DOE/EIS-0453-SA-01

Supplement Analysis for the Environmental Impact Statement for the Recapitalization of Infrastructure Supporting Naval Spent Nuclear Fuel Handling

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ACRONYMS and ABBREVIATIONS

CEQ	Council on Environmental Quality
C.F.R.	Code of Federal Regulations
DOE	Department of Energy
ECF	Expended Core Facility
EIS	Environmental Impact Statement
ICRP	International Commission on Radiological Protection
INL	Idaho National Laboratory
MOI	Maximally Exposed Off-site Individual
NEPA	National Environmental Policy Act
NNPP	Naval Nuclear Propulsion Program
NRC	Nuclear Regulatory Commission
NRF	Naval Reactors Facility
NSFH	Naval Spent Fuel Handling
ROD	Record of Decision
SA	Supplement Analysis
SDC	Seismic Design Category
U.S.	United States
U.S.C.	United States Code

1. INTRODUCTION AND PURPOSE

1.1. Introduction

The Naval Nuclear Propulsion Program (NNPP) has prepared this Supplement Analysis (SA) to evaluate the environmental impact statement (EIS) listed below considering changes that could have bearing on the potential environmental impacts previously analyzed. The Council on Environmental Quality (CEQ) National Environmental Policy Act (NEPA) regulations (40 C.F.R. 1500-1508) direct agencies to prepare a supplement to either a draft or final EIS if the "agency makes substantial changes in the proposed action that are relevant to environmental concerns" or there are "significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts." The Department of Energy (DOE) NEPA regulations (10 C.F.R. 1021.314(c)) state that, when it "is unclear whether or not an EIS supplement is required, DOE shall prepare a Supplement Analysis." This SA provides sufficient information for the NNPP to determine whether (1) to supplement an existing EIS, (2) to prepare a new EIS, or (3) no further NEPA documentation is required.

Existing EIS evaluated in this SA:

- *Final Environmental Impact Statement for the Recapitalization of Infrastructure Supporting Naval Spent Nuclear Fuel Handling* (DOE/EIS-0453-F), dated October 2016, https://www.energy.gov/nepa/downloads/eis-0453-final-environmental-impact-statement

1.2. Proposed Change and Review of New Information

In the EIS, the NNPP evaluated environmental impacts associated with recapitalizing naval spent nuclear fuel handling capabilities. Naval spent nuclear fuel handling capabilities are currently provided by the Expended Core Facility (ECF) at the Naval Reactors Facility (NRF) at the Idaho National Laboratory (INL) in southeast Idaho. In the Record of Decision (ROD) to the EIS, issued in December 2016, the decision was made to construct a new facility at NRF (ROD 2016). This alternative was selected based on improved long-term capacity, increased efficiency and effectiveness, and reduced long-term costs and risks compared to the other alternatives. The new facility is referred to as the Naval Spent Fuel Handling (NSFH) Facility.

The EIS describes a preliminary design of the water pool system where naval spent nuclear fuel handling processes would occur in the new facility. Since publication of the EIS, the water pool system design has progressed. This SA was prepared by reviewing the analysis in the EIS, supporting documents, and current information on the water pool system design. This SA evaluates whether the potential impacts of the updated water pool system design are adequately addressed by the analyses in the EIS and if additional NEPA documentation is needed.

Proposed Change

The NSFH Facility water pool system design described in the EIS has progressed from a preliminary design with a liner to an updated design with an epoxy-type coating. In addition, improvements have been made to the reinforced concrete water pool structure and, consistent with the replacement of the liner with an epoxy-type coating, the leak detection and collection system has been relocated external to the water pool walls. As discussed in Section 3 below, impacts to soils, groundwater, and health and safety associated with the updated design are unchanged from the alternatives analyzed in the EIS.

Review of New Information

In preparing this SA, the NNPP evaluated environmental conditions, requirements, and other changes that have occurred at NRF to determine whether the baseline natural environment has changed significantly since the EIS was issued in 2016. The evaluation focused mainly on those resource areas with potential to be impacted by design changes to the water pool system. No changes in environmental conditions or requirements at NRF were identified for public and occupational health and safety or geology and soils that were not addressed in the EIS. While changes have occurred with respect to state permit requirements for water resources and air quality, these changes do not affect the analyses in the EIS. Therefore, no substantial changes or significant new circumstances or information that may be relevant to environmental concerns and have bearing on the proposed action or its impacts are identified for inclusion in this SA.

