporate actions from one
or more of the five alternatives analyzed. Moreover, the programmatic decisions will not
identify all site-specific SNF management options. If appropriate, the decisions would be made
after additional site-specific NEPA evaluation.

II COMMENT

The commentor states that the EIS does not scientifically examine if Idaho would be safe to store waste
and asks if any evidence exists.
RESPONSE
Volume 2, Chapter 5 examines the potential environmental consequences of the alternatives considered,
many of which involve storing waste. This chapter explains the evaluations conducted and their results.
Volume 2, section 3.3 summarizes and compares the potential consequences of the alternatives. All
alternatives considered, including storing SNF in Idaho, would be safe, as evidenced by the small
environmental impacts reported in this EIS. Supporting appendices and reference material provide
increasing levels of detail on the scientific investigations conducted.

II COMMENT

Commentors state that some of DOE's spent nuclear fuel or foreign research reactor fuel should be
processed overseas at existing facilities and must be included as an alternative in this EIS. One commentor
expresses the opinion that the option of shipping spent nuclear fuel to British Nuclear Fuels chemical
processing facilities in England is not the best choice.
RESPONSE
Volume 1, section 3.2.5 and Appendix A have been revised in response to comments to include discussion
of foreign processing of DOE SNF is being evaluated in the FRR EIS. SNF reprocessing to recover
uranium and plutonium for defense purposes is being phased out. As discussed in Volume 1, section 1.1.3,
SNF processing is being evaluated for certain fuel types for purposes such as stabilization, which would not
eliminate the need for storage and ultimate disposition, such as disposal. Any future decision to perform
overseas processing of N-Reactor or any other specific SNF type will be subject to additional site-specific
or program-specific NEPA review tiered from this EIS.

II COMMENT

The commentor notes that solutions do not exist to solve the problem of the spent nuclear fuel that DOE has already generated.
RESPONSE
Volume 1, section 3.1 and Volume 2, section 3.4 describe the preferred alternatives for SNF management nationally and at the INEL, respectively. See also the responses to comments 04.04 (008) and 04.04 (011).
The programmatic action that DOE ultimately selects is not necessarily limited to one of the alternatives presented. For example, the ROD could incorporate actions from one or more of the five alternatives analyzed. Moreover, the programmatic decisions will not identify all site-specific SNF management options. If appropriate, the decisions would be implemented after additional site-specific NEPA evaluation.

II COMMENT

The commentor states that under some alternatives it could take years to build required facilities and suggests that specific language be included under each alternative to permit necessary actions, including the shipment of spent nuclear fuel to other sites and the provision of additional storage facilities on site.
RESPONSE
Volume 1, section 3.1 and Volume 1, Appendix D, section 3.8 describe the transition period required for implementation of the alternatives considered, and the impacts associated with the transition. The programmatic action that DOE ultimately selects is not necessarily limited to one of the alternatives presented. For example, a hybrid alternative could be developed that would incorporate actions from one or more of the five alternatives analyzed. Moreover, the programmatic decisions will not identify all site-specific SNF management options. If appropriate, decisions on implementation would be made after additional site-specific NEPA evaluation.

II COMMENT

The commentor questions how spent nuclear fuel handling experience accumulates with regard to the EIS Summary statement on page 21 that "DOE does not consider the Nevada Test Site to be a preferred site for the management of spent nuclear fuel because of the...Nevada Test Site's lack of current spent nuclear fuel handling experience."
RESPONSE
An overview of SNF management is in Volume 1, section 1.1, and the consequences of implementing the alternatives are presented in Volume 1, Chapter 5. Current management practices at each of the alternative sites are discussed in Volume 1, site-specific Appendices A through F, and the histories and past missions of these sites are also presented in these appendices. Supporting information on the types of SNF and their origins is given in Volume 1, Appendix J. Experience with handling DOE SNF generally has been acquired in connection with operating DOE nuclear reactors, particularly during refueling and storage activities. Several DOE sites also were prominently involved in past reprocessing of SNF to extract fissile materials for reuse. Relatively little reactor operation has occurred at the Nevada Test Site, and no reprocessing has occurred there. No SNF handling activities have occurred at the Nevada Test Site since 1986, as discussed in Volume 1, Appendix F, Part Two. See also the response to comment 04.03.01 (028).

II COMMENT

The commentor states that the EIS leads one to believe that the Savannah River Site does not handle waste
material as effectively as the INEL.
RESPONSE
This EIS analyzes all alternatives objectively. Volume 1, Chapter 5 and Appendix K, and Volume 2,
Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. The analyses
show that the impacts of all alternatives would be small.

II COMMENT

The commentor states that the EIS does not consider leaving Fort St. Vrain spent nuclear fuel in Colorado
where it is currently stored in a Nuclear Regulatory Commission licensed storage facility, nor does it
acknowledge that the foreign research reactor fuel could be processed or safely stored in Europe or the
United Kingdom.
RESPONSE
Volume 1, Appendix E, section 2.2 addresses the alternative of leaving the Fort St. Vrain SNF in Colorado
as an alternative to the Fort St. Vrain SNF Shipment and Storage Project. Under all of the alternatives
considered, the impacts of the proposed alternatives would be small. See also the response to comment
04.03 (027).

II COMMENT

The commentor notes that the description of the No Action alternative includes minimal spent nuclear fuel
related research and development and it is not obvious why, because there is already plenty of spent
nuclear fuel at the Idaho National Engineering Laboratory that could be used for research and development.
RESPONSE
Volume 1, section 3.1.1 discusses the No Action alternative. Section 3.1.1 shows that there would be no
additional shipments to INEL, except during the transition period. The No Action alternative seeks to
analyze a baseline condition of minimal activity against which the other alternatives can be measured;
therefore, it is defined as having minimal research and development. Minimal research and development is
not a consequence of ceasing shipments of SNF to INEL.

II COMMENT

Commentors state that alternative descriptions in Volume 1, Tables 3-1 through 3-4 mention the fuel
storage problems at Test Area North, but not at other storage facilities at the Idaho National Engineering
Laboratory that were identified as not meeting current standards. The commentor adds that no matter what
alternative is selected, spent nuclear fuel should be moved from all facilities that do not meet current
standards.
RESPONSE
Volume 1, Appendix B, Table 3-2, and Volume 2, Appendix F detail potential SNF projects required for
each alternative. Other potential upgrades or replacement facilities that may be required to implement a
specific alternative at the site are included for each alternative analysis in Volume 1, section 3.1, and more
detailed analyses are provided in the Volume 1 site-specific Appendices A through F.

II COMMENT

The commentor states that after identifying the spent fuel problems to be addressed, that various alternatives for resolution should have been explored, including design of storage facilities, what types of processing and handling are needed, and whether alternative types of fuel can improve the safety of long-term storage.

RESPONSE

Volume 1, Chapter 2 states that DOE needs to make complex-wide strategic decisions for managing SNF for the next 40 years. The EIS further states that because DOE is not ready to decide on the ultimate disposition of SNF, alternatives for technologies for disposition are not within the scope of this EIS.

The EIS discusses the various vulnerabilities identified with existing SNF storage facilities around the DOE complex. These problems are addressed in the EIS under the various alternatives. Alternatives for resolving problems at individual sites will be addressed on a site-specific basis in separate environmental documentation.

DOE believes that the range of alternatives analyzed in the EIS are inclusive and in accordance with the philosophy of considering a full range of reasonable alternatives, as required by NEPA and CEQ regulations Analysis and discussion of every alternative that can be postulated is an impossibly large task and is not required by existing regulations.

Volume 1, section 3.1 and Volume 2, section 3.4 describe the preferred alternatives for programmatic SNF management, and SNF management, environmental restoration, and waste management at the INEL respectively. See also the responses to comments 04.04 (008) and 04.04 (011).

II COMMENT

The commentor notes that projections of and disposition plans for the volume of waste that would be generated by spent fuel activities are key issues that merit attention in the EIS.

RESPONSE

The projections of waste generation associated with SNF management activities are summarized for each alternative in Volume 1, section 5.1 of the EIS. For example, Figure 5-1 summarizes the projections for the No Action alternative. All waste generation data is summarized in Volume 1, Appendix K. Additional site-specific information is provided in the Volume 1 site-specific Appendices A through F.

DOE disposition plans will be negotiated on a site-specific basis under FFA/COs.

II COMMENT

The commentor objects to the indefinite dates of storage and transport to a possible permanent site. The commentor asserts that nuclear fuel has been and will continue to be stored improperly. The commentor disagrees with DOE's position that the No Action alternative could result in a progressive loss or reduction of the safety margin. The commentor questions why such deterioration is expected under only the No Action alternative.

RESPONSE

Ultimate disposition of DOE SNF is a high priority. For planning purposes, DOE had determined that the SNF managed by DOE that is not otherwise dispositioned (e.g., chemically separated, with the high-level waste being converted into a vitrified glass for repository disposal) is authorized for disposal in the first repository. This authorization is subject to the physical and statutory limits of the first repository, DOE SNF meeting repository acceptance criteria, and payment of fees. As part of its SNF management program, DOE would (1) stabilize the SNF as needed to ensure safe interim storage, (2) characterize the existing SNF inventory to assess compliance with the first repository's acceptance criteria, and (3) determine what processing, if any, is required to meet the criteria. Decisions regarding the actual disposition of DOE SNF would follow appropriate review under NEPA and be subject to licensing by NRC. This path forward would be implemented so as to minimize impacts on the first repository

schedule.
Given the current first repository schedule and queue for emplacement, DOE must be prepared to store its
SNF for an extended period, currently estimated not to exceed 40 years. DOE believes that the alternatives
in the EIS represent reasonable alternatives for safely managing SNF.
The No Action alternative, which is required by NEPA, is an alternative analyzed as a baseline for
comparison. This alternative assumes only minimal safety upgrades to existing facilities, and no new
facilities. Under this alternative, existing conditions would largely continue and some fuel could
deteriorate. On the other hand, all other alternatives proposed would use upgrades and new facilities to
ensure improved storage conditions and to stabilize deteriorated SNF. See also the response to comment
06.01 (002).

II COMMENT

The commentor states that the EIS should clarify in detail how hazardous waste management activities at
the INEL will be handled under each alternative and how their differences will affect the facility's ability to
comply with current regulatory requirements, such as land ban requirements.
RESPONSE
A discussion of hazardous waste management practices at INEL is provided in Volume 2, section 3.1.3,
which notes that the DOE complex relies primarily on the private sector for disposal of hazardous waste at
licensed and permitted facilities. Few changes from these practices are assumed for any alternative, so that
the facility's ability to comply with current regulatory requirements, such as land ban requirements, are
basically unaffected.

II COMMENT

The commentor expresses the opinion that the mix and match of various proposals within the alternatives
frustrates meaningful comment on the environmental acceptability of the future management of the INEL.
RESPONSE
Please see responses to comments 04.03.02 (007) and 05.08.03 (015). Additionally, the alternatives in the
EIS are purposefully broad so that courses of action, bounded by the analyses of environmental
consequences, can be developed and tailored within and between alternatives. Narrowing the scope of
each alternative or increasing the number of alternatives to be more detail specific would further
complicate the analysis and clear presentation of environmental consequences. DOE did not identify a
preferred alternative in the Draft EIS, but has in the Final EIS following consideration of public comments,
including consultation with the Shoshone-Bannock Tribes. The course of action to be followed will be
published in the ROD.

II COMMENT

The commentor states that the EIS does not contain an alternative for low-level waste disposal.
RESPONSE
Volume 2, section 3.1 discusses alternatives for low-level waste disposal. Volume 2, Appendix F discusses
project-specific options for low-level waste disposal. The impacts for the alternatives are discussed in
Volume 2, Chapter 5, and would be small for all of the alternatives evaluated.

II COMMENT

The commentor states that all storage should be monitored and not be in caverns or where it cannot be monitored and retrieved if necessary.
RESPONSE
Volume 1, section 3.1 summarizes the alternatives considered for managing SNF in this programmatic EIS.
All of the alternatives considered would provide monitored and retrievable storage over the 40-year period discussed in this EIS.

II COMMENT

The commentor suggests that the No Action alternative take maximum actions for safe and secure management of spent nuclear fuel.
RESPONSE
DOE agrees that actions must be taken for safe and secure SNF management. Volume 1, section 3.1 describes the No Action alternative, which is required by NEPA.
The DOE assessment of SNF vulnerabilities summarized in Volume 1, section 1.1 demonstrates that DOE must implement a minimal program to protect the environment and the health and safety of workers and the public. The No Action alternative provides a baseline for comparison of the impacts of the other alternatives. These impacts are summarized in Volume 1, Table 3-1.

II COMMENT

The commentor states that the alternatives are not acceptable.
RESPONSE
This EIS considers management of DOE SNF pending ultimate disposition. DOE believes the analyses in this EIS are adequate to support a decision on this subject.
The NEPA, 42 USC Section 4371 et seq., and CEQ regulations at 40 CFR Section 1500 et seq. require that an EIS describe the purpose and need for the proposed action; alternatives, including no action; the affected environment; and environmental consequences associated with the proposed action and alternatives. Volumes 1 and 2 of this EIS meet these requirements. In each volume, Chapter 2 describes the purpose and need for the proposed action; Chapter 3 describes the alternatives being considered; Chapter 4 describes the affected environment; and Chapter 5 describes the environmental consequences.

II COMMENT

The commentor states that the EIS does not cover research and development activities to render the spent nuclear fuel to a stable, environmentally benign form.
RESPONSE
Volume 1, section 3.1 and Appendices A through F cover a range of research and development activities, including an overview of potential technologies for SNF management. DOE's preferred alternative for SNF management, discussed in Volume 1, section 3.1, states that research and development would be undertaken for SNF management, including stabilization technologies.

II COMMENT

The commentor asserts that the document indicates differences between alternatives and suggests that the alternatives that are better than others be identified.
RESPONSE
Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts associated with all the alternatives considered in this EIS. The analysis shows that the impacts for all the alternatives considered would be small. While there are differences in the impacts among all these alternatives, the differences, by themselves, do not distinguish between the alternatives.

Additional factors,
such as agency mission, costs, ease of implementation, and public comments were considered in the identification of the preferred alternatives. These alternatives are identified in Volume 1, section 3.1 and
Volume 2, section 3.4. See also the responses to comments 04.04 (008) and 04.04 (011).

II COMMENT

The commentor states that foreign and private domestic processing of spent nuclear fuel must be included
as an alternative in the EIS.
RESPONSE
Volume 1, Chapter 3 describes the alternatives considered in this programmatic EIS. Based on public
input, Volume 1, section 3.2 was revised to include the evaluation of an option for foreign processing of N-Reactor SNF for the purposes of stabilization. No private facilities are known to exist for the processing of
DOE SNF that could serve as reasonable alternatives compared with those evaluated in the EIS. Whereas
DOE has an obligation under the NEPA to evaluate a range of reasonable alternatives (including the No
Action alternative, whether deemed reasonable), NEPA and CEQ regulations clearly give deference to the
discretion of the agency, in this case DOE, to dismiss alternatives that the agency considers unreasonable
given the parameters of the purpose and need for the agency action. DOE believes this EIS presents a
reasonable range of alternatives, and has been responsive to public comments by evaluating the option of
foreign processing in Volume 1, section 3.2, as discussed. See also the response to comment 04.03.01
(001).
DOE has evaluated the potential need for processing SNF for stabilization purposes. Details can be found
in Volume 1, Appendices A through C. Volume I, Appendix D, section 3.6.2 has been expanded to further
explain why this alternative is not reasonable for Naval SNF.

II COMMENT

The commentor questions why the alternative with the least environmental impact is not identified and
preferred.
RESPONSE
There are no clear environmental discriminators between alternatives.

II COMMENT

The commentor states that the EIS should discuss the use of existing spent nuclear fuel handling facilities
at the Nevada Test Site, specifically E-MAD and R-MAD, in tandem with disposal at the Yucca Mountain
site as a viable and cost-effective alternative that would minimize transportation requirements.
RESPONSE
Although the Nevada Test Site (NTS) is evaluated in the EIS as an alternative site for SNF management
activities, DOE does not consider it to be a preferred site because Nevada is the host site for the Yucca
Mountain Site Characterization Project and the Nevada Test Site lacks current SNF handling experience.
As stated in Volume 1, Appendix F, Part Two, section 3.1, the Nevada Test Site provides a contrast to
other potential sites because it represents a site that has no existing SNF infrastructure and does not
currently generate or store any SNF. The existing SNF handling facilities mentioned by the commentor
were not built or maintained to current design standards and without extensive analysis it is uncertain
whether they may meet the minimum requirements necessary to consider them for modification. See also
the response to comment 04.04 (008).

II COMMENT

The commentor states that the Barnwell Plant should be considered and discussed in more detail as a viable alternative site for spent nuclear fuel management.

RESPONSE

The Barnwell Plant is considered for examination and storage of Naval SNF. A description of the Barnwell Plant and a discussion of its capabilities for Naval SNF storage and examination work is in Volume 1, Appendix D, Attachment E. As summarized in Attachment E, the Barnwell Plant would have to be acquired by DOE from its present private owners, and it would cost about $800 million to acquire and modify the plant. Once modified, the plant would provide the full range of water-pool and shielded-cell examination capabilities; however, the capability of the plant could be less than that of existing facilities at INEL.

II COMMENT

The commentor expresses an opinion that the EIS does not address alternatives, it simply moves spent nuclear fuel around.

RESPONSE

Further shipments of spent nuclear fuel (SNF) would likely be needed when a decision is made regarding ultimate disposition in a repository. Assessment of the impacts of these shipments is not included in this EIS because the method for ultimate disposition has not been selected and such analyses would be premature. Volume 1 of the EIS describes the alternatives for managing of SNF until 2035. This amount of time may be required to make and implement a decision on ultimate disposition of DOE SNF. DOE has evaluated in the EIS a range of reasonable alternatives for safely managing SNF during the period 1995 to 2035.

To inform the public concerning SNF transportation issues, this EIS evaluates the impacts of transportation for a reasonable range of alternatives. The alternatives vary from no action, involving limited transport of radioactive material, to centralization, which involves extensive transport of radioactive material. The analyses in the EIS show that the potential risks from transportation of SNF would be small for all the alternatives considered. Based on comments received during public review of this EIS, minimizing transportation is one of the factors to be considered in the DOE decision-making process that will ultimately lead to a ROD.

II COMMENT

The commentor states that the EIS fails to adequately assess alternatives, stating that high-level waste remains at the INEL under all alternatives analyzed. A specific example given was that all of the alternatives presented by DOE keep INEL high-level waste management activities at the Idaho Chemical Processing Plant, a site directly above the Snake River Plain aquifer.

RESPONSE

The EIS adequately considers a reasonable range of alternatives for managing high-level wastes. The commentor's implication that DOE should consider an alternative to move high-level waste to another site is not technically feasible. Because the Snake River Plain aquifer is hydrologically connected to, or beneath, the entire INEL site, on-site movement of the calcine for storage achieves no reduction in perceived risk to the aquifer. Liquid high-level waste can be transported, only by pipeline. Any alternative that would move this waste to another location, whether onsite or offsite, is thus considered unreasonable.

The amount of high-level waste that is subjected to calcining to convert from a liquid to a solid waste form
does, however, vary by alternative. The option of relocating the calcine bins from the Idaho Chemical
Processing Plant to another DOE facility is not reasonable because the cost of constructing new bins is
prohibitive. Therefore, for purposes of this EIS, proposed high-level waste management activities are
assessed at the INEL Idaho Chemical Processing Plant.

II COMMENT

The commentor requests that the EIS include specific corrections regarding spent nuclear fuel storage at
the Oak Ridge Reservation.
RESPONSE
Volume 1, section 4.5 summarizes the affected environment of the Oak Ridge Reservation (ORR). This
section has been modified to clarify that the Y-12 Plant stores SNF but does not generate or
manage high-level waste or transuranic waste.

II COMMENT

Commentors question DOE's expertise and infrastructure with regard to capability to handle spent nuclear
fuel.
RESPONSE
DOE has a program to safely manage and store radioactive materials (including both radioactive wastes and
SNF) at each of the sites considered in this EIS. The potential impacts of storing SNF and associated
mitigation measures are discussed in Volume 1, Chapter 5. Supporting information on types of SNF and
storage options for them is provided in Volume 1, Appendix J. Management and storage of radioactive
wastes at INEL are described in Volume 2, Chapters 1 and 2. DOE's policy is to comply with all
applicable Federal, State, and local regulations and DOE Orders. All radioactive materials will be
managed to ensure protection of the environment and the health and safety of the public and site
employees.
One of the concerns that must be addressed prior to ultimate disposition is that the waste may outlast some
storage methods. While ultimate disposition is outside the scope of this EIS, DOE is researching and
developing disposition technologies that will address the issue of the longevity of the waste and ensure that
the public and environment are protected.
General solutions proposed for managing SNF fuel are discussed in Volume 2, Chapters 1 and 2.
However, alternatives for safety managing SNF in the meantime are discussed in Volume 1, section
3.1.

II COMMENT

The commentor states that placement of the West Bear Creek Valley site for spent nuclear fuel use
demonstrates a total lack of regard for local populations and the environment.
RESPONSE
In response to public comments during the scoping process for this EIS, DOE conducted a screening
process to identify additional reasonable alternative sites. The screening process was used solely to
identify additional reasonable alternative sites for consideration and analysis in the EIS. Thus, the existing
reasonable alternatives were not included in this process, because they had already been selected as
reasonable potential sites by DOE. Pursuant to the screening process, the Oak Ridge Reservation (ORR) in
Oak Ridge, Tennessee, and the Nevada Test Site (NTS) near Las Vegas, Nevada, were added as reasonable
alternatives for the full scope of SNF management activities, bringing the number of sites to be analyzed to
10. Other sites were not considered reasonable for analysis in this EIS.
Identification of potential sites was based on factors including land ownership or current use, current or

former spent nuclear fuel management infrastructure, transportation, and relocation of spent nuclear fuel.
Realistic sites then were evaluated by using statutory and regulatory restrictions, environmental factors,
socioeconomic and transportation factors, and implementation considerations. Final decisions also
considered factors such as programmatic needs, mission conflicts, and timing. The conduct of and
conclusions from this process are documented in the Alternative Site Selection Decision Process Report,
which is summarized in Volume 1, section 3.2.3.
Specific information is not available on facilities that have not been fully designed and constructed. Such
data are also not available for future activities, such as decontamination projects that have not occurred and
treatment of waste streams whose treatment plans have not been finalized. Generic projects have been
included in the EIS to present readers with as comprehensive a range of forthcoming projects as is
possible. These projects or facilities may require additional analysis under the National Environmental
Policy Act. By analyzing generic projects at the various alternative sites, DOE can reasonably compare the
impacts of these activities on a programmatic level.

II II COMMENT

Commentors request that sites being analyzed in the EIS be removed from consideration, stating facilities at
various locations may be illegal, and that other sites represent reasonable, or more reasonable alternatives,
than those under consideration. One commentor notes the distinction between a prohibited monitored
retrievable storage facility and facilities under the Centralization alternative.
RESPONSE
In response to public comments during the scoping process for this EIS, DOE conducted a screening
process to identify additional sites to the eight sites then considered reasonable alternatives for managing
SNF. As a result of the screening process, ORR near Oak Ridge, Tennessee, and NTS near Las Vegas,
Nevada, were added as reasonable alternative sites for the full scope of SNF management activities,
bringing the number of sites to be analyzed to 10. Other sites were not considered reasonable for analysis
in this EIS.
Potential sites were identified based on such factors as land ownership or current use, current or former
SNF management infrastructure, transportation, and relocation of SNF. Realistic sites then were evaluated
considering statutory and regulatory restrictions, environmental factors, socioeconomic and transportation
factors, and implementability. As a result of this screening process, based largely on the basic qualities and
locations of the sites, a list of seven sites was forwarded to the decisionmakers as reasonable siting
alternatives in addition to the eight sites already deemed reasonable. In addition to site qualities and
location, the decisionmakers also considered factors such as programmatic needs, mission conflicts, and
timing. The conduct and conclusions of this process are documented in the Alternative Site Selection
Decision Process Report, which is summarized in Volume 1, section 3.2.3 of the EIS.
Section 145(g) of the Nuclear Waste Policy Act, as amended (the Act), prohibits the construction of a
monitored retrievable storage facility [pursuant to Section 142 (b) of the Act] in the State of Nevada.
However, a facility to manage DOE SNF would not be classified as a monitored retrievable storage facility
within the meaning of Section 142(b) of the Act. A facility to manage DOE SNF would be classified as
constructed and operated pursuant to the Atomic Energy Act of 1954 and would serve a different purpose
from that served by a monitored retrievable storage facility.
DOE believes that the range of alternatives analyzed in this EIS are inclusive and in accordance with the
philosophy of considering a full range of reasonable alternatives required by provisions of NEPA and CEQ
regulations. Analysis and discussion of all alternatives that can be postulated is an impossibly large task

and is not required by existing regulations. Although a site may represent a reasonable alternative for
analysis in the EIS, no decision has been made as to the level of SNF management activity at any site. This
decision will be made by the Secretary of Energy in a published ROD.

II COMMENT

Commentors request that the Oak Ridge Reservation or the Nevada Test Site be removed from
consideration, stating that state legislative actions or the Nuclear Waste Policy Act prohibit other spent
nuclear fuel storage at these sites. Other commentors also question why only two sites were added to the
original three sites selected for possible spent nuclear fuel management.
RESPONSE
The Nuclear Waste Policy Act, as amended [section 145(g)], prohibits the storage of commercial SNF in a
monitored retrievable storage facility in Nevada. In addition, the Nuclear Waste Policy Act, as amended
[section 142(a)], annulled and revoked the DOE proposal to locate a monitored retrievable storage facility
on or near ORR in Tennessee. However, a facility to store DOE SNF is not considered monitored
retrievable storage under the Nuclear Waste Policy Act, as amended. Consequently, NTS and ORR are
viable alternatives for the purposes of this EIS and, therefore, were added to the original three sites.
In response to public comments during the scoping process for this EIS, DOE conducted a screening to
identify additional sites to the eight sites then considered reasonable alternatives for the managing of SNF.
As a result of a disciplined screening, ORR and NTS were added as reasonable alternative sites for the full
scope of SNF management activities, bringing the number of sites to be analyzed to 10. Other sites were
not considered reasonable for analysis in this EIS. The Nevada Test Site is not considered to be a preferred
site because of the state's current role as the host site for the Yucca Mountain Site Characterization Project
and due to the site's lack of SNF infrastructure.
Potential sites were identified based on such factors as land ownership or current use, current or
former SNF management infrastructure, transportation, and relocation of SNF. Realistic sites
then were evaluated considering statutory and regulatory restrictions, environmental factors,
socioeconomic and transportation factors, and implementability. Final decisions also considered
such factors as programmatic needs, mission conflicts, and timing. The conduct and conclusions
of this process are documented in the Alternative Site Selection Decision Process Report, which is
summarized in Volume 1, section 3.2.3 of the EIS.
As indicated in the May 9, 1994 Amendment to the Implementation Plan for the Department of Energy
Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory
Environmental Impact Statement, DOE developed a three-step process to screen the potentially infinite
number of siting options that could exist for various levels of SNF management activity. During the public
hearings, DOE became aware that some commentors thought the amendment to the Implementation Plan
was intended to be the detailed report of the alternative site-selection process. Commentors were referred
to the Alternate Site Selection Decision Process Report for the details and conclusions of the conduct of
the process.

II COMMENT

The commentor notes that the location selected for the potential spent nuclear fuel management facility at
the Oak Ridge Reservation will be next to the Y-12 "walk-in pits," which contain shock-sensitive
pyrophoric chemicals.
RESPONSE
The Y-12 pits are actually 4 miles from the West Bear Creek Valley site selected for potential SNF
management activities at ORR. The distance is accounted for in accident impacts and in cumulative
impacts in the EIS, and no significant adverse environmental or health and safety impacts are reasonably
foreseen as a result of the proximity of the Y-12 pits.

II COMMENT

The commentor is of the opinion that the selection of the West Bear Creek Valley site on the Oak Ridge
Reservation was improper and did not adequately consider the site's geology. The commentor questions
locating the proposed spent nuclear fuel management facilities in the watershed of Grassy Creek. The
commentor also indicates that State of Tennessee geologists have concluded that hydrogeological
conditions indicate that Bear Creek Valley is not suitable for storing or disposing of hazardous waste
material of any type, as stated in a U.S. Geological Survey report. The commentor expresses the opinion
that the mechanism for transport of contaminants in the subsurface is too complex to model, and that there
is too great a potential for contaminating the Knox aquifer.

RESPONSE

ORR and NTS were selected as alternative sites as a result of the public comments received during the EIS
scoping process. Information about the selection process for the site on ORR is provided in Request for
Support in Preparing the Spent Nuclear Fuel and INEL Environmental Restoration and Waste
Management Environmental Impact Statement. The selection of the West Bear Creek Valley Site on
ORR did include consideration of impacts to geology and water resources. The West Bear Creek Valley
Site was selected and evaluated and compared in the EIS. Adequate information is provided to made
programmatic decisions. If ORR is selected to be the SNF management facility, more detailed analysis of
the site would be performed in tiering NEPA documentation.

There is very little potential for water quality impacts to Grassy Creek and the Clinch River from the
operation of proposed SNF management facilities, which are designed to have no liquid release of waste
water with hazardous chemical or radiological characteristics. These facilities would be designed to
include secondary containment, leak detection, and water balance monitoring equipment. No significant
impacts to water quality in either Grassy Creek or the Clinch River are anticipated from the sanitary
effluent outfall to Grassy Creek. This outfall would be a permitted discharge that is monitored as required
for permit compliance. Therefore, no significant environmental consequences related to water resources
are anticipated from the operation of SNF management facilities.

The State of Tennessee Department of Environment and Conservation correspondence dated August 31,
1994, commented extensively on the EIS. State geologists cite Geologic and Hydrologic Studies by the
U.S. Geological Survey (1959) as concluding, "It appears that the favorable areas available are not
sufficient to warrant consideration of Bear Creek Valley for use as a regional burial ground for solid
radioactive waste." The EIS does not consider any burial alternatives for SNF management. The
alternatives considered include only SNF interim storage and treatment facilities.

The ORR Energy Systems Waste Management Office has identified large portions of ORR as suitable waste
management areas. The proposed SNF management site is included in the areas. The suitability of the site
is due primarily to soil type that meets specific waste management criteria and the geographic location
within the ORR. Again, no materials would be buried would be buried as part of the proposed action or
any of the alternatives in this EIS.

If ORR is chosen as a site for SNF management, site-specific surface and groundwater studies may be
required to support follow-up NEPA reviews.

There is very little potential for contamination of the Knox aquifer from the operation of proposed SNF
management facilities, which are designed to have no liquid release of waste water with hazardous
chemical or radiological characteristics. These facilities would be designed to include secondary
containment, leak detection and water balance monitoring equipment. Therefore, no significant
environmental consequences related to water resources are anticipated from the operation of SNF
management facilities.

Impacts to geology and water resources for ORR are discussed in the EIS in Volume 1, Appendix F, Part

Three, sections 5.6 and 5.8, respectively.

II COMMENT

The commentor indicates that the selection of the Oak Ridge Reservation and the Nevada Test Site does
not logically flow from the siting parameters stated. In addition, the commentor indicates that conflicts in
program missions were not considered and that DOE ought to better coordinate the activities of defense
programs with the Office of Civilian Radioactive Waste Management.
RESPONSE
As documented in the Alternative Site Selection Decision Process Report, the parameters quoted by the
commentor were used to evaluate categories of sites, such as DOE sites with infrastructure. The
commentor is also referred to this report for details as to the conduct of the process that is summarized in
the EIS, Volume 1, section 3.2.3. Once categories of sites were considered realistic based on this initial
screening, individual sites were evaluated through a set of screening factors to identify those sites that
appeared attractive for further consideration by DOE decisionmakers. Thus, sites like ORR and NTS
passed both screenings, along with five others sites, and were considered candidates for consideration as
reasonable sites. NTS, which has no SNF infrastructure, passed the initial screening due to a
bypass on the logic diagram (Attachment 1 to the report) designed to allow consideration of sites without
infrastructure. Both sites were considered reasonable for consideration due to attributes discussed in the
report.
The site-selection task process was designed to present DOE managers with a list of sites that appeared
most attractive based on individual site qualities, including relative location, without programmatic
considerations such as conflict in site missions. Although in cases the site-selection task group did indicate
potential mission conflict concerns (see Attachment 4 to the report), the weighing of programmatic
considerations such as mission conflicts and implementation practicabilities were left to the
decisionmakers. There are regular coordination of activities between the Office of Civilian Radioactive
Waste Management and Defense Programs concerning DOE SNF covered in this EIS.

II COMMENT

The commentor states that the proximity to an aquifer or the presence of groundwater contamination being
characterized as a disadvantage when evaluating alternative sites for consideration in the EIS requires the
same disclosure for the INEL. The commentor also states that hydrogeologic conditions are of great
importance in the siting decisions for spent nuclear fuel. Groundwater concerns become pertinent in the
event of releases from leaks or spills. Also the potential for seismic action should have been considered
evenhandedly in the selection of sites to be considered for SNF management activities.
RESPONSE
Under NEPA, DOE is required to consider a full range of reasonable alternatives, which in this EIS
includes sites with nearby surface-water and groundwater resources. The potential environmental
consequences of implementing the alternatives at the alternative sites have been evaluated in Volume 1,
Chapter 5 of the EIS, which concludes that such impacts from all alternatives would be small. This
conclusion includes the potential impacts on nearby or adjacent water resources at each of the potential
sites. A discussion of this topic can be found in the water resources sections in Volume 1 and its
associated site-specific Appendices A through F. DOE will consider these potential impacts when making
its final decision.
The site-selection task team did consider the proximity to aquifers and seismic concerns as a relative
disadvantage in evaluating a number of potential sites through detailed screening criteria. This

comparison is in Attachment 4 to the Alternative Site Selection Decision Process Report. This set of screening criteria was used to identify sites that appeared attractive for further consideration by DOE decisionmakers.
Proximity to aquifers and areas of high seismicity are certainly appropriate considerations in siting DOE activities, including managing SNF.
INEL was one of three DOE and five Naval sites originally identified as reasonable siting alternatives for consideration in this EIS. In response to public comments during the scoping process for this EIS, DOE committed to conduct a screening process to identify additional sites for managing SNF. The original three DOE and five Naval sites were not considered in this process.
The EIS pays particular attention to geologic considerations such as seismicity at each of the sites under consideration, including the Snake River Plain, upon which INEL is located. Characterization of seismicity and its potential impacts were evaluated and discussed in the EIS.

II COMMENT

The commentor expresses the opinion that potential sites on the priority list for cleanup under the Comprehensive Environmental Response, Compensation, and Liability Act are being characterized as disadvantages when evaluating alternative sites for consideration in the EIS requires the same disclosure for INEL.
RESPONSE
DOE did consider that potential sites were on the priority list for cleanup under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as a relative disadvantage in evaluating a number of potential sites through detailed screening criteria. This comparison is in Attachment 4 to the Alternative Site Selection Decision Process Report. This set of screening criteria was used to identify sites that appeared attractive for further consideration by DOE decisionmakers. Concerns over conflicts with CERCLA activities are certainly appropriate to consider in siting DOE activities, including SNF management.
INEL was one of eight sites originally identified as reasonable siting alternatives for consideration in this EIS. In response to public comments during the scoping process for this EIS, DOE committed to conduct a screening process to identify additional sites. The original eight sites were not reevaluated in this process.
The EIS characterizes sites under consideration including INEL, as to CERCLA activities. Volume 2 of the EIS bounds such activities within the alternatives under consideration for INEL through 2005. Siting of SNF management activities (or any activities) at each of the sites must integrate ongoing activities, including those being managed under CERCLA. Large sites, such as INEL, usually present more opportunities to accommodate siting additional activities without conflicts to those committed to or in progress.

II COMMENT

The commentor expresses the opinion that in several instances, the process used to evaluate alternative sites considered proximity to tribal lands and cultural resources as a disadvantage, yet the EIS dismisses the interests of tribes in the proximity of sites originally considered for evaluation in the EIS, such as the INEL.
RESPONSE
The site-selection task team did consider the proximity to tribal lands and cultural resources as a relative disadvantage in comparing a number of potential sites through detailed screening criteria. This comparison is in Attachment 4 to the Alternative Site Selection Decision Process Report. This set of screening criteria identified sites that appeared attractive for further consideration by DOE

decisionmakers.
Proximity to tribal lands and cultural resources is certainly appropriate to consider in siting DOE activities,
including SNF management.
INEL was one of eight sites originally selected as reasonable siting alternatives for consideration in this
EIS. In response to public comments during the scoping process for this EIS, DOE committed to identify
additional sites. The original eight sites were not considered in this process.
DOE does not dismiss the interests of the tribes near existing sites, nor take them lightly in siting and
operating its facilities. Consultations have taken place during the preparation and review of the EIS, and
continue. DOE has discussed the concerns of the tribes with respect to their comments regarding the
adequacy of the EIS, as well as their concerns regarding the potential effects of decisions facing DOE on
the tribes' homelands and interests. The EIS has been revised to more adequately address the tribes'
concerns as presented in the tribes' comments on the EIS and in related consultations.

II COMMENT

Commentors note that the site-selection process used to identify additional reasonable sites for
consideration in the EIS was skewed away from sites where interim storage only can occur, and away from
port sites where spent nuclear fuel has been handled. Processing decisions have not been made and are
unlikely to be made in the future. Commentors also state that too much emphasis is placed on site size and
available infrastructure in evaluating potential alternative sites for consideration in the EIS, though these
factors were not used for the baseline decision, interim storage.
RESPONSE
In response to public comments during the scoping process for this EIS, DOE committed to identify
additional sites to the eight sites then considered reasonable siting alternatives for SNF management. The
conduct and conclusions of this process are documented in the Alternative Site Selection Decision
Process Report, which is summarized in Volume 1, section 3.2.3 of the EIS.
Potential sites were identified based on such factor as land ownership or current use, current or former
SNF management infrastructure, transportation, and relocation of SNF. Realistic sites then were evaluated
considered statutory and regulatory restrictions, environmental factors, socioeconomic and transportation
factors, and implementability. Final decisions also considered such factors as programmatic needs, mission
conflicts, and timing.
Site size and location is an appropriate consideration for interim management of SNF pending ultimate
disposition. In addition to SNF storage, there is a possibility that additional processes will need to be sited
and operated to further stabilize and possibly tailor SNF to meet whatever criteria evolves from eventual
decisions as to ultimate disposition of the various types of SNF. Therefore, as discussed in the decision
process report, assumptions were made as to minimum order of magnitude site sizes for foreseeable
potential activities. The larger sites provide more flexibility to fully manage SNF pending ultimate
disposition than the smaller sites, and thus have the attractive advantage of possibly precluding additional
shipments of SNF to larger sites for further processing or tailoring in the future, as possibly dictated by
criteria for ultimate disposition. The Alternative Site Selection Decision Process Report states these
considerations and the basis for assumptions used in the conduct of the process. In addition to evaluating
large sites for consideration, smaller sites were also evaluated for a lesser scope of SNF management
activity, limited to storage and research and development only. Only sites considered too small for basic
storage operations were eliminated from further consideration of any management activity.
The sites that were ultimately recommended to the decisionmakers as appearing most attractive were
mostly larger sites due to the relative attractiveness that site size presents from not only the ability to site
more complex activities, but also to provide more isolation from the public and present more opportunities

to site activities without conflict with other activities on site, either current or reasonably foreseen.

II COMMENT

The commentor expresses an opinion that the EIS improperly excludes sites from consideration as alternatives. The commentor further states that the criteria used to select candidate sites is too narrow,
favors remote sites, and involves shipments to INEL under all spent fuel management alternatives.
RESPONSE
INEL is one of three DOE and five Naval sites originally selected as reasonable alternative sites for
consideration in this EIS. INEL was selected because of the many years of DOE experience conducting
large-scale SNF management operations at that site. The same is true for the Savannah River Site in South
Carolina and the Hanford Site in Washington. Accordingly, these sites, and the five sites limited to Naval
fuel only (which have similar years of SNF management experience), were considered reasonable
alternatives for consideration of various levels of programmatic SNF management activities. INEL would
receive SNF for management under all alternatives except No Action and Centralization of all SNF
activities at one of the other five main sites. INEL would continue to receive SNF under all other
alternatives due largely to its current infrastructure and historical expertise in managing such materials.
Under the No Action alternative, there is a 3-year transition period in which the Navy would continue to
ship SNF to INEL for examination.
In response to public comments during the EIS scoping, DOE screened to identify additional reasonable
alternative sites for consideration and analysis in the EIS. Thus, the existing reasonable alternatives were
not reevaluated in this process, because they had already been selected as reasonable potential sites by
DOE.
Potential sites were identified based on such factors as land ownership or current use, current or former
SNF management infrastructure, transportation, and relocation of SNF. Realistic sites then were evaluated
considering statutory and regulatory restrictions, environmental factors, socioeconomic and transportation
factors, and implementability. As a result of this screening process and based largely on the basic qualities
and locations of the sites, a list of the seven sites was forwarded to the decisionmakers for consideration in
the EIS in addition to the eight sites already deemed reasonable. In addition to site qualities and location,
the decisionmakers ultimately also considered such factors as programmatic needs, mission conflicts,
timing, expertise, and infrastructure. The conduct and conclusions of this process are documented in the
Alternative Site Selection Decision Process Report, which is summarized in Volume 1, section 3.2.3 of
the EIS.
Pursuant to the screening process, ORR and NTS were added as reasonable alternatives for the full scope
of SNF management activities, bringing the number of sites to be analyzed to 10.
DOE believes that the range of alternatives analyzed in the EIS is inclusive and in accordance with the
philosophy of considering a full range of reasonable alternatives required by NEPA and CEQ regulations.

II COMMENT

The commentors express an opinion that DOE consider sites such as the Capitol building, the Pentagon,
and the like for the management of spent nuclear fuel.
RESPONSE
Such comments do not provide substance conducive to a response. DOE recognizes that some commentors
disagree with the need for and reasonable alternatives being considered to manage SNF. Volume 1 section
3.1 describes DOE's preferred alternative.

II COMMENT

The commentor states that the sites selected initially as reasonable alternatives for the management of spent nuclear fuel were selected only because they already manage nuclear waste.

RESPONSE

The original eight sites selected as reasonable alternatives for some level of SNF management activity have experience in such activities, which range from large-scale SNF management (storing, reprocessing, etc.) at the three large DOE sites, to handling activities limited to Naval SNF at the five smaller sites. Accordingly, these sites represent reasonable siting alternatives for a range of SNF management activities proposed in this EIS, per the October 29, 1993, Implementation Plan for the Department of Energy Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Impact Statement.

In response to public comments during the scoping process for this EIS, DOE committed to identify any additional reasonable sites for SNF management. After a screening process, ORR and NTS were added as reasonable alternatives for the full scope of SNF management activities, bringing the number of sites to be analyzed to 10.

Potential sites were identified based on such factors as land ownership and current use, current or former SNF management infrastructure, transportation, and relocation of SNF. Realistic sites then were evaluated by considering statutory and regulatory restrictions, environmental factors, socioeconomic and transportation factors, and implementability. Final decisions also considered programmatic needs, mission conflicts, timing, etc. The conduct and conclusions of this process are documented in the Alternative Site Selection Decision Process Report, which is available in the reading rooms and information locations identified in the EIS.

II COMMENT

The commentor states that the Oak Ridge Reservation is artificially constrained to the Regionalization and Centralization alternatives when the Alternative Site Selection Decision Process Report states that any site that is qualified for those alternatives is worthy of consideration for the other alternatives.

RESPONSE

Prior to selection as a reasonable site for all SNF management alternatives, ORR was being considered for SNF management activities under the No Action, Decentralization, and 1992/1993 Planning Basis alternatives. Under these alternatives, ORR either would manage its current and yet-to-be-generated SNF onsite, or would ship such SNF offsite per the 1992/1993 Planning Basis alternative, essentially to SRS.

Based on the alternative site selection process discussed in Volume 1, section 3.2.3 of the EIS, ORR was also selected as a reasonable alternative for all levels of SNF management activity, thus adding it to consideration under the Regionalization and Centralization alternatives. The Alternative Site Selection Process Report indicates that any site considered reasonable for the Regionalization and Centralization alternatives is also considered reasonable for a lower level of SNF management activity. That is, if a site is reasonable for managing all DOE SNF, it must also be reasonable for managing a smaller amount.

Of the two sites added as a result of the Secretary of Energy's decision, ORR is considered reasonable for all levels of SNF management activity, while NTS is considered only for the Regionalization and Centralization alternatives. This is because NTS does not currently manage SNF, and thus the No Action, Decentralization, and 1992/1993 Planning Basis alternatives do not apply.

II COMMENT

The commentor indicates that spent nuclear fuel management is an international problem; however, the commentor does not want it managed at the North Pole or in the South Pacific as suggested in a magazine article.
RESPONSE
In response to public comments during the scoping process for this EIS, DOE committed to identify additional sites to the eight sites then considered reasonable alternatives for managing SNF. As a result of the screening process, ORR and NTS were added as reasonable alternatives for the full scope of SNF management activities, bringing the number of sites to be analyzed to 10.
Potential sites were identified based on such factors as land ownership and current use, current or former spent nuclear fuel management infrastructure, transportation, and relocation of SNF. Realistic sites then were evaluated considering statutory and regulatory restrictions, environmental factors, socioeconomic and transportation factors, conflicts, timing, etc. The conduct and conclusions of this process are documented in the Alternative Site Selection Decision Process Report, which is available in the reading rooms and information locations identified in the EIS.

II COMMENT

The commentor raises questions about what might actually be done with spent nuclear fuel at the Savannah River Site and about future site-specific decisions.
RESPONSE
Ultimate disposition of DOE SNF is a high priority. For planning purposes, DOE had determined that the SNF managed by DOE that is not otherwise dispositioned (e.g., chemically separated, with the high-level waste being converted into a vitrified glass for repository disposal) is authorized for disposal in the first repository. This authorization is subject to the physical and statutory limits of the first repository, DOE SNF meeting repository acceptance criteria, and payment of fees. As part of its SNF management program, DOE would (1) stabilize the SNF as needed to ensure safe interim storage, (2) characterize the existing SNF inventory to assess compliance with the first repository's acceptance criteria, and (3) determine what processing, if any, is required to meet the criteria. Decisions regarding the actual disposition of DOE SNF would follow appropriate review under NEPA and be subject to licensing by NRC. This path forward would be implemented so as to minimize impacts on the first repository schedule.
Future site-specific decisions will involve NEPA reviews tiered from this programmatic EIS. These decisions will also include input from the public as appropriate under NEPA.

II COMMENT

The commentor states that nowhere in the EIS can one find consideration of the suitability, or lack thereof, of the sites being considered for spent nuclear fuel management.
RESPONSE
Volume 1, section 1.3.1 summarizes the consideration of the suitability of the sites selected. Additional details are in the Alternative Site Selection Decision Process Report, which is referenced in the EIS.

II COMMENT

The commentor states that the logic of designating the Nevada Test Site as a "nonpreferred" site based on equity concerns and lack of infrastructure is flawed. The commentor states that there is no provision in the National Environmental Policy Act for a nonpreferred alternative, and nothing in the Nuclear

Waste Policy
Act would prohibit storage of DOE spent nuclear fuel in Nevada. The commentor also states that in the
event that DOE does not site the repository in Nevada, a reasonable site for spent nuclear management will
have been eliminated without cause. Further, the commentor states that equity is not a reasonable basis to
designate the Nevada Test Site as nonpreferred, because other sites have spent nuclear fuel currently in
storage; nor is the site's lack of infrastructure a reasonable basis to designate it as nonpreferred, because
any grainfield site lacks infrastructure, and the EIS acknowledges the need to build additional spent
nuclear fuel storage facilities at any of the sites under consideration.
RESPONSE
The designation of NTS as a nonpreferred site is to alert EIS reviewers that DOE has both technical and
equity reservations that make NTS less attractive than other reasonable alternatives. This designation was
intended to communicate DOE's programmatic reservations with this site.
DOE identified NTS as a reasonable alternative site despite its lack of infrastructure. Although reasonable,
the lack of infrastructure may be considered unfavorably in comparison with the other sites being
considered, as one of numerous considerations in arriving at a ROD. The consideration of sites without
infrastructure is in keeping with public comments on the EIS Implementation Plan.
DOE recognizes that the other four DOE sites being evaluated as reasonable alternatives have managed
SNF for years, and may continue to do so for the period of time analyzed in this EIS. However, SNF
management at these sites will either decrease, increase, or remain the same. DOE agrees that nothing in
the Nuclear Waste Policy Act (NWPA), as amended, would preclude siting SNF management facilities for
DOE SNF in Nevada. However, the provisions of NWPA, as amended, that preclude siting monitored
retrievable storage facility at NTS are based partially on equity. NTS is currently the only site designated
by Congress in the NWPA, as amended, for the characterization of the nation's first geologic repository for
SNF and high-level waste. At present, the Yucca Mountain Project is primarily designated for commercial
fuel disposal, but DOE SNF and high-level waste not exceeding 10 percent (by weight) of the repository
capacity limit (70,000 tons metric tons heavy metal) could be placed in the repository.
Decisions regarding actual disposition of DOE SNF will follow appropriate NEPA review. This "path
forward" would be implemented so as to minimize impacts on the first repository schedule. See also the
response to comment 04.04 (008).

II COMMENT

The commentor indicates that although DOE conducted a site-selection process that allowed for
consideration of grainfield sites, only the Nevada Test Site was selected, and it was effectively dismissed as
a site under its designation as a "nonpreferred alternative."
RESPONSE
The alternative site selection process, as documented in the Alternative Site Selection Decision Process
Report did allow for the consideration of sites with no current spent nuclear fuel infrastructure or expertise
to be considered. The screening process was used to evaluate every DOE site and a sizable number of
Department of Defense (DOD) sites, which appeared to be reasonably representative of all DOD sites.
NTS is a greenfield site, in that it is not involved in, nor does it have the infrastructure related to,
management of SNF. DOD sites, which were also greenfield sites, were considered unreasonable due to
the conflict in DOE missions with those conducted by DOD.
Due to its lack of infrastructure and equity concerns with the potential siting of the nation's first geologic
repository, DOE considers NTS a less attractive alternative than the other DOE sites under evaluation.
Despite this nonpreferred status, NTS is evaluated in the EIS to the same level as the other reasonable
alternatives and, thus, gives the public a basis for comparative review of a reasonable greenfield site, as

well as giving decisionmakers the tools to fully consider NTS as a reasonable site for the management of
spent nuclear fuel. Decisionmakers will consider the environmental impacts, programmatic needs, costs,
and public comments in arriving at a ROD.
See also the response to comment 04.03.01 (028).

II COMMENT

The commentor states that DOE arbitrarily excluded potential greenfield sites from consideration in the
EIS; instead DOE predetermined a greenfield site that could be readily struck down as inappropriate.
RESPONSE
No sites evaluated in the EIS have been eliminated from consideration for the management of spent nuclear
fuel. It is true that a number of representative Department of Defense "greenfield" sites were considered
attractive by DOE's site-selection team, based largely on the relative location and quality of these sites.
However, consultations with the Department of Defense regarding the availability of these sites resulted in
their elimination due to mission conflicts with current site activities. Nevertheless, it is DOE's opinion that
the analysis of NTS gives decisionmakers (and the reviewing public) the full perspective of the
environmental impacts of a representative greenfield site to form a basis for comparison with other
reasonable sites analyzed in the EIS. In addition, nothing in the EIS eliminates or disfavors NTS on the
basis of environmental impacts. The programmatic considerations of lack of infrastructure and the
existence of concerns over equity will be part of decisionmaking, as well as factors such as cost,
implementability, environmental impacts, and technical considerations. See response to comment
04.03.01 (028).

II COMMENT

The commentor is of the opinion that DOE improperly excludes foreign facilities from consideration as
alternative fuel repositories.
RESPONSE
DOE has an obligation under NEPA to evaluate a range of reasonable alternatives, which must include a
No Action alternative. NEPA and the CEQ regulations clearly give deference to the discretion of the
agency, in this case DOE, to dismiss alternatives that the agency considers unreasonable given the
parameters of the purpose and need for agency action. DOE does not consider storing DOE-owned and
domestically stored SNF in foreign countries to be reasonable compared with the range of reasonable
domestic storage and management alternatives analyzed in this EIS, for which the analyses show that the
impacts of all alternatives would be small.
The alternative of foreign storage of foreign research reactor (FRR) SNF of U.S. origin is beyond the scope
of this EIS, which evaluates the management of any such SNF once it is returned to the U.S. The decision
whether FRR of U.S. origin is returned to the U.S., and the reasonable alternatives to returning such
material, is within the scope of the FRR EIS.
Volume 1 of this EIS assumes that all FRR EIS spent nuclear fuel is returned for domestic management so
that the environmental impacts of managing a reasonably foreseeable inventory can be evaluated in the
EIS. If a decision is made not to return FRR SNF to the U.S., the EIS analysis would be additionally
conservative in its evaluation of cumulative impacts due to the reduced domestic inventory to be managed.
In response to public comments, Volume 1, section 3.2 of the EIS has been expanded to discuss the option
of processing DOE N-Reactor SNF overseas for the purpose of stabilization as an example for evaluating
reasonably foreseeable impacts. See also response to comment 04.03 (054). Unlike foreign

storage of
domestic SNF, overseas processing presents a reasonable option to domestic processing of such materials
both in cost and availability of facilities.

II II COMMENT

The commentor notes that for many activities, the Minimum Treatment, Storage, and Disposal alternative is
no different than the No Action alternative for the INEL.
RESPONSE
While many activities may be similar in the alternatives cited, there are also differences, as shown in the
shaded box in Volume 2, section 3.1.3. Different activities and projects are planned for each high-level
waste alternative. Shaded boxes identify the major activities by alternative for each waste stream. These
shaded boxes are in Volume 2, section 3.1.3 for transuranic waste, low-level waste, mixed low-level waste,
greater-than-Class-C waste, and hazardous waste. Additional activities are shown in section 3.1.1 for spent
nuclear fuel, section 3.1.2 for environmental restoration, and section 3.1.3 for infrastructure projects.

II COMMENT

Commentors state that the EIS should consider an alternative that truly calls for management of the spent
nuclear fuel at those sites in closest proximity to origin of the fuel, thereby minimizing transportation of
spent nuclear fuel.
RESPONSE
The EIS does consider managing SNF at or close to sites closest to the fuel's origin under the No Action
alternative, discussed in Volume 1, section 3.1.1, and the Decentralization Alternative, discussed in
Volume 1, section 3.1.2. The EIS demonstrates that SNF can be safely managed with minimal transportation.

II COMMENT

The commentor suggests that Volume 1 alternatives, except for No Action, be modified to include a
general statement that the alternative would include any actions necessary to permit continued reactor
operation or to place spent nuclear fuel in safer storage, including shipping offsite or constructing storage
onsite.
RESPONSE
The programmatic action that DOE ultimately selects is not necessarily limited to one of the alternatives.
For example, a hybrid alternative could be developed that would incorporate actions from one or more of
the five alternatives analyzed. Moreover, the programmatic decisions will not identify all site-specific SNF
management options. If appropriate, the decisions would be made after additional site-specific NEPA
evaluation.

II COMMENT

The commentor states that completely remediating the Idaho National Engineering Laboratory is summarily
dismissed.
RESPONSE
Remediation of INEL site has been negotiated and documented in the FFA/CO Action Plan. As stated in
Volume 2, section 3.1.2, of this EIS, FFA/CO Action Plan would be followed under each alternative,
subject to funding constraints, except the No Action alternative. The Maximum Treatment, Storage,

and
Disposal alternative analyzes remediating INEL under a residential land use scenario, which would result
in substantial cleanup of the site with little contamination left in place.

II II COMMENT

The commentor states that there are waste shipments to DOE sites from non-DOE sites under the
Decentralization alternative, including spent nuclear fuel from foreign research reactors. The commentor
is of the opinion that allowing these shipments to take place will erode support for development of a
permanent waste repository.
RESPONSE
The EIS addresses a number of alternatives for SNF management, including the Decentralization
alternative. The Decentralization alternative considers SNF management essentially where it is currently
stored or generated, with the basic exception of fuels from university research reactors and/or foreign
research reactors, which would be managed at INEL or SRS. This is to avoid constructing facilities at
university campuses, or forcing such reactors to shut down due to the lack of such facilities, either here or
overseas. Conversely, the No Action alternative does not accommodate the receipt of SNF from foreign
research reactors and does not allow the transfer of university reactor SNF to DOE sites. Thus, the EIS
does consider an alternative that the commentor appears to favor. Whether leaving SNF at the university
sites places increased emphasis on the development of a permanent waste repository is a matter of
conjecture beyond the scope of this EIS.
Ultimate disposition of DOE SNF is a high priority. For planning purposes, DOE had determined that the
SNF managed by DOE that is not otherwise dispositioned (e.g., chemically separated, with the high-level
waste being converted into a vitrified glass for repository disposal) is authorized for disposal in the first
repository. This authorization is subject to the physical and statutory limits of the first repository,
DOE SNF meeting repository acceptance criteria, and payment of fees. As part of its SNF management
program, DOE would (1) stabilize the SNF as needed to ensure safe interim storage, (2) characterize the
existing SNF inventory to assess compliance with the first repository's acceptance criteria, and (3)
determine what processing, if any, is required to meet the criteria. Decisions regarding the actual
disposition of DOE SNF would follow appropriate review under NEPA and be subject to licensing by
NRC. This path forward would be implemented so as to minimize impacts on the first repository
schedule.

II COMMENT

The commentor expresses the opinion that the assumptions on which the spent nuclear fuel No Action
alternative are based are not valid in light of current ongoing INEL activities; specifically, discussion of
remediation activities are limited to activities already planned for removal of fuel from ICPP-603 storage
pools, but the necessary increased rack capacity needed at ICPP-666 is not included, nor is the stored fuel
in other areas of the Idaho National Engineering Laboratory.
RESPONSE
The No Action alternative, as described in Volume 2, section 3.1, includes activities and projects that have
already been initiated or that may be initiated after June 1, 1995, and have been evaluated under the
provisions of NEPA by June 1, 1995.
New activities would be limited to minor environmental safety and health activities needed to maintain safe
operations. There would be no new major upgrades, and the use of ICPP-603 storage pools would be
phased out. The ICPP-603 fuel is being removed under the Court Order. Reracking at ICPP-666 is not
necessary to accommodate that fuel. Other on-site fuel consolidation activities are continuing under

separate NEPA documentation, as described in Volume 2, section 2.1.3 for other NEPA review activities
at INEL. The No Action alternative, as described in Volume 1, section 3.1, represents a baseline for
comparison with the other alternatives. Projected impacts of alternative management schemes are
compared in the EIS with those impacts projected for the existing conditions against plans involving both
greater and lesser activities. DOE believes that the No Action alternative in the EIS satisfies the NEPA
requirements to include a No Action alternative, and that the activities under the alternative are consistent
with assumptions stated in Volume 1, section 3.1.

II COMMENT

The commentor disagrees with the statement in the EIS that the No Action alternative appears to be
environmentally more acceptable than other alternatives because no new research would be initiated.
RESPONSE
Volume 1, section 5.1.2 actually states: "This makes the No Action alternative appear to be more
environmentally acceptable than the other alternatives when, in fact, this research is simply delayed until
after the time period covered by this EIS." The intent of this statement in the EIS is to explain that while
the No Action alternative projects slightly smaller impacts, because fewer projects would be implemented,
the impacts would not be reduced, only deferred. The sentence has been modified to more clearly explain
this.

II COMMENT

The commentor notes that the EIS does not discuss the impacts of the No Action alternative on foreign
research reactor spent nuclear fuel. In particular, the commentor notes the United States would be harmed
by the selection of that alternative because the Reduced Enrichment for Research and Test Reactors
Program would cease, the cost of medical isotopes would increase, nonproliferation efforts would be
jeopardized, and U.S. diplomatic relations would be damaged.
RESPONSE
Volume 1, section 3.1, discusses the No Action alternative and describes the actions that would be
undertaken by DOE to the extent required by this alternative. Activities related to the management of
SNF, including research and development, would be included.
The EIS addresses only the sites at which FRR SNF would be stored if the United States adopts a proposed
policy to accept that SNF. The proposed policy and its impacts are analyzed in a separate EIS. While the
decisions for both EIS will be closely coordinated to ensure consistency, the concerns raised by this
commentor are specific to the FRR EIS and are outside the scope of this EIS.
The relationship between the FRR EIS and this EIS is discussed in Volume 1, section 1.2 and Volume 2,
section 1.2.3. The description of ongoing NEPA reviews has been revised.
See also the response to comment 04.04 (008).

II 4.4 Preferred Alternative

II COMMENT

Commentors express the opinion that the EIS does not define a preferred alternative that includes
reprocessing as a reasonable option.
RESPONSE

DOE believes that the range of alternatives analyzed in the EIS is inclusive and in accordance with the
philosophy of considering a full range of reasonable alternatives, as required by NEPA and CEQ
regulations. Analysis and discussion of all alternatives that can be postulated is an impossibly large task
and is not required by existing regulations. Volume 1, section 3.1 describes the preferred alternative for
SNF management. Volume 1, Appendices A, B, C, and J discuss stabilization activities, including
processing, passivation and canning, that could be employed at the sites for current and/or future SNF
management activities. See also the response to comment 04.04 (008).

II COMMENT

Commentors question DOE's preference for alternatives and intentions or agendas the management of spent
nuclear fuel. Some commentors feel decisions have already been made and that their opinions will be
ignored.
RESPONSE
After carefully considering the results of the analysis of alternatives in the EIS and considering
programmatic needs, cost, implementation, and public comments, DOE identified its preferred alternative
for programmatic SNF management (see Volume 1, section 3.1). The preferred alternative is
Regionalization by fuel type.
The decision as to whether the preferred alternative is selected for implementation over other reasonable
alternatives evaluated in the EIS will be made by the Secretary of Energy in the ROD. Based on the
analysis in the EIS, all environmental impacts would small and there is no environmental discriminator that
would clearly favor one alternative over another. Thus, DOE based its decision largely on programmatic
management needs, known vulnerabilities, and the need to maintain maximum flexibility to stabilize SNF
and meet criteria for ultimate disposition, when ultimate disposition is ready for decision in another EIS.
Under the preferred alternative, DOE management of SNF would be centered on activities at INEL, SRS,
and Hanford. INEL could manage nonaluminum-clad types, and could receive nonaluminum- clad
nonproduction fuels from Hanford. SRS could manage aluminum-clad fuel types, and could receive
aluminum-clad fuels from INEL. Hanford would manage defense SNF such as the N-Reactor graphite fuel,
and would not receive any significant amount of SNF from other sites. Naval SNF would be managed in
accordance with the Navy's preferred alternative, which was stated in the Draft EIS, and is consistent with
DOE's preferred alternative. Foreign research reactor SNF would be managed at either INEL, SRS, or
both. In a publicly available cost analysis (independent of this EIS), the DOE preferred alternative is
estimated to cost between $9 billion and $18 billion over the 40-year interim management period between
1995 and 2035.
Under all alternatives (over a 40-year period), the estimated number of latent cancer fatalities to the public
from DOE SNF management activities (facility operations plus transportation) would be less than two
latent cancer fatalities. There are no significantly high and adverse impacts identified for
minority and low-income communities under the preferred alternative.

II COMMENT

The commentor notes that detailed evaluations of environmental and human exposure pathways are more
appropriate when selected alternatives are detailed in a Final EIS and site-specific National Environmental
Policy Act reviews are conducted.
RESPONSE
More specific analysis is possible when details about implementation of programmatic decisions are
available. Many of the issues the commentor expressed interest in would be best directed to follow-up
NEPA reviews of site-specific projects. Such NEPA analyses will be performed when and as

appropriate.

II COMMENT

The commentors are reluctant to have the Idaho National Engineering Laboratory play a major role in
processing waste materials from other sites until a permanent storage site is available.
RESPONSE
After careful consideration of the results of the analysis of alternatives in the EIS and consideration of
program needs, implementation of program needs, public comments, and the draft site treatment plan, DOE
identified its preferred alternative for SNF management, environmental restoration, and waste management
at INEL (see Volume 2, section 3.4). The preferred alternative is similar to the Ten-Year Plan alternative,
but includes elements of other alternatives for same waste type. Ongoing SNF management, environmental
restoration, and waste management activities would be continued and enhanced to meet current and
expanded needs. The amount of newly generated waste would increase to reflect regulatory requirements
and environmental restoration activities. Transuranic and mixed low-level wastes received from other sites
would be treated and the residues would be returned to the generating DOE site or transported to an
approved off-site disposal facility, as negotiated under the INEL FFA/CO. Environmental Restoration
activities would be conducted in accordance with FFA/CO and its action plan. Volume 2, section 3.4 and
Chapter 5 show that the impacts of the preferred alternative would be small.

II COMMENT

The commentor believes that a hybrid alternative being announced in the Record of Decision is unacceptable.
RESPONSE
Under NEPA and CEQ regulations, a hybrid of the alternatives discussed in the EIS may be chosen in the
ROD. The alternatives examined in the EIS represent a range of reasonable alternatives, and the agency is
allowed to chose among variations of those alternatives, as long as the hybrid alternative is still
"qualitatively within courted spectrum of alternatives" that were discussed in the EIS. See the CEQ's Forty
Most Asked Questions Concerning CEQ's NEPA Regulations, 46 FR 18026 (March 23, 1981).

II II COMMENT

The commentor expresses the opinion that the Navy and DOE have already selected a preferred alternative.
RESPONSE
In accordance with NEPA, no decision on the alternative to be implemented has been made or will be
made until the Final EIS is issued and a 30-day waiting period has passed. No actions are being taken in
the meantime that would prejudice future decisions. The final decision and the basis for it will be
documented in the ROD, which will be published in the Federal Register in June 1995.
At the time the Draft EIS was issued, DOE had not identified a preferred alternative. The Navy stated its
preferred alternative in the Draft EIS and discussed how this alternative would support the Navy's mission,
as established by Congress. Upon consideration of public comments received on the Draft EIS and other
factors, DOE identified preferred alternatives. The decision process that led to the
identification of these preferred alternatives is provided in Volume 1, Chapter 3, and Volume 2, Chapter 3.

II COMMENT

The commentor is of the opinion that the decision process represented by the Draft EIS suggests a rushed
process with no vision, only fix-ups.
RESPONSE
NEPA, 42 USC Section 4321 et seq., and CEQ regulation at 40 CFR Part 1500 et seq. require that
an EIS describe the purpose and need for the proposed action; alternatives, including no action; the
affected environmental; and the environmental consequences associated with the proposed actions and
alternatives. Volume 1 and 2 of this EIS meet these requirements.
Input was solicited from the public during a 90-day public comment period on the Draft EIS, which
allowed commentors to provide comments and attend one or more of the 33 public hearings held in 20
locations around the United States. Comments were received from 1,430 individuals, agencies and
organizations. Many comments resulted in enhancement to the EIS (see Volume 1, section 1.4 and
Volume 2, section 2.1.5). Comments were also considered in the identification of DOE's preferred
alternatives [see the response to comment 04.04 (008)].
Despite the aggressive schedule for completion, the environmental analyses presented in the EIS have been
very carefully and thoroughly examined for completeness and accuracy. The decision to be made will
provide a path forward for a effective DOE SNF management program and will establish an effective INEL
program for the foreseeable future.

II COMMENT

The commentor recommends that specified criteria related to how waste material would be handled once
onsite be considered in DOE's decision-making process.
RESPONSE
Information on technical options for managing SNF at SRS can be found in Volume 1, Appendix C.
Environmental evaluation of waste management practices and options at SRS may be found in the DOE
Savannah River Site Waste Management Draft EIS.

II COMMENT

The commentor states that past experience with spent nuclear fuel needs to be a criteria for spent nuclear
fuel management decisions.
RESPONSE
SNF management experience was a factor used in determining DOE's and the Navy's preferred alternatives.
See Volume 1, section 3.1.

II COMMENT

The commentor suggests that a hasty decision is being made with respect to the storage of spent nuclear
fuel.
RESPONSE
DOE is devoting adequate time to evaluate a full range of reasonable alternatives for safely managing SNF,
including the need for interim storage capabilities.
Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of
all the alternatives considered in this EIS. Volume 1, section 3.1 discusses DOE's preferred alternative for
managing SNF. The analyses show that the impacts of all alternatives would be small. While there are
differences in the impacts among the alternatives, they are not sufficient to distinguish between alternatives
based on impact alone. See the response to comment 04.04 (008) regarding the preferred alternative for
SNF management.

II 4.5 Miscellaneous

II COMMENT

The commentor states that because the EIS did not find important environmental impact differences among
the alternatives to the proposed action, the final decision will be political.
RESPONSE
The content of the EIS follows CEQ and DOE regulations implementing NEPA, including factoring in topics of concern raised during the public scoping meetings. The analyses, data, and supporting conclusions in the EIS have been prepared and reviewed by subject-matter experts and critically reviewed
by an interdisciplinary team to ensure that environmental factors are fully considered in the decision-making process. Other factors, including public comments, economic and technical considerations, and
agency mission, will be considered.

II COMMENT

The commentor states that projects necessary to provide the infrastructure for spent nuclear fuel management at the INEL will divert limited resources from waste management and environmental restoration projects on the site. The commentor states that DOE's conclusion that the INEL compares
favorably with other potential sites is not justified, and the suitability of the INEL should be compared in
detail with other potential sites.
RESPONSE
INEL is one of eight sites originally selected as reasonable alternative sites for consideration in this EIS.
INEL was selected because of the many years of DOE experience conducting large-scale SNF management
operations at that site. The same is true for SRS and Hanford. Accordingly, these sites, as well as five
other sites limited to Naval fuel only and with years of SNF management experience, were considered
reasonable alternatives for consideration for various levels of programmatic SNF management activities.
In response to public comments during scoping for this EIS, DOE conducted a screening process to identify
additional reasonable alternative sites. The screening was used solely to identify additional reasonable
alternative sites for consideration and analysis in the EIS. Thus, the existing reasonable alternatives were
not included in this process, because they had already been selected as reasonable potential sites by DOE.
Pursuant to the screening process, ORR and NTS were added as reasonable alternatives for the full scope
of SNF management activities, bringing the number of sites to be analyzed to 10. Other sites were not
considered reasonable for analysis in this EIS.
Potential sites were identified based on such factors as land ownership or current use, current or former
SNF management infrastructure, transportation, and relocation of SNF. Realistic sites then were evaluated
considering statutory and regulatory restrictions, environmental factors, socioeconomic and transportation
factors, and implementability. As a result of this screening process, based largely on the basic qualities and
locations of the sites, a list of the seven most attractive sites was forwarded to the decisionmakers for
consideration in the EIS as reasonable siting alternatives in addition to the eight sites already deemed
reasonable. In addition to site qualities and location, the decisionmakers ultimately also considered such
factors as programmatic needs, mission conflicts, timing, expertise, and infrastructure. The conduct of this
process and its conclusions are documented in the Alternative Site Selection Decision Process Report and
summarized in Volume 1, section 3.2.3 of the EIS.
Regarding the concern of diverting resources from waste management to SNF management, the Secretary of
Energy has publicly affirmed that current DOE policy and practice emphasizes safety and environmental
considerations above other program goals. In this regard, DOE is working to remediate and eliminate
adverse environmental impacts from past programs, as well as to safely manage waste and SNF today and
in the future. The integration and relative emphasis between waste management, environmental

restoration, and SNF activities for the INEL through the year 2005 is addressed in Volume 2 of the EIS for a range of alternatives. Although DOE will use the EIS as a basis for a decision regarding these site-wide programs, implementation of decisions is subject to processes such as funding and permitting.

II COMMENT

The commentor recommends reducing the mass of the existing spent nuclear fuel.
RESPONSE
The mass of spent nuclear fuel cannot be reduced. Radioactive long-lived nuclides can be separated from cladding and other fuel structural materials, but the total amount of radioactive material remains the same.
General solutions proposed for managing nuclear waste are in Volume 1, section 1.1 and Appendix C, and Volume 2, Chapters 1 and 2, respectively. More specific descriptions of how wastes would be managed under the proposed alternatives are in Volumes 1 and 2, section 3.1. SNF management technology is discussed in Volume 1, Appendix J.

II COMMENT

The commentor expresses the opinion that, contrary to the conclusions in the EIS, nuclear waste storage has virtually no impact on anyone, common sense dictates that toxic substances, including spent nuclear fuel, should be managed to minimize potential exposure to people.
RESPONSE
The evaluation in this EIS indicates that all of the alternatives would result in extremely small impacts to the public. All the alternatives include actions to minimize exposure to people (for example, see Volume 1, section 5.7).

II COMMENT

The commentor objects to the term "No Action" alternative because people who support this alternative could be perceived as not caring about solving the problem.
RESPONSE
The No Action alternative is a specifically named alternative required under CEQ regulations for implementing the National Environmental Policy Act of 1969. Under the No Action alternative in this EIS, DOE would limit actions to the minimum necessary to safely and securely manage SNF at or close to the generation site or current storage location.

II COMMENT

The commentor recommends that the legal and technical constraints at the Nevada Test Site, outlined in the commentor's letter, be included in DOE's decision-making process for selecting a preferred alternative.
RESPONSE
All comments received during the public comment period were carefully reviewed and considered by DOE in preparation of the EIS and identification of the preferred alternative.
Although NTS is evaluated in the EIS as an alternative for SNF management activities, DOE did not consider it to be a preferred site in the EIS, because Nevada is the host site for the Yucca Mountain Site Characterization Project and because of NTS lack of current SNF handling experience. As stated in Volume 1, Appendix F, section 3.1, NTS provides a contrast to other potential sites because it represents a site that has no existing SNF infrastructure and does not currently generate or store any SNF. See also the

responses to comments 04.03.01 (28) and 04.04 (008).

II COMMENT

The commentor notes that environmental restoration and waste management activities have not been assessed separately for the INEL.
RESPONSE
Environmental restoration and waste management activities cannot be separated entirely because environmental restoration is a major waste generator. Reasonably foreseeable waste from environmental
restoration will in part dictate waste management activities. Volume 2 of the EIS provides extensive detail
on and analysis of these subjects.
The alternatives analyzed were designed to cover the spectrum of potential impacts, from maximum activities (the Maximum Treatment, Storage, and Disposal alternative) to minimum activities (the No
Action alternative). As identified in Volume 2, section 2.1.2, environmental restoration and waste
management activities discussed in the EIS are evaluated at both the site-wide level by waste stream
management and project-specific levels. For environmental restoration, potential impacts at INEL are
addressed only at the site-wide level. Project-specific impacts of these activities at INEL will be quantified
and evaluated in the future, as appropriate, as part of the CERCLA process.
The comparison of impacts is in Volume 2, section 3.3. This brief comparison of impacts is presented to
help decisionmakers and the public understand the potential environmental consequences of proceeding
with each of the alternatives at INEL. In the ROD, DOE may also choose to combine projects and activities from more than one alternative.

II COMMENT

The commentor recognizes that the Savannah River Site may need to manage some spent nuclear fuel until
ultimate disposition is available.
RESPONSE
Under all alternatives, some SNF would be managed at SRS for a number of years, even if the ROD selects
the Regionalization or Centralization alternative at a non-SRS location.

II COMMENT

The commentor suggests that intermediate processing at multiple sites other than the final disposition site
increases the potential for damage at multiple sites.
RESPONSE
The EIS evaluates the impacts of managing SNF at multiple sites; the impacts would be small.

II COMMENT

The commentor points out the benefits of the nuclear industry to U.S. citizens and the military and suggests
it is time to recognize the responsibility of safely storing the "remnants of the industry."
RESPONSE
Volume 1, section 3.1 describes the preferred alternative for programmatic SNF management; Volume 2,
section 3.4 describes the preferred alternative for SNF management, environmental restoration, and waste
management at INEL. See also the responses to comments 04.04 (008) and 04.04 (011).

II COMMENT

The commentor wants information on efforts to scale back the production of nuclear waste.
RESPONSE

This EIS considers management of DOE SNF pending ultimate disposition. DOE believes the analyses in this EIS are adequate to support a decision on this subject. General discussions of waste management procedures and plans are covered in Volume 2, Chapters 1 and 2. DOE has committed to a strategy emphasizing waste minimization and avoidance, where most new radioactive waste will be created during desirable cleanup activities and decommissioning of contaminated facilities that no longer serve essential missions. Most DOE SNF was generated in DOE production and experimental reactors that have ceased to operate, so considerable source reduction has already occurred.

II COMMENT

The commentor states that additional information is required to determine the extent to which the No Action alternative in Volume 2 would not meet current regulatory agreements in place at the INEL.
RESPONSE
The No Action alternative, as described in Volume 2, section 3.1, includes activities and projects that have been initiated or that may be initiated after June 1, 1995, and have been evaluated under the provisions of NEPA by June 1, 1995.
New activities would be limited to minor environmental safety and health activities needed to maintain safe operations. There would be no new major upgrades and the use of ICPP-603 storage pools would be phased out. The ICPP-603 fuel is being removed under the Court Order. Reracking at ICPP-666 is not necessary to accommodate that fuel. Other on-site fuel consolidation activities are continuing under separate NEPA documentation, as described in Volume 2, section 2.1.3 for other NEPA review activities at INEL. The No Action alternative, as described in Volume 1, section 3.1, represents a baseline for a comparison of the other alternatives. Projected impacts of alternative management schemes are compared in the EIS with those impacts projected for the existing conditions against plans involving both greater and lesser activities. DOE believes that the No Action alternative in this EIS satisfies the NEPA requirements to include a No Action alternative, and that the activities under the alternative are consistent with assumptions stated in Volume 1, section 3.1.

II COMMENT

The commentor states that the alternatives for the INEL EIS are poorly labeled and organized.
RESPONSE
The Summary describes the relationship between Volumes 1 and 2, as well as the relationship between the alternatives in the two volumes. The Summary also lists the key points in each of the Volume 2 alternatives.

II COMMENT

Commentors state that technologies and or proper storage sites for safe, long-term storage of nuclear waste may not exist.
RESPONSE
DOE has a program (including research, development, and demonstration activities) for safely managing and storing all radioactive materials at each of the sites considered in the EIS. General solutions for managing SNF, including storage, are discussed in Volume 1, section 1.1.3 and Appendix J. Current management practices for radioactive wastes are described in Volume 2, section 2.2.7, which is specific to INEL, but also generally applies to wastes at other DOE sites.
The potential impacts of storing SNF and associated mitigation measures are discussed in Volume 1, Chapter 5. Supporting information on types of SNF and their storage options is provided in

Volume 1,
Appendix J. Management and storage of radioactive wastes at INEL are described in Volume 2, Chapters 1
and 2. DOE's policy is to comply with applicable Federal, state, and local regulations and DOE Orders.
All radioactive materials are managed to ensure protection of the environment and the health and safety of
the public and site employees.

II COMMENT

The commentor emphasizes that the EIS and Record of Decision have the flexibility for a hybrid alternative.
RESPONSE
The programmatic action that DOE ultimately selects is not necessarily limited to one of the alternatives.
A hybrid alternative could be developed that would, for example, incorporate actions from one or more of
the five alternatives analyzed. Moreover, the programmatic decisions will not identify all site-specific SNF
management options. If appropriate, the decisions would be made after additional site-specific NEPA
evaluations.

II COMMENT

The commentor suggests that information on the No Action alternative in the Summary is contradictory.
RESPONSE
The Summary has been revised to clarify that the minimum facility upgrades necessary to ensure the safe
interim storage of SNF would be completed.

II COMMENT

The commentor suggests DOE evaluate the railroad rights-of-way for temporary storage of spent nuclear
fuel.
RESPONSE
Because railroad rights-of-way are privately owned and do not provide infrastructure for DOE SNF
concerns, such as exposure to the public and potential for accidents, railroad rights-of-way are unattractive.
This was not considered to be a reasonable alternative.

II COMMENT

The commentor requests specific information on secondary wastes to be produced from hypothetical
activities or not-yet-existent facilities related to possible processing of spent nuclear fuel, specifically the
radioactive scrap/waste facility. In addition, the commentor states that the EIS fails to discuss the
alternatives cited in the Spent Fuel Working Group Report on Inventory and Storage of the Department's
Spent Nuclear Fuel and Other Reactor Irradiated Nuclear Materials and Their Environmental, Safety
and Health Vulnerabilities and that continued avoidance of planning for the final disposition in a
repository extends the risk and hazards of storage at the Idaho National Engineering Laboratory.
RESPONSE
Specific information is not available on facilities that have not been constructed or activities that have not
been conducted to acquire a valid baseline. Generic projects have been included in the EIS as
"placeholders" to present readers with as comprehensive a range of forthcoming projects as is currently
possible. These projects or facilities would require additional analysis under NEPA. At such time,
accurate information on secondary waste generation will be provided for an assessment of impacts on waste
management. DOE acknowledges and discusses the vulnerability assessment in Volume 1, section 1.1.2.

The action plans for the correction of the vulnerabilities identified are referenced in the EIS and are
available in libraries and reading rooms that received this EIS.

II COMMENT

The commentor notes that Volume 2, Table 3.3-1 and section 5.19 need to be clearly linked. Also, specific discussion on safety requirements and other resources needed to implement the mitigation measures and monitoring for each alternative should be presented in the Final EIS.
RESPONSE
Volume 2, section 5.19 of the EIS has been revised to show clear links between the sections on mitigation
and Table 3.3-1.

5. TECHNICAL ISSUES

5.1 Aesthetic and Scenic Resources

05.01 (001) Aesthetic and Scenic Resources

COMMENT
The commentor states that the EIS ignores the presence of unusually aesthetically pleasing landforms,
particularly the buttes, on and adjacent to the Idaho National Engineering Laboratory. The commentor
notes that the Middle Butte and other sites on the Idaho National Engineering Laboratory are significant to
the Shoshone-Bannock Tribes. The commentor also states that visual impacts should not be analyzed
based on what could be seen from the Idaho National Engineering Laboratory boundary or a road, but that
the EIS should also analyze visual impacts for tribal members who have been granted a unique right of
access to the site.
RESPONSE
Volume 2, section 4.2 identifies that portion of the Idaho National Engineering Laboratory (INEL) within
the Big Butte Resource Area, which is administered by the Bureau of Land Management. Volume 2,
section 4.5 has been revised to acknowledge that features of the natural landscape have special significance
to the Shoshone-Bannock Tribes.
Volume 2, section 5.5 discusses the impacts of proposed projects on aesthetic and scenic resources at INEL
for the various EIS alternatives. Most of the proposed projects would be confined to existing developed
areas and be in size and shape to adjacent structures. The locations of some new facilities have not been
determined for the Ten-Year Plan alternative; however, such facilities probably would be within 2 miles of
existing facilities and at least 1/2 mile from public roads. Although no final siting for these projects is
expected to occur on or near the buttes, the final siting determination will consider preservation of
aesthetically pleasing landforms.
Volume 2, section 5.4 has been revised to state that the Shoshone-Bannock Tribes would be consulted
before any project is developed that could impact resources of importance to the Tribes.

05.01 (002) Aesthetic and Scenic Resources

COMMENT
The commentor states that impacts to visibility and enjoyment of view at the Fort Hall Reservation, as well
as effects on tourism, are not considered in the EIS.
RESPONSE
The Fort Hall Reservation is approximately 27 miles southeast of the southern boundary of INEL.
Although a specific analysis was not performed for the Fort Hall Reservation, the analysis performed for
the EIS concluded that the potential for impairment of the visual resource at Craters of the Moon National
Monument, which is approximately 12 miles west of INEL's western boundary, could not be ruled out.
The analysis used very conservative methods, including assumptions that many of the important proposed
sources of emissions would not incorporate emissions controls, and that pristine conditions currently exist
at Craters of the Moon. However, DOE would not be able to obtain an air permit for these emissions
sources unless it could be shown to the satisfaction of the Idaho Division of Environmental

Quality that
there would be no perceptible impacts on visibility at the Craters of the Moon National Monument, which
is the nearest Class I area to INEL. The control measures that would be required to avoid any impacts at
Craters of the Moon would also serve to prevent impairment of visibility or enjoyment of the view at the
Fort Hall Reservation.
In addition, the Fort Hall Reservation lies outside the path of prevailing winds flowing across the INEL
site. As noted in Volume 1, Appendix B, section 4.7, the mountain ranges bordering INEL normally
channel the prevailing westerlies into a southwest wind, away from the reservation.

05.01 (003) Aesthetic and Scenic Resources

COMMENT
Commentors urge that the beauty of Idaho be preserved.
RESPONSE
DOE agrees. In developing the alternatives for management of spent nuclear fuel (SNF) and environmental
restoration and waste management at INEL, DOE was sensitive to the impacts that could be caused by
disturbance of the natural landscape. Thus, for new facilities, DOE would use land that has already been
disturbed or land that is adjacent to developed land. The amount of land required for new facilities would
also be minimized. Even for the case in which all SNF would be shipped to INEL, only 31 acres (0.01
percent of the site land area) would be devoted to new facilities. In developing this land, there would be
efforts to prevent degradation of views and prevent environmental damage that might cause the loss of
natural flora and fauna.

5.2 Air Quality

05.02 (001) Air Quality

COMMENT
The commentor wonders about the effects on air quality of releases of polluting chemicals and radioactive
materials to the air.
RESPONSE
DOE's policy is to comply with all applicable Federal, state, and local regulations and DOE Orders, and to
protect human health and the environment. Where possible, potential concentrations of air pollutants from
the various alternatives have been estimated, considering appropriate local meteorology and other data for
each site. DOE employs pollution reduction techniques to minimize air releases when designing,
constructing, and operating facilities.
Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts,
including impacts to air quality, for all the alternatives considered in this EIS. The analyses show that the
impacts for all alternatives would be small.

05.02 (003) Air Quality

COMMENT
The commentor states that the radiological risks of the various alternatives in the EIS are impressively low
and are consistent with other studies that have concluded that the risks of handling the larger problems of
defense high-level waste or commercial fuel are not large.
RESPONSE
The comment is consistent with the EIS, which shows that the radiological risks associated with the various
alternatives would be low, including the risks of interim storage of high-level waste.
The risks of handling commercial SNF, with the exception of certain special-case fuels managed by

DOE,
are beyond the scope of this EIS.

05.02 (004) Air Quality

COMMENT
The commentor questions the appropriateness of the units of measure (picocuries per milliliter) used in
Volume 1, Appendix C, Table 4-18 to describe tritium activity in air moisture.
RESPONSE
The title of Table 4-18 has been revised to "Tritium measured in air at the Savannah River Site (pCi/cc)" to
more clearly reflect that a volume of air rather than water (or precipitation) was measured.

05.02 (005) Air Quality

COMMENT
The commentor indicates that the Hanford Site is in a noncompliant area for particulates.
RESPONSE
The commentor is correct. According to Volume 1, Appendix A, Table 4.7-2, the maximum 24-hour average particulate concentration exceeds State of Washington standards. The EIS has been changed to
reflect this fact.

II 05.02 (006) Air Quality

COMMENT
The commentor states that a definition of 95 percent meteorology should be provided in Volume 2, section
5.14 or Appendix F-5. The commentor also notes that the definition given in Volume 2, Appendix F,
section 5.3 is incorrect and should be replaced.
RESPONSE
The commentor is correct. The following definition of 95 percent meteorology has been added to Volume
2, section 5.14 and has replaced the incorrect definition in Volume 2, Appendix F: "95 percent meteorology is defined as stable weather conditions, unfavorable to atmospheric dispersion of contaminants, which are not exceeded more than 5 percent of the time."

II 05.02 (007) Air Quality

COMMENT
The commentor cannot tell from the EIS analysis if susceptible populations, such as those in nursing
homes, have been considered, or whether pollutant deposition on local food crops has been considered.
RESPONSE
DOE can determine no cases where susceptible subgroups, such as nursing home occupants, require specific evaluation. The basis for this statement is (1) air quality impacts at all populated (off-site) areas
are well below health-based standards for all pollutants considered, and (2) the applicable standards are
based on dose-response data, which have already accounted for susceptible subgroups.
Pollutant deposition on local food crops has been directly assessed in the case of radionuclides, and
indirectly assessed in the case of criteria pollutants. In the latter case, all off-site concentrations of criteria
pollutants are below the secondary air quality standards, which have been established to prevent adverse
effects to vegetation, property, or other elements of the environment.
DOE has added a better explanation of source terms and a description of the indirect exposure assessment
and secondary pathways that were evaluated and included in the EIS. (See Volumes 1 and 2, Chapter 5.)

II 05.02 (008) Air Quality

COMMENT
The commentor considers the EIS presumptuous to claim that levels of all nonradiological pollutants, with the possible exception of hydrochloric acid, which results from the incineration at INEL of low-level and mixed low-level waste, are below applicable standards. The commentor states that only trial burns can confirm this, and it is impossible to be so positive about any proposed incinerator. The commentor also asks if this incinerator is being evaluated under the Environmental Protection Agency's new "Combustion Strategy."
RESPONSE
With respect to hydrochloric acid, the incinerator in question is the Waste Experimental Reduction Facility. This facility is included in Volume 2 for the Ten-Year Plan and Maximum Treatment, Storage, and Disposal alternatives for processing low-level and mixed low-level waste. However, it is not a "proposed incinerator," but rather an existing facility that has had several trial burns and has processed low-level waste and limited amounts of mixed wastes. Thus, a considerable amount of test data and operating experience exists. The Waste Experimental Reduction Facility has an air quality permit that has specific limitations for various pollutants. The facility can continue to operate with existing permits. The reviewing agency will evaluate all data under applicable standards and guidelines, which may include the Environmental Protection Agency's (EPA's) new "Combustion Strategy," and will apply all required restrictions and emissions standards designed to ensure compliance.
Other incinerators proposed under these alternatives (e.g., the Idaho Waste Processing Facility, the Mixed Low-Level Waste Treatment Facility, and the private-sector Alpha-Mixed Low-level Waste Treatment Facility) are early in the conceptual design stage of development, and the projects' emissions are less certain. Annual average increment levels, exclusive of baseline levels, should be used to compare recently promulgated State of Idaho standards for noncarcinogenic toxics, including hydrochloric acid. The analyses presented in the EIS used maximum 8-hour concentrations in accordance with previous State of Idaho guidelines. Due to the conservative approach used in these analyses, and the additional analyses and conditions that will be applied by the State of Idaho Division of Environmental Quality as part of its permit review function, DOE can state with confidence that all pollutant levels would be well below applicable standards.

II 05.02 (009) Air Quality

COMMENT
The commentor objects to any promise of adding combustion controls to mitigate impacts. The commentor cites the case in which DOE received a permit for nitrogen oxide emissions from the Idaho Chemical Processing Plant in 1989, and although the permit contained a requirement to install abatement equipment for those emissions, the equipment has yet to be installed.
RESPONSE
The activity in question was the Fuel Processing Restoration (FPR) Project. The permit was contingent on operation of the FPR project and was not independently applicable. The FPR project did not proceed and the increases in nitrogen oxide emissions did not materialize. With regard to this EIS, DOE does not promise to add combustion controls to mitigate impacts. Rather, each new project would be evaluated to determine whether controls are required or warranted. In some cases, combustion controls may be required by the State of Idaho Division of Environmental Quality before a facility will be granted a construction permit.

II 05.02 (010) Air Quality

COMMENT
The commentor states that Idaho air quality rules should be specified as "Rules for the Control of Air
Pollution in Idaho," and references to the Air Quality Bureau should be updated.
RESPONSE
The commentor is correct. References to Idaho air quality rules and the Air Quality Bureau have been
updated in Volume 2.

II 05.02 (011) Air Quality

COMMENT
The commentor states that ambient air concentrations at the Idaho National Engineering Laboratory should
be modeled at the inner boundary of the grazing area on the site, because the public is allowed access to
that area.
RESPONSE
As defined in Rules for the Control of Air Pollution in Idaho, "ambient air" refers to that portion of the
atmosphere to which the general public has access. This is not the case with grazing areas on the INEL
site. Access to these areas is controlled and is restricted to certain individuals or groups; the general public
does not have access. DOE's position is that these grazing areas do not meet the definition of areas that
contain "ambient air." Therefore, ambient air quality standards do not apply, and impact modeling is not
required for these areas.

II 05.02 (012) Air Quality

COMMENT
The commentor asked DOE to explain why the latest version of the SCREEN air quality model (called
SCREEN2) was not used.
RESPONSE
The EIS used air quality baseline data for some toxic air pollutants that had been generated by previous
modeling efforts, which used the SCREEN model. Rather than repeat these analyses using SCREEN2, an
approach was taken whereby: (a) for any screening level, baseline toxic results that approached
about one-half an applicable standard were reassessed using the more refined Industrial Source
Complex Short Term-2 (ISCST-2) model; and (b) comparison tests
were run to
determine if there were significant differences in
the results obtained using SCREEN versus SCREEN2. For the manner in which the SCREEN model was
applied, test runs indicated that no difference would be obtained by reassessing the baseline cases that had
previously been performed. There is no requirement in Rules for the Control of Air Pollution in Idaho to
perform the analyses that were done using SCREEN. The analyses to determine compliance with toxic
increment standards were performed using ISCST-2.

II 05.02 (013) Air Quality

COMMENT
The commentor disagrees with the statement about krypton-85 being "by far, the radionuclide with the
highest emission rate." The commentor also states that since reprocessing has been suspended, argon-41 is
the radionuclide with the highest emission rate.
RESPONSE
The statement cited by the commentor is from Volume 1, Appendix B. Volume 2 makes it clear that
krypton-85 has historically been the radionuclide with the highest emission rate, but that fuel reprocessing,
the activity primarily responsible for krypton-85 emissions, ceased in 1992. The wording in Volume 1,
Appendix B, section 4.7 has been changed to correspond to that in Volume 2, section 4.7.

II 05.02 (014) Air Quality

COMMENT
The commentor questions why Volume 1, Table 4.7-3 and Volume 2, Table 4.7-1 list noble gas emissions from Argonne National Laboratory-West that are higher than those listed in the 1991 Radioactive Waste Management Information System and the 1991 Idaho National Engineering Laboratory National Emission Standard for Hazardous Air Pollutants, Annual Report.
RESPONSE
As indicated in footnotes on the tables cited by the commentor, the emissions estimates include those from existing facilities and reasonably foreseeable increases to the baseline. Included in the latter category is the Fuel Cycle Facility at Argonne National Laboratory-West. This facility has significant emissions of krypton-85 (11,500 curies) and xenon-131m (127 curies), which account for the difference between the values listed in the tables and the values reported in the Radioactive Waste Management Information System and 1991 Idaho National Engineering Laboratory National Emission Standard for Hazardous Air Pollutants, Annual Report.

II 05.02 (015) Air Quality

COMMENT
The commentor states that emissions and visibility impacts should be evaluated for fossil-fuel-burning equipment associated with plant services that would be needed to support the Regionalization or Centralization alternatives at Idaho National Engineering Laboratory.
RESPONSE
The specific projects associated with the alternatives for Regionalization or Centralization of SNF at INEL would not require additional fossil-fuel-burning equipment beyond that which is already installed, with the exception of one minor source, a diesel generator associated with the Fort St. Vrain Spent Fuel Storage Project. The emissions from this source would be very low, and the statement that these emissions would not add a measurable increment to emissions at INEL is accurate. Visibility impacts from this minor source would be small. A visibility impact analysis was also performed for the closest Class I area (Craters of the Moon National Monument) for the cumulative emissions of all applicable sources comprising each Volume 2 alternative.

II 05.02 (016) Air Quality

COMMENT
The commentor states that mercury is shown to slightly exceed the State of Idaho criteria for two of the alternatives. The commentor states that given the uncertainty known to exist in the Industrial Source Complex model, it is not possible to judge the health implications of this information.
RESPONSE
The mercury levels reported in the Draft EIS are the maximum 8-hour levels that would be expected. The EIS reflects State of Idaho standards effective May 1, 1994, for calculating the effect of mercury emissions on air quality. The State of Idaho now requires that state annual average levels should be used. As discussed in Volume 2, section 5.7, revised calculations show that mercury levels are now well below the Idaho standard. The revised mercury level is less than 3 percent of the state standard. These levels are predicted if mercury-bearing waste were processed at a very high rate. Feed rate limits or engineering controls could be employed to minimize and ensure that levels approaching the standard would not result.
The EIS has been changed from an 8-hour reporting level to a 24-hour reporting level.

II 05.02 (018) Air Quality

COMMENT
The commentor makes the following recommendations: (a) use the same baseline year for radionuclides, criteria pollutants, and toxic air pollutants, (b) clarify the distinction between existing emissions and projected emissions for some cases, and (c) present air emissions for 1990, 1991, and 1992, and an analysis for each of these years.
RESPONSE
The rationale for using different baseline years for radionuclides, criteria pollutants, and toxic air pollutants follows: Generally, the most representative baseline year is the most recent year. However, at the time the analyses were performed, the availability of data varied for the three classes of airborne emissions. For radionuclides and criteria pollutants, 1991 was the most recent year for which data were available when the baseline studies were conducted, and these were the data that were used. However, some SNF processing took place that year at the Idaho Chemical Processing Facility. SNF processing is no longer performed at this facility and radionuclide emissions for this activity are therefore not representative of baseline conditions. Moreover, processing is an activity assessed in association with some of the alternatives, and inclusion of these emissions in both the baseline and alternative impact scenarios would cause double counting. That is why the 1993 radionuclide emissions were used for this facility. With respect to toxic air pollutant emissions, only 1989 data were and currently are available for analysis.
The only distinction made between existing emissions and a future baseline involves increases due to specific projects that are expected to become operational before June 1, 1995 (that is, before the time period covered by the EIS alternatives). These projects are identified in Volume 2, sections 4.7 and Appendix F-3. The analysis is conservative in that no credit is taken for future reductions in emissions.
DOE does not agree that 3 years of emissions should be analyzed. Conservative emissions estimates were used for the baseline year, and all impacts based on these estimates represent an upper bound to the impacts that would actually occur. For example, the maximum emissions scenario used for criteria and toxic air pollutants exceeds actual emissions by a substantial margin (as illustrated in Volume 2, Figure 4.7-4) and bounds the baseline conditions.

II 05.02 (019) Air Quality

COMMENT
The commentor states that the only Air Quality Related Value considered was visibility, and no justification was given for not including other Air Quality Related Values, such as impacts to soils and plants.
RESPONSE
Air Quality Related Values other than visibility were assessed. Volume 2, section 5.7.4 discusses impacts to soils and vegetation and impacts due to secondary growth. All off-site concentrations of criteria pollutants are below the secondary air quality standards, which have been established to prevent adverse effects on vegetation, property, or other elements of the environment. Standards for protection of vegetation have also been established for fluorides, although impacts of fluoride emissions were modeled only for comparison to the Toxic Air Pollutant Increments. Fluoride emissions associated with the alternatives would be very low and would not be expected to result in any impact. Also, pollutant deposition on local food crops has been directly assessed for radionuclides; the results include the dose from ingestion of contaminated food products. With respect to other Air Quality Related Values,

evaluations were performed and described for ozone formation, stratospheric ozone depletion, acidic deposition, and global warming.

II 05.02 (020) Air Quality

COMMENT
The commentor points out that the statement "emissions of volatile organic compounds would be expected to have a negligible effect on ozone formation" is incorrect. The commentor states that the 1990 emission inventory indicates emissions of more than 600 tons per year of volatile organic compounds. The commentor recommends that the amount of ozone formation be estimated.
RESPONSE
The 1990 emissions inventory for INEL quantifies the maximum potential emissions of volatile organic compounds (VOCs) as more than 600 tons per year. VOC emissions from actual operations are less than 100 tons per year. VOC emissions from the proposed projects would be less than 10 tons per year of the applicable State of Idaho standards' significant level of 40 tons per year that would necessitate an ozone formation analysis. From Volume 2, Table 5.7-2 it can be seen that volatile organic compound emissions range from 5,583 kilograms (6.1 tons) per year for the No Action alternative to 8,882 kilograms (9.8 tons) per year for the Maximum Treatment, Storage, and Disposal alternative. The low potential for ozone formation from the proposed projects precludes the need for a detailed assessment. For those projects requiring air quality permits, analyses for impacts resulting from specific pollutants, in this case VOCs, would be performed, contingent on regulatory requirements.

II 05.02 (021) Air Quality

COMMENT
The commentor states that releases of carbon tetrachloride, freon, and greenhouse gases are described as extremely small compared with global loading, and considers this an unreasonable comparison.
RESPONSE
The statement in question attempts to characterize emissions associated with the alternatives in terms of potential for stratospheric ozone depletion (carbon tetrachloride and freon) and global warming (greenhouse gases, including carbon dioxide, methane, nitrous oxides, and chlorofluorocarbons). These are global (not regional) effects, which are associated with global emissions. The emissions from alternatives represent an extremely small fraction of global levels, and it is reasonable to conclude that these emissions would have small impacts with respect to global effects. INEL has an ongoing program to reduce or eliminate the use of chlorofluorocarbon compounds

II 05.02 (022) Air Quality

COMMENT
The commentor requests that DOE demonstrate how the emission rates and concentrations for air pollutants summarized in Volume 2, section 4.7 were calculated.
RESPONSE
The methods used to calculate emission rates and concentrations are described in Volume 2, Appendix F-3. Additional details on these methods are provided in the Technical Support Document for Air Resources, which is referenced in Appendix F-3. For radiological releases and assessments, additional details are provided in Estimated Radiological Doses Resulting from Airborne Radionuclide Released by Facilities at the Idaho National Engineering Laboratory, and Maximum Individual, Collocated Worker, and Population Doses from INEL Proposed Action and No Action Sources, which are also cited in Appendix F-3. The referenced reports are available for review in the reading rooms and information

locations listed in the EIS.

II 05.02 (023) Air Quality

COMMENT
The commentor points out that previous documents have established that adequate upper air (mixing height) data are not available for the Idaho National Engineering Laboratory vicinity and asked DOE to
describe the upper air meteorological data used for modeling.
RESPONSE
Verified measurements of on-site mixing height for the INEL vicinity are not available at this time. The
original nonradiological analyses (modeling of the baseline concentrations and impacts of alternatives)
conservatively assumed a mixing height of 100 meters for modeling of both short- and long-term (annual
average) concentrations. The radiological modeling (which only involves annual averages) used a mixing
height of 800 meters. Additional nonradiological modeling, which has since been performed to assess
compliance with Prevention of Significant Deterioration (PSD) increment limits, used values of 150 meters
for 3-hour and 24-hour averaging periods, and 800 meters for annual average assessments. These are
considered more reasonable estimates for short- and long-term mixing heights. The basis for the short-term
value is that 150 meters is reportedly the lowest mixing height ever observed at INEL (Air Permitting
Handbook, Page 4-48). The 800-meter value is recommended by the National Oceanic and Atmospheric
Administration as appropriate for long-term modeling (Sangendorf, J., U.S. Department of Commerce,
National Oceanic and Atmospheric Administration, Averaging INEL Mixing Depths, Memo to M. Abbott,
EG&G-Idaho, Inc., February 11, 1991). For short-term calculations, the same results are obtained whether
100 or 150 meters is used; this is because the highest short-term concentrations are predicted to occur
during conditions of slight-to-moderate atmospheric stability (that is, stability classes E and F), in which
cases mixing height data are not used by the Industrial Source Complex Short Term-2 model.

II 05.02 (024) Air Quality

COMMENT
The commentor points out that the toxic standards are now listed as increments and the New Source
Review Toxic Policy was eliminated.
RESPONSE
Volume 2, Figure 4.7-2 has been revised to reflect recent updates to the Idaho Toxic Air Pollutant
Standards. The New Source Review Toxic Policy was incorporated into the Rules for Control of Air
Pollution in Idaho.

II 05.02 (025) Air Quality

COMMENT
The commentor points out that the power of 10 is missing in the value of foreseeable increases in carbon
tetrachloride emissions in Volume 2, Table 4.7-2.
RESPONSE
Volume 2, Table 4.7-2 has been corrected to show the value for foreseeable increases in carbon
tetrachloride emissions as 4.5 x 10-5 kilograms per year.

II 05.02 (026) Air Quality

COMMENT
The commentor notes that the correct characterization for the area around the Idaho National Engineering
Laboratory site is "in attainment or unclassified" for all National Ambient Air Quality standards.
RESPONSE

The commentor is correct. Volume 2, section 4.7.4 has been revised to read: "The area around the Idaho
National Engineering Laboratory site is in attainment or unclassified for all National Ambient Air Quality
Standards."

II 05.02 (027) Air Quality

COMMENT
The commentor states that the estimated impacts on air quality, especially on visual air quality, were not
presented for operation of the New Waste Calcining Facility and questions whether this facility's impacts
are included in Volume 2, Figure 5.7-4. The commentor states that NOx reduction in the New Waste
Calcining Facility plume should be evaluated.
RESPONSE
The impacts on air quality have been assessed for emissions associated with the New Waste Calcining
Facility. These impact assessments included comparison with ambient air quality standards, but did not
include potential impacts on visibility. Visibility impacts were indirectly assessed in that the background
visual range used for the visibility analysis of alternative projects reflects conditions during which the New
Waste Calcining Facility was operating. Volume 2, section 5.7 discusses impacts to visibility. The Waste
Immobilization Facility, which would eventually replace the New Waste Calcining Facility (and which also
has similar projected NOx emissions), has been evaluated for visibility impacts. There is currently no
requirement to evaluate the New Waste Calcining Facility for NOx reduction. Visibility impacts will be
evaluated in conjunction with obtaining necessary permits.

II 05.02 (028) Air Quality

COMMENT
The commentor notes that: (a) the discussion of cumulative effects of airborne emissions at the Idaho
National Engineering Laboratory omits discussion of visibility impacts and does not discuss the synergistic
effects of exposure to multiple pollutants or long-term dose or risk from historic operations; and (b)
operational accident scenarios do not seem reasonable.
RESPONSE
Visibility impacts from airborne emissions are discussed in the Volume 2, section 5.15. The impacts
assessed for the alternatives are cumulative because the analysis determines the potential impairment of the
visual resource over the existing background, which is representative of conditions resulting from existing
emissions.
Potential synergistic effects from multiple chemical exposures are extremely difficult to assess
quantitatively because there is insufficient data to indicate synergistic effects. However, the potential for
synergistic effects is small where the concentrations for each individual compound are low, as is the case
for the alternatives evaluated in this EIS. To ensure that potential impacts are bounded, conservatively
high releases and exposure conditions were assumed. Further, the point of highest concentration for each
chemical occurs at different times and places. It is unlikely that any one individual could be exposed to
more than one chemical species at the concentrations reported in this EIS.
Radiation doses from historic operations are discussed in Volume 2, section 5.15.8. More information is
available in referenced technical support documents, which are available for review in public reading
rooms that received copies of this EIS. DOE is not aware of any generally accepted analysis methodology
that has been developed to evaluate synergistic effects due to several airborne chemical constituents. DOE
is aware that research into this area is continuing.
The evaluation of cumulative effects considers historic accidents only. The implementing regulations for

the National Environmental Policy Act (NEPA) at 40 CFR Paragraph 1508.7 specifies "that cumulative impacts result from past, present, and reasonably foreseeable future actions..." For cumulative impacts, DOE has consistently interpreted "reasonably foreseeable" to include construction, operation, maintenance, and other planned activities, but not to include future hypothetical accidents, inadvertent spills, and other unplanned activities. Potential chemical exposure resulting from an accident is evaluated in Volume 2, Appendix F-5.

II 05.02 (029) Air Quality

COMMENT
Referring to Volume 2, section 5.18.2, the commentor points out that application of refined modeling methods is not a mitigation measure.
RESPONSE
The commentor is correct. While the information derived from the application of refined modeling methods may eliminate the need for mitigation measures, the process is technically not a mitigation measure. The sentence in question has been revised. It clarifies what measures would be required if the results of refined modeling confirm the findings of the screening-level analysis; that is, visibility at the Class I area of Craters of the Moon would be perceptibly impaired as a result of projected emissions.

II 05.02 (030) Air Quality

COMMENT
The commentor points out that the key word "net" is missing from the description of when a Prevention of Significant Deterioration analysis must be performed.
RESPONSE
Volume 2, Appendix F, section F-3.3.1 has been revised to clarify that a Prevention of Significant Deterioration (PSD) review is required whenever any modification would result in a significant net increase of any air pollutant.

II 05.02 (031) Air Quality

COMMENT
The commentor states that trace elements such as nickel may also be emitted by combustion sources (e.g., generators and boilers) associated with the Pit 9 waste retrieval project.
RESPONSE
At the time the Draft EIS was prepared, no generators or boilers were proposed for the Pit 9 Retrieval Project. Since that time, however, the project has been expanded to include two boilers. The dispersion modeling now includes the projected emissions from these boilers, which include the trace elements of nickel, lead, and chromium. Emissions tables and dispersion modeling results in the EIS have been updated.

II 05.02 (032) Air Quality

COMMENT
The commentor notes that radiological assessment methodology for air impacts treats input data and output results as constants with no uncertainty or variability, which is not consistent with the state-of-the-art of environmental risk assessment. The commentor recommends that confidence statements be provided for estimates of the true, but unknown, value being calculated or the true, but unknown, distribution of values.
RESPONSE

The radiological assessment of air impacts used the GENII code to perform calculations of dose. The results represent best estimates for dose to an off-site individual, on-site individual, and the surrounding population. They are based on conservative release estimates, representative meteorology, and conservative assumptions regarding the location and habits of the receptors (especially for the maximally exposed off-site individual). The dispersion model algorithms are generally accepted as appropriate for this type of assessment (as opposed to research applications, in which a quantitative uncertainty analysis would be appropriate), and the computer code has been benchmarked as defined by the International Atomic Energy Agency. It can be said with confidence that the dose results, especially those for the maximally exposed off-site individual, overstate the doses that would actually occur, yet these results are still well below the most restrictive limit. Using a computer code that has been extensively tested and meets rigorous quality assurance requirements is considered sufficient for an assessment of this type under NEPA.

II 05.02 (033) Air Quality

COMMENT
The commentor recommends that the EIS clarify that a segment of past meteorological measurements has been chosen for the radiological assessments to be representative of average conditions to be expected for the 10-year period covered by the EIS.
RESPONSE
Volume 2, Appendix F-3.4.2 states that the meteorological data used for the radiological assessments were obtained at the various facility monitoring stations over the 5-year period 1987 through 1991. However, it was not explicitly stated that these conditions are assumed to be representative of the years covered by the EIS. Volume 2, Appendix F-3.4.2 has been revised to clarify this assumption.

II 05.02 (034) Air Quality

COMMENT
The commentor states that when comparing predicted concentrations of toxic air pollutants with the increment standards contained in the May 1, 1994, Idaho rules, the concentrations should be based on annual averages.
RESPONSE
The analyses in Volume 2, sections 4.7 and 5.7 compare predicted 8-hour concentrations with noncarcinogenic increments. The analyses for noncarcinogenic emissions have been revised to reflect annual average concentrations.

II 05.02 (035) Air Quality

COMMENT
The commentor questions the basis for 1.0 x 10+04 curies of noble gases from the Idaho Chemical Processing Plant listed in Volume 1, Appendix B, Table 4.7-3 ,and Volume 2, Table 4.7-1.
RESPONSE
The value of 1.0 x 10+4 curies represents an upper bound to the annual emissions of krypton-85 from the Idaho Chemical Processing Plant for a recent 1-year period. The actual releases for recent years have been classified. Actual baseline krypton-85 emissions from this facility are very much lower than this value.
The value of 1.0 x 10+4 curies was used in the radiological dose assessment. Because the dose from krypton-85 at these levels is not a large fraction of the overall dose, this release estimate is adequate for evaluation and comparison of alternatives required for a programmatic EIS.

II 05.02 (036) Air Quality

COMMENT
The commentor points out that Volume 1, Appendix B, Table 5.7-1 lists ammonium hydroxide and hydrofluoric acid as toxic air pollutants (carcinogens), yet these substances are not listed in Idaho's Toxic Air Pollutants Increments.
RESPONSE
The commentor is correct. Ammonium hydroxide and hydrofluoric acid are not carcinogens and are not listed in Idaho's Toxic Air Pollutants Increments. Hydrofluoric acid emissions were listed in the table because total fluoride emissions are listed in Idaho's Toxic Air Pollutants Increments. Ammonium hydroxide emissions were assessed conservatively as ammonia, a substance that is listed in the Toxic Air Pollutants Increments. DOE has clarified that these pollutants are not carcinogens and the basis for their inclusion (as stated above) in the EIS.

II 05.02 (037) Air Quality

COMMENT
The commentor states that current emissions and projected increases should be listed separately in Volume 2, and the basis for projected increases in baseline emissions should be explained.
RESPONSE
The comment concerns the listing of radionuclide emissions for potential projects. These emissions are considered reasonably foreseeable increases to the baseline. These increases currently are reflected in the data in Volume 2, Table 4.7-1, but are not listed separately. They are listed separately in the Technical Support Document for Air Resources, which is included as a reference for Volume 2. Emission rates for these projects were estimated in the same manner as described for alternative projects in Volume 2, Appendix F-3.4.1.

II 05.02 (038) Air Quality

COMMENT
The commentor states that analyses of air impacts should be compared with Prevention of Significant Deterioration limits, which are typically two to four times more stringent than National Ambient Air Quality Standards. The commentor points out that the Idaho National Engineering Laboratory has triggered the Prevention of Significant Deterioration baseline dates for nitrogen oxides, sulfur dioxide, and particulates and that the baseline conditions in Volume 2, section 4.7 are not Prevention of Significant Deterioration baseline conditions.
RESPONSE
The baseline date for a criteria pollutant establishes the date to start tracking consumed increments.
Additional analyses have been performed to characterize the existing baseline conditions and impacts of alternatives in terms of the amount of PSD increment consumed. The methodology used was discussed with the Idaho Division of Environmental Quality, and a report documenting the methods and results has been completed and included as a reference in Volume 2. The results indicate that existing baseline conditions are within allowable increment consumption limits. When the contributions of emissions from the alternatives are added, the amount of increment consumption remains below the allowable limits for each of the alternatives. The PSD baseline analysis have been incorporated into Volume 2, section 5.7.
Volume 2, Appendix F-3 has been revised to reflect the methods used to calculate PSD increment consumption.

II 05.02 (039) Air Quality

COMMENT
Commentors state that DOE should analyze the existing and potential air quality impacts to the Fort Hall Reservation using all wind roses that indicate possible contributions from the Idaho National Engineering Laboratory site.
RESPONSE
The air quality analyses in the EIS were based on meteorological data appropriate to the various facilities at INEL. The analyses used the hourly meteorological data obtained from three on-site monitoring stations for 1991 and 1992 and are graphically presented as wind roses in Volume 2, Figure 4.7-1. These stations are in the southeast, central, and northern sections of INEL. Similar analyses were performed for each facility. Maximum emissions concentrations from each facility were summed at specific receptor locations to determine the maximum baseline air quality impacts from present operations and the cumulative impacts from proposed actions. Additional analyses were performed to ensure that the impacts at points beyond the site boundary were less than those at the boundary (such as might occur if a facility with a tall stack were located in close proximity to the boundary). Similar analyses have been conducted to determine the air quality impacts to various locations on the Fort Hall Reservation. The air quality impacts to the Fort Hall Reservation can be found in Volume 2, sections 4.7 and 5.7, and all of these impacts would be small for the alternatives considered in this EIS.

II 05.02 (040) Air Quality

COMMENT
The commentor states that the Tribes object to any attempt to locate projects to avoid impacts at Craters of the Moon Class I area if such relocation results in impacts to the Tribes, especially where those impacts have not been evaluated.
RESPONSE
There are no specific proposals to relocate projects to avoid impacts at the Class I area of Craters of the Moon National Monument. However, in cases where visibility impacts to the pristine conditions at Craters of the Moon are shown to be a potential problem, all options, including changing or relocating the project in question, would be evaluated. Potential visual impacts must be further defined and resolved before projects can proceed. Additional emissions controls and relocation of projects may be required to reduce potential impacts below acceptable criteria. As changes in visual setting, particularly in the Middle Butte area located in the southern portion of the INEL site, are seen by the Shoshone-Bannock Tribes to be an adverse effect on an important Native American resource, the Shoshone-Bannock Tribes would be consulted before any project is developed that could have impacts to resources of importance to the Tribes.

II 05.02 (041) Air Quality

COMMENT
The commentor suggests that the impacts from fugitive dust emission modeling should differentiate between fugitive emissions from temporary and permanent sources.
RESPONSE
The text in Volume 2, Appendix F-3.4.3 has been revised to more clearly distinguish between fugitive sources that are temporary (such as construction and demolition projects) and those that are more permanent (such as unpaved roads and landfill operations). The specific fugitive sources analyzed have been identified.

II 05.02 (043) Air Quality

COMMENT
The commentor notes there seem to be variations in the application of models from one location to another, virtually no information regarding source terms is given, and it is difficult to know if fugitive
emissions have been considered and what emissions data were used.
RESPONSE
In general, models were applied consistently between sites. However, site-specific conditions may have
required a unique application. For example, the commentor mentions that site boundary impacts are
assessed at some sites, but in other cases, off-site locations are considered. The EIS evaluation first
identified the ambient air location of highest predicted impact to the public and then estimated the
maximum pollutant concentrations at that location for comparison with applicable standards. In the case
of INEL, the maximum impacted ambient air locations tend to be along public roads that traverse the site.
At other sites, the nearest ambient air location may be the site boundary, because public roads do not
traverse the site.
Temporary fugitive dust activities such as construction and demolition are exempt from compliance with air
quality standards; nevertheless, fugitive dust impacts from construction activities were assessed and are
reported in Volume 1, and Appendices A through F.
For the other DOE sites evaluated in Volume 1, source emission rates are provided, but source
characteristics (e.g., elevations, velocity, temperatures) are not provided in all cases. This level of detail is
more appropriate for a site-specific EIS. A discussion of the modeling and emissions is in Volume 1,
Appendices A through F.

II 05.02 (044) Air Quality

COMMENT
Commentors assert that DOE cannot avoid responsibility for its past practices of contaminating the air by
categorizing its past activities as irreversible commitments of resources. Commentors state that DOE has
put forward no compelling argument for further degrading the air of both the occupied and unoccupied
land surrounding the Idaho National Engineering Laboratory and object to any irreversible commitment of
air quality resources that could affect the Tribes' air quality, and also tourism. Commentors further note
that DOE provides no assurances that controls would be installed to avoid adverse impacts on the air
quality and visibility.
RESPONSE
The air quality impact analyses have detailed the potential for air quality impacts at ambient air locations.
The analyses, for the most part, have been conducted for the site boundary and roads that traverse the site.
Additional analyses have been conducted for the Craters of the Moon National Monument and the Fort
Hall Reservation. The analyses for criteria pollutant impacts have shown that impacts will be below all
applicable ambient air quality standards. PSD standards, which have been established specifically to
prevent the degradation of air quality, would be met. Toxic pollutant impacts would also be below all
applicable criteria. Impacts to air quality and visual resources at the Fort Hall Reservation from INEL
operations will be even less, and this should not impact tourism.
Visual resource screening analyses were conducted at Craters of the Moon National Monument. The
analyses used a screening methodology to determine the potential for worst-case impacts (i.e., during
maximum operating scenarios and adverse meteorological conditions). These analyses used very
conservative assumptions, including that many of the important proposed sources of emissions would
incorporate no or minimal emission controls. In many cases, projects are in conceptual design stages, and
adequate design of emission controls is not yet available. However, impacts are not likely to be

underestimated when conservative assumptions are used. A key aspect of the screening analysis is distance from the source to the potential impact area. The analysis showed some potential for adverse impacts during the worst-case conditions. Methods to decrease the impact have not been determined, but as discussed in the EIS, they will likely include controls to further reduce emissions of pollutants impacting visibility. Siting factors will also be considered, as will refined modeling analyses (in lieu of conservative screening analyses). Through the Idaho Division of Environmental Quality's Permit to Construct process, proposed projects are required to demonstrate that there will be no adverse impacts on the ambient air quality and on visibility at Craters of the Moon. Any controls needed to avoid adverse impacts to air quality and visibility would be specified in permits.

Impacts to visibility, as well as criteria and toxic pollutant loading, should not be considered irreversible and irretrievable commitments of resources, but rather short-term impacts over the life of each project.

Volume 2, section 5.18 has been revised to state that impacts to air quality and visibility are not irreversible and irretrievable commitments of resources.

II 05.02 (047) Air Quality

COMMENT

The commentor points out that the model receptor grid spacing is very large, and that a more dense grid spacing is necessary in areas of maximum predicted impact.

RESPONSE

After the Draft EIS was completed, DOE performed additional analyses, primarily for PSD increment consumption. As part of this analysis, a finely spaced receptor array was developed. This array includes receptor points spaced at approximately 100-meter intervals in those areas where the maximum impact is predicted to occur. This dense array has since been used in the PSD analyses for existing increment-consuming sources, and for sources associated with the EIS alternatives. The additional analyses have been incorporated into the appropriate sections of the EIS.

II 05.02 (048) Air Quality

COMMENT

The commentor notes that statements in Volume 2 that ozone levels are "not recognized as a problem in the region" and that the Idaho Division of Environmental Quality has determined that "ozone levels within the state are well below the standard" inaccurately describe ozone levels. The commentor states the more correct situation is that the Idaho Division of Environmental Quality has no ozone monitoring data from the vicinity and is not aware of problematic ozone levels in the area.

RESPONSE

The statements cited by the commentor reflect verbal comments that were obtained by the authors from the Idaho Division of Environmental Quality. The authors acknowledge, however, that the current wording of the statements could be misinterpreted to mean that ozone levels are not a problem in the area; in fact, data to substantiate this claim may not be available. The statements in Volume 2 have been replaced with the following: "The Division of Environmental Quality has no ozone monitoring data from the vicinity and is not aware of problem ozone levels in the area."

II 05.02 (049) Air Quality

COMMENT

The commentor considers the statement that "no previous projects have consumed increments" (at Craters

of the Moon National Monument) to be unreasonable.
RESPONSE
The commentor raises a valid question. Increment consumption is established by assessments that are
submitted with PSD permit applications, and accepted by the Division of Environmental Quality.
Although two PSD permit applications have been previously submitted for the INEL projects, the amount
of increment consumption at Craters of the Moon National Monument, if any, had not been established.
One of the two (the Fuel Processing Restoration Project at Idaho Chemical Processing Plant) has since
been withdrawn and currently is being modified. The other application (for the Special Manufacturing
Capability at Test Area North) had not been formally "closed out" at the time the Draft EIS was prepared.
As a result of discussions with the Division of Environmental Quality, it was decided that analyses were
required to firmly establish the amount of increment consumption at the time that the Special
Manufacturing Capability permit application was submitted and accepted, as of May 1, 1994.
Additionally, it was decided that further analyses showing increment consumption by sources associated
with the EIS alternatives was also required. These analyses have been completed. The statement to which
the commentor refers has been revised to reflect the updated results.

II 05.02 (050) Air Quality

COMMENT
The commentor points out that the assumption of Gaussian dispersion tends to break down over long
distances, or where flow direction changes. The commentor further states that Gaussian models can
seriously underpredict impacts in these scenarios, and predictions for the Idaho National Engineering
Laboratory boundary locations may be low.
RESPONSE
While it is true that Gaussian models used to estimate upper bound levels of toxic and critical impacts may
be subject to the shortcomings noted by the commentor, the Industrial Source Complex Short Term-2
(ISCST-2) model is generally regarded as appropriate for the type of modeling performed for this EIS. In
virtually every nonradiological case modeled, the highest ambient air impact occurred at public road
locations. In these cases, the transport distances are not long and are well within the distances for which
the ISCST-2 model is considered appropriate. Results of calculations indicate 80 to 85 percent of a dose
occurs in the first 20 miles. Calculational assumptions selected by DOE were conservative to cover the
uncertainties in calculational models.

II 05.02 (051) Air Quality

COMMENT
The commentor notes that there is a lack of any recent or reliable data about the effectiveness of the
filtering and ventilation systems in the building where the Fort St. Vrain spent fuel would be stored at the
Idaho National Engineering Laboratory. The commentor further states that the lack of these data creates
uncertainty about the degree to which radionuclides emitted from the spent fuel might be vented to the
environment through the storage facility's stack.
RESPONSE
There is no lack of recent reliable data about the effectiveness of the filtering and ventilation systems for
the Irradiated Fuels Storage Facility where Fort St. Vrain spent nuclear fuel is stored at INEL. The facility
is equipped with high efficiency particulate air (HEPA) filters having a verified filtration efficiency of 99.97
percent. Filter efficiency has been verified annually using standard Dioctyl Phthalate testing methodology.
Records of these filter tests are available from 1979 to the present.
Regarding the commentor's statement about releases to the environment, stack releases are continuously
monitored and records show that nearly all radioactivity has been below detectable levels. To

more
accurately assess historical releases to the environment, samples were obtained from the HEPA filters that
have been in place since the facility was constructed. From the analysis of the filter samples, the average
annual radionuclide emission rate and annual dose to a maximally exposed individual was calculated to be
4.8 x 10-6 millirem, which is significantly less than 1 percent of the limit of 10 millirem per year required
for DOE facilities by the Federal National Emission Standards for Hazardous Air Pollutants.

II 05.02 (052) Air Quality

COMMENT
The commentor asserts that it is incorrect to state that the GENII code tends to overestimate actual doses.
The commentor further asserts that neither the GENII code nor CAP-88 (with which it is compared) has
undergone a comprehensive validation study in the Idaho National Engineering Laboratory environs.
RESPONSE
The commentor refers to a statement in Volume 2, Appendix F-3 to the effect that the dose results for the
baseline assessment are not likely to underestimate actual baseline or future doses. Part of the basis for this
statement is that baseline results in the EIS (which were modeled with GENII) were higher than results
contained in the 1991 and 1992 National Emission Standards for Hazardous Air Pollutants Reports (which
were modeled with CAP-88). A study benchmarking these models in INEL settings has been published
recently (Radioactive Waste Management Complex Low-Level Waste Radiological Performance
Assessment) and is discussed in Volume 2, Appendix F-3. The point of the study is that the application of
the model, including source-term and receptor-related assumptions, produces results that are likely to be
conservative. The EIS has been revised to clarify this.

II 05.02 (053) Air Quality

COMMENT
The commentor notes that Volume 1, Appendix A, Table 5.7-1 does not show tritium releases from the K-basins.
RESPONSE
Tritium emissions from the K-basins have not been monitored because the emissions have been estimated
to contribute a very small amount to the dose received by the maximally exposed individual from all
airborne releases at the Hanford Site. In 1993, the average measured tritium concentration at the Hanford
Site boundary was 0.90 picocurie per cubic meter and the maximum concentration was 9.9 picocurie per
cubic meter. In 1993, the dose to the hypothetical maximally exposed individual from all Hanford Site
emissions to the atmosphere was estimated to be 0.01 millirem. Volume 1, Appendix A, section 5.7 has
been revised to reflect these data.

II 05.02 (054) Air Quality

COMMENT
The commentor suggests that releases from four thermal treatment facilities at the Idaho National
Engineering Laboratory should be included in the EIS.
RESPONSE
The four facilities identified by the commentor are the Waste Experimental Reduction Facility, the Process
Experimental Pilot Plant, the Idaho Chemical Processing Plant Denitration Facility, and the New Waste
Calcining Facility. These facilities exist at INEL and are included in the baseline for emissions from the
site. The Idaho Chemical Processing Plant Denitration Facility uses the main stack at the Idaho Chemical
Processing Plant and is included in that source. Other thermal treatment facilities were analyzed in

Volume 2, Appendix C. The sources of emissions from site facilities appear in Volume 2, sections 4.8 and
5.8, and are discussed in Volume 2, section 7.3.

II 05.02 (055) Air Quality

COMMENT
The commentor suggests that there is a lack of information concerning model use and input data, which
hinders review and verification of the EIS.
RESPONSE
Volume 2, Appendix F-3 discusses air dispersion modeling data and assumptions and health effects for
each INEL facility. Actual and foreseeable doses are a very small fraction of established DOE dose limits,
and are well below the National Emission Standards for Hazardous Air Pollutants (40 CFR 61, Subpart H)
limit of 10 millirem per year.

II 05.02 (056) Air Quality

COMMENT
The commentor asks about the purpose of the comparison of hazard indices contained in Volume 1, Appendix B.
RESPONSE
Hazard indexes are compared to show that the data indicate no change from the baseline criteria pollutant
hazard indexes under any of the alternatives. Volume 2, section 4.7 discusses the effects of INEL air
emissions. DOE has expanded the language in Volume 1, Appendix B, section 5.12 to clarify the
relationship between hazard indexes and reference concentrations or doses.

II 5.3 Cultural Resources

II COMMENT

Commentors suggest that requirements under Section 106 of the National Historic Preservation Act be
implemented early in the project planning process at the Idaho National Engineering Laboratory.
RESPONSE
DOE agrees that this evaluation should be done early enough to allow historic properties to be considered
fully during site selection and facility design. Requirements of the National Historic Preservation Act are
implemented during conceptual design if DOE proceeds with a proposed project.

II COMMENT

Commentors assert that the EIS does not adequately address impacts on cultural resources from the various
alternatives affecting the Idaho National Engineering Laboratory.
RESPONSE
The EIS identifies the number of known sites (approximately 1,500) on and percentage (4) of INEL
surveyed only to indicate the magnitude of potential sites at INEL. Volume 2, section 4.4 discusses the use
of predictive models and discusses the National Historic Preservation Act inventories that must be
completed prior to any actions. Volume 2, section 5.19 further discusses the National Historic
Preservation Act Section 106 requirements concerning the evaluation of sites and mitigation of impacts.
A comprehensive inventory of prehistoric cultural resources within the boundaries of INEL is under way.
To date, surveys to identify these resources have been focused on areas where adverse impacts are most
likely to occur (i.e., facility perimeters, along major roadways and utility corridors, gravel pits, etc.). In

addition, a preliminary predictive model has been developed to identify zones of prehistoric cultural resource density across the entire 890-square-mile facility. This model can be used by INEL project managers during the initial stages of project planning to avoid areas where prehistoric resources appear to be particularly dense, thus reducing the impact of INEL activities on sensitive cultural materials. Refinement and testing of this model are also under way through the INEL Cultural Resource Management Office. This office also maintains a complete record of all cultural resource investigations completed at INEL, as well as a database of all known cultural resources. Prior to conducting any ground-disturbing activities, INEL project managers are directed to consult with the INEL Cultural Resource Management Office to avoid damage to any sensitive materials. Under the 1992 Working Agreement Between the Shoshone-Bannock Tribes of the Fort Hall Indian Reservation and the Idaho Field Office of the DOE Concerning Environment, Safety, Health, Cultural Resources and Economic Self-Sufficiency, the Tribes are consulted and are given the opportunity to comment on any INEL project that has the potential to impact any cultural resource.
Based on public comments, DOE has expanded the EIS definition of cultural resources. For example, Volume 2, section 4.9 now includes a list of plants and vegetation important to the Tribes.

II COMMENT

The commentor expresses the opinion that there are not adequate agreements in place to protect the Shoshone-Bannock Tribes' archaeological artifacts and that options for removal of the artifacts for display and study should be considered, including executing a curation agreement.
RESPONSE
DOE has initiated the Working Agreement, Policy on Native American Consultation to ensure communication with the Shoshone-Bannock Tribe relating to treatment of archaeological sites during excavation, as mandated by the Archaeological Resources Protection Act, and protection of human remains, as required under the Native American Graves Protection and Repatriation Act. In keeping with DOE's Native American Policy (Memorandum EH-1: Management of Cultural Resources at Department of Energy Facilities, U.S. Department of Energy, Washington, DC, February 23, 1990), DOE consults with Native Americans during the planning and implementation of all proposed alternatives. If human remains are discovered, DOE notifies all tribes that have expressed an interest in the repatriation of graves, as required under the Native American Graves Protection and Repatriation Act. The tribes then have the opportunity to claim the remains and associated artifacts. Also, the DOE Idaho Operations Office is preparing a curation agreement pursuant to the Archaeological Resources Protection Act and is also drafting a programmatic agreement for the protection of historic properties pursuant to the National Historic Preservation Act. The handling of Native American cultural resource items pursuant to the Native American Graves Protection and Repatriation Act will be addressed by both of these agreements. Mitigation measures will be developed after these agreements are implemented. Volume 2, section 4.3 has been changed to reflect these agreements.

II COMMENT

The commentor suggests that the EIS include mitigation measures in case cultural resources are inadvertently discovered during construction.
RESPONSE
This EIS is a programmatic document, based on current information and designed to provide decisionmakers a broad base of knowledge about the affected environment, any foreseeable impacts, and any potential mitigation measures for an identified environmental impact associated with a specific course of action. Providing specific, detailed mitigation measures, especially in areas where no environmental impact is foreseen, is beyond the scope of this document. Each DOE operations office is

responsible for developing mitigation agreements, including actions to be taken in the event of discovery of archaeological resources or human remains during construction. Such agreements will be negotiated with appropriate tribes and State Historic Preservation Officers. These agreements would be referenced in future site-specific NEPA documentation when appropriate. The discussion in the EIS has been expanded to include this information.

II COMMENT

The commentor asserts that contamination resulting from transporting or storing SNF waste could affect hunting and gathering, which is as an irreplaceable part of the food supply and an important cultural and economic activity for the residents of the Fort Hall Reservation.

RESPONSE

There is a comprehensive environmental monitoring program at INEL, and the results are reported annually in the INEL Site Environmental Report. The monitoring conducted to date has not shown contamination in game species or food stuffs that would preclude or limit hunting and gathering. The site environmental monitoring programs gather game species and food stuffs from a wide area in southeastern Idaho, extending well beyond the boundaries of INEL in all directions.

Volume 1, Appendices D and I discuss impacts from both incident-free transportation and transportation accidents. The analysis shows that impacts from transportation activities for all alternatives would be small.

II COMMENT

The commentor objects to DOE's cultural resource impact analysis, because it minimizes impacts by fragmenting them and focuses solely on material culture.

RESPONSE

DOE performs an analysis first by looking at the individual parts. This approach allows experts on ecology, water use, land use, air quality, etc., to evaluate impacts specific to their disciplines. After these impacts are evaluated, the overall impacts to the resources are evaluated, thereby providing a holistic approach. DOE agrees that impacts to the Shoshone-Bannock Tribes include all discipline areas identified in the EIS; however, it is not feasible to include all these areas under cultural impacts.

DOE does not presume to know the locations, absence or occurrence of items, sites, or resources important to the Tribes over the whole INEL site. Nor would it be more protective of the items, sites, or resources to conduct a site-wide survey than to conduct a complete site-specific analysis in conjunction with a specific project prior to any surface- or subsurface-disturbing activities. Broadly, DOE's process is to identify a suitable site, conduct an initial survey, consult with the Tribes, and develop appropriate actions based on that consultation. The actions may include mitigation of impacts up to or including selection of another alternative site.

Volume 2, section 4.3 has been changed to discuss the Tribes' broad view of cultural resources. See also the response to comment 05.03 (002).

II COMMENT

Commentors assert that the EIS does not adequately address impacts on cultural resources from the various alternatives affecting the Idaho National Engineering Laboratory and that the EIS represents an opportunity for DOE to continue consultations with the Tribes.

RESPONSE

The number of known sites (approximately 1,500) and the portion (4 percent) of the INEL site that has been surveyed are identified in the EIS only to suggest the large number of potential sites at INEL. Volume 2, section 4.4 discusses the use of predictive models and discusses the National Historic Preservation Act inventories that must be completed prior to any actions. Volume 2, section 5.19 further discusses the National Historic Preservation Act Section 106 requirements concerning the evaluation of sites and mitigation of impacts.

A comprehensive inventory of prehistoric cultural resources within the boundaries of INEL is under way. To date, surveys to identify these resources have been focused on areas where adverse impacts are most likely to occur (i.e., facility perimeters, along major roadways and utility corridors, gravel pits, etc.). In addition, a preliminary predictive model has been developed to identify zones of prehistoric cultural resource density across the entire 890-square-mile facility. This model can be used by INEL project managers during the initial stages of project planning to avoid areas where prehistoric resources appear to be particularly dense, thus reducing the impact of INEL activities on sensitive cultural materials.

Refinement and testing of this model are also under way through the INEL Cultural Resource Management Office. This office also maintains a complete record of all cultural resource investigations completed at INEL, as well as a data base of all known cultural resources. Prior to conducting any ground-disturbing activities, INEL project managers are directed to consult with the INEL Cultural Resource Management Office to avoid damage to any sensitive materials. Under the 1992 Working Agreement Between the Shoshone-Bannock Tribes of the Fort Hall Indian Reservation and the Idaho Field Office of the DOE Concerning Environment, Safety, Health, Cultural Resources and Economic Self-Sufficiency, the Tribes are consulted and are given the opportunity to comment on any INEL project that has the potential to impact any cultural resource.

Based on public comments, DOE has expanded the EIS definition of cultural resources. For example, Volume 2, section 4.9 now includes a list of plants and vegetation important to the Tribes.

DOE has increased its consultation with the Shoshone-Bannock Tribes. A series of consultations involving management and technical personnel from the Tribes and DOE have resulted in a better understanding and resolution of mutual concerns. DOE continues to meet with the Tribes and plans to do so when implementing the actions proposed in the EIS.

II 5.4 Biological Resources

II COMMENT

The commentor notes that many studies have been conducted by biologists, botanists, etc., around the Hanford Site and Idaho National Engineering Laboratory areas with intriguing results.

RESPONSE

Every effort has been made to review all pertinent studies for inclusion in the EIS. The public hearing moderator requested that the speaker identify any pertinent additional studies so that they may be evaluated. None was provided by the commentor.

II COMMENT

The commentor suggests that the EIS considers the Arco desert to be a wasteland suitable for storage of spent nuclear fuel, which the commentor believes is a gross misunderstanding of the ecosystem and surrounding geography.

