DEPARTMENT OF THE NAVY
NAVAL SEA SYSTEMS COMMAND
1333 ISAAC HULL AVE SE
WASHINGTON NAVY YARD DC 20376-0001

Addendum to the Environmental Assessment and Revised Finding of No Significant Impact

for the Use of a More Efficient Shipping Container System for Spent Nuclear Fuel From Naval Aircraft Carriers

October 2009

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Environmental Assessment for the Use of a More Efficient Shipping Container System for Spent Nuclear Fuel From Naval Aircraft Carriers

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COVER SHEET

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ABSTRACT: The purpose of this Environmental Assessment (EA) is to evaluate the potential environmental impacts of using a proposed new longer, more efficient shipping container system, designated the M-290 shipping container, to ship naval spent nuclear fuel from nuclear-powered aircraft carriers. Use of the M-290 shipping container would provide improved support for aircraft carrier defueling and refueling schedules to meet the operational needs of the U.S. Navy, while continuing to provide for public safety and environmental protection. The Navy is committed to manage naval spent nuclear fuel consistent with the *Department of Energy (DOE) Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Final Environmental Impact Statement*; and to comply with the 1995 Settlement Agreement, as amended in 2008, among the State of Idaho, the DOE, and the Navy concerning the management of naval spent nuclear fuel. The EA provides an evaluation of potential environmental impacts of using the M-290 shipping container to transfer naval spent nuclear fuel from Newport News Shipbuilding and Dry Dock Company (NNS) in Virginia to the Naval Reactors Facility (NRF) in Idaho. The EA provides a comparison of the Proposed Action and the No-Action alternative. Other alternatives are identified but are judged unacceptable and therefore are not evaluated in detail. The potential environmental impacts associated with certain aspects of the Proposed Action, namely spent nuclear fuel handling at NNS and at NRF and transportation to NRF, are similar to those already addressed in previous Environmental Impact Statements (EISs) associated with the use of existing shipping container systems, which concluded that impacts upon the environment would be small. The EA adopts certain of the analyses in the prior EISs and examines new aspects presented by the Proposed Action such as the construction of new facilities and new equipment at both NNS and NRF. A draft EA was made available for public comment on June 21, 2007. Public comments to the draft EA were received and considered in the preparation of the final EA, which was issued on November 13, 2007.

This Addendum to the EA includes evaluation of the environmental impact of construction of a Cask Shipping and Receiving Facility at NRF to support the loading and unloading of M-290 shipping containers. A draft of the addendum to the EA was made available for public comment on July 15, 2009. No public comments were received.

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Summary

The purpose of this Environmental Assessment (EA) is to evaluate the potential environmental impacts of using a new longer, more efficient shipping container system, designated the M-290 shipping container, to ship naval spent nuclear fuel from Newport News Shipbuilding and Dry Dock Company (NNS) in Virginia to the Naval Reactors Facility (NRF) in Idaho. An Addendum to this EA (EAA) has been prepared to evaluate the environmental impact of construction of a separate Cask Shipping and Receiving Facility for the loading and unloading of M-290 shipping containers at NRF. The original EA considered modification of the South End Extension of the Expended Core Facility (ECF) in Idaho for this purpose. Modifications to the EA are annotated in red, underlined, and marked with a change bar in the margin.

The Navy is committed to manage naval spent nuclear fuel consistent with the *Department of Energy (DOE) Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Final Environmental Impact Statement (EIS)* [hereafter referred to as *DOE/EIS-0203-F (April 1995)*] and to comply with the 1995 Settlement Agreement among the State of Idaho, the DOE, and the Navy concerning the management of naval spent nuclear fuel, as well as the 2008 amendment to the Agreement.

Because of a projected increase in the frequency of nuclear-powered aircraft carrier defueling and refueling operations, the Navy has concluded that the current defueling and refueling process must be improved to support upcoming defueling and refueling schedules and meet the operational needs of the U.S. Navy. To address this need, alternative actions were identified.

- Proposed Action - Implement a new longer, more efficient shipping container system (designated the M-290).
- No-Action Alternative - Continue to use the existing M-140 shipping containers and existing water pool at NNS.
- Alternative 1 - Change the nuclear-powered aircraft carrier defueling and refueling schedules.
- Alternative 2 - Increase the capacity of the water pool at NNS.
- Alternative 3 - Use a second refueling shipyard for nuclear-powered aircraft carriers.
- Alternative 4 - Procure additional current design M-140 shipping containers.

The action alternatives are evaluated according to their ability to support the primary objective of meeting the operational needs of the U.S. Navy. The Proposed Action is the only alternative that meets the objective within the constraints of the decisions previously reached in the *Record of Decision for DOE/EIS-0203-F (April 1995)* for overall management of naval spent nuclear fuel. The amount of naval spent nuclear fuel shipped and the number of shipments would not increase for any of the alternatives. The No-Action Alternative and Alternatives 1 through 4 are unacceptable, since no alternative or combination of alternatives fully supports the defueling and refueling schedules and the operational needs of the U.S. Navy.

This EA reviews the existing facilities and operations at NNS in Virginia and NRF in Idaho for handling and processing naval spent fuel assemblies, and the changes that would be necessary to use the M-290 shipping container. In addition, the potential environmental impacts from current operations described in *DOE/EIS-0203-F (April 1995)* and *Department of the Navy Final EIS for a Container System for the Management of Naval Spent Nuclear Fuel* [hereafter referred to as *DOE/EIS-0251 (November 1996)*] are reviewed and compared to potential impacts resulting from use of the M-290 shipping container. The document also evaluates potential impacts from the transportation of naval spent nuclear fuel from NNS to NRF using the M-290 shipping container.

At NNS, naval aircraft carrier spent nuclear fuel assemblies are currently disassembled after removal from the ship to fit into the current design naval spent fuel shipping container, designated the M-140 shipping container. The use of the M-290 shipping container would allow direct loading of aircraft carrier spent nuclear fuel assemblies into the shipping container without the need for prior disassembly. Since existing NNS facilities are not adequately sized to support loading the new longer shipping container, a new M-290 loading facility would be needed. The new M-290 loading facility would be constructed within an already developed area of NNS that contains no known contamination. Construction would be in compliance with regulatory requirements. No significant environmental impact would result from the construction and operation of this facility.

The radiological impacts associated with management, handling, processing, and storing naval spent nuclear fuel were evaluated in *DOE/EIS-0203-F (April 1995)* (updated in *DOE/EIS-0203-F-SA-02 (June 2005)).* These analyses demonstrated that the radiological impacts at NNS, NRF, and other naval facilities would be small. Since the equipment, processes, and procedures to load M-290 shipping containers would be developed to the same stringent standards as used for current operations, the radiological impact of loading naval spent nuclear fuel into M-290 shipping containers would be small and comparable to that of M-140 shipping containers.

The environmental effects of the transportation of naval spent nuclear fuel have been previously evaluated in *DOE/EIS-0203-F (April 1995)* and in *DOE/EIS-0251 (November 1996)*. Based on these EISs, the Navy concluded that the environmental and public health impacts associated with transportation of naval spent nuclear fuel would be small.

The M-290 shipping container would be designed to meet the technical requirements specified in 49 CFR 173 and 10 CFR 71 and to provide radiation levels outside the container similar to the levels measured during past M-140 shipments. Since the radiation levels and amounts of spent nuclear fuel shipped in the M-290 shipping container would be comparable to the M-140 shipping container, the use of the M-290 shipping container would not change the conclusions in *DOE/EIS-0203-F (April 1995)* that the radiological impacts of transportation of naval spent nuclear fuel would be small.

After loading at NNS, the M-290 shipping container would be transported by rail to NRF and unloaded. As currently planned, the naval spent nuclear fuel assemblies from NIMITZ Class aircraft carriers would be individually removed from the M-290 shipping container into a shielded refueling machine and either lowered into the existing water pools for processing and examination; or, if required to facilitate prompt unloading and return of the shipping containers to the refueling shipyard, spent nuclear fuel assemblies would be placed into canisters loaded in concrete shielded overpacks for dry storage prior to processing in the water pools. As currently planned for USS ENTERPRISE spent nuclear fuel, the loaded internal canister containing the spent nuclear fuel assemblies would be lifted from the M-290 shipping container and placed into a concrete overpack for dry storage prior to processing in the water pool. The emptied M-290 shipping container would then be returned to the shipyard to support subsequent defueling and refueling operations.

Environmental conditions associated with the management of spent nuclear fuel at NRF, as well as the natural and man-made environmental impacts for spent nuclear fuel, were evaluated in *DOE/EIS-0203-F (April 1995)*. DOE concluded that the environmental impacts associated with the current management of naval spent nuclear fuel at NRF would be small. In addition, the radiological impacts of loading, unloading, and dry storage of spent fuel canisters were evaluated in *DOE/EIS-0251 (November 1996)*. The changes in processing operations and the dry storage of the naval spent nuclear fuel assemblies prior to processing in the water pool are actions within the normal operating scope of the facility and would be comparable to the current operations for processing and dry storage. An increase in the amount of remote-handled and contact-handled low level radioactive

waste (LLRW) will result at NRF from the transfer of disassembly operations from NNS to NRF. The disposal of this predominantly remote-handled LLRW is within the annual generation rate of LLRW previously evaluated in *DOE/EIS-0203-F (April 1995)* and the *Final Waste Management Programmatic EIS [DOE/EIS-0200-F (May 1997)].*

Previous plans were to modify the South End Extension of ECF for the loading and unloading of M-290 shipping containers received at NRF. Recent evaluations of ECF facility capabilities have shown that interrupting ongoing operations in the South End Extension to perform these modifications would not support canister loading and unloading needs. Construction of a Cask Shipping and Receiving Facility would permit continued production in the South End Extension, while also preparing a facility to support the operational need to unload canisters of naval spent nuclear fuel and return the new longer shipping containers in time to support defueling and refueling schedules of the Navy.

The action being evaluated by this Addendum is the building of a Cask Shipping and Receiving Facility that would support the loading and unloading of canisters of naval spent nuclear fuel from the new, longer, more efficient shipping containers. The Cask Shipping and Receiving Facility would be constructed within an already developed area of NRF. Construction would comply with regulatory requirements. No significant environmental impact would result from the construction and operation of this facility.

The environmental impacts of sabotage, including terrorist attack, on naval spent nuclear fuel were considered in detail in *DOE/EIS-0251 (November 1996)*. The Navy judged that the risks and consequences of sabotage would be no more severe than facility and transportation accidents that were analyzed in detail and were concluded to be small. DOE reevaluated the consequences of sabotage of rail transportation of spent nuclear fuel in *Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada [DOE/EIS-0250-F (February 2002)]*. DOE concluded that accident risks would be small and the safety features of spent nuclear fuel shipping containers that provide containment, shielding, and thermal protection provide protection against sabotage.

Conclusion

Based on the results of this EAA, which includes a comparison of the Proposed Action with previous related EISs and identification of facility, equipment, and operational changes necessitated by the adoption of a longer shipping container, the environmental conclusions of *DOE/EIS-0203-F (April 1995)* and *DOE/EIS-0251 (November 1996)* continue to be valid. Radiological characteristics of the new shipping container were evaluated and compared to the characteristics of existing containers. Natural and man-made environmental impacts were assessed for both sites involved in the Proposed Action and for the transportation process. No significant impact on the natural or human environment would be expected to result from using the M-290 shipping container.

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SECTION 1

INTRODUCTION

The aircraft carrier forms the backbone of the Navy's forward deployed peacetime presence, crisis response, and war-fighting forces. Although nuclear-powered aircraft carriers do not need to have fuel for propulsion replenished during deployments, the fuel becomes depleted in the reactor over many years and must be replaced. The depleted nuclear fuel withdrawn from the reactor is called spent nuclear fuel. The process of removing naval spent nuclear fuel and inserting new fuel is called refueling. When a nuclear-powered aircraft carrier reaches the end of its service life, the spent nuclear fuel needs to be removed before decommissioning the ship, using a process called defueling.

Spent nuclear fuel assemblies that are removed from U.S. Navy nuclear-powered ships are packaged in rugged shipping containers meeting Department of Energy (DOE) standards. The DOE standards are equivalent to Nuclear Regulatory Commission (NRC) and Department of Transportation (DOT) technical requirements for commercial shipments of spent nuclear fuel. The shipping container is a thick-walled, stainless steel vessel that provides shielding to minimize radiation exposure to the workers, the public, and the environment and protects the naval spent nuclear fuel during transport.

Consistent with the *Department of Energy Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Final Environmental Impact Statement,* [hereafter referred to as *DOE/EIS-0203-F (April 1995)*], naval spent nuclear fuel is shipped by rail in shielded shipping containers from naval shipyards to the Naval Reactors Facility (NRF) on the Idaho National Laboratory (INL) site in Idaho, where it is removed from the shipping containers and placed into water pools. Naval spent nuclear fuel is examined for specific characteristics and for abnormalities. Selected fuel is given more detailed examination. These examinations have significantly contributed to the longer core lives and continued safe performance of current naval reactor designs. Longer core lives have resulted in substantial reduction in the amount of spent nuclear fuel generated by the Navy.

The shipment of naval spent nuclear fuel from shipyards to the INL; the examination, handling, and storage of that spent nuclear fuel at INL; and the associated effects on human health and the environment which might result were previously analyzed and described in detail in the *DOE/EIS-0203-F (April 1995)*, *Volume 1, Appendix D*. Based on this EIS, the Navy decided to continue the historical, technically sound, and safe practice of conducting defueling and refueling of nuclear-powered warships as planned, and transporting naval spent nuclear fuel to NRF for inspection, examination, and temporary storage prior to shipment to a permanent repository or centralized interim storage facility outside the State of Idaho. These analyses demonstrated that the environmental impacts of implementing this decision would be small for normal operations and accident conditions.

Within the constraints of the *Record of Decision for DOE/EIS-0203-F (April 1995)* for overall naval spent nuclear fuel management, the Navy is proposing a new shipping container system for naval spent nuclear fuel, to provide improved support for the refueling schedules and operational needs of the U.S. Navy while continuing to provide for public safety and environmental protection.

The new shipping containers would be longer than existing containers and could be used for any type of naval spent nuclear fuel; however, their primary function would be to transport aircraft carrier spent nuclear fuel assemblies without prior disassembly of the non-fuel structural components from the spent nuclear fuel assemblies. Elimination of this disassembly operation at the shipyard would result in more efficient defueling and refueling operations, which are necessary to meet the current refueling schedules for the fleet in support of national defense.

Pursuant to the National Environmental Policy Act (NEPA) and the Council on Environmental Quality Regulations, the Department of the Navy (DON), Naval Nuclear Propulsion Program has prepared this Environmental Assessment (EA) evaluating the potential environmental impacts associated with using a new longer, more efficient shipping container system for naval spent nuclear fuel, designated the M-290 shipping container. In addition to the Proposed Action to transition to and use the M-290 shipping container system, this EA identifies several alternatives that could potentially address the need to improve the efficiency of nuclear-powered aircraft carrier defueling and refueling processes, while remaining within the constraints of decisions made in 1995 for overall naval spent nuclear fuel management. These alternatives are discussed in Section 2 of this EA.

1.1 BACKGROUND

Over the last 20 years, the Navy has increased the number of USS NIMITZ (CVN 68) Class nuclear-powered aircraft carriers (10 total). Three of these aircraft carriers have been refueled; the remainder will require refueling over the next 25 years. In addition, USS ENTERPRISE (CVN 65) is approaching the end of her service life and is scheduled to commence defueling and inactivation in 2013. These events will result in shipyard support operations and naval spent nuclear fuel container shipments occurring closer together than they have in the past, which will put a strain on the existing resources of both the defueling and refueling shipyard, Newport News Shipbuilding and Dry Dock Company (NNS) in Newport News Virginia, and the naval spent nuclear fuel processing facility, NRF in Idaho.

The defueling or refueling of an aircraft carrier and shipping the naval spent nuclear fuel is a complex and time-consuming process. The current refueling process requires the use of shipyard spent nuclear fuel handling facilities for 29 months for NIMITZ Class aircraft carriers, while the defueling process for ENTERPRISE could require 41 months. A significant part of this process is preparing the naval spent nuclear fuel for shipment. Currently, all aircraft carrier spent nuclear fuel assemblies must be partially disassembled by removing sufficient non-fuel structural components to allow the spent nuclear fuel to fit into existing shipping containers. This partial disassembly is performed while the fuel assembly is submerged in a water pool on a barge at NNS. The water in the pool provides shielding of the radiation emitted by the naval spent nuclear fuel, thereby ensuring protection of workers, the public, and the environment. The non-fuel structural components are designated as low level radioactive waste (LLRW) once removed from the naval spent nuclear fuel assemblies. The disposal of this predominantly remote-handled LLRW is made by shipment to the DOE Savannah River Site. Because of design differences between ENTERPRISE and NIMITZ Class fuel assemblies, equipment in the water pool must be reconfigured to support partial disassembly operations for the different types of spent nuclear fuel. This water pool reconfiguration typically takes 13 months, during which time the water pool cannot be used to support other aircraft carrier defueling or refueling operations.

Loaded spent nuclear fuel shipping containers are transported by rail from the refueling shipyard to NRF. After a shipping container is unloaded, it is returned by rail to the shipyard to support additional defueling or refueling work.

Currently, naval spent nuclear fuel assemblies are examined at NRF in the water pools. The assemblies are then prepared for dry storage prior to shipment to a permanent repository. The process for preparing spent nuclear fuel assemblies for dry storage was previously analyzed and described in detail in *Department of the Navy Final EIS for a Container System for the Management of Naval Spent Nuclear Fuel* [hereafter referred to as *DOE/EIS-0251 (November 1996)*]. This process generally involves removing non-fuel structural components from submarine spent nuclear fuel assemblies and any additional non-fuel structural components from aircraft carrier spent nuclear fuel assemblies. The naval spent nuclear fuel assemblies are then packaged into dry storage canisters,

which are placed inside concrete shielded overpacks. The concrete shielded overpacks are moved into the NRF overpack storage building. The Navy concluded in *DOE/EIS-0251 (November 1996)* that the environmental and public health impacts associated with handling and dry storage of spent nuclear fuel at NRF would be small.

The disposal of the predominantly remote-handled LLRW was previously evaluated in *DOE/EIS-0203-F (April 1995)*] and the *Final Waste Management Programmatic EIS [DOE/EIS-0200-F (May 1997)].* Based in part on the low impact to human health, DOE chose the environmentally preferable alternative to continue, to the extent practicable, disposal of on-site generated LLRW at INL, Savannah River Site, and two other DOE sites (Hanford and Nevada Test Sites).[1] Non-fuel structural components from naval spent nuclear fuel are currently disposed of at both INL and the Savannah River Site.

1.2 PURPOSE AND NEED FOR THE PROPOSED ACTION

The purpose of the proposed action is to improve the process for handling, loading, transporting, and unloading spent nuclear fuel removed from nuclear-powered aircraft carriers during defueling and refueling. This action is needed to support required defueling and refueling schedules and to meet the operational needs of the U.S. Navy. Currently, the process used at NNS to defuel or refuel nuclear-powered aircraft carriers involves partial disassembly of the spent nuclear fuel assemblies in the water pool at NNS. In the past, this process has supported Navy refueling schedules. However, with the increase in the number of aircraft carriers that will need to be defueled and refueled, this process is not capable of supporting future operational schedules. Changes in the process and infrastructure for defueling, refueling, transporting and handling spent nuclear fuel are needed for the Navy to fulfill its mission and have aircraft carriers available to meet fleet operational needs.

1.3 PROPOSED ACTION

The Navy proposes to make defueling and refueling nuclear-powered aircraft carriers more efficient by using a process similar to that used for Navy submarines. Under the Proposed Action, the Navy would implement a new longer shipping container system, designated the M-290 shipping container, which could be used for shipment of any type of naval spent nuclear fuel. However, the primary function of the M-290 shipping container would be to transport aircraft carrier spent nuclear fuel assemblies without prior disassembly of the non-fuel structural components from the spent nuclear fuel assembly, as is done for submarines. By using the longer shipping containers, the need for partial disassembly of aircraft carrier spent nuclear fuel assemblies in the water pool at NNS would be eliminated, providing an improved process to support the defueling and refueling schedules and to meet fleet operational needs.

The M-290 shipping container would be designed to meet the technical requirements applicable to naval and commercial spent nuclear fuel shipping containers. A description of the design of the M-290 shipping container is provided in Section 4.2.1. The Proposed Action to use the M-290 shipping container system would include the following actions:

- At NNS, a new spent nuclear fuel shipping container loading facility would be designed and constructed to support transfer of the spent nuclear fuel directly from the aircraft carrier into the longer shipping container. The existing shipping container loading facility at NNS is not adequately sized to support loading aircraft carrier spent nuclear fuel assemblies into the M-290 shipping containers. Further discussion of this facility is provided in Section 3.3.1.

- Longer railcars would be needed to transport the M-290 shipping container to NRF. Section 4.2.2 provides a discussion of the design requirements for these railcars.

- At NRF, a new, separate building, called the Cask Shipping and Receiving Facility, would be designed and constructed for loading, unloading, and preparing M-290 shipping containers for return to a shipyard or for loading naval spent nuclear fuel for shipment to a permanent repository. New support equipment including a higher capacity crane would be required to handle and unload the M-290 shipping containers. Some additional rail lines and sidings to support receipt and staging of M-290 shipping containers may also be needed. Further discussion is provided in Section 5.3.2.

- To support efficient unloading of the M-290 shipping containers, naval spent nuclear fuel receiving capability at NRF would be increased by allowing dry storage of spent nuclear fuel prior to processing the fuel for eventual shipment to a permanent repository. Operations for dry storage of spent nuclear fuel prior to processing would be similar to current NRF operations for dry storage after processing, described in *DOE/EIS-0251 (November 1996)*. Using dry storage prior to processing would allow prompt return of the emptied shipping containers to NNS to support subsequent defueling and refueling operations and minimize the number of new shipping containers that would need to be procured and maintained. The naval spent nuclear fuel would be stored in concrete shielded overpacks in the NRF overpack storage building. Further discussion can be found in Section 5.3.1.

- Non-fuel structural components removed during disassembly of naval spent nuclear fuel assemblies and shipping container internal canisters that are used for canister-based spent nuclear fuel shipments would be disposed of as LLRW. The quantity of LLRW that would be generated by this action is within the quantity previously assessed in *DOE/EIS-0203-F (April 1995)* and *DOE/EIS-0200-F (May 1997).* Further discussion can be found in Section 5.4.2.5.

Use of the proposed M-290 shipping container system would support the Navy's continued commitment to manage naval spent nuclear fuel in a manner that:

- Facilitates safe shipment to Idaho and ultimately to a permanent geologic repository or a centralized interim storage site outside the State of Idaho.
- Protects the Idaho environment while being temporarily stored at NRF.
- Is consistent with *DOE/EIS-0203-F (April 1995)*.
- Complies with the 1995 Settlement Agreement, as amended in 2008, among the State of Idaho, DOE, and the Navy.

1.4 THE NAVAL NUCLEAR PROPULSION PROGRAM

The Naval Nuclear Propulsion Program is a joint Navy and DOE organization responsible for all matters pertaining to U.S. Navy nuclear propulsion, as set forth in Presidential Executive Order 12344 and Public Law 106-65. The history and mission of the Naval Nuclear Propulsion Program is a matter of public record. The Program began in 1948, resulted in the commissioning of the first nuclear-powered submarine in 1954, and continues today with a fleet of nuclear-powered submarines and aircraft carriers unmatched by any other nation in the world.

The Naval Nuclear Propulsion Program's conservative design practices and stringent operating procedures have resulted in the demonstrated safety record of naval nuclear propulsion plants. U.S. Navy reactors have operated over 50 years without a reactor accident or a release of radioactivity having a significant impact on the environment. The U.S. Navy's nuclear-powered ships have an unparalleled record of safety, reliability, and environmental compliance.

1.5 PUBLIC PARTICIPATION

The Navy published a Notice of Intent (NOI) to prepare this EA in the Federal Register on January 20, 2006 to solicit comments on the scope of the EA. A notification was also published in selected newspapers in Idaho, Wyoming, and Virginia to ensure communication with the public. In addition, notifications were sent to state agencies, tribal officials, railroads, and citizens groups.

The Navy published a Notice of Availability (NOA) of the draft EA in the Federal Register on June 21, 2007 to solicit comments on the content of the EA. A notification on the availability of the draft EA was also published in selected newspapers in Idaho, Wyoming, and Virginia to ensure communication with the public. In addition, copies of the draft EA were sent to state agencies, tribal officials, railroads, and citizens groups. Comments related to the EA were received and were considered, as discussed in Appendix E.

The Navy published an NOA of the Final EA and Finding of No Significant Impact (FONSI), in November 2007, in selected newspapers in Idaho, Wyoming, and Virginia, to ensure communication with the public. In addition, copies of the final EA and FONSI were sent to state agencies, tribal officials, railroads, interested parties, and citizens' groups. No comments were received on the final EA.

This EA has been prepared to evaluate the potential environmental impacts of the Proposed Action and alternatives to address the need as described in Section 1.2. The Addendum to the EA (EAA) was prepared to include an evaluation of the environmental impact of constructing a Cask Shipping and Receiving Facility at NRF.

The Navy published an NOA of the draft EAA in July 2009, in selected newspapers in Idaho and Wyoming, to ensure communication with the public. In addition, copies of the draft EAA were sent to state agencies, tribal officials, interested parties, and citizens' groups. No comments were received on the draft EAA.

SECTION 2

DESCRIPTION AND EVALUATION OF ALTERNATIVES

The most important criterion used in evaluating alternative actions is the ability of an action to meet the primary objective of supporting the operational needs of the U.S. Navy, while maintaining protection of workers, the public, and the environment. This section describes and evaluates alternatives, including the Proposed Action and No-Action Alternative, for meeting the need to improve the process for removing spent nuclear fuel from nuclear-powered aircraft carriers during defueling and refueling.

The proposed action and all the alternatives considered support the Navy's commitment to manage naval spent nuclear fuel in a manner that facilitates safe shipment to a permanent geologic repository; protects the environment; is consistent with *Department of Energy (DOE) Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Final Environmental Impact Statement* (EIS) [hereafter referred to as *DOE/EIS-0203-F (April 1995)*]; and complies with the 1995 Settlement Agreement, as amended in 2008, among the State of Idaho, the DOE, and the Navy concerning the management of naval spent nuclear fuel.

The Navy has concluded that the current defueling and refueling process for nuclear-powered aircraft carriers must be improved to meet upcoming defueling and refueling schedules and support U.S. Navy operational needs. To address this need, alternative actions were identified as follows:

- Proposed Action - Implement a new longer, more efficient shipping container system (designated the M-290).
- No-Action Alternative - Continue to use the existing M-140 shipping containers and existing water pool at Newport News Shipbuilding and Dry Dock Company (NNS).
- Alternative 1 - Change the nuclear-powered aircraft carrier defueling and refueling schedules.
- Alternative 2 - Increase the capacity of the water pool at NNS.
- Alternative 3 - Use a second refueling shipyard for nuclear-powered aircraft carriers.
- Alternative 4 - Procure additional current design M-140 shipping containers.

The number of naval spent nuclear fuel assemblies shipped and the number of shipments would not increase for any of the alternatives. The management of this quantity of fuel including transportation to Naval Reactors Facility (NRF) was assessed previously in *DOE/EIS-0203-F (April 1995).* This assessment demonstrated that the environmental impacts associated with the naval spent fuel management would be small for normal operations and accident conditions.

2.1 PROPOSED ACTION: Implement a new longer, more efficient shipping container system

The Proposed Action would implement use of a new longer, more efficient shipping container system, designated the M-290. The longer shipping container would allow aircraft carrier spent nuclear fuel assemblies to be loaded directly from the ship into the shipping container without prior partial disassembly in the water pool at NNS, thereby streamlining the defueling and refueling process and reducing the time the spent nuclear fuel would remain at the shipyard.

The M-290 shipping container would then be transported to NRF and unloaded. The naval spent nuclear fuel assemblies would be placed into concrete shielded overpacks for dry storage, prior to processing the fuel assemblies for eventual shipment to a permanent repository. The emptied M-290

shipping container would then be returned to the shipyard to support subsequent defueling and refueling operations.

