

# DOE-ID NEPA CX DETERMINATION

## Idaho National Laboratory

### SECTION A. Project Title: NuScale Experiment

### SECTION B. Project Description and Purpose:

This environmental checklist (EC) is being revised as a first tier EC, because shipping irradiated materials off-Site is not covered in the overarching environmental checklist referenced in the original document. The work scope, aspects, and conditions and instructions have not changed.

Light Water Reactor (LWR) researchers, operators, and developers need to understand the behavior of metallic alloys exposed to low temperatures and low neutron fluences to evaluate LWR operational changes such as power-up rate requests. Obtaining this data requires performing irradiation experiments under low fluence and low temperature conditions like those in a typical Boiling Water Reactor (BWR). The Advanced Test Reactor (ATR) "I" positions offer this capability.

The proposed action irradiates a non-fueled drop-in materials experiment containing SA-508 Grade 3 Class 2 (hereafter SA-508) and Code Case N-774 Grade F6NM (hereafter F6NM) specimens in the ATR to obtain irradiation embrittlement data of base metal, weld metal, and heat-affected zone (HAZ) material from SA-508 and F6NM weldments as part of the NuScale alternative vessel material test program (AVMTP). SA-508 is a carbon steel while F6NM is a martensitic stainless steel. Idaho National Laboratory (INL) fabricates the insert and baskets primarily of aluminum and minimal amounts of stainless steel. Samples can be irradiated in one or more large I-positions of ATR in an aluminum multi-hole fixture in the Large I- position. The fixture would have 13 positions, and each basket would hold 11 samples (assuming positioning of the samples from one foot above core centerline to one foot below), for a total of 143 samples irradiated per ATR cycle. The material samples would be in direct contact with the primary coolant of ATR. Following irradiation, the samples would be removed from the basket for PIE.

Unirradiated specimens would be shipped in an approved Type A container. Irradiated SA508 and F6NM specimens will be shipped to the Materials and Fuels Complex (MFC) or Westinghouse for PIE via GE-100 or equivalent shipping container. Irradiated samples having research value will be placed in the NSUF sample library located at HFEF upon conclusion of the project.

The project anticipates inserting the experiments after the ATR core-internals-changeout scheduled for 2021. Irradiation will continue into 2022 with shipments to HFEF and/or Westinghouse completed by 2023.

### SECTION C. Environmental Aspects or Potential Sources of Impact:

#### Air Emissions

Experiment irradiation and PIE will be performed at the ATR and HFEF. Air emissions would include minor amounts of radionuclides and toxic air pollutants. The irradiation in the ATR is not a modification in accordance with Idaho Administrative Procedures Act (IDAPA) 58.01.01.201 and 40 Code of Federal Regulation (CFR) 61 Subpart H. ATR radionuclide emissions are sampled and reported in accordance with Laboratory Wide Procedure (LWP)-8000 and 40 CFR 61 Subpart H. All experiments will be evaluated by ATR Environmental Support and Services staff, prior to insertion in the ATR. All radionuclide release data (isotope specific in curies) directly associated with this experiment will be calculated and provided to ATR Programs Environmental Support organization.

The irradiated specimens will be delivered to the MFC HFEF for disassembly and then undergo routine PIE. All radionuclide release data associated with the PIE portion of this experiment will be recorded as part of the HFEF continuous stack monitor. The PIE examination in HFEF is not a modification in accordance with Idaho Administrative Procedures Act (IDAPA) 58.01.01.201 and 40 Code of Federal Regulation (CFR) 61 Subpart H.

#### Disturbing Cultural or Biological Resources

ATR is eligible for listing on the National Register of Historic Places (NRHP) and is considered a Category 1 historic property; as such, all project activities associated with the building must undergo cultural resource review (CRR).

#### Generating and Managing Waste

Waste streams are expected to include industrial waste such as PPE, packaging material; and low-level radioactive waste (LLW). All waste will be managed by WGS.