1.3. Background

The NNPP, also known as the Naval Reactors Program, was established in 1948 and is a joint DOE and United States (U.S.) Navy organization with responsibility for all matters pertaining to naval nuclear propulsion from design through disposal. The integrated relationship, authorities, and responsibilities between the DOE and U.S. Navy for naval nuclear propulsion are specified in Executive Order 12344 and codified in 50 United States Code (U.S.C.) § 2511 and 50 U.S.C. § 2406. The NNPP's mission is to provide the U.S. with safe, effective, and affordable naval nuclear propulsion plants and to ensure their continued safe and reliable operation through lifetime support, research and development, design, construction, specification, certification, testing, maintenance, and disposal. The NNPP maintains total responsibility for all aspects of the U.S. Navy's nuclear propulsion systems.

At the end of a nuclear propulsion system's useful life or when naval nuclear fuel has been depleted, the NNPP is responsible for removal of the naval spent nuclear fuel from an aircraft carrier, submarine, or prototype through a defueling operation. Once the naval spent nuclear fuel has been removed, it is sent to NRF at the INL in southeast Idaho for examination and further naval spent nuclear fuel handling, including transferring, preparing, and packaging for transfer to an interim storage facility or geologic repository.

1.4. EIS Purpose and Need for Action

The purpose and need for the proposed action in the EIS is to provide the infrastructure necessary to support the naval nuclear reactor defueling and refueling schedules required to meet the operational needs of the U.S. Navy. The proposed action was identified as necessary because of the need for significant upgrades to the ECF infrastructure to continue safe and environmentally responsible naval spent nuclear fuel handling until at least 2060. NRF is currently the only industrial base equipped to perform all aspects of naval spent nuclear fuel handling. There are no existing alternative facilities that could be employed effectively if the NNPP's current infrastructure for handling naval spent nuclear fuel becomes unavailable. Without the capabilities of the ECF, the U.S. Navy's nuclear-powered fleet defueling and refueling operations would need to be stopped, leading to the inability of the nuclear-powered ships to be redeployed into fleet operations. The availability of the nuclear-powered fleet directly affects the ability of the U.S. Navy to meet its military missions, ultimately impacting national security interests.

The updated water pool system design for the new NSFH Facility that will replace the naval spent fuel handling capabilities of the ECF and its support facilities is consistent with the purpose and need for the proposed action in the EIS and the ROD. Therefore, the updated

water pool system design does not invalidate or change the purpose and need for the proposed action in the EIS.

1.5. EIS Alternatives

The EIS analyzes three alternatives consistent with previous programmatic decisions to allow naval spent nuclear fuel to continue to be shipped by rail from shipyards and prototypes to the INL for processing.

1.5.1. No Action Alternative

The No Action Alternative involves maintaining the ECF without a change to the present course of action or management of the facility. The No Action Alternative does not meet the purpose and need for the proposed action because it would not provide the infrastructure necessary to support the naval nuclear reactor defueling and refueling schedules required to meet the operational needs of the U.S. Navy. The No Action Alternative does not meet the NNPP's need because significant upgrades are necessary to the ECF infrastructure to continue safe and environmentally responsible naval spent nuclear fuel handling until at least 2060.

1.5.2. Overhaul Alternative

The Overhaul Alternative involves continuing to use the aging infrastructure at the ECF, while incurring increasing costs to provide the required refurbishments and workaround actions necessary to ensure uninterrupted aircraft carrier and submarine refueling and defueling. Under the Overhaul Alternative, the NNPP would operate the ECF in a safe and environmentally responsible manner by continuing to maintain the ECF while implementing major refurbishment projects for the ECF infrastructure and water pools.

Water pool refurbishment would ensure that the water pools support long-term use by, to the extent practicable, bringing the water pools up to current design and construction standards. Water pool refurbishment efforts could include actions such as lining the pool to form a water-tight barrier between the water in the pool and the concrete walls of the pool, and reinforcing areas of known structural degradation. The water pools would need to be drained, decontaminated, and emptied of some equipment. This equipment would be discarded, due to exceedance of its useful service life and the excessive cost to refurbish it. Work-around actions would be required for the water pool overhaul to ensure that the ECF continued to support the mission-critical work of the naval nuclear-powered fleet.