The Proposed Action would take about 5 years to implement and require approximately 25 new M-290 shipping containers and 25 new railcars. This action would include construction of a new shipping container loading facility at NNS; a separate Cask Shipping and Receiving Facility at NRF, capable of handling the longer M-290 shipping containers; and modification of some existing facilities at NRF. Support equipment would be procured for loading M-290 shipping containers at NNS and unloading M-290 shipping containers at NRF.

The Proposed Action would support the defueling and refueling schedules and would meet the operational needs of the U.S. Navy.

2.2 NO-ACTION ALTERNATIVE: Continue to use the existing M-140 shipping containers and existing water pool at NNS

Under the No-Action Alternative, evaluated as the baseline, aircraft carrier defueling and refueling operations would continue as currently performed (i.e., with partial disassembly of aircraft carrier spent nuclear fuel assemblies at NNS). The water pool at NNS would continue to be used and the existing number of shorter shipping containers, designated as M-140s, would be used to transport the partially disassembled aircraft carrier spent nuclear fuel to NRF for placement into the water pools for processing.

Under the No-Action Alternative, no changes would occur to current aircraft carrier defueling and refueling operations. The water pool at NNS would be reconfigured to support USS ENTERPRISE defueling and then returned to NIMITZ Class carrier configuration to support subsequent refuelings. This reconfiguration work would result in generation of LLRW at NNS.

The No-Action alternative would require the design and procurement of new internal shipping container support structures for use with M-140 shipping containers and ENTERPRISE spent nuclear fuel assemblies. Previous ENTERPRISE refuelings used earlier design M-130 shipping containers, which are not certified for spent nuclear fuel shipments after December 31, 2009.

Use of the water pool at NNS for ENTERPRISE would delay the refueling of the next scheduled NIMITZ Class aircraft carrier, due to the time required to configure the water pool for ENTERPRISE spent nuclear fuel, use the water pool for ENTERPRISE defueling, and then reconfigure the water pool to support NIMITZ Class aircraft carriers.

If the Navy were to continue with the No-Action Alternative, the fleet defueling and refueling schedules could not be met, due to the extended unavailability of the water pool at NNS while it is being reconfigured and used to support disassembly of different types of naval spent nuclear fuel. Not supporting the schedules and effectively delaying the availability of the aircraft carriers would significantly affect the ability of the U.S. Navy to meet its operational commitments. This inability to support Navy schedules would have an unacceptable impact, due to the critical role the nuclear-powered aircraft carriers play in the nation's defense. The No-Action Alternative does not meet the primary objective of supporting the operational needs of the U.S. Navy.

2.3 ALTERNATIVES ELIMINATED FROM FURTHER EVALUATION

The Navy is committed to continue the management of naval spent nuclear fuel within the constraints of the *Record of Decision (ROD) for DOE/EIS-0203-F (April 1995).* Within these constraints, four additional alternatives were considered.

2.3.1 ALTERNATIVE 1: Change nuclear-powered aircraft carrier defueling and refueling schedules

This alternative would delay the defuelings and refuelings for the U.S. Navy's nuclear-powered aircraft carriers, so that the existing resources and infrastructure could continue to be used. This alternative was eliminated from further consideration in the EA, since it would not meet the primary objective of supporting operational needs of the U.S. Navy.

2.3.2 ALTERNATIVE 2: Increase the capacity of the water pool at NNS

This alternative would increase the water pool capacity at NNS to enable naval spent nuclear fuel assemblies from several aircraft carriers to be temporarily stored, until their partial disassembly and loading into the shorter M-140 shipping containers could be completed. Increased water pool capacity at NNS would allow spent nuclear fuel to be transferred from future aircraft carriers without delaying shipboard operations and would eliminate the need to reconfigure the water pool before and after the ENTERPRISE defueling.

The construction of additional water pool capacity would allow defuelings and refuelings to continue using the existing equipment and procedures. This alternative would allow for continued utilization of the manpower and expertise at NNS to support aircraft carrier defueling and refueling operations by partial disassembly of the spent nuclear fuel in the water pool at NNS.

Evaluation, design, environmental review, construction, equipment procurement, procedure preparation, equipment and procedure checkout, and qualification of an increased capacity water pool at NNS are estimated to take about 8 years. This alternative would not support the Navy's defueling and decommissioning schedules, because increasing water pool capacity at NNS could not be accomplished in time to support the defueling and decommissioning of ENTERPRISE. This alternative was eliminated from further consideration in the EA, since it would not meet the primary objective of supporting operational needs of the U.S. Navy.

2.3.3 ALTERNATIVE 3: Use a second refueling shipyard for nuclear-powered aircraft carriers

The only refueling shipyard other than NNS with the access and capability to refuel and defuel nuclear-powered aircraft carriers is Puget Sound Naval Shipyard and Intermediate Maintenance Facility (PSNS&IMF) in Bremerton, Washington. Under this alternative, ENTERPRISE would be defueled at PSNS&IMF. Existing PSNS&IMF facilities would be activated and configured to provide a water pool to perform partial disassembly of naval spent nuclear fuel assemblies, as is currently performed at NNS. The partially disassembled naval spent nuclear fuel assemblies would be loaded into M-140 containers and shipped to NRF for examination and processing. NIMITZ Class aircraft carriers would continue to be refueled at NNS, where spent nuclear fuel assemblies would be partially disassembled and shipped to NRF in M-140 shipping containers.

PSNS&IMF is the West Coast site for major nuclear-powered aircraft carrier and submarine maintenance. Transfer of the ENTERPRISE defueling to PSNS&IMF would impact this ongoing fleet support work. Present work schedules indicate that PSNS&IMF will not have a dry dock available that can be dedicated to the scheduled defueling and decommissioning of ENTERPRISE. Also,

implementation of this alternative would require a major increase in PSNS&IMF infrastructure to support a single aircraft carrier defueling, including crane capabilities, support structures, and M-140 loading enclosures. The need for additional personnel training and qualification efforts would be extensive. The experienced refueling manpower at NNS would need to support training operations at PSNS&IMF, thus further impacting ongoing refueling work at NNS.

The time to implement this alternative would not support the ENTERPRISE defueling schedule. In addition, PSNS&IMF support of the ENTERPRISE defueling would likely require changes to other ship maintenance schedules, negatively impacting the ability of these ships to meet fleet operational needs. This alternative would not contribute to improving the long-term NNS support of refueling schedules for NIMITZ Class aircraft carriers, in the years after the ENTERPRISE defueling.

It would take 6 to 8 years to implement this alternative. This alternative was eliminated from further consideration in this EA, since it would not meet the primary objective of supporting the needs of the U.S. Navy.

2.3.4 ALTERNATIVE 4: Procure additional current design M-140 shipping containers

This alternative would increase the number of current design M-140 shipping containers, to ensure that unavailability of shipping containers would not delay transferring partially disassembled aircraft carrier spent nuclear fuel assemblies from the water pool at NNS.

While procurement of additional M-140 shipping containers would eliminate delays in transferring spent nuclear fuel from the water pool at NNS to the shipping containers, the additional containers would not reduce the time required for partial disassembly operations or for reconfiguration of the water pool to support different types of naval spent nuclear fuel.

The need to use the water pool at NNS for partial disassembly of spent nuclear fuel would continue to severely limit the efficiency of defueling and refueling operations. Also, the extended unavailability of the water pool at NNS during reconfiguration to support disassembly of different types of naval spent nuclear fuel would further limit the use of the water pool to support subsequent refueling operations. The total time required to disassemble spent nuclear fuel and reconfigure the water pool would not support the Navy's defueling and refueling schedules.

Procurement of additional M-140 shipping containers would not result in support of the ENTERPRISE defueling and inactivation schedule. This alternative was eliminated from further consideration in the EA, since it would not meet the primary objective of supporting operational needs of the U.S. Navy.

2.4 CONCLUSION

The schedules for defueling and refueling of nuclear-powered aircraft carriers must be supported to meet U.S. Navy operational needs. The Proposed Action is the only alternative that meets this objective consistent with the decisions previously reached in the *Record of Decision for DOE/EIS-0203-F (April 1995)* for overall spent nuclear fuel management.

The No-Action Alternative and Alternatives 1 through 4 are unacceptable, since no alternative or combination of alternatives fully supports the operational needs of the U.S. Navy. In addition to not meeting these needs, Alternatives 2, 3, and 4 would require the construction of unnecessary additional infrastructure and increase required support operations. Although Alternatives 2 and 3 show some ability to better meet the operational needs of the U.S. Navy with respect to the conflict in defueling and refueling schedules between ENTERPRISE and NIMITZ Class aircraft carriers, support of the ENTERPRISE defueling schedule would still not be achieved.

This EA assesses the environmental impact of the implementation of the Proposed Action, specifically (1) at NNS - Section 3, (2) during transportation from NNS to NRF - Section 4, and (3) at NRF - Section 5.

SECTION 3

POTENTIAL ENVIRONMENTAL IMPACTS OF USING M-290 SHIPPING CONTAINERS AT NEWPORT NEWS SHIPBUILDING AND DRY DOCK COMPANY

Section 3 provides an assessment of the potential environmental impacts associated with the Proposed Action to use a new longer, more efficient shipping container, designated the M-290 shipping container, at Newport News Shipbuilding and Dry Dock Company (NNS) in Newport News, Virginia. This section describes the facilities and operations at NNS and identifies the changes that would be needed to implement the Proposed Action at this shipyard.

3.1 BACKGROUND

Newport News is located on the James River, a tributary of the Chesapeake Bay, in the Hampton Roads area of Virginia (Figure 3-1). As of the 2000 census, the City of Newport News population was 180,150 with a greater metropolitan population of over 1,380,000. The Hampton Roads region of Virginia is an industrial, commercial, and residential area and is home to manufacturing, shipbuilding, tourism, and military facilities, as well as the businesses that support these industries.

NNS has been in the shipbuilding business since 1886. NNS primarily constructs and repairs ocean-going vessels. NNS performs government and commercial fleet support services, the majority of which are for U.S. Navy nuclear-powered aircraft carriers and submarines. The NNS site is zoned "Heavy Industrial" by the City of Newport News, which classifies NNS as an "Intensely Developed Area" (IDA) under the Chesapeake Bay Preservation Act.

Department of Energy Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Final Environmental Impact Statement [hereafter referred to as *(DOE/EIS-0203-F (April 1995)*], *Volume 1, Appendix D,* described in detail, naval spent nuclear fuel management. Based on the EIS, the Navy concluded that the environmental and public health impacts associated with handling naval spent nuclear fuel would be small.

3.2 NAVAL SPENT NUCLEAR FUEL FACILITIES AND HANDLING OPERATIONS AT NNS

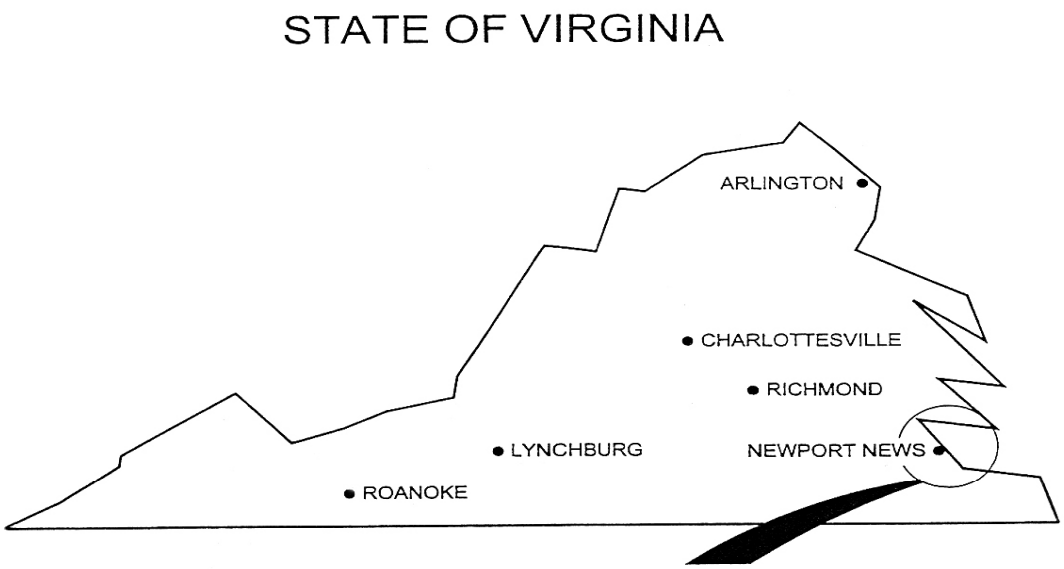
This section describes the existing facilities and operations at NNS used for the defueling and refueling of naval nuclear-powered ships and the processing and packaging of the spent nuclear fuel in existing shipping containers, designated M-140 shipping containers.

3.2.1 CURRENT DEFUELING AND REFUELING PROCESSES AT NNS

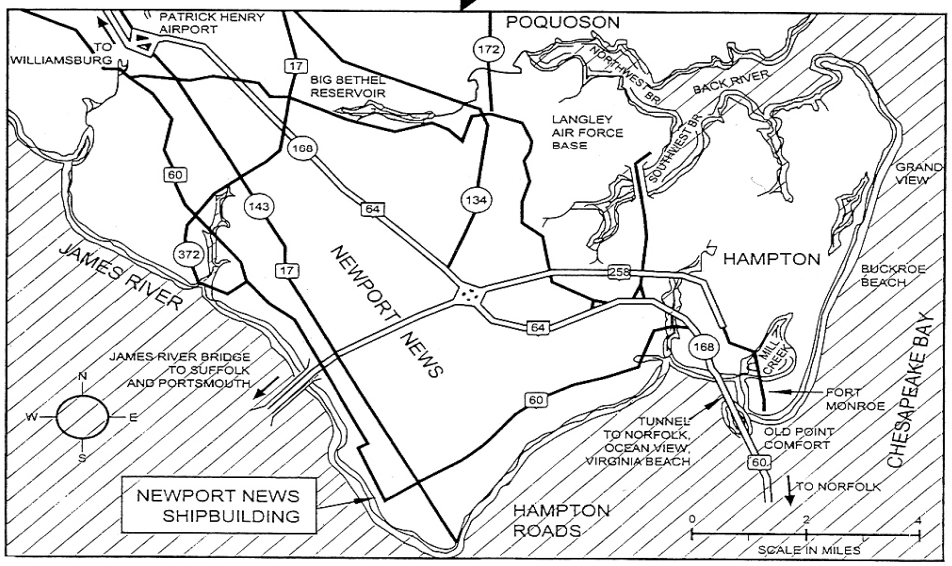
When a nuclear-powered aircraft carrier arrives at NNS for defueling or refueling, the ship is dry-docked near the refueling complex. The aircraft carrier dry dock is also adjacent to a water pool facility. Aircraft carrier spent nuclear fuel assemblies must be partially disassembled in the water pool in order to fit into M-140 shipping containers.

Aircraft carrier spent nuclear fuel assemblies are removed from the reactor vessel into a shielded refueling machine, and the refueling machine is transferred to a water pool facility. The aircraft carrier spent nuclear fuel assemblies are then discharged into the water pool. The water pool at NNS can hold the spent nuclear fuel assemblies from one aircraft carrier. The nuclear fuel assemblies must be partially disassembled and transferred out of the water pool into M-140 shipping containers before the next aircraft carrier arrives for defueling or refueling.

Figure 3-1



Location of Newport News Shipbuilding within Virginia.



Newport News Shipbuilding vicinity map.

In addition to the fuel, the aircraft carrier fuel assemblies are composed of non-fuel bearing structural components, which maintain proper support and spacing within the reactor. Non-fuel structural parts are removed from the aircraft carrier spent nuclear fuel assemblies in the water pool at NNS. The removed non-fuel structurals are loaded into disposal containers and shipped to the Savannah River Site in South Carolina for disposal as low level radiological waste (LLRW).

The shortened aircraft carrier spent nuclear fuel assemblies are then raised from the water pool into the shielded refueling machine and moved to the M-140 shipping container loading facility. The shortened assemblies are lowered into the M-140 shipping container, which is secured in a vertical orientation to a specially designed railcar. After loading, the M-140 shipping container is transported by rail to NRF.

Differences in design between USS ENTERPRISE and NIMITZ Class carriers require that the water pool at NNS be reconfigured between processing ENTERPRISE and NIMITZ Class spent nuclear fuel assemblies. Reconfiguration includes the movement, arrangement, and sizing of storage racks and other support equipment within the water pool to support naval spent nuclear fuel assemblies of different size, shape, and weight.

3.2.2 ENVIRONMENTAL IMPACT OF CURRENT OPERATIONS AT NNS

Environmental impacts associated with management and transport of naval spent nuclear fuel were previously evaluated in detail in *DOE/EIS-0203-F (April 1995)*. Based on the operations that would be performed and the controls that would be in place, the detailed evaluations in *DOE/EIS-0203-F (April 1995)* showed that the impacts on air, water, ecological, or geological resources at NNS and naval facilities would be small.

The Navy conducts environmental monitoring and surveys for radioactivity in harbors where naval nuclear-powered ships are built or overhauled. The Navy environmental monitoring program consists of analyzing samples of harbor sediment, water, and marine life, supplemented by shoreline surveys, dosimeters, and effluent monitoring. Sampling harbor sediment and water each quarter is emphasized because these would be the most likely areas affected by releases of radioactivity. Since the early 1960s, the Environmental Protection Agency (EPA) and its predecessor agency the Public Health Service have conducted detailed environmental surveys of selected U.S. harbors. EPA findings have been consistent with those of the Navy and have concluded that operation of naval nuclear-powered ships has had no adverse impact on public safety or health.[2]

Procedures used by the Navy to control releases of radioactivity from U.S. naval nuclear-powered ships and support facilities such as NNS have been effective in protecting the environment and the health and safety of the general public. Independent radiological environmental monitoring performed by the EPA and the States have confirmed the adequacy of these procedures. These procedures have ensured that no member of the general public has received measurable radiation exposure as a result of current operations of the Naval Nuclear Propulsion Program.

The effect of a terrorist attack associated with shipping containers, as stated in *Department of the Navy EIS for a Container System for the Management of Naval Spent Nuclear Fuel (DOE/EIS-0251 (November 1996))*, was concluded to be conservatively bounded by the limiting accidents specific to each facility.

3.3 DESCRIPTION OF PROPOSED NAVAL SPENT NUCLEAR FUEL FACILITIES AND HANDLING OPERATIONS AT NNS

This section describes the changes to facilities and operations at NNS that would be needed, if the Proposed Action to use the M-290 spent nuclear fuel shipping container system were to be implemented.

3.3.1 CHANGES TO NNS FACILITIES DUE TO PROPOSED ACTION

The existing facility for loading the M-140 shipping container is not adequately sized to support loading aircraft carrier spent nuclear fuel assemblies into the M-290 shipping container; therefore, a new M-290 shipping container loading facility would need to be constructed.

The M-290 loading facility would be located at least 500 feet from the James River near the dry dock where spent nuclear fuel is unloaded from aircraft carriers. The foundation size of the facility would be less than 30,000 square feet. The M-290 loading facility would be located within the project area shown in Appendix B in the Coastal Zone Consistency Determination. NNS has reviewed the current location planned for excavation and determined that it contains no known aboveground storage tanks, underground storage tanks, areas affected by previous petroleum releases, solid waste management units, hazardous waste treatment, storage, or disposal facilities.

Stormwater runoff from the facility, consistent with other buildings at NNS, would be directed into an existing stormwater runoff system that discharges through a Virginia Pollutant Discharge Elimination System permitted outfall. To provide space for construction of the new facility, an existing temporary storage building would be moved a short distance (still within the industrial area). Some underground services would be re-routed and existing infrastructure (utilities and roads) would be modified to connect the new facility with the existing NNS infrastructure.

The M-290 loading facility would be designed in accordance with the *Virginia Uniform Statewide Building Code*. The M-290 loading facility would meet stringent Naval Nuclear Propulsion Program requirements for control of naval spent nuclear fuel and other radioactive materials. The construction of the new facility would comply with the performance criteria of the *Chesapeake Bay Preservation Area Designation and Management Regulations* (9 VAC 10-20-10 et seq.) and the performance criteria for redevelopment in intensely developed areas (§VAC 10-20-110) as locally implemented. Environmental permits for the site would be modified as required to reflect the changes in operations and facilities.

3.3.2 CHANGES IN NAVAL SPENT NUCLEAR FUEL HANDLING OPERATIONS AT NNS DUE TO PROPOSED ACTION

Use of the M-290 shipping container would result in aircraft carrier spent nuclear fuel being loaded directly into the shipping container without partial disassembly, similar to the current loading of submarine spent nuclear fuel assemblies into the existing shipping containers at naval shipyards.

Aircraft carrier spent nuclear fuel assemblies would be removed from the reactor using the existing shielded refueling machine. The loaded refueling machine would then be transferred to the new M-290 loading facility where the fuel assemblies would be loaded directly into an M-290 shipping container. The shipping container would then be sealed and would be moved to an outside holding area and placed on a specially designed railcar, where it would be rotated into a horizontal position and secured for transport by rail to NRF. Operations to remove the spent nuclear fuel assemblies from the aircraft carrier and to load the assemblies into the longer shipping container would use equipment and processes that are similar to those currently in use at NNS.

3.4 ENVIRONMENTAL IMPACT OF USING THE M-290 SHIPPING CONTAINER AT NNS

In compliance with the guidelines established by the EPA and Council on Environmental Quality regulations, this section focuses on those conditions at NNS that potentially would be impacted by use of the M-290 shipping container. It describes existing environmental conditions at NNS. These conditions include geology, topography, soil resources, ecological resources, water resources, noise,

air quality, cultural resources, socioeconomics, traffic and transportation, aesthetic and scenic resources, utilities and energy, radiological safety, and hazardous materials/hazardous waste.

3.4.1 NATURAL IMPACTS

Geology, Topography, and Soils

NNS was built on existing shoreline and on dredged fill material supplied by the U.S. Army Corps of Engineers. NNS is located within the City of Newport News and adjacent to the James River. Newport News and its environs are situated in a flat terrain ranging in elevation from approximately 10 feet to 35 feet above mean sea level, located in the Coastal Plain province of southeastern Virginia. Beneath the coastal plain are unconsolidated gravels, sand, silts, and clays, with varying amounts of shells. Bedrock in the Newport News area is approximately 2000 feet below ground surface.

The NNS area is very flat except on the east side of the shipyard where the fill material meets the original river bank. Below the fill material are sediments comprised of layers made up of sub-layers of heavier shells and biofragmented sands grading to finer sub-layers of sandy silts and silty clays at the top portion of each sequential formation.

According to U.S. Geological Survey shaking-hazard maps, the coastal region of Virginia is in a low earthquake hazard area. No major faults underlie the area and the region is considered not to be prone to earthquakes according to “Earthquake Prediction and Control.” No volcanic hazards exist. Since the coastal plain of southeastern Virginia is composed of several thousand feet of sedimentary deposits, there are no geologic resources in the region.

The project area that potentially would be affected at NNS is located in an industrial area mostly paved with concrete and asphalt. (See Appendix B.) The proposed project would not affect primary coastal sand dunes.

ENVIRONMENTAL IMPACT: Existing conditions with respect to geology, topography, and soils would remain essentially unchanged and comparable to the No-Action Alternative. Minimal potential environmental impact to geology, topography, and soils would be associated with the implementation of the Proposed Action.

Ecological Resources

The U.S. Fish and Wildlife Service lists the following species as endangered (E) or moderately threatened (M) in the South Hampton Roads area from Suffolk eastward:

1. Loggerhead turtle (M)
2. Peregrine falcon (E)
3. Piping plover (M)
4. Red-cockaded woodpecker (E)
5. Eastern cougar (E)
6. Dismal Swamp Southeastern shrew (M)
7. Northeastern beach tiger beetle (M)

Commonwealth of Virginia, Department of Game and Inland Fisheries, maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters available on their website: http://www.dgif.virginia.gov/wildlife/info_map.index.html. This listing was also reviewed in the preparation of this EA.

There are no marine mammals that are routinely found within the lower Chesapeake Bay or its tributaries. Atlantic Bottlenose dolphins occasionally appear in the bay and along the beaches of Hampton Roads; however, their occurrence is transitory. Sightings of whales in the bay or near shore are rare.

There are no wetlands within or adjacent to the project area as shown in the wetlands survey map in Appendix B. There are no critical habitats, as defined in 50 CFR 424.02, within the project area at NNS. Peregrine falcons are sometimes seen seasonally. Their nesting location is on the towers of the James River Bridge lifting span, approximately one and a half miles away. Areas of wildlife habitat have not been identified to exist on the NNS shipyard property.

Construction efforts and operation of the new M-290 loading facility at NNS would occur in the already developed industrial area of NNS. This area has no potential to support wildlife other than as an occasional resting area for birds.

ENVIRONMENTAL IMPACT: The Proposed Action would essentially not change the existing condition of the area with respect to its ecological resources. There are no wetlands within or adjacent to the proposed project area. Under the No-Action Alternative, existing conditions would remain unchanged. Therefore, there would be minimal environmental impact on ecological resources associated with the implementation of the Proposed Action.

Water Resources

Surface water from NNS flows either directly into the James River, or indirectly to the James River by way of Salters Creek approximately 2 miles east of the NNS south boundary. The James River flows east and joins the lower section of the Chesapeake Bay, approximately 10 miles east of NNS. The Chesapeake Bay enters the Atlantic Ocean, approximately 25 miles east of NNS.

The James River-Hampton Roads waterbody encompasses the James River mainstream and tributaries from Old Point Comfort to Willoughby Spit (northern border) to the west side of Craney Island (eastern border), west to Barrel Point (southern border), and north to Boat Harbor, Hampton River, and Mill Creek.

Construction and excavation activities associated with the new M-290 loading facility would be in the industrial, mostly paved area of the shipyard. Construction related activities would be done in accordance with applicable federal, state, and local requirements; including the *Virginia Erosion and Sediment Control Law and Regulations*, *Virginia Stormwater Management Law and Regulations*, and other federal nonpoint source pollution mandates (e.g., *Clean Water Act Section 313*, *Federal Consistency under the Coastal Zone Management Act*). An erosion and sediment control plan and a stormwater management plan would be prepared and implemented. All applicable permits would be acquired including a Virginia *General Permit for Discharges of Stormwater from Construction Activities* due to excavation disturbing between 2500 square feet and one acre in the Chesapeake Bay Preservation Area. Appendix B to this document provides the *Federal Coastal Consistency Determination* related to the actions taken at NNS in support of the Proposed Action.

ENVIRONMENTAL IMPACT: Use of the new shipping container system would essentially not change the existing water resource conditions. Under the No-Action Alternative, existing conditions would remain unchanged. Minimal environmental impact on water resources would be associated with the implementation of the Proposed Action.

3.4.2 MAN-MADE IMPACTS

Noise

NNS is an existing industrial environment characterized by noise from truck and automobile traffic; shipyard cranes; related combustion engine powered equipment; operating transmission lines for steam, air, and water; and associated pumps and compressors. Numerous industrial complexes in the NNS area add to the ambient noise levels of the region.

With implementation of the Proposed Action, noise would be generated by construction activities and operations. Noise mitigation efforts currently in place would be followed. Additional mitigation measures (e.g., ear protection, exclusion of unnecessary workers from the area during peak noise occurrences) would be implemented if needed. Construction activities would be intermittent and temporary in nature. Noises from future container loading operations would be similar to those from current operations. The proposed activities would be located within the same waterfront area currently used for naval spent nuclear fuel handling and loading operations.

ENVIRONMENTAL IMPACT: The existing noise environment of this area is characteristic of an industrial setting. Noise impacts during construction would be localized and minor. Once construction would be complete, conditions would be similar to those currently experienced. Under the No-Action Alternative, conditions would remain unchanged. Minimal environmental impact from noise would be associated with the implementation of the Proposed Action.

Air Quality

Air quality at the shipyard is similar to that throughout the Newport News area. The EPA has designated areas of the United States as having air quality either better than (attainment) or worse than (nonattainment) the National Ambient Air Quality Standard (NAAQS). Criteria for nonattainment varies by pollutant: (1) an area is in nonattainment for ozone if its NAAQS has been exceeded more than three discontinuous times in three years and (2) an area is in nonattainment for any other pollutant if its NAAQS has been exceeded more than once per year. A nonattainment area that is upgraded to an attainment area is called a maintenance area. Hampton Roads, where the projected construction site would be located has recently been designated as a maintenance area.