RESPONSE

DOE and the Navy consider sensitive ecosystems and habitats when designing and siting projects

and
comply with the laws and regulations protecting wildlife resources, including those protecting threatened
and endangered species, to ensure the impacts of proposed activities are minimal. As described in Volumes
1 and 2, Chapter 5, measures for protecting ecological resources would be developed in consultation with
the appropriate agencies if any sensitive ecosystems or habitats are identified on a project site.
Preconstruction surveys would be conducted to determine the presence of these resources. DOE has designated INEL a National Environmental Research Park.

II COMMENT

The commentor states that Idaho National Engineering Laboratory operations have caused minimal harm to
animals and endangered species.
RESPONSE
DOE agrees with the commentor and notes that it has designated INEL a National Environmental Research
Park. DOE considers threatened and endangered species and sensitive habitats when designing and siting
its programs. It complies with the laws and regulations protecting wildlife resources, including those
protecting threatened and endangered species, to ensure that the impacts of DOE activities are minimal. As
described in Volume 1, section 5.7.7, measures to avoid or mitigate impacts to
ecological resources would be developed in consultation with the appropriate agencies if any threatened or
endangered species or sensitive habitats are identified on a project site. Preconstruction surveys would be
conducted to determine the presence of these resources.

II COMMENT

The commentor asks about risks to the fragile ecosystem of marine waters near Seattle, Washington.
RESPONSE
Volume 1, Chapter 5, Appendices D and K, and Volume 2, Chapter 5 summarize the environmental
impacts of all the alternatives considered in this EIS. The analyses show that the impacts of all alternatives
would be small. While there are differences in the impacts among the alternatives, these differences by
themselves are not sufficient to distinguish between alternatives.

II COMMENT

The commentor states that the EIS must address wildlife management practices at the Idaho National
Engineering Laboratory as well as the impacts to wildlife that could result from the alternatives, and that
the Tribes should be afforded hunting rights on the site.
RESPONSE
While DOE manages the game habitat at INEL, the State of Idaho manages wildlife and has jurisdiction
over hunting rights within the INEL boundary. Issues relating to wildlife management or requests for
hunting rights must be addressed to the state.
Impacts to wildlife that could occur as a result of the various alternatives, and subsequent mitigation
measures, are discussed in Volume 2, Chapter 5, sections 5.9 and 5.19.

II COMMENT

The commentor states that Idaho National Engineering Laboratory impacts cannot be evaluated without
specific sites selected for certain new construction projects, and that DOE should minimize impacts on
wildlife habitat by clustering new facilities near currently disturbed areas.

RESPONSE
Volume 2, Appendix C specifies the location of potential disturbances. DOE has attempted to site proposed activities in the most environmentally benign locations that will meet health and safety requirements. Siting was considered in the following order of preference: (1) locate in existing facilities,
(2) locate in existing industrial areas on previously disturbed areas, (3) locate in industrial areas on
undisturbed areas, (4) locate outside, but immediately adjacent to, industrial areas, and (5) locate outside
and away from existing industrial areas.
The three projects that would cause most of the disturbance outside and separate from the current industrial areas are the Idaho Waste Processing Facility, the Alpha-Mixed Low-Level Waste Treatment
Facility, and the Alpha-Mixed Low-Level Waste Disposal Facility. All three projects are still in the
conceptual design phase and would require project-specific NEPA documentation before resources are
committed. Because it is still in the design phase, the specific location for the Idaho Waste Processing
Facility is not well defined. The EIS states that it may be located near the Radioactive Waste Management
Complex (RWMC) or at other existing industrial locations on the INEL site. For purposes of analysis in
the ecological consequences section of the EIS, the Idaho Waste Processing Facility was located 4 kilometers (2.5 miles) east of the RWMC. This is the most conservative siting method because it would
result in the largest impact to ecological resources. Similarly, the Alpha-Mixed Low-Level Waste Treatment Facility and the Alpha-Mixed Low-Level Waste Disposal Facility may be located in or adjoining
existing INEL facilities. The most conservative assumption was used for the analysis: that a private facility
would be built 4 kilometers (2.5 miles) west of the RWMC.
As stated in the EIS, DOE would perform site-specific preactivity surveys to identify any sensitive
resources on the site to ensure that impacts from the proposed actions are identified and that mitigation
measures can be developed and integrated into the project.

II COMMENT

The commentor states that Volume 1, Appendix F should include language to ensure that actions will
preserve wetland resources, if such resources exist. The commentor also states that the presence of
wetlands on a proposed construction site is not addressed.
RESPONSE
As discussed in Volume 1, Appendix F, Part Two, sections 4.9.2 and 5.9.1, there are no wetlands on the
proposed SNF site at the Nevada Test Site (NTS); thus, no special preservation efforts are required.
Oak Ridge Reservation (ORR) wetlands are discussed in Volume 1, Appendix F, Part Three, sections 4.9.2
and 5.9.1. It is DOE policy to comply with Executive Order 11990, Protection of Wetlands, which directs
government agencies to avoid any short- and long-term adverse impacts on wetlands wherever there is a
practicable alternative. If ORR is chosen as a site for SNF management, the potential for impacts on
wetland resources on the site would be specifically analyzed, along with potential opportunities to avoid or
otherwise mitigate impacts. Unavoidable impacts to wetlands would be mitigated according to DOE policy.

II COMMENT

The commentor states that mitigation measures, including those for the desert tortoise, are not adequately
addressed in Volume 1, Appendix F.
RESPONSE
A biological opinion concerning the desert tortoise has been issued by the U.S. Fish and Wildlife Service
covering current projects at the NTS. (See Volume 1, Appendix F, Part Two, section 4.9.4.) As described
in Volume 1, Appendix F, Part Two, section 5.9, recommended mitigation measures included preactivity

surveys for the tortoises and their removal from affected areas, as well as periodic inspections and eventual backfilling, covering, or installation of tortoise-proof fencing around open construction trenches and excavations, and reducing speed limits on site roadways. After consulting with the U.S. Fish and Wildlife Service and the Nevada Division of Wildlife, similar recommendations would be implemented, as appropriate, if NTS were selected as the location for a SNF facility. Providing specific, detailed mitigation measures is beyond the scope of this EIS and will be addressed in tiering NEPA documentation when appropriate.

II COMMENT

Commentors state that the EIS failed to consider potential impacts on fish and wildlife from transportation of spent nuclear fuel and other hazardous materials. This includes accidents, alternative route analysis, threat reduction, and mitigation of impacts to wildlife from transportation accidents.

RESPONSE

Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. The analyses show that the impacts of all alternatives would be small, including the impacts to fish and wildlife. While there would be differences in the impacts among the alternatives, these differences by themselves are not sufficient to distinguish between alternatives.

Volume 2, section 5.19 addresses mitigation for both operations and accident conditions. Volume 2, section 5.11 covers all transportation impacts, including incident-free transportation and transportation accidents. Regional traffic impacts are also covered. As noted in Volume 2, section 5.11, the increased movements of materials and people due to all alternatives would result in no change to the level of service of U.S. Highway 20, the regional highway with the highest use around INEL.

An accident with a release of radionuclides or hazardous material into the environment could result in temporary exposures of biota. The impact would likely be localized and of short duration. State and U.S. Fish and Wildlife Departments and Natural Resource Trustees would be consulted to receive input for the most appropriate response for the specific accident and current conditions. The emergency response efforts would focus on cleaning the site and removing contaminants as completely and as rapidly as possible.

While radiological impacts from accidents could result in loss of individual animals and plants, long-term losses or large-area losses would not be anticipated. Impacts to fish would depend on the material and quantity spilled into the aquatic environment, and must be evaluated on a case-by-case basis.

Volume 2, Chapters 4 and 5 have been modified to include information on threat reduction and evaluation of the impacts of collision accidents wildlife.

II COMMENT

The commentor states big game kills by trains are not reported in the EIS, and increased risk of wildlife kills by train transport are not addressed in the EIS.

RESPONSE

Information was obtained from the State of Idaho Division of Wildlife Management concerning incidents involving trains killing large numbers of pronghorn antelope. This information has been included in Volume 2, section 4.11. See also the response to comment 05.04 (011) regarding changes in the EIS to evaluate impacts of transportation accidents.

II COMMENT

The commentor asks about depredation problems associated with antelope and elk in the Idaho National Engineering Laboratory area.
RESPONSE
The alternatives would disturb up to 726 acres of land outside of current facility fences or boundaries.
While depredation may increase, the increase is likely to be low because most of the disturbances would be located about 5 kilometers (3 miles) from the RWMC, which is located within the INEL boundary and far from any croplands. Policies concerning restrictions on hunting at INEL are not within the scope of this EIS.

II COMMENT

The commentor notes that a statement that no Federally listed species are expected to be affected by construction and operation of the spent nuclear fuel management facility is in conflict with Volume 1, Appendix F, Part 3, Table 4.9-1.
RESPONSE
Volume 1, Appendix F, Part 3, Table 4.9-1 lists species that "potentially occur on or in the vicinity of the Oak Ridge Reservation" but not necessarily on the project site. Volume 1, Appendix F, Part Three, section 4.9.4 describes the expectation of species occurrence on the proposed project site and identifies the species most likely to occur on the project site, none of which is Federally listed. None of the species listed in Table 4.9-1 has been observed on the proposed project site. No species listed as threatened or endangered by the U.S. Fish and Wildlife Service, in accordance with the Endangered Species Act, are expected to occur on the site and, thus, they would not be impacted. Impacts to state-listed and other special-status species are described in Volume 1, Appendix F, Part Three, section 5.9.1. There may be cumulative impacts on other special-status species, which consist of two plant and five raptor species. The cumulative effect to wildlife habitats is discussed in Volume 1, Appendix F, Part Three, section 5.16.1. Any loss of forested habitat would be a small percentage of the total forested area on or in the vicinity of ORR.

II COMMENT

The commentor expresses the opinion that storing spent nuclear fuel at the Savannah River Site presents a potential ecological problem.
RESPONSE
Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. The analyses show that the impacts of all alternatives would be small. While there are differences in the impacts among the alternatives, these differences by themselves are not sufficient to distinguish between alternatives.
For the Savannah River Site (SRS), potential effects from operations conditions would be primarily from disturbance of habitat, rather than effects from radionuclides. Potential effects from accidents would result in exposures to biota. However, emergency response would limit the potential impacts to a small localized area.

II COMMENT

The commentor suggests that terrestrial biota may be subject to more radiation exposure than humans, because human exposure can be limited by special clothing and protective equipment.
RESPONSE
Terrestrial biota are not subject to exposure under conditions that would require special

clothing or
protective equipment for humans. Work areas where potential radiation exposure is high and where monitored site workers use protective equipment have controlled access measures that limit entry by biota.
So long as exposure limits protective of humans are not exceeded, no substantial radiological impact on
biota would be expected as a result of waste management activities at the proposed spent nuclear fuel
facility.
Volume 1, Appendix F, Part Two, section 5.9 has been modified to clarify that most waste management
activities take place in enclosed environments and that outdoor radiation exposures are usually below
regulatory requirements.

II COMMENT

The commentor states that until surveys are conducted at the Oak Ridge Reservation facility, the status of
sensitive flora, fauna, and habitat is in question and could be a factor in selection of a final management
plan.
RESPONSE
The commentor is accurate in stating that until site surveys are completed, the status of the flora, fauna,
and habitat remain in question and could be a factor in the selection of the specific sites at ORR. Site-specific analyses are not appropriate for a programmatic EIS and would only be performed if ORR is
selected. The analyses in the EIS are based on existing documentation.

II COMMENT

The commentor suggests that animals near proposed new or expanded facilities in Idaho should be relocated to a similar environment.
RESPONSE
Generally, it is not feasible to relocate all animals disturbed by construction activities. Most animal species
that would be displaced include insects, reptiles, and small mammals. Preactivity surveys would be
conducted to determine if any endangered species or sensitive habitats are in the area. Where practical, proposed facilities are clustered near existing facilities to minimize impacts to undisturbed areas.
Measures to minimize impacts to wildlife at INEL are discussed in Volume 2, section 5.19.6.

II COMMENT

One commentor states that DOE and the Navy have failed to study the possibility that fish migrating up the
Columbia and Snake Rivers to Idaho could pick up radioactive particles, contaminate pristine Idaho
wilderness areas, and impact endangered species. Another commentor states that the Hanford Site would
be a poor storage area unless the already "depleted salmon" are protected.
RESPONSE
Volume 1, Appendix A, sections 4.8 and 4.9 have been modified to address potential impacts on aquatic
life in the Columbia River. Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize
the environmental impacts of all the alternatives considered in the EIS. The analyses show that the impacts
of all alternatives would be small.
All liquid effluents from Hanford Site facilities are monitored to ensure that aquatic resources are
protected. Fish populations are safe for human consumption. Radionuclide levels in fish from the Hanford
Reach are not significantly higher than those of fish found upstream. Fish migrating from the Columbia
River up the Snake River to Idaho would not pass through the Hanford area, because the confluence of the
two rivers is downstream from the Hanford Site. Fish inhabiting or moving through downstream areas
would also not be expected to have elevated radionuclide levels.

Any new facility would be built using technologies to protect these resources, including leak detection and water-balance monitoring equipment. Excess process water from the proposed facility would be treated before it is released to surface water or groundwater.
In some accident scenarios, such as a seismic event at Hanford with a frequency of occurrence of once every 1,000 years, contamination could reach the Columbia River. Individual fish in the affected reach of the river could become contaminated. However, contamination spread by the fish, and any associated risk, would be small compared with the environmental risk posed by more direct pathways in an accident scenario. Monitoring at DOE facilities indicates the most critical pathways for environmental contamination are generally through direct airborne and waterborne releases, rather than contamination spread through animals or fish.

II COMMENT

The commentor states that impacts of transport, storage, and accidental releases on threatened, endangered, and sensitive species should be considered.
RESPONSE
Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS, including those to threatened and endangered species. The analyses show that the impacts of all the alternatives would be small.
Threatened and endangered species and habitats are considered in the design and siting of programs and facilities. Volumes 1 and 2, section 7.2.1 identify all Federal environmental statutes and regulations, including the Endangered Species Act, that may apply to the programmatic alternatives for SNF management. DOE and the Navy comply with all applicable laws and regulations designed to protect wildlife resources to ensure impacts are minimal. These regulations include U.S. Department of Transportation (DOT) regulations on transport of hazardous and/or radioactive materials. Measures for minimizing impacts to sensitive species are described in Volumes 1 and 2, Chapter 5.

II COMMENT

The commentor states that there are virtually no data or literature references to support the Idaho National Engineering Laboratory ecological analyses and conclusions.
RESPONSE
The Environmental Resource Document for the Idaho National Engineering Laboratory referenced in the EIS provides an extensive compendium of documentation concerning the Idaho National Engineering Laboratory (INEL) environment and ecology. Additionally, Radioecology of the Idaho National Engineering Laboratory (Draft) provides a literature search and an evaluation of radiological impacts of current INEL operations. Both of these documents are referenced in the EIS and are available in reading rooms and information locations listed in the EIS.

II COMMENT

The commentor questions the effects on endangered species in the Twin Falls Thousand Springs area as a result of impacts to the Snake River aquifer.
RESPONSE
Under all alternatives considered, possible future sources of aquifer contamination would be small. Water quality in the aquifer would be expected to improve under current waste management practices under all alternatives. Increased water use at INEL would range from 1.3 percent under the No Action alternative to 4.0 percent for the Ten-Year Plan alternative; or approximately 0.43 to 1.3 percent of the total aquifer flow beneath INEL. Currently, a substantial portion of water pumped from the aquifer at INEL is discharged to the surface and eventually returned to the aquifer. The current water withdrawal rate is

equivalent to 56 percent of a typical irrigation well pumped 365 days per year. Because of the small percentage of water consumed, there would be a small impact to water levels or quantities in the aquifer, or to threatened or endangered species in the Thousand Springs area. A discussion and evaluation of present and potential impacts to water quality and quantity under the alternatives analyzed is provided in Volume 2, sections 4.8 and 5.8.

II COMMENT

The commentor states that it would be inappropriate to ship spent nuclear fuel through Puget Sound, a great natural area.
RESPONSE
The EIS evaluates potential environmental impacts of transporting SNF in the Puget Sound area. Naval Nuclear Propulsion Program shipments of Naval SNF are made in accordance with all applicable regulations. Shipments of radioactive materials associated with Naval SNF have never resulted in any measurable release of radioactivity to the environment, nor has there ever been an accident involving the release of radioactive material during shipment since the Naval Nuclear Propulsion Program began. The potential impacts to the local environment at Puget Sound from transportation of Naval SNF are discussed in Volume 1, Appendix D, Chapter 5 and Attachment A.

II COMMENT

The commentor states that the EIS neither describes ongoing activities nor analyzes their impacts in association with past and future activities and is therefore not comprehensive.
RESPONSE
Volume 2, Chapter 4 describes the existing environment at INEL. Volume 2, Chapter 2 discusses the current activities, facilities, and missions at INEL. Site-specific impacts, including cumulative impacts are presented in Volume 2, Chapter 5 and Appendix F. Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize all of the alternatives considered in this EIS. The analysis show that the impacts of all alternatives would be small.

II COMMENT

The commentor states that the Draft EIS should address loss of habitat at the Oak Ridge Reservation and the effects on the regions ecosystems by a change in land use.
RESPONSE
Both land use and habitat loss are considered in Volume 1, Appendix F. ORR occupies an area of 140 square kilometers (54 square miles). In 1980, DOE designated 54 square kilometers (21 square miles) of undeveloped ORR land to a National Environmental Research Park. Approximately 58 percent of the land on ORR [80 square kilometers (31 square miles)] can be classified as undeveloped due to its current land designation. By comparison, the SNF program would require about 0.36 square kilometers (0.14 square miles). Volume 1, Appendix F, Part Three, section 5.9 assesses impacts to ecological resources for both the Centralization and Regionalization alternatives. Neither alternative would present any significant impacts to ecological resources through alterations or loss of habitat.

II 5.5 Geology

II COMMENT

The commentor notes that no geologists from the Oak Ridge area were used to help prepare Volume 1, Appendix F, Part Three.

RESPONSE

The document was prepared using existing references and currently published information. The references cited for the Volume 1, Appendix F, Part Three discussion of ORR include current information on geology in that area.

II COMMENT

The commentor is of the opinion that the EIS is a coverup, especially regarding seismic hazards and geologic events.

RESPONSE

The best available information relative to seismic hazards and geologic events is provided in Volumes 1 and 2, section 4.6, the site-specific appendices to Volume 1, and associated references. The EIS provides sufficient information to allow independent evaluation of the seismic hazards and geologic events.

II COMMENT

The commentor notes that the Knox Group is divided into five formations, not four. The five formations are the Copper Ridge Dolomite, the Chepultepec Dolomite, the Longview Dolomite, the Kingsport Formation, and the Mascot Dolomite.

RESPONSE

The EIS has been revised to incorporate the information.

II COMMENT

The commentor states that the EIS does not address correcting current seismic deficiencies at Idaho National Engineering Laboratory facilities.

RESPONSE

DOE Order 5480.28, National Phenomena Hazards Mitigation, specifically requires facilities to be reevaluated when there is any change in design and construction standards. Existing facilities at INEL have undergone continual safety analysis and seismic design review. Several of the projects described in Volume 2, Appendix C are proposed by DOE to replace or upgrade facilities at INEL. Likewise, actions such as the transfer of fuels from potentially vulnerable facilities to modern facilities, have resulted from the ongoing safety analysis and seismic design reviews. Volume 2, Table 2.2.1 addresses the correction of seismic deficiencies identified with fuel storage facilities at INEL.

II COMMENT

The commentor states that storing radioactive material in a seismically active area like the Idaho National Engineering Laboratory could result in catastrophic consequences.

RESPONSE

Seismic hazards and geologic analyses can be found in Volume 1, section 4.2 and Appendix B, section 4.6, and Volume 2, section 4.6 and Appendix F-2. Seismically induced accidents are discussed in

Volume 2,
section 5.14 and Appendix F-5. The results of accident analyses (including seismically induced accidents)
indicate that the risk to the public from INEL operations is small. DOE takes seismic hazards very
seriously, and INEL uses independently and extensively reviewed analyses to support the enforcement and
implementation of DOE Orders and standards. An INEL seismic hazard assessment was completed in
1990. A more recent seismic hazard assessment for INEL is referenced in the EIS as Site-Specific
Probabilistic Seismic Hazard Analysis for the Idaho National Engineering Laboratory (Draft). See also
the response to comment 05.05.01 (040).

II COMMENT

Several commentors state that geologic conditions at the Idaho National Engineering Laboratory could
result in a sequence of events that would cause contamination of the Snake River Plain aquifer.
RESPONSE
An accident scenario resulting in maximum potential for groundwater contamination at INEL was analyzed
in the EIS in Volume 2, section 5.14 and Appendix F to determine the effects of such an accident on the
Snake River Plain aquifer. The hypothetical accident involves the instant failure of a high-level waste tank
due to an earthquake. The groundwater analysis assumed failure of the containment and no mitigating
measures to minimize flow from the waste tank into the soil immediately following the failure. This
hypothetical scenario represents the situation with the maximum reasonably foreseeable impact on the
aquifer. Maximum radionuclide concentrations would be predicted to reach the INEL boundary 300 years
after the hypothetical accident in concentrations less than EPA maximum contaminant levels (MCLs) or
DOE derived concentration guidelines (DCGs). See also the response to comment 05.08.01 (030).

II COMMENT

Commentors express opinions that the selection of the Oak Ridge Reservation as an alternative site was
performed in haste, and/or did not adequately consider the geology of the West Bear Creek Valley site.
RESPONSE
The selection of ORR and NTS as alternative sites resulted from public comments received during the
scoping process for this EIS. Information about the site-selection process at ORR is provided in Request
for Support in Preparing the Spent Nuclear Fuel and Idaho National Engineering Laboratory
Environmental Restoration and Waste Management Environmental Impact Statement, and Alternate Site
Selection Decision Process Report.
The West Bear Creek Valley site was selected for evaluation and comparison in this EIS. Published
geologic information was considered in making this selection. Adequate information is provided to make
programmatic decisions and evaluate alternatives in this EIS.

II COMMENT

The commentor states that significant adverse geologic events could cause radioactive releases.
RESPONSE
The general geological features of the alternative sites are described in Volume 1, Chapter 4 and potential
impacts associated with geologic events are summarized in Volume 1, Chapter 5, section 5.2.4. Details on
the geological features and potential dangers associated with those features are in Volume 1, Appendices A
through F for the alternative sites. DOE recognizes the potential adverse effects that geologic events can
have on facilities, and the EIS includes analysis of accidents and the potential consequences associated
with geologic events, such as earthquakes. The accidents evaluated included those with an

estimated
probability ranging from once in 1 million years to once in 10 million years. As described in Volume 1,
section 5.1.6, the probabilities of accidents with the potential for significant impacts occurring would be
small. The risks to the public from radioactive releases would be small for all of the impacts considered.
See also the response to comment 05.05.01 (016).

II COMMENT

The commentor states that it is appropriate to acknowledge the zinc and fluorspar districts are to the
northeast of Knoxville, Tennessee, and southwest of the Oak Ridge Reservation, respectively. The
commentor also notes that zinc prospects and sulfide mineralization may occur in the Oak Ridge area.
RESPONSE
As required by Council on Environmental Quality (CEQ) regulations, the description of the affected
environment is no longer than is necessary to understand the effects of the alternatives. No impacts to
geologic resources are expected from any of the alternatives; therefore, impacts to remote mineral districts
are not expected. If ORR is chosen as a site for new SNF management facilities, site-specific geologic
studies would be performed as necessary to determine the full extent of geologic resources at the proposed
site.
A discussion of the geologic resources at ORR is presented in the EIS in Volume 1, Appendix F, Part
Three, section 4.6.

II II COMMENT

The commentor questions the adequacy and conservatism of seismic hazard studies at the Idaho National
Engineering Laboratory.
RESPONSE
Seismic hazards and geologic analyses for INEL can be found in Volume 1, section 4.2; Volume 1,
Appendix B, section 4.6; and Volume 2, section 4.6 and Appendix F-2. Seismically induced accidents are
discussed in Volume 2, section 5.14 and Appendix F-5, and Volume 1, Appendix B, section 5.15. The
accident analyses (including seismically induced accidents) indicate that the risk to the public from INEL
operations is small. DOE takes seismic hazards very seriously, and INEL uses independently reviewed
analyses to support the enforcement and implementation of DOE Orders and standards.
Major DOE Idaho Operations Office-managed nuclear facilities currently in use at INEL were built or have
been evaluated to design basis accelerations that exceed accelerations that would result from a 7.0 moment
magnitude earthquake at the southern end of the Lemhi fault zone. There has been an extensive effort over
the past several years to upgrade DOE Orders and standards related to natural phenomena hazards.
DOE Order 5480.28, Natural Phenomena Hazards Mitigation, sets forth DOE procedures to design,
assess, and operate DOE facilities so that workers, the general public, and the environment are protected
from the impacts of natural phenomena hazards on DOE facilities. This Order specifically requires
facilities to be reevaluated when there is any change in design and construction standards. Existing INEL
facilities have undergone substantial safety analysis and seismic design review. Several of the projects
described in Volume 2, Appendix C of the EIS are proposed by DOE to replace or upgrade facilities at the
site. Likewise, actions such as the transfer of fuels from potentially vulnerable facilities to modern facilities
have resulted from the ongoing safety analysis and seismic design reviews.
The data and methods used in the seismic hazard report referenced in Volume 2, section 4.6 as
Site-Specific Probabilistic Seismic Hazard Analysis for the Idaho National Engineering Laboratory (Draft)
were extensively and independently reviewed. This report includes graphs showing rate of occurrence
versus acceleration for seismic events for each major facility at INEL. The seismic hazard curve

for the
Idaho Chemical Processing Plant was included as an example of the information contained in the INEL
seismic hazard analysis [Site-Specific Probabilistic Seismic Hazard Analysis for the Idaho National
Engineering Laboratory (Draft)]. The final versions of this report may be incorporated into the INEL
architectural and engineering standards after review by the INEL Natural Phenomena Committee.
The previous INEL seismic analysis (Earthquake Strong Ground Motion Estimates for the Idaho
National Engineering Laboratory: Final Report) was also extensively reviewed and incorporated into the
INEL standards after review by the Natural Phenomena Committee in 1992.
This report is referenced in Volume 2, section 4.6 and Volume 2, Appendix F-2 and contains facility- and
location-specific seismic hazard information.
The EIS summarizes current scientific evidence relevant to understanding the existing environment,
identifying reasonably foreseeable impacts, and evaluating potential consequences. The evaluation of
impacts is based on methods generally accepted by the scientific community.
See also the response to comment 05.05.01 (007).

II COMMENT

The commentor states that the Basin and Range Province north of the Idaho National Engineering
Laboratory lacks adequate seismic monitoring.
RESPONSE
During 1991 and 1992, DOE increased its network of seismic monitoring stations from 11 to 26 locations,
including stations in the Basin and Range Province. This network supplements measurements continuing
by U.S. Geological Survey (USGS) facilities. INEL regularly exchanges data with other seismic monitoring
networks around the region, including data for earthquakes that occur between networks. INEL scientists
currently are supporting studies of the 1994 Raney Peak earthquake sequence and have supported some of
the 1983 Borah Peak earthquake studies.

II COMMENT

The commentor questions why the overall level of seismic hazard calculated in the EIS for Idaho National
Engineering laboratory is lower than the seismic hazard curves for either the Hanford Site or the Savannah
River Site.
RESPONSE
The possible reasons for the relatively low seismicity, with respect to the more seismic Basin and Range
Province, for the Eastern Snake River Plain (ESRP) are discussed in Volume 2, section 4.6. The
differences noted by the commentor result from the site-specific data used to assess seismic hazards. In
particular, INEL has modeled ground motions based on site-specific analyses. Ground-motion attenuation
characteristics result from using source parameters for Basin and Range Province earthquakes, lower stress
drops, lower recurrence intervals for the southern segments of the Basin and Range Province faults (Lemhi,
Lost River, and Beaverhead), and the unique subsurface geology (interbeds of basalt and sediment) that
tend to deamplify ground motions.
Additional factors contributing to the relatively low seismic hazard for INEL are the distance from the
facilities to Basin and Range Province faults, INEL-specific attenuation characteristics, and the low
seismicity of the ESRP.
The Hanford Site models use empirical data derived from California earthquakes and considers a magnitude
9 subduction zone earthquake. SRS has a thicker layer of soil and subsurface geology that results in less
scattering during transmission of seismic waves. Both of these conditions tend to amplify ground motions
at SRS.

II COMMENT

The commentor notes that within 125 miles of the Idaho National Engineering Laboratory, 232 possibly active fault segments, including 20 with proven late Quaternary or younger displacement, exist. The commentor suggests that this observation is inconsistent with the relatively low seismic hazard for the Idaho National Engineering Laboratory presented in the EIS.
RESPONSE
In the Probabilistic Seismic Hazard Assessment studies [Site-Specific Probabilistic Seismic Hazard Analysis for the Idaho National Engineering Laboratory (Draft)] referenced in the EIS, DOE assessed and determined the major seismic sources in the vicinity of INEL. Because most of the seismic sources noted by the commentor are some distance from INEL, they are not significant contributors to the seismic hazard. The closest and most significant seismic sources, the Beaverhead, Lost River, and Lemhi faults, are considered in INEL seismic hazard assessments. The Probabilistic Seismic Hazard Assessments used at INEL have been independently reviewed and are developed consistent with the requirements of DOE Order 5480.28, Natural Phenomena Hazards Mitigation. The details of the characterization of the potential seismogenic sources, and how they are incorporated into seismic hazard assessments can be found in Volume 2, section 4.6 or its references.
The possible reasons for the relatively low seismicity, with respect to the more seismic Basin and Range Province, for the ESRP are discussed in Volume 2, section 4.6. The differences noted by the commentor result from the site-specific data used to assess seismic hazards. In particular, INEL has modeled ground motions based on site-specific analyses instead of empirical data. These curves result from using source parameters for Basin and Range Province earthquakes with lower stress drops, lower recurrence intervals for the southern segments of the Basin and Range Province faults, including the Lemhi, Lost River, and Beaverhead faults, and the unique subsurface geology of interbeds of basalt and sediment that tend to deamplify ground motions. Additional factors contributing to the low seismic hazard for INEL (relative to other DOE sites) are the distance from the facilities to Basin and Range Province faults, INEL-specific attenuation characteristics, and the low seismicity of the ESRP. See also the response to comment 05.05.01 (003).

II COMMENT

The commentor states that the coastal plain of South Carolina and Georgia is earthquake prone with "six faults in multiple directions" and is a poor site for temporary or long-term storage of spent nuclear fuel.
RESPONSE
The general geologic features of the alternative sites are described in Volume 1, Chapter 4 EIS and potential impacts associated with geologic events are summarized in Chapter 5, section 5.2.4. Details on the geologic features and potential dangerous events associated with those features are in Volume 1, site-specific Appendices A through F for the alternative sites. DOE recognizes the potential adverse effects that geologic events can have on facilities, and the EIS includes analysis of accidents and the potential consequences associated with geologic events, such as earthquakes. The accidents evaluated include those with an estimated probability ranging from once in 1 million years to once in 10 million years. As described in Volume 1, section 5.1.6, the probabilities of accidents occurring with the potential for significant impacts would be small. The accident analyses (including seismically induced accidents) indicate that the risk to the public from DOE operations would be small. Because DOE uses safety procedures and engineering design practices that minimize the effects of hazardous geologic

phenomena,
coupled with emergency response measures, the risks to the public from radioactive releases are further
reduced.
The site-specific response can be found in Volume 1, Appendix C, section 4.6.3, which describes the
region's geology, including fault systems and seismic history; section 5.8, which discusses the consequences
of analyzed seismic events on both surface water and groundwater resources; and Volume 1, Appendix C,
Attachment A-2.1.3, which describes estimates of risk that consider both the probability of and the
consequences from a wider range of seismic events, ranging from local and regional historically
documented earthquakes to postulated lower probability events with potentially greater
consequences.

II COMMENT

The commentor quotes a Woodward-Clyde study, commissioned by DOE, as having more realistic
measures of likely ground motions and suggests that DOE adopt these standards as an interim
measure.
RESPONSE
DOE has adopted this study (Earthquake Strong Ground Motion Estimates for the Idaho National
Engineering Laboratory: Final Report) and has incorporated the resulting seismic ground motions into
the architectural and engineering standards for INEL.

II COMMENT

The commentor states that a great deal more research, both onsite and in the surrounding regions, is
necessary before the Snake River Plain can be declared "aseismic."
RESPONSE
Seismic hazards and geologic analyses can be found in Volume 1, section 4.2; Volume 1, Appendix B,
section 4.6; and Volume 2, section 4.6 and Appendix F-2. Seismically induced accidents are discussed in
Volume 2, section 5.14 and Appendix F-5. The accident analyses, including seismically induced
accidents, indicate the risk to the public from INEL operations would be small.
The assertion that the Snake River Plain has a low rate of seismicity is supported by the evidence in
Volume 2, Figure 4.6-3, which represents a summary of the best available data at the time the data for the
EIS was compiled, and states the years over which the data were collected. The addition of subsequent
seismic events in the region would not change the conclusion that the Snake River Plain has a low
rate of seismicity compared with the Basin and Range Province. The term "aseismic" has been avoided
in the EIS to eliminate confusion.
Empirical evidence does not support the commentor's assertion that a major seismic event is likely to occur
in the future on the ESRP. Studies of fault scarps on the ESRP indicate that a seismic event with a
moment magnitude of 5.3 is the maximum event recorded in the rocks at the surface, which range in age
from 1.2 million to 2,100 years old. Thus, there is long-term geologic evidence with respect to the ESRP
geologic record with which to assess its magnitude of seismicity. The moment magnitude 5.3 estimate is
conservative with respect to earthquake magnitudes observed in similar tectonic environments and the
assumed instantaneous stress release. Further conservatism in the seismic hazard assessment cited in the
EIS [Site-Specific Probabilistic Seismic Hazard Analysis for the Idaho National Engineering
Laboratory (Draft)] is introduced through the use of a random ESRP earthquake, which has been assigned
a moment magnitude of 5.5 to 6.0. The methods and data used in this study have been independently
reviewed. The random earthquake is used to analyze the potential effects of potential seismic events
related to structures that do not have a surface expression.
Stress indicators show that the ESRP is subject to the same extensional stress as the adjacent Basin and
Range Province. There is geologic evidence to support the hypothesis that the ESRP is extending at the

same rate as the Basin and Range Province but by the different, less seismically intense mechanism of basaltic dike injection. The rate and magnitude assumed for the random earthquake is consistent and conservative with respect to these observations. These observations also indicate that elastic energy is not being stored for release in a major seismic event. Other possible explanations for the low seismicity of the ESRP can be found in Volume 2, section 4.6. The hypothesis that stored elastic energy will result in catastrophic brittle failure of the crust below INEL is not supported by published independently reviewed earth science literature or the local geology of INEL. Despite mapping of INEL and adjacent areas, such a catastrophic faulting event has not been observed in surface basalt flows that are up to 1.2 million years old.
The EIS summarizes existing credible scientific evidence relevant to understanding the existing environment, identifying reasonably foreseeable impacts, and evaluating potential consequences. The evaluation of impacts is based on methods generally accepted by the scientific community. The analyses reported in the EIS evaluate the potential consequences of reasonably foreseeable events.

II COMMENT

The commentor states the potential for major earthquakes on the Plain exists, and that although earthquakes on the plain do not provide the clear threat to Idaho National Engineering Laboratory that earthquakes on the fault systems north of the plain provide, the possibility of events up to magnitude 6 on the plain cannot be discarded.
RESPONSE
DOE assumes the commentor is referring to the ESRP. Empirical evidence does not support the commentor's assertion that a major seismic event is likely to occur in the future on the ESRP. Studies of fault scarps on the ESRP indicate that a seismic event with a moment magnitude of 5.3 is the maximum event recorded in the rocks at the surface, which range in age from 1.2 million to 2,100 years old. Thus, there is long-term geologic evidence with which to assess the magnitude of seismicity of the ESRP. The moment magnitude 5.3 estimate is conservative with respect to earthquake magnitudes observed in similar tectonic environments and the assumed instantaneous stress release. The possibility of a magnitude 6 earthquake on the ESRP was not discarded and has been considered in the seismic hazard assessment cited in the EIS [Site-Specific Probabilistic Seismic Hazard Analysis for the Idaho National Engineering Laboratory (Draft)] through the use of a random ESRP earthquake, which has been assigned a moment magnitude 5.5 to 6.0. The data and methods used in this study have been independently reviewed. The random earthquake is used to analyze the effects of seismic events related to structures that do not have a surface expression.

II COMMENT

The commentor states that earthquake magnitudes used for seismic analysis in the EIS are too low and that more research, both onsite and in the surrounding region, is required to adequately quantify the maximum seismic shaking possible on the INEL site.
RESPONSE
The methods and data used in the Site-Specific Probabilistic Seismic Hazard Analysis for the Idaho National Engineering Laboratory (Draft) have been independently reviewed, and the analyses contained therein, including the analysis and earthquake magnitude estimates that resulted in Figure 4.6-4, are scientifically defensible. The important parameters for the seismic hazard assessment are discussed in Volume 2, section 4.6. More detailed discussions on INEL seismic hazard assessments can be found in

Volume 2, Appendix F-2. Additional detail on parameter selection and the incorporation of uncertainty
into the seismic hazard assessment can be found in the Site-Specific Probabilistic Seismic Hazard Analysis for the Idaho National Engineering Laboratory (Draft). In keeping with the recommendations
of CEQ, the EIS contains only enough information to support decisions required by the decisionmakers.
To reduce the bulk of the document, references are cited that contain the relevant technical details.
Empirical evidence does not support the commentor's assertion that a moment magnitude 5.5 earthquake
on the ESRP is too low for adequate seismic hazard analysis of ESRP earthquake sources. Studies of fault
scarps on the ESRP indicate that a seismic event with a moment magnitude 5.3 is the maximum event recorded in the rocks at the surface, which range in age from 1.2 million to 2,100 years. Thus, there is
long-term geologic evidence with respect to the ESRP geologic record with which to assess the magnitude
of seismicity of the ESRP. The moment magnitude 5.3 estimate is mildly conservative with respect to
earthquake magnitudes observed in similar tectonic environments and the assumed instantaneous stress
release. Further conservatism in the seismic hazard assessment cited in the EIS [Site-Specific Probabilistic Seismic Hazard Analysis for the Idaho National Engineering Laboratory (Draft)] is introduced through the use of a random ESRP earthquake, which has been assigned a moment magnitude
5.5 to 6.0. The methods and data used in this study have been extensively reviewed. The random earthquake is used to analyze the effects of seismic events related to structures that do not have a surface
expression. Seismic hazards and geologic analyses can be found in Volume 1, sections 4.2; Volume 1,
Appendix B, section 4.6; and Volume 2, section 4.6 and Appendix F-2. Seismically induced accidents are
discussed in Volume 2, section 5.14 and Appendix F-5. DOE takes seismic hazards very seriously, and
INEL uses independently reviewed analyses to support the implementation of DOE Orders and standards.
The accident analyses (including beyond reasonably foreseeable accidents with potential impacts greater
than seismically induced accidents) indicate that the risk to the public from INEL operations would be
small. Therefore, additional information on reasonably foreseeable seismic events with lesser potential
impact would have no effect on the decision-making process.
No new analyses are required because, in accordance with NEPA (40 CFR 1502.22), the EIS summarizes
current credible scientific information relevant to understanding the existing environment, identifying
reasonably foreseeable impacts, and evaluating potential consequences. The EIS uses the most up-to-date
reviewed analyses available, and the evaluation of impacts is based on methods generally accepted by the
scientific community.
See also the response to comment 05.05.01 (001).

II COMMENT

The commentor expresses the opinion that the discussion of the Nevada Test Site is incomplete, because a
magnitude 5.6 earthquake that occurred near Little Skull Mountain on June 28, 1992, may not have been
factored into the analysis.
RESPONSE
The information in Volume 1 is an overview of the more detailed discussions contained within the Volume
1 appendices. In Volume 1, Appendix F, Part Two, section 4.6.3, the discussion on regional seismicity
includes the Little Skull Mountain earthquake and the problems associated with recurrence statistics.

II The commentor states that the New Madrid Seismic Zone is close enough to the reactor at the University of

Missouri to potentially cause damage should there be a large earthquake over magnitude 6.5, and

that the
seismic assessment for Missouri is based on outdated information.
RESPONSE
Research reactors are typically built to Uniform Building Code (UBC) requirements and are not required to
meet Nuclear Regulatory Commission (NRC) requirements for power reactors. Because a more detailed seismic analysis is not likely to affect the assessment of impacts of the programmatic alternatives,
no more seismic data are required in the EIS.
The data source for the research reactor at the University of Missouri was the document used to support the
licensing of the research reactor in 1961. In 1974, a thorough evaluation of the seismic events in the
vicinity was conducted for siting the Callaway commercial power reactor. The 1961 site-specific analysis
is more appropriate than an analysis done specifically for another facility. The area is in UBC Zone 1,
which demonstrates a low potential for seismic activity.

II COMMENT

The commentor states that the seismic wave attenuation characteristics of the eastern United States are not
adequately represented.
RESPONSE
The fact that strong-motion earthquakes are felt over wider regions of the eastern United States than their
counterparts in the western United States is considered in DOE site-specific seismic hazard assessments for
eastern United States sites. Any new DOE construction required by a decision supported by this EIS
would meet the stringent seismic hazard characterization requirements and design criteria of DOE Orders,
which would include a detailed assessment of seismic attenuation characteristics.

II COMMENT

The commentor states that the EIS Glossary definition of seismicity is incorrect.
RESPONSE
A new definition of seismicity, which relates to the location, size, and rate of occurrence of earthquakes,
has been included in the EIS Glossary.

II COMMENT

The commentor questions Volume 2, Figure 4.6-4 with respect to the relative magnitudes of acceleration in
the seismic hazard curves describing ground motions at Idaho National Engineering Laboratory and the
Savannah River Site.
RESPONSE
The reasons for a seemingly inconsistent seismic hazard at SRS with respect to INEL is, in part, due to the
low attenuation characteristics of eastern bedrock, which makes sites in the eastern United States more
susceptible to larger ground motions resulting from low-to-moderate magnitude earthquakes. Also,
sediments of Quaternary age, which are appropriate for recording surface faulting earthquakes, are not
widespread in the east. Typically, Precambrian to Mesozoic rocks are overlain only by Holocene deposits.
Therefore, the number of late Quaternary surface faulting earthquakes in the eastern United States has great
uncertainty, which results in conservative seismic hazard estimates. Accident analyses (including beyond
reasonably foreseeable accidents with potential impacts greater than seismically induced accidents)
indicate that the risk to the public from DOE operations would be small. Therefore, additional information
on reasonably foreseeable seismic events with lesser potential impact would have no effect on the
decision-making process. See also the response to comment 05.05.01 (003).

II COMMENT

The commentor maintains that the seismic hazards at the Nevada Test Site are severely understated in the EIS. The commentor states that the Nevada Test Site is in a high hazard area near major fault zones, and has experienced earthquakes triggered by other regional seismic events. Additionally, the commentor states that nuclear testing at the Nevada Test Site could have caused surface and subsurface faulting close to failure levels.

RESPONSE

The discussion of seismicity at NTS (Volume 1, section 5.2.4, and Volume 1, Appendix F, Part Two, section 4.6) will be revised to indicate that a moderate seismic potential exists at the proposed SNF management site. As stated in the 1993 Nevada Test Site Technical Site Information Report prepared by DOE, the southern Nevada region is generally characterized as an area of moderate seismic activity. NTS, including the proposed SNF management site, is located in Seismic Zone 2B, as defined in the Uniform Building Code of the International Conference of Building Officials. Zone 2B signifies areas with a moderate damage potential. Areas further to the west (western Nevada and California) are in Seismic Zones 3 and 4. Seismic Zone 3 signifies areas with a major damage potential. Seismic Zone 3 is near the western edge of NTS. Seismic Zone 4 signifies areas with a major damage potential that are near major faults. Zone 4 areas are well to the west of the site.

NTS has probably experienced earthquakes associated with regional seismic events. Some faults in the NTS region are oriented favorably for site seismicity to be influenced by other regional events. However, determining exact relationships between regional seismic events is difficult.

Nuclear testing has produced fresh fault scarps and surface cracks, generally localized in the vicinity of the nuclear tests. Recent geologic mapping of NTS shows faults that have ruptured in the Yucca Flat area, presumably as a result of testing. However, wave propagation from nuclear testing is hypothesized to relieve tectonic stress. The hypothesis regarding the triggering of local earthquakes by distant seismic events is still being evaluated and tested in the scientific community and is best regarded as a working hypothesis. Any new DOE facilities required by decisions supported by this EIS will be built consistent with the requirements of DOE Order 5480.28, Natural Phenomena Hazards Mitigation, which requires a rigorous, quantitative assessment and mitigation of natural phenomena hazards.

II COMMENT

One commentor notes that the high seismic hazard in the vicinity of Idaho National Engineering Laboratory demands that DOE commit to an ongoing program of geologic hazards studies. Commentors question how basalt flows will interact with nuclear waste and how the risks will be minimized.

RESPONSE

Seismic hazards and geologic analyses can be found in Volume 1, section 4.2; Volume 1, Appendix B, section 4.6; and Volume 2, section 4.6 and Appendix F-2. Seismically induced accidents are discussed in Volume 2, section 5.14 and Appendix F-5. DOE takes seismic hazards very seriously, and INEL uses independently reviewed analyses to support appropriate implementation of DOE Orders and standards.

There has been an extensive effort over the past several years to upgrade DOE Orders and standards related to natural phenomena hazards. Studies have been under way for many years and are continuing at INEL to ensure that seismic hazard characterization is based on up-to-date information and state-of-the-art methods. New geologic information on seismic hazard characterization is reviewed to determine if additional geologic studies are needed.

DOE has analyzed the effects of a hypothetical lava flow event at INEL. The geologic potential of a lava flow is discussed in Volume 2, section 4.6.4, and the estimated consequences of such an event for

the
various alternatives are shown in Volume 2, section 5.14, Tables 5.14-3, -5, -6, -8, and -9. The methodology used for performing these analyses is documented in Volume 2, Appendix F-5 and in Accident Assessments for the Idaho National Engineering Laboratory Facilities. As stated in the analyses, DOE used conservative assumptions to account for the uncertainty in modeling the effects of an
accident involving molten lava coming into contact with radioactive materials. The health risks to the
public would be small and well below DOE's Nuclear Safety Policy .
DOE has considered the potential for a volcanic ashfall event at INEL in Volume 2, section 4.6.4 and
Appendix F-2.1.2. As stated in section 4.6.4, potential ashfall events are not expected to impact the site.
The risk associated with an ashfall event is bounded by the accidents evaluated in Volume 2, section 5.14.
The impacts on the Hanford Site resulting from the Mount St. Helens eruption and ashfall were small. The
Assessment of Potential Volcanic Hazards for New Production Reactor Site at the Idaho National Engineering Laboratory determined that hazards from volcanic events would be small for INEL.
Therefore, a silicic ash-flow hazard at INEL does not represent a reasonably foreseeable significant adverse
impact on the human environment.
A hypothetical accident involving the instantaneous release of the contents of a high-level waste tank
represents the situation with the maximum reasonably foreseeable impact on the Snake River Plain aquifer
resulting from geologic conditions at INEL and is discussed in Volume 2, section 5.14 and Appendix F-2.
Under this scenario, maximum radionuclide concentrations are predicted to reach the INEL boundary 300
years after the accident and predicted concentrations will be less than EPA MCLs or DOE DCGs.
DOE Order 5480.28, Natural Phenomena Hazards Mitigation, sets forth DOE procedures to design, assess, and operate DOE facilities so that workers, the general public, and the environment are protected
from the impacts of natural phenomena hazards on DOE facilities. This Order specifically requires facilities
to be reevaluated when there is any change in design and construction standards. Existing facilities at
INEL have undergone substantial safety analysis and seismic design review. Several of the projects
described in Volume 2, Appendix C of the EIS are proposed by DOE to replace or upgrade facilities at
INEL. Likewise, actions such as the transfer of fuels from potentially vulnerable facilities to modern
facilities have resulted from the ongoing safety analysis and seismic design reviews.
No new analyses are required for INEL facilities because the EIS summarizes existing credible scientific
evidence relevant to understanding the existing environment, identifying reasonably foreseeable impacts,
and evaluating potential consequences. The evaluation of impacts is based on methods generally accepted
by the scientific community.
See also the responses to comments 05.08.01 (014) and 05.08.01 (030).

II COMMENT

Commentors note that the Idaho National Engineering Laboratory is designated a Uniform Building Code
Seismic Zone 2B and suggest that this area is not of low seismic potential as indicated in the EIS.
RESPONSE
The UBC seismic hazard zones range from 0 to 4, with 0 being designated the lowest seismic potential.
The Snake River Plain of Eastern Idaho is currently classified as Zone 2B, based on regional voting at
meetings of the professional engineering community. A small portion of the INEL site is in UBC Zone 3.
No INEL facilities are located in Zone 3. The characterization of DOE sites as having low-to-moderate
seismic potential is correct when taken in the context of UBC Zone 4, which includes regions of relatively
intense seismic activity. In fact, the UBC accelerations are up to twice those shown on National Earthquake Hazard Reduction Program Maps for most of INEL. Likewise, United States Geological Service ground motion maps (1982 and 1990) show accelerations lower than UBC values of 0.20g. These
comparisons point out that the UBC maps are extremely conservative for INEL and that the actual seismic
hazard is less than shown on the UBC map.

DOE Order 5480.28, Natural Phenomena Hazards Mitigation, requires that DOE facilities meet stringent natural phenomena hazards mitigation requirements. The UBC design basis acceleration for Zone 2B is 0.2g (the acceleration due to gravity is 1g). Most INEL moderate- or high-hazard facilities currently in use are designed to a design basis acceleration of 0.24g or higher. Low-to-moderate seismic hazard potential for INEL is further supported by the accelerations recorded at the site from the Borah Peak earthquake, which ranged from 0.078g to 0.017g. This earthquake had a moment magnitude of 6.9 (surface wave magnitude of 7.3).
Regardless of the adjectival characterization of the seismic hazard at the DOE sites as low or moderate, DOE Orders require a systematic quantification of the seismic hazard for its facilities. Quantitative probabilistic estimates of seismic hazards at other DOE sites have been used in the EIS when available.
DOE has prepared, and INEL uses, an independently reviewed probabilistic seismic hazard assessment.
This study estimates earthquake ground motions and how often they might occur. This study has been independently reviewed and will be incorporated into the INEL architectural and engineering standards after review by the site Natural Phenomena Committee per DOE Order 6130.1A, General Design Criteria.
Included in this study is an estimate of ground motions at INEL facilities from a moment magnitude 7.0 earthquake occurring at the southern end of the Lemhi fault zone near the site boundary. These ground motions exceed those that would occur as a result of moment magnitude 7.0 earthquakes at the southern ends of the Lost River and Beaverhead fault zones. The 1983 Borah Peak earthquake had a moment magnitude 6.9. A study has also been performed for the Navy's Expended Core Facility at INEL and presents detailed data and comparable results. See also the response to comment 05.05.01 (036).
Quantitative estimates of seismic hazards at INEL sites are in or referenced in section 4.6 of each of the Volume 1 appendices; Volume 1, Appendix D, section 4.2 ; and Volume 2, Appendix B, section 4.6.
These estimates are more useful than adjectival or UBC characterizations for the decision-making process.

II COMMENT

The commentor indicates that the EIS is inadequate because no seismic hazard zone map is included.
Specific reference was made to Volume 1, Appendix D, Part B.5.2 referring to seismic hazard maps as "zone maps" and that three of four waste water pits are not up to current earthquake codes. In addition, the commentor states that facilities should be reconstructed to meet current codes and that a seismic map of the Idaho National Engineering Laboratory with facility locations should be added.
RESPONSE
Seismic hazards and geologic analyses for INEL can be found in Volume 1, section 4.2; Volume 1, Appendix B, section 4.6; and Volume 2, section 4.6 and Appendix F-2. Seismically induced accidents are discussed in Volume 2, section 5.14 and Appendix F-5. DOE takes seismic hazards very seriously, and INEL uses reviewed analyses to support the implementation of DOE Orders and standards.
Volume 1, Appendix D, Chapter 4 contains sections that describe possible seismic hazards at each Navy site, provide general background information regarding the seismicity at these sites, and provide references for more detailed information. In addition, the current UBC seismic classification for each site is provided as a means for comparing the potential for seismic hazards among sites.
The effects of seismic failure of Naval SNF management facilities have been evaluated in this EIS. Volume 1, Appendix D, Chapter 5 and Attachment F provide summary and detailed discussions of the analyses that were performed and the public health risks that might result from a seismic event at each site where Naval SNF would be stored. The seismic events considered in the analyses included both an earthquake of the magnitude used as the basis for the design of the facility (design basis earthquake) and an earthquake of a magnitude, which is more severe than that for which the facility must be designed (beyond design basis earthquake). These analyses show that the risks associated with seismic events involving Naval

SNF would
be small for all of the alternatives and sites considered.
The three water pits that the commentor refers to were built to standards that were the acceptable criteria
at the time they were built. These water pits have been reevaluated under current seismic design standards
and found to be structurally adequate. An existing facility's seismic strength and risk assessment depends
on the building's specific characteristics as well as the seismic acceleration. Also, the accident analysis
bounds any seismically induced failure.
The information on seismic hazards used in this EIS was obtained from the available credible data for each
site. Because this information is specific to each site, it is more useful in understanding the potential
seismic hazards than the classifications provided for large regions in the UBC maps. An up-to-date seismic
evaluation was completed for all of the water pools at the Expended Core Facility at INEL. The results
show that they all can withstand earthquakes for both design basis events (peak ground acceleration of
0.24 g) and for beyond design basis events (peak ground acceleration of 0.4 g). The statement in Volume
1, Appendix D, Attachment B that three of the water pools were designed to the seismic hazard zone
classification in effect at the time they were built is correct, but does not mean that this is all they would
withstand or that they do not comply with current building codes or other applicable requirements.
DOE Order 5480.28, Natural Phenomena Hazards Mitigation, sets forth DOE policy to design, construct,
and operate DOE facilities so that workers, the general public and the environment are protected from the
impacts of natural phenomena hazards on DOE facilities. This Order specifically requires facilities to be
reevaluated when there is any change in design and construction standards. Existing facilities at INEL have
undergone continual safety analysis and seismic design review. Several of the projects described in
Volume 2, Appendix C of the EIS are proposed by DOE to replace or upgrade facilities at the site.
Likewise, actions such as the transfer of fuels from potentially vulnerable facilities to modern facilities have
resulted from the ongoing safety analysis and seismic design reviews.
The data and methods used in the seismic hazard report referenced in Volume 2, section 4.6 of the EIS as
Site-Specific Probabilistic Seismic Hazard Analysis for the Idaho National Engineering Laboratory
(Draft) were extensively and independently reviewed. This report includes graphs showing rate of
occurrence versus acceleration for seismic events for each major facility at INEL. This report may be
incorporated into the INEL architectural and engineering standards after review by the site Natural
Phenomena Committee. The previous INEL seismic analysis (Earthquake Strong Ground Motion
Estimates for the Idaho National Engineering Laboratory: Final Report) was reviewed and
incorporated into the site architectural and engineering standards after review by the site Natural
Phenomena Committee in 1992 and is referenced in Volume 2, sections 4.6 and F-2 and contains facility-
and location-specific seismic hazard information.
Most facilities currently in use at INEL are designed to withstand an earthquake acceleration of 0.24g or
higher. All of the facilities at the site lie in UBC Zone 2B, which requires that buildings withstand
earthquake accelerations of up to 0.2g. A small portion of the INEL site lies in UBC Zone 3, but there are
no facilities in that portion of the site. DOE seismic design standards for moderate- and high-hazard
facilities exceed the UBC seismic Zone 2B design criteria.
The EIS was prepared using existing references and currently published information. DOE prepared the
EIS in a layered fashion and placed much of the technical details in appendices and supporting
documentation. The references cited for Volume 1 and for Volume 2 include current information on
existing environment and applicable environmental consequences for all sites evaluated. These original
studies are referenced in Chapter 9 of both volumes and are available in reading rooms and information
locations for review by the commentor and other interested members of the public.
Low-to-moderate seismic potential for INEL is further supported by the accelerations recorded at the site
from the Borah Peak earthquake, which ranged from 0.078g to 0.017g. This earthquake had a moment
magnitude of 6.9 (surface magnitude of 7.3).

The EIS summarizes all known credible scientific evidence relevant to understanding the environment,
identifying reasonably foreseeable impacts, and evaluating potential consequences. The EIS uses the most
up-to-date reviewed analyses when available, and the evaluation of impacts is based on methods generally
accepted by the scientific community. The analyses reported in the EIS evaluate the potential
consequences, including direct, indirect, cumulative, irreversible and irretrievable effects, and long-term
productivity losses.

II COMMENT

The commentor states that the description of the Snake River Plain as having low seismicity is contradicted
by the Idaho National Engineering Laboratory's 1979 to 1981 Quarterly Seismic Reports, which
summarize data on earthquakes "registered on or originated on the Snake River Plain."
RESPONSE
The INEL Quarterly Seismic Reports cited by the commentor, available at the INEL Technical Library,
show far fewer earthquakes originating on the Plain than recorded by INEL seismographs on or near the
Plain. For example, the January 1982 report shows 470 earthquakes recorded by INEL seismographs on
the Plain for the months October through December 1981 with magnitudes ranging from 0.4 to 3.5.
Out of 470 earthquakes, only one event, with a magnitude of 1.1, was possibly located within the Snake
River Plain. These reports typically show one to two events per quarter originating in the Snake River Plain
with magnitudes ranging from 0.1 to 1.3. When this data is compared with Figure 4.6-3, it is appropriate to
describe the Snake River Plain as having a low-level of seismic activity with respect to the Basin and Range
Province. The term "aseismic" has been avoided in the EIS to eliminate confusion.
Seismic hazards and geologic analyses for INEL can be found in Volume 1, section 4.2; Volume 1,
Appendix B, section 4.6; and Volume 2, section 4.6 and Appendix F-2. Seismically induced accidents are
discussed in Volume 2, section 5.14 and Appendix F-5.
The assertion that the Snake River Plain has a low rate of seismicity is supported by the evidence in
Volume 2, Figure 4.6-3, which represents a summary of the best available data at the time the data for the
EIS was compiled. The addition of subsequent seismic events in the region would not change the
conclusion that the Snake River Plain has a low rate of seismicity with respect to the Basin and Range
Province.
See also the response to comment 05.05.01 (007).

II COMMENT

The commentor notes that the Borah Peak earthquake was a magnitude 7.3 and not a magnitude 6.9, as
stated in an EIS reference.
RESPONSE
The Borah Peak earthquake, as stated in Volume 2, section 4.6.1, had a surface wave magnitude of 7.3.
The moment magnitude for this earthquake was 6.9. Seismologists prefer to calculate and discuss
earthquake energy in terms of moment magnitude because it is based on the physical properties of the earth
and repeatable measurements (such as surface rupture length) as opposed to a surface wave magnitude,
which is a one-time measure of a seismograph's response to an earthquake. Other measures of magnitude
(such as Richter) cannot be determined for close, large events due to instrument saturation.

II COMMENT

The commentor asserts that the EIS statement that the Hanford Site is historically of low seismicity is
incorrect.
RESPONSE
The seismic hazards at the Hanford Site are described in Volume 1, section 4.1, and additional

detail is provided in Volume 1, Appendix A, section 4.6.3. The area of the Hanford Site has historically experienced several moderate-sized earthquakes. The largest earthquakes near the Hanford Site include an approximate magnitude 4.5 event in 1918 near the town of Corfu, 35 kilometers (22 miles) north of the Hanford Site, and a second event with the same approximate magnitude and location in 1973. The largest earthquake within the Hanford Site occurred in 1971 near the location of N-Reactor on the Columbia River and had a magnitude of 3.8.

DOE Orders require rigorous quantification of seismic hazards. Seismic hazard studies have been conducted at the Hanford Site to incorporate geologic estimates for the frequency of occurrence of large earthquakes associated with geologic faults and tectonic zones, as reported in Volume 1, Appendix A. The Hanford Site is in a UBC Zone 2B (Zone 0 represents low risk and Zone 4 represents high risk), which leads to design requirements to withstand moderate earthquakes.

II COMMENT

The commentor states that the Idaho National Engineering Laboratory is subject to moderate seismic hazard and that other facilities at Puget Sound Naval Shipyard, the Hanford Site, Los Alamos National Laboratory, and Sandia National Laboratories have moderate-to-high seismic potential.

RESPONSE

Estimates of seismic hazards at the sites considered are in or are referenced in Volume 1, Appendices A through F, and Volume 2, Appendix F-2. Quantitative estimates are more useful than adjectival characterizations for the decision-making process. However, the comment is acknowledged and DOE has rephrased the description of seismic hazard at DOE sites.

DOE Order 5480.28, Natural Phenomena Hazards Mitigation, requires that DOE facilities meet stringent natural phenomena hazards mitigation requirements. The UBC design basis acceleration for Zone 2B is 0.2g (the acceleration due to gravity is 1g). Most INEL moderate- or high-hazard nuclear facilities currently in use are designed or have been evaluated to a design basis acceleration of 0.24g or higher.

Low-to-moderate seismic hazard potential for INEL is further supported by the accelerations recorded at INEL from the Borah Peak earthquake, which ranged from 0.078g to 0.017g. This earthquake had a moment magnitude 6.9 (surface wave magnitude 7.3).

Regardless of the adjectival characterization of the seismic hazard at DOE sites as low or moderate, DOE Orders require a systematic quantification of the seismic hazard for its facilities. Quantitative probabilistic estimates of seismic hazards at other DOE sites have been used in the EIS when available. INEL is preparing and the EIS uses a probabilistic seismic hazard assessment for facilities managed by DOE's Idaho Operations Office. This study estimates earthquake ground motions and how often they might occur. This study has been extensively and independently reviewed and will be incorporated into INEL architectural and engineering standards after review by INEL Natural Phenomena Committee per DOE Order 6130.1A, General Design Criteria. A similar process was used in 1992 to incorporate a scientifically reviewed seismic analysis of INEL into INEL architectural and engineering standards. Included in these studies are estimates of accelerations at INEL facilities that would result from a moment magnitude 7.0 earthquake occurring at the southern end of the Lemhi fault zone near the INEL boundary. These accelerations for INEL facilities exceed those that would occur as a result of moment magnitude 7.0 earthquakes at the southern ends of the Lost River and Beaverhead fault zones. The 1983 Borah Peak earthquake had a moment magnitude 6.9.

The Lemhi Fault and other seismic sources are discussed in Volume 1, Appendix B, section 4.6 and in Volume 2, section 4.6 and Appendix F-2. Seismically induced accidents are discussed in Volume 2, section 5.14 and Appendix F-5. These accident analyses indicate that the risks to the public would be small from seismic initiated events.

Existing facilities at INEL have undergone substantial safety analysis and seismic design review. Several of the projects described in Volume 2, Appendix C are proposed by DOE to replace or upgrade facilities at INEL. Likewise, actions such as the transfer of fuels from potentially vulnerable facilities to modern facilities have resulted from the ongoing safety analysis and seismic design reviews.
All other major, moderate- and high-hazard facilities currently in use at INEL were built such that they can withstand accelerations from a moment magnitude 7.0 earthquake at the southern end of the Lemhi fault zone. This level of seismic safety is consistent with requirements contained in DOE Orders.
The accident analyses (including beyond reasonably foreseeable accidents with potential impacts greater than seismically induced accidents) indicate that the risk to the public from alternatives described in this EIS would be small. Therefore, additional information or characterization of reasonably foreseeable seismic events with lesser potential impact would have no effect on the decision-making process. The level of detail and characterization for seismic issues is appropriate for the programmatic decisions that will be made based on this document.

II COMMENT

The commentor questions why the overall level of seismic hazard calculated in the EIS for the Idaho National Engineering Laboratory is lower than the seismic hazard curves for either the Hanford Site or the Savannah River Site, and why U.S. Geological Survey data are not used.
RESPONSE
The differences perceived by the commentor result from the site-specific data and models used to assess seismic hazards. Each site used data and models judged to be appropriate to comply with DOE Orders and standards for that location. Regardless of differences in modeling approaches, steps were taken to ensure the professional and scientific integrity of these discussions and analyses for these sites. These analyses are adequate for evaluation and consideration of alternatives required for the programmatic EIS. See also the response to comment 05.05.01 (003).
DOE Order 5480.28, Natural Phenomena Hazard Mitigation, sets forth DOE procedures to design, assess, and operate DOE facilities so that workers, the general public, and the environment are protected from the impacts of natural phenomena hazards on DOE facilities. INEL uses analyses to support the implementation of DOE Orders and standards.
U.S. Geological Survey (USGS) data are regional in scope and do not provide sufficient information for analysis of the programmatic alternatives discussed in this EIS.

II COMMENT

The commentor states that a design basis earthquake using a two-segment rupture and moment magnitude 7.0 earthquake on the Lemhi fault is not conservative enough.
RESPONSE
The Lemhi fault and other seismic sources are discussed in Volume 1, Appendix B, section 4.6 and Volume 2, section 4.6 and Appendix F-2. Seismically induced accidents are discussed in Volume 2, section 5.14 and Appendix F-5. These accident analyses indicate that risks to the public would be small from seismic-initiated events.
Existing facilities at INEL have undergone substantial safety analysis and seismic design review. Several of the projects described in Volume 2, Appendix C of the EIS are proposed by DOE to replace or upgrade facilities at the site. Likewise, actions such as the transfer of fuels from potentially vulnerable facilities to modern facilities have resulted from the ongoing safety analysis and seismic design reviews.
All other major, moderate- and high-hazard facilities currently in use at INEL were built to withstand accelerations that would result from a moment magnitude 7.0 earthquake at the southern end of the Lemhi

fault zone.
The probabilistic seismic hazard assessment is intended to capture the effects of the most likely type of
high-intensity seismic events. Seismic events were the only identified common-cause initiators with the
potential to initiate radioactive and toxic material releases to the environment. Seismically initiated
releases and impacts from individual facilities were considered in the identification of the postulated
accident scenarios analyzed in this EIS. These results are conservative and ensure scientific integrity.
The two-segment rupture model is consistent with observations to date on Basin and Range earthquakes in
general and paleoseismic indicators near INEL in particular.
See also the response to comment 05.05.01 (001).

II COMMENT

The commentor states that seismicity at the Idaho National Engineering Laboratory is not mentioned in the
EIS analysis.
RESPONSE
Volume 1, Appendix B, section 4.6 and Volume 2, section 4.6 discuss seismicity in relation to INEL.
Volume 2, section 5.14 discusses how seismic events were used in the accident analyses. Details of the
accident analyses, including seismicity assumptions, are found in Accident Assessments for Facilities at
the Idaho National Engineering Laboratory.

II COMMENT

The commentor suggests that the seismic study in Volume 2, section 4.6 is incomplete because the peak
ground acceleration curves for facilities other than the Idaho Chemical Processing Plant have not been
included.
RESPONSE
The data and methods used in the seismic hazard report referenced in Volume 2, section 4.6 as
Site-Specific Probabilistic Seismic Hazard Analysis for the Idaho National Engineering Laboratory (Draft)
includes graphs showing rate of occurrence versus ground motion for seismic events for each major facility
at INEL. The seismic hazard curve for the Idaho Chemical Processing Plant was included as an example of
the information contained in the INEL seismic hazard analysis [Site-Specific Probabilistic Seismic
Hazard Analysis for the Idaho National Engineering Laboratory (Draft)]. This report may be
incorporated into the INEL architectural and engineering standards after it is finished and reviewed by the
INEL Natural Phenomena Committee. The previous INEL seismic analysis (Earthquake Strong Ground
Motion Estimates for the Idaho National Engineering Laboratory: Final Report) was also extensively
reviewed and incorporated into the INEL architectural and engineering standards after review by the INEL
Natural Phenomena Committee in 1992. Earthquake Strong Ground Motion Estimates for the Idaho
National Engineering Laboratory: Final Report is referenced in Volume 2, section 4.6 and
Appendix F-2 and contains facility- and location-specific seismic hazard information.

II COMMENT

The commentor notes that the Idaho National Engineering Laboratory is in an area of seismic activity and
specifically referred to the Beaverhead, Lemhi, and Lost River fault zones.
RESPONSE
Seismic hazards and geologic analyses can be found in Volume 1, section 4.6; Volume 1, Appendix B,
section 4.6; and Volume 2, section 4.6 and Appendix F-2. Seismically induced accidents are discussed
in Volume 2, section 5.14 and Appendix F-5. DOE takes seismic hazards very seriously, and INEL uses
independently reviewed analyses to support the enforcement and implementation of DOE Orders and

standards.
DOE Order 5480.28, National Phenomena Hazards Mitigation, sets forth DOE procedures to design, assess, and operate DOE facilities so that workers, the general public, and the environment are protected from the impacts of natural phenomena hazards on DOE facilities. This Order specifically requires facilities to be reevaluated when there is any change in design and construction standards. Existing facilities at INEL have undergone continual safety analysis and seismic design review. Several of the projects described in Volume 2, Appendix C of the EIS are proposed by DOE to replace or upgrade facilities at the site. Likewise, actions such as the transfer of fuels from potentially vulnerable facilities to modern facilities have resulted from the ongoing safety analysis and seismic design reviews.
INEL has prepared a probabilistic seismic hazard assessment for facilities at the site. This study [Site-Specific Probabilistic Seismic Hazard Analysis for the Idaho National Engineering Laboratory (Draft)] estimates earthquake accelerations and how often they might occur at facilities at the site. This study has been independently reviewed and will be incorporated into the INEL architectural and engineering standards after it is finalized and reviewed by the site Natural Phenomena Committee for use in conjunction with DOE Orders to design and build new facilities. Included in this study are vibratory ground motions at INEL facilities that would result from a magnitude 7.0 earthquake occurring at the southern end of the Lemhi fault zone near the site boundary. These ground motions would exceed those that would occur as a result of magnitude 7.0 earthquakes at the southern ends of the Lost River and Beaverhead fault zones.
Accident analysis results (including seismically induced accidents) indicate that the risk to the public from INEL operations would be small.
Major facilities currently in use at INEL were built to withstand accelerations that would result from a 7.0 earthquake at the southern end of the Lemhi fault zone.

II COMMENT

The commentor notes that the West Valley Demonstration Project facility is only about 30 kilometers from the probable causative structure for the 1929 Attica, New York, magnitude 5.8 earthquake.
RESPONSE
Volume 1, Appendix E, section 3.3.1 of the EIS has been revised to include seismic data that address the significance of seismic activity in the West Valley region.

II COMMENT

The commentor expresses the opinion that the geologic map in Volume 2, section 4.6 is inadequate because it does not define certain major geologic features; specifically, the Arco Volcanic Rift Zone, the Lava Ridge-Hell's Half Acre Volcanic Rift Zone, and the Axial Volcanic Zone.
RESPONSE
Rift zones at INEL, as discussed in the EIS, refer to volcanic rift zones in the region. The definition suggested by the commentor concerns continental or oceanic constructive tectonic plate margins, which, while correct, is not appropriate with respect to local conditions.
Important regional geologic features are included in Volume 2, section 4.6. A map showing the most significant volcanic rift zones in and near INEL can be found in the Engineering Design File referenced as Water Resources Supporting Document for the INEL Environmental Restoration and Waste Management EIS (Draft) in Volume 2, Appendix F. Many geologic maps of INEL and adjoining areas are available in the open literature. Some of this literature is cited and referenced in Volumes 1 and 2, including USGS reports and maps.
DOE added a more detailed geologic map of INEL to the EIS.

II COMMENT

The commentor suggests that analysis of seismic and volcanic hazards be fully reviewed by the Idaho
Geologic Survey and other qualified experts.
RESPONSE
Consistent with DOE Orders and standards, INEL seismic hazards assessments and methods have been independently reviewed by many expert seismologists and geologists. These include the Senior External
Events Review Group, a panel of seismic, geologic and structural engineering experts with expertise in
seismic siting and design of high-hazard facilities; the Lawrence Livermore Volcanic Working Group; the
Defense Nuclear Facilities Safety Board; Woodward-Clyde, Inc.; Risk Engineering, Inc.; Stanford University; University of Utah; State University of New York at Binghamton; Southern Methodist University; Idaho State University; the U.S. Geological Survey; and Boise State University. Given the
extensive nature of this review, DOE believes additional review is not necessary.
See also the response to comment 05.05 (015).

II COMMENT

The commentor points out that the Uniform Building Code contains four Seismic Risk Zones and not three.
RESPONSE
The EIS has been revised to reflect that there are more than three Uniform Building Code zones.

II 5.6 Land Use

II COMMENT

The commentor notes that the list of Federal outdoor recreation facilities in Volume 1, Appendix F, Part
Three, section 4.2 should be expanded, and Figure 4.2-2 should be updated.
RESPONSE
The list of Federal outdoor recreation facilities identified in the text and figures of Volume 1, Appendix F,
Part Three, section 4.2 is not intended to be all inclusive. However, the list of specific Federal outdoor
recreation facilities has been revised to include other major facilities.

II COMMENT

The commentor, referring to Volume 1, Appendix F, notes that the acreage needed for proposed facilities,
whether 90 or 120 acres, is unclear.
RESPONSE
Construction of SNF management facilities would require 90 acres. Under the Centralization alternative,
an Expended Core Facility would also need to be constructed; this would require an additional 30 acres.
The data in Volume 1, Appendix F, Parts Two and Three, Table 3.2-1 for the Centralization alternative
include the requirements of the Expended Core Facility, which are discussed in Volume 1, Appendix D.
To clarify the acreage requirements, a footnote has been added to Volume 1, Appendix F, Parts Two and
Three, Table 3.2-1, and the text of Volume 1, Appendix F, section 3.2 has been revised.

II COMMENT

The commentor supports the banning of grazing on Idaho National Engineering Laboratory land to allow
re-establishment of natural vegetation.
RESPONSE
Grazing policies are not within the scope of this EIS. The U.S. Department of the Interior, Bureau of Land

Management is responsible for those policies.

II COMMENT

The commentor states that the EIS land-use analysis does not identify policies or the decision-making
process, or provide an opportunity for public input on specific projects.
RESPONSE
The EIS identifies DOE land-use plans and policies applicable to INEL in Volume 2, section 4.2. Local
land-use policies are also identified in Volume 2, section 4.2. For details of these plans and policies, the
commentor is encouraged to consult the specific documents referenced in the EIS, which are available in
reading rooms and information locations listed in the EIS. Also, DOE has established a Future Use Project
Office, which is identifying stakeholder-preferred future use options at the 25 DOE sites by the end of
1995. Future use options are defined as a select range of preferred uses forged with consideration of
stakeholder desires and DOE missions, and tempered by technical, and legal constraints and opportunities.

II COMMENT

The commentor requests an explanation of how percentages were calculated for acres disturbed for Idaho
National Engineering Laboratory under each alternative.
RESPONSE
Calculations of the acreage that would be disturbed by proposed projects under each alternative were
based on figures contained in individual project data sheets found in Volume 2, Appendix C. Volume 2,
section 3.3 has been changed to show how the acreages disturbed were calculated.

II COMMENT

The commentor states that the EIS fails to consider impacts of the alternatives on the other current uses of
Idaho National Engineering Laboratory land such as hunting, grazing, and tribal ceremonial and religious
purposes.
RESPONSE
Volume 2, section 4.2 identifies the portions of INEL that are used for hunting and grazing. Volume 2,
section 4.4 discusses traditional resources that are of cultural or religious importance to local Native
Americans. All of these land uses are outside of the facility areas where the proposed actions of the
various EIS alternatives would be implemented. Consequently, no impacts to hunting or grazing activities,
nor to tribal ceremonial or religious uses, are expected. The future use of land would be coordinated with
local Native Americans to assess any potential impacts of future proposed activities.

II COMMENT

The commentor requests that the EIS describe and identify the locations of specific actions, the process for
making land-use decisions under the Federal Facilities Agreement and Consent Order, and that the EIS
identify the role of regulatory agencies in making future land-use decisions under the Federal Facilities
Agreement and Consent Order for Idaho National Engineering Laboratory.
RESPONSE
The specific location of proposed actions at INEL are identified in the project summaries. See Volume 2,
Appendix C. The number of acres disturbed for each project is also provided in this portion of the EIS.

The locations of projects not covered by this EIS will be identified in subsequent NEPA or Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) documents.
The Federal Facilities Agreement and Consent Order (FFA/CO) process does not entail making land-use "decisions." Rather, assumptions for future land uses at INEL will be made for the purpose of determining the appropriate level of cleanup at each operable unit. In August, 1994, the DOE Idaho Operations Office issued for public comment the Idaho National Engineering Laboratory Long-Term Land Use Future Scenarios . This document set forth various land-use scenarios that could be assumed for near-term and long-term activities at INEL. Public comments on the document were received, and currently are being reviewed and addressed as appropriate.
In accordance with CERCLA and the FFA/CO, the Idaho Department of Health and Welfare and EPA Region X will be part of the decision-making process on the appropriate level of cleanup at INEL. DOE requested comments on the Idaho National Engineering Laboratory Long-Term Land Use Future Scenarios from the State of Idaho and EPA Region X.

II COMMENT

The commentor states that the EIS needs to address whether the impacts from land use at the Idaho National Engineering Laboratory are permanent or temporary.
RESPONSE
Volume 2, section 5.18 states that disposal of radioactive or hazardous wastes would cause irreversible and irretrievable (i.e., permanent) commitments of land resources under the Ten-Year Plan and Maximum Treatment, Storage, and Disposal alternatives. The affected acreage is also identified. Acreage used for waste treatment, storage, and disposal activities would be reserved for those purposes, and other uses of this land would be precluded during the time period addressed by the EIS.

II COMMENT

The commentor states that the proposed placement of spent nuclear fuel facilities at the Nevada Test Site would be inconsistent with the DOE 1994 draft future land use plan for the Nevada Test Site, which designates that portion of Area 5 as a "nonnuclear test area."
RESPONSE
The NTS future land use plan has three area designations: underground nuclear weapons test area, proposed high-level radioactive waste repository area, and nonnuclear test area. These designations are broad, providing general guidance for future activities. The underground nuclear weapons test area has the general characteristics suitable for nuclear weapons tests, although some localized areas that are not suitable because of terrain, previous uses, local geologic features, or other reasons, may be used for other purposes. The proposed high-level radioactive waste area has been reserved to support the activities for the site characterization at Yucca Mountain, and is not available for other uses at this time. The nonnuclear test area is an area where weapons testing is not conducted and is available for other uses deemed appropriate by DOE, such as siting SNF management facilities.

II COMMENT

The commentor states that DOE has summarily dismissed the alternative of restoring the Idaho National Engineering Laboratory to pristine conditions as unreasonable and that DOE is ignoring the Shoshone-Bannock Tribes' rights to hunt, fish, and gather on unoccupied lands of the U.S. Government.
Additionally, the commentor states that the presence of cultural resources on the Idaho National Engineering Laboratory should qualify the Idaho National Engineering Laboratory as a unique land resource, thereby requiring restoration of the site.
RESPONSE
Environmental restoration activities at INEL are being conducted in accordance with the FFA/CO

dated
December 4, 1991. Restoration activities will comply with the requirements of CERCLA. These laws do
not require restoration to pristine conditions, but are designed to assure protection of human health and the
environment in a cost-effective manner.

II COMMENT

The commentor states that the analysis of land-use impacts is fundamentally flawed because it assumes that
"there are no Native American treaty rights that would affect any future land use on the INEL site." The
commentor states that the Fort Bridger Treaty expressly reserves the rights of the Shoshone-Bannock
Tribes to use unoccupied lands of the U.S., and the Tribes will exercise these rights when the Idaho
National Engineering Laboratory goes away or releases portions of land.
RESPONSE
The commentor is correct that the Fort Bridger Treaty of 1869 reserves certain future rights for the
Shoshone-Bannock Tribes to use lands on the INEL site to the extent that those lands may sometime in the
future become unoccupied. The analysis of land-use impacts in the EIS is limited to the time period and
scope of the EIS. The time period for Volume 2 analysis is the 10 years from June 1, 1995, to June 1,
2005; the time period for Volume 1 analysis is 40 years, with detailed impact analysis conducted for
actions occurring from June 1, 1995 to June 1, 2005. During the time periods covered by the EIS, DOE
does not plan to relinquish ownership and control of the INEL site. Discussions of the Fort Bridger Treaty
of 1869 in Volume 1, Appendix B and Volume 2 of the EIS have been changed to more clearly address this issue.

II COMMENT

The commentor requests information be included in the EIS on the approach related to land ownership
that would be used to transfer Idaho National Engineering Laboratory land to other agencies, or the private
sector and DOE's and other agencies' responsibilities in the land transfer process.
RESPONSE
The lands and facilities that are evaluated under the alternatives in this EIS are not scheduled to be turned
over to other government agencies or the private sector within the time considered in the EIS.
Consequently, the subject of transfer of government lands to other government agencies or to the private
sector is outside the scope of this EIS.

II COMMENT

The commentor objects to a land-use scenario projected by a draft DOE Idaho Operations Office document
and states that Idaho National Engineering Laboratory lands should remain as wildlife habitat and should
not be returned to the public for uses such as housing.
RESPONSE
This is in reference to a draft document entitled Long-Term Land Use Future Scenarios for the Idaho
National Engineering Laboratory. The purpose of the land use scenarios document is to facilitate
decisions regarding environmental restoration activities at INEL by projecting reasonable land use
scenarios for the next 100 years. The current land use status, that is, Federal Government management of
INEL, would not change under any of the alternatives analyzed in the EIS.

II 5.7 Utilities and Infrastructure

II COMMENT

The commentor asks whether recycling and the use of lined evaporation ponds have resulted in a relative
increase or decrease in net consumptive water use at the Idaho National Engineering Laboratory.
RESPONSE
Currently, there are no major water recycling projects at INEL. Consumptive water use at INEL has
probably increased since the use of lined evaporation ponds because water no longer recharges the aquifer.
No studies have quantitatively evaluated the magnitude of increase since switching to lined ponds.
However, it is likely that the increase is small with respect to total water use at INEL.

II COMMENT

The commentor questions why the electrical usage rate at the Idaho National Engineering Laboratory is
expected to decline.
RESPONSE
Volume 1, Appendix B, section 4.13 describes the 1995 baseline electrical usage at INEL. Electrical usage
at INEL is expected to decline when Navy prototype training at the Naval Reactors Facility is discontinued.

II COMMENT

The commentor notes that only sanitary waste water discharges are reported in Volume 1, Appendix B,
section 4.13.4, and that additional waste water discharges from specific projects will impact the Snake
River Plain aquifer. The commentor asserts that the EIS seriously underestimates the average annual waste
water discharge from 1989 through 1991, based on a comparison of discharges reported in the Draft EIS
(537 million liters per year) with those reported in INEL Nonradiological Waste Management
Information System (6.8 billion liters/year). The commentor asks how this difference is accounted for and
whether this will impact the analysis of impacts on the aquifer.
RESPONSE
As used in Volume 1, Appendix B, section 4.13.4, the term "waste water" refers primarily to sanitary
wastes. DOE has clarified this in the EIS. As noted in Volume 1, Appendix B, section 4.8.3, water
withdrawal from the aquifer by INEL is approximately 1.9 x E+9 gallons per year. Of this amount, a
substantial portion is discharged to the surface and is eventually returned to the aquifer. Water use impacts
are presented in the EIS. Because of the small percentage of water consumed with respect to INEL water
rights, and volume of water in the aquifer under INEL, there would be a small impact to water quantities in
the aquifer under all alternatives considered.

II COMMENT

The commentor identifies a discrepancy in terminology between sections regarding the Idaho National
Laboratory water rights.
RESPONSE
Volume 2, section 4.13 has been changed to refer to INEL water rights as a Federal Reserve Water Right.

II COMMENT

The commentor would like Volume 2, section 5.1.3 to clarify whether projected waste water quantities are limited to sewage.
RESPONSE
This discussion in section 5.13 has been modified as requested.

II 5.8 Water Resources

II COMMENT

The commentor states that the discussion in Volume 2 concentrates on radioactive wastes and omits nonradioactive effluents.
RESPONSE
Contaminants, including nonradioactive contaminants, are discussed in Volume 2, section 5.8. Nonradioactive contaminants at INEL were included in the analysis process performed for the EIS (Predicted Consequences on the Snake River Plain Aquifer of Alternative Actions 1 and 2,). The screening identified just three analytes, all radionuclides, with plumes above current EPA MCLs. These contaminants were selected for detailed analysis of potential consequences on the Snake River Plain aquifer and are the main constituents within the contaminant plumes. In addition, other contaminants, including nonradioactive contaminants, are discussed in Volume 2, section 5.8.

II COMMENT

The commentor suggests that there be more information on expected constituents and concentrations in waste streams for proposed actions at the Idaho National Engineering Laboratory in Volume 2, Appendix F of the EIS. The commentor expresses the opinion that a decision of "no impact" cannot be based on inadequately characterized waste streams or source terms.
RESPONSE
Anticipated projects have been included in the EIS to present readers with as comprehensive a range of forthcoming projects as is currently possible. These anticipated projects have been conservatively evaluated to attempt to bound reasonably foreseeable environmental impacts from such projects. NEPA review is performed on such activities when applicable, prior to initiation. At such time, accurate information on secondary waste generation would be available for an assessment of impacts on waste management. NEPA status of environmental restoration and waste management projects contemplated for INEL is discussed in the Summary (see box titled Projects Related to Alternatives in the Volume 2 section of the Summary, and in Volume 2, Table 3.1-1.)

II COMMENT

The commentor notes that data exist that indicate other contaminants in perched water at the Radioactive Waste Management Complex, Test Reactor Area, Idaho Chemical Processing Plant, and Test Area North have been detected in perched water zones, and that these data should have been included in Volume 1, Appendix B, section 4.8.2.
RESPONSE
The EIS has been changed to address the comment by indicating the presence of other contaminants that have been identified in the perched water at INEL.

II COMMENT

The commentor states that in the Oak Ridge Reservation discussion, 914 meters (3,000 feet) from a

source
is inappropriately represented as being close to the source.
RESPONSE
The discussion of water resources for ORR in Volume 1, Appendix F, Part Three, section 4.8 has been
revised.

II COMMENT

Commentors suggest addition of the location where Las Vegas currently gets its water and any future plans
to the discussion on the Nevada Test Site in Volume 1 of the EIS.
RESPONSE
Water use at NTS will not impact Las Vegas water use because NTS obtains its water from aquifers in a
groundwater basin that is separate from the Las Vegas groundwater basin. Additionally, Las Vegas obtains
70 to 80 percent of its water from the Colorado River. Volume 1, Appendix F, Part Two has been changed
to more accurately reflect where Las Vegas gets its water.

II COMMENT

A commentor states there is a need to clarify the assumption regarding the spent nuclear fuel facility's water
supply from the Area 5 wells and distribution system at the Nevada Test Site. A commentor also states
that the increased use of an aquifer currently in overdraft should constitute a significant environmental
effect, regardless of the user's right to that water.
RESPONSE
As indicated in Volume 1, Appendix F, Part Two, section 5.13, the water wells and pumping system in
Area 5 of the NTS have sufficient capacity to meet the requirements for the proposed SNF facility. The
proposed facility location is in the vicinity of the Area 5 water lines. Therefore, a tie-in to the existing site
infrastructure would be adequate to supply SNF facility water.
The commentor correctly states that water rights should not be a factor in the determination of the
significance of groundwater use impacts, and in fact, those water rights given to the Federal Government in
the area of NTS were not considered in the impact determination made in the EIS. The information on
Federal water rights was included in the EIS for information purposes only.
The discussion of groundwater quantity issues in Volume 1, Appendix F, Part Two, section 5.8 has been
revised to include a more comprehensive analysis of potential impacts on groundwater quantity. Because
the estimated perennial yield of the Frenchman Flat subbasin has been exceeded for more than 30 years
with no decline in static water levels, it is likely that increased water use for SNF management could be
sustained. The overall impact of any groundwater withdrawal in Frenchman Flats is a decrease in the
discharge in the deserts to the southwest of NTS. SNF operations would decrease this discharge
by 0.04 percent of the approximated 1992 discharge; therefore, impacts to groundwater are expected to
be small from SNF operations. More detailed analysis, such as that proposed by the commentor, would
be done if the NTS were chosen as a site for SNF management activities.

II II COMMENT

Commentors state that a summary table of water used and water consumed be provided for each
alternative, as well as a discussion of impacts in Volume 1, Appendix B, section 5.8.
RESPONSE
Volume 1, Appendix B, section 5.8 discusses the alternative that would represent the largest water
use/consumption and provides water consumption in both gallons and cubic meters. If the alternative with
the greatest projected water use is shown to have a small impact on the aquifer, then all others

would
likewise be small. There is additional detail in Volume 2, section 5.8.

II COMMENT

The commentor states that reference should be made to the increased consumption of water at Idaho National Engineering Laboratory as a result of the alternatives analyzed.
RESPONSE
The use of groundwater by the alternatives analyzed in the EIS for INEL is discussed in detail in Volume 2, section 5.8 and Appendix C. In general, increased construction activity and new facility operations require a net increase in consumptive water use. The maximum increase in net consumptive water use under any alternative is expected to be less than 5 percent of current water use at INEL. The EIS has been changed to reflect more accurate water use estimates.

II COMMENT

The commentor discusses the use of the term "aquitard" in Volume 1, Appendix F, Part Three of the EIS to describe certain geologic units on the Oak Ridge Reservation. The commentor notes that in several earlier published reports by State of Tennessee geologists, all the geologic units underlying the Oak Ridge Reservation were referred to as "aquifers" and it was stated that sufficient water supply for domestic use is usually obtained from wells at depths of 18 meters (60 feet) or less in the Conasauga Group. Some units, notably the Pumpkin Valley shale unit of the Conasauga Group, were noted to be poor aquifers, however.
RESPONSE
An aquifer is a body of rock or sediment in a formation, group of formations, or part of a formation that is saturated and sufficiently permeable to transmit economic quantities of water to wells or springs. An aquitard, on the other hand is a confining bed that will tend to retard, but does not prevent, the flow of water to or from an adjacent aquifer. It may serve as a storage unit, but will not readily yield water to wells or springs. The Geology Resources and Water Resources sections of the EIS were prepared by researching recently published material. No site-specific field study was conducted. Recent literature indicates that there are several formations beneath ORR with varying ability to store and transmit water to wells or springs. It is agreed that the Pumpkin Valley Shale could very well be referred to as a poor aquifer because it has been shown to have poor transmissivity capabilities. Recently published reports such as Status Report: A Hydrologic Framework for the Oak Ridge Reservation, and Status Report on the Geology of the Oak Ridge Reservation have all used the term "aquitard" to describe the Pumpkin Valley Shale and a number of the other geologic units beneath the ORR.
Pumpkin Valley Shale is the oldest of six formations within the Conasauga Group and is at the base of the group. No site-specific data are available to determine at what depth Pumpkin Valley Shale is encountered at the West Bear Creek Valley site. It is logical, however, to think that at depths of 18 meters (60 feet) or less on the site, the water- bearing unit most likely to be encountered would be an aquitard of the Conasauga Group. If the ORR is chosen as a site for new SNF management facilities, site-specific surface water and groundwater studies would be performed to identify and characterize the subsurface units.
The level of detail desired by the commentor for the data analysis is not appropriate for the decisions that will be based on this programmatic document, and would not provide any information that would assist decisionmakers. This broad environmental review document has been prepared in accordance with the provisions of NEPA and CEQ implementing regulations, which allow for a broad focus on issues related to

the subject of the decision. Additional, more specific data, such as that proposed by the commentor,
would be provided, if necessary, in further site-specific environmental documents.
Geology and water resources for ORR are discussed in the EIS in Volume 1, Appendix F, Part Three, sections 4.6 and 4.8.

II COMMENT

Commentors state that the EIS treats the complex fracture flow system in the clastic rocks and conduit
system of carbonate rocks of the Oak Ridge Reservation simplistically, that the system is too complex to be
modeled, and that the system is not well enough understood to support the broad conclusion that groundwater in the "aquitards" is essentially static or that these units are able to contain contaminants.
RESPONSE
DOE agrees that the ORR groundwater system is complex. It is difficult to characterize groundwater in
highly fractured and folded complex geologic settings. However, a full and detailed examination of the
complex fracture-contaminated flow processes on the ORR is beyond the scope of this EIS.
The EIS description and analysis of hydrologic conditions at ORR was developed from recently published
hydrologic literature, including Status Report: A Hydrologic Framework for the Oak Ridge Reservation.
Based on these sources, the EIS analysis of potential groundwater impacts of SNF storage at ORR did not
assume that the aquitards "contain contaminants," but rather that these units are characterized by shallow,
short-flow paths and that solute residence times increase sharply with depth. In the intermediate and deep
intervals, estimates of residence times from carbon 14 measurements and modeling are hundreds to tens of
thousands of years as stated in Status Report: A Hydrologic Framework for the Oak Ridge Reservation.
Volume 1, Appendix F, Part Three, section 5.8.4 has been revised to more accurately present the basis for
the EIS discussion of potential groundwater quality impacts.
Very little potential exists for contamination of the Knox aquifer from the operation of proposed SNF
management facilities. These facilities would be constructed using technologies that include secondary
containment, leak detection, and water-balance monitoring equipment. Therefore, no significant environmental consequences related to water resources are anticipated from the operation of SNF management facilities.
A detailed description of groundwater flow would require an in-depth site-specific field geology and
hydrogeology study. If ORR is selected as a site for new SNF management facilities, such studies would
be performed.
Geology and water resources for ORR are discussed in the EIS in Volume 1, Appendix F, Part Three, sections 4.6 and 4.8.

II COMMENT

The commentor states that karst features at the Oak Ridge Reservation (e.g., sinkholes, large springs, caves,
etc.), exist in certain geologic units within the Conasauga and Chickamauga Groups, indicating good
aquifers within those units.
RESPONSE
This comment is addressed by statements included in the EIS, Volume 1, Appendix F, Part Three, section
4.6. The EIS states that karst development is present to varying degrees in the carbonate rocks of the
Conasauga Group, most notably in the Maynardville Limestone, part of the Knox aquifer. However, it also
states that "Although no site-specific geologic characterization has been conducted at the West Bear Creek
Valley site, it appears the proposed Spent Nuclear Fuel Management Facility is located over the lower
Conasauga Group strata not normally characterized by karst development." Site-specific geologic and
hydrogeologic investigations would be necessary to verify this if ORR is chosen as a site for new SNF

management facilities.

II COMMENT

Commentors state they are concerned with the high cost to owners/operators of private and public water
systems to conduct water quality testing due to the potential impact of past, present, or future waste
management activities on the Snake River Plain aquifer.
RESPONSE
Independent assessments of the Snake River Plain aquifer water quality at INEL confirm DOE
environmental monitoring results that indicate that no contaminants in concentrations above EPA MCLs or
DOE DCGs exist beyond the INEL boundary. With improved management practices and remediation
efforts planned or under way, it is likely that water quality in the Snake River Plain aquifer below the INEL
will continue to improve. Therefore, there is no INEL-related cost to local water users for testing
groundwater outside the INEL boundary, because independent assessments indicate that INEL-related
aquifer contamination outside the INEL boundary is small with respect to EPA MCLs or DOE DCGs.

II COMMENT

The commentor states that the potential exists for a deeper, more active flow regime at the Oak Ridge
Reservation.
The commentor states that it is erroneous to dismiss the possibility of deep contaminant transfer in
groundwater at the Oak Ridge Reservation, suggesting that the reason there is little evidence for deep
contaminant transfer is that there is little data on the deep aquifer.
RESPONSE
Information provided in Volume 1, Appendix F, Part Three, section 4.8 was developed primarily from
published hydrologic literature on the ORR including Status Report: A Hydrologic Framework for the
Oak Ridge Reservation and recent site environmental reports. For the purpose of the EIS, such detailed
information was beyond that which would be necessary to understand the effects of the alternatives. If
ORR is chosen as a site for new SNF management facilities, site-specific groundwater studies would be
performed.
The EIS discussion of groundwater conditions at ORR and the EIS analysis of potential hydrologic
impacts, including the statement that there is little deep groundwater flow in the deep portions of the ORR
aquitards, were based on information and analysis in published hydrologic literature on the ORR. (See
Volume 1, Appendix F, Part Three, section 4.8 and references cited there.) These sources do not
dismiss the possibility of deep flow, but state that water budget analyses and observations of shallow
groundwater flow and near-surface conditions indicate that almost all groundwater flux occurs near the
ground surface.
Geology and water resources for ORR are discussed in the EIS in Volume 1, Appendix F, Part Three,
sections 4.6 and 4.8.

II COMMENT

The commentor notes that vadose zone conductivity values derived from slug tests at the Oak Ridge
Reservation may be understated in the EIS.
RESPONSE
It is true that smearing of clays by the drill bit during well installations, and other effects during slug
testing, could reveal conductivity values less than what actually exist in nature. The conductivity estimates
quoted in the Water Resources section of the EIS were obtained from Status Report: A Hydrologic
Framework for the Oak Ridge Reservation. This reference cites that saturated hydraulic conductivity
measurements were in fact conducted using infiltration tests as well as packer tests in the vadose zone.
Geology and water resources for the Oak Ridge Reservation are discussed in the EIS in Volume 1,

Appendix F, Part Three, sections 4.6 and 4.8.

II COMMENT

The commentor states that the discussion in Volume 1, Appendix B, section 4.8 on perching layers in the aquifer is incorrect. Perching layers are impermeable, not impervious, and so downward flows may still occur and impact the aquifer.

RESPONSE

Perching layers are relatively impermeable. While some small amount of water may percolate through the impermeable layer, the main flow is lateral until the edges of the impermeable bed are reached. Flow then continues downward. The section of the EIS cited by the commentor accurately describes the movement of water around and through these impermeable layers in the Snake River Plain aquifer.

II COMMENT

The commentor notes that the likely source of nitrates detected in springs that flow from the Maynardville limestone is the Conasauga Shales at the Oak Ridge Reservation. This contamination further shows the inability of the shales to keep contaminants from migrating to the Knox aquifer.

RESPONSE

Most of the Y-12 Plant is underlain by units included in the Conasauga aquitard. However, the Maynardville limestone (Knox aquifer) also underlies a portion of the Y-12 Plant. Regardless of the properties of these rock units, proposed SNF management facilities are designed to have no liquid release of waste water with hazardous chemical or radiological characteristics. These facilities would be constructed using technologies that include secondary containment, leak detection, and water-balance monitoring equipment. Therefore, no significant environmental consequences related to water resources are anticipated from the operation of SNF management facilities.

Detailed analyses of existing contaminant sources and transport pathways are beyond the scope of this EIS.

If ORR is selected for new SNF management facilities, site-specific groundwater studies would be performed. The level of detail desired by the commentor for the data analysis is not appropriate for the decisions that will be made based on this programmatic document, and would not provide any information that would assist decisionmakers. This broad environmental review document has been prepared in accordance with the provisions of NEPA and CEQ implementing regulations that allow for a broad focus on issues related to the subject of the decision. More specific data, such as that proposed by the commentor, would be provided, if necessary, in further site-specific environmental documents.

Geology and water resources for ORR are discussed in Volume 1, Appendix F, Part Three, sections 4.6 and 4.8.

II COMMENT

Commentors discuss the porous nature of the Eastern Snake River Plain and the potential impact of past, present, or future DOE activities related to spent nuclear fuel management at the Idaho National Engineering Laboratory on water quality of the Snake River Plain aquifer.

RESPONSE

Water resources at INEL and impacts resulting from SNF alternatives are described in Volume 1, Appendix B, sections 4.8 and 5.8. There would be no significant impacts to the aquifer under operating conditions.

Environmental monitoring shows that INEL operations have not contaminated the Snake River Plain aquifer above EPA limits beyond the INEL boundaries. Liquid effluent monitoring and double containment construction would limit operational releases from a new facility to near zero. Groundwater modeling using assumptions, including scientifically defensible assumptions regarding porosity, designed to increase the potential impacts to the aquifer from past, present, and future activities described

in the EIS show that groundwater quality will not be significantly impacted, because radioactive and other contaminant discharges to the soil or aquifer would not occur in concentrations above EPA MCLs or DOE DCGs. Furthermore, it is likely that overall aquifer water quality will continue to improve at INEL, regardless of the EIS alternative chosen for SNF management.
Water resources and impacts from all waste management and environmental restoration, including SNF alternatives, considered for the INEL are described in Volume 2, sections 4.8 and 5.8, respectively. Under all the alternatives considered, the possible future sources of contamination would be small compared with previous practices. This would be a result of waste management practices that include waste water discharge monitoring, as well as natural contaminant attenuation and radioactive decay for historical releases. Computer groundwater modeling using conservative parameters (discussed in Volume 2, Appendix F) indicates that existing contaminant plumes within the INEL boundary would continue to decrease at least through 2035. The modeling further indicates that overall aquifer groundwater quality would actually improve in that period and probably continue to improve after 2035.
A hypothetical accident involving the instantaneous release of the contents of a high-level waste tank due to a once-every-50,000-years seismic event represents the situation with the most potential impact on the Snake River Plain aquifer and is discussed in Volume 2, section 5.14 and Appendix F. Under this scenario, maximum radionuclide concentrations are predicted to reach the INEL boundary in concentrations less than EPA MCLs or DOE DCGs 300 years after the accident.
Independent assessments of the Snake River Plain aquifer water quality at INEL confirm DOE environmental monitoring results that indicate that no contaminants in concentrations above EPA MCLs or DOE DCGs exist beyond the INEL boundary. With improved management practices and remediation efforts planned or under way, it is likely that overall water quality in the Snake River Plain aquifer under the INEL will continue to improve.
As stated in Volume 2 Appendix F-2, the effects of porosity have been accounted for in the modeling described. The analysis shows that for all alternatives considered, impacts would be small.

II COMMENT

The commentor states the need for accuracy in modeling impacts of Idaho National Engineering Laboratory waste management activities on the Snake River Plain aquifer.
RESPONSE
A description of water resources and potential environmental consequences to water resources at INEL, including the Snake River Plain aquifer, is discussed in Volumes 1 and 2, sections 4.8 and 5.8. The analysis performed for the EIS integrated available data and technical information with computer modeling to evaluate contaminant transport and predict future trends in aquifer water quality. Computer modeling was completed through 2035 to add assurance to the conclusions reached in the document. Section 5.8 concludes that overall aquifer water quality would actually improve over this period. A discussion of the methodology and assumptions used for the computer modeling effort is in Volume 2, Appendix F.

II COMMENT

The commentor suggests that the reburial of plutonium in Pit 9 will pose a threat to the Snake River Plain aquifer.
RESPONSE
According to page 13 of the Pit 9 Demonstration Record of Decision (ROD), plutonium and other man-made radionuclides have been detected in sediments 34 meters (110 feet) below the surface of the Subsurface Disposal Area, but not in interbeds 9 meters (30 feet) or 73 meters (240 feet) beneath the surface. The presence of plutonium in the 34-meter (110-foot) sediment layer has been tentatively attributed to flooding of the Subsurface Disposal Area in 1969 from rapid thawing of local snow. Such

flooding is now prevented by a 5-meter (15-foot) dike around the Subsurface Disposal Area.
Transport modeling was conducted for the less than 10 nanocuries per gram transuranic residuals that will
be left in or returned to Pit 9 to evaluate potential contaminant migration to the Snake River Plain aquifer.
Modeling results indicated that the Safe Drinking Water Act standard of 15 picocuries per liter for gross
alpha radioactivity will not be exceeded anywhere in the Snake River Plain aquifer if a 0.6-meter (2-foot)
layer of clean soil with a linear absorption coefficient of at least 500 milliliters per gram is added to the
bottom of the pit and if the pit is backfilled to grade with clean soil. The Pit Residual Risk Assessment in
the Pit 9 Administrative Record evaluated human health risks from 10 nanocuries per gram transuranic
residuals left in the pit after cleanup. Modeling of radionuclide transport to the Snake River Plain aquifer
indicates that no migration to the aquifer is expected within 1,000 years. Residual contamination in Pit 9
will be reevaluated in the baseline risk assessment to be performed as part of the Transuranic-Contaminated Pits and Trenches Operable Units 7-13 Remedial Investigation/Feasibility Study.

II COMMENT

The commentor states that Volume 1, Appendix B, Table 4.8-1 should include actual detection limits and
background levels and asks if groundwater includes the vadose zone, perched water, and the regional
aquifer.
RESPONSE
Table 4.8-1 did not include the detection limits and background values because this would unnecessarily
complicate the table. The point being made by the table is that recent conditions at the site boundary are
within background levels and detection limits. Detection limits and background levels are available in the
references in Volume 1, Appendix B, Table 4.8-1 and references in section 4.8. Groundwater, perched
water, and the vadose zone are discussed separately in the EIS.
Volume 1, Appendix B, Table 4.8-1 specifically refers to groundwater quality in the Snake River Plain
aquifer. As discussed and defined in the EIS, locally saturated conditions above the water table result in
perched water, while groundwater refers to usable quantities of water within an aquifer. Water contained
in the vadose zone is referred to as vadose water. Because perched water occurs within the vadose zone, it
is vadose water.

II COMMENT

The commentor notes that discussions in Volume 1, Appendix B, section 4.8 should compare existing
aquifer conditions with both Environmental Protection Agency existing and proposed water quality
standards, and that proposed maximum contaminant levels are not appropriate for the discussion of water
quality in Volume 1, section 4.2 of the EIS.
RESPONSE
A comparison of each contaminant with existing EPA MCLs with proposed MCLs is in Volume 1,
Appendix B, Table 4.8-1. The summary material in Volume 1 has been enhanced to compare the
contaminant levels, where established, with existing EPA MCLs.
For americium-241, plutonium-238, plutonium-239, and plutonium-240, comparisons have been made for
gross alpha particle activity contaminant levels for drinking water.
The EIS includes comparisons with proposed EPA MCLs because the proposed standards provide a more
comparative benchmark for comparison of radionuclide concentrations than do the existing
standards.

II COMMENT

The commentor states he would like to see a single data base for Snake River Plain aquifer information and
the development of a new model to analyze groundwater contaminant dispersion at the Idaho

National
Engineering Laboratory.
RESPONSE
Most of the Snake River Plain aquifer data collected historically at INEL is retained by the USGS. Since INEL became involved in environmental restoration, a significant quantity of additional groundwater data has been collected. Efforts have been made to integrate this data, with maintenance of a single data base within each contractor organization. With the realization that contractors would be consolidated and recognizing the advantage to both the public and INEL, the integration of data bases into a single repository is being evaluated by DOE and the new INEL contractor.
The modeling efforts conducted for the EIS used the latest information and developments available to INEL personnel. Details regarding this modeling effort are discussed in Volume 2, Appendix F-2.2.
Additional efforts are under way to model contaminant transport and dispersion in support of environmental restoration activities associated with Waste Area Group 10 for the Comprehensive Snake River Plain Aquifer Remedial Investigation/Feasibility Study. This modeling effort has been and will continue to be reviewed by EPA, the State of Idaho, and DOE in accordance with the INEL FFA/CO.

II COMMENT

The commentor recommends further discussion of the extent to which contaminant migration in groundwater at the Idaho National Engineering Laboratory would differ as a result of changes in site remediation under each alternative.
RESPONSE
Remedial Action activities at INEL would not differ between the Ten-Year Plan; Minimum Treatment, Storage, and Disposal; and Maximum Treatment, Storage, and Disposal alternatives, as discussed in Volume 2, section 3.1.2. The only change in remediation activities occurs with the No Action alternative.
Only ongoing remediation efforts would be continued under the No Action alternative. Impacts associated with this alternative have been analyzed and are discussed in the EIS.
The differences in groundwater contamination are minimal for each of the alternatives. Groundwater modeling conducted for this EIS indicates that under all alternatives, overall groundwater quality at INEL continues to improve. Volume 2, section 5.8 and Appendix C describe groundwater remediation projects and indicate that groundwater quality is likely to improve under each of the alternatives.

II COMMENT

The commentor states that increased water use at the Idaho National Engineering Laboratory will result in surface subsidence and collapse.
RESPONSE
High transmissivity (ability to transmit water) and productivity (ability to produce water with little drawdown or water level decline in or near the well) of the Snake River Plain aquifer at INEL ensure that a collapse of the surface above a producing well will not occur. Historically, ground collapse due to aquifer pumping has not been observed at INEL. Any potential increase to aquifer pumping under any of the alternatives is less than a 5 percent maximum increase in current production at the INEL.
Additional discussion and references on INEL groundwater can be found in Volume 1, Appendix B, section 4.8, and Volume 2, section 4.8 and Appendix F-2.

II COMMENT

The commentor asks that DOE specify the degree of certainty and scientific basis for conclusions reached in Idaho National Engineering Laboratory groundwater modeling predictions.
RESPONSE
High confidence in predicting future movement of existing contaminant plumes in the aquifer is

based on decades of monitoring by the USGS and others that have provided good estimates of plume scale [1 to 10 kilometers (1 to 6 miles)] contaminant transport parameters and the importance of radioactive decay (a precisely known parameter) in contaminant reduction. For example, the tritium plume as measured from frequent samples in numerous wells has been receding in recent years. The position of the strontium-90 plume relative to the INEL boundary has been relatively stationary from 1980 to 1990 due to sorption on the rock and radioactive decay. The measured iodine-129 plume movement has been slowing and the area of the plume is shrinking. Predictive modeling of future contaminant movement is an extension of these quantitatively and independently measured trends. Parameters used in predictive modeling reproduce past contaminant plume geometries as delineated in past monitoring results. Liquid effluent discharge monitoring and control (as discussed below) ensures that there is a high degree of certainty that these trends will continue.

INEL's decreasing impact on groundwater resources is verified by the results of groundwater monitoring conducted by independent agencies such as the USGS and the State of Idaho INEL Oversight Program. These independent assessments confirm DOE environmental monitoring results that no contaminants in concentrations above EPA MCLs or DOE DCGs exist beyond the INEL boundary. Together, with improved management practices and remediation efforts planned or under way, it is likely that overall water quality in the Snake River Plain aquifer below INEL will continue to improve and that contaminant plumes (areas in the aquifer with contaminant concentrations above EPA MCLs or DOE DCGs) will continue to recede.

II COMMENT

Commentors discuss cleanup of the aquifer at the Idaho National Engineering Laboratory. Some commentors state that cleanup of contaminated groundwater is not addressed in the EIS and that no rationale is presented for eliminating this alternative from further consideration, and that adverse impacts will result from failure to conduct complete cleanup. In addition, a commentor states that DOE will do nothing about radioactive contamination of the Snake River Plain aquifer.

RESPONSE

Volume 2, section 3.1.2 of the EIS describes the alternatives for SNF management and waste management and environmental restoration at INEL within the 10 years covered by the EIS. All alternatives (except the No Action alternative) include the completion of all remedial investigations/feasibility studies scheduled under the INEL FFA/CO. The draft ROD for the Waste Area Group 10 Comprehensive/Snake River Aquifer Remedial Investigation/Feasibility Study, scheduled for May 2001, will make decisions regarding the level of cleanup for the Snake River Plain aquifer.

Volume 2, Appendix C describes subsurface remediation projects at INEL. The evaluation in Volume 2 bounds environmental impacts from environmental restoration (or cleanup) activities at INEL. However, specific decisions related to cleanup at INEL generally are addressed under an enforceable agreement executed by DOE, EPA Region X, and the State of Idaho on December 9, 1991, the FFA/CO. The FFA/CO establishes a comprehensive process integrating the remediation requirements of CERCLA and the corrective action requirements of the Resource Conservation and Recovery Act (RCRA) and the State of Idaho's Hazardous Waste Management Act. Cleanup activities are conducted under the process and schedule established in the FFA/CO. RODs under the FFA/CO process are signed by all three agencies and represent a joint determination that protectiveness will be achieved through implementation of the selected remedy.

DOE is committed to implementing RODs that result from this process. The EIS does not address alternatives for specific remedial projects because these are inherently project-specific decisions, and because it is DOE policy to use the CERCLA process to consider the environmental impacts of CERCLA actions.

II COMMENT

Commentors state that measurable effects on the Snake River Plain aquifer have occurred as a result of Idaho National Engineering Laboratory activities and these effects should be discussed even if they are not in excess of any water quality standard. Additionally, one commentor notes that water quality should be compared with existing, rather than proposed, standards.

RESPONSE

Volume 1, Appendix B and Volume 2 of the EIS discuss natural water chemistry, past and current disposal practices, resulting contamination levels in groundwater on the INEL site, at the site boundary, and beyond the boundary. Contamination levels are presented even when they are below existing drinking water standards. Because contamination levels are shown to be declining, and concentrations off site have never been above levels that would prohibit any water uses, the subject was given appropriate attention. In Volume 1, Appendix B, DOE compares the water quality with both the current and the proposed standards.

II COMMENT

The commentor states that an explanation of the reasons that increasing subsurface moisture enhances both attenuation and migration of localized contaminants is needed.

RESPONSE

The commentor is correct, and the text has been changed to address the comment. The reference to subsurface attenuation has been deleted from the text of Volume 2, section 4.8.

II COMMENT

Commentors state they are concerned that geologic conditions and past practices at the Idaho National Engineering Laboratory could contaminate the Snake River Plain aquifer.

RESPONSE

An accident scenario resulting in maximum groundwater contamination at INEL was analyzed and the results are presented in Volume 2, section 5.14 and Appendix F. The analysis was performed to determine the effects of such an accident on the Snake River Plain aquifer. The hypothetical accident involves the instant failure of a high-level waste tank due to an earthquake with a probability of occurring on the order of once every 50,000 years. For comparison, DOE and commercial reactors are designed to withstand seismic events that might occur once every 5,000 to 10,000 years.

The groundwater analysis assumed total failure of the containment and no mitigating measures to minimize flow from the waste tank into the soil immediately following the failure. This hypothetical scenario represents the situation with the most potential impact on the aquifer. Maximum radionuclide concentrations would be predicted to reach the INEL boundary 300 years after the hypothetical accident in concentrations less than EPA MCLs or DOE DCGs.

DOE is committed to operating INEL in compliance with all applicable Federal, state, and local regulations and standards pertaining to protecting surface and groundwater resources. DOE acknowledges that previous waste discharges to unlined ponds and deep wells have resulted in the introduction of contaminants to the subsurface at INEL; however, because of improved waste management practices, these discharges have been reduced or eliminated and regional groundwater quality continues to improve. In Volume 2, section 5.8.6, the water resource impacts associated with the alternative actions are summarized.

The conclusions are that implementation of any of the alternatives would result in small impacts to the quality of water leaving INEL.

The protection of water resources is verified by the results of groundwater monitoring conducted by independent agencies such as the USGS and State of Idaho INEL Oversight Program. These independent assessments confirm DOE environmental monitoring results, which indicate that no contaminants in concentrations above EPA MCLs or DOE DCGs exist beyond the INEL boundary and that there are no concentrations of contaminants that would cause impacts exceeding those impacts associated with accidents analyzed in Volume 2, section 5.14. With improved management practices and remediation efforts planned or under way, it is likely that water quality in the Snake River Plain aquifer below INEL will continue to improve.

II COMMENT

The commentor asks what value defined the plume boundary in Volume 1, Appendix B, section 4.8.
RESPONSE
The plume boundary is defined by concentrations greater than or equal to 0.5 picocuries per milliliter. The discussion in this section has been changed to incorporate this information.

II COMMENT

The commentor states that the EIS does not address perched water associated with injection wells at the Idaho National Engineering Laboratory.
RESPONSE
The EIS in Volume 2, section 4.8, states that the occurrence of perched water bodies at INEL is generally related to the presence of disposal ponds and other man-made surface-water features. These are the largest perched water bodies and are the ones of most concern. However, the EIS was modified to add vadose zone disposal wells to the discussion.

II COMMENT

The commentor suggests that the EIS incorrectly states that only tritium and nitrate in groundwater exceed Environmental Protection Agency drinking water standards at the Hanford Site. There are other contaminants that exceed EPA numeric standards or risk-based thresholds used when establishing standards.
RESPONSE
The commentor is correct. The discussion in the document has been modified to address the comment.

II COMMENT

The commentor suggests evidence of long subsurface flow paths beneath the Oak Ridge Reservation can be found by reviewing data from Martin Marietta Energy System's Offsite Well Monitoring Program, which has reported tritium levels in excess of background in wells south of the Oak Ridge Reservation.
RESPONSE
Adequate information is provided in Volume 1, Appendix F, Part Three, section 4.8, which was developed primarily from published hydrologic literature on the ORR, including Status Report: A Hydrologic Framework for the Oak Ridge Reservation, and other recent site environmental reports. The status report states that no evidence of contaminant migration along deep, long subsurface flow paths exists at ORR.
Interpretation of ORR off-site groundwater monitoring results is beyond the scope of this EIS.
The commentor also suggests that elevated concentrations of tritium would not necessarily indicate subsurface transport, but might be due to atmospheric or surface water transport of tritium released from past ORR operations. Additional information on the off-site monitoring program has been added to the groundwater discussion in Volume 1, Appendix F, Part Three, section 4.8.2. However, the extent and schedule of environmental monitoring at ORR and the amount of data produced by the program is outside the scope of this EIS. See also the response to comment 05.08.01 (003).

II COMMENT

The commentor notes that the EIS states the existence of one instance of a groundwater contaminant
crossing the Oak Ridge Reservation boundary and then cites two. The commentor also seeks to clarify the
references in the paragraph.
RESPONSE
Discussion of the solvent plume east of the Y-12 Plant is included in Volume 1, Appendix F, Part Two,
section 4.8.2 as additional supporting evidence of the one strongly suspected instance of groundwater flow
across the ORR boundary. This reference is not intended as a second instance of groundwater flow across
the ORR boundary. The discussion in the document has been modified to clarify the intended meaning.
Geology and water resources for the ORR are discussed in the EIS in Volume 1, Appendix F, Part Three,
sections 4.6, 4.8, and 5.8.

II COMMENT

Comments were received concerning DOE making a decision on the proposed alternatives when
information on the effect of aquifer heterogeneities on modeling to assess the extent of impacts to the
Snake River Plain aquifer is not complete.
RESPONSE
The heterogeneities referred to in the comment are important locally, on the scale of 10 to 100 meters (33
to 330 feet) with respect to calculating the distribution of contaminants from a point source of
contamination. Local heterogeneities in contaminant distribution are averaged out at intermediate, 100 to
1,000 meters (330 to 3,300 feet) and regional, 100 to 1,000 meters (330 to 3,300 feet) distances from the
point source. Intermediate and regional scale parameters were used to calibrate flow and contaminant
transport models. The model parameter values chosen were calibrated with contaminant plume
distribution time and space and data from INEL. This data is equivalent to long-term tracer test data and
serves as the best empirical data for intermediate and regional parameter estimation and model
calibration.
INEL water resources and potential impacts resulting from the alternatives considered by the EIS are
described in Volume 2, sections 4.8 and 5.8 and Appendix F. In accordance with the provisions of NEPA
at 40 CFR 1502.22, the EIS summarizes all known existing credible scientific evidence relevant to
understanding the existing environment, identifies reasonably foreseeable impacts, and evaluates potential
consequences. Assumptions and limitations in the groundwater analysis are identified in Volume 2,
Appendix F. As stated in the analyses, DOE used conservative assumptions to account for the uncertainty
in modeling the effects of proposed actions on groundwater quality. Results indicate that there will be no
contaminants above EPA MCLs at the INEL site boundary as a result of operations under any of the
proposed alternatives.

II COMMENT

The commentor states that groundwater contamination should be stated in absolute terms (metric tons per
year) and concentration differences from background for activities at Idaho National Engineering
Laboratory, and that perched water quality data should be included in the EIS.
RESPONSE
The effects of INEL operations on the Snake River Plain aquifer within the INEL boundary are shown in
terms of concentration, picocuries per liter for radionuclides, and milligrams per liter for nonradioactive
contaminants. Absolute values of contaminant mass (metric tons per year, for example) are not useful for
comparison with regulatory guidelines, such as the Safe Drinking Water Act, which contain water quality

standards in terms of concentration. Because the concentrations of contaminants resulting from INEL operations detected in the Snake River Plain aquifer outside the INEL boundary are below EPA MCLs or DOE DCGs, regional groundwater quality is compared with background levels for those contaminants that occur naturally and detection limits for those that do not.

In accordance with the provisions of NEPA and CEQ implementing regulations at 40 CFR 1502.22, the EIS summarizes existing credible scientific evidence relevant to understanding the existing environment, identifies reasonably foreseeable impacts, and evaluates potential consequences.

The net effects of INEL operations on groundwater resources are reflected in Snake River Plain aquifer monitoring results. Snake River Plain aquifer monitoring well data from wells in the vicinity of the RWMC and other areas where contaminated perched aquifers may exist was included in the analysis that resulted in Table 4.8-1. The data indicate that no significant impacts at the INEL boundary have resulted from the RWMC or other contaminated perched aquifer releases to the Snake River Plain aquifer. Perched water is not independently discussed in this EIS because Snake River Plain aquifer water quality impacts from INEL discharges are adequately evaluated in Snake River Plain aquifer monitoring conducted by DOE and independent agencies. Evaluating additional perched water information would not be relevant to evaluating reasonably foreseeable adverse impacts. This conclusion is further supported by the results of modeling conducted for this EIS, which included analyses for the most likely initial sources for contaminated water in perched water zones (percolation ponds and injection wells) on the Snake River Plain aquifer. Furthermore, the CERCLA ROD for the perched aquifer at the Test Reactor Area indicates that no remedial action will be required because the perched water contaminants will not result in unacceptable risks or consequences to the Snake River Plain aquifer. Characterization of some contaminated perched water is proceeding under CERCLA. The regional effects of contaminated perched water on the Snake River Plain aquifer are bounded by the high-level waste tank failure scenario analyzed in the Accident Analysis section. This analysis indicates that there will be no significant impact at the INEL boundary from the failure of containment of a high-level waste tank.

The curie content, volume, and rate of release of the source term used in this analysis probably exceed source term parameters that could be reasonably used to characterize contaminated perched aquifers at the INEL. Independent groundwater monitoring results, groundwater modeling results, and improved effluent discharge control and monitoring suggest that contaminants in the Snake River Plain aquifer are likely to decrease with time. Snake River Plain aquifer monitoring results are discussed in Volume 1, Appendix B, section 4.8 and shown in Table 4.8-1. Additional detail on subsurface water monitoring and modeling can be found in Volume 2, Appendix F-2.

No discernible water quality impacts are expected, since under normal operating conditions, there will be no discharges of contaminants to the soil or directly to the aquifer above EPA MCLs. The discussion on the hypothetical release due to an accident is discussed in Volume 2, Appendix F-5 and provides potential release amounts and modeled impacts in absolute terms and bounds any impacts from normal operational releases. Additional detail for the INEL is in Volume 2, section 5.8.

II COMMENT

The commentor suggests that certain perched aquifer groundwater monitoring data be included in the EIS and that groundwater quality comparisons with proposed maximum concentration levels are misleading.

RESPONSE

The data on water quality are provided in Volume 2, section 4.8. Data presented in the EIS are compared with EPA MCLs, although MCLs are drinking water standards, not groundwater standards. There is no requirement to report contaminants in the Snake River Plain aquifer relative to MCLs for drinking water, although this is usually done. The EIS used proposed MCLs because, for comparison purposes, this is the best available tool for individual radionuclides not having current MCLs. Other MCLs for radionuclides are either adjusted gross alpha, or a calculated 4 millirem-per-year dose, with the exception of tritium, strontium-90, and radium-226/228, which have specific MCLs. Volume 2, section 4.8 has been revised to clarify that while the proposed MCLs may change, they are used for groundwater quality comparison purposes.

The net effects of INEL operations on groundwater resources are reflected in groundwater monitoring results presented in the EIS. Monitoring well data were included in the analysis that resulted in Table 4.8-1. These data indicate that to date no significant impacts at the INEL boundary have resulted from INEL contaminant releases to the Snake River Plain aquifer. Independent groundwater monitoring results suggest that contaminants in the Snake River Plain aquifer are likely to decrease with time. These results are discussed in Volume 1, Appendix B, section 4.8 and are shown in Table 4.8-1.

A description of water resources and potential environmental consequences to water resources at INEL, including the Snake River Plain aquifer, are discussed in Volumes 1 and 2, sections 4.8 and 5.8. The analysis performed for the EIS integrated available data and technical information with computer modeling to evaluate contaminant transport and predict future trends in aquifer water quality. Computer modeling using conservative assumptions was completed through 2035 to add assurance to the conclusions reached in the document. Section 5.8 concludes that overall aquifer water quality would actually improve during this period. A discussion of the methodology and assumptions used for the computer modeling effort is in Volume 2, Appendix F .

Key contaminants were selected by comparing the contaminant data with the current 40 CFR 141 and proposed EPA 1991 MCLs and contamination guidelines found in DOE Order 5400.5, Radiation Protection of the Public and the Environment, derived concentration guides, radionuclides only. Contaminants with concentrations 50 percent of either of the regulatory limits were considered to be key contaminants. More detailed data on the results of groundwater monitoring at INEL are available in public reading rooms and the INEL Technical Library.

The data indicate that no significant impacts at the INEL boundary have resulted from INEL contaminant releases to the Snake River Plain aquifer. Current independent groundwater monitoring results show that contaminants in the Snake River Plain aquifer are generally decreasing with time. The large concentrations cited by the commentor, which are reported to be thousands of times above the MCLs, either cannot be found in any reference such as gross alpha at Test Area North, or apply only to perched water at Test Reactor Area. The EIS did not attempt to assess perched water, but rather concentrated on the Snake River Plain aquifer. The CERCLA ROD for Test Reactor Area indicates that no remedial action will be required, because the perched water contaminants will not result in unacceptable risks or consequences to the aquifer.

Other perched water is not independently evaluated, because Snake River Plain aquifer water quality impacts from INEL discharges are adequately evaluated in Snake River Plain aquifer monitoring conducted by DOE and independent agencies. Evaluation of additional perched water information would not be relevant to evaluating reasonably foreseeable adverse impacts. This conclusion is further supported by the results of modeling conducted for this EIS that included analyses for the most likely initial sources for contaminated water in perched water zones (percolation ponds and injection wells) on the Snake River Plain aquifer .

II COMMENT

The commentor states that the discussion in Volume 1, Appendix B, section 4.8 on exceeding maximum

contaminant levels in groundwater at Test Area North is misleading because the EIS infers that contaminants first exceeded standards at a time when the commentor says they should have been declining.
RESPONSE
The discussion in Volume 1, Appendix B, section 4.8 has been changed for clarification. The EIS focused
on showing recent trends in groundwater quality at INEL. Any long-term accumulation would be apparent
from these trends. Contaminant concentration data were reviewed for the period 1987 to 1992. Both
modeling and sampling data have indicated that Snake River Plain aquifer contamination attributable to
INEL is decreasing with time.

II COMMENT

Comments were received asking if any radioactively contaminated water has been found outside the Idaho
National Engineering Laboratory boundaries.
RESPONSE
Extremely low concentrations of iodine-129 and tritium have migrated outside the INEL site boundaries.
In 1992, iodine-129 concentrations were measured in two wells south of the INEL site boundary below
EPA MCLs, as follows: (a) 1.0 x 1E-5 picocuries per liter in Well No. 11, located approximately 6
kilometers (4 miles) beyond the boundary, and (b) 3.0 x 1E-5 picocuries per liter in Well No. 14, 13
kilometers (8 miles) beyond the boundary (Mann, L.J., U.S. Geological Survey, personal communication
with A.L. Lundahl, Science Applications International Corporation). Tritium concentrations were observed much below MCLs just south of the INEL site boundary in 1985. By 1988, the tritium plume
had receded to within the INEL site boundary, and its size has continued to decrease (Hydrologic Conditions and Distribution of Selected Chemical Constituents in Water, Snake River Plain Aquifer,
Idaho National Engineering Laboratory). Cobalt-60, strontium-90, cesium-139, plutonium-238, plutonium-240/241, and americium-241 have not been detected outside the INEL site boundaries.

II COMMENT

The commentor notes that the geology of the Oak Ridge Reservation would result in severe health effects if
a leak were to occur.
RESPONSE
A conservative analysis of the potential effects of a leak from an SNF storage facility at ORR is described in
Volume 1, Appendix F, section 5.8.2. The analysis found that exposures would be small.
There is very little potential for contamination of the Knox aquifer from the operation of SNF management
facilities. The proposed SNF facilities are designed to have no liquid release of waste water with hazardous
chemical or radiological characteristics through the use of modern technologies, including secondary
containment, leak detection, and water-balance monitoring equipment.

II COMMENT

The commentor states concern that vadose zone contaminants and other buried waste constituents at the
Idaho National Engineering Laboratory Radioactive Waste Management Complex were not included in the EIS groundwater model and may constitute a significant source of future contamination to the Snake
River Plain aquifer.
RESPONSE
Vadose zone contaminants at the INEL RWMC were not included in the groundwater model. Vadose zone contaminants and other buried waste constituents at the INEL RWMC were included in the INEL FFA/CO. Characterization of these constituents is in progress as part of ongoing or planned remedial
investigations.
The net effects of INEL operations on groundwater resources are reflected in groundwater monitoring

results. Snake River Plain aquifer monitoring well data from wells in the vicinity of the RWMC were included in the analysis that resulted in Table 4.8-1. These data indicate that, to date, no significant impacts to the Snake River Plain aquifer at the INEL boundary have resulted from RWMC contaminant releases to the Snake River Plain aquifer. Independent groundwater monitoring results indicate that contaminants in the Snake River Plain aquifer are likely to decrease with time. These results are discussed in Volume 1, Appendix B, section 4.8 and shown in Table 4.8-1.

Recently completed flood and erosion control construction at the RWMC will reduce the rate of transport through the unsaturated zone by minimizing surface flooding at the RWMC. This reduced rate of transport effectively increases natural contaminant attenuation processes that occur in the subsurface and decreases impacts on aquifer water quality.

It is likely that the effects of RWMC contaminants on the Snake River Plain aquifer are bounded by the hypothetical accident scenario referenced in the EIS in Volume 1, Appendix B, section 5.8. The hypothetical accident, representing a reasonably foreseeable accident, includes groundwater modeling of a major contaminant release to the subsurface. The analysis indicates that the hypothetical accident would cause small impacts to the aquifer, with no contaminants above MCLs at the INEL boundary.

II COMMENT

The commentor requests additional information on impacts from groundwater contamination.

RESPONSE

The purpose of this EIS is to evaluate the potential environmental impacts from proposed activities. For this reason, assumptions were made to ensure that estimated doses are conservatively high and represent an upper bound of potential impacts. The EIS is not intended to substitute for the assessments required by regulations. Any facilities constructed or operated under the chosen alternative will comply with applicable regulatory requirements. In the example cited by the commentor, further discussion of chromium concentrations in groundwater at INEL is in Volume 1, Appendix B and in the Water Quality sections of Volume 2.

Volume 2, section 5.12 discusses the potential health effects for on-site workers and the public. The analyses show that impacts would be small. The major impacts have been from past practices. The impacts are projected to decrease because of changes in facility procedures. Subsurface water quality and contaminant distribution are discussed in Volume 2, Appendix F-2.

II COMMENT

The commentor states the Brookhaven National Laboratory is in the Long Island Nassau-Suffolk Aquifer System, and the West Valley Demonstration Project is in the Cattaraugus Creek Aquifer System. The commentor also states that these have been designated as sole-source aquifers pursuant to the Safe Drinking Water Act and asks that the sensitivity and importance of these sole-source aquifers should be considered in the selection of the interim alternative. Specifically, that National Environmental Policy Act documentation should include a detailed assessment of the potential groundwater impacts.

RESPONSE

Volume 1, Appendix E, sections 3.1.1 and 3.3.1 have been revised to acknowledge sole-source aquifer designations for aquifers underlying these sites. More detailed aquifer characterization data for these sites will be incorporated by reference. Detailed sole-source aquifer characterization data is not required because this is a programmatic EIS. Potential impacts from alternatives considered in this EIS on water quality are expected to be small. Subsequent actions that may result from this EIS will require site- and project-specific NEPA reviews and compliance, but impacts from previous activities are not within the scope of this EIS.

II COMMENT

The commentor states that the discussions of groundwater occurrence, movement, use, and contamination
are not consistent between all sites. Without consistent information, there is little basis for comparison.
The commentor also states that consistent data probably does exist through investigations required for
CERCLA and RCRA, state and Federal permitting, and engineering design studies for buildings at all sites.
RESPONSE
For the analysis of impacts at a programmatic level, the hydrological information provided in Volume 1
and its site-specific appendices is sufficient for purposes of the EIS. Additional NEPA reviews at the site
or project level will provide more specific information as needed. While it appears that there is an
inconsistency among the various sites on hydrologic information summarized in Volume 1 of the EIS, this
is largely a reflection of the differences in water uses, availability, water sources, and water quality issues
that are important at each site. The appendices do, with minor exceptions, include all pertinent
information on lithology, water use, contamination, well yields, and consumption. When there is an
exception, a reference for further detail is provided, and additional information from the appendices is
included in Volume 1 to balance the discussion.

II COMMENT

The commentor suggests that the elevated nitrate, chloride, and sulfate levels found in groundwater in the
vicinity of the Idaho Chemical Processing Plant are not the result of agricultural activities, as discussed, but
might be attributable to the Naval Reactors Facility.
RESPONSE
The discussion in Volume 1, Appendix B, section 4.8 has been revised to state that the elevated levels of
nitrates, chlorides, and sulfates are the result of the disposal well and infiltration ponds at the Idaho
Chemical Processing Plant. The related sections of Volume 2 of the EIS have also been revised. There is
no evidence to substantiate the suggestion that the contaminant levels at the Idaho Chemical Processing
Plant are caused by the Naval Reactors Facility.

II COMMENT

The commentor states that in Volume 2, Appendix F-2.2.2 of the EIS, source terms for discharge of liquids
from SNF storage uses Idaho Chemical Processing Plant Building 666 as the generic example. The
commentor states that the facility is not generic or typical for the Idaho National Engineering Laboratory.
Rather, the Idaho Chemical Processing Plant is atypical because it is the only facility that meets current
standards. The commentor also states that because the other storage facilities will remain in service for the
near future and pose the greatest risk of discharge, the EIS must use one of these for the source term
generic case.
RESPONSE
Volume 2, Appendix F-2.2.2 referenced by the commentor states that Idaho Chemical Processing Plant
discharge and a hypothetical discharge from a generic facility were used to generate discharge data. This
bounding postulated leak scenario is greater than releases from any facilities at INEL, including the
Expended Core Facility. Results indicate that there will be no contaminants above MCLs at the site
boundary resulting from a postulated operational leak.

II COMMENT

The commentor points out that contamination of the Dublin-Midville aquifer (a regional source of drinking water) underlying the Savannah River Site is more widespread than the text of the Draft EIS indicates. As is, the text notes that evidence of contamination has been found in only one production well. The commentor also notes that there may be an inconsistency in the discussion of contamination of the Gordon aquifer.

RESPONSE

The text in Volume 1, Appendix C, section 4.8 has been revised to indicate that contaminants (i.e., trichloroethylene and tetrachloroethylene) have been detected above Primary Drinking Water Standards at another well completed in the Dublin-Midville aquifer system.

Regarding contamination of the Gordon aquifer, there are several plumes of contamination on SRS, but none has moved offsite and none is available to off-site users of this aquifer. Current SRS remediation efforts are intended to prevent off-site movement of this contaminated groundwater.

II COMMENT

The commentor suggests DOE sum the pumping rates for all production/potable wells on the Idaho National Engineering Laboratory to produce an estimate of maximum pumping capacity.

RESPONSE

While it is true that the capacities of all pumps could be summed to produce a maximum possible pumping rate, the likelihood of all pumps operating at one time is very small. Even during recovery from an extended power outage, it is unlikely that all pumps would be operating simultaneously; hence, the maximum pumping capacity would not be reached. Maximum pumping capacities are therefore not relevant to assessing potential impacts from pumping.

II COMMENT

The commentor states that contaminants released to the subsurface from the West Bear Creek Valley location at the Oak Ridge Reservation could reach the Knox aquifer, either directly, through macropores that could rapidly transmit contaminants to areas underlain by carbonates, or indirectly, following macropores to Grassy Creek and entering the aquifer through losing reaches of the creek.

RESPONSE

Full resolution of these concerns would require detailed investigation of site conditions and groundwater pathways. If ORR were chosen as a site for new SNF management facilities, site-specific geologic and hydrologic studies would be performed. Available information provides a sufficient basis, however, for an assessment that no significant environmental consequences related to water resources would be anticipated from the operation of SNF management facilities.

As discussed in the EIS, proposed SNF management facilities are designed to have no liquid release of waste water with hazardous chemical or radiological characteristics. Facilities would also be constructed to prevent and minimize the impacts of leaks, including secondary containment, leak detection, and water-balance monitoring equipment. The potential impacts on Grassy Creek and the Clinch River of an undetected subsurface release are, however, analyzed in the EIS (see Volume 1, Appendix F, Part Three, section 5.8.2). The analysis indicates that most radiological constituents would be below drinking water standards at the point of release, and that additional substantial reductions in the concentrations of constituents would occur as a result of dilution with groundwater and the receiving body of surface water.

The worst-case undetected release is estimated to constitute less than 0.0003 percent of the

estimated
average discharge of Grassy Creek at its confluence with the Clinch River. Any contaminants reaching the
Knox aquifer via the losing reaches of Grassy Creek would undergo a similar degree of dilution, such that
there would be little, if any, impact on water quality in the aquifer.
It is not likely that macropores would provide a direct connection to the Knox aquifer at the site of the
proposed SNF management facility, because available information indicates that the site is over lower
Conasauga Group strata that are not normally characterized by karst development or not hydraulically
well-connected to the Knox aquifer. (The only Conasauga Group information included in the Knox
aquifer is the uppermost formation in the group, the Maynardville Limestone). If a direct macropore
connection did exist and allowed an undetected release to reach the aquifer, dilution in the stormflow zone
and in the aquifer would significantly reduce the potential for impacts on water quality. See Volume 1,
Appendix F, Part Three, sections 4.6 and 4.8 for further discussion of site geology and hydrology.