1.5.3. New Facility Alternative

The New Facility Alternative would involve building a new facility with naval spent nuclear fuel handling capabilities. While a new facility requires new process and infrastructure assets, the design could leverage use of the newer, existing ECF support facilities and would leverage use of newer equipment designs. A new facility would include all current naval spent nuclear fuel handling operations conducted at the ECF. The facility would be designed with the flexibility to integrate future identified mission needs.

1.6. EIS Impact Analyses

The EIS describes the affected environment and analyzes several resource areas for potential environmental impacts (direct, indirect, and cumulative) that could result from the three alternatives. Conservative assumptions are used in the environmental impact analysis. Resource areas that were analyzed are discussed below in Section 3. The EIS concludes, with

a few exceptions, that potential impacts on human health and the environment would primarily be small. The exceptions were unrelated to the water pool system design for the New Facility Alternative; therefore, they are not discussed here. A comparison of impacts for the project alternatives is provided in EIS Table 2.6.1 (DOE 2016).

2. WATER POOL SYSTEM DESIGN PROGRESSION

2.1. Preliminary Water Pool System Design in the EIS

In the EIS, the NSFH Facility water pool system preliminary design included:

- A primary water containment provided by reinforced concrete walls surrounded by concrete fill.
- A barrier between the water in the pool and the concrete walls and floor of the pool provided by a liner. Although the liner materials are not identified in the EIS, characteristics discussed indicated the liner would be metal.
- Leak detection and collection capability.
- A system of gated sections that would allow moving water between sections of the water pool, facilitating normal maintenance and repair. An inspection and maintenance program would be developed. In addition, maintaining proper water chemistry in the pool to achieve a low-corrosive environment would help ensure the integrity of the water pool system.

2.2. Updated Water Pool System Design

Since the EIS was published, the water pool system design has progressed based on several factors including constructability, operational factors, technical and functional requirements, project schedule impacts, and cost. Based on these factors, the NNPP moved away from a metal liner concept in favor of an epoxy-type coating. This progression of the water pool system design does not constitute a new alternative.

The updated NSFH Facility water pool system design will consist of:

- A primary water containment provided by reinforced concrete walls surrounded by concrete fill.
- An epoxy-type coating on the pool walls and floors as a protective barrier to extend the service life of the concrete.
- Leak detection and collection capability.
- A system of gated sections that would allow moving water between sections of the water pool, facilitating normal maintenance and repair. An inspection and maintenance program would be developed. In addition, maintaining proper water chemistry in the pool to achieve a low-corrosive environment would help ensure the integrity of the water pool system.

2.2.1. Concrete Water Pool Structure and Fill

The reinforced concrete structure of the water pool is the primary water containment structure. The nuclear safety function of the water pool is to maintain water coverage of fuel, preventing criticality and thermal casualties associated with catastrophic pool drainage. The reinforced concrete structure alone meets industry standards for structural requirements to prevent catastrophic pool draining under the design basis accident conditions for the design life of the facility (at least the next 40 years).

The reinforced concrete structure is designed to withstand design basis impacts and seismic events (baseline seismic design category (SDC)–3 with additional factors applied for defense in depth) without compromising its nuclear safety function. Key attributes of the water pool system seismic design include:

- Reinforced 4 to 6-foot thick concrete walls and floors.
- Up to 20-foot thick concrete fill instead of compacted soil as backfill around the water pool.
- Water pool structural foundation on bedrock or high quality structural concrete fill on bedrock, which makes settlement and associated stress negligible and minimizes concrete cracking and distortion.

The water pool design incorporates controls on the concrete constituents to enhance the life and durability of the water pool concrete and rebar, such as limits on concrete porosity and chloride ion content. Water stops at construction joints minimize the potential for leakage, and extensive steel reinforcement minimizes the potential for surface cracking. The fill around the water pool removes the open path for water drainage to surrounding soil. Further, the presence of a liner or coating is not expected to affect the ability of the water pool concrete to resist damage from impacts.