Short-term impacts to localized air quality may result from construction of the new loading facility and clearing of the site. These impacts would result from fugitive dust generated by site preparation and construction activities and from tailpipe emissions caused by construction equipment and vehicles. Appropriate fugitive dust control measures (9 VAC 5-40-90 et seq.) would be employed. No open burning of construction or cleared material would be done at NNS. Standard dust suppression techniques, such as watering, would be used as needed during construction to prevent or suppress fine particulates from leaving the surface and becoming airborne through the action of mechanical disturbance or wind. Exhaust emissions from the transport of workers and machinery to the site and from construction equipment would not exceed Applicability Threshold limits for the respective pollutants and would be considered *de minimis*. The project would not be considered Regionally Significant. (Refer to the Record of Non-Applicability in Appendix C.)

ENVIRONMENTAL IMPACT: The effect of the Proposed Action on the local and regional air quality would be minimal and temporary during construction. Effects on the local air quality during shipping container loading operations would be similar to current loading operations. The Proposed Action is *de minimis* under the Conformity Rule and a Record of Non-Applicability is provided in Appendix C. Under the No-Action Alternative, air quality would remain the same. Minimal environmental impact on air quality would be associated with the implementation of the Proposed Action.

Cultural Resources

No buildings within the boundaries of NNS are currently listed as Historic Properties in the National Register, and NNS is not listed as a district in the National Register. No buildings within the project area have been identified as being considered by NNS or the City of Newport News for inclusion in this listing. A search of the Virginia Department of Historic Resources cultural resource inventory supported a conclusion that there are no previously listed architectural resources or archaeological sites within or adjacent to the project area. (See the review in Appendix D.)

ENVIRONMENTAL IMPACT: There are no historic properties affected by the Proposed Action. The new M-290 loading facility would be constructed in the industrial area of NNS and would not adversely impact any building or district potentially eligible for inclusion in the National Register of Historic Places. No adverse impacts to cultural resources associated with the construction of the proposed loading facility are expected. Under the No-Action Alternative, existing conditions would remain unchanged. Minimal impact on cultural resources would be associated with the implementation of the Proposed Action.

Socioeconomics

At the time of the 2000 census, over 1.4 million people resided within a 50-mile radius of NNS. The federal government is a major employer in the area. NNS employment is approximately 19,000. The region is bolstered by a busy port, numerous military installations, growing service industries, and tourism.

ENVIRONMENTAL IMPACT: With implementation of the Proposed Action, creation of temporary construction jobs and expenditures for materials and equipment would occur to support construction of the M-290 shipping container loading facility. This increase in jobs and expenditures would result in beneficial impacts to the local and regional economy. Implementation of the Proposed Action would avoid the need for partial disassembly of aircraft carrier spent nuclear fuel assemblies and the need to reconfigure the water pool between defueling ENTERPRISE and refueling NIMITZ Class carriers. Avoiding these operations would not be expected to have an impact on overall employment levels at NNS. Water pool operations at NNS would be reduced, coincident with the projected increase in the amount of aircraft carrier defueling and refueling work; therefore, no layoffs or reductions in force would be anticipated as a result of the Proposed Action. Given the projected stability of the workforce, there is no expected impact on minority and low-income populations or on children. Under the No-Action Alternative, current employment would remain unchanged or could increase to support the increased amount of aircraft carrier defueling and refueling work. Minimal impact on socioeconomics would be expected with the implementation of the Proposed Action.

Traffic and Transportation

Vehicular traffic within the shipyard would be expected to increase during the construction phase associated with this Proposed Action. However, the traffic patterns and density of traffic on public streets would not change the traffic flux normally associated with operating a shipyard. Pedestrian traffic inside the shipyard would increase temporarily, but would be expected to be within the flux patterns of pedestrian traffic normally associated with operation of a shipyard.

ENVIRONMENTAL IMPACT: The effect of the Proposed Action on traffic and transportation would be minimal and temporary during construction and during nuclear-powered aircraft carrier defueling and refueling actions. Under the No-Action Alternative, shipyard traffic would increase slightly with the

increase in aircraft carrier defueling and refueling occurrences. Minimal environmental impact on traffic and transportation would be expected with the implementation of the Proposed Action.

Aesthetic and Scenic Resources

NNS is an industrial site located in a highly developed urban area. Chain link fences mark the boundaries of the shipyard. Area beaches, fronting the Atlantic Ocean from Cape Henry southward and along the Chesapeake Bay westward from Cape Henry, provide both scenic and recreational opportunities to area residents and visitors and are within approximately one hour of commuting distance from NNS. Many colonial, Revolutionary War, Civil War, and contemporary period areas and landmarks are within commuting distance.

ENVIRONMENTAL IMPACT: Construction and operations of the M-290 loading facility would be consistent with the current visual character at the shipyard and available views from offsite would remain limited. Furthermore, the visual environment of the shipyard is already characteristic of an industrial area. Under the No-Action Alternative, existing conditions would remain unchanged. Minimal environmental impact on aesthetic and scenic resources would be associated with the implementation of the Proposed Action.

Utilities and Energy

The sources of potable water, electricity, natural gas, and sewage treatment at the shipyard are provided by local public utility companies. With implementation of the Proposed Action, connection points to existing utility systems (electrical, natural gas, steam, compressed air, telephone, potable water, and sewer) would be available in the vicinity of the proposed loading facility. The utility requirements for the new loading facility could be met by the existing utility systems. Hampton Roads Sanitation District would be asked to approve the design for addition and tie-ins to the existing sewer system.

ENVIRONMENTAL IMPACT: Construction and operation of the M-290 loading facility would result in minimal impacts on utility and energy systems. Under the No-Action Alternative, existing conditions would remain unchanged. Minimal environmental impact on utilities and energy resources would be associated with the implementation of the Proposed Action.

3.4.3 RADIOLOGICAL IMPACT OF USING M-290 SHIPPING CONTAINERS AT NNS

The following sections discuss the radiological impact of the changes to operations, equipment, and facilities at NNS, which would result from the proposal to ship spent nuclear fuel from aircraft carriers to NRF in M-290 shipping containers. The radiological impacts associated with management, handling, processing, and storing naval spent nuclear fuel were evaluated in *DOE/EIS-0203-F (April 1995)* (updated in *DOE/EIS-0203-F-SA-02 (June 2005)).* These analyses demonstrated that the radiological impacts at naval facilities would be small. The conclusions reached in the previous assessments are judged to apply to the use of the M-290 container system. This section provides a review of the changes needed to use the M-290 at NNS in terms of potential radiological impact and demonstrates that these changes would be comparable to what was previously evaluated.

3.4.3.1 Loading Naval Spent Nuclear Fuel into M-290 Shipping Containers

The Naval Nuclear Propulsion Program has adopted stringent controls for minimizing occupational and public radiation exposures to as low as reasonably achievable (ALARA). These measures avoid, reduce, or eliminate any potentially adverse environmental impacts from naval spent nuclear fuel management activities, including those associated with containerization.[3]

These requirements, which include those established for facilities that would be used to handle or store radioactive materials, are incorporated into the design of buildings, such as the proposed M-290 loading facility. The requirements are to: (1) prevent the spread of radioactive contamination within the facilities or to the environment, (2) minimize exposure to personnel within the facility, (3) ensure that exposure to personnel outside the facility is negligible, and (4) minimize the effort required to decontaminate and decommission the facilities at the end of their useful life.

The levels of occupational radiation exposure resulting from M-290 loading operations would be comparable to the levels experienced during current aircraft carrier spent nuclear fuel handling operations. The amount of naval spent nuclear fuel removed from aircraft carriers and loaded into shipping containers would not change as a result of using the M-290 shipping container; there is no change to the source of radiation experienced during loading operations. Additionally, the equipment, processes, and procedures used to load the M-290 shipping container would be developed to the same stringent standards used for current operations, which have been demonstrated to successfully minimize occupational exposure.

3.4.3.2 Operations

Implementation of the Proposed Action at NNS would reduce or eliminate handling operations at NNS involving disassembly of aircraft carrier spent nuclear fuel assemblies, reconfiguration of the water pool, and packaging of the resulting LLRW. The amount of LLRW waste generated would be less than that using the M-140 shipping container because the non-fuel bearing structural material would be removed at NRF and not at NNS. These changes, as well as eliminating the reconfiguration of the water pool between ENTERPRISE and NIMITZ Class aircraft carriers, would reduce the already small potential for radiological impact at NNS. The occupational radiation exposures and environmental releases would be similar to or less than those currently experienced in preparing aircraft carrier spent nuclear fuel for shipment.

Consistent with stringent Naval Nuclear Propulsion Program radiological controls, the potential for significant radiological impact would be small. Risks to the public would be similar for loading operations under both the Proposed Action and the No-Action Alternative.

3.4.4 NON-HAZARDOUS WASTE/HAZARDOUS MATERIAL/HAZARDOUS WASTE

At NNS, solid, non-hazardous waste is collected and transported to an approved and licensed commercial landfill. Recycling programs for metals, paper, cardboard, and other miscellaneous waste streams account for approximately 69 percent of the total waste stream based on NNS Waste Recycling tracking data. No wastes are disposed of on-site. Liquid chemical waste and oily waste water are pretreated in on-site facilities, and the effluent is discharged to the Hampton Roads Sanitation district within permit limits. Hazardous wastes are handled in compliance with applicable state and federal regulations. An extensive storm and industrial waste water drain system exists at the shipyard, which is regulated under a Virginia Pollutant Discharge Elimination System permit.

If demolition of any facility would be needed to support construction of the new loading facility, the existing facility would be inspected for asbestos, lead-based paints, and other hazardous materials prior to demolition, in accordance with Virginia requirements. The area that would be used for constructing the new loading facility would be sampled and characterized prior to excavation, to ensure proper planning for waste disposal, in accordance with applicable laws including *Virginia Management Act, Virginia Hazardous Waste Management Act,* and *Virginia Solid Waste Management Act*, as applicable. The currently planned footprint that would be excavated has been reviewed and contains no known aboveground storage tanks, underground storage tanks, areas affected by

previous petroleum releases, solid waste management units, or hazardous waste treatment, storage, or disposal facilities. NNS would follow applicable Virginia Department of Environmental Quality requirements for reporting any previously unidentified petroleum releases or underground storage tanks found during sampling and excavation. If the footprint of the excavation would change, or if final facility siting encroaches upon any known areas of contamination, NNS would consult with the applicable office of the Virginia Department of Environmental Quality. The construction of the new facility would comply with the performance criteria of the *Chesapeake Bay Preservation Area Designation and Management Regulations* (9AC 10-20-10 *et seq.*).

Hazardous and solid wastes generated during the proposed action would be tested and disposed of in accordance with applicable laws and regulations, including the *Virginia Waste Management Act; Virginia Hazardous Waste Management Regulations; Virginia Solid Waste Management Regulations; Virginia Regulations for the Transportation of Hazardous Materials; Resource Conservation and Recovery Act;* and applicable regulations contained in *Title 40 of CFR, "U.S. Department of Transportation Rules for Transportation of Hazardous Materials."* Any 90-day hazardous waste accumulation areas would be operated in accordance with the *Virginia Hazardous Waste Management Regulations* general standard.

ENVIRONMENTAL IMPACT: Operations involving the handling of hazardous materials and waste would not change with implementation of the Proposed Action. Hazardous materials and waste, including waste from construction activities, have been managed at the shipyard without having a significant impact on human health or the environment. Construction and operation of a new loading facility would not result in significant impacts with regard to hazardous materials or waste. Hazardous materials and waste would continue to be handled (i.e., contained, stored, transported, and disposed of) in accordance with state and federal regulations. Under the No-Action Alternative, existing conditions would remain unchanged. No significant impacts to the environment would be expected with implementation of the Proposed Action.

3.5 OTHER NEPA CONSIDERATIONS FOR NNS

3.5.1 CUMULATIVE EFFECTS IMPACT

Cumulative effects are those environmental impacts that result from the incremental impact of the Proposed Action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

The Proposed Action and No-Action Alternative would be implemented in a region of intense industrial development. The Proposed Action involves the redevelopment of existing industrial areas and would not significantly increase the density of development at NNS. Existing facilities would be used for the No-Action Alternative. Neither the Proposed Action nor the No-Action Alternative would be expected to have significant impact on the environment. NNS periodically constructs or modifies its facilities to efficiently support its shipbuilding operations. Since these continuing operations are expected to be comparable to ongoing practices and because construction or renovation would occur in the previously developed industrial area, no significant cumulative impacts would be expected as a result of adoption of the Proposed Action.

3.5.2 UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS AND MITIGATION MEASURES TO OFFSET ADVERSE EFFECTS

Implementation of the Proposed Action would not result in any significant unavoidable adverse environmental effects. Features of the proposed loading facility design and construction and the

associated compliance with standard Naval Nuclear Propulsion Program procedures during shipping container loading operations would reduce the potential for significant impacts resulting from implementation of the Proposed Action. Therefore, no offsetting mitigation measures would be required.

SECTION 4

POTENTIAL ENVIRONMENTAL IMPACTS OF TRANSPORTATION ASSOCIATED WITH USE OF M-290 SHIPPING CONTAINERS

Section 4 provides an assessment of the potential environmental impacts associated with the Proposed Action to transport naval spent nuclear fuel from Newport News Shipbuilding and Dry Dock Company (NNS) to the Naval Reactors Facility (NRF) using a new longer, more efficient, shipping container system, designated the M-290 shipping container. The section also provides a description of the equipment and process changes needed to use the M-290 shipping container.

4.1 BACKGROUND

The environmental effects of the transportation of naval spent nuclear fuel have been previously evaluated in *Department of Energy Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Final Environmental Impact Statement (EIS)* [hereafter referred to as *DOE/EIS-0203-F (April 1995)*] and in *Department of the Navy Final EIS for a Container System for the Management of Naval Spent Nuclear Fuel* [hereafter referred to as *DOE/EIS-0251 (November 1996)*]. Based on these EISs, the Navy concluded that the environmental and public health impacts associated with transportation of naval spent nuclear fuel would be small.

4.1.1 CURRENT NAVAL SPENT NUCLEAR FUEL SHIPMENTS

Spent nuclear fuel assemblies removed from aircraft carriers must be partially disassembled at NNS to fit into the existing shielded shipping container, designated the M-140 shipping container. The M-140 shipping container is a large, stainless steel shipping container that is transported in a vertical orientation on a specially designed railcar. The major components of the M-140 shipping container are the shielded container, closure head, and protective dome. Internal support structures are installed inside the container to keep the naval spent nuclear fuel assemblies in place. These support structures are modified to accept fuel assemblies of different designs. The container is shipped dry with the exception of a small amount of residual water. Cooling fins on the outside of the container dissipate the heat generated by the spent nuclear fuel.

4.1.2 SPENT NUCLEAR FUEL SHIPPING PRACTICES

The regulatory standards for packaging and transport of spent nuclear fuel are designed to achieve four primary objectives:

- Protect persons and property from radiation emitted from packages during transportation by specific limitations on the allowable radiation levels.
- Provide proper containment of the spent nuclear fuel in the package (achieved by packaging design requirements based on performance-oriented packaging integrity tests and environmental criteria).
- Prevent nuclear criticality (an unplanned nuclear chain reaction that may occur as a result of concentrating too much fissile material in one place).
- Provide physical protection against theft and sabotage during transit.

The M-140 shipping containers have been designed and built to meet the technical requirements specified in 49 CFR 173 and 10 CFR 71. These regulations require the shipping container to meet specific criteria under normal transport and accident conditions. For normal transport conditions, the shipping container must be evaluated for various conditions including free drop, puncture, heat, cold, pressure, water spray, and vibration. For accident conditions, the shipping container must be evaluated for a series of severe hypothetical accident conditions with the results compared against the criteria provided in 10 CFR 71. The M-140 shipping containers have undergone rigorous engineering evaluations to assure compliance with 49 CFR 173 and 10 CFR 71 technical requirements. This compliance has been certified by the DOE and the Nuclear Regulatory Commission (NRC).

The railcars used for naval spent nuclear fuel shipments are owned by the U.S. Army and are permanently assigned to the Naval Nuclear Propulsion Program. The railcars and equipment undergo preventive maintenance and are regularly inspected to identify any degrading condition or components.

All naval spent nuclear fuel shipments are accompanied by government escorts. These individuals perform the duties necessary to ensure the safe transportation of the naval spent nuclear fuel. The government escorts receive specialized training in shipment safety procedures, radiological controls, security, and emergency response. The government escorts are trained to use, and are equipped with, the necessary radiological monitoring equipment to verify shipping container integrity.

In the unlikely event of a transportation accident, government escorts are trained to immediately notify emergency assistance personnel, assess the containment status of the shipping container, and communicate this information to technical and support personnel. Depending on the situation, the technical and support personnel may activate emergency control centers that are prepared to provide the government escorts with the necessary support to quickly and safely bring an emergency situation under control. Railroads that handle escorted shipments have specific emergency response procedures to safely expedite recovery for shipments that are involved in a rail line accident. Continuously manned railroad operation centers maintain the capability to contact personnel from a combination of resources that provide appropriate equipment and manpower at the accident scene. The Naval Nuclear Propulsion Program follows a transportation policy specifically aimed at protecting the public from any harm that could result from sabotage of spent nuclear fuel shipping containers including monitoring and evaluating threat assessments, which enable prompt and increased attention to safety during transport of any nuclear material.

The M-140 shipping containers loaded with naval spent nuclear fuel use commercial rail lines and move in general and dedicated train service to NRF from the defueling and refueling shipyards. Naval Nuclear Propulsion Program spent nuclear fuel rail shipments have moved safely in the Nation's rail system since 1957. The specific routes used to transport the naval spent nuclear fuel are selected by the rail companies. The Naval Nuclear Propulsion Program will continue to follow applicable transportation regulations and requirements in the movement of its spent nuclear fuel rail shipments.

4.1.3 ENVIRONMENTAL IMPACTS OF CURRENT NAVAL SPENT NUCLEAR FUEL SHIPMENTS

The transportation of spent nuclear fuel was described in detail in *DOE/EIS-0203-F (April 1995).* The environmental effects of spent nuclear fuel management were concluded to be small.

Radiation dose during normal, incident-free transportation of spent nuclear fuel results from exposure to the external radiation field that surrounds the shipping containers. Incident-free transportation risks for naval spent nuclear fuel were evaluated in *DOE/EIS-0203-F (April 1995) Volume 1, Appendix D,* and include radiological risks from exposure to radiation from the spent nuclear fuel, as well as non-

radiological risks, namely exposure to emissions from normal train operation. The radiological and non-radiological risks to the public were analyzed for the naval spent nuclear fuel shipping containers currently used by the U.S. Navy and were determined to be small.

The potential for accidents and the resulting consequences during transportation of spent nuclear fuel were also evaluated in detail in *DOE/EIS-0203-F (April 1995)*. The potential for a shipment of naval spent nuclear fuel to be involved in a transportation accident, as with the potential for any U.S. commercial spent nuclear fuel shipment, was shown to be small. Potential risks to the public from transportation accidents include radiological risks from damage to the container that would cause its contents to be released, and non-radiological risks, such as injury to individuals, and damage to property and the environment from derailment and other accidents involving the train and/or shipping container. The radiological and non-radiological risks to the public for the naval spent nuclear fuel shipping containers currently used by the U.S. Navy were analyzed in *DOE/EIS-0203 (April 1995)* and were determined to be small.

The rugged design of a spent nuclear fuel shipping container provides protection from sabotage. Accidents analyzed in *DOE/EIS-0251 (November 1996)* showed that the environmental effects of all accidents analyzed and acts of terrorism were small. DOE reanalyzed the effects of sabotage in *Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada [DOE/EIS-0250-F (February 2002)]*, and determined that the risks due to transportation accidents would be small. The safety features that provide containment, shielding, and thermal protection provide protection against sabotage.

4.2 THE M-290 TRANSPORTATION SYSTEM

This section describes the new longer shipping container transportation system that would be needed to support the use of the M-290 shipping container. The M-290 transportation system includes the M-290 spent nuclear fuel shipping container, the shipping cradle (a container support structure that holds the container on the railcar), and the railcar.

4.2.1 M-290 SHIPPING CONTAINER

The major elements of the M-290 shipping container system are the shielded container, the closure system, the impact mitigating domes (to absorb energy during hypothetical transportation accidents), and the internal structures to support and protect the naval spent nuclear fuel. The M-290 shipping container would be a “hybrid” design; spent fuel can shipped using either a canister-based or a cask-based configuration. The existing M-140 shipping containers are cask-based.

For the canister-based application, a stainless steel canister would be placed into the transportation cask. The canister would contain the internal structures that support and protect the naval spent nuclear fuel. The naval spent nuclear fuel would be loaded into the canister, the canister would be sealed with a closure, and then the transportation cask would be sealed with a closure.

For the cask-based applications, an internal canister would not be used and the internal support structures would be installed into the transportation cask to protect the naval spent nuclear fuel. The naval spent nuclear fuel would be loaded directly into the cask, which would be sealed with a closure.

The closure systems for both the canister-based and the cask-based applications would maintain containment and confinement of the naval spent nuclear fuel within the shipping container.

The M-290 shipping container would be designed and built to meet the technical requirements for shipment of spent nuclear fuel specified in 49 CFR 173 and 10 CFR 71. In addition, scale model or mock-up tests would be performed to verify selected engineering evaluations. The rigorous process used to design, test, and certify the M-290 shipping container would be consistent with that used for the existing, shorter M-140 shipping container.

The M-290 shipping container would have a number of features that would work together to ensure that the shipping container limits radiation exposure and provides a safe and secure vessel for transport of naval spent nuclear fuel. The container wall thickness would be chosen to balance the considerations of external radiation exposure and container strength, while allowing sufficient transfer of the heat generated by the naval spent nuclear fuel.

The M-290 shipping container wall thickness would be sufficient to ensure that external radiation levels meet DOT requirements that protect people and property from radiation emitted from packages during transportation. The amount of radiation emitted would be significantly below 49 CFR 173 regulatory limits for shipment of spent nuclear fuel. The M-290 shipping container would be designed to ensure radiation levels outside the container are comparable to the levels for current naval spent nuclear fuel M-140 shipments.

4.2.2 M-290 RAILCAR AND SHIPPING

A new high weight capacity railcar would be required to support transportation of naval spent nuclear fuel in the longer M-290 shipping containers. The M-290 shipping container would be oriented horizontally on the railcar, which would allow the shipping envelope (height and width) requirement for the M-290 to be about the same as M-140 containers that are shipped in a vertical orientation. The Association of American Railroads (AAR) designates this shipping envelope as “Plate F” [a two-dimensional (height and width) rectangle that defines the space required for shipment]. The railcar used for the M-290 shipping container should be within this envelope or possibly even a smaller envelope, since the height of the M-290 when horizontal (i.e., the diameter) may be less than the vertical height of the M-140 shipping container.

The M-290 shipping container would be heavier and longer than the M-140 shipping container. The railcar used for the M-290 shipping container would be a tri-truck, 12-axle railcar rather than the dual-truck, 8-axle railcar used for M-140 shipping containers. The design of the M-290 railcar would be based on a current, proven design for a commercial, 12-axle, tri-truck, span-bolstered railcar, which has been in service since 2001 and has an estimated empty weight of approximately 200,000 pounds. The M-290 railcar would be about 78 feet long and would meet shipyard turn radius requirements (i.e., capable of navigating a 150-foot radius turn).

Since the height, width, and weight per axle of the M-290 shipping container system would be comparable to the M-140, the railcar used for the M-290 shipping container would be capable of traveling the same transportation routes as the railcar used for the M-140 shipping container.

The new railcar body would have integral shoring pads to support and level the car body when installing and removing the shipping containers. A shipping cradle would be attached to the railcar to provide stability to the horizontal container and ensure it remains firmly attached to the car. The new railcar design would meet applicable DOT requirements. The railcar would be designed in compliance with current standards that meet or exceed those used for railcars supporting the M-140 shipping containers. The railcar currently used to transport the M-140 shipping containers was designed using the *AAR Standard M-1001* and final AAR approval was received based on the railcar characterization, structural, and dynamic performance testing. In 2003, the AAR promulgated additional design and testing requirements in *AAR-S-2043 “Performance Specifications for Trains*

Used to Carry High Level Radioactive Material-S-2043." The M-290 railcar would be designed using the *AAR Standard M-1001* as well as the new *AAR Standard S-2043*. AAR approval of the final design would be requested.

Figure 4-1 is a notional depiction of an M-290 shipping container and railcar.

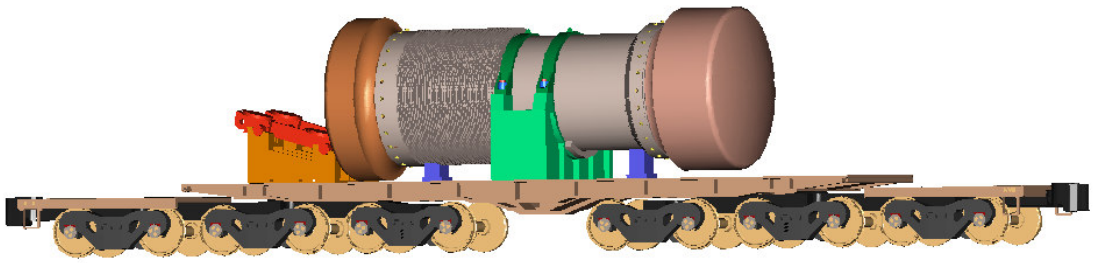


Figure 4-1
M-290 Shipping Container on a Railcar

4.3 ENVIRONMENTAL IMPACTS RESULTING FROM USE OF M-290 SHIPPING CONTAINERS

This section provides an assessment of the potential environmental impacts that would result from use of the M-290 shipping container system with respect to how they compare with the impacts resulting from use of existing shipping containers. Impacts from the use of the existing shipping containers were previously evaluated in *DOE/EIS-0203-F (April 1995)* and were determined to be small.

The environmental impacts of shipping naval spent nuclear fuel in the M-140 under normal and accident conditions were previously evaluated in *DOE/EIS-0203-F (April 1995)* and were determined to not be significant. The number of naval spent nuclear fuel assemblies shipped from NNS to NRF and the number of shipments would not increase as a result of using the M-290. The naval spent nuclear fuel capacity of the new longer M-290 shipping containers would be the same as the capacity of the shorter M-140 shipping containers. Since the number of shipments would not increase, the air emissions (e.g., locomotive exhaust) would be consistent with the No-Action Alternative. (Refer to the Record of Non-Applicability in Appendix C.)

The M-290 shipping container would be designed such that the external radiation exposure levels from the longer shipping container would be comparable to the levels for current naval spent nuclear fuel M-140 shipments. Since the radiation levels and amounts of spent nuclear fuel shipped in the M-290 would be comparable to the M-140, the use of the M-290 would not change the conclusions given in *DOE/EIS-0203-F (April 1995)* regarding the radiological impacts of transportation of naval spent nuclear fuel. The effect of changes on both the exposed worker and the general public would continue to be small and are below applicable limits.

No significant change in environmental impact would result from the Proposed Action compared to the No-Action Alternative.

4.4 OTHER NEPA CONSIDERATIONS

4.4.1 CUMULATIVE EFFECTS IMPACT

Cumulative impacts are those environmental impacts that result from the incremental impact of the Proposed Action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. The collective dose to the general population and workers is the measure used to quantify cumulative transportation impacts. The collective dose resulting from cumulative impacts of the shipment of all nuclear material in the United States, including Navy, DOE, civilian spent nuclear fuel, and medical waste was analyzed and concluded to be small in *DOE/EIS-0203-F (April 1995)*. The use of the M-290 shipping container would not increase the number of shipments. Therefore, the use of the M-290 shipping container would not change the conclusions reached in *DOE/EIS-0203-F (April 1995)* that the cumulative impacts from the transportation of spent nuclear fuel are small.

4.4.2 UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS AND MITIGATION MEASURES TO OFFSET ADVERSE EFFECTS

The Navy and DOE previously considered unavoidable adverse effects with respect to transportation of naval spent nuclear fuel in *DOE/EIS-0251 (November 1996)* and concluded that the unavoidable adverse effects of the transportation activities would be small.