II II COMMENT

The commentor states that past waste management activities have resulted in contamination of water in the
Clinch River and lakes near the Oak Ridge Reservation.
RESPONSE
Natural resources and impacts associated with the SNF management alternatives at ORR are specifically
discussed in Volume 1, Appendix F, Part Three. Current waste management problems, past contaminant
releases, and environmental restoration activities for cleanup of contaminated sites at ORR are not within
the scope of this EIS. Contact public affairs personnel at ORR for information on these topics or for
upcoming opportunities for public comment.

II COMMENT

The commentor states that the EIS did not mention storm water runoff and storm water injection at Idaho
National Engineering Laboratory wells as a source of waste water.
RESPONSE
The EIS does address the use of storm water injection wells used at INEL. This discussion can be found
in Volume 1, Appendix B, section 4.8; Volume 2, section 4.8; and Volume 2, Appendix F-2.2. Further
discussion of this subject also can be found in the Water Resources Supporting Document for the INEL
Environmental Restoration and Waste Management EIS, a reference used for the EIS, available in reading
rooms and information locations listed in the EIS.

II COMMENT

The commentor discusses the production of toxic materials upstream from the town of Hilton Head, and
the South Carolina coast, particularly impacts to watersheds, such as the Savannah River watershed, and
local and regional aquifers.
RESPONSE
Potential impacts to surface water and groundwater of the various SNF management alternatives proposed
for SRS are evaluated in Volume 1, Appendix C, section 5.8. Cumulative impacts to water resources are
presented in Volume 1, Appendix C, section 5.16.4. DOE expects the impact on water quality from
implementation of any of the alternatives under consideration to be small. Each of the alternatives would
contribute to the very small releases of radionuclides that normal SRS operations discharge to the surface
water through Federally permitted waste-water outfalls. In the unlikely event of an accidental

release of contaminants to either the ground or directly into the subsurface, DOE does not expect any adverse impacts to surface water or drinking water aquifers under SRS.
Cleanup of groundwater resources from past waste management practices at SRS are not within the scope of this EIS. However, environmental restoration activities at DOE sites are performed in accordance with agreements negotiated with the appropriate regulatory agencies and in compliance with applicable DOE guidance and environmental regulations.

II COMMENT

The commentor states that Volume 1, Appendix B of the EIS erroneously assumes that surface water flow at the Idaho National Engineering Laboratory over the last 8 years is indicative of what can be expected in the future.
RESPONSE
Volume 1, Appendix B, section 4.8.1 has been changed to address this concern. The last 8 years include very dry years at INEL, which may not be indicative of the future. The new discussion addresses that in dry years, surface water in the Big Lost River does not usually reach the western boundary of INEL. Also, because INEL is in a closed drainage basin, surface water never flows offsite.

II COMMENT

The commentor expresses concern that, following the December 1991 tritium leak into the Savannah River, individuals in Savannah received a high dose of radiation from drinking the water.
RESPONSE
The maximum dose to the public resulted from individuals who drink Savannah River water. The nearest public drinking water supplies that use Savannah River water are at Port Wentworth, Georgia, and Beaufort-Jasper, South Carolina, both near Savannah, Georgia, the residence of the commentor. The maximum dose to an individual consuming 2 liters of water per day from the Port Wentworth system was 0.030 millirem. The maximum dose from the Beaufort-Jasper system was 0.0096 millirem. These values are 0.8 percent and 0.2 percent, respectively, of the EPA drinking water standard for radioactivity (4 millirem per year). The maximum dose from this release to a hypothetical individual at the U.S. Highway 301 bridge just downstream of SRS was 0.035 millirem. There are no known consumers of Savannah River water at that location. The City of Savannah does not use the Savannah River as a source of drinking water.
The low dose received by individuals consuming water from the two public systems mentioned would not result in adverse health effects. The values are very much less than the variations in background radiation that normally results from day to day and from place to place within any city. Radioactive liquid releases from both normal and off-normal occurrences from storage of SNF at SRS are projected to be lower than that from the December 1991 tritium release.

II COMMENT

The commentor notes that Volume 1, Appendix B of the Draft EIS does not address local basin flooding at the Idaho National Engineering Laboratory.
RESPONSE
Local basin flooding at INEL is discussed in Volume 2, section 4.8.1 and Appendix F. Volume 1, Appendix B has been changed to discuss local basin flooding at INEL.
The DOE Idaho Operations Office recently completed constructing new flood and erosion control features at the RWMC, which will reduce the potential of localized flooding at the complex.

The INEL accident assessment summarized in Volume 2, section 5.14 considers flooding and other natural phenomena as potential initiators of facility accidents. Some potential accident initiators were selected for detailed analysis because they were considered reasonably foreseeable, and some initiators were selected for detailed analysis because of their large potential consequences. The consequences of a seismic failure of the high-level waste tanks were selected for detailed analysis over a flooding scenario because the large radioactive inventory in the high-level waste tanks could have a larger potential for consequences to water resources than a flood. The impact evaluations show that the risk to workers and the public from DOE operations would be small for all alternatives.

II COMMENT

The commentor notes that past waste management activities have resulted in contamination of the Snake and Columbia Rivers.

RESPONSE

No significant impacts to the Snake River and the Columbia River have resulted from INEL activities.
Surface water drains internally into natural sinks at or near INEL. No surface water drains directly from INEL into the Snake River. The protection of water resources is verified by the results of groundwater monitoring conducted by independent agencies such as the USGS and State of Idaho INEL Oversight Program. These independent assessments confirm DOE environmental monitoring results, which indicate that no contaminants in concentrations above EPA MCLs or DOE DCGs exist beyond the INEL boundary.
With improved management practices and remediation efforts planned or under way, it is likely that overall water quality in the Snake River Plain aquifer under the INEL will continue to improve. Therefore, no future impacts to the Snake and Columbia Rivers resulting from INEL past, present, or future operations are likely to occur.
As discussed in Volume 1, Appendix A, section 4.8, tritium, iodine-129, and uranium are found in slightly higher concentrations downstream of the Hanford Site than upstream, but well below concentration guidelines established by DOE and EPA drinking water standards. Cobalt-60 and iodine-131 were not consistently found in measurable quantities during 1989 in samples of Columbia River water from Priest Rapids Dam, the 300-Area water intake, or the Richland city pumphouse. In 1989, the average annual strontium-90 concentrations were essentially the same at Priest Rapids Dam (upstream of the Hanford Site) and the Richland pumphouse.

II COMMENT

Commentors express concern about existing contamination of the Clinch River and management of flow in East Fork Poplar Creek.

RESPONSE

Existing contamination of the local surface-water bodies is acknowledged in the EIS. The Clinch River and other surface waters have been affected by activities at ORR as well as by other activities upstream from ORR. Water quality in the Clinch River is routinely monitored by the Tennessee Valley Authority, the USGS, and the Tennessee Department of Environment and Conservation.
The Oak Ridge Reservation Environmental Report for 1992 summarizes 1992 Clinch River monitoring results at the Gallaher and Kingston water treatment plants. While radionuclides exist in concentrations significantly greater than zero in the treated water for a number of radioactive analyses, maximum concentrations are not greater than the EPA primary drinking water standards for any analysis at either plant. The environment affected by water resources at ORR is discussed in Volume 1, Appendix F, Part Three, section 4.8.

The addition of Clinch River water to East Fork Poplar Creek is required by the Tennessee Department of Environment and Conservation in order to guarantee a minimum base flow as the limitations in the Y-12 Plant discharge permit are based on flow management in the creek. The purpose of the Flow Management Project is to maintain a consistent flow in the creek of 7 million gallons per day to protect the stream for its intended uses.
It is DOE policy to consider the protection of water resources in the design, construction, and operation of its facilities, and to comply with Federal, state, and local regulations and standards pertaining to protection of water resources. The proposed SNF management facilities are designed to have no liquid release of waste water with hazardous chemical technologies, which include secondary containment, and leak detection and water-balance monitoring equipment. Therefore, no significant environmental consequences related to water resources are anticipated from the operation of SNF management facilities. Impacts to water resources at ORR are discussed in Volume 1, Appendix F, Part Three, section 5.8.

II COMMENT

The commentor notes that the EIS should include a discussion of the impacts to the ports and Puget Sound.
RESPONSE
The environmental consequences associated with storage of Naval SNF at Puget Sound Naval Shipyard are discussed in Volume 1, Appendix D, section 5.1.1. The environmental consequences for the alternatives analyzed are based on estimates of the amount of SNF that would be stored at the shipyard through 2035 and current knowledge of the design features associated with SNF storage systems. The environmental consequences for foreign fuel shipments are bounded by the analyses included in this EIS. The impacts at ports for shipment of Hanford N-Reactor fuel for overseas processing are discussed in this EIS as an example for evaluation of reasonably foreseeable impacts. The review of the environmental consequences associated with the alternatives shows that impacts on the environment from these activities would be very small. Foreign research reactor (FRR) fuel shipments and their impacts to the Ports in Puget Sound are covered in the EIS entitled Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel (Draft).

II COMMENT

The commentor states that DOE would be required to apply for water rights to withdraw Columbia River water for new spent nuclear fuel storage and management activities at the Hanford Site.
RESPONSE
As discussed in Volume 1, Appendix A, section 4.8.2, DOE withdraws water from the Columbia River under DOE's Federally reserved water rights. From a programmatic impact standpoint, the maximum SNF alternative would use approximately 1 percent of the baseline of total Hanford usage (Volume 1, Appendix K). In general, new SNF facilities, if any, would use less water than existing facilities. Site-specific NEPA analysis for any new SNF storage or treatment facilities would address water usage in detail.

II II COMMENT

The commentor asserts that the EIS assumes no surface water flow onsite and that this assumption greatly affects the evaluation of Snake River Plain aquifer recharge at Idaho National Engineering Laboratory.
RESPONSE
The EIS does not make this assumption. Volume 1, Appendix B, section 4.8.2 discusses regional

and local hydrogeology, which includes summary text regarding recharge of the Snake River Plain aquifer. Infiltration along stretches of the Big Lost River, Little Lost River, and Birch Creek on the INEL site are discussed in greater detail in Volume 2, section 4.8.1 and Volume 2, Appendix F-2.2.1. The EIS cites the reference (Streamflow Losses and Groundwater Level Changes Along the Big Lost River at the Idaho National Engineering Laboratory) referred to by the commentor.

II COMMENT

The commentor states that water tables at the Idaho National Engineering Laboratory, the Hanford Site, and Nevada Test Site are contaminated with radioactive waste and that the Columbia River has been contaminated by Idaho National Engineering Laboratory and Hanford Site waste.
RESPONSE
DOE evaluated the impacts to groundwater quality of proposed actions, where appropriate. The effects of past practices have been analyzed to determine cumulative impacts. These analyses are included in Volume 2, Appendix K and Volume 1, Chapter 5, Appendices A, B, and F.

II COMMENT

The commentor suggests clarification of the discussion of the depth of excavation in the vadose zone at the Nevada Test Site.
RESPONSE
As indicated in the preliminary design (Description of a Generic Spent Nuclear Fuel Infrastructure for the Programmatic Environmental Impact Statement), the cask loading and unloading pools in the SNF receiving and canning building are the deepest structures in the facility and are 13 meters (44 feet) deep.
Allowing another 2 meters (6 feet) for secondary containment, leak detection system, and construction needs results in an estimated excavation depth of 15 meters (50 feet). As indicated in Volume 1, Appendix F, Part Two, section 4.8.2, the depth to the water table in Area 5 is 244 meters (800 feet), although perched water tables have been reported at 21 meters (70 feet) in some locations of Area 5. Given the programmatic nature of the EIS and the preliminary status of the facility design, this analysis is sufficient to demonstrate that the excavation is expected to occur within the vadose zone at NTS.

II COMMENT

The commentor has concerns about seismic safety and the contamination of water resources at the Hanford Site.
RESPONSE
Volume 1, Appendix A, sections 4.8 and 5.8 discuss water resources at the Hanford Site. Geology of the site, including seismic hazards, is discussed in Volume 1, Appendix A, section 4.6. As summarized in Volume 1, section 5.2.6, the proposed alternatives for SNF management would have small impacts on water resources. Impacts of management SNF at K-basin at the Hanford Site will be analyzed in a separate EIS.

II COMMENT

The commentor suggests that tougher water quality standards from the Clean Water Act should be applied in the EIS, rather than limits based on the Safe Drinking Water Act.
RESPONSE
The Clean Water Act (CWA), 33 USC Section 1251 et sec., protects surface waters by requiring that any discharge of pollutants to surface waters of the United States be controlled or prevented. Under

the CWA,
EPA sets nationwide, industry-by-industry effluent standards. The CWA standards are set out in industry-by-industry permits that are based on technology development. In contrast, the Safe Drinking Water Act
(SDWA), 42 USC Section 300(f) et seq., ensures that water out of the tap is fit to drink. Under the
SDWA, EPA is responsible for setting national standards that must be met by the persons who deliver
water to the tap. The drinking water standards under the SDWA are specifically set to protect against
adverse health effects to persons from the consumption of drinking water. Drinking water standards have
become the key Federal reference point for prevention and cleanup decisions under both RCRA and CERCLA.
For a number of reasons, it is difficult to conduct a simple comparison of SDWA standards and CWA standards. First, for any one contaminant, CWA standards vary greatly from state to state, industry by
industry. The quality of the "receiving waters" for any given facility also affects the standards that will be
imposed under a CWA permit. Whether the facility analyzed in the EIS is a new facility or an existing
facility also impacts the CWA permit standards. For some constituents, from some industries, in some
states, with a new facility, the CWA permit standards might be more stringent than for the same constituent
under the SDWA. But it is definitely not a correct generalization that CWA standards are more stringent
than SDWA standards, and in fact in many instances, the opposite is true.
Because the national standards set under the SDWA are more uniformly applicable to all the DOE sites
analyzed in this EIS, and more important, because the SDWA standards are consistent in that they are
human-health based, rather than technology based, they were used in this EIS as a comparative reference
point.

II COMMENT

The commentor states that DOE's activities at Idaho National Engineering Laboratory will irreversibly and
irretrievably impact water resources.
RESPONSE
Irreversible and irretrievable effects on resources are discussed in Volume 2, section 5.18. Activities at
INEL have resulted in chemical and radioactive contaminant plumes in the Snake River Plain aquifer as
discussed in Volume 2, section 5.8.6. Water use and liquid effluent discharges at INEL would have a
minimal effect on Snake River Plain aquifer water quality and quantity.
Water resources and impacts resulting from all waste management and environmental restoration (including
SNF) alternatives considered for INEL are described in Volume 2, sections 4.8 and 5.8. Under all the
alternatives considered, the possible future sources of contamination would be small compared with
previous practices. This would be a result of waste management practices, including waste-water discharge
monitoring, as well as natural contaminant attenuation and radioactive decay for historical releases.
Computer groundwater modeling using conservative parameters (discussed in Volume 2, Appendix F)
indicates that existing contaminant plumes within the INEL boundary would continue to decrease at least
through 2035. The modeling further indicates that overall aquifer groundwater quality would actually
improve in that period and probably continue to improve after 2035.
INEL's commitment to DOE policy regarding the protection of water resources is verified by the results of
groundwater monitoring conducted by independent agencies such as the USGS and State of Idaho INEL
Oversight Program. These independent assessments confirm DOE environmental monitoring
results that indicate that no contaminants in concentrations above EPA MCLs or DOE DCGs exist beyond
the INEL boundary. With improved management practices and remediation efforts planned or under way,
it is likely that overall water quality in the Snake River Plain aquifer below the INEL will continue to
improve.
Recent improvement in groundwater quality at INEL is documented in report (e.g., Hydrologic Conditions

and Distribution of Selected Chemical Constituents in Water of the U.S. Geological Survey and A Review of the Production, Use, and Disposal of Groundwater and the Generation, Storage, and Processing of Radioactive Liquid Waste at the Idaho Chemical Processing Plant of the INEL Oversight Program) as referenced in the EIS. Although small irretrievable impacts to groundwater quality are possible, recent sampling results, computer modeling using mildly conservative assumptions, and improving liquid effluent discharge management ensure that impacts from current and future activities will be small and future effects of past practices have a decreasing effect on aquifer water quality.

II COMMENT

The commentor states that a full mass balance of water pumped from the aquifer and waste discharge volume analysis must be conducted for the entire history of the Idaho National Engineering Laboratory.

RESPONSE

The net effects of INEL operations on groundwater resources are reflected in groundwater monitoring results. Monitoring-well data were included in the analysis that resulted in Volume 1, Appendix B, section 4.8, Table 4.8-1. This data indicates that to date no significant impacts at the INEL boundary have resulted from INEL contaminant releases to the Snake River Plain aquifer. Independent groundwater monitoring results and groundwater modeling conducted for this EIS indicate that contaminants in the Snake River Plain aquifer are likely to decrease with time. These results are discussed in Volume 1, Appendix B, section 4.8 and shown in Table 4.8-1. Additional evaluation would not be useful in evaluating reasonably foreseeable adverse impacts. Water usage is described in Volume 2, section 4.13.1.

A description of water resources and potential environmental consequences to water resources at INEL, including the Snake River Plain aquifer, are discussed in Volumes 1 and 2, sections 4.8 and 5.8. The analysis performed for the EIS integrated available data and technical information with computer modeling to evaluate contaminant transport and predict future trends in aquifer water quality. Computer modeling was completed through 2035 to add assurance to the conclusions reached in the document. Volume 2, section 5.8 concludes that overall aquifer water quality would actually improve over this period. A discussion of the methodology and assumptions used for the computer modeling effort is in Volume 2, Appendix F of the EIS.

In accordance with NEPA regulations at 40 CFR 1502.22, the EIS summarizes all known existing credible scientific evidence relevant to understanding the existing environment, identifies reasonably foreseeable impacts, and evaluates potential consequences.

A full mass balance and waste discharge volume analysis conducted for the entire history of INEL would not change the conclusions reached in the EIS.

II COMMENT

The commentor states that the EIS de-emphasizes impacts on water resources by categorizing water resources as an "Issue Not Discussed in Detail" and ignoring water resources in the cumulative impacts analysis. The commentor further states there is an overemphasis on water usage, rather than radiological groundwater contamination, in addressing water resources in Volume 1.

RESPONSE

In response to public comments, section 5.3.2.6 has been added to Volume 1 to address the cumulative impacts on water resources. Based on the site-specific analysis in appendices to Volume 1, section 5.2.6, addressing water resources under "Issues Not Discussed in Detail" has been enhanced to state that the radiological impact to water resources at each candidate site is small.

II COMMENT

The commentor states that site-specific discussions on water resources and hydrological complexities should be compared, rather than just scattered throughout six appendices.
RESPONSE
Volume 1, Chapter 4 summarizes the pertinent characteristics of the affected environment at the alternative sites under consideration in the EIS. Detailed water resource and hydrological characteristics of the 10 alternative sites under consideration are in Volume 1, Appendices A, B, C, D and F, and Chapter 4.
Although not specifically provided in discussion or tabular form, a side-by-side comparison can be made between the information in the site-specific appendices. Due to the complexity and dissimilarity of the hydrogeologic characteristics between sites, such comparisons are subjective and depend on the specific interests of the reviewer, as well as decisionmakers.

II COMMENT

The commentor states that water resources, and in the context of the comment perhaps other natural resources, would be unavoidably adversely impacted because only limited remediation is proposed.
RESPONSE
The environmental restoration actions under the alternatives considered in this EIS would occur under the provisions of the CERCLA. CERCLA procedures provide for ecological risk assessment and identification of injury or potential injury to natural resources resulting from past releases of hazardous substances. The alternatives include projects for protecting the vadose zone and cleaning groundwater, and cleaning up and/or retrieving buried wastes. In keeping with DOE's Native American Policy (Memorandum EH-231: Management of Cultural Resources at Department of Energy Facilities, U.S. DOE, Washington, DC, February 23, 1990), DOE will consult with the Tribes during the planning and implementation of all proposed alternatives. Additionally, DOE has implemented the Working Agreement, Policy on Native American Consultation to ensure communication with the Shoshone-Bannock Tribes concerning the treatment of archaeological sites as mandated by the National Historic Preservation Act, Archaeological Resources Protection Act, and the protection of human remains under the Native American Graves Protection and Repatriation Act.
The prediction of unavoidable adverse impacts to groundwater was based on analyses that considered the extent of known contamination and potential effectiveness of existing and reasonably foreseeable treatment technologies. Note that the impacts will not be caused in the future but will be residual impacts from past actions and operations. CERCLA and the National Contingency Plan contain provisions for addressing residual injury to natural resources and natural resource damage assessment. In a letter dated July 7, 1992, the DOE Idaho Operations Office notified the State of Idaho, the Shoshone-Bannock Tribes, and the U.S. Department of the Interior of potential injury to trust resources caused by past releases.

II COMMENT

The commentor states that the spent nuclear fuel portion of the EIS does not discuss environmental restoration at Oak Ridge Reservation, and the adverse impacts for the Y-12 Plant have not been assessed.
RESPONSE
Detailed analysis of existing contaminant sources and transport pathways are beyond the scope of this EIS.
If ORR is selected for new SNF management facilities, site-specific groundwater studies would be performed.
Geology and water resources for ORR are discussed in Volume 1, Appendix F, Part Three, sections 4.6,

4.8, and 5.8.

II 5.9 Cumulative Impacts

II COMMENT

The commentor states the EIS does not adequately discuss the direct, indirect, or cumulative impacts of
transporting spent nuclear fuel and other radioactive and hazardous materials.
RESPONSE
DOE believes the EIS and reference documents contain an adequate discussion of direct, indirect, and
cumulative impacts of transporting SNF and other radioactive materials. Incident-free transportation of
hazardous materials results in essentially no impacts, as discussed in Volume 1, section 5.1. A discussion
of highway, railway, and barge transportation impacts and potential accident impacts is in Volume 1,
section 5.1.
The cumulative impacts analyses are discussed in Volume 1, section 5.3 and Volume 2, section 5.15.
Cumulative impacts of radioactive and hazardous materials transportation have been enhanced in Volume
1, section 5.3.2.
DOE conducted a comprehensive transportation cumulative impacts analysis, evaluating past, present, and
future shipments of radioactive material, which include radioactive waste and SNF. The transportation
cumulative impacts analysis include past transportation activities, transportation activities related to actions
in this EIS, reasonably foreseeable future transportation activities, and general transportation activities.
The analyses described in Volume 1, section 5.3 and Volume 2, section 5.15 show that the potential for
exposing the public to radiation hazards is low, and the overall impacts under all of the alternatives
analyzed in this EIS would be small.

II COMMENT

The commentor expresses an opinion that DOE hides behind a claim of national security and is keeping
information from the public, and thus prevents an accurate assessment of impacts.
RESPONSE
In recent years, DOE has released a significant amount of previously classified data and will continue to
release additional information as it is declassified. Most environmental monitoring data are not classified,
and significant amounts of information are available to the public, such as the annual environmental reports
published for each site. Some data on DOE activities remains classified until released by the Secretary of
Energy. Volumes of publicly available data were used in the preparation of this EIS, as evidenced by the
list of references for each volume and the associated appendices. This EIS contains sufficient information
for members of the public to interpret and evaluate impacts.

II COMMENT

The commentor is of the opinion that the EIS should evaluate the impacts and conditions anticipated many
generations from now.
RESPONSE
The time periods being considered in this EIS are 40 years for the programmatic management of SNF until
ultimate disposition, and 10 years for environmental management and waste management activities at
INEL. The EIS evaluates reasonably foreseeable impacts associated with the proposed actions and

alternatives analyzed in the EIS. Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. The analyses show that the impacts of all alternatives would be small. Because of the speculative nature of and uncertainties associated with projecting actions and impacts many years in the future, meaningful analysis beyond this horizon is not possible. Whereas this EIS addresses interim actions until ultimate disposition of DOE SNF, analysis of disposition options such a geologic disposal will entail analysis of potential impacts centuries into the future. Such analysis will likely be part of a future EIS.

II COMMENT

The commentor states that the EIS does not address the environmental impacts of bringing spent nuclear fuel into Idaho.

RESPONSE

The environmental consequences of all SNF alternatives, including those that involve bringing additional SNF to INEL, are extensively discussed in Volume 1, Chapter 5. This discussion is supported by Volume 1, Appendices B and D. Volume 2, Chapters 4 and 5 further discuss environmental impacts at INEL relative to waste management and environmental restoration projects.

II COMMENT

The commentor states that specified matters are not adequately addressed as required by the National Environmental Policy Act and pursuant to Council on Environmental Quality regulations implementing the Act. The matters specified by the commentor are the different types of SNF storage, whether wet or dry; the need for potential SNF processing; cumulative impacts, similar impacts, and residual impacts, including future permanent disposal; a monitoring and safety program that provides independent oversight of storage conditions; and activities and past problems associated with SNF management.

RESPONSE

Decisions regarding wet or dry storage and processing will be based on future NEPA documentation. Cumulative impacts, including impacts from connected or similar actions are addressed in Volume 1, section 5.3 and Volume 2, section 5.15; residual impacts, assuming this term applies to adverse effects that cannot be avoided, are addressed in Volume 1, section 5.4 and Volume 2, section 5.16. DOE does provide monitoring and safety programs that are open to public review. Activities including past problems associated with SNF management are discussed throughout Volume 1 and its appendices when relevant to issues being considered.

II COMMENT

The commentor objects to DOE making a decision on the proposed alternatives when information on the extent of impacts to the Snake River Plain aquifer is not complete.

RESPONSE

The commentor refers to Volume 2, section 5.8.1. A sentence specifically refers to the status of the analysis for the impacts of a hypothetical leak to the soil from an SNF storage facility. Another sentence in Volume 2, section 5.8.1 states that based on the bounding accident scenario for impacts to the Snake River Plain aquifer discussed in Volume 2, section 5.14, the impacts to the Snake River Plain aquifer are expected to be small. These hypothetical impacts are assessed with respect to EPA MCLs and DOE DCGs. Subsequent analysis of the hypothetical SNF storage facility leak and documentation supporting groundwater modeling for the EIS have been referenced in and are available with the EIS. These analyses

are consistent with conclusions stated in the EIS regarding the impacts of alternatives on water quality.
Water resources at INEL and potential impacts from the alternatives considered in the EIS are described in
Volume 2, sections 4.8, 5.8, and Appendix F. In accordance with NEPA regulations at 40 CFR 1502.22,
the EIS summarizes all known existing credible scientific evidence relevant to understanding the existing
environment, identifies reasonably foreseeable impacts, and evaluates potential consequences.
Assumptions and limitations in the groundwater analysis are identified in Volume 2, Appendix F. DOE
used conservative assumptions to account for the uncertainty in modeling the effects of proposed actions
on groundwater quality. Results indicate that under all the alternatives considered, there would be no
contaminants above EPA MCLs at the INEL site boundary as a result of operations under any of the
proposed alternatives. This would be a result of waste management practices, including waste water
discharge monitoring, as well as natural contaminant attenuation and radioactive decay for historical
releases.
Independent assessments of the Snake River Plain aquifer water quality at INEL confirm DOE
environmental monitoring results that no contaminants in concentrations above EPA MCLs or DOE DCGs
exist beyond the INEL boundary. With improved management practices and remediation efforts planned
or under way, it is likely that overall water quality in the Snake River Plain aquifer below the INEL will
continue to improve.

II COMMENT

The commentor asserts that the conclusions on potential impacts are flawed and that the EIS, being based
on these conclusions, fails to pick the best solution.
RESPONSE
Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of
all the alternatives considered in this EIS. The analyses show that the impacts of all alternatives would be
small. While there are differences in the impacts among the alternatives, these differences by themselves
are not sufficient to distinguish between alternatives.
Volume 1, section 3.1 and Volume 2, section 3.4 describe DOE's preferred alternatives for programmatic
SNF management, and SNF management, environmental restoration, and waste management at INEL.

II COMMENT

Many commentors state that the EIS needs to provide cumulative impact assessments for past and future
activities at the Idaho National Engineering Laboratory.
RESPONSE
Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts,
including cumulative impacts, of all the alternatives considered in this EIS. The analyses show that the
impacts of all alternatives would be small. Each alternative includes the appropriate projects listed in
Volume 2, including decontamination and decommissioning
Volume 2, Chapter 4 discusses the current environment at INEL, including impacts from past activities.
Waste streams and emissions from INEL facilities, including characterization data and radionuclide
inventories, are referenced in Volume 2, Appendix F.
Volume 2, Appendix C discusses 49 proposed projects and ongoing activities at INEL. These projects are
analyzed under each of the alternatives discussed in Volume 2, section 3.1 and include reasonably
foreseeable actions. These actions are subject to the outcome of negotiations with the State of Idaho under
the FFA/CO.
Mitigation measures are discussed in Volume 1, section 5.7 and in Volume 2, section 5.19.
See also the response to comment 04.01 (001).

II COMMENT

The commentor states that while measuring small quantities, DOE loses sight of overall impacts to people, geology, and the national budget.

RESPONSE

DOE used the process described in regulations to ensure that the procedural requirements of NEPA were satisfied. The scope of Volume 1 of this EIS is to evaluate impacts directly related to SNF management activities across the United States. The scope of Volume 2 is to evaluate impacts directly related to SNF management, environmental restoration, and waste management activities at INEL. Larger-scale impacts from the activities associated with the proposed action, plus past, current, and other reasonably foreseeable activities are evaluated in Volume 1, section 5.3 and Volume 2, section 5.15. The EIS includes an evaluation of the overall impacts to the human and natural environment, including people and geological resources. Costs of the alternatives are summarized in Volume 1, section 3.3.6.

II COMMENT

The commentor states that the EIS violates the National Environmental Policy Act because cumulative impacts do not include an evaluation of supply and demand; for example, the demand to store additional waste will increase.

RESPONSE

Volume 2 considers the potential consequences of a range of levels of waste and SNF management activity. Under the Maximum Treatment, Storage, and Disposal alternative, INEL would respond to significantly increased demand for management of waste and SNF. The assessment found that the impacts of this and other alternatives would be small. Cumulative impacts are included in the assessment. The EIS addresses these impacts in Volume 2, section 5.1.5.

II COMMENT

The commentor states that the EIS does not provide historical data on radioactive releases and states that National Environmental Policy Act requirements must be met in the EIS by providing a comprehensive evaluation of cumulative impacts for past and proposed activities at the Idaho National Engineering Laboratory.

RESPONSE

Waste streams and emissions from INEL facilities, including characterization data and radionuclide inventories, are included as references in Volume 2, Appendix F. Volume 2, Chapter 4 discusses the current environment at INEL, including impacts from past activities. The effects of all current operations at INEL, as discussed in Volume 2, Chapters 2 and 4, and potential effects of the proposed action and reasonably foreseeable actions not associated with the proposed action, have been evaluated in Volume 2, Chapter 5.

II COMMENT

The commentor takes the position that all projects included in the Nevada Test Site's master plan must be considered in the cumulative impact analysis for that site.

RESPONSE

A site's master plan identifies all the projects desired to fulfill the current site mission at the maximum level without regard to budgetary constraints, priorities, or current direction. It represents the

first stage of the planning process, and remains relatively static. Projects are not well defined in the master plan. In contrast, the site 5-year plan presents more thorough development and definition of those projects in the master plan that might be initiated or implemented over a 5-year period. In the 5-year plan, which is updated annually, projects are prioritized in light of the current site needs, budgetary constraints, and current policy and direction. Because the 5-year plan identifies the mission-critical projects, which are most likely to be funded and completed, it is a better indicator of planned activities at the site than the master plan. Due to the nature of the planning and budget cycle, the 5-year plan is not limited to projects that are likely to be implemented in a 5-year period, but provides a longer perspective. For these reasons the 5-year plan is considered to be an appropriate basis for identifying projects for analysis of cumulative impacts. Additional discussion of the site master plan and relation to the 5-year plan and cumulative impacts were added to Volume 1, Appendix F, Part Two.
Due to the nature of the planning and budget cycle, the 5-year plan is not limited to projects that are likely to be implemented in a 5-year period, but provides a longer perspective. For these reasons, the 5-year plan is considered to be an appropriate basis for identifying projects for analysis of cumulative impacts.

Appropriate sections of the Nevada Test Site's Master Plan Projects are summarized in Volume 1, Appendix F, Part Two.

II COMMENT

The commentor asks that the EIS address the cumulative impacts from existing waste and waste proposed over the next 40 years at the Idaho National Engineering Laboratory. In addition, the commentor asks that the EIS address the cumulative impacts from the waste at the Hanford Site and the past, present, and future waste from the Trojan Nuclear Power Plant in the Columbia River basin.
RESPONSE
Volume 1, Chapter 5 Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. The analyses show the impacts of all alternatives would be small.
The EIS addresses the cumulative impacts from current and future waste at INEL in Volume 2, section 5.15.
The EIS addresses the cumulative impacts from waste at the Hanford Site on the Columbia River in Volume 1, Appendix A, section 5.8. The Trojan Nuclear Power Plant has operated with an NRC license in accordance with 10 CFR 20. Operation ceased on November 9, 1992. On January 4, 1993, Portland General Electric Company announced that the plant would not restart, and the plant was defueled by January 27, 1993. The decommissioning plan was submitted to NRC on January 26, 1995, and includes spent fuel management for the Trojan plant. This is outside the scope of this EIS.

II COMMENT

In supporting the preference for the Planning Basis alternative, the commentor states that the EIS does not fully address the cumulative impacts (specifically to public health and safety) of adding new missions at many different proposed sites under the various alternatives, and states that adding new functions and duplicating them at several sites may negatively impact safety.
RESPONSE
This EIS evaluates 10 sites as reasonable siting alternatives for some level of SNF management activity.
The analysis in the EIS includes environmental considerations, socioeconomic impacts, potential risks to the public from operations and reasonably foreseeable accident conditions, site-specific cumulative effects,

and other environmental factors for a number of options for managing SNF. Cumulative effects, involving site-specific projects or missions that are planned to occur simultaneously with SNF management activities are discussed in Volume 1, Appendices A through F. The EIS concludes that the alternative sites are environmentally suitable for management of SNF, and that risks to the public or the environment due to managing SNF at any of the 10 sites under consideration would be small even when new missions are involved. Discussions on public health and safety can be found in Volume 1, sections 5.1 and 5.3 and the associated site-specific Appendices A through F, and in Volume 2, section 5.12.

II COMMENT

The commentor states that socioeconomic impacts are not fully addressed from a cumulative perspective; therefore, socioeconomic impacts are underestimated. The commentor suggests that, at a minimum, the point be included under "cumulative effects" that there are large socioeconomic impacts, rarely mitigated, before the project starts. Further, the commentor suggests that the EIS not assume that there will be a mitigation measure of payments in lieu of property taxes unless a specific plan is proposed. The commentor states that DOE does not pay property taxes and rarely makes payments in lieu of property taxes.

RESPONSE

The commentor is correct that DOE facilities generally do not pay local or state property taxes. However, various mechanisms exist for DOE to compensate state or local governments in the form of payments in lieu of taxes or "special burden" payments. Special burden payments help offset increases in employment and population caused by DOE facility construction and/or operation (which may put additional burdens on local services, utilities, and infrastructures). Each situation requires an independent evaluation to determine whether such payments would be authorized to the appropriate state or local jurisdiction. When assessing socioeconomic impacts, the EIS does not presume that payments in lieu of taxes would be paid to states or local communities, but only discusses the possibility of such payments as a measure to mitigate adverse impacts.

Volume 1, Appendix F, Parts Two and Three, section 5.16 discuss potential socioeconomic impacts from a cumulative perspective. These sections do not explicitly "identify large socioeconomic impacts that have occurred before the start of the proposed project." Rather, potential cumulative socioeconomic impacts are discussed in terms of "the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions." In this context, socioeconomic impacts from the SNF management alternatives are compared with baseline economic and demographic forecasts. The effects on these regional economic growth rates from programmatic SNF management are relatively insignificant. DOE would evaluate the need to implement measures to mitigate adverse socioeconomic impacts on a site-specific basis.

Impact avoidance measures discussed in Volume 1, section 5.7.2 of the EIS could be further evaluated on a site-specific basis when more detailed socioeconomic analyses are conducted. Although DOE does not pay property taxes to local jurisdictions, Federal and civilian employees working at sites, or indirectly employed by sites, do. Infrastructure projects such as roads and other capital expenditures on DOE sites are financed by the Federal Government, reducing the fiscal impact on public financial resources of local jurisdictions.

II COMMENT

The commentor states that the EIS is defective because Volume 2 does not adequately address the cumulative effects of shipping, receiving, processing, and storing nuclear waste at the Idaho National Engineering Laboratory; nor does it address the cumulative impacts of past disposal and storage practices, present management actions, and reasonably foreseeable actions regarding spent nuclear fuel. The commentor expresses concerns about the cumulative impacts to the Snake River Plain aquifer underlying the Idaho National Engineering Laboratory and the level of detail in project summaries regarding cumulative impacts, and cites an example.

RESPONSE

Volumes 1 and 2 of the EIS comply with CEQ regulations regarding assessing the cumulative impacts of programmatic SNF management and SNF management, environmental restoration, and waste management at INEL, respectively. The regulations at 40 CFR 1508.7 define "cumulative impacts" as impacts that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts of SNF management activities at INEL are discussed in Volume 1, Appendix B, section 5.16. Impacts of past practices and present conditions at INEL are described in Volume 2, Chapter 4. This serves as a baseline to add incremental cumulative impacts from proposed actions, as in Volume 2, Chapter 5. The projects described in Volume 2, Appendix C are each included in one or more of the alternatives considered in Volume 2; their combined impacts are, therefore, included in the analyses of environmental consequences in Volume 2, Chapter 5. Volume 2, section 5.15 is a comprehensive discussion of cumulative impacts (including the Snake River Plain aquifer) at INEL from past, present, and future actions of DOE and others. Topics addressed include land use, socioeconomics, cultural resources, air, water, transportation, health and safety, waste management, and ecological resources. To aid in readability, many of these impacts have also been described in tables. The detail in Volume 2, section 5.15 is commensurate with the current state of planning, design, or development of such potential activities, including the example cited by the commentor. This detail is presented only to the extent known or reasonably foreseeable. Table 5.15-1 describes the largest projects, both onsite and offsite, that are not part of the proposed action but that have been included in the cumulative impact analysis. Volume 2, presents nonhealth-related transportation and health-related cumulative impacts from the proposed, connected, and similar actions. See also the response to comment 05.09 (011).

See also the response to comment 05.09 (006) regarding impacts to the Snake River Plain aquifer.

II COMMENT

The commentor states that the EIS is inadequate because it fails to address the cumulative impacts of spent fuel shipments as they pertain to Idaho National Engineering Laboratory-specific proposals.

RESPONSE

The impacts due to SNF shipments are described in Volume 1, Appendices D and I. Cumulative impacts from SNF shipments are described in Appendices D and I for both radiological impacts and vehicular accident impacts. Cumulative impacts due to past activities are presented for each site for the period from the start of operations at a site to 1993. Impacts through 2035 are in a range for the Centralization alternative as an upper bound, which lends conservatism to the evaluation for alternatives with less transportation. No other cumulative impacts are related to transportation; thus, this analysis is adequate.

II COMMENT

The commentor states that longshoremen, sailors, and the general public will receive significant exposure if

commercial shipping lanes are used and waste casks are off loaded in Portland, Oregon, or Seattle, Washington, and trucked to the Hanford Site or Idaho National Engineering Laboratory. Children stuck in traffic in cars alongside or behind these waste shipments could receive a significant dose.
RESPONSE
DOE believes the EIS and reference documents contain an adequate discussion of direct, indirect, and cumulative impacts of transporting SNF and other radioactive materials. Incident-free transportation of hazardous materials results in essentially no impacts as discussed in Volume 1, section 5.11. A discussion of highway, railway, and barge transportation impacts and potential accident impacts is in the Environmental Consequences of Key Disciplines and Offsite Transportation of SNF sections of the EIS.
The cumulative impacts analyses are discussed in Volume 1, section 5.3 and Volume 2, section 5.15.
DOE conducted a comprehensive transportation cumulative impacts analysis, evaluating past, present, and future shipments of radioactive material, which include radioactive waste and SNF. The transportation cumulative impacts analysis includes past transportation activities, transportation activities related to actions in this EIS, reasonably foreseeable future transportation activities, and general transportation activities.
The analyses described in Volume 1, section 5.3 and Volume 2, section 5.15.7 show that the potential for exposing the public to radiation hazards is extremely low and the overall impacts under all of the alternatives analyzed in this EIS would be small.

II COMMENT

The commentor notes that the second sentence in Volume 2, section 5.7.4.3.2 incorrectly states that cumulative impacts from all major sources after the baseline date must be below Prevention of Significant Deterioration increment limits. Increases from minor sources also consume increment.
RESPONSE
The commentor is correct in that it should be clarified that increases from both major and minor sources after the baseline date consume increment. In fact, the increment consumption analyses that have been performed considered all applicable sources that became operational (or will become operational) after the baseline dates. The sentence has been revised to clarify that the PSD analysis considers increases from all applicable major and minor source emissions that occur after the baseline dates.

II COMMENT

The commentor states that all alternatives except the No Action alternative have a potential for further releases to the environment, which will exacerbate existing contamination by both chemical and radiological materials.
RESPONSE
The proposed SNF facilities are designed to have no liquid release of waste water with hazardous chemical or radiological characteristics through the use of modern technologies, including secondary containment, leak detection, and water-balance monitoring equipment. The analysis in the EIS includes environmental considerations, potential risks to the public from operations and reasonably foreseeable accident conditions, site-specific cumulative effects, and other environmental factors for a number of options for managing SNF. Cumulative effect, involving existing site problems and site-specific projects or missions that are planned to occur simultaneously with SNF management activities are discussed in Volume 1, Appendix F. The EIS concludes that the alternative sites are environmentally suitable for management of SNF, and that risks to the public or the environment due to SNF management would be small, even when new missions are involved.

Discussions on public health and safety are in Volume 1, sections 5.1 and 5.3 and site-specific Appendix
F.

II 5.10 Safety and Health Effects

II COMMENT

One commentor questions the use of legal limit radiation levels for DOE spent nuclear fuel shipping casks
and measured radiation levels for U.S. Navy spent nuclear fuel shipping casks.
RESPONSE
Using legal limit radiation levels will overestimate potential impacts from DOE SNF shipments; this
assumption was necessary to maintain flexibility in the specific choice of shipping casks that have been
used by DOE. Even with this assumption, the risks are still small. The Navy intends to use existing
shipping casks, which have been in use and for which there are measured radiation levels, if transport is
required; therefore, these realistic measured data were used, and it was not necessary to make similar
assumptions to bound potential impacts.

II COMMENT

The commentor states that transportation of radioactive materials involves minimal risks.
RESPONSE
The comment accurately reflects the analyses of impacts provided in Volumes 1 and 2, Chapter 5 and
Volume 1, Appendices D and I. Volume 1, Appendix I summarizes the methodologies, key data,
assumptions, and results of calculations for the transportation analyses. These analyses show that the risks
associated with the transportation of radioactive material would be small for all alternatives considered.
The conclusion that such risks would be small is borne out by past experience with such shipments.

II COMMENT

The commentor states that traffic fatality risks are somewhat higher for Naval than non-Naval shipments.
The commentor states that the analysis uses the same documents for both Naval and non-Naval risk
estimates and does not consider the increased non-Naval shipments.
RESPONSE
Off-site shipments of non-Naval fuel are discussed in Volume 1, Appendix 1, while on-site shipments of
non-Naval fuel are discussed in Volume 1, Appendices A, B, C, and F, for Hanford, INEL, SRS, and
NTS/ORR, respectively. Off-site and on-site shipments of Naval fuel are discussed in Volume 1, Appendix
D.
DOE and the Navy reviewed their analyses of traffic fatality risks and did not identify any errors. All of the
impacts would be small for both radiological and nonradiological risks. The different number of shipments
between Naval and non-Naval SNF was considered in the analyses.
When comparing Naval and non-Naval transportation impacts, some differences other than the number of
shipments are important. For example, all off-site Naval SNF shipments from shipyards are by rail,
whereas all off-site test specimen shipments are by truck. The results are presented for the expected
number of each of these types of shipments. DOE shipments assume that all off-site shipments are either
by rail or by truck, and results are presented for both cases. Another example is that the Naval SNF
shipments from Pearl Harbor have a portion of the trip on ocean transport vessels. The reference document
for accident rates (Longitudinal Review of State-Level Accident Statistics for Carriers of

Interstate
Freight) lists a significantly higher nonradiological casualty rate for ocean transport than the nonradiological fatality rate listed for rail or truck transport.

II COMMENT

The commentor states that the probabilities for transportation accidents represent only the likelihood for a
single shipment. The commentor states that probabilities should be determined on the basis of total annual
shipments, not individual shipments.
RESPONSE
The results of the transportation accident risk assessment are cumulative risks that account for all
shipments over the entire campaign (1995 to 2035). Probabilities for the maximum reasonably foreseeable
transportation accidents are annual probabilities based on the total annual shipments.

II COMMENT

Commentors identify issues regarding public and worker safety and risks, and the effect on the environment
due to accidents caused by extreme weather and natural disasters at the facilities.
RESPONSE
Volume 1, Chapters 3 and 5 and Appendices A through F, and Volume 2, Chapters 3 and 5 and Appendix
F discuss risks to the public, workers, and the environment due to facility accidents, including those caused
by extreme weather and natural disasters, such as high winds, floods, earthquakes, and tornados. The
discussions include extensive evaluations and analyses of accidents. Protecting members of the general
public and workers from accidents is considered by DOE in the design, location, construction, and operation of facilities. The analyses and other information in the EIS demonstrate that the risk to workers
and the public from all accidents, including those caused by extreme weather or natural disasters, would be
small for all of the alternatives considered.

II COMMENT

The commentor suggests that the EIS fails account for the long-term risks to the public and potential
liability costs from damage scenarios under various options.
RESPONSE
Even for INEL accidents with the maximum reasonably foreseeable consequences, and with the most unfavorable meteorological conditions, no long-term risks to the public are expected. As noted in Volume
2, section 5.14, there is a potential for limited economic impacts associated with 1-year access restrictions
to public lands or up to a 1-year agricultural land withdrawal for land on and immediately adjacent to
INEL. Relative to potential liability costs, DOE will use the statutory indemnity contemplated by the
Price-Anderson Act (42 USC 2210) to ensure ready and prompt availability of funds to compensate the
public for injuries and damages resulting from a nuclear incident arising from activities conducted by
indemnified DOE contractors. Compensation provided under the Act would cover nuclear incidents arising at INEL, as well as nuclear incidents arising during the transportation of material to and from the
site.
Although the Price-Anderson Act is the primary means for compensating the public for damages from nuclear incidents, other remedies exist for claims not falling within the purview of the Act. For example,
claims against DOE or its employees may be cognizable under the Federal Tort Claims Act, and claims
for environmental damage may fall within CERCLA. These and other laws afford any injured party mechanisms for seeking recovery for damages relating to operation of DOE facilities.

II COMMENT

The commentor suggests that DOE is not going to study ingestion of radioactive materials at the Idaho National Engineering Laboratory because contaminated food and water would be impounded. The commentor also states that DOE's assumed cleanup of accidents does not account for redistribution of particles by wind.

RESPONSE

For INEL facility accidents with the maximum reasonably foreseeable consequences and the most unfavorable meteorological conditions, some restrictions on uses of agricultural products might be implemented in accordance with established Protective Action Guides. However, this does not mean that ingestion of radioactive material has not been analyzed in the EIS. There has been much research on the potential for health effects through ingestion, as well as other pathways, and is discussed in Volume 2, Appendices A and F-4. The accidents assessments summarized in Volume 2, section 5.14 account for ingestion of radioactive materials. Resuspension of radioactive materials from the ground is included as a potential dispersion path. Wind-borne resuspension generally reduces the amount of exposure at any given distance from the point of release, but increases the area in which exposure might occur. The accident analyses generally did not take credit for mitigative measures. Nevertheless, the risks to the public and workers from all accidents analyzed in the EIS would be small.

II COMMENT

The commentor states that agency officials should be able to answer over the telephone basic questions, such as what is the longevity of radioactive spent fuel.

RESPONSE

Because agency officials are accountable for answers to technical information given over the telephone, it is unreasonable to expect all technical information to be immediately available to the official who answers the telephone. In addition, agency officials consider it prudent to check answers, especially quantitative answers, against available references or with technical experts before providing the information to the public. Whenever possible, questioners were intentionally referred to specific locations in the EIS that would answer their questions in detail, in language agreed to by a wide range of reviewers and experts.

II COMMENT

The commentor would like DOE to minimize worker and public exposure to radiation during construction, operation, and maintenance activities, using the principle of the "as low as reasonably achievable" approach.

RESPONSE

Maintaining occupational exposure to radiation and radioactive materials as low as reasonably achievable (ALARA) is an integral part of all site radiological control programs. In addition, it is DOE's policy to implement legally applicable radiation protection standards and to consider and adopt, as appropriate, recommendations by authoritative organizations. Examples of such standards and organizations include DOE Order 5400.5, Radiation Protection of the Public and the Environment, the National Council on Radiation Protection and Measurements, and the International Commission on Radiological Protection.

See also the response to comment 05.10 (029).

II COMMENT

Commentors express the opinion that all facets of DOE's nuclear program are lethal and under the protection of bureaucrats.
RESPONSE
Hazardous material resulting from DOE's past, present, and future nuclear programs can be managed and disposed of in a safe manner. This EIS addresses the programmatic management of SNF in the interim to ultimate disposition, as well as environmental management activities at INEL over the next 10 years. It concludes that there would be no significant environmental impacts under any of the reasonable alternatives being considered for implementation. Although vulnerabilities exist, DOE has the management skill, scientific capability, and Secretarial mandate to safely manage SNF and INEL waste management and environmental restoration activities in the period covered by this EIS.

II COMMENT

The commentor notes a typographical error on the first line of the last paragraph on page 25 of the Summary.
RESPONSE
The commentor is correct that the word "facilities" should be "fatalities." DOE has corrected the error in the Summary and in Volume 1.

II COMMENT

One commentor refers to the degraded conditions in the Idaho National Engineering Laboratory structures as assessed by the Spent Fuel Working Group. This individual states that the known vulnerabilities in the storage of spent nuclear fuel lead to the risk of radioactive contamination, health problems, accidental criticalities, meltdown, and explosions. Another commentor wants DOE to "address existing storage problems that are a danger to us all."
RESPONSE
Volume 2, section 2.2 discusses the vulnerability of SNF storage at INEL. Actions to address these vulnerabilities are identified in Volume 2, section 2.2, Table 2.2-1. Because of the vulnerabilities identified in Volume 2, section 2.2, a criticality at Building 603 at the Idaho Chemical Processing Plant was considered 10 times more likely than at a modern facility such as Building 666. The consequences of such a criticality are reported in Volume 2, section 5.14. The impacts to the public from such an event would be small; impacts to workers at the scene could vary depending on the circumstances, but because of shielding by water and concrete, it is not likely that radiation exposure would result in a prompt fatality.
Workers could have an increased risk of developing cancer over their lifetimes.

II COMMENT

The commentor requests clarification of the phrases "high, though not fatal, dose" and "probably not likely" in Volume 1, Chapter 5.
RESPONSE
The phrases were used in reference to an estimated worker dose of 120 rem resulting from a particular accident. A dose of 120 rem is considered to be a dose with large potential health effects (e.g., death). A population that receives short-term exposures may have individuals who die from a range of doses. The nominal dose level for death to an individual with no medical intervention is 300 to 500 rem. Some individuals could die with no medical intervention at lower doses. Thus, a short-term dose of 120 rem with no medical intervention could result in death in part of a population. A short-term dose of 120 rem would

not be considered a fatal dose for typical individuals. Occupational doses to workers are usually less than 2 rems.

DOE has modified the EIS to clarify the phrases.

II COMMENT

The commentor questions what number of latent cancer fatalities per year DOE considers significant.
RESPONSE
DOE considers seriously the relationship between radiation exposure and the potential for latent cancer fatalities. Rather than a "number" of fatalities that is considered significant, DOE strives to keep the likelihood of a latent cancer fatality to a member of the public or in its work force very low. DOE's Nuclear Safety Policy states that "the general public be protected such that no individual bears significant additional risk to health and safety from the operation of a DOE nuclear facility above the risks to which members of the general population are exposed." Quantitatively, the goal translates to an incremental chance of a fatal cancer to a member of the public of one chance in 500,000 per year from DOE operations.

II COMMENT

The commentor suggests that consistent definitions of maximally exposed individual (MEI) and maximally exposed off-site individual (MOI) are needed. The comment cites the definitions in Volume 1, Appendix H and text in Volume 2, Appendix F-3.
RESPONSE
The definitions in Volume 1, Appendix H agree with the text in Volume 2, Appendix F-3. The text in Volume 2 contains an expanded discussion of the details involved in evaluating the maximally exposed individual, appropriate for a site-specific NEPA document. The less-detailed technical discussion given in Volume 1, Appendix H is appropriate for a programmatic analysis.

II COMMENT

The commentor suggests that duplication of facilities and missions at several sites is "not likely to enhance safety" and, in fact, can degrade the safety posture of those facilities.
RESPONSE
Volume 1, Chapter 5 summarizes the radiological and health and safety impacts associated with all the alternatives considered in this EIS, including using existing facilities and constructing new ones. Volume 1, section 3.3.6 summarizes the cost evaluation. The health and safety of workers and the public has been considered in the evaluation of these alternatives and the identification of a preferred alternative. The information provided on radiological and health and safety impacts, including facility costs are considered adequate for evaluating and comparing the impacts of all the alternatives. Volume 1, section 3.3.6 has been revised to indicate that there are no widely accepted equivalence values between costs and radiological exposures or other health effects or environmental impacts.
See also the response to comment 04.04 (008) for management of SNF under DOE's preferred alternative.

II COMMENT

The commentor states that a sentence in the Summary on public and worker health effects implies there is

some connection between spent nuclear fuel and natural background radiation. The commentor suggests
deleting the sentence.
RESPONSE
The sentence states that radiation exposures also occur from natural sources. DOE considers it important
for the reader to understand that natural radiation also contributes to the exposure that humans receive.
The EIS has been changed to clarify the intent of the discussion.

II COMMENT

The commentor suggests that atmospheric testing be added to a discussion about underground testing
releases.
RESPONSE
Volume 1, section 4.4 has been changed to include discussion of atmospheric testing.

II COMMENT

Commentors suggest that adequate baseline health studies need to be conducted at all existing DOE sites,
along transportation routes, and at proposed DOE sites to support risk factors used in the EIS. Some
commentors request that all epidemiological studies be included in this EIS, or if they have not been
performed, explain why and what other public involvement activities were conducted.
RESPONSE
In March 1990, DOE announced that it will turn over responsibility for research on long-term health
effects to workers at DOE facilities and the public in surrounding communities to the U.S. Department of
Health and Human Services. DOE directed that all worker health and exposure data and all data regarding
releases of radioactive and toxic materials be released. Baseline health effects studies for DOE
workers and for members of the surrounding public are either under way or planned at all major DOE
facilities. Results of all studies are available to the public.
Some persons have proposed performing epidemiological studies of the people living in communities in the
vicinity of installations performing work associated with atomic energy. However, as demonstrated by the
studies that have been attempted, such as those in Great Britain, the level of radiation exposure in the
communities from man-made radionuclides is very low with respect to the variations in background
radiation and other factors introduced by individual lifestyles. This, plus other variables introduced by
nature and other industries in the communities, has made it impossible to perform credible studies or
develop definitive conclusions. Efforts in this area are expected to continue, but after 50 years of extensive
study, the standards of the International Commission on Radiological Protection represent the most reliable
data available.
The epidemiological studies of baseline health effects at all existing DOE sites are not essential for
decisionmakers to discriminate between the alternatives discussed in this programmatic EIS, because they
are not relevant to any reasonably foreseeable adverse impacts.
Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of
all the alternatives considered in the EIS. The analyses show that none of the alternatives would have
adverse impacts.

II COMMENT

The commentor notes that cancer fatalities are in the Summary as "one" for all alternatives.
RESPONSE
The values in the Summary were chosen for simplicity of presentation. The analyses in the text and
appendices of the EIS provide health effects estimates for each site and alternative. These

estimates vary
over a wide range and depend on a variety of factors. However, in all cases, the analyses estimate that less
than one fatal cancer would result from the activities under each alternative.

II COMMENT

The commentor questions whether radiation from past practices may be the cause of cancers and other
health effects in the area and discusses previous releases and accidents at DOE sites.
RESPONSE
Analysis of impacts from past releases and accidents at DOE sites is not within the scope of this EIS;
however, it is DOE policy to identify and correct any inadequate practices concerning safety and health
arising from operation of its facilities. In this regard, accidents and accidental releases are required to be
reported, and accidents resulting in significant releases from DOE facilities are included in annual
monitoring reports that are publicly available. Detailed descriptions of the events concerning prior
accidents or releases are outside the scope of the EIS. The Hanford Environmental Dose Reconstruction
project currently is evaluating past releases from the Hanford Site.
Analyses in the Health and Safety sections of both volumes of the EIS evaluated potential impacts to the
off-site public from both radiological and nonradiological hazards for actions resulting from the alternatives
in this EIS. For all alternatives, impacts were estimated to be small, hypothetically resulting in fewer than
one additional fatal cancer in the surrounding population over that which would occur without the
presence of these DOE activities.

II COMMENT

The commentor notes that insufficient information is provided on dose assessment methodology to allow
verification of the accuracy and representativeness of the predicted impacts and doses.
RESPONSE
Methods for estimating releases to water are described in Volume 2, Appendix F-2. Methods for
estimating releases to air are described in Volume 2, Appendix F-3. Exposure and risk assessment
methodology is described in Volume 2, Appendix F-4. Additional information is available in the cited
reference material available in public reading rooms and information locations listed in the EIS.

II COMMENT

The commentor suggests that nonradiation workers, visitors, and motorists at Idaho National Engineering
Laboratory should be defined as the maximally exposed individuals, rather than a site-boundary resident.
RESPONSE
Potential exposure to nonradiation workers, visitors, and motorists at INEL has been evaluated for both
radioactive and nonradioactive releases from site facilities. Descriptions of the exposure scenarios for these
situations are contained in Volume 2, sections 5.7 and 5.12. Further information on evaluation methods is
in Volume 2, Appendix F-4. Although such individuals may be closer to some site facilities than
a site-boundary resident, they are not considered to be the maximally exposed individuals for two reasons. First,
workers spend only about 2,000 hours each year at the site; visitors and motorists spend even
fewer. Site-boundary residents are assumed to spend 50 weeks (8,400 hours) each year at the site boundary. Second,
additional pathways for exposure are included for site-boundary residents that do not apply to workers,
visitors, and motorists. In particular, the potential for ingestion of radioactivity from home-grown produce
is included in the evaluation for site-boundary residents.

II COMMENT

The commentor points out that risk estimates for all alternatives are higher for the Savannah River Site than
for other sites.
RESPONSE
The estimates of risk from releases of radioactive and nonradioactive materials and from accidents depend
on many factors. These include characteristics of the local population distribution, meteorology,
groundwater, and surface water. They also include the characteristics of the facilities and activities
addressed under each alternative. The assessment methods used for each site are described in Volume 1,
Appendices A through F.
Specific information on the risks associated with the alternatives considered for SRS is provided in Volume
1, Appendices C and D, Chapter 5. The analyses in this EIS show that the risks for all alternatives
considered would be small.

II COMMENT

Commentors question the effects from exposure to radiation and the methods for reporting radiation risks,
and suggest that the EIS may not have used the most up-to-date or most accepted radiation and health
effects dose response factors, particularly as related to induction of cancers.
RESPONSE
The potential health effects from exposure to radiation are the subject of research by scientists throughout
the world. Some published results have been subjected to enough review and confirmation in the scientific
community to become well accepted. Others have not stood up to careful scrutiny. Others are considered
interesting, but unproven, hypotheses. None of these individual studies provides a comprehensive set of
risk factors necessary to support the type of analysis required for the EIS. These individual studies are not,
by themselves, a technically sound basis for setting radiation standards or making policy decisions.
The dose response factors for cancer induction used in the EIS were taken from the most recent
International Commission on Radiological Protection recommendations (1990 Recommendations of the
International Commission of Radiological Protection), which reflect the most recent and most widely
accepted analysis of all currently available data. The authors of ICRP 60 reviewed all available studies.
Volume 1, Appendix D and Volume 2, Appendix F-4 provide useful primers on radioactivity, radiation
dose, and resulting health impacts. Volume 2, Appendix F-4 provides a discussion of how radiation doses
were calculated and how cancer risks were estimated.

II COMMENT

The commentor questions how tritium could be present in urine after 400 days if its biological (retention)
half-life is roughly 12 days.
RESPONSE
The biological or retention half-life does not refer to the period of time required for all of the material to be
eliminated from the body. It is an estimate of the time for half the material to be eliminated. Half of the
remaining tritium will be eliminated in another 12 days, leaving one fourth of the original amount. Half of
this amount will be eliminated in the next 12 days, and so on. If the original intake was large enough, it is
possible that detectable amounts would be eliminated 400 days later. Additional basic information on
radiation and its effects can be found in Volume 2, Appendix A.

II COMMENT

Commentors suggest that the discussions of radiation and the term "latent cancer fatalities" are misleading
or insensitive.
RESPONSE
The terms used in the EIS are not intended to be misleading or insensitive. They are the standard terms
used to describe the impacts being evaluated. A glossary is provided in the EIS to aid in understanding
technical terms. With regard to the effects of radiation exposure, basic information has been provided in
Volume 2, Appendix A. More detailed information is in Volume 2, Appendix F-4.

II COMMENT

The commentor identifies specific inconsistencies within the EIS.
RESPONSE
The section on Public and Worker Health Effects in the Summary has been modified to indicate that the
estimated health effects to the public include both operation activities and routine transportation. The
collective dose estimate provided in Volume 1, section 5.3.2 is to the worker, which is higher than the dose
to the public.

II COMMENT

The commentor asks whether the Advanced Neutron Source Facility and the Expended Core Facility
should be included in the assessment of potential impacts for the Oak Ridge Reservation.
RESPONSE
The Expended Core Facility was included in the analysis of potential SNF facilities at ORR. The
Advanced Neutron Source Facility was evaluated separately. Both were included in estimates of dose to
the maximally exposed individual. These assessments are in Volume 1, Appendix D and Volume 1,
Appendix F, Part Three.

II COMMENT

The commentor states that preservation of life and protection of property should be paramount in deciding
what government-sponsored activities are allowed.
RESPONSE
The health and safety of people and the protection of property are accorded appropriate importance in
deciding what activities could be implemented by the government (e.g., DOE Order 5480.1B,
Environmental, Safety and Health Program for DOE Operations, Section 7, and EIS Volume 1,
Summary).

II COMMENT

The commentor states that cancer morbidity, not just cancer fatality, should be used as the measure of the
impact of radiation exposures.
RESPONSE
The analyses of the potential effects of radiation exposure in this EIS do consider health effects other than
cancer fatalities and are based on the standards of the International Commission on Radiological
Protection. Volume 1, Appendix D, Attachment F, section F-1.3.3 and Volume 2, Appendix F-4 discuss
the terminology and risk factors used by the International Commission on Radiological Protection and how
these factors were applied in calculating the effects on human health in this EIS.
The International Commission on Radiological Protection defines "health detriments" to include the impact
of all fatal cancers, nonfatal cancers, and genetic effects. The health detriments caused by any exposure to
radiation are calculated by summing all of these effects after multiplying each effect by a

weighting factor
intended to represent the severity of the impact of each type of effect on human health. As stated in the
EIS, the total health effects (deaths, nonfatal cancers, genetic effects, and other impacts on human health)
may be obtained for the public by multiplying the latent cancer fatalities by the factor of 1.46 developed by
the International Commission on Radiological Protection.
Cancer fatalities were used to summarize and compare the results in the EIS because this effect was viewed
to be of the greatest interest to most people.

II COMMENT

The commentor questions the accuracy of information in Volume 1, Appendix A on Hanford Site spent nuclear fuel management.
RESPONSE
The information has been updated and the text clarified.

II COMMENT

The commentor notes that the Summary presents numbers of fatal cancers in the populations surrounding
each site for each alternative but does not give the sizes of the populations so that impacts can be
estimated.
RESPONSE
Several factors in each site analysis affect the estimate of cancer fatalities, including population sizes,
which are different for each site. These data are provided in Volume 1, Chapter 5. The Summary has been
changed to reference Chapter 5 to identify the source of this information. The EIS was prepared in a tiered
fashion with respect to technical depth of information. The Summary was intended to summarize the
information so that it would be generally understandable to nontechnical persons. The first three chapters
of each volume present expanded information with more technical detail, but are still in summary form.
The remaining chapters in each volume provide the technical information needed to support the
conclusions. The appendices are the most technically detailed and provide sufficient information for a
thorough technical review by specialists. The appendices also provide references that contain more
information on the methods and results of technical analyses.

II COMMENT

The commentor asks why the computer code used to estimate health risks associated with DOE releases is
not site-specific.
RESPONSE
Because the purpose of the analysis was to allow comparison among the alternatives, including sites, the
use of the same source input is appropriate. The computer codes used to estimate health risks associated
with releases from DOE facilities allow the input of site-specific data. Wherever possible, site-specific data
was used for such input parameters as source terms, hydrology, and demographics. Although conservative
generic meteorology classes D, E, and F were used in modeling, no credit was taken for terrain or stack
height.

II COMMENT

The commentor refers to Volume 1, Appendix B, section 5.12 and raises an issue that the analysis for
chemical impact focuses on cancer health effects. Some chemicals cause adverse noncancer health

effects
at exposure levels below those predicted to cause unacceptable increases in cancer incidence. In addition,
the commentor states that the potential for synergistic effects from hazardous chemicals should be
considered whenever possible.
RESPONSE
Potential synergistic effects from multiple chemical exposures are extremely difficult to assess
quantitatively because there is insufficient data to indicate synergistic effects. However, the potential for
synergistic effects is small where the concentrations for each individual compound are low, as is the case
for the alternatives evaluated in this EIS. To ensure that potential impacts are bounded, conservatively
high releases and exposure conditions were assumed. Further, the point of highest concentration for each
chemical occurs at different times and places. It is unlikely that any one individual could be exposed to
more than one chemical species at the concentrations reported in this EIS.
Radiation doses from historic operations are discussed in Volume 2, section 5.15.8. More information is
available in referenced technical documents, which are available for review in reading rooms and
information locations listed in the EIS. DOE is not aware of any generally accepted analysis
methodology that has been developed to evaluate synergistic effects due to several airborne chemical
constituents. DOE is aware that research into this area is continuing.
The evaluation of cumulative effects considers historic accidents only. The implementing regulation for
NEPA at 40 CFR, Paragraph 1508.7 specifies "that cumulative impacts result from past, present, and
reasonably foreseeable future actions..." For cumulative impacts, DOE has consistently interpreted
"reasonably foreseeable" to include construction, operation, maintenance, and other planned activities, but
not to include future hypothetical accidents, inadvertent spills, and other unplanned activities. Potential
chemical exposure resulting from an accident is evaluated in Volume 2, Appendix F-5. See also the
response to comment 05.10 (021).

II COMMENT

The commentor points out an apparent inconsistency between the dose reported in the EIS for low-level
waste disposal operations and the dose given in the Radioactive Waste Management Complex Low-Level
Waste Radiological Performance Assessment.
RESPONSE
The commentor is correct that the doses reported in the cited reference for the post-institutional control
period exceed those cited in the EIS for the operational period. However, the dose estimates are not
directly comparable because the assumptions used in each analysis are significantly different. The doses
cited in the EIS are evaluated at the site boundary and represent an upper bound for doses from operations
during the time period addressed in the EIS. The doses cited in the RWMC performance assessment are
the post-institutional control doses evaluated for a location very near the waste disposal complex (100
meters away) and represent an estimate of doses more than 100 years outside the time period addressed by
the EIS. During this post-institutional time period, it is assumed that no controls exist to prevent an
individual from approaching the waste disposal complex. Therefore, it is reasonable to expect doses for the
post-institutional control period could exceed those cited in the EIS for the operational period.
Further, the doses reported in the RWMC performance assessment do not account for planned remediation
of the RWMC under the CERCLA process. These remediation activities could significantly reduce the
radiation doses expected from the RWMC over the long term.
The evaluation in Volume 2 of this EIS bounds environmental impacts from environmental restoration (or
cleanup) activities at INEL. However, specific decisions related to cleanup at INEL are generally
addressed under an enforceable agreement executed by DOE, EPA Region X, and the State of Idaho on
December 9, 1991, the FFA/CO. The FFA/CO establishes a comprehensive process that integrates the

remediation requirements of CERCLA and the corrective action requirements of RCRA and the State of Idaho's Hazardous Waste Management Act. Cleanup activities are conducted under the process and schedule established in the FFA/CO. RODs under the FFA/CO process are signed by all three agencies and represent a joint determination that protectiveness will be achieved through implementation of the selected remedy.

II COMMENT

The commentor asks why the GENII-S computer code was not used for Hanford Site assessments instead of the GENII used in the EIS.
RESPONSE
GENII-S incorporates the same models and data inputs for dose parameters used. The GENII and GENII-S codes yield the same results when used in the deterministic mode. However, GENII-S does not have the capability to calculate the uncertainty in the atmospheric dispersion factors or the transit time to the receptor. These calculations are important particularly where short-lived radionuclides are important dose contributors and distances are long. The model does not allow for any decay on the way to the receptor, and thus, overestimates releases. Considering these limitations, the use of GENII was appropriate.

II COMMENTS

The commentor requests that radiation doses, expressed in effective dose equivalent, be provided for Brookhaven National Laboratory, as well as for other sites considered in the EIS.
RESPONSE
Radiation doses, expressed in effective dose equivalent, are provided for current activities at Brookhaven National Laboratory in Volume 1, Appendix E, Chapter 3. The evaluation of potential impacts under each alternative is in Appendix E, Chapter 4. No additional quantitative estimates of radiation dose are presented in Chapter 4, because none of the alternatives would result in an increase in emissions at Brookhaven National Laboratory.

II COMMENT

The commentor asks whether the dose factors in Volume 2, Appendix F-4, Table F-4-5 are for unit intakes by inhalation or ingestion.
RESPONSE
The values in Volume 2, Appendix F-4, Table F-4-5 are for unit intakes by ingestion. The table is referenced in the text under a discussion of dose evaluation for consumption of contaminated groundwater.

II COMMENT

The commentor suggests that the high efficiency particulate air filter efficiency data stated for operations is not applicable to failed filters and cites a past occurrence at which a facility was shut down due to a filter break.
RESPONSE
The EIS contains evaluations of atmospheric emissions for both intact and failed high efficiency particulate air (HEPA) filters. Several of the accident scenarios address situations in which failed filtration systems are assumed. These assessments provide an upper bound for the potential consequences of such a failure and

are discussed in Volume 2, section 5.14. Releases to the atmosphere from operating conditions with intact filtration systems are discussed in the Volume 2, section 5.7. The health and safety impacts from operational releases appear in Volume 2, section 5.12. The filtration systems are not the only control on atmospheric emissions. Other systems, including emission monitoring and administrative controls, are used to ensure that filter efficiency is maintained.

To minimize airborne releases, projects involving radioactive particulates at INEL would take place within a double-confinement structure. Conservative assumptions normally are used to estimate releases to the atmosphere, such as modeling only two filters in series when at least three are planned for actual operations. Also, although HEPA filters have established particulate removal efficiencies of 99.97 percent (down to diameters of 0.3 micrometers), a conservative efficiency factor of only 99 percent typically is used for operational safety and accident analyses. These filters are capable of removing particles as small as 0.001 micrometers from an airstream, but the manufacturer performs the rating calibration at 0.3 micrometers using a standard aerosol-generating device. The filters are tested annually and inspected daily to ensure that their efficiency is maintained.

Safety analyses for forthcoming INEL facility operations will not presume perfect HEPA filter operation. Additional precautions will be taken to minimize airborne releases. The pressure differential across each filter is measured continuously to detect formation of any holes or insecure filter installation. Filter temperature will be measured to promptly detect a filter fire. Finally, radiation sensors will be installed downstream of the filters to continuously monitor atmospheric releases. Detection of radioactive particulates above the natural background levels would result in a prompt shutdown of facility operations.

See also the response to comment 05.11.03 (009)

II COMMENT

The commentor notes that data mentioned in the text of the EIS on off-site radiation levels are not provided.

RESPONSE

References have been added to Volume 2, section 4.7.3 that contain the data. Specifically, these are the yearly environmental reports for INEL for 1987 through 1991 (The Idaho National Engineering Laboratory Site Environmental Report for Calendar Year 1991). These references are available in reading rooms and information locations listed in the EIS.

II COMMENT

The commentor suggests that the statistical presentation of risks is misleading.

RESPONSE

The terms used to describe risk are not intended to suggest that individuals can have small fractions of a cancer. Risks applied to individuals reflect the lifetime probability of fatal cancer. Risks applied to populations reflect the number of additional cancers expected in that population. The terms used in the EIS are the standard used to describe the impacts being evaluated. With regard to the effects of radiation exposure, additional basic information is provided in Volume 2, Appendix A. More detailed information is in Volume 2, Appendix F-4.

II COMMENT

The commentor suggests that other locations or extraordinary circumstances could result in higher exposures and require a redefinition of the maximally exposed individual.

RESPONSE

Every reasonable effort was made to ensure that the doses estimated for the maximally exposed individual provide an upper bound for potential doses from site operations. For example, the locations chosen for evaluation correspond to the highest air and ground concentrations where any member of the public could reside. The dose pathways include conservatively high values for parameters such as time spent outdoors and dietary intakes of locally grown produce. The scenario definition is "generic" in the sense that it includes a set of standard pathways for radiation exposure. However, site-specific data have been used to evaluate these pathways.
The suggested approach of conducting personal field interviews to determine the potential for individuals receiving doses in excess of the maximum individual doses is not warranted. This information is not relevant to estimating foreseeable significant adverse impacts essential to reasoned choices among alternatives.

II COMMENT

The commentor questions the statement that less than 1 percent of the average radiation exposure to a member of the United States population comes from the nuclear fuel cycle and asks for documentation.
RESPONSE
For the average member of the U.S. population, about 82 percent of total radiation exposure comes from natural background, including radon (55 percent), cosmic radiation (8 percent), radioactivity in the soil (8 percent), and natural radioactivity in the body (11 percent). About 18 percent comes from man-made sources including medical diagnosis and treatment (15 percent) and various consumer products (3 percent).
Less than 1 percent results from the nuclear fuel cycle and global fallout. There are many references for these facts. One of the most authoritative is the 1990 Recommendations of the International Commission of Radiological Protection.

II COMMENT

The commentor suggests that DOE adopt an informal de minimis criterion to avoid unnecessary expenditure of resources in protecting and reassuring the public.
RESPONSE
DOE has not adopted a de minimis dose level for members of the public. Balancing of the public dose level versus cost to further reduce the dose to the public is accomplished at DOE facilities within the context of state and Federal regulations applicable to exposure of the public to radionuclide releases.
Balancing of public dose versus cost is effective in preventing the expenditure of funds to further reduce the already-low public exposures from radionuclide releases at DOE facilities. It is beyond the scope of this EIS to establish de minimis goals for DOE facilities.

II COMMENT

The commentor asks if the term "health effects" in Volume 1, Appendix B, section 4.11, page 4.11-7 should be interpreted as "latent cancer fatalities."
RESPONSE
There is no page 4.11-7 in Volume 1, Appendix B. DOE assumes that the commentor is referring to text on page 4.12-1 of the Draft EIS. The commentor is correct. The text has been changed to read "latent cancer fatalities" instead of "health effects."

II COMMENT

The commentor suggests that health risk-based standards be used to develop chemical hazard indices.
RESPONSE
Health risk-based standards were used to develop chemical hazard indices where possible. Such standards
are not available for all chemicals. Where risk-based standards were not available, State of Idaho standards
were used. This methodology is described in Volume 2, Appendix F-4.

II COMMENT

The commentor states that, contrary to statements in the EIS, measurable increments in radiological
emissions could result from spent fuel alternatives and suggests that the cited statement should be clarified.
RESPONSE
The statement in Volume 1 cited by the commentor has been clarified.

II COMMENT

The commentor suggests that actual risk values be given and that the bullets in the right column on page 28
of the Draft EIS Summary be used as a summary.
RESPONSE
The EIS Summary is intended to summarize the information in a manner that would be generally
understandable by nontechnical persons. The first three chapters of each volume expand information with
more technical detail, but are still summary in form. Remaining chapters in each volume summarize the
technical information needed to support the conclusions. The appendices are technically detailed and
provide sufficient information for a thorough technical review by specialists. The appendices also contain
references that provide even more information on the methods and results of the technical analysis.
The Summary has been revised as suggested.

II COMMENT

The commentor notes that the Idaho National Engineering Laboratory has kept radiation to a minimum and
that it is a safe area.
RESPONSE
The comment is noted.

II COMMENT

The commentor expresses doubt that there are no significant adverse health effects from low-level radiation
exposures typical of those received by populations surrounding commercial nuclear reactors or DOE
facilities, and does not believe that the Centers for Disease Control and Prevention studies are credible.
RESPONSE
The effects of radiation exposure on human populations has been studied by many different organizations
in addition to the Centers for Disease Control and Prevention. The International Commission on
Radiological Protection (ICRP) has reviewed the state of knowledge of the effects of radiation exposure in
1990 Recommendations of the International Commission of Radiological Protection. The ICRP
concluded that the effects of low-level radiation exposure were adequately represented by the risk factors
derived for high-dose exposures (B142, Page 142 of ICRP Publications). These high-dose risk factors were
used in the EIS to estimate the health impacts for radiation exposures. The health impacts from radiation
exposure to the public associated with the various alternatives would be less than the typical

incidence of occupational-accident caused fatalities. (See Volume 1, section 5.3 and Volume 2, sections 5.15 and F-4.2.3 for occupational-accident fatality rates.)

II COMMENT

The commentor states that the latent cancer fatalities appear to be high (1.6 latent cancer fatalities per 40 years, centralization at the Savannah River Site) and asks that these numbers be checked for accuracy.
Additionally, the commentor asks if there are ways, such as more shielding, to reduce impacts.
RESPONSE
DOE believes that the analytical approaches and technical information used in the EIS represent current and accurate information. Every attempt was made to ensure the data are accurate. The technical approaches used in the analyses supporting this EIS were reviewed and evaluated by DOE and independent contractors. The information in the EIS also underwent internal DOE review, and all technical comments provided were considered in preparing the EIS.
More shielding will not be added, as designs comply with NRC regulations applicable to radioactive materials transportation. These regulations are found in 10 CFR Part 71, which includes detailed packaging design requirements and package certification testing requirements. Complete documentation of design and safety analyses and results of the required testing are submitted to NRC to certify the package for use. This certification testing involves the following components: heat, physical drop onto an unyielding surface, water submersion, puncture by dropping package onto a rigid spike, and gas tightness.
Some of the required tests simulate maximum reasonably foreseeable accident conditions.

II COMMENT

The commentor raises questions regarding complete reliance on high efficiency particulate air filters for preventing emissions of radioactive particulates, especially those less than 0.3 micrometers in diameter.
RESPONSE
To minimize airborne releases, projects involving radioactive particulates at INEL would take place within a double-confinement structure. Conservative assumptions normally are used to estimate releases to the atmosphere, such as modeling only two filters in series when at least three are planned for actual operations. Also, although HEPA filters have established particulate removal efficiencies of 99.97 percent (down to diameters of 0.3 micrometers), a conservative efficiency factor of only 99 percent typically is used for operational safety and accident analyses. These filters are capable of removing particles as small as 0.001 micrometers from an airstream, but the manufacturer performs the rating calibration at 0.3 micrometers using a standard aerosol-generating device. The filters are tested annually and inspected daily to ensure that their efficiency is maintained.
Safety analyses for forthcoming INEL facility operations will not presume perfect HEPA filter operation.
Additional precautions will be taken to minimize airborne releases. The pressure differential across each filter is measured continuously to detect formation of any holes or insecure filter installation. Filter temperature will be measured to promptly detect a filter fire. Finally, radiation sensors will be installed downstream of the filters to continuously monitor atmospheric releases. Detection of radioactive particulates above the natural background levels would result in a prompt shutdown of facility operations.

II COMMENT

The commentor raises the issue that the most recent numbers on radiation were not used for analysis in the

EIS.
RESPONSE
Volume 1, Appendix F, Figure 4.7-2 provides information on natural background radiation, specifically radon, in homes (inhaled). The information referenced is from the 1987 publication by the National Council on Radiation Protection and Measurement, Ionizing Radiation Exposure to the Population of the United States. This reference provides a number that is recognized nationally. The figure is meant to be indicative of the natural background radiation found in the Oak Ridge area. Values of radon from different areas within the country are still being studied and may differ; they may be smaller in some instances, and larger in others. This information does not affect the analysis, and there have been no changes in the EIS.
A brief discussion of occupational and public health and safety for ORR is included in the EIS in Volume 1, Appendix F, Part Three, section 4.12.

II COMMENT

The commentor observes that health and safety impacts from the Idaho National Engineering Laboratory have apparently been minimal.
RESPONSE
The cumulative impacts analyzed in Volume 2, Chapter 5 for all of the alternatives analyzed in this EIS agree with this observation.

II COMMENT

The commentor does not want any additional spent nuclear fuel or activities at the Oak Ridge Reservation.
RESPONSE
The analysis in Volume 1, Chapter 5 and Volume 1, Appendix F, Chapter 5 indicates that the environmental consequences of the alternatives considered in the EIS would be small at any of the sites, including ORR. Therefore, bringing in additional SNF is not likely to add to environmental health hazardous that may already exist at this site. See also the response to comment 01.01.01.02 (011).

II COMMENT

The commentor asks whether a quantitative uncertainty analysis should be done for the EIS.
RESPONSE
Volume 2, section 5.1 and Volume 1, Appendix D, section F.1.5 have been revised to include a discussion of uncertainty analysis. In general, however, environmental impact analyses are designed to produce a reasonable projection of the upper bound for potential environmental consequences. This requires the use of appropriately conservative assumptions and analytical approaches. In this context "conservative" means that an assumption or analysis would tend to overproduced, rather than underpredict, any adverse impacts.
However, overly conservative analyses do not provide a useful basis for comparing alternatives. Therefore, the aim has been to avoid overconservatism and base the environmental impact analyses on realistic, site-specific information wherever possible. Each alternative has been analyzed using identical methods and levels of conservatism so that the relative impacts of alternatives can be accurately assessed.
The analysis of the impacts of normal operations and hypothetical accidents are based on calculations that require input data and a model or analytical method for projecting potential impacts. The nature of the input data for each analysis is slightly different. Socioeconomic analyses are based on projected budgets, for example, while air resources analyses are based on estimated releases of pollutants. The analytical models are also fundamentally different for similar reasons. For all analyses where conservative

assumptions have been required, generally accepted engineering and scientific approaches have been used
to ensure that these assumptions are not outside the range of uncertainty usually associated with the data.
Detailed uncertainty analyses can sometimes be useful to evaluate environmental impacts. They are
particularly valuable when projected impacts are large and it is important to know how reliable the
projections are. However, quantitative estimates of uncertainty in impacts for hypothetical future activities
are difficult to determine. When appropriately conservative estimates of impacts are shown to be small, the
exact degree of uncertainty diminishes in importance. The estimates of impacts in this EIS are small
enough that detailed quantitative uncertainty analyses are not necessary to meet the objectives of an EIS.

II COMMENT

The commentor suggests that professional engineers review Idaho National Engineering Laboratory
facilities and questions the accountability of personnel who sign off DOE safety documents.
RESPONSE
All DOE facilities are reviewed for hazard classifications per DOE Order 5481.1B, Safety Analysis and
Review System. Higher-hazard facilities require extensive safety analysis and review procedures. This
includes independent reviews of these analysis summarized in safety evaluation reports. These reports and
the safety basis of the facility are approved by the Program Senior Official at DOE Headquarters. The
Office of Environmental Safety and Health Oversight (EH) conducts independent reviews of these
documents and must agree with all assumptions, conservatisms, and analyses. This includes operating
parameters and hazard classification of the facilities personnel conducting these reviews, including hazard
professional engineers. See also the response to comment 06.02 (019).

II COMMENT

The commentor is concerned that the EIS underestimates the tritium release from the 100-K basin during
an accident. The commentor estimates that the tritium release to the environment would be about 40 times
higher than estimated by the EIS.
RESPONSE
Volume 1, Appendix A, section 1.1.2 has been revised to show that the amount of tritium in the basin is
approximately 134 curies.

II COMMENT

The commentor claims that past court cases have rejected shipments of nuclear waste through Puget
Sound's ports and that current government procedures do not adequately guarantee the safe handling of
this fuel.
RESPONSE
DOE complies with the DOT regulations for the transport of radioactive material. These regulations are
designed to protect workers and the public by minimizing the risks associated with the transport of
radioactive material. The EIS analyzes a full range of alternatives, from no action, which involves
extremely limited transport of radioactive material, to centralization, which involves extensive transport of
radioactive material. For all alternatives, the potential risks from transportation would be small. This
includes the risks associated with maximum reasonably foreseeable accidents. The probabilities and
consequences of maximum reasonably foreseeable transportation accidents are discussed and evaluated in
Volume 1, Appendices D and I. Although the consequences of an accident of this type might be high, the

probability of such an accident having high consequences is on the order of one chance in 10 million, and the consequences of most accidents, including those with a probability of occurring more frequently, would be less than those of the accidents analyzed.
With more than 50 years of radioactive material transportation in the commercial and government sector, there have been few transportation accidents involving radioactive materials, and these have resulted in little or no release of radioactivity. Nonetheless, emergency response teams are trained and ready throughout the United States to respond quickly in the event of a transportation accident. DOE recognizes the importance of preparedness for potential accidents involving transportation of SNF. DOE, DOT, and the Federal Emergency Management Agency (FEMA) provide training and materials to local emergency responders to prepare them to handle accidents properly. DOE provides for Radiological Assistance Program teams, which consist of trained experts equipped and prepared to quickly respond to an accident, and assist local emergency response personnel if requested. This response network, along with other preventive safety measures, such as shipping container design and testing, and adherence to stringent regulations, supports the continued safe shipping of SNF.
SNF shipping containers that could be handled by longshore workers are designed to meet national and international standards for safety, including radiation levels at the outside of the containers.
This EIS analyzes transportation from ports of entry. The potential for radiological exposures to longshore workers is within the scope of the EIS entitled Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel (Draft).
As stated in this EIS, the Atomic Energy Act of 1954 authorizes DOE to establish standards to protect health and minimize dangers to life and property. Radiation protection standards are based on controlling radioactive releases to as low as reasonably achievable (ALARA) levels in recognition of the potential health risk associated with exposure to radiation. In addition, DOE adopted and enforces the occupational, safety, and health protection requirements that are equivalent to those issued by the Federal Occupational Safety and Health Administration (OSHA). DOE designs, locates, constructs, and operates its facilities in a way that provides a level of safety that is within the safety requirements for workers in private industry for all comparable job categories, including high-hazard occupations such as construction. Analyses are discussed in Volume 1, section 5.1.1; Volume 1, Appendices A through D, Chapter 4; and Volume 2, section 5.12. Health and Safety sections of both volumes of the EIS evaluate both radiological and nonradiological impacts to the health of workers at DOE facilities. For all alternatives, impacts would be small. The Navy complies with OSHA regulations in the nonradiological occupational safety, health, and occupational medicine area.

II COMMENT

The commentor suggests that a caveat be added to Appendix F to show that exposure from the maximum reasonable foreseeable accident is in addition to exposure from natural background radiation.
RESPONSE
Volume 1, Appendix F has been changed to reflect the commentor's suggestion.

II II 05.10.01 (001) Worker

COMMENT
The commentor states that chemical exposure risks are not included in the analysis of on-site transportation impacts for hazardous chemicals at the Nevada Test Site.
RESPONSE
Chemical exposure risks associated with on-site transportation are associated only with transportation accidents, because, during normal transportation, the chemicals are in sealed containers. Volume

1,
Appendix F, Part Two, section 5.11.1 states that the transportation accident risk is bounded by the risk
evaluated for the chemical spill accident at the Expended Core Facility in Volume 1, Appendix D.

II 05.10.01 (002) Worker

COMMENT
The commentor, quoting a passage from Volume 2, which states that "industrial hygiene practices assure
hearing protection for all workers," asks whether Idaho National Engineering Laboratory procedures cover
all site employees. The commentor suggests that if they do, no effort has been made to ensure protection
of all site workers.
RESPONSE
INEL procedures cover all workers for all operations. DOE Orders are used to enforce standards at DOE
sites. DOE Order 5480.4, Environmental Protection, Safety, and Health Protection Standards, specifies
mandatory compliance with Title 29 CFR 1910, Occupational Safety and Health. DOE Order 5483.1A,
Occupational Safety and Health Program for DOE Contractor Employees at Government-Owned,
Contractor-Operated Facilities, provides additional guidance for DOE contractor employees at
government-owned, contractor-operated facilities and specifically requires compliance with OSHA hearing
protection requirements.

II 05.10.01 (003) Worker

COMMENT
The commentor suggests that workers may not be safe near leaking radioactive containers, such as the
leaking tanks at the Hanford Site, while an effort is made to stop the source of the leaks.
RESPONSE
DOE considers worker safety in its planning before performing any work in a radiation environment. The
DOE policy regarding worker exposure to radioactivity is to minimize the exposure to the lowest level that
is reasonably achievable. Radiation workers are intensively trained and follow rigorous operational
procedures to ensure safety. Also, workers have the authority to stop any work if they believe conditions
are unsafe. Work is not resumed until conditions are declared safe.

II 05.10.01 (004) Worker

COMMENT
Commentors raise issues about the health and safety of the workers at DOE and Navy facilities.
RESPONSE
As stated in the EIS, the Atomic Energy Act of 1954 authorizes DOE to establish standards to protect
health and minimize dangers to life and property. Radiation protection standards are based on controlling
radioactive releases to as low as reasonably achievable (ALARA) levels in recognition of the potential
health risk associated with exposure to radiation. In addition, DOE adopted and enforces the occupational,
safety, and health protection requirements that are equivalent to those issued by OSHA. DOE designs,
locates, constructs, and operates its facilities in a way that provides a level of safety that is within the safety
requirements for workers in private industry for all comparable job categories, including high-hazard
occupations such as construction. Analyses are discussed in Volume 1, section 5.1.1; Volume 1,
Appendices A through D, Chapter 4; and Volume 2, section 5.12. Health and Safety sections of both
volumes of the EIS evaluate radiological and nonradiological impacts to the health of workers at DOE
facilities. For all alternatives, impacts would be small. In the nonradiological occupational safety, health,
and occupational medicine area, the Navy complies with OSHA regulations.

II 05.10.01 (005) Worker

COMMENT
Commentors raise the issue of potential radiation exposure to longshore workers in the Port of Seattle.
RESPONSE
SNF shipping containers that could be handled by longshore workers are designed to meet national and
international standards for safety, including radiation levels at the outside of the containers.
This EIS analyses transportation from ports of entry. The potential for radiological exposures to longshore
workers is within the scope of the EIS entitled Proposed Nuclear Weapons Nonproliferation Policy
Concerning Foreign Research Reactor Spent Nuclear Fuel.

II 05.10.01 (006) Worker

COMMENT
The commentor states that not all adverse properties of toxic and radioactive materials to which workers
may be exposed are addressed in the EIS.
RESPONSE
The risk of contracting fatal cancers from exposure to radiation was used as a measure of impact to public
health throughout the EIS to provide a consistent document and to allow ready comparison with other
health impacts, such as those from exposure to chemical carcinogens. When nonfatal health effects and
genetic effects from radiation are included in the analysis, the lifetime risk increases from 5E-4 per rem of
exposure for fatal cancers to 7.3E-4 per rem of exposure for all health effects combined. The risk factors
for these health effects are provided in Volume 2, Appendix F-4.
The risk factors for cancer induction used in the EIS have been taken from the most recent International
Commission on Radiological Protection recommendations (1990 Recommendations of the International
Commission of Radiological Protection), which reflect the most recent and most widely accepted analysis
of all currently available data. The authors reviewed all available studies. Volume 2, Appendix A of this
EIS provides a useful primer on radioactivity and radiation dose. Volume 2, Appendix F-4 provides a
discussion of how radiation doses were calculated and how cancer risks were estimated.
Analysis of exposure of workers to toxic materials is addressed in Volume 2, sections 5.7 and 5.12. The
inventory of potential chemical releases at INEL was reviewed and all potentially toxic materials were
included in the analysis, even those that are only suspected of having adverse health effects. In addition,
the records of all reported occupational injuries and illnesses, regardless of cause, were used to estimate
potential future health impacts to workers.

II 05.10.01 (007) Worker

COMMENT
The commentor notes that Volume 1, section 4.12.1 does not mention anything about worker health and
safety beyond radiation exposure and that there have been quite a number of off normal and unusual
occurrences at the 100-K area fuel storage basins and spent nuclear fuel storage areas each year. The
commentor suggests that occurrences for the last 5 years at the Hanford Site be summarized in the EIS.
RESPONSE
The EIS has been changed to provide additional worker safety and health information.

II 05.10.01 (008) Worker

COMMENT

The commentor indicates that Idaho National Engineering Laboratory workers would not accept significant
risks just to have a job.
RESPONSE
DOE is formally committed to protecting the safety and health of its workers, the public, and the environment. See the response to comment 05.10.01 (004).

II 05.10.01 (009) Worker

COMMENT
Commentors suggest that potential impacts to workers are deemphasized because they are reported in
various sections of the document rather than in one place, and noted that the EIS did not identify the
names and affiliations of those who prepared the various sections.
RESPONSE
EIS preparers, their affiliations, their education, and their years of experience are identified in Volumes 1
and 2, Chapter 6. DOE is solely responsible for the preparation and content of the EIS, whether in draft or
final form. Although various consultants assisted DOE in preparing this document, DOE provided final
technical review and approval of the document.

II 05.10.01 (028) Worker

COMMENT
The commentor suggests that the national average value for radiation doses from radon may not be the best
value to use in describing the Oak Ridge Reservation area.
RESPONSE
Radon doses were included as part of the description of natural background radiation. Doses from radon
vary widely at individual locations, as well as across the nation. Results from individual surveys, even at
specific locations, change with time due to a variety of factors. Therefore, national average values are the
most useful for describing natural background from radon under most circumstances.

II 05.10.01 (029) Worker

COMMENT
The commentor notes that estimated radiation doses for one alternative appear to exceed the DOE
occupational administrative control level, and suggests a lower standard be applied.
RESPONSE
The purpose of the EIS is to evaluate the potential impacts from proposed activities. For this reason,
assumptions were made to ensure that estimated doses are conservatively high and represent an upper
bound of potential impacts. Although conservatively high, the analysis shows potential radiation dose for
the alternative in question would remain within legal limits for occupational exposure. The EIS is not
intended to substitute for the assessments required by regulations or by DOE Orders. Any facilities
constructed or operated under the chosen alternative will comply with applicable requirements.

II 05.10.01 (030) Worker

COMMENT
The commentor states that the EIS does not adequately address worker fatalities from operations and
accident conditions as a basis for comparing alternatives.
RESPONSE
Volume 1, Chapter 5 discusses the disciplines studied that result in potential impacts and that are of
general interest, or may help discriminate among sites. The impacts from radiation exposures resulting
from operations and accident conditions were analyzed for all alternatives contained in the EIS.

The data
are summarized in Volume 1, Appendix K, Table K-2.

II 05.10.01 (031)Worker

COMMENT
The commentor states that contamination as a result of past nuclear weapons activities has resulted in
potential health and safety threats to many defense workers and surrounding communities.
RESPONSE
DOE's policy is to identify and correct and inadequate practices concerning safety and health arising from
past or present operation of its facilities. DOE, with the assistance of other agencies and Congress, has
initiated many in-depth investigations into these potential health and safety concerns and is implementing
corrective actions as soon as possible in cooperation with the respective stakeholders,
within existing budgetary constituents. Detailed descriptions of the events concerning prior accidents or
releases are outside the scope of the EIS.

II II COMMENT

The commentor states the source term inventories in Volume 1, Appendix I-20 to I-23, are incomplete and
that no explanation was found to account for how the list was reduced. The commentor further states that
spent nuclear fuel typically contains a large number of fission products and their progeny and, for
modeling purposes, the list is often truncated by combining certain parent-daughter isotopes or by
eliminating the minor contributors to dose.
RESPONSE
In some cases to facilitate modeling, the radionuclide distributions for representative SNF types were
truncated to eliminate minor contributors to dose. The radionuclides eliminated accounted for less than 1
percent of the total dose. Volume 1, Appendix I has been revised to clarify this point. Supporting
information is contained in documents referenced in Volume 1, Appendix I.

II COMMENT

Commentors express a lack of confidence in the transportation analyses because there is insufficient detail
in the EIS to explain how the numbers were obtained. For example, one commentor wants to know why
centralization at the Idaho National Engineering Laboratory requires fewer shipments than centralization at
the Hanford Site, when 80 percent of DOE spent nuclear fuel is already at the Hanford Site. Questions also
arise regarding the verification and testing of computer codes used in the EIS. Several commentors
question the transportation accident probabilities used and are concerned about the potential for
transportation accidents caused by substance abusers. Additionally, commentors question whether health
effects of individuals in Idaho transportation corridor cities have been evaluated.
RESPONSE
Volume 1, Appendix I summarizes the methodologies, key data, assumptions, and results of calculations
for the transportation analyses. Details on the methodology, computer programs, modeling parameters,
and calculations are contained in supporting technical documents that are referenced in the EIS. For
example, in Volume 1, Appendix I, DOE Complex Wide Spent Nuclear Fuel Shipment Estimates for the
DOE Programmatic Spent Nuclear Fuel Management Environmental Impact Statement, is referenced for
details on fuel transportation. Therein it is noted that the Hanford fuel shipping cask holds 1.8 tons of
fuel, whereas most of the INEL fuel is shipped in casks holding only 25 kilograms of fuel. Hence, there are
fewer shipments of fuel required to move fuel from INEL to Hanford than from Hanford to INEL. The
supporting technical detail is so extensive that it could not physically accompany the EIS. However, these

supporting technical documents are available in the in the reading rooms and information locations identified in the EIS.
The computer codes used in the transportation analyses included the generally accepted transportation impact assessment programs RADTRAN 4 and RISKIND, and the generally accepted transportation routing computer codes HIGHWAY and INTERLINE. These computer codes have been used by Federal agencies in numerous EISs, environmental assessments, and other analyses. The computer codes have undergone rigorous independent review and were determined to be adequate for use in the transportation analyses. The computer codes were also chosen to be complementary in order to balance treatment of the potential consequences with risks of transportation.
The derivation of the transportation accident probabilities is described in Volume 1, Appendix I. The accident probabilities used in the EIS are based on historical statistics observed in the truck and rail industries and account for many phenomena, such as weather, road conditions, and substance abuse.
The transportation analysis evaluated shipments from their point of origin to their destination. The incident-free and accident risk transportation analyses are presented for the entire route, which included Idaho, if a shipment happened to travel through, originate, or terminate in Idaho.
The accident consequence analyses are presented for transportation accidents with probabilities of occurrence exceeding 1E-7 per year. The results are for various combinations of population categories (i.e., rural, urban, and suburban) and meteorology. Results were not given for specific towns or cities because of the large number of towns and cities along a transportation route in which an accident could occur. Instead, the results were presented for accidents in various population density zones, such as rural, suburban, and urban. To determine which accident corresponds to their town or city, reviewers would match their particular population density zone to a population zone analyzed in the EIS. For example, to find the consequences of a transportation accident in a suburban area such as Idaho Falls or Pocatello, the reviewer would look up the consequences of an accident in a suburban area; these consequences would be representative of the consequences in Idaho Falls or Pocatello.

II COMMENT

The commentor notes that transportation impacts are underestimated and that transportation risks have been trivialized by the comparison with traffic fatalities.
RESPONSE
Analyses in the transportation sections of both volumes of the EIS evaluated potential impacts to workers and the public from the transportation of radioactive material using models, data, and assumptions that were chosen to overestimate the actual impacts of transportation. For all alternatives, the potential risks from transportation would be small.
The comparison of transportation risks with traffic fatalities is appropriate because the overwhelming risk from vehicular transportation accidents is from traffic fatalities that are not associated with the release of radioactive material or exposure to radionuclides released during a transportation accident. The comparison is needed to provide some point of reference or perspective for the risks associated with SNF management. There was no intention to trivialize transportation risks.

II COMMENT

The commentor states that the transportation assessment for the waste being sent offsite for incineration is not identified and may present cumulative impacts and waste management concerns for the residuals that are not analyzed in the EIS.
RESPONSE
The comment refers to Volume 2, section 2.2.7, which discusses off-site incineration and return

of
residuals to INEL as one of the existing options for treating low-level waste generated at INEL. This
section does not discuss the transportation assessment for shipping waste offsite for treatment. The
transportation assessment is included in Volume 2, section 5.11. Volume 2, Table 5.11-4 summarizes
anticipated waste shipments associated with each alternative, including shipments from INEL to an
unspecified private-sector facility. To bound the transportation assessment, the private-sector facility was
assumed to be located in the southeastern United States, which maximizes the shipping mileage. Both the
incident-free and transportation accident analyses include the assessment of waste shipped offsite for
treatment. These were also included in the cumulative impact analyses.

II COMMENT

The commentor questions the use of average annual risk for transportation impacts when there may be a
large difference in the number of yearly shipments.
RESPONSE
The total cumulative risks from transportation for the period 1995 through 2035 are presented in Volume
1, Chapter 5 of the EIS. The total cumulative risk accounts for all years, including years when the number
of shipments is low and years when the number of shipments is high; however, the annual validation in the
shipping rates is not expected to be large, so the average annual rate was considered the most accurate.
The EIS Summary has been changed to add clarifying words as agreed with EPA.

II COMMENT

The commentor expresses an opinion that contractors at the Hanford Site are in a conflict of interest
situation and their assessment of contamination of the Columbia River lacks credibility.
RESPONSE
This specific issue discussed is not within the scope of this EIS; however it is the policy of the DOE and
other Federal agencies to ensure that their contractors are not placed in or allowed to operate in conflict of
interest situations. This EIS was thoroughly reviewed by DOE technical experts to ensure that it is factual
and accurate. See also the response to comment 03.03 (008) regarding DOE credibility.

II COMMENT

Commentors express general fears about the "dangers" of nuclear power; about residing near nuclear waste,
spent nuclear fuel, and/or radioactivity; and what they breathe, drink, and eat. Some commentors cite
recent health concerns with their families or neighbors, or the effect on property values if an incident
should occur.
RESPONSE
DOE is aware of general public fears regarding radiation and radioactivity. The EIS analyzes the
cumulative effect of DOE and Navy operations at the 10 candidate sites for SNF management activities.
The EIS concludes that there is no significant risk due to operations or reasonably foreseeable accidents
involving SNF management, including transportation at any of the candidate sites. See also the response to
comment 05.15 (005) regarding property values.

II COMMENT

The commentor states that public exposures from past releases such as the accidental criticality in 1978 are

unknown.
RESPONSE
Radiation exposures resulting from past accidents, including the 1978 accidental criticality, have been assessed as cited in Idaho National Engineering Laboratory Historical Dose Evaluation. This report is cited as a reference in Volume 2, section 5.14.1.
The 1978 accident involved an unplanned nuclear chain reaction at the Idaho Chemical Processing Plant shielded hot cell. The incident lead to an estimated release of 620 curies, resulting in an effective radiation dose of less than 0.1 millirem to the general public. There were no on-site or off-site fatalities or injuries.

II COMMENT

The commentor states that while sodium does not have a maximum contaminant level, it does have a recommended level and does have an effect on humans.
RESPONSE
Although sodium levels exceed the recommended levels in isolated groundwater areas of INEL, sodium disposal has decreased in recent years. Sodium levels are shown on Table 2-4 in the Water Resources Engineering Design File, available in reading rooms and information locations listed in the EIS. Sodium concentrations in the Snake River Plain aquifer are at or below background concentrations at the INEL boundary. There are no increased effects on off-site populations from sodium in groundwater at INEL.
On-site groundwater used for human consumption complies with drinking water quality standards established in the Safe Drinking Water Act.

II COMMENT

The commentor does not want to receive indirect exposure from radioactive contamination in the food chain.
RESPONSE
The EIS evaluates the potential indirect exposure from contamination in the food chain and concludes that the risks of radiation exposure to the public and to workers would be small for all alternatives. This is based on evaluations of operations and analyses of potential facility and transportation accidents. The sections in the EIS that cover public safety include Volume 1, Summary, Public and Worker Health Effects; Volume 1, sections 5.7.10 and 5.7.12; Volume 1, Appendices A through F, sections on Occupational and Public Health and Safety, and Facility and Transportation Accidents; Volume 2, Summary, Accident section; and Volume 2, sections 3.3.11, 3.3.13, and 4.11.4.

II COMMENT

The commentor states that probabilistic risk assessments are unreliable and should not be used to assess radiological risks to the public or as the basis for decisions.
RESPONSE
The accident analyses in the EIS used combinations of deterministic and probabilistic risk assessments.
Deterministic assessments are based on inductive reasoning wherein the analyst evaluates the response to proposed initiating events such as equipment failures, human failures, and natural phenomena.
Probabilistic assessments are based on deductive reasoning wherein the analyst assumes an end result (such as the release of radioactive materials from a facility) and then evaluates the necessary conditions required to produce the assumed result. Risk professionals and analysts consider these techniques important and complementary. In the EIS, reasonably foreseeable accidents over a range of likelihood were analyzed using these techniques. The EIS concludes that risk to workers and the public would be small for all the alternatives considered.

II COMMENT

The commentor states that public health analyses may not be adequate due to the lack of specific waste and materials characterization.
RESPONSE
Many sites are preparing separate EISs on waste management, including SRS and Hanford. Appropriate waste characterization will be analyzed for impacts to public health in those EISs.
Volume 1 of this EIS covers SNF management. Radiological impacts are addressed in greater detail because these impacts are of greatest significance in managing this material, and are of particular interest to the public.
DOE has added better references to Volume 2 to characterize waste streams and has added additional mapping to those references.

II COMMENT

The commentor asks why the time period for obtaining occupational injury and illness rates for DOE and its contractors differs from that for private industry.
RESPONSE
The evaluation in the EIS is based on the latest available reported data from each source. The time periods for obtaining occupational injury and illness rates differ because DOE and the National Safety Council report their data at different intervals.

II COMMENT

The commentor states that the analysis of worker doses emphasizes large accidents and does not explicitly address smaller events, such as unscheduled maintenance, that may give high doses to workers. The commentor asks if these are included under routine operations.
RESPONSE
As discussed in Volume 1, Appendix F, Parts Two and Part Three, section 5.15, the accident analysis considered a range of events from comparatively frequent operational upsets to very rare events. Within each range of frequency, accidents with the most severe potential consequences were assessed. Therefore, the accident analysis evaluates the upper bound of consequences for the smaller, more likely events described by the commentor. In addition, these smaller events are included in the evaluation of operations conditions. Potential impacts to workers from operations are based on historical dosimetry records. These records include any doses from unscheduled maintenance and other high-dose activities that appear in the dosimetry database. (See also Volume 1, sections 3.3.2 and 5.1.1 and Appendices A through F.)

II COMMENT

The commentor finds a paragraph on radiological health effects difficult to follow and requests rewording.
RESPONSE
Volume 1, Appendix F, Part Two, section 5.12 has been reworded to clarify its meaning.

II COMMENT

Commentors raise questions about or state that the EIS did not adequately discuss the health and safety of the public and environment as a result of operating facilities.
RESPONSE
Volume 1, Chapter 5 and Volume 2, Chapter 5 discuss radiological and nonradiological impacts to

the
public relating to SNF management activities and environmental restoration and waste management
activities at INEL. For all alternatives considered in this EIS, impacts would be small. The
health and
safety impacts to the public from the rest of DOE's operations are beyond the scope of this EIS.

II COMMENT

Commentors state that radiological health impacts other than fatal cancer, total detriments,
should be
addressed in this EIS.
RESPONSE
Risk of fatal cancers from exposure to radiation was used as a measure of impact to public health
throughout the EIS to provide a consistent document and to allow ready comparison with other
health
impacts, such as those from exposure to chemical carcinogens. Nonfatal health effects and
genetic effects
from radiation are a legitimate concern and are included in the EIS. Volume 1, section 5.1 has
been
changed to clarify fatal and nonfatal cancers and genetic effects.
The EIS analyses of the potential effects of radiation exposure do consider health effects other
than cancer
fatalities and are based on the standards of the International Commission on Radiological
Protection. The
term "health detriments" includes the total impact of all fatal cancers, nonfatal cancers, and
genetic effects.
The health detriments caused by any exposure to radiation are calculated by taking the sum of all
these
effects after multiplying each effect by a weighting factor intended to represent the severity
the impact of
each type of effect has on human health.
Volume 1, section 5.1 discusses the terminology and risk factors used by the International
Commission on
Radiological Protection, which are consistent with those used by NRC. These factors were applied
in this
EIS in calculating the effects on human health. Cancer fatalities were used to summarize and
compare the
results in the EIS, because this effect was viewed to be of the greatest interest to most people.
The EIS
states that the number of total health effects (deaths, nonfatal cancers, genetic effects, and
other impacts on
human health) may be obtained by multiplying the factor of 1.46 times the latent cancer
fatalities.

II COMMENT

The commentor questions the safety of spent nuclear fuel when in a shipping cask, and cites as an
example
the potential radiation exposure of 10 millirem per hour at 1 meter from the surface of the cask.
RESPONSE
The comparison of the 10 millirem radiation dose with a chest x-ray was intended to demonstrate
how
small the projected doses would be. DOE did not intend to imply that there would be therapeutic
value
associated with exposure to a shipping cask. In fact, no members of the public are likely to
receive a
radiation dose of as much as 10 millirem because they would be at greater distances from the cask
and
exposed for much shorter periods of time.

II COMMENT

The commentor questions the presentation of radiation dose and risk impact in Volume 1, Appendix
D,
Table 3-1 as an example and states that as radiation exposure doubles, the chance of cancer-
related deaths
increases by approximately a factor of 10.
RESPONSE
The comment is inaccurate. In Volume 1, Appendix D, Table 3-1, units are the lifetime risk of
fatal cancer
over the entire 40 years for the alternatives listed in the table. The numbers are not in units
of millirem per

hour.

II COMMENT

Commentors suggest that estimated releases from proposed facilities are too near the 10-millirem per year dose limit established under the National Emission Standard for Hazardous Air Pollutants, and controls should be implemented to reduce the dose to as low as reasonably achievable.
RESPONSE
The purpose of the EIS is to evaluate the potential environmental impacts from proposed activities. For this reason, assumptions were made to ensure that estimated doses are conservatively high and represent an upper bound of potential impacts. The EIS is not intended to substitute for the assessments required under the National Emission Standard for Hazardous Air Pollutants or any other regulatory requirement. Any facilities constructed or operated under the chosen alternative will comply with applicable regulatory requirements, including assessments of radiation doses under the National Emission Standard for Hazardous Air Pollutants.

II COMMENT

The commentor expresses an opinion that DOE is not fully committed to protecting public health and safety.
RESPONSE
The Secretary of Energy has publicly affirmed that DOE policy and practice now place safety and environmental considerations above other program goals. DOE is working as expeditiously as possible to rectify and eliminate adverse environmental impacts as a result of previous practices. DOE is formally committed to protecting the safety and health of its workers and the public, and to protecting the environment. DOE intends to design, construct, and operate all proposed facilities in a way that provides a level of safety and of safety assurance that complies with applicable Federal, state, and local requirements and DOE Orders.

II COMMENT

The commentor questions whether the environmental, safety, and health effects to the air and water from radioactive releases from the K-basins have been adequately considered.
RESPONSE
The health effects for members of the public from radioactive releases are described in Volume 1, Appendix A, section 4.12.2. This section describes the environmental monitoring and the dose consequences to the public from the Hanford Site. Volume 1, Appendix A, section 5.7.1 discusses the releases and dose consequences to the public from current activities at specific facilities, including the K-basins.

II COMMENT

The commentor questions whether public health impacts are underestimated in the EIS.
RESPONSE
DOE believes that conservative analyses have been used to estimate public health impacts and risks.
Discussion of this matter has been added to the EIS. The environmental impact analyses are designed to produce a reasonable projection of the upper bound for potential environmental consequences. This requires the use of appropriately conservative assumptions and analytical approaches. In this context, "conservative" means that an assumption or analysis would tend to overproduced, rather than underpredict,

any adverse impacts. However, overly conservative analyses do not provide a useful basis for comparing alternatives. Therefore, the aim has been to avoid over conservatism and base the environmental impact analyses on realistic, site-specific information wherever possible. Each alternative has been analyzed using similar methods and levels of conservatism so that the relative impacts of alternatives can be accurately assessed.

The analysis of the impacts of operations and hypothetical accidents are based on calculations that require two elements: input data and a model or analytical method for projecting potential impacts. These elements necessarily introduce some uncertainty in the estimated level of impacts on the environment. The nature of the input data for each analysis is slightly different. Socioeconomic analyses are based on projected budgets, for example, while air resources analyses are based on estimated releases of pollutants.

The analytical models are also fundamentally different for similar reasons. Therefore, the exact degree of uncertainty varies among the analyses in the EIS. However, for all analyses where conservative assumptions have been required, generally accepted engineering and scientific approaches have been used to ensure that these assumptions are not outside the range of uncertainty usually associated with the data.

Detailed uncertainty analyses can sometimes be used to evaluate environmental impacts. They are particularly valuable when projected impacts are large and it is important to know how reliable the projections are. However, quantitative estimates of uncertainty in impacts for hypothetical future activities are difficult to determine. When appropriately conservative estimates of impacts are shown to be small, the exact degree of uncertainty diminishes in importance. The estimated impacts in this EIS are small enough that detailed quantitative uncertainty analyses are not necessary to provide a meaningful understanding of potential consequences.

II COMMENT

The commentor notes that EIS doses reported in rem are not defined as either "committed effective dose equivalent" or "total effective dose equivalent."

RESPONSE

For readability, the generic term "dose" is used throughout the EIS in place of the more technically correct terms "committed effective dose equivalent" (CEDE) or "total effective dose equivalent" (TEDE). In general, the doses reported in the EIS are TEDE; that is, the reported dose accounts for the effective dose equivalent (EDE) from external radiation sources as well as the 50-year CEDE from internal radiation sources. For the accident analyses in the EIS, the TEDE is generally dominated by the CEDE from the inhalation and ingestion pathways. On the other hand, occupational doses from operations are almost entirely EDE. In either case, it is appropriate to identify these doses as TEDE, provided that doses from both external and internal pathways are accounted for.

II COMMENT

The commentor states that Volume 2, section 4.7.3 overestimates the significance of natural background radiation when compared with other exposures and that exposures that are a small fraction of background radiation are not necessarily "acceptable" because the public is usually unaware of the risks associated with fluctuations in exposure to background radiation.

RESPONSE

Volume 2, section 4.7.3 presents a comparison of doses from INEL activities to background. There is no attempt to call these doses acceptable.

II COMMENT

The commentor asks if multiple sclerosis was included in the health effects studied relative to the Idaho National Engineering Laboratory or anywhere else.
RESPONSE
Multiple sclerosis was not one of the health effects studied for INEL or any of the other sites. The health effects considered were the ones generally associated with exposures to radiation or chemicals. These health effects are the clearest indications of the effects of DOE activities discussed in the EIS. Studies of the effects of radiation exposure have not indicated any association between radiation exposure and multiple sclerosis. Multiple sclerosis has been studied by medical researchers. For more information, contact the Multiple Sclerosis Society at 800-624-8236.

II COMMENT

The commentor suggests that, with regard to incident-free transportation calculation of fatalities, there may be an oversimplification in either the radiological or the nonradiological models based on differences observed in the range of results presented.
RESPONSE
DOE has reviewed the models used for incident-free transportation calculations for both radiological and nonradiological fatalities and has not identified any over-simplifications. The basis for the commentor's conclusion is apparently a comparison of the range between truck fatalities and rail fatalities for the general population presented in Tables I-15 to I-19 of Appendix I. Radiological and nonradiological fatalities include both fatalities for the general population and for workers.

II COMMENT

The commentor objects to the characterization of a 34-percent increase in cancer risk as "minimal."
RESPONSE
The term "minimal" relates to the overall risk from operations of SNF facilities at ORR. Even with the 34-percent increase in risk cited by the commentor, the number of fatal cancers from all sources resulting from 1 year of operations would be 2.9 x 10-2. In other words, a 34-percent increase in a very small number is still a very small number.

II 5.11 Accidents/Releases

II COMMENT

The commentor is concerned about the effects from even small accidents.
RESPONSE
Volume 1, Chapters 3 and 5 and Appendices A through F; and Volume 2, Chapters 3 and 5 and Appendix F discuss risks to the public, workers and the environment due to a range of large to small accidents. The discussions include extensive evaluations and analyses of accidents. Small accidents have been included in the analysis, particularly if they have a high probability of occurring. The EIS shows that the risk to workers and the public from all accidents would be small for all of the alternatives considered.

II COMMENT

The commentor states that, although there are no known disasters in handling of the nuclear waste as it
exists, no one can say that a disaster will not be created.
RESPONSE
Volume 1, Chapters 3 and 5 and Appendices A through F, and Volume 2, Chapters 3 and 5 and Appendix
F, discuss risks to the public, workers, and the environment due to facility and transportation accidents,
including SNF- handling accidents. The EIS analyses also evaluate the potential consequences of these
accidents. These analyses have been extensively reviewed. The EIS shows that the risk to workers and the
public from such accidents would be small for all alternatives considered.

II COMMENT

The commentor questions the rationale of including analysis of a spent nuclear fuel transportation accident
involving a release of large amounts of radioactive materials, as the historic record of spent nuclear fuel
transportation accident shows no such releases.
RESPONSE
DOE agrees with the commentor's assessment of the historical safety record for SNF transportation
activities. Consequently, DOE assigned a probability of 1 x 10-7 (one in one million) per year for potential
SNF transportation accidents accompanied by a large release of radioactivity.

II COMMENT

The commentor suggested that a rural population would represent a "best case scenario" not a "worst case
scenario" in the event of a release from containment at the Oak Ridge site.
RESPONSE
This comment concerns the description of the existing socioeconomic conditions provided in Volume 1,
Chapter 4. These generalized population distributions were not used in accident assessments. For facility
accident assessments, as discussed in Volume 1, Appendix F, Part Three, section 5.15, actual population
distributions in the most populous sector were used to maximize potential radiation doses to the population.

II II COMMENT

The commentor states that DOE should more fully study the potential effect of mass leakage and failure of
storage tanks at the Idaho National Engineering Laboratory regarding impacts on all life forms downstream,
downwind, and on the site.
RESPONSE
The evaluation of facility accidents in the EIS considered a range of large to small accidents, including
maximum reasonably foreseeable accidents. Reasonably foreseeable accidents as defined in
Recommendations for the Preparation of Environmental Assessments and Environmental Impact
Statements include those for which impacts may have very large or catastrophic consequences. Volume 2,
Chapters 3 and 5 and Appendix F discuss risks to the public, workers, and the environment (i.e.,
secondary impacts) due to facility accidents. The EIS shows that risks from accidents would be small for
all of the alternatives considered.
The maximum reasonably foreseeable accident considered in the EIS with a potential impact to the Snake
River Plain aquifer was the immediate release of 300,000 gallons of radioactive liquid from a high-level
waste tank at the Idaho Chemical Processing Plant. The assessment, discussed in Volume 2, section 5.14,
shows that the impacts to the aquifer would be small; for example, drinking water standards are not
exceeded at the site boundary. No adverse impacts to other life forms would be expected as a result of this
accident.

Also discussed in Volume 2, section 5.14 is the maximum reasonably foreseeable accident that would result in an airborne release of radioactive or hazardous material at INEL. This event was a severe earthquake at the Argonne National Laboratory-West Hot Fuel Examination Facility. As shown in Volume 2, Table 5.14-4, should such an incident occur, a potential exists for limited adverse effects to vegetation or wildlife onsite or downwind of the facility. No impacts would be expected to endangered or threatened species for this or any other reasonably foreseeable accident.

II COMMENT

Commentors state that there are significant safety problems at the Idaho National Engineering Laboratory, including historical accidents, and operational incidents.
RESPONSE
DOE's accident history at INEL has been compared with other industries, as summarized in Volume 2, section 5.14.1. This comparison shows that the accident rate at INEL is lower than that for comparable private industrial work. Past accidents were analyzed in Idaho National Engineering Laboratory Historical Dose Evaluation, and reasonably foreseeable accidents were analyzed in Accident Assessments for Idaho National Engineering Laboratory Facilities. Protection of members of the general public and workers against accidents is considered by DOE in the design, location, construction, and operation of facilities. The EIS shows that the risk to workers and the public from facility accidents would be small for all of the alternatives considered.

II COMMENT

The commentor states that the work-day population of the Idaho Chemical Processing Plant is more than 1,000, and that DOE does not explain why a lower number of workers was used in the assessment of a potential collapse of the main stack caused by an earthquake.
RESPONSE
A seismic event large enough to cause a stack collapse would clearly initiate an emergency response. Workers would either take cover or evacuate as directed by the emergency response announcements. A qualitative assessment of the number of workers either within the range of the stack collapse or whose normal evacuation path might be impeded by debris from the stack collapse indicated that about 50 workers could be affected.

II COMMENT

The commentor states that the more material that exists at a particular location, the more likely a spill or accident will occur.
RESPONSE
DOE agrees with the comment. The likelihood of accidents as assessed in the EIS depends in part on the handling rate and the amount of waste. Both of these considerations were included in the accident analyses discussed in Volume 1, site-specific Appendices A through F, and Volume 2, section 5.14.

II COMMENT

The commentor states that the analysis associated with a radiological release following an earthquake-induced accident at the Idaho National Engineering Laboratory should include possible releases to the Snake River Plain aquifer.
RESPONSE

In terms of the consequences to the Snake River Plain aquifer, the maximum reasonably foreseeable accident analyzed with a potential impact was a release of the entire contents of a high-level waste tank at
the Idaho Chemical Processing Plant. This potential accident is discussed in Volume 2, section 5.14 and
Appendix F-5. The analysis assumed a seismic event of sufficient magnitude to cause one or more tanks to
fail, and 300,000 gallons of high-level waste to be released to the soil beneath the tank farm. Modeling of
migration of contaminants into the aquifer showed that even without any mitigation measures, the maximum concentration of radionuclides at the nearest site boundary was within requirements of safe
drinking water standards.
The analyses of accidents described in Volume 1 and Volume 2 of this EIS include a range of accidents
that might release radioactive material to the Snake River Plain aquifer or to the atmosphere. These
analyses are described in Volume 1, Appendices B and D, and in Volume 2, section 5.14 and Appendix F.
These analyses show the risks to the public and workers would be small for all of the alternatives
considered.

II COMMENT

The commentor expresses the opinion that the fuel handling control systems at the Idaho Chemical Processing Plant are inadequate, and suggests the likelihood of a criticality may be higher than determined
in the EIS, particularly as the Idaho National Engineering Laboratory consolidates, reracks, and handles
more spent fuel. The commentor states that a criticality accident at ICPP-666 would have an annual
frequency closer to 1E-01 per year rather than 1E-03 per year. Thus, the commentor suggests that an
evaluation of an inadvertent nuclear criticality in ICPP-666 is needed to complete the EIS.
RESPONSE
DOE established an estimated annual frequency for a criticality accident during SNF-handling operations
in a water pool by consensus of a group of experts. To the knowledge of these experts, there never has
been a criticality accident anywhere in the world during storage of SNF in a water pool. The consensus of
the experts was that a frequency of 1E-4 events per year was a representative value for the probability of an
accidental criticality in a water pool throughout all DOE SNF handling and storage operations. It was the
consensus that controls in effect at a specific facility and the condition of fuel and equipment at that
facility may justify the use of a larger or smaller value, but that overall the probability values should fall in
the range of 1E-03 to 1E-05 events per year. Detailed review of the EIS would reveal that this range has
been used to describe the frequency of this accident in specific facilities.
Based on this consensus, the estimated annual frequency for a criticality accident at ICPP-603 was selected
as 1E-03 per year in Volume 1, Appendix B. The higher frequency of occurrence was selected because of
the storage arrangement, and the type, age, and condition of fuel in ICPP-603. ICPP-666 is a newer facility
and storage arrangements for fuel in ICPP-666 are better than for fuel in ICPP-603. It would therefore be
expected that the frequency of occurrence of an accidental criticality in ICPP-666 would be smaller than in
ICPP- 603. Accordingly, a starting estimate of 1E-04 per year is more appropriate for ICPP-666.
ICPP-666 has a larger fuel inventory than ICPP-603. Methodology was established and is discussed in the
EIS to adjust the frequency of occurrence for fuel inventories and for the number of fuel-handling
operations. It was determined that a fuel inventory difference does not directly affect the frequency of
occurrence of an inadvertent criticality, but only indirectly through an affect on the number of
fuel-handling operations. The EIS states in Volume 1, Appendix B, section 5.1.5 that the number
of fuel-handling operations will be approximately the same i
the future
as it was in the past. Accordingly, it is
appropriate to use 1E-04 per year as the estimated frequency of occurrence of a criticality accident at
ICPP-666.

The commentor also implies that receipt of more reactive Navy fuel would cause the likelihood of a
criticality accident to increase. Because fuel is more reactive does not necessarily increase the frequency of
occurrence of an inadvertent criticality. ICPP imposes additional administrative controls for handling more
reactive fuel (e.g., when such fuel is being handled, only one module is allowed to be out of storage at a
time). Thus, the frequency of occurrence of an inadvertent criticality for handling more reactive fuel at
ICPP-666 remains on the order of 1E-04 per year.
The commentor states that 1) ICPP has not performed a detailed assessment of nuclear characteristics of
fuel and ICPP-666 fuel-handling operations; 2) ICPP has not conducted comprehensive deterministic
accident analyses of planned operations; and 3) ICPP has not developed and implemented an appropriate
fuel control system. The commentor is incorrect. All of these actions were completed prior to shipment of
fuel to ICPP-666.
The commentor further alleges that if SNF is consolidated at the Idaho National Engineering Laboratory,
"there will be a much higher probability that an accidental nuclear criticality will occur than is suggested
by the EIS." The results in the EIS for ICPP-603 represent the bounding inadvertent criticality event. The
frequency of this event does not change for various alternatives, because movement of fuel from ICPP-603
would take place under all alternatives. If other fuels are consolidated at ICPP, ICPP-603 would not be
used for storing that fuel. The frequency of occurrence of an inadvertent criticality accident may increase
somewhat in another facility, either existing or yet to be built, for storage of the additional fuel. For
example, the frequency of an inadvertent criticality in ICPP-666 may increase from 1E-04 to 1E-03 per
year if all the consolidated fuel were handled there. Nevertheless, the bounding event under all
alternatives is expected to be an event in ICPP-603 as stated in the EIS.

II COMMENT

The commentor states that the location selected for the potential spent nuclear fuel management facility at
the Oak Ridge Reservation will be next to the Y-12 "walk-in pits," which contain shock-sensitive,
pyrophoric chemicals.
RESPONSE
The Y-12 pits are actually 4 miles from the West Bear Creek Valley site selected for potential SNF
management activities at ORR. The distance is accounted for in accident impacts and in cumulative
impacts in the EIS, and no significant adverse environmental or health and safety impacts are reasonably
foreseen as a result of the proximity of the Y-12 pits.

II COMMENT

The commentor asks for a description of the cask drop accident mentioned in Volume 1, section 5.1.
RESPONSE
The cask drop accident mentioned is a postulated scenario in which a cask holding SNF is dropped and
overturned in the fuel transfer area of the 105-KE or 105-KW basins at the Hanford Site. As a result,
broken spent fuel rods might spill out of the cask and onto the floor of the building, but away from the
spent fuel pool. This accident is described in detail in Volume 1, Appendix A, section 1.1. Volume 1,
section 5.1 of the EIS has been changed to correctly reference the cask drop accident.

II COMMENT

The commentor recommends clarifying how the estimated frequency of a fuel-handling accident at the

Idaho National Engineering Laboratory, and the impacts associated with it, would change between the
alternatives.
RESPONSE
The characteristics of accidents analyzed under the each of alternatives are adjusted through the use of
scaling factors developed for both frequency and consequences (see Accident Assessments for Idaho National Engineering Laboratory Facilities). For example, the expected frequency of a handling accident involving SNF would be greater in the 1992/1993 Planning Basis alternative than the No Action
alternative because of the increased number of handling events in the 1992/1993 Planning Basis alternative
compared with the No Action alternative. But no adjustments to the consequences would be expected
because the same type and amount of "material at risk" would be involved.

II COMMENT

The commentor states that the accident impacts would decrease for Oak Ridge under the Decentralization
alternative due to storage upgrades not included in the No Action alternative.
RESPONSE
Volume 1, section 5.1 has been modified as identified by the commentor.

II COMMENT

The commentor notes that no liquid releases are planned for normal operations and that the EIS should
address whether these plans are subject to change; and if so, analyses should be modified.
RESPONSE
No current plans exist to change the operating scenario (i.e., no liquid releases are planned to the
environment, as stated in Volume 1, Appendix F, Part Two, section 5.8.1). Nevertheless, a conservative
release scenario was evaluated for this EIS, which represents a maximum amount of liquid effluent that
could be released under operating conditions. This evaluation should be sufficient to bound any future
operations releases.

II II COMMENT

Commentors indicate the EIS failed to analyze transportation accidents while transporting spent nuclear
fuel through inland waters of the United States.
RESPONSE
Volume 1, Appendix I has been expanded to include three additional shipping scenarios for transporting
N-Reactor SNF from the Hanford Site to Sellafield, England, for processing. The scenarios include inland
and U.S. territorial water barge transport of SNF and transoceanic shipment of SNF to Sellafield, England.
Accident consequences are included for port activities as well as during ocean transit. Risk to workers and
the public from these activities has been shown to be very small. This evaluation is performed as an
example of reasonably foreseeable impacts. Analyses, impacts, and consequences of transporting foreign
research reactor (FRR) SNF on the open seas to the United States is addressed in the EIS entitled
Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel.

II COMMENT

Commentors suggest that the EIS describe the historical spent nuclear fuel accidents that occurred between
1971 and 1993 to determine if any had occurred in urban or suburban areas where the probability of an
accident was noted by the EIS to be very low (less than 1 x 10-7 per year).

RESPONSE
The 1 x 10-7 per year probability cited by the commentors does not refer solely to the probability of an
SNF accident; rather, it refers to the probability of an SNF accident accompanied by a large release of
radioactivity. Based on the historical record, no SNF accidents in any areas (rural, suburban, or urban)
have resulted in the release of large amounts of radioactivity.

II COMMENT

The commentor notes that the EIS does not address the potential for shipboard fires and spread of
contamination as a result of those fires, or the impact to emergency response personnel in port or at sea
should a shipboard fire occur.
RESPONSE
The analysis of accidents, including shipboard fires, in ports and on ships, and the resulting impacts on
emergency response personnel for FRR SNF is beyond the scope of this EIS. However, these types of
accidents and their impacts are being addressed in a separate EIS entitled Proposed Nuclear Weapons
Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel (Draft) (FRR EIS),
as well as a decision as to whether the United States will receive such SNF.
The criteria used to choose the ports of entry are outlined in the Notice of Intent for the FRR EIS (Federal
Register Vol. 58, No. 202, October 21, 1993, pages 54336-54340). These criteria included: (a) adequacy
of harbor and dock characteristics to satisfy the cask-carrying ship requirements, (b) availability of safe
and secure lag storage, (c) adequacy of overland transportation systems from ports to the storage sites, (d)
experience in safe and secure handling of hazardous cargo; (e) emergency preparedness status at the port
and nearby communities; and (f) proximity to the proposed storage sites. A range of alternative ports will
also be analyzed in the FRR EIS. The decision regarding port selection will not be made until both this
EIS and the FRR EIS are completed.
An analysis of a shipboard fire involving Naval SNF is included in Volume 1, Appendix D, Attachment F.

II COMMENT

The commentor requests inclusion of a shipboard fire accident scenario in the EIS.
RESPONSE
Shipboard transport and handling of SNF is beyond the scope of this EIS. Policy alternatives for United
States origin foreign research reactor SNF, and for its transport, receipt, handling, and storage are being
addressed in a separate environmental impact statement (58 FR 54336). The FRR SNF EIS will assess
impacts of marine transport and receipt of FRR SNF at six or more ports of entry. Incident-free operations
and potential accidents, including a shipboard fire, will be evaluated.
An analysis of a shipboard fire involving Naval SNF is included in Volume 1, Appendix D, Attachment F.

II COMMENT

Commentors raise the issue that transportation-accident health impacts to Tribal members and shipment
inspectors along Interstate-15 through the Shoshone-Bannock Reservation are not included in the EIS.
RESPONSE
As discussed in Volume I, section 5.11.2, radiological impacts for incident-free transportation have been
determined for (1) crewmen (drivers) and (2) members of the public. The crewmen category refers to the
drivers of the shipments, and the members of the public category includes Tribe members.
For incident-free transportation, the radiological effects a shipment inspector might receive are
encompassed within the effects to a crewman or driver of shipments based on the intermittent time

the inspector interacts with a shipment compared to the interaction time of the driver. The radiological health effects to the driver are based on the driver receiving radiological exposure, within DOT regulatory limits, while in the cab of the vehicle and during detailed inspections of the cargo and the vehicle carrying the radioactive material.

Incident-free radiological impacts to Tribe members for SNF and radioactive waste shipments through the reservation are encompassed in the existing EIS analyses for members of the public based on population density along a generic transport route.

A reservation-specific accident analysis would not provide information additional to the information provided in Volume 1, Appendices D and I for the programmatic alternatives considered in this EIS. The probability of an accident occurring along a specific 20-mile segment of interstate highway during an SNF shipment is so small that it is beyond the range of analysis required for a programmatic EIS.

II II COMMENT

The commentor states that previous releases and accidents at DOE sites were intentional and/or covered up. The commentor also discusses previous and potential releases of radioactivity and accidents at U.S. government sites.

RESPONSE

It is DOE policy to identify and correct any inadequate practices concerning safety and health arising from operation of its facilities. In this regard, accidents and accidental releases are required to be reported, and releases from DOE facilities under all operating conditions are included in annual monitoring reports.

Detailed accounts of the events related to prior accidents or releases are outside the scope of the EIS. The EIS addresses the impacts of a number of reasonably foreseeable accidents related to SNF management, with no significant risk of health effects or environmental impacts identified. DOE has considered past, current, and reasonably foreseeable future activities in assessing the cumulative impacts, which would be small.

The environmental impact analyses are designed to produce a reasonable projection of the upper bound for potential environmental consequences. This requires the use of appropriately conservative assumptions and analytical approaches. In this context, "conservative" means that an assumption or analysis would tend to overproduced, rather than underpredict, any adverse impacts. However, overly conservative analyses do not provide a useful basis for comparison among alternatives.

II COMMENT

Commentors, when referring to the transportation discipline, state they are confused by the term "maximum reasonably foreseeable accident." For example, commentors state they wonder if this is equivalent to a worst-case accident and whether the EIS has evaluated such an accident. Commentors wonder what constitutes the maximum reasonably foreseeable accident, and commentors state they wonder how DOE would deal with such an accident if it occurred.

RESPONSE

The EIS evaluates two complementary aspects of the impacts from transportation accidents. The first aspect is the risk associated with transporting radioactive material; transportation risk takes into account the probabilities and consequences of a complete spectrum of transportation accidents (i.e., accidents with high probabilities and low consequences, to accidents with low probabilities and high consequences).

The second aspect is the consequence associated with a bad transportation accident. A worst-case accident is too subjective and statistically, has virtually no probability of occurring. Instead, the EIS

analyzes an
accident that better represents an accident that could occur, but one which has little chance of occurring.
This kind of accident is termed the "maximum reasonably foreseeable accident." In accordance with DOE
guidelines for accident analyses in EISs, this accident was chosen based on having a probability of about 1
x 10-7 per year or about one in 10 million per year. This kind of accident is roughly comparable with what
used to be called a worst-case accident, except that it is chosen based on a specific probability criterion (1
x 10-7).
For most alternatives, an accident involving a rail shipping container containing SNF is the maximum
reasonably foreseeable accident. The precise accident scenario that leads to the maximum reasonably
foreseeable accident is not described because there are different combinations of fire and impact that could
lead to the accident conditions. For example, a high-speed train collision with the shipping container
followed by a high-temperature fire that lasts 2 to 3 hours could lead to these conditions, but there are also
other combinations of fire and impact that could lead to the same conditions. Appendix I describes these
various combinations.
The mitigation of transportation accidents may come either before or after the accident. Measures that are
used before the accident include shipping the radioactive material in approved containers. For shipments
containing large amounts of radioactive material, such as SNF, only containers that are specifically
designed to withstand hypothetical accident conditions are used. In addition, transportation routes are also
chosen to minimize the risk associated with transporting radioactive material. Measures that are used after
a transportation accident include emergency response and EPA protective action guides that are designed
to limit doses.
The EIS Summary was changed to clarify this concept.

II COMMENT

The commentor asks about the impacts to the Idaho agricultural industry resulting from accidental releases
of hazardous materials to the air or to groundwater.
RESPONSE
Volume 1, Chapters 3 and 5 and Appendices A through F, and Volume 2, Chapters 3 and 5 and Appendix
F, discuss risks to the public, workers, and the environment due to facility accidents. The EIS shows that
impacts from accidents would be small for all of the alternatives considered.
The maximum reasonably foreseeable accident considered with a potential impact to the Snake River Plain
aquifer was a release of the entire contents of a high-level waste tank at the ICPP, as evaluated in Volume
2, section 5.14. The assessment shows that even without taking credit for mitigation measures, impacts to
the aquifer would be small; for example, drinking water standards would not be exceeded at the site
boundary. As shown in Volume 2, Table 5.14-4, for any accident involving an airborne release of
radioactive or hazardous material at INEL, there is a potential for limited economic impacts associated with
1-year restrictions to public lands or up to a 1-year agricultural land withdrawal for land on and
immediately adjacent to INEL (up to an estimated 10,000 acres).