Quality assurance and quality control during concrete placement will be used to prevent and detect construction defects prior to water pool system commissioning. During water pool system construction, concrete will be inspected after placement and any defects will be repaired prior to applying the epoxy-type coating and filling the pool with water.

If significant deterioration of the epoxy-type coating occurs, and the coating is not repaired, certain aspects of the water chemistry in the pool could cause slow degradation of the reinforced concrete structure. To mitigate this effect, additional concrete coverage over the rebar above the minimum required by industry standards is planned. This additional concrete coverage will also provide further defense against surface cracking and will increase the overall structural integrity of the concrete pool system.

2.2.2. Epoxy-Type Coating

The epoxy-type coating will function to minimize exposure of the water pool concrete to the water pool environment, extending the service life of the water pool reinforced concrete structure.

2.2.3. Leak Detection and Collection System

The water pool leak detection and collection system will consist of:

- Water level monitoring.
- Flow meters on the make-up water system (water added to offset evaporation) that determine the amount of water being added to the pool.
- Leak collection system between the exterior surface of the pool floor and the concrete fill on bedrock.
- Wells for camera access located in the highest stress regions of the water pool.
- Groundwater monitoring.

2.2.4. Inspection and Maintenance Program

An inspection and maintenance program will be developed to maintain the performance of the water pool system. Camera access will allow examination of the highest stress regions of the water pools.

To facilitate maintenance and repair activities, gated sections will allow for draining and refurbishment of individual portions of the pool, if needed. With intermittent repair as needed, an extended service life of the reinforced concrete structure of the water pool is expected.

3. IMPACT EVALUATIONS

Three qualitative resource area assessments were performed to determine whether changes to the water pool system design (i.e., the updated design) would cause substantially different impacts on resource areas compared to those described in the EIS. Resource areas evaluated in the EIS were screened for potential impacts from changes in the water pool system design. Based on these screening results, resource areas were either included or eliminated from further analysis in this SA. The resource areas with potential to be affected by the changes to the water pool system design were evaluated to determine whether potential impacts had been adequately covered or bounded by the analysis in the EIS.

3.1. Resource Area Screening

The NNPP conducted an initial screening of all resource areas addressed in the EIS to determine which areas could potentially be affected by the changes to the water pool system design. Based on this screening, the NNPP determined the resource areas in Table 1 would not be affected by the updated water pool system design. Therefore, the impact analyses presented in the EIS for these resource areas are still considered applicable and are not evaluated further in this SA.

Table 1: Resource Areas Eliminated from Additional Analysis

Resource Area	Rationale for Exclusion from Additional Analysis
Land Use	No additional construction or land disturbance.
Transportation	No substantive change in material deliveries.
Ecological Resources	No additional construction or land disturbance, no change to airborne radiological releases, no change to best management practices to protect vegetation and wildlife.
Air Quality	No change to analysis assumptions for air quality impacts. The inventories of hazardous chemicals to be used for the updated design do not exceed the Threshold Planning Quantities as stipulated on the Extremely Hazardous Substances List provided in 40 C.F.R. § 355, Appendix A. Similarly, none of the thresholds in the List of Regulated Toxic Substances and Threshold Quantities for Accidental Release Prevention (40 C.F.R. § 68.130) would be exceeded for any chemicals to be used or stored at NRF.
Noise	No change to construction or operation activities, travel routes, or exceedance of Occupational Safety and Health Administration standards.
Cultural and Historic Resources	No additional construction or land disturbance.

Table 1 (Continued)

Visual and Scenic Resources	No change in height of new facility in relation to the existing buildings and no change in visual impacts from air pollutants (e.g., plume visibility).
Socioeconomics	No substantive change in the number of construction workers.
Energy, Utilities, and Infrastructure	No change in demand and infrastructure modifications for: consumption of electricity and fuel; water, gas, and electrical systems; and security infrastructure.
Environmental Justice	No change to impacts on environmental justice populations and the Shoshone-Bannock tribes.
Waste Management	No substantive change in volume of waste streams or disposal pathways.
Naval Spent Nuclear Fuel Management	No change in ability to process naval spent nuclear fuel and meet established schedules.