The effects of radiation exposure from the naval spent nuclear fuel are minimized through the use of shielding to reduce the radiation fields. The potential consequences of an accident are minimized by the rugged design of the shipping container and in the unlikely event of a transportation accident, government escorts are trained to initiate emergency response as discussed in Section 4.1.2. Therefore, no offsetting mitigation measures would be required.

SECTION 5

POTENTIAL ENVIRONMENTAL IMPACTS OF USING M-290 SHIPPING CONTAINERS AT NAVAL REACTORS FACILITY

Section 5 provides an assessment of the potential environmental impacts associated with the Proposed Action to use a new longer, more efficient shipping container, designated the M-290 shipping container at the Naval Reactors Facility (NRF) on the Idaho National Laboratory (INL) site in Idaho. This section also provides a description of the facilities and operations at NRF and identifies the changes that would be needed to implement the Proposed Action at this facility.

5.1 BACKGROUND

INL is located on approximately 570,000 acres in southeastern Idaho and is 34 miles west of Idaho Falls, 38 miles northwest of Blackfoot, and 22 miles east of Arco. (See Figure 5-1.) INL is owned by the Federal Government and administered and managed by the Department of Energy (DOE). It is located primarily within Butte County, but portions of the site are in Bingham, Jefferson, Bonneville, and Clark counties. The site is roughly equidistant from Salt Lake City, Utah and Boise, Idaho.

NRF is located on the INL and has the facilities necessary to receive, examine, prepare for storage, and ship naval spent nuclear fuel and irradiated test specimens. One of the facilities is the Expended Core Facility (ECF) which contains offices and enclosed work areas, including an array of interconnected reinforced concrete water pools, which permit visual observation of naval spent nuclear fuel during handling and inspection in the water pool, while shielding workers from radiation. The information derived from the examinations performed at NRF provides engineering data on nuclear reactor environments, material behavior, and design performance. Naval spent nuclear fuel examinations have significantly contributed to the longer core lives and continued safe performance of current naval reactor designs. Longer core lives have resulted in substantial reduction in the amount of spent nuclear fuel generated by the Navy.

Facilities and operations at INL and NRF related to naval spent nuclear fuel management were described in detail in previous Environmental Impact Statements (EISs) (*Department of Energy Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Final EIS* [hereafter referred to as *DOE/EIS-0203-F (April 1995)*] and *Department of the Navy Final EIS for a Container System for the Management of Naval Spent Nuclear Fuel* [hereafter referred to as *DOE/EIS-0251 (November 1996)*]). Detailed descriptions of the affected environment at INL were provided in *DOE/EIS-0203-F (April 1995), Volume 1, Appendix B; Volume 1, Appendix D, Sections 4.2 and 5.2; and Volume 2, Section 4.* Based on these EISs, the Navy concluded that the environmental and public health impacts associated with processing and dry storage of spent nuclear fuel, and with construction of facilities at NRF would be small.

5.2 NAVAL SPENT NUCLEAR FUEL FACILITIES AND HANDLING OPERATIONS AT NRF

This section describes the existing facilities and operations at NRF for receipt, processing, and storage of naval spent nuclear fuel received in current design spent nuclear fuel shipping containers, designated M-140 shipping containers.

5.2.1 CURRENT OPERATIONS AND FACILITIES AT NRF

As discussed in *DOE/EIS-0251 (November 1996),* the facilities at NRF are used to: (1) receive naval spent nuclear fuel, (2) load the spent nuclear fuel into the ECF water pools, (3) process spent nuclear fuel in the ECF water pools, (4) load processed spent nuclear fuel assemblies into canisters for dry storage and shipment to a repository (spent fuel canisters), and (5) temporarily store the loaded spent fuel canisters in the Overpack Storage Building. Spent fuel canisters used for dry storage of naval spent nuclear fuel in Idaho will be used for shipment of spent nuclear fuel to a geologic repository, and may be used for disposal purposes once the disposal requirements for the geologic repository are finalized.

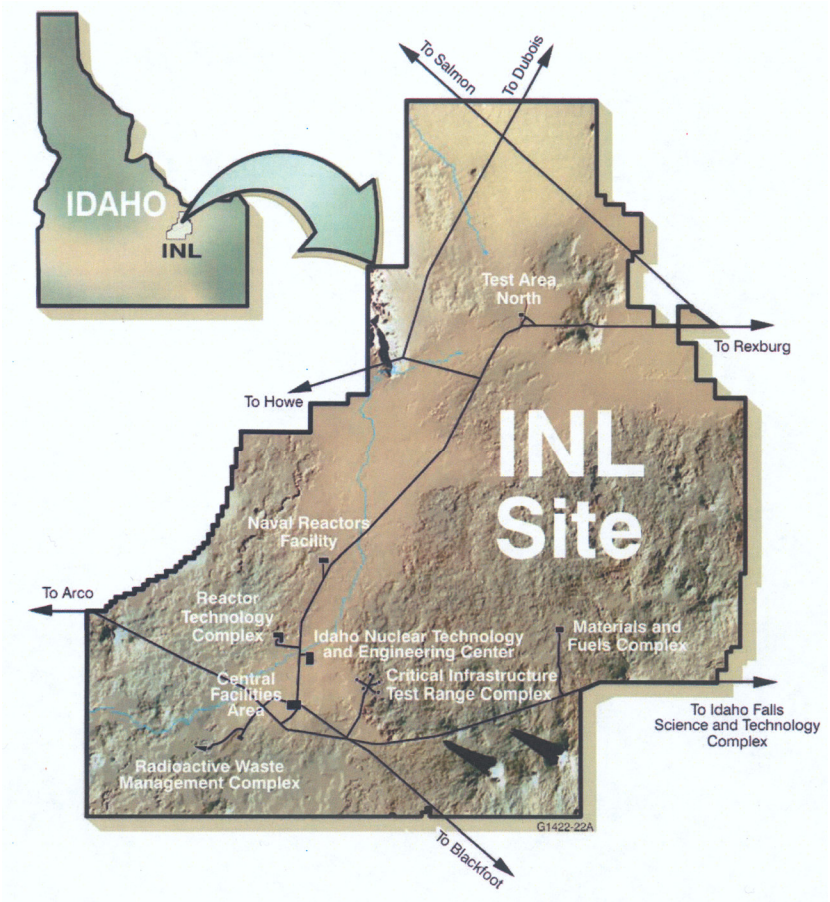


Figure 5-1
Location of NRF in Idaho

DOE/EIS-0203-F (April 1995) provided the details of the current receipt and handling processes for naval spent nuclear fuel. Naval spent nuclear fuel is removed from nuclear-powered ships at refueling shipyards (aircraft carriers at Newport News Shipbuilding and Dry Dock Company (NNS) and submarines at other shipyards) and loaded into existing M-140 shipping containers. The M-140 shipping containers are sealed at the shipyard and shipped to NRF on railcars. The M-140 shipping containers are received at NRF and are staged on rail sidings located inside the developed area of NRF. The M-140 shipping containers are then brought into the East End of ECF and are prepared for defueling by removing the protective dome. Appropriate containments to prevent release of radioactive material are installed, and the container access plug is removed to allow access to the naval spent nuclear fuel assemblies.

M-140 shipping containers are unloaded in the East End of ECF using a fuel handling machine, which draws the assemblies out of the container into a shielded volume. The fuel handling machine is transferred to the ECF water pools. The naval spent nuclear fuel assembly is then discharged into a receiving receptacle in the water pools.

Naval spent nuclear fuel assemblies have non-fuel bearing structural components above and below the fuel region to maintain proper support and spacing within the reactor. These upper and lower non-fuel bearing structural components are generally removed to provide access to the fuel-bearing sections to permit examination of the assembly. Currently, a portion of the non-fuel structural material of the aircraft carrier spent nuclear fuel assembly is removed in a water pool at NNS by unbolting portions of the structural components of the assembly. Remaining non-fuel structural material is removed in the ECF water pools using an underwater cutting saw. The non-fuel bearing structural material removed from both aircraft carrier and submarine assemblies is classified as low level radioactive waste (LLRW). Based upon the radiation levels exhibited by LLRW, this waste is designated as either remote-handled (RH) or contact-handled (CH) LLRW. Much of the LLRW associated with the spent fuel assembly is RH-LLRW. NRF packages RH-LLRW in the water pool in accordance with DOE disposal site requirements and ships the waste to authorized DOE disposal sites.

After the upper and lower non-fuel bearing metal structures have been removed from a naval spent nuclear fuel assembly in the ECF water pools, a lifting fixture is installed to facilitate handling. Staging and movement of the assembly is performed in a vertical orientation. Prepared fuel may then be inspected immediately or it may be held in storage racks for a time prior to inspection. Visual examinations of naval spent nuclear fuel assemblies are performed to verify that the fuel has performed as expected.

As described in detail in *DOE/EIS-0251 (November 1996),* the Navy is committed to transfer naval spent nuclear fuel at INL out of wet storage facilities and into dry storage. After examination in the ECF water pools, naval spent nuclear fuel assemblies are removed from the water pool and put into spent fuel canisters. After the canister is loaded and sealed, the spent fuel canister is placed into a concrete overpack that provides radiation shielding. The concrete overpack, together with the spent fuel canister, is designed to meet the technical requirements for dry storage specified in 10 CFR 72. The spent fuel canisters in the dry storage concrete overpacks are then moved from ECF to the Overpack Storage Building.

When the geologic repository opens, the plan under the No-Action Alternative, consistent with *DOE/EIS-0251 (November 1996),* is to move the concrete overpack back into the ECF Dry Storage Canister Loading Station. The spent fuel canisters will be removed from the concrete overpack and placed into a shipping overpack. The shipping overpack will be moved onto a railcar in the South End Extension of ECF and the spent fuel canister will be shipped to the geologic repository. Upgrades are planned to link this area of ECF to existing rail lines at NRF. *DOE/EIS-0251 (November 1996*) concluded the impacts of these facility upgrades would be small.

5.2.2 ENVIRONMENTAL IMPACT OF CURRENT OPERATIONS AT NRF

Environmental impacts associated with the management of naval spent nuclear fuel at NRF were previously described in *DOE/EIS-0203-F (April 1995)* and updated in *DOE/EIS-0203-F-SA-02 (June 2005)*. This EIS and the update evaluated environmental conditions, including geology, topography, soil resources, ecological and water resources, noise, air quality, land use, cultural resources, socioeconomics, traffic and transportation, aesthetic and scenic resources, utilities and energy, radiological safety, and hazardous materials/hazardous waste. The potential natural and man-made environmental impacts for naval spent nuclear fuel were assessed in *DOE/EIS-0203-F (April 1995)*

Volume 1, Appendix B. This review concluded the environmental impact of operations at NRF related to naval spent nuclear fuel is very small.

DOE/EIS-0251 (November 1996) evaluated a variety of shipping container designs for use in storing and shipping naval spent nuclear fuel. This EIS evaluated the full range of environmental impacts and other effects associated with the loading and storage of naval spent nuclear fuel and showed that for all the alternatives considered, the impacts would be so small, and differ so little among alternatives that the impacts were of little assistance in differentiating among the alternatives. Areas considered in the evaluation included the effects on public health, ecology, cultural resources, aesthetic and scenic values, air and water resources, and geology. Impacts on areas such as noise, traffic and transportation, and utilities normally associated with routine daily activities were also considered and concluded to be small. *DOE/EIS-0251 (November 1996)* also considered the effects of sabotage, including terrorist attack, and stated that the effects were expected to be conservatively bounded by limiting accidents analyzed in the EIS for each facility.

5.3 DESCRIPTION OF PROPOSED NAVAL SPENT NUCLEAR FUEL FACILITIES AND HANDLING OPERATIONS AT NRF

This section describes the changes to facilities and handling operations at NRF that would be needed, if the Proposed Action were to be implemented. These changes are relative to the unloading, processing, and dry storage of aircraft carrier spent nuclear fuel transported in M-290 shipping containers.

5.3.1 CHANGES IN NAVAL SPENT NUCLEAR FUEL HANDLING OPERATIONS AT NRF DUE TO PROPOSED ACTION

The M-290 shipping container, containing longer aircraft carrier spent nuclear fuel assemblies, would be transported to NRF in a horizontal orientation on a railcar and staged on railroad sidings within the already developed area of NRF. The number of railroad sidings would be sufficient to accommodate about 20 M-290 shipping containers. The railcar holding the M-290 shipping container would then be brought into a newly constructed Cask Shipping and Receiving Facility, which would be located east of ECF, adjacent to the Overpack Storage Building. The M-290 shipping container would be lifted into a vertical orientation, removed from the railcar, and then moved into the trench located in the Cask Shipping and Receiving Facility. In the cask-based configuration, each spent fuel assembly in the M-290 shipping container would be placed into canisters, which would be sealed and loaded into concrete shielded overpacks for dry storage prior to processing for eventual shipment to a permanent repository. In the canister-based configuration, the sealed, loaded shipping container internal canister containing the spent nuclear fuel assemblies would be lifted from the M-290 shipping container as a unit and loaded into a concrete overpack for dry storage. The M-290 storage overpack would be nearly identical to the dry storage overpacks currently in use. Like the existing overpacks, the storage overpack for M-290 would be designed to meet the dry storage technical requirements specified in 10 CFR 72. The dry storage system would be designed such that shielding is provided by large amounts of concrete and steel. The design would also ensure the dry storage system would dissipate heat by natural flow of air.

Once loaded, the concrete overpacks with canisters of naval spent nuclear fuel, would be moved to the Overpack Storage Building. Operations for dry storage of naval spent nuclear fuel prior to processing would be similar to current NRF operations for dry storage after processing, described in *DOE/EIS-0251 (November 1996)*. Using dry storage prior to processing would allow prompt return of the emptied shipping containers to NNS, to support subsequent defueling and refueling operations and to minimize the number of new shipping containers that need to be procured and maintained.

The current long-range plan for NRF operations, based on adoption of the M-290, shows that 25 shipping containers of aircraft carrier spent nuclear fuel would be received during 2015 through 2017. The naval spent nuclear fuel in these containers would be processed from 2023 through 2033 and shipped out of Idaho as required by the 1995 Settlement Agreement among the State of Idaho, the DOE, and the Navy, as amended on June 4, 2008.

As stated in *DOE/EIS-0251 (November 1996)*, naval fuel, which has high integrity cladding, can be stored indefinitely in dry storage containers. Dry storage provides effective cooling and shielding for the storage of such high-integrity spent nuclear fuel. Naval spent nuclear fuel can be placed in dry storage because specific features of the canisters make it possible to keep the fuel in a safe condition. Natural convection in the concrete overpack transfers the heat from the canister to ambient air. The amount of spent nuclear fuel in the canister, and thus amount of decay heat, is limited, to ensure the spent nuclear fuel in the canister remains within design temperatures.

To process aircraft carrier spent nuclear fuel assemblies, the loaded concrete overpacks would be moved from the Overpack Storage Building to the ECF Dry Storage Canister Loading Station. The water pool processing operations for the longer aircraft carrier spent nuclear fuel assemblies would be slightly different than the current processing operations (e.g., longer sections would be removed from the assemblies); but the operations would be similar to those used for processing of aircraft carrier prototype full-length assemblies previously handled at NRF. Staging and movement of the longer aircraft carrier spent nuclear fuel assemblies would be limited to deeper sections of the ECF water pools, as these operations are typically done with fuel assemblies in the vertical orientation.

After the non-fuel bearing structural portions of the assembly are removed in water pools, the aircraft carrier spent nuclear fuel assemblies would be packaged in spent fuel canisters and placed in dry storage pending transfer to a permanent geologic repository.

5.3.1 CHANGES TO NRF FACILITIES DUE TO PROPOSED ACTION

NRF would need the capability to receive and stage the new M-290 shipping containers and railcars prior to unloading. Some additional rail sidings at NRF would be needed to stage the additional M-290 shipping containers and rail cars since submarine spent nuclear fuel shipments in M-140 shipping containers would continue in parallel with aircraft carrier shipments. Any new rail sidings constructed would be located within the already developed area of NRF. New rails leading into the Cask Shipping and Receiving Facility would be constructed in already disturbed areas adjacent to NRF. The new rail lines would be connected to existing rail lines.

Once at NRF, the M-290 shipping container and railcar would be moved into a newly constructed Cask Shipping and Receiving Facility, where the shipping container would be uprighted. The Cask Shipping and Receiving Facility would be constructed to receive and package naval spent nuclear fuel for transfer to the geologic repository. Use of a Cask Shipping and Receiving Facility for handling of M-290 shipping containers would allow receipt of the aircraft carrier spent nuclear fuel at ECF to occur in parallel with receipt of submarine spent nuclear fuel in the East End of ECF. The foundation size of the Cask Shipping and Receiving Facility would be less than 30,000 square feet.

Figure 5-2 depicts the projected location of the Cask Shipping and Receiving Facility, the new rail lines, and the new rail sidings with respect to the current NRF. Site NRF-61 is a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) site, which is near the rail lines, but will not be disturbed by their planned path.

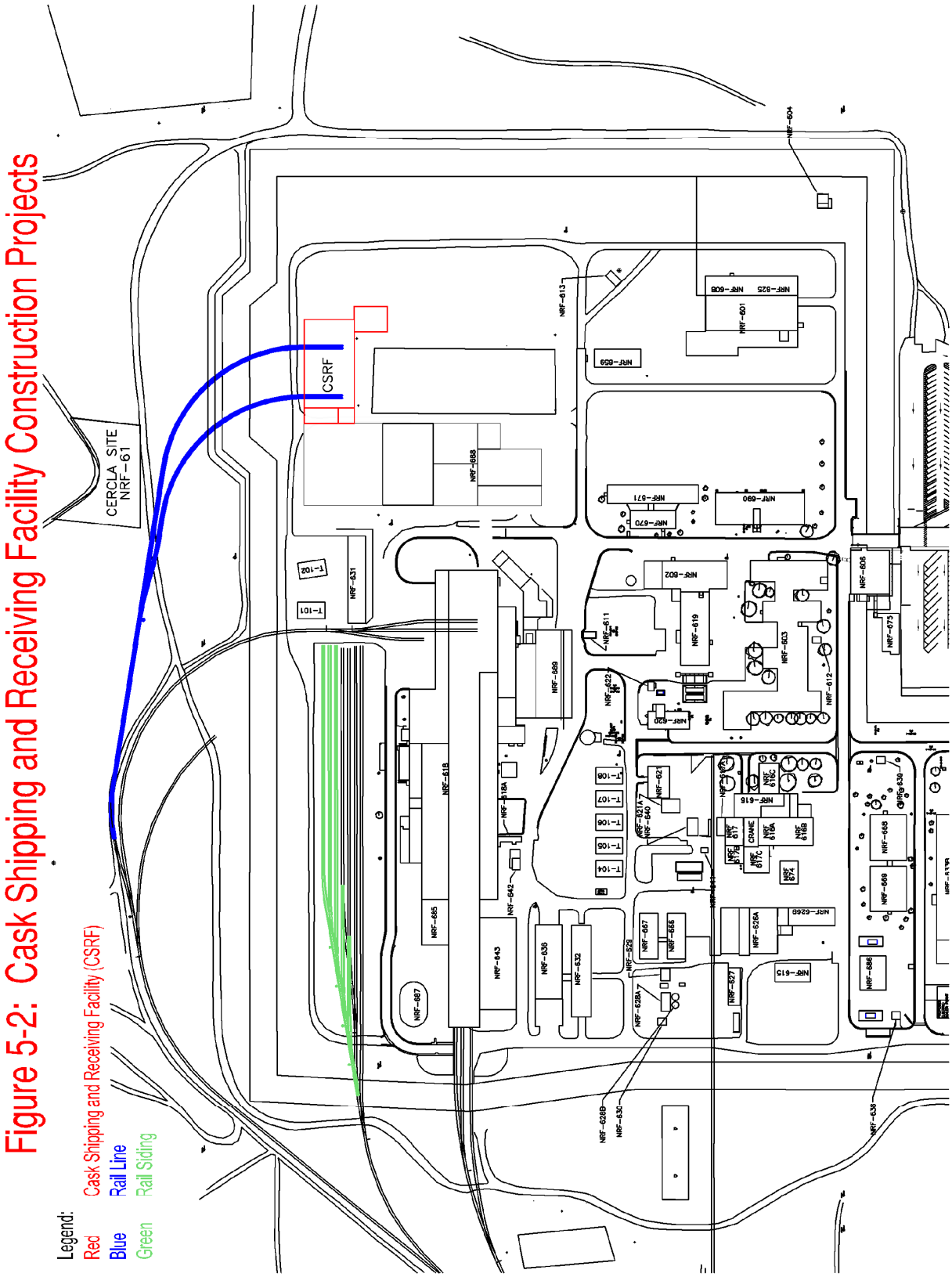


Figure 5-2: Cask Shipping and Receiving Facility Construction Projects
Legend:
Red Cask Shipping and Receiving Facility (CSRF)
Blue Rail Line
Green Rail Siding
CERCLA SITE
NRF-61
CSRF
NRF-613
NRF-659
NRF-825
NRF-608
NRF-601
NRF-604
NRF-671
NRF-670
NRF-690
NRF-688
NRF-631
T-102
T-101
NRF-602
NRF-611
NRF-619
NRF-623
NRF-620
NRF-612
NRF-605
NRF-675
NRF-685
NRF-618
NRF-618A
NRF-642
NRF-643
NRF-635
NRF-632
NRF-687
T-108
T-107
T-106
T-105
T-104
NRF-621
NRF-616
NRF-618C
NRF-618B
NRF-618A
NRF-538
NRF-668
NRF-669
NRF-629
NRF-667
NRF-666
NRF-526A
NRF-6268
NRF-613
NRF-627
NRF-628A
NRF-628B
NRF-630
NRF-686
NRF-638

NRF has reviewed the current excavation location planned for construction of the Cask Shipping and Receiving Facility, the new rail lines and the new rail storage area and determined that it contains no known aboveground storage tanks, underground storage tanks, areas affected by previous petroleum releases, CERCLA sites, or hazardous waste treatment, storage, or disposal facilities. Stormwater runoff from the Cask Shipping and Receiving Facility, consistent with other buildings at NRF, would be discharged into an existing stormwater runoff system. The Cask Shipping and Receiving Facility would be designed in accordance with the *Idaho Uniform Statewide Building Code*. The Cask Shipping and Receiving Facility would meet stringent Naval Nuclear Propulsion Program requirements for control of naval spent nuclear fuel and other radioactive materials. Environmental permits for the site would be modified as required to reflect the changes in operations and facilities.

New electric overhead cranes with up to 310-ton capacity would be needed to support lifting or handling of the M-290 shipping container, which is projected to weigh more than 200 tons. A 75-ton auxiliary hoist would also be incorporated into the Cask Shipping and Receiving Facility. Other support equipment, such as stands and shielding, would be procured as needed to support the M-290 shipping container unloading operations.

5.4 ENVIRONMENTAL IMPACT OF USING THE M-290 SHIPPING CONTAINER AT NRF

This section focuses on those areas potentially subject to environmental impacts resulting from use of the M-290 shipping container and from construction of a Cask Shipping and Receiving Facility and rail lines. The Cask Shipping and Receiving Facility would be located east of ECF, adjacent to the Overpack Storage Building. The new rail lines would be located at NRF on already developed or disturbed areas. Figure 5-2 depicts the projected location of the Cask Shipping and Receiving Facility, the new rail lines, and the new rail sidings.

5.4.1 NATURAL IMPACTS

DOE/EIS-0203-F (April 1995) evaluated the DOE spent nuclear fuel management and waste management programs and concluded that 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 (which included NRF) would be negligible. Furthermore, since naval spent nuclear fuel management is a low-intensity industrial activity, its contribution to noise and traffic was concluded to be inconsequential and its utility needs would generally be within the capabilities of the sites. This includes the impacts resulting from the transportation, receipt, handling, and examination of naval spent nuclear fuel. The impacts associated with dry storage of spent nuclear fuel were evaluated in *DOE/EIS-0251 (November 1996)*. The environmental impacts associated with use of the M-290 shipping containers at NRF are expected to be similar to those already evaluated in *DOE/EIS-0203-F (April 1995), Volume 1, Appendix B, Section 5*. The changes in processing operations and the storage of the naval spent nuclear fuel assemblies in concrete overpacks, as identified above, are actions within the normal operating scope of the facility and would have similar small effects on the natural or man-made environment as the current processing and holding actions. The natural and man-made environment and the existing resources at NRF would be similar for the No-Action Alternative and the Proposed Action.

- Geology, Topography, Soils - Facility construction and modifications associated with the Proposed Action would be within the already developed or disturbed area of the NRF site. Existing conditions with respect to geology, topography, and soils would remain essentially unchanged and comparable to the No-Action Alternative. Minimal potential environmental impact to geology, topography, and soils would be associated with implementation of the Proposed Action.

ENVIRONMENTAL IMPACT: Existing conditions with respect to geology, topography, and soils would remain unchanged and comparable to the No-Action Alternative. Minimal potential environmental impact to geology, topography, and soils would be associated with the implementation of the Proposed Action.

- Ecological Resources - Ecological resources (i.e., the terrestrial ecology, wetlands, aquatic ecology, and endangered and threatened species) in the vicinity of INL would not be affected, since no additional land outside the already developed or disturbed portion of NRF would be disturbed. For the Proposed Action, the existing conditions would remain unchanged and comparable to the No-Action Alternative. A more detailed discussion of ecological resources at INL is provided in *DOE/EIS-0203-F (April 1995), Volume 1, Appendix B, Sections 4.9 and 5.9.*

  ENVIRONMENTAL IMPACT: The Proposed Action would not change the existing condition of the area with respect to its ecological resources. Under the No-Action Alternative, existing conditions would remain unchanged. Therefore, there would be minimal environmental impact on ecological resources associated with implementation of the Proposed Action.

- Water Resources – Existing water resources would remain unchanged. For the Proposed Action, the existing conditions would remain unchanged and comparable to the No-Action Alternative. NRF operations have virtually no effect on surface waters. The small amount of hazardous waste produced during operations produces no effect on the environment in the vicinity of INL, and therefore would have no impact on water quality in the area. A more detailed discussion of water resources is provided in *DOE/EIS-0203-F (April 1995), Volume 1, Appendix B, Sections 4.8 and 5.8.* For the construction of the Cask Shipping and Receiving Facility, the most significant change to existing water resource conditions would be a small (estimated to be about 5%) increase of water flow to the NRF Industrial Waste Ditch, compared to the No-Action Alternative. Since NRF does not discharge hazardous constituents to the Industrial Waste Ditch, no impacts to groundwater quality are expected. NRF does not discharge stormwater to waters of the State of Idaho or the United States; therefore, no impact to surface water is expected.

  Construction and excavation activities associated with the Cask Shipping and Receiving Facility and rail lines would be in the developed or disturbed area of NRF. Construction related activities would be done in accordance with applicable federal, state, and local requirements. An erosion and sediment control plan including discussion of stormwater management would be prepared and implemented in accordance with local controls.

  ENVIRONMENTAL IMPACT: Use of the new shipping container system would not significantly change the existing water resource conditions. Under the No-Action Alternative, existing conditions would not change. Construction of a new facility would have no significant impact on the water resources in the area. Minimal environmental impact on water resources would be associated with the implementation of the Proposed Action.

5.4.2 MAN-MADE IMPACTS

- Air Quality - Facility construction and modifications associated with the Proposed Action are expected to be minor. NRF is located in an area designated as neither nonattainment nor maintenance for National Ambient Air Quality Standards (NAAQS). Thus, the Clean Air Act Conformity Rule does not apply.

Short-term impacts to localized air quality may result from construction of the new facility and rail lines. These impacts would result from fugitive dust generated by site preparation and construction activities and from tailpipe emissions caused by construction equipment and vehicles. Appropriate fugitive dust control measures would be employed, per Idaho air quality regulations. No open burning of construction or cleared material would be done at NRF. Standard dust suppression techniques, such as watering, would be used as needed during construction to prevent or suppress fine particulates from leaving the surface and becoming airborne through the action of mechanical disturbance or wind. Exhaust emissions from the transport of workers and machinery to the site and from construction equipment would not exceed Applicability Threshold limits for the respective pollutants and would be considered *de minimis*. The project would not be considered Regionally Significant. No permits or approvals would be required prior to construction or operation of the new facility.