II COMMENT

The commentor notes that it is inconsistent to say no cases were found where an accident in one facility
could cause an accident in a collocated facility when an earthquake could cause multiple accidents at a
facility and across the entire site.
RESPONSE
Qualitative assessments of accidents associated with existing and proposed operations and their

potential
for causing accidents in another facility were part of the accident evaluation. No cases were identified in
which an accident in one facility would cause an accident in another facility greater than the bounding
accidents already considered in the EIS. The potential for simultaneous accidents caused by a single
seismic initiator is described in Volume 2, section 5.14. DOE's analysis shows that potential
multiple-facility releases or multiple-release mechanisms from a single facility resulting from a severe seismic event
would be bounded by those resulting from the postulated accidents at the Argonne National
Laboratory-West Hot Fuel Examination Facility. Consistent with the accident selection methodology described in
Volume 1, Appendix B, the consequences and risks associated with multiple facility releases were
eliminated from further consideration because they do not represent the maximum reasonably foreseeable
accidents within the frequency categories defined in Volume 1, Appendix B, Table 5.15-5.

II COMMENT

Commentors state that the effects of a large earthquake at the Nevada Test Site should be evaluated as a
high consequence, low probability event.
RESPONSE
In the EIS, the accident yielding the largest radiation dose (i.e., the bounding event) is the airplane crash
into the dry cell facility scenario. This accident scenario assumes a breach of the containment and a
subsequent airplane fuel fire resulting in a plume of contaminants. The results of this hypothetical accident
are provided in Volume 1, Appendix F, Part Two, Tables 5.15.1 through 5.15.6.
A large-earthquake scenario was considered in the EIS. It was determined that the earthquake scenario
differs from the airplane crash scenario in that there is limited combustible material in the structures, the
spilled airplane fuel is not present during an earthquake, and ignition sources are minimal. Thus, the
impact of subsequent fires and resultant contaminant plumes was found to be less in the earthquake
scenario than for the airplane-crash scenario. As a result, a more detailed analysis was not warranted.

II COMMENT

The commentor expresses disbelief that impacts from accidents such as Three Mile Island or Chernobyl
would not cause damage if they occurred at the Idaho National Engineering Laboratory.
RESPONSE
The nature of potential accidents associated with storing SNF, as well as treating and storing radioactive
wastes, at INEL differs from the types of accidents the commentor mentions. Nuclear fuels in the reactor
accidents cited were so intensely radioactive that the heat they generated internally was sufficient to melt
or burn the fuels in the absence of cooling. For SNF in long-term storage at INEL, natural decay of
radioactivity has occurred long enough that the heat the fuel generates would be much lower than that
required for fuel melting. The fraction of radionuclides available to be released to the environment is much
smaller for nonmelted fuel than for reactor fuel that could melt by internally generated heat.
This EIS shows that the risk to workers and the public from INEL facility accidents would be small for all
of the alternatives considered.

II COMMENT

The commentor notes that flooding could occur at the Idaho National Engineering Laboratory and that
impacts to water resources should be addressed.
RESPONSE
The INEL accident analyses, summarized in Volume 1, Appendices B and D, and Volume 2, Chapter 5

considers flooding and other natural phenomena as potential causes of accidents. Some potential accidents were selected for detailed analysis because they were comparatively likely, and some causes were selected for detailed analysis because of their large potential consequences. The consequences of a seismic failure of the high-level waste tanks was selected for detailed analysis instead of flooding because the radioactive inventory in the high-level waste tanks has a larger potential for consequences to water resources than a flood. The high-level waste tank failure accident is reported in Volume 2, section 5.14, and the impacts to the aquifer would be small under all the alternatives that were analyzed.

II COMMENT

The commentor states that risks associated with Idaho National Engineering Laboratory aboveground storage, waste management, and reburial of wastes for the Pit 9 Retrieval project have not been characterized in the EIS. The commentor further asks that if the Pit 9 waste is not safe to store above ground, what is the case with the safety of the tons of high-level waste in storage.
RESPONSE
The Pit 9 Retrieval Project is an on-going project initiated under INEL FFA/CO and applies to all alternatives. Simply stated, the project will excavate previously buried wastes, separate transuranic components, and rebury the remaining waste. The separated components would be placed in drums and stored in the Transuranic Storage Area of the RWMC. While the Project has separate NEPA documentation, the Pit 9 Retrieval Project impacts were included in this EIS as part of the INEL baseline.
A summary of Pit 9 Retrieval Project is given in Volume 2, Appendix C. Risks, including accident risks, associated with the Pit 9 Retrieval Project are part of the baseline impacts summarized in Volume 2, Chapter 5. Post-treatment low-level waste from Pit 9 could be stored safely above ground, but low-level waste contaminated with fewer than 10 nanocuries per gram alpha-emitting radionuclides could be returned to shallow land burial. The section in the EIS Summary entitled Public Worker Health Effects notes that the risk from facility accidents would be small for the alternatives considered.

II COMMENT

The commentor states that collocation issues are not discussed, and that there is little written about the secondary impacts from an accident in one facility on other operating facilities at the Idaho National Engineering Laboratory.
RESPONSE
Volume 2, Chapters 3 and 5 and Appendix F discuss risks to the public, workers, and the environment due to facility accidents at INEL. As indicated in the EIS, the discussion is a summary of facility accidents detailed in Accident Assessments for Idaho National Engineering Laboratory Facilities. The discussion includes evaluations and analyses of accidents that were extensively reviewed. Qualitative assessments of accidents associated with existing and proposed operations, and their potential for causing accidents or secondary impacts in another facility, were part of the accident evaluation. No cases were identified where an accident in one facility would cause an accident in another facility greater than the bounding accident already considered in the EIS. Secondary impacts to other facilities were limited to potential cleanup costs. No other collocation issues were identified.

II COMMENT

Commentors suggest that particles released from the main stack at the Idaho Chemical Processing Plant in an incident on April 2, 1992, could be dispersed by wind and that a single 3-millirem-per-hour particle

could cause an exposure of 10 millirem in about 3 1/2 hours. Commentors suggest that long-term ingestion
of such particles was not analyzed because of the assumption of interdiction measures.
RESPONSE
In the incident at the ICPP main stack, a release of quarter-sized flakes of ammonium nitrate occurred at an
elevation of about 250 feet. All detectable material was found within an area 2,560 yards wide by 350
yards long, about 12 acres. Thus, it is unlikely that any detectable radioactivity was transported beyond
the INEL boundary. A subsequent cleanup effort with high efficiency particulate air filtered vacuum
equipment returned the contaminated area to levels below those for noncontaminated areas, in accordance
with DOE Order 5480.11, Radiation Protection for Occupational Workers.
Resuspension of radioactive materials from the ground by wind is acknowledged as a potential dispersion
mechanism. Windborne resuspension reduces the amount of exposure at any given distance from the point
of releases, but increases the area in which some exposure occurs. The commentor incorrectly concludes
that direct contact with a 3-millirem-per-hour particle for about 3 1/2 hours would result in an effective
whole body dose of 10 millirem. Rather, only that part of the body in contact with the particle would
receive a localized dose of 10 millirem. Depending on the exposure pathway, it may take thousands of
such particles to result in an effective whole body dose of 10 millirem. For the INEL facility accidents
with the maximum reasonably foreseeable consequences, and with the most unfavorable meteorological
conditions, some restrictions on use of agricultural products might be implemented in accordance with
established protective action guides.

II COMMENT

Commentors raise the issue of health risks involved should there be an accidental spill or a leak to the
water table at the Idaho National Engineering Laboratory.
RESPONSE
Volume 1, Chapters 3 and 5 and site-specific Appendices A through F; and Volume 2, Chapters 3 and 5
and Appendix F discuss risks to the public, workers, and the environment due to a range of large and small
facility accidents. The maximum reasonably foreseeable accident considered with a potential impact to the
Snake River aquifer was the release of the entire contents of a high-level waste tank at the Idaho Chemical
Processing Plant. This accident is discussed in Volume 2, section 5.14. The assessment shows that even
without taking credit for mitigation measures, impacts to the aquifer would be small; that is, concentrations
at the site boundary would be within requirements of the safe drinking water standards.

II COMMENT

The commentor states that the EIS fails to fully assess the Idaho Chemical Processing Plant high-level
waste tanks and vaults, including structural constituents, seismic (risks), leakage in and out of the vaults,
and service line leaks.
RESPONSE
A maximum reasonably foreseeable accident associated with the high-level waste tanks was performed for
the EIS, as reported in Volume 2, section 5.14. A more detailed description of the assessment is given in
Accident Assessments for Idaho National Engineering Laboratory Facilities. The analysis assumed a
seismic event of sufficient magnitude to cause one or more tanks to fail, and 300,000 gallons of high-level
waste to be released to the soils beneath the tank farm. Modeling of migration of contaminants into the
Snake River Plain aquifer showed that even without any mitigation measures, the maximum concentration
of radionuclides at the nearest site boundary would be within requirements of safe drinking water

standards.

II COMMENT

Commentors express disbelief that a criticality would occur only once in 10,000 years in a spent nuclear
fuel storage pool; risk methods used to estimate number of latent cancers a criticality could produce are
also not believable to commentors.
RESPONSE
DOE acknowledges a typographical error in Volume 1, Chapter 5. The estimated probability of a
criticality accident at the ICPP is 1 chance in 1,000 per year of operation, not 1 in 10,000 as printed.
While DOE recognizes the potential for a criticality accident in an SNF storage pool, there has never been
a nuclear criticality in an SNF storage pool in the history of the DOE complex or in the much larger
experience base represented by the commercial nuclear power industry.
The evaluations in this EIS of the probability of an inadvertent criticality consider a number of factors,
including facility design controls, administrative controls, fuel inventories, fuel types, degraded conditions
of some fuels, and fuel-handling frequencies. In addition to the estimated probability of occurrence, the
risk depends on the consequences of a criticality, which were conservatively calculated in the EIS.
The risk factors for cancer induction used in the EIS were taken from the most recent International
Commission on Radiological Protection recommendations (1990 Recommendations of the International
Commission of Radiological Protection), which reflect the most recent and most widely accepted analysis
of all currently available data. The authors of ICRP 60 reviewed all available studies. Volume 2,
Appendix A provides a useful primer on radioactivity and radiation dose. Volume 2, Appendix F-4
provides a discussion of how radiation doses were calculated and how cancer risks were estimated.
Volume 1, Appendix D, section F.1.3.3 and Volume 2, Appendix F-4 discuss the terminology and risk
factors used by the International Commission on Radiological Protection and how these factors were
applied in calculating the effects of radiation on human health in this EIS.
Cancer fatalities were used in the EIS to summarize and compare the results, since this effect was viewed to
be of the greatest interest to the most people. The typographical error in Volume 1, Chapter 5 has been
corrected.

II COMMENT

The commentor asks DOE to clarify whether the "accident scenario with the highest risk" as reported in the
Summary is equivalent to the "maximum credible accident" or "maximum conceivable accident" or
"maximum foreseeable accident" or "maximum reasonably foreseeable accident" as reported in Volume 2.
RESPONSE
The accident scenario with the highest risk as reported in the Summary is not necessarily the same as a
"maximum credible" or "maximum conceivable" or "maximum foreseeable" or "maximum reasonably
foreseeable" accident. The evaluation of facility accidents in Volume 1, Appendices A through F, section
5.15; and Volume 2, section 5.14 consider a range of accidents, from relatively common events, such as
handling accidents, to very rare events, such as an aircraft crash into a facility. The assessments included
"maximum reasonably foreseeable" accidents. For NEPA purposes, they are accidents that "have
catastrophic consequences even if their probability of occurrence is low, provided that the analysis of the
impacts is supported by credible scientific evidence, is not based on pure conjecture, and is within the rule
of reason" [40 CFR section 1502.22(b)]. In many cases, these accidents were beyond the design basis of
the facilities and more severe than the maximum reasonably foreseeable accident for the facilities.
Accident risks were determined by multiplying accident consequences by accident probabilities, and those
with the highest risk are reported in the Summary because they bound the risks from facility

accidents.

II COMMENT

The commentor suggests that because of the potential for causing contamination in the event of a seismically initiated Mackay Dam failure, a dynamic analysis of the dam structure should be undertaken to
determine its level of seismic resistance.
RESPONSE
DOE considered the failure of the Mackay Dam in its analysis and found that the consequences of the
potential event would be much less than the maximum reasonable foreseeable accident, as discussed below. As a result, a dynamic analysis of the dam structure to determine its level of seismic resistance is
unwarranted.
Mackay Dam is an earthenfill structure completed in 1917 and has a storage capacity of 44,500 acre-feet.
The dam was not built to conform to seismic or hydrologic design criteria. In 1978, Mackay Dam was
classified as a high-hazard dam by the State of Idaho, based on inspections by the Idaho Department of
Water Resources and the U.S. Army Corps of Engineers (Phase 1 Inspection Report). Mackay Dam is 11
miles northwest of the epicenter of the 1983 Borah Peak earthquake. Following the earthquake, the dam
was inspected and there was no structural damage to the dam or the outlet works. Therefore, although the
structure's ability to withstand severe seismic activity is unknown, the performance of the structure during
the Borah Peak earthquake demonstrated the stability of the embankment during moderate earthquake ground motion (Flood Routing Analysis for a Failure of Mackay Dam). Following the Borah Peak earthquake, stabilization work was completed on the right abutment of the dam and the spillway was
cleared of rock debris. The dam was inspected by the Idaho Department of Water Resources and a certificate was issued for continued operation of the dam and storage (Letter, Department of Water
Resources to Mr. J. Doyle Jensen, Big Lost River Irrigation District, April 20, 1985).
In spite of the good record for the dam, various postulated dam failure scenarios have been examined with
regard to flooding of INEL facilities. These postulated failures include piping failures, seismically induced
dam collapse, and overtopping of the dam structure during the hypothetical probable maximum flood. In
all cases, the reservoir was assumed to be full at the start of the initiating event. In the case of seismic
failure, the failure was assumed to occur during the 25-year return period flood with an inlet flow to the
full reservoir of 4,030 cubic feet per second (Flood Routing Analysis for a Failure of Mackay Dam).
These conditions bound any additional water that could be impounded by ice dams above the reservoir,
because the Big Lost River plain is relatively flat and the depth of the river is relatively shallow (a few
feet), making the storage of significant bodies of water behind ice dams beyond reasonably foreseeable.
In all the above cases, it is assumed that the Big Lost River diversion dam would be over-topped by the
floodwaters, with the probable maximum flood being by far the worst case (Flood Routing Analysis for a
Failure of Mackay Dam). The probability of a probable maximum flood leading to dam failure has been
estimated to be less than 1.0E-6 per year [Flood Evaluation Study; Radioactive Waste Management Complex (Draft)]. Although the probability for a seismically induced failure of the dam has not been
calculated, the probability of seismic failure causing total collapse, coupled with a full reservoir and a 25-year recurrence interval flood is believed to be very small. None of the postulated failures of the Mackay
Dam would overtop dikes at the RWMC (Safety Analysis Report for the Radioactive Waste Management Complex at the Idaho National Engineering Laboratory), although there would be some flooding at Test
Reactor Area, ICPP, Expended Core Facility, and Test Area North areas (Flood Routing Analysis for a
Failure of Mackay Dam). Even for probable maximum flood conditions, the flood waters and any transported contamination would be contained within the boundaries of INEL (Flood Routing Analysis
for a Failure of Mackay Dam). Groundwater contamination could be introduced during a flood, but the
accident has been bounded by the assessment of a seismic failure of the high-level waste tanks at

the ICPP,
which is assumed to rupture one or more tanks, releasing 300,000 gallons of high-level waste to the soils
beneath the ICPP tank farm. The maximum reasonably foreseeable event would be several orders of magnitude more severe than flood-induced contamination over a large surface area.

II COMMENT

The commentor expresses the opinion that DOE and the Department of Defense should stop producing and
disposing of radioactive waste because the area at the Idaho National Engineering Laboratory is both
seismically and volcanically active and could cause a radioactive release to the Snake River Plain aquifer.
RESPONSE
Seismic hazards and geologic analyses can be found in Volume 1, section 4.2 and Appendix B, section 4.6
and Volume 2, section 4.6 and Appendix F-2. Seismically induced accidents are discussed in Volume 2,
section 5.14 and Appendix F-5. DOE takes seismic hazards very seriously, and INEL uses independently
reviewed analyses to support the enforcement and implementation of DOE Orders and standards. An extensive effort has occurred over the past several years to upgrade DOE Orders and standards related to
natural phenomena hazards. Studies have been under way for many years and are continuing at the INEL
to ensure that seismic hazard characterization is based on up-to-date information and state-of-the-art
methods. New geologic information on seismic hazard characterization is continually reviewed to determine if additional geologic studies are needed.
DOE has analyzed the effects of a hypothetical lava flow event at INEL . The geologic potential of a lava
flow is discussed in Volume 2, section 4.6.4, and the estimated consequences of such an event for the
various alternatives are shown in Volume 2, section 5.14, Tables 5.14-3, -5, -6, -8, and -9. The methodology used for performing these analyses is documented in Volume 2, Appendix F-5 and in Accident Assessments for the Idaho National Engineering Laboratory Facilities. As stated in the analyses, the DOE used conservative assumptions to account for the uncertainty in modeling the effects of
an accident involving molten lava coming into contact with radioactive materials. The health risks to the
public are well below DOE's Nuclear Safety Policy .
DOE has considered the potential for a volcanic ashfall event at INEL in Volume 2, section 4.6.4 and
Volume 2 Appendix F-2.1.2. As stated in section 4.6.4, potential ashfall events are not expected to impact
the site. The risk associated with an ashfall event is bounded by the accidents evaluated in Volume 2,
section 5.14. The impacts on the Hanford Site resulting from the Mount St. Helens eruption and ash fall
were small. The Volcanism Working Group (Assessment of Potential Volcanic Hazards for the New Production Reactor Site at the Idaho National Engineering Laboratory) determined that hazards from
volcanic events are small for INEL. Therefore, a silicic ash-flow hazard at the INEL does not represent a
reasonably foreseeable significant adverse impact on the human environment.
A hypothetical accident involving the instantaneous release of the contents of a high-level waste tank
represents the situation with the most potential impact on the Snake River Plain aquifer resulting from
geologic conditions at the INEL and is discussed in Volume 2, sections 5.14 and Volume 2, Appendix F-2.
Under this scenario, maximum radionuclide concentrations are predicted to reach the INEL boundary 300
years after the accident and predicted concentrations will be less than EPA MCLs or DOE DCGs.
DOE Order 5480.28, Natural Phenomena Hazards Mitigation, sets forth DOE procedures to design, assess, and operate DOE facilities so that workers, the general public, and the environment are protected
from the impacts of natural phenomena hazards on DOE facilities. This Order specifically requires facilities
to be re-evaluated upon any change in design and construction standards. Existing facilities at INEL have
undergone continual safety analysis and seismic design review. Several of the projects described in
Volume 2, Appendix C of the EIS are proposed by DOE to replace or upgrade facilities at the INEL. Likewise, actions such as the transfer of fuels from potentially vulnerable facilities to modern facilities have
resulted from the ongoing safety analysis and seismic design reviews.

No new analyses are required for DOE Idaho Operations Office-managed facilities because the EIS summarizes existing credible scientific evidence relevant to understanding the existing environment, identifying reasonably foreseeable impacts, and evaluating potential consequences. The evaluation of impacts is based on methods generally accepted by the scientific community. The analyses reported in the EIS evaluate the potential consequences including direct, indirect, cumulative, irreversible and irretrievable effects and long-term productivity losses. See also the responses to comments 05.08.01 (014) and 05.08.01 (030).

General discussions of waste management procedures and plans are covered in Volume 2, Chapters 1 and 2. Therein it is noted that the DOE is committed to a strategy emphasizing waste minimization and avoidance, with the goal being that most newly generated radioactive waste will be created during necessary cleanup activities and decommissioning of contaminated facilities that no longer serve essential missions. The DOE complex-wide management and cleanup of wastes associated with those activities is outside the scope of this EIS. However, they are currently being addressed in the forthcoming Waste Management Programmatic EIS.

With respect to cleaning up INEL, the INEL Environmental Restoration Program, including both remediation and decontamination and decommissioning, is discussed in Volume 2, section 2.2.6. For a description of the significant progress already made in this program at INEL, see the response to comment 02.04 (047).

The generation and storage of SNF is discussed in Volume 1, section 1.1. Therein it is noted that most DOE SNF was generated in DOE production and experimental reactors that have ceased to operate, so considerable source reduction has already occurred. See Volume 1, Appendix E for further information on experimental reactors. In addition, the Navy is developing longer-lived Naval reactor cores, thereby reducing the amount of SNF that will be generated. Completely eliminating the sources of SNF, however, is outside the scope of this EIS.

II COMMENT

The commentor suggests that an additional failure scenario of the Mackay Dam be evaluated (collapse-induced flooding during high water at times when cold weather results in ice obstructions on the river).

RESPONSE

The Mackay Dam failure scenarios analysis in Flood Routing Analysis for a Failure of Mackay Dam and cited in the EIS includes a probable maximum flood scenario considered to be the most severe flood event reasonably possible using NRC siting criteria for commercial nuclear reactors. The Mackay Dam failure study includes sensitivity analyses that indicate significant changes in parameters would result in minor variations in flooding at INEL. Therefore, DOE believes the Mackay Dam failure model accurately assesses reasonably foreseeable INEL flooding hazards that could occur as a result of flooding of the Big Lost River. The combination of probable maximum flood estimated frequency and additional events and their probabilities would result in flooding hazards with probabilities lower than those that are reasonably foreseeable.

No new analyses are required for DOE Idaho Operations Office-managed facilities because the EIS summarizes credible scientific evidence relevant to understanding the existing environment, identifying reasonably foreseeable impacts, and evaluating potential consequences. This information is provided in Volume 2, section 4.8 and Volume 2, Appendix F-2.

The results of accident analyses (including beyond reasonably foreseeable accidents with potential impacts greater that seismically induced accidents) indicate that the risk to the public from alternatives described in this EIS would be small. Therefore, additional information or characterization of reasonably foreseeable seismic events with lesser potential impact would have no effect on the decision-making process.

II COMMENT

Commentors state that nuclear waste, spent nuclear fuel, and other dangerous materials can be involved in
accidents.
RESPONSE
Volume 1, Chapters 3 and 5 and site-specific Appendices A through F, and Volume 2, Chapters 3 and 5
and Appendix F discuss risks to the public, workers, and the environment, and secondary effects resulting
from a range of potential accidents. The discussions include evaluations and analyses of accidents.
Although DOE cannot guarantee that no accidents will occur, the results of evaluations and analyses in
this EIS indicate that risks to workers, the public, and the environment would be small for all the
alternatives considered. (See the EIS Summary, Public and Worker Health Effects.)

II COMMENT

The commentor suggests that the EIS discuss an accident at the Idaho National Engineering Laboratory
involving up to 6,000 gallons of hydrofluoric acid.
RESPONSE
An accidental release of hydrofluoric acid is discussed in Volume 1, Appendix B, section 5.15.
Hydrofluoric acid is stored outside in the ICPP facility area in a 30,290-liter (8,000-gallon) storage tank.
Although there are only about 11,356 liters (3,000 gallons) in the tank, the accident was modeled
assuming a full storage tank. The tank is over a catch basin that would contain the contents of the tank if
the tank ruptures or if there is a piping failure. All the tank's contents were assumed to leak immediately.
The amount of hydrofluoric acid released and the surface area of the acid in the catch basin were
considered in the analysis. Downwind concentrations of acid are independent of the amount of acid
spilled and depend only on the evaporation rate from the catch basin. The evaporation rate, in turn,
depends on the surface area of the catch basin, as well as other factors. The duration of the release,
however, depends on the total amount of acid spilled.
The EIS shows that the consequence of this potential event at the nearest site boundary is 0.078 milligrams
per cubic meter of hydrofluoric acid. As to the impact to the maximally exposed individual, this
concentration represents 0.2 percent of the Emergency Response Planning Guide Level 3 (ERPG-3) for
hydrofluoric acid. For reference purposes, 100 percent of the ERPG-3 level is the maximum concentration
of the specific toxic material from which a person not wearing a respirator could escape within 30 minutes,
without having his ability to escape impaired or experiencing irreversible side effects.

II COMMENT

The commentor questions whether the maximally exposed individual is the person at the site boundary and
recommends that further analysis be done to show that this individual has indeed received the maximum
individual dose.
RESPONSE
The accident analyses in the EIS were performed with the plume rise going to the locations where
maximum dose is received. See Volume 1, section 5.1.

II COMMENT

The commentor suggests that after an accident, communication with members of the public who may
consume contaminated vegetables and other food produced in the vicinity is not well established at the
Idaho National Engineering Laboratory.
RESPONSE
Volume 1, section 5.7 and Volume 2, section 5.19 discuss accident mitigation. DOE has issued a

series of
Orders specifying the requirements for emergency preparedness, and each DOE site has established an
emergency management program. These programs are developed and maintained to ensure adequate response for most accident conditions and to provide the framework to readily extend response efforts for
accidents not specifically considered.
The emergency management program incorporates activities associated with planning, preparedness, and
response, including simulated emergency exercises with states, counties, and other agencies. Emergency
preparedness requirements for the facilities would be part of the planning that would occur after a ROD.
Command, control, and communication are key parts of these emergency management programs. However,
the details of such planning are beyond the scope of the EIS.
For the off-site population, the need for any protective action would be based on the guidance provided in
the protective action guides developed by EPA. Interdiction activities by INEL accident recovery personnel are expected to take place following an accident to limit doses to off-site individuals at risk.
This interdiction can limit ingestion exposure to the public.
For accidents with maximum reasonably foreseeable consequences at INEL, interdiction in accordance
with protective action guides was assumed in the EIS analyses. Doses resulting from the ingestion pathway
were calculated assuming contaminated foods comprised 10 percent of the person's 1-year diet following
the accident. More information on the parameters used in the accident analysis and the assumptions
regarding ingestion of contaminated food can be found in Accident Assessments for Idaho National Engineering Laboratory Facilities, sections 2.1.2. and 2.1.3.

II COMMENT

Commentors raise the issue of impacts a nuclear accident could have on the State of Idaho, such as impacts
on tourism and the economy.
RESPONSE
Volume 1, Chapter 5 and Appendices A through F, and Volume 2, Chapters 3 and 5 and Appendix F of the EIS discuss reasonably foreseeable accidents and their impacts. Although DOE cannot guarantee that
accidents will be prevented or that contamination will not occur, for all alternatives considered in the EIS,
the risk to workers and the public from facility accidents would be small. DOE expects that impacts from
reasonably foreseeable accidents on tourism and the economy would be limited and of short duration. As
noted in Volume 2, section 5.14, there would be a potential for limited economic impacts.

II COMMENT

The commentor wants to better understand the assumptions used to determine risk acceptability, what
constitutes acceptable risk, and who is responsible for this determination.
RESPONSE
Risks are presented in the EIS without a determination of acceptability. Acceptable risks can be determined only by the individual.
As used in this EIS, risk is defined as the product of the probability of an event times the consequences of
that event. Volume 1, Appendices A through F, and Volume 2, Appendix F provide the details of how the
risk analyses for this EIS were performed.

II COMMENT

Commentors state that accidents, accidental releases, and long-term effects of accidents are unpredictable.
RESPONSE
DOE cannot guarantee that accidents will not occur. Given that Volumes 1 and 2, Chapter 5 summarize
the results of analyses of reasonably foreseeable accidents. Volumes 1 and 2, Chapter 5 also

discuss impact avoidance and mitigation measures. These analyses show that the risks of reasonably foreseeable accidents under all the alternatives considered would be small.

II COMMENT

The commentor states that assumed ground-level releases from a facility accident may underestimate the impacts to the off-site population, because the modeling assumptions bias the model output and the conclusions of the accident analysis. An example provided is that a small number of workers close to the release point receive a higher dose than the large numbers of members of the public outside the site perimeter.

RESPONSE

The environmental impact analyses are designed to produce a reasonable projection of the upper bound for potential environmental consequences. This requires the use of appropriately conservative assumptions and analytical approaches. In this context, "conservative" means that an assumption or analysis would tend to overproduced, rather than underpredict, any adverse impacts. However, unreasonably conservative analyses do not provide a useful basis for comparing alternatives. Therefore, the aim has been to avoid unreasonable conservatism and base the environmental impact analyses on realistic, site-specific information whenever possible. Facility accidents were modeled using a release elevation consistent with the specific accident scenario. For example, some scenarios would have an elevated release point, such as through a stack, and others would have a ground-level release point. Each alternative has been analyzed using comparable methods and levels of conservatism so that the relative impacts of alternatives can be assessed accurately.

Volume 2, Appendix F-5.3.1 has been revised to state that the methods used in the analysis would produce higher estimates of radiation exposures near the point of release.

II COMMENT

The commentor suggests that following an accident, certain roadways could be inaccessible due to plume direction or weather conditions, and that this should be acknowledged.

RESPONSE

The EIS has been changed to acknowledge that under certain conditions, the ability of people to use designated evacuation routes could be impeded.

II COMMENT

The commentor requests clarification of what is meant by "not credible" with respect to an aircraft crash at the Hanford Site.

RESPONSE

The EIS has been revised to explain that if an event has a probability of occurring less than once in 1 million years, additional analyses were not performed.

II COMMENT

The commentor states that there could be a considerable error in the assumption that the maximum amount of contaminated foods consumed in the year following an accident for a person at the Idaho National Engineering Laboratory's nearest site boundary would be 10 percent of their diet.

RESPONSE

For the purposes of this EIS, accident assessments were performed using realistic, but generally conservative assumptions. As part of the health impact analysis to the maximally exposed individual following a potential accident, that individual's total dose received comprises four sources of exposure: air immersion, inhalation, ingestion, and direct ground-surface exposure.
That portion of the dose resulting from the ingestion pathway was calculated assuming contaminated foods comprised 10 percent of the person's 1-year diet following the accident and there were no interdiction actions unless EPA protective action guides were projected to be exceeded. The assumption of 10 percent is based on an engineering judgment of what is reasonable for most of the people living near the site, as well as to try to make the scenario realistic, but generally conservative. Raising the percentage to a greater value would represent an unwarranted overconservatism in the total dose to the MEI.
The environmental impact analyses are designed to provide a reasonable projection of the upper bound for potential environmental consequences. This requires the use of appropriately conservative assumptions and analytical approaches. In this context, "conservative" means that an assumption or analyses would tend to overproduced, rather than underpredict any adverse impacts. However, overly conservative analyses do not provide a useful basis for comparison among alternatives.
More information on the parameters used in the accident analyses and the assumptions regarding ingestion of contaminated food can be found in Accident Assessments for Idaho National Engineering Laboratory Facilities, sections 2.1.2 and 2.1.3.

II COMMENT

The commentor suggests that the degrading structural integrity of spent nuclear fuel is a significant risk driver and that the EIS should include this prominent factor in the discussion of risk for the No Action alternative. As an example, the commentor states that the degraded fuel at the Hanford Site was said to be contributing to elevated radionuclide activities, which contaminates the groundwater that flows into the Columbia River.
RESPONSE
The accident risks presented in the EIS for the No Action alternative reflect an assessment of the current accident probabilities associated with SNF management, including the probabilities associated with degraded (vulnerable) fuels and facilities. Under the No Action alternative, DOE would limit actions to the minimum necessary for safe and secure management of SNF at the generation site or current storage location.
Volume 2, section 5.1.2 has been modified to state: "Consequences would be bounded by existing accident assessments, but likelihood may increase."

II COMMENT

The commentor states that the cumulative impacts from more than one accident initiated simultaneously by a major earthquake must be evaluated in the EIS.
RESPONSE
As discussed in Volume 2, section 4.6.3, seismic events were found to be the most likely common-cause initiators with the potential to cause releases at more than one facility and involve more than one waste type. Further, the potential for simultaneous accidents caused by a single seismic initiator is described in Volume 2, section 5.14.2. DOE's analysis shows that potential multiple-facility releases or multiple-release mechanisms from a single facility resulting from a severe seismic event would be bounded by those resulting from the postulated accidents at the Argonne National Laboratory-West Hot Fuel Examination Facility. Consistent with the accident selection methodology described in Volume 1, Appendix B, section

5.15.3, the consequences and risks associated with multiple facility releases were eliminated from further
consideration because they do not represent the maximum reasonably foreseeable accidents within the
frequency categories defined in Volume 1, Appendix B, Table 5.15-5.

II COMMENT

The commentor states that nonradiological health effects resulting from an accidental release of hazardous
materials through a groundwater or surface water pathway at the Idaho National Engineering Laboratory
have been overlooked.
RESPONSE
Such events are summarized in Volume 2, section 5.8. Under all of the alternatives considered, the
possible future sources of contamination would be small compared with previous practices. Therefore, in
this section DOE concludes that (a) only contaminant concentrations below EPA MCLs and DOE DCGs
would migrate beyond the site boundary, resulting in small impact to the quality of groundwater leaving
the INEL site; (b) adverse effects to groundwater quality have occurred in localized areas within the INEL
site (contaminant plumes), but these plumes have not affected the regional quality of water; (c)
state-of-the-art waste management practices applied under the alternatives would result in further reduction of
contaminants existing in water resources (through source reduction and reduction of existing contamination
through normal attenuation and radioactive decay); (d) computer modeling of vadose zone and saturated
zone contaminant transport indicates that contaminant plumes with concentrations above the primary
MCLs would continue to decrease at least through 2030 and the overall quality of the groundwater would
be improving; and (e) water use at the INEL site for any alternative would have minimal effect on the
quantity of water in the Snake River Plain aquifer.

II COMMENT

The commentor suggests a seismically induced accident associated with the 100-K basins should be
included in the Hanford Site accident assessments since an "unreviewed safety question" was declared on
May 5, 1994.
RESPONSE
A discussion of the seismic effect on the 100-K basins has been added to Volume 1, Appendix A,
section 5.15.

II COMMENT

The commentor states that thousands of cancers could result from one mistake that causes an accident
involving transportation or a criticality in an inversion layer.
RESPONSE
Volumes 1 and 2, Chapter 5 discuss the probabilities and consequences of transportation and facility
accidents, including those caused by human error. These discussions and their supporting documents
include extensive evaluations of accident consequences using generally accepted engineering principles and
practices including analysis under various meteorological conditions. The EIS shows that the risks to the
public from facility and transportation accidents would be small for the alternatives considered.

II COMMENT

The commentor states that a dam failure, rather than flooding at the Hanford Site, is the event that would
inundate spent nuclear fuel facilities. A reference to the dam failure discussion would be

appropriate.
RESPONSE
Volume 1, Appendix A, section 4.8 discusses natural flooding at the Hanford Site because there is a potential for collapse of the shoreline along the riverbank in the White Bluffs area. A cross-reference to dam failure in Appendix A has been added. Neither the probable maximum flood, nor a flood caused by collapse of the shoreline in the White Bluffs area would impact SNF operations at the Hanford Site. Flooding from a 50 percent failure of Grand Coulee Dam would inundate the K-basins.

II COMMENT

The commentor states that only "worst case" accidents should be the basis for a decision, or that worst-case, maximum credible accidents require evaluation.
RESPONSE
CEQ regulations no longer require analysis of worst-case accidents. Rather, CEQ regulations require only assessment of effects of reasonably foreseeable accidents. In accordance with CEQ regulations and DOE guidance, the evaluation of reasonably foreseeable accidents in the EIS considers both high-risk and high-consequence accidents over a range of frequency of occurrences. (See Volume 1, Appendices A through F, section 5.15 and Volume 2, section 5.14.) The high-risk and high-consequence accidents were considered because they produce effects that are very unlikely to be exceeded by severe accidents. Smaller-consequence accidents were considered, particularly if they had a high probability of occurrence, because they could potentially represent a higher risk (risk = probability x consequence) than those lower probability accidents with higher consequences. The EIS shows that the risk to workers and the public from all accidents analyzed would be small for all alternatives considered.

II COMMENT

The commentor notes that spent nuclear fuel is dangerous, but that so is gasoline if not handled properly. If gasoline had the same handling requirements as spent nuclear fuel, it would be too expensive to buy.
RESPONSE
DOE agrees that potential consequences from accidents involving some hazardous materials are much greater than those from SNF management.

II COMMENT

The commentor states that DOE has not considered impacts from shipboard fires and earthquakes.
RESPONSE
The EIS addresses seismicity in Volume 1, section 5.2.4, accidents in Volume 1, section 5.7.12, and accidents involving shipboard fires in Volume 1, Appendix D, section F-1.4.4. Locations considered for SNF management have emergency action plans and equipment to respond to accidents and other emergencies. Shipboard fires would be included as one of the types of accidents, if applicable to the location. The plans would be updated to cover any new SNF facilities and activities. DOE would coordinate activities with state and local agencies to establish and implement an appropriate emergency response training program for potential accidents for the location. The details of such planning are beyond the scope of the EIS.

II II II II COMMENT

The commentor states that the source terms in Volume 2, Table 4.7.1 are constants and wants to know the range of values over a 10-year period. Additionally the commentor requests projection of source terms

under postulated abnormal conditions involving several facilities.
RESPONSE
The projection requested by the commentor is provided in Volume 2, Chapter 5, which presents the impacts of the alternatives, including impacts under abnormal and accident conditions.

II 5.12 Transportation Issues

II COMMENT

Commentors object to the shipment of radioactive material because the risk is perceived to be too high.
Commentors state that an adequate study of the worst-case accident is needed and a policy is required to publicly fund response team training, and that some longshoremen may refuse to handle high-level waste shipments.
RESPONSE
DOE complies with the DOT regulations for transporting radioactive material. These regulations are designed to protect workers and the public by minimizing the risks associated with transporting radioactive material. The EIS analyzes a full range of alternatives, from no action, which involves extremely limited transport of radioactive material, to centralization, which involves extensive transport of radioactive material. For all alternatives, the potential risks from transportation would be small. This includes the risks associated with maximum reasonably foreseeable accidents. The probabilities and consequences of maximum reasonably foreseeable transportation accidents are discussed and evaluated in Volume 1, Appendices D and I. Although the consequences of an accident of this type might be high, the probability of such an accident having high consequences is on the order of one chance in 10 million years, and the consequences of most accidents, including those with a probability of occurring more frequently, would be less than those of the accidents analyzed.
With more than 50 years of radioactive material transportation in the commercial and government sectors, there have been few transportation accidents involving radioactive materials, and these have resulted in little or no release of radioactivity. Nonetheless, emergency response teams are trained and ready throughout the United States to respond quickly in the event of a transportation accident. DOE recognizes the importance of preparedness for potential accidents involving SNF transportation. DOE, DOT, and FEMA provide training and materials to local emergency responders to prepare them to handle accidents properly. DOE provides for Radiological Assistance Program teams, which consist of trained experts equipped and prepared to quickly respond to an accident, and assist local emergency response personnel if requested. This response network, along with other preventive measures, such as shipping container design and testing, and adherence to stringent regulations, supports the continued safe shipping of SNF.
SNF shipping containers that could be handled by longshore workers are designed to meet national and international standards for safety, including radiation levels at the outside of the containers.
This EIS analyzes transportation from ports of entry. The potential for radiological exposures to longshore workers is within the scope of the EIS entitled Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel.

II COMMENT

One commentor states a definition of the term "general transportation" in Appendix I could not be found.
RESPONSE
The term "general transportation" is discussed in Volume 1, Appendix I, section I-9.1 and refers to "transportation activities that take place that are unrelated to the alternatives evaluated in

this EIS or to
reasonably foreseeable actions. Examples of these activities are shipments of radiopharmaceuticals to
nuclear medicine laboratories and shipments of commercial low-level radioactive waste to commercial
disposal facilities." The activities described by general transportation activities are those that occur
independent of DOE work and over which DOE has no control.

II COMMENT

The commentor states that the EIS should address the condition of the transportation infrastructure (e.g.,
rail lines, crossings, bridges, and tunnels).
RESPONSE
Adequate rail lines, crossings, bridges, and tunnels exist to support the SNF transportation. The shipment
of SNF requires no special transportation infrastructure that is not also necessary for safe transport of
commodities in the United States today. DOT is the regulatory agency responsible for establishing and
enforcing the standards for the transportation infrastructure.

II COMMENT

The commentor states that DOE should halt shipments of spent nuclear fuel during inclement weather.
RESPONSE
Although the comment is not specifically related to the effects of weather on SNF transport, the same
response applies for radioactive material transportation. DOT requirements for containers and the EIS
modeling codes used to analyze potential impacts of transportation account for such things as bad weather,
accidents, natural phenomenon, etc.

II COMMENT

The commentor states that the EIS used a generic approach to the mitigation of impacts and states that the
secondary route comparison factors discussed in the mitigation section are critical in some rural sections of
Idaho. The commentor also notes that TRANSAX-92 demonstrated that state corridor emergency
responders are not prepared for radiological incidents.
RESPONSE
The primary and secondary route comparison factors discussed in the mitigation section were developed by
DOT; DOE and the Navy believe them to be accurate. Pursuant to 49 CFR 397.67, motor carriers
transporting hazardous material required to be placarded or marked in accordance with 49 CFR 177.823
and not subject to a nonradioactive hazardous material routing designation, shall operate the vehicle over
routes that do not go through heavily populated areas, places where crowds are assembled, tunnels, narrow
streets, or alleys, except where the motor carrier determines that: (1) there is no practicable alternative;
(2) a reasonable deviation is necessary to reach terminals, points of loading and unloading, facilities for
food, fuel, repairs, rest, or a safe haven; or (3) a reasonable deviation is required by emergency conditions,
such as a detour that has been established by a highway authority, or a situation exists where a law
enforcement official requires the drivers to take an alternate route.
DOE participates with other Federal, state, and local authorities to sponsor and fund various emergency
response training courses throughout the United States. These courses are provided for the benefit of state
and local authorities responsible for public safety and emergency response to natural disasters
and man-made accidents, including those involving nuclear materials. The government has organized, trained, and
equipped state and Federal emergency response teams that are quickly available to assist local authorities

in the event of an emergency.

II COMMENT

The commentor states that DOE does not have a good record with respect to building apparatus such as nuclear fuel casks and waste repositories, and getting the cooperation of the states within a very short period of time.

RESPONSE

The commentor is referring to lengthy delays in the construction and opening of the Yucca Mountain and Waste Isolation Pilot Plant sites, as well as the 5- to-10-year time period for designing and certifying radioactive material shipping casks.

DOE operates within the framework of Federal regulations and DOE policy, which are designed for public and stakeholder involvement when procuring shipping casks or constructing new facilities. Unfortunately, such a process is costly and time consuming; however, DOE feels it is a process that affords the best opportunity to obtain facilities or apparatus designed with the highest standards of safety, utility, and public/stakeholder input into the process.

II COMMENT

The commentor states that DOE did not address the environmental impacts of moving spent nuclear fuel.

RESPONSE

Volume 1, Appendices D and I analyze the transportation of SNF. NEPA, 42 USC Section 4321 et. seq., and CEQ regulations at 40 CFR Part 1500 et. seq. require that an EIS describe the purpose and need for the proposed action; alternatives, including no action; the affected environment; and the environmental consequences associated with the proposed action and alternatives. Volumes 1 and 2 of this EIS meet these requirements. In each volume, Chapter 2 describes the purpose and need for the proposed action; Chapter 3 describes the alternatives being considered; Chapter 4 describes the affected environment; and Chapter 5 describes the environmental consequences.

Input was solicited from the public during a 90-day public comment period, which allowed commentors to send written comments, give oral comments and send a facsimile by a toll-free telephone line, or attend one or more of the 33 public hearings held in 20 locations around the United States.

All supporting documents referenced in the EIS are on file and are available to the public.

II COMMENT

The commentor requests specific information on the number of 40-year-period spent nuclear fuel shipments, highway routes affected, and populations exposed to risks.

RESPONSE

Specific information on the number of SNF shipments is in Volume 1, Appendices D and I.

The HIGHWAY computer code predicts highway routes for transporting radioactive materials within the United States. The HIGHWAY code currently describes approximately 240,000 miles of roads. A complete description of the interstate highway system, United States highways, most of the principal state highways, and a number of local and community highways are identified in the database. The HIGHWAY computer code calculates routes that maximize the use of interstate highways. This feature allows the user to predict routes for shipping radioactive materials that conform to DOT regulations (as specified in 49 CFR Part 177). The routes calculated conform to applicable guidelines and regulations; therefore, they represent routes that could be used.

The impacts of transportation for all programmatic alternatives considered in this EIS would be small.

II COMMENT

The commentor questions the need for cross-country shipments under the Regionalization by geography alternative.
RESPONSE
For the Regionalization by geography alternative, all existing and future SNF would be shipped to the destination site without crossing the Mississippi River. However, there would be cross-country shipments of Naval SNF. To examine all Naval SNF in a cost effective manner, examination would occur at one location. Because the Navy defuels and refuels ships at shipyards on the east and west coasts, cross-country shipments would be necessary for the fuel to reach the examination and storage site. Overviews of the alternatives analyzed in the EIS are found in Volume 1, Chapter 3.

II COMMENT

The commentor states that a history of the movement of spent nuclear fuel is not in the EIS and provides a specific example that gives the understanding that all previous shipments of spent nuclear fuel brought to the Savannah River Site from Newport News/Hampton Roads have been transported by truck, representing many hundreds of shipments. Yet, the discussion of movements out of the Newport News/Hampton Roads area in Volume 1, section 4.6.2 mentions only 10 shipments, each conducted by rail.
RESPONSE
The EIS conducted a comprehensive transportation cumulative impacts analysis, evaluating the historical, present, and future or projected shipments of radioactive material, which includes radioactive waste and SNF. Dose information is contained in Volume 1, Appendix I. The transportation cumulative impacts analyses includes historical shipments of SNF and is found in Volume 1, Appendix D for Naval SNF and Appendix I for non-Naval SNF.
The example given by the commentor refers to Naval SNF shipments, which travel by rail. The additional references provided in Table I-58 contain the historical data for non-Naval SNF shipments, which predominantly travel by truck.

II COMMENT

The commentor suggests specific information regarding Fort St. Vrain fuel, number of shipments, destination facility, and inventory be added to the Final EIS.
RESPONSE
The EIS already contains this information in either Volume 1 or Volume 2. Volume 1 reference from a 1994 letter to distribution from T.L. Wichmann, Spent Nuclear Fuel Inventory Data,, gives specific information regarding quantity of Fort St. Vrain fuel currently stored at INEL and the quantity that could be received in the future. The quantity that could be received could be stored at a specific location, but may be managed in other facilities and in other ways. The EIS has bounded the information by the assumptions and methodologies used in calculating the individual and cumulative impacts. Because the EIS is considered to bound the information suggested by the commentor, the EIS has not been changed.

II COMMENT

The commentor states that the EIS concentrates on the radiological impacts of transportation to the exclusion of the other hazardous materials.
RESPONSE
Volume 2, section 5.11 discusses the transportation of both hazardous and radioactive materials

for both
incident-free and accident cases. In incident-free transportation, there are no emissions from materials
being transported, so the only hazardous materials emissions considered were those from particulates and
sulfur dioxide present in urban population zones. The methodologies for determining transportation
impacts associated with hazardous materials transportation accidents are discussed in Volume 2, section
5.11.1. The analysis of the maximum reasonably foreseeable case truck accident scenario for all
alternatives is in Volume 2, Table 5.11-15. The impacts of a hazardous material transportation accident
are low under all alternatives.

II COMMENT

The commentor states that the EIS should discuss the impacts of the increase in highway traffic and the
associated roadway congestion, as well as the impacts of increased rail traffic.
RESPONSE
A discussion of highway and rail transportation impacts and potential accident impacts is in the sections of
the EIS entitled Traffic and Transportation, Transportation, and Offsite Transportation of SNF. Based on
public and agency comments, DOE has modified descriptions of on-site traffic patterns where appropriate.
DOE complies with the DOT requirements for off-site transportation of SNF, including the use of licensed
shipping containers that meet DOT performance requirements. As a result, the potential for exposing the
public to radiation hazards is extremely low. DOE further minimizes accident risks by following training
and route-selection guidelines and uses other procedural controls for hazardous and radioactive shipments.
In the unlikely event of an accident, DOE and local governmental authorities will implement emergency
response measures. As described in the EIS Summary, Public and Worker Health Effects section, the
overall risk from transportation would be small.
See also the response to comment 05.12 (003).

II COMMENT

The commentor expresses concern that the EIS inadequately addresses the nonradiological impacts of
transportation activities, and questions the adequacy of the 1982 reference document used in the EIS.
RESPONSE
Incident-free nonradiological fatalities were estimated using unit risk factors. These unit risk factors
account for the fatalities associated with exhaust emissions, but the distances used to estimate the impacts
must be doubled to reflect the round-trip distance, because these impacts occur whether or not the
shipment contains radioactive material. Two sets of data were evaluated: 1) data from Non-radiological
Impacts of Transporting Radioactive Material and 2) data from the Motor Vehicle-Related Air Toxics
Study. In Non-radiological Impacts of Transporting Radioactive Material, the nonradiological unit risk
factor for trucks was 1.0 x 10-7 fatalities per kilometer, and the nonradiological unit risk factor for trains
was 1.3 x 10-7 fatalities per kilometer. These unit risk factors are applicable only in urban areas. In Motor
Vehicle-Related Air Toxics Study the unit risk factor was calculated to be 7.2 x 10-11 fatalities per
kilometer; this unit risk factor is applicable in all areas (i.e., rural, suburban, and urban). Based on the
routes analyzed in this EIS, the unit risk factors from Non-radiological Impacts of Transporting
Radioactive Material were found to overestimate impacts by about 20 or 30 times relative to the unit risk
factors from Motor Vehicle-Related Air Toxics Study. Therefore, the unit risk factors from
Non-radiological Impacts of Transporting Radioactive Material were used as a conservative estimate of
the incident-free nonradiological fatalities presented in this EIS. Unit risk factors from Non-

radiological
Impacts of Transporting Radioactive Material account for all fatalities, not just cancer fatalities. Other
effects of chronic exposure to diesel exhaust emissions have been followed in occupationally exposed
workers, but these data are not sufficient to make a correlation between the effects and the exposure
experienced (Motor Vehicle-Related Air Toxics Study). Therefore, these impacts were not estimated in the
EIS.

II II II COMMENT

The commentor states that the Mackay Branch has been abandoned by the Union Pacific Railroad and
there is an application before the Interstate Commerce Commission to abandon the Scoville Branch from
Arco, Idaho, to Mile Post 43.
RESPONSE
The map showing the Mackay Branch will be corrected to reflect abandonments by the Union Pacific
Railroad.

II II COMMENT

The commentor states that purpose-built ships would greatly add to the safety of handling foreign research
reactor spent nuclear fuel shipped to ports in the United States.
RESPONSE
The risks associated with the transport by ship of FRR SNF and its handling at U.S. ports, including
purpose-built ships, are being evaluated in the EIS entitled Proposed Nuclear Weapons Nonproliferation
Policy Concerning Foreign Research Reactor Spent Nuclear Fuel (Draft).

II COMMENT

Commentors question the choice of ports of entry to the United States that are analyzed in the EIS and
state that the EIS does not consider transportation or radioactive material handling impacts, such as
shipboard fires, at port facilities.
RESPONSE
The analysis of impacts at port facilities and nearby communities, the specific port selection process, and
the overseas transportation of FRR SNF to United States ports is being addressed in the EIS entitled
Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent
Nuclear Fuel (Draft) (FRR EIS). Only the impacts of transportation of SNF from these ports of entry to
DOE facilities are analyzed in this EIS.
The criteria used to choose the ports of entry are outlined in the Notice of Intent for the FRR EIS (Federal
Register Vol. 58, No. 202, October 21, 1993, pages 54336-54340). These criteria included: (a) adequacy
of harbor and dock characteristics to satisfy the cask-carrying ship requirements, (b) availability of safe and
secure lag storage, (c) adequacy of overland transportation systems from ports to the storage sites, (d)
experience in safe and secure handling of hazardous cargo, (e) emergency preparedness status at the port
and nearby communities, and (f) proximity to the proposed storage sites. A range of alternative ports will
also be analyzed in the FRR EIS. The decision regarding port selection will not be made until both this
EIS and the FRR EIS are completed. In addition, in response to public comments, this EIS
discusses the consequences of a shipping accident
that results in a shipboard fire approximately 2 miles from Seattle (Volume 1, Appendix D,
section F).

II COMMENT

The commentor is concerned that Puget Sound will be a possible point of entry for hundreds of shipments of radioactive material and that the DOE fails to recognize the danger for this urban area.
RESPONSE
The analysis of impacts at port facilities and nearby communities, the specific port selection process, and the overseas transportation of FRR SNF to United States ports is being addressed in the EIS entitled Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel (Draft) (FRR EIS). Only the impacts of transportation of SNF from these ports of entry to DOE facilities are analyzed in this EIS.
The criteria used to choose the ports of entry are outlined in the Notice of Intent for the FRR EIS (Federal Register Vol. 58, No. 202, October 21, 1993, pages 54336-54340). These criteria included: (a) adequacy of harbor and dock characteristics to satisfy the cask-carrying ship requirements, (b) availability of safe and secure lag storage, (c) adequacy of overland transportation systems from ports to the storage sites, (d) experience in safe and secure handling of hazardous cargo, (e) emergency preparedness status at the port and nearby communities, and (f) proximity to the proposed storage sites. A range of alternative ports will also be analyzed in the FRR EIS. The decision regarding port selection will not be made until both this EIS and the FRR EIS are completed.
In addition, in response to public comments, this EIS discusses the consequences of a shipping accident that results in a shipboard fire approximately 2 miles from Seattle (Volume 1, Appendix D, section F).

II II COMMENT

A commentor raises the issue of the proposed movement of nuclear waste from Washington, DC, to Tennessee in what his sources indicate are leaky containers.
RESPONSE
DOE is not proposing to ship nuclear waste from Washington, DC, and believes that the commentor may have Washington state or other states with DOE facilities in mind. DOE is evaluating in this EIS several alternatives that would entail transporting SNF to ORR for storage. Any transportation would be conducted in compliance with DOT regulations using NRC transportation standards.

II COMMENT

A commentor provides recommendations for the packaging of radioactive materials for transportation.
RESPONSE
DOE complies with the applicable requirements of DOT regulations covering the packaging of radioactive materials. DOE has conducted analyses using representative packaging for radioactive materials in the EIS; if an alternative is chosen that requires transportation of radioactive materials, the recommendations made by the commentor will be considered. These analyses are adequate for comparison of alternatives under consideration in this programmatic EIS.

II COMMENT

The commentor believes the EIS does not adequately address the potential health effects from external radiation from spent nuclear fuel casks.
RESPONSE
Volume 1, Appendices D and I provide analyses of potential health effects from external radiation associated with SNF transportation. These analyses show that the health effects from external radiation under all alternatives considered in the programmatic EIS would be small.

II II COMMENT

The commentor states that the EIS should analyze a more realistic scenario of transportation than either all shipments by truck or all shipments by rail. A combination of the two forms of transportation should be analyzed.
RESPONSE
The assumption of all shipments by truck or all shipments by rail serves to produce analytical results representing the limits of potential transportation impacts; any combination of truck and rail shipments would have impacts between these extremes. Therefore, additional analyses are not required. In each case of transport by truck or rail, the potential impacts would be small.

II COMMENT

The commentor states that the description of the regional transportation infrastructure around the Hanford Site implied that Interstate 90 would be used for shipping campaigns, and that the shipping campaigns in northern Idaho are not considered in the EIS.
RESPONSE
The description of the regional transportation infrastructure is a discussion of the existing transportation environment at and around the Hanford Site; it is not meant to imply that Interstate 90 may be used for shipping campaigns. The analysis of transportation risks is provided in Volume 1, Appendices D and I. These analyses cover all appropriate shipping routes and show that the risks for all of the programmatic alternatives considered would be small.

II II COMMENT

One commentor questions the regulatory status of on-site shipments in noncertified containers.
RESPONSE
The Hazardous Materials Transportation Act applies only to hazardous material shipments conducted "in commerce." A letter written in 1991 from the U.S. Department of Transportation, Research and Special Programs Administration, addresses the definition of the term "in commerce" and the applicability of the Hazardous Materials Transportation Act to shipments conducted on DOE sites. The referenced letter states that shipments conducted in areas to which the general public does not have unrestricted access are not "in commerce" and as such, need not meet the requirements of 49 CFR. The above discussion notwithstanding, DOE has implemented specific procedures, as required by DOE Order 5480.3, Safety Requirements for the Packaging and Transportation of Hazardous Materials, Hazardous Substances, and Hazardous Wastes, which ensures the health and safety of the public and workers are protected during onsite shipments. These procedures include (but are not limited to) speed restrictions, use of escort vehicles, and prior notification of appropriate emergency response personnel that the shipment will take place.

II COMMENT

Commentors question the adequacy of transportation regulations, including radiation limits, container accident safety requirements, and routing. For example, commentors question the external radiation limits associated with the shipping containers, the ability of a shipping container to withstand fire, and the routing of radioactive material shipments.
RESPONSE
A brief discussion of transportation regulations is in Appendix I of the EIS. DOE follows DOT

regulations for shipping radioactive material, which include requirements for external radiation, ability of a shipping container to withstand hypothetical accident conditions (including fire), and transportation routing. These requirements were established by DOT to protect workers and the public and are designed to minimize the risks associated with transporting radioactive material. DOE has no reason to question the adequacy of the DOT regulations. As discussed in the EIS, the risk from transportation would be very small. The criteria used to choose the ports of entry are outlined in the Notice of Intent for the EIS entitled Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Reactor Spent Nuclear Fuel (FRR EIS). These criteria included: (a) adequacy of harbor and dock characteristics to satisfy the cask-carrying ship requirements, (b) availability of safe and secure lag storage, (c) adequacy of overland transportation systems from ports to the storage sites, (d) experience in safe and secure handling of hazardous cargo, (e) emergency preparedness status at the port and nearby communities, and (f) proximity to the proposed storage sites. A range of alternative ports will also be analyzed in the FRR EIS. The decision regarding port selection will not be made until both this EIS and the FRR EIS are completed.

II COMMENT

Commentors ask about notification and inspection of radioactive materials shipments. In particular, commentors question the inspection of foreign research reactor spent nuclear fuel.
RESPONSE
The DOE complies with all DOT regulations regarding notification and inspection of radioactive materials shipments. The inspection of FRR SNF before it reaches the United States would be the responsibility of the shipper, who must certify that the radioactive material is in proper condition for transport. This includes compliance with external radiation and contamination requirements.

II COMMENT

The commentor states that the EIS has not acknowledged the right of Indian Tribes to regulate transportation of spent nuclear fuel and other hazardous materials across Tribal lands under the Hazardous Materials Transportation Act.
RESPONSE
DOE is and always has been committed to safe and secure transportation of SNF to appropriate facilities for storage or other management activities. Consistent with this commitment, DOE will comply with applicable requirements promulgated by a state, a political subdivision, or an Indian Tribe that is authorized and has not been preempted by the Hazardous Materials Transportation Act, Atomic Energy Act, or other applicable Federal law.

II II II COMMENT

Commentors state that the consequences of the maximum reasonably foreseeable transportation accident are provided only for a rural population zone. The commentor asks about the consequences if the same accident occurred in an urban population zone.
RESPONSE
NEPA requires that an EIS evaluate reasonably foreseeable impacts from proposed actions. For this EIS, an accident is considered reasonably foreseeable if it has a probability of at least 1 x 10-7 per year, or one chance in 10 million years. Factors that affect accident probability include state-specific accident rates; accidents per kilometer; the fraction of accidents that occur in rural, suburban, and urban population

zones; the probability that an accident will be of a certain severity; and the annual shipping mileage in rural, suburban, and urban population zones. Weather conditions also affect the probability of accident consequences because stable, worst-case, weather conditions are only about one-tenth as likely as neutral, average weather conditions.

Volume 1, Appendix I, Table I-41 summarizes the maximum reasonably foreseeable transportation accident for the Regionalization by geography alternative, in which all SNF is sent to the Hanford and SRS. The footnotes to the table state that the maximum reasonably foreseeable accident occurs in a suburban population zone, not a rural zone. If this same accident were postulated to occur in an urban population zone, the accident probability would be less than 1 x 10-7 per year, which makes it so unlikely that the scenario was not analyzed.

Volume 1, Appendix I, Table I-31 summarizes the maximum reasonably foreseeable transportation accident for the Decentralization alternative. Footnote "a" to the table states that the maximum reasonably foreseeable accident occurs in a rural population zone. If an accident of equal severity were postulated to occur in an urban or suburban population zone, the accident probability has been calculated to be less than 1 x 10-7 per year, which makes it so unlikely that the scenario was not analyzed. The methodology used to calculate the probability of rail transportation accidents is summarized in Appendix I.

Volume 1, Appendix I, Table I-55, summarizes the maximum reasonably foreseeable transportation accident for the Centralization alternative at ORR. The table shows that under neutral weather conditions, the maximum reasonably foreseeable transportation accident could occur in an urban area with a probability of 1 x 10-7 per year. If the accident occurred under stable weather conditions, the probability would be one-tenth of the probability under neutral weather, or 1 x 10-8 per year, which is less than one chance in 10 million per year. Calculations documented in the references also show that an accident of equal severity in a suburban area also has a probability of less than 1 x 10-7 per year. Only in the rural population zone, because most of the distance traveled by the shipments would be in rural areas, has a probability greater than 1 x 10-7 per year for an accident of maximum severity to occur under stable, worst-case, weather conditions. Other less severe accidents would have a probability of less than one chance in 10 million per year in urban and suburban areas under stable, worst-case, weather conditions, but their consequences would be less than the results shown in Table I-55.

The consequences of transportation accidents in rural areas include ingestion doses because this is a predominantly agricultural area where residents most likely eat what they produce from the land. This is in contrast to the consequences for transportation accidents in urban and suburban areas, which do not include ingestion doses. Residents of these areas are most likely not involved in agriculture and do not produce what they eat at their resident location. Therefore, the consequences of transportation accidents in rural areas may be greater than the consequences in suburban or urban areas, even though the population densities in the later areas are higher.

II COMMENT

A commentor states no emergency response systems are set up to respond to transportation accidents involving spent nuclear fuel.

RESPONSE

DOE has developed and implemented emergency response systems to respond to transportation accidents involving DOE radioactive materials and SNF. This is discussed in Volume 1, Appendix I, section 6. To date, accidents involving SNF have been rare. In the event of an accident involving an SNF shipment in transit, local fire and police organizations are first to respond. DOE, DOT, and FEMA provide training and training materials to local emergency responders to prepare them to handle accidents properly. DOE provides Radiological Assistance Program teams, which consist of trained experts equipped and

prepared
to quickly respond to an accident and assist local emergency response personnel if requested. This
response network, along with preventive measures, such as shipping container design and testing, and
adherence to stringent regulations, supports the continued safe shipping of SNF.
DOE uses the Transcom satellite tracking system for each of its SNF shipments. This system uses a
transponder located on the trailer with the shipment that relays continuous position of the shipment via
satellite to computer terminals at DOE facilities around the country. In the unlikely event a problem
occurs with a shipment, the exact position of the shipment can be immediately determined remotely in
order to dispatch response teams and aid in assessing the situation.

II II COMMENT

Commentors note that the future selection of a national central repository would require further shipments
of spent nuclear fuel and that analyses of these shipments should be included in the EIS. Additionally, the
commentors state that the public has not been properly sensitized to the full transportation issues.
RESPONSE
Further shipments of SNF might be needed when a decision is made regarding ultimate disposition in a
permanent repository. Assessment of the impacts of these shipments is not included in this EIS because the
method for ultimate disposition has not been selected and such analyses would be premature. Volume 1
describes the alternatives for SNF management until 2035. This amount of time may be
required to make and implement a decision for ultimate disposition of SNF. DOE has evaluated in the EIS
a range of reasonable alternatives for safely managing SNF during the period 1995 to 2035.
To inform the public concerning SNF transportation issues, this EIS evaluates the transportation impacts
for a reasonable range of alternatives. The alternatives vary from no action, involving limited transport of
radioactive material, to centralization, which involves extensive transport of radioactive material. The
analyses in the EIS show that the potential risks from transportation of SNF would be small for all the
alternatives considered. Minimizing transportation is one of the factors that has been considered in the
DOE decision-making process.

II COMMENT

The commentor questions why and how these waste products must be moved.
RESPONSE
Transportation of SNF and radioactive wastes may be necessary to implement alternatives for safely and
effectively managing these materials during the period evaluated by the EIS. The need for these activities is
discussed in Volume 1, Chapters 1 and 2, and in Volume 2, Chapters 1 and 2. Most SNF and radioactive
wastes would be transported by truck or train using shipping containers that satisfy all applicable
requirements of DOT and NRC. DOE follows DOT regulations for the shipment of radioactive material,
which include requirements for routing, external radiation limits, and the ability of a shipping container to
withstand hypothetical accident conditions, including fire. A brief discussion of transportation regulations
is in Volume 1, Appendix I.

II II COMMENT

The commentor notes that the increased shipments required to centralize spent nuclear fuel at the Nevada
Test Site matter because of the low risk of transportation and the eventual need to transport the

spent fuel
to Nevada for ultimate disposition at Yucca Mountain.
RESPONSE
The commentor is correct that for all alternatives, the potential risks from transportation would be very
small. It is true that centralization at NTS could provide interim storage of SNF in close proximity to the
potential site of ultimate disposition. DOE has considered these, as well as other factors, in the
identification of a preferred alternative and the ROD. See also the response to comment 04.04 (008) on
DOE's preferred alternative.

II 5.13 Emergency Preparedness

II COMMENT

Commentors state that DOE has not agreed to pay for monitoring, training, and equipping local emergency
responders at ports of entry and along shipping routes. One commentor states that the EIS should establish
DOE responsibility for training emergency responders to DOE.
RESPONSE
As a shipper of radioactive materials, DOE is responsible for complying with the regulations applicable to
the safety of its shipments. This includes assisting state, tribal, and local emergency responders if an
accident occurs. DOE's Transportation Emergency Preparedness Program includes initiatives on planning
and training, exercises, and technical assistance to state, tribal, and local governments.
DOE participates with other Federal, state, and local authorities to sponsor and fund various emergency
response training courses throughout the United States. These courses are usually provided for the benefit
of local, state, and tribal authorities responsible for public safety and emergency response to natural
disasters or man-made accidents. The funds for these training sessions come from Federal grants or direct
allocations of state tax dollars. Trainees provide their own transportation to these sessions and, generally
provide their own emergency response equipment; however, Federal assistance is provided at
times. The Federal Government has organized, trained, and equipped state and Federal regional emergency
response teams, which are quickly available to assist local authorities in the event of an emergency.

II II COMMENT

The commentor wants to know the mechanics of dissemination of information to the public when incidents
occur at the Idaho National Engineering Laboratory.
RESPONSE
The DOE Idaho Operations Office maintains a Warning Communications Center (WCC) that is manned 24
hours a day, 7 days a week. WCC personnel operate in four teams, with each team on duty 1 week at a
time. Incident information is immediately passed to the WCC by INEL personnel and others. Depending
on the nature of the incident, different media are informed. Incidents such as car collisions that impact
traffic are sent to local radio stations only. With radioactive materials releases that could affect the public,
however, information is immediately sent to not only local radio stations, but to all state television stations,
major state radio stations, newspapers, and public officials. Information is updated frequently, and during
an incident, additional personnel are brought in to answer questions from public officials, the press, and
the general public.

II COMMENT

Commentors propose that DOE inform all those living within a 500-mile radius of nuclear waste storage sites of the wastes generated and stored nearby and the significant danger these wastes represent to all life.
RESPONSE
The action proposed by the commentors is being accomplished by the preparation and publication of this EIS and other site-specific EISs that will be prepared to assess the environmental impacts of SNF and radioactive waste management at DOE sites. SNF and radioactive waste management pose risks that must be understood and minimized. This EIS evaluates these hazards and the engineered safeguards and management practices designed to reduce or eliminate the hazards. Sites have emergency action plans and equipment to respond to accidents and other emergencies. DOE requirements for emergency response preparedness are contained in DOE Orders 5500.1B, 2B, and 3A (Emergency Management System; Emergency Categories, Classes, and Notification and Reporting Requirements; and Planning and Preparedness for Operational Emergencies, respectively). DOE emergency notification requirements are based on the Emergency Response Planning Zone determined for each facility based on hazard assessments for the facilities. DOE notifies out to the distance required by the Emergency Response Planning Zone and applicable state and local requirements.

II COMMENT

The commentor points out that, in the event of an incident involving spent nuclear fuel at the Idaho National Engineering Laboratory, large numbers of highly trained personnel are always on hand to combat the effect of any incidents.
RESPONSE
The commentor is correct. INEL's highly trained work force includes a broad range of technical disciplines and skills; this expertise, knowledge of plant systems and procedures, and training in emergency response actions and priorities are key elements in the control of emergency situations and the mitigation of impacts.

II COMMENT

The commentor questions whether statements related to the evacuation time for motorists at the nearest public highway to the Idaho National Engineering Laboratory are substantiated.
RESPONSE
The commentor is referring to a statement in Volume 2 that a motorist at the nearest public access highway could be evacuated in 2 hours. In the event of an accident at an INEL facility that results in an airborne release to the environment, normal precautionary actions include establishment of road blocks on affected portions of public highways traversing the site. The road blocks prevent members of the public from entering the affected area; site security personnel would also patrol the affected portion of highway to ensure no motorists remained after the road blocks were established. Evaluations of site security response times indicate that these actions can be accomplished well within the 2-hour period assumed in the Volume 2 accident analysis.

II II COMMENT

The commentor suggests that switching from truck to train for transportation of spent nuclear fuel might result in inadequate emergency preparedness along the new routes.
RESPONSE
The EIS addresses accidents in Volume 1, section 5.7.12. Locations considered for SNF management have

emergency action plans and equipment to respond to accidents and other emergencies. The plans would
be updated to cover any new SNF facilities and activities. DOE would coordinate activities with state and
local agencies to establish and implement an appropriate emergency response training program for
potential accidents. The details of such planning are beyond the scope of the EIS.

II COMMENT

The commentor states that the Shoshone-Bannock Tribes have limited emergency response personnel and
lack any equipment in the event of an accident on the Fort Hall Reservation.
RESPONSE
In the event of an accident involving a hazardous or radioactive material shipment on the Fort Hall
Reservation, local fire and police organizations are first to respond. DOE, DOT, and FEMA provide
training and training materials to local emergency responders to prepare them to handle accidents properly.
If the accident involves a release of hazardous or radioactive material, assistance is available on short notice
from the State Hazardous Materials Team located 15 minutes away in Pocatello. DOE provides for
Radiological Assistance Program teams consisting of trained experts equipped and prepared to quickly
respond to a radiological accident and assist local emergency response personnel, if requested. The DOE
response team could respond to a request for assistance from the Tribes in much less than 4 hours, based
on documented response times to other locations such as Dubois, Idaho, and the State of Oregon.
Although the accident analysis presented in the EIS takes no credit for emergency response measures, the
impacts of the potential accidents would be small.

II COMMENT

The commentors state that emergency response systems are not set up to respond to transportation
accidents involving spent nuclear fuel.
RESPONSE
To date, accidents involving SNF have been rare, but they do occur; however, no significant releases have
resulted from any of the accidents during SNF transportation. In the event of an accident involving an SNF
shipment in transit, local fire and police organizations are first to respond. DOE, DOT, and FEMA provide
training and training materials to local emergency responders to prepare them to handle accidents properly.
DOE provides for Radiological Assistance Program teams, which consist of trained experts equipped and
prepared to quickly respond to an accident and assist local emergency response
personnel if requested. This response network, along with preventive measures, such as shipping container
design and testing and adherence to stringent regulations, supports the continued safe shipping of SNF.

II COMMENT

The commentor states that DOE needs to define a position regarding the funding of local emergency
response in states along spent nuclear fuel transportation corridors.
RESPONSE
DOE recognizes the importance of preparedness for potential accidents involving transportation of SNF.
Currently, training is available on a limited basis at the awareness level for first responders. DOE is
working with state and local officials through the Transportation External Coordination Working Group to
develop a national approach for training and technical assistance.

II II II COMMENT

Commentors question the adequacy of notification of civil agencies and inspection of shipments of radioactive materials. In particular, some commentors express concern about the inspection of foreign research reactor spent nuclear fuel.
RESPONSE
DOE complies with DOT regulations and, when applicable, the International Atomic Energy Agency regulations regarding notification and inspection of radioactive material shipments. Foreign shippers transporting material to ultimate destinations within the United States are also required to comply with the regulations. Inspection of FRR SNF before it reaches the United States is the responsibility of the shipper, who must certify that the radioactive material is in proper condition for transport. This includes compliance with external radiation and contamination requirements.
The Naval Nuclear Propulsion Program does not announce the times or routes of shipments to make it more difficult for terrorists, saboteurs, or hijackers to plan and execute an attack on these shipments.
This is in accordance with Federal Government policy and regulations governing such shipments. The Navy's policy on notification is also in full compliance with the applicable state and Federal regulations for such shipments containing highly enriched weapons-grade uranium.

II COMMENT

The commentor requests that DOE consider Governor Campbell's request for assistance with South Carolina's emergency response capability because of the shipment of foreign research reactor spent nuclear fuel within the state.
RESPONSE
DOE responded to former Governor Campbell's request by providing funds to assist with South Carolina's emergency response capability.

II 5.14 Not used

II 5.15 Socioeconomics

II COMMENT

The commentor states that the negative public perception of spent nuclear fuel storage facilities at the Oak Ridge Reservation could lead to rejection by certain persons or businesses of the nearby community as a suitable place to live or conduct business. That rejection would have a corresponding negative economic impact on the community.
RESPONSE
Volume 1, Appendix F, Part Three, section 5.3 discusses the socioeconomic impacts of the EIS alternatives on the region of influence around ORR. Because the actual environmental impacts associated with SNF management under all alternatives considered in the EIS would be small, there is no reason to believe that storage or examination of SNF at any of the locations evaluated would have any adverse effect on the local economy.

II COMMENT

Commentors state they are concerned about the loss of spent nuclear fuel management jobs under any of the alternatives.
RESPONSE

Employment and job issues are discussed in Volume 1, Chapter 5 and site-specific Appendices A through F, and in Volume 2, Chapters 4 and 5. These sections discuss direct and indirect job creation and impacts on the labor force of affected communities. The EIS Summary section Spent Nuclear Fuel-Related Employment concludes that employment-related impacts would be small for all the alternatives considered.

II COMMENT

Commentors suggest looking at clean energy sources and toward alternative jobs that would be generated.
RESPONSE
The development of clean energy sources and the associated new jobs and employment opportunities are not within the scope of this EIS.

II COMMENT

Commentors state that the EIS socioeconomic analysis should include effects on local property values, subsequent effects on the tax base, and the effects on the effort to diversify the local economy.
RESPONSE
Because the environmental impacts associated with SNF management under all alternatives would be small, there is no reason to believe that storage or examination of SNF at any location evaluated would have a discernible effect on local property values, as described where appropriate in Volume 1, Appendices A through F, and Volume 2, section 5.3. Changes in the economic conditions under any of the alternatives considered would be small relative to the local economies of the potential sites and would not effect long-term housing demand and property values. Consequently, impacts on the local tax base and any efforts to diversify local economies would be small.

II COMMENT

The commentor notes that in addition to the four county school districts, there are city school districts in Oak Ridge and Harriman, Tennessee.
RESPONSE
The average daily memberships for city school districts, such as Oak Ridge and Harriman, are included in the total average daily membership presented for the four county school districts in Volume 1, Appendix F, Part Three, section 4.3.3.

II COMMENT

The commentor states that the EIS should include a more detailed socioeconomic analysis for Nye and Clark Counties in Nevada, including consideration of the impact of this project in conjunction with other activities planned for the Nevada Test Site.
RESPONSE
The EIS, Volume 1, Appendix F, Part Two, section 5.16, presents the potential cumulative impacts from the proposed SNF management facilities. The approach for analysis in Volume 1, Appendix F, Part Two, section 5.3, is adequate for comparing alternatives in a programmatic EIS.

II COMMENT

The commentor states that the environmental and health risks associated with nuclear waste storage outweigh any economic benefit.

RESPONSE
Volume 1, section 5.3 and Volume 2, section 5.15 of the EIS evaluate potential impacts to the off-site public from both radiological and nonradiological hazards. The analyses show that the impacts from all alternatives would be small.

II COMMENT

The commentor is concerned that the unique situation of the Shoshone-Bannock Tribes and/or the Fort Hall Reservation is not discussed. The assumed migration rates fail to consider the interests of the Tribes or Reservation, and greater household sizes on the Reservation must be addressed in the EIS. In addition, socioeconomic analysis should treat the Reservation as a separate entity due to the markedly higher unemployment rate on the Reservation and because 70 percent of the food each resident consumes is acquired by hunting and gathering.
RESPONSE
The purpose of this EIS is to analyze the potential impacts related to the alternatives. Impacts related to changes in baseline conditions are addressed in general to support the impact analysis. However, there would be no significant impacts to the socioeconomic resources of the region of influence as a result of the changes in regional economic, transportation, health, accidents, or environmental conditions induced by the SNF management alternatives at the potential sites or environmental restoration and waste management program alternatives at the INEL. Therefore, it was not considered necessary to specifically analyze potential impacts to the Shoshone-Bannock Tribes or the Fort Hall Reservation. Impacts of implementation of any of the EIS alternatives are expected to be small.
With respect to INEL, employees represent less than 2 percent of employed persons residing on the Fort Hall Reservation (25 out of 1,544). Employment changes at INEL as a result of the alternatives are not expected to disproportionately affect the Tribes or the Reservation; therefore, separate analyses were not performed.
The migration assumptions do account for a proportion of the population remaining in the area if jobs are lost. If the commentor is concerned that residents of the Reservation would not migrate, that possibility is reflected in the migration assumptions contained in the EIS. Household size assumptions were used to determine estimates of migrating population. Because it is unlikely that any affected person on the Reservation would migrate, the difference in household size does not impact the population analyses.
Transportation and accident analyses do not indicate that Reservation lands would be damaged; therefore, no impact to agricultural production or hunting or gathering are expected. The residents' food supply is not expected to be impacted.

II COMMENT

The commentor observes that there is no discussion on the adequacy of public facilities and services in the region of influence around the Idaho National Engineering Laboratory.
RESPONSE
Data regarding community resources are presented in Volume 2, section 4.3.3 The data do not indicate any remarkable excesses or deficiencies in levels of service; therefore, their adequacies were not specifically evaluated. The data-collection process did not reveal outstanding problems in levels of service.

II COMMENT

The commentor disagrees with the use of current employment figures rather than more recent employment
projections for the Idaho National Engineering Laboratory and states that the analysis ignores cumulative
impacts and reasonably foreseeable actions.
RESPONSE
The EIS has been revised to reflect current projections of employment, including the results of the INEL
contractor consolidation including program changes at Argonne National Laboratory-West.
Cumulative employment impacts are presented in Volume 2, section 5.15. The cumulative employment
figures include the effects of (1) baseline changes at INEL, (2) alternative impacts, and (3) off-site (i.e.,
non-DOE) project impacts. The cumulative employment impacts are based on the best available data at the
time of the analyses. The projected INEL employment figures are bounding for the region of influence.
With the announced INEL employment reductions, employment estimates for any of the Volume 2
alternatives are easily accommodated within the existing site and region of influence infrastructure.
The Final EIS and ROD will be issued in 1995; therefore, fiscal year 1995 would be used as the baseline
for analyzing potential impacts that could result from implementation of the SNF and INEL environmental
restoration and waste management alternatives. The analysis in Volume 2, section 5.3 evaluates the
potential impacts under each alternative relative to conditions in 1995. However, INEL employment data
are provided beginning with fiscal year 1990 (Volume 2, section 4.4.3 and Figure 4.3-1); therefore, the
reader may compare the projected impacts to employment levels during years prior to 1995. The issue
raised in the comment regards baseline employment only. The absolute impacts of the alternatives remain
the same regardless of which baseline year is chosen. It is the "relative" impact that differs. Furthermore,
the analysis conducted estimates the impacts of the alternatives, not of changes in baseline. Change in
baseline employment is not an alternative, and therefore, is not analyzed as such.

II COMMENT

The commentor states that the socioeconomic analyses should have identified local jurisdictions
surrounding the Idaho National Engineering Laboratory and discussed the fiscal health and impacts of the
alternatives on those specific areas.
RESPONSE
Community resources were analyzed, and the results are presented in Volume 2, section 4.3.3 and Table
4.3-4. Existing economic, social, and community profiles for affected communities are presented.
The potential socioeconomic impacts associated with the alternatives are so small that detailed analysis of
local jurisdictions is not needed. Most INEL employees live in Bonneville County (67 percent).
Therefore, it could be expected that any potential impacts would be focused in that area.

II COMMENT

The commentor states that the higher wage rate of Idaho National Engineering Laboratory employees, as
compared to the average wage rate in the region of influence, was not considered in the socioeconomic
analysis.
RESPONSE
It is true that INEL jobs on average are higher paying than the average private-sector job in Idaho.
However, job losses (under the Ten-Year Plan and Minimum Treatment, Storage, and Disposal
alternatives) and job gains (under the Ten-Year Plan and Maximum Treatment, Storage, and Disposal
alternatives), as discussed in Volume 2, section 5.3, are not expected to be sufficient to generate adverse
impacts with or without wage differentials taken into account. Volume 2, section 5.3 describes methods
used to analyze impacts, including total employment and earnings impacts that were estimated using
Regional Input-Output Modeling System multipliers. As described in Volume 2, section 4.3, during fiscal
year 1990, INEL directly employed approximately 11,100 persons, while the population directly

supported by INEL employment was estimated to be approximately 38,000 persons.

II COMMENT

Commentors object to shipment and storage, and potential sabotage of nuclear waste at Idaho National Engineering Laboratory, because it would seriously affect the tourist industry and economy of Idaho and western Wyoming.

RESPONSE

Because the actual environmental impacts associated with SNF management under all alternatives considered in the EIS would be small, there is no reason to believe that storage or examination of SNF at any of the locations evaluated would have any significant effect on tourism. Even the impacts of hypothetical accidents are limited in extent and small enough that there should be no impact on tourism.

II COMMENT

The commentor raises an issue about the lack of quantitative analysis of the socioeconomic impacts that would result from a 1-year restriction of agricultural use of land surrounding the Idaho National Engineering Laboratory that has been contaminated following an accident and release of radioactive material.

RESPONSE

The impacts have been addressed in Volume 2, section 5.14 in a qualitative manner. While it is anticipated that the major part of the land that would be restricted following an accident at INEL would be onsite, there is a potential for existing agricultural land near INEL to become contaminated and also restricted from use. More likely, however, is the possibility of a temporary restriction of land use pending completion of surveys to ascertain whether contamination has occurred under allowable limits. Such temporary restriction would be of short duration.

Although the economic value of any contaminated land is highly subjective, in the event that damages are incurred as a result of contamination and restriction of land use, persons injured may be able to recover their losses in accordance with applicable laws and regulations.

II COMMENT

The commentor requests that the socioeconomic portion of the EIS address DOE's strategic plan to improve U.S. competitiveness in a world economy and to transfer technology from the public to the private sector. Specifically, the commentor asks what the impacts of each alternative are on competitiveness and technology transfer.

RESPONSE

DOE is in the process of identifying technologies for transfer from the public to the private sector at each of its facilities and has ongoing programs targeting improving U.S. competitiveness in the world economy.

The activities associated with SNF management use existing technologies and do not appear to offer opportunities for technology transfer.

II COMMENT

The commentor is of the opinion that managing spent nuclear fuel at the Savannah River Site, coupled with projected employment declines, will impede economic development in the region and have an adverse impact on the quality of public education in Aiken County, South Carolina.

RESPONSE

As noted in Volume 1, Appendix C, section 5.3, DOE believes that the projected decline in employment at

SRS would be offset, in part, by the creation of operations jobs to support SNF management activities.
DOE does not anticipate any adverse impacts to the public education system under any of the management alternatives being considered.
In terms of economic development in Aiken County and the region, DOE believes that the research and development activities and opportunities that may accompany SNF management activities could stimulate economic development in the region.

II COMMENT

The commentor notes the importance of maintaining the pool of experts.
RESPONSE
The commentor is correct in noting the importance of maintaining a pool of expert personnel. In addition, it is necessary to maintain the existing infrastructure and skilled resources necessary to manage SNF as well as other nuclear materials and waste. One of the factors considered in identifying sites for SNF management was maximizing the use of existing expertise and overall SNF infrastructure, including environment, safety, and health; waste management safeguards and security; and emergency response capabilities.

II COMMENT

The commentor raises an issue about adverse employment impacts to the Shoshone-Bannock Tribes and asks whether DOE will mitigate those impacts.
RESPONSE
Volume 1, section 5.7.2 states that DOE will minimize impacts by coordinating with the local and regional planning agencies to address impacts on community services, housing, infrastructure, utilities, and transportation.

II COMMENT

The commentor states that the number used for the population located within 50 miles of the Nevada Test Site is too low and that workers from the Nevada Test Site are not considered in the analysis.
RESPONSE
Volume 1, Appendix F, Part Two, section 5.7 states that a population of 15,100 persons was estimated to be within 50 miles of the proposed SNF facilities at NTS in 1995. This population estimate is based on 1990 census data extrapolated to 1995 using county growth rates. Volume 1, Appendix F, Part Two, section 4.3, considers Nye and Clark counties, where most of the NTS work force resides.

II COMMENT

The commentor states that DOE needs to make firm commitments to mitigate adverse employment impacts that could occur, ranging from retraining displaced workers to providing support for the local communities.
RESPONSE
As stated in Volume 1, Chapter 5, DOE will coordinate its planning efforts with local communities and county planning agencies to address impacts on community services, housing, infrastructure, utilities, transportation, and employment. In the past, DOE has worked to retrain and refocus workers due to changes in mission, such as the transition from past emphasis on defense-related activities during the Cold War to current environmental restoration activities. Also, as in the case of the City of Idaho Falls, DOE is working with community leaders to help diversify the economic base away from a large dependence on DOE activities at INEL.

II 5.16 Safeguards and Security

II COMMENT

The commentor states that this EIS addresses nothing new in establishing a viable waste policy and that
moving nuclear wastes around only delays the problem to the next generation.
RESPONSE
DOE is committed not only to developing Federal geologic repositories for permanent isolation of SNF,
but to providing safe interim storage pending availability of permanent disposal facilities. Transportation of
SNF is necessary to varying degrees under the alternatives DOE is analyzing for providing safe interim
storage and management of SNF. The alternatives have definite purposes for relocating SNF, such as
storing similar fuel types within a single secure facility. Thus, the alternatives attempt to balance
transportation concerns with other worthy considerations, including nonproliferation, worker safety, and
cost effectiveness.
The potential impacts from storing radioactive materials associated with SNF are discussed in Volume 1,
Chapter 5. Environmental consequences of SNF management for all alternatives are discussed in Volume
1, section 5.1, and mitigation measures are discussed in Volume 1, section 5.7. DOE has a program for
safety managing and storing SNF and other radioactive materials at each of the sites considered in the EIS.
It is DOE policy to design, construct, and operate its facilities in a way that provides a level of safety and
safety assurance that meets applicable Federal, state, local, and DOE
requirements and regulations. DOE will manage SNF in accordance with applicable Federal, state, local,
and DOE requirements and regulations in a manner that ensures protection of the environment and the
health and safety of the public and site employees.

II COMMENT

The commentor states that there should be "a lot more" security associated with the various alternatives
described in Volume 1, and these alternatives should all be comparable with the measures taken for the
Centralization alternative.
RESPONSE
DOE has security systems in place at all facilities that handle nuclear materials. The extent of the security
systems established for the various alternatives would be appropriate for the activities involved.
Security precautions are routine for all shipments of DOE nuclear material. Security precautions have, for
more than 40 years, resulted in no known theft of DOE nuclear materials.
See also the response to comment 05.16 (001).

II COMMENT

Commentors request declassification of environmental, safety, and health documentation relevant to
establishing historical Idaho National Engineering Laboratory source terms (radioactive releases), because
unavailability of this previously classified documentation has prevented an accurate assessment of the
impacts.
RESPONSE
This comment relates to DOE's dose reconstruction project, which is outside the scope of this EIS.
The U.S. Department of Health and Human Services (HHS) and DOE have two Memoranda of
Understanding (MOUs) for public health responsibilities around DOE sites. Under the MOU, which

was signed in December 1990, DOE transferred the responsibility for managing and conducting energy-related analytic epidemiologic research to HHS. HHS has delegated reasonability to the Centers for Disease Control and Prevention (CDC). Baseline health effects studies for both DOE workers and for members of the surrounding public are either under way or planned at all facilities. To support this effort, DOE has directed that all worker health and exposure data and all data regarding releases of radioactive and toxic materials be released. DOE is responding to all CDC requests for declassification of documents relating to the dose reconstruction project. All studies will be made available to the public and the scientific community. For more information on this matter, contact the DOE Office of Public Affairs.
In recent years, DOE has released significant amounts of previously classified data and will continue to release additional information as it becomes declassified. Although most environmental monitoring data are not classified, other data on DOE activities are very sensitive and will remain classified until released by the Secretary of Energy.

II COMMENT

The commentor asks about the consequences of terrorist attacks, and states that storage and disposal facilities should be where the least damage could occur.
RESPONSE
The EIS evaluates 10 sites as reasonable alternatives for some level of SNF management activity. The analysis in the EIS includes a number of factors including the potential risks to the public from both operations and reasonably foreseeable accident conditions. Discussions on public health and safety can be found in the Occupational Public Health and Safety sections in Volume 1 (and its associated site-specific Appendices A through F), and in the Health and Safety section in Volume 2. The EIS concludes that there would be no significant risks to the public or the environment due to SNF management activities at any of the 10 sites being considered.
The consequences of postulated terrorist acts are expected to be bounded by the results of other human-initiated events, such as plane crashes, explosions, fires, etc.; therefore, terrorist attacks require no specific analysis. SNF is not attractive to terrorists due to the bulk of the fuel and transport containers and also to the high radiation fields surrounding unshielded SNF.
DOE and the Navy have extensive security systems at all facilities handling nuclear materials. Security precautions are routine for all shipments of government-owned nuclear material. For more than 40 years, security precautions have successfully prevented the theft of government-owned nuclear materials.

II COMMENT

The commentor is opposed to alternatives that centralize spent nuclear fuel at a single location because an attack on a nuclear fuel storage facility could release large quantities of radioactivity, which, in turn, would cause significant loss of human life.
RESPONSE
DOE has extensive security systems in place at all facilities that handle nuclear materials. Security precautions, including emergency response team notification, are routine for all shipments of DOE nuclear material. Even in the event of a successful attack on a DOE nuclear facility, the accident analyses detailed in the EIS, which bound any credible terrorist attack scenario, describe consequences far less severe than "the extinction of mankind" mentioned by the commentor. However, scenarios involving the use of nuclear weapons are outside the scope of this EIS. Volume 2, section 5.14 has been changed to include acts of

terrorism as an initiating event.

II COMMENT

The commentor is opposed to nuclear power because of the concern about nuclear materials falling into
"the wrong hands."
RESPONSE
DOE has extensive security systems in place at all facilities that handle nuclear materials. Security
precautions, including emergency response team notification, are routine for all shipments of DOE nuclear
material. Security precautions have, for more than 40 years, successfully prevented the theft of DOE
nuclear materials. Questions and concerns regarding nuclear nonproliferation are outside the scope of this
EIS. However, Volume 1, sections 1.2.3 and 1.2.4 refer the reader to other DOE-sponsored NEPA
reviews. Nuclear nonproliferation policies will be addressed in two future DOE publications: EIS on a
Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent
Nuclear Fuel and Programmatic EIS for the Management and Disposition of Excess Nuclear Material
(Draft).

II 5.17 Monitoring

II COMMENT

The commentor states that adequate funds must be available to support environmental monitoring activities
at Idaho National Engineering Laboratory.
RESPONSE
INEL has adequate funds to support environmental monitoring activities per DOE Order 5400.1, General
Environmental Protection Program, which implements the established environmental protection program
at INEL.

II COMMENT

The commentor states that the EIS does not evaluate the potential need for additional environmental
monitoring of new Idaho National Engineering Laboratory facilities described under the alternatives.
RESPONSE
The purpose of the EIS is to evaluate the potential environmental impacts from proposed activities. The
EIS is not intended to substitute for the assessments required by regulations. Any facilities
constructed or operated under the chosen alternative will comply with applicable regulatory requirements, including
requirements for monitoring emissions from facilities and surveillance of the surrounding environment.

II COMMENT

The commentor has requested documentation of the results of the environmental monitoring programs,
particularly those of the Environmental Protection Agency, in the Volume 1 site descriptions.
RESPONSE
DOE has added references to the environmental monitoring results at the various sites discussed in Volume
1, Chapter 4.

II COMMENT

The commentor requests that the EIS contain a detailed monitoring plan for the preferred alternative and
describe the feedback mechanisms by which the monitoring results are used to modify mitigation strategies
based on changing information.
RESPONSE
The Idaho National Engineering Laboratory Environmental Monitoring Plan has been provided as a
reference for the EIS. For existing facilities, it is independent of the alternative selected. For monitoring
new facilities, more specific information, such as specific locations and facility operational parameters, is
required before an appropriate monitoring plan could be prepared. The facility-specific monitoring plan
would be prepared after final issuance of an EIS. DOE believes that inclusion of a detailed monitoring
plan in this EIS would not provide useful information to decisionmakers, because it would not provide a
discriminator for comparison of the alternatives.

II 5.18 General Operations

II COMMENT

The commentor questions what techniques are being developed to ensure safe, long-term storage of nuclear
waste, and that this is not dangerous material and ways of safely storing it really need to be reexamined.
RESPONSE
Numerous technologies are already available for managing radioactive materials, and others are being
considered for this purpose. Technological options for SNF management are described in Volume 1,
section 1.1.3 and Appendix J. Current management practices for all types of radioactive wastes are
discussed in Volume 2, section 2.2.7, and technology development activities are described in Volume 2,
section 3.1. (Volume 2 is specific to INEL, but waste management technologies also generally apply to
other DOE sites.) DOE has established a policy of compliance with all applicable Federal, state, and local
regulations and DOE Orders. All radioactive materials will be managed to protect the environment and the
health and safety of the public and site employees.

II COMMENT

The commentor believes that technologies for safe, long-term storage of nuclear waste and plutonium may
not exist because the material being stored has a long half-life and will outlast the storage containers.
RESPONSE
DOE has a program to safely manage and store radioactive materials (including both radioactive wastes and
SNF) at each of the sites considered in the EIS. The potential impacts of storing SNF and associated
mitigation measures are discussed in Volume 1, Chapter 5. Supporting information on types of SNF and
storage options for them is provided in Volume 1, Appendix J. Management and storage of radioactive
materials at INEL are described in Volume 2, Chapters 1 and 2. It is DOE's policy to comply with
applicable Federal, state, and local regulations and DOE Orders. All radioactive materials will be managed
to ensure protection of the environment and the health and safety of the public and site employees.
One of the concerns that must be addressed prior to ultimate disposition is the concern raised by the
commentor that the waste may outlast some storage methods. While ultimate disposition is outside the
scope of this EIS, DOE is researching and developing disposition technologies that will address the issue of
the longevity of the waste and ensure that the public and environment are protected.
General long-term solutions proposed for managing SNF at INEL are discussed in Volume 2, Chapters

1
and 2. The alternatives for safe SNF management in the interim are discussed in section 3.1 of Volume 1.

II II COMMENT

Commentors raise an issue about the disposing of hazardous and radioactive wastes using environmentally unacceptable methods.

RESPONSE

DOE accepts the responsibility to operate its hazardous and radioactive waste management activities in compliance with applicable requirements. DOE continues to improve the procedures and technologies associated with waste management. Accordingly, the lessons learned from past waste management practices and the knowledge being gained from current research and development programs are incorporated into future waste management programs. One purpose of this EIS is to further these objectives.

Volume 1 is intended to provide the public and decisionmakers with a programmatic view of proposed actions and alternatives for managing SNF. For all alternatives analyzed, DOE is committed to meeting applicable Federal, state, local, and DOE requirements to ensure that SNF is safely managed and that the environment and health and safety of the public and site employees are protected. Under the No Action alternative, only the minimum actions necessary for continued safe management of SNF would be implemented.

Volume 2 is a site-specific assessment of SNF and environmental restoration and waste management alternatives at INEL. Again, the intent of Volume 2 is to provide the public and decisionmakers with the information necessary to select the best alternative for these activities at INEL. DOE is also preparing a programmatic EIS for waste management, which will provide a broader view of complex-wide waste management programs similar to the way Volume 1 of this EIS addresses the programmatic concerns for SNF.

II COMMENT

The commentor states that for Volume 1, high-level, transuranic, and mixed waste are different wastes, with different risks, and should be dealt with separately in the EIS. The commentor also asks for a definition of mixed waste.

RESPONSE

DOE agrees with the comment that these three wastes are of different types, with different risks, and different disposal requirements. While it would be necessary in a site-specific EIS to treat each of these as separate entities, for this programmatic EIS, they were lumped together (and separated from low-level wastes) for two reasons: (1) the volumes of high-level, transuranic, and mixed wastes that would be generated from SNF management under the No Action alternative are uniformly small compared with volumes of these wastes already at DOE sites, and (2) high-level, transuranic, and mixed wastes must eventually be disposed of offsite, whereas low-level wastes can be disposed of onsite. A definition of mixed waste has been added to Appendix H.

II COMMENT

The commentor indicates that Figure 5-2 and the text on page 5-25 do not agree.

RESPONSE

The text in Volume 1, section 5.1.3.3 indicates that the Hanford Site would generate 110 cubic meters per year of high-level, transuranic, and mixed waste due to processing. Volume 1, Figure 5-2 illustrates the volumes of waste that would be generated from the Decentralization alternative.

II COMMENT

The commentor has questions about safe temporary storage and ultimate disposal of radioactive materials.

RESPONSE

DOE has a program to safely manage and store radioactive materials, including SNF, at each of the sites considered in this EIS. It is DOE's policy to design, construct, and operate its facilities in a manner that provides a level of safety and safety assurance that is in accordance with applicable Federal, state, and local regulations and DOE Orders. DOE will manage radioactive materials and wastes in a manner that ensures protection of the environment and the health and safety of the public and site employees. Management and disposal of radioactive wastes are discussed in Volume 2, Chapter 1. Current management practices for each type of radioactive waste (which are improvements on past techniques) are given in Volume 2, section 2.2.7. The potential impacts of storing radioactive materials associated with SNF are discussed in Volume 1, Chapter 5. Specific supporting information on types of SNF and storage options for them are presented in Volume 1, Appendix J.

II COMMENT

The commentor asks about three waste treatment facilities under development by the Scientific Ecology Group, Inc. at the Oak Ridge Reservation site.

RESPONSE

Scientific Ecology Group, Inc., has three commercial waste treatment facilities under development, which are not located at ORR. It has recently completed construction of a Carlsbad, New Mexico, facility; has recently purchased property for a Hanford, Washington, site; and is in the planning stages for an Idaho Falls, Idaho, site. As stated in Volume 1, Appendix F-4, Scientific Ecology Group, Inc., operates a low-level radioactive waste incinerator at ORR. The addition of a second radioactive waste incinerator is being considered, as stated in Volume 1, Appendix F, Part Three, section 5.16. While some enhancements to this facility will be made, it will remain within the property boundaries of the site. The potential incremental impacts from the addition of a second radioactive incinerator are assessed in a qualitative manner in the EIS.

II COMMENT

The commentor questions the meaning of off-site disposal as a waste management activity at the Nevada Test Site.

RESPONSE

Off-site disposal in the context of Volume 1, section 4.4 means disposal off of the Nevada Test Site at a DOE facility or permitted and licensed commercial disposal facility. The destination disposal site would depend on the type of waste. The text in the Final EIS has been changed to clarify that DOE does not manage wastes offsite.

II COMMENT

Commentors want all wastes disposed of in Resource Conservation and Recovery Act-permitted hazardous waste and/or Environmental Protection Agency/Nuclear Regulatory Commission-permitted radioactive waste disposal sites as appropriate.

RESPONSE

DOE waste management policies and practices embrace numerous laws and regulations governing hazardous and radioactive wastes. A comprehensive list of these requirements is provided in Volume 2, Chapter 7, and associated environmental permits are also discussed there. Current management practices for radioactive and nonradioactive wastes are described in Volume 2, section 2.2.7, which is specific to INEL, but also generally applies to wastes at other DOE sites. DOE has established a policy of complying with all applicable Federal, state, and local regulations and DOE Orders, including applicable regulations establishing disposal requirements, including RCRA disposal of wastes in hazardous waste sites, and, if appropriate, EPA/NRC-permitted radioactive waste disposal sites. All radioactive and nonradioactive materials will be managed to protect the environment and the health and safety of the public and site employees.

II COMMENT

The commentor states that several types of low-level radioactive waste should be considered greater-than-Class-C waste, which requires an engineered barrier for disposal in burial grounds.
RESPONSE
DOE radioactive wastes are specifically managed according to DOE Order 5820.2A, Radioactive Waste Management, which classifies radioactive wastes somewhat differently than regulations promulgated by NRC for commercial radioactive wastes. In particular, DOE has only one category for low-level wastes, which encompasses the A, B, C, and greater-than-Class-C distinctions made by NRC. Specific management measures may still be prescribed for DOE low-level wastes according to the type and quantity of radionuclides present, analogous to standards for disposal of commercial radioactive wastes. For example, DOE low-level waste analogous to NRC greater-than-Class-C waste is required by DOE Order 5820.2A, Radioactive Waste Management, to be handled as a special case, and is not permitted to be buried in the RWMC. Additional information on special-case waste at INEL has been added to Volume 2, section 3.1.3.

II COMMENT

The commentor urges that until we can eliminate the generation of nuclear waste, keep it where we can see it and monitor it, and people have an interest in seeing that the generation is eventually eliminated or substantially curtailed.
RESPONSE
Under the No Action alternative, DOE would limit actions to the minimum necessary for safe and secure management of SNF at the generation sites or current storage locations. Most DOE SNF was generated in DOE production and experimental reactors that have ceased to operate, so considerable source reduction has already occurred. SNF management plans are presented for all alternatives in Volume 1, section 1.1, and mitigation measures are discussed in section 5.7.

II COMMENT

The commentor expresses an opinion that all waste should be stored in a retrievable manner using the best technologies available.
RESPONSE
Descriptions of how wastes would be managed under the proposed alternative actions are in Volumes 1 and 2, section 3.1. These alternative actions also consider the best technologies available. Technology development activities, including stabilization technologies, aimed at advancing the best technologies available for waste management are described in Volume 2, section 3.1.

II COMMENT

The commentor wants to know if the statement on Volume 1, page 5-72 stating "but with processing approximately 2 cubic meters per year (3 cubic meters per year) of high-level waste generated" refers to a process or a reprocessing activity at the Savannah River Site.
RESPONSE
The statement refers to "processing," as shown in Volume 1, Appendix C, section 3.1.

II COMMENT

The commentor suggests a wording change in Volume 1, Appendix A, section 2.3 to better define the characteristics of the Hanford Spent Nuclear Fuel Management Plan.
RESPONSE
The suggested wording change has been incorporated into the EIS.

II COMMENT

The commentor states that the EIS should reconsider the procedures for burial at the Idaho National Engineering Laboratory Radioactive Waste Management Complex of the material removed from the ends of fuel modules during examination at the Expended Core Facility, and that the EIS does not contemplate changes to this procedure.
RESPONSE
The Navy and DOE rely on definitions and classifications of nuclear materials set forth in the Nuclear Waste Policy Act, as amended, and regulations issued by EPA (40 CFR 261) and NRC (10 CFR 61). The categories set forth in these regulations are "Spent Nuclear Fuel," "High-Level Waste," "Transuranic Waste," "Low-Level Waste," "Low-Level Mixed Waste," "Greater-than-Class-C Waste," and "Hazardous Waste."
Volume 1, Appendix H sets forth the definition of SNF used in this EIS as "fuel that has been withdrawn from a nuclear reactor following irradiation, the constituent elements of which have not been separated."
The definition of high-level waste in Volume 1, Appendix H is "highly radioactive waste material that results from the reprocessing of spent nuclear fuel, including liquid waste produced from reprocessing and a solid waste derived from the liquid..." Transuranic waste is defined as "waste containing more than 100 nanocuries of alpha-emitting transuranic isotopes, with half-lives greater than 20 years, per gram of waste, ..." Low-level waste is defined as "waste that contains radioactivity and is not classified as high-level waste, transuranic waste, or spent nuclear fuel."
The ends removed from Naval SNF modules at the Expended Core Facility are structural material that provides support and directs the flow of cooling water during operation. The material removed from the ends of the fuel modules does not contain any fuel or fission products from fuel and therefore cannot be considered SNF. It does not contain transuranic elements or fission products and thus cannot be considered high-level waste or transuranic waste. The amounts of radioactivity in the end boxes cause them to be classified as low-level waste. Consequently, the material removed from the ends of the modules at the Expended Core Facility is categorized as low-level waste due to the amount of radioactivity in it.
Their disposal at the RWMC at INEL is accomplished in accordance with applicable regulations. As indicated in Volume 1, Appendix D, section 5.2.15, the amount of low-level waste generated each year at the Expended Core Facility is 425 cubic meters. The radioactive isotopes, which represent 99 percent of the activity in the material removed from the ends of fuel modules, are identified below.

ISOTOPE	HALF LIFE
Fe55	2.73 years
Co60	5.271 years
Ni59	76,000 years
Ni63	100 years

A description of the composition of material removed from the ends of fuel modules during examination
has been added to Volume 1, Appendix D, Attachment B.

II II COMMENT

The commentor states that he was unaware that spent fuel storage generates transuranic waste and is
concerned that this may be due to extensive fuel leakage.
RESPONSE
As reported in Volume 1, section 5.1.1 and site-specific Appendices A through F, transuranic waste is
generated in small quantities by the routine operations associated with transporting, receiving, and
managing SNF (from filters, ion exchange columns, etc., particularly during examination and stabilization
activities) rather than extensive leakage.

II II II COMMENT

The commentor points out that the vulnerability assessment states that canned fuel in ICPP-603 being
transferred to ICPP-666 could lead to contamination and additional vulnerabilities, and that the EIS fails to
address this issue.
RESPONSE
DOE is aware of the potential for contamination if transfers are not conducted in a safe, well-planned
manner. All fuels to be transferred from ICPP-603 at the Idaho Chemical Processing Plant to ICPP-666
have been inspected for corrosion and other potential breaches. Potentially breached or deteriorated fuels
will be placed in suitable containers to prevent release of radioactive material. All fuels will be transported
in shielded transfer casks. ICPP-666 has extensive monitoring and water purification capabilities, and any
leaking container or fuel element would be identified and necessary corrective actions taken. No
additional vulnerabilities are anticipated.
The EIS discusses the Spent Fuel Working Group Report on Inventory and Storage of the Department's
Spent Nuclear Fuel and Other Irradiated Nuclear Materials and Their Environmental, Safety and
Health Vulnerabilities (known as the vulnerability assessment) and associated action plans to resolve
identified vulnerabilities in Volume 1, section 1.1.2 and Appendix I-2 and in Volume 2, section 2.2.5.

II COMMENT

Many commentors raise issues about DOE's past record of waste-handling practices at such sites as
Hanford, Oak Ridge, and Idaho National Engineering Laboratory, resulting in releases to the
environment.
RESPONSE
DOE has identified, or is currently evaluating many of the problems that exist with its waste management
infrastructure, or that have resulted from past releases of contaminants to the environment. Waste
management strategies are continually evolving to meet current regulatory requirements and take advantage
of technology advancements. Many facilities across the DOE complex are either undertaking, evaluating,
or planning upgrades or replacements to come into compliance with applicable regulations. Historical
contaminant releases are addressed by DOE's Environmental Restoration Program. Each DOE site listed
on EPA's National Priorities List must negotiate an agreement with the appropriate regulatory agencies to
prioritize work and develop enforceable schedules for cleanup of contaminated areas. An example is
INEL's FFA/CO, which is signed by DOE, EPA Region X, and the State of Idaho.
As discussed in Volume 1, Chapter 1, DOE is committed to complying with all applicable Federal and
state laws and regulations, DOE Orders, and interagency agreements governing SNF and

environmental
restoration and waste management.
As discussed in Volume 1, Chapter 3, safe management of SNF requires that many factors be analyzed,
including site security, presence of skilled workers, safety, and the affected environment. The EIS did not
reach a decision regarding in which state or states SNF will be stored. Analysis of impacts for a number of
potential storage locations were included in the EIS. As part of the public comment process, specific
public input regarding the eventual location of SNF storage facilities was sought. Consideration of this
input was part of the process used in arriving at the preferred alternative. The preferred alternative in the
EIS, as well as other factors, will be considered in the ROD for the proposed action.
Volume 1, section 5.1.1 summarizes potential impacts from waste management activities associated with
the SNF management alternatives. Site-specific details are discussed in Volume 1, Appendix A for the
Hanford Site, Volume 1, Appendix F, Part Three for ORR, and Volume 1, Appendix B for INEL.

II II COMMENT

The commentor wants mitigations measured for their effectiveness and addressed in the EIS. A thorough
discussion of proposed mitigation for direct, indirect, and cumulative impacts should be included. A
Council on Environmental Quality regulation states that an EIS should include the means to mitigate
adverse environmental effects.
RESPONSE
As discussed in Volume 1, Chapter 5, the EIS evaluated impacts to socioeconomics, utilities, materials and
waste management, occupational health and safety, public health and safety, and transportation; in all
cases, the results indicate that impacts to the environment and to humans would be small. However,
general mitigation techniques are discussed in Chapter 5. This level of detail is appropriate for a
programmatic EIS. Follow-onsite-specific NEPA analyses would address specific mitigation features
considered for identified impacts. Comparison of specific impacts by alternatives for Volume 2 is provided
in Table 3.3-1, with an indication of proposed mitigation measures. Possible mitigation measures are
further discussed in Volume 2, Chapter 5. Specific mitigation measures to be undertaken will be
developed for the ROD, and if necessary, a formal mitigation action plan will be developed, as
appropriate.

II 5.19 Miscellaneous

II COMMENT

Several commentors state preferences for truck, rail, barge, or air as modes of transportation. Numerous
reasons were provided for favoring one mode of transportation over another.
RESPONSE
The EIS evaluates truck, rail, barge, and ship transportation because they are believed to be most practical
in terms of risk and cost. Other modes of transportation were not evaluated.
Truck transport of radioactive material is a legal and viable option and the potential risks from this mode of
transportation are very small. Rail transport of radioactive material is also a legal and viable option. The
EIS evaluates both truck and rail transportation for DOE shipments. Navy SNF has been transported by
rail, except for transportation by ship from Pearl Harbor Naval Shipyard to Puget Sound Naval Shipyard,
where the containers are transferred to railcars and heavy-lift transporters move casks to the
nearest rail access at the Kesselring Site. Transport of SNF or radioactive waste by air would not occur
under any alternative being considered in this EIS.

An analysis of barge transport analysis has been added to the EIS.

II COMMENT

The commentor identifies errors or omissions in the text and suggests alternative wording to clarify the meaning of the text.
RESPONSE
The errors or omissions identified by the commentor have been corrected in the Final EIS.

II COMMENT

The commentor expresses support for DOE ecological activities and research at the Idaho National Engineering Laboratory, which are not specific to this EIS.
RESPONSE
The comment is noted.

II COMMENT

Commentors express fear of moral impacts and obligations, catastrophic events, radiation and/or nuclear materials, and emotional concerns over the management of nuclear material such as spent nuclear fuel.
RESPONSE
DOE has attempted in this EIS to develop reasonably foreseeable, quantifiable environmental impacts due to the proposed action(s), including operations and accident consequences. Other potential concerns such as moral, emotional, and psychological (including fear, dread, mental anguish, negative effects on youth, hatred, etc.) issues are beyond the scope of required NEPA evaluations. The U.S. Supreme Court, in Metropolitan Edison v. People Against Nuclear Energy, 103 S. Ct. 1556 (1983), clearly delineated the aforementioned NEPA evaluative requirements.

II COMMENT

Many commentors state they are concerned about errors and inconsistent use of information throughout the document, while others express concern about misleading discussions that need to be clarified.
RESPONSE
The EIS has been reviewed for errors and inconsistencies, including those identified by individual commentors. Changes have been made to the EIS to correct errors or clarify misleading discussions.

II COMMENT

Commentors express reservation and/or discontent about residing near nuclear waste and/or radioactivity.
RESPONSE
DOE is aware of general public fears regarding radiation and radioactivity, a significant portion of which arise from a basic unfamiliarity with such risks. The EIS analyzes the cumulative effects of DOE and Navy operations at the 10 candidate sites for management activities involving SNF. The EIS concludes that there would be no significant risk due to either operations or credible accidents involving the management of SNF, including transportation, at any of the candidate sites.

II COMMENT

The commentor questions the existence or effectiveness of quality assurance or quality control within DOE or its facilities.
RESPONSE
DOE and its contractors implement quality assurance/quality control requirements for all phases of work and facility operations. Formal quality program requirements are derived and implemented from DOE Order 5700.6C, Quality Assurance, which defines the interrelations of criteria and includes requirements for managing, achieving, and assessing quality that result in improved safety and reliability of DOE's products and services. In accordance with these requirements, approved quality programs are invoked at the project/program level. These quality programs are tailored to meet the specific needs and requirements of the projects/programs and apply the appropriate industry standard criteria unique to that work, e.g., NQA-1 for nuclear reactor operations, EPA environmental quality assurance management requirements for remediation activities, etc. In recent years, DOE has adopted the Total Quality Management philosophy, whereby employees at all levels are encouraged to take ownership in applying quality principals for all aspects of their respective duties and interactions, resulting in more immediate and positive results.

II COMMENT

The commentor asks why the value for the State of Idaho appears to be omitted from Volume 1, Figure 5.15-1 of the EIS.
RESPONSE
This error has been corrected.

II COMMENT

Commentors raise the issue of the potential impacts to the environment and the people of Idaho.
RESPONSE
Descriptions of the existing environment at INEL and the potential impacts to the environment as a result of implementation of the alternative actions are in Volumes 1 and 2, Chapters 4 and 5, respectively. These chapters discuss the current environmental situation and the expected consequences, if any, of the alternative actions on the environment and show that the impacts would be small for all alternatives. The measures that DOE could implement to control or reduce impacts to the environment are described in Volume 1, section 5.7 and Volume 2, section 5.19. As described in these sections, DOE is committed to operating its facilities in compliance with all applicable laws and regulations protecting environmental resources to ensure that the impacts of DOE activities on those resources are small.

II COMMENT

The commentor notes that the EIS identifies irreversible and irretrievable commitments of air and water resources likely to occur due to the proposed action and notes "the assertion that air quality resources may be and groundwater resources already have been irretrievably impacted." The commentor also states that DOE has an obligation to protect natural resources under its jurisdiction and to remediate harm that the agency has caused.
RESPONSE
The identification of irreversible and irretrievable commitments of resources is a standard component of an EIS. Irreversible and irretrievable commitment of resources refers to the process of making resources

unavailable for use as a result of past, present, or proposed actions. Irreversible and irretrievable commitment of resources does not imply adverse environmental impacts. The discussion of cumulative impacts in Volume 2, section 5.15 shows that the impacts from past, present, and proposed actions at INEL would be small.

II COMMENT

The commentor suggests specific deletions, corrections, or additions to the EIS.
RESPONSE
If the suggested change was considered editorial or significant to the decision-making process, the appropriate change has been incorporated into the EIS.

II COMMENT

The commentor states that a discussion of Oak Ridge spent fuel inventories in Volume 1, Appendix I incorrectly refers the reader to a section that does not exist.
RESPONSE
Volume 1, Appendix F, Part Three, section 2.3.7 has been modified to correct this error.

II COMMENT

The commentor expresses the opinion that all facets of DOE's nuclear program are lethal and under the protection of bureaucrats.
RESPONSE
This EIS addresses the programmatic management of SNF in the interim to ultimate disposition, as well as environmental restoration and waste management activities at INEL over the next 10 years. Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. The analyses show that the impacts of all alternatives would be small.
Although vulnerabilities exist, DOE has the management skill, scientific capability, and Secretarial mandate to safely manage SNF and INEL waste management and environmental restoration activities during the period covered by this EIS. See also the response to comment 03.07 (004).

II COMMENT

The commentor states that a description of the amount of radiation expected to be released in the course of this project is a necessary item in the EIS.
RESPONSE
This information is provided for all alternatives and all sites considered in the EIS. Volumes 1 and 2, Chapter 5 summarize information on potential releases to the environment. Additional details are provided in Volume 1, Appendices A through D and K, and Volume 2, Appendix F.

05.19 (017) Miscellaneous

COMMENT
The commentor identifies sections of Volume 2 of the EIS that require clarification or additional information to more completely address the material in appropriate sections.
RESPONSE
The EIS has been modified to include the additional information requested by the commentor in Volume 2, Chapter 4.

05.19 (018) Miscellaneous

COMMENT
The commentor requests a specific change to the EIS.
RESPONSE
The commentor's suggested language has been incorporated in Volume 1, section 5.1.1.

05.19 (019) Miscellaneous

COMMENT
The commentor is unclear what the term "estimated population dose" means and states that the text in
Volume 1 refers to Figure 5-1 as representing the estimated population dose, but that figure does not
contain that term.
RESPONSE
The statement should have referred to estimated annual latent cancer fatalities. The sentence referred to by
the commentor has been revised in the EIS.

VOLUME III Part B

Department of Energy Programmatic
Spent Nuclear Fuel Management
and
Idaho National Engineering Laboratory
Environmental Restoration and
Waste Management Programs
Final Environmental Impact Statement
Volume 3
Part B
April 1995
U.S. Department of Energy
Office of Environmental Management
Idaho Operations Office

VOLUME 3, PART B: CONTENTS

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6. SPENT NUCLEAR FUEL MANAGEMENT SPECIFIC

6.1 Vulnerabilities

06.01 (002) Vulnerabilities

COMMENT
Commentors express the opinion that spent nuclear fuel is currently stored in poor conditions and that DOE will not take responsibility for the waste currently existing. Commentors also state that they do not trust DOE to manage additional spent nuclear fuel any better in the future, because DOE may not have learned from the last 40 years of spent nuclear fuel management.
RESPONSE
DOE acknowledges its responsibility to safely manage spent nuclear fuel (SNF). The Secretary of Energy has publicly affirmed that current DOE policy and practice emphasize safety and environmental considerations above other program goals. DOE is formally committed to protecting the safety and health of its workers, the public, and the environment. Furthermore, DOE intends to design, construct, and operate facilities in a safe manner, relying on lessons learned from the last 40 years of SNF management.
DOE is working to rectify and eliminate any adverse environmental impacts from past programs. Problems at existing storage facilities have been identified in the Spent Fuel Working Group Report on Inventory and Storage of the Department's Spent Nuclear Fuel and Other Reactor Irradiated Nuclear Materials and Their Environmental, Safety and Health Vulnerabilities. This report, called the spent nuclear fuel vulnerability assessment, and associated action plans to resolve identified vulnerabilities are acknowledged in Volume 1, section 1.1.2 and Appendix J-2, and Volume 2, section 2.2.5. Additional site-specific information is in Volume 1, Appendices A through F. Environmental consequences of SNF management are presented for all alternatives in Volume 1, section 5.1, and mitigation measures are discussed in section 5.7. For all alternatives analyzed, the impacts of SNF management activities would be small.

06.01 (005) Vulnerabilities

COMMENT
The commentor states that the EIS fails to acknowledge current problems with spent fuel handling and storage, and that these problems will continue to be ignored if DOE begins its massive transportation and concentration program.
RESPONSE
Problems at existing storage facilities have been identified in the Spent Fuel Working Group Report on Inventory and Storage of the Department's Spent Nuclear Fuel and Other Reactor Irradiated Nuclear Materials and Their Environmental, Safety and Health Vulnerabilities. This report, commonly referred to as the spent nuclear fuel vulnerability assessment, and associated action plans to resolve identified vulnerabilities are acknowledged in Volume 1, sections 1.1.2 and J-2, and Volume 2, section 2.2.5.
Additional site-specific information is in Volume 1, Appendices A through F. Environmental consequences of SNF management are presented for all alternatives in Volume 1, section 5.1, and mitigation measures are discussed in section 5.7. For all alternatives analyzed, DOE is committed to complying with applicable Federal, state, and local regulations and DOE Orders to ensure

protection of the
environment and the health and safety of the public and site employees. See also the response to comment
03.05 (024).

06.01 (006) Vulnerabilities

COMMENT
The commentor raises two issues: (1) the ability of the K-basins to withstand a credible earthquake and (2)
the chemical breakdown of the spent nuclear fuel in the basins.
RESPONSE
The continued management, storage, and chemistry of spent nuclear fuel currently stored at the Hanford
Site will be evaluated in the Hanford Spent Nuclear Fuel Management EIS (tiered from this EIS) and in
the EIS for the Management of Spent Nuclear Fuel from the K-Basins at the Hanford Site, Richland,
Washington. The EISs will consider both the seismic conditions and the chemistry of the spent nuclear
fuel.

06.01 (008) Vulnerabilities

COMMENT
The commentor states that existing storage conditions for N-Reactor fuels in the Hanford Site K-basins
must be corrected immediately because of degradation from corrosion and hydriding.
RESPONSE
Descriptions of SNF stored at the Hanford Site and technologies for managing SNF are presented in
Volume 1, section 1.1. Hanford-specific information on N-Reactor fuel and conditions at the K-basins is
given in Volume 1, Appendix A, section 2.3. More general information on management options for
degraded SNF and associated management technologies is in Volume 1, Appendix J, sections J-3 and J-4.
DOE agrees that it is necessary to deal with spent N-Reactor fuel, especially in the 105-KE Basin. This
situation was prominently identified in the Spent Fuel Working Group Report on Inventory and Storage
of the Department's Spent Nuclear Fuel and Other Reactor Irradiated Nuclear Material and Their
Environmental, Safety and Health Vulnerabilities (called the spent nuclear fuel vulnerability
assessment). These concerns also are reflected in a June 1994 Tri-Party Agreement to initiate
encapsulation of uncontainerized fuel. This agreement between the State of Washington, the
Environmental Protection Agency (EPA), and DOE has a target date of December 2002 for removal of
SNF and sludge from the 105-K basins. See also the response to comment 06.01 (006).

06.01 (009) Vulnerabilities

COMMENT
The commentor requests that the EIS address cleanup of Idaho National Engineering Laboratory
contamination and the safety of existing spent nuclear fuel storage facilities, particularly ICPP-603.
RESPONSE
The evaluation in Volume 2 of this EIS bounds environmental impacts from environmental restoration (or
cleanup) activities at the Idaho National Engineering Laboratory (INEL). However, specific decisions
related to cleanup at INEL are generally addressed under an enforceable agreement executed by DOE, the
Environmental Protection Agency (EPA) Region X, and the State of Idaho on December 9, 1991, the
Federal Facility Agreement and Consent Order (FFA/CO). The FAA/CO establishes a comprehensive
process that integrates the remediation requirements of Comprehensive Environmental Response,
Compensation, and Liability Act (CERCLA), the corrective action requirements of the Resource
Conservation and Recovery Act (RCRA), and the State of Idaho's Hazardous Waste Management Act.
Cleanup activities are conducted under the process and schedule established in the FFA/CO. Records of
Decision (RODs) under the FFA/CO process are signed by all three entities and represent a joint
determination that environmental protection will be achieved through implementation of the selected
remedy. The FFA/CO's role in INEL's environmental restoration program is discussed in detail in Volume
2, sections 2.2.6 and 7.2.5.
DOE has a program for safely managing and storing SNF and other radioactive materials at each of

the sites
considered in the EIS. It is DOE's policy to design, construct, and operate its facilities in a way that
provides a level of safety and safety assurance that is in accord with applicable Federal, state, and local
regulations and DOE Orders. DOE will manage SNF in a manner that ensures protection of the environment and the health and safety of the public and site employees. The potential impacts from storing
radioactive materials associated with SNF are discussed in Volume 1, Chapters 5. Environmental consequences of SNF management are presented for all alternatives in Volume 1, section 5.1, and mitigation measures are discussed in section 5.7.
Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of
all the alternatives considered in this EIS. The analyses show that the impacts of all alternatives would be
small. Problems at existing storage facilities have been identified in Spent Fuel Working Group Report on
Inventory and Storage of the Department's Spent Nuclear Fuel and Other Reactor Irradiated Nuclear Material and Their Environmental, Safety and Health Vulnerabilities. This report, commonly called the
SNF vulnerability assessment, and associated action plans to resolve identified vulnerabilities are
acknowledged in Volume 1, sections 1.1.2 and J-2 of the EIS. Additional information is included in
Volume 2, section 2.2.2.

06.01 (011) Vulnerabilities

COMMENT
The commentor asserts that DOE failed to acknowledge the urgency of the vulnerabilities associated with
existing storage facilities at the Hanford Site, as highlighted in the Spent Fuel Working Group Report on
Inventory and Storage of the Department's Spent Nuclear Fuel and Other Reactor Irradiated Nuclear Material and Their Environmental, Safety and Health Vulnerabilities, and that the EIS needs to be modified to include the three specific actions included in the Hanford Federal Facility Agreement and
Consent Order (Tri-Party Agreement) in January 1994.
RESPONSE
DOE concurs that action is necessary to deal with spent N-Reactor fuel, especially in the 105-KE Basin.
This situation was prominently identified in the spent nuclear fuel vulnerability assessment. These
concerns also are reflected in a June 1994 Tri-Party Agreement to initiate encapsulation of uncontainerized
fuel. This agreement between the State of Washington, EPA, and DOE has a target date of December 2002
for removal of SNF and sludge from the 105-K Basins. A fourth amendment to the Tri-Party Agreement
(January 1994) contains specific milestones related to managing SNF at the Hanford Site. Descriptions of
SNF stored at Hanford and technologies for managing SNF are in Volume 1, section 1.1. Hanford-specific
information on N-Reactor fuel and K-basin conditions is given in Volume 1, Appendix A, section 2.3.
More general information on management options for degraded SNF and associated management technologies is in Volume 1, Appendices J-3 and J-4, respectively.

06.01 (013) Vulnerabilities

COMMENT
The commentor states that the EIS is based on an unjustified presumption that spent nuclear fuel must be
moved to be stored.
RESPONSE
Volume 1, section 1.1.2 discusses the corrective actions for the SNF vulnerability assessment conducted by
DOE. Volume 1, section 1.1 of the EIS presents a comprehensive discussion on the options available for
managing SNF, including storing, stabilizing, transporting, and preparing it for final disposition. Specific
technologies to accomplish these options are discussed in Volume 1, Appendix J. These options are
incorporated to varying degrees in all of the alternatives, as described in Volume 1, Chapters 3 and 5.

Volume 1, Figures 3-1 and 3-6 show the number of shipments expected for each alternative, and Figure 3-7 compares estimated shipments among all of the alternatives. The wide range in shipment numbers reflects DOE's desire to consider all realistic transportation possibilities and the related stakeholder concerns. In addition, the alternatives have definite purposes for relocating SNF, such as storing similar fuel types within a single secure facility. Thus, the alternatives attempt to balance transportation concerns with other worthy considerations, including nonproliferation, worker safety, and cost effectiveness.

06.01 (014) Vulnerabilities

COMMENT
Commentors note that descriptions of alternatives in Volume 1, Tables 3-1 through 3-4 mention the fuel storage problems at Test Area North but not at other storage facilities at the Idaho National Engineering Laboratory that were identified as not meeting current standards, such as the fuel in pool storage at ICPP-603. The commentor adds that no matter what alternative is selected, fuel should be moved from all facilities that do not meet current standards.
RESPONSE
DOE is currently taking steps to correct outdated and potentially unsafe facilities. Problems at existing storage facilities have been identified in the Spent Fuel Working Group Report on Inventory and Storage of the Department's Spent Nuclear Fuel and Other Reactor Irradiated Nuclear Material and their Environmental, Safety and Health Vulnerabilities. This report, commonly called the SNF vulnerability assessment, and associated action plans to resolve identified vulnerabilities are acknowledged in Volume 1, sections 1.1.2 and Appendix J-2 of the EIS. Additional site-specific information is presented in Volume 1, Appendices A through F. INEL plans to move SNF from ICPP-603 by December 31, 2000, as an interim action, and the impacts of the action are included in the No Action alternative. Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. The analyses show that the impacts of all alternatives would be small. While there are differences among the alternatives, these differences by themselves are not sufficient to distinguish between alternatives. For all alternatives analyzed, DOE is committed to complying with applicable Federal, state, and local regulations and DOE Orders to ensure protection of the environment and the health and safety of the public and site employees.

06.01 (016) Vulnerabilities

COMMENT
The commentor states that the condition of the spent nuclear fuel and the spent nuclear fuel storage facilities is not adequately covered in the EIS, and cites specific problems with the spent nuclear fuel and the K-basins at the Hanford Site. In addition, the commentor believes that, based on the Spent Fuel Working Group Report on Inventory and Storage of the Department's Spent Nuclear Fuel and Other Reactor Irradiated Nuclear Material and Their Environmental, Safety and Health Vulnerabilities, it is apparent that none of the facilities in the DOE complex is acceptable for the continued storage of existing inventories of spent nuclear fuel, much less additional fuel from another location.
RESPONSE
DOE believes that the condition of SNF and existing storage facilities, as well as the associated vulnerabilities, are adequately represented in the EIS. Problems with the K-basins and other storage facilities identified in the Spent Fuel Working Group Report on Inventory and Storage of the Department's Spent Nuclear Fuel and Other Reactor Irradiated Nuclear Material and Their Environmental, Safety and Health Vulnerabilities are being addressed by corrective action plans that are proceeding independently of this EIS.

06.01 (017) Vulnerabilities

COMMENT
The commentor states that it is urgent to address the vulnerabilities at the Hanford Site identified in the Spent Fuel Working Group Report.
RESPONSE
Descriptions of SNF stored at the Hanford Site and technologies for managing SNF are in Volume 1, section 1.1. Hanford-specific information on N-Reactor fuel and K-basin conditions is given in Volume 1, Appendix A, section 2.3. More general information on management options for degraded SNF and associated management technologies is discussed in Volume 1, Appendix J, sections J-3 and J-4. DOE agrees that it is necessary to deal with spent N-Reactor fuel, especially in the 105-KE basin. This situation was prominently identified in the spent nuclear fuel vulnerability assessment. These concerns also are reflected in a June 1994 Tri-Party Agreement to initiate encapsulation of uncontainerized fuel. This agreement between the State of Washington, EPA, and DOE has a target date of December 2002 for removal of SNF and sludge from the 105-K basins.
Under all alternatives except No Action, production reactor SNF would be removed from its present storage location. Volume 1, Appendix A, section 2.3 has been revised to provide additional information on the Hanford Site vulnerabilities described in the spent nuclear fuel vulnerability assessment of December 1993.

6.1.1 Working Group Report and Action Plans

06.01.01 (001) Working Group Report and Action Plans

COMMENT
Some commentors state that the safety and health vulnerabilities, some of which have been identified in the Spent Fuel Working Group Report have been ignored or are not acknowledged in the EIS, and ask whether the public had input to the report. Others ask if the No Action alternative would be used by DOE as an excuse to avoid its responsibilities for spent nuclear fuel vulnerabilities, and some commentors cited this as a reason for supporting the No Action alternative.
RESPONSE
The Spent Fuel Working Group Report on Inventory and Storage of the Department's Spent Nuclear Fuel and Other Reactor Irradiated Nuclear Material and Their Environmental, Safety and Health Vulnerabilities (spent nuclear fuel vulnerability assessment) and associated action plans to resolve identified vulnerabilities are acknowledged in Volume 1, section 1.1.2 and Appendix J-2, and Volume 2, section 2.2.5 for INEL. These sections note that Phase I, Phase II, and Phase III Action Plans have been released for public comment.
Additional site-specific information is presented in Volume 1, Appendices A through F. The environmental consequences of SNF management are presented for all alternatives in Volume 1, section 5.1, and mitigation measures are discussed in Volume 1, section 5.7. For all alternatives analyzed, DOE is committed to comply with applicable Federal, state, and local regulations and DOE Orders to ensure protection of the environment and the health and safety of the public and site employees. With the exception of the No Action alternative, all alternatives fully address the identified vulnerabilities.
Although the No Action alternative includes actions for safe and secure SNF management, as discussed in Volume 1, section 5.1.2, the minimal actions allowed by the No Action alternative may not completely resolve all the long-term vulnerabilities at all existing facilities identified in the SNF vulnerability assessment, particularly for degraded SNF. As a result of public comments, additional information on the vulnerability assessment and corrective action plans and their relationship to this EIS has been added to Volume 1, Appendices A, C, and F.

For additional discussion on the No Action alternative as it relates to SNF storage, see the response to
comment 06.05 (016).

6.2 Existing Facilities

06.02 (002) Existing Facilities

COMMENT
The commentor states that the use of a hypothetical spent nuclear fuel processing project in the EIS is
misleading because DOE started constructing the fuel processing facility at Idaho Chemical Processing
Plant in 1991.
RESPONSE
The hypothetical facility is described in Volume 2, Appendix C, SNF6. This facility was used to provide a
basis for estimating the impacts of constructing the facility at other sites considered in the EIS. The project
data sheet states that the existing Fluorinal Dissolution Process (Idaho Chemical Processing Plant Building
601) and Fuel Processing Restoration Project were considered as part of the structure of this hypothetical
project.

II COMMENT

Commentors question where spent nuclear fuel from foreign research reactors would be stored if brought
into the United States, and express concern about the ability of existing spent nuclear fuel storage areas at
Savannah River Site to safely store foreign research reactor spent nuclear fuel, given the current conditions
of spent nuclear fuel storage areas.
RESPONSE
Foreign research reactor (FRR) SNF is discussed in Volume 1, sections 1.1 and 1.2. DOE has decided to
accept up to 409 SNF elements, which will be stored temporarily at the Savannah River Site. DOE is
preparing a separate EIS entitled Proposed Nuclear Weapons Nonproliferation Policy Concerning
Foreign Research Reactor Spent Nuclear Fuel (Draft), which will determine whether to accept up to
25,000 additional elements and which port(s) of entry would be used. Volume 1 of this EIS addresses the
cumulative environmental impacts of managing all DOE FRR SNF through 2035, including the additional
25,000 FRR elements.
Consequently, the impacts associated with FRR SNF are evaluated under the management alternatives
analyzed in Volume 1, along with the DOE SNF generated in the United States. Problems at existing
storage facilities have been identified in the Spent Fuel Working Group Report on Inventory and Storage
of the Department's Spent Nuclear Fuel and Other Reactor Irradiated Nuclear Material and Their
Environmental, Safety and Health Vulnerabilities (spent nuclear fuel vulnerability assessment). This
report and associated action plans to resolved identified vulnerabilities are acknowledged in Volume 1,
section 1.1.2 and Appendix J-2. Additional site-specific information is presented in Volume 1, Appendices
A through F. As noted in the summary section of Volume 1, on a nationwide or site-specific basis, the
implementation of any of the alternatives would not significantly contribute to cumulative impacts. The
main storage location(s) Preferred Alternative language for all DOE SNF, including that from foreign
research reactors if the decision is to accept such fuel into this country, will be addressed in the ROD for
this EIS. For locations of foreign research reactors SNF management under DOE's preferred alternative,
see the response to comment 04.04 (008).

II COMMENT

The commentor notes that the EIS emphasizes the use of new facilities and believes that DOE should make more effective use of existing and currently uncompleted facilities.

RESPONSE

DOE did consider facility usage in its decision-making process for the identification of a preferred alternative for SNF management. The alternatives considered in this EIS include those based on using existing facilities and those based on using new facilities. To the extent practical, DOE favors using or modifying existing facilities when safety and environmental considerations would not be compromised and when such modifications and operations are relatively cost effective. Although not part of the EIS, a separate cost report on SNF management has been prepared and identifies the cost difference between using existing facilities and building new facilities.

II COMMENT

The commentor asks when more effective storage facilities will be available.

RESPONSE

Following the ROD for this EIS, if the alternative selected requires new storage facilities, DOE will begin upgrading existing facilities or building new facilities as soon as possible after appropriate National Environmental Policy Act (NEPA) reviews are performed and funding is available. A typical construction schedule for new nuclear facilities is 7 to 10 years. In the meantime, DOE will continue its program of safely managing and storing SNF and other radioactive materials at each of the sites considered in the EIS. DOE manages SNF in accordance with applicable Federal, state, and local regulations and DOE Orders in a manner that ensures protection of the environment and the health and safety of the public and site employees.

II COMMENT

The commentor states that DOE failed to analyze what it will do when ICPP-666 is full, which could be long before 2002.

RESPONSE

DOE analyzed various methods of expanding the storage capacity at INEL to accommodate projected receipts under each of the alternatives. The capacity of Building 666 at the Idaho Chemical Processing Plant (ICPP) can be increased by implementing the Increased Rack Capacity for ICPP-666 Project, described in Volume 2, Appendix C, SNF2. This project would extend the ability to receive fuel at ICPP-666 by several years. In addition, depending on the alternative selected, additional storage capacity at INEL could be provided by additional reracking at ICPP-666 [see Volume 2, Appendix C, SNF3, Additional Increased Rack Capacity (ICPP-666)] or by constructing Project SNF4, Dry Fuel Storage Facility: Fuel Receiving, Canning/Characterization, and Shipping (see Volume 2, Appendix C, SNF4).

II COMMENT

The commentor asks if there are sufficient glass containers available at the Savannah River Site to handle all of the wastes that might be shipped to that site under some of the alternatives considered in the EIS.

RESPONSE

DOE believes that the commentor is referring to the vitrified (glass) high-level waste logs being produced in the Savannah River Site Defense Waste Processing Facility. This facility does not require glass containers, rather it adds inert materials to the waste materials and melts them into a vitrified form in preparation for interim storage or disposition. This technology is not directly applicable to SNF, but to the liquid high-level waste produced from processing SNF. Detailed information on this activity is available in the Supplemental EIS - Defense Waste Processing Facility, Savannah River Site.