Three resource areas were identified that could potentially be impacted by the updated water pool system design; therefore, they are evaluated in this SA. These include:

- Geology and Soils (soil contamination impacts).
- Water Resources (groundwater and drinking water impacts).
- Public and Occupational Health and Safety (radiological impacts).

3.2. Resource Area Impacts and Comparisons

DOE 2019 states that for a SA, the comparison of a proposed change or new information is not limited to the preferred alternative in the existing EIS or the alternative selected in a ROD. Comparison can be made to one or more of the alternatives that were analyzed in detail in the existing EIS to demonstrate that the proposed change falls within the range of alternatives and impacts that were previously analyzed. This guidance is applied to the comparison of impacts between preliminary and updated water pool system designs for the resource areas identified as potentially affected. Evaluations are in Section 3.2.1 Geology and Soils (soil contamination impacts), Section 3.2.2 Water Resources (groundwater and drinking water impacts), and Section 3.2.3 Public and Occupational Health and Safety (radiological impacts).

Qualitative discussions and comparisons of environmental impacts are made to show that:

- The updated water pool system design is a minor variation of the range of alternatives that were analyzed in the EIS and does not represent a new alternative.
- Environmental impacts associated with the updated water pool system design are within the impacts previously analyzed in the EIS or represent minor variations of those impacts.

Environmental impacts to geology and soils, water resources, and public and occupational health and safety potentially applicable to the updated design include two hypothetical water pool scenarios analyzed in the EIS: the drained water pool (Appendix F.5.4.4) and the minor water pool leak (Appendix F.5.4.12). These two hypothetical water pool scenarios from the EIS are summarized below.

Drained Water Pool

For the drained water pool accident in the EIS, an earthquake causes damage to the structure of the water pool, resulting in complete water loss. The building structure would also be affected such that filtered ventilation systems would not be functional. The type of radiological release would consist of:

- Corrosion products on naval spent nuclear fuel in the drained water pool that go airborne.
- Corrosion products that are dislodged from the outside surface of naval spent nuclear fuel and entrained with the water that drains from water pool (direct release to the ground).
- Direct radiation due to removal of shielding properties of the water.

The annual probabilities assigned to an earthquake reflect the likelihood that this event might occur. The earthquake probability varies among alternatives in the EIS based on differences in water pool structures and associated seismic design criteria. The probability evaluation in the EIS does not take credit for the presence of a liner or epoxy-type coating. Neither the liner nor the epoxy-type coating are designed to remain water-tight during a design basis seismic event; therefore, they are not relied upon to prevent drainage during a seismic event.

As presented in the EIS, risk to the public from an earthquake resulting in a drained water pool is negligible for any of the alternatives when compared to risks from normal daily activities. This analysis is based on the robust nature of the reinforced concrete structure that contains the water within the pool and the emergency response capabilities that reside within the NNPP. While these results are consistent for all alternatives, the risks from an earthquake for the New Facility Alternative are smaller than the risks for the Overhaul Alternative or No Action Alternative due to the higher seismic standard to which the new facility is designed.

The seismic performance requirements (i.e., baseline SDC-3 with additional factors applied for defense in depth) did not change with the updated water pool system design compared to the New Facility Alternative presented in the EIS. Therefore, the updated water pool system design would not affect the drained water pool analysis performed in the EIS.

Minor Water Pool Leak

An evaluation of a minor water pool leak is provided in Appendix F.5.4.12 of the EIS. A minor water pool leak could occur as the result of a construction deficiency, ground settlement, facility deterioration, or a small seismic event that causes minor damage to the water pool structure. Depending on conditions, a minor water pool leak might persist for some time before discovery (Nuclear Regulatory Commission [NRC] 2006).

Combinations of factors at NRF would minimize the likelihood that a water pool leak would result in noticeable off-site environmental impacts. These include:

- The type of radiological contaminants (minimized by using pool filtration systems).
- Radionuclide sorption by the concrete walls and floor of the water pool and surrounding concrete fill.
- Hydrologic and chemical processes in the environment.
- Groundwater monitoring (unlikely that leakage to the environment would go undetected for an extended time period).

Based on these factors, the potential for a minor water pool leak to significantly impact the environment would be small. However, for conservatism, a minor water pool leak was included in the EIS for each alternative.