Relative to existing conditions and operations at INL, no significant impacts to air quality can be attributed to handling, loading, and dry storage of naval spent nuclear fuel at INL under any alternative container systems.[4] Air quality at the facility may be temporarily impacted during construction of the additional rail lines, but is not expected to change designation of the area with respect to NAAQS. Naval spent nuclear fuel management activities would have no impact on nonradiological ambient air quality and would not be expected to cause either radiological or nonradiological air quality impacts to exceed state or Federal standards, or to significantly affect air quality in any other respect at NRF.[5] For the Proposed Action, air emissions at NRF would remain essentially unchanged and comparable to the No-Action Alternative. Details of the non-radiological air quality and radiological air quality impacts are provided in *DOE/EIS-0203-F (April 1995), Volume 1, Appendix B, Sections 4.7 and 5.7.*

ENVIRONMENTAL IMPACT: The effect of the Proposed Action on the local air quality would be minimal and temporary during construction. Effects on the local air quality during shipping container loading and unloading operations would be similar to current loading and unloading operations. Under the No-Action Alternative, air quality would remain the same. Minimal environmental impact on air quality would be associated with implementation of the Proposed Action.

- Noise - NRF is an industrial environment, characterized by noise from trucks, automobiles, cranes, engine-powered equipment, and operating transmission lines. Noise in the area, generated as a result of the use of the longer shipping container, would not be discerned beyond the site boundaries and would have no discernible impact on noise in the vicinity of INL.[6] Noise from construction of a Cask Shipping and Receiving Facility and building additional rail lines would be temporary in impact. Noise mitigation efforts currently in place would be followed. Additional mitigation measures (e.g., ear protection, exclusion of unnecessary workers from the area during peak noise occurrences) would be implemented as needed. Construction activities would be intermittent and temporary in nature. Noises from future container loading and unloading operations would be similar to those from current operations. The proposed activities would be located adjacent to the area currently used for naval spent nuclear fuel loading, unloading, and handling operations. Noise resulting from the Proposed Action would remain comparable to the No-Action Alternative.

  ENVIRONMENTAL IMPACT: The existing noise environment of the area is characteristic of an industrial setting. Noise impacts during construction would be localized and minor. Once construction would be complete, conditions would be similar to those currently experienced. Under the No-Action Alternative, conditions would remain unchanged. Minimal environmental impact from noise would be associated with the Proposed Action.

- Land Use - Land use at NRF would be the same for both the No-Action Alternative and Proposed Action. The Cask Shipping and Receiving Facility would be within already disturbed and developed areas. Establishment of additional rail lines within the disturbed area of NRF would be within the current land use actions. Use of the land would be substantially unchanged. Existing environmental conditions would persist. For the Proposed Action, the existing conditions would remain unchanged and comparable to the No-Action Alternative.

- Cultural Resources - The cultural resources in the region would not be affected by the use of the longer shipping containers. The construction and modifications that would be made at NRF would occur in already developed or disturbed areas of NRF and would not impact cultural resources. For the Proposed Action, the existing conditions would remain unchanged and comparable to the No-Action Alternative. Further information on cultural resources at INL is provided in *DOE/EIS-0203-F (April 1995), Volume 1, Appendix B, Sections 4.4 and 5.4 and in Volume 2, Section 4.4.2*.

- Socioeconomics – The federal government is a major employer in the area. NRF employment is approximately 1200. No significant permanent increase or decrease in jobs would result from construction of the Cask Shipping and Receiving Facility or the rail lines.

  ENVIRONMENTAL IMPACT: With implementation of the Proposed Action, creation of temporary construction jobs and expenditures for materials and equipment would occur to support construction of the M-290 loading and unloading Cask Shipping and Receiving Facility. This increase in jobs and expenditures would result in beneficial impacts to the local and regional economy. For the implementation of the M-290 shipping containers, the size of the workforce would remain unchanged and comparable to the No-Action Alternative. There is no expected impact on minority and low-income populations or on children. The workforce at NRF may increase in the future because the amount of work to support defueling and refueling operations and operations to ship naval spent nuclear fuel out of Idaho is expected to increase. These facility operational changes are not dependent upon the Proposed Action. *DOE/EIS-0203-F (April 1995), Volume 1, Appendix B, Sections 4.3 and 5.3* provide a complete description of the affected environment at the INL site with respect to socioeconomics. Minimal impact on socioeconomics would be expected with implementation of the Proposed Action.

- Aesthetic and Scenic Resources - Changes to aesthetic and scenic resources are not anticipated with the Proposed Action, since the size of a container and its handling have no interaction with the physical aesthetics or scenic vistas associated with the region. For the Proposed Action, the existing conditions would remain unchanged and comparable to the No-Action Alternative. *DOE/EIS-0203-F (April 1995), Volume 1, Appendix B, Sections 4.5 and 5.5* provide a detailed description of these resources.

  ENVIRONMENTAL IMPACT: Construction and operations of the Cask Shipping and Receiving Facility would be consistent with the current visual character of the NRF area. Under the No-Action Alternative, existing conditions would remain unchanged. Minimal environmental impact on aesthetic and scenic resources would be associated with the Proposed Action.

- Utilities and Energy - The Proposed Action would have little impact on the amount of energy and the usage of utilities at NRF. With implementation of the Proposed Action, connection points to existing utility systems (electrical, natural gas, steam, compressed air, telephone, potable water, and sewer) would be available in the vicinity of the proposed facility. The utility

requirements for the new facility would be met by the existing utility systems. The amount of naval spent nuclear fuel handled would be the same for both the No-Action Alternative and the Proposed Action. For the Proposed Action, the existing conditions would remain comparable to the No-Action Alternative. For more detailed information, refer to *DOE/EIS-0203-F (April 1995), Volume 1, Appendix B, Sections 4.13 and 5.13*.

ENVIRONMENTAL IMPACT: Construction and operation of the Cask Shipping and Receiving Facility would result in minor impacts on utility and energy systems. Under the No-Action Alternative, existing conditions would remain unchanged. Minimal environmental impact on utilities and energy resources would be associated with the implementation of the Proposed Action.

5.4.3 RADIOLOGICAL IMPACT OF USING M-290 SHIPPING CONTAINERS AT NRF

The following sections discuss the radiological impact of the changes to operations, equipment, and facilities at NRF that would result from the proposal to ship spent nuclear fuel from aircraft carriers to NRF in M-290 shipping containers. The radiological impacts associated with management, handling, processing and storage of naval spent nuclear fuel were evaluated in *DOE/EIS-0203-F (April 1995)* and updated in *DOE/EIS-0203-F-SA-02 (June 2005).* These analyses demonstrated that the radiological impacts would be small. In addition, the radiological impacts of loading, unloading, and dry storage of spent fuel canisters were evaluated in *DOE/EIS-0251 (November 1996)* and were also shown to be small. The conclusions reached in these previous EISs would also apply to the use of the M-290 shipping container system. This section reviews the changes needed to use the M-290 at NRF in terms of potential radiological impact and demonstrates that these changes would be comparable to what was previously evaluated in *DOE/EIS-0203-F (April 1995)* and *DOE/EIS-0251 (November 1996)*.

5.4.3.1 Unloading Naval Spent Nuclear Fuel From M-290 Shipping Containers

The DOE and the Navy have adopted stringent controls for minimizing occupational and public radiation exposures to as low as reasonably achievable (ALARA). These measures avoid, reduce, or eliminate potential adverse environmental impacts from naval spent nuclear fuel management activities, including those associated with containerization. These same stringent controls would be used to keep radiation exposures ALARA for use of the M-290 shipping container.

Naval spent nuclear fuel shipped to NRF in M-290 shipping containers would be unloaded and placed into canisters for dry storage. The process of loading spent nuclear fuel assemblies from canisters into the ECF water pools would be similar to that used for spent nuclear fuel arriving in existing M-140 shipping containers. The equipment and procedures for unloading the M-290 shipping container would achieve low levels of occupational and public radiation exposure, similar to those achieved with the existing M-140 shipping container. The amount of naval spent nuclear fuel received in shipping containers would not change as a result of using the M-290 shipping container. The radiation levels emitted by the longer aircraft carrier spent nuclear fuel assemblies would be comparable to radiation levels of assemblies currently received in M-140 shipping containers. Since the equipment, processes and procedures would be developed to the same stringent standards as used for current operations, the levels of occupational radiation exposure due to direct radiation used in the analysis in *DOE/EIS-0251 (November 1996)* would not change. Therefore, the conclusion remains that the radiological impact would be small for unloading the M-290 shipping container as compared to an M-140 shipping container.

5.4.3.2 Dry Storage of Longer Aircraft Carrier Spent Nuclear Fuel Assemblies

The radiological impacts of dry storage of naval spent nuclear fuel assemblies in spent fuel canisters held in concrete shielded overpacks were assessed in detail in *DOE/EIS-0251 (November 1996).* No airborne radioactivity was expected to occur as a result of normal dry storage operations. Similarly, the longer aircraft carrier assemblies removed from the M-290 shipping containers would also be stored in sealed canisters inside shielded concrete overpacks. Therefore, no airborne radionuclides would be released during normal dry storage of longer aircraft carrier spent nuclear fuel assemblies shipped in M-290 shipping containers.

In addition to normal operations, potential accidents to dry storage containers and overpacks were considered in *DOE/EIS-0251 (November 1996)*. Containers of longer aircraft carrier spent nuclear fuel assemblies would hold less spent nuclear fuel than was assumed in the evaluation of accidents in *DOE/EIS-0251 (November 1996)*. Therefore, the dry storage of aircraft carrier spent nuclear fuel assemblies before removal of the non-fuel structural material would not change the conclusions of *DOE/EIS-0251 (November 1996)* that there would be no significant radiological impact resulting from the handling, loading and dry storage of naval spent nuclear fuel.

5.4.3.3 Unloading Longer Aircraft Carrier Spent Nuclear Fuel Assemblies From Dry Storage

To process aircraft carrier spent nuclear fuel assemblies that were stored dry before processing, the loaded concrete overpacks would first be moved to the ECF Dry Storage Canister Loading Station. The spent fuel canister in the concrete overpack would then be opened and the aircraft carrier assemblies would be transferred using techniques and equipment similar to those used for unloading of M-140 shipping containers. The opening of the sealed dry storage canister could result in the airborne release of very small amounts of radioactivity. Two of the container systems that were considered as alternatives in *DOE/EIS-0251 (November 1996)* required the dry storage canister to be opened and the spent nuclear fuel assemblies repackaged into shipping overpacks. Although the alternatives that included opening dry storage canisters had slightly higher calculated radiation exposures, the radiological effects from these alternatives were still small. Therefore, the radiological effects of airborne release due to opening of dry storage canisters to remove longer aircraft carrier spent nuclear fuel assemblies would not change the conclusion of *DOE/EIS-0251 (November 1996)*.

5.4.3.4 Spent Nuclear Fuel Processing in the Water Pool

As described in Section 5.3.1, the longer aircraft carrier assemblies would be processed in the deeper portion of one of the ECF water pools until the non-fuel structural material would be removed. The radiological effects of processing naval spent nuclear fuel in ECF water pools under both normal operations and accident conditions were evaluated in *DOE/EIS-0203-F (April 1995)* and *DOE/EIS-0251 (November 1996)*. The additional non-fuel bearing structural material on the longer aircraft carrier spent nuclear fuel assemblies processed in the water pools would be comparable to the sources of radioactive materials used for the analyses in *DOE/EIS-0203-F (April 1995).* The conclusion that the radiological impacts of naval spent nuclear fuel management would be small during normal and accident conditions would not change due to the additional non-fuel structural material on the longer aircraft carrier assemblies.

5 4.3.5 LLRW Resulting From Use of the M-290 Shipping Container

Aircraft carrier spent nuclear fuel assemblies shipped to NRF in M-290 shipping containers will be longer than those previously shipped in M-140 shipping containers and would contain the non-fuel

structural material that is currently removed at NNS. This material would be removed at NRF rather than at NNS. The material would be the same radiological classification as material typically removed from aircraft carrier and submarine spent nuclear fuel at NRF, specifically RH-LLRW. Additional CH-LLRW would result at NRF from the eventual disposal of the internal canisters used for preprocessed dry storage once the spent nuclear fuel is removed for processing. The additional LLRW generated at NRF would be the same type of waste as routinely generated at NRF.

The removal of the bolted portions of the non-fuel structural components from aircraft carrier spent nuclear fuel assemblies with the welded non-fuel portions currently cut off in the ECF water pools would result in about 36 cubic meters (m^3) per year of RH-LLRW being generated at NRF rather than NNS.

In *DOE/EIS-0203-F (April 1995)*, it was identified that the LLRW generated at NRF from processing of naval spent nuclear fuel was 430 m^3 per year. The 2005 Supplemental Analysis of this EIS stated that the yearly disposal rates for LLRW and Mixed Level Radioactive Waste at INL exceeded the yearly average estimates in *DOE/EIS-0203-F (April 1995)* in the near term, due to the accelerated cleanup initiatives underway at INL. In addition, the *Final Waste Management Programmatic EIS* [hereafter referred to as *DOE/EIS-0200F (May 1997)*] identified that the INL site was expected to generate 105,000 m^3 of LLRW over a 20-year projection, or approximately 5,000 m^3 annually. However; the total estimates for future disposal from INL have decreased as shown in the December 2000 *Current and Planned Low-Level Waste Disposal Capacity Report, Revision 2*, such that the additional 36 m^3/yr from the proposed action would not increase the total LLRW at INL over the overall INL projections in *DOE/EIS-0200F (May 1997)* of 5000 m^3/yr.

Disposal of LLRW generated at NRF was included in the amounts of LLRW previously evaluated in *DOE/EIS-0203-F (April 1995)* and the *DOE/EIS-0200-F (May 1997).* In *DOE/EIS-0200-F (May 1997),* the DOE evaluated the environmental impacts of waste disposal, including LLRW, and evaluated the health risks, environmental impacts, and costs considering treatment, transportation, storage, and disposal. Based in part on the low impact to human health, DOE chose the environmentally preferable alternative to continue, to the extent practicable, disposal of on-site LLRW at INL, Savannah River Site, and two other DOE sites. In addition, DOE decided to make the Hanford Site in Washington and the Nevada Test Site available to all DOE sites for LLRW disposal. Non-fuel structural components from naval spent nuclear fuel are currently disposed of at both INL and the Savannah River Site.[7] The LLRW generated as a result of using the M-290 shipping container would be within the overall quantities of LLRW that were previously evaluated; therefore, the conclusions from these prior EISs would not change as a result of the Proposed Action. The LLRW would be disposed of at an available DOE site consistent with the regional LLRW disposal described in *DOE/EIS-0200-F (May 1997).*

5.4.4 HAZARDOUS MATERIAL/HAZARDOUS WASTE/NON-HAZARDOUS WASTE

The current planned footprint of land that would be excavated for the Cask Shipping and Receiving Facility, rail lines, and rail sidings has been reviewed and contains no known aboveground storage tanks, underground storage tanks, areas affected by previous petroleum releases, CERCLA sites, or hazardous waste treatment, storage, or disposal facilities. If the footprint of the excavation would change, or if final facility siting encroaches upon any known areas of contamination, NRF would consult with the applicable regulatory authorities. The area that would be used for construction of the Cask Shipping and Receiving Facility, rail lines, and rail sidings would be characterized prior to excavation, to ensure proper planning for waste disposal.

Any non-hazardous solid waste generated during the proposed action would be collected and transported to an INL approved solid waste landfill. NRF performs recycling of metals, cardboard, and

other miscellaneous waste streams. No wastes are disposed of at NRF. All chemicals and products that may be used are evaluated prior to being allowed on-site.

ENVIRONMENTAL IMPACT: Operations involving the handling of hazardous materials and waste would not change with implementation of the Proposed Action. Hazardous materials and waste, including waste from construction activities, have been managed at NRF without having a significant impact on human health or the environment. Hazardous wastes are handled in compliance with applicable state and federal regulations. Construction and operation of a new loading facility would not result in significant impacts with regard to hazardous materials or waste. Hazardous materials and waste would continue to be handled (i.e., contained, stored, transported, and disposed of) in accordance with state and federal regulations. Under the No-Action Alternative, existing conditions would remain unchanged. No significant impacts to the environment would be expected with implementation of the Proposed Action.

5.5 OTHER NEPA CONSIDERATIONS AT NRF

5.5.1 CUMULATIVE IMPACTS

Cumulative impacts are those environmental impacts that result from the incremental impact of the Proposed Action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

The DOE and Navy have previously evaluated environmental impacts of naval spent nuclear fuel management in *DOE/EIS-0203-F (April 1995)* and *DOE/EIS-0251 (November 1996)*, including the construction of additional naval spent fuel handling and storage facilities. The amounts of naval spent nuclear fuel being shipped would not change as a result of using the M-290 shipping container and the normal and accident conditions evaluated in these previous EISs would apply to the Proposed Action. NRF periodically constructs or modifies facilities to support spent nuclear fuel handling operations more efficiently. Facility changes to implement the Proposed Action would be minor and within already disturbed or developed portions of the site. Therefore, there would be no additional cumulative environmental and radiological impacts at NRF resulting from the Proposed Action.

It is also expected that no disproportionately high or adverse impacts would result to any particular group of people from use of the M-290 at NRF. Under the No-Action Alternative, existing environmental conditions would remain unchanged. For the Proposed Action, the environmental conditions at NRF would be comparable to the No-Action Alternative discussed in *DOE/EIS-0251 (November 1996)*.

5.5.2 UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS AND MITIGATION MEASURES TO OFFSET ADVERSE EFFECTS

Implementation of the Proposed Action would not result in significant unavoidable adverse environmental effects. Compliance with standard Naval Nuclear Propulsion Program procedures during shipping container unloading, storage, and processing operations would reduce the potential for significant impacts resulting from implementation of the Proposed Action. Therefore, no offsetting mitigation measures would be required.

SECTION 6

REFERENCES

The following are the footnote references made in Sections 1 through 5 of this Environmental Assessment.

1. *Record of Decision (ROD) for the Department of Energy's (DOE's) Waste Management Program: Treatment and Disposal of Low Level Waste and Mixed Low Level Waste; Amendment of the ROD for the Nevada Test Site*, 2/25/00.

2. Environmental Monitoring and Disposal of Radioactive Wastes from U.S. Naval Nuclear Powered Ships and Their Support Facilities, Report NT-06-1, March 2006.

3. ROD for a Dry Storage Container System for the Management of Naval Spent Nuclear Fuel, 1/8/97.

4. *Department of the Navy Final Environmental Impact Statement for a Container System for the Management of Naval Spent Nuclear Fuel, DOE/EIS-0251 (November 1996).*

5. DOE Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Final Environmental Impact Statement, DOE/EIS-0203-F (April 1995), Volume 1.

6. Ibid.

7. ROD for the DOE's Waste Management Program: Treatment and Disposal of Low Level Waste and Mixed Low Level Waste; Amendment of the ROD for the Nevada Test Site, 2/25/00.

SECTION 7

RELATED DOCUMENTS

The following is a list of documents either directly referenced in this Environmental Assessment (EA) or indirectly related to topics addressed in this EA.

The Current and Planned Low Level Waste Disposal Capacity Report, Revision 2, December 2000.

Department of Energy (DOE) Environmental Impact Statement (EIS)-0200-F (May 1997), *Final Waste Management Programmatic Environmental Impact Statement for Managing Treatment, Storage, and Disposal of Radioactive and Hazardous Waste*.

DOE/EIS-0203-F (April 1995), *Department of Energy Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Final Environmental Impact Statement*.

DOE/EIS-0203-F-SA-02 (June 2005), *Supplemental Analysis* (Extending the original EIS for another 10 years).

DOE/EIS-0250-F (February 2002), *Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada*.

DOE/EIS-0251 (November 1996), *Department of the Navy Final Environmental Impact Statement for a Container System for the Management of Naval Spent Nuclear Fuel*.

Department of Navy (DON), *Naval Nuclear Propulsion Program, Environmental Monitoring and Disposal of Radioactive Wastes From U.S. Naval Nuclear-Powered Ships and Their Support Facilities, Report NT-06-1,* March 2006.

DON, *Naval Nuclear Propulsion Program, Occupational Radiation Exposure from U.S. Naval Nuclear Plants and Their Support Facilities, Report NT-06-2.* March 2006.

Environmental Assessment of Short Term Storage of Naval Spent Fuel, December 1993.

Idaho Uniform Statewide Building Code; Industrial Control Plan

Pakiser, L.C. Jr., December 19, 1969, *Earthquake Protection and Control,* Science, Volume 166, #3916, pp. 1467-1474.

Record of Decision (ROD) for Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Restoration and Waste Management Programs, Federal Register 6/1/95.

ROD for a Dry Storage Container System for the Management of Naval Spent Nuclear Fuel, Federal Register, Volume 62, No. 5, 1/8/97.

ROD for the DOE's Waste Management Program: Treatment and Disposal of Low Level Waste and Mixed Low Level Waste; Amendment of the Record of Decision for the Nevada Test Site, Federal Register, Volume 65, No. 38, 2/25/00.

Settlement of the U.S. District Court Action in Civil Case No. 91-0054-S-EJL (U.S. District Court, 1995).

Siudyla, et al., *Groundwater Resources of the Four Cities Area, Virginia,* Planning Bulletin 331, State Water Control Board, Bureau of Water Control Management, November 1981.

Teifke, R.H., *Geologic Studies, Coastal Plains of Virginia Bulletin 83 (Parts 1, 2, and 3).* Virginia Division of Mineral Resources, 1973.

U.S. Environmental Protection Agency (USEPA), *Radiological Surveys of the Norfolk Naval Station, the Norfolk Naval Shipyard, and Newport News Shipbuilding*. Report 520/5-88-017, October 1988.

U.S. Geological Survey (USGS), *Conceptualization and Analysis of Ground-Water Flow System in the Coastal Plain of Virginia and Adjacent Parts of Maryland and North Carolina*. Professional Paper 1404-F, 1990.

Virginia Department of Air Pollution Control (DOAPC), State Air-Pollution Control Board. *Regulations for the Control and Abatement of Air Pollution,* Revision 2, January 1993.

Virginia Division of Mineral Resources (DOMR). *Geology of the Newport News South and Bowers Hill Quadrangles.* Virginia Report of Investigation 28. Virginia Division of Mineral Resources, 1971.

Virginia Water Control Board (WCB). *Virginia Water Quality Assessment for 1992, 305(b) Report to EPA and Congress*. Information Bulletin #588, Volume 2 of 3, April 1992.

Virginia Uniform Statewide Building Code (USBC), 2003 Ed.

SECTION 8

Glossary and Acronyms

8.1 GLOSSARY

Naval Nuclear Propulsion Program - A joint program of the Department of Energy and the Department of the Navy that has as its objective the design and development of improved U.S. Navy nuclear propulsion plants having high reliability, maximum simplicity, and optimum fuel life for installation in ships ranging in size from small submarines to large combatant surface ships.

Nuclear Radiation - Energy that is emitted from atomic nuclei in various nuclear reactions and includes alpha, beta, and gamma radiation, and neutrons.

Rem - A unit of measure used to indicate the amount of radiation exposure a person receives.

Radioactive Waste - Equipment and materials that are radioactive and for which there is no further use.

Low Level Radioactive Waste (LLRW) - Radioactive waste that is not high level radioactive waste, spent nuclear fuel, transuranic waste, byproduct material (as defined in Section 11e(2) of the Atomic Energy Act of 1954, amended), or naturally occurring radioactive material. The non-fuel bearing structural components removed from the naval spent nuclear fuel assemblies and characterized as LLRW have been exposed to the same operating conditions as the fuel since they were physically attached to the fuel assemblies. These structures contain no fuel or fission products, but they are radioactive because some neutrons from the reactions in the core have activated the atoms of the metal. They are also radioactive because some of the radioactive corrosion products from the reactor have been deposited on the metal surfaces. The metal structurals are not hazardous waste under the Resource Conservation and Recovery Act. They are not explosive, reactive, corrosive, flammable, toxic or combustible.

Water Pools - Deep pools of water used to inspect and process spent nuclear fuel assemblies. The water shields the material being stored while allowing it to be accessible for handling. Storage racks are located below the water surface to support and position the fuel assemblies in place for handling and to prevent the formation of a critical mass.

8.2 ACRONYMS

ACRS	Advisory Committee on Reactor Safeguards
ALARA	As Low As Reasonably Achievable
CCD	Coastal Consistency Determination
CEQ	Council on Environmental Quality
CAA	Clean Air Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
DEQ	Department of Environmental Quality
DOAPC	Department of Air Pollution Control
DOD	U.S. Department of Defense
DOE	U.S. Department of Energy
DON	U.S. Department of Navy
DOT	U.S. Department of Transportation
EA	Environmental Assessment
EAA	Environmental Assessment Addendum
ECF	Expended Core Facility
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
FCCD	Federal Coastal Consistency Determination
HEPA	High Efficiency Particulate Air
INL	Idaho National Laboratory
IDA	Intensely Developed Area
LLRW	Low Level Radioactive Waste
M-130	~130 inch Shipping Container
M-140	~140 inch Shipping Container
M-290	~290 inch Shipping Container
NAAQS	National Ambient Air Quality Standard
NEPA	National Environmental Policy Act
NNS	Newport News Shipbuilding and Dry Dock Company
NOI	Notice of Intent
NO_x	Nitrogen Oxides
NRC	Nuclear Regulatory Commission
NRF	Naval Reactors Facility
RCRA	Resource Conservation and Recovery Act
VCP	Virginia's Coastal Resources Management Program
VOC	Volatile Organic Compounds
WCB	Water Control Board

SECTION 9

LIST OF PREPARERS

This Environmental Assessment Addendum has been prepared by the Naval Nuclear Propulsion Program.