II COMMENT

The commentor notes that, while the EIS states that spent nuclear fuel is stored in water pools or above-grade dry storage, there is some spent nuclear fuel in below-grade dry storage at the Idaho Chemical Processing Plant at the Idaho National Engineering Laboratory.

RESPONSE

Some SNF is stored in below-grade dry storage at ICPP. Volume 1, section 5.8.3 has been changed to clearly include isolation from the environment in below-grade dry storage.

II COMMENT

The commentor identifies specific safety issues associated with the continued management, storage, and chemistry of spent nuclear fuel, principally N-Reactor fuel, currently stored at the Hanford Site, or suggests continued wet storage for N-Reactor fuel.

RESPONSE

DOE has fully evaluated the safety issues associated with SNF management at the Hanford Site and other DOE sites and reported the results of this evaluation in the Spent Fuel Working Group Report on Inventory and Storage of the Department's Spent Nuclear Fuel and Other Reactor Irradiated Nuclear Materials and Their Environmental, Safety and Health Vulnerabilities. This EIS evaluates the impacts associated with SNF management at Hanford, including normal emissions and accidental releases and has found that they would be small. The continued management, storage, and chemistry of SNF currently stored at Hanford will be evaluated in the Hanford-specific NEPA reviews. One such NEPA review is being prepared for the transfer of fuel from the K-basins.

Appendix A has been revised to reflect the proposed path forward for the K-basins.

II COMMENT

The commentor expresses an opinion that DOE is currently storing "other spent fuel high-level nuclear waste" at the Hanford Site in illegal "once-through" cooling pools that discharge water directly into already contaminated soils and flush contaminants into the Columbia River.

RESPONSE

Storing SNF in basins is not illegal; the SNF storage basins do not use "once-through" cooling. The spent nuclear fuel vulnerability assessment fully describes SNF at Hanford and identifies vulnerabilities associated with this storage. Eight of the Hanford production reactors, all of which have been retired, did use "once-through" cooling systems. Direct discharges to the Columbia River from the K-basins are in accordance with an existing, legal National Pollutant Discharge Elimination System permit. Appropriate measures are being taken to isolate from the rest of the basin a known area in the K-East basin where leaks to the ground have occurred.

II COMMENT

The commentor raises an issue about the numerical designation of a specific spent nuclear fuel storage facility.

RESPONSE

The numerical designation of the facility in question is of no intended significance.

II COMMENT

The commentor states that the spent fuel capacity, which could be provided by the reracking of the High
Flux Isotope Reactor at the Oak Ridge Reservation, is not addressed in the EIS.
RESPONSE
A discussion of the SNF management program at the Oak Ridge Reservation (ORR) is in Volume 1,
Appendix F, Part Three, section 2.3.

II COMMENT

Commentors suggest that the discussion of transuranic waste in Volume 1, Appendix F, Part Three does
not explain how or why the waste is generated. Commentors also question whether the Oak Ridge
Reservation has facilities capable of handling more waste than is obligated by present programs.
RESPONSE
Small quantities of radioactive wastes, including transuranic wastes, would usually be generated during
some fuel stabilization activities. The quantities identified in Volume 1, Appendix F, Part Three are
estimates of the maximum amount that could be generated from these activities. Actual quantities
generated are likely to be smaller. A discussion of transuranic wastes is presented in the EIS in
Volume 1, section 3.3.4. Additional information about waste generation can be found in the reference,
F-Team Final Report. This report is available in reading rooms and information locations listed in the
EIS.
SNF management generates low-level waste. For ORR, this is described in Volume 1, Appendix F, Part
Three, section 5.14.2, which states that low-level waste generated by SNF management activities under the
wet-storage option is estimated at 7,800 cubic meters, and the dry storage option would generate
significantly less. This section shows that ORR has a capacity for storing low-level liquid waste of about
98,300 cubic meters. The addition of 7,800 cubic meters would not significantly impact the capacity or
the decisions associated with low-level waste management at ORR.
SNF management also generates small amounts of transuranic waste, although transuranic waste is not
shipped to ORR, as commentors' remarks imply. This is discussed in Volume 1, Appendix F, Part Three,
section 5.14.2, which states that transuranic waste generated by SNF management activities would be
shipped directly to the Waste Isolation Pilot Plant, if it is available. If the Waste Isolation Pilot Plant is not
available, ORR transuranic management capacity would be evaluated, including options for additional
storage.

II COMMENT

Commentors state that reactor-irradiated nuclear materials are currently stored in poor conditions, cite
some examples of the vulnerabilities at Idaho National Engineering Laboratory from the Spent Fuel
Working Group Report and express the opinion that DOE may not manage additional spent nuclear fuel
any better in the future.
RESPONSE
Problems at existing SNF storage facilities have been identified in the Spent Fuel Working Group Report
on Inventory and Storage of the Department's Spent Nuclear Fuel and Other Reactor Irradiated Nuclear
Materials and their Environmental, Safety and Health Vulnerabilities. This DOE report, also called the
vulnerability assessment, and associated action plans to resolve identified vulnerabilities are acknowledged
in Volume 1, sections 1.1.2 and Appendix J-2, and Volume 2, section 2.2.5. Additional site-specific
information is in Volume 1, Appendices A through F. Environmental consequences of SNF management

are presented for all alternatives in Volume 1, section 5.1, and mitigation measures are discussed in
Volume 1, section 5.7. For all alternatives analyzed, DOE is committed to comply with applicable Federal, state, and local regulations and DOE Orders to ensure protection of the environment and the
health and safety of the public and site employees.
The Secretary of Energy has publicly affirmed that current DOE policy and practice emphasize safety and
environmental considerations above other program goals. DOE is committed to protecting the safety and
health of its workers, the public, and the environment. Furthermore, DOE intends to design, construct, and
operate facilities in such a way as to provide a level of safety equal to or better than that associated with
the operation of commercial facilities. DOE is working as quickly as possible to rectify and eliminate
adverse environmental impacts from past programs.
Immediate actions to correct any possible unsafe storage practices and to address SNF vulnerabilities
include transfer of SNF from the Underwater Fuel Storage Facility at ICPP-603 and other facilities to new,
more modern facilities at ICPP-666. These actions also involve inspection and canning of corroded fuels.
Volume 2, Table 2.2-1 lists specific corrective actions and schedules to address SNF vulnerabilities at
INEL.

II COMMENT

The commentor asserts that DOE has not demonstrated that safe storage methods are available; that DOE
kept secret the fact that spent nuclear fuel storage areas at ICPP-603 had been unsafely storing spent
nuclear fuel; that only after a whistleblower gave this information to the State was it admitted by DOE; and
that transfers of spent nuclear fuel from ICPP-603 at the Idaho National Engineering Laboratory may not
be as safe or as quick as projected.
RESPONSE
DOE is taking the actions necessary to ensure safe SNF storage, including the SNF currently being transferred from ICPP-603. In the absence of substantiation of the commentor's assertion, DOE has no
reason to question the safety or speed of the transfers from ICPP-603 or the requirements that ensure
safety. DOE has aggressively identified and disseminated information about the vulnerabilities and
deficiencies of its SNF management facilities.
See the response to comment 06.02 (015) for more information on vulnerabilities associated with SNF
storage.

II COMMENT

Commentors state that DOE should reconstruct all existing facilities at the Idaho National Engineering
Laboratory that do not comply with the current design standards, such as those for seismic and confinement requirements.
RESPONSE
DOE Order 5480.28, Natural Phenomena Hazards Mitigation, sets forth DOE policy for designing, constructing, and operating DOE facilities so that workers, the general public, and the environment are
protected from the impacts of natural phenomena hazards on DOE facilities. This Order specifically
requires facilities to be reevaluated when there is any change in design and construction standards.
Additionally, in accordance with DOE Order 5480.23, Nuclear Safety Analysis Reports, existing facilities
at INEL are required to undergo periodic safety analyses, including seismic and confinement design
reviews. When appropriate, design modifications are made. Besides design modifications, DOE uses
emergency preparedness plans and administrative controls to minimize potential hazards.
INEL reactors and confinement structures meet requirements as outlined in their safety analysis reports,
safety evaluation reviews, and safety basis documents. These reviews show that potential impacts

at the
site boundary are within regulatory limits. Engineered barriers are designed for operations that have a
potentially high impact or high probability of occurrence.
The seismic analyses, which have been completed for some facilities at INEL, show that most facilities are
adequate to meet current earthquake standards. For facilities that do not meet current standards, corrective
actions have been identified and implemented. As an example, DOE is taking action to transfer spent
nuclear fuels from potentially vulnerable facilities to modern facilities. Further, several of the projects
described in Volume 2, Appendix C are proposed by DOE to replace or upgrade existing facilities at INEL.

II COMMENT

The commentor states that long-term radiation exposure has compromised spent nuclear fuel confinement
barriers in Savannah River Site canyons by changing the concrete into a spongy substance. Additionally,
the commentor requests that DOE identify the canyon confinement boundaries and those conditions that
will ensure their safe maintenance.
RESPONSE
Periodic inspections of Savannah River Site canyons reveal some erosion of interior surfaces due to
long-term exposure to acids and bases. This erosion, or etching, has left the surface with a pitted or spongy
appearance. Tests have shown this to be only a surface phenomenon that does not compromise the
structural integrity of the 4- to 5-foot-thick concrete confinement barriers.

II COMMENT

Commentors state that DOE has failed to recognize in the EIS the problems with existing storage facilities,
such as compliance with environmental laws and safety requirements, and question whether the
vulnerabilities identified in the Spent Fuel Working Group Report will be addressed adequately. One
commentor notes that the U.S. District Court ordered immediate action to mitigate unsafe storage practices
at the Idaho National Engineering Laboratory.
RESPONSE
As noted by the commentors, DOE prepared a report on vulnerabilities of the current program and has
been directed by the Secretary of Energy to develop an integrated, long-term SNF program. The SNF
vulnerability assessment and associated action plans to resolve identified vulnerabilities are
acknowledged in Volume 1, section 1.1.2 and Appendix J, and Volume 2, section 2.2.5. Additional
site-specific information is in Volume 1, Appendices A through F. Environmental consequences of SNF
management for all alternatives are discussed in Volume 1, section 5.1, and mitigation measures are
discussed in Volume 1, section 5.7. For all alternatives analyzed, DOE is committed to meeting applicable
Federal, state, and local requirements and DOE Orders to ensure protection of the environment and the
health and safety of the public and site employees. However, under the No Action alternative, the
minimum actions deemed necessary for the continued safe management of SNF would be implemented.
Action has been taken at INEL to correct any possible unsafe storage practices, including transfer of SNF
from the Underwater Fuel Storage Facility and other facilities into more modern facilities, as well as
inspection and canning of corroded fuel. However, the U.S. District Court did not order that immediate
action be taken to mitigate unsafe storage practices at INEL.

II COMMENT

The commentor asks why Volume 1, Table 1-2 lists only 45 non-DOE facilities, while the text talks about

55 such facilities.
RESPONSE
There are a total of 57 non-DOE facilities representing domestic, licensed, small generators of SNF. The
45 facilities identified in Volume 1, Table 1-2, Appendix E, Table 2.1-1 are non-DOE facilities that may
contribute to projected SNF inventories during the next 40 years. The EIS has been revised to make this
distinction.

II COMMENT

The commentor requests that the word "proposed" be deleted from Volume 1, Appendix E, section 3.3 with regard to the Fort St. Vrain Independent Spent Fuel Storage Installation, because the facility is in
operation.
RESPONSE
The requested changes have been made.

II COMMENT

The commentor suggests that a reference to Las Vegas being 80 kilometers to the east of the Nevada Test
Site is incorrect and should be deleted.
RESPONSE
The sentence intended to infer that the Union Pacific railroad is near Las Vegas, not the Nevada Test Site.
The EIS has been clarified.

II COMMENT

The commentor identifies three issues related to the transfer of fuel between the K-basins at the Hanford
Site.
RESPONSE
Volume 1, Appendix A, section 3.1 and Attachment A discuss basin storage at the Hanford K-basins. The
potential for an inadvertent criticality related to this transfer has been considered (Smith, G. L., 1991,
Westinghouse Hanford Company, Richland, Washington, internal memorandum to J. P. Schmidt,
Westinghouse Hanford Company, Richland, Washington, Consequences Analyses of Hypothetical
K-Basin Accident Scenarios, 105 KE/KW Accident Liquid Discharge, August 14; and Monthey, M. J.,
1993, Engineering Study of the Transfer of Irradiated Fuels on the Hanford Site, WHC-SD-TP-ES-001,
Rev. 0, Westinghouse Hanford Company, Richland, Washington). The details provided in Volume 1,
Appendix A, section 3.1 and Attachment A are adequate for the evaluation and comparison of alternatives
in this programmatic EIS.

II COMMENT

The commentor requests more information concerning near-term plans for the Hanford Site K-basin fuels.
RESPONSE
The EIS evaluates five alternatives for SNF interim management over a 40-year period. Near-term actions
for any specific SNF management location will be the subject of site-specific NEPA evaluations.
Volume 1, Appendix A, section 2.3 has been revised to provide additional information on the current
status of K-basin fuel. Additional information concerning foreign processing of N-Reactor fuel was added
to Volume 1, section 3.2.5 and Appendix A.

II COMMENT

The commentor suggests that removal of all fuel from pool storage at ICPP-603 by December 31,

2000, at
the Idaho National Engineering Laboratory be added as a project in Volume 1, Appendix B, Table 3-2
(potential spent nuclear fuel projects for each alternative).
RESPONSE
On-site SNF movement is under-way. This activity is considered part of normal SNF management and is
not considered a potential activity.

II COMMENT

The commentor requests that the EIS provide information on the capacity of ICPP-666 following each of
the rerack projects and a comparison of the capacities to the amount of SNF expected at the Idaho National
Engineering Laboratory under the Ten-Year Plan alternative and the Maximum Treatment, Storage, and
Disposal alternative.
RESPONSE
The EIS has been modified to incorporate the requested information. Specific changes are found in
Volume 2, Appendix C, Projects SNF2, Increased Rack Capacity for ICPP-666, and SNF3, Additional
Increased Rack Capacity (ICPP-666). The comparison to the amount of SNF expected under the Ten-Year
Plan alternative and the Maximum Treatment, Storage, and Disposal alternative is provided in Volume 2,
section 3.1.1. The EIS has been changed to compare rack capacity and projected inventories under the
various alternatives.

II COMMENT

The commentor states that the short-term impacts of the transfer of spent nuclear fuel from ICPP-603 to
other facilities are not addressed in the EIS.
RESPONSE
Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of
all the alternatives considered in this EIS. The analyses show that the impacts of all alternatives would be
small.

II COMMENT

The commentor notes that there has been nuclear waste stored at the Idaho National Engineering
Laboratory for the past 40 years, which was not intended to be long-term storage, but expresses the
opinion that this does not justify adding additional waste, and that possibly all of it should be moved.
RESPONSE
Volume 2, Chapter 5 and Volume 1, Appendix D discuss the impacts of waste management on INEL and
SNF management, respectively. These impacts would be small under all the alternatives considered in the
EIS.

II COMMENT

The commentor states that the safety of existing technologies and facilities has been demonstrated for
decades.
RESPONSE
This comment is consistent with the EIS, which shows environmental impacts from all the alternatives
considered would be small.

II COMMENT

The commentor states that the EIS does not adequately address spent nuclear fuel facilities and requests
that specific information such as layout plans, design standards, proposed safety measures, and environmental monitoring plans be added. Additionally, the commentor states that use of existing facilities
is unacceptable because the 40-year project lifetime exceeds the design lifetime of the facilities.
RESPONSE
This is a programmatic EIS to aid in making programmatic decisions for SNF management. As such, it
evaluates the general technologies and types of facilities required under the different alternatives. The
specific information requested by the commentor will be developed as part of the implementation of the
programmatic decisions. The information would be available in later facility-specific NEPA reviews,
permit applications and design documents.
DOE recognizes the commentor's concern regarding facility design life. DOE is taking steps to evaluate
facility design lives and taking appropriate action to upgrade facilities to safely extend their lives or to
replace facilities that cannot be upgraded.

II COMMENT

The commentor believes that releases due to degrading cladding have been calculated, and should be used.
RESPONSE
Volume 1, Appendix A of the EIS has been modified to include an evaluation of the risks identified by the
commentor.

II COMMENT

The commentor questions the capacity of K-basins to combine 105-KE and 105-KW volumes.
RESPONSE
The footnote for Volume 1, Appendix A, Table 3-2 has been changed to clarify the capacities of the
K-basins with reracking.

II 6.3 Inventories (amount and characteristics)

II 06.03 (001) Inventories (amount and characteristics)

COMMENT
The commentor notes an apparent discrepancy between Volume 1, Table 1-1, which states that there is no
existing foreign research reactor spent nuclear fuel in the United States, and the Foreign Research Reactor
EIS Implementation Plan, which addresses 15,000 elements of foreign research reactor spent nuclear fuel.
RESPONSE
The Volume 1, Table 1-1 column headed "Existing" refers to SNF currently managed by DOE at DOE
facilities. Until received in the United States, FRR SNF is not managed by DOE and is not considered
part of the existing inventory. Although the Implementation Plan for the EIS on the Proposed Nuclear
Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel refers to
15,000 elements of FRR SNF that would be eligible for return to the United States for management by
DOE in the event FRR SNF acceptance policy is renewed, the revised Implementation Plan refers to
25,000 elements of FRR SNF eligible for return to the United States. These elements are not currently in
the United States or managed by DOE except for fuel shipments returned under the Environmental
Assessment of Urgent-Relief Acceptance of Foreign Research Reactor Spent Nuclear Fuel (Draft).

II 06.03 (002) Inventories (amount and characteristics)

COMMENT
The commentor states that DOE refers to approximately 290 metric tons of heavy metal instead of approximately 1,200 metric tons of spent nuclear fuel at the Idaho National Engineering Laboratory.
RESPONSE
The 290 metric tons of heavy metal (MTHM) and 1,200 metric tons (total assembly weight) of SNF that DOE currently manages at INEL refer to the same amount of material and are consistent. DOE uses the heavy metal content of SNF as a common measure of the amount of fuel matrix in a fuel element. This is done to provide a standard of comparison among fuel types. Fuel elements vary widely in the amount of structural material in relation to the amount of fuel matrix associated with them. The amount of structural materials removed prior to storage may depend on fuel type. MTHM provides a uniform basis for measuring of quantity, irrespective of the structure of the fuel element. DOE recognizes and manages the structural material, either as an integral part of the fuel element, or as a separate material, as appropriate.

II 06.03 (003) Inventories (amount and characteristics)

COMMENT
The commentor states that the Kema Suspension Reactor Fuel is not addressed in the EIS.
RESPONSE
At the time the Draft EIS was prepared, the Kema Suspension Reactor Fuel was not on the SNF Inventory.
Subsequently, the fuel was placed on the inventory. The EIS has been modified to address this fuel. A discussion of the SNF management program at ORR, where the Kema Suspension Reactor SNF is stored, can be found in Volume 1, Appendix F, Part Three, section 2.3.

II 06.03 (004) Inventories (amount and characteristics)

COMMENT
The commentor points out that Volume 1, Appendix B states that there is no DOE production reactor fuel stored in Idaho. Volume 1, Appendix B, Table 2-2 indicates production fuel is stored at the Idaho Chemical Processing Plant. The commentor suggests resolving this apparent discrepancy.
RESPONSE
The ICPP does not store production reactor fuel, but only stores other aluminum-clad fuel from the Savannah River Site, as referenced in Volume 1, Appendix B, Table 2-2.

II 06.03 (005) Inventories (amount and characteristics)

COMMENT
The commentor notes that in Volume 1, Table 1-8, the spent nuclear fuel inventory at the Oak Ridge Reservation is 3.02 metric tons of heavy metal and in section 1.1 the inventory is stated to be 2 metric tons of heavy metal and requests clarification.
RESPONSE
The correct SNF inventory at ORR is 3.02 MTHM. The inventory number in Volume 1, section 1.1 has been corrected to 3.02 MTHM.

II 06.03 (006) Inventories (amount and characteristics)

COMMENT
The commentor notes that Volume 1, Appendix B, Table 2-2 indicates that graphite fuels are stored underwater in ICPP-603 and believes that this is not correct.
RESPONSE
The commentor is correct. Graphite fuels, such as Fort St. Vrain SNF, are not stored underwater

in
ICPP-603; they are stored dry in the Irradiated Fuel Storage Facility, a separate portion of the ICPP-603
facility. This error has been corrected in the EIS.

II 06.03 (008) Inventories (amount and characteristics)

COMMENT
The commentor requests spent nuclear fuel inventory information, including fuel type, for all Idaho
National Engineering Laboratory storage facilities.
RESPONSE
The primary INEL SNF storage facilities, the types of fuel stored, and the stored configurations are
presented in Volume 1, Appendix B, Table 2-2, and the relative properties of SNF at those facilities in
metric tons of heavy metal is presented in Volume 1, Appendix B, Figure 2-2. Additional information is
available in Volume 1. This document, T. Wichmann letter, Subject Spent Nuclear Fuel Inventory Data,"
is available at any of the reading rooms and information locations listed in the Volume 1 Summary. See
also the response to comment 06.03 (013).

II 06.03 (009) Inventories (amount and characteristics)

COMMENT
The commentor identifies an apparent discrepancy between Idaho National Engineering Laboratory spent
nuclear fuel quantities in the EIS (288.68 metric tons of heavy metal) and those given in a presentation to
INEL Site-Specific Advisory Board (266.55 metric tons of heavy metal). The commentor requests
clarification, particularly with respect to the fuel rods identified in the 1989 Radioactive Waste
Management Information System as having been shipped to the Radioactive Waste Management Complex
for disposal.
RESPONSE
Both numbers are correct in the context in which they are given. The presentation to the Site-Specific
Advisory Board reflects the inventory as of approximately January 1994, and excludes 17.81 MTHM that
were in the Experimental Breeder Reactor-II (EBR-II) at the time. (Nuclear fuel is not considered to be
SNF until it has been discharged from a reactor after irradiation.) The number given in the EIS is a June
1994 estimate that reflects the projected inventory as of July 1995. This projected inventory includes the
EBR-II, fuel, as well as approximately 4 MTHM of other fuels. These other fuels consist of internal
receipts from other INEL reactors and the 19 Naval shipments allowed under the modified Court Order.
The fuel rods identified in the 1989 Radioactive Waste Management Information System are not included
in this inventory because no positive determination has been made that they exist. Regardless, disposition
of these materials will be resolved by the CERCLA action proposed for the Radioactive Waste
Management Complex.

II 06.03 (010) Inventories (amount and characteristics)

COMMENT
The commentor identifies specific inaccuracies in the EIS dealing with the number of Fort St. Vrain fuel
elements that are in storage and that would be transferred to DOE under the agreement, and recommends
that the inaccuracies be corrected.
RESPONSE
DOE revised the EIS in response to this comment.

II 06.03 (011) Inventories (amount and characteristics)

COMMENT
The commentor notes that the EIS incorrectly states that facilities on the Oak Ridge Reservation do not generate or manage spent nuclear fuel, high-level waste, or transuranic waste.
RESPONSE
ORR does generate and manage SNF and transuranic waste. A discussion of SNF generation and storage at ORR is presented in the EIS in Volume 1, Appendix F, Part Three, section 2.2. Volume 1 of the EIS has been modified to correct the statement about generation and storage of SNF and transuranic waste. A discussion of past generation activities at ORR is beyond the scope of this EIS.

II 06.03 (013) Inventories (amount and characteristics)

COMMENT
The commentor requests that considerably more detail be added to Volume 1, Table 1.1 to more fully characterize the DOE spent nuclear fuel inventory.
RESPONSE
The level of detail requested for SNF characterization is not available in all instances; furthermore, such detail is not essential for a programmatic NEPA document. However, some additional characteristics of the SNF are provided in each site appendix. For example, see Volume 1, Appendix F, Part Three, section 2.3.
Additional storage condition characterization can be found in the Spent Fuel Working Group Report on Inventory and Storage of the Department's Spent Nuclear Fuel and Other Reactor Irradiated Nuclear Materials and Their Environmental, Safety and Health Vulnerabilities, which is referenced in the EIS.

II 06.03 (014) Inventories (amount and characteristics)

COMMENT
The commentor raises questions about complete reliance on high-efficiency particulate air filters for preventing emissions of radioactive particulates.
RESPONSE
To minimize airborne releases, projects at INEL involving radioactive particulates would take place within a double-confinement structure. Conservative assumptions normally are used to estimate releases to the atmosphere, such as modeling only two filters in series when at least three are planned for actual operations. Also, although high-efficiency particulate air (HEPA) filters have established particulate removal efficiencies of 99.97 percent (down to diameters of 0.3 micrometers), a conservative efficiency factor of only 99 percent typically is used for operational safety and accident analyses. These filters are capable of removing particles as small as 0.001 micrometers from an airstream, but the manufacturer performs the rating calibration at 0.3 micrometers using a standard aerosol-generating device. The filters are tested annually and inspected daily to ensure that their efficiency is maintained.
Safety analyses for forthcoming INEL facility operations will not assume perfect HEPA filter operation.
Additional precautions will be taken to minimize airborne releases. The pressure differential across each filter is measured continuously to detect the formation of any holes or insecure filter installation. Filter temperature will be measured to promptly detect a filter fire.
Finally, radiation sensors will be installed downstream of the filters to continuously monitor atmospheric releases. Detection of radioactive particulates above the natural background levels would result in a prompt shutdown of facility operations.

II II COMMENT

The commentor emphasizes that spent nuclear fuel should be classified as waste.
RESPONSE
The status of SNF is addressed in Volume 1, section 7.2.5. Historically, SNF was reprocessed to recover
valuable products and fissionable materials. As a recycled material, SNF is not considered a solid waste
under RCRA. Since April 1992, however, DOE's focus on most of its SNF has changed to storage and
ultimate disposition. This has created some uncertainty with regard to the regulatory status of some DOE
SNF. DOE has initiated discussions with EPA, along with state regulators, about whether some SNF
should be designated as a waste, and about the potential applicability of RCRA to some of its SNF. Until
decisions are made about which additional requirements might apply, SNF is still distinct from solid waste
materials.

II COMMENT

The commentor states that the EIS does not include substantial quantities of spent nuclear fuel that DOE
manages and references the National Academy of Sciences recommendation to manage materials that could
be generated from DOE's weapons-grade fissile materials program to an "SNF Standard." The commentor
also states that the EIS does not include the recent purchase of 500 metric tons of highly enriched uranium
from dismantled nuclear weapons from the former USSR. The commentor is of the
opinion that a programmatic EIS not including these potential sources of spent nuclear fuel underestimates
the risks and other impacts and prevents meaningful evaluations of alternatives.
RESPONSE
The scope of the programmatic SNF portion of this EIS, described in Volume 1, section 1.3, is management
of DOE SNF in a safe and environmentally sound manner until decisions regarding its ultimate disposition
are made and implemented. For the purpose of this EIS (as described in the
Volume 1 Summary), SNF is essentially defined as fuel that has been withdrawn from a nuclear reactor
following irradiation, the constituent elements of which have not been separated. SNF inventory also
includes uranium/neptunium target material, blanket subassemblies, pieces of fuel, and debris. DOE's SNF
responsibilities, which are addressed in this EIS, include all current or reasonably foreseeable fuel
generated by DOE production, research, and development reactors; Naval reactors; university reactors
(both domestic and possibly foreign of U.S. origin); and some special-case commercial SNF, such as core
rubble from the Three Mile Island Unit 2 reactor.
Materials that would be generated from the DOE weapons-usable fissile materials program, including
uranium from dismantled nuclear weapons, are outside the scope of this EIS. These materials, otherwise
known as special nuclear materials, are being addressed in the Storage and Disposition of
Weapons-Usable Fissile Materials Programmatic Environmental Impact Statement, which is currently
being prepared. Special nuclear material is defined as (a) plutonium or uranium enriched in the isotope
233 or 235, and any other material that the Nuclear Regulatory Commission, pursuant to the provisions of
the Atomic Energy Act of 1954, Section 51, determines to be special nuclear material; or (b) any material
artificially enriched by any of the foregoing, but which does not include source material.
The above definitions are contained in Volume 1, Appendix H of the EIS. There are distinct differences
between the management of SNF and special nuclear materials, such as the level of safeguards and security
required.

II II COMMENT

The commentor expresses the belief that Navy spent nuclear fuel is probably more stable than other spent
nuclear fuel that DOE manages, such as graphite and aluminum spent nuclear fuel, and is thankful that
Naval fuel represents a substantial portion of DOE's spent nuclear fuel, because the radioactive

materials
present in spent nuclear fuel will outlast the cladding and the temporary storage facility.
RESPONSE
DOE agrees that because of the robust nature of Navy SNF, it is more stable and easier to store than the
graphite and aluminum fuels. However, as described in Volume 1, section 1.1.3 and Appendix J, all types
of Navy and DOE fuels will be stored safely until ultimate disposition is decided. For more information on
amounts and descriptions of SNF, refer to Volume 1, section 1.1.2 and site-specific Appendices A through
F.

II COMMENT

The commentor contends that the EIS is flawed because it does not indicate that transfer of partly corroded
spent fuel is a new venture by DOE, is untested, and may prove to be unsafe.
RESPONSE
DOE has substantial experience with handling and transferring SNF, including some corroded and
otherwise damaged fuel. Transfers have been accomplished safely, and appropriate measures would be
taken to similarly ensure the safety of future transfers, such as placing the corroded fuel in suitable
containers. DOE also has safety analysis systems in place to ensure that the risks of its activities are
understood and appropriately minimized. All transfers are conducted in accordance with the safety
analysis requirements.

II COMMENT

The commentor identifies safety concerns related to handling metal fuels.
RESPONSE
The potential impacts from storage of radioactive materials associated with SNF are discussed in
Volume 1, Chapter 5. The impacts of transporting SNF are also discussed in Volume 1, Chapter 5. The
environmental consequences of managing SNF, including metal fuels, are presented for all alternatives in
Volume 1, section 5.1, and mitigation measures are discussed in Volume 1, section 5.7. Additional details
on the management of metallic SNF are provided in the site-specific appendices to Volume 1.
DOE has a program to safely manage, transport, and store all types of SNF and other radioactive materials
at each of the sites considered in the EIS.

II 6.4 Technologies

II COMMENT

Commentors recommend several strategies for spent nuclear fuel management, as well as potential
technologies for the storing, stabilizing, and treating spent nuclear fuel.
RESPONSE
Some of the management strategies and technologies recommended by commentors are already being
actively pursued by DOE, while others are currently speculative and require additional research to
determine their effectiveness for managing SNF. Volume 1, section 1.1 presents a comprehensive
discussion of the options available for managing SNF, including storage, stabilization, transportation, and
preparation for final disposition. Specific technologies to accomplish these options are discussed in
Volume 1, Appendix J.

II COMMENT

The commentor questions what techniques are being developed to ensure safe, long-term storage of nuclear waste so it cannot be used again.
RESPONSE
Numerous technologies are already available for managing radioactive materials, and others are being actively developed for this purpose. Technological options for managing of SNF are described in Volume 1, section 1.1.3 and Appendix J of the EIS. Current management practices for all types of radioactive wastes are discussed in Volume 2, section 2.2.7, and technology development activities are described in Volume 2, section 3.1. Volume 2 is specific to INEL, but waste management technologies also generally apply to other DOE sites.

II COMMENT

The commentor proposes on-site disposition of spent nuclear fuel using technology involving Tela coils.
RESPONSE
DOE is unaware of any technology involving Tela coils that would be of practical benefit in managing SNF. Technologies currently available are summarized in Volume 1, Appendix J. Development of future technologies for managing SNF is beyond the scope of this EIS, and will be subjected to additional NEPA review prior to implementation.

II COMMENT

The commentor supports technology development if it results in recycling fuel and ensuring safer long-term storage.
RESPONSE
Numerous technologies are available for managing radioactive materials, and others are being actively developed for this purpose. Technological options for managing SNF are described in Volume 1, section 1.1.3 and Appendix J. Current management practices for all types of radioactive wastes are discussed in Volume 2, section 2.2.7, and technology development activities are described in Volume 2, section 3.1. Volume 2 is specific to INEL, but waste management technologies also generally apply to other DOE sites. DOE is committed to comply with all applicable Federal, state, and local regulations and DOE Orders. All radioactive materials will be managed to protect the environment and the health and safety of the public and site employees.

II COMMENT

The commentor expresses the opinion that the "solution" to nuclear waste is the ceramic glass encasement technology and that this technology should be at Hoquiam and Aberdeen, Washington.
RESPONSE
Technologies for the encapsulation of high-level waste in ceramic or glass logs are being considered for immobilization of such wastes at a number of locations, including INEL's proposed Waste Immobilization Facility. DOE does not currently consider it reasonable to locate such facilities at other DOE sites. Location of similar facilities at sites other than INEL is beyond the scope of this EIS. In addition, Volume 1, Appendix J of the EIS describes technologies that are considered reasonable for SNF management at the present time.

II COMMENT

The commentor states that the EIS merely describes potential technologies for processing spent nuclear fuel and does not analyze their potential consequences.
RESPONSE
Volume 1, section 1.1 discusses DOE's plan to develop an integrated, long-term SNF program. The discussion also points out a number of actions that prevent DOE from making all decisions regarding SNF management for the next 40 years at this time. These actions include characterization of certain types of SNF and lack of acceptance criteria for ultimate disposition.
There are more than 90 types of DOE SNF, and any spent fuel that is to be disposed of in a geologic repository must first be characterized under an approved quality assurance program. This characterization database would be used to evaluate each fuel type to determine the extent of conditioning, if any, necessary to meet repository waste acceptance criteria.
Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. The analyses show that the impacts of all alternatives would be small.

II COMMENT

Commentors recommend a particular technology that they believe would be beneficial for the management or disposition of spent nuclear fuel, specifically alternative fuel processing methods, such as the work being conducted at Argonne National Laboratories, and dry cask storage.
RESPONSE
A summary of the technologies for SNF management, including some of the work being done by Argonne National Laboratories, as well as dry cask storage options, are presented in Volume 1, Appendix J. Some of these technologies are already being actively pursued by DOE, while others are currently speculative and would require additional research to determine their effectiveness for managing SNF. To the extent that the technologies recommended are viable, they were considered, with many other recommendations, in the decision-making process for identification of the preferred alternative for SNF management.

II COMMENT

The commentor states that no interim decision concerning DOE's metal fuel at the Hanford Site should be made without considering the ultimate treatment measures necessary to prepare this fuel for final disposition, and that some of the treatment options mentioned in the EIS are as yet unproven technologies.
RESPONSE
General technologies and practices for managing SNF, including metal fuels, are discussed in Volume 1, section 1.1.3 and Appendix J. Therein, it is noted that technologies for final disposition of SNF cannot be specified in advance of repository acceptance requirements. These requirements are several years from completion and approval, but a combination of the technologies described in Volume 1, Appendix J may satisfy the eventual acceptance criteria, even though some of them are as yet unproven technologies.
Furthermore, consideration is given by the alternatives analyzed in the EIS to providing or maintaining processing flexibility that may prove necessary to meeting the acceptance requirements. Consequently, although the ultimate disposition of SNF is a high priority for DOE, the details of disposition activities have not been finalized and are beyond the scope of this EIS.

II COMMENT

The commentor states that the Draft EIS does not adequately address the impacts of the proposals for
research and development of technologies to convert liquid high-level waste to a solid form for ultimate
disposal and proposals for any necessary interim storage.
RESPONSE
The impacts of proposals regarding converting liquid high-level waste to a solid form for ultimate disposal
and proposals for interim storage are discussed under the Project Summary entitled "Waste Immobilization
Facility (Technology Selection for Treatment of Sodium-Bearing and Calcined Wastes)." See Volume 2,
Appendix C, HLW 2. DOE believes the analysis performed for this project is adequate.

II COMMENT

The commentor recommends the quarter sections of land adjacent to the Zoo-East area be identified as an
"example site" the first time this site is mentioned in Volume 1, Appendix A, section 5.1, instead of
waiting until section 5.1.2 to make this statement.
RESPONSE
The descriptions in Volume 1, Appendix A, sections 5.1 and 5.1.2 are very similar and in close proximity.
Thus, there is little chance for confusion about the wording, and no change is required.

II COMMENT

The commentor wants Volume 1, Appendix A, Table 5.7-5 to indicate best available control technology
used in design.
RESPONSE
Volume 1, Appendix A, section 2.2.2 has been changed to make it clear that DOE standards are followed
for all design/construction activities.

II II COMMENT

One commentor states that the EIS alternatives specify either wet or dry storage without explaining either
the environmental consequences or reasons for not splitting the two storage types into separate alternatives.
Commentors request information on the relative merits of wet storage versus dry storage of spent nuclear
fuel. Commentors state that the EIS does not distinguish the consequences of reprocessing versus dry and
wet storage. Information is also requested on spent nuclear fuel types, costs and benefits of processing,
short-term activities to fix storage problems, storage facility design, and work-force requirements.
RESPONSE
The EIS discusses wet and dry storage in Volume 1, section 1.1.3 and Appendix J. Within alternatives,
estimated impacts of the particular storage type were included as input in modeling used to determine each
alternative's impact; therefore, the consequences related to a particular storage type are included in this EIS
(see Volume 1, Appendix I, for example). The analyses demonstrate that the impacts of all alternatives
considered would be small for both wet and dry storage. Separation into additional alternatives based on
storage type is not likely to result in any significant difference in the consequences.
Volume 1, Chapters 1, 4, and 5 and Appendix J, and Volume 2, Chapters 2 and 4 and Appendix F provide
the requested information. Volume 1, section 3.3 summarizes the SNF cost evaluation.
Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of
all the alternatives considered in this EIS.

II COMMENT

The commentor advocates long-term storage or disposal of spent nuclear fuel in a manner that will allow
future generations to recover it and perhaps neutralize it, or otherwise treat it with technologies not
available today.
RESPONSE
The ultimate disposition of SNF is outside the scope of this EIS. This EIS addresses interim storage of
DOE SNF for a period of up to 40 years, until disposition decisions regarding DOE SNF are made.

II COMMENT

The commentor advocates considering monitored retrievable storage for spent nuclear fuel in lieu of
permanent disposal because of concern about criticality issues.
RESPONSE
Although the final disposition of fissile materials and SNF is outside the scope of this EIS, the Nuclear
Waste Policy Act (NWPA), as amended, determined that these materials will be disposed of in a geologic
repository. DOE is aware of the criticality safety concerns and is considering several potential paths to
address these concerns, including processing of some SNF to separate the fissile materials. To the extent
allowed by NWPA, DOE could use monitored retrievable storage for some SNF pending resolution of
long-term criticality safety issues.

II COMMENT

commentors suggest that highly enriched spent nuclear fuel and highly enriched spent nuclear materials be
stored in aboveground engineered storage facilities.
RESPONSE
As stated in Volume 1, Chapter 1: "In 1992, the Secretary of Energy directed the Department to develop an
integrated, long-term Spent Nuclear Fuel Management Program. This program is assessing DOE's SNF and
fuel storage facilities, integrating DOE's many existing SNF activities into one program, identifying the most
appropriate and responsible means of facility operation, and ensuring that issues associated with SNF are
resolved safely and cost-effectively." Solutions to the storage questions may require changes in
management strategies for these fuels, including such options as the construction of new facilities,
including those suggested by the commentor, and stabilization of certain fuels. The program has also
established a programmatic objective to define a management path and proceed toward ultimate disposition
of DOE SNF. Activities are currently in process to meet or address this objective. Volume 1, Appendix J
provides an overview of technologies for SNF management. Storage and disposition of special nuclear
materials is beyond the scope of this EIS, but is being analyzed in the Programmatic EIS for Storage and
Disposition of Weapons-Usable Fissile Materials (see Volume 1, section 1.2.3).

II II COMMENT

The commentor states that the EIS should address the failure of science to turn nuclear waste into a form
compatible with people and species on the planet.
RESPONSE
Technology development addressed within this EIS, such as the Waste Immobilization Facility (described
in Volume 2, Appendix C, section HLW2), is focused on meeting waste acceptance criteria for ultimate
disposition. These criteria will represent the best scientific consensus for a compatible form.

II 6.5 Ultimate Disposition

II COMMENT

Some commentors request information on DOE's long-range plans for reprocessing or processing. Some commentors oppose reprocessing of spent nuclear fuel for reasons such as poor past practices and nonproliferation issues, while others support it because they want the fissile material or other valuable resources to be recovered. Other commentors support processing for the purpose of stabilizing the fuels for long-term storage, but oppose reprocessing for purposes of separation and recovery of fissile materials.

RESPONSE

Processing and reprocessing are defined in Volume 1, Appendix H. Processing means "applying a chemical or physical process designed to alter the characteristics of the SNF matrix." Reprocessing is defined as "processing of reactor-irradiated nuclear material (primarily SNF) to recover fissile and fertile material, in order to recycle such materials primarily for defense programs." Thus, reprocessing is only one type of processing. As discussed in Volume 1, Chapter 1, DOE made a policy decision in 1992 that reprocessing of SNF for weapons production would be phased out. This policy is still in effect.

Volume 1, Chapter 1 also indicates that several forms of SNF processing may still be required to stabilize certain types of SNF for safe storage. In addition, there are many different types of fuel with widely differing characteristics that may require treatment for safe storage and final disposition. At this time, repository acceptance criteria for SNF and high-level waste for final disposition have not been defined; therefore, the types of fuels that may require some type of treatment or processing cannot be determined.

Many of the treatments being studied do not separate fissile materials, although some do. Because repository acceptance criteria are not defined, it is not currently possible to determine whether fissile material will have to be separated from some fuels (such as fuels containing highly enriched uranium) to meet disposal criteria. Processing and use of existing reprocessing facilities are evaluated in the EIS, because these facilities could be utilized for short-term management of some fuels that were not designed for extended underwater storage, but which are currently being stored underwater. Specific technologies for managing SNF are described in Volume 1, Appendix J.

II COMMENT

Commentors express opinions that DOE is emphasizing transportation of spent nuclear fuel without considering the goals and consequences of these actions, and that DOE advocates relocating spent nuclear fuel instead of addressing current storage problems and long-term spent nuclear fuel management, including ultimate disposition. Commentors further note that there is no justification for transporting spent nuclear fuel which is currently in storage before final disposition.

RESPONSE

Volume 1, section 1.1 of the EIS presents a comprehensive discussion of the options available for managing SNF, including storage, stabilization, transportation, and preparation for final disposition.

Specific technologies to accomplish these options are discussed in Volume 1, Appendix J. These options are incorporated to varying degrees in all of the alternatives, as described in Volume 1, Chapters 3 and 5.

Volume 1, Figures 3-1 and 3-6 graphically indicate the number of shipments expected for each alternative, and Figure 3-7 compares estimated shipments among all of the alternatives. The wide range in shipment numbers reflects DOE's desire to consider all realistic transportation possibilities and the

related stakeholder concerns. In addition, the alternatives have definite purposes for relocating SNF, such as storing similar fuel types at a single site. In this way, the alternatives attempt to balance transportation concerns with other important considerations, including nonproliferation, worker safety, and cost effectiveness.
Problems at existing storage facilities have been identified in the Spent Fuel Working Group Report on Inventory and Storage of the Department's Spent Nuclear Fuel and Other Reactor Irradiated Nuclear Materials and Their Environmental, Safety and Health Vulnerabilities. This report, commonly called the SNF vulnerability assessment, and associated action plans to resolve identified vulnerabilities are acknowledged in Volume 1, section 1.1.2 and Appendix J-2. Additional site-specific information is presented in Volume 1, Appendices A through F.
Environmental consequences of SNF management are presented for all alternatives in Volume 1, section 5.1, and mitigation measures are discussed in section 5.7. For all alternatives analyzed, DOE is committed to meeting applicable Federal, state, and local regulations and DOE Orders to ensure protection of the environment and the health and safety of the public and site employees. For all alternatives, the environmental consequences would be small.
Volume 1, section 1.1.3 and Appendix J of the EIS notes that technologies for final disposition of SNF cannot be specified in advance of repository waste acceptance criteria. These requirements are several years from completion and approval, but a combination of the technologies described in Volume 1, Appendix J may satisfy the eventual acceptance criteria. Furthermore, consideration is given by the alternatives analyzed in the EIS to providing or maintaining processing flexibility that may prove necessary to meeting the acceptance requirements.
Ultimate disposition of DOE SNF is a high priority. For planning purposes, DOE had determined that the SNF managed by DOE that is not otherwise dispositioned (e.g., chemically separated, with the high-level waste being converted into a vitrified glass for repository disposal) is authorized for disposal in the first repository. This authorization is subject to the physical and statutory limits of the first repository, DOE SNF meeting repository acceptance criteria, and payment of fees. As part of its SNF management program, DOE would (1) stabilize the SNF as needed to ensure safe interim storage, (2) characterize the existing SNF inventory to assess compliance with the first repository's acceptance criteria, and (3) determine what processing, if any, is required to meet the criteria. Decisions regarding the actual disposition of DOE SNF would follow appropriate review under NEPA and be subject to licensing by NRC. This path forward would be implemented so as to minimize impacts on the first repository schedule.

II COMMENT

Commentors express the opinion that disposal of spent nuclear fuel would result in the loss of valuable resources, including some of the fission products, in addition to the uranium and plutonium, and urge that DOE carefully guard and conserve these resources as well as pursue new and innovative ways of neutralizing the dangers of spent nuclear fuel and making use of its constituents. Additionally, some commentors state that concentrating such resources in a particular location could cause future generations to attempt to mine them.
RESPONSE
Under the Nuclear Waste Policy Act, as amended (Section 122), disposing of SNF in a geologic repository requires that the material be retrievable for recovery of economically valuable contents for a relatively short period of time. This requirement will be met by appropriate siting and design criteria for the repository. In accordance with EPA's environmental standard (40 CFR 191), institutional controls and provisions for safeguards and security will be implemented to address human intrusion considerations.

II COMMENT

The commentor states that DOE should stop trying to appease the public and create a repository in Nevada or stop generating nuclear energy.

RESPONSE

Volume 1, Chapter 2 states the purpose and need for DOE action. DOE must deal in an environmentally sound manner with the SNF remaining in inventory, and with the small amounts to be produced from other programs. Neither disposal nor generation is within the scope of this EIS.

II COMMENT

The commentor states that the EIS does not adequately integrate important information related to ultimate disposition (e.g. availability, cost, and acceptance criteria) with decisions on spent nuclear fuel treatment, storage, and stabilization.

RESPONSE

General solutions for managing SNF are discussed in Volume 1, section 1.1.3 and Appendix J. These sections note that technologies for final SNF disposition cannot be specified in advance of repository waste acceptance requirements. These requirements are several years from completion and approval, but a combination of the technologies described in Volume 1, Appendix J may satisfy the eventual acceptance criteria. Furthermore, consideration is given by the various alternatives in both Volumes 1 and 2 of the EIS to providing or maintaining processing flexibility that may prove necessary to meet the acceptance requirements. As stated in Volume 1, Chapter 2, activities related to the final disposition of SNF are beyond the scope of this EIS.

II COMMENT

The commentor states that, because there is obviously no risk associated with any alternatives, we should abandon construction of the Yucca Mountain repository and retain the site for use as a storage facility using existing technologies, because they have been demonstrated to be so safe.

RESPONSE

The EIS analyses indicate that the environmental impacts for all alternatives considered would be small.
Nevertheless, Congress has mandated in the Nuclear Waste Policy Act, as amended, that DOE develop geologic repository(s) for permanent disposal of SNF and high-level waste to ensure that this and future generations are protected from the hazards of this material. Accordingly, DOE is proceeding to characterize the Yucca Mountain site to determine if it is a suitable site for a repository. Until such a repository is available, DOE will continue to store its SNF in accordance with the results of this EIS and ROD.

II COMMENT

Commentors state that criteria necessary for safe temporary or permanent disposal of spent nuclear fuel should be identified and the alternatives compared with them. Commentors give a list of criteria that should be addressed, including transportation risks and accidents, human health risks after disposal, pollution prevention, and cost.

RESPONSE

The ultimate disposition of SNF, including risks after disposition is beyond the scope of this EIS. Volume 1, section 3.3 compares the impacts of the alternatives considered for managing SNF, including

most of the
topics identified by the commentor, including public health effects and risks from operations,
transportation, and accidents. Volume 1, Chapter 5 and supporting appendices and reference
materials
discuss the potential environmental consequences and identify possible measures to mitigate
impacts in the
interim until disposal in the repository. Congress has mandated in the Nuclear Waste Policy Act,
as
amended, that the need for a repository and all alternatives to geologic disposal for SNF and
high- level
waste need not be considered by DOE.
In following the requirements of NEPA, this EIS includes a complete description of the impacts
and risks
associated with all of the alternatives considered for SNF management. This EIS compares the
various
alternatives and, as discussed in Volume 1, section 3.3.6, DOE evaluated the cost of the proposed
alternatives. This evaluation is available to the public.
Refer to Volume 1, Chapter 1 for an overview of DOE Spent Nuclear Fuel Management activities.

II COMMENT

The commentor is of the opinion that spent nuclear fuel could be reprocessed at the Hanford Site;
therefore, all spent nuclear fuel should be sent there for reprocessing.
RESPONSE
DOE considered in this programmatic EIS the potential for processing SNF for stabilization
purposes. In
1992, DOE instituted a policy that phased out reprocessing for weapons production. No SNF is
being
reprocessed at the Hanford Site. Because existing facilities at Hanford are not capable of
reprocessing
many of the fuel types managed by DOE, and due to significant safety concerns of operating
existing
reprocessing facilities there, DOE has no plan to reprocess material at the Hanford Site with
existing
facilities.

II COMMENT

The commentor expresses an opinion that the EIS does not address the problems associated with the
safe
long-term storage of spent nuclear fuel.
RESPONSE
The potential impacts from SNF storage over a 40-year period are fully discussed in Volume 1,
Chapter 5
and the Volume 1 site-specific appendices. Specific environmental consequences of SNF management
are
presented for all alternatives analyzed in Volume 1, section 5.1, and mitigation measures are
described in
section 5.7. Further details are provided for each site in Volume 1, Appendices A
through F.
DOE has a program to safely manage and store SNF at each of the sites considered in the EIS, and
technological options for dealing with current and future inventories are discussed in Volume 1,
Appendix
J. In general, DOE has established a policy of designing, constructing, and operating its
facilities in ways
that meet applicable Federal, state, and local requirements and DOE Orders. All radioactive
materials are
managed in a manner that ensures protection of the environment, the health and safety of the
public, and
site employees.
Ultimate disposition of DOE SNF is a high priority. For planning purposes, DOE had determined
that the
SNF managed by DOE that is not otherwise dispositioned (e.g., chemically separated, with the
high-level
waste being converted into a vitrified glass for repository disposal) is authorized for disposal
in the first
repository. This authorization is subject to the physical and statutory limits of the first
repository, DOE
SNF meeting repository acceptance criteria, and payment of fees. As part of its SNF management
program,
DOE would (1) stabilize the SNF as needed to ensure safe interim storage, (2) characterize the
existing
SNF inventory to assess compliance with the first repository's acceptance criteria, and (3)
determine what
processing, if any, is required to meet the criteria. Decisions regarding the actual disposition

of DOE SNF
would follow appropriate review under NEPA and be subject to licensing by NRC. This path forward
would be implemented so as to minimize impacts on the first repository schedule.

II COMMENT

Commentors question the schedule for ultimate disposal of spent nuclear fuel with regard to perceived
delays in New Mexico and Nevada, and problems with the associated siting process. Some commentors
state that the proposed repositories are not the answer to spent nuclear fuel management.
RESPONSE
The repositories to which the commentors apparently refer are the Waste Isolation Pilot Plant (WIPP) in
New Mexico, for disposal of defense transuranic (TRU) wastes, and the Yucca Mountain site in Nevada,
for disposal of commercial SNF and high-level wastes. Although the ultimate disposition of DOE SNF and
TRU wastes, and the perceived delays in the availability of associated facilities are outside the scope of this
EIS, the assumptions used in evaluating alternatives for interim management of SNF and managing TRU
wastes at INEL are discussed in this EIS.
As described in Volume 2, section 2.2.7, DOE plans to transport all stored and newly generated TRU
waste that meets the waste acceptance criteria to WIPP. DOE's current schedule is to demonstrate
compliance with the disposal requirements as mandated in the WIPP Land Withdrawal Act of 1992
(Publication 102-579) and begin waste disposal operations in 1998. Alternatives for managing that waste
in the interim are described in Volume 2, section 3.1.3.
Ultimate disposition of DOE SNF is a high priority. For planning purposes, DOE had determined that the
SNF managed by DOE that is not otherwise dispositioned (e.g., chemically separated, with the high-level
waste being converted into a vitrified glass for repository disposal) is authorized for disposal in the first
repository. This authorization is subject to the physical and statutory limits of the first repository, DOE
SNF meeting repository acceptance criteria, and payment of fees. As part of its SNF management program,
DOE would (1) stabilize the SNF as needed to ensure safe interim storage, (2) characterize the existing
SNF inventory to assess compliance with the first repository's acceptance criteria, and (3) determine what
processing, if any, is required to meet the criteria. Decisions regarding the actual disposition of DOE SNF
would follow appropriate review under NEPA and be subject to licensing by NRC. This path forward
would be implemented so as to minimize impacts on the first repository schedule.
See also the response to comment 04.01 (005).

II COMMENT

The commentor believes that long-term management of spent nuclear fuel is extremely problematic and
probably beyond human capability.
RESPONSE
General technologies and practices for managing SNF are discussed in Volume 1, section 1.1.3 and
Appendix J. The EIS evaluates impacts of SNF management alternatives during the next 40 years until the
SNF can be disposed of in a geologic repository. For the long-term (beyond 40 years), repository siting
and design requirements contained in the Nuclear Regulatory Commission's regulations (10 CFR 60)
address issues that span geologic time to ensure safe isolation of this material. Therein it is noted that
technologies for final disposition of SNF cannot be specified in advance of repository acceptance
requirements. These requirements are several years from completion and approval.
See also the responses to comments 06.05 (007) and 06.05 (010) for additional information on final
disposition of SNF.

II COMMENT

The commentor states that based on the overall risks of the spent nuclear fuel management alternatives
evaluated in the EIS, DOE should adopt an alternative plan that facilitates acceptance of foreign research
reactor fuels because the risks of doing so would be small compared with the possible dangers to the
United States from the diversion of fuel abroad.
RESPONSE
The policy on acceptance of foreign research reactor fuels is not within the scope of this EIS. See the
response to comment 06.09 (013) for additional discussion.

II COMMENT

The commentor asks if there is any research going on to find a better plan for spent nuclear fuel disposal
than encapsulation or vitrification, which the commentor asserts have been shown in testing not to work.
RESPONSE
DOE, and others, are researching techniques to process SNF for disposal. Contrary to the commentor's
statement, encapsulation and vitrification are viable technologies for certain spent fuels, as discussed in
Volume 1, Appendix J. In all Volume 1 alternatives except No Action, research would continue, to
ensure that there will be a broad base of technologies available, including vitrification, encapsulation, and
multipurpose canisters, for treating SNF to meet the repository acceptance criteria.

II COMMENT

The commentor believes that solutions do not exist for the problems of spent nuclear fuel and other wastes,
including commercial sources and low-level waste. The commentor also states that an integrated approach
for dealing with these wastes is needed.
RESPONSE
General solutions for managing SNF are discussed in Volume 1, section 1.1, and technological options for
dealing with the current and future inventories are described in Volume 1, Appendix J. DOE has a
program for safely managing and storing SNF at each of the sites considered in the EIS. The DOE
Environmental Management Program prepared the DOE-Owned Spent Nuclear Fuel Strategic Plan for
the safe, reliable, and efficient management of DOE SNF and its preparation for disposal. This plan is
available to the public. All SNF and other wastes will be managed to ensure protection of the environment
and the health and safety of the public and site employees. While DOE complex-wide management of
wastes is outside the scope of this EIS, the Waste Management Programmatic EIS is currently being
prepared to address an integrated national approach for dealing with these wastes. The Draft Waste
Management Programmatic EIS will be issued for public comment later this year.

II COMMENT

Commentors express the opinion that DOE is avoiding making a clear choice of a path forward on overall
management of spent nuclear fuel, including a decision as to ultimate disposition, by alluding to the
preparation of future documents to clear up the missing pieces to the "ultimate solution." It was suggested
that the experience exists to make a decision now. Commentors express frustration that a national nuclear
policy has not been established, and long-range plans do not exist. Such policy and the "ultimate solution"
should include the total energy picture and its associated environmental impacts, nonproliferation, ultimate
disposition of spent nuclear fuel and nuclear waste, and other "nuclear age" problems. Permanent
solutions are favored over interim solutions. Commentors prefer the No Action alternative for spent
nuclear fuel management.
RESPONSE
This EIS addresses the interim programmatic management of DOE SNF nationwide, in addition to site-wide

environmental restoration and waste management activities at INEL. Yucca Mountain is being studied as the potential site for the first geologic repository. If the site is found suitable, acceptance of commercial SNF is expected to begin in 2010. Although acceptance of DOE high-level waste is planned for 2015, the date for acceptance of DOE SNF at the repository has not been finalized. The 40 years for SNF management is based on the maximum amount of time considered necessary to implement decisions on the ultimate disposition of DOE SNF. DOE, through this EIS, solicited public comment regarding both program needs. Regarding INEL activities, this period is indexed to both strategic planning periods and budget forecasts, as well as looking into the future as far as reasonably foreseeable regarding specific site-wide programs. The programmatic SNF 40-year period is based on the maximum amount of time considered necessary to make and implement decisions on the ultimate disposition of SNF by fuel type, to define the criteria necessary to implement such disposition, and to have the facilities (such as geologic repositories) available to implement ultimate disposition. The need for such interim management is discussed in Volume 1, Chapter 2, and the EIS Summary in greater detail. Accordingly, DOE is evaluating a reasonable range of alternatives for the safe and environmentally sound management of its SNF, as well as the No Action alternative required by law. The programmatic SNF portion of the EIS will be reviewed and updated as necessary.

With respect to establishing an overall national nuclear or energy policy, this EIS is devoted to setting the strategy for the period required to develop and implement decisions on ultimate disposition. Ultimate disposition of DOE SNF is a high priority. For planning purposes, DOE had determined that the SNF managed by DOE that is not otherwise dispositioned (e.g., chemically separated, with the high-level waste being converted into a vitrified glass for repository disposal) is authorized for disposal in the first repository. This authorization is subject to the physical and statutory limits of the first repository, DOE SNF meeting repository acceptance criteria, and payment of fees. As part of its SNF management program, DOE would (1) stabilize the SNF as needed to ensure safe interim storage, (2) characterize the existing SNF inventory to assess compliance with the first repository's acceptance criteria, and (3) determine what processing, if any, is required to meet the criteria. Decisions regarding the actual disposition of DOE SNF would follow appropriate review under NEPA and be subject to licensing by NRC. This path forward would be implemented so as to minimize impacts on the first repository schedule.

National policy with regard to the overall management of DOE's waste is being established through the preparation of the Waste Management Programmatic EIS, which is on a parallel course with this EIS.

The site-wide management of INEL waste streams is being coordinated with the programmatic document, which will set the overall strategic approach. Commercial SNF and waste management activities are not within the scope of either this SNF or the Waste Management Programmatic EIS currently being prepared. National energy policy is not within the scope of any of these documents.

See the response to comment 03.05 (007) regarding alternative sources of energy. See the response to comment 01.01.01.01 (008) regarding preference for the No Action alternative.

II COMMENT

A commentor states that the ultimate disposition of DOE spent nuclear fuel is generally similar to situations facing nuclear power utilities in the United States and other nuclear reactors worldwide. Thus, the commentor suggests that all spent nuclear fuel be turned over to the International Atomic Energy Agency for choice of one final repository. Other commentors suggest that an international approach be taken regarding spent nuclear fuel disposition or storage issues.

RESPONSE

The scope of the EIS for SNF is discussed in Volume 1, Chapters 1 and 2. These chapters explain that this EIS is restricted to considering temporary storage (through 2035) and related interim measures for managing only DOE SNF. Consequently, the location and nature of a geologic repository, especially for commercial SNF and SNF of international origin, are not included in this EIS because they are separate, independent actions and the subject of Presidential and Congressional policies. SNF and high-level waste disposition is subject to the Nuclear Waste Policy Act, as amended, which restricts current repository siting evaluations to the Yucca Mountain site in Nevada. No treaties or other arrangements are in place or envisioned as being feasible to combine SNF disposition efforts with those occurring outside the United States. Nevertheless, among the technologies described in Volume 1, Appendix J are several options that would prepare SNF for satisfying eventual repository acceptance requirements. These options are consistent with SNF disposition approaches being actively pursued or under consideration in other countries. Also, as outlined in Appendix J, DOE maintains an awareness of international SNF efforts to take advantage of any technological advancements elsewhere that would be helpful in the United States.

II COMMENT

The commentor suggests that funds should not be expended on moving toxic waste until final disposition is known.

RESPONSE

DOE is committed not only to developing a Federal geologic repository for permanent isolation of SNF and high-level waste, but to providing safe interim storage pending availability of permanent disposal facilities. DOE has a program for safely managing and storing radioactive materials at each of the sites considered in the EIS. Analyzing transportation of SNF and waste materials is necessary to varying degrees under the alternatives DOE is analyzing for providing safe interim storage and management of SNF and waste materials. The alternatives have definite purposes for relocating SNF and waste materials, such as storing and/or treating similar fuel and waste types within a single secure facility. Thus, the alternatives attempt to balance transportation concerns with other worthy considerations, including nonproliferation, worker and public health and safety, and cost effectiveness.

II COMMENT

The commentor suggests disposing of spent nuclear fuel at sea, enclosed in a submarine, in a geologic repository, or in outer space. Another commentor opposes disposing of spent nuclear fuel at sea.

RESPONSE

In the late 1970s the Federal Government evaluated a full range of reasonable alternatives for ultimate disposition of SNF and high-level waste. These alternatives included mixed geologic disposal, sub-seabed disposal, island disposal, and space disposal. As a result of this evaluation, documented in a generic EIS issued in 1979 by DOE, Congress mandated in the Nuclear Waste Policy Act in 1983 and it's 1987 amendment that geologic repositories be developed for permanent disposal of SNF and high-level waste, that research and development or alternative means and technologies for permanent disposal be continued and accelerated (section 222) and that, in particular, sub-seabed disposal be initiated and progress reported periodically to Congress (section 224). DOE is proceeding with these activities.

II COMMENT

The commentor states that to resolve the overall problem of storage of all types of spent nuclear fuel, DOE should press ahead to determine where the ultimate repository of spent nuclear fuel will be. Additionally, the commentor urges DOE to complete the EIS process, and adopt the Navy's preferred alternative for Naval fuel.

RESPONSE

Volume 1, section 3.1 shows the actions that would be undertaken by DOE to the extent required by the Navy's preferred alternative. Activities related to the management of SNF, including research and development activities would be included. DOE is continuing to aggressively pursue investigation of the candidate repository site at Yucca Mountain in Nevada for disposal of high-level waste and SNF. Ultimate disposition of DOE SNF is a high priority. For planning purposes, DOE had determined that the SNF managed by DOE that is not otherwise dispositioned (e.g., chemically separated, with the high-level waste being converted into a vitrified glass for repository disposal) is authorized for disposal in the first repository. This authorization is subject to the total quantity of DOE SNF and high-level waste not exceeding 10 percent (by weight) of the first repository capacity limit (70,000 metric tons of heavy metal), DOE SNF meeting repository acceptance criteria, and payment of fees. As part of its SNF management program, DOE would (1) stabilize the SNF as needed to ensure safe interim storage, (2) characterize the existing SNF inventory to assess compliance with the first repository's acceptance criteria, and (3) determine what processing, if any, is required to meet the criteria. Decisions regarding the actual disposition of DOE SNF would follow appropriate review under NEPA and be subject to licensing by NRC. This path forward would be implemented so as to minimize impacts on the first repository schedule.

II COMMENT

The commentor suggests that highly enriched spent nuclear fuel may never meet repository waste acceptance criteria due to criticality and safeguards concerns.

RESPONSE

DOE agrees that highly enriched SNF is an issue regarding repository disposal, in particular concerns about criticality. This issue is being addressed by DOE and the Nuclear Regulatory Commission. If the fuel must ultimately be processed to satisfy the repository acceptance criteria, Volume 1, section 1.1.3 and Appendix J of the EIS discuss the available technologies that may be needed for final disposition of SNF.

II COMMENT

The commentor states that until final repository siting and its requirements are assigned, it is unreasonable to consider other elements of the spent nuclear fuel program.

RESPONSE

As the EIS discusses, interim management of SNF must be addressed for up to the next 40 years pending ultimate disposition. The alternatives identified and evaluated in the EIS represent a full range of reasonable alternatives for managing SNF, including the No Action alternative. The environmental impacts of these alternatives, along with other decision factors such as cost, mission impacts, and public comment, will be considered in the decision-making process leading to the ROD.

II COMMENT

The commentor states that DOE's Environmental Management and Office of Civilian Radioactive Waste Management should have an integrated approach to discussion of spent nuclear fuel and a joint effort be undertaken to define the ultimate disposal in a geologic repository. The commentor also recommends that the EIS be revised to include a road map that would demonstrate a joint approach.

RESPONSE
Ultimate disposition of DOE SNF is a high priority. For planning purposes, DOE had determined that the SNF managed by DOE that is not otherwise dispositioned (e.g., chemically separated, with the high-level waste being converted into a vitrified glass for repository disposal) is authorized for disposal in the first repository. This authorization is subject to the physical and statutory limits of the first repository, DOE SNF meeting repository acceptance criteria, and payment of fees. As part of its SNF management program, DOE would (1) stabilize the SNF as needed to ensure safe interim storage, (2) characterize the existing SNF inventory to assess compliance with the first repository's acceptance criteria, and (3) determine what processing, if any, is required to meet the criteria. Decisions regarding the actual disposition of DOE SNF would follow appropriate review under NEPA and be subject to licensing by NRC. This path forward would be implemented so as to minimize impacts on the first repository schedule.
As part of this path forward strategy, the Office of Environmental Management and the Office of Civilian Radioactive Waste Management have established a working group to provide an integrated approach to identify and address technical, regulatory, and institutional issues regarding disposal of DOE SNF in the geologic repository. This working group has made significant progress in defining the issues and establishing work plans to address them.

II COMMENT

The commentor asks about the potential long-term radiation of DOE's waste, and supports the Ten-Year Plan alternative for disposal of spent nuclear fuel at the Idaho National Engineering Laboratory.
RESPONSE
Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. The analyses show that the impacts of all alternatives would be small. While there are differences in the impacts among the alternatives, these differences by themselves are not sufficient to distinguish between alternatives.
Volume 1, Chapter 5 summarizes the radiological impacts associated with all the alternatives considered in this EIS, including using existing facilities and constructing new ones. Volume 1, section 3.3 summarizes the cost of alternatives. The health and safety of workers and the public has been considered in the evaluation of these alternatives and the identification of a preferred alternative. The information provided on radiological impacts and facility costs is considered adequate for evaluation and comparison of the impacts of all the alternatives considered in this EIS.
Volume 1, section 3.1 describes the preferred alternative for SNF management. See the response to comment 04.04 (008). Volume 2, section 3.4 discusses DOE's preferred alternative for SNF management, environmental restoration, and waste management activities at INEL. See the response to comment 04.04 (011).

II COMMENT

The commentor states that the repository for spent nuclear fuel will not take DOE fuels and that decisions on managing Hanford Site materials should not be based on a mythical repository, but it should be assumed that it will remain at Hanford forever. The commentor also states that the Monitored Retrievable Storage negotiations with Indian Tribes have not been successful.
RESPONSE
Although activities associated with licensing and opening the repositories or Monitored Retrievable Storage are outside the scope of this EIS, general solutions for managing SNF in the interim are within the scope of this EIS and are discussed in Volume 1, section 1.1 and Appendix J of the EIS. More detailed descriptions are in the Volume 1 site-specific Appendices A through F. Therein it is noted that

technologies for final SNF disposition and a geologic repository site cannot be selected in advance of
repository performance requirements and waste acceptance criteria. These requirements and criteria are
several years from completion and approval. The repository must then be constructed and certified, which
could require decades to properly accomplish. Evaluating and opening disposal sites for radioactive
materials is time consuming. Yucca Mountain is being studied as the potential site for the first geologic
repository. If the site is found suitable, acceptance of commercial SNF is expected to begin in 2010.
Although acceptance of DOE high-level waste is planned for 2015, the date for acceptance of DOE SNF at
the repository has not been finalized. DOE acknowledges these challenges by allowing up to 40 years for a
suitable repository to become fully operational.

II COMMENT

The commentor has an opinion on the second geologic repository being used for disposition of higher
reactivity spent nuclear fuel.
RESPONSE
Under the Nuclear Waste Policy Act, as amended, DOE is not authorized to work on a second repository
and is required to report to the President and to Congress between January 2007 and January 2010 on the
need for a second repository. Concerns regarding disposal of higher-reactivity (enriched) SNF is being
addressed for the first repository between DOE Office of Environmental Management and Office of Civilian
Radioactive Waste Management.

II 6.6 Interim Management

II COMMENT

The commentor states that the EIS does not evaluate reasonable, safe alternatives for spent nuclear fuel
storage.
RESPONSE
DOE believes that the alternatives analyzed in this EIS are reasonable and in accordance with NEPA and
Council on Environmental Quality (CEQ) requirements to consider a range of reasonable alternatives.
Alternatives range from the No Action alternative, required by law, to an alternative that consolidates all
SNF at one of five sites. Alternatives dismissed are discussed in Volumes 1 and 2, section 3.2. DOE
believes the discussion of the basis for dismissing other possible alternatives is adequate.

II COMMENT

The commentor states that possible future contamination of the Idaho National Engineering Laboratory
(ICPP-666) storage pool from spent nuclear fuel transferred from ICPP-603 could produce an
environmental impact.
RESPONSE
Volume 2, Appendix C, SNF4-1 discusses the Canning Characterization Project that could be instituted
under various alternatives at ICPP to keep this situation from occurring.

II COMMENT

Commentors express opinions that the interim spent nuclear fuel management program sites will become "de facto" permanent storage sites for the nation and perhaps the world, and that the decision on a permanent storage site will be delayed. In addition, several commentors express the view that these sites may not be suitable for permanent disposal of spent nuclear fuel, but because they may be politically and economically weak, the storage sites will be forced on them.

RESPONSE

It is not DOE's intent to allow interim SNF storage sites to become de facto permanent storage sites. In fact, Congress mandated that the Federal Government pursue the development of a geologic repository for the permanent disposal of SNF and high-level waste and directed DOE to study the Yucca Mountain site in Nevada to determine if it is suitable for this purpose. DOE currently is pursuing those directions. DOE is committed to developing facilities for permanent isolation of SNF and high-level waste. Pending availability of such disposal sites, DOE must provide for safe and environmentally sound storage and management of these materials. The implementation of safe interim storage and transition to ultimate disposition represents the solution that DOE seeks to define with this EIS.

This EIS objectively evaluates 10 sites as reasonable alternatives for some level of interim SNF management activity, without regard to or consideration of political or economic factors. The analyses in the EIS include environmental considerations, socioeconomic impacts, potential risks to the public from operations and reasonably foreseeable accident conditions, and other environmental factors for a number of options for management of SNF. The EIS concludes that the alternative sites are environmentally suitable for management of SNF and that there would be no significant risk to the public or the environment due to interim management of SNF at any of the 10 sites being considered.

DOE considered public comment while preparing the EIS, upon which decisions will be based. Although the EIS provides DOE with an informed basis for decisionmaking from the perspective of environmental impacts and public comment, decisions will also consider such factors as national needs, schedules, and costs. In addition, implementation of decisions is subject to independent processes, including Congressional funding and environmental permitting. DOE intends, however, to develop and implement a national SNF management strategy that best serves the overall needs of the nation.

II COMMENT

The commentor asks DOE to quantify the relationship between the capacity of any new storage facilities planned and DOE's total inventory of spent nuclear fuel.

RESPONSE

The storage capacity required to safely manage the existing and projected SNF inventories depends on the programmatic approach selected by DOE. However, SNF storage facilities, complex-wide, would be sized to provide the storage capacity required under the programmatic approach selected, considering the availability of qualified existing storage under the specific alternative, at the specific site.

II COMMENT

The commentor notes that the transfer of fuels from Idaho Chemical Processing Plant Building 603 (ICPP-603) to the newer storage pool in ICPP-666 is not assessed in the EIS.

RESPONSE

As discussed in Volume 2, Chapter 3, phasing out wet storage in ICPP-603 and moving fuel to ICPP-666 is part of the No Action, Ten-Year Plan, and Maximum Treatment, Storage, and Disposal alternatives.

The impacts of moving this fuel have been assessed as a part of the overall impacts of these alternatives, as described in Volume 2, section 5.1.

II COMMENT

The commentor notes that the EIS does not discuss the Test Area North Dry Cask Storage Project in Appendix B, section 3.1.1.3, where it would be expected. The commentor states that rather than moving
the spent nuclear fuel to the Idaho Chemical Processing Plant, it could be stored on an expanded pad at
Test Area North with less transportation, less handling, and less attendant risk. In addition, the commentor
states alternatives to moving spent nuclear fuel from Test Area North to Idaho Chemical Processing Plant
should be evaluated in the EIS.
RESPONSE
The Test Area North Dry Cask Storage Project is proceeding as an interim action. Volume 2, Appendix F
discusses two projects related to the use of Test Area North: (1) dry fuel storage facility and fuel receiving,
canning, characterization and shipping; and (2) Test Area North pool fuel transfer.
Volume 2, section 2.2 states that as part of the vulnerability corrective action plan, DOE plans to move
SNF management activity from Test Area North to a more central location.

II COMMENT

The commentor states that relocation of spent nuclear fuel will only enlarge the area of the environment
that will later have to be restored, because both the old storage area from which the spent nuclear fuel will
be moved and the a new area to which it will be moved will both have to be restored eventually.
RESPONSE
Volume 1, section 1.3 discusses safe and environmentally sound management of SNF until decisions
regarding its ultimate disposition are made and implemented. Storage options at each generating site and
other storage options are analyzed. The analysis of the storage options of each alternative includes the
estimated type and size of a representative storage facility potentially needed at each site.
DOE believes that relocation of some SNF could be a beneficial management strategy. New facilities
would be designed both for safe storage and for more effective restoration when they are decommissioned.
Removing SNF from older facilities in the near term could serve to reduce future environmental and safety
problems and allow restoration activities to begin.

II COMMENT

The commentor notes that the EIS states: "DOE has scheduled the installation and operation of new fuel
characterization and canning equipment in the Irradiated Fuel Storage Facility before the Record of
Decision (1995)." According to Westinghouse Idaho Nuclear Company, the earliest such a facility will be
operating is early to mid-1996, and the location has not been determined.
RESPONSE
Installation of new fuel characterization and canning equipment in the Irradiated Fuel Storage Facility is
now tentatively scheduled for early 1996. The text of the EIS has been revised to reflect this change in
schedule.

II COMMENT

The commentor notes that DOE sites predominantly use wet storage, and only limited dry storage
experience exits within DOE. The commentor recommends that DOE consider commercial experience
wherever possible to increase regulator and public acceptance, and reduce schedule and cost.
RESPONSE
Current and projected DOE SNF inventories are considered in this EIS. Existing storage facilities are
identified, and their status, capacities, and accident histories are described. SNF container design,

integrity, corrosion and corrosion byproducts, storage technologies, and storage facility design life are
factored into the EIS analysis for each alternative. Storage options at the site of generation and other
storage options are analyzed. The analysis of the storage options for each alternative includes the
estimated type and size of representative storage facilities potentially needed at each site. Commercial
experience is considered whenever possible to increase public acceptance and reduce costs and schedules.

II 6.7 Cost

II COMMENT

Commentors want cost evaluation to be part of this EIS.
RESPONSE
Volume 1, section 3.3.6 summarizes the costs for implementing actions under each alternative. In addition,
a discussion of the cost evaluation has been prepared for use by decisionmakers For each alternative, the
cost evaluation considers capital costs for upgrades, operations, maintenance, decontamination,
decommissioning, and transportation. The evaluation also addresses additional systems costs, including
disposition.

II COMMENT

The commentor expresses the opinion that a spent nuclear fuel management facility (spent nuclear fuel
receipt, inspection, processing, and temporary storage) would be less costly if built near the spent nuclear
fuel final storage repository, and that the cost of such a facility would be lower if it were built now rather
than in the future.
RESPONSE
The commentor may be correct in asserting that economies of scale and transportation cost savings would
help lower the eventual cost of a centralized SNF management facility located near a permanent SNF waste
repository. It is also true that inflation causes cost escalations for facilities built in the future rather than
now. DOE considered these issues when it identified the preferred alternative.

II COMMENT

The commentor indicates that the costs of handling and storing DOE spent nuclear fuel are considerably
higher than equivalent costs for commercial fuel and asks whether characterization facilities are really
needed and whether overseas processing of spent nuclear fuel might be more cost effective.
RESPONSE
Volume 1, section 3.3.6 summarizes the cost for implementing actions under each alternative. For each
alternative, the cost evaluation considers capital costs for upgrades, operation, maintenance,
decontamination, decommissioning, and transportation. The evaluation also addresses additional system
costs, including disposition. This is adequate for evaluating and comparing the alternatives considered in
this programmatic EIS. Volume 1, section 3.1 discusses the requirements for characterization facilities
under all of the alternatives discussed in this EIS. Volume 1, section 3.2 has been changed to further
evaluate overseas processing of SNF.

II COMMENT

The commentor states that the cost of removing and mitigating environmental hazards associated with spent
nuclear fuel will increase in the future, so decisions need to be made soon.
RESPONSE
The commentor may be correct in assuming that costs may increase over time. Volume 1, section 3.3.6 of
the EIS summarizes the costs of managing SNF. The ROD for this EIS will be issued by June 1, 1995.

II COMMENT

The commentor asks that cost considerations be weighed against radiological impact and suggests that
using existing facilities could lower costs.
RESPONSE
Volume 1, Chapter 5 summarizes the radiological impacts associated with all the alternatives considered in
this EIS, including using existing facilities and constructing new ones. Volume 1, section 3.3.6 summarizes
the cost for implementing actions under each alternative. The health and safety of workers and the public
has been considered in the evaluation of these alternatives and the identification of a preferred alternative.
The information provided on radiological impacts and facility costs is considered adequate for evaluating
and comparing the impacts of all the alternatives considered in this EIS.

II COMMENT

Commentors state that the cost of the corrective action plans for the problems identified in the Spent Fuel
Working Group Report are underestimated and should have been included in this EIS.
RESPONSE
A summary of specific corrective actions to address the SNF vulnerabilities at INEL identified in the Spent
Fuel Working Group Report on Inventory and Storage of the Department's Spent Nuclear Fuel and
Other Reactor Irradiated Nuclear Materials and Their Environmental, Safety and Health
Vulnerabilities at INEL are listed in Volume 2, Table 2.2-1. Many of the corrective actions are currently
under way or have been completed. Those activities for which NEPA review was complete before the
ROD for this EIS was issued are analyzed under the No Action alternative. Although NEPA does not
require an analysis of the costs of implementing alternatives in an EIS, DOE prepared a cost evaluation for
all alternatives that includes the SNF facilities; the results are summarized in Volume 1, section 3.3.6.

II COMMENT

The commentor states that "moving nuclear waste around from 'interim site' to 'interim site' is dangerous
and extremely expensive." The commentor also states that funds would be put to better use "cleaning up
and organizing individual sites and developing a program to eliminate waste."
RESPONSE
DOE evaluated the transportation impacts of shipping SNF; the results are presented in Volume 1,
Appendix I, and Volume 2, section 5.11. DOE's cost evaluation of the proposed alternatives, summarized
in Volume 1, section 3.3.6, shows that transportation costs do not differ among alternatives.
Transportation of the entire DOE inventory between widely dispersed sites was analyzed to provide a
reasonable range of alternatives and associated impacts for decisionmakers to consider. These evaluations
show that the impacts of all the alternatives considered in this programmatic EIS would be small.

II COMMENT

Commentors state that the cost information presented is not truthful and that the costs will be

higher than
stated.
RESPONSE
Volume 1, section 3.3.6 summarizes the cost for implementing actions under each alternative. In addition,
a reference to the cost evaluation has been added to the EIS. DOE has provided a significant amount of
information in these documents to allow independent evaluation of the costs.

II COMMENT

The commentor believes that the Federal Government should have to pay a tariff to locations willing to
house spent fuel.
RESPONSE
The government provides support to communities that have Federal facilities and projects, through the
creation of jobs and other associated benefits. Payments to areas willing to accept SNF would be
determined by Congress or the President and are outside of the scope of this EIS.

II COMMENT

The commentor raises issues regarding the costs and scheduling of alternatives being considered within this
EIS.
RESPONSE
While cost and schedule issues will be considered in the decisions facilitated by this EIS, these are
administrative issues that are beyond the scope of this EIS. DOE prepared a cost report, which estimates
the cost of each of the alternatives under consideration in this EIS. This report is summarized in Volume 1,
section 3.3.6 and is available to the public.

II COMMENT

The commentor states that the "massive" cost estimates for ICPP-666 and dry spent nuclear fuel storage
"lead us to wonder whether the scale of these projects might be a Trojan horse" to allow shipments of
additional spent nuclear fuel and other nuclear materials.
RESPONSE
Decisions for storing other nuclear materials will be decided through other NEPA documents, including
those discussed in Volume 1, section 1.2. Facility costs are based on compliance with nuclear facility
requirements, as identified in DOE Order 6430.1A, General Design Criteria. The size and cost of these
facilities vary by alternative and the proposed amount of SNF to be stored.

II COMMENT

The commentor states that the cost of each proposed alternative and assumptions should be available to the
public and included in the EIS.
RESPONSE
While cost and scheduling issues will be considered in the decisions facilitated by this EIS, these are
administrative issues that lie beyond the scope of the EIS itself. DOE prepared a cost report, which
estimates the cost of each of the alternatives under considerations in this EIS. This report is summarized in
Volume 1, section 3.3.6 and is available to the public.

II 6.8 Commercial Spent Nuclear Fuel

II COMMENT

The commentor requests that DOE accept greater-than-Class-C sealed sources from commercial nuclear
power plants, and that the EIS be expanded to include acceptance of commercial power reactor fuel and
high-level waste.
RESPONSE
Volume 2, section 3.1 discusses acceptance of greater-than-Class C sealed sources for recycling or storage
for all of the alternatives analyzed except the Maximum Treatment, Storage, and Disposal alternative. As
discussed in Volume 1, Chapter 1 and the Implementation Plan, this EIS does not address commercial
power plant SNF or high-level waste, which are the subjects of the Nuclear Waste Policy Act, as amended.

II COMMENT

The commentor raises issues regarding commercial spent nuclear fuel, particularly with respect to
compensating communities for storage as is being discussed with tribal governments for commercial spent
nuclear fuel monitored retrievable storage.
RESPONSE
This EIS pertains to the programmatic management of DOE SNF. Issues regarding SNF under the
cognizance of commercial power utilities are beyond the scope of this EIS. Compensation to tribes as part
of negotiations between the former Nuclear Waste Negotiator and various entities to establish a commercial
SNF monitored retrievable storage facility is likewise beyond the scope of this EIS.

II COMMENT

The commentor states that the Project Summary for Fort St. Vrain spent fuel shipments needs some factual
corrections.
RESPONSE
The Fort St. Vrain Project Summary has been corrected.

II COMMENT

The commentor states that there may be a relationship between DOE spent nuclear fuel and commercial
spent nuclear fuel.
RESPONSE
Except for a very few special-case situations as described in Volume 1, section 1.1, this EIS does not
discuss SNF from commercial power nuclear reactors. Volume 1, Chapter 2 states that the decisions that
must be made to establish an effective program for DOE SNF are a) where to conduct SNF management
activities, b) the appropriate facilities, capabilities and technologies for SNF management, and c) the
research and development activities to support the SNF management program.
See also the response to comment 04.01 (001).

II COMMENT

The commentor notes that the EIS fails to fully consider that the remaining useful life of the facility where
the Fort Ft. Vrain fuel is to be stored will be exceeded by 2015, well before a repository is expected to be
ready for this fuel.
RESPONSE
In Volume 2, Chapter 3, DOE proposes a dry storage facility in each of the alternatives in which Fort St.
Vrain SNF would be received. Yucca Mountain is being studied as the potential site for the first

geologic
repository. If the site is found suitable, acceptance of commercial SNF is expected to begin in 2010.
Although acceptance of DOE high-level waste is planned for 2015, the date for acceptance of DOE SNF at
the repository has not been finalized. DOE considered that the design life of the facility may be exceeded
before a repository is ready. In the event that engineering studies cannot justify extending the use of the
existing facility, Fort St. Vrain SNF would be moved to the new dry storage facility.

II COMMENT

The commentor urges DOE to consider all contractual obligations to accept spent nuclear fuel equally, and
refers specifically to Fort St. Vrain fuel.
RESPONSE
DOE considered its contractual obligation to accept specific fuels in its identification of a preferred
alternative for programmatic SNF management.

II COMMENT

The commentor states that DOE is responsible for accepting spent nuclear fuel and high-level waste from
commercial power reactors, referring to commercial spent nuclear fuel that DOE is obligated to manage
after 1998.
RESPONSE
As described in Volume 1, Chapter 1, this EIS focuses on DOE SNF from production, research and
development reactors, Naval reactors, university and foreign research reactors, and miscellaneous
generators. Management of commercial SNF is beyond the scope of this EIS. DOE's responsibility with
respect to commercial SNF is within DOE's Office of Civilian Radioactive Waste Management.

II COMMENT

The commentor states that, with respect to the No Action alternative, Public Service Company of Colorado
would not be able to transport the remaining spent nuclear fuel from the Fort St. Vrain facility and release
the facility for unrestricted use.
RESPONSE
DOE recognizes that this would be a consequence of the No Action alternative. This has been considered
in DOE's identification of a preferred alternative for SNF management.

II 6.9 Miscellaneous

II COMMENT

The commentor states that the EIS should also include plans for dealing with errors or misjudgments and
provide compensation for damages for those locations that accept spent nuclear fuel.
RESPONSE
Potential accidents and the impacts associated with these accidents are generally discussed in Volume 1,
section 5.1, and treated in more detail in Volume 1, Appendices A through F. DOE includes contingencies
for dealing with errors in its planning for new facilities and activities, as well as procedures for existing
facilities and activities. An in-depth analysis of the impacts of operations and potential accidents is
provided for SNF management operations in Volume 1, Appendices A though F, and for INEL restoration

and remediation activities in Volume 2. The analyses include potential hazards and consequences and the possible methods, measures, or controls to be employed to minimize them. The analyses confirm that the risk from SNF management operations is small.

DOE will use the statutory indemnity contemplated by the Price-Anderson Act (42 USC 2210) to ensure ready and prompt availability of funds to compensate the public for injuries and damages resulting from a nuclear incident arising from activities conducted by indemnified DOE contractors. Compensation provided under the Act would cover nuclear incidents at INEL as well as nuclear incidents during the transport of material to and from the site.

Although the Price-Anderson Act is the primary means for compensating the public for damages from nuclear incidents, other remedies exist for claims not falling within the purview of the Act. For example, claims against DOE or its employees may be cognizable under the Federal Tort Claims Act, and claims for environmental damage may fall within CERCLA. These and other laws afford an injured party mechanisms for seeking recovery for damages related to operation of DOE facilities.

II COMMENT

The commentor states that spent nuclear fuel does not require treatment prior to disposal and that DOE is proposing treatment facilities only so that it can remain in the weapons production business.

RESPONSE

Volume 1, section 1.1.3 discusses technologies for managing SNF, and more details on fuel management technologies are provided in Volume 1, Appendix J. Therein it is acknowledged that some SNF may not require treatment prior to disposal in a repository. However, there are many different types of fuel with widely differing characteristics, which may make treatment necessary. At this time, repository waste acceptance criteria have not been defined; therefore, the fuels that might require treatment cannot be determined at present. Processing is being considered to provide the chemical or mechanical stability needed for ultimate disposition or to meet limits on size or amount of fissile material in individual containers.

Many of the SNF treatment technologies being studied do not require separation of uranium or plutonium, and thus would not be related to the weapons production business. As discussed in Volume 1, Chapter 1, DOE made a policy decision in 1992 that reprocessing of SNF for weapons production would be phased out. That policy is still in effect.

II COMMENT

The commentor expresses the opinion that if people are unhappy with the current situation with respect to spent nuclear fuel, they should participate in solving the problem, rather than complaining.

RESPONSE

Through the public scoping process and the public comment period on the Draft EIS, many people and organizations have participated in developing solutions to the SNF problem.

II COMMENT

The commentor states that the inset entitled "What is Spent Nuclear Fuel?" in the Summary is "rather inadequate and 'harmless' as far as the lay public is concerned."

RESPONSE

This insert was provided to clarify the definition of SNF for the public. It has been modified to better accomplish that.

II COMMENT

Commentors request that DOE address spent nuclear fuel management program priorities in the EIS in light of funding and other limitations. commentors also request that the public be allowed to comment on the priorities.
RESPONSE
The Spent Fuel Working Group Report on Inventory and Storage of the Department's Spent Nuclear Fuel and Other Reactor Irradiated Nuclear Materials and Their Environmental, Safety and Health Vulnerabilities and associated action plans address some of DOE's immediate SNF management priorities.
The Phase I Action Plan was issued in February 1994, the Phase II Action Plan in April 1994, and the Phase III Action Plan in October 1994. These action plans currently are being implemented.
Additionally, DOE has issued the DOE-Owned Spent Nuclear Fuel Strategic Plan. This plan addresses the issues associated with the management of SNF and its preparation for disposal. The plan is available in the reading rooms and information locations listed in the EIS.

II COMMENT

The commentor expresses the opinion that disposal of spent nuclear fuel in a repository will result in the concentration of valuable resources at a particular site and that it would attract generations in the future who would want to mine the resources.
RESPONSE
The ultimate disposition of SNF is not within the scope of this EIS. This EIS considers interim storage until the decisions on ultimate disposition are made. The process that will decide the manner of ultimate disposition will consider the resource value of SNF and its constituents, along with long-term management and security concerns, including human intrusion.

II COMMENT

The commentor, although supportive of options that would help solve the plutonium (and highly enriched uranium) waste problem, feels the Isaiah Project is not an appropriate option.
RESPONSE
The Isaiah Project has been proposed to consume excess plutonium as a mixed-oxide fuel in commercial power-production reactors (specifically within the Washington Public Power Supply System). Such projects concern the management of existing special nuclear material, not SNF (which is no longer being reprocessed to yield recycled fissile material). The Isaiah Project is not included in the alternatives considered in this EIS and its adoption or rejection would not change the need to select a method for SNF management. Future management of the current inventory of special nuclear material will be addressed in the forthcoming EIS for Storage and Disposition of Weapons-Usable Fissile Material. Preparation of that EIS was recently announced in Volume 59 of the Federal Register, pages 31985 through 31989.

II COMMENT

The commentor questions why the EIS frequently mentions reprocessing activities and that the Court noted that none of the fuel brought to the Idaho National Engineering Laboratory has been reprocessed.
RESPONSE
The commentor seems to be referring to Fort St. Vrain SNF. While there has been substantial reprocessing of some SNF at INEL over its 40-year history, no Fort St. Vrain SNF has been reprocessed. The existing processing facilities at INEL do not have the capability to reprocess graphite matrix fuels, such as the fuel used at Fort St. Vrain.

II COMMENT

The commentor asserts that the illustration of a fuel rod and a fuel assembly in the fact sheet What is Spent Nuclear Fuel is not representative of the vast majority of spent nuclear fuel managed by DOE and the Navy. Additionally, the commentor states that the other illustrations and descriptions of spent nuclear fuel in the EIS summaries do not include descriptions of many fuels, including Navy fuels, Shippingport, and TRIGA fuels.

RESPONSE

The illustrations and descriptions in the fact sheet and the EIS summaries were chosen by DOE because they help provide a basic understanding of the typical components of SNF. DOE is not attempting to provide detailed descriptions of the numerous SNF types in this EIS; rather, DOE is describing the basic considerations, such as cladding type and condition, that are germane to a general understanding of SNF management.

II COMMENT

The commentor asks DOE to responsibly manage the radioactive materials (including radioactive wastes and spent nuclear fuel) that DOE helped to create and wants to give DOE 2 years to make significant strides in decontamination, stabilizing, and managing radioactive wastes, or replace it.

RESPONSE

DOE acknowledges its responsibility for safe management of radioactive materials, including SNF and radioactive wastes. DOE is committed to comply with all applicable Federal and state laws and regulations, DOE Orders, and interagency agreements governing SNF and radioactive and hazardous wastes. According to Volume 2, Chapter 2, two programmatic EISs are being prepared at the national level regarding DOE's SNF Program (Volume 1) and DOE's Environmental Restoration and Waste Management Program (a separate forthcoming document). Additionally, DOE prepared a DOE-Owned Spent Nuclear Fuel Strategic Plan for the safe, reliable, and efficient management of DOE SNF and its preparation for disposal. This plan is available to the public.

For more discussion on DOE's legal authority and responsibility for managing radioactive materials, see the response to comment 03.04 (010).

II COMMENT

The commentor states that receipt of spent nuclear fuel from foreign research reactors may overload existing storage capacities at the Norfolk Naval Shipyard.

RESPONSE

Volume 1, section 4.6 of the EIS states that the Norfolk Naval Shipyard is being considered solely for temporary storage of Naval SNF, not SNF from DOE facilities or international sources. Hampton Roads, Virginia, is a potential port of entry being analyzed in the forthcoming EIS on the Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel (Draft).

II COMMENT

One commentor favors keeping foreign spent nuclear fuel out of the United States. Others question the need, cost, motive, legality, or reasons behind such returns, especially given the ability to manage FRR SNF overseas. Another commentor states that this EIS should address what happens before the fuel lands on our shores.

RESPONSE

Alternatives related to the acceptance of FRR SNF of United States origin, including shipping,

are being analyzed in a separate EIS. This EIS does analyze the impacts of domestic transportation and management of FRR SNF, which represents less than 1 percent of all SNF addressed in this EIS, should a decision to return such fuel be made. The environmental impact analyses are designed to produce a reasonable projection of the upper bound for potential environmental consequences. This requires the use of appropriately conservative assumptions and analytical approaches. In this context, "conservative" means that an assumption or analysis would tend to overpredict, rather than underpredict, any adverse impacts.
However, overly conservative analyses do not provide a useful basis for comparing alternatives. DOE will not make a final decision on the acceptance of FRR SNF until the EIS on a Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel and this EIS are completed.
Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. The analyses show that the impacts of all alternatives would be small.

II COMMENT

The commentor discusses the need for cleanup at other sites, including non-DOE sites, including consideration of alternatives that gauge environmental and accidental risks. It was noted that the EIS should address these problems. The commentor states that DOE has willfully and illegally failed to request the funding necessary to cease discharges and implement best available treatment and closed fuel cooling to meet the deadlines in the Hanford Cleanup Agreement. The commentor states this leads to a lack of confidence for the storage of any additional fuels at Hanford.
RESPONSE
Cleanup at sites other than INEL is not within the scope of this EIS, which addresses programmatic management of SNF at all sites (Volume 1), and limited to cleanup and waste management activities at INEL (Volume 2). However, the Secretary of Energy has publicly affirmed that current DOE policy and practice emphasizes safety and environmental considerations above other program goals. DOE is working closely with EPA to remediate and eliminate adverse environmental impacts from past programs. No significant potential environmental impacts have been identified for any of the alternatives identified in the EIS for SNF management.

II COMMENT

The commentor states that at a public meeting unrelated to the EIS, the commentor's suggestion to reuse nuclear waste was ignored. The commentor also states that the current administration has an anti-nuclear policy.
RESPONSE
This EIS pertains to the programmatic SNF management and SNF management, environmental restoration, and waste management at INEL. SNF reprocessing to recover uranium and plutonium for defense purposes is being phased out as a matter of national policy. As discussed in Volume 1, section 1.1.3, however, SNF processing is being evaluated for certain types of SNF for the purpose of stabilizing, rather than the recovering, fissile materials, which would not eliminate the need for storage and eventual disposal. The nuclear policy of this administration is outside the scope of this EIS.

II COMMENT

The commentor expresses opinions regarding storage or disposition of fissile material, including

such
material if foreign research reactor and spent nuclear fuel are reprocessed in Europe.
RESPONSE
These concerns relate to the management of special nuclear material, not DOE SNF, which is no longer
being reprocessed to recycle fissile material. Future management of the current inventory of special
nuclear material will be addressed in the forthcoming EIS for the Storage and Disposition of
Weapons-Usable Fissile Material, as described in Volume 1, section 1.2.3. See also the response to
comment 06.09 (013).

II COMMENT

The commentor expresses an opinion that areas of little or no population and/or areas not near sensitive
resources are best suited for the management of spent nuclear fuel. The commentor also urges DOE to
select the safest site for the management of spent nuclear fuel.
RESPONSE
Although SNF management activities can safely coincide with high population or otherwise sensitive areas,
risks can be higher in such areas. However, public perceptions of risk from DOE and/or Navy activities
tend to significantly exceed the risks as presented in this EIS.
The EIS evaluates 10 sites as reasonable alternative sites for some level of SNF management. The analysis
in the EIS includes a number of factors, including the risk to the public from operations and reasonably
foreseeable accident conditions. Discussions on public health and safety can be found in the Occupational
Public Health and Safety sections in Volume 1 (and its associated site-specific appendices A through F)
and in the Health and Safety section in Volume 2. The EIS concludes that the consequences to the public
and the environment due to SNF management activities at any of the 10 sites under consideration would be
small. DOE tries to avoid high-population areas to the extent practicable.

II COMMENT

The commentor raises questions regarding management of special nuclear materials and secondary wastes
generated by spent nuclear fuel processing, specifically the Actinide Recycle Demonstration Project, and
questions details of the Actinide Recycle Demonstration Project. The commentor requests
that the EIS provide additional information on projects or facilities that are in preliminary
planning stages.
RESPONSE
The Electrometallurgical Process Demonstration Project (formerly the Actinide Recycling Demonstration
Project) is discussed in Volume 2, section 3.1.1, where SNF activities under the various alternatives are
discussed. More detailed information is in Volume 2, Appendix C, section SNF8. The objectives of this
demonstration are to investigate electrochemical processing of SNF, to produce a waste form that is
potentially suitable for a geologic repository, and to quantify volumetric reduction factors. This
demonstration would produce high-level radioactive waste containing fission products, because SNF would
be processed. Mixed wastes also would emerge because of electrorefiner operation involving cadmium,
plus sodium contaminants in the SNF to be used for this demonstration.
Management of special nuclear materials such as highly enriched uranium is being covered by a separate
EIS and is outside the scope of this EIS. Specific information is not available for facilities that have not
been constructed or activities that have not been conducted to acquire a valid baseline. Generic projects
have been included in the EIS as placeholders to present readers with as comprehensive a range of
forthcoming projects as is currently possible. These projects or facilities may require additional NEPA
documentation. At such time, accurate information on secondary waste generation will be provided for an

assessment of impacts on waste management.

II COMMENT

The commentor states that the period of interim storage addressed in this EIS should not fix the date of
repository availability, and that consideration should be given to recycling rather than disposal.
RESPONSE
Decisions as to the ultimate disposition of SNF have not been made, and are outside the scope of this EIS.
Ultimate disposition of DOE SNF is a high priority. For planning purposes, DOE had determined that the
SNF managed by DOE that is not otherwise dispositioned (e.g., chemically separated, with the high-level
waste being converted into a vitrified glass for repository disposal) is authorized for disposal in the first
repository. This authorization is subject to the physical and statutory limits of the first repository, DOE
SNF meeting repository acceptance criteria, and payment of fees. As part of its SNF management program,
DOE would (1) stabilize the SNF as needed to ensure safe interim storage, (2) characterize the existing
SNF inventory to assess compliance with the first repository's acceptance criteria, and (3) determine what
processing, if any, is required to meet the criteria. Decisions regarding the actual disposition of DOE SNF
would follow appropriate review under NEPA and be subject to
licensing by NRC. This path forward would be implemented so as to minimize impacts on the first repository schedule.
The 40-year period of interim management proposed in this EIS is designed to bound the date for decisions
on ultimate disposition to be made and necessary facilities, such as a potential repository, available for
implementation. Yucca Mountain is being studied as a suitable geologic repository. If the site is found
suitable, acceptance of commercial SNF is expected to begin in 2010. Although acceptance of DOE
high-level waste is planned for 2015, the date for acceptance of DOE SNF at the repository has not been
finalized.
The current policy of DOE precludes the reprocessing of SNF to recover fissile materials. Although such
policies are subject to periodic review, a need for the recovery or recycling of such materials is not
currently foreseen.

II COMMENT

The commentor believes that nonfinancial costs of spent nuclear fuel management, to the environment,
resources, and people, should be included in DOE's decision.
RESPONSE
DOE interprets the nonfinancial costs identified by the commentor to mean impacts to the environment.
Volumes 1 and 2, Chapter 5 summarize the environmental impacts for all of the alternatives considered in
this EIS. The impacts for all of the alternatives would be small.

II COMMENT

Commentors express opinions about the history of spent nuclear fuel mismanagement.
RESPONSE
The condition of SNF management facilities is the result of a number of factors. Regardless of those
factors, it was recognized that the condition of these facilities cast doubt on the ability to continue to safely
manage SNF. Therefore, DOE prepared a report commissioned by the Secretary of Energy on
vulnerabilities of the current program and has been directed by the Secretary to develop an integrated,
long-term SNF program. The SNF vulnerability assessment and associated action plans to resolve
identified vulnerabilities are identified in the EIS in Volume 1, section 1.1.2 and Appendix J, and Volume

2, section 2.5.2. Additional site-specific information is in Volume 1, Appendices A through F. Environmental consequences of SNF management for all alternatives are discussed in Volume 1, section 5.1, and mitigation measures are discussed in section 5.7. For all alternatives analyzed, the impacts would be small.

II COMMENT

The commentor indicates that information on the Fort St. Vrain site was incorrect and provided appropriate data.
RESPONSE
These data have been incorporated into Volume 1, section 4.7.3, and Volume 1, Appendix E, section 3.3.2.

II COMMENT

The commentor suggests minor text revisions to the Fort St. Vrain project summary in Volume 2.
RESPONSE
The EIS has been changed to reflect the commentor's recommendation for text changes to the Volume 2 summary.

II COMMENT

The commentor notes that Volume 1, Appendix A, section 2.1.4 fails to mention the Bechtel Hanford Company and states the opinion that privatization of certain activities may bring additional contractors into key roles.
RESPONSE
The following sentence was added to the end of Volume 1, Appendix A, section 2.1.4: "In 1994, the Bechtel Hanford Company and a team of subcontractors became DOE's environmental restoration contractor at the Hanford Site." Future contractor arrangements at the Hanford Site are outside the scope of this EIS.

II COMMENT

The commentor states that the EIS does not solve the current Idaho National Engineering Laboratory spent nuclear fuel problems, let alone the ones that will be there in 40 years.
RESPONSE
Volume 1, Chapter 1 discusses DOE's plan to develop an integrated, long-term SNF program. The discussion also points out a number of reasons why DOE cannot make all decisions regarding SNF management for the next 40 years at this time. These reasons include (a) lack of characterization data on the interim storage behavior of certain types of SNF and (b) lack of acceptance criteria for ultimate disposition. Volume 1, Appendix J identifies a number of activities currently under way to define a management path and proceed toward ultimate disposition. This EIS is one step in the plan to address ultimate disposition.
This EIS is not a decision-making document; rather, it is a tool designed to aid the decision-making process by evaluating the environmental consequences of proposed actions and their alternatives. This information is used by decisionmakers in conjunction with other information, such as costs and budgets, to determine a course of action.

II COMMENT

Commentors request information on the relative merits of wet storage versus dry storage of spent nuclear fuel. Commentors state that the EIS does not distinguish the consequences of reprocessing versus dry and wet storage. Information is also requested on spent nuclear fuel types, costs and benefits of processing, short-term activities to fix storage problems, storage facility design, and work-force requirements. Other commentors question why the two storage types are not split into two alternatives.
RESPONSE
Volume 1, Chapters 1, 4, and 5 and Appendix J, and Volume 2, Chapters 2 and 4 and Appendix F provide the requested information. Volume 1, section 3.3 summarizes the Spent Fuel Management Cost Evaluation Plan. Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. The analyses show that the impacts of all alternatives would be small.

II COMMENT

The commentor expresses a general opinion that engineering has its limitations and fails to take into account consequences and that the consequences of that engineering bring about and put a tremendous burden on the whole society to solve those problems.
RESPONSE
The commentor's opinion regarding engineering and its perceived limitations is noted.

II COMMENT

The commentor wants to keep spent nuclear fuel where it is until "we come up with something safe."
RESPONSE
Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. The analyses show that the impacts of all alternatives would be small. While there are differences in the impacts among the alternatives, these differences by themselves are not sufficient to distinguish between alternatives. Volume 1, section 3.1 describes the preferred alternative for programmatic SNF management.
See also the response to comment 04.04 (008).

II COMMENT

The commentor objects to reactor irradiated nuclear material continuing to be generated and causing serious health effects.
RESPONSE
Eliminating all current and future generation of DOE SNF would not significantly diminish the handling, storage, and final disposition challenges DOE faces. Inventories of DOE SNF are addressed in Volume 1, section 1.1. Approximately 86 percent of the current inventory originated in DOE weapons-production reactors that have ceased to operate. Another 8 percent was generated in DOE experimental reactors, most of which have been shut down. According to Volume 1, Table 1-1, the additional SNF to be generated over the next 40 years (until 2035) will amount to only a 3-percent increase in the current inventory.
Eliminating sources of DOE SNF altogether would require halting nuclear Navy operations and nuclear research at universities, which is not within the control of DOE and is outside the scope of this EIS.

II COMMENT

The commentor asks how DOE will correct storage problems and what new designs have been tested for
handling and storing spent nuclear fuel. Furthermore, the commentor is of the opinion that the EIS does
not address the broad issues of permanent storage and availability of mature technology.
RESPONSE
The potential impacts of storing radioactive materials associated with SNF are discussed in Volume 1,
Chapter 5. Environmental consequences of SNF management are presented for all alternatives in Volume
1, section 5.1, and mitigation measures are discussed in section 5.7.
Problems at existing storage facilities have been identified in Spent Fuel Working Group Report on
Inventory and Storage of the Department's Spent Nuclear Fuel and Other Reactor Irradiated Nuclear
Materials and Their Environmental, Safety and Health Vulnerabilities. This report, commonly called
the SNF vulnerability assessment, and associated action plans to resolve identified vulnerabilities are
acknowledged in Volume 1, section 1.1.2 and Appendix J-2. Additional site-specific information is
presented in Volume 1, Appendices A through F.
At INEL, there is an ongoing dry storage demonstration project to gain information and experience with
using commercial dry storage casks for DOE fuels. Dry storage is addressed in Volume 1, section 1.1.3 and
Appendix J.
Volumes 1 and 2, and Appendix D discuss the impacts of waste management on INEL and SNF
management. These impacts would be small under all alternatives considered in the EIS. DOE determined
that the transfer of SNF at INEL from potentially unsafe storage to a newer storage facility is an effective
interim action that can be conducted prior to completion of this EIS. Depending on the alternative selected
in the ROD for this EIS, various projects are proposed for interim storage and treatment of SNF pending a
later decision on ultimate disposition. DOE will implement the reflected projects, described in Volume 2,
Appendix C, to address the deficiencies with current storage. The proposed projects include reracking of
existing underwater storage facilities to more effectively use their capacities, constructing modular dry
storage facilities for longer-term storage, and processing facilities to treat and stabilize some SNF for
interim storage. Commercial experience is considered whenever possible to increase public acceptance and
reduce costs and schedules. The alternatives analyzed attempt to balance considerations such as using
existing facilities, minimizing transportation, consolidating similar fuels, and others.

II COMMENT

The commentor states that DOE fails to explain how spent nuclear fuel should be properly managed and
disposed of.
RESPONSE
Volume 1, section 3.1 describes the preferred alternative for programmatic SNF management. Volume 1,
Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the
alternatives considered in this EIS. The analyses show that the impacts of all alternatives
would be small.
Volume 1, Appendix B, Chapter 2, specifically discusses INEL's program objectives.
See also the response to comment 04.04 (008).

II COMMENT

The commentor states that the EIS fails to take an integrated approach to addressing the multitude of issues
involved in handling and storing spent nuclear fuel.
RESPONSE
Volume 1, Chapter 1 discusses DOE's plan to develop an integrated, long-term SNF program. Volume 1,
Appendix J identifies a number of activities currently under way to define a management path to proceed
toward ultimate disposition. DOE's Plan of Action to Resolve Spent Nuclear Fuel Vulnerabilities
identified in the Spent Fuel Working Group Report on Inventory and Storage of the Department's

Spent
Nuclear Fuel and Other Reactor Irradiated Nuclear Materials and Their Environmental, Safety and Health Vulnerabilities identified this EIS as a vehicle to address the lack of a path forward for the ultimate
disposition of SNF. In addition, this EIS focuses on a programmatic approach to SNF management. Site-specific SNF management issues will be addressed by additional NEPA reviews tiered from this EIS.

II COMMENT

The commentor requests that more details and options be provided in the EIS concerning costs of alternatives, storage facility design, types of processing, improved long-term storage safety, and final spent
nuclear fuel disposition. The commentor states that many of these same concerns were raised during the
scoping meetings and have not been adequately addressed, including minimization of spent nuclear fuel
transportation.
RESPONSE
The EIS has been augmented to include the estimated range of costs for each of the SNF programmatic
alternatives. The technological options for interim storage, transportation, stabilization, and processing
are discussed in Volume 1, Appendix J. Evaluation of specific designs and technology options are not
required at the programmatic NEPA level and will be analyzed in follow-on site-specific NEPA documents. DOE received approximately 1,900 comments during on the EIS scoping process. DOE attempted to respond to all the public concerns; however, the ultimate disposition of DOE SNF cannot be
specifically addressed in this EIS due to unknown future requirements for geologic repository acceptance
criteria, which in turn affect stabilization and treatment strategies. The range of technological options that
DOE believes may be required for stabilization, treatment, or preparation for ultimate disposal are
discussed in Volume 1, Appendix J. Minimization of transportation is a DOE goal consistent with safe and
efficient operations.

II COMMENT

The commentor states that the EIS should evaluate the best storage form, processing requirements and
other technical considerations required for long-term management of spent nuclear fuel.
RESPONSE
Volume 1 of the EIS is programmatic in nature and addresses the major management decisions while laying
the groundwork for the more specific technical decisions that the commentor believes should be evaluated,
such as the best storage form and processing requirements for specific fuel types. However, the EIS
discusses the current SNF management problem and the need for action in Volume 1, Chapter 1. Technical considerations and solutions to the management problems are addressed in Volume 1, Appendix
J, including storage options, containers, and processing options.

II COMMENT

The commentor states that storage is not the optimum strategy for spent nuclear fuel management. The
commentor also states that plutonium is too readily available for making weapons and that it must be
degraded as rapidly as possible while maintaining the safety of the environment and the ability to recover
other valuable constituents.
RESPONSE
This EIS does not consider ultimate disposition of SNF; rather it considers interim storage until the
decisions on ultimate disposition of special nuclear material are made. The process that will decide the
manner of ultimate disposition, which is the subject of another EIS, will consider the resource value of

SNF and its constituents, as well as the necessary safeguards against diversion of materials for weapons
production. DOE has a program for safely managing and storing SNF and other radioactive materials at
each of the sites considered in the EIS. DOE will manage SNF in accordance with applicable Federal,
state, and local requirements and regulations and DOE Orders in a manner that protects the environment
and the health and safety of the public and site employees.

II COMMENT

The commentor requests that specific corrections or specific additional information regarding the management options for the fuel elements at the Veterans Administration Medical Center, Omaha, Nebraska, be included in the EIS.
RESPONSE
As described in footnotes to Volume 1, Appendix E, Table 2.1-3, the Veterans Administration Medical
Center in Omaha, Nebraska, is a Category 2 Facility that does not routinely generate SNF. No SNF is
expected to be generated by this facility during the period covered by this EIS. Volume 1, section 1.1.2,
Table 1-2 has been deleted from the EIS because it duplicated Volume 1, Appendix E, Table 2.1-3.

II COMMENT

The commentor states that Volume 1, Appendix J does not appear to recognize the complexities that occur
when spent nuclear fuel is damaged, and that oxidation products on the outside of fuel are a source of
facility contamination during canning. The commentor states that the EIS should be modified to address
this omission.
RESPONSE
The section of Volume 1, Appendix J to which the commentor refers is intended to provide an overview for
the reader of the technology options that are available to DOE for use in preparing SNF for interim storage.
Technologies would be evaluated for appropriateness for specific fuels prior to use. This evaluation would
identify potential problems and appropriate mitigation measures. The potential for damaged or externally
contaminated fuels is routinely considered in DOE's evaluations of technologies for treatment or conditioning of SNF.

06.09 (050) Miscellaneous

COMMENT
The commentor states that the Project Summary on Fort St. Vrain spent fuel shipments references a previously prepared environmental assessment that may not be relevant.
RESPONSE
The EIS has been corrected in response to this comment.

06.09 (051) Miscellaneous

COMMENT
The commentor expresses the opinion that the storage of spent nuclear fuel has adversely impacted Native
Americans and will next destroy the institution of the American family farm.
RESPONSE
Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of
all the alternatives considered in this EIS. The analyses show that the impacts of all alternatives would be
small.

06.09 (052) Miscellaneous

COMMENT
The commentor notes that in Volume 1, section 4.6.5 the effective dose equivalent is provided in rem per
year, but in Appendix D, effective dose equivalent values are provided in millirem per year. The
commentor suggests that units be consistent throughout the document.
RESPONSE
The EIS has been revised to ensure uniformity in units throughout the document.

06.09 (053) Miscellaneous

COMMENT
The commentor wants to ensure that mitigation is an integral part of planning and suggests that mitigation
should consider avoidance, minimization, rectification, and compensation.
RESPONSE
If necessary, a mitigation action plan will be prepared for this EIS in accordance with the CEQ regulations
at 10 CFR 1021. All necessary mitigation is generally noted in this EIS. Volume 1, section 5.7 addresses
mitigation measures relative to environmental impacts.

7. INEL ER&WM PROGRAMS SPECIFIC

07 (001) INEL ER&WM Programs Specific

COMMENT

Many commentors state that the discussion about environmental restoration activities at the Idaho National Engineering Laboratory lacks substance and that no specific projects are discussed. Some commentors express the opinion that there is a need for more progress on environmental restoration of contaminated DOE sites in particular, contaminated sites at the Idaho National Engineering Laboratory, including cleanup of the Snake River Plain aquifer, and on resolution of spent nuclear fuel management issues at the Idaho National Engineering Laboratory.

RESPONSE

The environmental restoration program at the Idaho National Engineering Laboratory (INEL) is discussed in Volume 2, sections 2.2.6 and 7.2.5 of the EIS. Volume 2, Table 3.1-3 lists the general environmental restoration projects that would be completed under each alternative. Details regarding many of these projects are not available at this time. However, summaries of some projects are included in Volume 2, Appendix C, Decontamination and Decommissioning Project Summaries and as Ongoing Projects Project Summaries.

The evaluation in Volume 2 of this EIS bounds environmental impacts from environmental restoration (or cleanup) activities at INEL. However, specific decisions related to cleanup at INEL are generally addressed under an enforceable agreement executed by DOE, the Environmental Protection Agency (EPA) Region X, and the State of Idaho on December 9, 1991. This agreement is the Federal Facility Agreement and Consent Order (FFA/CO). The FFA/CO establishes a comprehensive process that integrates the remediation requirements of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the corrective action requirements of the Resource Conservation and Recovery Act (RCRA) and the State of Idaho's Hazardous Waste Management Act. Cleanup activities are conducted under the process and schedule established in the FFA/CO. Records of Decision (RODs) under the FFA/CO process are signed by all three agencies and represent a joint determination that protectiveness will be achieved through implementation of the selected remedy.

Environmental restoration efforts at INEL have progressed substantially since the FFA/CO was signed. As of November 1994, 10 of the 25 scheduled RODs have been successfully negotiated and signed by DOE, EPA and the State of Idaho. These RODs have resulted in implementation and/or completion of several interim and final actions designed to reduce or eliminate hazards to human health and the environment. To date, all enforceable milestones set in accordance with the FFA/CO have been met, either on or ahead of schedule. Additional work will continue over the next several years, as detailed in this EIS and the FFA/CO Action Plan.

The draft ROD for the Waste Area Group 10 Comprehensive Snake River Plain Aquifer Remedial Investigation Feasibility Study, scheduled for May 2001, will announce decisions regarding the cleanup of the Snake River Plain aquifer. This EIS cannot anticipate the detail of those decisions. Therefore, analyses performed in support of this EIS must address the nature of the anticipated cleanup in general terms.

Other DOE sites negotiate similar agreements with the appropriate regulatory agencies and follow similar processes for management of their environmental restoration activities. However, the details of such programs for the other DOE sites is not within the scope of this EIS.

DOE prepared a report on vulnerabilities of the current spent nuclear fuel (NSF) program. The NSF

vulnerability assessment and associated action plans to resolve identified vulnerabilities are acknowledged
in Volume 1, section 1.1.2 and Appendix J. Additional site-specific information is in Volume 1, Appendices A through F. Environmental consequences of NSF management are presented for all alternatives in Volume 1, section 5.1, and mitigation measures are discussed in section 5.7. For all
alternatives analyzed, DOE is committed to meeting applicable Federal, state, and local regulations and
DOE Orders to ensure protection of the environment and the health and safety of the public and site
employees. Consequently, the No Action alternative still includes the minimum actions deemed necessary
for continued safe NSF management.

07 (003) INEL ER&WM Programs Specific

COMMENT
The commentor disapproves of Bin Set #8, feeling that this would only be used to support the reprocessing
of spent nuclear fuels. In addition, the commentor expresses concern that there is no characterization of
the radionuclide content of existing calcine in the EIS and that presentation of the Calcine Transfer Project
(Bin Set #1) as a Research Development Project is misleading. The commentor also believes that the
decontamination and decommissioning of Bin Set #1 should be a high priority project.
RESPONSE
Additional calcine storage facilities, i.e., Bin Set #8, are proposed under the Maximum Treatment, Storage,
and Disposal alternative at the Idaho National Engineering Laboratory. Bin Set #8 gives DOE the capability to transfer liquid high-level waste to a more stable form irrespective of the technology selected.
A large part of the liquid to be concentrated and calcined would consist of decontamination solutions
generated from the extensive decontamination and decommissioning activities undertaken in this alternative, rather than additional high-level liquid waste from reprocessing. Reprocessing for the recovery
of fissile material for the weapons stockpile is being phased out as a matter of DOE policy, although some
type of processing of some fuels may be necessary as a waste treatment.
Presentation of detailed calcine data in this EIS was not considered important to the decision process, since
all calcine is to be managed as high-level waste, irrespective of its radionuclide content. Detailed
characterization data on calcine can be found in Inventory and Properties of Idaho Chemical Processing
Plant Calcined High Level Waste (WINCO-1050; February, 1988) available through the DOE Public Reading Rooms.
DOE acknowledges the commentor's opinion that decontamination and decommissioning of Bin Set #1 should be a priority. The Calcine Transfer Project (Bin Set #1), which would result in transfer of calcine
from Bin Set #1 to more modern facilities is classified as research and development because methods for
removal of the calcine must be developed and tested; Bin Set #1 does not have calcine recovery capability
built in. Decisions on decontamination and decommissioning will be made after calcine transfer has been
accomplished and the condition of Bin Set #1 can be properly evaluated.

7.1 Waste Management

07.01 (002) Waste Management

COMMENT
The commentor is unsure if waste contaminated with 10 to 100 nanocuries alpha emitters is included in the
mixed low-level waste designated for incineration in the Waste Experiment Reduction Facility.
RESPONSE
Volume 2, section 2.2 states "Alpha low-level wastes (low-level radioactive waste contaminated with 10 to
100 nanocuries alpha emitters) and alpha-mixed low-level wastes are managed together at Idaho National

Engineering Laboratory site." As discussed in Volume 2, the Waste Experimental Reduction Facility (WERF) would provide for low-level waste and mixed low-level waste incineration. WERF does not handle waste streams with concentrations of alpha-emitting radionuclides greater then 0.1 nanocuries per gram.

II COMMENT

The commentor questions whether private-sector treatment of alpha-contaminated mixed low-level waste will be located on or off the Idaho National Engineering Laboratory .
RESPONSE
As discussed in Volume 2, section 3.1 under the Ten-Year Plan and Maximum Treatment, Storage, and Disposal alternatives, transuranic and alpha low-level waste treatment capabilities would be developed either through the private sector (on- or offsite) or through INEL facilities. However, for analysis purposes in Volume 2, the facility was located on the INEL site slightly east of the Radioactive Waste Management Complex (RMWC), as stated in Volume 2, Table F-3-6, Note g.

II COMMENT

The commentor notes that waste management impacts were not analyzed, and also raises the issue that the EIS does not delineate why impacts are negligible.
RESPONSE
Volume 2, Chapter 5 discusses the evaluations of impacts. These impacts are summarized and compared in Volume 2, section 3.3. These sections and the supporting references provide technical details on the evaluations that DOE believe are adequate for the purpose of this EIS. The statement that the impacts are negligible is a generalized summary of the specific analyses and data presented in more detail in other parts of the document. Each discipline has a standard against which it measures adverse impacts. For example, in Volume 2 in the section on land use, the number of acres that would be disturbed during the implementation of each alternative is presented and that number is further divided into acres newly disturbed and acres previously disturbed. The standard for land use is whether the proposed action would affect surrounding land uses or local land-use plans. The conclusion is that existing and planned land uses within INEL facility areas would not change. Proposed activities would also be consistent with local land-use plans. Thus, the conclusion is that no adverse impacts are expected. Each discipline is similarly analyzed and discussed in the EIS.

II COMMENT

The commentor states that the EIS fails to provide throughput characterization of the Waste Immobilization Facility, fails to identify calcining and vitrification in combination, as an option, and fails to characterize the Waste Immobilization Facility emission control system. The commentor also states that grouping of low-level waste has been thoroughly discredited at the Hanford Site and that direct vitrification, rather than the separation and vitrification of high-level waste, offers the best solution because it would produce the largest high-activity waste portion, which would be sent to a repository rather than remain at the Idaho National Engineering Laboratory.
RESPONSE
As the commentor states, the EIS does not provide throughput characterization of the Waste Immobilization Facility. Rather, the EIS presents the Waste Immobilization Facility project summary as a bounding analysis of the potential range of technologies that have been identified for treatment of liquid

and calcine high-level waste. The specific technology to be used is scheduled to be selected in conjunction
with the ROD for this EIS. Following selection of the technologies, a facility-specific National
Environmental Policy Act (NEPA) document would be required for facility construction.
This facility-specific document would provide the Waste Immobilization Facility throughput and emissions
characterizations.
ICPP Radioactive Liquid and Calcine Waste Technologies Evaluation Interim Report, listed in the
references for the Waste Immobilization Facility project presents all of the options that were considered in
the systems engineering analysis of potential treatment technologies. The option of calcination and
vitrification was considered but was not recommended because it failed to meet specific needs, as outlined
in the report.

II COMMENT

The commentor states the EIS does not provide information related to the management of greater-
than-Class-C low-level radioactive waste, including recycling and reusing sealed sources at the Idaho National
Engineering Laboratory.
RESPONSE
Greater-than-Class-C low-level radioactive waste is discussed in Volume 2, section 2.2.7 of the EIS.
Management of greater-than-Class-C waste materials is described for each of the alternatives in
Volume 2, section 3.1.3. The comprehensive range of options includes managing existing inventories
at the INEL RWMC, building a new dedicated storage facility for all sealed radiation sources, and
transferring management responsibility to another site. The percentage of sealed sources that will be
recycled is currently unknown.

II COMMENT

The commentor suggests that "higher impact wastes" should not be disposed of at the Radioactive Waste
Management Complex; this includes materials from EBR-II and the Advanced Test Reactor.
RESPONSE
Greater-than-Class-C wastes are not disposed of at the RWMC. In May 1989, the Nuclear Regulatory
Commission (NRC) promulgated a rule that requires disposal of commercially generated low-level waste
with concentrations of radioactivity greater-than-Class-C in a deep geologic repository, unless disposal
elsewhere is approved by NRC. Currently, a small amount of greater-than-Class-C low-level waste is being
stored at INEL pending availability of a disposal facility licensed by NRC. Management alternatives for
the disposal of greater-than-Class-C wastes are discussed in Volume 2, section 3.2.

II II COMMENT

The commentor is impressed that only 11 acres of the Idaho National Engineering Laboratory site have
been contaminated by radioactive materials.
RESPONSE
The comment is noted.

II COMMENT

The commentor states that the Idaho National Engineering Laboratory has received Rocky Flats Plant
waste in the past.
RESPONSE
It is correct that INEL received waste shipments from the Rocky Flats Plant that were subsequently buried
in several pits and trenches, including Pit 9, at the Subsurface Disposal Area at the RWMC between 1954

and 1970. For information regarding cleanup of Pit 9, refer to the project summary in Volume 2, Appendix C.

II COMMENT

The commentor states that the sodium treatment and processing facilities at the Idaho National Engineering Laboratory should be kept up to date and working and that the Idaho National Engineering Laboratory should process all these types of wastes from throughout the country.
RESPONSE
The general objective of the proposed Sodium Processing Project would be to construct and operate a process system to convert hydroxide to a disposable waste form, sodium carbonate.
This project would involve treating mixed wastes. Under the Federal Facility Compliance Act of 1992, DOE is required to negotiate with states or EPA, as appropriate, to develop site treatment plans, including schedules and milestones, to develop treatment technologies and construct facilities that would treat mixed wastes. Decisions on these treatment technologies and related facilities would be made in conjunction with negotiations already under way with the State of Idaho pursuant to the Federal Facility Compliance Act, and after appropriate NEPA review has been completed and public comments have been collected.

II II COMMENT

The commentor states that the infrastructure at the Idaho National Engineering Laboratory, one of DOE's criteria for site selection, is not as usable as the EIS suggests and the figures do not include the Naval Reactors Facility and Argonne National Laboratory-West.
RESPONSE
DOE acknowledges that some facilities at some of the alternative sites may be too old to use for future waste management activities and may need to be upgraded or replaced. For instance, at INEL, NSF is being relocated from an old facility (ICPP-603) to a modern facility (ICPP-666), which has no safety vulnerabilities. Site-specific details are provided in the Materials and Waste Management sections of Volume 1, Appendices A through F.
Regarding facility costs, DOE developed an independent cost evaluation report, which is summarized in Volume 1, section 3.3.6. For each alternative, the cost evaluation considered capital costs for upgrades to existing facilities and for new facilities. DOE will consider evaluation results in preparing the ROD.
However, details on specific facility needs at individual sites will be developed after decisions on the alternatives have been made and the ROD published. At that time, there will be additional NEPA review as necessary to address proposals to implement that strategy in a safe and environmentally sound manner.
Age and condition of buildings are a consideration when evaluating waste and NSF management capabilities and needs. In the case of INEL, this information is in Volume 2.
The INEL Institutional Plan covers facilities that are under the control of the DOE Idaho Operations Office. The Naval Reactors Facility and Argonne National Laboratory-West are organizationally separate from the DOE Idaho Operations Office, and as such, are not considered part of the overall INEL infrastructure. Details on the Naval Reactors Facility are included in Volume 1, Appendix D.

II COMMENT

The commentor believes that information on waste management for the Idaho National Engineering Laboratory is not always complete and asks for the status of the waste vitrification project.
RESPONSE
DOE attempts to provide to the public accurate and complete information, and the public has an opportunity to request information from DOE and to provide comments during scoping and public

review
periods.
Glassification and vitrification technologies have been considered at INEL for treatment of calcined high-level radioactive waste. High-level waste and related actions under the alternatives analyzed are discussed
in Volume 2, section 3.1.3. Calcined solids would be converted to a more stable glass or ceramic form
under the Ten-Year Plan; Minimum Treatment, Storage, and Disposal; and Maximum Treatment, Storage,
and Disposal alternatives. The Waste Immobilization Facility at INEL is tentatively scheduled to begin
operating in 2008. More information on this facility is in Volume 2, Appendix C.

II COMMENT

The commentor states that the Volume 2 discussion about storage of nonmixed private-sector transuranic
waste should include discussion of permit modifications and limited capacity.
RESPONSE
Volume 2, Table 7-3 discusses the RCRA permitting status of each activity. The possible storage of
nonmixed private-sector transuranic waste, and any possible modifications to the pending Part B RCRA
permit are included in discussions in Volume 2, Chapter 7. The capacity to store transuranic waste in
compliance with applicable requirements is provided by the Transuranic Storage Area Enclosure and Storage Project, an ongoing project described in Volume 2, Appendix C, section OP8.

II COMMENT

The commentor alleges that the EIS does not provide a full analysis of the proposed restart and expanded
operations of the Waste Experiment Reduction Facility, including an analysis of alternatives and cumulative impacts.
RESPONSE
Restart and expanded operations, including incineration, at WERF were addressed in the Draft EIS; in
response to public comments, the project summary was expanded in the Final EIS. The Volume 2, Appendix C project summary (MLW-1) provides specific information about WERF operations, and the cumulative impacts of operating WERF are assessed in Volume 2, section 5.15, including the No Action
alternative, which would involve no incineration at WERF. DOE believes that the analysis of impacts of
operating WERF, not operating WERF, and treatment of low-level and mixed low-level wastes at other
facilities are adequately assessed in the EIS.
The Environmental Assessment, Idaho National Engineering Laboratory Low-Level and Mixed Waste Processing Finding of No Significant Impact (FONSI) was signed by Tara O'Toole, EH-1, on June 3, 1994.
The FONSI was initially provided to the State of Idaho in mid-September 1994, for assistance in the review
of this EIS. It was officially provided by letter OPA/AD-94-287, dated November 17, 1994.
See also the response to comment 05.02 (008).

II COMMENT

The commentor states that overall radiological performance assessment methodology for assessing the
buried low-level waste at the RWMC and the disposal facility's performance should be based on sound
assumptions and employ calculation methods known to perform satisfactorily.
RESPONSE
Impacts of low-level waste disposal at the INEL RWMC are currently being assessed. The performance
assessment will specify criteria waste forms must satisfy before the waste can be disposed of at RWMC.
Waste disposal would not occur if the requirements of the waste acceptance criteria, based on the performance assessment, were not satisfied. Waste not meeting the criteria would require further treatment
before disposal. The overall performance assessment methodology will be based on sound assumptions
and calculation methods known to perform satisfactorily and will be available for public, state,

and Federal
agency review.

II II COMMENT

The commentor wants details on the waste material that has been synthesized at the Idaho National Engineering Laboratory from reactors.
RESPONSE
Details on the operations of nuclear reactors at INEL are outside the scope of this EIS. However, wastes
generated to be handled by the environmental restoration and waste management program are included
with other INEL operations in Volume 2, section 5.15. In addition, reactor operations at INEL involving
NSF are addressed in Volume 1, section 2.1. Adequate information on these wastes for evaluation of
alternatives is provided in the EIS.
Detailed information on wastes generated from reactor operations, both currently and historically, can be
found in the INEL Radioactive Waste Management Information System, which is available at INEL information locations.

II COMMENT

The commentor is concerned that volumes and waste type descriptions are vague for the Maximum Treatment, Storage, and Disposal alternative.
RESPONSE
Graphics are provided in Volume 2, section 3.1 that indicate the volumes of each waste type that would be
handled under each alternative. Definitions and descriptions of each waste type are provided in Volume 2,
Chapter 2.

II COMMENT

The commentor states that the 145,000 cubic meters of low-level waste disposed of at the Idaho National
Engineering Laboratory cited in Volume 1, Appendix B, section 4.14.4 of the EIS is significantly lower
than an Idaho National Engineering Oversight Program report cites.
RESPONSE
The value of 145,000 cubic meters of low-level waste disposed of at the INEL RWMC cited in Volume 1
of the EIS is consistent with low-level waste volumes cited elsewhere in the EIS and is consistent with the
Integrated Data Base (1992) information. The number cited from the INEL Oversight Program Report does not necessarily reflect only volumes of low-level waste.

II COMMENT

The commentor states that DOE must fully and separately characterize the various waste inventories in
storage and discharged to the environment. The commentor is particularly concerned about inventory
values listed for transuranic waste in Volume 1 because they do not correspond to state oversight numbers,
which are considerably higher. In addition, the EIS fails to account for the 2,787 pounds of plutonium
DOE has recently acknowledged is buried at the Radioactive Waste Management Complex, and plutonium
is not included in the inventories of spent nuclear fuel in Volume 1, Appendix I,
Table I-25.
RESPONSE
General discussions of current waste inventories at the INEL RWMC are in Volume 2, section 2.2.7 under
the specific waste categories. Effluent discharges are discussed in Volume 2, sections 4.7 and 4.8.
References are included in those sections directing the reader to documents for more detailed information.

The commentor is correct that the transuranic waste inventories in Volume 1, section 4.2 (and also in Volume 2, section 2.2.7) of the Draft EIS incorrectly report that 102,000 cubic meters of transuranic waste is buried and stored at RWMC. The correct total volume of transuranic waste (which includes alpha-contaminated low-level waste) that is buried and retrievable at the RWMC is 127,000 cubic meters. This error has been corrected in both sections of the Final EIS.
The press release to which the commentor refers (Fact Sheet, Buried Waste at INEL May Contain More Plutonium than Previously Recorded) acknowledges that more plutonium than previously estimated was shipped to and buried at INEL. Currently, DOE estimates that 1,320 to 1,980 pounds (600 to 900 kilograms) more plutonium was shipped from the Rocky Flats Plant between 1954 and 1970 than previously estimated. This amount is in addition to 807 pounds (366 kilograms) of plutonium that INEL records indicate is buried in waste at the RWMC. Limitations of plutonium measurement techniques and uncertainties associated with plutonium quantities have been known for many years and contributed to this discrepancy. This increase in the estimated plutonium inventory at the RWMC does not effect the transuranic waste volume inventories in Volume 2, section 3.1.3 or the consequences analyses in Volume 2, Chapter 5; therefore, the new estimated inventory of plutonium buried at the RWMC was not addressed in the EIS.
The radionuclide inventory for representative DOE research/test reactor NSF based on EBR-II Mark 5 fuel presented in Volume 1, Appendix I, Table I-25 correctly lists plutonium, including four isotopes of plutonium and the curie content per assembly of each isotope. No changes to this table are necessary.

II COMMENT

The commentor cites an apparent inconsistency between the EIS, the Federal Register, and the Idaho National Engineering Laboratory Oversight Committee on the mixed waste volumes at the site. In addition, the commentor questions whether high-level liquid waste is included in any of the numbers.
RESPONSE
Volume 1, Appendix B, section 4.14.3 states that 1,100 cubic meters (1,439 cubic yards) of mixed low-level waste is stored at INEL, while the commentor cites the Federal Register (May 26, 1992) total for the site of 63,973 cubic meters (83,670 cubic yards). The 1,100-cubic-meter (1,439-cubic-yard) value in the EIS refers only to mixed low-level wastes, not all mixed wastes, which was the case for the Federal Register value and also possibly the Oversight Committee values, although the origin of the reference to specific values is not known. Liquid high-level waste volumes are reported in Volume 1, Appendix B, section 4.14.1.

II COMMENT

The commentor states that the EIS does not present sufficient information on certain waste streams or treatment processes/facilities and wants to know the amounts of wastes, where they are, their condition and type, and the technologies available and being worked on.
RESPONSE
Information on waste materials and related facilities currently at INEL (including the amounts of waste, where they are, and their condition and type) is given in Volume 2, section 2.2.7. Associated activities under the various alternatives, including technologies available and being worked on, are described in Volume 2, section 3.1. However, in some cases, complete information is not yet available, such as on waste streams from future decontamination activities and where treatment plans have not been fully determined. In other cases, although facility designs and treatment processes are still at the conceptual stage, sufficient information exists to bound the environmental impacts from the range of

alternatives being
considered.

II II COMMENT

The commentor states that the Volume 2, Maximum Treatment, Storage and Disposal alternative for mixed
transuranic waste should discuss impacts from Best Demonstrated Available Technology treatment because
the Waste Isolation Pilot Plant waste acceptance criteria may adopt Land Disposal Restrictions.
RESPONSE
As shown in Volume 2, Table 3.1-6, treatment to meet disposal requirements will be done in the Idaho
Waste Processing Facility and/or private-sector alpha-contaminated mixed low-level waste treatment
facility. These facilities are described in Volume 2, Appendix C, sections TRU3 and TRU1, respectively.
As stated in section TRU3, under the Federal Facility Compliance Act of 1992, DOE is required to
negotiate with states or EPA, as appropriate, to develop site treatment plans, including schedules and
milestones, to develop treatment technologies and construct facilities that would treat mixed wastes.
Decisions on these treatment technologies and related facilities would be made in conjunction with
negotiations already under way with the State of Idaho, pursuant to the Federal Facility Compliance Act,
and after appropriate NEPA review is complete.

II COMMENT

The commentor asks about the status of the glass vitrification project that seemed so promising at the Idaho
National Engineering Laboratory a few years ago.
RESPONSE
Glassification and vitrification technologies have been considered at INEL for treating calcined high-level
radioactive waste. High-level waste and related actions under the alternatives analyzed are discussed in
Volume 2, section 3.1.3. Calcined solids would be converted to a more stable glass or ceramic form under
all alternatives except the No Action alternative. The Waste Immobilization Facility at the Idaho National
Engineering Laboratory is planned for operation after 2005. More information on this facility is in
Volume 2, Appendix C.