A leak rate of 1,136 liters per day (300 gallons per day) was used in the assessment for all alternatives. This rate was three times the rate estimated in an NRC review of leakage from 13 commercial nuclear power spent fuel pools (NRC 2013) and judged to be conservative. The radionuclide inventory was based on analysis of the water in the ECF water pool. All alternatives were evaluated over a 40-year service life due to the ongoing nature of the event. Neither a liner nor an epoxy-type coating were relied upon to reduce the assumed leakage rate. Additionally, no credit was taken for leakage collection in the minor water pool leak analysis. The only difference in variables considered among alternatives was the duration of the leak, which is discussed further below.

No Action Alternative and Refurbishment Period of the Overhaul Alternative

For the No Action Alternative and the refurbishment period of the Overhaul Alternative, a 40-year duration for an undetected minor water pool leak was assumed. The rationale for this duration was based on the possibility that a leak could occur in an area of the water pool that cannot be repaired, or that a small leak goes undetected for a period of time.

For the No Action Alternative and the refurbishment period of the Overhaul Alternative, the peak annual radiation dose for the Maximally Exposed Off-Site Individual (MOI) would be 7.6×10^{-3} millirem (7.6×10^{-6} rem). This is less than 0.0025 percent of the annual radiation dose that a member of the public would receive from natural background radiation from sources such as sunlight and medical x-rays (approximately 310 millirem per year).

New Facility Alternative and Operational Period of the Overhaul Alternative

For the New Facility Alternative and the operational period of Overhaul Alternative, a 5-year duration for an undetected minor water pool leak was assumed. The rationale for this duration was based on the expectation that the combination of the water pool liner, concrete walls, and groundwater monitoring would prevent the water pool from leaking, undetected, to the environment. Once a leak was detected and located, appropriate repairs would be performed.

For the New Facility Alternative and the operational period of the Overhaul Alternative, the peak annual radiation dose for the MOI would be 2.4×10^{-3} millirem (2.4×10^{-6} rem). This is less than 0.00077 percent of the annual radiation dose that a member of the public would receive from natural background radiation (approximately 310 millirem per year). Therefore, the resulting impact on public health and safety from a minor water pool leak would be negligible in comparison to the amount of natural background radiation received by individuals annually.

Updated Design of the Water Pool System

Similar capabilities in both the preliminary and updated water pool system designs support the judgement that a minor water pool leak of 5 years (as opposed to a 40-year leak) would be representative for the updated water pool system design. The concrete water pool structure as described in Section 2.2 provides a formidable barrier to contain water within the pool. Should a minor water pool leak develop, the leak detection and collection system described in Section 2.2.3 would be expected to detect the leak. The water pool gate system that provides

capability to isolate individual pools would facilitate the ability to locate and repair water pool leaks.

3.2.1. Geology and Soils – Soil Contamination

Section 4.3 of the EIS discusses the potential impacts on geology and soils from the alternatives. Impacts on geology and soils would occur if the alternatives created a situation where geologic resources were used or soil quality was diminished (e.g., by soil contamination or by erosion and sedimentation). The discussion in Section 4.3 of the EIS is informed by the minor water pool leak scenario for all three alternatives. The EIS identifies small radiological impacts from soil contamination for the No Action Alternative and the refurbishment period of the Overhaul Alternative. The EIS presented no radiological impact on soils from the New Facility Alternative. This resource area analysis from the EIS remains appropriate for the updated water pool system design, based on the continued applicability of the minor water pool leak analysis as discussed in Section 3.2.

3.2.2. Water Resources – Groundwater and Drinking Water

Section 4.4 of the EIS discusses the potential impacts to water resources from the alternatives. Water resources would be impacted if actions associated with the alternatives increased certain parameters addressed in the EIS, including constituents in groundwater. The discussion in Section 4.3 of the EIS is informed by the minor water pool leak scenario. The EIS identifies that for the No Action Alternative and the refurbishment period of the Overhaul Alternative, negligible potential impacts on groundwater and drinking water from radiological contamination could occur. The minor water pool leak analysis in the EIS found that the concentration of radionuclides in the water at the location of an individual member of the public would be much lower than the EPA Maximum Contaminant Levels for drinking water. The EIS presented no radiological impact on water resources due to a minor water pool leak from the New Facility Alternative. This resource area analysis from the EIS remains appropriate for the updated water pool system design, based on the continued applicability of the minor water pool leak analysis as discussed in Section 3.2.