Naval Nuclear Propulsion Program

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Mary M. Ahlin	B.S. Mathematics/Biology M.S. Health Physics Certified Health Physicist (1990)	28 years experience, including 15 years in Environmental Affairs, 8 years in Emergency Planning, 5 years In Radiological Controls
Richard H. Funk	B.S. Chemical Engineering	24 years experience, including 14 years in Environmental Affairs, 1 year at the Reactor Plant Contractor Office at NNS, 3 years in Environmental Engineering, 6 years at Expended Core Facility in ID

SECTION 10

DISTRIBUTION

10.1 Department of Navy/Department of Energy Officials and Agencies (Listings are in alphabetical order in columns.)

Commander, Fleet Forces Command Attn: Mr. Gary Edwards, Code N77 NH-3N, 2, 214/12A 1562 Mitscher Avenue Suite 250 Norfolk, VA 23551-2487	Commander, Navy Region Northwest (CNRNW) Attn: Mr. Hayden Street, Code N45B 1103 Hunley Road Silverdale, WA 98315-5000
Commanding Officer, Naval Amphibious Base Little Creek Attn: Pamela P. Anderson Cultural Resources Specialist, Environmental Planning 1450 Gator Boulevard, Bldg. 3165 Norfolk, VA 23521	Department of Navy Commander, Naval Sea Systems Command Attn: Deborah Verderame 1333 Isaac Hull Avenue SE Building 197 Room 4W1737 Washington Navy Yard, DC 20376
Commander, Navy Region Mid-Atlantic (CNRMA) Attn: Ms. Chris Porter, Code N451 1510 Gilbert Street Norfolk, VA 23511-2737	Department of Energy Environmental Management Attn: Ms. Tish O'Conor 1000 Independence Avenue Washington, DC 20585-0113

10.2 Federal Officials and Agencies

U.S. Environmental Protection Agency Region X Attn: Mr. Dennis Faulk Program Manager Office of Environmental Cleanup 309 Bradley Blvd. Suite 115 Richland, WA 99352

10.3 State Officials and Agencies (Listings are in alphabetical order in columns.)

Idaho Department of Environmental Quality, INL Oversight Attn: Susan Burke Coordinator-Manager 1410 North Hilton Boise, ID 83706-1253	Midwest Council of State Governments Attn: Ms. Lisa Janairo 2906 Mill Road P.O. Box 981 Sheboygan, WI 53082-0981	Virginia Department of Environmental Quality Attn: Ms. Ellie L. Irons Environmental Impact Review Manager P.O. Box 1105 Richmond, VA 23218
Idaho Department of Environmental Quality Attn: Ms. Lezlie Aller INL Oversight Program 900 North Skyline Dr, Suite A Idaho Falls, ID 83402	Southern States Energy Board Attn: Mr. Christopher Wells Asst. Director, Nuclear Program 6325 Amherst Court Norcross, GA 30092	Western Interstate Energy Board Attn: Mr. Douglas Larson 1600 Broadway, Suite 1700 Denver, CO 80202

10.4 Reading Rooms (Copies of the EAA will be made available at the following locations.)

Boise State University Albertson's Library 1910 University Drive Boise, ID 83725	Newport News Public Library Main Street Branch Attn: Ms. Bonnie Roblin 110 Main St. Newport News, VA 23601	United States Department of Energy Attn: Mr. Brad Bugger Public Reading Room 1776 Science Center Drive Idaho Falls, ID 83402

10.5 Other Interested Parties (Listings are in alphabetical order in columns.)

Confederated Tribes of the Umatilla Indian Reservation Attn: Mr. Eric Quaempts, Director Department of Natural Resources P.O. Box 638 Pendleton, OR 97801	Shoshone-Bannock Tribe Attn: Mr. Alonzo Coby, Chairman Fort Hall Business Council P.O. Box 306 Pima Drive Fort Hall, ID 83203

Association of American Railroads Attn: Mr. Robert E. Fronczak 50 F Street N.W. Washington, D.C. 20001	Holtec International Attn: Mr. Allen Hickman 555 Lincoln Drive West Marlton, NJ 08053	Snake River Alliance Attn: Ms. Beatrice Brailsford, Program Director 217 South Johnson P.O. Box 425 Pocatello, ID 83204
Chesapeake Bay Foundation 6 Herndon Avenue Annapolis, MD 21403	INL Citizens Advisory Board Attn: Mr. R.D. Maynard c/o Portage Environmental 1075 S. Utah Avenue, Suite 200 Idaho Falls, ID 83402	Snake River Alliance Attn: Ms. Andrea Shipley, Executive Director 350 N. 9th Street, B10 P.O. Box 1731 Boise, ID 83701
Coalition 21 Attn: Mr. John Tanner 2175 Tasman Avenue Idaho Falls, ID 83404	James River Association Attn: Mr. William Street Executive Director P.O. Box 909 Mechanicsville, VA 23111	Union Pacific Railroad Attn: Ms. Sandra Covi Manager, Hazardous Materials 1400 Douglas Street, MC-1040 Omaha, NE 68179
Coastal Virginia Watermen's Association Attn: Mr. C.D. Hancock, Pres. 510 Timberneck Hampton, VA 23663	Keep Yellowstone Nuclear Free Attn: Ms. Mary Woollen Executive Director P.O. Box 4757 Jackson, WY 83001	Virginia Watermen's Association Attn: Mr. M. Dale Taylor President P.O. Box 551 Urbanna, VA 23175
CSX Transportation, Inc. TellCSX 500 Water Street Jacksonville, FL 32246	Partnership for Science and Technology Attn: Mr. Lane Allgood 151 N. Ridge Avenue, Suite 260 Idaho Falls, ID 83402	
Hampton Roads Watermen's Association Attn: Mr. William E. Abbott President 1212 Winston Street Norfolk, VA 23518	Sierra Club – Virginia Chapter Attn: Mr. Michael Town Director 422 E. Franklin St. Richmond, VA 23219	

APPENDIX A

PUBLIC COMMENTS TO THE NOTICE OF INTENT

A.1 BACKGROUND

On January 20, 2006, the Department of the Navy, Naval Nuclear Propulsion Program published in the Federal Register a Notice of Intent (NOI) to prepare an Environmental Assessment (EA) on the potential environmental impacts associated with using a more efficient shipping container system for spent nuclear fuel to support the refueling and defueling of U.S. Navy nuclear-powered aircraft carriers. The Naval Nuclear Propulsion Program also published a notice in selected newspapers in the Idaho, Wyoming, and Virginia areas to ensure ample notification to the public. Finally, the Naval Nuclear Propulsion Program sent copies of the newspaper notice to selected state agencies, congressional staff, tribes, and public interest organizations.

The NOI invited public comments on environmental issues and concerns relative to the NOI and the scope of the EA, on or before February 21, 2006. Comments were accepted by letter, by phone, and by e-mail. A total of four comments were received.

A.2 PUBLIC COMMENTS RECEIVED

Four public comments were received during the comment period: two of an administrative nature and two substantive comments. Table A-1 provides a summary of the comments received. This table includes the name and contact information of the commenter, the affiliation of the commenter, and a summary of the comment and how it was considered in the preparation of the EA.

Table A-1
Summary of Public Comments to NOI

Serial Number	Method Received	Commenter	Organization	Contact Info	Summary of Comment	Comment Disposition
0001	Phone	Allen Hickman	Holtec International	E-mail: Allen_Hickman@holtec.com Phone: 856-797-0900 ext. 684	Holtec International is an engineering and manufacturing company that specializes in storage and shipping containers for spent nuclear fuel. The commenter inquired about business opportunities related to the M-290 project.	The appropriate Naval Nuclear Propulsion Program business contact information was provided to the commenter.
0002	USPS	John Schmidt	Sierra Club (Northwest Office); Northern Rockies Chapter	P.O. Box 1173 Pocatello, ID 83204	The commenter requested that his organization be removed from the mailing list.	The organization was removed from the mailing list.

Table A-1 (continued)
Summary of Public Comments to NOI

Serial Number	Method Received	Commenter	Organization	Contact Info	Summary of Comment	Comment Disposition
0003	USPS	Ellie L. Irons	Virginia Department of Environmental Quality (DEQ)	P.O. Box 10009 Richmond, VA 23240 Phone: 804-698-4000	DEQ's Office of Environmental Impact Review coordinates Virginia's review of federal environmental documents. DEQ requested 21 copies of the EA to ensure an effective coordinated review by Virginia state agencies. DEQ stated that their involvement in the review would depend, in part, on the route of the proposed shipment. As the lead agency for federal consistency, DEQ would review the Navy federal consistency determination submitted pursuant to the Coastal Zone Management Act, which addresses the pertinent Enforceable Policies of the Virginia Coastal Resources Management Program.	21 copies of the federal consistency determination were provided on May 11, 2006 and 21 copies of the EA will be provided. For more information on consideration of this comment in the EA see Section A.3.
0004	E-mail	Robert E. Fronczak, P.E., Assistant Vice President, Environment & Hazardous Material	American Association of Railroads (AAR)	50 F Street, N.W. Washington, DC 20001 Phone: 202-639-2839 Email: RFronczak@aar.org	The AAR recommended that any new equipment the Navy builds to transport spent nuclear fuel should be built in conformance with S-2043; AAR's new "Performance Specification for Trains Used to Carry High Level Radioactive Material." The AAR highlighted some of the benefits of using these standards. Additionally, AAR expressed its opinion that the safest possible method of transporting spent nuclear fuel by rail is through the use of dedicated trains and discussed some of the advantages provided by dedicated trains.	Transportation issues were considered during the preparation of Section 4 of the EA. See Section A.3 of this appendix for details related to this comment.

A.3 CONSIDERATION OF PUBLIC COMMENTS IN THE ENVIRONMENTAL ASSESSMENT

The two administrative comments (0001 and 0002) did not require consideration in the preparation of the EA. In comment 0003, the Virginia DEQ stated that their review of the EA would depend in part on the route that rail shipments would take from Newport News Shipbuilding and Dry Dock Company (NNS) to Idaho. This subject was addressed both in the federal consistency determination and the EA. Section 4 of the EA addresses transportation issues. The proposed new shipping containers would be longer than existing containers and could be used for any type of naval spent nuclear fuel; however, their primary function would be to transport aircraft carrier spent nuclear fuel. The increased length of the containers would require new railcars capable of carrying containers in a horizontal orientation, versus the vertical orientation used for existing containers. The new railcars and containers would be designed and built to meet the technical requirements for shipment of spent nuclear fuel specified in 49 CFR 173 and 10 CFR 71, and provide equivalent safety to current design

naval spent nuclear fuel shipping containers and railcars. Since the shipping envelope (i.e., height and width) and the weight per axle for the new railcars would be comparable to those of the existing naval spent nuclear fuel shipping container railcars, no change would be required to the routes that have been used for decades to ship naval spent nuclear fuel from Newport News, Virginia to Idaho. (See Section 4.2.2.)

The Federal Coastal Consistency Determination was issued by the Naval Nuclear Propulsion Program to DEQ separately from the EA and is included in Appendix B. The consistency determination concluded that the proposed action is consistent to the maximum extent practicable with the enforceable policies of the Virginia Coastal Resources Management Program. Potential environmental impacts at NNS are discussed in Section 3.4 of the EA.

Section 4 of the EA addresses transportation issues related to the comments from the AAR (0004). The Naval Nuclear Propulsion Program is aware of AAR and railroad specifications including *AAR Standard S-2043*. As described in Section 4.2.2, new railcars would be designed using *AAR Standard S-2043* and AAR approval of the final design would be requested. The AAR's recommendation to ship naval spent nuclear fuel exclusively on dedicated trains was previously considered in both the *Department of Energy Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Final Environmental Impact Statement (EIS) (DOE/EIS-0203-F (April 1995))* and *Department of the Navy Final EIS for a Container System for the Management of Naval Spent Nuclear Fuel* (*DOE/EIS-0251 (November 1996)*). As previously addressed, the safety of naval spent nuclear fuel shipments results from the use of robust shipping containers and the rugged nature of naval spent nuclear fuel. The M-290 shipping container would be designed and built consistent with the practices used for existing naval spent nuclear fuel shipping containers. The use of dedicated versus general freight service is not dependent upon the type of shipping container used and is outside the scope of this EA.

APPENDIX B

FEDERAL COASTAL CONSISTENCY DETERMINATION

B.1 BACKGROUND

Section 3 of the Environmental Assessment (EA) discusses the affected environment at Newport News Shipbuilding and Dry Dock Company (NNS), in Newport News, Virginia. Newport News is located within Virginia's coastal management area and is subject to Virginia's Coastal Resources Management Program (VCP); a federally approved state coastal management program created pursuant to the federal Coastal Zone Management Act.

Federal activities that have a reasonable likelihood of affecting any land or water use or natural resources of Virginia's designated coastal resources management area must be consistent with the enforceable policies of the VCP. The VCP is a networked program with several agencies administering the enforceable policies. The Department of Environmental Quality (DEQ) is the lead agency for the VCP and is responsible for coordinating the Virginia review of federal consistency determinations that provide analysis of the federal activity in light of the enforceable policies of the VCP.

On April 21, 2006, the Department of the Navy, Naval Nuclear Propulsion Program provided DEQ the Federal Coastal Consistency Determination (FCCD) for the proposal to use a new longer, more efficient shipping container system, designated the M-290 shipping container, for spent nuclear fuel from naval aircraft carriers. This proposal includes the determination that the existing NNS facilities would not be adequately sized to support loading the aircraft carrier spent nuclear fuel into the longer shipping containers; therefore, a new shipping container loading facility would need to be constructed at NNS. A project area for this proposal was identified.

On May 11, 2006, the Naval Nuclear Propulsion Program provided DEQ with a revision to the original FCCD that modified the project area to allow the location of the spent nuclear fuel shipping container loading facility to be closer to the aircraft carrier dry dock. The FCCD concluded that the proposed action would have minimal effect on land use, water use, or natural resources of Virginia's coastal zone and would be conducted in a manner that would be consistent to the maximum extent practicable with the enforceable policies of the VCP.

Section B.5 provides a copy of the FCCD submitted to DEQ separately from this EA.

B.2 NEED FOR A CONSISTENCY DETERMINATION

Regulations assuring that federal agency activities are undertaken in a manner consistent to the maximum extent practicable with the enforceable policies of approved management programs are located at 15 CFR Part 930 Sub-part C *(National Oceanic and Atmospheric Administration)*. These regulations allow for the submission to state agencies of either a negative determination or a consistency determination. If a federal agency determines that there will not be coastal effects, then the federal agency provides the state agencies with a negative determination. However, Virginia's Listed Federal Agency Activities regulation states that all federal development projects inside the coastal zone are automatically subject to consistency and require a consistency determination as opposed to a negative determination.

The federal regulations define a development project as any federal activity involving the planning, construction, modification, or removal of public works, facilities, or other structures, and include the acquisition, use, or disposal of any coastal use or resource. The construction of the new loading facility at NNS qualifies as a development project. Therefore, although the EA concludes that there would be no coastal effects, the proposed action is a federal development project and a consistency determination was issued to DEQ. The consistency determination was submitted to DEQ prior to issuance of the EA to provide the DEQ sufficient time to coordinate their review.

B.3 SUMMARY OF CONSISTENCY DETERMINATION

The nine enforceable policies of the VCP are: fisheries management, subaqueous lands management, wetlands management, dunes management, non-point source pollution control, point source pollution control, shoreline sanitation, air pollution control, and coastal lands management.

As described in Section 3, construction and demolition efforts at NNS would include use of appropriate erosion and sediment control best management practices. Storm water runoff would be directed into existing NNS storm water drainage systems that discharge through Virginia Pollutant Discharge Elimination System permitted outfalls. Air conditioner condensate and sanitary discharges would be tied into the existing NNS sanitary sewer system.

The consistency determination concluded that the proposed action would have minimal effect on land use, water use, or natural resources of Virginia's coastal zone. The proposed action would be conducted in a manner that would be consistent to the maximum extent practicable with the enforceable policies of the VCP.

B.4 DEQ CONCURRENCE WITH CONSISTENCY DETERMINATION

On July 13, 2006, the DEQ responded to the Navy's consistency determination. Based on the review of the Navy's consistency determination and the comments submitted by agencies administering the enforceable policies of the VCP, DEQ concurred that the proposal is consistent with the VCP provided that all applicable permits and approvals are obtained.

Section B.6 provides a copy of DEQ's concurrence with the Federal Coastal Consistency Determination.

B.5 FEDERAL COASTAL CONSISTENCY DETERMINATION FOR U.S. NAVY – NAVAL NUCLEAR PROPULSION PROGRAM PROPOSAL TO USE A MORE EFFICIENT SHIPPING CONTAINER SYSTEM FOR SPENT NUCLEAR FUEL FROM NAVAL AIRCRAFT CARRIERS

FEDERAL COASTAL CONSISTENCY DETERMINATION
U.S. NAVY – NAVAL NUCLEAR PROPULSION PROGRAM PROPOSAL TO USE A MORE EFFICIENT SHIPPING CONTAINER SYSTEM FOR SPENT NUCLEAR FUEL FROM NAVAL AIRCRAFT CARRIERS

May 11, 2006

Proposed Federal Agency Action

The Department of the Navy, Naval Nuclear Propulsion Program is proposing to use a more efficient shipping container system for naval spent nuclear fuel (SNF) to support refueling and defueling U.S. Navy nuclear-powered aircraft carriers. The proposed new shipping containers would be longer than existing containers and could be used for any type of naval SNF; however, their primary function would be to transport aircraft carrier SNF from the refueling shipyard, Newport News Shipbuilding and Dry Dock Company (NNS) in Newport News, Virginia to Idaho for processing. The increased length of the containers would require new railcars capable of carrying containers in a horizontal orientation, versus the vertical orientation used for existing containers. The new railcars and containers would meet all applicable Nuclear Regulatory Commission and Department of Transportation regulations and provide equivalent safety to existing design naval SNF shipping containers and railcars. The shipping envelope (i.e., height and width) for the new containers and railcars would be no greater than for existing naval SNF shipping containers, and the new shipping container and railcar would meet railroad industry weight limits. Therefore, no change would be required to the routes that have been used for decades to ship naval SNF from Newport News, Virginia to Idaho.

Existing NNS facilities are not adequately sized to support loading the aircraft carrier SNF into the new shipping containers; therefore, a new shipping container loading facility must be constructed at NNS. The proposed use of the new shipping container system and the related construction of a new loading facility at NNS are the subject of an Environmental Assessment.

The project area where the new loading facility would be constructed is an already developed shipyard industrial area at least 500 feet from the James River shoreline, near the dry dock where naval SNF is unloaded from aircraft carriers. The foundation size of the loading facility would be less than

1

30,000 square feet. Existing buildings in the project area currently used for storage and industrial activities would be demolished as required to provide space for construction of the new loading facility. These activities would be relocated to new or existing buildings within the project area. If needed, an adjacent dry dock within the project area would be shortened to provide space for the loading facility. Some underground services would be re-routed and existing infrastructure (utilities, rail spurs, and roads) would be modified to connect the new facilities with the existing NNS infrastructure. Operations inside the new loading facility would involve handling SNF, and would be conducted in accordance with stringent Naval Nuclear Propulsion Program procedures that have been used safely for many years for control of SNF and other radioactive materials. Existing operations at the shipyard would continue and would not be affected by the proposed construction efforts. Existing environmental permits for NNS would be modified as required to reflect the changes in operations and/or facilities.

Background

The Coastal Zone Management Act (CZMA), enacted in 1972, created the National Coastal Management Program for management and control of the uses of and impacts on coastal zone resources. The program is implemented through federally approved state coastal management programs (CMPs).

Federal approval of a state CMP triggers the CZMA Section 307 federal consistency determination requirement. Section 307 mandates that federal actions within a state's coastal zone (or outside the coastal zone, if the action affects land or water uses or natural resources within the coastal zone) be consistent to the maximum extent practicable with the enforceable policies of the state CMP. Federal agency actions include direct and indirect federal agency activities, federally approved activities, and federal financial assistance activities. Accordingly, federal agency activities (direct, indirect, or cumulative) reasonably affecting the state's coastal zone must be consistent to the maximum extent practicable with the enforceable policies of the state's CMP, unless compliance is otherwise prohibited by law. There are no categorical exemptions or exclusions to or from the Section 307 federal consistency requirements.

The Commonwealth of Virginia has developed and implemented a federally approved Coastal Resources Management Program (CRMP). The nine enforceable policies of the Virginia CRMP address: fisheries; subaqueous lands; wetlands; primary sand dunes; point and non-point source pollution; shoreline sanitation; air pollution; and coastal lands management.

Program and Policy Analysis

Fisheries Management

The proposed use of the new shipping container system, including construction and demolition efforts at NNS related to the proposed new loading facility as well as operation of the new facility, would occur in the industrial, mostly asphalt or concrete paved area of the shipyard, and would not affect fish stocks, breeding, or spawning areas. Storm water runoff from the area would be directed into an existing NNS storm water drainage system that discharges through Virginia Pollutant Discharge Elimination System (VPDES) permitted outfalls. Construction and demolition efforts would include use of appropriate erosion and sediment control best management practices. The dry dock in the project area is normally dry and water discharges are made through VPDES permitted outfalls. Neither recreational nor commercial fishing activity would be affected.

Subaqueous Lands Management

The proposed action would have no effect on subaqueous lands. There are no state-owned bottomlands within or adjacent to the proposed project area.

Wetlands Management

The proposed action would not affect wetlands. There are no wetlands within or adjacent to the proposed project area.

Dunes Management

The proposed action would not affect primary coastal sand dunes as the proposed project area occurs within the NNS industrial area adjacent to the James River.

Point Source Pollution Control

The proposed action would not involve point source discharge of pollutants. Air conditioner condensate and sanitary discharges would be tied into the existing NNS sanitary sewer system that discharges to the Hampton Roads Sanitation District. Storm water runoff from the area would be directed into an existing NNS storm water drainage system that discharges through VPDES permitted outfalls. Water discharged from the dry dock in the project area is through VPDES permitted outfalls.

Non-point Source Pollution Control

The proposed action would include control measures to prevent the possibility of runoff pollution during demolition and construction activities. Erosion and sediment controls would be provided along the limits of surface disturbance, entrances to existing storm water drainage inlets, and construction entrances. All control measures would be in accordance with the latest version of the Virginia Erosion and Sediment Control Handbook.

Shoreline Sanitation Management

The proposed action would not involve installation of septic tanks.

Air Pollution Control

The proposed action would result in standard construction and operations-related emissions that are *de minimis* relative to regional air emissions.

Coastal Lands Management

The proposed action would not affect coastal lands subject to the Chesapeake Bay Preservation Act. The proposed project area at NNS is located in a developed industrial area mostly paved with concrete and asphalt.

Conclusion

After careful consideration, the Department of the Navy, Naval Nuclear Propulsion Program has determined that the proposed action would have minimal effect on land use, water use, or

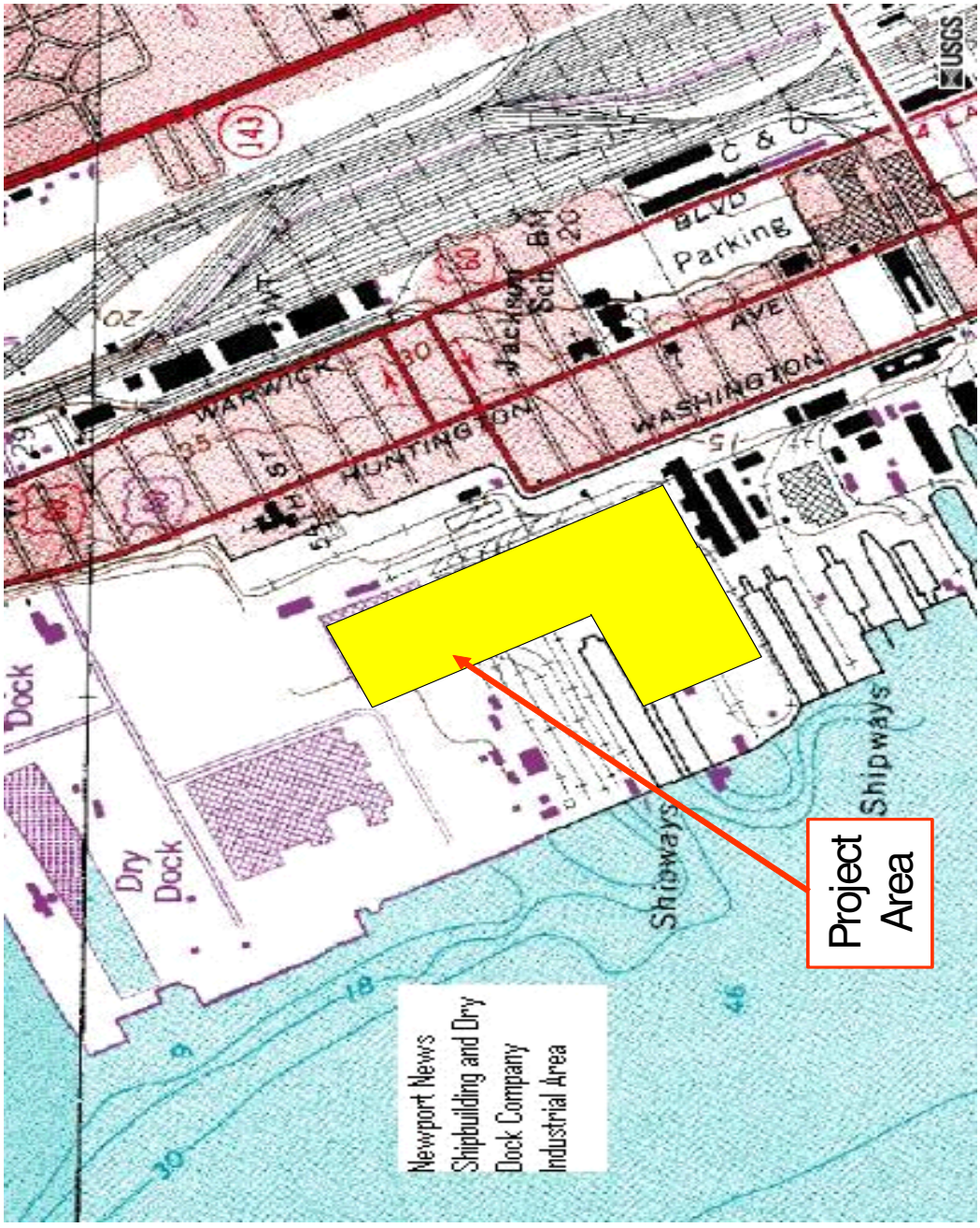
natural resources of the Commonwealth of Virginia's coastal zone. The proposed action would be conducted in a manner that would be consistent to the maximum extent practicable with the applicable enforceable policies of the Coastal Resources Management Program. Applicable permits or modifications to existing permits will be obtained for the proposed project if required by Federal, State, or local law.

Signature

11 MAY 2006
Date

J. M. McKenzie
Director, Regulatory Affairs
Naval Nuclear Propulsion Program

Project Area for Construction of M-290 Loading Facility at NNS



B.6 DEQ CONCURRENCE WITH FEDERAL COASTAL CONSISTENCY DETERMINATION FOR U.S. NAVY – NAVAL NUCLEAR PROPULSION PROGRAM PROPOSAL TO USE A MORE EFFICIENT SHIPPING CONTAINER SYSTEM FOR SPENT NUCLEAR FUEL FROM NAVAL AIRCRAFT CARRIERS

COMMONWEALTH of VIRGINIA

L. Preston Bryant, Jr.
Secretary of Natural Resources

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July 13, 2006

Mr. J. M. McKenzie
Director, Regulatory Affairs
Naval Nuclear Propulsion Program
Naval Sea Systems Command
1333 Isaac Hull Avenue SE
Washington Navy Yard, DC 20376-0001

RE: Federal Consistency Determination for the Naval Nuclear Propulsion Program Proposal to Use a More Efficient Shipping Container system for Spent Nuclear Fuel from Naval Aircraft Carriers, City of Newport News, DEQ 06-100F.

Dear Mr. McKenzie:

The Commonwealth of Virginia has completed its review of the federal consistency determination for the above referenced project. The Department of Environmental Quality (DEQ) is responsible for coordinating Virginia's review of federal consistency determinations and responding to appropriate officials on behalf of the Commonwealth. Pursuant to the Coastal Zone Management Act of 1972, as amended, federal actions that can have foreseeable effects on Virginia's coastal uses or resources must be conducted in a manner which is consistent, to the maximum extent practicable, with the Virginia Coastal Resources Management Program (VCP). This letter is in response to your May 11, 2006 submission (received on May 17) requesting concurrence with the federal consistency determination prepared by the Department of the Navy. The following agencies, locality, and planning district commission participated in this review:

Department of Environmental Quality
Department of Conservation and Recreation
Department of Game and Inland Fisheries
Virginia Marine Resources Commission
Department of Transportation
Department of Historic Resources
Hampton Roads Planning District Commission
City of Newport News

Project Description

The Department of the Navy, Naval Nuclear Propulsion Program, proposes to use a more efficient shipping container system for naval spent nuclear fuel (SNF) to support refueling and defueling nuclear-powered aircraft carriers at the Newport News Shipbuilding and Dry Dock Company in the City of Newport News. The project area is a developed shipyard industrial area approximately 500 feet from the James River shoreline and near the existing dry dock where naval SNF is presently unloaded from aircraft carriers. Project activities include the demolition of existing industrial and storage buildings and the construction of a new loading facility with a foundation of less than 30,000 square feet. If needed, an adjacent dry dock would be shortened to provide space for the facility. Some underground services would be re-routed and existing infrastructure (utilities, rail spurs, and roads) would be modified to connect to the new facility. The Navy finds the proposed action consistent to the maximum extent practicable with the enforceable policies of the Virginia Coastal Resources Management Program (VCP).

Federal Consistency Analysis

The Virginia Coastal Resources Management Program is comprised of a network of programs administered by several agencies. In order to be consistent with the VCP, the federal agency must obtain all the applicable permits and approvals listed under the Enforceable Policies of the VCP prior to commencing the project. Based on our review of the Navy's consistency determination and the comments submitted by agencies administering the enforceable policies of the VCP, DEQ concurs that this proposal is consistent with the VCP provided all applicable permits and approvals are obtained as described below. However, other state approvals which may apply to this project are not included in this consistency concurrence. Therefore, the Navy must ensure that this project is constructed and operated in accordance with all applicable federal, state, and local laws and regulations.

According to information in the consistency determination the proposed activity would have no effect on the following enforceable policies: fisheries management; subaqueous lands management; wetlands management; dunes management; point source pollution control; shoreline sanitation; air pollution control; and coastal lands management. Project reviewers generally agree with the Navy's determination. However, please see the discussions below with regard to the point source pollution control, air pollution control, and coastal lands management enforceable policies of the VCP. The Navy must ensure that the proposed action is also consistent with the aforementioned policies. The analysis which follows, responds to the Navy's discussion of the enforceable policies of the VCP that apply to this project and review comments submitted by agencies that administer the enforceable policies.