#### Releasing Contaminants

Chemicals will be used and will be submitted to chemical inventory lists with associated Safety Data Sheets (SDSs) for approval prior to use. The Facility Chemical Coordinator will enter these chemicals into the INL Chemical Management Database. All chemicals will be managed in accordance with laboratory procedures. When dispositioning surplus chemicals, project personnel must contact the facility Chemical Coordinator for disposition instructions.

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Although not anticipated, there is a potential for spills when using chemicals or fueling equipment. In the event of a spill, notify facility environmental staff. If environmental staff cannot be contacted, report the release to the Spill Notification Team (208-241-6400). Clean up the spill and turn over spill cleanup materials to WGS.

### Using, Reusing, and Conserving Natural Resources

All materials will be reused and recycled where economically practicable. All applicable waste will be diverted from disposal in the landfill where conditions allow.

**SECTION D. Determine Recommended Level of Environmental Review, Identify Reference(s), and State Justification:** Identify the applicable categorical exclusion from 10 Code of Federal Regulation (CFR) 1021, Appendix B, give the appropriate justification, and the approval date.

For Categorical Exclusions (CXs), the proposed action must not: (1) threaten a violation of applicable statutory, regulatory, or permit requirements for environmental, safety, and health, or similar requirements of Department of Energy (DOE) or Executive Orders; (2) require siting and construction or major expansion of waste storage, disposal, recovery, or treatment or facilities; (3) disturb hazardous substances, pollutants, contaminants, or Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)-excluded petroleum and natural gas products that pre-exist in the environment such that there would be uncontrolled or unpermitted releases; (4) have the potential to cause significant impacts on environmentally sensitive resources (see 10 CFR 1021). In addition, no extraordinary circumstances related to the proposal exist that would affect the significance of the action. In addition, the action is not "connected" to other action actions (40 CFR 1508.25(a)(1)) and is not related to other actions with individually insignificant but cumulatively significant impacts (40 CFR 1608.27(b)(7)).

**References:** 10 CFR 1021, Appendix B to subpart D, items B3.6, "Small-scale research and development, laboratory operations, and pilot projects" and B1.30 "Transfer actions."

Final Site-Wide Environmental Impact Statement for the Continued Operation of the Department of Energy/National Nuclear Security Administration Nevada National Security Site and Off-Site Locations in the State of Nevada (DOE/EIS-0426, December 2014).

**Justification:** The proposed R&D activities are consistent with CXs B3.6 "Siting, construction, modification, operation, and decommissioning of facilities for small-scale research and development projects; conventional laboratory operations (such as preparation of chemical standards and sample analysis); small-scale pilot projects (generally less than 2 years) frequently conducted to verify a concept before demonstration actions, provided that construction or modification would be within or contiguous to a previously disturbed area (where active utilities and currently used roads are readily accessible). Not included in this category are demonstration actions, meaning actions that are undertaken at a scale to show whether a technology would be viable on a larger scale and suitable for commercial deployment;" and

B1.30 "Transfer actions, in which the predominant activity is transportation, provided that (1) the receipt and storage capacity and management capability for the amount and type of materials, equipment, or waste to be moved already exists at the receiving site and (2) all necessary facilities and operations at the receiving site are already permitted, licensed, or approved, as appropriate. Such transfers are not regularly scheduled as part of ongoing routine operations."

The environmental impacts of transferring LLW from the INL Site to the Nevada National Security Site were analyzed in the 2014 Final Site-Wide Environmental Impact Statement for the Continued Operation of the Department of Energy/National Nuclear Security Administration Nevada National Security Site and Off-Site Locations in the State of Nevada (DOE/EIS-0426) and DOE's Waste Management Programmatic EIS (DOE/EIS-200). The fourth Record of Decision (ROD) (65 FR 10061, February 25, 2000) for DOE's Waste Management Programmatic EIS established the Nevada National Security Site as one of two regional LLW and MLLW disposal sites.

Is the project funded by the American Recovery and Reinvestment Act of 2009 (Recovery Act)  Yes  No

Approved by Jason Sturm, DOE-ID NEPA Compliance Officer on: 01/29/2020