II COMMENT

The commentor asks how the Actinide Recycle Demonstration Project would generate high-level or mixed
wastes.
RESPONSE
The Actinide Recycle Demonstration Project (now the Electrometallurgical Demonstration Project)
description has been modified and expanded in Volume 2, Appendix C, section SNF8. The objectives of
this demonstration are to investigate pyroprocessing of NSF, to produce a waste form that is potentially
suitable for a geologic repository, and to quantify volumetric reduction factors. This demonstration would
produce high-level radioactive waste containing fission products because NSF would be processed. Mixed
wastes also would be generated because of electrorefiner operation involving cadmium, plus sodium
contaminants in the NSF to be used for this demonstration.

II II COMMENT

The commentor opposes new high-level waste storage facilities proposed for the Idaho Chemical
Processing Plant until DOE selects a technology for processing existing high-level waste, and determines

that nuclear weapons materials production capacity is needed to meet national security requirements.
RESPONSE
New storage facilities have been proposed for liquid high-level waste and solid high-level waste. As
discussed in Volume 2, Appendix C, new tanks would be needed to replace others that do not currently
comply with RCRA under some of the alternatives analyzed. Additional storage capacity would be needed
for calcined high-level waste if existing liquid high-level waste is to be converted into the more stable solid
calcined form. None of these new facilities is intended to support nuclear weapons material production
capacity.
See also the response to comment 04.04 (008).

II COMMENT

Commentors remark about the large amount of nuclear waste that is accumulating at the Idaho National
Engineering Laboratory and that there is not a coherent plan for what to do next.
RESPONSE
This EIS is a fundamental planning tool in development of a coherent plan for managing nuclear waste at
INEL. Descriptions of how specific wastes would be managed under the proposed alternative actions are
in Volume 2, section 3.1. The DOE Environmental Restoration and Waste Management Five-Year Plan
describes the activities of the environmental restoration program, which is already under way. Although
the ultimate disposition of high-level nuclear wastes is a high priority for DOE, the details of those
disposition activities have not been finalized and are beyond the scope of this EIS.

II 7.2 Environmental Restoration

II COMMENT

Commentors identify sections of Volume 2 of the EIS that require clarification or additional information to
more completely address the topics discussed in the sections.
RESPONSE
The EIS has been modified to include the additional information requested by the commentors or to clarify
the discussions in the identified Volume 2 sections.

II II COMMENT

Commentors question whether the environmental restoration activities and alternatives for the Idaho
National Engineering Laboratory are consistent with Federal laws governing cleanup and with the Federal
Facility Agreement and Consent Order negotiated among DOE, the Environmental Protection Agency, and
the State of Idaho.
RESPONSE
Subject to Congressional funding, DOE is committed to ensuring that applicable Federal laws (specifically,
the FFA/CO Action Plan, as stated in Volume 2, section 3.1.2.1) for remediation activities are followed for
each alternative except the No Action alternative. The number of new decontamination and
decommissioning projects depends on the alternative, but even if new projects are not undertaken,
surveillance and maintenance activities would be conducted in compliance with applicable regulations.
The role of the FFA/CO is discussed further in Volume 2, sections 2.2.6 and 7.2.5.

II COMMENT

The commentor asks how land-use plans would impact the use of areas covered under the Federal Facility
Agreement and Consent Order for the Idaho National Engineering Laboratory.
RESPONSE
Management, closure, and/or remediation of actual disposal sites, depending on the waste or material
disposed of, are regulated under CERCLA, RCRA, or the Atomic Energy Act. The regulations of each of
these acts contain provisions to control use of disposal sites, when disposal activities are discontinued. The
future use of land at any disposal site at INEL following final closure is unknown at the present time.
However, administrative controls, deed restrictions, and institutional controls would be implemented to
control or prevent certain use of these lands indefinitely.

II COMMENT

The commentor raises the issue that the cleanup decision for Pit 9 materials allows treated Pit 9 materials
containing transuranic elements to be returned to Pit 9 for disposal and that aboveground storage of these
wastes was not chosen because it "would pose a potential radiological hazard to the public and the
environment." The commentor also raises questions about complete reliance on high-efficiency particulate
air filters for preventing emissions of radioactive particulates.
RESPONSE
Specific cleanup decisions, such as the one made for the Pit 9 interim action cleanup, are made under
CERCLA based on the INEL FFA/CO between DOE, EPA Region X, and the State of Idaho and are not
within the scope of this EIS. The objective of cleanup decisions under CERCLA and the FFA/CO, such as
for Pit 9, is to reduce the potential for exposure to contamination to ensure that human health and the
environment are adequately protected. This is done by establishing cleanup objectives and standards
specifically to ensure adequate protection and compliance with applicable environmental standards and
guidance. Approximately half of the soil and other material in Pit 9 is estimated to contain fewer than 10
nanocuries per gram of transuranic elements; after initial excavation, this material would be returned to the
pit following assay commensurate with current disposal practices for low-level radioactive wastes at the
RWMC, as regulated by DOE Order 5820.2A, Radioactive Waste Management. The remaining half
would be removed and treated, both to reduce transuranic concentrations to less than 10 nanocuries per
gram and to satisfy risk-based cleanup criteria established in the ROD. Following treatment, this soil and
other materials meeting these criteria will be returned to Pit 9 as low-level radioactive waste. The treated
concentrate would be in a stable vitrified form. Although an in-depth analysis of risk was not performed
for the aboveground storage alternative, it was not preferred because the waste would be stored in an
untreated and potentially unstable form for an undetermined period of time until an appropriate treatment
method could be found.
To minimize airborne releases, projects involving radioactive particulates at INEL would take place within
a double-confinement structure. Conservative assumptions normally are used to estimate releases to the
atmosphere, such as modeling only two filters in series when at least three are planned for actual
operations. Also, although high-efficiency particulate air (HEPA) filters have established particulate
removal efficiencies of 99.97 percent (down to diameters of 0.3 micrometers), a conservative efficiency
factor of only 99 percent typically is used for operational safety and accident analyses. These filters are
capable of removing particles as small as 0.001 micrometers from an airstream, but the manufacturer
performs the rating calibration at 0.3 micrometers using a standard aerosol-generating device. The filters
are tested annually and inspected daily to ensure that their efficiency is maintained.
Safety analyses for forthcoming INEL facility operations will not assume perfect HEPA filter

operation.
Additional precautions will be taken to minimize airborne releases. The pressure differential across each
filter will be measured continuously to detect formation of any holes or insecure filter installation. Filter
temperature will be measured to promptly detect a filter fire. Finally, radiation sensors will be installed
downstream of the filters to continuously monitor atmospheric releases. Detection of radioactive
particulates above the natural background levels would result in a prompt shutdown of facility operations.
See also the response to comment 05.11.03 (009).

II COMMENT

The commentor notes that the statement in Volume 2 of the Draft EIS that project-specific Idaho National
Engineering Laboratory environmental restoration activities will be quantified and evaluated as part of the
Comprehensive Environmental Response, Compensation, and Liability Act should be modified to reference
the Federal Facilities Agreement/Consent Order.
RESPONSE
The commentor is correct. Project-specific impacts of environmental restoration activities at INEL will be
quantified and evaluated in the future as part of CERCLA, in accordance with the FFA/CO. The EIS has
been modified to incorporate the change.

II COMMENT

The commentor states that new remedial designs and remedial actions will be conducted for each Record
of Decision under the FFA/CO that requires a remedial action. The Draft EIS, in Volume 2, section 3.1,
implies that remedial design and remedial action can only occur as a result of a remedial investigation and
feasibility study. This implication should be corrected.
RESPONSE
The commentor is correct. The Final EIS has been modified to clarify that new remedial design and
remedial actions would be implemented if remedial action is determined necessary by the ROD from the
CERCLA process and the FFA/CO for each interim action or remedial investigation and feasibility study
completed.

II II COMMENT

The commentor asks how 1 million cubic yards of imported waste compares to the quantities of waste that
will be generated at the Idaho National Engineering Laboratory from environmental restoration and waste
management activities, what portion of the imported waste will be treated and what portion simply
disposed of, and what the impacts of storage of these wastes are once the Radioactive Waste Management
Complex reaches capacity.
RESPONSE
As discussed in Volume 2, section 3.1, under the Maximum Treatment, Storage, and Disposal alternative,
approximately one million cubic yards (770,000 cubic meters) of low-level waste would be accepted for
treatment and disposal at INEL. That volume of waste is approximately 10 to 15 times the amount
of low-level waste that would be generated onsite from environmental restoration and waste management
activities, depending on the alternative used for comparison. Portions of this waste that would be treated
and disposed of, treated without disposal, and retrievably stored for all alternatives are illustrated in
Volume 2, Figure 3.1-27. As indicated in this figure and discussed in Volume 2, section 3.2, by 2005, all
low-level waste would have been disposed of onsite under the Maximum Treatment, Storage, and Disposal

alternative. Most of the waste received under all but the Maximum Treatment, Storage, and Disposal
alternative would be stored safely pending completion of a proposed new treatment and disposal facility.
As soon as these facilities are operational beyond 2005, they would
allow the waste to be handled under appropriate procedures developed at that time. The period after 2005
is outside the scope of this EIS; however, NEPA review would be performed on such storage activities.
The evaluation in Volume 2 bounds environmental impacts from environmental restoration (or cleanup)
activities at INEL. However, specific decisions related to cleanup at INEL are generally addressed under
an enforceable agreement executed by DOE, EPA Region X, and the State of Idaho on December 9, 1991,
the FFA/CO. The FFA/CO establishes a comprehensive process that integrates the remediation
requirements of CERCLA and the corrective action requirements of RCRA and the State of Idaho's
Hazardous Waste Management Act. Cleanup activities are conducted under the process and schedule
established in the FFA/CO. RODs under the FFA/CO process are signed by all three agencies and
represent a joint determination that protectiveness will be achieved through implementation of the selected
remedy.

II COMMENT

The commentor notes that remediation of the Transuranic Storage and Retrieval Area and restoration of the
waste does not consider the implications of additional waste volumes due to contaminated soil.
RESPONSE
Volume 2, Table 5.15-2 includes impacts from newly generated waste, including contaminated soil.

II II COMMENT

The commentor expresses doubts about the cleanup methods chosen at Idaho National Engineering Laboratory.
RESPONSE
The environmental restoration program at INEL is specifically discussed in Volume 2, sections 2.2.6 and
7.2.5. The evaluation in Volume 2 of this EIS bounds environmental impacts from environmental
restoration (or cleanup) activities at INEL. However, specific decisions related to cleanup at INEL are
generally addressed under an enforceable agreement executed by DOE, EPA Region X, and the State of
Idaho on December 9, 1991, the FFA/CO. The FFA/CO establishes a comprehensive process to integrate
the remediation requirements of CERCLA and the corrective action requirements of RCRA and the State
of Idaho's Hazardous Waste Management Act. Cleanup activities are conducted under the process and
schedule established in the FFA/CO. RODs under the FFA/CO process are signed by all three agencies
and represent a joint determination that protectiveness will be achieved through implementation of the
selected remedy.

II COMMENT

The commentor states that the EIS fails in its Volume 2-stated goal of making decisions on ways to "treat,
store and dispose of waste, manage spent nuclear fuel, and conduct environmental restoration activities at
the Idaho National Engineering Laboratory in an environmentally safe manner."
RESPONSE
Improvements throughout the Final EIS evidence DOE's efforts to respond to this general finding by the
public by publishing as thorough a study as possible.

II II COMMENT

The commentor states that the EIS does not address decontamination and decommissioning of Idaho National Engineering Laboratory tanks VES-WM-182 through -186, from which heels are to be removed, along with tanks VES-WM-100, -101, and -102.
RESPONSE
The EIS does not address decontamination and decommissioning (D&D) of the tanks referred to because that would not be within the scope of the Tank Farm Heel Removal Project. The purpose of that project is to remove liquid and solid wastes remaining in the tanks after they have been emptied using currently installed transfer jets. This supplemental transfer operation is anticipated to take place between 2000 and 2015. Thus, D&D would occur after 2015, which is after the 10-year planning period (1995 to 2005) for the INEL waste management part of this EIS. Such proposals would be addressed by additional NEPA documentation.

II COMMENT

The commentor states that the EIS should include data that fully characterizes the Idaho National Engineering Laboratory Decontamination and Decommissioning Program waste volumes and toxicity.
RESPONSE
INEL D&D program is discussed in Volume 2, section 2.2.6. Major D&D projects anticipated to occur within the 10-year period of this EIS are discussed in more detail in Volume 2, Appendix C, Project Summaries. It is impossible to fully characterize D&D waste streams prior to implementing D&D activities at the facilities being decontaminated and decommissioned.

Limited characterization of facilities prior to D&D provides sufficient information for making D&D decisions, but cannot fully characterize or anticipate all wastes. Wastes generated by D&D activities are managed in accordance with applicable DOE guidelines and environmental regulations. Additional characterization of these wastes would be completed during D&D implementation as necessary to ensure proper management of D&D wastes.

II COMMENT

The commentor asserts that decontamination and decommissioning of facilities are subject to evaluation under the Federal Facilities Agreement/Consent Order, and the EIS should incorporate this information.
RESPONSE
The decontamination and decommissioning of facilities is not part of the current INEL FFA/CO. D&D programs at INEL are described in Volume 2, section 2.2.6, including the process by which the D&D is accomplished while meeting regulatory requirements and guidelines.

II COMMENT

The commentor identifies a statement describing the decontamination and decommissioning activities for the Maximum Treatment, Storage, and Disposal alternative as different from those under the Ten-Year Plan alternative. The statement appears in the Volume 2 summary and the Summary.
RESPONSE
The commentor is correct, and the statement has been changed in the EIS.

II II II COMMENT

The commentor indicates that the cost of environmental restoration at the Idaho National Engineering Laboratory will be billions of dollars.
RESPONSE

Whereas it may ultimately take several billion dollars to complete environmental restoration activities at INEL and other DOE sites, the scope of INEL environmental restoration activities in this EIS is limited to the period 1995 to 2005. The cost of environmental restoration activities during this period will ultimately be a function of Congressional funding allocations for the cleanup projects discussed in Volume 2 of this EIS. Cleanup activities at INEL are conducted under the process and schedules established under the FFA/CO, as agreed upon by DOE, EPA, and the State of Idaho.

II 7.3 Regulatory Compliance

II COMMENT

The commentor recommends that Volume 2 of the EIS provide additional information concerning the Federal Facilities Agreement and Consent Order at the Idaho National Engineering Laboratory; the June 28, 1993, Court Order; the State of Idaho's hazardous waste program; and all agreements that the Idaho National Engineering Laboratory has entered into with the State of Idaho pursuant to those regulations.
RESPONSE
Volume 2, Chapter 7 provides a summary of the information requested. The Court Order is part of the EIS administrative record and is appended to the Implementation Plan. The commitments or requirements identified in those documents will be carefully considered in arriving at the ROD for this EIS.

II COMMENT

The commentor requests that the EIS discuss the Antidegradation Policy (40 CFR 131.12).
RESPONSE
A discussion of the Antidegradation Policy, which is an EPA policy requiring states to develop and adopt statewide antidegradation policies to prevent degradation of surface waters has not been added to the EIS.
INEL has only intermittent surface waters, none of which is utilized either a source of water for INEL activities or discharges from INEL facilities. Therefore, a discussion of the policy would not provide useful information for decisionmakers.

II 7.4 Miscellaneous

II COMMENT

Commentors express opinions that nuclear waste production should be reduced and eventually stopped until a means for safe management and disposal are available. Time and resources should shift to cleanup.
RESPONSE
General discussions of waste management procedures and plans are in Volume 2, Chapters 1 and 2.
Therein, it is noted that DOE is committed to a strategy emphasizing waste minimization and avoidance, with the goal being that most newly generated radioactive waste will be created during necessary cleanup activities and decommissioning of contaminated facilities that no longer serve essential missions. The DOE complex-wide management and cleanup of wastes associated with those activities, including the time and resources required, is outside the scope of this EIS. However, complex-wide management of waste currently is being addressed in the forthcoming DOE Waste Management Programmatic EIS.
With respect to cleaning up INEL, the INEL Environmental Restoration Program, including both remediation and decontamination and decommissioning, is discussed in Volume 2, section 2.2.6. For

a
description of the significant progress already made in this program at INEL, see the response to comment
02.04 (047). The evaluation in Volume 2 of this EIS bounds environmental impacts from environmental
restoration (or cleanup) activities at INEL. However, specific decisions related to cleanup at INEL are
generally addressed under an enforceable agreement executed by DOE, EPA Region X, and the State of
Idaho on December 9, 1991, the FFA/CO. The FFA/CO establishes a comprehensive process that
integrates the remediation requirements of CERCLA, and the corrective action requirements of RCRA and
the State of Idaho's Hazardous Waste Management Act. Cleanup activities are conducted under the
process and schedule established in the FFA/CO. RODs under the FFA/CO process are signed by all three
agencies and represent a joint determination that protectiveness will be achieved through implementation
of the selected remedy.

The generation and storage of SNF are discussed in Volume 1, section 1.1. Therein it is noted that most of
DOE's SNF was generated in DOE production and experimental reactors that have ceased to operate, so
considerable source reduction has already occurred. In addition, the Navy has been engaged in the
development of longer-lived Naval reactor cores, thereby reducing the amount of SNF that is generated.
Eliminating the source of SNF altogether, however, is outside the scope of this EIS.

While DOE is committed to developing permanent Federal geologic repositories for isolation of SNF and
high-level wastes, technologies for final SNF disposition cannot be specified in advance of certification of
repository performance and associated acceptance criteria of SNF and high-level waste for disposal. DOE
has acknowledged these challenges by allowing up to 40 years for a suitable repository to become fully
operational. The 40-year period is not needed for preparation of SNF for final disposition, but is judged to
be an upper limit on the time needed for a repository to be available. Until such disposal options are
available, DOE is committed to provide for safe and environmentally sound storage and management of
SNF.

07.04 (003) Miscellaneous

COMMENT

The commentor states that DOE should review impacts of long-term storage of transuranic waste at Idaho
National Engineering Laboratory because transuranic waste shipments will not occur during the next 20
years.

RESPONSE

The transuranic waste management program at INEL is described in Volume 2, section 2.2.7. New
transuranic waste facilities, which meet the State of Idaho, EPA and RCRA requirements, are being
constructed to replace the existing storage facilities. The potential impacts of this action, including the
impacts of long-term transuranic storage at INEL, were evaluated in Environmental Assessment for the
Retrieval and Restorage of Transuranic Storage Area Waste. In addition, the receipt of transuranic waste
at INEL for the 10-year period was analyzed in the Volume 2, Maximum Treatment, Storage, and Disposal
alternative. The long-term receipt of transuranic waste at INEL is being analyzed as a part of the
forthcoming DOE Waste Management Programmatic EIS.

07.04 (004) Miscellaneous

COMMENT

Commentors want DOE to responsibly manage the radioactive materials, including unspecified toxics,
radioactive wastes, and spent nuclear fuel that DOE helped to create. Other commentors express
opinions that there is no way that anything like radioactive waste can be handled safely and question DOE
waste management practices and policies.

RESPONSE

DOE acknowledges its responsibility to safely manage radioactive materials, including SNF and radioactive wastes. DOE's policy is to comply with applicable Federal and state laws and regulations, DOE Orders, and interagency agreements governing SNF and radioactive and hazardous wastes. DOE has a program that includes research, development, and demonstration activities for the safe management and storage of all radioactive materials at each of the sites considered in this EIS. General solutions for managing SNF, including storage, are discussed in Volume 1, section 1.1.3 and Appendix J. Current management practices for radioactive wastes are described in section 2.2.7, which is specific to INEL but also generally applies to wastes at other DOE sites. DOE also has adopted a policy emphasizing waste minimization and avoidance, as discussed in Volume 2, Chapters 1 and 2 of the EIS. Most new radioactive waste will be created during unavoidable cleanup activities and decommissioning of contaminated facilities that no longer serve essential national missions. Residual radioactive wastes may also result from cleanup actions performed under CERCLA pursuant to the INEL FFA/CO. Volume 2, Chapter 2 references two programmatic EISs that are being prepared regarding DOE Spent Nuclear Fuel Programs: Volume 1 of this EIS and the Waste Management Programmatic EIS, a separate forthcoming document. This EIS was prepared in full accordance with NEPA and follows the Council on Environmental Quality (CEQ) implementing regulations.

07.04 (006) Miscellaneous

COMMENT
The commentor requests that the EIS provide additional information on waste management and cleanup projects or facilities that are in preliminary planning stages.
RESPONSE
Anticipated projects have been included in the EIS to give readers as comprehensive a range of forthcoming projects as is currently possible. These anticipated projects have been conservatively evaluated to attempt to bound the reasonably foreseeable environmental impacts from such projects. NEPA review is performed on such activities where applicable, prior to initiation. At such time, accurate information on secondary waste generation would be available for an assessment of impacts on waste management. NEPA status of environmental restoration and waste management projects contemplated for INEL is discussed in the Summary (see box titled Projects Related to Alternatives in section on Alternatives) and in Volume 2, Table 3.1-1.
The evaluations in Volume 2 of this EIS bound environmental impacts from environmental restoration (or cleanup) activities at INEL. However, specific decisions related to cleanup at INEL are generally addressed under an enforceable agreement executed by DOE, EPA Region X, and the State of Idaho on December 9, 1991, the FFA/CO. The FFA/CO establishes a comprehensive process that integrates the remediation requirements of CERCLA and the corrective action requirements of the RCRA and the State of Idaho's Hazardous Waste Management Act. Cleanup activities are conducted under the process and schedule established in the FFA/CO. RODs under the FFA/CO process are signed by all three agencies and represent a joint determination that protectiveness will be achieved through implementation of the selected remedy.

07.04 (007) Miscellaneous

COMMENT
Commentors request specific information on secondary wastes to be produced from potential future activities or not-yet-existent facilities related to possible processing of SNF, including the EBR-II Blanket Processing Project, fuel subassemblies, and high-level liquid wastes from the Spent Fuel Processing Project.

RESPONSE
Anticipated projects have been included in the EIS to present readers with as comprehensive a range of foreseeable projects as is currently possible. Information and preliminary estimates of waste generation rates from the Blanket Processing Project, fuel subassemblies, high-level wastes from the Spent Fuel Processing Project, and other potential future projects and facilities are in Volume 2, Appendix C. This information was used to determine the potential impacts of each alternative, as discussed in Volume 2, Chapter 5. If ultimately proposed, these projects or facilities will require additional review under NEPA as they come closer to reality. At such time, more information on secondary waste generation storage times and schedules will be provided for an assessment of impacts on waste management.

07.04 (008) Miscellaneous

COMMENT
The commentor requests that DOE begin training its work force for the day when the majority of funds are dedicated to waste management.
RESPONSE
Funding priorities and work-force retraining to meet those changing priorities are not within the scope of this EIS.

8. NAVAL PROGRAM SPECIFIC

8.1 Preferences

08.01 (001) Preferences

COMMENT
Some persons expressed general opposition to one or more of the alternatives considered without identifying technical reasons for the opposition. Some of these expressions of opposition included the following concerns: Storage could last longer than planned. The EIS and Record of Decision may not be completed by June 1995. Litigation over the sufficiency of this EIS could delay implementation. An alternative allowing removal from the shipyards might not be selected.
RESPONSE
Some individuals oppose one or more of the alternatives identified by DOE and the Navy for the transportation, receipt, processing, and storage of spent nuclear fuel. Nevertheless, some alternative must be selected since DOE has a considerable amount of spent nuclear fuel in existence. To select an alternative, the Navy is cooperating with DOE in this comprehensive EIS on spent nuclear fuel management, including Naval spent nuclear fuel. This EIS evaluates alternatives for spent nuclear fuel management pending ultimate disposition. Some of the alternatives which are being evaluated in the DOE EIS will allow routine Naval spent nuclear fuel shipments to be resumed promptly. Therefore, it is by no means certain that storage at shipyards will be extended.

08.01 (002) Preferences

COMMENT
Some persons expressed support for one or more of the alternatives considered without identifying technical reasons for their support. Some of these expressions of support were based on such things as the Navy's expertise, the amount of information and technology presented in the EIS, the safety or cost effectiveness of the alternative supported, and the commentors' personal knowledge of the absence of problems with Naval spent nuclear fuel and safety in the Naval Nuclear Propulsion Program in the past.
RESPONSE
DOE and the Navy must make a selection of an alternative for transportation, receipt, processing, and storage of spent nuclear fuel and the support from the public is acknowledged.

08.01 (003) Preferences

COMMENT
Some persons expressed general satisfaction with the safety of the Naval Nuclear Propulsion Program.
Examples of these expressions of support include:
"I have a high confidence in the Navies (sic) ability to store the fuel at PSNS in a safe and environmentally secure manner."
"My feeling is that I believe that the Navy has a good record of safety, I believe that they should get off the back of the Navy and let them do their work."
"I just want everyone to understand that the Navy's nuclear program is safe and the workers that I represent are very, very safe."
"As for transporting spent fuel the Navy has been transporting fuel safely across the country to

INEL for
years."
"Proper examination of the fuel will help ensure the safety of the servicemen operating the ships and help
maintain a technical advantage by continually improving the reactor cores."
"The safety record for the navy nuclear program has been good."
"I've read the EIS and I'm in favor of the Navy being a good steward of the land, continuing its processing,
and I think it is within what we would call acceptable risk."
RESPONSE
Commentors provided statements of personal knowledge and conviction that the safety record of the Navy
in servicing nuclear-powered vessels and in handling and shipping Naval spent nuclear fuel which support
the Navy's statements in this EIS. Some commentors affirmed the relationship between examining all Naval
spent nuclear fuel and ensuring the safety of nuclear-powered vessels and the sailors who serve aboard
them.
These comments support the Naval Nuclear Propulsion Program and its continuing efforts to maintain
safety and minimize the risks associated with operation of the nuclear fleet. Protecting the people who sail
and service nuclear-powered vessels, the public, and the environment has always been one of the highest
priorities of the Navy.

08.01 (004) Preferences

COMMENT
Some persons expressed opposition to one or more of the alternatives considered and provided reasons for
their opposition. Some of these expressions of opposition were based on such things as the costs of
providing new facilities for Naval spent nuclear fuel management, the number of shipments involved,
existing pollution problems in the area, or the difficulty of evacuating an area.
RESPONSE
Some individuals oppose one or more of the alternatives identified by DOE and the Navy for the
transportation, receipt, processing, and storage of spent nuclear fuel. Nevertheless, some alternative must
be selected since DOE has a considerable amount of spent nuclear fuel in existence. To select an
alternative, the Navy is cooperating with DOE in this comprehensive EIS on spent nuclear fuel
management, including Naval spent nuclear fuel. This EIS evaluates alternatives for spent nuclear fuel
management pending ultimate disposition.   Analyses of the matters of concern and the reasons for
opposition identified have been considered in this EIS.
Analyses of the impacts associated with managing Naval spent nuclear fuel show that any effects on human
health or the environment would be small for all of the alternatives considered. The potential impacts due
to normal operations or hypothetical accident conditions for management of Naval spent nuclear fuel
present little risk for all of the alternatives considered.

08.01 (005) Preferences

COMMENT
Some persons expressed support for one or more of the alternatives considered and provided technical
reasons for their support. Some of these expressions of support were based on such things as the proven
nature of the existing Naval spent nuclear fuel management program, the lack of need to change existing
practices, or the unsuitable nature of some sites considered in comparison to others.
RESPONSE
DOE and the Navy must make a selection of an alternative for transportation, receipt, processing, and
storage of spent nuclear fuel and the support from the public is acknowledged.   Analyses of the matters of
concern and the reasons for opposition identified have been considered in this EIS.

II 08.01 (006) Preferences

COMMENT
Some persons expressed general opposition to one or more of the alternatives considered because they felt that some of the alternatives to be evaluated in the Environmental Impact Statement would require further site specific NEPA reviews, which would prevent prompt implementation.
RESPONSE
Appendix D to Volume 1 of this EIS includes in Chapters 3 and 5 and Attachments D and E detailed evaluation of methods and facilities for storage of Naval spent nuclear fuel at Navy sites under the alternatives considered. Chapters 3 and 5 and Attachment F provide detailed information on the exposures and potential health effects associated with each method of Naval spent nuclear fuel management at shipyards and Navy prototype sites, as well the effects associated with examination of Naval spent nuclear fuel at DOE sites. In all of these cases, it is assumed that the facilities used for Naval spent nuclear fuel management would be properly designed for the weather, seismic, and other conditions applicable to the particular site evaluated.
This EIS provides the information necessary to show that all three methods of storage at shipyards and Navy prototype considered (dry storage, storage in shipping containers, and storage in water pools) are practical and could be accomplished safely and with very small risks. This level of analysis is sufficient to select a management alternative for Naval spent nuclear fuel. Further NEPA review may be required for construction of specific facilities, but this review could easily be conducted within the transition period allotted for facility and equipment design and construction.

II 08.01 (007) Preferences

COMMENT
Some persons expressed general opposition to use of one or more of the Navy sites for storage of spent nuclear fuel from other locations.
RESPONSE
Under the No Action and Decentralization alternatives, Navy sites would be used to store spent nuclear fuel which was removed from reactors during servicing at the site performing the servicing, with the exception of Norfolk Naval Shipyard, which would accept Naval spent nuclear fuel from Newport News Shipbuilding and Drydock Company. This transfer would be necessary because Newport News Shipbuilding and Drydock is a private facility. The EIS states that the Navy's preferred alternative is to resume shipment of Naval spent nuclear fuel to INEL for examination and storage pending ultimate disposition.

II 08.01 (008) Preferences

COMMENT
All U. S. citizens benefitted from the protection provided by nuclear-powered Naval vessels so the No-Action and Decentralization alternatives would not succeed in keeping Naval spent nuclear fuel in the vicinity of those who derived the benefits of its use.
RESPONSE
As stated by the commentor, the argument that spent nuclear fuel should be stored at the location where it is removed during reactor servicing in order to keep it in the locality of those who enjoyed the benefits associated with its use does not apply to Naval spent nuclear fuel. The commentor observes that all U. S. citizens benefitted from the operation of the Navy's submarines and surface ships.
Section 3.9 of Appendix D to Volume 1 of this EIS discusses the fact that storing or examining Naval spent nuclear fuel at Naval sites is not the Navy's preferred alternative. The Navy has clearly stated its preferred

alternative for Naval spent nuclear fuel: namely, transport to INEL for examination and storage pending ultimate disposition.

II 08.01 (009) Preferences

COMMENT
Governor Andrus refused to allow spent nuclear fuel into Idaho. DOE with the court's help has been able to circumvent Governor Andrus for Naval spent nuclear fuel shipments to INEL.
RESPONSE
This statement is inaccurate. In August 1993, the Secretary of the Navy, the Secretary of Energy, and Governor Andrus signed an agreement allowing 19 specific shipments of Naval spent nuclear fuel to Idaho while this EIS was being prepared and allowing for additional shipments if the Secretary of Defense certified they were needed for National Defense. In December 1993, the court accepted the agreement, modifying its order to provide for the additional shipments while the EIS was prepared. All shipments of Naval spent nuclear fuel have been conducted in full compliance with this order.

II 8.2 NEPA-Related Comments

II COMMENT

Commentors stated that, a public hearing was poorly handled by the government representatives or the public review process should be different.
RESPONSE
The public hearings on this EIS were designed to provide members of the public an opportunity to ask questions and obtain information as well as provide comments. To accomplish these goals, the hearings consisted of a presentation summarizing the information contained in this EIS, a session in the main hearing room during which questions from those in attendance were answered, and a period in which those in attendance could state their comments on the content of the EIS. In addition, a smaller room with a recorder and a representative of DOE or the Navy was provided for those who did not wish to speak in front of the audience or who did not want to wait to make their comments. Informal question and answer sessions were also conducted to provide an additional opportunity for members of the public to ask more detailed questions.
The hearings began with brief summaries of the alternatives and the associated impacts by DOE and Navy officials. These summaries were intended to provide background on the nature of the decision to be made, the alternatives considered, and the results of the evaluations of potential impacts on human health and the environment.
The summary presentations were followed by a "question and answer" period to permit those in attendance to obtain information they might desire concerning the alternatives, supporting analyses, or the results of the evaluation of impacts. These sessions were intended to allow those in attendance to bring out any additional information on the EIS or the process that they might consider useful. Each question and answer during this session was recorded in its entirety as part of the permanent record of the hearings.
After the question and answer sessions, those in attendance were provided an opportunity to make a public statement providing their comments on this EIS. Each person's statement was recorded verbatim as part of the permanent record of the hearings. At the same time, a court recorder and an official of DOE were made available in a small, separate room to allow those who did not wish to speak in front of the

hearing
audience or who did not wish to wait for an opportunity to address the full hearing an opportunity to have
their statements recorded verbatim. DOE and Navy officials were also made available in an informal
setting to answer additional questions from those in attendance.
Written statements were also accepted at each hearing location from those who wished to provide their
comments in that form. In addition, a toll-free "800 number" telephone service was provided for those who
wished to submit comments orally or by facsimile. Of course, written comments were accepted by mail.
All written and oral comments, regardless of whether they were provided before the hearing audience, were
recorded and analyzed, with no greater weight given to the manner in which the comments were provided.
The goals and intentions of the Navy and DOE in designing and carrying out the public review process,
including the public hearings, was to make it as simple, easy, and convenient as possible for members of
the public to be fully informed and then provide their comments in the manner they preferred.

II COMMENT

Construction of the new dry cell at the Expended Core Facility was started without adequate NEPA documentation.
RESPONSE
This comment is not accurate. Adequate NEPA documentation existed at the time the Expended Core
Facility dry cell expansion construction was initiated. Nonetheless, the dry cell construction was included
in Volume 2, Part B of the EIS to ensure that this EIS would be a comprehensive document presenting
information on all projects expected during the period which Volume 2 of the EIS covers.

II COMMENT

The discussion of the new Expended Core Facility dry cell in the EIS does not characterize emissions from
the facility.
RESPONSE
Annual releases of radioactivity from Expended Core Facility are identified in Table F.1.4.1.1-1 of
Appendix D to Volume 1 of the EIS. Analysis of the environmental impacts of these emissions is included
in Appendix D. Volume 2, Appendix C, of the EIS correctly states that emissions from the Expended
Core Facility would not be expected to change significantly due to the construction of the dry cell facility.
Instead, operations now conducted in other parts of the Expended Core Facility would be replaced by
operations in the new dry cell if the new dry cell becomes operational. Appendix C of Volume 2 has been
modified to clarify this point.

II 8.3 Policy

II II COMMENT

Operation of the Navy's nuclear-powered vessels should be stopped immediately or should be stopped until
a specified condition (such as a decision on ultimate disposition of spent nuclear fuel) is satisfied.
RESPONSE
Decisions on whether to operate nuclear-powered Naval vessels and the numbers of such vessels are made
by the Congress and the President of the United States. Therefore, they are beyond the scope of this
Environmental Impact Statement.
Further, as discussed in the Environmental Impact Statement, spent nuclear fuel already exists

and will
require safe management at some location. The EIS considers management of spent nuclear fuel containing
2800 metric tons of heavy metal, 2700 metric tons of which is already in existence. Approximately 65
metric tons of the total of 2800 metric tons of heavy metal is Naval spent nuclear fuel. Thus, stopping the
use of nuclear power for Navy ships will not eliminate the need for safe management of spent nuclear fuel.

II COMMENT

A decision on the method for managing Naval spent nuclear fuel should be postponed until a plan for the
ultimate disposal of spent nuclear fuel is in place.
RESPONSE
As discussed in the Environmental Impact Statement, Naval spent nuclear fuel already exists and will
require safe management at some location. There is no way to defer a decision on how to manage existing
Naval spent nuclear fuel until permanent storage is available.

II COMMENT

The Naval Nuclear Propulsion Program should be regulated by some other federal or independent agency.
RESPONSE
The Naval Nuclear Propulsion Program is subject to regulation by many other agencies, as specified in
applicable laws, executive orders, and regulations. For example, the Naval Nuclear Propulsion Program is
subject to regulation under the Resource Conservation and Recovery Act (RCRA), the Toxic Substances
Control Act (TSCA), the Comprehensive Environmental Response Compensation and Liability Act
(CERCLA), the Superfund Amendments and Reauthorization Act (SARA), the Safe Drinking Water Act,
the Clean Water Act, the Clean Air Act, and many others. All of these laws have either the U. S.
Environmental Protection Agency or appropriate departments in the host states as the regulator. The Naval
Nuclear Propulsion Program's compliance with these laws is actively monitored by the EPA and the states
and since 1980 there have been more than 300 inspections, examinations, and audits by state and federal
agencies under these laws. This monitoring has been facilitated by the efforts of the Naval Nuclear
Propulsion Program in the 1980's to ensure that the regulators received security clearances.
Decisions on the appropriate regulating agencies and the type, extent, and nature of regulation of the
operations of nuclear-powered Naval vessels and the Naval Nuclear Propulsion Program are made by the
Congress and the President of the United States. Therefore, this issue is beyond the scope of this
Environmental Impact Statement.

II COMMENT

The Environmental Impact Statement should consider ways to reduce the amount of Naval spent nuclear
fuel produced, including reducing the number of nuclear powered warships in operation or to be built.
RESPONSE
The EIS explains the need for examination of spent Naval fuel to support achieving the goal of fuel lasting
the life of a ship, thus avoiding the need for refueling, and reducing the amount of spent nuclear fuel
created. However, the draft EIS does not consider reducing the number of nuclear powered warships in
operation or to be built. Such matters are directed by Congress and the President fulfilling their
fundamental Federal responsibilities under the Constitution in providing for the common defense. It would
be inappropriate and unfeasible for this EIS to consider what the military force structure of the

United
States should be. Rather, the EIS analysis supports accomplishment of the Navy's fundamental mission as
established and funded by Congress.

II COMMENT

Some commentors indicated that DOE or the Navy is not providing complete, accurate, or truthful information.
RESPONSE
The Navy has provided a large amount of information on the shipment of Naval spent nuclear fuel and the
types and amounts of radiation or radioactive material involved in releases from normal operations and
postulated accidents in Appendix D. Appendix D also includes descriptions of the Expended Core Facility
and Naval spent nuclear fuel operations. The Navy has attempted to provide enough information on
radiation, radioactivity, and other aspects of operations or hypothetical accidents to allow independent
calculation of the environmental impacts. This is intended to permit independent analysis and verification
of the estimated impacts calculated by the Navy. Every effort has been made during the preparation of this
EIS to see that the best available information on impacts has been included, including public review in
accordance with the requirements of the Act.
In this EIS, the Navy has clearly stated its preferred alternative and discussed how this alternative would
support the Navy's mission, as established by Congress. In Appendix D, the environmental impacts of the
Navy's proposed action and alternatives are evaluated in accordance with NEPA, the Council on
Environmental Quality regulations, and Navy regulations.

II COMMENT

Analyses of the alternatives should be performed by independent groups or individuals.
RESPONSE
The process specified under NEPA provides opportunities for independent evaluation of the environmental
impacts associated with alternatives for actions such as the subject of this EIS. As a part of this process,
the draft EIS has been provided to a wide range of state, federal, and local agencies and officials and to
private groups and individuals. This is intended to permit them to perform their own evaluation of the
analyses and the conclusions.
Many of these independent reviewers submitted the results of their reviews as comments. These comments
were used to prepare the final EIS which is provided to the person deciding upon the alternative to be
selected.
The Navy has provided a large amount of information on the shipment of Naval spent nuclear fuel and the
types and amounts of radiation or radioactive material involved in releases from normal operations and
postulated accidents for all of the alternatives in Appendix D to Volume 1. The Navy has attempted to
provide enough information on the radiation, radioactivity, and other aspects of operations or reasonably
foreseeable accidents to allow independent calculation of the environmental impacts. All of this
information is intended to permit independent analysis and verification of the estimated impacts calculated
by the Navy.

II COMMENT

The risks associated with the management of Naval spent nuclear fuel are unacceptable.
RESPONSE
The risks associated with all of the alternatives considered for management of DOE's spent nuclear fuel,
including Naval spent nuclear fuel have been calculated and presented in this EIS. All of these risks would

be small. The risks associated with the normal operations involved in management of Naval spent nuclear fuel and a broad range of hypothetical accidents are summarized in Chapter 3 of Appendix D to Volume 1. For example, as summarized in Chapter 3 and described in more detail in Chapter 5 and Attachments A and F to Appendix D, the risk resulting form normal operations or accidents associated with Naval spent nuclear fuel management during the 40 years covered by this EIS would be far less than 1 additional cancer fatality or radiation-related health effect over the entire time. This risk is very small in comparison to the other risks of daily life.

II COMMENT

The Navy and DOE have already made up their minds on the action they plan to choose and are not seriously considering all of the alternatives presented or they plan to implement some action not revealed in this EIS.
RESPONSE
In accordance with NEPA, no decision on the alternative to be implemented has been made or will be made until the final EIS is issued and no actions are being taken in the meantime which would prejudice that decision. The final decision and the basis for it will be documented in the Record of Decision which will be published in the Federal Register in June 1995.
In this EIS, the Navy has stated its preferred alternative and discussed how this alternative would support the Navy's mission, as established by Congress. In Volume 1, Appendix D, the environmental impacts of the Navy's proposed action and all alternatives, including those which would not support the Navy's mission, are evaluated in accordance with NEPA, the Council on Environmental Quality regulations, and DOE and Navy regulations.

II COMMENT

The Navy or DOE will decide on the alternative to be implemented based on faulty or hasty research.
RESPONSE
NEPA requires the preparation of an EIS for major federal actions as a means to assure comprehensive evaluation of the impacts associated with the alternatives. It also provides for review of the EIS by the public and other agencies in order to develop assurance that important aspects have not been overlooked or that pertinent information has not been omitted. Every effort has been made during the preparation of this EIS to see that the best available information on impacts has been included, including public review in accordance with the requirements of the Act.
The risks associated with all of the alternatives considered were found to be very small. Even so, every effort was made to use the best available information on the effects of the actions considered and the methods for calculating effects which could not be measured. A wide range of disciplines were examined to assure that any important effects were not overlooked. The results of independent reviews and public comments have been carefully considered. It would appear that the potential environmental impacts of the alternatives considered have been evaluated thoroughly and the information is adequate to support the required decision.
As a part of this effort, the Navy has provided a large amount of information on the shipment of Naval spent nuclear fuel and the types and amounts of radiation or radioactive material involved in releases from normal operations and postulated accidents for all of the alternatives in Appendix D to Volume 1. The Navy has attempted to provide enough information on the radiation, radioactivity, and other aspects of

normal operations or hypothetical accidents to allow independent calculation of the environmental impacts. All of this information is intended to permit independent analysis and verification of the estimated impacts calculated by the Navy.

II COMMENT

The Navy should analyze the effects of a reactor accident at the Kesselring Site.
RESPONSE
Such matters are outside the scope of this EIS. The EIS deals with the alternatives for handling, transporting, examining, and storing spent nuclear fuel, including Naval spent nuclear fuel, once it has been removed from nuclear reactors. It does not include any information to be used in conjunction with decisions related to the start-up, shutdown, or continued operation of reactors. Consequently, it is not intended to include analyses of the effects of reactor accidents.

II COMMENT

The health, safety, and welfare of citizens should be considered in reaching any decision on the course of action to be used for management of spent nuclear fuel.
RESPONSE
This EIS is devoted to analysis of all effects on human health and the environment which might result from operations or reasonably foreseeable accidents associated with DOE and Navy management of spent nuclear fuel. The details of the analyses for Naval spent nuclear fuel management are described in Attachments A and F of Appendix D to Volume 1. Chapters 3 and 5 summarize the results of these analyses and the detailed results are described in the Attachments to Appendix D.
Every effort has been made to include all possible affected areas, including any identified during the public review of this EIS. It is believed that no important area of potential human health effect or environmental impact has been omitted from this EIS.
The health, safety, and welfare of citizens will be considered carefully in reaching any decision on the course of action to be used for management of spent nuclear fuel.

II COMMENT

If the Navy and DOE decide to manage spent nuclear fuel at a location for the period covered by this EIS, that location will become a permanent site for storage of spent nuclear fuel.
RESPONSE
It is not correct that a site selected for management of Naval spent nuclear fuel during the period of this EIS will become a permanent site for storage of spent nuclear fuel. Congress has determined under the Nuclear Waste Policy Act, as amended, that spent nuclear fuel and high-level waste will be buried in a geologic repository, independent of the location where DOE or commercial spent nuclear fuel is stored.
The Navy supports selecting and implementing an approach for final disposition of Naval spent nuclear fuel as soon as possible. There is no benefit to the Navy to store Naval spent nuclear fuel any longer than is necessary to implement the method selected for ultimate disposition. The Navy's commitment is reinforced by the Navy's bearing the cost of storing Naval spent nuclear fuel pending ultimate disposition.
The 40-year period considered in this EIS is intended to provide enough time for selecting and implementing a method for ultimate disposition. In this EIS, the Navy has clearly stated its preferred alternative for management of Naval spent nuclear fuel during the 40 year interim period and discussed how this alternative would support the Navy's mission, as established by Congress. In Volume 1, Appendix D, the environmental impacts of the Navy's proposed action and all alternatives, including those that would not support the Navy's mission, are evaluated in accordance with NEPA, the Council on Environmental Quality regulations, and DOE and Navy regulations.

See also the response to comment 08.03.03 (001).

II COMMENT

The Navy should reconsider its policy of not notifying emergency response organizations of shipments of
Naval spent nuclear fuel passing through their areas of responsibility.
RESPONSE
The Naval Nuclear Propulsion Program does not announce the times or routes of shipments in order to
make it more difficult for terrorists, saboteurs, or hijackers to plan and execute an attack on these
shipments. This is in accordance with federal government policy and regulations governing such
shipments. The Navy's policy on notification is also in full compliance with the applicable state and
federal regulations for such shipments containing highly enriched weapons-grade uranium. The extremely
rugged design of Naval spent nuclear fuel and the shipping containers, which comply fully with
Department of Transportation and Nuclear Regulatory Commission requirements, make it
unnecessary for emergency response personnel to maintain any extraordinary level of alert during the
movement of shipments.
As a practical matter, such notification would not improve emergency response or reduce the already small
risks for these shipments. Every shipment is accompanied at all times by escorts who can immediately
contact the Naval Nuclear Propulsion Program emergency control center and federal or local emergency
response personnel in the event of a problem. When notified, emergency response personnel would utilize
existing emergency response plans and capabilities, if needed.
The risks associated with the complete range of accidents which might occur during these shipments are
analyzed in detail in Attachment A of Appendix D to Volume 1 and were shown to be very small.

II COMMENT

The Naval Nuclear Propulsion Program refused to be included in the assessment of vulnerabilities for spent
nuclear fuel storage performed by DOE.
RESPONSE
This comment is incorrect. The Naval Nuclear Propulsion Program participated in the referenced review of
potential vulnerabilities in DOE spent nuclear fuel facilities. Facilities at the Idaho Chemical Processing
Plant and the Expended Core Facility at INEL used for the management of Naval spent nuclear fuel were
included in the study and are discussed in both the summary (Volume I) and the detailed information
sections (Volume II and III) of the final report.
DOE's Vulnerability Assessment states on pages 22 and 32 of Volume 1 that no vulnerabilities associated
with the storage of Naval spent nuclear fuel were identified.

II COMMENT

The risks and costs associated with the period of transition to a new alternative for the management of
Naval spent nuclear fuel are unacceptable.
RESPONSE
The risks associated with all of the alternatives considered for management of DOE's spent nuclear fuel,
including Naval spent nuclear fuel have been calculated and presented in this EIS. All of these risks would
be small. The risks associated with the normal operations involved in management of Naval spent nuclear
fuel and a broad range of hypothetical accidents are summarized in Volume 1, Appendix D, Chapter 3.
For example, as summarized in Chapter 3 and described in more detail in Chapter 5 and Appendix D,
Attachments A and F, the risk resulting from normal operations or accidents associated with Naval spent
nuclear fuel management during the 40 years covered by this EIS would be less than 1 additional

cancer
fatality or radiation-related health effect over the entire time. This risk is very small in comparison to the
other risks of daily life.
As discussed in the EIS, it is true that selection of an alternative which would involve a change from the
current practice of sending Naval spent nuclear fuel to the Expended Core Facility at INEL would involve
higher costs and could require a transition period during which Naval spent nuclear fuel would accumulate
at the sites where it is removed from reactors. Even though the Navy does not prefer any of these
alternatives, the impacts on human health and the environment associated with such a transition period
have been considered in Volume 1, Appendix D and were found to be very small.

II COMMENT

The alternatives for management of DOE and Naval spent nuclear fuel should be reconsidered after ten
years or possibly even five years instead of forty years.
RESPONSE
The alternatives for management of spent nuclear fuel will be reconsidered in the future if new information
or circumstances show a need for changes in the strategy for management of spent nuclear fuel.

II COMMENT

The Navy has disregarded the requirements of NEPA by identifying a preferred alternative in the Draft EIS.
RESPONSE
The statement that the Navy has disregarded the requirements of NEPA by identifying a preferred
alternative in the Draft EIS is incorrect. To the contrary, the regulations issued by the Council on
Environmental Quality to implement NEPA require an agency to identify in the Draft EIS its preferred
alternative if one exists (40 CFR 1502.14(e)). This preferred alternative may be altered in the Final EIS if
substantive issues are identified during public review of the Draft EIS. Therefore, identifying a preferred
alternative in the Draft EIS does not imply that a decision has already been made or that the agency has
any lack of regard for the public process specified by NEPA or the value of the public review.
Identification of a preferred alternative in the Draft EIS is not a violation of the requirements of NEPA, nor
is it prejudicial to public or technical review. It simply provides a clear indication of the agency's
preference based on the information available at the time the Draft EIS is issued and allows the public to
include this factor in their review of the Draft EIS. Indeed, most draft environmental impact statements do
contain preferred alternatives to serve this purpose.

II COMMENT

The risks associated with defueling of nuclear-powered warships should be included in this EIS.
RESPONSE
Refueling and defueling of Naval nuclear reactors are considered to be part of the effort associated with
reactor operations. The purpose of this EIS is to evaluate alternatives for and the possible impacts on the
environment and human health associated with the management of spent nuclear fuel, including Naval
spent nuclear fuel, after it has been removed from reactors. Indeed, Nuclear Regulatory Commission
regulations and DOE Orders define spent nuclear fuel as "fuel which has been withdrawn from a nuclear
reactor following irradiation, the constituent elements of which have not been separated by reprocessing".
All of the alternatives considered would require removal of spent nuclear fuel from nuclear-powered
ships, so analyses of accidents associated with such work would not assist in the evaluation of

the
alternatives for management of spent nuclear fuel. This the case for other types of spent nuclear fuel as
well, and refueling of university or research reactors is similarly not within the scope of this EIS.

II COMMENT

The Navy should pay the costs for storage and disposal of Naval spent nuclear fuel.
RESPONSE
Under current federal policy, the Navy does pay the costs of storage for Naval spent nuclear fuel and will
pay the costs of disposal for Naval spent nuclear fuel once those costs are established.

II COMMENT

Disruption of the process of deactivations and refuelings of nuclear-powered Naval vessels will impair the
Navy's mission and affect the national security of this country.
RESPONSE
None of the alternatives considered in detail in this EIS would impact the Navy's ability to refuel and
defuel nuclear-powered warships because each alternative provides for a transition period while new
facilities would be procured or constructed. The Navy's preferred alternative best supports the Navy's
broader mission by allowing examination of all Naval spent nuclear fuel. The importance of examination
of Naval spent nuclear fuel to the Navy's mission is discussed in Section 3.7 of Appendix D to Volume 1 of
this EIS.

II COMMENT

Operation of reactors at the Kesselring Site should be stopped immediately or should be stopped until a
specified condition (such as a decision on ultimate disposition of spent nuclear fuel) is satisfied.
RESPONSE
Cessation or continuation of reactor operations at the Kesselring Site is not one of the alternatives being
evaluated in this EIS. The continued operation of these reactors will not remove the need for a decision on
a method for safely managing spent nuclear fuel until a method for ultimate disposition is selected.
Therefore, the continued operation of the reactors at the Kesselring Site is beyond the scope of this
Environmental Impact Statement.
As discussed in this Environmental Impact Statement, spent nuclear fuel already exists and will require safe
management at some location. This EIS considers management of spent nuclear fuel containing 2800
metric tons of heavy metal, 2700 metric tons of which is already in existence. Approximately 65 metric
tons of the total of 2800 metric tons of heavy metal is Naval spent nuclear fuel and only a small portion of
this will be generated at the Kesselring Site in the coming years. Thus, stopping the operation of the
reactors at the Kesselring Site will not eliminate the need for safe management of spent nuclear fuel.

II COMMENT

A commentor was skeptical that the transition to any new method for management of Naval spent nuclear
fuel could be implemented in time to prevent accumulation of spent nuclear fuel at Navy sites.
RESPONSE
Section 3.8 of Appendix D to Volume 1 of the EIS states that most of the alternatives would require a
period of implementation while facilities were constructed and equipment was procured. Existing

facilities
and equipment would be employed to the fullest extent to manage Naval spent nuclear fuel during the first
six years of the transition to ensure refueling and defueling of nuclear-powered warships could proceed as
necessary during this period. Naval spent nuclear fuel would be transported to the Expended Core Facility
at INEL during the transition should an alternative be selected requiring construction of a new examination
facility or procurement of additional shipping containers for dry storage at Navy sites. For the No Action
alternative, Naval spent nuclear fuel would be shipped to INEL for approximately three years. For
alternatives requiring replacement of the Expended Core Facility, the transition would take approximately
six years. After the transition period, the new facilities would be completed to the point that they could
begin to accept Naval spent nuclear fuel.
These transition periods represent the best estimate of the time needed to execute any of the alternatives,
given the need for federal budgeting, procurement, and construction.

II II COMMENT

Some persons alleged that the storage of Naval spent nuclear fuel at Pearl Harbor Naval Shipyard would
violate a provision of the state constitution of Hawaii.
RESPONSE
The state constitution of Hawaii prohibits the disposal of radioactive waste within the state without the
approval of the state legislature. Regardless of the applicability of that requirement to federal activities, no
disposal of spent nuclear fuel in Hawaii is considered in this EIS. Under all of the alternatives considered,
Naval spent nuclear fuel would be monitored and maintained at the interim storage location while the
method for ultimate disposition is being identified and implemented, consistent with Congressional
direction, such as disposal in a geologic repository. Currently, Congress has directed DOE to assess the
Yucca Mountain site in Nevada as a candidate geologic repository.

II COMMENT

The Office of State Planning for the state of Hawaii has requested submittal of a Coastal Zone Management
consistency plan if an alternative involving the storage of Naval spent nuclear fuel at Pearl Harbor is
selected.
RESPONSE
In accordance with the Coastal Zone Management Act (16 USC 1453), the Pearl Harbor Naval Shipyard,
as part of the Pearl Harbor Naval Base, is excluded from the coastal zone since it is on land controlled by
the Federal Government. Therefore, a Coastal Zone Management consistency determination is not required
for storage of Naval spent nuclear fuel at Pearl Harbor Naval Shipyard.
It should be noted that the impacts of the alternatives involving storage of spent Naval nuclear fuel at the
shipyard would be very small, so no impact on Hawaii's Coastal Zone would be expected if such an
alternative were selected.

II II COMMENT

The Environmental Impact Statement should provide a description of the impacts on the Navy's mission
resulting from not removing spent nuclear fuel from ships.
RESPONSE
Section 3.6.3 of Appendix D to Volume 1 provides a description of the impacts to the Navy mission (and
to the environment) that would arise from storing Naval spent nuclear fuel on inactive ships. In summary,

storing Naval spent nuclear fuel aboard inactive ships would use up the limited space at shipyards, idle skilled shipyard workers when the shipyards ran out of ship servicing work and room to do work, and tie up highly trained Navy nuclear ship operators. In return, this concept would not produce lower environmental impacts than the alternatives considered in detail in this EIS and might actually increase the environmental impacts.

It is physically possible to retain spent fuel in the reactors in nuclear-powered vessels and moor the ships at shipyards until a decision on the ultimate disposition of spent nuclear fuel is reached. Most inactive Russian nuclear-powered submarines have been tied up at shipyards without removing their spent fuel. After a decision on ultimate disposition is made and implemented, the fuel could be removed from the ships and transported to the permanent disposal facility.

Implementing this alternative would require extensive modifications to facilities at shipyards, including increasing the number of piers and the availability of waterfront utilities to support the ships at their moorings. Other shipyard facilities also might have to be modified or replaced as a result of the use of waterfront space to moor the numbers of ships involved during the 40-year period. The construction of piers and other needed facilities would cause impacts on the waterfronts and harbors and could affect the local ecology. The radiological effects on the environment or people in the vicinity would be negligible as long as the nuclear-powered vessels and propulsion plants were maintained under the same procedures and discipline used for operating ships, since the environmental effects of operating U.S. Navy nuclear-powered vessels are well documented and known to be small.

This method for storing Naval spent nuclear fuel would cause some increase in construction activities, but in the long run it would result in the idling of skilled workers as the shipyards ran out of room and work schedules were disrupted by the loss of ship servicing work. Mooring the ships without removing the Naval spent nuclear fuel would also utilize highly trained Navy nuclear ship operators in the unproductive task of watching over shut down ships. The resources dedicated to providing the additional moorings would produce no improvements in a shipyard's ability to perform its mission and would actually decrease its capabilities.

In addition, the costs and impacts on national security resulting from such an approach would be large; it would affect the ability of the U.S. Navy to carry out its mission. Further, the costs of maintaining the ships with spent nuclear fuel remaining installed under Navy operating procedures and providing the additional piers and waterfront services and utilities would be large. The costs of this approach would be high both for ships which are to be decommissioned and for ships which would normally be refueled and returned to duty. In the case of ships which are being decommissioned at the end of their life, the primary cost of this alternative would be to maintain qualified nuclear operators, shipboard equipment, and associated shipyard support, including security, to ensure nuclear and radiological safety for the workers and the public. This would be more costly than removal of the spent fuel for storage because of the need to maintain operating personnel aboard the ships until they are defueled. Failure to remove the spent nuclear fuel from Navy ships which are still needed for service would result in these ships being unavailable once their currently installed reactor fuel reaches the end of useful life. This is impractical and even more expensive than leaving the spent fuel in decommissioned ships because the ships would have to be replaced or the Navy would be forced to operate without the full complement of ships required to execute national policies.

In summary, this alternative would be costly and would involve extensive actions which would have an effect on the environment due to construction activities. This alternative would also not permit continued service of many Navy ships and only postpone decisions on a satisfactory storage location. As a result of these considerations, this alternative was eliminated from detailed analysis.

Storing Naval spent nuclear fuel on inactive ships would also prevent examination of the Naval spent nuclear fuel. The EIS explains that the inspections currently performed are important for three reasons: to provide data on current reactor performance, to validate models used to predict future performance, and to support research to improve reactor design (See Sections 2.4.1, 3.1, 3.9 and B.2 of Appendix D to Volume 1).

Naval fuel examinations provide real data on reactor cores installed in ships currently operating in the Fleet. This information is essential to validate calculational models and analyses. Through the years, the Naval Nuclear Propulsion Program has built a substantial technical database from examinations of earlier reactor core types. The Program predicts the performance of current core types with calculational models supported by this database. Essentially no information exists yet on core types that will form the backbone of the nuclear fleet for the foreseeable future (Trident-class submarines, LOS ANGELES-class submarines, and NIMITZ-class aircraft carriers). Data from these reactor core types are necessary to validate basic assumptions of current models, provide a measure of variability which exists between individual cores and within a single core, and identify any unanticipated effects of operation that have not been evaluated or accounted for in current models.

Confidence in the validity of engineering models is essential for assurance that ship operations can continue without restriction. Since reactors operating in the Fleet are not taxed to the limits of their design during peacetime operations, the Program requires a technically-sound basis for continuing to conclude we have a robust design. Prototype reactors can not by themselves provide this information as their operation is not identical to that of a warship. The fact that a core operated satisfactorily with no indication of a problem during a normal shipboard lifetime does not guarantee that the core would have been acceptable under the worst case conditions for which it was designed. The examination of spent nuclear fuel from each core provides the assurance needed that there are no unexpected technical issues not evaluated and addressed in the models that would affect continued unrestricted operation.

Data from examinations also contributes significantly to improvements in reactor design. Improvements in calculational models and analyses have enabled the Program to increase both the lifetime and the performance of reactor cores. For example, the reactor cores installed in the USS NAUTILUS in the 1950's operated for two years. Current reactor cores are designed to last over 20 years, a significant technical accomplishment unique to Naval fuel. The Navy is seeking to develop a life-of-the-ship (30 year) core for the New Attack Submarine which is still in the design stages. This core will further reduce the amount of spent nuclear fuel generated in the long-term, as ships will not require refueling during their lifetime. Continuing data from current core types is essential if this effort is to succeed.

In the final analysis, examination of spent Naval fuel absorbs considerable resources. In a time of extremely tight budgets, the Navy would not be performing such examinations unless they were judged to be necessary to support the conduct of technical work. Examinations done over the last 37 years have played a key role in achieving over 4400 reactor-years of safe nuclear reactor operations, having nuclear-powered warships steam over 100,000,000 miles, and increasing core lifetimes from 2 years to over 20 years. The record shows there is no reason for reducing the technical basis upon which safe Naval reactor design and operation are founded -- and that basis includes as a key cornerstone the examination of Naval spent nuclear fuel.

II COMMENT

The EIS should explain further why examination of all Naval spent nuclear fuel is essential to the mission of the Navy.

RESPONSE

The EIS explains that these inspections are important for three reasons: to provide data on current reactor performance, to validate models used to predict future performance, and to support research to improve reactor design (See Volume 1, Appendix D, sections 2.4.1, 3.1, 3.9, and B.2). The EIS evaluates five sites for full examination of Naval spent nuclear fuel and one site for limited examination. The Expended Core Facility at INEL is the only existing facility with the capability for performing examinations of Naval spent nuclear fuel.

Naval fuel examinations provide real data on reactor cores installed in ships currently operating in the Fleet. This information is essential to validate calculational models and analyses. Through the years, the Naval Nuclear Propulsion Program has built a substantial technical data base from examinations of earlier reactor core types. The Program predicts the performance of current core types with calculational models supported by this data base. Essentially no information exists yet on core types that will form the backbone of the nuclear fleet for the foreseeable future (Trident-class submarines, LOS ANGELES-class submarines, and NIMITZ-class aircraft carriers). Data from these reactor core types are necessary to validate basic assumptions of current models, provide a measure of variability that exists between individual cores and within a single core, and identify any unanticipated effects of operation that have not been evaluated or accounted for in current models.

Confidence in the validity of engineering models is essential for assurance that ship operations can continue without restriction. Because reactors operating in the Fleet are not taxed to the limits of their design during peacetime operations, the program requires a technically sound basis for continuing to conclude we have a robust design. Prototype reactors can not by themselves provide this information as their operation is not identical to that of a warship. The fact that a core operated satisfactorily with no indication of a problem during a normal shipboard lifetime does not guarantee that the core would have been acceptable under the worst case conditions for which it was designed. The examination of spent nuclear fuel from each core provides the assurance needed that there are no unexpected technical issues not evaluated and addressed in the models that would affect continued unrestricted operation.

Data from examinations also contribute significantly to improvements in reactor design. Improvements in calculational models and analyses have enabled the program to increase both the lifetime and the performance of reactor cores. For example, the reactor cores installed in the USS NAUTILUS in the 1950s operated for 2 years. Current reactor cores are designed to last more than 20 years, a significant technical accomplishment unique to Naval fuel. The Navy is seeking to develop a life-of-the-ship (30-year) core for the New Attack Submarine which is still in the design stages. This core will further reduce the amount of spent fuel generated in the long-term, as ships will not require refueling during their lifetime. Continuing data from current core types is essential if this effort is to succeed.

In the final analysis, examination of spent Naval fuel absorbs considerable resources. In a time of extremely tight budgets, the Navy would not be performing such examinations unless they were judged to be necessary to support the conduct of technical work. Examinations done over the last 37 years have played a key role in achieving more than 4,400 reactor-years of safe nuclear reactor operations, having nuclear-powered warships steam more than 100 million miles, and increasing core lifetimes from 2 years to more than 20 years. The record shows there is no reason for reducing the technical basis upon which safe Naval reactor design and operation are founded -- and that basis includes as a cornerstone the examination of Naval spent nuclear fuel.

Language has been added to Volume 1 and Volume 1, Appendix D, Chapter 3 of the EIS explaining this matter further.

II COMMENT

The EIS should explain how much Naval spent nuclear fuel receives more than just visual examination, and why that is essential to meet the Navy's mission.

RESPONSE

The EIS explains that all Naval spent nuclear fuel is visually examined on exterior and interior surfaces (See sections 2.4.1 and B.2 of Appendix D to Volume 1). These examinations require that non-fuel structural material first be removed from the fuel cells, an operation which is currently performed at only one location, the Expended Core Facility at INEL. About 10 to 20 percent of the spent nuclear fuel cores receive additional examination in the form of detailed dimensional measurements to detect even minute changes in fuel cell or fuel element dimensions, measurements to determine the amount of surface corrosion on fuel elements which could impede heat transfer, and more intrusive sampling to discern internal performance characteristics of the fuel. The examinations are essential in supporting the Navy's continued safe operation of Naval reactors and design of new, improved fuel having longer lifetime (see sections 3.1 and 3.9 of Appendix D).

Naval fuel examinations provide real data on reactor cores installed in ships currently operating in the Fleet. This information is essential to validate calculational models and analyses. Through the years, the Naval Nuclear Propulsion Program has built a substantial technical database from examinations of earlier reactor core types. The program predicts the performance of current core types with calculational models supported by this database. Essentially no information exists yet on core types that will form the backbone of the nuclear fleet for the foreseeable future (Trident-class submarines, LOS ANGELES-class submarines, and NIMITZ-class aircraft carriers). Data from these reactor core types are necessary to validate basic assumptions of current models, provide a measure of variability which exists between individual cores and within a single core, and identify any unanticipated effects of operation that have not been evaluated or accounted for in current models.

Confidence in the validity of engineering models is essential for assurance that ship operations can continue without restriction. Since reactors operating in the Fleet are not taxed to the limits of their design during peacetime operations, the program requires a technically-sound basis for continuing to conclude we have a robust design. Prototype reactors can not by themselves provide this information as their operation is not identical to that of a warship. The fact that a core operated satisfactorily with no indication of a problem during a normal shipboard lifetime does not guarantee that the core would have been acceptable under the worst case conditions for which it was designed. The examination of spent fuel from each core provides the assurance needed that there are no unexpected technical issues not evaluated and addressed in the models that would affect continued unrestricted operation.

Data from examinations also contributes significantly to improvements in reactor design. Improvements in calculational models and analyses have enabled the program to increase both the lifetime and the performance of reactor cores. For example, the reactor cores installed in the USS NAUTILUS in the 1950's operated for two years. Current reactor cores are designed to last over 20 years, a significant technical accomplishment unique to Naval fuel. The Navy is seeking to develop a life-of-the-ship (30 year) core for the New Attack Submarine which is still in the design stages. This core will further reduce the amount of spent nuclear fuel generated in the long-term, as ships will not require refueling during their lifetime. Continuing data from current core types is essential if this effort is to succeed.

In the final analysis, examination of spent Naval fuel absorbs considerable re sources. In a time of extremely tight budgets, the Navy would not be performing such examinations unless they were judged to

be necessary to support the conduct of technical work. Examinations done over the last 37 years have
played a key role in achieving over 4400 reactor-years of safe nuclear reactor operations, having nuclear-powered warships steam over 100,000,000 miles, and increasing core lifetimes from 2 years to over 20
years. The record shows there is no reason for reducing the technical basis upon which safe Naval reactor
design and operation are founded -- and that basis includes as a key cornerstone the examination of Naval
spent nuclear fuel.
Section 2.4.1 of Appendix D to Volume 1 has been revised to include information on the amount of Naval
spent nuclear fuel which receives additional examination.

II COMMENT

Some Naval fuel inspection is performed in facilities other than ECF; this seems to be in conflict with the
navy's assertion that all its spent fuel is examined at ECF. Complete information about the "test specimen
shipments to or from several laboratories and test facilities" mentioned at A.2.4 of Volume 1, Appendix D.
A detailed description of all fuel examination and testing facilities available to the nuclear navy should be
provided.
RESPONSE
This EIS correctly states that all spent nuclear fuel removed from Naval nuclear-powered ships and
prototypes is transported to the Expended Core Facility at INEL. This EIS in Volume 1, Appendix D,
Sections 2.4.1 and B.2, describes how all Naval fuel modules are visually examined in the ECF water
pools to verify that the spent fuel has performed as expected. Some modules are selected for more detailed
examination or analysis. These more extensive examinations, which include destructive as well as nondestructive operations on the fuel and structural regions of the modules, are performed in the Expended
Core Facility water pools and shielded cells.
The Naval Nuclear Propulsion Program evaluates small specimens of both fuel and non-fuel materials for
possible use in Naval reactor systems. As discussed in EIS Volume 1, Appendix D, Section B.3, such
specimens are irradiated at the INEL Test Reactor Area and then returned to the Expended Core Facility
for examination. A typical specimen undergoes several cycles of irradiation and examination over a period
of months or years. The examination includes nondestructive and destructive operations in the Expended
Core Facility water pools and shielded cells. The destructive operations may include, for example,
sectioning of specimens for additional testing or analysis.
Certain specimens may require specialized testing or examination not available at the Expended Core
Facility. After the initial inspections at ECF, these specimens are shipped off- site, typically to the Knolls
Atomic Power Laboratory or the Bettis Atomic Power Laboratory, for further inspection in their shielded
cells and glove boxes.
In summary, all Naval spent nuclear fuel and test specimens are examined at the Expended Core Facility at
INEL. Nearly all of the individual tests and examinations are performed in the Expended Core Facility
water pools and shielded cells. There are currently no other facilities available to the Navy which could
perform this work, but alternatives to the use of the Expended Core Facility at INEL are evaluated in this
EIS. Specialized tests and examinations may be performed at off-site locations and environmental impacts
associated with the transportation of these specimens are included in this EIS (refer to Attachment A) to
provide a complete and comprehensive evaluation for all alternatives considered.

II COMMENT

There is a need to examine Naval spent nuclear fuel to maintain the safety of the nuclear-

powered Naval vessels and to promote improvements in that fuel, including longer-lived cores which produce less spent nuclear fuel for a given amount of energy produced.
RESPONSE
The observation that examination of Naval spent nuclear fuel is important to maintaining the safety of the Navy's nuclear power program and to improving the performance of future designs, along the way reducing the amount of spent nuclear fuel which must be managed, supports the Navy's evaluation of the alternatives in this EIS. The ability to examine all Naval spent nuclear fuel is a factor in the selection of the Navy's preferred alternative for the management of spent nuclear fuel. The examination of spent Naval fuel absorbs considerable resources. In a time of extremely tight budgets, the Navy would not be performing such examinations unless they were judged to be necessary to support the conduct of technical work.
Examinations done over the last 37 years have played a key role in achieving over 4400 reactor-years of safe nuclear reactor operations, having nuclear-powered warships steam over 100,000,000 miles, and increasing core lifetimes from 2 years to over 20 years. The record shows there is no reason for reducing the technical basis upon which safe Naval reactor design and operation are founded -- and that basis includes as a key cornerstone the examination of Naval spent nuclear fuel.

II II COMMENT

The possibility that Native American, Native Hawaiian, or other groups, including low income groups might suffer disproportionately high human health effects or environmental impacts under any of the alternatives considered for management of spent nuclear fuel should be evaluated.
RESPONSE
Analyses of the impacts associated with management of Naval spent nuclear fuel showed that any effects on human health or the environment would be small for all of the alternatives considered. The potential impacts due to normal operations or hypothetical accident conditions associated with the management of Naval spent nuclear fuel present little or no significant risk and do not constitute a credible adverse impact to the surrounding population. Therefore, the impacts of Naval spent nuclear fuel management also do not constitute a disproportionately high and adverse impact to any particular segment of the population, minorities and low-income groups included.
A description of the composition of the populations surrounding the sites considered for management of Naval spent nuclear fuel and the results of evaluation of the potential for disproportionately high and adverse impacts on subgroups of these populations has been added to Chapters 4 and 5 of Appendix D to Volume 1.

II II COMMENT

Some persons stated that they believed that past environmental practices of the Navy had resulted in contamination of the water or soil in a location. Most of these statements did not identify the specific practices involved and in some cases did not identify a specific location, but one mentioned toxic waste in Kitsap County, Washington, another mentioned pollution of Puget Sound, and some mentioned the Kahoolawe and Waikane Valley areas of Hawaii.
RESPONSE
The Navy complies with all applicable federal, state, and local environmental laws and regulations for protection of the environment. Some of the federal laws and regulations which apply to Navy activities include the Resource Conservation and Recovery Act (RCRA), the Toxic Substances Control Act (TSCA), the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), the Superfund

Amendments and Reauthorization Act (SARA), the Safe Drinking Water Act, the Clean Water Act, and the Clean Air Act, among many others. All of these laws have either the U. S. Environmental Protection Agency or appropriate departments in the host states as the regulator. The Naval Nuclear Propulsion Program's compliance with these laws is actively monitored by the EPA and the states and in recent years there have been more than 300 inspections, examinations, and audits by state and federal agencies under these laws with no significant findings.

Some concerns expressed about past environmental practices were not specific enough to permit evaluation. Others do not relate to the activities of the Naval Nuclear Propulsion Program, such as Superfund sites in Kitsap County and the pollution of the Chesapeake Bay.

The Kahoolawe and Waikane Valley areas of Hawaii were target ranges. These areas have not been affected by the operation or servicing of nuclear-powered Naval vessels. Similarly, the concerns about the effects of past environmental practices at Pearl Harbor do not appear to be specifically related to the activities of the Naval Nuclear Propulsion Program. However, the Pearl Harbor Naval complex, the U.S. Environmental Protection Agency, and the state of Hawaii recently entered into a Federal Facility Agreement under Section 120 of the Comprehensive Environmental Response Compensation and Liability Act (CERCLA). This agreement has as its purpose the investigation and remediation of the environmental impacts of past and present Navy activities at Pearl Harbor and assurance of the effectiveness of cleanup actions by coordination with federal and state authorities.

Some of the issues identified in comments may appear to be related to the Naval Nuclear Propulsion Program, but review of these cases has shown that they are not caused by the Program or the Navy. The following are examples of such matters:

1. The report in the Seattle Post-Intelligencer of March 9, 1994, that low levels of Iodine-131 have been detected in the water around Puget Sound Naval Shipyard apparently did not include the fact that the site where Iodine-131 was identified is located near the outfall of the Bremerton sewage treatment plant.

Iodine-131 is commonly used for therapeutic purposes in the treatment of medical patients who have thyroid disorders and it is not unusual to detect Iodine-131 in sanitary sewer effluent resulting from patients' excreta. Consequently, the most likely source of the Iodine-131 found in Sinclair inlet is from medical applications.

Activities associated with Naval nuclear operations at the shipyard do not result in intentional discharge of any radioactive liquid effluent. In addition, Iodine-131 is a product of fission in nuclear reactors, but all Iodine-131 produced from Naval nuclear operations at the shipyard is totally contained within the nuclear fuel and could not escape to the reactor coolant or the environment. Frequent routine testing of the reactor coolant confirms that Iodine-131 is not released from the fuel. Consequently, the source of any radioactive iodine in the waters of Puget Sound was not released from activities associated with nuclear-powered Naval vessels.

2. The reason Saratoga County was fined by the State of New York for problems in Kayderosseras Creek during work on the Northline Bridge was not related to material released from the Kesselring Site. In fact, the fine had nothing to do with the sediment in the creek or material from the Kesselring Site or any other site along the streams involved. This has been confirmed by the Director of the Saratoga County Environmental Management Services.

There is a memorandum of understanding between the New York State Department of Environmental Conservation and Saratoga County covering work in watercourses and wetlands associated with bridge maintenance or renovation. The New York State Department of Transportation requested Saratoga County to perform some work to prevent erosion or undercutting of the approaches to the Northline Bridge. While performing the requested modifications to the Northline Bridge approaches, Saratoga County exceeded the scope of work allowed by the memorandum of understanding. The New York State Department of Environmental Conservation believed that the County should have obtained additional permission to perform the work and consequently fined Saratoga County.

Annual sampling of Glowegee Creek upstream and downstream from the Kesselring Site confirms that there is no significant difference between radioactivity upstream and downstream. The results of sediment sampling and other routine environmental sampling at and around the Kesselring Site are provided every year to state, county, and local officials.
None of the issues raised in such comments are related to the management of Naval spent nuclear fuel or the actions considered in this EIS.

II COMMENT

Some persons stated or implied that they believe that the Navy has not made reports of monitoring available to the public, has incorrectly represented the conclusions of these reports, or has released pollutants to the environment in violation of laws or regulations.
RESPONSE
This comment has no basis. Navy Nuclear Propulsion Program work is subject to and complies with all applicable Federal, state, and local regulations for protection of the environment, including the Resource Conservation and Recovery Act (RCRA), the Toxic Substances Control Act (TSCA), the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), the Superfund Amendments and Reauthorization Act (SARA), the Safe Drinking Water Act, the Clean Water Act, and the Clean Air Act, and others. The U. S. Environmental Protection Agency or state agencies regulate Naval Nuclear Propulsion Program work in accordance with these statutes.
Compliance with these laws for Naval Nuclear Propulsion Program work is actively monitored by the EPA and the states and over the last 14 years there have been more than 200 inspections, examinations, and audits by state and Federal agencies under these laws with no significant problems identified and no fines or penalties imposed. The reports of the monitoring and inspections performed by these agencies can be obtained from the agency involved, and the Navy has provided copies of many of these reports in response to requests from the public.
The Navy has provided a large amount of information on the shipment of Naval spent nuclear fuel and the types and amounts of radiation or radioactive material involved in releases from normal operations and postulated accidents in Appendix D to Volume 1. Appendix D also includes descriptions of the Expended Core Facility and Naval spent nuclear fuel operations, including transportation (See, for example, Chapters 2 and 3 and Attachments A, B, and F). The Navy has attempted to provide enough information on radiation, radioactivity, and other aspects of operations or hypothetical accidents to allow independent calculation of the environmental impacts. This is intended to permit independent analysis and verification of the estimated impacts calculated by the Navy. Every effort has been made during the preparation of this EIS to see that the best available information on impacts has been included.

II COMMENT

The commentor suggests that INEL's Radioactive Waste Management Information System Solid Waste Master Database under-reports the curie content of Navy wastes sent to the Radioactive Waste Management Complex, and that the wastes were buried in a manner that does not comply with applicable regulations. The commentor further states that items in the database in question were inappropriately deleted during a database validation conducted in fiscal year 1992.
RESPONSE
This comment is inaccurate. The Navy has complied and continues to comply with all applicable Federal, state, and local regulations for protection of the environment and handling and disposing of radioactive waste. The commentor's reference to burial of 8 million curies at INEL appears to be based on erroneous data in a 1989 unvalidated version of the database, later corrected by DOE personnel.
During the approximately 40 years of operation of the Navel Reactors Facility at INEL, the Naval Nuclear Propulsion Program has shipped approximately 4 million curies of low-level radioactive waste to

the INEL Radioactive Waste Management Complex for disposal in accordance with all applicable regulations and stringent controls. Burial of low-level radioactive waste is the method for disposal prescribed by the Nuclear Regulatory Commission for waste under its jurisdiction. Sampling of the soil and groundwater in the vicinity of INEL has shown that the material buried at INEL for the Naval Nuclear Propulsion Program has had no detectable effect on air or water quality and has had no effect on the environment beyond the boundaries of the burial ground.
Examination of the database revealed that the entry proposed by the commentor as being deleted from the database was, in fact, present in the database.

II COMMENT

The commentor stated concern that Pearl Harbor Naval Shipyard already holds some large containers of radioactive waste and that the Navy claims such storage poses little threat to the surrounding community.
RESPONSE
This comment apparently refers to the use of shipping containers to store Naval spent nuclear fuel from recently defueled ships at Pearl Harbor Naval Shipyard during the period required for preparation of this EIS. The storage of these containers is covered under the Environmental Assessment for Short Term Storage of Naval Spent Fuel, dated December 1993, and issued by the U.S. Department of the Navy and the associated finding of No Significant Impact. Section 3.1 of the Environmental Assessment presents the results of analyses of the environmental impacts associated with the storage of a small number of containers at Pearl Harbor until the Record of Decision supported by this EIS is issued on June 1, 1995.
Volume 1, Appendix D, Section F.1.4.1.5 of the EIS presents the radiation exposure analysis results for the storage of many more containers. The results of both analyses show that risks to workers or the public from the storage of Naval spent nuclear fuel in shipping containers at the Pearl Harbor Naval Shipyard are very low.

II COMMENT

The Southeastern Public Service Authority power plant located on the Norfolk Naval Shipyard has emitted dioxin. The operation of the plant has not demonstrated a community good faith approach.
RESPONSE
Although this comment is not related to Naval spent nuclear fuel management, a response has been provided.
The Southeastern Public Service Authority (SPSA) is a public agency created by the Virginia Water and Sewer Authority Act. In October 1992, SPSA assumed responsibility for operation and maintenance of the refuse-derived fuel plant, operating the plant under contract to the Navy. Solid wastes received from communities including Norfolk, Portsmouth, Chesapeake, Suffolk, Isle of Wight, Virginia Beach, Franklin, and Southhampton are shredded after sorting and removal of recyclable materials and burned in the plant to produce steam for the Norfolk Naval Shipyard and electricity to supplement the service supplied by Virginia Electric Power. The SPSA plant at Norfolk Naval Shipyard does not violate the requirements of the Clean Air Act since the U. S. Environmental Protection Agency (EPA) does not require compliance with any standard for dioxin emissions until 1996. In the absence of a federal standard for dioxin emissions, in 1989 the state of Virginia, with Navy agreement, incorporated into the plant's air emissions permit a dioxin standard consistent with the dioxin limit the EPA plans to implement in 1996. The Navy

agreed to this standard at the time based on test data which was collected when the plant was relatively
new, but that data apparently was not representative of the long- term, steady-state operating conditions
because monitoring later showed dioxin levels exceeded these limits. When the emissions were found to
exceed the permit levels, the Navy, SPSA, and the Virginia Department of Environmental Quality
established an agreement which resulted in a multimillion dollar contract, initiated in May 1993, to install
state of the art pollution control equipment which exceeds EPA criteria. The plant will be in compliance
with the Clean Air Act requirements in September 1995, two months ahead of the EPA schedule.
In the meantime, a unique spray water system operating in the flues for all boilers at the plant has been
proven to reduce the dioxin and furan emissions by 95%. Risk exposure studies by the Virginia
Department of Health have concluded that there is no unacceptable risk associated with the operation of
the SPSA plant and sampling in the vicinity of the plant has found no dioxin or furan levels above
background levels.
On a related point raised by the commentor, there is no record of a 1972 Supreme Court ruling involving
the SPSA and the subject of dioxins at the refuse-derived fuel plant.

II COMMENT

Commentors provided statements of personal knowledge and conviction that the safety record of the Navy
in servicing nuclear-powered vessels and in handling and shipping Naval spent nuclear fuel which support
the Navy's statements in this EIS. Some commentors affirmed the relationship between examining all Naval
spent nuclear fuel and ensuring the safety of nuclear-powered vessels and the sailors who serve aboard
them.
RESPONSE
These comments support the Naval Nuclear Propulsion Program and its continuing efforts to maintain
safety and minimize the risks associated with operation of the nuclear fleet. Protecting the people who sail
and service nuclear-powered vessels, the public, and the environment has always been one of the highest
priorities of the Navy.

II 8.4 Proposed Action and Alternatives

II COMMENT

The Navy should consider some different alternatives than those in the Environmental Impact Statement.
RESPONSE
The Navy has considered in this Environmental Impact Statement all alternatives considered reasonable, as
required by NEPA (42 USC 4332) and Federal regulations (40 CFR 1502.14).

II COMMENT

The "no action" alternative should be revised to consider the cessation of nuclear powered warship
refueling and defueling to make it a true "no action" alternative.
RESPONSE
Spent nuclear fuel and nuclear-powered warships currently exist, so there can be no alternative which truly
involves no action. The No Action alternative defined in the EIS represents the minimum practical amount
of action which can be taken with respect to spent nuclear fuel.
Ceasing the refueling and defueling of nuclear powered warships would entail substantially more action
than the description of the "no action" alternative currently in the EIS. Specifically, the Navy

would need
to: (a) provide additional pier space to tie up ships which would have otherwise been refueled or defueled;
(b) keep more Naval personnel on duty as crew members for ships which were scheduled to be decommissioned; (c) rearrange operating schedules to reflect for the unavailability of nuclear-powered
warships planned for refueling; (d) substantially reduce the work at Naval shipyards resulting in the layoff
of thousands of workers with commensurate serious economic impacts to the communities involved; and
(e) remove some ships from operation thus reducing the fleet size below the level needed to support
national policies. For these reasons, as discussed in Section 3.6.3 of Appendix D to Volume 1, an
alternative of leaving nuclear fuel aboard nuclear-powered warships was not examined in detail.

II COMMENT

Storage for periods of the length considered in the EIS is not seen by some as "temporary" or "interim".
RESPONSE
Volume 1 of this EIS considers alternative approaches to safely, efficiently, and responsibly manage
existing and projected quantities of spent nuclear fuel until the year 2035. This amount of time may be
required to make and implement a decision on the ultimate disposition of spent nuclear fuel. This EIS
provides the environmental information to support decisions that will facilitate a transition between DOE's
current practices and ultimate disposition of spent nuclear fuel. The Navy and DOE intend to make the
transition from fuel management under the alternatives considered in this EIS to ultimate disposition as
quickly as practicable.

II COMMENT

Navy plans for dealing with the transition from current practices for management of Naval spent nuclear
fuel to one of the other alternatives should be discussed.
RESPONSE
The transition period required if certain alternatives were selected is described in Section 3.8 of Appendix
D to Volume 1. As described in Section 3.8, the transition would make use of existing facilities and
transportation methods described under the alternatives considered. The risks associated with all of the
alternatives considered for management of Naval spent nuclear fuel, summarized in Chapter 3 of Appendix
D are small, so the risks associated with the transition period would be just as small.

II COMMENT

A commentor advocated storage of Naval spent nuclear fuel at the Expended Core Facility at INEL for a
number of reasons.
RESPONSE
Long-term storage of spent nuclear fuel at the Expended Core Facility is not among the alternatives
evaluated in the EIS because such storage would result in no reduction in environmental impacts from
those for the alternatives considered and it would have a severe impact on the Navy's ability to perform its
mission. Storage in the water pools at the Expended Core Facility would effectively preclude examination
of Naval spent nuclear fuel at that facility because storage would use up the space in the water pool needed
for machinery and examination equipment. This would require the construction of new facilities for the
examination of Naval spent nuclear fuel or the loss of the ability to perform examinations of Naval spent
nuclear fuel. The impact on the Navy's mission that would result from the loss of the ability to

examine
Naval spent nuclear fuel is described in Chapter 3 of this EIS.
Analyses of the impacts associated with storage of the Naval spent nuclear fuel at DOE sites are included in
the appendices to the EIS for each site. For example, section 5 of Volume 1, Appendix B, includes the
impact of storing Naval spent nuclear fuel in water pools at INEL.
Attachment F to Appendix D, Section F.1.4.1.4, does present the impacts of performing spent fuel examination at Expended Core Facility. In addition, the impacts of spent nuclear fuel examination at all of
DOE sites and Puget Sound Naval Shipyard and the impacts of water pool storage at the Naval shipyard
sites are presented. Results of analyses of the impacts for dry storage at all of the Navy sites considered in
this EIS are also provided. These results are shown in Section F.1.4.1.5 of Attachment F. For INEL
analysis, a site near the Expended Core Facility at the Naval Reactors Facility was selected.

II COMMENT

According to a commentor, one hundred Naval spent nuclear fuel shipments to INEL planned during a transition from current practices for management of Naval spent nuclear fuel to one of the other alternatives make the No Action alternative a misnomer.
RESPONSE
The scope of this EIS is somewhat unique in that it evaluates ongoing operations; it is solely an assessment
of an action not yet initiated. Accordingly, each alternative evaluated in this EIS for all spent nuclear fuel
must involve some period of transition and implementation while new facilities are developed or procured.
During the transition periods, which range from about three years for the No Action alternative up to about
20 years for Centralization of all DOE spent nuclear fuel, existing facilities would continue to be used for
managing spent nuclear fuel. Under the No Action alternative, Naval spent nuclear fuel would be transported to INEL while shipping containers are procured for storage at Navy sites. This EIS evaluates a
40 year period, so a three year transition period is not excessive. Alternatives which would not require
transportation for Naval spent nuclear fuel to INEL during a transition are untenable because the Navy
would be unable to refuel and defuel naval vessels, thereby greatly impacting national security as further
explained below and in Volume 1, Appendix D, Section 3.6.3. Moreover, such an approach would actually involve substantially more action and environmental impacts than shipment of the Naval fuel to
INEL because all of the containers available to store Naval spent nuclear fuel at shipyards and prototype
sites have been filled during the period while this EIS was being prepared.
Of particular importance in this regard is the refueling of the aircraft carrier USS NIMITZ. Refueling of the
USS NIMITZ is scheduled to begin in 1998, but refueling preparations are already underway for this first-of-a-kind effort.
These preparations entail emptying, by late 1995, spent nuclear fuel from the earlier refueling of the USS ENTERPRISE and defueling of the USS LONG BEACH. This spent nuclear fuel is at
Newport News Shipbuilding and Drydock Company in a special support facility which is required for the
NIMITZ Class refuelings. Once the facility is emptied, it would then be reconfigured for use, including
refurbishment, maintenance, and extensive training of refueling personnel.
If the facility cannot be emptied, the USS NIMITZ cannot be refueled. The result is that the Navy would
have fewer carriers than congressionally mandated to fulfill its national security requirements for regional
conflicts (such as Operation Desert Storm) and peacekeeping (such as Somalia and Haiti). The national
security need to ensure that the USS NIMITZ is refueled on schedule was certified by the Secretary of
Defense in October 1994 and accepted by the Governor of Idaho in January 1995, when he allowed shipment of naval spent nuclear fuel from the Newport News Shipbuilding and Drydock Company to continue. Additional shipments would be required after the Record of Decision is issued on this EIS in
June 1995 to complete unloading the facility by late 1995.
Volume 1, Appendix D, Section 3.6.3 provides a description of the impacts to the Navy mission (and to the
environment) that would arise from storing naval spent nuclear fuel on inactive ships. In summary, storing

naval spent nuclear fuel aboard inactive ships would use up the limited space at shipyards, idle skilled shipyard workers when the shipyards ran out of ship servicing work and room to do work, and tie up highly trained Navy nuclear ship operators. In return, this concept would not produce lower environmental impacts than the alternatives considered in detail in this EIS and might actually increase the environmental impacts.

II COMMENT

The selection of the preferred alternative for the Navy should be based on a combination of the lowest risk and the lowest cost.

RESPONSE

Section 3.9 of Appendix D to Volume 1 of this EIS states that the selection of the navy's preferred alternative was based on consideration of several important issues, including consideration of the very small environmental impacts associated with all of the alternatives considered. Two of the predominant issues are cost and risk. Section 3.7.4 provides a summary of how the cost and risk values vary among the alternatives.

A comparison of the change in the number of potential cancer fatalities that might occur in the general population for each year of operation for each Naval spent nuclear fuel alternative is provided in Section 3.7.1.1, Table 3-1, in Appendix D to Volume 1. This comparison is broken down to show the risks associated with normal operations, the highest risk facility accident, and transportation operations. The risks due to Naval Nuclear Propulsion Program activities for any of the alternatives considered is very small. In all cases, thousands of years of repetition would be required before a single additional cancer fatality would occur. These risks are all so small that there is no real difference among the alternatives from the standpoint of risk.

The costs associated with each Naval spent nuclear fuel alternative are summarized in Table 3- 8 in Section 3.7.4 of Appendix D to Volume 1. The costs to the Navy for the alternatives considered range between $1.5 billion and $5.7 billion over 40 years.

II COMMENT

Naval spent nuclear fuel shipping containers are ill-suited for storage.

RESPONSE

Naval spent nuclear fuel shipping containers are designed to withstand the rigors of shipment and hypothetical accidents which might occur during shipping. As a result, the certified shipping containers for Naval spent nuclear fuel are rugged enough to endure the far less demanding conditions associated with storage at Navy sites. This fact is borne out by the Navy's Environmental Assessment for storage of Naval spent nuclear until this EIS is completed and by the analyses provided in Attachment F of Appendix D to Volume 1 of this EIS.

As stated in Appendix D, a long-term seal would be needed to replace the rubber seal in the shipping containers if an alternative utilizing the shipping containers for storage for 40 years were selected as a result of this EIS. However, the existing seal is designed to last many years and is adequate for the period until that decision is made. The current shipping container seals are designed to contain radioactive material during frequent loading and unloading operations and during shipment, requiring it to be flexible and reusable. Design of a seal for long-term storage would be simpler because repeated opening and closing of the container lid would not occur during storage, allowing use of such methods as welding the container shut.

II COMMENT

Naval spent nuclear fuel is being left indefinitely in shipping containers at shipyards.
RESPONSE
Naval spent nuclear fuel is being stored in sealed shipping containers at Navy sites during the period
required for preparation of this EIS and selection of an alternative for management of DOE spent nuclear
fuel. The environmental impacts associated with this storage were evaluated in an Environmental
Assessment and Finding of No significant Impact issued in early 1994. An Environmental Assessment was
prepared and a Finding of No significant Impact was issued because the impacts of the of the preferred
alternative for this short period of storage were found to be small. The alternative which used storage in
certified shipping containers at the sites which would continue to perform servicing of Naval reactors
through June 1995 was selected as the best means of safely managing Naval spent nuclear fuel during the
time needed for completion of this EIS.
The Record of Decision identifying the alternative selected for management of spent nuclear fuel selected
will be issued on June 1, 1995. At that time, implementation of the alternative selected will begin. Naval
spent nuclear fuel stored at Navy sites will be transferred to the locations associated with the alternative
selected unless an alternative making use of storage at the Navy sites is selected.

II COMMENT

Management of Naval spent nuclear fuel at a Navy site should not be considered because of proximity to
population centers.
RESPONSE
Under NEPA, the Navy is required to consider the full range of reasonable alternatives, including the
alternative of taking no action. The analysis in the EIS demonstrated that the environmental impact of any
of the alternatives would be small. This analysis took into consideration population data for each site.
Therefore, the Navy did not eliminate any locations from consideration based on these characteristics.
Although Naval sites are included in the analysis, the Navy has identified a preferred alternative in Section
3.9, Appendix D, Part A which would not store Naval spent nuclear fuel at Naval sites. The Navy's
preferred alternative would resume the historic, technically sound and safe practice of conducting refueling
and defueling of nuclear-powered warships and prototypes as planned, transporting the Naval
spent nuclear fuel to the Expended Core Facility at INEL for full inspection and examination, and
transferring Naval spent nuclear fuel to DOE for storage at that site.

II COMMENT

Management of Naval spent nuclear fuel at a Navy site should not be considered because of an airport in
the vicinity.
RESPONSE
The analyses in Appendix D to Volume 1 of the EIS specifically considered the location and characteristics
of the airports in the vicinity of each site (See Attachment F of Appendix D to Volume 1). Even taking this
into account, the risk from an airplane crashing into a shipping container was shown to be very low and the
resulting risk of injury to the public small. For example, the most limiting accident involving Naval spent
nuclear fuel is described in Attachment F of Appendix D to be an airplane crash into a shipping container
at the Pearl Harbor Naval Shipyard. This accident would lead to 26 latent fatal cancers over the next fifty
years in the population within 50 miles of the shipyard. Since the probability of the event is one chance in

100,000 per year, the risk would be 0.00026 latent fatal cancer fatalities per year or, in other words, about one chance in 4000 of single latent cancer fatality over a year. This risk is shared among the approximately 820,000 people residing within 50 miles of the shipyard who would be expected to experience over 2000 cancer fatalities from all other causes every year.

II COMMENT

Management of Naval spent nuclear fuel at Pearl Harbor Naval Shipyard should not be considered because the Honolulu airport is close enough that it might be damaged, making it more difficult for emergency assistance to reach the island.

RESPONSE

The most limiting accident involving Naval spent nuclear fuel is described in Attachment F of Appendix D to Volume 1 to be an airplane crash into a shipping container at the Pearl Harbor Naval Shipyard. This accident would lead to 26 latent fatal cancers over the next fifty years in the population within 50 miles of the shipyard. Since the probability of the event is one chance in 100,000 per year, the risk would be 0.00026 latent fatal cancer fatalities per year or, in other words, about one chance in 4000 of single latent cancer fatality over a year. This risk is shared among the approximately 820,000 people residing within 50 miles of the shipyard who would be expected to experience over 2000 cancer fatalities from all other causes every year. The analyses in Appendix D of the EIS specifically considered the location of the Honolulu airport relative to Pearl Harbor Naval Shipyard. It also estimated the extent of contamination that might result from hypothetical accidents. The analysis of the impact of hypothetical accidents in Appendix D of the EIS did not rely on any off-shipyard response.

Taking into account the location of the airport and the effects of hypothetical accidents, the risk that the Honolulu airport could not be used to provide emergency assistance from the mainland would be very low and the resulting risk to the public small. Further, the Navy has significant emergency response capability on Oahu and does not rely on the mainland, State, or local resources for emergency response beyond existing emergency plans and resources.

II COMMENT

Management of Naval spent nuclear fuel at a Navy site should be ruled out because of an aquifer, stream, or other water in the vicinity.

RESPONSE

Although the Navy's preferred alternative is not to store Naval spent nuclear fuel at Naval sites, under NEPA, the Navy is required to consider the full range of reasonable alternatives, including the alternative of taking no action. The analysis in the EIS demonstrated that the environmental impact of any of the alternatives would be small. This analysis took into consideration nearby bodies of water. Therefore, the Navy did not eliminate any locations from consideration based on these characteristics. The Navy has managed its spent nuclear fuel for nearly 40 years now without any significant environmental impact on water.

II COMMENT

Management of Naval spent nuclear fuel at a Navy site should be ruled out because of the possibility of seismic activity in the vicinity.

RESPONSE
Although the Navy's preferred alternative is not to store Naval spent nuclear fuel at Naval sites, under
NEPA, the Naval Nuclear Propulsion Program is required to consider the full range of reasonable alternatives, including the alternative of taking no action. The analyses in Appendix D (See Attachment F,
Sections F.1.2, F.1.3, and F.1.4) took into consideration accidents which might be caused by natural
phenomena, including earthquakes equaling or exceeding the design basis of the facilities, and demonstrated that the impacts were found to be small. Any facility constructed for Naval spent nuclear
fuel management would be designed with adequate strength based on the specific seismic characteristics of
the site. Therefore, the Navy did not eliminate any locations from consideration based on these characteristics. See also response 08.04(015).

II COMMENT

Management of Naval spent nuclear fuel at a Navy site should be ruled out because of the possibility of
severe weather in the vicinity.
RESPONSE
Although the Navy's preferred alternative is not to store Naval spent nuclear fuel at Naval sites, under
NEPA, the Naval Nuclear Propulsion Program is required to consider the full range of reasonable alternatives, including the alternative of taking no action. The analyses in Appendix D the EIS (See
Chapter 5 and Attachment F, Section F.1) showed that the environmental impact of any of the alternatives
would be small, including accidents which might be caused by natural phenomena, such as hurricanes,
tsunamis, or tornados. Any facility constructed for Naval spent nuclear fuel management would be designed with adequate strength based on the specific weather characteristics of the site. Therefore, the
Navy did not eliminate any locations from consideration based on these characteristics.

II COMMENT

Additional Department of Defense sites should be considered.
RESPONSE
A site selection process was followed which is described in depth in the EIS and in associated reference
documents. In view of the range of types of sites analyzed in the EIS (from large populations in coastal
areas to remote, desert-like, sparsely populated areas) and the conclusion that environmental impacts
would be very small at all sites, extrapolation to other sites would be expected to yield similar results.
For management of Naval spent nuclear fuel, certain physical requirements, such as a rail siding or paved
roadway, and administrative and support functions needed to safely handle and monitor the operations and
spent fuel are needed. These administrative and support functions include physical security (since the
spent fuel contains highly enriched uranium), radiological monitoring, and emergency response capability.
In view of the very small impacts for the sites considered, providing these administrative and support
functions and the physical facilities at a site which does not have them would produce greater impacts on
the environment with no associated reductions in impact.

II COMMENT

The Navy should consider some other site, either specified or not specified in the comment.
RESPONSE
For management of Naval spent nuclear fuel, certain physical requirements, as a rail siding or paved
roadway, and administrative and support functions needed to safely handle and monitor the operations and
spent fuel are needed. These administrative and support functions include physical security (since the

spent fuel contains highly enriched uranium), radiological monitoring, and emergency response capability.
In view of the very small impacts for the sites considered, providing these administrative and support
functions and the physical facilities at a site which does not have them would produce greater impacts on
the environment with no associated reductions in impact.

II COMMENT

The Navy should consider some other site which is not specified.
RESPONSE
For management of Naval spent nuclear fuel, certain physical requirements, such as a rail siding or paved
roadway, and administrative and support functions needed to safely handle and monitor the operations and
spent fuel are needed. These administrative and support functions include physical security (since the
spent fuel contains highly enriched uranium), radiological monitoring, and emergency response capability.
In view of the small impacts for the sites considered, providing these administrative and support functions
and the physical facilities at a site which does not have them would produce greater impacts on the
environment with no associated reductions in impact.

II COMMENT

Management of Naval spent nuclear fuel at a Navy site should not be considered if it is judged to be a
scenic area.
RESPONSE
Under NEPA, the Navy is required to consider the full range of reasonable alternatives, including the
alternative of taking no action. The analysis in the EIS demonstrated that the environmental impact of any
of the alternatives would be small. This analysis took into consideration the aesthetic and scenic values for
each site and showed that any impacts in this category would be small. Therefore, the Navy did not
eliminate any locations from consideration based on these characteristics.
Although Naval sites are included in the analysis, the Navy has identified a preferred alternative in Section
3.9, Appendix D, Part A which would not store Naval spent nuclear fuel at Naval sites. The Navy's
preferred alternative would resume the historic, technically sound and safe practice of conducting refueling
and defueling of nuclear-powered warships and prototypes as planned, transporting the Naval spent
nuclear fuel to the Expended Core Facility at INEL for full inspection and examination, and transferring
Naval spent nuclear fuel to DOE for storage at that site.

II COMMENT

Management of Naval spent nuclear fuel at a Navy site should not be considered if it is judged to be an
environmentally sensitive area.
RESPONSE
Under NEPA, the Navy is required to consider the full range of reasonable alternatives, including the
alternative of taking no action. The analysis in the EIS demonstrated that the environmental impact of any
of the alternatives would be small. This analysis took into consideration possible effects on the ecology for
each site and showed that any impacts in this category would be small. Therefore, the Navy did not
eliminate any locations from consideration based on these characteristics.
Although Naval sites are included in the analysis, the Navy has identified a preferred alternative in Section
3.9, Appendix D, Part A which would not store Naval spent nuclear fuel at Naval sites. The Navy's
preferred alternative would resume the historic, technically sound and safe practice of

conducting refueling
and defueling of nuclear-powered warships and prototypes as planned, transporting the Naval spent nuclear fuel to the Expended Core Facility at INEL for full inspection and examination, and transferring
Naval spent nuclear fuel to DOE for storage at that site.

II COMMENT

Use of the Puget Sound Naval Shipyard Water Pit Facility will preclude the performance of aircraft carrier
refuelings at Puget Sound Naval Shipyard and consequently jobs would be lost at the shipyard.
RESPONSE
The Decentralization Alternative for Naval Spent Nuclear Fuel Management includes an option which would utilize the Puget Sound Naval Shipyard Water Pit Facility for examination of high priority fuel. As
stated in this Environmental Impact Statement, the use of this facility for spent nuclear fuel inspection
would preclude its use for support of aircraft carrier refuelings. If the option of using the existing water
pool for fuel examination under the Decentralization Alternative were selected, it would be necessary to
find other ways to support aircraft carrier refuelings. Due to the limited space available at Puget Sound
Naval Shipyard, it might prove difficult to find alternate means to provide the needed support for aircraft
carrier refueling at that shipyard.
Long range plans have included Puget Sound Naval Shipyard as the west coast location for conducting
aircraft carrier refuelings. This was the basis for constructing the Water Pit Facility. Including the ships
currently under construction, the Navy will have at least nine nuclear- powered aircraft carriers. While no
near-term refuelings are scheduled for Puget Sound Naval Shipyard, it is expected that future plans and
overlapping of refuelings and defuelings will require simultaneous servicing of two aircraft carriers, which
might require two shipyards to perform the work. The comment presupposes that these refueling jobs exist
at Puget Sound Naval Shipyard and therefore could be lost, but other variations in the shipyard staffing
make this uncertain.

II COMMENT

Facilities for management of Naval spent nuclear fuel should not be located at sites where weapons are
handled or stored.
RESPONSE
Weapons are not handled or stored at any of the Navy sites considered in this EIS. In the case of some
locations, such as the Pearl Harbor or Norfolk Naval Shipyard, other Navy facilities which handle or store
weapons are in the same general vicinity, but they are separated from the sites considered by a great enough
distance that the weapons would not constitute a threat to Naval spent nuclear fuel management.
Even though accidents associated with weapons are not reasonably expected to affect Naval spent nuclear
fuel, the consequences of such accidents would be within the limits of other accidents not related to
weapons analyzed in this EIS. Appendix D to Volume 1 of the EIS includes an evaluation of a broad range
of hypothetical accidents which might occur as a result of human error, equipment failure, or natural
phenomena, including fires involving the storage facilities and projectiles striking the storage facilities. The
results of these analyses are summarized in Chapter 3, tabulated for each individual site in Chapter 5, and
described in detail in Attachment F. The analyses show that the risks associated with all of the accidents
are very low.
Although the Navy's preferred alternative is not to store Naval spent nuclear fuel at Naval sites, under
NEPA, the Naval Nuclear Propulsion Program is required to consider the full range of reasonable
alternatives, including the alternative of taking no action. The evaluation of potential impacts on human

health and the environment provided in this EIS shows that the risks associated with all of the alternatives and sites considered is very small.

II COMMENT

Storage of Naval spent nuclear fuel at Puget Sound Naval Shipyard might result in the loss of the ability of the shipyard to operate efficiently.
RESPONSE
It is true that space is at the Puget Sound Naval Shipyard must be managed carefully. However, as shown in Table D-1 in Appendix D to this EIS, between 33,000 and 77,000 square feet would be required for three of the four possible methods for storage of Naval spent nuclear fuel at Puget Sound Naval Shipyard, with the fourth, storage in shipping containers on railcars, requiring 260,000 square feet. Storing or examining Naval spent nuclear fuel at Naval sites is not the Navy's preferred alternative. Even so, if an alternative which would use storage at Navy sites were selected, the needed area could be provided at the shipyard without limiting its ability to carry out its mission effectively.
In Section 3.9 of Appendix D to this EIS, the Navy has clearly stated its preferred alternative for management of Naval spent nuclear fuel during the 40 year interim period and discussed how this alternative would support the Navy's mission, as established by Congress. Appendix D to Volume 1 contains an evaluation of the environmental impacts of the Navy's proposed action and all alternatives, including those which would not support the Navy's mission, in accordance with NEPA, the Council on Environmental Quality regulations, and DOE and Navy regulations.

II COMMENT

Management of Naval spent nuclear fuel at a DOE site other than INEL should not be considered, because it would be necessary to construct a new facility similar to the existing Expended Core Facility.
RESPONSE
Under NEPA, the Navy is required to consider the full range of reasonable alternatives, including alternatives which would relocate the management of Naval spent nuclear fuel to other locations. The analysis in the EIS demonstrated that the environmental impact of any of the alternatives would be small.
This analysis took into consideration the potential effects of normal operations and postulated accidents for each site and for transportation of Naval spent nuclear fuel. Therefore, the Navy did not eliminate any locations from consideration based on these characteristics.
Although sites which would require the construction of a replacement for the existing Expended Core Facility at INEL are included in the analysis, the Navy has identified a preferred alternative in Section 3.9, Appendix D, Part A which would not examine or store Naval spent nuclear fuel at those sites. While this EIS shows that environmental impacts of constructing and operating an examination facility would be very small, the cost of constructing such a facility would exceed $800,000,000. The Navy's preferred alternative would resume the historic, technically sound and safe practice of conducting refueling and defueling of nuclear-powered warships and prototypes as planned; transporting the Naval spent nuclear fuel to the Expended Core Facility at INEL for full inspection and examination; and transferring Naval spent nuclear fuel to DOE for storage at that site.

II COMMENT

The water table at Puget Sound Naval Shipyard is just below the ground surface. Therefore, construction of a water pit facility at this location might not be possible.

RESPONSE
Construction and operation of a water pool facility at Puget Sound Naval Shipyard is feasible as demonstrated by the existing Water Pit Facility. The groundwater table is relatively close to the surface of the ground in this region and this makes building design and construction more complex, but it can be accomplished in a safe manner.

II COMMENT

Management of spent fuel at Puget Sound Naval Shipyard should be ruled out because only rudimentary inspection facilities are available at the shipyard.
RESPONSE
The Decentralization Alternative for Naval Spent Nuclear Fuel Management includes an option which would utilize the Puget Sound Naval Shipyard Water Pit Facility for examination of high priority fuel. As stated by the commentor, this alternative would provide only a limited capability for examination and analysis of Naval spent nuclear fuel and, as described in the EIS, the ability to sustain further development of the advanced nuclear reactors needed to ensure the safety and performance superiority of U.S. Navy ships would be jeopardized. However, under NEPA, the Navy is required to consider the full range of reasonable alternatives, so this alternative has been included.
Although an alternative involving inspection of a limited amount of Naval spent nuclear fuel at Puget Sound Naval Shipyard is included in the analysis, the Navy identified a preferred alternative in section 3.9 of Appendix D to Volume 1 which would not involve inspection of Naval spent nuclear fuel at the shipyard. The Navy's preferred alternative would resume the historic, technically sound and safe practice of conducting refueling and defueling of nuclear-powered warships and prototypes as planned, transporting the Naval spent nuclear fuel to the Expended Core Facility at INEL for full inspection and examination, and transferring Naval spent nuclear fuel to DOE for storage at that site.

II COMMENT

Any facility for management of spent nuclear fuel should be adequately designed for the purpose, but the EIS should present conclusions about the storage options that would be employed at each site.
RESPONSE
Appendix D to Volume 1 of this EIS includes in Chapters 3 and 5 and Attachments D and E detailed evaluation of methods and facilities for storage of Naval spent nuclear fuel at Navy sites under the alternatives considered. Chapters 3 and 5 and Attachment F provide detailed information on the exposures and potential health effects associated with each method of Naval spent nuclear fuel management at shipyards and Navy prototype sites, as well the effects associated with examination of Naval spent nuclear fuel at DOE sites. In all of these cases, it is assumed that the facilities used for Naval spent nuclear fuel management would be properly designed for the weather, seismic, and other conditions applicable to the particular site evaluated.
This EIS provides the information necessary to show that all three methods of storage at shipyards and Navy prototype considered (dry storage, storage in shipping containers, and storage in water pools) are practical and could be accomplished safely and with very small risks.

II COMMENT

Commentors express a preference for alternatives that do not result in additional nuclear waste or spent nuclear fuel being managed in Hawaii. In addition, commentors express one or more of the following opinions:

That such material be stored in areas of low population, as opposed to areas of high population
That better sites are available that present less risk
That there is a risk to water resources, fragile ecosystems, or the environment
RESPONSE
See responses to comments 08.01 (001) and 08.01 (004).

II 8.5 Technical Issues

II II COMMENT

The Navy will be contributing a large proportion of the future spent nuclear fuel that must be managed by DOE.
RESPONSE
As stated in the Summary and other sections of Volume 1 of this EIS, spent nuclear fuel representing approximately 100 metric tons of heavy metal (MTHM) will be added over the next 40 years to the amount currently being managed by DOE. Of this total, approximately 55 MTHM will be produced by the Naval Nuclear Propulsion Program. Since DOE currently manages approximately 2700 MTHM of spent nuclear fuel, including about 10 MTHM of Naval spent nuclear fuel, the Naval spent nuclear fuel at the end of the period evaluated in this EIS would be 65 MTHM, which is approximately 2% of the total of 2800 MTHM considered.

II COMMENT

The unique nature of Navy fuel is secret and poses a greater threat than conventional fuel.
RESPONSE
The statement that Naval spent nuclear fuel presents a significantly greater environmental threat than other conventional reactor fuel is incorrect and without technical basis.
Sections 2.2, 3.7, A.7, B.2, and F.1 of Appendix D to Volume 1 of this EIS present information on the integrity of Navy fuel. Further details on the nature of Naval spent nuclear fuel which can be used to evaluate the environmental impact associated with its management are provided in Attachments A and F to Appendix D. Although the detailed design of Navy fuel is classified, this EIS contains significant information concerning its performance characteristics.
These design requirements for Navy fuel include:
a. Battle shock. Navy fuel is designed to withstand the shock encountered in a wartime battle situation without damage. These shocks are well is excess of the seismic shocks for which other reactor fuels are designed. As an example, Navy fuel can withstand shocks much greater than 50g, or 50 times the acceleration due to gravity. Civilian reactors are designed only to withstand the shock of an earthquake which is typically less than 1g.
b. Long life. Navy fuel is designed to operate in a high temperature and high pressure environment for many years. Current designs are capable of over 20 years of successful operation. Typical civilian reactor fuel is designed to operate for only a few years.
c. Total containment of fission products. Navy fuel is designed to operate throughout its lifetime without any release of fission products. This is essential to minimize radiation exposure to the crew who live inside the confined space of a submarine for many months at a time. Some civilian reactor fuels are designed to operate with releases of fission products and Nuclear Regulatory Commission requirements for civilian fuel allow for a primary coolant radioactivity level equivalent to about 0.1 percent fuel damage during normal operations. This results in detectable fission product activity in the reactor coolant produced from the fuel.
d. Rapid power transients. Navy fuel is designed to operate successfully during rapid power transients

(e.g., achieve full power in seconds) while typical civilian fuel takes many hours to achieve full power to
ensure it is not damaged. The Navy requirement is based on the need to rapidly change speeds or direction
of a ship, for example, to outrun a torpedo.
All of these very stringent operational requirements for Naval nuclear fuel enable it to maintain its integrity
indefinitely under the far less demanding conditions encountered during transportation and storage.

II COMMENT

The EIS should include more details on the design and other characteristics of Naval spent nuclear fuel.
RESPONSE
Volume 1, Appendix D, sections 2.2, 3.7, A.7, B.2, and F.1 of this EIS present information on the integrity
of Navy fuel. Further details on the nature of Naval spent nuclear fuel which can be used to evaluate the
environmental impact associated with its management are provided in Appendix D,
Attachments A and F. Although the detailed design of Navy fuel is classified, this EIS contains significant
information concerning its performance characteristics.
These design requirements for Navy fuel include:
a. Battle shock. Navy fuel is designed to withstand the shock encountered in a wartime battle situation
without damage. These shocks are well in excess of the seismic shocks for which other reactor fuels are
designed . As an example, Navy fuel can withstand shocks much greater than 50g, or 50 times the
acceleration due to gravity. Civilian reactors are designed only to withstand the shock of an earthquake
which is typically less than 1g.
b. Long life. Navy fuel is designed to operate in a high temperature and high pressure environment for
many years. Current designs are capable of over 20 years of successful operation. Typical civilian reactor
fuel is designed to operate for only a few years.
c. Total containment of fission products. Navy fuel is designed to operate throughout its lifetime without
any release of fission products. This is essential to minimize radiation exposure to the crew who live inside
the confined space of a submarine for many months at a time. Some civilian reactor fuels are designed to
operate with releases of fission products and Nuclear Regulatory Commission requirements for civilian fuel
allow for a primary coolant radioactivity level equivalent to about 0.1% fuel damage during normal
operations. This results in detectable fission product activity in the reactor coolant produced from the fuel.
d. Rapid power transients. Navy fuel is designed to operate successfully during rapid power transients
(e.g. achieve full power in seconds) while typical civilian fuel takes many hours to achieve full power to
ensure it is not damaged. The Navy requirement is based on the need to rapidly change speeds or direction
of a ship -- for example, to outrun a torpedo.
All of these very stringent operational requirements for Naval nuclear fuel enable it to maintain its integrity
indefinitely under the far less demanding conditions encountered during transportation and storage.

II COMMENT

Naval spent nuclear fuel may be unsuitable for a geologic repository and expensive processing facilities
may be needed to prepare it for ultimate disposal.
RESPONSE
Since Naval spent nuclear fuel is very stable and has high structural integrity, it well suited for disposal
into a geologic repository without processing or destructive disassembly. Under the currently foreseeable
criteria for accepting spent nuclear fuel for disposal in a geologic repository, Naval spent nuclear fuel
modules could likely be placed intact into the containers to be used for disposal. Once placed in a

geologic repository, the corrosion-resistant characteristics of the Naval spent nuclear fuel would keep it in
a stable form which would preclude achieving a critical configuration for a period well in excess of 10,000
years, the period specified for analysis in the Nuclear Waste Policy Act, as amended.
A discussion of the integrity of Navy fuel is presented in Section 2.2 of Appendix D to Volume 1 of this
EIS. Further details on the nature of Naval spent nuclear fuel which can be used to evaluate the
environmental impact associated with its management are provided in Attachment F to Appendix D. The
very stringent requirements for Naval nuclear fuel to operate at high temperatures, high pressures, and resist
corrosion in very hot water cause it to be more than adequate to endure the conditions which might be
encountered after emplacement in a geologic repository.
Finally, it should be noted that this EIS evaluates safe management of spent nuclear fuel for 40 years,
including processing where required to stabilize the fuel for safe storage. No processing of Naval spent
nuclear fuel is required for that purpose. In the unlikely event that waste acceptance criteria to be
established in the future were to require processing of Naval spent nuclear fuel to enable it to be ultimately
disposed of, that would be evaluated in accordance with NEPA requirements at that time, but that matter is
beyond the scope of this EIS.

II COMMENT

The EIS should include information on the effective power-generating life of Naval nuclear reactor.
RESPONSE
As discussed in Section 3.7.4 of Appendix D to Volume 1 of this EIS, the life of the current reactor cores
used in Naval nuclear-powered vessels is greater than 20 years. The lifetime of Naval nuclear reactor cores
has increased by a factor of more than ten from the 2 year lifetime of the first core installed in the first
nuclear-powered submarine in the 1950's. This increase in lifetime is in large part the result of the
examinations of Naval spent nuclear fuel conducted at the Expended Core Facility over the past 37 years.
This increase in core life has reduced the environmental impacts associated with operation of the nuclear
navy, as described in Section 3.7.4.
A discussion of the integrity of Navy fuel is presented in Section 2.2 of Appendix D to Volume 1 of this
EIS. Further details on the nature of Naval spent nuclear fuel which can be used to evaluate the
environmental impact associated with its management are provided in Attachment F to Appendix D.

II COMMENT

The EIS should include the criteria for determining when defueling of a Naval reactor is needed.
RESPONSE
The most important factor determining the need for refueling or defueling of any nuclear- powered warship
is the mission of the Navy laid out by the Congress and President of the United States. If the mission
requires a ship to continue operating beyond the end of the useful life of the core installed in the ship, the
core must be replaced when it no longer is capable of producing sufficient power for ship operation. If a
ship is no longer needed, the nuclear reactor fuel will be removed from the ship, even if it has not reached
the end of its useful lifetime.
With the end of the Cold War and the recent changes in the mission of the armed forces, the Navy has been
reducing the number of warships it has in service, including the deactivation of some nuclear-powered
submarines and surface ships. Information on the recent decreases in the number of nuclear-powered
Naval vessels and current plans for future reductions in the number of nuclear-powered vessels is reflected
in this EIS. However, it should be emphasized that such numbers are subject to change at any time

pursuant to Congressional or Presidential direction.
A discussion of the integrity of Navy fuel is presented in Section 2.2 of Appendix D to Volume 1 of this
EIS. Further details on the nature of Naval spent nuclear fuel which can be used to evaluate the environmental impact associated with its management are provided in Attachment F to Appendix D.
Information on the operating lifetime of current nuclear reactor cores is provided in Section 3.7.4.

II COMMENT

The EIS should include information on how long Naval spent nuclear fuel will remain radioactive and the
amount of radioactivity in each core or module.
RESPONSE
Section F.1.4 provides detailed information on the radionuclides present in Naval spent nuclear fuel, their
half-lives, and the amounts of each present. This section provides all of the data needed for analysis of a
range of postulated accidents at facilities storing or examining Naval spent nuclear fuel. Section A.7.1
provides similar information on the radionuclides and amounts of each for analyses of postulated transportation accidents involving Naval spent nuclear fuel. The half-lives of these radionuclides are
readily available from standard scientific publications, such as chemistry and physics textbooks. Each
section includes data on the fractions of each type of radioactive material that might be released in an
accident. These data provide a detailed characterization of the kinds and amounts of radioactivity
associated with Naval spent nuclear fuel which is adequate to understand the nature of Naval spent nuclear
fuel and to evaluate the potential environmental impacts associated with all of the alternatives considered
in this EIS.

II COMMENT

The life expectancy of shipping containers may not be long enough to store Naval spent nuclear fuel safely
for the period considered in this EIS or may be incompatible with the half-lives of the radionuclides
present.
RESPONSE
Naval spent nuclear fuel shipping containers are designed to withstand the rigors of shipment and hypothetical accidents which might occur during shipping. As a result, the certified shipping containers for
Naval spent nuclear fuel are rugged enough to endure the far less demanding conditions associated with
storage at Navy sites. This fact is borne out by the analyses provided in Attachment F of Appendix D to
Volume 1 of this EIS.
As stated in Appendix D, the only change to shipping container design is that a long-term seal would be
used to replace the rubber seal in the shipping containers if an alternative utilizing the shipping containers
for storage for 40 years were selected as a result of this EIS. However, the existing seal is designed to last
many years and is adequate for the period until that decision is made. The current shipping container seals
are designed to contain radioactive material during frequent loading and unloading operations and during
shipment, requiring it to be flexible and reusable. Design of a seal for long-term storage would be less
demanding because repeated opening and closing of the container lid would not occur during storage,
allowing use of such methods as welding the container shut, if necessary.
The level of detail desired by the commentor for the data analysis is not appropriate for the decision that
will be made out of this programmatic document, and would not provide any information that would assist
the decision-maker in making this decision. This broad environmental review document has been prepared
in accordance with NEPA and implementing regulations, that allow for a broad focus on issues actually the
subject of the decision. Additional, more specific data, such as the proposed by the commentor,

would be
provided, if necessary, in further site-specific environmental documents.
Attachment F.1.4 provides detailed information on the radionuclides present in Naval spent nuclear fuel,
and the amounts of each present. This section provides all of the data needed for analysis of a range of
postulated accidents at facilities storing or examining Naval spent nuclear fuel. Information on the half
lines radionuclides can be obtained from standard publications such as physics or chemistry text books.
Section A.7.1 provides similar information on the radionuclides and amounts of each for analyses of
postulated transportation accidents involving Naval spent nuclear fuel. Each section includes data on the
fractions of each type of radioactive material that might be released in an accident. These data provide a
detailed characterization of the kinds and amounts of radioactivity associated with Naval spent nuclear fuel
to allow understanding the nature of Naval spent nuclear fuel and to evaluate the potential environmental
impacts associated with all of the alternatives considered in this EIS.

II COMMENT

The use of beta-quenching in the production of Naval nuclear fuel may be a defective process which could
compromise the storage of Naval spent nuclear fuel.
RESPONSE
The comment is incorrect with respect to Naval nuclear fuel. It apparently refers to an article in a
magazine (Mother Jones) which reported statements to the Nuclear Regulatory Commission concerning
possible causes of defects in commercial nuclear fuel elements and the claims in an unrelated lawsuit. The
lawsuit involved a technician who was suing his former employer over the results of a developmental
process related to what metallurgists call "alpha treatment" of material containing zirconium.
The concern in the technician's lawsuit involved the results of a test related to one step of the process for
manufacturing the cladding of nuclear fuel used in electrical generating plants operated by some utilities.
Navy nuclear fuel material is produced by an entirely different process from that used to produce the beta-
quenched zirconium fuel cladding used in commercial nuclear plants. As a result, Naval fuel material has
different properties from commercial fuel. The procedure at issue in the lawsuit and the subsequent
processing steps are not used in the fabrication of Naval nuclear fuel.
The Naval nuclear fuel manufacturing process is backed by extensive testing, years of operational
experience, and examinations after reactor shutdown. Examinations of spent Naval nuclear fuel performed
at the Expended Core Facility at INEL on all Naval nuclear fuel after use, as well as monitoring of
operating Naval nuclear fuel, have shown that there is no reason to expect failures of Naval spent nuclear
fuel to occur during storage for more than 100,000 years.

II II COMMENT

The commentor states that Native Hawaiian fishing ponds within the boundaries of Pearl Harbor Naval
Shipyard might be contaminated in the event of an accident involving Naval spent nuclear fuel stored at the
shipyard.
RESPONSE
Volume 1, Appendix D, section 5.1.4 of the EIS shows that there would be no impact on the Native
Hawaiian fishing ponds resulting from routine Naval spent nuclear fuel storage operations at Pearl Harbor
Naval Shipyard. This conclusion is supported by the fact that the handling of Naval spent nuclear fuel
from Naval vessels, including refueling and defueling operations and operations very similar to those
considered in this EIS, have been conducted at Pearl Harbor Naval Shipyard for almost 30 years without
impact on the environment. Report NT-94-1, Environmental Monitoring and Disposal of Radioactive
Wastes from U.S. Naval Nuclear Powered Ships and Their Support Facilities, Washington, DC, March

1994, provides additional information on the results of environmental monitoring for past operations.
With regard to hypothetical accidents, Volume 1, Appendix D, Chapter 5, section 5.1.4 and Volume 1, Attachment F, section F.1.3.8 provide the results of calculations of radioactive material dispersion and deposition calculations for a hypothetical airplane crash into Naval spent nuclear fuel storage containers at Pearl Harbor Naval Shipyard, the worst-case potential accident for that site. In even this most extreme case, an area of only about 110 acres might be contaminated to the point where radiation doses exceeding the Nuclear Regulatory Commission limit for exposure to the general public (100 millirem per year) might result for a person living full time on that land. This discussion does not mean that an area of such size would be made permanently unusable or inaccessible because the calculation assumes that no action is taken to clean up the radioactivity or to otherwise mitigate the effects of the accident. Radioactive contamination could and would be removed in order to minimize the affected area and impacts on access or use.

II COMMENT

Historic sites could be damaged or made inaccessible by accidents associated with Naval spent nuclear fuel.
RESPONSE
Appendix D of this EIS (See Chapter 5, Section 5.1.4.14.3, and Attachment F, Section F.1.3.8) discusses in detail the potential environmental effects in the event of a number of extremely unlikely accidents involving Naval spent nuclear fuel. It should be noted that servicing of nuclear reactors aboard Naval vessels, including refueling and defueling operations and operations very similar to those considered in this EIS, have been conducted at Navy sites for almost 40 years without impact on the environment. For example, Report NT-94-1, Environmental Monitoring and Disposal of Radioactive Wastes from U.S. Naval Nuclear Powered Ships and Their Support Facilities, Washington, D.C., March 1994, provides additional information on the results of environmental monitoring of past operations.
For the most severe of the hypothetical accidents, Volume 1, Appendix D (Chapter 5, section 5.1.4, and Attachment F, section F.1.3.8) shows that in even these extreme cases an area of only about 110 to 210 acres might be contaminated to the point where radiation doses exceeding the Nuclear Regulatory Commission limit for exposure to the general public (100 millirem per year) might result for a person living full time on that land. Most of this area would be within the boundaries of the DOE or Navy site, depending on the site being considered.
This discussion does not mean that an area of such size would be rendered permanently unavailable for public use since the calculation described in the preceding paragraph assumes that no action is taken to clean up the radioactivity. In reality, radioactive contamination could and would be removed in order to minimize the affected area and impacts on access. Historic Structures would not be destroyed or physically altered in the event of any of the hypothetical accidents.

II COMMENT

The commentor states that use of the land at Pearl Harbor Naval Shipyard is not compatible with the culture of Native Hawaiians and their perception of the sacred nature of the land, or "aina."
RESPONSE
As described in Volume 1, Appendix D, section 5.1.4 of this EIS, any facilities required for management of Naval spent nuclear fuel at Pearl Harbor Naval Shipyard would be constructed within the existing industrial area, and no additional land outside the shipyard would be used. Naval spent nuclear

fuel management activities would be consistent with the existing activities at the shipyard; and established procedures to prevent interference with any cultural activities or artifacts of Native Hawaiians would be followed.

With regard to hypothetical accidents, Volume 1, Appendix D, Chapter 5, section 5.1.4, and Volume 1, Attachment F, section F.1.3.8 provide the results of calculations of radioactive material dispersion and deposition calculations for a hypothetical airplane crash into Naval spent nuclear fuel storage containers at Pearl Harbor Naval Shipyard, the worst case potential accident for that site. In even this most extreme case, an area of only about 110 acres might be contaminated to the point where radiation doses exceeding the Nuclear Regulatory Commission limit for exposure to the general public (100 millirem per year) might result for a person living full time on that land.

This discussion does not mean that an area of such size would be made permanently unusable or inaccessible since the calculation assumes that no action is taken to clean up the radioactivity or to otherwise mitigate the effects of the accident. Radioactive contamination could and would be removed in order to minimize the affected area and impacts on access or use.

II COMMENT

Storage of Naval spent nuclear fuel at Pearl Harbor Naval Shipyard might conflict with the resolution of land claims by Native Hawaiians.

RESPONSE

The actions considered in this EIS would not affect the land claims of Native Hawaiians. Appendix D of this EIS (See Chapter 5, Section 5.1.4, and Attachment F, Section F.1.3 and F.1.4) discusses in detail the potential environmental effects associated with storage of Naval spent nuclear fuel at Pearl Harbor Naval Shipyard. It should be noted that servicing of nuclear reactors aboard Naval vessels, including refueling and defueling operations and operations very similar to those considered in this EIS, have been conducted at Navy sites for almost 30 years at Pearl Harbor and more than 30 years at other Navy shipyards without impact on the environment. For example, Report NT-94-1, Environmental Monitoring and Disposal of Radioactive Wastes from U.S. Naval Nuclear Powered Ships and Their Support Facilities, Washington, D.C., March 1994, provides additional information on the results of environmental monitoring covering current and past operations.

For the most severe of the hypothetical accidents, Appendix D (See Chapter 5, Section 5.1.4.14.3, and Attachment F, Section F.1.3.8) shows that, in even these extreme cases, at a Naval shipyard an area of only about 110 acres might be contaminated to the point where radiation doses exceeding the Nuclear Regulatory Commission limit for exposure to the general public (100 millirem per year) might result for a person living full time on that land.

This discussion does not mean that an area of such size would be rendered inaccessible or unusable since the calculation described in the preceding paragraph assumes that no action is taken to clean up the radioactivity. In reality, radioactive contamination could and would be removed in order to minimize the affected area and impacts on access. The net result of the analysis in this EIS is that the outcome of any claims by Native Hawaiians would not be altered by the alternative selected for management of Naval spent nuclear fuel.

Although the Navy's preferred alternative is not to store Naval spent nuclear fuel at Naval sites, under NEPA, the Naval Nuclear Propulsion Program is required to consider the full range of reasonable alternatives, including the alternative of taking no action. Similarly, the regulations issued by the Council on Environmental Quality (40 CFR 1502.14(c)) to implement NEPA require the consideration of alternatives which may be beyond the jurisdiction of the agency. The analyses in Appendix D the EIS (See Chapter 5 and Attachment F, Section F.1) showed that the environmental impact of any of the

alternatives
would be small.

II II COMMENT

The analyses in the Environmental Impact Statement should consider health effects other than cancer
fatalities.
RESPONSE
The analyses of the potential effects of radiation exposure in this EIS do consider health effects other than
cancer fatalities and are based on the standards of the International Commission on Radiological Protection. Section F.1.3.3 of Appendix D to Volume 1 discusses the terminology and risk factors used by
the International Commission on Radiological Protection and how these factors were applied in calculating
the effects on human health in this EIS. In order to describe the effects of radiation exposure, the
International Commission on Radio logical Protection defines the term "health detriments" to include the
total impact of all fatal cancers, non-fatal cancers, and genetic effects. The health detriments caused by
any exposure to radiation are calculated by taking the sum of all of these effects after multiplying each
effect by a weighting factor intended to represent the severity the impact of each type of effect on human
health.
Cancer fatalities were used to summarize and compare the results in the EIS since this effect was viewed to
be of the greatest interest to most people. The EIS states that the number of total health effects (deaths,
non-fatal cancers, genetic effects, and other impacts on human health) may be obtained by multiplying the
latent cancer fatalities by the factor of 1.46 developed by the International Commission on Radiological
Protection.
As a result of this comment, Chapters 3 and 5 of Appendix D to Volume 1 have been revised to more
clearly indicate how other health effects are to be calculated.

II COMMENT

The effects of radiation are not well understood.
RESPONSE
The effects of radiation have been studied extensively. There are many publications on the subject and the
field of radiation health physics includes a great many professionals who have devoted their careers to this
topic. As a result of the widespread efforts to understand the effects of radiation, many experts on public
health believe that the effects of radiation on human health and the mechanisms involved are better
understood than the effects of other chemicals present in modern daily life.
There are many variations in natural background radiation and modern lifestyles. For this reason and
others, there are some differences of opinion concerning the effects of exposures to low levels of radiation
and the methods which should be used to extrapolate the results of measurements to the very low radiation
exposures which would be involved in the actions considered in this EIS. However, the International
Commission on Radiological Protection, whose reports and methods were used to calculate the impacts
reported in this EIS, has adopted the "linear method" for producing such estimates since this is the most
conservative method accepted by the scientific community. The standards used by the International
Commission on Radiological Protection are kept abreast of the most up-to-date research and are modified
as necessary to incorporate new results. The methods and standards used in the EIS are also consistent
with the most recent studies and recommendations of the Committee on Biological Effects of Ionizing
Radiation (commonly called BEIR V) and the National Academy of Sciences.
The Occupational and Public Health and Safety sections for the Navy sites in Chapter 4 of Appendix D to

Volume 1 provide a description of a very comprehensive epidemiological study by researchers from Johns Hopkins University of the health of workers at the six Naval ship yards and the two private shipyards which serviced the Navy's nuclear-powered ships. This independent study evaluated a population of more than 70,000 workers over a period of approximately 25 years to determine whether there was an excess of leukemia or other cancers associated with exposure to low levels of gamma radiation. This study found no evidence to conclude that the health of the people involved in work on U. S. Naval nuclear-powered vessels had been adversely affected by exposure to low levels of radiation incidental to this work.
Some persons have proposed performing epidemiological studies of the people living in communities in the vicinity of installations performing work associated with atomic energy. However, as demonstrated by the studies which have been attempted, such as those in Great Britain, the level of radiation exposure in the communities from man-made radionuclides is very low with respect to the variations in background radiation and other factors introduced by individual lifestyles. This fact, plus other variables introduced by nature and other industries in the communities, has made it impossible to perform credible studies or develop definitive conclusions. Efforts in this area are expected to continue, but after 50 years of extensive study, the standards of the International Commission on Radiological Protection represent the most reliable data available.
Based on all of these considerations, the effects of radiation are understood well enough to provide a reasonable evaluation of the alternatives in this EIS. The standards of the International Commission on Radiological Protection have been used with the exposures for all of the alternatives evaluated in order to provide a consistent basis for comparison. However, in order to allow independent evaluation of the effects, Attachment F to Appendix D of Volume 1 provides the amounts of radioactive material which could be released and the radiation exposures calculated for routine operations and accident conditions for each alternative.

II COMMENT

Human health effects should receive greater consideration than such matters as jobs or costs in reaching a decision on the course of action for managing spent nuclear fuel.
RESPONSE
This EIS is devoted to analysis of all effects on human health and the environment which might result from operations or reasonably foreseeable accidents associated with DOE and Navy management of spent nuclear fuel. The details of the analyses for Naval spent nuclear fuel management are described in Attachments A and F of Appendix D to Volume 1. Chapters 3 and 5 summarize the results of these analyses and the detailed results are described in the Attachments to Appendix D.
Every effort has been made to include all possible affected areas, including any identified during the public review of this EIS. It is believed that no important area of potential human health effect or environmental impact has been omitted from this EIS.
The health, safety, and welfare of citizens will be considered carefully in reaching any decision on the course of action to be used for management of spent nuclear fuel.

II COMMENT

An independent study of the health effects on workers associated with reactor servicing at shipyards should be performed.
RESPONSE
The Occupational and Public Health and Safety sections for the Navy sites in Chapter 4 of Appendix D to Volume 1 provide a description of a very comprehensive epidemiological study by researchers from

Johns Hopkins University of the health of workers at the six Naval shipyards and the two private shipyards which serviced the Navy's nuclear-powered ships. This independent study, published in 1991, evaluated a population of more than 70,000 workers over a period of approximately 25 years (1957 to 1981) to determine whether there was an excess of leukemia or other cancers associated with exposure to low levels of gamma radiation. This study found no evidence to conclude that the health of the people involved in work on U. S. Naval nuclear-powered vessels had been adversely affected by exposure to low levels of radiation incidental to this work.

II COMMENT

A comment identified that the EIS states that storage of spent nuclear fuel at Puget Sound Naval shipyard would cause less than one cancer fatality in 100,000 years and questioned whether any other industry has achieved such a safety record.

RESPONSE

The comment appears to refer to Section 5.1.1.12 of Appendix D to Volume 1 of the EIS. The specific risk values quoted in this EIS for normal operations and accidents conditions at Puget Sound Naval Shipyard may be found in Section 3.7 of Appendix D. Specifically, the EIS states that "it could be stated that one member of the population might experience a fatal cancer due to incident-free storage of Naval spent nuclear fuel at the Puget Sound Naval Shipyard if operations continued for 15,400 years." More specifically, Table 3-2 in Appendix D shows that the number of fatal cancers per year to the general population that would result from water pool storage of spent fuel at Puget would be 6.5 x 10-5 (1 cancer divided by 6.5 x 10-5 fatal cancers per year = 15,400 years).