1. Point Source Pollution Control. The consistency determination (page 4) states that the proposed action would not involve point source discharge of pollutants. Water from the existing dry dock in the project area is discharged through Virginia Pollutant Discharge Elimination System (VPDES)-permitted outfalls.

DEQ reviewers note that the document describes the possible shortening of an adjacent dry dock within the project area in the event that additional space is needed for the loading facility. Should shortening of the dry dock become a part of the scope of the proposed project, authorization from the Virginia Water Protection Permit (VWPP) program (Virginia Code §62.1-44.15:5 and Water Quality Certification pursuant to Section 401 of the Clean Water Act) would likely be required for impacts to surface waters. Therefore, a Joint Permit Application (JPA) would need to be submitted in advance of the proposed activity. Provided that proper application is made and required VWP permits are issued and complied with, DEQ finds the project consistent with the point source pollution control enforceable policy of the VCP. For additional information, contact Bert Parolari, DEQ Tidewater Regional Office (TRO), at (757) 518-2166.

2. Non-point Source Pollution Control. The proposed action would include control measures to prevent the possibility of runoff pollution during demolition and construction activities. All control measures would be in accordance with the latest version of the *Virginia Erosion and Sediment Control Handbook*.

The Department of Conservation and Recreation (DCR) Division of Soil and Water Conservation (DSWC) did not respond to our request for comments on this proposed action. However, according to available DCR guidance, federal agencies and their authorized agents conducting regulated land-disturbing activities on private and public lands in the state must comply with the Virginia Erosion and Sediment Control Law and Regulations (VESCL&R), Virginia Stormwater Management Law and Regulations (VSWML&R), and other applicable federal nonpoint source pollution mandates (e.g. Clean Water Act Section 313, Federal Consistency under the Coastal Zone Management Act). Clearing and grading activities, installation of staging areas, parking lots, roads, buildings, utilities, or other structures, soil or dredge spoil areas, or related land conversion activities that disturb 2,500 square feet or more in a Chesapeake Bay Preservation Area would be regulated by VESCL&R and those that disturb one acre or greater would be covered by VSWML&R. Accordingly, the Navy should prepare and implement erosion and sediment control (ESC) and stormwater management (SWM) plans to ensure compliance with state law. The federal agency is ultimately responsible for achieving project compliance through oversight of on-site contractors, regular field inspection, prompt action against non-compliant sites, and/or other mechanisms, consistent with agency policy.

Furthermore, DCR is responsible for the issuance, denial, revocation, termination and enforcement of Virginia Pollutant Discharge Elimination System (VPDES) permits for the control of stormwater discharges from municipal separate storm sewer systems

(MS4s) and land disturbing activities under the Virginia Stormwater Management Program. Therefore, for projects involving land disturbing activities of 2,500 square feet or more in Chesapeake Bay Preservation Areas (CPBAs), the Navy or its authorized agent is required to apply for registration coverage under the General Permit for Discharges of Stormwater from Construction Activities. General information and registration forms for the General Permit are available on DCR's website at: http://www.dcr.virginia.gov/sw/vsmp.htm#geninfo. Additional information regarding the Stormwater Management Program requirements may be directed to Eric Capps, DCR, at (804) 786-3957, eric.capps@dcr.virginia.gov.

3. Air Pollution Control. The consistency determination states (page 4) that the proposed construction activities will produce construction equipment-related air emissions that are *de minimis* relative to regional air emissions.

According to the DEQ Air Division, the project site is located in the Hampton Roads ozone (O_3) non-attainment area. Contributors of ozone pollution are volatile organic compounds (VOCs) and oxides of nitrogen (NO_x). The Navy should ensure that all reasonable precautions are taken to limit emissions of VOCs and NO_x, principally by controlling or limiting the burning of fossil fuels.

DEQ recommends that the Navy employ appropriate fugitive dust control measures (9 VAC 5-40-90 et seq. in the Regulations for the Control and Abatement of Air Pollution). These precautions include, but are not limited to, the following:

- Use, where possible, of water or chemicals for dust control;
- Installation and use of hoods, fans, and fabric filters to enclose and vent the handling of dusty materials;
- Covering of open equipment for conveying materials;
- Prompt removal of spilled or tracked dirt or other materials from paved streets, and of dried sediments resulting from soil erosion.

In addition, if project activities include the burning of construction or demolition material, this activity must meet the requirements under 9 VAC 5-40-5600 et seq., for open burning. Whereas, the regulation provides for, but does not require, the local adoption of a model ordinance concerning open burning, the applicant should contact City of Newport News officials to determine what local requirements, if any, exist.

To obtain assistance with meeting the requirements of applicable air regulations, please contact Jane Workman, DEQ-TRO, at (757) 518-2000.

4. Coastal Lands Management. According to the consistency determination (page 4), the proposed action would not affect coastal lands subject to the Chesapeake Bay Preservation Act.

DCR's Division of Chesapeake Bay Local Assistance finds that, while Chesapeake Bay Preservation Areas (CBPAs) are not locally designated on federal lands, the activities of the Navy must be consistent with the enforceable policies of Virginia's Coastal Resources Management Program (VCMP), which includes the Coastal Lands Management enforceable policy as administered through the Chesapeake Bay Preservation Area Designation and Management Regulations (Regulations). Federal actions on installations located within Tidewater Virginia are required to be consistent, to the maximum extent practicable, with the performance criteria of the Regulations on lands analogous to locally designated Chesapeake Bay Preservation Areas.

As proposed, this project would take place on land included in the NNS refueling shipyard, which is analogous to areas designated as an Intensely Developed Area (IDA) by the City of Newport News under its Bay Act program. Redevelopment activities, such as the proposed project, are allowed in IDAs provided the activities comply with the performance criteria for redevelopment (§ 9 VAC 10-20-110) as locally implemented.

Provided redevelopment is carried out in a manner which is consistent with the performance criteria for IDAs, DCR-DCBLA finds the project would be consistent with the coastal lands management enforceable policy of the VCP as administered under the Chesapeake Bay Preservation Act & Regulations. For additional information, contact Alice Baird, DCR-DCBLA, at (804) 225-2307.

Additional Environmental Considerations

In addition to the enforceable policies of the VCP, the project was also reviewed with respect to applicable requirements and recommendations of the following programs:

1. Solid and Hazardous Wastes. DEQ Waste Division staff conducted a cursory review of its data files and determined that Newport News Shipbuilding has several locations that are either large quantity generators (LQG) (VAD988186110 LQG, VAD001307495 LQG, VAD988186110 LQG) and/or treatement, storage or disposal (TSD) facilities (VAD001307495 TSD). The following website may prove helpful in locating additional information using the above identification numbers: http://www.epa.gov/echo/search_by_permit.html.

Any wastes that are generated during the described operations must be tested and disposed of in accordance with applicable Federal, State, and local laws and regulations. Some of the applicable state laws and regulations are:

- Virginia Waste Management Act (Code of Virginia Section 10.1-1400 *et seq.*);
- Virginia Hazardous Waste Management Regulations (VHWMR) (9VAC 20-60);
- Virginia Solid Waste Management Regulations (VSWMR) (9VAC 20-80); and

- Virginia Regulations for the Transportation of Hazardous Materials (9VAC 20-110).

Some of the applicable Federal laws and regulations are:

- Resource Conservation and Recovery Act (RCRA) (42 U.S.C. Section 6901 *et seq.*);
- applicable regulations contained in Title 40 of the Code of Federal Regulations; and
- U.S. Department of Transportation Rules for Transportation of Hazardous materials (49 CFR Part 107).

All structures being demolished, renovated, or removed should be checked for asbestos-containing materials (ACM) and lead-based paint (LBP) prior to demolition. If ACM or LBP are found, in addition to the federal waste-related regulations mentioned above, State regulations 9VAC 20-80-640 for ACM and 9VAC 20-60-261 for LBP must be followed.

Please note that DEQ encourages all construction projects and facilities to implement pollution prevention principles, including the reduction, reuse, and recycling of all solid wastes generated. All generation of hazardous wastes should be minimized and handled appropriately. Additional questions and requests for information may be directed to Paul Kohler, DEQ, at (804) 698-4208.

2. Natural Heritage Resources. The Department of Conservation and Recreation (DCR) Division of Natural Heritage (DNH) has searched its Biotics Data System (Biotics) for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

Biotics documents the presence of natural heritage resources in the project area. However, due to the scope of the activity and the distance to the resources, DCR-DNH does not anticipate that this project will adversely impact these natural heritage resources.

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the Virginia Department of Conservation and Recreation (DCR), DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. The current activity will not affect any documented state-listed plants or insects.

In addition, DCR files do not indicate the presence of any State Natural Area Preserves under DCR's jurisdiction in the project vicinity.

Any absence of data may indicate that the project area has not been surveyed, rather than confirm that the area lacks natural heritage resources. New and updated information is continually added to Biotics. Please contact DCR-DNH at (804) 786-7951 for an update on this natural heritage information if a significant amount of time passes before project implementation.

3. Wildlife Resources. The Department of Game and Inland Fisheries (DGIF), as the Commonwealth's wildlife and freshwater fish management agency, exercises enforcement and regulatory jurisdiction over wildlife and freshwater fish, including state or federally listed endangered or threatened species, but excluding listed insects (*Virginia Code* Title 29.1). The DGIF is a consulting agency under the U.S. Fish and Wildlife Coordination Act (16 U.S.C. sections 661 et seq.), and provides environmental analysis of projects or permit applications coordinated through DEQ and several other state and federal agencies. DGIF determines likely impacts upon fish and wildlife resources and habitat, and recommends appropriate measures to avoid, reduce, or compensate for those impacts.

After review of the consistency determination, DGIF does not anticipate the proposed action would have a significant adverse impact upon threatened and endangered wildlife resources under its jurisdiction. For additional information, contact Andrew Zadnik, DGIF, at (804) 367-2733.

4. Historic Structures and Archaeological Resources. In a January 12, 2006 letter to the Navy, the Virginia Department of Historic Resources (DHR) reminded the Navy that, as a federal agency it must consider the effects of its actions on historic properties listed in or eligible for the National Register of Historic Places and provide the Advisory Council on Historic Preservation the opportunity to comment in accordance with Sections 106 of the National Historic Preservation Act, as amended, and its implementing regulation 36 CFR 800. The Section 106 review process begins when the Navy provides a description of the undertaking and its Area of Potential Effect (APE) to the State Historic Preservation Officer (SHPO), which in Virginia is DHR. The Navy must consult directly with DHR on this undertaking. While 36 CFR 800.8 allows federal agencies to coordinate Section 106 compliance with the National Environmental Policy Act (NEPA), the Navy must inform the SHPO (DHR) early in the process that it intends to do so. The Navy must also take care that the environmental documentation prepared under NEPA does present information about historic properties and potential effects to such resources at a level of detail that allows the SHPO and other consulting parties to comment. For additional information and coordination, contact Roger Kirchen, DHR, at (894) 367-2323, Ext. 153.

5. Transportation Impacts. The Virginia Department of Transportation (VDOT) finds that the proposed project appears to have no conflicts with existing and proposed transportation facilities contained in the Six Year Plan and the 2026 Long Range Plan.

Increased freight activities may require coordination and scheduling with the City of Newport News to minimize vehicle delay.

Any VDOT right-of-way land use requirements, lane closures, traffic control or work zone safety issues should be coordinated with the City of Newport News and VDOT's Williamsburg Residency at (757) 253-4832. For additional information, contact Mary Stanley, VDOT, at (804) 786-0868.

6. Pollution Prevention. DEQ advocates that principles of pollution prevention be used in all construction projects as well as in facility operations. Effective siting, planning, and on-site Best Management Practices (BMPs) will help to ensure that environmental impacts are minimized. However, pollution prevention techniques also include decisions related to construction materials, design, and operational procedures that will facilitate the reduction of wastes at the source. DEQ has several pollution prevention recommendations that may be helpful in constructing or operating this project:

- Consider development of an effective Environmental Management System (EMS). An effective EMS will ensure that the proposed facility is committed to minimizing its environmental impacts, setting environmental goals, and achieving improvements in its environmental performance. DEQ offers EMS development assistance and recognizes facilities with effective Environmental Management Systems through its Virginia Environmental Excellence Program.
- Consider environmental attributes when purchasing materials. For example, the extent of recycled material content, toxicity level, and amount of packaging should be considered and can be specified in purchasing contracts.
- Consider contractors' commitment to the environment when choosing contractors. Specifications regarding raw materials and construction practices can be included in contract documents and requests for proposals.
- Choose sustainable materials and practices for infrastructure and building construction and design. These could include asphalt and concrete containing recycled materials, and integrated pest management in landscaping, among other things.
- Integrate pollution prevention techniques into the facility maintenance and operation, to include the following: inventory control (record-keeping and centralized storage for hazardous materials), product substitution (use of non-toxic cleaners), and source reduction (fixing leaks, energy-efficient HVAC and equipment). Maintenance facilities should be designed with sufficient and suitable space to allow for effective inventory control and preventive maintenance.

DEQ's Office of Pollution Prevention provides information and technical assistance relating to pollution prevention techniques and EMS. If interested, please contact Tom Griffin, (804) 698-4545.

7. Energy Conservation. This project should be planned and designed to comply with state and federal guidelines and industry standards for energy conservation and efficiency, if applicable. For example, energy efficiency of the facility can be enhanced by maximizing the use of the following:

- thermally-efficient building shell components (roof, wall, floor, windows and insulation);
- facility siting and orientation with consideration towards natural lighting and solar loads
- high efficiency heating, ventilation, air conditioning systems;
- high efficiency lighting systems and daylighting techniques; and
- energy-efficient office and data processing equipment.

The Department of Mines, Minerals and Energy should be contacted, Matt Heller at (434) 951-6351, for assistance in meeting this challenge.

8. Local Comments. City of Newport News, Department of Planning staff note that the container facility would be located on existing developed land within NNS, and therefore, find the project would have little significant impact on natural resources. The safety of local residents is the primary concern of the department and it is pleased that the new railcars and containers would meet all applicable Nuclear Regulatory Commission (NRC) and Department of Transportation (DOT) regulations for shipping spent nuclear fuel. For additional information, contact Randy Hildebrandt, City of Newport News, at (757) 926-8411.

9. Regional Comments. The Hampton Roads Planning District Commission (HRPDC) reviewed the consistency determination and contacted the City of Newport News. Based on its review, HRPDC found the proposal generally consistent with local and regional plans and policies. For additional information, contact Arthur Collins, HRPDC, at (757) 420-8300.

Thank you for the opportunity to comment on this undertaking. If you have questions, please do not hesitate to call me at (804) 698-4325 or John Fisher at (804) 698-4339.

Sincerely,

Ellie Irons,
OEIR Program Manager

APPENDIX C

CLEAN AIR CONFORMITY: RECORD OF NON-APPLICABILITY (RONA) CONCERNING THE GENERAL CONFORMITY RULE

C.1 BACKGROUND

The Clean Air Act (CAA) contains the general conformity rule to ensure that federal actions in nonattainment and attainment/maintenance areas do not interfere with a state's timely attainment of the National Ambient Air Quality Standards (NAAQS). The general conformity rule divides the air conformity process into two distinct areas: applicability analysis and conformity determination. The rule only applies in areas that are designated as NAAQS nonattainment areas or maintenance areas. The applicability analysis process requires federal agencies to determine if their proposed action would have emissions of criteria pollutants above threshold levels [40 Code of Federal Regulations (CFR) 51.853 (7-1-06 Ed.)], or are listed exemptions that have been determined to have no increase, or are clearly *de minimis.*[1]

The purpose of this appendix is to identify the general conformity exemptions that apply to the Proposed Action, establish that the conformity rules do not apply for the activities associated with the Proposed Action of this document, and determine whether the Proposed Action requires a conformity determination.

A Record of Non-Applicability is prepared when the action qualifies for exemption or if the direct and indirect emissions[2] are below the thresholds.

C.2 PROPOSED ACTION

The Navy is proposing to use a new longer, more efficient shipping container system for spent nuclear fuel, designated the M-290 shipping container, to support refueling/defueling nuclear-powered aircraft carriers. This action involves three areas: (1) Newport News Shipbuilding and Dry Dock Company (NNS), where construction of a new loading facility at the shipyard would be required and where unloading naval spent nuclear fuel from the nuclear-powered aircraft carriers and loading this spent nuclear fuel into the longer containers would be done; (2) transportation of the spent nuclear fuel loaded shipping containers; and (3) unloading, storing, and processing operations, and construction of a Cask Shipping and Receiving Facility, at the Naval Reactors Facility (NRF) in Idaho.

C.3 NEWPORT NEWS

Newport News is located in a maintenance area for ozone and is in attainment for all other criteria pollutants. A maintenance area is an area that has been redesignated from non-attainment to attainment for the ozone standard. The precursors for ozone are volatile organic compounds (VOCs) and nitrogen oxides (NO_x). Construction activity associated with the new loading facility would induce

[1] *De minimis* emissions are total direct and indirect emissions of a criterion pollutant caused by a federal action in a nonattainment or attainment/maintenance area at rates less than specified applicability thresholds.

[2] Direct emissions are those that occur as a direct result of the action, and occur at the same time and place as the action. Indirect emissions are those that occur at a later time or distance from the place where the action takes place, but may be reasonably anticipated as a consequence of the proposed action.

short-term minor effects on local air quality. Increased VOCs and NO_x emissions from proposed construction activities would result from the following potential activities:

1. Operation of construction vehicles at the construction site.
2. Operation of construction vehicles on public roads.
3. Operation of equipment at the construction site.
4. Construction worker commutes.

General Conformity under the CAA, Section 176 has been evaluated for the Newport News construction according to the requirements of 40 CFR 93, Subpart B. Total direct and indirect annual emissions of criteria pollutants from this project have been estimated in Table A. These quantities are less than the applicable conformity threshold values established at 40 CFR 51.853(b)(1) and (2). Applicability thresholds are shown in Table B. A comparison of estimated emissions to the applicability thresholds is shown in Table C. The project is not considered regionally significant according to 40 CFR 51.853(i) and as illustrated in Table E.

Table A: Total Annual Estimated Emissions (Tons)

Year	PM-10	CO	NO_x	SO_2	VOC	$PM_{2.5}$	Pb
2009	0.73	8	21	0.16	1.1	0.7	0.00
2010	0.79	35	29	0.13	2.8	0.7	0.00
2011	0.64	32	23	0.06	2.4	0.6	0.00
TOTAL:	**2.16**	**75**	**73**	**0.35**	**6.3**	**2**	**0.00**

Table B: Applicability Thresholds

Area Classification	Pollutant	Tons Per Year (TPY)
Maintenance area inside an ozone transport area	VOC	50
All maintenance areas	NO_x	100
All maintenance areas	CO	100
All maintenance areas	SO_2	100
All maintenance areas	PM-10	100
All maintenance areas	$PM_{2.5}$	100
All maintenance areas	Pb	25

Table C: Determination of Estimated Emissions Meeting Applicability Threshold

Pollutant	Annual Total Estimated Emissions (TPY)			Is this below the Applicability Threshold *(de minimis)* for all years?
	2009	2010	2011	
VOC	1.1	2.8	2.4	Yes
NO_x	21	29	23	Yes
CO	8	35	32	Yes
SO_2	0.16	0.13	0.06	Yes
PM-10	0.73	0.79	0.64	Yes
$PM_{2.5}$	0.7	0.7	0.6	Yes
Pb	0	0	0	Yes

If the total emissions estimate for any given pollutant is 10% or more of the area's total emissions for that pollutant, the action is considered regionally significant by the United States Environmental Protection Agency (US EPA) and the Virginia Department of Environmental Quality.

Table D shows the current emissions estimate for the Newport News City County area of Virginia. These estimates were taken from the US EPA 2002 National Emissions Inventory (NEI). Table E shows the estimated emissions for the highest emitting year for the construction of the M-290 loading facility and whether those emissions are regionally significant.

Table D: 2002 NEI Summary, Newport News City County, Virginia (Tons)

	CO	NO_x	PM10-PRI	SO_2	VOC	$PM_{2.5}$-PRI
Area	5,060	2,790	35,400	7,750	3,750	6,700
Non-road Mobile	11,600	6,150	312	711	1,210	300
On-road Mobile	35,600	3,440	77.8	105	2,640	50
Point	232	392	142	1,180	494	50
Pollutant Total:	**52,500**	**12,800**	**35,900**	**9,750**	**8,100**	**7,100**

Table E: Regional Significance

Pollutant	Newport News City Estimated Annual Emissions (TPY)[3]	Proposed Action Estimated Emissions (tons) [highest emitting year]	Proposed Action Estimated Emissions Compared With County (Percent)	Are the estimated emissions for the construction of the M-290 Loading Facility regionally significant (≥ 10% of current emissions estimates for the area)?
VOC	8,100	2.8 [2010]	0.03	No
NO_x	12,800	29 [2010]	0.2	No
CO	52,500	35 [2010]	0.07	No
SO_2	9,750	0.16 [2009]	0.002	No
PM-10	35,900	0.79 [2010]	0.002	No
$PM_{2.5}$	7,100	0.7 [2009]	0.009	No

Construction emissions were based on the number and types of construction vehicles, construction equipment used and estimated hours of use. The estimated emissions were calculated for each motorized source, using software developed by the U.S. EPA.

Estimated NO_x and VOCs emissions related to construction vehicles that traveled roads and workers' vehicles were calculated using the EPA MOBILE6 model. Estimated emissions related to construction equipment used at the site were calculated using the EPA NONROAD2005 model. The equipment and vehicles hours of operation are estimated based on programmatic experience with similar construction projects at government sites.

Short-term, minor, adverse, direct effects are expected. An increase in construction activity, including trucks and other heavy equipment, would emit minor amounts of NO_x and VOCs, but significantly below the *de minimis* threshold limits for the applicability of conformity requirements for VOCs and NO_x.

[3] Taken from the US EPA 2002 NEI.
Website: ftp://ftp.epa.gov/EmisInventory/2002finalnei/all_sector_tier_summary_data/
File name: nei2002_cap_all_sector_tier3annual_summary.zip

Conformity under the CAA, Section 176, has been evaluated for the proposed action in accordance with 40 CFR 51. The activities at NNS are similar in scope to current activities (40 CFR 51.853(c)(2)(ii)), future activities are similar in scope to current activities (40 CFR 51.853(c)(2)(x)), and total direct and indirect emissions associated with the proposed action would be below the *de minimis* threshold (40 CFR 51.853(b)). In addition, the emissions are not regionally significant. For these reasons and since the annual emission values will not exceed the *de minimis* requirements, this rule is not applicable to actions at this site. A formal conformity determination is not required and potential air quality impacts are presumed by regulations not to be significant.

C.4 TRANSPORTATION

The M-290 shipping containers loaded with naval spent nuclear fuel are transported by railcars from NNS to the NRF in Idaho for examination and processing. These railcars pass through a number of states. It is expected that some of the areas being traversed are NAAQS nonattainment or maintenance areas. However, the transportation of loaded shipping containers is a continuing and recurring activity (40 CFR 51.853(c)(2)(ii)). Future activities are similar in scope to current activities (40 CFR 51.853(c)(2)(x)), the operations are routine in nature (40 CFR 51.853(c)(2)(xiii)), and involve routine recurring transportation of materials (40 CFR 51.853(c)(2)(vii)). The route being used to transport the longer M-290 shipping containers is the same as for the smaller shipping containers. The total direct and indirect emissions associated with the proposed action would be below the *de minimis* thresholds (40 CFR 51.853(b)).

In summary, the Proposed Action has been evaluated for conformity applicability with respect to transportation, and it has been determined that it is exempt from the need for a conformity determination.

C.5 NAVAL REACTORS FACILITY

Spent nuclear fuel handling actions being taken at NRF are continuing and recurring activities (40 CFR 51.853(c)(2)(ii)), similar in scope to current actions being conducted for shipments using smaller shipping containers. Future activities are similar in scope to current activities (40 CFR 51.853(c)(2)(x)). Construction activity associated with the Cask Shipping and Receiving Facility would induce short-term minor effects on local air quality. Increased VOCs and NO_x emissions from proposed construction activities would result from the following potential activities:

- Operation of construction vehicles at the construction site.
- Operation of construction vehicles on public roads.
- Operation of equipment at the construction site.
- Construction worker commutes.

The operations associated with the Proposed Action are routine (40 CFR 51.853(c)(2)(xiii)) and include routine maintenance and repair (40 CFR 51.853(c)(2)(iv)). NRF is neither located in a nonattainment area (NAA), nor in a maintenance area with respect to all criteria pollutants. Conformity under the CAA, Section 176 has been evaluated for the Proposed Action, including NRF construction, in accordance with 40 CFR 51.853. In summary, the actions being taken at NRF have been evaluated for conformity applicability, and it has been determined that it is exempt from the need for a conformity determination (40 CFR 51.853(b)(1)).

MEMORANDUM OF RECORD:
Proposed Action

SUBJECT: Record of Non-Applicability (RONA) to the General Conformity Rule for the Proposed Action to the use of a new longer, more efficient shipping container system for spent nuclear fuel from U.S. Navy aircraft carriers.

This Proposed Action includes the construction of a new loading facility at Newport News Shipbuilding and Dry Dock Company (NNS); transportation of naval spent nuclear fuel from NNS to Naval Reactors Facility (NRF) in Idaho using larger shipping containers; construction of a Cask Shipping and Receiving Facility at NRF; and unloading, processing, and storage of naval spent nuclear fuel at NRF.

General Conformity under the Clean Air Act (CAA), Section 176 has been evaluated to the requirements of 40 CFR 51.853. The requirements of these rules are not applicable to this alternative because:

Total direct and indirect emissions from this alternative have been estimated at 2.81 tons VOCs and 29.21 tons NO_x per year, which are below the conformity threshold values of 100 tons VOCs and 100 tons of NO_x established at 40 CFR 51.853 and are not regionally significant according to 40 CFR 51.853(i).

No calculations were made for activities associated with transportation, since it has been determined that the activity proposed is routine and comparable to the transport of the smaller shipping containers. The transportation of loaded shipping containers is a continuing and recurring activity. The route being used to transport the longer M-290 shipping containers is the same as for the existing shipping containers. The scope of the transportation activity is similar to that of current shipments, also. Previous similar transportation actions [DOE/EIS-0250 (November 1996)] have shown that the effect will not exceed *de minimis* levels of direct emissions of a criteria pollutant or its precursors and is exempted by 40 CFR 51.853.

Conformity under the CAA, Section 176, has been evaluated for activity at NRF in accordance with 40 CFR 51. The requirements of this rule are not applicable to actions at this site because NRF is not in a nonattainment or maintenance area.

Support documentation and emission estimates:

( ) Are Attached
(X) Appear in the NEPA Documentation (for NNS Activities)
(X) Other (Not Necessary) (for Transportation and NRF)

J. M. McKenzie
Director, Regulatory Affairs
Naval Nuclear Propulsion Program

APPENDIX D

NATIONAL HISTORIC PRESERVATION ACT

D.1 BACKGROUND

Section 3 of the Environmental Assessment (EA) discusses the affected environment at Newport News Shipbuilding and Dry Dock Company (NNS), in Newport News, Virginia. Existing facilities at NNS are not adequately sized to support loading the aircraft carrier spent nuclear fuel into the new longer shipping containers; therefore, a new shipping container loading facility must be constructed at NNS.

In accordance with Section 106 of the National Historic Preservation Act of 1966, as amended, the Department of the Navy, Naval Nuclear Propulsion Program provided the Virginia Department of Historic Resources (DHR), with the Project Review Application Form for the proposed action. The Department of the Navy, Naval Nuclear Propulsion Program has determined that there are no historic properties affected by the proposed action.

Section D.2 provides a copy of the Project Review Application Form, and attachments including concurrence from DHR agreeing with the finding of no historic properties affected.

D.2 PROJECT REVIEW APPLICATION FORM FOR U.S. NAVY – NAVAL NUCLEAR PROPULSION PROGRAM PROPOSALTO USE A MORE EFFICIENT SHIPPING CONTAINER SYSTEM FOR SPENT NUCLEAR FUEL FROM NAVAL AIRCRAFT CARRIERS

Project Review Application Form

This application must be completed for all projects that will be federally funded, licensed, or permitted, or that are subject to state review. Please allow 30 days from receipt for the review of a project. All information must be completed before review of a project can begin and incomplete forms will be returned for completion.