3.2.3. Public and Occupational Health and Safety – Radiological Impacts

Section 4.13.2 of the EIS discusses radiological impacts to public and occupational health and safety from the proposed action. Sources of radiological impacts from routine naval spent nuclear fuel handling operations are not affected by the updated water pool design and are therefore not discussed herein. Potential effects on public and occupational health and safety from the drained water pool scenario and minor water pool leak scenario are discussed below.

Drained Water Pool Scenario

As presented in Section 3.2, the seismic performance requirements did not change with the updated water pool system design compared to the New Facility Alternative. Additionally, neither the liner nor the epoxy-type coating are designed to remain water-tight during a design basis seismic event and are not relied upon to prevent drainage during a seismic event. Therefore, the updated water pool system design would not affect the conclusions of the seismic analysis discussed in Section 4.13.2 of the EIS.

Minor Water Pool Leak Scenario

As presented in Section 3.2, similar capabilities in both the preliminary and updated water pool system designs support the judgement that a minor water pool leak of 5 years (as opposed to a

40-year leak) would be representative for the updated water pool design. The concrete water pool structure as described in Section 2.2 provides a formidable barrier to contain water within the pool. Should a minor water pool leak develop, the leak detection and collection system described in Section 2.2.3 would be expected to detect the leak. The water pool gate system that provides the capability to isolate individual pools would facilitate the ability to locate and repair water pool leaks. Therefore, the updated water pool system design would not affect the conclusions of the minor water pool leak evaluation discussed in Section 4.13.2 of the EIS.

4. CONCLUSIONS AND DETERMINATION

Conclusions

In accordance with DOE regulations in 10 C.F.R. 1021.314(c), this SA evaluates potential impacts from the updated design for the NSFH Facility water pool system to determine whether the EIS should be supplemented, a new EIS should be prepared, or no further NEPA documentation is necessary.

Resource areas in the EIS were screened for the potential to be impacted by the water pool system design. This resulted in evaluation of impacts on public and occupational health and safety, geology and soils, and water resources. Based on the evaluations in this SA, the updated water pool system design would not affect the outcome of the analyses for these resources in the EIS. Therefore, the minor variations of the alternatives and impacts due to the water pool system design modifications since the issuance of the EIS are within the bounds of the impacts evaluated in the EIS.

Determination

The evaluations in this SA indicate that the updated water pool system design for naval spent nuclear fuel handling in the new NSFH Facility does not constitute a substantial change to the proposed action in the *Final Environmental Impact Statement for the Recapitalization of Infrastructure Supporting Naval Spent Nuclear Fuel Handling*, DOE/EIS-0453-F, relevant to environmental concerns. Similarly, no significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts have been identified. The NNPP concludes that the updated water pool system design is not a substantial change relative to the proposal analyzed in the EIS. Therefore, no further NEPA documentation is required.

Approved in Washington, D.C., on this 4th day of September, 2020.

Admiral J. F. Caldwell, Jr.
Director, Naval Reactors

5. REFERENCES

DOE 2019	"Recommendations for the Supplement Analysis Process, Second Edition." U.S. Department of Energy, Office of NEPA Policy and Compliance, Washington, D.C. January 2019.
DOE 2016	DOE/EIS-0453-F. "Final Environmental Impact Statement for the Recapitalization of Infrastructure Supporting Naval Spent Nuclear Fuel Handling." U.S. Department of Energy, Washington, D.C. October 2016.
NRC 2006	"Liquid Radioactive Release Lessons Learned Task Force Final Report," U.S. Nuclear Regulatory Commission, Washington, D.C. September 2006.
NRC 2013	NUREG-2157. "Waste Confidence Generic Environmental Impact Statement, Draft Report for Comment." U S. Nuclear Regulatory Commission, Washington, D.C. September 2013.
ROD 2016	"Record of Decision for the Recapitalization of Infrastructure Supporting Naval Spent Nuclear Fuel Handling at the Idaho National Laboratory." Federal Register, Vol. 81, No. 234. U.S. Department of Energy Naval Nuclear Propulsion Program, Washington, D.C. December 2016.