Regarding the assessment of risks, this EIS is not intended to serve as a comparison of risks between spent nuclear fuel storage activities and other industrial activities.

The analyses presented in this EIS do show that the environmental impacts associated with any of the alternatives would be very small for both normal operations and accident conditions. All of the alternatives considered would result in radiation exposures to the public which would be well below Nuclear Regulatory Commission or Environmental Protection Agency standards and far below the normal risks of daily life.

II COMMENT

Radiation can cause damage to materials such as concrete or metal and this should be analyzed in the EIS.

RESPONSE

The commentor is referring to the well-known phenomenon of radiation embrittlement. Embrittlement is a condition that can be caused only by intense radiation in an operating nuclear reactor. Naval spent nuclear fuel in examination or storage facilities is in a subcritical (shut down) condition. Therefore, there is not enough neutron radiation present in spent nuclear fuel examination or storage facilities to cause embrittlement. Since the water pool structures or storage containers would not be exposed to levels of radiation comparable to operating reactors, material degradation due to radiation would not occur in the examination or storage facilities. This conclusion is borne out by almost 40 years of experience in shipping and storing Naval spent nuclear fuel.

The shipping containers used for Naval spent nuclear fuel are inspected after every shipment to assure that they are acceptable for continued use. They also receive maintenance and more detailed inspections at specified periods.

II II COMMENT

Some persons questioned the impact on Pearl Harbor Naval Shipyard if the ability to perform nuclear
reactor servicing work for warships were lost as a result of the alternatives considered in this EIS.
RESPONSE
None of the alternatives evaluated in detail in this EIS would result in Pearl Harbor Naval Shipyard losing
the ability to service the nuclear reactors aboard Navy vessels. Information on the socioeconomic impacts
associated with the loss of reactor servicing work was not included in this EIS for this reason.

II COMMENT

The potential impact on tourism in the vicinity of a Naval spent nuclear fuel management facility should be
discussed in the EIS.
RESPONSE
Since the actual environmental impacts associated with management of Naval spent nuclear under all
alternatives considered in the Environmental Impact Statement would be small, there is no reason to
believe that storage or examination of Naval spent nuclear fuel at any of the locations evaluated would
have any significant effect on tourism. Even the impacts of hypothetical accidents are limited in extent and
small enough that there should be no impact on tourism.
Naval spent nuclear fuel has been managed at Naval shipyards, Navy prototype reactor sites, and INEL for
almost 40 years, incidental to the refueling and defueling of nuclear-powered warships. This has been
done with no discernible adverse effect on tourism in the vicinity of these facilities.

II COMMENT

The effects on the marketability of products produced in the vicinity of a Naval spent nuclear fuel
management facility should be evaluated.
RESPONSE
Since the environmental impacts associated with management of Naval spent nuclear fuel under all
alternatives considered in the EIS would be small, there is no reason to believe that the marketability of
products produced in the vicinity of a Naval spent nuclear fuel management site would be affected. Even
the impacts of hypothetical accidents would be small enough that there would not be any effect on the
marketability of products other than temporarily.
Naval spent nuclear fuel has been managed at Naval shipyards, Navy prototype reactor sites, and INEL for
almost 40 years, incidental to the refueling and defueling of nuclear-powered warships. This has been
done with no discernible adverse effect on the marketability of products from the vicinity of these facilities.

II COMMENT

The effects on property values in the vicinity of a Naval spent nuclear fuel management facility should be
evaluated.
RESPONSE
Since the actual environmental impacts associated with management of Naval spent nuclear under all
alternatives considered in the Environmental Impact Statement would be small, there is no reason to
believe that storage or examination of Naval spent nuclear fuel at any of the locations evaluated would
have any effect on property values in the locality.
Changes in employment under any of the alternatives considered would be very small and would not create

demand that would affect housing and property values. The largest impact on property values associated
with the alternatives considered would result from the shutdown of the Expended Core Facility at INEL.
Naval spent nuclear fuel has been managed at Naval shipyards, Navy prototype reactor sites, and INEL for
almost 40 years, incidental to the refueling and defueling of nuclear-powered warships. This has been
done with no discernible adverse effect on property values in the vicinity of these facilities.

II COMMENT

The effects on jobs and economic development in the vicinity of a Naval spent nuclear fuel management
facility should be evaluated.
RESPONSE
The EIS does evaluate in detail the socioeconomic effects of each alternative. The results of the evaluation
for management of Naval spent nuclear fuel are provided in Chapters 3 and 5 of Appendix D to Volume 1.
As summarized in Chapter 3 of Appendix D, changes in permanent employment range from an increase of
about 10 jobs at each Navy site under the No Action alternative to a loss of 500 jobs at INEL for the
alternatives which would terminate the use of the Expended Core Facility.
As shown in the Socioeconomics sections for each site in Chapter 5 of Appendix D, the magnitude of these
changes with respect to the populations, regional economies, and local job markets in the vicinity of the
Navy sites would be too small to impact local economic development. The largest impact on employment
or the local economy associated with the alternatives considered would result from the shutdown of the
Expended Core Facility at INEL.

II COMMENT

The effects of shipments of Naval spent nuclear fuel on the local infrastructure (such as streets or sewers)
should be evaluated.
RESPONSE
Shipments of Naval spent nuclear fuel from the Kesselring Site use multi-wheel transporters to move the
shipping containers to the nearest railroad siding, where the containers are placed on railroad cars for the
rest of the trip. The many wheels on this vehicle ensure the load on each wheel of the transporter is
maintained below the highway weight limits for the roads used in the movement. As a result, the loading
of each wheel of the transporter is less than the wheel loading of a regular commercial truck. This is done
to prevent damage to the roads or any structures beneath them. Permits which require the shipment not to
exceed posted load limits are obtained from New York State, Saratoga County, and the Village of Ballston
Spa.
The company which moves the Naval spent nuclear fuel shipping containers must post a bond to repair any
damage created during the movement. Repairs to the infrastructure in the municipalities along the transfer
route have never been required as a result of Naval spent nuclear fuel shipments over the last 37 years. If
any damage to the infrastructure in Ballston Spa (such as the sewers system) should be shown to be caused
by the transport of Naval spent nuclear fuel from the Kesselring Site in the future, appropriate means are
available to compensate the town for repairs.
An evaluation of alternate routes was completed by the Naval Nuclear Propulsion Program in 1992. It
showed that the route currently used is safe and is the best alternative available. Copies of this report were
provided to local officials and placed in the Schenectady County Library.

II COMMENT

The impacts and possible mitigative measures associated with Naval spent nuclear fuel resulting from
possible base closures should be evaluated in the Environmental Impact Statement.
RESPONSE
The EIS takes into account the impacts arising from base closures at Charleston Naval Shipyard and Mare
Island Naval Shipyard. As of January 1995, Naval spent nuclear fuel has been removed from these
shipyards under an agreement between the Secretaries of Energy and Navy and the Governor of Idaho. In
addition, the EIS takes into account the most recent plans for fleet size and the increased number of
defuelings and inactivations scheduled over the next decade as a result of those plans.
Since speculation on the Navy sites that might be closed would not be appropriate, a detailed discussion of
how Naval spent nuclear fuel might be handled in the event of closures of bases not currently slated for
closure is not included. In any event, Naval spent nuclear fuel would continue to be managed by the
Federal government and all efforts would be taken to move this material to an operational site if a location
storing Naval spent nuclear fuel were to be closed. Further NEPA documentation might be needed to
address the effects of such an event.

II II COMMENT

The effects of earthquakes or other seismic events on Naval spent nuclear fuel management facilities should
be evaluated.
RESPONSE
The effects of a severe seismic event on Naval spent nuclear fuel management facilities are evaluated in the
EIS. Attachment F to Appendix D of Volume 1 provides a discussion of the analyses performed and the
public health risks which might result from a seismic event at each site where Naval spent nuclear fuel
could be stored. The seismic events considered in the analyses included both an earthquake of the
magnitude used as the basis for the design of the facility (design basis earthquake) and an earthquake of a
magnitude which is more severe than that for which the facility must be designed (beyond design basis
earthquake.)
Appendix D identifies that Naval spent nuclear fuel will retain its integrity even if an earthquake causes
complete draining of a water pool that is being used for storage of Naval spent nuclear fuel. Air circulation
through the fuel racks and fuel units was shown to be sufficient to prevent cladding failure and release of
any fission products from the fuel in the unlikely event of complete loss of pool water. The primary
consequences of the loss of pool water would be the potential for increased direct radiation and some
release of corrosion products. The risks and effects of this and seismic events involving other types of
Naval spent nuclear fuel storage are very small and are included in Appendix D to Volume 1.
With regard to new facilities, Volume 1, Appendix D, identifies that if the Record of Decision involves the
need for new facilities for the interim storage of Naval spent nuclear fuel, detailed site-specific seismic
evaluations would be conducted for those sites and the results would be incorporated into the design of
new facilities. The construction of any new facilities for Naval spent nuclear fuel management would meet
strict seismic standards for the interim storage of Naval spent nuclear fuel. The design and construction of
these facilities to seismic standards which take into consideration the seismic character of the area would
ensure that structures could withstand a major seismic event. Additional information regarding the facility
design considerations for Naval spent nuclear fuel management activities is provided in Attachment D to
Appendix D of Volume 1.

II COMMENT

Discussion of a fault in the vicinity of Puget Sound Naval Shipyard (or some other site) should be added to the Environmental Impact Statement.

RESPONSE

Section 4.1.1.6.3 of Appendix D to Volume 1 provides a summary of the seismic hazards in the Puget Sound area and identifies that the Puget Sound area is prone to seismic activity. This section also identifies that a detailed seismic evaluation would be conducted and that any facilities constructed to store Naval spent nuclear fuel would be designed to seismic criteria for that area. Since the seismicity of the area is factored into the seismic design criteria, any facility constructed to that criteria would be expected to withstand a major seismic event in that area.

The existing Puget Sound Water Pit facility was designed to the seismic design criteria for the Puget Sound area and is expected to withstand a major earthquake in this area. More specific information describing the construction of the Puget Sound Water Pit Facility is provided in Volume 1, Appendix D, Attachment D, section D.2.

Although failure of spent nuclear fuel management facilities is not anticipated, the effects of seismic failure of Naval spent nuclear fuel management facilities has been evaluated in the EIS. Volume 1, Appendix D, Attachment F provides a discussion of the analyses that were performed and the public health risks that might result from a seismic event at each site where Naval spent nuclear fuel would be stored. The seismic events considered in the analyses included both an earthquake of the magnitude used as the basis for the design of the facility (design basis earthquake) and an earthquake of a magnitude which is more severe than that for which the facility must be designed (beyond design basis earthquake.)

Appendix D identifies that Naval spent nuclear fuel will retain its integrity even if an earthquake causes complete draining of a water pool that is being used for storage of Naval spent nuclear fuel. Air circulation through the fuel racks and fuel units was shown to be sufficient to prevent cladding failure and the release of any fission products from the fuel in the unlikely event of complete loss of pool water. The primary consequences of the loss of pool water would be the potential for increased direct radiation and some release of corrosion products. The risks and effects of this and seismic events involving other types of Naval spent nuclear fuel storage are very small and are included in Volume 1, Appendix D.

II COMMENT

An up-to-date seismic analysis should be performed for any site considered for Naval spent nuclear fuel management.

RESPONSE

An up-to-date seismic evaluation was completed for the Expended Core Facility at INEL since it is an existing facility. The seismic events considered included both an earthquake magnitude which is required as the basis for the design of the facility (design basis earthquake), and an earthquake magnitude which is more severe than that for which the facility must be designed (beyond design basis earthquake.)

Any new facilities needed for management of Naval spent nuclear fuel would be evaluated for seismic hazards. Even though design of the facilities incorporating seismic evaluation would make it unlikely that any catastrophic damage would occur as a result of the most severe earthquakes postulated, the EIS includes analyses of the effects of loss of water from the pools at the sites considered. The effects of a complete loss of pool water are reported in Attachment F to Appendix D and identify that Naval spent nuclear fuel will retain its integrity even if an earthquake causes complete draining of a water pool. Air

circulation through the fuel racks and fuel units was shown to be sufficient to prevent cladding failure and
the release of any fission products from the fuel in the unlikely event of complete loss of pool water. The
primary consequences of the loss of pool water would be the potential for increased direct radiation and
some release of corrosion products.
The risks and effects of this, and seismic events involving other types of Naval spent nuclear fuel storage at
the Expended Core Facility and at other sites, are very small and are included in Volume 1, Appendix D.
The construction of any new facilities for Naval spent nuclear fuel management would meet seismic standards at least as good as the current Expended Core Facility.
Volume 1, Appendix D identifies that if the Record of Decision involves the need for new facilities for the
interim storage of Naval spent nuclear fuel, detailed seismic evaluations would be conducted for those
sites. The construction of any new facilities for Naval spent nuclear fuel management would meet strict
seismic standards for the interim storage of Naval spent nuclear fuel. The design and construction of these
facilities to strict seismic standards (which take into consideration the seismic character of the area) will
ensure that structures will withstand a major seismic event. Additional information regarding the facility
design considerations for Naval spent nuclear fuel management activities is provided in Volume 1, Appendix D, Attachment D.

II COMMENT

A commentor felt that the discussion of hazards associated with volcanoes at the Expended Core Facility
was misleading because volcanic flows have occurred in the INEL region within the past several thousand
years.
RESPONSE
Section 4.2.6 of Appendix D to Volume 1 states that there are no active volcanoes known to exist near the
Expended Core Facility at INEL. The probability that a volcano might cause a hazard at the Expended
Core Facility site is very low, estimated to be less than one chance in 100,000 per year.
The discussion in Section 4.2.6 of Appendix D to Volume 1 to this EIS has been revised to clarify the low
probability of volcanic hazards affecting the Expended Core Facility at INEL.

II COMMENT

Some areas in the vicinity of Puget Sound may be susceptible to liquefaction in the event of an earthquake.
If the location at Puget Sound Naval Shipyard where railcars containing spent nuclear fuel were located
should liquify, the railcars could sink.
RESPONSE
The Puget Sound area is prone to seismic activity and liquefaction is a possible result of earthquakes in this
area. The Puget Sound Naval Shipyard performs geotechnical evaluations whenever new facilities are
constructed or as necessary to update information about the site. These studies are used as a basis for the
design of facilities on the shipyard and the shipyard has taken steps in the design and operation of its
facilities that would prevent or minimize any impacts should an earthquake occur.
Even if such an event were to occur, the analyses in this EIS demonstrate that the effects would be
minimal. The shipping containers are watertight and would maintain their integrity even after a severe
earthquake because they are designed to withstand transportation accidents which could be more severe
than a seismic event. Attachments A and F of Appendix D to Volume 1 provide a discussion of the design
of the spent fuel shipping containers and the results of analyses of severe accidents which might occur
during the various modes of shipping container transportation and storage.
If a railcar containing a shipping container loaded with spent fuel were to tip over or settle in the ground

due to liquefaction, no release of radioactive material to the environment or increase in radiation exposure
to any worker or member of the public would occur since the containers are designed to withstand transportation accidents far more severe without breaching. The shipyard would initiate emergency
recovery actions using the equipment available within the shipyard or from sources outside the shipyard to
upright or stabilize the railcar and container as soon as practicable as part of the recovery from the event.

II COMMENT

According to a commentor, Appendix D to Volume 1 inaccurately describes the magnitude of the Borah
Peak earthquake as " 6.9 when it was actually 7.3 on the Richter Scale", and that this results in an
incorrect derivation of the design basis peak ground acceleration value for the Expended Core Facility.
RESPONSE
The comment is inaccurate. Seismologists commonly use one of three scales to describe the magnitude of
an earthquake. These scales are the Richter scale, the Moment Magnitude scale, and the Surface Wave
Magnitude scale. Unfortunately, seismologists have not prescribed a universal scale for describing all
earthquakes and it is sometimes difficult to convert the units from one scale to another as one would
convert temperature units from Fahrenheit to Celsius.
It should be noted that the Moment Magnitude scale is more widely used by seismologists as compared to
the Richter scale when discussing earthquakes. The Moment Magnitude scale reflects the energy released
at the source. The Richter scale is the measure of the local ground motion in the 1 to 5 Hz range and is
satisfactory up to a magnitude of 6.5. Seismographs saturate at magnitudes exceeding 6.5 so the news
media typically quote the Surface Wave magnitude of the event and call it the Richter Scale. The Surface
Wave magnitude is a measure of the ground motion in the 0.05 Hz range and is measured at large distances
from the epicenter. The Surface Wave Magnitude scale is also commonly used by some seismologists to
describe earthquakes at INEL.
Section B.5.2 of Appendix D to Volume 1 states that the 0.24g peak ground acceleration is "derived on the
basis that a moment magnitude 6.9 seismic event centered near Howe on the Lemhi Fault would cause a
rupture of approximately 34 kilometers along the Lemhi Fault. The Howe epicenter is the epicenter
located closest to the Expended Core Facility, and 6.9 was the moment magnitude of the Borah Peak
earthquake in 1983". The seismologist who evaluated the seismic hazard for the Expended Core Facility at
INEL used the Moment Magnitude scale, and not the Richter scale, to describe the magnitude of the Borah
Peak earthquake and to derive the peak ground acceleration for the Expended Core Facility. The Borah
Peak earthquake was also measured at 7.3 on the Surface Wave Magnitude scale, as identified by the
seismologist who evaluated the Expended Core Facility. Some other studies of the Borah Peak earthquake,
such as that described in the Special Isotope Separator EIS, have cited the magnitude of the Borah Peak
earthquake as 7.3 on the Richter scale (on page 3-15 and in Table 3-2 on page 3-17 of that EIS). These
are all references to the same magnitude earthquake; they are merely reported on different scales.

II COMMENT

There may be greater than minimal likelihood of a tsunami in the vicinity of Puget Sound Naval Shipyard
due to the possibility of large earthquakes beneath Puget Sound.
RESPONSE
The containers which would be used for dry storage are designed to withstand water immersion under

severe accident conditions and no deleterious effects would be expected from submersion of a container by a tsunami.
Storage of Naval spent nuclear fuel in water pools at Navy sites is also considered in this EIS. The Naval spent nuclear fuel in water pools would normally be under water and the effects on the environment due to flooding by a tsunami would be primarily limited to exchanging some pool water bearing radioactive corrosion products with the flood waters. Such a release would not be expected to occur except for the most severe tsunamis which raised the level of the waters of Puget Sound many feet. If that did occur, Attachment F to Appendix D of Volume 1 provides analyses of the effects of water pool water being released under accident conditions. The results of these analyses represent an upper limit on the effects of releases possible during a tsunami sufficiently severe to flood a water pool containing Naval spent nuclear fuel.
Chapter 4 of Appendix D to Volume 1 has been changed to clarify that a tsunami could be caused in the manner described.

II COMMENT

Additional information pertaining to seismicity near some Navy sites should be added to the EIS or the information in the EIS does not reflect the latest geotechnical studies.
RESPONSE
Chapter 4 of Appendix D to Volume 1 contains sections which describe possible seismic hazards at each Navy site, provide general background information regarding the seismicity at these sites, and provide references where more detailed information can be obtained. In addition, the current Uniform Building Code (UBC) seismic classification for each site is provided as a means for comparing the potential for seismic hazards among sites.
The effects of seismic failure of Naval spent nuclear fuel management facilities have been evaluated in this EIS. Chapter 5 and Attachment F of Appendix D to Volume 1 provide summary and detailed discussions of the analyses that were performed and the public health risks that might result from a seismic event at each site where Naval spent nuclear fuel would be stored. The seismic events considered in the analyses included both an earthquake of the magnitude used as the basis for the design of the facility (design basis earthquake) and an earthquake of a magnitude which is more severe than that for which the facility must be designed (beyond design basis earthquake.) These analyses show that the risks associated with seismic events involving Naval spent nuclear fuel are very small for all of the alternatives and sites considered.
The EIS states that if the Record of Decision identifies a particular site for interim storage of Naval spent nuclear fuel, a detailed seismic evaluation would be conducted. This evaluation would consider the latest geotechnical information available at the time. The EIS has been revised to eliminate the reference to seismic risk zoning promulgated by the U.S. Coast and Geodetic Survey at the Kesselring Site.

II COMMENT

According to a commentor, seismic events up to magnitude 9 might occur in the vicinity of Puget Sound Naval Shipyard.
RESPONSE
There has recently been speculation by some that earthquakes in the Puget Sound area might produces magnitudes as high as 8.2 to 8.8. On the other hand, some seismologists believe that earthquakes with magnitudes exceeding 7 are unlikely in this region. There is also some disagreement on the nature of the fault movements that might occur in this area.

Although failure of spent nuclear fuel management facilities during seismic events within the design criteria is not anticipated, the effects of seismic failure of Naval spent nuclear fuel management facilities have been evaluated in this EIS. Chapter 5 and Attachment F of Appendix D to Volume 1 provide summary and detailed discussions of the analyses that were performed and the public health risks that might result from a seismic event at each site where Naval spent nuclear fuel would be stored. The seismic events considered in the analyses included both an earthquake of the magnitude used as the basis for the design of the facility (design basis earthquake) and an earthquake of a magnitude which is more severe than that for which the facility must be designed (beyond design basis earthquake.) These analyses show that the risks associated with seismic events involving Naval spent nuclear fuel are very small for all of the alternatives and sites considered.
This EIS states that if an alternative making use of Navy sites for storage of Naval spent nuclear fuel were to be selected a detailed seismic evaluation would be conducted. This evaluation would consider the latest geotechnical information available at the time. The EIS has been revised to clarify the range of earthquake magnitudes identified for the Puget Sound area.

II COMMENT

There are significant differences in interpretations of ground motions at INEL and the design acceleration level of the fuel racks is not identified.
RESPONSE
Section F.1.4.2.1.1.3 of Appendix D to Volume 1 of this EIS states that the ground acceleration used to evaluate the stability of the Expended Core Facility water pool and fuel racks in a design basis seismic event is 0.24g.
Section F.1.4.2.1.1.3 of Appendix D to Volume 1 summarizes the bases used by expert seismologists to determine the 0.24g peak ground acceleration for the Expended Core Facility. The considerations and techniques involved are described in more detail in the reference provided in Section F.1.4.2.1.1.3. The facilities on INEL are many miles apart. As a result, the distance between a fault epicenter, such as the Lemhi fault epicenter at Howe, and each facility at INEL differs by a number of miles. Since the ground motion produced by an earthquake decreases as the distance from the epicenter increases, the same magnitude earthquake at the epicenter (for example, a moment magnitude 6.9 quake) will produce different peak ground accelerations at the different facilities.
The references to Appendices B and D to Volume 1 provide more detailed discussions of the geotechnical conditions in the vicinity of INEL and the various facilities at this large site.

II COMMENT

The EIS should provide seismic analyses documenting that the superstructure of the Expended Core Facility has the ability to sustain design basis earthquake and accident scenarios.
RESPONSE
An up-to-date seismic evaluation was completed for the Expended Core Facility at INEL based on the 1994 Natural Phenomena Hazard Report referenced in Section F.1.4.2.1.3 of Appendix D to Volume 1.
The analysis concluded that neither the superstructure nor the cranes would collapse, even though some members of the superstructure would experience some localized damage.
The seismic analyses included both an 0.24g magnitude earthquake and an 0.40g magnitude earthquake which is more severe than that for which the facility has been designed (beyond design basis earthquake).
The seismic evaluation is discussed in Section F.1.4.2.1.1 of Appendix D to Volume 1.
The seismic analysis also evaluated the water pools. Based on the evaluation of the Expended Core Facility, damage to Naval spent nuclear fuel is not expected. Section F.1.4.2.1.1 of Appendix D to Volume 1 provides the results of analyses for loss of water from the water pools at the Expended Core

Facility, even though an earthquake is not expected to produce such an accident. In addition, Section
F.1.4.2.1.3 of Appendix D to Volume 1 provides the results of analyses for a crane load failure. These
analyses show that the risks associated with such postulated accidents would be small.

II II COMMENT

The number of fatal cancers to the general population per year shown in Table 3-2 of Appendix D to
Volume 1 should be multiplied by the number of people in the population to obtain the risks associated
with Naval spent nuclear fuel management.
RESPONSE
The comment is incorrect, apparently resulting from a misreading of the information provided in the EIS.
Table 3-2 of Appendix D to Volume 1 provides the total risk to the entire population for each alternative
considered. The values in Table 3-2 should not be multiplied by the number of people in the population
since the number of people affected has already been included in the calculation of the numbers shown in
the table. An explanation of how risk is calculated is provided in Section F.1.3.10 of Appendix D to
Volume 1.
The estimates of risk to the entire population from normal operations in Table 3-2 were obtained from the
results of detailed analyses provided in Attachment F to Appendix D. The analysis in Attachment F was
performed by calculating the total number of fatal cancers that might occur in the total population within a
50 mile radius of each site evaluated for management of Naval spent nuclear fuel. The details of the
analyses for the Navy sites and for the Oak Ridge Reservation and the Nevada Test Site are provided in
Section F.1.4.1, including the amounts of radioactivity which might be released to the environment for
each alternative considered and the number of people within 50 miles of each site.

II COMMENT

Population data for a large area surrounding sites considered should be used in the analyses.
RESPONSE
The EIS used population data from the 1990 Census for an area within 50 miles of each site for evaluation
of the potential environmental impact to the general population. (Distributions for Navy sites are shown in
Appendix D, Chapter 4, and those for DOE sites considered are in the Volume 1 Appendices for each site.)
Combining this population data with radiological exposures in the 50 mile radius region yielded the
collective person-rem for all of the people in the region. These results were then converted to latent cancer
fatalities using correlations developed by the International Commission on Radiological Protection These
correlations are consistent with the most recent studies and recommendations of the Committee on Biological Effects of Ionizing Radiation (commonly called
BEIR V).
The area within 50 miles of each site encompasses all of the people who might be affected by radiological
exposure associated with the alternatives for spent nuclear fuel management. As an illustration of this, the
analytical results for the most severe hypothetical Naval spent nuclear fuel accidents under all alternatives,
provided in the Facility and Transportation Accidents sections of Chapter 5, show that the maximum area
which might be contaminated with radioactivity to a level which would cause a person living there for 24
hours a day to exceed the Nuclear Regulatory Commission's limit to the general public of 100 millirem per
year would be less than about 210 acres for all cases.

II COMMENT

Information on the radionuclides present in Naval spent nuclear fuel and the amounts of each should be
provided in the Environmental Impact Statement.
RESPONSE
Appendix D to Volume 1 provides, in Attachments A and F, a list of radionuclides in Naval spent nuclear
fuel and the exposure to human beings and lists the quantity of each nuclide involved. This information is
provided for both normal operations and accidents.

II COMMENT

All pathways for exposure to human beings to radiation or radioactive material and all effects of such
exposure should be included in the analyses of the impacts of normal operations and postulated accidents.
RESPONSE
The EIS includes an evaluation of all significant pathways by which radiation or radioactive materials can
impact human health. These pathways include direct radiation from the spent nuclear fuel facility, direct
exposure from immersion in airborne radioactive material, direct exposure from radioactive material
deposited on the ground, internal exposure from inhalation of radioactive materials, internal exposure from
ingestion of radioactive materials (both from food and drinking water), and direct exposure from the surface
of or immersion in contaminated water. The pathways used in the analyses for
Naval spent nuclear fuel are described in Attachments A and F of Appendix D to Volume 1 of the EIS.
Both latent fatal cancers and other health effects are discussed.

II COMMENT

Some commentors were concerned that an accident involving Naval spent nuclear fuel at a Navy site would
have disastrous consequences for a region.
RESPONSE
Appendix D to Volume 1 of the EIS includes an evaluation of a broad range of hypothetical accidents
which might occur as a result of human error, equipment failure, or natural phenomena, such as
earthquakes or tornadoes. The results of these analyses, which are summarized in Chapter 3, provided for
each site in Chapter 5, and described in detail in Attachments A and F, show that the risks associated with
all of the accidents are very low.
The risks are very low even though the analyses included many conservatisms. For example, the analysis
of an airplane crash into a container used to store Naval spent nuclear fuel assumed that the crash would
cause the container to be breached even though evaluation had shown that no part of an airplane could
penetrate the container. The analyses used meteorological conditions (such as wind dispersion and speed)
which have only one chance in twenty of actually occurring, but no credit was taken for the fact that they
are worse than the actual conditions 95 percent of the time. Further, the analysis of the consequences also
assumed that no evacuation of people in nearby residential areas or other mitigative measures were used to
reduce the effects. As a result of these conservatisms, it is expected that the actual impacts of these
accidents would be 10 to 100 times less than calculated.
Even when the low probability of these accidents is not considered, the consequences without mitigative
measures or planned emergency response would not be so extreme as feared by the commentors. The
principal reason for this is that Naval nuclear fuel is designed to withstand the conditions encountered in
combat and therefore is rugged enough to resist or minimize damage in even the most severe accidents. In
addition to the rugged nature of Naval spent nuclear fuel by itself, the containment provided by

the
facilities and transport containers, the precautions and procedures applied to this work, and the existing
emergency response capabilities of the Navy sites and the surrounding regions make it highly likely that the
actual consequences would be much less than calculated.
As described in Attachments A and F of Appendix D to Volume 1 of the EIS, all significant pathways by
which radiation or radioactive materials released by these accidents could impact human health have been
included. Attachments A and F of Appendix D to Volume 1 of the EIS provide all of the information used
to calculate the effects of accidents involving Naval spent nuclear fuel so that an independent analyst could
use these data to perform calculations to confirm the accuracy of the conclusion that such accidents would
not be as disastrous as some persons feared.

II COMMENT

The potential health effects of exposure to radiation or radioactive material as a result of normal operations
or postulated accidents involving Naval spent nuclear fuel and all effects of such exposure should be
included in the EIS.
RESPONSE
The EIS includes an evaluation of the exposure and potential health effects associated with Naval spent
nuclear fuel management at all of the sites considered. These analyses include all possible pathways, such
as direct radiation from the spent nuclear fuel facility, direct exposure from immersion in airborne
radioactive material, direct exposure from radioactive material deposited on the ground, internal exposure
from inhalation of radioactive materials, internal exposure from ingestion of radioactive materials (both
from food and drinking water), and direct exposure from the surface of or immersion in contaminated
water. The analyses performed for Naval spent nuclear fuel management alternatives and their results are
described in Attachments A and F of Appendix D to Volume 1 of the EIS. Both latent fatal cancers and
other health effects are discussed.

II COMMENT

The accident analyses in the EIS for Naval spent nuclear fuel storage facilities should include fires or
explosions on Naval vessels at shipyards as initiating events.
RESPONSE
Appendix D to Volume 1 of the EIS includes an evaluation of a broad range of hypothetical accidents
which might occur as a result of human error, equipment failure, or natural phenomena, such as
earthquakes or tornadoes. These analyses included fires involving the storage facilities and projectiles
striking the storage facilities. The results of these analyses are summarized in Chapter 3, tabulated for each
individual site in Chapter 5, and described in detail in Attachment F. The analyses show that the risks
associated with all of the accidents are very low.
Section F.1.2 describes the procedure used to select accidents for detailed analysis. The evaluation of
possible accidents concluded that accidents initiated at nearby locations, such as those on Naval vessels at
shipyards, would not produce more severe effects than the accidents chosen for detailed analysis and are
therefore not specifically evaluated. The accidents selected included a hypothetical crash of a large
passenger or cargo aircraft directly on to the fuel storage areas, crashes which would involve both fire and
high energy projectiles, so the effects of such an event would likely far outweigh the effects of an explosion
on a vessel.
The consequences of Naval spent nuclear fuel storage facilities being struck by projectiles from weapons

have been specifically considered. This evaluation was performed as part of the analysis of possible terrorist or military attack. The effects of such an attack have been deter mined to be less than the limiting accidents analyzed in the EIS, specifically the crash of a large jet or an earthquake (See Appendix D, Attachment F, Section F.1.2). Attacks using anti-tank weapons or other specialized weapons, as well as conventional explosives, were evaluated.

The reasons that the effects of a projectile from an anti-tank weapon striking one of the storage containers would be less severe than the accidents analyzed are: (a) anti-tank weapons would be likely to cause a self-sealing penetration in the metal of a container, unlike that which is assumed from the airplane crash (impact from a 50 inch diameter engine rotor); (b) there is no explosive material inside the container, so it will not "blow up" as a tank would if hit by such a weapon (in an attack on a tank, the artillery shells inside the turret detonate from the energy injected into the turret by the anti-tank shell); (c) there would be no fire to disperse the radioactivity that is released when the container is breached, unlike an aircraft crash where the jet fuel might pool, ignite, and create such a fire. The rugged design of containers and the thick walls of water pools, combined with the shock-absorbing nature of water with a free surface, reduce the effects of other types of explosive charges.

Attachment F of Appendix D of the EIS has been modified to better describe this analysis.

II COMMENT

The analyses of normal operations and hypothetical accidents should include calculation of the exposure to the maximum exposed individual for transportation and for each site for each alternative.

RESPONSE

The EIS does provide an estimate of the exposure for a maximum exposed individual for normal operations and postulated accidents for fixed sites and transportation under all alternatives. Attachments A and F of Appendix D to Volume 1 provide the results of calculations of the potential exposure to the maximum exposed individual for shipments and facilities for all alternatives, as well as the potential exposure to workers, to a person at the point of nearest public access, and to the population in the vicinity. Sections A.8.2, A.8.3, and A.8.4 in Attachment A provide the detailed results for routine operations and accidents during transportation and Sections F.1.4.1 and F.1.4.2 in Attachment F provide detailed results for normal operations and accidents for each site considered. The results tabulated in these sections show that the risks to the maximum exposed individuals would be very small under all of the alternatives considered.

II COMMENT

The risks and costs associated with the period of transition to a new alternative for the management of Naval spent nuclear fuel should be analyzed.

RESPONSE

Section 3.8 of Appendix D to Volume 1 of this EIS states that most of the alternatives would require a period of implementation while facilities were constructed and equipment was procured. Existing facilities and equipment would be employed to manage Naval spent nuclear fuel during the transition. Naval spent nuclear fuel would be transported to the Expended Core Facility at INEL during the transition should an alternative be selected requiring construction of a new examination facility or procurement of additional shipping containers for dry storage at Navy sites. Given this use of facilities and transportation routes that are included in alternatives such as the 1992/1993 Planning Basis, the impacts per year during the transition would be the same as given for those alternatives. The potential environmental impacts of actions that would be taken to manage Naval spent nuclear fuel during a transition period are therefore included in the EIS and all extremely small.

II COMMENT

The airplane crash accident analyses in the EIS for Naval spent nuclear fuel storage at Pearl Harbor should
include accidents involving shipping containers stored on railcars.
RESPONSE
Analyses of an aircraft crash into shipping containers stored on railcars at Pearl Harbor Naval Shipyard
were not included in this EIS because shipping containers are not stored on railcars at Pearl Harbor, but on
concrete pads. Ship rather than rail transport is used to move Naval spent nuclear fuel to Puget Sound
Naval Shipyard. Attachment F (including Table F.3-6) to Appendix D of Volume 1 includes analyses of
the accidents which might occur for storage of Naval spent nuclear fuel on concrete pads at Pearl Harbor
Naval Shipyard.
If an analysis were included for containers stored on railcars, the only difference in the result would be due
to a slight increase in the probability an airplane might crash into a container. This is because the target
area for an array of containers on railcars would be greater than the target area for an array of the same
number of containers on a concrete pad. The dependence of crash probabilities on target area is described
in Section F.3 of Appendix D to Volume 1. The difference in target areas is listed in Table D-1 in
Appendix D.

II COMMENT

The risks associated with "dry storage" at shipyards and prototype locations should be analyzed in this EIS.
RESPONSE
Appendix D to Volume 1 of this EIS includes, in Chapters 3 and 5 and Attachments A and F, detailed
evaluation of the possible exposures and potential health effects associated with Naval spent nuclear fuel
management at shipyards and Navy prototype sites. These analyses include risks for transportation and
facility accidents for these alternatives, as well as for all other alternatives considered, and showed that the
risks from any alternative would be very small. Transportation of Naval spent nuclear fuel for the
alternative involving the largest number of shipments was shown to produce less than one additional
fatality for the entire 40 year period considered. Under the Decentralization alternative, three methods of
storage at shipyards and Navy prototype reactor locations are considered: dry storage, storage in shipping
containers, and storage in water pools. The risks associated with dry storage are specifically discussed in
this EIS.
This EIS shows that the risk associated with the transportation of Naval spent nuclear fuel or the risks
associated with storage at any location would be so small for all the alternatives considered that they do
not provide a basis for choosing among the alternatives.

II COMMENT

The risks associated with ships carrying Naval spent nuclear fuel to the Mainland should be analyzed in
this EIS.
RESPONSE
Appendix D to Volume 1 of this EIS includes, in Chapters 3 and 5 and Attachments A and F, detailed
evaluation of the possible exposures and potential health effects associated with the shipment of Naval

spent nuclear fuel from the Pearl Harbor Naval Shipyard in Hawaii to Puget Sound Naval Shipyard. This is the only movement of Naval spent nuclear fuel by ship and the only shipping route which makes use of the Strait of Juan de Fuca and the upper portions of Puget Sound to the Puget Sound Naval Shipyard in Bremerton. No Naval spent nuclear fuel is shipped to the ports of Seattle or Tacoma.
The analyses reported in Appendix D include risks for normal operations and postulated accidents for these alternatives, as well as for all other alternatives considered, and showed that the risks from any alternative would be very small. All transportation of Naval spent nuclear fuel for the alternative involving the largest number of shipments was shown to produce less than one additional fatality for the entire 40 year period considered. Under all alternatives but those which do not allow Naval spent nuclear fuel to leave Pearl Harbor, a few shipments (fewer than 25) from Pearl Harbor to Puget Sound Naval Shipyard would be made.
This EIS shows that the risk associated with the transportation of Naval spent nuclear fuel or the risks associated with storage at any location would be so small for all the alternatives considered that they do not provide a basis for choosing among the alternatives. An analysis for a postulated accident which would result in a serious fire aboard the vessel carrying Naval spent nuclear fuel in certified shipping containers has been added to this EIS.

II COMMENT

Evaluation of a criticality event could be hampered because no references for ruthenium and cesium release fractions were found.
RESPONSE
The cesium release fraction used is taken from the Nuclear Regulatory Commission's Regulatory Guide 3.34, as stated in section F.1.4.2.1.2.1 of Appendix D to Volume 1.
The Nuclear Regulatory Commission's Regulatory Guide 3.34 does not include a release fraction for ruthenium. However, ruthenium was added to the postulated releases in order to provide complete analyses consistent with those reported for other facilities in this EIS. The ruthenium release fraction used was obtained from a technical report prepared by Los Alamos National Laboratory. This document, A Guide to Radiological Accident Considerations for Siting and Design of DOE Nonreactor Nuclear Facilities, LA-10294-MS, issued January 1986, was inadvertently omitted from the list of references in the Draft EIS and has been added to the list of references in Attachment F of Appendix D to Volume 1.

II COMMENT

The loss of jobs in Southeastern Idaho should be considered in selecting an alternative for management of Naval spent nuclear fuel.
RESPONSE
Appendix D to Volume 1 includes information on the socioeconomic impacts, such as increases or decreases in employment at Naval spent nuclear fuel management facilities, for each alternative considered. The data on socioeconomic impacts are summarized in Table 3-7 and Section 3.7 of Appendix D. The analysis summarized in Table 3-7 shows that selection of an alternative which ended the current practice of shipping Naval spent nuclear fuel to the Expended Core Facility at INEL would result in the loss of approximately 500 jobs in Southeastern Idaho.

II COMMENT

One commentor stated that the EIS should include uncertainties on the estimates of aircraft crash probabilities and of the resulting number of latent cancer fatalities.
RESPONSE
The analyses performed for airplane crashes contain a large number of conservative assumptions which

result in a worst case or bounding analysis which is intended to produce results which would not be exceeded even if all uncertainties were at the most unfavorable limit of their ranges. Section F.1.4.2.2.2 of Appendix D to Volume 1 provides a description of the analysis of an airplane crash.

The risks are very low even though the analyses included many conservatisms. For example, the analysis of an airplane crash into a container used to store Naval spent nuclear fuel assumed that the crash would cause the container to be breached even though evaluation had shown that no part of an airplane could penetrate the container. The analyses used meteorological conditions (such as wind dispersion and speed) which have only one chance in twenty of actually occurring, but no credit was taken for the fact that they are worse than the actual conditions 95% of the time. Further, the analysis of the consequences also assumed that no evacuation of people in nearby residential areas or other mitigative measures were used to reduce the effects. As a result of these conservatisms, it is expected that the actual impacts of these accidents would be 10 to 100 times less than calculated.

The conservative assumptions discussed above result in analysis results which are much greater than those which would be expected should the accident actually occur. The exposures and latent cancer fatalities which have been calculated and reported in this EIS for a hypothetical airplane crash are ten to one hundred times higher than those which would result from a more realistic, best-estimate analysis. Put another way, a more realistic analysis would calculate risks which are 10 to 100 times less than those contained in the EIS.

II COMMENT

One commentor stated that the formula for the effective crash area on page F-228 appears to be inconsistent with the description in the text and that the area calculated using this formula would be infinite for a crash attitude angle of zero.

RESPONSE

The formula for the effective crash area given in section F.3.2 is valid only for crash angles of descent greater than zero degrees. This is not a problem with the use of the equation because an airplane would have to be flying along parallel to the ground at an altitude equal to or greater than the height of the "target" for the angle to be zero. In such a case, the airplane would clear the object and there would be no crash.

The term in question which contains the cotangent of the angle of the aircraft's descent (cot) represents the effective shadow area. The effective shadow area is the area of the projection of the target elevation on the horizontal plane behind the target. The formula for the effective shadow area is:

Ashallow = (L + Aw) H cot

As can be seen, as the angle of descent () decreases, shadow area increases. For the limiting case where goes to zero, the aircraft clears the top of the target; hence, the effective shallow area projection does not apply. For the EIS, a value of 15 degrees is used for , based on the recommended value in the Sandia 1983 reference.

Section F.3.2 will be revised to note that the angle of descent during a crash ( ) must be greater than zero for the effective crash area formula to be valid.

II COMMENT

One commentor requested that details on perpendicular distances between runways and potential Naval spent nuclear fuel storage sites be provided in the EIS to allow for calculation of the exponential factors in the crash probability expressions in Section F.3.2.

RESPONSE

Perpendicular distances between runways and potential Naval spent nuclear fuel storage sites can be determined by interested parties from the aeronautical and site maps obtained for each site from the Federal Aviation Authority referenced in section F.3.3. For Pearl Harbor, the following distances were used in calculating the airport crash probabilities:

Airport	Runway Designation	Y-miles from end of runway to SNF	X-miles from center-line of runway to SNF
Honolulu International/ Hickam AFB	8 left	0.99	1.75
	8 right	0.93	2.97
	4 right	0.17	3.32
Barbers Point NAS	29	3.9	6.1
	11	5.6	6.1
	22 left	6.6	1.4
	22 right	6.6	1.5
	4 left	8.4	1.5
	4 right	8.4	1.4

II COMMENT

One commentor presumed that the reason aircraft crash probabilities for potential Naval spent nuclear fuel management sites are small is due to the exponential decrease in the probability of an airplane striking an object on the ground as the distance from airports increases.

RESPONSE

The observation that the probability of an airplane crashing into an object on the ground decreases rapidly as the distance between an airport or airway and the object increase is borne out by the data on aircraft crashes. Objects or buildings near airports or using main air routes are more likely to be involved in a crash than those at greater distances because there are more aircraft in the vicinity of airports or heavily used airways and because an aircraft is more likely to crash during takeoff and landing than during other flight conditions.

The exponential factors which are included in the crash probability formula take into account the fact that the probability of an aircraft crash striking a specific target decreases exponentially as the distance from the target to the centerline of the runway or airway increases. Further, the rate at which this exponential decrease occurs is dependent upon other factors such as the type of aircraft which is involved, and the type of flight operation in progress, such as takeoff, landing, or level flight.

II COMMENT

A commentor requested more detailed justification in the EIS for the use of a reduced aircraft skid distance of 300 feet at shipyards.

RESPONSE

The 300 foot skid distance identified in section F.3.3 is based on a review of several shipyard and prototype sites which might contain Naval spent nuclear fuel. This review showed that from most directions an aircraft could not skid more than a few hundred feet before it would hit a building, crane, or drydock in the crowded confines of a Navy site. Such an obstacle would quickly bring the airplane to rest and would thus limit the skid distance.

In addition, a more detailed quantitative analysis was performed for two selected site locations to check the validity of the use of a 300 foot skid distance. Analysis of these latter site locations was performed using maps of the specific sites, locating on these maps the potential site where Naval spent nuclear fuel could be kept, and calculating the average of the maximum skid distances for every direction around the Naval spent nuclear fuel. In this calculation, it was assumed that an airplane would skid 1600 feet along

the ground
unless the distance it could skid would be limited by an existing building, drydock, or other substantial
structure. No credit was taken for reductions in skid distance caused by cranes, high buildings, or raised
earthen berms. The average skid distances for these two shipyards calculated in this manner were 199 feet
and 314 feet. These results support the use of the 300 foot skid distance in this EIS.

II COMMENT

This EIS should present in detail the differences between the Nuclear Regulatory Commission and Sandia
methods for calculating aircraft crash probabilities.
RESPONSE
There are several key differences between the Nuclear Regulatory Commission and Sandia methodologies
which will produce differences in the calculated crash probabilities at spent nuclear fuel sites. First, the
Nuclear Regulatory Commission method treats crashes during landing and takeoff operations at airports as
equally probable events. In contrast, the Sandia method distinguishes between the two, and assigns a
higher probability of occurrence to a crash during landing, which is consistent with crash data for
commercial and military aircraft.
Second, the Nuclear Regulatory Commission method calculates the probabilities of crashes for concentric
rings around the airports, whereas the Sandia method employs an approach using two zones based on the
direction of travel and whether the aircraft is landing or taking off. With the Nuclear Regulatory
Commission method, the probability of an aircraft crash during takeoff or landing is equally likely to occur
in all directions at a given radius from the airport. Thus, during a takeoff operation, a target located behind
the aircraft or off to the side of the aircraft is just as likely to be involved in an aircraft crash as a target
located ahead of the aircraft. This result is not realistic based on existing crash data which indicates that
targets behind the aircraft and off to the sides are seldom, if ever, involved in crashes during takeoffs. In
contrast, the Sandia crash zone approach identifies two distinct crash zones: one ahead of the runway, and
one off to the sides of the runway. Different crash probability values are used for each zone to avoid
calculating probabilities for unrealistic situations such as the one just described.
Finally, the Sandia method includes terms, not found in the Nuclear Regulatory Commission method,
which adjust the aircraft crash probability based on the angle between the centerline of the runway and a
line which extends from the end of the runway to the target, and aircraft type. Civilian aircraft typically
follow a straight approach or departure route so this feature increases the crash probability if the target is
located along the runway centerline or at small angles from the runway centerline. For military high
performance aircraft, similar crash probability adjustments are made during landing operations, but are not
made during takeoff operations since military aircraft typically do not follow a straight departure route.
These angular adjustments in crash probability are consistent with crash data for both commercial and
military aircraft.

II COMMENT

The effects on endangered or threatened species in the vicinity of a Navy site as a result of routine
operations or accidents associated with Naval spent nuclear fuel management operations should be evaluated.
RESPONSE
The EIS considers in detail the potential environmental effects of each alternative under routine operations
and accident conditions. The results of these analyses show, and past experience demonstrates, that Naval

spent nuclear fuel can be managed safely and without adverse environmental effects. Chapter 5 of Appendix D to Volume 1 includes a discussion of the effects of Naval spent nuclear fuel management on the ecology in the vicinity of the sites considered.

To ensure appropriate protection for protected species, the location for any new Naval spent nuclear fuel storage or examination facilities would be selected to avoid ecologically sensitive areas, such as those in the vicinity of threatened or endangered species. Construction activities would comply with all applicable laws and regulations, using established procedures for preserving air and water quality and minimizing such impacts as noise and disturbance or destruction of habitat.

No Naval spent nuclear fuel storage or examination facility would release water carrying radioactive or hazardous material to the environment. In almost 40 years of receipt, transportation, handling, and examination of Naval spent nuclear fuel, the Naval Nuclear Propulsion Program has never had a release of radioactivity that has had a significant effect on the environment. Based on the operations that would be performed and the controls that would be in place, the impacts on air, water, ecological, or geological resources of any Naval facility considered would be small. Furthermore, experience has shown that since Naval spent nuclear fuel management is a low-intensity industrial activity, its contributions to noise and traffic would be inconsequential. Detailed calculations have shown that the cumulative radiation exposure, and the health impacts of that exposure, on the human population in the vicinity of a Naval spent nuclear fuel facility would be inconsequential; correspondingly, it is judged that the operation of such a facility would not threaten the existence of any species.

In the unlikely event of a serious accident involving Naval spent nuclear fuel, it is estimated that for the most severe case only about 210 acres of land would be affected to an extent that would exceed the Nuclear Regulatory Commission public limit of 100 millirem per year. Most of this area would be within shipyard or DOE site boundaries. The affected area would require decontamination, but this does not mean that an area of such size would be rendered permanently unavailable for use or even evacuated for long periods of time. In reality, radioactive contamination could and would be removed in order to minimize the affected area. Since the radiological effects of accidents on the human population would be small, the radiological effects on species other than humans would also likely be small.

II COMMENT

The effects on endangered or threatened species in the vicinity of a Navy site as a result of routine operations or accidents associated with Naval spent nuclear fuel management operations should be evaluated.

RESPONSE

The EIS considers in detail the potential environmental effects of each alternative under routine operations and accident conditions. The results of these analyses show, and past experience demonstrates, that Naval spent nuclear fuel can be managed safely and without adverse environmental effects. Chapter 5 of Appendix D to Volume 1 includes a discussion of the effects of Naval spent nuclear fuel management on the ecology in the vicinity of the sites considered.

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II COMMENT

The effects of hurricanes or tsunamis should be analyzed in this EIS and considered in the final decision.

RESPONSE

While hurricanes can have high winds, hurricane winds normally cannot generate the very large, very fast missiles analyzed for tornadoes. For example, tornado winds of 360 miles per hour were used to generate the wind-driven missiles used in evaluating storage in shipping containers, as described in Section F.1.4 of Appendix D to Volume 1. These winds are the same as those specified for design of nuclear power plants.

Hurricanes very infrequently produce winds that could generate such missiles, so the analyses provided for tornadoes in Appendix D provide an upper limit for the effects of hurricanes. Examination of damage caused by recent severe hurricanes shows that robust structures can withstand hurricanes. Based on these considerations, the analysis of wind-driven missiles in the EIS is reasonable and adequate.

The containers used for storage are designed to withstand water immersion under severe accident conditions and no deleterious effects would be expected from submersion of a container. Thus, the rugged containers used for storage would be highly unlikely to be penetrated during a hurricane or tsunami.

Storage of Naval spent nuclear fuel in water pools at Navy sites is also considered under the Decentralization alternative. The Naval spent nuclear fuel in water pools would normally be under water and the effects on the environment due to flooding by a hurricane or tsunami would be primarily limited to exchanging some pool water bearing radioactive corrosion products with the flood waters. Such a release would not be expected to occur except for the most severe hurricanes or tsunamis. Attachment F to Appendix D of Volume 1 provides analyses of the effects of releases of water containing radioactive material. The results of these analyses represent an upper limit on the effects of releases possible during a hurricane or tsunami sufficiently severe to flood a water pool containing Naval spent nuclear fuel. These results show that the risks of such releases would be small under all of the alternatives considered.

Some commentors expressed concern about the depth of flooding of drydocks during such severe weather.

However, this is not a concern because Naval spent nuclear fuel facilities would not be placed in

drydocks
since they are needed for ship maintenance and repair.

II COMMENT

Hurricanes can have winds like the 212 miles per hour measured during Hurricane Iniki in 1992. Since
hurricanes are more common than tornadoes, the probability for a wind-driven missile is higher than the
tornado probability given in the EIS.
RESPONSE
The analysis presented in section F.1.4.2.2. of Attachment F to Volume 1, Appendix D, Part B, assumed a
missile driven by the winds of a tornado impacted upon a dry storage container. This assumption was made
because winds produced by tornados are higher than hurricane winds and thus the impacting missile would
be traveling with higher velocity and would have higher kinetic energy. Even at this higher velocity,
analysis has shown that the missile would not penetrate the container. The probability of penetration at
the lower velocity of a hurricane (212 miles per hour) would be even smaller than the probability of
penetration for a missile propelled by the winds of a tornado (traveling at 360 mph).
While hurricanes can have high winds, hurricane winds normally cannot generate the very large, very fast
missiles analyzed for tornadoes. While hurricanes may occur more frequently than tornadoes the overall
risk from a hurricane is lower because of the lack of penetration of the container.
The analysis of wind damage using missiles propelled by the winds of tornados is the same as is done for
design of nuclear power plants. Hurricanes very infrequently have winds that could generate such missiles,
so the analyses provided for tornados in Appendix D provide an upper limit for the effects of hurricanes.
Examination of damage caused by recent severe hurricanes shows that robust structures can withstand
hurricanes. Based on these considerations, the analysis of wind-driven missiles in the EIS is reasonable
and adequate.

II COMMENT

Accidents could be caused by human error during handling or storage of Naval spent nuclear fuel.
RESPONSE
The range of hypothetical accidents analyzed in Appendix D to Volume 1 (more than ten different
accidents) include those which might be caused by human error, failures of equipment, and natural
phenomena, such as earthquakes or tornados. The analyses provide calculations of the most severe
consequences which might be caused by reasonably foreseeable accidents.
The accidents analyzed include those caused by persons working with Naval spent nuclear fuel, such as
improper crane operation, and by others, such as aircraft crashes, which could be caused by pilot error.
The analyses and some of the possible initiating causes are described in detail in Attachment F to Appendix
D.

II COMMENT

The effects of routine Naval spent nuclear fuel management operations on water consumption or usage
should be evaluated.
RESPONSE
For each of the locations considered for management of Naval spent nuclear fuel, consumption of both
surface water and groundwater has been evaluated. (See the Water Resources sections of Chapter 5 in
Appendix D to Volume 1) As stated in the EIS, consumption or usage of water is expected to represent a
small change at all of the sites.
For example, current freshwater usage at the Puget Sound Naval Shipyard is identified in Chapter 4 of

Appendix D to Volume 1 as 676 million gallons annually. At Norfolk Naval Shipyard, current water consumption is 823 million gallons yearly. None of the alternatives for Naval spent nuclear fuel management would involve an increase in current water usage at any location of more than 3 million gallons yearly.

II COMMENT

The effects on groundwater resulting from routine operations or accidents associated with Naval spent nuclear fuel management should be evaluated.
RESPONSE
The effects of Naval spent nuclear fuel management on groundwater are addressed in Volume 1, Appendix D. During routine operations associated with spent nuclear fuel there would be no discharge of radioactive or hazardous liquid effluents under any of the alternatives at any of the sites. This is consistent with current Naval spent nuclear fuel management practices.
The effects of accidents on groundwater are also addressed in Appendix D, Attachment F. These analyses consider exposure and risk associated with direct release of radioactivity to surface water or ground water, as well as potential for air releases which affect ground or surface waters. Details of the analyses are summarized in Attachment F.

II COMMENT

The effects on the ocean of routine operations or accidents associated with Naval spent nuclear fuel management should be evaluated.
RESPONSE
The effects on the ocean of routine operations and accidents associated with Naval spent nuclear fuel management are addressed in Attachment F to Appendix D. Table F.1.3.8-2 addresses impacts to water resources in the vicinity of locations involved with spent nuclear fuel operations. The possible exposures to radioactive material documented in Attachment F and the impacts of various Naval spent nuclear fuel management alternatives include those due to any radioactivity entering the ocean near the shipyards. The effects of both deposition of airborne radioactivity and liquid effluent releases were analyzed. Impacts due to activities on and in the ocean (boating and swimming) as well as ingestion of sea food were included in the evaluations.
From the start of the Naval Nuclear Propulsion Program, the policy of the U.S. Navy has been to reduce to the minimum practicable amount the amounts of radioactivity released into harbors. Navy procedures to accomplish this have been reviewed with DOE, the U.S. Nuclear Regulatory Commission, and the U.S. Environmental Protection Agency.
The total amount of long-lived gamma radioactivity released into harbors and seas within twelve miles of shore has been less than 0.002 curie during each of the last twenty-three years. This total is for releases from U.S. Naval nuclear-powered ships and from the supporting shipyards, tenders, and submarine bases and at operating bases and home ports in the U.S. and overseas, and all other U.S. and foreign ports which were visited by Navy nuclear-powered ships. (Refer to Report NT-94-1, Environmental Monitoring and Disposal of Radioactive Wastes from U.S. Naval Nuclear Powered Ships and Their Support Facilities, Washington, D.C., March 1994). To put this small quantity of radioactivity into perspective, it is less than the quantity of naturally occurring radioactivity in the volume of ocean water occupied by a single nuclear-powered submarine.
There are no fission product releases to the ocean from nuclear fuel on board operating Naval vessels because the fuel is designed to contain fully any fission products in order to protect the crew.

II COMMENT

The Draft EIS does not account for severe water leaks from the Expended Core Facility.
RESPONSE
There is no evidence that any leakage is occurring from the Expended Core Facility (ECF) water pool.
Each time water is added to the pool at ECF the amount is measured and recorded. Actual measured water additions to the ECF pool can be correlated with expected evaporation from the surface of the water pool rather than leakage. Nevertheless, section F.1.4.2.1.6 of this EIS presents an accident analysis for minor water leakage from the ECF water pool. The analysis was based on the largest amount of water leakage from the ECF pool that is reasonably foreseeable. This analysis used the isotopes and their concentrations shown by measurement to be present in the ECF pool water to represent the radioactivity which might be released to the environment.
In addition to the analysis of minor water leakage, section F.1.4.2.1.1 presented an analysis of an accident where the entire contents of the Expended Core Facility water pool are assumed to leak rapidly due to a seismic event. This analysis assumed that the isotopes normally present and those which could escape due to shock impact from the seismic event would be present in the water leaking to the environment.
The results of both these analyses indicate that the impact on the environment would be very, very small.
There have been leaks from the Expended Core Facility on occasion in the past, but these leaks have been located and corrected when they occurred. Monitoring of the groundwater in the vicinity of the Expended Core Facility has detected no radioactive material released from ECF.

II COMMENT

Storage or management of Naval spent nuclear fuel at a Navy site would make it a more attractive target for attack in the event of war.
RESPONSE
Since Naval spent nuclear fuel is not a strategic asset, the presence or absence of Naval spent nuclear fuel would not be expected to alter the strategy of an aggressor with respect to attacking a Naval shipyard.
Information has been added to Appendix D of Volume 1 of the EIS which provides further discussion of the effects of an attack on Naval spent nuclear fuel management facilities or equipment in the event of war, terrorism or sabotage. The effect of such an attack is expected to be conservatively bounded by the limiting accident discussed at each facility under each alternative. For example, the most limiting accident involving Naval spent nuclear fuel is described in Attachment F of Appendix D to be an airplane crash into a shipping container at the Pearl Harbor Naval Shipyard. This accident would lead to 26 latent fatal cancers over the next fifty years in the population within 50 miles of the shipyard. Since the probability of the event is one chance in 100,000 per year, the risk would be 0.00026 latent fatal cancer fatalities per year or, in other words, about one chance in 4,000 of a single latent fatal cancer fatality over a year. This risk is shared among the approximately 820,000 people residing within 50 miles of the shipyard who would be expected to have over 2,000 cancer fatalities from all causes every year. For an act of war, sabotage or terrorist attack, it is likely the risk would be lower than calculated because it should be less probable that a force would exist to disperse radioactive products into the atmosphere from a weapon as compared to the motive force of the fire assumed in the case of an airplane crash.

II COMMENT

Storage or management of spent nuclear fuel at a Navy site would make it a more attractive target for terrorist attack or sabotage.
RESPONSE
Naval spent nuclear fuel would be stored or examined only within the secure areas of a DOE or Navy site.
The security precautions in effect at these sites, in addition to the extremely rugged containers or thick walls of water pools, would make the Naval spent nuclear fuel management facilities unattractive targets for terrorists.
Information has been added to Appendix D of Volume 1 of the EIS which provides further discussion of the effects of an attack on Naval spent nuclear fuel management facilities or equipment in the event of war, terrorism or sabotage. The effect of such an attack is expected to be conservatively bounded by the limiting accident discussed at each facility under each alternative. For example, the most limiting accident involving Naval spent nuclear fuel is described in Attachment F of Appendix D to be an airplane crash into a shipping container at the Pearl Harbor Naval Shipyard. This accident would lead to 26 latent fatal cancers over the next fifty years in the population within 50 miles of the shipyard. Since the probability of the event is one chance in 100,000 per year, the risk would be 0.00026 latent fatal cancer fatalities per year or, in other words, about one chance in 4,000 of a single latent fatal cancer fatality over a year. This risk is shared among the approximately 820,000 people residing within 50 miles of the shipyard who would be expected to have over 2,000 cancer fatalities from all causes every year.
For an act of war, sabotage or terrorist attack, it is likely the risk would be lower than calculated for the airplane crash because it should be less probable that a force would exist to disperse radioactive products into the atmosphere from a weapon as compared to the motive force of the fire assumed in the case of an airplane crash. For example, anti-tank weapon attacks on containers would be less severe than the accidents analyzed because: (a) anti-tank weapons would cause a self-sealing penetration in the metal of a container, unlike that which is assumed from the airplane crash (impact from a 50 inch diameter engine rotor); (b) there is no explosive material inside the container, so it will not "blow up" as a tank would if hit by such a weapon (in a tank attack, the tank shells inside the turret detonate); (c) there would be no fire to disperse the radioactivity that is released when the container is breached, unlike an aircraft crash where the jet fuel will burn creating such a fire. The rugged design of containers and the thick walls of water pools, combined with the shock-absorbing nature of water with a free surface, reduce the effects of other types of explosive charges. Attachment F of Appendix D of the EIS has been modified to better describe this analysis.

II COMMENT

The EIS should describe the consequences of a terrorist attack on Naval spent nuclear fuel management facilities.
RESPONSE
The consequences of such an attack have been considered and determined to be less than the limiting accidents analyzed in the EIS, specifically the crash of a large jet or an earthquake (See Appendix D, Attachment F, Section F.1.2). Attacks using anti-tank weapons or other specialized weapons, as well as conventional explosives, were evaluated.
The reasons that anti-tank weapon attacks on containers would be less severe than the accidents analyzed are: (a) anti-tank weapons would cause a self-sealing penetration in the metal of a container, unlike that which is assumed from the airplane crash (impact from a 50 inch diameter engine rotor); (b) there is no

explosive material inside the container, so it will not "blow up" as a tank would if hit by such a weapon (in a tank attack, the tank shells inside the turret detonate); (c) there would be no fire to disperse the radioactivity that is released when the container is breached, unlike an aircraft crash where the jet fuel might pool, ignite, and create a fire. The rugged design of containers and the thick walls of water pools, combined with the shock-absorbing nature of water with a free surface, reduce the effects of other types of explosive charges. It is not credible that a terrorist attack would result in a criticality or meltdown of spent nuclear fuel; however, in Section F.1.4.2.1.2 the consequences of a hypothetical criticality accident are presented. The risks associated with an accidental criticality are less than those associated with a drained water pool or an airplane crash into dry storage containers. Attachment F of Appendix D of the EIS has been modified to better describe this analysis.

Terrorist attacks on Naval spent nuclear fuel during shipment were also evaluated. The massive structure of the shipping containers used for Naval spent nuclear fuel makes them an unlikely target of a terrorist attack. No such attacks have occurred in the nearly 40 years of rail shipments, which have now traveled about 2 million kilometers. Thus, the probability of a terrorist attack on a shipment is judged to be no more than the probability of a rail accident which is listed in section A.7.1.2.1 of Attachment A to Appendix D of the EIS. The consequences of a terrorist attack are also judged to be no more severe than those listed for transportation accidents. Therefore the same conclusions reached for transportation accidents apply to the risk to the extremely rugged shipping containers from terrorist attack during a shipment. In addition, during shipment, all Naval spent nuclear fuel containers are accompanied by escorts who remain in contact with headquarters. In the event of an emergency, state and federal resources would be quickly summoned to stabilize the situation.

II COMMENT

The effects of a terrorist attack using a nuclear weapon should be evaluated for Naval spent nuclear fuel management facilities.

RESPONSE

Naval spent nuclear fuel would be stored or examined only within the secure areas of a DOE or Navy site. The security precautions in effect at these sites would make the Naval spent nuclear fuel management facilities unattractive targets for terrorists. Although a detailed analysis of the effect of a nuclear weapon attack has not been included in the EIS, such a scenario would not cause an uncontrolled chain reaction or explosion in Naval spent nuclear fuel. The only effect that might occur from a nuclear weapon detonation would be damage or dispersion of the spent nuclear fuel. The immediate death and destruction resulting from detonation of the nuclear weapon itself would be of much greater concern than the limited delayed effects associated with Naval spent nuclear fuel.

II COMMENT

The weight of the Naval spent nuclear fuel shipping containers may be greater than can be supported by existing buildings or structures.

RESPONSE

The weight of shipping containers can be readily accommodated on any well constructed pad on firm ground. This is illustrated by the fact that they are within the weight limits for the railroads and are transported over the standard rail lines and handled at the Navy shipyards and INEL without special arrangements or structures. Containers used in transport of Naval spent nuclear fuel have been

used to
approximately 40 years without causing damage to existing buildings or structures.

II II COMMENT

It would be impossible (or very difficult) to evacuate Oahu in the event of an accident at Pearl Harbor
Naval Shipyard involving Naval spent nuclear fuel stored there.
RESPONSE
Evaluation of the results in this EIS shows that evacuation of Oahu should not be required even if the most
severe accident postulated for Naval spent nuclear fuel were to occur.
In order to help understand why this is the case for even severe hypothetical accidents, Appendix D (See
Chapter 5, section 5.1.4.14.3, and Attachment F, section F.1.3.8) provides the results of calculations of
radioactive material dispersion and deposition calculations for a hypothetical airplane crash into Naval
spent nuclear fuel storage containers at Pearl Harbor Naval Shipyard. (As one measure of the conservatism
of the analyses, such a crash is not expected to breach a container, but in the EIS it was assumed that such
an accident would occur nonetheless.) This is the worst case potential accident for that site. These results
show that even under this extremely severe case, an area of only about 110 acres could be contaminated to
the point where radiation doses exceeding the Nuclear Regulatory Commission public limit of 100 millirem
per year might result for a person living full-time on that land. Most of this area would be within shipyard
boundaries. The potentially contaminated area would be small owing to the relatively small amount of
spent nuclear fuel in a storage container and the robust nature of the container and the fuel.
These results mean that the maximum area which might be considered for possible evacuation in the most
severe case would be very small and localized. It should be kept in mind that the calculation described in
the preceding paragraph assumes that no action is taken to clean up the radioactivity released and people
would occupy the land full time for at least a year without any action to mitigate the
effects of exposure. In reality, radioactive contamination could and would be removed in order to
minimize the affected area and reduce impacts on any people involved.

II COMMENT

It would be difficult to obtain emergency aid from the Mainland in the event of an accident at Pearl Harbor
Naval Shipyard involving Naval spent nuclear fuel stored there.
RESPONSE
As discussed in this EIS (See Appendix D, Section 5.8.4), the Navy has significant emergency response
capability on Oahu and does not rely on resources from the Mainland for emergency response.
Furthermore, the analysis of the impact of hypothetical accidents in the EIS did not rely on any
off-shipyard response. The State of Hawaii does have radiological emergency response procedures. In
addition, the State of Hawaii plans in place to deal with natural emergencies such as hurricanes and floods
are sufficient to deal with any public response necessary in the unlikely event of a problem involving Naval
spent nuclear fuel. Thus, any off-shipyard emergency response would reduce the potential health impacts
below the levels calculated in the EIS.

II COMMENT

Emergency planning for accidents involving Naval spent nuclear fuel should be described in this
Environmental Impact Statement.
RESPONSE
As discussed in Appendix D (Section 5.8.4), the Navy has significant emergency response capability at all
of its sites and does not rely on the State or local resources for emergency response.

Furthermore, the analysis of the impact of hypothetical accidents in the EIS did not rely on any off-shipyard response. All of the states hosting Navy sites have radiological emergency response procedures. In addition, other civil defense plans in place to deal with natural emergencies are sufficient to deal with any public response necessary in the unlikely event of a problem involving Naval spent nuclear fuel.
As a further point, the analyses of hypothetical accidents in Appendix D are conservative because they assume that no off-site emergency response actions are taken. Thus, any off-site emergency response to protect the public would reduce the potential health impacts below the levels calculated in the EIS.

II COMMENT

The State of Hawaii's Department of Health would not be capable of responding to a major release of radioactive material at Pearl Harbor.
RESPONSE
The analyses of hypothetical accidents in Appendix D to Volume 1 assume that no off-site emergency response actions are taken in the event of even the most severe accidents. Thus, if an off-site emergency response occurred, it would reduce the potential health impacts below the levels calculated in the EIS.
As discussed in Appendix D (Section 5.8.4), the Navy has significant emergency response capability at all of its sites, including Pearl Harbor, and does not rely on the State of Hawaii or local resources for emergency response beyond existing emergency plans and resources. Nonetheless, the state of Hawaii, like all of the states hosting Navy sites, has emergency response procedures already established. In addition, other civil defense plans in place to deal with natural emergencies are sufficient to deal with any public response necessary in the unlikely event of a problem involving Naval spent nuclear fuel. Coordination of Navy and local emergency response capabilities is tested periodically in drills simulating radiological accidents at the shipyard.

II COMMENT

The existence of emergency plans and the state of readiness maintained by emergency response teams is an indication that an accident is likely.
RESPONSE
Maintaining preparedness for emergencies has been judged by most people in the United States to be a prudent step. This does not mean that all of the emergencies for which preparedness is maintained are highly probable or even likely, but reflects the belief that it is more prudent to train personnel and provide equipment that might be needed in emergencies if they occur. Experience has also shown that such preparedness can be of great value in less severe accidents or in natural disasters.
Preparedness for the most severe accidents has been a basic tenet of the Navy and the Naval Nuclear Propulsion Program from the very beginning of the use of nuclear power in warships. Despite steaming more than 100,000,000 miles and accumulating over 4400 reactor years of operation without a reactor accident or any problem having a significant effect on the environment, the Navy has continued to train personnel how to respond a full range of accidents and has tested the preparedness of their personnel with periodic exercises. These exercises include interaction with appropriate state and local agencies and continue to form a cornerstone of the safety philosophy of the Naval Nuclear Propulsion Program.
The Navy's efforts to maintain vigilance and preparedness do not in any way indicate that accidents are expected or accepted.

II COMMENT

There is no warning system in place in the vicinity of Puget Sound Naval Shipyard to alert the citizens in the event of a radiological accident at the shipyard (and no funding mechanism exists to support such a system).

RESPONSE

The EIS shows that the maximum area in the vicinity of Puget Sound Naval Shipyard which might be considered for possible evacuation in the most severe radiological accident involving spent nuclear fuel management would be very small and localized. Consequently, the normal methods for notifying the public, such as the Emergency Broadcast System, commercial radio and television and police car public address systems, are adequate. In addition, the Navy has significant emergency response capability at all of its sites. These resources also would be available to provide public assistance if needed.
In order to help understand why this is the case for even severe hypothetical accidents, Appendix D to Volume 1 (See Chapter 5, Section 5.1.1.14.3, and Attachment F, Section F.1.3.8) provides the results of calculations of radioactive material dispersion and deposition calculations for a hypothetical airplane crash into Naval spent nuclear fuel storage containers at Puget Sound Naval Shipyard. It is an indication of the conservative nature of the analyses in the EIS that an accident assuming breach of the container was included in the EIS even though such an airplane crash involving the largest aircraft in existence would not be expected to penetrate the containers. This is the worst case potential accident for that site. These results show that even under this extremely severe case an area of only about 110 acres could be contaminated to the point where radiation doses exceeding the Nuclear Regulatory Commission public limit of 100 millirem per year might result for a person living full time on that land for a year and most of this area would be within shipyard boundaries. The potentially contaminated area would be small owing to the relatively small amount of spent nuclear fuel in a storage container and the robust nature of the container and the fuel.

II COMMENT

The citizens in the vicinity of Puget Sound Naval Shipyard are not prepared to respond to a radiological emergency.

RESPONSE

Representatives of the Puget Sound Naval Shipyard have met a number of times in the past with the Kitsap County Emergency Management (KDEM) Agency to address emergency planning related matters, including Shipyard assistance of response to off-site radiological accidents and emergencies. In these discussions, the representatives of the Kitsap County Emergency Management Agency have stated their intention to familiarize citizens and businesses with emergency planning concepts such as sheltering. Puget Sound Naval Shipyard will continue to work with local emergency planning organizations to ensure that adequate response capabilities exist in the remote event of a radiological accident.

II COMMENT

The Puget Sound Naval Shipyard does not share emergency response plans or conduct joint planning with local emergency management organizations.

RESPONSE

This statement is inaccurate. Over the years, the Puget Sound Naval Shipyard has conducted or attended many formal meetings with the representatives of local emergency preparedness organizations. Some examples of the information exchanged during these meetings include: notification procedures, shipyard response and assistance for radiological accidents at locations other than the shipyard, Kitsap County Emergency Plan revision, information for shipyard annexes to the Washington and Kitsap County Emergency Management Plans, radiation monitoring instrumentation, public information releases, communication equipment, monitoring beyond the boundaries of the shipyard, aerial monitoring, accident scenarios, shipment of radioactive material, training for county firefighters and Emergency Medical Technicians, Event Category and Protective Action Recommendations, and an overview of nuclear-powered Naval vessels, the reactors installed in them, and Naval nuclear fuel. The shipyard has also presented overviews of the Navy Environmental Monitoring Program and the Navy Radioactive Waste Disposal Program.

Over the past 18 years, the Shipyard has met with the Kitsap Department of Environmental Management (KDEM) approximately 30 times and has provided information for potential inclusion in annexes to their emergency plans. In January, 1992, the Shipyard assisted the Kitsap Department of Environmental Management in reviewing and revising parts of the draft revision to the 1973 County plan. The current County Plan reflects information provided by the shipyard. The Shipyard will continue to provide technical assistance to the County as applicable information from the County's operating procedures is added to the County's plan.

Many tours of the Shipyard Emergency Control Center and the control center to be used at the scene of an accident have been conducted for state and local officials. The Kitsap county emergency management agencies have been involved with planning and conducting joint exercises.

II COMMENT

It would be very difficult to evacuate the area in the vicinity of Norfolk Naval Shipyard in the event of an accident due to the large population and the poor highway system.

RESPONSE

The results of the analyses of postulated accidents in this EIS show that no evacuation would likely be required even if the most severe accident postulated for Naval spent nuclear fuel were to occur at any of the sites considered.

In order to help understand why this is the case for even severe hypothetical accidents, Appendix D, Attachment F, Section F.1.3.8 provides the results of calculations of radioactive material dispersion and deposition calculations for all hypothetical accident scenarios analyzed. For the worst case potential accident at Navy sites, the results show that an area of less than about 110 acres could be contaminated to the point where radiation doses exceeding the Nuclear Regulatory Commission public limit of 100 millirem per year might result for a person living full time on that land for an entire year. Most of this area would be within shipyard boundaries.

These results mean that the maximum area which might be considered for possible evacuation in the most severe case would be very small and localized. It should be kept in mind that the calculation described in the preceding paragraph assumes that no action is taken to clean up the radioactivity released and people would occupy the land full time for at least a year without any action to mitigate the effects of exposure.

In reality, radioactive contamination could and would be removed in order to minimize the affected area and reduce impacts on any people involved.

II II COMMENT

The cumulative impacts of radiation and other carcinogens should be analyzed.

RESPONSE

The radiological and non-radiological cumulative health impacts associated with each alternative involving Naval spent nuclear fuel are addressed in Volume 1, Section 5.3 and in more detail in the Cumulative

Impacts section for each site in Chapter 5 of Appendix D to Volume 1. The results of the analyses performed in support of the EIS demonstrate that implementing any of the alternative at any of the sites would not produce significant cumulative impacts. As discussed in Volume 1, Appendix D, this stems from the fact that release of radioactive materials is strictly controlled at minute levels, levels which are very small compared to the amounts of radioactivity present in the environment from natural sources, and that the only chemical releases associated with routine Naval spent nuclear fuel operations would be the small amounts of combustion products associated with heating boiler operations and occasional emergency diesel operations.

Radiological and non-radiological cumulative health impacts associated with carcinogens are treated separately in the EIS because, with few exceptions such as cigarette smoke, increases in the effects of known carcinogens caused by combination with exposure to radioactive materials or radiation have not been quantified or conclusively identified by the scientific community. Further, as noted above, spent nuclear fuel operations release only a small level of combustion exhaust in addition to the minute levels of radioactive material releases. In addition, considerably less is known about the health risks due to chemical carcinogens so quantitative tools for assessing these risks are either not available or not widely accepted. Consequently, combining risks associated with radiological and non-radiological carcinogens would introduce considerable unnecessary uncertainty into the calculations for risks associated with radioactivity.

II II COMMENT

The Navy should identify how it expects to manage greater-than-class C low-level waste.

RESPONSE

U.S. Nuclear Regulatory Commission 10 CFR 61 identifies three classes of low-level wastes which are generally suitable for near-surface disposal: namely, Classes A, B and C. Wastes with concentrations greater than those specified for Class C for certain short and long-lived isotopes were found to be not generally suitable for near surface disposal. These wastes are classified as "greater than Class C" Low-Level radioactive waste (GTCC LLW).

In May 1989, the Nuclear Regulatory Commission promulgated a rule that requires disposal of commercially generated Low-Level Waste with concentrations of radioactivity greater than Class C in a deep geologic repository, unless disposal elsewhere is approved by the Nuclear Regulatory Commission.

Currently, a small amount (about 25 cubic meters) of greater than Class C Low-Level Waste in material removed from the ends of Naval spent nuclear fuel modules over the years is being stored at the Naval Reactors Facility pending availability of a disposal facility licensed by the Nuclear Regulatory Commission.

This material has been collected and held at the Expended Core Facility for many years. In addition, about 0.02 cubic meters of test specimens are being stored at the Expended Core Facility as greater than Class C Low-Level Waste pending availability of a permanent disposal facility. This practice is expected to continue over the period of time covered by this EIS.

This description of how greater than Class C Low-Level Waste is stored at the Expended Core Facility has been added to Volume 1, Appendix D of the EIS.

II COMMENT

The quantity and character of Naval Reactors Facility specimens irradiated at INEL and other test reactors that ultimately are sent to the Radioactive Waste Management Complex for shallow land burial should be

provided in this EIS since the data in this EIS suggest Greater than Class C waste.
RESPONSE
This EIS provides in Section A.7.3 of Appendix D to Volume 1 enough information on the number of shipments of specimens from Naval Reactors Facility and the amounts of radioactivity and other information related to these shipments to allow an independent analyst to perform calculations of the potential impacts of these shipments. These specimen shipments have been included to support evaluation of possible cumulative impacts even though they are not part of the action evaluated by this EIS. The statement that Greater than Class C waste is sent to the Radioactive Waste Management Complex at INEL for shallow land burial is inaccurate. Specimens which contain nuclear fuel are not sent to the Radioactive Waste Management Complex at INEL. Only those specimens which meet the Radioactive Waste Management Complex acceptance criteria are ultimately sent to that facility for disposal. Greater than Class C radioactive waste from Navy operations has been held at the Naval Reactors Facility and will continue to be held there until a site for ultimate disposition is designated.

II COMMENT

The Navy should consider the material removed from the ends of fuel modules during examination at the Expended Core Facility as spent nuclear fuel.
RESPONSE
This EIS relies on definitions and classifications of nuclear materials set forth in the Nuclear Waste Policy Act, as amended, and regulations issued by the Environmental Protection Agency (40 CFR 261) and the Nuclear Regulatory Commission (10 CFR 61). The categories set forth in these regulations are "Spent Nuclear Fuel", "High Level Waste", "Transuranic Waste", "Low-Level Waste", "Low-Level Mixed Waste", "Greater than Class C Waste", and "Hazardous Waste".
Volume 1, Appendix H sets forth the definition of spent nuclear fuel used in this EIS as "fuel that has been withdrawn from a nuclear reactor following irradiation, the constituent elements of which have not been separated." The definition of High-Level Waste in Appendix H to Volume 1 is "highly radioactive waste material that results from the reprocessing of spent nuclear fuel, including liquid waste produced from reprocessing and a solid waste derived from the liquid....". Transuranic Waste is defined as "waste containing more than 100 nanoCuries of alpha-emitting transuranic isotopes, with half-lives greater than 20 years, per gram of waste, ...". Low-Level Waste is defined as "waste that contains radioactivity and is not classified as high-level waste, transuranic waste, or spent nuclear fuel".
The ends of the fuel modules removed from Naval spent nuclear fuel modules at the Expended Core Facility are structural material which provides support and directs the flow of cooling water during operation. This structural material is removed by cutting through portions of the fuel modules which contain no fuel. The material removed from the ends of the fuel modules does not contain any fuel or fission products from fuel and therefore cannot be considered "spent nuclear fuel". They do not contain transuranic elements or fission products and thus cannot be considered High Level Waste or Transuranic Waste. The amounts of radioactivity in the end boxes cause them to be classified as Low-Level Waste.
Consequently the material removed from the ends of the modules at the Expended Core Facility is categorized as Low-Level Waste due to the amount of radioactivity present in it. The disposal of this structural material at the Radioactive Waste Management Complex at INEL is accomplished in accordance with all applicable regulations. As indicated in Section 5.2.15 of Appendix D, Part A of Vol. 1 of the EIS, the amount of Low-Level Waste generated each year at the Expended Core Facility is 425 cubic meters. The radioactive isotopes which represent 99% of the activity in the material removed from the ends of fuel modules are identified in the following table:

ISOTOPE	HALF LIFE
Fe55	2.73 years

Co60	5.271 years
Ni59	76000 years
Ni63	100 years

A description of the composition of material removed from the ends of fuel modules during examination
has been added to Volume 1, Appendix D, Attachment B of the EIS.

II COMMENT

The impacts of the waste generated at ECF are understated and the facts, as presented, could be misleading.
RESPONSE
Section 5.2.15 of Appendix D, Part A of Vol. 1 of the EIS states that the amount of Low-Level Waste
generated each year at ECF is approximately 425 cubic meters. The primary constituent of this Low-Level
waste is the material removed from the ends of Naval spent nuclear fuel modules at ECF to permit access
for visual examination of the spent fuel internal surfaces. These ends of the fuel modules are structural
material which provide support and direct the flow of cooling water during operation. This structural
material is removed by cutting through portions of the fuel modules which contain no fuel and the cutting
process does not expose nuclear fuel, leaving it completely encased in zirconium.
The structural material removed from the modules does not contain any fuel or fission products from fuel
and therefore is not "spent nuclear fuel". It does not contain transuranic elements or fission products and
thus is not High Level Waste or Transuranic Waste. The amounts of radioactivity in the material removed
from the ends of the Naval spent nuclear fuel modules allow them to be classified as Low-Level Waste.
Their disposal at the Radioactive Waste Management Complex at INEL is accomplished in accordance
with all applicable regulations. The radioactive isotopes which represent 99% of the activity in the end
boxes removed from fuel modules are identified in the following table:

ISOTOPES CONTAINED IN CORE STRUCTURALS

ISOTOPE	HALF LIFE	PRIMARY MODE OF DECAY
Fe55	2.73 years	Electron Capture (x-ray)
Co60	5.271 years	Beta & Gamma
Ni59	76000 years	Electron Capture
Ni63	100 years	Beta

A description of the composition of the material removed from the ends of Naval spent nuclear fuel
modules during examination has been added to Volume 1, Appendix D of the EIS.
The analyses performed in the EIS include all phases of spent nuclear fuel management at INEL, including
generation, handling , and disposal or storage of Low-Level Waste. The conclusion from these analyses is
that the normal operations associated with the management of spent nuclear fuel at INEL result in only
very small exposures to humans and the environment. Consequently, the radioactivity associated with
Low-Level Waste is managed and disposed of under stringent controls so that the environmental impacts
are very small.

II COMMENT

According to the commentor, this EIS fails to include information on all radioactive waste streams from the
Expended Core Facility at INEL using Nuclear Regulatory Commission classifications.
RESPONSE
This EIS does characterize all radioactive waste streams from Naval spent nuclear fuel management at the
Expended Core Facility. Volume 1, Appendix D, section 5.2.15 of the EIS provides a description of all of
the waste streams from the Expended Core Facility at INEL. Appendix D, section 5.2.15 includes the
volumes of low-level radioactive waste and transuranic wastes produced each year and a statement that
there is no high-level radioactive waste produced at the Expended Core Facility. This covers the
applicable radioactive waste categories defined by the Nuclear Regulatory Commission. Section 5.2.15

also describes how all of the waste streams from the Expended Core Facility would be affected by each of
the alternatives considered.
The analyses performed in the EIS include all phases of spent nuclear fuel management at INEL, including
generation, handling, and disposal or storage of low-level waste. The conclusion from these analyses is
that the normal operations associated with the management of spent nuclear fuel at INEL result in only
very small exposures to humans and the environment. Consequently, although the radioactivity associated
with low-level waste is managed and disposed of under all applicable regulations and stringent controls so
that the environmental impacts are very small.
A description of the composition of the material removed from the ends of Naval spent nuclear fuel
modules during examination has been added to Volume 1, Appendix D of the EIS in response to a number
of public comments. This information may help to understand the nature of the low-level waste produced
at the Expended Core Facility and why it classified as low-level waste.

II II COMMENT

The range of dose rates at 1 meter from loaded Naval spent nuclear fuel shipping containers should be
provided in the EIS.
RESPONSE
This EIS states in Section I-4.1 of Appendix I to Volume 1 (page I-45 of the Draft EIS) that "a dose rate of
1 millirem per hour at one meter (3.28 feet) was used for Naval-type SNF shipments, based on measured
dose rate from previous Naval SNF shipments." The value of 1 millirem per hour at one meter was
obtained from the values measured from navy shipments in the past. As described in Section A.7.1.1.2 of
Appendix D to Volume 1, the dose rate values used in the calculations for Naval spent nuclear fuel
shipments ranged from 0.1 to 1.8 millirem per hour at one meter.
For fuel types which had been shipped in the past, the values used in the analyses were calculated by
averaging the measured values. For the fuel types which had not been shipped in the past, the exposure
rates from the applicable Safety Analysis Reports for Packaging were used, with suitable adjustment to
reflect a lower level of uncertainty than is used in such documents. This lower level of uncertainty is
justified by the extensive measurements of exposure levels from past shipments. To verify that this
technique reliably produced values which would not be exceeded in practice, it was checked by adjusting
the values used in the Safety Analysis Reports for Packaging for spent fuel types already shipped in the
same manner and comparing them to measurements. In all cases, the estimated values exceeded the
measured values so this method is conservative.
Department of Transportation regulation for shipment of spent nuclear fuel limit the exposure rate at one
meter from the surface of the shipping container to 10 millirem per hour for any shipment, but, as discussed
above, the exposure rates for Naval spent nuclear fuel shipments are well below this level.

II COMMENT

A commentor did not understand how the consequences of an accident involving shipment of low-level
radioactive waste could be considered to be insignificant.
RESPONSE
This EIS states in Section A.5 of Appendix D to Volume 1 that the consequences of an accident involving
shipment of low-level radioactive waste from shipyards would be insignificant compared to the accidents
analyzed for spent nuclear fuel. The probability of an accident and the severity (impact velocity, damage,
etc.) of an accident involving radioactive waste would be similar to spent nuclear fuel, but the amount of
radioactive material which might be available for release would be many tens of times less than

the already
small amount of fuel available for release from spent nuclear fuel. Therefore, the consequences would be
insignificant compared to those of spent nuclear fuel.
Sections A.8.3 and A.8.4 of Appendix D provide the risk and maximum consequences of postulated transportation accidents involving spent nuclear fuel and the risks for all of the alternatives considered are
very small. The risks associated with a low-level radioactive waste shipment would be even smaller than
these very low risks.

II COMMENT

A commentor expressed concern about the nature of the radionuclides which might be released in an accident involving Naval spent nuclear fuel.
RESPONSE
Table A-14 in Appendix D to Volume 1 of this EIS provides the list of isotopes and amount of activity for
each isotope which would be released in an accident from an average shipment of Naval spent nuclear fuel.
The two columns on the left in Table A-14 list the radionuclides and amount of radioactivity which might
be released by the most severe accidents which might cause both radioactive nuclides produced directly
from fission of atoms and radionuclides in corrosion products to be released. The two columns on the right
list the radionuclides and activities for the less severe accidents which could only cause radioactive
material present in the corrosion on the outside of the fuel elements to be released.
Radioactive material in the very thin film of corrosion formed on the exterior of fuel elements can be
released by the shock of an accident such as a collision. The materials referred to as "corrosion products"
are not corrosive. The radionuclides resulting directly from fission of atoms occur only inside the fuel
elements and are completely contained by the cladding of the fuel. They could only be released if the
forces of the accident are severe enough to break the fuel elements open or to melt.
The radionuclides listed could only be released as a result of an accident during transportation and
therefore they would not increase exponentially with the storage of shipments. The radionuclides which
might be released during a postulated accident while Naval spent nuclear fuel is in storage at a Navy site
are addressed in detail in Attachment F of Appendix D to Volume 1.

II COMMENT

The term "person-rem" would be more appropriate than "rem" in some locations in Attachment A to Appendix D of Volume 1.
RESPONSE
The text in the locations identified has been changed to use "person-rem" in all locations referring to
estimated dose to the general population. A check of the remainder of Attachment A to Appendix D of
Volume 1 has been conducted to assure that the use of this term is consistent throughout.

II COMMENT

More detail concerning the neutron reduction factor used in the Naval spent nuclear fuel shipment calculations used for the analyses in this EIS should be provided.
RESPONSE
Section A.7.1.1.9 of Appendix D to Volume 1 of this EIS states that a more realistic neutron reduction
factor was used for Naval spent nuclear fuel instead of the factor supplied in the RADTRAN4 computer
program. This more realistic factor used the same basic equation used in RADTRAN 4 (Section 4.2.2 of
the RADTRAN 4 Technical Manual, Volume II [Neuhauser and Kanipe 1993]). The basic equation is:

DRn(r) = K x e-ux x (1 + a1r + a2r2 + a3r3 + a4r4) / r2

where: DRn(r) = neutron dose rate at distance r
r = distance from source (m)

K = constant
u = linear attenuation coefficient (m-1)
a1,a2,a3,a4 = dimensionless coefficients

The difference is that a value of 2.0 x 10-10 was used for a4 in lieu of 0. This was done because it reproduced the results of measurements of the neutron exposure from Naval spent nuclear fuel shipments and yielded a higher exposure from each shipment than the standard value. Attachment A to Appendix D of Volume 1 has been revised to provide this detail.

II COMMENT

The Navy plans to make a few more shipments of Naval spent nuclear fuel than stated in the Draft EIS.

RESPONSE

The number of planned shipments has not changed from those presented in the Draft EIS. The number of shipments of Naval spent nuclear fuel identified in this EIS represent the best available information based on long-term military force estimates during the next 40 years.

The commentor referred to information provided to him separately by the Naval Nuclear Propulsion Program that stated that the number of shipments of Naval spent nuclear fuel over the past forty years was revised to 599 instead of the 584 identified in Appendix D to Volume 1. This change occurred as a result of reviews of records of historic shipments, where one shipment sometimes included more than one container, and updates necessary to reflect all shipments expected to be completed by June 1995. The EIS has been revised to reflect 599 shipments of Naval spent nuclear fuel in the years prior to the action considered in this EIS. This change results in less than a 1 percent change in the total calculated exposure to the public and the results in the EIS have been changed accordingly. However, the change does not affect any of the comparison or analyses of environmental impacts provided in the EIS.

II COMMENT

The text in Section A.7.1.2.4 and the entries in Table A-13 in Appendix D to Volume 1 may be inconsistent.

RESPONSE

Section A.7.1.2.4 of Appendix D to Volume 1 provides release fractions to be used in the calculation of the consequences and risks for postulated transportation accidents involving Naval spent nuclear fuel. This section states that "from the modal study, the release fraction in lower left region R(1,1) is zero for the risk evaluation". Later it states "For the maximum consequence evaluation, 1% of the corrosion products might be released for the lower left region, R(1,1)". Table A-13 provides a summary of the cask release fractions to be used for risk analyses so the value of 0.0 as described in the text and above is correct.

The document which describes the methodology used in the analyses of postulated accidents for Naval spent nuclear fuel shipments provides more details on the use of the risk matrix and other information on the application of the analytical technique. See U.S. Nuclear Regulatory Commission publication NUREG/CR-4829, Shipping Container Response to Severe Highway and Railway Accident Conditions, UCID-20733, prepared by Lawrence Livermore National Laboratory for the Division of Reactor System Safety and issued by the Office of Nuclear Regulatory Research, Washington, D.C., in 1987 and referenced in Attachment A to Appendix D.

II COMMENT

The Navy has stated that approximately 580 to 600 shipments of Naval spent nuclear fuel to INEL would be required under the alternatives which would continue inspection of Naval spent nuclear fuel at the existing Expended Core Facility, but section A.7.2 of Attachment A to Appendix D to Volume 1 (page A-57)

appears to indicate that 728 shipments would be required.
RESPONSE
There is no contradiction between the number of shipments used by the Navy in the EIS or in public meetings or reviews.
Under the alternatives which would continue inspection of Naval spent nuclear fuel at the existing Expended Core Facility, approximately 600 container shipments would be needed over the forty year period to move the Naval spent nuclear fuel from shipyards and Navy prototype reactors to the Expended Core Facility at INEL. These shipments would travel by the commercial rail system (with the exception of a few ocean shipments from Pearl Harbor Naval Shipyard to Mainland, whereupon rail transport would be used, and a few miles traveled overland by a limited number of shipments of prototype spent nuclear fuel to reach a railhead). Section A.7.1 provides a discussion of the detailed basis for this number of shipments.
Section A.7.2 provides information concerning the transfer, within the boundaries of the INEL site, of Naval spent nuclear fuel from the Expended Core Facility to the DOE storage facility at INEL. These short transfers (less than 5 miles, one way) would use roads not accessible to the general public. These shipments were included in the EIS to provide a complete evaluation of the possible impacts from all aspects of movement of Naval spent nuclear fuel. It is planned that all alternatives which would relocate the examination of Naval spent nuclear fuel to other DOE sites would also involve similar transfers conducted entirely within the boundaries of the new site.

II COMMENT

The EIS states that Norfolk Naval Shipyard is about 10 miles from Newport News Shipbuilding, but the rail distance between the two facilities is 250 miles. A commentor questioned whether this information is correct.
RESPONSE
The information on the rail distance between Newport News and Norfolk is correct. Norfolk Naval Shipyard and Newport News Shipbuilding and Drydock Company are on opposite sides of the James River, about ten miles apart, but the two locations have no direct rail connection. Rail traffic from Newport News must be routed through Richmond, Virginia, Petersburg, Virginia, and a portion of North Carolina in order to reach Norfolk. The total distance traveled by a Naval spent nuclear fuel shipment would be 251 miles and this value was used in the analyses performed for this EIS.

II COMMENT

The railroad tracks may not be in good condition to carry spent nuclear fuel.
RESPONSE
The requirements for railroad track inspections and the standards for track condition and safety are established by the Federal Railroad Administration, a part of the Department of Transportation, and are set forth in federal regulations (49 CFR 213). In advance of each shipment of Naval spent nuclear fuel, the Navy provides railroad companies who will move the Naval spent nuclear fuel with the number of railcars and the weight of each railcar. The railroad companies ensure that locomotives, tracks, and bridges are capable of accommodating the shipment and completing it safely.
Naval spent nuclear fuel has been shipped from the various Navy sites by rail for 38 years without any release of radioactive material. Nevertheless, as described in Section A.4.1.4 of Appendix D to Volume 1 of this EIS, each shipment of Naval spent nuclear fuel is accompanied by escorts who remain in contact with headquarters. In the event of an emergency, state and federal resources would be quickly summoned to stabilize the situation. Moreover, Naval spent nuclear fuel is shipped in large, rugged,

certified shipping
containers which are designed to withstand accidents which might occur during shipment. Section A.4.1 of
Appendix D provides descriptions and photographs of the shipping containers used for Naval spent nuclear
fuel.

II COMMENT

The commentor states that DOE presents no information on the characteristics of the SPAN4 computer
code or the value in selecting it.
RESPONSE
The SPAN4 computer code was developed as an analysis tool specifically suited to the unique
characteristics of Naval SNF, therefore providing conservative yet more realistic values of the transport
index to exposure rate conversion factors presented in Volume 1, Appendix D, Attachment A, Table A-16.
Volume 1, Appendix D, Attachment F, section F.1.3.6 provides additional discussion on the SPAN 4
computer code.

II II COMMENT

The costs of Naval spent nuclear fuel management could be very high.
RESPONSE
The costs associated with each alternative for the management of Naval spent nuclear fuel are provided in
Appendix D of this EIS in Section 3.7.4 (See Table 3.8) and in Attachment D (See Section D.1.6). The
costs to the Navy for the alternatives considered range between $1.5 Billion and about $6 Billion for 40
years.

II COMMENT

The costs of Naval spent nuclear fuel management at INEL should include the costs of replacing the
existing Expended Core Facility.
RESPONSE
The Expended Core Facility at INEL is a modern facility which has been continuously upgraded and
expanded during its lifetime. It meets all the requirements for accomplishment of its mission and for
protection of human safety and the environment. Engineering evaluation of the facility and its structures
has shown that it possesses more than adequate strength for earthquakes which might be expected at its
location. A full engineering evaluation completed in 1994 showed that, even though the initial portions of
the facility were constructed in the 1950's, the entire facility meets the current seismic requirements. It has
been well-maintained, it is not deteriorating (please see the photographs in Appendix D, Attachment B),
and it has adequate capacity for the foreseeable workload throughout the period covered by this EIS. No
need to replace the Expended Core Facility is foreseen for the period covered by this EIS, so the costs of
replacement have not been included.

II COMMENT

The Barnwell Nuclear Fuel Plant adjacent to the Savannah River Site could be modified to manage Naval
spent nuclear fuel as an alternative to the Expended Core Facility at INEL.
RESPONSE
It is correct that management of Naval spent nuclear fuel at the Barnwell Nuclear Fuel Plant appears to be
possible without large impacts on the environment. The use of the Barnwell Nuclear Fuel Plant to provide
capabilities for Naval spent nuclear fuel management similar to those at the Expended Core

Facility at
INEL is discussed in Chapter 3 of Appendix D to Volume 1. This discussion includes the impacts associated with the use of this facility for management of Naval spent nuclear fuel (Section 3.7.4). The
Barnwell Nuclear Fuel Plant is included in Chapter 4, Affected Environment (Section 4.3), Chapter 5,
Environmental Consequences (Section 5.3). The results of analyses of normal operations and accidents
the at facility are included with the results for the Savannah River Site in Attachment F (Sections F.1.4.1
and F.1.4.2) and are presented explicitly where they differ appreciably from the results for a Naval spent
nuclear fuel examination facility located on the Savannah River Site proper.
A brief description of the modifications needed to duplicate capabilities provided by the Expended Core
Facility at INEL is presented in Section E.2 of Appendix D to Volume 1. This description was intended to
be sufficient for the purposes of evaluating environmental impacts for this EIS, but additional detailed
engineering work would be needed to determine the proper course of action if an alternative involving
relocation of Naval spent nuclear fuel management to the Savannah River Site were to be selected. The
costs associated with use of this facility for Naval spent nuclear fuel management are included in the
discussion in Section 3.7.4 of Appendix D, with the conclusion that, while close to $800 million would be
needed to modify the facility, additional funds would be needed to buy it from the current owners.

II COMMENT

The costs for the ultimate disposition of Naval spent nuclear fuel should be included in the federal budget.
RESPONSE
Since the final method for ultimate disposition of Naval spent nuclear fuel or any of the other nuclear fuel
under DOE cognizance has not been selected, the costs have not been included in the federal budget
process. The costs associated with the method finally selected for the ultimate disposition of Naval spent
nuclear fuel will be incorporated into the federal budget at the appropriate time in accordance with
established federal budgeting procedures.

II COMMENT

It is doubtful that the Expended Core Facility can be operated economically until the end of the period
covered by this EIS, when it would be nearly 80 years old.
RESPONSE
The Expended Core Facility at INEL has been upgraded many times since its original construction, as
needed to provide the capabilities and capacity required by the Naval Nuclear Propulsion Program and to
ensure the safety of the people who work there, the people of Idaho, and the environment. As a result, the
current facility is safe and capable of fulfilling the Navy's mission. It meets or exceeds current standards for
seismic events and radiological protection, even for those portions built in the 1950's.
The costs of operating and maintaining the Expended Core facility throughout the period of this EIS are
provided in Section 3.7 of Appendix D to Volume 1. These costs include future improvements to the
facility, based on the assumption that it would need maintenance and modifications on about the same
schedule as in the past. There is no reason to arbitrarily retire the facility simply because some number of
years have elapsed since its construction.

II COMMENT

The costs for normal operations and cleanup after accidents at the Pearl Harbor Naval Shipyard would be higher than on the Mainland.

RESPONSE

The costs of constructing and operating a Naval spent nuclear fuel storage area for three types of storage at Navy sites are presented in detail in Attachment D to Appendix D of Volume 1 and summarized in Section 3.7 of Appendix D to Volume 1 and the details are provided in other parts of Appendix D. These cost estimates show that management of Naval spent nuclear fuel at Navy sites would be higher for some operations and lower for others. The important point is that it would not be possible to provide examination of all Naval spent nuclear fuel using only Navy sites. The principal associated with differences in costs is related to the differences between the Navy sites and DOE sites.

The analyses in Volume 1, Appendix D, Section F.1.3.8, for postulated accidents involving Naval spent nuclear fuel storage at Navy sites show that for the worst case potential accident an area of only about 110 acres could be contaminated to the point where radiation doses exceeding the Nuclear Regulatory Commission public limit of 100 millirem per year might result for a person living full time on that land for an entire year. Most of this area would be within shipyard boundaries. Consequently, the area which might be considered for possible cleanup in the most severe case would be very small and localized and, therefore, the cost of cleanup would not be appreciably different at any of the Navy sites considered. It should be noted that this is the most severe accident; reasonably foreseeable accidents would involve far less area.

Although Naval sites are included in the analysis, the Navy has identified a preferred alternative in Section 3.9 of Appendix D to Volume 1 which would not store Naval spent nuclear fuel at Naval sites. The Navy's preferred alternative would resume the historic, technically sound and safe practice of conducting refueling and defueling of nuclear-powered warships and prototypes as planned, transporting the Naval spent nuclear fuel to the Expended Core Facility at INEL for full inspection and examination, and transferring Naval spent nuclear fuel to DOE for storage at that site.

II COMMENT

The costs for dry storage of Naval spent nuclear fuel in immobile casks at Navy sites would be cheaper than storage at INEL if the Multi-Purpose Containers being developed by DOE were used.

RESPONSE

As acknowledged by the commentor, Naval spent nuclear fuel can be safely and securely managed at all of the sites considered in this EIS. The costs of constructing and operating a Naval spent nuclear fuel storage area for three types of storage at Navy sites, as well as costs for other alternatives for management of Naval spent nuclear fuel, are presented in detail in Attachment D to Appendix D of Volume 1 and summarized in Section 3.7 of Appendix D. The costs for dry storage in immobile casks were developed using information from currently available dry storage casks licensed by the Nuclear Regulatory Commission for use with the spent nuclear fuel from commercial reactors. Allowances were included for some additional costs for designing new inserts to hold and cool Naval spent nuclear fuel, which would differ from the inserts used for commercial spent nuclear fuel, and for installation of additional radiation shielding required for storage within the confines of a shipyard. All other costs associated with such storage, such as operating costs, phase-in and facility closure costs, construction of concrete pads, and procurement of equipment needed to load and unload the containers were included.

DOE is currently developing Multi-Purpose Containers which could be used for storage, transportation, and disposal. DOE placed a contract for design of the first Multi-Purpose Containers in March of this year and plans to place the contract for manufacture of the first ones in the middle of 1997. This means that the first Multi-Purpose Container would be available in early 1998 and, even then, the early

containers would not be destined for Naval spent nuclear fuel. The licensing of these containers by the Nuclear Regulatory Commission for use in storage of spent nuclear fuel and issue of the Certificate of Compliance for use in shipping are planned to be completed in 1997. The dry storage casks used to develop the costs reported in Appendix D are currently licensed and in use, making their costs reasonably well-known.
It is possible that the Multi-Purpose Containers could be used for Naval spent nuclear fuel at some time in the future, but they would not be available inn time to support a change in the method of managing Naval spent nuclear fuel. These containers are estimated at this early stage of development to cost about $350,000 to $430,000 for the 125-ton containers which would be needed for Naval spent nuclear fuel, but some uncertainty in this estimate exists since the containers have not yet been designed or built. Section D.1.3.1 of Appendix D to Volume 1 states that about 290 containers would be needed, depending on the loading of the containers. A special insert for Naval spent nuclear fuel would have to be designed for the Multi-Purpose Containers. Design and separate licensing for this insert would be required. In the end, the costs of using the Multi-Purpose Containers for storage of Naval spent nuclear fuel would be substantially greater than stated in the comment.
When the costs of concrete overpacks required for the Multi-Purpose Containers, any buildings required for this method of storage, and the equipment to load and unload them are included, it is possible, given the uncertainties in costs at this point in their development, that the costs for Multi-Purpose Containers might not be less than those for immobile dry storage provided in the EIS. If in the future, the costs for Multi-Purpose Containers for immobile dry storage were found to be less than those for other methods, they might well be adopted, but the total costs associated with the Multi-Purpose Containers, including design and licensing, and their availability would have to be considered.
It should be remembered that the primary reason the Navy prefers not to store Naval spent nuclear fuel at Navy sites is that full examination of all Naval spent nuclear fuel would not be possible. The principal reason that the Navy prefers an alternative which would resume the historic, technically sound and safe practice of transporting Naval spent nuclear fuel to the Expended Core Facility at INEL for full inspection and examination and transferring Naval spent nuclear fuel to DOE for storage at that site is that this would allow the continued examination of all Naval spent nuclear fuel at the lowest cost and smallest risk, as stated in this EIS. Examination of all Naval spent nuclear fuel is an important part of the safety program of the Naval Nuclear Propulsion Program which has allowed the nuclear Navy to steam more than 100,000,000 miles and accumulate over 4400 reactor years of operation without a reactor accident or any problem having a significant effect on the environment. Examination of Naval spent nuclear fuel has also provided an important contribution to increasing the lifetime of Navy reactor cores by a factor of more than 10, reducing the amount of Naval spent nuclear fuel which must be managed.

II COMMENT

The commentor indicates that the Navy downplays the benefits of reduced costs and radiological effects from decreased transportation, and the costs of necessary facility enhancements at INEL by dismissing storage of its spent nuclear fuel at the point of origin due to cost. The Navy has also failed to substantiate the need to examine all of its spent nuclear fuel. It was stated that the Navy is required to provide any cost-benefit analysis that they may have prepared to justify their preference for the cheaper alternative of keeping activities at INEL.
RESPONSE
Appendix D to Volume 1 of the EIS evaluates the environmental impacts of a reasonable range of

alternatives for the management of Naval spent nuclear fuel, including the No-Action alternative. As the
environmental impacts would be small, there are no clear environmental discriminators between
alternatives. The Navy's preferred alternative is justified on the basis of Navy programmatic needs such as
full examination of spent nuclear fuel, as well as the relative costs between alternatives [see response to
comment 8.5.11.(1)]. The relative cost of transportation is low compared to the costs of on-site
management of spent nuclear fuel, as discussed in section 3.3 of Volume 1 (see response to comment
6.7.(1)). The discussion of the Navy's preferred alternative does not dismiss any of the other alternatives
evaluated in the EIS.
Section 2.4.1 of Appendix D to Volume 1 of the EIS has been expanded to more fully discuss the need for
full inspection of Naval spent nuclear fuel. See also response to comment 8.3.3.(2) in regards to the need
for full examination of spent nuclear fuel.
Regarding a cost-benefit analysis, the commentor has specifically cited to 40 CFR 81502.23 in suggesting
that a cost-benefit analysis be prepared. A cost-benefit analysis is not generally required by Council on
Environmental Quality requirements, but may be used "as an aid in evaluating environmental
consequences". Because all evaluated environmental consequences are small and because of the difficulty
of developing generally accepted equivalency factors between different types of impacts, e.g., what
monetary value should be place upon the loss of 35 acres of sagebrush habitat? DOE and the Navy have
not developed a cost-benefit analysis. The range of estimated costs for implementing various alternatives is
summarized in Volume 1, section 3.3.6.

II 8.6 Miscellaneous

II COMMENT

Some persons felt that the term "spent nuclear fuel" is misleading because they believe that it means fuel
which has no power to destroy or no power to do work.
RESPONSE
The term "spent nuclear fuel" is used in legislation, such as the Nuclear Waste Policy Act of 1982, as
amended (42 USC 10101), and in regulations governing nuclear material and work (for example, 40 CFR
191, "Environmental Radiation Protection Standards for Management and Disposal of Spent Nuclear Fuel,
High-Level Waste, and Transuranic Waste", and 10 CFR 53, "Criteria and Procedures for Determining
Adequacy of Available Spent Nuclear Fuel Storage Capacity") to define a specific category of nuclear
material and specify the manner in which it must be controlled. All three of these examples use the same
definition (for example, see 42 USC 10101 (23)) of spent nuclear fuel as "fuel that has been withdrawn
from a nuclear reactor following irradiation, the constituent elements of which have not been separated by
reprocessing". This category is used to denote fuel which has been used in a reactor and is no longer
usable for its original purpose.
This terminology is not intended to convey the impression that such fuel is no longer radioactive or no
longer requires careful management. Because of its use as fuel in a reactor, spent nuclear fuel remains
highly radioactive. DOE, the Navy, the Nuclear Regulatory Commission, and other organizations have
devoted much effort to the proper handling of spent nuclear fuel and protecting human beings and the
environment from the effects by ensuring that it is properly managed.

II COMMENT

Some persons felt that the term "spent nuclear fuel" is misleading because they believe that

spent nuclear
fuel should be classified as waste.
RESPONSE
The term "spent nuclear fuel" is used in legislation, such as the Nuclear Waste Policy Act of 1982, as amended (42 USC 10101), and in regulations governing nuclear material and work (for example, 40 CFR 191, "Environmental Radiation Protection Standards for Management and Disposal of Spent Nuclear Fuel, High-Level Waste, and Transuranic Waste", and 10 CFR 53, "Criteria and Procedures for Determining Adequacy of Available Spent Nuclear Fuel Storage Capacity") to define a specific category of nuclear material and specify the manner in which it must be controlled. All three of these examples use the same definition (for example, see 42 USC 10101 (23)) of spent nuclear fuel as "fuel that has been withdrawn from a nuclear reactor following irradiation, the constituent elements of which have not been separated by reprocessing". This category is used to denote material which must be handled in accordance with specific procedures and requirements.
This terminology is not intended to mislead or confuse. On the contrary, the category "spent nuclear fuel" should help understanding since it conforms to the terminology commonly used in public forums and technical and regulatory circles to clearly denote the special characteristics, controls, and handling associated with this particular class of material and how spent nuclear fuel differs from other types of radioactive material.

II COMMENT

It appears that there is a plan for the same site at Puget Sound Naval Shipyard to be used for a proposed Naval spent nuclear fuel storage facility and for another proposed Navy facility.
RESPONSE
This comment is an erroneous conclusion drawn from a map in the EIS. The map on page D-12 of Volume 1 Appendix D shows the conceptual location of the interim storage site at Puget Sound Naval shipyard.
The designated area in this figure approximates the general location where the interim storage facility would be located. The other facility referred to by the commentor is Puget Sound Naval Shipyard's proposed mixed waste storage building. The spent nuclear fuel storage location would not be sited in the exact same location. However, it is possible that they would be located in close proximity to each other.

II COMMENT

Some persons have confused the Navy's Environmental Assessment on the Short-Term Storage of Naval Spent Fuel with this Environmental Impact Statement, which deals with the management of Naval and other DOE spent nuclear fuel until a method for ultimate disposition can be implemented.
RESPONSE
Two NEPA documents considering aspects of Naval spent nuclear fuel management exist: one is this EIS and the other is the Navy's Environmental Assessment on the Short-Term Storage of Naval Spent Fuel.
A 1993 ruling by the Federal District Court for Idaho limited the number of shipments of Naval spent nuclear fuel which could be sent to INEL for examination until this EIS is completed and a Record of Decision on the storage of DOE spent nuclear fuel is issued in June 1995. This meant that safe storage of some Naval spent nuclear fuel had to be accomplished by means other than shipment to INEL during the period from the time of the court's order until the Record of Decision is issued. Therefore, in accordance with the requirements of NEPA, and as ordered by the Idaho court, an Environmental Assessment was prepared to evaluate the alternatives for accomplishing safe storage during the brief period and to identify and assess the impacts associated with each alternative considered. This document is the Navy's Environmental Assessment on the Short- Term Storage of Naval Spent Fuel.
An Environmental Assessment was prepared because the impacts of the preferred alternative for

this short period of storage were found to be small, as documented in the Finding of No Significant Impact issued early in 1994 after a period of public review. The alternatives considered in the Environmental Assessment were necessarily limited to those which could be implemented immediately and would be used only through June 1995. The Environmental Assessment chose a No Action alternative which used storage in certified shipping containers at the sites which would continue to perform servicing of Naval reactors through June 1995 as the best means of safely managing Naval spent nuclear fuel during the time needed for completion of this EIS. The evaluation included Newport News Shipbuilding and the facility used at that location for servicing nuclear-powered aircraft carriers.

This Environmental Impact Statement considers alternatives for managing all DOE spent nuclear fuel, including Naval spent nuclear fuel, until a method for ultimate disposition can be implemented. It covers a period which begins after its completion and the issue of the associated Record of Decision in June 1995.

The period considered extends 40 years from June 1995 because of the time needed to select and implement a method for final disposition of the spent nuclear fuel. This EIS considers a wider range of alternatives than the Navy's Environmental Assessment because more time would be available to construct new facilities or implement other long-term actions and because more types of spent nuclear fuel needed to be considered.

The conclusions concerning the preferred alternative in its Environmental Assessment and this EIS naturally differ because of the different periods of time available for beginning to use the alternatives for management of Naval spent nuclear fuel, the amounts of spent nuclear fuel, the long-term effect on the Navy's mission, and the effects on the environment considered in the two documents. In both cases, management of Naval spent nuclear fuel can be accomplished safely and with very small environmental impacts.

Some of the differences which result from the different time periods considered in the two documents have been noted by commentors. For example, the longer period covered in this EIS required the Navy to rule out storage at Newport News Shipbuilding and Drydock Company because it is a private facility might have to be purchased by the Federal government and currently plays an important role in the Navy's infrastructure. For the same reason, management of Naval spent nuclear fuel in water pools at Navy sites is evaluated in this EIS but was not in the Environmental Assessment because there was not enough time to construct or modify (as in the case of the water pool at Puget Sound Naval Shipyard) the facilities.

Similarly, no modifications to the certified shipping containers were needed for storage during the interim period ending in June 1995, but if an alternative involving management of Naval spent nuclear fuel in shipping containers were to be selected for the longer period covered by the EIS, construction or modification of facilities at Navy sites would have to be completed. Finally, examination of Naval spent nuclear fuel can continue until June 1995 due to an existing backlog of fuel so the impact on the Navy's mission was not a determining factor in the Environmental Assessment.

II COMMENT

Some persons identified differences between the results of analyses presented in the Navy's Environmental Assessment on the Short-Term Storage of Naval Spent Fuel and the results of the analyses reported in this Environmental Impact Statement, which deals with the management of Naval and other DOE spent nuclear fuel until a method for ultimate disposition can be implemented.

RESPONSE

Two NEPA documents evaluating the environmental impacts of alternatives for managing Naval spent nuclear fuel exist: one is this EIS and the other is the Navy's Environmental Assessment on the Short-Term Storage of Naval Spent Fuel. As identified by the commentor, there are some differences in the results of

the analyses performed for these separate documents. This occurs because the Environmental Assessment covers the period from the end of 1993 to June 1, 1995 and this EIS covers the period beginning June 1, 1995 and extending up to 40 years into the future. As a result, substantially less Naval spent nuclear fuel is considered in the Environmental Assessment than in this EIS and the cores from newer, larger nuclear-powered warships are not included in the Environmental Assessment since they will not be removed from ships until well after June 1, 1995.
For example, as cited by the commentor, the probability that an airplane might crash into a shipping container stored at Pearl Harbor Naval Shipyard is smaller for the Environmental Assessment than for this EIS because there are fewer containers (6 by June 1, 1995, versus 42 by the year 2035). The smaller number of containers and the smaller area covered by the containers would reduce the chances that an airplane could strike a container. The dependence of the probability on the effective area of the target is described in Section F.3.2 of Attachment F to Appendix D to Volume 1 of the EIS.
Similarly, as pointed out by the commentor, the calculations of fatalities if an airplane were to strike a container produce fewer potential deaths in the Environmental Assessment than in this EIS. This is because the amounts of radioactivity involved in the hypothetical accidents in the Environmental Assessment were based on storage of smaller cores from earlier generation submarines which would be removed from ships prior to June 1, 1995. The similar calculations in this EIS are based on the largest cores which might be stored at each location during the next 40 years.

II COMMENT

Information on the quantities and types of Naval spent nuclear fuel stored at the Expended Core Facility should be included in this EIS.
RESPONSE
Naval spent nuclear fuel is not stored at the Expended Core Facility. As described in Section B.2.4, some components from the first Naval spent nuclear fuel modules, or from modules which show the most pronounced effects of use, for designs currently in the fleet are retained in the water pools at the Expended Core Facility for assisting in diagnosis of any problem which may occur. However, as the various fuel design types are replaced in fleet service, the fuel components related to the fuel design being retired are removed from the library and transferred to ICPP. Although these components do not constitute a large amount of spent nuclear fuel, they are included in the analyses in this EIS.

II COMMENT

A commentor concluded that data reported in the EIS as being used in analyses were the results of the analyses.
RESPONSE
The commentor misinterpreted information provided in the EIS, concluding that data used in analyses were results of the analyses. The commentor apparently thought the number of residents per square mile in rural, suburban, and urban localities was the number of potential fatalities which might result from an accident involving shipment of Naval spent nuclear fuel. The number of residents per square mile in rural, suburban, and urban localities was used to calculate the number of people living along transportation routes. This misinterpretation caused the commentor to conclude that the risks associated with transportation of Naval spent nuclear fuel would be much higher than they actually are.
Section A.7 provides detailed descriptions of the input values used in the analyses of the shipment of Naval spent nuclear fuel in order to allow independent individuals or groups to evaluate or even perform their own calculations. Section A.7.1.2.9 shows the number of people per square mile for urban, suburban, and

rural areas along transportation routes. These are the numbers cited by the commentor.
The results of the analyses of risks for Naval spent nuclear fuel shipments show that less than one fatality would be caused by transportation accidents or routine operations under any of the alternatives considered in this EIS. These results are tabulated in Section A.8.

II COMMENT

The commentor thought that the Navy stated in Volume I, Appendix D, Section 4.1.1.7.3, page 4.1.1-12, of the Draft EIS that there are no radioactive airborne emissions from operations at Puget Sound Naval Shipyard and questioned the accuracy of such a statement.
RESPONSE
The commentor misinterpreted the information presented in Volume I, Appendix D, Section 4.1.1.7.3, page 4.1.1-12 concerning radioactive airborne emissions at Puget Sound Naval Shipyard. The commentor missed a key word in the first sentence in Section 4.1.1.7.3 which states that "Radiological facilities at all Naval shipyards are designed to ensure that there are no uncontrolled discharges of radioactivity in airborne exhausts." This section and Section F.1.4.1 in Attachment F present the results of analyses based the radioactive releases published in Naval Nuclear Propulsion Program Report NT-93-1, which is available to the public. The specific airborne releases used in the analyses for Puget Sound Naval Shipyard are listed in Tables F.1.4.1.1-1 and F.1.4.1.1-2 on pages F-50 and F-52 of Attachment F.
As stated in Section 4.1.1.7.3, the results of the analyses show that emissions of radionuclides from each shipyard result in an effective dose equivalent of less than 0.1 millirem per year to any member of the general public, which is 1% of the Clean Air Act standard promulgated by the Environmental Protection Agency in 40 CFR 61, Subparts H and I. The analyses demonstrate that the risks associated with any of the alternatives for management of Naval spent nuclear fuel are very small.

II COMMENT

A commentor stated that impact analyses for long term storage of spent nuclear fuel at the Expended Core Facility were not present in the EIS.
RESPONSE
Long-term storage of spent nuclear fuel at the Expended Core Facility is not an alternative considered in this EIS. Some alternatives result in the Expended Core Facility being shut down and others result in the Expended Core Facility continuing spent nuclear fuel examinations. There are no alternatives which use the Expended Core Facility as a storage facility. In all alternatives, Naval spent nuclear fuel would be shipped to either the Idaho Chemical Processing Plant at INEL or some other site after examination is completed. The sole exception is the small amount of library storage of Naval reactor components, which is covered under the impact analyses for fuel examination provided in this EIS.
Storage of spent nuclear fuel in water pools at the Expended Core Facility would effectively preclude examination of Naval spent nuclear fuel at that facility because storage would use up the space in the water pool needed for machinery and examination equipment. This would require the construction of new facilities for the examination of Naval spent nuclear fuel or the loss of the ability to perform examinations of Naval spent nuclear fuel. The impact on the Navy's mission that would result from the loss of the ability to examine Naval spent nuclear fuel is described in Chapter 3 of this EIS.
Analyses of the impacts associated with storage of the Naval spent nuclear fuel at the DOE sites are included in the appendices to the EIS for each site. For example, Section 5 of Volume 1, Appendix B, includes the impact of storing Naval spent nuclear fuel in water pools at INEL.
Attachment F to Appendix D, Section F.1.4.1.4, does present the results of analyses of the impacts of

performing spent nuclear fuel examination at the Expended Core Facility. In addition, the impacts of spent fuel examination at all of the DOE sites and Puget Sound Naval Shipyard and the impacts of water pool storage at the Naval shipyard sites are presented. Results of analyses of the impacts for dry storage at all of the Navy sites considered in this EIS are also provided. These results are shown in Section F.1.4.1.5 of Attachment F. For INEL analysis, a site near the Expended Core Facility at the Naval Reactors Facility was selected.

II COMMENT

The commentor requested clarification of information in the EIS which presents the impact of facility accidents on close-in workers.

RESPONSE

The results of an evaluation of the impact to close-in workers involved in Naval spent nuclear fuel management that might occur due to the various radiological accidents postulated in spent nuclear fuel handling and storage are presented in Section F.1.4.3 of Appendix D to Volume of this EIS. Section F.1.4.3.2.2 provides information on the effects of a hypothetical airplane crash into the dry storage area.

The commentor asked whether the statements in this section are intended to apply to people involved in extinguishing the fire associated with the postulated crash.

As stated in Section F.1.4.3, the evaluation in this section includes workers at the spent nuclear fuel management site working with the fuel or working very close to the scene of postulated accidents. This is contrasted with the worker located 100 meters from the radioactive material release point, defined in Section F.1.3.2, for which exposures have been calculated and presented throughout Appendix D for normal operations and postulated facility accidents. Discussions of emergency preparedness training and exercises and the bases for calculating individual exposure times are presented in Section F.1.3.9.

II COMMENT

A commentor thought that the water pool at Puget Sound Naval Shipyard was identified in Volume 1 of this EIS as not in use but the commentor had heard that it was in use.

RESPONSE

Section 1.1.2.4 of Volume 1 of this EIS (page 1-11 of the Draft EIS) states that an existing water pool facility, constructed to support the refueling of nuclear-powered aircraft carriers, is located within the industrial zone of the Puget Sound Naval Shipyard. This section further states that, to date, the facility has been used for refueling equipment demonstrations and testing. The facility has not been used for aircraft carrier servicing work.

II COMMENT

A commentor identified what appeared to be an inconsistency in the peak ground acceleration value reported for ECF. A value of 0.35g is quoted on page D-32 of Volume 1, Appendix D, Part B for the Water Pit Facility and a value of 0.24g is quoted on page F-73 of Appendix D.

RESPONSE

There is no inconsistency in the peak ground acceleration data provided in Appendix D to Volume 1. The 0.35g peak ground acceleration value provided on page D-32 refers to the Puget Sound Water Pit Facility at Puget Sound Naval Ship yard. The 0.24g peak ground acceleration quoted on page F-73 refers to the Expended Core Facility at INEL.

II COMMENT

A commentor requested that the EIS identify whether other modes of transportation besides rail have been
used to ship Naval spent nuclear fuel to INEL.
RESPONSE
The EIS presents detailed descriptions of past and future shipments of Naval spent nuclear fuel in
Attachment A to Appendix D of Volume 1. Section A.2 of Appendix D provides the desired information
on shipment of Naval spent nuclear fuel.
The only method used to ship Naval spent nuclear fuel to INEL in the past and the only method proposed
for future shipments is by rail. The only exceptions to this are that Naval spent nuclear fuel from Pearl
Harbor Naval Shipyard is transported by ship from Hawaii to Puget Sound Naval Shipyard where the
shipping containers are transferred to railcars for the journey to INEL and the use of heavy-lift transporters
to move Naval spent nuclear fuel in shipping containers a few miles to the nearest railhead at the
Kesselring and Windsor sites.

II COMMENT

One commentor stated the water pit facility at Puget Sound Naval Shipyard was to be doubled in size. She
expressed this concern due to the proximity of the water pit facility to the city boundary.
RESPONSE
The statement that the water pit is to be doubled in size is incorrect. In Volume 1, Appendix D, page D-29,
the EIS states that "Expansion of the Water Pit Facility to accommodate simultaneous refueling and
examination operations is undesirable due to the proximity of other shipyard facilities." This is the reason
why Puget Sound would no longer have the capability to refuel nuclear-powered aircraft carriers should
the Decentralization, Limited Examination alternate be chosen.

08.06 (016) Miscellaneous

COMMENT
One commentor stated that the shipment of radioactive waste from the shipyards had not been included in
the EIS.
RESPONSE
Current practices for the management of radioactive waste at each of the shipyards considered in this EIS
are described in Sections 4.1.1.14, 4.1.2.14, 4.1.3.14, and 4.1.4.14 of Appendix D to Volume 1. The
environmental consequences of waste management associated with each alternative for management of
Naval spent nuclear fuel are described for each shipyard in Sections 5.1.1.15, 5.1.2.15, 5.1.3.15, and
5.1.4.15 of Appendix D to Volume 1.

08.06 (017) Miscellaneous

COMMENT
Environmental Monitoring information from the 1985 EPA survey of Pearl Harbor was misquoted. In
addition, there are limitations in the EPA analysis that should make one cautious about drawing strong
conclusions.
RESPONSE
The misquotation cited on page 4.1.4-14 of Appendix D to Volume 1 has been corrected. During editing
of the Draft EIS, the word "greatly" was inadvertently substituted for "significantly".
The conclusions in Section 4.1.4.8.3 of Volume 1, Appendix D pertaining to the EPA analyses are a direct
quotation from page 11 of the EPA report (with the exception of the inadvertent editing change stated

above) titled "Radiological Surveys of the Pearl Harbor Naval Shipyard and Environs" (Callis 1987). The only other discussion in the EIS related to this EPA report directly precedes the statement of the EPA conclusions and states that the purpose of the monitoring performed in the vicinity of Pearl Harbor Naval Shipyard is "to confirm that the general public is not affected by operations of Pearl Harbor Naval Shipyard". This statement of purpose has been revised to directly quote the EPA's purpose statement: "The purpose of the survey was to determine if operations related to U.S. Navy nuclear warship activities resulted in releases of radionuclides which could contribute to significant population exposure or contamination of the environment". Consequently, the discussion in the EIS is consistent with the EPA report.

08.06 (018) Miscellaneous

COMMENT
The EIS incorrectly referred to the Environmental Protection Agency regulations in 40 CFR 61, titled "National Emission Standards for Hazardous Air Pollutants", as Nuclear Regulatory Commission regulations.
RESPONSE
Appendix D to Volume 1 of this EIS was revised to properly identify that 40 CFR 61 is an EPA regulation and more specifically refer to Subpart H of the regulation.

08.06 (019) Miscellaneous

COMMENT
The description for the Kesselring Site in Section 4.1.5 of Appendix D to Volume 1 states that the land surrounding the site is either wooded or is used for farming. There are also residential areas surrounding the site.
RESPONSE
Section 4.1.5.2 of Appendix D to Volume 1 states that "most of the land surrounding the Site is wooded or used for farming" and this characterization is correct. The site is not surrounded by residences, but there are many residences in the area. The characterization was not intended to imply that there were no residences in the vicinity, so Section 4.1.5.2 of Appendix D to Volume 1 has been revised to add a statement that some of the land is used for residential purposes.

08.06 (020) Miscellaneous

COMMENT
A commentor stated that she thought that the disposal of reactor compartments removed from decommissioned nuclear-powered Naval vessels at the Hanford Site violates some requirement and barge shipments to Hanford might be hazardous.
RESPONSE
The Naval Nuclear Propulsion Program conducts the shipment and disposal of the reactor compartments from decommissioned Naval nuclear-powered vessels at the Hanford Site in compliance with all applicable safety and environmental regulations. This procedure was evaluated a number of years ago in an earlier Environmental Impact Statement prior to initiation of any shipments. That Environmental Impact Statement demonstrated that the risks and impacts to human health or the environment associated with the shipment and disposal of these reactor compartments are very small.
No Naval spent nuclear fuel is shipped by barge up the Columbia River to the Hanford Site. This issue is beyond the scope of this EIS.

9. MISCELLANEOUS

09 (010) Miscellaneous

COMMENT
The commentor states that secretive practices of DOE and its predecessor agencies have resulted in improper health experimentation on human subjects, inadequate National Environmental Policy Act evaluation of DOE spent nuclear fuel, inadequate identification of Fort St. Vrain Nuclear Regulatory Commission licensed storage, and inadequate characterization of zirconium cladding problems in commercial fuel.
RESPONSE
This EIS considers interim storage of DOE spent nuclear fuel (SNF); thus, health experimentation and possible zirconium cladding problems are not discussed. This EIS does respond to the adequacy of National Environmental Policy Act review for DOE SNF management actions. Volume 1, section 1.1.2 and Volume 2, Appendix C, SNF5 describe storage at Fort St. Vrain.

09 (021) Miscellaneous

COMMENT
The commentor states that the U.S. Public Health Service Agency for Toxic Substance and Disease Registry was asked to review the EIS, but the agency declined comment.
RESPONSE
The U.S. Public Health Service Centers for Disease Control and Prevention did comment on the EIS, and DOE responds to those comments in this document.

9.1 Unrelated Comments

09.01 (003) Unrelated Comments

COMMENT
Commentors reviewed the EIS and have no comments.
RESPONSE
DOE appreciates the reviews.

09.01 (004) Unrelated Comments

COMMENT
Some commentors make statements and others express opinions that require no response from DOE.
RESPONSE
No response is required.

09.01 (007) Unrelated Comments

COMMENT
The commentor requested information on the amount of wastes going to geologic repositories at Yucca Mountain and the Waste Isolation Pilot Plant.
RESPONSE
These geologic repositories have not been opened due to siting, permitting, and policy issues. Thus, no wastes are going to Yucca Mountain or the Waste Isolation Pilot Plant.

09.01 (008) Unrelated Comments

COMMENT
The commentor states that Tennessee should create a local citizen's advisory board through the state's local
oversight program.
RESPONSE
This issue is outside the scope of the EIS.

09.01 (010) Unrelated Comments

COMMENT
The reviewer had no comments based on review of the Draft EIS.
RESPONSE
DOE appreciates the review.