I. GENERAL PROJECT INFORMATION

1. Has this project been previously reviewed by DHR? YES x NO ___ DHR File # 2006-0798
2. Project Name: Newport News Shipbuilding – New Shipping Container Loading Facility
3. Project Location:

Newport News	N/A	N/A - independent city
City	Town	County

4. Specify Federal and State agencies involved in project (providing funding, assistance, license or permit). Refer to the list of agencies and abbreviations in the instructions.

Lead Federal Agency	Navy
Other Federal Agency	N/A
State Agency	N/A

5. Lead Agency Contact Information

Contact Person	J. M. McKenzie		
Mailing Address	08U Naval Reactors, Naval Sea Systems Command 1240 Isaac Hull Avenue, SE Stop 8036 Washington Navy Yard, DC 20376-8036		
Phone Number	202-781-6183	Fax Number	202-781-6427
Email Address	john.m.mckenzie@navy.mil		

6. Applicant Contact Information

Contact Person	Alan Denko		
Mailing Address	08U Naval Reactors, Naval Sea Systems Command 1240 Isaac Hull Avenue, SE Stop 8036 Washington Navy Yard, DC 20376-8036		
Phone Number	202-781-6214	Fax Number	202-781-6427
Email Address	alan.r.denko@navy.mil		

II. PROJECT LOCATION AND DESCRIPTION

7. USGS Quadrangle Name: Newport News South
8. Number of acres included in the project: Approximately 1.5

9. Have any architectural or archaeological surveys of the area been conducted? YES_X_ NO___

If yes, list author, title, and date of report here. Indicate if a copy is on file at DHR. N/A
M. Graham/VDHR, Archives Search Map created 06/20/06, on file with DHR and attached

10. Are any structures 50 years old or older within or adjacent to the project area? YES_X_ NO___

If yes, give date(s) of construction and provide photographs. N/A
Archive search concluded no previously listed architectural or archaeological sites present in project area. In the project area, one building was built in 1936, four in 1941, one in 1942, and one in 1953. Pursuant to 36 CFR 800.11(c)(3), photographs are not provided due to security concerns. None of these buildings would be impacted by the proposed undertaking.

11. Does the project involve the rehabilitation, alteration, removal, or demolition of any structure, building, designed site (e.g. park, cemetery), or district that is 50 years or older? If *yes*, this must be explained fully in the project description. YES___ NO_X__

12. Does the project involve any ground disturbance (e.g. excavating for footings, installing sewer or water lines or utilities, grading roads, etc.)? If *yes*, this must be explained fully in the project description. YES_X_ NO___

13. DESCRIPTION: Attach a complete description of the project. Refer to the instructions for the required information.

To the best of my knowledge, I have accurately described the proposed project and its likely impacts.

Signature of Applicant/Agent — 10/12/2006 Date

The following information must be attached to this form:

X	Completed DHR Archives search
X	USGS map with APE shown
X	Complete project description
*	Any required photographs and plans

*see item 10 above

X No historic properties affected ___ No adverse effect
___ Additional information is needed in order to complete our review.
___ We have previously reviewed this project. A copy of our correspondence is attached.

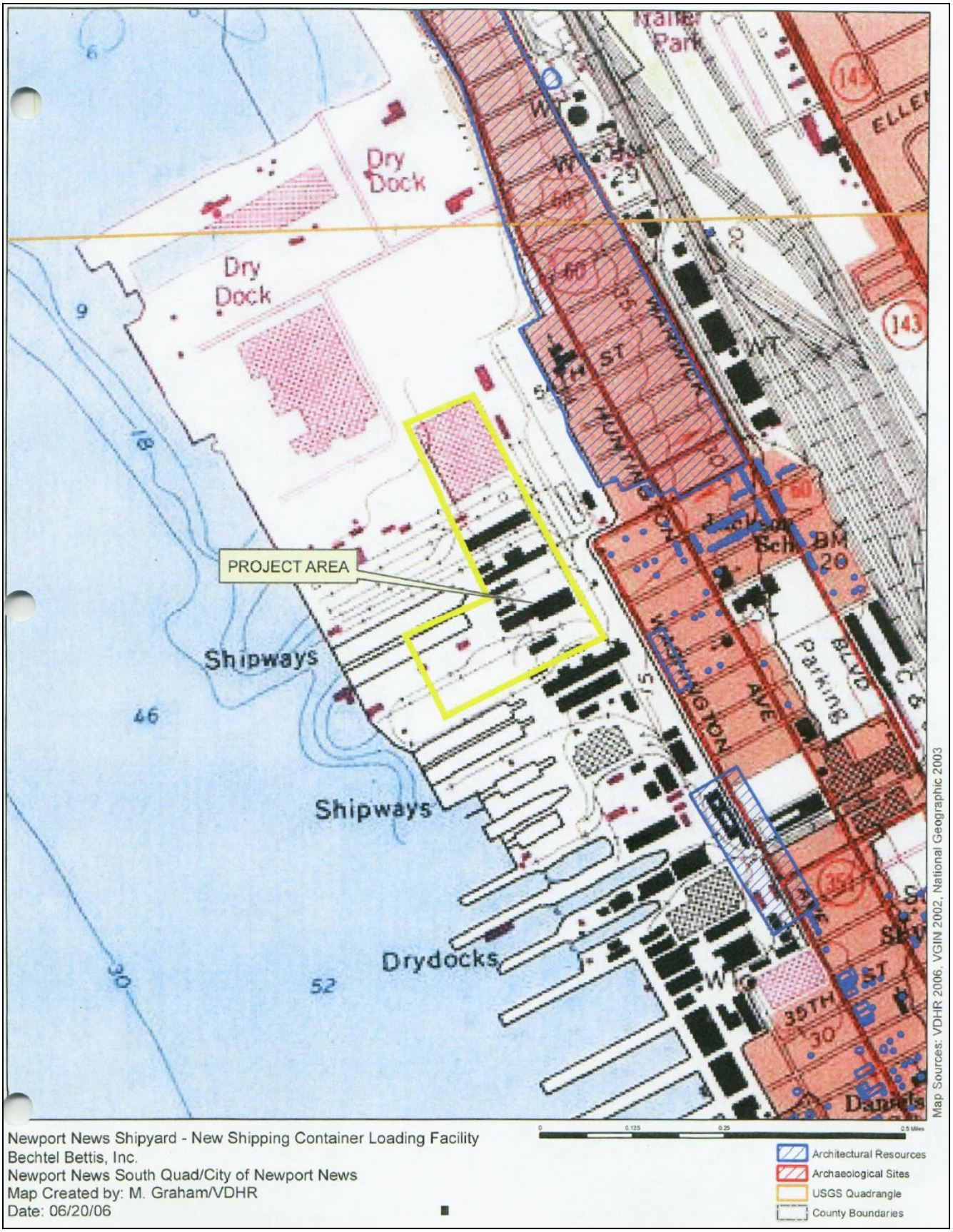
Comments: RE: Naval Nuclear Propulsion Program
Proposal to Use More Efficient Shipping
Containers Systems for Spent Nuclear Fuel
for Aircraft Carriers

Signature [signature] Date 3 Nov 06

Phone number 804 367 2323 ext 14 DHR File # 2006-0798

This Space For Department Of Historic Resources Use Only

MAIL COMPLETED FORM AND ATTACHMENTS TO:
Virginia Department of Historic Resources
Attention: Project Review
2801 Kensington Avenue, Richmond, VA 23221
www.dhr.virginia.gov


PROJECT AREA
Shipways
Shipways
Drydocks
Dry Dock
Dry Dock
Map Sources: VDHR 2006, VGIN 2002, National Geographic 2003
Newport News Shipyard - New Shipping Container Loading Facility
Bechtel Bettis, Inc.
Newport News South Quad/City of Newport News
Map Created by: M. Graham/VDHR
Date: 06/20/06
Architectural Resources
Archaeological Sites
USGS Quadrangle
County Boundaries


Project Area at Newport News Shipbuilding and Dry Dock Company
USGS Quadrangle Name: "Newport News South" Number: O36076h4
HAMPTON
NEWPORT NEWS
HAMPTON ROADS
BATTEN BAY
NANSEMOND RIVER
SUFFOLK
Newport News South, V
WetlandMAPS.com

Attachment to Project Review Application Form
Newport News Shipbuilding - New Shipping Container Loading Facility

Description of the Proposed Undertaking and Project Area

The Department of the Navy, Navy Nuclear Propulsion Program is proposing to use a more efficient shipping container system for naval spent nuclear fuel to support refueling and defueling U.S. Navy nuclear-powered aircraft carriers. The proposed new shipping containers would be longer than existing containers and could be used for any type of naval spent nuclear fuel; however, their primary function would be to transport aircraft carrier spent nuclear fuel from the refueling shipyard, Newport News Shipbuilding and Dry Dock Company (NNS) in Newport News, Virginia to Idaho for processing. Existing NNS facilities are not adequately sized to support loading the aircraft carrier spent nuclear fuel into the proposed new shipping containers; therefore, a new shipping container loading facility would have to be constructed at NNS.

The location of the construction would be near the dry dock where naval spent nuclear fuel is unloaded from aircraft carriers (as shown in the maps attached to the Project Review Application Form). This project area is an already developed industrial area covered by structures or paved with concrete and asphalt. Railroad tracks and roadways run through portions of the project area.

An archive search conducted by DHR concluded that there are no previously listed architectural resources or archaeological sites within the project area. The project area includes a variety of modern industrial buildings as well as seven buildings greater than 50 years old (varying in age from 53 to 72 years old). Each of the seven buildings greater than 50 years old is an all-steel industrial structure with metal siding and has no historical significance.

Construction would require that a temporary storage building be relocated and an existing roadway rerouted. None of the buildings greater than 50 years old would be rehabilitated, altered, removed, or demolished. Significant ground disturbance would be necessary for construction of the new loading facility. Also, some underground services would be re-routed and existing infrastructure modified to connect the new facility with the existing NNS infrastructure. All ground disturbances would be occurring in industrial areas either paved or disturbed by previous construction.

APPENDIX E

PUBLIC COMMENTS TO THE NOTICE OF AVAILABILITY, DRAFT AND FINAL ENVIRONMENTAL ASSESSMENT, AND DRAFT ADDENDUM TO THE ENVIRONMENTAL ASSESSMENT

E.1 BACKGROUND

On June 21, 2007, the Department of the Navy, Naval Nuclear Propulsion Program published in the Federal Register a Notice of Availability (NOA) of a draft Environmental Assessment (EA) on the potential environmental impacts associated with using a more efficient shipping container system for spent nuclear fuel to support the refueling and defueling of U.S. Navy nuclear-powered aircraft carriers. The Naval Nuclear Propulsion Program also published a notice in selected newspapers in the Idaho, Wyoming, and Virginia areas to ensure ample notification to the public. In addition, the Naval Nuclear Propulsion Program sent copies of the notice and the draft EA to selected state agencies, congressional staff, tribes, and public interest organizations.

The NOA invited public comments on environmental issues and concerns relative to the draft EA and the scope of the EA, on or before July 24, 2007. Comments were accepted by letter, by phone, and by e-mail. Public comments were solicited for the final EA, as well. The Draft Addendum to the EA (EAA) was provided for public comment on July 15, 2009.

E.2 PUBLIC COMMENTS RECEIVED

Seven public comments were received on the draft EA during the comment period: two of an administrative nature and five substantive comments. No comments were received on the Final EA. No comments were received on the Draft EAA. Table E-1 provides a summary of the comments received. This table includes the name and contact information of the commenter, the affiliation of the commenter, and a summary of the comment and how it was considered in the preparation of the EA.

Table E-1
Summary of Public Comments to NOA, Draft and Final EA, and Draft EAA

Serial Number	Method Received	Commenter	Organization	Contact Info	Summary of Comment	Comment Disposition
0001	e-mail	Lake Barrett	None Identified	Lake@Lbarrett.com	Expressed inability to access the website	Website activated the afternoon of June 21, due to early publication of notice.
0002	Phone	Charlie Ellis	VA Dept. of Environmental Quality (DEQ)- Office of Environmental Impact Review	629 East Main St., 6th Floor Richmond, VA 23219 804-698-4488	Expressed inability to access the website	Website activated the afternoon of June 21, due to early publication of notice.
0003	USPS	Randy W. Hildebrandt	City of Newport News Department of Planning	2400 Washington Avenue Newport News, VA 23607	This project will have little significant impact on the environment. There is no objection to the project.	NA
0004	USPS	Arthur L. Collins	Hampton Roads Planning District Commission		The proposal continues to be consistent with local and regional plans and policies.	NA

Serial Number	Method Received	Commenter	Organization	Contact Info	Summary of Comment	Comment Disposition
0005	USPS	Ellie L. Irons	VA DEQ	P.O. Box 1105 Richmond, VA 23218 804-698-4021	*Division of Air Quality* and its *Tidewater Regional Office* have no comments on air quality. *Waste Division* did not think solid waste was addressed. The Navy must conduct its activities consistent with *Chesapeake Bay Preservation Area Designation and Management Regulations*, and *Erosion and Sediment Control; Stormwater Management Regulations*. The Navy must register for coverage under the *VPDES Stormwater Management General Permit for Construction*. *Dept. of Historic Resources* concurred with Navy's determination of no effect on historic resources. No new comments from *Natural Heritage Resources Roads and Traffic,* and *Wildlife Resources*. Two petroleum releases are located in the proposed project area. If evidence of such is found, it must be reported to DEQ. Any underground and above ground storage tanks (USTs and ASTs), distributed by the project, need to be properly closed. Any portable ASTs for equipment fuel must be registered with DEQ.	Section 3.4.4 was revised to clarify that NNS will follow applicable Virginia requirements during demolition, excavation, and construction activities. Section 3.4.4 was also clarified to identify that the area to be excavated contains no known aboveground storage tanks, underground storage tanks, areas affected by previous petroleum releases, solid waste management units, or hazardous waste treatment, storage, or disposal facilities. NNS would follow applicable Virginia Department of Environmental Quality requirements for reporting any previously unidentified petroleum releases or underground storage tanks found during sampling and excavation. The new facility will not include any regulated storage tanks.
0006	E-mail	Robert E. Fronczak, P.E., Assistant Vice President, Environment & Hazardous Material	American Association of Railroads (AAR)	50 F Street, N.W. Washington, DC 20001 202-639-2839 Email: RFronczak@aar.org	The AAR repeated earlier comments made following the issuance of the Notice of Intent, see Appendix A. The AAR recommended the Navy commit to using dedicated trains given the preponderance of support from other government agencies.	Transportation issues were considered during the preparation of Section 4 of the EA. See Section A.3 of Appendix A of this EA for details related to this comment. This comment is outside the scope of this EA.
0007	e-mail	Susan Burke	Idaho DEQ	1410 North Hilton Boise, ID 83706 208-373-0502	1. Clarify what is meant by "temporary" dry storage.	1. The EA has been clarified to describe in more detail the current operations, to place naval spent nuclear fuel into dry storage after processing and the proposed dry storage of naval spent nuclear fuel prior to processing.

					2. How can the spent nuclear fuel assemblies be in dry storage without needing to go into water pools? 3. Clarify how the additional LLRW to be generated by the use of the M-290 will not increase the total LLRW at INL above levels in referenced Environmental Impact Statements. 4. Clarify what amount of the LLRW is remote-handled (RH)-LLRW and how it will be disposed of. 5. Will there be an increase in the NRF workforce due to removal of the non-fuel structural components from the spent fuel assemblies?	2. Section 5.3.1 was revised to identify that dry storage containers are designed to dissipate heat through natural convection of air. 3. Section 5.4.2.5 was revised to clarify the amount of LLRW generated at NRF versus NNS and how this relates to amounts projected in previous Environmental Impact Studies. 4. Section 5 was revised to clarify the amount of the additional LLRW resulting from use of the M-290 and how it would be disposed, 5. Section 5.4.1-*Socioeconomics* was revised to clarify that no changes in the NRF workforce are expected.

DEPARTMENT OF THE NAVY
NAVAL SEA SYSTEMS COMMAND
1333 ISAAC HULL AVE SE
WASHINGTON NAVY YARD DC 20376-0001

Revised Finding of No Significant Impact for the Use of a More Efficient Shipping Container System for Spent Nuclear Fuel From Naval Aircraft Carriers

October 2009

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Revised Finding of No Significant Impact

DEPARTMENT OF NAVY

Department of Defense

Notice of an Addendum to an Environmental Assessment and Revised Finding of No Significant Impact for the Use of a More Efficient Shipping Container System for Spent Nuclear Fuel from Naval Aircraft Carriers

Agency: Department of Navy, DoD

Action: Revised Finding of No Significant Impact

SUMMARY: Pursuant to Section 102(2) of the National Environmental Policy Act (NEPA) of 1969 as amended (42 U.S.C. 4321 *et seq.*), the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA (40 CFR Parts 1500-1508), and the Chief of Naval Operations Environmental and Natural Resources Program Manual (OPNAV Instruction 5090.1C), the Department of the Navy, Naval Nuclear Propulsion Program announces the availability of an Addendum to an Environmental Assessment (EAA) on the potential environmental impacts associated with using a more efficient shipping container system for spent nuclear fuel to support defueling and refueling U.S. Navy nuclear-powered aircraft carriers at Northrop Grumman Shipbuilding - Newport News (NGSB-NN) (formerly Newport News Shipbuilding and Dry Dock Company (NNS)) in Virginia, and the associated rail shipment of this spent nuclear fuel to the Naval Reactors Facility (NRF) in Idaho. The potential environmental impacts associated with the use of the new shipping container system, designated the M-290, are essentially the same as those addressed in previous Environmental Impact Statements (EISs), associated with the use of existing shipping container systems, which concluded that impacts upon the environment would be small. The addendum evaluated construction of a cask shipping and receiving facility at NRF to support handling of the M-290. The previous Environmental Assessment (EA) evaluated modification of an existing facility at NRF and determined that impacts upon the environment associated with the modification would be small. The EAA determined that impacts upon the environment associated with construction of the facility would also be small. The EAA concludes that the potential effects on the human environment associated with the use of the M-290 shipping container system and the infrastructure changes that will allow its use are not significant. Therefore, it is not required that an EIS be prepared. The Naval Nuclear Propulsion Program is issuing a revised Finding of No Significant Impact (FONSI).

FOR FURTHER INFORMATION:
Copies of the EAA and revised FONSI are available for review at the following locations: United States Department of Energy Public Reading Room, Idaho Falls, ID; Boise State University, Boise, ID; Newport News Public Library Main Street Branch, Newport News, VA. In addition, the EAA and revised FONSI are available to the public at the *http://www.snfshippingcontainer.us* web site.

SUPPLEMENTARY INFORMATION: The Department of the Navy, Naval Nuclear Propulsion Program prepared an Environmental Assessment on the potential environmental impacts associated with using a more efficient shipping container system for spent nuclear fuel to support defueling and refueling U.S. Navy nuclear-powered aircraft carriers at Northrop Grumman Shipbuilding - Newport News (NGSB-NN) (formerly Newport News Shipbuilding and Dry Dock Company (NNS)) in Virginia, and the associated rail shipment of this spent nuclear fuel to the Naval Reactors Facility (NRF) in Idaho for temporary storage. Use of the M-290 shipping container would provide improved support for the aircraft carrier defueling and refueling schedules to meet the operational needs of the U.S. Navy, while continuing to provide for public safety and environmental protection. An Addendum to the

Environmental Assessment was prepared to address the impact of construction of a cask shipping and receiving facility at NRF to support use of the M-290. The previous EA evaluated modification of an existing facility at NRF.

The Naval Nuclear Propulsion Program manages naval spent nuclear fuel consistent with *Department of Energy (DOE) Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Final Environmental Impact Statement,* [hereafter referred to as [*DOE/EIS-0203-F (April 1995)*]; and a 1995 Settlement Agreement, as amended in 2008, among the State of Idaho, the DOE, and the Navy concerning the management of naval spent nuclear fuel.

Reason for Proposed Action: Because of a projected increase in the frequency of aircraft carrier defueling and refueling operations, the Naval Nuclear Propulsion Program has concluded that the current defueling and refueling process for nuclear-powered aircraft carriers must be improved to meet upcoming defueling and refueling schedules and support the U.S. Navy's operational needs. The Proposed Action to meet this need is to implement a new, more efficient shipping container system, designated the M-290, and to construct a cask shipping and receiving facility to more efficiently handle the M-290.

Alternatives to the Proposed Action: The Naval Nuclear Propulsion Program identified a number of alternative actions to address the above need.

- No-Action Alternative - Continue to use the existing M-140 shipping containers and existing water pool at NGSB-NN.
- Alternative 1 - Change the nuclear-powered aircraft carrier defueling and refueling schedules.
- Alternative 2 - Increase the capacity of the water pool at NGSB-NN.
- Alternative 3 - Use a second refueling shipyard for nuclear-powered aircraft carriers.
- Alternative 4 - Procure additional current design M-140 shipping containers.

The Proposed Action and action alternatives were evaluated according to their ability to support the primary objective of meeting the operating needs of the U.S. Navy. The Proposed Action was the only alternative that met the objective, while staying within the operational constraints of the decisions previously reached in the *Record of Decision* for *DOE/EIS-0203-F (April 1995)* for overall naval spent nuclear fuel management. The amount of naval spent nuclear fuel shipped and the number of shipments would not increase for any of the alternatives. The No-Action Alternative and Alternatives 1 through 4 were unacceptable, since no alternative or combination of alternatives fully supported the defueling and refueling schedules and the operational needs of the U.S. Navy.

Environmental Impacts of Proposed Action: The EA and EAA reviewed the current processes and existing facilities and operations at NGSB-NN in Virginia and NRF in Idaho for handling and processing naval spent fuel assemblies, and the changes that would be necessary to use the M-290 shipping container. In addition, the potential environmental impacts from current operations, described in *DOE/EIS-0203-F (April 1995)* and *Department of the Navy Final EIS for a Container System for the Management of Naval Spent Nuclear Fuel* [hereafter referred to as *DOE/EIS-0251 (November 1996)*], were reviewed and compared to potential impacts resulting from use of the M-290 shipping container. The EA also evaluated potential impacts from the transportation of naval spent nuclear fuel from NGSB-NN to NRF using the M-290 shipping container.

At NGSB-NN, naval aircraft carrier spent nuclear fuel assemblies are currently disassembled after removal from the ship in order to fit into the current design naval spent fuel shipping container, designated the M-140 shipping container. The use of the M-290 shipping container would result in direct loading of aircraft carrier spent nuclear fuel assemblies without the need for disassembly. This

would expedite the defueling process, and enable NGSB-NN to meet Navy operational schedule requirements.

Existing NGSB-NN facilities are not adequately sized to support the new longer shipping container; therefore, a new M-290 loading facility would be needed. The new M-290 loading facility would be constructed within an already developed area of NGSB-NN. Construction would comply with Commonwealth of Virginia regulatory requirements. No significant environmental impact would result from the construction of this facility.

The environmental effects of the transportation of naval spent nuclear fuel have been previously evaluated in *DOE/EIS-0203-F (April 1995)* and in *DOE/EIS-0251 (November 1996)*. Based on these EISs, the Naval Nuclear Propulsion Program concluded that the environmental and public health impacts associated with transportation of naval spent nuclear fuel would be small.

The M-290 shipping container would be designed to meet the technical requirements specified in 49 CFR 173 and 10 CFR 71 and to provide radiation levels outside the container similar to the levels measured during past M-140 shipments. Since the radiation levels and amounts of spent nuclear fuel shipped in the M-290 shipping container would be comparable to the M-140 shipping container, the use of the M-290 shipping container would not change the conclusions in *DOE/EIS-0203-F (April 1995)* that the radiological impacts of transportation of naval spent nuclear fuel would be small.

Environmental conditions associated with the management of spent nuclear fuel at NRF, as well as the natural and man-made environmental impacts for spent nuclear fuel, were evaluated in *DOE/EIS-0203-F (April 1995)*. DOE concluded that the environmental impacts associated with the current management of spent nuclear fuel at the Idaho National Laboratory, including naval spent nuclear fuel at NRF, would be small. In addition, the radiological impacts of loading, unloading, and dry storage of spent fuel canisters were evaluated in *DOE/EIS-0251 (November 1996)*. The EA analyzed modification of existing NRF facilities and determined that no significant environmental impact would result from such modification. The EAA analyzed construction of a Cask Shipping and Receiving Facility at NRF within an already developed area of NRF. Construction would comply with regulatory requirements. No significant environmental impact would result from the construction of this facility.

The changes in processing operations and the dry storage of the naval spent nuclear fuel assemblies prior to processing in the water pools are actions within the normal operating scope of the facility and would be comparable to the current operations.

Conclusion: Based on the results of the EA and EAA, which included a comparison of the Proposed Action with previous related EISs and identification of facility, equipment, and operational changes necessitated by the adoption of the M-290 shipping container, the environmental conclusions of *DOE/EIS-0203-F (April 1995)* and *DOE/EIS-0251 (November 1996)* continue to be valid. Radiological impacts from the new shipping container were evaluated and compared to the impacts from existing containers. Natural and man-made environmental impacts were assessed for both sites involved in the action and for the transportation process. No significant effect on the human environment would be expected to result from use of the M-290 shipping container.

Because the Proposed Action meets the operational needs of the U.S. Navy and has no significant impact on the quality of the human environment, the Naval Nuclear Propulsion Program concludes that the Proposed Action is the preferred action to address the current need for finding ways to more efficiently support defueling and refueling schedules for Naval nuclear-powered aircraft carriers. Use of the M-290 shipping container would provide improved support for aircraft carrier defueling and refueling schedules to meet the operational needs of the U.S. Navy, while continuing to provide for public safety and environmental protection.

Agencies and Persons Consulted: The Naval Nuclear Propulsion Program has determined that the Proposed Action will not affect listed species or critical habitats. Therefore, no further consultation is required under Section 7 of the Endangered Species Act.

The Naval Nuclear Propulsion Program consulted with the Virginia Historic Society as to the potential to cause effect on historic properties.

A Federal Coastal Consistency Determination was provided to Virginia's Coastal Resources Management on May 11, 2006. The consistency determination concluded that the Proposed Action would have minimal effect on land use, water use, or natural resources of Virginia's coastal zone, and would be consistent to the maximum extent practicable with the enforceable policies of the Virginia Coastal Resources Management Program. The State of Virginia concurred with this determination in a letter dated July 13, 2006.

The Naval Nuclear Propulsion Program evaluated the impact of the Proposed Action on air quality under the General Conformity rules under the Clean Air Act, Section 176 and determined that the rules were not applicable to the Proposed Action.

Public Comment: A Notice of Intent to prepare an EA was issued on January 20, 2006. Public comments were received and considered in the preparation of the Draft EA. The Draft EA was made available for public comment on June 21, 2007. Public comments were received and considered in the preparation of the final EA. No public comments were received on the final EA. A Notice of Availability and a Draft Addendum to the EA were made available for public comment on June 15, 2009. No public comments were received.

Related Documents: Previous environmental impact statements that relate to this action include:

1. DOE/EIS-0200-F (May 1997), *Final Waste Management Programmatic Environmental Impact Statement for Managing Treatment, Storage, and Disposal of Radioactive and Hazardous Waste.*
2. *DOE/EIS-0203-F (April 1995), DOE Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Final Environmental Impact Statement.*
3. DOE/EIS-0203-F-SA-02 (June 2005), *Supplemental Analysis* (Extending the original EIS for another 10 years).
4. DOE/EIS-0250-F (February 2002), *Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada.*
5. *DOE/EIS-0251 (November 1996), Department of the Navy Final Environmental Impact Statement for a Container System for the Management of Naval Spent Nuclear Fuel.*
6. *Environmental Assessment of Short Term Storage of Naval Spent Fuel,* December 1993.

FINDING OF NO SIGNIFICANT IMPACT: On the basis of the EA and EAA prepared in support of the use of a new longer, more efficient shipping container system for spent nuclear fuel removed from naval aircraft carriers, the Department of the Navy, Naval Nuclear Propulsion Program has determined that the Proposed Action will not significantly affect the quality of the human environment. Therefore, the Department of the Navy is not required to prepare an EIS and is issuing this revised Finding of No Significant Impact.

Signed in Washington, DC this 2nd day of October 2009.

ADM Kirkland H. Donald
Director, Naval Nuclear Propulsion Program

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