APPENDIX A

Responses to Comments by Individuals, Organizations, or Agencies

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98	Schwarz, Ted M.	02.07 (002), 03.08 (011), 08.03.01 (008), 08.04 (008), 08.04 (009), 08.04 (014)
99	Devereaux, Eugene E.	02.07 (002), 03.08 (011), 08.03.01 (008), 08.04 (008),
99	Devereaux, Eugene E.	08.04 (009), 08.04 (014)
100	Lorella, Kathy C.	02.07 (002), 03.08 (011), 08.03.01 (008), 08.04 (008), 08.04 (009), 08.04 (014)
101	Gilmore, Ginnie	08.04 (010), 08.04 (014)
102	Webb, Chuck	08.04 (010), 08.04 (014)
103	Fong, Thelma V.	02.07 (002), 03.08 (011), 08.03.01 (008), 08.04 (008), 08.04 (009), 08.04 (014)
104	Risser, Peter	02.07 (002), 03.08 (011), 08.03.01 (008), 08.04 (008), 08.04 (009), 08.04 (014)
106	Schedin, Todd	02.07 (002), 03.08 (011), 08.03.01 (008), 08.04 (008), 08.04 (009), 08.04 (014)
107	Sickles, Linda	02.07 (002), 03.08 (011), 08.03.01 (008), 08.04 (008), 08.04 (009), 08.04 (014)
108	Steele, William K.	02.07 (002), 03.08 (011), 08.03.01 (008), 08.04 (008), 08.04 (009), 08.04 (014)
109	Pittman, Rosemary	02.07 (002), 03.08 (011), 08.03.01 (008), 08.04 (008), 08.04 (009), 08.04 (014)
110	Malan, Linda	02.07 (002), 03.08 (011), 08.03.01 (008), 08.04 (008), 08.04 (009), 08.04 (014)
111	Gilmore, Leigh	08.01 (001), 08.03.01 (005), 08.03.01 (008), 08.04 (010), 08.04 (013), 08.04 (014), 08.05.05 (002)
112	Ibele, Margaret R.	06.05 (011), 08.01 (001)
113	Van Niel, Sally J.	02.07 (002), 03.08 (011), 06.02 (003), 08.04 (014)
114	Grant, Jane F.	02.07 (002), 03.08 (011), 08.03.01 (008), 08.04 (008), 08.04 (009), 08.04 (014)
115	Kogut, William	02.07 (002), 03.08 (011), 08.03.01 (008), 08.04 (008), 08.04 (009), 08.04 (014)
116	Sweet, Sallie	02.07 (002), 03.08 (011), 08.03.01 (008), 08.04 (008), 08.04 (009), 08.04 (014)
117	Magee, Joan	02.07 (002), 03.08 (011), 08.03.01 (008), 08.04 (008), 08.04 (009), 08.04 (014)
118	Medwell, Nancy	02.07 (002), 03.08 (011), 08.03.01 (008), 08.04 (008),
118	Medwell, Nancy	08.04 (009), 08.04 (014)
119	Trenor, Dorothy L.	02.07 (002), 03.08 (011), 08.03.01 (008), 08.04 (008), 08.04 (009), 08.04 (014)
120	Strandell, Amy J.	02.07 (002), 03.08 (011), 08.03.01 (008), 08.04 (008), 08.04 (009), 08.04 (014)
121	Brown, Robert G.	02.07 (002), 03.08 (011), 08.03.01 (008), 08.04 (008), 08.04 (009), 08.04 (014)
122	Bainbridge, Winnifred	02.07 (002), 03.08 (011), 08.03.01 (008), 08.04 (008), 08.04 (009), 08.04 (014)
123	Crawford, Gordon	02.07 (002), 03.08 (011), 08.03.01 (008), 08.04 (008), 08.04 (009), 08.04 (014)
124	Moore, Emma E.	02.07 (002), 03.08 (011), 08.03.01 (008), 08.04 (008), 08.04 (009), 08.04 (014)
125	Reppun, J. I. Frederick	08.04 (003), 08.04 (010), 08.05.03 (006), 08.05.06 (003)
126	Stokes, Don R.	03.05 (023), 03.05.03 (003), 06.05 (009), 06.09 (046)
127	Varney, Robert W.	08.01 (002)
128	Austrom, Dawn	08.04 (010), 08.04 (014)

129	Loeb, Bernard S.	09.01 (003)
130	Slifer, B.	01.01.01.02 (006), 05.08.01 (014)
131	Bowers, Katharina	02.07 (012), 03.08 (010), 08.04 (010), 08.05.03 (001), 08.05.06 (004), 08.05.06 (005)
132	Lein, Ray H.	08.05.04 (004)
133	Fay, William M.	05.02 (004), 05.08.01 (054)
134	Louch, Charles D.	02.06 (025), 08.04 (010), 08.05.06 (012)
135	Webb, David R.G	08.01 (001)
136	Wentlandt, Carol	08.01 (001)
137	Coleman, Peter F.	01.01.01.02 (006), 04.03.01 (019), 05.10.02 (006), 05.10.02 (016), 05.12 (001), 06.05 (016)
138	DeMarco, Anita	08.03.01 (005), 08.03.01 (007), 08.03.01 (009), 08.04 (010)
139	Pocuis, D. Leo	08.04 (010)
140	Stevens, Alexander R.	05.11.02 (006), 08.04 (010)
141	Cooper, Kathleen B.	08.01 (002)
142	Beardsley, Robert	08.03.01 (002), 08.03.01 (005), 08.04 (010), 08.05.05 (002)
143	Watters, Brad	08.04 (010)
144	Corr, Cecilia	06.09 (007), 06.09 (013), 06.09 (014)
145	Stockdale, Jeri	08.04 (010), 08.04 (013), 08.04 (014), 08.05.04 (004)
146	Sims, Lynn	01.02.01.02 (008), 03.08 (011), 04.01 (005), 05.10.01(031), 05.18.04 (002), 06.05 (001), 06.09 (013), 07.04 (004), 08.01 (002), 08.03.01 (003)
147	Manheimer, Elaine	03.03 (008), 04.01 (005), 07 (001), 08.03.01 (005), 08.03.01 (008), 08.03.03 (001), 08.03.03 (002), 08.03.05 (001), 08.04 (026), 08.05.01 (001), 08.05.01 (009), 08.05.03 (001), 08.05.05 (002), 08.05.06 (026), 08.05.06 (028), 08.06 (003), 08.06 (011)
148	King, Joan O.	02.07 (013), 03.08 (010)
149	Hall, Pamela	08.01 (004), 08.04 (010)
150	Wood, Marlene Y.	08.05.06 (004), 08.05.06 (005), 08.05.06 (006), 08.05.06 (025)
151	Troxel, Sarajane M.	01.02.01.02 (006), 08.01 (001), 08.05.06 (025)
152	Varricchio, Louis	01.01.02 (007)
152	Varricchio, Marilyn	01.01.02 (007)
153	Matthews, R. S.	02.08 (023), 04.03 (057), 05.10 (027), 08.05.11 (002), 08.05.11 (003)
154	Crocker, Nan	01.01.01.02 (006), 05.12 (001), 07.01.02 (001)
155	Nickerson, Russell	08.02 (001), 08.04 (010)
156	Enquist, Robert W.	08.01 (002)
157	Patrick, Lewis W.	04.03.01 (001)
158	Smith, Ben L.	02.02 (002), 02.08 (025), 04.01 (005), 04.03 (001), 04.03 (003), 04.03.01 (005), 04.03.02.01 (001), 06.05 (026), 06.05 (028), 06.07 (001)
159	Egan, Joseph	08.03.01 (008)
160	Griffin, James	08.01 (004), 08.03.01 (005), 08.05.06 (005)
162	Harsley, Raleigh G.	08.04 (010)
163	McGinnis, Anna	08.04 (010)
164	Zaidi, Rafiq	08.03.05 (005), 08.05.04 (005)
165	Whitaker, O'Kelley	08.04 (011), 08.05.06 (025)
166	Williams, Woodie	08.04 (001), 08.04 (018)
167	Deegan, Robert	01.02.01.02 (006), 02.08 (006), 03.04 (007), 04.03 (027), 05.12.03 (002), 06.03 (001), 08.03.01 (008), 08.03.04 (001), 08.04 (002), 08.04 (016), 08.05.06 (025), 08.05.06 (030)
168	Hall, Theodore R.	08.03.01 (005), 08.05.06 (032)
169	Clemens, Johnny	08.04 (010), 08.04 (015), 08.05.08 (001)
170	Linnell, William S.	05.10.02 (017), 05.19 (016)
171	Copeland, William E.	08.03.01 (005), 08.03.01 (007), 08.05.06 (034)
172	Bogen, Douglas	08.01 (001), 08.03.01 (004), 08.03.01 (005), 08.04 (001)

173	Morse, Macy	02.08 (007), 04.03 (001), 08.05.03 (004), 08.05.10 (010)
175	Bogen, Douglas	05.10 (029), 08.01 (001), 08.03.01 (004)
176	Hamilton, Bill	02.07 (012), 08.01 (001), 08.02 (001), 08.03.01 (003), 08.03.01 (006)
177	Cole, Roger P.	06.01 (002), 08.03.01 (004), 08.03.01 (005), 08.03.01 (006), 08.03.01 (014), 08.05.03 (002)
178	Petty, Guy	02.03 (010), 08.04 (018), 08.04 (019), 08.05.04 (004), 08.05.06 (028), 08.05.06 (033)
179	Bogen, Doug	08.01 (001), 08.03.01 (004), 08.03.01 (014), 08.03.01 (018), 08.04 (001)
180	Emery, Susan	08.03.01 (004), 08.04 (010), 08.04 (013), 08.04 (014), 08.05.04 (002)
181	Emery, Susan	08.03.01 (004), 08.04 (013), 08.04 (014), 08.05.04 (002)
182	Bogen, Douglas	05.10 (021)
182	Cole, Roger P.	05.10 (021)
182	Emery, Susan	05.10 (021)
182	Hamilton, Bill	05.10 (021)
182	Nuick, Dick	05.10 (021)
182	Petty, Guy	05.10 (021)
182	Questions and Answers, Kittery, ME Evening	05.10 (021)
182	Tylan, Mark	05.10 (021)
182	Wolf, Kathy	05.10 (021)
183	Petty, Guy	08.05.02 (002), 08.05.04 (002), 08.05.05 (001), 08.05.06 (002), 08.05.06 (027), 08.05.06 (033)
184	Axelrod, Daniel M.	03.01 (009), 06.09 (016)
185	Romane, Richard R.	08.05.06 (032)
186	Lotts, A. L.	01.01.01.01 (029), 04.03 (032), 05.12.06 (002), 06.03 (011), 06.09 (005)
187	Ellis, Thomas	08.01 (006), 08.03.01 (005), 08.03.01 (010), 08.03.01 (021), 08.05.07 (003)
188	Mackay, Daniel	04.03 (019), 04.04 (008), 04.04.01 (002)
189	Wicks, Frank	06.05 (017)
190	Ekman, John	04.03 (001)
191	Lambert, James	05.10.02 (017), 05.10.02 (019), 08.03.01 (005), 08.03.05 (001), 08.05.06 (001)
192	Zollo, Frank	05.10.01 (004), 08.01 (001), 08.03.01 (001)
193	Shannon, John	02.08 (041), 03.04.01 (005), 05.11.01 (002), 08.03.01 (012)
194	Kelly-Lind, Ellen	02.07 (012), 02.08 (002), 06.05 (011), 08.01 (001), 08.03.01 (001), 08.03.01 (003), 08.03.01 (004), 08.03.01 (005)
195	Shannon, John	02.08 (041), 05.11.01 (002), 05.18.04 (002)
196	Zurmuhlen, Edward	08.01 (001), 08.04 (018), 08.04 (019), 08.05.04 (006)
197	Bryant, Ronald	08.01 (002)
198	Williams, Linda	03.08 (010), 08.03.01 (003), 08.03.01 (005)
199	Lambert, James	05.10.02 (017), 06.09 (014), 08.05.05 (003)
200	Lambolot, James	08.01 (002)
201	Gelsey, Rudolph	08.03.01 (001), 08.03.01 (003), 08.03.01 (004), 08.05.08 (001)
202	Mackay, Daniel	02.03.01 (003), 03.03 (008), 06.01 (002), 06.01.01 (001), 06.02 (021), 06.05 (001)
203	Williams, Linda	03.08 (010), 08.03.01 (003), 08.03.01 (005)
204	Trieble, Wilbur	08.05.04 (002)
205	Purner, Jeff	08.01 (002)
206	Brodie, Hal	03.08 (016)
207	Zollo, Frank	01.02.03 (002), 08.03.01 (001)
208	Questions and Answers,	02.07 (001), 03.04 (010), 08.01 (001), 08.03.01 (010),

	Ballston Spa, NY Ev	08.05.06 (001)
209	Sanders, James E.	01.02.03 (002), 04.03 (001)
210	Koeberl, Dwight D.	03.03 (013), 08.01 (001)
211	Solomon, Gerald B.	08.01 (002)
212	Kelly-Lind, Ellen	01.02.03 (002), 02.08 (002), 06.05 (011), 07.04 (001), 08.03.01 (003)
213	Kellam, Janet K.	01.01.01.02 (006), 04.03 (001), 05.08.01 (014), 06.05 (010)
214	Lambert, James R.	05.10.02 (017), 05.10.02 (019), 08.03.01 (005), 08.03.05 (001), 08.05.06 (001)
215	Williams, Linda	03.03 (008), 03.08 (010), 08.01 (005)
216	Brodie, Hal	03.08 (016)
217	Morgan, Elizabeth	08.01 (004)
218	Gelsey, Rudolph	03.01 (001), 05.10.02 (023), 08.01 (002), 08.03.01 (003), 08.03.01 (004)
219	Bechtel, Dennis	01.01.01.01 (015), 05.12 (001), 05.15 (007)
220	Mazon, Mike	03.08 (019), 06.05 (004)
221	Lewnow, Richard	01.01.01.02 (004)
222	Carroll, Stevi	01.01.01.02 (006), 03.03 (008), 05.12 (001)
223	Treichel, Judy	01.01.01.01 (022), 01.02.03 (002), 03.08 (007), 04.05 (007), 05.11.03 (003)
224	Skinner, Lawrence	05.16 (006)
225	Brown, Chris	01.01.01.01 (022), 02.01 (007), 02.04 (005), 04.01 (003), 05.10.02 (018), 05.11.03 (003), 05.12.04 (003), 06.07 (001), 08.03.01 (005), 09.01 (004)
226	Brown, Chris	09.01 (004)
226	Coleman, Marsha	09.01 (004)
226	Mazon, Mike	09.01 (004)
226	Questions and Answers, Las Vegas, NV Aftern	09.01 (004)
226	Skinner, Lawrence	09.01 (004)
226	Von Tressenhussen, Englebrecht	09.01 (004)
227	Hilmas, Duane	09.01 (003)
228	Skinner, Lawrence	05.16 (006)
229	Questions and Answers, Ballston Spa, NY Af	09.01 (004)
230	Herbert, Patricia A.	01.01.02 (002), 01.02.03 (002), 02.06 (027), 03.01 (001), 04.01 (005), 05.08.01 (025), 06.09 (013), 07.01.01 (003)
231	Watts, Frances	01.01.01.01 (022)
232	Hedgepeth, Dave	01.01.01.01 (022), 01.01.01.02 (011), 03.08 (011), 03.08 (012), 04.03 (001), 05.11.01 (008)
233	Lagergren, Ginna	05.08.01 (014), 05.09 (004), 06.05 (002)
233	Lagergren, Ken	05.08.01 (014), 05.09 (004), 06.05 (002)
235	Meigs, Marilyn F.	06.02 (010), 06.04 (010)
236	Davenport, Les	09.01 (004)
236	Grainger, Jamie	09.01 (004)
236	Questions and Answers, Pasco, WA Evening	09.01 (004)
237	Devine, John C.	06.01 (008), 06.02 (010)
238	Grainger, Jamie	02.01 (006), 03.07 (007), 04.03 (027)
239	Steele, Selma A.	04.03 (018), 05.10.02 (016), 08.04 (010), 08.04 (013)
240	Schierloh, Brooke	04.03.01 (019), 06.09 (013), 08.04 (010)
241	Luxem, David A	01.01.01 (002), 05.12 (001), 08.01 (001)
242	Hill, Crag	02.01 (030), 04.03 (001)
242	Schneider, Laurie	02.01 (030), 04.03 (001)
243	Moore, James F.	02.08 (001), 05.08.01 (014)
244	Bryan, Mary	01.01.01.01 (015), 02.04 (028), 02.04 (060), 02.07 (007), 02.08 (052), 03.08 (012), 04.01 (001), 05.10 (058), 05.11.01 (008), 06.05 (002), 06.09 (019)
245	Lambert Holenstein, Kathryn (Cherie)	02.06 (001), 02.08 (033), 03.05 (008), 04.03 (001), 04.03 (021), 06.07 (001)
246	Leistiko, Ron	03.08 (001), 05.11.02 (001), 05.11.02 (006), 05.12.03 (001), 05.12.06 (002), 05.13 (001)
247	Knight, Paige	01.01.01.01 (022), 04.03 (001), 06.01.01 (001), 06.09 (043),

247	Knight, Paige	08.03.01 (013)
250	Belsey, Dick	01.01.01.02 (020), 06.09 (017), 09.01 (004)
250	Cropper, Tom	01.01.01.02 (020), 06.09 (017), 09.01 (004)
250	Farrell, Russ	01.01.01.02 (020), 06.09 (017), 09.01 (004)
250	Knight, Paige	01.01.01.02 (020), 06.09 (017), 09.01 (004)
250	Morse, Macy	01.01.01.02 (020), 06.09 (017), 09.01 (004)
250	Questions and Answers, Portland, OR Afern	01.01.01.02 (020), 06.09 (017), 09.01 (004)
250	Steele, Jen	01.01.01.02 (020), 06.09 (017), 09.01 (004)
250	Stranahan, Lori	01.01.01.02 (020), 06.09 (017), 09.01 (004)
251	Belsey, Richard	02.01 (026), 02.03 (014), 02.03 (015), 02.08 (020), 03.08 (023), 04.04 (017), 05.09 (001), 06.01 (006), 06.01.01 (001), 08.03.01 (013)
252	Howes, Deborah	03.05 (024), 04.03 (031), 05.08.03 (003), 05.12 (001), 05.12.03 (002)
253	Knight, Paige	01.01.01.01 (022), 01.01.01.01 (041), 04.03 (001), 06.09 (043), 08.03.01 (013)
254	Farrell, Russ	02.07 (001), 03.08 (010), 06.09 (013), 08.03.01 (001), 08.03.01 (004)
255	Cropper, Tom	05.18.04 (002)
256	Greer, Beth	01.02.01 (005), 02.08 (046), 08.03.01 (005)
257	Peck, Geraldine	01.02.03 (002), 02.08 (002), 05.10.02 (016)
258	Sims, Lynn	01.02.03 (002), 03.05 (008), 03.08 (011), 05.10.02 (016), 05.12.08 (001), 06.09 (013), 07 (001), 08.01 (001)
259	Dunning, Dirk	05.10.02 (002), 05.10.02 (022), 06.01 (011), 06.01 (016), 06.03 (008), 06.09 (009), 08.05.01 (003), 08.06 (006)
260	Antilla, Everett	02.06 (001), 03.05 (008), 04.03 (001), 05.12 (001)
261	Ferguson, Ken	01.01.01.02 (006), 01.02.03 (002), 02.08 (047), 03.05.05 (002), 03.06 (001)
262	Leistiko, Ron	02.04 (001), 03.08 (001), 03.08 (011), 04.03 (001), 05.10.02 (016), 05.11.02 (001), 05.11.03 (025), 05.12.03 (001), 05.12.06 (002), 05.13 (001)
263	Reitnour, Michael	01.02.03 (002), 02.01 (026), 04.03 (001), 04.03.01 (019),
263	Reitnour, Michael	05.12 (001), 05.12.07.01 (002)
264	Klein, Robin	02.04 (010), 03.07 (003), 05.09 (001), 05.10 (023), 05.11.02 (001), 05.12.08 (001), 05.18.04 (002), 06.02 (028), 06.05 (016), 06.09 (013)
265	Morse, Macy	01.01.01.02 (006), 03.05 (008), 04.03 (001), 05.09 (003), 05.10 (021), 05.12.06 (003), 06.06 (003), 07.04 (001), 08.03.01 (005), 08.03.01 (008), 08.05.08 (001)
266	Lambert Holenstein, Kathryn (Cherie)	02.06 (001), 04.03 (001), 06.07 (001)
267	Sutton, Thomas B.	02.08 (020)
268	Fruing, John	09.01 (004)
268	Knight, Paige	09.01 (004)
268	Porter, Lynn	09.01 (004)
268	Questions and Answers, Portland, OR Evenin	09.01 (004)
268	Teuksbury, Ross	09.01 (004)
269	Belsey, Richard	01.01.01.01 (004), 02.03 (005), 02.03 (024), 04.04 (008),

		05.10 (029), 05.10.01 (004), 05.10.02 (002), 05.10.02 (016), 05.10.02 (017), 05.13 (005), 05.12.07.01 (001) 05.12.07.01 (002), 05.12.08 (001), 06.05 (001), 06.07 (001), 08.03.01 (013), 08.04 (001)
270	Knight, Paige	01.01.01.01 (022), 02.01 (023), 02.06 (001), 02.08 (002), 03.01 (001), 03.01 (008), 03.08 (012), 04.03 (001), 05.09 (002), 05.10 (021), 05.10 (055), 05.11.03 (003), 05.15 (024), 05.16 (001), 05.19 (004), 06.05 (011), 06.05 (016), 06.05 (030)
271	Acuff, Brian	05.12.06 (002)
272	Tewksbury, Ross	01.02 (001), 05.11.02 (001), 05.12.06 (002), 06.03.01 (001)
273	Penfield, Janet	08.03.01 (008)
274	Sutton, Barry	03.05.05 (003)
275	Olson, Lynn	06.09 (007)
276	Bellman-Cruz, Laurie J.	08.04 (009), 08.04 (010), 08.04 (020), 08.04 (021), 08.05.04 (002)
277	Eddy, David C	05.10.01 (004), 08.03.01 (009), 08.03.01 (011), 08.04 (010),
277	Eddy, David C	08.04 (020)
278	McFarlane, Harold F.	01.01.01.01 (002), 01.01.02 (007), 06.05 (002)
279	Davison, David I.	08.04 (010), 08.04 (014), 08.04 (018), 08.04 (021), 08.05.05 (002), 08.05.06 (005), 08.05.06 (006), 08.05.06 (027), 08.05.06 (032)
280	Downey, Patricia	02.07 (002), 03.08 (011), 08.03.01 (008), 08.04 (008), 08.04 (009), 08.04 (014)
281	Smith, Desmond F.	02.07 (002), 03.08 (011), 08.03.01 (008), 08.04 (008), 08.04 (009), 08.04 (014)
282	Heilman, Paul E.	02.07 (002), 03.08 (011), 08.03.01 (008), 08.04 (008), 08.04 (009), 08.04 (014)
283	Porter, Lynn	02.07 (002), 03.08 (011), 08.03.01 (008), 08.04 (008), 08.04 (009), 08.04 (014)
284	Somers-Gulsvig, Julie A.	02.07 (002), 03.08 (011), 08.03.01 (008), 08.04 (008), 08.04 (009), 08.04 (014)
285	Boehm, Mark A.	02.07 (002), 03.08 (011), 08.03.01 (008), 08.04 (008), 08.04 (009), 08.04 (014)
286	Altier, Leslie	02.07 (002), 03.08 (011), 08.03.01 (008), 08.04 (008), 08.04 (009), 08.04 (014)
287	Johnson, Barry L.	09 (021)
288	Foster, Nicki L.	01.01.01.01 (022), 01.01.01.02 (006), 05.12.08 (002)
289	Smith, Tony	03.08 (010)
290	Wilcox, Bernard	03.05.05 (003)
291	Meigs, Marilyn F.	02.04 (004), 04.03 (027), 06.02 (010)
292	Springer, Elizabeth	03.04 (021), 05.04 (020), 05.10 (066), 05.10.02 (016), 05.11 (001), 05.12.03 (003), 08.01 (001), 08.03.01 (005), 08.04 (010), 08.05.06 (008)
293	Oesterhaus, Carole L.	08.01 (005), 08.03.05 (001), 08.04 (021)
294	Anonymous	01.01.01.02 (003), 02.06 (003), 02.06 (016), 05.09 (018), 05.12 (001), 05.12.03 (002), 05.12.06 (002), 05.13 (001), 05.13.04 (001), 06.02 (011)
295	Lee, James	02.07 (001), 02.07 (012)
296	Ulbright, Edgar P.	02.01 (026), 02.04 (002)
297	Baldwin, Paul	02.06 (037), 02.07 (012), 03.08 (012), 05.12 (001), 05.13 (001), 06.09 (013)
297	Canfield, Kerry	02.06 (037), 02.07 (012), 03.08 (012), 05.12 (001), 05.13 (001), 06.09 (013)

297	Crandall, Kathryn	02.06 (037), 02.07 (012), 03.08 (012), 05.12 (001), 05.13 (001), 06.09 (013)
297	Critchley, Mel	02.06 (037), 02.07 (012), 03.08 (012), 05.12 (001), 05.13 (001), 06.09 (013)
297	Dyson, Jessica	02.06 (037), 02.07 (012), 03.08 (012), 05.12 (001), 05.13 (001), 06.09 (013)
297	Gibbs, Dominic	02.06 (037), 02.07 (012), 03.08 (012), 05.12 (001), 05.13 (001), 06.09 (013)
297	Harding, Hilary	02.06 (037), 02.07 (012), 03.08 (012), 05.12 (001), 05.13 (001), 06.09 (013)
297	Lang, Lance	02.06 (037), 02.07 (012), 03.08 (012), 05.12 (001), 05.13 (001), 06.09 (013)
297	Larson, Jim	02.06 (037), 02.07 (012), 03.08 (012), 05.12 (001), 05.13 (001), 06.09 (013)
297	Pollet, Gerald	02.06 (037), 02.07 (012), 03.08 (012), 05.12 (001), 05.13 (001), 06.09 (013)
297	Questions and Answers, Seattle, WA Afterno	02.06 (037), 02.07 (012), 03.08 (012), 05.12 (001), 05.13 (001), 06.09 (013)
297	Slatin, Alfred	02.06 (037), 02.07 (012), 03.08 (012), 05.12 (001), 05.13 (001), 06.09 (013)
297	Surielo, Carrie	02.06 (037), 02.07 (012), 03.08 (012), 05.12 (001), 05.13 (001), 06.09 (013)
297	Ulbright, Edgar	02.06 (037), 02.07 (012), 03.08 (012), 05.12 (001), 05.13 (001), 06.09 (013)
297	Willcox, Bernard	02.06 (037), 02.07 (012), 03.08 (012), 05.12 (001), 05.13 (001), 06.09 (013)
297	Wilson, George	02.06 (037), 02.07 (012), 03.08 (012), 05.12 (001),
297	Wilson, George	05.13 (001), 06.09 (013)
298	Baldwin, Paul	02.07 (012), 02.08 (045), 03.03 (008)
299	Noland, Jane	01.01.01 (002), 01.01.01.02 (006), 02.07 (001), 03.04 (014), 05.09 (001), 05.10.01 (005), 05.11.02 (006), 05.12 (001), 05.12.06 (002), 05.12.07.01 (002), 05.13.04 (001), 06.09 (013)
300	Meigs, Marilyn F.	04.03 (027)
301	Pollet, Gerald	01.01.01.01 (015), 03.04 (014), 04.03 (005), 04.03 (064), 05.10.02 (003), 05.11.02 (006), 05.11.02 (007), 05.12 (001), 05.12.03 (002), 06.09 (014), 08.03.01 (008), 08.04 (016), 08.05.06 (008)
302	Crandall, Kathryn	02.03 (024), 02.07 (012), 04.03 (055), 05.10 (022), 05.10.02 (017), 06.09 (013), 08.03.01 (003), 08.03.01 (008), 08.03.01 (014), 08.03.05 (001)
303	Stohr, Joe	01.01.01.01 (042), 02.08 (052), 03.07 (003), 05.09 (014), 06.02 (005), 08.01 (002), 08.01 (004), 08.01 (005), 08.03.01 (015)
304	Larson, Jim	02.07 (012), 05.08.02 (010)
305	Lang, Lance	02.06 (037), 03.03 (008), 04.03 (001), 06.09 (013)
306	Ulbright, Edgar P.	02.04 (060), 04.03 (001), 05.09 (001), 05.10.02 (007)
307	Wilson, George	01.01.01.01 (022), 01.02.01 (003), 02.07 (012), 02.08 (002), 03.03 (008), 05.11.02 (006), 05.12.07.01 (002), 08.01 (001)
308	Harding, Hilary	02.07 (012)
309	Species, Scott	02.04 (002), 03.08 (010), 06.07 (011)
310	Johnston, Anne	03.05 (018), 03.08 (011), 04.03 (001), 05.10.02 (016),

06.09 (013)
311 Dyson, Jessica 02.07 (012), 02.08 (002), 03.02 (003), 08.04 (010),
08.04 (014), 08.04 (016)
312 Gleysteen, Rod 02.07 (012), 03.03 (002), 03.07 (003), 06.06 (003)
313 Zepeda, Barbara 02.06 (010), 03.01 (001), 03.08 (008), 07.04 (004),
08.05.11 (004)
314 Canfield, Kerry 03.08 (012), 04.03 (027), 05.12.03 (002), 05.13 (001),
314 Canfield, Kerry 06.09 (013)
315 Quiakana, Marcus 01.02.01 (005), 02.06 (004), 03.03 (008), 05.10.02 (007),
07.04 (004)
316 Donnelly, Tom 02.04 (010), 03.03 (008), 05.16 (005), 08.03.01 (012),
09 (010)
317 Straw, Owen 03.08 (013)
318 Kain, Helene 08.04 (010)
319 Anonymous 02.07 (001)
320 Bryant, Chris 03.08 (013)
321 Mohtiak, Dan 03.08 (013)
322 Wiles, B. 08.01 (002)
323 Indeterminate, Andrew A. 08.03.01 (005), 08.04 (010), 08.05.03 (003), 08.05.06 (027)
323 Indeterminate, Patricia L. 08.03.01 (005), 08.04 (010), 08.05.03 (003), 08.05.06 (027)
324 Adrian, Jim 01.02.03 (002), 08.01 (002), 08.03.05 (006)
325 Southland, Robert E. 05.19 (011)
326 Diehl, Don 02.08 (001), 03.01 (001)
327 Bachaud, J. D. 01.02.01.02 (006)
328 Gardner, Jeanne 02.06 (001), 06.04 (005)
329 Billings, Josh 02.07 (012), 04.04 (008), 08.03.01 (001), 08.04 (001)
330 Best, Karen 08.01 (001), 08.04 (010), 08.04 (014), 08.04 (021),
08.05.03 (003)
331 Stone, Bettie J. 04.01 (005), 05.10.02 (017)
332 Paulsen, William S. 08.04 (010), 08.04 (014)
333 Pocuis, D. Leo 08.04 (010)
334 Haney, Richard 08.04 (010)
335 Theriot, Pierre 05.12 (001), 08.01 (004), 08.01 (005), 08.04 (001)
336 Haney, Mary 08.04 (010), 08.05.06 (005)
337 Williams, Leroy 05.11 (002), 06.07 (001), 08.04 (010), 08.04 (013),
08.05.04 (004), 08.05.04 (005)
338 Parypa, Andrew 08.01 (002), 08.01 (003)
339 Martin, Clarence 08.01 (001), 08.01 (002), 08.05.05 (005)
340 Graber, Henry 01.02.03 (002)
341 Graber, Dorothy 08.01 (001), 08.01 (002), 08.01 (005), 08.04 (010),
08.04 (013), 08.05.04 (005), 08.05.06 (005)
342 Johnson, Heather 08.01 (001), 08.04 (010), 08.04 (013), 08.04 (014),
08.04 (019)
343 Hoffman, Marcus 06.05 (011), 08.01 (001), 08.01 (004), 08.03.01 (012),
08.04 (010), 08.04 (013)
344 Manheimer, Elaine 02.04 (010), 03.05 (005), 03.08 (011), 04.01 (005),
06.05 (014), 06.05 (016), 08.01 (001), 08.03.01 (005),
08.03.01 (012), 08.03.01 (022), 08.04 (008), 08.04 (010),
08.04 (014), 08.04 (022), 08.04 (026), 08.05.01 (001),
08.05.01 (009), 08.05.03 (001), 08.05.05 (002),
08.05.06 (026), 08.05.06 (027), 08.05.10 (002),
08.05.10 (003), 08.05.10 (008), 08.06 (003), 08.06 (007),
08.06 (008), 08.06 (011), 08.06 (015), 08.06 (016)
345 Gegner, Bert 08.03.01 (016)
346 Banks, Virginia 02.06 (037), 08.01 (001), 08.01 (002), 08.04 (013),

		08.05.01 (009)
346	Biggs, Alan	02.06 (037), 08.01 (001), 08.01 (002), 08.04 (013), 08.05.01 (009)
346	Cooper, Ida Mae	02.06 (037), 08.01 (001), 08.01 (002), 08.04 (013), 08.05.01 (009)
346	Crandall, Kathryn	02.06 (037), 08.01 (001), 08.01 (002), 08.04 (013), 08.05.01 (009)
346	Dyson, Jessica	02.06 (037), 08.01 (001), 08.01 (002), 08.04 (013), 08.05.01 (009)
346	Gardner, Jenne	02.06 (037), 08.01 (001), 08.01 (002), 08.04 (013), 08.05.01 (009)
346	Heng, Neda	02.06 (037), 08.01 (001), 08.01 (002), 08.04 (013), 08.05.01 (009)
346	Lefcoski, Jack	02.06 (037), 08.01 (001), 08.01 (002), 08.04 (013), 08.05.01 (009)
346	Lingworthy, Mariel	02.06 (037), 08.01 (001), 08.01 (002), 08.04 (013),
346	Lingworthy, Mariel	08.05.01 (009)
346	Manheimer, Elaine	02.06 (037), 08.01 (001), 08.01 (002), 08.04 (013), 08.05.01 (009)
346	Osborne, Dan	02.06 (037), 08.01 (001), 08.01 (002), 08.04 (013), 08.05.01 (009)
346	Pollet, Gerald	02.06 (037), 08.01 (001), 08.01 (002), 08.04 (013), 08.05.01 (009)
346	Questions and Answers, Bremerton, WA Eveni	02.06 (037), 08.01 (001), 08.01 (002), 08.04 (013), 08.05.01 (009)
346	Rogers, Albert W.	02.06 (037), 08.01 (001), 08.01 (002), 08.04 (013), 08.05.01 (009)
346	Romane, Richard	02.06 (037), 08.01 (001), 08.01 (002), 08.04 (013), 08.05.01 (009)
346	Sorosua, Adrian	02.06 (037), 08.01 (001), 08.01 (002), 08.04 (013), 08.05.01 (009)
346	Swanson, Mary	02.06 (037), 08.01 (001), 08.01 (002), 08.04 (013), 08.05.01 (009)
346	Takaro, Tim	02.06 (037), 08.01 (001), 08.01 (002), 08.04 (013), 08.05.01 (009)
346	Turchik, Sandy	02.06 (037), 08.01 (001), 08.01 (002), 08.04 (013), 08.05.01 (009)
346	Zimsen, Andrew	02.06 (037), 08.01 (001), 08.01 (002), 08.04 (013), 08.05.01 (009)
346	Zimsen, William D.	02.06 (037), 08.01 (001), 08.01 (002), 08.04 (013), 08.05.01 (009)
347	Lefcoski, Jack	01.02.03 (002), 06.05 (020), 09.01 (004)
348	Gleysteen, Mary	02.01 (032), 02.07 (012), 04.01 (005), 08.03.01 (005), 08.03.01 (009), 08.03.01 (011)
349	Pollet, Gerald	02.07 (012), 04.03 (005), 05.09 (001), 05.10.01 (005), 05.10.02 (003), 05.12.06 (002), 08.03.01 (007), 08.05.06 (008)
350	Cooper, Ida May	01.02.03 (002), 08.01 (001)
351	Donnelly, Tom	01.02.01.02 (006), 02.04 (002), 02.04 (010), 02.06 (007), 08.03.01 (008), 08.05.06 (032)
352	Fessenden, Loyette	08.03.05 (001), 08.04 (021), 08.05.06 (025), 08.05.08 (001)
353	Babbitt, Maryellen	08.01 (001), 08.01 (004), 08.04 (010), 08.04 (013), 08.05.06 (031)
354	Dyson, Jessica	01.02.01.02 (006), 01.02.03 (002), 04.03 (005), 08.01 (001)

355	Crandall, Kathryn	04.03 (005), 04.04 (008), 06.01 (002), 06.09 (024), 08.01 (001), 08.03.01 (005), 08.03.01 (008), 08.04 (010)
356	Hudson, Jackie	08.01 (001), 08.03.01 (005)
357	Graves, Dallas J.	05.19 (001), 08.03.01 (009), 08.04 (016), 09.01 (004)
358	Haugen, Monna E.	02.07 (012), 04.01 (005), 06.02 (006), 06.05 (016), 08.03.01 (009), 08.05.06 (004), 08.05.06 (005), 08.05.06 (006)
359	Bellman Cruz, Laurie J.	08.03.05 (004), 08.04 (010), 08.04 (013), 08.04 (020), 08.04 (021), 08.05.04 (002)
360	Widener, Judith E.	01.01.01.01 (008), 04.03 (001), 05.11.03 (026), 06.09 (024)
361	Parker, Sharon	01.01.01.02 (006), 04.03 (001)
362	Podraza, Florence	08.05.06 (005)
363	Wells, Matthew	03.03 (008), 03.05 (008), 06.07 (011), 06.09 (013)
364	Bartschi, Earl	01.01.01.02 (006), 02.04 (060), 05.10.02 (016)
364	Bartschi, Glenna	01.01.01.02 (006), 02.04 (060), 05.10.02 (016)
365	Wells, Matthew	03.03 (008), 03.05 (008), 06.07 (011), 06.09 (013)
366	Cole, Christine N.	01.01.01.02 (006), 04.03 (001), 05.18.01 (002)
367	Questions and Answers, Pearl City, HI Afte	08.03.02 (001)
368	Aiken, Carol	02.08 (001), 03.08 (007), 08.01 (001), 08.03.05 (001)
369	Lucas, Pam	08.01 (001), 08.03.02 (001), 08.03.05 (001), 08.05.02 (003), 08.05.03 (003), 08.05.05 (001), 08.05.06 (005), 08.05.06 (023)
370	Abraham, Naomi	05.11.03 (026), 08.03.01 (011), 08.05.03 (003), 08.05.06 (005)
371	Anderson, Bruce S.	08.03.01 (004), 08.03.01 (012), 08.04 (010), 08.04 (011),
371	Anderson, Bruce S.	08.04 (012), 08.05.04 (006), 08.05.06 (005), 08.05.07 (002)
372	Nahoopii, Kawika	08.01 (001)
373	Iezza, Cora	08.03.01 (018), 08.03.02 (001), 08.05.02 (003), 08.05.04 (001), 08.05.04 (002)
374	Pollock, Marilyn	05.15 (003), 08.04 (010), 08.04 (013), 08.05.06 (023), 08.05.06 (031)
375	Malama, Kaonohi	08.01 (004), 08.04 (010), 08.05.06 (006)
376	Sutton, Richard	01.02.03 (002), 08.01 (001), 08.04 (010), 08.04 (013), 08.05.06 (025)
377	Osorio, Jonathan K.	08.01 (001), 08.03.01 (005), 08.03.05 (001), 08.04 (003), 08.05.02 (001), 08.05.02 (003)
378	Priolo, John	08.05.04 (001)
379	Lloyd, Alan	08.04 (010), 08.04 (018)
380	Kakalia, Clara	08.01 (001), 08.01 (002), 08.03.01 (011), 08.03.04 (001), 08.03.05 (001), 08.05.02 (003), 08.05.06 (005)
381	Souza, Jerry	08.01 (001), 08.03.01 (001), 08.04 (010)
382	Uyehara, Richard F.	08.01 (001), 08.01 (002)
383	Uyehara, Richard F.	08.01 (001), 08.01 (002)
384	Priolo, John	02.06 (001), 08.01 (002), 08.05.04 (001)
385	Gates, Marilyn	05.10 (010), 05.10 (021), 08.01 (001), 08.03.01 (001), 08.03.01 (004), 08.03.01 (005), 08.03.01 (007), 08.03.05 (002), 08.04 (010), 08.04 (029), 08.05.01 (008), 08.05.06 (005), 08.05.06 (022), 08.05.06 (031), 08.05.07 (001)
386	Gora, Francine H.	08.04 (010), 08.04 (020)
387	Shannon, Beth L.	08.01 (001)
388	Young, Tin Hu	04.05 (021), 08.04 (018)

389	Young, Tin Hu	08.04 (013), 08.04 (018)
390	Souza, Jerry G.	08.04 (010)
391	Pollock, Marilyn	08.03.01 (012), 08.04 (010), 08.04 (013), 08.05.06 (023), 08.05.06 (031)
392	Lucas, Pamela L.	02.08 (001), 08.01 (001), 08.03.05 (001), 08.05.06 (005),
392	Lucas, Pamela L.	08.05.06 (023)
393	Anderson, Bruce S.	08.01 (001), 08.04 (010), 08.04 (011), 08.05.04 (007), 08.05.07 (002)
394	Uyehara, Richard F.	08.01 (001), 08.01 (002)
395	Priolo, John	02.06 (001), 08.01 (002), 08.05.04 (001)
397	Morris, Evelyn	08.01 (001), 08.04 (010), 08.05.04 (002), 08.05.06 (007), 08.05.07 (002)
398	Kahunahana Castro Howell, Anna Marie	08.01 (001)
399	Toyama, Ben	08.01 (003)
400	Liborio, Kevin	08.01 (003)
401	McCoy, Nina R.	03.01 (001), 08.01 (001), 08.01 (005), 08.03.01 (004), 08.04 (010), 08.04 (011), 08.04 (013), 08.04 (014), 08.04 (015), 08.05.02 (004)
402	McCoy, Nina R.	03.08 (010)
403	Hubbard, Lela	08.01 (001), 08.01 (004), 08.03.01 (004), 08.03.01 (005), 08.03.01 (011), 08.03.05 (001), 08.05.11 (001)
404	Abraham, Naomi	08.01 (001)
405	Hangca, Luis	08.05.06 (025), 08.05.07 (005)
406	Talkington, John	08.03.01 (001), 08.03.01 (007), 08.03.05 (001)
407	Viglielmo, Frances	03.03 (008), 03.04 (011), 05.10.02 (017), 05.11.03 (001), 08.01 (001), 08.01 (004), 08.03.01 (005), 08.05.06 (005), 08.05.06 (025)
408	Hershinow, David	04.03 (001), 05.10.02 (016), 08.01 (001), 08.03.01 (011), 08.04 (008), 08.05.06 (023)
409	Kepano, Virginia A.	08.01 (001), 08.03.02 (001), 08.05.06 (005), 08.06 (001)
410	Nahoopii, Kawika	08.01 (001), 08.03.02 (001), 08.05.02 (002), 08.05.02 (003), 08.05.06 (005)
411	Jones, Michael	03.03 (008), 08.03.01 (022), 08.03.03 (001), 08.03.05 (002), 08.04 (001), 08.05.04 (002), 08.05.06 (007), 08.05.06 (027), 08.05.06 (028), 08.06 (005)
412	Priolo, John	08.05.04 (001)
413	Viglielmo, Frances	08.01 (004), 08.03.01 (005), 08.03.01 (011), 08.05.03 (003),
413	Viglielmo, Frances	08.05.06 (005), 08.05.06 (023), 08.05.06 (024), 08.05.06 (025)
414	McCoy, Nina R.	08.01 (004), 08.03.01 (001), 08.04 (010), 08.04 (011), 08.04 (013), 08.04 (014), 08.05.02 (004), 08.05.04 (003)
415	Jones, Michael	03.03 (008), 08.03.01 (022), 08.04 (001), 08.04 (020), 08.05.06 (007), 08.05.06 (028), 08.06 (005)
416	Uyehara, Richard	08.01 (001), 08.01 (002)
417	Hershinow, David	04.03 (001), 05.10.02 (016), 08.01 (001), 08.03.01 (011), 08.04 (008), 08.05.06 (023)
418	Kepano, Virginia A.	05.11.03 (026), 08.01 (001), 08.03.05 (002), 08.04 (010)
419	Talkington, John	08.03.01 (007), 08.03.05 (001), 08.04 (014), 08.05.06 (005)
420	Harrington, Philip S.	04.03 (001), 08.04 (010), 08.04 (013), 08.05.01 (009)
421	Wyndham, Harald	01.01.01.02 (006), 05.05 (017), 05.12 (001)
422	Canham, Susan	05.10 (006), 05.12.06 (002)
423	Harvey, William D.	01.02.01.02 (006), 03.02 (001)
424	Meigs, Marilyn F.	02.04 (004), 04.03 (027), 06.04 (010)

425	Leslie, Bret	02.04 (060), 04.01 (002), 04.03 (001), 04.03 (047), 05.10.01 (009), 06.05 (001), 06.05 (002), 08.01 (001), 08.03.03 (002), 08.04 (019)
426	Carricato, Mike	09.01 (004)
426	Flory, Brenda	09.01 (004)
426	Leslie, Bret	09.01 (004)
426	Questions and Answers, Arlington, VA After	09.01 (004)
427	Amber, Dave	09.01 (004)
427	Questions and Answers, Arlington, VA Eveni	09.01 (004)
427	Robinowitz, Mark	09.01 (004)
428	Bhide, Manohar	02.06 (028), 03.05.05 (007), 04.01 (005), 05.19 (001), 06.03.02 (003)
429	Robinson, Enders A.	05.10.01 (003), 06.09 (024)
430	Bhide, Manohar	02.06 (028), 03.05.05 (007), 05.19 (001), 06.03.02 (003), 06.09 (022)
431	Meigs, Marilyn F.	02.04 (004), 06.02 (010), 06.04 (010)
432	Robinowitz, Mark	02.01 (031), 02.06 (009), 02.06 (035), 03.03 (002), 03.08 (011), 04.03 (001), 05.10 (021), 05.10.01 (006), 07.01.03 (001)
433	Robinowitz, Mark	02.06 (009), 02.06 (035), 05.10 (021), 05.10 (048), 09.01 (004)
434	Bybee, R. V.	01.01.01.02 (006), 04.03 (001), 05.08.01 (014), 05.12 (001)
435	Vegwert, Mark	01.01.01.02 (006), 05.05 (017)
436	Erman, Laird	01.01.01.02 (006), 03.08 (010), 05.05 (017)
436	Harrin, Claudia	01.01.01.02 (006), 03.08 (010), 05.05 (017)
436	Schryrer, Laurie	01.01.01.02 (006), 03.08 (010), 05.05 (017)
436	White, Michael	01.01.01.02 (006), 03.08 (010), 05.05 (017)
436	White, Sue	01.01.01.02 (006), 03.08 (010), 05.05 (017)
436	Wilson, Randi	01.01.01.02 (006), 03.08 (010), 05.05 (017)
437	King, Neil	01.02.03 (002), 02.08 (002), 03.08 (010), 05.05 (017), 05.05.01 (016)
438	Farmer, Jack	03.03 (002), 03.08 (011), 05.18.04 (002)
439	Nichols, Mary H.	01.01.01.02 (011), 03.03 (008), 05.08.02 (001), 05.18.04 (002)
440	Jolley, Robert B.	01.01.01.01 (019), 01.01.01.02 (011), 01.02.03 (002), 05.10 (034)
441	O'Neal, James	02.07 (001)
442	Kocher, Warren	09.01 (004)
442	Nichols, Mary H	09.01 (004)
442	O'Neal, James	09.01 (004)
442	Questions and Answers, Kingston, TN Evenin	09.01 (004)
443	Jolley, Robert B.	01.01.01.01 (019), 01.01.01.02 (011), 01.02.03 (002), 05.10 (034)
444	Hedgepeth, Dave	09.01 (004)
444	Honicker, Jeannine	09.01 (004)
444	McCabe, Amy	09.01 (004)
444	Questions and Answers, Oak Ridge, TN After	09.01 (004)
444	Walters, Barbara	09.01 (004)
445	Smith, Gus	01.02.03 (002)
446	Smith, Ben L.	01.01.01.01 (029), 01.01.01.01 (045), 02.02 (002), 02.04 (037), 02.06 (025), 02.08 (025), 04.01 (005), 04.03 (001), 04.03 (003), 04.03.01 (005), 04.03.02.01 (001), 05.08.01 (004), 06.05 (028), 06.07 (001)
447	McCabe, Amy	01.01.01.02 (011), 02.03 (007), 02.04 (021), 02.04 (041), 02.07 (007), 03.04 (008), 04.03 (041),

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04.03.01 (001),
                                                                 04.03.01 (002), 04.03.01 (006), 05.04
(027), 05.05 (024),
                                                                 06.07 (015)
           448            Honicker, Jeannine                     03.07 (004), 04.03 (021), 06.07 (001),
08.04 (001)
           449            Hedgepeth, David                       01.01.01.01 (022), 01.01.01.02 (011),
03.08 (011),
                                                                 03.08 (012), 04.03 (001), 05.11.01 (008)
           450            Clark, G. Wayne                        03.08 (011), 06.07 (012), 06.09 (001)
           452            Lotts, A. L.                           04.03.02 (006), 04.05 (019), 05.12
(007), 06.07 (001),
                                                                 06.09 (005)
           453            Bryan, Mary                            02.03.01 (001), 02.03.01 (004), 02.04
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           454            Anonymous                              01.02.03 (002)
           455            Lotts, A. L.                           01.01.01.01 (029), 04.03 (032), 05.12.06
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           456            Stockard, Joe L.                       02.04 (019), 02.04 (062), 02.07 (001),
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           457            Todd, Lisa R.                          08.03.01 (011), 08.03.05 (001)
           458            Brelsford, C. K.                       01.01.01.02 (008), 01.02.03 (002), 05.10
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           459            Tauscher, Carol                        08.04 (010), 08.04 (013), 08.04 (021)
           461            Schrader, Kathi                        01.01.01.02 (006)
           462            Hilbert, H.                            01.01.01.02 (006)
           463            Helland, Karen K.                      01.02.01.02 (016), 03.07 (004), 03.08
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           464            Kessler, Marc A.                       01.01.01.01 (008), 01.02.03 (002), 04.03
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           465            Stewart, Margaret M.                   01.02.03 (002), 02.01 (023), 02.04
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           466            Alban, Susan                           01.01.01.02 (006)
           467            Alban, Daniel L.                       05.05 (017)
           468            Smith, Deanna                          01.02.03 (002), 02.08 (008), 03.07
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           469            Flinn, Alicia                          01.01.01.02 (006), 01.02.03 (002), 02.08
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           470            Hausrath, Anne                         01.02 (001), 03.03 (008), 05.10 (016)
           471            Gardunia, Brian                        01.02 (001), 04.03 (042)
           472            Hall, Dale O.                          08.05.06 (025)
           473            Jay, Elisabeth                         02.01 (003), 03.03 (008), 05.10 (006),
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           474            Bjornsen, Fritz                        01.01.01.01 (015), 01.01.01.02 (006),
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           475            Read, Heidi                            03.03 (008)
           476            Barringer, John                        01.01.01.02 (006), 01.02.03 (002)
           477            McElhinney, Gwynne                     04.03 (001), 05.05 (014), 05.05 (015),
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           478            Inzer, Jo                              02.01 (003), 03.02 (002), 05.05 (017),
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           480            Hausrath, Libby                        01.01.01.01 (022)
           481            Pumphrey, Laurel                       03.03 (008)
           482            Kresge, Michele                        01.02.03 (002), 05.10 (014), 06.01.01
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           483            Andrus, Cecil D.                       01.01.01.01 (004), 01.02.02 (001), 02.01
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484	Anonymous	08.01 (001)
485	Lafargue, Genevieve	08.01 (001)
486	Waber, Don	08.01 (004)
487	Scott, Frank	05.15 (002)
488	Driscoll, Cristine	08.01 (001)
489	Wallace, Ann	08.01 (001)
490	Lawrence, Linda	08.04 (010), 08.04 (013)
491	Gancio, Ann M.	08.01 (001)
492	Mathews, James C.	08.01 (001)
493	Wrenn, Jane	08.01 (001)
494	Irwin, Donald	01.01.01.01 (022)
495	Topik, Mrs. Fred	01.01.01.01 (022), 03.05 (007)
496	Fleming, Grace M.	08.01 (001), 08.04 (010)
497	Fauci, Joanie	01.01.01.01 (015), 01.01.01.01 (022), 01.01.01.02 (006), 02.01 (026), 04.01 (005), 04.03 (001), 04.03 (048), 05.10.01 (009), 06.07 (001), 07.04 (001)
498	Shim, Julie	08.05.06 (005)
499	Wiggins, Thomas	08.01 (001), 08.04 (010), 08.04 (014)
500	Johnson, Leroy	08.01 (002)
501	Tillett, Jackie	08.01 (001)
502	Anonymous	08.01 (001)
503	Anonymous	08.04 (010)
505	Bennett, Jackie	09.01 (004)
506	Murphy, David	08.01 (002)
508	Bubb, Adella M	08.01 (001)
509	Maginnis, Paul	08.01 (001)
510	Smith, Matt	02.08 (002), 03.03 (008), 03.07 (004), 05.05.01 (016),
510	Smith, Matt	05.08.01 (014), 05.08.01 (023), 07 (001)
511	Fredericks, Sally	05.05 (015), 05.08.01 (014), 08.01 (001), 08.03.01 (005), 08.04 (003)
512	Davis, Julie	03.05 (008), 05.12 (001), 08.01 (001)
512	Wornum, George	03.05 (008), 05.12 (001), 08.01 (001)
513	Newick, Richard C.	03.03 (008), 03.08 (020), 04.03.01 (017), 08.01 (001), 08.03.01 (001), 08.03.01 (005), 08.04 (013), 08.05.06 (004), 08.05.06 (031)
514	Weaver, Larry W.	09.01 (003)
515	Leming, Earl C.	01.01.01.01 (005), 01.02 (001), 02.01 (004), 02.01 (005), 02.01 (011), 02.02 (001), 02.03 (024), 02.08 (027), 03.06 (001), 04.03.01 (005), 04.03.01 (007), 05.04 (015), 05.04 (018), 05.05 (011), 05.05 (013), 05.05 (024), 05.05 (028), 05.06 (001), 05.06 (002), 05.08 (006), 05.08.01 (003), 05.08.01 (004), 05.08.01 (005), 05.08.01 (008), 05.08.01 (009), 05.08.01 (012), 05.08.01 (035), 05.08.01 (037), 05.08.01 (056), 05.11.02 (005), 05.12.05 (001), 05.12.07.01 (001), 05.19 (014), 06.01.01 (001), 06.02 (013), 06.02 (014), 06.03 (001), 06.03 (003), 06.03 (011), 06.03 (013), 06.07 (001), 08.04 (025)
516	Brimas, Patricia	05.10 (030)
516	Loosier, Carla	05.10 (030)
516	Questions and Answers, Savannah, GA Aftern	05.10 (030)
517	Brimas, Patricia A.	03.07 (004), 03.08 (010), 05.08.02 (005), 05.10.02 (007),

		06.09 (024)
518	Loosier, Carla	05.04 (019), 05.12.08 (001), 06.04.01 (002)
519	Everette, Amanda	02.01 (026), 02.07 (001), 03.08 (012), 04.01 (001), 04.01 (005), 04.03 (001), 04.03 (040), 06.01 (002), 06.02 (021), 06.05 (002), 06.07 (001), 06.09 (019), 07.01.02 (001)
520	Stuart, Ivan F.	05.12.04 (002)
521	Questions and Answers, Savannah, GA Evenin	09.01 (004)
522	Bailey, Dana	01.01.01.01 (005)
523	Hall, Jennifer	01.01.01.01 (005), 05.11.01 (005)
524	Johnson, Heather	05.16 (002)
525	Nasrah, Sister	02.08 (002)
526	Stuart, Ivan	05.12.04 (002)
527	Gump, Grace	03.08 (013), 08.01 (001)
528	Washington, Jim	08.04 (013), 08.04 (014), 08.04 (019)
529	Cook, Reena	08.04 (010), 08.04 (013), 08.04 (014), 08.05.06 (004)
530	Kuhlman, Henry	02.07 (001), 08.01 (001), 08.04 (014)
531	Hondo, Carolyn	01.01.01.02 (006), 03.01 (004), 07 (001)
532	Maikmus, Mary	01.01.01.01 (008), 01.01.01.02 (006), 01.02.01.02 (017), 05.05.01 (016), 05.12 (001)
533	Young, Diana G.	05.08.01 (014), 05.09 (001)
534	Young, Richard S.	01.01.01.02 (006), 05.12 (001)
535	Smith, Arthur P.	08.04 (010)
535	Smith, Ruth A.	08.04 (010)
536	Prater, George	05.05 (026), 08.04 (014)
537	Baldwin, Jane	01.01.01.02 (006), 05.10.02 (016), 05.11.03 (026), 05.15 (014)
538	Andrus, Cecil D.	01.01.01.01 (004), 01.02.02 (001), 02.01 (030), 02.03 (005), 02.03 (014), 02.04 (007), 02.04 (014), 02.04 (060), 02.08 (002), 03.01 (002), 03.01 (003), 03.04.01 (007), 04.03 (006), 04.03 (061), 05.05.01 (017), 05.08.01 (014), 05.10.01 (009), 05.10.02 (002), 05.10.02 (016), 05.10.02 (017), 05.15 (002), 05.18.04 (002), 06.05 (005), 06.09 (008), 07.02.01 (001), 08.03.01 (017)
539	Jay, Elisabeth	02.01 (003), 03.03 (008), 05.10 (006), 06.01 (002), 06.01.01 (001)
540	Pumphrey, Laurel	03.03 (008), 03.04 (018), 06.02 (015)
541	McElhinney, Gwynne	04.03 (001), 05.05 (014), 05.05 (015), 05.05.01 (034),
541	McElhinney, Gwynne	05.08.01 (014), 06.05 (002)
542	McCollen, Lyn	03.08 (010), 05.09 (001), 05.10 (031), 05.10.02 (003), 05.12 (001), 05.13.04 (001)
543	Inzer, Jo	03.02 (002), 05.05 (017), 05.10 (022), 05.10 (029), 05.10.02 (017), 05.11.03 (037), 06.01.01 (001), 06.07 (009)
544	Hall, Patricia	01.01.01.02 (006), 03.03 (008), 03.07 (003), 03.08 (010)
545	McEnaney, Robert	02.04 (001), 04.01 (005), 04.03 (001), 05.18.04 (001), 06.01 (005), 06.01.01 (001), 06.02 (007), 06.02 (032), 06.06 (006), 07.01 (004)
546	Boucher, Tracy	02.01 (002), 02.08 (034), 06.07 (001)
547	Brady, Marcia W.	03.08 (013), 05.08.01 (014), 06.09 (038)
548	Hall, Patricia	01.01.01.02 (006), 03.03 (008), 03.07 (003), 03.08 (010)
549	McEnaney, Robert	06.01.01 (001), 06.02 (007), 06.06 (002)
550	Boucher, Tracy	02.01 (002), 02.08 (034), 06.07 (001)
551	Bjornsen, Fritz	09.01 (004)
551	Questions and Answers, Boise, ID	09.01 (004)
552	Reppun, J. I. Frederick	06.09 (004), 08.01 (002), 08.05.01

		(005), 08.05.01 (006), 08.05.01 (007), 08.05.03 (006), 08.05.06 (005)
553	Doughty, Jane	02.08 (002), 04.03 (001), 05.10.02 (011), 06.09 (019), 08.04 (014), 08.04 (021), 08.05.04 (002), 08.05.06 (023)
554	Wilson, Kay W.	08.04 (010)
555	Horton, Patricia	08.04 (010)
555	Horton, Peter	08.04 (010)
556	Bowman, Tom	05.08.01 (014), 05.09 (001), 06.05 (002)
556	Lousen, Patti	05.08.01 (014), 05.09 (001), 06.05 (002)
557	Fisk, Edison S.	08.04 (010)
558	Leichtman, Kal	08.01 (005)
559	Aho, Margaret	03.04.01 (002), 03.05 (008), 05.08.01 (014), 05.12 (001), 06.05 (002)
560	O'Connor, John	01.01.01.02 (006), 01.02.02 (004), 03.07 (004), 05.04 (004),
560	O'Connor, John	05.08.01 (014), 05.08.01 (030), 05.11.03 (004)
560	O'Connor, Kacee	01.01.01.02 (006), 01.02.02 (004), 03.07 (004), 05.04 (004), 05.08.01 (014), 05.08.01 (030), 05.11.03 (004)
561	Proksa, Dennis J.	05.09 (001), 05.12 (001), 06.05 (002), 06.07 (010), 07.04 (004)
562	Neumann, David	06.04 (001)
563	Brinton, Cora	01.01.01 (002), 05.10.02 (006), 08.01 (001), 08.06 (020)
564	Schmidt, Gail	08.01 (004), 08.04 (010), 08.05.07 (001)
565	Berger, Bonnie	08.01 (001)
566	Martin, Terry	05.12 (001)
567	McDermott, Vincent	08.04 (013)
567	Swords, Marcella	08.04 (013)
568	Anonymous	02.08 (002)
569	Stewart, Brenda	08.01 (001)
570	Woodward, Karen	08.04 (010)
571	Tillett, Jackie	08.04 (010), 08.05.06 (005), 08.05.06 (022)
572	Halfhill, Tom	08.01 (001)
573	Hill, Wayne	08.01 (001)
574	Williams, Paul	01.01.01.01 (022)
575	Vanderbilt, Gloria	08.01 (001)
576	Mitchell, Thomas	08.04 (010)
577	Stori, Mary	01.01.01.02 (006)
578	Walters, Curtis	08.04 (018), 08.05.06 (005)
579	Shepard, Kathy	01.01.01.02 (006), 08.04 (010)
580	Hassell, Jack N.	08.04 (010)
581	Copley, Ralph	08.03.05 (001), 08.05.06 (030)
582	Campbell, Darrel	06.01 (002), 08.01 (001), 08.04 (001), 08.04 (008)
583	Champagne, Sherry	08.01 (001)
584	Mellen, Roz	08.04 (010)
585	Dove, Debby	08.01 (001), 08.01 (004), 08.05.06 (005)
586	Swanson, Mary	06.09 (013), 08.04 (011)
587	Dyson, Jessica	02.07 (012)
588	Neumann, David	06.05 (020)
589	Hobbs, Jack	03.04.01 (002), 03.05 (008), 03.05.03 (003), 04.03 (005), 04.03 (031), 06.06 (003), 08.01 (001), 08.04 (011), 08.04 (013), 08.05.06 (005)
590	Qualman, Ronald	01.01.01.02 (006), 08.04 (010), 08.04 (013)
591	Smithhart, Lorne R.	08.01 (001)
592	Detmer, Tami	08.04 (013)
593	Kay, Jerome	08.01 (002)
594	Dee, Keith	08.01 (001)
595	Broscious, Chuck	02.02 (003), 02.03 (025), 02.04 (032), 02.05 (001), 02.06 (021), 02.06 (024), 03.04 (011), 03.04 (018), 03.04.01 (001), 04.01 (001), 04.03 (001), 04.03.01 (014), 05.08.01 (021), 05.09 (008), 05.10.01 (009), 05.11.03 (001), 05.11.03 (013), 05.16 (003), 05.18.01 (008), 05.18.01 (009), 06.03.02 (001), 06.09 (002), 07.04

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596 Trigsted, Todd 02.01 (030), 02.07 (001)
597 Hanson, Gertie 01.01.01.01 (022), 01.01.01.02 (006),
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598 Anderson, Kristen 01.01.01.02 (006), 05.08.01 (014)
599 Schalck, D. Kate 05.05 (012), 05.05.01 (018), 05.05.01
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600 Hanson, Wes 03.05 (022), 03.08 (011), 05.05 (026),
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601 Swan, Kerrigan A. 01.01.01.01 (005), 01.01.01.02 (006),
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602 Clubbe, Brett 01.01.01.02 (006), 02.01 (030), 02.08
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603 Thompson, Blake 02.08 (042), 03.05.05 (003), 05.04
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604 Benson, Betty 01.01.01.02 (006)
605 Tockman, Jason 03.03 (002), 03.03 (008), 04.03.01
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606 Seaman, Thomas 04.03 (001), 04.03.01 (017)
607 Harvey-Marose, Kevin 01.01.01.02 (006), 02.04 (002), 03.05
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05.04 (002), 05.08.01 (014), 07.04 (001)
608 Broscious, Chuck 09.01 (004)
608 Questions and Answers, Moscow, ID Afternoon 09.01 (004)
609 Schalck, D. Kate 05.05.01 (016), 05.05.01 (018),
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610 Broscious, Chuck 01.01.01.01 (029), 01.02.02 (005),
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611	Read, Heidi	03.03 (008)
612	Windham, Craig	01.01.01.01 (005), 01.01.01.01 (022), 03.04 (010), 03.05 (009), 03.08 (011)
613	Ward, Sonne	06.04 (001)
614	Grizzle, Rodney P.	09.01 (004)
615	Abbott, Dinah	01.01.01.01 (005), 01.01.01.01 (022), 03.04 (010), 03.05 (009), 03.08 (011)
616	Kaiser, Justine	01.01.01.01 (005), 01.01.01.01 (022), 03.04 (010), 03.05 (009), 03.08 (011)
617	Wicks, Kirk	01.01.01.01 (005), 01.01.01.01 (022), 03.04 (010), 03.05 (009), 03.08 (011)
618	Cogan, Lindy	01.01.01.01 (005), 01.01.01.01 (022), 03.04 (010), 03.05 (009), 03.08 (011)
619	Hungerford, Clark	01.01.01.01 (005), 01.01.01.01 (022), 03.04 (010), 03.05 (009), 03.08 (011)
620	Owen, Elizabeth	01.01.01.01 (005), 01.01.01.01 (022), 03.04 (010), 03.05 (009), 03.08 (011), 05.12.08 (001), 06.05 (002)
621	Owen, Robert E.	01.01.01.01 (005), 01.01.01.01 (022), 03.04 (010), 03.05 (009), 03.08 (011)
622	Varricchio, Louis	01.01.02 (007)
623	Ward, Sonne	06.04 (001)
624	Higginbotham, Jan	03.03 (008), 04.03 (001), 06.09 (051)
625	Indeterminate, Illegible	01.01.01.01 (005), 01.01.01.01 (022), 03.04 (010),
625	Indeterminate, Illegible	03.05 (009), 03.08 (011)
626	Herring, J. Stephen	01.02.03 (002), 04.01 (005), 05.10 (002), 06.04.01 (002), 06.05 (003), 06.09 (006), 08.03.03 (005)
627	Beeman, Janel	01.01.01.01 (005), 01.01.01.01 (022), 03.04 (010), 03.05 (009), 03.08 (011)
628	Ashley, Reed	09.01 (004)
628	Benjamin, Dick	09.01 (004)
628	Cavanaugh, Fred	09.01 (004)
628	Green, Glenn	09.01 (004)
628	McWhorter, Don	09.01 (004)
628	O'Brien, Frank	09.01 (004)
628	Poe, W. Lee	09.01 (004)
628	Questions and Answers, N. Augusta, SC Eveni	09.01 (004)
628	Ward, Eric	09.01 (004)
628	Yandell, Forrest	09.01 (004)
629	Geddes, Rick L.	02.08 (019), 06.08 (001), 08.04 (003)
629	Questions and Answers, N. Augusta, SC After	02.08 (019), 06.08 (001), 08.04 (003)
629	Ronic, Bill	02.08 (019), 06.08 (001), 08.04 (003)
629	Sujka, Mike	02.08 (019), 06.08 (001), 08.04 (003)
630	Mowry, Authur	02.06 (023), 03.02 (002), 03.05 (008), 03.05.03 (003), 06.04 (001), 06.05 (003), 06.09 (017), 08.03.01 (004)
631	Costner, Brian	02.04 (042), 02.08 (016), 04.01 (001), 04.03 (001), 04.03.01 (023), 04.05 (001)

632	Geddes, Rick L.	02.01 (026), 04.01 (005), 04.03 (001), 06.09 (040)
633	O'Brien, Frank D.	02.02 (003), 02.04 (034), 06.07 (001)
634	Sipp, Pete	03.05 (007), 04.05 (011)
635	Ferrara, Russ	03.05 (008), 03.08 (003), 05.15 (017)
636	Green, Thomas	01.01.01.02 (008), 03.03 (008), 06.05 (016), 06.06 (003)
637	Yandell, Forrest	01.01.01.02 (008), 01.02.01.02 (006), 04.03.01 (017)
638	Walker, John	05.15 (016)
639	Sujka, Mike F.	01.02.03 (002)
640	Knotts, Ronald E.	01.02.01.02 (014), 03.05 (008), 04.01 (005)
641	Walker, John	05.15 (016)
642	Thurmond, Senator Strom	01.01.01.02 (008), 05.13.04 (002), 06.05 (016), 06.06 (003)
643	Matthews, R. S.	02.08 (023), 04.03 (057), 05.10 (027), 08.05.11 (002), 08.05.11 (003)
644	Carr, Luther J.	02.08 (042)
645	Price, Mariann	01.01.01.02 (011)
646	Walker, Authur	01.01.01.02 (011), 05.12 (001)
647	Smith, Clyde	06.09 (014)
648	Shane, Chris	01.01.01.02 (011), 05.19 (011)
649	Bradford, Rand	01.01.01.02 (011), 03.05 (007)
650	Shelton	01.01.01.02 (011), 05.10.02 (007)
651	Reed, Kristi	01.01.01.02 (014)
652	Vail, Stephen	01.01.01.02 (011), 01.02.01.02 (006), 05.12 (001)
653	Kotowicz Lloyd, Ann	01.01.01.02 (011)
654	Dickinson, Irene P	01.01.01.02 (011), 03.05 (007), 05.10.02 (016), 05.12 (001)
655	Janes, Pauline	01.01.01.02 (011)
656	Hill, Rhonda	01.01.01.02 (011)
657	Hardwick, Doris	05.10.02 (016)
658	Shootman, Charles	01.01.01.02 (011), 05.10.02 (007), 05.18.04 (002)
659	Rice, Kevin	01.01.01.02 (011)
660	Anonymous	01.01.01.02 (011)
661	Wright, Alden	01.01.01.02 (011)
662	Jordan, Evonne	02.07 (012)
663	Lynch, Janet	02.07 (012)
664	Johnson, Leroy	08.01 (002), 08.03.05 (006)
665	Larson, Lester	01.01.01.02 (011), 03.03 (005)
666	Hassell, Mike	01.01.01.02 (011), 06.09 (013)
667	Millagan, Heston	01.01.01.02 (011), 06.09 (013)
668	Hammons, Dorotha	01.01.01.02 (011)
669	Murphy, Jane	06.05 (016), 08.01 (001), 08.04 (014)
670	Hunt, Sandra	08.01 (001), 08.04 (010)
671	Witlock, Brenda	01.01.01.02 (011)
672	Fincher, Angie	01.01.01.02 (011)
673	Lewallen, Debra J.	01.01.01.02 (011), 05.10 (061)
674	Turnbill, Johnnie	01.01.01.02 (011)
675	Varriacchio, Louis	01.01.02 (007)
676	Begley, Roger	01.01.01.02 (011), 02.08 (002)
677	Stevenson, Elizabeth	01.01.01.02 (006), 05.08.01 (014)
678	McCombs, Patricia A.	08.04 (010)
679	Kelly, Elizabeth	01.01.01.01 (005), 01.01.01.01 (022), 03.04 (010), 03.05 (009), 03.08 (011)
680	Drewes, Kenneth N.	01.01.01.01 (002), 06.05 (016)
681	Blanchard, Florence K.	01.01.01.01 (005), 01.01.01.01 (022), 03.04 (010), 03.05 (009), 03.08 (011)
682	Gordon, Bart	01.01.01.01 (022), 04.01 (005), 04.03 (010), 04.03.01 (002), 06.09 (013)
683	Knight, Carol	01.01.01.01 (005), 01.01.01.01 (022), 03.04 (010), 03.05 (009), 03.08 (011)
684	Johnson, Helen G.	05.10.02 (007), 05.18.01 (002), 08.01 (001), 08.01 (005)
685	Duke, Beth M	05.11.03 (020), 08.04 (013)
686	Zimmerman, Madeline M.	08.01 (004), 08.04 (010), 08.04 (018)
687	Chretien, Rollin	06.04 (001)
688	Wessner, Peggy	01.01.01.01 (022)
689	Daly, Amelia	08.01 (001)
690	Roland, Russ	01.01.01.01 (022), 08.01 (001), 08.01 (002)
691	Minear, Karen	08.01 (001)
692	Delusignan, Dorian	01.01.01.01 (022), 08.01 (001)

693	Flory, Lynn	08.01 (001)
694	Minear, Valara	08.04 (010)
695	Pfeiffer, Pat	08.04 (010), 08.05.04 (002), 08.05.06 (023), 08.05.06 (030)
696	Ormsby, Bill	08.01 (002)
697	Pfeiffer, Arden	08.04 (010), 08.04 (013), 08.04 (018)
698	Lee, Janet	08.01 (004)
699	Cowles, Betty	08.01 (001)
700	Nakaoka, Charles	08.04 (013), 08.05.06 (005)
701	Chutter, R. J.	08.01 (002), 08.04 (010), 08.04 (013)
702	Nelns, Barbara	01.01.01.01 (022)
703	Camp, George	08.01 (001)
704	Howell, James	08.01 (001)
705	Gonzales, David	08.01 (001)
706	Paulson, Steve	02.01 (030), 05.08.01 (014), 05.10.02 (007), 05.16 (001), 06.05 (026)
707	Anderson, Kristen	02.01 (012), 02.01 (030), 02.06 (021), 05.05.01 (020), 05.10.02 (026), 07.04 (001)
707	Benson, Betty	02.01 (012), 02.01 (030), 02.06 (021), 05.05.01 (020), 05.10.02 (026), 07.04 (001)
707	Broscious, Chuck	02.01 (012), 02.01 (030), 02.06 (021), 05.05.01 (020), 05.10.02 (026), 07.04 (001)
707	Hulett, Chris	02.01 (012), 02.01 (030), 02.06 (021), 05.05.01 (020), 05.10.02 (026), 07.04 (001)
707	Pritchett, Jane	02.01 (012), 02.01 (030), 02.06 (021), 05.05.01 (020), 05.10.02 (026), 07.04 (001)
707	Questions and Answers, Moscow, ID. Evening	02.01 (012), 02.01 (030), 02.06 (021), 05.05.01 (020), 05.10.02 (026), 07.04 (001)
707	Seaman, Thomas	02.01 (012), 02.01 (030), 02.06 (021), 05.05.01 (020), 05.10.02 (026), 07.04 (001)
707	Thompson, Blake	02.01 (012), 02.01 (030), 02.06 (021), 05.05.01 (020), 05.10.02 (026), 07.04 (001)
707	Tockman, Jason	02.01 (012), 02.01 (030), 02.06 (021), 05.05.01 (020), 05.10.02 (026), 07.04 (001)
707	Trigsted, Todd	02.01 (012), 02.01 (030), 02.06 (021), 05.05.01 (020), 05.10.02 (026), 07.04 (001)
707	Wright, Russell	02.01 (012), 02.01 (030), 02.06 (021), 05.05.01 (020), 05.10.02 (026), 07.04 (001)
708	Meyers	01.01.01.01 (005), 01.01.01.01 (022), 03.04 (010),
708	Meyers	03.05 (009), 03.08 (011)
709	Rouirere, Carol	01.01.01.01 (005), 01.01.01.01 (022), 03.04 (010), 03.05 (009), 03.08 (011)
710	Smith, Susan	01.01.01.01 (005), 01.01.01.01 (022), 03.04 (010), 03.05 (009), 03.08 (011)
711	Wolf, Evelyn	01.01.01.01 (005), 01.01.01.01 (022), 03.04 (010), 03.05 (009), 03.08 (011)
712	Thompsen, Angle	01.01.01.01 (005), 01.01.01.01 (022), 03.04 (010), 03.05 (009), 03.08 (011)
713	Biggerstaff CMT, Tere	01.01.01.01 (005), 01.01.01.01 (022), 01.01.01.02 (006), 03.04 (010), 03.05 (009), 03.08 (011), 05.01 (003)
714	Christiansen, Niel	01.01.01.01 (002), 01.01.02 (001)
715	Davis, Elizabeth A.	04.03.01 (021), 06.05 (017)
716	Henderson, Clay P.	08.04 (010)
716	Henderson, Judy	08.04 (010)
717	Berenson, Janet	01.01.01.02 (006)
718	Melville, Chi	01.01.01.02 (006), 02.04 (025), 04.03 (001), 05.08.01 (014), 06.05 (002), 08.03.01 (004), 08.03.03 (002)
719	Cassidy, Deirdre	02.04 (010), 03.08 (007), 04.01 (001), 04.01 (005), 06.01 (002), 06.05 (002)

719	Voras, Phil	02.04 (010), 03.08 (007), 04.01 (001), 04.01 (005), 06.01 (002), 06.05 (002)
720	Spitzer, Debra A.	01.01.01.01 (005), 01.01.01.01 (022), 03.04 (010), 03.05 (009), 03.08 (011)
721	Ristow, Steven C.	02.03 (028), 02.04 (060), 02.08 (035), 04.03 (001)
722	Albin, Audrey	01.01.01.01 (005), 01.01.01.01 (022), 03.04 (010), 03.05 (009), 03.08 (011)
723	Geer, J.	01.01.01.01 (005), 01.01.01.01 (022), 03.04 (010), 03.05 (009), 03.08 (011)
724	Van Fleet, Janet	01.01.03 (001), 04.03 (001)
725	Feulner, Anne	08.04 (010), 08.04 (014), 08.05.06 (005)
725	Feulner, Herb	08.04 (010), 08.04 (014), 08.05.06 (005)
726	Streeter, Jack	01.02.03 (002), 02.08 (042), 03.05 (007), 03.05.04 (002)
727	Davidson, Ray C.	08.01 (004)
727	Davidson, Velda	08.01 (004)
728	De Spain, J.	02.03 (002), 03.08 (011), 05.12 (001)
729	Slansky, Cyril M.	01.02.01.02 (006), 03.05.05 (003), 06.02 (034), 06.08 (003), 08.03.05 (006)
730	Eichler, Robert F.	01.01.01.02 (005), 04.05 (004), 05.09 (007), 05.15 (005), 06.05 (007), 08.03.01 (005), 08.05.03 (005), 08.05.04 (005)
731	Cantrill, Dante	01.01.01.02 (006), 02.08 (002), 03.07 (004), 05.18.04 (002)
731	Cantrill, Judie	01.01.01.02 (006), 02.08 (002), 03.07 (004), 05.18.04 (002)
732	Williams, Emily	01.01.01.02 (006), 05.12 (001)
732	Williams, Terry	01.01.01.02 (006), 05.12 (001)
732	Williams, Theresa E.	01.01.01.02 (006), 05.12 (001)
733	Du Val, Elizabeth H.	01.01.01.01 (005), 01.02.03 (002), 04.01 (005), 04.03 (021), 04.05 (020)
734	Ahrens, Patti	01.01.01.01 (005), 01.01.01.01 (022), 03.04 (010), 03.05 (009), 03.08 (011)
735	Ahrens, Peter L.	01.01.01.01 (005), 01.01.01.01 (022), 03.04 (010), 03.05 (009), 03.08 (011)
736	Meltzer, Frank L.	03.08 (007)
737	Edelstein, Jan M.	01.01.01.02 (006), 04.01 (001), 04.03.01 (012), 05.10 (008), 05.18.01 (011), 06.05 (002), 06.05 (008)
738	Stein, Karen	02.07 (014), 02.08 (001), 03.05 (008), 05.04 (016), 06.02 (008)
739	Paroni, Genevieve M.	01.01.01.01 (004), 01.01.01.01 (005), 01.01.01.01 (029), 01.01.02 (001), 05.19 (003), 08.01 (002), 08.03.01 (006), 08.04 (007)
740	Ellis, Cathy	02.03 (002), 03.08 (011), 05.12 (001)
741	Longley, Bee	02.06 (001), 02.08 (001)
742	Reimers, Diane	01.02 (001), 03.05 (008), 04.03 (001), 05.12 (001)
743	Washburn, Charlotte	03.05 (008), 04.01 (005)
743	Washburn, James	03.05 (008), 04.01 (005)
744	Holt, Kenneth W.	02.01 (018), 02.03 (017), 02.08 (054), 02.08 (056), 04.04 (010), 05.02 (007), 05.02 (008), 05.02 (016), 05.02 (043), 05.10 (035), 05.10 (038), 05.10 (041), 05.10 (063), 05.10.02 (002), 05.10.02 (003), 05.10.02 (012)
745	Eiden, Max	02.04 (006), 04.01 (005), 05.05.01 (001), 05.08.01 (014), 06.07 (001), 08.03.01 (009)
746	Sharpe, Roberta R.	01.01.01.01 (005), 01.01.01.01 (022), 03.04 (010), 03.05 (009), 03.08 (011)
747	Bowlden, Scott	01.01.01.01 (005), 01.01.01.01 (022), 03.04 (010), 03.05 (009), 03.08 (011)
748	Record, Terry	01.01.01.01 (005), 01.01.01.01 (022),

		03.04 (010), 03.05 (009), 03.08 (011)
749	Pense, Margaret	01.01.01.01 (005), 01.01.01.01 (022), 03.04 (010), 03.05 (009), 03.08 (011)
750	Davis, Bruce	01.01.01.01 (005), 01.01.01.01 (022), 03.04 (010), 03.05 (009), 03.08 (011)
751	Blanchard, Tom	01.01.01.01 (008), 01.01.01.01 (022)
751	Harling, Leonard	01.01.01.01 (008), 01.01.01.01 (022)
751	House, Rupert	01.01.01.01 (008), 01.01.01.01 (022)
752	Burgess, Dave	01.01.01.01 (022), 03.03 (008), 04.03 (001), 05.08.01 (014), 05.10 (006)
752	Burgess, Kathy	01.01.01.01 (022), 03.03 (008), 04.03 (001), 05.08.01 (014), 05.10 (006)
753	Shroy, Edna E.	08.04 (010)
754	Nelson, Bruce	03.08 (010), 08.04 (010), 08.04 (013)
754	Nelson, Georgia	03.08 (010), 08.04 (010), 08.04 (013)
755	Meza, Patrece	01.01.02 (005)
756	Wanzenried, Fred	01.01.01.02 (006), 03.08 (011), 05.08.01 (014), 05.10 (006)
756	Wanzenried, Maxine	01.01.01.02 (006), 03.08 (011), 05.08.01 (014), 05.10 (006)
757	Cox, Chris	03.07 (003), 06.09 (013)
758	Seels, Phyllis	01.01.01.02 (011), 03.08 (011)
759	Quiggle, Nancy	01.01.01.02 (011), 03.08 (011)
760	Indeterminate, Mrs. Richard	01.02.03 (002), 03.08 (011)
760	Indeterminate, Richard L.	01.02.03 (002), 03.08 (011)
761	Klein, Richard F.	08.04 (018)
762	Myers, Joy	01.01.01.01 (008), 01.01.02 (001), 04.05 (016), 06.06 (003), 06.07 (001), 08.03.03 (002)
763	Page, Paul	01.01.01.01 (004), 01.01.01.01 (005), 01.01.01.01 (033), 08.01 (002), 08.01 (004), 08.05.06 (005), 08.05.11 (001)
764	Donnelly, Tom	03.03 (008), 03.08 (011), 05.09 (002), 08.03.01 (005), 08.03.01 (006), 08.03.01 (012), 08.04 (010), 08.05.01 (009), 08.05.06 (005), 08.05.06 (032), 09 (010)
765	Mann, Phylliss A.	01.02.01.02 (011), 08.01 (001), 08.04 (003), 08.04 (010), 08.05.05 (002), 08.05.06 (005), 08.05.07 (003), 08.05.07 (006), 08.05.07 (007), 08.05.07 (008)
766	Romane, Richard R.	08.05.06 (031)
767	Parker, Genevieve M.	08.04 (010), 08.04 (014), 08.05.06 (005)
768	Price, Jo	01.01.01.02 (006), 01.02.03 (002), 05.05 (017), 05.05.01 (016), 06.02 (033)
769	Hartman, Diania	02.03 (002), 03.08 (011), 05.12 (001)
770	Stratten, Betty	05.05.01 (016), 05.08.01 (014), 05.12 (001)
771	Eigabroadt, Earl E.	01.02.01.02 (020), 08.01 (002), 08.01 (004)
772	Commander, John C.	01.01.01.01 (038)
773	Loo, Henry	01.01.03 (001), 06.09 (003)
774	Canan, Craig	01.01.01.02 (011), 03.08 (011), 04.03 (001)
775	Essin, Christine	08.01 (001)
775	Hensley, Charlie	08.01 (001)
775	Indeterminate, Clint A.	08.01 (001)
775	Indeterminate, illegible	08.01 (001)
775	Indeterminate, Kathleen	08.01 (001)
775	Indeterminate, Michail	08.01 (001)
775	Indeterminate	08.01 (001)
775	Lachey, Jeanette	08.01 (001)
775	Lay, Amanda	08.01 (001)
775	Lindquist, Jeff	08.01 (001)
775	Marmes, Rondel	08.01 (001)
775	Nunnelley, Pamela J.	08.01 (001)
775	Pineus, Kari E.	08.01 (001)
775	Potts, Roxanne M.	08.01 (001)
775	Spiers, Christopher	08.01 (001)
775	Story, Marty	08.01 (001)
776	Nickerson, Jack E.	05.12 (001), 06.04 (001), 06.06 (003)
777	Malone, Terence W.	04.01 (005), 08.01 (002), 08.01 (004),

		08.04 (010), 08.04 (014), 08.04 (027), 08.05.07 (003)
778	Duplessis, Lee	02.08 (011), 05.10.02 (021)
779	Bradshaw, Lois	01.02.03 (002), 03.05 (007), 05.05 (017)
780	Melville, Loretta	01.01.01.01 (005), 01.01.01.01 (022), 03.04 (010), 03.05 (009), 03.08 (011)
781	Ingalls, Martha	01.01.01.01 (005), 01.01.01.01 (022), 03.04 (010), 03.05 (009), 03.08 (011)
782	Stauffer, Carrie L.	01.01.01.01 (005), 01.01.01.01 (022), 03.04 (010), 03.05 (009), 03.08 (011)
783	Wilkinson, Leah	01.01.01.01 (005), 01.01.01.01 (022), 03.04 (010), 03.05 (009), 03.08 (011)
784	Watteyne, Marilyn J.	01.01.01.01 (005), 01.02 (001), 03.04 (010), 03.05 (009), 03.08 (011)
785	Kennedy, Alexandra	01.01.01.01 (005), 01.01.01.01 (022), 03.04 (010), 03.05 (009), 03.08 (011)
786	Frazier, Marilyn	01.01.01.01 (005), 01.01.01.01 (022), 03.04 (010), 03.05 (009), 03.08 (011)
787	Marcus, Joyce	01.01.01.01 (005), 01.01.01.01 (022), 03.04 (010), 03.05 (009), 03.08 (011)
788	Wile, Charles H.	01.01.01.01 (005), 01.01.01.01 (022), 03.04 (010), 03.05 (009), 03.08 (011)
789	Flynn, Carol L.	01.01.01.02 (006), 05.08.01 (014), 06.07 (001)
790	Long, Everett	01.01.01.01 (022), 03.08 (011)
791	Ward, Sonne	06.04 (003)
792	Tewell, Joanna C.	01.02.01.02 (006), 01.02.03 (002), 04.05 (013), 05.10 (002), 05.13.01 (003)
793	Werth, Robert	01.01.01.01 (005), 01.01.01.01 (022), 03.04 (010), 03.05 (009), 03.08 (011)
794	Maestas, Herman	01.02.03 (002)
795	Gordon, Kathleen C.	04.03 (001), 05.12.08 (001)
796	Werth, Wendy	01.01.01.01 (005), 01.01.01.01 (022), 03.04 (010), 03.05 (009), 03.08 (011)
797	Meacham, Brian E.	01.01.01.01 (004), 01.02.01.02 (004), 01.02.03 (002), 03.05 (008), 04.03 (001), 05.13.04 (001), 05.19 (011), 06.01 (002), 06.02 (035), 06.04 (001), 07.04 (001)
798	Huber, Arlene	01.01.01.02 (006)
799	Missin, Meta	01.01.01.01 (022), 05.12 (001)
800	Leusch, Peter	01.01.01.02 (006), 05.12 (001), 07.04 (004)
801	Chaney, Charlotte	01.01.01.02 (006)
802	Hultsch, Roland A.	01.01.01.01 (004), 01.02.01.01 (005)
803	Hardinge, Jeep	01.01.01.01 (005), 01.02 (001), 03.04 (010), 03.05 (009), 03.08 (011)
804	Fraser, Bill	01.01.01.02 (006), 01.02.01.01 (002), 05.05.01 (016), 05.08.01 (014)
805	Saunders, Mary	01.01.01.02 (006), 02.04 (019), 05.09 (001)
806	Reaves, Whitfield	01.01.01.02 (006), 01.02.03 (002), 02.04 (001), 05.09 (001)
807	Moffett, Ed	01.01.01.02 (006), 02.04 (019), 05.09 (001)
808	Moffett, Jennifer	01.01.01.02 (006), 02.04 (019), 05.09 (001)
809	Roberts, Elizabeth A.	03.07 (004), 04.03 (001)
810	McCulloch, Betty	08.04 (013), 08.04 (014)
811	Fredricks, Randall C.	01.01.01.02 (006), 01.01.01.02 (024), 05.05 (017), 05.05.01 (016), 05.08.01 (014)
812	Kanouff, J. M.	01.01.01.01 (005), 01.01.01.01 (022), 03.04 (010), 03.05 (009), 03.08 (011)
813	Zayha, Al	01.01.01.01 (005), 01.01.01.01 (022),

03.04 (010),
813 Zayha, Al 03.05 (009), 03.08 (011)
814 Hieb, Mary 01.01.01.01 (005), 01.01.01.01 (022),
03.04 (010),
03.05 (009), 03.08 (011)
815 Lehrad, Klaus 01.01.01.01 (005), 01.01.01.01 (022),
03.04 (010),
03.05 (009), 03.08 (011)
816 Indeterminate, Illegible 01.01.01.01 (005), 01.01.01.01 (022),
03.04 (010),
03.05 (009), 03.08 (011)
817 Quapp, W. J. 01.02.03 (002), 06.04 (001)
818 Law, Joe M. 01.02.03 (002), 08.03.05 (006)
819 Fuller, Margaret 01.02.03 (002), 05.05.01 (016),
05.08.01 (014)
820 Hansen, Brent 01.01.01.01 (005), 01.01.01.01 (022),
03.04 (010),
03.05 (009), 03.08 (011)
821 Indeterminate, Pat 01.01.01.01 (005), 01.01.01.01 (022),
03.04 (010),
03.05 (009), 03.08 (011)
822 Little, Ben 01.01.01.01 (005), 01.01.01.01 (022),
03.04 (010),
03.05 (009), 03.08 (011)
823 McWhorter, Donald L. 02.01 (014), 02.03 (018), 04.03 (001),
04.03 (005),
04.04 (001), 05.10.02 (002), 05.15
(002), 08.04 (001),
08.05.11 (003), 08.05.11 (005)
824 Kocher, Ann 03.07 (003), 05.08.02 (009)
824 Kocher, Warren 03.07 (003), 05.08.02 (009)
825 Peelle, Robert 01.01.01.01 (002), 01.01.01.01 (004),
01.01.01.01 (022),
01.01.01.02 (033), 01.02 (001),
01.02.01.01 (001),
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(019), 03.04 (012),
03.05 (003), 03.07 (002), 05.08.01
(049), 05.08.03 (006),
05.09 (015), 05.10 (033), 05.10.01
(029), 05.10.02 (014),
05.10.02 (020), 05.12 (002), 05.12.08
(001), 05.15 (001),
05.15 (006), 05.18.01 (006), 05.19
(013), 06.02 (014),
06.03 (011), 06.05 (001), 06.07 (009),
06.09 (049)
826 Hinzelman, John E. 08.01 (002)
827 Van Zandt, Stephen C. 02.06 (006), 03.05 (007), 05.08.01
(014), 05.15 (003),
827 Van Zandt, Stephen C. 05.16 (007), 05.18.04 (002), 07.04 (004)
828 Wagner, Paul 01.01.01.01 (022), 01.01.01.02 (006),
03.08 (023),
05.05.01 (016), 05.08.01 (014), 05.09
(001),
07 (001)
828 Wagner, Shirley 01.01.01.01 (022), 01.01.01.02 (006),
03.08 (023),
05.05.01 (016), 05.08.01 (014), 05.09
(001),
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829 Bean, Lawrence 01.01.01.01 (022), 01.01.01.02 (006),
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830 Spencer, Harvey G. 01.01.01.01 (004), 02.08 (022)
831 Hart 01.01.01.01 (005), 01.01.01.01 (022),
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832 Murray, Alexander P. 02.01 (017), 02.04 (034), 02.08 (009),
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833 Drown, Lynn R. 01.01.01.01 (022), 01.01.01.02 (006),
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834	Hughes, William F.	05.05.01 (016)
835	Fredenburg, Ed	05.10.01 (030)
836	Stibal, Shirley	01.01.01.02 (006), 03.05 (007), 03.07 (004), 05.08.01 (014), 05.09 (003), 08.04 (016)
837	Bruce, Lera G.	01.02.03 (002), 05.08.01 (014)
838	Bodansky, David	05.02 (003), 05.10 (049), 05.15 (018), 06.05 (013)
839	Granlund, Win	08.04 (010), 08.05.06 (005)
840	Dicks, Norm	06.05 (021), 06.07 (001), 08.03.01 (020), 08.04 (010), 08.04 (024)
841	Ganus, Zada K.	08.01 (001)
842	Horton, Lynn B.	08.04 (014)
843	Strong, T. R.	08.01 (001), 08.01 (002), 08.01 (004)
844	Schmidt, Peter W.	02.01 (008), 04.04 (008), 05.09 (001), 06.07 (001), 08.04 (010), 08.04 (028)
845	Conway, John T.	02.01 (027), 02.04 (042), 02.08 (058), 04.03.02.01 (002)
846	Collins, Arthur L.	01.02.03 (002)
847	Tinno, Keith	01.01.01.01 (022), 01.01.01.01 (043), 01.01.01.02 (026), 01.01.02 (003), 01.02.03 (003), 02.03 (004), 02.04 (001), 02.04 (007), 02.04 (026), 02.04 (031), 02.04 (037), 02.04 (038), 02.04 (057), 02.06 (034), 02.06 (040), 02.08 (013), 02.08 (021), 02.08 (029), 02.08 (030), 03.07 (001), 03.07 (005), 03.07 (008), 03.08 (002), 03.08 (017), 04.03 (002), 04.03 (005), 04.03 (009), 04.03 (015), 04.03 (021), 04.03 (045), 04.03.01 (007), 04.03.01 (009), 04.03.01 (010), 04.03.01 (014), 04.03.01 (020), 04.03.01 (025), 04.03.02 (003), 04.03.02 (004), 04.03.02 (007), 04.05 (002), 04.05 (010), 05.01 (001), 05.01 (002), 05.02 (009), 05.02 (039), 05.02 (040), 05.02 (044), 05.02 (051), 05.03 (002), 05.03 (003), 05.03 (005), 05.03 (006), 05.03 (007), 05.04 (007), 05.06 (006), 05.06 (007), 05.06 (010), 05.06 (011), 05.06 (012), 05.08.01 (014), 05.08.01 (024), 05.08.01 (025), 05.08.01 (039), 05.08.03 (007), 05.08.03 (015), 05.09 (001), 05.09 (006), 05.10 (004), 05.10 (025), 05.10 (029), 05.10.02 (002), 05.11.02 (008), 05.11.03 (008), 05.12.06 (004), 05.13.02 (004), 05.15 (009), 05.15 (010), 05.15 (012), 05.15 (014), 05.15 (015), 05.15 (022), 06.04 (006), 06.05 (016), 06.07 (001), 06.08 (004), 06.08 (006), 06.09 (013), 07 (001), 07.01.04 (001), 08.03.03 (002), 08.03.03 (003), 08.05.06 (009), 08.05.06 (011), 08.05.11 (007)
848	Kadak, Andrew C.	02.03 (015), 06.08 (000), 06.08 (007)
849	Jones, Michael	02.01 (002), 02.01 (013), 05.10 (063), 05.11.03 (031),
849	Jones, Michael	05.19 (019), 08.03.01 (005), 08.03.01 (018), 08.03.01 (022), 08.03.03 (001), 08.03.03 (002), 08.03.05 (002), 08.04 (001), 08.04 (004), 08.04 (008), 08.04 (023),

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850	Duke, Judith C.	08.04 (010), 08.04 (013), 08.04 (014), 08.04 (020), 08.05.06 (005), 08.05.06 (032)
851	Lee, John G.	01.01.01.01 (005), 01.01.01.01 (022), 03.04 (010), 03.05 (009), 03.08 (011)
852	Herudon, Janet	01.01.01.02 (006), 08.04 (018)
853	Kellam, Janet K.	01.01.01.01 (005), 01.01.01.01 (022), 03.04 (010), 03.05 (009), 03.08 (011)
854	Swanson, John R.	05.19 (011)
855	Condit, Clay	05.11.01 (007)
856	Pinkerton, Brad	03.03 (008), 03.05 (024), 05.08.01 (014), 08.03.01 (005)
857	Yohe, Robert M.	05.03 (001)
858	Chapman, Frank R.	02.07 (005), 04.03 (001), 04.04.01 (005), 04.05 (012), 05.05.01 (005), 05.08.02 (003), 05.10.02 (016), 05.12 (001), 05.19 (011), 06.04 (001), 06.05 (001), 06.05 (011), 06.06 (003), 06.09 (013)
859	Taylor, Larry L.	03.05 (007), 06.04.01 (003), 06.04.01 (004), 06.05 (001), 06.09 (006), 08.03.01 (019), 08.04 (001)
860	Hanggi, Dennis M.	01.01.01.01 (022), 01.01.01.02 (006), 03.08 (023), 05.05.01 (016), 05.08.01 (014), 05.09 (001), 07 (001)
861	Duke, Robert A.	08.04 (010), 08.04 (013), 08.04 (014), 08.04 (020),
861	Duke, Robert A.	08.05.06 (005), 08.05.06 (032)
862	Wiethorn, Richard E.	01.01.01.02 (006), 01.01.01.02 (010), 01.02 (001), 03.07 (004), 05.05 (017), 05.08.01 (014), 05.10.02 (007), 06.06 (003)
863	Salazar, Hallette R.	06.09 (019), 08.01 (004), 08.04 (010)
864	Gleysteen, Mary	08.03.01 (005), 08.03.05 (001), 08.04 (008), 08.05.01 (009), 08.05.05 (001), 08.05.06 (025), 08.05.06 (030)
865	Anonymous	08.01 (004), 08.01 (005), 08.01 (008), 08.03.03 (005), 08.03.05 (006), 08.04 (005)
866	Dilley, Les	01.01.01.02 (006)
867	Carpenter, Michelle L.	08.01 (001), 08.04 (010), 08.04 (021), 08.05.05 (002)
868	Iwanski, Myron	01.01.01.01 (040), 02.01 (026), 05.10.02 (020), 05.12 (015)
869	Jull, Paula	01.01.01.01 (022), 01.01.01.02 (006), 04.01 (005)
870	Egan, Joseph R.	02.03 (024), 02.04 (033), 03.04 (008), 03.04 (013), 04.03.02.01 (004), 05.12.03 (002), 05.19 (001), 05.19 (002)
871	Kelly, Elizabeth	01.01.01.01 (005), 01.01.01.01 (022), 03.04 (010), 03.05 (009), 03.08 (011)
872	Burgess, Ila G.	01.01.01.02 (006), 02.08 (020), 03.04.01 (004), 05.08.01 (014), 05.12 (001), 06.07 (001)
873	Boswell, JoAnn	01.01.01.02 (006)
874	Jobe, Lowell A.	01.02.03 (002), 02.07 (001), 03.05.05 (006), 06.05 (001), 06.05 (026), 06.07 (001)

875	Peters, Gail	01.01.03 (001), 08.01 (001), 08.05.06 (031)
876	Hill, Debbie W.	01.01.01.02 (011), 01.02.03 (002), 03.08 (011)
877	Phillips, Keith E.	01.01.01.01 (042), 02.01 (024), 02.01 (025), 02.08 (010), 03.04 (001), 03.04 (008), 05.08.02 (012), 05.10 (018), 06.01 (011), 06.01 (017), 06.02 (029), 06.05 (005), 06.07 (001), 06.09 (028), 08.01 (001), 08.01 (004)
878	McConnell, M. R.	08.04 (010)
879	Trost, Charles H.	01.01.01.02 (006), 05.05.01 (016), 05.08.01 (014)
880	Smith, Vicki	01.01.01.01 (022), 01.01.01.02 (006), 03.08 (023),
880	Smith, Vicki	05.05.01 (016), 05.08.01 (014), 05.09 (001), 07 (001)
881	Kramer, Angela	05.10 (006), 05.10.02 (010), 05.19 (006), 05.19 (011), 08.04 (014)
882	Hanggi, Patricia	01.01.01.01 (022), 01.01.01.02 (006), 03.08 (023), 05.05.01 (016), 05.08.01 (014), 05.09 (001), 07 (001)
883	Buel, Austin	06.09 (019), 08.03.01 (007)
884	Kolb, Catherine	08.01 (001), 08.04 (010), 08.04 (014)
885	Zuvela, Anthony J.	08.01 (001)
886	Bray, Kris	08.01 (001), 08.05.06 (005)
887	Jordan, Thomas	08.01 (001), 08.04 (010)
888	Mitchell, Kelly	08.04 (010)
889	Matz, Joey	08.01 (001), 08.04 (014)
890	Esparza, Micah	08.04 (014)
891	Moore, Marie	08.04 (014)
892	Schmatjen, Jeff	08.01 (001), 08.04 (011)
893	Todd, Megan	08.04 (014)
894	Inabinett, Nathan	03.05 (007), 08.01 (001)
895	Stark, Jenny	08.01 (001), 08.04 (010)
896	Warren, Jeffrey	02.04 (024), 03.05 (002), 04.03 (001), 05.05.01 (001)
897	Condit, Clay	05.11.01 (007)
898	Devlin, Sally	05.12.07.01 (002), 05.15 (023)
899	McDonald, Timothy	05.12.06 (002), 05.12.07.01 (002), 05.13.02 (006), 08.03.01 (013)
900	Campbell, Carroll A.	02.02 (002), 04.03 (001), 06.05 (016), 06.06 (003)
901	Grover, Jean	03.05 (002), 08.01 (001), 08.03.05 (001)
902	Benjamin, Richard W.	02.01 (026), 02.02 (003), 04.03 (001), 04.04 (001), 06.04 (001), 06.05 (023), 08.03.01 (002)
903	Loosier, Carla S.	02.04 (010), 02.06 (033), 03.05 (007), 04.03 (049), 05.10.02 (007), 05.18 (002), 05.18.01 (002), 05.19 (004)
904	Wagner, Robert J.	01.01.01.01 (004), 01.02.01.01 (006)
905	Deegan, Robert F.	01.02.01.02 (006), 02.08 (006), 03.04 (007), 04.03 (027), 06.03 (001), 08.03.04 (001), 08.04 (010)
906	Bechtel, Dennis	01.01.01.02 (004), 01.02 (001), 02.06 (031), 04.03 (016), 04.03 (020), 05.12 (011)
907	Brailsford, Beatrice	01.02.01.02 (002), 01.02.03 (002), 02 (001), 02.01 (030), 02.03 (006), 02.04 (004), 02.04 (007), 02.06 (005), 03.07 (003), 03.07 (004), 04.01 (001), 04.03 (005), 04.03.01 (002), 04.03.01 (012), 04.03.01 (019), 05.10.02 (016), 06.01 (002), 06.01 (013), 06.05 (002), 06.06 (005), 07.01.05 (002), 08.03.03 (004), 09.01 (004)
908	Turner, Roger	01.01.01.02 (006), 02.03 (020), 02.04 (001), 02.06 (002), 02.06 (008), 02.08 (018), 02.08 (059), 03.05 (008),

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909 Morrison, Anita 01.01.01.02 (006)
910 Christ, Margaret 05.12 (001)
911 Pottenger, Bob 01.01.01.02 (006)
911 Pottenger, Gerri 01.01.01.02 (006)
912 Swenson, Pamela 05.05.01 (016), 05.08.01 (014), 05.12
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913 Knox, Harry W. 05.05.01 (016)
914 Day, Jon 08.05.06 (005)
915 Kelly, Mary T. 02.06 (034), 02.07 (006), 02.08 (057),
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916 George, Roxane 01.01.02 (006), 01.02 (001), 01.02.03
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916 Hulett, Chris 01.01.02 (006), 01.02 (001), 01.02.03
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917 Anderson, Anne M. 03.03 (002), 08.01 (001), 08.04 (014),
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917 Anderson, Craig P. 03.03 (002), 08.01 (001), 08.04 (014),
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918 Watson, Brian E. 03.05 (008), 03.08 (011), 08.03.01 (005)
919 Koslowsky, George 04.03 (001), 08.01 (007), 08.03.01
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920 Anonymous 01.01.01.02 (011)
921 Cooke, Kerry 06.05 (016)
922 Knapp, Wynne 04.03 (017)
923 Granlund, Win 08.04 (010), 08.05.06 (005)
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925	Kirk, Amy	01.01.01.01 (022), 01.01.01.02 (006), 03.08 (023), 05.05.01 (016), 05.08.01 (014), 05.09 (001), 07 (001)
926	Noland, Jane	02.04 (056), 05.04 (006), 05.11.02 (006), 05.12 (001), 05.12.03 (002), 05.13.02 (005)
927	Hall, David	01.01.01.01 (005), 02.04 (017), 04.03 (001), 05.12 (001),
928	Lancaster, Colleen	01.02.03 (002), 03.05 (006), 06.02 (006), 06.05 (016), 06.06 (003), 07 (001)
929	Frazier, M.	01.01.01.02 (006), 02.08 (009), 03.03 (008), 03.04 (014), 04.03.01 (017)
930	Pritchett, Jane R.	01.01.01.02 (006), 02.01 (019), 02.08 (009), 03.04 (002), 03.07 (003), 05.05 (017), 05.05.01 (016), 05.12 (001), 05.12 (005), 05.12 (010), 05.12.06 (002), 05.12.07.01 (002), 06.05 (017), 06.05 (029), 07.01.04 (002)
931	Schmidt, Peter W.	02.01 (008), 04.04 (008), 05.09 (001), 06.07 (001), 08.04 (010), 08.04 (028)
932	Collins, Arthur L.	01.02.03 (002)
933	Egan, Joseph R.	03.04 (013), 05.10 (002), 05.10.02 (002), 05.19 (001), 05.19 (002)
934	Witte, Beverly J.	02.07 (002), 03.08 (011), 08.03.01 (008), 08.04 (008),
934	Witte, Beverly J.	08.04 (009), 08.04 (014)
935	Kirkpatrick, B. J.	02.07 (002), 03.08 (011), 06.09 (013), 08.03.01 (008), 08.04 (008), 08.04 (009), 08.04 (014)
936	Butler, Julie	03.08 (009), 04.03.01 (001), 04.04 (008), 04.05 (009), 05.05.01 (015), 05.09 (008), 09.01 (004)
937	Sonnenberg, Mark	06.04 (001)
938	Egan, Joseph R.	02.01 (010), 05.10 (002), 05.10.02 (002), 05.12 (012), 05.13.02 (002), 05.19 (001), 05.19 (002)
939	Crawford, A. C.	02.08 (032), 03.08 (002), 05.12 (013), 05.19 (005), 05.19 (013), 06.02 (023), 06.03 (010), 06.08 (002), 06.08 (008), 06.09 (026), 06.09 (027), 06.09 (050)
940	Wright, Catherine	05.08.01 (014), 07.01.02 (004)
941	Bradshaw, Ken	03.03 (008), 05.08.01 (014), 07.02.06 (005)
942	Patheal, Colen	05.12 (001)
943	Teitge, Thomas	01.01.01.02 (006), 03.05 (007)
944	Beeman, Janel	01.02.03 (002), 05.09 (002), 05.12 (001)
945	Martin, Marilyn	01.02.03 (002), 05.12 (001)
946	Siegel, Taggart	01.01.01.02 (006), 05.08.01 (014), 05.09 (002), 05.12 (001)
947	Gilden, Stacy	01.01.01.02 (006), 03.05.05 (010), 03.08 (010), 04.03 (026), 05.08.01 (014), 05.12 (001), 06.09 (023), 06.09 (040), 06.09 (041), 08.03.01 (001), 08.03.03 (002)
948	Mix, Mary A.	05.08.01 (014), 05.09 (005), 05.12 (001)
949	Smith, Matt	02.08 (002), 03.03 (008), 03.03 (012), 05.05.01 (016), 05.08.01 (014), 05.08.01 (023)
950	Teasley, Marlese	01.01.01.02 (006), 03.07 (004), 05.19 (011), 06.05 (011)
951	Anthony, George	01.01.01.02 (025), 02.04 (005), 03.07 (004), 05.09 (002),

06.06 (003), 08.01 (002)
952 Blades, Jonnie 01.01.01.02 (006), 05.12 (001), 05.19
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953 Wills, Steve 03.07 (003), 05.08.01 (014)
954 Mills, John D. 01.01.01.01 (022), 05.05.01 (016),
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955 Allen, Bruce 03.03 (008), 05.12 (001), 06.04.02
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955 Allen, Bruce 08.03.03 (003)
956 Barrows, Bill 01.01.01.01 (008), 01.02.03 (002), 03.03
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08.03.01 (005)
957 Caccia, John 02.03 (019), 03.05 (007), 03.05 (008),
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958 Rogers, Kris 01.01.01.01 (022), 01.01.01.02 (006),
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959 Gorham, Sara 05.08.01 (014), 05.11.03 (020), 05.12
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960 Glaccum, Ellen 01.01.01.01 (022), 01.01.01.02 (006),
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961 Steffens, Veronica 01.01.01.02 (006)
962 Patheal, Helen 01.01.01.02 (006)
963 Berentz, Bob 03.05 (008), 03.07 (003), 05.08.01
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964 Fritzler, Loretta 01.02.03 (001), 03.05 (007), 03.08
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965 Kipping, David 01.01.01.01 (022), 06.06 (003), 08.03.03
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966 Keisel, Allison 01.01.01.01 (022), 03.05 (004), 05.05.01
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967 Potter, Martha 01.02.03 (002)
968 Stewart, Mark 03.03 (008), 08.04 (001)
969 Anderson, Hilary 01.01.01.02 (006), 05.10.02 (016)
970 Lenkner, Charles 02 (001), 03.07 (004), 03.08 (013),
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971 Stewart, Margaret M. 01.02.03 (002), 02.01 (023), 02.04
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972 Potter, Roderick 02.07 (004), 03.03 (008), 03.07 (003),
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973 Williams, Xenia 02.08 (002), 05.05 (015), 05.08.01 (014)
974 Walker, Amy 01.01.01.01 (022), 01.01.01.02 (006),
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975 Watson, Kelley 01.01.01.01 (039), 01.01.01.02 (006),
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975 Watson, Kelley 03.03 (008), 03.07 (003), 05.08.01
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976 Stewart, Margaret M. 01.01.01.01 (022), 02.08 (020), 04.01
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977 Lenker, John 03.05.05 (012)
978 Chisholm, Bill 01.01.01.01 (022), 01.01.01.01 (026),
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979 Rickards, Peter 02.08 (001), 02.08 (002), 03.03 (002),

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980 Chisholm, William K. 01.01.01.01 (022), 01.01.01.01 (026),
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981 Blanchard, Tom 01.01.01.02 (006), 02.04 (060), 03.03
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982 Scarborough, Leslie 01.01.01.02 (006), 05.08.01 (014)
983 Ulahwti 02.02 (003), 02.04 (002), 02.04 (060),
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984 Gouley, Richard 01.01.01.02 (006), 05.04 (014), 05.08.01
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985 Laverty, Denise 01.01.01.01 (022), 05.09 (001), 05.15
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986 Diepenbrock, Kathleen 03.05 (008), 04.03 (001), 05.12 (001),
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987 Thomas, Tim 01.01.01.02 (006), 05.05.01 (016),
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987 Thomas, Tim 05.15 (008)
988 Sherrerd, Bill 03.05 (007), 04.05 (018), 05.08.01
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989 Meyer, Richard 01.01.01.01 (022), 02.08 (002), 03.03
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990 Jaquet, Wendy 01.01.01.02 (006), 05.05 (015), 05.08.01
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991 Strausbaugh, Cindy 01.01.01.02 (006), 01.02.01.02 (006),
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992 Barrows, William F. 06.03 (002)
992 Cunningham, Don 06.03 (002)
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996 Barrows, William F. 01.01.01.02 (006), 01.02.01.02 (012),
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997 Laverty, Denise 01.01.01.01 (022), 05.09 (001), 05.15
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998 Hart, Marcia 01.01.01.01 (022), 01.01.01.02 (006),
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999 Wells, Matthew 03.03 (008), 03.05 (008), 06.07 (011),
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1000 Todd, Paul 01.01.01.01 (008), 03.08 (017), 05.09

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1001 Slifer, Betty 01.01.01.02 (006), 03.03 (008)
1002 Cole, Christine N. 01.01.01.02 (006), 04.03 (001), 05.18.01
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1003 Chandler, Asa 01.01.01.02 (006), 04.01 (001), 05.05.01
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1004 Kimmich, Scott 01.01.01.01 (005), 01.01.01.01 (022),
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1005 Borquist, Robert E. 08.03.05 (006), 08.04 (010), 08.05.06
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1006 Deegan, Robert F. 01.02.01.02 (006), 02.08 (006), 03.04
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1007 Baggett, Chrys 01.01.01.01 (004), 01.01.01.01 (022),
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1008 Logan, John A. 04.03 (047), 05.08.01 (015), 05.18.01
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1009 Lamotte, Christian 01.01.01.01 (005), 01.01.01.01 (022),
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1011 McCabe, Amy 01.01.01.02 (011), 02.03 (007), 02.04
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1012 Myers, Joy 01.01.01.01 (002), 01.01.01.02 (012),
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1013 McGrath, James 01.01.01.01 (001), 02.08 (009)
1014 Stennet, Clint 01.01.01.01 (022), 01.02 (001), 03.03
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1014 Stennet, Clint 05.05.01 (016), 05.08.01 (014), 05.18.04
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1015 Heckler, Hilde 05.08.01 (014), 05.12 (001), 08.01 (005)
1016 Bybee, R. V. 01.01.01.02 (006), 04.03 (001), 05.08.01
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1017 Wade, Marty 03.05 (029), 05.08.01 (014), 05.10.02
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1018 Wade, Marty 03.05 (029), 05.08.01 (014), 05.10.02
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1019 Shipley, Diana 01.01.01.01 (022), 01.01.01.02 (006),
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1020 Shipley, Diana Y. 01.01.01.01 (022), 01.01.01.02 (006),
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1021 Turner, Roger 01.01.01.01 (022), 02.01 (026), 02.03
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1022 Jayne, Jerry 03.08 (007), 05.06 (003), 05.06 (012),
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1023	Jayne, Gerald A.	05.06 (003), 05.06 (012), 05.19 (003)
1024	Turner, Roger	01.01.01.01 (022), 02.01 (026), 02.03 (008), 02.03 (022), 02.04 (001), 02.06 (030), 03.03 (008), 03.05 (008), 03.07 (004), 04.03 (001), 08.03.03 (002)
1025	Nickerson, Jack	05.05.01 (016), 05.11.03 (007), 05.11.03 (008), 08.01 (001)
1026	Kenney, Dick	01.02.03 (002), 02.07 (001), 03.05.05 (011), 06.05 (016)
1027	Beitel, George A.	01.02.03 (002)
1028	Beitel, George A.	01.02.03 (002)
1029	Ball, Lynn W.	05.06 (013)
1030	Ward, Sonne	06.04 (001)
1031	Rickards, Peter	01.01.01.01 (015), 01.01.01.01 (022), 01.02 (001), 02.01 (009), 03.08 (014), 03.08 (017), 05.08.01 (016), 05.11.03 (009), 05.11.03 (014), 05.11.03 (035), 06.03 (014), 06.05 (001), 06.07 (001)
1032	Rickards, Peter	02.03.01 (002), 05.08.01 (014), 05.08.01 (016), 05.10 (044),
1032	Rickards, Peter	05.10 (046), 05.10.02 (008), 05.11.03 (009), 05.11.03 (011), 05.11.03 (020), 05.15 (015), 07.02.01 (003), 07.04 (004), 08.05.06 (005)
1033	Duplessis, Lee	02.08 (002), 03.08 (011), 04.03 (001), 05.10 (029), 05.10.02 (002), 05.10.02 (007), 05.13.01 (001)
1034	Duplessis, Lee	02.08 (002), 03.08 (011), 04.03 (001), 05.10 (029), 05.10.02 (002), 05.10.02 (007), 05.13.01 (001)
1034	McDaniels, Trimelda	02.08 (002), 03.08 (011), 04.03 (001), 05.10 (029), 05.10.02 (002), 05.10.02 (007), 05.13.01 (001)
1035	Brailsford, Beatrice	01.01.01.02 (006), 01.02.01.02 (002), 01.02.03 (002), 02.07 (008), 02.08 (002), 02.08 (008), 02.08 (020), 03.07 (003), 03.07 (004), 04.01 (001), 04.03 (005), 04.03.01 (001), 04.03.01 (012), 04.03.01 (019), 04.04.01 (007), 06.04.01 (001), 06.05 (016), 07.01.05 (002), 09.01 (004)
1036	Kaufmann, Theresa M.	01.02.03 (002), 04.01 (001), 04.03 (001), 06.01 (005), 06.05 (002), 06.05 (016), 06.07 (001), 06.09 (042)
1037	Kaufmann, Theresa M.	01.02.03 (002), 04.01 (001), 04.03 (001), 06.01 (005), 06.05 (002), 06.05 (016), 06.07 (001), 06.09 (042)
1038	Rice, Chuck	01.01.01.01 (002), 01.01.02 (001)
1039	Rice, Charles M.	01.01.01.01 (002), 01.01.02 (001)
1040	Tanner, John B.	02.06 (039)
1041	Caldwell, Lindsey	05.10.01 (008)
1042	Drewes, Kenneth N.	07.01.01 (001), 08.03.05 (006)
1043	Horan, John R.	01.01.01.01 (029), 01.02.03 (001), 01.02.03 (002), 06.07 (001)
1044	Hayball, Brett	01.01.01.02 (006), 01.01.01.02 (026), 02.03 (009), 02.04 (007), 02.04 (031), 02.04 (038), 02.04 (055), 02.08 (013), 02.08 (026), 03.07 (001), 03.07 (008), 04.03 (015), 04.03 (037), 04.03 (052), 05.02 (039), 05.02 (044), 05.03 (002), 05.03 (006), 05.03 (007),
1044	Hayball, Brett	05.05.01 (036), 05.08.01 (014), 05.09 (001), 05.10.02 (017), 05.11.02 (008), 05.12.06

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1045 Hayball, Brett 01.01.01.02 (006), 01.01.01.02 (026),
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1046 Craig, Senator Larry E. 01.02.01.02 (013), 06.04 (008), 06.09
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1047 Schrade, Jeff 02.02 (005), 06.04 (008), 06.09 (030)

1048 Allen, Donald 01.01.01.01 (008), 03.05 (024), 03.08
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1049 McDaniels, Trimelda C. 02.04 (011), 03.04.01 (002), 03.08
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1050 Duplessis, Lee 02.04 (011), 03.04.01 (002), 03.08
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1050 McDaniels, Trimelda C. 02.04 (011), 03.04.01 (002), 03.08
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1051 Elle, Jean 01.01.01.01 (022), 03.08 (007), 03.08
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1052 Elle, Jean 01.01.01.02 (006), 03.08 (007), 03.08
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1053 Kempthorne, Dirk 03.01 (014), 06.06 (003), 07 (001)

1054 Kempthorne, Dirk 03.01 (014), 06.06 (003), 07 (001)

1055 Proksa, Margo 01.01.01.01 (005), 01.01.01.02 (006),
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1055 Proksa, Margo 03.04 (017), 03.07 (003), 03.08 (011),
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1056 Proksa, Margo 01.01.01.01 (005), 01.01.01.02 (006),
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1057 Wade, Mike 01.01.01.02 (006)

1058 Hensel, David 01.01.01.01 (022), 03.05 (007), 03.05
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1059 Hensel, David 01.01.01.01 (022), 02.04 (028), 03.05
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1060 Daly, Katherine R. 01.01.01.02 (006), 08.03.01 (001)

1061 Weeg, Steven 01.01.01.02 (006), 02.01 (029), 02.08
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1062 Skinner, Robert 01.01.01.02 (006), 01.02.03 (002),
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1063 Skinner, Robert L. 01.01.01.02 (006), 01.02.03 (002),
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1064 Tate, Deborah 01.01.01.01 (022), 01.01.01.02 (028),
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1065 Daly, Katherine R. 01.01.01.02 (006), 08.03.01 (001)

1066 Turner, Kaye 01.02.03 (002), 03.05 (008), 06.05 (002)

1067 Turner, Kaye 01.02.03 (002), 03.05 (008), 06.05 (002)

1068 Dold, Ann 05.11.03 (014)

1068 Questions and Answers, Idaho Falls, ID Afte 05.11.03 (014)

1068 Rickards, Peter 05.11.03 (014)

1068 Ward, Sonne 05.11.03 (014)

1069 Bates, Albert 04.03 (004), 04.03 (012)

1070 McDaniels, Trimelda C. 09.01 (004)

1070 Nickerson, Jack 09.01 (004)

1070 Proksa, Margo 09.01 (004)

1070 Questions and Answers, Idaho Falls, ID. Eve 09.01 (004)

1070 Rickards, Peter 09.01 (004)

1076 Barber, Brad T. 09.01 (010)

1077 McDonald, Timothy 05.12.06 (002), 05.12.07.01 (002),
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1080 Sanderson, Richard E. 01.02.01.01 (007), 02.01 (022), 03.04
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1080 Sanderson, Richard E. 05.19 (005), 05.19 (018), 06.02 (025),
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		06.07 (008), 06.09 (052), 06.09 (053),
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1081	Cogan, Lindy	01.02.03 (002)
1082	Koben, Marcia	01.01.01.02 (006)
1083	Rowe, Jennifer	01.01.01.01 (022)
1084	Stireman, James	05.19 (011)
1085	Record, Terry	01.01.01.01 (008), 01.01.01.01 (022)
1086	Harris, Lisa	01.01.01 (002), 08.01 (001)
1087	Sharpe, Roberta R.	01.01.01.01 (008), 01.02.03 (002), 03.04 (010), 03.05 (009)
1088	Moredock, Elizabeth	01.01.01.02 (011), 05.10.02 (008)
1089	Heft, Philip	03.07 (003)
1090	Roberts, Randy	01.01.01.02 (011), 02.06 (001), 06.09 (013)
1091	Knight, Carol	01.01.01.01 (008), 03.04 (010), 03.07 (004)
1092	Jones, Eleanor	08.04 (010), 08.04 (015)
1093	Connelly, Joan	05.12.06 (002), 08.01 (001), 08.03.01 (005)
1094	Van Every, Robert	01.01.01.02 (006)
1095	Harvey, Ian	01.01.01.02 (006), 05.01 (003)
1096	Watkins, Karen	01.01.01.02 (011), 05.10.02 (007)
1097	Finn, Ellen	08.04 (010)
1098	Bradley, Edith	03.05 (007), 05.16 (007)
1099	Green, Jody	08.01 (004), 08.04 (018), 08.05.06 (005)
1100	Flint, William	01.01.01.02 (006)
1101	Stone, Gary	05.08.01 (014), 05.19 (011)
1102	Holce, Leah	01.01.01.02 (006), 03.05 (002), 05.11.03 (012), 05.12 (001)
1103	Overman, Robert	04.01 (005), 06.04 (001), 06.05 (001),
		06.06 (008),
		06.07 (007), 07 (001)
1104	Michael, Frank	01.01.01.01 (022), 01.01.01.02 (011)
1105	Kerrigan, Laurie	01.01.01.02 (006), 04.03 (001)
1106	Saccoman, Joe	01.01.01.02 (006), 05.08.01 (014), 05.10 (006)
1107	Powers, Julian	02.06 (001), 06.09 (013)
1108	Glasseir, Rox	08.01 (004), 08.04 (013), 08.05.06 (030)
1109	Van Der Harst, John	01.02.03 (002)
1110	Palmer, Doug	08.04 (010), 08.04 (014)
1111	Saccoman, Bill	01.01.01.02 (006)
1111	Saccoman, Patty	01.01.01.02 (006)
1112	Little, Glen	06.05 (001)
1113	Shotwell, Evelyn	01.01.01.02 (006)
1114	Branter, Keith	01.02.03 (002)
1115	Hungerford, Clark	01.02.03 (002)
1116	Gyorke, Joseph	01.01.01.02 (011)
1119	Costner, Brian	01.01.01.01 (015), 02.01 (028), 02.04 (002), 02.04 (007),
		02.04 (009), 02.04 (042), 03.04 (004),
		04.01 (001),
		04.01 (004), 04.03 (001), 06.09 (044)
1120	Sanderson, Richard E.	01.02.01.01 (007), 02.01 (022), 03.04 (005), 03.04 (006),
		03.04 (022), 03.05 (028), 03.07 (006),
		03.07 (007),
		03.08 (018), 04.03 (043), 04.03 (063),
		04.03.02.01 (003),
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1120 Sanderson, Richard E. 05.18.01 (013), 05.18.01 (014), 05.18.05
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07.01.04 (003),
07.03 (001), 07.03 (002), 08.06 (014),
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08.06 (019)
1122 Gauer, Madelon 05.08.01 (030), 06.05 (016)
1122 Gauer, Paul 05.08.01 (030), 06.05 (016)
1123 Horton, Lynn B. 08.04 (014) 03.04 (022), 03.05 (028),
03.07 (006), 03.07 (007),
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1120 Sanderson, Richard E. 05.18.01 (013), 05.18.01 (014), 05.18.05
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08.06 (019)
1122 Gauer, Madelon 05.08.01 (030), 06.05 (016)
1122 Gauer, Paul 05.08.01 (030), 06.05 (016)
1123 Horton, Lynn B. 08.04 (014)
1125 Knapp, Malcolm R. 09.01 (010)
1126 Sanderson, Richard E. 01.02.01.01 (007), 02.01 (022), 03.04
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1126 Sanderson, Richard E. 07.03 (001), 07.03 (002), 08.06 (014),
08.06 (018),
08.06 (019)
1128 McDonald, Tim 08.03.01 (013), 08.04 (010)
1129 Quinley, Vickie 05.08.01 (014)
1130 Sower, Bob W. 01.01.01.02 (006)
1131 Peterson, Samara 03.07 (004), 05.08.01 (030)
1132 Morgan, LaRene 01.01.01.02 (006), 01.01.02 (005)
1133 Arkoosh, Karen 01.01.01.02 (006), 05.08.01 (014),
05.10.02 (016)
1134 Fisse, Ron 01.01.01.02 (006), 01.01.02 (005),
05.08.01 (014)
1135 Buys, Barbara 08.05.05 (002)
1136 Wallbaum, Gary 01.01.01.02 (011), 05.18.01 (005), 06.04
(008), 06.09 (013)
1137 Shotwell, Cornelia 01.01.01.02 (006)
1138 Suhr, Debbie 01.01.01.02 (006)
1139 Hodge, Mary 01.01.01.02 (006)
1140 Apperson, Jerry 05.12 (001)
1141 Hill, Joy 05.18.04 (002), 08.01 (001)
1142 Wimberly, Jan 01.01.01.02 (006)
1143 Strong, Tye 01.01.01.02 (006), 04.03 (001), 04.05
(003)
1144 Bourner, Darrell 05.08.01 (014)
1145 Smiley, Jane 04.03 (001), 05.10.02 (016)
1146 Bates, Dorothy 01.01.01.01 (022), 05.12.08 (001)
1147 Lane, Lois 08.01 (001)
1148 King, Marilee 01.01.01.02 (006)
1149 Kleinklof, Karl 05.05.01 (016)
1150 Teusher, Meryle 01.01.01.02 (006)
1151 Moeller, Mary 01.01.01.02 (006)
1152 Mattulat, Judy 01.01.01.02 (006)
1153 Benson, Margaret 01.01.01.02 (006)
1154 Baldocchi, Dennis 01.01.01.01 (010), 01.01.01.02 (011)
1155 Casebeau, Max 03.05 (007), 03.05 (008), 04.01 (001),
04.01 (005),
05.08.01 (014), 05.11.03 (001), 05.12
(001)
1156 Armstrong, Ted 02.08 (009), 05.08.01 (014), 05.08.01
(041)
1157 Tschirgi, Scott 05.08.01 (014)
1158 Baslee, Oradell 01.01.01.02 (006)
1159 Hastings, Virginia 01.01.01.02 (006)
1160 Day, Raymond 05.08.01 (014), 05.11.03 (020)
1161 Hulette, Christin 01.02.03 (002), 03.03 (008), 03.08
(013), 04.03 (001),
05.12 (001), 05.13.01 (002), 06.04
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08.01 (002)
1162 Beem, Stacy 01.01.01.02 (006)
1163 Fowler, Halle 01.01.01.01 (022)
1164 Lanigan, Karen 01.01.01.01 (022), 01.02.01.02 (017)

1165	Bowman, Bill	05.08.01 (014)
1166	Quinn, Tim	08.01 (001)
1167	Heykamp, Elaine	08.01 (001)
1168	McLaughlin, Pam	03.04 (014)
1169	Unger, Richard	01.01.01.01 (015)
1170	Pannell, George	01.01.01.02 (011)
1171	Clements, Linda	05.08.01 (014)
1172	Pomeroy, Betsy	01.01.01.02 (006)
1172	Pomeroy, Nelson	01.01.01.02 (006)
1173	Salaegs, Peggy	01.01.01.02 (006)
1174	Russell, Donald	01.01.01.02 (011), 05.12.08 (001)
1175	Capalbo, Joseph	01.01.01.02 (006), 07 (001)
1176	Malone, Mrs. Paul	01.01.01.02 (006)
1176	Malone, Paul	01.01.01.02 (006)
1177	Breedlove, Debbie	01.01.01.02 (006)
1178	Fowler, Happy	01.01.01.02 (011)
1179	Warren, Jeffrey	02.08 (001)
1180	Alsdorf, Todd	01.01.02 (007), 01.02.03 (002)
1181	Edwards, Carol	01.01.01.02 (006), 05.02 (001), 05.08.01 (014)
1182	Boyle, Terry	08.04 (010), 08.04 (013), 08.04 (021)
1183	Erickson, Randee	05.12 (001), 05.13.04 (001), 05.16 (005), 08.01 (001)
1184	Belzer, Fred	01.01.01.01 (005), 01.01.01.01 (013), 01.02.03 (002),
1184	Belzer, Fred	02.04 (001), 03.05 (008), 04.01 (001), 04.03 (001), 04.03 (021), 06.07 (001), 06.09 (042)
1185	Bick, Susan	01.01.01.02 (006)
1186	Lehto, Kevin	05.12 (001)
1187	Bragg, William A.	01.01.01.01 (008)
1188	Randolph, Sperry	01.01.01.02 (011)
1189	Haaz, Nan	01.01.01.02 (011)
1190	Allen, Raymond	01.01.01.02 (011)
1191	Dixon, Marjorie	01.01.01.02 (006)
1192	Strawser, Mary	01.01.01.02 (006)
1193	Parrette, Joe	01.02.03 (002)
1194	Watson, Jackson L.	01.01.01.02 (006)
1195	Ricketts, W.	01.01.01.02 (011)
1196	Brooks, James	01.01.01.02 (011), 03.08 (010), 06.06 (003)
1197	Morley, Mary Kay	08.04 (010)
1198	Doersam, Eugene	01.01.01.02 (011)
1199	Snow, Dickey	01.01.01.02 (011)
1200	Gleaves, Richard	01.01.01.01 (015), 01.01.01.02 (011)
1201	Heindsmann, Sandra	01.01.01.01 (022), 02.04 (029), 03.05 (008), 05.04 (024)
1202	Watson, Carole	01.01.01.02 (006)
1203	Hoover, Elizabeth	01.01.01.02 (011)
1204	Runstein, Helen	08.05.06 (005), 08.05.06 (006)
1205	Gordon, Margaret	01.01.01.02 (011)
1206	McGehee, Connie	01.01.01.02 (011), 03.03 (008)
1207	Batey, Gary	01.01.01.02 (011)
1208	Billingsley, Adron	01.01.01.02 (011)
1209	Coop, Linda	01.01.01.02 (011)
1210	Dowd, Joyce	01.01.01.02 (011)
1211	Martin, Pauline	01.01.01.02 (011)
1212	Donaldson, Jeanne	01.02.03 (002)
1213	Wurster, Connie	06.09 (013), 08.01 (001)
1214	Wison, Hazel	01.01.01.02 (011)
1215	Csorgo, Alex	01.01.01.02 (011), 05.12 (001)
1216	Stout, Dean	01.01.01.02 (011)
1217	Denton, Marcia	01.01.01.02 (011)
1218	Stoknes, Kjell	01.02.02 (002), 07.04 (004)
1218	Stoknes, Marilyn	01.02.02 (002), 07.04 (004)
1219	Draper, Marge	01.01.01.02 (006)
1220	Jentry, Boyd	01.01.01.01 (022)
1221	Vance, Jesse	01.01.01.02 (011)
1222	Franden, Janet	01.02.03 (002)
1223	Bell, Willard	01.01.01.02 (011)
1224	McReynolds, Susan	01.01.01.02 (011)
1225	Rice, JoAnn	08.04 (013), 08.04 (014)
1226	Adams, Fern	01.01.01.02 (006), 01.01.01.02 (011), 05.12 (001)
1227	Jones, Jewel	01.01.01.02 (011)
1228	Fennema, Diane	01.01.01.02 (006)
1229	Vanderven, Peter	02.07 (012)
1230	Zajac, Nell	02.07 (012)
1231	Honicker, Jeannine	04.03 (005), 04.03.01 (001)
1232	Ewald, Linda	01.01.01.02 (011), 05.12 (001)
1233	Shortt, Timothy	05.10 (002)

1234	Matsu-Pissot, Yuki	09.01 (004)
1235	Mitchell, Don	01.01.01.02 (011)
1236	Scudder, Gary	01.01.01.02 (006)
1237	Fuller, Robert	01.01.01.02 (011)
1238	Brown, Norman C.	02.07 (012)
1239	Gruhl, Wade	01.01.01.02 (006), 03.05 (008), 03.08 (013), 05.12 (001)
1240	Picquet, Cheryn	05.18.04 (002)
1241	Campbell, Barbara	02.07 (012)
1242	Silverman, Larry	02.07 (012)
1243	Kinard, Deborah	09.01 (004)
1244	Kessler, Peter	02.07 (012)
1245	Gorenflo, Louise	03.03 (008), 05.12 (001), 05.18.04 (002)
1246	Beasley, Alton	02.01 (026), 02.04 (005), 06.05 (011), 09.01 (007)
1247	Wheeler, Paige	02.07 (012)
1248	Johnson, Elaine	01.02.03 (002)
1249	Johnson, Sally	01.01.01.01 (022)
1250	Fowler, Corinne	01.01.01.01 (015), 05.12 (001)
1251	Baumgarener, Charlotte	01.01.01.02 (006), 03.08 (024), 07 (001)
1252	Manning, Mary	08.04 (010), 08.04 (013)
1253	Wegman, Jerry	01.01.01.02 (002), 05.08.01 (014)
1254	Mendoza, Mary	02.07 (012)
1255	Zanover, Sally	08.04 (010)
1256	Lagenaur, Mary Beth	01.01.01.01 (022), 01.01.01.02 (006), 04.03 (001), 05.08.01 (014)
1257	Neumann, David	02.06 (036), 05.19 (001), 09.01 (004)
1258	Takahashi, Dana	08.01 (001)
1259	Pearson, Esther	01.01.01.02 (006)
1260	Lawson, Loretta	01.01.01.02 (006)
1261	McCann, Anita	01.01.02 (005)
1262	Frazier, Kathleen	01.01.01.02 (006)
1263	Coyle, Gaylord	01.01.01.02 (006)
1264	Tippett, Verna L.	01.01.01.02 (006), 05.08.01 (014)
1265	Hansen, Adeline	01.01.01.02 (006)
1266	Kincheloe, Karen	01.01.01.02 (006)
1267	Sieger, Karyn	01.01.01.02 (006), 05.12 (001)
1268	Parks, Steve	01.01.01.02 (006), 03.07 (003)
1269	Conger, Bill	01.01.01.02 (011)
1270	Duvall, Jami	05.12 (001), 08.01 (001)
1271	Stume, Betty Ann	01.02.01.02 (005)
1272	Velasco, Steve	05.12.04 (001)
1273	Davidson, Nancy	01.01.01.02 (011)
1274	Allen, Pat	01.01.01.01 (004), 08.03.02 (001), 08.04 (013), 08.05.06 (005), 08.05.06 (023), 08.05.07 (004)
1275	Lanigan, Steve	03.05 (007), 05.12 (001)
1276	Barney, Jody	01.01.01.02 (011)
1277	McDaniels, Trimelda	01.01.01.02 (006), 02.04 (019), 03.05 (008)
1278	MClemore, Janis	01.01.01.02 (020), 06.09 (013), 08.04 (010)
1279	Walton, Barbara A.	01.01.01.01 (022), 01.02.03 (002), 05.12.08 (001), 06.05 (016)
1280	Cox, Chris	03.07 (003), 06.09 (013)
1281	Ludders, Beverly	01.01.01.02 (006), 07.02.01 (003)
1282	Pearson, Ernest	01.01.01.02 (006)
1283	Toler, Stuart	03.05 (007), 05.09 (001)
1284	Holtz, Libby	02.08 (002), 04.03 (001), 05.08.01 (014), 08.01 (001)
1285	Sirhall, Emma L.	05.08.01 (014)
1286	Stoke, Jonathan	03.08 (011), 04.04 (008), 05.12.06 (002), 06.09 (013)
1287	Blood, Tina	01.01.02 (005)
1288	Langworthy, Helen	01.02.03 (002)
1289	McLaughlin, Pam	01.01.01.01 (008), 01.02.03 (002), 02.04 (060), 04.03 (001), 05.12 (001)
1290	Weatherley-White, Matthew	08.01 (001)
1291	Baldwin, June	01.01.01.02 (006)
1292	Hogan, Terry	01.01.01.02 (011)
1293	Swartzman, Margaret	01.01.01.02 (020), 05.08.03 (005), 08.04 (008), 08.06 (004)
1294	Sattgast, Leah W.	03.03 (008), 03.07 (004), 05.08.01 (014)
1295	Howard, Steven	01.01.01.02 (011)
1296	Smith, Eric	03.08 (009), 05.11.03 (039), 06.05 (016)
1297	Bowen, Randy L.	01.01.01.01 (015), 05.12 (001)
1298	Pannell, Deborah	01.01.01.02 (011)

1299	Blurton, Eleanor	01.01.01.02 (006), 01.02.03 (002)
1300	Blair, Joy	01.01.01.02 (011)
1301	Benjamin, Marvel	01.01.01.02 (006), 05.08.01 (014)
1302	Knecht, Dieter	02.08 (015), 08.01 (005)
1303	Sowdon, Doug	06.01 (011), 06.09 (013), 08.04 (010), 08.04 (014)
1304	Gatton, Leslie	03.08 (009), 03.08 (010)
1305	McAuley, Mike	01.01.01.02 (006)
1306	Tyler, Nancy	01.01.01.02 (006)
1307	Schimdt, Helena	01.01.01.02 (011), 05.08.01 (014)
1308	Scannella, Joe	01.01.01.02 (011)
1309	Bazin, Nancy	03.05 (008), 08.01 (001)
1310	Seperich, Yvonne	01.01.01.02 (011)
1311	Groll, Mary F.	01.01.01.02 (006)
1312	Dougherty, Al	01.01.01.02 (006)
1312	Dougherty, Jenive	01.01.01.02 (006)
1313	Day, Heather	05.11.02 (006), 06.09 (013)
1314	McLaughlin, Dennis	01.01.01.01 (022), 01.01.01.02 (013), 03.05 (008)
1315	Hudson, John	01.01.01.02 (011)
1316	Reed, David	01.01.01.02 (011), 04.03.01 (001), 05.08.02 (001)
1317	Lowe, Frances E.	01.01.01.02 (011)
1318	Akers, W. H.	01.02.03 (002)
1319	Flinn, James	09.01 (004)
1320	Crosslin, Leslie	01.01.01.01 (029), 03.07 (003), 06.05 (002)
1321	Tuck, Frank	01.01.01.02 (011)
1322	McNabb, Harry O.	01.01.01.02 (011)
1323	Rogers, Mary Grace	01.01.01.02 (011), 05.10.02 (016), 06.09 (013)
1324	Navarro, Pat	01.01.01.02 (011)
1325	Dempster, Michael	02.07 (012)
1326	Hughel, Dan	01.01.01.02 (014)
1327	Lieberman, Bernard	01.02.03 (002)
1328	Haskew, Mark	01.02.03 (002)
1329	Tumlin, Gary	01.01.01.02 (011), 05.18.04 (002)
1330	Burris, Mary S.	01.01.01.02 (011), 05.18.04 (002)
1331	Morris, Mary	03.07 (003), 05.10.02 (016), 05.18.04 (002)
1332	Phelps, Jim	01.01.01.01 (022), 01.01.01.02 (011), 05.12 (001)
1333	King, David	01.01.01.02 (011), 05.18.04 (002)
1334	Poche, Anthony F.	01.01.01.02 (011), 03.07 (003), 03.08 (010), 04.01 (005)
1335	Piquet, Margaret	01.01.01.02 (011)
1336	Buchanan, James	01.01.01.02 (011), 05.12 (001)
1337	Conner, Robert	01.01.01.02 (011), 03.08 (010)
1338	Miller, Dana	02.07 (001), 03.08 (010), 05.15 (005), 05.18.04 (002), 09.01 (008)
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1344	Manheimer, Elaine	03.08 (011), 06.06 (003), 07.04 (001), 08.01 (001), 08.03.05 (002), 08.04 (010), 08.04 (013), 08.04 (014)
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1367	Ballard, Carolyn	01.01.01.01 (022), 05.12 (001), 05.18.04 (002)
1368	Myers, Brian	01.01.01.02 (011), 05.09 (001)
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1428	Roberts, Lucy	01.01.01.02 (011)
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1430	Tenpenny, Ray	01.01.01.02 (011)
1431	Tenpenny, Peggy Sue	01.01.01.02 (011), 01.02.03 (002)
1432	Manning, Lillian	01.01.01.01 (022), 05.09 (001)
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02.06 (024)	595
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02.06 (036)	1257
02.06 (037)	297, 305, 346
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02.06 (040)	847
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02.07 (006)	915
02.07 (007)	244, 447, 1011
02.07 (008)	1035
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02.08 (008)	468, 1035
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02.08 (012)	610
02.08 (013)	847, 1044, 1045
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02.08 (016)	631
02.08 (018)	908
02.08 (019)	629
02.08 (020)	251, 267, 469, 872, 976, 1035, 1055, 1056
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